

ENVIRONMENTAL WASTE PROCESSING FACILITY

REVISED 2017 ANNUAL REPORT

Nunavut Water Board
c/o Manager of Licensing
PO Box 119
Gjoa Haven, Nunavut X0B 1J0



November 5, 2019

O/Ref.: QE19-300-3

Confidential document



Environmental Waste Processing Facility

REVISED 2017 ANNUAL REPORT

Confidential document presented to

NUNAVUT WATER BOARD

Prepared and verified by:



Raquel Labranche, P.Eng.
Project Manager

Approved by:



Jennifer Godin
Director

NWB Annual Report

Year being reported:

2017

License No: 1BR-THI1722

Issued Date: May 4, 2017

Expiry Date: May 3, 2022

Project Name:

Hydrocarbon-Impacted Water Treatment Facility Project

Licensee:

Qikiqtaaluk Environmental Inc.

Mailing Address:

PO Box 2110
2027 Iqaluit Lane
Iqaluit, Numavut X0A 0H0

Name of Company filing Annual Report (if different from Name of Licensee please clarify relationship between the two entities, if applicable):

Same

General Background Information on the Project (*optional):

Licence Requirements: the licensee must provide the following information in accordance with

A summary report of water use and waste disposal activities, including, but not limited to: methods of obtaining water; sewage and greywater management; drill waste management; solid and hazardous waste management.

Water Source(s):	No water used	
Water Quantity:	0	Quantity Allowable Domestic (cu.m)
	0	Actual Quantity Used Domestic (cu.m)
	0	Quantity Allowable Drilling (cu.m)
	0	Total Quantity Used Drilling (cu.m)

Waste Management and/or Disposal

115 m³ of solid waste and 32, 000L of liquid waste were disposed of down South at an accredited location.

In 2017, 900 m³ of soils were in treatment but were not treated to below CCME criteria. Therefore, the soils remained in place to be treated in 2018.

Hydrocarbon-Impacted Water

Additional Details:

A list of unauthorized discharges and a summary of follow-up actions taken.

Spill No.: (as reported to the Spill Hot-line)
 Date of Spill:
 Date of Notification to an Inspector:
 Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

Revisions to the Spill Contingency Plan

Additional Details:

Revisions to the Abandonment and Restoration Plan

Additional Details:

Progressive Reclamation Work Undertaken

Additional Details (i.e., work completed and future works proposed)

Results of the Monitoring Program including:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where sources of water are utilized;

Additional Details:

The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are deposited;

Additional Details:

Results of any additional sampling and/or analysis that was requested by an Inspector

Additional Details: (date of request, analysis of results, data attached, etc)

N/A

Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.

Additional Details: (Attached or provided below)

N/A

Any responses or follow-up actions on inspection/compliance reports

Additional Details: (Dates of Report, Follow-up by the Licensee)

N/A

Any additional comments or information for the Board to consider

Attached are the analytical results for water samples collected at monitoring station THI-1 prior to discharge of treated water on July 5 ($\approx 1,270$ L), August 13 ($\approx 15,000$ L), and September 16 ($\approx 20,100$ L).

Date Submitted:

November 5, 2019

Submitted/Prepared by:

Raquel Labranche

Contact Information:**Tel:** 514-208-5981**Fax:** N/A**email:** rlabranche@genv.ca

C.O.C.: ---

REPORT No. B17-19822

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateaufort, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 14-Jul-17

