

File No.: 04-1000-20-2017-450

February 9, 2018

s.22(1)

Dear s.22(1)

Re: **Request for Access to Records under the Freedom of Information and Protection of Privacy Act (the "Act")**

I am responding to your request of November 14, 2017 for:

Environmental Test Hole Reports or other contamination investigation reports conducted underlying Renfrew Street by Keystone Environmental from January 1, 2015 to November 14, 2017.

All responsive records are attached.

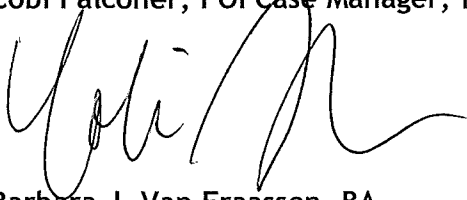
Under section 52 of the Act you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your request. The Act allows you 30 business days from the date you receive this notice to request a review by writing to: Office of the Information & Privacy Commissioner, info@oipc.bc.ca or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number assigned to your request (#04-1000-20-2017-450); 2) a copy of this letter; 3) a copy of your original request for information sent to the City of Vancouver; and 4) detailed reasons or grounds on which you are seeking the review.

Please do not hesitate to contact the Freedom of Information Office at foi@vancouver.ca if you have any questions.

Yours truly,

Cobi Falconer, FOI Case Manager, for

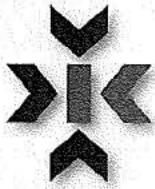
A handwritten signature in black ink, appearing to read 'Cobi Falconer', written over the typed name.

Barbara J. Van Fraassen, BA
Director, Access to Information & Privacy

Barbara.vanfraassen@vancouver.ca
453 W. 12th Avenue Vancouver BC V5Y 1V4
Phone: 604.873.7999
Fax: 604.873.7419

Encl.

:kt



**Keystone
Environmental**
Knowledge-Driven Results

September 15, 2017

Ms. Heidi Horlacher
City of Vancouver
Suite 320 – 507 West Broadway
Vancouver BC V5Z 0B4

Dear Ms. Horlacher:

**Re: Environmental Summary Letter Additional Information – City of Vancouver
Investigations
2889 East 1st Avenue and 1615 Renfrew Street, Vancouver, BC
Project No. 12732**

As requested, please find attached borehole logs, tabulated analytical results compared to the applicable standards and laboratory analytical reports associated with the Environmental Summary Letter dated July 25, 2017.

We trust this is the information you require at this time. Please contact us if you have any questions.

Sincerely,

Keystone Environmental Ltd.

Sumeet Dogra, P.Eng.
Project Manager

I:\12700-12799\12732\Phase 00004A - Off-Site DS\COV Additional Information Request\Report\12732 170915 Additional information Request - COV.docx

ATTACHMENT:

- Tables
- BH Logs
- Laboratory Certificates

TABLES

GLOSSARY: GROUNDWATER ANALYTICAL RESULTS

2889 East 1st Avenue and 1615 Renfrew Street, Vancouver, BC

Renfrew View Homes Ltd.

Project #: 12732

September 2017

List of Acronyms

AW_{FW}	Aquatic Life Water Use (freshwater)
AW_M	Aquatic Life Water Use (marine)
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CSR	British Columbia Contaminated Sites Regulation
DW	Drinking Water Use
EPHW₁₀₋₁₉	Extractable Petroleum Hydrocarbons (carbon range 10 to 19)
EPHW₁₉₋₃₂	Extractable Petroleum Hydrocarbons (carbon range 19 to 32)
HEPHw	Heavy Extractable Petroleum Hydrocarbons (corrected for PAHs)
HMW-PAHs	Heavy Molecular Weight Polycyclic Aromatic Hydrocarbons
HWR	British Columbia Hazardous Waste Regulation
IW	Irrigation Water Use
LEPHw	Light Extractable Petroleum Hydrocarbons (corrected for PAHs)
LMW-PAHs	Light Molecular Weight Polycyclic Aromatic Hydrocarbons
LW	Livestock Water Use
MTBE	Methyl tert-Butyl Ether
n/s	No Standard
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
RDL	Reported Detection Limit
RPD	Relative Percent Difference
TDS	Total Dissolved Solids
VHw₆₋₁₀	Volatile Petroleum Hydrocarbons (carbon range 6 to 10)
VOC	Volatile Organic Compounds
VPHw	Volatile Petroleum Hydrocarbons (corrected for BTEX)

List of Symbols

<	Concentration is less than the laboratory reported detection limit
*	Laboratory reported detection limit is greater than applicable standard/guideline
--	Sample was not analyzed for the specified constituent
a	CSR standard is hardness dependent
b	CSR standard is pH dependent
c	Temperature data not available, T>20°C assumed for conservativeness
d	CSR standard is Chloride dependent
e	CSR standard is Salinity dependent
f	CSR standard is pH and T dependent

List of Units

mbg	Metres below grade
µg/L	Micrograms per litre
mg/L	Milligrams per litre

Groundwater Exceedances

125	Exceeds CSR DW standards
125	Exceeds CSR AW _M standards

QA/QC Exceedances

45%	RPD exceeds 20%
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Formulas

RPD	$RPD = ((\text{Max. Concentration} - \text{Min. Concentration}) / ((\text{Max. Concentration} + \text{Min. Concentration}) / 2)) * 100$
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**TABLE 1: GROUNDWATER ANALYTICAL RESULTS
INORGANICS**

2889 East 1st Avenue and 1615 Renfrew Street, Vancouver, BC
Renfrew View Homes Ltd.
Project #: 12732
September 2017

CSR DW Standards	CSR AW _w Standards
n/s	n/s

SAMPLE ID	Units	MW16-11S	MW16-11D	MW16-12S	MW16-12D	MW16-A	RPD
DATE SAMPLED		14-Jun-16	14-Jun-16	14-Jun-16	14-Jun-16	14-Jun-16	for
LAB CERTIFICATE		B647969	B647969	B647969	B647969	B647969	MW16-12D
LAB SAMPLE ID		OV5938	OV5939	OV5940	OV5941	OV5947	and
TOP OF SCREEN (mbg)		13.5	17.7	4.6	7.6	Duplicate of	MW16-A
BOTTOM OF SCREEN (mbg)		15.0	19.2	6.1	9.1	MW16-12D	
hardness	mg/L	86.2	39.1	58.2	26.9	26.6	--

9500	n/s
6	200
10	125
1000	5000
n/s	1000
n/s	n/s
5000	50000
5	1
n/s	n/s
50	150
n/s	40
1000	20
6500	n/s
10	20
730	n/s
100000	n/s
550	n/s
1	1
250	10000
n/s	83
n/s	n/s
10	540
n/s	n/s
n/s	15
22000	n/s
n/s	n/s
n/s	3
22000	n/s
n/s	1000
20	1000
n/s	n/s
5000	100
n/s	n/s

Dissolved Metals							
aluminum	µg/L	--	--	--	--	--	--
antimony	µg/L	--	--	--	--	--	--
arsenic	µg/L	--	--	--	--	--	--
barium	µg/L	--	--	--	--	--	--
beryllium	µg/L	--	--	--	--	--	--
bismuth	µg/L	--	--	--	--	--	--
boron	µg/L	--	--	--	--	--	--
cadmium	µg/L	--	--	--	--	--	--
calcium	µg/L	--	--	--	--	--	--
chromium (total)	µg/L	--	--	--	--	--	--
cobalt	µg/L	--	--	--	--	--	--
copper	µg/L	--	--	--	--	--	--
iron	µg/L	--	--	--	--	--	--
lead	µg/L	<0.20	0.61	<0.20	0.23	<0.20	--
lithium	µg/L	--	--	--	--	--	--
magnesium	µg/L	--	--	--	--	--	--
manganese	µg/L	--	--	--	--	--	--
mercury	µg/L	--	--	--	--	--	--
molybdenum	µg/L	--	--	--	--	--	--
nickel	µg/L	--	--	--	--	--	--
potassium	µg/L	--	--	--	--	--	--
selenium	µg/L	--	--	--	--	--	--
silicon	µg/L	--	--	--	--	--	--
silver	µg/L	--	--	--	--	--	--
strontium	µg/L	--	--	--	--	--	--
sulphur	µg/L	--	--	--	--	--	--
thallium	µg/L	--	--	--	--	--	--
tin	µg/L	--	--	--	--	--	--
titanium	µg/L	--	--	--	--	--	--
uranium	µg/L	--	--	--	--	--	--
vanadium	µg/L	--	--	--	--	--	--
zinc	µg/L	--	--	--	--	--	--
zirconium	µg/L	--	--	--	--	--	--

Groundwater Exceedances

125	Exceeds CSR DW standards
125	Exceeds CSR AW _w standards

QA/QC Exceedances

45%	RPD exceeds 20%
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TABLE 2: GROUNDWATER ANALYTICAL RESULTS

HYDROCARBONS

2889 East 1st Avenue and 1615 Renfrew Street, Vancouver, BC
 Renfrew View Homes Ltd.
 Project #: 12732
 September 2017

CSR DW Standards	CSR AW _m Standards
n/s	1500
15000	15000
n/s	500
5000	5000
n/s	n/s
n/s	n/s

n/s	1500
15000	15000
n/s	500
5000	5000
n/s	n/s
n/s	n/s

5	1000
2.4	2500
n/s	720
24	3300
300	n/s

n/s	60
n/s	n/s
n/s	0.5
n/s	1
n/s	1
0.01	0.1
n/s	n/s
n/s	n/s
n/s	n/s
n/s	1
n/s	n/s
n/s	2
n/s	120
n/s	n/s
n/s	n/s
n/s	10
n/s	3
n/s	0.2
n/s	34
n/s	n/s
n/s	n/s
n/s	n/s

SAMPLE ID	Units	MW15-2	MW15-B	RPD	MW15-4	MW16-11S	MW16-11D	MW16-12S	MW16-12D	MW16-A	RPD
DATE SAMPLED		13-Nov-15	13-Nov-15	for	12-Nov-15	14-Jun-16	14-Jun-16	14-Jun-16	14-Jun-16	14-Jun-16	for
LAB CERTIFICATE		B5A1688	B5A1688	MW15-2	B5A1688	B647969	B647969	B647969	B647969	B647969	MW16-12D
LAB SAMPLE ID		NQ3089	NQ3092	and	NQ3083	OV5938	OV5939	OV5940	OV5941	OV5947	and
TOP OF SCREEN (mbg)		6.1	Duplicate of	MW15-B	4.6	13.5	17.7	4.6	7.6	Duplicate of	MW16-A
BOTTOM OF SCREEN (mbg)		7.6	MW15-2		6.1	15.0	19.2	6.1	9.1	MW16-12D	

Petroleum Hydrocarbons											
VPHw	µg/L	<300	<300	--	<300	<300	<300	<300	<300	<300	--
VHw ₆₋₁₆	µg/L	<300	<300	--	<300	<300	<300	<300	<300	<300	--
LEPHw	µg/L	--	--	--	<200	<200	<200	<200	<200	<200	--
EPHW ₁₅₋₁₉	µg/L	--	--	--	<200	<200	<200	<200	<200	<200	--
HEPHw	µg/L	--	--	--	<200	<200		650	<200	<200	--
EPHW ₁₈₋₃₂	µg/L	--	--	--	<200	<200		650	<200	<200	--

Monocyclic Aromatic Hydrocarbons												
benzene	µg/L	<0.40	<0.40	--	<0.40		1.8	0.49	0.67	0.53	0.64	--
ethylbenzene	µg/L	<0.40	<0.40	--	<0.40		1.3	<0.40	<0.40	<0.40	<0.40	--
styrene	µg/L	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
toluene	µg/L	<0.40	<0.40	--	<0.40		10	0.91	<0.40	<0.40	<0.40	--
xylene	µg/L	<0.40	<0.40	--	<0.40		8.2	<0.40	<0.40	<0.40	<0.40	--

Polycyclic Aromatic Hydrocarbons												
acenaphthene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
acenaphthylene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
acridine	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
anthracene	µg/L	--	--	--	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--
benzo[a]anthracene	µg/L	--	--	--	<0.010	<0.010		0.018	<0.010	<0.010	<0.010	--
benzo[a]pyrene	µg/L	--	--	--	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	--
benzo[b]fluoranthene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
benzo[ghi]perylene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
benzo[k]fluoranthene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
chrysene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
dibenz[a,h]anthracene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
fluoranthene	µg/L	--	--	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	--
fluorene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
indeno[1,2,3-cd]pyrene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
methylnaphthalene, 2-	µg/L	--	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--
naphthalene	µg/L	--	--	--	<0.10		0.18	<0.10	<0.10	<0.10	<0.10	--
phenanthrene	µg/L	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
pyrene	µg/L	--	--	--	<0.020	<0.020		0.038	<0.020		0.021	<0.020
quinoline	µg/L	--	--	--	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	--
Total HMW-PAHs	µg/L	--	--	--	<0.050	<0.050		0.056	<0.050	<0.050	<0.050	--
Total LMW-PAHs	µg/L	--	--	--	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	--
Total PAHs	µg/L	--	--	--	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	--

Groundwater Exceedances

125	Exceeds CSR DW standards
125	Exceeds CSR AW _m standards

QA/QC Exceedances

45%	RPD exceeds 20%
-----	-----------------

**TABLE 2: GROUNDWATER ANALYTICAL RESULTS
HYDROCARBONS**

2889 East 1st Avenue and 1615 Renfrew Street, Vancouver, BC
Renfrew View Homes Ltd.
Project #: 12732
September 2017

CSR DW Standards	CSR AW _M Standards	SAMPLE ID	Units	MW16-25	MW16-26
		DATE SAMPLED		19-Aug-16	19-Aug-16
		LAB CERTIFICATE		B670362	B670360
		LAB SAMPLE ID		PH5851	PH5848
		TOP OF SCREEN (mbg)		7.6	7.6
		BOTTOM OF SCREEN (mbg)		9.1	9.1
		Petroleum Hydrocarbons			
n/s	1500	VPHw	µg/L	860	2800
15000	15000	VHw ₆₋₁₆	µg/L	2200	15000
n/s	500	LEPHw	µg/L	--	--
5000	5000	EPHw ₁₀₋₁₉	µg/L	--	--
n/s	n/s	HEPHw	µg/L	--	--
n/s	n/s	EPHw ₆₋₃₂	µg/L	--	--
		Monocyclic Aromatic Hydrocarbons			
5	1000	benzene	µg/L	1100	1100
2.4	2500	ethylbenzene	µg/L	48	800
n/s	720	styrene	µg/L	<0.50	<0.50
24	3300	toluene	µg/L	99	4800
300	n/s	xylene	µg/L	160	5600
		Polycyclic Aromatic Hydrocarbons			
n/s	60	acenaphthene	µg/L	--	--
n/s	n/s	acenaphthylene	µg/L	--	--
n/s	0.5	acridine	µg/L	--	--
n/s	1	anthracene	µg/L	--	--
n/s	1	benzo[a]anthracene	µg/L	--	--
0.01	0.1	benzo[a]pyrene	µg/L	--	--
n/s	n/s	benzo[b,j]fluoranthene	µg/L	--	--
n/s	n/s	benzo[g,h,i]perylene	µg/L	--	--
n/s	n/s	benzo[k]fluoranthene	µg/L	--	--
n/s	1	chrysene	µg/L	--	--
n/s	n/s	dibenz[a,h]anthracene	µg/L	--	--
n/s	2	fluoranthene	µg/L	--	--
n/s	120	fluorene	µg/L	--	--
n/s	n/s	indeno[1,2,3-cd]pyrene	µg/L	--	--
n/s	n/s	methylnaphthalene, 2-	µg/L	--	--
n/s	10	naphthalene	µg/L	--	--
n/s	3	phenanthrene	µg/L	--	--
n/s	0.2	pyrene	µg/L	--	--
n/s	34	quinoline	µg/L	--	--
n/s	n/s	Total HMW-PAHs	µg/L	--	--
n/s	n/s	Total LMW-PAHs	µg/L	--	--
n/s	n/s	Total PAHs	µg/L	--	--

Groundwater Exceedances

125	Exceeds CSR DW standards
125	Exceeds CSR AW _M standards

QA/QC Exceedances

45%	RPD exceeds 20%
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GLOSSARY: VAPOUR ANALYTICAL RESULTS

2889 East 1st Avenue and 1615 Renfrew Street, Vancouver, BC
Renfrew View Homes Ltd.
Project #: 12732
September 2017

List of Acronyms

AL	Agricultural Land Use
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
CL	Commercial Land Use
CSR	British Columbia Contaminated Sites Regulation
IL	Industrial Land Use
MSVC	Measured Sub-surface Vapour Concentration
MTBE	Methyl Tertiary Butyl Ether
n/s	No Standard
PIVC	Predicted Indoor Vapour Concentration
POVC	Predicted Outdoor Vapour Concentration
PL	Urban Park Land Use
RDL	Reported Detection Limit
RL	Residential Land Use
RPD	Relative Percent Difference
VHV ₆₋₁₃	Volatile Petroleum Hydrocarbons (carbon range 6 to 13)
VOC	Volatile Organic Compounds
VPHv	Volatile Petroleum Hydrocarbon (corrected for BTEX)

Formulas

PIVC	$PIVC = MSVC (\mu g/m^3) * \text{Attenuation Factor for PIVC (unitless)}$
POVC	$POVC = MSVC (\mu g/m^3) * \text{Attenuation Factor for POVC (unitless)}$
RPD	$RPD = \frac{[Max\ Concentration - Min\ Concentration]}{[(Max\ Concentration + Min\ Concentration)/2]} * 100$

List of Symbols

<	Concentration is less than the laboratory reported detection limit
*	Laboratory reported detection limit is greater than applicable standard/guideline
--	Sample was not analyzed for the specified constituent

List of Units

mbg	Metres below grade
$\mu g/m^3$	Micrograms per gram
L/min	Litres per minute
min	Minutes

Vapour Exceedances

<u>125</u>	Exceeds CSR RL standards
125	Exceeds CSR CL standards

QA/QC Exceedances

45%	RPD exceeds 35%
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TABLE 3: VAPOUR ANALYTICAL RESULTS
HALOGENATED VOCS
 2889 East 1st Avenue and 1615 Renfrew Street, Vancouver, BC
 Renfrew View Homes Ltd.
 Project #: 12732
 September 2017

