McINTOSH•LALANI ENGINEERING LTD.

February 21, 2019 M•L 8855

GEC Architecture Suite 300, 2207 4 Street SW Calgary, AB T2S 1X1

Attention:

Mr. Robert (Bob) Stirling (bob.stirling@gecarchitecture.com)

Subject:

Laboratory Testing Results

Drumheller Curling Club

Calgary, Alberta

Laboratory testing of select soil samples recovered from the Drumheller Curling Club site has been completed. Natural moisture contents are presented on the attached updated borehole logs, as well as, organic contents and soluble sulphate contents.

1.0 CONCRETE

Testing for soluble sulphates indicates a negligible soluble sulphate concentration of up to 0.082 percent. Therefore, the use of Type GU (Normal Portland) cement concrete in accordance with CSA A23.1, Table 2 for F-2 exposure is suitable for all concrete in contact with the soil which these samples represent. The F-2 exposure class requires minimum 25 MPa strength at 28 days, a maximum water to cementing materials ratio of 0.55 and 4-7 percent entrained air by volume based on 14-20 mm aggregate.

It is recommended that all imported soils to be utilized on site be tested for soluble sulphate concentrations.

2.0 SOIL ERODIBILITY

M•L has conducted laboratory testing and calculated soil erodibility factors (K-values) for the surficial soils within the subject site for use in an Erosion and Sedimentation Control (ESC) plan. The K-values were calculated in accordance with the RUSLEFAC guidelines¹ using two (2) pairs of hydrometer and organic content test results obtained on borehole Sample 2-2 and Sample 5-2. The samples were obtained from the surficial silty sand soils at an approximate depth of 1.07 m.

The particle size distribution of the soils was obtained using the hydrometer method. The hydrometer results are attached. The USDA classification scheme was used for differentiating silts and sand when

¹ Wall, G.J., D.R. Coote, E.A. Pringle and I.J. Shelton (editors). 2002. RUSLEFAC — Revised Universal Soil Loss Equation for Application in Canada: A Handbook for Estimating Soil Loss from Water Erosion in Canada. Research Branch, Agriculture and Agri-Food Canada. Ottawa. Contribution No. AAFC/AAC2244E. 117 pp.

determining the soil structure and permeability classes from the Erodibility Worksheet. Sample 2-2 and Sample 5-2 were classified as a 'Sandy Loam' (USDA) due to its elevated sand content, coupled with a balanced clay and silt content. The percentage of very fine sands (0.05 - 0.10 mm) was added to percent silt for application to the nomograph in Drawing 8855.00.B01.

The soil erodibility K-values for the sample were determined graphically (refer to Drawing 8855.00.B01) and is listed below:

			lized t	Compo o passir ieve	osition, ng 2 mm				
Sample No.	Soil Class (USDA)	Clay Silt		Very Fine Sand	Other Sand	Structure Class	Perm. Class	Organics (%)	K- value
2-2	Sandy Loam	10.2	22.4	20.0	47.4	2	2	2.6	0.028
5-2	Sandy Loam	11.0	21.0	21.9	46.1	2	2	2.4	0.029

The graphically determined K-values are considered to represent the most erodible soil types on site likely to be exposed during rough grading. Furthermore, these soils are considered suitable as engineered fill soils for rough grading. Thus, an average K-value of 0.029 that represents the typical result from our experience in the area can be considered suitable for application in the ESC plan for the project site.

h feb 21,2019

3.0 CLOSURE

We trust the information presented meets with your present requirements. Should you have questions please contact our office.

Respectfully submitted,

McIntosh Lalani Engineering Ltd.

