CITY OF VANCOUVER

TEST HOLE INVESTIGATION REPORT

This Test Hole Investigation Report is required to be completed as part of the Test Hole Permitting process. The report must be submitted electronically to the City's Contaminated Sites Team (CST) within two months of completing the drilling investigation in City streets and laneways.

In addition to completing and submitting this report, please attach a site plan (scale = 1:200) that includes the following information: north arrow, nearby buildings, roads, subsurface utilities, test pit, borehole, monitoring well, and vapour probe locations. Please also provide tables and figures that summarize the soil, groundwater, and vapour laboratory analytical results compared to applicalbe City standards, as well as copies of certified laboratory analytical reports.

Please email the Test Hole Investigation Report and associated attachments as one stand-alone PDF to the CST at: contaminated.sites@vancouver.ca

1. Site Owner Information:

Name of Site Owner	Western Prosperity Investments Holdings Ltd.
Company (if applicable)	Keystone Environmental Ltd.
Contact (if different from Owner)	Francini Martins
Address	320-4400 Dominion Street, Burnaby
Phone Number	604-430-0671
Email Address	fmartins@keystoneenviro.com

2. Summary of Investigation:

Please provide a brief summary of the environmental site investigation scope of work and the key results of the investigation.

One nested groundwater and soil vapour well was drilled in the alley east of Dunbar Street. Two shallow boreholes were advanced on 29th Avenue and had a soil vapour monitoring well installed in each for contingency purposes. In one borehole on Dunbar Street, two groundwater monitoring wells and one soil vapour monitoring well were nested. The soil vapour well was for contingency purposes. The concentration of soil vapour, soil and groundwater in the location in the alley was less than CSR RL or CSR DW standards. The concentration of VOCs in the groundwater were less than the CSR DW standards. In the two boreholes, concentrations of BTEX/VPH were less than the CSR RL standards.

3. Investigation Location Completion Details

In the following tables please summarize the groundwater monitoring well, borehole, vapour probe, and test pit completion details as appropriate. If you require additional space please attach a separate page. Please also attach groundwater monitoring well, borehole, vapour probe, and test pit logs to this report.

A. Groundwater Monitoring Well Completion Details:

MW I.D.	Depth to well bottom (m bgs)	Well screen length (m)	Depth to water (m bgs)	NAPL Thickness (if applicable)	CHV Readings (ppm / % LEL)
MW16-9S	9.68	1.5	8.356	n/a	0.3
MW16-9D	15.14	1.5	Dry	n/a	0.2
MW16-4S	4.87	1.5	Dry	n/a	0
MW16-4D	13.88	1.5	12.501	n/a	0

Notes: MW = monitoring well; m bgs = metres below ground surface; NAPL = non-aqueous phase liquid; CHV = combustible headspace vapour readings; ppm = parts per million; %LEL = lower explosive limit

B. Borehole / Test Pit Completion Details:

BH / TP I.D.	Depth of BH / TP (m bgs)	Foreign debris / Staining Observed? (Yes / No)
BH16-5	3.1	No
BH16-6	3.1	No

Notes: BH = Borehole; TP = Test pit; m bgs = metres below ground surface

C. Soil Vapour Probe Completion Details:

Vapour Probe I.D.	Vapour Probe Installation Depth (m bgs)	Screen length (m)
SV16-4	1.4	0.3
SV16-5	1.4	0.3
SV16-6	1.4	0.3
SV16-9	1.5	0.3

4. Laboratory Analytical Results Summary

In the following table please list the substance(s) and substance concentration(s) for soil, groundwater, and vapour that were measured to be greater than the *Environmental Management Act* (EMA) Contaminated Sites Regulation (CSR) standard(s), as required by City Policies[1].

Media	Location I.D.	Sample I.D.	Sample Depth (m bgs)	Substance	Maximum Concentration (specify units)
n/a	n/a	n/a	n/a	n/a	n/a

[1] The BC CSR soil, groundwater, and vapour standards that apply to City streets and laneways are:

1. Soil contamination in City streets and laneways must be remediated to Industrial Land Use standards, as defined in the CSR.
2. To protect soil quality for urban agriculture, the top 1m of soil in boulevards and street medians must be remediated to Residential Land Use standards, with Industrial Land Use below the first 1m.
3. Groundwater is to be remediated in accordance with the standards that apply under the CSR.
4. Soil vapour must be remediated to Industrial Land Use standards.

5. BC Ministry of Environment Forms:

Was a Notification of Likely or Actual Migration (NOM) and Site Risk Classification report submitted to the City as per BC MOE notification requirements? Yes☐ No☐ N/A☑

6. Monitoring Well Sampling and Decommissioning Schedule:

Please list the proposed monitoring well sampling frequency as well as an estimated monitoring well decommissioning date.

Sampling Frequency (semi-annual, annual, etc.):	Unknown at this time
Estimated Monitoring Well Decommissioning Date:	Unknown at this time

7. Conclusion Statement:

"I confirm that all of the information contained in this report is true and accurate. Based on laboratory analytical results from environmental investigations carried out on City property, the following conditions are present in soil, groundwater, and vapour". Please select the checkboxes that reflect current site conditions:

- Substance concentrations measured in soil samples collected on City street / laneway were:
  - less than the CSR IL soil standards ☑
  - greater than the CSR IL soil standards ☐
- Substance concentrations measured in soil samples collected at a depth of 0-1mbgs beneath street medians, boulevards or sidewalks were:
  - less than the CSR RL soil standards ☑
  - greater than the CSR RL soil standards ☐
- Substance concentrations measured in groundwater samples collected were:
  - less than the standards that apply under the CSR ☑
  - greater than the standards that apply under the CSR ☐
- Substance concentrations ~~measured~~ Indoor and outdoor in vapour samples collected were:
  - less than the CSR Schedule 11 IL standards ☑
  - greater than the CSR Schedule 11 IL standards ☐

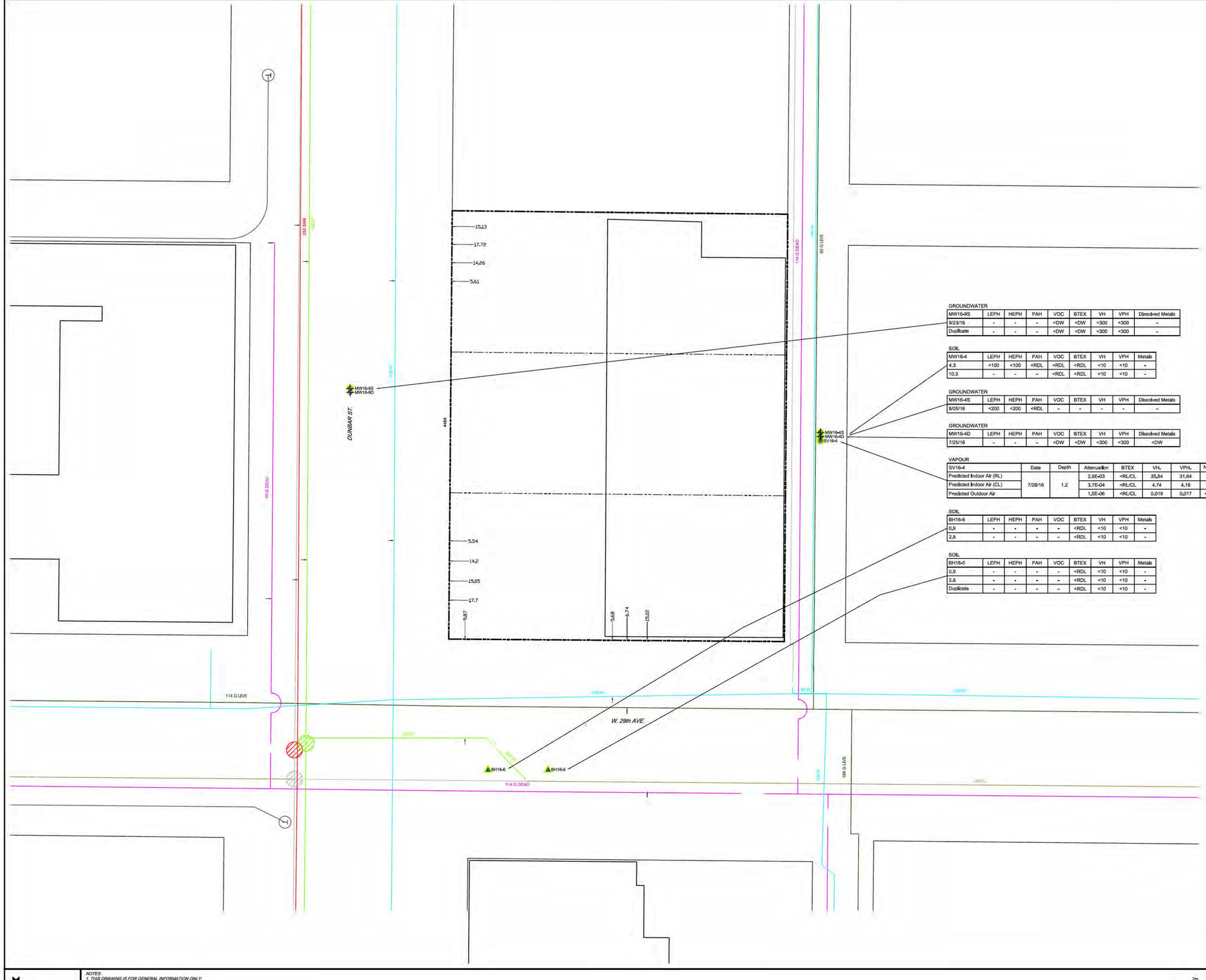
Stewart McBride
Name

Keystone Environmental Ltd.
Company Name


Signature

November 15, 2016
Date

FIGURE



GROUNDWATER

MW16-9S	LEPH	HEPH	PAH	VOC	BTEX	VH	VPH	Dissolved Metals
9/23/16	-	-	-	<DW	<DW	<300	<300	-
Duplicate	-	-	-	<DW	<DW	<300	<300	-

SOIL

MW16-4	LEPH	HEPH	PAH	VOC	BTEX	VH	VPH	Metals
4.3	<100	<100	<RDL	<RDL	<RDL	<10	<10	-
10.3	-	-	-	<RDL	<RDL	<10	<10	-

GROUNDWATER

MW16-4S	LEPH	HEPH	PAH	VOC	BTEX	VH	VPH	Dissolved Metals
8/05/16	<200	<200	<RDL	-	-	-	-	-

GROUNDWATER

MW16-4D	LEPH	HEPH	PAH	VOC	BTEX	VH	VPH	Dissolved Metals
7/25/16	-	-	-	<DW	<DW	<300	<300	<DW

VAPOUR

SV16-4	Date	Depth	Attenuation	BTEX	VH_v	VPH_v	Naphthalene	VOC
Predicted Indoor Air (RL)	7/28/16	1.2	2.8E-03	<RL/CL	35,84	31,64	<0,0042	<RL/CL
Predicted Indoor Air (CL)			3.7E-04	<RL/CL	4.74	4,18	<0,00056	<RL/CL
Predicted Outdoor Air			1.5E-06	<RL/CL	0,019	0,017	<0,0000023	<RL/CL

SOIL

BH16-6	LEPH	HEPH	PAH	VOC	BTEX	VH	VPH	Metals
0,9	-	-	-	-	<RDL	<10	<10	-
2,8	-	-	-	-	<RDL	<10	<10	-

SOIL

BH16-5	LEPH	HEPH	PAH	VOC	BTEX	VH	VPH	Metals
0,9	-	-	-	-	<RDL	<10	<10	-
2,8	-	-	-	-	<RDL	<10	<10	-
Duplicate	-	-	-	-	<RDL	<10	<10	-

LEGEND

- SITE
- STORM SEWER
- SANITARY SEWER
- COMBINED SEWER
- WATER LINE
- TELEPHONE LINE
- GAS LINE
- DEAD GAS LINE
- ABANDONED/OUT OF SERVICE LINE
- KEYSTONE BOREHOLE (2016)
- KEYSTONE MONITORING WELL (2016)
- KEYSTONE VAPOUR WELL (2016)
- SOIL/GROUNDWATER/ATTENUATED VAPOUR CONCENTRATION(S) LESS THAN CSR STANDARDS
- SOIL/ATTENUATED VAPOUR CONCENTRATION(S) GREATER THAN CSR STANDARDS (RL)
- SOIL/ATTENUATED VAPOUR CONCENTRATION(S) GREATER THAN CSR STANDARDS (CL)
- GROUNDWATER CONCENTRATION(S) GREATER THAN CSR STANDARDS (DW)

LEPH	LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS
HEPH	HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
PAH	POLYCYCLIC AROMATIC HYDROCARBONS
VOC	VOLATILE ORGANIC COMPOUNDS
BTEX	BENZENE, TOLUENE, ETHYLBENZENE & XYLENE
VH	VOLATILE HYDROCARBONS
VPH	VOLATILE PETROLEUM HYDROCARBONS
<	LESS THAN
RDL	REPORTED DETECTION LIMIT
-	NOT ANALYZED
RL	CSR RESIDENTIAL LAND USE STANDARD
CL	CSR COMMERCIAL LAND USE STANDARD
DW	CSR DRINKING WATER STANDARD

SAMPLE I.D. — ANALYTE

MW09-1	LEPH
1,5	<250

DEPTH (m) (SOIL) / DATE (M/D/Y) (GROUNDWATER) / STANDARD (VAPOUR) — RESULTS

NOTES:
1. Soil Sample values are presented as Micrograms per gram (ug/g) [parts per million (ppm)].
2. Groundwater Sample values are presented as Micrograms per Litre (ug/L) [parts per billion (ppb)].
3. Vapour Sample values are presented as Micrograms per cubic metre (ug/m3).
4. Soil/Vapour Sample Exceeding CSR (RL) Standard in ORANGE.
5. Soil/Vapour Sample Exceeding CSR (CL) Standard in DARK RED.
6. Groundwater Sample Exceeding CSR (DW) Standard in BLUE.

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NOTES:
1. THIS DRAWING IS FOR GENERAL INFORMATION ONLY.
LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

2m 0 10m
SCALE: 1:200(approx.)

4464 Dunbar Street
Vancouver, B C
Qualex Landmark Holdings Inc.

REVISION No.	DATE	PROJECT No.
01	Nov. 2016	13096-03

Figure 1
Soil, Groundwater & Vapour Analytical Results

PLOT SCALE: 1:1 DRAWN BY: AB CADD FILE No.: 13096\Ph 00003\Rpt\COVR\p1-Soil & GW Anal\pSoilAR1.dwg

TABLES

GLOSSARY: SOIL ANALYTICAL RESULTS
4464 Dunbar Street
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

List of Acronyms

AL	Agricultural Land Use
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CL	Commercial Land Use
CSR	British Columbia Contaminated Sites Regulation
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
$EPHs_{10-19}$	Extractable Petroleum Hydrocarbons (carbon range 10 to 19)
$EPHs_{19-32}$	Extractable Petroleum Hydrocarbons (carbon range 19 to 32)
HEPHs	Heavy Extractable Petroleum Hydrocarbons (corrected for PAH)
HMW-PAHs	Heavy Molecular Weight Polycyclic Aromatic Hydrocarbons
HWR	British Columbia Hazardous Waste Regulation
IL	Industrial Land Use
LEPHs	Light Extractable Petroleum Hydrocarbons (corrected for PAH)
LMW-PAHs	Light Molecular Weight Polycyclic Aromatic Hydrocarbons
MS	Maximum Spread
MTBE	Methyl tert-Butyl Ether
n/s	No Standard
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCDD	Polychlorinated Dibenzodioxins
PCDF	Polychlorinated Dibenzofurans
PL	Park Land Use
RDL	Reported Detection Limit
RL	Residential Land Use
RPD	Relative Percent Difference
TEQ	Toxicity Equivalence Quotient
VHs_{6-10}	Volatile Petroleum Hydrocarbons (carbon range 6 to 10)
VOC	Volatile Organic Compounds
VPHs	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	BC CSR Matrix Numerical Soil Standards (BC CSR Scedule 5) site specific factors:
	1 Intake of contaminated soil
	2 Groundwater used for drinking water
	3 Toxicity to soil invertebrates and plants
	6 Groundwater flow to surface water used by aquatic life (freshwater)
b	CSR standard is pH dependent
c	CSR standard for hexavalent chromium (Cr VI) used for conservativeness
d	Regional background soil quality for metals analyses from BC MOE Protocol 4
e	CSR standard for VPHs/LEPHs/HEPHs used for comparison

List of Units

mbg	Metres below grade
µg/g	Micrograms per gram
pg/g	Picograms per gram

Soil Exceedances

125	Exceeds CSR RL standards
125	Exceeds CSR CL standards

QA/QC Exceedances

45%	RPD exceeds 35%
5>3	MS exceeds RDL

Formulas

MS MS = (Max. Concentration - Min. Concentration); reported as MS </=/> RDL

Note: MS used in place of RPD when concentration of sample and/or duplicate is less than 5x RDL.