CSR RL Standards	CSR CL Standards	SAMPLE ID	Units	SV15-2			
		DATE SAMPLED		19-Nov-15			
		LAB CERTIFICATE		B5A3525			
		LAB SAMPLE ID		NR2690			
		SAMPLE DEPTH (mbg)		1.4			
		FLOW RATE (L/min)		0.2			
		FLOW DURATION (min)		30			
		VAPOUR CONCENTRATION		MSVC	PIVC (RL)	PIVC (CL)	POVC
		ATTENUATION FACTOR		--	2.8E-03	3.7E-04	1.5E-06
Halogenated Aliphatics							
1	2	bromodichloromethane	µg/m³	--	--	--	--
9	30	bromofom	µg/m³	--	--	--	--
5	15	bromomethane	µg/m³	--	--	--	--
0.65	2	carbon tetrachloride	µg/m³	<0.33	<0.000924	<0.000122	<0.00000495
10000	30000	chloroethane	µg/m³	<1.7	<0.0048	<0.00063	<0.0000026
1	1.5	chloroform	µg/m³	3.3	0.0092	0.0012	0.000005
5.5	15	chloromethane	µg/m³	--	--	--	--
15	50	dibromo-3-chloropropane, 1,2-	µg/m³	--	--	--	--
40	100	dibromochloromethane	µg/m³	--	--	--	--
1	1	dibromoethane, 1,2-	µg/m³	--	--	--	--
5	15	dibromomethane	µg/m³	--	--	--	--
200	600	dichlorodifluoromethane	µg/m³	--	--	--	--
500	1500	dichloroethane, 1,1-	µg/m³	<0.33	<0.000924	<0.000122	<0.00000495
0.4	1	dichloroethane, 1,2-	µg/m³	<0.17	<0.000476	<0.0000629	<0.00000255
1	1	dichloroethene, 1,1-	µg/m³	<0.33	<0.000924	<0.000122	<0.00000495
20	60	dichloroethene, 1,2- (cis)	µg/m³	<0.33	<0.000924	<0.000122	<0.00000495
60	200	dichloroethene, 1,2- (trans)	µg/m³	<0.33	<0.000924	<0.000122	<0.00000495
20	65	dichloromethane	µg/m³	<3.3	<0.0092	<0.0012	<0.000005
0.65	2	dichloropropane, 1,2-	µg/m³	--	--	--	--
50	150	dichloropropane, 1,3-	µg/m³	--	--	--	--
n/s	n/s	dichloropropane, 2,2-	µg/m³	--	--	--	--
n/s	n/s	dichloropropene, 1,1-	µg/m³	--	--	--	--
2.5	7.5	dichloropropene, 1,3- (cis)	µg/m³	--	--	--	--
2.5	7.5	dichloropropene, 1,3- (trans)	µg/m³	--	--	--	--
2	2	hexachlorobutadiene, 1,3-	µg/m³	--	--	--	--
1.5	4	tetrachloroethane, 1,1,1,2-	µg/m³	--	--	--	--
1	1	tetrachloroethane, 1,1,2,2-	µg/m³	--	--	--	--
600	2000	tetrachloroethene	µg/m³	12	0.034	0.0044	0.000018
2000	6500	trichloroethane, 1,1,1-	µg/m³	<0.33	<0.000924	<0.000122	<0.00000495
0.6	2	trichloroethane, 1,1,2-	µg/m³	--	--	--	--
0.5	0.5	trichloroethene	µg/m³	<0.33	<0.000924	<0.000122	<0.00000495
700	2000	trichlorofluoromethane	µg/m³	--	--	--	--
10	35	trichloropropane, 1,2,3-	µg/m³	--	--	--	--
1	3.5	vinyl chloride	µg/m³	<0.67	<0.00188	<0.000248	<0.000001
Halogenated Aromatics							
10	30	bromobenzene	µg/m³	--	--	--	--
40	100	chlorotoluene, 2-	ug	--	--	--	--
n/s	n/s	chlorotoluene, 4-	µg/m³	--	--	--	--
200	600	dichlorobenzene, 1,2-	µg/m³	--	--	--	--
80	250	dichlorobenzene, 1,3-	µg/m³	--	--	--	--
600	2500	dichlorobenzene, 1,4-	µg/m³	--	--	--	--
50	150	monochlorobenzene	µg/m³	--	--	--	--
n/s	n/s	trichlorobenzene, 1,2,3-	µg/m³	--	--	--	--
4	10	trichlorobenzene, 1,2,4-	µg/m³	--	--	--	--

Vapour Exceedances
 125 Exceeds CSR RL standards
 125 Exceeds CSR CL standards

QA/QC Exceedances
 45% RPD exceeds 35%



BOREHOLE LOGS

MONITORING WELL ID: MW15-2/SV15-2



Well Type: Monitoring Well

Project Location: 1615 Renfrew Street, Vancouver BC

Drilling Contractor: Badger Daylighting/Uniwide Drilling

Drilling Equipment/Method: Hydrovac/Solid Stem Auger

Well Location: East of Site on Renfrew Street

Project Name/No.: 12732

Client:

Engineer/Geologist:

Drill Date: November 4, 2015

Page: 1 of 2

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)		Elevation (m)	Well Construction	Remarks
							0	ppm			
0		Ground Surface							61.118		
0		CONCRETE							60.874		
1		SILTY SAND (FILL) Red to brown SILTY SAND FILL, medium to coarse grained sand, moist, odours and staining not observed.									
2											
3											
4											
5									59.594		
6		SANDY SILT Brown to grey SANDY SILT, dense, moist, trace gravel, odours and staining not observed.									
7											
8											
9											
10											
11											
12											
13											
14											
15									56.546		
16		SILTY SAND Grey SILTY SAND, medium to coarse grained, trace gravel, moist to wet, odours and staining not observed.									
17											
18											
19											
20											

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Co-ordinates:	Well-Borehole Diameter: 0.25 m	Depth of Well (TOC): 7.62 mbg
Date of Water Level: February 29, 2016	Well Casing Diameter: 0.05 m	Well Elevation (TOC): 61.052 mASL
Water Level (from TOC): 4.81 mbg	Well Casing Material: Schedule 40 PVC	Well Elevation (Ground): 61.118 mASL
Surveyed Water Elevation (m): 56.242 mASL	Well Screen Slot Size: 0.25 mm	Datum: COV Monuments V-1136 and V-3802

MONITORING WELL ID: MW15-2/SV15-2



Well Type: Monitoring Well
 Project Location: 1615 Renfrew Street, Vancouver BC
 Drilling Contractor: Badger Daylighting/Uniwide Drilling
 Drilling Equipment/Method: Hydrovac/Solid Stem Auger
 Well Location: East of Site on Renfrew Street

Project Name/No.: 12732
 Client:
 Engineer/Geologist:
 Drill Date: November 4, 2015 Page: 2 of 2

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)	Elevation (m)	Well Construction	Remarks
							ppm			
21										
22										
23	7		N			MW15-2(6.7)	0.1			
24										
25		End of Hole	N			MW15-2(7.6)	0.1	53.498		Well Screen and 10/20 Silica Sand
26	8									
27										
28										
29	9									
30										
31										
32										
33	10									
34										
35										
36	11									
37										
38										
39	12									
40										

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Co-ordinates:	Well-Borehole Diameter: 0.25 m	Depth of Well (TOC): 7.62 mbg
Date of Water Level: February 29, 2016	Well Casing Diameter: 0.05 m	Well Elevation (TOC): 61.052 mASL
Water Level (from TOC): 4.81 mbg	Well Casing Material: Schedule 40 PVC	Well Elevation (Ground): 61.118 mASL
Surveyed Water Elevation (m): 56.242 mASL	Well Screen Slot Size: 0.25 mm	Datum: COV Monuments V-1135 and V-3802

MONITORING WELL ID: MW15-4/SV15-4



Well Type: Monitoring Well

Project Location: 1615 Renfrew Street, Vancouver BC

Drilling Contractor: Badger Daylighting/Uniwide Drilling

Drilling Equipment/Method: Hydrovac/Solid Stem Auger

Well Location: West of Site in laneway

Project Name/No.: 12732

Client:

Engineer/Geologist:

Drill Date: November 4, 2015 Page: 1 of 1

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)	Elevation (m)	Well Construction	Remarks
							ppm			
0		Ground Surface						59.112		
0		ASPHALT								
0.5		SILTY SAND (FILL) Red to brown SILTY SAND FILL, medium to coarse grained sand, some organics, moist, odours and staining not observed.								
1							0.1	58.198		
1.5		SANDY SILT Brown to grey SANDY SILT, dense, moist, trace gravel, odours and staining not observed.								
2							0.2			
2.5										
3										
3.5							0			
4										
4.5										
5										
5.5							0.1	56.064		
6		SANDY SILT Grey SANDY SILT, trace gravel, dense, moist to wet, odours and staining not observed.								
6.5										
7							0.1			
7.5										
8										
8.5										
9										
9.5							0			
10										
10.5										
11										
11.5										
12										
12.5							0.1			
13										
13.5										
14										
14.5							0			
15										
15.5										
16										
16.5										
17							0.1			
17.5										
18										
18.5										
19										
19.5							0	53.016		
20										

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Co-ordinates:	Well-Borehole Diameter: 0.25 m	Depth of Well (TOC): 6.03 mbg
Date of Water Level: February 29, 2016	Well Casing Diameter: 0.05 m	Well Elevation (TOC): 59.030 mASL
Water Level (from TOC): 2.94 mbg	Well Casing Material: Schedule 40 PVC	Well Elevation (Ground): 59.112 mASL
Surveyed Water Elevation (m): 56.090 mASL	Well Screen Slot Size: 0.25 mm	Datum: COV Monuments V-1135 and V-3802

MONITORING WELL ID: MW16-11S/D / SV16-11



Well Type: Monitoring Well
 Project Location: 1615 Renfrew Street, Vancouver BC
 Drilling Contractor: Badger Daylighting/ Sonic Drilling
 Drilling Equipment/Method: Hydrovac/Sonic
 Well Location: West side of Renfrew St.

Project Name/No.: 12732
 Client: -
 Engineer/Geologist:
 Drill Date: June 9, 2016

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)		Well Construction	Remarks
							ppm	ppm		
0		Ground Surface								
0.9		SILT Red-brown SILT with organics. Stiff, dry, odours and/or staining not observed.	N			MW16-11(0.3)	0.9			
0.8		SANDY SILT Grey-brown SANDY SILT. Stiff, dry, odours and staining not observed. Increasing sand with depth.	N			MW16-11(1.2)	0.8			
24.5		SILTY SAND Grey SILTY SAND, with trace gravel. Dry, odours and/or staining not observed. Decreasing silt with depth.	N			MW16-11(2.0)	24.5			
20.1			N			MW16-11(2.7)	20.1			
22.2		SAND Brown-grey fine to coarse grained SAND with trace silt. Dense, moist, odours and/or staining not observed. Hydrocarbon-like odours observed below 3.5 mbg.	N			MW16-11(3.3)	22.2			
101			N			MW16-11(4.3)	101			
335			N			MW16-11(5.3)	335			

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Date of Water Level: June 13, 2016
 Water Level (from TOC): S: 5.246 m / D: 9.487 m

Well-Borehole Diameter: 0.20 m
 Well Casing Diameter: 0.05 m
 Well Casing Material: Schedule 40 PVC
 Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): S:14.901 m / D:19.525 m

MONITORING WELL ID: MW16-11S/D / SV16-11



Well Type: Monitoring Well
 Project Location: 1615 Renfrew Street, Vancouver BC
 Drilling Contractor: Badger Daylighting/ Sonic Drilling
 Drilling Equipment/Method: Hydrovac/Sonic
 Well Location: West side of Renfrew St.

Project Name/No.: 12732
 Client:
 Engineer/Geologist:
 Drill Date: June 9, 2016

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)					Well Construction	Remarks
							0	500	1000	1500	2000		
21	7 8 9 10 11 12	Dark grey fine to coarse grained SAND. Dense, moist, no staining. Hydrocarbon-like odours observed from 6.5 to 8.5 mbg. Colour change to brown below 9.2 mbg. <i>Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The City of Vancouver and Keystone Environmental Ltd. are not responsible for any use or modification of this document. The City of Vancouver and Keystone Environmental Ltd. accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this document.</i>	II		N	MW16-11(6.1)	60.7						Well Screen and 10/20 Silica Sand
22			II		N	MW16-11(6.7)	25.8						
23			II		N	MW16-11(7.6)	42.8						
24													
25			II		N	MW16-11(8.8)	102.7						
26													
27			II		N	MW16-11(9.3)	95.5						
28													
29			II		N	MW16-11(11.3)	70.8						
30													
31			II		N	MW16-11(12.0)	67.2						
32													
33		SILT Dark grey SILT. Very stiff, dry, odours and/or staining not observed.											
34													
35													
36													
37													
38													
39													
40													

Date of Water Level: June 13, 2016
 Water Level (from TOC): S: 5.246 m / D: 9.487 m

Well-Borehole Diameter: 0.20 m
 Well Casing Diameter: 0.05 m
 Well Casing Material: Schedule 40 PVC
 Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): S:14.901 m / D:19.525 m

MONITORING WELL ID: MW16-11S/D / SV16-11



Well Type: Monitoring Well

Project Location: 1615 Renfrew Street, Vancouver BC

Drilling Contractor: Badger Daylighting/ Sonic Drilling

Drilling Equipment/Method: Hydrovac/Sonic

Well Location: West side of Renfrew St.

Project Name/No.: 12732

Client:

Engineer/Geologist:

Drill Date: June 9, 2016

Page: 3 of 4

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)		Well Construction	Remarks
							ppm			
41		SILT Dark grey SILT. Very stiff, dry, odours and/or staining not observed.	II		N	MW16-11(12.3)	1.4			
42		SAND Grey fine to coarse grained SAND. Dense, saturated, odours and/or staining not observed.								
43	13									
44										
45										
46	14		II		N	MW16-11(14.0)	1.5			
47										
48										
49	15		II		N	MW16-11(15.0)	2.6			
50										
51										
52	16	SILT Grey SILT. Very stiff, moist, odours and/or staining not observed.	II		N	MW16-11(15.7)	0.6			
53										
54		<p><i>Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The City of Vancouver and Keystone Environmental Ltd. are not responsible for any use or modification of this document. The City of Vancouver and Keystone Environmental Ltd. accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this document.</i></p>	II		N	MW16-11(16.6)	0.6			
55										
56	17									
57										
58			II		N	MW16-11(17.5)	0.5			
59	18	SAND Grey fine to coarse grained SAND. Dense, moist, staining and/or odours not observed.	II		N	MW16-11(18.0)	1.4			
60										

Date of Water Level: June 13, 2016
 Water Level (from TOC): S: 5.246 m / D: 9.487 m

Well-Borehole Diameter: 0.20 m
 Well Casing Diameter: 0.05 m
 Well Casing Material: Schedule 40 PVC
 Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): S:14.901 m / D:19.525 m

MONITORING WELL ID: MW16-11S/D / SV16-11



Well Type: Monitoring Well

Project Location: 1615 Renfrew Street, Vancouver BC

Drilling Contractor: Badger Daylighting/ Sonic Drilling

Drilling Equipment/Method: Hydrovac/Sonic

Well Location: West side of Renfrew St.

Project Name/No.: 12732

Client:

Engineer/Geologist:

Drill Date: June 9, 2016

Page: 4 of 4

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)				Well Construction	Remarks			
							0	500	1000	1500			2000		
61	19	SAND Grey fine to coarse grained SAND. Dense, moist, staining and/or odours not observed.	II		N	MW16-11(18.8)	0.6				[Well Construction Diagram]				
62		SANDY SILT Grey-brown SANDY SILT. Stiff, dry, odours and/or staining not observed.					II	N	MW16-11(19.5)	0.4					
63										Increasing sand with depth.			II	N	MW16-11(20.5)
64															
65	20														
66															
67															
68		End of Hole													
69	21														
70															
71															
72	22														
73															
74															
75	23														
76															
77															
78															
79	24														
80															

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Date of Water Level: June 13, 2016
Water Level (from TOC): S: 5.246 m / D: 9.487 m

Well-Borehole Diameter: 0.20 m
Well Casing Diameter: 0.05 m
Well Casing Material: Schedule 40 PVC
Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): S:14.901 m / D:19.525 m

MONITORING WELL ID: MW16-12 S/D



Well Type: Monitoring Well

Project Location: 1615 Renfrew Street, Vancouver BC

Drilling Contractor: Badger Daylighting/Sonic Drilling

Drilling Equipment/Method: Hydrovac/Sonic

Well Location: West side of Renfrew St.

Project Name/No.: 12732

Client:

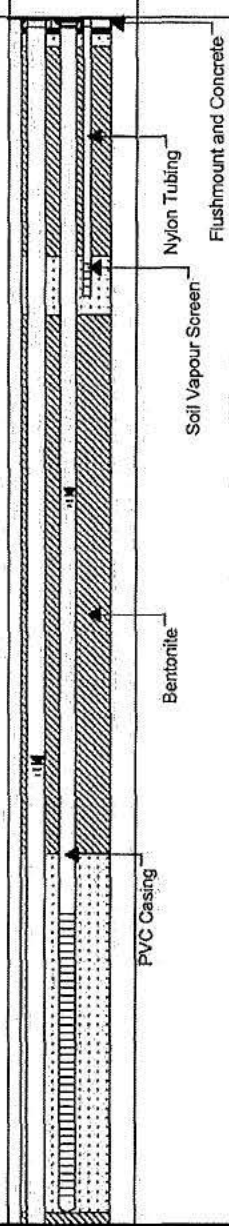
Engineer/Geologist:

Drill Date: June 10, 2016

Page: 1 of 2

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)					Well Construction	Remarks
							0	500	1000	1500	2000		
0		Ground Surface											
0.7	X	SILTY SAND (FILL) Brown SILTY SAND FILL, medium to coarse grained sand, moist, odours and staining not observed.	G	100	N	MW16-12 (0.3)							
1.5	X	SAND and GRAVEL (FILL) Grey coarse grained SAND and GRAVEL FILL, moist, odours and staining not observed.	G	100	N	MW16-12 (1.5)							
2.3	X	SILTY SAND Brown to grey SILTY SAND, with some medium grained gravel, moist, staining not observed. Hydrocarbon like odour encountered at approximately 2.3 mbg.	G	100	N	MW16-12 (2.3)							
2.8	X		G	100	N	MW16-12 (2.8)							
3.8	X	SANDY SILT Grey SANDY SILT with some medium grained gravel, dense, moist, odours and staining not observed.	G	100	N	MW16-12 (3.8)							
4.3	X		G	100	N	MW16-12 (4.3)							
4.8	X		G	100	N	MW16-12 (4.8)							
5.5	X		G	100	N	MW16-12 (5.5)							

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Date of Water Level: June 13, 2016
Water Level (from TOC): S: 4.15 m / D: 4.35 m

Well-Borehole Diameter: 0.20 m
Well Casing Diameter: 0.05 m
Well Casing Material: Schedule 40 PVC
Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): S: 5.88 m / D: 8.71 m

MONITORING WELL ID: MW16-12 S/D



Well Type: Monitoring Well
 Project Location: 1615 Renfrew Street, Vancouver BC
 Drilling Contractor: Badger Daylighting/Sonic Drilling
 Drilling Equipment/Method: Hydrovac/Sonic
 Well Location: West side of Renfrew St.

Project Name/No.: 12732
 Client:
 Engineer/Geologist:
 Drill Date: June 10, 2016

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)					Well Construction	Remarks
							0	500	1000	1500	2000		
21				100	N	MW16-12 (6.1)	0						
22													
23	7			100	N	MW16-12 (7.1)	0						
24				100	N	MW16-12 (7.5)	0						
25													
26	8												
27				100	N	MW16-12 (8.2)	0						
28													
29	9			100	N	MW16-12 (9.1)	0						
30		End of Hole											
31													
32													
33	10												
34													
35													
36	11												
37													
38													
39	12												
40													

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Well Screen and 10/20 Silica Sand

Date of Water Level: June 13, 2016
 Water Level (from TOC): S: 4.15 m / D: 4.35 m
 Well-Borehole Diameter: 0.20 m
 Well Casing Diameter: 0.05 m
 Well Casing Material: Schedule 40 PVC
 Well Screen Slot Size: 0.25 mm
 Depth of Well (TOC): S: 5.88 m / D: 8.71 m

MONITORING WELL ID: MW16-25



Well Type: Monitoring Well

Project Location: 1615 Renfrew Street, Vancouver, BC

Drilling Contractor: Badger Daylighting / Southland Drilling Co. Ltd.

Drilling Equipment/Method: Hydro vacuum excavation / Solid stem

Well Location: Middle of Renfrew St.

