



**FOUNDATION INVESTIGATION REPORT
SWAMP AND HIGH FILL CROSSINGS**

for

**HIGHWAY 69 FOUR-LANING FOR 21.5 KM
FROM 4.5 KM NORTH OF HIGHWAY 64
TO 8.7 KM NORTH OF HIGHWAY 637
G.W.P. 5218-06-00
DISTRICT 54, SUDBURY, ONTARIO**

***PHASE 2: STA. 15+180 TO 22+346.5, TOWNSHIP OF SERVOS
STA. 10+000 TO 11+300, TOWNSHIP OF BURWASH***

VOLUME 2

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January 27, 2009



APPENDIX B

Explanation of Terms Used in Report

Record of Borehole Sheets: Swamps 501 to 506

Record of Penetration Test Sheets: Swamps 501 to 506

EXPLANATION OF TERMS USED IN REPORT

N VALUE: THE STANDARD PENETRATION TEST (SPT) N VALUE IS THE NUMBER OF BLOWS REQUIRED TO CAUSE A STANDARD 51mm O.D. SPLIT BARREL SAMPLER TO PENETRATE 0.3m INTO UNDISTURBED GROUND IN A BOREHOLE WHEN DRIVEN BY A HAMMER WITH A MASS OF 63.5kg, FALLING FREELY A DISTANCE OF 0.76m. FOR PENETRATIONS OF LESS THAN 0.3m N VALUES ARE INDICATED AS THE NUMBER OF BLOWS FOR THE PENETRATION ACHIEVED. AVERAGE N VALUE IS DENOTED THUS \bar{N} .

DYNAMIC CONE PENETRATION TEST: CONTINUOUS PENETRATION OF A CONICAL STEEL POINT (51mm O.D. 60° CONE ANGLE) DRIVEN BY 475 J IMPACT ENERGY ON 'A' SIZE DRILL RODS. THE RESISTANCE TO CONE PENETRATION IS MEASURED AS THE NUMBER OF BLOWS FOR EACH 0.3m ADVANCE OF THE CONICAL POINT INTO THE UNDISTURBED GROUND.

SOILS ARE DESCRIBED BY THEIR COMPOSITION AND CONSISTENCY OR DENSENESS.

CONSISTENCY: COHESIVE SOILS ARE DESCRIBED ON THE BASIS OF THEIR UNDRAINED SHEAR STRENGTH (c_u) AS FOLLOWS:

c_u (kPa)	0 - 12	12 - 25	25 - 50	50 - 100	100 - 200	> 200
	VERY SOFT	SOFT	FIRM	STIFF	VERY STIFF	HARD

DENSENESS: COHESIONLESS SOILS ARE DESCRIBED ON THE BASIS OF DENSENESS AS INDICATED BY SPT N VALUES AS FOLLOWS:

N (BLOWS/0.3m)	0 - 5	5 - 10	10 - 30	30 - 50	> 50
	VERY LOOSE	LOOSE	COMPACT	DENSE	VERY DENSE

ROCKS ARE DESCRIBED BY THEIR COMPOSITION AND STRUCTURAL FEATURES AND / OR STRENGTH.

RECOVERY: SUM OF ALL RECOVERED ROCK CORE PIECES FROM A CORING RUN EXPRESSED AS A PERCENT OF THE TOTAL LENGTH OF THE CORING RUN.

MODIFIED RECOVERY: SUM OF THOSE INTACT CORE PIECES, 100mm+ IN LENGTH EXPRESSED AS A PERCENT OF THE LENGTH OF THE CORING RUN. THE ROCK QUALITY DESIGNATION (R Q D), FOR MODIFIED RECOVERY, IS:

RQD (%)	0 - 25	25 - 50	50 - 75	75 - 90	90 - 100
	VERY POOR	POOR	FAIR	GOOD	EXCELLENT

JOINTING AND BEDDING:

SPACING	50mm	50 - 300mm	0.3m - 1m	1m - 3m	> 3m
JOINTING	VERY CLOSE	CLOSE	MOD. CLOSE	WIDE	VERY WIDE
BEDDING	VERY THIN	THIN	MEDIUM	THICK	VERY THICK

ABBREVIATIONS AND SYMBOLS

FIELD SAMPLING

S S	SPLIT SPOON	T P	THINWALL PISTON
W S	WASH SAMPLE	O S	OSTERBERG SAMPLE
S T	SLOTTED TUBE SAMPLE	R C	ROCK CORE
B S	BLOCK SAMPLE	P H	T W ADVANCED HYDRAULICALLY
C S	CHUNK SAMPLE	P M	T W ADVANCED MANUALLY
T W	THINWALL OPEN	F S	FOIL SAMPLE
F V	FIELD VANE		

STRESS AND STRAIN

u_w	kPa	PORE WATER PRESSURE
u	1	PORE PRESSURE RATIO
σ	kPa	TOTAL NORMAL STRESS
σ'	kPa	EFFECTIVE NORMAL STRESS
τ	kPa	SHEAR STRESS
$\sigma_1, \sigma_2, \sigma_3$	kPa	PRINCIPAL STRESSES
ϵ	%	LINEAR STRAIN
$\epsilon_1, \epsilon_2, \epsilon_3$	%	PRINCIPAL STRAINS
E	kPa	MODULUS OF LINEAR DEFORMATION
G	kPa	MODULUS OF SHEAR DEFORMATION
μ	1	COEFFICIENT OF FRICTION

MECHANICAL PROPERTIES OF SOIL

m_v	kPa^{-1}	COEFFICIENT OF VOLUME CHANGE
C_c	1	COMPRESSION INDEX
C_s	1	SWELLING INDEX
C_α	1	RATE OF SECONDARY CONSOLIDATION
c_v	m^2/s	COEFFICIENT OF CONSOLIDATION
H	m	DRAINAGE PATH
T_v	1	TIME FACTOR
U	%	DEGREE OF CONSOLIDATION
σ'_{vo}	kPa	EFFECTIVE OVERBURDEN PRESSURE
σ'_p	kPa	PRECONSOLIDATION PRESSURE
τ_f	kPa	SHEAR STRENGTH
c'	kPa	EFFECTIVE COHESION INTERCEPT
ϕ'	-°	EFFECTIVE ANGLE OF INTERNAL FRICTION
c_u	kPa	APPARENT COHESION INTERCEPT
ϕ_u	-°	APPARENT ANGLE OF INTERNAL FRICTION
τ_R	kPa	RESIDUAL SHEAR STRENGTH
τ_r	kPa	REMOULDED SHEAR STRENGTH
S_t	1	SENSITIVITY = $\frac{c_u}{\tau_r}$

PHYSICAL PROPERTIES OF SOIL

ρ_s	kg/m^3	DENSITY OF SOLID PARTICLES	n	1, %	POROSITY	e_{max}	1, %	VOID RATIO IN LOOSEST STATE
γ_s	kN/m^3	UNIT WEIGHT OF SOLID PARTICLES	w	1, %	WATER CONTENT	e_{min}	1, %	VOID RATIO IN DENSEST STATE
ρ_w	kg/m^3	DENSITY OF WATER	S_r	%	DEGREE OF SATURATION	I_D	1	DENSITY INDEX = $\frac{e_{max} - e}{e_{max} - e_{min}}$
γ_w	kN/m^3	UNIT WEIGHT OF WATER	w_L	%	LIQUID LIMIT	D	mm	GRAIN DIAMETER
ρ	kg/m^3	DENSITY OF SOIL	w_p	%	PLASTIC LIMIT	D_n	mm	n PERCENT - DIAMETER
γ	kN/m^3	UNIT WEIGHT OF SOIL	w_s	%	SHRINKAGE LIMIT	C_u	1	UNIFORMITY COEFFICIENT
ρ_d	kg/m^3	DENSITY OF DRY SOIL	I_p	%	PLASTICITY INDEX = $w_L - w_p$	h	m	HYDRAULIC HEAD OR POTENTIAL
γ_d	kN/m^3	UNIT WEIGHT OF DRY SOIL	I_L	1	LIQUIDITY INDEX = $\frac{w - w_p}{I_p}$	q	m^3/s	RATE OF DISCHARGE
ρ_{sat}	kg/m^3	DENSITY OF SATURATED SOIL	I_C	1	CONSISTENCY INDEX = $\frac{w_L - w}{I_p}$	v	m/s	DISCHARGE VELOCITY
γ_{sat}	kN/m^3	UNIT WEIGHT OF SATURATED SOIL	DTPL		DRIER THAN PLASTIC LIMIT	i	1	HYDRAULIC GRADIENT
ρ'	kg/m^3	DENSITY OF SUBMERGED SOIL	APL		ABOUT PLASTIC LIMIT	k	m/s	HYDRAULIC CONDUCTIVITY
γ'	kN/m^3	UNIT WEIGHT OF SUBMERGED SOIL	WTPL		WETTER THAN PLASTIC LIMIT	j	kN/m^3	SEEPAGE FORCE
e	1, %	VOID RATIO						

SWAMP 501

RECORD OF BOREHOLE No 501-1

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+000, o/s 19.0m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 16, 2007 CHECKED BY C.N.

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									
○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE																	
232.3 0.0	Ground Surface						20	40	60	80	100						
0.1	Peat, coarse fibrous Dark brown		1	SS	36		232										
	Silty clay trace sand, trace gravel																
	Stiff Brown Moist		2	SS	12												
230.9 1.4	Brown/ grey						231										
	End of borehole																
	Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 501-2

1 of 1

METRIC




G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+000, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 16, 2007 CHECKED BY C.N.

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 (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE										
231.5 0.0	Top of Ice						20	40	60	80	100							
0.1 231.0	Ice		1	SS	8	▽*											0.5m frozen	
0.5 231.0	Peat, fine fibrous Dark brown																	
	Silty clay trace to some sand trace gravel		2	SS	4													2 13 38 47
	Firm Brown/ Moist grey		3	SS	7													
228.9 2.6	Clayey silt some to with sand																	
	Soft Grey Moist to wet		4	SS	WH**												0 22 50 28	
227.8 3.7	Sand, with gravel																	
227.5 4.0	Grey Wet																	
	End of borehole																	
	Refusal on probable bedrock																	
														</				

RECORD OF PENETRATION TEST No 501-3

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+012.5, o/s 44.5m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
 DATUM Geodetic DATE February 15, 2007 CHECKED BY C.N.

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						
233.7 0.0	Ground Surface Probable silty clay Firm to stiff													
230.8 2.9	Probable sand Compact End of dynamic cone penetration test Refusal on probable bedrock													

METRIC

+⁷, X⁵: Numbers refer to Sensitivity

(%) STRAIN AT FAILURE

RECORD OF PENETRATION TEST No 501-5

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+012.5, o/s 42.5m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 15, 2007 CHECKED BY C.N.

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 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE							
231.6 0.0	Ground Surface Probable peat Probable silty clay Firm to stiff							20 40 60 80 100	20 40 60						
225.8 5.8	End of dynamic cone penetration test Refusal on probable bedrock							226	120/0cm						

RECORD OF BOREHOLE No 501-6

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+025, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 16, 2007 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)		
								○ UNCONFINED	● QUICK TRIAXIAL	✕ LAB VANE	✚ FIELD VANE									
230.9 0.0	Ground Surface																			
0.1	Peat, coarse fibrous Dark brown		1	SS	13												0.5m frozen			
	Clayey silt trace sand, rootlets organics to 0.7m																			
	Stiff Brown Moist		2	SS	11															

RECORD OF BOREHOLE No 501-7

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+025, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 16, 2007 CHECKED BY C.N.


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									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
231.3	Ground Surface						20	40	60	80	100						
0.0	Peat, coarse fibrous		1	CS	-											Org. 84.5%	
230.8	Dark brown																
0.5	Clayey silt some sand, trace gravel																
	Firm to stiff Brown/grey Moist to wet		2	SS	10												
	sand seams		3	SS	8												10 16 43 31
228.5																	
2.8	Gravelly sand, trace silt																
	Compact Grey Wet		4	SS	23												
227.6																	
3.7	End of borehole																
	Refusal on probable bedrock																

RECORD OF BOREHOLE No 501-8

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+037.5, o/s 44.5m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 16, 2007 CHECKED BY C.N.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
230.4	Ground Surface							20	40	60	80	100					
0.0	Clayey silt trace sand, trace gravel Stiff Brown/ Moist grey		1	SS	27		230										0.5m frozen
			2	SS	9		229										
228.7																	
1.7																	
228.5	Sand, with gravel		3	SS	6/15cm												
1.9	Compact Brown Wet End of borehole Refusal on probable bedrock Sample 3: Sampler bouncing * Borehole dry upon completion of drilling																

RECORD OF PENETRATION TEST No 501-9

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 17+037.5 CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 16, 2007	CHECKED BY	C.N.

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	SHEAR STRENGTH kPa			○ UNCONFINED + FIELD VANE						● QUICK TRIAXIAL × LAB VANE
231.2 0.0	Ground Surface						231								
	Probable clayey silt						230								
	Soft to stiff						229								
228.7 2.5	End of dynamic cone penetration test Refusal on probable bedrock							120 / 0 cm							

RECORD OF BOREHOLE No 501-10

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+037.5, o/s 40.5m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY G.D.
DATUM Geodetic DATE February 17, 2007 CHECKED BY C.N.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100					
232.3 0.0	Ground Surface																
0.1	Peat, coarse fibrous Dark brown		1	SS	13		232										
	Silt, with sand trace clay, rootlets organics to 0.6m																
	Compact Dark Moist brown		2	SS	16		231										
	with gravel, boulders																
230.5 1.8	Brown Wet		3	SS	15		230										
	Clayey silt trace sand, trace gravel																
	Stiff Brown/ Moist grey to wet																
229.4 2.9	End of borehole Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 501-11

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+050, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE February 16, 2007 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)		
								○ UNCONFINED		+ FIELD VANE		● QUICK TRIAXIAL						× LAB VANE		
232.2 0.0	Ground Surface							20	40	60	80	100					GR SA SI CL			
0.1	Peat, coarse fibrous Dark brown		1	SS	20		232													
	Clayey silt trace sand, trace gravel organics to 0.4m																			
	Very stiff Dark brown Moist stiff brown to wet		2	SS	21		231													
	boulders																			
	Brown/ grey		3	SS	19		230													
	sand seams																			
229.0 3.2	End of borehole		4	SS	6/15cm	▼▼*	229													
	Refusal on probable bedrock																			
	Sample 4: Sampler bouncing																			
	* 2007 02 16																			
	▽ Water level observed during drilling																			
	▼ Water level measured after drilling																			

RECORD OF BOREHOLE No 501-12

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+053, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 17, 2007 CHECKED BY C.N.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100					
231.5 0.0	Ground Surface																
0.1	Peat, coarse fibrous Dark brown		1	SS	4	∇*	231										
	Silty clay, trace sand																
	Firm Brown/grey Moist to wet		2	SS	2									o			
	pockets of sand boulders																
229.7 1.8	Brown		3	SS	15/15cm		230							o			
	End of borehole																
	Refusal on probable bedrock																
	Sample 3: Sampler bouncing																
	* 2007 2 17																
	∇ Water level observed during drilling																

RECORD OF PENETRATION TEST No 501-13

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+060, o/s 33.5m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 17, 2007 CHECKED BY C.N.





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 (%)						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)			GR	SA	SI	CL
								<div><div></div><div></div><div></div><div></div><div></div></div> <div>○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE</div>													
230.5 0.0	Ground Surface Probable clayey silt Firm to stiff	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div><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RECORD OF BOREHOLE No 501-14

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+060 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 17, 2007 CHECKED BY C.N.