JOB/PROJECT NO.: Soil & Water Treatment - 2017

DATE REPORTED: 19-Jul-17

P.O. NUMBER: 430001537

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res1-2			
			Sample I.D.	B17-19822-1			
			Date Collected	05-Jul-17			
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Aluminum	mg/L	0.01	SM 3120	17-Jul-17/O	0.11		
Antimony	mg/L	0.0001	EPA 200.8	18-Jul-17/O	0.0011		
Arsenic	mg/L	0.0001	EPA 200.8	18-Jul-17/O	0.0044		
Barium	mg/L	0.001	SM 3120	17-Jul-17/O	0.150		
Beryllium	mg/L	0.002	SM 3120	17-Jul-17/O	< 0.002		
Bismuth	mg/L	0.02	SM 3120	17-Jul-17/O	< 0.02		
Boron	mg/L	0.005	SM 3120	17-Jul-17/O	0.211		
Cadmium	mg/L	0.00001	EPA 200.8	18-Jul-17/O	0.000885		
Calcium	mg/L	0.02	SM 3120	17-Jul-17/O	97.6		
Chromium	mg/L	0.001	EPA 200.8	18-Jul-17/O	< 0.001		
Chromium (VI)	mg/L	0.001	MOE E3056	18-Jul-17/O	< 0.001 ¹		
Cobalt	mg/L	0.0001	EPA 200.8	18-Jul-17/O	0.0013		
Copper	mg/L	0.0001	EPA 200.8	18-Jul-17/O	0.0054		
Iron	mg/L	0.005	SM 3120	17-Jul-17/O	8.87		
Lead	mg/L	0.00002	EPA 200.8	18-Jul-17/O	0.00235		
Magnesium	mg/L	0.01	SM 3120	17-Jul-17/O	62.0		
Manganese	mg/L	0.001	SM 3120	17-Jul-17/O	0.395		
Mercury	mg/L	0.00002	SM 3112 B	18-Jul-17/O	< 0.00002		
Molybdenum	mg/L	0.0001	EPA 200.8	18-Jul-17/O	0.0120		
Nickel	mg/L	0.0002	EPA 200.8	18-Jul-17/O	0.0090		
Potassium	mg/L	0.1	SM 3120	17-Jul-17/O	247		
Selenium	mg/L	0.001	EPA 200.8	18-Jul-17/O	0.001		
Silver	mg/L	0.00002	EPA 200.8	18-Jul-17/O	0.00002		
Sodium	mg/L	0.2	SM 3120	17-Jul-17/O	495		
Strontium	mg/L	0.001	SM 3120	17-Jul-17/O	0.581		
Thallium	mg/L	0.00005	EPA 200.8	18-Jul-17/O	< 0.00005		
Tin	mg/L	0.05	SM 3120	17-Jul-17/O	< 0.05		



R.L. = Reporting Limit

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

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

Greg Clarkin, BSc., C. Chem
Lab Manager - Ottawa District

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

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DATE REPORTED: 19-Jul-17

P.O. NUMBER: 430001537

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res1-2			
			Sample I.D.	B17-19822-1			
			Date Collected	05-Jul-17			
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Uranium	mg/L	0.00005	EPA 200.8	18-Jul-17/O	0.00044		
Vanadium	mg/L	0.005	SM 3120	17-Jul-17/O	< 0.005		
Yttrium	mg/L	0.005	SM 3120	17-Jul-17/O	< 0.005		
Zinc	mg/L	0.005	SM 3120	17-Jul-17/O	0.132		

1 Chromium (VI) result is based on total chromium

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Greg Clarkin, BSc., C. Chem
Lab Manager - Ottawa District