Project Name/No.: 12732

Client:

Engineer/Geologist:

Drill Date: August 16, 2016

Page: 2 of 2

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)		Well Construction	Remarks		
							ppm					
21	7	SILT Grey SILT, dense, dry, odour or staining not observed.							Well Screen and 10/20 Silica Sand			
22		Increased SAND content below 6.7 mbg.			N	MW16-25 (6.7)	290					
23												
24						N	MW16-25 (7.6)	170				
25	8	SILTY SAND Grey SILTY SAND, some brown-colouring oxidation, odour not observed.							Well Screen and 10/20 Silica Sand			
26												
27						N	MW16-25 (8.4)	13.4				
28												
29	9								Well Screen and 10/20 Silica Sand			
30					N	MW16-25 (9.1)	31.1					
31	10	End of Hole										
32												
33												
34												
35												
36		11	<p><i>Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The City of Vancouver and Keystone Environmental Ltd. are not responsible for any use or modification of this document. The City of Vancouver and Keystone Environmental Ltd. accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this document.</i></p>									
37												
38												
39												
40		12										

Date of Water Level: August 19, 2016
 Water Level (from TOC): 5.475 m

Well-Borehole Diameter: 0.20 m
 Well Casing Diameter: 0.05 m
 Well Casing Material: Schedule 40 PVC
 Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): 9.121 m

MONITORING WELL ID: MW16-26



Well Type: Monitoring Well

Project Location: 1615 Renfrew Street, Vancouver, BC

Drilling Contractor: Badger Daylighting/ Southland Drilling Co. Ltd.

Drilling Equipment/Method: Hydrovac / Solid Stem

Well Location: On Renfrew street, far side from the site

Project Name/No.: 12732

Client:

Engineer/Geologist.

Drill Date: August 17, 2016

Page: 1 of 2

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)				Well Construction	Remarks
							0	500	1000	1500		
0		Ground Surface										
0 - 1	X	SANDY SILT (FILL) Brown SANDY SILT FILL, some gravel, odour or staining not observed.				MW16-26 (0.5)	53.7					Vinyl Tubing Flushmount and Concrete
1 - 3	1	SILTY SAND Grey SILTY SAND, moist, hydrocarbon odours observed. Staining not observed.				MW16-26 (1.4)		743				Soil Vapour Screen and 10/20 Silica Sand
3 - 7	2					MW16-26 (2.3)	46.7					Bentonite
7 - 10	3					MW16-26 (3.0)		734				
10 - 13	4					MW16-26 (3.8)		980				
13 - 15	5					MW16-26 (4.6)		1550				PVC Casing
15 - 18	6					MW16-26 (5.3)		625				
18 - 20	6	SILT Grey SILT, dense, moist, hydrocarbon odours observed. Staining not observed.				MW16-26 (6.1)	94.2					

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Date of Water Level: August 19, 2016
Water Level (from TOC): 5.465 m

Well-Borehole Diameter: 0.20 m
Well Casing Diameter: 0.05 m
Well Casing Material: Schedule 40 PVC
Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): 9.030 m

MONITORING WELL ID: MW16-26



Well Type: Monitoring Well

Project Location: 1615 Renfrew Street, Vancouver, BC

Drilling Contractor: Badger Daylighting/ Southland Drilling Co. Ltd.

Drilling Equipment/Method: Hydrovac / Solid Stem

Well Location: On Renfrew street, far side from the site

Project Name/No.: 12732

Client:

Engineer/Geologist.

Drill Date: August 17, 2016

Page: 2 of 2

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)				Well Construction	Remarks
							0	500	1000	1500		
21		SILT Grey SILT, dense, moist, hydrocarbon odours observed. Staining not observed.										
22					N	MW16-26 (6.7)				628		
23	7	SILTY SAND Grey SILTY SAND, wet, hydrocarbon odours observed. Staining not observed.										
24					N	MW16-26 (7.0)				1760		
25												
26	8											
27					N	MW16-26 (8.4)				860		
28												
29												
30	9				N	MW16-26 (9.1)				657		
31		End of Hole										
32												
33	10											
34												
35												
36	11											
37												
38												
39	12											
40												

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Date of Water Level: August 19, 2016
Water Level (from TOC): 5.465 m

Well-Borehole Diameter: 0.20 m
Well Casing Diameter: 0.05 m
Well Casing Material: Schedule 40 PVC
Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): 9.030 m

MONITORING WELL ID: MW17-34 S/D



Well Type: Chemical Injection Well

Project Location: 1615 Renfrew Street, Vancouver, BC

Project Name/No.: 12732

Drilling Contractor: Omega Environmental Drilling / Badger Daylighting Client:

Drilling Equipment/Method: Sonic/Hydro Vacuum Excavation

Engineer/Geologist:

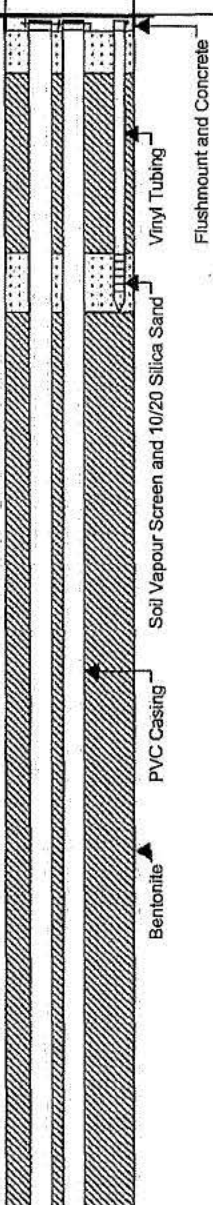
Well Location: On Renfrew Street

Drill Date: January 26, 2017

Page: 1 of 3

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)					Well Construction	Remarks
							0	500	1000	1500	2000		
0		Ground Surface											
0 - 1		SILT Red-brown SILT with organic material, stiff, dry, odour or staining not observed.											
1 - 3		SANDY SILT Grey-brown SANDY SILT. Increasing sand with depth. Stiff, dry, odour or staining not observed.											
3 - 6		SILTY SAND Grey SILTY SAND with trace gravel. Decreasing silt with depth. Loose, dry, odour or staining not observed.											
6 - 9		SAND Grey-brown, fine to coarse SAND, trace SILT. Dense, moist, odour or staining not observed.											
9 - 12		Hydrocarbon odour observed below 3.5 mbg.											
12 - 15													
15 - 17													
17 - 19													
19 - 20													

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Date of Water Level:
Water Level (from TOC):

Well-Borehole Diameter: 0.20 m
Well Casing Diameter: 0.05 m
Well Casing Material: Schedule 40 PVC
Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): 12.8 m

MONITORING WELL ID: MW17-34 S/D



Well Type: Chemical Injection Well

Project Location: 1615 Renfrew Street, Vancouver, BC

Project Name/No.: 12732

Drilling Contractor: Omega Environmental Drilling / Badger Daylighting Client:

Drilling Equipment/Method: Sonic/Hydro Vacuum Excavation

Engineer/Geologis

Well Location: On Renfrew Street

Drill Date: January 26, 2017

Page: 2 of 3

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)				Well Construction	Remarks		
							0	500	1000	1500			2000	
21	7	Dark grey colour below 6.4 mbg. Hydrocarbon odour observed down to 8.5 mbg.												
22														
23														
24														
25														
26			8	Colour change to brown below 9.2 mbg.										
27														
28														
29														
30			10	<p><i>Any use which a third party makes of this document, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The City of Vancouver and Keystone Environmental Ltd. are not responsible for any use or modification of this document. The City of Vancouver and Keystone Environmental Ltd. accept no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this document.</i></p>										
31														
32														
33														
34	11	SILT Dark grey SILT, very stiff, dry, odour or staining not observed.												
35														
36														
37														
38	12													
39														
40														

Well Screen and 10/20 Silica Sand

Date of Water Level:
Water Level (from TOC):

Well-Borehole Diameter: 0.20 m
Well Casing Diameter: 0.05 m
Well Casing Material: Schedule 40 PVC
Well Screen Slot Size: 0.25 mm

Depth of Well (TOC): 12.8 m

MONITORING WELL ID: MW17-34 S/D



Well Type: Chemical Injection Well

Project Location: 1615 Renfrew Street, Vancouver, BC

Project Name/No.: 12732

Drilling Contractor: Omega Environmental Drilling / Badger Daylighting Client:

Drilling Equipment/Method: Sonic/Hydro Vacuum Excavation

Engineer/Geologist.

Well Location: On Renfrew Street

Drill Date: January 26, 2017

Page: 3 of 3

Depth (ft/m)	Symbol	Soil / Sediment Description	Sample Type	% Recovery	Sample Analyzed	Sample ID	Headspace (PID)				Well Construction	Remarks
							0	500	1000	1500		
41		SAND Grey, fine to coarse SAND. Dense, saturated, odours or staining not observed.										
42		End of Hole										
43												
44												
45												
46												
47												
48												
49												
50												
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54												
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Date of Water Level:	Well-Borehole Diameter: 0.20 m	Depth of Well (TOC): 12.8 m
Water Level (from TOC):	Well Casing Diameter: 0.05 m	
	Well Casing Material: Schedule 40 PVC	
	Well Screen Slot Size: 0.25 mm	

LABORATORY CERTIFICATES

Your Project #: 12732-4
Site Location: 2889 E 1ST AVE, VANCOUVER, BC
Your C.O.C. #: K005803

Attention:Sumeet Dogra

KEYSTONE ENVIRONMENTAL LTD
SUITE 320
4400 DOMINION STREET
BURNABY, BC
CANADA V5G 4G3

Report Date: 2016/08/22
Report #: R2243887
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B670362

Received: 2016/08/19, 10:40

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Extra VOCs in Water by HS GC/MS	1	N/A	2016/08/19	BBY8SOP-00040	EPA 8260c R3 m
VOCs, VH, F1, LH in Water by HS GC/MS	1	2016/08/19	2016/08/22	BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	1	N/A	2016/08/22	BBY WI-00033	Auto Calc

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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Amandeep Nagra, Account Specialist
Email: ANagra@maxxam.ca
Phone# (604)639-2602

=====

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Maxxam Job #: B670362
Report Date: 2016/08/22

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E 1ST AVE, VANCOUVER, BC
Sampler Initials: GF

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		PH5851		
Sampling Date		2016/08/19		
COC Number		K005803		
	UNITS	MW16-25	RDL	QC Batch
Volatiles				
2-Butanone (MEK)	ug/L	<10	10	8369940
4-Methyl-2-pentanone (MIBK)	ug/L	<10	10	8369940
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	103		8369940
4-Bromofluorobenzene (sur.)	%	103		8369940
D4-1,2-Dichloroethane (sur.)	%	91		8369940
RDL = Reportable Detection Limit				

Maxxam Job #: B670362
Report Date: 2016/08/22

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E 1ST AVE, VANCOUVER, BC
Sampler Initials: GF

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		PH5851		
Sampling Date		2016/08/19		
COC Number		K005803		
	UNITS	MW16-25	RDL	QC Batch
Volatiles				
VPH (VHW6 to 10 - BTEX)	ug/L	860	300	8368993
Chloromethane	ug/L	<1.0	1.0	8370144
Vinyl chloride	ug/L	<0.50	0.50	8370144
Chloroethane	ug/L	<1.0	1.0	8370144
Trichlorofluoromethane	ug/L	<4.0	4.0	8370144
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	2.0	8370144
Dichlorodifluoromethane	ug/L	<2.0	2.0	8370144
1,1-dichloroethene	ug/L	<0.50	0.50	8370144
Dichloromethane	ug/L	61 (1)	2.0	8370144
trans-1,2-dichloroethene	ug/L	<1.0	1.0	8370144
1,1-dichloroethane	ug/L	<0.50	0.50	8370144
cis-1,2-dichloroethene	ug/L	<1.0	1.0	8370144
Chloroform	ug/L	<1.0	1.0	8370144
1,1,1-trichloroethane	ug/L	<0.50	0.50	8370144
1,2-dichloroethane	ug/L	<0.50	0.50	8370144
Carbon tetrachloride	ug/L	<0.50	0.50	8370144
Benzene	ug/L	1100 (2)	2.0	8370144
1,2-dichloropropane	ug/L	<0.50	0.50	8370144
cis-1,3-dichloropropene	ug/L	<1.0	1.0	8370144
trans-1,3-dichloropropene	ug/L	<1.0	1.0	8370144
Bromomethane	ug/L	<1.0	1.0	8370144
1,1,2-trichloroethane	ug/L	<0.50	0.50	8370144
Trichloroethene	ug/L	<2.5 (2)	2.5	8370144
Chlorodibromomethane	ug/L	<1.0	1.0	8370144
1,2-dibromoethane	ug/L	<0.20	0.20	8370144
1,3-Butadiene	ug/L	<5.0	5.0	8370144
Tetrachloroethene	ug/L	5.8	0.50	8370144
Bromodichloromethane	ug/L	<1.0	1.0	8370144
Toluene	ug/L	99	0.40	8370144
RDL = Reportable Detection Limit				
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.				
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.				

Maxxam Job #: B670362
Report Date: 2016/08/22

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E 1ST AVE, VANCOUVER, BC
Sampler Initials: GF

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		PH5851		
Sampling Date		2016/08/19		
COC Number		K005803		
	UNITS	MW16-25	RDL	QC Batch
Ethylbenzene	ug/L	48	0.40	8370144
m & p-Xylene	ug/L	73	0.40	8370144
Bromoform	ug/L	<1.0	1.0	8370144
Styrene	ug/L	<0.50	0.50	8370144
o-Xylene	ug/L	84	0.40	8370144
Xylenes (Total)	ug/L	160	0.40	8370144
1,1,1,2-tetrachloroethane	ug/L	<0.50	0.50	8370144
1,1,2,2-tetrachloroethane	ug/L	1.7 (1)	0.50	8370144
1,2-dichlorobenzene	ug/L	<0.50	0.50	8370144
1,3-dichlorobenzene	ug/L	<0.50	0.50	8370144
1,4-dichlorobenzene	ug/L	<0.50	0.50	8370144
Chlorobenzene	ug/L	<0.50	0.50	8370144
Dibromomethane	ug/L	<0.90	0.90	8370144
Bromobenzene	ug/L	<2.0	2.0	8370144
VH C6-C10	ug/L	2200	300	8370144
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	89		8370144
4-Bromofluorobenzene (sur.)	%	97		8370144
D4-1,2-Dichloroethane (sur.)	%	103		8370144
RDL = Reportable Detection Limit				
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.				

Maxxam Job #: B670362
Report Date: 2016/08/22

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E 1ST AVE, VANCOUVER, BC
Sampler Initials: GF

GENERAL COMMENTS

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

Package 1	21.0°C
-----------	--------

Results relate only to the items tested.

Maxxam Job #: B670362
Report Date: 2016/08/22

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD

Client Project #: 12732-4

Site Location: 2889 E 1ST AVE, VANCOUVER, BC

Sampler Initials: GF

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8369940	1,4-Difluorobenzene (sur.)	2016/08/19	103	70 - 130	103	70 - 130	104	%		
8369940	4-Bromofluorobenzene (sur.)	2016/08/19	102	70 - 130	102	70 - 130	104	%		
8369940	D4-1,2-Dichloroethane (sur.)	2016/08/19	94	70 - 130	93	70 - 130	93	%		
8370144	1,4-Difluorobenzene (sur.)	2016/08/20	97	70 - 130	87	70 - 130	103	%		
8370144	4-Bromofluorobenzene (sur.)	2016/08/20	109	70 - 130	103	70 - 130	99	%		
8370144	D4-1,2-Dichloroethane (sur.)	2016/08/20	120	70 - 130	103	70 - 130	117	%		
8369940	2-Butanone (MEK)	2016/08/19	102	70 - 130	98	70 - 130	<10	ug/L	NC	40
8369940	4-Methyl-2-pentanone (MIBK)	2016/08/19	103	70 - 130	100	70 - 130	<10	ug/L	NC	40
8370144	1,1,1,2-tetrachloroethane	2016/08/20	116	70 - 130	112	70 - 130	<0.50	ug/L	NC	30
8370144	1,1,1-trichloroethane	2016/08/20	121	70 - 130	111	70 - 130	<0.50	ug/L	NC	30
8370144	1,1,2,2-tetrachloroethane	2016/08/20	116	70 - 130	123	70 - 130	<0.50	ug/L	NC	30
8370144	1,1,2Trichloro-1,2,2Trifluoroethane	2016/08/20					<2.0	ug/L	NC	30
8370144	1,1,2-trichloroethane	2016/08/20	112	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
8370144	1,1-dichloroethane	2016/08/20	116	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
8370144	1,1-dichloroethene	2016/08/20	123	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
8370144	1,2-dibromoethane	2016/08/20	115	70 - 130	112	70 - 130	<0.20	ug/L	NC	30
8370144	1,2-dichlorobenzene	2016/08/20	127	70 - 130	127	70 - 130	<0.50	ug/L	NC	30
8370144	1,2-dichloroethane	2016/08/20	118	70 - 130	108	70 - 130	<0.50	ug/L	NC	30
8370144	1,2-dichloropropane	2016/08/20	108	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
8370144	1,3-Butadiene	2016/08/20					<5.0	ug/L		
8370144	1,3-dichlorobenzene	2016/08/20	138 (1)	70 - 130	126	70 - 130	<0.50	ug/L	NC	30
8370144	1,4-dichlorobenzene	2016/08/20	134 (1)	70 - 130	122	70 - 130	<0.50	ug/L	NC	30
8370144	Benzene	2016/08/20	122	70 - 130	110	70 - 130	<0.40	ug/L	NC	30
8370144	Bromobenzene	2016/08/20	128	N/A	116	70 - 130	<2.0	ug/L		
8370144	Bromodichloromethane	2016/08/20	116	70 - 130	109	70 - 130	<1.0	ug/L	NC	30
8370144	Bromoform	2016/08/20	122	70 - 130	116	70 - 130	<1.0	ug/L	NC	30
8370144	Bromomethane	2016/08/20	126	60 - 140	112	60 - 140	<1.0	ug/L	NC	30
8370144	Carbon tetrachloride	2016/08/20	117	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
8370144	Chlorobenzene	2016/08/20	96	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
8370144	Chlorodibromomethane	2016/08/20	116	70 - 130	112	70 - 130	<1.0	ug/L	NC	30
8370144	Chloroethane	2016/08/20	142 (1)	60 - 140	101	60 - 140	<1.0	ug/L	NC	30

Maxxam Job #: B670362
Report Date: 2016/08/22

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E 1ST AVE, VANCOUVER, BC
Sampler Initials: GF

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8370144	Chloroform	2016/08/20	120	70 - 130	110	70 - 130	<1.0	ug/L	NC	30
8370144	Chloromethane	2016/08/20	106	60 - 140	99	60 - 140	<1.0	ug/L	NC	30
8370144	cis-1,2-dichloroethene	2016/08/20	121	70 - 130	111	70 - 130	<1.0	ug/L	NC	30
8370144	cis-1,3-dichloropropene	2016/08/20	117	70 - 130	111	70 - 130	<1.0	ug/L	NC	30
8370144	Dibromomethane	2016/08/20	115	N/A	108	70 - 130	<0.90	ug/L		
8370144	Dichlorodifluoromethane	2016/08/20	113	N/A	102	60 - 140	<2.0	ug/L	NC	30
8370144	Dichloromethane	2016/08/20	126	70 - 130	118	70 - 130	<2.0	ug/L	NC	30
8370144	Ethylbenzene	2016/08/20	115	70 - 130	113	70 - 130	<0.40	ug/L	NC	30
8370144	m & p-Xylene	2016/08/20	127	70 - 130	121	70 - 130	<0.40	ug/L	NC	30
8370144	o-Xylene	2016/08/20	121	70 - 130	118	70 - 130	<0.40	ug/L	NC	30
8370144	Styrene	2016/08/20	101	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
8370144	Tetrachloroethene	2016/08/20	121	70 - 130	111	70 - 130	<0.50	ug/L	NC	30
8370144	Toluene	2016/08/20	110	70 - 130	105	70 - 130	<0.40	ug/L	NC	30
8370144	trans-1,2-dichloroethene	2016/08/20	123	70 - 130	111	70 - 130	<1.0	ug/L	NC	30
8370144	trans-1,3-dichloropropene	2016/08/20	101	70 - 130	100	70 - 130	<1.0	ug/L	NC	30
8370144	Trichloroethene	2016/08/20	118	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
8370144	Trichlorofluoromethane	2016/08/20	132	60 - 140	118	60 - 140	<4.0	ug/L	NC	30
8370144	VH C6-C10	2016/08/20			87	70 - 130	<300	ug/L	NC	30
8370144	Vinyl chloride	2016/08/20	128	60 - 140	119	60 - 140	<0.50	ug/L	NC	30
8370144	Xylenes (Total)	2016/08/20					<0.40	ug/L	NC	30

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.