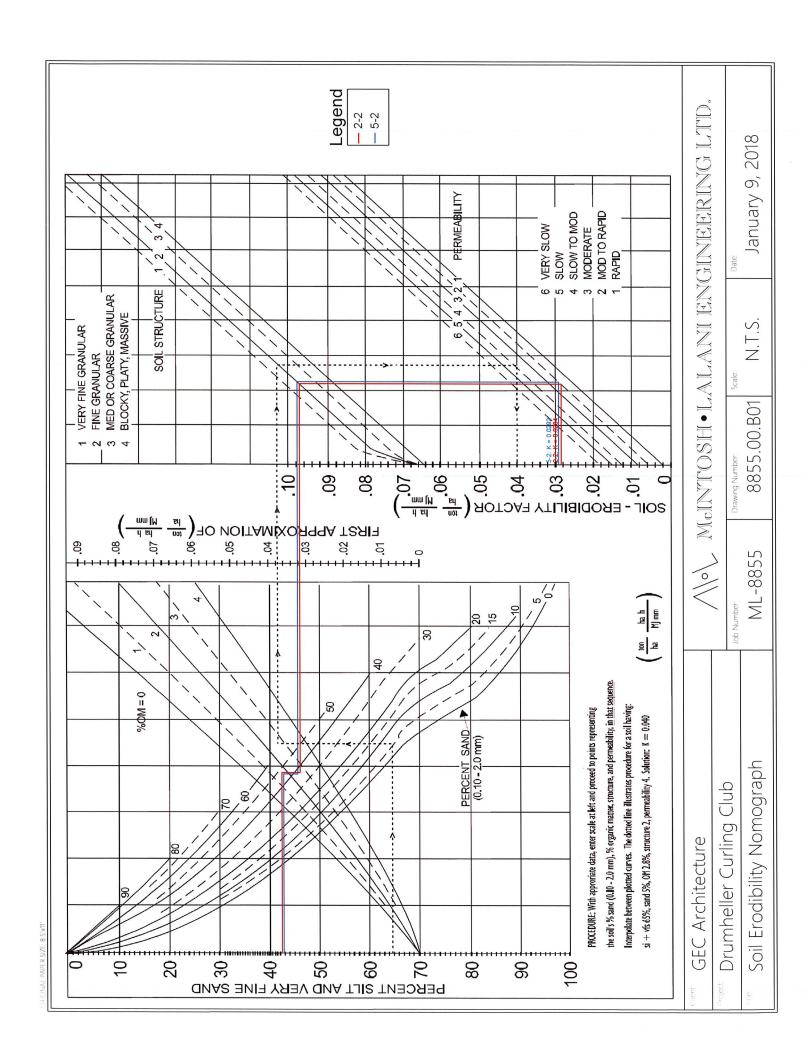
Brian Tingley, E.I.T

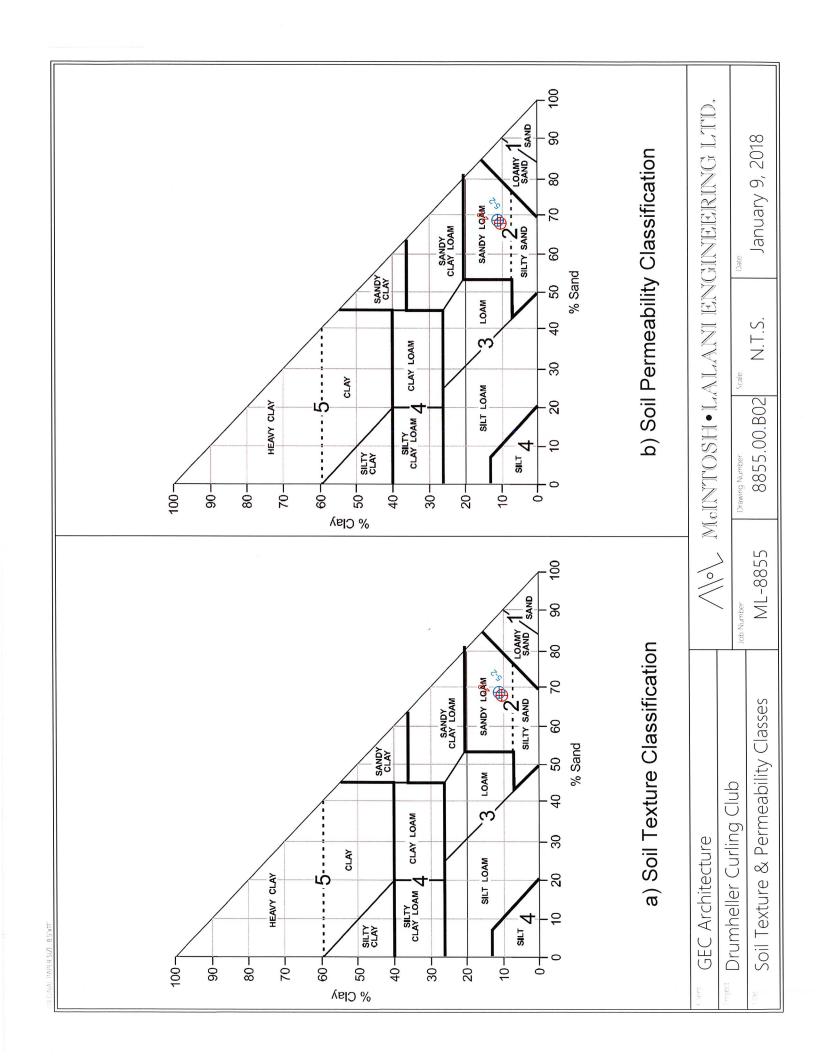
Junior Project Engineer

/bt

Asad Shaikh, P.Eng.

