



Englobe

Sols Matériaux Environnement

NATIONAL CAPITAL COMMISSION

Phase II Environnemental Site Assessment

Leamy Stream Pedestrian Bridge Gatineau (Hull Sector), Québec

Final Report

January 2016

O/Ref.: 033-B-0012112-2-HG-R-0001-00

January 4, 2015

Mister Bernard Reid

Direction of planning in the national capital, Division of Design and construction
NATIONAL CAPITAL COMMISSION
40 Elgin Street, Room 202
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Objet: Phase II Environmental Site Assessment

Leamy Stream Pedestrian Bridge Gatineau (Hull Sector), Québec
O/Ref.: 033-B-0012112-2-HG-R-0001-00

Sir,

As agreed, you will find the results for the Phase II Environmental Site Assessment (ESA) realised in the scope of this mandate.

1 INTRODUCTION

Englobe was mandated by the National Capital Commission (NCC) to carry out a Phase II ESA at the east and west extremities of the Pedestrian Bridge at Leamy Stream in Gatineau, Québec. The investigated site is located east of Fournier Boulevard in the north sector of Hull. The bridge is 56 m long and has a width of 6 m. The general location of the investigated site is presented in Figure 1. The investigated sectors are in the east and the west of the pedestrian bridge in the Leamy Lake Park (Hull sector). The present study was performed in order to plan future bridge repairs.

This report presents the objectives of the investigation, a summary description of the completed work, the obtained results as well as the associated conclusions and recommendations.

1.1 Mandate and objective

The terms governing this mandate are based on the statements contained in a proposal prepared by Englobe (previously LVM, a division of Englobe Corp., Ref. 15-0090-033) and accepted on May 1st, 2015 by the CCN (Purchase order # 592245).

The objective of the Phase II ESA was to acquire soil quality data on the investigated site in consideration of the Environmental Quality Act (EQA) and associated regulations and the Ministry of Sustainable Development, Environment and Fight against Climate Change (MDDELCC)'s *Soil Protection and Contaminated Sites Rehabilitation Policy* (Policy).

The objective of the present study was to acquire preliminary environmental soil quality located at the eastern and western extremity of the pedestrian bridge. It must also be noted that there are no designated activity from appendix III of the *Land Protection and Rehabilitation Regulation* (RPRT) that is or has ever been done on the investigated site. Consequently, this verification will be done in consideration of the MDDELCC's Policy.

1.2 Scope and Limitations

The study performed within the scope of our mandate is subject to the scope and limitations described in Appendix 1 and any particular conditions described elsewhere within this report.

Furthermore, the results of the study are only valid for the investigated sectors. It also must be noted that the environmental quality of soils in other locations have not been defined.

2 DESCRIPTION OF THE FIELDWORK

The locations of the boreholes were suggested by the NCC. The choice of the parameters were suggested by Englobe, in order to meet the objective of the Phase II ESA, and approved by the NCC and CIMA⁺. Before the boreholes were done, public and private underground services (electricity, gas, telephone, aqueduct, sewers, etc.) were located with the help of Info-Excavation and the City of Gatineau.

The fieldwork performed within the scope of this study was conducted at the same time as the geotechnical part of the project, from May 4th to 6th, 2015, by Englobe's technical staff. The tasks performed included the following:

- ▶ Drilling of five (5) boreholes;
- ▶ Description and sampling of materials met in the boreholes;
- ▶ Location of the boreholes;
- ▶ Selection and analysis of representative soil samples taken.

The borehole locations were identified with a GPS. Plans with the locations of the boreholes are presented in figures 2 and 3.

2.1 Boreholes

The work consisted of drilling five (5) boreholes identified as F-01-15 to F-05-15. The boreholes were performed using a Geoprobe from the company George Downing Estate Drilling Limited, under the supervision of Englobe's technical staff. The boreholes depths vary between 5.36 and 6.10 m. Following their completion, the boreholes which were not instrumented with monitoring wells were backfilled using the borehole cuttings and finished at the surface with cold asphalt for boreholes F-01-15, F-03-15 and F-04-15.

2.2 Sampling

Sampling, transportation and preservation procedures were performed taking into account the proposed methodologies in the different characterisation guides of the MDDELCC. Prior to each sampling, instruments (trowel, split spoon or other) that may have come into contact with the samples were cleaned according to the *Sampling Guide for Environmental Analysis* (MDDELCC, 2010). The sampling transportation and preservation procedures are presented in Appendix 4.

In total, forty-nine (49) samples and three (3) duplicates were taken with the help of a split spoon that was cleaned between each sampling and with the help of a thin-wall sampling tube. The sampling was performed according to the encountered stratigraphy and the organoleptic observations made according to the maximum sampling intervals 0.5 m thick (without any overlap of stratigraphic unit). The samples were described in order to identify the nature and soil type. The thicknesses of sampling intervals in the soundings were noted in the sounding report in Appendix 2.

2.3 Analytical Program

The analytical program was established according to the contaminants suspected in the investigated sector. The soil samples submitted for analysis were selected according to visual or olfactory observations made in the field (texture, colour, odour, presence of debris).

A total of ten (10) soil samples and one (1) field duplicate were selected and analysed for one or more of the following parameters:

- ▶ Petroleum Hydrocarbons C₁₀-C₅₀ (PH C₁₀-C₅₀) (ten (10) samples and one (1) duplicate);
- ▶ Polycyclic Aromatic Hydrocarbons (PAH) (ten (10) samples and one (1) duplicate);
- ▶ Volatile Organic Compounds (VOC) (Monocyclic Aromatic Hydrocarbons (MAH) and Chlorinated Aliphatic Hydrocarbons (HAC)) (Eight (8) samples and one (1) duplicate);
- ▶ Metals (Ag, As, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sn and Zn) (ten (10) samples and one (1) duplicate);
- ▶ Non-Chlorinated Benzene Compounds (NCBC) (Five (5) samples);
- ▶ Total Sulphur (ten (10) samples and one (1) duplicate);
- ▶ Phenolic Compounds (Five (5) samples).

In the event of the soils disposal, two (2) soil samples were selected for the following parameters:

- ▶ Petroleum Hydrocarbons - fractions 1 to 4 (PH F1-F4);
- ▶ Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- ▶ Leachates Metals (Ag, As, Ba, B, Cd, Cr, Pb, Se, U), Ontario Regulation 558/00.

The chemical analysis performed within the scope of this mandate were entrusted to the laboratory AGAT of Saint-Laurent in Montreal duly accredited by the MDDELCC for the analysis of targeted parameters, including Ont. Reg 558/00. The analytical certificated issued is provided in appendix 3.

2.4 Quality Assurance and Control Program

Englobe maintains a quality insurance and control system within all of the projects with which it is entrusted. It includes the analysis of one (1) field duplicate identified as DUP-1 which corresponds to sample F-02-15 CF-7. This duplicate was analysed for the parameters cited in the previous section.

The laboratory also applies a quality insurance and control program on the set of analytical procedures. The program includes the use of analytical method blanks, duplicates, fortified samples, reference materials and surrogates.

The results obtained for the quality control are discussed in section 4.3.

3 FIELD CHARACTERISTICS

3.1 Stratigraphic Context

The nature and certain properties of materials making up the different stratigraphic units were visually determined during the fieldwork. It must be noted that because the soil description is done visually this could involve the use of the judgement and interpretation of the employee that did the material examination. The following paragraphs present a summary of the stratigraphic context. In this summary, the term *depth* refers to ground surface at the location of the soundings.

The sounding reports, inserted in Appendix 3, contain a detailed description of encountered materials.

The stratigraphy observed in borehole F-01-15 consists, beneath the bituminous concrete covering, of a heterogeneous fill layer composed of sand and gravel with a little silt until a depth of 0.61 m. Sub-jacent to this unit we observed a gravelly sand until a depth of 3.66 m, with traces of silt between 0.61 and 1.22 m, some silt and traces of organic matter between 1.22 and 2.44 m, and some silt between 2.44 and 3.66 m. This unit rests on a unit of 1.22 m thick of sand and gravel with traces of silt, followed by gravelly sand with some silt until a depth of 5.36 m. A refusal was obtained at 5.36 m deep.

Generally, the stratigraphy of boreholes F-03-15 and F-04-15 consists, beneath the concrete covering of 0.10 m thick, followed by a heterogeneous fill layer, mostly of silty clay with traces of sand and gravel (thickness of 0.51 m), gravelly sand with some to traces of silt (thickness varies from 1.83 to 3.05 m) to a depth that varies from 2.44 (F-03-15) to 3.66 m (F-04-15). Sub-jacent to the fill layer, in borehole F-03-15, a gravel with some sand and traces of silt to a depth of 3.66 m, followed by a humid gravelly sand with traces of silt, clay and organic matter until a depth of 4.88 m. At borehole F-04-15, under the fill, there is a unit composed of stone, gravel with a bit of sand, traces of silt and organic matter till a depth of 4.27 m. For each of these two boreholes, these last units sit on the natural soil composed of humid to very humid silty sand until a depth of 6.40 m. The bedrock was not reached during the drilling.

For boreholes F-02-15 and F-05-15, the stratigraphy observed at borehole F-02-15 consists of a covering of vegetal soil and organic matter 0.05 m thick followed by a heterogeneous fill layer. The fill layer is

present at the surface of F-05-15. It is primarily composed of gravelly sand with traces of silt (thickness of 0.56 m: F-02-15), silty clay with some sand and traces of gravel (thickness of 0.61 m), of sand with some silt and traces of gravel (thickness that varies from 0.61 to 1.83 m) and of gravelly sand with some to traces of silt (thickness varies from 0.61 to 1.83 m), until a depth of 3.05 m (F-05-15) to 3.66 m (F-02-15). The fill sits on the natural soil composed of humid to very humid silty sand that is saturated until a depth of 6.10 m. Traces of organic matter, clay and gravel were met in the two boreholes at depths between 3.66 and 4.27 m for borehole F-02-15 and between 3.05 and 3.66 m for borehole F-05-15. The bedrock was not reached in these boreholes.

Note that odours of an unknown nature were detected in boreholes F-01-15 between a depth of 4.88 and 5.36 m.

4 ENVIRONMENTAL ASSESSMENT

For the benefit of the reader, a description of the criteria taken from the MDDELCC's Policy and in regards to site characterisation work is provided in appendix 4. The applicable criteria threshold values and standards retained for the investigated site were based on these requirements.

4.1 Retained Evaluation Criteria

The results for the chemical analyses obtained within the scope of this study were compared to the soil criteria in the MDDELCC's Policy.

Since the investigated site is located in a park and is used as a bike and pedestrian path, it is considered as a non-sensitive recreation site. Therefore, the environmental quality of the soils on the investigated site must respect MDDELCC's Policy level C, which is the maximum acceptable limit level. Furthermore the concentration obtained for the soil samples are compared to the criteria of appendix I of the *Regulation Respecting the Burial of Contaminated Soils* (RESC).

4.2 Results

The results for the chemical analysis performed on the soils samples are presented in table 1. The following principal elements can be drawn upon the examination of this data.

The samples analysed present concentrations in VOC's, NCBC's and phenolic compounds that are inferior to level A of the MDDELCC's Policy criteria.

F-02-15 CF-2 and CF-7 soil samples present concentrations in total sulphur in the A-B range of the MDDELCC's Policy criteria.

F-01-15 TM-2 and F-03-15 TM-2 soil samples present PH C₁₀-C₅₀ and total sulphur concentrations in the A-B range of the MDDELCC's Policy criteria. However, the samples mentioned have concentrations of PAH in the B-C range of the MDDELCC's Policy criteria.

The F-01-15 TM-6 presents concentrations of metal (lead) in the A-B range of the MDDELCC's Policy criteria. However, the samples mentioned have concentrations of total sulphur in the B-C range of the MDDELCC's Policy criteria.

The F-03-15 TM-5 presents concentrations of metal (molybdenum) and of PAH in the A-B range of the MDDELCC's Policy criteria. Furthermore, the samples mentioned have concentrations of PAH in the B-C range of the MDDELCC's Policy criteria.

The F-04-15 CF-1 presents concentrations of PH C₁₀-C₅₀ and of total sulphur in the B-C range of the MDDELCC's Policy criteria.

The F-05-15 CF-1 presents concentrations of total sulphur in the B-C range of the MDDELCC's Policy criteria.

4.3 Quality Control Program

The analytical results obtained for the field duplicates are presented in table 2.

The relative difference between the original soil data and their duplicates vary between 15 and 25 % for the metals (barium and manganese) and 62 % for the total sulphur. For the rest of the results, it was impossible to calculate the corresponding relative difference given that they are located under the analytical detection limits of or has less the 10 times the limit. A difference in the contamination range was observed for one of the contaminants. The difference observed for the total sulphur between the original sample and its duplicate can be explained by the fact the results is around the MDDELCC's Policy criteria.

In sum, the chemical analysis results obtained for the original soil sample taken during the present mandate and their corresponding duplicates are, generally speaking, similar to reveal a good mastery of sampling procedure. The calculated relative differences also demonstrate indirectly, a good reproduction of analytical methods. Let us recall that the relative difference is in fact the sum of the sampling error and the analytical error.

The data relating to the quality control of analytical procedures provided by the laboratory are presented in appendix 3. The analysis of the data provided by the laboratory relative to quality control of the analytical procedures leads us to believe that their work responds to the desired quality. The internal control data presented by the laboratory show that, generally speaking, the employed protocols are well mastered and consequently, the data provided is reliable. The analyses performed on the laboratory duplicates, for their part, show that this laboratory generally properly manipulated and prepared the received samples. This last element confers to the results presented within the present reports additional credibility.

5 DISCUSSION OF RESULTS

5.1 Soil

In summary, the analytical results for the soil samples taken in the boreholes and submitted for laboratory analysis present for the selected parameters concentrations inferior to level C of the MDDELCC's Policy. Consequently, the soil from the boreholes located on the investigated site respects the maximum acceptable limit for a pedestrian and bike path. These soils are compatible with the actual and future usage of this site.

However, soils presenting a concentration in the A-B and B-C range of the MDDELCC's Policy criteria were present at boreholes F-01-15, F-02-15, F-03-15, F-04-15 and F-05-15. These concentrations were found at depths between 0.61 m as well as 1.22 and 4.88 m and 5.36 m for borehole F-01-15, between 0.61 and 1.22 m as well as between 3.66 and 4.88 m for borehole F-03-15, between 0.10 and 0.61 m for borehole F-04-15 and between 0.00 and 0.61 m for borehole F-05-15.

6 CONCLUSION

As part of the pedestrian bridge repair at the Leamy Stream, a Phase II ESA of soils was done by Englobe in the east and west extremities of the pedestrian bridge in the Leamy Lake Park in Gatineau (Hull sector). The study was done in order to preliminarily verify the environmental quality of soils at both bridge extremities.

Based on the results obtained over the course of the Phase II ESA, it appears that the soils sampled in the boreholes and sent for laboratory analysis have concentrations inferior to level C of the MDDELCC's Policy criteria. These soils are compatible with the actual and future usage of the investigated site. However, it must be noted that the soils characterized in the A-B and B-C range of the MDDELCC's Policy criteria were identified during the work.

Phase II environmental site assessment
Leamy stream Pedestrian Bridge, (sector Hull), Gatineau, Québec
National Capital Commission

If soils must be excavated on the property under study and be eliminated off site and that the latter presents concentrations above the level A of the MDDELCC's Policy criteria, it must be managed according to the modalities presented in the *Management Grid for Excavated Contaminated Soils* of the MDDELCC's Policy and the *Regulation Respecting Contaminated Soil Storage and Contaminated Soil Transfer Stations*. Also if fill soil must be transported to the site, it is recommended to insure that the environmental quality of the imported soil respects the *Management Grid for Excavated Contaminated Soils* of the MDDELCC's and the *Regulation Respecting Contaminated Soil Storage and Contaminated Soil Transfer Stations*.

We thank you for having allowed us to participate in the realization of your project

We trust the enclosed to your satisfaction. If, however, additional information should be required, please communicate with the undersigned.

Jean-Louis Ngoundzi, Eng., DESS
Discipline Manager - Environment



Daniel Morin, M.Sc., EESA[®], VEA[®]
Technical Reviewer - Environment

JLN/mp

att. Figure 1: General Localisation of Site Under Study
Figure 2: Quality of Soils (East sector)
Figure 3: Quality of Soils (West sector)
Table 1: Summary of Analytical Results for Soil Samples
Table 2: Results of the Soil Quality Control
Appendix 1: Limitation Clauses
Appendix 2: Sounding Reports
Appendix 3: Certificate of Analysis
Appendix 4: MDDELCC Policy and Legal Context

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Figures

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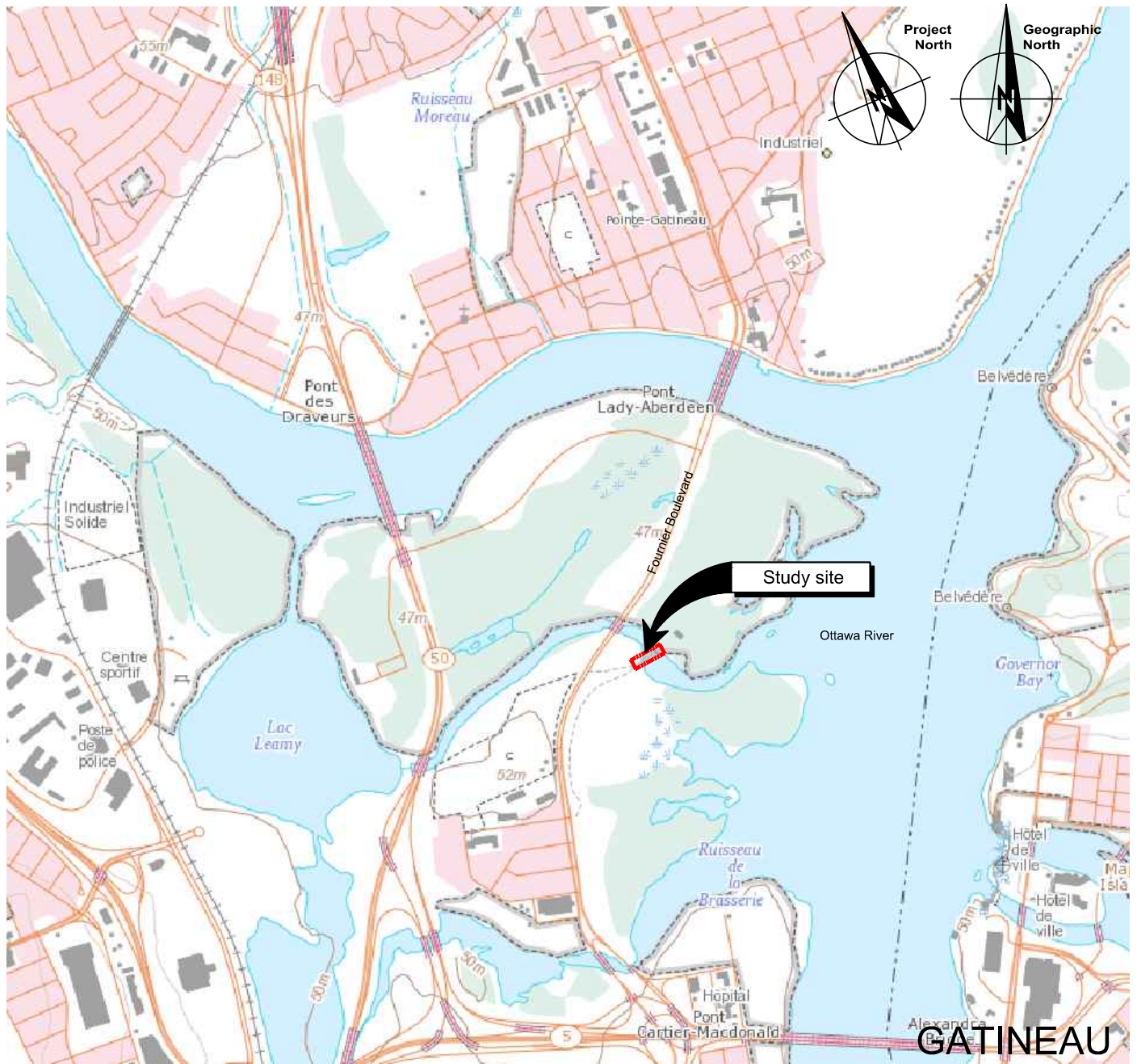
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GRAPHIC SCALE : 1 : 20 000

0 0,1 0,2 0,3 0,4 0,5 0,75 1,0 1,25 km



SOURCE :

- RNC, L'Atlas of Canada - Toporama

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Client

National Capital Commission

Project

Phase II Environmental Site Assessment

Leamy stream pedestrian bridge, Gatineau, Quebec

Title

Figure 1
General location of the site under study



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Fax : 819.770.1373

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Drawn R. Frenette

Checked D. Morin

Discipline **Environnement**Scale **1:20 000**Date **2015-07-15**

Project Manager

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Révision date :

