



File No.: 04-1000-20-2018-588

January 24, 2019

s.22(1)

A large rectangular area of the document has been redacted with a grey background.

Dear s.22(1)

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

I am responding to your request of November 6, 2019 for:

A copy of the report commissioned by Petro Canada, 2808 West Broadway (for Suncor Energy Products Partnership, through SNC-Lavalin) in regards to soil contamination. The tests were done in front of the Petro Station, along and on MacDonald Street in front of building and sidewalk at 2520 MacDonald Street, between January 1, 2017 and October 23, 2018.

All responsive records are attached.

Under section 52 of the Act, and within 30 business days of receipt of this letter, you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your FOI request by writing to: Office of the Information & Privacy Commissioner, info@oipc.bc.ca or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number (#04-1000-20-2018-588); 2) a copy of this letter; 3) a copy of your original request; and 4) detailed reasons why you are seeking the review.

Yours truly,



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

Barbara.vanfraassen@vancouver.ca
453 W. 12th Avenue Vancouver BC V5Y 1V4

*If you have any questions, please email us at foi@vancouver.ca and we will respond to you as soon as possible. Or you can call the FOI Case Manager at 604.871.6584.

Encl.

:ag



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SNC-Lavalin Inc.
8648 Commerce Court
Burnaby, British Columbia, Canada V5A 4N6
604.515.5151 604.515.5150

November 5, 2018

Project: 131167

City of Vancouver
#300 - 515 West 10th Avenue
Vancouver, BC V5Z 4A8

ATTENTION: Ms. Heidi Horlacher, P.Geo.
Contaminated Sites Specialist

**REFERENCE: Environmental Reports, City of Vancouver Lands Adjacent 2808 West Broadway,
Vancouver, BC ("Lands")**

You have requested copies of the reports listed on the attached Schedule A (collectively called the "Reports"). The Reports are provided to you by SNC-Lavalin Inc. (SNC-Lavalin) on behalf of Suncor Energy Products Partnership ("SEPP") on the following terms and conditions and are subject to the conditions set forth in the Reports:

1. The reports are and will remain the exclusive property of SEPP.
2. The reports were prepared for SEPP by the consultant, an independent environmental consulting firm, and contain valuable commercial, financial, scientific and technical information belonging to SEPP. The reports may not be released or disclosed, in whole or in part, to anyone without the prior written consent of SEPP and the consultant. If such consent is given, the reports are expressly provided in confidence to the recipient of such consent for the limited purpose as specified in the consent and shall not be otherwise used or disclosed without the prior written consent of SEPP and the consultant as its dissemination may harm or interfere significantly with the competitive and negotiating position of, and result in undue financial loss to SEPP and the consultant or either of them. Consequently, its disclosure to third parties for any other purpose should be refused pursuant to section 21 of the *Freedom of Information and Protection of Privacy Act (B.C.)*. In addition, the reports are exempt from mandatory disclosure under section 17(3) of the *Freedom of Information and Protection of Privacy act (B.C.)* by virtue of the environmental testing referred to therein having been done for SEPP on a fee-for-services basis.
3. Neither SEPP nor the consultant warrants or represents, in any way, that the reports are accurate, complete or capable of being relied upon by anyone for any purpose whatsoever, unless such purpose is disclosed to SEPP and SEPP and the consultant have provided their prior written consent to such reliance. Any other such reliance on the reports shall be entirely without risk or liability to either or both of SEPP and the consultant. Neither SEPP nor the consultant shall be liable for any claim for damages or any cause of action whether in negligence or otherwise arising from the unauthorized use of the reports.
4. As the reports were not prepared by SEPP, SEPP does not make any warranty or representation concerning: (a) the contents of the reports; (b) the scope, nature or methodology of the investigations upon which the reports are based; (c) the qualifications of the person or entity conducting the investigation or preparing the reports; or (d) the fitness of the reports for any





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City of Vancouver – Page 2 of 2
November 5, 2018

Project 131167

purpose. Furthermore, since the reports were not prepared by SEPP, SEPP is not, and will not be, responsible or liable for any claims, damages, losses or expenses arising from or related to the reports or the information contained therein, whether directly or indirectly.

5. SEPP is not bound by any assertion, conclusion, statement of fact or determination contained in the reports.
6. SEPP specifically objects to the inclusion of the whole and each and every part of the reports and any description thereof in the site registry or in any environmental impact statement, save and except only to the extent specifically and expressly required by law.
7. Nothing in this letter or the Reports is or may be deemed to be an admission of liability by SEPP for any environmental condition related to the Lands or any claim that you may make against SEPP.

Your acceptance of the Reports shall be deemed to be an acceptance of the terms and conditions set forth or referred to in this letter.



Jason Tataren, P.Geo.
Project Manager

*Environment & Geoscience
Infrastructure*

JNT/jh
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enc.

1: Schedule A
> cc: Curtis Bogren, Suncor Energy Products Partnership, Port Moody, BC





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Schedule A

The “Reports”

No. Copies	Item	Rev.	Dated
1	Notice to Reader	N/A	November 5, 2018
1	City of Vancouver Test Hole Investigation Report	N/A	November 5, 2018
1	Tables <ul style="list-style-type: none">› 1: Summary of Analytical Results for Hydrocarbons in Soil - Municipal Lands (2007 - 2017)› 2: Summary of Analytical Results for PAH in Soil - Municipal Lands (2007 - 2017)› 3: Summary of Analytical Results for Total Metals in Soil - Municipal Lands (2007 - 2017)› 4: Summary of Analytical Results for Hydrocarbons in Groundwater - Municipal Lands (2007 - 2017)› 5: Summary of Analytical Results for PAH in Groundwater - Municipal Lands (2007 - 2017)› 6: Summary of Analytical Results for Dissolved Metals in Groundwater - Municipal Lands (2007 - 2017)› 7: Summary of Analytical Results for Hydrocarbons, PAH and VOC in Soil Vapour - Municipal Lands› 8: Summary of Estimated Outdoor Air Concentration for Hydrocarbons, VOCs and PAHs in Soil Vapour - Municipal Lands	N/A	December 15, 2017
1	Drawings: <ul style="list-style-type: none">› 131167-C02 – Site Plan – City of Vancouver› 131167-C03 – Summary of Soil Analytical Results – City of Vancouver› 131167-C04 – Summary of Groundwater Analytical Results – City of Vancouver› 131167-C05 – Summary of Estimated Outdoor Air Results – City of Vancouver	0	December 18, 2017
1	Borehole Logs: <ul style="list-style-type: none">› 17-01› 17-03	N/A	December 15, 2017
1	Monitoring Reports <ul style="list-style-type: none">› October 27, 2017› December 7, 2017	N/A	December 18, 2017
1	Maxxam Analytics Laboratory Reports: <ul style="list-style-type: none">› B794040› B7A9221› B798870	1 2 2	October 30, 2017 December 18, 2017 January 30, 2018



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Notice to Reader

This report has been prepared and the work referred to in this report have been undertaken by SNC-Lavalin Inc. (SNC-Lavalin) for the exclusive use of Suncor Energy Products Partnership (SEPP), who has been party to the development of the scope of work and understands its limitations. The methodology, findings, conclusions and recommendations in this report are based solely upon the scope of work and subject to the time and budgetary considerations described in the proposal and/or contract pursuant to which this report was issued. Any use, reliance on, or decision made by a third party based on this report is the sole responsibility of such third party. SNC-Lavalin accepts no liability or responsibility for any damages that may be suffered or incurred by any third party as a result of the use of, reliance on, or any decision made based on this report.

The findings, conclusions and recommendations in this report (i) have been developed in a manner consistent with the level of skill normally exercised by professionals currently practicing under similar conditions in the area, and (ii) reflect SNC-Lavalin's best judgment based on information available at the time of preparation of this report. No other warranties, either expressed or implied, are made as to the professional services provided under the terms of our original contract and included in this report. The findings and conclusions contained in this report are valid only as of the date of this report and may be based, in part, upon information provided by others. If any of the information is inaccurate, new information is discovered, site conditions change or standards are amended, modifications to this report may be necessary. The results of this assessment should in no way be construed as a warranty that the subject site is free from any and all environmental impact.

Any soil and rock descriptions in this report and associated logs have been made with the intent of providing general information on the subsurface conditions of the site. This information should not be used as geotechnical data for any purpose unless specifically addressed in the text of this report. Groundwater conditions described in this report refer only to those observed at the location and time of observation noted in the report.

This report must be read as a whole, as sections taken out of context may be misleading. If discrepancies occur between the preliminary (draft) and final version of this report, it is the final version that takes precedence. Nothing in this report is intended to constitute or provide a legal opinion.

The contents of this report are confidential and proprietary. Other than by SEPP, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of SEPP and SNC-Lavalin.



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 applicable 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	Suncor Energy Inc.
Company (if applicable)	n/a
Contact (if different from Owner)	Curtis Bogren
Address	PO Box 100, 1155 Glenayre Dr, Port Moody, BC
Phone Number	604.933.2664
Email Address	cbogren@suncor.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.

In October 2017 two boreholes/monitoring wells (17-01 and 17-03) were installed on CoV lands adjacent 2808 W Broadway. Groundwater monitoring and sampling of wells 17-01 and 17-03 was completed in November and December 2017. Concentrations of hydrocarbons greater than the applicable CSR standards were identified at 17-01. Data from previous investigations (2007-2017) is presented on the attached tables and drawings. Applicable CSR standards are provided for reference purposes only.

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)
17-01	4.86	1.5	4.23 / 3.58	n/a	100 % LEL
17-03	5.07	1.5	4.38	n/a	35 ppm

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)
17-01	5.2	no
17-03	5.2	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)
n/a	n/a	n/a

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 Policies¹.

Media	Location I.D.	Sample I.D.	Sample Depth (m bgs)	Substance	Maximum Concentration (specify units)
groundwater	17-01	MW17-01-171208	3.58	benzene	510 ug/L
groundwater	17-01	MW17-01-171208	3.58	ethylbenzene	2000 ug/L
groundwater	17-01	MW17-01-171106	4.23	toluene	200 ug/L
groundwater	17-01	MW17-01-171106	4.23	VPHw	4400 ug/L
groundwater	17-01	MW17-01-171208	3.58	LEPHw	720 ug/L
groundwater	17-01	MW17-01-171208	3.58	MTBE	470 ug/L
groundwater	17-01	MW17-01-171208	3.58	naphthalene	130 ug/L
groundwater	17-01	MW17-01-171208	3.58	1-Methylnaphthalene	13 ug/L
groundwater	17-01	MW17-01-171208	3.58	2-Methylnaphthalene	20 ug/L

1. **Soil:** The BC CSR soil standards for residential land use (RL) apply to soil at depths between 0 and 3m bgs and the BC CSR soil standards for commercial land use (CL) apply to soil at depths > 3 m bgs in City streets and laneways.
2. **Groundwater:** The BC CSR water use standards that apply to the site under investigation are also applicable for the evaluation of groundwater in City streets and laneways.
3. **Vapour:** The BC CSR Schedule 11 Generic Numerical Vapour Standards for CL use apply to vapour in City streets and laneways.

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.):	Annual
Estimated Monitoring Well Decommissioning Date:	To be determined

7. Conclusion Statement: Applicable CSR standards are provided for reference purposes only.

"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 between 0 and 3m bgs were:
 - less than the CSR RL soil standards
 - greater than the CSR RL soil standards
- Substance concentrations measured in soil samples collected greater than 3 m bgs were:
 - less than the CSR CL soil standards
 - greater than the CSR CL soil standards
- Substance concentrations measured in groundwater samples collected were:
 - less than the CSR AW / CSR DW standards
 - greater than the CSR AW / CSR DW standards
- Substance concentrations measured in vapour samples collected were:
 - less than the CSR Schedule 11 CL standards
 - greater than the CSR Schedule 11 CL standards

Jason Tataren

Name

jason.tataren@snc
avalin.com

Signature

Digitally signed by
jason.tataren@sncalavalin.com
DN: cn=jason.tataren@sncalavalin.com
Date: 2018.11.05 10:29:57 -08'00'

SNC-Lavalin Inc.

Company Name

November 5, 2018

Date

TABLE 1: Summary of Analytical Results for Hydrocarbons in Soil - Municipal Lands (2007 - 2017)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Depth Interval (m)	Field Screen ^a (ppm)	Monocyclic Aromatic Hydrocarbons				Gross Parameters			MTBE µg/g	
					Benzene µg/g	Ethylbenze µg/g	Toluene µg/g	Xylenes µg/g	VPH (C6-C10) µg/g	EPH ^d (C10-C19) µg/g	EPH ^d (C19-C32) µg/g		
Excavation 2007	TRE07-1-01-070206	2007 02 06	1.5	50	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-03-070206	2007 02 06	3.5	2,750	< 0.005	0.04	< 0.05	< 0.1	13	< 100 ^c	< 100 ^c	< 0.1	
	TRE07-1-04-070206	2007 02 06	4.0	75	< 0.005	0.08	< 0.05	< 0.1	31	< 100	< 100	< 0.1	
	TRE07-1-07-070206	2007 02 06	2.0	550	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-08-070206	2007 02 06	3.5	2,750	< 0.005	0.22	< 0.05	0.4	21	< 100	< 100	< 0.1	
	TRE07-1-10-070206	2007 02 06	2.5	50	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-11-070206	2007 02 06	3.5	25	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-14-070206	2007 02 06	3.5	200	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-15-070206	2007 02 06	1.2	125	0.005	0.07	< 0.05	0.1	< 10	241	< 100	< 0.1	
	TRE07-1-16-070206	2007 02 06	2.0	50	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-21-070207	2007 02 07	3.0	0	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-27-070207	Duplicate of TRE07-21-070207			< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	QA/QC RPD %					*	*	*	*	*	*	*	*
	TRE07-1-22-070207	2007 02 07	3.8	1,650	< 0.005	0.17	< 0.05	1.1	41	111	< 100	< 0.1	
	TRE07-1-23-070207	2007 02 07	2.0	10	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100 ^c	< 100 ^c	< 0.1	
	TRE07-1-26-070207	2007 02 07	4.0	3,300	0.071	2.0	< 0.05	7	44	< 100 ^c	< 100 ^c	< 0.1	
	TRE07-1-28-070207	Duplicate of TRE07-1-26-070207			0.061	2.1	< 0.05	14	270	163	< 100	< 0.1	
	QA/QC RPD %					15	5	*	67	*	*	*	*
	TRE07-1-30-070209	2007 02 09	3.0	50	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-32-070209	2007 02 09	0.8	25	< 0.005	< 0.01	0.07	< 0.1	< 10	< 100	423	< 0.1	
	TRE07-1-33-070209	2007 02 09	4.0	6,600	< 0.005	1.3	< 0.05	6.8	87	159	< 100	< 0.1	
	TRE07-1-35-070210	2007 02 10	2.3	75	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-37-070210	2007 02 10	3.5	70	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-38-070210	2007 02 10	1.0	70	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	144	< 0.1	
	TRE07-1-40-070210	2007 02 10	3.0	60	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-44-070210	2007 02 10	3.0	55	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-46-070210	2007 02 10	2.0	65	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-48-070210	2007 02 10	3.5	75	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-50-070210	2007 02 10	2.0	30	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-53-070210	2007 02 10	1.3	55	0.007	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-54-070210	2007 02 10	1.4	70	< 0.005	0.02	0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-55-070210	2007 02 10	3.1	30	0.006	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	TRE07-1-56-070210	Duplicate of TRE07-1-55-070210			< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	QA/QC RPD %					*	*	*	*	*	*	*	*
Stockpile 1	SP07-1-01-070207	2007 02 07	-	50	< 0.005	0.01	< 0.05	< 0.1	11	< 100	< 100	< 0.1	
Stockpile 2	SP07-2-01-070207	2007 02 07	-	3,300	< 0.005	0.18	< 0.05	0.4	52	< 100 ^c	< 100 ^c	< 0.1	
07-2	BH07-2-10-070313	2007 03 13	4.6 - 4.7	200	0.006	0.15	< 0.05	0.4	< 10	< 100	< 100	< 0.1	
	BH07-2-11-070313	Duplicate of BH07-2-10-070313			0.057	0.75	0.15	2.8	13	< 100	< 100	< 0.1	
	QA/QC RPD %					*	133	*	150	*	*	*	*
	BH07-2-5-070313	2007 03 13	2.4 - 2.5	50	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	BH07-2-8-070313	2007 03 13	3.4 - 3.5	130	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
07-5	BH07-5-13-070313	2007 03 13	6.7 - 6.9	2,860	0.11	0.31	0.33	2	< 10	< 100	< 100	< 0.1	
	BH07-5-4-070312	2007 03 12	1.7 - 1.8	100	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
	BH07-5-7-070313	2007 03 13	3.0 - 3.1	2,640	< 0.005	0.09	< 0.05	0.7	18	< 100 ^c	< 100 ^c	< 0.1	
	BH07-5-9-070313	2007 03 13	4.3 - 4.4	3,520	0.006	0.81	0.14	6.5	30	< 100	< 100	< 0.1	
07-6	BH07-6-6-070314	2007 03 14	2.7 - 2.9	10	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
07-7	BH07-7-3-070315	2007 03 15	1.2 - 1.4	15	< 0.005	< 0.01	< 0.05	< 0.1	< 10	< 100	< 100	< 0.1	
08-7	BH08-7-11-080512	2008 05 12	4.7 - 4.9	120	0.081	0							

