



Appendix I Boring and Test Pit Logs



APPENDIX I

Boring and Test Pit logs

Explanation of the Form Boring Log

Explanation of the Term Rock Quality Designation (RQD)

Boring Logs: Boreholes BH Series

Boring Logs; Boreholes W Series

Test Pit Logs: Test Pits TP Series

EXPLANATION OF THE FORM BORING LOG

This form summarizes both field information and selected laboratory test results obtained from each boring. An explanation of the various columns of the form follows.

DEPTH

This column gives the depth scale of the boring.

STRATIGRAPHY

ELEVATION AND DEPTH

This column gives the elevation and depth of inferred geologic contacts. The elevation is referred to the datum shown in the general heading.

DESCRIPTION

This column gives a description of the soil based on visual examination of the samples and laboratory tests. Each stratum is described according to the following classification and terminology :

<u>Classification</u>	<u>Particle Size</u>
Clay	less than 0,002 mm
Silt	from 0,002 to 0,080 mm
Sand	from 0,080 to 5 mm
Gravel	from 5 to 80 mm
Cobbles	from 80 to 200 mm
Boulders	larger than 200 mm
<u>Terminology</u>	<u>Proportion</u>
Trace	less than 10%
Some	10 to 20%
Adjective (e.g. silty or sandy)	20 to 35%
And (e.g. sand and gravel)	35 to 50%

The compactness condition of cohesionless soils is defined as follows :









Compactness Condition	SPT N-Index Blows/0.3 m or Blows/foot
Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	over 50

The consistency of cohesive soils is defined as follows :

	Undrained Shear Strength	
	kPa	psf
Very soft	0 to 12	0 to 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very stiff	100 to 200	2000 to 4000
Hard	over 200	over 4000

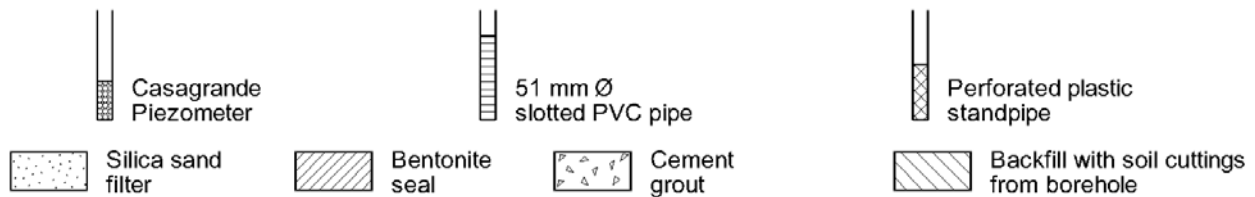
SYMBOL

This column represents, using standard symbols, the soil and rock stratigraphy at the borehole location.

 Fill	 Organic soil	 Clay	 Silt
 Sand	 Gravel	 Cobbles or boulders	 Bedrock

WATER LEVEL

This column shows the groundwater level in the boring measured on the date indicated. In impervious soils the accurate determination of groundwater elevations by standpipe, casing or open-hole readings is not possible within the normal time frame of the completion of the site work, and the true groundwater level may be higher or lower than indicated. Where both pervious and impervious soil strata are penetrated, the groundwater levels in each layer may be at different levels and sealed piezometers or standpipes within the individual layers are required to establish true groundwater conditions. Water levels determined by a piezometer can be considered as representative groundwater levels for the layer in which the piezometer tip is located.



SAMPLES

The first three columns describe the type and number, the condition, as well as the percentage recovery, of each sample obtained from the boring. The location and condition of each sample is plotted to scale. The legends for sample condition and type of sampler used are explained on the top left side of the form.

The fourth column shows the SPT N-Index of the soil as determined by the Standard Penetration Test or the RQD value of the rock. The "N" value corresponds to the number of blows from a 63.5 kg hammer, falling from a height of 760 mm, required to drive the last 300 mm of a 51 mm diameter standard split spoon sampler. The Standard Penetration Test is carried out according to NQ 2501-140. The RQD value of rock is defined as the modified percentage of rock cores recovered by diamond core drilling, counting only those pieces of sound rock that are 100 mm or more in length.

The soil and rock samples will be stored for a one year period after which they will be discarded unless otherwise instructed.

WATER CONTENT AND LIMITS

The central section of the boring log forms a graph which is used to plot the water content and Atterberg limits test results obtained in the laboratory, at the elevation of the samples on which they have been carried out.

OTHER TESTS

This column shows the results or abbreviations of other laboratory or field tests which have been performed. An explanation of the abbreviations is given at the top of the form. The results of other tests not plotted on the form are appended to the report.

DYNAMIC CONE PENETRATION TEST, UNDRAINED SHEAR STRENGTH

The last column on the right side of the form presents graphically, and at the elevation at which they were carried out, the results of the dynamic cone penetration test (i.e., the number of blows of a 63.5 kg hammer having a free fall of 760 mm, required to drive in the soil, for a depth of 300 mm, a standard 51 mm diameter cone point). This test is carried out from the ground surface or beyond the cased depth of the borehole according to NQ 2501-145.

This column also presents graphically the results of the shear strength measurements as obtained by the Field Vane test (NQ 2501-200) or in laboratory by the Swedish Fall-Cone test (NQ 2501-110).

EXPLANATION OF THE TERM

ROCK QUALITY DESIGNATION (RQD)

The Rock Quality Designation (**RQD**) is an indirect measure of the number of fractures and of the degree of softening or alteration in a rock mass. The RQD values are used to assess the overall quality of the rock mass.

The Rock Quality Designation is determined on rock cores which have been recovered using double or triple diamond core barrels of at least NQ size (minimum rock core diameter of 45 mm). For a given rock core, the lengths of those pieces that are 100 mm or more are added. The RQD is then obtained by dividing this sum by the total length drilled and expressing the result as a percentage.

Rock cores broken during drilling or by handling are fitted together and counted as one piece. Such broken cores are readily identified by their fresh fracture surfaces which consist of irregular breaks and are unaltered.

This method of rock quality evaluation is not applicable in the case of thinly bedded sedimentary rocks and foliated metamorphic rocks. For such cases, the rock quality for a particular engineering application should be evaluated by a qualified geologist.

The RQD values may be used to describe and classify the rock quality as follows:

Description of Rock Quality	RQD (%)
Very poor / Very severely fractured	< 25
Poor / Severely fractured	25 – 50
Fair / Fractured	50 – 75
Good / Moderately jointed	75 – 90
Excellent / Sound	90 – 100



BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-101-05*
SITE : West Option Site **PAGE :** 1 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** PW
BORING DATE : 2005-03-15 TO 2005-03-16 **CORE BARREL :** PQ
DATUM : Geodetic **COORDINATES :** 5186835.66 N 261816.10 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	75.53		GROUND SURFACE								
	0.00	75.22	Topsoil.								
		0.30	Compact sand and gravel, some silt.		SS-1		75	13			
1					SS-2		58	20			
	74.01		Stiff to very stiff grey sandy and clayey silt, trace of gravel.		SS-3		33	17	⊙		
2		1.52			SS-4		50	19			
	72.79		Generally dense to very dense brown sand with some gravel and silt or sand and silt, occasional layers of silt and sand.		SS-5		62	51			
		2.74			SS-6		50	56			
					SS-8		75	26			
					SS-7		33	65			
5			NOTE: Upon completion, the borehole was provided with a bottom capped 63.5mm diameter PVC tube grouted in place with cement bentonite, to allow down-hole seismicity tests.		SS-9		50	18			
					SS-10		62	32	⊙		
					SS-11		71	38			
					SS-12		67	46			
					SS-13		100	68/13cm			
	65.88		Bedrock: Poor quality light grey calcareous mudstone, layers of greenish grey and dark grey shale, 5% of calcareous sandstone (less than 140mm thick).		DC-14		100	37			
	9.65				DC-15		73	25			

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-101-05*
SITE : West Option Site **PAGE :** 2 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** PW
BORING DATE : 2005-03-15 TO 2005-03-16 **CORE BARREL :** PQ
DATUM : Geodetic **COORDINATES :** 5186835.66 N 261816.10 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
13			Poor quality light grey calcareous mudstone, layers of greenish grey and dark grey shale, 5% of calcareous sandstone (less than 140mm thick). Occasional veinlets of calcite, layers at 45° from borehole axis, presence of pyrite in joints (in greenish and dark shale).		DC-16		44	100			
14					DC-17		100	50			
15					DC-18		82	62			
16	59.93 15.60		Fair to good quality greenish grey mudstone, layers of light grey mudstone, layers of dark shale (less than 10mm thick). 15-20% of sandstone beds (less than 35mm thick). Beddings at 40° from borehole axis.		DC-19		90	63			
17					DC-20		66	6			
18					DC-21		92	77			
19	56.89 18.64		Poor quality greenish grey mudstone, layers of light grey mudstone and dark shale (1-40mm thick).		DC-22		93	23			
20					DC-23		98	48			
21	55.34 20.19		Fair to good quality calcareous sandstone layers (350mm thick), layers of greenish grey mudstone, thin layers of dark grey slate (1-5mm thick), beddings at 35° from borehole axis.		DC-24		97	72			
22					DC-25		100	76			
23					DC-26		98	77			

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-101-05*
SITE : West Option Site **PAGE :** 3 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** PW
BORING DATE : 2005-03-15 TO 2005-03-16 **CORE BARREL :** PQ
DATUM : Geodetic **COORDINATES :** 5186835.66 N 261816.10 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
			Good quality calcareous sandstone with layers of greenish grey mudstone.								
25	50.16				DC-27		100	84			
	25.38		END OF BOREHOLE								
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-102-05**
 SITE : West Option Site PAGE : 1 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-02-19 TO 2005-02-22 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186804.92 N 261805.33 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
	75.52		GROUND SURFACE								
	0.00		Topsoil.								
	75.37		Compact sand and gravel, (trace of organics from 0.15 to 0.3m).								
	0.15										
1			Dense gravelly silt and sand.								
	73.84										
	1.68										
2											
3			NOTE ON WATER LEVEL: Water level at 75.72m (artesian) on 2005-04-15.								
	70.22		Very dense brown gravelly sand and silt.								
	5.30										
6											
7			Bedrock: Poor quality light grey calcareous sandstone, layers of grey calcareous mudstone, some layers of greenish grey and dark grey shale.								
10	65.28										
	10.23										
11											
				DC-14		100	42				
				DC-15		93	48				
				DC-16		100	98				

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-102-05**
 SITE : West Option Site PAGE : 2 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-02-19 TO 2005-02-22 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186804.92 N 261805.33 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD	50
										UNDRAINED SHEAR STRENGTH (kPa)		
										50	100	
13			Poor quality light grey calcareous sandstone, layers of grey calcareous mudstone, some layers of greenish grey and dark grey shale. Beddings at 30-50° from borehole axis. Veinlets of calcite. Local presence of finely disseminated pyrite.		DC-17		100	0				
					DC-18		100	95				
14					DC-19		100	25				
15					DC-20		100	42				
16					DC-21		100	45				
17					DC-22		100	50				
					DC-23		100	50				
18	57.42	18.10	Poor quality calcareous sandstone (500mm thick), with greenish grey mudstone layers, and thin layers (1-20mm) of black shale. Bedding at 45° from borehole axis. Presence of pyrite in joints. Occasional calcite veins.		DC-24		100	39				
19					DC-25		100	36				
20					DC-26		100	33				
21					DC-27		100	24				
					DC-28		100	77				
					DC-29		91	41				
22					DC-30		100	51				
23	52.74	22.78	Layers of good quality calcareous sandstone (max. 400mm thick), greenish mudstone layers, 10-15% dark shale layers (1-20mm thick).		DC-31		100	89				

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-102-05*
SITE : West Option Site **PAGE :** 3 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** HW
BORING DATE : 2005-02-19 TO 2005-02-22 **CORE BARREL :** HQ
DATUM : Geodetic **COORDINATES :** 5186804.92 N 261805.33 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)			
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD	50	100
25	50.37	25.15	Layers of good quality calcareous sandstone (max. 400mm thick), greenish mudstone layers, 10-15% dark shale layers (1-20mm thick).			DC-32		100	82				
			END OF BOREHOLE										
26													
27													
28													
29													
30													
31													
32													
33													
34													
35													

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-103-05**
 SITE : West Option Site PAGE : 1 OF 7
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-03-23 TO 2005-03-31 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5186802.02 N 261849.13 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY		WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m		DESCRIPTION	SYMBOL	TYPE AND NUMBER			CONDITION	RECOVERY %
	75.67									
	0.00									
	75.52									
	0.15									
1										
	74.15									
	1.52									
2										
	72.93									
	2.74									
3										
	71.56									
	4.11									
4										
5										
6										
7										
8										
9										
10										
11										
	64.55									
	11.13									

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-103-05**
 SITE : West Option Site PAGE : 2 OF 7
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-03-23 TO 2005-03-31 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5186802.02 N 261849.13 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)				
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD	50	100	
										UNDRAINED SHEAR STRENGTH (kPa)				
										50	100			
13			Very poor to poor quality greenish grey mudstone, 5-10% of thin black shale layers. Tectonic breccia from 11.13 to 12.50m. Frequent calcite veinlets, beddings at 45° from borehole axis.			DC-19	100	31						
62.01			Very poor quality red mudstone, 35-45% greenish grey mudstone beds, 10-15% thin layers of black shale (1-10mm thick), 5% slightly calcareous sandstone beds (max. 40mm thick), occasional calcite veinlets, beddings at 45° from borehole axis.			DC-20	74	0						
13.66							DC-21	100	11					
							DC-22	91	0					
							DC-23	95	20					
							DC-24	100	13					
							DC-25	89	28					
							DC-26	97	14					
							DC-27	94	14					
56.80					Fair quality red and greenish grey mudstone layers, undulated mudstone beds at 20.3m, occasional calcite veins, local presence of pyrite. Beddings at 45° from borehole axis.			DC-28	88	55				
18.87									DC-29	92	44			
							DC-30	93	40					
							DC-31	100	46					
							DC-32	100	54					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-103-05*
SITE : West Option Site **PAGE :** 3 **OF** 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-23 **TO** 2005-03-31 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186802.02 N 261849.13 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD			50	100
	DEPTH - m											
								50	100			
24.01		Layers of poor quality red and greenish grey mudstone.			DC-33		93	37				
25	50.40				DC-34		75	18				
25.27		Layers of fair to good quality red and greenish grey mudstone. Layers of red mudstone are locally fissile at 26.7, 28.2 and 29.5m depth and contain layers of calcareous mudstone (5mm thick). Layers of grey mudstone contain 15-20% of thin layers of dark shale. Beddings at 45° from borehole axis.			DC-35		100	87				
26					DC-36		100	17				
27					DC-37		93	87				
28					DC-38		100	41				
29					DC-39		100	44				
30	45.77				DC-40		96	46				
29.90		Fair quality greenish grey mudstone, 15% thin dark shale layer. Beddings at 50° from borehole axis.			DC-41		100	43				
31	44.72				DC-42		89	20				
30.95		Layers of poor to fair quality red and greenish grey mudstone. Breccia (fault breccia) in greenish grey mudstone from 32.78 to 33.20m depth. Calcite veinlets. Beddings at 40° from borehole axis.			DC-43		100	59				
32					DC-44		100	59				
33					DC-45		100	55				
34					DC-46		100	71				
35												
40.21												
35.46		Layers of fair quality greenish grey mudstone.										

