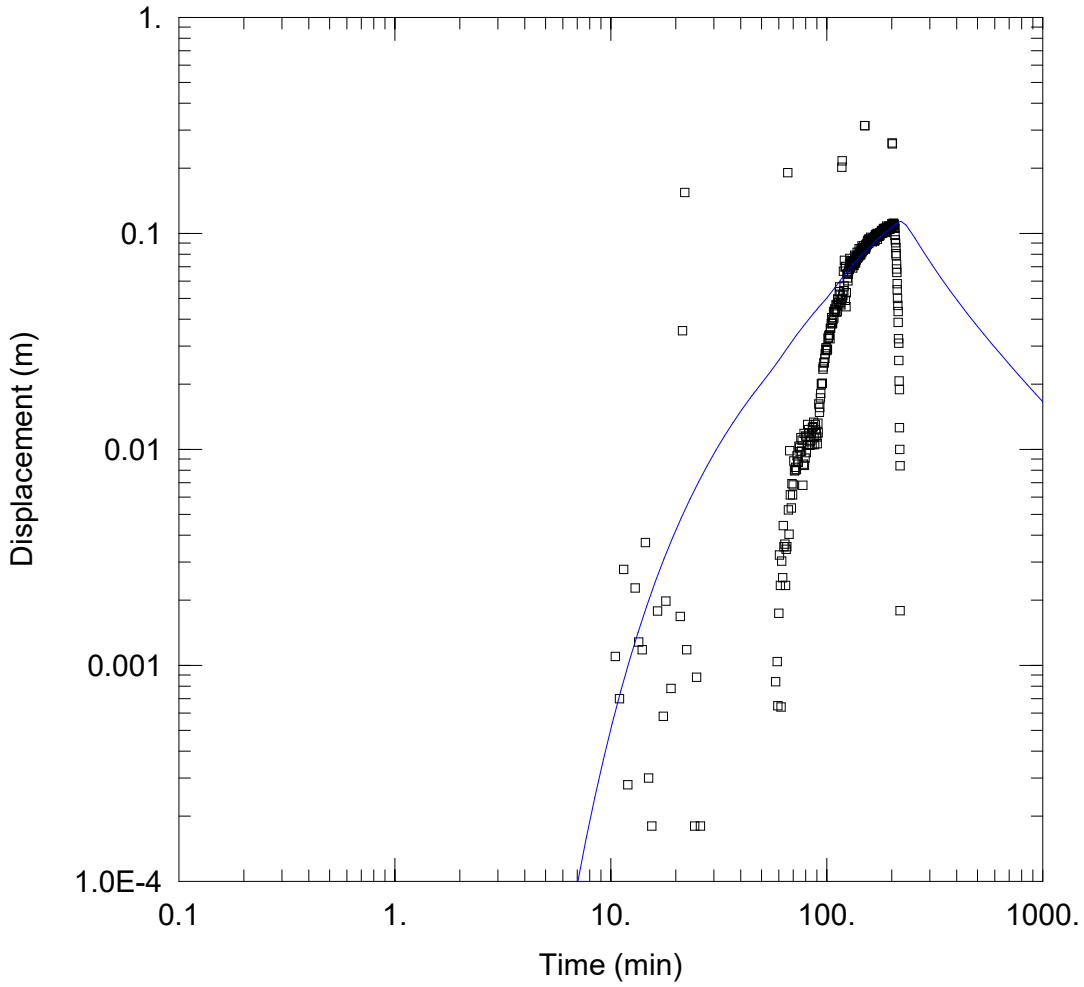
Appendix B

Aqtesolv Modeling

(Palmer, 2020)



WELL TEST ANALYSIS

Data Set: G:\...\MW9 StepTest - MW4D Obs Well.aqt
Date: 10/28/20 Time: 10:00:57

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW9	0	0

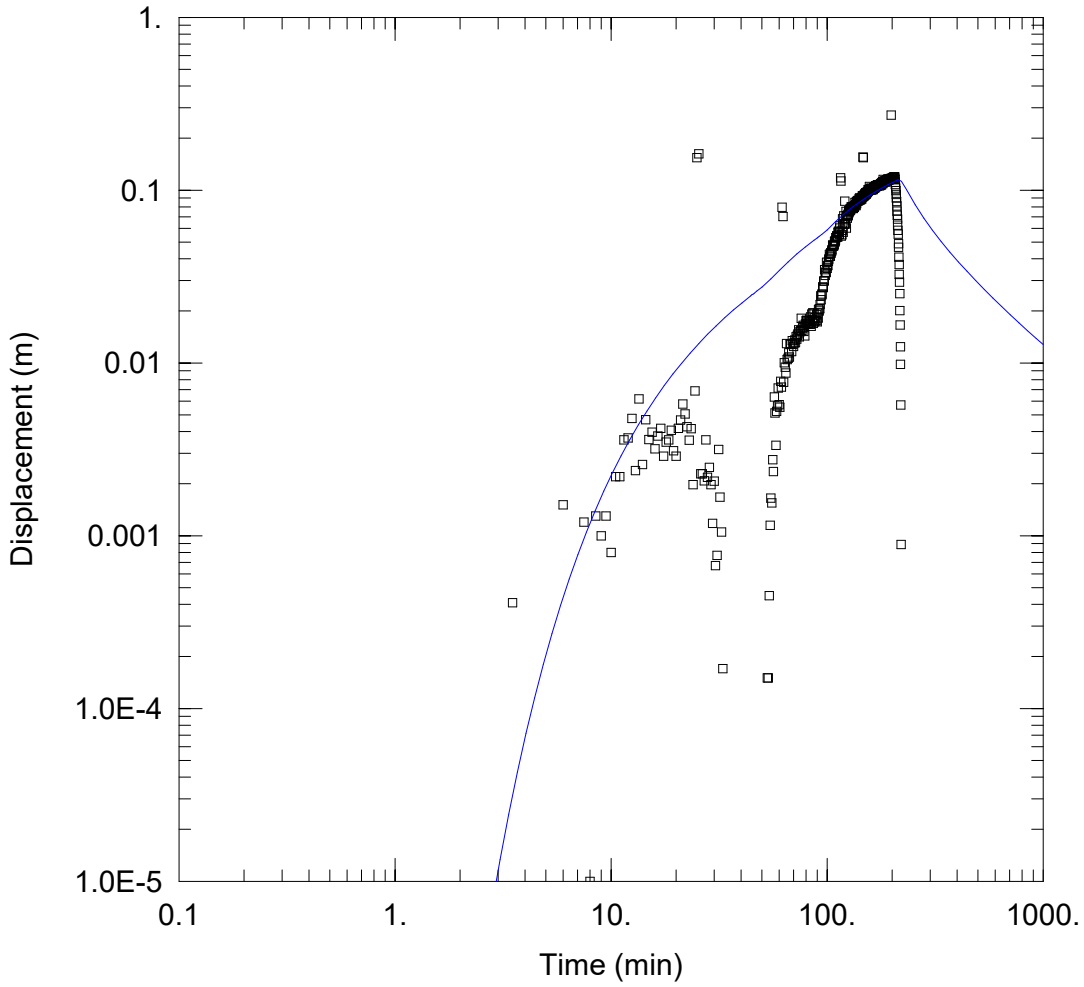
Observation Wells

Well Name	X (m)	Y (m)
▫ MW4D	663	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.308 m^2/min
S = 0.0003761
Kz/Kr = 1.
b = 13. m



WELL TEST ANALYSIS

Data Set: G:\...\MW9 StepTest - MW5 Obs Well.aqt
Date: 10/28/20 Time: 10:21:55

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW9	0	0

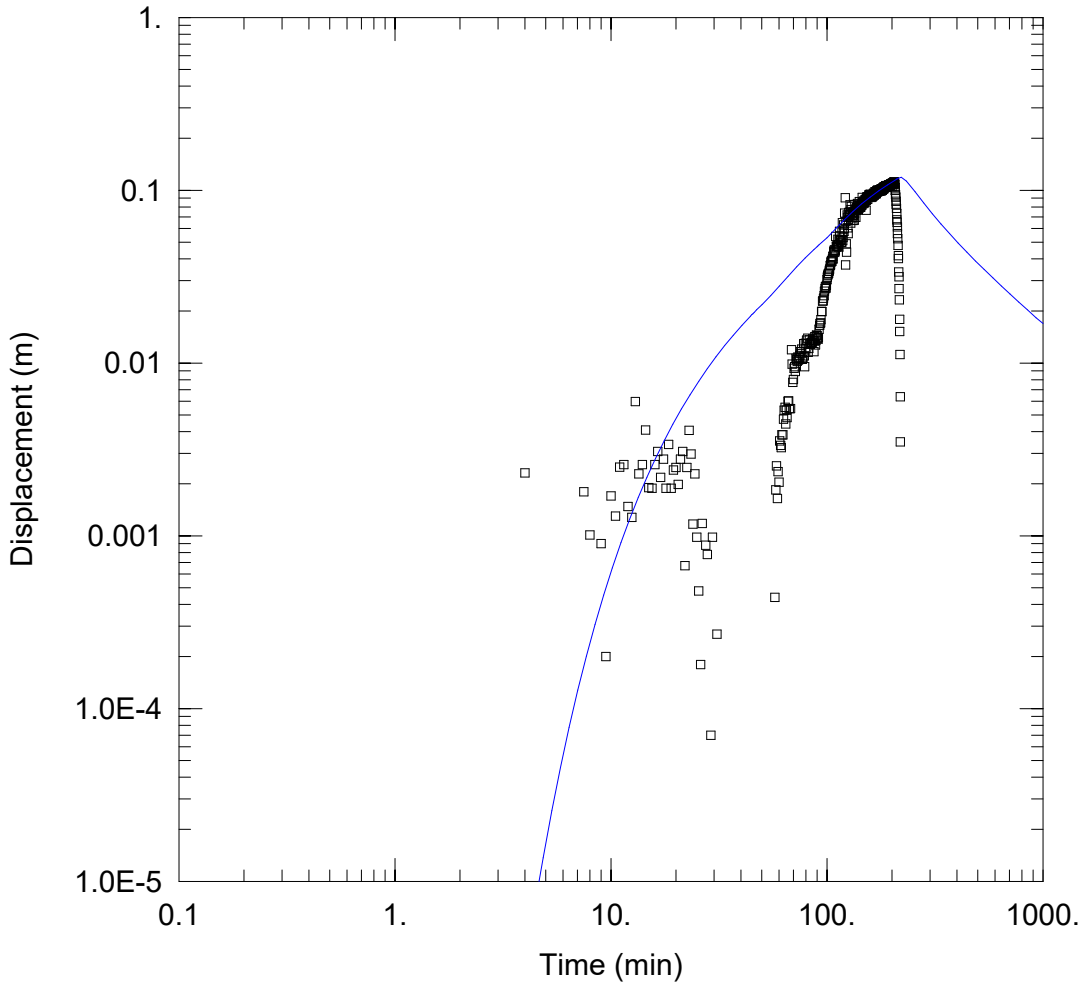
Observation Wells

Well Name	X (m)	Y (m)
▫ MW5	666	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.73 m^2/min
S = 0.0002855
Kz/Kr = 1.
b = 13. m



WELL TEST ANALYSIS

Data Set: G:\...\MW9 StepTest - MW6 Obs Well.aqt
Date: 10/28/20 Time: 10:32:48

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW9	0	0

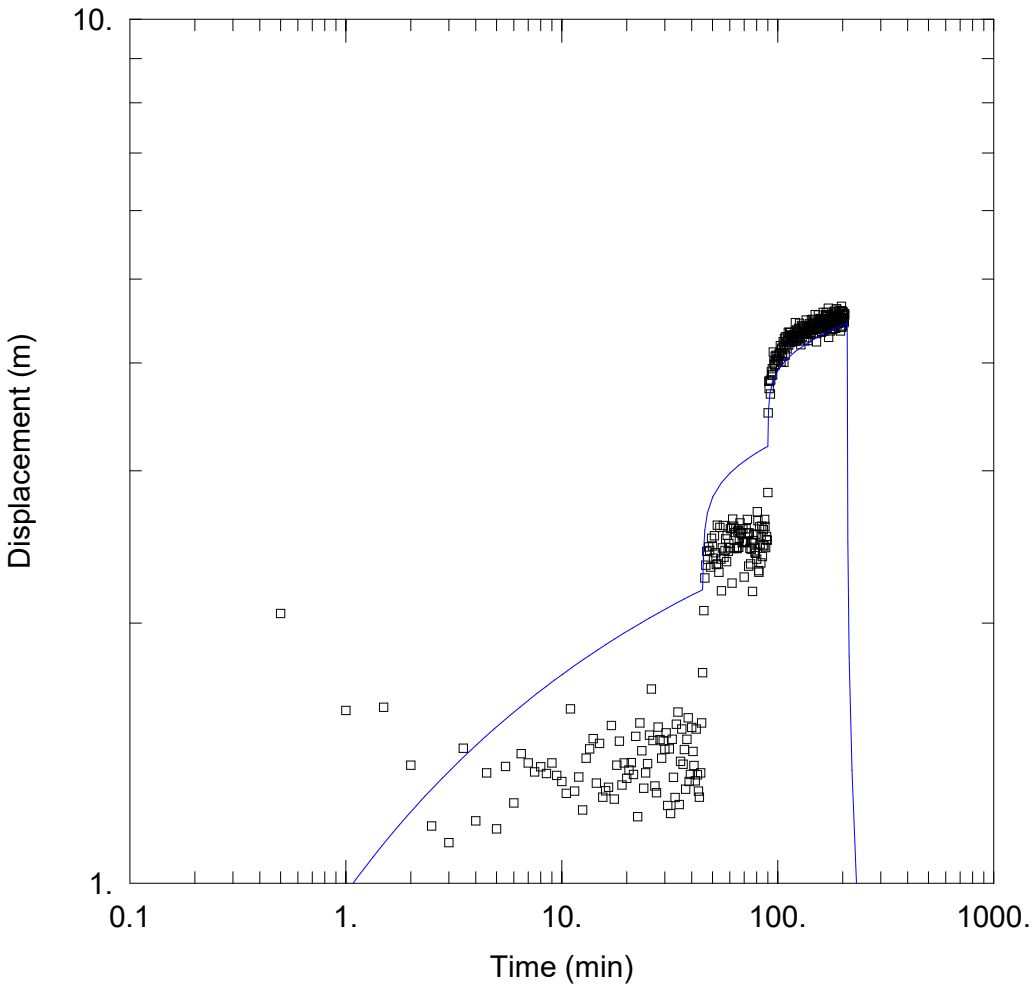
Observation Wells

Well Name	X (m)	Y (m)
MW6	672	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.288 m^2/min
S = 0.0003439
Kz/Kr = 1.
b = 13. m



WELL TEST ANALYSIS

Data Set: Z:\...\MW9 StepTest.aqt
Date: 08/27/20 Time: 21:33:21

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW9	0	0

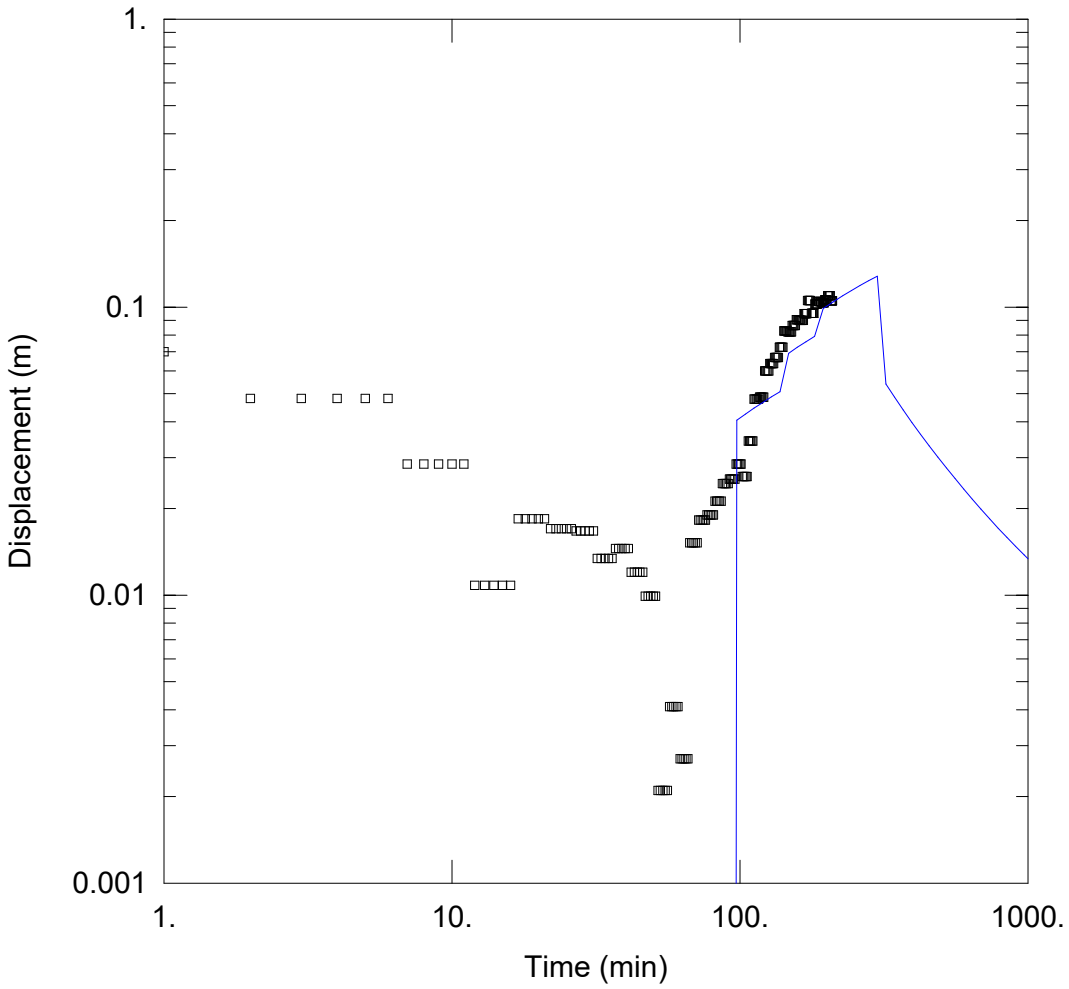
Observation Wells

Well Name	X (m)	Y (m)
MW9	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.5570 m^2/min
S = 20.31
Kz/Kr = 1.
b = 13. m



NOBLETON GROUNDWATER EXPLORATION STUDY

Data Set: G:\...\MW9 StepTest - NOB-PW5 Obs Well.aqt
Date: 10/28/20 Time: 10:45:31

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW9	0	0

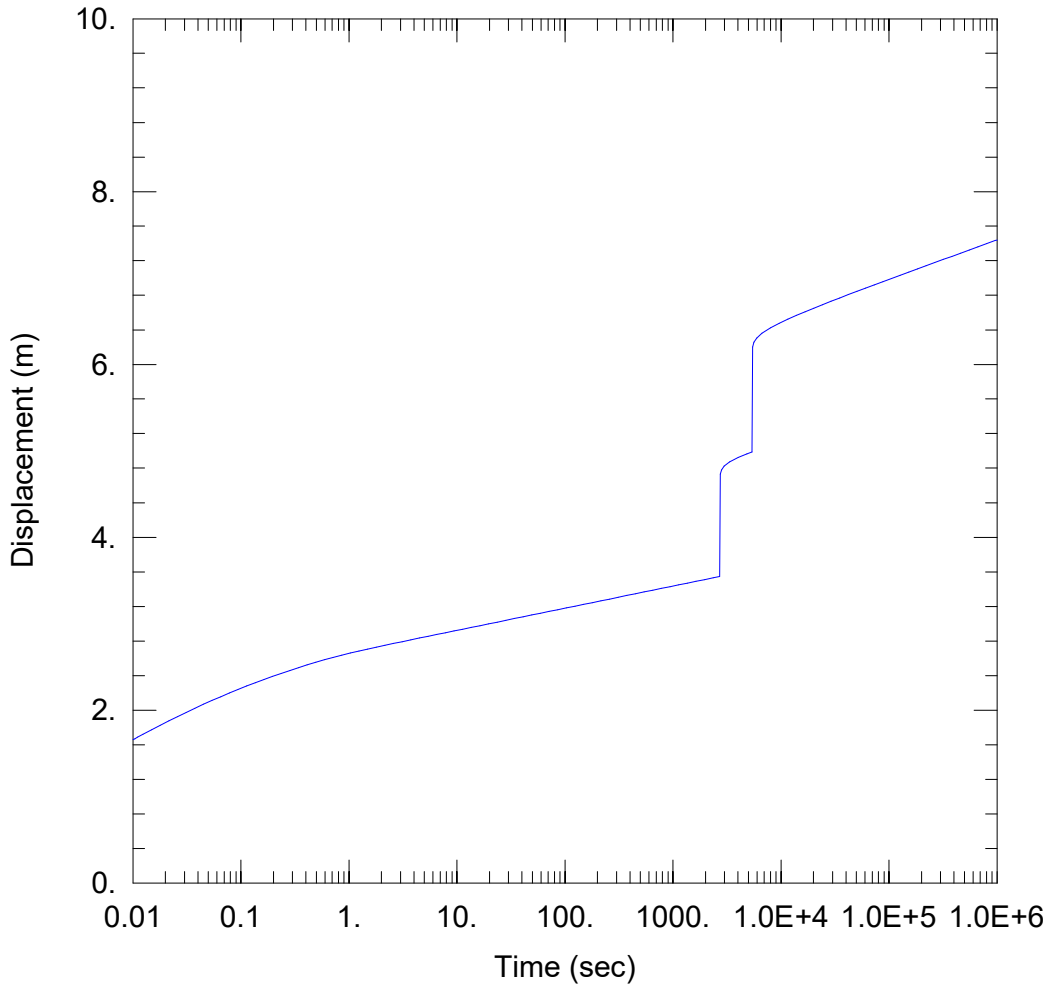
Observation Wells

Well Name	X (m)	Y (m)
▫ NOB-PW5	658	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1.708 m^2/min
S = 0.04524
Kz/Kr = 1.
b = 13. m



WELL TEST ANALYSIS

Data Set: G:\...\MW9 Forward Solution 35 lps.aqt
Date: 02/01/21 Time: 18:14:35

PROJECT INFORMATION

Company: Palmer
Client: Black & Veatch
Project: 1704602
Location: Nobleton
Test Well: MW9
Test Date: June 23, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW9	0	0

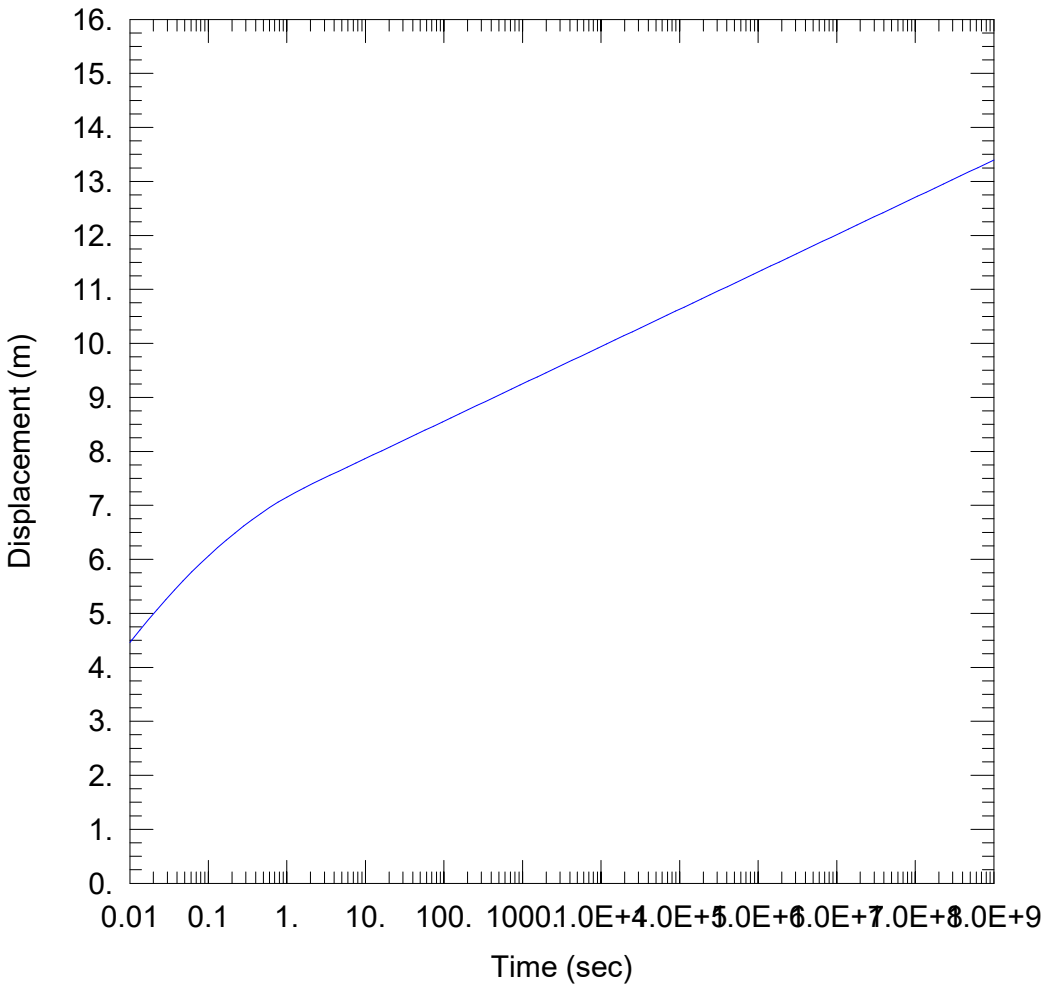
Observation Wells

Well Name	X (m)	Y (m)
▫ MW9	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 802. m^2/day
S = 0.00033
Kz/Kr = 1.
b = 13. m



WELL TEST ANALYSIS

Data Set: G:\...\MW9 Forward Solution.aqt
Date: 02/01/21 Time: 18:14:58

PROJECT INFORMATION

Company: Palmer
Client: Black & Veatch
Project: 1704602
Location: Nobleton
Test Well: MW9
Test Date: June 23, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW9	0	0

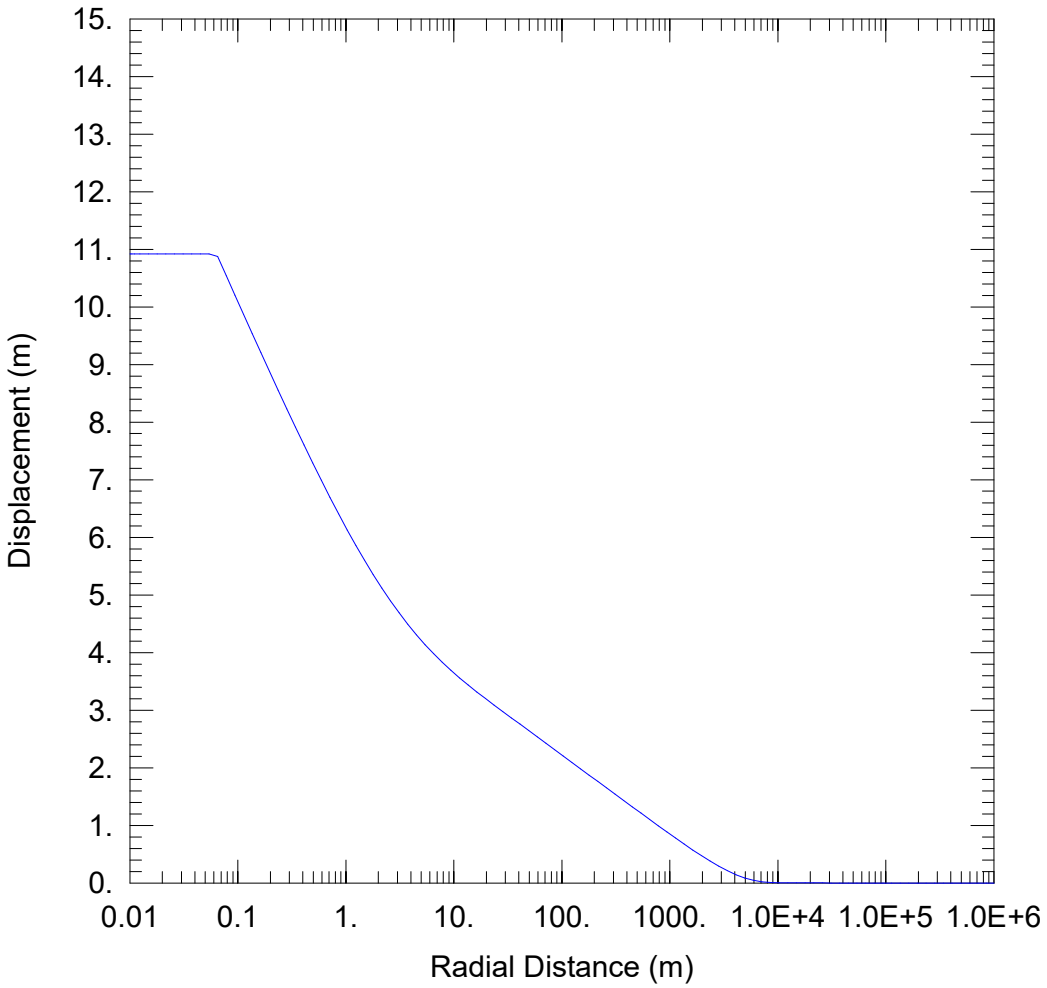
Observation Wells

Well Name	X (m)	Y (m)
MW9	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 802. m^2/day
S = 0.00033
Kz/Kr = 1.
b = 13. m



WELL TEST ANALYSIS

Data Set: G:\...\MW9 Forward Solution.aqt
Date: 02/01/21 Time: 18:13:56

PROJECT INFORMATION

Company: Palmer
Client: Black & Veatch
Project: 1704602
Location: Nobleton
Test Well: MW9
Test Date: June 23, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW9	0	0

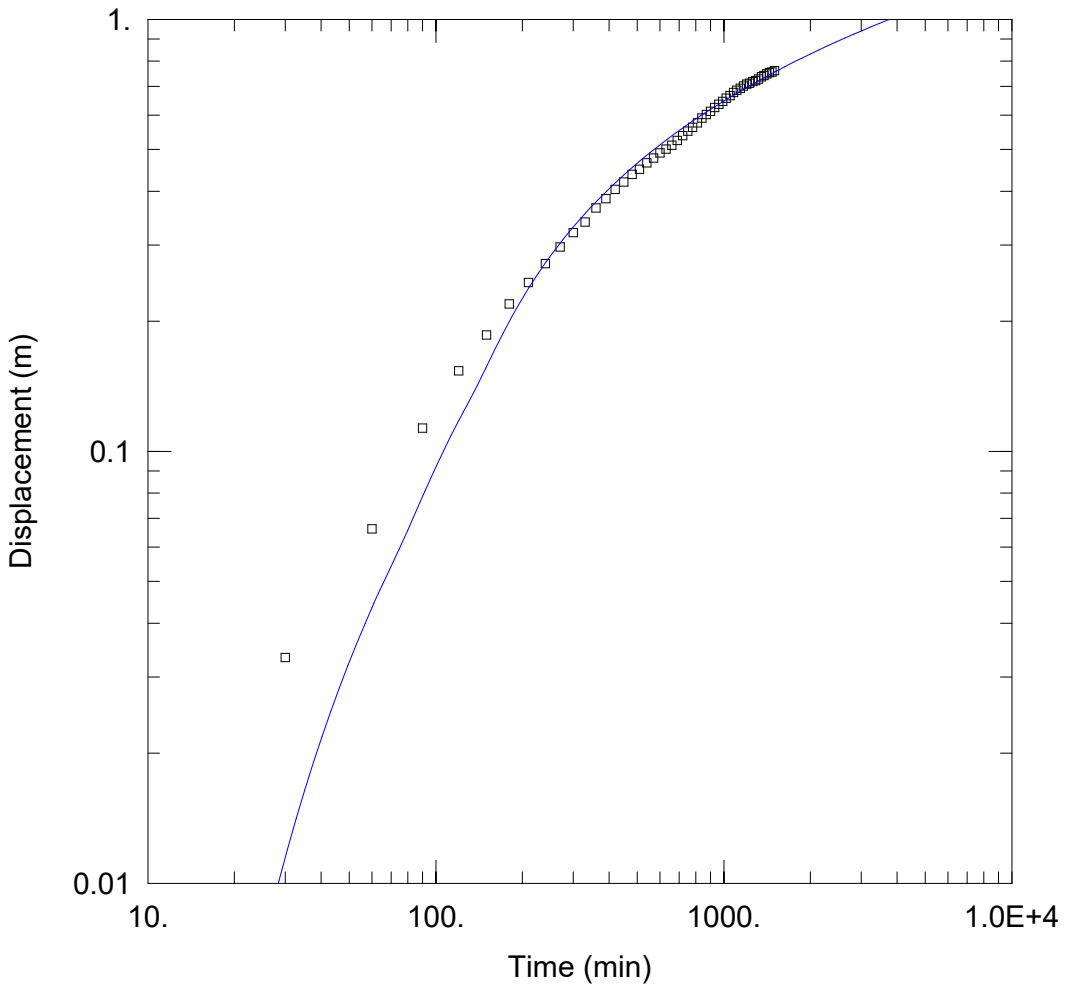
Observation Wells

Well Name	X (m)	Y (m)
▫ MW9	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 802. m^2/day
S = 0.00033
Kz/Kr = 1.
b = 13. m



WELL TEST ANALYSIS

Data Set: Z:\...\MW6 Step & Pumping Test - MW1D Obs Well Bounday Conditions.aqt
Date: 08/21/20 Time: 15:56:43

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0

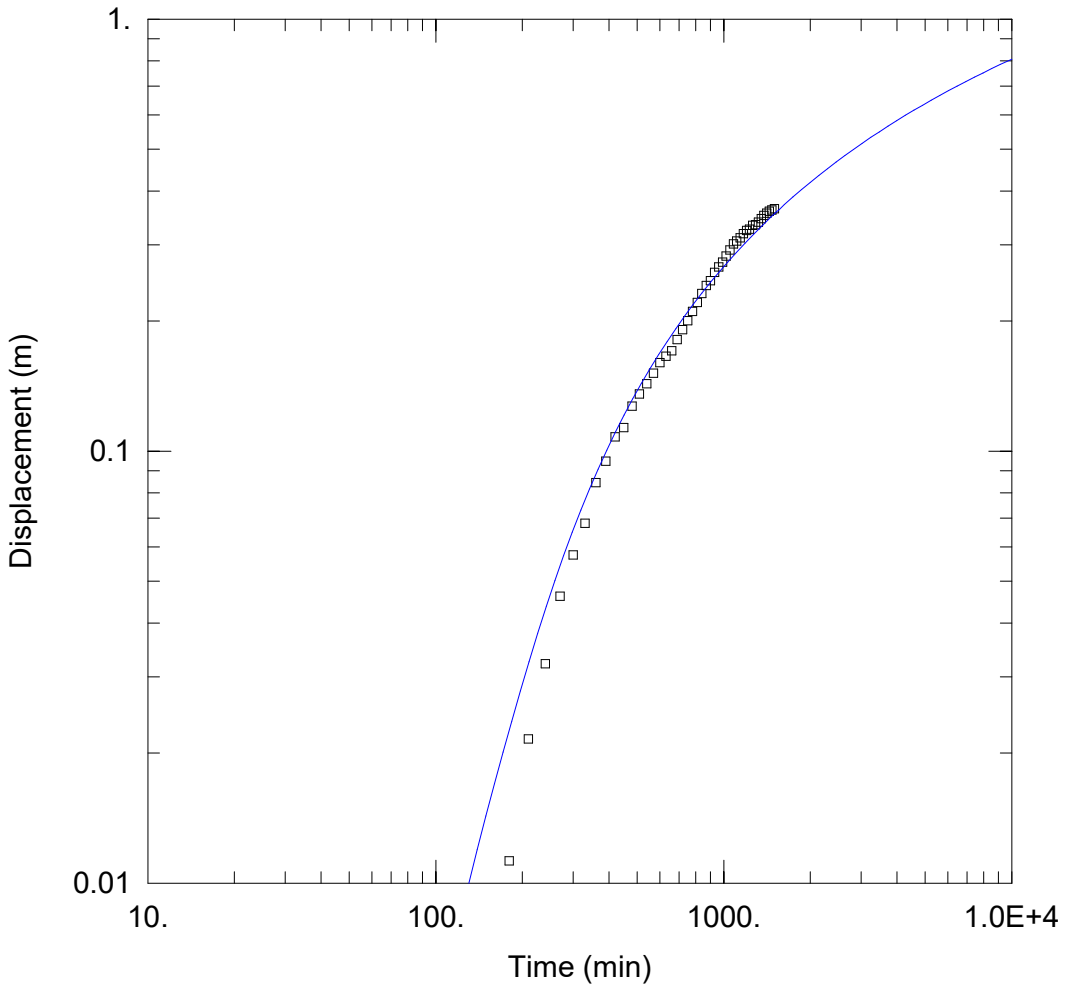
Observation Wells

Well Name	X (m)	Y (m)
▫ MW1D	338	395

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.8198 m^2/min
S = 0.0006288
Kz/Kr = 1.
b = 15.26 m



WELL TEST ANALYSIS

Data Set: Z:\...\MW6 Step & Pumping Test - MW3D Obs Well Bounday Conditions.aqt
Date: 08/21/20 Time: 15:56:31

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0

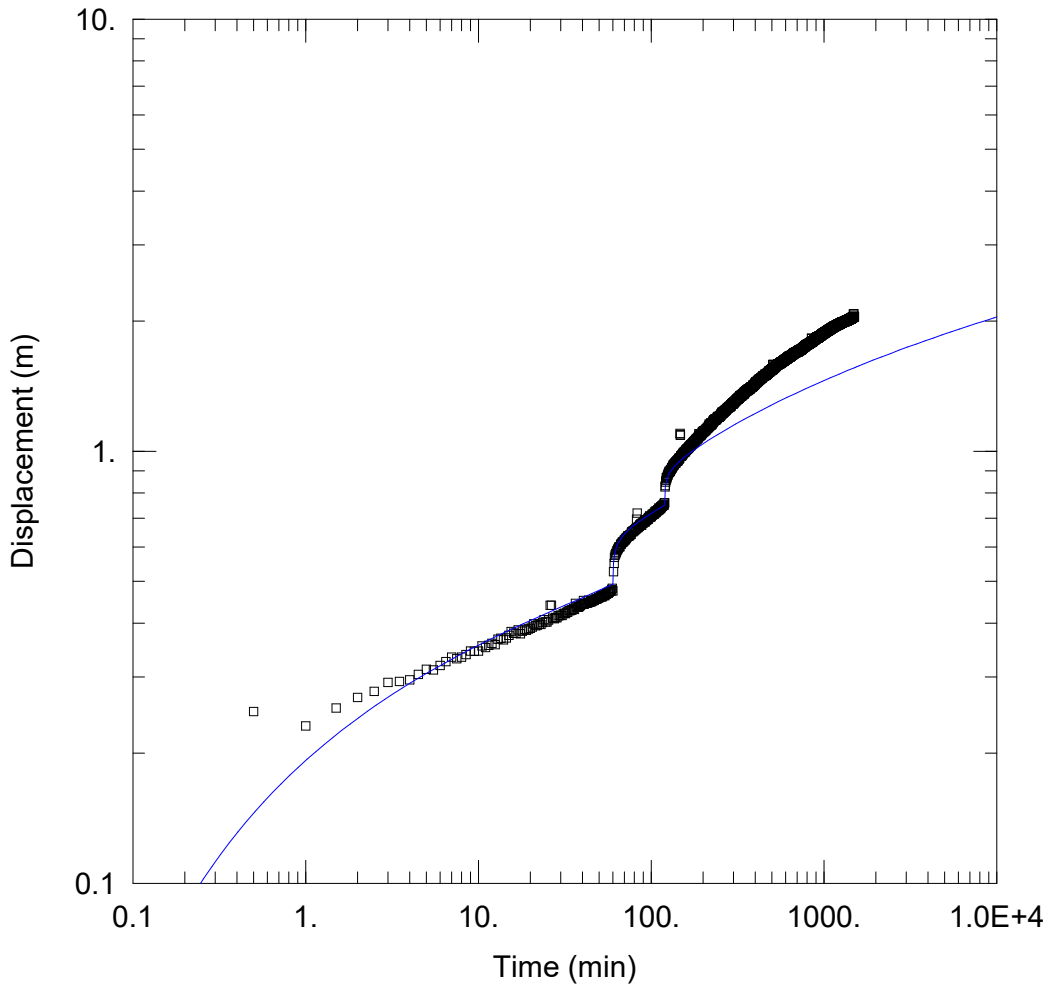
Observation Wells

Well Name	X (m)	Y (m)
MW3D	296	313

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.8651 m^2/min
S = 0.003791
Kz/Kr = 1.
b = 15.26 m



WELL TEST ANALYSIS

Data Set: Z:\...\MW6 Step & Pumping Test - MW4D Obs Well Bounday Conditions.aqt
Date: 08/21/20 Time: 15:56:08