TABLE 2: Summary of Analytical Results for PAH in Soil - Municipal Lands (2007 - 2017)

Sample Location	Excavation 2007	Stockpile 2	07-5	BC Standards	
				CSR High Density Residential Land Use (RLHD) ^b (0-3m)	CSR Commercial Land Use (CL) ^c (>3m)
Sample Date (yyyy mm dd)	TRE07-1-03-070206	TRE07-1-23-070207	TRE07-1-26-070207	SP07-2-01-070207	BH07-5-7-070313
Depth Interval (m)	2007 02 06	2007 02 07	2007 02 07	2007 02 07	2007 03 13 3.0 - 3.1
Field Screen (ppm) ^a	3.5	2.0	4.0	-	2,640
Parameter	Units	Analytical Results			
Polycyclic Aromatic Hydrocarbons					
Naphthalene	µg/g	0.13	< 0.01	0.49	< 0.01 < 0.03
2-Methylnaphthalene	µg/g	< 0.01	< 0.01	< 0.01	0.09 100
Acenaphthylene	µg/g	< 0.01	< 0.01	< 0.01	n/a
Acenaphthene	µg/g	< 0.01	< 0.01	< 0.01	2,000 15,000
Fluorene	µg/g	< 0.01	< 0.01	< 0.01	1,000 9,500
Phenanthrene	µg/g	< 0.01	< 0.01	< 0.01	50 50
Anthracene	µg/g	< 0.01	< 0.01	< 0.01	30 30
Fluoranthene	µg/g	< 0.01	< 0.01	< 0.01	200 200
Pyrene	µg/g	< 0.01	< 0.01	< 0.01	100 100
Benzo(a)anthracene	µg/g	< 0.01	< 0.01	< 0.01	10 10
Chrysene	µg/g	< 0.01	< 0.01	< 0.01	400 4,500
Benzo(b+j)fluoranthene	µg/g	< 0.01	< 0.01	< 0.01	10 10
Benzo(k)fluoranthene	µg/g	< 0.01	< 0.01	< 0.01	10 10
Benzo(a)pyrene	µg/g	< 0.02	< 0.02	< 0.02	10 50
Indeno(1,2,3-cd)pyrene	µg/g	< 0.02	< 0.02	< 0.02	10 10
Dibenz(a,h)anthracene	µg/g	< 0.02	< 0.02	< 0.02	10 10
Benzo(g,h,i)perylene	µg/g	0.3	< 0.01	0.27	< 0.01 < 0.02

Associated Maxxam file(s): F24771, F24772, F72134.

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

n/a Denotes no applicable standard/guideline.

BOLD Concentration greater than CSR High Density Residential Land Use (RLHD) standard (0 - 3m)

SHADOW Concentration greater than CSR Commercial Land Use (CL) standard (> 3m)

^a Field screening results are measured based on a 'dry headspace' method using a combustible gas meter calibrated to a hexane standard.

^b The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by marine and/or estuarine aquatic life (whichever is most stringent). Samples with depths below 3.0 m are compared to Commercial Land Use (CL) standards

^c The site-specific factors used for determining the matrix standards for this site include: toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater or marine and/or estuarine aquatic life (whichever is most stringent).

TABLE 3: Summary of Analytical Results for Total Metals in Soil - Municipal Lands (2007 - 2017)

Sample Location		Excavation 2007			Stockpile 2	BC Standard	
Sample ID	TRE07-1-08-070206	TRE07-1-16-070206	TRE07-1-26-070207	SP07-2-01-070207	CSR High Density Residential Land Use (RLHD) ^a (0-3m)	CSR Commercial Land Use (CL) ^b (>3m)	
Sample Date (yyyy mm dd)	2007 02 06	2007 02 06	2007 02 07	2007 02 07	-	-	
Parameter	Units	Analytical Results					
Physical Parameters							
pH	pH	7.75	7.58	6.44	7.27	n/a	n/a
Total Metals							
Barium	µg/g	50.8	119	140	37	350	350
Copper	µg/g	19.2	46.5	20.5	15.6	150 (pH 6.0-<6.5)	150 (pH 6.0-<6.5)
Lead	µg/g	3.6	7.3	12.7	4.5	120 max	150 max
Zinc	µg/g	40	68	82	45	150 (pH <8.0)	150 (pH <8.0)

Associated Maxxam files: F24770, F24771, F24772.

All terms defined within the body of SNC-Lavalin's report.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

BOLD Concentration greater than CSR High Density Residential Land Use (RLHD) standard (0 - 3m)

SHADOW Concentration greater than CSR Commercial Land Use (CL) standard (> 3m)

^a The site-specific factors used for determining the matrix standards for this site include: intake of contaminated soil, groundwater used for drinking water, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by marine and/or estuarine aquatic life (whichever is most stringent). Samples with depths below 3.0 m are compared to Commercial Land Use (CL) standards

^b The site-specific factors used for determining the matrix standards for this site include: toxicity to soil invertebrates and plants, and groundwater flow to surface water used by freshwater or marine and/or estuarine aquatic life (whichever is most stringent).

TABLE 4 : Summary of Analytical Results for Hydrocarbons in Groundwater - Municipal Lands (2007 - 2017)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Monocyclic Aromatic Hydrocarbons				Gross Parameters				MTBE (µg/L)
			Benzene (µg/L)	Ethylbenzene (µg/L)	Toluene (µg/L)	Xylenes (µg/L)	VHw ₆₋₁₀ (µg/L)	VPHw (C6-C10) (µg/L)	EPHw ₁₀₋₁₉ (µg/L)	LEPHw (C10-C19) (µg/L)	
1	MW1-070320	2007 03 20	29.6	458	1,090	7,960	22,700	13,000	7,000	7,000 ^c	< 80
	MW1-080527	2008 05 27	38.8	636	266	7,630	26,100	18,000	6,440	6,310	170
	MW1	2016 02 12	< 27 ^a	680	330	11,000	160,000	150,000	130,000	130,000 ^c	3,100
4	MW4-070320	2007 03 20	10.0	279	24.4	2,340	8,680	6,000	3,180	3,180 ^c	< 80
	MW4-090326	2009 03 26	47	614	85	4,670	17,100	12,000	-	-	< 40
	MW4-150413	2015 04 13	< 7.4 ^a	170	16	650	4,300	3,400	3,400	3,400 ^c	< 400
	MW15-A-150413	Duplicate	< 6.3 ^a	150	14	550	3,700	3,000	2,500	2,500 ^c	< 400
	QA/QC RPD %	*	13	13	17	15	13	31	*	*	*
	MW4	2016 02 12	< 6.6 ^a	140	12	750	3,200	2,300	4,700	4,700 ^c	1,900
07-2	MW4-170506	2017 05 06	4.1	73	6.7	320	1,300	900	890	890 ^c	< 200
	MW07-2-070320	2007 03 20	2,700	1,410	6,550	7,070	23,100	5,400	1,840	1,640	< 80
	MW07-2-080526	2008 05 26	1,430	1,810	5,640	12,200	36,700	16,000	2,360	2,160	80
	MW07-2-150412	2015 04 12	120	850	120	2,400	6,100	2,600	4,400	4,400 ^c	4,300
	MW07-2	2016 02 27	210	1,700	190	4,900	11,000	4,100	4,400	4,400 ^c	6,100
07-5	MW07-2-170506	2017 05 06	110	1,300	140	4,400	8,000	2,000	870	870 ^c	< 200
	MW07-5-070320	2007 03 20	1,770	2,220	5,140	17,900	30,300	3,200	2,850	2,540	< 80
	MW07-5-080527	2008 05 27	2,940	2,230	8,000	16,500	30,900	< 3,000 ^a	3,110	2,880	350
	MW07-5-081023	2008 10 23	1,690	2,020	2,750	14,900	42,200	21,000	4,780	4,780 ^c	120
	MW07-5-090804	2009 08 04	1,190	823	3,230	10,500	25,500	9,800	32,400	32,400 ^c	1,990
	MW07-5-140728	2014 07 28	2,000	2,100	490	10,000	27,000	12,000	3,600	3,600 ^c	< 200
08-7	MW07-5	2016 02 12	470	2,200	880	13,000	32,000	16,000	14,000	14,000 ^c	2,200
	MW16-A	Duplicate	470	2,300	890	13,000	31,000	15,000	15,000	15,000 ^c	1,300
	QA/QC RPD %	0	4	1	0	3	6	7	7	51	*
	MW08-7-080527	2008 05 27	1,390	645	1,510	2,900	9,350	2,900	620	550	< 80
	MW08-7-081023	2008 10 23	1,190	1,470	2,010	7,450	22,700	11,000	1,550	1,550 ^c	< 80
	MW08-7-090326	2009 03 26	917	1,200	1,810	5,990	16,000	6,100	1,890	1,670	< 80
08-10	MW08-7-100323/24	2010 03 23/24	1,320	1,850	1,350	8,090	21,800	9,200	2,350 ^d	2,350 ^d	< 80
	MW08-7-101007	2010 10 07	682	1,690	943	8,660	31,300	19,000	1,600	1,600 ^c	< 200
	MW08-7-111027	2011 10 27	510	1,300	330	7,800	12,000	1,600	-	-	< 4
	MW08-7-130812	2013 08 12	190	390	76	1,500	2,900	770	-	-	< 4
	MW08-7-140728	2014 07 28	540	1,700	270	5,700	15,000	7,300	1,700	1,700 ^c	< 200
	MW08-7-150412	2015 04 12	560	1,400	260	5,400	12,000	4,900	1,500	1,500 ^c	< 200
09-1	MW08-7	2016 02 27	410	1,200	190	3,700	7,500	2,000	840	840 ^c	850
	MW08-7-170506	2017 05 06	350	1,200	190	4,900	8,200	1,500	2,100	2,100 ^c	< 200
	QA/QC RPD %	*	*	*	*	*	*	*	*	*	*
	MW08-10-080526	2008 05 26	< 0.5	0.6	1.1	2.7	< 300	< 300	< 80	< 80	< 4
	MW08-10-081023	2008 10 23	< 0.5	< 0.5	< 0.5	< 0.5	< 300	< 300	< 80	< 80	< 4
	MW08-10-090804	2009 08 04	< 0.5	< 0.5	< 0.5	< 0.5	< 300	< 300	< 80 ^e	< 80	< 4
09-2	MW08-10-100324	2010 03 24	< 0.5	< 0.5	< 0.5	< 0.5	< 300	< 300	< 80 ^e	< 80	< 4
	MW08-10-111027	2011 10 27	< 0.4	< 0.4	< 0.4	< 0.4	< 300	< 300	< 200 ^e	< 200	< 4
	MW08-10-121026	2012 10 26	< 0.4	< 0.4	< 0.4	< 0.4	< 300	< 300	< 200 ^e	< 200	< 4
	MW08-10-130812	2013 08 12	< 0.4	< 0.4	< 0.4	< 0.4	< 300	< 300	< 200 ^e	< 200	< 4
	MW08-10-150412	2015 04 12	< 0.4	< 0.4	< 0.4	< 0.4	< 300	< 300	< 200 ^e	< 200	< 4
	MW08-10-170506	2017 05 06	< 0.40	< 0.40	< 0.40	0.68	< 300	< 300	< 200 ^e	< 200	< 4.0
09-3	MW09-2-090804	2009 08 04	< 0.5	< 0.5	< 0.5	1.1	< 300	< 300	< 80	< 80 ^c	< 80
	MW09-2-100324	2010 03 24	< 0.5	< 0.5	< 0.5	< 0.5	< 300	< 300	< 80 ^d	< 80 ^d	< 80
	MW09-2-111027	2011 10 07	< 0.4	< 0.4	< 0.5	0.5	< 300	< 300	< 80 ^c	< 80	< 4
	MW09-2-121026	2012 10 26	< 0.4	< 0.4	< 0.4	< 0.4	< 300	< 300	< 80 ^c	< 80 ^c	< 4
	MW09-2-130812	2013 08 12	< 0.4	< 0.4	< 0.4	< 0.4	< 300	< 300	< 200 ^c	250	< 4
	MW09-2-170506	2017 05 06	< 0.40	< 0.40	< 0.40	< 0.40	< 300	< 300	< 200 ^c	< 200	< 4.0
17-01	MW09-3-090804	2009 08 04	4.5	2.7	< 0.5	3.2	< 300	-	-	-	< 4
	MW09-3-100323/24	20									

TABLE 5: Summary of Analytical Results for PAH in Groundwater - Municipal Lands (2007 - 2017)

Location Sample Location Sample ID Sample Date (yyyy mm dd)	Municipal Lands										BC Standards		
	1	07-2		07-5		08-7			08-10		CSR Drinking Water (DW)	CSR Aquatic Life ^b (AW)	
	MW1-080527 2008 05 27	MW07-2-070320 2007 03 20	MW07-2-080526 2008 05 26	MW07-5-070320 2007 03 20	MW07-5-080527 2008 05 27	MW08-7-080527 2008 05 27	MW08-7-090326 2009 03 26	MW08-7-100324 2010 03 24	MW08-10-080526 2008 05 26	MW08-10-081023 2008 10 23			
Parameter Units	Analytical Results												
Polycyclic Aromatic Hydrocarbons (PAH)													
Naphthalene	µg/L	130	200	200	310	230	74	220	270	0.02	0.01	80	10
Methylnaphthalene, 1-	µg/L	-	-	-	-	-	-	-	-	-	-	5.5	n/a
Methylnaphthalene, 2-	µg/L	28	26	38	70	52	2.8	16	16	< 0.01	< 0.01	15	n/a
Acenaphthylene	µg/L	< 0.03	< 0.02	< 0.02	< 0.04	< 0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	n/a	n/a
Acenaphthene	µg/L	0.13	0.05	0.08	0.13	0.09	< 0.01	0.03	0.03	< 0.01	< 0.01	250	60
Fluorene	µg/L	0.09	0.02	0.06	0.11	0.08	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	150	120
Phenanthrene	µg/L	0.06	0.02	0.02	0.06	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	n/a	3
Anthracene	µg/L	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1,000	1
Acridine	µg/L	0.23	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	n/a	0.5
Fluoranthene	µg/L	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02	0.02	150	2
Pyrene	µg/L	0.10	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.03	0.02	100	0.2
Benzo(a)anthracene	µg/L	< 0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.02	0.07	1
Chrysene	µg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	7	1
Benzo(b)fluoranthene	µg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.07	n/a
Benzo(k)fluoranthene	µg/L	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	n/a	n/a
Benzo(a)pyrene	µg/L	0.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	0.1
Indeno(1,2,3-cd)pyrene	µg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	n/a	n/a
Dibenz(a,h)anthracene	µg/L	< 0.02 ^a	< 0.02 ^a	< 0.02 ^a	0.01	n/a							
Benzo(g,h,i)perylene	µg/L	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	n/a	n/a
Quinoline	µg/L	< 0.05	< 0.9	< 0.05	< 2	< 0.4	< 0.05	< 0.1	< 0.05	< 0.05	< 0.05	0.05	34

Associated Maxxam file(s): F73196, F77074, F102567, F102568, F104447, F104448, F135611, F135612, F163822, B798870, B7A9221.