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-103-05*
SITE : West Option Site **PAGE :** 4 OF 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-23 TO 2005-03-31 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186802.02 N 261849.13 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
37			Layers of fair quality greenish grey mudstone, 20% of dark shale layers (1-30mm thick), few slightly calcareous sandstone beds (max. 40mm thick), occasional calcite veinlets. Beddings at 30-45° from borehole axis.		DC-47		100	77			
					DC-48		95	51			
					DC-49		100	51			
	37.12	38.55	Layers of good to excellent quality red mudstone, beds of greenish grey mudstone, few layers of dark shale (1-40mm thick). Small calcite vienlets. Beddings at 30-45° from borehole axis.		DC-50		100	39			
					DC-51		100	97			
					DC-52		97	90			
					DC-53		100	84			
					DC-54		100	70			
					DC-55		100	63			
					DC-56		100	76			
					DC-57		100	85			

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-103-05*
SITE : West Option Site **PAGE :** 5 **OF** 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-23 **TO** 2005-03-31 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186802.02 N 261849.13 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)	
49		Layers of fair quality red mudstone, beds of greenish grey mudstone.			DC-58	100	57					
50	25.89 49.78	Fair to good quality red and greenish grey mudstone, few dark mudstone layers and sandstone beds (max. 80mm thick). Occasional calcite veinlets. Beddings at 40° from borehole axis.			DC-59	100	69					
51					DC-60	100	65					
52					DC-61	100	68					
53					DC-62	100	77					
54					DC-63	100	70					
55	21.24 54.43	Good to excellent quality greenish grey and dark mudstone, sandstone beds (max. 10mm thick). Presence of microfolds. Beddings at 35° from borehole axis.			DC-64	100	100					
56					DC-65	100	86					
57	19.06 56.61	Good quality red and greenish grey mudstone, 5% dark mudstone layers (1-7mm thick), few sandstone beds (max. 30mm thick). Beddings at 45° from borehole axis.			DC-66	100	86					
58												
59					DC-67	100	84					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-103-05*
SITE : West Option Site **PAGE :** 6 **OF** 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-23 **TO** 2005-03-31 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186802.02 N 261849.13 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
61	14.34	61.33	Good quality red and greenish grey mudstone, 5% dark mudstone layers.		DC-68		100	80			
62			Layers of fair quality greenish grey and black mudstone (locally fissile), 10-15% of calcareous sandstone layers. (max. 400mm thick). Beddings at 35-55° from borehole axis. Occasional calcite veinlets. Local presence of pyrite.		DC-69		100	92			
63					DC-70		100	75			
64					DC-71		100	69			
65					DC-72		95	83			
66					DC-73		100	95			
67					DC-74		97	68			
68				DC-75		100	70				
69				DC-76		96	82				
70											
71											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-103-05*
SITE : West Option Site **PAGE :** 7 OF 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-23 TO 2005-03-31 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186802.02 N 261849.13 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
73			Layers of excellent quality greenish grey and black mudstone (locally fissile), 10-15% of calcareous sandstone layers. (max. 400mm thick). Beddings at 35-55° from borehole axis. Occasional calcite veinlets.		DC-77	100	96				
74					DC-78	100	88				
75	0.72 74.95		Layers of good to excellent quality greenish grey and black mudstone, 30% of light grey calcareous sandstone layers (max. 500mm thick). Beddings at 40° from borehole axis. Occasional calcite veinlets.		DC-79	100	97				
76					DC-80	100	89				
77					DC-81	97	80				
78											
79											
80	-3.86 79.53		END OF BOREHOLE								
81											
82											
83											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-104-05**
 SITE : West Option Site PAGE : 1 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-03-17 TO 2005-03-20 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186802.14 N 261894.45 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	75.72		GROUND SURFACE								
	0.00		Topsoil.								
	75.57	0.15	Loose silty sand and gravel, cobbles.		SS-1		60	8			
	75.26	0.46	Dense grey gravelly and silty sand (shells at 1.5m).		SS-2		38	49			
1					SS-3		50	28			
2	73.43	2.29	Very stiff grey clayey silt, traces of sand and gravel.		SS-4		33	40			
3	72.98	2.74	Compact to very dense brown silty sand and gravel or silty and gravelly sand.		SS-5		50	27	\odot		
4					SS-6		0	75			
5					SS-7		33	97			
6					SS-8		0	27			
7					SS-9		42	41			
8	68.05	7.67	Bedrock: Very poor quality red and greenish grey mudstone with light grey calcareous mudstone layers 5-30mm thick), thin layers of dark shale (1-5mm thick). Beddings at 30° from borehole axis. Pyrite in joints.		SS-10		50	28			
					SS-11		50	10/5cm			
9					DC-12		94	0			
					DC-13		89	35			
10					DC-14		59	12			
	64.87	10.85	Fair quality red mudstone, 20% greenish grey mudstone.		DC-15		85	100			
11					DC-16		100	72			

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-104-05**
 SITE : West Option Site PAGE : 2 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-03-17 TO 2005-03-20 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186802.14 N 261894.45 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%) W _P W W _L 20 40 60 80	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)	
13		Fair to good quality red mudstone, 20% greenish grey mudstone, layers of light grey calcareous mudstone (10-50mm thick). Beddings at 35° from borehole axis. Calcite veinlets and pyrite in joints.			DC-17		100	76				
14												
15	60.92 14.80	Fair to good quality greenish grey mudstone, layers of light grey mudstone. Sedimentary breccia at 1.5m. Slickenside at 1.5m. Beddings at 40° from borehole axis.			DC-18		100	92				
16												
17	58.88 16.84	Very poor quality greenish grey mudstone, 15% of red mudstone layers. Tectonic (?) breccia from 18.5 to 20.0m. Veinlets of calcite.			DC-19		100	48				
18					DC-20		100	0				
19					DC-21		52	8				
20	55.73 19.99	Poor quality red mudstone, 20-25% greenish grey mudstone layers, and layers of light grey calcareous mudstone (5-10mm thick). Beddings at 55° from borehole axis. Calcite veinlets and veins.			DC-22		51	0				
21					DC-23		76	0				
22					DC-24		91	28				
23					DC-25		100	30				
					DC-26		84	10				

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-104-05*
SITE : West Option Site **PAGE :** 3 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** HW
BORING DATE : 2005-03-17 TO 2005-03-20 **CORE BARREL :** HQ
DATUM : Geodetic **COORDINATES :** 5186802.14 N 261894.45 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY				SAMPLES				LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)															
	ELEVATION - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION	RECOVERY %	N or RQD		WATER CONTENT and LIMITS (%)		50	100												
	DEPTH - m									W _P	W	W _L	50	100											
25	50.47	Poor quality red mudstone, 20-25% greenish grey mudstone layers, and layers of light grey calcareous mudstone (5-10mm thick).			DC-27		80	0																	
25.25	END OF BOREHOLE																								
26																									
27																									
28																									
29																									
30																									
31																									
32																									
33																									
34																									
35																									

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** BH-105-05
SITE : West Option Site **PAGE :** 1 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-23 TO 2005-04-05 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186770.94 N 261880.10 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)			LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD	W _p	W	W _L		50	100
													UNDRAINED SHEAR STRENGTH (kPa)	
	75.41		GROUND SURFACE											
	0.00	75.26	Sandy topsoil, trace of silt (frozen).		SS-1		58	22						
		0.15	Compact to dense brown sand and gravel, some silt.		SS-2		21	41						
1					SS-3		17	25						
	73.89		Compact grey sand, trace of gravel, cobbles.		SS-4		64	55						
	1.52				SS-5		100	50/10cm						
2					SS-6		71	63						
	73.12		Very dense reddish brown sand and silt, trace of gravel, cobbles.		SS-7		50	55						
	2.29				SS-8		0	50/8cm						
3					SS-9		0	50/0cm						
	71.60		Very dense reddish brown sandy silt, some gravel, cobbles.		SS-10		0	50/0cm						
	3.81				SS-11		0	50/5cm						
4					SS-12		0	50/0cm						
	70.00		Very dense reddish brown sandy silt, some gravel, cobbles and boulders.											
	5.41													
5														
	66.82		Bedrock: Very poor quality red mudstone, layers of grey mudstone and calcareous sandstone, beds of black shale.		SS-13		0	50/2cm						
	8.59				DC-14		38	0						
6					DC-15		86	0						
	65.78		Poor to excellent quality red mudstone, layers of grey mudstone and sandstone.		DC-16		100	85						
	9.63				DC-17		100	34						
7					DC-18		100	100						
8														
9														
10														
11														

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-105-05*
SITE : West Option Site **PAGE :** 2 **OF** 3
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-23 **TO** 2005-04-05 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186770.94 N 261880.10 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)	
		Fair to excellent quality red mudstone, layers of grey mudstone and sandstone. Beddings at 30-40° from borehole axis.										
13				DC-19		100	93					
14				DC-20		98	65					
15				DC-21		100	89					
16				DC-22		100	75					
17				DC-23		100	66					
18				DC-24		100	54					
19				DC-25		100	71					
20	55.42 19.99	Very poor quality red mudstone.		DC-26		100	23					
21	54.99 20.42	Fair to good quality red mudstone, layers of grey mudstone and calcareous sandstone, beds of black shale.		DC-27		100	84					
22				DC-28		100	55					
23	52.42 22.99	Poor quality red mudstone.		DC-29		100	79					
				DC-30		70	35					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-105-05*
SITE : West Option Site **PAGE :** 3 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-23 TO 2005-04-05 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186770.94 N 261880.10 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD	50
			Poor quality red mudstone, layers of grey mudstone and calcareous sandstone, beds of black shale.									
25						DC-31		100	76			
	49.75					DC-32		100	41			
	25.66		END OF BOREHOLE									
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-106-05**
 SITE : West Option Site PAGE : 1 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-02-10 TO 2005-02-22 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186973.53 N 261962.58 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	76.25		GROUND SURFACE								
	0.00		Topsoil.		SS-1		33	2			
1	75.34	0.91	Compact to dense grey gravelly sand, some silt.		SS-2		67	13			
2	73.96	2.29	Compact grey gravelly silt and sand.		SS-3		29	60	\odot		
	73.51	2.74	Stiff to very stiff silt, some clay.		SS-4		58	29			
					SS-5		75	28	\odot		
					SS-6		75	44			
5	71.68	4.57	Very dense brown and grey gravelly sand, some silt, occasional cobbles.		SS-7		50	68			
					SS-8		67	46	\odot		
6	70.15	6.10	Bedrock: Very poor quality grey to dark grey shale, small veinlets of calcite, local traces of pyrite.		DC-9		79	0			
					DC-10		69	20			
	68.53	7.72	Very poor quality grey shale, with 10-15% of black shale layers (5-30mm thick), occasional thin (1-3mm thick) and undulating layers of dark shale, small occasional veinlets of calcite.		DC-11		83	0			
					DC-12		100	12			
					DC-13		100	0			
					DC-14		100	0			
11	65.50	10.75	Very poor quality black shale. Sedimentary breccia (100-150mm thick) at 11.4m depth.		DC-15		100	20			
					DC-16		93	0			

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-106-05**
 SITE : West Option Site PAGE : 2 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-02-10 TO 2005-02-22 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186973.53 N 261962.58 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded
Remoulded	SS Split spoon	GS Grain size analysis	Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded
Undisturbed	ST Thin walled Shelby tube	C Consolidation	Dyn. Cone Pen. Test \times - - - - - \times
Lost	PS Piston sampler	D Unit weight (kN/m ³)	
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%) W _P W W _L 20 40 60 80	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)	
13		Very poor quality black shale, 10% of calcareous sandstone (5-80mm thick), at 45° from borehole axis.		DC-17		75	19					
14	62.25 14.00	Very poor quality grey shale, occasional undulated layers of black shale (1-5mm thick), at 45° from borehole axis, veilets of calcite.		DC-18		90	0					
15				DC-19		100	15					
16	60.10 16.15	Layers of poor to locally good grey shale, with calcareous light grey mudstone, 10-15% of black shale layers, occasional sandstone beds (10-100mm thick), at 45° from borehole axis. Veinlets of calcite, local trace of pyrite.		DC-20		100	0					
17				DC-21		90	20					
18				DC-22		100	83					
19				DC-23		100	24					
20				DC-24		100	31					
21				DC-25		100	40					
22	54.84 21.41	Layers of good quality grey and light grey calcareous mudstone, with 15-20% of layers of black shale (1-10mm thick), sandstone beds (3-5mm thick).		DC-26		100	88					
23				DC-27		100	28					
				DC-28		100	52					
				DC-29		100	80					
				DC-30		100	77					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-106-05*
SITE : West Option Site **PAGE :** 3 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** HW
BORING DATE : 2005-02-10 TO 2005-02-22 **CORE BARREL :** HQ
DATUM : Geodetic **COORDINATES :** 5186973.53 N 261962.58 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD	50
			Layers of fair quality grey shale.			DC-31		100	57			
25	51.03	25.22	END OF BOREHOLE									
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-107-05*
SITE : West Option Site **PAGE :** 1 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** HW
BORING DATE : 2005-02-08 TO 2005-02-16 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186941.02 N 261948.72 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION	TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD			50	100	
	75.79		GROUND SURFACE									
	0.00		Topsoil.									
	75.33	0.46	Compact brown and reddish sand, some silt and gravel.	SS-1		25	2/46cm					
1				SS-2		67	13					
	74.27	1.52		Loose to compact grey clayey silt, trace of sand and gravel.	SS-3		50	7				
2					SS-4		58	24				
	72.13	3.66			Compact to very dense grey and reddish silty and gravelly sand.	SS-5		67	21			
3			SS-6			75	55					
4			SS-7			67	48					
5			SS-8			67	21					
6			Bedrock: Succession of very poor quality red and greenish grey mudstone layers at 45° from borehole axis.	SS-9		55	50/8cm					
7	68.78	7.01		SS-10		0	100/13cm					
				DC-11		58	0					
8				DC-12		65	0					
				DC-13		100	0					
				DC-14		96	30					
9				DC-15		100	48					
	66.74	9.05		Layers of poor quality grey and dark grey shale, 5% of sandstone layers (5-50mm thick) at 45° from borehole axis, occasional veinlets of calcite.	DC-16		100	25				
10			DC-17			100	0					
11			DC-18			94	46					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-107-05**
 SITE : West Option Site PAGE : 2 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-02-08 TO 2005-02-16 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5186941.02 N 261948.72 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded
Remoulded	SS Split spoon	GS Grain size analysis	Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded
Undisturbed	ST Thin walled Shelby tube	C Consolidation	Dyn. Cone Pen. Test \times - - - - - \times
Lost	PS Piston sampler	D Unit weight (kN/m ³)	
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	

DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%) W _P W W _L 20 40 60 80	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
	DEPTH - m										50	100
13		Layers of poor quality grey and dark grey shale, 5% of sandstone layers (5-50mm thick) at 45° from borehole axis, occasional veinlets of calcite.			DC-19		65	12				
14					DC-20		58	31				
15					DC-21		100	0				
16	59.89 15.90	Layers of very poor to poor quality grey shale and light grey calcareous mudstone at 40° from borehole axis, veinlets of calcite at 16.7m. Sedimentary breccia (from 17.0 to 17.3m).			DC-22		100	0				
17					DC-23		92	22				
18					DC-24		100	15				
19	56.97 18.82	Layers of very poor to poor quality grey shale, 25% of dark shale (1-20mm thick) at 40° from borehole axis.			DC-25		92	48				
20					DC-26		100	15				
21					DC-27		100	58				
22	54.15 21.64	Layers of poor quality grey and black shale, with 25% of sandstone layers (5-50mm thick), at 40° from borehole axis, local trace of pyrite.			DC-28		100	12				
23					DC-29		100	18				
					DC-30		98	0				
					DC-31		96	46				
					DC-32		76	22				
					DC-33		100	33				

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-107-05*
SITE : West Option Site **PAGE :** 3 **OF** 3
FILE NO : T-1050-B (603333-KELL) **CASING :** HW
BORING DATE : 2005-02-08 **TO** 2005-02-16 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186941.02 N 261948.72 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
			Layers of fair quality calcareous mudstone and dark shale, veinlets of calcite.			DC-34	100	57			
25	50.77	25.02	END OF BOREHOLE								
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : BH-108-05
 SITE : West Option Site PAGE : 1 OF 7
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-02-16 TO 2005-02-25 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5186938.62 N 261994.91 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	ELEVATION - m		STRATIGRAPHY DESCRIPTION	SYMBOL	WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)			LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		UNDRAINED SHEAR STRENGTH (kPa)				
	ELEVATION - m	DEPTH - m				TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD	W _P	W	W _L		50	100					
	76.19		GROUND SURFACE																	
	0.00		Peat and topsoil.																	
1	75.58	0.61	Compact brown sand, some silt and gravel.		Water level at elev. 75.86m on 2005-04-15	SS-1		62	1/15cm											
						SS-2		67	12											
2						SS-3		71	16											
3	73.75	2.44				Compact grey silt, traces of sand and clay, occasional gravel.		SS-4		12	17									
4								SS-5		75	22									
5	71.31	4.88	Dense to very dense grey sand, some silt and gravel, to gravel and sand trace of silt.		SS-6		8	29												
					SS-7		72	82												
6					SS-8		80	25/13cm												
7			Bedrock: Layers of fair to poor quality greenish grey shale and calcareous light grey mudstone, with 10-15% undulated layers of black shale (1-5mm thick). Beddings at 40° from borehole axis. Occasional calcite veinlets, trace of pyrite. Slikensides from 11.7 to 12.0m depth.		SS-9		89	86												
					SS-10		82	60/13cm												
8	68.88	7.32			SS-11		80	100/13cm												
					DC-12		100	0												
9					DC-13		100	49												
					DC-14		100	13												
10					DC-15		90	59												
11			DC-16		91	26														
			DC-17		100	0														

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-108-05*
SITE : West Option Site **PAGE :** 2 **OF** 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-02-16 **TO** 2005-02-25 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186938.62 N 261994.91 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
12.12			Succession of very poor to fair quality red and greenish grey mudstone layers at 45° from borehole axis.		DC-18		100	40				
13					DC-19		96	16				
14					DC-20		62	0				
15					DC-21		96	56				
16					DC-22		100	49				
17					DC-23		96	72				
18					DC-24		98	49				
18.50	57.69	18.50	Succession of fair quality greenish grey and red mudstone layers at 45° from borehole axis, with light grey calcareous shale layers, thin layers of black shale (1-5mm thick), Calcite veinlets.		DC-25		95	46				
19					DC-26		100	26				
20					DC-27		96	78				
21	55.79	20.40	Layers of fair to poor quality greenish grey mudstone, with 10-15% of light grey calcareous mudstone, 15% of thin layers of dark shale. Beddings at 45° from borehole axis, calcite veinlets, trace of pyrite.									
22												
23	53.49	22.70	Succession of excellent quality red and greenish grey mudstone layers, with 15% of thin layers of black shale (1-10mm thick). Beddings at 45° from borehole axis, calcite veinlets, local traces of pyrite.									

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-108-05**
 SITE : West Option Site PAGE : 3 OF 7
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-02-16 TO 2005-02-25 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5186938.62 N 261994.91 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded
Remoulded	SS Split spoon	GS Grain size analysis	Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded
Undisturbed	ST Thin walled Shelby tube	C Consolidation	Dyn. Cone Pen. Test \times - - - - - \times
Lost	PS Piston sampler	D Unit weight (kN/m ³)	
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	

DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%) W _P W W _L 20 40 60 80	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)	
25		Succession of excellent quality red and greenish grey mudstone layers, with 15% of thin layers of black shale (1-10mm thick). Beddings at 45° from borehole axis, calcite veinlets, local traces of pyrite.			DC-28		100	100				
26					DC-29		100	92				
27	48.81											
28	27.38	Succession of fair to good red and greenish grey mudstone, with calcareous layers (5-50mm thick) and 5-10% of layers of black shale (1-10mm thick). Beddings at 45° from borehole axis.			DC-30		100	72				
29												
30					DC-31		100	78				
31					DC-32		100	77				
32												
33					DC-33		100	70				
34	42.71	Succession of excellent to good quality red and greenish grey mudstone, layer of calcareous mudstone (10 to 80mm thick) and 5-10% of thin layers of black shale. Disseminated pyrite, occasional calcite veinlets. Beddings at 40° from borehole axis.			DC-34		100	86				
35	33.48				DC-35		100	91				

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-108-05*
SITE : West Option Site **PAGE :** 4 OF 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-02-16 TO 2005-02-25 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186938.62 N 261994.91 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
	39.67	36.52	Succession of layers of good quality red and greenish grey mudstone, some calcareous layers.								
37			Succession of layers of good to poor quality red and greenish grey mudstone, occasional light grey calcareous mudstone and sandstone layers (5-20mm thick), 5% of black shale layers (1-10mm thick). Beddings at 45° from borehole axis.		DC-36		100	63			
38											
39					DC-37		100	81			
40					DC-38		100	31			
41					DC-39		96	48			
42	34.43	41.76	Succession of layers of good quality red and greenish grey mudstone, some calcareous layers, thin layers of black shale (1-5mm thick), occasional beds of calcareous sandstone (5-50mm thick). Occasional to frequent slickenside surfaces and fault striations along joints. Beddings at 50° from borehole axis.		DC-40		100	88			
43					DC-41		100	71			
44					DC-42		100	73			
45					DC-43		100	82			
46					DC-44		97	84			
47											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-108-05**
 SITE : West Option Site PAGE : 5 OF 7
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-02-16 TO 2005-02-25 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5186938.62 N 261994.91 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
Remoulded Undisturbed Lost Rock core	SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	GS Grain size analysis C Consolidation D Unit weight (kN/m ³) CP Compressive strength (MPa)	

DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD	50
			Succession of layers good quality red and greenish grey mudstone.									
49	27.28	48.91	Poor quality greenish grey mudstone, some light grey calcareous layers, occasional slickenside surfaces and fault striations in joints. Layers at 50° from borehole axis.			DC-45	100	26				
50	25.95	50.24	Very poor quality grey shale, with some thin layers of dark shale (1-15mm thick). Frequent slickensides and fault striations along joints. Calcite veinlets and veins. Local presence of pyrite. Layers at 50° from borehole axis.			DC-46	100	7				
51						DC-47	92	0				
52						DC-48	100	0				
53						DC-49	100	0				
54						DC-50	53	0				
55						DC-51	48	0				
56						DC-52	100	0				
57						DC-53	84	0				
57	18.94	57.25	Layers of very poor to poor quality grey shale, 10% of thin layers of black shale. Probable fault beccias. Slickensides and fault striations along joints. Layers at 50° from borehole axis. Frequent calcite veinlets.			DC-54	100	18				
58						DC-55	82	22				
59						DC-56	100	36				
						DC-57	100	41				

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-108-05*
SITE : West Option Site **PAGE :** 6 **OF** 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-02-16 **TO** 2005-02-25 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186938.62 N 261994.91 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	ELEVATION - m DEPTH - m	STRATIGRAPHY DESCRIPTION	SYMBOL	WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%) w_p w w_L 20 40 60 80	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
					TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
61		Layers of very poor to poor quality grey shale, 10-15% of dark shale layers (1-10mm thick). Probable fault breccia at 62m. Frequent calcite veins (20-30mm thick). Layers at 50° from borehole axis. Local presence of pyrite.			DC-58	98	13				
62					DC-59	100	45				
63					DC-60	100	52				
64					DC-61	100	0				
65	11.70 64.49	Good to excellent quality grey mudstone, 10-15% of dark shale layers (5-10mm thick), 10% of light grey clacareous mudstone layers (10-20mm thick). Local presence of pyrite, calcite veinlets.			DC-62	100	77				
66					DC-63	97	100				
67	9.49 66.70	Good quality greenish grey mudstone, 25-30% of red mudstone layers. Beddings at 50° from borehole axis.			DC-64	100	70				
68					DC-65	92	77				
69											
70	6.14 70.05	Good to excellent quality red mudstone layers, 5% of green mudstone beds, light grey mudstone layers (5-10mm thick). Beddings at 45° from borehole axis. Pyrite in joints.			DC-66	100	75				
71											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-108-05*
SITE : West Option Site **PAGE :** 7 OF 7
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-02-16 TO 2005-02-25 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186938.62 N 261994.91 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane
Remoulded Undisturbed Lost Rock core	SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	(Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x

DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)					
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD	50	100		
73			Good to excellent quality red mudstone layers, 5% of green mudstone beds, light grey mudstone layers (5-10mm thick). Beddings at 45° from borehole axis. Pyrite in joints.			DC-67	100	88							
74						DC-68	97	97							
75						DC-69	76	49							
76						DC-70	97	70							
77						DC-71	100	94							
78						DC-72	0	-							
79	-3.24	79.42	END OF BOREHOLE												
80															
81															
82															
83															

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-109-05**
 SITE : West Option Site PAGE : 1 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : PW
 BORING DATE : 2005-02-28 TO 2005-03-07 CORE BARREL : PQ
 DATUM : Geodetic COORDINATES : 5186941.04 N 262038.73 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY		SYMBOL	WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m			DESCRIPTION	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	76.43	0.00	GROUND SURFACE								
			Topsoil.		SS-1		25	1			
1	75.67	0.76	Compact to loose brown gravelly and silty sand.		SS-2		58	16			
2	74.75	1.68	Compact grey sand and silt, trace of gravel.		SS-3		75	9	\odot	GS	
					SS-4		75	24			
3	73.08	3.35	Dense to very dense brown sand, some silt and gravel.		SS-5		58	18			
4					SS-6		58	36	\odot	GS	
5	71.35	5.08	Bedrock: Very severely fractured (weathered) red mudstone.		SS-7		62	50			
					SS-8		50	33			
					SS-9		38	24			
7	69.17	7.26	Layers of fair to good quality red mudstone, occasional greenish grey mudstone and dark shale layers (10-60mm thick), 5-10% slightly calcareous light grey mudstone layers (1-10mm thick). Beddings at 50° from borehole axis.		SS-10		0	60/5cm			
8					DC-11		92	58		Pyrite detection	
9					DC-12		97	62		CP=9.4	
										CP=5.1	
10					DC-13		89	79			
11					DC-14		90	83		Pyrite detection	

NOTE:
 Upon completion, the borehole was provided with a bottom capped 63.5mm diameter PVC tube grouted in place with cement bentonite, to allow down-hole seismicity tests.