PAH TEQ TEQ = 0.1*(Benzo[a]anthracene + Benzo[b]fluoranthene + Benzo[k]fluoranthene) + Benzo[a]pyrene + 0.2*(Indeno[1,2,3-cd]pyrene) + 1.1*(Dibenzo[a,h]anthracene)

Note: For PAH concentrations below the analytical relative detection limit, a value of one half the detection limit is used in the calculations.

PCDD & PCDF TEQ TEQ = 2,3,7,8-TCDD + 0.5*(1,2,3,7,8-PCDD + 2,3,4,7,8-PCDF) + 0.1*(1,2,3,4,7,8-HCDD + 1,2,3,7,8,9-HCDD + 1,2,3,6,7,8-HCDD + 2,3,7,8-TCDF + 1,2,3,4,7,8-HCDF + 1,2,3,7,8,9-HCDF + 1,2,3,6,7,8-HCDF + 2,3,4,6,7,8-HCDF) + 0.05*(1,2,3,7,8-PCDF) + 0.01*(1,2,3,4,6,7,8-HCDD + 1,2,3,4,6,7,8-HCDF + 1,2,3,4,7,8,9-HCDF) + 0.001*(OCDD + OCDF

Note: For PCDD/PCDF concentrations below the analytical relative detection limit, a value of one half the detection limit is used in the calculations.

RPD RPD = ((Max. Concentration - Min. Concentration)/((Max. Concentration + Min. Concentration)/2))*100

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TABLE 1: SOIL ANALYTICAL RESULTS
HYDROCARBONS
4464 Dunbar Street
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

CSR RL Standards	CSR CL Standards	SAMPLE ID / DATE SAMPLED / LAB CERTIFICATE / LAB SAMPLE ID / SAMPLE DEPTH (mbg) / SOIL DESCRIPTION	Units	MW16-4 (4.3) 21-Jul-16 B660180 PB8608 4.3	MW16-4 (10.3) 21-Jul-16 B660180 PB8614 10.3	BH16-5 (0.9) 19-Sep-16 B681371 PN9263 0.9	BH16-5 (2.8) 19-Sep-16 B681371 PN9266 2.8	BH16-E 19-Sep-16 B681371 PN9267 Duplicate of BH16-5 (2.8)	RPD or MS for BH16-5 (2.8) and BH16-E	BH16-6 (0.9) 19-Sep-16 B681371 PN9270 0.9	BH16-6 (2.8) 19-Sep-16 B681371 PN9273 2.8
		Petroleum Hydrocarbons									
200	200	VPHs	µg/g	<10	<10	<10	<10	<10	--	<10	<10
200	200	$VHs_{6\ 10}$	µg/g	<10	<10	<10	<10	<10	--	<10	<10
1000	2000	LEPHs	µg/g	<100	--	--	--	--	--	--	--
1000	2000	$EPHs_{10\ 19}$	µg/g	<100	--	--	--	--	--	--	--
1000	5000	HEPHs	µg/g	<100	-	--	--	--	--	--	--
1000	5000	$EPHs_{19\ 32}$	µg/g	<100	--	--	--	--	--	--	--
		Monocyclic Aromatic Hydrocarbons									
0.04a	0.04a	benzene	µg/g	<0.0050	< 0050	<0.0050	<0.0050	<0.0050	--	<0.0050	<0.0050
1a	7a	ethylbenzene	µg/g	<0.010	< 010	<0.010	<0.010	<0.010	--	<0.010	<0.010
5	50	styrene	µg/g	<0.030	< 030	<0.030	<0.030	<0.030	--	<0.030	<0.030
1.5a	2.5a	toluene	µg/g	<0.020	< 020	<0.020	<0.020	<0.020	--	<0.020	<0.020
5a	20a	xylenes	µg/g	<0.040	< 040	<0.040	<0.040	<0.040	--	<0.040	<0.040
		Polycyclic Aromatic Hydrocarbons									
n/s	n/s	acenaphthene	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	acenaphthylene	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	anthracene	µg/g	<0.050	--	--	--	--	--	--	--
1	10	benzo[a]anthracene	µg/g	<0.050	--	--	--	--	--	--	--
1a	10a	benzo[a]pyrene	µg/g	<0.050	--	--	--	--	--	--	--
1	10	benzo[b]fluoranthene	µg/g	<0.050	--	--	--	--	--	--	--
1	10	benzo[b+j]fluoranthene	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	benzo[g,h,i]perylene	µg/g	<0.050	--	--	--	--	--	--	--
1	10	benzo[k]fluoranthene	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	chrysene	µg/g	<0.050	--	--	--	--	--	--	--
1	10	dibenz[a,h]anthracene	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	fluoranthene	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	fluorene	µg/g	<0.050	--	--	--	--	--	--	--
1	10	indeno[1,2,3-cd]pyrene	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	methylnaphthalene, 2-	µg/g	<0.050	--	--	--	--	--	--	--
5	50	naphthalene	µg/g	<0.050	--	--	--	--	--	--	--
5	50	phenanthrene	µg/g	<0.050	--	--	--	--	--	--	--
10	100	pyrene	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	Total HMW-PAHs	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	Total LMW-PAHs	µg/g	<0.050	--	--	--	--	--	--	--
n/s	n/s	Total PAHs	µg/g	<0.050	--	--	--	--	--	--	--

Soil Exceedances

125	Exceeds CSR RL standards
125	Exceeds CSR CL standards

QA/QC Exceedances

45%	RPD exceeds 35%
5>3	MS exceeds RDL

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TABLE 2: SOIL ANALYTICAL RESULTS
VOCS
4464 Dunbar Street
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

CSR RL Standards	CSR CL Standards	SAMPLE ID	Units	MW16-4 (4.3)	MW16-4 (10.3)
		DATE SAMPLED		21-Jul-16	21-Jul-16
		LAB CERTIFICATE		B660180	B660180
		LAB SAMPLE ID		PB8608	PB8614
		SAMPLE DEPTH (mbg)		4.3	10.3
		SOIL DESCRIPTION			
		Halogenated Aliphatics			
8.2	18	bromodichloromethane	µg/g	<0.050	<0.050
620	2200	bromoform	µg/g	<0.050	<0.050
3.9	13	bromomethane	µg/g	<0.30	<0.30
5	50	carbon tetrachloride	µg/g	<0.025	<0.025
30	65	chloroethane	µg/g	<0.10	<0.10
5	50	chloroform	µg/g	<0.050	<0.050
47	160	chloromethane	µg/g	<0.10	<0.10
11	26	dibromochloromethane	µg/g	<0.050	<0.050
0.32	0.73	dibromoethane, 1,2-	µg/g	<0.025	<0.025
67	230	dibromomethane	µg/g	<0.20	<0.20
94	310	dichlorodifluoromethane	µg/g	<0.20	<0.20
5	50	dichloroethane, 1,1-	µg/g	<0.025	<0.025
5	50	dichloroethane, 1,2-	µg/g	<0.025	<0.025
5	50	dichloroethene, 1,1-	µg/g	<0.025	<0.025
5	50	dichloroethene, 1,2- (cis)	µg/g	<0.025	<0.025
5	50	dichloroethene, 1,2- (trans)	µg/g	<0.025	<0.025
5	50	dichloromethane	µg/g	<0.10	<0.10
5	50	dichloropropane, 1,2-	µg/g	<0.025	<0.025
5	50	dichloropropene, 1,3- (cis)	µg/g	<0.050	<0.050
5	50	dichloropropene, 1,3- (trans)	µg/g	<0.050	<0.050
32	73	tetrachloroethane, 1,1,1,2-	µg/g	<0.025	<0.025
4.1	9.3	tetrachloroethane, 1,1,2,2-	µg/g	<0.025	<0.025
5a	5a	tetrachloroethene	µg/g	<0.025	<0.025
5	50	trichloroethane, 1,1,1-	µg/g	<0.025	<0.025
5	50	trichloroethane, 1,1,2-	µg/g	<0.025	<0.025
0.015a	0.015a	trichloroethene	µg/g	<0.0050	<0.0050
390	2000	trichlorofluoromethane	µg/g	<0.20	<0.20
0.79	7.5	vinyl chloride	µg/g	<0.060	<0.060
		Halogenated Aromatics			
28	92	bromobenzene	µg/g	<0.20	<0.20
1	10	dichlorobenzene, 1,2-	µg/g	<0.025	<0.025
1	10	dichlorobenzene, 1,3-	µg/g	<0.025	<0.025
1	10	dichlorobenzene, 1,4-	µg/g	<0.025	<0.025
1	10	monochlorobenzene	µg/g	<0.025	<0.025
		Non-Halogenated Aliphatics			
0.58	1.2	butadiene, 1,3-	µg/g	<0.10	<0.10
22000	110000	butanone, 2-	µg/g	<5.0	<5.0
n/s	n/s	hexanone, 2-	µg/g	<5.0	<5.0
5300	47000	methyl-2-pentanone, 4-	µg/g	<0.50	<0.50

Soil Exceedances

125	Exceeds CSR RL standards
125	Exceeds CSR CL standards

QA/QC Exceedances

45%	RPD exceeds 35%
5>3	MS exceeds RDL

Keystone Environmental

GLOSSARY: GROUNDWATER ANALYTICAL RESULTS
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

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
$EPHw_{10-19}$	Extractable Petroleum Hydrocarbons (carbon range 10 to 19)
$EPHw_{19-32}$	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
MS	Maximum Spread
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
VHw_{6-10}	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	Minimum standards applied, as per Technical Guidance 9 (BC MOE, 2005)

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 AWFW standards

QA/QC Exceedances

45%	RPD exceeds 20%
5>3	MS exceeds RDL

Formulas

MS MS = (Max. Concentration - Min. Concentration); reported as MS </=/> RDL

Note: MS used in place of RPD when concentration of sample and/or duplicate is less than 5x RDL.

RPD RPD = ((Max. Concentration - Min. Concentration)/((Max. Concentration + Min. Concentration)/2))*100

Keystone Environmental

TABLE 3: GROUNDWATER ANALYTICAL RESULTS
HYDROCARBONS
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

CSR DW Standards	SAMPLE ID	Units	MW16-4S	MW16-9S	MW16-B	RPD or MS
	DATE SAMPLED		05-Aug-16	23-Sep-16	23-Sep-16	for
	LAB CERTIFICATE		B665108	B683386	B683386	MW16-9S
	LAB SAMPLE ID		PE5468	PO9858	PO9859	and
	TOP OF SCREEN (mbg)			8.2	Duplicate of	MW16-B
	BOTTOM OF SCREEN (mbg)			9.7	MW16-9S	
	Petroleum Hydrocarbons					
n/s	VPHw	µg/L	--	<300	<300	--
15000	$VHw_{6\ 10}$	µg/L	--	<300	<300	--
n/s	LEPHw	µg/L	<200	--	--	--
5000	$EPHw_{10\ 19}$	µg/L	<200	--	--	--
n/s	HEPHw	µg/L	<200	--	--	--
n/s	$EPHw_{19\ 32}$	µg/L	<200	--	--	--
	Monocyclic Aromatic Hydrocarbons					
5	benzene	µg/L	--	<0.40	<0.40	--
2.4	ethylbenzene	µg/L	--	<0.40	<0.40	--
n/s	styrene	µg/L	--	<0.50	<0.50	--
24	toluene	µg/L	--	0.44	<0.40	0.4=0.4
300	xylenes	µg/L	--	<0.40	<0.40	--
	Polycyclic Aromatic Hydrocarbons					
n/s	acenaphthene	µg/L	<0.050	--	--	--
n/s	acenaphthylene	µg/L	<0.050	--	--	--
n/s	acridine	µg/L	<0.050	--	--	--
n/s	anthracene	µg/L	<0.010	--	--	--
n/s	benzo[a]anthracene	µg/L	<0.010	--	--	--
0.01	benzo[a]pyrene	µg/L	<0.0090	--	--	--
n/s	benzo[b+j]fluoranthene	µg/L	<0.050	--	--	--
n/s	benzo[g,h,i]perylene	µg/L	<0.050	--	--	--
n/s	benzo[k]fluoranthene	µg/L	<0.050	--	--	--
n/s	chrysene	µg/L	<0.050	--	--	--
n/s	dibenz[a,h]anthracene	µg/L	<0.050	--	--	--
n/s	fluoranthene	µg/L	<0.020	--	--	--
n/s	fluorene	µg/L	<0.050	--	--	--
n/s	indeno[1,2,3-cd]pyrene	µg/L	<0.050	--	--	--
n/s	methylnaphthalene, 2-	µg/L	<0.10	--	--	--
n/s	naphthalene	µg/L	<0.10	--	--	--
n/s	phenanthrene	µg/L	<0.050	--	--	--
n/s	pyrene	µg/L	<0.020	--	--	--
n/s	quinoline	µg/L	<0.24	--	--	--
n/s	Total HMW-PAHs	µg/L	<0.050	--	--	--
n/s	Total LMW-PAHs	µg/L	<0.24	--	--	--
n/s	Total PAHs	µg/L	<0.24	--	--	--

Groundwater Exceedances

125	Exceeds CSR DW standards

QA/QC Exceedances

45%	RPD exceeds 20%
5>3	MS exceeds RDL

Keystone Environmental

TABLE 4: GROUNDWATER ANALYTICAL RESULTS
VOCS
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

CSR DW Standards	SAMPLE ID DATE SAMPLED LAB CERTIFICATE LAB SAMPLE ID TOP OF SCREEN (mbg) BOTTOM OF SCREEN (mbg)	Units	MW16-4D 25-Jul-16 B66104 PC2751	MW16-9S 23-Sep-16 B6 386 PO 858 2	MW16-B 23-Sep-16 B683386 PO9859 D plicate of MW16-9S	RPD or MS for MW16-9 and MW16-B
	Halogenated Aliphatics					
16	bromodichloromethane	µg/L	<1.0	<1.0	<1.0	--
100	bromoform	µg/L	<1.0	<1.0	<1.0	--
51	bromomethane	µg/L	<1.0	<1.0	<1.0	--
5	carbon tetrachloride	µg/L	<0.50	<0.50	<0.50	--
46	chloroethane	µg/L	<1.0	<1.0	<1.0	--
100	chloroform	µg/L	3.6	20	19	5%
950	chloromethane	µg/L	<1.0	<1.0	<1.0	--
100	dibromochloromethane	µg/L	<1.0	<1.0	<1.0	--
0.34	dibromoethane, 1,2-	µg/L	<0.20	<0.20	<0.20	--
370	dibromomethane	µg/L	<0.90	<0.90	<0.90	--
7300	dichlorodifluoromethane	µg/L	<2.0	<2.0	<2.0	--
3700	dichloroethane, 1,1-	µg/L	<0.50	<0.50	<0.50	--
5	dichloroethane, 1,2-	µg/L	<0.50	<0.50	<0.50	--
n/s	dichloroethene, 1,1-	µg/L	<0.50	<0.50	<0.50	--
370	dichloroethene, 1,2- (cis)	µg/L	<1.0	2.4	2.8	0.4<1
730	dichloroethene, 1,2- (trans)	µg/L	<1.0	<1.0	<1.0	--
50	dichloromethane	µg/L	<2.0	<2.0	<2.0	--
9.9	dichloropropane, 1,2-	µg/L	<0.50	<0.50	<0.50	--
6.7	dichloropropene, 1,3- (cis)	µg/L	<1.0	<1.0	<1.0	--
6.7	dichloropropene, 1,3- (trans)	µg/L	<1.0	<1.0	<1.0	--
26	tetrachloroethane, 1,1,1,2-	µg/L	<0.50	<0.50	<0.50	--
3.4	tetrachloroethane, 1,1,2,2-	µg/L	<0.50	<0.50	<0.50	--
30	tetrachloroethene	µg/L	<0.50	19	20	5%
1000000	trichloro-1,2,2-trifluoroethane, 1,1,2-	µg/L	<2.0	<2.0	<2.0	--
10000	trichloroethane, 1,1,1-	µg/L	<0.50	<0.50	<0.50	--
12	trichloroethane, 1,1,2-	µg/L	<0.50	<0.50	<0.50	--
5	trichloroethene	µg/L	<0.50	<0.50	<0.50	--
11000	trichlorofluoromethane	µg/L	<4.0	<4.0	<4.0	--
2	vinyl chloride	µg/L	<0.50	<0.50	<0.50	--
	Halogenated Aromatics					
730	bromobenzene	µg/L	<2.0	<2.0	<2.0	--
3	dichlorobenzene, 1,2-	µg/L	<0.50	<0.50	<0.50	--
n/s	dichlorobenzene, 1,3-	µg/L	<0.50	<0.50	<0.50	--
1	dichlorobenzene, 1,4-	µg/L	<0.50	<0.50	<0.50	--
30	monochlorobenzene	µg/L	<0.50	<0.50	<0.50	--
	Non-Halogenated Aliphatics					
6.1	butadiene, 1,3-	µg/L	<5.0	<5.0	<5.0	--
22000	butanone, 2-	µg/L	<10	<10	<10	--
15	methyl tert-butyl ether	µg/L	--	--	--	--
2900	methyl-2-pentanone, 4-	µg/L	<10	<10	<10	--

Groundwater Exceedances

125	Exceeds CSR DW standards

QA/QC Exceedances

45%	RPD exceeds 20%
5>3	MS exceeds RDL

Keystone Environmental

GLOSSARY: VAPOUR ANALYTICAL RESULTS
4464 Dunbar Street
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

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
MS	Maximum Spread
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)

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
µg/m³	Micrograms per gram
L/min	Litres per minute
min	Minutes

Vapour Exceedances

125	Exceeds CSR RL standards
125	Exceeds CSR CL standards

QA/QC Exceedances

45%	RPD exceeds 35%
5>3	MS exceeds RDL

Formulas

MS MS = (Max. Concentration - Min. Concentration); reported as MS </=/> RDL

Note: MS used in place of RPD when concentration of sample and/or duplicate is less than 5x RDL.

