# **APPENDIX A**

APPENDIX A GEOTECHNICAL TERMS AND CONDITIONS



#### GEOTECHNICAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these "General Conditions".

#### 1.0 USE OF REPORT AND OWNERSHIP

This geotechnical report pertains to a specific site, a specific development and a specific scope of work. It is not applicable to any other sites nor should it be relied upon for types of development other than that to which it refers. Any variation from the site or development would necessitate a supplementary geotechnical assessment.

This report and the recommendations contained in it are intended for the sole use of EBA's Client. EBA does not accept any responsibility for the accuracy of any of the data, the analyses or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

#### 2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. EBA's instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

#### 3.0 ENVIRONMENTAL AND REGULATORY ISSUES

Unless stipulated in the report, EBA has not been retained to investigate, address or consider and has not investigated, addressed or considered any environmental or regulatory issues associated with development on the subject site.

### 4.0 NATURE AND EXACTNESS OF SOIL AND ROCK DESCRIPTIONS

Classification and identification of soils and rocks are based upon commonly accepted systems and methods employed in professional geotechnical practice. This report contains descriptions of the systems and methods used. Where deviations from the system or method prevail, they are specifically mentioned.

Classification and identification of geological units are judgmental in nature as to both type and condition. EBA does not warrant conditions represented herein as exact, but infers accuracy only to the extent that is common in practice.

Where subsurface conditions encountered during development are different from those described in this report, qualified geotechnical personnel should revisit the site and review recommendations in light of the actual conditions encountered.

#### 5.0 LOGS OF TESTHOLES

The testhole logs are a compilation of conditions and classification of soils and rocks as obtained from field observations and laboratory testing of selected samples. Soil and rock zones have been interpreted. Change from one geological zone to the other, indicated on the logs as a distinct line, can be, in fact, transitional. The extent of transition is interpretive. Any circumstance which requires precise definition of soil or rock zone transition elevations may require further investigation and review.

## 6.0 STRATIGRAPHIC AND GEOLOGICAL INFORMATION

The stratigraphic and geological information indicated on drawings contained in this report are inferred from logs of test holes and/or soil/rock exposures. Stratigraphy is known only at the locations of the test hole or exposure. Actual geology and stratigraphy between test holes and/or exposures may vary from that shown on these drawings. Natural variations in geological conditions are inherent and are a function of the historic environment. EBA does not represent the conditions illustrated as exact but recognizes that variations will exist. Where knowledge of more precise locations of geological units is necessary, additional investigation and review may be necessary.



## 7.0 SURFACE WATER AND GROUNDWATER CONDITIONS

Surface and groundwater conditions mentioned in this report are those observed at the times recorded in the report. These conditions vary with geological detail between observation sites; annual, seasonal and special meteorologic conditions; and with development activity. Interpretation of water conditions from observations and records is judgemental and constitutes an evaluation of circumstances as influenced by geology, meteorology and development activity. Deviations from these observations may occur during the course of development activities.

#### 8.0 PROTECTION OF EXPOSED GROUND

Excavation and construction operations expose geological materials to climatic elements (freeze/thaw, wet/dry) and/or mechanical disturbance which can cause severe deterioration. Unless otherwise specifically indicated in this report, the walls and floors of excavations must be protected from the elements, particularly moisture, desiccation, frost action and construction traffic.

### 9.0 SUPPORT OF ADJACENT GROUND AND STRUCTURES

Unless otherwise specifically advised, support of ground and structures adjacent to the anticipated construction and preservation of adjacent ground and structures from the adverse impact of construction activity is required.

#### 10.0 INFLUENCE OF CONSTRUCTION ACTIVITY

There is a direct correlation between construction activity and structural performance of adjacent buildings and other installations. The influence of all anticipated construction activities should be considered by the contractor, owner, architect and prime engineer in consultation with a geotechnical engineer when the final design and construction techniques are known.

#### 11.0 OBSERVATIONS DURING CONSTRUCTION

Because of the nature of geological deposits, the judgmental nature of geotechnical engineering, as well as the potential of adverse circumstances arising from construction activity, observations during site preparation, excavation and construction should be carried out by a geotechnical engineer. These observations may then serve as the basis for confirmation and/or alteration of geotechnical recommendations or design guidelines presented herein.

#### 12.0 DRAINAGE SYSTEMS

Where temporary or permanent drainage systems are installed within or around a structure, the systems which will be installed must protect the structure from loss of ground due to internal erosion and must be designed so as to assure continued performance of the drains. Specific design detail of such systems should be developed or reviewed by the geotechnical engineer. Unless otherwise specified, it is a condition of this report that effective temporary and permanent drainage systems are required and that they must be considered in relation to project purpose and function.

#### 13.0 BEARING CAPACITY

Design bearing capacities, loads and allowable stresses quoted in this report relate to a specific soil or rock type and condition. Construction activity and environmental circumstances can materially change the condition of soil or rock. The elevation at which a soil or rock type occurs is variable. It is a requirement of this report that structural elements be founded in and/or upon geological materials of the type and in the condition assumed. Sufficient observations should be made by qualified geotechnical personnel during construction to assure that the soil and/or rock conditions assumed in this report in fact exist at the site.

#### 14.0 SAMPLES

EBA will retain all soil and rock samples for 30 days after this report is issued. Further storage or transfer of samples can be made at the Client's expense upon written request, otherwise samples will be discarded.



# **APPENDIX B**

APPENDIX B TESTHOLE LOGS AND LABORATORY DATA - OFF-SITE ENGINEERING



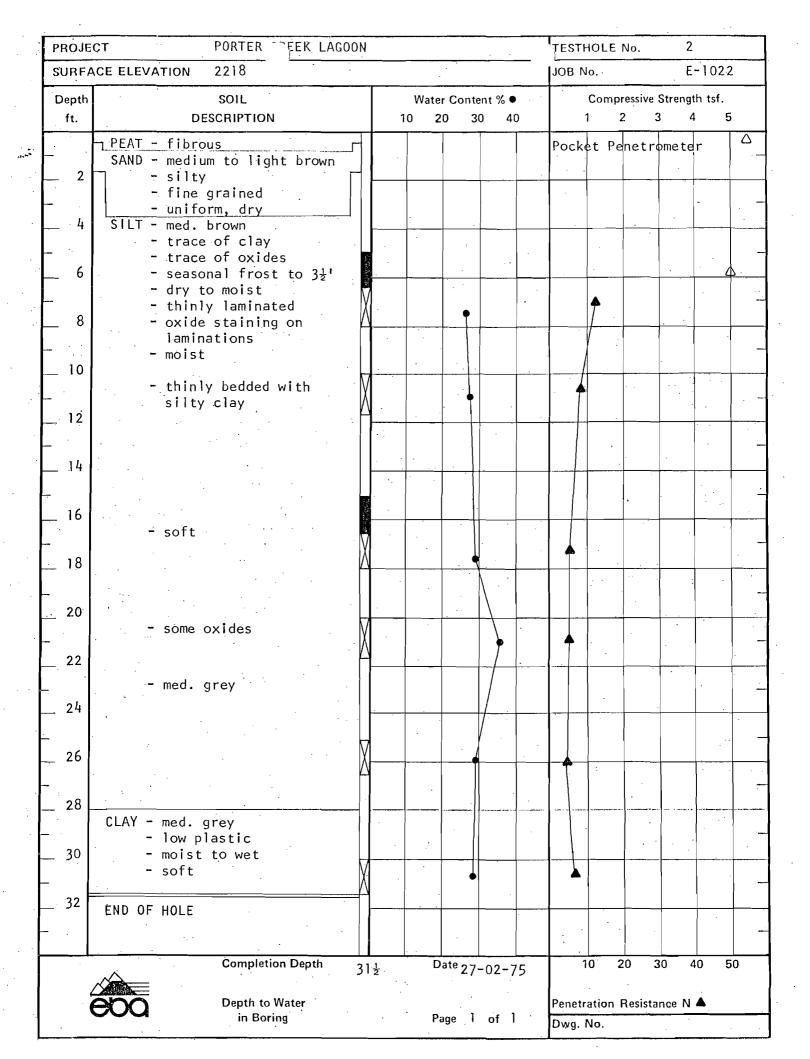
## WHISTLE BEND SUBDIVISION

Testhole Logs From Previously Completed Projects

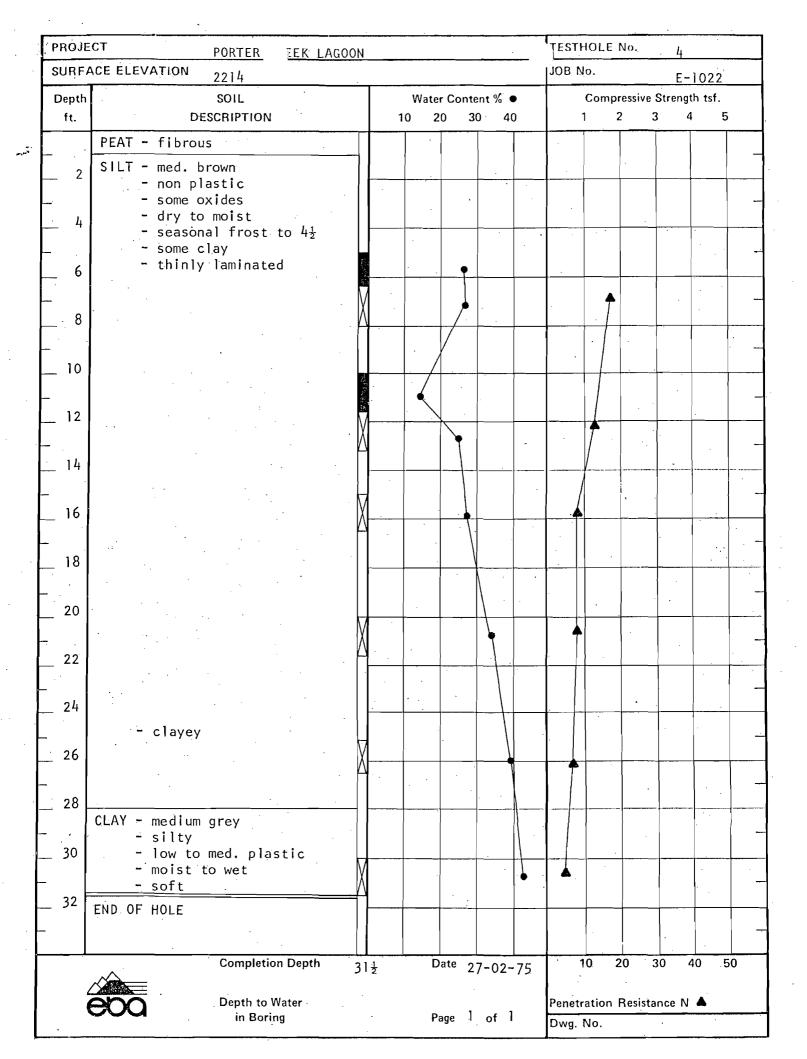


PROJE	CT PORTER CREEK LAGOON						TTEST	HOLE	No.	1		
SURFA	ACE ELEVATION 2216			_			Laob v	lo.		E-	-1022	
Depth	SOIL		Water	Cont	ent %"	•		Comp	ressive	Strengt	h tsf.	
ft.	DESCRIPTION		10 20	) 3	0 40	0				3 4		
	PEAT - fibrous			•			Poc1	ket P	entro	mete	r	Δ_
2	SILT - medium brown - tr. to some clay - some oxides			<del>.</del>	-		ļ. ·					
4	- seasonal frost to $3\frac{1}{2}$ '	.			<u>.</u>							
6	<ul><li>non plastic</li><li>dry to moist</li><li>thinly laminated</li></ul>			-	<u> </u>			<b>A</b>				<u>.                                    </u>
8			-	-\								
10				-	\ \		-		Δ			
12		<u> </u>		 :				•	-			
- 14							ļ ,	/	<u> </u>			_
_ 16	<ul><li>thinly bedded with layers of silty clay</li><li>moist</li></ul>			· · ·	•		<b></b>					
18	- soft										<u>.</u>	 
_ 20 <u> </u>						ļ.		-				
_ 22	- wet - soft	V						Δ				. <del>-</del>
- 24	- non plastic	Δ										_
_ 26	CLAV J:			· —	<u> </u>	-						
_ 28	CLAY - medium grey - low to med. plastic - soft				 					-		_
30	- moist to wet - thin sand lenses at 26'								:			-
_ 32 =	END OF HOLE			<u>.</u>				,				_
-										-		
	Completion Depth	31 <del>1</del>	Da	ite 2	7-02-	75			. •	30 4	•	0 .
	Depth to Water in Boring		Pa	ge 1	of 1	I	Penetr Dwg.		Resista	nce N	Δ	<del>-</del>

. ابديد



PROJE	CT ·	PORTER CREEK LA	GOON	,					I <sub>TEST</sub>	HOLE	No.		3	
SURFA	CE ELEVATION	2219			_				) <del></del> (JOB	No.			—- E-102	<u> </u>
Depth	<del></del>	SOIL			Mata	- Ca	tent %			Comi		e Streng		
ft.	DES	SCRIPTION		1				0 .		1	2			5
	PEAT - fibrous	<del></del>	-			T .				T	7	<del></del>	$\overline{\mathbf{I}}$	Τ
	SAND - medium	<u>·</u>		ļ					]	] .			}	
2	- silty		.	ļ				-		_		-	<del>                                     </del>	+
	ー - fine gr	rained, uniform	Ы							-			İ	
4	- dry	· · · · · · · · · · · · · · · · · · ·					_	ļ		-			<u> </u>	1
	SILT - med. br - non pla			·	-									
6		laminated	100		•		<u></u>		<u>.</u>					
l	- dry to	moist	V.										,	
_ 8	- some ox	kides al frost to 4'	·  X			•				1				
-	36430116	11 11051 10 4		-			+			/\		1.	1	T
~ ,			:						/					
_ 10			$\nabla$				<del> </del>	1		+		<del> </del>		$\dagger$
-	•		Δ						<b>4</b>					
12	•	6.				<del> </del>	<del></del>	<del>                                     </del>	-		-	-	1	+
-	,	• •											.	
14						,	₩			1	<u> </u>		<del> </del>	$\downarrow$
_	•		· 🔟	1			¥			1			·	}
16				111111	ts 🗟	 	1							_
		bedded with	Å,	:			'			1				
18	layers	of silty clay med. plastic	ĮΧ					•						
		mea. prastre										-	1	Ť
- 20	,	·							·				1.	١
20	- soft		. 1		_ <del></del>		<del>-</del> ,				<del> </del>	+	<u> </u>	+
		• .	Δ			ĺ		\		1				
_ 22				<u> </u>				//	 	-		<del> </del>	+	+
-		No.		٠				Y		]		}		
24						<u> </u>	<del>                                     </del>	1	<u> -</u>	-		-	<del> </del>	+
-	·			•										ŀ
26	•		X				¥	<u> </u>	-					$\downarrow$
_			Н		- '		1							
_ 28 _	:								.		_			
	CLAY - med. gr	ey, silty	.		1					1.				
30	- low to - moist t	medium plastic	.   ]				1							
_ ,,	- soft	O WCL	М											+
		<u> </u>							•					
_ 32 =	END OF HOLE			,			+			<del> </del>	-	+	-	+
-	•				•									
· L		Completion Depth		1 .	ח	ate -	7.00	7.		10	20	30	40	50
			31	2	,	7	27-02-	- / 5						٠.
		Depth to Water							l.			, tance N	_	



					LAGOON	STANLEY ASSOCIATES								_	EST					<u>4-0</u>	1	
PROP	OSE	D SL	<u>UDGE</u>	LAGO	oon area	CASE 670 RUBBER T											NO:	020	1-49	904		
			_			UTM ZONE: 8 N6738	3800 E4	493	000	)				EL	_EVA	10IT.	l:					
SAMP	LE	IYPE	-	GR	AB NO RECOVER	Y SHELBY TUBE											PERCI	NT C	DAVEI			
	님			7	00	TT										20	40		60	80		E
Depth(m)	SAMPLE TYPE	RUN NO	၂ ပွ	SYMBOL	S0	lL										20	PERO 40		60	80		ELEVATION(m)
epth	PLE	<del>S</del>	OSC	L S	DESCR	IPTI∩N	F	LAS	TIC		M.Ç.		LIQU	ן   סונ	4	PER 20	CENT 40		OR FI 60	NES ▲ 80		¥I
	SAI			SOIL		11 11014		$\vdash$			•			ŀ		4	PER	CENT	CLAY	<b>\$</b>		
0.0			ļ		ORGANICS(OL)-silty, fibro	ıs black		1	10	20	- 3	0	40		-	20	40		60 	80	-	0.0
-					SAND(SP)—trace of silt, n																	Γ
E					uniform, moist, lo	ose (est.),	ļ															-  -  -
F					SILT(ML)-clayey, trace of	fine sand,																F
F					horizontal and pa	rallel laminae,																F
1.0					2 mm thick, mois plastic, light olive	t, dense, medium												····i		····		<del> </del>
-					, , , , , , , , , , , , , , , , , , ,																	L L
<u> </u>																						
F																						
F																						-  -
- - 2.0																	ļļ		ļļ			- 2.0
-																						<del>-</del> -
																						Ī
F					END OF TEST PIT 2.4 m																	
F																						-
-																						-
3.0					WATER TABLE NOT ENCOUN	ITERED		.i														_ _
																						- <del>-</del>
}																						- _
F																						_ _
F																						-
- - 4.0																	ļļ					- 
<u> -</u>																						- -
_																						- ⊢
																	ļļ.					_
																						<b>-</b>
_																						-
├─ 5.0 ├																	****					-
-		1																				- -
L																<u>ļ</u>			<u>.</u>			- -
E																						-
F																						- -
6.0																	ļļ.					- 
ļ.																						- -
L																						- -
	ليا تور	) A	<u>.</u>	•			LOGGE	D F	: <u>:</u> 3Y: 1	MCP	<u>:</u>	<u> </u>			CO	.: MPI	ETIOI	: <u>:</u> ( DF	<u>:                                    </u>	2.3	<u>:                                     </u>	
<b>{</b>	Ľŀ	3A	Ľn		eering Consult	ants Ltd.	REVIEV	VED	BY:	: JRT							ETE:			07		
08/07/15 C	0:24/2	A CYUKOI	N-T6)		<u>Whitehorse, Yukon</u>		Fig. N	0: 4	1904	1–01					<u> </u>					Pag	e 1	of 1

PORTER	RTER CREEK SEWAGE LAGOON STANLEY ASSOCIATES  OPOSED SLUDGE LAGOON AREA CASE 670 RUBBER TIRED BACKHOE													r Pit i			<u> </u>	) -
PROPO	SEI	) SL	UDGE	LAGO	ON AREA		CASE 670 RUBBER TI	RED BA	CKHO	=			PR0	JECT	NO: 02	201-4	1904	
							UTM ZONE: 8 N6738	800 E4	19300	)			ELE	/ATION	l;			
SAMPL	E 1	YPE		GRA	/B	NO RECOVERY	SHELBY TUBE								DED 05.11	F 0044		
):	ᆈ			7										20	PERCEN 40	60	80	」 ()
ΈÌ lì	ב	9	()	SYMBOL		S0:	$\coprod$							20	PERCEN 40	IT SAND 60	80 80	L ELEVATION(m)
ttd.	SAMPLE	RUN NO	nsc	. SY		חממחז	DUION		LASTIC		I.C.	LIQUII	$\Box$	▲ PER	CENT SI	LT OR F	FINES A	ATI(
2	SAM	∝	'	SOIL		DESCRI	PHON		LASIIC ——		1.6, *		′⊢		40 Percei	MT CLAY	80 ^ <b>&amp;</b>	
									10	20	30	40	$\perp$	20	40	60	80	
0.0							s with rootlets											0.0
-	1					oughout, black race of silt m	edium grained,											-
-					uni	form, moist, la	oose (est.),		ļ	ļļ	ļļ			ļ	ļļ	ļļ	ļļļ.	
-						k orangey brov	wn	/										
-					SILT(ML)-ck	ayey, trace of t	fine sand,											-
					. 101 . 2 r	ızonlai ana pa nm thick mois	rallel laminae, st, dense, medium		ļļ	ļļ	ļļ			ļ	ļļ	ļļ	ļļļ.	[_
-						stic, light olive												-
-					·	·												Ł
-								ļ	<u> </u>									
-																		-
.																		-
- 2.0	1								<u></u>	<u></u>	ļļ			ļļ	<del> </del>			-2.0
.																		-
-																		-
-	ľ	ļ		Ì				<u> </u>							<del>  </del> -			···· -
-				,	END OF TEST	T PIT 2.5 m												-
}													\					-
- 3.0		- 1		Ì	WATER TABLE	E NOT ENCOUN	TERED											-
.																		-
-																		<u> </u>
-																		~F
		l		ĺ														-
- 4,0	ľ													ļ <u>.</u>	<u> </u>			-4.0
. ",																		-
																		F.
-									ļ		ļļ			ļ	ļļ	ļļ	ļļ	
.																		-
																		-
- 5.0											ļļ			ļļ	ļļ			
.																		-
-																	<b>   </b>	
																		-
																		-
- 6.0															ļļ		<u> </u>	-6.0
.																		-
																		-
ī	<u> </u>	١	Fne	rin	paring	Conquilta	anta Itd	LOGGE									: 2.5 m	
1	ъĽ	ıΗ	إالتا				ants Ltd.	REVIEV						OMPL	ETE: 8	8-09-		1 -£ 4
3/07/15 OB:	24/14	(YUKO)	N-T6)		<u>Whitehors</u>	<u>e, rukon</u>		Fig. N	o: 49U	4~UZ							Page	1 of 1

					LAGOON	STANLEY ASSOCIATES								PIT			<u>04-0</u>	3
PROP	OSE	D SL	UDGE	LAGO	OON AREA	CASE 670 RUBBER T							<del>1</del> —		NO: C	201-	4904	
						UTM ZONE: 8 N673	8800 E	4930	000				ELE,	/ATIOI	<b>1</b> :			
SAMP	LE	TYPE	-	GRA	AB NO RECOVER	SHELBY TUBE			_			_			DEDAC	IT ADA	/FI —	
Depth(m)	SAMPLE TYPE	RUN NO	OSO	SOIL SYMBOL	SC DESCR			PLAST 	ic		M.C. <del>•</del>	<u>Г</u> Ю́Л	ID	20 20 • PEF 20	PERCEI 40 PERCE 40 RCENT S 40	60 INT SAN 60 GILT OR 60	80 ID <b>⊕</b> 80 FINES ▲ 80	ELEVATION(m)
0.0					ODOMNIOC(OL) -III. (II			1	0 :	20	30	40	_	20	40	60	80	0.0
- 1.0					ORGANICS(OL)—silty, fibro throughout, blac SILT(ML)—trace of fine sa volcanic ash on damp, non plast SAND(SP)—trace of silt, n uniform, moist, l dark orangey bro SILT(ML)—clayey, trace of horizontal and p 2 mm thick, mai	k nd, trace of top of unit, ic, light brown nedium grained, loose (est.), own fine sand, arallel laminae, ist, dense, medium												
- - 2,0																		
- - - - - -					END OF TEST PIT 2.5 m													- - - - - - - - - - - - - - - - - - -
- 3.0 - - - - -					WATER TABLE NOT ENCOU	NTERED												-
4.0  - - - - - - -																		
- 5.0 6.0																		
-				•		1 717	Trogg	ED B	Y: M	ACP			10	OMPI	FTION	DFPTI	H: 2.5	- - - -
	EI	3A	Eng	gin	eering Consult	ants Ltd.		WED			-				ETE: 8			111
					Whitehorse, Yukon			No: 4										e 1 of 1
8/07/15	DB:24/0	M (YUKO	N-T6)			-												