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0

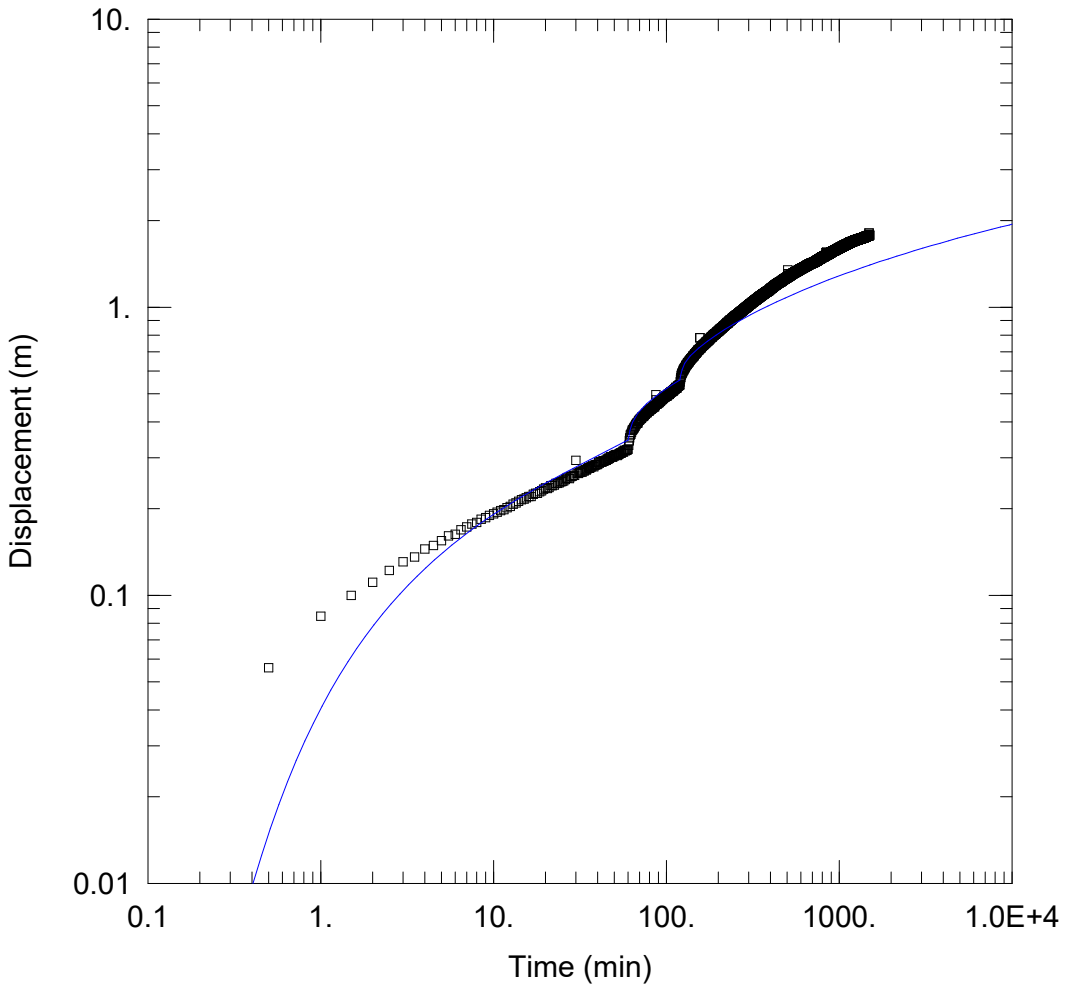
Observation Wells

Well Name	X (m)	Y (m)
▫ MW4D	-12.68	1.39

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.8619 m^2/min
S = 0.0008709
Kz/Kr = 1.
b = 15.26 m



NOBLETON GROUNDWATER EXPLORATION STUDY

Data Set: Z:\...\MW6 Step & Pumping Test - MW5 Obs Well Bounday Conditions.aqt
Date: 08/21/20 Time: 15:55:46

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0

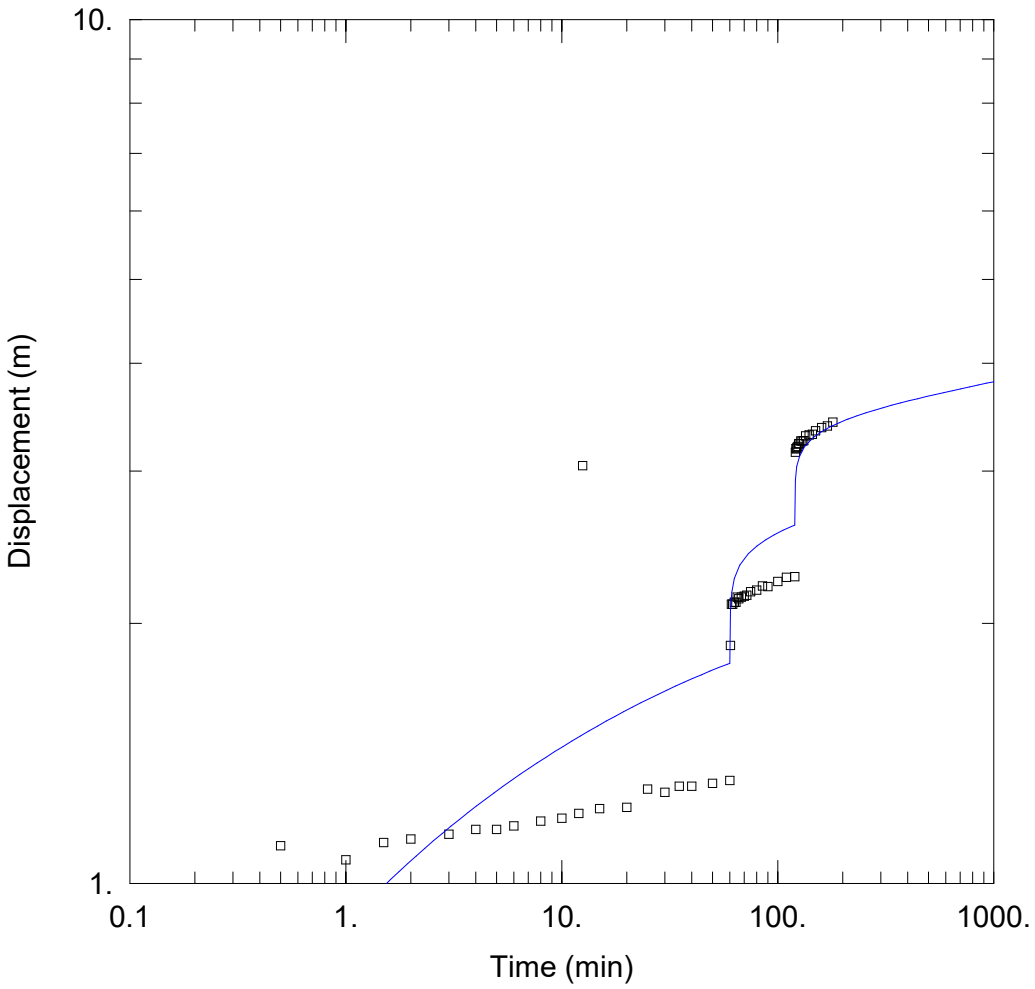
Observation Wells

Well Name	X (m)	Y (m)
□ MW5	82.42	-9.96

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.7733 m^2/min
S = 0.0002469
Kz/Kr = 1.
b = 15.26 m



WELL TEST ANALYSIS

Data Set: Z:\...\MW6 Step & Pumping Test -MW6 Pumping Well Bounday Conditions.aqt
Date: 08/21/20 Time: 15:54:52

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0

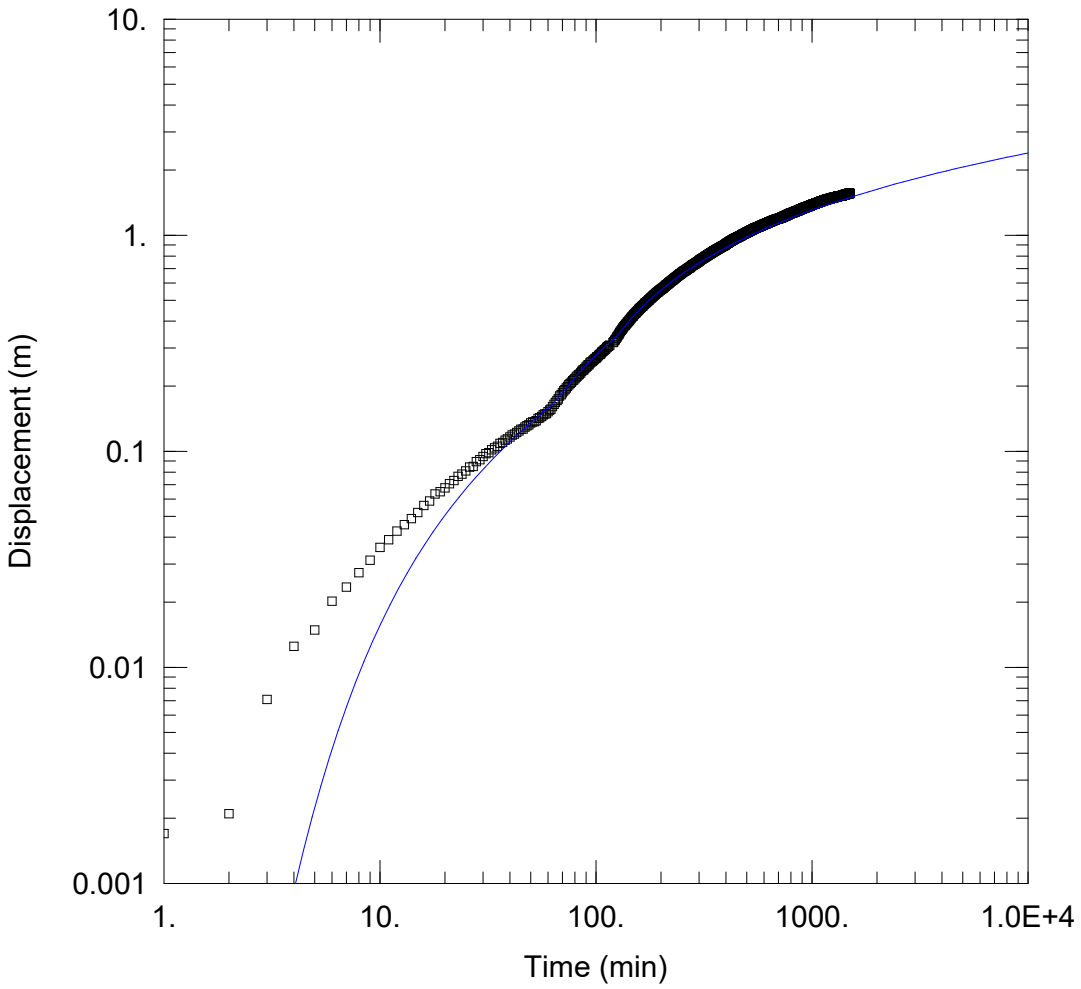
Observation Wells

Well Name	X (m)	Y (m)
▫ MW6	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.5728 m^2/min
S = 9.514
Kz/Kr = 1.
b = 15.26 m



WELL TEST ANALYSIS

Data Set: Z:\...\MW6 Step & Pumping Test - MW9 Obs Well Bounday Conditions.aqt
Date: 08/21/20 Time: 15:55:31

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0

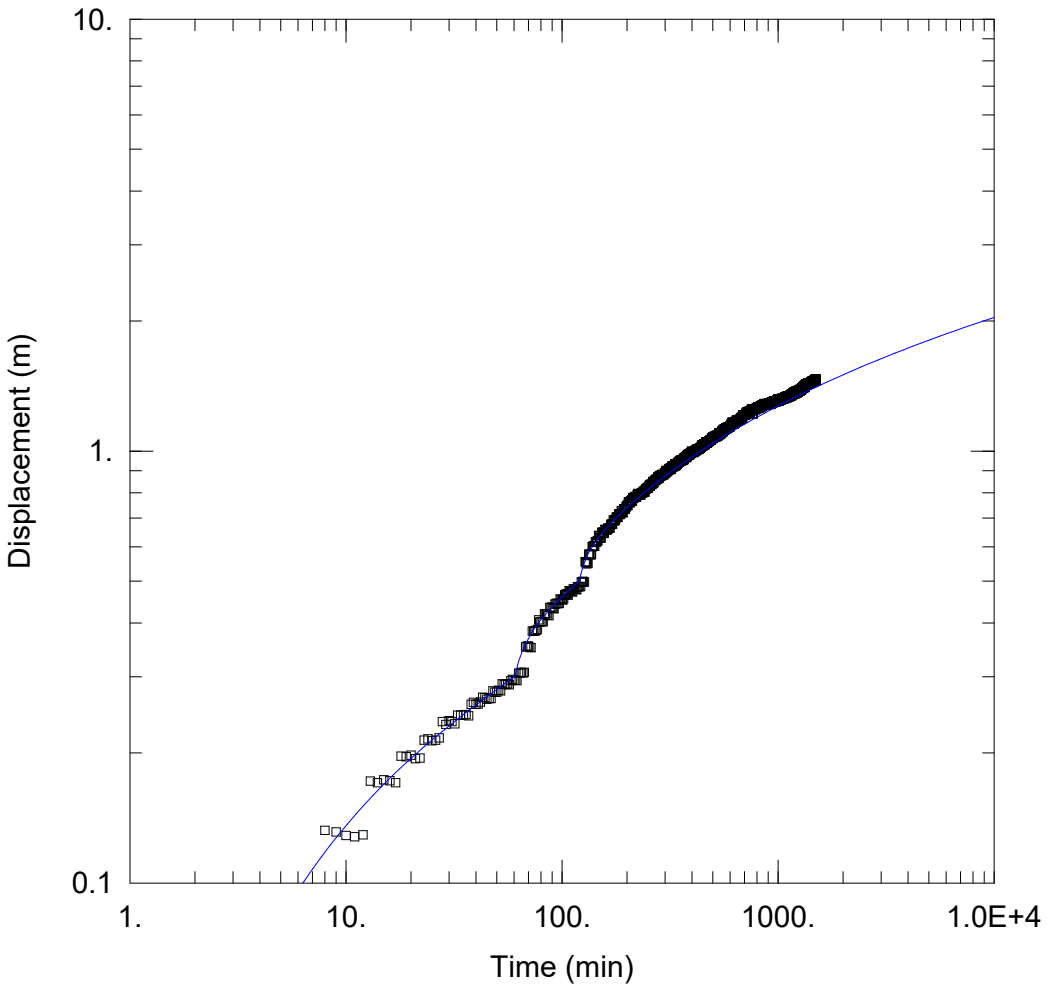
Observation Wells

Well Name	X (m)	Y (m)
□ MW9	87	692

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.4588 m^2/min
S = 0.0003774
Kz/Kr = 1.
b = 15.26 m



NOBLETON GROUNDWATER EXPLORATION STUDY

Data Set: Z:\...\MW6 Step & Pumping Test - NOB-PW5 Obs Well Bounday Conditions.aqt
Date: 08/21/20 Time: 16:07:02

PROJECT INFORMATION

Company: Palmer
Client: York Region
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 12, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0

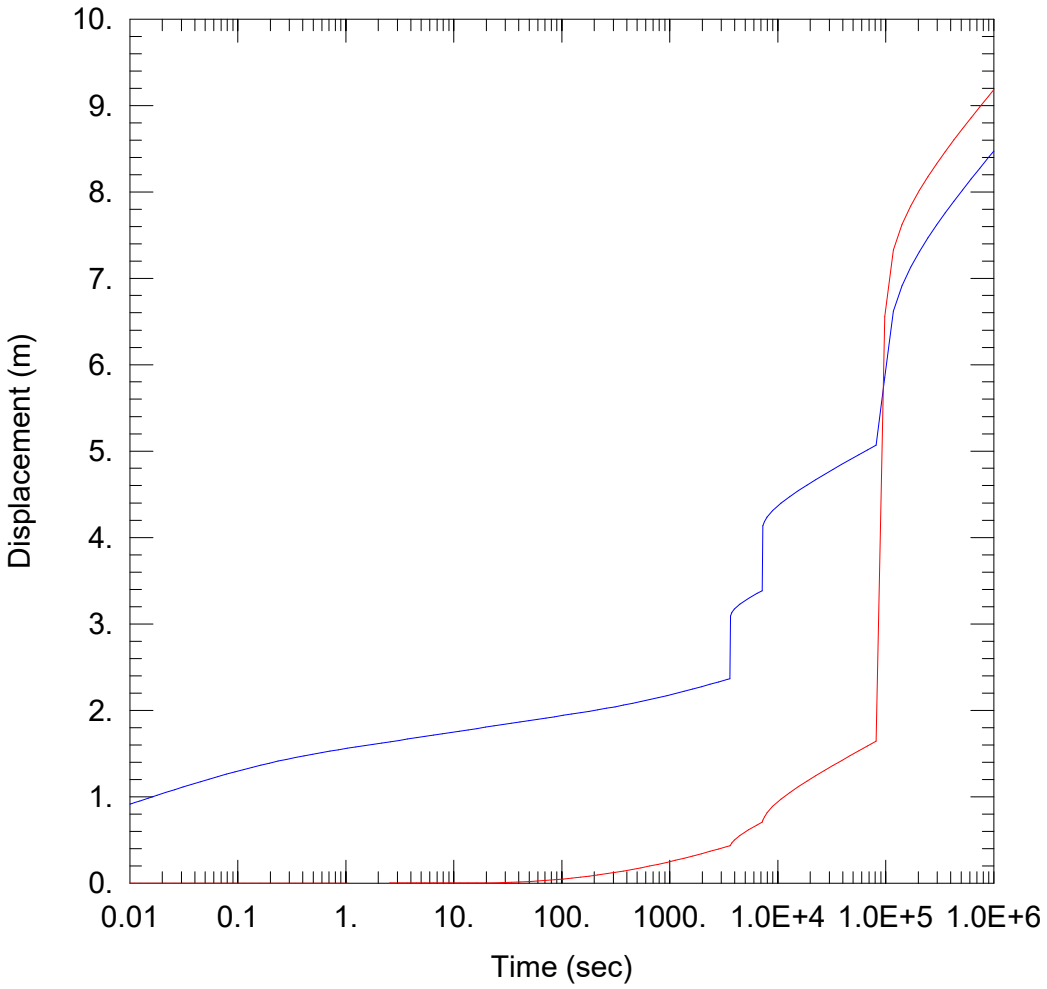
Observation Wells

Well Name	X (m)	Y (m)
NOB-PW5	64.69	-8.69

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 0.6562 m^2/min
S = 0.0009573
Kz/Kr = 1.
b = 15.26 m



WELL TEST ANALYSIS

Data Set: G:\...\MW6 Forward Solution.aqt
Date: 02/01/21 Time: 18:16:33

PROJECT INFORMATION

Company: Palmer
Client: Black & Veatch
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 16, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0
NOB-PW5	65	0

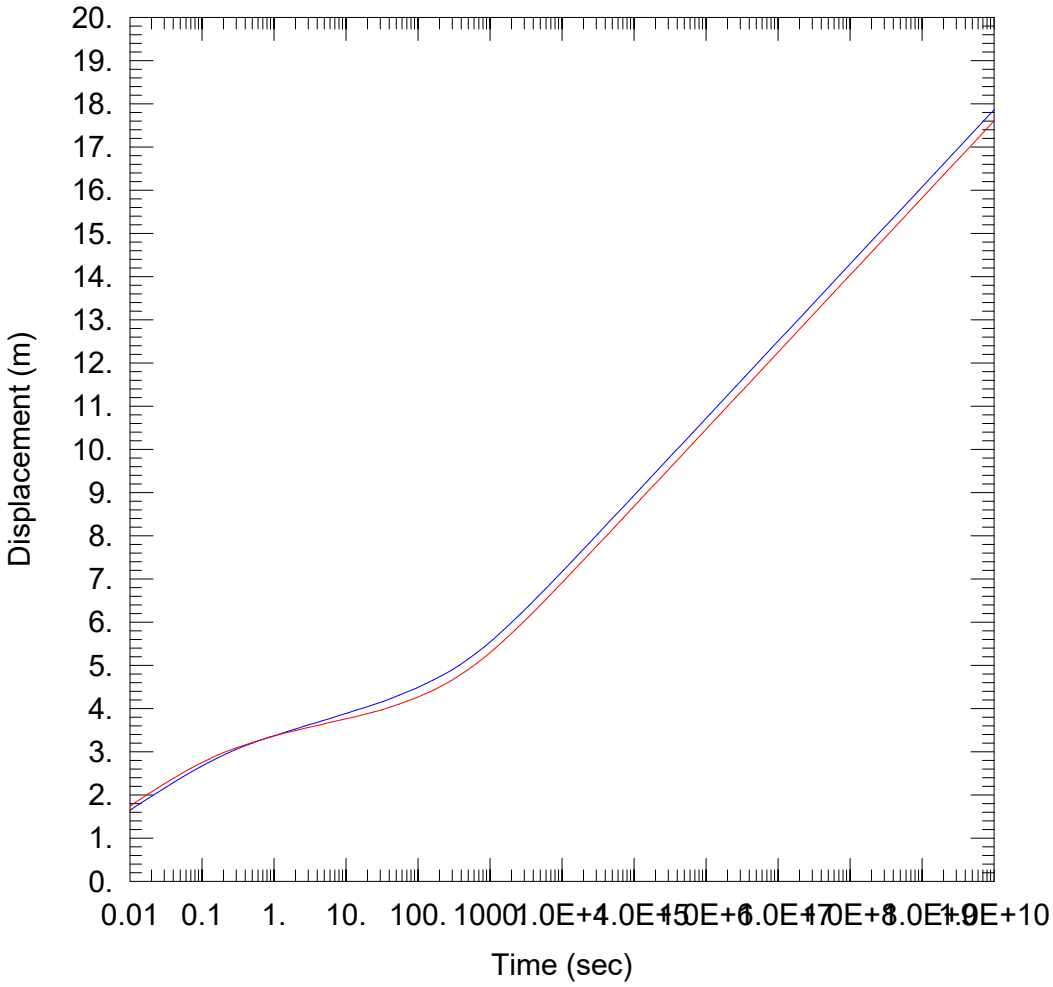
Observation Wells

Well Name	X (m)	Y (m)
▫ MW6	0	0
▫ NOB-PW5	65	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1082. m^2/day
S = 0.00059
Kz/Kr = 1.
b = 15.26 m



WELL TEST ANALYSIS

Data Set: G:\...\MW6 Forward Solution 35 lps.aqt
Date: 02/01/21 Time: 18:16:47

PROJECT INFORMATION

Company: Palmer
Client: Black & Veatch
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 16, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0
NOB-PW5	65	0

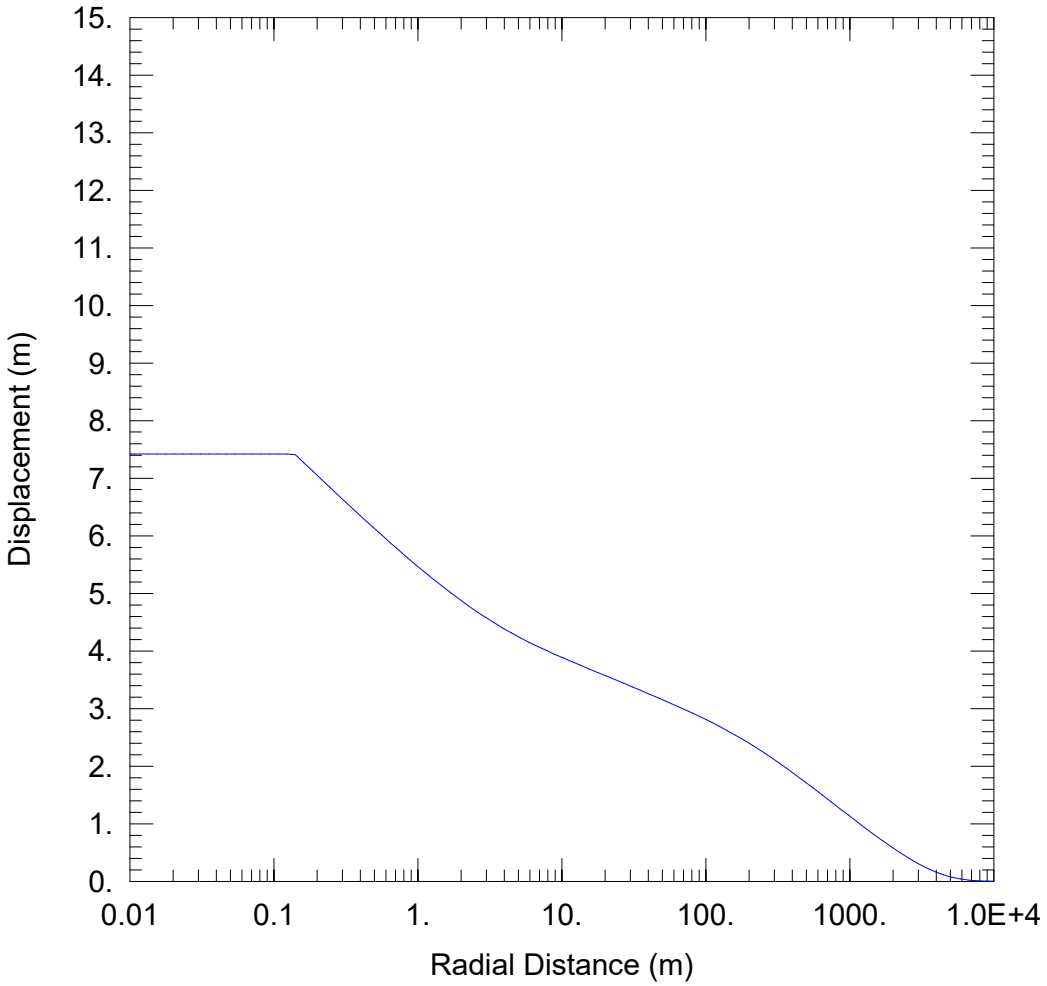
Observation Wells

Well Name	X (m)	Y (m)
MW6	0	0
NOB-PW5	65	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1082. m^2/day
S = 0.00059
Kz/Kr = 1.
b = 15.26 m



WELL TEST ANALYSIS

Data Set: G:\...\MW6 Forward Solution - Distance Drawdown.aqt
Date: 02/01/21 Time: 18:17:05

PROJECT INFORMATION

Company: Palmer
Client: Black & Veatch
Project: 1704602
Location: Nobleton
Test Well: MW6
Test Date: March 16, 2020

WELL DATA

Pumping Wells

Well Name	X (m)	Y (m)
MW6	0	0

Observation Wells

Well Name	X (m)	Y (m)
▫ MW6	0	0

SOLUTION

Aquifer Model: Confined
Solution Method: Theis

T = 1082. m^2/day
S = 0.00059
Kz/Kr = 1.
b = 15.26 m

Appendix C

Water Quality Analysis

(Palmer, 2020)

PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
ATTN: Adrian Lo
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 23-JUN-20
Report Date: 30-JUN-20 14:40 (MT)
Version: FINAL

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2465334

Project P.O. #: NOT SUBMITTED
Job Reference: 1704602
C of C Numbers: 17-797038
Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

Summary of Guideline Exceedances

Guideline ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Drinking Water Regulation (ODWQS) JAN.1,2020 - Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)						
L2465334-1	S1	Bacteriological Tests	Total Coliforms	<2	0	CFU/100mL
L2465334-2	S2	Bacteriological Tests	E. Coli	<2	0	CFU/100mL
			Fecal Coliforms	<2	0	CFU/100mL
			Total Coliforms	<2	0	CFU/100mL
L2465334-3	S3	Bacteriological Tests	E. Coli	<2	0	CFU/100mL
			Fecal Coliforms	<2	0	CFU/100mL
			Total Coliforms	<2	0	CFU/100mL
Ontario Drinking Water Regulation (ODWQS) JAN.1,2020 - Ontario DW Aesthetic and Operational Guidelines (June, 2006)						
L2465334-1	S1	Physical Tests	Colour, Apparent	11.4	5	CU
			Turbidity	6.16	5	NTU
		Anions and Nutrients	Hardness (as CaCO3)	234	80-100	mg/L
		Total Metals	Aluminum (Al)-Total	0.190	0.1	mg/L
			Iron (Fe)-Total	0.882	0.3	mg/L
			Manganese (Mn)-Total	0.0969	0.05	mg/L
L2465334-2	S2	Physical Tests	Colour, Apparent	17.2	5	CU
		Anions and Nutrients	Hardness (as CaCO3)	219	80-100	mg/L
		Total Metals	Iron (Fe)-Total	0.588	0.3	mg/L
			Manganese (Mn)-Total	0.0724	0.05	mg/L
L2465334-3	S3	Physical Tests	Colour, Apparent	20.2	5	CU
		Anions and Nutrients	Hardness (as CaCO3)	222	80-100	mg/L
		Total Metals	Iron (Fe)-Total	0.684	0.3	mg/L
			Manganese (Mn)-Total	0.0751	0.05	mg/L

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Physical Tests - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID: L2465334-1 / Sample Date: 23-JUN-20 / Sample ID: S1	Lab ID: L2465334-2 / Sample Date: 23-JUN-20 / Sample ID: S2	Lab ID: L2465334-3 / Sample Date: 23-JUN-20 / Sample ID: S3
Colour, Apparent	CU	-	5	11.4	17.2	20.2
Conductivity	umhos/cm	-	-	469	469	461
pH	pH units	-	6.5-8.5	8.05	8.09	8.05
Redox Potential	mV	-	-	261 PEHR	278 PEHR	284 PEHR
Total Dissolved Solids	mg/L	-	500	251 DLDS	254 DLDS	258 DLDS
Turbidity	NTU	-	5	6.16	3.06	4.94

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Anions and Nutrients - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID L2465334-1 Sample Date 23-JUN-20 Sample ID S1	Lab ID L2465334-2 Sample Date 23-JUN-20 Sample ID S2	Lab ID L2465334-3 Sample Date 23-JUN-20 Sample ID S3
Alkalinity, Bicarbonate (as CaCO3)	mg/L	-	-	256	252	251
Alkalinity, Carbonate (as CaCO3)	mg/L	-	-	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	-	-	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	-	30-500	256	252	251
Ammonia, Total (as N)	mg/L	-	-	0.593 DLHC	0.569 DLHC	0.583 DLHC
Bromide (Br)	mg/L	-	-	<0.10	<0.10	<0.10
Chloride (Cl)	mg/L	-	250	6.69	6.75	6.86
Computed Conductivity	uS/cm	-	-	429	412	414
Conductivity % Difference	%	-	-	-9	-13	-11
Fluoride (F)	mg/L	1.5	-	0.142	0.143	0.145
Hardness (as CaCO3)	mg/L	-	80-100	234	219	222
Ion Balance	%	-	-	121	115	118
Langelier Index		-	-	1	1	1
Nitrate (as N)	mg/L	10	-	<0.020	<0.020	<0.020
Nitrite (as N)	mg/L	1	-	<0.010	<0.010	<0.010
Saturation pH	pH	-	-	7.27	7.32	7.31
Orthophosphate-Dissolved (as P)	mg/L	-	-	0.0190	0.0269	0.0240
TDS (Calculated)	mg/L	-	-	257	247	248
Sulfate (SO4)	mg/L	-	500	1.36	1.14	0.76
Sulphide (as S)	mg/L	-	0.05	<0.018	<0.018	<0.018
Sulphide (as H2S)	mg/L	-	0.05	<0.019	<0.019	<0.019
Anion Sum	me/L	-	-	4.47	4.40	4.38
Cation Sum	me/L	-	-	5.40	5.07	5.15
Cation - Anion Balance	%	-	-	9	7	8

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Inorganic Parameters - WATER

				Lab ID	L2465334-1	L2465334-2	L2465334-3
				Sample Date	23-JUN-20	23-JUN-20	23-JUN-20
				Sample ID	S1	S2	S3
Analyte	Unit	Guide Limits #1	#2				
Silica	mg/L	-	-		22.5	22.3	23.3

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Bacteriological Tests - WATER

		Guide Limits				
Lab ID				L2465334-1	L2465334-2	L2465334-3
Sample Date				23-JUN-20	23-JUN-20	23-JUN-20
Sample ID				S1	S2	S3
Analyte	**Unit**	**#1**	**#2**			
E. Coli	CFU/100mL	0	-	0	<2 DLM	<2 DLM
Fecal Coliforms	CFU/100mL	0	-	0	<2 DLM	<2 DLM
Total Coliform Background	CFU/100mL	-	-	750 DLM	204 DLM	56 DLM
Total Coliforms	CFU/100mL	0	-	<2 DLM	<2 DLM	<2 DLM

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Metals - WATER

				Lab ID	L2465334-1	L2465334-2	L2465334-3
				Sample Date	23-JUN-20	23-JUN-20	23-JUN-20
				Sample ID	S1	S2	S3
Analyte	Unit	Guide Limits #1	#2				
Sodium Adsorption Ratio	SAR	-	-	0.41	0.42	0.42	

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Total Metals - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID L2465334-1 / Sample Date 23-JUN-20 / Sample ID S1	Lab ID L2465334-2 / Sample Date 23-JUN-20 / Sample ID S2	Lab ID L2465334-3 / Sample Date 23-JUN-20 / Sample ID S3
Aluminum (Al)-Total	mg/L	-	0.1	0.190	0.030	0.086
Antimony (Sb)-Total	mg/L	0.006	-	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	0.0100	-	0.00128	0.00097	0.00089
Barium (Ba)-Total	mg/L	1	-	0.253	0.245	0.233
Beryllium (Be)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L	-	-	<0.000050	<0.000050	<0.000050
Boron (B)-Total	mg/L	5	-	0.046	0.040	0.041
Cadmium (Cd)-Total	mg/L	0.005	-	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Total	mg/L	-	-	54.9	48.9	50.3
Cesium (Cs)-Total	mg/L	-	-	0.000028	<0.000010	0.000013
Chromium (Cr)-Total	mg/L	0.05	-	0.00196	0.00094	0.00076
Cobalt (Co)-Total	mg/L	-	-	0.00018	<0.00010	0.00010
Copper (Cu)-Total	mg/L	-	1	0.0013	<0.0010	<0.0010
Iron (Fe)-Total	mg/L	-	0.3	0.882	0.588	0.684
Lead (Pb)-Total	mg/L	0.01	-	0.00031	<0.00010	0.00014
Magnesium (Mg)-Total	mg/L	-	-	23.6	23.5	23.5
Manganese (Mn)-Total	mg/L	-	0.05	0.0969	0.0724	0.0751
Molybdenum (Mo)-Total	mg/L	-	-	0.00118	0.00119	0.00101
Nickel (Ni)-Total	mg/L	-	-	0.00117	0.00090	<0.00050
Phosphorus (P)-Total	mg/L	-	-	0.077	0.065	0.065
Potassium (K)-Total	mg/L	-	-	1.53	1.42	1.41
Rubidium (Rb)-Total	mg/L	-	-	0.00102	0.00065	0.00069
Selenium (Se)-Total	mg/L	0.05	-	<0.000050	<0.000050	<0.000050
Silicon (Si)-Total	mg/L	-	-	10.5	10.4	10.9
Silver (Ag)-Total	mg/L	-	-	<0.000050	<0.000050	<0.000050
Sodium (Na)-Total	mg/L	20	200	14.6	14.3	14.4
Strontium (Sr)-Total	mg/L	-	-	0.480	0.453	0.443
Sulfur (S)-Total	mg/L	-	-	0.55	0.55	<0.50
Tellurium (Te)-Total	mg/L	-	-	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Total Metals - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2465334-1	L2465334-2	L2465334-3
				Sample Date	23-JUN-20	23-JUN-20	23-JUN-20
				Sample ID	S1	S2	S3
Thorium (Th)-Total	mg/L	-	-		<0.00010	<0.00010	<0.00010
Tin (Sn)-Total	mg/L	-	-		<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	-	-		0.00998	0.00126	0.00427
Tungsten (W)-Total	mg/L	-	-		<0.00010	<0.00010	<0.00010
Uranium (U)-Total	mg/L	0.02	-		0.000460	0.000237	0.000173
Vanadium (V)-Total	mg/L	-	-		0.00057	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	-	5		<0.0030	<0.0030	<0.0030
Zirconium (Zr)-Total	mg/L	-	-		<0.00030	<0.00030	<0.00030

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Volatile Organic Compounds - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	Sample Date	Sample ID
				L2465334-1	23-JUN-20	S1
				L2465334-2	23-JUN-20	S2
				L2465334-3	23-JUN-20	S3
Methane, Dissolved	ug/L	-	2000	443	628 DLA	542

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLA	Detection Limit adjusted for required dilution
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-SPEC-PCT-WT	Water	Automated Speciated Alkalinity	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-IC-N-WT	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

COLOUR-APPARENT-WT	Water	Colour	APHA 2120

Apparent Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method after sample decanting. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EC-MF-WT	Water	E. coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 CC for 24 – 2 h. Method ID: WT-TM-1200

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

ETL-SAR-CALC-WT	Water	Sodium Adsorption Ratio	Calculation
ETL-SILICA-CALC-WT	Water	Calculate from SI-TOT-WT	EPA 200.8
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

FC-MF-WT	Water	Fecal Coliforms	SM 9222D

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
		A 100mL volume of sample is filtered through a membrane, the membrane is placed on mFC agar and incubated at 24–2h@44.5–0.2CC. Method ID: WT-TM-1200	
IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation	APHA 1030E, 2330B, 2510A
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
		Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.	
		Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.	
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).	
METHANE-DIS-WT	Water	Methane, dissolved	EPA REGION 1, NATATTEN.WPD, REV. 1
		Water samples are collected in headspace vials containing sodium bisulfate preservative. A volume of water is withdrawn from the un-capped vial. After shaking & equilibration, the vial headspace i s analyzed for target gases by GC/FID. The concentration of the gas in water is proportional to the partial pressure of the gas above the liquid & is calculated using Henry's Law.	
NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
		This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.	
NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
		Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.	
PH-WT	Water	pH	APHA 4500 H-Electrode
		Water samples are analyzed directly by a calibrated pH meter.	
		Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days	
PO4-DO-COL-WT	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.	
REDOX-POTENTIAL-WT	Water	Redox Potential	APHA 2580
		This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.	
		It is recommended that this analysis be conducted in the field.	
S2-T>H2S-CALC-WT	Water	Total Sulphide Calculated as H2S	Calculation
		This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".	
SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

SULPHIDE-WT	Water	Sulphide (as S)	APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TC-MF-WT	Water	Total Coliforms	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5CC for 24–2h. Method ID: WT-TM-1200

TCB-MF-WT	Water	Total Coliform Background	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5CC for 24–2h. Method ID: WT-TM-1200.