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 (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 (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B670362
Report Date: 2016/08/22

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E 1ST AVE, VANCOUVER, BC
Sampler Initials: GF

VALIDATION SIGNATURE PAGE

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



Rob Reinert, B.Sc., Scientific Specialist

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Your Project #: 12732-4
Site Location: 2889 E1ST AVE, VANCOUVER, BC
Your C.O.C. #: K005804

Attention: Sumeet Dogra
KEYSTONE ENVIRONMENTAL LTD
SUITE 320
4400 DOMINION STREET
BURNABY, BC
CANADA V5G 4G3

Report Date: 2016/08/24
Report #: R2245721
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B670360
Received: 2016/08/19, 10:40

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Extra VOCs in Water by HS GC/MS	1	N/A	2016/08/19	BBY8SOP-00040	EPA 8260c R3 m
VOCs, VH, F1, LH in Water by HS GC/MS	1	2016/08/19	2016/08/22	BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	1	N/A	2016/08/22	BBY WI-00033	Auto Calc

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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Amandeep Nagra, Account Specialist
Email: ANagra@maxxam.ca
Phone# (604)639-2602

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Maxxam Job #: B670360
Report Date: 2016/08/24

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E1ST AVE, VANCOUVER, BC
Sampler Initials: GF

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		PH5848		
Sampling Date		2016/08/19		
COC Number		K005804		
	UNITS	MW16-26	RDL	QC Batch
Volatiles				
2-Butanone (MEK)	ug/L	<10	10	8369940
4-Methyl-2-pentanone (MIBK)	ug/L	<10	10	8369940
RDL = Reportable Detection Limit				

Maxxam Job #: B670360
Report Date: 2016/08/24

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E1ST AVE, VANCOUVER, BC
Sampler Initials: GF

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		PH5848		
Sampling Date		2016/08/19		
COC Number		K005804		
	UNITS	MW16-26	RDL	QC Batch
Volatiles				
VPH (VHW6 to 10 - BTEX)	ug/L	2800	300	8368993
Chloromethane	ug/L	<1.0	1.0	8370144
Vinyl chloride	ug/L	<0.50	0.50	8370144
Chloroethane	ug/L	<1.0	1.0	8370144
Trichlorofluoromethane	ug/L	<4.0	4.0	8370144
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	2.0	8370144
Dichlorodifluoromethane	ug/L	<2.0	2.0	8370144
1,1-dichloroethene	ug/L	<0.50	0.50	8370144
Dichloromethane	ug/L	65 (1)	2.0	8370144
trans-1,2-dichloroethene	ug/L	<1.0	1.0	8370144
1,1-dichloroethane	ug/L	0.65 (1)	0.50	8370144
cis-1,2-dichloroethene	ug/L	<1.0	1.0	8370144
Chloroform	ug/L	<1.0	1.0	8370144
1,1,1-trichloroethane	ug/L	<0.50	0.50	8370144
1,2-dichloroethane	ug/L	<0.50	0.50	8370144
Carbon tetrachloride	ug/L	<0.50	0.50	8370144
Benzene	ug/L	1100 (2)	4.0	8370144
1,2-dichloropropane	ug/L	<0.50	0.50	8370144
cis-1,3-dichloropropene	ug/L	<1.0	1.0	8370144
trans-1,3-dichloropropene	ug/L	<1.0	1.0	8370144
Bromomethane	ug/L	<1.0	1.0	8370144
1,1,2-trichloroethane	ug/L	<0.50	0.50	8370144
Trichloroethene	ug/L	<5.0 (2)	5.0	8370144
Chlorodibromomethane	ug/L	<1.0	1.0	8370144
1,2-dibromoethane	ug/L	0.59 (1)	0.20	8370144
1,3-Butadiene	ug/L	<5.0	5.0	8370144
Tetrachloroethene	ug/L	8.5	0.50	8370144
Bromodichloromethane	ug/L	<1.0	1.0	8370144
Toluene	ug/L	4800 (2)	4.0	8370144
RDL = Reportable Detection Limit				
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.				
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.				

Maxxam Job #: B670360
Report Date: 2016/08/24

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E1ST AVE, VANCOUVER, BC
Sampler Initials: GF

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		PH5848		
Sampling Date		2016/08/19		
COC Number		K005804		
	UNITS	MW16-26	RDL	QC Batch
Ethylbenzene	ug/L	800 (1)	4.0	8370144
m & p-Xylene	ug/L	3800 (1)	4.0	8370144
Bromoform	ug/L	<1.0	1.0	8370144
Styrene	ug/L	<0.50	0.50	8370144
o-Xylene	ug/L	1800 (1)	4.0	8370144
Xylenes (Total)	ug/L	5600	4.0	8370144
1,1,1,2-tetrachloroethane	ug/L	<0.50	0.50	8370144
1,1,2,2-tetrachloroethane	ug/L	2.8 (2)	0.50	8370144
1,2-dichlorobenzene	ug/L	<0.50	0.50	8370144
1,3-dichlorobenzene	ug/L	<0.50	0.50	8370144
1,4-dichlorobenzene	ug/L	<0.50	0.50	8370144
Chlorobenzene	ug/L	<0.50	0.50	8370144
Dibromomethane	ug/L	<0.90	0.90	8370144
Bromobenzene	ug/L	<2.0	2.0	8370144
VH C6-C10	ug/L	15000	300	8370144

RDL = Reportable Detection Limit
 (1) Detection limits raised due to dilution to bring analyte within the calibrated range.
 (2) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.

Maxxam Job #: B670360
Report Date: 2016/08/24

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E1ST AVE, VANCOUVER, BC
Sampler Initials: GF

GENERAL COMMENTS

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

Package 1	21.0°C
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Results relate only to the items tested.

Maxxam Job #: B670360
Report Date: 2016/08/24

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4

Site Location: 2889 E1ST AVE, VANCOUVER, BC
Sampler Initials: GF

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8369940	2-Butanone (MEK)	2016/08/19	102	70 - 130	98	70 - 130	<10	ug/L	NC	40
8369940	4-Methyl-2-pentanone (MIBK)	2016/08/19	103	70 - 130	100	70 - 130	<10	ug/L	NC	40
8370144	1,1,1,2-tetrachloroethane	2016/08/20	116	70 - 130	112	70 - 130	<0.50	ug/L	NC	30
8370144	1,1,1-trichloroethane	2016/08/20	121	70 - 130	111	70 - 130	<0.50	ug/L	NC	30
8370144	1,1,2,2-tetrachloroethane	2016/08/20	116	70 - 130	123	70 - 130	<0.50	ug/L	NC	30
8370144	1,1,2Trichloro-1,2,2Trifluoroethane	2016/08/20					<2.0	ug/L	NC	30
8370144	1,1,2-trichloroethane	2016/08/20	112	70 - 130	110	70 - 130	<0.50	ug/L	NC	30
8370144	1,1-dichloroethane	2016/08/20	116	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
8370144	1,1-dichloroethene	2016/08/20	123	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
8370144	1,2-dibromoethane	2016/08/20	115	70 - 130	112	70 - 130	<0.20	ug/L	NC	30
8370144	1,2-dichlorobenzene	2016/08/20	127	70 - 130	127	70 - 130	<0.50	ug/L	NC	30
8370144	1,2-dichloroethane	2016/08/20	118	70 - 130	108	70 - 130	<0.50	ug/L	NC	30
8370144	1,2-dichloropropane	2016/08/20	108	70 - 130	107	70 - 130	<0.50	ug/L	NC	30
8370144	1,3-Butadiene	2016/08/20					<5.0	ug/L		
8370144	1,3-dichlorobenzene	2016/08/20	138 (1)	70 - 130	126	70 - 130	<0.50	ug/L	NC	30
8370144	1,4-dichlorobenzene	2016/08/20	134 (1)	70 - 130	122	70 - 130	<0.50	ug/L	NC	30
8370144	Benzene	2016/08/20	122	70 - 130	110	70 - 130	<0.40	ug/L	NC	30
8370144	Bromobenzene	2016/08/20	128	N/A	116	70 - 130	<2.0	ug/L		
8370144	Bromodichloromethane	2016/08/20	116	70 - 130	109	70 - 130	<1.0	ug/L	NC	30
8370144	Bromoform	2016/08/20	122	70 - 130	116	70 - 130	<1.0	ug/L	NC	30
8370144	Bromomethane	2016/08/20	126	60 - 140	112	60 - 140	<1.0	ug/L	NC	30
8370144	Carbon tetrachloride	2016/08/20	117	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
8370144	Chlorobenzene	2016/08/20	96	70 - 130	98	70 - 130	<0.50	ug/L	NC	30
8370144	Chlorodibromomethane	2016/08/20	116	70 - 130	112	70 - 130	<1.0	ug/L	NC	30
8370144	Chloroethane	2016/08/20	142 (1)	60 - 140	101	60 - 140	<1.0	ug/L	NC	30
8370144	Chloroform	2016/08/20	120	70 - 130	110	70 - 130	<1.0	ug/L	NC	30
8370144	Chloromethane	2016/08/20	106	60 - 140	99	60 - 140	<1.0	ug/L	NC	30
8370144	cis-1,2-dichloroethene	2016/08/20	121	70 - 130	111	70 - 130	<1.0	ug/L	NC	30
8370144	cis-1,3-dichloropropene	2016/08/20	117	70 - 130	111	70 - 130	<1.0	ug/L	NC	30
8370144	Dibromomethane	2016/08/20	115	N/A	108	70 - 130	<0.90	ug/L		
8370144	Dichlorodifluoromethane	2016/08/20	113	N/A	102	60 - 140	<2.0	ug/L	NC	30

Maxxam Job #: B670360
Report Date: 2016/08/24

QUALITY ASSURANCE REPORT(CONT'D)

KEystone ENVIRONMENTAL LTD
Client Project #: 12732-4

Site Location: 2889 E1ST AVE, VANCOUVER, BC
Sampler Initials: GF

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8370144	Dichloromethane	2016/08/20	126	70 - 130	118	70 - 130	<2.0	ug/L	NC	30
8370144	Ethylbenzene	2016/08/20	115	70 - 130	113	70 - 130	<0.40	ug/L	NC	30
8370144	m & p-Xylene	2016/08/20	127	70 - 130	121	70 - 130	<0.40	ug/L	NC	30
8370144	o-Xylene	2016/08/20	121	70 - 130	118	70 - 130	<0.40	ug/L	NC	30
8370144	Styrene	2016/08/20	101	70 - 130	99	70 - 130	<0.50	ug/L	NC	30
8370144	Tetrachloroethene	2016/08/20	121	70 - 130	111	70 - 130	<0.50	ug/L	NC	30
8370144	Toluene	2016/08/20	110	70 - 130	105	70 - 130	<0.40	ug/L	NC	30
8370144	trans-1,2-dichloroethene	2016/08/20	123	70 - 130	111	70 - 130	<1.0	ug/L	NC	30
8370144	trans-1,3-dichloropropene	2016/08/20	101	70 - 130	100	70 - 130	<1.0	ug/L	NC	30
8370144	Trichloroethene	2016/08/20	118	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
8370144	Trichlorofluoromethane	2016/08/20	132	60 - 140	118	60 - 140	<4.0	ug/L	NC	30
8370144	VH C6-C10	2016/08/20			87	70 - 130	<300	ug/L	NC	30
8370144	Vinyl chloride	2016/08/20	128	60 - 140	119	60 - 140	<0.50	ug/L	NC	30
8370144	Xylenes (Total)	2016/08/20					<0.40	ug/L	NC	30

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.

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.

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 (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B670360
Report Date: 2016/08/24

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732-4
Site Location: 2889 E1ST AVE, VANCOUVER, BC
Sampler Initials: GF

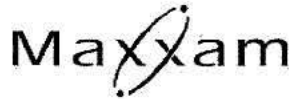
VALIDATION SIGNATURE PAGE

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



Rob Reinert, B.Sc., Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



K 005804

Maxxam Job#: B670360

Report To:

Blank form for reporting to details including PO, Ph, and Fax.

Form for PO #, Quotation #, Project # (12732-4), Proj. Name, Location (2889 E 1st Ave, Vancouver, BC), and Sampled By (GF).

Invoice To: Require Report? Yes No

Company Name: Keystone Environmental Ltd. Contact Name: Sameet Datta, Nigel Green. Address: #320-4400 Dominion Street, Burnaby, BC. Phone/Fax: (604) 430-0671.

REGULATORY REQUIREMENTS SERVICE REQUESTED: CSR, CCME, BC Water Quality, Other. DRINKING WATER. Regular Turn Around Time (TAT) (5 days for most tests). RUSH (Please contact the lab). Date Required: 1 Day, 2 Day, 3 Day.

Special Instructions: Return Cooler Ship Sample Bottles (please specify) Analyze but do not report

ANALYSIS REQUESTED

Table with columns for Sample Identification, Lab Identification, Sample Type, Date/Time Sampled, and various chemical analysis parameters (BTEXVPH, MTBE, TOC, etc.). Row 1 contains data for sample 1: Lab ID M1626, Sample Type water, Date/Time Aug 19/16, and analysis results for BTEXVPH (X), TOC (N), etc.



Vertical text: Samples are from a Drinking Water Source? YES NO. Does source supply multiple households? YES NO.

Laboratory Use Only section. Includes fields for Relinquished by (signature), Date (16/08/19), Time (10:26), Received by (KEVIN CHOW), Date (20/08/19), Time (10:46), Temperature on Receipt (20, 21, 22), and Custody Seal Intact on Cooler? (Yes).

IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS. Maxxam International Corporation c/o Maxxam Analytica

Your Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER
Your C.O.C. #: K014321

Attention: Sumeet Dogra
KEYSTONE ENVIRONMENTAL LTD
SUITE 320
4400 DOMINION STREET
BURNABY, BC
CANADA V5G 4G3

Report Date: 2017/09/19
Report #: R2446306
Version: 2 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

MAXXAM JOB #: B5A1688
Received: 2015/11/13, 16:05

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
EPH in Water when PAH required	1	2015/11/19	2015/11/19	BBY8SOP-00029	BCMOE EPH w 12/00 m
PAH in Water by GC/MS (SIM)	1	2015/11/19	2015/11/20	BBY8SOP-00021	EPA 8270d R5 m
Total LMW, HMW, Total PAH Calc	1	N/A	2015/11/23	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	1	N/A	2015/11/23	BBY WI-00033	Auto Calc
Extra VOCs in Water by HS GC/MS	1	N/A	2015/11/16	BBY8SOP-00040	EPA 8260c R3 m
Extra VOCs in Water by HS GC/MS	2	N/A	2015/11/17	BBY8SOP-00040	EPA 8260c R3 m
VOCs, VH, F1, LH in Water by HS GC/MS	3	2015/11/15	2015/11/15	BBY8SOP-00009/11/12	BC Lab Manual 2017 m
Volatile HC-BTEX	3	N/A	2015/11/16	BBY WI-00033	Auto Calc

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

Your Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER
Your C.O.C. #: K014321

Attention:Sumeet Dogra

KEYSTONE ENVIRONMENTAL LTD
SUITE 320
4400 DOMINION STREET
BURNABY, BC
CANADA V5G 4G3

Report Date: 2017/09/19
Report #: R2446306
Version: 2 - Partial

CERTIFICATE OF ANALYSIS – PARTIAL RESULTS

MAXXAM JOB #: B5A1688

Received: 2015/11/13, 16:05

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Amandeep Nagra, Account Specialist
Email: ANagra@maxxam.ca
Phone# (604)639-2602

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B5A1688
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER
Sampler Initials: ACF

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		NQ3083	NQ3089	NQ3092		
Sampling Date		2015/11/12 09:35	2015/11/13 12:00	2015/11/13 12:00		
COC Number		K014321	K014321	K014321		
	UNITS	MW15-4	MW15-2	MW15-B	RDL	QC Batch
Volatiles						
2-Butanone (MEK)	ug/L	<10	<10	<10	10	8114978
4-Methyl-2-pentanone (MIBK)	ug/L	<10	<10	<10	10	8114978
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	113	115	118		8114978
4-Bromofluorobenzene (sur.)	%	91	93	94		8114978
D4-1,2-Dichloroethane (sur.)	%	99	101	108		8114978
RDL = Reportable Detection Limit						

Maxxam Job #: BSA1688
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER
Sampler Initials: ACF

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		NQ3083		
Sampling Date		2015/11/12 09:35		
COC Number		K014321		
	UNITS	MW15-4	RDL	QC Batch
Polycyclic Aromatics				
Low Molecular Weight PAH's	ug/L	<0.24	0.24	8112999
High Molecular Weight PAH's	ug/L	<0.050	0.050	8112999
Total PAH	ug/L	<0.24	0.24	8112999
Quinoline	ug/L	<0.24	0.24	8118082
Naphthalene	ug/L	<0.10	0.10	8118082
2-Methylnaphthalene	ug/L	<0.10	0.10	8118082
Acenaphthylene	ug/L	<0.050	0.050	8118082
Acenaphthene	ug/L	<0.050	0.050	8118082
Fluorene	ug/L	<0.050	0.050	8118082
Phenanthrene	ug/L	<0.050	0.050	8118082
Anthracene	ug/L	<0.010	0.010	8118082
Acridine	ug/L	<0.050	0.050	8118082
Fluoranthene	ug/L	<0.020	0.020	8118082
Pyrene	ug/L	<0.020	0.020	8118082
Benzo(a)anthracene	ug/L	<0.010	0.010	8118082
Chrysene	ug/L	<0.050	0.050	8118082
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	8118082
Benzo(k)fluoranthene	ug/L	<0.050	0.050	8118082
Benzo(a)pyrene	ug/L	<0.0090	0.0090	8118082
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	8118082
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	8118082
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	8118082
Calculated Parameters				
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	8113001
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.20	8113001
Ext. Pet. Hydrocarbon				
EPH (C10-C19)	mg/L	<0.20	0.20	8118098
EPH (C19-C32)	mg/L	<0.20	0.20	8118098
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	115		8118098
RDL = Reportable Detection Limit				

Maxxam Job #: B5A1688
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER
Sampler Initials: ACF

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		NQ3083		
Sampling Date		2015/11/12 09:35		
COC Number		K014321		
	UNITS	MW15-4	RDL	QC Batch
D10-ANTHRACENE (sur.)	%	95		8118082
D8-ACENAPHTHYLENE (sur.)	%	99		8118082
D8-NAPHTHALENE (sur.)	%	88		8118082
D9-Acridine (sur.)	%	102		8118082
TERPHENYL-D14 (sur.)	%	103		8118082
RDL = Reportable Detection Limit				