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-109-05**
 SITE : West Option Site PAGE : 2 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : PW
 BORING DATE : 2005-02-28 TO 2005-03-07 CORE BARREL : PQ
 DATUM : Geodetic COORDINATES : 5186941.04 N 262038.73 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core		TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel		LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m ³) CP Compressive strength (MPa)		Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times	
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%) w_p w w_L 	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD			50	100
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)	
13		Succession of layers of fair quality red mudstone and greenish grey mudstone, local traces of pyrite.			DC-15	87	69					
13.50	62.93											
14		Layers of fair quality red mudstone, 5-10% layers of greenish grey mudstone (10-30mm thick) at 45° from borehole axis.			DC-16	100	86					
15												
15.54	60.89				DC-17	100	100					
16		Layers of fair to excellent quality red and greenish mudstone, layers black shale (1-5mm thick) at 50° from borehole axis.			DC-18	97	70					
17												
18					DC-19	100	100					
18.50	57.93											
19		Layers of fair quality grey shale, 5% of layers of black shale (5-25mm thick) at 45° from borehole axis, with slickensides and fault striations. Pyrite in joints and finely disseminated in black shale beddings, calcite veinlets.			DC-20	100	51					
20												
21					DC-21	97	61					
22												
22.26	54.17				DC-22	95	71					
22.49	53.94	Layers of red and grey shale. Good quality grey shale, 5-10% black shale (1-5mm thick).										
23					DC-23	90	65					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-109-05*
SITE : West Option Site **PAGE :** 3 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** PW
BORING DATE : 2005-02-28 TO 2005-03-07 **CORE BARREL :** PQ
DATUM : Geodetic **COORDINATES :** 5186941.04 N 262038.73 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
52.17	24.26		Layers of good quality red and grey shale, thin layers of black shale (1-3mm thick)		DC-24		100	87			
51.13	25.30		END OF BOREHOLE								
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-109-05*
SITE : West Option Site **PAGE :** 3 OF 3
FILE NO : T-1050-B (603333-KELL) **CASING :** PW
BORING DATE : 2005-02-28 TO 2005-03-07 **CORE BARREL :** PQ
DATUM : Geodetic **COORDINATES :** 5186941.04 N 262038.73 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
52.17	24.26		Layers of good quality red and grey shale, thin layers of black shale (1-3mm thick)		DC-24		100	87			
51.13	25.30		END OF BOREHOLE								
25											
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-110-05**
 SITE : West Option Site PAGE : 1 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-02-22 TO 2005-02-25 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186908.14 N 262022.81 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane (Su) ◇ intact						
	Remoulded	SS	Split spoon	GS	Grain size analysis			(Sur) ◆ remoulded						
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation			Swedish cone (Cu) ▽ intact						
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)			(Cur) ▼ remoulded						
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)			Dyn. Cone Pen. Test × - - - - - ×						
DEPTH - m	STRATIGRAPHY			SAMPLES			WATER CONTENT and LIMITS (%)		LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)				
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION	RECOVERY %		N of RQD	W _p	W	W _L	50
	76.20	0.00	GROUND SURFACE											
			Topsoil.			SS-1		12	2					
1	75.29	0.91	Compact brown gravelly sand, some silt.		75.81m on 2005-04-15	SS-2		54	21					
						SS-3		50	15					
2	74.07	2.13	Dense grey sandy silt.			SS-4		50	34					
	73.46	2.74	Compact to dense brown sand and silt, some gravel.			SS-5		50	45	○				
						SS-6		58	27					
4	71.93	4.27	Very dense brown sandy gravel, some silt.			SS-7		50	52	○				
	70.82	5.38	Bedrock: Very severely fractured (weathered) red mudstone.			SS-8		50	35					
6						SS-9		0	25/0cm					
7	69.27	6.93	Very poor quality dark grey shale. Beddings at 30° from borehole axis.			DC-10		59	19					
8	68.45	7.75	Succession of very poor quality red and dark grey mudstone. Beddings at 50° from borehole axis.			DC-11		32	0					
9	67.00	9.20	Good quality red mudstone, occasional slightly calcareous light grey mudstone layers (5-10mm thick) at 50° from borehole axis.			DC-12		100	79					
10						DC-13		97	84					
11														

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-110-05**
 SITE : West Option Site PAGE : 2 OF 3
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-02-22 TO 2005-02-25 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186908.14 N 262022.81 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%) W _P W W _L 20 40 60 80	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD			50	100	
	DEPTH - m									UNDRAINED SHEAR STRENGTH (kPa)		
13	62.51	Good quality red mudstone, occasional slightly calcareous light grey mudstone layers (5-10mm thick) at 50° from borehole axis.		DC-14		97	92					
14	13.69			DC-15		100	26					
15	60.89	Very poor to fair quality red mudstone, some slightly calcareous light grey mudstone layers (5-10mm thick) at 50° from borehole axis.		DC-16		100	55					
16	15.31			DC-17		100	15					
17				DC-18		100	37					
18				DC-19		100	48					
19	57.90	Layers of poor quality red mudstone, 30-40% greenish grey shale layers (1-10mm thick) at 50° from borehole axis.		DC-20		90	68					
20	18.30			DC-21		97	32					
21				DC-22		100	23					
22	56.30	Very poor to fair quality red and grey mudstone layers. Beddings at 60° from borehole axis.		DC-23		100	19					
23	19.90			DC-24		100	75					
24				DC-25		95	70					
25				DC-26		100	93					
26	54.79	Fair to excellent quality red mudstone, occasional layers of greenish grey mudstone (5-30mm thick), layers at 60° from borehole axis.		DC-25		95	70					
27	21.41			DC-26		100	93					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-110-05*
SITE : West Option Site **PAGE :** 3 **OF** 3
FILE NO : T-1050-B (603333-KELL) **CASING :** HW
BORING DATE : 2005-02-22 **TO** 2005-02-25 **CORE BARREL :** HQ
DATUM : Geodetic **COORDINATES :** 5186908.14 N 262022.81 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD	50
			Excellent quality greenish grey and dark grey mudstone, layers at 60° from borehole axis.			DC-27		100	90			
25	50.52	25.68	END OF BOREHOLE									
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-111A-05**
 SITE : West Option Site PAGE : 1 OF 2
 FILE NO : T-1050-B (603333-KELL) CASING : HW
 BORING DATE : 2005-03-07 TO 2005-03-14 CORE BARREL : HQ
 DATUM : Geodetic COORDINATES : 5186872.61 N 261927.58 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane		
	Remoulded	SS	Split spoon	GS	Grain size analysis			(Su)	◇ intact	
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation			(Sur)	◆ remoulded	
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)			(Cu)	▽ intact	
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)			(Cur)	▼ remoulded	
								Dyn. Cone Pen. Test		× - - - - - ×
DEPTH - m	STRATIGRAPHY			SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	75.74		GROUND SURFACE							
	0.00		Topsoil.							
1	75.28	0.46	Compact brown gravelly and silty sand.		SS-1		25	17		
					SS-2		50	28		
					SS-3		50	20		
2	73.86	1.88	Compact brown gravelly sand, some silt.		SS-4		25	16		
					SS-5		50	15		
3	73.00	2.74	Compact grey silt, some clay, traces of sand and gravel.		SS-6		50	23	⊕	
					SS-7		58	21		
5	70.71	5.03	Dense to very dense brown gravelly sand and silt.		SS-8		58	55		
					SS-9		54	62		
					SS-10		50	37		
					SS-11		29	101		
					SS-12		56	42		
					SS-13		50	61		
10	66.14	9.60	Very dense grey silt, some sand.		SS-14		75	57		
					SS-15		62	41		
11	65.38	10.36	Dense to very dense brown gravelly sand and silt.		SS-16		75	90		

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** BH-111A-05
SITE : West Option Site **PAGE :** 2 OF 2
FILE NO : T-1050-B (603333-KELL) **CASING :** HW
BORING DATE : 2005-03-07 TO 2005-03-14 **CORE BARREL :** HQ
DATUM : Geodetic **COORDINATES :** 5186872.61 N 261927.58 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
								w_p w w_L 			
	63.22	12.52	Very dense gravelly sand and silt.			SS-17		100	4/10cm		
13			Bedrock: Succession of layers of very poor quality red and greenish grey mudstone, layers of black shale (1-10mm thick) at 50° from borehole axis.			SS-18		50	50/5cm		
						DC-19		67	0		
14	61.90	13.84	Succession of fair quality red and greenish grey mudstone, layers of light grey calcareous mudstone (10-20mm thick). Beddings at 40-50° from borehole axis.			DC-20		77	0		
15	60.45	15.29	Fair quality red mudstone and grey calcareous mudstone layers, 50-55% dark shale layers (1-5mm thick) at 50° from borehole axis.			DC-21		100	21		
16	59.79	15.95	Succession of very poor to fair quality red mudstone and greenish grey mudstone, black shale layers (1-5mm thick). Beddings at 45° from borehole axis.			DC-22		100	57		
20	55.88	19.86	END OF BOREHOLE								
21											
22											
23											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-116A-05*
SITE : West Option Site **PAGE :** 1 OF 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-19 TO 2005-03-22 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186914.80 N 261894.79 E

SAMPLE CONDITION <input type="checkbox"/> Remoulded <input type="checkbox"/> Undisturbed <input type="checkbox"/> Lost <input type="checkbox"/> Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m ³) CP Compressive strength (MPa)	Field Vane (Su) <input type="checkbox"/> intact (Sur) <input type="checkbox"/> remoulded Swedish cone (Cu) <input type="checkbox"/> intact (Cur) <input type="checkbox"/> remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY		WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m		DESCRIPTION	SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
	75.44										
	0.00										
	75.26										
	0.23										
1											
2											
3											
	73.00										
	3.19										
4											
5											
	71.78										
	4.78										
6											
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-116A-05*
SITE : West Option Site **PAGE :** 2 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-19 **TO** 2005-03-22 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186914.80 N 261894.79 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
			INCLINATION ANGLE: 50° AZIMUTH: 315°					w_p w w_L 				
66.16	12.12		Bedrock: Very poor to poor quality greenish grey mudstone, few dark mudstone layers (1-10mm thick), 5% red mudstone beds (max. 30mm thick). Beddings at 85° from borehole axis. Layers of poor to fair quality red mudstone, 10-15% of greenish grey mudstone layers, light grey calcareous mudstone beds. Beddings at 85° from borehole axis.									
13				DC-1		57	0					
				DC-2		75	28					
14	64.72	13.99		DC-3		100	63					
15				DC-4		100	54					
16				DC-5		94	60					
17				DC-6		100	57					
18				DC-7		98	27					
19				DC-8		100	47					
20				DC-9		100	63					
21			DC-10		98	38						
22												
23												

Tropari at 19.81m:
inclination = 48°



BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-116A-05*
SITE : West Option Site **PAGE :** 3 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-19 **TO** 2005-03-22 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186914.80 N 261894.79 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
25	56.68	24.49	Poor to good quality red mudstone, layers of reddish green-grey mudstone, 5% of thin layers of light grey calcareous mudstone beds. Beddings at 80° from borehole axis.		DC-11		100	46			
27	54.29	27.61	Poor to fair quality red and greenish grey mudstone, few black mudstone beds, some thin layers light green calcareous mudstone beds. Beddings at 85° from borehole axis. Scarce calcite veinlets. Local presence of finely disseminated pyrite.		DC-12		100	85			
28					DC-13		100	72			
29					DC-14		100	57			
30					DC-15		100	41			
31					DC-16		100	73			
32					DC-17		100	27			
33											
34											
35											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-116A-05*
SITE : West Option Site **PAGE :** 4 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-19 **TO** 2005-03-22 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186914.80 N 261894.79 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m ³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
37			Poor to fair quality red and greenish grey mudstone, few black mudstone beds, some thin layers light green calcareous mudstone beds. Beddings at 85° from borehole axis. Scarce calcite veinlets. Local presence of finely disseminated pyrite.		DC-18		100	46			
38					DC-19		100	21			
39					DC-20		100	44			
40	45.21	39.46	Succession of poor to fair quality greenish grey and black mudstone, 5% of calcareous sandstone beds (max. 80mm thick). Beddings at 85° from borehole axis. Presence of pyrite in fractures. Occasional calcite veinlets.		DC-21		98	62			
41					DC-22		100	38			
42					DC-23		100	30			
43					DC-24		100	63			
44					DC-25		100	56			
45											
46	39.91	46.38	Layers of fair quality greenish grey mudstone, layers of red and light grey mudstone. Beddings at 85° from borehole axis.								
47											

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Tropari at 41.15m: inclination = 48°



BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-116A-05*
SITE : West Option Site **PAGE :** 5 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-19 **TO** 2005-03-22 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186914.80 N 261894.79 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
49			Blayers of fair quality greenish grey mudstone, layers of red and light grey mudstone. Beddings at 85° from borehole axis.		DC-26		100	63			
37.54			END OF BOREHOLE								
49.48											
50											
51											
52											
53											
54											
55											
56											
57											
58											
59											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-116B-05**
 SITE : West Option Site PAGE : 1 OF 5
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-02-25 TO 2005-03-04 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5186914.80 N 261897.19 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) \diamond intact
Remoulded	SS Split spoon	GS Grain size analysis	(Sur) \blacklozenge remoulded
Undisturbed	ST Thin walled Shelby tube	C Consolidation	Swedish cone (Cu) ∇ intact
Lost	PS Piston sampler	D Unit weight (kN/m ³)	(Cur) \blacktriangledown remoulded
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	75.44		GROUND SURFACE								
	0.00	75.26	Topsoil.								
		0.18	Compact brown sand, some silt to silty, some gravel.		SS-1		71	13			
1					SS-2		62	11			
2					SS-3		54	22	\odot		
	73.00		Compact grey silt, trace of sand and gravel.		SS-4		0	15			
3		2.44			SS-5		67	23			
4			Dense to very dense reddish and grey sand, some silt and gravel, occasional cobbles and boulders.		SS-6		33	76			
5					SS-7		71	33			
6			NOTE ON WATER LEVEL: Water level at 75.79m (artesian) on 2005-04-15.		SS-8		71	27			
7					SS-9		58	49			
8					SS-10		75	36			
9					SS-11		75	62			
	67.11		Bedrock: Very poor quality greenish grey and dark grey mudstone, 15-20% light grey calcareous mudstone beds (5-25mm thick), some sandstone beds (5mm thick). Beddings at 50° from borehole axis. Calcite veinlets.		DC-12		74	26			
	8.33				DC-13		100	0			
10					DC-14		100	0			
					DC-15		100	46			
					DC-16		100	0			
11					DC-17		100	15			

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-116B-05*
SITE : West Option Site **PAGE :** 2 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-02-25 **TO** 2005-03-04 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186914.80 N 261897.19 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
13			Very poor quality greenish grey and dark grey mudstone, 15-20% light grey calcareous mudstone beds (5-25mm thick), some sandstone beds (5mm thick). Beddings at 50° from borehole axis, Calcite veinlets.		DC-18		100	0			
14					DC-19		100	18			
					DC-20		100	0			
					DC-21		100	0			
					DC-22		91	14			
15	60.34	15.10	Very poor quality red mudstone and greenish grey mudstone. Beddings at 50° from borehole axis.		DC-23		100	43			
16					DC-24		100	0			
					DC-25		100	0			
17	58.75	16.69	Very poor to fair quality red mudstone and greenish grey mudstone. Beddings at 50° from borehole axis.		DC-26		100	20			
					DC-27		100	45			
18					DC-28		100	57			
19	56.90	18.54	Fair to good quality red mudstone and greenish grey mudstone, beds of light grey calcareous mudstone (1-3mm thick), thin beds of black shale. Beddings at 50° from borehole axis.		DC-29		78	53			
20					DC-30		100	38			
21					DC-31		100	26			
22					DC-32		96	39			
23					DC-33		100	67			
	51.77	23.67	(see next page)								

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-116B-05**
 SITE : West Option Site PAGE : 3 OF 5
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-02-25 TO 2005-03-04 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5186914.80 N 261897.19 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) <input type="checkbox"/> intact
<input type="checkbox"/> Remoulded	SS Split spoon	GS Grain size analysis	(Sur) <input type="checkbox"/> remoulded
<input type="checkbox"/> Undisturbed	ST Thin walled Shelby tube	C Consolidation	Swedish cone (Cu) <input type="checkbox"/> intact
<input type="checkbox"/> Lost	PS Piston sampler	D Unit weight (kN/m ³)	(Cur) <input type="checkbox"/> remoulded
<input type="checkbox"/> Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	Dyn. Cone Pen. Test <input type="checkbox"/> - - - - - x

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)				
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %	N or RQD			W _p	W	W _L	50	100
	DEPTH - m													50	100
		Good to fair quality red mudstone with 5% of greenish grey mudstone layers, and thin dark grey shale (2-10mm thick). Beddings at 40° from borehole axis.			DC-34	100	93								
25					DC-35	84	78								
26					DC-36	97	80								
27					DC-37	100	86								
28					DC-38	94	69								
29					DC-39	100	66								
30	44.91				DC-40	100	78								
30.53		Layers of fair to good quality red mudstone, 15-20% greenish grey mudstone beds and 5% light grey calcareous mudstone beds. Beddings at 40° from borehole axis. Occasional calcite veinlets.			DC-41	100	64								
31					DC-42	93	76								
32															
33															
34															
35															

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-116B-05*
SITE : West Option Site **PAGE :** 4 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-02-25 **TO** 2005-03-04 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186914.80 N 261897.19 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
37			Layers of good quality red mudstone, 15-20% greenish grey mudstone beds and 5% light grey calcareous mudstone beds. Beddings at 40° from borehole axis. Occasional calcite veinlets.		DC-43		100	78			
38	37.32	38.12	Layers of excellent to good quality red mudstone, 15-20% greenish grey mudstone beds and 5% light grey calcareous mudstone beds. Beddings at 40° from borehole axis.		DC-44		100	100			
39					DC-45		100	90			
40					DC-46		100	92			
41					DC-47		100	66			
42					DC-48		100	80			
43					DC-49		100	82			
44					DC-50		100	48			
45											
46											
47	28.12	47.32	Fractured layers of red mudstone . . . (cont.)								