WHITEHORSE SEWAGE TREATMENT FACILITY  DRILL: CME-75 C/W SOLID SHAFT AUGERS  PROJECT NO: 0201-95-12025  WHITEHORSE, YUKON  UTM ZONE: 8 N6738330 E493070  ELEVATION: 675 m  SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  STANDARD PEN. ☐ 75 mm SPOON ☐ CRREL BARREL  DCPT (blows/300 mm) ♦ 6 12 18 24 20 40 60 80  PERCENT GRAVEL ■ 6 12 18 24 20 40 60 80	ELEVATION(m)
SAMPLE TYPE GRAB SAMPLE NO RECOVERY STANDARD PEN. 75 mm SPOON CRREL BARREL  DOPT (blows/300 mm)  FOOT TO THE STANDARD PEN. 75 mm SPOON CRREL BARREL  DOPT (blows/300 mm)  FOOT TO THE STANDARD PEN. 80 80 80 80 80 80 80 80 80 80 80 80 80	N(m)
♦ DCPT (blows/300 mm) ♦       ■ PERCENT CRAVEL ■         6       12       18       24       20       40       60       80	(E)N
6 12 18 24 20 40 60 80	N(m)
20 40 60 80 + PERSONAL CIT OF TAKES	은
SOIL  DESCRIPTION  PERCENT SAND   20 40 60 80  PLASTIC M.C. LIQUID  PERCENT SILT OR FINES A  20 40 60 80  PERCENT CLAY   PERCENT CLAY   PERCENT CLAY	EX.
SILT — some clay, trace of sand;	675.4
non-plastic; firm; moist; light	- -
E grey	-
	-
1.0   CILT AND CLAY - L L L L L L L L	-
SILT AND CLAY — low plastic; firm; moist; I light grey	-
	- -
	-
	- -
- 2.0 - moisture content increases with	—673.( -
[ depth	-
	-
	- -
- below 3.0 m; moist to wet; medium	-
grey	- - -
	<u>-</u>
	-
F	- -
	—671.( - -
	-
END OF BOREHOLE @ 4.5 m	_
- no water table encountered	-
- 5.0   — borehole located at approximately — Station 10+450	-
Elevation is estimated	-
	-
	-
L_6.0	- 669.(
	-
	-
	-
	-
	-
	-
	_
	- -
1 COOFE DV. ISD COMPLETION DEDITIONS	667.0
EBA Engineering Consultants Ltd.    LOGGED BY: JSB	
Whitehorse, Yukon Page 1	of 1

PORTE							CLIENT: STANLEY ASSOC										25-BI	
				_	ATME	NT FACILITY	DRILL: CME-75 C/W S			JGERS							-1202	5
WHITE							UTM ZONE: 8 N67386						EVATIC	)N: 6	79 m	1		
SAMP	LE	TYPE		GRA	B SAM	µPLE ✓ NO RECOVER	Y ⊠standard pen.	75				CRREL BA	_		DAFUT	0041751		
	إيرا				_				■ S 40	PT PENE 80		N. <b>≡</b> 160		20	RCENT 40	60	80	
Depth(m)	SAMPLE TYPE	9	2	()	SYMBOL		SOIL						2	PE 20	RCENT 40	SAND 60	80	(£)
l td	띮	RUN NO	SPT(N)	OSC					LASTIC	М.		LIQUID	▲F	ERCE	NT SILT	OR FI	NES ▲	Depth(ft)
ă	SAM	<u>~</u>	0,		SOIL	NF2C	RIPTION		LASTIC ——	MI.V	···		- 2	20 A DI	40 ERCENT	60 CLAYA	80	
	Ľ				<u> </u>				20	40	60	80	2	20	40	60	80	0.0
- 0.0						SAND — trace of silt;	fine grained; loose;											- 0.0 -
<u> </u>						damp; mediun	1 DIOWII		ļļ					ļļ				
E																		2.0
1.0									<u> </u>				·	ļļ				E I
<u>-</u> -																		4.0
<u>-</u> -		1				— colour change	es to a medium grey	 &	-				<b>.</b>					:- <u>-</u> •
- - 2.0						below 1.5 m	• ,											6.0
F 2.0																		<u>"</u> -
														ļ				8.0
	- silt conte						creases to some											Ē
3.0	below 2.5					Delow 2.5 m								ļ				10.Ω
<u> </u>								•					<b>1</b> 1 1					E
_														ļ <u>ļ</u>				12.0
																		- 72.0
— 4.0 -						SILT - clayey; low pk	ıstic; firm; moist;											£
-		3				medium grey			•									14.0
_																		E
_ 5.0																		16.0
_																		-
_																		.E 18.0
_																		E
6.0		4				– hecomes mois	et to wet; more clayey			•			ļ <u>i</u>					20.0
-	П					with depth	to hot more orayey											E
_														****				22.0
_ 7.0																		
- 7,0																		E
<u>.</u> -								ļ										24.0
		5			]				•									E
8.0	ĺ					END OF BOREHOLE @												26.0
-						— no water enco — slouahina fron	n start of drilling to											
- - - - -		1	}	1		4.0 m	otare or arming to	ļ					l		1			28.0
_ ]							ed at approximately											E
— 9.0 -		Ì				Station 10+85												30.0
- - -						— elevation is es	stimatea											je l
-																		32.0
- 10.0																		E 32.0
																		F
-							<u> lı</u>	OGGED E	וכו	<u> </u>			COME	) ETI	NI DE	DTLI.	7.8 m	34.0
	ĽΈ	3A	En	gine	eer	ing Consulta		REVIEWED					COMP					
08/07/15 OI				Ų	Vhit.	<u>ehorse, Yukon</u>	,										Page	1 of 1

WHITEHORS: YUKON				( TRANSFER PIPELINE	ENGI				_							H03			
SAMPLE TYPE  Sees Swint   No recovery   Stromberg Peak  SOIL  DESCRIPTION  PERSIC   Lat.   Loud   Sees Swint   Sees   Sees Swint   Sees   Sees										ERS		4					95-	202	<u>!5                                    </u>
SOIL   DESCRIPTION												1		)N: (	675 ——	m			
SOIL  DESCRIPTION  PLASTIC M.C. LIQUID  A PRESENT SET ON BOX OF THE SET ON BOX OF TH	SAMP	LE	TYPE	GRAB SAMPLE NO RECOVER	Y ⊠STANDARD PEN							L BAR		DED	SENIE	004/			
SAND — trace of silt; medium grained; soft; domp to moist; light reddish brown SLT — trace to some cky, trace of sund; non-plastic; fine grained; soft; domp; light grey  — clay content increases with depth  — becomes moist below 2.6 m — some clay to clayer by 3.0 m  — some clay to clay		닏		21.0.77			20	UARD 40	ZENE!	KAHUN 60	N (N) ■ 80		20	40	0	60	80		] 字
SAND — trace of silt; medium grained; soft; domp to moist; light reddish brown SLT — trace to some cky, trace of sund; non-plastic; fine grained; soft; domp; light grey  — clay content increases with depth  — becomes moist below 2.6 m — some clay to clayer by 3.0 m  — some clay to clay	Œ	Ξ	E	l S0IL			١n	* 20	DCPT	<b>♦</b> 30	40								Ì
SAND — trace of silt; medium grained; soft; domp to moist; light reddish prown SLIT — trace to some cky, trace all sand; non-plastic; fine grained; soft; domp; light grey  — clay content increases with depth  — becomes maist below 2.6 m — some clay to clayer by 3.0 m  — some clay to cl	뒱	띪	ĬŢ(	DECODIDATA	\\I	DIA							▲ PEI	RCENI	T SIL	T OR F	INES 4	<u> </u>	<b>∄</b>
SAND — trace of silt; medium grained; soft; domp to moist; light reddish brown SLT — trace to some cky, trace of sund; non-plastic; fine grained; soft; domp; light grey  — clay content increases with depth  — becomes moist below 2.6 m — some clay to clayer by 3.0 m  — some clay to clay	ے ا	₩.	0,	DESCRIPTIO	JN	ru:	SIIC		M.C.		LIQUID ————————————————————————————————————								4 4
SUT – troce to some clay, trace of sand; non-plostic; fire grained; soft; damp, light grey  - clay content increases with depth  - clay content increases with depth  - becomes moist below 2.6 m  - some clay to clayey by 3.0 m  - some clay to clayey by 3.0 m  - SUT AND CLAY – low plastic; moist to wet; firm clayer — wet by 4.5 m  - wet by 4.5 m  - no water reacountered - little to no sloughing - Borelable located at approximately Station 11+100  - Elevation is estimated  - EBA Engineering Consultants Ltd.  Whitehorse, Yukon  - COMPLETION DEPTH: 4.6 m  - CO		Ľ				· · · ·	10	20		30	40								
SILT - troce to some clay, trace of sond; mon-plastic; fine graineut; soft; domp; light grey  - clay content increases with depth  - becomes moist below 2.6 m - some clay to clayer by 3.0 m  - SILT AND CLAY - low plastic; moist to wet; firm; olive grey - wet by 4.5 m  ENO OF BORCHOLE © 4.6 m - no water encountered - little to no sloughing - Borshole located at approximately Stotion 11+100 - Elevation is estimated  - EBA Engineering Consultants Ltd.  Whitehorse, Yukon  Whitehorse, Yukon  - Cooperation Depth: 4.6 m - Cooperation D	- 0.0 - -			soft; damp to moist; light re															6/5.0
- 1.0   non-plestic; fine grained; soft; damp; light grey   - clay content increases with depth   - clay con	-				- rood:					1 1									<u>F</u>
damp; light grey  - clay content increases with depth  - becomes maist below 2.6 m  - same clay to clayer by 3.0 m  - SILT AND CLAY — low plastic; maist to wet; firm; olive grey  - wet by 4.5 m  END OF BOREHOLE @ 4.5 m  - no water encountered - little to no sloughing - Borehole located at approximately Station 11+100 - Elevation is estimated  -6.0  EBA Engineering Consultants Ltd.  Whitehorse, Yukon  Whitehorse, Yukon  - Clay content increases with depth  - 673.0  - 687.0  - 687.0  - 688.0  - 688.0  - 687.0  - 688.0  - 688.0  - 689.0  -	Ē																		E
- becomes moist below 2.6 m - some clay to clayey by 3.0 m  - some clay to claye by 3.0 m  - some claye by 3.0 m  - some claye by 3.0 m  - some cla	— 1.0 -				,														· -
- becomes moist below 2.6 m - some clay to clayey by 3.0 m  - some clay to claye by 3.0 m  - some claye by 3.0 m  - some claye by 3.0 m  - some cla	-																		-
- becomes moist below 2.6 m - some clay to clayey by 3.0 m  - some clay to claye by 3.0 m  - some claye by 3.0 m  - some claye by 3.0 m  - some cla				- clay content increases with	denth		<u></u>	-		-							-		
- becomes moist below 2.6 m - some clay to clayey by 3.0 m - some clay to clayey by 3.0 m  - some clay to claye by 3.0 m  - some claye by 4.5 m	_			ciay content increases with	deptii		Ī												-
- some clay to clayey by 3.0 m  - solution is grey  - we to y 4.5 m  - no water encountered  - little to no sloughing - Borehole located at approximately Station 11+100  - Elevation is estimated  - solution is e	2 <i>.</i> 0																		··· <del> -</del> 673.0
- some clay to clayey by 3.0 m  - solution is grey  - we to y 4.5 m  - no water encountered  - little to no sloughing - Borehole located at approximately Station 11+100  - Elevation is estimated  - solution is e																			E
- some clay to clayey by 3.0 m  - solution is grey  - we to y 4.5 m  - no water encountered  - little to no sloughing - Borehole located at approximately Station 11+100  - Elevation is estimated  - solution is e	-							ļļ.		ļļ.				ļļ					
SILT AND CLAY — low plastic; moist to wet; firm; olive grey — wet by 4.5 m END OF BOREHOLE @ 4.6 m — no water encountered — little to no sloughing — Borehole located at approximately Station 11+100 — Elevation is estimated  EBA Engineering Consultants Ltd.  Whitehorse, Yukon  Whitehorse, Yukon  Face Located St. JSB REVIEWED BY: CRH COMPLETION DEPTH: 4.6 m COMPLETIE: 19/10/95	Ė			- becomes moist below 2.6 m															F
SILT AND CLAY — low plastic; moist to wet; firm; olive grey — wet by 4.5 m END OF BOREHOLE @ 4.6 m — no water encountered — little to no sloughing — Borehole located at approximately Station 11+100 — Elevation is estimated  EBA Engineering Consultants Ltd.  Whitehorse, Yukon  Whitehorse, Yukon  Face Located St. JSB REVIEWED BY: CRH COMPLETION DEPTH: 4.6 m COMPLETIE: 19/10/95	[ — 3.0							<u>.</u>		ļļ.				<u>.</u>					<u>E</u>
SILI AND CLAY - low plastic; moist to wet; firm; olive grey	-			— some clay to clayey by 3.0	m		•	•											-
SILI AND CLAY - low plastic; moist to wet; firm; olive grey																			Ė
SILI AND CLAY - low plastic; moist to wet; firm; olive grey	_																		E
SILI AND CLAY - low plastic; moist to wet; firm; olive grey	-																		
firm; olive grey — wet by 4.5 m END OF BOREHOLE @ 4.6 m — no water encountered — little to no sloughing — Borehole located at approximately Station 11+100 — Elevation is estimated  EBA Engineering Consultants Ltd.  Whitehorse, Yukon    Completion Depth: 4.6 m   Reviewed By: CRH   Completic 19/10/95	— 4.0 -			SILT AND CLAY - low plastic; moist	to wet;					†**** <u>†</u>		····							··· <del>[</del> 671.0
EBA Engineering Consultants Ltd.  END OF BOREHOLE @ 4.6 m  - no water encountered  - little to no sloughing  - Borehole located at approximately Statian 11+100  - Elevation is estimated  - 669.0  EBA Engineering Consultants Ltd.  Whitehorse, Yukon    Complement Depth: 4.6 m   C	-			firm; olive grey															E
- no water encountered - little to no sloughing - Borehole located at approximately Station 11+100 - Elevation is estimated  - 669.0  EBA Engineering Consultants Ltd.  Whitehorse, Yukon  - no water encountered - little to no sloughing - Borehole located at approximately - 5.0  - 667.0	-									•									
Borehole located at approximately Station 11+100 - Elevation is estimated	-																		F
Borehole located at approximately Station 11+100 - Elevation is estimated  - 6.0  - 7.0  EBA Engineering Consultants Ltd.  Whitehorse, Yukon    Completion Depth: 4.6 m   Comp	5.0									<del> </del>  -									<u>F</u>
EBA Engineering Consultants Ltd.    Complete in the image of the image is a second below the image is a second bel					nately														-
EBA Engineering Consultants Ltd.    Complete in the image of the image is a second below the image is a second bel	<del>-</del>				-									ļļ.			-		
EBA Engineering Consultants Ltd.    Complete in the image of the image is a second below the image is a second bel	_			— Elevation is estimated															E
EBA Engineering Consultants Ltd.    Complete in the image of the image is a second below the image is a second bel	- 6.0				-		<u>. ļ</u> .	ļļ		ļļ.		<u>į</u>	<u>ļ</u>				ļļ.		
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  EBA Engineering Consultants Ltd.  EBA Engineering Consultants Ltd.  Page 1 of 1	-	ſ																	Ė
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  EBA Engineering Consultants Ltd.  EBA Engineering Consultants Ltd.  Page 1 of 1	_							,		ļļ.									
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  EBA Engineering Consultants Ltd.  EBA Engineering Consultants Ltd.  Page 1 of 1	- -																		-
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  EBA Engineering Consultants Ltd.  EBA Engineering Consultants Ltd.  Page 1 of 1	- - - 70																		<u>E</u>
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  EBA Engineering Consultants Ltd.  Page 1 of 1	- /.0 -																		-
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  EBA Engineering Consultants Ltd.  Page 1 of 1	- - (																		-
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  EBA Engineering Consultants Ltd.  Page 1 of 1	_ - -	İ																	E
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  EBA Engineering Consultants Ltd.  Page 1 of 1	-																		-
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  LOGGED BY: JSB COMPLETION DEPTH: 4.6 m  REVIEWED BY: CRH COMPLETE: 19/10/95  Page 1 of 1	8.0 -						···						···		····÷				667.0
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  LOGGED BY: JSB COMPLETION DEPTH: 4.6 m  REVIEWED BY: CRH COMPLETE: 19/10/95  Page 1 of 1	-																		Ē
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  LOGGED BY: JSB COMPLETION DEPTH: 4.6 m  REVIEWED BY: CRH COMPLETE: 19/10/95  Page 1 of 1	-							}									1		
EBA Engineering Consultants Ltd.  Whitehorse, Yukon  LOGGED BY: JSB COMPLETION DEPTH: 4.6 m  REVIEWED BY: CRH COMPLETE: 19/10/95  Page 1 of 1	- -																		-
EDA Engineering Consultants Ltd.  REVIEWED BY: CRH  COMPLETE: 19/10/95  Page 1 of 1			) i		1 713	In	: GFD	BY.	ISR	<u> </u>		<u> </u>	: COMP	기 FT'	IUN IUN	DEPT	H: 4	6 m	
Whitehorse, Yukon Page 1 of 1		ĽĿ	3A		ants Ltd.					1								_ 111	
	NR /N7 /44 A	14 B F -	Y (ALIKUM	Whitehorse, Yukon										_	_			age	1 of 1

PORTER CREEK TRANSFER PIPELINE	CLIENT: STANLEY ASSOCIATE		BOREHOLE NO: 12025-BH04	1
WHITEHORSE SEWAGE TREATMENT FACILITY	DRILL: CME-75 C/W HOLLO		PROJECT NO: 0201-95-12025	
WHITEHORSE, YUKON	UTM ZONE: 8 N6738960 E		ELEVATION: 670 m	
SAMPLE TYPE GRAB SAMPLE NO R	ecovery Standard Pen.		L BARREL CORE	
		■ STANDARD PENETRATION 20 40 60 80		ا ج
Depth(m) SAMPLE TYPE RUN NO SPT(N) USC SOIL SYMBOL	SOIL	▲ DCPT ▲	● PERCENT SAND ●	ELEVATION(m)
Depth(m) SPT(N) USC USC OIL SYMBC		20 40 60 80	20 40 60 80 €	₽
SOIL SOIL )	ESCRIPTION	PLASTIC M.C. LV	QUID 20 40 60 80	F
		10 20 30 40		긔
SAND — trace	of silt	, , , , , , , , , , , , , , , , , , , ,		70.0
SILT — trace to	some clay, low plastic;	1		
	ined; very stiff; moist;		<u> </u>	
E     grey				
1 18 — occasio	onal zones of non-plastic			
				0.898
	ntent increases with depth			
	becomes a darker grey below			
2.5 m = 2.5 m = less sq	nd below 2.5 m			
F	- medium plastic; moist to			
	f; grey			66.0
E 4.0   wet; stil				
3 10				
5.0				
6.0				64.0
4   9			<u> </u>	
7.0				
5 17				
8.0 5 13				62.0
- become	es highly plastic below 8.2 m			
	· , ,			
9.0			<b>♦ A</b>	
			<u> </u>	60.0
— become — 10.0 m	es blueish grey and firm below			
-11.0				
-				
			<u> </u>	558.0
8 7				0010
END OF BOREH	OLE @ 12.5 m			
	er table encountered			
	e is located approximately			
-	л 11+325 n is estimated		<u> </u>	356.0
- 17.0       — Lievquo	ii io cominarca		F	JU.V
=				
<u>-</u> 15.0				
EBA Engineering Cons		ED BY: JSB	COMPLETION DEPTH: 12.5 m	
Whitehorse, Yuk		WED BY: CRH	COMPLETE: 19/10/95 Page 1 of	F 1
8/07/15 08:38AM (YUKONIS) #1111 CC11O1 SC, 1 QLN	OII			<u> </u>

PORTER CREEK TRANSFER PIPELINE	CLIENT: STANLEY ASSOCIATES		BOREHOLE		
WHITEHORSE SEWAGE TREATMENT FACILITY	DRILL: CME-75 C/W HOLLOW			D: <b>0</b> 201-95-1202	5
WHITEHORSE, YUKON	UTM ZONE: 8 N6739120 E4		ELEVATION:		
SAMPLE TYPE GRAB NO RECOVER	y Standard Pen.			HQ CORE	
[ 폴 [떼크] 윤] 8 [종]	SOIL RIPTION	STANDARD PENETRATION  20 40 60 80  PLASTIC M.C. LIQ	20	ERCENT GRAVEL ■ 40 60 80  PERCENT SAND ● 40 60 80  ENT SILT OR FINES ▲ 40 60 80  PERCENT CLAY ◆	Depth(ft)
SAND — silty; fine gr	ained, uniform sand;	10 20 30 40	20	40 60 80	- 0.0 2.0
soft; dry; yello	wish brown				<u>:</u>
	ce to some silt; fine				6.0 8.0
	nd; fine to medium unded gravel; loose;				· <b>E</b> 10.0
- 4.0         dry; medium t					12.0
5.0 4 17 - becomes com	npact below 4.0 m				.E 16.0
E 6.0 ≥ 5   17		<b>.</b>			18.0
E 7.0 7 1 1 1					22.0 24.0
8.0 6 38		• •			· <b>E</b> 26.0
SAND AND GRAVEL —		• •			28.0 30.0
E           graded sarid,	well graded gravels; dense; dry;				<u>:</u>
E 11.0 8 76   light grey	gravola, dollad, dry,	•			<b> 34.0 1 36.0 1 36.0 1</b>
- drilling becom	nes easier below 8.8 m				38.0
$\begin{bmatrix} \begin{bmatrix} 1 \\ 13 \end{bmatrix} \end{bmatrix}$ $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$ $\begin{bmatrix} - \\ 1 \end{bmatrix}$ grinding and $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$	fairly hard drilling				<u>:</u>
E Delow 12.3 m					£ 44.0 46.0
— drilling becom	nes easier delow		<u> </u>		· <b>ૄ</b> 48�
11 30 - less gravel, b	ecomes fine to	<b>9. i</b> i	<b>.</b> .		50. <del>8</del> 52.0
E           medium graine					<b>€</b> 54.0 <b>€</b> 56.0
E           "atci table a	t 15.0 m				E 58.0
12 69 SAND - some silt, tr	ace of gravel; medium				60.0 62.0
to coarse grai	ned sand; fine to				· 🖺 64.0
	ed sub—rounded gravel; ed; medium greyish				66.0
F 🖂 14   33       hrown	eu, meulum greyisii				₹70.0 12.0
E-22.0					- 72.0 74.0
E-23.0 \texts 15 \\ E					[ 76.0   78.0
L F=1 '	avel below 24.0 m	•		•	[ <u> </u> 80.08
- becomes siltie					82.0 84.0
F [ '   '         24.0 m	s finer grained below				86.0
= 27.0	d medium to coarse				- [ 90.0
= 28.0 grained below	27.0 m				₩ 92.0 94.0
- 29.0 ≥ 19   13   END OF BOREHOLE @	79.2 m			•	E 96.0
= 30.0   - water table of					₽8.0 100.0
	ted at approximately				102.0
E <sub>32.0</sub> Station 11+48 E Elevation is e					104.0
= 33.0   - Elevation is e.	sumuteu				108.0
34.0					<u>:</u> <u></u>
TD 1	I TI I LOCCE	D BY; JSB	COMPLET	TION DEPTH: 29.2 m	<u> </u>
EBA Engineering Consulta		VED BY: CRH		TE: 19/10/95	
Whitehorse, Yukon 08/07/15 08:3844 (YUKON34)				Page	1 of 1