TURBIDITY-WT	Water	Turbidity	APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

17-797038

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Reference Information

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-SPEC-PCT-WT	**Water**							
Batch R5133297								
WG3349734-4 DUP		**WG3349734-3**						
Alkalinity, Total (as CaCO3)		199	201		mg/L	1.3	20	25-JUN-20
Alkalinity, Bicarbonate (as CaCO3)		199	201		mg/L	1.3	20	25-JUN-20
Alkalinity, Carbonate (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	25-JUN-20
Alkalinity, Hydroxide (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	25-JUN-20
WG3349734-2 LCS								
Alkalinity, Total (as CaCO3)			102.1		%		85-115	25-JUN-20
WG3349734-1 MB								
Alkalinity, Total (as CaCO3)			<2.0		mg/L		2	25-JUN-20
Alkalinity, Bicarbonate (as CaCO3)			<2.0		mg/L		2	25-JUN-20
Alkalinity, Carbonate (as CaCO3)			<2.0		mg/L		2	25-JUN-20
Alkalinity, Hydroxide (as CaCO3)			<2.0		mg/L		2	25-JUN-20
Batch R5133298								
WG3349738-4 DUP		**WG3349738-3**						
Alkalinity, Total (as CaCO3)		95.5	87.5		mg/L	8.8	20	25-JUN-20
Alkalinity, Bicarbonate (as CaCO3)		95.5	87.5		mg/L	8.8	20	25-JUN-20
Alkalinity, Carbonate (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	25-JUN-20
Alkalinity, Hydroxide (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	25-JUN-20
WG3349738-2 LCS								
Alkalinity, Total (as CaCO3)			101.6		%		85-115	25-JUN-20
WG3349738-1 MB								
Alkalinity, Total (as CaCO3)			<2.0		mg/L		2	25-JUN-20
Alkalinity, Bicarbonate (as CaCO3)			<2.0		mg/L		2	25-JUN-20
Alkalinity, Carbonate (as CaCO3)			<2.0		mg/L		2	25-JUN-20
Alkalinity, Hydroxide (as CaCO3)			<2.0		mg/L		2	25-JUN-20
BR-IC-N-WT	**Water**							
Batch R5135856								
WG3351298-15 DUP		**WG3351298-13**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	26-JUN-20
WG3351298-12 LCS								
Bromide (Br)			101.6		%		85-115	26-JUN-20
WG3351298-11 MB								
Bromide (Br)			<0.10		mg/L		0.1	26-JUN-20
WG3351298-14 MS		**WG3351298-13**						
Bromide (Br)			101.9		%		75-125	26-JUN-20
CL-IC-N-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	**Water**							
Batch R5135856								
WG3351298-15 DUP		**WG3351298-13**						
Chloride (Cl)		21.4	21.4		mg/L	0.1	20	26-JUN-20
WG3351298-12 LCS								
Chloride (Cl)			101.3		%		90-110	26-JUN-20
WG3351298-11 MB								
Chloride (Cl)			<0.50		mg/L		0.5	26-JUN-20
WG3351298-14 MS		**WG3351298-13**						
Chloride (Cl)			102.3		%		75-125	26-JUN-20
COLOUR-APPARENT-WT	**Water**							
Batch R5131567								
WG3349433-2 LCS								
Colour, Apparent			100.3		%		85-115	24-JUN-20
WG3349433-1 MB								
Colour, Apparent			<2.0		CU		2	24-JUN-20
EC-MF-WT	**Water**							
Batch R5135147								
WG3349777-3 DUP		**L2465486-3**						
E. Coli		0	<10	RPD-NA	CFU/100mL	N/A	65	25-JUN-20
WG3349777-4 DUP		**L2465492-4**						
E. Coli		0	0		CFU/100mL	0.0	65	25-JUN-20
WG3349777-1 MB								
E. Coli			0		CFU/100mL		1	25-JUN-20
EC-WT	**Water**							
Batch R5133297								
WG3349734-4 DUP		**WG3349734-3**						
Conductivity		726	724		umhos/cm	0.3	10	25-JUN-20
WG3349734-2 LCS								
Conductivity			98.3		%		90-110	25-JUN-20
WG3349734-1 MB								
Conductivity			<3.0		umhos/cm		3	25-JUN-20
Batch R5133298								
WG3349738-4 DUP		**WG3349738-3**						
Conductivity		723	721		umhos/cm	0.3	10	25-JUN-20
WG3349738-2 LCS								
Conductivity			98.1		%		90-110	25-JUN-20
WG3349738-1 MB								
Conductivity			<3.0		umhos/cm		3	25-JUN-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WT	**Water**							
Batch R5135856								
WG3351298-15 DUP		**WG3351298-13**						
Fluoride (F)		0.059	0.058		mg/L	0.3	20	26-JUN-20
WG3351298-12 LCS								
Fluoride (F)			102.9		%		90-110	26-JUN-20
WG3351298-11 MB								
Fluoride (F)			<0.020		mg/L		0.02	26-JUN-20
WG3351298-14 MS		**WG3351298-13**						
Fluoride (F)			102.5		%		75-125	26-JUN-20
FC-MF-WT	**Water**							
Batch R5135144								
WG3349760-1 MB								
Fecal Coliforms			0		CFU/100mL		1	25-JUN-20
MET-T-CCMS-WT	**Water**							
Batch R5132824								
WG3349547-4 DUP		**WG3349547-3**						
Aluminum (Al)-Total		0.0833	0.0814		mg/L	2.2	20	25-JUN-20
Antimony (Sb)-Total		0.00014	0.00014		mg/L	0.6	20	25-JUN-20
Arsenic (As)-Total		0.00080	0.00075		mg/L	6.1	20	25-JUN-20
Barium (Ba)-Total		0.0200	0.0199		mg/L	0.5	20	25-JUN-20
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-JUN-20
Boron (B)-Total		0.020	0.020		mg/L	0.1	20	25-JUN-20
Cadmium (Cd)-Total		0.0000084	0.0000070		mg/L	18	20	25-JUN-20
Calcium (Ca)-Total		32.3	32.5		mg/L	0.7	20	25-JUN-20
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-JUN-20
Cesium (Cs)-Total		0.000018	0.000018		mg/L	0.5	20	25-JUN-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-20
Copper (Cu)-Total		0.00147	0.00160		mg/L	8.3	20	25-JUN-20
Iron (Fe)-Total		0.151	0.153		mg/L	1.1	20	25-JUN-20
Lead (Pb)-Total		0.000472	0.000501		mg/L	5.8	20	25-JUN-20
Magnesium (Mg)-Total		9.30	9.15		mg/L	1.7	20	25-JUN-20
Manganese (Mn)-Total		0.0123	0.0125		mg/L	1.4	20	25-JUN-20
Molybdenum (Mo)-Total		0.00122	0.00118		mg/L	4.0	20	25-JUN-20
Nickel (Ni)-Total		0.00082	0.00087		mg/L	5.8	20	25-JUN-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5132824								
WG3349547-4 DUP		**WG3349547-3**						
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	25-JUN-20
Potassium (K)-Total		1.56	1.54		mg/L	1.2	20	25-JUN-20
Rubidium (Rb)-Total		0.00093	0.00107		mg/L	14	20	25-JUN-20
Selenium (Se)-Total		0.000145	0.000142		mg/L	2.3	20	25-JUN-20
Silicon (Si)-Total		0.27	0.26		mg/L	4.0	20	25-JUN-20
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	25-JUN-20
Sodium (Na)-Total		11.0	11.0		mg/L	0.7	20	25-JUN-20
Strontium (Sr)-Total		0.165	0.167		mg/L	0.9	20	25-JUN-20
Sulfur (S)-Total		7.41	7.46		mg/L	0.6	25	25-JUN-20
Thallium (Tl)-Total		<0.000010	0.000014	RPD-NA	mg/L	N/A	20	25-JUN-20
Tellurium (Te)-Total		0.00040	0.00034		mg/L	16	20	25-JUN-20
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	25	25-JUN-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-20
Titanium (Ti)-Total		0.00178	0.00159		mg/L	11	20	25-JUN-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	25-JUN-20
Uranium (U)-Total		0.000390	0.000397		mg/L	1.7	20	25-JUN-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	25-JUN-20
Zinc (Zn)-Total		0.0068	0.0072		mg/L	5.2	20	25-JUN-20
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	25-JUN-20
WG3349547-2 LCS								
Aluminum (Al)-Total			98.8		%		80-120	25-JUN-20
Antimony (Sb)-Total			96.3		%		80-120	25-JUN-20
Arsenic (As)-Total			95.9		%		80-120	25-JUN-20
Barium (Ba)-Total			94.5		%		80-120	25-JUN-20
Beryllium (Be)-Total			94.6		%		80-120	25-JUN-20
Bismuth (Bi)-Total			93.9		%		80-120	25-JUN-20
Boron (B)-Total			93.6		%		80-120	25-JUN-20
Cadmium (Cd)-Total			98.2		%		80-120	25-JUN-20
Calcium (Ca)-Total			96.0		%		80-120	25-JUN-20
Chromium (Cr)-Total			93.9		%		80-120	25-JUN-20
Cesium (Cs)-Total			100.0		%		80-120	25-JUN-20
Cobalt (Co)-Total			94.0		%		80-120	25-JUN-20
Copper (Cu)-Total			94.2		%		80-120	25-JUN-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5132824								
WG3349547-2 LCS								
Iron (Fe)-Total			94.0		%		80-120	25-JUN-20
Lead (Pb)-Total			95.8		%		80-120	25-JUN-20
Magnesium (Mg)-Total			98.4		%		80-120	25-JUN-20
Manganese (Mn)-Total			98.0		%		80-120	25-JUN-20
Molybdenum (Mo)-Total			96.7		%		80-120	25-JUN-20
Nickel (Ni)-Total			93.5		%		80-120	25-JUN-20
Phosphorus (P)-Total			96.3		%		70-130	25-JUN-20
Potassium (K)-Total			94.2		%		80-120	25-JUN-20
Rubidium (Rb)-Total			102.3		%		80-120	25-JUN-20
Selenium (Se)-Total			98.3		%		80-120	25-JUN-20
Silicon (Si)-Total			97.0		%		60-140	25-JUN-20
Silver (Ag)-Total			94.8		%		80-120	25-JUN-20
Sodium (Na)-Total			95.5		%		80-120	25-JUN-20
Strontium (Sr)-Total			98.4		%		80-120	25-JUN-20
Sulfur (S)-Total			96.4		%		80-120	25-JUN-20
Thallium (Tl)-Total			97.9		%		80-120	25-JUN-20
Tellurium (Te)-Total			95.6		%		80-120	25-JUN-20
Thorium (Th)-Total			93.8		%		70-130	25-JUN-20
Tin (Sn)-Total			93.9		%		80-120	25-JUN-20
Titanium (Ti)-Total			95.6		%		80-120	25-JUN-20
Tungsten (W)-Total			93.1		%		80-120	25-JUN-20
Uranium (U)-Total			97.4		%		80-120	25-JUN-20
Vanadium (V)-Total			96.0		%		80-120	25-JUN-20
Zinc (Zn)-Total			96.2		%		80-120	25-JUN-20
Zirconium (Zr)-Total			93.6		%		80-120	25-JUN-20
WG3349547-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	25-JUN-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	25-JUN-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	25-JUN-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	25-JUN-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	25-JUN-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	25-JUN-20
Boron (B)-Total			<0.010		mg/L		0.01	25-JUN-20
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	25-JUN-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5132824								
WG3349547-1 MB								
Calcium (Ca)-Total			<0.050		mg/L		0.05	25-JUN-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	25-JUN-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	25-JUN-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	25-JUN-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	25-JUN-20
Iron (Fe)-Total			<0.010		mg/L		0.01	25-JUN-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	25-JUN-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	25-JUN-20
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	25-JUN-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	25-JUN-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	25-JUN-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	25-JUN-20
Potassium (K)-Total			<0.050		mg/L		0.05	25-JUN-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	25-JUN-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	25-JUN-20
Silicon (Si)-Total			<0.10		mg/L		0.1	25-JUN-20
Silver (Ag)-Total			<0.000050		mg/L		0.00005	25-JUN-20
Sodium (Na)-Total			<0.050		mg/L		0.05	25-JUN-20
Strontium (Sr)-Total			<0.0010		mg/L		0.001	25-JUN-20
Sulfur (S)-Total			<0.50		mg/L		0.5	25-JUN-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	25-JUN-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	29-JUN-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	25-JUN-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	25-JUN-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	25-JUN-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	25-JUN-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	25-JUN-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	25-JUN-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	25-JUN-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	25-JUN-20
WG3349547-5 MS		**WG3349547-3**						
Aluminum (Al)-Total			80.1		%		70-130	25-JUN-20
Antimony (Sb)-Total			97.6		%		70-130	25-JUN-20
Arsenic (As)-Total			95.4		%		70-130	25-JUN-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5132824								
WG3349547-5 MS		**WG3349547-3**						
Barium (Ba)-Total			N/A	MS-B	%		-	25-JUN-20
Beryllium (Be)-Total			90.9		%		70-130	25-JUN-20
Bismuth (Bi)-Total			91.7		%		70-130	25-JUN-20
Boron (B)-Total			90.0		%		70-130	25-JUN-20
Cadmium (Cd)-Total			99.8		%		70-130	25-JUN-20
Calcium (Ca)-Total			N/A	MS-B	%		-	25-JUN-20
Chromium (Cr)-Total			95.4		%		70-130	25-JUN-20
Cesium (Cs)-Total			99.2		%		70-130	25-JUN-20
Cobalt (Co)-Total			94.9		%		70-130	25-JUN-20
Copper (Cu)-Total			92.3		%		70-130	25-JUN-20
Iron (Fe)-Total			N/A	MS-B	%		-	25-JUN-20
Lead (Pb)-Total			91.4		%		70-130	25-JUN-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	25-JUN-20
Manganese (Mn)-Total			86.2		%		70-130	25-JUN-20
Molybdenum (Mo)-Total			95.0		%		70-130	25-JUN-20
Nickel (Ni)-Total			92.8		%		70-130	25-JUN-20
Phosphorus (P)-Total			97.7		%		70-130	25-JUN-20
Potassium (K)-Total			89.4		%		70-130	25-JUN-20
Rubidium (Rb)-Total			101.2		%		70-130	25-JUN-20
Selenium (Se)-Total			98.7		%		70-130	25-JUN-20
Silicon (Si)-Total			94.5		%		70-130	25-JUN-20
Silver (Ag)-Total			91.9		%		70-130	25-JUN-20
Sodium (Na)-Total			N/A	MS-B	%		-	25-JUN-20
Strontium (Sr)-Total			N/A	MS-B	%		-	25-JUN-20
Sulfur (S)-Total			N/A	MS-B	%		-	25-JUN-20
Thallium (Tl)-Total			94.5		%		70-130	25-JUN-20
Tellurium (Te)-Total			93.7		%		70-130	25-JUN-20
Thorium (Th)-Total			91.9		%		70-130	25-JUN-20
Tin (Sn)-Total			93.1		%		70-130	25-JUN-20
Titanium (Ti)-Total			92.3		%		70-130	25-JUN-20
Tungsten (W)-Total			92.5		%		70-130	25-JUN-20
Uranium (U)-Total			N/A	MS-B	%		-	25-JUN-20
Vanadium (V)-Total			97.0		%		70-130	25-JUN-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5132824								
WG3349547-5 MS		**WG3349547-3**						
Zinc (Zn)-Total			89.6		%		70-130	25-JUN-20
Zirconium (Zr)-Total			85.4		%		70-130	25-JUN-20
METHANE-DIS-WT	**Water**							
Batch R5137337								
WG3352269-3 DUP		**L2464135-1**						
Methane, Dissolved		1950	2170		ug/L	11	30	29-JUN-20
WG3352269-2 MB								
Methane, Dissolved			<5.0		ug/L		5	29-JUN-20
NH3-F-WT	**Water**							
Batch R5133996								
WG3349450-3 DUP		**WG3349450-5**						
Ammonia, Total (as N)		0.060	0.060		mg/L	0.0	20	25-JUN-20
WG3349450-2 LCS								
Ammonia, Total (as N)			97.8		%		85-115	25-JUN-20
WG3349450-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	25-JUN-20
WG3349450-4 MS		**WG3349450-5**						
Ammonia, Total (as N)			78.4		%		75-125	25-JUN-20
NO2-IC-WT	**Water**							
Batch R5135856								
WG3351298-15 DUP		**WG3351298-13**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	26-JUN-20
WG3351298-12 LCS								
Nitrite (as N)			101.7		%		90-110	26-JUN-20
WG3351298-11 MB								
Nitrite (as N)			<0.010		mg/L		0.01	26-JUN-20
WG3351298-14 MS		**WG3351298-13**						
Nitrite (as N)			102.5		%		75-125	26-JUN-20
NO3-IC-WT	**Water**							
Batch R5135856								
WG3351298-15 DUP		**WG3351298-13**						
Nitrate (as N)		0.022	<0.020	RPD-NA	mg/L	N/A	20	26-JUN-20
WG3351298-12 LCS								
Nitrate (as N)			100.3		%		90-110	26-JUN-20
WG3351298-11 MB								
Nitrate (as N)			<0.020		mg/L		0.02	26-JUN-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT	**Water**							
Batch R5135856								
WG3351298-14 MS		**WG3351298-13**						
Nitrate (as N)			98.0		%		75-125	26-JUN-20
PH-WT	**Water**							
Batch R5133297								
WG3349734-4 DUP		**WG3349734-3**						
pH		7.82	7.85	J	pH units	0.03	0.2	25-JUN-20
WG3349734-2 LCS								
pH			6.99		pH units		6.9-7.1	25-JUN-20
Batch R5133298								
WG3349738-4 DUP		**WG3349738-3**						
pH		7.50	7.48	J	pH units	0.02	0.2	25-JUN-20
WG3349738-2 LCS								
pH			6.98		pH units		6.9-7.1	25-JUN-20
PO4-DO-COL-WT	**Water**							
Batch R5133877								
WG3350515-3 DUP		**WG3350515-5**						
Orthophosphate-Dissolved (as P)		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	26-JUN-20
WG3350515-2 LCS								
Orthophosphate-Dissolved (as P)			100.6		%		80-120	26-JUN-20
WG3350515-1 MB								
Orthophosphate-Dissolved (as P)			<0.0030		mg/L		0.003	26-JUN-20
WG3350515-4 MS		**WG3350515-5**						
Orthophosphate-Dissolved (as P)			112.9		%		70-130	26-JUN-20
REDOX-POTENTIAL-WT	**Water**							
Batch R5132644								
WG3350357-1 CRM		**WT-REDOX**						
Redox Potential			98.7		%		80-120	25-JUN-20
WG3350357-2 DUP		**L2465334-1**						
Redox Potential		261	260		mV	0.4	25	25-JUN-20
SO4-IC-N-WT	**Water**							
Batch R5135856								
WG3351298-15 DUP		**WG3351298-13**						
Sulfate (SO4)		1.53	1.54		mg/L	0.5	20	26-JUN-20
WG3351298-12 LCS								
Sulfate (SO4)			101.8		%		90-110	26-JUN-20
WG3351298-11 MB								

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT	**Water**							
Batch R5135856								
WG3351298-11 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	26-JUN-20
WG3351298-14 MS		**WG3351298-13**						
Sulfate (SO4)			104.3		%		75-125	26-JUN-20
SOLIDS-TDS-WT	**Water**							
Batch R5138638								
WG3351954-3 DUP		**L2464202-10**						
Total Dissolved Solids		665	662		mg/L	0.5	20	29-JUN-20
WG3351954-2 LCS								
Total Dissolved Solids			102.6		%		85-115	29-JUN-20
WG3351954-1 MB								
Total Dissolved Solids			<10		mg/L		10	29-JUN-20
SULPHIDE-WT	**Water**							
Batch R5131800								
WG3349577-3 DUP		**WG3349577-5**						
Sulphide (as S)		<0.018	<0.018	RPD-NA	mg/L	N/A	20	25-JUN-20
WG3349577-2 LCS								
Sulphide (as S)			100.4		%		75-125	25-JUN-20
WG3349577-1 MB								
Sulphide (as S)			<0.018		mg/L		0.018	25-JUN-20
WG3349577-4 MS		**WG3349577-5**						
Sulphide (as S)			92.4		%		65-135	25-JUN-20
TC-MF-WT	**Water**							
Batch R5135143								
WG3349771-3 DUP		**L2465486-1**						
Total Coliforms		0	<10	RPD-NA	CFU/100mL	N/A	65	25-JUN-20
WG3349771-1 MB								
Total Coliforms			0		CFU/100mL		1	25-JUN-20
TCB-MF-WT	**Water**							
Batch R5135143								
WG3349771-3 DUP		**L2465486-1**						
Total Coliform Background		0	<10	RPD-NA	CFU/100mL	N/A	65	25-JUN-20
WG3349771-1 MB								
Total Coliform Background			0		CFU/100mL		1	25-JUN-20
TURBIDITY-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-WT	**Water**							
Batch R5131782								
WG3349675-3 DUP		**L2465409-4**						
Turbidity		464	475		NTU	2.3	15	25-JUN-20
WG3349675-2 LCS								
Turbidity			102.0		%		85-115	25-JUN-20
WG3349675-1 MB								
Turbidity			<0.10		NTU		0.1	25-JUN-20

Quality Control Report

Workorder: L2465334 Report Date: 30-JUN-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2465334 Report Date: 30-JUN-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: Adrian Lo

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Redox Potential							
	1	23-JUN-20 09:50	25-JUN-20 00:00	0.25	38	hours	EHTR-FM
	2	23-JUN-20 10:30	25-JUN-20 00:00	0.25	37	hours	EHTR-FM
	3	23-JUN-20 11:05	25-JUN-20 00:00	0.25	37	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2465334 were received on 23-JUN-20 17:15.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668

L2465334-COFC

here

COC Number: 17 - 797038

Page of

Report To	Contact and company name below will appear on the final report
Company:	Palmer
Contact:	Adrian Lo
Phone:	647 643 9377
	Company address below will appear on the final report
Street:	74 Berkeley St
City/Province:	Toronto
Postal Code:	M5A 2W7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	Palmer
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	adrian.lo@pecg.ca
Email 2	
Email 3	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accounting@pecg.ca
Email 2	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R]	☑ Standard TAT if received by 3 pm - business days - no surcharges apply
PRIORITY (Business Days): 4 day [P4-20%] ☐	EMERGENCY: 1 Business day [E - 100%] ☐
3 day [P3-25%] ☐	Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
2 day [P2-50%] ☐	
Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information	
ALS Account # / Quote #:	24400
Job #:	1204602
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): L2465334

ALS Contact: Jen Barkshire-Paterson

Sampler: Adrian Lo

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Gen chem	metals	methane	nutrients	sulphide	TC/EC/FC	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	S1	23/6/2020	[illegible]	GW	7	✓	✓	✓	✓	✓	✓		
	S2	23/6/2020	10:30	GW	7	✓	✓	✓	✓	✓	✓		
	S3	23/6/2020	11:05	GW	7	✓	✓	✓	✓	✓	✓		

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Compare to ODWS

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☑ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
9.8	2.2

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Adrian Lo	Date: 6/23/2020	Time: 5:15	Received by: [illegible]	Date: June 23/20	Time: 17:15	Received by: [illegible]	Date: June 24/20	Time: 1430

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

S/F

Your Project #: 1704602
Site Location: NOBLETON
Your C.O.C. #: 778264-01-01

Attention: Adrian Lo

Palmer Environmental Consulting Group Inc
74 Berkeley Street
Toronto, ON
CANADA M5A 2W7

Report Date: 2020/07/15
Report #: R6247108
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F5868
Received: 2020/06/23, 18:20

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	1	N/A	2020/06/26	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	1	N/A	2020/06/26	CAM SOP-00463	SM 23 4500-Cl E m
Colour	1	N/A	2020/07/03	CAM SOP-00412	SM 23 2120C m
Free (WAD) Cyanide	1	N/A	2020/06/24	CAM SOP-00457	OMOE E3015 m
Dioxins/Furans in Water (EPA 8290 mod.) (3)	1	2020/07/07	2020/07/14	BRL SOP-00406 (mod)	EPA 8290 m
Diuron, Guthion, Temephos	1	2020/06/29	2020/06/29	CAM SOP-00306	EPA 532 m
Dissolved Organic Carbon (DOC) (4)	1	N/A	2020/06/27	CAM SOP-00446	SM 23 5310 B m
Diquat / Paraquat	1	2020/06/26	2020/06/27	CAM SOP-00327	EPA 549.2 m
Fluoride	1	2020/06/25	2020/06/26	CAM SOP-00449	SM 23 4500-F C m
Dissolved Gases in Water in mg/L units	1	N/A	2020/06/24		
Glyphosate	1	2020/06/25	2020/06/25	CAM SOP-00305	HPLC in-house method
Hardness (calculated as CaCO3)	1	N/A	2020/06/29	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA	1	2020/06/29	2020/06/29	CAM SOP-00453	EPA 7470A m
Metals Analysis by ICPMS (as received) (5)	1	N/A	2020/06/26	CAM SOP-00447	EPA 6020B m
Total Coliforms/ E. coli, CFU/100mL	1	N/A	2020/06/23	CAM SOP-00551	MOE E3407
Dissolved Methane in Water	1	N/A	2020/06/30	CAM SOP-00219 Modified Combustible Gas Indicator Method	RSKSOP-175 m
Heterotrophic plate count, (CFU/mL)	1	N/A	2020/06/23	CAM SOP-00512	SM 9215B
Microcystin	1	N/A	2020/06/29	CAM SOP-00476	OMECC-LSB E3469
NDMA in Drinking Water (MSABN-3291Amod)	1	2020/06/25	2020/06/30	BRL SOP-00012	MOE Method E3388
Total Ammonia-N	1	N/A	2020/06/26	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (6)	1	N/A	2020/06/26	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrilotriacetic Acid (NTA) (7)	1	2020/06/25	2020/06/25	CAM SOP-00411	EPA 430.1 m
OC Pesticides (Selected) & PCB (8)	1	2020/06/29	2020/06/30	CAM SOP-00307	EPA 8081A/ 8082B m
OC Pesticides Summed Parameters	1	N/A	2020/06/24	CAM SOP-00307	EPA 8081A/8082B m
ODWS - Semi-Volatiles	1	2020/06/26	2020/06/27	CAM SOP-00301	EPA 8270 m
Organic Nitrogen	1	N/A	2020/06/30		
pH	1	2020/06/25	2020/06/26	CAM SOP-00413	SM 4500H+ B m
Gross Alpha and Gross Beta (1)	1	N/A	2020/06/29	BQL SOP-00008	GFPC

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Site Location: NOBLETON
Your C.O.C. #: 778264-01-01

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CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F5868
Received: 2020/06/23, 18:20

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Tritium by Liquid Scintillation Counting (1)	1	N/A	2020/06/27	BQL SOP-00009	LSC
Sulphate by Automated Colourimetry	1	N/A	2020/06/26	CAM SOP-00464	EPA 375.4 m
Bromate Analysis (2)	1	N/A	N/A		
Sulphide	1	N/A	2020/06/24	CAM SOP-00455	SM 23 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2020/06/29		Auto Calc
Total Kjeldahl Nitrogen in Water	1	2020/06/26	2020/06/29	CAM SOP-00938	OMOE E3516 m
Turbidity	1	N/A	2020/06/26	CAM SOP-00417	SM 23 2130 B m
VOCs (Drinking Water)	1	N/A	2020/06/25	CAM SOP-00226	EPA 8260C m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Kitimat
(2) This test was performed by Sub from Campo to SGS Mineral
(3) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
(4) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

Your Project #: 1704602
Site Location: NOBLETON
Your C.O.C. #: 778264-01-01

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Report Date: 2020/07/15
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CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F5868
Received: 2020/06/23, 18:20

(5) Metals analysis was performed on the sample 'as received'.
(6) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.
(7) Bureau Veritas Laboratories attempt to commence NTA analysis as soon as possible in accordance with the reference method. However, rapid analysis may not be practically achievable, particularly for samples from remote locations. Extended delay in analysis times may increase the uncertainty of the test results, but does not necessarily imply that the results are compromised.
(8) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Gina Baybayan, Project Manager
Email: Gina.Baybayan@bvlabs.com
Phone# (905)817-5766
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C0F5868
Report Date: 2020/07/15

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463						
Sampling Date		2020/06/23 13:05						
COC Number		778264-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	S1	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Calculated Parameters								
Calculated TDS	mg/L	270	N/A	1.0				6800341
Hardness (CaCO3)	mg/L	220	N/A	1.0				6800280
Total Organic Nitrogen	mg/L	<0.10	N/A	0.10				6802152
Inorganics								
Total Ammonia-N	mg/L	0.62	N/A	0.050				6807175
Colour	TCU	2	N/A	2				6807192
Fluoride (F-)	mg/L	0.18	N/A	0.10				6805470
Total Kjeldahl Nitrogen (TKN)	mg/L	0.71	N/A	0.10				6807915
Microcystin	ug/L	<0.10	N/A	0.10				6810207
Dissolved Organic Carbon	mg/L	1.0	N/A	0.40				6807433
pH	pH	8.01						6805480
Dissolved Sulphate (SO4)	mg/L	<1.0	N/A	1.0				6805488
Sulphide	mg/L	<0.020	N/A	0.020				6804018
Turbidity	NTU	1.5	N/A	0.1				6806421
WAD Cyanide (Free)	mg/L	<0.0010	N/A	0.0010				6803344
Alkalinity (Total as CaCO3)	mg/L	250	N/A	1.0				6805456
Dissolved Chloride (Cl-)	mg/L	7.8	N/A	1.0				6805484
Nitrite (N)	mg/L	<0.010	N/A	0.010				6805277
Nitrate (N)	mg/L	<0.10	N/A	0.10				6805277
Nitrate + Nitrite (N)	mg/L	<0.10	N/A	0.10				6805277
Miscellaneous Parameters								
NTA	mg/L	<0.050	N/A	0.050				6804569
Fixed Gases								
Methane	L/m3	1.6	N/A	0.005				6812157
Metals								
Mercury (Hg)	mg/L	<0.00010	N/A	0.00010				6810551
Aluminum (Al)	ug/L	<4.9	N/A	4.9				6804935

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
N/A = Not Applicable

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C0F5868
Report Date: 2020/07/15

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463						
Sampling Date		2020/06/23 13:05						
COC Number		778264-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	S1	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Antimony (Sb)	ug/L	<0.50	N/A	0.50				6804935
Arsenic (As)	ug/L	<1.0	N/A	1.0				6804935
Barium (Ba)	ug/L	220	N/A	2.0				6804935
Boron (B)	ug/L	40	N/A	10				6804935
Cadmium (Cd)	ug/L	<0.090	N/A	0.090				6804935
Calcium (Ca)	ug/L	50000	N/A	200				6804935
Chromium (Cr)	ug/L	<5.0	N/A	5.0				6804935
Copper (Cu)	ug/L	<0.90	N/A	0.90				6804935
Iron (Fe)	ug/L	510	N/A	100				6804935
Lead (Pb)	ug/L	<0.50	N/A	0.50				6804935
Magnesium (Mg)	ug/L	24000	N/A	50				6804935
Manganese (Mn)	ug/L	58	N/A	2.0				6804935
Potassium (K)	ug/L	1300	N/A	200				6804935
Selenium (Se)	ug/L	<2.0	N/A	2.0				6804935
Sodium (Na)	ug/L	14000	N/A	100				6804935
Uranium (U)	ug/L	<0.10	N/A	0.10				6804935
Zinc (Zn)	ug/L	<5.0	N/A	5.0				6804935
Semivolatile Organics								
2,3,4,6-Tetrachlorophenol	ug/L	<0.50	N/A	0.50				6808056
2,4,5-T	ug/L	<1.0	N/A	1.0				6808056
2,4,6-Trichlorophenol	ug/L	<0.50	N/A	0.50				6808056
2,4-D	ug/L	<1.0	N/A	1.0				6808056
2,4-Dichlorophenol	ug/L	<0.25	N/A	0.25				6808056
Alachlor	ug/L	<0.50	N/A	0.50				6808056
Aldicarb	ug/L	<5.0	N/A	5.0				6808056
Atrazine	ug/L	<0.50	N/A	0.50				6808056
Des-ethyl atrazine	ug/L	<0.50	N/A	0.50				6808056
Atrazine + Desethyl-atrazine	ug/L	<1.0	N/A	1.0				6808056
Bendiocarb	ug/L	<2.0	N/A	2.0				6808056

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ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463						
Sampling Date		2020/06/23 13:05						
COC Number		778264-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	S1	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Bromoxynil	ug/L	<0.50	N/A	0.50				6808056
Carbaryl	ug/L	<5.0	N/A	5.0				6808056
Carbofuran	ug/L	<5.0	N/A	5.0				6808056
Chlorpyrifos (Dursban)	ug/L	<1.0	N/A	1.0				6808056
Cyanazine (Bladex)	ug/L	<1.0	N/A	1.0				6808056
Diazinon	ug/L	<1.0	N/A	1.0				6808056
Dicamba	ug/L	<1.0	N/A	1.0				6808056
Diclofop-methyl	ug/L	<0.90	N/A	0.90				6808056
Dimethoate	ug/L	<2.5	N/A	2.5				6808056
Dinoseb	ug/L	<1.0	N/A	1.0				6808056
Malathion	ug/L	<5.0	N/A	5.0				6808056
Metolachlor	ug/L	<0.50	N/A	0.50				6808056
Metribuzin (Sencor)	ug/L	<5.0	N/A	5.0				6808056
Ethyl Parathion	ug/L	<1.0	N/A	1.0				6808056
Pentachlorophenol	ug/L	<0.50	N/A	0.50				6808056
Phorate	ug/L	<0.50	N/A	0.50				6808056
Picloram	ug/L	<5.0	N/A	5.0				6808056
Prometryne	ug/L	<0.25	N/A	0.25				6808056
Simazine	ug/L	<1.0	N/A	1.0				6808056
Terbufos	ug/L	<0.50	N/A	0.50				6808056
Triallate	ug/L	<1.0	N/A	1.0				6808056
Trifluralin	ug/L	<1.0	N/A	1.0				6808056
Benzo(a)pyrene	ug/L	<0.0050	N/A	0.0050				6808056
Methyl parathion	ug/L	<1.0	N/A	1.0				6808056
Volatile Organics								
1,1-Dichloroethylene	ug/L	<0.10	N/A	0.10				6803778
1,2-Dichlorobenzene	ug/L	<0.20	N/A	0.20				6803778
1,2-Dichloroethane	ug/L	<0.20	N/A	0.20				6803778
1,4-Dichlorobenzene	ug/L	<0.20	N/A	0.20				6803778

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ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463						
Sampling Date		2020/06/23 13:05						
COC Number		778264-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	S1	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Benzene	ug/L	<0.10	N/A	0.10				6803778
Bromodichloromethane	ug/L	<0.10	N/A	0.10				6803778
Bromoform	ug/L	<0.20	N/A	0.20				6803778
Carbon Tetrachloride	ug/L	<0.10	N/A	0.10				6803778
Chlorobenzene	ug/L	<0.10	N/A	0.10				6803778
Chloroform	ug/L	0.14	N/A	0.10				6803778
Dibromochloromethane	ug/L	<0.20	N/A	0.20				6803778
Methylene Chloride(Dichloromethane)	ug/L	<0.50	N/A	0.50				6803778
Ethylbenzene	ug/L	<0.10	N/A	0.10				6803778
Tetrachloroethylene	ug/L	<0.10	N/A	0.10				6803778
Toluene	ug/L	<0.20	N/A	0.20				6803778
Trichloroethylene	ug/L	<0.10	N/A	0.10				6803778
Vinyl Chloride	ug/L	<0.20	N/A	0.20				6803778
o-Xylene	ug/L	<0.10	N/A	0.10				6803778
p+m-Xylene	ug/L	<0.10	N/A	0.10				6803778
Total Xylenes	ug/L	<0.10	N/A	0.10				6803778
Total Trihalomethanes	ug/L	<0.20	N/A	0.20				6803778
Pesticides & Herbicides								
Glyphosate	ug/L	<10	N/A	10				6805177
Diquat	ug/L	<7.0	N/A	7.0				6807197
Diuron	ug/L	<10	N/A	10				6810179
Guthion (Azinphos-methyl)	ug/L	<2.0	N/A	2.0				6810179
Paraquat	ug/L	<1.0	N/A	1.0				6807197
Temephos	ug/L	<10	N/A	10				6810179
Calculated Parameters								
Aldrin + Dieldrin	ug/L	<0.006	N/A	0.006				6800957
Chlordane (Total)	ug/L	<0.006	N/A	0.006				6800957
DDT+ Metabolites	ug/L	<0.006	N/A	0.006				6800957
Heptachlor + Heptachlor epoxide	ug/L	<0.006	N/A	0.006				6800957

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
N/A = Not Applicable

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BV Labs Job #: C0F5868
Report Date: 2020/07/15

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463						
Sampling Date		2020/06/23 13:05						
COC Number		778264-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	S1	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total PCB	ug/L	<0.05	N/A	0.05				6800957
Pesticides & Herbicides								
Lindane	ug/L	<0.0060	N/A	0.0060				6810583
Heptachlor	ug/L	<0.0060	N/A	0.0060				6810583
Aldrin	ug/L	<0.0060	N/A	0.0060				6810583
Heptachlor epoxide	ug/L	<0.0060	N/A	0.0060				6810583
Oxychlordane	ug/L	<0.0060	N/A	0.0060				6810583
g-Chlordane	ug/L	<0.0060	N/A	0.0060				6810583
a-Chlordane	ug/L	<0.0060	N/A	0.0060				6810583
Dieldrin	ug/L	<0.0060	N/A	0.0060				6810583
o,p-DDE	ug/L	<0.0060	N/A	0.0060				6810583
p,p-DDE	ug/L	<0.0060	N/A	0.0060				6810583
o,p-DDD	ug/L	<0.0060	N/A	0.0060				6810583
p,p-DDD	ug/L	<0.0060	N/A	0.0060				6810583
o,p-DDT	ug/L	<0.0060	N/A	0.0060				6810583
p,p-DDT	ug/L	<0.0060	N/A	0.0060				6810583
Methoxychlor	ug/L	<0.024	N/A	0.024				6810583
Aroclor 1016	ug/L	<0.050	N/A	0.050				6810583
Aroclor 1221	ug/L	<0.050	N/A	0.050				6810583
Aroclor 1232	ug/L	<0.050	N/A	0.050				6810583
Aroclor 1242	ug/L	<0.050	N/A	0.050				6810583
Aroclor 1248	ug/L	<0.050	N/A	0.050				6810583
Aroclor 1254	ug/L	<0.050	N/A	0.050				6810583
Aroclor 1260	ug/L	<0.050	N/A	0.050				6810583
Dioxins & Furans								
2,3,7,8-Tetra CDD *	pg/L	<1.16	1.16	9.76	1.00	1.16		6829462
1,2,3,7,8-Penta CDD *	pg/L	<1.92	1.92	9.76	1.00	1.92		6829462
1,2,3,4,7,8-Hexa CDD *	pg/L	<1.25	1.25	9.76	0.100	0.125		6829462

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin

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BV Labs Job #: C0F5868
Report Date: 2020/07/15

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463						
Sampling Date		2020/06/23 13:05						
COC Number		778264-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	S1	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
1,2,3,6,7,8-Hexa CDD *	pg/L	<1.06	1.06	9.76	0.100	0.106		6829462
1,2,3,7,8,9-Hexa CDD *	pg/L	<1.07	1.07	9.76	0.100	0.107		6829462
1,2,3,4,6,7,8-Hepta CDD *	pg/L	<1.48	1.48	9.76	0.0100	0.0148		6829462
Octa CDD *	pg/L	<1.88	1.88	97.6	0.000300	0.000564		6829462
Total Tetra CDD *	pg/L	<1.16	1.16	9.76			0	6829462
Total Penta CDD *	pg/L	<1.92	1.92	9.76			0	6829462
Total Hexa CDD *	pg/L	<1.12	1.12	9.76			0	6829462
Total Hepta CDD *	pg/L	<1.48	1.48	9.76			0	6829462
2,3,7,8-Tetra CDF **	pg/L	<1.05	1.05	9.76	0.100	0.105		6829462
1,2,3,7,8-Penta CDF **	pg/L	<1.59	1.59	9.76	0.0300	0.0477		6829462
2,3,4,7,8-Penta CDF **	pg/L	<1.56	1.56	9.76	0.300	0.468		6829462
1,2,3,4,7,8-Hexa CDF **	pg/L	<1.18	1.18	9.76	0.100	0.118		6829462
1,2,3,6,7,8-Hexa CDF **	pg/L	<1.06	1.06	9.76	0.100	0.106		6829462
2,3,4,6,7,8-Hexa CDF **	pg/L	<1.18	1.18	9.76	0.100	0.118		6829462
1,2,3,7,8,9-Hexa CDF **	pg/L	<1.31	1.31	9.76	0.100	0.131		6829462
1,2,3,4,6,7,8-Hepta CDF **	pg/L	<0.934	0.934	9.76	0.0100	0.00934		6829462
1,2,3,4,7,8,9-Hepta CDF **	pg/L	<1.19	1.19	9.76	0.0100	0.0119		6829462
Octa CDF **	pg/L	<1.88	1.88	97.6	0.000300	0.000564		6829462
Total Tetra CDF **	pg/L	<1.05	1.05	9.76			0	6829462
Total Penta CDF **	pg/L	<1.57	1.57	9.76			0	6829462
Total Hexa CDF **	pg/L	<1.17	1.17	9.76			0	6829462
Total Hepta CDF **	pg/L	<1.05	1.05	9.76			0	6829462
NDMA/D/F/MIB/GEO								
N-Nitrosodimethylamine	ug/L	<0.0009	N/A	0.0009				6804773
Microbiological								
Heterotrophic plate count	CFU/mL	5	N/A	N/A				6802193
Background	CFU/100mL	15	N/A	N/A				6802192

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
* CDD = Chloro Dibenzo-p-Dioxin
** CDF = Chloro Dibenzo-p-Furan
N/A = Not Applicable

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ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463						
Sampling Date		2020/06/23 13:05						
COC Number		778264-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	S1	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Total Coliforms	CFU/100mL	0	N/A	N/A				6802192
Escherichia coli	CFU/100mL	0	N/A	N/A				6802192
TOTAL TOXIC EQUIVALENCY	pg/L					4.5		
Surrogate Recovery (%)								
C13-1234678 HeptaCDD *	%	61						6829462
C13-1234678 HeptaCDF **	%	61						6829462
C13-123678 HexaCDD *	%	51						6829462
C13-123678 HexaCDF **	%	49						6829462
C13-12378 PentaCDD *	%	46						6829462
C13-12378 PentaCDF **	%	40						6829462
C13-2378 TetraCDD *	%	40						6829462
C13-2378 TetraCDF **	%	40						6829462
C13-OCDD *	%	67						6829462
D6-N-Nitrosodimethylamine	%	33						6804773
2,4,5,6-Tetrachloro-m-xylene	%	80						6810583
Decachlorobiphenyl	%	87						6810583
2,4,6-Tribromophenol	%	86						6808056
2,4-Dichlorophenyl Acetic Acid	%	85						6808056
2-Fluorobiphenyl	%	72						6808056
D14-Terphenyl (FS)	%	94						6808056
D5-Nitrobenzene	%	77						6808056
4-Bromofluorobenzene	%	108						6803778
D4-1,2-Dichloroethane	%	110						6803778
D8-Toluene	%	91						6803778

EDL = Estimated Detection Limit
RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.
WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch
N/A = Not Applicable
* CDD = Chloro Dibenzo-p-Dioxin
** CDF = Chloro Dibenzo-p-Furan