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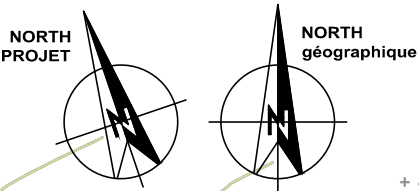
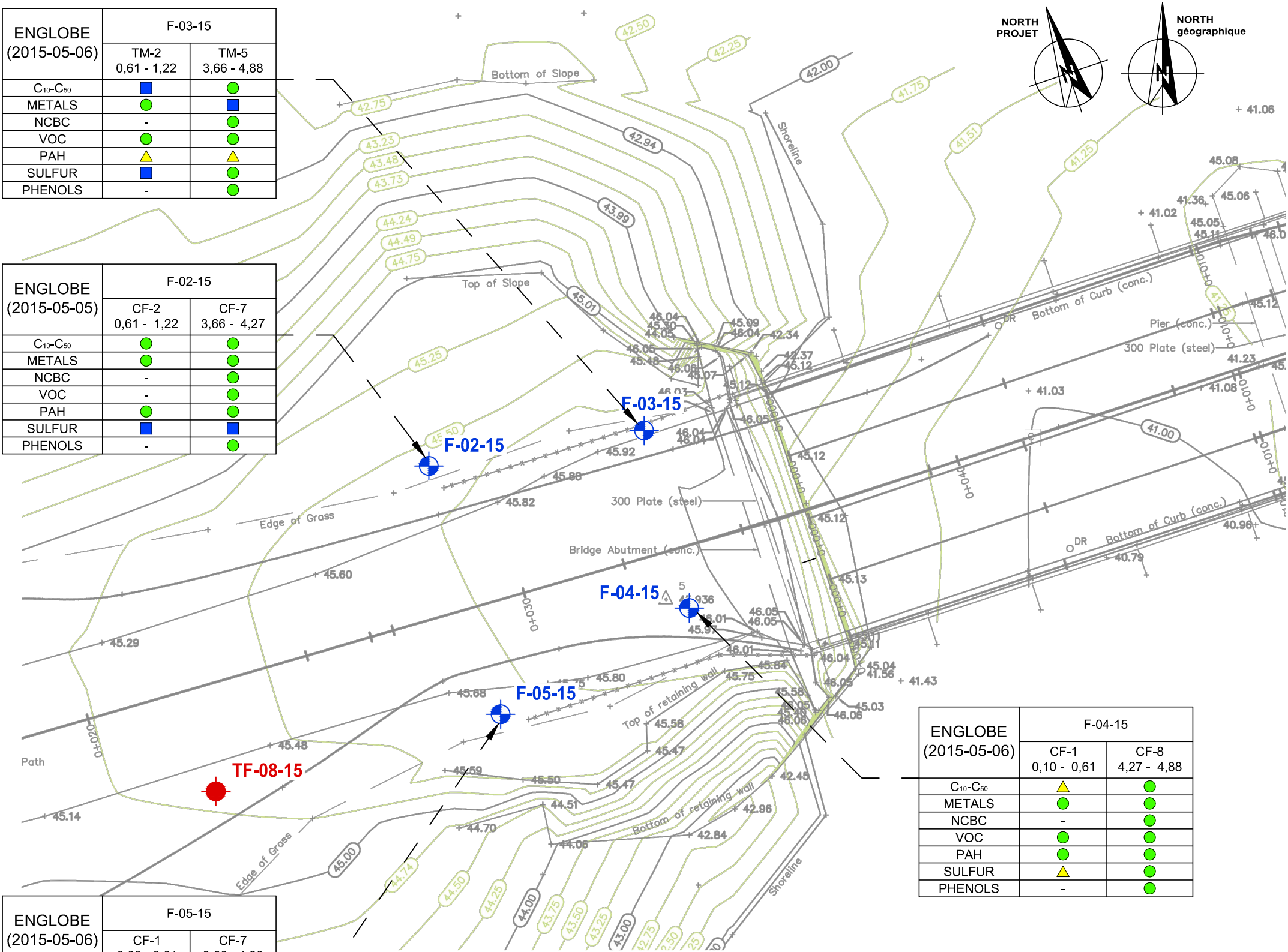
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ENGLOBE (2015-05-06)	F-03-15	
	TM-2 0,61 - 1,22	TM-5 3,66 - 4,88
C ₁₀ -C ₅₀		
METALS		
NCBC	-	
VOC		
PAH		
SULFUR		
PHENOLS	-	

ENGLOBE (2015-05-05)	F-02-15	
	CF-2 0,61 - 1,22	CF-7 3,66 - 4,27
C ₁₀ -C ₅₀		
METALS		
NCBC	-	
VOC	-	
PAH		
SULFUR		
PHENOLS	-	

ENGLOBE (2015-05-06)	F-05-15	
	CF-1 0,00 - 0,61	CF-7 3,66 - 4,30
C ₁₀ -C ₅₀		
METALS		
NCBC	-	
VOC		
PAH		
SULFUR		
PHENOLS	-	



LEGEND :

F-01-15



ENVIRONMENTAL BOREHOLE
(ENGLOBE, MAY 2015)

TF-NN-AA



GEOTECHNICAL BOREHOLE
(ENGLOBE, MAY 2015)

BOREHOLE
SOIL SAMPLE ANALYZED
DEPTH INTERVAL (m)
PERFORMED BY: COMPANY
(DATE)
ANALYSED PARAMETERS

HP C₁₀-C₅₀

METALS

NCBC

VOC

PAH

SULFUR

PHENOLS

MDDELCC CRITERIA POLICY
AND RESC STANDARDS (SOILS):

- NOT ANALYZED
- < A
- A-B
- B-C
- > C
- ≥ RESC

ENGLOBE (2015-05-04)	F-01-15	
	TM-2 0,61 - 1,22	
C ₁₀ -C ₅₀		
METALS		
NCBC	-	
VOC		
PAH		
SULFUR		
PHENOLS	-	

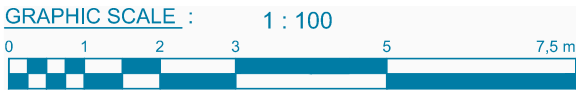
ENGLOBE (2015-05-06)	F-04-15	
	CF-1 0,10 - 0,61	CF-8 4,27 - 4,88
C ₁₀ -C ₅₀		
METALS		
NCBC	-	
VOC		
PAH		
SULFUR		
PHENOLS	-	

BOREHOLE COORDONATE

BOREHOLE	NORTH (y)	EAST (X)
F-02-15	5034726,8	366750,1
F-03-15	5034727,6	366754,8
F-04-15	5034723,7	366755,8
F-05-15	5034721,4	366751,6
F-08-15	5034719,7	366745,4

REFERENCES: NCC Project No. 09011, Sheet No. 1/2, Date 2009/06/22

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Project

National Capital Commission Phase II Environmental Site Assessment

Leamy stream pedestrian bridge, Gatineau, Quebec

Title

Figure 2
Soil quality
(West sector)



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Date 2015-07-15

Project Manager

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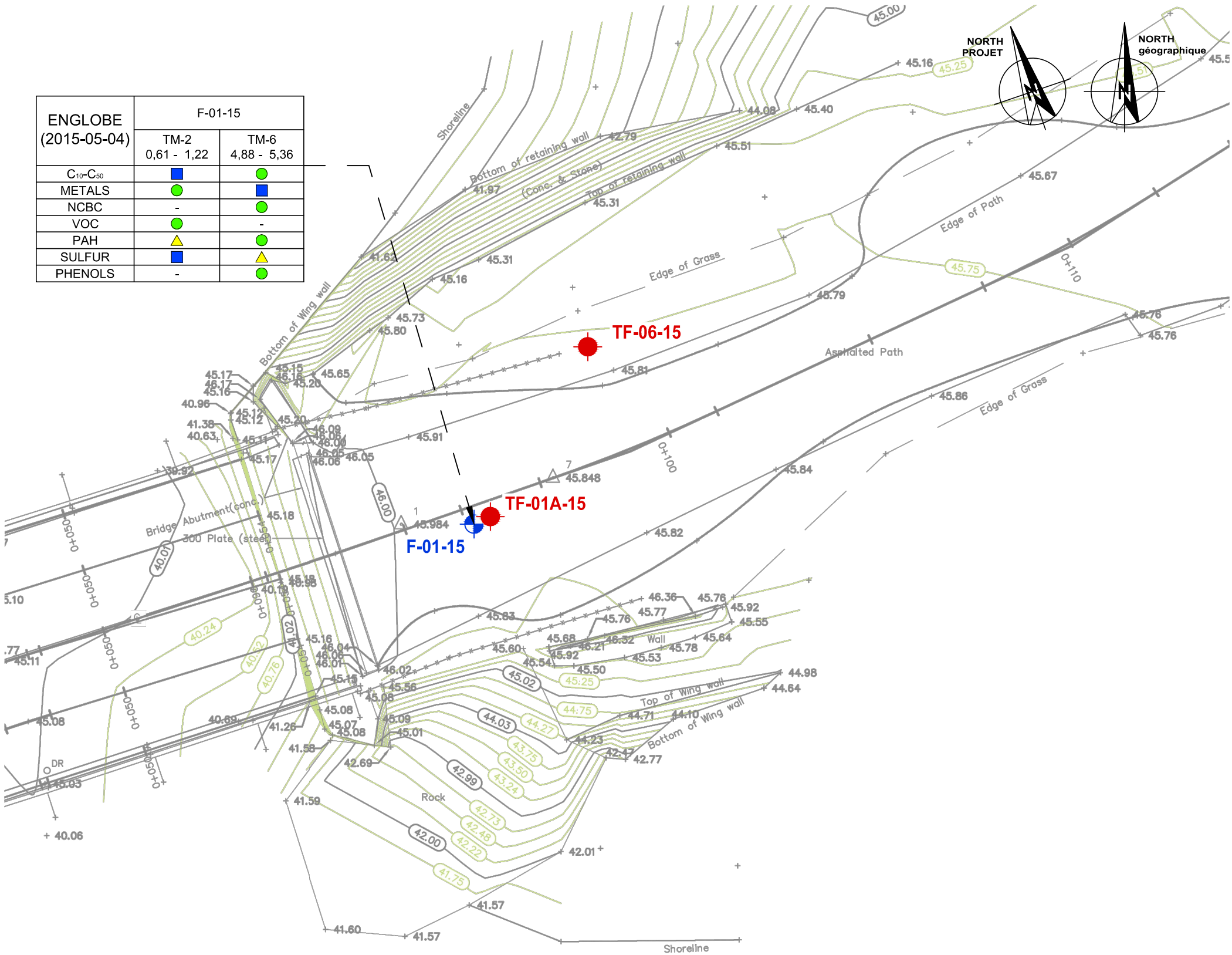
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ENGLOBE (2015-05-04)	F-01-15	
	TM-2 0,61 - 1,22	TM-6 4,88 - 5,36
C ₁₀ -C ₅₀	■	●
METALS	●	■
NCBC	-	●
VOC	●	-
PAH	▲	●
SULFUR	■	▲
PHENOLS	-	●



LEGEND :

F-01-15



ENVIRONMENTAL BOREHOLE
(ENGLOBE, MAY 2015)

TF-NN-AA



GEOTECHNICAL BOREHOLE
(ENGLOBE, MAY 2015)

BOREHOLE
SOIL SAMPLE ANALYZED
DEPTH INTERVAL (m)
PERFORMED BY: COMPANY
(DATE)

ANALYSED PARAMETERS

HP C₁₀-C₅₀

METALS

NCBC

VOC

PAH

SULFUR

PHENOLS

MDDELCC CRITERIA POLICY
AND RESC STANDARDS (SOILS):

ENGLOBE (2015-05-04)	F-01-15	
	TM-2 0,61 - 1,22	
C ₁₀ -C ₅₀	■	
METALS	●	
NCBC	-	
VOC	●	
PAH	▲	
SULFUR	■	
PHENOLS	-	

— NOT ANALYZED

● < A

■ A-B

▲ B-C

◆ > C

◆ ≥ RESC

BOREHOLE COORDONATE

BOREHOLE	NORTH (y)	EAST (X)
F-01-15	5034743,8	366814,3
TF-01A-15	5034744,0	366814,6
F-06-15	5034747,8	366816,8

REFERENCES: NCC Project No. 09011, Sheet No. 1/2, Date 2009/06/22

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Project

National Capital Commission Phase II Environmental Site Assessment

Leamy stream pedestrian bridge, Gatineau, Quebec

Title

Figure 3 Soil quality (East sector)



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Date 2015-07-15

Project Manager

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Tables

Table 1 : Summary of the Analytical Results for Soil Samples

Parameters	Units	Policy ⁽¹⁾			RESC ⁽²⁾ Appendix I	ANALYTICAL RESULTS									
		A ⁽³⁾	B	C		F-01-15		F-02-15		F-03-15		F-04-15		F-05-15	
Sample						TM-2	TM-6	CF-2	CF-7	TM-2	TM-5	CF-1	CF-8	CF-1	CF-7
Sampling Date						2015-05-04	2015-05-04	2015-05-05	2015-05-05	2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06
Depth (m)						0,61 - 1,22	4,88 - 5,36	0,61 - 1,22	3,66 - 4,27	0,61 - 1,22	3,66 - 4,88	0,10 - 0,61	4,27 - 4,88	0,00 - 0,61	3,66 - 4,30
Stratigraphic Unit						Gravelly sand with traces of silt	Gravelly sand with a little silt	Grey sand, a little silt and traces of gravel	Silty sand with traces of clay, gravel and organic matter	Gravelly sand with traces of silt	Gravelly sand with traces of silt clay and organic matter	Silty clay with traces of gravel and sand	Silty sand with traces of gravel	Silty Clay with a little sand and traces of gravel	Silty sand
TOTAL PETROLEUM HYDROCARBONS															
PH C ₁₀ -C ₅₀	mg/kg	300	700	3 500	10 000	481	<100	<100	<100	339	105	1 110	<100	<100	<100
METALS															
Silver	mg/kg	2	20	40	200	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5
Arsenic	mg/kg	10	30	50	250	<5,0	<5,0	<5,0	<5,0	<5,0	<5,0	<5,0	<5,0	<5,0	<5,0
Barium	mg/kg	200	500	2 000	10 000	43	43	131	79	45	58	24	54	160	51
Cadmium	mg/kg	1,5	5	20	100	<0,9	<0,9	1,1	<0,9	<0,9	<0,9	<0,9	<0,9	<0,9	<0,9
Chromium	mg/kg	45	250	800	4 000	<45	<45	<45	<45	<45	<45	<45	<45	51	<45
Cobalt	mg/kg	15	50	300	1 500	<15	<15	<15	<15	<15	<15	<15	<15	15	<15
Copper	mg/kg	50	100	500	2 500	<40	<40	<40	<40	<40	<40	<40	<40	<40	<40
Tin	mg/kg	5	50	300	1 500	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Manganese	mg/kg	1 000	1 000	2 200	11 000	428	158	661	284	255	375	185	245	464	254
Molybdenum	mg/kg	2	10	40	200	<2	<2	<2	<2	<2	5	<2	<2	<2	<2
Nickel	mg/kg	30	100	500	2 500	<30	<30	<30	<30	<30	<30	<30	<30	32	<30
Lead	mg/kg	50	500	1 000	5 000	<30	66	<30	<30	<30	<30	<30	<30	<30	<30
Zinc	mg/kg	100	500	1 500	7 500	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
NBCC															
2,4-DNT	mg/kg	--	--	--	--	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
2,6-DNT	mg/kg	0,7	2x10 ⁻⁴	3x10 ⁻³	--	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Nitrobenzene	mg/kg	--	--	--	--	-	-	-	-	-	-	-	-	-	-
TNT	mg/kg	--	0,04	1,70	--	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
VOC															
Acrylonitrile	mg/kg	--	1	5	840	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Vinyle chloride	mg/kg	0,4	0,4	0,4	60	<0,4	-	-	<0,4	<0,4	<0,4	<0,4	<0,4	<0,4	<0,4
1,1-Dichlorethylene	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Dichloromethae	mg/kg	--	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,2-Dichloroethylene [cis et trans]	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,1-Dichloroethane	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,2-Dichloroethane	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Chloroforme	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,1,1-Trichloroethane	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Carbon Tetrachloride	mg/kg	0,1	5	50	50	<0,1	-	-	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
Benzene	mg/kg	0,1	0,5	5	5	<0,1	-	-	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
Trichloroethene	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,2-Dichloropropane	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,3-Dichloropropene [cis et trans]	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Toluene	mg/kg	0,2	3	30	30	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,1,2-Trichloroethane	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Tetrachloroethylene	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Chlorobenzene (mono)	mg/kg	0,2	1	10	10	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Ethylbenzene	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
m+p-xylene	mg/kg	--	--	--	--	-	-	-	-	-	-	-	-	-	-
o-Xylene	mg/kg	--	--	--	--	-	-	-	-	-	-	-	-	-	-

Table 1 : Summary of the Analytical Results for Soil Samples

Parameters	Units	Policy ⁽¹⁾			RESC ⁽²⁾ Appendix I	ANALYTICAL RESULTS									
		A ⁽³⁾	B	C		F-01-15		F-02-15		F-03-15		F-04-15		F-05-15	
Sample						TM-2	TM-6	CF-2	CF-7	TM-2	TM-5	CF-1	CF-8	CF-1	CF-7
Sampling Date						2015-05-04	2015-05-04	2015-05-05	2015-05-05	2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06
Depth (m)						0,61 - 1,22	4,88 - 5,36	0,61 - 1,22	3,66 - 4,27	0,61 - 1,22	3,66 - 4,88	0,10 - 0,61	4,27 - 4,88	0,00 - 0,61	3,66 - 4,30
Stratigraphic Unit						Gravelly sand with traces of silt	Gravelly sand with a little silt	Grey sand, a little silt and traces of gravel	Silty sand with traces of clay, gravel and organic matter	Gravelly sand with traces of silt	Gravelly sand with traces of silt clay and organic matter	Silty clay with traces of gravel and sand	Silty sand with traces of gravel	Silty Clay with a little sand and traces of gravel	Silty sand
Styrene	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,1,2,2-Tetrachloroethane	mg/kg	0,2	5	50	50	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,3-Dichlorobenzene	mg/kg	0,2	1	10	10	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,4-Dichlorobenzene	mg/kg	0,2	1	10	10	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
1,2-Dichlorobenzene	mg/kg	0,2	1	10	10	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
Sommation des 1,2-dichloroethene (t+c)	mg/kg	0,2	5	50	50		-	-							
Sommation des 1,3-dichloropropene (t+c)	mg/kg	0,2	5	50	50		-	-							
Sommation des xylenes	mg/kg	0,2	5	10	10	<0,2	-	-	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2	<0,2
PAH															
Acenaptene	mg/kg	0,1	10	100	100	<0,1	<0,1	<0,1	<0,1	<0,1	<u>2,1</u>	<0,1	<0,1	<0,1	<0,1
Acenaphthylene	mg/kg	0,1	10	100	100	<0,1	<0,1	<0,1	<0,1	<u>0,2</u>	<u>0,8</u>	<0,1	<0,1	<0,1	<0,1
Anthracene	mg/kg	0,1	10	100	100	0,1	<0,1	<0,1	<0,1	<u>0,4</u>	<u>29</u>	<0,1	<0,1	<0,1	<0,1
Benzo(a)anthracene	mg/kg	0,1	1	10	34	<u>0,7</u>	<0,1	<0,1	<0,1	<u>1,8</u>	<u>6,2</u>	<0,1	<0,1	<0,1	<0,1
Benzo(a)pyrene	mg/kg	0,1	1	10	34	<u>1,1</u>	<0,1	<0,1	<0,1	<u>2,2</u>	<u>5,5</u>	<0,1	<0,1	<0,1	<0,1
Benzo(b)fluoranthene	mg/kg	--	1	10	136 ⁽⁴⁾	<u>0,9</u>	<0,1	<0,1	<0,1	<u>1,9</u>	<u>3,7</u>	<0,1	<0,1	<0,1	<0,1
Benzo(j)fluoranthene	mg/kg	--	1	10	136 ⁽⁴⁾	<u>0,5</u>	<0,1	<0,1	<0,1	<u>1</u>	<u>2,3</u>	<0,1	<0,1	<0,1	<0,1
Benzo(k)fluoranthene	mg/kg	--	1	10	136 ⁽⁴⁾	<u>0,4</u>	<0,1	<0,1	<0,1	<u>0,9</u>	<u>2,1</u>	<0,1	<0,1	<0,1	<0,1
Benzo(c)phenanthrene	mg/kg	0,1	1	10	56	<0,1	<0,1	<0,1	<0,1	<u>0,2</u>	<u>0,8</u>	<0,1	<0,1	<0,1	<0,1
Benzo(ghi)perylene	mg/kg	0,1	1	10	18	<u>0,8</u>	<0,1	<0,1	<0,1	<u>1,8</u>	<u>2,8</u>	<0,1	<0,1	<0,1	<0,1
Chrysene	mg/kg	0,1	1	10	34	<u>0,8</u>	<0,1	<0,1	<0,1	<u>1,8</u>	<u>5,6</u>	<0,1	<0,1	<0,1	<0,1
Dibenz(a,h)anthracene	mg/kg	0,1	1	10	82	<u>0,2</u>	<0,1	<0,1	<0,1	<u>0,4</u>	<u>0,8</u>	<0,1	<0,1	<0,1	<0,1
Dibenzo(a,i)pyrene	mg/kg	0,1	1	10	34	<u>0,3</u>	<0,1	<0,1	<0,1	<u>0,5</u>	<u>0,8</u>	<0,1	<0,1	<0,1	<0,1
Dibenzo(a,h)pyrene	mg/kg	0,1	1	10	34	<0,1	<0,1	<0,1	<0,1	<0,1	<u>0,2</u>	<0,1	<0,1	<0,1	<0,1
Dibenzo(a,l)pyrene	mg/kg	0,1	1	10	34	<0,1	<0,1	<0,1	<0,1	<u>0,2</u>	<u>0,5</u>	<0,1	<0,1	<0,1	<0,1
7,12-Dimethylbenzantracene	mg/kg	0,1	1	10	34	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
Fluoranthene	mg/kg	0,1	10	100	100	<u>0,8</u>	<0,1	<0,1	<0,1	<u>2,3</u>	<u>15,6</u>	<0,1	<0,1	<0,1	<0,1
Fluorene	mg/kg	0,1	10	100	100	<0,1	<0,1	<0,1	<0,1	<0,1	<u>2,8</u>	<0,1	<0,1	<0,1	<0,1
Indeno(1,2,3-cd)pyrene	mg/kg	0,1	1	10	34	<u>0,6</u>	<0,1	<0,1	<0,1	<u>1,3</u>	<u>2,7</u>	<0,1	<0,1	<0,1	<0,1
3-Methylcholanthrene	mg/kg	0,1	1	10	150	<0,1	<0,1	<0,1	<0,1	<0,1	0,1	<0,1	<0,1	<0,1	<0,1
Naphtalene	mg/kg	0,1	5	50	56	<0,1	<0,1	<0,1	<0,1	<0,1	<u>2,5</u>	<0,1	<0,1	<0,1	<0,1
Phenanthrene	mg/kg	0,1	5	50	56	0,1	<0,1	<0,1	<0,1	<u>0,5</u>	<u>19,8</u>	<0,1	<0,1	<0,1	<0,1
Pyrene	mg/kg	0,1	10	100	100	<u>0,9</u>	<0,1	<0,1	<0,1	<u>2</u>	<u>12</u>	<0,1	<0,1	<0,1	<0,1
2-Methylnaphtalene	mg/kg	0,1	1	10	56	<0,1	<0,1	<0,1	<0,1	<0,1	<u>0,8</u>	<0,1	<0,1	<0,1	<0,1
1-Methylnaphtalene	mg/kg	0,1	1	10	56	<0,1	<0,1	<0,1	<0,1	<0,1	<u>0,8</u>	<0,1	<0,1	<0,1	<0,1
2-Chloronaphtalene	mg/kg	--	--	--	56	-	-	-	-	-	-	-	-	-	-
1,3-Dimethylnaphtalene	mg/kg	0,1	1	10	56	<0,1	<0,1	<0,1	<0,1	<0,1	<u>0,8</u>	0,1	<0,1	<0,1	<0,1
2,3,5-Trimethylnaphtalene	mg/kg	0,1	1	10	56	<0,1	<0,1	<0,1	<0,1	<0,1	<u>0,4</u>	<0,1	<0,1	<0,1	<0,1
Sommation des HAP	mg/kg	--	--	--	--	-	-	-	-	-	-	-	-	-	-
OTHER INORGANIC															
Total sulphur	mg/kg	400	1 000	2 000	--	<u>580</u>	<u>1440</u>	<u>543</u>	<u>632</u>	<u>979</u>	386	<u>1130</u>	<200	<u>1470</u>	320