					PIPELI		CLIENT: STANLEY ASSOC							_				120			
					ATMENT	FACILITY	DRILL: CME-75 C/W SC				JGEF	RS		_				01-9	5-12	025	
WHITE							UTM ZONE: 8 N673902								EVATIO	ON: 6	655	m			
SAMP	LE	TYPE		GRA	B SAMPLI	E NO RECOVERY	∕ ⊠standard pen.	早7	5 m	пS	POON	<u> </u>	CRRE	EL BAF		- DEC	O C KIT	GRAVE	1 -	1	
_	PE			님		~ ~	T.T.								20	0	40	60	80		E
m)	∠	$\Xi$	ی ا	SYMBOL		S0	IL .								20		RCEN 40	IT SAND 60	80		) No
Depth(m)	SAMPLE TYPE	SPT(N)	OSI	S	<u> </u> 	DESCRI	ΤΡΤΊΛΝ	   Pl	ASTIC	;	М.	.C.	LIQI		▲ F		NT SII 40	LT OR F 60	INES A		ELEVATION(m)
	SAI			SOIL		DESCIVI	II IION		<u> </u>				—			◆ PE		IT CLAY	•		
_ 0.0					SIIT _	some sand; fine g	rained: uniform		10		20	30	40	: +	20	<u> </u>	40	60 :	80	: .	655.0
- -					JILI	sand; soft; dry; ligi															.
 -						brown	•						ļ <u> </u>						<del> </del>		-
-																					
— 1.0 -																			<del> </del>	· · · · · · · · · · · · · · · · · · ·	-
-								<b>⊕</b>													:
<del>-</del> -																					-
_ 2.0					ի — Լ	- drilling becomes a below 1.8 m	little harder	1													-653.0
					\  SILT	clayey; low plastic;	 ; damp; stiff;	اد -													
_						grey						ļļ	ļļ	ļļ					ļļ		·
-		1																			.
3.0						clay content incre	acec with denth						ļļ	ļ					ļ <u>ļ</u>		· -
<u>-</u> -						ciaj content mere	usos with uoptii														:
<del>-</del>																			<del> </del>	-	-
-																					: :
4.0 																					651.0
-																					:
4.0											•										-
- 5 N														ļļ					ļļ		: 
- 0.0																					:
-														ļļ					ļļ	<u>.</u>	·
-																					:
- 6.0											•			<u></u>		<u> </u>					-649.0
-																					.
						drilling becomes e	asv below 6.5 m														-
-						<b>y</b>	<b>,</b>														-
7.0	l																				- -
-																					• •
- - -				ŀ	END OI	F BOREHOLE @ 7.6		7													-
- 8.0 - 8.0					-	no water table end	countered							ļ					ļļ		-647.0
			ĺ	ľ		Borehole located a	ıt approximately														
-						Station 11+400 Elevation is estima	ited							ļ						<u> </u>	· -
- -						Elevation is caumo	1660													-	-
9.0												<u>-</u>	ļļ	ļ							· -
-																					-
- -																					-
10.0																					645.0
	<u>1,1</u>	2 A	Fna	in	aprir	na Conquita		OGGED					· · ·					DEPTH		m	U45.U
•	בנב	JΗ	ппя			ng Consulta	шиз ши. R	EVIEW	ED B	Y: 1	CRH				COM	PLETE	E: 24	1/10/			
8/07/15 Oi	1:38AV	(YUKON	-91	γį	<u>eniteh</u>	orse, Yukon _													۲a	ge 1	of 1

				CLIENT: DAVID NAIRN					ì			_					<u>'31-</u>	<u>-01</u>	
				DRILL: TRUCK MOUN													1731		
WHITE				UTM ZONE: 8 N673								ELE'	/ATIC	N: 6					
SAMP	LE	TYPE	GRAB NO RECOVERY	Standard Pen	٧.		75	mm S	P001	۱ [	∭CRRE	L BAR			_	TURBE			
Depth(m)	SAMPLE TYPE	RUN NO	SOIL DESCRIPTIO	N	PL	ASTIC			C.		LIQUID	,	20 20 A PER 20	PERCE 40 PERC 40 CENT 40 PERC	ENT S SILT ( ENT (	60 SAND 4 60 OR FIN 60 CLAY 4	80 80 IES ▲ 80		ELEVATION(m)
0.0			(SURFACING GRAVEL) SAND — silty, so	ome		10	-	20	30	1 1	40		20	40	- 1	60	80	-	
- - -		1	gravel, fine grained, seasonally frozen, olive brown GRAVEL — sandy, some silt, gravel up	y		•						ı	<b>a</b>	<b>A</b>	•				  -  -
		2	40 mm diameter, seasonally f medium brown		•							*	•						 696.0 -
1.0 			— sandier, cleaner and easier to	1															- -  -  -
- - -		3	drill from 1.2 m to 1.8 m		•														- - -
- 2.0 																			- - -
- - -			— seasonal frost ends at 2.2 m																- - -
-																			694.0 - - -
3.0 - - -		4			•														- - -
- - -			END OF BOREHOLE @ 3,5 m — drilled at STA 2+990																- - - -
— 4.0   																			- - - -
- - - -				1															- 692.0 - -
5.0 - - - -																			- - - -
-	L, I	۷.	Engineering Consulta	nta Itd				Y: M		•	·						: 3.5	m	
•	ĽĹ	JH		лиз ши.	RI	EVIE/	₩ED	BY:	WCP				OMP	LETE:	95,	/01 <u>/</u>			
18/07/15 OF	R-7.RA).	ı (YIIKO)	Whitehorse, Yukon														<u> </u>	<u>je 1</u>	of 1

	DAD CONSTRUCTION	CLIENT: DAVID NAIRN													731–	02	
GEOTECHNICA		DRILL: TRUCK MOUN													11731		
WHITEHORSE,		UTM ZONE: 8 N673		_									681.				
SAMPLE TYP	E GRAB NO RECOVER	y Standard Pen	1.		75 m	m SP	00N	∭CI	RREL	BARF				STURE			
Depth(m) SAMPLE TYPE RUN NO	SOIL DESCRIPTIO	)N	PL/	ASTIC		M.C		LIQUI	ID _	4	20 20 • PER 20	40 PER 40 CENT 40 PER	CENT SILT CENT	60 CLAY	80 80 NES ▲ 80		ELEVATION(m)
0.0	(SURFACING GRAVEL) SAND — silty, s	some		10	2	0	30	40		i	20	40	<u> </u>	60	80		
1 - - - - - - - - - - - - - - - -	gravel, fine grained, seasonal frozen, light brown  SAND — some silt, trace of fine gravely brown seasonally frozen, medium brown medium grained, damp, loose	vel,	•							· A		<b>A</b>			•	-	- - - 681.0 - - -
- 1.0																-	-
3	SILT — some clay, seasonally frazen approximately 2.2 m, moist becoming wet below frost, fir where moist and soft where v olive brown	m					•									-	- - - - - -
- 1																-	-
- - -	— easy drilling															-	- - - 679.0
- - -																	- -
- 3.0 4 - 4							•									-	- · ·
	END OF BOREHOLE @ 3.5 m — drilled at STA 2+440															-	 - - -
4.0  -  -  -																-	 - -
																	- 677.0
- - -																-	-
5.0   																	<del>-</del>
ERA	Engineering Consulta	ante Ita				: MC		- ; ;							1: 3.5	m	
אמם		AIIOD DUU.	RE	VIEV	/ED E	3Y: M	ICP			C	OMF	PLET	E: 95	5/01/			of 1
08/07/15 <b>08:28</b> 4M <b>(</b> YUKO	Whitehorse, Yukon														<u> </u>	ie i	of 1

			AD CONSTRUCTION	CLIENT: DAVID NAIRNI				S		BOREH					03	
			EVALUATION	DRILL: TRUCK MOUNT						PROJE				<u>11731</u>		
			YUKON	UTM ZONE: 8 N6730						ELEVAT		<u>მ65</u>	<u>m</u>			
SAMP	<u>LŁ</u> -	IYPŁ	GRAB SAMPLE NO RECOVER	y Standard Pen	_			SPOON		L BARREL	L ■ PERC	TAIT	<u>ODAVEI</u>			
	닖		COLL		_	20 20	40	60	ON (N) <b>■</b> 80	20	40	)	60	80		$\widehat{E}$
Ē	<u> </u>	2	SOIL			10	<b>♦</b> [ 20	ICPT � 30	40	20	PER 40		SAND 60	80		)NO
Depth(m)	SAMPLE TYPE	SPT(N)	DESCRIPTI	ΛN	PLA	STIC		W.C.	LIQUID		PERCENT		OR FI			ELEVATION(m)
ے ا	SAIV	,		OIA	,   ⊢	3110		•		20	<u>40</u> ♦ PER	_	60   CLAY -	<u>80</u>		
0.0	_		(CUDEACING ODAYEL) CAND		-	10	20	30	40	20			60	80		665.0
F 0.0			(SURFACING GRAVEL) SAND — silty, gravel, fine grained, seasond												Ė	005.0
_			frozen, medîum brown	ally	ļ			<b>T</b>							E	_
F			SILT — some clay, trace of fine sai	nd,											-	
1.0			seasonally frozen, olive brow	'n											F	
- 1.0															-	_
-															-	
F								•							F	-
E															E	
2.0			- seasonal frost ends at 2.0n	n												-663.0
Ē			— wet below frost line												E	
<u>-</u>														ļļ		-
-															ŀ	
3.0								•							<u>-</u>	-
E			– slightly drier from 3.2 m to	3.4 m											E	
_			Signify drief from 5.2 in to	0.1 111				ļļ						ļļ	<u>t</u>	-
-  -										·					-	
- - 4.0															E	-661.0
- "															-	001.0
-			<ul> <li>interbedded wet and very we</li> </ul>	et silts											F	
-			•					•							E	-
- 															Ļ	
─ 5.0 -															-	-
															E	
-			– moist below 5,5 m													-
-															E	
- 6.0								<u> </u>							-	-659.0
-			END OF BOREHOLE @ 6.2 m												F	
-			— drilled at STA 1+490												[	-
-															-	
7.0								<u></u>						ļļ		-
															. [	
-								ļļ							-	_
-															-	
- 8.0							<u>.</u>								E	-657.0
- 5.5															-	007.0
<u> </u>															ļ	
-															E	-
9.0															-	
	L L	2 A	Engineering Congults				BY: N		· · · · · ·					l: 6.2	m	
	<u>ا</u> ئا	JΗ	Engineering Consulta	ants Ltd.			D BY:				MPLETI			/31		
08/07/15 0	B:29A).	v (YUKON	<u>₩hitehorse, Yukon</u>						-					Pag	e 1	of 1

RANGE						DN	CLIENT: DAVID NAIRNE & ASSOCIATES						BOREHOLE NO: 11731-07 PROJECT NO: 0201-11731							
GEOTE WHITE					IN		DRILL: SHOP BUILT AU UTM ZONE: 8 N67369		710				EVATIO				1/31			
SAMP					B SAN	MPLE NO RECOVER		900 E4943 75 r		POON	ПП	CRREL BA		лч: <b>О</b>	د. ۱ ه	TH				
	T		_	OIV		MILE NO NECOVER	JANAANA I EN.				LILL PENETRA	_		■ PER	CENT	GRAVE	L <b>a</b>			
~	YE				BG		SOIL		10	20	30 CPT�	40	2	0 - ● PEI	40 RCENI	60 Sand	80 •	-  £		
Depth(m)	Щ	RUN NO	SPT(N)	SSC	SYMBOL				10	Ž0	30	40		0	40	60	80 INES ▲	ELEVATION(ft)		
Dep	MP	₽	ß		SOIL	DESC	RIPTION	PU	ASTIC	М	.C.	LIQUID		0	40	60	80			
	Ŝ				Š				10	20	30	40	2		rcen <sup>.</sup> 40	T CLAY 60	<b>⊗</b> 80			
0,0						ORGANIC ROOT MAT C	VER SILT — moist, bl	ack										2236.0		
- -						SAND — trace of silt, seasonally fro thawed, mediu	zen, damp when		•											
_						mawca, mcaia	III DIOWII			ļļ								🗦 📗		
-		1						•										2234.0		
-																		E		
-		l																F		
— 1 <i>.</i> 0										ļļ	ļļļ							<b>.</b> [		
_																				
_																		2232.0		
-																		<u> </u>		
_						SILT — trace of fine	sand trace of clay			ļļ					-			<u>E</u>		
_							st.), medium brown											E		
-																		E 0070 0		
-																		2230.0		
2.0										ļļ					-			<u>F</u>		
_																		E l		
_		2								•								<u> </u>		
_																		<u>-</u> 2228.0		
_						END OF BOREHOLE @	2.5 m											=		
						<ul> <li>drilled at STA</li> </ul>	0+050 along Golf											F		
-						Course Access	Road													
-	1																			
— 3.0 -													1					<u>2</u> 226.0		
-																		E		
-																		<u>E</u>		
-																				
-																		mE		
-	ĺ	1																<del>-2</del> 224.0		
-																		F		
- 4.0					ľ															
-			ĺ															Ē.		
-																		<u>-</u> 2222.0		
-																		2222.0		
								LOCOED S	V 12	20			00110	I ETIA	WI D	- DTI I	0.5	E		
	ΕŢ	3A	En,	gin	eer	ing Consulta	ants Ltd.	LOGGED B'					COMP				2.5 n 20	I		
9 /07/14 N			. 4)			<u>ehorse, Yukon</u>									/			e 1 of 1		

RANGE	WA	Y RC	AD C	ONSTR	UCTI(	DN	CLIENT: DAVID NAIRNE	& ASSOCI	ATES	İ							<u> 731–</u>	80	
GEOTE					N		DRILL: SHOP BUILT AU								VO: 02		1731		
WHITE							LITM ZONE: 8 N6737								: 681	m			
SAMP	LE	TYPE	-	GRA	B SAM	IPLE NO RECOVER	y Standard Pen.	75 г	nm SI	POON		CRREL E	BARRE						
Depth(m)	SAMPLE TYPE	RUN NO	SPT(N)	nsc	SYMBOL		SOIL		10	20	PENETRA 30	40		20 		60 NT SAN 60 LT OR	80 D ▲ 80 FINES ■		ELEVATION(m)
8	YAM!	ॡ	S		SOIL	DESU	RIPTION		ASTIC ⊢——	м	.C.	LIQVIC ————————————————————————————————————	<b>'</b>  -	20	40 PERCE	60 NT CLA	80 .v.æ.		Ē
	٠,				Ľ				10	20	30	40		20	40 40	60	80		
0.0							OVER SILT — seasonally over dark brown	y /										-	681.0
<u></u>		1					zen, damp when	•										<u>-</u>	•
- - - 1,0						·													-
- - -						∬ with silt	gravel at interface												
 - -						SILT — trace of fine damp to mois brown	sand, trace of clay, It with depth, olive											-	
2.0		2							Ð									-	-679.0
- - -																			
-																		-	
- 3.0 - - -						— wet below 3.0	) m											-	
- - -		3								•								-	-
- 4.0 -						END OF BOREHOLE @ — drilled at STA Course Access	0+450 along Golf											-	-677.0
- - - -																		-	
- - - 5.0																		-	<u>-</u>
- - -																		-	
- - -																		-	•
- 6.0 -																		-	-675.0
-  -  -  -																		-	
- - 7.0																		-	
	FΙ	<u>-</u> Α	En	σin	eer	ring Consulta	ants Itd	LOGGED B									1: 3.8	m	
	1	J L X	1111			<u>.ehorse, Yukon</u>	AIIOD EOG.	REVIEWED	RA: I	MCP			- C0	MPLE	ETE: 9!	)/04/		10 1	of 1
08/07/15 0	8:29A	и (уико	N-6)	1	(¥ 111 <b>l</b>	enorse, rukon			_								Put	ge 1	VI I

RANGE						ON	CLIENT: DAVID NAIRNE		IATES							731-0	9
GEOTE					N	_	DRILL: SHOP BUILT AUG								0201-1	i 1731	
WHITE							UTM ZONE: 8 N67373							ON: 67	3.1 m		
SAMP	LE	TYPE		GRA	B SAM	MPLE NO RECOVER	y Standard Pen.	75				RREL_B/	ARREL				
	پرا				برا				Mate ■ 10	idard f 20	ENETRAT 30	ON <b>≡</b> 40	;	■ PERC 20 4	ENT GRAV 0 60	/EL■ 80	<del> </del>
E	烂	일	2		SYMBOL		SOIL		10	<b>♦</b> DC 20	PT <b>♦</b> 30	40			CENT SAN	ID <b>\$</b> 80	
Depth(m)	띭	RUN NO	SPT(N)	nsc	S								+		SILT OR		ELEVATION(ft)
De	,AMI	ॡ	S		SOIL	DESU	RIPTION		ASTIC	М.	Մ.	LIQUID ———I		20 4	O 60_ CENT CLA	80	🖺
	(7)								10	20	30	40	:	20 4		80	Ш
0.0							VER SILT — moist, bla	ck									
-						<u>and brown</u> SAND — trace of silt,	madium arainad										2208.0
-							zen, moist to wet										<u> </u>
-							medium brown becom	ina									
-		1.				grey below 1.0		_					1				···[
<u> </u>		1							•								Ē
		1			(												2206.0
_																	
— 1 <i>.</i> 0													.  <u> </u>				<b>[</b>
-						— easy to drill											E
-																	
-		ļ ]															2204.0
																	<b> </b>
_																	F I
-					}												F
_						SILT - same clay tro	roa of fine cand wet										Ę I
-						soft, olive grey	ace of fine sand, wet,										<del>-</del> 2202.0
— 2.0						3014 31170 gray	•						.				
-																	E
_																	
_		2								8							<u> </u>
_						END OF BOREHOLE @	7.5 m										E
-							0+650 along Golf										2200.0
-						Course Access	Road										F
-																	E
_ 3.0																	Ē
- "																	E
-																	2198.0
-		}															E
-																	Ē,
_				}												T	<u>E</u>
_	ł		1														E
-																	- 2196.0
-																	E I
<b> 4.</b> 0																	F
-																	F
-					ĺ												Ė
_																	= -2194.0
													loor		1 1		E
	ΕŦ	3A	En	gine	eer	ring Consulta		LOGGED E REVIEWED			_				DEPTH 95/04/	l: 2.5 <u>m</u> /20	
						ehorse, Yukon		VE A IEAA ED	וום וו	noF			UUUUU	LL1E;	3J/V4/		1 of 1
8/07/15 OF	1-90AF	A CATIKO	V-41		1												

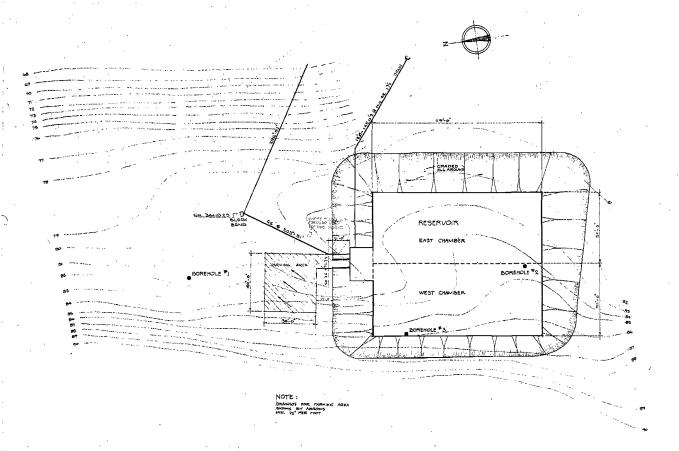
RANGEWAY ROAD CONSTRUCTION	CLIENT: DAVID NAIRNE & AS			OREHOLE NO: 11731-1	0
GEOTECHNICAL EVALUATION	DRILL: SHOP BUILT AUGER F			ROJECT NO: 0201-11731	
WHITEHORSE, YUKON	UTM ZONE: 8 N6737330 E			_EVATION: 673.1 m	
SAMPLE TYPE GRAB SAMPLE NO RECOVER	ry Standard Pen.	75 mm SPOON ■ STANDARD PE	CRREL BA	ARREL ■ PERCENT GRAVEL ■	
	COLL	10 20	30 <b>40</b>	20 40 60 80	<b></b>
SAMPLE TYPE RUN NO SPT(N) USC USC SOIL SYMBOL	SOIL	♦ DCF 10 20	7T <b>♦</b> 30 40	● PERCENT SAND ● 20 40 60 80	ELEVATION(ft)
NSC USC USC USC USC USC USC USC USC USC U	CRIPTION	PLASTIC M.C		▲ PERCENT SILT OR FINES ▲	
DESC	IVII TION	<b>├</b>	——	♦ PERCENT CLAY ♦	- 2
0.0 ORGANIC ROOT MAT	OVED CILT moint blank	10 20	30 40	20 40 60 80	E
and brown	OVER SILT — moist, black				2208.0
SAND — trace of silt	medium to fine	1			F
	o damp, medium to	•			F
light brown					Ē
					E 0000 0
-					2206.0
					<u>-</u>
					··F
					E
-					-
-	•				2204.0
-					·· E
					Ē
_					
-					Ē
					<del>[_2</del> 202.0
<u> </u>					Ė
					<u>-</u>
		•			Ē
	) 25 m				[
END OF BOREHOLE €   — drilled at STA	≠ 2.5 m . 0+920 along Golf				<del>2</del> 200.0
Access Road	o to 22 dienig oon				E
					_
					🖺
-					E
-					2198.0
					E
					<u>E</u>
-					Ē
-					E
					2196.0
- 4.0					E
-					E
-					Ē
-					E
-					<del>2</del> 194.0
EBA Engineering Consult		D BY: MCP		COMPLETION DEPTH: 2.5 m	_
Whitehorse, Yukon	REVIE	WED BY: MCP		COMPLETE: 95/04/20	1 of 1
DB/07/15 OB:29AM (YUKON-4) WILLEHOUSE, YUKON				Page	I VI I