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-116B-05*
SITE : West Option Site **PAGE :** 5 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-02-25 **TO** 2005-03-04 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186914.80 N 261897.19 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
			Layers of fair quality red mudstone with some greenish grey mudstone beds and layers of light grey calcareous mudstone (5-40mm thick).								
49					DC-51		100	34			
50	25.32	50.12	END OF BOREHOLE								
51											
52											
53											
54											
55											
56											
57											
58											
59											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-117A-05**
 SITE : West Option Site PAGE : 1 OF 5
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-03-15 TO 2005-03-19 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187110.81 N 262036.32 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %			N or RQD	50	100
											UNDRAINED SHEAR STRENGTH (kPa)		
	77.38		GROUND SURFACE										
	0.00		Fill: Grey silt, some sand and gravel (see BH-117B-05).										
1	76.77	0.80	Brown peat (see BH-117B-05).										
2	76.16	1.59	Light brown peat, wood, small roots (see BH-117B-05).										
3	75.25	2.78	Dense grey sand, some silt and gravel (see BH-117B-05).										
4	74.64	3.58	Compact to dense grey silt, trace of clay (see BH-117B-05).										
5													
6	73.29	5.34	Dense to very dense grey sand, some silt and gravel, occasional cobbles and boulders (see BH-117B-05).										
7													
8	71.23	8.03	Bedrock: Very poor to poor quality light grey mudstone, thin layers of dark grey shale. Calcite veinlets. Joints filled with silt and gravel		DC-1		61	0					
					DC-2		83	0					
					DC-3		38	0					
					DC-4		77	29					
					DC-5		38	0					
					DC-6		79	57					
					DC-7		89	39					
					DC-8		86	0					
11	69.13	10.77	Very poor quality grey mudstone and dark grey shale. Sedimentary breccia. Calcite veinlets.										

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-117A-05*
SITE : West Option Site **PAGE :** 2 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-15 **TO** 2005-03-19 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187110.81 N 262036.32 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)			
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD			50	100		
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)			
13	67.79 12.52	Very poor quality calcareous mudstone. Sedimentary breccia.		DC-9		42	0							
		Poor quality calcareous grey mudstone, few layers of dark grey mudstone. Beddings at 70-90° from borehole axis. Calcite veinlets.		DC-10		100	25							
14	66.75 13.87	Very poor to poor quality grey mudstone, layers of calcareous mudstone and sandstone, dark grey shale beds. Presence of microfolds and minor discontinuity in the beddings. Calcite veinlets.		DC-11		99	15							
15				DC-12		100	27							
16				DC-13		70	15							
17				DC-14		100	36							
18				DC-15		87	0							
				DC-16		85	0							
				DC-17		91	0							
19	63.06 18.69			Very poor to poor quality grey mudstone, layers of calcareous mudstone and dark grey shale. Beddings at 70-90° from borehole axis.	DC-18		100	0						
					DC-19		100	0						
					DC-20		100	0						
		DC-21				90	11							
		DC-22				97	40							
22	60.98 21.41	Good quality grey mudstone.		DC-23		100	84						Tropari at 21.64m: inclination = 50°	
23	60.49 22.05	Very poor to poor quality grey mudstone, layers of calcareous mudstone and dark grey shale. Beddings at 70-90° from borehole axis.		DC-24		100	0						Tropari at 22.40m: inclination = 50°	
				DC-25		100	45							

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-117A-05**
 SITE : West Option Site PAGE : 3 OF 5
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-03-15 TO 2005-03-19 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187110.81 N 262036.32 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane		
	Remoulded	SS	Split spoon	GS	Grain size analysis			(Su)	◇ intact	
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation			(Sur)	◆ remoulded	
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)			(Cu)	▽ intact	
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)			(Cur)	▼ remoulded	
								Dyn. Cone Pen. Test		× - - - - - ×
DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %		N of RQD	WATER CONTENT and LIMITS (%)
								w_p w w_L 20 40 60 80	UNDRAINED SHEAR STRENGTH (kPa)	
									50	100
25	58.51 24.63		Very poor to poor quality grey mudstone. Open calcite veins filled with silt at 20° from borehole axis and with signs of displacement of beds. Poor to fair quality grey mudstone, layers of calcareous mudstone. Beddings at 70-90° from borehole axis.		DC-26	91	0			
					DC-27	100	57			
					DC-28	97	40			
					DC-29	100	0			
					DC-30	89	38			
29	55.03 29.18		Excellent quality grey mudstone, layers of calcareous mudstone. Beddings at 70-90° from borehole axis.		DC-31	100	96			
					DC-32	100	100			
32	52.90 31.95		Fair to excellent quality dark grey mudstone. Calcite veinlets. Sedimentary breccia texture.		DC-33	100	68			
					DC-34	100	99			
35					DC-35	100	84			

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-117A-05*
SITE : West Option Site **PAGE :** 4 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-15 **TO** 2005-03-19 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187110.81 N 262036.32 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)				LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %	N or RQD	W _P	W	W _L		50	100
	DEPTH - m												50	100
		Good quality dark grey mudstone.												
37	49.19 36.80	Fair to good quality dark grey mudstone. Beddings at 80° from borehole axis.		DC-36		100	89							
39	47.47 39.04	Good quality dark grey mudstone, sedimentary breccia texture, numerous calcite veinlets.		DC-37		100	65							
41				DC-38		100	78							
42	45.10 42.14	Good to excellent quality dark grey mudstone, layers at 80-90° from borehole axis.		DC-39		100	85							
43				DC-40		100	78							
45				DC-41		100	100							
46				DC-42		100	93							
47				DC-43		100	100							

Tropari at 39.93m: inclination = 51°

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-117A-05*
SITE : West Option Site **PAGE :** 5 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-15 **TO** 2005-03-19 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187110.81 N 262036.32 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane
Remoulded Undisturbed Lost Rock core	SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	(Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
			Good to excellent quality dark grey mudstone, layers at 80-90° from borehole axis.								
49					DC-44		100	78			
50	38.89	50.24	END OF BOREHOLE								
51											
52											
53											
54											
55											
56											
57											
58											
59											

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Tropari at 48.46m: inclination = 53°



BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-117B-05**
 SITE : West Option Site PAGE : 1 OF 5
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-03-04 TO 2005-03-14 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187110.11 N 262037.03 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
Remoulded Undisturbed Lost Rock core	SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	GS Grain size analysis C Consolidation D Unit weight (kN/m ³) CP Compressive strength (MPa)	

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%) W _P W W _L 20 40 60 80	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		UNDRAINED SHEAR STRENGTH (kPa)
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	
	77.38		GROUND SURFACE										
	0.00		Fill: Grey silt, some sand and gravel.										
1	76.77	0.61	Brown peat.		SS-1		83	---					
	76.16	1.22	Light brown peat, wood, small roots.		SS-2		38	8					
2	75.25	2.13	Dense grey sand, some silt and gravel.		SS-3		79	0/46cm					
	74.64	2.74	Compact to very dense grey silty and sandy gravel.		SS-4		58	44					
					SS-5		62	28	⊙				
4	73.27	4.11	Dense to very dense grey sand, some silt and gravel, occasional cobbles and boulders.		SS-6		62	45					
					SS-7		58	67					
5					SS-8		57	32					
6	71.21	6.17	Bedrock: Very poor to poor quality grey mudstone, layers of dark clayey shale. Beddings at 80° from borehole axis.		SS-9		33	50/8cm					
					DC-10		83	0					
7					DC-11		92	0					
					DC-12		92	41					
8					DC-13		100	41					
9					DC-14		95	15					
10	67.25	10.13	Poor to very poor quality grey mudstone. Sedimentary breccia structures. Calcite veins.		DC-15		100	51					
					DC-16		100	72					
11					DC-17		98	0					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-117B-05**
 SITE : West Option Site PAGE : 2 OF 5
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-03-04 TO 2005-03-14 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187110.11 N 262037.03 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane
Remoulded Undisturbed Lost Rock core	SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	(Su) intact (Sur) remoulded (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
13	64.05	13.33	Poor to very poor quality fractured grey mudstone. Sedimentary breccia structures. Calcite veins.		DC-18		100	34			
14			Fair quality grey mudstone, beds of calcareous mudstone, shale beds. Beddings at 70-90° from borehole axis.		DC-19		95	39			
15					DC-20		100	61			
16					DC-21		100	50			
17					DC-22		100	54			
18					DC-23		100	69			
19	56.80	20.58	Fair quality grey mudstone. Breccia texture, calcite veins.		DC-24		100	73			
20	56.58	20.80	Fair to very poor quality grey mudstone.		DC-25		69	17			
21	53.88	23.50	(see next page).								

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-117B-05*
SITE : West Option Site **PAGE :** 3 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-04 **TO** 2005-03-14 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187110.11 N 262037.03 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	ELEVATION - m DEPTH - m	STRATIGRAPHY		WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
		DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD			50	100
		Good to excellent quality grey mudstone, layers of calcareous mudstone, shale beds. Beddings at 70° from borehole axis.			DC-26	100	93					
					DC-27	100	94					
					DC-28	100	80					
	49.01 28.37	Excellent quality red mudstone. Beddings at 60-70° from borehole axis.			DC-29	98	95					
					DC-30	100	100					
					DC-31	100	89					
					DC-32	100	91					
					DC-33	100	100					

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-117B-05*
SITE : West Option Site **PAGE :** 4 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-04 **TO** 2005-03-14 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187110.11 N 262037.03 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m ³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %			N or RQD	50	100
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)	
	40.93	Excellent quality red mudstone.										
	36.45	Good quality grey mudstone. Sedimentary breccia texture. Calcite veins.										
37				DC-34	100	86						
38												
	38.91	Excellent quality grey calcareous mudstone, layers of dark shale and calcareous sandstone.										
39	38.47			DC-35	100	89						
40				DC-36	100	98						
41												
				DC-37	100	94						
42												
				DC-38	100	100						
43												
				DC-39	100	83						
44												
				DC-40	100	100						
45												
	30.77	Excellent quality grey mudstone. Sedimentary breccia texture. Calcite veins.										
46	46.61											
47				DC-41	100	100						

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-117B-05*
SITE : West Option Site **PAGE :** 5 **OF** 5
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-03-04 **TO** 2005-03-14 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187110.11 N 262037.03 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane
Remoulded Undisturbed Lost Rock core	SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	(Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
			Excellent quality grey mudstone. Sedimentary breccia texture. Calcite veins.								
49					DC-42		100	100			
50	27.26	50.12	END OF BOREHOLE		DC-43		100	100			
51											
52											
53											
54											
55											
56											
57											
58											
59											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** BH-301-05
SITE : West Option Site **PAGE :** 1 OF 1
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-04-06 TO 2005-04-06 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187040.50 N 261822.36 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
	76.79		GROUND SURFACE								
	0.00		Topsoil.								
	76.64	0.15	Stiff to very stiff brown and grey clay, some silt to silty, trace of sand.		SS-1		79	5			
	75.88	0.91	Bedrock: Very poor quality dark grey mudstone, layers of light grey calcareous mudstone and dark shale. Beddings at 50° from borehole axis.		SS-2		100	50/8cm			
1					SS-3		59	80/13cm			
					DC-4		100	0			
2					DC-5		88	0			
3					DC-6		100	0			
4					DC-7		96	21			
	72.35	4.44	END OF BOREHOLE		DC-8		100	0			
5											
6											
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-302-05**
 SITE : West Option Site PAGE : 1 OF 1
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-04-06 TO 2005-04-06 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187285.22 N 261760.44 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) ◇ intact (Sur) ◆ remoulded Swedish cone (Cu) ▽ intact (Cur) ▼ remoulded Dyn. Cone Pen. Test × - - - - - ×
Remoulded Undisturbed Lost Rock core	SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	77.19		GROUND SURFACE								
	0.00 77.09 0.10		Topsoil. Loose brown sand, some silt and gravel.		SS-1		83	8			
1					SS-2		67	9			
	75.67		Very Loose grey sand, some silt and gravel.		SS-3		17	3			
2	1.52				SS-4		42	3			
	74.14		Very dense reddish sand, some silt to silty, some gravel, occasional cobbles.		SS-5		83	67			
3	3.05				SS-6		91	72			
	72.62		Bedrock: Good to excellent quality grey mudstone, layers of light grey calcareous mudstone. Beddings at 30° from borehole axis.		DC-7		90	75			
4	4.57				DC-8		100	100			
	69.93		END OF BOREHOLE		DC-9		100	100			
5	7.26										
6											
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-303-05*
SITE : West Option Site **PAGE :** 1 OF 1
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-04-11 TO 2005-04-11 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187439.64 N 261726.57 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane (Su) ◇ intact			
	Remoulded	SS	Split spoon	GS	Grain size analysis			(Sur) ◆ remoulded			
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation			Swedish cone (Cu) ▽ intact			
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)			(Cur) ▼ remoulded			
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)			Dyn. Cone Pen. Test × - - - - - ×			
DEPTH - m	STRATIGRAPHY			SAMPLES				LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION		RECOVERY %	N or RQD	WATER CONTENT and LIMITS (%)
	71.50		GROUND SURFACE								
	0.00		Probable fill: Brown silt, some sand or sandy, some gravel.			SS-1		87	24		
1	70.59	0.91	Compact to loose brown sand, some silt to silty, gravel.			SS-2		58	29		
2						SS-3		46	8		
	69.06	2.44	Bedrock: Very poor to fair quality grey mudstone, light grey calcareous mudstone beds. Brecciated zone (to 5.0m depth). Calcite veins and veinlets.			SS-4		67	50/8cm		
3						DC-5		100	52		
4						DC-6		100	0		
5						DC-7		100	29		
	66.06	5.43	END OF BOREHOLE								
6											
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-304-05**
 SITE : West Option Site PAGE : 1 OF 1
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-04-07 TO 2005-04-07 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187608.64 N 261685.01 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	66.06		GROUND SURFACE								
	0.00		Topsoil.								
	65.86	0.20	Compact brown silt, some sand and gravel.		SS-1		83	18			
1	64.84	1.22	Compact brown sand, some silt and gravel.		SS-2		67	13			
2	63.62	2.44	Very dense brown sand, some silt and gravel.		SS-3		50	10			
	63.32	2.74			SS-4		100	48			
3	61.41	4.65	Bedrock: Very poor to poor quality grey mudstone, layers of calcareous mudstone and dark shale. Beddings at 60-80° from borehole axis.		SS-5		0	50/8cm			
4					DC-6		100	44			
5					DC-7		100	65			
6	59.84	6.22	END OF BOREHOLE								
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-305-05**
 SITE : West Option Site PAGE : 1 OF 1
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-04-11 TO 2005-04-11 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187745.35 N 261584.61 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
	64.06		GROUND SURFACE									
	0.00 64.01 0.05		Asphalt (50mm).		SS-1		82	12				
1			Compact brown and grey sand, some silt to silty, gravel.		SS-2		83	18				
	62.77 1.29		Bedrock: Very poor quality (locally brecciated) greenish grey mudstone, layers of black mudstone and shale (very fissile from 2.0 to 3.1m).		SS-3		67	60/15cm				
2					DC-4		73	0				
	60.94 3.12		Fair quality dark grey mudstone, beds of greenish grey mudstone (2-10mm thick). Calcite veinlets. Local presence of pyrite. Beddings at 50° from borehole axis.		DC-5		83	0				
3					DC-6		96	50				
4					DC-7		100	67				
	58.67 5.39		END OF BOREHOLE									
5												
6												
7												
8												
9												
10												
11												