Table 1 : Summary of the Analytical Results for Soil Samples

Parameters	Units	Policy ⁽¹⁾			RESC ⁽²⁾ Appendix I	ANALYTICAL RESULTS									
		A ⁽³⁾	B	C		F-01-15		F-02-15		F-03-15		F-04-15		F-05-15	
Sample						TM-2	TM-6	CF-2	CF-7	TM-2	TM-5	CF-1	CF-8	CF-1	CF-7
Sampling Date						2015-05-04	2015-05-04	2015-05-05	2015-05-05	2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06
Depth (m)						0,61 - 1,22	4,88 - 5,36	0,61 - 1,22	3,66 - 4,27	0,61 - 1,22	3,66 - 4,88	0,10 - 0,61	4,27 - 4,88	0,00 - 0,61	3,66 - 4,30
Stratigraphic Unit						Gravelly sand with traces of silt	Gravelly sand with a little silt	Grey sand, a little silt and traces of gravel	Silty sand with traces of clay, gravel and organic matter	Gravelly sand with traces of silt	Gravelly sand with traces of silt clay and organic matter	Silty clay with traces of gravel and sand	Silty sand with traces of gravel	Silty Clay with a little sand and traces of gravel	Silty sand
PHENOLS															
o-Cresol	mg/kg	0,1	1	10	56	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
m-Cresol	mg/kg	0,1	1	10	56	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
p-Cresol	mg/kg	0,1	1	10	56	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Dimethyl-2,4 phenol	mg/kg	0,1	1	10	140	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Nitro-2 phenol	mg/kg	0,5	1	10	130	-	<0,5	-	<0,5	-	<0,5	-	<0,5	-	<0,5
Nitro-4 phenol	mg/kg	0,5	1	10	290	-	<0,5	-	<0,5	-	<0,5	-	<0,5	-	<0,5
Phenol	mg/kg	0,1	1	10	62	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Chloro-2 phenol	mg/kg	0,1	0,5	5	57	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Chloro-3 phenol	mg/kg	0,1	0,5	5	57	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Chloro-4 phenol	mg/kg	0,1	0,5	5	57	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Dichloro-2,3 phenol	mg/kg	0,1	0,5	5	140	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Dichloro-2,4 phenol	mg/kg	0,1	0,5	5	140	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Dichloro-2,5 phenol	mg/kg	0,1	0,5	5	140	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Dichloro-2,6+3,5 phenol	mg/kg	0,1	0,5	5	140	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Dichloro-3,4 phenol	mg/kg	0,1	0,5	5	140	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Pentachlorophenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Tetrachloro-2,3,4,5 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Tetrachloro-2,3,4,6 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Tetrachloro-2,3,5,6 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Trichloro-2,3,4 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Trichloro-2,3,5 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Trichloro-2,3,6 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Trichloro-2,4,5 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Trichloro-2,4,6 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1
Trichloro-3,4,5 phenol	mg/kg	0,1	0,5	5	74	-	<0,1	-	<0,1	-	<0,1	-	<0,1	-	<0,1

Notes

(1)

: Soil Protection and Contaminated Sites Rehabilitation Policy (MDDELCC)

(2)

: Regulation respecting the burial of contaminanted soil (Gouvernement of Quebec)

(3)

: The A criteria represent background levels for thin inorganic substances and the quantification limits for organic substances - In the case of metals and metaloid , the background levels indicated prevail for the geological Province of Superior and Rae, as indicated in the MDDELCC's policy.

(4)

: Limit of the value applicable to the sommation of benzo (b+j+k) fluoranthene only

Legend

-

: Not analysed

- -

: No criteria or norm

ND

: Not available

0,8

: Concentrations in the A-B range of the criteria from the policy

5,9

: Concentration in the B-C range of the criteria from the policy

2 500

: Concentrations over the C criteria from the policy

10 000

: Concentrations above or equal to the norms of appendix I of RESC

Table 2 : Results of the Soil Quality Control

Parameters	Units	Policy ⁽¹⁾			RESC ⁽²⁾	Parent sample	Duplicate	Relative difference
		A ⁽³⁾	B	C	Appendix I			
Sample						F-02-15 CF-7	DUP-1	
Sampling Date						2015-05-05	2015-05-05	
Depth (m)						3,66 - 4,27	3,66 - 4,27	
Stratigraphic Unit						Silty sand with traces of clay, gravel and organic matter		
TOTAL PETROLEUM HYDROCARBONS								
PH C ₁₀ -C ₅₀	mg/kg	300	700	3 500	10 000	<100	<100	n.a
METALS								
Silver	mg/kg	2	20	40	200	<0,5	<0,5	n.a
Arsenic	mg/kg	10	30	50	250	<5,0	<5,0	n.a
Barium	mg/kg	200	500	2 000	10 000	79	92	15
Cadmium	mg/kg	1,5	5	20	100	<0,9	<0,9	n.a
Chromium	mg/kg	45	250	800	4 000	<45	<45	n.a
Cobalt	mg/kg	15	50	300	1 500	<15	<15	n.a
Copper	mg/kg	50	100	500	2 500	<40	<40	n.a
Tin	mg/kg	5	50	300	1 500	<5	<5	n.a
Manganese	mg/kg	1 000	1 000	2 200	11 000	284	364	25
Molybdenum	mg/kg	2	10	40	200	<2	<2	n.a
Nickel	mg/kg	30	100	500	2 500	<30	<30	n.a
Lead	mg/kg	50	500	1 000	5 000	<30	<30	n.a
Zinc	mg/kg	100	500	1 500	7 500	<100	<100	n.a
NBCC								
2,4-DNT	mg/kg	--	--	--	--	<0,1	-	n.a
2,6-DNT	mg/kg	0,7	2x10 ⁻⁴	3x10 ⁻³	--	<0,1	-	n.a
Nitrobenzene	mg/kg	--	--	--	--	-	-	n.a
TNT	mg/kg	--	0,04	1,70	--	<0,1	-	n.a
VOC								
Acrylonitrile	mg/kg	--	1	5	840	<0,2	<0,2	n.a
Vinyle chloride	mg/kg	0,4	0,4	0,4	60	<0,4	<0,4	n.a
1,1-Dichlorethylene	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
Dichloromethae	mg/kg	--	5	50	50	<0,2	<0,2	n.a
1,2-Dichloroethylene [cis et trans]	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
1,1-Dichloroethane	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
1,2-Dichloroethane	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
Chloroforme	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
1,1,1-Trichloroethane	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
Carbon Tetrachloride	mg/kg	0,1	5	50	50	<0,1	<0,1	n.a
Benzene	mg/kg	0,1	0,5	5	5	<0,1	<0,1	n.a
Trichloroethene	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
1,2-Dichloropropane	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
1,3-Dichloropropene [cis et trans]	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
Toluene	mg/kg	0,2	3	30	30	<0,2	<0,2	n.a
1,1,2-Trichloroethane	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
Tetrachloroethylene	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
Chlorobenzene (mono)	mg/kg	0,2	1	10	10	<0,2	<0,2	n.a
Ethylbenzene	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
m+p-xylene	mg/kg	--	--	--	--	-	-	n.a
o-Xylene	mg/kg	--	--	--	--	-	-	n.a
Styrene	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
1,1,2,2-Tetrachloroethane	mg/kg	0,2	5	50	50	<0,2	<0,2	n.a
1,3-Dichlorobenzene	mg/kg	0,2	1	10	10	<0,2	<0,2	n.a
1,4-Dichlorobenzene	mg/kg	0,2	1	10	10	<0,2	<0,2	n.a
1,2-Dichlorobenzene	mg/kg	0,2	1	10	10	<0,2	<0,2	n.a
Sum of 1,2-dichloroethene (t+c)	mg/kg	0,2	5	50	50			n.a
Sum of 1,3-dichloropropene (t+c)	mg/kg	0,2	5	50	50			n.a
Sum of xylenes	mg/kg	0,2	5	10	10	<0,2	<0,2	n.a
PAH								
Acenaphtene	mg/kg	0,1	10	100	100	<0,1	<0,1	n.a
Acenaphthylene	mg/kg	0,1	10	100	100	<0,1	<0,1	n.a
Anthracene	mg/kg	0,1	10	100	100	<0,1	<0,1	n.a
Benzo(a)anthracene	mg/kg	0,1	1	10	34	<0,1	<0,1	n.a
Benzo(a)pyrene	mg/kg	0,1	1	10	34	<0,1	<0,1	n.a
Benzo(b)fluoranthene	mg/kg	--	1	10	136 ⁽⁴⁾	<0,1	<0,1	n.a
Benzo(j)fluoranthene	mg/kg	--	1	10	136 ⁽⁴⁾	<0,1	<0,1	n.a
Benzo(k)fluoranthene	mg/kg	--	1	10	136 ⁽⁴⁾	<0,1	<0,1	n.a
Benzo(c)phenanthrene	mg/kg	0,1	1	10	56	<0,1	<0,1	n.a
Benzo(ghi)perylene	mg/kg	0,1	1	10	18	<0,1	<0,1	n.a
Chrysene	mg/kg	0,1	1	10	34	<0,1	<0,1	n.a
Dibenz(a,h)anthracene	mg/kg	0,1	1	10	82	<0,1	<0,1	n.a
Dibenzo(a,i)pyrene	mg/kg	0,1	1	10	34	<0,1	<0,1	n.a
Dibenzo(a,h)pyrene	mg/kg	0,1	1	10	34	<0,1	<0,1	n.a
Dibenzo(a,l)pyrene	mg/kg	0,1	1	10	34	<0,1	<0,1	n.a
7,12-Dimethylbenzanthracene	mg/kg	0,1	1	10	34	<0,1	<0,1	n.a
Fluoranthene	mg/kg	0,1	10	100	100	<0,1	<0,1	n.a
Fluorene	mg/kg	0,1	10	100	100	<0,1	<0,1	n.a
Indeno(1,2,3-cd)pyrene	mg/kg	0,1	1	10	34	<0,1	<0,1	n.a
3-Methylcholanthrene	mg/kg	0,1	1	10	150	<0,1	<0,1	n.a
Naphtalene	mg/kg	0,1	5	50	56	<0,1	<0,1	n.a
Phenanthrene	mg/kg	0,1	5	50	56	<0,1	<0,1	n.a
Pyrene	mg/kg	0,1	10	100	100	<0,1	<0,1	n.a
2-Methylnaphtalene	mg/kg	0,1	1	10	56	<0,1	<0,1	n.a
1-Methylnaphtalene	mg/kg	0,1	1	10	56	<0,1	<0,1	n.a
2-Chloronaphtalene	mg/kg	--	--	--	56	-	-	n.a
1,3-Dimethylnaphtalene	mg/kg	0,1	1	10	56	<0,1	<0,1	n.a
2,3,5-Trimethylnaphtalene	mg/kg	0,1	1	10	56	<0,1	<0,1	n.a
Sommation des HAP	mg/kg	--	--	--	--	-	-	n.a
OTHER INORGANIC								
Total sulphur	mg/kg	400	1 000	2 000	--	632	332	62

Table 2 : Results of the Soil Quality Control

Parameters	Units	Policy ⁽¹⁾			RESC ⁽²⁾	Parent sample	Duplicate	Relative difference
		A ⁽³⁾	B	C	Appendix I			
Sample						F-02-15 CF-7	DUP-1	
Sampling Date						2015-05-05	2015-05-05	
Depth (m)						3,66 - 4,27	3,66 - 4,27	
Stratigraphic Unit						Silty sand with traces of clay, gravel and organic matter		
PHENOLS								
o-Cresol	mg/kg	0,1	1	10	56	<0,1	-	n.a
m-Cresol	mg/kg	0,1	1	10	56	<0,1	-	n.a
p-Cresol	mg/kg	0,1	1	10	56	<0,1	-	n.a
Dimethyl-2,4 phenol	mg/kg	0,1	1	10	140	<0,1	-	n.a
Nitro-2 phenol	mg/kg	0,5	1	10	130	<0,5	-	n.a
Nitro-4 phenol	mg/kg	0,5	1	10	290	<0,5	-	n.a
Phenol	mg/kg	0,1	1	10	62	<0,1	-	n.a
Chloro-2 phenol	mg/kg	0,1	0,5	5	57	<0,1	-	n.a
Chloro-3 phenol	mg/kg	0,1	0,5	5	57	<0,1	-	n.a
Chloro-4 phenol	mg/kg	0,1	0,5	5	57	<0,1	-	n.a
Dichloro-2,3 phenol	mg/kg	0,1	0,5	5	140	<0,1	-	n.a
Dichloro-2,4 phenol	mg/kg	0,1	0,5	5	140	<0,1	-	n.a
Dichloro-2,5 phenol	mg/kg	0,1	0,5	5	140	<0,1	-	n.a
Dichloro-2,6+3,5 phenol	mg/kg	0,1	0,5	5	140	<0,1	-	n.a
Dichloro-3,4 phenol	mg/kg	0,1	0,5	5	140	<0,1	-	n.a
Pentachlorophenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Tetrachloro-2,3,4,5 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Tetrachloro-2,3,4,6 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Tetrachloro-2,3,5,6 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Trichloro-2,3,4 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Trichloro-2,3,5 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Trichloro-2,3,6 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Trichloro-2,4,5 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Trichloro-2,4,6 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Trichloro-3,4,5 phenol	mg/kg	0,1	0,5	5	74	<0,1	-	n.a
Notes								
(1)	: Soil Protection and Contaminated Sites Rehabilitation Policy (MDDELCC)							
(2)	: Regulation respecting the burial of contaminanted soil (Gouvernement of Quebec)							
(3)	: The A criteria represent background levels for thin inorganic substances and the quantification limits for organic substances - In the case of metals and metaloid , the background levels indicated prevail for the geological Province of Superior and Rae, as indicated in the MDDELCC's policy.							
(4)	: Limit of the value applicable to the sommation of benzo (b+j+k) fluoranthene only							
Legend								
-	: Not analysed							
--	: No criteria or norm							
n.a.	: Non applicable							
NA	: Not available							
0,8	: Concentrations in the A-B range of the criteria from the policy							
5,9	: Concentration in the B-C range of the criteria from the policy							
2 500	: Concentrations over the C criteria from the policy							
10 000	: Concentrations above or equal to the norms ot appendix I of RESC							

Appendix 1 Limitation Clauses

LIMITATION CLAUSES

This report was prepared and work to which it refers was undertaken by Englobe on behalf of the NCC the Client. It is intended for the sole and exclusive use of the Client. Any person other than the Client who uses this report, draws on this report or takes a decision based on this report is the only one to bear liability for such use. The Client and Englobe do not declare anything and do not provide any guarantee related to this report and the work referred to in this report to anyone. They disclaim any obligation towards any other person or any liability whatever it may consist of towards all losses, expenses, damages, fines, penalties and other harm that any other person may suffer by the use of this report, the belief he/she holds towards it or towards any decision or measure based on this report on the work mentioned herein.

Investigations conducted by Englobe for this report and any conclusion or recommendation presented in this report are representative of Englobe's appraisal of the locations observed at the time of the site inspection at the date(s) provided in this report as well as of available information at the time this report was presented. This report was prepared to specifically address this site and is partly based on visual observations of the location, underground research at some precise locations and depths as well as on a specific analysis of chemical and material parameters during a certain time span, as is described in this report. Unless otherwise indicated, the conclusions may not be applied to the site's former nor future state, to sections of the site that were not available for a direct investigation nor for chemical, material or analyses parameters that were not addressed. Substances other than the ones targeted by the investigation described in this report may exist on the site, substances targeted by this investigation may be present in other locations of the site that were not investigated and concentrations of substances targeted different than the ones indicated in the report may exist in locations other than the ones where samples were collected.

In the event where the condition of the site or where applicable standards were to change or should additional information become available at some future time, the modification of findings, conclusions or recommendations of the present report may be required.

When no policy, regulation or criteria is available, the interpretation of the data, comments, recommendations and conclusions expressed in this report are established with the generally recognized rules and practices.

Lorsqu'aucune politique, réglementation ou critère n'est disponible pour permettre l'interprétation des données, les commentaires, recommandations et conclusions exprimées dans ce rapport sont établies selon les règles et les pratiques généralement reconnues.

Except for the Client, the reproduction or distribution of the report and the use of information contained herein, whether in part or in total, is not authorized without having obtained Englobe's express written authorization.

No provision of the present report aims to constitute or provide a legal advice.

Appendix 2 Sounding Logs







The following sounding logs summarize soils and rock geotechnical properties as well as ground water conditions, as collected during field work and/or obtained from laboratory tests. This note explains the different symbols and abbreviations used in these logs.

STRATIGRAPHIC UNITS

Elevation/Depth: Reference to the geodesic elevation of the soil or to a bench mark of arbitrary elevation, at the location of the sounding. Depth of the different geological boundaries as measured from ground surface. On the left, the scale is in meters while on the right, it is in feet.

Description of the stratigraphic units: Every geological formation is detailed. The proportion of the different elements of the soil, defined according to the size of the particles, is given following the classification hereafter. The relative compactness of cohesionless soils is defined by the "N" index of the Standard Penetration Test. The consistency of cohesive soils is defined by their shear resistance.

SYMBOLS

TOP SOIL		SAND		COBBLE	
BACKFILL		SILT		BOULDER	
GRAVEL		CLAY		ROCK	

WATER LEVEL

This column shows the ground water level, as measured at a given time during the geotechnical investigation. The details of the installation (type and depth) are also illustrated in this column.

SAMPLES

Type and number: Each sample is labelled in accordance with the number of this column and the given notation refers to samples types.

Sub-sample: When a sample contains two or more different stratigraphic units, it is sometimes necessary to separate it and create sub-samples. This column allows for the identification of the latter and the association to *in situ* or laboratory measurements to these sub-samples.

Condition: The position, length and condition of each sample are shown in this column. The symbol shows the condition of the sample, following the legend given on the sounding log.

Size: This column indicates the split spoon sampler size.

"N" index The standard penetration index shown in this column is expressed with the letter "N". This index is obtained with the Standard Penetration Test. It corresponds to the number of blows required to drive the last 300mm of the split spoon, using a 622 Newton hammer falling freely from a height of 762mm (ASTM D-1586). For a 610mm long split spoon, the "N" index is obtained by adding the number of blows required for the driving of the 2nd and 3rd 150mm of the split spoon. Refusal (R) indicates a number of blows greater than 100. A set of numbers such as 28-30-50/60mm indicates that the number of blows required to drive the 1st and 2nd 150mm of the split spoon are respectively 28 and 30. Moreover, it indicates that 50 blows were necessary to get a penetration of 60mm, whereupon the test was suspended.

RQD index: Rock Quality Designation index: This index is defined as the ratio between the total length of all rock cores of 100mm and more in length over the total length of the core run. The RQD index is an indirect measurement of the number of "natural" fractures and of the amount of the alteration in a rock mass.

TESTS

Results: This column shows, for the corresponding depth, the results of tests carried out in the field or in the laboratory (shear strength, dynamic penetration, Atterberg limits with the cone, etc.). For more information, please refer to the legend in the upper part of the sounding log. However, an abbreviation indicating the type of analysis performed is shown next to the sample tested.

Graph: This graph shows the undrained shear strength resistance of cohesive soils, as measured *in situ* or in the laboratory (NQ 2501-200). It is also used to present the Dynamic Cone Penetration Test (NQ 2501-145) results. Moreover, this graph is used for the representation of the water content and Atterberg limits test results.