PIVC PIVC = MSVC (µg/m3) * Attenuation Factor for PIVC (unitless)

POVC POVC = MSVC (µg/m3) * Attenuation Factor for POVC (unitless)

RPD RPD = [[Max Concentration - Min Concentration]/[[Max Concentration + Min Concentration]/2]]*100}

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TABLE 5: VAPOUR ANALYTICAL RESULTS
HYDROCARBONS AND NON-HALOGENATED VOCS
4464 Dunbar Street
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

CSR RL Standards	CSR CL Standards	SAMPLE ID	Units	SV16-4			
		DATE SAMPLED		28-Jul-16			
		LAB CERTIFICATE		L1805710			
		LAB SAMPLE ID		L1805710-1			
		SAMPLE DEPTH (mbg)		1.2			
		FLOW RATE (L/min)		0.2			
		FLOW DURATION (min)		20			
		VAPOUR CONCENTRATION		MSVC	PIVC (RL)	PIVC (CL)	POVC
		ATTENUATION FACTOR		--	2.8E-03	3.7E-04	1.5E-06
		Petroleum Hydrocarbons					
1000	3000	VPHv	µg/m³	**11300**	31.64	4.181	0.01695
n/s	n/s	VH_{6-13}	µg/m³	12800	35.84	4.736	0.0192
		Monocyclic Aromatic Hydrocarbons					
1.5	4	benzene	µg/m³	**27.4**	0.0767	0.0101	0.0000411
1000	3000	ethylbenzene	µg/m³	8.57	0.024	0.00317	0.0000129
1000	3000	styrene	µg/m³	<0.63	<0.00176	<0.000233	<0.000000945
5000	15000	toluene	µg/m³	55.7	0.156	0.0206	0.0000836
100	300	xylenes	µg/m³	20.3	0.0568	0.00751	0.0000305
		Non-Halogenated Aliphatics					
2500	8000	decane, n-	µg/m³	<10	<0.03	<0.004	<0.00002
700	2000	hexane, n-	µg/m³	1360	3.808	0.5032	0.00204
3000	9000	methyl tert-butyl ether	µg/m³	<6.3	<0.018	<0.0023	<0.0000095
		Polycyclic Aromatic Hydrocarbons					
3	9	naphthalene	µg/m³	<2.3	<0.0064	<0.00085	<0.0000035

Vapour Exceedances

125	Exceeds CSR RL standards
125	Exceeds CSR CL standards

QA/QC Exceedances

45%	RPD exceeds 35%
5>3	MS exceeds RDL

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TABLE 6: VAPOUR ANALYTICAL RESULTS
HALOGENATED VOCS
4464 Dunbar Street
Qualex-Landmark Holdings Inc.
Project #: 13096
October 2016

CSR RL Standards	CSR CL Standards	SAMPLE ID	Units	SV16-4			
		DATE SAMPLED		28-Jul-16			
		LAB CERTIFICATE		L1805710			
		LAB SAMPLE ID		L1805710-1			
		SAMPLE DEPTH (mbg)		1.2			
		FLOW RATE (L/min)		0.2			
		FLOW DURATION (min)		20			
		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	<20*	<0.056	<0.0074	<0.00003
9	30	bromoform	µg/m³	<3.8	<0.011	<0.0014	<0.0000057
0.65	2	carbon tetrachloride	µg/m³	<0.38	<0.00106	<0.000141	<0.00000057
10000	30000	chloroethane	µg/m³	<13	<0.036	<0.0048	<0.00002
1	1.5	chloroform	µg/m³	**169**	0.473	0.0625	0.000253
5.5	15	chloromethane	µg/m³	<3.8	<0.011	<0.0014	<0.0000057
40	100	dibromochloromethane	µg/m³	<6.3	<0.018	<0.0023	<0.0000095
500	1500	dichloroethane, 1,1-	µg/m³	<0.63	<0.00176	<0.000233	<0.000000945
0.4	1	dichloroethane, 1,2-	µg/m³	<0.25	<0.0007	<0.0000925	<0.000000375
1	1	dichloroethene, 1,1-	µg/m³	<1.8*	<0.005	<0.00067	<0.0000027
20	60	dichloroethene, 1,2- (cis)	µg/m³	<1.3	<0.0036	<0.00048	<0.000002
60	200	dichloroethene, 1,2- (trans)	µg/m³	<5	<0.014	<0.0019	<0.0000075
20	65	dichloromethane	µg/m³	41.5	0.116	0.0154	0.0000623
0.65	2	dichloropropane, 1,2-	µg/m³	<1*	<0.003	<0.0004	<0.000002
2.5	7.5	dichloropropene, 1,3- (cis)	µg/m³	<0.63	<0.00176	<0.000233	<0.000000945
2.5	7.5	dichloropropene, 1,3- (trans)	µg/m³	<1.3	<0.0036	<0.00048	<0.000002
1.5	4	tetrachloroethane, 1,1,1,2-	µg/m³	<1	<0.003	<0.0004	<0.000002
1	1	tetrachloroethane, 1,1,2,2-	µg/m³	<1.5*	<0.0042	<0.00056	<0.0000023
600	2000	tetrachloroethene	µg/m³	19.2	0.0538	0.0071	0.0000288
2000	6500	trichloroethane, 1,1,1-	µg/m³	<0.63	<0.00176	<0.000233	<0.000000945
0.6	2	trichloroethane, 1,1,2-	µg/m³	<5*	<0.014	<0.0019	<0.0000075
0.5	0.5	trichloroethene	µg/m³	**1.09**	0.00305	0.000403	0.00000164
700	2000	trichlorofluoromethane	µg/m³	<6.3	<0.018	<0.0023	<0.0000095
1	3.5	vinyl chloride	µg/m³	<0.75	<0.0021	<0.000278	<0.00000113
		Halogenated Aromatics					
200	600	dichlorobenzene, 1,2-	µg/m³	<3 8	<0.011	<0.0014	<0.0000057
80	250	dichlorobenzene, 1,3-	µg/m³	<1 3	<0.0036	<0.00048	<0.000002
800	2500	dichlorobenzene, 1,4-	µg/m³	<1 3	<0.0036	<0.00048	<0.000002
50	150	monochlorobenzene	µg/m³	<1	<0.003	<0.0004	<0.000002

Vapour Exceedances

125	Exceeds CSR RL standards
125	Exceeds CSR CL standards

QA/QC Exceedances

45%	RPD exceeds 35%
5>3	MS exceeds RDL

Keystone Environmental

LABORATORY CERTIFICATES OF ANALYSIS

Your Project #: 13096
Site Location: 4464 DUNBAR ST.
Your C.O.C. #: K008555, K008554

Attention:Gwenn Farrell

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

Report Date: 2016/07/29
Report #: R2225718
Version: 1 Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B660180
Received: 2016/07/21, 19:00

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Moisture	1	2016/07/26	2016/07/27	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	1	2016/07/27	2016/07/28	BBY8SOP-00017	BCMOE BCLM Dec2000 m
PAH in Soil by GC/MS (SIM)	1	2016/07/27	2016/07/28	BBY8SOP-00022	EPA 8270d R5 m
Total PAH and B(a)P Calculation	1	N/A	2016/07/29	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	1	N/A	2016/07/29	BBY WI-00033	Auto Calc
EPH in Soil by GC/FID	1	2016/07/27	2016/07/28	BBY8SOP-00029	BCMOE EPH s 07/99 m
Extra VOCs in Soil - Field Pres. (1)	2	N/A	2016/07/28	BBY8SOP-00040	EPA 8260c R3
VOCs, VH, F1, LH in Soil - Field Pres. (1)	2	N/A	2016/07/27	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX for Soil	2	N/A	2016/07/28	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.
(1) The extraction date for VOC, BTEX, VH, or F1 samples that are field preserved with methanol equals the date sampled, unless otherwise stated.

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 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 #: B660180
Report Date: 2016/07/29

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

PHYSICAL TESTING (SOIL)

Maxxam ID		PB8608		PB8614	PB8614		
Sampling Date		2016/07/21		2016/07/21	2016/07/21		
COC Number		K008555		K008555	K008555		
	UNITS	MW16-4 (4.3)	QC Batch	MW16-4 (10.3)	MW16-4 (10.3) Lab-Dup	RDL	QC Batch
Physical Properties							
Moisture	%	6.8	8340933	8.7	8.9	0.30	8342007

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B660180
Report Date: 2016/07/29

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		PB8608	PB8614		
Sampling Date		2016/07/21	2016/07/21		
COC Number		K008555	K008555		
	UNITS	MW16-4 (4.3)	MW16-4 (10.3)	RDL	QC Batch
Volatiles					
Extractable (MeOH) 2-Butanone (MEK)	mg/kg	<5.0	<5.0	5.0	8343851
Extractable (MeOH) 4-Methyl-2-pentanone (MIBK)	mg/kg	<0.50	<0.50	0.50	8343851
Extractable (MeOH) 2-Hexanone	mg/kg	<5.0	<5.0	5.0	8343851
Surrogate Recovery (%)					
Extractable (MeOH) 1,4-Difluorobenzene (sur.)	%	90	91		8343851
Extractable (MeOH) 4-Bromofluorobenzene (sur.)	%	92	91		8343851
Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	%	97	97		8343851
RDL = Reportable Detection Limit					

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B660180
Report Date: 2016/07/29

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Maxxam ID		PB8608		
Sampling Date		2016/07/21		
COC Number		K008555		
	UNITS	MW16-4 (4.3)	RDL	QC Batch
Polycyclic Aromatics				
Naphthalene	ug/g	<0.050	0.050	8343402
2-Methylnaphthalene	ug/g	<0.050	0.050	8343402
Acenaphthylene	ug/g	<0.050	0.050	8343402
Acenaphthene	ug/g	<0.050	0.050	8343402
Fluorene	ug/g	<0.050	0.050	8343402
Phenanthrene	ug/g	<0.050	0.050	8343402
Anthracene	ug/g	<0.050	0.050	8343402
Fluoranthene	ug/g	<0.050	0.050	8343402
Pyrene	ug/g	<0.050	0.050	8343402
Benzo(a)anthracene	ug/g	<0.050	0.050	8343402
Chrysene	ug/g	<0.050	0.050	8343402
Benzo(b&j)fluoranthene	ug/g	<0.050	0.050	8343402
Benzo(b)fluoranthene	ug/g	<0.050	0.050	8343402
Benzo(k)fluoranthene	ug/g	<0.050	0.050	8343402
Benzo(a)pyrene	ug/g	<0.050	0.050	8343402
Indeno(1,2,3-cd)pyrene	ug/g	<0.050	0.050	8343402
Dibenz(a,h)anthracene	ug/g	<0.050	0.050	8343402
Benzo(g,h,i)perylene	ug/g	<0.050	0.050	8343402
Low Molecular Weight PAH`s	ug/g	<0.050	0.050	8340644
High Molecular Weight PAH`s	ug/g	<0.050	0.050	8340644
Total PAH	ug/g	<0.050	0.050	8340644
Calculated Parameters				
LEPH (C10-C19 less PAH)	mg/kg	<100	100	8340645
HEPH (C19-C32 less PAH)	mg/kg	<100	100	8340645
Hydrocarbons				
EPH (C10-C19)	mg/kg	<100	100	8343414
EPH (C19-C32)	mg/kg	<100	100	8343414
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	86		8343402
D8-ACENAPHTHYLENE (sur.)	%	78		8343402
D8-NAPHTHALENE (sur.)	%	79		8343402
TERPHENYL-D14 (sur.)	%	88		8343402
RDL = Reportable Detection Limit				

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B660180
Report Date: 2016/07/29

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

LEPH & HEPH WITH PAH FOR CSR IN SOIL (SOIL)

Maxxam ID		PB8608		
Sampling Date		2016/07/21		
COC Number		K008555		
	UNITS	MW16-4 (4.3)	RDL	QC Batch
O-TERPHENYL (sur.)	%	94		8343414
RDL = Reportable Detection Limit				

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Maxxam Job #: B660180
Report Date: 2016/07/29

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

CSR VOC + VPH IN SOIL - FIELD PRESERVED (SOIL)

Maxxam ID		PB8608	PB8614		
Sampling Date		2016/07/21	2016/07/21		
COC Number		K008555	K008555		
	UNITS	MW16-4 (4.3)	MW16-4 (10.3)	RDL	QC Batch
Volatiles					
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	10	8340572
Chloromethane	mg/kg	<0.10	<0.10	0.10	8342797
Vinyl chloride	mg/kg	<0.060	<0.060	0.060	8342797
Bromomethane	mg/kg	<0.30	<0.30	0.30	8342797
Chloroethane	mg/kg	<0.10	<0.10	0.10	8342797
Trichlorofluoromethane	mg/kg	<0.20	<0.20	0.20	8342797
1,1-dichloroethene	mg/kg	<0.025	<0.025	0.025	8342797
Dichloromethane	mg/kg	<0.10	<0.10	0.10	8342797
trans-1,2-dichloroethene	mg/kg	<0.025	<0.025	0.025	8342797
1,1-dichloroethane	mg/kg	<0.025	<0.025	0.025	8342797
cis-1,2-dichloroethene	mg/kg	<0.025	<0.025	0.025	8342797
Chloroform	mg/kg	<0.050	<0.050	0.050	8342797
1,1,1-trichloroethane	mg/kg	<0.025	<0.025	0.025	8342797
1,2-dichloroethane	mg/kg	<0.025	<0.025	0.025	8342797
Carbon tetrachloride	mg/kg	<0.025	<0.025	0.025	8342797
Benzene	mg/kg	<0.0050	<0.0050	0.0050	8342797
1,2-dichloropropane	mg/kg	<0.025	<0.025	0.025	8342797
Trichloroethene	mg/kg	<0.0050	<0.0050	0.0050	8342797
Bromodichloromethane	mg/kg	<0.050	<0.050	0.050	8342797
cis-1,3-dichloropropene	mg/kg	<0.050	<0.050	0.050	8342797
trans-1,3-dichloropropene	mg/kg	<0.050	<0.050	0.050	8342797
1,3-Butadiene	mg/kg	<0.10	<0.10	0.10	8342797
1,1,2-trichloroethane	mg/kg	<0.025	<0.025	0.025	8342797
Toluene	mg/kg	<0.020	<0.020	0.020	8342797
Chlorodibromomethane	mg/kg	<0.050	<0.050	0.050	8342797
1,2-dibromoethane	mg/kg	<0.025	<0.025	0.025	8342797
Tetrachloroethene	mg/kg	<0.025	<0.025	0.025	8342797
Chlorobenzene	mg/kg	<0.025	<0.025	0.025	8342797
1,1,1,2-tetrachloroethane	mg/kg	<0.025	<0.025	0.025	8342797
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	8342797
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	8342797
Bromoform	mg/kg	<0.050	<0.050	0.050	8342797
RDL = Reportable Detection Limit					

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Maxxam Job #: B660180
Report Date: 2016/07/29

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

CSR VOC + VPH IN SOIL - FIELD PRESERVED (SOIL)

Maxxam ID		PB8608	PB8614		
Sampling Date		2016/07/21	2016/07/21		
COC Number		K008555	K008555		
	UNITS	MW16-4 (4.3)	MW16-4 (10.3)	RDL	QC Batch
Styrene	mg/kg	<0.030	<0.030	0.030	8342797
o-Xylene	mg/kg	<0.040	<0.040	0.040	8342797
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	8342797
1,1,2,2-tetrachloroethane	mg/kg	<0.025	<0.025	0.025	8342797
1,2-dichlorobenzene	mg/kg	<0.025	<0.025	0.025	8342797
1,3-dichlorobenzene	mg/kg	<0.025	<0.025	0.025	8342797
1,4-dichlorobenzene	mg/kg	<0.025	<0.025	0.025	8342797
Dichlorodifluoromethane	mg/kg	<0.20	<0.20	0.20	8342797
Bromobenzene	mg/kg	<0.20	<0.20	0.20	8342797
Dibromomethane	mg/kg	<0.20	<0.20	0.20	8342797
VH C6-C10	mg/kg	<10	<10	10	8342797
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	105	106		8342797
4-Bromofluorobenzene (sur.)	%	111	116		8342797
D10-ETHYLBENZENE (sur.)	%	122	122		8342797
D4-1,2-Dichloroethane (sur.)	%	103	108		8342797
RDL = Reportable Detection Limit					

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Maxxam Job #: B660180
Report Date: 2016/07/29

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

GENERAL COMMENTS

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

Package 1	28.7°C

Results relate only to the items tested.