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ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463					
Sampling Date		2020/06/23 13:05					
COC Number		778264-01-01		TOXIC EQUIVALENCY		# of	
	UNITS	S1 Lab-Dup	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Inorganics							
Microcystin	ug/L	<0.10	0.10				6810207
WAD Cyanide (Free)	mg/L	<0.0010	0.0010				6803344
Miscellaneous Parameters							
NTA	mg/L	<0.050	0.050				6804569
Volatile Organics							
1,1-Dichloroethylene	ug/L	<0.10	0.10				6803778
1,2-Dichlorobenzene	ug/L	<0.20	0.20				6803778
1,2-Dichloroethane	ug/L	<0.20	0.20				6803778
1,4-Dichlorobenzene	ug/L	<0.20	0.20				6803778
Benzene	ug/L	<0.10	0.10				6803778
Bromodichloromethane	ug/L	<0.10	0.10				6803778
Bromoform	ug/L	<0.20	0.20				6803778
Carbon Tetrachloride	ug/L	<0.10	0.10				6803778
Chlorobenzene	ug/L	<0.10	0.10				6803778
Chloroform	ug/L	<0.10	0.10				6803778
Dibromochloromethane	ug/L	<0.20	0.20				6803778
Methylene Chloride(Dichloromethane)	ug/L	<0.50	0.50				6803778
Ethylbenzene	ug/L	<0.10	0.10				6803778
Tetrachloroethylene	ug/L	<0.10	0.10				6803778
Toluene	ug/L	<0.20	0.20				6803778
Trichloroethylene	ug/L	<0.10	0.10				6803778
Vinyl Chloride	ug/L	<0.20	0.20				6803778
o-Xylene	ug/L	<0.10	0.10				6803778

RDL = Reportable Detection Limit
TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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ODWQSOG TABLES 1, 2 AND 4 (WATER)

BV Labs ID		MYF463					
Sampling Date		2020/06/23 13:05					
COC Number		778264-01-01		TOXIC EQUIVALENCY		# of	
	UNITS	S1 Lab-Dup	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
p+m-Xylene	ug/L	<0.10	0.10				6803778
Total Xylenes	ug/L	<0.10	0.10				6803778
Total Trihalomethanes	ug/L	<0.20	0.20				6803778
TOTAL TOXIC EQUIVALENCY	pg/L				0		
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	106					6803778
D4-1,2-Dichloroethane	%	111					6803778
D8-Toluene	%	91					6803778

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

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BV Labs Job #: C0F5868
Report Date: 2020/07/15

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

ODWS - TABLE 3, RADIONUCLIDES, 2006 (WATER)

BV Labs ID		MYF463			MYF463		
Sampling Date		2020/06/23 13:05			2020/06/23 13:05		
COC Number		778264-01-01			778264-01-01		
	UNITS	S1	RDL	QC Batch	S1 Lab-Dup	RDL	QC Batch
RADIONUCLIDE							
Gross Alpha	Bq/L	0.13	0.10	6800926			
Gross Beta	Bq/L	<0.10	0.10	6800926			
Tritium	Bq/L	<15	15	6803912	<15	15	6803912

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

PERMANENT GASES (WATER)

BV Labs ID		MYF463		
Sampling Date		2020/06/23 13:05		
COC Number		778264-01-01		
	UNITS	S1	RDL	QC Batch
Fixed Gases				
Calculated Methane	mg/L	1.1	0.003	6801873

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

BV Labs Job #: C0F5868
Report Date: 2020/07/15

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

TEST SUMMARY

BV Labs ID: MYF463
Sample ID: S1
Matrix: Water

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6805456	N/A	2020/06/26	Surinder Rai
Chloride by Automated Colourimetry	KONE	6805484	N/A	2020/06/26	Deonarine Ramnarine
Colour	SPEC	6807192	N/A	2020/07/03	Shivani Shivani
Free (WAD) Cyanide	SKAL/CN	6803344	N/A	2020/06/24	Gnana Thomas
Dioxins/Furans in Water (EPA 8290 mod.)	HRMS/MS	6829462	2020/07/07	2020/07/14	Angel Guerrero
Diuron, Guthion, Temephos	LC/UV	6810179	2020/06/29	2020/06/29	Kimberley Linde
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6807433	N/A	2020/06/27	Nimarta Singh
Diquat / Paraquat	LC/UV	6807197	2020/06/26	2020/06/27	James Lee
Fluoride	ISE	6805470	2020/06/25	2020/06/26	Surinder Rai
Dissolved Gases in Water in mg/L units		6801873	N/A	2020/06/24	Automated Statchk
Glyphosate	LC/FLU	6805177	2020/06/25	2020/06/25	James Lee
Hardness (calculated as CaCO3)		6800280	N/A	2020/06/29	Automated Statchk
Mercury in Water by CVAA	CV/AA	6810551	2020/06/29	2020/06/29	Meghaben Patel
Metals Analysis by ICPMS (as received)	ICP/MS	6804935	N/A	2020/06/26	Arefa Dabhad
Total Coliforms/ E. coli, CFU/100mL	PL	6802192	N/A	2020/06/23	Sonja Elavinamannil
Dissolved Methane in Water	GC/FID	6812157	N/A	2020/06/30	Neng (Cathy) Li
Heterotrophic plate count, (CFU/mL)	PL	6802193	N/A	2020/06/23	Sirimathie Aluthwala
Microcystin	ELIS	6810207	N/A	2020/06/29	Helen He
NDMA in Drinking Water (MSABN-3291Amod)	GCTQ/MS	6804773	2020/06/25	2020/06/30	Wenhui (Susie) Shi
Total Ammonia-N	LACH/NH4	6807175	N/A	2020/06/26	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6805277	N/A	2020/06/26	Chandra Nandlal
Nitrilotriacetic Acid (NTA)	SPEC	6804569	2020/06/25	2020/06/25	Viorica Rotaru
OC Pesticides (Selected) & PCB	GC/ECD	6810583	2020/06/29	2020/06/30	Li Peng
OC Pesticides Summed Parameters	CALC	6800957	N/A	2020/06/24	Automated Statchk
ODWS - Semi-Volatiles	GC/MS	6808056	2020/06/26	2020/06/27	Wendy Zhao
Organic Nitrogen	CALC	6802152	N/A	2020/06/30	Automated Statchk
pH	AT	6805480	2020/06/25	2020/06/26	Surinder Rai
Gross Alpha and Gross Beta	GFPC	6800926	N/A	2020/06/29	Barbara Kalbasi Esfahani
Tritium by Liquid Scintillation Counting	LSC	6803912	N/A	2020/06/27	Danish Samad
Sulphate by Automated Colourimetry	KONE	6805488	N/A	2020/06/26	Deonarine Ramnarine
Bromate Analysis		6815155	N/A	2020/07/02	Gina Baybayan
Sulphide	ISE/S	6804018	N/A	2020/06/24	Neil Dassanayake
Total Dissolved Solids (TDS calc)	CALC	6800341	N/A	2020/06/29	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	6807915	2020/06/26	2020/06/29	Rajni Tyagi
Turbidity	AT	6806421	N/A	2020/06/26	Neil Dassanayake
VOCs (Drinking Water)	P&T/MS	6803778	N/A	2020/06/25	Dina Wang

BV Labs ID: MYF463 Dup
Sample ID: S1
Matrix: Water

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	SKAL/CN	6803344	N/A	2020/06/24	Gnana Thomas
Microcystin	ELIS	6810207	N/A	2020/06/29	Helen He

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BV Labs Job #: C0F5868
Report Date: 2020/07/15

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

TEST SUMMARY

BV Labs ID: MYF463 Dup
Sample ID: S1
Matrix: Water

Collected: 2020/06/23
Shipped:
Received: 2020/06/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrilotriacetic Acid (NTA)	SPEC	6804569	2020/06/25	2020/06/25	Viorica Rotaru
Tritium by Liquid Scintillation Counting	LSC	6803912	N/A	2020/06/27	Danish Samad
VOCs (Drinking Water)	P&T/MS	6803778	N/A	2020/06/25	Dina Wang

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	8.0°C
Package 2	9.3°C
Package 3	7.3°C

Results relate only to the items tested.

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BV Labs Job #: C0F5868
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QUALITY ASSURANCE REPORT

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6803778	4-Bromofluorobenzene	2020/06/25	108	70 - 130	105	70 - 130	103	%				
6803778	D4-1,2-Dichloroethane	2020/06/25	104	70 - 130	104	70 - 130	102	%				
6803778	D8-Toluene	2020/06/25	94	70 - 130	93	70 - 130	95	%				
6804773	D6-N-Nitrosodimethylamine	2020/06/30			39	10 - 85	32	%				
6808056	2,4,6-Tribromophenol	2020/06/27	95	30 - 130	91	30 - 130	89	%				
6808056	2,4-Dichlorophenyl Acetic Acid	2020/06/27	94	30 - 130	91	30 - 130	89	%				
6808056	2-Fluorobiphenyl	2020/06/27	79	30 - 130	76	30 - 130	76	%				
6808056	D14-Terphenyl (FS)	2020/06/27	98	30 - 130	93	30 - 130	95	%				
6808056	D5-Nitrobenzene	2020/06/27	80	30 - 130	78	30 - 130	81	%				
6810583	2,4,5,6-Tetrachloro-m-xylene	2020/06/30	76	30 - 130	89	30 - 130	72	%				
6810583	Decachlorobiphenyl	2020/06/30	96	30 - 130	109	30 - 130	78	%				
6829462	C13-1234678 HeptaCDD	2020/07/13			85	30 - 130	88	%				
6829462	C13-1234678 HeptaCDF	2020/07/13			106	30 - 130	119	%				
6829462	C13-123678 HexaCDD	2020/07/13			60	30 - 130	54	%				
6829462	C13-123678 HexaCDF	2020/07/13			54	30 - 130	47	%				
6829462	C13-12378 PentaCDD	2020/07/13			55	30 - 130	44	%				
6829462	C13-12378 PentaCDF	2020/07/13			49	30 - 130	41	%				
6829462	C13-2378 TetraCDD	2020/07/13			51	30 - 130	43	%				
6829462	C13-2378 TetraCDF	2020/07/13			50	30 - 130	43	%				
6829462	C13-OCDD	2020/07/13			96	30 - 130	108	%				
6800926	Gross Alpha	2020/06/29			120	60 - 140	<0.10	Bq/L	NC	N/A		
6800926	Gross Beta	2020/06/29			104	70 - 130	<0.10	Bq/L	NC	N/A		
6803344	WAD Cyanide (Free)	2020/06/24	97	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20		
6803778	1,1-Dichloroethylene	2020/06/25	107	70 - 130	103	70 - 130	<0.10	ug/L	NC	30		
6803778	1,2-Dichlorobenzene	2020/06/25	86	70 - 130	87	70 - 130	<0.20	ug/L	NC	30		
6803778	1,2-Dichloroethane	2020/06/25	112	70 - 130	110	70 - 130	<0.20	ug/L	NC	30		
6803778	1,4-Dichlorobenzene	2020/06/25	93	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
6803778	Benzene	2020/06/25	111	70 - 130	110	70 - 130	<0.10	ug/L	NC	30		
6803778	Bromodichloromethane	2020/06/25	NC	70 - 130	105	70 - 130	<0.10	ug/L	NC	30		
6803778	Bromoform	2020/06/25	99	70 - 130	98	70 - 130	<0.20	ug/L	NC	30		
6803778	Carbon Tetrachloride	2020/06/25	101	70 - 130	103	70 - 130	<0.10	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6803778	Chlorobenzene	2020/06/25	93	70 - 130	93	70 - 130	<0.10	ug/L	NC	30		
6803778	Chloroform	2020/06/25	NC	70 - 130	104	70 - 130	<0.10	ug/L	NC	30		
6803778	Dibromochloromethane	2020/06/25	103	70 - 130	97	70 - 130	<0.20	ug/L	NC	30		
6803778	Ethylbenzene	2020/06/25	91	70 - 130	90	70 - 130	<0.10	ug/L	NC	30		
6803778	Methylene Chloride(Dichloromethane)	2020/06/25	103	70 - 130	101	70 - 130	<0.50	ug/L	NC	30		
6803778	o-Xylene	2020/06/25	97	70 - 130	94	70 - 130	<0.10	ug/L	NC	30		
6803778	p+m-Xylene	2020/06/25	101	70 - 130	99	70 - 130	<0.10	ug/L	NC	30		
6803778	Tetrachloroethylene	2020/06/25	94	70 - 130	91	70 - 130	<0.10	ug/L	NC	30		
6803778	Toluene	2020/06/25	95	70 - 130	92	70 - 130	<0.20	ug/L	NC	30		
6803778	Total Trihalomethanes	2020/06/25					<0.20	ug/L	NC	30		
6803778	Total Xylenes	2020/06/25					<0.10	ug/L	NC	30		
6803778	Trichloroethylene	2020/06/25	112	70 - 130	109	70 - 130	<0.10	ug/L	NC	30		
6803778	Vinyl Chloride	2020/06/25	92	70 - 130	89	70 - 130	<0.20	ug/L	NC	30		
6803912	Tritium	2020/06/27			100	92 - 108	<15	Bq/L	NC	N/A		
6804018	Sulphide	2020/06/24	101	80 - 120	101	80 - 120	<0.020	mg/L	NC	20		
6804569	NTA	2020/06/25	99	80 - 120	99	80 - 120	<0.050	mg/L	NC	20		
6804773	N-Nitrosodimethylamine	2020/06/30			104	65 - 135	<0.0009	ug/L	9.4	25		
6804935	Aluminum (Al)	2020/06/26	99	80 - 120	99	80 - 120	<4.9	ug/L				
6804935	Antimony (Sb)	2020/06/26	101	80 - 120	101	80 - 120	<0.50	ug/L				
6804935	Arsenic (As)	2020/06/26	99	80 - 120	99	80 - 120	<1.0	ug/L				
6804935	Barium (Ba)	2020/06/26	98	80 - 120	96	80 - 120	<2.0	ug/L				
6804935	Boron (B)	2020/06/26	97	80 - 120	98	80 - 120	<10	ug/L				
6804935	Cadmium (Cd)	2020/06/26	101	80 - 120	100	80 - 120	<0.090	ug/L				
6804935	Calcium (Ca)	2020/06/26	100	80 - 120	99	80 - 120	<200	ug/L				
6804935	Chromium (Cr)	2020/06/26	97	80 - 120	96	80 - 120	<5.0	ug/L				
6804935	Copper (Cu)	2020/06/26	104	80 - 120	99	80 - 120	<0.90	ug/L	NC	20		
6804935	Iron (Fe)	2020/06/26	100	80 - 120	99	80 - 120	<100	ug/L	NC	20		
6804935	Lead (Pb)	2020/06/26	102	80 - 120	100	80 - 120	<0.50	ug/L	NC	20		
6804935	Magnesium (Mg)	2020/06/26	103	80 - 120	101	80 - 120	<50	ug/L				
6804935	Manganese (Mn)	2020/06/26	99	80 - 120	97	80 - 120	<2.0	ug/L				
6804935	Potassium (K)	2020/06/26	100	80 - 120	99	80 - 120	<200	ug/L				

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6804935	Selenium (Se)	2020/06/26	101	80 - 120	101	80 - 120	<2.0	ug/L				
6804935	Sodium (Na)	2020/06/26	100	80 - 120	100	80 - 120	<100	ug/L				
6804935	Uranium (U)	2020/06/26	104	80 - 120	103	80 - 120	<0.10	ug/L				
6804935	Zinc (Zn)	2020/06/26	101	80 - 120	100	80 - 120	<5.0	ug/L				
6805177	Glyphosate	2020/06/25	89	50 - 130	95	50 - 130	<10	ug/L	NC	40		
6805277	Nitrate (N)	2020/06/26	101	80 - 120	101	80 - 120	<0.10	mg/L	NC	20		
6805277	Nitrite (N)	2020/06/26	107	80 - 120	105	80 - 120	<0.010	mg/L	NC	20		
6805456	Alkalinity (Total as CaCO3)	2020/06/26			97	85 - 115	<1.0	mg/L	1.6	20		
6805470	Fluoride (F-)	2020/06/26	81	80 - 120	95	80 - 120	<0.10	mg/L	0	20		
6805480	pH	2020/06/26			101	98 - 103			0.48	N/A		
6805484	Dissolved Chloride (Cl-)	2020/06/26	95	80 - 120	102	80 - 120	<1.0	mg/L	0.88	20		
6805488	Dissolved Sulphate (SO4)	2020/06/26	NC	75 - 125	106	80 - 120	<1.0	mg/L	0.49	20		
6806421	Turbidity	2020/06/26			112	85 - 115	<0.1	NTU	1.1	20		
6807175	Total Ammonia-N	2020/06/26	94	75 - 125	101	80 - 120	<0.050	mg/L	NC	20		
6807192	Colour	2020/07/03			100	80 - 120	<2	TCU	NC	25		
6807197	Diquat	2020/06/26			107	50 - 130	<7.0	ug/L	0.94	40		
6807197	Paraquat	2020/06/26			112	50 - 130	<1.0	ug/L	0	40		
6807433	Dissolved Organic Carbon	2020/06/27	102	80 - 120	100	80 - 120	<0.40	mg/L	0.22	20		
6807915	Total Kjeldahl Nitrogen (TKN)	2020/06/29	116	80 - 120	107	80 - 120	<0.10	mg/L	19	20	106	80 - 120
6808056	2,3,4,6-Tetrachlorophenol	2020/06/27	102	30 - 130	99	30 - 130	<0.50	ug/L	4.1	40		
6808056	2,4,5-T	2020/06/27	100	30 - 130	96	30 - 130	<1.0	ug/L	6.7	40		
6808056	2,4,6-Trichlorophenol	2020/06/27	87	30 - 130	84	30 - 130	<0.50	ug/L	5.3	40		
6808056	2,4-D	2020/06/27	91	30 - 130	87	30 - 130	<1.0	ug/L	2.1	40		
6808056	2,4-Dichlorophenol	2020/06/27	79	30 - 130	78	30 - 130	<0.25	ug/L	6.1	40		
6808056	Alachlor	2020/06/27	97	40 - 130	91	40 - 130	<0.50	ug/L	4.7	40		
6808056	Aldicarb	2020/06/27	84	70 - 130	89	70 - 130	<5.0	ug/L	4.5	40		
6808056	Atrazine + Desethyl-atrazine	2020/06/27	68	30 - 130	66	30 - 130	<1.0	ug/L	6.3	40		
6808056	Atrazine	2020/06/27	92	30 - 130	88	30 - 130	<0.50	ug/L	6.7	40		
6808056	Bendiocarb	2020/06/27	94	40 - 130	95	40 - 130	<2.0	ug/L	0.50	40		
6808056	Benzo(a)pyrene	2020/06/27	97	30 - 130	93	30 - 130	<0.0050	ug/L	5.9	40		
6808056	Bromoxynil	2020/06/27	110	40 - 130	105	40 - 130	<0.50	ug/L	4.0	40		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6808056	Carbaryl	2020/06/27	105	40 - 130	100	40 - 130	<5.0	ug/L	3.3	40		
6808056	Carbofuran	2020/06/27	106	40 - 130	99	40 - 130	<5.0	ug/L	3.4	40		
6808056	Chlorpyrifos (Dursban)	2020/06/27	98	40 - 130	92	40 - 130	<1.0	ug/L	5.7	40		
6808056	Cyanazine (Bladex)	2020/06/27	78	40 - 130	71	40 - 130	<1.0	ug/L	7.1	40		
6808056	Des-ethyl atrazine	2020/06/27	43	30 - 130	43	30 - 130	<0.50	ug/L	5.6	40		
6808056	Diazinon	2020/06/27	93	40 - 130	89	40 - 130	<1.0	ug/L	5.1	40		
6808056	Dicamba	2020/06/27	96	30 - 130	93	30 - 130	<1.0	ug/L	3.6	40		
6808056	Diclofop-methyl	2020/06/27	104	40 - 130	99	40 - 130	<0.90	ug/L	4.1	40		
6808056	Dimethoate	2020/06/27	90	40 - 130	89	40 - 130	<2.5	ug/L	2.4	40		
6808056	Dinoseb	2020/06/27	102	40 - 130	95	40 - 130	<1.0	ug/L	5.9	40		
6808056	Ethyl Parathion	2020/06/27	96	40 - 130	88	40 - 130	<1.0	ug/L	6.2	40		
6808056	Malathion	2020/06/27	87	40 - 130	84	40 - 130	<5.0	ug/L	3.7	40		
6808056	Methyl parathion	2020/06/27	96	30 - 130	92	30 - 130	<1.0	ug/L	4.5	40		
6808056	Metolachlor	2020/06/27	93	40 - 130	87	40 - 130	<0.50	ug/L	4.3	40		
6808056	Metribuzin (Sencor)	2020/06/27	119	40 - 130	114	40 - 130	<5.0	ug/L	4.9	40		
6808056	Pentachlorophenol	2020/06/27	92	25 - 130	89	25 - 130	<0.50	ug/L	3.8	40		
6808056	Phorate	2020/06/27	88	40 - 130	87	40 - 130	<0.50	ug/L	3.1	40		
6808056	Picloram	2020/06/27	48	10 - 130	51	10 - 130	<5.0	ug/L	1.1	40		
6808056	Prometryne	2020/06/27	94	30 - 130	91	30 - 130	<0.25	ug/L	2.4	40		
6808056	Simazine	2020/06/27	80	40 - 130	77	40 - 130	<1.0	ug/L	6.1	40		
6808056	Terbufos	2020/06/27	84	40 - 130	85	40 - 130	<0.50	ug/L	1.4	40		
6808056	Triallate	2020/06/27	96	40 - 130	90	40 - 130	<1.0	ug/L	5.8	40		
6808056	Trifluralin	2020/06/27	108	40 - 130	106	40 - 130	<1.0	ug/L	2.0	40		
6810179	Diuron	2020/06/29	82	40 - 130	83	40 - 130	<10	ug/L	NC	40		
6810179	Guthion (Azinphos-methyl)	2020/06/29	88	40 - 130	88	40 - 130	<2.0	ug/L	NC	40		
6810179	Temephos	2020/06/29	92	40 - 130	92	40 - 130	<10	ug/L				
6810207	Microcystin	2020/06/29	94	60 - 140	94	60 - 140	<0.10	ug/L	NC	20		
6810551	Mercury (Hg)	2020/06/29	97	75 - 125	96	80 - 120	<0.00010	mg/L	NC	20		
6810583	a-Chlordane	2020/06/30	81	30 - 130	94	30 - 130	<0.0060	ug/L	7.9	40		
6810583	Aldrin	2020/06/30	71	30 - 130	78	30 - 130	<0.0060	ug/L	NC	40		
6810583	Aroclor 1016	2020/06/30					<0.050	ug/L				

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6810583	Aroclor 1221	2020/06/30					<0.050	ug/L				
6810583	Aroclor 1232	2020/06/30					<0.050	ug/L				
6810583	Aroclor 1242	2020/06/30					<0.050	ug/L				
6810583	Aroclor 1248	2020/06/30					<0.050	ug/L				
6810583	Aroclor 1254	2020/06/30					<0.050	ug/L				
6810583	Aroclor 1260	2020/06/30					<0.050	ug/L				
6810583	Dieldrin	2020/06/30	103	30 - 130	120	30 - 130	<0.0060	ug/L	NC	40		
6810583	g-Chlordane	2020/06/30	109	30 - 130	87	30 - 130	<0.0060	ug/L	30	40		
6810583	Heptachlor epoxide	2020/06/30	76	30 - 130	89	30 - 130	<0.0060	ug/L	8.3	40		
6810583	Heptachlor	2020/06/30	65	30 - 130	73	30 - 130	<0.0060	ug/L	6.7	40		
6810583	Lindane	2020/06/30	72	30 - 130	82	30 - 130	<0.0060	ug/L	8.3	40		
6810583	Methoxychlor	2020/06/30	64	30 - 130	70	30 - 130	<0.024	ug/L	NC	40		
6810583	o,p-DDD	2020/06/30	89	30 - 130	102	30 - 130	<0.0060	ug/L	5.9	40		
6810583	o,p-DDE	2020/06/30	85	30 - 130	97	30 - 130	<0.0060	ug/L	6.8	40		
6810583	o,p-DDT	2020/06/30	90	30 - 130	101	30 - 130	<0.0060	ug/L	7.7	40		
6810583	Oxychlordane	2020/06/30	85	30 - 130	99	30 - 130	<0.0060	ug/L	7.8	40		
6810583	p,p-DDD	2020/06/30	86	30 - 130	100	30 - 130	<0.0060	ug/L	4.1	40		
6810583	p,p-DDE	2020/06/30	81	30 - 130	87	30 - 130	<0.0060	ug/L	2.1	40		
6810583	p,p-DDT	2020/06/30	65	30 - 130	71	30 - 130	<0.0060	ug/L	8.4	40		
6812157	Methane	2020/06/30					<0.005	L/m3	5.3	20		
6829462	1,2,3,4,6,7,8-Hepta CDD	2020/07/13			99	80 - 140	<1.18, EDL=1.18	pg/L	6.8	35		
6829462	1,2,3,4,6,7,8-Hepta CDF	2020/07/13			90	80 - 140	<1.12, EDL=1.12	pg/L	11	35		
6829462	1,2,3,4,7,8,9-Hepta CDF	2020/07/13			95	80 - 140	<1.43, EDL=1.43	pg/L	8.1	35		
6829462	1,2,3,4,7,8-Hexa CDD	2020/07/13			102	80 - 140	<1.72, EDL=1.72	pg/L	10	35		
6829462	1,2,3,4,7,8-Hexa CDF	2020/07/13			106	80 - 140	<1.41, EDL=1.41	pg/L	7.3	35		
6829462	1,2,3,6,7,8-Hexa CDD	2020/07/13			122	80 - 140	<1.46, EDL=1.46	pg/L	7.1	35		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6829462	1,2,3,6,7,8-Hexa CDF	2020/07/13			124	80 - 140	<1.26, EDL=1.26	pg/L	10	35		
6829462	1,2,3,7,8,9-Hexa CDD	2020/07/13			113	80 - 140	<1.48, EDL=1.48	pg/L	5.2	35		
6829462	1,2,3,7,8,9-Hexa CDF	2020/07/13			159 (1)	80 - 140	<1.56, EDL=1.56	pg/L	4.3 (1)	35		
6829462	1,2,3,7,8-Penta CDD	2020/07/13			111	80 - 140	<1.21, EDL=1.21	pg/L	2.7	35		
6829462	1,2,3,7,8-Penta CDF	2020/07/13			110	80 - 140	<1.51, EDL=1.51	pg/L	7.0	35		
6829462	2,3,4,6,7,8-Hexa CDF	2020/07/13			117	80 - 140	<1.40, EDL=1.40	pg/L	13	35		
6829462	2,3,4,7,8-Penta CDF	2020/07/13			107	80 - 140	<1.48, EDL=1.48	pg/L	11	35		
6829462	2,3,7,8-Tetra CDD	2020/07/13			100	80 - 140	<1.52, EDL=1.52	pg/L	5.8	35		
6829462	2,3,7,8-Tetra CDF	2020/07/13			100	80 - 140	<1.28, EDL=1.28	pg/L	10	35		
6829462	Octa CDD	2020/07/13			95	80 - 140	<1.89, EDL=1.89	pg/L	2.0	35		
6829462	Octa CDF	2020/07/13			90	80 - 140	<2.09, EDL=2.09	pg/L	0	35		
6829462	Total Hepta CDD	2020/07/13					<1.18, EDL=1.18	pg/L				
6829462	Total Hepta CDF	2020/07/13					<1.25, EDL=1.25	pg/L				
6829462	Total Hexa CDD	2020/07/13					<1.54, EDL=1.54	pg/L				
6829462	Total Hexa CDF	2020/07/13					<1.40, EDL=1.40	pg/L				
6829462	Total Penta CDD	2020/07/13					<1.21, EDL=1.21	pg/L				
6829462	Total Penta CDF	2020/07/13					<1.49, EDL=1.49	pg/L				

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6829462	Total Tetra CDD	2020/07/13					<1.52, EDL=1.52	pg/L				
6829462	Total Tetra CDF	2020/07/13					<1.28, EDL=1.28	pg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Native recovery is above method criteria, no positive hits are detected in the samples associated with this Internal

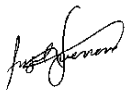
Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

BV Labs Job #: C0F5868
Report Date: 2020/07/15

Palmer Environmental Consulting Group Inc
Client Project #: 1704602
Site Location: NOBLETON
Sampler Initials: AL

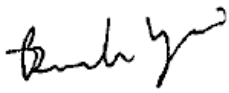
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

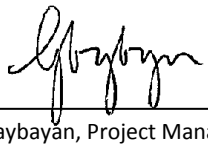


Angel Guerrero, Supervisor, Ultra Trace Analysis, HRMS

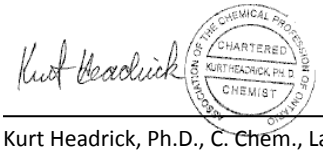
Anastassia Hamanov, Scientific Specialist



Branko Vrzic, A.SC.T., Senior Analyst, HRMS Services

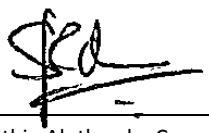


Gina Baybayan, Project Manager



Kurt Headrick, Ph.D., C. Chem., Laboratory Manager

Sonja Elavinamannil, Analyst I

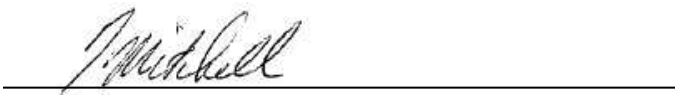


Sirimathie Aluthwala, Campobello Micro

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Tom Mitchell, B.Sc, Supervisor, Compressed Gases

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
ATTN: ADRIAN LO
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 17-MAR-20
Report Date: 01-APR-20 06:29 (MT)
Version: FINAL

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2428868

Project P.O. #: NOT SUBMITTED
Job Reference: 1704602
C of C Numbers:
Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

			ALS ID	L2428868-1	L2428868-2	L2428868-3
			Sampled Date	16-MAR-20	16-MAR-20	16-MAR-20
			Sampled Time	09:45	10:45	11:40
			Sample ID	MW6 SAMPLE1 ST	MW6 SAMPLE 2 ST	MW6 SAMPLE 3 ST
Grouping	Analyte	Unit				
Physical Tests	Colour, Apparent	CU		14.9	13.4	14.8
	Conductivity	umhos/cm		457	453	457
	pH	pH units		8.08	8.02	8.03
	Redox Potential	mV		PEHR 291	PEHR 288	PEHR 286
	Total Dissolved Solids	mg/L		DLDS 237	DLDS 251	DLDS 244
	Turbidity	NTU		4.41	3.42	3.80
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3)	mg/L		251	251	254
	Alkalinity, Carbonate (as CaCO3)	mg/L		<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3)	mg/L		<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3)	mg/L		251	251	254
	Ammonia, Total (as N)	mg/L		0.334	0.304	0.312
	Bromide (Br)	mg/L		<0.10	<0.10	<0.10
	Chloride (Cl)	mg/L		4.99	4.85	4.85
	Computed Conductivity	uS/cm		423	404	418
	Conductivity % Difference	%		-8	-11	-9
	Fluoride (F)	mg/L		0.130	0.133	0.138
	Hardness (as CaCO3)	mg/L		244	225	239
	Ion Balance	%		126	117	122
	Langelier Index			1	1	1
	Nitrate (as N)	mg/L		<0.020	<0.020	<0.020
	Nitrite (as N)	mg/L		<0.010	<0.010	<0.010
	Saturation pH	pH		7.26	7.30	7.27
	Orthophosphate-Dissolved (as P)	mg/L		0.0142	0.0143	0.0116
	TDS (Calculated)	mg/L		250	243	250

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

			ALS ID	L2428868-1	L2428868-2	L2428868-3
			Sampled Date	16-MAR-20	16-MAR-20	16-MAR-20
			Sampled Time	09:45	10:45	11:40
			Sample ID	MW6 SAMPLE1 ST	MW6 SAMPLE 2 ST	MW6 SAMPLE 3 ST
Grouping	Analyte	Unit				
Anions and Nutrients	Sulfate (SO4)	mg/L	<0.30	<0.30	<0.30
	Sulphide (as S)	mg/L	<0.018	<0.018	<0.018
	Sulphide (as H2S)	mg/L	<0.019	<0.019	<0.019
	Anion Sum	me/L	4.31	4.30	4.35
	Cation Sum	me/L	5.44	5.02	5.30
	Cation - Anion Balance	%	12	8	10
Inorganic Parameters	Silica	mg/L	28.7	28.5	27.9
Bacteriological Tests	E. Coli	CFU/100 mL	0	0	0
	Fecal Coliforms	CFU/100 mL	0	0	0
	Total Coliform Background	CFU/100 mL	34	9	1
	Total Coliforms	CFU/100 mL	11	2	0
Metals	Sodium Adsorption Ratio	SAR	0.32	0.31	0.31
Total Metals	Aluminum (Al)-Total	mg/L	0.022	<0.010	0.017
	Antimony (Sb)-Total	mg/L	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total	mg/L	0.00032	0.00026	0.00033
	Barium (Ba)-Total	mg/L	0.240	0.221	0.224
	Beryllium (Be)-Total	mg/L	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total	mg/L	<0.000050	<0.000050	<0.000050
	Boron (B)-Total	mg/L	0.031	0.028	0.029
	Cadmium (Cd)-Total	mg/L	<0.000010	<0.000010	<0.000010
	Calcium (Ca)-Total	mg/L	57.3	52.5	55.9
	Cesium (Cs)-Total	mg/L	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total	mg/L	0.00203	<0.00050	<0.00050

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

			ALS ID	L2428868-1	L2428868-2	L2428868-3
			Sampled Date	16-MAR-20	16-MAR-20	16-MAR-20
			Sampled Time	09:45	10:45	11:40
			Sample ID	MW6 SAMPLE1 ST	MW6 SAMPLE 2 ST	MW6 SAMPLE 3 ST
Grouping	Analyte	Unit				
Total Metals	Cobalt (Co)-Total	mg/L		<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total	mg/L		0.0022	<0.0010	<0.0010
	Iron (Fe)-Total	mg/L		0.874	0.761	0.783
	Lead (Pb)-Total	mg/L		0.00011	<0.00010	<0.00010
	Magnesium (Mg)-Total	mg/L		24.6	22.8	24.0
	Manganese (Mn)-Total	mg/L		0.0620	0.0563	0.0589
	Molybdenum (Mo)-Total	mg/L		0.000681	0.000618	0.000628
	Nickel (Ni)-Total	mg/L		0.00082	0.00266	<0.00050
	Phosphorus (P)-Total	mg/L		0.088	0.073	0.066
	Potassium (K)-Total	mg/L		1.33	1.25	1.30
	Rubidium (Rb)-Total	mg/L		0.00052	0.00049	0.00047
	Selenium (Se)-Total	mg/L		<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total	mg/L		13.4	13.3	13.0
	Silver (Ag)-Total	mg/L		<0.000050	<0.000050	<0.000050
	Sodium (Na)-Total	mg/L		11.5	10.7	11.0
	Strontium (Sr)-Total	mg/L		0.383	0.350	0.374
	Sulfur (S)-Total	mg/L		<0.50	<0.50	<0.50
	Tellurium (Te)-Total	mg/L		<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total	mg/L		<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total	mg/L		<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total	mg/L		<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total	mg/L		0.00077	0.00031	0.00076
	Tungsten (W)-Total	mg/L		<0.00010	<0.00010	<0.00010
	Uranium (U)-Total	mg/L		0.000036	0.000031	0.000033

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

			ALS ID	L2428868-1	L2428868-2	L2428868-3
			Sampled Date	16-MAR-20	16-MAR-20	16-MAR-20
			Sampled Time	09:45	10:45	11:40
			Sample ID	MW6 SAMPLE1 ST	MW6 SAMPLE 2 ST	MW6 SAMPLE 3 ST
Grouping	Analyte	Unit				
Total Metals	Vanadium (V)-Total	mg/L		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total	mg/L		<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total	mg/L		<0.00030	<0.00030	<0.00030
Organic Parameters	Ethane, Dissolved	ug/L		<5.0	<5.0	<5.0
	Ethene, Dissolved	ug/L		<5.0	<5.0	<5.0
	Methane, Dissolved	ug/L		224	297	525

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Summary of Guideline Exceedances: [Combined] - Ontario PWQO+SANITARY-SEWERS

Guideline ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Region of Durham Sanitary Sewer ByLaw						
(No parameter exceedances)						
Region of Durham Storm Sewer By-Law						
(No parameter exceedances)						
Ontario PWQO						
L2428868-1	MW6 SAMPLE1 ST	Total Metals	Aluminum (Al)-Total	0.022	0.015	mg/L
			Copper (Cu)-Total	0.0022	0.001	mg/L
			Iron (Fe)-Total	0.874	0.3	mg/L
			Phosphorus (P)-Total	0.088	0.01	mg/L
L2428868-2	MW6 SAMPLE 2 ST	Total Metals	Iron (Fe)-Total	0.761	0.3	mg/L
			Phosphorus (P)-Total	0.073	0.01	mg/L
L2428868-3	MW6 SAMPLE 3 ST	Total Metals	Aluminum (Al)-Total	0.017	0.015	mg/L
			Iron (Fe)-Total	0.783	0.3	mg/L
			Phosphorus (P)-Total	0.066	0.01	mg/L

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-SPEC-PCT-WT	Water	Automated Speciated Alkalinity	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-IC-N-WT	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

COLOUR-APPARENT-WT	Water	Colour	APHA 2120

Apparent Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method after sample decanting. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EC-MF-WT	Water	E. coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 C for 24 – 2 h. Method ID: WT-TM-1200

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

ETL-SAR-CALC-WT	Water	Sodium Adsorption Ratio	Calculation
ETL-SILICA-CALC-WT	Water	Calculate from SI-TOT-WT	EPA 200.8
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

FC-MF-WT	Water	Fecal Coliforms	SM 9222D

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mFC agar and incubated at 24–2h@44.5–0.2 C. Method ID: WT-TM-1200

IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation	APHA 1030E, 2330B, 2510A

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

METHANE,C2-DIS-WT	Water	Methane, Ethane and Ethene	EPA REGION 1, NATATTEN.WPD REV. 1

Water samples are collected in headspace vials containing sodium bisulfate preservative. A volume of water is withdrawn from the un-capped vial. After shaking & equilibration, the vial headspace is analyzed for target gases by GC/FID. The concentration of the gas in water is proportional to the partial pressure of the gas above the liquid & is calculated using Henry's Law.

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PO4-DO-COL-WT	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

REDOX-POTENTIAL-WT	Water	Redox Potential	APHA 2580

This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

S2-T>H2S-CALC-WT	Water	Total Sulphide Calculated as H2S	Calculation

This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

SULPHIDE-WT	Water	Sulphide (as S)	APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TC-MF-WT	Water	Total Coliforms	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5 C for 24–2h. Method ID: WT-TM-1200

TCB-MF-WT	Water	Total Coliform Background	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5 C for 24–2h. Method ID: WT-TM-1200.