Maxxam Job #: B5A1688
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER
Sampler Initials: ACF

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		NQ3083	NQ3089	NQ3092		
Sampling Date		2015/11/12 09:35	2015/11/13 12:00	2015/11/13 12:00		
COC Number		K014321	K014321	K014321		
	UNITS	MW15-4	MW15-2	MW15-B	RDL	QC Batch
Volatiles						
VPH (VHW6 to 10 - BTEX)	ug/L	<300	<300	<300	300	8113098
Chloromethane	ug/L	<1.0	<1.0	<1.0	1.0	8113638
Vinyl chloride	ug/L	<0.50	<0.50	<0.50	0.50	8113638
Chloroethane	ug/L	<1.0	<1.0	<1.0	1.0	8113638
Trichlorofluoromethane	ug/L	<4.0	<4.0	<4.0	4.0	8113638
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	<2.0	<2.0	2.0	8113638
Dichlorodifluoromethane	ug/L	<2.0	<2.0	<2.0	2.0	8113638
1,1-dichloroethene	ug/L	<0.50	<0.50	<0.50	0.50	8113638
Dichloromethane	ug/L	<2.0	<2.0	<2.0	2.0	8113638
trans-1,2-dichloroethene	ug/L	<1.0	<1.0	<1.0	1.0	8113638
1,1-dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8113638
cis-1,2-dichloroethene	ug/L	4.1	<1.0	<1.0	1.0	8113638
Chloroform	ug/L	<1.0	<1.0	<1.0	1.0	8113638
1,1,1-trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8113638
1,2-dichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8113638
Carbon tetrachloride	ug/L	<0.50	<0.50	<0.50	0.50	8113638
Benzene	ug/L	<0.40	<0.40	<0.40	0.40	8113638
1,2-dichloropropane	ug/L	<0.50	<0.50	<0.50	0.50	8113638
cis-1,3-dichloropropene	ug/L	<1.0	<1.0	<1.0	1.0	8113638
trans-1,3-dichloropropene	ug/L	<1.0	<1.0	<1.0	1.0	8113638
Bromomethane	ug/L	<1.0	<1.0	<1.0	1.0	8113638
1,1,2-trichloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8113638
Trichloroethene	ug/L	5.0	<0.50	<0.50	0.50	8113638
Chlorodibromomethane	ug/L	<1.0	<1.0	<1.0	1.0	8113638
1,2-dibromoethane	ug/L	<0.20	<0.20	<0.20	0.20	8113638
1,3-Butadiene	ug/L	<5.0	<5.0	<5.0	5.0	8113638
Tetrachloroethene	ug/L	24	<0.50	<0.50	0.50	8113638
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	1.0	8113638
Toluene	ug/L	<0.40	<0.40	<0.40	0.40	8113638
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	0.40	8113638
RDL = Reportable Detection Limit						

Maxxam Job #: B5A1688
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER

Sampler Initials: ACF

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		NQ3083	NQ3089	NQ3092		
Sampling Date		2015/11/12 09:35	2015/11/13 12:00	2015/11/13 12:00		
COC Number		K014321	K014321	K014321		
	UNITS	MW15-4	MW15-2	MW15-B	RDL	QC Batch
m & p-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	8113638
Bromoform	ug/L	<1.0	<1.0	<1.0	1.0	8113638
Styrene	ug/L	<0.50	<0.50	<0.50	0.50	8113638
o-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	8113638
Xylenes (Total)	ug/L	<0.40	<0.40	<0.40	0.40	8113638
1,1,1,2-tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8113638
1,1,2,2-tetrachloroethane	ug/L	<0.50	<0.50	<0.50	0.50	8113638
1,2-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8113638
1,3-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8113638
1,4-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8113638
Chlorobenzene	ug/L	<0.50	<0.50	<0.50	0.50	8113638
Dibromomethane	ug/L	<0.90	<0.90	<0.90	0.90	8113638
Bromobenzene	ug/L	<2.0	<2.0	<2.0	2.0	8113638
VH C6-C10	ug/L	<300	<300	<300	300	8113638
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	106	107	103		8113638
4-Bromofluorobenzene (sur.)	%	96	93	96		8113638
D4-1,2-Dichloroethane (sur.)	%	90	90	92		8113638
RDL = Reportable Detection Limit						

Maxxam Job #: B5A1688
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER
Sampler Initials: ACF

GENERAL COMMENTS

Version 2: report contains results for samples MW15-2, MW15-B and MW15-4 as per request from Nigel Grewal. (NNK)

Results relate only to the items tested.

Maxxam Job #: B5A1688
Report Date: 2017/09/19

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732

RENFREW VIEW HOMES LTD/ RENFREW ST,
Site Location: VANCOUVER
Sampler Initials: ACF

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8113638	1,4-Difluorobenzene (sur.)	2015/11/15	106	70 - 130	104	70 - 130	105	%		
8113638	4-Bromofluorobenzene (sur.)	2015/11/15	101	70 - 130	100	70 - 130	97	%		
8113638	D4-1,2-Dichloroethane (sur.)	2015/11/15	100	70 - 130	100	70 - 130	88	%		
8114978	1,4-Difluorobenzene (sur.)	2015/11/16	109	70 - 130	108	70 - 130	107	%		
8114978	4-Bromofluorobenzene (sur.)	2015/11/16	96	70 - 130	102	70 - 130	107	%		
8114978	D4-1,2-Dichloroethane (sur.)	2015/11/16	97	70 - 130	102	70 - 130	94	%		
8118082	D10-ANTHRACENE (sur.)	2015/11/19	92	50 - 140	103	50 - 140	97	%		
8118082	D8-ACENAPHTHYLENE (sur.)	2015/11/19	100	50 - 140	99	50 - 140	92	%		
8118082	D8-NAPHTHALENE (sur.)	2015/11/19	99	50 - 140	98	50 - 140	90	%		
8118082	D9-Acridine (sur.)	2015/11/19	96	50 - 140	96	50 - 140	92	%		
8118082	TERPHENYL-D14 (sur.)	2015/11/19	93	50 - 140	104	50 - 140	99	%		
8118098	O-TERPHENYL (sur.)	2015/11/19	117	60 - 140	119	60 - 140	115	%		
8113638	1,1,1,2-tetrachloroethane	2015/11/15	73	70 - 130	71	70 - 130	<0.50	ug/L	NC	30
8113638	1,1,1-trichloroethane	2015/11/15	77	70 - 130	74	70 - 130	<0.50	ug/L	NC	30
8113638	1,1,2,2-tetrachloroethane	2015/11/15	78	70 - 130	84	70 - 130	<0.50	ug/L	NC	30
8113638	1,1,2Trichloro-1,2,2Trifluoroethane	2015/11/15					<2.0	ug/L	NC	30
8113638	1,1,2-trichloroethane	2015/11/15	75	70 - 130	74	70 - 130	<0.50	ug/L	NC	30
8113638	1,1-dichloroethane	2015/11/15	73	70 - 130	70	70 - 130	<0.50	ug/L	NC	30
8113638	1,1-dichloroethene	2015/11/15	73	70 - 130	71	70 - 130	<0.50	ug/L	NC	30
8113638	1,2-dibromoethane	2015/11/15	74	70 - 130	74	70 - 130	<0.20	ug/L	NC	30
8113638	1,2-dichlorobenzene	2015/11/15	75	70 - 130	76	70 - 130	<0.50	ug/L	NC	30
8113638	1,2-dichloroethane	2015/11/15	74	70 - 130	72	70 - 130	<0.50	ug/L	NC	30
8113638	1,2-dichloropropane	2015/11/15	77	70 - 130	75	70 - 130	<0.50	ug/L	NC	30
8113638	1,3-Butadiene	2015/11/15					<5.0	ug/L	NC	30
8113638	1,3-dichlorobenzene	2015/11/15	77	70 - 130	79	70 - 130	<0.50	ug/L	NC	30
8113638	1,4-dichlorobenzene	2015/11/15	74	70 - 130	76	70 - 130	<0.50	ug/L	NC	30
8113638	Benzene	2015/11/15	78	70 - 130	75	70 - 130	<0.40	ug/L	NC	30
8113638	Bromobenzene	2015/11/15	75	70 - 130	78	70 - 130	<2.0	ug/L	NC	30
8113638	Bromodichloromethane	2015/11/15	74	70 - 130	72	70 - 130	<1.0	ug/L	NC	30
8113638	Bromoform	2015/11/15	71	70 - 130	75	70 - 130	<1.0	ug/L	NC	30

Maxxam Job #: B5A1688
Report Date: 2017/09/19

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732

RENFREW VIEW HOMES LTD/ RENFREW ST,
Site Location: VANCOUVER
Sampler Initials: ACF

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8113638	Bromomethane	2015/11/15	103	60 - 140	86	60 - 140	<1.0	ug/L	NC	30
8113638	Carbon tetrachloride	2015/11/15	76	70 - 130	74	70 - 130	<0.50	ug/L	NC	30
8113638	Chlorobenzene	2015/11/15	72	70 - 130	70	70 - 130	<0.50	ug/L	NC	30
8113638	Chlorodibromomethane	2015/11/15	73	70 - 130	72	70 - 130	<1.0	ug/L	NC	30
8113638	Chloroethane	2015/11/15	129	60 - 140	86	60 - 140	<1.0	ug/L	NC	30
8113638	Chloroform	2015/11/15	77	70 - 130	75	70 - 130	<1.0	ug/L	NC	30
8113638	Chloromethane	2015/11/15	70	60 - 140	69	60 - 140	<1.0	ug/L	NC	30
8113638	cis-1,2-dichloroethene	2015/11/15	77	70 - 130	75	70 - 130	<1.0	ug/L	NC	30
8113638	cis-1,3-dichloropropene	2015/11/15	71	70 - 130	70	70 - 130	<1.0	ug/L	NC	30
8113638	Dibromomethane	2015/11/15	71	70 - 130	72	70 - 130	<0.90	ug/L	NC	30
8113638	Dichlorodifluoromethane	2015/11/15	77	60 - 140	76	60 - 140	<2.0	ug/L	NC	30
8113638	Dichloromethane	2015/11/15	84	70 - 130	82	70 - 130	<2.0	ug/L	NC	30
8113638	Ethylbenzene	2015/11/15	79	70 - 130	77	70 - 130	<0.40	ug/L	NC	30
8113638	m & p-Xylene	2015/11/15	82	70 - 130	79	70 - 130	<0.40	ug/L	NC	30
8113638	o-Xylene	2015/11/15	79	70 - 130	76	70 - 130	<0.40	ug/L	NC	30
8113638	Styrene	2015/11/15	78	70 - 130	77	70 - 130	<0.50	ug/L	NC	30
8113638	Tetrachloroethene	2015/11/15	77	70 - 130	75	70 - 130	<0.50	ug/L	NC	30
8113638	Toluene	2015/11/15	81	70 - 130	78	70 - 130	<0.40	ug/L	NC	30
8113638	trans-1,2-dichloroethene	2015/11/15	75	70 - 130	72	70 - 130	<1.0	ug/L	NC	30
8113638	trans-1,3-dichloropropene	2015/11/15	70	70 - 130	69 (1)	70 - 130	<1.0	ug/L	NC	30
8113638	Trichloroethene	2015/11/15	76	70 - 130	73	70 - 130	<0.50	ug/L	NC	30
8113638	Trichlorofluoromethane	2015/11/15	93	60 - 140	90	60 - 140	<4.0	ug/L	NC	30
8113638	VH C6-C10	2015/11/15			82	70 - 130	<300	ug/L	NC	30
8113638	Vinyl chloride	2015/11/15	77	60 - 140	79	60 - 140	<0.50	ug/L	NC	30
8113638	Xylenes (Total)	2015/11/15					<0.40	ug/L	NC	30
8114978	2-Butanone (MEK)	2015/11/16	92	70 - 130	88	70 - 130	<10	ug/L	NC	40
8114978	4-Methyl-2-pentanone (MIBK)	2015/11/16	76	70 - 130	75	70 - 130	<10	ug/L	NC	40
8118082	2-Methylnaphthalene	2015/11/20	105	50 - 140	92	50 - 140	<0.10	ug/L	NC	40
8118082	Acenaphthene	2015/11/20	103	50 - 140	94	50 - 140	<0.050	ug/L	NC	40
8118082	Acenaphthylene	2015/11/20	105	50 - 140	92	50 - 140	<0.050	ug/L	NC	40

Maxxam Job #: B5A1688
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QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732

RENFREW VIEW HOMES LTD/ RENFREW ST,
Site Location: VANCOUVER
Sampler Initials: ACF

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8118082	Acridine	2015/11/20	97	50 - 140	86	50 - 140	<0.050	ug/L	NC	40
8118082	Anthracene	2015/11/20	103	50 - 140	96	50 - 140	<0.010	ug/L	NC	40
8118082	Benzo(a)anthracene	2015/11/20	94	50 - 140	91	50 - 140	<0.010	ug/L	NC	40
8118082	Benzo(a)pyrene	2015/11/20	90	50 - 140	91	50 - 140	<0.0090	ug/L	NC	40
8118082	Benzo(b&j)fluoranthene	2015/11/20	88	50 - 140	89	50 - 140	<0.050	ug/L	NC	40
8118082	Benzo(g,h,i)perylene	2015/11/20	81	50 - 140	82	50 - 140	<0.050	ug/L	NC	40
8118082	Benzo(k)fluoranthene	2015/11/20	83	50 - 140	91	50 - 140	<0.050	ug/L	NC	40
8118082	Chrysene	2015/11/20	94	50 - 140	95	50 - 140	<0.050	ug/L	NC	40
8118082	Dibenz(a,h)anthracene	2015/11/20	85	50 - 140	80	50 - 140	<0.050	ug/L	NC	40
8118082	Fluoranthene	2015/11/20	105	50 - 140	94	50 - 140	<0.020	ug/L	NC	40
8118082	Fluorene	2015/11/20	97	50 - 140	87	50 - 140	<0.050	ug/L	NC	40
8118082	Indeno(1,2,3-cd)pyrene	2015/11/20	84	50 - 140	84	50 - 140	<0.050	ug/L	NC	40
8118082	Naphthalene	2015/11/20	101	50 - 140	92	50 - 140	<0.10	ug/L	NC	40
8118082	Phenanthrene	2015/11/20	102	50 - 140	94	50 - 140	<0.050	ug/L	NC	40
8118082	Pyrene	2015/11/20	106	50 - 140	97	50 - 140	<0.020	ug/L	NC	40
8118082	Quinoline	2015/11/20	114	50 - 140	102	50 - 140	<0.24	ug/L	NC	40
8118098	EPH (C10-C19)	2015/11/19	105	60 - 140	107	70 - 130	<0.20	mg/L	NC	30
8118098	EPH (C19-C32)	2015/11/19	120	60 - 140	123	70 - 130	<0.20	mg/L	NC	30

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.

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 (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) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B5A1688
Report Date: 2017/09/19

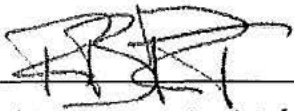
KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: RENFREW VIEW HOMES LTD/ RENFREW ST,
VANCOUVER
Sampler Initials: ACF

VALIDATION SIGNATURE PAGE

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



David Huang, M.Sc., P.Chem., QP, Scientific Services Manager



Rob Reinert, B.Sc., Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job#: B5A1688

K 014321

Invoice To: Require Report? Yes No
 Company Name: Keystone Environmental Ltd.
 Contact Name: Sumant Dagra
 Address: #320-4400 Dominion Street
Burnaby, BC PC: V5G 4G3
 Phone / Fax#: Ph: (604) 430-0671 Fax: (604) 430-0672
 E-mail: Sdagra@keystoneenviro.com

Report To:
 Company Name: _____
 Contact Name: _____
 Address: _____
 PC: _____
 Ph: _____ Fax: _____

PO #: _____
 Quotation #: _____
 Project #: 12732
 Proj. Name: Renfrew View Homes Ltd
 Location: Renfrew St, Vancouver
 Sampler By: ACF

REGULATORY REQUIREMENTS SERVICE REQUESTED:

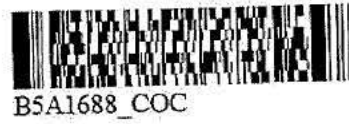
- CSR Regular Turn Around Time (TAT) (5 days for most tests)
 CCME RUSH (Please contact the lab)
 BC Water Quality 1 Day 2 Day 3 Day
 Other 1 Day 2 Day 3 Day
 DRINKING WATER Date Required: _____

Special Instructions:

Return Cooler Ship Sample Bottles (please specify)

ANALYSIS REQUESTED

Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	MTBE	TPH	LEP/HEPH	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP	MOG	Phenols by GC/MS	SWOG	Disolved Metals	Total Metals Field Address:	Nitrate	Nitrite	Ammonia	Chloride	Fluoride	Sulfate	TDS	Total Suspended Solids-TSS	pH	Conductivity	Avalinity	BOD	COD	Coliform, Total & E.coli	Asbestos	Facal	# of containers	HOLD	NO	NO				
1 BH-2	NQ3081	Drinking water	Nov 12/15 (1:20)	X	X	X																											5							
2 mw15-3	NQ3082		" (10:30)	X	X																												5							
3 mw15-4	NQ3083		" (9:35)	X	X																												5							
4 mw15-5D	NQ3084		" (10:50)	X																														3						
5 mw15-5s	NQ3085		" (11:20)	X		X																												5						
6 mw15-6D	NQ3086		" (11:50)	X																														3						
7 mw15-7	NQ3087		" (12:45)	X		X																												5						
8 mw15-6s	NQ3088		Nov 13/15 (12:40)	X		X																													7					
9 mw15-2	NQ3089		Nov 13 2015 (12:30)	X																															3					
10 mw15-10	NQ3090		Nov 13 2015 (12:30)	X		X																													5					
11 mw15-A	NQ3091		Nov 13 2015 (14:10)	X		X																														4				
12 mw15-B	NQ3092	✓	Nov 13 2015 (12:00)	X																															3					

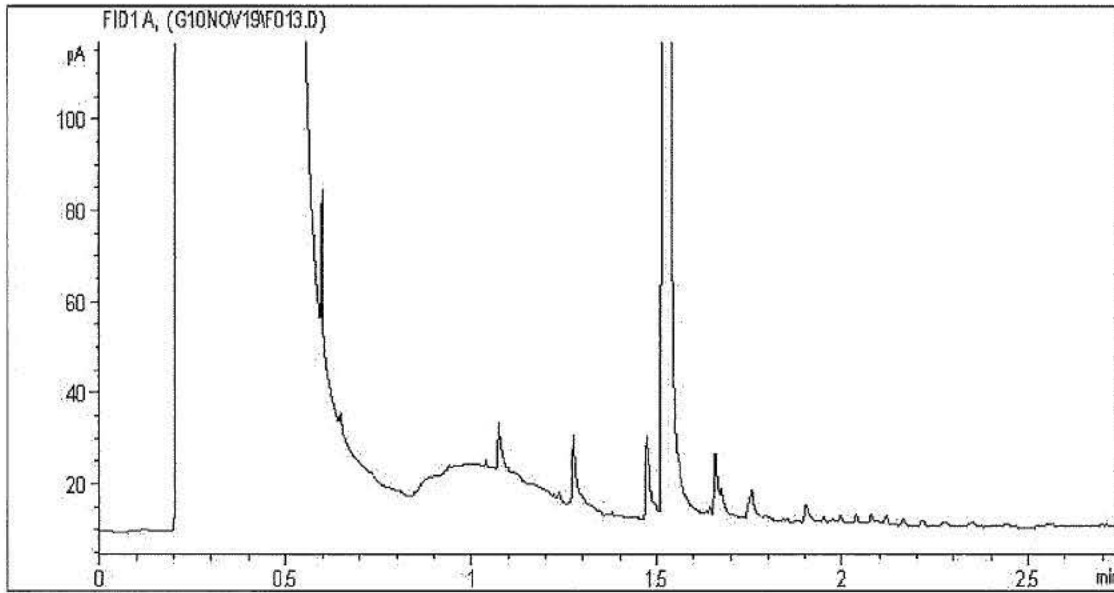


*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
Amanda Felker	15/11/13	16:05	Natred Arner	2015/11/13	16:05	<input type="checkbox"/>	5, 4, 4	Yes <input type="checkbox"/> No <input type="checkbox"/>