Geotechnical Project Engineer

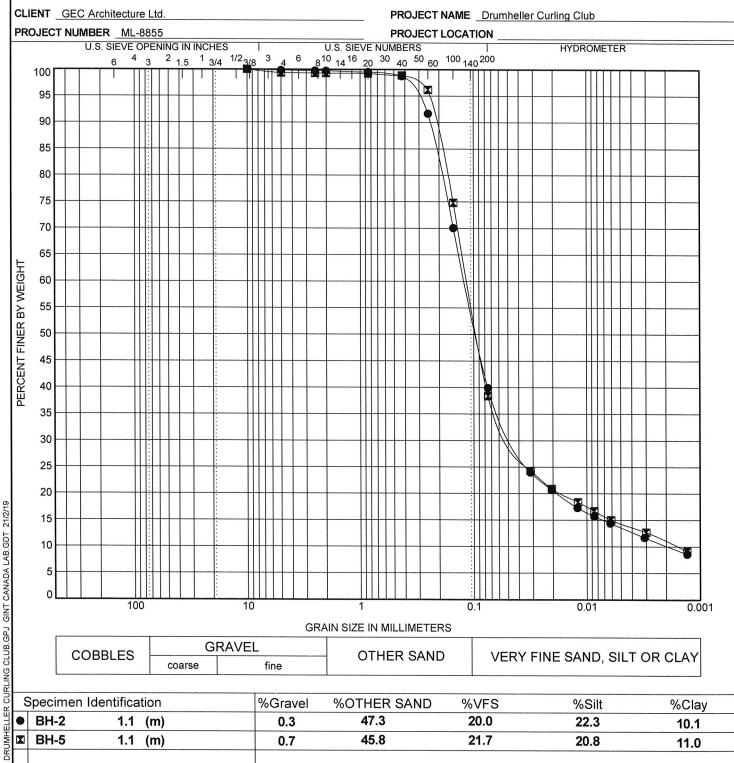




LIENT GEC Architecture Ltd.	F	PROJECT NAME	Drumhelle	er Curling Cl	lub		
ROJECT NUMBER ML-8855		PROJECT LOCA					
Sandy clay	90 80 clay		PERCE, silty clay	M Sh Os	0.00		
sandy clay loar 20 10 loamy sand sand	loam am		silt loam			silt	
sandy clay loan 20 loamy sand 0 8 8 8 8	n loam	8	silt loam ઝુ			180	
sandy clay loan 20 loamy sand 0 8 8 8 8	n loam	ි 2 - 0.05mm	silt loam	8	s	Silt Other	
sandy clay loar loamy sand Salety lo Depth	n loam	ි 2 - 0.05mm	silt loam	Silt Clay	VFS	Silt Other Sand	Gravel
sandy clay loar 20 10 sandy clay loar loamy sand Borehole (ft) 2 3.5 2-2	n loam	8	silt loam Org. Cont. (%) 2.6	Silt Clay (%) (%) 22.4 10.2	VFS (%) 20.0	Silt Other	
sandy clay loar 20 10 loamy sand Sand Sand Depth Borehole (ft)	اره المحافظة المحافظ	(2 - 0.05mn	silt loam Org. Cont. (%) 2.6	Silt Clay (%) (%)	VFS (%) 20.0	Sillt Other Sand (%)	Gravel (%)
sandy clay loar 20 sandy clay loar 10 sand sand Sandy clay loar Sandy clay loar	PERCENT SAND (USDA Classification SANDY LOAM	2 - 0.05mn	silt loam Org. Cont. (%) 2.6	Silt Clay (%) (%) 22.4 10.2	VFS (%) 20.0	Other Sand (%)	Gravel (%) 0.3
sandy clay loar 20 10 sandy clay loar loamy sand Borehole (ft) 2 3.5 2-2	PERCENT SAND (USDA Classification SANDY LOAM	2 - 0.05mn	silt loam Org. Cont. (%) 2.6	Silt Clay (%) (%) 22.4 10.2	VFS (%) 20.0	Other Sand (%)	Gravel (%) 0.3
sandy clay loar 20 sandy clay loar 10 sand sand Sandy clay loar Sandy clay loar	PERCENT SAND (USDA Classification SANDY LOAM	2 - 0.05mn	silt loam Org. Cont. (%) 2.6	Silt Clay (%) (%) 22.4 10.2	VFS (%) 20.0	Other Sand (%)	Gravel (%) 0.3

McIntosh Lalani Engineering

USDA GRAIN SIZE DISTRIBUTION



Reviewed By:

The testing services reported herein have been performed by an ML 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, ML will provide it upon written request.