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 (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			GR	SA	SI	CL	
								○ UNCONFINED	+	FIELD VANE														
								● QUICK TRIAXIAL	×	LAB VANE														
233.2 0.0	Ground Surface																							
0.1	Peat, coarse fibrous Dark brown		1	SS	10																			
	Silt, with sand with gravel, boulders																							
	Compact Brown Moist		2	SS	24/15cm																			
231.8 1.4	End of borehole Refusal on probable bedrock																							
	Sample 2: Sampler bouncing																							
	* Borehole dry upon completion of drilling																							

RECORD OF PENETRATION TEST No 501-15

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+060, o/s 34.5m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 17, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
234.8 0.0	Ground Surface Probable peat Probable silt Loose to compact																
230.2 4.6	End of dynamic cone penetration test																

SWAMP 502

RECORD OF PENETRATION TEST No 502-1

1 of 1 **METRIC**

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+440, o/s 32.5m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									WATER CONTENT (%)			
233.7 0.0	Ground Surface																			
233.1 0.6	Probable clayey silt																			
	Firm to stiff																			
	End of dynamic cone penetration test						233													
	Refusal on probable bedrock																			
														</						

RECORD OF BOREHOLE No 502-2

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+440 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

SOIL PROFILE		SAMPLES				* GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
232.2	Ground Surface																
0.0	Bedrock at surface																
	* Borehole dry																

RECORD OF PENETRATION TEST No 502-3

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+440, o/s 42.5m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

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 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
227.6 0.0	Ground Surface							20	40	60	80	100					
	Probable clayey silt																
	Firm to very stiff						227										
226.7 0.9	End of dynamic cone penetration test																
	Refusal on probable bedrock																

RECORD OF BOREHOLE No 502-4

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+450, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

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									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
231.6	Ground Surface							20	40	60	80	100					
0.0	Clayey silt, trace sand organics to 0.2m		1	SS	9												
231.0	Stiff Dark Moist						231										
0.6	End of borehole																
	Refusal on probable bedrock																

RECORD OF BOREHOLE No 502-5

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 17+450, o/s 18.8m Rt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Continuous Flight Hollow Stem Augers
DATUM	Geodetic	DATE	February 12, 2007	COMPILED BY	N.S.B.
				CHECKED BY	C.N.

[illegible]

RECORD OF BOREHOLE No 502-6

1 of 1

METRIC


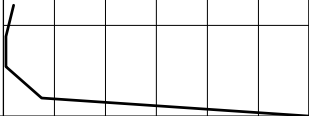
G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+462.5, o/s 36.5m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

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 (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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RECORD OF PENETRATION TEST No 502-7

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta, 17+462.5 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT	PLASTIC LIMIT	NATURAL MOISTURE CONTENT	LIQUID LIMIT	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						WATER CONTENT (%)
227.5 0.0	Ground Surface Probable peat Probable clayey silt Firm to stiff						227							
226.1 1.4	End of dynamic cone penetration test Refusal on probable bedrock							120/13 cm						

RECORD OF BOREHOLE No 502-8

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 17+462.5, o/s 30.5m Rt. CL Med.	ORIGINATED BY	T.X.
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DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.

DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 502-9

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+475, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

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 (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)				GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE					LAB VANE							
232.2 0.0	Ground Surface Peat, coarse fibrous Dark brown																							
231.9 0.3	End of borehole Refusal on probable bedrock																							
	* Borehole dry upon completion of drilling																							

RECORD OF BOREHOLE No 502-10

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+475, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT			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			20	40	60	80	100	W _p	W	W _L			
226.3 0.0	Ground Surface																	
0.1	Peat, coarse fibrous Dark brown		1	SS	9		226											
225.5 0.8	Clayey silt, trace sand organic inclusions layers of silt																	
	Stiff Brown																	
	End of borehole																	
	Refusal on probable bedrock																	
	* Borehole dry upon completion of drilling																	

RECORD OF PENETRATION TEST No 502-11

1 of 1 **METRIC**

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+487.5, o/s 40.5m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	SHEAR STRENGTH kPa					W _p	W		
						20	40	60	80	100						
233.2 0.0	Ground Surface															
	Probable clayey silt															
232.6 0.6	Stiff					233										
	End of dynamic cone penetration test															
	Refusal on probable bedrock															

RECORD OF BOREHOLE No 502-12

1 of 1

METRIC

G.W.P. 5218-06-00	LOCATION	Hwy 69 (New), Sta. 17+487.5 CL Med.	ORIGINATED BY	T.X.
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DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.


DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

[illegible]

RECORD OF PENETRATION TEST No 502-13

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+487.5, o/s 36.5m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.


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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE							WATER CONTENT (%)			GR
224.3 0.0	Ground Surface Probable peat Probable clayey silt Firm to stiff						224											
222.5 1.8	End of dynamic cone penetration test Refusal on probable bedrock						223											

RECORD OF BOREHOLE No 502-14

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+500, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa												WATER CONTENT (%)		
								20 40 60 80 100												20 40 60		
230.0	Ground Surface																					
0.0	Peat, coarse fibrous																					
0.2	Dark brown		1	SS	2																	
	Clayey silt trace to some sand organics to 0.7m																					
228.9	Firm to Dark Moist		2	SS	15/15cm		229															
1.1	stiff brown/ brown																					
	End of borehole																					
	Refusal on probable bedrock																					
	Sample 2: Sampler bouncing																					
	* Borehole dry upon completion of drilling																					

RECORD OF BOREHOLE No 502-15

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+500, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.









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											
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE											
225.0 0.0	Ground Surface							20	40	60	80	100							
0.1	Peat, coarse fibrous Dark brown		1	SS	16										o				
	Clayey silt trace to some sand organics to 0.5m layers of silt																		
223.6 1.4	Stiff Brown/ Moist greyish brown		2	SS	15		224								10-11		0 11 68 21		
	End of borehole																		
	Refusal on probable bedrock																		
	* Borehole dry upon completion of drilling																		

RECORD OF BOREHOLE No 502-16

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+512.5, o/s 34.0m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

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									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
230.4	Ground Surface							20	40	60	80	100					
0.0	Peat, coarse fibrous		1	SS	10		230										
0.2	Dark brown																
	Clayey silt, trace sand organic inclusions layers of silt																
229.3	Stiff Dark Moist																
1.1	brown																
	End of borehole																
	Refusal on probable bedrock																

RECORD OF BOREHOLE No 502-17

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+512.5 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE February 12, 2007 CHECKED BY C.N.

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 (%)						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa					WATER CONTENT (%)							GR	SA	SI	CL			
						○ UNCONFINED			● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE											
227.1	Ground Surface																							
0.0	Bedrock at surface																							
	* Borehole dry																							

RECORD OF BOREHOLE No 502-18

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+512.5, o/s 36.0m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.

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												
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
224.4 0.0	Ground Surface							20	40	60	80	100								
0.1	Peat, coarse fibrous Dark brown		1	SS	11		224							○						
	Clayey silt, trace sand organics to 0.9m layers of silt																			
	Stiff Brown/ Moist grey to wet		2	SS	14		223							○						
			3	SS	15									▬▬○				0 1 63 36		
222.0 2.4	End of borehole Refusal on probable bedrock						222													
	* Borehole dry upon completion of drilling																			

RECORD OF BOREHOLE No 502-19

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+525, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.


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									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
227.7	Top of Snow					227										1 13 61 25	
0.0	Snow																
0.2	Peat, coarse fibrous		1	SS	4												
227.2	Dark brown																
0.5	Clayey silt, trace sand layers of silt					226											
	Firm to Brown Moist stiff		2	SS	13												
	some sand, trace gravel		3	SS	15												
	Very stiff					225											
225.0			4	SS	23												
2.7	End of borehole Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 502-20

1 of 1

METRIC


G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+525, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			GR
224.7	Ground Surface																			
0.0	Peat, coarse fibrous			1	SS	9														
0.2	Dark brown																			
	Silty clay, trace sand organic inclusions layers of clayey silt						224													
223.5	Stiff Grey/ Moist		2	SS	13															
1.2	End of borehole																			
	Refusal on probable bedrock																			
	 <																			

RECORD OF PENETRATION TEST No 502-21

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 17+537.5, o/s 35.5m Lt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 13, 2007	CHECKED BY	C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT	NATURAL MOISTURE CONTENT	LIQUID LIMIT	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40						60
228.4 0.0	Ground Surface Probable peat Probable silty clay Stiff						228								
226.8 1.6	End of dynamic cone penetration test Refusal on probable bedrock						227								

RECORD OF BOREHOLE No 502-22

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+537.5 CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.

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											
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE											
225.8	Ground Surface							20	40	60	80	100							
0.0	Peat, coarse fibrous																		
0.2	Dark brown		1	SS	11									○					
	Silty clay, trace sand organics to 0.9m thin layers of clayey silt						225												
	Stiff Brown Moist		2	SS	11									○					
	trace gravel																		
			3	SS	13		224							○	—		1 2 56 41		
223.5	End of borehole																		
2.3	Refusal on probable bedrock																		

RECORD OF PENETRATION TEST No 502-23

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+537.5, o/s 36.5m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.

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 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE						
223.8 0.0	Ground Surface Probable peat Probable silty clay Stiff to very stiff							20 40 60 80 100	20 40 60					
221.2 2.6	End of dynamic cone penetration test Refusal on probable bedrock							20 40 60 80 100	20 40 60					
								120/15cm						

RECORD OF BOREHOLE No 502-24

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+550, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.

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									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
226.4	Ground Surface						20	40	60	80	100						
0.0	Peat, coarse fibrous																
0.2	Dark brown			1	SS	9								○			
	Silty clay, trace sand																
	thin layers of clayey silt																
	Stiff Brown/ Moist grey		2	SS	13								○			0 2 53 45	
			3	SS	14								○				
224.0	End of borehole																
2.4	Refusal on probable bedrock																
						</											

RECORD OF BOREHOLE No 502-25

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 17+550, o/s 18.8m Rt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Continuous Flight Hollow Stem Augers
DATUM	Geodetic	DATE	February 13, 2007	COMPILED BY	N.S.B.
				CHECKED BY	C.N.






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RECORD OF BOREHOLE No 502-26

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+562.5, o/s 37.0m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.

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										
								20 40 60 80 100										
225.8 0.0	Ground Surface																	
0.1	Peat, coarse fibrous Dark brown		1	SS	8													
	Clayey silt trace sand, trace gravel organics to 0.7m						225											
	Firm to Brown Moist stiff		2	SS	14													
			3	SS	11		224											
223.4 2.4	End of borehole Refusal on probable bedrock																	
	* Borehole dry upon completion of drilling																	

RECORD OF PENETRATION TEST No 502-27

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+562.5 CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100	W _p W W _L				
224.8 0.0	Ground Surface Probable peat Probable clayey silt Stiff													
220.8 4.0	End of dynamic cone penetration test Refusal on probable bedrock													

RECORD OF BOREHOLE No 502-28

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+562.5, o/s 38.5m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
DATUM Geodetic DATE February 13, 2007 CHECKED BY C.N.

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 (%)						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa					WATER CONTENT (%)							GR	SA	SI	CL			
						○ UNCONFINED			● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE											
223.7	Ground Surface																							
0.0	Bedrock at surface																							
	* Borehole dry																							

RECORD OF BOREHOLE No 502-29

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+575, o/s 17.3m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 14, 2007 CHECKED BY C.N.

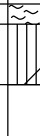
SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT						PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa											WATER CONTENT (%)		
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE								
224.7 0.0	Ice																				
0.1 0.2	Ice Peat, coarse fibrous Dark brown		1	SS	16																
224.2 0.5	Clayey silt, trace sand thin layers of silt Stiff Brown Moist End of borehole Refusal on probable bedrock * Borehole dry upon completion of drilling																				

RECORD OF BOREHOLE No 502-30

1 of 1

METRIC



G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+575, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 14, 2007 CHECKED BY C.N.

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 (%)		
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
222.6	Ground Surface							20	40	60	80	100								
0.0	Peat																			
0.2	Dark brown		1	SS	4															
221.8	Clayey silt, trace sand organic inclusions thin layers of silt						222													
0.8	Firm Dark Moist brown																			
	End of borehole																			
	Refusal on probable bedrock																			
	* Borehole dry upon completion of drilling																			

RECORD OF PENETRATION TEST No 502-31

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+587.5, o/s 40.0m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
 DATUM Geodetic DATE February 14, 2007 CHECKED BY C.N.

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 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
226.1 0.0	Ground Surface Probable peat Probable clayey silt Stiff to very stiff						226	20	40	60	80	100					
224.9 1.2	End of dynamic cone penetration test Refusal on probable bedrock						225										
													</				

RECORD OF BOREHOLE No 502-32

1 of 1

METRIC


G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+587.5 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 14, 2007 CHECKED BY C.N.

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 (%)						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			GR	SA	SI	CL
								○ UNCONFINED	+	FIELD VANE	● QUICK TRIAXIAL	×					LAB VANE						
223.6 0.0	Ice																						
0.1	Ice																						
223.3 0.3	Peat, coarse fibrous Dark brown		1	SS	11																		
	Clayey silt, trace sand organics to 0.7m																						
	Stiff _____ Brown _____ Moist		2	SS	13																		
222.1 1.5	trace gravel boulders																						
	End of borehole																						
	Refusal on probable bedrock																						

RECORD OF PENETRATION TEST No 502-33

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+587.5, o/s 39.0m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 14, 2007 CHECKED BY C.N.


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						
221.9 0.0	Ground Surface Probable peat Probable clayey silt Firm to very stiff							20 40 60 80 100	○ UNCONFINED ● QUICK TRIAXIAL	+ FIELD VANE × LAB VANE				
218.2 3.7	End of dynamic cone penetration test Refusal on probable bedrock							120/0cm						

RECORD OF BOREHOLE No 502-34

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+600, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 14, 2007 CHECKED BY C.N.

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													
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE													
225.6	Ground Surface																				
0.0	Peat, coarse fibrous																				
0.2	Dark brown			1	SS	12															
225.1	Clayey silt, trace sand organic inclusions																				
0.5	Stiff Brown Moist Silt, with sand some clay, trace gravel boulders			2	SS	20															
	Compact Brown Moist to wet		3	SS	30													9 29 47 15			
223.3																					
2.3	End of borehole																				
	Refusal on probable bedrock																				
	* Borehole dry upon completion of drilling																				

RECORD OF BOREHOLE No 502-35

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+600, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 14, 2007 CHECKED BY C.N.


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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100					
223.3 0.0	Top of Ice																
0.1	Ice																
223.0 0.3	Peat, coarse fibrous Dark brown		1	SS	13		223										
	Clayey silt trace sand, trace gravel boulders																
221.8 1.5	Stiff Grey/ brown Moist		2	SS	15		222										
	End of borehole																
	Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 502-36

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+612.5, o/s 34.0m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 15, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT LIMIT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)					
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					WATER CONTENT (%)				GR	SA	SI	CL		
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE														
227.2	Ground Surface							20	40	60	80	100										
0.0	Peat, coarse fibrous		1	SS	9		227															
0.2	Dark brown																					
	Silty clay, trace sand organics to 0.7m thin layers of clayey silt		2	SS	18		226												0	2	43	55
	Stiff Brown/ Moist grey		3	SS	15		225															
224.6	End of borehole																					
2.6	Refusal on probable bedrock																					
	* Borehole dry upon completion of drilling																					

RECORD OF PENETRATION TEST No 502-37

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 17+612.5 CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
COMPILED BY				N.S.B.	
DATUM	Geodetic	DATE	February 14, 2007	CHECKED BY	C.N.