Classification

Particle size (mm)

Clay	< 0.002
Clay and silt (undifferentiated)	< 0.08
Sand	0.08 to 5
Gravel	5 to 80
Cobble	80 to 300
Boulder	> 300

Descriptive terminology

Proportion (%)

"Traces" (tr.)	1 to 10
"Some" (s.)	10 to 20
Adjective (ex.: sandy, silty)	20 to 35
"And" (ex.: sand and gravel)	35 to 50

Compactness of cohesionless soils

Standard Penetration Test index ("N" value), ASTM D-1586 (blows for a 300mm penetration)

Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	> 50

Consistency of cohesive soils

Undrained shear strength (kPa)

Very soft	< 12
Soft	12 to 25
Firm	25 to 50
Stiff	50 to 100
Very stiff	100 to 200
Hard	> 200

Plasticity of cohesive soils

Liquid limit (%)

Low	< 30
Medium	30 to 50
High	> 50

Sensitivity of cohesive soils

$S_t = (C_u/C_{ur})$

Low	$S_t < 2$
Medium	$2 < S_t < 4$
High	$4 < S_t < 8$
Extra-sensitive	$8 < S_t < 16$
Quick (sensitive) clay	$S_t > 16$

Classification of rock

RQD (%)

Very poor quality	< 25
Poor quality	25 to 50
Fair quality	50 to 75
Good quality	75 to 90
Excellent quality	90 to 100

Z:\Style_LVM\Log\Log_Geotec_80Log_Forage_LVM_AN.sty - Printed : 2015-12-18 15h
B-0012112-2 [EN]
R.F.
Vertical Scale = 1 : 75
EQ-09-Ge-66A R.1 04.03.2009



Client :

National Capital Commission

BOREHOLE REPORT

File n°: B-0012112-2 [EN]

Borehole n°: F-01-15

Date: From 2015-05-04 to 2015-05-04

Project: Pedestrian bridges Ruisseau Leamy

Location: Sentier des Voyageurs, Gatineau, Quebec, East shore

Coordinates (m): North 5034744.0 (Y)

East 366814.0 (X)

Elevation 45.90 (Z)

Bedrock: m End depth: 5.36 m

Sample condition

Intact Remoulded Lost Core

Organoleptic soil examination:

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)

Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

Sample type

SS Split Spoon
TM Thin wall Tube
PS Piston Tube
RC Rock core
AS Auger
MA Bulk sample
TU Transparent tube
PW LVM Mega-Sampler
FG Frozen ground

Tests

L Consistency Limits
W_L Liquid Limit (%)
W_P Plastic Limit (%)
I_P Plasticity Index (%)
I_L Liquidity Index
W Natural Water Content (%)
GS Grain Size Analysis
S Hydrometer analysis
R Refusal
VBS Methylene Blue Value
WR Weight of Rods
O.M. Organic Matter (%)
K Permeability (cm/s)
UW Unit Weight (kN/m³)
A Absorption (l/min. m)
U Uniaxial Compressive strength (MPa)
RQD Rock Quality Designation (%)
CA Chemical Analysis
P_L Limit Pressure (kPa)
E_m Pressuremeter Modulus (MPa)
E_r Modulus of subgrade reaction (MPa)
SP₀ Segregation Potential (mm²/H °C)

▼ Water Level
N Std Penetration test (blows/300mm)
N_C Dyn. Penetration test (blows/300mm) ●
σ'_p Preconsolidation Pressure (kPa)
SCI Soil Corrosivity Index

Undrained shear strength

C_U Undisturbed (kPa)
C_{UR} Remoulded (kPa)

Field Laboratory
▲ ■
△ □

		STRATIGRAPHY				SAMPLES								FIELD AND LABORATORY TESTS				
DEPTH - ft	DEPTH - m	ELEVATION - m DEPTH - m	SOIL OR BEDROCK DESCRIPTION	SYMBOLS	WATER LEVEL (m) / DATE	TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam		RESULTS	NATURAL WATER CONTENT AND LIMITS (%)		
													Odor	Visual		W _p	W _L	
		45.90														20 40 60 80 100 120		
		0.00	Asphalt															
1		45.85	Heterogeneous Fill: Sand and gravel gray-black, some silt Brown gravelly sandy, traces of silt			TM-1				50			I	I	C ₁₀ -C ₅₀ , METALS, VOC, SULFER, PAH			
2		0.05						TM-2			50			I		I		
3	1	45.29						TM-3			25			I		I		
4		0.61	Brown gravelly sand, some silt, very wet, traces of organic materials															
5		44.68						TM-3-1			25			I		I		
6	2	1.22						TM-4			33			I		I		
7		2.44	Grey sand gravel, some silt				TM-4-1			33			I	I				
8			Sand and gravel, traces of soil, very wet															
9								TM-5			31			I		I		
10	3							TM-5-1			31			I	I			
11		42.24	Grey gravelly sand, some silt, saturated												C ₁₀ -C ₅₀ , METALS, PHENOLS, SULFER, PAH			
12		3.66						TM-6			77			I		D		
13	4																	
14		41.02	End of the borehole at 5.36 m after obtaining a refusal during the casing insertion															
15		4.88																
16	5	40.54																
17		5.36																
18	6																	
19																		
20																		
21																		
22																		
23	7																	
24																		
25																		
26	8																	
27																		
28																		
29																		

Remarks:

Borehole type: HW/HQ casing by rotation

Boring equipment: Geoprobe

Prepared by: S. Séguin, tech.

Approved by: J.-L. Ngoundzi, Eng., DESS

2015-12-18

Page: 1 of 1



Client :

National Capital Commission

BOREHOLE REPORT

File n°: B-0012112-2 [EN]

Borehole n°: F-02-15

Date: From 2015-05-05 to 2015-05-05

Project: **Pedestrian bridges Ruisseau Leamy**Location: **Sentier des Voyageurs, Gatineau, Quebec, West shore**

Coordinates (m): North 5034727.0 (Y)

East 366750.0 (X)

Elevation **45.55 (Z)**

Bedrock: m End depth: 6.10 m

Sample condition

Intact



Remoulded



Lost



Core

Organoleptic soil examination:

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)

Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

Sample type

SS Split Spoon
TM Thin wall Tube
PS Piston Tube
RC Rock core
AS Auger
MA Bulk sample
TU Transparent tube
PW LVM Mega-Sampler
FG Frozen ground

Tests

L Consistency Limits
W_L Liquid Limit (%)
W_p Plastic Limit (%)
I_p Plasticity Index (%)
I_L Liquidity Index
W Natural Water Content (%)
GS Grain Size Analysis
S Hydrometer analysis
R Refusal
VBS Methylene Blue Value
WR Weight of Rods
O.M. Organic Matter (%)
K Permeability (cm/s)
UW Unit Weight (kN/m³)
A Absorption (l/min. m)
U Uniaxial Compressive strength (MPa)
RQD Rock Quality Designation (%)
CA Chemical Analysis
P_L Limit Pressure (kPa)
E_m Pressuremeter Modulus (MPa)
E_r Modulus of subgrade reaction (MPa)
SP_o Segregation Potential (mm²/H °C)

Water Level
N Std Penetration test (blows/300mm)
N_c Dyn. Penetration test (blows/300mm) ●
σ'_p Preconsolidation Pressure (kPa)
SCI Soil Corrosivity Index

Undrained shear strength**C_u** Undisturbed (kPa)**C_{ur}** Remoulded (kPa)

Field Laboratory
 ▲ ■
 △ □

STRATIGRAPHY				SAMPLES								FIELD AND LABORATORY TESTS			
DEPTH - ft	DEPTH - m	ELEVATION - m DEPTH - m	SOIL OR BEDROCK DESCRIPTION	SYMBOLS	WATER LEVEL (m) / DATE	TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam	RESULTS	NATURAL WATER CONTENT AND LIMITS (%) W _p W WL
															20 40 60 80 100 120
															UNDRAINED SHEAR STRENGTH (kPa) OR DYNAMIC PENETRATION 20 40 60 80 100 120
1	0.00	45.55	Topsoil and organic matter			SS-1				42	3-4 9-11	13	I	I	
2	0.05	45.50	Heterogeneous Fill : Grey sand gravel, traces of silt			SS-2				25	3-20 5-2	25	I	I	
3	0.61	44.94	Grey sand, some silt, traces of gravel			SS-3				25	6-6 11-3	17	I	I	
4	1.22	44.33	Grey silty clay, some sand, some gravel			SS-4				17	5-11 14-7	25	I	I	
5	1.83	43.72	Sand grey gritty, some silt, traces of clay			SS-5				29	3-12 23-6	35	I	I	
6						SS-6				46	4-5 9-4	14	I	I	
7	3.66	41.89	Natural ground : Grey silty sand, traces of clay, traces of gravel, traces of organic matter, very wet			SS-7 DUP-1				87	2-1 2-2	3	I	I	
8	4.27	41.28	Grey silty sand, very wet			SS-8				92	1-1 3-2	4	I	I	
9						SS-9				87	3-2 2-3	4	I	I	
10						SS-10				75	2-1 1-2	2	I	I	
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
26															
27															
28															
29															

Remarks:

Borehole type: **HW/HQ casing by rotation**Boring equipment: **Geoprobe**Prepared by: **S. Séguin, tech.**Approved by: **J.-L. Ngoundzi, Eng., DESS**

2015-12-18

Page: 1 of 1



Client :

National Capital Commission

BOREHOLE REPORT

File n°: B-0012112-2 [EN]

Borehole n°: F-03-15

Date: From 2015-05-05 to 2015-05-05

Project: Pedestrian bridges Ruisseau Leamy

Location: Sentier des Voyageurs, Gatineau, Quebec, West shore

Coordinates (m): North 5034726.0 (Y)

East 366755.0 (X)

Elevation 45.93 (Z)

Bedrock: m End depth: 6.10 m

Sample condition

Intact Remoulded Lost Core

Organoleptic soil examination:

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)

Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

Sample type

SS Split Spoon
TM Thin wall Tube
PS Piston Tube
RC Rock core
AS Auger
MA Bulk sample
TU Transparent tube
PW LVM Mega-Sampler
FG Frozen ground

Tests

L Consistency Limits
W_L Liquid Limit (%)
W_p Plastic Limit (%)
I_p Plasticity Index (%)
I_L Liquidity Index
W Natural Water Content (%)
GS Grain Size Analysis
S Hydrometer analysis
R Refusal
VBS Methylene Blue Value
WR Weight of Rods
O.M. Organic Matter (%)
K Permeability (cm/s)
UW Unit Weight (kN/m³)
A Absorption (l/min. m)
U Uniaxial Compressive strength (MPa)
RQD Rock Quality Designation (%)
CA Chemical Analysis
P_L Limit Pressure (kPa)
E_m Pressurometer Modulus (MPa)
E_r Modulus of subgrade reaction (MPa)
SP_o Segregation Potential (mm²/H °C)

▼ Water Level
N Std Penetration test (blows/300mm)
N_c Dyn. Penetration test (blows/300mm) ●
σ'_p Preconsolidation Pressure (kPa)
SCI Soil Corrosivity Index

Undrained shear strength

C_u Undisturbed (kPa)C_{ur} Remoulded (kPa)

Field Laboratory
▲ ■
△ □

DEPTH - ft DEPTH - m		STRATIGRAPHY			WATER LEVEL (m) / DATE	SAMPLES							FIELD AND LABORATORY TESTS								
		ELEVATION - m DEPTH - m	SOIL OR BEDROCK DESCRIPTION	SYMBOLS		TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam		RESULTS	NATURAL WATER CONTENT AND LIMITS (%)					
													Odor	Visual		W _p	W _L				
																UNDRAINED SHEAR STRENGTH (kPa) OR DYNAMIC PENETRATION					
																20	40	60	80	100	120
1		0.00	Asphalt																		
2		45.83	Heterogeneous Fill : Grey silty			TM-1					50										
3		0.10	clay, traces of sand			DUP-2															
4	1	45.32	Grey-brown gravelly sandy, traces			TM-2					50										
5		0.61	of silt																		
6		44.71	Brown gravelly sand, some silt,			TM-3					19										
7	2	1.22	wet																		
8		43.49	Gravel, some sand, traces of silt,			TM-3-1					63										
9		2.44	wet			TM-4					31										
10	3	42.27	Grey sand gravelly, traces of silt,			TM-4-1					31										
11		3.66	traces of clay, traces of organic			TM-5					21										
12	4		matter, very wet																		
13		41.05	Natural ground: Grey silty sand,			TM-5-1					21										
14	5	4.88	very wet			TM-6					4										
15		39.83	End of borehole			TM-6-1					4										
16	6	6.10																			
17																					
18																					
19																					
20																					
21																					
22																					
23	7																				
24																					
25																					
26	8																				
27																					
28																					
29																					

Remarks:

Borehole type: HW/HQ casing by rotation

Boring equipment: Geoprobe

Prepared by: S. Séguin, tech.

Approved by: J.-L. Ngoundzi, Eng., DESS

2015-12-18

Page: 1 of 1



Client :

National Capital Commission

BOREHOLE REPORT

File n°: B-0012112-2 [EN]

Borehole n°: F-04-15

Date: From 2015-05-06 to 2015-05-06

Project: **Pedestrian bridges Ruisseau Leamy**Location: **Sentier des Voyageurs, Gatineau, Quebec, West shore**

Coordinates (m): North 5034724.0 (Y)

East 366756.0 (X)

Elevation **45.94 (Z)**

Bedrock: m End depth: 6.10 m

Sample condition

Intact



Remoulded



Lost



Core

Organoleptic soil examination:

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)

Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

Sample type

SS Split Spoon
TM Thin wall Tube
PS Piston Tube
RC Rock core
AS Auger
MA Bulk sample
TU Transparent tube
PW LVM Mega-Sampler
FG Frozen ground

Tests

L Consistency Limits
W_L Liquid Limit (%)
W_p Plastic Limit (%)
I_p Plasticity Index (%)
I_L Liquidity Index
W Natural Water Content (%)
GS Grain Size Analysis
S Hydrometer analysis
R Refusal
VBS Methylene Blue Value
WR Weight of Rods
O.M. Organic Matter (%)
K Permeability (cm/s)
UW Unit Weight (kN/m³)
A Absorption (l/min. m)
U Uniaxial Compressive strength (MPa)
RQD Rock Quality Designation (%)
CA Chemical Analysis
P_L Limit Pressure (kPa)
E_m Pressuremeter Modulus (MPa)
E_r Modulus of subgrade reaction (MPa)
SP_o Segregation Potential (mm²/H °C)

Water Level
N Std Penetration test (blows/300mm)
N_c Dyn. Penetration test (blows/300mm) ●
σ'_p Preconsolidation Pressure (kPa)
SCI Soil Corrosivity Index

Undrained shear strength**C_u** Undisturbed (kPa)**C_{ur}** Remoulded (kPa)

Field Laboratory
 ▲ ■
 △ □

		STRATIGRAPHY				SAMPLES							FIELD AND LABORATORY TESTS									
DEPTH - ft	DEPTH - m	ELEVATION - m DEPTH - m	SOIL OR BEDROCK DESCRIPTION	SYMBOLS	WATER LEVEL (m) / DATE	TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam		RESULTS	NATURAL WATER CONTENT AND LIMITS (%)						
													Odor	Visual		Wp W WL						
																20	40	60	80	100	120	
																UNDRAINED SHEAR STRENGTH (kPa) OR DYNAMIC PENETRATION						
																20	40	60	80	100	120	
1		0.00	Asphalt Heterogeneous Fill : Grey silty clay, traces of gravel, traces of sand Grey sand gravelly, traces of silt			SS-1				40	2-4 3-5	7			C ₁₀ -C ₅₀ , METALS, VOC, SULFURE, PAH							
2		0.10									21	6-5 5-6	10									
3	1	0.61									17	5-3 7-7	10									
4																						
5																						
6	2	44.11	Grey gravelly sand, some silt, wet			SS-3				17	5-3 7-7	10			C ₁₀ -C ₅₀ , METALS, VOC, SULFURE, PAH							
7		1.83									33	2-3 19-9	22									
8											33	18-17 19-15	36									
9																						
10	3																					
11																						
12		42.28	Pebbles, gravel, some sand, traces of silt, traces of organic matter, wet Natural ground : Grey silty sand, traces of gravel, very wet Grey silty sand, very wet			SS-6				33	8-12 16-15	28			C ₁₀ -C ₅₀ , METALS, VOC, PHENOLS, SULFUR, PAH							
13	4	3.66									17	9-60 19-13	79									
14		41.67									75	4-3 3-2	6									
15		4.27																				
16	5	41.06																				
17		4.88																				
18																						
19																						
20	6	39.84	End of borehole			SS-8 DUP-3				92	2-2 1-2	3			VOC							
21		6.10									79	3-2 2-4	4									
22																						
23	7																					
24																						
25																						
26	8																					
27																						
28																						
29																						

Remarks:

Borehole type: **HW/HQ casing by rotation**Boring equipment: **Geoprobe**Prepared by: **S. Séguin, tech.**Approved by: **J.-L. Ngoundzi, Eng., DESS**

2015-12-18

Page: 1 of 1



Client :

National Capital Commission

BOREHOLE REPORT

File n°: B-0012112-2 [EN]

Borehole n°: F-05-15

Date: From 2015-05-06 to 2015-05-06

Project: Pedestrian bridges Ruisseau Leamy

Location: Sentier des Voyageurs, Gatineau, Quebec, West shore

Coordinates (m): North 5034721.0 (Y)

East 366752.0 (X)

Elevation 45.55 (Z)

Bedrock: m End depth: 6.10 m

Sample condition



Intact



Remoulded



Lost



Core

Organoleptic soil examination:

Visual aspect: Non-existent(N); Disseminated(D); Soaked(S)

Odor: Non-existent(N); Light(L); Medium(M); Persistent(P)

Sample type

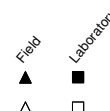
SS Split Spoon
 TM Thin wall Tube
 PS Piston Tube
 RC Rock core
 AS Auger
 MA Bulk sample
 TU Transparent tube
 PW LVM Mega-Sampler
 FG Frozen ground

Tests

L Consistency Limits
 W_L Liquid Limit (%)
 W_P Plastic Limit (%)
 I_P Plasticity Index (%)
 I_L Liquidity Index
 W Natural Water Content (%)
 GS Grain Size Analysis
 S Hydrometer analysis
 R Refusal
 VBS Methylene Blue Value
 WR Weight of Rods
 O.M. Organic Matter (%)
 K Permeability (cm/s)
 UW Unit Weight (kN/m³)
 A Absorption (l/min. m)
 U Uniaxial Compressive strength (MPa)
 RQD Rock Quality Designation (%)
 CA Chemical Analysis
 P_L Limit Pressure (kPa)
 E_M Pressurometer Modulus (MPa)
 E_r Modulus of subgrade reaction (MPa)
 SP₀ Segregation Potential (mm²/H °C)

▼ Water Level
 N Std Penetration test (blows/300mm)
 N_C Dyn. Penetration test (blows/300mm) ●
 σ'_p Preconsolidation Pressure (kPa)
 SCI Soil Corrosivity Index

Undrained shear strength

C_U Undisturbed (kPa)C_{UR} Remoulded (kPa)

DEPTH - ft	DEPTH - m	STRATIGRAPHY			WATER LEVEL (m) / DATE	SAMPLES							FIELD AND LABORATORY TESTS					
		ELEVATION - m DEPTH - m	SOIL OR BEDROCK DESCRIPTION	SYMBOLS		TYPE AND NUMBER	SUB-SAMPLE	CONDITION	SIZE	RECOVERY %	Blows/150mm	"N" or RQD	Organo. Exam		RESULTS	NATURAL WATER CONTENT AND LIMITS (%)		
													Odor	Visual		W _p	W _L	
															UNDRAINED SHEAR STRENGTH (kPa) OR DYNAMIC PENETRATION		20 40 60 80 100 120	
																	20 40 60 80 100 120	
1		45.55 0.00	Heterogeneous Fill: grey silty clay, some sand, traces of gravel			SS-1			21	2-4 4-5	8	I	I	C ₁₀ -C ₅₀ , METALS, VOC, BPC, SULFUR, PAH				
2		44.94 0.61	No collection		SS-2			0	2-8 6-3	14	I	I						
3	1				SS-3			0	3-6 4-2	10	I	I						
4					SS-4			8	1-4 5-11	9	I	I						
5		43.72			SS-5			17	3-4 4-21	8	I	I						
6	2	1.83	Grey sand, some silt, traces of gravel		SS-6			67	17-6 4-4	10	I	I	VOC					
7		43.11 2.44	Grey gravelly sand, traces of silt		SS-7			79	2-1 1-1	2	I	I	C ₁₀ -C ₅₀ , METALS, VOC, PHENOLS, SULFUR, PAH					
8					SS-8			79	2-2 1-1	3	I	I						
9		42.50			SS-9			83	2-3 3-3	6	I	I						
10	3	3.05	Natural ground: Grey silty sand, traces of organic matter, very wet		SS-10			75	1-1 2-2	3	I	I						
11		41.89	Grey silty sand, saturated															
12		39.45 6.10	End of borehole															
13	4																	
14																		
15																		
16	5																	
17																		
18																		
19																		
20	6																	
21																		
22																		
23	7																	
24																		
25																		
26	8																	
27																		
28																		
29																		

Remarks:

Borehole type: HW/HQ casing by rotation

Boring equipment: Geoprobe

Prepared by: S. Séguin, tech.

Approved by: J.-L. Ngoundzi, Eng., DESS

2015-12-18

Page: 1 of 1



Appendix 3 Certificate of Chemical Analyses

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP
900 BOUL DE LA CARRIERE BUR 100
GATINEAU, QC J8Y6T5
(819) 778-3143

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

N° DE PROJET: B-0012112-2

N° BON DE TRAVAIL: 15M973671

ANALYSE DES SOLS VÉRIFIÉ PAR: Rémi Briant, chimiste

ORGANIQUE DE TRACE VÉRIFIÉ PAR: Robert Roch, Chimiste

ANALYSE DE L'EAU VÉRIFIÉ PAR: Rémi Briant, chimiste

DATE DU RAPPORT: 2015-05-22

VERSION*: 2

NOMBRE DE PAGES: 35

Si vous désirez de l'information concernant cette analyse, S.V.P. contacter votre chargé de projets au (514) 337-1000.

***NOTES**

VERSION 2: Final, 2015-05-22.

Nous disposerons des échantillons dans les 30 jours suivants les analyses. S.V.P. Contactez le laboratoire si vous désirez avoir un délai d'entreposage.



AGAT Laboratoires

Certificat d'analyse

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

9770 ROUTE TRANSCANADIENNE
ST. LAURENT, QUEBEC
CANADA H4S 1V9
TEL (514)337-1000
FAX (514)333-3046
<http://www.agatlabs.com>

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Analyses Inorganiques - Sol

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON:							F-01-15 TM-2	F-01-15 TM-6	F-02-15 CF2	F-02-15 CF7	DUP-1
MATRICE:							Sol	Sol	Sol	Sol	Sol
DATE D'ÉCHANTILLONNAGE:							2015-05-04	2015-05-04	2015-05-05	2015-05-05	2015-05-05
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6542883	6542896	6542901	6543027	6543033
Soufre total	mg/kg	400	1000	2000		200	580[A-B]	1440[B-C]	543[A-B]	632[A-B]	332[<A]
IDENTIFICATION DE L'ÉCHANTILLON:							F-03-15 TM-2	F-03-15 TM-5	F-04-15 CF-1	F-04-15 CF-8	F-05-15-CF1
MATRICE:							Sol	Sol	Sol	Sol	Sol
DATE D'ÉCHANTILLONNAGE:							2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543036	6543073	6543090	6543209	6543232
Soufre total	mg/kg	400	1000	2000		200	979[A-B]	386[<A]	1130[B-C]	<200[<A]	1470[B-C]
IDENTIFICATION DE L'ÉCHANTILLON:							F-05-15-CF7				
MATRICE:							Sol				
DATE D'ÉCHANTILLONNAGE:							2015-05-06				
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543253				
Soufre total	mg/kg	400	1000	2000		200	320[<A]				

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes: A se réfère QC PTC (Critère A), B se réfère QC PTC (Critère B), C se réfère QC PTC (Critère C), D se réfère QC RESC (Annexe 1)

Certifié par:



La procédure des Laboratoires AGAT concernant les signatures et les signataires se conforme strictement aux exigences d'accréditation ISO 17025:2005 comme le requiert, lorsque applicable, CALA, CCN et MDDEFP. Toutes les signatures sur les certificats d'AGAT sont protégées par des mots de passe et les signataires rencontrent les exigences des domaines d'accréditation ainsi que les exigences régionales approuvées par CALA, CCN et MDDEFP.