USDA GRAIN SIZE DISTRIBUTION 88551

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

		heller Curling Club		-		ling Info				Borehole No		
Clie	nt: GEC A	Architecture Ltd.		-			Drilling Inc			Project No.:N	VIL-8855	
							ck SS-Auger		10 0111==	Elevation:	. ПП	
	LE TYPE				//PLE		SPT SAMPLE			AUGER SAMPLE		OVERY
BACK	FILL TYP	PE BENTONITE : F	PEA (GRAV	EL	Ш	SLOUGH	GR	OUT 🔀	DRILL CUTTING		
Depth (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	nscs	BLOWS /150 mm	PLASTIC M.C.	LIQUID ————		30 40	OTHER DATA	Well 11 SLOTTED PIEZOMETER
0	71 1× 71 1×	TOPSOIL - dark brown organics,					10 20	30 40	● POCKETPEN 80 160 2	40 320		H
·	\(\frac{1}{2}\)\(\frac{1}{2}\)\(\frac{1}{2}\)	trace rubble approx. 450 mm thick.	-	1-1	TPSL							10 11
		Silty SAND - fine grain, loose, damp, trace coal, light to medium brown.					68					
1				1-2			6.8	ļ				
		- trace roots.		1-3		3-2-3	7.8:					
2				1.0	SM	020		† · · · · · · · ·				
		- trace clay, moist, trace oxides.		1-4				<u> </u>				
3		,,,		'-				<u> </u>				
,		O L ODAVE	X	1-5		2-2-3	24.1					10
		Sandy GRAVEL - coarse grain, fine gravel, well sorted, compact, moist,		1-6				ļļ				10
1	.00	medium brown.		1-0				<u> </u>				
5		- coarse gravel, wet.	X	1-7		8-16-12	12.4	ļ				
•		coaled graves, trea	I	1-8								10
6					CIMO		16.7	<u> </u>		<u> </u>		<u> </u>
			X	1-9	GWS	5-14-20	16.7	<u> </u>				1
7			1	1-10								
	.00	- trace organics, med grey.		1-11		11-15-13	19,0	<u> </u>			ļ	
8						11-10-10			······································	\$> (-		
	.2.0			1-12	2			ļļ				
9												
		END OF HOLE at a depth of 9.1 m. Slough to a depth of 6.1 m. 25 mm										<u></u>
		PVC standpipe installed to a depth of 9.1 m with 3.0 m slotted. Wet										
10		upon completion.						·{			,	
		Water Levels: Sept 25, 2018: 4.67 m EOH: 8.80 m										
11		30pt 20; 2010. 4.07 III EOH. 0.00 III										
											S	
		McIntosh Lalani Eng	gine	ering			Lo	gged By: F	SC	Completion	on Depth: 30 ft	
		Calgary, AB	,0	٠١	,				: Asad Shaikh		: 9/14/2018	

		nheller Curling Club Architecture Ltd.					g Information: rvice Drilling Inc		_					rehole No.:2 pject No.:ML-8855	
Olic	iii. GLO F	Tronicotoro Eta.					SS-Auger					\dashv		evation:	,
SAMP	LE TYPE	SHELBY TUBE	П	COR	E SAI	MPLE	SPT SAMPLE	(M)		GRAB SAMPLE	<u> </u>				NO RECOVERY
	FILL TYP				GRA		SLOUGH		_	GROUT			<u> </u>	L CUTTINGS	SAND
Depth (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	nscs	BLOWS /150 mm		LIQUID		■ BLOW 10 20 ● POCKET 80 160	30	40		OTHER DATA	Well '2' SLOTTED PIEZOMETER Well '2-B' SLOTTED PIEZOMETER
0	<u> </u>	TOPSOIL - dark brown		2-1	TPSL		10 20 30	40	ļ.	80 160	240 ::	320) ;		42 4444 44
-1		organics, trace rubble approx. \(\frac{400 mm thick.}{} \) Silty Sand FILL - fine grain,		2-2			47						· · · · · · · · · · · · · · · · · · ·	Organic Content = 2.6%	
-2		loose, damp, medium brown coal approx. 150 mm thick, trace rubble, trace gravel,	I	2-3 2-4	FILL	3-3-2	148				44 44 44			2.076	
-3		trace roots. trace oxides, trace clay.		2-5 2-6	SM	2-3-4	7.8							[SO ₄] = 0.041%	
-5		Silty SAND - fine grain, loose, wet, trace oxides, trace roots, medium brown.		2-7 -		6-9-9	11.9								
-1 -2 -3 -4 -5 -6		Sandy GRAVEL - coarse grain, well sorted, wet, medium brown/orange.		2-8	GWS	7-10-9	•								
-7		- no recovery in split spoon. - no recovery in split spoon. Silty CLAY (Till) - trace sand		2-9 2-10	CL-ML		17.9								
-8		and gravel, soft, wet, low plastic, trace oxide, trace coal, medium brown.	Ŕ	2-10 2-11 2-12 2-13		3-3-6	23.5				•				
-9 -10		Silty SAND - trace gravel, some clay, loose, wet,		2-13 - 2-14		9-10-15	27,2				•				
-10 -11		medium blue/grey. Silty CLAY (Till) - trace sand and gravel, stiff, moist-wet,	X	2-15		3-6-7	16.5				(· · · · · · · · · · · · · · · · · · ·		
-12		low plastic, trace coal, medium blue/grey. - medium to high plastic,			CL-ML		28.2					•			
-13		damp, medium grey no recovery in split spoon.		2-17 2-18		4-5-7	•								
-14				2-19 2-20	1	3-6-8	27.7				•				
-13 -14 -15 -16		END OF HOLE at a depth of 15.2 m. Slough to a depth of													
−16 −17		11.8 m. 25 mm PVC standpipe installed to a depth of 14.4 m with 1.5 m slotted. Wet upon							-1						
-18		completion. WELL B: 25 mm PVC													
-19		standpipe installed, (nested with 1 in same well) to a depth													
-20		of 7.6 m with 1.5 m slotted. Wet upon completion.													
-21		Water Levels: Sept 25, 2018: 11.58 m EOH: 12.78 m													
-17 -18 -19 -20 -21 -22		Well B: Sept 25, 2018: 6.12 m EOH: 7.57 m													
McIntosh Lalani Engineer						<u> </u>	<u> </u>	Logged			<u>: : :</u>			Completion Depth	
		Calgary, AB		٠٠٠٠.		-		Reviewe	ed	By: Asad Sha	aikh			Drilled on: 9/13/20)18