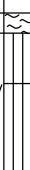
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RECORD OF BOREHOLE No 502-38

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+612.5, o/s 34.5m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 15, 2007 CHECKED BY C.N.

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									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
223.4	Ground Surface							20	40	60	80	100					
0.0	Peat, coarse fibrous																
0.2	Dark brown		1	SS	13		223										
	Silt some sand, some gravel																
	Compact Dark Moist		2	SS	23												
	boulders																
221.7	Brown						222										
1.7	End of borehole																
	Refusal on probable bedrock																

RECORD OF BOREHOLE No 502-39

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+622, o/s 20.8m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 14, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					W _P	W	W _L		GR	SA	SI	CL
225.4	Ground Surface																			
0.0	Peat, coarse fibrous																			
0.2	Dark brown		1	SS	10		225													
	Silt, trace sand organics to 0.7m																			
	Compact Dark brown Moist to wet		2	SS	15		224													
	some gravel boulders																			
223.7	Brown																			
1.7	Silty sand, trace gravel		3	SS	35												9	53	(38)	
223.0	Dense Brown Wet						223													
2.4	End of borehole																			
	Refusal on probable bedrock																			

RECORD OF BOREHOLE No 502-40

1 of 1

METRIC


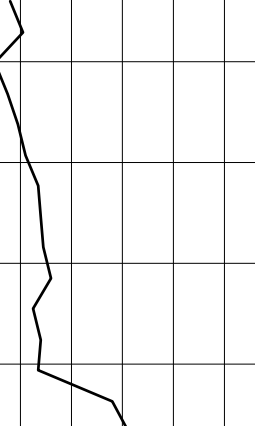
G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+625, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 15, 2007 CHECKED BY C.N.

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 (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)					GR	SA	SI	CL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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226.2 0.0	Ground Surface							20	40	60	80	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

RECORD OF PENETRATION TEST No 502-41

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+640, o/s 42.5m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 15, 2007 CHECKED BY C.N.

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						
228.9 0.0	Ground Surface Probable peat Probable clayey silt Stiff to very stiff													
224.3 4.6	End of dynamic cone penetration test Refusal on probable bedrock							120/0cm						

RECORD OF BOREHOLE No 502-42

1 of 1

METRIC

G.W.P. 5218-06-00	LOCATION	Hwy 69 (New), Sta. 17+640, o/s 2.5m Rt. CL Med.	ORIGINATED BY	T.X.
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DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.

DATUM Geodetic DATE February 15, 2007 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 502-43

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 17+640, o/s 40.5m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE February 15, 2007 CHECKED BY C.N.


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 (%)						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa					WATER CONTENT (%)							GR	SA	SI	CL			
						○ UNCONFINED			● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE											
227.7	Ground Surface																							
0.0	Bedrock at surface																							

SWAMP 503

RECORD OF PENETRATION TEST No 503-1

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+020, o/s 38.5m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY G.D.
DATUM Geodetic DATE December 14, 2006 CHECKED BY C.N.

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										
222.5 0.0	Ground Surface Probable topsoil Probable silt Loose to compact Probable sand Compact to dense															
214.6 7.9	End of dynamic cone penetration test Refusal on probable bedrock															

RECORD OF BOREHOLE No 503-2

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+020 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.



SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT						PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)				
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						w _p w w _L				WATER CONTENT (%)	GR	SA	SI	CL
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE														
226.4	Ground Surface							20	40	60	80	100										
0.0	Topsoil						226															
225.8	Sand and silt, trace gravel with cobbles and boulders																					
0.6	Dense Brown Wet																					
224.7							225															
1.7	End of borehole Refusal on probable bedrock																					

RECORD OF BOREHOLE No 503-3

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+020 o/s 34.5m Rt. CL Med. ORIGINATED BY S.A/R.S
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE April 24, 2007 CHECKED BY C.N.



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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			
227.0 0.0	Ground Surface Topsoil							20	40	60	80	100								
226.4 0.6	End of borehole Refusal on probable bedrock																			
	* Borehole dry upon completion of drilling																			

RECORD OF BOREHOLE No 503-4

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+025, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

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 (%)						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE					LAB VANE						
224.6	Ground Surface		1	SS	7		224																
0.0	Topsoil																						
224.3	Silt some sand, trace clay																						
0.3	Compact Greyish Moist to dense brown		2	SS	69/23cm																		
223.5	End of borehole																						
1.1	Refusal on probable bedrock																						
	Sample 2: Sampler bouncing																						
	* Borehole dry upon completion of drilling																						

METRIC







20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 503-6

1 of 1

METRIC


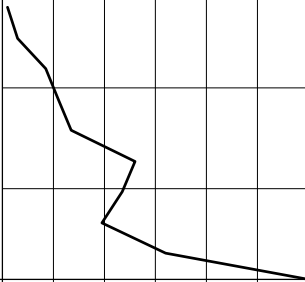
G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+037.5, o/s 34.0m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

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														
						○ UNCONFINED			+ FIELD VANE											
						● QUICK TRIAXIAL			× LAB VANE											
221.8 0.0	Ground Surface Topsoil		1	SS	11		221													
221.3 0.5	Silt some sand, trace clay		2	SS	13			220												
	Compact Brown/ Moist grey to wet		3	SS	27				219											
										218										
											217									
219.1 2.7	Sand some silt, some gravel	4	SS	31	216															
	Dense to Greyish Wet very dense brown	5	SS	45																
			6	SS		39														
215.2 6.6	End of borehole Refusal on probable bedrock		7	SS	52/13cm															
	Sample 7: Sampler bouncing																			
	* 2006 12 15																			
	 Water level observed during drilling																			
	 Water level measured after drilling																			

RECORD OF PENETRATION TEST No 503-7

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+037.5 CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
DATUM		Geodetic		DATE	December 15, 2006
				CHECKED BY	C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE	20 40 60 80 100	w _p	w		
224.1 0.0	Ground Surface Probable topsoil Probable silt Loose to compact Probable sand Compact to dense												
221.1 3.0	End of dynamic cone penetration test Refusal on probable bedrock						120/25cm						

RECORD OF BOREHOLE No 503-8

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+037.5 o/s 35.0m Rt. CL Med. ORIGINATED BY S.A/R.S
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE April 24, 2007 CHECKED BY C.N.

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 (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa											WATER CONTENT (%)				GR	SA	SI	CL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
223.0	Ground Surface																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

RECORD OF BOREHOLE No 503-9

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+050, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE December 14, 2006 CHECKED BY C.N.




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	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)		
								○ UNCONFINED		+ FIELD VANE		● QUICK TRIAXIAL						x LAB VANE		
222.2	Ground Surface						20	40	60	80	100									
0.0	Peat, coarse fibrous																			
0.2	Dark brown		1	SS	1															
221.7	Clayey silt, with organics																			
0.5	Soft Dark Moist brown																			
220.8	Sand and silt trace clay, trace gravel		2	SS	38															
1.4	Loose to Brown Wet dense																			
	Sand, with silt trace to some gravel		3	SS	38															
	Dense to Brown Wet very dense																			
			4	SS	50/15cm															

RECORD OF BOREHOLE No 503-10

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+050, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

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									
○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE																	
222.3	Ground Surface						20	40	60	80	100						
0.0 222.0	Topsoil						222										
0.3	Silty sand, trace gravel rock fragments																
221.4	Brown Moist																
0.9	End of borehole Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF PENETRATION TEST No 503-11

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+062.5, o/s 37.5m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY G.D.
DATUM Geodetic DATE December 14, 2006 CHECKED BY C.N.

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						
221.7	Ground Surface							20	40	60	80	100		
0.0	Probable topsoil							20	40	60	80	100		
	Probable silt													
	Very loose to compact													
	Probable sand													
	Compact to very dense													
215.2	End of dynamic cone penetration test													
6.5	Refusal on probable bedrock													

RECORD OF BOREHOLE No 503-12

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+062.5 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			GR	SA	SI	CL
								○ UNCONFINED	+	FIELD VANE	● QUICK TRIAXIAL	×					LAB VANE						
223.0	Ground Surface																						
0.0	Topsoil																						
222.6																							
0.4	Sand some silt, some gravel																						
	Dense to Brown Moist very dense to wet		1	SS	97																		
			2	SS	50/15cm																		

RECORD OF BOREHOLE No 503-13

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+062.5 o/s 37.5m Rt. CL Med.	ORIGINATED BY	S.A/R.S
DIST	54	HWY	69	BOREHOLE TYPE	Manual Hand Sampling
				COMPILED BY	G.D.
DATUM	Geodetic	DATE	April 24, 2007	CHECKED BY	C.N.


[illegible]

RECORD OF BOREHOLE No 503-14

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+075, o/s 18.8m Lt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Continuous Flight Solid Stem Augers
DATUM	Geodetic	DATE	December 15, 2006	CHECKED BY	C.N.


SOIL PROFILE			SAMPLES		
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES
223.30.0	Ground Surface				
222.90.4	Topsoil		1	SS	4
	Sand some silt, some gravel				
	Compact to Grey Moist very dense to wet		2	SS	75
			3	SS	55
			4	SS	49
218.15.2	End of borehole		5	SS	75
Refusal on probable bedrock					
<div>* 2006 12 15</div> <div> Water level observed during drilling</div> <div> Water level measured after drilling</div>					

RECORD OF BOREHOLE No 503-15

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+075 o/s 19.0m Rt. CL Med. ORIGINATED BY S.A/R.S
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE April 24, 2006 CHECKED BY C.N.

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 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
220.8	Ground Surface							20	40	60	80	100					
0.0	Topsoil																
220.5	End of borehole																
0.3	Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 503-16

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+087.5, o/s 37.5m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					w _p	w	w _L			
								○ UNCONFINED	● QUICK TRIAXIAL	+ FIELD VANE	× LAB VANE	WATER CONTENT (%)						
223.4	Ground Surface							20	40	60	80	100						
0.0	Topsoil		1	SS	4	↓* <												

RECORD OF BOREHOLE No 503-17

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+087.5 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Manual Hand Sampling COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

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 (%)						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa					WATER CONTENT (%)							GR	SA	SI	CL			
						○ UNCONFINED			● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE											
222.5	Ground Surface																							
0.0	Bedrock at surface																							
				</																				

RECORD OF BOREHOLE No 503-18

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+087.5, o/s 36.0m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE December 14, 2006 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa												
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
217.5	Ground Surface																			
0.0	Topsoil																			
217.2	Clayey silt, with sand Firm Brown/ Moist grey to wet		1	SS	3	▼* ▼*	217												0 26 53 21	
0.3																				
			2	SS	7															
215.8					216															
1.7	Silt some sand, trace clay		3	SS	13															
	Compact Greyish Wet brown																			
214.9			4	SS	50/5cm		215											0 16 77 7		
2.6	End of borehole																			
	Refusal on probable bedrock																			
	Sample 4: Sampler bouncing																			
	* 2006 12 15																			
	▽ Water level observed during drilling																			
	▼ Water level measured after drilling																			

RECORD OF BOREHOLE No 503-19

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+100, o/s 18.8m Lt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Manual Hand Sampling
				COMPILED BY	G.D.
DATUM	Geodetic	DATE	December 15, 2006	CHECKED BY	C.N.

[illegible]

RECORD OF BOREHOLE No 503-20

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+100, o/s 18.8m Rt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Continuous Flight Solid Stem Augers
DATUM	Geodetic	DATE	December 14, 2006	CHECKED BY	C.N.

[illegible]

RECORD OF PENETRATION TEST No 503-21

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+112.5, o/s 37.5m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY G.D.
DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

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			20	40					
228.4	Ground Surface													
0.0	Probable topsoil													
	Probable sand and silt													
	Loose													
227.2	End of dynamic cone penetration test													
1.2	Refusal on probable bedrock													

RECORD OF BOREHOLE No 503-22

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+112.5	CL Med.	ORIGINATED BY	T.X.	
DIST	54	HWY	69	BOREHOLE TYPE	Manual Hand Sampling	COMPILED BY	G.D.
DATUM	Geodetic	DATE	December 15, 2006		CHECKED BY	C.N.	

[illegible]

RECORD OF PENETRATION TEST No 503-23

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+112.5, o/s 35.0m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY G.D.
DATUM Geodetic DATE December 14, 2006 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100	W _p W W _L	WATER CONTENT (%)			
217.6 0.0	Ground Surface Probable topsoil Probable silt Loose to compact													
217														
216														
215														
214														
213														
212														
211														
210.5 7.1	End of dynamic cone penetration test Refusal on probable bedrock							120/10cm						

RECORD OF BOREHOLE No 503-24

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+125, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.

DIST 54 HWY 69 BOREHOLE TYPE Manual Hand Sampling COMPILED BY G.D.

DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 503-25

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+125, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE December 14, 2006 CHECKED BY C.N.

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 (%)		
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
218.5	Ground Surface							20	40	60	80	100								
0.0 218.2	Topsoil		1	SS	3	▼*	218							○			0 13 80 7			
0.3	Silt some sand, trace clay														○					
	Loose to Greyish Wet compact brown		2	SS	15										○					
	Grey		3	SS	28										○					
215.9						▼*	217													
2.6 215.5	Sand some silt, some gravel		4	SS	20		216								○					
3.0	Compact to dense																			
	End of borehole Refusal on probable bedrock																			
	* 2006 12 14																			
	▽ Water level observed during drilling																			
	▼ Water level measured after drilling																			

RECORD OF BOREHOLE No 503-26

1 of 1

METRIC


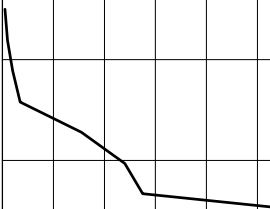
G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta.18+137.5, o/s 37.5m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Manual Hand Sampling COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

SOIL PROFILE				SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)				
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa					w _p	w	w _L	WATER CONTENT (%)	GR	SA		SI	CL			
228.7	Ground Surface																					
0.0	Bedrock at surface																					
	* Borehole dry																					

RECORD OF PENETRATION TEST No 503-27

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+137.5 CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
DATUM		Geodetic	DATE	December 15, 2006	CHECKED BY
					C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT	NATURAL MOISTURE CONTENT	LIQUID LIMIT	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						
220.8 0.0	Ground Surface Probable <u>topsoil</u> — Probable silt Very loose to compact — — — — — Probable sand Compact to dense													
218.5 2.3	End of dynamic cone penetration test Refusal on probable bedrock							120/15cm						

RECORD OF BOREHOLE No 503-28

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+137.5, o/s 37.5m Rt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Continuous Flight Hollow Stem Augers
DATUM	Geodetic	DATE	December 14, 2006	CHECKED BY	C.N.


[illegible]

RECORD OF BOREHOLE No 503-29

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+150, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.