All terms defined within the body of SNC-Lavalin's Report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than CSR Drinking Water (DW) standard

BOLD Concentration greater than CSR Aquatic Life (AW) standard.

^a Laboratory detection limit exceeds regulatory standard/guideline.

^b Standard to protect marine and/or estuarine aquatic life.

TABLE 5: Summary of Analytical Results for PAH in Groundwater - Municipal Lands (2007 - 2017)

Parameter	Units	Municipal Lands								BC Standards	
		09-1		09-2		09-3		17-01		17-03	CSR
		Sample Location	MW09-1-100324	MW09-2-100324	MW09-3-100324	MW10-A-100324	QA/QC	MW17-01-171106	MW17-01-171208	MW17-03-171106	CSR
Analytical Results											
Naphthalene	µg/L	0.05	0.07	< 0.01	< 0.01	*	62	130	< 0.10	80	10
Methylnaphthalene, 1-	µg/L	-	-	-	-	-	-	13	-	5.5	n/a
Methylnaphthalene, 2-	µg/L	0.02	0.03	< 0.01	< 0.01	*	6.5	20	< 0.10	15	n/a
Acenaphthylene	µg/L	< 0.01	< 0.01	< 0.01	< 0.01	*	< 0.050	< 0.050	< 0.050	n/a	n/a
Acenaphthene	µg/L	< 0.01	< 0.01	< 0.01	< 0.01	*	< 0.050	0.061	< 0.050	250	60
Fluorene	µg/L	< 0.01	< 0.01	< 0.01	0.01	*	< 0.050	< 0.050	< 0.050	150	120
Phenanthrene	µg/L	< 0.01	0.07	< 0.01	< 0.01	*	< 0.050	< 0.050	< 0.050	n/a	3
Anthracene	µg/L	< 0.01	< 0.01	< 0.01	< 0.01	*	< 0.010	< 0.010	< 0.010	1,000	1
Acridine	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	*	< 0.050	< 0.050	< 0.050	n/a	0.5
Fluoranthene	µg/L	< 0.01	0.15	< 0.01	< 0.01	*	< 0.020	< 0.020	0.047	150	2
Pyrene	µg/L	< 0.01	0.26	< 0.01	< 0.01	*	< 0.020	< 0.020	0.040	100	0.2
Benzo(a)anthracene	µg/L	< 0.01	0.03	< 0.01	< 0.01	*	< 0.010	< 0.010	0.011	0.07	1
Chrysene	µg/L	< 0.01	0.07	< 0.01	< 0.01	*	< 0.020	< 0.020	< 0.020	7	1
Benzo(b)fluoranthene	µg/L	< 0.01	0.04	< 0.01	< 0.01	*	< 0.030	< 0.030	< 0.030	0.07	n/a
Benzo(k)fluoranthene	µg/L	< 0.01	0.02	< 0.01	< 0.01	*	< 0.050	< 0.050	< 0.050	n/a	n/a
Benzo(a)pyrene	µg/L	< 0.01	0.03	< 0.01	< 0.01	*	< 0.0050	< 0.0050	0.0067	0.01	0.1
Indeno(1,2,3-cd)pyrene	µg/L	< 0.02	0.03	< 0.02	< 0.02	*	< 0.050	< 0.050	< 0.050	n/a	n/a
Dibenz(a,h)anthracene	µg/L	< 0.02 ^a	< 0.02 ^a	< 0.02 ^a	< 0.02 ^a	*	< 0.0030	< 0.0030	< 0.0030	0.01	n/a
Benzo(g,h,i)perylene	µg/L	< 0.02	0.05	< 0.02	< 0.02	*	< 0.050	< 0.050	< 0.050	n/a	n/a
Quinoline	µg/L	< 0.05	< 0.05	< 0.05	< 0.05	*	< 0.020	< 0.020	< 0.020	0.05	34

Associated Maxxam file(s): F73196, F77074, F102567, F102568, F104447, F104448, F135611, F135612, F163822, B798870, B7A9221.

All terms defined within the body of SNC-Lavalin's Report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than CSR Drinking Water (DW) standard

BOLD Concentration greater than CSR Aquatic Life (AW) standard.

^a Laboratory detection limit exceeds regulatory standard/guideline.

^b Standard to protect marine and/or estuarine aquatic life.

TABLE 6: Summary of Analytical Results for Dissolved Metals in Groundwater - Municipal Lands (2007 - 2017)

Location	Sample Location	Municipal Lands														BC Standards		
		1	4	07-2		07-5			08-10			09-1		09-2				
Sample Date (yyyy mm dd)	Sample ID	MW1	MW4	MW4-170506	MW07-2	MW07-2-170506	MW07-5-080527	MW07-5	MW16-A	QA/QC	MW08-10-170506	MW17-A-170506	QA/QC	MW09-1-170506	MW09-2-170506	CSR	CSR	
Parameter	Units	2016 02 12	2016 02 12	2017 05 06	2016 02 27	2017 05 06	2008 05 27	2016 02 12	Duplicate	RPD %	2017 05 06	Duplicate	RPD %	2017 05 06	2017 05 06	Drinking Water (DW)	Aquatic Life ^a (AW)	
Physical Parameters																		
pH (field)	pH	7.83	7.72	6.39	10.27	6.95	6.6	7.4	7.4	*	6.65	6.65	*	6.71	6.44	n/a	n/a	
Hardness	mg/L	269	199	1,610	231	223	445	330	327	1	388	394	2	373	393	n/a	n/a	
Geochemical Indicators																		
Dissolved Aluminum	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,500	n/a	
Dissolved Calcium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n/a	n/a	
Dissolved Iron	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n/a	n/a	
Dissolved Magnesium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n/a	n/a	
Dissolved Manganese	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n/a	n/a	
Dissolved Potassium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n/a	n/a	
Dissolved Sodium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	n/a	
Dissolved Metals																		
Antimony	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	2,500	
Arsenic	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	125	
Barium	µg/L	42.0	49.1	377	96.8	100	125	74.8	67.0	11	198	202	2	281	80.7	1,000	5,000	
Beryllium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	1,000	
Boron	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,000	12,000	
Cadmium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	15	
Chromium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50 ^b	15 ^b	
Cobalt	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20 ^c	40	
Copper	µg/L	0.22	< 0.20	0.26	< 0.20	< 0.20	0.8	0.22	0.31	*	0.29	0.37	*	< 0.20	0.65	1,500	20	
Lead	µg/L	76.8	8.82	18.3	9.26	14.0	28.0	44.2	43.4	*	< 0.20	< 0.20	*	< 0.20	< 0.20	10	20	
Mercury	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.25	
Molybdenum	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	10,000	
Nickel	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	83	
Selenium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	20	
Silver	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	15	
Thallium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n/a	3	
Titanium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	n/a	1,000	
Uranium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	85	
Vanadium	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	n/a	
Zinc	µg/L	< 5.0	< 5.0	< 5.0	5.2	< 5.0	< 5	< 5.0	< 5.0	*	< 5.0	< 5.0	*	< 5.0	< 5.0	7.8	3,000	100

Associated Maxxam file(s): F77074, F102567, F102568, B610904, B610905, B614832, B734643.

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- Denotes analysis not conducted.

n/a Denotes no applicable standard.

* RPDs are not normally calculated where one or more concentrations are less than five times MDL.

SHADED Concentration greater than CSR Drinking Water (DW) standard**BOLD** Concentration greater than CSR Aquatic Life (AW) standard.^a Standard to protect marine and/or estuarine aquatic life.^b Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.^c Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

TABLE 7: Summary of Analytical Results for Hydrocarbons, PAH and VOC in Soil Vapour - Municipal Lands

Sample Location	07-2			07-6			08-7			09-2			
	Sample ID	MW07-2-090330 #AIR2-120MIN	MW07-2-090828 #AIR2-120MIN	Sample Date (yyyy mm dd)	MW07-6-090330 #AIR2-120MIN	MW08-7-090330 #AIR2-120MIN	Sample Duration (min)	2009 03 30	2009 03 30	MW08-7-30MIN ^b	2016 02 27	MW08-7-5MIN ^b	MW09-2-090828 #AIR2-120MIN
Parameter	Units	Analytical Results											
Monocyclic Aromatic Hydrocarbons													
Benzene	ug/m ³	4,100	18,100	< 20	1,300	830	2,800	4,300	< 20	< 20	< 20	< 2	
Ethylbenzene	ug/m ³	4,100	85,100	< 20	120	100	930	1,700	< 20	< 20	< 20	2	
Toluene	ug/m ³	1,100	8,010	< 20	200	210	< 0.33	< 2.0	20	20	20	15	
Xylenes	ug/m ³	4,500	168,000	< 20	880	1,970	2,900	4,700	30	30	30	20	
Gross Parameters													
VHv (C6-C13)	ug/m ³	3,970,000	6,310,000	< 200	2,480,000	362,000	450,000	1,100,000	< 200	< 200	< 200	< 80	
VPHv (C6-C13)	ug/m ³	3,860,000	5,920,000	< 200	2,390,000	331,000	430,000	1,100,000	< 200	< 200	< 200	< 80	
Polycyclic Aromatic Hydrocarbons (PAH)													
Naphthalene	ug/m ³	< 20	140	< 20	< 20	< 20	< 1.7	< 9.9	< 20	< 20	< 20	< 2	
Volatile Organic Compounds (VOC)													
Bromobenzene	ug/m ³	< 4.2	< 0.83	< 0.42	-	-	-	-	< 0.83	< 0.83	< 0.83	-	
1,3-Butadiene	ug/m ³	< 42	130	< 4.2	-	-	< 0.83	< 5.0	< 5.0	< 0.42	< 0.42	< 2	
Cumene	ug/m ³	260	6,520	< 20	30	< 20	70	74	< 20	< 20	< 20	< 3	
n-Decane	ug/m ³	110	6,350	< 20	200	410	< 1.7	< 9.9	< 20	< 20	< 20	< 3	
1,2-Dibromoethane	ug/m ³	-	-	-	-	-	< 0.33	< 2.0	-	-	< 0.8	-	
1,2-Dichloroethane	ug/m ³	< 16.7	< 0.083	< 1.67	-	-	< 0.17	< 0.99	< 0.99	< 0.083	< 0.083	< 0.3	
1,2-Dichloropropane	ug/m ³	< 4.17	< 0.083	< 0.42	-	-	-	-	< 0.083	< 0.083	< 0.083	-	
n-Hexane	ug/m ³	97,500	109,000	< 20	87,900	27,300	7,300	40,000	< 20	< 20	< 20	< 2	
Isobutanol	ug/m ³	< 210	< 21	< 21	-	-	-	-	< 21	< 21	< 21	-	
Methyl ter-butyl ether	ug/m ³	< 20	< 20	< 20	< 20	< 20	< 1.7	< 9.9	< 20	< 20	< 20	< 20	
Methylcyclohexane	ug/m ³	104,000	128,000	< 20	65,100	26,500	22,000	42,000	< 20	< 20	< 20	< 3	
Methylene bromide	ug/m ³	< 8.33	< 0.83	< 0.83	-	-	-	-	< 0.83	< 0.83	< 0.83	-	
1,2,3-Trimethylbenzene	ug/m ³	-	-	-	-	-	-	-	-	-	-	-	
1,2,4-Trimethylbenzene	ug/m ³	50	25,800	< 20	< 20	130	110	100	< 20	< 20	< 20	< 3	
1,3,5-Trimethylbenzene	ug/m ³	70	15,300	< 20	40	140	140	110	< 20	< 20	< 20	< 2	

Associated Maxxam file(s): B097122, B1A4690, B297701, B370226, B464881, B529466, B614836.

Associated CanTest file(s): 100331054, 100829020.

Associated CARO file(s): R003270.

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- Denotes analysis not conducted.

a Depth of base of Bentonite Seal.

b The results are above the analytical calibration range and therefore approximate. The results may be biased low.

TABLE 7: Summary of Analytical Results for Hydrocarbons, PAH and VOC in Soil Vapour - Municipal Lands

Sample Location		09-4							
Sample ID	MW09-4-090828-AIR2-120MIN	MW09-4-100323-SNCAIR-20MIN ^b	MW09-4-101007-30MINS ^b	MW09-4-111027-20MIN ^b	VW09-4-121026 ^b	VW09-4-130812 ^b	VW09-4-140728-5MIN ^b	VW09-4-150412-2MIN ^b	
Sample Date (yyyy mm dd)	2009 08 28	2010 03 23	2010 10 07	2011 10 27	2012 10 26	2013 08 12	2014 07 28	2015 04 12	
Sample Duration (min)	120	20	30	20	40	70	5	2	
Sample Depth ^a (m)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	
Parameter	Units	Analytical Results							
Monocyclic Aromatic Hydrocarbons									
Benzene	ug/m ³	610	800	2,900	1,900	1,160	14,300	172,000	65,300
Ethylbenzene	ug/m ³	3,260	< 50	490	310	126	3,360	28,000	24,200
Toluene	ug/m ³	200	550	560	1,000	123	7,140	41,300	19,100
Xylenes	ug/m ³	1,400	360	3,400	1,700	386	1,810	43,900	57,300
Gross Parameters									
VHv (C6-C13)	ug/m ³	1,830,000	2,900,000	870,000	440,000	190,000	188,000	1,340,000	1,830,000
VPHv (C6-C13)	ug/m ³	1,810,000	2,900,000	870,000	410,000	187,000	161,000	1,030,000	1,590,000
Polycyclic Aromatic Hydrocarbons (PAH)									
Naphthalene	ug/m ³	< 20	150	< 2	< 3	< 1.3	19.7	< 10	< 25
Volatile Organic Compounds (VOC)									
Bromobenzene	ug/m ³	-	-	-	-	-	-	-	-
1,3-Butadiene	ug/m ³	-	< 100	< 2	290	< 1.3	< 1.4	< 10	21,800
Cumene	ug/m ³	600	< 50	400	210	68	12	2,790	2,950
n-Decane	ug/m ³	3,150	< 150	680	< 5	< 2.5	< 2.9	< 20	< 50
1,2-Dibromoethane	ug/m ³	-	< 50	< 0.8	< 1	< 0.63	< 0.71	< 5	< 13
1,2-Dichloroethane	ug/m ³	-	-	< 0.3	< 0.5	< 0.25	< 0.29	< 2	< 5
1,2-Dichloropropane	ug/m ³	-	-	-	-	-	-	-	-
n-Hexane	ug/m ³	15,600	11,000	1,100	16,000	1,510	166	22,900	77,000
Isobutanol	ug/m ³	-	-	-	-	-	-	-	-
Methyl ter-butyl ether	ug/m ³	< 20	< 100	< 20	< 30	< 13	< 14	< 100	< 250
Methylcyclohexane	ug/m ³	7,380	40,000	16,000	15,000	< 2.5	14,300	116,000	100,000
Methylene bromide	ug/m ³	-	-	-	100	38.5	-	-	-
1,2,3-Trimethylbenzene	ug/m ³	-	-	-	-	-	24.9	498	-
1,2,4-Trimethylbenzene	ug/m ³	440	< 100	790	230	74.4	194	3,420	4,450
1,3,5-Trimethylbenzene	ug/m ³	460	< 100	420	140	34.3	158	2,640	4,100

Associated Maxxam file(s): B097122, B1A4690, B297701, B370226, B464881, B529466, B614836.