		nheller Curling Club Architecture Ltd.					rmation: Drilling Ind	,										No.:3 o.:ML-	8855		
Olic	an. GLO	TOTILOGUE EU.		+			ck SS-Aug										ation		3000		
SAME	PLE TYPE	SHELBY TUBE	COR	E SAN			SPT SAMPI		R	M GRA	B SA	MPI		Γ			RSAN		∭NO F	RECOVER	 (Y
	FILL TYP		PEA				SLOUGH			GRO								INGS	SAN		
۱۱۵۲۱						Т	3230011		<u> </u>	<u></u> , 0, 10	T			L	ادات				F-21 0/ "1		
Ê	BOL	COII	SAMPLE TYPE	9		ပ္ ေ							■ BL0	OW C	TAUC	_		_		Well '3' SLOTTED PIEZOMETER	-
Depth (m)	SOIL SYMBOL	SOIL DESCRIPTION		SAMPLE NO	nscs	BLOWS /150 mm	:				-	10	2	0	30	40			THER DATA	3.SL ZOM	
ă	SOIL	DESCRIPTION	SAM	SA	_	B 7	PLASTIC	M.C.		LIQUID ————————————————————————————————————		_	POCK	(FTPF	N (kPa	a) 🗭				Mel.	ī
- 0	~~~	\ASPHALT - approx. 50 mm thick.		-	ASPH		10	20 3	30	40	 	80	16	60	240	320	\dashv				
		Silty Sand FILL - trace gravel, trace	-/				<u>:</u>		<u>:</u> :		ļ <u>:</u>			: : : .							
		clay, loose, damp, trace rubble, da	k _	┨	FILL				<u>.</u>		ļ;										
	\bowtie	brown.		3-1					: :												
. '		Cilty CAND modium arein trans					ļ		: :		ļ										
- -		Silty SAND - medium grain, trace clay, loose, damp, light to medium	F					: .;	: :		ļ		. <u>;</u>								
		brown.	[X	3-2		1-1-3		21.4	<u>.</u>				<u>.</u>	<u>.</u> .			. []				i
-2 :		- trace organics in split spoon.],,					: :		-	<u>.</u>		;							
				3-3	SM		ļ		<u>:</u> :				<u>.</u>	: : ! · · :						N N	
-									<u>.</u>					:							
-3		- compact, moist.	\vdash						<u>.</u>		1									<u> </u>	ĺ
		Sandy GRAVEL - coarse grain, we	, X	3-4		3-5-11	14.6		<u>.</u>		-			. .							
•		sorted, compact, damp, medium	"	٦, [<u>.</u> 												
_4		brown, dark orange.		3-5					<u>.</u>					<u>.</u>							
-	. 6.3								: :				.	<u>.</u>							ĺ
							10.2	· į	<u>.</u>				 	: !		: ::::					l
5		- trace cobbles, wet.	X	3-6		15-20-21	10.2		: :				.	: . ;			١. ;				
		- trace copples, wet.		1				· į	<u>.</u>							: :::-					
-	. 6.			3-7	GWS				<u>:</u>		. ;		.								
-			-						<u>.</u>												
6 -							129		<u>:</u>		. ;			: . :		: :					
_			V	3-8		3-8-13	12.9		<u>:</u>		. :			.		<u></u> .					
-			F	3-9					:							: :					
- 7				J 3-8	'				<u>.</u>		. ;										
		Silty SAND - fine grain, trace clay,		3-10				22:5			.										
-		loose, wet, medium grey.		Я												ļļ.					
8			Z	3-1	1	1-4-4					.										
<u> </u>				3-1	SM			27.	8												
_			ļ.	45	1				<u>.</u>							j					
- - - a									<u>.</u>							···					
8		END OF HOLE at a depth of 9.1 m							<u>:</u>		.		<u>;</u>	::	· . 						
-		Slough to a depth of 6.1 m. 25 mm							<u>:</u>				.								
<u> </u>		PVC standpipe installed to a depth of 6.1 m with 3.0 m slotted. Wet					·····		<u>:</u>			: <u>:</u> :	<u>;</u>		<u></u>	::::	· · . · · ·				
-10 -		upon completion.					ļ <u>.</u>		<u>.</u>			 !	.			i					
Ė		Water Levels:							÷												
Ė		Sept 25, 2018: 4.57 m EOH: 5.92	m				ļ		 :												
-11																	.				
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	11	McIntosh Lalani I	≘ngine	erin	g					d By: R		10:							Depth: 30 1	it	
. #		Calgary, AB						i Ke	viev	ved By:	Asa	a Sh	aıkh				ווופט	a on: 9	/14/2018 1		

