

PROJECT	1413191-11	RECORD OF BOREHOLE No 16-01		SHEET 1 OF 2	METRIC
W.O.	2016-11048	LOCATION	N 4906781.2 ; E 402030.2	ORIGINATED BY	JL
DIST	Eastern HWY 7/115	BOREHOLE TYPE	203 mm O.D. Hollow Stem Augers; Wash Boring; NQ Rock Coring	COMPILED BY	TZ
DATUM	Geodetic	DATE	November 14 to 16, 2016	CHECKED BY	LCC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES		SHEAR STRENGTH kPa									WATER CONTENT (%)
203.8	GROUND SURFACE															
0.0	TOPSOIL															
0.2	SILT and SAND to CLAYEY SILT with SAND, trace to some gravel to gravelly with cobbles (TILL) Compact to very dense / stiff to hard Brown to grey Moist to wet		1	SS	43											
			2	SS	16											
			3	SS	24										12 41 34 13	
			4	SS	15									CHEM		
			5	SS	12										9 43 36 12	
			6	SS	19											
			7	SS	26										18 41 30 11	
	- Auger refusal encountered at a depth of about 5.9 m. HQ casing advanced to a depth of about 6.9 m. Tricone refusal encountered at a depth of about 6.9 m															
196.9	- Recovered limestone rock fragments		1	RC												
7.0																
	- Grey below a depth of about 8.5 m		8	SS	23											
			9	SS	37										21 40 30 9	
			10	SS	56											
	- Limestone rock fragments recovered from split-spoon sample No. 11															
191.2	- Recovered granite rock fragments		11	SS	100/0.03											
12.7			2	RC	-											
190.7	- Recovered granite and limestone rock fragments															
13.1			3	RC	-											
			12	SS	100/0.03											
189.2																
14.6																

DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT		UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL			
SHEAR STRENGTH kPa		WATER CONTENT (%)						
○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × REMOULDED								
20	40	60	80	100	10	20	30	GR SA SI CL
203								
202								12 41 34 13
201								CHEM
200								9 43 36 12
199								18 41 30 11
198								
197								
196								
195								
194								21 40 30 9
193								
192								
191								
190								
189								

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+ 3, × 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

PROJECT		1413191-11		RECORD OF BOREHOLE No 16-01		SHEET 2 OF 2		METRIC																
W.O.		2016-11048		LOCATION		N 4906781.2 ; E 402030.2		ORIGINATED BY																
DIST		Eastern HWY 7/115		BOREHOLE TYPE		203 mm O.D. Hollow Stem Augers; Wash Boring; NQ Rock Coring		COMPILED BY																
DATUM		Geodetic		DATE		November 14 to 16, 2016		CHECKED BY																
								LCC																
SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS			ELEVATION SCALE			DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT			REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES																			
--- CONTINUED FROM PREVIOUS PAGE ---																								
	SILT and SAND to CLAYEY SILT with SAND, trace to some gravel to gravelly with cobbles (TILL) Compact to very dense / stiff to hard Brown to grey Moist to wet		13	SS	104																			
			14	SS	100/0 10																			
184.9																								
18.9	- Recovered limestone and shale rock fragments		4	RC	-																			
183.7																								
20.1	- Recovered limestone rock fragments		5	RC	-																			
183.2																								
20.6	LIMESTONE (BEDROCK) - Bedrock cored between depths of about 20.6 m and 23.6 m - For bedrock coring details refer to Record of Drillhole 16-01		6	RC	REC 99%																			
			7	RC	REC 100%																			
180.2																								
23.6	END OF BOREHOLE																							
NOTES: 1. Auger refusal encountered at a depth of about 2.1 m below ground surface due to inferred cobble/ boulder. Borehole relocated about 1 m east of original borehole location. 2. Water not encountered during drilling within the upper 5.9 m of the borehole (i.e. prior to wash boring / rock coring and introduction of drilling water). 3. Borehole advanced to a depth of about 5.9 m using hollow stem augers followed by wash boring methods using a tricone and HQ casing. At certain intervals of depth, rock coring using a NQ double tube core barrel was utilized to advance the borehole through zones / layers of cobbles and very dense / hard soils with gravel / rock fragments. 4. Soil sample collected from a depth of about 2.6 m below ground surface and submitted for corrosivity testing.																								