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													
								20	40	60	80	100									
222.0	Ground Surface							○ UNCONFINED + FIELD VANE							WATER CONTENT (%)						
0.0	Topsoil							● QUICK TRIAXIAL × LAB VANE							20 40 60 80 100						
0.2	Silt some sand, trace clay cobbles and boulders																				
220.9	Brown Moist						221														
1.1	End of borehole Refusal on probable bedrock																				
	* Borehole dry																				

RECORD OF BOREHOLE No 503-30

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+150, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L			
217.9	Ground Surface																	
0.0	Topsoil																	
0.3	Sand and silt trace gravel																	
217.1	Brown Moist																	
0.8	End of borehole																	
	Refusal on probable bedrock																	
	* Borehole dry																	

METRIC


20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 503-32

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+162.5 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

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												
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
220.5	Ground Surface						220	20	40	60	80	100	20	40	60					
0.0	Topsoil																			
0.2	Sand and silt, trace gravel cobbles and boulders																			
	Brown Moist																			
219.3	End of borehole																			
1.2	Refusal on probable bedrock																			
	* Borehole dry																			

RECORD OF BOREHOLE No 503-33

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+162.5 o/s 34.0m Rt. CL Med. ORIGINATED BY S.A/R.S
 DIST 54 HWY 69 BOREHOLE TYPE Manual Hand Sampling COMPILED BY G.D.
 DATUM Geodetic DATE April 24, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT			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			20	40	60	80	100	W _p	W	W _L			
216.7 0.0	Ground Surface																	
0.1	Topsoil End of borehole Refusal on probable bedrock * Borehole dry upon completion of drilling																	

RECORD OF BOREHOLE No 503-34

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+175, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY G.D.
 DATUM Geodetic DATE December 14, 2006 CHECKED BY C.N.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			GR	SA	SI	CL	
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE					LAB VANE							
222.4	Ground Surface		1	SS	5	↓*	222																	
0.0	Topsoil																							
221.9	Sand and silt trace clay, trace gravel																							
0.5	Dense to Brown Wet very dense																							
220.7	End of borehole																							
1.7	Refusal on probable bedrock																							
	Samples 2 and 3: Sampler bouncing																							
	* 2006 12 14																							
	▽ Water level observed during drilling																							
	▼ Water level measured after drilling																							

RECORD OF BOREHOLE No 503-35

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+175, o/s 18.8m Rt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Continuous Flight Solid Stem Augers
DATUM	Geodetic	DATE	December 15, 2006	CHECKED BY	C.N.


SOIL PROFILE			SAMPLES		
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES
220.0	Ground Surface				
0.0	Topsoil		1	SS	1
219.5	Sand and silt, trace gravel cobbles				
0.5	Loose to Brown Wet dense		2	SS	17
218.0			3	SS	44
2.0	End of borehole				
	Refusal on probable bedrock				
	* 2006 12 15				
	Water level observed during drilling				
	Water level measured after drilling				

RECORD OF BOREHOLE No 503-36

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+180, o/s 34.0m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY G.D.
 DATUM Geodetic DATE December 15, 2006 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE										WATER CONTENT (%)			
224.9	Ground Surface																				
0.0	Topsoil																				
0.2	Sand and silt, trace gravel cobbles																				
223.8	Brown Moist						224														
1.1	End of borehole Refusal on probable bedrock																				
	* Borehole dry																				

RECORD OF PENETRATION TEST No 503-37

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+180 CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
COMPILED BY				G.D.	
DATUM	Geodetic	DATE	December 15, 2006	CHECKED BY	C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL x LAB VANE	20 40 60 80 100	w _p	w		
223.0 0.0	Ground Surface Probable topsoil Probable sand and silt compact to dense												
220.7 2.3	End of dynamic cone penetration test Refusal on probable bedrock						120/15cm						

RECORD OF BOREHOLE No 503-38

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+180, o/s 34m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Manual Hand Sampling COMPILED BY G.D.
 DATUM Geodetic DATE December 16, 2006 CHECKED BY C.N.

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 (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)				GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE					LAB VANE							
218.1	Ground Surface																							
0.0	Bedrock at surface																							

SWAMP 504

RECORD OF BOREHOLE No 504-1

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+300, o/s 19.0m Lt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Continuous Flight Hollow Stem Augers
DATUM	Geodetic	DATE	April 30, 2007	CHECKED BY	C.N.



[illegible]

RECORD OF BOREHOLE No 504-2

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+300, o/s 19.0m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE April 30, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
214.1	Ground Surface																
0.0 213.8	Peat, amorphous Dark brown/black						214										
0.3 213.5	Boulders																
0.6	End of borehole Refusal on probable bedrock																
	* Borehole dry																

RECORD OF BOREHOLE No 504-3

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+325, o/s 40m Lt. CL Med. ORIGINATED BY W.L.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY N.S.B.
 DATUM Geodetic DATE March 26, 2008 CHECKED BY C.N.

SOIL PROFILE		SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	20	40	60	80	100	W _p	W		
222.2 0.0	Ground Surface															
0.1	Topsoil End of borehole Refusal on probable bedrock * Borehole dry															

METRIC

20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF PENETRATION TEST No 504-5

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+325, o/s 35.0m Rt. CL Med.	ORIGINATED BY	W.L.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	March 26, 2008	CHECKED BY	C.N.

[illegible]

RECORD OF BOREHOLE No 504-6

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+350, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE December 11, 2006 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					WATER CONTENT (%)							
								○ UNCONFINED		+ FIELD VANE			● QUICK TRIAXIAL							
214.2	Ground Surface							20	40	60	80	100								
0.0 213.9	Topsoil		1	SS	6	▽*	214													
0.3	Sandy silt, trace organics																			
213.3	Loose Brown Wet																			
0.9	Silt, trace clay		2	SS	11			213												
	Compact Grey Wet		3	SS	11															
212.0	Clayey silt, trace sand						212													
2.2	Stiff Brown Moist to wet		4	SS	14															
211.2	Sandy silt, trace clay		5	SS	50/13cm		211													
3.0 210.7	Dense Grey Wet brown																			
3.5	End of borehole																			
	Refusal on probable bedrock																			
	Sample 5: Sampler bouncing																			
	* 2006 12 11																			
	▽ Water level observed during drilling																			
	Note: Bedrock outcrop visible across a nearby creek																			

RECORD OF BOREHOLE No 504-7

1 of 1

METRIC

G.W.P. 5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+350 CL Med.	ORIGINATED BY	T.X.
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DIST	54	HWY	69	BOREHOLE TYPE	Power Augering	COMPILED BY	N.S.B.
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DATUM Geodetic DATE December 16, 2006 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 504-8

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+350, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE December 11, 2006 CHECKED BY C.N.


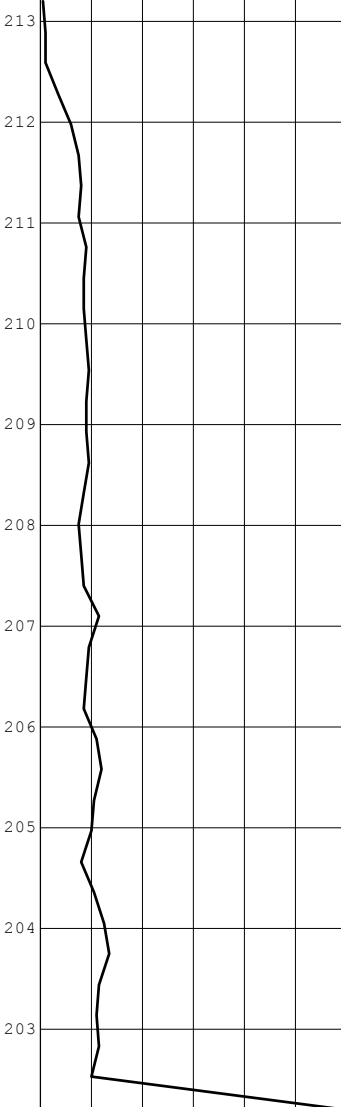
SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE										
213.4	Ground Surface						20	40	60	80	100							
0.0	Peat, coarse fibrous		1	SS	1	▼* ▽*									○	Org. 33.9%	GR SA SI CL	
0.2	Dark brown																	
212.7	Silty clay, trace sand organics																	
0.7	Soft Grey Moist to wet		2	SS	8									○				
	Clayey silt, trace sand																	
	Firm Brown Moist to wet		3	SS	9									⊞				0 1 69 30
			4	SS	7									○				
	layers of silt																	
	Grey		5	SS	3									○				0 1 81 18
	</																	

METRIC

RECORD OF PENETRATION TEST No 504-10

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+375 CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE December 11, 2006 CHECKED BY C.N.

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 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE							
213.5 0.0	Ground Surface Probable peat Probable clayey silt Soft to stiff														
202.2 11.3	End of dynamic cone penetration test Refusal on probable bedrock														

RECORD OF BOREHOLE No 504-11

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+375, o/s 40.0m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE December 13, 2006 CHECKED BY C.N.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
213.3	Ground Surface																
0.0	Peat, coarse fibrous Dark brown		1	SS	WH**												
212.8	Clayey silt, trace sand organics to 1.5m Firm Grey/ Wet brown Grey																
0.5			2	SS	5												
			3	SS	6												0 1 63 36
			4	SS	4												
			5	TW	PH												
207.0	Silt trace sand, trace clay Loose Grey Wet sand lenses	7	SS	8													
6.3																	
		8	SS	8													
203.8	Sand, trace silt Compact Grey Wet to loose	9	SS	11													
9.5																	
199.4	End of borehole Refusal on probable bedrock																
13.9																	
	Sample 12: Sampler bouncing																
	Cont'd																

RECORD OF BOREHOLE No 504-11

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+375, o/s 40.0m Rt. CL Med. ORIGINATED BY T.X.

DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.

DATUM Geodetic DATE December 13, 2006 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 504-12

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+400, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE December 12, 2006 CHECKED BY C.N.

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								
214.0	Ground Surface																	
0.0	Topsoil																	
0.2	Clayey silt organics				1	SS	8											
	Firm to stiff	Grey/ brown	Moist to wet															
					2	SS	10	▼*	213									
					3	SS	9	▼*	212									
					4	SS	9		211									
					5	SS	8		210									
209.8	Silt some clay, trace sand																	
4.2	Loose Brown Wet				6	SS	4		209									0 5 83 12
																</		

METRIC

+⁷, ×⁵: Numbers refer to Sensitivity

20
15 — ○ — 5
10

(%) STRAIN AT FAILURE

RECORD OF PENETRATION TEST No 504-14

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+425, o/s 37.5m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE December 12, 2006 CHECKED BY C.N.



SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT			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			20	40	60	80	100	W _p	W	W _L			
216.7 0.0	Ground Surface Probable topsoil Probable silt Loose to compact																	
214.4 2.3	End of dynamic cone penetration test Refusal on probable bedrock																	

RECORD OF BOREHOLE No 504-15

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+425 CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE December 12, 2006 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
214.2	Ground Surface																
0.0	Topsoil		1	SS	4		214										
0.3	Clayey silt trace sand, trace gravel organic inclusions Firm Brown Moist						213										
212.7	End of borehole																
1.5	Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF PENETRATION TEST No 504-16

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+425, o/s 37.5m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE December 12, 2006 CHECKED BY C.N.

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									
213.7 0.0	Ground Surface Probable topsoil Probable clayey silt Firm to stiff														
210.8 2.9	End of dynamic cone penetration test Refusal on probable bedrock							120/12cm							

RECORD OF BOREHOLE No 504-17

1 of 1

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+450, o/s 18.8m Lt. CL Med.	ORIGINATED BY	T.X.
DIST	54	HWY	69	BOREHOLE TYPE	Power Augering
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 06, 2006	CHECKED BY	C.N.




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RECORD OF BOREHOLE No 504-18

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+450, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X/N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE December 13, 2006 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT						PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						W _p	W	W _L		GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE								
215.6 0.0	Ground Surface							20	40	60	80	100		20	40	60					
215.1 0.5	Topsoil																				
	End of borehole Refusal on probable bedrock																				
	* Borehole dry																				

RECORD OF BOREHOLE No 504-19

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+475, o/s 36.0m Lt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE December 16, 2006 CHECKED BY C.N.




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 (%)												
						○ UNCONFINED			+ FIELD VANE		● QUICK TRIAXIAL		× LAB VANE											
223.5	Ground Surface																							
0.0	Silt, trace clay rootlets, rock fragments		1	SS	6																			
222.6	Loose Grey Moist to wet																							
0.9	Sand, trace gravel		2	SS	15																			
221.9	Compact Brown Wet		3	SS	15/8cm																			
1.6	End of borehole Refusal on probable bedrock																							
	Sample 3: Sampler bouncing																							
	* 2006 12 16																							
	▽ Water level observed during drilling																							
	▼ Water level measured after drilling																							

RECORD OF BOREHOLE No 504-20

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+475 CL Med. ORIGINATED BY T.X/N.L.B
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE December 13, 2006 CHECKED BY C.N.









SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
219.5	Ground Surface																
0.0	Topsoil					 *	219										
218.7	End of borehole																
0.8	Refusal on probable bedrock																
	* 2006 12 13																
	 Water level measured after drilling																

RECORD OF BOREHOLE No 504-21

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+475, o/s 36.0m Rt. CL Med. ORIGINATED BY T.X.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE December 16, 2006 CHECKED BY C.N.

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										
								○ UNCONFINED	+	FIELD VANE								
215.3	Ground Surface						● QUICK TRIAXIAL	×	LAB VANE	WATER CONTENT (%)								
0.0	Topsoil		1	SS	4	 	20	40	60	80	100	20	40	60	kN/m ³	GR SA SI CL		
214.7	Sandy silt, trace clay organics																	
0.6	Compact Grey Moist to wet		2	SS	19													
	trace gravel																	
	Brown		3	SS	15													
212.9																		
2.4	End of borehole Refusal on probable bedrock																	

RECORD OF BOREHOLE No 504-22

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+500, o/s 18.8m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE December 16, 2006 CHECKED BY C.N.

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									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
221.7	Ground Surface						20	40	60	80	100						
0.0	Topsoil		1	SS	5								○				
221.4	Clayey silt, trace sand Firm to Brown/ Moist stiff grey		2	CS	-								○				
0.3			3	SS	9								○			0 1 76 23	
			4	SS	15								○				
217.2	Silt, some to with sand trace clay, trace gravel cobbles Compact Brown Wet		5	SS	16	▽*							○			1 13 80 6	
4.5																	
			6	SS	24								○			8 27 63 2	
214.8	End of borehole																
6.9	Refusal on probable bedrock																
* 2006 12 16																	
▽ Water level observed during drilling																	
▼ Water level measured after drilling																	

RECORD OF BOREHOLE No 504-23

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+500, o/s 18.8m Rt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE December 16, 2006 CHECKED BY C.N.

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									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
217.0	Ground Surface						20	40	60	80	100						
0.0 216.7	Topsoil		1	SS	6	▼*											
0.3	Clayey silt, trace sand																
216.1	Firm Brown/ Moist grey						216										
0.9	Silt, trace clay		2	SS	26												
215.6	Compact Grey Moist to wet																
1.4	Sand, silty to with silt cobble		3	SS	16	▽*											
	Compact Brown Wet						215										0 65 (35)
							214										
			4	SS	10												

RECORD OF PENETRATION TEST No 504-24

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+510, o/s 34.0m Lt. CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE December 16, 2006 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
222.6 0.0	Ground Surface Probable topsoil Probable silt Very loose to compact																
220.3 2.3	End of dynamic cone penetration test Refusal on probable bedrock																

RECORD OF BOREHOLE No 504-25

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+510 CL Med. ORIGINATED BY T.X.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE December 16, 2006 CHECKED BY C.N.