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C.O.C.: ---

REPORT No. B17-15508

Rev. 1

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 07-Jun-17

JOB/PROJECT NO.: Discharge Criteria Res 1,2,5 & CP

DATE REPORTED: 23-Jun-17

P.O. NUMBER: 430001464

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res 1-2	Res 5 & CP		
			Sample I.D.	B17-15508-1	B17-15508-2		
			Date Collected	05-Jun-17	05-Jun-17		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Hardness (as CaCO ₃)	mg/L	1	SM 3120	14-Jun-17/O	1430	90	
Alkalinity(CaCO ₃) to pH4.5	mg/L	5	SM 2320B	07-Jun-17/O	172	124	
Conductivity @25°C	µmho/cm	1	SM 2510B	07-Jun-17/O	10400	382	
pH @25°C	pH Units		SM 4500H	07-Jun-17/O	7.65	7.85	
Total Suspended Solids	mg/L	3	SM 2540D	13-Jun-17/O	22	< 3	
Nitrite (N)	mg/L	0.05	SM4110C	07-Jun-17/O	< 0.05	< 0.05	
Nitrate (N)	mg/L	0.05	SM4110C	07-Jun-17/O	< 0.05	< 0.05	
Chloride	mg/L	0.5	SM4110C	07-Jun-17/O	2510	2.8	
Sulphate	mg/L	1	SM4110C	07-Jun-17/O	471	16	
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	20-Jun-17/O	0.65	< 0.01	
Phenolics	mg/L	0.001	MOEE 3179	16-Jun-17/R	0.013	0.020	
Aluminum	mg/L	0.01	SM 3120	13-Jun-17/O	0.08	0.09	
Antimony	mg/L	0.0001	EPA 200.8	12-Jun-17/O	0.0037	0.0002	
Arsenic	mg/L	0.0001	EPA 200.8	12-Jun-17/O	0.0168	0.0006	
Barium	mg/L	0.001	SM 3120	13-Jun-17/O	0.386	0.019	
Beryllium	mg/L	0.002	SM 3120	13-Jun-17/O	< 0.002	< 0.002	
Bismuth	mg/L	0.02	SM 3120	13-Jun-17/O	< 0.02	< 0.02	
Boron	mg/L	0.005	SM 3120	13-Jun-17/O	0.254	0.022	
Cadmium	mg/L	0.000014	EPA 200.8	12-Jun-17/O	0.000376	0.000087	
Cobalt	mg/L	0.0001	EPA 200.8	12-Jun-17/O	0.0021	0.0011	
Copper	mg/L	0.0001	EPA 200.8	12-Jun-17/O	0.0192	0.0057	
Lead	mg/L	0.00002	EPA 200.8	12-Jun-17/O	0.00070	0.00075	
Nickel	mg/L	0.0002	EPA 200.8	12-Jun-17/O	0.0160	0.0029	
Selenium	mg/L	0.001	EPA 200.8	12-Jun-17/O	0.007	< 0.001	
Silver	mg/L	0.00002	EPA 200.8	12-Jun-17/O	0.00004	< 0.00002	
Thallium	mg/L	0.00005	EPA 200.8	12-Jun-17/O	< 0.00005	< 0.00005	
Uranium	mg/L	0.00005	EPA 200.8	12-Jun-17/O	0.00126	0.00044	

note: Revision created to add Hardness to Report.

R.L. = Reporting Limit

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

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill



Gord Murphy
Lab Supervisor

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C.O.C.: ---

REPORT No. B17-15508

Rev. 1

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 07-Jun-17

JOB/PROJECT NO.: Discharge Criteria Res 1,2,5 & CP

DATE REPORTED: 23-Jun-17

P.O. NUMBER: 430001464

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res 1-2	Res 5 & CP		
			Sample I.D.	B17-15508-1	B17-15508-2		
			Date Collected	05-Jun-17	05-Jun-17		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Calcium	mg/L	0.02	SM 3120	13-Jun-17/O	241	32.3	
Chromium	mg/L	0.002	SM 3120	13-Jun-17/O	< 0.002	< 0.002	
Chromium (VI)	mg/L	0.002	MOE E3056	13-Jun-17/O	< 0.002 ¹	< 0.002 ¹	
Copper	mg/L	0.002	SM 3120	13-Jun-17/O	0.008	0.007	
Iron	mg/L	0.005	SM 3120	13-Jun-17/O	0.134	0.290	
Lead	mg/L	0.02	SM 3120	13-Jun-17/O	< 0.02	< 0.02	
Magnesium	mg/L	0.01	SM 3120	13-Jun-17/O	202	2.32	
Manganese	mg/L	0.001	SM 3120	13-Jun-17/O	1.55	0.447	
Mercury	µg/L	0.02	SM 3112B	13-Jun-17/R	< 0.02	< 0.02	
Molybdenum	mg/L	0.01	SM 3120	13-Jun-17/O	0.01	< 0.01	
Nickel	mg/L	0.01	SM 3120	13-Jun-17/O	0.01	< 0.01	
Potassium	mg/L	0.1	SM 3120	13-Jun-17/O	53.6	63.7	
Sodium	mg/L	0.2	SM 3120	13-Jun-17/O	1720	3.9	
Strontium	mg/L	0.001	SM 3120	13-Jun-17/O	1.59	0.070	
Tin	mg/L	0.05	SM 3120	13-Jun-17/O	< 0.05	< 0.05	
Titanium	mg/L	0.005	SM 3120	13-Jun-17/O	< 0.005	< 0.005	
Vanadium	mg/L	0.005	SM 3120	13-Jun-17/O	< 0.005	< 0.005	
Yttrium	mg/L	0.005	SM 3120	13-Jun-17/O	< 0.005	< 0.005	
Zinc	mg/L	0.005	SM 3120	13-Jun-17/O	0.162	0.011	
Acenaphthene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Acenaphthylene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Anthracene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Benzo(a)anthracene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Benzo(a)pyrene	µg/L	0.01	EPA 8270	13-Jun-17/K	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Benzo(b+k)fluoranthene	µg/L	0.1	EPA 8270	13-Jun-17/K	< 0.1	< 0.1	
Benzo(g,h,i)perylene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	