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METRIC

PROJECT		RECORD OF BOREHOLE NO 16-02		SHEET 1 OF 2		METRIC	
W.O.	2016-11048	LOCATION	N 4906699.3 ; E 402055.8	ORIGINATED BY		JL	
DIST	Eastern HWY 7/115	BOREHOLE TYPE	203 mm O.D. Continuous Flight Hollow Stem Augers	COMPILED BY		TZ	
DATUM	Geodetic	DATE	November 14, 2016	CHECKED BY		LCC	

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+ 3, × 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

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PROJECT		1413191-11		RECORD OF BOREHOLE No 16-02		SHEET 2 OF 2		METRIC									
W.O.		2016-11048		LOCATION		N 4906699.3 ; E 402055.8		ORIGINATED BY									
DIST		Eastern HWY 7/115		BOREHOLE TYPE		203 mm O.D. Continuous Flight Hollow Stem Augers		COMPILED BY									
DATUM		Geodetic		DATE		November 14, 2016		CHECKED BY									
								LCC									
SOIL PROFILE			SAMPLES			DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT			REMARKS & GRAIN SIZE DISTRIBUTION (%)		
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	20 40 60 80 100	20 40 60 80 100	W _p W W _L	WATER CONTENT (%)	10 20 30	γ	GR SA SI CL			
187.5	SILT and SAND to CLAYEY SILT with SAND, some gravel to gravelly (TILL) Compact to very dense / stiff to hard Moist to wet Brown to grey		14	SS	13		188										
16.3	Sandy GRAVEL, trace silt, trace clay Very dense Wet Grey		15	SS	100/0.13		187										
186.0	SILT and SAND, some gravel, trace clay (TILL) Very dense Wet Grey		16	SS	100/0.10		186										
185.2	AUGER REFUSAL - END OF BOREHOLE		17	SS	*												
18.6	NOTES: * Split-spoon sampling attempted at a depth of about 18.6 m, however the tip of the split-spoon sampler was lost at the bottom of the borehole. 1. Water encountered at a depth of about 6.4 m below ground surface (Elev. 197.2 m) during drilling. 2. Water level measurement in standpipe piezometer: Date Depth(m) Elev.(m) 24/11/16 2.8 201.0																





PROJECT 1413191-11		RECORD OF BOREHOLE No 16-03		SHEET 1 OF 2		METRIC	
W.O. 2016-11048		LOCATION N 4906702.8 ; E 402062.8		ORIGINATED BY		JL/MB	
DIST Eastern HWY 7/115		BOREHOLE TYPE 203 mm O.D. Continuous Flight Hollow Stem Augers; NQ Rock Coring		COMPILED BY		TZ	
DATUM Geodetic		DATE November 17 and 18, 2016		CHECKED BY		LCC	

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+ 3, × 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

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PROJECT 1413191-11		RECORD OF BOREHOLE No 16-03				SHEET 2 OF 2		METRIC									
W.O. 2016-11048		LOCATION N 4906702.8 ; E 402062.8				ORIGINATED BY JL/MB											
DIST Eastern HWY 7/115		BOREHOLE TYPE 203 mm O.D. Continuous Flight Hollow Stem Augers; NQ Rock Coring				COMPILED BY TZ											
DATUM Geodetic		DATE November 17 and 18, 2016				CHECKED BY LCC											
SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	SHEAR STRENGTH kPa									WATER CONTENT (%)
	--- CONTINUED FROM PREVIOUS PAGE ---						20	40	60	80	100						
185.3	SILT and SAND to CLAYEY SILT with SAND, trace to some gravel to gravelly (TILL) Compact to dense / stiff to hard Wet Grey		14	SS	30												21 37 38 4
				15	SS	14											
				16	SS	50/0.05											
18.3	LIMESTONE (BEDROCK) Bedrock cored between depths of about 18.3 m and 21.5 m. For bedrock coring details refer to Record of Drillhole 16-03.		1	RC	REC 93%											RQD = 72%	
				2	RC	REC 99%											RQD = 88%
182.1 21.5	END OF BOREHOLE NOTES: 1. Water encountered at a depth of about 7.9 m below ground surface (Elev. 195.7 m) during drilling. 2. Soil sample collected from a depth of about 1.1 m below ground surface and submitted for corrosivity testing.																