RANGEWAY ROAD CONSTRUCTION	CLIENT: DAVID NAIRNE & A			OREHOLE NO: 11731-1	1
GEOTECHNICAL EVALUATION	DRILL: SHOP BUILT AUGER			ROJECT NO: 0201-11731	
WHITEHORSE, YUKON	UTM ZONE: 8 N6737640			LEVATION: 682 m	
SAMPLE TYPE GRAB SAMPLE NO REC	overy Standard Pen.	75 mm SPOON ☐☐ ■ STANDARD PENETR	CRREL BA	MARREL  ■ PERCENT GRAVEL  ■ PERCENT GRAVEL	
	~~	10 20 30	40_	20 40 60 80	1 22
Depth(m) SAMPLE TYPE RUN NO SPT(N) USC SOIL SYMBOL	SOIL	DCPT ◆ 10 20 30	40	● PERCENT SAND ● 20 40 60 80	ELEVATION(ft)
MPLE TY WIND NO USC USYMB	SCRIPTION	PLASTIC M.C.	LIQUID	PERCENT SILT OR FINES ▲ 20 40 60 80	\   
SOIL SOIL	DOMI HON	<b>├</b>		♦ PERCENT CLAY ♦	<b>→ H</b>
0.0 ORGANIC ROOT M	AT OVER SILT — moist, black	10 20 30	40	20 40 60 80	
over brow					Ē
					<del>-2</del> 237.0
					E
CAND I	. 71 - 65 - 5 - 1				<u>E</u>
	some silt, fine grained, I fragments of coarse	9		A •	-
	and throughout, damp,				<u> </u>
very loose	, light brown				<del>-2</del> 235.0
-1.0			ļļ		
-					E
					Ē
					- 0077.0
			ļļ		<u>-</u> 2233,0 E
-					Ē
-					E
					-
2.0					
-					" <del>[-2</del> 231.0
-					
- <b>-</b>					Ė I
		•			
END OF BOREHO					<u>"</u>
	STA 1+120 along Golf cess Road				<del>E-2</del> 229.0
Course Ac	cess roud				E
-					
- 3.0					<u> </u>
					=
-					2227.0
-					
-					<u>.</u> -
					E
-					Ē
-					<del>2</del> 2225.0
- 4.0					::
					F
					E
-					E 0007.0
TDA Eranina and C	114-11	GED BY: MCP		COMPLETION DEPTH: 2.5 m	2223.0
EBA Engineering Consu	manus Lua. REVI	EWED BY: MCP		COMPLETE: 95/04/20	
Whitehorse, Yuko	n_		_	Page	1 of 1

# **APPENDIX C**

APPENDIX C TESTHOLE LOGS AND LABORATORY DATA - WHISTLE BEND





5		HOLE LOC
DBPTH IN FEET	MMPÉS NE TYPE	BOREHOLE #1
		SILTY, SANDY CRAFT, NON PLASTIC STANIMUM SIZE S' 35% PAOS NE 200 SIEVE
,		BEDROCK - GEOLOGICAL DISCRIPTION: HORNELANDE - BIOTITE GRANDDIORITE
	• 🕸	BOTTOM OF HOLE
		BOREHOLE # 2
15	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	SUTTY, SANOTY CHRAFTL - NON PLASTIC MARGINANA SYSTEMS SON, PARCE NET 2000 SHANE
25		BEDROCK - THEREO & ALTERED GRANDOLORITE
25	32	SEDRACK - HARMSLENDE SIGNITE CHANDPORTE SOUTTON OF HOLE
		BOREHOLE #3
, , , ,		SILTY, SANDY CRAVEL - NON PLASTIC STANDARD TERM SOME MAYS NO 200 STRVE
حد		BEOROCK - THEMRED A ALTERED GRANDHOMTE
35		SEDARCK - HORNEDLE MOS BIOTITE - GRAND DIONITE
===		

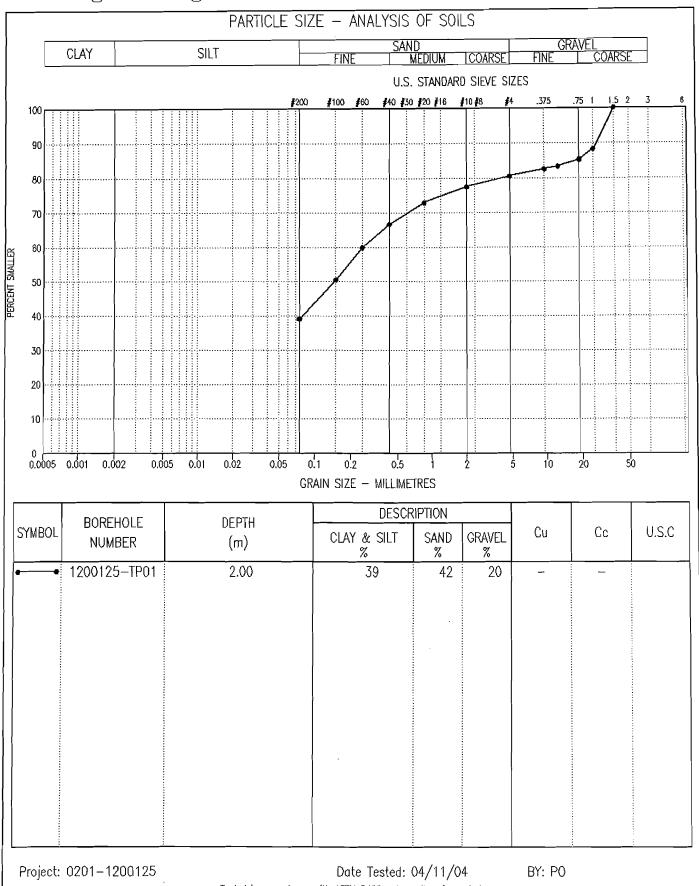
VALLEYVIEW PUMPHOUSE



	I GENERAL REVISION	e/20/1 6.5.	
	DESCRIPTION	DATE BY	7
Constitute Engineers T.M. NEWTON ENGINEERING L.TD	DEPARTMENT OF PUBLIC WOR	KS	
87/2 - 150 th St Edmonton Alte	CANADA		
DWG. No. W 65-2-17	WHITE HORSE WATER SYSTEM	1965	
DATE SEP. (5 1965 -	RESERVOIR LOCATION PLAN	REV	
SCALE: ["= 20'-0"		77	

	CLIENT: City of Whitehorse								PIT				125-	-T <u>PO</u>	1
Kulan Subdivision	EXCAVATOR: Komatsu PC 1								JECT						
Whitehorse, YT	UTM ZONE: 8 N6736914 E	E49	0922	2				ELEV	'ATIOI	<u>4: 76</u>	9.4	m			
SAMPLE TYPE GRAB NO RECOVERY	SHELBY TUBE									PERCE	NT O	DANCI	_	_T_	
									20	40	· (	60	80	′	E
OS SYMBOL	IL								20	PERC 40		sand • 60	80	`;	ĕ
SO DESCRI		EN .	ASTIC		ис		LIQUI	n	▲ PE	RCENT	SILT	OR FIN	NES ▲		<u> </u>
SO DESCRI	PTION	LD	1311C		M.C	·		<b>"</b>	20	40 PERI	:FNT	60 CLAY <b>4</b>	80	- :	ELEVATION(m)
			10	20	)	30	40		20	40	)	60	80		
SAND AND SILT (TILL) — so	ome gravel,													-	
cobbles and boulders moist, compact (est.),															769.0
	, ollite ploati								ļļ						703.0
-														-	
								Ì						+	
- 1.0															
- 1.0														ţ	
-														-	
<u>-</u>				<u>,                                     </u>					ļļ.					F	
-															
														-	
			•				ļ		ļļ.					-	
- 20															
-														Ŀ	767.0
-									ļļ.						707.0
-															
														L	
3.0 3.0	}						ļļ		.ļļ.					-	
- moisture content in 3.0 m	creasing below													-	
-															
-							-				ļļ			+	
														-	
			<u>T</u>				ļļ						ļļ		
														}	
-														F	-765.0
-													k		
-														}	
			•											-	-
	testnit at							<u> </u>						-	Ã
approximately 5.0 m	toothic at													-	
														-	-
-		ļ 												-	
-														<u> </u>	
	: 5.8 m													F	-
- 6.0 END OF TESTPIT 5.8 m							†			·				<u> </u>	·
-															·
-														_	763.0
EDA Engineaging Conquit	onta Ita Loc			; MC					COM	PLET	ON E	DEPTI	1: 5.8	m	
EBA Engineering Consult	alles Leu. REV	VIEV	/ED E	3Y: J	RT				COM	PLET	E: 04	1/10,			of 1
Whitehorse, Yukon 54/11/09 01:32PM (YUKON-TB)								_	L					nge I	VI I

## EBA Engineering

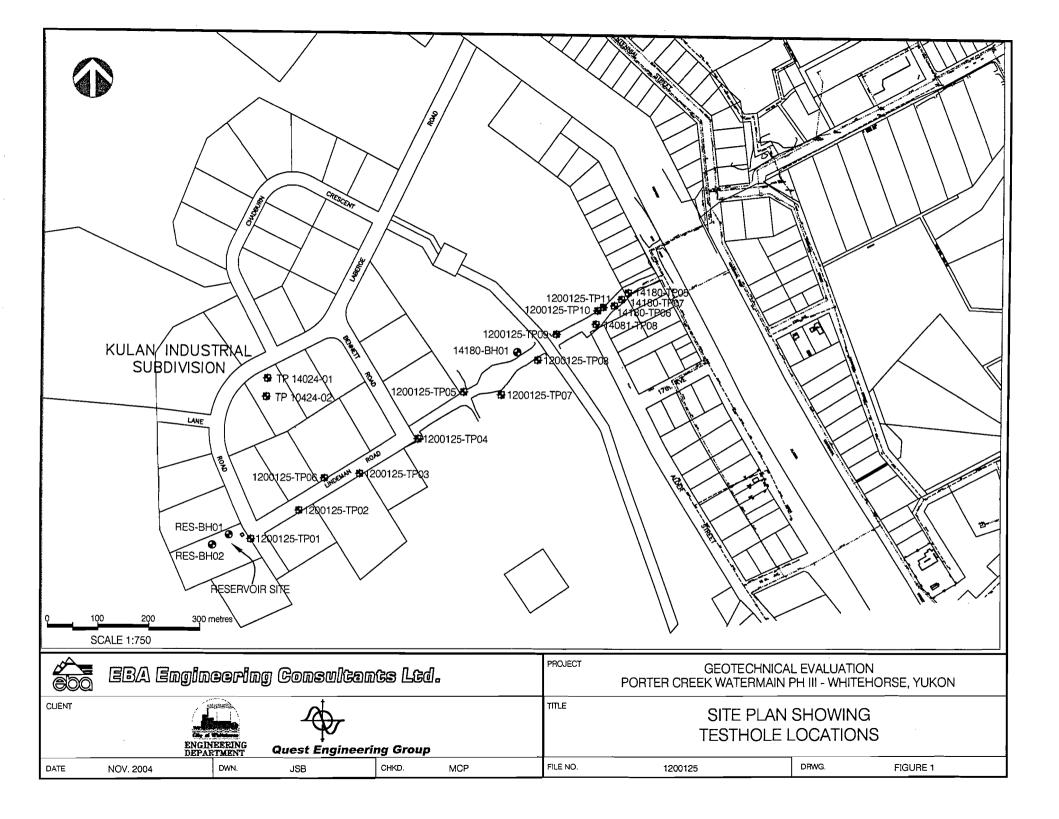


Dota presented hereon is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA

Tested in accordance with ASTM D422 unless otherwise noted.

The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.





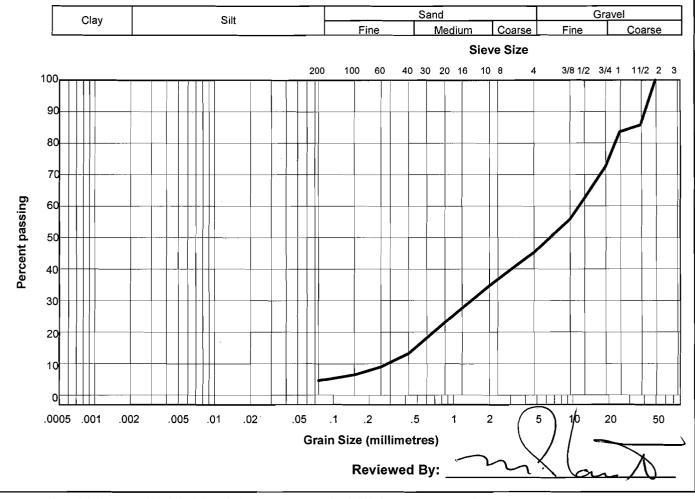
## WHISTLE BEND SUBDIVISION

Current Borehole Logs and Associated Laboratory Test Result Report Forms



Geotechnical Evaluation AECOM								во	REHO	LE N	10: V	V14101	171-E	3H01
Whistle	e Bend Subdivision	Drilling Method:	Drilling Method: NODWELL Mounted CME 75							TNC	): W1	41011	71	
Whiteh	norse, YT	6736721N; 493	953l	E; Zo	one 8									
SAMP	LE TYPE 💹 GRAB SAMPLE 🖊 NO RECOV	ERY X BULK			CRREL CORE		SHEL	BY T	UBE		GRA	B CORE		
BACK	FILL TYPE 💹 BENTONITE 📝 PEA GRAVI	EL SLOUG	Н		GROUT		ORILL	_ CU1	TINGS	,	SAN	D		
		(additional)	111	띪						T	◆ CL	AY (%)		
Ē	1.771.01.001.01		TYPE	8	GROUND ICE	□ Bu	lk De	nsitví	kg/m³)[	+	20 4 ● S	0 60 ILT (%) (	80	æ l
r)	LITHOLOGICAL		Щ	₽	DESCRIPTION	50	0 100	00 150	0 2000		20 4	0 60	80	Ę
Depth (m)	DESCRIPTION		SAMPLE	SAMPLE NUMBER	AND COMMENTS	PLAS	TIC I	M.C	LIQUI		<b>▲</b> SA 20 4	ND (%) 0 60	80	Depth (ft)
			SA	₽W		⊢		•		1	■ GR/	AVEL (%	)■	
- 0	Grass and Labrador Tea ground cover over organic root	material				2	) 4L	: :	80	1:	<u>20 4</u> : :	0 60	: :	0 =
	SAND - silty, trace organics, seasonally frozen, damp be	elow frost, medium		1		•								크
F	brown - sand becomes some silt, fine grained, uniform, damp,	greyish brown					+	•		1:				4
	below 0.5 m												: :	
<u> </u>														=
				2		•								E.
-			5				1	:::		1:	:::::	: : : : :		5_7
2														4
-	- some gravel below 2.0 m					1			100000			}		4
E l								: :					: :	3
Εl										1:		!		=
_ 3				3		•				:				40=
3											11.6	) - ( ) - ( 		10_=
-										}				4
											::::			目
_ 4	von coordilling to 40 m													Ē
4	- very easy drilling to 4.0 m  GRAVEL AND SAND - trace silt, likely cobbles, very co	mpact, dark brown					· · · · ·	· : : :	: : :	1 :	: :			0 15 15 15 15 15 15 16 16 17 17 17 17 17 17 17 17 17 17 17 17 17
-				4										Ξ
			James 1941			1								15_=
_ 5														
_														T
														111
				5						1	: :		: :	=
_ 6				,		T								
														20
								.;.;						7
-														1
7								. ;;	. į į į.		.ļ. ļ.		;.;	
				6						•	11,			=
_							;	. ; ;	. į į. į.		.;;	: : : : }-:	;.;	25
														27_
_ 8						;;	. ; . ;	.;;	.;.;;;			; ; ; ; ;		=
														-
_			10000	i					. į. į. į.					
<u> </u>				7		•								=
_ 9	END OF BOREHOLE @ 9.0 m													20 =
E	FIND OL BOLELOFE (R. 9'0 III													30_=
<u> </u>										.	. į. į.			
								: :						20
- 10		_		 	OGGED BY: MCP	];	: :	<u>:                                    </u>	COM	) r	TION	DEPT	: : U: 0	
éoc	EBA Engineering Con	sultants	l ti	┪╠	REVIEWED BY:			-				2/8/20		ı <u> </u>
ecc	LD/(Linging Coning Con	<i>Guitaints</i>		<b>~</b>	DRAWING NO:				Page			<i></i> ∪ ∠ ∪ ·		
MGP W1410	1171.GPJ EBA.GDT 09/01/30	-		*					-3-	. •				

PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	100
	37.500	86
Project Number: W14101171	25.000	84
Date Tested: September 17, 2008	19.000	73
Tespit Number: BH01-6	12.500	62
Depth: 7.5 m	9.500	56
Soil Description: GRAVEL AND SAND - trace silt	4.750	45
Cu:40.1	2.000	35
Cc:	0.850	23
Natural Moisture Content: 1.2%	0.425	13
Remarks:	0.250	9
	0.150	7
	0.075	4.6

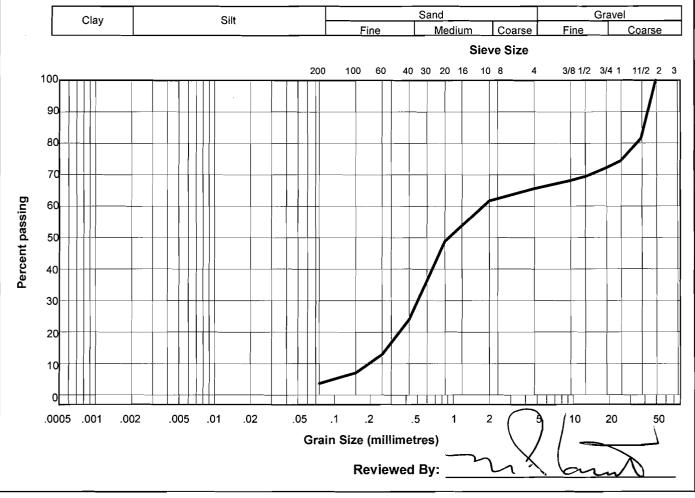


Data presented hereon is for the sole use of the stipulated client. EBA is not responsible, nor can be held liable, for use made of this report by any other party, with or without the knowledge of EBA. The testing services reported herein have been performed by an EBA technician to recognized industry standards, unless otherwise noted. No other warranty is made. These data do not include or represent any interpretation or opinion of specification compliance or material suitability. Should engineering interpretation be required, EBA will provide it upon written request.



Geotechnical Evaluation		AECOM					BOREHOLE NO: W14101171-BH02			
Whistle Bend Subdivision		Drilling Method: NODWELL Mounted CME 75					PROJECT NO: W14101171			
Whitehorse, YT 6736796N; 494022E; Zone 8										
SAMPLE TYPE GRAB SAMPLE NO RECOVE	RY 🔲	BULK		CRREL CORE	SHE	LBY TUBE	GF	RAB CORE		
BACKFILL TYPE BENTONITE PEA GRAVE	/EL SLOUGH			GROUT	DRIL	L CUTTINGS	CUTTINGS SAND			
LITHOLOGICAL DESCRIPTION	SAMPLE TYPE SAMPLE NUMBER			GROUND ICE DESCRIPTION AND COMMENTS	PLASTIC	ensity(kg/m³) 000 1500 2000 M.C. LIQU	20 20 20 1D 20	20 40 60 80 ▲ SAND (%) ▲		
SAND - silty, trace organics, fine grained, uniform, damp	to dry below								0 =	
SAND AND GRAVEL - trace silt, occassional cobble bel very compact, hard drilling, dark brown  SAND AND GRAVEL - trace silt, occassional cobble bel very compact, hard drilling, dark brown  - refusal at 5.0 m on first attempt, backed up 1.0 m, refusal tempt END OF BOREHOLE @ 5.0 m	ow 2.8 m ow 3.5 m, da	amp,							0 15 10 10 15 10 10 10 10 10 10 10 10 10 10 10 10 10	
- -									=	
=										
				LOGGED BY: MCP	; ; ;	COM	: :  Pl FTIC	: : : : : : : : : : : : : : : : : : :		
🚓 EBA Engineering Consultants Ltd.			REVIEWED BY:	COM	COMPLETE: 12/8/2008					
<u> </u>				DRAWING NO:			Page 1 of 1			

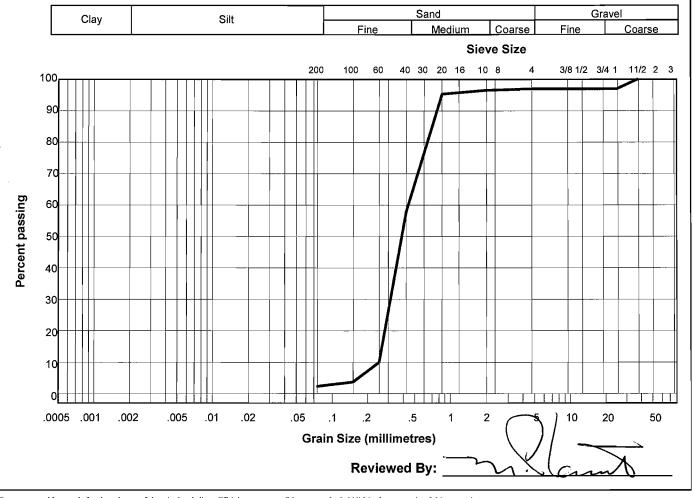
PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	100
	37.500_	82
Project Number: W14101171	25.000	74
Date Tested: December 9, 2008	19.000	72
Tespit Number: BH02-4	12.500	69
Depth: 4.5 m	9.500	68
Soil Description: SAND AND GRAVEL - trace silt	4.750	66
Cu: 9.2	2.000	62
Cc: 0.7	0.850	49
Natural Moisture Content: 2.6%	0.425	24
Remarks:	0.250	13
	0.150	7
	0.075	3.6