AGAT Laboratoires

Certificat d'analyse

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

9770 ROUTE TRANSCANADIENNE
ST. LAURENT, QUEBEC
CANADA H4S 1V9
TEL (514)337-1000
FAX (514)333-3046
<http://www.agatlabs.com>

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Métaux Extractibles Totaux - Sol (PRTC)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

Paramètre	Unités	IDENTIFICATION DE L'ÉCHANTILLON:					F-01-15 TM-2	F-01-15 TM-6	F-02-15 CF2	F-02-15 CF7	DUP-1
		MATRICE:					Soi	Soi	Soi	Soi	Soi
		DATE D'ÉCHANTILLONNAGE:					2015-05-04	2015-05-04	2015-05-05	2015-05-05	2015-05-05
		C / N: A	C / N: B	C / N: C	C / N: D	LDR	6542883	6542896	6542901	6543027	6543033
Argent	mg/kg	2	20	40	200	0.5	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]
Arsenic	mg/kg	6	30	50	250	5.0	<5.0[<A]	<5.0[<A]	<5.0[<A]	<5.0[<A]	<5.0[<A]
Baryum	mg/kg	200	500	2000	10000	20	43[<A]	43[<A]	131[<A]	79[<A]	92[<A]
Cadmium	mg/kg	1.5	5	20	100	0.9	<0.9[<A]	<0.9[<A]	1.1[<A]	<0.9[<A]	<0.9[<A]
Chrome	mg/kg	85	250	800	4000	45	<45[<A]	<45[<A]	<45[<A]	<45[<A]	<45[<A]
Cobalt	mg/kg	15	50	300	1500	15	<15[<A]	<15[<A]	<15[<A]	<15[<A]	<15[<A]
Cuivre	mg/kg	40	100	500	2500	40	<40[<A]	<40[<A]	<40[<A]	<40[<A]	<40[<A]
Étain	mg/kg	5	50	300	1500	5	<5[<A]	<5[<A]	<5[<A]	<5[<A]	<5[<A]
Manganèse	mg/kg	770	1000	2200	11000	10	428[<A]	158[<A]	661[<A]	284[<A]	364[<A]
Molybdène	mg/kg	2	10	40	200	2	<2[<A]	<2[<A]	<2[<A]	<2[<A]	<2[<A]
Nickel	mg/kg	50	100	500	2500	30	<30[<A]	<30[<A]	<30[<A]	<30[<A]	<30[<A]
Plomb	mg/kg	50	500	1000	5000	30	<30[<A]	66[A-B]	<30[<A]	<30[<A]	<30[<A]
Zinc	mg/kg	110	500	1500	7500	100	<100[<A]	<100[<A]	<100[<A]	<100[<A]	<100[<A]

Certifié par:



La procédure des Laboratoires AGAT concernant les signatures et les signataires se conforme strictement aux exigences d'accréditation ISO 17025:2005 comme le requiert, lorsque applicable, CALA, CCN et MDDEFP. Toutes les signatures sur les certificats d'AGAT sont protégées par des mots de passe et les signataires rencontrent les exigences des domaines d'accréditation ainsi que les exigences régionales approuvées par CALA, CCN et MDDEFP.



AGAT Laboratoires

Certificat d'analyse

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

9770 ROUTE TRANSCANADIENNE
ST. LAURENT, QUEBEC
CANADA H4S 1V9
TEL (514)337-1000
FAX (514)333-3046
<http://www.agatlabs.com>

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Métaux Extractibles Totaux - Sol (PRTC)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

Paramètre	Unités	IDENTIFICATION DE L'ÉCHANTILLON:					F-03-15 TM-2	F-03-15 TM-5	F-04-15 CF-1	F-04-15 CF-8	F-05-15 CF-1
		MATRICE:					Soi	Soi	Soi	Soi	Soi
		DATE D'ÉCHANTILLONNAGE:					2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06
		C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543036	6543073	6543090	6543209	6543232
Argent	mg/kg	2	20	40	200	0.5	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]
Arsenic	mg/kg	6	30	50	250	5.0	<5.0[<A]	<5.0[<A]	<5.0[<A]	<5.0[<A]	<5.0[<A]
Baryum	mg/kg	200	500	2000	10000	20	45[<A]	58[<A]	24[<A]	54[<A]	160[<A]
Cadmium	mg/kg	1.5	5	20	100	0.9	<0.9[<A]	<0.9[<A]	<0.9[<A]	<0.9[<A]	<0.9[<A]
Chrome	mg/kg	85	250	800	4000	45	<45[<A]	<45[<A]	<45[<A]	<45[<A]	51[<A]
Cobalt	mg/kg	15	50	300	1500	15	<15[<A]	<15[<A]	<15[<A]	<15[<A]	15[A]
Cuivre	mg/kg	40	100	500	2500	40	<40[<A]	<40[<A]	<40[<A]	<40[<A]	<40[<A]
Étain	mg/kg	5	50	300	1500	5	<5[<A]	<5[<A]	<5[<A]	<5[<A]	<5[<A]
Manganèse	mg/kg	770	1000	2200	11000	10	255[<A]	375[<A]	185[<A]	245[<A]	464[<A]
Molybdène	mg/kg	2	10	40	200	2	<2[<A]	5[A-B]	<2[<A]	<2[<A]	<2[<A]
Nickel	mg/kg	50	100	500	2500	30	<30[<A]	<30[<A]	<30[<A]	<30[<A]	32[<A]
Plomb	mg/kg	50	500	1000	5000	30	<30[<A]	<30[<A]	<30[<A]	<30[<A]	<30[<A]
Zinc	mg/kg	110	500	1500	7500	100	<100[<A]	<100[<A]	<100[<A]	<100[<A]	<100[<A]

Certifié par:



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AGAT Laboratoires

Certificat d'analyse

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

9770 ROUTE TRANSCANADIENNE
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TEL (514)337-1000
FAX (514)333-3046
<http://www.agatlabs.com>

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Métaux Extractibles Totaux - Sol (PRTC)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON: F-05-15-CF7

MATRICE: Sol

DATE D'ÉCHANTILLONNAGE: 2015-05-06

Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543253
Argent	mg/kg	2	20	40	200	0.5	<0.5[<A]
Arsenic	mg/kg	6	30	50	250	5.0	<5.0[<A]
Baryum	mg/kg	200	500	2000	10000	20	51[<A]
Cadmium	mg/kg	1.5	5	20	100	0.9	<0.9[<A]
Chrome	mg/kg	85	250	800	4000	45	<45[<A]
Cobalt	mg/kg	15	50	300	1500	15	<15[<A]
Cuivre	mg/kg	40	100	500	2500	40	<40[<A]
Étain	mg/kg	5	50	300	1500	5	<5[<A]
Manganèse	mg/kg	770	1000	2200	11000	10	254[<A]
Molybdène	mg/kg	2	10	40	200	2	<2[<A]
Nickel	mg/kg	50	100	500	2500	30	<30[<A]
Plomb	mg/kg	50	500	1000	5000	30	<30[<A]
Zinc	mg/kg	110	500	1500	7500	100	<100[<A]

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes: A se réfère QC PTC (Critère A), B se réfère QC PTC (Critère B), C se réfère QC PTC (Critère C), D se réfère QC RESC (Annexe 1)

Certifié par:



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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

COSV (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON:				F-01-15 TM-6	F-02-15 CF7	F-03-15 TM-5	F-04-15 CF-8	F-05-15-CF7
MATRICE:				Sol	Sol	Sol	Sol	Sol
DATE D'ÉCHANTILLONNAGE:				2015-05-04	2015-05-05	2015-05-06	2015-05-06	2015-05-06
Paramètre	Unités	C / N	LDR	6542896	6543027	6543073	6543209	6543253
Nitrobenzène	mg/kg		0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,4-DNT	mg/kg		0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2,6-DNT	mg/kg		0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TNT	mg/kg		0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Étalon de recouvrement	Unités	Limites						
Acénaphène-D10	%	40-140		95	88	92	92	99
Fluoranthène-D10	%	40-140		96	90	108	90	99

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes

Certifié par:



Robert Roch

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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

HAM-HAC (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON:							F-01-15 TM-2	F-02-15 CF7	DUP-1	F-03-15 TM-2	F-03-15 TM-5
MATRICE:							Sol	Sol	Sol	Sol	Sol
DATE D'ÉCHANTILLONNAGE:							2015-05-04	2015-05-05	2015-05-05	2015-05-06	2015-05-06
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6542883	6543027	6543033	6543036	6543073
Acrylonitrile	mg/kg	-	1	5	840	0.2	<0.2[<B]	<0.2[<B]	<0.2[<B]	<0.2[<B]	<0.2[<B]
Benzène	mg/kg	0.1	0.5	5	5	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Chlorobenzène (mono)	mg/kg	0.2	1	10	10	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,2 benzène	mg/kg	0.2	1	10	10	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,3 benzène	mg/kg	0.2	1	10	10	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,4 benzène	mg/kg	0.2	1	10	10	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Éthylbenzène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Styrène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Toluène	mg/kg	0.2	3	30	30	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Xylènes	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Chloroforme	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Chlorure de vinyle	mg/kg	0.4	0.4	60	60	0.4	<0.4[<A]	<0.4[<A]	<0.4[<A]	<0.4[<A]	<0.4[<A]
Dichloro-1,1 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,2 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,1 éthène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,2 éthène (cis et trans)	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichlorométhane	mg/kg	-	5	50	50	0.2	<0.2[<B]	<0.2[<B]	<0.2[<B]	<0.2[<B]	<0.2[<B]
Dichloro-1,2 propane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,3 propène (cis et trans)	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Tétrachloro-1,1,2,2 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Tétrachloroéthène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Tétrachlorure de carbone	mg/kg	0.1	5	50	50	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Trichloro-1,1,1 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Trichloro-1,1,2 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Trichloroéthène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]

Certifié par:



Robert Roch

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AGAT Laboratoires

Certificat d'analyse

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N° DE PROJET: B-0012112-2

9770 ROUTE TRANSCANADIENNE
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<http://www.agatlabs.com>

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

HAM-HAC (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

		IDENTIFICATION DE L'ÉCHANTILLON:	F-01-15 TM-2	F-02-15 CF7	DUP-1	F-03-15 TM-2	F-03-15 TM-5
		MATRICE:	Soi	Soi	Soi	Soi	Soi
		DATE D'ÉCHANTILLONNAGE:	2015-05-04	2015-05-05	2015-05-05	2015-05-06	2015-05-06
Étalon de recouvrement	Unités	Limites	6542883	6543027	6543033	6543036	6543073
Dibromofluorométhane	%	40-140	99	99	99	99	99
Toluène-D8	%	40-140	100	100	109	108	101
4-Bromofluorobenzène	%	40-140	98	98	89	89	97
Éthylbenzène-D10	%	40-140	102	97	105	106	102

Certifié par:



Robert Roch

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PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

HAM-HAC (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

Paramètre	Unités	IDENTIFICATION DE L'ÉCHANTILLON:					F-04-15 CF-1	F-04-15 CF-8	F-05-15-CF1	F-05-15-CF7
		MATRICE:					Sol	Sol	Sol	Sol
		DATE D'ÉCHANTILLONNAGE:					2015-05-06	2015-05-06	2015-05-06	2015-05-06
		C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543090	6543209	6543232	6543253
Acrylonitrile	mg/kg	-	1	5	840	0.2	<0.2[<B]	<0.2[<B]	<0.2[<B]	<0.2[<B]
Benzène	mg/kg	0.1	0.5	5	5	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Chlorobenzène (mono)	mg/kg	0.2	1	10	10	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,2 benzène	mg/kg	0.2	1	10	10	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,3 benzène	mg/kg	0.2	1	10	10	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,4 benzène	mg/kg	0.2	1	10	10	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Éthylbenzène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Styrène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Toluène	mg/kg	0.2	3	30	30	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Xylènes	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Chloroforme	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Chlorure de vinyle	mg/kg	0.4	0.4	60	60	0.4	<0.4[<A]	<0.4[<A]	<0.4[<A]	<0.4[<A]
Dichloro-1,1 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,2 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,1 éthène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,2 éthène (cis et trans)	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichlorométhane	mg/kg	-	5	50	50	0.2	<0.2[<B]	<0.2[<B]	<0.2[<B]	<0.2[<B]
Dichloro-1,2 propane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Dichloro-1,3 propène (cis et trans)	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Tétrachloro-1,1,2,2 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Tétrachloroéthène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Tétrachlorure de carbone	mg/kg	0.1	5	50	50	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Trichloro-1,1,1 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Trichloro-1,1,2 éthane	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]
Trichloroéthène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]	<0.2[<A]	<0.2[<A]

Certifié par:



Robert Roch

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AGAT CERTIFICAT D'ANALYSE

Page 9 de 35

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AGAT Laboratoires

Certificat d'analyse

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N° DE PROJET: B-0012112-2

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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

HAM-HAC (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

		IDENTIFICATION DE L'ÉCHANTILLON:			
		MATRICE:	F-04-15 CF-1	F-04-15 CF-8	F-05-15-CF1
			Soi	Soi	Soi
		DATE D'ÉCHANTILLONNAGE:	2015-05-06	2015-05-06	2015-05-06
Étalon de recouvrement	Unités	Limites	6543090	6543209	6543232
Dibromofluorométhane	%	40-140	98	100	100
Toluène-D8	%	40-140	101	102	102
4-Bromofluorobenzène	%	40-140	98	97	95
Éthylbenzène-D10	%	40-140	99	98	100

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes: A se réfère QC PTC (Critère A), B se réfère QC PTC (Critère B), C se réfère QC PTC (Critère C), D se réfère QC RESC (Annexe 1)

Certifié par:



Robert Roch

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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Hydrocarbures aromatiques polycycliques (HAP) (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

Paramètre	Unités	IDENTIFICATION DE L'ÉCHANTILLON:					F-01-15 TM-2	F-01-15 TM-6	F-02-15 CF2	F-02-15 CF7	DUP-1
		MATRICE:					Sol	Sol	Sol	Sol	Sol
		DATE D'ÉCHANTILLONNAGE:					2015-05-04	2015-05-04	2015-05-05	2015-05-05	2015-05-05
		C / N: A	C / N: B	C / N: C	C / N: D	LDR	6542883	6542896	6542901	6543027	6543033
Acénaphène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Acénaphthylène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Anthracène	mg/kg	0.1	10	100	100	0.1	0.1[A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo(a)anthracène	mg/kg	0.1	1	10	34	0.1	0.7[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo(a)pyrène	mg/kg	0.1	1	10	34	0.1	1.1[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo (b) fluoranthène	mg/kg	0.1	1	10	-	0.1	0.9[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo (j) fluoranthène	mg/kg	0.1	1	10	-	0.1	0.5[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo (k) fluoranthène	mg/kg	0.1	1	10	-	0.1	0.4[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo(c)phénanthrène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo(g,h,i)pyrène	mg/kg	0.1	1	10	18	0.1	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Chrysène	mg/kg	0.1	1	10	34	0.1	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	82	0.1	0.2[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	34	0.1	0.3[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Diméthyl-7,12benzo(a)anthracène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Fluoranthène	mg/kg	0.1	10	100	100	0.1	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Fluorène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	34	0.1	0.6[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Méthyl-3cholanthrène	mg/kg	0.1	1	10	150	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Naphtalène	mg/kg	0.1	5	50	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Phénanthrène	mg/kg	0.1	5	50	56	0.1	0.1[A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Pyrène	mg/kg	0.1	10	100	100	0.1	0.9[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Méthyl-1naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Méthyl-2naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Diméthyl-1,3naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Triméthyl-2,3,5naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]

Certifié par:



Robert Roch

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AGAT Laboratoires

Certificat d'analyse

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

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<http://www.agatlabs.com>

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Hydrocarbures aromatiques polycycliques (HAP) (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

		IDENTIFICATION DE L'ÉCHANTILLON:	F-01-15 TM-2	F-01-15 TM-6	F-02-15 CF2	F-02-15 CF7	DUP-1
		MATRICE:	Soi	Soi	Soi	Soi	Soi
		DATE D'ÉCHANTILLONNAGE:	2015-05-04	2015-05-04	2015-05-05	2015-05-05	2015-05-05
Étalon de recouvrement	Unités	Limites	6542883	6542896	6542901	6543027	6543033
Acénaphthène-D10	%	40-140	103	105	83	102	103
Fluoranthène-D10	%	40-140	97	88	72	85	83
Pérylène-D12	%	40-140	101	87	81	79	77

Certifié par:



Robert Roch

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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Hydrocarbures aromatiques polycycliques (HAP) (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

Paramètre	Unités	IDENTIFICATION DE L'ÉCHANTILLON:					F-03-15 TM-2	F-03-15 TM-5	F-04-15 CF-1	F-04-15 CF-8	F-05-15-CF1
		MATRICE:					Soi	Soi	Soi	Soi	Soi
		DATE D'ÉCHANTILLONNAGE:					2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06
		C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543036	6543073	6543090	6543209	6543232
Acénaphène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]	2.1[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Acénaphthylène	mg/kg	0.1	10	100	100	0.1	0.2[A-B]	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Anthracène	mg/kg	0.1	10	100	100	0.1	0.4[A-B]	29.0[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo(a)anthracène	mg/kg	0.1	1	10	34	0.1	1.8[B-C]	6.2[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo(a)pyrène	mg/kg	0.1	1	10	34	0.1	2.2[B-C]	5.5[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo (b) fluoranthène	mg/kg	0.1	1	10	-	0.1	1.9[B-C]	3.7[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo (j) fluoranthène	mg/kg	0.1	1	10	-	0.1	1.0[B]	2.3[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo (k) fluoranthène	mg/kg	0.1	1	10	-	0.1	0.9[A-B]	2.1[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo(c)phénanthrène	mg/kg	0.1	1	10	56	0.1	0.2[A-B]	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Benzo(g,h,i)érylène	mg/kg	0.1	1	10	18	0.1	1.8[B-C]	2.8[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Chrysène	mg/kg	0.1	1	10	34	0.1	1.8[B-C]	5.6[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	82	0.1	0.4[A-B]	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	34	0.1	0.5[A-B]	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]	0.2[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	34	0.1	0.2[A-B]	0.5[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Diméthyl-7,12benzo(a)anthracène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Fluoranthène	mg/kg	0.1	10	100	100	0.1	2.3[A-B]	15.6[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Fluorène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]	2.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	34	0.1	1.3[B-C]	2.7[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Méthyl-3cholantrène	mg/kg	0.1	1	10	150	0.1	<0.1[<A]	0.1[A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Naphtalène	mg/kg	0.1	5	50	56	0.1	<0.1[<A]	2.5[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Phénanthrène	mg/kg	0.1	5	50	56	0.1	0.5[A-B]	19.8[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Pyrène	mg/kg	0.1	10	100	100	0.1	2.0[A-B]	12.0[B-C]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Méthyl-1naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Méthyl-2naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	0.8[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Diméthyl-1,3naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	0.8[A-B]	0.1[A]	<0.1[<A]	<0.1[<A]
Triméthyl-2,3,5naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	0.4[A-B]	<0.1[<A]	<0.1[<A]	<0.1[<A]

Certifié par:



Robert Roch

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Certificat d'analyse

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N° DE PROJET: B-0012112-2

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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Hydrocarbures aromatiques polycycliques (HAP) (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

		IDENTIFICATION DE L'ÉCHANTILLON:	F-03-15 TM-2	F-03-15 TM-5	F-04-15 CF-1	F-04-15 CF-8	F-05-15-CF1
		MATRICE:	Soi	Soi	Soi	Soi	Soi
		DATE D'ÉCHANTILLONNAGE:	2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06
Étalon de recouvrement	Unités	Limites	6543036	6543073	6543090	6543209	6543232
Acénaphthène-D10	%	40-140	104	96	106	105	102
Fluoranthène-D10	%	40-140	95	74	102	91	92
Pérylène-D12	%	40-140	99	127	105	85	90

Certifié par:



Robert Roch

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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Hydrocarbures aromatiques polycycliques (HAP) (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON: F-05-15-CF7

MATRICE: Sol

DATE D'ÉCHANTILLONNAGE: 2015-05-06

Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543253
Acénaphène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]
Acénaphthylène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]
Anthracène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]
Benzo(a)anthracène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]
Benzo(a)pyrène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]
Benzo (b) fluoranthène	mg/kg	0.1	1	10	-	0.1	<0.1[<A]
Benzo (j) fluoranthène	mg/kg	0.1	1	10	-	0.1	<0.1[<A]
Benzo (k) fluoranthène	mg/kg	0.1	1	10	-	0.1	<0.1[<A]
Benzo(c)phénanthrène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]
Benzo(g,h,i)pyrène	mg/kg	0.1	1	10	18	0.1	<0.1[<A]
Chrysène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]
Dibenzo(a,h)anthracène	mg/kg	0.1	1	10	82	0.1	<0.1[<A]
Dibenzo(a,i)pyrène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]
Dibenzo(a,h)pyrène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]
Dibenzo(a,l)pyrène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]
Diméthyl-7,12benzo(a)anthracène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]
Fluoranthène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]
Fluorène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]
Indéno(1,2,3-cd)pyrène	mg/kg	0.1	1	10	34	0.1	<0.1[<A]
Méthyl-3cholanthrène	mg/kg	0.1	1	10	150	0.1	<0.1[<A]
Naphtalène	mg/kg	0.1	5	50	56	0.1	<0.1[<A]
Phénanthrène	mg/kg	0.1	5	50	56	0.1	<0.1[<A]
Pyrène	mg/kg	0.1	10	100	100	0.1	<0.1[<A]
Méthyl-1naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]
Méthyl-2naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]
Diméthyl-1,3naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]
Triméthyl-2,3,5naphtalène	mg/kg	0.1	1	10	56	0.1	<0.1[<A]

Certifié par:



Robert Roch

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AGAT Laboratoires

Certificat d'analyse

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

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TEL (514)337-1000
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<http://www.agatlabs.com>

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Hydrocarbures aromatiques polycycliques (HAP) (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON: F-05-15-CF7

MATRICE: Sol

DATE D'ÉCHANTILLONNAGE: 2015-05-06

Étalon de recouvrement	Unités	Limites	
Acénaphthène-D10	%	40-140	104
Fluoranthène-D10	%	40-140	86
Pérylène-D12	%	40-140	79

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes: A se réfère QC PTC (Critère A), B se réfère QC PTC (Critère B), C se réfère QC PTC (Critère C), D se réfère QC RESC (Annexe 1)
6543036 L'échantillon utilisé comme duplicata est non-homogène, le duplicata est non-conforme.