TURBIDITY-WT	Water	Turbidity	APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2428868 Report Date: 01-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3

Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-SPEC-PCT-WT	**Water**							
Batch R5030706								
WG3294720-4 DUP		**WG3294720-3**						
Alkalinity, Total (as CaCO3)		247	250		mg/L	1.2	20	18-MAR-20
Alkalinity, Bicarbonate (as CaCO3)		247	250		mg/L	1.2	20	18-MAR-20
Alkalinity, Carbonate (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	18-MAR-20
Alkalinity, Hydroxide (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	18-MAR-20
WG3294720-2 LCS								
Alkalinity, Total (as CaCO3)			103.6		%		85-115	18-MAR-20
WG3294720-1 MB								
Alkalinity, Total (as CaCO3)			<2.0		mg/L		2	18-MAR-20
Alkalinity, Bicarbonate (as CaCO3)			<2.0		mg/L		2	18-MAR-20
Alkalinity, Carbonate (as CaCO3)			<2.0		mg/L		2	18-MAR-20
Alkalinity, Hydroxide (as CaCO3)			<2.0		mg/L		2	18-MAR-20
BR-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-9 DUP		**WG3295249-8**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-7 LCS								
Bromide (Br)			102.5		%		85-115	19-MAR-20
WG3295249-6 MB								
Bromide (Br)			<0.10		mg/L		0.1	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Bromide (Br)			97.7		%		75-125	19-MAR-20
CL-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-9 DUP		**WG3295249-8**						
Chloride (Cl)		5.03	5.03		mg/L	0.0	20	19-MAR-20
WG3295249-7 LCS								
Chloride (Cl)			103.8		%		90-110	19-MAR-20
WG3295249-6 MB								
Chloride (Cl)			<0.50		mg/L		0.5	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Chloride (Cl)			105.4		%		75-125	19-MAR-20
COLOUR-APPARENT-WT	**Water**							
Batch R5030529								
WG3294800-3 DUP		**L2428868-1**						
Colour, Apparent		14.9	14.7		CU	1.7	20	18-MAR-20
WG3294800-2 LCS								

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
COLOUR-APPARENT-WT	**Water**							
Batch R5030529								
WG3294800-2 LCS								
Colour, Apparent			97.9		%		85-115	18-MAR-20
WG3294800-1 MB								
Colour, Apparent			<2.0		CU		2	18-MAR-20
EC-MF-WT	**Water**							
Batch R5031740								
WG3294400-1 MB								
E. Coli			0		CFU/100mL		1	18-MAR-20
EC-WT	**Water**							
Batch R5030706								
WG3294720-4 DUP		**WG3294720-3**						
Conductivity		460	452		umhos/cm	1.8	10	18-MAR-20
WG3294720-2 LCS								
Conductivity			101.6		%		90-110	18-MAR-20
WG3294720-1 MB								
Conductivity			<3.0		umhos/cm		3	18-MAR-20
F-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-9 DUP		**WG3295249-8**						
Fluoride (F)		0.134	0.134		mg/L	0.5	20	19-MAR-20
WG3295249-7 LCS								
Fluoride (F)			103.1		%		90-110	19-MAR-20
WG3295249-6 MB								
Fluoride (F)			<0.020		mg/L		0.02	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Fluoride (F)			99.2		%		75-125	19-MAR-20
FC-MF-WT	**Water**							
Batch R5031749								
WG3294399-3 DUP		**L2428856-3**						
Fecal Coliforms		0	<10	RPD-NA	CFU/100mL	N/A	65	18-MAR-20
WG3294399-1 MB								
Fecal Coliforms			0		CFU/100mL		1	18-MAR-20
MET-T-CCMS-WT	**Water**							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-4 DUP		**WG3294192-3**						
Aluminum (Al)-Total		0.059	0.050		mg/L	16	20	18-MAR-20
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Barium (Ba)-Total		0.0876	0.0858		mg/L	2.1	20	18-MAR-20
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-MAR-20
Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	18-MAR-20
Cadmium (Cd)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-MAR-20
Calcium (Ca)-Total		28.0	28.5		mg/L	1.8	20	18-MAR-20
Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-MAR-20
Cesium (Cs)-Total		0.00022	0.00020		mg/L	8.8	20	18-MAR-20
Cobalt (Co)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Copper (Cu)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
Iron (Fe)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	18-MAR-20
Lead (Pb)-Total		0.00096	<0.00050	RPD-NA	mg/L	N/A	20	19-MAR-20
Magnesium (Mg)-Total		11.4	10.9		mg/L	4.3	20	18-MAR-20
Manganese (Mn)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-MAR-20
Molybdenum (Mo)-Total		0.0211	0.0210		mg/L	0.4	20	18-MAR-20
Nickel (Ni)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-MAR-20
Phosphorus (P)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	18-MAR-20
Potassium (K)-Total		69.0	67.1		mg/L	2.7	20	18-MAR-20
Rubidium (Rb)-Total		0.142	0.139		mg/L	2.6	20	18-MAR-20
Selenium (Se)-Total		0.00123	0.00126		mg/L	2.4	20	18-MAR-20
Silicon (Si)-Total		3.6	3.6		mg/L	0.5	20	18-MAR-20
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-MAR-20
Sodium (Na)-Total		160	151		mg/L	6.1	20	18-MAR-20
Strontium (Sr)-Total		0.914	0.936		mg/L	2.4	20	18-MAR-20
Sulfur (S)-Total		25.9	25.3		mg/L	2.3	25	18-MAR-20
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-MAR-20
Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	18-MAR-20
Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	25	18-MAR-20
Tin (Sn)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Titanium (Ti)-Total		<0.0030	<0.0030		mg/L			18-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
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Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-4 DUP		**WG3294192-3**						
Titanium (Ti)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-MAR-20
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Uranium (U)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-MAR-20
Vanadium (V)-Total		0.0099	0.0093		mg/L	6.3	20	18-MAR-20
Zinc (Zn)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	19-MAR-20
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	18-MAR-20
WG3294192-2 LCS								
Aluminum (Al)-Total			106.4		%		80-120	18-MAR-20
Antimony (Sb)-Total			102.4		%		80-120	18-MAR-20
Arsenic (As)-Total			101.9		%		80-120	18-MAR-20
Barium (Ba)-Total			99.7		%		80-120	18-MAR-20
Beryllium (Be)-Total			101.2		%		80-120	18-MAR-20
Bismuth (Bi)-Total			100.8		%		80-120	18-MAR-20
Boron (B)-Total			99.8		%		80-120	18-MAR-20
Cadmium (Cd)-Total			103.0		%		80-120	18-MAR-20
Calcium (Ca)-Total			99.3		%		80-120	18-MAR-20
Chromium (Cr)-Total			103.6		%		80-120	18-MAR-20
Cesium (Cs)-Total			99.3		%		80-120	18-MAR-20
Cobalt (Co)-Total			101.6		%		80-120	18-MAR-20
Copper (Cu)-Total			103.6		%		80-120	18-MAR-20
Iron (Fe)-Total			104.9		%		80-120	18-MAR-20
Lead (Pb)-Total			101.5		%		80-120	18-MAR-20
Magnesium (Mg)-Total			107.5		%		80-120	18-MAR-20
Manganese (Mn)-Total			102.1		%		80-120	18-MAR-20
Molybdenum (Mo)-Total			94.1		%		80-120	18-MAR-20
Nickel (Ni)-Total			101.1		%		80-120	18-MAR-20
Phosphorus (P)-Total			107.4		%		70-130	18-MAR-20
Potassium (K)-Total			104.0		%		80-120	18-MAR-20
Rubidium (Rb)-Total			105.7		%		80-120	18-MAR-20
Selenium (Se)-Total			103.7		%		80-120	18-MAR-20
Silicon (Si)-Total			104.6		%		60-140	18-MAR-20
Silver (Ag)-Total			100.5		%		80-120	18-MAR-20
Sodium (Na)-Total			101.2		%		80-120	18-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-2 LCS								
Strontium (Sr)-Total			104.6		%		80-120	18-MAR-20
Sulfur (S)-Total			99.6		%		80-120	18-MAR-20
Thallium (Tl)-Total			99.5		%		80-120	18-MAR-20
Tellurium (Te)-Total			98.7		%		80-120	18-MAR-20
Thorium (Th)-Total			100.3		%		70-130	18-MAR-20
Tin (Sn)-Total			101.7		%		80-120	18-MAR-20
Titanium (Ti)-Total			99.7		%		80-120	18-MAR-20
Tungsten (W)-Total			97.4		%		80-120	18-MAR-20
Uranium (U)-Total			101.8		%		80-120	18-MAR-20
Vanadium (V)-Total			104.2		%		80-120	18-MAR-20
Zinc (Zn)-Total			100.3		%		80-120	18-MAR-20
Zirconium (Zr)-Total			95.9		%		80-120	18-MAR-20
WG3294192-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	18-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	18-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	18-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	18-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	18-MAR-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	18-MAR-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	18-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	18-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	18-MAR-20
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	18-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	18-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	18-MAR-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	18-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	18-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-1 MB								
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	18-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	18-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	18-MAR-20
Silver (Ag)-Total			<0.000050		mg/L		0.00005	18-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	18-MAR-20
Strontium (Sr)-Total			<0.0010		mg/L		0.001	18-MAR-20
Sulfur (S)-Total			<0.50		mg/L		0.5	18-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	18-MAR-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	18-MAR-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	18-MAR-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	18-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	18-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-MAR-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	18-MAR-20
WG3294192-5 MS		**WG3294192-3**						
Aluminum (Al)-Total			92.2		%		70-130	18-MAR-20
Antimony (Sb)-Total			100.4		%		70-130	18-MAR-20
Arsenic (As)-Total			102.4		%		70-130	18-MAR-20
Barium (Ba)-Total			N/A	MS-B	%		-	18-MAR-20
Beryllium (Be)-Total			104.8		%		70-130	18-MAR-20
Bismuth (Bi)-Total			103.0		%		70-130	18-MAR-20
Boron (B)-Total			100.3		%		70-130	18-MAR-20
Cadmium (Cd)-Total			102.1		%		70-130	18-MAR-20
Calcium (Ca)-Total			N/A	MS-B	%		-	18-MAR-20
Chromium (Cr)-Total			103.0		%		70-130	18-MAR-20
Cesium (Cs)-Total			102.9		%		70-130	18-MAR-20
Cobalt (Co)-Total			100.3		%		70-130	18-MAR-20
Copper (Cu)-Total			N/A	MS-B	%		-	19-MAR-20
Iron (Fe)-Total			N/A	MS-B	%		-	18-MAR-20
Lead (Pb)-Total			94.4		%		70-130	19-MAR-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	18-MAR-20

Quality Control Report

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74 Berkeley Street
Toronto ON M5V 1E3
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-5 MS		**WG3294192-3**						
Manganese (Mn)-Total			104.1		%		70-130	18-MAR-20
Molybdenum (Mo)-Total			N/A	MS-B	%		-	18-MAR-20
Nickel (Ni)-Total			100.4		%		70-130	18-MAR-20
Phosphorus (P)-Total			106.8		%		70-130	18-MAR-20
Potassium (K)-Total			N/A	MS-B	%		-	18-MAR-20
Rubidium (Rb)-Total			N/A	MS-B	%		-	18-MAR-20
Selenium (Se)-Total			96.9		%		70-130	18-MAR-20
Silicon (Si)-Total			N/A	MS-B	%		-	18-MAR-20
Silver (Ag)-Total			102.2		%		70-130	18-MAR-20
Sodium (Na)-Total			N/A	MS-B	%		-	18-MAR-20
Strontium (Sr)-Total			N/A	MS-B	%		-	18-MAR-20
Sulfur (S)-Total			N/A	MS-B	%		-	18-MAR-20
Thallium (Tl)-Total			102.6		%		70-130	18-MAR-20
Tellurium (Te)-Total			104.4		%		70-130	18-MAR-20
Thorium (Th)-Total			96.0		%		70-130	18-MAR-20
Tin (Sn)-Total			99.99		%		70-130	18-MAR-20
Titanium (Ti)-Total			101.7		%		70-130	18-MAR-20
Tungsten (W)-Total			98.6		%		70-130	18-MAR-20
Uranium (U)-Total			108.8		%		70-130	18-MAR-20
Vanadium (V)-Total			101.2		%		70-130	18-MAR-20
Zirconium (Zr)-Total			95.2		%		70-130	18-MAR-20
METHANE,C2-DIS-WT	**Water**							
Batch R5046508								
WG3297036-27 DUP		**L2428856-1**						
Methane, Dissolved		358	342		ug/L	4.5	30	26-MAR-20
Ethane, Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	30	26-MAR-20
Ethene, Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	30	26-MAR-20
WG3297036-21 MB								
Methane, Dissolved			<5.0		ug/L		5	26-MAR-20
Ethane, Dissolved			<5.0		ug/L		5	26-MAR-20
Ethene, Dissolved			<5.0		ug/L		5	26-MAR-20
NH3-F-WT	**Water**							

Quality Control Report

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74 Berkeley Street
Toronto ON M5V 1E3
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT	**Water**							
Batch R5032874								
WG3294306-3 DUP		**L2428868-3**						
Ammonia, Total (as N)		0.312	0.308		mg/L	1.1	20	19-MAR-20
WG3294306-2 LCS								
Ammonia, Total (as N)			105.8		%		85-115	19-MAR-20
WG3294306-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	19-MAR-20
WG3294306-4 MS		**L2428868-3**						
Ammonia, Total (as N)			N/A	MS-B	%		-	19-MAR-20
NO2-IC-WT	**Water**							
Batch R5033253								
WG3295249-9 DUP		**WG3295249-8**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-7 LCS								
Nitrite (as N)			103.3		%		90-110	19-MAR-20
WG3295249-6 MB								
Nitrite (as N)			<0.010		mg/L		0.01	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Nitrite (as N)			105.3		%		75-125	19-MAR-20
NO3-IC-WT	**Water**							
Batch R5033253								
WG3295249-9 DUP		**WG3295249-8**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-7 LCS								
Nitrate (as N)			103.3		%		90-110	19-MAR-20
WG3295249-6 MB								
Nitrate (as N)			<0.020		mg/L		0.02	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Nitrate (as N)			102.3		%		75-125	19-MAR-20
PH-WT	**Water**							
Batch R5030706								
WG3294720-4 DUP		**WG3294720-3**						
pH		8.04	8.06	J	pH units	0.02	0.2	18-MAR-20
WG3294720-2 LCS								
pH			7.00		pH units		6.9-7.1	18-MAR-20
PO4-DO-COL-WT	**Water**							

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-COL-WT	**Water**							
Batch R5029360								
WG3294575-7 DUP		**L2428868-3**						
Orthophosphate-Dissolved (as P)		0.0116	0.0102		mg/L	13	20	18-MAR-20
WG3294575-6 LCS								
Orthophosphate-Dissolved (as P)			105.3		%		80-120	18-MAR-20
WG3294575-5 MB								
Orthophosphate-Dissolved (as P)			<0.0030		mg/L		0.003	18-MAR-20
WG3294575-8 MS		**L2428868-3**						
Orthophosphate-Dissolved (as P)			103.3		%		70-130	18-MAR-20
REDOX-POTENTIAL-WT	**Water**							
Batch R5038911								
WG3298682-1 CRM		**WT-REDOX**						
Redox Potential			100.2		%		80-120	25-MAR-20
WG3298682-2 DUP		**L2428856-1**						
Redox Potential		280	280		mV	0.0	25	25-MAR-20
SO4-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-9 DUP		**WG3295249-8**						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-7 LCS								
Sulfate (SO4)			104.9		%		90-110	19-MAR-20
WG3295249-6 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Sulfate (SO4)			107.3		%		75-125	19-MAR-20
SOLIDS-TDS-WT	**Water**							
Batch R5033648								
WG3296080-3 DUP		**L2428155-1**						
Total Dissolved Solids		436	445		mg/L	2.0	20	20-MAR-20
WG3296080-2 LCS								
Total Dissolved Solids			97.2		%		85-115	20-MAR-20
WG3296080-1 MB								
Total Dissolved Solids			<10		mg/L		10	20-MAR-20
SULPHIDE-WT	**Water**							
Batch R5029229								
WG3294260-3 DUP		**L2427860-1**						
Sulphide (as S)		17.6	17.6		mg/L	0.4	20	18-MAR-20
WG3294260-2 LCS								

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SULPHIDE-WT	**Water**							
Batch R5029229								
WG3294260-2 LCS								
Sulphide (as S)			94.6		%		75-125	18-MAR-20
WG3294260-1 MB								
Sulphide (as S)			<0.018		mg/L		0.018	18-MAR-20
WG3294260-4 MS		**L2427860-1**						
Sulphide (as S)			N/A	MS-B	%		-	18-MAR-20
TC-MF-WT	**Water**							
Batch R5031747								
WG3294402-3 DUP		**L2428856-1**						
Total Coliforms		0	<10	RPD-NA	CFU/100mL	N/A	65	18-MAR-20
WG3294402-1 MB								
Total Coliforms			0		CFU/100mL		1	18-MAR-20
TCB-MF-WT	**Water**							
Batch R5031747								
WG3294402-3 DUP		**L2428856-1**						
Total Coliform Background		0	<10	RPD-NA	CFU/100mL	N/A	65	18-MAR-20
WG3294402-1 MB								
Total Coliform Background			0		CFU/100mL		1	18-MAR-20
TURBIDITY-WT	**Water**							
Batch R5029066								
WG3294313-3 DUP		**L2428868-3**						
Turbidity		3.80	4.01		NTU	5.4	15	18-MAR-20
WG3294313-2 LCS								
Turbidity			101.5		%		85-115	18-MAR-20
WG3294313-1 MB								
Turbidity			<0.10		NTU		0.1	18-MAR-20

Quality Control Report

Workorder: L2428868 Report Date: 01-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2428868 Report Date: 01-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Redox Potential							
	1	16-MAR-20 09:45	25-MAR-20 00:00	0.25	206	hours	EHTR-FM
	2	16-MAR-20 10:45	25-MAR-20 00:00	0.25	205	hours	EHTR-FM
	3	16-MAR-20 11:40	25-MAR-20 00:00	0.25	204	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2428868 were received on 17-MAR-20 14:00.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2428868-COFC

COC Number: 17 -

Page of

Report To	Contact and company name below will appear on the final report
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Adrian Lo
Phone:	(647) 643-9377
	Company address below will appear on the final report
Street:	74 Berkeley St.
City/Province:	Toronto, Ontario
Postal Code:	M5A 2w7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	~~adrian@pecg.ca~~ adrian.lo@pecg.ca
Email 2	
Email 3	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	accounting@pecg.ca
Email 2	

Project Information	
ALS Account # / Quote #:	24400/Q71932
Job #:	1704602
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): L2428868

ALS Contact: **Sampler:**

- Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	POTABILITY	METHANE	FECAL COLIFORM BACTERIA	HYDROGEN SULPHIDE	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	MW6 Sample 1 ST	16-03-20	9:45	GW	✓	✓	✓	✓			9
	MW6 Sample 2 ST	16-03-20	10:45	GW	✓	✓	✓	✓			9
	MW6 Sample 3 ST	16-03-20	11:40	GW	✓	✓	✓	✓			9
	~~MW6 Sample 4 ST~~	~~16-03-20~~		~~GW~~	X	X	X	X			~~9~~

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Durham Sanitary/Storm + PWQO

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☑ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
7.8				6.6			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Adrian Lo	Date: FEB-3-2020	Time: (EST)	Received by:	Date: March 17/20	Time: 14:00	Received by:	Date: mar 17/20	Time: 1830

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
ATTN: ADRIAN LO
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 19-MAR-20
Report Date: 01-APR-20 06:33 (MT)
Version: FINAL

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2429968

Project P.O. #: NOT SUBMITTED
Job Reference: 1704602
C of C Numbers:
Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

			ALS ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
			Sampled Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
			Sampled Time	11:30	23:30	11:30	23:30
			Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Grouping	Analyte	Unit					
Physical Tests	Colour, Apparent	CU	PEHR 22.6	21.1	26.3	24.0
	Conductivity	umhos/cm	455	459	462	461
	pH	pH units	7.95	7.96	7.97	7.99
	Redox Potential	mV	PEHR 278	PEHR 280	PEHR 275	PEHR 284
	Total Dissolved Solids	mg/L	DLDS 258	DLDS 257	DLDS 274	DLDS 274
	Turbidity	NTU	PEHR 5.60	PEHT 4.66	4.69	4.23
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3)	mg/L	255	248	250	252
	Alkalinity, Carbonate (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3)	mg/L	<2.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3)	mg/L	255	248	250	252
	Ammonia, Total (as N)	mg/L	0.306	0.306	0.305	0.304
	Bromide (Br)	mg/L	DLM <0.10	<0.10	<0.10	<0.10
	Chloride (Cl)	mg/L	5.26	5.36	5.45	5.50
	Computed Conductivity	uS/cm	411	409	407	412
	Conductivity % Difference	%	-10	-11	-13	-11
	Fluoride (F)	mg/L	0.132	0.131	0.129	0.130
	Hardness (as CaCO3)	mg/L	229	231	228	231
	Ion Balance	%	116	121	118	119
	Langelier Index		1	1	1	1
	Nitrate (as N)	mg/L	<0.020	<0.020	<0.020	<0.020
	Nitrite (as N)	mg/L	<0.010	<0.010	<0.010	<0.010
	Saturation pH	pH	7.27	7.28	7.28	7.27
	Orthophosphate-Dissolved (as P)	mg/L	0.0121	0.0108	0.0080	0.0089
	TDS (Calculated)	mg/L	248	244	244	247

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

		ALS ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
		Sampled Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
		Sampled Time	11:30	23:30	11:30	23:30
		Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Grouping	Analyte	Unit				
Anions and Nutrients	Sulfate (SO4)	mg/L	<0.30	<0.30	<0.30	<0.30
	Sulphide (as S)	mg/L	0.019	<0.018	<0.018	<0.018
	Sulphide (as H2S)	mg/L	0.020	<0.019	<0.019	<0.019
	Anion Sum	me/L	4.38	4.26	4.29	4.34
	Cation Sum	me/L	5.09	5.15	5.06	5.15
	Cation - Anion Balance	%	8	9	8	9
Inorganic Parameters	Silica	mg/L	27.0	28.2	26.7	27.0
Bacteriological Tests	E. Coli	CFU/100 mL	PEHR 0	PEHT 0	0	0
	Fecal Coliforms	CFU/100 mL	PEHR 0	PEHT 0	0	0
	Total Coliform Background	CFU/100 mL	PEHR 0	PEHT 0	0	0
	Total Coliforms	CFU/100 mL	PEHR 0	PEHT 0	0	0
Metals	Sodium Adsorption Ratio	SAR	0.31	0.31	0.31	0.31
Total Metals	Aluminum (Al)-Total	mg/L	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total	mg/L	0.00023	0.00023	0.00020	0.00022
	Barium (Ba)-Total	mg/L	0.221	0.224	0.222	0.225
	Beryllium (Be)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total	mg/L	0.000082	<0.000050	<0.000050	<0.000050
	Boron (B)-Total	mg/L	0.029	0.029	0.029	0.029
	Cadmium (Cd)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
	Calcium (Ca)-Total	mg/L	54.8	55.0	54.4	55.5
	Cesium (Cs)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

		ALS ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
		Sampled Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
		Sampled Time	11:30	23:30	11:30	23:30
		Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Grouping	Analyte	Unit				
Total Metals	Cobalt (Co)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Total	mg/L	0.743	0.752	0.727	0.738
	Lead (Pb)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010
	Magnesium (Mg)-Total	mg/L	22.4	22.9	22.3	22.5
	Manganese (Mn)-Total	mg/L	0.0559	0.0563	0.0545	0.0556
	Molybdenum (Mo)-Total	mg/L	0.000663	0.000654	0.000648	0.000641
	Nickel (Ni)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total	mg/L	0.059	0.074	0.072	0.061
	Potassium (K)-Total	mg/L	1.26	1.30	1.23	1.28
	Rubidium (Rb)-Total	mg/L	0.00046	0.00043	0.00044	0.00045
	Selenium (Se)-Total	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total	mg/L	12.6	13.2	12.5	12.6
	Silver (Ag)-Total	mg/L	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Total	mg/L	10.7	10.9	10.6	10.8
	Strontium (Sr)-Total	mg/L	0.366	0.362	0.363	0.363
	Sulfur (S)-Total	mg/L	<0.50	<0.50	<0.50	<0.50
	Tellurium (Te)-Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total	mg/L	<0.000010	<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
	Tungsten (W)-Total	mg/L	<0.00010	<0.00010	<0.00010	<0.00010
	Uranium (U)-Total	mg/L	0.000030	0.000029	0.000027	0.000026

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

		ALS ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
		Sampled Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
		Sampled Time	11:30	23:30	11:30	23:30
		Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Grouping	Analyte	Unit				
Total Metals	Vanadium (V)-Total	mg/L	<0.00050	<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total	mg/L	<0.0030	<0.0030	<0.0030	<0.0030
	Zirconium (Zr)-Total	mg/L	<0.00030	<0.00030	<0.00030	<0.00030
Organic Parameters	Ethane, Dissolved	ug/L	<5.0	<5.0	<5.0	<5.0
	Ethene, Dissolved	ug/L	<5.0	<5.0	<5.0	<5.0
	Methane, Dissolved	ug/L	494	486	654	434

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Summary of Guideline Exceedances: [Combined] - Ontario PWQO+SANITARY-SEWERS

Guideline ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Region of Durham Sanitary Sewer ByLaw						
(No parameter exceedances)						
Region of Durham Storm Sewer By-Law						
(No parameter exceedances)						
Ontario PWQO						
(No parameter exceedances)						
L2429968-1	MW6 PT 24HR	Total Metals	Iron (Fe)-Total	0.743	0.3	mg/L
			Phosphorus (P)-Total	0.059	0.01	mg/L
L2429968-2	MW6 PT 36HR	Total Metals	Iron (Fe)-Total	0.752	0.3	mg/L
			Phosphorus (P)-Total	0.074	0.01	mg/L
L2429968-3	MW6 PT 48HR	Total Metals	Iron (Fe)-Total	0.727	0.3	mg/L
			Phosphorus (P)-Total	0.072	0.01	mg/L
L2429968-4	MW6 PT 60HR	Total Metals	Iron (Fe)-Total	0.738	0.3	mg/L
			Phosphorus (P)-Total	0.061	0.01	mg/L

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-SPEC-PCT-WT	Water	Automated Speciated Alkalinity	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-IC-N-WT	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

COLOUR-APPARENT-WT	Water	Colour	APHA 2120

Apparent Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method after sample decanting. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EC-MF-WT	Water	E. coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 C for 24 – 2 h. Method ID: WT-TM-1200

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

ETL-SAR-CALC-WT	Water	Sodium Adsorption Ratio	Calculation
ETL-SILICA-CALC-WT	Water	Calculate from SI-TOT-WT	EPA 200.8
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

FC-MF-WT	Water	Fecal Coliforms	SM 9222D

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mFC agar and incubated at 24–2h@44.5–0.2 C. Method ID: WT-TM-1200

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation	APHA 1030E, 2330B, 2510A
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

METHANE,C2-DIS-WT	Water	Methane, Ethane and Ethene	EPA REGION 1, NATATTEN.WPD REV. 1

Water samples are collected in headspace vials containing sodium bisulfate preservative. A volume of water is withdrawn from the un-capped vial. After shaking & equilibration, the vial headspace is analyzed for target gases by GC/FID. The concentration of the gas in water is proportional to the partial pressure of the gas above the liquid & is calculated using Henry's Law.

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PO4-DO-COL-WT	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

REDOX-POTENTIAL-WT	Water	Redox Potential	APHA 2580

This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

S2-T>H2S-CALC-WT	Water	Total Sulphide Calculated as H2S	Calculation

This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

SULPHIDE-WT	Water	Sulphide (as S)	APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TC-MF-WT	Water	Total Coliforms	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5 C for 24–2h. Method ID: WT-TM-1200

TCB-MF-WT	Water	Total Coliform Background	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5 C for 24–2h. Method ID: WT-TM-1200.

TURBIDITY-WT	Water	Turbidity	APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-SPEC-PCT-WT	**Water**							
Batch R5033584								
WG3296559-4 DUP		**WG3296559-3**						
Alkalinity, Total (as CaCO3)		252	254		mg/L	0.5	20	20-MAR-20
Alkalinity, Bicarbonate (as CaCO3)		252	254		mg/L	0.5	20	20-MAR-20
Alkalinity, Carbonate (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	20-MAR-20
Alkalinity, Hydroxide (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3296559-2 LCS								
Alkalinity, Total (as CaCO3)			103.7		%		85-115	20-MAR-20
WG3296559-1 MB								
Alkalinity, Total (as CaCO3)			<2.0		mg/L		2	20-MAR-20
Alkalinity, Bicarbonate (as CaCO3)			<2.0		mg/L		2	20-MAR-20
Alkalinity, Carbonate (as CaCO3)			<2.0		mg/L		2	20-MAR-20
Alkalinity, Hydroxide (as CaCO3)			<2.0		mg/L		2	20-MAR-20
BR-IC-N-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295966-12 LCS								
Bromide (Br)			98.5		%		85-115	20-MAR-20
WG3295966-11 MB								
Bromide (Br)			<0.10		mg/L		0.1	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Bromide (Br)			97.1		%		75-125	20-MAR-20
CL-IC-N-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Chloride (Cl)		5.36	5.36		mg/L	0.0	20	20-MAR-20
WG3295966-12 LCS								
Chloride (Cl)			104.1		%		90-110	20-MAR-20
WG3295966-11 MB								
Chloride (Cl)			<0.50		mg/L		0.5	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Chloride (Cl)			104.1		%		75-125	20-MAR-20
COLOUR-APPARENT-WT	**Water**							
Batch R5032809								
WG3295725-3 DUP		**L2429968-1**						
Colour, Apparent		22.6	23.6		CU	4.3	20	19-MAR-20
WG3295725-2 LCS								

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
COLOUR-APPARENT-WT	**Water**							
Batch R5032809								
WG3295725-2 LCS								
Colour, Apparent			99.0		%		85-115	19-MAR-20
WG3295725-1 MB								
Colour, Apparent			<2.0		CU		2	19-MAR-20
EC-MF-WT	**Water**							
Batch R5033536								
WG3295922-1 MB								
E. Coli			0		CFU/100mL		1	20-MAR-20
EC-WT	**Water**							
Batch R5033584								
WG3296559-4 DUP		**WG3296559-3**						
Conductivity		461	461		umhos/cm	0.0	10	20-MAR-20
WG3296559-2 LCS								
Conductivity			100.6		%		90-110	20-MAR-20
WG3296559-1 MB								
Conductivity			<3.0		umhos/cm		3	20-MAR-20
F-IC-N-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Fluoride (F)		0.131	0.130		mg/L	1.1	20	20-MAR-20
WG3295966-12 LCS								
Fluoride (F)			103.2		%		90-110	20-MAR-20
WG3295966-11 MB								
Fluoride (F)			<0.020		mg/L		0.02	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Fluoride (F)			99.1		%		75-125	20-MAR-20
FC-MF-WT	**Water**							
Batch R5033537								
WG3295906-3 DUP		**L2429968-4**						
Fecal Coliforms		0	0		CFU/100mL	0.0	65	20-MAR-20
WG3295906-1 MB								
Fecal Coliforms			0		CFU/100mL		1	20-MAR-20
MET-T-CCMS-WT	**Water**							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-4 DUP		**WG3295776-3**						
Aluminum (Al)-Total		0.075	0.066		mg/L	13	20	20-MAR-20
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Barium (Ba)-Total		0.0891	0.0907		mg/L	1.8	20	20-MAR-20
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-20
Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	20-MAR-20
Cadmium (Cd)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAR-20
Calcium (Ca)-Total		97.8	98.6		mg/L	0.8	20	20-MAR-20
Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
Cesium (Cs)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAR-20
Cobalt (Co)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Copper (Cu)-Total		0.0056	0.0051		mg/L	9.4	20	20-MAR-20
Iron (Fe)-Total		0.19	0.18		mg/L	4.3	20	20-MAR-20
Lead (Pb)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-20
Magnesium (Mg)-Total		13.5	13.6		mg/L	0.3	20	20-MAR-20
Manganese (Mn)-Total		0.0093	0.0103		mg/L	9.5	20	20-MAR-20
Molybdenum (Mo)-Total		0.00457	0.00468		mg/L	2.5	20	20-MAR-20
Nickel (Ni)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
Phosphorus (P)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	20-MAR-20
Potassium (K)-Total		19.1	19.3		mg/L	1.2	20	20-MAR-20
Rubidium (Rb)-Total		0.0170	0.0172		mg/L	1.4	20	20-MAR-20
Selenium (Se)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-20
Silicon (Si)-Total		3.5	3.6		mg/L	1.2	20	20-MAR-20
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-20
Sodium (Na)-Total		997	993		mg/L	0.4	20	20-MAR-20
Strontium (Sr)-Total		1.71	1.70		mg/L	0.5	20	20-MAR-20
Sulfur (S)-Total		43.4	43.1		mg/L	0.7	25	20-MAR-20
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAR-20
Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	20-MAR-20
Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	25	20-MAR-20
Tin (Sn)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Titanium (Ti)-Total		<0.0030	<0.0030		mg/L			20-MAR-20

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-4 DUP		**WG3295776-3**						
Titanium (Ti)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	20-MAR-20
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Uranium (U)-Total		0.00133	0.00132		mg/L	1.4	20	20-MAR-20
Vanadium (V)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
Zinc (Zn)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	20-MAR-20
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295776-2 LCS								
Aluminum (Al)-Total			100.6		%		80-120	20-MAR-20
Antimony (Sb)-Total			103.2		%		80-120	20-MAR-20
Arsenic (As)-Total			97.5		%		80-120	20-MAR-20
Barium (Ba)-Total			99.2		%		80-120	20-MAR-20
Beryllium (Be)-Total			103.2		%		80-120	20-MAR-20
Bismuth (Bi)-Total			103.3		%		80-120	20-MAR-20
Boron (B)-Total			100.2		%		80-120	20-MAR-20
Cadmium (Cd)-Total			99.9		%		80-120	20-MAR-20
Calcium (Ca)-Total			104.7		%		80-120	20-MAR-20
Chromium (Cr)-Total			97.7		%		80-120	20-MAR-20
Cesium (Cs)-Total			104.7		%		80-120	20-MAR-20
Cobalt (Co)-Total			95.1		%		80-120	20-MAR-20
Copper (Cu)-Total			96.3		%		80-120	20-MAR-20
Iron (Fe)-Total			99.5		%		80-120	20-MAR-20
Lead (Pb)-Total			105.6		%		80-120	20-MAR-20
Magnesium (Mg)-Total			101.3		%		80-120	20-MAR-20
Manganese (Mn)-Total			99.2		%		80-120	20-MAR-20
Molybdenum (Mo)-Total			103.2		%		80-120	20-MAR-20
Nickel (Ni)-Total			95.6		%		80-120	20-MAR-20
Phosphorus (P)-Total			100.1		%		70-130	20-MAR-20
Potassium (K)-Total			97.6		%		80-120	20-MAR-20
Rubidium (Rb)-Total			99.1		%		80-120	20-MAR-20
Selenium (Se)-Total			98.7		%		80-120	20-MAR-20
Silicon (Si)-Total			101.7		%		60-140	20-MAR-20
Silver (Ag)-Total			103.4		%		80-120	20-MAR-20
Sodium (Na)-Total			97.0		%		80-120	20-MAR-20

Quality Control Report

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74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-2 LCS								
Strontium (Sr)-Total			109.9		%		80-120	20-MAR-20
Sulfur (S)-Total			101.1		%		80-120	20-MAR-20
Thallium (Tl)-Total			104.1		%		80-120	20-MAR-20
Tellurium (Te)-Total			97.2		%		80-120	20-MAR-20
Thorium (Th)-Total			105.7		%		70-130	20-MAR-20
Tin (Sn)-Total			98.4		%		80-120	20-MAR-20
Titanium (Ti)-Total			98.2		%		80-120	20-MAR-20
Tungsten (W)-Total			105.3		%		80-120	20-MAR-20
Uranium (U)-Total			107.8		%		80-120	20-MAR-20
Vanadium (V)-Total			98.6		%		80-120	20-MAR-20
Zinc (Zn)-Total			96.0		%		80-120	20-MAR-20
Zirconium (Zr)-Total			100.2		%		80-120	20-MAR-20
WG3295776-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	20-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	20-MAR-20
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	20-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-MAR-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	20-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-MAR-20
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	20-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	20-MAR-20

Quality Control Report

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Toronto ON M5V 1E3
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-1 MB								
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	20-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	20-MAR-20
Silver (Ag)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	20-MAR-20
Strontium (Sr)-Total			<0.0010		mg/L		0.001	20-MAR-20
Sulfur (S)-Total			<0.50		mg/L		0.5	20-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	20-MAR-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-MAR-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-MAR-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	20-MAR-20
WG3295776-5 MS		**WG3295776-3**						
Aluminum (Al)-Total			85.6		%		70-130	20-MAR-20
Antimony (Sb)-Total			98.9		%		70-130	20-MAR-20
Arsenic (As)-Total			102.4		%		70-130	20-MAR-20
Barium (Ba)-Total			N/A	MS-B	%		-	20-MAR-20
Beryllium (Be)-Total			97.2		%		70-130	20-MAR-20
Bismuth (Bi)-Total			100.4		%		70-130	20-MAR-20
Boron (B)-Total			N/A	MS-B	%		-	20-MAR-20
Cadmium (Cd)-Total			98.7		%		70-130	20-MAR-20
Calcium (Ca)-Total			N/A	MS-B	%		-	20-MAR-20
Chromium (Cr)-Total			97.1		%		70-130	20-MAR-20
Cesium (Cs)-Total			103.0		%		70-130	20-MAR-20
Cobalt (Co)-Total			94.6		%		70-130	20-MAR-20
Copper (Cu)-Total			88.9		%		70-130	20-MAR-20
Iron (Fe)-Total			N/A	MS-B	%		-	20-MAR-20
Lead (Pb)-Total			99.7		%		70-130	20-MAR-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	20-MAR-20

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-5 MS		**WG3295776-3**						
Manganese (Mn)-Total			100.6		%		70-130	20-MAR-20
Molybdenum (Mo)-Total			102.7		%		70-130	20-MAR-20
Nickel (Ni)-Total			92.9		%		70-130	20-MAR-20
Phosphorus (P)-Total			115.0		%		70-130	20-MAR-20
Potassium (K)-Total			N/A	MS-B	%		-	20-MAR-20
Rubidium (Rb)-Total			N/A	MS-B	%		-	20-MAR-20
Selenium (Se)-Total			96.5		%		70-130	20-MAR-20
Silicon (Si)-Total			N/A	MS-B	%		-	20-MAR-20
Silver (Ag)-Total			96.5		%		70-130	20-MAR-20
Sodium (Na)-Total			N/A	MS-B	%		-	20-MAR-20
Strontium (Sr)-Total			N/A	MS-B	%		-	20-MAR-20
Sulfur (S)-Total			N/A	MS-B	%		-	20-MAR-20
Thallium (Tl)-Total			100.0		%		70-130	20-MAR-20
Tellurium (Te)-Total			85.9		%		70-130	20-MAR-20
Thorium (Th)-Total			96.6		%		70-130	20-MAR-20
Tin (Sn)-Total			97.0		%		70-130	20-MAR-20
Titanium (Ti)-Total			95.2		%		70-130	20-MAR-20
Tungsten (W)-Total			103.8		%		70-130	20-MAR-20
Uranium (U)-Total			N/A	MS-B	%		-	20-MAR-20
Vanadium (V)-Total			103.4		%		70-130	20-MAR-20
Zinc (Zn)-Total			80.6		%		70-130	20-MAR-20
Zirconium (Zr)-Total			98.3		%		70-130	20-MAR-20
METHANE,C2-DIS-WT	**Water**							
Batch R5046508								
WG3297036-27 DUP		**L2428856-1**						
Methane, Dissolved		358	342		ug/L	4.5	30	26-MAR-20
Ethane, Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	30	26-MAR-20
Ethene, Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	30	26-MAR-20
WG3297036-21 MB								
Methane, Dissolved			<5.0		ug/L		5	26-MAR-20
Ethane, Dissolved			<5.0		ug/L		5	26-MAR-20
Ethene, Dissolved			<5.0		ug/L		5	26-MAR-20
NH3-F-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT	**Water**							
Batch R5034079								
WG3295968-3 DUP		**L2429968-4**						
Ammonia, Total (as N)		0.304	0.307		mg/L	0.9	20	20-MAR-20
WG3295968-2 LCS								
Ammonia, Total (as N)			109.3		%		85-115	20-MAR-20
WG3295968-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	20-MAR-20
WG3295968-4 MS		**L2429968-4**						
Ammonia, Total (as N)			N/A	MS-B	%		-	20-MAR-20
NO2-IC-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295966-12 LCS								
Nitrite (as N)			103.3		%		90-110	20-MAR-20
WG3295966-11 MB								
Nitrite (as N)			<0.010		mg/L		0.01	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Nitrite (as N)			103.3		%		75-125	20-MAR-20
NO3-IC-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295966-12 LCS								
Nitrate (as N)			103.1		%		90-110	20-MAR-20
WG3295966-11 MB								
Nitrate (as N)			<0.020		mg/L		0.02	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Nitrate (as N)			99.6		%		75-125	20-MAR-20
PH-WT	**Water**							
Batch R5033584								
WG3296559-4 DUP		**WG3296559-3**						
pH		7.99	7.99	J	pH units	0.00	0.2	20-MAR-20
WG3296559-2 LCS								
pH			7.01		pH units		6.9-7.1	20-MAR-20
PO4-DO-COL-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-COL-WT	**Water**							
Batch R5033096								
WG3295969-3 DUP		**L2429143-3**						
Orthophosphate-Dissolved (as P)		1.98	2.03		mg/L	2.2	20	20-MAR-20
WG3295969-2 LCS								
Orthophosphate-Dissolved (as P)			106.1		%		80-120	20-MAR-20
WG3295969-1 MB								
Orthophosphate-Dissolved (as P)			<0.0030		mg/L		0.003	20-MAR-20
WG3295969-4 MS		**L2429143-3**						
Orthophosphate-Dissolved (as P)			N/A	MS-B	%		-	20-MAR-20
REDOX-POTENTIAL-WT	**Water**							
Batch R5038911								
WG3298682-1 CRM		**WT-REDOX**						
Redox Potential			100.2		%		80-120	25-MAR-20
WG3298682-2 DUP		**L2428856-1**						
Redox Potential		280	280		mV	0.0	25	25-MAR-20
SO4-IC-N-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295966-12 LCS								
Sulfate (SO4)			105.3		%		90-110	20-MAR-20
WG3295966-11 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Sulfate (SO4)			106.2		%		75-125	20-MAR-20
SOLIDS-TDS-WT	**Water**							
Batch R5034165								
WG3296551-3 DUP		**L2428856-3**						
Total Dissolved Solids		261	259		mg/L	0.8	20	21-MAR-20
WG3296551-2 LCS								
Total Dissolved Solids			101.1		%		85-115	21-MAR-20
WG3296551-1 MB								
Total Dissolved Solids			<10		mg/L		10	21-MAR-20
Batch R5034187								
WG3296553-3 DUP		**L2429968-2**						
Total Dissolved Solids		257	263		mg/L	2.1	20	21-MAR-20
WG3296553-2 LCS								
Total Dissolved Solids			98.8		%		85-115	21-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-WT	**Water**							
Batch R5034187								
WG3296553-1 MB								
Total Dissolved Solids			<10		mg/L		10	21-MAR-20
Batch R5034266								
WG3296554-3 DUP		**L2429968-4**						
Total Dissolved Solids		274	274		mg/L	0.0	20	21-MAR-20
WG3296554-2 LCS								
Total Dissolved Solids			100.0		%		85-115	21-MAR-20
WG3296554-1 MB								
Total Dissolved Solids			<10		mg/L		10	21-MAR-20
SULPHIDE-WT	**Water**							
Batch R5033975								
WG3296979-3 DUP		**L2429712-1**						
Sulphide (as S)		<0.018	<0.018	RPD-NA	mg/L	N/A	20	23-MAR-20
WG3296979-2 LCS								
Sulphide (as S)			95.5		%		75-125	23-MAR-20
WG3296979-1 MB								
Sulphide (as S)			<0.018		mg/L		0.018	23-MAR-20
WG3296979-4 MS		**L2429712-1**						
Sulphide (as S)			88.4		%		65-135	23-MAR-20
TC-MF-WT	**Water**							
Batch R5033539								
WG3295918-3 DUP		**L2429968-3**						
Total Coliforms		0	<10	RPD-NA	CFU/100mL	N/A	65	20-MAR-20
WG3295918-1 MB								
Total Coliforms			0		CFU/100mL		1	20-MAR-20
TCB-MF-WT	**Water**							
Batch R5033539								
WG3295918-3 DUP		**L2429968-3**						
Total Coliform Background		0	<10	RPD-NA	CFU/100mL	N/A	65	20-MAR-20
WG3295918-1 MB								
Total Coliform Background			0		CFU/100mL		1	20-MAR-20
TURBIDITY-WT	**Water**							
Batch R5032979								
WG3295983-3 DUP		**L2429968-3**						
Turbidity		4.69	4.58		NTU	2.4	15	20-MAR-20
WG3295983-2 LCS								