Geote	chnical Evaluation		AECOM							BOREHOLE NO: W14101171-BH03						
Whistl	e Bend Subdivision		Drilling Method:	NOD	OWE	LL Mounted CME 75	ı	PROJECT NO: W14101171								
Whitel	horse, YT		6736852N; 494	158E	; Zo	ne 8		-								
SAMP	PLE TYPE GRAB SAMPLE	NO RECOVE	RY   BULK			CRREL CORE	<u> </u>	SHEL	BY T	JBE		GRAE	COR	Ξ		
BACK	FILL TYPE BENTONITE	PEA GRAVE	L SLOUGI	1		GROUT		ORILI	L CUT	TINGS	:::	SANE	)			
	imore!	L. 2			ద						Ť	◆ CL	AY (%)	•		
(C)				TYPE	NUMBER	CDOUND IOE	□ Ru	Ik De	neity(	kg/m³)[	1 2	20 40 ■ SII	) 60 ₋T (%)	<u>80</u>		
	LITHOL			Ш	$\supseteq$	GROUND ICE DESCRIPTION	50	0 100	00 150	0 2000	2	0 40	60	80	<del> </del>	
Depth (m)	DESCR	IPTION	·	SAMPLE	SAMPLE	ALID COLUMNITO	PLΔS	TIC I	M C	LIQUI	2	A SAI 20 40	ND (%) ) _60	<b>▲</b> 80	Depth (ft)	
-				SAI	₽₩		'		•	•	-	GRA	VEL (9	6) 🔳		
- 0	SAND AND SILT (FILL) - trace grave	I (along ditch)		-	ഗ		20	) 4(	0 <u>60</u> : :	80	1 :	20 40 : : :	60	80 : : :	0 =	
F -	ORGANIC FILL LINE				1		•								=	
	SAND - some silt becoming trace silt	by 1.0 m, trace grav	/el, medium to				. : . :				1:				1 =	
Ē.	fine grained, damp, dark brown	1									:					
<u> </u>											1:::				1	
E	SILT - some clay, trace of fine graine	d sand, wet, soft, oli	ive brown		2		•				•			4	┪ <sub>ॗ</sub> ॗॗॗ	
-	- very easy to drill						****	: :	:::		1				3=	
_ _ 2																
1 2 2 3			-												1 =	
-															1 =	
<u> </u>					3						1				] ]	
_ 3					3					. ] [ ].	]				. 10 =	
-															"=	
E							. ; ;			. į į. į.	ļ. <u>.</u>	<u>.</u>			] =	
F																
_ 4				3153450						. į į		<u> </u>			클	
4					4		•								5 10 11 11 11 11 11 11 11 11 11 11 11 11	
<u> </u>	END OF BOREHOLE @ 4.5 m									. įį. į.					15_	
Ē	LIND OF BOILLIOLL (@ 4.5 III															
_ 5											· :				1 ]	
-							: :								=	
									•		1				1 =	
E .															1 =	
6											1				20_=	
-															1 =	
-															] _=	
- 7																
_ '								****							1 =	
-																
E															25_=	
8															.] =	
_															] =	
_							;	;	. ; . ;					<u>.</u>	. =	
-			•						: :							
_ 9										. į. į. į.	ļ. İ.			ļ	=	
-															30_=	
											.					
-															=	
- 10					11	OCCED DV: MOD			<u> </u>	COM	<u>                                     </u>	ION	<u>הבריי</u>	TLI- 4	33	
	EBA Engineer	ina Cons	gultante l	l to	<b>/</b>	OGGED BY: MCP REVIEWED BY:				COM					JIII	
ex	a LD/ ( Linginoon	ing Join	Januino I	t U	<u>"</u>	RAWING NO:				Page						

PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	100
Project Number: W14101171	25.000	97
Date Tested: December 9, 2008	19.000	97
Tespit Number: BH03-2	12.500	97
Depth: _1.5 m	9.500	97
Soil Description: SAND - trace gravel, trace silt	4.750	97
Cu:1.8	2.000	97
Cc:0.9	0.850	95
Natural Moisture Content: 2.9%	0.425	58
Remarks:	0.250	10
	0.150	4
	0.075	2.4





Geoted	chnical Evaluation	AECOM							[	BOREHOLE NO: W14101171-BH04								
Whistle	e Bend Subdivision		Drilling Method: NODWELL Mounted CME 75						F	PROJECT NO: W14101171								
Whiteh	norse, YT		6736277	N; 49455	50E;	Zon	e 8											
SAMPI	LE TYPE GRAB SAMPLE	NO RECOVE	RY 🔀	BULK			CRREL CORE	$\prod$		ELB'					RAB C	DRE		
BACK	FILL TYPE 🌃 BENTONITE	PEA GRAVE		SLOUGH		[.	GROUT		DR	ILL (	CUTI	TINGS	• • •	20	ND			
Depth (m)		OGICAL RIPTION		1	SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS		500 ASTI	1000 C M.	1500 C.	g/m³) [ 2000 LIQUI	D	20 20 20 20 G	CLAY 40 SILT ( 40 SAND 40 RAVE	60 8 %) ● 60 8 (%) ▲ 60 8	0	Depth (ft)
- 0	SILT WITH SAND AND ORGANICS		rozen, moist		+	N)		+	20	40	60	_ <u>80</u> : : :	1:	20	40	50 8 : :	: :	0 =
1	below seasonal frost, brown wi	th organic black				2			•									չ դամակավաղո
2	Fill line at 2.5 m. organics, moist, bla	ck								3-6								ակումեունո
= .	SILT - some clay, some fine sand, w		5 m, very sof	t,		3			: :	•	i		1					=
4	dark grey  - not as saturated and firmer betwee	n 4.5 and 5.5 m				4			•					<b>A</b>				0 15 15 15
6  			-			5			•									
7 - 7 - 8 - 8	END OF BOREHOLE @ 7.5 m					6			•									25_[111]
9 - 10																		20
ébo	EBA Engineer	ing Cons	sultar	nts L	td	. RE	GGED BY: MCP VIEWED BY: RAWING NO:	_				COMI COMI Page	PLE	TE:				m

ASTM D422

Project:

Whistle Bend Subdivision, Whitehorse, YT

Date Tested:

2008/12/09

Client:

**AECOM** 

Project No.:

W14101171

Location:

Sample No.:

BH04-4

Depth:

5.4 m

Description\*\*: SILT - some clay, some sand

Particle	Percent	Clay Size	Silt Size		Sand		Gra	vel
Size	Passing	100		Fine	Medium	Coarse	Fine	Coarse
100 mm		100				ľ		
75 mm		P 90						
50 mm		e						
38 mm		r 80	/					
25 mm		C °°						
19 mm		n 70		-				
13 mm		t						
10 mm		F 60	<b> </b>					
5 mm		i						
2 mm	100	n 50 —						
850 µm	97	e		No. of the Control of				
425 µm	93	<b>r</b>   40						
250 µm	90	b	/					
150 µm	87	<b>y</b> 30 —				ГМ	aterial Des	scription
75 µm	84	M				""	Proportio	
30 µm	59	a 20					y Size *	17
20 μm	50	s					lt Size Sand	67 16
12 µm	38	<b>s</b> 10					iravel	0
9 µm	32						obbles	0
6 µm	28	0 —	<u>                                     </u>					
3 µm	20				00 2			20 75
1 μm	15		Particle Size (µm)		· <del></del> F	aπια	e Size(mr	II) ——

Remarks:

\* The upper clay size of 2 µm, per the Canadian Foundation Engineering Manual.

\*\* The description is visually based & subject to EBA description protocols.



Geote	chnical Evaluation	AECOM								BOREHOLE NO: W14101171-BH05							
Whistle	e Bend Subdivision	Drilling Method:	NOI	DWE	LL Mounted CME 75	5			PR(	SJEC	CT	NO:	: W1	1410	117	1	
Whiteh	norse, YT	6736224N; 4944	478E	Ξ; Zo	ne 8												
SAMP	LE TYPE 🧱 GRAB SAMPLE 🖊 NO RECOVER	RY 🔀 BULK			CRREL CORE		SH	IELE	BY TU	JBE			GRA	AB CC	RE		
BACK	FILL TYPE 💹 BENTONITE 💢 PEA GRAVEL	SLOUGI	Н		GROUT		DR	RILL	CUT	TING	s :	•••	SAN	D			
			Ä	SAMPLE NUMBER									◆ CI	LAY ( 40 6	(%) <b>∢</b> 30		
Œ	LITHOLOGICAL		TYPE	<u>N</u>	GROUND ICE		Bulk I	Den	sity(k	(g/m³)			<b>●</b> S	ILT (S	%)●	}	€
Depth (m)	DESCRIPTION		삗	Ы П	DESCRIPTION		500_	1000	1500	2000	)		20 4 ▲ S/	<u>40 6</u> AND (	30 { (%) <b>₄</b>	<u>su</u>	Depth (ft)
å	DESCRIPTION		SAMPLE	셸	AND COMMENTS	PLA	STI	СМ	.C.	LIQ	סונ	2	20 4		50 i	30	🋎
			S	SAI			20	40	60	80					- (70) 30 - 1		
F 0	ORGANICS AND WOOD FRAGMENTS			1		1	: :	:	•		:						0 =
	SILT - some fine sand, some clay, trace organics, saturate grey	eu, very soit, dark							<u> </u>	ii.	: :		<u></u>	<u> </u>		i .i	
ĖΙ											:						=
上 1						1.			ļļ.	ļ <u>.</u> .	<u>:</u>			ļ. ļ			=
Ē [				2			•	:									=
Ļ ¥	- groundwater at 1.5 m - same elevation as McIntyre Cree	ak				1	4.4		<u></u>	<u>.</u>	<u>:</u>		ļ	ļ. ļ.,	: . <u>;</u>	ġ.;	<b>▼</b> 5_
Ę	groundwater at 1.5 m - Same Grovation as Worldy's Groc	,				:	: :				:						] =
_ 2									<u> </u>	<u>.</u>	;		ļ. <u>.</u>	ļ. į	} .	1	
Ė Į								:			:						=
FI								<u>.</u> .								! · ! · ·	
Ε, Ι				3		1	•	:									
<u> </u>	- less sand and slightly lower moisture content by 3.0 m		ł					•••	 : :				! · · · · · · · · · · · · · · · · · · ·	} · · · · ·		: : : : : : : : : : : : : : : : : : :	10_=
E l						:		:			:						=
Εl						:		;.	: ::	111	:						1
<u> </u>																	] =
E Ì	<ul> <li>trace to some sand and well rounded up to 2.5 mm diam to 5.0 m (lens), brownish, cast to silt matrix</li> </ul>	neter from 4.0 m		4													
E	to 5.0 in fiers), brownish, cast to silt matrix			4					<u>:</u>	<u> </u>	<u>:</u>		<u></u>	<u>.</u>		<u>.</u>	0
<b> </b>							: :										"=
E 5								<del>]</del> .	<u>:</u>	<u>.</u>	:		<u>.</u>	<u>:</u>	ļ. <u>ļ</u> .	<u>.</u>	1 1
E																	=
-	- silt is slightly drier and firmer from 5.5 to 6.0 m, dark gre	v				:			<u>.</u>	<u>.</u>	:		: <u>:</u> .		<u>:</u> :.		=
F (	one to digitaly drief and minist nonzoto to 0.0 m, daile gro	J		5			•	:				•••					=
F 6									H				<u> </u>			11.	
Ė l							: :	:									=
F											:				: ::	· · · · · ·	=
[ ,																	
F'						:											=
<u> </u>				6					<u> </u>						<u>.</u>	<u>.</u>	
																	25_=
<u> </u>							.;;	;.	į <u>į</u> .	<u>.</u>		<u>;</u>	; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	<u>.</u> ; . ;	.;.;.	.;.;.	=
<u> </u>								:									
<u> </u>								<del>.</del> .	: .i.	<u>.</u>	<u>;.</u>	;		<u>.</u>			. <u> </u>
F				7			•										
<u> </u>	SAND - some gravel, trace silt, trace clay, saturated, brow	n							<u>.</u>	ļļ.			<u>.</u>	<u>.</u>		<u></u>	. 30 =
F	S. 115 Contro gravor, trace only trace day, saturated, blow	••						:				:					30_
-						. :			<u> </u>	<u>.</u>		. <u>.</u>		<u> </u>	: : . : .	. <del>.</del> . <del></del>	1 =
<u> </u>							: :	:					: :				25
- 10				T1	OGGED BY: MCP	⊥:	. ;	-	. : T	CON	∕IPI	L : LET	ION	 I DE	PTH	l: 10	
ébo	EBA Engineering Cons	ultants l	Lto	<b>∄.</b> [R	REVIEWED BY:					CON	ΛΡΙ	LET	E: 1	2/9/	200	8	
					RAWING NO:					Page							

Geote	chnical Evaluation	AECOM	BO	BOREHOLE NO: W14101171-BH05									
Whistle	e Bend Subdivision		Drilling Method:	NOD	WE	LL Mounted CME 75	;	PROJECT NO: W14101171					
Whiteh	norse, YT		6736224N; 4944	178E;	; Zo	ne 8							
SAMP	LE TYPE GRAB SAMPLE	NO RECOVE	RY BULK			CRREL CORE	SHE	LBY T	UBE	G	RAB COF	₹E	
BACKI	FILL TYPE BENTONITE	PEA GRAVE	L SLOUGH	1		GROUT و	DRII	LL CU	TTINGS	S	AND		
Depth (m)	LITHOL	OGICAL RIPTION		SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS	PLASTIC	000 150	1	20 20 20	RAVEL (	80 80 80 6) <b>A</b> 80	Depth (ft)
10	- poor sample recovery at 10 m						1 : : :	: : :	: : :	: :	10 00	1 1	
E					8					<b>+</b>		<b>A</b>	=
E i	END OF BOREHOLE @ 10.5 m			122000									35
[- [_ 11													=
┡ ''										1:::::			1 =
E 1						ı							=
<u> </u>							1 1 1 1			1::::			- 크
E 42				1									]
12				}					****	1::::			40 =
E													=
Fi									+++++				1 =
Ē ,,													=
13													1 =
13								: : :					=
										- <del> -  -  -</del>			1 45
				1						: :			45_
_ 14													- 킄
-													
14													=
- 1													=
15				1									=
-				1									50_=
-					ľ								. I
_ 16											<u> </u>	. <u></u>	
Εl													=
- 1										<u></u>  .			.
E I													55_
17										<u></u>			<u> </u>
													=
<b> </b>										<b>∤. į. į</b> .			. 급
				1 1						: :			킄
18												. [. ] . [	
ΕÍ				}									60_=
-					ł								1 =
=													=
_ 19								.][]			<u>: : : : :</u>	. į į į.	클
Ė						,							4
<u> </u>								.][]	. į. į. i.			.1.1.1.	<u> </u>
=													55
20					$\Box$				: : :	: :	<u>: : : :</u>	<u> </u>	
	■ ERA Engineer	ina Con	oultanta l	+~	, <u> </u>	OGGED BY: MCP					ON DEP		.5m
ébo	EBA Engineer	ing cons	sunams L	_lU	<u>ال</u> ر	REVIEWED BY: PRAWING NO:			Page:		: 12/9/2	UUÖ	
					Įν	AVVIING INO.			i ⊏aye .	<u>د ۱۵ ۷</u>			

ASTM D422

Project:

Whistle Bend Subdivision, Whitehorse, YT

Date Tested:

2008/12/09

Client:

**EACOM** 

Project No.:

W14101171

Location:

Sample No.:

BH05-5

Depth:

6.0 m

Description\*\*: SILT - some sand, some clay

Particle	Percent		lay Size	Silt Size		Sand	Gravel	
Size	Passing				Fine	Medium Coarse		arse
100 mm		10	0		9			
75 mm		<b>P</b> 9	_					
50 mm		e						
38 mm		r 8	_ ل					
25 mm		c °	<b>`</b>   '	1				
19 mm		n 7	0					
13 mm		t						
10 mm		F 6	0	<u> </u>				
5 mm		i						
2 mm	100	n 5	0	<b> </b>				
850 µm	100	е						
425 μm	100	<b>r</b>	0	<i> </i>				
250 µm	99	b						
150 µm	98	<b>y</b> 3	0	<u> </u>				tion
75 µm	83	М					Proportion (%	
31 µm	52	$\begin{array}{c c} \mathbf{v} & 2 \\ \mathbf{a} & 2 \end{array}$	0				ay Size *	12
20 µm	42	S	 					71    17
12 µm	33	<b>s</b> 1	0			1 1 2 2 1 1 1 1		0
9 µm	28					i i ! ) i !		0
6 μm	24	,	لــا ٥	<u>                                      </u>		<u> </u>		
3 µm	16		2	2 8 ——— Particle Size (μm)			5 20	75
1 µm	10			ranticle Size (pill)	<i></i> →	Partic	le Size(mm)	

Remarks:

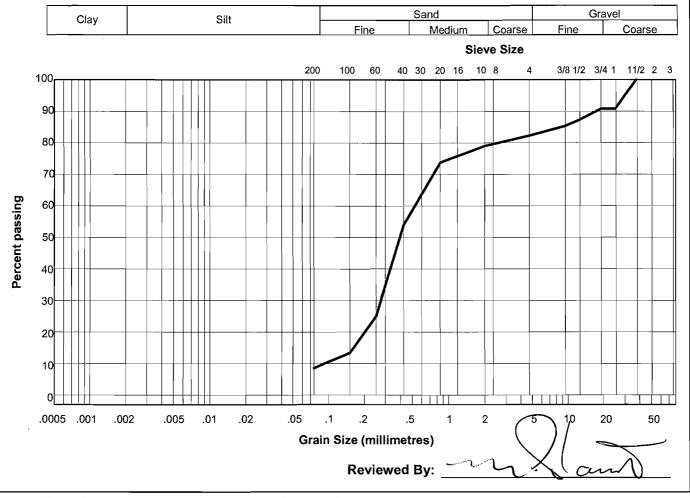
\* The upper clay size of 2 µm, per the Canadian Foundation Engineering Manual.

\*\* The description is visually based & subject to EBA description protocols.

Reviewed By:

EBA Engineering Consultants Ltd.

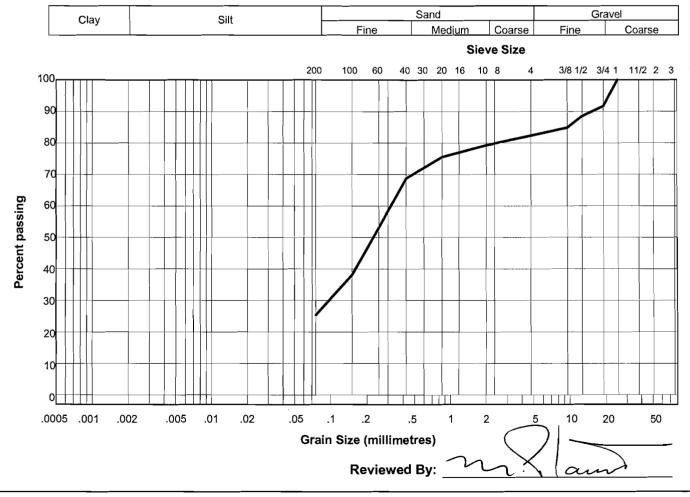
PARTICLE SIZE DISTRIBUTION		Mary Mary 1897 Total Colores
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	100
Project Number: W14101171	25.000	91
Date Tested: December 9, 2008	19.000	91
Tespit Number: BH05-8	12.500	87
Depth: 10.5 m	9.500	85
Soil Description: SAND - some gravel, trace silt	4.750	82
Cu: 5.7	2.000	79
Cc:1.6	0.850	74
Natural Moisture Content: 17.7%	0.425	54
Remarks:	0.250	25
	0.150	13
	0.075	8.6

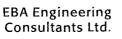




Geote	chnical Evaluation	AECOM				_		BOREHO	LE NO: \	N14101171-E	3H06
Whistle	e Bend Subdivision	Drilling N	vlethod:	NO	DWE	LL Mounted CME 75	İ	PROJECT	NO: W	14101171	
Whiteh	norse, YT	6736288	3N; 4943	380E	E; Zo	ne 8					
SAMP	LE TYPE 🧱 GRAB SAMPLE 🖊 NO RECOV	ERY	BULK			CRREL CORE	<u> ш</u>	BY TUBE		AB CORE	
BACK	FILL TYPE BENTONITE PEA GRAVI	EL 📗	SLOUGH	1		GROUT	DRILL	L CUTTINGS			
				Щ	SAMPLE NUMBER				◆ C	LAY (%) <b>◆</b> 40 60 80	
Œ	LITHOLOGICAL			TYPE	₩ 	GROUND ICE	Bulk De	nsity(kg/m³)	• 8	ILT (%) ●	£
Depth (m)	DESCRIPTION			밁	Ш	DESCRIPTION		00 1500 2000	_ A S	10 60 80 AND (%) ▲	Depth (ft)
占	DEGOIN HON			SAMPLE	闦	AND COMMENTS	PLASTIC I	M.C. LIQUII	20 4	10 60 80 AVEL (%) ■	ے ا
				လ	SAI		20 40	0 60 80		10 60 80	
- 0	SILT AND ORGANICS (FILL) - some gravel, some to tra brown/black	ace sand, mo	oist,		1		•				—————————————————————————————————————
_											=
											Ē
- 1											늴
-	SILT - some sand, trace clay, wet, soft, grey				2		•				4
									1111		5_=
<u> </u>											=
_ 2 1	SAND AND SILT - some gravel, saturated, loose, dark	brown		1							
=											Ē
					_						=
_ 3▼					3				=0		▼103
	- groundwater at 3.0 m, sample recovery below 3.0 m is groundwater	s poor due to									- 10
-	giodnovato										7
											=
_ 4	GRAVEL AND SAND - trace to some silt, saturated, loo										킠
-	GRAVEL AND SAND - trace to some siit, saturated, 100	se, dark brov	VII		4		•				-
-											15_=
-											Ē
_ 5							- <u>-</u>		1-1-1-1		=
_											3
_											
6					5		•		•	<b>À</b> ∰ : : : : :	
_				8: 21:							20_
_											4
_											=
7									1.5.1.5		4
					6		•				=
_	END OF PORTUOI E @ 7.5 m										25_
	END OF BOREHOLE @ 7.5 m										
_ 8									\		1
-											녑
-									1-1-1-1		
- 9											=
_ a											30_=
-											
_											33
- 10			_								33=
	EDA Enginocrina Com	01.140	nta	1 4.	<b>,</b>	OGGED BY: MCP		COM	PLETION	DEPTH: 7.5	m
éoc	EBA Engineering Con	suitai	ııs I	_[(	<b>⊿.</b>  ‡	REVIEWED BY: DRAWING NO:		COMF   Page		2/9/2008	
						AL AZAMITA O TAO'	_	li aye	1011		

PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	100
Date Tested: December 10, 2008	19.000	92
Tespit Number: BH06-3	12.500	88
Depth: 3.0 m	9.500	85
Soil Description: SAND AND SILT - some gravel	4.750	82
Cu:	2.000	79
Cc:	0.850	76
Natural Moisture Content: 18.3%	0.425	69
Remarks:	0.250	53
	0.150	38
	0.075	25.4







PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	100
Project Number: W14101171	25.000	79
Date Tested: December 10, 2008	19.000	75
Tespit Number: BH06-5	12.500	63
Depth: 6.0 m	9.500	58
Soil Description: GRAVEL AND SAND - trace silt	4.750	50
Cu: 130.5	2.000	41
Cc: 0.4	0.850	33
Natural Moisture Content: 12.7%	0.425	26
Remarks:	0.250	19
	0.150	14
	0.075	9.4