Associated CanTest file(s): 100331054, 100829020.

Associated CARO file(s): R003270.

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^a Depth of base of Bentonite Seal.

^b The results are above the analytical calibration range and therefore approximate. The results may be biased low.

TABLE 8: Summary of Estimated Outdoor Air Concentration for Hydrocarbons, VOCs and PAHs in Soil Vapour - Municipal Lands

Sample Location		07-2		07-6		08-7			09-2		BC Standard
Sample ID	MW07-2-090330-#AIR2-120MIN	MW07-2-090828-#AIR2-120MIN	MW07-6-090330-#AIR2-120MIN	MW08-7-090330-#AIR2-120MIN	MW08-7-090828-#AIR2-120MIN	MW08-7-30MIN	MW08-7-5MIN	MW09-2-090828-#AIR2-120MIN	MW09-2-101007-30MINS	CSR	
Sample Date (yyyy mm dd)	2009 03 30	2009 08 28	2009 03 30	2009 03 30	2009 08 28	2016 02 27	2016 02 27	2009 08 28	2010 10 07	Commercial Land Use (CL)	
Sample Duration (min)	120	120	120	120	120	30	5	120	30		
Sample Depth ^a (m)	1.8	1.8	1.2	3.4	3.4	3.4	3.4	4.4	4.4		
Attenuation Factor	0.0000012	0.0000012	0.0000015	0.0000061	0.0000061	0.0000061	0.0000061	0.0000061	0.0000061		
Parameter	Units	Analytical Results									
Monocyclic Aromatic Hydrocarbons											
Benzene	ug/m3	0.00492	0.02172	< 0.00003	0.000793	0.0005063	0.001708	0.002623	< 0.0000122	< 0.0000122	
Ethylbenzene	ug/m3	0.00492	0.10212	< 0.00003	0.000732	0.000061	0.0005673	0.001037	< 0.0000122	0.00000122	
Toluene	ug/m3	0.00132	0.009612	< 0.00003	0.000122	0.0001281	< 0.000002013	< 0.00000122	0.0000122	0.00000915	
Xylenes	ug/m3	0.0054	0.2016	< 0.00003	0.0005368	0.0012017	0.001769	0.002867	0.0000183	0.0000122	
Styrene	ug/m3	-	-	-	-	-	< 0.00001037	< 0.000006039	-	3,000	
Gross Parameters											
VHv6-13	ug/m3	4.764	7.572	< 0.0003	1.5128	0.22082	0.2745	0.671	< 0.000122	< 0.0000488	
VPH	ug/m3	4.632	7.104	< 0.0003	1.4579	0.20191	0.2623	0.671	< 0.000122	< 0.0000488	
LEPH (C10-C19)	ug/m3	0.0018	0.1572	< 0.00012495	< 0.000050813	0.033306	-	-	< 0.000050813	-	
Petroleum Hydrocarbon Fractions											
Aliphatics C6-C8	ug/m3	3.756	1.776	< 0.00002505	1.3359	0.08967	-	-	< 0.000010187	-	
Aromatics C6-C8	ug/m3	0.00612	0.0312	< 0.000012495	0.000915	0.0006344	-	-	< 0.0000050813	-	
Aliphatics >C8-C10	ug/m3	0.8628	3.264	< 0.00002505	0.13481	0.043432	-	-	< 0.000010187	-	
Aromatics >C8-C10	ug/m3	0.01032	0.3036	< 0.000012495	0.00061	0.0012627	-	-	< 0.0000050813	-	
Aliphatics >C10-C12	ug/m3	0.0018	0.156	< 0.000012495	< 0.0000050813	0.031049	-	-	< 0.0000050813	-	
Aliphatics >C12-C16	ug/m3	< 0.0000996	0.002064	< 0.000012495	< 0.0000050813	0.0022875	-	-	< 0.0000050813	-	
Aliphatics >C16-C19	ug/m3	< 0.0000996	< 0.0000996	< 0.000012495	< 0.0000050813	< 0.0000050813	-	-	< 0.0000050813	-	
Polycyclic Aromatic Hydrocarbons											
Naphthalene	ug/m3	< 0.000024	0.000168	< 0.00003	< 0.0000122	< 0.0000122	< 0.00001037	< 0.000006039	< 0.0000122	< 0.0000122	
Volatile Organic Compounds											
Acetaldehyde	ug/m3	< 0.0000504	< 0.00000504	< 0.0000063	-	-	-	-	< 0.000002562	-	
Biphenyl	ug/m3	< 0.00000504	0.00000948	< 0.00000063	-	-	-	-	< 0.0000002562	-	
Bromobenzene	ug/m3	< 0.00000504	< 0.000000996	< 0.00000063	-	-	-	-	< 0.0000005063	-	
1,3-Butadiene	ug/m3	< 0.0000504	-	< 0.0000063	-	-	< 0.000005063	< 0.00000305	< 0.000002562	< 0.0000122	
n-Decane	ug/m3	0.000132	0.00762	< 0.00003	0.000122	0.0002501	< 0.000001037	< 0.000006039	< 0.0000122	< 0.00000183	
1,2-Dibromoethane	ug/m3	-	-	-	-	-	< 0.000002013	< 0.00000122	-	< 0.00000488	
1,1-Dichloroethane	ug/m3	-	-	-	-	-	-	-	-	1,500	
1,2-Dichloroethane	ug/m3	< 0.00002004	< 0.0000001	< 0.000002505	-	-	< 0.0000001037	< 0.0000006039	< 0.0000000508	< 0.000000183	
1,2-Dichloropropane	ug/m3	< 0.000005004	< 0.0000001	< 0.0000006255	-	-	-	-	< 0.0000000508	-	
n-Hexane	ug/m3	0.117	0.1308	< 0.00003	0.053619	0.016653	0.004453	0.0244	< 0.0000122	< 0.00000122	
Isobutanol	ug/m3	< 0.000252	< 0.0000252	< 0.0000315	-	-	-	-	< 0.00001281	-	
Isopropylbenzene	ug/m3	0.000312	0.007824	< 0.00003	0.0000183	< 0.0000122	0.0000427	0.00004514	< 0.0000122	< 0.00000183	
MTBE	ug/m3	< 0.000024	< 0.000024	< 0.00003	< 0.0000122	< 0.0000122	< 0.00001037	< 0.000006039	< 0.0000122	< 0.0000122	
Methylcyclohexane	ug/m3	0.1248	0.1536	< 0.00003	0.039711	0.016165	0.01342	0.02562	< 0.0000122	< 0.00000183	
Methylene bromide	ug/m3	< 0.00000996	< 0.00000996	< 0.0000012495	-	-	-	-	< 0.0000005081	-	
1,2,3-Trimethylbenzene	ug/m3	< 0.000024	0.005856	< 0.00003	< 0.0000122	0.0000305	-	-	< 0.0000122	< 0.00000122	
1,2,4-Trimethylbenzene	ug/m3	0.00006	0.03096	< 0.00003	< 0.0000122	0.0000793	0.0000671	0.000061	< 0.0000122	< 0.00000183	
1,3,5-Trimethylbenzene	ug/m3	0.000084	0.01836	< 0.00003	0.0000244	0.0000854	0.0000854	0.0000671	< 0.0000122	10	

Associated CanTest file(s): 100331054, 100829020.

Associated Caro file(s): R003270.

Associated Maxxam file(s): B097122, B1A4690, B297701, B370226, B464881, B529466, B614836.

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit or RPD less than indicated value.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

BOLD Concentration greater than Commercial Land Use (CL)

^a Depth of base of Bentonite Seal.

^b The results are above the analytical calibration range and therefore approximate. The results may be biased low.

TABLE 8: Summary of Estimated Outdoor Air Concentration for Hydrocarbons, VOCs and PAHs in Soil Vapour - Municipal Lands

Sample Location		09-4								BC Standard		
Sample ID	MW09-4-090828-#AIR2-120MIN	MW09-4-100323-#SNCAIR-20MIN ^b	MW09-4-101007-30MINS ^b	MW09-4-111027-20MIN ^b	VW09-4-121026 ^b	VW09-4-130812 ^b	VW09-4-140728-5MIN ^b	VW09-4-150412-2MIN ^b	CSR Commercial Land Use (CL)			
Sample Date (yyyy mm dd)	2009 08 28	2010 03 23	2010 10 07	2011 10 27	2012 10 26	2013 08 12	2014 07 28	2015 04 12				
Sample Duration (min)	120	20	30	20	4,4	4,4	4,4	4,4				
Sample Depth ^a (m)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4				
Attenuation Factor	0.00000061	0.00000061	0.00000061	0.00000061	0.00000061	0.00000061	0.00000061	0.00000061				
Parameter	Units	Analytical Results										
Monocyclic Aromatic Hydrocarbons												
Benzene	ug/m3	0.0003721	0.000488	0.001769	0.001159	0.0007076	0.008723	0.10492	0.039833	4		
Ethylbenzene	ug/m3	0.0019886	< 0.0000305	0.0002989	0.0001891	0.0007686	0.0020496	0.01708	0.014762	3,000		
Toluene	ug/m3	0.000122	0.0003355	0.0003416	0.00061	0.0007503	0.0043554	0.025193	0.011651	15,000		
Xylenes	ug/m3	0.000854	0.0002196	0.002074	0.001037	0.00023546	0.0011041	0.026779	0.034953	300		
Styrene	ug/m3	-	-	-	-	-	-	-	-	3,000		
Gross Parameters												
VHv6-13	ug/m3	1.1163	1.769	0.5307	0.2684	0.1159	0.11468	0.8174	1.1163	n/a		
VPH	ug/m3	1.1041	1.769	0.5307	0.2501	0.11407	0.09821	0.6283	0.9699	3,000		
LEPH (C10-C19)	ug/m3	0.032879	-	-	-	-	-	-	-	n/a		
Petroleum Hydrocarbon Fractions												
Aliphatics C6-C8	ug/m3	0.51972	-	-	-	-	-	-	-	n/a		
Aromatics C6-C8	ug/m3	0.0004941	-	-	-	-	-	-	-	n/a		
Aliphatics >C8-C10	ug/m3	0.2623	-	-	-	-	-	-	-	n/a		
Aromatics >C8-C10	ug/m3	0.0028426	-	-	-	-	-	-	-	n/a		
Aliphatics >C10-C12	ug/m3	0.030256	-	-	-	-	-	-	-	n/a		
Aliphatics >C12-C16	ug/m3	0.0026108	-	-	-	-	-	-	-	n/a		
Aliphatics >C16-C19	ug/m3	< 0.000050813	-	-	-	-	-	-	-	n/a		
Polycyclic Aromatic Hydrocarbons												
Naphthalene	ug/m3	< 0.00000122	0.0000915	< 0.00000122	< 0.00000183	< 0.000000793	0.000012017	< 0.0000061	< 0.00001525	9		
Volatile Organic Compounds												
Acetaldehyde	ug/m3	-	-	-	-	-	-	-	-	15		
Biphenyl	ug/m3	-	-	-	-	-	-	-	-	n/a		
Bromobenzene	ug/m3	-	-	-	-	-	-	-	-	200		
1,3-Butadiene	ug/m3	-	< 0.000061	< 0.00000122	0.0001769	< 0.000000793	< 0.000000854	< 0.0000061	0.013298	2		
n-Decane	ug/m3	0.0019215	< 0.0000915	0.0004148	< 0.00000305	< 0.000001525	< 0.000001769	< 0.0000122	< 0.0000305	8,000		
1,2-Dibromoethane	ug/m3	-	< 0.0000305	< 0.00000488	< 0.0000061	< 0.000003843	< 0.000004331	< 0.00000305	< 0.00000793	0.5		
1,1-Dichloroethane	ug/m3	-	0.0003355	-	-	-	-	-	-	1,500		
1,2-Dichloroethane	ug/m3	-	-	< 0.000000183	< 0.000000305	< 0.0000001525	< 0.0000001769	< 0.00000122	< 0.00000305	20		
1,2-Dichloropropane	ug/m3	-	-	-	-	-	-	-	-	10		
n-Hexane	ug/m3	0.009516	0.00671	0.000671	0.00976	0.0009211	0.00010126	0.013969	0.04697	2,000		
Isobutanol	ug/m3	-	-	-	-	-	-	-	-	n/a		
Isopropylbenzene	ug/m3	0.000366	< 0.0000305	0.000244	0.0001281	0.00004148	0.00000732	0.0017019	0.0017995	1,000		
MTBE	ug/m3	< 0.0000122	< 0.000061	< 0.0000122	< 0.0000183	< 0.00000793	< 0.00000854	< 0.000061	< 0.0001525	9,000		
Methylcyclohexane	ug/m3	0.0045018	0.0244	0.00976	0.00915	< 0.000001525	0.008723	0.07076	0.061	5,000		
Methylene bromide	ug/m3	-	-	-	-	-	-	-	-	10		
1,2,3-Trimethylbenzene	ug/m3	0.0001464	-	0.0002135	0.000061	0.000023485	0.000015189	0.00030378	-	n/a		
1,2,4-Trimethylbenzene	ug/m3	0.0002684	< 0.000061	0.0004819	0.0001403	0.000045384	0.00011834	0.0020862	0.0027145	20		
1,3,5-Trimethylbenzene	ug/m3	0.0002806	< 0.000061	0.0002562	0.0000854	0.000020923	0.00009638	0.0016104	0.002501	10		

Associated CanTest file(s): 100331054, 100829020.

Associated Caro file(s): R003270.

Associated Maxxam file(s): B097122, B1A4690, B297701, B370226, B464881, B529466, B614836.