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-WT	**Water**							
Batch R5032979								
WG3295983-2 LCS								
Turbidity			99.0		%		85-115	20-MAR-20
WG3295983-1 MB								
Turbidity			<0.10		NTU		0.1	20-MAR-20

Quality Control Report

Workorder: L2429968 Report Date: 01-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2429968 Report Date: 01-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Redox Potential							
	1	17-MAR-20 11:30	25-MAR-20 00:00	0.25	180	hours	EHTR-FM
	2	17-MAR-20 23:30	25-MAR-20 00:00	0.25	168	hours	EHTR-FM
	3	18-MAR-20 11:30	25-MAR-20 00:00	0.25	156	hours	EHTR-FM
	4	18-MAR-20 23:30	25-MAR-20 00:00	0.25	144	hours	EHTR-FM
Turbidity							
	1	17-MAR-20 11:30	20-MAR-20 10:00	48	71	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 10:00	48	59	hours	EHTL
Bacteriological Tests							
E. coli							
	1	17-MAR-20 11:30	20-MAR-20 08:40	48	69	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 08:40	48	57	hours	EHTL
Fecal Coliforms							
	1	17-MAR-20 11:30	20-MAR-20 08:40	48	69	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 08:40	48	57	hours	EHTL
Total Coliforms							
	1	17-MAR-20 11:30	20-MAR-20 08:40	48	69	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 08:40	48	57	hours	EHTL
Total Coliform Background							
	1	17-MAR-20 11:30	20-MAR-20 08:40	48	69	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 08:40	48	57	hours	EHTL

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2429968 were received on 19-MAR-20 16:21.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

L2429968-COFC

COC Number: 17 -

Page of

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Adrian Lo
Phone:	(647) 643-9377
	Company address below will appear on the final report
Street:	74 Berkeley St.
City/Province:	Toronto, Ontario
Postal Code:	M5A 2w7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax adrian@pecg.ca

Email 2 adrian-lo@pecg.ca

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax accounting@pecg.ca

Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	24400/Q71932
Job #:	1704602
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): L2429968RD

ALS Contact: Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	POTABILITY	METHANE	FECAL COLIFORM BACTERIA	HYDROGEN SULPHIDE	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	MW6 PT [redacted] 24 HR	17-3-20	11:30	GW	✓	✓	✓	✓			9
	MW6 PT [redacted] 36 HR	17-3-20	23:30	GW	✓	✓	✓	✓			9
	" PT " 48 HR	18-3-20	11:30	GW	✓	✓	✓	✓			
	" " 60 HR	18-3-20	23:30	GW	✓	✓	✓	✓			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Durham Sanitary/Storm + PWQO

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☒ Ice Cubes ☒ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
6.0				2.9			

SHIPMENT RELEASE (client use)

Released by: Adrian Lo Date: 19-3-20 Time:

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date: March 19/20 Time: 21

FINAL SHIPMENT RECEPTION (lab use only)

Received by: Date: 3-19-2020 Time: 1900

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
ATTN: ADRIAN LO
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 17-MAR-20
Report Date: 01-APR-20 06:25 (MT)
Version: FINAL

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2428856

Project P.O. #: NOT SUBMITTED
Job Reference: 1704602
C of C Numbers:
Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

			ALS ID	L2428856-1	L2428856-2	L2428856-3
			Sampled Date	16-MAR-20	16-MAR-20	16-MAR-20
			Sampled Time	12:30	17:30	23:30
			Sample ID	MW6 PT 1HR	MW6 PT 6HR	MW6 PT 12HR
Grouping	Analyte	Unit				
Physical Tests	Colour, Apparent	CU		13.7	14.7	14.6
	Conductivity	umhos/cm		460	455	458
	pH	pH units		8.04	8.08	8.06
	Redox Potential	mV		PEHR 280	PEHR 284	PEHR 277
	Total Dissolved Solids	mg/L		DLDS 246	DLDS 246	DLDS 261
	Turbidity	NTU		PEHT 3.49	4.87	4.01
Anions and Nutrients	Alkalinity, Bicarbonate (as CaCO3)	mg/L		247	254	254
	Alkalinity, Carbonate (as CaCO3)	mg/L		<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3)	mg/L		<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3)	mg/L		247	254	254
	Ammonia, Total (as N)	mg/L		0.306	0.308	0.310
	Bromide (Br)	mg/L		<0.10	<0.10	<0.10
	Chloride (Cl)	mg/L		4.89	4.98	5.05
	Computed Conductivity	uS/cm		423	427	431
	Conductivity % Difference	%		-8	-6	-6
	Fluoride (F)	mg/L		0.138	0.134	0.137
	Hardness (as CaCO3)	mg/L		247	247	251
	Ion Balance	%		130	126	127
	Langelier Index			1	1	1
	Nitrate (as N)	mg/L		<0.020	<0.020	<0.020
	Nitrite (as N)	mg/L		<0.010	<0.010	<0.010
	Saturation pH	pH		7.27	7.25	7.24
	Orthophosphate-Dissolved (as P)	mg/L		0.0119	0.0105	0.0086
	TDS (Calculated)	mg/L		249	253	255

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

		ALS ID	L2428856-1	L2428856-2	L2428856-3
		Sampled Date	16-MAR-20	16-MAR-20	16-MAR-20
		Sampled Time	12:30	17:30	23:30
		Sample ID	MW6 PT 1HR	MW6 PT 6HR	MW6 PT 12HR
Grouping	Analyte	Unit			
Anions and Nutrients	Sulfate (SO4)	mg/L	<0.30	<0.30	<0.30
	Sulphide (as S)	mg/L	<0.018	<0.018	<0.018
	Sulphide (as H2S)	mg/L	<0.019	<0.019	<0.019
	Anion Sum	me/L	4.24	4.36	4.37
	Cation Sum	me/L	5.49	5.48	5.57
	Cation - Anion Balance	%	13	11	12
Inorganic Parameters	Silica	mg/L	29.1	28.6	30.0
Bacteriological Tests	E. Coli	CFU/100 mL	0	0	0
	Fecal Coliforms	CFU/100 mL	0	0	0
	Total Coliform Background	CFU/100 mL	0	0	0
	Total Coliforms	CFU/100 mL	0	0	0
Metals	Sodium Adsorption Ratio	SAR	0.31	0.31	0.32
Total Metals	Aluminum (Al)-Total	mg/L	<0.010	<0.010	0.024
	Antimony (Sb)-Total	mg/L	<0.00010	<0.00010	<0.00010
	Arsenic (As)-Total	mg/L	0.00031	0.00029	0.00030
	Barium (Ba)-Total	mg/L	0.226	0.228	0.236
	Beryllium (Be)-Total	mg/L	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Total	mg/L	<0.000050	<0.000050	<0.000050
	Boron (B)-Total	mg/L	0.031	0.031	0.031
	Cadmium (Cd)-Total	mg/L	<0.000010	<0.000010	<0.000010
	Calcium (Ca)-Total	mg/L	57.7	58.0	59.8
	Cesium (Cs)-Total	mg/L	<0.000010	<0.000010	<0.000010
	Chromium (Cr)-Total	mg/L	<0.00050	<0.00050	<0.00050

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

			ALS ID	L2428856-1	L2428856-2	L2428856-3
			Sampled Date	16-MAR-20	16-MAR-20	16-MAR-20
			Sampled Time	12:30	17:30	23:30
			Sample ID	MW6 PT 1HR	MW6 PT 6HR	MW6 PT 12HR
Grouping	Analyte	Unit				
Total Metals	Cobalt (Co)-Total	mg/L		<0.00010	<0.00010	<0.00010
	Copper (Cu)-Total	mg/L		<0.0010	<0.0010	<0.0010
	Iron (Fe)-Total	mg/L		0.809	0.802	0.858
	Lead (Pb)-Total	mg/L		<0.00010	0.00106	<0.00010
	Magnesium (Mg)-Total	mg/L		25.0	24.7	24.6
	Manganese (Mn)-Total	mg/L		0.0590	0.0589	0.0632
	Molybdenum (Mo)-Total	mg/L		0.000691	0.000669	0.000646
	Nickel (Ni)-Total	mg/L		<0.00050	<0.00050	<0.00050
	Phosphorus (P)-Total	mg/L		0.066	0.068	0.080
	Potassium (K)-Total	mg/L		1.32	1.32	1.35
	Rubidium (Rb)-Total	mg/L		0.00051	0.00050	0.00054
	Selenium (Se)-Total	mg/L		<0.000050	<0.000050	<0.000050
	Silicon (Si)-Total	mg/L		13.6	13.4	14.0
	Silver (Ag)-Total	mg/L		<0.000050	<0.000050	<0.000050
	Sodium (Na)-Total	mg/L		11.4	11.3	11.5
	Strontium (Sr)-Total	mg/L		0.387	0.390	0.393
	Sulfur (S)-Total	mg/L		<0.50	<0.50	<0.50
	Tellurium (Te)-Total	mg/L		<0.00020	<0.00020	<0.00020
	Thallium (Tl)-Total	mg/L		<0.000010	<0.000010	<0.000010
	Thorium (Th)-Total	mg/L		<0.00010	<0.00010	<0.00010
	Tin (Sn)-Total	mg/L		<0.00010	0.00013	<0.00010
	Titanium (Ti)-Total	mg/L		<0.00030	<0.00030	0.00116
	Tungsten (W)-Total	mg/L		<0.00010	<0.00010	<0.00010
	Uranium (U)-Total	mg/L		0.000032	0.000034	0.000037

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

WATER - [Combined] - Ontario PWQO+SANITARY-SEWERS

			ALS ID	L2428856-1	L2428856-2	L2428856-3
			Sampled Date	16-MAR-20	16-MAR-20	16-MAR-20
			Sampled Time	12:30	17:30	23:30
			Sample ID	MW6 PT 1HR	MW6 PT 6HR	MW6 PT 12HR
Grouping	Analyte	Unit				
Total Metals	Vanadium (V)-Total	mg/L		<0.00050	<0.00050	<0.00050
	Zinc (Zn)-Total	mg/L		<0.0030	0.0153	<0.0030
	Zirconium (Zr)-Total	mg/L		<0.00030	<0.00030	<0.00030
Organic Parameters	Ethane, Dissolved	ug/L		<5.0	<5.0	<5.0
	Ethene, Dissolved	ug/L		<5.0	<5.0	<5.0
	Methane, Dissolved	ug/L		358	381	464

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Summary of Guideline Exceedances: [Combined] - Ontario PWQO+SANITARY-SEWERS

Guideline ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Region of Durham Sanitary Sewer ByLaw						
(No parameter exceedances)						
Region of Durham Storm Sewer By-Law						
(No parameter exceedances)						
Ontario PWQO						
(No parameter exceedances)						
L2428856-1	MW6 PT 1HR	Total Metals	Iron (Fe)-Total	0.809	0.3	mg/L
			Phosphorus (P)-Total	0.066	0.01	mg/L
L2428856-2	MW6 PT 6HR	Total Metals	Iron (Fe)-Total	0.802	0.3	mg/L
			Lead (Pb)-Total	0.00106	0.001	mg/L
			Phosphorus (P)-Total	0.068	0.01	mg/L
L2428856-3	MW6 PT 12HR	Total Metals	Aluminum (Al)-Total	0.024	0.015	mg/L
			Iron (Fe)-Total	0.858	0.3	mg/L
			Phosphorus (P)-Total	0.080	0.01	mg/L

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-SPEC-PCT-WT	Water	Automated Speciated Alkalinity	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-IC-N-WT	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

COLOUR-APPARENT-WT	Water	Colour	APHA 2120

Apparent Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method after sample decanting. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EC-MF-WT	Water	E. coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 C for 24 – 2 h. Method ID: WT-TM-1200

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

ETL-SAR-CALC-WT	Water	Sodium Adsorption Ratio	Calculation
ETL-SILICA-CALC-WT	Water	Calculate from SI-TOT-WT	EPA 200.8
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

FC-MF-WT	Water	Fecal Coliforms	SM 9222D

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mFC agar and incubated at 24–2h@44.5–0.2 C. Method ID: WT-TM-1200

IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation	APHA 1030E, 2330B, 2510A

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

METHANE,C2-DIS-WT	Water	Methane, Ethane and Ethene	EPA REGION 1, NATATTEN.WPD REV. 1

Water samples are collected in headspace vials containing sodium bisulfate preservative. A volume of water is withdrawn from the un-capped vial. After shaking & equilibration, the vial headspace is analyzed for target gases by GC/FID. The concentration of the gas in water is proportional to the partial pressure of the gas above the liquid & is calculated using Henry's Law.

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PO4-DO-COL-WT	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

REDOX-POTENTIAL-WT	Water	Redox Potential	APHA 2580

This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

S2-T>H2S-CALC-WT	Water	Total Sulphide Calculated as H2S	Calculation

This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

SULPHIDE-WT	Water	Sulphide (as S)	APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TC-MF-WT	Water	Total Coliforms	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5 C for 24–2h. Method ID: WT-TM-1200

TCB-MF-WT	Water	Total Coliform Background	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5 C for 24–2h. Method ID: WT-TM-1200.

TURBIDITY-WT	Water	Turbidity	APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Workorder: L2428856 Report Date: 01-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-SPEC-PCT-WT	**Water**							
Batch R5030706								
WG3294720-4 DUP		**WG3294720-3**						
Alkalinity, Total (as CaCO3)		247	250		mg/L	1.2	20	18-MAR-20
Alkalinity, Bicarbonate (as CaCO3)		247	250		mg/L	1.2	20	18-MAR-20
Alkalinity, Carbonate (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	18-MAR-20
Alkalinity, Hydroxide (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	18-MAR-20
WG3294720-2 LCS								
Alkalinity, Total (as CaCO3)			103.6		%		85-115	18-MAR-20
WG3294720-1 MB								
Alkalinity, Total (as CaCO3)			<2.0		mg/L		2	18-MAR-20
Alkalinity, Bicarbonate (as CaCO3)			<2.0		mg/L		2	18-MAR-20
Alkalinity, Carbonate (as CaCO3)			<2.0		mg/L		2	18-MAR-20
Alkalinity, Hydroxide (as CaCO3)			<2.0		mg/L		2	18-MAR-20
BR-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-4 DUP		**WG3295249-3**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-9 DUP		**WG3295249-8**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-2 LCS								
Bromide (Br)			101.9		%		85-115	19-MAR-20
WG3295249-7 LCS								
Bromide (Br)			102.5		%		85-115	19-MAR-20
WG3295249-1 MB								
Bromide (Br)			<0.10		mg/L		0.1	19-MAR-20
WG3295249-6 MB								
Bromide (Br)			<0.10		mg/L		0.1	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Bromide (Br)			97.7		%		75-125	19-MAR-20
WG3295249-5 MS		**WG3295249-3**						
Bromide (Br)			98.6		%		75-125	19-MAR-20
CL-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-4 DUP		**WG3295249-3**						
Chloride (Cl)		56.5	56.5		mg/L	0.0	20	19-MAR-20
WG3295249-9 DUP		**WG3295249-8**						
Chloride (Cl)		5.03	5.03		mg/L	0.0	20	19-MAR-20
WG3295249-2 LCS								

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-2 LCS								
Chloride (Cl)			103.8		%		90-110	19-MAR-20
WG3295249-7 LCS								
Chloride (Cl)			103.8		%		90-110	19-MAR-20
WG3295249-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	19-MAR-20
WG3295249-6 MB								
Chloride (Cl)			<0.50		mg/L		0.5	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Chloride (Cl)			105.4		%		75-125	19-MAR-20
WG3295249-5 MS		**WG3295249-3**						
Chloride (Cl)			99.4		%		75-125	19-MAR-20
COLOUR-APPARENT-WT	**Water**							
Batch R5030529								
WG3294800-3 DUP		**L2428868-1**						
Colour, Apparent		14.9	14.7		CU	1.7	20	18-MAR-20
WG3294800-2 LCS								
Colour, Apparent			97.9		%		85-115	18-MAR-20
WG3294800-1 MB								
Colour, Apparent			<2.0		CU		2	18-MAR-20
EC-MF-WT	**Water**							
Batch R5031740								
WG3294400-1 MB								
E. Coli			0		CFU/100mL		1	18-MAR-20
EC-WT	**Water**							
Batch R5030706								
WG3294720-4 DUP		**WG3294720-3**						
Conductivity		460	452		umhos/cm	1.8	10	18-MAR-20
WG3294720-2 LCS								
Conductivity			101.6		%		90-110	18-MAR-20
WG3294720-1 MB								
Conductivity			<3.0		umhos/cm		3	18-MAR-20
F-IC-N-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-4 DUP		**WG3295249-3**						
Fluoride (F)		0.058	0.057		mg/L	1.2	20	19-MAR-20
WG3295249-9 DUP		**WG3295249-8**						
Fluoride (F)		0.134	0.134		mg/L	0.5	20	19-MAR-20
WG3295249-2 LCS								
Fluoride (F)			103.3		%		90-110	19-MAR-20
WG3295249-7 LCS								
Fluoride (F)			103.1		%		90-110	19-MAR-20
WG3295249-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	19-MAR-20
WG3295249-6 MB								
Fluoride (F)			<0.020		mg/L		0.02	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Fluoride (F)			99.2		%		75-125	19-MAR-20
WG3295249-5 MS		**WG3295249-3**						
Fluoride (F)			99.99		%		75-125	19-MAR-20
FC-MF-WT	**Water**							
Batch R5031749								
WG3294399-3 DUP		**L2428856-3**						
Fecal Coliforms		0	<10	RPD-NA	CFU/100mL	N/A	65	18-MAR-20
WG3294399-1 MB								
Fecal Coliforms			0		CFU/100mL		1	18-MAR-20
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-4 DUP		**WG3294192-3**						
Aluminum (Al)-Total		0.059	0.050		mg/L	16	20	18-MAR-20
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Barium (Ba)-Total		0.0876	0.0858		mg/L	2.1	20	18-MAR-20
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-MAR-20
Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	18-MAR-20
Cadmium (Cd)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	18-MAR-20
Calcium (Ca)-Total		28.0	28.5		mg/L	1.8	20	18-MAR-20
Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-MAR-20
Cesium (Cs)-Total		0.00022	0.00020		mg/L	8.8	20	18-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-4 DUP		**WG3294192-3**						
Cobalt (Co)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Copper (Cu)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
Iron (Fe)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	18-MAR-20
Lead (Pb)-Total		0.00096	<0.00050	RPD-NA	mg/L	N/A	20	19-MAR-20
Magnesium (Mg)-Total		11.4	10.9		mg/L	4.3	20	18-MAR-20
Manganese (Mn)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-MAR-20
Molybdenum (Mo)-Total		0.0211	0.0210		mg/L	0.4	20	18-MAR-20
Nickel (Ni)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	18-MAR-20
Phosphorus (P)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	18-MAR-20
Potassium (K)-Total		69.0	67.1		mg/L	2.7	20	18-MAR-20
Rubidium (Rb)-Total		0.142	0.139		mg/L	2.6	20	18-MAR-20
Selenium (Se)-Total		0.00123	0.00126		mg/L	2.4	20	18-MAR-20
Silicon (Si)-Total		3.6	3.6		mg/L	0.5	20	18-MAR-20
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-MAR-20
Sodium (Na)-Total		160	151		mg/L	6.1	20	18-MAR-20
Strontium (Sr)-Total		0.914	0.936		mg/L	2.4	20	18-MAR-20
Sulfur (S)-Total		25.9	25.3		mg/L	2.3	25	18-MAR-20
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-MAR-20
Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	18-MAR-20
Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	25	18-MAR-20
Tin (Sn)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Titanium (Ti)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	18-MAR-20
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-MAR-20
Uranium (U)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-MAR-20
Vanadium (V)-Total		0.0099	0.0093		mg/L	6.3	20	18-MAR-20
Zinc (Zn)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	19-MAR-20
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	18-MAR-20
WG3294192-2 LCS								
Aluminum (Al)-Total			106.4		%		80-120	18-MAR-20
Antimony (Sb)-Total			102.4		%		80-120	18-MAR-20
Arsenic (As)-Total			101.9		%		80-120	18-MAR-20
Barium (Ba)-Total			99.7		%		80-120	18-MAR-20
Beryllium (Be)-Total			101.2		%		80-120	18-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-2 LCS								
Bismuth (Bi)-Total			100.8		%		80-120	18-MAR-20
Boron (B)-Total			99.8		%		80-120	18-MAR-20
Cadmium (Cd)-Total			103.0		%		80-120	18-MAR-20
Calcium (Ca)-Total			99.3		%		80-120	18-MAR-20
Chromium (Cr)-Total			103.6		%		80-120	18-MAR-20
Cesium (Cs)-Total			99.3		%		80-120	18-MAR-20
Cobalt (Co)-Total			101.6		%		80-120	18-MAR-20
Copper (Cu)-Total			103.6		%		80-120	18-MAR-20
Iron (Fe)-Total			104.9		%		80-120	18-MAR-20
Lead (Pb)-Total			101.5		%		80-120	18-MAR-20
Magnesium (Mg)-Total			107.5		%		80-120	18-MAR-20
Manganese (Mn)-Total			102.1		%		80-120	18-MAR-20
Molybdenum (Mo)-Total			94.1		%		80-120	18-MAR-20
Nickel (Ni)-Total			101.1		%		80-120	18-MAR-20
Phosphorus (P)-Total			107.4		%		70-130	18-MAR-20
Potassium (K)-Total			104.0		%		80-120	18-MAR-20
Rubidium (Rb)-Total			105.7		%		80-120	18-MAR-20
Selenium (Se)-Total			103.7		%		80-120	18-MAR-20
Silicon (Si)-Total			104.6		%		60-140	18-MAR-20
Silver (Ag)-Total			100.5		%		80-120	18-MAR-20
Sodium (Na)-Total			101.2		%		80-120	18-MAR-20
Strontium (Sr)-Total			104.6		%		80-120	18-MAR-20
Sulfur (S)-Total			99.6		%		80-120	18-MAR-20
Thallium (Tl)-Total			99.5		%		80-120	18-MAR-20
Tellurium (Te)-Total			98.7		%		80-120	18-MAR-20
Thorium (Th)-Total			100.3		%		70-130	18-MAR-20
Tin (Sn)-Total			101.7		%		80-120	18-MAR-20
Titanium (Ti)-Total			99.7		%		80-120	18-MAR-20
Tungsten (W)-Total			97.4		%		80-120	18-MAR-20
Uranium (U)-Total			101.8		%		80-120	18-MAR-20
Vanadium (V)-Total			104.2		%		80-120	18-MAR-20
Zinc (Zn)-Total			100.3		%		80-120	18-MAR-20
Zirconium (Zr)-Total			95.9		%		80-120	18-MAR-20
WG3294192-1 MB								

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	18-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	18-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	18-MAR-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	18-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	18-MAR-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	18-MAR-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	18-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	18-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	18-MAR-20
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	18-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	18-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	18-MAR-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	18-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	18-MAR-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	18-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	18-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	18-MAR-20
Silver (Ag)-Total			<0.000050		mg/L		0.00005	18-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	18-MAR-20
Strontium (Sr)-Total			<0.0010		mg/L		0.001	18-MAR-20
Sulfur (S)-Total			<0.50		mg/L		0.5	18-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	18-MAR-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	18-MAR-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	18-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-1 MB								
Tungsten (W)-Total			<0.00010		mg/L		0.0001	18-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	18-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	18-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-MAR-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	18-MAR-20
WG3294192-5 MS		**WG3294192-3**						
Aluminum (Al)-Total			92.2		%		70-130	18-MAR-20
Antimony (Sb)-Total			100.4		%		70-130	18-MAR-20
Arsenic (As)-Total			102.4		%		70-130	18-MAR-20
Barium (Ba)-Total			N/A	MS-B	%		-	18-MAR-20
Beryllium (Be)-Total			104.8		%		70-130	18-MAR-20
Bismuth (Bi)-Total			103.0		%		70-130	18-MAR-20
Boron (B)-Total			100.3		%		70-130	18-MAR-20
Cadmium (Cd)-Total			102.1		%		70-130	18-MAR-20
Calcium (Ca)-Total			N/A	MS-B	%		-	18-MAR-20
Chromium (Cr)-Total			103.0		%		70-130	18-MAR-20
Cesium (Cs)-Total			102.9		%		70-130	18-MAR-20
Cobalt (Co)-Total			100.3		%		70-130	18-MAR-20
Copper (Cu)-Total			N/A	MS-B	%		-	19-MAR-20
Iron (Fe)-Total			N/A	MS-B	%		-	18-MAR-20
Lead (Pb)-Total			94.4		%		70-130	19-MAR-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	18-MAR-20
Manganese (Mn)-Total			104.1		%		70-130	18-MAR-20
Molybdenum (Mo)-Total			N/A	MS-B	%		-	18-MAR-20
Nickel (Ni)-Total			100.4		%		70-130	18-MAR-20
Phosphorus (P)-Total			106.8		%		70-130	18-MAR-20
Potassium (K)-Total			N/A	MS-B	%		-	18-MAR-20
Rubidium (Rb)-Total			N/A	MS-B	%		-	18-MAR-20
Selenium (Se)-Total			96.9		%		70-130	18-MAR-20
Silicon (Si)-Total			N/A	MS-B	%		-	18-MAR-20
Silver (Ag)-Total			102.2		%		70-130	18-MAR-20
Sodium (Na)-Total			N/A	MS-B	%		-	18-MAR-20
Strontium (Sr)-Total			N/A	MS-B	%		-	18-MAR-20
Sulfur (S)-Total			N/A	MS-B	%		-	18-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5029331								
WG3294192-5 MS		**WG3294192-3**						
Thallium (Tl)-Total			102.6		%		70-130	18-MAR-20
Tellurium (Te)-Total			104.4		%		70-130	18-MAR-20
Thorium (Th)-Total			96.0		%		70-130	18-MAR-20
Tin (Sn)-Total			99.99		%		70-130	18-MAR-20
Titanium (Ti)-Total			101.7		%		70-130	18-MAR-20
Tungsten (W)-Total			98.6		%		70-130	18-MAR-20
Uranium (U)-Total			108.8		%		70-130	18-MAR-20
Vanadium (V)-Total			101.2		%		70-130	18-MAR-20
Zirconium (Zr)-Total			95.2		%		70-130	18-MAR-20
METHANE,C2-DIS-WT	**Water**							
Batch R5046508								
WG3297036-27 DUP		**L2428856-1**						
Methane, Dissolved		358	342		ug/L	4.5	30	26-MAR-20
Ethane, Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	30	26-MAR-20
Ethene, Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	30	26-MAR-20
WG3297036-21 MB								
Methane, Dissolved			<5.0		ug/L		5	26-MAR-20
Ethane, Dissolved			<5.0		ug/L		5	26-MAR-20
Ethene, Dissolved			<5.0		ug/L		5	26-MAR-20
NH3-F-WT	**Water**							
Batch R5032874								
WG3294306-3 DUP		**L2428868-3**						
Ammonia, Total (as N)		0.312	0.308		mg/L	1.1	20	19-MAR-20
WG3294306-2 LCS								
Ammonia, Total (as N)			105.8		%		85-115	19-MAR-20
WG3294306-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	19-MAR-20
WG3294306-4 MS		**L2428868-3**						
Ammonia, Total (as N)			N/A	MS-B	%		-	19-MAR-20
NO2-IC-WT	**Water**							
Batch R5033253								
WG3295249-4 DUP		**WG3295249-3**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-9 DUP		**WG3295249-8**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	19-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-WT	**Water**							
Batch R5033253								
WG3295249-2 LCS								
Nitrite (as N)			104.0		%		90-110	19-MAR-20
WG3295249-7 LCS								
Nitrite (as N)			103.3		%		90-110	19-MAR-20
WG3295249-1 MB								
Nitrite (as N)			<0.010		mg/L		0.01	19-MAR-20
WG3295249-6 MB								
Nitrite (as N)			<0.010		mg/L		0.01	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Nitrite (as N)			105.3		%		75-125	19-MAR-20
WG3295249-5 MS		**WG3295249-3**						
Nitrite (as N)			100.9		%		75-125	19-MAR-20
NO3-IC-WT	**Water**							
Batch R5033253								
WG3295249-4 DUP		**WG3295249-3**						
Nitrate (as N)		0.052	0.052		mg/L	0.0	20	19-MAR-20
WG3295249-9 DUP		**WG3295249-8**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-2 LCS								
Nitrate (as N)			103.5		%		90-110	19-MAR-20
WG3295249-7 LCS								
Nitrate (as N)			103.3		%		90-110	19-MAR-20
WG3295249-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	19-MAR-20
WG3295249-6 MB								
Nitrate (as N)			<0.020		mg/L		0.02	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Nitrate (as N)			102.3		%		75-125	19-MAR-20
WG3295249-5 MS		**WG3295249-3**						
Nitrate (as N)			98.8		%		75-125	19-MAR-20
PH-WT	**Water**							
Batch R5030706								
WG3294720-4 DUP		**WG3294720-3**						
pH		8.04	8.06	J	pH units	0.02	0.2	18-MAR-20
WG3294720-2 LCS								
pH			7.00		pH units		6.9-7.1	18-MAR-20
PO4-DO-COL-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-COL-WT	**Water**							
Batch R5029360								
WG3294575-3 DUP		**L2427684-1**						
Orthophosphate-Dissolved (as P)		0.0184	0.0178		mg/L	3.0	20	18-MAR-20
WG3294575-7 DUP		**L2428868-3**						
Orthophosphate-Dissolved (as P)		0.0116	0.0102		mg/L	13	20	18-MAR-20
WG3294575-2 LCS								
Orthophosphate-Dissolved (as P)			108.2		%		80-120	18-MAR-20
WG3294575-6 LCS								
Orthophosphate-Dissolved (as P)			105.3		%		80-120	18-MAR-20
WG3294575-1 MB								
Orthophosphate-Dissolved (as P)			<0.0030		mg/L		0.003	18-MAR-20
WG3294575-5 MB								
Orthophosphate-Dissolved (as P)			<0.0030		mg/L		0.003	18-MAR-20
WG3294575-4 MS		**L2427684-1**						
Orthophosphate-Dissolved (as P)			101.4		%		70-130	18-MAR-20
WG3294575-8 MS		**L2428868-3**						
Orthophosphate-Dissolved (as P)			103.3		%		70-130	18-MAR-20
REDOX-POTENTIAL-WT	**Water**							
Batch R5038911								
WG3298682-1 CRM		**WT-REDOX**						
Redox Potential			100.2		%		80-120	25-MAR-20
WG3298682-2 DUP		**L2428856-1**						
Redox Potential		280	280		mV	0.0	25	25-MAR-20
SO4-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-4 DUP		**WG3295249-3**						
Sulfate (SO4)		16.9	16.9		mg/L	0.0	20	19-MAR-20
WG3295249-9 DUP		**WG3295249-8**						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	19-MAR-20
WG3295249-2 LCS								
Sulfate (SO4)			105.0		%		90-110	19-MAR-20
WG3295249-7 LCS								
Sulfate (SO4)			104.9		%		90-110	19-MAR-20
WG3295249-1 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	19-MAR-20
WG3295249-6 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	19-MAR-20
WG3295249-10 MS		**WG3295249-8**						
Sulfate (SO4)			107.3		%		75-125	19-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT	**Water**							
Batch R5033253								
WG3295249-5 MS		**WG3295249-3**						
Sulfate (SO4)			102.3		%		75-125	19-MAR-20
SOLIDS-TDS-WT	**Water**							
Batch R5033648								
WG3296080-3 DUP		**L2428155-1**						
Total Dissolved Solids		436	445		mg/L	2.0	20	20-MAR-20
WG3296080-2 LCS								
Total Dissolved Solids			97.2		%		85-115	20-MAR-20
WG3296080-1 MB								
Total Dissolved Solids			<10		mg/L		10	20-MAR-20
Batch R5034165								
WG3296551-3 DUP		**L2428856-3**						
Total Dissolved Solids		261	259		mg/L	0.8	20	21-MAR-20
WG3296551-2 LCS								
Total Dissolved Solids			101.1		%		85-115	21-MAR-20
WG3296551-1 MB								
Total Dissolved Solids			<10		mg/L		10	21-MAR-20
SULPHIDE-WT	**Water**							
Batch R5029229								
WG3294260-3 DUP		**L2427860-1**						
Sulphide (as S)		17.6	17.6		mg/L	0.4	20	18-MAR-20
WG3294260-2 LCS								
Sulphide (as S)			94.6		%		75-125	18-MAR-20
WG3294260-1 MB								
Sulphide (as S)			<0.018		mg/L		0.018	18-MAR-20
WG3294260-4 MS		**L2427860-1**						
Sulphide (as S)			N/A	MS-B	%		-	18-MAR-20
TC-MF-WT	**Water**							
Batch R5031747								
WG3294402-3 DUP		**L2428856-1**						
Total Coliforms		0	<10	RPD-NA	CFU/100mL	N/A	65	18-MAR-20
WG3294402-1 MB								
Total Coliforms			0		CFU/100mL		1	18-MAR-20
TCB-MF-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TCB-MF-WT	**Water**							
Batch R5031747								
WG3294402-3 DUP		**L2428856-1**						
Total Coliform Background		0	<10	RPD-NA	CFU/100mL	N/A	65	18-MAR-20
WG3294402-1 MB								
Total Coliform Background			0		CFU/100mL		1	18-MAR-20
TURBIDITY-WT	**Water**							
Batch R5029066								
WG3294313-3 DUP		**L2428868-3**						
Turbidity		3.80	4.01		NTU	5.4	15	18-MAR-20
WG3294313-2 LCS								
Turbidity			101.5		%		85-115	18-MAR-20
WG3294313-1 MB								
Turbidity			<0.10		NTU		0.1	18-MAR-20

Quality Control Report

Workorder: L2428856 Report Date: 01-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2428856 Report Date: 01-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Redox Potential							
	1	16-MAR-20 12:30	25-MAR-20 00:00	0.25	204	hours	EHTR-FM
	2	16-MAR-20 17:30	25-MAR-20 00:00	0.25	198	hours	EHTR-FM
	3	16-MAR-20 23:30	25-MAR-20 00:00	0.25	192	hours	EHTR-FM

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2428856 were received on 17-MAR-20 14:10.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L2428856-COFC

COC Number: 17 -

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Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select ...	Contact your AM to confirm all E&P TATs (surcharges may apply)
Company:	Palmer Environmental Consulting Group Inc.	Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	Regular [R]	☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Adrian Lo	Quality Control (QC) Report with Report ☑ YES ☐ NO	PRIORITY (Business Days)	4 day [P4-20%] ☐ / 3 day [P3-25%] ☐ / 2 day [P2-50%] ☐
Phone:	(647) 643-9377	☑ Compare Results to Criteria on Report - provide details below if box checked	EMERGENCY	1 Business day [E1 - 100%] ☐ / Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm
Street:	74 Berkeley St.	Email 1 or Fax ~~adrian@pecg.ca~~	For tests that can not be performed according to the service level selected, you will be contacted.	
City/Province:	Toronto, Ontario	Email 2 Adrian.l@pecg.ca		
Postal Code:	M5A 2w7	Email 3		
Invoice To	Same as Report To ☐ YES ☐ NO	**Invoice Distribution**		
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX		
Company:		Email 1 or Fax accounting@pecg.ca		
Contact:		Email 2		

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	24400/Q71932	AFE/Cost Center:	PO#
Job #:	1704602	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):	L2428856	ALS Contact:	Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	POTABILITY	METHANE	FECAL COLIFORM BACTERIA	HYDROGEN SULPHIDE	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	MW6 PT 1HR	16-03-20	12:30	GW	✓	✓	✓	✓			9
	MW6 PT 6HR	16-03-20	~~12:30~~	GW	✓	✓	✓	✓			9
	MW6 PT 12 HR	16-03-20	~~23:30~~	GW	✓	✓	✓	✓			9
	~~MW6 PT 24 HR~~										9
	~~MW6 PT 36 HR~~		17:30								
	~~MW6 PT 48 HR~~		23:30								
	~~MW6 PT 60 HR~~										

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	Durham Sanitary/Storm + PWQO
Are samples for human consumption/ use? ☐ YES ☑ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact ☑ Yes ☐ No ☐

Cooling Initiated ☑

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
7.8				4.6			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Adrian Lo	Date: 16-03-2020	Time: 14:10	Received by:	Date: March 17/20	Time: 14:10	Received by:	Date: Mar 17/20	Time: 1830

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
ATTN: ADRIAN LO
74 Berkeley Street
Toronto ON M5V 1E3

Date Received: 19-MAR-20
Report Date: 01-APR-20 06:33 (MT)
Version: FINAL

Client Phone: 647-795-8153

Certificate of Analysis

Lab Work Order #: L2429968

Project P.O. #: NOT SUBMITTED
Job Reference: 1704602
C of C Numbers:
Legal Site Desc:

Jennifer Barkshire-Paterson
Account Manager

Summary of Guideline Exceedances

Guideline ALS ID	Client ID	Grouping	Analyte	Result	Guideline Limit	Unit
Ontario Drinking Water Regulation (ODWQS) JAN.1,2020 - Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)						
(No parameter exceedances)						
Ontario Drinking Water Regulation (ODWQS) JAN.1,2020 - Ontario DW Aesthetic and Operational Guidelines (June, 2006)						
L2429968-1	MW6 PT H24R	Physical Tests	Colour, Apparent	22.6	5	CU
			Turbidity	5.60	5	NTU
		Anions and Nutrients	Hardness (as CaCO3)	229	80-100	mg/L
		Total Metals	Iron (Fe)-Total	0.743	0.3	mg/L
			Manganese (Mn)-Total	0.0559	0.05	mg/L
L2429968-2	MW6 PT 36HR	Physical Tests	Colour, Apparent	21.1	5	CU
		Anions and Nutrients	Hardness (as CaCO3)	231	80-100	mg/L
		Total Metals	Iron (Fe)-Total	0.752	0.3	mg/L
			Manganese (Mn)-Total	0.0563	0.05	mg/L
L2429968-3	MW6 PT 48HR	Physical Tests	Colour, Apparent	26.3	5	CU
		Anions and Nutrients	Hardness (as CaCO3)	228	80-100	mg/L
		Total Metals	Iron (Fe)-Total	0.727	0.3	mg/L
			Manganese (Mn)-Total	0.0545	0.05	mg/L
L2429968-4	MW6 PT 60HR	Physical Tests	Colour, Apparent	24.0	5	CU
		Anions and Nutrients	Hardness (as CaCO3)	231	80-100	mg/L
		Total Metals	Iron (Fe)-Total	0.738	0.3	mg/L
			Manganese (Mn)-Total	0.0556	0.05	mg/L

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Physical Tests - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
				Sample Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
				Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Colour, Apparent	CU	-	5		22.6 PEHR	21.1	26.3	24.0
Conductivity	umhos/cm	-	-		455	459	462	461
pH	pH units	-	6.5-8.5		7.95	7.96	7.97	7.99
Redox Potential	mV	-	-		278 PEHR	280 PEHR	275 PEHR	284 PEHR
Total Dissolved Solids	mg/L	-	500		258 DLDS	257 DLDS	274 DLDS	274 DLDS
Turbidity	NTU	-	5		5.60 PEHR	4.66 PEHT	4.69	4.23