Geotechnical Evaluation AEC											_												1-BH07
Whistle	e Bend S	ubdivision			_	Drill	ing N	/lethod:	NOE	DWE	LL Mounted CME	<del>-</del> 75			F	PRO	JEC	1 T	NO:	W1	4101	171	
Whitel	horse, YT	<u> </u>			_	673	7137	'N; 494	178E	; Zoı	ne 8												
SAMP	LE TYPE	GRAB:	SAMPLE		NO RECOVI	ΞRY	$\boxtimes$	BULK			CRREL CORE			SHE	ELΒ\	Y TU	BE			3RAE	3 COI	₹E	
BACK	FILL TYP	E BENTO	NITE		PEA GRAVE	L		SLOUG	4		GROUT وَ	[	77	DRI	LL C	TTUC	INGS	<u>:</u> ا		SANE			
Depth (m)			THOL	RIPT	ION				SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTIOI AND COMMEN	N	PLAS	00 1 STIC	000 ·	1500	g/m³) [ 2000 LIQUI — <b>1</b> 80	+	20	0 4( ● SII 0 4( ▲ SA 0 4( GRA	LT (% 0 60 ND (% 0 60 VEL	80 6) • 80	Depth (ft)
3	SILT - so	ome sand, some sown  ome clay, moist to  sty increased by 4  f sand (thin lense	o wet, soft, o	olive b	rown	rost, fir	m, oli	ve		1 2			2		40	60	80		20	) 40	) 66	800	10
- - - - - 10					_						20050 21/ 1/21						201				D		33
	= CD	A Enai	n00"	ino		۱	4-	nta l	1 4-	나	OGGED BY: MCI	۲										TH: (	óm
ébo		A Engl	ieer	ırıg	Con	SUI	ιdl	us I	_ta	<b>'</b> ·ド	EVIEWED BY:										2/9/2	:008	
	EBA Engineering Consultants Ltd. REVIEWED BY: COMPLETE: 12/9/2008 DRAWING NO: Page 1 of 1										PARVING NO:						-aye	<u>;  </u>	UI I				

ASTM D422

Project:

Whistle Bend Subdivision, Whitehorse, YT

Date Tested:

2008/12/09

Client:

AECOM

Project No.:

W14101171

Location:

Sample No.: BH07-3 Depth: 4.5 m

Description\*\*: SILT - some clay

Particle	Percent		Clay Size	Silt Size		Sand		Gra	vel	_
Size	Passing		100		Fine	Medium	Coarse	Fine	Coarse	_
100 mm		,	100							
75 mm		P	90							
50 mm		е								
38 mm		r	80							
25 mm		C e								
19 mm			70							$\parallel$
13 mm		t								
10 mm		F	60							$\parallel$
5 mm	-	i								
2 mm		n	50	<u> </u>						$\parallel$
850 µm	-	е			***************************************					
425 µm		r	40		-					+
250 µm		b								
150 µm	100	у	30				<u>                                   </u>	aterial De	scription	╢
75 µm	100	M		<b>/</b> *			'*'	Proportio		II
25 µm	97	a	20	<i>/</i>				y Size *	17	1
16 µm	94	s						It Size Sand	83 0	
10 µm	87	s	10					and Gravel	0	H
7 µm	76				\$ F F F F F F F F F F F F F F F F F F F			obbles	0	
5 μm	57		0	<u>                                     </u>	_		<u> </u>		<u>                                     </u>	<u>.</u>
3 µm	27	]		2			2 5		20 75	; 
1 μm	10			—— Fatticle Size (µm)	<del></del>	· <del></del>	ramici	e Size(mı	iii) —	_

Remarks:

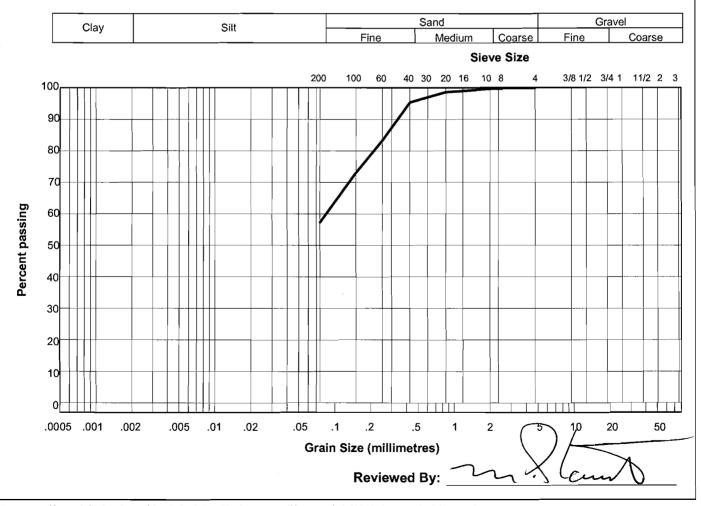
\* The upper clay size of 2 µm, per the Canadian Foundation Engineering Manual.

\*\* The description is visually based & subject to EBA description protocols.



Geote	chnical Evaluation	AECOM					BOREHO	DLE NO: '	W14101171-E	3H08
Whistle	e Bend Subdivision	Drilling Method:	NO	DWE	LL Mounted CME 75		PROJEC	T NO: W	14101171	
Whitel	norse, YT	6737347N; 494	293E	; Zo	ne 8					
SAMP	LE TYPE 🧱 GRAB SAMPLE 🖊 NO RECOV	ERY X BULK			CRREL CORE	SHEL	.BY TUBE	GR/	AB CORE	
BACK	FILL TYPE 💹 BENTONITE 💢 PEA GRAVI	EL SLOUG	Н		GROUT و	DRIL	L CUTTINGS	SAN	ID	
Depth (m)	LITHOLOGICAL DESCRIPTION		SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS	PLASTIC	ensity(kg/m³): 00 1500 2000 M.C. LIQU	20 20 20 A S D 20	LAY (%) ◆ 40 60 80  SILT (%) ◆ 40 60 80  AND (%) ▲ 40 60 80  AVEL (%) ■ 40 60 80	Depth (ft)
- 0	SAND - some silt, fine grained, uniform, dry to damp be loose, medium brown	ow seasonal frost,		1		•		: : :		0 =
1 2	SILT AND SAND - trace organics, damp, firm, brown - interbedded with sandier material			2		•			<b>A</b> •	15 15 15 15 15 15 15 15 15 15 15 15 15 1
3				3	~	•				10
3	SILT - trace fine sand, trace to some clay, wet and softe grey with some brown mottling	r with depth, olive		4		•				16
5	- soft and dark grey below 5 m			5						5
7	END OF BOREHOLE @ 6.0 m									20_
9										25
- 10 eoc	EBA Engineering Con	sultants i	Ltc	<b>)</b> _ R	OGGED BY: MCP EVIEWED BY: PRAWING NO:	1	COM		N DEPTH: 6m 12/9/2008	

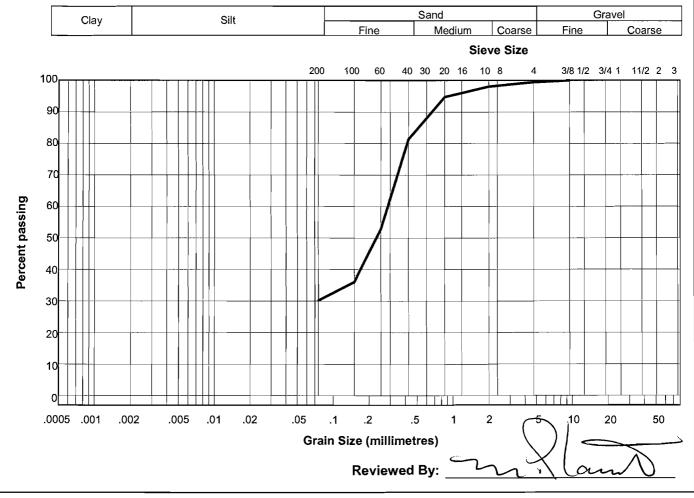
PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 10, 2008	19.000	#N/A
Tespit Number: BH08-2	12.500	#N/A
Depth: 1.5 m	9.500	#N/A
Soil Description: SILT AND SAND	4.750	100
Cu:	2.000	100
Cc:	0.850	99
Natural Moisture Content: 17.0%	0.425	95
Remarks:	0.250	83
	0.150	73
	0.075	57.3

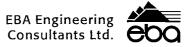




Geotechnical Evaluation				ECOM		BOREHOLE NO: W14101171-BH09									
Whistle Bend Subdivision								ELL Mounted CME 75	5	PROJ	PROJECT NO: W141011			01171	
Whitehorse, YT					4N; 494	167E	E; Zo					-			
1/42/20	SAMPLE		ECOVER	Y 🔀	BULK			CRREL CORE		BY TUBE			RAB (	CORE	
BACKFILL TYPE BENT	ONITE	PEA	GRAVEL		SLOUG	H	~	GROUT و	DRILI	_CUTTIN	IGS		AND	/ /0/	
						씽	SAMPLE NUMBER					20	CLAY	(%) <b>♦</b> 60 80	
Ê	ITHOI	OGICA	j				$\subseteq$	GROUND ICE	□ Bulk De	nsity(kg/r 00 1500 20	n³) □	20	SILT	60 80 (%) ● 60 80	
		RIPTION				님	Щ	DESCRIPTION				4	SAND	(%) ▲	- 1
ے ا	J_00.	(1101	•			SAMPLE TYPE	M	AND COMMENTS	PLASTIC I	M.C. LI ●	QUID <del>-i</del>	20	<u>40</u> GRAVI	_60 ´80 EL (%) ■	<b>⊢</b> '
0 SAND - trace to some sil	lt troop are	onice fine ar	sinod unif	omo dan	an to	107	S		20 40	60 8	30	20	40	60 80 : : :	
0 SAND - trace to some sil	n, trace org ose, dark br	own	antea, urino	oiii, uaii	iip to		1		•		1		•	Á	
											<u> </u>				. <u>;</u>
1															· <del></del>
							2		•						
2															
- slightly coarser and gre	ey below 2.	0 m							1 1 1 1						
							3								
3							•		[.;.,;.;.;	. į į. į.	: : : : :				
- becomes siltier and firr	m. moisture	increasing be	elow 3.0 m	1											
TOTAL CONTROL CALLED	,			•						. į į	ļ				
4											<u> </u>				
SILT - some clay, trace fi	ine sand u	et soft dark	orev			-	4								
C.E. Como day, trace il	Junu, W	ot, ook, uark	J'~J								:::				
5															
							5								
6	0.0						5				<u>.</u>				
END OF BOREHOLE @	ю.U m														
											÷.;				
7															
															- (
8															
9											<u></u>		. <u></u>		. <u>i</u>
											<u></u> .				. <u>i</u>
						1 1									
10					-		T <sub>1</sub>	00000 07/1400		100	: :		i i	EDTU	
EBA Engl	inee	rina C	One	ulte	nte	   tr	<b>√</b> [□	OGGED BY: MCP						EPTH: 9/2008	

PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 10, 2008	19.000	#N/A
Tespit Number: BH09-1	12.500	#N/A
Depth: 0.3 m	9.500	100
Soil Description: SAND - silty, trace gravel	4.750	99
Cu:	2.000	98
Cc:	0.850	95
Natural Moisture Content: 9.2%	0.425	81
Remarks:	0.250	53
	0.150	36
	0.075	30.2





Geotechnical Evaluation	AECOM	_				LE NO: W14101171-E	BH10
Whistle Bend Subdivision	Drilling Method: N	IODWE	LL Mounted CME 75		PROJEC <sup>-</sup>	ΓNO: W14101171	
Whitehorse, YT	6737740N; 49459	3E; Zo	ne 8				
SAMPLE TYPE RAB SAMPLE IN NO RECOVE	RY 🔀 BULK		CRREL CORE	SHEL	BY TUBE	GRAB CORE	
BACKFILL TYPE BENTONITE PEA GRAVE	L SLOUGH		GROUT .	DRILL	. CUTTINGS		
LITHOLOGICAL DESCRIPTION	l I	SAMPLE IYPE SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS	PLASTIC N	nsity(kg/m³) [ 0 1500 2000 M.C. LIQUII	20 40 60 80 ▲ SAND (%) ▲	Depth (ft)
O SILT - some clay, trace of fine sand, seasonally frozen to	0.6 m, moist,	1	<u> </u>	20 40	: : : : :	1 1 1 1 1 1 1 1 1 1	0 =
SILT - some clay, trace of fine sand, seasonally frozen to below frost firm, medium olive brown, some mottlin  - 1 - 2 - 3 - moisture content increasing with depth, firm, dark olive - consistently smooth drilling throughout depth of boreho plasticity from 4.5 to 6.0 m  - 5 - 6 - END OF BOREHOLE @ 6.0 m	ig	1 2 3 4 5					5 10 10 10 10 10 10 10 10 10 10 10 10 10
- - <sub>10</sub>							33=
EBA Engineering Cons	sultants L	td.[₹	OGGED BY: MCP REVIEWED BY: DRAWING NO:			PLETION DEPTH: 6m PLETE: 12/10/2008 1 of 1	1 ———

ASTM D422

Project:

Whistle Bend Subdivision, Whitehorse, YT

Date Tested:

2008/12/11

Client:

**AECOM** 

Project No.:

W14101171

Location:

Sample No.:

BH10-2

Depth:

1.5 m

Description\*\*: SILT - some clay

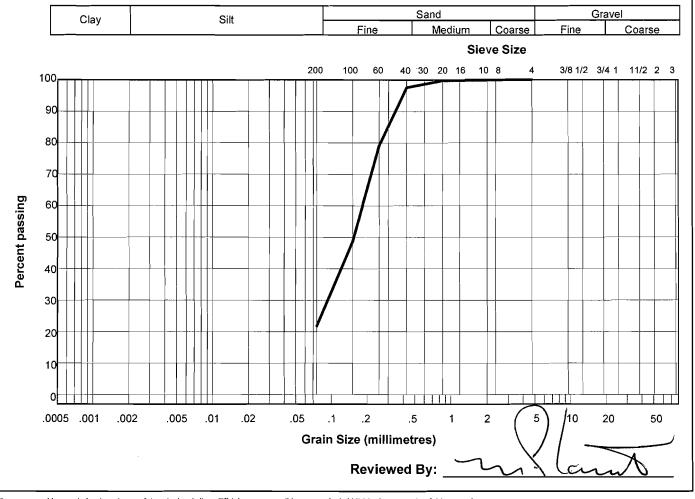
Particle Size	Percent	C	ay Size		Silt	Size				Sand			avel
Size	Passing	100	n —						Fine	Medium	Coarse	Fine	Coarse
100 mm													
75 mm		<b>P</b> 90				/							
50 mm		e				/							
38 mm		r 80	)										
25 mm		C °											
19 mm		n 70											
13 mm		t				/							
10 mm		F 60			11111	4						<del>                                     </del>	
5 mm		i			/								
2 mm		n 50	)		4								
850 µm		е			/								
425 µm		r 40	)		<i>\$</i>								
250 µm	100	b			<b>/</b>								
150 µm	100	<b>y</b> 30	)									Astorial De	egription
75 µm	100			<b>/</b>								/laterial De Proportio	
26 µm	94	M a 20	)									ay Size *	20
17 µm	81	s S	•								8	Silt Size	80
11 µm	62	<b>s</b> 10								<b></b>	+	Sand Gravel	0 0
8 µm	50											Cobbles	0
6 µm	41	(	لـــا ر										
3 µm	26		2					80	4	00	2		20 7
1 µm	16		←		Part	icle Si	i <b>ze</b> (µı	n)	$\longrightarrow$	·	Partic	le Size(m	m) —

Remarks:

- \* The upper clay size of 2 µm, per the Canadian Foundation Engineering Manual.
- \*\* The description is visually based & subject to EBA description protocols.

Geote	chnical Evaluation		AECOM					BOREHO	LE NO: W1	4101171-E	3H11
Whistle	e Bend Subdivision		Drilling Method:	NOD	WEI	LL Mounted CME 75	5	PROJECT	NO: W141	01171	
Whiteh	norse, YT		6737995N; 494	583E;	; Zor	ne 8					
SAMP	LE TYPE GRAB SAMPLE	NO RECOVE	RY   BULK			CRREL CORE	SHEL	BY TUBE	GRAB C	ORE	
BACKI	FILL TYPE BENTONITE	PEA GRAVE	L SLOUGH	1		GROUT	DRIL	CUTTINGS	SAND		
			ш			<u></u>			→ CLAY	′ (%) ◆	
<u></u>				TYPE	SAMPLE NUMBER		T Bulk Do	nsity(kg/m³) [	20 40 ● SILT	60 80	t)
n n	LITHOL	OGICAL		Ш	2	GROUND ICE DESCRIPTION	500 100	00 1500 2000	20 40	60 80	th (f
Depth (m)	DESCR	IPTION		[립]	쁘	AND COMMENTS	DI ACTIO I	MO HOUS	▲ SAND 20 40		Depth (ft)
				SAMPLE	₹	, <u></u>	HLASTIC	M.C. LIQUIC	■ GRAVE	EL (%) ■	
- 0	GRAVEL (FILL) - sandy, trace to som	o ailt aagaanally fra	and dark brown		Sy		20 40	60 80	20 40	60 80	0 -
[ ]	GRAVEL (FILL) - Sandy, trace to som	ie siii, seasonally iid	zen, uark brown		1		•				Ē
ᅡ	SAND - some silt to silty, fine grained	L day to dama faidy	compact modium	-							10
E	brown	i, dry to damp, ramy	compact, medium								
<u> </u> 1				21.53			1.4.1.4				l 🚽
E					2		•		•	<b>A</b>	=
⊨ I	- sand is medium to coarse grained f	rom 1.5 to 2.0 m									5_=
E	- sand is medium to coalse grained i	1011 1.5 (0 2.0 111									Ξ.
_ 2 ,	CILT name alou trace fine cond. do	mn haaamina maiat	with donth firm	-						;.;;;	=
	SILT - some clay, trace fine sand, dai medium to dark olive with some	np, becoming moisi brown mottling	. with depth, nim,								
<u> </u>		-			ĺ			$, \vdots, \vdots, \vdots, \vdots, \vdots.$		;.;;;	
					3	•	•				7
3											10_=
E (											1
-											
<u> </u>				Contraction (	- {						- 킠
-					4						耳
											15 =
-											
5											=
-											
E				g-10- 5							
					5						1
E 6 ,											
F. (	END OF BOREHOLE @ 6.0 m										20_
E l											4
-					}						4
E 7											
<u> </u>											=
E l											) J
- [											25_=
E 8											-
<b>F</b>											
E l											
-											
_ 9											
<b>├</b>											30_=
E											=
<u> </u>											20
10								11111			33=
	ERA Engineer	ina Can	oultanta !	1 4~1	, <u> </u>	DGGED BY: MCP			PLETION D		1
ébo	5 EBA Engineeri	ng Cons	วนแสมเริ่ม	_tU	·\K	EVIEWED BY: RAWING NO:		Page	PLETE: 12/ 1 of 1	10/2008	
	1171 CD LEBA CDT 09/01/30				الا	I VANING INU.		Iraye	1 01 1		

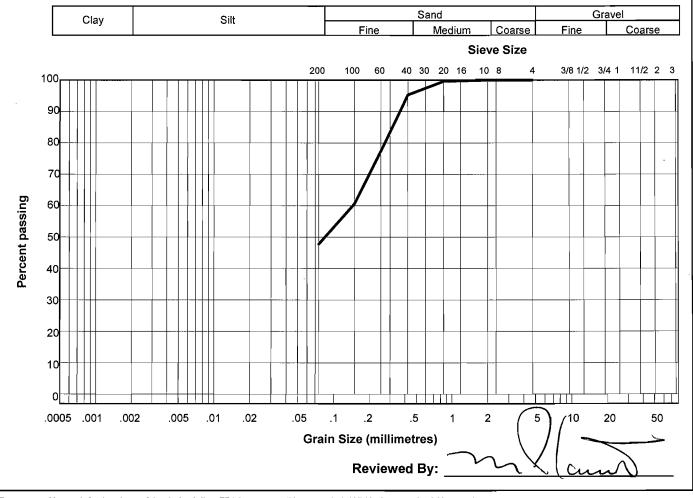
PARTICLE SIZE DISTRIBUTION	<u> </u>	
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 11, 2008	19.000	#N/A
Tespit Number: BH11-2	12.500	#N/A
Depth: 1.5 m	9.500	#N/A
Soil Description: SAND - silty	4.750	100
Cu:	2.000	100
Cc:	0.850	100
Natural Moisture Content: 6.5%	0.425	98
Remarks:	0.250	79
	0.150	49
	0.075	21.8





	chnical Evaluation	AECOM														-BH12
Whistle	e Bend Subdivision	Drilling Method:	NO	DWE	ELL Mounted CME 75	5			PR	OJE	CT	NO:	W1	4101	171	
Whiteh	norse, YT	6738445N; 4948	8801	E; Zo	ne 8											
SAMP	LE TYPE 🏻 GRAB SAMPLE 🖊 NO RECOVE	RY 🔀 BULK			CRREL CORE		] s	HELI	BY T	UBE			GRA	B COI	RE	
BACK	FILL TYPE 🎆 BENTONITE 🔃 PEA GRAVE	L [[]]] SLOUGH	Н		GROUT		ם	RILL	. CUT	ITING	SS [		SANI			
Depth (m)	LITHOLOGICAL DESCRIPTION		SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS	-	500 AST	100 FIC N	<u>0 150</u> И.С.	kg/m³; 10 2000 LIQI ——————————————————————————————————	0 DID I	20	0 44 ● SI 0 44 ▲ SA 0 44 I GRA	ILT (% 10 60 ND (% 10 60 AVEL	0 80 6) ● 0 80 %) ▲	Depth (ft)
_ 0	ORGANIC ROOT MATERIAL - frozen, black	/		1				1 1	1 1		:					0 =
-	SAND AND SILT - some silt to silty, fine grained, uniform medium brown	, dry to damp,	<u> </u>	'												=
- - -	- becomes coarser, trace silt, dry, loose, greyish brown b	elow 0.3 m														
- '	SILT -some fine sand, trace to some clay, damp, firm, lig	ht olive									• • • •					·
-				2			•									1 =
-										• • • • • • • • • • • • • • • • • • • •	• • • • •					·  5킄
- 1								: :		: :						1 - 4
-							: :	: :			::-	• • • • •		! · · · · · · · · · · · · · · · · · · ·	****	1 4
-								: :								1 1
-									. (	• (• • • •				! · (· · · ) ! ! ! !		``
- ,				3		1										[ <u>,</u> [
_	- moisture content increases with depth, still firm, dark of	ive									:					1 14
-																.] =
-																~ 
- 4							:	: :								.]
-	- finer below 4.0 m			4												``
_				"					. [ [	<u>. i. i</u> .						
_							:		: :	: :	$\vdots$	: :	: :			13
_ 5									<u>. j. j</u>	<u>. i. i</u> .						.)
-																1 =
3						:		<u>.</u>	. į į	. įį.						]
-				5			•									]
_ 6	END OF BOREHOLE @ 6.0 m							<u>.</u> ;	. į į	. į į.	. <b>;</b>			<u> </u>		20_=
-	END OF BOREHOLE @ 6.0 III															
-								÷.;		· <del></del> .	. <u>i</u>					네 클
									: :		:	: :	: : :			=
7							<del>.</del> .		· {· · }	·	· <u>.</u>			] j		네 킄
-											:					1 4
_							į .	···	· {··}	• • • • •	. ;					25_
-											:					=
8							;.				· į· ·					·/ 킄
-											:					1 =
-											· [					세 클
8											:					=
<u> </u>							; .				::-	:   : : :				30_=
-																
-								± ::			::-					·  ]
10								: :								30-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
				ŢL	OGGED BY: MCP										TH: 6	
éoc	EBA Engineering Cons	sultants l	Lto	$d. \mathbb{F}$	REVIEWED BY:									2/10	/2008	
	·			[[	PRAWING NO:		_			Pag	<u>e 1</u>	of 1	<u> </u>			