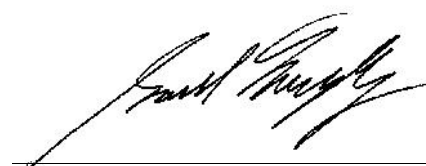
note: Revision created to add Hardness to Report.

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

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Gord Murphy
Lab Supervisor

C.O.C.: ---

REPORT No. B17-15508

Rev. 1

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 07-Jun-17

JOB/PROJECT NO.: Discharge Criteria Res 1,2,5 & CP

DATE REPORTED: 23-Jun-17

P.O. NUMBER: 430001464

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

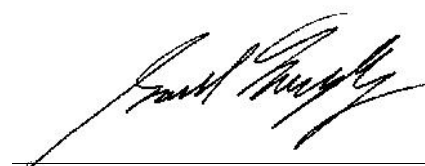
			Client I.D.	Res 1-2	Res 5 & CP		
			Sample I.D.	B17-15508-1	B17-15508-2		
			Date Collected	05-Jun-17	05-Jun-17		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Benzo(k)fluoranthene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Chrysene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Dibenzo(a,h)anthracene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Fluoranthene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Fluorene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	0.14	
Indeno(1,2,3,-cd)pyrene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
Methylnaphthalene,1-	µg/L	0.05	EPA 8270	13-Jun-17/K	0.09	0.24	
Methylnaphthalene,2-	µg/L	0.05	EPA 8270	13-Jun-17/K	0.14	0.20	
Methylnaphthalene 2-(1-)	µg/L	0.07	EPA 8270	13-Jun-17/K	0.22	0.44	
Naphthalene	µg/L	0.05	EPA 8270	13-Jun-17/K	0.30	0.23	
Phenanthrene	µg/L	0.05	EPA 8270	13-Jun-17/K	0.08	< 0.05	
Pyrene	µg/L	0.05	EPA 8270	13-Jun-17/K	< 0.05	< 0.05	
2-Fluorobiphenyl (SS)	% rec.	10	EPA 8270	13-Jun-17/K	94.0	96.0	
Terphenyl-d14 (SS)	% rec.	10	EPA 8270	13-Jun-17/K	105	122	
Benzene	µg/L	0.5	EPA 8260	14-Jun-17/O	< 0.5	< 0.5	
Toluene	µg/L	0.5	EPA 8260	14-Jun-17/O	< 0.5	0.9	
Ethylbenzene	µg/L	0.5	EPA 8260	14-Jun-17/O	< 0.5	< 0.5	
Xylene, m,p-	µg/L	0.4	EPA 8260	14-Jun-17/O	< 0.4	< 0.4	
Styrene	µg/L	0.5	EPA 8260	14-Jun-17/O	< 0.5	< 0.5	
Xylene, o-	µg/L	0.1	EPA 8260	14-Jun-17/O	< 0.1	0.7	
Dichloroethane-d4,1,2-(SS)	%		EPA 8260	14-Jun-17/O	109	105	
Toluene-d8 (SS)	%		EPA 8260	14-Jun-17/O	103	103	
Bromofluorobenzene,4(SS)	%		EPA 8260	14-Jun-17/O	91.0	91.0	
PHC F1 (C6-C10)	µg/L	20	MOE E3421	14-Jun-17/O	< 20	24	
PHC F2 (>C10-C16)	µg/L	50	MOE E3421	09-Jun-17/K	150	< 50	
PHC F3 (>C16-C34)	µg/L	400	MOE E3421	09-Jun-17/K	< 400	< 400	
PHC F4 (>C34-C50)	µg/L	400	MOE E3421	09-Jun-17/K	< 400	< 400	

note: Revision created to add Hardness to Report.