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** *BH-306-05*
SITE : West Option Site **PAGE :** 1 OF 1
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-04-08 TO 2005-04-08 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187802.27 N 261530.86 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	61.48		GROUND SURFACE								
	0.00 61.38 0.10		Topsoil. Compact to loose brown sand, some silt to silty, some gravel.		SS-1		79	11			
1					SS-2		54	9			
	59.96 1.52		Very poor to fair quality light grey mudstone, layers of calcareous mudstone, few dark shale beds. Beddings at 60° from borehole axis.		SS-3		33	60/8cm			
2					DC-4		100	24			
3											
4					DC-5		100	59			
	57.16 4.32		END OF BOREHOLE								
5											
6											
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** BH-307-05
SITE : West Option Site **PAGE :** 1 OF 1
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-04-08 TO 2005-04-08 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187922.39 N 261417.47 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane (Su) \diamond intact
Remoulded	SS Split spoon	GS Grain size analysis	(Sur) \blacklozenge remoulded
Undisturbed	ST Thin walled Shelby tube	C Consolidation	Swedish cone (Cu) ∇ intact
Lost	PS Piston sampler	D Unit weight (kN/m ³)	(Cur) \blacktriangledown remoulded
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	52.81		GROUND SURFACE								
	0.00		Topsoil.								
	52.66		Loose brown sand, some silt to silty, some gravel.		SS-1		85	9			
	0.15										
	52.20		Poor to fair quality red mudstone, layers of grey mudstone, thin layer of light grey calcareous siltstone. Beddings at 40-70° from borehole axis.		SS-2		0	30/3cm			
	0.61										
1					DC-3		85	54			
2											
3					DC-4		100	56			
4											
5					DC-5		100	43			
5	48.06		END OF BOREHOLE								
	4.75										
6											
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec BOREHOLE : **BH-401-05**
 SITE : West Option Site PAGE : 1 OF 2
 FILE NO : T-1050-B (603333-KELL) CASING : NW
 BORING DATE : 2005-04-12 TO 2005-04-13 CORE BARREL : -----
 DATUM : Geodetic COORDINATES : 5186551.27 N 261610.76 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times ----- \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD	50
	76.58		GROUND SURFACE									
	0.00	0.00	Topsoil.									
	76.38	0.20	Compact to dense brown sand, some silt to silty, some gravel, cobbles, occasional boulders.		SS-1		71	3				
1					SS-2		62	45				
2					SS-3		62	37				
	74.14	2.44			Dense to very dense reddish grey sandy gravel, cobbles and boulders.							
3					SS-4		89	50/8cm				
					DC-5		43	---				
4					SS-6		74	82/28cm				
					DC-7		91	---				
					SS-8		89	50/8cm				
					DC-9		67	---				
5	72.01	4.57			Dense to very dense reddish grey sand, some silt and gravel, occasional cobbles and boulders.							
					SS-10		62	54				
6			SS-11		75	38						
			SS-12		62	34						
7												
8			SS-13		8	29						
			DC-14		17	---						
9												
			SS-15		0	25/0cm						
			DC-16		100	---						
10												
			SS-17		42	31						
			DC-18		33	---						
11	65.91	10.67	Compact reddish grey silty sand, occasional gravel.									
			SS-19		67	---						

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BORING LOG

PROJECT : Rabaska Project (Phase 2), Levis, Quebec **BOREHOLE :** BH-401-05
SITE : West Option Site **PAGE :** 2 OF 2
FILE NO : T-1050-B (603333-KELL) **CASING :** NW
BORING DATE : 2005-04-12 TO 2005-04-13 **CORE BARREL :** -----
DATUM : Geodetic **COORDINATES :** 5186551.27 N 261610.76 E

SAMPLE CONDITION	TYPE OF SAMPLER	LABORATORY AND IN SITU TEST	Field Vane
Remoulded Undisturbed Lost Rock core	SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	(Su) intact (Sur) remoulded (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test -----x

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
			Compact reddish grey silty sand, occasional gravel.								
13					SS-20		46	25			
14					SS-21		58	15			
15					SS-22		38	15			
16	60.73	15.85	END OF SAMPLING and start of DYNAMIC PENETRATION TEST								
17			Probably: Compact sand.								
18	59.08	17.50	Probably: Dense to very dense sand with gravel, occasional cobbles.								
19											
20	56.46	20.12	END OF DYNAMIC PENETRATION TEST								
21											
22											
23											

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-001-04*
SITE : West Option Site **PAGE :** 1 OF 1
FILE NO : T-1050-A (603333-RABA) **CASING :** -----
BORING DATE : 2004-09-29 TO 2004-09-29 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186743.66 N 261454.50 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test ×-----×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	78.14		GROUND SURFACE								
	0.00		Topsoil.		SS-1		83	50/15cm			
	78.04		Brown sand, some silt and gravel.		DC-2		100	0			
	0.10		Bedrock: Poor quality grey clayey limestone with 20-25% undulated shale layers (1 to 10mm thick) at 60° from borehole axis.		DC-3		96	0			
	77.91										
	0.23		Good to excellent quality grey mudstone with 20-25% undulated black shale layers (1 to 10mm thick) at 60° from borehole axis.		DC-4		100	82			
1	76.77										
	1.37										
2											
					DC-5		98	91			
3											
4											
5					DC-6		100	100			
6											
6	72.02		END OF BOREHOLE								
	6.12										
7											
8											
9											
10											
11											

Water level at elev. 75.64m on 2004-10-06

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-002-04*
SITE : West Option Site **PAGE :** 1 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-22 TO 2004-09-23 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186907.61 N 261713.80 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane (Su) ◇ intact	
	Remoulded	SS	Split spoon	GS	Grain size analysis			(Sur) ◆ remoulded	
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation			Swedish cone (Cu) ▽ intact	
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)			(Cur) ▼ remoulded	
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)			Dyn. Cone Pen. Test × - - - - - ×	

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)			LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD	W _P	W		W _L	50	100
												UNDRAINED SHEAR STRENGTH (kPa)		
	76.40		GROUND SURFACE											
	0.00		Topsoil.											
	76.25	0.15	Loose to compact brown sand, some silt to silty sand, some gravel.	SS-1		33	6							
1				SS-2		42	14							
	75.00		Dark brown gravel and sand, some silt.	SS-3		79	34	⊙						
	74.57		Bedrock: Very poor quality dark grey mudstone.	SS-4		81	90/25cm							
2	1.40			DC-5		75	0							
	74.57	1.83		DC-6		100	33							
			Poor quality dark grey mudstone, slightly calcareous, layers at 40° from borehole axis, readily cleavable, presence of pyrite.	DC-7		100	53							
3	73.50			DC-8		100	32							
	2.90			DC-9		100	32							
				DC-10		100	80							
4				DC-11		100	75							
	71.04		Good to excellent quality dark grey mudstone, slightly calcareous, layers at 40° from borehole axis, readily cleavable, presence of pyrite.	DC-12		100	100							
	5.36			DC-13		67	28							
5				DC-14		100	97							
				DC-15		83	0							
6				DC-16		100	100							

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D = 26.5



BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-002-04*
SITE : West Option Site **PAGE :** 2 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-22 TO 2004-09-23 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186907.61 N 261713.80 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane			
	Remoulded	SS	Split spoon	GS	Grain size analysis	(Su)	◇	intact			
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation	(Sur)	◆	remoulded			
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)	(Cu)	▽	intact			
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)	(Cur)	▼	remoulded			
						Dyn. Cone Pen. Test × - - - - - ×					
DEPTH - m	STRATIGRAPHY			SAMPLES				LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION	RECOVERY %		N or RQD	WATER CONTENT and LIMITS (%)	50
								w_p w w_L 20 40 60 80			
13		Excellent quality dark grey mudstone, slightly calcareous, layers at 40° from borehole axis, readily cleavable, presence of pyrite.			DC-17		100	87			
14					DC-18		100	100			
15	61.01 15.39	END OF BOREHOLE									
16											
17											
18											
19											
20											
21											
22											
23											

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont BOREHOLE : **W-003-04**
 SITE : West Option Site PAGE : 1 OF 2
 FILE NO : T-1050-A (603333-RABA) CASING : NW
 BORING DATE : 2004-09-30 TO 2004-09-30 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187142.54 N 262011.73 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane		
	Remoulded	SS	Split spoon	GS	Grain size analysis			(Su)	◇ intact	
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation			(Sur)	◆ remoulded	
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)			(Cu)	▽ intact	
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)			(Cur)	▼ remoulded	
								Dyn. Cone Pen. Test		× - - - - - ×

DEPTH - m	STRATIGRAPHY		SYMBOL	WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)			LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m			DESCRIPTION	TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD	W _P		W	W _L	50
	77.53													
	0.00													
	77.43													
	0.10													
	76.92													
	0.61													
1														
	75.70													
2	1.83													
	73.83													
4	3.70													
	73.14													
	4.39													
5														
	71.89													
6	5.64													
	71.10													
	6.43													
7														
8														
9														
10														
	66.94													
	10.59													
11														

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-003-04*
SITE : West Option Site **PAGE :** 2 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-30 TO 2004-09-30 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187142.54 N 262011.73 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane				
	Remoulded	SS	Split spoon	GS	Grain size analysis	(Su)	◇	intact				
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation	(Sur)	◆	remoulded				
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)	(Cu)	▽	intact				
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)	(Cur)	▼	remoulded				
						Dyn. Cone Pen. Test × - - - - - ×						
DEPTH - m	STRATIGRAPHY			SAMPLES				LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)			
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION		RECOVERY %	N of RQD	WATER CONTENT and LIMITS (%)	50
										w_p w w_L 20 40 60 80	UNDRAINED SHEAR STRENGTH (kPa) 50 100	
13	64.70 12.83		Good to excellent quality grey mudstone, slightly calcareous, layers of light grey mudstone (1 to 10mm thick) at 45° from borehole axis, trace of pyrite locally. Good to excellent quality red mudstone with layers of grey mudstone and black shale, trace of pyrite.			DC-14	100	85				
14						DC-15	100	88				
15	62.22 15.32		END OF BOREHOLE									
16												
17												
18												
19												
20												
21												
22												
23												

D = 26.6
CP=99.4



BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont BOREHOLE : **W-004-04**
 SITE : West Option Site PAGE : 1 OF 2
 FILE NO : T-1050-A (603333-RABA) CASING : HW
 BORING DATE : 2004-09-24 TO 2004-09-28 CORE BARREL : HQ3
 DATUM : Geodetic COORDINATES : 5186686.10 N 261925.54 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
	DEPTH - m											
	75.15	GROUND SURFACE										
	0.00	Fill: Compact brown sand, some silt and gravel.			SS-1		58	16				
1	74.24	Compact brown and reddish sand, some silt and gravel.			SS-2		46	12				
	0.91											
2	73.35	Dense to very dense brown and reddish sand, some silt and gravel to silt and sand with trace of gravel and trace of clay, occasional cobbles and boulders.			DC-3		95	---				
	1.80				DC-4		58	---				
3					SS-5		91	50/13cm				
4					DC-6		83	---				
5					DC-7		69	---				
6					DC-8		78	---				
7					SS-9		67	33	\odot	GS		
8					SS-10		54	33				
9					SS-11		85	50/3cm				
10					DC-12		39	---				
11	63.90	Bedrock: Succession of layers of fair quality red and grey mudstone at 50° from borehole axis.			SS-13		79	71/23cm				
	11.25				DC-14		100	85				

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-004-04*
SITE : West Option Site **PAGE :** 2 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** HW
BORING DATE : 2004-09-24 TO 2004-09-28 **CORE BARREL :** HQ3
DATUM : Geodetic **COORDINATES :** 5186686.10 N 261925.54 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m ³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%) W _P W W _L 20 40 60 80	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50	100
	DEPTH - m										UNDRAINED SHEAR STRENGTH (kPa)	
13		Succession of layers of fair quality red and grey mudstone at 50° from borehole axis.			DC-15		100	33				
14					DC-16		98	71				
15					DC-17		100	82				
15.68	59.68											
16	15.47	Succession of layers of good to excellent quality red and grey mudstone at 50° from borehole axis.			DC-18		100	85				
17					DC-19		100	100				
18					DC-20		100	92				
19					DC-21		100	95				
20					DC-22		100	100				
21												
22												
23	52.29	END OF BOREHOLE										
	22.86											