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Maxxam Job #: B660180
Report Date: 2016/07/29

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8342797	1,4-Difluorobenzene (sur.)	2016/07/27	94	70 - 130	94	70 - 130	104	%		
8342797	4-Bromofluorobenzene (sur.)	2016/07/27	103	70 - 130	106	70 - 130	113	%		
8342797	D10-ETHYLBENZENE (sur.)	2016/07/27	110	50 - 130	96	50 - 130	122	%		
8342797	D4-1,2-Dichloroethane (sur.)	2016/07/27	96	70 - 130	97	70 - 130	89	%		
8343402	D10-ANTHRACENE (sur.)	2016/07/28	79	60 - 130	77	60 - 130	86	%		
8343402	D8-ACENAPHTHYLENE (sur.)	2016/07/28	77	50 - 130	72	50 - 130	79	%		
8343402	D8-NAPHTHALENE (sur.)	2016/07/28	79	50 - 130	75	50 - 130	79	%		
8343402	TERPHENYL-D14 (sur.)	2016/07/28	82	60 - 130	77	60 - 130	87	%		
8343414	O-TERPHENYL (sur.)	2016/07/28	96	50 - 130	96	50 - 130	97	%		
8343851	Extractable (MeOH) 1,4-Difluorobenzene (sur.)	2016/07/28			90	70 - 130	91	%		
8343851	Extractable (MeOH) 4-Bromofluorobenzene (sur.)	2016/07/28			96	70 - 130	94	%		
8343851	Extractable (MeOH) D4-1,2-Dichloroethane (sur.)	2016/07/28			94	70 - 130	94	%		
8340933	Moisture	2016/07/28					<0.30	%	1.3	20
8342007	Moisture	2016/07/28					<0.30	%	2.3	20
8342797	1,1,1,2-tetrachloroethane	2016/07/27	113	60 - 140	109	60 - 140	<0.025	mg/kg	NC	40
8342797	1,1,1-trichloroethane	2016/07/27	115	60 - 140	108	60 - 140	<0.025	mg/kg	NC	40
8342797	1,1,2,2-tetrachloroethane	2016/07/27	118	60 - 140	125	60 - 140	<0.025	mg/kg	NC	40
8342797	1,1,2-trichloroethane	2016/07/27	123	60 - 140	118	60 - 140	<0.025	mg/kg	NC	40
8342797	1,1-dichloroethane	2016/07/27	110	60 - 140	104	60 - 140	<0.025	mg/kg	NC	40
8342797	1,1-dichloroethene	2016/07/27	111	60 - 140	106	60 - 140	<0.025	mg/kg	NC	40
8342797	1,2-dibromoethane	2016/07/27	125	60 - 140	121	60 - 140	<0.025	mg/kg	NC	40
8342797	1,2-dichlorobenzene	2016/07/27	112	60 - 140	113	60 - 140	<0.025	mg/kg	NC	40
8342797	1,2-dichloroethane	2016/07/27	117	60 - 140	114	60 - 140	<0.025	mg/kg	NC	40
8342797	1,2-dichloropropane	2016/07/27	116	60 - 140	111	60 - 140	<0.025	mg/kg	NC	40
8342797	1,3-Butadiene	2016/07/27					<0.10	mg/kg		
8342797	1,3-dichlorobenzene	2016/07/27	114	60 - 140	111	60 - 140	<0.025	mg/kg	NC	40
8342797	1,4-dichlorobenzene	2016/07/27	109	60 - 140	107	60 - 140	<0.025	mg/kg	NC	40
8342797	Benzene	2016/07/27	118	60 - 140	111	60 - 140	<0.0050	mg/kg	NC	40
8342797	Bromobenzene	2016/07/27	116	60 - 140	111	60 - 140	<0.20	mg/kg		
8342797	Bromodichloromethane	2016/07/27	107	60 - 140	102	60 - 140	<0.050	mg/kg	NC	40
8342797	Bromoform	2016/07/27	109	60 - 140	108	60 - 140	<0.050	mg/kg	NC	40

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Maxxam Job #: B660180
Report Date: 2016/07/29

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8342797	Bromomethane	2016/07/27	100	50 - 150	99	50 - 150	<0.30	mg/kg	NC	40
8342797	Carbon tetrachloride	2016/07/27	112	60 - 140	109	60 - 140	<0.025	mg/kg	NC	40
8342797	Chlorobenzene	2016/07/27	113	60 - 140	107	60 - 140	<0.025	mg/kg	NC	40
8342797	Chlorodibromomethane	2016/07/27	112	60 - 140	109	60 - 140	<0.050	mg/kg	NC	40
8342797	Chloroethane	2016/07/27	132	50 - 150	125	50 - 150	<0.10	mg/kg	NC	40
8342797	Chloroform	2016/07/27	115	60 - 140	108	60 - 140	<0.050	mg/kg	NC	40
8342797	Chloromethane	2016/07/27	122	50 - 150	121	50 - 150	<0.10	mg/kg	NC	40
8342797	cis-1,2-dichloroethene	2016/07/27	114	60 - 140	108	60 - 140	<0.025	mg/kg	NC	40
8342797	cis-1,3-dichloropropene	2016/07/27	128	60 - 140	121	60 - 140	<0.050	mg/kg	NC	40
8342797	Dibromomethane	2016/07/27	114	60 - 140	108	60 - 140	<0.20	mg/kg		
8342797	Dichlorodifluoromethane	2016/07/27	99	50 - 150	107	50 - 150	<0.20	mg/kg		
8342797	Dichloromethane	2016/07/27	124	60 - 140	118	60 - 140	<0.10	mg/kg	NC	40
8342797	Ethylbenzene	2016/07/27	123	60 - 140	116	60 - 140	<0.010	mg/kg	NC	40
8342797	m & p-Xylene	2016/07/27	122	60 - 140	115	60 - 140	<0.040	mg/kg	NC	40
8342797	o-Xylene	2016/07/27	124	60 - 140	117	60 - 140	<0.040	mg/kg	NC	40
8342797	Styrene	2016/07/27	128	60 - 140	122	60 - 140	<0.030	mg/kg	NC	40
8342797	Tetrachloroethene	2016/07/27	113	60 - 140	107	60 - 140	<0.025	mg/kg	NC	40
8342797	Toluene	2016/07/27	122	60 - 140	115	60 - 140	<0.020	mg/kg	NC	40
8342797	trans-1,2-dichloroethene	2016/07/27	109	60 - 140	103	60 - 140	<0.025	mg/kg	NC	40
8342797	trans-1,3-dichloropropene	2016/07/27	129	60 - 140	124	60 - 140	<0.050	mg/kg	NC	40
8342797	Trichloroethene	2016/07/27	112	60 - 140	106	60 - 140	<0.0050	mg/kg	NC	40
8342797	Trichlorofluoromethane	2016/07/27	116	50 - 150	111	50 - 150	<0.20	mg/kg	NC	40
8342797	VH C6-C10	2016/07/27			97	60 - 140	<10	mg/kg	NC	40
8342797	Vinyl chloride	2016/07/27	119	50 - 150	116	50 - 150	<0.060	mg/kg	NC	40
8342797	Xylenes (Total)	2016/07/27					<0.040	mg/kg	NC	40
8343402	2-Methylnaphthalene	2016/07/28	74	50 - 130	73	50 - 130	<0.050	ug/g	NC	50
8343402	Acenaphthene	2016/07/28	78	50 - 130	75	50 - 130	<0.050	ug/g	NC	50
8343402	Acenaphthylene	2016/07/28	73	50 - 130	71	50 - 130	<0.050	ug/g	NC	50
8343402	Anthracene	2016/07/28	74	60 - 130	72	60 - 130	<0.050	ug/g	NC	50
8343402	Benzo(a)anthracene	2016/07/28	67	60 - 130	62	60 - 130	<0.050	ug/g	NC	50
8343402	Benzo(a)pyrene	2016/07/28	71	60 - 130	67	60 - 130	<0.050	ug/g	NC	50

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QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
Sampler Initials: GF

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8343402	Benzo(b&j)fluoranthene	2016/07/28	74	60 - 130	66	60 - 130	<0.050	ug/g	NC	50
8343402	Benzo(b)fluoranthene	2016/07/28	74	60 - 130	63	60 - 130	<0.050	ug/g	NC	50
8343402	Benzo(g,h,i)perylene	2016/07/28	70	60 - 130	64	60 - 130	<0.050	ug/g	NC	50
8343402	Benzo(k)fluoranthene	2016/07/28	71	60 - 130	73	60 - 130	<0.050	ug/g	NC	50
8343402	Chrysene	2016/07/28	71	60 - 130	66	60 - 130	<0.050	ug/g	NC	50
8343402	Dibenz(a,h)anthracene	2016/07/28	67	60 - 130	62	60 - 130	<0.050	ug/g	NC	50
8343402	Fluoranthene	2016/07/28	75	60 - 130	74	60 - 130	<0.050	ug/g	NC	50
8343402	Fluorene	2016/07/28	72	50 - 130	71	50 - 130	<0.050	ug/g	NC	50
8343402	Indeno(1,2,3-cd)pyrene	2016/07/28	71	60 - 130	66	60 - 130	<0.050	ug/g	NC	50
8343402	Naphthalene	2016/07/28	74	50 - 130	71	50 - 130	<0.050	ug/g	NC	50
8343402	Phenanthrene	2016/07/28	73	60 - 130	73	60 - 130	<0.050	ug/g	NC	50
8343402	Pyrene	2016/07/28	74	60 - 130	74	60 - 130	<0.050	ug/g	NC	50
8343414	EPH (C10-C19)	2016/07/28	100	50 - 130	102	50 - 130	<100	mg/kg	NC	40
8343414	EPH (C19-C32)	2016/07/28	100	50 - 130	103	50 - 130	<100	mg/kg	NC	40
8343851	Extractable (MeOH) 2-Butanone (MEK)	2016/07/28			128	60 - 140	<5.0	mg/kg	NC	50
8343851	Extractable (MeOH) 2-Hexanone	2016/07/28			117	60 - 140	<5.0	mg/kg	NC	40
8343851	Extractable (MeOH) 4-Methyl-2-pentanone (MIBK)	2016/07/28			112	60 - 140	<0.50	mg/kg	NC	50

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).

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KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: 4464 DUNBAR ST.
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.

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Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B660180

CHAIN OF CUSTODY RECORD

Page: 2 of 2

K008554

Invoice To: Require Report? Yes [X] No [ ]

Company Name: Keystone Environmental Ltd.
Contact Name: Sherry Farrell, Francis Yee, Chris Thomas
Address: #320-4400 Dominion Street
Burnaby, BC PC: V5G 4G3
Phone / Fax#: Ph: (604) 430-0671 Fax: (604) 430-0672
E-mail: sfarrell@keystone-env.com, fyee@keystone-env.com, cthomas@keystone-env.com

Report To:

Company Name:
Contact Name:
Address:
PC:
Ph: Fax:
Phone / Fax#:
E-mail

PO #:
Quotation #:
Project #: 13096
Proj. Name:
Location: 4464 Dunbar St, Vancouver, BC
Sampled By: JF

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled
1	MW11-4 (12.8)		Soil	July 21/16
2	11 (13.5)		11	11
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

BTEX/VPH [ ] MTBE [ ]
VOC/VPH [ ]
EPH [ ] TEH [ ]
PAH [ ] LEPH/HEPH [ ]
CCME PHC (Fractions 1-4 Plus BTEX) [ ]
CCME PHC (Fractions 2-4) [ ]
CCME BTEX (Fraction 1 Plus BTEX) [ ]
PCB [ ]
Phenols by 4AAP [ ] Phenols by GCMS [ ]
TOG [ ] MOG [ ] SWOG [ ]
Dissolved Metals: Field Filtered? Y [ ] N [ ]
Total Metals: Field Acidified? Y [ ] N [ ]
Nitrate [ ] Nitrite [ ] Ammonia [ ]
Chloride [ ] Fluoride [ ] Sulphate [ ]
Total Suspended Solids-TSS [ ] TDS [ ]
pH [ ] Conductivity [ ] Alkalinity [ ]
BOD [ ]
COD [ ]
Coliform, Total & E.coli [ ] Fecal [ ]
Asbestos [ ]
# of containers: 4, 4
HOLD [ ]

Samples are from a Drinking Water Source? YES [ ] NO [ ]
Does source supply multiple households? YES [ ] NO [ ]

B660180_COC

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
	16/7/21	18:55	KEVIN CHUNG	2016/07/21	19:00

Laboratory Use Only

Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
	29, 28, 29	Yes [ ] No [ ]

N/A

JUST SAMPLED
ICEPACK - YES

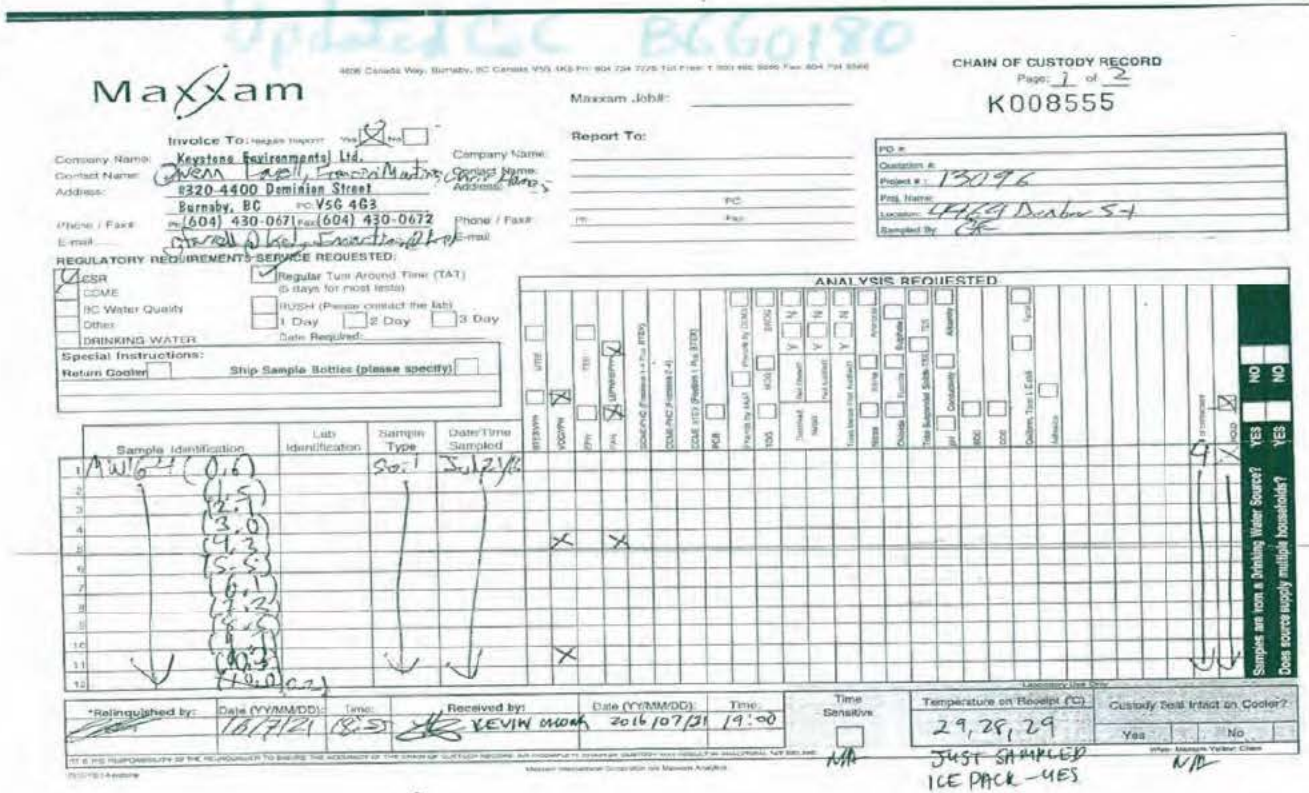
N/A

*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

COC-1027-Keystone

Maxxam International Corporation o/a Maxxam Analytics



Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 734 8566

CHAIN OF CUSTODY RECORD

Page: 1 of 2

K008555

Maxxam Job#:

Invoice To: Yes ☒ No ☐

Company Name: Keystone Environments Ltd.