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Gord Murphy
Lab Supervisor

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Rev. 1

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Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

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Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 07-Jun-17

JOB/PROJECT NO.: Discharge Criteria Res 1,2,5 & CP

DATE REPORTED: 23-Jun-17

P.O. NUMBER: 430001464

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res 1-2	Res 5 & CP		
			Sample I.D.	B17-15508-1	B17-15508-2		
			Date Collected	05-Jun-17	05-Jun-17		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Oil & Grease-Total	mg/L	1.0	SM 5520	14-Jun-17/K	< 1.0	1.4	

1 Chromium (VI) result is based on total chromium

note: Revision created to add Hardness to Report.

R.L. = Reporting Limit

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Gord Murphy
Lab Supervisor

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REPORT No. B17-23911

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 18-Aug-17

JOB/PROJECT NO.: Discharge Criteria Res 1,2

DATE REPORTED: 23-Aug-17

P.O. NUMBER: 430001626

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res1-2_20170813			
			Sample I.D.	B17-23911-1			
			Date Collected	13-Aug-17			
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Hardness (as CaCO ₃)	mg/L	1	SM 3120	21-Aug-17/O	487		
Alkalinity(CaCO ₃) to pH4.5	mg/L	5	SM 2320B	18-Aug-17/O	175		
pH @25°C	pH Units		SM 4500H	18-Aug-17/O	7.96		
Conductivity @25°C	µmho/cm	1	SM 2510B	18-Aug-17/O	3860		
Total Suspended Solids	mg/L	3	SM 2540D	23-Aug-17/O	13		
Chloride	mg/L	0.5	SM4110C	18-Aug-17/O	922		
Nitrite (N)	mg/L	0.1	SM4110C	18-Aug-17/O	< 1 ²		
Nitrate (N)	mg/L	0.1	SM4110C	18-Aug-17/O	< 1 ²		
Sulphate	mg/L	1	SM4110C	18-Aug-17/O	107		
Aluminum	mg/L	0.01	SM 3120	21-Aug-17/O	0.14		
Antimony	mg/L	0.0001	EPA 200.8	21-Aug-17/O	0.0003		
Arsenic	mg/L	0.0001	EPA 200.8	21-Aug-17/O	0.0046		
Barium	mg/L	0.001	SM 3120	21-Aug-17/O	0.079		
Beryllium	mg/L	0.002	SM 3120	21-Aug-17/O	< 0.002		
Bismuth	mg/L	0.02	SM 3120	21-Aug-17/O	< 0.02		
Boron	mg/L	0.005	SM 3120	21-Aug-17/O	0.311		
Cadmium	mg/L	0.00001	EPA 200.8	21-Aug-17/O	0.000095		
Calcium	mg/L	0.02	SM 3120	21-Aug-17/O	96.1		
Chromium	mg/L	0.001	EPA 200.8	21-Aug-17/O	0.001		
Chromium (VI)	mg/L	0.001	MOE E3056	22-Aug-17/O	< 0.001 ¹		
Cobalt	mg/L	0.0001	EPA 200.8	21-Aug-17/O	0.0017		
Copper	mg/L	0.0001	EPA 200.8	21-Aug-17/O	0.0055		
Iron	mg/L	0.005	SM 3120	21-Aug-17/O	2.94		
Lead	mg/L	0.00002	EPA 200.8	21-Aug-17/O	0.00317		
Magnesium	mg/L	0.01	SM 3120	21-Aug-17/O	60.0		
Manganese	mg/L	0.001	SM 3120	21-Aug-17/O	1.07		
Mercury	mg/L	0.00002	SM 3112 B	21-Aug-17/O	< 0.00002		