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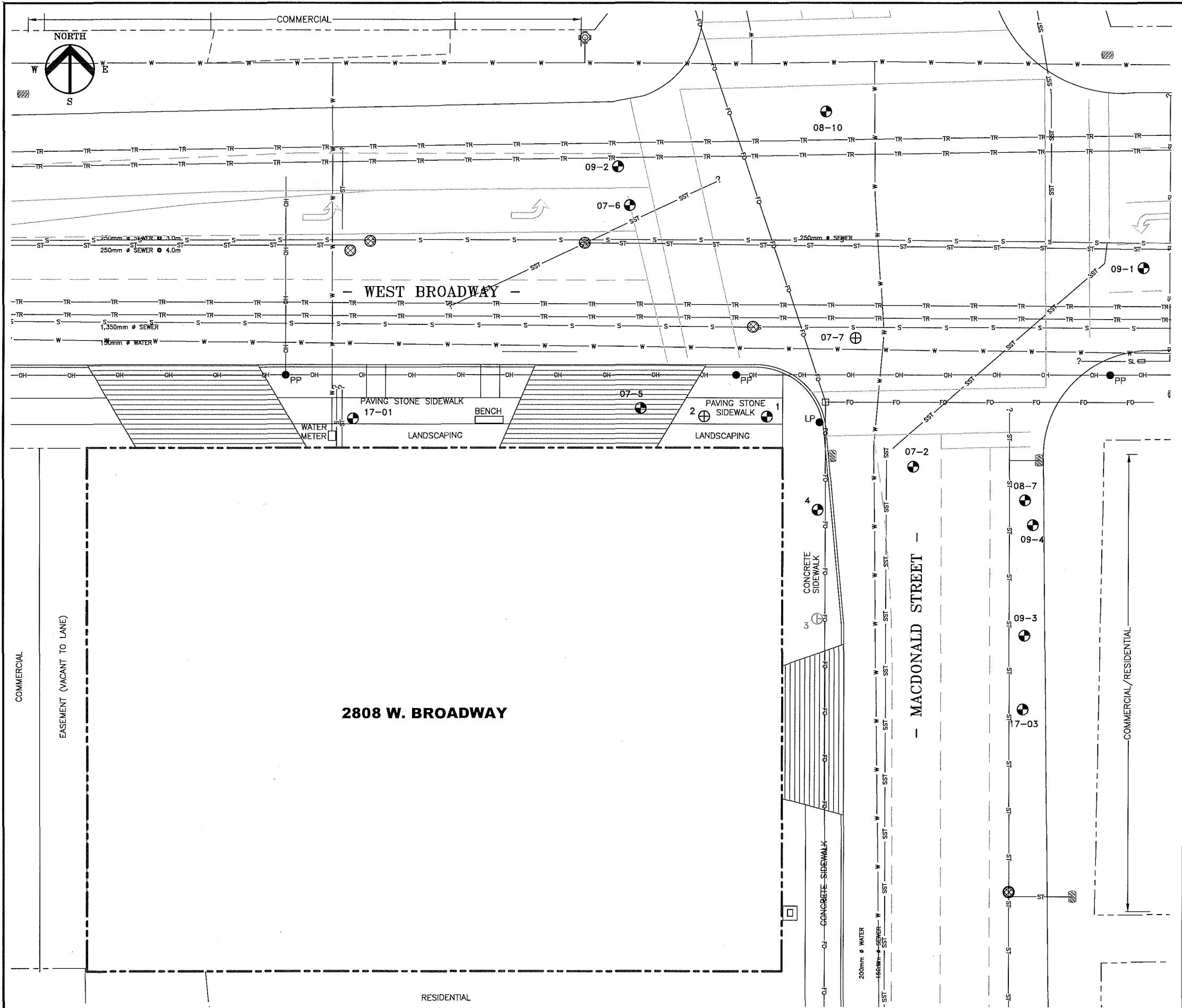
- Denotes analysis not conducted.

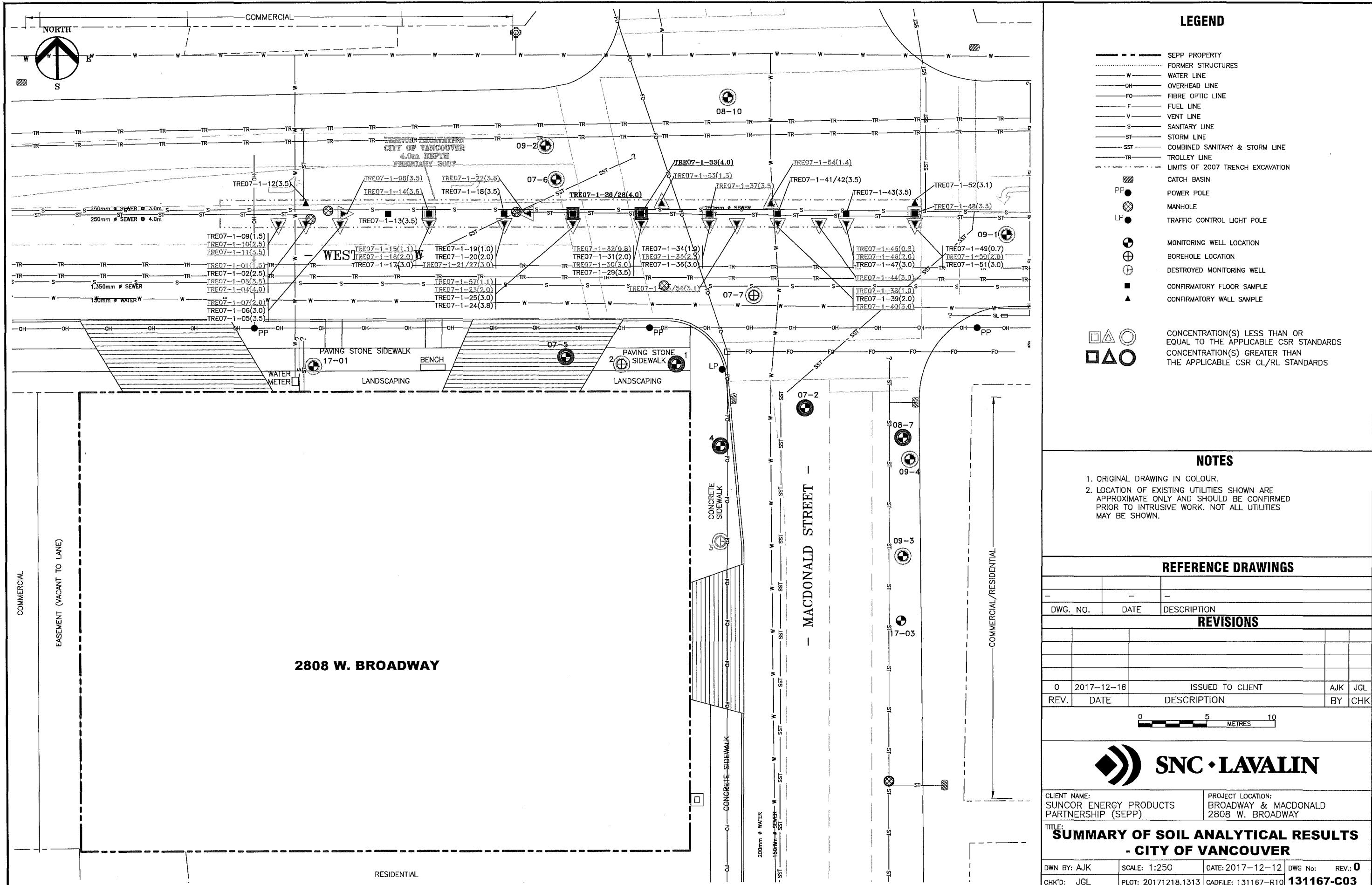
n/a Denotes no applicable standard/guideline.

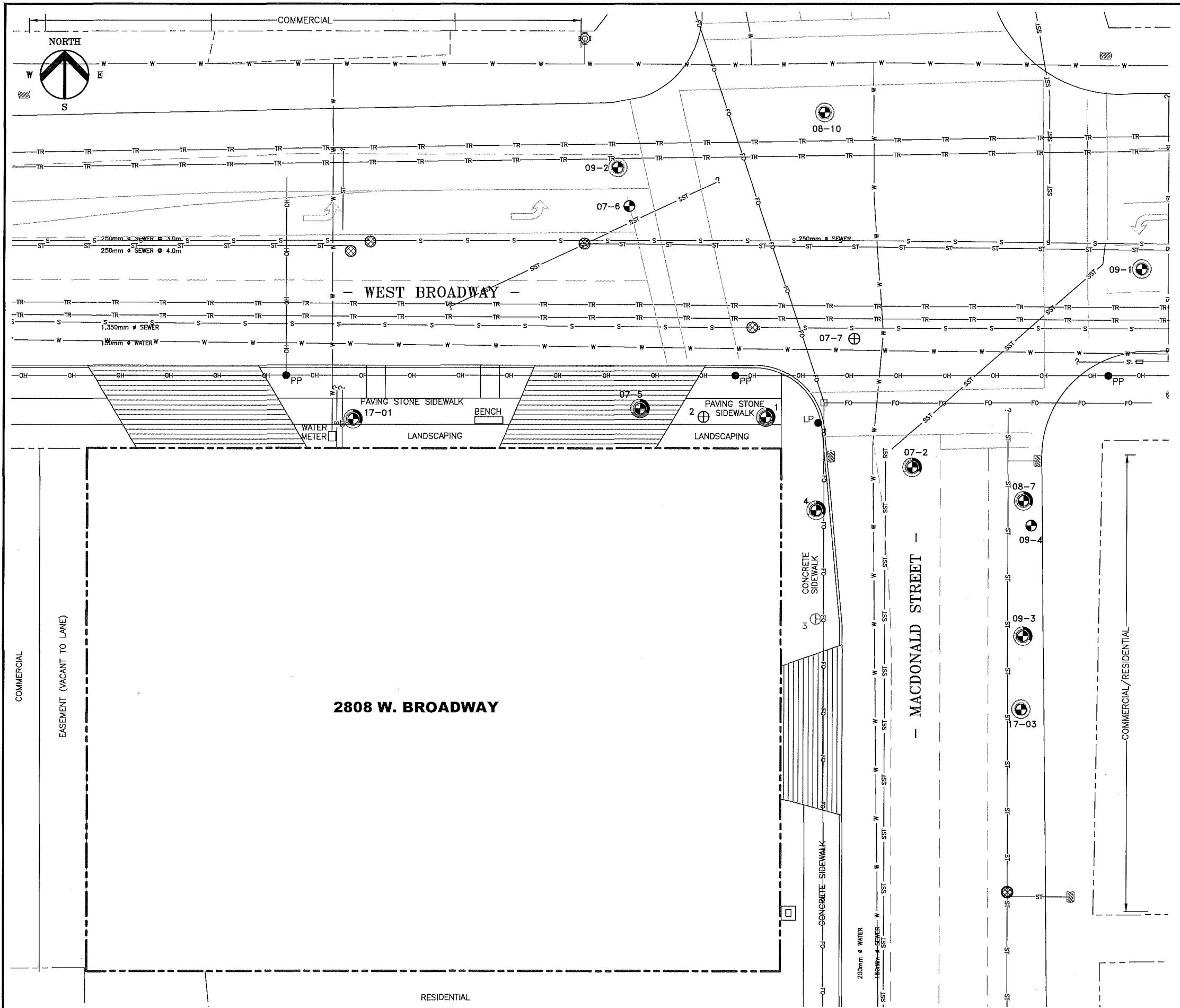
BOLD Concentration greater than Commercial Land Use (CL)

^a Depth of base of Bentonite Seal.

^b The results are above the analytical calibration range and therefore approximate. The results may be biased low.







LEGEND

— — — — —	SEPP PROPERTY
.....	FORMER STRUCTURES
— W —	WATER LINE
— OH —	OVERHEAD LINE
— FO —	FIBRE OPTIC LINE
— F —	FUEL LINE
— V —	VENT LINE
— S —	SANITARY LINE
— ST —	STORM LINE
— SST —	COMBINED SANITARY & STORM LINE
— TR —	TROLLEY LINE
(●)	MONITORING WELL LOCATION
(+)	BOREHOLE LOCATION
(?)	DESTROYED MONITORING WELL
(■)	CATCH BASIN
● PP	POWER POLE
○ MH	MANHOLE
● LP	TRAFFIC CONTROL LIGHT POLE
(●)	CONCENTRATION(S) LESS THAN OR EQUAL TO THE APPLICABLE STANDARDS
(+)	CONCENTRATION(S) GREATER THAN THE CSR AW STANDARDS
(?)	CONCENTRATION(S) GREATER THAN THE CSR DW STANDARDS
(■)	CONCENTRATION(S) GREATER THAN THE EPHw OR Vhw STANDARD COULD BE CONSIDERED PROOF OF LNAPL PRESENCE

NOTES

- ORIGINAL DRAWING IN COLOUR.
- LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED PRIOR TO INTRUSIVE WORK. NOT ALL UTILITIES MAY BE SHOWN.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
-	-	-