Contact Name: Owen Lapell, Francis Martin

Address: #320-4400 Dominion Street, Burnaby, BC, V5G 4G3

Phone / Fax: (604) 430-0671 / (604) 430-0672

E-mail: Owen.Lapell@keystone-env.com, Francis.Martin@keystone-env.com

Report To:

Company Name:

Contact Name:

Address:

Phone / Fax:

E-mail:

PO #:

Quotation #:

Project #: 13096

Proj. Name:

Location: 4469 Dunbar St

Sampled By: CK

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)
☐ 1 Day ☐ 2 Day ☐ 3 Day
Date Required:

Special Instructions:

Return Cooler ☐ Ship Sample Bottles (please specify) ☐

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled
1	MW21 (0.6)		Soil	July/21
2	(1.5)			
3	(2.1)			
4	(3.0)			
5	(4.3)			
6	(5.3)			
7	(0.1)			
8	(1.2)			
9	(2.5)			
10	(3.1)			
11	(0.3)			
12	(0.0) (C2)			

Samples are from a Drinking Water Source? NO ☐ YES ☐

Does source supply multiple households? NO ☐ YES ☐

Laboratory Use Only

*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?
	16/7/21	18:30	KEVIN CHOW	2016/07/31	19:00	N/A	29, 28, 29	Yes ☐ No ☐

JUST SAMPLED
ICE PACK - YES

N/A

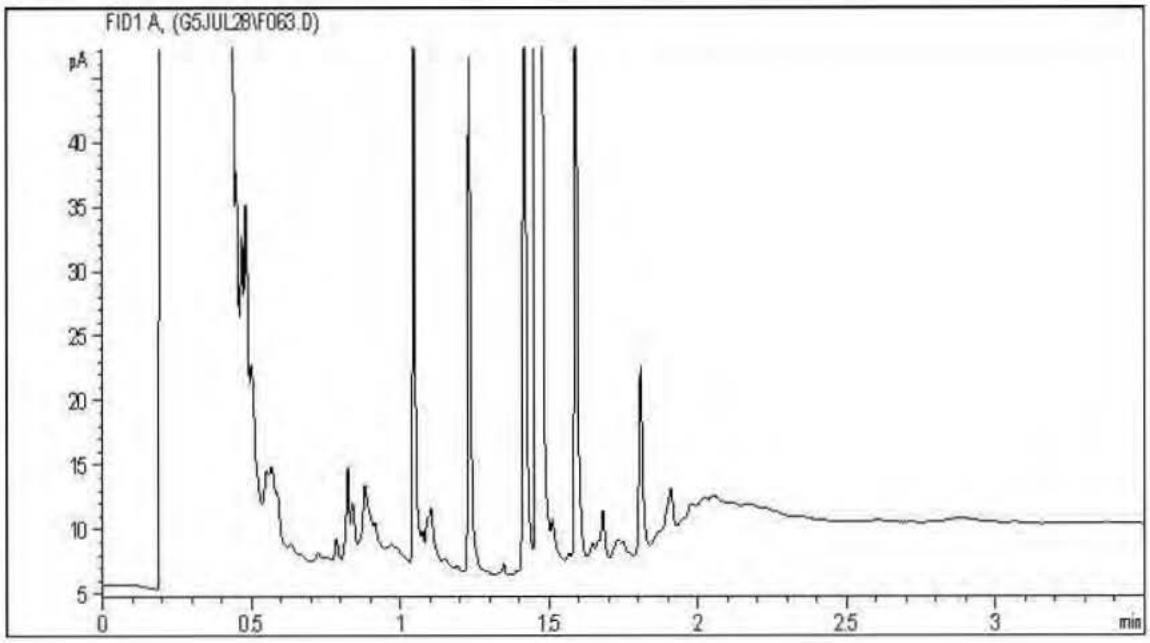
*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT BEING DELAYED.

Maxxam Standard Conditions and Maxxam Analytics

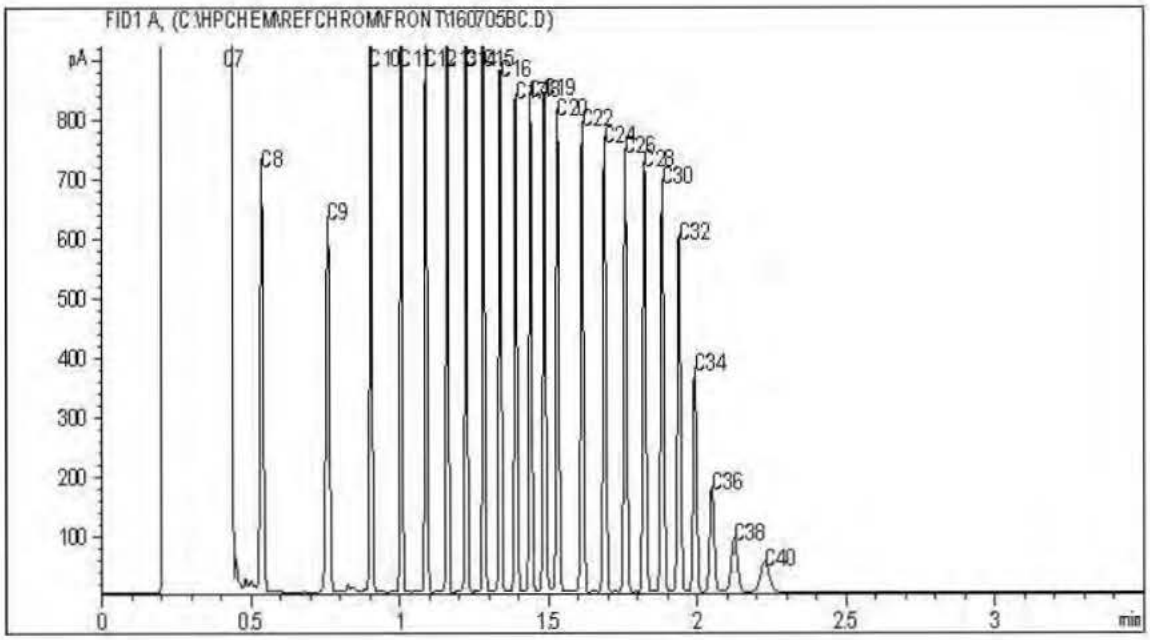
Maxxam Job #: B660180
Report Date: 2016/07/29
Maxxam Sample: PB8608

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Reference: 4464 DUNBAR ST.
Client ID: MW16-4 (4.3)

EPH in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

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

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: 13096
Site Location: PHASE 2 VANCOUVER
Your C.O.C. #: K014335

Attention:Francini Martins

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

Report Date: 2016/08/03
Report #: R2227977
Version: 1 Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B661042
Received: 2016/07/25, 15:30

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Hardness (calculated as CaCO3)	1	N/A	2016/07/29	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CVAF	1	N/A	2016/08/03	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2016/07/29	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	1	N/A	2016/07/28	BBY7SOP-00002	EPA 6020B R2 m
Filter and HNO3 Preserve for Metals	1	N/A	2016/07/29	BBY7 WI-00004	BCMOE Reqs 08/14
Extra VOCs in Water by HS GC/MS	1	N/A	2016/07/28	BBY8SOP-00040	EPA 8260c R3 m
VOCs, VH, F1, LH in Water by HS GC/MS	1	2016/07/29	2016/07/30	BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	1	N/A	2016/08/02	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 #: B661042
Report Date: 2016/08/03

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		PC2751	
Sampling Date		2016/07/25 14:00	
COC Number		K014335	
	UNITS	MW16-4D	QC Batch
Calculated Parameters			
Filter and HNO3 Preservation	N/A	FIELD	ONSITE

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Maxxam Job #: B661042
Report Date: 2016/08/03

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		PC2751	PC2751		
Sampling Date		2016/07/25 14:00	2016/07/25 14:00		
COC Number		K014335	K014335		
	UNITS	MW16-4D	MW16-4D Lab-Dup	RDL	QC Batch
Volatiles					
2-Butanone (MEK)	ug/L	<10	<10	10	8344151
4-Methyl-2-pentanone (MIBK)	ug/L	<10	<10	10	8344151
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	104	104		8344151
4-Bromofluorobenzene (sur.)	%	97	96		8344151
D4-1,2-Dichloroethane (sur.)	%	87	88		8344151

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B661042
Report Date: 2016/08/03

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PC2751		
Sampling Date		2016/07/25 14:00		
COC Number		K014335		
	UNITS	MW16-4D	RDL	QC Batch
Misc. Inorganics				
Dissolved Hardness (CaCO3)	mg/L	59.5	0.50	8339420
Elements				
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	8349159
Dissolved Metals by ICPMS				
Dissolved Aluminum (Al)	ug/L	413	3.0	8340787
Dissolved Antimony (Sb)	ug/L	1.38	0.50	8340787
Dissolved Arsenic (As)	ug/L	0.66	0.10	8340787
Dissolved Barium (Ba)	ug/L	19.1	1.0	8340787
Dissolved Beryllium (Be)	ug/L	<0.10	0.10	8340787
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	8340787
Dissolved Boron (B)	ug/L	141	50	8340787
Dissolved Cadmium (Cd)	ug/L	<0.010	0.010	8340787
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	8340787
Dissolved Cobalt (Co)	ug/L	1.16	0.50	8340787
Dissolved Copper (Cu)	ug/L	0.73	0.20	8340787
Dissolved Iron (Fe)	ug/L	317	5.0	8340787
Dissolved Lead (Pb)	ug/L	<0.20	0.20	8340787
Dissolved Lithium (Li)	ug/L	6.5	5.0	8340787
Dissolved Manganese (Mn)	ug/L	94.5	1.0	8340787
Dissolved Molybdenum (Mo)	ug/L	171	1.0	8340787
Dissolved Nickel (Ni)	ug/L	4.8	1.0	8340787
Dissolved Selenium (Se)	ug/L	1.27	0.10	8340787
Dissolved Silicon (Si)	ug/L	4720	100	8340787
Dissolved Silver (Ag)	ug/L	<0.020	0.020	8340787
Dissolved Strontium (Sr)	ug/L	98.5	1.0	8340787
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	8340787
Dissolved Tin (Sn)	ug/L	<5.0	5.0	8340787
Dissolved Titanium (Ti)	ug/L	13.9	5.0	8340787
Dissolved Uranium (U)	ug/L	0.60	0.10	8340787
Dissolved Vanadium (V)	ug/L	<5.0	5.0	8340787
Dissolved Zinc (Zn)	ug/L	8.2	5.0	8340787
Dissolved Zirconium (Zr)	ug/L	<0.50	0.50	8340787
RDL = Reportable Detection Limit				

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Maxxam Job #: B661042
Report Date: 2016/08/03

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		PC2751		
Sampling Date		2016/07/25 14:00		
COC Number		K014335		
	UNITS	MW16-4D	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	17.4	0.050	8339422
Dissolved Magnesium (Mg)	mg/L	3.92	0.050	8339422
Dissolved Potassium (K)	mg/L	4.78	0.050	8339422
Dissolved Sulphur (S)	mg/L	16.5	3.0	8339422
RDL = Reportable Detection Limit				

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Maxxam Job #: B661042
Report Date: 2016/08/03

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		PC2751		
Sampling Date		2016/07/25 14:00		
COC Number		K014335		
	UNITS	MW16-4D	RDL	QC Batch
Volatiles				
VPH (VHW6 to 10 - BTEX)	ug/L	<300	300	8339519
Chloromethane	ug/L	<1.0	1.0	8345960
Vinyl chloride	ug/L	<0.50	0.50	8345960
Chloroethane	ug/L	<1.0	1.0	8345960
Trichlorofluoromethane	ug/L	<4.0	4.0	8345960
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	2.0	8345960
Dichlorodifluoromethane	ug/L	<2.0	2.0	8345960
1,1-dichloroethene	ug/L	<0.50	0.50	8345960
Dichloromethane	ug/L	<2.0	2.0	8345960
trans-1,2-dichloroethene	ug/L	<1.0	1.0	8345960
1,1-dichloroethane	ug/L	<0.50	0.50	8345960
cis-1,2-dichloroethene	ug/L	<1.0	1.0	8345960
Chloroform	ug/L	3.6	1.0	8345960
1,1,1-trichloroethane	ug/L	<0.50	0.50	8345960
1,2-dichloroethane	ug/L	<0.50	0.50	8345960
Carbon tetrachloride	ug/L	<0.50	0.50	8345960
Benzene	ug/L	<0.40	0.40	8345960
1,2-dichloropropane	ug/L	<0.50	0.50	8345960
cis-1,3-dichloropropene	ug/L	<1.0	1.0	8345960
trans-1,3-dichloropropene	ug/L	<1.0	1.0	8345960
Bromomethane	ug/L	<1.0	1.0	8345960
1,1,2-trichloroethane	ug/L	<0.50	0.50	8345960
Trichloroethene	ug/L	<0.50	0.50	8345960
Chlorodibromomethane	ug/L	<1.0	1.0	8345960
1,2-dibromoethane	ug/L	<0.20	0.20	8345960
1,3-Butadiene	ug/L	<5.0	5.0	8345960
Tetrachloroethene	ug/L	<0.50	0.50	8345960
Bromodichloromethane	ug/L	<1.0	1.0	8345960
Toluene	ug/L	<0.40	0.40	8345960
Ethylbenzene	ug/L	<0.40	0.40	8345960
m & p-Xylene	ug/L	<0.40	0.40	8345960
Bromoform	ug/L	<1.0	1.0	8345960
RDL = Reportable Detection Limit				

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Maxxam Job #: B661042
Report Date: 2016/08/03

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		PC2751		
Sampling Date		2016/07/25 14:00		
COC Number		K014335		
	UNITS	MW16-4D	RDL	QC Batch
Styrene	ug/L	<0.50	0.50	8345960
o-Xylene	ug/L	<0.40	0.40	8345960
Xylenes (Total)	ug/L	<0.40	0.40	8345960
1,1,1,2-tetrachloroethane	ug/L	<0.50	0.50	8345960
1,1,2,2-tetrachloroethane	ug/L	<0.50	0.50	8345960
1,2-dichlorobenzene	ug/L	<0.50	0.50	8345960
1,3-dichlorobenzene	ug/L	<0.50	0.50	8345960
1,4-dichlorobenzene	ug/L	<0.50	0.50	8345960
Chlorobenzene	ug/L	<0.50	0.50	8345960
Dibromomethane	ug/L	<0.90	0.90	8345960
Bromobenzene	ug/L	<2.0	2.0	8345960
VH C6-C10	ug/L	<300	300	8345960
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	108		8345960
4-Bromofluorobenzene (sur.)	%	103		8345960
D4-1,2-Dichloroethane (sur.)	%	112		8345960
RDL = Reportable Detection Limit				

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Maxxam Job #: B661042
Report Date: 2016/08/03

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

GENERAL COMMENTS

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

Package 1	22.0°C

Results relate only to the items tested.