R.L. = Reporting Limit

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

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

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C.O.C.: ---

REPORT No. B17-23911

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 18-Aug-17

JOB/PROJECT NO.: Discharge Criteria Res 1,2

DATE REPORTED: 23-Aug-17

P.O. NUMBER: 430001626

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res1-2_20170813			
			Sample I.D.	B17-23911-1			
			Date Collected	13-Aug-17			
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Molybdenum	mg/L	0.0001	EPA 200.8	21-Aug-17/O	0.0112		
Nickel	mg/L	0.0002	EPA 200.8	21-Aug-17/O	0.0079		
Potassium	mg/L	0.1	SM 3120	21-Aug-17/O	39.4		
Selenium	mg/L	0.001	EPA 200.8	21-Aug-17/O	0.001		
Silver	mg/L	0.00002	EPA 200.8	21-Aug-17/O	< 0.00002		
Sodium	mg/L	0.2	SM 3120	21-Aug-17/O	500		
Strontium	mg/L	0.001	SM 3120	21-Aug-17/O	0.465		
Tin	mg/L	0.05	SM 3120	21-Aug-17/O	< 0.05		
Titanium	mg/L	0.005	SM 3120	21-Aug-17/O	< 0.005		
Uranium	mg/L	0.00005	EPA 200.8	21-Aug-17/O	0.00043		
Vanadium	mg/L	0.005	SM 3120	21-Aug-17/O	< 0.005		
Yttrium	mg/L	0.005	SM 3120	21-Aug-17/O	< 0.005		
Zinc	mg/L	0.005	SM 3120	21-Aug-17/O	0.023		
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	21-Aug-17/O	< 0.01		
Phenolics	mg/L	0.001	MOEE 3179	21-Aug-17/O	< 0.001		
Oil & Grease-Total	mg/L	1.0	SM 5520	21-Aug-17/K	1.0		

- 1 Chromium (VI) result is based on total chromium
- 2 Elevated RL's due to Chloride interferences



Greg Clarkin, BSc., C. Chem
Lab Manager - Ottawa District

R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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C.O.C.: ---

REPORT No. B17-23899

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

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Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 18-Aug-17

JOB/PROJECT NO.: Discharge Criteria Res1,2,5 & CP

DATE REPORTED: 24-Aug-17

P.O. NUMBER: 430001626

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res1-2-20170813			
			Sample I.D.	B17-23899-1			
			Date Collected	13-Aug-17			
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Benzene	µg/L	0.5	EPA 8260	23-Aug-17/O	< 0.5		
Toluene	µg/L	0.5	EPA 8260	23-Aug-17/O	< 0.5		
Ethylbenzene	µg/L	0.5	EPA 8260	23-Aug-17/O	< 0.5		
Xylene, m,p-	µg/L	0.4	EPA 8260	23-Aug-17/O	< 0.4		
Xylene, o-	µg/L	0.1	EPA 8260	23-Aug-17/O	< 0.1		
Xylene, m,p,o-	µg/L	0.4	EPA 8260	23-Aug-17/O	< 0.4		
Toluene-d8 (SS)	%		EPA 8260	23-Aug-17/O	113		
PHC F1 (C6-C10)	µg/L	20	MOE E3421	23-Aug-17/O	< 20		
PHC F2 (>C10-C16)	µg/L	50	MOE E3421	23-Aug-17/K	240		
PHC F3 (>C16-C34)	µg/L	400	MOE E3421	23-Aug-17/K	< 400		
PHC F4 (>C34-C50)	µg/L	400	MOE E3421	23-Aug-17/K	< 400		
Acenaphthene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Acenaphthylene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Anthracene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Benzo(a)anthracene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Benzo(a)pyrene	µg/L	0.01	EPA 8270	22-Aug-17/K	< 0.01		
Benzo(b)fluoranthene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Benzo(b+k)fluoranthene	µg/L	0.1	EPA 8270	22-Aug-17/K	< 0.1		
Benzo(g,h,i)perylene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Benzo(k)fluoranthene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Chrysene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Dibenzo(a,h)anthracene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Fluoranthene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Fluorene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Indeno(1,2,3,-cd)pyrene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Methylnaphthalene,1-	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Methylnaphthalene,2-	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		



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

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

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C.O.C.: ---

REPORT No. B17-23899

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
 Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
 Ottawa Ontario K1V 7P1
 Tel: 613-526-0123
 Fax: 613-526-1244

DATE RECEIVED: 18-Aug-17

JOB/PROJECT NO.: Discharge Criteria Res1,2,5 & CP

DATE REPORTED: 24-Aug-17

P.O. NUMBER: 430001626

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	Res1-2-20170813			
			Sample I.D.	B17-23899-1			
			Date Collected	13-Aug-17			
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Methylnaphthalene 2-(1-)	µg/L	0.07	EPA 8270	22-Aug-17/K	< 0.07		
Naphthalene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Phenanthrene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Pyrene	µg/L	0.05	EPA 8270	22-Aug-17/K	< 0.05		
Terphenyl-d14 (SS)	% rec.	10	EPA 8270	22-Aug-17/K	71.0		