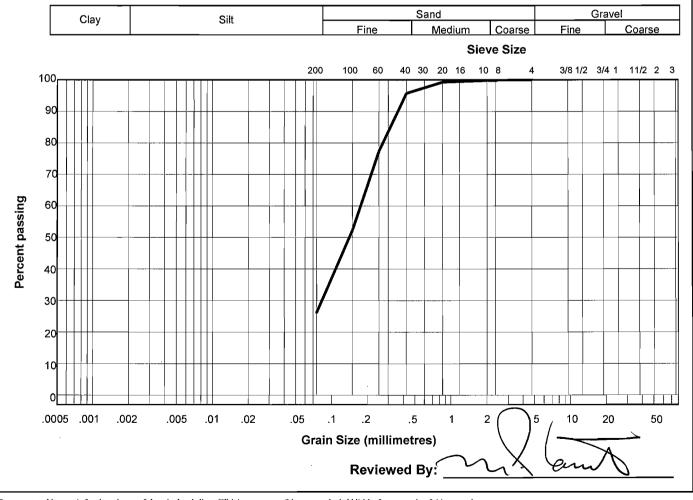
PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 10, 2008	19.000	#N/A
Tespit Number: BH12-1	12.500	#N/A
Depth: 0.3 m	9.500	#N/A
Soil Description: SAND AND SILT	4.750	100
Cu:	2.000	100
Cc:	0.850	100
Natural Moisture Content: 4.5%	0.425	95
Remarks:	0.250	77
	0.150	61
	0.075	47.7





Geote	chnical Evaluation	AECOM						В	ORE	HOL	LE N	O: W	1410 <sup>.</sup>	1171-E	3H13
Whistl	e Bend Subdivision	Drilling Method:	NOI	DWE	ELL Mounted CME 75	5		P	ROJ	ECT	NO:	W14	1011	71	
Whitel	norse, YT	6738509N; 4944	430E	E; Zo	ne 8										
SAMP	LE TYPE GRAB SAMPLE 🖊 NO RECOVE	RY BULK			CRREL CORE		SH	ELBY	' TUBI	E		GRAB	CORE	Ē	
BACK	FILL TYPE BENTONITE PEA GRAVE	L SLOUGH	+		GROUT و		DR	ILL C	UTTU	NGS	::: <u> </u>	SAND			
	الماقعة المعتدد			띪							1	◆ CL/	Y (%)	<b>*</b>	
(a)			TYPE	NUMBER	CDOUND ICE	H	Rulk i	Densi	ty(kg/ı	m³\ □	20	) 40 ● SII	60 T (%)	80	æ
h (r	LITHOLOGICAL		ш	$\exists$	GROUND ICE DESCRIPTION		500	1000 1	1500 2	000	20	3 40	60	80	# (#
Depth (m)	DESCRIPTION		SAMPL	岸	AND COMMENTS	DI A	STI	C M C					ID (%) 60		Depth (ft)
			SAI	SAMPLE			•	•	C. LI	•		<b>GRA</b>	/EL (%	6) ■	
- 0	ORGANIC ROOT MATERIAL - seasonally frozen, brown	and black		ഗ		+:	<u>20</u> : :	40	60 8	80 : :	20	) 40 ::	60	80	0 =
<b> </b>	SAND - silty, trace organics at upper interface, fine grains	ed, uniform, damp		1		•	: :	: :		: :		: :			
<u> </u>	below seasonal frost, medium brown - sand becomes slightly coarser, trace silt, dry to damp, i	modium arovich								÷ ;				· · <del>!</del> · <del>!</del> · ·	=
-	brown	nedium greyisii													
<u> </u>										÷ :		•			
<b> </b>				2		•						•		<b>A</b>	
F	- trace to some gravel from 1.5 to 2.5 m									÷ ; ; .	1.4.1				5_=
-	Č														=
2						1.4				÷ :-	·÷·	•			0 mlandardardardardardardardardardardardardard
Ė I						:	: :	: :							
-	SILT - some clay, trace fine sand, damp, firm, light olive					1.4			+++	÷ :			1		1
Ε, Ι				3			•								
3 -	- moisture content increases with depth, firm, becomes of	lark olive	101 <i>81</i> 1							*			336		10_=
E						:		: :				: :			=
E													1 1 1		]
4						:									Ē
- <b>"</b>						::									
E				4			•								
			*********			1 ::		· · · · · · ·	: :	: :		:::	: : :		15_=
- - 5															
	- easy drilling throughout depth of borehole					1									
-															
-				5		:		: :				: :			
E 6				J						<u>.i.</u> j.					. ⊣
-	END OF BOREHOLE @ 6.0 m														20_=
						1	.;.;		<u>.</u> ;.;.						=
-						:									=
7								; . ;.	.;.;.						25
						:	: :	: :							
⊨ Ì								;	. j. j.	. <b>.</b>					25
-						:									23_
_ 8								; . ;.			;				=
															- 클
-								į . į.		4.			. į į		=
						1:									
_ 9								į . į.		4.				ļļ. ļ	30
<u> </u>						:									30_
_						-:-									=
-															
- 10			<u> </u>	11	OGGED BY: MCP	1:	: :	.::	10	: :		: : ! IAOI	: : }FDT	H: 6m	
eoc	EBA Engineering Cons	sultants l	to	計	REVIEWED BY:				100	OMF	PLETI	E: 12	/10/2	008	ı
eod	a -Dit -ingiliooning cont	Januario L			RAWING NO:						1 of 1			<del>-</del>	
MCD WIAI	01171.GPJ EBA.GDT 09/01/30														

PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 11, 2008	19.000	#N/A
Tespit Number: BH13-2	12.500	#N/A
Depth: <u>1.5 m</u>	9.500	#N/A
Soil Description: SAND - silty	4.750	100
Cu:	2.000	100
Cc:	0.850	99
Natural Moisture Content: 3.2%	0.425	96
Remarks:	0.250	77
	0.150	52
	0.075	26.2





Geotechnical E	Evaluation		AECOM						В	BOR	EHOL	E NO	): W1	4101	171-E	3H14
Whistle Bend S	Subdivision		Drilling Met	hod: No	ODWE	ELL Mounted CME 75	5		P	RO	JECT	NO:	W14	1011	71	
Whitehorse, Y	Γ		6738205N;	494192	2E; Zo	ne 8										
SAMPLE TYPE	GRAB SAMPLE	NO RECOVE	RY 🔀 BL	JLK		CRREL CORE			ELBY				RAB	CORE		
BACKFILL TYP	PE BENTONITE	PEA GRAVE	:L ∭ SL	OUGH.		GROUT		DR	ILL C	UTT	INGS		AND			
				և	SAMPLE NUMBER							20	CLA'	Y (%) 60	<b>♦</b> 80	
Œ E	LITHOL	OGICAL		77 74	3	GROUND ICE		Bulk D	Densi	ty(kg	/m³) [_		SILT	(%)€		<b>£</b>
Depth (m)		RIPTION		<u>σ</u>		DESCRIPTION			1000 1			4	<u>40</u> SANI	O (%)	•	Depth (ft)
ا ق	DECON	11011		H IdWAS	M M	AND COMMENTS	PLA	ASTIC	C M.C	C. L	LIQUID	20	40 GRAV	60 FL (%	80 N■	۵
0 0000	IIO DOOT MATERIAL				′\ <u>\</u> \		1	20	40	60	80	20	40	60	80	
SILT - S	NIC ROOT MATERIAL - seaso some clay, trace fine sand, se	easonally frozen to 0	0.8 m, damp be	low	1			•				<b>A</b> •			•	Ē
s	easonal frost, firm, medium ol	ive brown											<u>.</u>			
-								: :								=
F 1																
					2			•								
				ta i.									::::::			5.7
_ 2																1 =
-																=
-											;.;					=
– - moisti	ure content increases with de	pth, firm, dark olive	brown		3			•								=
_ 3																10_=
-																0 15 15
<u>-</u>													· <del> </del>			
_ 4																
					4			•								=
- soft b	y 4.5 m, turning dark grey as	moisture content inc	reases betwee	n	993		::									15_=
4. 5	.5 and 6.0 m															
																=
_				10000												
<del>-</del> -					5			•								]
6   FND OF	F BOREHOLE @ 6.0 m										. <del></del>					20
	DOTAL TOLL @ 0.0 III						:									=
_																]
_ ,							:									
- '								***						· · · · · · · · · · · · · · · · · · ·	•••••	
-							:									=
F																25_=
8							::	.;.;	.;.;.					<u> </u>		=
							:	: :			: :					=
_													. į į.			
							:									
_ 9										. : : :					. <del>!</del> . <del>!</del>	30_=
							:									
<u> </u>																
- 10															: :	25 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	24 5 '	·	11	(_	ا بی	OGGED BY: MCP		• • • • • • • • • • • • • • • • • • • •							H: 6m	
eta EE	BA Engineer	ing Cons	sultani	s Lt	<i>d.</i>   F	REVIEWED BY:					OMP		E: 12/	10/2	800	
MGP W14101171.GPJ EB	A.GDT 09/01/30				L	PRAWING NO:					age '	1 01 1				

ASTM D422

Project:

Whistle Bend Subdivision, Whitehorse, YT

Date Tested:

2008/12/11

Client:

**AECOM** 

Project No.:

W14101171

Location:

Sample No.:

BH14-1

Depth:

0.3 m

Description\*\*: SILT - some clay, trace sand

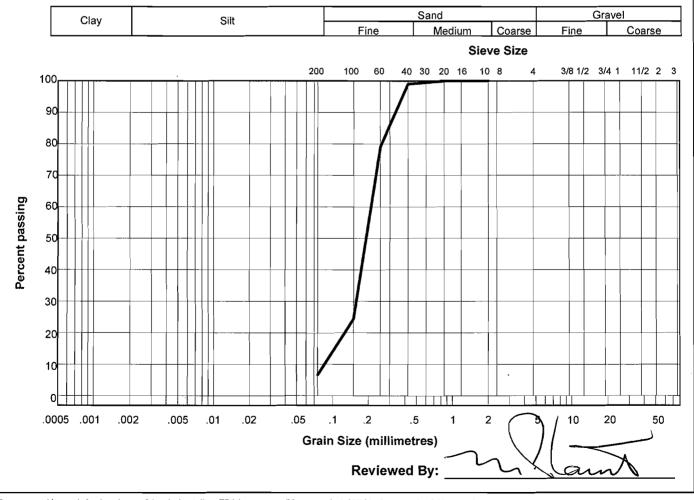
Particle Size	Percent		Clay Siz	ze	Silt	Size			Sand _			avel
Size	Passing	1	100 —					Fine	Medium	Coarse	e Fine	Coarse
100 mm		]						•				
75 mm		P	90									
50 mm		e				/						
38 mm		r	80			•						
25 mm		C e										
19 mm		n	70									
13 mm		t	. ,			/						
10 mm		<b> </b> _	60 -			<b>4</b>						
5 mm		F   i			/							
2 mm	100	'n	50									
850 µm	100	e			/							
425 μm	99	r .	40		/							
250 μm	99	b			<i>[</i>							
150 µm	99	y	30		<u> </u>							
75 µm	98										Material De Proportio	
26 µm	93	M	20								ay Size *	18
17 µm	81	a		4							Silt Size	80
11 μm	62	s	10							_	Sand Gravel	2
8 µm	50									1 1	Gravei Cobbles	0 0
6 μm	39		0									
3 μm	24	-		2			8	O	400	2	5	20 75
1 μm	14		<b>←</b>		Part	icle Siz	<b>e</b> (µm)		$\rightarrow$	Partic	<b>le Size</b> (m	m) —

Remarks:

- \* The upper clay size of 2 µm, per the Canadian Foundation Engineering Manual.
- \*\* The description is visually based & subject to EBA description protocols.

Whistle Bend Subdivision  Drilling Method: NODWELL Mounted CME 75  PROJECT NO: W141011:  Whitehorse, YT  G738162N; 494003E; Zone 8  SAMPLE TYPE  GRAB SAMPLE  NO RECOVERY  BULK  CRREL CORE  SHELBY TUBE  GRAB CORE  GROUT  DRILL CUTTINGS  20 40 60  SILT (%)  20 40 60  A SAND  A SAND  A SAND  CLAY (%)  20 40 60  DESCRIPTION  AND COMMENTS  PLASTIC M.C. LIQUID  20 40 60  GROVEL  BURNOLOGICAL  DESCRIPTION  A SAND (%)  20 40 60  GROVEL  20 40 60  GROUND ICE  DESCRIPTION  A SAND (%)  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60  GROVEL  20 40 60	•
SAMPLE TYPE GRAB SAMPLE NO RECOVERY BULK CREL CORE SHELBY TUBE GRAB CORE BACKFILL TYPE BENTONITE PEA GRAVEL SLOUGH GROUT DRILL CUTTINGS SAND	30
BACKFILL TYPE BENTONITE PEA GRAVEL SLOUGH GROUT DRILL CUTTINGS SAND	80
	30
(E) #\$\frac{\text{LITHOLOGICAL}}{\text{DESCRIPTION}}\$\frac{\text{LICHY (%)}}{\text{20}}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\frac{\text{CIAY (%)}}{20}\$\frac{\text{DESCRIPTION}}{\text{DESCRIPTION}}\$\frac{\text{Bulk Density(kg/m³)}}{\text{DESCRIPTION}}\$\frac{\text{DESCRIPTION}}{\text{SAND (%)}}\$\frac{\text{ASAND (%)}}{\text{AND COMMENTS}}\$\frac{\text{ASAND (%)}}{\text{PLASTIC M.C. LIQUID}}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CLAY (%)}\$\frac{\text{20}}{20}\$\frac{40}{60}\$\text{60}\$\text{CAY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CAY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CAY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\frac{\text{CLAY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\frac{\text{CICHY (%)}}{20}\$\frac{\text{40}}{60}\$\text{CICHY (%)}\$\text{40}\$\text{60}\$\text{CICHY (%)}\$\text{40}\$\text{60}\$\text{CICHY (%)}\$\text{40}\$\text{60}\$\text{CICHY (%)}\$\text{40}\$\text{60}\$\text{CICHY (%)}\$\text{40}\$\text{60}\$\text{CICHY (%)}\$\text{40}\$\text{60}\$\text{CICHY (%)}\$\text{40}\$\text{60}\$\text{60}\$\text{60}\$\text{CICHY (%)}\$\text{40}\$\text{60}\$\tex	<b>▶</b>
S	Depth (ft)
O SAND - some to trace silt, fine grained, uniform, dry to damp below	; ; 0 <u>=</u>
seasonal frost, medium brown - becomes cleaner and greyish brown at 0.3 m  1 2 2 - 2 - 3 - smooth, easy drilling throughout depth of borehole - 4 - 4 - 5 - 6 - 6 - 6 - 7	10
6	20
SILT - some clay, trace fine sand, wet, soft, dark olive  END OF BOREHOLE @ 9.0 m	30
LOGGED BY: MCP COMPLETION DEPT	l: 9m
EBA Engineering Consultants Ltd. REVIEWED BY: COMPLETE: 12/10/20	
DRAWING NO: Page 1 of 1	

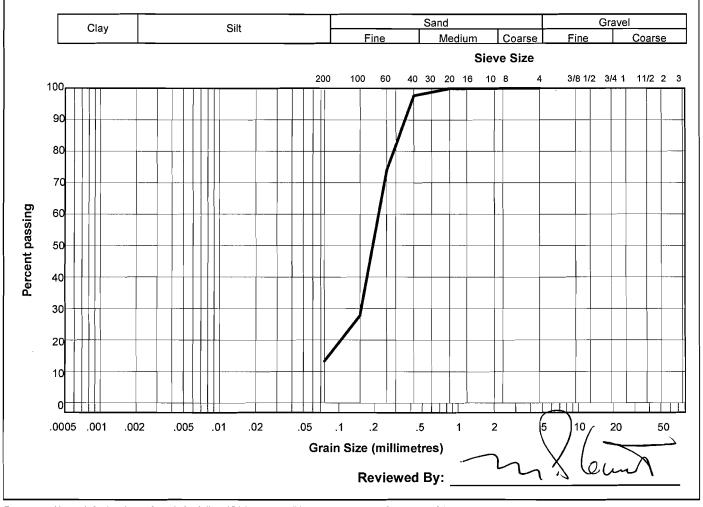
PARTICLE SIZE DISTRI	BUTION	in the second se
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 11, 2008	19.000	#N/A
Tespit Number: BH15-5	12.500	#N/A
Depth: 6.0 m	9.500	#N/A
Soil Description: SAND - trace silt	4.750	#N/A
Cu: 2.4	2.000	100
Cc:1.4	0.850	100
Natural Moisture Content: 2.9%	0.425	99
Remarks:	0.250	79
	0.150	24
	0.075	6.6





Geote	echnical Eva	luation			AEC	COM				•			$\rightarrow$									3H16
	tle Bend Sub	division								ELL Mounted CME 75	;			PR	OJE	СТ	NO	: W	1410	1171		
	horse, YT						N; 493	653E	E; Zc	ne 8												
	PLE TYPE	GRAB SAMPLE		NO RECO			BULK			CRREL CORE	Щ			3Y TI					AB CC	RE		
BACK	(FILL TYPE	BENTONITE		PEA GRAV	EL	Ш	SLOUG	H		GROUT	$\square$	DR	RILL	CUT	TING	3S	<u> </u>	SAN				
Depth (m)		LITHO DESC						SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS	PLA	500 ASTI	1000	1.C.	kg/m <sup>3</sup> 0 200 LIQ	0 UID	2 2	20 4 ● S 20 4 ■ S 20 4	40 6 SILT ( 40 6 AND 40 6 AVEL	%) ◆ 60 80 %) ● 60 80 (%) ▲ 60 80 - (%) 1	) )	Denth (ft)
0	ORGANIC	ROOT MATERIAL - se	asonally	/ frozen, orga	nic brov	wn			Ŝ		+-	<u>20</u> : :	40	60 : :	80	) :	:	20 <u>′</u>	40 ( : :	80 8 : : :	) :	
- - - - - - - 1 1	SAND - soil	ne silt to silty, damp be clean and medium to fi sh brown	low sea	sonal frost, d	ark brov	wn	/		1		•										<b>A</b>	10
<u>-</u>	SILT - som	e clay, trace fine sand,	damp, f	īm, light olive	)				2		•											į
_ 2									3													
_ 3	- moisture	content increases with	still firm																		1	
_ 4	- some mo	ttling in soil at 4.5 m						4													1	
<sub>-</sub> 5									5													
_ 6 - -	END OF BO	DREHOLE @ 6.0 m																				2
. <i>1</i> -												-1							-3 - 6			2
- 8																						
. 9																						;
10	EBA	\ Enginee	ring	g Con	sul	ltar	nts i	_ Ltc	<i>d.</i> [₹	OGGED BY: MCP REVIEWED BY: DRAWING NO:	<u>;</u>	-			COI COI Pag	MP	LET	E: 1	I DE	PTH 1/200	: 6m	

PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 11, 2008	19.000	#N/A
Tespit Number: BH16-1	12.500	#N/A
Depth: 0.3 m	9.500	#N/A
Soil Description: SAND - trace silt	4.750	100
Cu:	2.000	100
Cc:	0.850	100
Natural Moisture Content: 5.2%	0.425	98
Remarks:	0.250	74
	0.150	28
	0.075	13.3





Geotechnical Evaluation		AECOM				BOREHO	LE NO: W14101171-B	3H17
Whistle Bend Subdivision		Drilling Method	NODV	VELL Mounted CME 7	5	PROJEC1	TNO: W14101171	
Whitehorse, YT		6738516N; 493	694E; 2	Zone 8				
SAMPLE TYPE GRAB SA				CRREL CORE		BY TUBE	GRAB CORE	
BACKFILL TYPE BENTONI	TE PEA GRAN	EL SLOUG		GROUT	DRILI	L CUTTINGS		
			SAMPLE TYPE				◆ CLAY (%) ◆ 20 40 60 80	
E IIT	HOLOGICAL		TYPE	GROUND ICE	□ Bulk De	nsity(kg/m³)[	● SILT (%) ●	(#)
<u> </u>	SCRIPTION			DESCRIPTION		00 1500 2000	20 40 60 80 <b>A</b> SAND (%) <b>A</b>	Depth (ft)
ا ق			SAMPLE	AND COMMENTS	PLASTIC I	M.C. LIQUII	20 40 60 80 GRAVEL (%)	ے ا
000444000000000000000000000000000000000			S S	5	20 40	0 60 80	20 40 60 80	
ORGANIC ROOT MATERIA SAND - some silt, trace orga			1	i	•			
- becomes SAND - trace sill	medium to fine grained,	lamp, greyish brown /	$'  \  $					
ORGANIC ROOT MATERIA SAND - some silt, trace orga - becomes SAND - trace silt SILT - some clay, trace fine	and, damp, firm, medium	olive brown						
<u> </u>								TIT
-			2	2	•			
 								5_=
2								=
- moisture content increasin	y with depth, becoming so	ter						크
E_					1.1.1.1.1			
-			3					=
3								10_
_								
_								
-								
4			233				<u> </u>	
- sandy, silt lens from 4.1 to	4 3 m		4	<b> </b>	•			0 mm
- Suridy, Silt forio non 4.1 to	4.0 III				1.4.1.4.1			15_=
_ <b>'</b>								
<u>-</u>								
-			5	,				1 1
6				,				
END OF BOREHOLE @ 6.0	m							
-								7111
-								1
_ 7								=
								릨
<u> </u>								25_=
- 8								
-								=====================================
					\			
9								T
								30_7
<u>-</u>							<b>4 </b>	=
								20 =
- 10		<del>-</del>		LOGGED BY: MCP	1	COMF	PLETION DEPTH: 6m	
🚓 EBA Engin	eering Cor	sultants	Ltd.	REVIEWED BY:	_	COME	PLETE: 12/11/2008	
MGP W14101171.GPJ EBA.GDT 09/01/30				DRAWING NO:		Page	1 of 1	

ASTM D422

Project:

Whistle Bend Subdivision, Whitehorse, YT

Date Tested:

2008/12/11

Client:

**AECOM** 

Project No.:

W14101171

Location:

Sample No.:

BH17-3

Depth:

3.0 m

Description\*\*: SILT - some clay, trace sand

Particle	Percent	Cla	y Size	Silt Size			Sand		Gra	avel
Size	Passing	100		-		Fine	Medium	Coarse	Fine	Coarse
100 mm		100				_				
75 mm		P 90								
50 mm		e			<u> </u>					
38 mm		r 80		/_						
25 mm		c °°		<b>/</b>   <b>/</b>						
19 mm		n 70								
13 mm		t								
10 mm		F 60								
5 mm		i		<b>               </b>						
2 mm	100	n 50								
850 µm	99	е								
425 µm	98	r 40								
250 µm	97	b		I						
150 µm	97	<b>y</b> 30		1/1111					otorial Da	a a sindia n
75 µm	96			/				· IVI	aterial De Proportio	
27 µm	85	M 20							y Size *	13
18 µm	75	S						1 1	t Size	83
11 µm	56	<b>s</b> 10						1 1	Sand ravel	4
8 µm	44							1 1	bbles	ő
6 µm	34	0								
3 µm	19		2	<b>.</b>	80	4(		2 5		20 75
1 µm	10		<del></del> -	<ul> <li>Particle Size</li> </ul>	∌ (µm) •	$\longrightarrow$	←—	Particle	e Size(mi	m) <del>→</del>

Remarks:

\* The upper clay size of 2 µm, per the Canadian Foundation Engineering Manual.