		nheller Curling Club		_		ling Info					Borehole		
Clie	nt: GEC	Architecture Ltd.					Drilling Inc					No.:ML-8855	
							ck SS-Auge				Elevatio		
	LE TYPE			SAN			SPT SAMPLE		RAB SAMPLE		UGER SA		RECOVERY
BACK	FILL TYF	PE BENTONITE	PEA (GRAV	EL.	Щ	SLOUGH	<u>[</u>]G	ROUT		RILL CUT	TINGS SAN	
Depth (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SOSN	BLOWS /150 mm	PLASTIC	M.C. LIQUI	10 ID	BLOW COUNT 20 30	40	OTHER DATA	Well '4' SLOTTED PIEZOMETER
0	XXXXX	\ASPHALT - approx. 50 mm thick.	_		ASPH		10 20 : :	30 40	80	OCKETPEN (kF 160 240	320		
1		Silty Sand FILL - trace gravel, trace clay, loose, damp, trace rubble, dark brown.		4-1	FILL								
2		Silty SAND - fine grain, loose, damp, trace roots, light brown.	X	4-2 4-3		2-2-2	12:9	22.0					
3		- trace clay, moist.		4-4	SM	0.00		23.9	<u>.</u>				
4			\(\bar{\}\)	4-5		3-2-3							
5		Sandy GRAVEL - coarse grain, well sorted, compact, damp, medium brown, dark orange wet, trace cobbles.		4-6 4-7		11-20-18	9,8						
6			X	4-8 4-9	GWS	2-4-11	15.4						
7		Silty SAND - fine grain, trace gravel, loose, wet, medium grey/green.		4-10									
8			X	4-11	SM	3-4-5		26.3					
9		- trace organics. END OF HOLE at a depth of 9.1 m.	I	4-12			20	5					
10		Slough to a depth of 6.1 m. 25 mm PVC standpipe installed to a depth of 7.0 m with 3.0 m slotted. Wet upon completion.											
11		Water Levels: Sept 25, 2018: 5.08 m EOH: 6.92 m											
/		McIntosh Lalani Eng	gine	ering				Logged By:				pletion Depth: 30 fl	
		Calgary, AB (403) 291-2345							By: Asad Shail or Depth: m	K h		d on: 9/14/2018 1 of 1	

		nheller Curling Club Architecture Ltd.		+		ling Infor Service I	mation: Orilling Inc						-+			No.:5 lo.:ML-8855	
Olici	it. OLO7	World Clare					ck SS-Aug	er						Elev			
SAMP	LE TYPE	SHELBY TUBE	CORE	E SAN			SPT SAMPL		M G	RAB S	AMPLE			UGEF			ECOVERY
	FILL TYP		PEA				SLOUGH	-		ROUT		<u> </u>					
_, .51					_ <u>-</u>				<u>()</u> ~	1			<u> </u>		1		
Depth (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	nscs	BLOWS /150 mm	PLASTIC	M.C.	LIQUI	ID _	10	20	COUNT 30 PEN (kF	40		OTHER DATA	Well '5' SLOTTED PIEZOMETER
0	XXXXX	\ASPHALT - approx. 50 mm thick.	_	ļ	ASPH		10	20 3 :	0 40		80	160	240	320			
·		Silty Sand FILL - trace gravel, trace clay, loose, damp, trace rubble, da	e rk	5-1	FILL												
∙1		∖brown. Silty SAND - fine grain, loose, dam	_/[]	5-2			6.5									Organic Content =	
		trace roots, light brown.	r,	5-3		2-2-2	9.#					}	<u> </u>	·		2.4%	
2				1 2-3		2-2-2		:				:					
					SM						·	ļļ	<u>.</u>	.; <u>;</u> .	. <u>;</u>		
-3		- trace clay, moist.		5-4							. <u></u>			.;			
			X	5-5		3-3-4	16.5					ļ					
								······									
4	X	Sandy GRAVEL - coarse grain, we		5-6								;;;					
		sorted, compact, damp, medium brown, dark orange.		5-7		0 45 45	<u>8.</u> 0:	:	<u>.</u>				<u> </u>	·			
5		-				8-15-15				:::: <u> </u>	. 		; 	.;;.		$[SO_4] = 0.082\%$	
	A.	- wet, trace cobbles, trace organic	s. 🖺	5-8	GWS].							
6							<u>:</u> 	į		.			<u></u>				
-	A L		X	5-9		7-7-8	13.7		;			.		· · · · · · · · · · · · · · · · · · ·			
_				ľ					ļļ.			ļļ	<u>.</u>				
7		Silty SAND - fine grain, some clay	I	5-10	SM				34.2				1				
		loose, wet, medium grey. Sandy GRAVEL - coarse grain, we						<u>.</u>	<u>.</u>				<u> </u>				
8		sorted, compact, damp, trace	$^{"}$ \bowtie	-		5-6-10			ļļ.		·						
	.20	cobbles, medium brown, dark orange.		5-11				21.3									
-9		- no recovery in split spoon, no					<u> </u>	į	ļļ.				<u> </u>	::-: <u> </u> :			
		recovery on auger. - no recovery on auger.	X	5-12	GWS	20-15-15								::::::::::::::::::::::::::::::::::::::			
10		, and a supplied the supplied to the supplied							ļļ.				<u>.</u>	.ļļ.			
· IU								İ									
			<u></u>	1			8.4		<u>.</u>								
-11			X	5-13	3	6-7-10						. .		·			
		Shale BEDROCK - weathered, weak, damp, light grey.		5-14				23:8				·					
-12		weak, uamp, light grey.		5-15	BE			•				i.	ļļ	.ij.			
			$\mid X \mid$	5-16		24-25-16								.; .	<u>.</u> D. <u>.</u>		
-12		Coal BEDROCK - weathered wea	k - I	5-17			<u>.</u>	·	35.0					.;j.			
ıs		wet, black.		j	BE		l								· · : · · ·		
		END OF HOLE of a danth of 42.7	X	5-18	3	14-20-27						: : : :					
-14		END OF HOLE at a depth of 13.7 Slough to a depth of 6.1 m. 25 mm	1						<u> </u>								
		PVC standpipe installed to a deptl of 8.2 m with 3.0 m slotted. Wet	1					· ; · · · · · · · · · · · · · · · · · ·	<u>i</u> .			::.:: :;::::					
-15		upon completion.															
-10 -11 -12 -13 -14		Water Levels:					<u>:</u>		<u> </u>						<u>.</u>		
		Sept 25, 2018: 5.46 m EOH: 8.25	m						÷								
		McIntosh Lalani	Engine	ering]	•			ged By							oletion Depth: 45 ft	
		Calgary, AB (403) 291-2345							viewed I oundwat			ikh				d on: 9/14/2018 1 of 1	