R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie



Greg Clarkin , BSc., C. Chem
 Lab Manager - Ottawa District

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C.O.C.: ---

REPORT No. B17-28021

Report To:

Qikiqtaaluk Env. Inc.
9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 21-Sep-17

JOB/PROJECT NO.: QE17-110-2

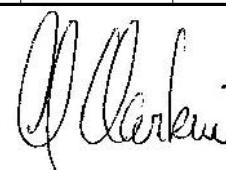
DATE REPORTED: 26-Sep-17

P.O. NUMBER: 430001702

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	RES.1-2-3	CP		
			Sample I.D.	B17-28021-1	B17-28021-2		
			Date Collected	16-Sep-17	16-Sep-17		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Hardness (as CaCO ₃)	mg/L	1	SM 3120	22-Sep-17/O	245	321	
Alkalinity(CaCO ₃) to pH4.5	mg/L	5	SM 2320B	26-Sep-17/O	180	295	
pH @25°C	pH Units		SM 4500H	21-Sep-17/O	8.02	8.18	
Conductivity @25°C	µmho/cm	1	SM 2510B	21-Sep-17/O	1570	1150	
Total Suspended Solids	mg/L	3	SM 2540D	26-Sep-17/O	27	10	
Chloride	mg/L	0.5	SM4110C	21-Sep-17/O	293	136	
Nitrite (N)	mg/L	0.1	SM4110C	21-Sep-17/O	< 0.1	< 0.1	
Nitrate (N)	mg/L	0.1	SM4110C	21-Sep-17/O	< 0.1	< 0.1	
Sulphate	mg/L	1	SM4110C	21-Sep-17/O	53	62	
Aluminum	mg/L	0.01	SM 3120	22-Sep-17/O	0.38	0.36	
Antimony	mg/L	0.0001	EPA 200.8	22-Sep-17/O	0.0010	0.0001	
Arsenic	mg/L	0.0001	EPA 200.8	22-Sep-17/O	0.0031	0.0025	
Barium	mg/L	0.001	SM 3120	22-Sep-17/O	0.079	0.040	
Beryllium	mg/L	0.002	SM 3120	22-Sep-17/O	< 0.002	< 0.002	
Bismuth	mg/L	0.02	SM 3120	22-Sep-17/O	< 0.02	< 0.02	
Boron	mg/L	0.005	SM 3120	22-Sep-17/O	0.127	0.158	
Cadmium	mg/L	0.00014	EPA 200.8	22-Sep-17/O	0.000300	0.000167	
Calcium	mg/L	0.02	SM 3120	22-Sep-17/O	55.8	98.0	
Chromium	mg/L	0.001	EPA 200.8	22-Sep-17/O	0.001	0.001	
Cobalt	mg/L	0.0001	EPA 200.8	22-Sep-17/O	0.0010	0.0036	
Copper	mg/L	0.0001	EPA 200.8	22-Sep-17/O	0.0102	0.0162	
Iron	mg/L	0.005	SM 3120	22-Sep-17/O	2.38	3.27	
Lead	mg/L	0.00002	EPA 200.8	22-Sep-17/O	0.0107	0.00381	
Magnesium	mg/L	0.01	SM 3120	22-Sep-17/O	25.7	18.5	
Manganese	mg/L	0.001	SM 3120	22-Sep-17/O	0.546	3.70	
Mercury	mg/L	0.00002	SM 3112 B	22-Sep-17/O	< 0.00002	< 0.00002	
Molybdenum	mg/L	0.0001	EPA 200.8	22-Sep-17/O	0.0068	0.0039	
Nickel	mg/L	0.0002	EPA 200.8	22-Sep-17/O	0.0050	0.0088	