REVISED

REV.	DATE	DESCRIPTION	BY
0	2017-12-18	ISSUED TO CLIENT	AJK JGL

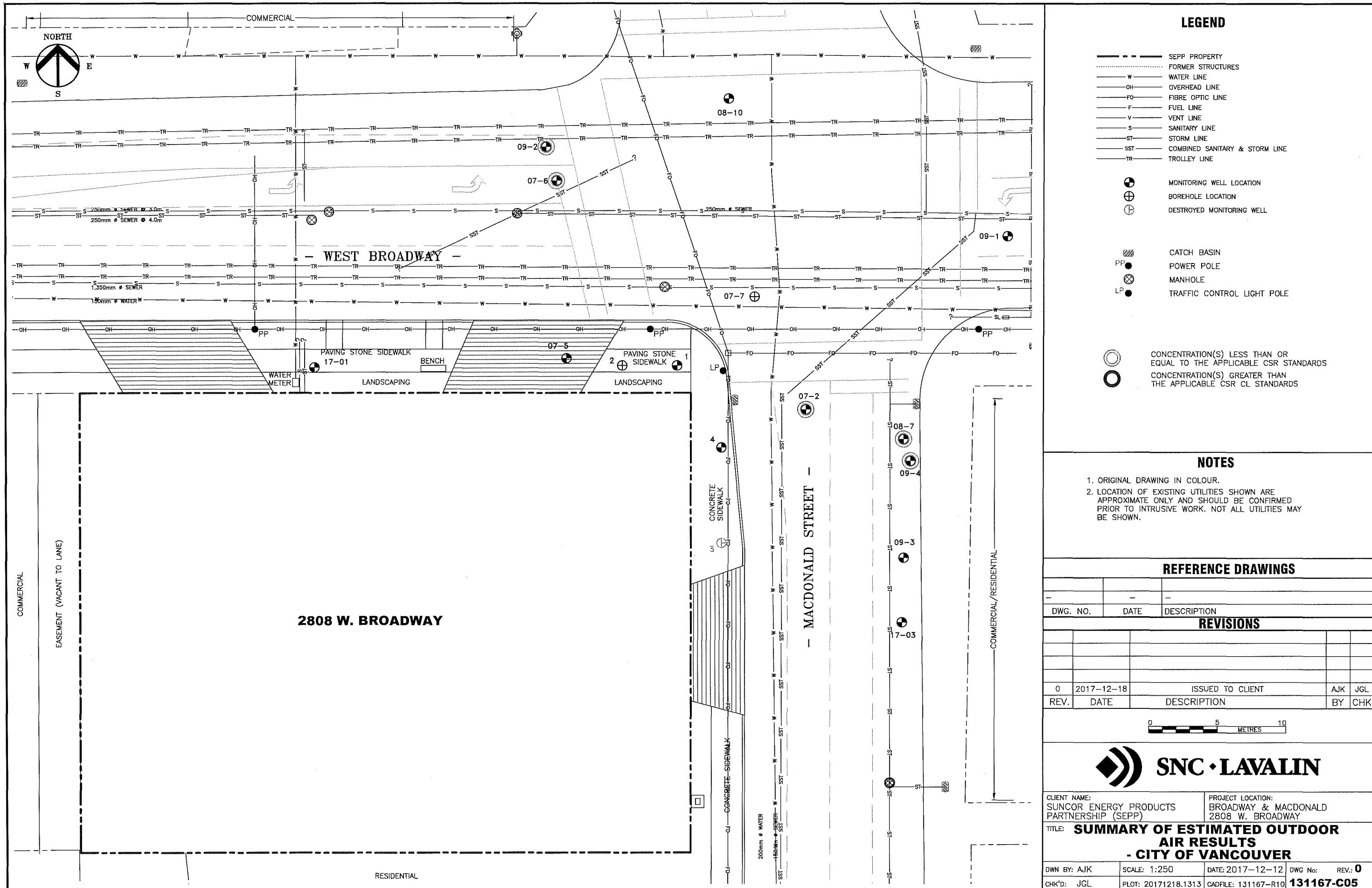
0 5 10 METRES



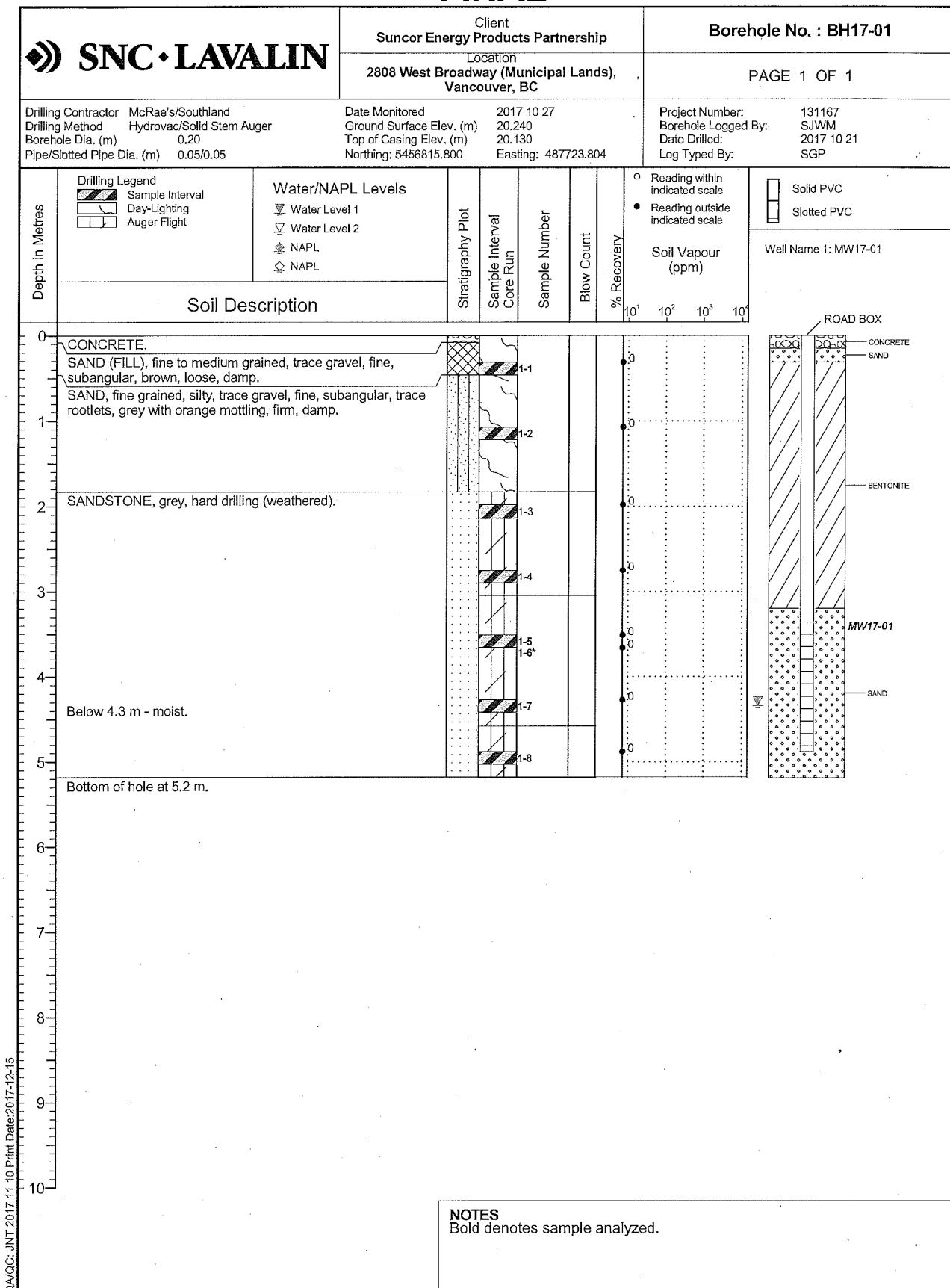
CLIENT NAME: SUNCOR ENERGY PRODUCTS PARTNERSHIP (SEPP) PROJECT LOCATION: BROADWAY & MACDONALD 2808 W. BROADWAY

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS - CITY OF VANCOUVER

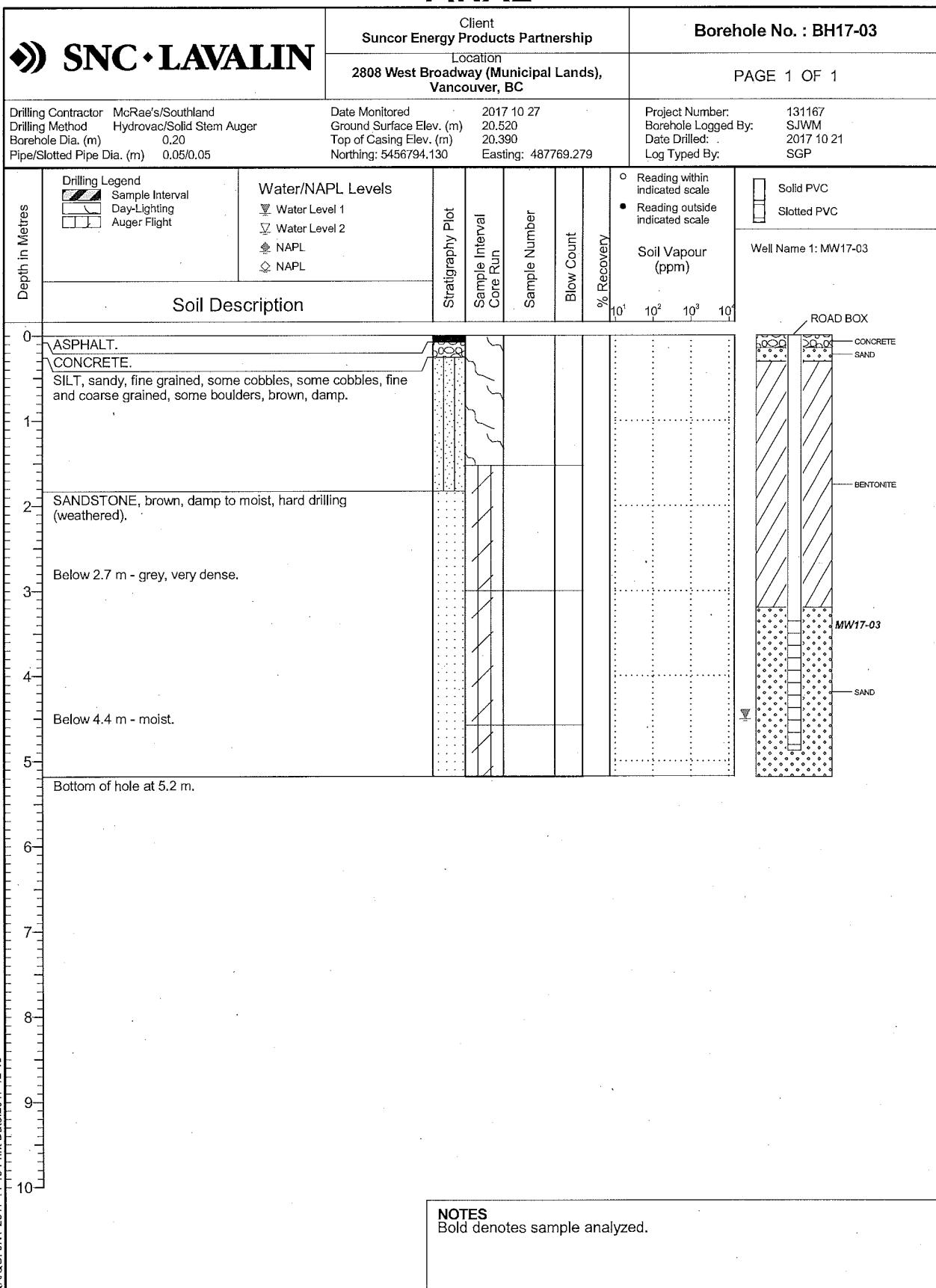
DWN BY: AJK	SCALE: 1:250	DATE: 2017-12-12	DWG No: 0
CHK'D: JCL	PLOT: 20171218.1313	CADFILE: 131167-R10	131167-C04



FINAL



FINAL





MONITORING REPORT

SNC-LAVALIN

Project No.: 131167

Date: 2017-10-27

Observer: SM

Weather: 10°C, Sunny

Time: 10:00:00

Approved by: JNT

Suncor Energy Products Partnership
2808 West Broadway
Vancouver, BC

Monitoring Well No.	Reference Elevation ¹ (m)	Depth to NAPL ² (m)	Apparent NAPL Thickness ³ (mm)	Depth to Water (m)	Potentiometric Elevation ³ (m)	Depth to Bottom (m)	Calculated Vapour Conc. ⁴ (ppm)	Comments
---------------------	--------------------------------------	--------------------------------	---	--------------------	---	---------------------	--	----------

Municipal Lands

MW17-01	20.130	-	0	4.230	15.900	4.86	11,000	*
MW17-03	20.390	-	0	4.380	16.010	5.07	35	*

NOTES: * Wattera in well during measurement.

¹ Reference Elevation is a mark on the rim of the monitoring well standpipe surveyed with respect to Datum.² Non-Aqueous Phase Liquid³ NAPL specific gravity assumed to be 0.8⁴ 1% LEL is approximately equivalent to 110 ppm.



MONITORING REPORT

SNC-LAVALIN

Project No.: 131167

Date: 2017-12-07

Observer: SM

Weather: 3°C, Fog

Time: 08:50

Approved by: JNT

Suncor Energy Products Partnership
2808 West Broadway
Vancouver, BC

Monitoring Well No.	Reference Elevation ¹ (m)	Depth to NAPL ² (m)	Apparent NAPL Thickness ³ (mm)	Depth to Water (m)	Potentiometric Elevation ³ (m)	Depth to Bottom (m)	Calculated Vapour Conc. ⁴ (ppm)	Comments
---------------------	--------------------------------------	--------------------------------	---	--------------------	---	---------------------	--	----------

Municipal Lands

17-01	20.130	-	0	3.578	16.552	4.82	11,000	*
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NOTES: * Waterra tubing in well during measurement.

¹ Reference Elevation is a mark on the rim of the monitoring well standpipe surveyed with respect to a local datum.

² Non-Aqueous Phase Liquid

³ NAPL specific gravity assumed to be 0.8

⁴ 1% LEL is approximately equivalent to 110 ppm.

Attention:Jason Tataren

SNC Lavalin Environmental Consultants
 8648 COMMERCE COURT
 BURNABY, BC
 CANADA V5A 4N6

Your P.O. #: 4700002618
 Your Project #: 131167
 Site#: 91762
 Site Location: 2808 W. BROADWAY, VANCOUVER, BC
 PO# 4700002618
 Your C.O.C. #: 539137-01-01

Report Date: 2017/10/30

Report #: R2468665

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B794040

Received: 2017/10/24, 15:15

Sample Matrix: Soil
 # Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH VH F1 in Soil - Field Pres. (1)	6	N/A	2017/10/26	BBY8SOP-00010/11/12	BC Lab Manual 2017 m
Moisture	1	2017/10/26	2017/10/27	BBY8SOP-00017	BCMOE BCLM Dec2000 m
Moisture	6	2017/10/27	2017/10/28	BBY8SOP-00017	BCMOE BCLM Dec2000 m
EPH in Soil by GC/FID	5	2017/10/27	2017/10/29	BBY8SOP-00029	BCMOE EPH s 07/99 m
Volatile HC-BTEX for Soil	6	N/A	2017/10/30	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.

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

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

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

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

Attention:Jason Tataren

SNC Lavalin Environmental Consultants
8648 COMMERCE COURT
BURNABY, BC
CANADA V5A 4N6

Your P.O. #: 4700002618
Your Project #: 131167
Site#: 91762
Site Location: 2808 W. BROADWAY, VANCOUVER, BC
PO# 4700002618
Your C.O.C. #: 539137-01-01

Report Date: 2017/10/30

Report #: R2468665

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B794040

Received: 2017/10/24 15:15

Encryption Key

cynatenique

Tanya Eugine
Project Manager
30 Oct 2017 17:34:02

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

Namita Sahni, Burnaby Project Manager

Email: NSahni@maxxam.ca

Phone# (604)639-2614

=====
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 #: B794040
Report Date: 2017/10/30

SNC Lavalin Environmental Consultants
Client Project #: 131167
Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SM

PHYSICAL TESTING (SOIL)

Maxxam ID		SH6499	SH6499	SH6500	SH6501	SH6502	SH6503		
Sampling Date		2017/10/21 08:50	2017/10/21 08:50	2017/10/21 09:00	2017/10/21 09:10	2017/10/21 09:20	2017/10/21 09:30		
COC Number		539137-01-01	539137-01-01	539137-01-01	539137-01-01	539137-01-01	539137-01-01		
	UNITS	BH17-01-01	BH17-01-01 Lab-Dup	BH17-01-02	BH17-01-04	BH17-01-05	BH17-01-06	RDL	QC Batch

Physical Properties

Moisture	%	7.6	7.3	20	13	11	11	0.30	8810710
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RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		SH6504		SH6505		
Sampling Date		2017/10/21 09:50		2017/10/21 10:00		
COC Number		539137-01-01		539137-01-01		
	UNITS	BH17-01-07	QC Batch	BH17-01-08	RDL	QC Batch

Physical Properties

Moisture	%	11	8810710	14	0.30	8808738
----------	---	----	---------	----	------	---------

RDL = Reportable Detection Limit

Maxxam Job #: B794040
Report Date: 2017/10/30

SNC Lavalin Environmental Consultants
Client Project #: 131167
Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SM

TOTAL PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		SH6499	SH6500	SH6501	SH6502	SH6504		
Sampling Date		2017/10/21 08:50	2017/10/21 09:00	2017/10/21 09:10	2017/10/21 09:20	2017/10/21 09:50		
COC Number		539137-01-01	539137-01-01	539137-01-01	539137-01-01	539137-01-01		
	UNITS	BH17-01-01	BH17-01-02	BH17-01-04	BH17-01-05	BH17-01-07	RDL	QC Batch
Hydrocarbons								
EPH (C10-C19)	mg/kg	<100	<100	<100	<100	<100	100	8811554
EPH (C19-C32)	mg/kg	<100	<100	<100	<100	<100	100	8811554
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	96	96	98	98	94		8811554
RDL = Reportable Detection Limit								

Maxxam Job #: B794040
Report Date: 2017/10/30

SNC Lavalin Environmental Consultants

Client Project #: 131167

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

Your P.O. #: 4700002618

Sampler Initials: SM:

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

Maxxam ID		SH6499	SH6500	SH6501		SH6502		SH6503		
Sampling Date		2017/10/21 08:50	2017/10/21 09:00	2017/10/21 09:10		2017/10/21 09:20		2017/10/21 09:30		
COC Number		539137-01-01	539137-01-01	539137-01-01		539137-01-01		539137-01-01		
	UNITS	BH17-01-01	BH17-01-02	BH17-01-04	RDL	BH17-01-05	RDL	BH17-01-06	RDL	QC Batch
Volatiles										
VPH (VH 6 to 10 - BTEX)	mg/kg	<10	<10	<10	10	<23	23	<21	21	8806316
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	<0.10	0.10	<0.23 (1)	0.23	<0.21 (1)	0.21	8806645
Benzene	mg/kg	<0.0050	<0.0050	<0.0050	0.0050	<0.011 (1)	0.011	<0.010 (1)	0.010	8806645
Toluene	mg/kg	<0.020	<0.020	<0.020	0.020	<0.046 (1)	0.046	<0.042 (1)	0.042	8806645
Ethylbenzene	mg/kg	<0.010	<0.010	<0.010	0.010	0.13 (1)	0.023	0.12 (1)	0.021	8806645
m & p-Xylene	mg/kg	<0.040	<0.040	<0.040	0.040	0.28 (1)	0.091	0.26 (1)	0.083	8806645
o-Xylene	mg/kg	<0.040	<0.040	<0.040	0.040	<0.091 (1)	0.091	<0.083 (1)	0.083	8806645
Styrene	mg/kg	<0.030	<0.030	<0.030	0.030	<0.068 (1)	0.068	<0.063 (1)	0.063	8806645
Xylenes (Total)	mg/kg	<0.040	<0.040	<0.040	0.040	0.28	0.091	0.26	0.083	8806645
VH C6-C10	mg/kg	<10	<10	<10	10	<23 (1)	23	<21 (1)	21	8806645
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	100	105	105		108		106		8806645
4-Bromofluorobenzene (sur.)	%	102	105	105		103		103		8806645
D10-ETHYLBENZENE (sur.)	%	96	94	94		93		92		8806645
D4-1,2-Dichloroethane (sur.)	%	108	112	110		113		111		8806645

RDL = Reportable Detection Limit

(1) Detection limits raised based on sample volume used for analysis.