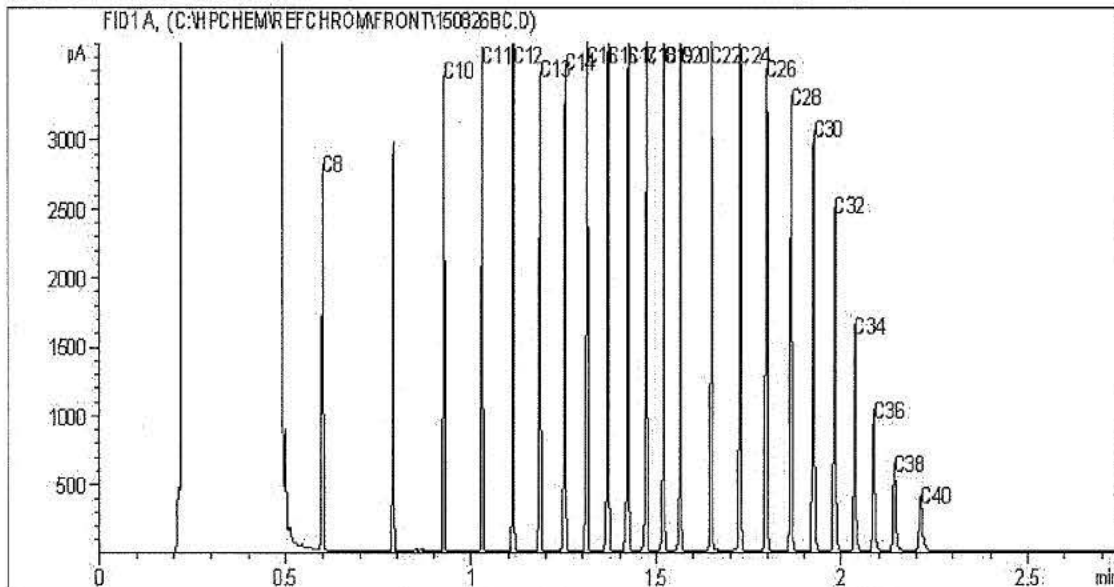
IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS. White: Maxxam Yellow: Client

ICE - YES N/A

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 12732
Your C.O.C. #: K008532

Attention: Sumeet Dogra
KEYSTONE ENVIRONMENTAL LTD
SUITE 320
4400 DOMINION STREET
BURNABY, BC
CANADA V5G 4G3

Report Date: 2017/09/19
Report #: R2446316
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B647969

Received: 2016/06/14, 16:10

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Hardness (calculated as CaCO ₃)	5	N/A	2016/06/17	BBY WI-00033	Auto Calc
EPH in Water when PAH required	5	2016/06/16	2016/06/17	BBY8SOP-00029	BCMOE EPH w 12/00 m
Elements by CRC ICPMS (dissolved)	5	N/A	2016/06/16	BBY7SOP-00002	EPA 6020B R2 m
PAH in Water by GC/MS (SIM)	3	2016/06/16	2016/06/17	BBY8SOP-00021	EPA 8270d R5 m
PAH in Water by GC/MS (SIM)	2	2016/06/16	2016/06/18	BBY8SOP-00021	EPA 8270d R5 m
Total LMW, HMW, Total PAH Calc	5	N/A	2016/06/20	BBY WI-00033	Auto Calc
Filter and HNO ₃ Preserve for Metals	5	N/A	2016/06/20	BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	5	N/A	2016/06/21	BBY WI-00033	Auto Calc
Extra VOCs in Water by HS GC/MS	5	N/A	2016/06/16	BBY8SOP-00040	EPA 8260c R3 m
VOCs, VH, F1, LH in Water by HS GC/MS	4	2016/06/16	2016/06/16	BBY8SOP-00009/11/12	BC Lab Manual 2017 m
VOCs, VH, F1, LH in Water by HS GC/MS	1	2016/06/16	2016/06/18	BBY8SOP-00009/11/12	BC Lab Manual 2017 m
Volatile HC-BTEX	4	N/A	2016/06/17	BBY WI-00033	Auto Calc
Volatile HC-BTEX	1	N/A	2016/06/20	BBY WI-00033	Auto Calc

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Your Project #: 12732
Your C.O.C. #: K008532

Attention:Sumeet Dogra
KEYSTONE ENVIRONMENTAL LTD
SUITE 320
4400 DOMINION STREET
BURNABY, BC
CANADA V5G 4G3

Report Date: 2017/09/19
Report #: R2446316
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B647969

Received: 2016/06/14, 16:10

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.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Amandeep Nagra, Account Specialist

Email: ANagra@maxxam.ca

Phone# (604)639-2602

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		OV5938	OV5939	OV5940	OV5941	OV5947	
Sampling Date		2016/06/14	2016/06/14	2016/06/14	2016/06/14	2016/06/14	
COC Number		K008532	K008532	K008532	K008532	K008532	
	UNITS	MW16-11S	MW16-11D	MW16-12S	MW16-12D	MW16-A	QC Batch
Calculated Parameters							
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	FIELD	FIELD	ONSITE

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		OV5938	OV5938	OV5939	OV5940	OV5941	OV5947		
Sampling Date		2016/06/14	2016/06/14	2016/06/14	2016/06/14	2016/06/14	2016/06/14		
COC Number		K008532	K008532	K008532	K008532	K008532	K008532		
	UNITS	MW16-11S	MW16-11S Lab-Dup	MW16-11D	MW16-12S	MW16-12D	MW16-A	RDL	QC Batch
Volatiles									
2-Butanone (MEK)	ug/L	<10	<10	<10	<10	<10	<10	10	8301869
4-Methyl-2-pentanone (MIBK)	ug/L	<10	<10	<10	<10	<10	<10	10	8301869
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	98	99	99	99	100	99		8301869
4-Bromofluorobenzene (sur.)	%	98	109	98	98	98	99		8301869
D4-1,2-Dichloroethane (sur.)	%	84	84	83	84	85	83		8301869
RDL = Reportable Detection Limit									
Lab-Dup = Laboratory Initiated Duplicate									

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		OV5938	OV5939	OV5940	OV5941	OV5947		
Sampling Date		2016/06/14	2016/06/14	2016/06/14	2016/06/14	2016/06/14		
COC Number		K008532	K008532	K008532	K008532	K008532		
	UNITS	MW16-11S	MW16-11D	MW16-12S	MW16-12D	MW16-A	RDL	QC Batch
Polycyclic Aromatics								
Low Molecular Weight PAH's	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	0.24	8299745
High Molecular Weight PAH's	ug/L	<0.050	0.056	<0.050	<0.050	<0.050	0.050	8299745
Total PAH	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	0.24	8299745
Quinoline	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	0.24	8301131
Naphthalene	ug/L	0.18	<0.10	<0.10	<0.10	<0.10	0.10	8301131
2-Methylnaphthalene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	8301131
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Acenaphthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Phenanthrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8301131
Acridine	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Fluoranthene	ug/L	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	8301131
Pyrene	ug/L	<0.020	0.038 (1)	<0.020	0.021	<0.020	0.020	8301131
Benzo(a)anthracene	ug/L	<0.010	0.018	<0.010	<0.010	<0.010	0.010	8301131
Chrysene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	<0.0090	<0.0090	0.0090	8301131
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8301131
Calculated Parameters								
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8299968
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.65	<0.20	<0.20	<0.20	0.20	8299968
Ext. Pet. Hydrocarbon								
EPH (C10-C19)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8301136
EPH (C19-C32)	mg/L	<0.20	0.65	<0.20	<0.20	<0.20	0.20	8301136
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	94	94	94	97	94		8301136
D10-ANTHRACENE (sur.)	%	110	116	113	112	113		8301131
D8-ACENAPHTHYLENE (sur.)	%	116	120	118	115	118		8301131
RDL = Reportable Detection Limit								
(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.								

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		OV5938	OV5939	OV5940	OV5941	OV5947		
Sampling Date		2016/06/14	2016/06/14	2016/06/14	2016/06/14	2016/06/14		
COC Number		K008532	K008532	K008532	K008532	K008532		
	UNITS	MW16-11S	MW16-11D	MW16-12S	MW16-12D	MW16-A	RDL	QC Batch
D8-NAPHTHALENE (sur.)	%	102	103	102	101	104		8301131
D9-Acridine (sur.)	%	104	94	104	98	101		8301131
TERPHENYL-D14 (sur.)	%	113	121	116	116	116		8301131
RDL = Reportable Detection Limit								

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

CSR DISSOLVED METALS (NO CV-HG) IN WATER

Maxxam ID		OV5938	OV5939	OV5940	OV5941	OV5947		
Sampling Date		2016/06/14	2016/06/14	2016/06/14	2016/06/14	2016/06/14		
COC Number		K008532	K008532	K008532	K008532	K008532		
	UNITS	MW16-11S	MW16-11D	MW16-12S	MW16-12D	MW16-A	RDL	QC Batch
Misc. Inorganics								
Dissolved Hardness (CaCO3)	mg/L	86.2	39.1	58.2	26.9	26.6	0.50	8300559
Dissolved Metals by ICPMS								
Dissolved Lead (Pb)	ug/L	<0.20	0.61	<0.20	0.23	<0.20	0.20	8301262
RDL = Reportable Detection Limit								

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		OV5938	OV5939	OV5940	OV5941	OV5947		
Sampling Date		2016/06/14	2016/06/14	2016/06/14	2016/06/14	2016/06/14		
COC Number		K008532	K008532	K008532	K008532	K008532		
	UNITS	MW16-11S	MW16-11D	MW16-12S	MW16-12D	MW16-A	RDL	QC Batch
Volatiles								
VPH (VHW6 to 10 - BTEX)	ug/L	<300	<300	<300	<300	<300	300	8299746
Chloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
Vinyl chloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Chloroethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
Trichlorofluoromethane	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	4.0	8301725
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8301725
Dichlorodifluoromethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8301725
1,1-dichloroethene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Dichloromethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8301725
trans-1,2-dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
1,1-dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
cis-1,2-dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
1,1,1-trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
1,2-dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Carbon tetrachloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Benzene	ug/L	1.8	0.49	0.67	0.53	0.64	0.40	8301725
1,2-dichloropropane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
cis-1,3-dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
trans-1,3-dichloropropene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
Bromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
1,1,2-trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Trichloroethene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Chlorodibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
1,2-dibromoethane	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	8301725
1,3-Butadiene	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	8301725
Tetrachloroethene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Bromodichloromethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
Toluene	ug/L	10	0.91	<0.40	<0.40	<0.40	0.40	8301725
Ethylbenzene	ug/L	1.3	<0.40	<0.40	<0.40	<0.40	0.40	8301725
m & p-Xylene	ug/L	5.4	<0.40	<0.40	<0.40	<0.40	0.40	8301725
Bromoform	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	8301725
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
o-Xylene	ug/L	2.7	<0.40	<0.40	<0.40	<0.40	0.40	8301725
RDL = Reportable Detection Limit								

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		OV5938	OV5939	OV5940	OV5941	OV5947		
Sampling Date		2016/06/14	2016/06/14	2016/06/14	2016/06/14	2016/06/14		
COC Number		K008532	K008532	K008532	K008532	K008532		
	UNITS	MW16-11S	MW16-11D	MW16-12S	MW16-12D	MW16-A	RDL	QC Batch
Xylenes (Total)	ug/L	8.2	<0.40	<0.40	<0.40	<0.40	0.40	8301725
1,1,1,2-tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
1,1,2,2-tetrachloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
1,2-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
1,3-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
1,4-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Chlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	8301725
Dibromomethane	ug/L	<0.90	<0.90	<0.90	<0.90	<0.90	0.90	8301725
Bromobenzene	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	8301725
VH C6-C10	ug/L	<300	<300	<300	<300	<300	300	8301725
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	100	98	99	100	96		8301725
4-Bromofluorobenzene (sur.)	%	89	86	86	84	83		8301725
D4-1,2-Dichloroethane (sur.)	%	93	89	92	88	90		8301725
RDL = Reportable Detection Limit								

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

GENERAL COMMENTS

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

Package 1	16.0°C
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Version 3: report contains results for samples MW16-11S, MW16-11D, MW16-12S, MW16-12D and MW16-A as per request from Nigel Grewal. (NNK)

Results relate only to the items tested.

Maxxam Job #: B647969
Report Date: 2017/09/19

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8301131	D10-ANTHRACENE (sur.)	2016/06/17	112	50 - 140	100	50 - 140	103	%		
8301131	D8-ACENAPHTHYLENE (sur.)	2016/06/17	112	50 - 140	100	50 - 140	107	%		
8301131	D8-NAPHTHALENE (sur.)	2016/06/17	111	50 - 140	98	50 - 140	104	%		
8301131	D9-Acridine (sur.)	2016/06/17	96	50 - 140	88	50 - 140	89	%		
8301131	TERPHENYL-D14 (sur.)	2016/06/17	112	50 - 140	102	50 - 140	106	%		
8301136	O-TERPHENYL (sur.)	2016/06/17	97	60 - 140	91	60 - 140	91	%		
8301725	1,4-Difluorobenzene (sur.)	2016/06/16	100	70 - 130	106	70 - 130	101	%		
8301725	4-Bromofluorobenzene (sur.)	2016/06/16	99	70 - 130	102	70 - 130	86	%		
8301725	D4-1,2-Dichloroethane (sur.)	2016/06/16	93	70 - 130	95	70 - 130	89	%		
8301869	1,4-Difluorobenzene (sur.)	2016/06/16	98	70 - 130	99	70 - 130	98	%		
8301869	4-Bromofluorobenzene (sur.)	2016/06/16	98	70 - 130	99	70 - 130	98	%		
8301869	D4-1,2-Dichloroethane (sur.)	2016/06/16	83	70 - 130	83	70 - 130	83	%		
8301131	2-Methylnaphthalene	2016/06/17	115	50 - 140	91	50 - 140	<0.10	ug/L	3.7	40
8301131	Acenaphthene	2016/06/17	115	50 - 140	93	50 - 140	<0.050	ug/L	NC	40
8301131	Acenaphthylene	2016/06/17	117	50 - 140	95	50 - 140	<0.050	ug/L	NC	40
8301131	Acridine	2016/06/17	102	50 - 140	87	50 - 140	<0.050	ug/L	NC	40
8301131	Anthracene	2016/06/17	115	50 - 140	95	50 - 140	<0.010	ug/L	NC	40
8301131	Benzo(a)anthracene	2016/06/17	117	50 - 140	104	50 - 140	<0.010	ug/L	NC	40
8301131	Benzo(a)pyrene	2016/06/17	99	50 - 140	101	50 - 140	<0.0090	ug/L	NC	40
8301131	Benzo(b&j)fluoranthene	2016/06/17	108	50 - 140	103	50 - 140	<0.050	ug/L	NC	40
8301131	Benzo(g,h,i)perylene	2016/06/17	87	50 - 140	102	50 - 140	<0.050	ug/L	NC	40
8301131	Benzo(k)fluoranthene	2016/06/17	104	50 - 140	105	50 - 140	<0.050	ug/L	NC	40
8301131	Chrysene	2016/06/17	123	50 - 140	108	50 - 140	<0.050	ug/L	NC	40
8301131	Dibenz(a,h)anthracene	2016/06/17	80	50 - 140	100	50 - 140	<0.050	ug/L	NC	40
8301131	Fluoranthene	2016/06/17	111	50 - 140	95	50 - 140	<0.020	ug/L	NC	40
8301131	Fluorene	2016/06/17	114	50 - 140	92	50 - 140	<0.050	ug/L	NC	40
8301131	Indeno(1,2,3-cd)pyrene	2016/06/17	83	50 - 140	100	50 - 140	<0.050	ug/L	NC	40
8301131	Naphthalene	2016/06/17	117	50 - 140	93	50 - 140	<0.10	ug/L	5.7	40
8301131	Phenanthrene	2016/06/17	112	50 - 140	91	50 - 140	<0.050	ug/L	NC	40
8301131	Pyrene	2016/06/17	113	50 - 140	95	50 - 140	<0.020	ug/L	0.50	40
8301131	Quinoline	2016/06/17	115	50 - 140	109	50 - 140	<0.24	ug/L	13	40

Maxxam Job #: B647969
Report Date: 2017/09/19

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8301136	EPH (C10-C19)	2016/06/17	97	60 - 140	93	70 - 130	<0.20	mg/L	9.5	30
8301136	EPH (C19-C32)	2016/06/17	96	60 - 140	87	70 - 130	<0.20	mg/L	NC	30
8301262	Dissolved Lead (Pb)	2016/06/16	97	80 - 120	101	80 - 120	<0.20	ug/L	2.6	20
8301725	1,1,1,2-tetrachloroethane	2016/06/16	91	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
8301725	1,1,1-trichloroethane	2016/06/16	88	70 - 130	85	70 - 130	<0.50	ug/L	NC	30
8301725	1,1,2,2-tetrachloroethane	2016/06/16	95	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8301725	1,1,2Trichloro-1,2,2Trifluoroethane	2016/06/16					<2.0	ug/L	NC	30
8301725	1,1,2-trichloroethane	2016/06/16	91	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
8301725	1,1-dichloroethane	2016/06/16	87	70 - 130	83	70 - 130	<0.50	ug/L	NC	30
8301725	1,1-dichloroethene	2016/06/16	89	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8301725	1,2-dibromoethane	2016/06/16	92	70 - 130	89	70 - 130	<0.20	ug/L	NC	30
8301725	1,2-dichlorobenzene	2016/06/16	98	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
8301725	1,2-dichloroethane	2016/06/16	94	70 - 130	92	70 - 130	<0.50	ug/L	NC	30
8301725	1,2-dichloropropane	2016/06/16	91	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8301725	1,3-Butadiene	2016/06/16					<5.0	ug/L		
8301725	1,3-dichlorobenzene	2016/06/16	98	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8301725	1,4-dichlorobenzene	2016/06/16	94	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8301725	Benzene	2016/06/16	90	70 - 130	86	70 - 130	<0.40	ug/L		
8301725	Bromobenzene	2016/06/16	92	70 - 130	87	70 - 130	<2.0	ug/L		
8301725	Bromodichloromethane	2016/06/16	82	70 - 130	79	70 - 130	<1.0	ug/L	NC	30
8301725	Bromoform	2016/06/16	86	70 - 130	77	70 - 130	<1.0	ug/L	NC	30
8301725	Bromomethane	2016/06/16	73	60 - 140	79	60 - 140	<1.0	ug/L	NC	30
8301725	Carbon tetrachloride	2016/06/16	91	70 - 130	88	70 - 130	<0.50	ug/L	NC	30
8301725	Chlorobenzene	2016/06/16	83	70 - 130	77	70 - 130	<0.50	ug/L	NC	30
8301725	Chlorodibromomethane	2016/06/16	83	70 - 130	79	70 - 130	<1.0	ug/L	NC	30
8301725	Chloroethane	2016/06/16	78	60 - 140	87	60 - 140	<1.0	ug/L	NC	30
8301725	Chloromethane	2016/06/16	92	60 - 140	101	60 - 140	<1.0	ug/L	NC	30
8301725	cis-1,2-dichloroethene	2016/06/16	93	70 - 130	87	70 - 130	<1.0	ug/L	NC	30
8301725	cis-1,3-dichloropropene	2016/06/16	85	70 - 130	87	70 - 130	<1.0	ug/L	NC	30
8301725	Dibromomethane	2016/06/16	85	70 - 130	83	70 - 130	<0.90	ug/L		
8301725	Dichlorodifluoromethane	2016/06/16	74	60 - 140	86	60 - 140	<2.0	ug/L	NC	30

Maxxam Job #: B647969
Report Date: 2017/09/19

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8301725	Dichloromethane	2016/06/16	100	70 - 130	96	70 - 130	<2.0	ug/L	NC	30
8301725	Ethylbenzene	2016/06/16	89	70 - 130	87	70 - 130	<0.40	ug/L		
8301725	m & p-Xylene	2016/06/16	95	70 - 130	93	70 - 130	<0.40	ug/L		
8301725	o-Xylene	2016/06/16	90	70 - 130	85	70 - 130	<0.40	ug/L		
8301725	Styrene	2016/06/16	94	70 - 130	87	70 - 130	<0.50	ug/L	NC	30
8301725	Tetrachloroethene	2016/06/16	90	70 - 130	85	70 - 130	<0.50	ug/L	NC	30
8301725	Toluene	2016/06/16	88	70 - 130	85	70 - 130	<0.40	ug/L		
8301725	trans-1,2-dichloroethene	2016/06/16	89	70 - 130	85	70 - 130	<1.0	ug/L	NC	30
8301725	trans-1,3-dichloropropene	2016/06/16	86	70 - 130	84	70 - 130	<1.0	ug/L	NC	30
8301725	Trichloroethene	2016/06/16	96	70 - 130	91	70 - 130	<0.50	ug/L	NC	30
8301725	Trichlorofluoromethane	2016/06/16	89	60 - 140	87	60 - 140	<4.0	ug/L	NC	30
8301725	VH C6-C10	2016/06/16			92	70 - 130	<300	ug/L		
8301725	Vinyl chloride	2016/06/16	93	60 - 140	97	60 - 140	<0.50	ug/L	NC	30
8301725	Xylenes (Total)	2016/06/16					<0.40	ug/L		
8301869	2-Butanone (MEK)	2016/06/16	83	70 - 130	83	70 - 130	<10	ug/L	NC	40
8301869	4-Methyl-2-pentanone (MIBK)	2016/06/16	95	70 - 130	96	70 - 130	<10	ug/L	NC	40

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.