R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

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C.O.C.: ---

REPORT No. B17-28021

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 21-Sep-17

JOB/PROJECT NO.: QE17-110-2

DATE REPORTED: 26-Sep-17

P.O. NUMBER: 430001702

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	RES.1-2-3	CP		
			Sample I.D.	B17-28021-1	B17-28021-2		
			Date Collected	16-Sep-17	16-Sep-17		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Potassium	mg/L	0.1	SM 3120	22-Sep-17/O	31.8	38.7	
Selenium	mg/L	0.001	EPA 200.8	22-Sep-17/O	< 0.001	< 0.001	
Sodium	mg/L	0.2	SM 3120	22-Sep-17/O	207	92.1	
Silver	mg/L	0.00002	EPA 200.8	22-Sep-17/O	0.00003	0.00003	
Strontium	mg/L	0.001	SM 3120	22-Sep-17/O	0.301	0.294	
Tin	mg/L	0.05	SM 3120	22-Sep-17/O	< 0.05	< 0.05	
Titanium	mg/L	0.005	SM 3120	22-Sep-17/O	0.012	0.013	
Uranium	mg/L	0.00005	EPA 200.8	22-Sep-17/O	0.00182	0.00193	
Vanadium	mg/L	0.005	SM 3120	22-Sep-17/O	< 0.005	< 0.005	
Yttrium	mg/L	0.005	SM 3120	22-Sep-17/O	< 0.005	< 0.005	
Zinc	mg/L	0.005	SM 3120	22-Sep-17/O	0.061	0.016	
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	25-Sep-17/O	0.17	0.07	
Phenolics	mg/L	0.001	MOEE 3179	26-Sep-17/O	< 0.001	0.001	
Oil & Grease-Total	mg/L	1.0	SM 5520	25-Sep-17/K	9.5	2.4	
Benzene	µg/L	0.5	EPA 8260	22-Sep-17/O	< 0.5	< 0.5	
Toluene	µg/L	0.5	EPA 8260	22-Sep-17/O	< 0.5	< 0.5	
Ethylbenzene	µg/L	0.5	EPA 8260	22-Sep-17/O	< 0.5	< 0.5	
Xylene, m,p-	µg/L	0.4	EPA 8260	22-Sep-17/O	< 0.4	< 0.4	
Xylene, o-	µg/L	0.1	EPA 8260	22-Sep-17/O	< 0.1	< 0.1	
Xylene, m,p,o-	µg/L	0.4	EPA 8260	22-Sep-17/O	< 0.4	< 0.4	
Toluene-d8 (SS)	%		EPA 8260	22-Sep-17/O	100	99.0	
PHC F1 (C6-C10)	µg/L	20	MOE E3421	22-Sep-17/O	112	24	
PHC F2 (>C10-C16)	µg/L	50	MOE E3421	25-Sep-17/K	1310	< 50	
PHC F3 (>C16-C34)	µg/L	400	MOE E3421	25-Sep-17/K	7500	< 400	
PHC F4 (>C34-C50)	µg/L	400	MOE E3421	25-Sep-17/K	500	< 400	
Acenaphthene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Acenaphthylene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Anthracene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	



Greg Clarkin, BSc., C. Chem
Lab Manager - Ottawa District

R.L. = Reporting Limit

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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C.O.C.: ---

REPORT No. B17-28021

Report To:

Qikiqtaaluk Env. Inc.

9935, rue de Chateauneuf, Entrée 1
Brossard Quebec J4Z 3V4 Canada

Attention: Olivier Simard

Caduceon Environmental Laboratories

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Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 21-Sep-17

JOB/PROJECT NO.: QE17-110-2

DATE REPORTED: 26-Sep-17

P.O. NUMBER: 430001702

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

			Client I.D.	RES.1-2-3	CP		
			Sample I.D.	B17-28021-1	B17-28021-2		
			Date Collected	16-Sep-17	16-Sep-17		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed			
Benzo(a)anthracene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Benzo(a)pyrene	µg/L	0.01	EPA 8270	25-Sep-17/K	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Benzo(b+k)fluoranthene	µg/L	0.1	EPA 8270	25-Sep-17/K	< 0.1	< 0.1	
Benzo(g,h,i)perylene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Benzo(k)fluoranthene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Chrysene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Dibenzo(a,h)anthracene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Fluoranthene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Fluorene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Indeno(1,2,3,-cd)pyrene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Methylnaphthalene,1-	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Methylnaphthalene,2-	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Methylnaphthalene 2-(1-)	µg/L	0.07	EPA 8270	25-Sep-17/K	< 0.07	< 0.07	
Naphthalene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Phenanthrene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Pyrene	µg/L	0.05	EPA 8270	25-Sep-17/K	< 0.05	< 0.05	
Terphenyl-d14 (SS)	% rec.	10	EPA 8270	25-Sep-17/K	63	54	

R.L. = Reporting Limit

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

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie



Greg Clarkin , BSc., C. Chem
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