Maxxam Job #: B794040
Report Date: 2017/10/30

SNC Lavalin Environmental Consultants

Client Project #: 131167

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

Your P.O. #: 4700002618

Sampler Initials: SM

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

Maxxam ID		SH6504		
Sampling Date		2017/10/21 09:50		
COC Number		539137-01-01		
	UNITS	BH17-01-07	RDL	QC Batch
Volatiles				
VPH (VH 6 to 10 - BTEX)	mg/kg	<10	10	8806316
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	8806645
Benzene	mg/kg	0.031	0.0050	8806645
Toluene	mg/kg	0.046	0.020	8806645
Ethylbenzene	mg/kg	0.98	0.010	8806645
m & p-Xylene	mg/kg	0.45	0.040	8806645
o-Xylene	mg/kg	0.053	0.040	8806645
Styrene	mg/kg	<0.030	0.030	8806645
Xylenes (Total)	mg/kg	0.50	0.040	8806645
VH C6-C10	mg/kg	<10	10	8806645
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	105		8806645
4-Bromofluorobenzene (sur.)	%	103		8806645
D10-ETHYLBENZENE (sur.)	%	96		8806645
D4-1,2-Dichloroethane (sur.)	%	110		8806645
RDL = Reportable Detection Limit				

Maxxam Job #: B794040
Report Date: 2017/10/30

SNC Lavalin Environmental Consultants
Client Project #: 131167
Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SM

GENERAL COMMENTS

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

Package 1	7.0°C
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Results relate only to the items tested.

Maxxam Job #: B794040
Report Date: 2017/10/30

QUALITY ASSURANCE REPORT

SNC Lavalin Environmental Consultants

Client Project #: 131167

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

Your P.O. #: 4700002618

Sampler Initials: SM

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8806645	1,4-Difluorobenzene (sur.)	2017/10/26	100	70 - 130	98	70 - 130	106	%		
8806645	4-Bromofluorobenzene (sur.)	2017/10/26	104	70 - 130	101	70 - 130	105	%		
8806645	D10-ETHYLBENZENE (sur.)	2017/10/26	89	60 - 130	83	60 - 130	92	%		
8806645	D4-1,2-Dichloroethane (sur.)	2017/10/26	103	70 - 130	99	70 - 130	110	%		
8811554	O-TERPHENYL (sur.)	2017/10/29	96	60 - 140	97	60 - 140	100	%		
8806645	Benzene	2017/10/26	108	60 - 140	100	70 - 130	<0.0050	mg/kg	13	40
8806645	Ethylbenzene	2017/10/26	101	60 - 140	99	70 - 130	<0.010	mg/kg	18	40
8806645	m & p-Xylene	2017/10/26	99	60 - 140	100	70 - 130	<0.040	mg/kg	19	40
8806645	Methyl-tert-butylether (MTBE)	2017/10/26					<0.10	mg/kg	NC	40
8806645	o-Xylene	2017/10/26	98	60 - 140	99	70 - 130	<0.040	mg/kg	NC	40
8806645	Styrene	2017/10/26					<0.030	mg/kg	NC	40
8806645	Toluene	2017/10/26	106	60 - 140	97	70 - 130	<0.020	mg/kg	36	40
8806645	VH C6-C10	2017/10/26			112	70 - 130	<10	mg/kg		
8806645	Xylenes (Total)	2017/10/26					<0.040	mg/kg	19	40
8808738	Moisture	2017/10/27					<0.30	%	0.83	20
8810710	Moisture	2017/10/28					<0.30	%	4.0	20
8811554	EPH (C10-C19)	2017/10/29	99	60 - 140	96	70 - 130	<100	mg/kg	NC	40
8811554	EPH (C19-C32)	2017/10/29	99	60 - 140	99	70 - 130	<100	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 (absolute difference $\leq 2 \times$ RDL).

Your P.O. #: 4700002618

Your Project #: 643291

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

PO# 4700002618

Your C.O.C. #: 542657-01-01

Attention:Jason Tataren

SNC Lavalin Environmental Consultants
8648 COMMERCE COURT
BURNABY, BC
CANADA V5A 4N6

Report Date: 2017/12/18

Report #: R2492285

Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B7A9221

Received: 2017/12/08, 15:23

Sample Matrix: GROUND WATER

Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS	1	N/A	2017/12/11	BBY8SOP-00010/11/12	BCMOE BCLM Jul 2017
EPH in Water when PAH required	1	2017/12/12	2017/12/12	BBY8SOP-00029	BCMOE BCLM Mar 2017
PAH in Water by GC/MS (SIM)	1	2017/12/12	2017/12/12	BBY8SOP-00021	BCMOE BCLM Mar 2005
Total LMW, HMW, Total PAH Calc	1	N/A	2017/12/14	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	1	N/A	2017/12/14	BBY WI-00033	Auto Calc
Volatile HC-BTEX	1	N/A	2017/12/12	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.

Résults relate to samples tested.

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

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

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

Your P.O. #: 4700002618

Your Project #: 643291

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

PO# 4700002618

Your C.O.C. #: 542657-01-01

Attention:Jason Tataren

SNC Lavalin Environmental Consultants
8648 COMMERCE COURT
BURNABY, BC
CANADA V5A 4N6

Report Date: 2017/12/18

Report #: R2492285

Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B7A9221

Received: 2017/12/08, 15:23

Encryption Key



Namita Sahni
Burnaby Project Manager
18 Dec 2017 08:57:07

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

Namita Sahni, Burnaby Project Manager

Email: NSahni@maxxam.ca

Phone# (604)639-2614

=====
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 #: B7A9221
 Report Date: 2017/12/18

SNC Lavalin Environmental Consultants
 Client Project #: 643291
 Site Location: 2808 W. BROADWAY, VANCOUVER, BC
 Your P.O. #: 4700002618
 Sampler Initials: SJ

CSR BTEX/VPH IN WATER (GROUND WATER)

Maxxam ID	SQ4551			
Sampling Date	2017/12/08 13:30			
COC Number	542657-01-01			
	UNITS	MW17-01-171208	RDL	QC Batch
Calculated Parameters				
VPH (VH 6 to 10 - BTEX)	ug/L	1200	300	8856849
Volatiles				
Methyl-tert-butylether (MTBE)	ug/L	470 (1)	4.0	8858251
Benzene	ug/L	510	0.40	8858251
Toluene	ug/L	170	0.40	8858251
Ethylbenzene	ug/L	2000	0.40	8858251
m & p-Xylene	ug/L	1100	0.40	8858251
o-Xylene	ug/L	180	0.40	8858251
Styrene	ug/L	<0.40	0.40	8858251
Xylenes (Total)	ug/L	1200	0.40	8858251
VH C6-C10	ug/L	5100	300	8858251
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	98		8858251
4-Bromofluorobenzene (sur.)	%	99		8858251
D4-1,2-Dichloroethane (sur.)	%	95		8858251
RDL = Reportable Detection Limit				
(1) Tentatively identified result and may be potentially biased high due to matrix interference.				

Maxxam Job #: B7A9221
Report Date: 2017/12/18

SNC Lavalin Environmental Consultants
Client Project #: 643291
Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SJ

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

Maxxam ID		SQ4551		
Sampling Date		2017/12/08 13:30		
COC Number		542657-01-01		
	UNITS	MW17-01-171208	RDL	QC Batch
Calculated Parameters				
Low Molecular Weight PAH's	ug/L	150	2.0	8856106
High Molecular Weight PAH's	ug/L	<0.050	0.050	8856106
Total PAH	ug/L	150	2.0	8856106
Polycyclic Aromatics				
Quinoline	ug/L	<0.020	0.020	8859324
Naphthalene	ug/L	130 (1)	2.0	8859324
1-Methylnaphthalene	ug/L	13 (1)	1.0	8859324
2-Methylnaphthalene	ug/L	20 (1)	2.0	8859324
Acenaphthylene	ug/L	<0.050	0.050	8859324
Acenaphthene	ug/L	0.061	0.050	8859324
Fluorene	ug/L	<0.050	0.050	8859324
Phenanthrene	ug/L	<0.050	0.050	8859324
Anthracene	ug/L	<0.010	0.010	8859324
Acridine	ug/L	<0.050	0.050	8859324
Fluoranthene	ug/L	<0.020	0.020	8859324
Pyrene	ug/L	<0.020	0.020	8859324
Benzo(a)anthracene	ug/L	<0.010	0.010	8859324
Chrysene	ug/L	<0.020	0.020	8859324
Benzo(b&j)fluoranthene	ug/L	<0.030	0.030	8859324
Benzo(k)fluoranthene	ug/L	<0.050	0.050	8859324
Benzo(a)pyrene	ug/L	<0.0050	0.0050	8859324
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	8859324
Dibenz(a,h)anthracene	ug/L	<0.0030	0.0030	8859324
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	8859324
Calculated Parameters				
LEPH (C10-C19 less PAH)	mg/L	0.72	0.20	8857309
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.20	8857309
Ext. Pet. Hydrocarbon				
EPH (C10-C19)	mg/L	0.85	0.20	8859332
RDL = Reportable Detection Limit				
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.				

Maxxam Job #: B7A9221
Report Date: 2017/12/18

SNC Lavalin Environmental Consultants

Client Project #: 643291

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

Your P.O. #: 4700002618

Sampler Initials: SJ

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

Maxxam ID	SQ4551			
Sampling Date	2017/12/08 13:30			
COC Number	542657-01-01			
	UNITS	MW17-01-171208	RDL	QC Batch
EPH (C19-C32)	mg/L	<0.20	0.20	8859332
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	96		8859332
D10-ANTHRACENE (sur.)	%	103		8859324
D8-ACENAPHTHYLENE (sur.)	%	110		8859324
D8-NAPHTHALENE (sur.)	%	107		8859324
TERPHENYL-D14 (sur.)	%	87		8859324
RDL = Reportable Detection Limit				

Maxxam Job #: B7A9221

Report Date: 2017/12/18

SNC Lavalin Environmental Consultants

Client Project #: 643291

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

Your P.O. #: 4700002618

Sampler Initials: SJ

GENERAL COMMENTS

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

Package 1	11.3°C
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Revised report to include split files as requested- NS7 2017/12/18

Results relate only to the items tested.

Maxxam Job #: B7A9221
Report Date: 2017/12/18

QUALITY ASSURANCE REPORT

SNC Lavalin Environmental Consultants
Client Project #: 643291

Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SJ

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8858251	1,4-Difluorobenzene (sur.)	2017/12/11	100	70 - 130	98	70 - 130	106	%		
8858251	4-Bromofluorobenzene (sur.)	2017/12/11	99	70 - 130	101	70 - 130	98	%		
8858251	D4-1,2-Dichloroethane (sur.)	2017/12/11	97	70 - 130	96	70 - 130	100	%		
8859324	D10-ANTHRACENE (sur.)	2017/12/12	98	50 - 140	100	50 - 140	104	%		
8859324	D8-ACENAPHTHYLENE (sur.)	2017/12/12	103	50 - 140	105	50 - 140	106	%		
8859324	D8-NAPHTHALENE (sur.)	2017/12/12	102	50 - 140	104	50 - 140	106	%		
8859324	TERPHENYL-D14 (sur.)	2017/12/12	85	50 - 140	90	50 - 140	89	%		
8859332	O-TERPHENYL (sur.)	2017/12/12	95	60 - 140	96	60 - 140	97	%		
8858251	Benzene	2017/12/11	97	70 - 130	97	70 - 130	<0.40	ug/L	NC	30
8858251	Ethylbenzene	2017/12/11	106	70 - 130	107	70 - 130	<0.40	ug/L	NC	30
8858251	m & p-Xylene	2017/12/11	100	70 - 130	100	70 - 130	<0.40	ug/L	NC	30
8858251	Methyl-tert-butylether (MTBE)	2017/12/11	98	70 - 130	97	70 - 130	<4.0	ug/L	NC	30
8858251	o-Xylene	2017/12/11	101	70 - 130	101	70 - 130	<0.40	ug/L	NC	30
8858251	Styrene	2017/12/11	102	70 - 130	103	70 - 130	<0.40	ug/L	NC	30
8858251	Toluene	2017/12/11	98	70 - 130	97	70 - 130	<0.40	ug/L	NC	30
8858251	VH C6-C10	2017/12/11			97	70 - 130	<300	ug/L	NC	30
8858251	Xylenes (Total)	2017/12/11					<0.40	ug/L	NC	30
8859324	1-Methylnaphthalene	2017/12/12	103	50 - 140	105	50 - 140	<0.050	ug/L	NC	40
8859324	2-Methylnaphthalene	2017/12/12	98	50 - 140	102	50 - 140	<0.10	ug/L	NC	40
8859324	Acenaphthene	2017/12/12	95	50 - 140	98	50 - 140	<0.050	ug/L	NC	40
8859324	Acenaphthylene	2017/12/12	97	50 - 140	101	50 - 140	<0.050	ug/L	NC	40
8859324	Acridine	2017/12/12	97	50 - 140	99	50 - 140	<0.050	ug/L	NC	40
8859324	Anthracene	2017/12/12	99	50 - 140	102	50 - 140	<0.010	ug/L	NC	40
8859324	Benzo(a)anthracene	2017/12/12	96	50 - 140	100	50 - 140	<0.010	ug/L	NC	40
8859324	Benzo(a)pyrene	2017/12/12	90	50 - 140	97	50 - 140	<0.0050	ug/L	NC	40
8859324	Benzo(b&j)fluoranthene	2017/12/12	91	50 - 140	103	50 - 140	<0.030	ug/L	NC	40
8859324	Benzo(g,h,i)perylene	2017/12/12	71	50 - 140	88	50 - 140	<0.050	ug/L	NC	40
8859324	Benzo(k)fluoranthene	2017/12/12	90	50 - 140	97	50 - 140	<0.050	ug/L	NC	40
8859324	Chrysene	2017/12/12	100	50 - 140	105	50 - 140	<0.020	ug/L	NC	40
8859324	Dibenz(a,h)anthracene	2017/12/12	73	50 - 140	91	50 - 140	<0.0030	ug/L	NC	40