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 (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).

Maxxam Job #: B647969
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Sampler Initials: RFM

VALIDATION SIGNATURE PAGE

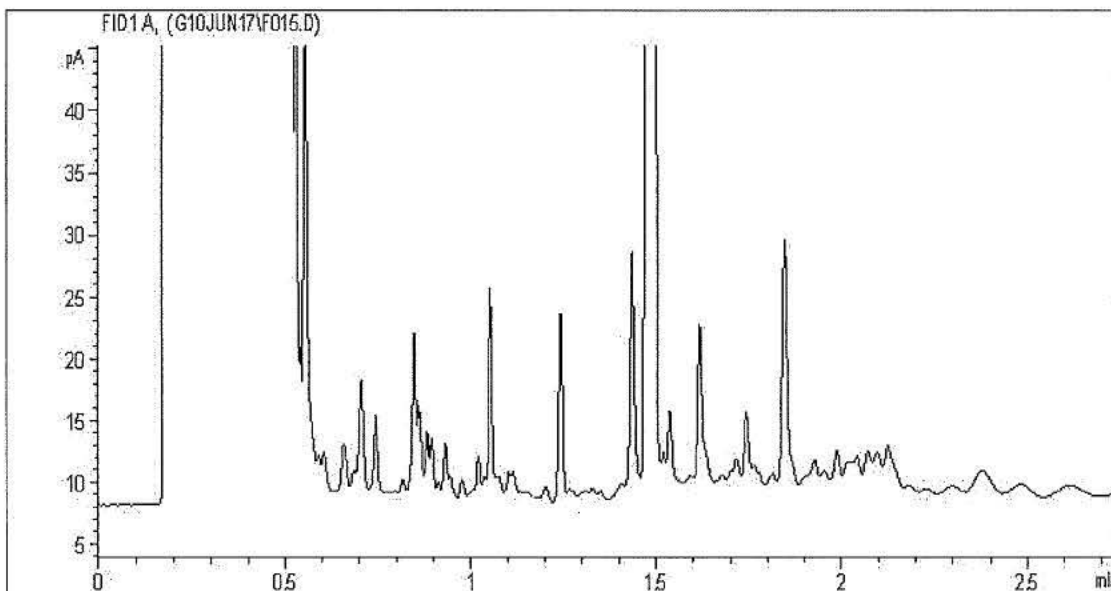
The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



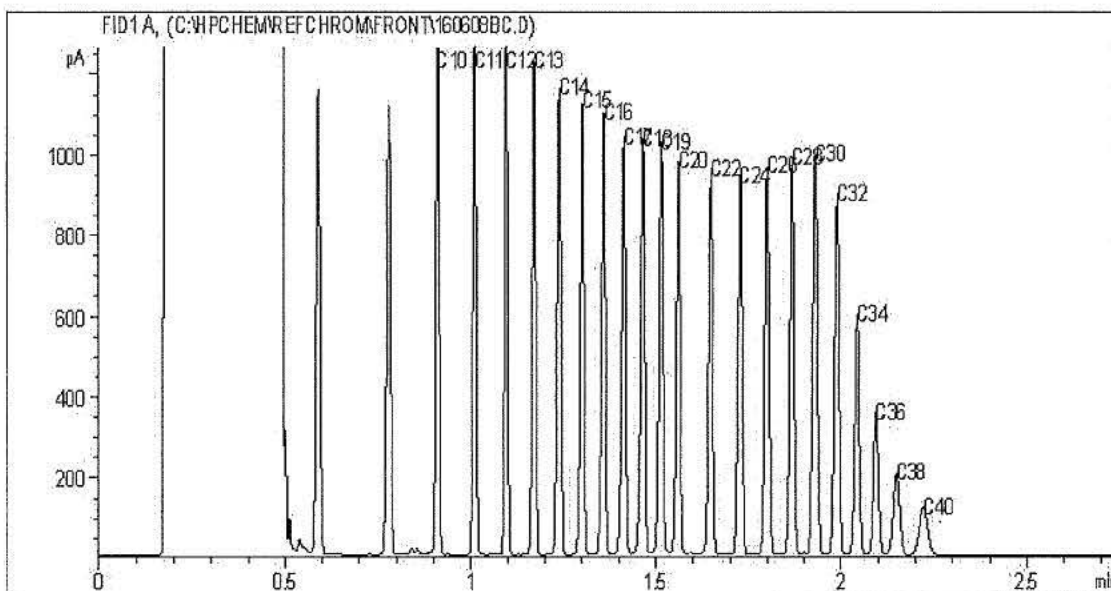
Andy Lu, Ph.D., P.Chem., Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

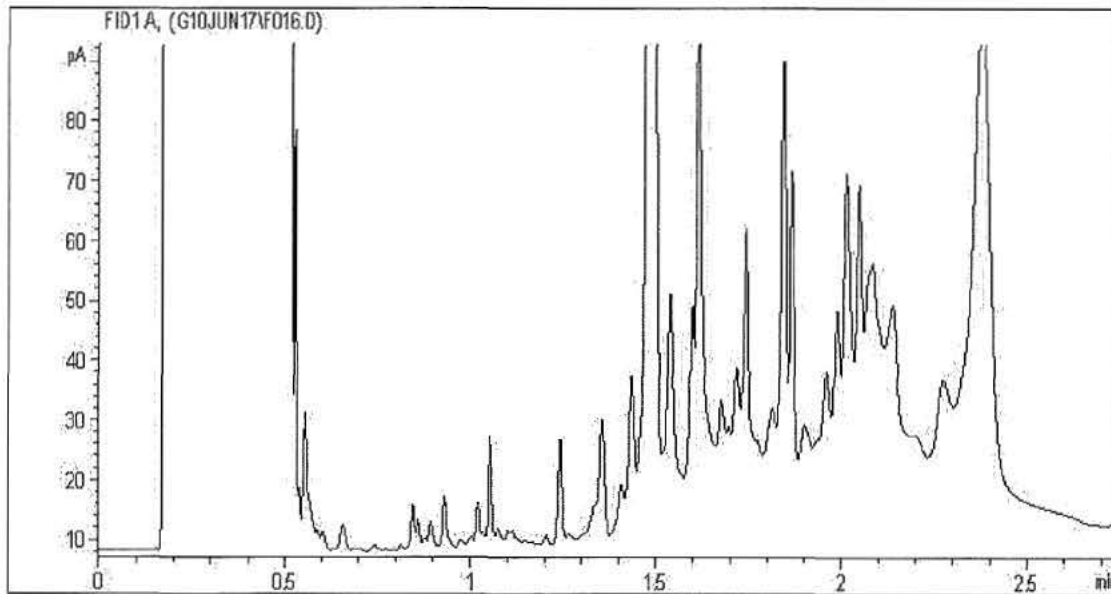


TYPICAL PRODUCT CARBON NUMBER RANGES

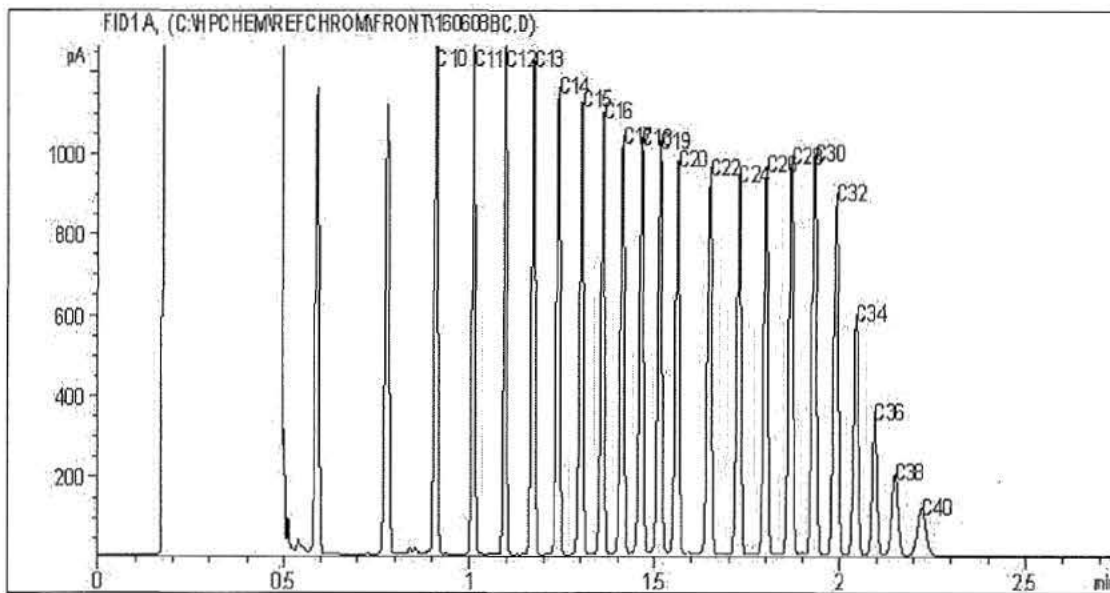
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

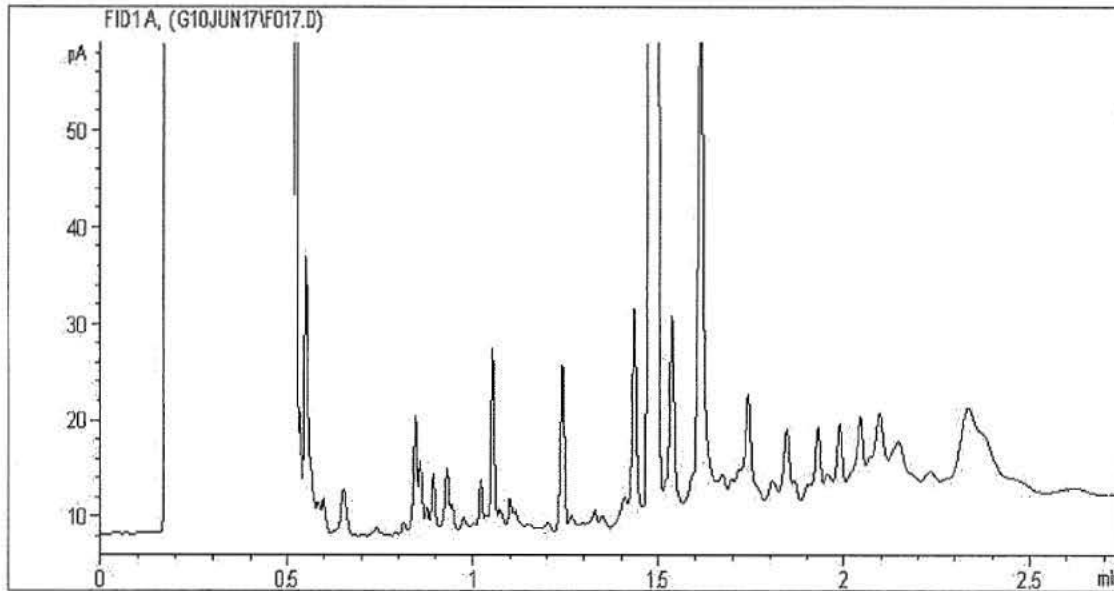


TYPICAL PRODUCT CARBON NUMBER RANGES

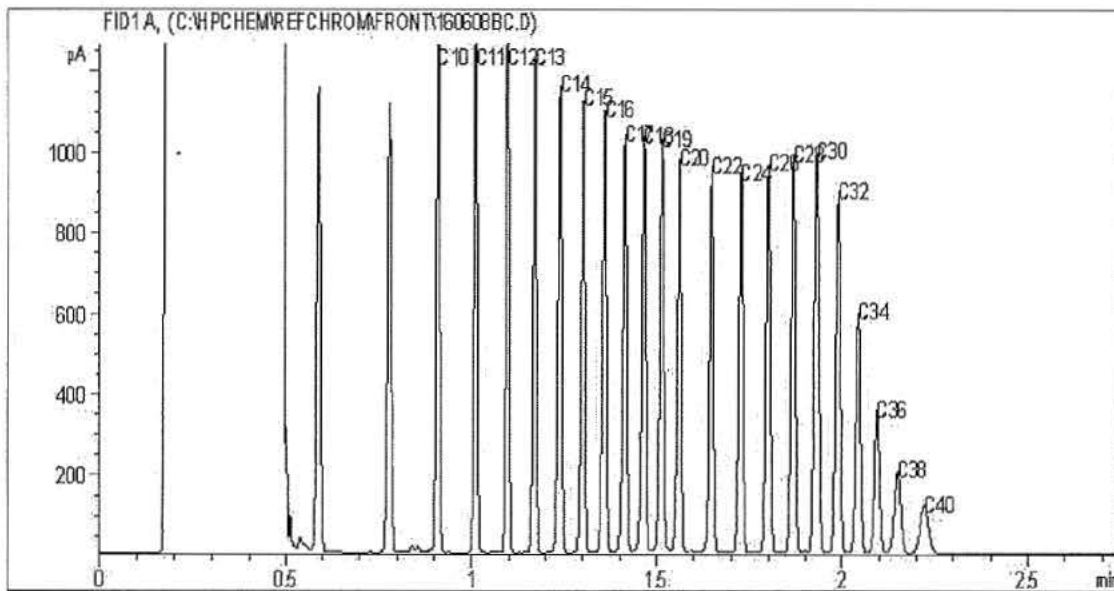
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

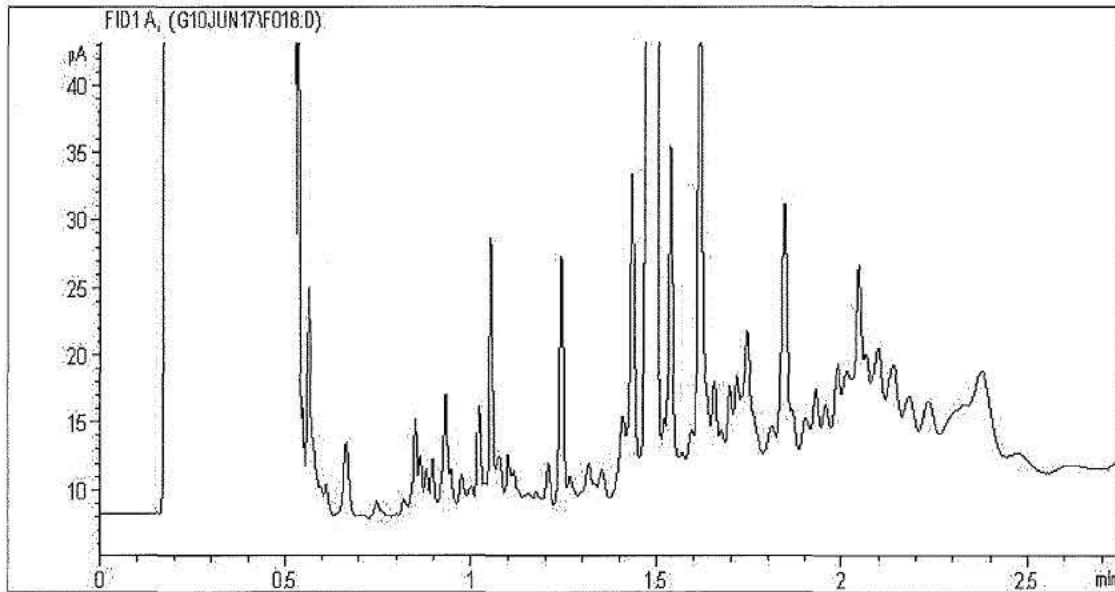


TYPICAL PRODUCT CARBON NUMBER RANGES

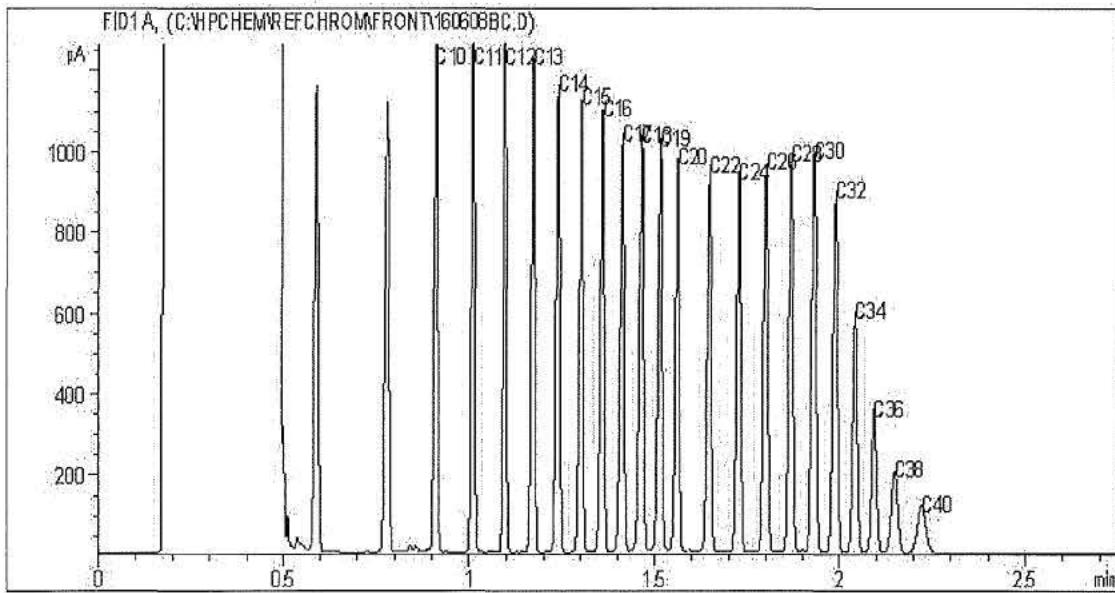
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram

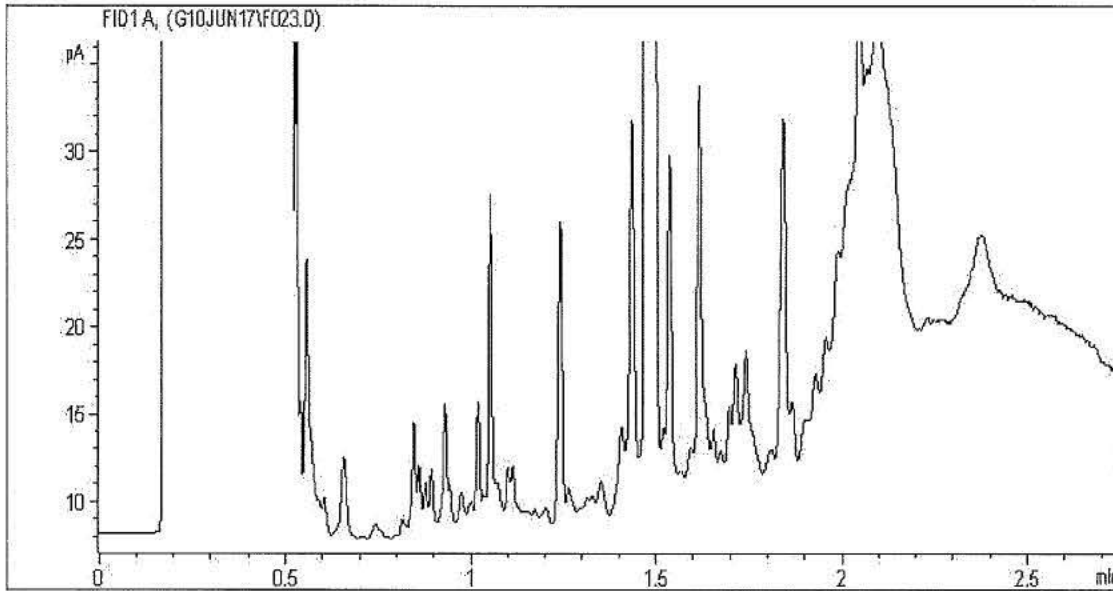


TYPICAL PRODUCT CARBON NUMBER RANGES

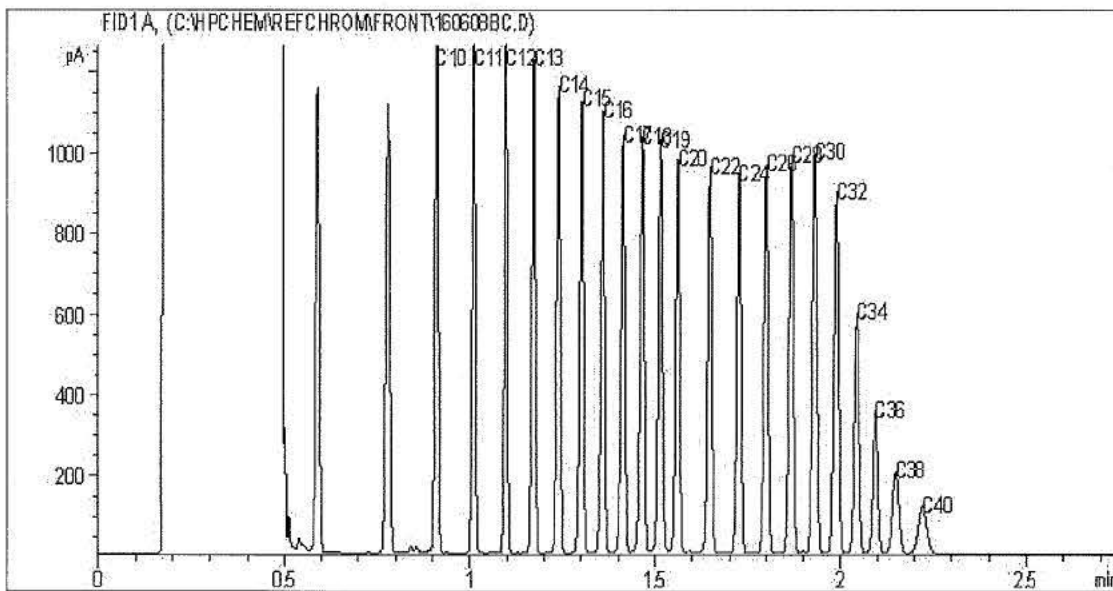
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C6 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: 12732
Site Location: 1615 RENFREW ST
Your C.O.C. #: 477345-03-01

Attention: NIGEL GREWAL

KEYSTONE ENVIRONMENTAL LTD
SUITE 320
4400 DOMINION STREET
BURNABY, BC
CANADA V5G 4G3

Report Date: 2017/09/19
Report #: R2446352
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B5A3525

Received: 2015/11/19, 12:55

Sample Matrix: Air
Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
VOCs by TD – Complete List Calc (ug/m3)	1	N/A	2015/11/20	BBY5SOP-00031	BCMOE BCLM Jun2009 m
VOCs by TD Tube – Complete List (ug)	1	N/A	2015/11/25	BBY5SOP-00031	BCMOE BCLM Jun2009 m
Duration	1	N/A	2015/11/25	N/A	Field Data
Flow Rate (L/min)	1	N/A	2015/11/25	N/A	Field Data

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam 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.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam 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 Maxxam, unless otherwise agreed in writing.

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.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

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.

Your Project #: 12732
Site Location: 1615 RENFREW ST
Your C.O.C. #: 477345-03-01

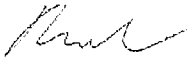
Attention: NIGEL GREWAL
KEYSTONE ENVIRONMENTAL LTD
SUITE 320
4400 DOMINION STREET
BURNABY, BC
CANADA V5G 4G3

Report Date: 2017/09/19
Report #: R2446352
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B5A3525
Received: 2015/11/19, 12:55

Encryption Key



Nancy Niklis
Project Manager
19 Sep 2017 14:51:25

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Amandeep Nagra, Account Specialist
Email: ANagra@maxxam.ca
Phone# (604)639-2602

=====
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B5A3525
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: 1615 RENFREW ST
Sampler Initials: NG

DRYCLEANING ORGANICS IN AIR BY TD (AIR)

Maxxam ID		NR2690	NR2690		
Sampling Date		2015/11/19	2015/11/19		
COC Number		477345-03-01	477345-03-01		
	UNITS	SV15-2	SV15-2 Lab-Dup	RDL	QC Batch
Field Parameters					
Duration	min	30		N/A	ONSITE
Flow Rate	L/min	0.2		N/A	ONSITE
Air Analysis					
Carbon tetrachloride	ug/m3	<0.33		0.33	8119184
Chloroethane	ug/m3	<1.7		1.7	8119184
Chloroform	ug/m3	3.3		0.33	8119184
1,1-dichloroethane	ug/m3	<0.33		0.33	8119184
1,2-dichloroethane	ug/m3	<0.17		0.17	8119184
1,1-dichloroethene	ug/m3	<0.33		0.33	8119184
cis-1,2-dichloroethene	ug/m3	<0.33		0.33	8119184
trans-1,2-dichloroethene	ug/m3	<0.33		0.33	8119184
Dichloromethane	ug/m3	<3.3		3.3	8119184
Isopropanol	ug/m3	<17		17	8119184
Tetrachloroethene	ug/m3	12		1.7	8119184
1,1,1-trichloroethane	ug/m3	<0.33		0.33	8119184
Trichloroethene	ug/m3	<0.33		0.33	8119184
Vinyl chloride	ug/m3	<0.67		0.67	8119184
Volatiles					
Carbon tetrachloride	ug	<0.0020	<0.0020	0.0020	8125261
Chloroethane	ug	<0.010	<0.010	0.010	8125261
Chloroform	ug	0.020	0.022	0.0020	8125261
1,1-dichloroethane	ug	<0.0020	<0.0020	0.0020	8125261
1,2-dichloroethane	ug	<0.0010	<0.0010	0.0010	8125261
1,1-dichloroethene	ug	<0.0020	<0.0020	0.0020	8125261
cis-1,2-dichloroethene	ug	<0.0020	<0.0020	0.0020	8125261
trans-1,2-dichloroethene	ug	<0.0020	<0.0020	0.0020	8125261
Dichloromethane	ug	<0.020	<0.020	0.020	8125261
Isopropanol	ug	<0.10	<0.10	0.10	8125261
Tetrachloroethene	ug	0.071	0.078	0.010	8125261
1,1,1-trichloroethane	ug	<0.0020	<0.0020	0.0020	8125261
Trichloroethene	ug	<0.0020	<0.0020	0.0020	8125261
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B5A3525
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: 1615 RENFREW ST
Sampler Initials: NG

DRYCLEANING ORGANICS IN AIR BY TD (AIR)

Maxxam ID		NR2690	NR2690		
Sampling Date		2015/11/19	2015/11/19		
COC Number		477345-03-01	477345-03-01		
	UNITS	SV15-2	SV15-2 Lab-Dup	RDL	QC Batch
Vinyl chloride	ug	<0.0040	<0.0040	0.0040	8125261
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B5A3525
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: 1615 RENFREW ST
Sampler Initials: NG

GENERAL COMMENTS

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

Package 1	7.0°C
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Version 2: report contains results for sample SV15-2 as per request from Nigel Grewal. (NNK)

Results relate only to the items tested.

Maxxam Job #: B5A3525
Report Date: 2017/09/19

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: 1615 RENFREW ST
Sampler Initials: NG

QC Batch	Parameter	Date	Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8125261	1,1,1,2-tetrachloroethane		77	60 - 140	<0.0020	ug		
8125261	1,1,1-trichloroethane	2015/11/25	74	60 - 140	<0.0020	ug	NC	40
8125261	1,1,2,2-tetrachloroethane		92	60 - 140	<0.0020	ug		
8125261	1,1,2-trichloroethane		104	60 - 140	<0.0020	ug		
8125261	1,1-dichloroethane	2015/11/25	87	60 - 140	<0.0020	ug	NC	40
8125261	1,1-dichloroethene	2015/11/25	89	60 - 140	<0.0020	ug	NC	40
8125261	1,2,3-trichlorobenzene				<0.010	ug		
8125261	1,2,3-trichloropropane				<0.0020	ug		
8125261	1,2,3-Trimethylbenzene				<0.0020	ug		
8125261	1,2,4-trichlorobenzene				<0.010	ug		
8125261	1,2,4-trimethylbenzene		99	60 - 140	<0.0020	ug		
8125261	1,2-dibromo-3-chloropropane				<0.010	ug		
8125261	1,2-dibromoethane		97	60 - 140	<0.0020	ug		
8125261	1,2-dichlorobenzene		78	60 - 140	<0.010	ug		
8125261	1,2-dichloroethane	2015/11/25	72	60 - 140	<0.0010	ug	NC	40
8125261	1,2-dichloropropane		73	50 - 150	<0.0020	ug		
8125261	1,3,5-trimethylbenzene		97	60 - 140	<0.0020	ug		
8125261	1,3-Butadiene		92	50 - 150	<0.0050	ug		
8125261	1,3-dichlorobenzene		74	60 - 140	<0.010	ug		
8125261	1,3-dichloropropane				<0.0020	ug		
8125261	1,4-dichlorobenzene		74	60 - 140	<0.010	ug		
8125261	2,2-dichloropropane				<0.0020	ug		
8125261	2-Butanone (MEK)				<0.010	ug		
8125261	2-chlorotoluene				<0.0020	ug		
8125261	2-Hexanone				<0.010	ug		
8125261	4-chlorotoluene				<0.0020	ug		
8125261	Benzene		91	60 - 140	<0.0020	ug		
8125261	Bromobenzene				<0.0020	ug		
8125261	Bromodichloromethane		73	60 - 140	<0.0020	ug		
8125261	Bromoform		75	60 - 140	<0.0020	ug		
8125261	Bromomethane				<0.020	ug		

Maxxam Job #: B5A3525
Report Date: 2017/09/19

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: 1615 RENFREW ST
Sampler Initials: NG

QC Batch	Parameter	Date	Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8125261	C6-C13 Hydrocarbons (VHv)		102	60 - 140	<0.50	ug		
8125261	C6-C13 Hydrocarbons (VPHv)				<0.50	ug		
8125261	Carbon tetrachloride	2015/11/25	78	60 - 140	<0.0020	ug	NC	40
8125261	Chlorobenzene		96	60 - 140	<0.0020	ug		
8125261	Chloroethane	2015/11/25	88	50 - 150	<0.010	ug	NC	40
8125261	Chloroform	2015/11/25	81	60 - 140	<0.0020	ug	9.6	40
8125261	Chloromethane		97	60 - 140	<0.020	ug		
8125261	cis-1,2-dichloroethene	2015/11/25	83	60 - 140	<0.0020	ug	NC	40
8125261	cis-1,3-dichloropropene		78	50 - 150	<0.0020	ug		
8125261	Dibromochloromethane				<0.0020	ug		
8125261	Dibromomethane				<0.0020	ug		
8125261	Dichlorodifluoromethane				<0.020	ug		
8125261	Dichloromethane	2015/11/25			<0.020	ug	NC	40
8125261	Ethylbenzene		92	60 - 140	<0.010	ug		
8125261	Hexachloro-1,3-butadiene				<0.0050	ug		
8125261	Isopropanol	2015/11/25			<0.10	ug	NC	40
8125261	Isopropylbenzene		89	60 - 140	<0.0020	ug		
8125261	m & p-Xylene		99	60 - 140	<0.010	ug		
8125261	Methyl Isobutyl Ketone				<0.010	ug		
8125261	Methylcyclohexane		77	60 - 140	<0.0020	ug		
8125261	Naphthalene		76	60 - 140	<0.010	ug		
8125261	n-Butylbenzene				<0.0020	ug		
8125261	n-Decane		111	60 - 140	<0.010	ug		
8125261	n-Hexane		103	60 - 140	<0.010	ug		
8125261	n-Propylbenzene				<0.0020	ug		
8125261	o-Xylene		99	60 - 140	<0.010	ug		
8125261	p-Isopropyltoluene				<0.0020	ug		
8125261	sec-Butylbenzene				<0.0020	ug		
8125261	Styrene				<0.010	ug		
8125261	tert-Butylbenzene				<0.0020	ug		
8125261	Tetrachloroethene	2015/11/25	92	60 - 140	<0.010	ug	9.5	40

Maxxam Job #: B5A3525
Report Date: 2017/09/19

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: 1615 RENFREW ST
Sampler Initials: NG

QC Batch	Parameter	Date	Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8125261	Toluene		84	60 - 140	<0.0020	ug		
8125261	Total Xylenes				<0.010	ug		
8125261	trans-1,2-dichloroethene	2015/11/25	111	60 - 140	<0.0020	ug	NC	40
8125261	trans-1,3-dichloropropene		82	50 - 150	<0.0020	ug		
8125261	Trichloroethene	2015/11/25	86	60 - 140	<0.0020	ug	NC	40
8125261	Trichlorofluoromethane		107	50 - 150	<0.010	ug		
8125261	Vinyl chloride	2015/11/25			<0.0040	ug	NC	40

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

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.

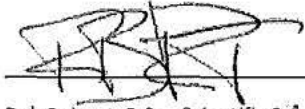
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Maxxam Job #: B5A3525
Report Date: 2017/09/19

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 12732
Site Location: 1615 RENFREW ST
Sampler Initials: NG

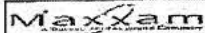
VALIDATION SIGNATURE PAGE

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



Rob Reinert, B.Sc., Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Analytica International Corporation aka Maxxam Analytica
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Chain Of Custody Record

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INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name: #3763 KEYSTONE ENVIRONMENTAL LTD		Company Name: Nigel Smeeth		Quotation #: B41651		Maxxam Job #: B5A3525	
Contact Name: SUITE 320 4400 DOMINION STREET		Contact Name: Nigel Smeeth		P.O. #:		Bottle Order #: 47345	
Address: BURNABY BC V5G 4G3		Address:		Project #: 12732		Chain Of Custody Record	
Phone: (604) 430-0671 Fax: (604) 430-0672		Phone:		Project Name: 1615 Beacon St		Project Manager:	
Email:		Email:		Site #:		Amardeep Nagra	
				Sampled By: NJG		COC#7345-03-01	

Regulatory Criteria: <input checked="" type="checkbox"/> CSR <input type="checkbox"/> CCME <input type="checkbox"/> SC Water Quality <input type="checkbox"/> Other	Special Instructions:	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)										Turnaround Time (TAT) Required: Please provide advance notice for rush projects	
		Metals Filtered? (Y/N)	PUMP FLOW RATE (L/MINUTE)	PUMP NUMBER	PUMP RUN TIME (MINUTES)	SV - FULL SCAN VOCs (NO MTBE)	SV - BTEX/PH	SV - CSAP LIST - DIESEL (INCL NAPHTH)	SV - CSAP LIST - GASOLINE (INCL NAPHTH)	SV - CSAP LIST - DRYCLEANER	SV - ISOPROPANOL	SV - NAPHTHALENE	Regular (Standard) TAT: (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. <input checked="" type="checkbox"/> Please note, Standard TAT for certain tests such as BOD and Dissolved Solids are = 9 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission): 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: <input type="checkbox"/> Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Filtered? (Y/N)	PUMP FLOW RATE (L/MINUTE)	PUMP NUMBER	PUMP RUN TIME (MINUTES)	SV - FULL SCAN VOCs (NO MTBE)	SV - BTEX/PH	SV - CSAP LIST - DIESEL (INCL NAPHTH)	SV - CSAP LIST - GASOLINE (INCL NAPHTH)	SV - CSAP LIST - DRYCLEANER	SV - ISOPROPANOL	SV - NAPHTHALENE	# of Bottles	Comments
1 NR2689	SV15-1	Nov 19, 2015		AIR		0.2	3332	30	X					X	X	1	
2 NR2690	SV15-2						4771						X				
3 NR2691	SV15-5						3209		X						X		
4 NR2692	SV15-7						3246				X						
5 NR2693	SV15-8						4773								X		
6 NR2694	SV15-9						3250				X						
7 NR2695	SV15-10						3209		X						X		
8																	
9																	
10																	



RELINQUISHED BY: (Signature/Print) Nigel Smeeth	Date: (YY/MM/DD) 15/11/19	Time 12:55	RECEIVED BY: (Signature/Print) Amardeep Nagra	Date: (YY/MM/DD) 2015/11/19	Time 12:55	# Jars used and not submitted	Temperature (°C) on Receipt 6.87	Lab Use Only Custody Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

Maxxam Analytica International Corporation aka Maxxam Analytica