		heller Curling Club					rmation:								ole N			
Clie	nt: GEC A	Architecture Ltd.		\dashv			Drilling Inc									:ML-8855		
- A N 4 P		OUTLINATURE T	CORI	- 644			ck SS-Auge SPT SAMPLE		™ GRA	D CAL!	חר	1	L E	levat		е Шил	RECOVER	
	LE TYPE										PLE							Υ
SAUKI	FILL TYP	E BENTONITE :	PEA	GRAV T	EL	Щ	SLOUGH		GRO	T			⊘ DF	KILL U	UTTIN	GS 🖸 SAI		
Depth (m)	SOIL SYMBOL	SOIL	SAMPLE TYPE	SAMPLE NO	nscs	BLOWS /150 mm				1	■ E	BLOW C	OUNT I	40		OTHER DATA	Well '6' SLOTTED PIEZOMETER	i.
De	SOIL	DESCRIPTION	SAMP	SAM		B #	PLASTIC 10 20	M.C.	LIQUID 0 40		● PC	 CKETP 160	EN (kPa 240	320		DAIA	Well '6 PIEZ	ī
0		ASPHALT - approx. 50 mm thick.	/		ASPH FILL		: :	:	:		: :		: :					
		Silty Sand FILL - trace gravel, trace clay, loose, damp, trace rubble, dark brown.		6-1														
1		Silty SAND - fine grain, loose, damp trace roots, light brown.											;;					
2			X	6-2	SM	3-4-3	19.6											
				6-3														
3		- trace clay.	X	6-4		3-4-6	2	1.5										
4		Sandy GRAVEL - coarse grain, well		6-5				· · · · · · · ·										
		sorted, compact, damp, medium brown, dark orange.				40.44.	8,4											
5		- wet, trace cobbles.		6-6 6-7		10-14-16	13.3											
6					GWS													
			X	6-8		7-12-12							I <u>.</u>				21-12	
7							403	0										
-8		Silty CLAY - trace gravel, low plastic firm, wet, medium grey. no recovery in split spoon.	;, X	6-9		5-3-3	10.4	0										
-9				6-10	SM			30	3									
-10		END OF HOLE at a depth of 9.1 m. Slough to a depth of 6.1 m. 25 mm PVC standpipe installed to a depth of 6.1 m with 3.0 m slotted. Wet																
		upon completion. Water Levels: Sept 25, 2018: 5.38 m EOH: 6.07 n	,											 				
-11		, ,																
		Mointach Laisni E	naina	L.	<u>ا</u>	.1.	1	Lon	ged By: R	0			. ;	T C	omple	etion Depth: 30	ft	_
		McIntosh Lalani E Calgary, AB	ngine	erin	Ą		<u> </u>		riewed By:		Shail	kh				on: 9/14/2018		
_		(403) 291-2345					}		undwater l						age 1			