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Anions and Nutrients - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID L2429968-1 / Sample Date 17-MAR-20 / Sample ID MW6 PT H24R	Lab ID L2429968-2 / Sample Date 17-MAR-20 / Sample ID MW6 PT 36HR	Lab ID L2429968-3 / Sample Date 18-MAR-20 / Sample ID MW6 PT 48HR	Lab ID L2429968-4 / Sample Date 18-MAR-20 / Sample ID MW6 PT 60HR
Alkalinity, Bicarbonate (as CaCO3)	mg/L	-	-	255	248	250	252
Alkalinity, Carbonate (as CaCO3)	mg/L	-	-	<2.0	<2.0	<2.0	<2.0
Alkalinity, Hydroxide (as CaCO3)	mg/L	-	-	<2.0	<2.0	<2.0	<2.0
Alkalinity, Total (as CaCO3)	mg/L	-	30-500	255	248	250	252
Ammonia, Total (as N)	mg/L	-	-	0.306	0.306	0.305	0.304
Bromide (Br)	mg/L	-	-	<0.10 DLM	<0.10	<0.10	<0.10
Chloride (Cl)	mg/L	-	250	5.26	5.36	5.45	5.50
Computed Conductivity	uS/cm	-	-	411	409	407	412
Conductivity % Difference	%	-	-	-10	-11	-13	-11
Fluoride (F)	mg/L	1.5	-	0.132	0.131	0.129	0.130
Hardness (as CaCO3)	mg/L	-	80-100	229	231	228	231
Ion Balance	%	-	-	116	121	118	119
Langelier Index		-	-	1	1	1	1
Nitrate (as N)	mg/L	10	-	<0.020	<0.020	<0.020	<0.020
Nitrite (as N)	mg/L	1	-	<0.010	<0.010	<0.010	<0.010
Saturation pH	pH	-	-	7.27	7.28	7.28	7.27
Orthophosphate-Dissolved (as P)	mg/L	-	-	0.0121	0.0108	0.0080	0.0089
TDS (Calculated)	mg/L	-	-	248	244	244	247
Sulfate (SO4)	mg/L	-	500	<0.30	<0.30	<0.30	<0.30
Sulphide (as S)	mg/L	-	0.05	0.019	<0.018	<0.018	<0.018
Sulphide (as H2S)	mg/L	-	0.05	0.020	<0.019	<0.019	<0.019
Anion Sum	me/L	-	-	4.38	4.26	4.29	4.34
Cation Sum	me/L	-	-	5.09	5.15	5.06	5.15
Cation - Anion Balance	%	-	-	8	9	8	9

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Inorganic Parameters - WATER

			Lab ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
			Sample Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
			Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Analyte	Unit	Guide Limits #1	#2				
Silica	mg/L	-	-	27.0	28.2	26.7	27.0

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Bacteriological Tests - WATER

				Lab ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
				Sample Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
				Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Analyte	Unit	Guide Limits #1	#2					
E. Coli	CFU/100mL	0	-	0 PEHR	0 PEHT	0	0
Fecal Coliforms	CFU/100mL	0	-	0 PEHR	0 PEHT	0	0
Total Coliform Background	CFU/100mL	-	-	0 PEHR	0 PEHT	0	0
Total Coliforms	CFU/100mL	0	-	0 PEHR	0 PEHT	0	0

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Metals - WATER

			Lab ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
			Sample Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
			Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Analyte	Unit	Guide Limits #1	#2				
Sodium Adsorption Ratio	SAR	-	-	0.31	0.31	0.31	0.31

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Total Metals - WATER

Analyte	Unit	Guide Limits #1	Guide Limits #2	Lab ID L2429968-1	L2429968-2	L2429968-3	L2429968-4
				Sample Date 17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
				Sample ID MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Aluminum (Al)-Total	mg/L	-	0.1	<0.010	<0.010	<0.010	<0.010
Antimony (Sb)-Total	mg/L	0.006	-	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic (As)-Total	mg/L	0.0100	-	0.00023	0.00023	0.00020	0.00022
Barium (Ba)-Total	mg/L	1	-	0.221	0.224	0.222	0.225
Beryllium (Be)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth (Bi)-Total	mg/L	-	-	0.000082	<0.000050	<0.000050	<0.000050
Boron (B)-Total	mg/L	5	-	0.029	0.029	0.029	0.029
Cadmium (Cd)-Total	mg/L	0.005	-	<0.000010	<0.000010	<0.000010	<0.000010
Calcium (Ca)-Total	mg/L	-	-	54.8	55.0	54.4	55.5
Cesium (Cs)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010
Chromium (Cr)-Total	mg/L	0.05	-	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Total	mg/L	-	1	<0.0010	<0.0010	<0.0010	<0.0010
Iron (Fe)-Total	mg/L	-	0.3	0.743	0.752	0.727	0.738
Lead (Pb)-Total	mg/L	0.01	-	<0.00010	<0.00010	<0.00010	<0.00010
Magnesium (Mg)-Total	mg/L	-	-	22.4	22.9	22.3	22.5
Manganese (Mn)-Total	mg/L	-	0.05	0.0559	0.0563	0.0545	0.0556
Molybdenum (Mo)-Total	mg/L	-	-	0.000663	0.000654	0.000648	0.000641
Nickel (Ni)-Total	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus (P)-Total	mg/L	-	-	0.059	0.074	0.072	0.061
Potassium (K)-Total	mg/L	-	-	1.26	1.30	1.23	1.28
Rubidium (Rb)-Total	mg/L	-	-	0.00046	0.00043	0.00044	0.00045
Selenium (Se)-Total	mg/L	0.05	-	<0.000050	<0.000050	<0.000050	<0.000050
Silicon (Si)-Total	mg/L	-	-	12.6	13.2	12.5	12.6
Silver (Ag)-Total	mg/L	-	-	<0.000050	<0.000050	<0.000050	<0.000050
Sodium (Na)-Total	mg/L	20	200	10.7	10.9	10.6	10.8
Strontium (Sr)-Total	mg/L	-	-	0.366	0.362	0.363	0.363
Sulfur (S)-Total	mg/L	-	-	<0.50	<0.50	<0.50	<0.50
Tellurium (Te)-Total	mg/L	-	-	<0.00020	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Total Metals - WATER

			Lab ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
			Sample Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
			Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
		Guide Limits					
Analyte	Unit	#1	#2				
Thorium (Th)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Tin (Sn)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	-	-	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten (W)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Uranium (U)-Total	mg/L	0.02	-	0.000030	0.000029	0.000027	0.000026
Vanadium (V)-Total	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	-	5	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium (Zr)-Total	mg/L	-	-	<0.00030	<0.00030	<0.00030	<0.00030

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Organic Parameters - WATER

	Lab ID	L2429968-1	L2429968-2	L2429968-3	L2429968-4
	Sample Date	17-MAR-20	17-MAR-20	18-MAR-20	18-MAR-20
	Sample ID	MW6 PT H24R	MW6 PT 36HR	MW6 PT 48HR	MW6 PT 60HR
Analyte	Unit	Guide Limits #1	Guide Limits #2				
Ethane, Dissolved	ug/L	-	-	<5.0	<5.0	<5.0	<5.0
Ethene, Dissolved	ug/L	-	-	<5.0	<5.0	<5.0	<5.0
Methane, Dissolved	ug/L	-	2000	494	486	654	434

Guide Limit #1: Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)
Guide Limit #2: Ontario DW Aesthetic and Operational Guidelines (June, 2006)

Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.
Analytical result for this parameter exceeds Guide Limits listed. See Summary of Guideline Exceedances.

* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-SPEC-PCT-WT	Water	Automated Speciated Alkalinity	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

BR-IC-N-WT	Water	Bromide in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

COLOUR-APPARENT-WT	Water	Colour	APHA 2120

Apparent Colour is measured spectrophotometrically by comparison to platinum-cobalt standards using the single wavelength method after sample decanting. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment. Concurrent measurement of sample pH is recommended.

EC-MF-WT	Water	E. coli	SM 9222D

A 100 mL volume of sample is filtered through a membrane, the membrane is placed on mFC-BCIG agar and incubated at 44.5 –0 .2 C for 24 – 2 h. Method ID: WT-TM-1200

EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B

Water samples can be measured directly by immersing the conductivity cell into the sample.

ETL-SAR-CALC-WT	Water	Sodium Adsorption Ratio	Calculation
ETL-SILICA-CALC-WT	Water	Calculate from SI-TOT-WT	EPA 200.8
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

FC-MF-WT	Water	Fecal Coliforms	SM 9222D

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mFC agar and incubated at 24–2h@44.5–0.2 C. Method ID: WT-TM-1200

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
IONBALANCE-OP03-WT	Water	Detailed Ion Balance Calculation	APHA 1030E, 2330B, 2510A
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

METHANE,C2-DIS-WT	Water	Methane, Ethane and Ethene	EPA REGION 1, NATATTEN.WPD REV. 1

Water samples are collected in headspace vials containing sodium bisulfate preservative. A volume of water is withdrawn from the un-capped vial. After shaking & equilibration, the vial headspace is analyzed for target gases by GC/FID. The concentration of the gas in water is proportional to the partial pressure of the gas above the liquid & is calculated using Henry's Law.

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO2-IC-WT	Water	Nitrite in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

PH-WT	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011). Holdtime for samples under this regulation is 28 days

PO4-DO-COL-WT	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

REDOX-POTENTIAL-WT	Water	Redox Potential	APHA 2580

This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.

It is recommended that this analysis be conducted in the field.

S2-T>H2S-CALC-WT	Water	Total Sulphide Calculated as H2S	Calculation

This calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S). Total Sulphide as (S2-) is determined using procedures adapted from APHA 4500-S2 "Sulphide".

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
SOLIDS-TDS-WT	Water	Total Dissolved Solids	APHA 2540C

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.

SULPHIDE-WT	Water	Sulphide (as S)	APHA 4500S2D

This analysis is carried out using procedures adapted from APHA Method 4500-S2-D "Methylene Blue Method". Sulphide is determined colourmetrically.

TC-MF-WT	Water	Total Coliforms	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5 C for 24–2h. Method ID: WT-TM-1200

TCB-MF-WT	Water	Total Coliform Background	SM 9222B

A 100mL volume of sample is filtered through a membrane, the membrane is placed on mENDO LES agar and incubated at 35–0.5 C for 24–2h. Method ID: WT-TM-1200.

TURBIDITY-WT	Water	Turbidity	APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

**ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody Numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guideline limits are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-SPEC-PCT-WT	**Water**							
Batch R5033584								
WG3296559-4 DUP		**WG3296559-3**						
Alkalinity, Total (as CaCO3)		252	254		mg/L	0.5	20	20-MAR-20
Alkalinity, Bicarbonate (as CaCO3)		252	254		mg/L	0.5	20	20-MAR-20
Alkalinity, Carbonate (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	20-MAR-20
Alkalinity, Hydroxide (as CaCO3)		<2.0	<2.0	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3296559-2 LCS								
Alkalinity, Total (as CaCO3)			103.7		%		85-115	20-MAR-20
WG3296559-1 MB								
Alkalinity, Total (as CaCO3)			<2.0		mg/L		2	20-MAR-20
Alkalinity, Bicarbonate (as CaCO3)			<2.0		mg/L		2	20-MAR-20
Alkalinity, Carbonate (as CaCO3)			<2.0		mg/L		2	20-MAR-20
Alkalinity, Hydroxide (as CaCO3)			<2.0		mg/L		2	20-MAR-20
BR-IC-N-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Bromide (Br)		<0.10	<0.10	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295966-12 LCS								
Bromide (Br)			98.5		%		85-115	20-MAR-20
WG3295966-11 MB								
Bromide (Br)			<0.10		mg/L		0.1	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Bromide (Br)			97.1		%		75-125	20-MAR-20
CL-IC-N-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Chloride (Cl)		5.36	5.36		mg/L	0.0	20	20-MAR-20
WG3295966-12 LCS								
Chloride (Cl)			104.1		%		90-110	20-MAR-20
WG3295966-11 MB								
Chloride (Cl)			<0.50		mg/L		0.5	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Chloride (Cl)			104.1		%		75-125	20-MAR-20
COLOUR-APPARENT-WT	**Water**							
Batch R5032809								
WG3295725-3 DUP		**L2429968-1**						
Colour, Apparent		22.6	23.6		CU	4.3	20	19-MAR-20
WG3295725-2 LCS								

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
COLOUR-APPARENT-WT	**Water**							
Batch R5032809								
WG3295725-2 LCS								
Colour, Apparent			99.0		%		85-115	19-MAR-20
WG3295725-1 MB								
Colour, Apparent			<2.0		CU		2	19-MAR-20
EC-MF-WT	**Water**							
Batch R5033536								
WG3295922-1 MB								
E. Coli			0		CFU/100mL		1	20-MAR-20
EC-WT	**Water**							
Batch R5033584								
WG3296559-4 DUP		**WG3296559-3**						
Conductivity		461	461		umhos/cm	0.0	10	20-MAR-20
WG3296559-2 LCS								
Conductivity			100.6		%		90-110	20-MAR-20
WG3296559-1 MB								
Conductivity			<3.0		umhos/cm		3	20-MAR-20
F-IC-N-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Fluoride (F)		0.131	0.130		mg/L	1.1	20	20-MAR-20
WG3295966-12 LCS								
Fluoride (F)			103.2		%		90-110	20-MAR-20
WG3295966-11 MB								
Fluoride (F)			<0.020		mg/L		0.02	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Fluoride (F)			99.1		%		75-125	20-MAR-20
FC-MF-WT	**Water**							
Batch R5033537								
WG3295906-3 DUP		**L2429968-4**						
Fecal Coliforms		0	0		CFU/100mL	0.0	65	20-MAR-20
WG3295906-1 MB								
Fecal Coliforms			0		CFU/100mL		1	20-MAR-20
MET-T-CCMS-WT	**Water**							

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-4 DUP		**WG3295776-3**						
Aluminum (Al)-Total		0.075	0.066		mg/L	13	20	20-MAR-20
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Barium (Ba)-Total		0.0891	0.0907		mg/L	1.8	20	20-MAR-20
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-20
Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	20-MAR-20
Cadmium (Cd)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-MAR-20
Calcium (Ca)-Total		97.8	98.6		mg/L	0.8	20	20-MAR-20
Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
Cesium (Cs)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAR-20
Cobalt (Co)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Copper (Cu)-Total		0.0056	0.0051		mg/L	9.4	20	20-MAR-20
Iron (Fe)-Total		0.19	0.18		mg/L	4.3	20	20-MAR-20
Lead (Pb)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-20
Magnesium (Mg)-Total		13.5	13.6		mg/L	0.3	20	20-MAR-20
Manganese (Mn)-Total		0.0093	0.0103		mg/L	9.5	20	20-MAR-20
Molybdenum (Mo)-Total		0.00457	0.00468		mg/L	2.5	20	20-MAR-20
Nickel (Ni)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
Phosphorus (P)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	20-MAR-20
Potassium (K)-Total		19.1	19.3		mg/L	1.2	20	20-MAR-20
Rubidium (Rb)-Total		0.0170	0.0172		mg/L	1.4	20	20-MAR-20
Selenium (Se)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-20
Silicon (Si)-Total		3.5	3.6		mg/L	1.2	20	20-MAR-20
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-MAR-20
Sodium (Na)-Total		997	993		mg/L	0.4	20	20-MAR-20
Strontium (Sr)-Total		1.71	1.70		mg/L	0.5	20	20-MAR-20
Sulfur (S)-Total		43.4	43.1		mg/L	0.7	25	20-MAR-20
Thallium (Tl)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-MAR-20
Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	20-MAR-20
Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	25	20-MAR-20
Tin (Sn)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Titanium (Ti)-Total		<0.0030	<0.0030		mg/L			20-MAR-20

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-4 DUP		**WG3295776-3**						
Titanium (Ti)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	20-MAR-20
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-MAR-20
Uranium (U)-Total		0.00133	0.00132		mg/L	1.4	20	20-MAR-20
Vanadium (V)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-MAR-20
Zinc (Zn)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	20-MAR-20
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295776-2 LCS								
Aluminum (Al)-Total			100.6		%		80-120	20-MAR-20
Antimony (Sb)-Total			103.2		%		80-120	20-MAR-20
Arsenic (As)-Total			97.5		%		80-120	20-MAR-20
Barium (Ba)-Total			99.2		%		80-120	20-MAR-20
Beryllium (Be)-Total			103.2		%		80-120	20-MAR-20
Bismuth (Bi)-Total			103.3		%		80-120	20-MAR-20
Boron (B)-Total			100.2		%		80-120	20-MAR-20
Cadmium (Cd)-Total			99.9		%		80-120	20-MAR-20
Calcium (Ca)-Total			104.7		%		80-120	20-MAR-20
Chromium (Cr)-Total			97.7		%		80-120	20-MAR-20
Cesium (Cs)-Total			104.7		%		80-120	20-MAR-20
Cobalt (Co)-Total			95.1		%		80-120	20-MAR-20
Copper (Cu)-Total			96.3		%		80-120	20-MAR-20
Iron (Fe)-Total			99.5		%		80-120	20-MAR-20
Lead (Pb)-Total			105.6		%		80-120	20-MAR-20
Magnesium (Mg)-Total			101.3		%		80-120	20-MAR-20
Manganese (Mn)-Total			99.2		%		80-120	20-MAR-20
Molybdenum (Mo)-Total			103.2		%		80-120	20-MAR-20
Nickel (Ni)-Total			95.6		%		80-120	20-MAR-20
Phosphorus (P)-Total			100.1		%		70-130	20-MAR-20
Potassium (K)-Total			97.6		%		80-120	20-MAR-20
Rubidium (Rb)-Total			99.1		%		80-120	20-MAR-20
Selenium (Se)-Total			98.7		%		80-120	20-MAR-20
Silicon (Si)-Total			101.7		%		60-140	20-MAR-20
Silver (Ag)-Total			103.4		%		80-120	20-MAR-20
Sodium (Na)-Total			97.0		%		80-120	20-MAR-20

Quality Control Report

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Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-2 LCS								
Strontium (Sr)-Total			109.9		%		80-120	20-MAR-20
Sulfur (S)-Total			101.1		%		80-120	20-MAR-20
Thallium (Tl)-Total			104.1		%		80-120	20-MAR-20
Tellurium (Te)-Total			97.2		%		80-120	20-MAR-20
Thorium (Th)-Total			105.7		%		70-130	20-MAR-20
Tin (Sn)-Total			98.4		%		80-120	20-MAR-20
Titanium (Ti)-Total			98.2		%		80-120	20-MAR-20
Tungsten (W)-Total			105.3		%		80-120	20-MAR-20
Uranium (U)-Total			107.8		%		80-120	20-MAR-20
Vanadium (V)-Total			98.6		%		80-120	20-MAR-20
Zinc (Zn)-Total			96.0		%		80-120	20-MAR-20
Zirconium (Zr)-Total			100.2		%		80-120	20-MAR-20
WG3295776-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	20-MAR-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Boron (B)-Total			<0.010		mg/L		0.01	20-MAR-20
Cadmium (Cd)-Total			<0.000005(		mg/L		0.000005	20-MAR-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-MAR-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Iron (Fe)-Total			<0.010		mg/L		0.01	20-MAR-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-MAR-20
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	20-MAR-20
Potassium (K)-Total			<0.050		mg/L		0.05	20-MAR-20

Quality Control Report

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-1 MB								
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	20-MAR-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Silicon (Si)-Total			<0.10		mg/L		0.1	20-MAR-20
Silver (Ag)-Total			<0.000050		mg/L		0.00005	20-MAR-20
Sodium (Na)-Total			<0.050		mg/L		0.05	20-MAR-20
Strontium (Sr)-Total			<0.0010		mg/L		0.001	20-MAR-20
Sulfur (S)-Total			<0.50		mg/L		0.5	20-MAR-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	20-MAR-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-MAR-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	20-MAR-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-MAR-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-MAR-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-MAR-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	20-MAR-20
WG3295776-5 MS		**WG3295776-3**						
Aluminum (Al)-Total			85.6		%		70-130	20-MAR-20
Antimony (Sb)-Total			98.9		%		70-130	20-MAR-20
Arsenic (As)-Total			102.4		%		70-130	20-MAR-20
Barium (Ba)-Total			N/A	MS-B	%		-	20-MAR-20
Beryllium (Be)-Total			97.2		%		70-130	20-MAR-20
Bismuth (Bi)-Total			100.4		%		70-130	20-MAR-20
Boron (B)-Total			N/A	MS-B	%		-	20-MAR-20
Cadmium (Cd)-Total			98.7		%		70-130	20-MAR-20
Calcium (Ca)-Total			N/A	MS-B	%		-	20-MAR-20
Chromium (Cr)-Total			97.1		%		70-130	20-MAR-20
Cesium (Cs)-Total			103.0		%		70-130	20-MAR-20
Cobalt (Co)-Total			94.6		%		70-130	20-MAR-20
Copper (Cu)-Total			88.9		%		70-130	20-MAR-20
Iron (Fe)-Total			N/A	MS-B	%		-	20-MAR-20
Lead (Pb)-Total			99.7		%		70-130	20-MAR-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	20-MAR-20

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	**Water**							
Batch R5033089								
WG3295776-5 MS		**WG3295776-3**						
Manganese (Mn)-Total			100.6		%		70-130	20-MAR-20
Molybdenum (Mo)-Total			102.7		%		70-130	20-MAR-20
Nickel (Ni)-Total			92.9		%		70-130	20-MAR-20
Phosphorus (P)-Total			115.0		%		70-130	20-MAR-20
Potassium (K)-Total			N/A	MS-B	%		-	20-MAR-20
Rubidium (Rb)-Total			N/A	MS-B	%		-	20-MAR-20
Selenium (Se)-Total			96.5		%		70-130	20-MAR-20
Silicon (Si)-Total			N/A	MS-B	%		-	20-MAR-20
Silver (Ag)-Total			96.5		%		70-130	20-MAR-20
Sodium (Na)-Total			N/A	MS-B	%		-	20-MAR-20
Strontium (Sr)-Total			N/A	MS-B	%		-	20-MAR-20
Sulfur (S)-Total			N/A	MS-B	%		-	20-MAR-20
Thallium (Tl)-Total			100.0		%		70-130	20-MAR-20
Tellurium (Te)-Total			85.9		%		70-130	20-MAR-20
Thorium (Th)-Total			96.6		%		70-130	20-MAR-20
Tin (Sn)-Total			97.0		%		70-130	20-MAR-20
Titanium (Ti)-Total			95.2		%		70-130	20-MAR-20
Tungsten (W)-Total			103.8		%		70-130	20-MAR-20
Uranium (U)-Total			N/A	MS-B	%		-	20-MAR-20
Vanadium (V)-Total			103.4		%		70-130	20-MAR-20
Zinc (Zn)-Total			80.6		%		70-130	20-MAR-20
Zirconium (Zr)-Total			98.3		%		70-130	20-MAR-20
METHANE,C2-DIS-WT	**Water**							
Batch R5046508								
WG3297036-27 DUP		**L2428856-1**						
Methane, Dissolved		358	342		ug/L	4.5	30	26-MAR-20
Ethane, Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	30	26-MAR-20
Ethene, Dissolved		<5.0	<5.0	RPD-NA	ug/L	N/A	30	26-MAR-20
WG3297036-21 MB								
Methane, Dissolved			<5.0		ug/L		5	26-MAR-20
Ethane, Dissolved			<5.0		ug/L		5	26-MAR-20
Ethene, Dissolved			<5.0		ug/L		5	26-MAR-20
NH3-F-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT	**Water**							
Batch R5034079								
WG3295968-3 DUP		**L2429968-4**						
Ammonia, Total (as N)		0.304	0.307		mg/L	0.9	20	20-MAR-20
WG3295968-2 LCS								
Ammonia, Total (as N)			109.3		%		85-115	20-MAR-20
WG3295968-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	20-MAR-20
WG3295968-4 MS		**L2429968-4**						
Ammonia, Total (as N)			N/A	MS-B	%		-	20-MAR-20
NO2-IC-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Nitrite (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295966-12 LCS								
Nitrite (as N)			103.3		%		90-110	20-MAR-20
WG3295966-11 MB								
Nitrite (as N)			<0.010		mg/L		0.01	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Nitrite (as N)			103.3		%		75-125	20-MAR-20
NO3-IC-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295966-12 LCS								
Nitrate (as N)			103.1		%		90-110	20-MAR-20
WG3295966-11 MB								
Nitrate (as N)			<0.020		mg/L		0.02	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Nitrate (as N)			99.6		%		75-125	20-MAR-20
PH-WT	**Water**							
Batch R5033584								
WG3296559-4 DUP		**WG3296559-3**						
pH		7.99	7.99	J	pH units	0.00	0.2	20-MAR-20
WG3296559-2 LCS								
pH			7.01		pH units		6.9-7.1	20-MAR-20
PO4-DO-COL-WT	**Water**							

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-DO-COL-WT	**Water**							
Batch R5033096								
WG3295969-3 DUP		**L2429143-3**						
Orthophosphate-Dissolved (as P)		1.98	2.03		mg/L	2.2	20	20-MAR-20
WG3295969-2 LCS								
Orthophosphate-Dissolved (as P)			106.1		%		80-120	20-MAR-20
WG3295969-1 MB								
Orthophosphate-Dissolved (as P)			<0.0030		mg/L		0.003	20-MAR-20
WG3295969-4 MS		**L2429143-3**						
Orthophosphate-Dissolved (as P)			N/A	MS-B	%		-	20-MAR-20
REDOX-POTENTIAL-WT	**Water**							
Batch R5038911								
WG3298682-1 CRM		**WT-REDOX**						
Redox Potential			100.2		%		80-120	25-MAR-20
WG3298682-2 DUP		**L2428856-1**						
Redox Potential		280	280		mV	0.0	25	25-MAR-20
SO4-IC-N-WT	**Water**							
Batch R5034454								
WG3295966-15 DUP		**L2429968-2**						
Sulfate (SO4)		<0.30	<0.30	RPD-NA	mg/L	N/A	20	20-MAR-20
WG3295966-12 LCS								
Sulfate (SO4)			105.3		%		90-110	20-MAR-20
WG3295966-11 MB								
Sulfate (SO4)			<0.30		mg/L		0.3	20-MAR-20
WG3295966-14 MS		**L2429968-2**						
Sulfate (SO4)			106.2		%		75-125	20-MAR-20
SOLIDS-TDS-WT	**Water**							
Batch R5034165								
WG3296551-3 DUP		**L2428856-3**						
Total Dissolved Solids		261	259		mg/L	0.8	20	21-MAR-20
WG3296551-2 LCS								
Total Dissolved Solids			101.1		%		85-115	21-MAR-20
WG3296551-1 MB								
Total Dissolved Solids			<10		mg/L		10	21-MAR-20
Batch R5034187								
WG3296553-3 DUP		**L2429968-2**						
Total Dissolved Solids		257	263		mg/L	2.1	20	21-MAR-20
WG3296553-2 LCS								
Total Dissolved Solids			98.8		%		85-115	21-MAR-20

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-WT	**Water**							
Batch R5034187								
WG3296553-1 MB								
Total Dissolved Solids			<10		mg/L		10	21-MAR-20
Batch R5034266								
WG3296554-3 DUP		**L2429968-4**						
Total Dissolved Solids		274	274		mg/L	0.0	20	21-MAR-20
WG3296554-2 LCS								
Total Dissolved Solids			100.0		%		85-115	21-MAR-20
WG3296554-1 MB								
Total Dissolved Solids			<10		mg/L		10	21-MAR-20
SULPHIDE-WT	**Water**							
Batch R5033975								
WG3296979-3 DUP		**L2429712-1**						
Sulphide (as S)		<0.018	<0.018	RPD-NA	mg/L	N/A	20	23-MAR-20
WG3296979-2 LCS								
Sulphide (as S)			95.5		%		75-125	23-MAR-20
WG3296979-1 MB								
Sulphide (as S)			<0.018		mg/L		0.018	23-MAR-20
WG3296979-4 MS		**L2429712-1**						
Sulphide (as S)			88.4		%		65-135	23-MAR-20
TC-MF-WT	**Water**							
Batch R5033539								
WG3295918-3 DUP		**L2429968-3**						
Total Coliforms		0	<10	RPD-NA	CFU/100mL	N/A	65	20-MAR-20
WG3295918-1 MB								
Total Coliforms			0		CFU/100mL		1	20-MAR-20
TCB-MF-WT	**Water**							
Batch R5033539								
WG3295918-3 DUP		**L2429968-3**						
Total Coliform Background		0	<10	RPD-NA	CFU/100mL	N/A	65	20-MAR-20
WG3295918-1 MB								
Total Coliform Background			0		CFU/100mL		1	20-MAR-20
TURBIDITY-WT	**Water**							
Batch R5032979								
WG3295983-3 DUP		**L2429968-3**						
Turbidity		4.69	4.58		NTU	2.4	15	20-MAR-20
WG3295983-2 LCS								

Quality Control Report

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-WT	**Water**							
Batch R5032979								
WG3295983-2 LCS								
Turbidity			99.0		%		85-115	20-MAR-20
WG3295983-1 MB								
Turbidity			<0.10		NTU		0.1	20-MAR-20

Quality Control Report

Workorder: L2429968 Report Date: 27-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

Workorder: L2429968 Report Date: 27-APR-20

Client: PALMER ENVIRONMENTAL CONSULTING GROUP INC. (Richmond Hill)
74 Berkeley Street
Toronto ON M5V 1E3
Contact: ADRIAN LO

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Redox Potential							
	1	17-MAR-20 11:30	25-MAR-20 00:00	0.25	180	hours	EHTR-FM
	2	17-MAR-20 23:30	25-MAR-20 00:00	0.25	168	hours	EHTR-FM
	3	18-MAR-20 11:30	25-MAR-20 00:00	0.25	156	hours	EHTR-FM
	4	18-MAR-20 23:30	25-MAR-20 00:00	0.25	144	hours	EHTR-FM
Turbidity							
	1	17-MAR-20 11:30	20-MAR-20 10:00	48	71	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 10:00	48	59	hours	EHTL
Bacteriological Tests							
E. coli							
	1	17-MAR-20 11:30	20-MAR-20 08:40	48	69	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 08:40	48	57	hours	EHTL
Fecal Coliforms							
	1	17-MAR-20 11:30	20-MAR-20 08:40	48	69	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 08:40	48	57	hours	EHTL
Total Coliforms							
	1	17-MAR-20 11:30	20-MAR-20 08:40	48	69	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 08:40	48	57	hours	EHTL
Total Coliform Background							
	1	17-MAR-20 11:30	20-MAR-20 08:40	48	69	hours	EHTR
	2	17-MAR-20 23:30	20-MAR-20 08:40	48	57	hours	EHTL

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2429968 were received on 19-MAR-20 16:21.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Custody (COC) / Analytical Request Form

L2429968-COFC

COC Number: 17 -

Page of

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Report To	Contact and company name below will appear on the final report
Company:	Palmer Environmental Consulting Group Inc.
Contact:	Adrian Lo
Phone:	(647) 643-9377
	Company address below will appear on the final report
Street:	74 Berkeley St.
City/Province:	Toronto, Ontario
Postal Code:	M5A 2w7
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)

Quality Control (QC) Report with Report ☑ YES ☐ NO

☑ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax adrian@pecg.ca

Email 2 adrian-lo@pecg.ca

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax accounting@pecg.ca

Email 2

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	24400/Q71932
Job #:	1704602
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): L2429968RD

ALS Contact: Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	POTABILITY	METHANE	FECAL COLIFORM BACTERIA	HYDROGEN SULPHIDE	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
	MW6 PT [redacted] 24 HR	17-3-20	11:30	GW	✓	✓	✓	✓			9
	MW6 PT [redacted] 36 HR	17-3-20	23:30	GW	✓	✓	✓	✓			9
	" PT " 48 HR	18-3-20	11:30	GW	✓	✓	✓	✓			
	" " 60 HR	18-3-20	23:30	GW	✓	✓	✓	✓			

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human consumption/ use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

Durham Sanitary/Storm + PWQO

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice Packs ☒ Ice Cubes ☒ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
6.0				2.9			

SHIPMENT RELEASE (client use)

Released by: Adrian Lo Date: 19-3-20 Time:

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date: March 19/20 Time: 21

FINAL SHIPMENT RECEPTION (lab use only)

Received by: Date: 3-19-2020 Time: 1900

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Your P.O. #: 1704602
Your Project #: NOBLETON
Your C.O.C. #: 760523-01-01

Attention: Adrian Lo

Palmer Environmental Consulting Group Inc
74 Berkeley Street
Toronto, ON
CANADA M5A 2W7

Report Date: 2020/04/28
Report #: R6157444
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C073871
Received: 2020/03/19, 15:54

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	1	N/A	2020/03/23	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	1	N/A	2020/03/23	CAM SOP-00463	SM 23 4500-Cl E m
Colour	1	N/A	2020/03/25	CAM SOP-00412	SM 23 2120C m
Free (WAD) Cyanide	1	N/A	2020/03/26	CAM SOP-00457	OMOE E3015 m
Dioxins/Furans in Water (EPA 8290 mod.) (3)	1	2020/03/23	2020/03/28	BRL SOP-00406 (mod)	EPA 8290 m
Diuron, Guthion, Temephos	1	2020/03/26	2020/03/27	CAM SOP-00306	EPA 532 m
Dissolved Organic Carbon (DOC) (4)	1	N/A	2020/03/23	CAM SOP-00446	SM 23 5310 B m
Diquat / Paraquat	1	2020/03/25	2020/03/25	CAM SOP-00327	EPA 549.2 m
Fluoride	1	2020/03/20	2020/03/23	CAM SOP-00449	SM 23 4500-F C m
Dissolved Gases in Water in mg/L units	1	N/A	2020/03/20		
Glyphosate	1	2020/03/20	2020/03/20	CAM SOP-00305	HPLC in-house method
Hardness (calculated as CaCO3)	1	N/A	2020/03/20	CAM SOP 00102/00408/00447	SM 2340 B
Mercury in Water by CVAA	1	2020/03/20	2020/03/20	CAM SOP-00453	EPA 7470A m
Metals Analysis by ICPMS (as received) (5)	1	N/A	2020/03/20	CAM SOP-00447	EPA 6020B m
Total Coliforms/ E. coli, CFU/100mL	1	N/A	2020/03/19	CAM SOP-00551	MOE E3407
Dissolved Methane in Water	1	N/A	2020/03/25	CAM SOP-00219 Modified Combustible Gas Indicator Method	RSKSOP-175 m
Heterotrophic plate count, (CFU/mL)	1	N/A	2020/03/19	CAM SOP-00512	SM 9215B
Microcystin	1	N/A	2020/03/20	CAM SOP-00476	OMECC-LSB E3469
NDMA in Drinking Water (MSABN-3291Amod)	1	2020/03/25	2020/03/30	BRL SOP-00012	MOE Method E3388
Total Ammonia-N	1	N/A	2020/03/23	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (6)	1	N/A	2020/03/22	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrilotriacetic Acid (NTA) (7)	1	2020/03/23	2020/03/24	CAM SOP-00411	EPA 430.1 m
OC Pesticides (Selected) & PCB (8)	1	2020/03/20	2020/03/23	CAM SOP-00307	EPA 8081A/ 8082B m
OC Pesticides Summed Parameters	1	N/A	2020/03/20	CAM SOP-00307	EPA 8081A/8082B m
ODWS - Semi-Volatiles	1	2020/03/24	2020/03/26	CAM SOP-00301	EPA 8270 m
Organic Nitrogen	1	N/A	2020/03/24		
pH	1	2020/03/20	2020/03/23	CAM SOP-00413	SM 4500H+ B m
Gross Alpha and Gross Beta (1)	1	N/A	2020/04/01	BQL SOP-00008	GFPC

Your P.O. #: 1704602
Your Project #: NOBLETON
Your C.O.C. #: 760523-01-01

Attention: Adrian Lo

Palmer Environmental Consulting Group Inc
74 Berkeley Street
Toronto, ON
CANADA M5A 2W7

Report Date: 2020/04/28
Report #: R6157444
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C073871
Received: 2020/03/19, 15:54

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Tritium by Liquid Scintillation Counting (1)	1	N/A	2020/03/26	BQL SOP-00009	LSC
Sulphate by Automated Colourimetry	1	N/A	2020/03/23	CAM SOP-00464	EPA 375.4 m
Bromate Analysis (2)	1	N/A	N/A		
Sulphide	1	N/A	2020/03/20	CAM SOP-00455	SM 23 4500-S G m
Total Dissolved Solids (TDS calc)	1	N/A	2020/03/24		
Total Kjeldahl Nitrogen in Water	1	2020/03/23	2020/03/23	CAM SOP-00938	OMOE E3516 m
Turbidity	1	N/A	2020/03/20	CAM SOP-00417	SM 23 2130 B m
VOCs (Drinking Water)	1	N/A	2020/03/20	CAM SOP-00226	EPA 8260C m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Laboratories Kitimat
(2) This test was performed by Sub from Campo to SGS Mineral
(3) Confirmatory runs for 2,3,7,8-TCDF are performed only if the primary result is greater than the RDL.
(4) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.

Your P.O. #: 1704602
Your Project #: NOBLETON
Your C.O.C. #: 760523-01-01

Attention: Adrian Lo

Palmer Environmental Consulting Group Inc
74 Berkeley Street
Toronto, ON
CANADA M5A 2W7

Report Date: 2020/04/28
Report #: R6157444
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C073871
Received: 2020/03/19, 15:54

(5) Metals analysis was performed on the sample 'as received'.
(6) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.
(7) Bureau Veritas Laboratories attempt to commence NTA analysis as soon as possible in accordance with the reference method. However, rapid analysis may not be practically achievable, particularly for samples from remote locations. Extended delay in analysis times may increase the uncertainty of the test results, but does not necessarily imply that the results are compromised.
(8) Chlordane (Total) = Alpha Chlordane + Gamma Chlordane

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Gina Baybayan, Project Manager
Email: Gina.Baybayan@bvlabs.com
Phone# (905)817-5766

==========

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C073871
Report Date: 2020/04/28

Palmer Environmental Consulting Group Inc
Client Project #: NOBLETON
Your P.O. #: 1704602

RESULTS OF ANALYSES OF WATER

BV Labs ID				MHC147			MHC147		
Sampling Date				2020/03/19 10:30			2020/03/19 10:30		
COC Number				760523-01-01			760523-01-01		
	UNITS	MAC	A/O	NOBLETON MW6	RDL	QC Batch	NOBLETON MW6 Lab-Dup	RDL	QC Batch
RADIONUCLIDE									
Gross Alpha	Bq/L	**NA**	-	<0.10	0.10	6648933	<0.10	0.10	6648933
Gross Beta	Bq/L	**NA**	-	<0.10	0.10	6648933	<0.10	0.10	6648933
Tritium	Bq/L	-	-	<15	15	6654193	<15	15	6654193
Calculated Parameters									
Calculated TDS	mg/L	-	500	270	1.0	6645163			
Hardness (CaCO3)	mg/L	-	80:100	230	1.0	6644557			
Total Organic Nitrogen	mg/L	-	0.15	<0.10	0.10	6644060			
Inorganics									
Total Ammonia-N	mg/L	-	-	0.45 (1)	0.050	6646730			
Colour	TCU	-	5	<2	2	6652645			
Fluoride (F-)	mg/L	**1.5**	-	0.18	0.10	6646816			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	-	0.40 (1)	0.10	6649063			
Microcystin	ug/L	-	-	<0.10	0.10	6646160			
Dissolved Organic Carbon	mg/L	-	5	0.94	0.40	6648025			
pH	pH	-	6.5:8.5	8.03		6646820			
Dissolved Sulphate (SO4)	mg/L	-	500	<1.0	1.0	6646767			
Sulphide	mg/L	-	0.05	<0.020	0.020	6646471			
Turbidity	NTU	-	5	3.7	0.1	6644053			
WAD Cyanide (Free)	mg/L	**0.2**	-	<0.0010	0.0010	6648630	<0.0010	0.0010	6648630
Alkalinity (Total as CaCO3)	mg/L	-	30:500	240	1.0	6646819			
Dissolved Chloride (Cl-)	mg/L	-	250	6.0	1.0	6646763			
Nitrite (N)	mg/L	**1**	-	<0.010	0.010	6646785			
Nitrate (N)	mg/L	**10**	-	<0.10	0.10	6646785			
Nitrate + Nitrite (N)	mg/L	**10**	-	<0.10	0.10	6646785			
Miscellaneous Parameters									
NTA	mg/L	**0.4**	-	<0.050	0.050	6649228			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)
(1) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.