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Maxxam Job #: B661042
Report Date: 2016/08/03

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8344151	1,4-Difluorobenzene (sur.)	2016/07/28	103	70 - 130	102	70 - 130	104	%		
8344151	4-Bromofluorobenzene (sur.)	2016/07/28	103	70 - 130	99	70 - 130	91	%		
8344151	D4-1,2-Dichloroethane (sur.)	2016/07/28	86	70 - 130	88	70 - 130	90	%		
8345960	1,4-Difluorobenzene (sur.)	2016/07/30	87	70 - 130	88	70 - 130	108	%		
8345960	4-Bromofluorobenzene (sur.)	2016/07/30	94	70 - 130	99	70 - 130	99	%		
8345960	D4-1,2-Dichloroethane (sur.)	2016/07/30	104	70 - 130	97	70 - 130	107	%		
8340787	Dissolved Aluminum (Al)	2016/07/28	112	80 - 120	113	80 - 120	<3.0	ug/L		
8340787	Dissolved Antimony (Sb)	2016/07/28	102	80 - 120	100	80 - 120	<0.50	ug/L		
8340787	Dissolved Arsenic (As)	2016/07/28	106	80 - 120	104	80 - 120	<0.10	ug/L		
8340787	Dissolved Barium (Ba)	2016/07/28	103	80 - 120	100	80 - 120	<1.0	ug/L		
8340787	Dissolved Beryllium (Be)	2016/07/28	105	80 - 120	101	80 - 120	<0.10	ug/L		
8340787	Dissolved Bismuth (Bi)	2016/07/28	102	80 - 120	101	80 - 120	<1.0	ug/L		
8340787	Dissolved Boron (B)	2016/07/28	114	80 - 120	112	80 - 120	<50	ug/L		
8340787	Dissolved Cadmium (Cd)	2016/07/28	104	80 - 120	100	80 - 120	<0.010	ug/L		
8340787	Dissolved Chromium (Cr)	2016/07/28	103	80 - 120	102	80 - 120	<1.0	ug/L		
8340787	Dissolved Cobalt (Co)	2016/07/28	105	80 - 120	103	80 - 120	<0.50	ug/L		
8340787	Dissolved Copper (Cu)	2016/07/28	103	80 - 120	104	80 - 120	<0.20	ug/L		
8340787	Dissolved Iron (Fe)	2016/07/28	105	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
8340787	Dissolved Lead (Pb)	2016/07/28	104	80 - 120	105	80 - 120	<0.20	ug/L		
8340787	Dissolved Lithium (Li)	2016/07/28	102	80 - 120	105	80 - 120	<5.0	ug/L		
8340787	Dissolved Manganese (Mn)	2016/07/28	102	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
8340787	Dissolved Molybdenum (Mo)	2016/07/28	100	80 - 120	102	80 - 120	<1.0	ug/L		
8340787	Dissolved Nickel (Ni)	2016/07/28	105	80 - 120	105	80 - 120	<1.0	ug/L		
8340787	Dissolved Selenium (Se)	2016/07/28	107	80 - 120	107	80 - 120	<0.10	ug/L		
8340787	Dissolved Silicon (Si)	2016/07/28					<100	ug/L		
8340787	Dissolved Silver (Ag)	2016/07/28	103	80 - 120	103	80 - 120	<0.020	ug/L		
8340787	Dissolved Strontium (Sr)	2016/07/28	101	80 - 120	101	80 - 120	<1.0	ug/L		
8340787	Dissolved Thallium (Tl)	2016/07/28	101	80 - 120	101	80 - 120	<0.050	ug/L		
8340787	Dissolved Tin (Sn)	2016/07/28	103	80 - 120	101	80 - 120	<5.0	ug/L		
8340787	Dissolved Titanium (Ti)	2016/07/28	100	80 - 120	100	80 - 120	<5.0	ug/L		
8340787	Dissolved Uranium (U)	2016/07/28	104	80 - 120	104	80 - 120	<0.10	ug/L		

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QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8340787	Dissolved Vanadium (V)	2016/07/28	103	80 - 120	103	80 - 120	<5.0	ug/L		
8340787	Dissolved Zinc (Zn)	2016/07/28	108	80 - 120	104	80 - 120	<5.0	ug/L		
8340787	Dissolved Zirconium (Zr)	2016/07/28					<0.50	ug/L		
8344151	2-Butanone (MEK)	2016/07/28	98	70 - 130	119	70 - 130	<10	ug/L	NC	40
8344151	4-Methyl-2-pentanone (MIBK)	2016/07/28	109	70 - 130	122	70 - 130	<10	ug/L	NC	40
8345960	1,1,1,2-tetrachloroethane	2016/07/30	100	70 - 130	104	70 - 130	<0.50	ug/L	NC	30
8345960	1,1,1-trichloroethane	2016/07/30	105	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
8345960	1,1,2,2-tetrachloroethane	2016/07/30	111	70 - 130	111	70 - 130	<0.50	ug/L	NC	30
8345960	1,1,2Trichloro-1,2,2Trifluoroethane	2016/07/30					<2.0	ug/L	NC	30
8345960	1,1,2-trichloroethane	2016/07/30	100	70 - 130	102	70 - 130	<0.50	ug/L	NC	30
8345960	1,1-dichloroethane	2016/07/30	100	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
8345960	1,1-dichloroethene	2016/07/30	107	70 - 130	109	70 - 130	<0.50	ug/L	NC	30
8345960	1,2-dibromoethane	2016/07/30	103	70 - 130	105	70 - 130	<0.20	ug/L	NC	30
8345960	1,2-dichlorobenzene	2016/07/30	116	70 - 130	121	70 - 130	<0.50	ug/L	NC	30
8345960	1,2-dichloroethane	2016/07/30	111	70 - 130	100	70 - 130	<0.50	ug/L	NC	30
8345960	1,2-dichloropropane	2016/07/30	103	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
8345960	1,3-Butadiene	2016/07/30					<5.0	ug/L	NC	30
8345960	1,3-dichlorobenzene	2016/07/30	122	70 - 130	125	70 - 130	<0.50	ug/L	NC	30
8345960	1,4-dichlorobenzene	2016/07/30	118	70 - 130	121	70 - 130	<0.50	ug/L	NC	30
8345960	Benzene	2016/07/30	97	70 - 130	105	70 - 130	<0.40	ug/L	NC	30
8345960	Bromobenzene	2016/07/30	113	70 - 130	116	70 - 130	<2.0	ug/L	NC	30
8345960	Bromodichloromethane	2016/07/30	101	70 - 130	102	70 - 130	<1.0	ug/L	NC	30
8345960	Bromoform	2016/07/30	112	70 - 130	113	70 - 130	<1.0	ug/L	NC	30
8345960	Bromomethane	2016/07/30	137	60 - 140	132	60 - 140	<1.0	ug/L	NC	30
8345960	Carbon tetrachloride	2016/07/30	98	70 - 130	101	70 - 130	<0.50	ug/L	NC	30
8345960	Chlorobenzene	2016/07/30	98	70 - 130	103	70 - 130	<0.50	ug/L	NC	30
8345960	Chlorodibromomethane	2016/07/30	102	70 - 130	105	70 - 130	<1.0	ug/L	NC	30
8345960	Chloroethane	2016/07/30	111	60 - 140	98	60 - 140	<1.0	ug/L	NC	30
8345960	Chloroform	2016/07/30	105	70 - 130	106	70 - 130	<1.0	ug/L	NC	30
8345960	Chloromethane	2016/07/30	115	60 - 140	115	60 - 140	<1.0	ug/L	NC	30
8345960	cis-1,2-dichloroethene	2016/07/30	107	70 - 130	108	70 - 130	<1.0	ug/L	NC	30

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Maxxam Job #: B661042
Report Date: 2016/08/03

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8345960	cis-1,3-dichloropropene	2016/07/30	122	70 - 130	124	70 - 130	<1.0	ug/L	NC	30
8345960	Dibromomethane	2016/07/30	110	70 - 130	115	70 - 130	<0.90	ug/L	NC	30
8345960	Dichlorodifluoromethane	2016/07/30	138	60 - 140	143 (1)	60 - 140	<2.0	ug/L	NC	30
8345960	Dichloromethane	2016/07/30	117	70 - 130	117	70 - 130	<2.0	ug/L	NC	30
8345960	Ethylbenzene	2016/07/30	103	70 - 130	106	70 - 130	<0.40	ug/L	NC	30
8345960	m & p-Xylene	2016/07/30	105	70 - 130	108	70 - 130	<0.40	ug/L	NC	30
8345960	o-Xylene	2016/07/30	100	70 - 130	103	70 - 130	<0.40	ug/L	NC	30
8345960	Styrene	2016/07/30	110	70 - 130	114	70 - 130	<0.50	ug/L	NC	30
8345960	Tetrachloroethene	2016/07/30	106	70 - 130	112	70 - 130	<0.50	ug/L	NC	30
8345960	Toluene	2016/07/30	98	70 - 130	101	70 - 130	<0.40	ug/L	NC	30
8345960	trans-1,2-dichloroethene	2016/07/30	110	70 - 130	112	70 - 130	<1.0	ug/L	NC	30
8345960	trans-1,3-dichloropropene	2016/07/30	128	70 - 130	130	70 - 130	<1.0	ug/L	NC	30
8345960	Trichloroethene	2016/07/30	103	70 - 130	106	70 - 130	<0.50	ug/L	NC	30
8345960	Trichlorofluoromethane	2016/07/30	122	60 - 140	125	60 - 140	<4.0	ug/L	NC	30
8345960	VH C6-C10	2016/07/30			97	70 - 130	<300	ug/L	NC	30
8345960	Vinyl chloride	2016/07/30	131	60 - 140	131	60 - 140	<0.50	ug/L	NC	30
8345960	Xylenes (Total)	2016/07/30					<0.40	ug/L	NC	30
8349159	Dissolved Mercury (Hg)	2016/08/03	102	80 - 120	89	80 - 120	<0.010	ug/L	NC	20

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.

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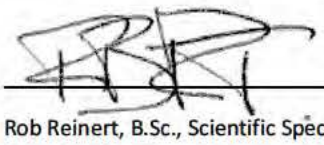
Maxxam Job #: B661042
Report Date: 2016/08/03

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Site Location: PHASE 2 VANCOUVER

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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Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

CHAIN OF CUSTODY RECORD

Page ___ of ___

K 014335

Maxxam Job#: B661042

Invoice To: Required Report? Yes ☑ No ☐

Company Name: Keystone Environmental Ltd.
Contact Name: Francini Martins
Address: #320-4400 Dominion Street
Burnaby, BC PC V5G 4G3
Phone / Fax#: ph (604) 430-0671 Fax (604) 430-0672
E-mail: fmartins@keystoneenviromental.ca

Report To:

Company Name:
Contact Name: SAME
Address:
PO:
Ph: Fax:
Phone / Fax#:
E-mail:

PO #:
Quotation #:
Project #: 13046
Proj. Name: Phase 2
Location: Vancouver
Sampled By: SG/JS

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)
☐ 1 Day ☐ 2 Day ☐ 3 Day
Date Required:

Special Instructions:

Return Cooler ☐ Ship Sample Bottles (please specify) ☐

Limited Volume for dissolved metals
~~Hold LEPH/HEPH bottles~~ SG E.E.

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled
1	MW16-4	B	GW	16/07/25 2:00
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Bottle Order #: 5

Samples are from a Drinking Water Source? NO
Does source supply multiple households? NO

B661042_COC

Laboratory Use Only

*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?
Sean Sea	16/07/25	3:30	Laurel Barthwer	2016/07/25	15:30	☐	20 24 22	N/A ☐ Yes ☐ No

Ice present

White: Maxxam Yellow: Client

Your Project #: 13096
Your C.O.C. #: K005780

Attention:Francini Martins

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

Report Date: 2016/08/08
Report #: R2231867
Version: 1 Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B665108
Received: 2016/08/05, 14:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
EPH in Water when PAH required	1	2016/08/08	2016/08/08	BBY8SOP-00029	BCMOE EPH w 12/00 m
PAH in Water by GC/MS (SIM)	1	2016/08/08	2016/08/08	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	1	N/A	2016/08/08	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	1	N/A	2016/08/08	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

==========

This report has been generated and distributed using a secure automated process.
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Maxxam Job #: B665108
Report Date: 2016/08/08

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096

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

Maxxam ID		PE5468		
Sampling Date		2016/08/05 12:00		
COC Number		K005780		
	UNITS	MW 16-4	RDL	QC Batch
Polycyclic Aromatics				
Low Molecular Weight PAH`s	ug/L	<0.24	0.24	8352355
High Molecular Weight PAH`s	ug/L	<0.050	0.050	8352355
Total PAH	ug/L	<0.24	0.24	8352355
Naphthalene	ug/L	<0.10	0.10	8354859
2-Methylnaphthalene	ug/L	<0.10	0.10	8354859
Quinoline	ug/L	<0.24	0.24	8354859
Acenaphthylene	ug/L	<0.050	0.050	8354859
Acenaphthene	ug/L	<0.050	0.050	8354859
Fluorene	ug/L	<0.050	0.050	8354859
Phenanthrene	ug/L	<0.050	0.050	8354859
Anthracene	ug/L	<0.010	0.010	8354859
Acridine	ug/L	<0.050	0.050	8354859
Fluoranthene	ug/L	<0.020	0.020	8354859
Pyrene	ug/L	<0.020	0.020	8354859
Benzo(a)anthracene	ug/L	<0.010	0.010	8354859
Chrysene	ug/L	<0.050	0.050	8354859
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	8354859
Benzo(k)fluoranthene	ug/L	<0.050	0.050	8354859
Benzo(a)pyrene	ug/L	<0.0090	0.0090	8354859
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	8354859
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	8354859
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	8354859
Calculated Parameters				
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	8352885
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.20	8352885
Ext. Pet. Hydrocarbon				
EPH (C10-C19)	mg/L	<0.20	0.20	8354855
EPH (C19-C32)	mg/L	<0.20	0.20	8354855
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	91		8354855
D10-ANTHRACENE (sur.)	%	110		8354859
D8-ACENAPHTHYLENE (sur.)	%	108		8354859
D8-NAPHTHALENE (sur.)	%	84		8354859
RDL = Reportable Detection Limit				

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Maxxam Job #: B665108
Report Date: 2016/08/08

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096

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

Maxxam ID		PE5468		
Sampling Date		2016/08/05 12:00		
COC Number		K005780		
	UNITS	MW 16-4	RDL	QC Batch
D9-Acridine	%	104		8354859
TERPHENYL-D14 (sur.)	%	98		8354859
RDL = Reportable Detection Limit				

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Maxxam Job #: B665108
Report Date: 2016/08/08

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096

GENERAL COMMENTS

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

Package 1	19.3°C

Results relate only to the items tested.

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Maxxam Job #: B665108
Report Date: 2016/08/08

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8354855	O-TERPHENYL (sur.)	2016/08/08	92	50 - 130	90	50 - 130	93	%		
8354859	D10-ANTHRACENE (sur.)	2016/08/08			100	60 - 130	95	%		
8354859	D8-ACENAPHTHYLENE (sur.)	2016/08/08			96	50 - 130	96	%		
8354859	D8-NAPHTHALENE (sur.)	2016/08/08			100	50 - 130	95	%		
8354859	D9-Acridine	2016/08/08			87	50 - 130	78	%		
8354859	TERPHENYL-D14 (sur.)	2016/08/08			96	60 - 130	94	%		
8354855	EPH (C10-C19)	2016/08/08	91	50 - 130	91	50 - 130	<0.20	mg/L	NC	30
8354855	EPH (C19-C32)	2016/08/08	99	50 - 130	98	50 - 130	<0.20	mg/L	NC	30
8354859	2-Methylnaphthalene	2016/08/08			100	50 - 130	<0.10	ug/L	NC	40
8354859	Acenaphthene	2016/08/08			99	50 - 130	<0.050	ug/L	3.7	40
8354859	Acenaphthylene	2016/08/08			93	50 - 130	<0.050	ug/L	NC	40
8354859	Acridine	2016/08/08			83	50 - 130	<0.050	ug/L	NC	40
8354859	Anthracene	2016/08/08			100	60 - 130	<0.010	ug/L	7.5	40
8354859	Benzo(a)anthracene	2016/08/08			93	60 - 130	<0.010	ug/L	NC	40
8354859	Benzo(a)pyrene	2016/08/08			96	60 - 130	<0.0090	ug/L	NC	40
8354859	Benzo(b&j)fluoranthene	2016/08/08			99	60 - 130	<0.050	ug/L	NC	40
8354859	Benzo(g,h,i)perylene	2016/08/08			94	60 - 130	<0.050	ug/L	NC	40
8354859	Benzo(k)fluoranthene	2016/08/08			101	60 - 130	<0.050	ug/L	NC	40
8354859	Chrysene	2016/08/08			98	60 - 130	<0.050	ug/L	NC	40
8354859	Dibenz(a,h)anthracene	2016/08/08			78	60 - 130	<0.050	ug/L	NC	40
8354859	Fluoranthene	2016/08/08			100	60 - 130	<0.020	ug/L	NC	40
8354859	Fluorene	2016/08/08			92	50 - 130	<0.050	ug/L	1.8	40
8354859	Indeno(1,2,3-cd)pyrene	2016/08/08			87	60 - 130	<0.050	ug/L	NC	40
8354859	Naphthalene	2016/08/08			97	50 - 130	<0.10	ug/L	NC	40
8354859	Phenanthrene	2016/08/08			92	60 - 130	<0.050	ug/L	0.85	40
8354859	Pyrene	2016/08/08			100	60 - 130	<0.020	ug/L	NC	40

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8354859	Quinoline	2016/08/08			109	50 - 130	<0.24	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 (one or both samples < 5x RDL).