SOIL PROFILE				SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa					w _p	w	w _L																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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219.2	Ground Surface									20	40	60	80	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

1 of 1 **METRIC**

7.8	End of dynamic cone penetration test Refusal on probable bedrock											120/20cm						
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RECORD OF BOREHOLE No 504-27

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+240, o/s 19.0m Lt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY G.D.
 DATUM Geodetic DATE February 07, 2007 CHECKED BY C.N.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)		
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
227.1	Ground Surface							20	40	60	80	100					GR	SA	SI	CL
0.0	Topsoil						227													
0.2	Silt some sand, some gravel cobbles																			
	Brown Moist																			
225.9							226													
1.2	Sand and gravel, trace silt cobbles and boulders																			
225.3	Grey/ brown Moist																			
1.8	End of borehole Refusal on probable bedrock																			

RECORD OF BOREHOLE No 504-28

1 of 1

METRIC

G.W.P. 5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+240, o/s 19.0m Rt. CL Med.	ORIGINATED BY	S.A.
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DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY G.D.

DATUM Geodetic DATE April 24, 2007 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 504-29

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+260, o/s 33.0m Lt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY G.D.
 DATUM Geodetic DATE February 07, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
228.3	Ground Surface																
0.0	Topsoil																
0.2	Silt some sand, some gravel cobbles and boulders Brown Moist						228										
							227										
226.6																	
1.7	End of borehole Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 504-30

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+260, o/s 7.0m Lt. CL Med. ORIGINATED BY L.B.

DIST 54 HWY 69 BOREHOLE TYPE Manual Probing COMPILED BY G.D.

DATUM Geodetic DATE December 12, 2006 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 504-31

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+260, o/s 7.0m Rt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Manual Probing COMPILED BY G.D.
 DATUM Geodetic DATE April 24, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC NATURAL LIQUID LIMIT MOISTURE LIMIT CONTENT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					w _p	w	w _L		GR	SA	SI	CL
226.0 0.0	Ground Surface																			
0.1	Topsoil																			
	End of borehole																			
	Refusal on probable bedrock																			

RECORD OF BOREHOLE No 504-32

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+260, o/s 33.0m Rt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY G.D.
 DATUM Geodetic DATE April 24, 2007 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE					LAB VANE			
216.2	Ground Surface																			
0.0	Topsoil																			
0.2	Silt with gravel, trace sand cobbles and boulders																			
215.0	Brown/ Moist grey																			
1.2	End of borehole Refusal on probable bedrock																			
1.2	* Borehole dry upon completion of drilling																			

RECORD OF BOREHOLE No 504-33

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+280, o/s 19.0m Lt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY G.D.
 DATUM Geodetic DATE February 07, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
228.2	Ground Surface																
0.0	Topsoil						228										
0.2	End of borehole																
	Refusal on probable bedrock																
	* Borehole dry																

RECORD OF BOREHOLE No 504-34

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+280, o/s 19.0m Rt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY G.D.
 DATUM Geodetic DATE April 24, 2007 CHECKED BY C.N.





SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION kPa RESISTANCE PLOT						PLASTIC LIMIT	NATURAL MOISTURE CONTENT	LIQUID LIMIT	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa											w _p	w	w _L
								○ UNCONFINED		+ FIELD VANE		● QUICK TRIAXIAL									
216.0	Ground Surface							20	40	60	80	100									
0.0	Topsoil																				
215.7	End of borehole																				
0.3	Refusal on probable boulder																				
	* Borehole dry																				

RECORD OF BOREHOLE No N16-1

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy. 69 Sta. 24+880, C/L ORIGINATED BY F.P.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY F.P.
 DATUM Geodetic DATE March 27, 2004 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					WATER CONTENT (%)							
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE					w _p w w _L							
213.9 0.0	Ground Surface																			
0.1	Topsoil		1	SS	5													0 51 33 16		
213.3 0.6	Silty sand, some clay organics																			
	Loose Brown Moist Clayey silt																			
	Stiff Grey Wet						213													
211.8 2.1	End of borehole		2	SS	13		212													
	Refusal on probable bedrock																			

SWAMP 505

RECORD OF BOREHOLE No 505-1

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+720, o/s 18.8m Lt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE March 08, 2007 CHECKED BY C.N.

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 (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)				GR	SA	SI	CL
								○ UNCONFINED	+	FIELD VANE	● QUICK TRIAXIAL	×	LAB VANE												
220.5	Ground Surface																								
0.0	Topsoil																								
0.2	Clayey silt, trace sand																								
219.6	Firm to stiff																								
0.9	Mottled brown/grey																								
	Silt, trace sand layers of silty clay		1	SS	12																				
	Compact Grey Wet																								
	thin sand partings		2	SS	14																				
218.1	End of borehole																								
2.4	Refusal on probable bedrock																								
	* Borehole dry upon completion of drilling																								

RECORD OF BOREHOLE No 505-2

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+722.5, o/s 18.8m Rt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE March 06, 2007 CHECKED BY C.N.


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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100					
216.9	Ground Surface																
0.0	Topsoil																
216.6																	
0.3	Clayey silt, trace sand																
	Firm to Mottled Moist stiff brown/grey		1	SS	9		216										
215.7	Sand, trace silt																
1.2																	
215.2	Loose to Grey Moist compact		2	SS	4/15cm												
1.7	End of borehole Refusal on probable bedrock																
	Sample 2: Sampler bouncing																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 505-3

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+725, o/s 36.5m Lt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE March 06, 2007 CHECKED BY C.N.

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												
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
218.5	Ground Surface						218	20	40	60	80	100	20	40	60					
0.0	Topsoil																			
0.2	Clayey silt, trace sand																			
217.7	Mottled Moist brown/grey																			
0.8	End of borehole Refusal on probable bedrock																			
	* Borehole dry upon completion of drilling																			

RECORD OF PENETRATION TEST No 505-4

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+725 CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
 DATUM Geodetic DATE March 06, 2007 CHECKED BY C.N.

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 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
218.3 0.0	Ground Surface Probable topsoil Probable clayey silt Stiff						218	20	40	60	80	100					
217.4 0.9	End of dynamic cone penetration test Refusal on probable bedrock																

RECORD OF BOREHOLE No 505-5

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+725, o/s 40.5m Rt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE March 06, 2007 CHECKED BY C.N.





SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					W _p W W _L				
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE					WATER CONTENT (%)				
214.2	Ground Surface							20	40	60	80	100					GR SA SI CL
0.0	Clayey silt, organics						214										
	Firm Brown Moist (FILL)																
213.3																	
0.9	Topsoil		1	SS	8		213								○		
212.8																	
1.4																	
212.7	Clayey silt, trace sand																
1.5	Firm Brown Moist																
	End of borehole																
	Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 505-6

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+750, o/s 18.8m Lt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE March 06, 2007 CHECKED BY C.N.

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									
○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE																	
214.9	Ground Surface							20	40	60	80	100					
0.0	Topsoil							20	40	60	80	100					
214.6	End of borehole																
0.3	Refusal on probable bedrock																
	* Borehole dry																

RECORD OF BOREHOLE No 505-7

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+750, o/s 18.8m Rt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE March 06, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT							PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							w _p	w	w _L		GR	SA	SI	CL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
213.5	Ground Surface																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

RECORD OF PENETRATION TEST No 505-8

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+775, o/s 37.5m Lt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 27, 2007 CHECKED BY C.N.

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			20	40	60	80	100					
212.2 0.0	Ground Surface Probable topsoil Probable clayey silt Firm to stiff						212										
208.9 3.3	End of dynamic cone penetration test Refusal on probable bedrock						209										


METRIC

20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF PENETRATION TEST No 505-10

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+775, o/s 37.5m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 28, 2007 CHECKED BY C.N.

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 (%)		
								○ UNCONFINED	+ FIELD VANE	● QUICK TRIAXIAL						× LAB VANE		
211.4 0.0	Ground Surface Probable topsoil Probable clayey silt Firm to stiff																	
	Probable silty clay Firm to stiff																	
	Probable silt Compact																	
202.6 8.8	End of dynamic cone penetration test																	

RECORD OF BOREHOLE No 505-11

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+800, o/s 18.8m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 27, 2007 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)		
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
211.3 0.0	Ground Surface							20	40	60	80	100								
0.1	Peat, coarse fibrous Dark brown		1	SS	12		211													
210.6 0.7	Silt trace sand, trace clay																			
	Compact Light Moist brown		2	SS	8		210				■			-			0 13 63 24			
	Clayey silt, some sand																			
209.5 1.8	Stiff Brown Moist		3	SS	7		209				■									
	Clay, trace sand layers of silty clay																			
	Stiff to Reddish Moist firm brown		4	SS	4		208							-○-			0 1 36 63			
				FV							+	6								
207.1 4.2	Clayey silt, trace sand Firm Grey Wet		5	SS	1		207										0 1 70 29			
205.9 5.4	Silty clay			FV			206				+	9								
	Firm to Grey Wet soft																			
			6	TW	PH		205							-	○	17.6	0 0 53 47			
				FV							+	5								
							204													
			7	TW	PH		203													
202.8 8.5	Silt, trace clay			FV							+	2								
202.3 9.0	Loose Grey Wet																			
	End of borehole Refusal on probable bedrock																			

* 2007 02 27

▽ Water level observed
during drilling

▼ Water level measured
after drilling

■ Penetrometer test

RECORD OF BOREHOLE No 505-12

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+800, o/s 18.8m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 27, 2007 CHECKED BY C.N.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100					
211.3 0.0	Ground Surface													
0.1	Peat, coarse fibrous Dark brown		1	SS	24		211						Org. 2.9%	
210.4 0.9	Silt trace sand, trace clay													
	Compact Light Moist brown to wet		2	SS	11		210							
	Clayey silt, trace sand													
	Stiff to Mottled Moist firm brown/grey		3	SS	6		209							0 1 70 29
	thin partings of silt													
	Wet													
207.9 3.4	Silt, trace clay		4	SS	5		208							
207.2 4.1	Loose Grey Wet													
	Clay, trace sand						207							
	Firm Grey Wet		5	SS	2									
	thin layers of silt			FV			206							
			6	TW	PH		205							
	varved thin layers of silty clay			FV			204							
	Grey/ dark grey		7	SS	2		203							0 1 37 62
202.6 8.7	Silty clay thin layers of silt													
	Firm Grey Wet		8	SS	2		202							
201.2 10.1	Silt, some clay						201							
	Loose Grey Wet													
200.0 11.3	End of borehole		9	SS	6		200							0 0 81 19
	Probable silt													
	Loose to compact													

Cont'd

+⁷, X⁵:

Numbers refer to
Sensitivity

20
15—5
10

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 505-12

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+800, o/s 18.8m Rt. CL Med. ORIGINATED BY M.R.

DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.

DATUM Geodetic DATE February 27, 2007 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 505-13

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+825, o/s 38.0m Lt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 27, 2007 CHECKED BY C.N.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED		+ FIELD VANE							
								● QUICK TRIAXIAL		× LAB VANE		WATER CONTENT (%)					
210.8	Ground Surface		1	SS	6/15cm		20	40	60	80	100	20	40	60	GR SA SI CL		
0.0	Topsoil																
0.2	Clayey silt, trace sand																
209.9 0.9	Firm Mottled Moist brown/grey							210									
	Silty clay, trace sand			2	SS		6										
	Firm Reddish Moist brown to wet																
				3	SS		5	209									
	layers of silt							208									
					4		SS	2	207								
	Brown/grey																
						206											
	no layering					205											
						204											
	layers of silt			FV													
						203											
			7	SS	1												
202.3				FV													
8.5	Silt, trace sand thin layers of silty clay					202											
	Very loose Grey Wet																
	no layering		8	SS	2	201											
	Loose to compact																
						200											
199.5			9	SS	10												
11.3	End of borehole					199											
	Probable silt																
	Loose to compact					198											
197.4																	
13.4	End of dynamic cone penetration test																
	Refusal on probable bedrock																

Cont'd

+⁷, X⁵:

Numbers refer to
Sensitivity

20
15—5
10




(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 505-13

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+825, o/s 38.0m Lt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
 DATUM Geodetic DATE February 27, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
	* 2007 02 27  Water level observed during drilling  Water level measured after drilling  Penetrometer test C.F.H.S.A. - Denotes Continuous Flight Hollow Stem Augers																

RECORD OF PENETRATION TEST No 505-14

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 18+825 CL Med.	ORIGINATED BY	N.L.B.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 27, 2007	CHECKED BY	C.N.

[illegible]

RECORD OF BOREHOLE No 505-15

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+825, o/s 38.0m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 26, 2007 CHECKED BY C.N.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)					
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa								WATER CONTENT (%)				
								○ UNCONFINED		+ FIELD VANE						○				
								● QUICK TRIAXIAL		× LAB VANE										
210.8	Ground Surface							20	40	60	80	100								
0.0	Topsoil																			
0.2	Clayey silt sandy silt partings																			
	Stiff Mottled Moist brown/grey		1	SS	10		210													
	no partings		2	SS	6		209													
208.1	Clay, varved						208													
2.7	Stiff Brown/ Moist red		3	SS	3		207													
				FV																
	thin layers of silty clay		4	SS	WH**		206													
	Firm Grey Wet			FV																
	no layering																			
	Brown/ grey		5	SS	WH		205													
				FV			204													
	thin layers of silt		6	SS	WH		203													
				FV			202													
			7	SS	WH		201													
				FV																
199.8	Silt, trace clay		8	SS	5		200													
11.0	thin layers of silty clay						199													
	Loose Grey Wet																			
198.0	End of borehole		9	SS	9		198													
12.8	Probable silt						197													
	Compact						196													
	Cont'd																			

Cont'd

RECORD OF BOREHOLE No 505-15

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+825, o/s 38.0m Rt. CL Med. ORIGINATED BY N.L.B.

DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.

DATUM Geodetic DATE February 26, 2007 CHECKED BY C.N.

[illegible]

RECORD OF BOREHOLE No 505-16

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+850, o/s 18.8m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 26, 2007 CHECKED BY C.N.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa								WATER CONTENT (%)		
								○ UNCONFINED	+ FIELD VANE	● QUICK TRIAXIAL						× LAB VANE		
210.4	Ground Surface						20	40	60	80	100	20	40	60	GR SA SI CL			
0.0	Peat, fine fibrous																	
0.2	Dark brown		1	SS	11													
	Clayey silt, trace sand																	
	Stiff Brown Moist to wet		2	SS	6										0 8 60 32			
209.0																		
1.4	Silty clay, trace sand																	
	thin silt partings		3	SS	6													
	Firm Brown Moist to wet																	
207.8																		
2.6	Clay, trace sand																	
	Firm to soft Reddish brown Moist to wet		4	SS	4										0 1 27 72			
				FV														
	silt layers																	
			5	TW	PH													
	Grey			FV														
			6	TW	PH													
				FV														
203.0																		
7.4	Silty clay																	
	Firm Grey Wet		7	SS	1										0 0 50 50			
				FV														
	thin layers of silt																	
			8	SS	2													
200.2																		
10.2	Silt, trace clay																	
	thin layers of silty clay																	
	Very loose Grey Wet to loose		9	SS	3													
			10	SS	6													
197.6																		
12.8	End of borehole																	
	Probable silt																	
	Loose to compact																	

Cont'd

+⁷, X⁵:

Numbers refer to
Sensitivity

20
15—5
10

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 505-17

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+850, o/s 18.8m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 26 and 27, 2007 CHECKED BY C.N.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100					
210.3	Ground Surface													
0.0	Wood, peat													
210.0	(FILL)		1	SS	20		210						180	Org.
0.3	Peat, fine fibrous													28.9%
209.7	Dark brown													
0.6	Silty clay, trace sand		2	SS	9		209							
	Stiff Reddish Moist brown													
			3	SS	6		208							
207.7	Clay, trace sand													
2.6	Firm Brown Moist to wet		4	TW	PH		207						18.2	0 1 23 76
				FV										
206.0	Clayey silt, trace sand						206							
4.3	Firm Grey Wet		5	SS	2									0 1 71 28
	boulders						205							
204.3	Clay, layered						204							0 0 28 72
6.0	Firm to soft Grey/ dark grey Wet		6	SS	2									
				FV			203							
			7	TW	PH									
				FV			202							
201.6	Silty clay, trace sand						201							
8.7	Firm Grey Wet		8	SS	1									
	thin layers of silt			FV			200							
200.1	Silt, trace clay													
10.2	thin layers of silty clay						199							
	Very Grey Wet		9	SS	3									
	loose						198							
	no silty clay layers													
	Loose		10	SS	9		197							
197.5	End of borehole													
12.8	Probable silt													
	Loose to compact													

Cont'd

+⁷, X⁵:

Numbers refer to
Sensitivity

20
15 0 5
10

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 505-17

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+850, o/s 18.8m Rt. CL Med. ORIGINATED BY N.L.B.

DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.

DATUM Geodetic DATE February 26 and 27, 2007 CHECKED BY C.N.

[illegible]

RECORD OF PENETRATION TEST No 505-18

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+875, o/s 38.5m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 25, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
210.2 0.0	Ground Surface Probable peat Probable clayey silt to clay Firm to stiff						210										
							209										
							208										
							207										
							206										
							205										
							204										
							203										
							202										
							201										
							200										
198.9 11.3	End of dynamic cone penetration test						199										

RECORD OF BOREHOLE No 505-19

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+875 CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 26, 2007 CHECKED BY C.N.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100					
210.0	Ground Surface													
0.0 219.7	Peat, coarse fibrous Dark brown		1	CS	-									
0.3	Clayey silt, trace sand													
	Stiff to Reddish Moist firm brown		2	SS	8		209							
208.6	Clay, trace sand													
1.4	Firm Brown/ Moist grey		3	SS	6		208							0 1 39 60
	layers of silt						207							
	Wet		4	SS	3		206							
							205							
	no layering						204							
			6	SS	WH**		203							0 0 35 65
	thin layers of silt						202							
	Grey		7	SS	WH		201							
201.5	Silt, some clay						200							
8.5	Very loose Grey Wet to compact		8	SS	4		199							0 0 83 17
198.7	End of borehole		9	SS	10		198							
11.3	Probable silt						197							
	Compact						196							
196.0	End of dynamic cone penetration test													
14.0	Refusal on probable bedrock													

Cont'd

+⁷, X⁵:

Numbers refer to
Sensitivity

20
15 0 5
10

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 505-19

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+875 CL Med. ORIGINATED BY N.L.B.

DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.


DATUM Geodetic DATE February 26, 2007 CHECKED BY C.N.

[illegible]

RECORD OF PENETRATION TEST No 505-20

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+875, o/s 38.0m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 26, 2007 CHECKED BY C.N.

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							
209.8 0.0	Ground Surface Probable peat Probable clayey silt to clay Firm to stiff							20 40 60 80 100		20 40 60 80 100					
								209							
								208							
								207							
								206							
								205							
								204							
								203							
202.2 7.6	End of dynamic cone penetration test														

RECORD OF BOREHOLE No 505-21

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+900, o/s 18.8m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 25, 2007 CHECKED BY C.N.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa										
						○ UNCONFINED			+ FIELD VANE							
						● QUICK TRIAXIAL			× LAB VANE							
210.0	Ground Surface															
0.0	Peat, fine fibrous															
219.7	Dark brown/black		1	SS	10										48.9%	
0.3	Clayey silt, trace sand															
	Stiff to firm		2	SS	5											
208.6	Brown Moist to wet															
1.4	Clay															
	Firm Mottled Moist		3	SS	4											
	grey/Brown															
			4	SS	2											
	trace sand															
	Wet															
			5	SS	2											
	thin layers of silt			FV												
	Grey															
			6	SS	WH**											
				FV												
			7	SS	2											
201.3																
8.7	Silt, trace clay															
	thin partings of clay															
	Loose Grey Wet		8	SS	5											
			9	SS	3											
198.7																
11.3	End of borehole															
	Probable silt															
	Loose to compact															
196.1																
13.9	End of dynamic cone penetration test															
	Refusal on probable bedrock															
	Cont'd															

Cont'd

+⁷, X⁵:

Numbers refer to
Sensitivity

20
15—○—5
10

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 505-21

2 of 2

METRIC

G.W.P.	<u>5218-06-00</u>	LOCATION	<u>Hwy 69 (New), Sta. 18+900, o/s 18.8m Lt. CL Med.</u>	ORIGINATED BY	<u>M.R.</u>
DIST	<u>54</u>	HWY	<u>69</u>	BOREHOLE TYPE	<u>C.F.H.S.A. and Dynamic Cone Penetration Test</u>
				COMPILED BY	<u>N.S.B.</u>
DATUM	<u>Geodetic</u>	DATE	<u>February 25, 2007</u>	CHECKED BY	<u>C.N.</u>

[illegible]

RECORD OF BOREHOLE No 505-22

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+900, o/s 18.8m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.S.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 25, 2007 CHECKED BY C.N.


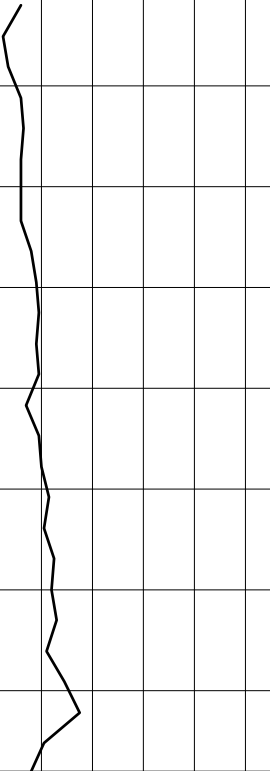
SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE					WATER CONTENT (%)				
209.9	Ground Surface							20	40	60	80	100					
0.0	Peat, coarse fibrous							20	40	60	80	100					
0.2	Dark brown		1	CS	-												
	Silty clay, trace sand																
	Stiff Mottled Moist		2	SS	7		209										0 1 55 44
	grey																
			3	SS	8		208										
							▽*										
	Firm Wet						▽*										
			4	SS	2		207										
				FV													
			5	SS	1		206										
				FV													
			6	SS	1		205										0 1 49 50
				FV													
			7	SS	7		204										

METRIC

RECORD OF PENETRATION TEST No 505-24

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+925 CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 25, 2007 CHECKED BY C.N.

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							
210.1 0.0	Ground Surface Probable peat Probable clayey silt to clay Firm to stiff														
202.2 7.9	End of dynamic cone penetration test														

RECORD OF BOREHOLE No 505-25

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+925, o/s 38.0m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.S.S.A and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 25, 2007 CHECKED BY C.N.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)										
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)									
								○ UNCONFINED + FIELD VANE										○									
								● QUICK TRIAXIAL × LAB VANE																			
209.8	Ground Surface						20	40	60	80	100	20	40	60		GR SA SI CL											
0.0	Peat, coarse fibrous		1	SS	9																						
0.2	Dark brown																										
	Clayey silt, trace sand																										
	Stiff Mottled brown/grey Moist																										
		2	SS	9																							
		3	SS	10																							
207.1																											
2.7	Clay, varved layers of silt																										
	Firm Brown/Wet grey																										
		4	SS	1																							
		5	SS	WH**																							
204.3																											
5.5	Silt, trace clay thin layers of Silty clay																										
	Loose Grey Wet																										
	no layering																										

RECORD OF BOREHOLE No 505-26

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+950, o/s 19.0m Lt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE April 26, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION kPa RESISTANCE PLOT						PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)				GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE												
214.5	Ground Surface																								
0.0	Topsoil																								
214.2	End of borehole																								
0.3	Refusal on probable bedrock																								
	* Borehole dry																								

RECORD OF BOREHOLE No 505-27

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+950, o/s 18.8m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 25, 2007 CHECKED BY C.N.

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													
								○ UNCONFINED			+ FIELD VANE										
210.5	Ground Surface						20	40	60	80	100										
0.0	Topsoil																				
0.2	Silty clay, trace sand thin layers of clayey silt		1	SS	12																
	Stiff to Mottled Moist firm brown/ to wet grey		2	SS	11													0 2 64 34			
			3	SS	7																
	Grey																				
			4	SS	4													0 1 68 31			
206.5	Silt, trace clay thin layers of silty clay																				
4.0	Loose Grey Wet no layering		5	SS	7																
204.8	Sand some gravel, trace silt layers of silt																				
5.7	Loose Grey Wet		6	SS	8																
203.8	End of borehole																				
6.7	* Borehole dry upon completion of drilling																				

RECORD OF PENETRATION TEST No 505-28

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+961, o/s 37.0m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 25, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100	W _p W W _L	WATER CONTENT (%)			
210.5 0.0	Ground Surface Probable peat Probable clayey silt to clay Firm to stiff													
206.1 4.4	End of dynamic cone penetration test Refusal on probable bedrock													

RECORD OF BOREHOLE No 505-29

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+975, o/s 40.5m Lt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE February 22, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC NATURAL LIQUID LIMIT MOISTURE LIMIT CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					W _p W W _L				WATER CONTENT (%)			
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
218.2	Ground Surface							20	40	60	80	100								
0.0	Topsoil						218													
217.9																				
0.3	Silt, some gravel trace sand, trace clay cobbles and boulders																			
217.0	Brown Moist																			
1.2	Sandy silt, with gravel cobbles and boulders						217													
216.5																				
1.7	Grey/ Moist brown																			
	End of borehole																			
	Refusal on probable bedrock																			

RECORD OF BOREHOLE No 505-30

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 18+975 CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE April 26, 2007 CHECKED BY C.N.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)				
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					w _p	w	w _L		WATER CONTENT (%)	GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE									
216.2	Ground Surface																				
0.0	Topsoil						216														
0.2	End of borehole																				
	Refusal on probable bedrock																				
	* Borehole dry																				

RECORD OF BOREHOLE No 505-31

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+000, o/s 19.0m Lt. CL Med. ORIGINATED BY N.L.B.

DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.

DATUM Geodetic DATE April 26, 2007 CHECKED BY C.N.


[illegible]

RECORD OF BOREHOLE No 505-32

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+000, o/s 19.0m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
DATUM Geodetic DATE April 26, 2007 CHECKED BY C.N.

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 (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)				GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE					LAB VANE							
216.1	Ground Surface																							
0.0	Topsoil																							
0.2	End of borehole																							
	Refusal on probable boulder																							
	* Borehole dry																							

RECORD OF PENETRATION TEST No N17-2

1 of 2 METRIC




G.W.P. 5218-06-00 LOCATION Hwy. 69 Sta. 25+370, C/L
Co-ords. 5 123 108 N; 320 235 E ORIGINATED BY F.P.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY F.P.
DATUM Geodetic DATE February 26, 2004 CHECKED BY G.D.

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 (%)		
								○ UNCONFINED		+ FIELD VANE								○		
							20	40	60	80	100									
209.9 0.0	Ground Surface																			
	Peat, coarse fibrous		1	SS	13															
	Dark brown Silty clay, trace sand clayey silt lenses																			
	Stiff Brown Moist																			
			2	SS	13											0 1 44 55				
	Clay, trace sand																			
	Firm Mottled Wet grey/brown		3	SS	5															
	Varved Grey		4	SS	WH**											0 1 27 72				
			5	SS	WH															
	silt lenses																			
			6	SS	5															
	Silt some clay, trace sand																			
	Loose Grey Moist															0 1 87 12				
			7	SS	9															
			8	SS	6											0 1 81 18				
	Sand, with gravel, with silt																			
	Loose Grey Wet																			
			9	SS	7															
196.3 13.6	End of borehole																			
	Refusal on probable bedrock																			
	* 2004 02 26 Cont'd																			

RECORD OF PENETRATION TEST No N17-2

2 of 2 **METRIC**

G.W.P. 5218-06-00 LOCATION Hwy. 69 Sta. 25+370, C/L ORIGINATED BY F.P.
 Co-ords. 5 123 108 N; 320 235 E
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY F.P.
 DATUM Geodetic DATE February 26, 2004 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
194.9	Cont'd  Water level observed during drilling  Water level measured after drilling  Penetrometer test WH** Refers to penetration under weight of rods and hammer																


SWAMP 506

RECORD OF BOREHOLE No 506-1

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+040, o/s 38.5m Lt. CL Med. ORIGINATED BY V.M.M.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE February 23, 2007 CHECKED BY G.D.


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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)			
221.0	Ground Surface							20	40	60	80	100		20	40	60				
0.0	Topsoil																			
220.7	End of borehole																			
0.3	Refusal on probable bedrock																			
	* Borehole dry																			

RECORD OF BOREHOLE No 506-2

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+040 CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE April 30, 2007 CHECKED BY G.D.

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 (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)				GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE					LAB VANE							
216.1	Ground Surface																							
0.0	Topsoil						216																	
215.8	End of borehole																							
0.3	Refusal on probable boulder																							
	* Borehole dry																							

RECORD OF BOREHOLE No 506-3

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+040, o/s 38.5m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 25, 2007 CHECKED BY G.D.

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										
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE										
210.8 0.0	Ground Surface							20	40	60	80	100						
0.1	Peat, coarse fibrous Dark brown		1	CS	-													
	Clayey silt, trace sand boulders																	
	Firm Brown Moist		2	SS	2		210							○				
	thin partings of sand																	
			3	SS	9		209							○				
208.5 2.3	End of borehole																	
	Refusal on probable bedrock																	

RECORD OF BOREHOLE No 506-4

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+050, o/s 19.0m Lt. CL Med. ORIGINATED BY V.M.M.
DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
DATUM Geodetic DATE February 23, 2007 CHECKED BY G.D.


SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					w _p	w	w _L			
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE										
216.1	Ground Surface							20	40	60	80	100						GR SA SI CL
0.0	Topsoil						216											
0.2	Sand, some silt cobbles and boulders																	
215.3	Brown Dry																	
0.8	Silty sand						215											
214.9	cobbles																	
1.2	Brown Dry																	
	End of borehole																	
	Refusal on probable bedrock																	
	* Borehole dry																	

RECORD OF BOREHOLE No 506-5

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+050, o/s 18.8m Rt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE March 31, 2008 CHECKED BY G.D.

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 (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)				GR	SA	SI	CL
								○ UNCONFINED	● QUICK TRIAXIAL	+	×	FIELD VANE					LAB VANE							
213.1	Ground Surface																							
0.0	Topsoil																							
0.2	End of borehole																							
	Refusal on probable bedrock																							
	* Borehole dry																							

RECORD OF PENETRATION TEST No 506-6

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 19+075, o/s 38.5m Lt. CL Med.	ORIGINATED BY	M.R.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 24, 2007	CHECKED BY	G.D.