Certifié par:



Robert Roch

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AGAT Laboratoires

Certificat d'analyse

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

9770 ROUTE TRANSCANADIENNE
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FAX (514)333-3046
<http://www.agatlabs.com>

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Hydrocarbures pétroliers C10-C50 (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON:							F-01-15 TM-2	F-01-15 TM-6	F-02-15 CF2	F-02-15 CF7	DUP-1
MATRICE:							Soi	Soi	Soi	Soi	Soi
DATE D'ÉCHANTILLONNAGE:							2015-05-04	2015-05-04	2015-05-05	2015-05-05	2015-05-05
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6542883	6542896	6542901	6543027	6543033
Hydrocarbures pétroliers C10 à C50	mg/kg	300	700	3500	10000	100	481[A-B]	<100[<A]	<100[<A]	<100[<A]	<100[<A]
Étalon de recouvrement	Unités			Limites							
Nonane	%			40-140			82	97	102	95	97
IDENTIFICATION DE L'ÉCHANTILLON:							F-03-15 TM-2	F-03-15 TM-5	F-04-15 CF-1	F-04-15 CF-8	F-05-15-CF1
MATRICE:							Soi	Soi	Soi	Soi	Soi
DATE D'ÉCHANTILLONNAGE:							2015-05-06	2015-05-06	2015-05-06	2015-05-06	2015-05-06
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543036	6543073	6543090	6543209	6543232
Hydrocarbures pétroliers C10 à C50	mg/kg	300	700	3500	10000	100	339[A-B]	105[<A]	1110[B-C]	<100[<A]	<100[<A]
Étalon de recouvrement	Unités			Limites							
Nonane	%			40-140			88	93	98	98	95
IDENTIFICATION DE L'ÉCHANTILLON:							F-05-15-CF7				
MATRICE:							Soi				
DATE D'ÉCHANTILLONNAGE:							2015-05-06				
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543253				
Hydrocarbures pétroliers C10 à C50	mg/kg	300	700	3500	10000	100	<100[<A]				
Étalon de recouvrement	Unités			Limites							
Nonane	%			40-140			98				

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes: A se réfère QC PTC (Critère A), B se réfère QC PTC (Critère B), C se réfère QC PTC (Critère C), D se réfère QC RESC (Annexe 1)

Certifié par:



Robert Roch

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AGAT CERTIFICAT D'ANALYSE

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AGAT Laboratoires

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PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Hydrocarbures pétroliers TPH CCME F1-F4 moins BTEX (Sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON:							F-04-15 CF-9	F-05-15-CF6
MATRICE:							Sol	Sol
DATE D'ÉCHANTILLONNAGE:							2015-05-06	2015-05-06
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6543215	6543248
Benzène	mg/kg	0.1	0.5	5	5	0.1	<0.1[<A]	<0.1[<A]
Toluène	mg/kg	0.2	3	30	30	0.2	<0.2[<A]	<0.2[<A]
Éthylbenzène	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]
Xylènes (o,m,p)	mg/kg	0.2	5	50	50	0.2	<0.2[<A]	<0.2[<A]
C6-C10 (F1)	mg/kg					10	<10	<10
C6-C10 (F1-BTEX)	mg/kg					10	NA	NA
C>10-C16 (F2)	mg/kg					10	<10	<10
C>16-C34 (F3)	mg/kg					10	17	<10
C>34-C50 (F4)	mg/kg					10	<10	<10
Hydrocarbures lourds par gravimétrie (F4G-sg)	mg/kg					300	NA	NA
Étalon de recouvrement	Unités			Limites				
Rec. Fluorobenzène (BTEX F-1)	%			40-140			88	88
Rec. Nonane (F2-F4)	%			40-140			136	113

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes: A se réfère QC PTC (Critère A), B se réfère QC PTC (Critère B), C se réfère QC PTC (Critère C), D se réfère QC RESC (Annexe 1)

6543215-6543248 Les résultats sont exprimés sur une base sèche.

Les fractions F1-BTEX présentent les résultats après soustraction des BTEX.

La Fraction F1 est quantifiée en fonction du facteur de réponse du Toluène. Le facteur de réponse de l'alcane nC6 ne respecte pas le critère de 30% d'écart du facteur de réponse du Toluène. Le facteur de réponse de l'alcane nC10 ne dépasse pas 30% d'écart du facteur de réponse du Toluène.

Les Fractions F2, F3 et F4 sont quantifiées en fonction des facteurs de réponse moyens des alcanes nC10, nC16 et nC34. Le facteur de réponse de l'alcane nC50 ne respecte pas le critère de 30% d'écart du facteur de réponse moyen des alcanes nC10, nC16 et nC34. Les facteurs de réponse des alcanes nC10, nC16 et nC34 ne varient pas plus de 10 % d'écart des uns des autres.

Le domaine de linéarité respecte un écart maximal de 15%.

Le tracé du chromatogramme est revenu à la ligne de base avant le temps de rétention de l'alcane nC50. Dans le cas contraire l'analyse de la Fraction F4G-sg a été effectuée.

La Fraction F4G-sg présente les hydrocarbures lourds analysés par gravimétrie après traitement au gel de silice.

Le résultat des hydrocarbures lourds ne peut pas être ajouté aux résultats des hydrocarbures C6 à C50.

Les résultats des contrôles de qualité sont disponibles dans la section «Contrôle de qualité» du certificat d'analyse.

Le délai de conservation pour l'extraction et l'analyse a été respecté.

L'analyse des F1-F4 est réalisée au laboratoire AGAT de Québec.

Certifié par:



Robert Roch

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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Phénols (sol)											
DATE DE RÉCEPTION: 2015-05-12						DATE DU RAPPORT: 2015-05-22					
IDENTIFICATION DE L'ÉCHANTILLON:							F-01-15 TM-6	F-02-15 CF7	F-03-15 TM-5	F-04-15 CF-8	F-05-15-CF7
MATRICE:							Sol	Sol	Sol	Sol	Sol
DATE D'ÉCHANTILLONNAGE:							2015-05-04	2015-05-05	2015-05-06	2015-05-06	2015-05-06
Paramètre	Unités	C / N: A	C / N: B	C / N: C	C / N: D	LDR	6542896	6543027	6543073	6543209	6543253
o-Crésol	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
m-Crésol	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
p-Crésol	mg/kg	0.1	1	10	56	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Diméthyl-2,4 phénol	mg/kg	0.1	1	10	140	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Nitro-2 phénol	mg/kg	0.5	1	10	130	0.5	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]
Nitro-4 phénol	mg/kg	0.5	1	10	290	0.5	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]	<0.5[<A]
Phénol	mg/kg	0.1	1	10	62	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Chloro-2 phénol	mg/kg	0.1	0.5	5	57	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Chloro-3 phénol	mg/kg	0.1	0.5	5	57	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Chloro-4 phénol	mg/kg	0.1	0.5	5	57	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dichloro-2,3 phénol	mg/kg	0.1	0.5	5	140	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dichloro-2,4 phénol	mg/kg	0.1	0.5	5	140	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dichloro-2,5 phénol	mg/kg	0.1	0.5	5	140	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dichloro-2,6+3,5 phénol	mg/kg	0.1	0.5	5	140	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Dichloro-3,4 phénol	mg/kg	0.1	0.5	5	140	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Pentachlorophénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Tétrachloro-2,3,4,5 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Tétrachloro-2,3,4,6 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Tétrachloro-2,3,5,6 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Trichloro-2,3,4 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Trichloro-2,3,5 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Trichloro-2,3,6 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Trichloro-2,4,5 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Trichloro-2,4,6 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]
Trichloro-3,4,5 phénol	mg/kg	0.1	0.5	5	74	0.1	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]	<0.1[<A]

Certifié par:



Robert Roch

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PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Phénols (sol)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

		IDENTIFICATION DE L'ÉCHANTILLON:				
		MATRICE:				
		DATE D'ÉCHANTILLONNAGE:				
Étalon de recouvrement	Unités	Limites	F-01-15 TM-6	F-02-15 CF7	F-03-15 TM-5	F-04-15 CF-8
			Soi	Soi	Soi	Soi
			2015-05-04	2015-05-05	2015-05-06	2015-05-06
			6542896	6543027	6543073	6543209
Phénol-D5	%	40-140	90	91	92	84
2-Fluorophénol	%	40-140	72	75	75	68
2,6-dibromophénol	%	40-140	54	56	59	86
2,4,6-Tribromophénol	%	40-140	50	58	62	60

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes: A se réfère QC PTC (Critère A), B se réfère QC PTC (Critère B), C se réfère QC PTC (Critère C), D se réfère QC RESC (Annexe 1)

Certifié par:



Robert Roch

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NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

PRÉLEVÉ PAR: Sylvain Seguin

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Lixiviation - Métaux (O. Reg. 558)

DATE DE RÉCEPTION: 2015-05-12

DATE DU RAPPORT: 2015-05-22

IDENTIFICATION DE L'ÉCHANTILLON: F-04-15 CF-9 F-05-15-CF6					
MATRICE: Sol Sol					
DATE D'ÉCHANTILLONNAGE: 2015-05-06 2015-05-06					
Paramètre	Unités	C / N	LDR	6543215	6543248
Argent lixivié	mg/L		0.2	<0.2	<0.2
Arsenic lixivié	mg/L		0.02	<0.02	<0.02
Baryum lixivié	mg/L		1	<1	<1
Bore lixivié	mg/L		5	<5	<5
Cadmium lixivié	mg/L		0.01	<0.01	<0.01
Chrome lixivié	mg/L		0.01	<0.01	<0.01
Plomb lixivié	mg/L		0.05	<0.05	<0.05
Sélénium lixivié	mg/L		0.5	<0.5	<0.5
Uranium lixivié	mg/L		0.5	<0.5	<0.5

Commentaires: LDR - Limite de détection rapportée; C / N - Critères Normes

Certifié par:



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Contrôle de qualité

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Analyse des Sols															
Date du rapport: 2015-05-22			DUPLICATA			MATÉRIAU DE RÉFÉRENCE			BLANC FORTIFIÉ			ÉCH. FORTIFIÉ			
PARAMÈTRE	Lot	N° éch.	Dup #1	Dup #2	% d'écart	Blanc de méthode	% Récup.	Limites		% Récup.	Limites		% Récup.	Limites	
								Inf.	Sup.		Inf.	Sup.		Inf.	Sup.

Métaux Extractibles Totaux - Sol (PRTC)

Argent	6524051	NA	NA	NA	0.0	< 0.5	102%	80%	120%	104%	80%	120%	109%	80%	120%
Arsenic	6524051	NA	NA	NA	0.0	< 5.0	107%	80%	120%	99%	80%	120%	109%	80%	120%
Baryum	6524051	NA	NA	NA	0.0	< 20	92%	80%	120%	96%	80%	120%	97%	80%	120%
Cadmium	6524051	NA	NA	NA	0.0	< 0.9	98%	80%	120%	98%	80%	120%	98%	80%	120%
Chrome	6524051	NA	NA	NA	0.0	< 45	97%	80%	120%	99%	80%	120%	96%	80%	120%
Cobalt	6524051	NA	NA	NA	0.0	< 15	96%	80%	120%	95%	80%	120%	94%	80%	120%
Cuivre	6524051	NA	NA	NA	0.0	< 40	97%	80%	120%	94%	80%	120%	NA	80%	120%
Étain	6524051	NA	NA	NA	0.0	< 5	100%	80%	120%	93%	80%	120%	NA	80%	120%
Manganèse	6524051	NA	NA	NA	0.0	< 10	99%	80%	120%	99%	80%	120%	99%	80%	120%
Molybdène	6524051	NA	NA	NA	0.0	< 2	109%	80%	120%	102%	80%	120%	104%	80%	120%
Nickel	6524051	NA	NA	NA	0.0	< 30	98%	80%	120%	99%	80%	120%	89%	80%	120%
Plomb	6524051	NA	NA	NA	0.0	< 30	99%	80%	120%	97%	80%	120%	NA	80%	120%
Zinc	6524051	NA	NA	NA	0.0	< 100	98%	80%	120%	98%	80%	120%	84%	80%	120%

Analyses Inorganiques - Sol

Soufre total	1	NA	NA	NA	0.0	< 200	103%	80%	120%	104%	80%	120%	NA	80%	120%
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Métaux Extractibles Totaux - Sol (PRTC)

Argent	6542901	6542901	<0.5	<0.5	0.0	< 0.5	105%	80%	120%	103%	80%	120%	107%	80%	120%
Arsenic	6542901	6542901	<5.0	<5.0	0.0	< 5.0	108%	80%	120%	103%	80%	120%	112%	80%	120%
Baryum	6542901	6542901	131	130	0.8	< 20	90%	80%	120%	98%	80%	120%	99%	80%	120%
Cadmium	6542901	6542901	1.1	1.1	0.0	< 0.9	97%	80%	120%	99%	80%	120%	97%	80%	120%
Chrome	6542901	6542901	< 45	< 45	0.0	< 45	96%	80%	120%	100%	80%	120%	98%	80%	120%
Cobalt	6542901	6542901	< 15	< 15	0.0	< 15	96%	80%	120%	98%	80%	120%	98%	80%	120%
Cuivre	6542901	6542901	< 40	< 40	0.0	< 40	97%	80%	120%	98%	80%	120%	102%	80%	120%
Étain	6542901	6542901	< 5	< 5	0.0	< 5	97%	80%	120%	93%	80%	120%	NA	80%	120%
Manganèse	6542901	6542901	661	650	1.7	< 10	102%	80%	120%	101%	80%	120%	96%	80%	120%
Molybdène	6542901	6542901	< 2	< 2	0.0	< 2	103%	80%	120%	107%	80%	120%	106%	80%	120%
Nickel	6542901	6542901	< 30	< 30	0.0	< 30	97%	80%	120%	103%	80%	120%	100%	80%	120%
Plomb	6542901	6542901	< 30	< 30	0.0	< 30	96%	80%	120%	98%	80%	120%	99%	80%	120%
Zinc	6542901	6542901	< 100	< 100	0.0	< 100	95%	80%	120%	100%	80%	120%	92%	80%	120%

Certifié par:



La procédure des Laboratoires AGAT concernant les signatures et les signataires se conforme strictement aux exigences d'accréditation ISO 17025:2005 comme le requiert, lorsque applicable, CALA, CCN et MDDEFP. Toutes les signatures sur les certificats d'AGAT sont protégées par des mots de passe et les signataires rencontrent les exigences des domaines d'accréditation ainsi que les exigences régionales approuvées par CALA, CCN et MDDEFP.

Contrôle de qualité

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Analyse organique de trace

Date du rapport: 2015-05-22			DUPLICATA			MATÉRIAU DE RÉFÉRENCE				BLANC FORTIFIÉ			ÉCH. FORTIFIÉ		
PARAMÈTRE	Lot	N° éch.	Dup #1	Dup #2	% d'écart	Blanc de méthode	% Récup.	Limites		% Récup.	Limites		% Récup.	Limites	
								Inf.	Sup.		Inf.	Sup.		Inf.	Sup.
HAM-HAC (sol)															
Acrylonitrile	1	6543027	< 0.2	< 0.2	0.0	< 0.2	87%	80%	120%	NA	80%	120%	85%	80%	120%
Benzène	1	6543027	< 0.1	< 0.1	0.0	< 0.1	90%	80%	120%	NA	80%	120%	85%	80%	120%
Chlorobenzène (mono)	1	6543027	< 0.2	< 0.2	0.0	< 0.2	89%	80%	120%	NA	80%	120%	90%	80%	120%
Dichloro-1,2 benzène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	92%	80%	120%	NA	80%	120%	94%	80%	120%
Dichloro-1,3 benzène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	92%	80%	120%	NA	80%	120%	93%	80%	120%
Dichloro-1,4 benzène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	93%	80%	120%	NA	80%	120%	95%	80%	120%
Éthylbenzène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	85%	80%	120%	NA	80%	120%	85%	80%	120%
Styrène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	83%	80%	120%	NA	80%	120%	89%	80%	120%
Toluène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	87%	80%	120%	NA	80%	120%	86%	80%	120%
Xylènes	1	6543027	< 0.2	< 0.2	0.0	< 0.2	85%	80%	120%	NA	80%	120%	85%	80%	120%
Chloroforme	1	6543027	< 0.2	< 0.2	0.0	< 0.2	87%	80%	120%	NA	80%	120%	82%	80%	120%
Chlorure de vinyle	1	6543027	< 0.4	< 0.4	0.0	< 0.4	97%	80%	120%	NA	80%	120%	89%	80%	120%
Dichloro-1,1 éthane	1	6543027	< 0.2	< 0.2	0.0	< 0.2	87%	80%	120%	NA	80%	120%	81%	80%	120%
Dichloro-1,2 éthane	1	6543027	< 0.2	< 0.2	0.0	< 0.2	82%	80%	120%	NA	80%	120%	77%	80%	120%
Dichloro-1,1 éthène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	94%	80%	120%	NA	80%	120%	86%	80%	120%
Dichloro-1,2 éthène (cis et trans)	1	6543027	< 0.2	< 0.2	0.0	< 0.2	90%	80%	120%	NA	80%	120%	82%	80%	120%
Dichlorométhane	1	6543027	< 0.2	< 0.2	0.0	< 0.2	95%	80%	120%	NA	80%	120%	89%	80%	120%
Dichloro-1,2 propane	1	6543027	< 0.2	< 0.2	0.0	< 0.2	85%	80%	120%	NA	80%	120%	80%	80%	120%
Dichloro-1,3 propène (cis et trans)	1	6543027	< 0.2	< 0.2	0.0	< 0.2	89%	80%	120%	NA	80%	120%	86%	80%	120%
Tétrachloro-1,1,2,2 éthane	1	6543027	< 0.2	< 0.2	0.0	< 0.2	82%	80%	120%	NA	80%	120%	92%	80%	120%
Tétrachloroéthène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	93%	80%	120%	NA	80%	120%	92%	80%	120%
Tétrachlorure de carbone	1	6543027	< 0.1	< 0.1	0.0	< 0.1	104%	80%	120%	NA	80%	120%	96%	80%	120%
Trichloro-1,1,1 éthane	1	6543027	< 0.2	< 0.2	0.0	< 0.2	94%	80%	120%	NA	80%	120%	86%	80%	120%
Trichloro-1,1,2 éthane	1	6543027	< 0.2	< 0.2	0.0	< 0.2	88%	80%	120%	NA	80%	120%	89%	80%	120%
Trichloroéthène	1	6543027	< 0.2	< 0.2	0.0	< 0.2	93%	80%	120%	NA	80%	120%	83%	80%	120%
Dibromofluorométhane	1	6543027	99	99	0.0	100	98%	40%	140%	NA	40%	140%	100%	40%	140%
Toluène-D8	1	6543027	100	100	0.0	103	98%	40%	140%	NA	40%	140%	103%	40%	140%
4-Bromofluorobenzène	1	6543027	98	100	2.0	98	100%	40%	140%	NA	40%	140%	109%	40%	140%
Éthylbenzène-D10	1	6543027	97	96	1.0	107	99%	40%	140%	NA	40%	140%	99%	40%	140%
Hydrocarbures aromatiques polycycliques (HAP) (sol)															
Acénaphène	1	6543036	<0.1	<0.1	0.0	<0.1	96%	70%	130%	NA	70%	130%	NA	70%	130%
Acénaphtylène	1	6543036	0.2	0.2	0.0	<0.1	75%	70%	130%	NA	70%	130%	NA	70%	130%
Anthracène	1	6543036	0.4	0.3	29.0	<0.1	89%	70%	130%	NA	70%	130%	NA	70%	130%
Benzo(a)anthracène	1	6543036	1.7	1.3	26.7	<0.1	92%	70%	130%	NA	70%	130%	NA	70%	130%
Benzo(a)pyrène	1	6543036	2.2	2.1	4.7	<0.1	100%	70%	130%	NA	70%	130%	NA	70%	130%
Benzo (b) fluoranthène	1	6543036	1.9	1.6	17.0	<0.1	98%	70%	130%	NA	70%	130%	NA	70%	130%
Benzo (j) fluoranthène	1	6543036	1.0	0.9	11.0	<0.1	104%	70%	130%	NA	70%	130%	NA	70%	130%
Benzo (k) fluoranthène	1	6543036	0.9	0.8	12.0	<0.1	86%	70%	130%	NA	70%	130%	NA	70%	130%
Benzo(c)phénanthrène	1	6543036	0.2	0.1	29.4	<0.1	84%	70%	130%	NA	70%	130%	NA	70%	130%
Benzo(g,h,i)pérylène	1	6543036	1.8	1.8	0.0	<0.1	103%	70%	130%	NA	70%	130%	NA	70%	130%
Chrysène	1	6543036	1.8	1.3	30.2	<0.1	97%	70%	130%	NA	70%	130%	NA	70%	130%



Contrôle de qualité

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Analyse organique de trace (Suite)