D = 26.3
CP=22.0

D = 27.2
CP=19.5

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BORING LOG

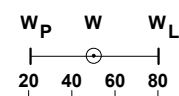
PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-005-04*
SITE : West Option Site **PAGE :** 1 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-29 TO 2004-09-29 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186934.47 N 262210.95 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test
--	---	---	---

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
	77.55		GROUND SURFACE									
	0.00	77.25	Fill: Loose grey sand, gravel and silt.									
	0.30		Peat.									
1	76.33	1.22	Loose brown and reddish silty and gravelly sand.									
2	75.26	2.29	Bedrock: Succession of layers of very poor quality red and grey mudstone with thin layers of black clayey shale at 40° from borehole axis.									
3	73.21	4.34		Succession of layers of poor quality red and grey mudstone with thin layers of black clayey shale at 40° from borehole axis.								
5	72.27	5.28	Succession of layers of fair quality red and grey mudstone with thin layers of black clayey shale at 40° from borehole axis.									
6												
7												
8												
9												
10												
11												

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Water level at elev. 76.25m on 2004-10-06



GS
 Pyrite detection
 D = 26.4
 CP=6.5



BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-005-04*
SITE : West Option Site **PAGE :** 2 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-29 TO 2004-09-29 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186934.47 N 262210.95 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
			Succession of layers of good quality red and grey mudstone with thin layers of black clayey shale at 40° from borehole axis.								
					DC-13		97	85			
					DC-14		100	91			
	62.54 15.01		END OF BOREHOLE								
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-006-04*
SITE : West Option Site **PAGE :** 1 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-28 TO 2004-09-29 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186372.84 N 261810.50 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %			N or RQD	50	100
									W _p W W _L			50	100
	79.84		GROUND SURFACE										
	0.00		Topsoil.										
	79.69	0.15	Loose brown sand, some silt (to silty), occasional gravel.		SS-1		75	9					
1	79.00	0.84	Bedrock: Succession of very poor quality grey mudstone with subordinate layers of black, red and light grey, slightly calcareous mudstone. Beddings at 45° to 50° from borehole axis. Calcite veinlets.		SS-2		80	50/13cm					
2					DC-3		98	0					
3					DC-4		100	15					
4					DC-5		100	18					
5	74.81	5.03	Succession of poor quality grey mudstone with subordinate layers of black, red and light grey, slightly calcareous mudstone. Beddings at 45° to 50° from borehole axis. Calcite veinlets.		DC-6		100	0					
6					DC-7		100	27					
7	73.59	6.25	Succession of good quality grey mudstone with subordinate layers of black and red mudstone. All layers at 45° to 50° from borehole axis.		DC-8		100	100					
8					DC-9		100	92					
9					DC-10		100	88					
10					DC-11		100	100					
11													

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-006-04*
SITE : West Option Site **PAGE :** 2 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-28 TO 2004-09-29 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186372.84 N 261810.50 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)			
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD	50	100
13	67.44 12.40		Succession of poor quality slightly calcareous grey mudstone, layers of red and black mudstone at 45° to 50° from borehole axis. Calcite veinlets.			DC-12	100	33					
14	65.92 13.92		END OF BOREHOLE										
15													
16													
17													
18													
19													
20													
21													
22													
23													

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-008-04*
SITE : West Option Site **PAGE :** 1 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-23 TO 2004-09-23 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186310.70 N 262288.52 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
	78.60		GROUND SURFACE									
	0.00	78.45	Topsoil.									
		0.15	Loose to compact brown sand, some silt (to silty), some gravel.		SS-1		58	7				
1		77.38	Bedrock: Succession of very poor quality grey mudstone and slightly calcareous mudstone, layers at 30° to 35° from borehole axis, cleavable locally.		SS-2		61	22				
		1.22										
2			Succession of very poor quality grey mudstone and slightly calcareous mudstone, layers at 30° to 35° from borehole axis, cleavable locally.		DC-3		49	0				
3		75.40			DC-4		100	0				
		3.20			DC-5		100	20				
4			Succession of poor quality grey mudstone and slightly calcareous mudstone, layers at 30° to 35° from borehole axis, cleavable locally.		DC-6		100	0				
5		73.88			DC-7		100	53				
		4.72			DC-8		100	78				
6			Succession of very poor quality grey mudstone and slightly calcareous mudstone, layers at 30° to 35° from borehole axis, cleavable locally.		DC-9		100	61				
7					DC-10		100	73				
8		68.92			DC-11		100	0				
9		9.68	Succession of fair quality grey mudstone and slightly calcareous mudstone, layers at 30° to 35° from borehole axis, cleavable locally.		DC-12		94	41				
10		68.26			DC-13		100	62				
		10.34										

D = 26.4
CP=5.9

Water level at elev. 75.86m on 2004-10-06

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BORING LOG

PROJECT : Rabaska Project (Phase 1), Levis / Beaumont **BOREHOLE :** *W-008-04*
SITE : West Option Site **PAGE :** 2 OF 2
FILE NO : T-1050-A (603333-RABA) **CASING :** NW
BORING DATE : 2004-09-23 TO 2004-09-23 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186310.70 N 262288.52 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		SYMBOL	TYPE AND NUMBER	CONDITION			RECOVERY %	N or RQD
13	65.09	13.51	Succession of fair quality grey mudstone and slightly calcareous mudstone, layers at 30° to 35° from borehole axis, cleavable locally.		DC-14	92	65		D = 26.6 CP=15.9		
14			Succession of good quality grey mudstone and slightly calcareous mudstone, layers at 30° to 35° from borehole axis, cleavable locally.		DC-15	100	90				
15	63.54	15.06	END OF BOREHOLE								
16											
17											
18											
19											
20											
21											
22											
23											

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec BOREHOLE : **BH-501-05**
 SITE : Levis, Quebec PAGE : 1 OF 2
 FILE NO : T-1050-C (604238) CASING : PW, HW
 BORING DATE : 2005-09-30 TO 2005-10-04 CORE BARREL : PQ
 DATUM : Geodetic COORDINATES : 5186611.14 N 261760.12 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY		SYMBOL	WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m			DESCRIPTION	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD	W _P
	76.09		GROUND SURFACE									
	0.00		Topsoil.									
	75.94	0.15	Loose to compact brown silty sand, some gravel, occasional cobbles and boulders, shells. Becoming grey at 0.6m and then reddish at 0.9m.		SS-1		79	6				
1					SS-2		67	29				
	74.57	1.52	Compact reddish silt and sand, some clay, trace of gravel.		SS-3		83	17				
2					SS-4		79	24	⊙	GS		
	73.09	3.00	Compact grey silt and sand, trace of gravel and clay.		SS-5		67	24				
3					SS-6		67	20				
4					SS-7		83	22	⊙	GS		
5					SS-8		92	21				
6	69.99	6.10	Dense to very dense reddish silt and sand, trace of gravel and clay.		SS-9		62	47				
7					SS-10		75	46	⊙	GS		
8	68.47	7.62	Very dense grey silt and sand, trace of gravel and clay.		SS-11		72	136				
9					SS-12		83	65/15cm				
10					DC-13		100	---				
11					DC-14		27	---				

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-501-05*
SITE : Levis, Quebec **PAGE :** 2 OF 2
FILE NO : T-1050-C (604238) **CASING :** PW, HW
BORING DATE : 2005-09-30 TO 2005-10-04 **CORE BARREL :** PQ
DATUM : Geodetic **COORDINATES :** 5186611.14 N 261760.12 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) \diamond intact (Sur) \blacklozenge remoulded Swedish cone (Cu) ∇ intact (Cur) \blacktriangledown remoulded Dyn. Cone Pen. Test \times - - - - - \times
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)			LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD	W _P	W	W _L		50	100
			INCLINATION ANGLE: 90° AZIMUTH: 0°											
13	62.89		Very dense grey silt and sand, trace of gravel and clay.		DC-15		72	---						
13.21			Bedrock: Layers of very poor to fair quality grey limestone, 40% of dark shale layers (1-9mm thick). Bedding at 30-40° from borehole axis.		DC-15A		100	0						
14					DC-16		88	48						
15					DC-17		100	74						
16					DC-18		100	66						
17					DC-19		100	32						
18					DC-20		70	27						
19					DC-21		100	18						
20	56.26	19.84	END OF BOREHOLE											
21			NOTE: Upon completion, the borehole was provided with a bottom capped 63.5mm diameter PVC tube grouted in place with cement bentonite, to allow down-hole seismicity tests.											
22														
23														

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** BH-502-05
SITE : Levis, Quebec **PAGE :** 1 OF 2
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-09-28 TO 2005-09-29 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186576.98 N 261829.00 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test - - - - - x
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DEPTH - m	STRATIGRAPHY		SYMBOL	WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m			DESCRIPTION	TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
	75.75		GROUND SURFACE									
	0.00		Topsoil.									
	75.60		Compact to dense brown reddish silty sand, some gravel and clay, occasional cobbles and boulders.									
	0.15											
1												
2												
3												
4												
5	70.59			Bedrock: Layers of fair to good quality grey siltstone, 15% of red mudstone, 10% of dark shale, some calcareous millimetric beds. Bedding at 30-45° from borehole axis. Top of rock severely fractured on a meter length.								
	5.16											
6												
7												
8												
9												
10												
11												

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-502-05*
SITE : Levis, Quebec **PAGE :** 2 OF 2
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-09-28 TO 2005-09-29 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186576.98 N 261829.00 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	INCLINATION ANGLE: 90°	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
		AZIMUTH: 0°						W _P W W _L 			
13			Layers of fair to good quality grey siltstone, 15% of red mudstone, 10% of dark shale, some calcareous millimetric beds. Bedding at 30-45° from borehole axis.		DC-16		100	74			
14					DC-17		100	79			
15	60.91 14.84		END OF BOREHOLE		DC-18		100	83			
16											
17											
18											
19											
20											
21											
22											
23											

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-503-05*
SITE : Levis, Quebec **PAGE :** 1 OF 3
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-09-30 TO 2005-10-06 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186711.11 N 261741.31 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane		
	Remoulded	SS	Split spoon	GS	Grain size analysis			(Su)	◇ intact	
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation			(Sur)	◆ remoulded	
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)			(Cu)	▽ intact	
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)			(Cur)	▼ remoulded	
									Dyn. Cone Pen. Test	× - - - - - ×

DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
	75.33		GROUND SURFACE								
	0.00	75.17	Topsoil.								
		0.15	Compact brown silty sand, some gravel, occasional cobbles, shells. Becoming grey at 0.5m.		SS-1		62	13			
1					SS-2		42	30			
	73.81		Compact grey gravelly and sandy silt, trace of clay, occasional cobbles.		SS-3		0	40			
2		1.52			SS-4		79	21			
					SS-5		58	74			
	71.52		Dense to very dense (locally compact) reddish sand, some silt to silty, some gravel, occasional cobbles and boulders.		DC-6		67	---			
4		3.81			SS-7		50	60			
					SS-8		71	52			
					DC-9		84	---			
					SS-10		33	54			
					SS-11		62	34			
					SS-12		50	31			
					DC-13		24	---			
					SS-14		0	30/0cm			
					DC-15		43	---			
					DC-16		84	---			
					SS-17		50	67			
					DC-18		42	---			
					SS-19		46	13			

NOTE ON WATER LEVEL:
Water level at 75.72m (artesian) on 2005-10-14.

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-503-05*
SITE : Levis, Quebec **PAGE :** 2 OF 3
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-09-30 TO 2005-10-06 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186711.11 N 261741.31 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x
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DEPTH - m	STRATIGRAPHY		SYMBOL	WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m			INCLINATION ANGLE: 90°	DESCRIPTION	TYPE AND NUMBER			CONDITION	RECOVERY %	N of RQD
		AZIMUTH: 0°						W _P W W _L 		UNDRAINED SHEAR STRENGTH (kPa)		
										50	100	
			Dense to very dense (locally compact) reddish sand, some silt to silty, some gravel, occasional cobbles and boulders.		SS-20		42	35				
13					DC-21		19	---				
14					SS-22		38	47				
15					SS-23		67	73				
16					SS-24		58	30				
17					DC-25		23	---				
18					SS-26		71	42				
19					DC-27		36	---				
20					SS-28		54	26				
21					SS-29		56	82				
22					SS-30		100	86/5cm				
23					DC-31		24	---				
					DC-32		43	---				

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-503-05*
SITE : Levis, Quebec **PAGE :** 3 **OF** 3
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-09-30 **TO** 2005-10-06 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5186711.11 N 261741.31 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
			INCLINATION ANGLE: 90° AZIMUTH: 0°					W _P W W _L 			
	51.33										
	24.00		Bedrock: Layers of fair to excellent quality grey mudstone, 10% of grey limestone and 5% of dark shale. Bedding generally at 35-45° from borehole axis, except between 24.7m and 25m where a fold pattern was observed.								
25				SS-33		0	20/0cm				
				DC-34		100	85				
26				DC-35		100	69				
27	48.20		DC-36		100	100					
	27.13		END OF BOREHOLE								
28											
29											
30											
31											
32											
33											
34											
35											

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec BOREHOLE : **BH-504-05**
 SITE : Levis, Quebec PAGE : 1 OF 1
 FILE NO : T-1050-C (604238) CASING : NW
 BORING DATE : 2005-10-06 TO 2005-10-07 CORE BARREL : NQ
 DATUM : Geodetic COORDINATES : 5186591.03 N 261551.93 E