\*\* The description is visually based & subject to EBA description protocols.



Geote	chnical Evaluation	AECOM					BOREHO	DLE NO	D: W14101171-E	3H18
Whistl	e Bend Subdivision	Drilling Method:	NO	DWE	ELL Mounted CME 75	5	PROJEC	T NO:	W141011 <u>71</u>	
Whitel	horse, YT	6738121N; 4937	750E	E; Zc	one 8					
SAMP	PLE TYPE GRAB SAMPLE NO RECOV	ERY   BULK			CRREL CORE	SHEL	BY TUBE		GRAB CORE	
BACK	FILL TYPE 💹 BENTONITE 📝 PEA GRAVE	EL SLOUGH	Н		GROUT	DRIL	L CUTTINGS	S S	SAND	
	ten Brood			<u>K</u>				1	CLAY (%) ◆	
<u></u>			TYPE	NUMBER	ODOUND IOE	□ Bulk De	ensity(kg/m³)	20	0 40 60 80 ■ SILT (%) ●	æ
h (n	LITHOLOGICAL		ET	₹	GROUND ICE DESCRIPTION	500 10	00 1500 2000	20	40 60 80	th (f
Depth (m)	DESCRIPTION		SAMPLE	빌	AND COMMENTS	DI ACTIC	M.C. LIQU	ID 20	SAND (%) ▲ 40 60 80	Depth (ft)
			SAI	SAMPLE		Liono			GRAVEL (%) ■	
- 0	ORGANIC ROOT MATERIAL			Ŝ		20 4	0 60 80	20	40 60 80	0 -
-	SAND AND SILT - rootlets throughout, seasonally froze	n, organic brown		1		•				Ĭ
<u> </u>	SAND - some to trace silt, medium to fine grained, damp	below frost,								]
E	greyish brown  SILT - some clay, trace sand, damp, firm, light olive brown	/ vn								
<u> </u>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									
_				2		•		▲ ♦		=
_										5_=
ļ.										
_ 2										5510
<b> </b>								.   : :		=
_										=
-				3		•				=
_ 3	- moisture content increases with depth		481							10_
-	molecule content molecules vital aspain									
Ė 1										=
E										
_ 4										=
E				4		•				=
<u> </u>	- becomes softer by 4.5 m color tums dark grey below 5	.0 m								15_=
-	becomes sold by the in color talls dark grey below o	.0 111								=
5										=
-										-
<u> </u>			3.3							=
-				5		•				=
<u> </u>	END OF BOREHOLE @ 6.0 m		la fa							20_=
-										=
-										=
E 7										=
<b> -</b>										25
F										25_=
-										=
8										
-										=
-										=
										=
_ 9								-		30 =
										=
F								1		=
ا ۱										33
10					L .OGGED BY: MCP	1::::	COM	IPI FTI		<u>  33=</u> า
	EBA Engineering Con	sultants l	Lta	<b>d</b> .	REVIEWED BY:		COIV	IPLETE	E: 12/11/2008	•
			`		DRAWING NO:			1 of 1		
MGP W1410	01171,GPJ EBA.GDT 09/01/30				<del></del>				<del></del>	

ASTM D422

Project:

Whistle Bend Subdivision, Whitehorse, YT

Date Tested:

2008/12/11

Client:

**AECOM** 

Project No.:

W14101171

Location:

Sample No.:

BH18-2

Depth:

1.5 m

Description\*\*: SILT - some clay, trace sand

Particle	Percent		Clay	Size			Sil	t Si	ze							Sa	and	d						Gra	vel			=
Size	Passing		100											Fine			Me	dium	ו	Coa	rse		Fine		Co	arse		_
100 mm		1	100									/*		-														
75 mm		P	90			Ш				9					$\perp$			1		1		$\perp \mid$		$\perp$			Ш	
50 mm		е								/																		
38 mm		r	80						1			Ш			<u> </u>					-		$\coprod$	Щ.		1		Ш	Ш
25 mm		C e							/																			
19 mm		n	70		-			$\parallel /$		_					-	4		-	_	-	$\coprod$	1			4	1	╢	$\parallel \parallel$
13 mm		t																										
10 mm		_	60		1			<i>†</i>		-	$\prod$			_	$\perp$			_		-	$\parallel \parallel$	4	-			$\parallel \parallel$		Ш
5 mm		j						/																				
2 mm		n	50				1	-			$\downarrow \downarrow$		₩.		$\perp$			$\parallel$		-	$\dashv$	$\bot$			-		$\parallel \parallel$	Ш
850 µm	100	е					/																					
425 µm	100	r	40		-	<u> </u>	/44	┼	_	-	$\dashv$		#		+-			<del>  </del> -		$\perp$	$\mathbb{H}$	+		_	-	$\dashv \vdash$		$\coprod$
250 µm	99	b				/													l									
150 µm	99	у	30			/		<del> </del>	+	$\dashv$	$\bot \downarrow$		₩-		$\perp$			$\parallel$	_	╁	<u>                                      </u>	ote	rial	Des	crin	tion	<u> </u>	4
75 µm	98				/	/															IVI			ortio			•	
26 µm	91	Ma	20		<i>\\</i>				-		igwedge	+	#					╢_	_	-  ₹		y S	ize	*		14		$\parallel$
17 µm	82	S		$\downarrow$																			ize			34		
11 µm	62	s	10	-	-			-			$\dashv \downarrow$	H	$\parallel$	_				₩-		-		Sar Srav				2 0		$\parallel$
8 µm	51																						les			0		
6 µm	40		0						_	}			i							I		П	[ ]			$\Pi$		Ш
3 µm	20			2			_				,	8			40				2		5				0		75	5
1 µm	10			<del></del>	-		Par	ticl	e S	ize	(μ	m)	_		$\rightarrow$	<b>←</b>		_		art	icl	e S	Size	(mn	n)	_		>

Remarks:

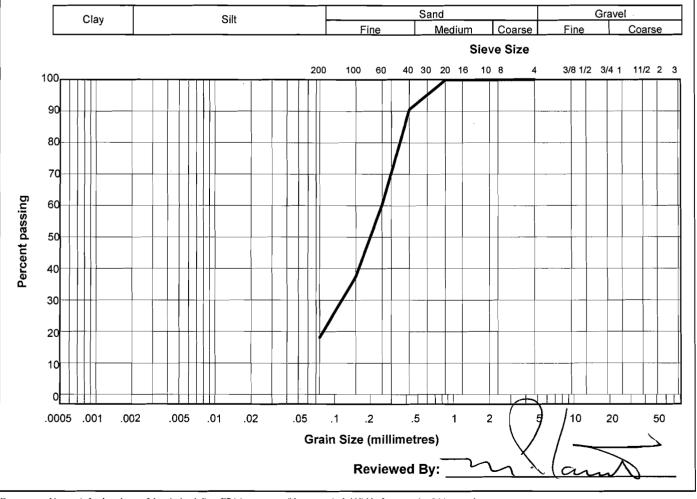
\* The upper clay size of 2 µm, per the Canadian Foundation Engineering Manual.

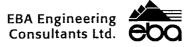
\*\* The description is visually based & subject to EBA description protocols.

Geote	chnical Evaluation		AECOM						BOF	REHO	LE NO	): W14	101171	-BH19
Whistle	e Bend Subdivision		Drilling Method:	: NO	DWE	ELL Mounted CME 75	5		PRO	DJECT	NO:	W1410	1171	
Whiteh	norse, YT		6737854N; 493	739E	Ξ; Zo	ne 8								
SAMP	LE TYPE GRAB SAMPLE	NO RECOVE	RY X BULK			CRREL CORE		SHEL	BY TL	BE		GRAB CO	DRE	
BACK	FILL TYPE BENTONITE	PEA GRAVE	L SLOUG	Н		GROUT	$\square$	DRILI	CUT	TINGS		SAND		
Depth (m)	LITHOL( DESCR			SAMPLE TYPE	SAMPLE NUMBER	GROUND ICE DESCRIPTION AND COMMENTS	PLA	STIC I	00 1500 M.C.	LIQUIC	20 20 20	● SILT ( <sup>6</sup> ) 40 6 ▲ SAND ( ) 40 6 GRAVEL	80 80 80 80 80 80 (%) ▲ 80 80 - (%) ■	Depth (ft)
- 0	SAND - some to trace silt, medium to	fine grained damn	helow seasonal		/S		1:	20 40	60	80	20	) 40 E	80 80	0 =
3	SAND - some to trace silt, medium to frost, medium brown to greyish  SILT - some clay, trace fine sand, dan  - moisture increasing with depth, dark  - softer by 4.5 m, becoming dark olive	np, firm, light olive l			3									0 milindindindindindindindindindindindindindi
- 6	END OF BOREHOLE @ 6.0 m				5			•						
7 8 - 9 - 10	END OF BOREHOLE @ 0.0 (III													20 Third to the state of the st
	EBA Engineeri	ng Cons	sultants	Lto	<i>対.</i> [F	OGGED BY: MCP REVIEWED BY: PRAWING NO:					LETE	ON DE E: 12/1	PTH: 60 1/2008	m
ACO MAAAA	1171,GPJ EBA GDT 09/01/30									- 0 -				

.

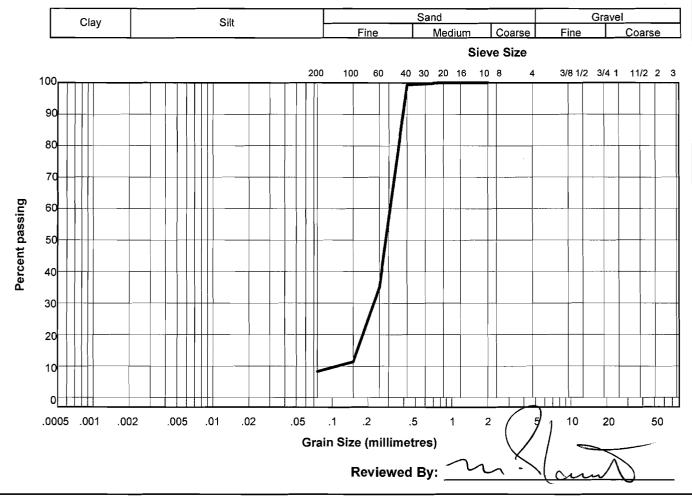
PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 11, 2008	19.000	#N/A
Tespit Number: BH19-1	12.500	#N/A
Depth: 0.3 m	9.500	#N/A
Soil Description: SAND - some silt	4.750	100
Cu:	2.000	100
Cc:	0.850	100
Natural Moisture Content: 6.0%	0.425	90
Remarks:	0.250	60
	0.150	37
	0.075	18.1





Geote	chnical Evaluation	AECOM					BOREHO	E NO: W14	01171-В	H20
Whistl	e Bend Subdivision	Drilling Method:	NO	DWE	LL Mounted CME 75	_	PROJEC'I	NO: W1410	1171	
Whitel	horse, YT	6739080N; 4934	450E	Ξ; <b>Z</b> o	ne 8					
SAMP	LE TYPE 🛮 GRAB SAMPLE 📈 NO RECOVE	RY BULK			CRREL CORE	SHEL	BY TUBE	GRAB CC	RE	
BACK	FILL TYPE 💹 BENTONITE 🔀 PEA GRAVE	L SLOUGH	Н		GROUT	DRIL	L CUTTINGS			
	-		μī	SAMPLE NUMBER				◆ CLAY ( 20 40 6	%) <b>♦</b>	
(m)	LITHOLOGICAL		TYPE	M	GROUND ICE	□ Bulk De	ensity(kg/m³) □	■ SILT (9	%) ●	<b>£</b>
Depth (m)	DESCRIPTION		1111	Z Ш	DESCRIPTION	500 100	00 1500 2000	20 40 6 ▲ SAND (		Depth (ft)
മ്	DESCINI TION		SAMPL	굨	AND COMMENTS	PLASTIC	M.C. LIQUIE	20 40 6 ■ GRAVEL	0 80	ے
			လ	SAI		20 40	0 60 80	20 40 6		
- 0	SILT (FILL) on top of cleared area  SAND - some to trace silt, medium to fine grained, damp	helow seasonal		1		•				0 🗐
	frost, fairly compact, medium brown to greyish brown	NU NU								
-						1 : : :				
1										=
-				2		•		•	<b>A</b>	0 15 15 15 15 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18
F	÷									5_=
- ,										=
2										=
E 1	SILT - some clay, trace fine sand, moist to wet, firm, beca 3.0 m, dark olive brown, trace mottling	oming softer by	1 1							]
<u> </u>	3.0 m, dark onve brown, trace morting			^					/ · ( · · · · · · · · · · · · · · · · ·	=
E 3				3						E <sub>01</sub>
Fil										10=
E 1						1 1 1 1 1				=
E l										킄
<u> </u>										큭
				4		•		<b>A</b> •	•	4
-									<u> </u>	15_
-										=
_ 5										]
E										3
-										=
E 6				5		•				
_										20_=
										=
_										=
E 7									; . ; . ; . ; . ; . ; . ; . ; . ; . ; .	Ξ
				6		•				Ξ.
	END OF BOREHOLE @ 7.5 m							- <u> - - - - - -</u>		25
E.	LIB OF BOILTIOLE W 1.0 III									25
_ 8										킙
-										킄
-					`					릨
										4
_ a										30_
<u> </u>	•									3
										_=
10						<u> </u>				33=
	■ EDA Enginooring Con	oultanta !	1 +-	<b>√</b> ⊨	OGGED BY: MCP			LETE: 12/11		<u>n</u>
ébo	EBA Engineering Cons	รนแสกเร เ	_((	<i>1.</i> [	REVIEWED BY: DRAWING NO:		Page	PLETE: 12/11	12008	
							age	. 91 1		

PARTICLE SIZE DISTRIBUTION		
ASTM C136 & D422	Sieve Size	Percent Passing
Project: Whistle Bend Subdivision, Whitehorse, YT	50.000	#N/A
	37.500	#N/A
Project Number: W14101171	25.000	#N/A
Date Tested: December 11, 2008	19.000	#N/A
Tespit Number: BH20-2	12.500	#N/A
Depth: 1.5 m	9.500	#N/A
Soil Description: SAND - trace silt	4.750	#N/A
Cu:2.8	2.000	100
Cc: 1.5	0.850	100
Natural Moisture Content: 3.3%	0.425	99
Remarks:	0.250	35
	0.150	11
	0.075	8.3





ASTM D422

Project:

Whistle Bend Subdivision, Whitehorse, YT

Date Tested:

2008/12/09

Client:

**AECOM** 

Project No.:

W14101171

Location:

Sample No.:

BH20-4

Depth:

4.5 m

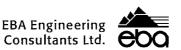
Description\*\*: SILT - some clay, trace sand

Particle	Percent	С	lay Size	Silt Size	Sand		Gr	avel
Size	Passing			_	Fine Medium	Coarse	Fine	Coarse
100 mm		. 10	<sup>0</sup>					
75 mm		<b>P</b> 9						
50 mm		e		9				
38 mm		r 8	o 🗀					
25 mm		C G	<b>~</b>					
19 mm		n 7	0 —					
13 mm		t						
10 mm		F 6	0					
5 mm	-	i						
2 mm	100	n 5	0 —	<b></b>				
850 µm	99	е						
425 µm	98	r 4	0	<u> </u>				
250 µm	96	b						
150 µm	95	<b>y</b> 3	0				aterial D	escription
75 μm	95	R.A				107	Proporti	
27 μm	87	M 2	0 —	J- <b>7</b>			y Size *	16
18 µm	76	s					lt Size Sand	79
11 µm	60	<b>s</b> 1	0				Sano Gravel	5 0
8 µm	50						obbles	0
6 µm	39		0	<u>                                     </u>	<u>                                     </u>			
3 µm _	23	,	2			2 5		20 75
1 µm	12		<del>-</del> -	Particle Size (µm)	<del></del>	Partic	<b>e Size</b> (m	nm)

Remarks:

\* The upper clay size of 2 µm, per the Canadian Foundation Engineering Manual.

\*\* The description is visually based & subject to EBA description protocols.



Geote	chnical Evaluation	Client: AECOM					TESTP	IT N	10: W1	4101171-TF	21	
Whist	e Bend Subdivision		Excavator: Hitao	hi T	rack	ed		PROJE	CT	NO: W	14101171	
Whitel	norse, YT		6739182N; 4949	917E	; Zo	ne 8						
SAMP	CLE TYPE GRAB SAMPLE	NO RECOVE	RY X BULK			CRREL CORE	SHEL	BY TUBE		∏ GRA	AB CORE	
BACK	FILL TYPE BENTONITE	PEA GRAVE	L IIII SLOUGH	4		GROUT	☑ DRILI	L CUTTING	gs 🖁	<u>. d</u>		
		<u>-</u>		ш	NUMBER					◆ C	LAY (%) ◆ 40 60 80	
Œ.	LITHOL	OCICAL		TYPE	Æ	GROUND ICE	□ Bulk De	nsity(kg/m	3) 🗆	• 9	SILT (%) ●	╡€
Depth (m)		OGICAL		<u>Ш</u>	Z	DESCRIPTION	500 100	00 1500 200	00	20	40 60 80 AND (%) ▲	Depth (ff)
Det	DESCR	RIPTION		SAMPLE	SAMPLE	AND COMMENTS	PLASTIC	M.C. LIC	DIU	20	40 60 80	ු පී
				δ	SAIV.		20 40	0 60 80	-i )		AVEL (%)■ 40 60 80	
- 0	GRASS GROUND COVER AND OR seasonally frozen to 0.5 m, bla	RGANICS - rootlets thack	nroughout,			Seasonal Frost to 0.5 m				<del></del>		0 mpunpunpunpunpunpunpunpunpunpunpunpunpunp
F	SAND - silty, interbedded with organ	ics, medium to fine g	rained, moist to		1	Unfrozen below 0.5 m	-			++++		1 4
Ė ,	wet, dark grey	•		-								1 3
F										ti iti		1 =
E												1 [
E					2	·			•			1 3
E 2												=
E '	SILT - trace clay, trace fine sand, de	posited in even, para	illel laminae	1 1								1 4
	(glaciolacustine), wet, soft, da	IK Drown										] =
F												
E 3												10 =
-	- becomes dark grey in colour (un	noxidized) below 3.0	m		3							"=
			,		,							. 1
												=
4	SAND - trace to some silt, medium to	o fine arained and all	tios below 5.0 m							4.1.1		. 4
-	wet to saturated with water ent	tering testpit around	5.0 m, very loose,		4		•			<b>•</b>		4 =
È I	testpit sloughing badly, dark gr	rey										15_
-				\					:			=
5										+++++		네 를
Ė						J.						=
-												·  नि
Ē 6					5							1 =
E i	END OF TESTPIT @ 6.0 m										• • • • • • • • • • • • • • • • • • • •	· 20_=
-												] =
Εl	NOTE: testpit excavated in large ket course	ttle depression locate	ed west of golf	Н								1 4
E 7	odujoo											
Εl									:			=
E l												
-									:			20
<u>├</u> 8												- 킄
E												20 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
<u> </u>												
												=
_ 9												30_∃
Ė												
F									:			·  =
E 10												32-
10					L	OGGED BY: MCP		CC	MPI	LETION	DEPTH: 6	
ébo	5 EBA Engineer	ing Cons	sultants L	_tc	<b>∄.</b> [F	REVIEWED BY:		CC	MPI	LETE: (	3/24/2009	
						RAWING NO:		Pa	ge 1	of 1		

#### PARTICLE SIZE ANALYSIS TEST REPORT

ASTM D422 & C136

Project:

Whistlebend Subdivision

Client:

**AECOM** 

Project No.: Site:

W14101171

Kettle Depression

Client Rep.:

By:

Material Type:

Date Tested:

27-Mar-2009

MCP

Sample No.:

W14101171-TP21

Soil Description<sup>2</sup>: SAND - trace silt

1.7

Sample Loc.: Sample Depth:

4.0 m

USC Classification: SM

Cu: Cc:

Sampling Method: Grab

By:

Moisture Content: 21.7

Date sampled:

24-Mar-2009

MCP

0.9

Particle	_ , ,				<u> </u>	San	d							Grave							
Size (mm)	Percent Passing		Fine		Medium				Coarse			Fine				Coarse			Cobble		
300	Ĭ	200	400			10 20	20	46	40		,	0.601	4 107	040	40 4			3" 4"	6" 8"		
200		100	100	60		10 30	20	16	10	1	4	3/8"	1/2"	3/4"	1° 1	1.5" 2		3" 4"	6" 8"		
150		ļ				<del>/</del> -		- 1			-		$\dashv$	-	1	1					
100	ļ	90			<i> </i>	-			-+						+	+		+			
75		1	i		/	1															
50		80	1			+	_		-+				_		+			1	_		
38	}				/																
25		70			/								$\top$								
19		9	İ		/							1									
12.5		PERCENT PASSING								_											
10	1	<b>A</b> 50		/		<u> </u>															
5	100.0	Ë												Ì							
2	99.8	2 40 L		/_							_				↓_					_	
0.85	99.7	-					İ					Ì									
0.425	98.2	30		$-\!$		ļ							_			-		ļ			
0.25	55.6																				
0.15	8.3	20		<del> </del>		<del> </del>							-+-	[5	oil De	scrip	ion i	Proporti	ons (%):		
0.075	2.2	į		/			-								lay <sup>1</sup> &				0		
		10				<del> </del>	_		-		$\dashv$				Silt	2		Gravel			
														8	Sand	98	3	Cobble	0		
		0.075	0.1	5 0.2	25 0.	425	0.85		2		4.75	9.5	12.5	19	25 3	7.5 5	0	75	150	:	
									PA	RTICLE	SIZE (m	m)									

Notes:

Specification:

Remarks:

<sup>&</sup>lt;sup>1</sup> The upper clay size of 2 um, per the Canadian Foundation Engineering Manual

<sup>&</sup>lt;sup>2</sup> The description is visually based & subject to EBA description protocols

<sup>&</sup>lt;sup>3</sup> If cobbles are present, sampling procedure may not meet ASTM C702 & D75