Date du rapport: 2015-05-22			DUPLICATA			MATÉRIAU DE RÉFÉRENCE				BLANC FORTIFIÉ			ÉCH. FORTIFIÉ		
PARAMÈTRE	Lot	N° éch.	Dup #1	Dup #2	% d'écart	Blanc de méthode	% Récup.	Limites		% Récup.	Limites		% Récup.	Limites	
								Inf.	Sup.		Inf.	Sup.		Inf.	Sup.
Dibenzo(a,h)anthracène	1	6543036	0.4	0.4	0.0	<0.1	110%	70%	130%	NA	70%	130%	NA	70%	130%
Dibenzo(a,i)pyrène	1	6543036	0.5	0.6	18.0	<0.1	121%	70%	130%	NA	70%	130%	NA	70%	130%
Dibenzo(a,h)pyrène	1	6543036	<0.1	<0.1	0.0	<0.1	115%	70%	130%	NA	70%	130%	NA	70%	130%
Dibenzo(a,l)pyrène	1	6543036	0.2	0.2	0.0	<0.1	94%	70%	130%	NA	70%	130%	NA	70%	130%
Diméthyl-7,12benzo(a)anthracène	1	6543036	<0.1	<0.1	0.0	<0.1	95%	70%	130%	NA	70%	130%	NA	70%	130%
Fluoranthène	1	6543036	2.3	1.5	42.1	<0.1	86%	70%	130%	NA	70%	130%	NA	70%	130%
Fluorène	1	6543036	<0.1	<0.1	0.0	<0.1	83%	70%	130%	NA	70%	130%	NA	70%	130%
Indéno(1,2,3-cd)pyrène	1	6543036	1.3	1.5	14.0	<0.1	98%	70%	130%	NA	70%	130%	NA	70%	130%
Méthyl-3cholantrène	1	6543036	<0.1	<0.1	0.0	<0.1	103%	70%	130%	NA	70%	130%	NA	70%	130%
Naphtalène	1	6543036	<0.1	<0.1	0.0	<0.1	88%	70%	130%	NA	70%	130%	NA	70%	130%
Phénanthrène	1	6543036	0.5	0.4	22.0	<0.1	82%	70%	130%	NA	70%	130%	NA	70%	130%
Pyrène	1	6543036	2.0	1.3	38.6	<0.1	87%	70%	130%	NA	70%	130%	NA	70%	130%
Méthyl-1naphtalène	1	6543036	<0.1	<0.1	0.0	<0.1	86%	70%	130%	NA	70%	130%	NA	70%	130%
Méthyl-2naphtalène	1	6543036	<0.1	<0.1	0.0	<0.1	73%	70%	130%	NA	70%	130%	NA	70%	130%
Diméthyl-1,3naphtalène	1	6543036	<0.1	<0.1	0.0	<0.1	96%	70%	130%	NA	70%	130%	NA	70%	130%
Triméthyl-2,3,5naphtalène	1	6543036	<0.1	<0.1	0.0	<0.1	96%	70%	130%	NA	70%	130%	NA	70%	130%
Acénaphthène-D10	1	6543036	104	101	3.0	92	85%	40%	140%	NA	40%	140%	NA	40%	140%
Fluoranthène-D10	1	6543036	95	93	2.0	75	84%	40%	140%	NA	40%	140%	NA	40%	140%
Pérylène-D12	1	6543036	99	98	1.0	90	101%	40%	140%	NA	40%	140%	NA	40%	140%
Hydrocarbures pétroliers C10-C50 (sol)															
Hydrocarbures pétroliers C10 à C50	1	6543036	339	319	6.1	< 100	96%	70%	130%	NA	70%	130%	NA	70%	130%
Nonane	1	6543036	88	95	7.7	86	85%	40%	140%	NA	40%	140%	NA	40%	140%
Phénols (sol)															
o-Crésol	1	NA	NA	NA	0.0	< 0.1	100%	70%	130%	NA	70%	130%	95%	70%	130%
m-Crésol	1	NA	NA	NA	0.0	< 0.1	109%	70%	130%	NA	70%	130%	103%	70%	130%
p-Crésol	1	NA	NA	NA	0.0	< 0.1	98%	70%	130%	NA	70%	130%	93%	70%	130%
Diméthyl-2,4 phénol	1	NA	NA	NA	0.0	< 0.1	95%	70%	130%	NA	70%	130%	89%	70%	130%
Nitro-2 phénol	1	NA	NA	NA	0.0	< 0.5	83%	70%	130%	NA	70%	130%	76%	70%	130%
Nitro-4 phénol	1	NA	NA	NA	0.0	< 0.5	79%	70%	130%	NA	70%	130%	72%	70%	130%
Phénol	1	NA	NA	NA	0.0	< 0.1	122%	70%	130%	NA	70%	130%	117%	70%	130%
Chloro-2 phénol	1	NA	NA	NA	0.0	< 0.1	96%	70%	130%	NA	70%	130%	92%	70%	130%
Chloro-3 phénol	1	NA	NA	NA	0.0	< 0.1	99%	70%	130%	NA	70%	130%	94%	70%	130%
Chloro-4 phénol	1	NA	NA	NA	0.0	< 0.1	113%	70%	130%	NA	70%	130%	106%	70%	130%
Dichloro-2,3 phénol	1	NA	NA	NA	0.0	< 0.1	95%	70%	130%	NA	70%	130%	89%	70%	130%
Dichloro-2,4 phénol	1	NA	NA	NA	0.0	< 0.1	86%	70%	130%	NA	70%	130%	81%	70%	130%
Dichloro-2,5 phénol	1	NA	NA	NA	0.0	< 0.1	97%	70%	130%	NA	70%	130%	89%	70%	130%
Dichloro-2,6+3,5 phénol	1	NA	NA	NA	0.0	< 0.1	101%	70%	130%	NA	70%	130%	96%	70%	130%
Dichloro-3,4 phénol	1	NA	NA	NA	0.0	< 0.1	95%	70%	130%	NA	70%	130%	89%	70%	130%
Pentachlorophénol	1	NA	NA	NA	0.0	< 0.1	82%	70%	130%	NA	70%	130%	76%	70%	130%
Tétrachloro-2,3,4,5 phénol	1	NA	NA	NA	0.0	< 0.1	76%	70%	130%	NA	70%	130%	71%	70%	130%
Tétrachloro-2,3,4,6 phénol	1	NA	NA	NA	0.0	< 0.1	77%	70%	130%	NA	70%	130%	72%	70%	130%
Tétrachloro-2,3,5,6 phénol	1	NA	NA	NA	0.0	< 0.1	73%	70%	130%	NA	70%	130%	70%	70%	130%

Contrôle de qualité

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Analyse organique de trace (Suite)

Date du rapport: 2015-05-22			DUPLICATA			MATÉRIAU DE RÉFÉRENCE				BLANC FORTIFIÉ			ÉCH. FORTIFIÉ		
PARAMÈTRE	Lot	N° éch.	Dup #1	Dup #2	% d'écart	Blanc de méthode	% Récup.	Limites		% Récup.	Limites		% Récup.	Limites	
								Inf.	Sup.		Inf.	Sup.		Inf.	Sup.
Trichloro-2,3,4 phénol	1	NA	NA	NA	0.0	< 0.1	88%	70%	130%	NA	70%	130%	83%	70%	130%
Trichloro-2,3,5 phénol	1	NA	NA	NA	0.0	< 0.1	85%	70%	130%	NA	70%	130%	79%	70%	130%
Trichloro-2,3,6 phénol	1	NA	NA	NA	0.0	< 0.1	81%	70%	130%	NA	70%	130%	76%	70%	130%
Trichloro-2,4,5 phénol	1	NA	NA	NA	0.0	< 0.1	82%	70%	130%	NA	70%	130%	77%	70%	130%
Trichloro-2,4,6 phénol	1	NA	NA	NA	0.0	< 0.1	80%	70%	130%	NA	70%	130%	77%	70%	130%
Trichloro-3,4,5 phénol	1	NA	NA	NA	0.0	< 0.1	82%	70%	130%	NA	70%	130%	78%	70%	130%
Phénol-D5	1	NA	NA	NA	0.0	94	94%	40%	140%	NA	40%	140%	93%	40%	140%
2-Fluorophénol	1	NA	NA	NA	0.0	76	77%	40%	140%	NA	40%	140%	76%	40%	140%
2,6-dibromophénol	1	NA	NA	NA	0.0	60	63%	40%	140%	NA	40%	140%	61%	40%	140%
2,4,6-Tribromophénol	1	NA	NA	NA	0.0	66	66%	40%	140%	NA	40%	140%	63%	40%	140%
COSV (sol)															
Nitrobenzène	1	NA	NA	NA	0.0	< 0.1	89%	70%	130%	NA	70%	130%	NA	70%	130%
2,4-DNT	1	NA	NA	NA	0.0	< 0.1	79%	70%	130%	NA	70%	130%	NA	70%	130%
2,6-DNT	1	NA	NA	NA	0.0	< 0.1	87%	70%	130%	NA	70%	130%	NA	70%	130%
TNT	1	NA	NA	NA	0.0	< 0.1	83%	70%	130%	NA	70%	130%	NA	70%	130%
Acénaphthène-D10	1	NA	NA	NA	0.0	100	92%	40%	140%	NA	40%	140%	NA	40%	140%
Fluoranthène-D10	1	NA	NA	NA	0.0	101	102%	40%	140%	NA	40%	140%	NA	40%	140%
Hydrocarbures pétroliers TPH CCME F1-F4 moins BTEX (Sol)															
Benzène	1	6543215	< 0.1	< 0.1	0.0	< 0.1	106%	80%	120%	NA	100%	100%	NA	70%	130%
Toluène	1	6543215	< 0.2	< 0.2	0.0	< 0.2	104%	80%	120%	NA	100%	100%	NA	70%	130%
Éthylbenzène	1	6543215	< 0.2	< 0.2	0.0	< 0.2	105%	80%	120%	NA	100%	100%	NA	70%	130%
Xylènes (o,m,p)	1	6543215	< 0.2	< 0.2	0.0	< 0.2	115%	80%	120%	NA	100%	100%	NA	70%	130%
Rec. Fluorobenzène (BTEX F-1)	1	6543215	88	94	6.6	100	83%	40%	140%	NA	100%	100%	NA	40%	140%
C6-C10 (F1)	1	6543215	< 10	<10	0.0	< 10	88%	70%	130%	NA	100%	100%	NA	60%	140%
C>10-C16 (F2)	1	6543215	< 10	< 10	0.0	< 10	129%	70%	130%	NA	100%	100%	139%	60%	140%
C>16-C34 (F3)	1	6543215	17	18	5.7	< 10	129%	70%	130%	NA	100%	100%	138%	60%	140%
C>34-C50 (F4)	1	6543215	< 10	< 10	0.0	< 10	117%	70%	130%	NA	100%	100%	125%	60%	140%

Commentaires: L'analyse des hydrocarbures pétroliers TPH CCME F1-F4 dans les sols n'est pas contrôlée par le programme d'accréditation du MDDEFP.

Certifié par:



Robert Roch

La procédure des Laboratoires AGAT concernant les signatures et les signataires se conforme strictement aux exigences d'accréditation ISO 17025:2005 comme le requiert, lorsque applicable, CALA, CCN et MDDEFP. Toutes les signatures sur les certificats d'AGAT sont protégées par des mots de passe et les signataires rencontrent les exigences des domaines d'accréditation ainsi que les exigences régionales approuvées par CALA, CCN et MDDEFP.

Contrôle de qualité

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

Analyse de l'eau															
Date du rapport: 2015-05-22			DUPLICATA			MATÉRIAU DE RÉFÉRENCE			BLANC FORTIFIÉ			ÉCH. FORTIFIÉ			
PARAMÈTRE	Lot	N° éch.	Dup #1	Dup #2	% d'écart	Blanc de méthode	% Récup.	Limites		% Récup.	Limites		% Récup.	Limites	
								Inf.	Sup.		Inf.	Sup.		Inf.	Sup.

Lixiviation - Métaux (O. Reg. 558)

Argent lixivié	6548130	NA	NA	NA	0.0	< 0.2	NA	80%	120%	101%	80%	120%	NA	80%	120%
Arsenic lixivié	6548130	NA	NA	NA	0.0	< 0.02	NA	80%	120%	103%	80%	120%	115%	80%	120%
Baryum lixivié	6548130	NA	NA	NA	0.0	< 1	97%	80%	120%	99%	80%	120%	NA	80%	120%
Bore lixivié	6548130	NA	NA	NA	0.0	< 5	NA	80%	120%	114%	80%	120%	108%	80%	120%
Cadmium lixivié	6548130	NA	NA	NA	0.0	< 0.01	116%	80%	120%	116%	80%	120%	114%	80%	120%
Chrome lixivié	6548130	NA	NA	NA	0.0	< 0.01	106%	80%	120%	110%	80%	120%	110%	80%	120%
Plomb lixivié	6548130	NA	NA	NA	0.0	< 0.05	NA	80%	120%	107%	80%	120%	110%	80%	120%
Sélénium lixivié	6548130	NA	NA	NA	0.0	< 0.5	112%	80%	120%	104%	80%	120%	95%	80%	120%
Uranium lixivié	6548130	NA	NA	NA	0.0	< 0.5	NA	80%	120%	100%	80%	120%	97%	80%	120%

Certifié par:



La procédure des Laboratoires AGAT concernant les signatures et les signataires se conforme strictement aux exigences d'accréditation ISO 17025:2005 comme le requiert, lorsque applicable, CALA, CCN et MDDEFP. Toutes les signatures sur les certificats d'AGAT sont protégées par des mots de passe et les signataires rencontrent les exigences des domaines d'accréditation ainsi que les exigences régionales approuvées par CALA, CCN et MDDEFP.



Sommaire de méthode

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

PARAMÈTRE	PRÉPARÉ LE	ANALYSÉ LE	AGAT P.O.N.	RÉFÉRENCE DE LITTÉRATURE	TECHNIQUE ANALYTIQUE
Analyse des Sols					
Soufre total	2015-05-19	2015-05-19	INOR-101-6056F	MA.310-CS 1.0	COMBUSTION
Argent	2015-05-19	2015-05-20	MET-101-6105F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/MS
Arsenic	2015-05-19	2015-05-20	MET-101-6105F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/MS
Baryum	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Cadmium	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Chrome	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Cobalt	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Cuivre	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Étain	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Manganèse	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Molybdène	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Nickel	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Plomb	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES
Zinc	2015-05-19	2015-05-20	MET-101-6107F	MA. 200 - Mét 1.2 ; MA. 203 - Mét 3.2	ICP/OES

Sommaire de méthode

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

PARAMÈTRE	PRÉPARÉ LE	ANALYSÉ LE	AGAT P.O.N.	RÉFÉRENCE DE LITTÉRATURE	TECHNIQUE ANALYTIQUE
Analyse organique de trace					
Nitrobenzène	2015-05-20	2015-05-20	ORG-100-5102F	MA. 400 COSV 1.0	GC/MS
2,4-DNT	2015-05-20	2015-05-20	ORG-100-5102F	MA. 400 COSV 1.0	GC/MS
2,6-DNT	2015-05-20	2015-05-20	ORG-100-5102F	MA. 400 COSV 1.0	GC/MS
TNT	2015-05-20	2015-05-20	ORG-100-5102F	MA. 400 COSV 1.0	GC/MS
Acénaphène-D10	2015-05-20	2015-05-20	ORG-100-5102F	MA. 400 COSV 1.0	GC/MS
Fluoranthène-D10	2015-05-20	2015-05-20	ORG-100-5102F	MA. 400 COSV 1.0	GC/MS
Acrylonitrile	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Benzène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Chlorobenzène (mono)	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,2 benzène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,3 benzène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,4 benzène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Éthylbenzène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Styrène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Toluène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Xylènes	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Chloroforme	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Chlorure de vinyle	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,1 éthane	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,2 éthane	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,1 éthène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,2 éthène (cis et trans)	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichlorométhane	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,2 propane	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dichloro-1,3 propène (cis et trans)	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Tétrachloro-1,1,2,2 éthane	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Tétrachloroéthène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Tétrachlorure de carbone	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Trichloro-1,1,1 éthane	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Trichloro-1,1,2 éthane	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Trichloroéthène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Dibromofluorométhane	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Toluène-D8	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
4-Bromofluorobenzène	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Éthylbenzène-D10	2015-05-19	2015-05-19	ORG-100-5101F	MA.400-COV 2.0	GC/MS
Acénaphène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Acénaphthylène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Anthracène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Benzo(a)anthracène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Benzo(a)pyrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Benzo (b) fluoranthène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Benzo (j) fluoranthène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Benzo (k) fluoranthène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Benzo(c)phénanthrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Benzo(g,h,i)pérylène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Chrysène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Dibenzo(a,h)anthracène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Dibenzo(a,i)pyrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Dibenzo(a,h)pyrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS



Sommaire de méthode

NOM DU CLIENT: LVM UNE DIVISION D'ENGLOBE CORP

N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

PARAMÈTRE	PRÉPARÉ LE	ANALYSÉ LE	AGAT P.O.N.	RÉFÉRENCE DE LITTÉRATURE	TECHNIQUE ANALYTIQUE
Dibenzo(a,l)pyrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Diméthyl-7,12benzo(a)anthracène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Fluoranthène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Fluorène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Indéno(1,2,3-cd)pyrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Méthyl-3cholanthrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Naphtalène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Phénanthrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Pyrène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Méthyl-1naphtalène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Méthyl-2naphtalène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Diméthyl-1,3naphtalène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Triméthyl-2,3,5naphtalène	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Acénaphthène-D10	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Fluoranthène-D10	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Pérylène-D12	2015-05-19	2015-05-19	ORG-100-5102F	MA.400-HAP 1.1	GC/MS
Hydrocarbures pétroliers C10 à C50	2015-05-19	2015-05-19	ORG-100-5104F	MA. 400-HYD. 1.0	GC/FID
Nonane	2015-05-19	2015-05-19	ORG-100-5104F	MA. 400-HYD. 1.0	
Benzène	2015-05-19	2015-05-19	VOL-160-5002F	MA. 400 - COV. 2.0	GC/MS
Toluène	2015-05-19	2015-05-19	VOL-160-5002F	MA. 400 - COV. 2.0	GC/MS
Éthylbenzène	2015-05-19	2015-05-19	VOL-160-5002F	MA. 400 - COV. 2.0	GC/MS
Xylènes (o,m,p)	2015-05-19	2015-05-19	VOL-160-5002F	MA. 400 - COV. 2.0	GC/MS
Rec. Fluorobenzène (BTEX F-1)	2015-05-19	2015-05-19	VOL-160-5002F	MA. 400 - COV. 2.0	GC/MS
C6-C10 (F1)	2015-05-19	2015-05-19	ORG-160-5110F	Méthode CCME 1er volet	GC/FID
C6-C10 (F1-BTEX)	2015-05-19	2015-05-19	ORG-160-5110F	Méthode CCME 1er volet	GC/FID
C>10-C16 (F2)	2015-05-19	2015-05-19	ORG-160-5110F	Méthode CCME 1er volet	GC/FID
C>16-C34 (F3)	2015-05-19	2015-05-19	ORG-160-5110F	Méthode CCME 1er volet	GC/FID
C>34-C50 (F4)	2015-05-19	2015-05-19	ORG-160-5110F	Méthode CCME 1er volet	GC/FID
Hydrocarbures lourds par gravimétrie (F4G-sg)	2015-05-19	2015-05-19	ORG-160-5110F	Méthode CCME 1er volet	GRAVIMÉTRIE
Rec. Nonane (F2-F4)	2015-05-19	2015-05-19	ORG-160-5110F	Méthode CCME 1er volet	GC/FID
o-Crésol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-PHE 1.0	GC/MS
m-Crésol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
p-Crésol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Diméthyl-2,4 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Nitro-2 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Nitro-4 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Chloro-2 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Chloro-3 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Chloro-4 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Dichloro-2,3 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Dichloro-2,4 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Dichloro-2,5 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Dichloro-2,6+3,5 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Dichloro-3,4 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Pentachlorophénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Tétrachloro-2,3,4,5 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Tétrachloro-2,3,4,6 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Tétrachloro-2,3,5,6 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS



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N° BON DE TRAVAIL: 15M973671

N° DE PROJET: B-0012112-2

À L'ATTENTION DE: JEAN-LOUIS NGOUNDZI

PRÉLEVÉ PAR: Sylvain Seguin

LIEU DE PRÉLÈVEMENT: Ruisseau Leamy

PARAMÈTRE	PRÉPARÉ LE	ANALYSÉ LE	AGAT P.O.N.	RÉFÉRENCE DE LITTÉRATURE	TECHNIQUE ANALYTIQUE
Trichloro-2,3,4 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Trichloro-2,3,5 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Trichloro-2,3,6 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Trichloro-2,4,5 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Trichloro-2,4,6 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Trichloro-3,4,5 phénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Phénol-D5	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
2-Fluorophénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
2,6-dibromophénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
2,4,6-Tribromophénol	2015-05-19	2015-05-19	ORG-100-5103F	MA.400-Phé 1.0	GC/MS
Analyse de l'eau					
Argent lixivié	2015-05-19	2015-05-21	MET-101-6105F	MA. 200 - Mét 1.2	ICP/MS
Arsenic lixivié	2015-05-19	2015-05-21	MET-101-6105F	MA. 200 - Mét 1.2	ICP/MS
Baryum lixivié	2015-05-21	2015-05-21	MET-101-6107F	MA. 200 - Mét 1.2	ICP/OES
Bore lixivié	2015-05-21	2015-05-21	MET-101-6107F	MA. 200 - Mét 1.2	ICP/OES
Cadmium lixivié	2015-05-21	2015-05-21	MET-101-6107F	MA. 200 - Mét 1.2	ICP/OES
Chrome lixivié	2015-05-19	2015-05-21	MET-101-6107F	MA. 200 - Mét 1.2	ICP/OES
Plomb lixivié	2015-05-21	2015-05-21	MET-101-6107F	MA. 200 - Mét 1.2	ICP/OES
Sélénium lixivié	2015-05-19	2015-05-21	MET-101-6105F	MA. 200 - Mét 1.2	ICP/MS
Uranium lixivié	2015-05-21	2015-05-21	MET-101-6107F	MA. 200 - Mét 1.2	ICP/OES



Notes:

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11/22/2004



9770 Route Transcanadienne
St-Laurent, QC
H4S 1V9
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Tél.: 514.337.1000 • Sans frais: 1.866.417.5227 • Téléc.: 514.333.3046

Notes:

[illegible]

Nº: 128899



9770 Route Transcanadienne
St-Laurent, QC
H4S 1V9
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Température à l'arrivée: _____
Bon de travail AGAT: _____
Notes: _____

Tél.: 514.337.1000 • Sans frais: 1.866.417.5227 • Téléc.: 514.333.3046

Compagnie : _____

Adresse : _____

Téléphone : _____ Téléc. : _____

Projet : _____

Lieu de prélèvement : _____

Prélevé par : _____

Même adresse : ☐ Oui ☐ Non

Compagnie : _____
Contact : _____
Courriel : _____
Adresse : _____

Bon de commande : _____ Soumission : _____

Commentaires:

Matrice (légende)

<u>S</u> Sol	<u>B</u> Boue	<u>ES</u> Eau de surface
<u>SL</u> Solide	<u>EU</u> Eau usée	<u>EF</u> Effluent
<u>SE</u> Sédiment	<u>ST</u> Eau souterraine	<u>AF</u> Affluent
<u>EP</u> Eau potable (Note pour réseau : Veuillez fournir votre formulaire MDDEFP)	<u>A</u> Air	

1. Nom: _____
Courriel: _____

2. Nom: _____
Courriel: _____

☐ PRTC ☐ Eau consom. ☐ RQEP ☐ RESC
☐ CCME ☐ Eau résurg. ☐ Autre : _____

☐ **Portrait**
un échantillon par page

☐ **Paysage**
plusieurs échantillons/page

☐ Un échantillon par bon de travail

Environnemental:	Haute Résolution:
Régulier: <input type="checkbox"/> 5 à 7 jours	Régulier: <input type="checkbox"/> 10 à 15 jours
Urgent: <input type="checkbox"/> < 12 heures	Urgent: <input type="checkbox"/> < 10 jours
<input type="checkbox"/> 24 heures	
<input type="checkbox"/> 48 heures	Date Require: _____
<input type="checkbox"/> 72 heures	_____

LES ÉCHANTILLONS RECUS APRÈS 16 H SERONT ENREGISTRÉS COMME ÉTANT REÇUS LE JOUR OUVRABLE SUIVANT.