SOIL PROFILE				SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT	PLASTIC LIMIT	NATURAL MOISTURE CONTENT	LIQUID LIMIT	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)					
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	20			40	60	80	100		W _p	W	W _L	WATER CONTENT (%)	GR	SA
211.3 0.0	Ground Surface Probable peat — — Probable silt Loose to compact																		
209.5 1.8	End of dynamic cone penetration test Refusal on probable bedrock																		

METRIC


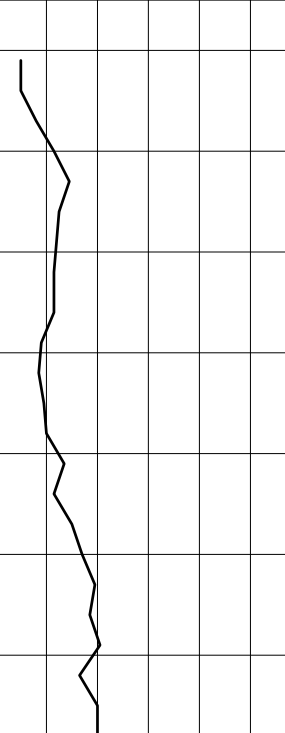
G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 19+075 CL	ORIGINATED BY	M.R.
DIST	54	HWY	69	BOREHOLE TYPE	Continuous Flight Solid Stem Augers
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 24, 2007	CHECKED BY	G.D.

[illegible]

RECORD OF PENETRATION TEST No 506-8

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+075 o/s 38.5m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 24, 2007 CHECKED BY G.D.

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						
209.5 0.0	Ground Surface Probable peat Probable clayey silt/ silty clay Firm to stiff													
202.2 7.3	End of dynamic cone penetration test													

METRIC

+⁷, X⁵: Numbers refer to Sensitivity



(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 506-10

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+100, o/s 18.8m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.S.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 24, 2007 CHECKED BY G.D.

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 (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										
209.4	Ground Surface																	
0.0	Topsoil																	
0.2	Silty clay, trace sand																	
	Stiff to firm Mottled brown/grey Moist to wet grey	1	SS	8			209											
		2	SS	8			208											
						207												
		3	SS	3		206										0 1 46 53		
205.3	Silt, trace clay thin layers of silty clay					205												
4.1	Very loose Grey Wet	4	SS	4		204												
	no layering, trace sand Loose					203										0 1 90 9		
202.7	End of borehole					202												
6.7	Probable silt Loose to compact					201												
200.5	End of dynamic cone penetration test																	
8.9	Refusal on probable bedrock																	
	* 2007 02 24																	
	▽ Water level observed during drilling																	
	▼ Water level measured after drilling																	
	C.F.S.S.A. - Denotes Continuous Flight Solid Stem Augers																	

RECORD OF BOREHOLE No 506-11

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+125, o/s 36.5m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.S.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 24, 2007 CHECKED BY G.D.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							
209.4	Ground Surface														
0.0	Peat, fine fibrous														
0.2	Dark brown		1	SS	3		209								
208.7	Clayey silt, trace sand rootlets														
0.7	Firm Grey Wet		2	SS	9		208								
	Silty clay, trace sand														
	Stiff to firm		3	SS	7										
	Brown/ dark brown														
	thin layers of silt						207								
	Grey		4	SS	7		206								
205.3															
4.1	Silt, trace clay						205								
	thin layers of silty clay														
	Loose Brown Wet		5	SS	7		204								
	no layering														
	some clay, trace sand		6	SS	7		203								
202.7															
6.7	End of borehole						202								
	Probable silt						201								
	Loose to compact						200								
							199								
							198								
197.8															
11.6	End of dynamic cone penetration test														
	Refusal on probable bedrock														
	* 2007 02 24														
	Water level observed during drilling														
	Water level measured after drilling														
	C.F.H.S.A. - Denotes Continuous Flight Hollow Stem Augers														

RECORD OF PENETRATION TEST No 506-12

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+125 CL ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 24, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC NATURAL LIQUID LIMIT MOISTURE LIMIT CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100	W _p W W _L	WATER CONTENT (%)			
209.0 0.0	Ground Surface Probable peat Probable silty clay Firm to stiff													
199.9 9.1	End of dynamic cone penetration test													

RECORD OF BOREHOLE No 506-13

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+125, o/s 36.5m Rt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.S.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 24, 2007 CHECKED BY G.D.


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										
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE										
208.9 0.0	Top of Ice							20	40	60	80	100	WATER CONTENT (%)					
0.1	Ice												20	40	60			
208.3	Peat, fine fibrous Dark brown																	
0.6	Peat, coarse fibrous Dark brown																	
	Silty clay, trace sand		1	SS	10		208							○				
	Stiff Mottled Moist to firm brown/ to wet grey grey																	
	fine fibrous Dark brown		2	SS	10		207							○				
	amorphous Olive brown						206											
205.6																		
3.3	Clay, silty Grey Wet		3	SS	4		205							○				
204.9	Clayey silt, trace sand																	
204.4	Soft Grey Wet																	
4.5	End of borehole		4	SS	1		204										0 1 75 24	
203.3																		
5.6	Silt, trace clay thin layers of silty clay						203											
	Loose Grey Wet		5	SS	5									○				
	* Borehole dry upon completion of drilling						202											
			6	SS	7		201							○				
200.7																		
8.2	End of borehole Probable silt Loose to compact						200											
							199											
198.7																		
10.2	End of dynamic cone penetration test Refusal on probable bedrock											120/15cm						
	* Borehole dry upon completion of drilling C.F.S.S.A. - Denotes Continuous Flight Solid Stem Augers																	

RECORD OF BOREHOLE No 506-14

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+150, o/s 18.8m Lt. CL Med. ORIGINATED BY M.R.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 24, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
210.0	Ground Surface																
0.0	Peat, coarse fibrous																
0.2	Dark brown																
	Silty clay, trace sand thin layers of silt																
	Stiff Brown/ Moist grey		1	SS	10		209						o				
208.5																	
1.5	End of borehole																
	Refusal on probable bedrock																
	* Borehole dry upon completion of drilling																

RECORD OF BOREHOLE No 506-15

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+150, o/s 18.8m Rt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE February 24, 2007 CHECKED BY G.D.

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 (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)				GR	SA	SI	CL
								○ UNCONFINED	+	FIELD VANE	● QUICK TRIAXIAL	×					LAB VANE							
209.7	Ground Surface																							
0.0	Topsoil																							
0.2	End of borehole																							
	Refusal on probable bedrock																							
	End of borehole																							
	* Borehole dry																							

RECORD OF BOREHOLE No 506-16

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+175, o/s 36.0m Lt. CL Med. ORIGINATED BY S.A.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE March 31, 2008 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
209.1	Ground Surface																
0.0	Topsoil																
0.2	End of borehole																
	Refusal on probable bedrock																
	* Borehole dry																

RECORD OF BOREHOLE No 506-17

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+175 CL ORIGINATED BY V.M.M.
DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
DATUM Geodetic DATE February 23, 2007 CHECKED BY G.D.

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									
212.6	Ground Surface																
0.0	Topsoil																
0.1	End of borehole																
	Refusal on probable bedrock																
	* Borehole dry																


Cont'd

RECORD OF BOREHOLE No 506-18

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+175, o/s 36.0m Rt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Power Augering COMPILED BY N.S.B.
 DATUM Geodetic DATE February 24, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
209.1	Ground Surface																
0.0 208.8	Topsoil						209										
0.3	End of borehole Refusal on probable bedrock																
	* Borehole dry																

METRIC

METRIC

WH** Denotes penetration due to weight of hammer and rods

RECORD OF BOREHOLE No 506-21

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+225, o/s 35.5m Lt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 21, 2007 CHECKED BY G.D.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
208.7	Top of Ice						20	40	60	80	100						
0.0	Ice					▽*											
0.2	Peat, coarse fibrous Dark brown																
207.0																	
1.7	Silt trace sand, trace clay Loose Grey Wet thin layers of silty clay Very loose		1	SS	9								○				
			2	SS	2								○				
			3	SS	1								○				
203.2																	
5.5	Clay, trace sand Soft Brown/ Moist to stiff grey to wet layers of silt Grey no layering																
			4	SS	WH**												
				FV													
			5	SS	WH								○				
				FV													
			6	SS	WH									○			
				FV													
			7	SS	WH												
				FV													
			8	SS	WH									○			
				FV													
			9	SS	WH										○		
				FV													

Cont'd

METRIC

(%) STRAIN AT FAILURE

RECORD OF PENETRATION TEST No 506-22

1 of 2 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 19+225 CL	ORIGINATED BY	N.L.B.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 21, 2007	CHECKED BY	G.D.

[illegible]

2 of 2 **METRIC**

(%) STRAIN AT FAILURE

METRIC

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 506-23

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+225, o/s 35.5m Rt. CL Med. ORIGINATED BY M.R.

DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.

DATUM Geodetic DATE February 23, 2007 CHECKED BY G.D.

[illegible]

METRIC

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 	PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT w_p w w_L WATER CONTENT (%) 20 40 60	UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE						
208.7	Top of Ice					SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE 20 40 60 80 100				

[illegible]

METRIC

20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 506-25

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+250, o/s 18.8m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 23, 2007 CHECKED BY G.D.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa												
						○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
							WATER CONTENT (%)											
208.7	Top of Ice																	
0.0	Ice																	
208.4																		
0.3	Peat, coarse fibrous																	
	Dark brown																	
	fine fibrous		1	SS	WH**													
	amorphous		2	SS	WH													
	Olive brown																	
205.2			3	SS	WH											199		
3.5	Silty clay layers of sandy silt																	
	Soft Brown Wet		4	SS	1													
204.3																		
4.4	Silt with sand, trace clay																	
	Very loose Grey Wet		5	SS	1												0 30 66 4	
203.1																		
5.6	Clayey silt, trace sand thin layers of silt																	
	Firm Grey Wet to soft		6	SS	WH												0 2 70 28	
				FV														
			7	SS	WH												0 4 50 46	
				FV														
200.0																		
8.7	Clay, varved thin layers of silt																	
	Soft Grey/ Moist to firm brown to wet		8	SS	WH													
				FV														
			9	TW	PH													
				FV														
			10	SS	1													
				FV														
	Grey/ dark grey		11	SS	WH													
				FV														
193.7																		

RECORD OF BOREHOLE No 506-25

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+250, o/s 18.8m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 23, 2007 CHECKED BY G.D.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
193.7							20	40	60	80	100						
15.0	Silt, trace clay layers of silty clay Very loose Grey Wet to loose — — — — no layering some clay, trace sand Compact		12	SS	3									○			
191.3			13	SS	12									○		0 1 84 15	
17.4	End of borehole Probable silt Loose to compact						191										
							190										
							189										
							188										
187.4																	
21.3	End of dynamic cone penetration test																

RECORD OF PENETRATION TEST No 506-26

1 of 2 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 19+275, o/s 35.0m Lt. CL Med.	ORIGINATED BY	M.R.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 19, 2007	CHECKED BY	G.D.

[illegible]

RECORD OF PENETRATION TEST No 506-26

2 of 2 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+275, o/s 35.0m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 19, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	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
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L			
193.7	Probable clayey soils Soft to firm						193											
							192											
							191											
	Probable silt Loose to compact						190											
							189											
							188											
187.4 21.3	End of dynamic cone penetration test																	

METRIC

(%) STRAIN AT FAILURE

METRIC

20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF PENETRATION TEST No 506-28

1 of 2 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 19+275, o/s 35.0m Rt. CL Med.	ORIGINATED BY	M.R.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 19, 2007	CHECKED BY	G.D.

[illegible]

RECORD OF PENETRATION TEST No 506-28

2 of 2 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+275, o/s 35.0m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 19, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
193.7	Probable silt Loose to compact						193										
							192										
							191										
							190										
189.2 19.5	End of dynamic cone penetration test																

RECORD OF BOREHOLE No 506-29

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+300, o/s 18.8m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 21, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION kPa RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					W _P	W	W _L					
								○ UNCONFINED	● QUICK TRIAXIAL	+ FIELD VANE	× LAB VANE	WATER CONTENT (%)								
208.7	Top of Ice						20	40	60	80	100						GR	SA	SI	CL
0.0	Ice																			
208.4																				
0.3	Peat, coarse fibrous pieces of decayed wood																			
	Dark brown																			
			1	SS	WH**															
			2	SS	WH															
			3	SS	WH											555				
	fine fibrous																			
			4	SS	WH											219				
	amorphous																			
			5	SS	WH											146				
	Olive brown																			
203.3																				
5.4	Organic clayey silt layers of fine sand		6	SS	WH															
202.7																				
6.0	Very soft Grey Wet																			
	Clayey silt		7	SS	WH															
	Soft Grey Wet																			
				FV																
201.3																				
7.4	Silty clay, trace sand thin layers of clayey silt		8	SS	WH															
	Soft to Grey/ Wet																			
	firm brown			FV																
			9	TW	-															
				FV																
			10	SS	WH															
				FV																
			11	SS	WH															
	partings of silt		12	SS	WH															
					</															

RECORD OF BOREHOLE No 506-29

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+300, o/s 18.8m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 21, 2007 CHECKED BY G.D.

SOIL PROFILE				SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION kPa RESISTANCE PLOT						PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa						WATER CONTENT (%)							GR	SA	SI	CL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
						○ UNCONFINED			● QUICK TRIAXIAL	+	×	FIELD VANE	LAB VANE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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RECORD OF BOREHOLE No 506-30

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+300, o/s 18.8m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 20, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					W _P	W	W _L		WATER CONTENT (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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RECORD OF BOREHOLE No 506-30

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+300, o/s 18.8m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 20, 2007 CHECKED BY G.D.

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 (%)				
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)				
								○ UNCONFINED + FIELD VANE													
								● QUICK TRIAXIAL × LAB VANE													
193.7							20	40	60	80	100		20	40	60		GR	SA	SI	CL	
15.0	Silty clay thin layers of silt Firm Grey Wet		12	SS	WH									c							
				FV																	
192.3																					
16.4	Silt, trace clay thin layers of clay Loose Grey Wet		13	SS	7									o							
			14	SS	8									o							
	trace sand, trace gravel																				
186.8			15	SS	4									o				1	5	86	8
21.9	End of borehole																				
	<div>* Borehole dry upon compeltion of Drilling</div> <div>WH** Denotes penetration due to weight of hammer and rods</div>																				

RECORD OF BOREHOLE No 506-31

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+325, o/s 35.0m Lt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 20, 2007 CHECKED BY G.D.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
208.7	Top of Ice																
0.0	Ice					▽*											
0.2	Peat, coarse fibrous																
	Dark brown Wet		1	SS	WH**		208										
	wood pieces		2	SS	WH		207								607		
			3	SS	WH		206								750		
	fine fibrous, no wood		4	SS	WH		205								704		
			5	SS	WH		204								534		
	amorphous		6	SS	WH		203								148		
203.7	Clayey silt, trace sand						202										
5.0	Firm Grey Wet		7	SS	WH		201										
	layers of sand			FV			200										
	no sand layers		8	SS	WH		199										
200.2	Clay, trace sand						198										
8.5	Firm to soft Brown/ grey Wet		9	SS	WH		197										
				FV			196										
			10	SS	WH		195										
				FV			194										
	layers of silt		11	SS	WH												
	Grey		12	SS	WH												
				FV													

Cont'd

RECORD OF BOREHOLE No 506-31

2 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+325, o/s 35.0m Lt. CL Med. ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 20, 2007 CHECKED BY G.D.

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 (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
193.7							20	40	60	80	100		20	40	60		GR SA SI CL
192.2 16.5			13	SS	WH									○			
	Silt, some clay layers of silty clay Loose Grey Wet													○			
			14	SS	7												
	no layering, trace gravel																
189.8			15	SS	9									○			
18.9	End of borehole Probable silt Loose to compact																

RECORD OF BOREHOLE No 506-32

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+325, o/s 35.0m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 21, 2007 CHECKED BY G.D.