SAMPLE CONDITION		TYPE OF SAMPLER		LABORATORY AND IN SITU TEST				Field Vane (Su) ◇ intact			
	Remoulded	SS	Split spoon	GS	Grain size analysis			(Sur) ◆ remoulded			
	Undisturbed	ST	Thin walled Shelby tube	C	Consolidation			Swedish cone (Cu) ▽ intact			
	Lost	PS	Piston sampler	D	Unit weight (kN/m³)			(Cur) ▼ remoulded			
	Rock core	DC	Diamond core barrel	CP	Compressive strength (MPa)			Dyn. Cone Pen. Test × - - - - - x			
DEPTH - m	STRATIGRAPHY			SAMPLES				LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	DEPTH - m	DESCRIPTION	SYMBOL	WATER LEVEL - m	TYPE AND NUMBER	CONDITION		RECOVERY %	N of RQD	WATER CONTENT and LIMITS (%)
			INCLINATION ANGLE: 90° AZIMUTH: 0°							W _P W W _L	50 100
										20 40 60 80	50 100
	75.92		GROUND SURFACE								
	0.00		Topsoil.								
	75.61										
	0.30		Loose reddish clayey silt, some sand, trace of gravel.			SS-1	⊗	83	5	⊕	
	75.32										
	0.60		Compact reddish silty sand, some gravel, trace of clay, occasional cobbles and boulders.			SS-2	⊗	54	21		
1											
	74.40		Compact reddish silty sand, some gravel.			SS-3	⊗	67	24		
2											
	1.52					SS-4	⊗	42	34	⊕	
3			Dense to very dense reddish silty sand, some gravel, cobbles and boulders.			SS-5	⊗	33	86		
	73.72					DC-6	⊗	71	---		
	2.20					SS-7	⊗	45	50/13cm		
4						DC-8	⊗	68	---		
						DC-9	⊗	100	---		
5						SS-10	⊗	63	67/25cm		
						DC-11	⊗	100	---		
6						SS-12	⊗	83	68		
						SS-13	⊗	87	119/25cm		
	69.39										
	6.53		END OF BOREHOLE								
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-505-05*
SITE : Levis, Quebec **PAGE :** 1 OF 1
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-10-06 TO 2005-10-06 **CORE BARREL :** NQ
DATUM : Geodetic **COORDINATES :** 5186485.00 N 261656.02 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	50
			INCLINATION ANGLE: 90° AZIMUTH: 0°					w_p w w_L 			
	77.44		GROUND SURFACE								
	0.00	77.28	Topsoil.								
	0.15		Compact brown sand and gravel, some silt, cobbles and boulders.		SS-1		50	20			
	76.64	0.80	Bedrock: Very severely fractured and weathered rock.		DC-2		100	---			
1					SS-3		0	20/0cm			
					DC-4		47	---			
	75.91	1.52	Layers of poor to good quality grey siltstone, 25% beds of dark shale. Bedding at 30-40° from borehole axis.		DC-5		100	27			
2					DC-6		100	40			
3					DC-7		100	84			
4					DC-8		100	62			
5	72.71	4.72	END OF BOREHOLE								
6											
7											
8											
9											
10											
11											

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-506-05*
SITE : Levis, Quebec **PAGE :** 1 OF 1
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-10-07 TO 2005-10-11 **CORE BARREL :** NQ
DATUM : Geodetic **COORDINATES :** 5186491.04 N 261437.02 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test x - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES				WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %	N of RQD			W _p	W
	76.77		GROUND SURFACE									
	0.00	76.46	Topsoil.									
1	0.30		Compact grey and reddish sand, some silt and gravel. Presence of roots on top of the layer.		SS-1		58	6				
	75.55	1.22	Generally dense (locally compact) reddish silty sand, trace of gravel to gravelly, occasional cobbles and boulders.		SS-2		62	24				
2					SS-3		67	36	⊙			
					SS-4		61	44				
3					DC-5		38	---				
					SS-6		0	20/0cm				
					DC-7		27	---				
4					SS-8		46	32	⊙			
5					SS-9		0	22				
					SS-10		42	29				
6					SS-11		39	75				
	70.21	6.55	END OF BOREHOLE									
7												
8												
9												
10												
11												

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec BOREHOLE : **BH-507-05**
 SITE : Levis, Quebec PAGE : 1 OF 4
 FILE NO : T-1050-C (604238) CASING : NW
 BORING DATE : 2005-10-10 TO 2005-10-14 CORE BARREL : NQ3
 DATUM : Geodetic COORDINATES : 5187907.70 N 261438.50 E

Remoulded	SS Split spoon	GS Grain size analysis	Field Vane (Su) \diamond intact
Undisturbed	ST Thin walled Shelby tube	C Consolidation	(Sur) \blacklozenge remoulded
Lost	PS Piston sampler	D Unit weight (kN/m ³)	Swedish cone (Cu) ∇ intact
Rock core	DC Diamond core barrel	CP Compressive strength (MPa)	(Cur) \blacktriangledown remoulded
			Dyn. Cone Pen. Test \times - - - - - \times

DEPTH - m	STRATIGRAPHY		SYMBOL	WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)	
	ELEVATION - m	DEPTH - m			DESCRIPTION	TYPE AND NUMBER	CONDITION			RECOVERY %	N of RQD
	54.17										
	0.00										
	54.02										
	0.15										
	53.26										
1	0.91				SS-1		83	8			
	52.90				SS-2		82	50/13cm			
	1.27				DC-3		26	0			
2					DC-4		55	34			
3					DC-5		100	100			
4					DC-6		100	81			
5					DC-7		100	94			
6					DC-8		100	66			
7					DC-9		100	55			
8					DC-10		100	58			
9					DC-11		100	55			
10					DC-12		100	90			
11									CP=12.2		
									CP=45.1		
									CP=14.3		

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-507-05*
SITE : Levis, Quebec **PAGE :** 2 **OF** 4
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-10-10 **TO** 2005-10-14 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187907.70 N 261438.50 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test - - - - - x
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)			
	ELEVATION - m	DEPTH - m	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	W _P	W	W _L
	41.98	12.19	Layers of fair quality grey siltstone. 20% of greenish grey mudstone beds (1-30mm thick), 10% of red mudstone and siltstone beds (1-20mm thick), trace of calcite veinlets. Bedding at 30° from borehole axis.										
13				DC-13	100	65							
	40.17	14.00	Layers of good quality red mudstone and siltstone, 10-40% of greenish grey mudstone beds, trace of dark shale. Presence of slickenside. Bedding at 30-40° from borehole axis.										
14				DC-14	100	87							
15				DC-15	100	77							
16				DC-16	100	91							
17				DC-17	93	71							
	33.92	20.25	Layers of generally poor to good quality greenish grey mudstone, 20% of grey siltstone beds (1-100mm thick), 5% of red mudstone and siltstone beds (1-30mm thick), trace of millimetric dark shale beds, and of calcite veinlet. Bedding at 10-60° from borehole axis.										
18				DC-18	90	77							
19				DC-19	76	44							
20				DC-20	100	97							
21				DC-21	100	68							
22			DC-22	100	100								

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BORING LOG

PROJECT : Rabaska Project (Phase 3), Levis, Quebec **BOREHOLE :** *BH-507-05*
SITE : Levis, Quebec **PAGE :** 4 OF 4
FILE NO : T-1050-C (604238) **CASING :** NW
BORING DATE : 2005-10-10 TO 2005-10-14 **CORE BARREL :** NQ3
DATUM : Geodetic **COORDINATES :** 5187907.70 N 261438.50 E

SAMPLE CONDITION Remoulded Undisturbed Lost Rock core	TYPE OF SAMPLER SS Split spoon ST Thin walled Shelby tube PS Piston sampler DC Diamond core barrel	LABORATORY AND IN SITU TEST GS Grain size analysis C Consolidation D Unit weight (kN/m³) CP Compressive strength (MPa)	Field Vane (Su) intact (Sur) remoulded Swedish cone (Cu) intact (Cur) remoulded Dyn. Cone Pen. Test × - - - - - ×
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DEPTH - m	STRATIGRAPHY			WATER LEVEL - m	SAMPLES			WATER CONTENT and LIMITS (%)	LABORATORY and IN SITU TESTS	DYN. CONE PEN. TEST (blows/0.3m)		
	ELEVATION - m	INCLINATION ANGLE: 90°	DESCRIPTION		TYPE AND NUMBER	CONDITION	RECOVERY %			N of RQD	W _P	W
		AZIMUTH: 0°										
37			Layers of generally poor to good quality greenish grey mudstone, 20% of grey siltstone beds (1-100mm thick), 5% of red mudstone and siltstone beds (1-30mm thick), trace of millimetric dark shale beds, and of calcite veinlet. Bedding at 10-60° from borehole axis.		DC-34		98	76				
					DC-35		98	88				
					DC-36		100	100				
15.57					DC-37		100	68				
38.60			Alternation of fair to good quality red and grey mudstone and siltstone. Bedding at 30° from borehole axis.		DC-38		100	72				
					DC-39		100	88				
13.15			END OF BOREHOLE									
41.02												
42												
43												
44												
45												
46												
47												



PROJECT: Rabaska Project (Phase 3), Levis, Quebec

SITE: Levis, Quebec

LOCATION:

DATUM: Geodetic

SURFACE ELEVATION: 75.3 m

COORDINATES:
NORTH: 5186711.1 **EAST:** 261741.3

TEST PIT DIMENSIONS: 2.5 m x 1.5 m

PHOTO NUMBER:

DESCRIPTION OF PHOTOGRAPH:

DEPTH (m)	ELEV. (m)	DEPTH (m)	DESCRIPTION	SYMBOL	WATER	BS SAMPLE	CBR SAMPLE	LABORATORY TESTS	LEGEND
	75.3		GROUND SURFACE						
	0.0	75.2	Topsoil.						LABORATORY TESTS w: Water content (%) GS: Grain size analysis D: Unit weight (kN/m ³) P: Modified Proctor test wOPT: Optimal water content (%) Dmax: Max. Dry unit weight (kN/m ³) wL: Liquid limit (%) wP: Plastic limit (%) CBR: C.B.R. test
1	0.1		Brown gravelly sand, trace of silt, 20% of cobbles and blouders (max. dia. 45cm), shells. Presence of oxidation. Becoming grey at 0.7m depth.			1	A	GS w = 12.9 P, Wopt = 8.4, Dmax = 20.6 CBR	
	74.0	1.3	Grey gravelly and sandy silt, trace of clay, occasional cobbles.			2			
	73.6	1.7	END OF TEST PIT			3	4		
2									TYPE AND CONDITION OF SAMPLE Remoulded Intact BS Bulk sample CBR C.B.R. sample
3									

V:\Geotec\4\S\el\ T-1050-C-TP.sly Plotted: 2006-22-13:01hrs

WATER LEVEL: 1.30m (depth) **DATE:** 2005-10-14

CONDITIONS: Slight water inflow at 1.3m.

STATE OF TERRAIN: **SURFACE SOIL:**

TOPOGRAPHY: **DENSITY OF WOODS:** Scattered

SLOPE: **VEGETATION:** White pines

STABILITY OF SIDES: Stable

EQUIPMENT USED: Caterpillar 430 backhoe

REMARKS:

DESCRIBED BY: H. Chouinard, Sr. Tech. **DATE:** 2005-10-14 **APPROVED BY :** R. Bousquet, M.A.Sc., Eng.



PROJECT: Rabaska Project (Phase 3), Levis, Quebec

SITE: Levis, Quebec

LOCATION:

DATUM: Geodetic

SURFACE ELEVATION: 75.9 m

COORDINATES:
NORTH: 5186591.0 **EAST:** 261551.9

TEST PIT DIMENSIONS: 2.5 m x 1.5 m

PHOTO NUMBER:

DESCRIPTION OF PHOTOGRAPH:

DEPTH (m)	ELEV. (m)	DEPTH (m)	DESCRIPTION	SYMBOL	WATER	BS SAMPLE	CBR SAMPLE	LABORATORY TESTS	LEGEND
	75.9		GROUND SURFACE						
	0.0		Topsoil.						LABORATORY TESTS w: Water content (%) GS: Grain size analysis D: Unit weight (kN/m ²) P: Modified Proctor test wOPT: Optimal water content (%) Dmax: Max. Dry unit weight (kN/m ³) wL: Liquid limit (%) wP: Plastic limit (%) CBR: C.B.R. test
	75.6	0.3	Reddish clayey silt, some sand, trace of gravel.					w = 18.1 , wL = 31.6 , wP = 17.3	
1	75.3	0.6	Reddish silty sand, some gravel, trace of clay, 30% of cobbles and boulders (max. dia. 60cm).					GS w = 10.1 , wL = 17.7 , wP = 12.5 P , Wopt =7.8 , Dmax =21.5 CBR	
								A	
	74.3	1.6	END OF TEST PIT						
2									TYPE AND CONDITION OF SAMPLE Remoulded Intact BS Bulk sample CBR C.B.R. sample
3									

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WATER LEVEL: m (depth) **DATE:**

CONDITIONS:

STATE OF TERRAIN: **SURFACE SOIL:**

TOPOGRAPHY: **DENSITY OF WOODS:** S

SLOPE: **VEGETATION:** White pines

STABILITY OF SIDES: Stable

EQUIPMENT USED: Caterpillar 430 backhoe

REMARKS:



PROJECT: Rabaska Project (Phase 3), Levis, Quebec

SITE: Levis, Quebec

LOCATION:

DATUM: Geodetic

SURFACE ELEVATION: 77.4 m

COORDINATES:
NORTH: 5186485.0 **EAST:** 261656.0

TEST PIT DIMENSIONS: 2.5 m x 1.3 m

PHOTO NUMBER: TP-505-05.BMP

DESCRIPTION OF PHOTOGRAPH:



DEPTH (m)	ELEV. (m)	DEPTH (m)	DESCRIPTION	SYMBOL	WATER	BS SAMPLE	CBR SAMPLE	LABORATORY TESTS	LEGEND
	77.4		GROUND SURFACE						
	0.0		Topsoil.						LABORATORY TESTS w: Water content (%) GS: Grain size analysis D: Unit weight (kN/m ³) P: Modified Proctor test wOPT: Optimal water content (%) Dmax: Max. Dry unit weight (kN/m ³) wL: Liquid limit (%) wP: Plastic limit (%) CBR: C.B.R. test
	77.2	0.2	Brown sand and gravel, some silt. Fragments of weathered rock.			1	A	GS w = 11.8 P, Wopt = 8.5, Dmax = 20.4 CBR	
	76.8	0.6	Bedrock: Very severely fractured and weathered rock.			2			
1									
	76.0	1.5	END OF TEST PIT						
2									
3									TYPE AND CONDITION OF SAMPLE Remoulded Intact BS Bulk sample CBR C.B.R. sample

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WATER LEVEL: 1.40m (depth) **DATE:** 2005-10-14

CONDITIONS: Very slight water inflow at 1.4m.

STATE OF TERRAIN: **SURFACE SOIL:**

TOPOGRAPHY: **DENSITY OF WOODS:**

SLOPE: **VEGETATION:**

STABILITY OF SIDES:

EQUIPMENT USED: Caterpillar 430 backhoe

REMARKS:

DESCRIBED BY: H. Chouinard, Sr. Tech. **DATE:** 2005-10-14 **APPROVED BY :** R. Bousquet, M.A.Sc., Eng.