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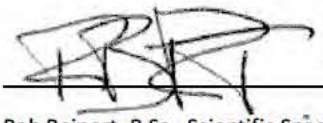
Maxxam Job #: B665108
Report Date: 2016/08/08

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096

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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Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B665108

CHAIN OF CUSTODY RECORD

Page: ___ of ___

K 005780

Invoice To: Require Report? Yes [X] No [ ]

Company Name: Keystone Environmental Ltd.
Contact Name: Francini Martins
Address: #320-4400 Dominion Street, Burnaby, BC PC: V5G 4G3
Phone / Fax#: Ph: (604) 430-0671 Fax: (604) 430-0672
E-mail: Fmartins@keystoneenvironmental.ca

Report To:

Company Name:
Contact Name: Same
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

PO #:
Quotation #:
Project #: 13096
Proj. Name:
Location:
Sampled By:

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [X] RUSH (Please contact the lab)
  - [ ] 1 Day [ ] 2 Day [ ] 3 Day
  - Date Required: EOD August 8th 2016

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH	VOC/VPH	EPH	PAH	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP	Phenols by GCMS	TOG	SWOG	Dissolved Metals	Field Filtered?	Totals Metals Field Acidified?	Nitrate	Chloride	Sulphate	Total Suspended Solids-TSS	pH	Conductivity	Alkalinity	BOD	COD	Fecal Coliform, Total & E.coli	Asbestos	# of containers	HOLD
					MTBE		TEH	LEPH/HEPH									N	N	N	Ammonia		TDS									
																	Y	Y	Y												
																		Field Filtered?	Field Acidified?												
1	MW16-4		GW	08/05/16 NOON				/																						2	
2																															
3																															
4																															
5																															
6																															
7																															
8																															
9																															
10																															
11																															
12																															

B665108_COC

Samples are from a Drinking Water Source? YES [ ] NO [ ]
Does source supply multiple households? YES [ ] NO [ ]

Laboratory Use Only

*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?
Scan Bgm	16/08/05	2:00pm	Laurel Bentham	2016/08/05	14:10	[ ]	20,19,19	NA Yes [ ] No [ ]

*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

COC-1027-Keystone

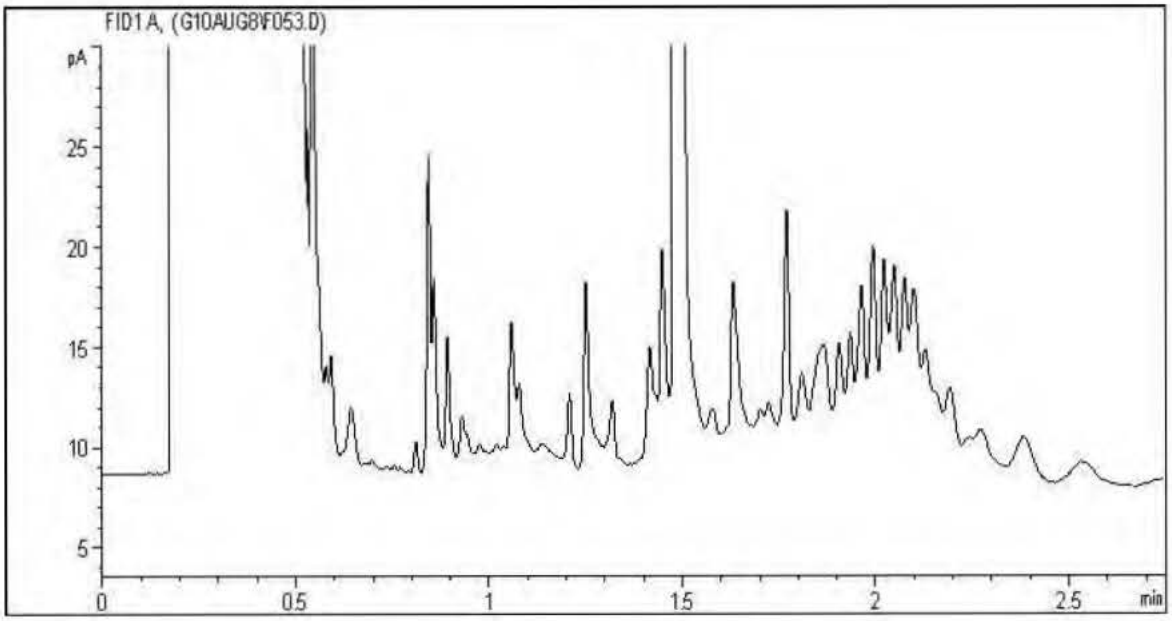
Maxxam International Corporation o/a Maxxam Analytics

Ice present

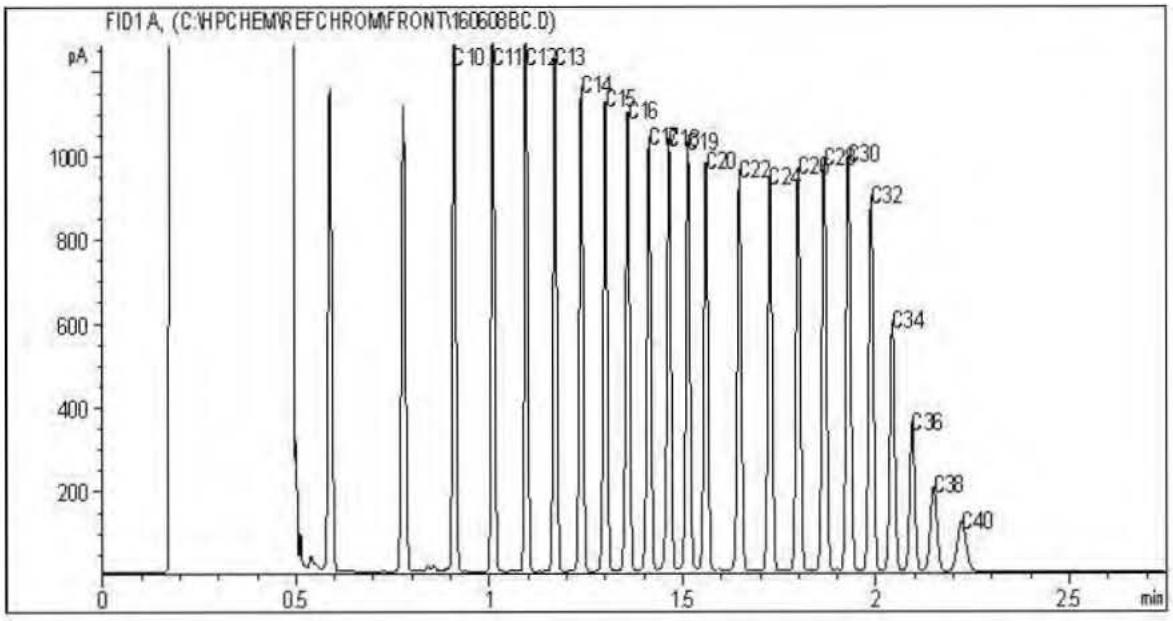
Maxxam Job #: B665108
Report Date: 2016/08/08
Maxxam Sample: PE5468

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096
Client ID: MW 16-4

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.

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: 13096-3
Your C.O.C. #: K009134, K009135

Attention:Francini Martins

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

Report Date: 2016/11/02
Report #: R2293479
Version: 3 Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B681371
Received: 2016/09/19, 19:20

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH VH F1 in Soil - Field Pres. (1)	2	N/A	2016/09/30	BBY8SOP-00010,	EPA 8260c R3 m
BTEX/MTBE LH VH F1 in Soil - Field Pres. (1)	2	N/A	2016/10/05	BBY8SOP-00010,	EPA 8260c R3 m
Moisture	2	2016/09/29	2016/09/30	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	2	2016/10/03	2016/10/04	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Volatile HC-BTEX for Soil	2	N/A	2016/09/30	BBY WI-00033	Auto Calc
Volatile HC-BTEX for Soil	2	N/A	2016/10/05	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.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The extraction date for VOC, BTEX, VH, or F1 samples that are field preserved with methanol equals the date sampled, unless otherwise stated.

Your Project #: 13096-3
Your C.O.C. #: K009134, K009135

Attention:Francini Martins

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

Report Date: 2016/11/02
Report #: R2293479
Version: 3 Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B681371
Received: 2016/09/19, 19:20

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 #: B681371
Report Date: 2016/11/02

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

PHYSICAL TESTING (SOIL)

Maxxam ID		PN9263	PN9266		PN9270	PN9273		
Sampling Date		2016/09/19	2016/09/19		2016/09/19	2016/09/19		
COC Number		K009134	K009134		K009134	K009134		
	UNITS	BH16-5 (0.9)	BH16-5 (2.8)	QC Batch	BH16-6 (0.9)	BH16-6 (2.8)	RDL	QC Batch
Physical Properties								
Moisture	%	8.7	12	8416503	17	12	0.30	8419728
RDL = Reportable Detection Limit								

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B681371
Report Date: 2016/11/02

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

CSR BTEX/VPH IN SOIL - FIELD PRESERVED (SOIL)

Maxxam ID		PN9263	PN9266		PN9270	PN9273		
Sampling Date		2016/09/19	2016/09/19		2016/09/19	2016/09/19		
COC Number		K009134	K009134		K009134	K009134		
	UNITS	BH16-5 (0.9)	BH16-5 (2.8)	QC Batch	BH16-6 (0.9)	BH16-6 (2.8)	RDL	QC Batch
Volatiles								
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	8415431	<10	<10	10	8419941
Benzene	mg/kg	<0.0050	<0.0050	8416171	<0.0050	<0.0050	0.0050	8420167
Toluene	mg/kg	<0.020	<0.020	8416171	<0.020	<0.020	0.020	8420167
Ethylbenzene	mg/kg	<0.010	<0.010	8416171	<0.010	<0.010	0.010	8420167
m & p-Xylene	mg/kg	<0.040	<0.040	8416171	<0.040	<0.040	0.040	8420167
o-Xylene	mg/kg	<0.040	<0.040	8416171	<0.040	<0.040	0.040	8420167
Styrene	mg/kg	<0.030	<0.030	8416171	<0.030	<0.030	0.030	8420167
Xylenes (Total)	mg/kg	<0.040	<0.040	8416171	<0.040	<0.040	0.040	8420167
VH C6-C10	mg/kg	<10	<10	8416171	<10	<10	10	8420167
Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	103	102	8416171	106	103		8420167
4-Bromofluorobenzene (sur.)	%	95	96	8416171	101	100		8420167
D10-ETHYLBENZENE (sur.)	%	86	91	8416171	85	89		8420167
D4-1,2-Dichloroethane (sur.)	%	98	94	8416171	101	100		8420167

RDL = Reportable Detection Limit

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Maxxam Job #: B681371
Report Date: 2016/11/02

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

GENERAL COMMENTS

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

Package 1	9.0°C

Revised Report (Version: 2): BH16-6 (0.9) and BH16-6 (2.8) analyzed for VPH/VH (GP5).
Revised Report (Version: 3): Split Report requested for all BH16-5 and BH16-6 results (GP5).

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B681371
Report Date: 2016/11/02

QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8416171	1,4-Difluorobenzene (sur.)	2016/09/30	102	60 - 140	104	60 - 140	105	%		
8416171	4-Bromofluorobenzene (sur.)	2016/09/30	96	60 - 140	97	60 - 140	96	%		
8416171	D10-ETHYLBENZENE (sur.)	2016/09/30	97	60 - 130	82	60 - 130	89	%		
8416171	D4-1,2-Dichloroethane (sur.)	2016/09/30	97	60 - 140	93	60 - 140	96	%		
8420167	1,4-Difluorobenzene (sur.)	2016/10/05	101	60 - 140	99	60 - 140	105	%		
8420167	4-Bromofluorobenzene (sur.)	2016/10/05	101	60 - 140	102	60 - 140	100	%		
8420167	D10-ETHYLBENZENE (sur.)	2016/10/05	89	60 - 130	79	60 - 130	87	%		
8420167	D4-1,2-Dichloroethane (sur.)	2016/10/05	90	60 - 140	95	60 - 140	102	%		
8416171	Benzene	2016/09/30	99	60 - 140	89	60 - 140	<0.0050	mg/kg	NC	40
8416171	Ethylbenzene	2016/09/30	99	60 - 140	89	60 - 140	<0.010	mg/kg	NC	40
8416171	m & p-Xylene	2016/09/30	96	60 - 140	88	60 - 140	<0.040	mg/kg	NC	40
8416171	o-Xylene	2016/09/30	95	60 - 140	85	60 - 140	<0.040	mg/kg	NC	40
8416171	Styrene	2016/09/30					<0.030	mg/kg	NC	40
8416171	Toluene	2016/09/30	96	60 - 140	86	60 - 140	<0.020	mg/kg	0.56	40
8416171	VH C6-C10	2016/09/30			98	60 - 140	<10	mg/kg	NC	40
8416171	Xylenes (Total)	2016/09/30					<0.040	mg/kg	NC	40
8416503	Moisture	2016/10/01					<0.30	%	2.8	20
8419728	Moisture	2016/10/04					<0.30	%	1.3	20
8420167	Benzene	2016/10/05	87	60 - 140	80	60 - 140	<0.0050	mg/kg	NC	40
8420167	Ethylbenzene	2016/10/05	93	60 - 140	84	60 - 140	<0.010	mg/kg	NC	40
8420167	m & p-Xylene	2016/10/05	93	60 - 140	84	60 - 140	<0.040	mg/kg	NC	40
8420167	o-Xylene	2016/10/05	88	60 - 140	81	60 - 140	<0.040	mg/kg	NC	40
8420167	Styrene	2016/10/05					<0.030	mg/kg	NC	40
8420167	Toluene	2016/10/05	91	60 - 140	84	60 - 140	<0.020	mg/kg	NC	40
8420167	VH C6-C10	2016/10/05			77	60 - 140	<10	mg/kg	NC	40

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Maxxam Job #: B681371
Report Date: 2016/11/02

QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8420167	Xylenes (Total)	2016/10/05					<0.040	mg/kg	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 (one or both samples < 5x RDL).