[illegible]

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Nº: 128900



9770 Route Transcanadienne
St-Laurent, QC
H4S 1V9
fr.agatlabs.com

Tél.: 514.337.1000 • Sans frais: 1.866.417.5227 • Téléc.: 514.333.3046

À l'usage exclusif du laboratoire

Température à l'arrivée: _____
Bon de travail AGAT: _____
Notes: _____

Information du client

Compagnie : _____

Adresse : _____

Téléphone : _____ Téléc. : _____

Projet : _____

Lieu de prélèvement : _____

Prélevé par : _____

Facturé à

Même adresse : ☐ Oui ☐ Non

Compagnie : _____
 Contact : _____
 Courriel : _____
 Adresse : _____

 Bon de commande : _____ Soumission : _____

Commentaires:

Matrice (légende)

<u>S</u> Sol	<u>B</u> Boue	<u>ES</u> Eau de surface
<u>SL</u> Solide	<u>EU</u> Eau usée	<u>FF</u> Effluent
<u>SE</u> Sédiment	<u>ST</u> Eau souterraine	<u>AF</u> Affluent
<u>EP</u> Eau potable (Note pour réseau : Veuillez fournir votre formulaire MDDEFP)	<u>A</u> Air	

Rapport envoyé à

1. Nom: _____
Courriel: _____

2. Nom: _____
Courriel: _____

Critères à respecter

☐ PRTC ☐ Eau consom. ☐ RQEP ☐ RESC
☐ CCME ☐ Eau résurg. ☐ Autre : _____

Format de rapport

- ☐ **Portrait**
un échantillon par page
- ☐ **Paysage**
plusieurs échantillons/page
- ☐ Un échantillon
par bon de travail

Délais d'analyse requis (jours ouvrables)

Environnemental:	Haute Résolution:
Régulier: <input type="checkbox"/> 5 à 7 jours	Régulier: <input type="checkbox"/> 10 à 15 jours
Urgent: <input type="checkbox"/> < 12 heures	Urgent: <input type="checkbox"/> < 10 jours
<input type="checkbox"/> 24 heures	
<input type="checkbox"/> 48 heures	Date Requise:
<input type="checkbox"/> 72 heures	

LES ÉCHANTILLONS REÇUS APRÈS 16 H SERONT ENREGISTRÉS COMME ÉTANT REÇUS LE JOUR OUVRABLE SUIVANT

Compagnie : _____ Contact : _____ Courriel : _____ Adresse : _____		Bon de commande : _____ Soumission : _____		Commentaires : _____ _____	
Matrice (légende) <div style="display: flex; justify-content: space-between;"> <div> <u>S</u> Sol <u>SL</u> Solide <u>SE</u> Sédiment <u>EP</u> Eau potable (Note pour réseau : Veuillez fournir votre formulaire MDDEFP) </div> <div> <u>B</u> Boue <u>EU</u> Eau usée <u>ST</u> Eau souterraine <u>A</u> Air </div> <div> <u>ES</u> Eau de surface <u>EF</u> Effluent <u>AF</u> Affluent </div> </div>					
IDENTIFICATION DE L'ÉCHANTILLON		DATE DE PRÉLÈVEMENT	MATRICE	NOMBRE DE CONTENANTS	BTX <input type="checkbox"/> HAM <input type="checkbox"/> COV: HAC-HAM <input checked="" type="checkbox"/> THM <input type="checkbox"/> Hydrocarbures pétroliers C10-C50 AGR <input type="checkbox"/> Chlorobenzènes <input type="checkbox"/> Phtalates <input type="checkbox"/> BPC : Congénères <input type="checkbox"/> Aroclor <input type="checkbox"/> Éthylène glycol <input type="checkbox"/> Glycols (balayage) <input type="checkbox"/> Formaldéhyde Huiles et graisses : Minéraux <input type="checkbox"/> Totales <input type="checkbox"/> Pesticides (spécifier) : Phénols (GC/MS) <input checked="" type="checkbox"/> Indice phénolique (4AAP) <input type="checkbox"/> 6 Métaux (Cd, Cr, Cu, Ni, Pb, Zn) 13 Métaux TC - Sol <input checked="" type="checkbox"/> 16 Métaux TC - Eau <input type="checkbox"/> Métaux (spécifier): Mercure <input type="checkbox"/> Sélénium - Sol <input type="checkbox"/> Dureté totale <input type="checkbox"/> Alcalinité <input type="checkbox"/> Bicarbonates <input type="checkbox"/> Conductivité <input type="checkbox"/> Chlorures <input type="checkbox"/> Fluorures <input type="checkbox"/> Sulfates <input type="checkbox"/> Bromures <input type="checkbox"/> Cyanures : Totaux <input type="checkbox"/> Disponibles <input type="checkbox"/> Oxydables <input type="checkbox"/> DCO <input type="checkbox"/> P total <input type="checkbox"/> COT <input type="checkbox"/> NH ₃ <input type="checkbox"/> NTK <input type="checkbox"/> NO ₂ + NO ₃ <input type="checkbox"/> Solides : Totaux <input type="checkbox"/> Dissous <input type="checkbox"/> MES <input type="checkbox"/> MESV <input type="checkbox"/> Sulfures - Eau <input type="checkbox"/> Soufre total - Sol <input checked="" type="checkbox"/>
F-04-15 CF-7 2015-05-06 S 2 1 CF-8 X 1 2 F-04-15 CF-9 2015-05-06 S 4 DUP-3 CF-10 2015-05-06 S 2 F-05-15 CF-11 2015-05-06 S 2 F-05-15 CF-4 2015-05-06 S 1 1 CF-5 1 F-05-15 CF-6 2015-05-06 S 4 F-05-15 CF-7 2015-05-06 S 2					X X
Échantillon remis par (nom en lettres moulées et signature)		Date/heure	Échantillon reçu par (nom en lettres moulées et signature)		Date/heure
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Page 4 de 5
 N°: 128901

PHA-FH + RTEX
 LIVIAT Métaux (Cd, Cr, Cu, Ni, Pb, Zn)



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Information du client

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 Téléphone : _____ Téléc. : _____
 Projet : _____
 Lieu de prélèvement : _____
 Prélevé par : _____

Facturé à

Même adresse : ☐ Oui ☐ Non

Compagnie : _____
Contact : _____
Courriel : _____
Adresse : _____

Bon de commande : _____ Soumission : _____

Commentaires:

Matrice (légende)

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☐ **Portrait**
un échantillon par page

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plusieurs échantillons/page

☐ Un échantillon par bon de travail**Délais d'analyse requis (jours ouvrables)**

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<input type="checkbox"/> 48 heures	Date Requite: <input type="text"/>
<input type="checkbox"/> 72 heures	

LES ÉCHANTILLONS REÇUS APRÈS 16 H SERONT ENREGISTRÉS COMME ÉTANT REÇUS LE JOUR OUVRABLE SUIVANT.

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Date/heure

Nº: 128902

Appendix 4 MDDELCC Policy and Legal Context

MINISTÈRE DU DÉVELOPPEMENT DURABLE, DE L'ENVIRONNEMENT ET DE LA LUTTE CONTRE LES CHANGEMENTS CLIMATIQUES DU QUÉBEC (MDDELCC) POLICY AND LEGAL CONTEXTE

SECTION IV.2 OF THE QUÉBEC ENVIRONMENT QUALITY ACT AND REGULATION ON THE PROTECTION AND REHABILITATION OF LAND

Since March 1st, 2003, Section IV.2.1 of Chapter 1 of the *Environmental Quality Act* has been modified according to bill 72. This bill modified the *Environmental Quality Act* and other legislative measures related to the protection and rehabilitation of land. These modifications had the objective to establish new rules for the protection and rehabilitation of land in the event of contamination. This bill specifies the conditions according to which an individual or municipality may be required to characterize and rehabilitate a contaminated property and gives the ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques du Québec (Québec Ministry of Sustainable Development, Environment and Combatting Climate Change) various powers, notably the power to require the characterisation of a property and its rehabilitation.

Through the *Land Protection and Rehabilitation Regulation* (hereafter referred to as: "RPRT"), which went into effect on March 27, 2003, Section IV.2.1 of the LQE imposes certain requirements on companies in industrial or commercial sectors designated by the RPRT, when they definitely cease operating, in order to identify and mitigate any contamination that may be detected on land where they had carried out their activities. Section IV.2.1 of the LQE also requires the implementation of rehabilitation and notification measures when a change in the use of land, contaminated by certain industrial or commercial activities designated by the RPRT. Municipalities must also prepare a list of contaminated sites on their territory and no construction or subdivision permit can be issued to properties on this list without an expert's attestation that the project is compatible with the terms of the rehabilitation plan for the subject site.

Furthermore, article 31.57 of the LQE requires compliance with the standards set forth in the RPRT, in the case of the voluntary rehabilitation of a property. If voluntary rehabilitation work calls for maintaining, on site, contaminants in concentrations that exceed regulatory standards, an analysis of health risks must then be carried out to support the risk management measures to maintain the contaminants on site.

The RPRT is based on the use of pre-established standards relating to the contamination of soil, as well as standards established according to the municipal zoning of the property. In this regard, the RPRT includes a list of threshold values applicable to a wide range of chemical compounds (ex.: heavy metals, petroleum hydrocarbons, chlorinated pesticides, etc.). These standards serve to evaluate the extent of contamination; they are also used as threshold values for decontamination measures.

In General, applicable threshold values are those shown in Appendix I of the RPRT. In this regard, it should be noted that the standards in Appendix I are equivalent to the generic criteria “B” of the *Soil Protection and Rehabilitation of Contaminated Sites Policy* (hereafter referred to as the Policy). However, in the case of land usages mentioned below, applicable threshold values are those presented in Appendix II of the RPRT, which are equivalent to generic criteria “C” of the Policy:

- ▶ Land where municipal zoning regulations only allow industrial, commercial or institutional uses, except for properties housing elementary or high schools, daycare centres, medical centres, residential and long-term care facilities, rehabilitation centres, child and youth protection centres or detention centres;
- ▶ Land that constitutes or will constitute the construction limits of a road or sidewalk along a road, cycling path or municipal park, with the exception of playgrounds for which limit values presented in Appendix I continue to apply to the surface of a thickness of at least one metre.

Furthermore, when a contaminant among the metals and metalloids of Appendices I or II is present on a site in concentrations exceeding the limit value presented in the appendix and that it does not result from human activity, this concentration constitutes the applicable limit value for that contaminant.

In the event that a contaminant is not included in Appendices I or II of the RPRT, the criteria set forth in the Soil protection and rehabilitation of contaminated land policy apply.

REGULATION RESPECTING THE BURIAL OF CONTAMINATED SOIL

Since July 2001, the RESC has determined conditions or prohibitions applicable to the development, expansion or operation of sites used, in whole or in part, for the burial of contaminated soil, as well as the conditions applicable to their closing and post-closing follow-up.

In the case of an environmental rehabilitation project where contaminated soil must be disposed-of off-site, the RESC stipulates that contaminated soil cannot be placed in a contaminated soil landfill if:

- 1) This soil contains one or several substances whose concentration is equal to or higher than the limit values set in Appendix I of the RESC, except:
 - a) *if they are put in a place targeted by article 2 of the RESC;*
 - b) *soil from which at least 90 % of the substances that had initially been present in the soil have been removed using a treatment authorized by law and, in the case of removed metals and metalloids, only if the latter have been stabilized, set or solidified using an authorized treatment;*
 - c) *when a detailed report shows that a substance present in the soil cannot be removed in a proportion of 90 % following an optimal authorized treatment and that no technique is available for this purpose.*
- 2) This soil contains more than 50 mg of PCB per kilogram;
- 3) After segregation, this soil contains more than 25 % residual matter;
- 4) This soil contains explosive or radioactive matter as defined in article 3 of the Regulation on dangerous substances or matter physically or chemically incompatible with materials constituting the burial site;
- 5) Contaminated soil that contains a free-phase liquid according to a standard test conducted by a laboratory accredited by the Ministry under the terms of article 118.6 of the law.

Therefore, contaminated soil whose concentrations exceed the limit values set in Appendix I of the RESC cannot be buried without first undergoing a treatment to remove at least 90 % of the substances it initially contained. Consequently, taking the threshold values of Appendix I into account has an influence on the mode of management of the contaminated soil and also on the cost of managing the contaminated soil.

SOIL PROTECTION AND CONTAMINATED LAND REHABILITATION POLICY

Criteria relating to soil

In Québec, the assessment of the environmental quality of soil and groundwater on industrial or residential sites are carried out since June 1998, based on the MDDELCC's reference guide entitled: "*Soil Protection and the Rehabilitation of Contaminated Land Policy*" (hereafter referred to as the Policy). This Policy is based on the use of pre-established generic criteria associated to the projected use of the land. As such, the Policy includes a list of criteria for a wide range of chemical elements and compounds (ex.: heavy metals, petroleum hydrocarbons, chlorinated pesticides, etc.). All compounds on this list are associated to three threshold values (A, B, and C).

The generic criteria serve to assess the extent of contamination, as well as threshold values to define rehabilitation objectives. In addition, the criteria are used for the management of excavated contaminated soil and have been established to protect the health of future users and to safeguard the environment. These criteria, when used in the context of site remediation, are the simplest to apply and require the least follow-up and future commitment. Their use is considered in priority and they are the most widely used mode of risk-management.

Level A: Background concentrations for inorganic parameters and detection limit for organic parameters.

The quantification limit is defined as the minimum concentration that can be quantified using an analytical method with a known reliability.

Level B: Maximum acceptable limit for properties with residential, recreational or institutional vocation. Also included in this level is land with a commercial vocation located in a residential area.

Institutional uses include hospitals, schools and day care centres.

Recreational uses cover a wide range of possibilities, with different levels of sensitivity. For example, more sensitive uses such as playgrounds must be managed based on Level B. Level C can apply to less sensitive recreational uses such as bicycle paths.

Level C: The maximum acceptable limit for commercial properties not located in a residential area and for industrial properties.

Criteria relating to groundwater

A grid for the quality of groundwater presents, for several substances, the criteria established for water intended for consumption as well as criteria applicable to the infiltration of contaminated groundwater in surface water or for the infiltration in the sewer system (receiving environments). This grid also provides the quantification limits associated to each of the substances. In the case of the infiltration of groundwater in a municipal sewer or in the materials around the sewer pipes, the municipality that owns the sewers must be consulted to verify if they have norms for the contaminants considered. These norms could be applied with the agreement of the municipality should groundwater infiltrate the sewer. In the case of a contaminant for which the municipality does not have an established norm, the criteria “Résurgence dans les eaux de surface ou infiltration dans les égouts” (seepage into surface water or infiltration in sewers) will be selected for this contaminant.

Water quality criteria are not published or established for all parameters or for all uses. In the absence of pre-established criteria for a given contaminant or use, the MDDELCC is responsible for defining a criteria based on available documentation, or for assessing a value, based on prevailing protocols and methods. Once established, the list of new criteria will be updated periodically.

For each property characterized, concentrations measured in the groundwater must be compared with background concentrations measured or the detection limits to determine whether or not the groundwater is contaminated. In the presence of groundwater contamination, requirements include the identification of either the industrial or other activities responsible for the substances that actively contribute to the contamination and to implement measures to abate the active source of contaminants.

Management Grid of Excavated Contaminated Soils

The Grid for the management of excavated contaminated soil was papered in order to favour management options with the objective to decontaminate and valorize the reuse of the soils until the adoption of the « *Règlement sur l'enfouissement et l'incinération des matières résiduelles* » (Regulation Respecting the Landfilling and Incineration of Residual Materials).

CONTAMINANT LEVEL	MANAGEMENT OPTIONS
« <A »	1. Unrestricted use.
Plage « A-B »	1. Use as fill on a contaminated site being cleaned up for a future residential use * or on any industrial or commercial site provided its use does not result in an increase in the level of contamination ** on the receiving site and the soils do not emit perceptible hydrocarbon odours. 2. Use as daily cover material in a sanitary landfill (LES). 3. Use as final cover material in a LES provided it is covered with 15 cm of clean soil.
Plage « B-C »	1. Optimal decontamination *** in an authorised treatment site and management according to the cleanup level reached. 2. Use as fill on the source site provided its use does not increase the level of contamination ** on the site and this site is used for industrial or commercial purposes. 3. Use as daily cover material in a LES.
« >C »	1. Optimal decontamination *** in an authorised treatment site and management according to the cleanup level reached. 2. If the preceding option is impractical, final disposal in an authorised secure landfill.
*	Contaminated sites being cleaned up for a future residential use are the sites dedicated to residential use for which a characterisation has shown a contamination higher than the B value and where there is a necessity to bring outside soil for completing the restoration.
**	Contamination refers to the nature of the contamination and its concentration.
***	Optimal treatment for hydrocarbons C ₁₀ -C ₅₀ is defined as attainment of “B” criterion or reduction of initial concentration by 80 % and for volatiles as attainment of “B” criterion. In this respect, volatiles are defined as contaminants whose boiling point is <180 °C or whose <i>Henry’s Law</i> constant is above 6.58×10^{-7} atm·m ³ /g including contaminants identified in Section III of the soil criteria grid included in Appendix 2 to this document.

REGULATION RESPECTING CONTAMINATED SOIL STORAGE AND CONTAMINATED SOIL TRANSFER STATIONS (RSCTSC)

The Regulation Respecting Contaminated Soil Storage and Contaminated Soil Transfer Stations (hereafter “RSCTSC”) came into effect on February 15, 2007. In summary, the RSCTSC establishes rules for the establishment, operation and closure of contaminated soil transfer stations. All soils received at contaminated soil transfer stations are to be transferred to treatment centers where they are to be decontaminated. This regulation applies to soils that contain contaminant concentrations equal to or greater than limit values in Schedule I (equal to generic criterion “B”), with the exception of Section 4 of Chapter I. Section 4 of Chapter I prohibits the disposal of soils elsewhere than at the site of origin if these soils contain contaminants in concentrations lower than the limit values in Schedule I (equal to generic criterion “B”) on soil or land with lower contaminant concentrations. Section 4 of Chapter I also prohibits the disposal on or in land to be used for housing unless these soils are used as backfill in connection with land rehabilitation work and in accordance with the Environment Quality Act and that these soils contain contaminants in a concentration equal to or lower than the contaminant concentration in the host soils. This regulation also prohibits, at all time, the mixing of contaminated soils with clean soils or with materials having different contaminant concentrations with the purpose of reducing the overall contamination level and to allow their disposal in a less restrictive manner.

REGULATION RESPECTING HAZARDOUS MATERIALS (RMD)

As of December 1st, 1997, the Regulation Respecting Hazardous Materials (hereafter “RMD”) replaces the Hazardous Waste Regulation. It is not uncommon to observe residual waste in the scope of environmental site assessments. Residual waste is to be characterized in order to determine if it constitutes a hazardous waste and to determine the management method. Hazardous materials are defined, amongst others, by their physico-chemical properties, that is, flammable material, corrosive material, explosive material, gaseous material, oxidizing material, radioactive material, leachable material and toxic material. To determine the presence of the latter two types of hazardous materials, clinker, slag, ash, and similar residual waste, should be assessed for leachability and toxicity. We should note that by definition, several types of residual waste materials are not hazardous. Also equipment, containers or objects containing or contaminated by hazardous materials (i.e. oils, grease, PCBs) at concentrations exceeding the limit values of regulations may be defined as hazardous materials.

REGULATION RESPECTING THE LANDFILLING AND INCINERATION OF RESIDUAL MATERIAL (REIMR)

The Regulation Respecting the Landfilling and Incineration of Residual Material (hereafter “REIMR”), enacted on May 11, 2005, came into effect on January 19, 2006, following a transitional period of three years. Since January 19, 2009, this regulation has now completely replaced the Regulation Respecting Solid Waste (RDS). The REIMR follows up on seven actions planned for in the Québec Policy on Residual Materials (1998-2008). The purpose of the REIMR is to ensure that residual materials are disposed in a manner that does not compromise the safety of persons or the protection of the environment. This regulation covers all residual waste which is not classified as hazardous materials under the Regulation Respecting Hazardous Materials (RMD). The REIMR also establishes which residual waste materials may be disposed of in landfills, and establishes rules for the construction and operation of landfills, as well as establishing rules for the closure of landfills and the management after landfill closure. The REIMR allows the use of contaminated soils as cover layers in engineered landfills, if certain conditions are fulfilled. According to the REIMR, soils used as cover material may contain contaminants in a concentration equal to or lower than the limit values set out in Schedule I to the Land Protection and Rehabilitation Regulation (hereafter “LPRR”), in the case of volatile organic compounds. The maximal allowable concentration of other contaminants in soils used as a cover material is those established in Schedule II of the LPRR. Those limit values do not apply to contaminants that do not originate from human activity. This regulation also establishes requirements for the hydraulic conductivity and grain size of soils used as cover material. The REIMR also establishes maximal allowable concentration for the disposal of contaminated soils in engineered landfills. These values are equal to those of Schedule I of the LPRR, for all analytical parameters.

CRITERIA FOR SURFACE WATER QUALITY

In 1990, the ministry officially published the first list of surface water quality guidelines for the assessment of surface water quality in Québec. A new version of these guidelines are now available and replace the former documents entitled “Critères de qualité de l'eau” (MENVIQ, 1990a, rev. 92) and “Critères de qualité de l'eau de surface au Québec” (MEF, 1998). The guidance document now in place is entitled “Critères de qualité de l'eau de surface au Québec” (November 2009) and is a database containing surface water quality guidelines for over 300 contaminants. Guidelines are generally available to protect a variety of surface water uses, including the protection of drinking water sources, the consumption of aquatic species, the protection of aquatic life, the protection of terrestrial species consuming fish, and the protection of recreational activities. Contaminants are classified in an alphabetical order, and are identified according to their chemical names in French language, as well as according to their CAS (Chemical Abstract Service) numbers. We should note that these surface water quality guidelines have not been adopted by regulation, i.e. they have not been legally enacted. They should rather be integrated in decision making to determine the requirements for clean-up or to guide the assessment of surface water quality. These guidelines represent threshold values for the protection for a given surface water use against deleterious toxic, aesthetic or organoleptic impacts.