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PERMANENT GASES (WATER)

BV Labs ID			MHC147		
Sampling Date			2020/03/19 10:30		
COC Number			760523-01-01		
	UNITS	A/O	NOBLETON MW6	RDL	QC Batch
Fixed Gases					
Methane	L/m3	3	0.56	0.005	6653094
Calculated Methane	mg/L	-	0.37	0.003	6644234

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID				MHC147		
Sampling Date				2020/03/19 10:30		
COC Number				760523-01-01		
	UNITS	MAC	A/O	NOBLETON MW6	RDL	QC Batch
Metals						
Mercury (Hg)	mg/L	**0.001**	-	<0.00010	0.00010	6646292
Aluminum (Al)	ug/L	-	100	<5.0	5.0	6646608
Antimony (Sb)	ug/L	**6**	-	<0.50	0.50	6646608
Arsenic (As)	ug/L	**10**	-	<1.0	1.0	6646608
Barium (Ba)	ug/L	**1000**	-	220	2.0	6646608
Boron (B)	ug/L	**5000**	-	23	10	6646608
Cadmium (Cd)	ug/L	**5**	-	<0.10	0.10	6646608
Calcium (Ca)	ug/L	-	-	55000	200	6646608
Chromium (Cr)	ug/L	**50**	-	<5.0	5.0	6646608
Copper (Cu)	ug/L	-	1000	<1.0	1.0	6646608
Iron (Fe)	ug/L	-	300	680	100	6646608
Lead (Pb)	ug/L	**10**	-	<0.50	0.50	6646608
Magnesium (Mg)	ug/L	-	-	22000	50	6646608
Manganese (Mn)	ug/L	-	50	50	2.0	6646608
Potassium (K)	ug/L	-	-	1100	200	6646608
Selenium (Se)	ug/L	**50**	-	<2.0	2.0	6646608
Sodium (Na)	ug/L	-	200000	10000	100	6646608
Uranium (U)	ug/L	**20**	-	<0.10	0.10	6646608
Zinc (Zn)	ug/L	-	5000	<5.0	5.0	6646608

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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID				MHC147		
Sampling Date				2020/03/19 10:30		
COC Number				760523-01-01		
	UNITS	MAC	A/O	NOBLETON MW6	RDL	QC Batch
Semivolatile Organics						
2,3,4,6-Tetrachlorophenol	ug/L	**100**	1	<0.50	0.50	6653898
2,4,5-T	ug/L	**280**	-	<1.0	1.0	6653898
2,4,6-Trichlorophenol	ug/L	**5**	2	<0.50	0.50	6653898
2,4-D	ug/L	**100**	-	<1.0	1.0	6653898
2,4-Dichlorophenol	ug/L	**900**	0.3	<0.25	0.25	6653898
Alachlor	ug/L	**5**	-	<0.50	0.50	6653898
Aldicarb	ug/L	**-**	-	<5.0	5.0	6653898
Atrazine	ug/L	**-**	-	<0.50	0.50	6653898
Des-ethyl atrazine	ug/L	**-**	-	<0.50	0.50	6653898
Atrazine + Desethyl-atrazine	ug/L	**5**	-	<1.0	1.0	6653898
Bendiocarb	ug/L	**-**	-	<2.0	2.0	6653898
Bromoxynil	ug/L	**5**	-	<0.50	0.50	6653898
Carbaryl	ug/L	**90**	-	<5.0	5.0	6653898
Carbofuran	ug/L	**90**	-	<5.0	5.0	6653898
Chlorpyrifos (Dursban)	ug/L	**90**	-	<1.0	1.0	6653898
Cyanazine (Bladex)	ug/L	**-**	-	<1.0	1.0	6653898
Diazinon	ug/L	**20**	-	<1.0	1.0	6653898
Dicamba	ug/L	**120**	-	<1.0	1.0	6653898
Diclofop-methyl	ug/L	**9**	-	<0.90	0.90	6653898
Dimethoate	ug/L	**20**	-	<2.5	2.5	6653898
Dinoseb	ug/L	**10**	-	<1.0	1.0	6653898
Malathion	ug/L	**190**	-	<5.0	5.0	6653898
Metolachlor	ug/L	**50**	-	<0.50	0.50	6653898
Metribuzin (Sencor)	ug/L	**80**	-	<5.0	5.0	6653898
Ethyl Parathion	ug/L	**50**	-	<1.0	1.0	6653898
Pentachlorophenol	ug/L	**60**	30	<0.50	0.50	6653898
Phorate	ug/L	**2**	-	<0.50	0.50	6653898
Picloram	ug/L	**190**	-	<5.0	5.0	6653898
Prometryne	ug/L	**1**	-	<0.25	0.25	6653898
Simazine	ug/L	**10**	-	<1.0	1.0	6653898
Terbufos	ug/L	**1**	-	<0.50	0.50	6653898

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SEMI-VOLATILE ORGANICS BY GC-MS (WATER)

BV Labs ID				MHC147		
Sampling Date				2020/03/19 10:30		
COC Number				760523-01-01		
	UNITS	MAC	A/O	NOBLETON MW6	RDL	QC Batch
Triallate	ug/L	**230**	-	<1.0	1.0	6653898
Trifluralin	ug/L	**45**	-	<1.0	1.0	6653898
Benzo(a)pyrene	ug/L	**0.01**	-	<0.0050	0.0050	6653898
Methyl parathion	ug/L	-	-	<1.0	1.0	6653898
Surrogate Recovery (%)						
2,4,6-Tribromophenol	%	-	-	77		6653898
2,4-Dichlorophenyl Acetic Acid	%	-	-	81		6653898
2-Fluorobiphenyl	%	-	-	60		6653898
D14-Terphenyl (FS)	%	-	-	85		6653898
D5-Nitrobenzene	%	-	-	61		6653898

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
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VOLATILE ORGANICS BY GC/MS (WATER)

BV Labs ID				MHC147	MHC147		
Sampling Date				2020/03/19 10:30	2020/03/19 10:30		
COC Number				760523-01-01	760523-01-01		
	UNITS	MAC	A/O	NOBLETON MW6	NOBLETON MW6 Lab-Dup	RDL	QC Batch
Volatile Organics							
1,1-Dichloroethylene	ug/L	**14**	-	<0.10	<0.10	0.10	6643887
1,2-Dichlorobenzene	ug/L	**200**	3	<0.20	<0.20	0.20	6643887
1,2-Dichloroethane	ug/L	**5**	-	<0.20	<0.20	0.20	6643887
1,4-Dichlorobenzene	ug/L	**5**	1	<0.20	<0.20	0.20	6643887
Benzene	ug/L	**1**	-	<0.10	<0.10	0.10	6643887
Bromodichloromethane	ug/L	**-**	-	<0.10	<0.10	0.10	6643887
Bromoform	ug/L	**-**	-	<0.20	<0.20	0.20	6643887
Carbon Tetrachloride	ug/L	**5**	-	<0.10	<0.10	0.10	6643887
Chlorobenzene	ug/L	**80**	30	<0.10	<0.10	0.10	6643887
Chloroform	ug/L	**-**	-	<0.10	<0.10	0.10	6643887
Dibromochloromethane	ug/L	**-**	-	<0.20	<0.20	0.20	6643887
Methylene Chloride(Dichloromethane)	ug/L	**50**	-	<0.50	<0.50	0.50	6643887
Ethylbenzene	ug/L	**140**	1.6	<0.10	<0.10	0.10	6643887
Tetrachloroethylene	ug/L	**10**	-	<0.10	<0.10	0.10	6643887
Toluene	ug/L	**-**	24	<0.20	<0.20	0.20	6643887
Trichloroethylene	ug/L	**5**	-	<0.10	<0.10	0.10	6643887
Vinyl Chloride	ug/L	**2**	-	<0.20	<0.20	0.20	6643887
o-Xylene	ug/L	**-**	-	<0.10	<0.10	0.10	6643887
p+m-Xylene	ug/L	**-**	-	<0.10	<0.10	0.10	6643887
Total Xylenes	ug/L	**90**	20	<0.10	<0.10	0.10	6643887
Total Trihalomethanes	ug/L	**-**	-	<0.20	<0.20	0.20	6643887
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	**-**	-	98	98		6643887
D4-1,2-Dichloroethane	%	**-**	-	99	101		6643887
D8-Toluene	%	**-**	-	99	98		6643887

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PESTICIDES & HERBICIDES BY HPLC (WATER)

BV Labs ID			MHC147		
Sampling Date			2020/03/19 10:30		
COC Number			760523-01-01		
	UNITS	MAC	NOBLETON MW6	RDL	QC Batch
Pesticides & Herbicides					
Glyphosate	ug/L	**280**	<10	10	6645953
Diquat	ug/L	**70**	<7.0	7.0	6652690
Diuron	ug/L	**150**	<10	10	6654969
Guthion (Azinphos-methyl)	ug/L	**20**	<2.0	2.0	6654969
Paraquat	ug/L	**10**	<1.0	1.0	6652690
Temephos	ug/L	**-**	<10	10	6654969

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
MAC: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
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ORGANOCHLORINATED PESTICIDES BY GC-ECD (WATER)

BV Labs ID			MHC147		
Sampling Date			2020/03/19 10:30		
COC Number			760523-01-01		
	UNITS	MAC	NOBLETON MW6	RDL	QC Batch
Calculated Parameters					
Aldrin + Dieldrin	ug/L	**0.7**	<0.006	0.006	6644306
Chlordane (Total)	ug/L	**7**	<0.006	0.006	6644306
DDT+ Metabolites	ug/L	**30**	<0.006	0.006	6644306
Heptachlor + Heptachlor epoxide	ug/L	**3**	<0.006	0.006	6644306
Total PCB	ug/L	**3**	<0.05	0.05	6644306
Pesticides & Herbicides					
Lindane	ug/L	**4**	<0.0060	0.0060	6646554
Heptachlor	ug/L	-	<0.0060	0.0060	6646554
Aldrin	ug/L	-	<0.0060	0.0060	6646554
Heptachlor epoxide	ug/L	-	<0.0060	0.0060	6646554
Oxychlordane	ug/L	-	<0.0060	0.0060	6646554
g-Chlordane	ug/L	-	<0.0060	0.0060	6646554
a-Chlordane	ug/L	-	<0.0060	0.0060	6646554
Dieldrin	ug/L	-	<0.0060	0.0060	6646554
o,p-DDE	ug/L	-	<0.0060	0.0060	6646554
p,p-DDE	ug/L	-	<0.0060	0.0060	6646554
o,p-DDD	ug/L	-	<0.0060	0.0060	6646554
p,p-DDD	ug/L	-	<0.0060	0.0060	6646554
o,p-DDT	ug/L	-	<0.0060	0.0060	6646554
p,p-DDT	ug/L	-	<0.0060	0.0060	6646554
Methoxychlor	ug/L	**900**	<0.024	0.024	6646554
Aroclor 1016	ug/L	-	<0.050	0.050	6646554
Aroclor 1221	ug/L	-	<0.050	0.050	6646554
Aroclor 1232	ug/L	-	<0.050	0.050	6646554
Aroclor 1242	ug/L	-	<0.050	0.050	6646554
Aroclor 1248	ug/L	-	<0.050	0.050	6646554
Aroclor 1254	ug/L	-	<0.050	0.050	6646554
Aroclor 1260	ug/L	-	<0.050	0.050	6646554
Surrogate Recovery (%)					
2,4,5,6-Tetrachloro-m-xylene	%	-	78		6646554
Decachlorobiphenyl	%	-	115		6646554

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QC Batch = Quality Control Batch
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DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		MHC147						
Sampling Date		2020/03/19 10:30						
COC Number		760523-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	NOBLETON MW6	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Dioxins & Furans								
2,3,7,8-Tetra CDD *	pg/L	<1.24	1.24	10.5	1.00	1.24		6655211
1,2,3,7,8-Penta CDD *	pg/L	<1.25	1.25	10.5	1.00	1.25		6655211
1,2,3,4,7,8-Hexa CDD *	pg/L	<1.31	1.31	10.5	0.100	0.131		6655211
1,2,3,6,7,8-Hexa CDD *	pg/L	<1.25	1.25	10.5	0.100	0.125		6655211
1,2,3,7,8,9-Hexa CDD *	pg/L	<1.15	1.15	10.5	0.100	0.115		6655211
1,2,3,4,6,7,8-Hepta CDD *	pg/L	<1.22	1.22	10.5	0.0100	0.0122		6655211
Octa CDD *	pg/L	<1.21	1.21	105	0.000300	0.000363		6655211
Total Tetra CDD *	pg/L	<1.24	1.24	10.5			0	6655211
Total Penta CDD *	pg/L	<1.25	1.25	10.5			0	6655211
Total Hexa CDD *	pg/L	<1.46 (1)	1.46	10.5			0	6655211
Total Hepta CDD *	pg/L	<1.22	1.22	10.5			0	6655211
2,3,7,8-Tetra CDF **	pg/L	<1.22	1.22	10.5	0.100	0.122		6655211
1,2,3,7,8-Penta CDF **	pg/L	<1.14	1.14	10.5	0.0300	0.0342		6655211
2,3,4,7,8-Penta CDF **	pg/L	<1.17	1.17	10.5	0.300	0.351		6655211
1,2,3,4,7,8-Hexa CDF **	pg/L	<1.21	1.21	10.5	0.100	0.121		6655211
1,2,3,6,7,8-Hexa CDF **	pg/L	<1.17	1.17	10.5	0.100	0.117		6655211
2,3,4,6,7,8-Hexa CDF **	pg/L	<1.17	1.17	10.5	0.100	0.117		6655211
1,2,3,7,8,9-Hexa CDF **	pg/L	<1.34	1.34	10.5	0.100	0.134		6655211
1,2,3,4,6,7,8-Hepta CDF **	pg/L	<1.19 (1)	1.19	10.5	0.0100	0.0119		6655211
1,2,3,4,7,8,9-Hepta CDF **	pg/L	<1.24	1.24	10.5	0.0100	0.0124		6655211
Octa CDF **	pg/L	<1.12	1.12	105	0.000300	0.000336		6655211
Total Tetra CDF **	pg/L	<1.22	1.22	10.5			0	6655211
Total Penta CDF **	pg/L	<1.16	1.16	10.5			0	6655211
Total Hexa CDF **	pg/L	<1.22	1.22	10.5			0	6655211
Total Hepta CDF **	pg/L	<1.28 (1)	1.28	10.5			0	6655211
TOTAL TOXIC EQUIVALENCY	pg/L					3.89		

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,
The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan

(1) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

DIOXINS AND FURANS BY HRMS (WATER)

BV Labs ID		MHC147						
Sampling Date		2020/03/19 10:30						
COC Number		760523-01-01			TOXIC EQUIVALENCY		# of	
	UNITS	NOBLETON MW6	EDL	RDL	TEF (2005 WHO)	TEQ(DL)	Isomers	QC Batch
Surrogate Recovery (%)								
C13-1234678 HeptaCDD *	%	86						6655211
C13-1234678 HeptaCDF **	%	72						6655211
C13-123678 HexaCDD *	%	84						6655211
C13-123678 HexaCDF **	%	76						6655211
C13-12378 PentaCDD *	%	71						6655211
C13-12378 PentaCDF **	%	59						6655211
C13-2378 TetraCDD *	%	76						6655211
C13-2378 TetraCDF **	%	63						6655211
C13-OCDD *	%	100						6655211

EDL = Estimated Detection Limit

RDL = Reportable Detection Limit

TEF = Toxic Equivalency Factor, TEQ = Toxic Equivalency Quotient,

The Total Toxic Equivalency (TEQ) value reported is the sum of Toxic Equivalent Quotients for the congeners tested.

WHO(2005): The 2005 World Health Organization, Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds

QC Batch = Quality Control Batch

* CDD = Chloro Dibenzo-p-Dioxin

** CDF = Chloro Dibenzo-p-Furan

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SEMI-VOLATILE ORGANICS BY HRMS (WATER)

BV Labs ID			MHC147		
Sampling Date			2020/03/19 10:30		
COC Number			760523-01-01		
	UNITS	MAC	NOBLETON MW6	RDL	QC Batch
NDMA/D/F/MIB/GEO					
N-Nitrosodimethylamine	ug/L	**0.009**	<0.0009	0.0009	6652664
Surrogate Recovery (%)					
D6-N-Nitrosodimethylamine	%	-	33		6652664

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
MAC: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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MICROBIOLOGY (WATER)

BV Labs ID			MHC147	
Sampling Date			2020/03/19 10:30	
COC Number			760523-01-01	
	UNITS	MAC	NOBLETON MW6	QC Batch
Microbiological				
Heterotrophic plate count	CFU/mL	-	0	6645219
Background	CFU/100mL	-	1	6645218
Total Coliforms	CFU/100mL	**0**	0	6645218
Escherichia coli	CFU/100mL	**0**	0	6645218

QC Batch = Quality Control Batch
MAC: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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TEST SUMMARY

BV Labs ID: MHC147
Sample ID: NOBLETON MW6
Matrix: Water

Collected: 2020/03/19
Shipped:
Received: 2020/03/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6646819	N/A	2020/03/23	Neil Dassanayake
Chloride by Automated Colourimetry	KONE	6646763	N/A	2020/03/23	Deonarine Ramnarine
Colour	SPEC	6652645	N/A	2020/03/25	Viorica Rotaru
Free (WAD) Cyanide	SKAL/CN	6648630	N/A	2020/03/26	Louise Harding
Dioxins/Furans in Water (EPA 8290 mod.)	HRMS/MS	6655211	2020/03/23	2020/03/28	Owen Cosby
Diuron, Guthion, Temephos	LC/UV	6654969	2020/03/26	2020/03/27	James Lee
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6648025	N/A	2020/03/23	Mandeep Kaur
Diquat / Paraquat	LC/UV	6652690	2020/03/25	2020/03/25	James Lee
Fluoride	ISE	6646816	2020/03/20	2020/03/23	Neil Dassanayake
Dissolved Gases in Water in mg/L units		6644234	N/A	2020/03/20	Automated Statchk
Glyphosate	LC/FLU	6645953	2020/03/20	2020/03/20	Hanna Kloc
Hardness (calculated as CaCO3)		6644557	N/A	2020/03/20	Automated Statchk
Mercury in Water by CVAA	CV/AA	6646292	2020/03/20	2020/03/20	Meghaben Patel
Metals Analysis by ICPMS (as received)	ICP/MS	6646608	N/A	2020/03/20	Prempal Bhatti
Total Coliforms/ E. coli, CFU/100mL	PL	6645218	N/A	2020/03/19	Farhana Rahman
Dissolved Methane in Water	GC/FID	6653094	N/A	2020/03/25	Anojan Sureshkumar
Heterotrophic plate count, (CFU/mL)	PL	6645219	N/A	2020/03/19	Sirimathie Aluthwala
Microcystin	ELIS	6646160	N/A	2020/03/20	Chris Li
NDMA in Drinking Water (MSABN-3291Amod)	GCTQ/MS	6652664	2020/03/25	2020/03/30	Wenhui (Susie) Shi
Total Ammonia-N	LACH/NH4	6646730	N/A	2020/03/23	Mazin Wakai
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6646785	N/A	2020/03/22	Amanpreet Sappal
Nitrilotriacetic Acid (NTA)	SPEC	6649228	2020/03/23	2020/03/24	Viorica Rotaru
OC Pesticides (Selected) & PCB	GC/ECD	6646554	2020/03/20	2020/03/23	Joy Zhang
OC Pesticides Summed Parameters	CALC	6644306	N/A	2020/03/20	Automated Statchk
ODWS - Semi-Volatiles	GC/MS	6653898	2020/03/24	2020/03/26	Wendy Zhao
Organic Nitrogen	CALC	6644060	N/A	2020/03/24	Automated Statchk
pH	AT	6646820	2020/03/20	2020/03/23	Neil Dassanayake
Gross Alpha and Gross Beta	GFPC	6648933	N/A	2020/04/01	Barbara Kalbasi Esfahani
Tritium by Liquid Scintillation Counting	LSC	6654193	N/A	2020/03/26	Danish Samad
Sulphate by Automated Colourimetry	KONE	6646767	N/A	2020/03/23	Deonarine Ramnarine
Bromate Analysis		6660248	N/A	2020/03/30	Gina Baybayan
Sulphide	ISE/S	6646471	N/A	2020/03/20	Kazzandra Adeva
Total Dissolved Solids (TDS calc)	CALC	6645163	N/A	2020/03/24	Automated Statchk
Total Kjeldahl Nitrogen in Water	SKAL	6649063	2020/03/23	2020/03/23	Shivani Shivani
Turbidity	AT	6644053	N/A	2020/03/20	Kazzandra Adeva
VOCs (Drinking Water)	P&T/MS	6643887	N/A	2020/03/20	Dina Wang

BV Labs ID: MHC147 Dup
Sample ID: NOBLETON MW6
Matrix: Water

Collected: 2020/03/19
Shipped:
Received: 2020/03/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Free (WAD) Cyanide	SKAL/CN	6648630	N/A	2020/03/26	Louise Harding
Gross Alpha and Gross Beta	GFPC	6648933	N/A	2020/04/01	Barbara Kalbasi Esfahani
Tritium by Liquid Scintillation Counting	LSC	6654193	N/A	2020/03/26	Danish Samad

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BV Labs Job #: C073871
Report Date: 2020/04/28

Palmer Environmental Consulting Group Inc
Client Project #: NOBLETON
Your P.O. #: 1704602

TEST SUMMARY

BV Labs ID: MHC147 Dup
Sample ID: NOBLETON MW6
Matrix: Water

Collected: 2020/03/19
Shipped:
Received: 2020/03/19

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
VOCs (Drinking Water)	P&T/MS	6643887	N/A	2020/03/20	Dina Wang

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.7°C
Package 2	12.0°C
Package 3	9.7°C

Revised Report (2020/04/27): Added criteria policy.

Sample MHC147 [NOBLETON MW6] : TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6643887	4-Bromofluorobenzene	2020/03/20	98	70 - 130	101	70 - 130	98	%				
6643887	D4-1,2-Dichloroethane	2020/03/20	93	70 - 130	98	70 - 130	97	%				
6643887	D8-Toluene	2020/03/20	102	70 - 130	100	70 - 130	100	%				
6646554	2,4,5,6-Tetrachloro-m-xylene	2020/03/23	89	30 - 130	77	30 - 130	68	%				
6646554	Decachlorobiphenyl	2020/03/23	128	30 - 130	114	30 - 130	102	%				
6652664	D6-N-Nitrosodimethylamine	2020/03/30			37	10 - 85	28	%				
6653898	2,4,6-Tribromophenol	2020/03/25	82	30 - 130	81	30 - 130	80	%				
6653898	2,4-Dichlorophenyl Acetic Acid	2020/03/25	82	30 - 130	81	30 - 130	81	%				
6653898	2-Fluorobiphenyl	2020/03/25	62	30 - 130	63	30 - 130	61	%				
6653898	D14-Terphenyl (FS)	2020/03/25	87	30 - 130	86	30 - 130	88	%				
6653898	D5-Nitrobenzene	2020/03/25	57	30 - 130	64	30 - 130	64	%				
6655211	C13-1234678 HeptaCDD	2020/03/28			75	30 - 130	99	%				
6655211	C13-1234678 HeptaCDF	2020/03/28			69	30 - 130	90	%				
6655211	C13-123678 HexaCDD	2020/03/28			83	30 - 130	90	%				
6655211	C13-123678 HexaCDF	2020/03/28			69	30 - 130	82	%				
6655211	C13-12378 PentaCDD	2020/03/28			70	30 - 130	76	%				
6655211	C13-12378 PentaCDF	2020/03/28			58	30 - 130	62	%				
6655211	C13-2378 TetraCDD	2020/03/28			63	30 - 130	77	%				
6655211	C13-2378 TetraCDF	2020/03/28			61	30 - 130	69	%				
6655211	C13-OCDD	2020/03/28			90	30 - 130	98	%				
6643887	1,1-Dichloroethylene	2020/03/20	99	70 - 130	102	70 - 130	<0.10	ug/L	NC	30		
6643887	1,2-Dichlorobenzene	2020/03/20	86	70 - 130	92	70 - 130	<0.20	ug/L	NC	30		
6643887	1,2-Dichloroethane	2020/03/20	87	70 - 130	97	70 - 130	<0.20	ug/L	NC	30		
6643887	1,4-Dichlorobenzene	2020/03/20	94	70 - 130	97	70 - 130	<0.20	ug/L	NC	30		
6643887	Benzene	2020/03/20	90	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
6643887	Bromodichloromethane	2020/03/20	NC	70 - 130	98	70 - 130	<0.10	ug/L	NC	30		
6643887	Bromoform	2020/03/20	99	70 - 130	109	70 - 130	<0.20	ug/L	NC	30		
6643887	Carbon Tetrachloride	2020/03/20	89	70 - 130	97	70 - 130	<0.10	ug/L	NC	30		
6643887	Chlorobenzene	2020/03/20	89	70 - 130	95	70 - 130	<0.10	ug/L	NC	30		
6643887	Chloroform	2020/03/20	NC	70 - 130	91	70 - 130	<0.10	ug/L	NC	30		
6643887	Dibromochloromethane	2020/03/20	118	70 - 130	107	70 - 130	<0.20	ug/L	NC	30		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6643887	Ethylbenzene	2020/03/20	88	70 - 130	93	70 - 130	<0.10	ug/L	NC	30		
6643887	Methylene Chloride(Dichloromethane)	2020/03/20	86	70 - 130	90	70 - 130	<0.50	ug/L	NC	30		
6643887	o-Xylene	2020/03/20	90	70 - 130	96	70 - 130	<0.10	ug/L	NC	30		
6643887	p+m-Xylene	2020/03/20	94	70 - 130	99	70 - 130	<0.10	ug/L	NC	30		
6643887	Tetrachloroethylene	2020/03/20	86	70 - 130	91	70 - 130	<0.10	ug/L	NC	30		
6643887	Toluene	2020/03/20	88	70 - 130	93	70 - 130	<0.20	ug/L	NC	30		
6643887	Total Trihalomethanes	2020/03/20					<0.20	ug/L	NC	30		
6643887	Total Xylenes	2020/03/20					<0.10	ug/L	NC	30		
6643887	Trichloroethylene	2020/03/20	92	70 - 130	99	70 - 130	<0.10	ug/L	NC	30		
6643887	Vinyl Chloride	2020/03/20	88	70 - 130	95	70 - 130	<0.20	ug/L	NC	30		
6644053	Turbidity	2020/03/20			113	85 - 115	<0.1	NTU	7.0	20		
6645953	Glyphosate	2020/03/20	59	50 - 130	102	50 - 130	<10	ug/L	NC	40		
6646160	Microcystin	2020/03/20	91	60 - 140	82	60 - 140	<0.10	ug/L	NC	20		
6646292	Mercury (Hg)	2020/03/20	95	75 - 125	96	80 - 120	<0.00010	mg/L	NC	20		
6646471	Sulphide	2020/03/20	85	80 - 120	90	80 - 120	<0.020	mg/L	11	20		
6646554	a-Chlordane	2020/03/23	100	30 - 130	87	30 - 130	<0.0060	ug/L	16	40		
6646554	Aldrin	2020/03/23	85	30 - 130	76	30 - 130	<0.0060	ug/L	20	40		
6646554	Aroclor 1016	2020/03/23					<0.050	ug/L				
6646554	Aroclor 1221	2020/03/23					<0.050	ug/L				
6646554	Aroclor 1232	2020/03/23					<0.050	ug/L				
6646554	Aroclor 1242	2020/03/23					<0.050	ug/L				
6646554	Aroclor 1248	2020/03/23					<0.050	ug/L				
6646554	Aroclor 1254	2020/03/23					<0.050	ug/L				
6646554	Aroclor 1260	2020/03/23					<0.050	ug/L				
6646554	Dieldrin	2020/03/23	119	30 - 130	100	30 - 130	<0.0060	ug/L	16	40		
6646554	g-Chlordane	2020/03/23	111	30 - 130	92	30 - 130	<0.0060	ug/L	12	40		
6646554	Heptachlor epoxide	2020/03/23	94	30 - 130	83	30 - 130	<0.0060	ug/L	18	40		
6646554	Heptachlor	2020/03/23	78	30 - 130	66	30 - 130	<0.0060	ug/L	24	40		
6646554	Lindane	2020/03/23	85	30 - 130	76	30 - 130	<0.0060	ug/L	25	40		
6646554	Methoxychlor	2020/03/23	88	30 - 130	73	30 - 130	<0.024	ug/L	20	40		
6646554	o,p-DDD	2020/03/23	110	30 - 130	97	30 - 130	<0.0060	ug/L	17	40		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6646554	o,p-DDE	2020/03/23	99	30 - 130	86	30 - 130	<0.0060	ug/L	16	40		
6646554	o,p-DDT	2020/03/23	101	30 - 130	82	30 - 130	<0.0060	ug/L	16	40		
6646554	Oxychlordane	2020/03/23	96	30 - 130	84	30 - 130	<0.0060	ug/L	16	40		
6646554	p,p-DDD	2020/03/23	106	30 - 130	94	30 - 130	<0.0060	ug/L	17	40		
6646554	p,p-DDE	2020/03/23	88	30 - 130	86	30 - 130	<0.0060	ug/L	20	40		
6646554	p,p-DDT	2020/03/23	96	30 - 130	77	30 - 130	<0.0060	ug/L	20	40		
6646608	Aluminum (Al)	2020/03/20	103	80 - 120	97	80 - 120	<5.0	ug/L				
6646608	Antimony (Sb)	2020/03/20	105	80 - 120	99	80 - 120	<0.50	ug/L				
6646608	Arsenic (As)	2020/03/20	104	80 - 120	98	80 - 120	<1.0	ug/L				
6646608	Barium (Ba)	2020/03/20	102	80 - 120	97	80 - 120	<2.0	ug/L				
6646608	Boron (B)	2020/03/20	94	80 - 120	87	80 - 120	<10	ug/L				
6646608	Cadmium (Cd)	2020/03/20	102	80 - 120	98	80 - 120	<0.10	ug/L				
6646608	Calcium (Ca)	2020/03/20	NC	80 - 120	99	80 - 120	<200	ug/L				
6646608	Chromium (Cr)	2020/03/20	101	80 - 120	95	80 - 120	<5.0	ug/L				
6646608	Copper (Cu)	2020/03/20	98	80 - 120	95	80 - 120	<1.0	ug/L	1.7	20		
6646608	Iron (Fe)	2020/03/20	104	80 - 120	97	80 - 120	<100	ug/L	0.055	20		
6646608	Lead (Pb)	2020/03/20	101	80 - 120	96	80 - 120	<0.50	ug/L	1.5	20		
6646608	Magnesium (Mg)	2020/03/20	101	80 - 120	97	80 - 120	<50	ug/L				
6646608	Manganese (Mn)	2020/03/20	100	80 - 120	94	80 - 120	<2.0	ug/L				
6646608	Potassium (K)	2020/03/20	103	80 - 120	98	80 - 120	<200	ug/L				
6646608	Selenium (Se)	2020/03/20	104	80 - 120	97	80 - 120	<2.0	ug/L				
6646608	Sodium (Na)	2020/03/20	104	80 - 120	99	80 - 120	<100	ug/L				
6646608	Uranium (U)	2020/03/20	105	80 - 120	100	80 - 120	<0.10	ug/L				
6646608	Zinc (Zn)	2020/03/20	102	80 - 120	97	80 - 120	<5.0	ug/L	0.19	20		
6646730	Total Ammonia-N	2020/03/23	95	75 - 125	98	80 - 120	<0.050	mg/L	NC	20		
6646763	Dissolved Chloride (Cl-)	2020/03/23	NC	80 - 120	105	80 - 120	<1.0	mg/L	1.8 (1)	20		
6646767	Dissolved Sulphate (SO4)	2020/03/23	110	75 - 125	102	80 - 120	<1.0	mg/L	7.9	20		
6646785	Nitrate (N)	2020/03/22	103	80 - 120	101	80 - 120	<0.10	mg/L	NC	20		
6646785	Nitrite (N)	2020/03/22	109	80 - 120	107	80 - 120	<0.010	mg/L	NC	20		
6646816	Fluoride (F-)	2020/03/23	37 (2)	80 - 120	94	80 - 120	<0.10	mg/L	NC	20		
6646819	Alkalinity (Total as CaCO3)	2020/03/23			97	85 - 115	<1.0	mg/L	4.7	20		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6646820	pH	2020/03/23			102	98 - 103			0.73	N/A		
6648025	Dissolved Organic Carbon	2020/03/23	88	80 - 120	100	80 - 120	<0.40	mg/L	0.19	20		
6648630	WAD Cyanide (Free)	2020/03/26	106	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20		
6648933	Gross Alpha	2020/04/01			116	60 - 140	<0.10	Bq/L	NC	N/A		
6648933	Gross Beta	2020/04/01			93	70 - 130	<0.10	Bq/L	NC	N/A		
6649063	Total Kjeldahl Nitrogen (TKN)	2020/03/23	95	80 - 120	99	80 - 120	<0.10	mg/L	2.4	20	94	80 - 120
6649228	NTA	2020/03/24	83	80 - 120	92	80 - 120	<0.050	mg/L	NC	20		
6652645	Colour	2020/03/25			100	80 - 120	<2	TCU	NC	25		
6652664	N-Nitrosodimethylamine	2020/03/30			108	65 - 135	<0.0009	ug/L	2.2	25		
6652690	Diquat	2020/03/25			79	50 - 130	<7.0	ug/L	2.6	40		
6652690	Paraquat	2020/03/25			73	50 - 130	<1.0	ug/L	5.3	40		
6653094	Methane	2020/03/25					<0.005	L/m3	0	20		
6653898	2,3,4,6-Tetrachlorophenol	2020/03/25	84	30 - 130	84	30 - 130	<0.50	ug/L	0.18	40		
6653898	2,4,5-T	2020/03/25	95	30 - 130	93	30 - 130	<1.0	ug/L	2.4	40		
6653898	2,4,6-Trichlorophenol	2020/03/25	70	30 - 130	73	30 - 130	<0.50	ug/L	1.2	40		
6653898	2,4-D	2020/03/25	85	30 - 130	83	30 - 130	<1.0	ug/L	1.7	40		
6653898	2,4-Dichlorophenol	2020/03/25	62	30 - 130	66	30 - 130	<0.25	ug/L	2.1	40		
6653898	Alachlor	2020/03/25	84	40 - 130	86	40 - 130	<0.50	ug/L	3.6	40		
6653898	Aldicarb	2020/03/25	81	70 - 130	81	70 - 130	<5.0	ug/L	2.2	40		
6653898	Atrazine + Desethyl-atrazine	2020/03/25	64	30 - 130	66	30 - 130	<1.0	ug/L	1.8	40		
6653898	Atrazine	2020/03/25	84	30 - 130	86	30 - 130	<0.50	ug/L	1.7	40		
6653898	Bendiocarb	2020/03/25	94	40 - 130	90	40 - 130	<2.0	ug/L	1.5	40		
6653898	Benzo(a)pyrene	2020/03/25	85	30 - 130	84	30 - 130	<0.0050	ug/L	1.6	40		
6653898	Bromoxynil	2020/03/25	94	40 - 130	91	40 - 130	<0.50	ug/L	0.033	40		
6653898	Carbaryl	2020/03/25	102	40 - 130	96	40 - 130	<5.0	ug/L	0.22	40		
6653898	Carbofuran	2020/03/25	96	40 - 130	89	40 - 130	<5.0	ug/L	0.42	40		
6653898	Chlorpyrifos (Dursban)	2020/03/25	84	40 - 130	84	40 - 130	<1.0	ug/L	1.0	40		
6653898	Cyanazine (Bladex)	2020/03/25	81	40 - 130	82	40 - 130	<1.0	ug/L	4.0	40		
6653898	Des-ethyl atrazine	2020/03/25	44	30 - 130	46	30 - 130	<0.50	ug/L	2.2	40		
6653898	Diazinon	2020/03/25	81	40 - 130	81	40 - 130	<1.0	ug/L	2.1	40		
6653898	Dicamba	2020/03/25	83	30 - 130	82	30 - 130	<1.0	ug/L	1.6	40		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6653898	Diclofop-methyl	2020/03/25	92	40 - 130	91	40 - 130	<0.90	ug/L	1.9	40		
6653898	Dimethoate	2020/03/25	79	40 - 130	79	40 - 130	<2.5	ug/L	4.3	40		
6653898	Dinoseb	2020/03/25	92	40 - 130	90	40 - 130	<1.0	ug/L	0.85	40		
6653898	Ethyl Parathion	2020/03/25	86	40 - 130	84	40 - 130	<1.0	ug/L	1.3	40		
6653898	Malathion	2020/03/25	79	40 - 130	78	40 - 130	<5.0	ug/L	1.9	40		
6653898	Methyl parathion	2020/03/25	88	30 - 130	86	30 - 130	<1.0	ug/L	3.0	40		
6653898	Metolachlor	2020/03/25	80	40 - 130	81	40 - 130	<0.50	ug/L	2.0	40		
6653898	Metribuzin (Sencor)	2020/03/25	103	40 - 130	103	40 - 130	<5.0	ug/L	2.4	40		
6653898	Pentachlorophenol	2020/03/25	78	25 - 130	77	25 - 130	<0.50	ug/L	0.78	40		
6653898	Phorate	2020/03/25	70	40 - 130	77	40 - 130	<0.50	ug/L	7.3	40		
6653898	Picloram	2020/03/25	55	10 - 130	49	10 - 130	<5.0	ug/L	19	40		
6653898	Prometryne	2020/03/25	82	30 - 130	84	30 - 130	<0.25	ug/L	0.98	40		
6653898	Simazine	2020/03/25	73	40 - 130	75	40 - 130	<1.0	ug/L	3.9	40		
6653898	Terbufos	2020/03/25	67	40 - 130	76	40 - 130	<0.50	ug/L	11	40		
6653898	Triallate	2020/03/25	83	40 - 130	83	40 - 130	<1.0	ug/L	1.5	40		
6653898	Trifluralin	2020/03/25	98	40 - 130	97	40 - 130	<1.0	ug/L	0.52	40		
6654193	Tritium	2020/03/26			99	92 - 108	<15	Bq/L	NC	N/A		
6654969	Diuron	2020/03/27	80	40 - 130	84	40 - 130	<10	ug/L	NC	40		
6654969	Guthion (Azinphos-methyl)	2020/03/27	86	40 - 130	88	40 - 130	<2.0	ug/L	NC	40		
6654969	Temephos	2020/03/27	87	40 - 130	90	40 - 130	<10	ug/L				
6655211	1,2,3,4,6,7,8-Hepta CDD	2020/03/28			96	80 - 140	<1.11, EDL=1.11	pg/L	17	35		
6655211	1,2,3,4,6,7,8-Hepta CDF	2020/03/28			91	80 - 140	<0.983, EDL=0.983	pg/L	0	35		
6655211	1,2,3,4,7,8,9-Hepta CDF	2020/03/28			88	80 - 140	<1.16, EDL=1.16	pg/L	3.5	35		
6655211	1,2,3,4,7,8-Hexa CDD	2020/03/28			83	80 - 140	<1.18, EDL=1.18	pg/L	7.0	35		
6655211	1,2,3,4,7,8-Hexa CDF	2020/03/28			87	80 - 140	<1.11, EDL=1.11	pg/L	5.9	35		
6655211	1,2,3,6,7,8-Hexa CDD	2020/03/28			102	80 - 140	<1.13, EDL=1.13	pg/L	2.9	35		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6655211	1,2,3,6,7,8-Hexa CDF	2020/03/28			106	80 - 140	<1.07, EDL=1.07	pg/L	13	35		
6655211	1,2,3,7,8,9-Hexa CDD	2020/03/28			91	80 - 140	<1.03, EDL=1.03	pg/L	4.3	35		
6655211	1,2,3,7,8,9-Hexa CDF	2020/03/28			101	80 - 140	<1.22, EDL=1.22	pg/L	17	35		
6655211	1,2,3,7,8-Penta CDD	2020/03/28			86	80 - 140	<1.14, EDL=1.14	pg/L	2.4	35		
6655211	1,2,3,7,8-Penta CDF	2020/03/28			89	80 - 140	<1.09, EDL=1.09	pg/L	3.3	35		
6655211	2,3,4,6,7,8-Hexa CDF	2020/03/28			94	80 - 140	<1.07, EDL=1.07	pg/L	7.7	35		
6655211	2,3,4,7,8-Penta CDF	2020/03/28			90	80 - 140	<1.11, EDL=1.11	pg/L	3.3	35		
6655211	2,3,7,8-Tetra CDD	2020/03/28			95	80 - 140	<1.04, EDL=1.04	pg/L	6.5	35		
6655211	2,3,7,8-Tetra CDF	2020/03/28			83	80 - 140	<1.06, EDL=1.06	pg/L	3.6	35		
6655211	Octa CDD	2020/03/28			91	80 - 140	<1.30, EDL=1.30 (4)	pg/L	0	35		
6655211	Octa CDF	2020/03/28			82	80 - 140	1.15, EDL=1.06	pg/L	0 (3)	35		
6655211	Total Hepta CDD	2020/03/28					<1.11, EDL=1.11	pg/L				
6655211	Total Hepta CDF	2020/03/28					<1.06, EDL=1.06	pg/L				
6655211	Total Hexa CDD	2020/03/28					<1.94, EDL=1.94 (4)	pg/L				
6655211	Total Hexa CDF	2020/03/28					<1.12, EDL=1.12	pg/L				
6655211	Total Penta CDD	2020/03/28					<1.14, EDL=1.14	pg/L				

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		SPIKED BLANK		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
6655211	Total Penta CDF	2020/03/28					<1.10, EDL=1.10	pg/L				
6655211	Total Tetra CDD	2020/03/28					<1.04, EDL=1.04	pg/L				
6655211	Total Tetra CDF	2020/03/28					<1.06, EDL=1.06	pg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) POTENTIAL EXCEEDANCE FOR PARAMETER

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(3) Recovery is outside method acceptance criteria.Minimal impact on data

(4) EMPC / NDR - Peak detected does not meet ratio criteria and has resulted in an elevated detection limit.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

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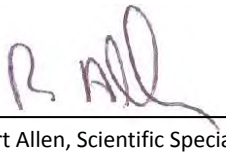
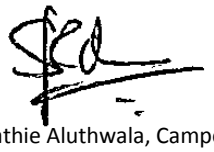
VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Robert Allen, Scientific Specialist



Sirimathie Aluthwala, Campobello Micro

Tom Mitchell, B.Sc, Supervisor, Compressed Gases

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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