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Maxxam Job #: B681371
Report Date: 2016/11/02

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

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

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Maxxam

CHAIN OF CUSTODY RECORD

Page: 1 of 1

Maxxam Job#: B681371

K009134

Invoice To: Require Report? Yes ✓ No

Company Name	Keystone Environmental Ltd.
Contact Name	[illegible]
Address	#320-4400 Dominion Street Burnaby, BC PC: V5G 4G3
Phone / Fax#	Ph: (604) 430-0671 Fax: (604) 430-0672
E-mail	

Report To:

Company Name:	
Contact Name:	
Address:	PC:
Phone / Fax#:	Ph: Fax:
E-mail	

PO #	
Quotation #	
Project #	[illegible]
Proj. Name	
Location	
Sampled By	[illegible]

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)
- 1 Day / 2 Day / 3 Day
- Date Required: EOD Sept 30

Special Instructions:

Return Cooler ☐ Ship Sample Bottles (please specify) ☐

ANALYSIS REQUESTED

BTEX/VPH, VOC/VPH, EPH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Prepared for ..., TOG, MOG, Dissolved Metals, Total Metals, Total Metals (Hot Acid), Nitrate, Chloride, Total Suspended Solids, pH, Conductivity, BOD, COD, Coliform Total & E.coli, Asbestos, VH/VPH, # of containers, HOLD

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	VH/VPH	HOLD
1	BH16-5 (1-1)		[illegible]	[illegible]	X	X
2	(1-2)					
3	(2-1)					
4	(2-8)				X	
5	BH16-E				X	
6	BH16-F					
7	BH16-5 (3-1)					
8	BH16-6 (0-1)					
9	(0-2)					
10	(2-1)					
11	(2-2)					
12	(3-6)		↓	↓		↓

Samples are from a Drinking Water Source? YES / NO

Does source supply multiple households? YES / NO

*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?
[illegible]	16/09/19	19:20	[illegible]	2016/09/19	[illegible]	☐	10 / 6 / 11	Yes ✓ No

Laboratory Use Only

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

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K

B681371_COC

CHAIN OF CUSTODY RECORD

Page: 1 of 1

K009134

Invoice To: Require Report? Yes ✓ No

Company Name:	Keystone Environmental Ltd.	Company Name:	
Contact Name:	Francini Blevins	Contact Name:	
Address:	#320-4400 Dominion Street Burnaby, BC PC: V5G 4G3	Address:	PC:
Phone / Fax#:	Ph: (604) 430-0671 Fax: (604) 430-0672	Phone / Fax#:	Ph: Fax:
E-mail		E-mail	

PO #:	
Quotation #:	
Project # :	13096-3
Proj. Name:	
Location:	
Sampled By:	Stewart McBride

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)
- 1 Day 2 Day 3 Day

Date Required:

Special Instructions:

Return Cooler Ship Sample Bottles (please specify)

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled
1	BH16-5 (0.9)		Soil	Sept 19
2	(1.2)			
3	(2.1)			
4	(2.8)			
5	BH16-E			
6	BH16-F			
7	BH16-5 (3.6)			
8	BH16-6 (0.9)			
9	(1.2)			
10	(2.1)			
11	(2.8)			
12	(3.6)			

BTEX/VPH; VOC/VPH: X; EPH; PAH; LEPH/HEPH; OCME-PHC (Fractions 1-4 Plus BTEX); OCME-PHC (Fractions 2-4); OCME BTEX (Fraction 1 Plus BTEX); PCB; Phenols by 4AAP; Phenols by GCMS; MOG; TOG; SWOG; TOG; Dissolved Metals (Field Filtered? N/Y); Total Metals (Field Acidified? N/Y); Ammonia; Nitrate; Chloride; Sulphate; Fluoride; TDS; Total Suspended Solids-TSS; Conductivity; pH; Alkalinity; BOD; COD; Coliform, Total & E.coli; Fecal; Asbestos; # of containers: 3; HOLD: X

Samples are from a Drinking Water Source? NO

Does source supply multiple households? NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
Stewart McBride	16/09/19	19:20	Apatus	2016/09/19	19:20

Time Sensitive:

Laboratory Use Only

Temperature on Receipt (°C): 10 / 6 / 11

Custody Seal Intact on Cooler? Yes NA No

ice-yes

JS

*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

COC-1027-Keystone

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5

B681371_COC

CHAIN OF CUSTODY RECORD

Page: 2 of 2

K009135

Invoice To: Require Report? Yes ☑ No ☐

Company Name:	Keystone Environmental Ltd.	Company Name:	
Contact Name:	Francini Martins	Contact Name:	
Address:	#320-4400 Dominion Street Burnaby, BC PC: V5G 4G3	Address: PC:	
Phone / Fax#:	Ph: (604) 430-0671 Fax: (604) 430-0672	Phone / Fax#: Ph: Fax:	
E-mail	fmartins@keystoneenviro.com	E-mail	smcbride@keystoneenviro.com

PO #:	
Quotation #:	
Project #:	13046-3
Proj. Name:	
Location:	
Sampled By:	Stewart McBride

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)
- ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ Ship Sample Bottles (please specify) ☐

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled
1	MW16-7 (1.2)		Soil	Sept 19
2	(2.8)			
3	(3.3)			
4	(4.9)			
5	(6.7)			
6	(8.2)			
7	(9.4)			
8	(11.3)			
9	(12.8)			
10	(14.3)			
11	MW16-6			
12	MW16-4			

Analysis columns: MTBE; BTEX/VPH; VOC/VPH; TEH; EPH; LEPH/HEPH; PAH; CCME-PHC (Fractions 1-4 Plus BTEX); CCME-PHC (Fractions 2-4); CCME BTEX (Fraction 1 Plus BTEX); PCB; Phenols by 4AAP; Phenols by GCMS; TOG; MOG; SWOG; Dissolved Metals (Field Filtered? Y/N); Total Metals Field Acidified? (Y/N); Field Acidified? (Y/N); Nitrate; Nitrite; Ammonia; Chloride; Fluoride; Sulphate; Total Suspended Solids-TSS; TDS; Conductivity; Alkalinity; pH; BOD; COD; Coliform: Total & E.coli; Fecal; Asbestos; # of containers; HOLD

	NO	NO
Samples are from a Drinking Water Source?	YES	
Does source supply multiple households?		YES

Laboratory Use Only

*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?
Stewart McBride	16/09/19	19:20	Abatin	2016/09/19	19:20	☐	10 / 6 / 11	Yes NA No

ice - Yes

JJ

*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

COC-1027-Keystone

Maxxam International Corporation o/a Maxxam Analytics

Your Project #: 13096-3
Your C.O.C. #: K009136

Attention:Francini Martins

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

Report Date: 2016/11/02
Report #: R2293481
Version: 2 Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B683386
Received: 2016/09/23, 12:40

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	2016/09/28	BBY8SOP-00040	EPA 8260c R3 m
VOCs, VH, F1, LH in Water by HS GC/MS	1	2016/09/28	2016/09/29	BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	1	N/A	2016/09/30	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.

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 #: B683386
Report Date: 2016/11/02

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

VOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		PO9858		
Sampling Date		2016/09/23		
COC Number		K009136		
	UNITS	MW16-9S	RDL	QC Batch
Volatiles				
2-Butanone (MEK)	ug/L	<10	10	8413762
4-Methyl-2-pentanone (MIBK)	ug/L	<10	10	8413762
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	96		8413762
4-Bromofluorobenzene (sur.)	%	98		8413762
D4-1,2-Dichloroethane (sur.)	%	97		8413762
RDL = Reportable Detection Limit				

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Maxxam Job #: B683386
Report Date: 2016/11/02

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		PO9858		
Sampling Date		2016/09/23		
COC Number		K009136		
	UNITS	MW16-9S	RDL	QC Batch
Volatiles				
VPH (VHW6 to 10 - BTEX)	ug/L	<300	300	8408277
Chloromethane	ug/L	<1.0	1.0	8414614
Vinyl chloride	ug/L	<0.50	0.50	8414614
Chloroethane	ug/L	<1.0	1.0	8414614
Trichlorofluoromethane	ug/L	<4.0	4.0	8414614
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	2.0	8414614
Dichlorodifluoromethane	ug/L	<2.0	2.0	8414614
1,1-dichloroethene	ug/L	<0.50	0.50	8414614
Dichloromethane	ug/L	<2.0	2.0	8414614
trans-1,2-dichloroethene	ug/L	<1.0	1.0	8414614
1,1-dichloroethane	ug/L	<0.50	0.50	8414614
cis-1,2-dichloroethene	ug/L	2.4	1.0	8414614
Chloroform	ug/L	20	1.0	8414614
1,1,1-trichloroethane	ug/L	<0.50	0.50	8414614
1,2-dichloroethane	ug/L	<0.50	0.50	8414614
Carbon tetrachloride	ug/L	<0.50	0.50	8414614
Benzene	ug/L	<0.40	0.40	8414614
1,2-dichloropropane	ug/L	<0.50	0.50	8414614
cis-1,3-dichloropropene	ug/L	<1.0	1.0	8414614
trans-1,3-dichloropropene	ug/L	<1.0	1.0	8414614
Bromomethane	ug/L	<1.0	1.0	8414614
1,1,2-trichloroethane	ug/L	<0.50	0.50	8414614
Trichloroethene	ug/L	<0.50	0.50	8414614
Chlorodibromomethane	ug/L	<1.0	1.0	8414614
1,2-dibromoethane	ug/L	<0.20	0.20	8414614
1,3-Butadiene	ug/L	<5.0	5.0	8414614
Tetrachloroethene	ug/L	19	0.50	8414614
Bromodichloromethane	ug/L	<1.0	1.0	8414614
Toluene	ug/L	0.44	0.40	8414614
Ethylbenzene	ug/L	<0.40	0.40	8414614
m & p-Xylene	ug/L	<0.40	0.40	8414614
Bromoform	ug/L	<1.0	1.0	8414614
Styrene	ug/L	<0.50	0.50	8414614
RDL = Reportable Detection Limit				

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KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		PO9858		
Sampling Date		2016/09/23		
COC Number		K009136		
	UNITS	MW16-9S	RDL	QC Batch
o-Xylene	ug/L	<0.40	0.40	8414614
Xylenes (Total)	ug/L	<0.40	0.40	8414614
1,1,1,2-tetrachloroethane	ug/L	<0.50	0.50	8414614
1,1,2,2-tetrachloroethane	ug/L	<0.50	0.50	8414614
1,2-dichlorobenzene	ug/L	<0.50	0.50	8414614
1,3-dichlorobenzene	ug/L	<0.50	0.50	8414614
1,4-dichlorobenzene	ug/L	<0.50	0.50	8414614
Chlorobenzene	ug/L	<0.50	0.50	8414614
Dibromomethane	ug/L	<0.90	0.90	8414614
Bromobenzene	ug/L	<2.0	2.0	8414614
VH C6-C10	ug/L	<300	300	8414614
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	101		8414614
4-Bromofluorobenzene (sur.)	%	108		8414614
D4-1,2-Dichloroethane (sur.)	%	99		8414614
RDL = Reportable Detection Limit				

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KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

GENERAL COMMENTS

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

Package 1	11.7°C

Revised Report (Version: 2): Split report requested for MW16-9 results (GP5).

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8413762	1,4-Difluorobenzene (sur.)	2016/09/28	96	70 - 130	97	70 - 130	101	%		
8413762	4-Bromofluorobenzene (sur.)	2016/09/28	102	70 - 130	94	70 - 130	90	%		
8413762	D4-1,2-Dichloroethane (sur.)	2016/09/28	98	70 - 130	96	70 - 130	102	%		
8414614	1,4-Difluorobenzene (sur.)	2016/09/29	97	70 - 130	98	70 - 130	102	%		
8414614	4-Bromofluorobenzene (sur.)	2016/09/29	112	70 - 130	117	70 - 130	107	%		
8414614	D4-1,2-Dichloroethane (sur.)	2016/09/29	92	70 - 130	92	70 - 130	86	%		
8413762	2-Butanone (MEK)	2016/09/30	117	70 - 130	121	70 - 130	<10	ug/L	NC	40
8413762	4-Methyl-2-pentanone (MIBK)	2016/09/30	106	70 - 130	110	70 - 130	<10	ug/L	NC	40
8414614	1,1,1,2-tetrachloroethane	2016/09/29	87	70 - 130	92	70 - 130	<0.50	ug/L		
8414614	1,1,1-trichloroethane	2016/09/29	93	70 - 130	92	70 - 130	<0.50	ug/L		
8414614	1,1,2,2-tetrachloroethane	2016/09/29	98	70 - 130	98	70 - 130	<0.50	ug/L		
8414614	1,1,2Trichloro-1,2,2Trifluoroethane	2016/09/29					<2.0	ug/L		
8414614	1,1,2-trichloroethane	2016/09/29	89	70 - 130	92	70 - 130	<0.50	ug/L		
8414614	1,1-dichloroethane	2016/09/29	89	70 - 130	91	70 - 130	<0.50	ug/L		
8414614	1,1-dichloroethene	2016/09/29	91	70 - 130	94	70 - 130	<0.50	ug/L		
8414614	1,2-dibromoethane	2016/09/29	89	70 - 130	93	70 - 130	<0.20	ug/L	NC	30
8414614	1,2-dichlorobenzene	2016/09/29	114	70 - 130	112	70 - 130	<0.50	ug/L		
8414614	1,2-dichloroethane	2016/09/29	86	70 - 130	86	70 - 130	<0.50	ug/L	NC	30
8414614	1,2-dichloropropane	2016/09/29	93	70 - 130	97	70 - 130	<0.50	ug/L		
8414614	1,3-Butadiene	2016/09/29					<5.0	ug/L		
8414614	1,3-dichlorobenzene	2016/09/29	102	70 - 130	103	70 - 130	<0.50	ug/L		
8414614	1,4-dichlorobenzene	2016/09/29	106	70 - 130	103	70 - 130	<0.50	ug/L		
8414614	Benzene	2016/09/29	95	70 - 130	90	70 - 130	<0.40	ug/L		
8414614	Bromobenzene	2016/09/29	101	70 - 130	103	70 - 130	<2.0	ug/L		
8414614	Bromodichloromethane	2016/09/29	83	70 - 130	87	70 - 130	<1.0	ug/L		
8414614	Bromoform	2016/09/29	87	70 - 130	89	70 - 130	<1.0	ug/L		
8414614	Bromomethane	2016/09/29	102	60 - 140	108	60 - 140	<1.0	ug/L		
8414614	Carbon tetrachloride	2016/09/29	84	70 - 130	85	70 - 130	<0.50	ug/L		
8414614	Chlorobenzene	2016/09/29	88	70 - 130	94	70 - 130	<0.50	ug/L		
8414614	Chlorodibromomethane	2016/09/29	86	70 - 130	90	70 - 130	<1.0	ug/L		
8414614	Chloroethane	2016/09/29	111	60 - 140	103	60 - 140	<1.0	ug/L		

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QUALITY ASSURANCE REPORT(CONT'D)

KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8414614	Chloroform	2016/09/29	87	70 - 130	87	70 - 130	<1.0	ug/L		
8414614	Chloromethane	2016/09/29	92	60 - 140	98	60 - 140	<1.0	ug/L		
8414614	cis-1,2-dichloroethene	2016/09/29	NC	70 - 130	92	70 - 130	<1.0	ug/L		
8414614	cis-1,3-dichloropropene	2016/09/29	90	70 - 130	94	70 - 130	<1.0	ug/L		
8414614	Dibromomethane	2016/09/29	91	70 - 130	93	70 - 130	<0.90	ug/L		
8414614	Dichlorodifluoromethane	2016/09/29	86	60 - 140	93	60 - 140	<2.0	ug/L		
8414614	Dichloromethane	2016/09/29	99	70 - 130	103	70 - 130	<2.0	ug/L		
8414614	Ethylbenzene	2016/09/29	94	70 - 130	99	70 - 130	<0.40	ug/L		
8414614	m & p-Xylene	2016/09/29	87	70 - 130	92	70 - 130	<0.40	ug/L		
8414614	o-Xylene	2016/09/29	85	70 - 130	90	70 - 130	<0.40	ug/L		
8414614	Styrene	2016/09/29	82	70 - 130	86	70 - 130	<0.50	ug/L		
8414614	Tetrachloroethene	2016/09/29	86	70 - 130	89	70 - 130	<0.50	ug/L		
8414614	Toluene	2016/09/29	87	70 - 130	90	70 - 130	<0.40	ug/L		
8414614	trans-1,2-dichloroethene	2016/09/29	89	70 - 130	89	70 - 130	<1.0	ug/L		
8414614	trans-1,3-dichloropropene	2016/09/29	76	70 - 130	110	70 - 130	<1.0	ug/L		
8414614	Trichloroethene	2016/09/29	85	70 - 130	86	70 - 130	<0.50	ug/L		
8414614	Trichlorofluoromethane	2016/09/29	108	60 - 140	111	60 - 140	<4.0	ug/L		
8414614	VH C6-C10	2016/09/29			94	70 - 130	<300	ug/L		
8414614	Vinyl chloride	2016/09/29	91	60 - 140	95	60 - 140	<0.50	ug/L		
8414614	Xylenes (Total)	2016/09/29					<0.40	ug/L		

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 (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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KEYSTONE ENVIRONMENTAL LTD
Client Project #: 13096-3
Sampler Initials: SM

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.

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CHAIN OF CUSTODY RECORD

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K009136

Maxxam Job#: B683386

Invoice To: Require Report? Yes ☑ No ☐

Company Name: Keystone Environmental Ltd.
Contact Name: Francini Martins
Address: #320-4400 Dominion Street
Burnaby, BC PC: V5G 4G3
Phone / Fax#: Ph:(604) 430-0671 Fax:(604) 430-0672
E-mail: fmartins@keystoneenviro.com

Report To:

Company Name:
Contact Name:
Address:
PC:
Ph: Fax:
Phone / Fax#:
E-mail: jmcbride@keystoneenviro.com

PO #:
Quotation #:
Project #: 13096-3
Proj. Name:
Location:
Sampled By: Stewart McBride

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)
☐ 1 Day ☐ 2 Day ☐ 3 Day
Date Required:

Special Instructions:
Return Cooler ☐ Ship Sample Bottles (please specify) ☐

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH	VOC/VPH	EPH	PAH	CCME PHC (Fraction 1-4 Plus BTEX)	CCME PHC (Fraction 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols (4AAP)	TOG	Dissolved Metals	Total Metals	Anions	Chloride	Total Suspended Solids (TSS)	pH	Conductivity	BOD	COD	Coliform, Total & E.coli	Asbestos	# of containers	HOLD	Samples are from a Drinking Water Source?	Does source supply multiple households?
1	MW16-S		water	Sept 23		X																				3		NO	NO
2	MW16-B		↓	↓		X																				3		YES	YES
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Present on Cooler?
Stewart McBride	16/09/23	12:40	WAHOVE MM	16/09/23	12:40	☐	11.1, 12.12	Yes ☐ No ☐

ICE-YES

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THIS CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

White: Maxxam Yellow: Client

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