Maxxam Job #: B7A9221
Report Date: 2017/12/18

QUALITY ASSURANCE REPORT(CONT'D)

SNC Lavalin Environmental Consultants

Client Project #: 643291

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

Your P.O. #: 4700002618

Sampler Initials: SJ

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8859324	Fluoranthene	2017/12/12	93	50 - 140	100	50 - 140	<0.020	ug/L	NC	40
8859324	Fluorene	2017/12/12	89	50 - 140	92	50 - 140	<0.050	ug/L	NC	40
8859324	Indeno(1,2,3-cd)pyrene	2017/12/12	73	50 - 140	89	50 - 140	<0.050	ug/L	NC	40
8859324	Naphthalene	2017/12/12	98	50 - 140	103	50 - 140	<0.10	ug/L	NC	40
8859324	Phenanthrene	2017/12/12	92	50 - 140	95	50 - 140	<0.050	ug/L	NC	40
8859324	Pyrene	2017/12/12	96	50 - 140	103	50 - 140	<0.020	ug/L	NC	40
8859324	Quinoline	2017/12/12	112	50 - 140	115	50 - 140	<0.020	ug/L	NC	40
8859332	EPH (C10-C19)	2017/12/12	102	60 - 140	99	70 - 130	<0.20	mg/L	NC	30
8859332	EPH (C19-C32)	2017/12/12	122	60 - 140	108	70 - 130	<0.20	mg/L	NC	30

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

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

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

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

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

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

Attention: Jason Tataren

SNC Lavalin Environmental Consultants
 8648 COMMERCE COURT
 BURNABY, BC
 CANADA V5A 4N6

Your P.O. #: 4700002618
 Your Project #: 131167
 Site#: 91762
 Site Location: 2808 W. BROADWAY, VANCOUVER, BC
 PO# 4700002618
 Your C.O.C. #: 539137-17-01

Report Date: 2018/01/30
 Report #: R2507576
 Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B798870

Received: 2017/11/06, 16:07

Sample Matrix: GROUND WATER
 # Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS	2	N/A	2017/11/07	BBY8SOP-00010/11/12	BCMOE BCLM Jul 2017
EPH in Water when PAH required	2	2017/11/08	2017/11/08	BBY8SOP-00029	BCMOE BCLM Mar 2017
PAH in Water by GC/MS (SIM)	1	2017/11/08	2017/11/08	BBY8SOP-00021	BCMOE BCLM Jul 2017m
PAH in Water by GC/MS (SIM)	1	2017/11/08	2017/11/09	BBY8SOP-00021	BCMOE BCLM Jul 2017m
Total LMW, HMW, Total PAH Calc	1	N/A	2017/11/10	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	1	N/A	2017/11/09	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	1	N/A	2017/11/10	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	1	N/A	2017/11/09	BBY WI-00033	Auto Calc
Volatile HC-BTEX	2	N/A	2017/11/08	BBY WI-00033	Auto Calc

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

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

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

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

Attention: Jason Tataren

SNC Lavalin Environmental Consultants
8648 COMMERCE COURT
BURNABY, BC
CANADA V5A 4N6

Your P.O. #: 4700002618
Your Project #: 131167
Site#: 91762
Site Location: 2808 W. BROADWAY, VANCOUVER, BC
PO# 4700002618
Your C.O.C. #: 539137-17-01

Report Date: 2018/01/30

Report #: R2507576

Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B798870

Received: 2017/11/06, 16:07

Encryption Key



Namita Sahni
Burnaby Project Manager
30 Jan 2018 11:29:55

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

Namita Sahni, Burnaby Project Manager

Email: NSahni@maxxam.ca

Phone# (604)639-2614

=====

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 #: B798870
Report Date: 2018/01/30

SNC Lavalin Environmental Consultants

Client Project #: 131167

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

Your P.O. #: 4700002618

Sampler Initials: SJ

CSR BTEX/VPH IN WATER (GROUND WATER)

Maxxam ID		SK6500			SK6500			SK6502		
Sampling Date		2017/11/06 11:35			2017/11/06 11:35			2017/11/06 10:05		
COC Number		539137-17-01			539137-17-01			539137-17-01		
	UNITS	MW17-01-171106	RDL	QC Batch	MW17-01-171106 Lab-Dup	RDL	QC Batch	MW17-03-171106	RDL	QC Batch

Calculated Parameters

VPH (VH 6 to 10 - BTEX)	ug/L	4400	300	8821686				<300	300	8821686
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Volatiles

Methyl-tert-butylether (MTBE)	ug/L	290 (1)	4.0	8822574	240	4.0	8822574	<4.0	4.0	8822574
Benzene	ug/L	350	0.40	8822574	340	0.40	8822574	<0.40	0.40	8822574
Toluene	ug/L	200	0.40	8822574	190	0.40	8822574	<0.40	0.40	8822574
Ethylbenzene	ug/L	1300	0.40	8822574	1300	0.40	8822574	<0.40	0.40	8822574
m & p-Xylene	ug/L	820	0.40	8822574	920	0.40	8822574	<0.40	0.40	8822574
o-Xylene	ug/L	170	0.40	8822574	160	0.40	8822574	<0.40	0.40	8822574
Styrene	ug/L	<0.40	0.40	8822574	<0.40	0.40	8822574	<0.40	0.40	8822574
Xylenes (Total)	ug/L	980	0.40	8822574	1100	0.40	8822574	<0.40	0.40	8822574
VH C6-C10	ug/L	7200	300	8822574	7500	300	8822574	<300	300	8822574

Surrogate Recovery (%)

1,4-Difluorobenzene (sur.)	%	92		8822574	94		8822574	125		8822574
4-Bromofluorobenzene (sur.)	%	109		8822574	105		8822574	106		8822574
D4-1,2-Dichloroethane (sur.)	%	95		8822574	90		8822574	130		8822574

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

(1) Qualifying ion outside of acceptance criteria. Results are tentatively identified and potentially biased high.

Maxxam Job #: B798870
Report Date: 2018/01/30

SNC Lavalin Environmental Consultants
Client Project #: 131167
Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SJ

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

Maxxam ID		SK6500		SK6502		
Sampling Date		2017/11/06 11:35		2017/11/06 10:05		
COC Number		539137-17-01		539137-17-01		
	UNITS	MW17-01-171106	RDL	MW17-03-171106	RDL	QC Batch
Calculated Parameters						
Low Molecular Weight PAH's	ug/L	68	2.0	<0.10	0.10	8821684
High Molecular Weight PAH's	ug/L	<0.050	0.050	0.10	0.050	8821684
Total PAH	ug/L	68	2.0	0.10	0.10	8821684
Polycyclic Aromatics						
Quinoline	ug/L	<0.020	0.020	<0.020	0.020	8823459
Naphthalene	ug/L	62 (1)	2.0	<0.10	0.10	8823459
2-Methylnaphthalene	ug/L	6.5	0.10	<0.10	0.10	8823459
Acenaphthylene	ug/L	<0.050	0.050	<0.050	0.050	8823459
Acenaphthene	ug/L	<0.050	0.050	<0.050	0.050	8823459
Fluorene	ug/L	<0.050	0.050	<0.050	0.050	8823459
Phenanthrene	ug/L	<0.050	0.050	<0.050	0.050	8823459
Anthracene	ug/L	<0.010	0.010	<0.010	0.010	8823459
Acridine	ug/L	<0.050	0.050	<0.050	0.050	8823459
Fluoranthene	ug/L	<0.020	0.020	0.047	0.020	8823459
Pyrene	ug/L	<0.020	0.020	0.040	0.020	8823459
Benzo(a)anthracene	ug/L	<0.010	0.010	0.011	0.010	8823459
Chrysene	ug/L	<0.020	0.020	<0.020	0.020	8823459
Benzo(b&j)fluoranthene	ug/L	<0.030	0.030	<0.030	0.030	8823459
Benzo(k)fluoranthene	ug/L	<0.050	0.050	<0.050	0.050	8823459
Benzo(a)pyrene	ug/L	<0.0050	0.0050	0.0067	0.0050	8823459
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	<0.050	0.050	8823459
Dibenz(a,h)anthracene	ug/L	<0.0030	0.0030	<0.0030	0.0030	8823459
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	<0.050	0.050	8823459
Calculated Parameters						
LEPH (C10-C19 less PAH)	mg/L	0.55	0.20	<0.20	0.20	8821685
Ext. Pet. Hydrocarbon						
EPH (C10-C19)	mg/L	0.61	0.20	<0.20	0.20	8823455
EPH (C19-C32)	mg/L	<0.20	0.20	<0.20	0.20	8823455
Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	118		113		8823455
RDL = Reportable Detection Limit						
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.						

Maxxam Job #: B798870
 Report Date: 2018/01/30

SNC Lavalin Environmental Consultants

Client Project #: 131167

Site Location: 2808 W. BROADWAY, VANCOUVER, BC

Your P.O. #: 4700002618

Sampler Initials: SJ

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

Maxxam ID		SK6500		SK6502		
Sampling Date		2017/11/06 11:35		2017/11/06 10:05		
COC Number		539137-17-01		539137-17-01		
	UNITS	MW17-01-171106	RDL	MW17-03-171106	RDL	QC Batch
D10-ANTHRACENE (sur.)	%	100		96		8823459
D8-ACENAPHTHYLENE (sur.)	%	101		98		8823459
D8-NAPHTHALENE (sur.)	%	94		100		8823459
TERPHENYL-D14 (sur.)	%	80		78		8823459
RDL = Reportable Detection Limit						

Maxxam Job #: B798870
Report Date: 2018/01/30

SNC Lavalin Environmental Consultants
Client Project #: 131167
Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SJ

GENERAL COMMENTS

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

Package 1	5.7°C
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Revised report to include split files as requested- NS7 2018/01/30

Results relate only to the items tested.

Maxxam Job #: B798870
Report Date: 2018/01/30

QUALITY ASSURANCE REPORT

SNC Lavalin Environmental Consultants
Client Project #: 131167

Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SJ

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8822574	1,4-Difluorobenzene (sur.)	2017/11/07	93	70 - 130	117	70 - 130	107	%		
8822574	4-Bromofluorobenzene (sur.)	2017/11/07	103	70 - 130	107	70 - 130	100	%		
8822574	D4-1,2-Dichloroethane (sur.)	2017/11/07	86	70 - 130	125	70 - 130	125	%		
8823455	O-TERPHENYL (sur.)	2017/11/08	111	60 - 140	104	60 - 140	107	%		
8823459	D10-ANTHRACENE (sur.)	2017/11/08	93	50 - 140	94	50 - 140	93	%		
8823459	D8-ACENAPHTHYLENE (sur.)	2017/11/08	94	50 - 140	96	50 - 140	95	%		
8823459	D8-NAPHTHALENE (sur.)	2017/11/08	96	50 - 140	92	50 - 140	94	%		
8823459	TERPHENYL-D14 (sur.)	2017/11/08	76	50 - 140	78	50 - 140	73	%		
8822574	Benzene	2017/11/07	NC	70 - 130	111	70 - 130	<0.40	ug/L	1.7	30
8822574	Ethylbenzene	2017/11/07	NC	70 - 130	96	70 - 130	<0.40	ug/L	0.23	30
8822574	m & p-Xylene	2017/11/07	NC	70 - 130	96	70 - 130	<0.40	ug/L	12	30
8822574	Methyl-tert-butylether (MTBE)	2017/11/07	NC	70 - 130	121	70 - 130	<4.0	ug/L	18	30
8822574	o-Xylene	2017/11/07	NC	70 - 130	107	70 - 130	<0.40	ug/L	1.2	30
8822574	Styrene	2017/11/07	107	70 - 130	110	70 - 130	<0.40	ug/L	NC	30
8822574	Toluene	2017/11/07	NC	70 - 130	106	70 - 130	<0.40	ug/L	3.6	30
8822574	VH C6-C10	2017/11/07			111	70 - 130	<300	ug/L	3.8	30
8822574	Xylenes (Total)	2017/11/07					<0.40	ug/L	9.6	30
8823455	EPH (C10-C19)	2017/11/08	114	60 - 140	107	70 - 130	<0.20	mg/L	NC	30
8823455	EPH (C19-C32)	2017/11/08	122	60 - 140	117	70 - 130	<0.20	mg/L	NC	30
8823459	2-Methylnaphthalene	2017/11/08	92	50 - 140	95	50 - 140	<0.10	ug/L	NC	40
8823459	Acenaphthene	2017/11/08	90	50 - 140	91	50 - 140	<0.050	ug/L	NC	40
8823459	Acenaphthylene	2017/11/08	87	50 - 140	91	50 - 140	<0.050	ug/L	NC	40
8823459	Acridine	2017/11/08	99	50 - 140	99	50 - 140	<0.050	ug/L	NC	40
8823459	Anthracene	2017/11/08	103	50 - 140	101	50 - 140	<0.010	ug/L	NC	40
8823459	Benzo(a)anthracene	2017/11/08	78	50 - 140	81	50 - 140	<0.010	ug/L	NC	40
8823459	Benzo(a)pyrene	2017/11/08	77	50 - 140	87	50 - 140	<0.0050	ug/L	NC	40
8823459	Benzo(b&i;)fluoranthene	2017/11/08	81	50 - 140	89	50 - 140	<0.030	ug/L	NC	40
8823459	Benzo(g,h,i)perylene	2017/11/08	56	50 - 140	79	50 - 140	<0.050	ug/L	NC	40
8823459	Benzo(k)fluoranthene	2017/11/08	74	50 - 140	87	50 - 140	<0.050	ug/L	NC	40
8823459	Chrysene	2017/11/08	81	50 - 140	85	50 - 140	<0.020	ug/L	NC	40

Maxxam Job #: B798870
Report Date: 2018/01/30

QUALITY ASSURANCE REPORT(CONT'D)

SNC Lavalin Environmental Consultants
Client Project #: 131167

Site Location: 2808 W. BROADWAY, VANCOUVER, BC
Your P.O. #: 4700002618
Sampler Initials: SJ

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8823459	Dibenz(a,h)anthracene	2017/11/08	54	50 - 140	77	50 - 140	<0.0030	ug/L	NC	40
8823459	Fluoranthene	2017/11/08	86	50 - 140	88	50 - 140	<0.020	ug/L	NC	40
8823459	Fluorene	2017/11/08	78	50 - 140	81	50 - 140	<0.050	ug/L	NC	40
8823459	Indeno(1,2,3-cd)pyrene	2017/11/08	57	50 - 140	79	50 - 140	<0.050	ug/L	NC	40
8823459	Naphthalene	2017/11/08	88	50 - 140	92	50 - 140	<0.10	ug/L	NC	40
8823459	Phenanthrene	2017/11/08	80	50 - 140	82	50 - 140	<0.050	ug/L	8.4	40
8823459	Pyrene	2017/11/08	92	50 - 140	94	50 - 140	<0.020	ug/L	NC	40
8823459	Quinoline	2017/11/08	116	50 - 140	118	50 - 140	<0.020	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 (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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