<u>-</u>		nheller Curling Club Architecture Ltd.		\dashv			rmation: Drilling Inc									No.:7 lo.:ML-8855	
	OLO /	WORKOOKHO EKA.		\dashv		-10 SS-/									ation		
SAMP	LE TYPE	SHELBY TUBE	CORE	SAN			SPT SAMPLE	 E	™ GRAI	B SAMPI	LE	-			R SAN	/IPLE INO RE	
BACKI	FILL TYP	BENTONITE	PEA (GRAV	/EL		SLOUGH		GRO	UT			 □	RILL	CUTT	INGS 📆 SAND	,
Depth (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SOSO	BLOWS /150 mm	PLASTIC	M.C.	LIQUID €	10)	20	COUNT 30 PEN (kP	40		OTHER DATA	Well 7' SLOTTED PIEZOMETER
0	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	TOPSOIL - dark brown organics, trace rubble approx. 450 mm thick. over clayey silt loam	L	7-1	TPSL		10 2	20 30	40	80		160	PEN (kP 240	320)		
-1		Silty SAND - trace gravel, loose, damp, trace roots, light brown.		7-2		000	7.8										
-2		- trace coal.		7-3 7-4	SM	2-3-3	10.5									[SO ₄] = 0.041%	
-3 -4			X	7-5	:	3-3-4											
-5		Sandy GRAVEL - coarse grain, well sorted, compact, wet, trace cobbles, medium brown, dark orange.	I	7-6 7-7 7-8	GWB	5-10-13	10:0					# # # # # # # # # # # # # # # # # # #					
-6		Silty CLAY - trace sand and gravel, soft, moist, low plastic, medium brown.	X	7-9	CL-ML	3-4-4		21.3									
-7		Sandy GRAVEL - some clay, coarse, compact, medium brown.		7-10	GWS		17.	5									
-8		Silty CLAY - trace sand and coarse gravel, stiff, moist, low plastic, medium grey.	I	7-12		9-8-10											
-9		- no recovery in split spoon.	X	7-1	2	5-6-6	1 <u>6:</u> 0				. .						
- 10		- no recovery in split spoon.		 	CL-ML	4-6-8											
-11				7-14	4	7-0-0	19	0						•			
-9 -10 -11 -12 -13		END OF HOLE at a depth of 12.2 m. Slough to a depth of 10.6 m. 25 mm PVC standpipe installed to a depth of 12.2 m with 3.0 m slotted. Wet upon completion.															
-14 -15		Water Levels: Sept 25, 2018: 9.68 m EOH: 11.82 m															
:		Maintent Later Co		0==			<u> </u>	Lon	ged By: R0		<u></u>		<u>;;.</u>	<u>.::</u>	Com	pletion Depth: 40 ft	
	11	McIntosh Lalani En Calgary, AB	igine	erin	y				riewed By:		haikl	h				d on: 9/13/2018	
		(403) 291-2345					Ì		undwater [Page	1 of 1	

		heller Curling Club			-		mation:				Borehole				
Clie	nt: GEC /	Architecture Ltd.	····-	\dashv			Drilling Inc				Project N Elevation		855		
SAMP	LE TYPE	SHELBY TUBE	CORF	 E SAM			ck SS-Aug SPT SAMPL		GRAR	SAMPLE [AUGER SAI		∭NO RE	COVER	Y
	FILL TYP		PEA (SLOUGH		GROL		DRILL CUT		SAND		
Depth (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	nscs	BLOWS /150 mm	PLASTIC I	M.C. LIQI)	● POCKETPE	30 40 N (kPa) ●		HER ATA	Well '8' SLOTTED PIEZOMETER	Elevation (m)
ANDARD AUGER 8865 DRUMHELLER CIRLING CLUB GPJ M-L STANDARD GDT 21/2/19 ANDARD AUGER 8865 DRUMHELLER CIRLING CLUB GPJ M-L STANDARD GDT 21/2/19 ANDARD AUGER 8865 DRUMHELLER CIRLING CLUB GPJ M-L STANDARD GDT 21/2/19 ANDARD AUGER 8865 DRUMHELLER CIRLING CLUB GPJ M-L STANDARD GDT 21/2/19 ANDARD AUGER 8865 DRUMHELLER CIRLING CLUB GPJ M-L STANDARD GDT 21/2/19 ANDARD AUGER 8865 DRUMHELLER CIRLING CLUB GPJ M-L STANDARD GDT 21/2/19 ANDARD AUGER 8865 DRUMHELLER CIRLING CLUB GPJ M-L STANDARD GDT 21/2/19 ANDARD AUGER 8865 DRUMHELLER CIRLING CLUB GPJ M-L STANDARD GDT 21/2/19 ANDARD GDT		TOPSOIL - dark brown organics trace rubble approx. 450 mm this LOAM - clayey silt loam, trace to some gravel, black brown Silty Sand FILL - trace gravel, trace, loose, damp, dark brown Silty SAND - trace clay, loose, dirace roots, medium brown. Sandy GRAVEL - medium grain sorted, compact, moist, medium brown. Silty CLAY (Till) - trace sand an gravel, stiff, moist, low plastic, medium grey. - no recovery in split spoon. END OF HOLE at a depth of 9. Slough to a depth of 3.9 m. 25 r PVC standpipe installed to a de of 9.1 m ownth 3.0 m slotted. Wet upon completion. Water Levels: Sept 25, 2018: 5.30 m EOH: 8.	clay, grey. d	8-3 8-4 8-5 8-6 8-7 8-9	SM CL-ML	3-3-4 3-3-6 12-14-18 1-1-2	7.8	28.2		80 160	240 320 		nath: 20 fr		
ML STANE	11	McIntosh Lala Calgary, AB (403) 291-234	_	ering				Logged By Reviewed Groundwa	Ву: А	sad Shaikh	Drille	pletion De ed on: 9/1- 1 of 1	epth: 30 ft 4/2018		