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									
								○ UNCONFINED		+ FIELD VANE							
								● QUICK TRIAXIAL		× LAB VANE							
							WATER CONTENT (%)										
							20	40	60	80	100	20	40	60			
208.7	Top of Ice																
0.0	Ice																
208.4																	
0.3	Peat, coarse fibrous pieces of decayed wood						208										
	Dark brown																
			1	SS	2		207										
	fine fibrous																
			2	SS	WH**		206								176		
	amorphous		3	SS	WH		205										
			4	SS	WH												
204.1																	
4.6	Organic clayey silt		5	SS	WH		204										
	Soft Grey Wet			FV			203	+	4								
203.0																	
5.7	Silty clay thin layers of silt						202	+	4				○				
	Soft to Grey Wet firm		6	SS	WH												
				FV													
201.5																	
7.2	Clay, varved						201						○				
	Soft to Brown/ Wet firm grey		7	SS	WH		200	+	4								
				FV													
			8	SS	WH		199	+	4					○			
				FV													
			9	SS	2		198							○			
				FV			197	+	4								
			10	SS	1		196							○			
				FV				+	4								
195.3																	
13.4	Silt, trace clay layers of silty clay						195							○			
	Very loose Grey Wet to loose		11	SS	4												
							194										
	Cont'd																

Cont'd

+7, X⁵:

Numbers refer to
Sensitivity

20
15—5
10

(%) STRAIN AT FAILURE

METRIC

RECORD OF PENETRATION TEST No 506-33

1 of 2 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+335 CL ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 12, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE LIQUID LIMIT LIMIT CONTENT CONTENT LIMIT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40	60	80	100	W _p	W	W _L		
208.7 0.0	Ground Surface Probable peat																
	Probable clayey soils																
	Probable silt Loose to compact																
	Cont'd																

RECORD OF PENETRATION TEST No 506-33

2 of 2 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+335 CL ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 12, 2007 CHECKED BY G.D.

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 (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	SHEAR STRENGTH kPa					WATER CONTENT (%)							GR	SA	SI	CL
193.7																					
	Probable silt Loose to compact	<div><div></div><div></div><div></div><div></div></div>						193	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div>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RECORD OF BOREHOLE No 506-34

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+350, o/s 18.8m Lt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 14, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	W _P	W	W _L	WATER CONTENT (%)			GR		SA	SI	CL	
								SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
208.7	Ground Surface																			
0.0	Peat, coarse fibrous Dark brown																			
	fine fibrous		1	SS	WH**															
			2	SS	WH															
			3	SS	WH															
		4	SS	WH																
205.0	Organic clay		5	SS	WH															
3.7	Very soft Grey Wet																			
204.4	Silty clay, trace sand		6	SS	WH															
4.3	Soft Grey Wet to firm																			
	layers of sand		7	SS	WH															
	no sand layers			FV																
			8	SS	WH															
				FV																
			9	SS	2															
				FV																
			10	SS	WH															
				FV																
			11	SS	WH															
			FV																	
195.4	Silt trace sand, trace clay		12	SS	WH															
13.3	Very loose Grey Wet																			
194.4	End of borehole																			
14.3																				
	Cont'd																			

Cont'd

+⁷, X⁵:

Numbers refer to
Sensitivity

20
15—5
10

(%) STRAIN AT FAILURE

RECORD OF BOREHOLE No 506-34

2 of 2

METRIC

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta. 19+350, o/s 18.8m Lt. CL Med.	ORIGINATED BY	M.R.
DIST	54	HWY	69	BOREHOLE TYPE	C.F.H.S.A. and Dynamic Cone Penetration Test
DATE		February 14, 2007		CHECKED BY	G.D.
DATUM	Geodetic				

[illegible]

RECORD OF BOREHOLE No 506-35

1 of 2

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+350, o/s 18.8m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 13, 2007 CHECKED BY G.D.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE									
208.7	Top of Ice						20	40	60	80	100						
0.0	Ice																
208.4	Peat, coarse fibrous																
0.3	fine fibrous			1	SS	WH**											
				2	SS	WH											
	amorphous																
	Olive brown	3		SS	WH												
			4	SS	WH										667	Org. 44.9%	
			5	SS	WH									302			
204.5	Silty clay thin layers of silt and silty sand																
4.2	Firm Mottled Wet brown/ grey		6	SS	1												
				FV													
202.8																	
5.9	Silty sand																
	Very loose Grey Wet		7	SS	WH												
201.8	Silty clay, trace sand																
6.9	Firm Grey/ Wet brown		8	SS	1											0 1 43 56	
				FV													
	Grey/ dark grey		9	SS	WH											0 1 38 61	
				FV													
198.6																	
10.1	Silt, trace clay thin layers of silty clay																
	Very loose Grey Wet		10	SS	2												
	no layering trace sand																
	Loose		11	SS	8											0 1 89 10	
195.9																	
12.8	End of borehole																
	Probable silt																
	Loose to compact																
	Cont'd																

Cont'd

+⁷, X⁵:

Numbers refer to
Sensitivity

20
15 0 5
10

(%) STRAIN AT FAILURE

METRIC

(%) STRAIN AT FAILURE

1 of 1 **METRIC**

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+7, X⁵: Numbers refer to Sensitivity

20
15—○—5 (% STRAIN AT FAILURE)
10

RECORD OF BOREHOLE No 506-37

1 of 1

METRIC

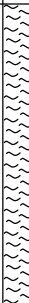
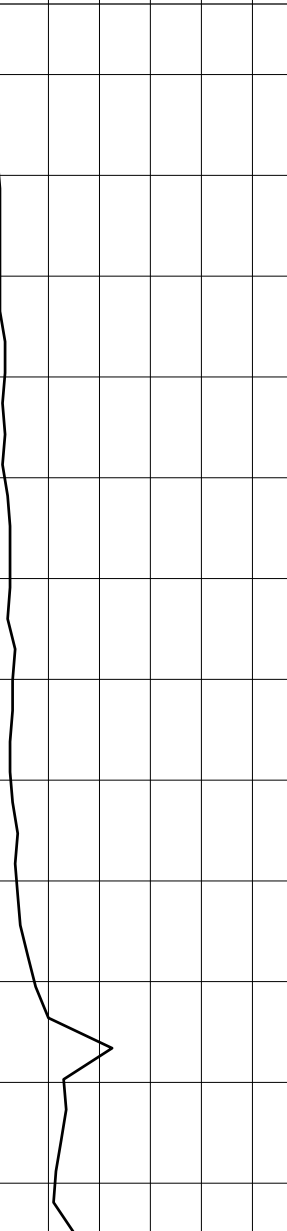
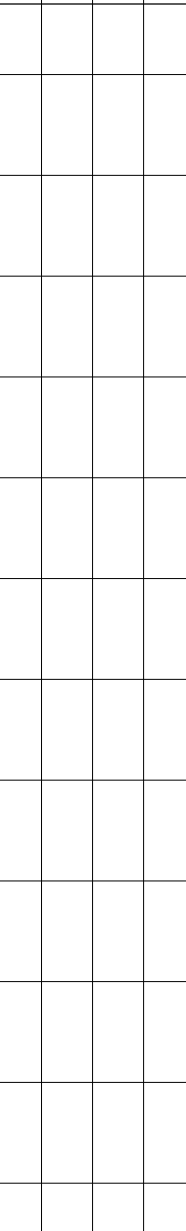


G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+375 CL ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.H.S.A. and Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 12 and 13, 2007 CHECKED BY G.D.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)		
								○ UNCONFINED	● QUICK TRIAXIAL	+ FIELD VANE	× LAB VANE									
208.7	Ground Surface																			
0.0	Peat, coarse fibrous																			
	Dark brown Wet																			
	amorphous		1	SS	WH*										558	Org. 69.9%				
			2	SS	WH															
206.0	Organic clay		3	SS	WH															
2.7	Soft Brown/ Wet																			
	grey		4	SS	1															
205.2	Sand, with silt																			
3.5	Very loose Grey Wet																			
204.4	Clayey silt, trace sand																			
4.3	Firm Grey Wet		5	SS	1											0 2 64 34				
203.0	Silty clay, trace sand																			
5.7	Firm Grey Wet		6	SS	WH															
				FV																
			7	SS	2											0 1 43 56				
				FV																
			8	SS	1															
				FV																
197.9	Silt, trace sand																			
10.8	Loose Grey Wet		9	SS	8															
197.5	End of borehole																			
11.2	Probable silt																			
196.5	Loose to compact																			
12.2	End of dynamic cone penetration test																			
	Refusal on probable bedrock																			
	* 2007 2 12/13																			
	Water level observed during drilling																			
	Water level observed during drilling																			
	WH** Denotes penetration due to weight of hammer and rods																			
	C.F.H.S.A. - Denotes Continuous Flight Hollow																			
	Stem Augers																			

RECORD OF PENETRATION TEST No 506-38

1 of 1 **METRIC**

G.W.P.	5218-06-00	LOCATION	Hwy 69 (New), Sta 19+375, o/s 34.0m Rt. CL Med.	ORIGINATED BY	M.R.
DIST	54	HWY	69	BOREHOLE TYPE	Dynamic Cone Penetration Test
				COMPILED BY	N.S.B.
DATUM	Geodetic	DATE	February 13, 2007	CHECKED BY	G.D.

SOIL PROFILE						SAMPLES			DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)							
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	SHEAR STRENGTH kPa					W _p W W _L			WATER CONTENT (%)			GR	SA	SI	CL			
208.7 0.0	Ground Surface Probable peat																								
	Probable clayey silt/ silty clay Soft to firm																								
	Probable silt Loose to compact																								
196.5 12.2	End of Dynamic Cone Penetration Test																								

METRIC

20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 506-40

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+400, o/s 18.8m Rt. CL Med. ORIGINATED BY M.R.
DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
DATUM Geodetic DATE February 12, 2007 CHECKED BY G.D.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
208.9	Top of Ice/snow		1	SS	WH**	▽*	20	40	60	80	100	20	40	60	kN/m³	GR SA SI CL	
0.0	Ice																
0.2	Peat, coarse fibrous		2	SS	1	208	20	40	60	80	100	20	40	60			
208.3	Dark brown																
0.6	Organic silty clay		3	SS	3	207	20	40	60	80	100	20	40	60			
207.5	Very soft Dark brown Wet																
1.4	Silty clay, trace sand partings of silt		4	SS	1	206	20	40	60	80	100	20	40	60			
206.3	Soft to Grey Wet firm																
2.6	Clayey silt, trace sand Firm Grey Wet		5	SS	3	204	20	40	60	80	100	20	40	60			
204.8																	
4.1	Silt, trace clay						205	20	40	60	80	100	20	40	60		
203.4	Very loose Grey Wet																
5.5	End of borehole																
	Refusal on probable bedrock																

RECORD OF BOREHOLE No 506-41


1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+425, o/s 36.5m Lt. CL Med. ORIGINATED BY N.L.B.

DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.


DATUM Geodetic DATE February 12, 2007 CHECKED BY G.D.

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT	NATURAL MOISTURE CONTENT	LIQUID LIMIT	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)		
								○ UNCONFINED		+ FIELD VANE		● QUICK TRIAXIAL						× LAB VANE		w _p
211.5	Ground Surface					↓*	20	40	60	80	100	20	40	60	kN/m³	GR SA SI CL				
0.0	Topsoil		1	SS	17															
211.2	Clayey silt, trace sand Stiff Mottled Moist brown/grey		2	SS	14															
0.3			3	SS	12															
			thin layers of sand Wet																	
			4	SS	9															
	cobbles and boulders																			
207.0	End of borehole					207														
4.5	Refusal on probable bedrock																			
* 2007 02 12																				
↓ Water level measured after drilling																				

RECORD OF PENETRATION TEST No 506-42

1 of 1 METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+425 CL ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE Dynamic Cone Penetration Test COMPILED BY N.S.B.
DATUM Geodetic DATE February 12, 2007 CHECKED BY G.D.


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							
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE							
211.5 0.0	Ground Surface Probable peat Probable clayey silt Firm to stiff														

RECORD OF BOREHOLE No 506-43

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+425, o/s 36.5m Rt. CL Med. ORIGINATED BY M.M.
 DIST 54 HWY 69 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY N.S.B.
 DATUM Geodetic DATE February 11, 2007 CHECKED BY G.D.


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 (%)		
								○ UNCONFINED		+ FIELD VANE								○		
211.6	Ground Surface							20	40	60	80	100								
0.0	Peat, fine fibrous		1	SS	24															
0.2	Dark brown																			
	Sandy silt, trace clay																			
	Compact Brown Moist																			
			2	SS	12															
			3	SS	21															
209.3	End of borehole																			
2.3	Refusal on probable bedrock																			
	* Borehole dry upon completion of drilling																			

RECORD OF BOREHOLE No 506-44

1 of 1

METRIC

G.W.P. 5218-06-00 LOCATION Hwy 69 (New), Sta. 19+450, o/s 19.0m Lt. CL Med. ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE Test Pit COMPILED BY N.S.B.
 DATUM Geodetic DATE January 18, 2008 CHECKED BY G.D.

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	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa										WATER CONTENT (%)		
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE												
212.4	Ground Surface						212										GR SA SI CL			
0.0	Topsoil																			
0.2	Silt some sand, trace clay Brown Moist																			
210.9							211													
1.5	End of borehole Refusal on probable bedrock																			
	* Borehole dry upon completion of drilling																			

METRIC

20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No N17-8

1 of 2

METRIC

G.W.P. 5218-06-00

LOCATION

Hwy. 69 Sta. 25+830, C/L

Co-ords. 5 123 423 N; 319 901 E

ORIGINATED BY F.P.

DIST 54 HWY 69

BOREHOLE TYPE

C.F.H.S.A. + Dynamic Cone Penetration Test

COMPILED BY F.P.

DATUM Geodetic

DATE

February 27, 2004

CHECKED BY G.D.

SOIL PROFILE			SAMPLES			* GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)								
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					w _p	w	w _L										
								○ UNCONFINED + FIELD VANE													WATER CONTENT (%)				
								● QUICK TRIAXIAL × LAB VANE																	
208.6 0.0	Top of Ice Ice		1	SS	WH**			20	40	60	80	100													
208.1 0.5	Peat, coarse fibrous Dark brown						208																		
			2	SS	WH		207																		
							206																		
			3	SS	WH		205																		
204.7 3.9	Clay, organics to 4.9m Very soft Grey Wet						204																		
			4	SS	WR***		203																		
							202																		
	Soft		5	SS	WH		201																		
201.3 7.3	Clayey silt, trace sand Firm Grey Wet		6	SS	WH		200																		
							199																		
			7	SS	WH		198																		
							197																		
	silt seams		8	SS	3		196																		
197.0 11.6	Silt, trace sand, trace clay clayey silt seams Loose Grey Wet to very loose		9	SS	10		195																		
							194																		
193.6	Cont'd																								

RECORD OF BOREHOLE No N17-8

2 of 2

METRIC

G.W.P. 5218-06-00

LOCATION

Hwy. 69 Sta. 25+830, C/L

Co-ords. 5 123 423 N; 319 901 E

ORIGINATED BY F.P.

DIST 54 HWY 69

BOREHOLE TYPE

C.F.H.S.A. + Dynamic Cone Penetration Test

COMPILED BY F.P.

DATUM Geodetic

DATE _____

February 27, 2004

CHECKED BY G.D.

[illegible]