

# **APPENDIX 'B'**

## **TEST HOLE DATA**

**CLIENT** CITY OF WINNIPEG - WATER AND WASTE DEPARTMENT  
**PROJECT** 2012/2013 Outfall Repairs & Rehabilitation  
**SITE** Olive Street Outfall  
**LOCATION** Upper Bank  
**DRILLING METHOD** 200 mm ø Hollow Stem Auger, Continuous Sampling

**JOB NO.** 12-0107-013  
**GROUND ELEV.** 232.08 m  
**TOP OF PVC ELEV.**  
**WATER ELEV.**  
**DATE DRILLED** 9/26/2012  
**UTM (m)** N 5,526,008  
 E 625,311

ELEVATION (m)	DEPTH		GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	SPT (N) blows/0.15 m ▲ DYNAMIC CONE (N) blows/ft △	Cu POCKET PEN (kPa) ★ Cu TORVANE (kPa) ◆		
	(m)	(ft)								PL	MC	LL
232.0			[Cross-hatched]	<b>TOPSOIL</b> - Black, damp, crumbly, trace rootlets.	[Dotted]							
231.6			[Diagonal lines]	<b>SILTY CLAY FILL (CL-CI)</b> - Dark brown, damp, very stiff, low to intermediate plasticity, trace medium to coarse grained sand, trace rootlets. - 40 mm diameter gravel at 0.51 m.	[Dotted]							
231	1		[Diagonal lines]	<b>SILTY CLAY (CI)</b> - Brown, damp, very stiff, intermediate plasticity, some fine to medium grained sand, trace coarse grained sand, trace rootlets. - 10 mm thick sand and gravel seam at 1.02 m. - Fine to medium grained sand layer between 1.09 and 1.12 m. - Trace silt lenses below 1.22 m.	[Dotted]							
230.1	2		[Diagonal lines]	<b>CLAYEY SAND</b> - Brown, damp, dense, low to no plasticity, fine to medium grained, some clay, trace silt, trace rootlets. - Trace oxidation, trace clay below 2.54 m. - Harder drilling below 2.59 m.	[Dotted]	2.6						
230			[Diagonal lines]	<b>CLAY TILL</b> - Grey, moist, dense, some fine to medium grained sand, trace coarse grained sand, trace fine grained gravel.	[Dotted]	2.8						
229.0	3		[Diagonal lines]	<b>END OF TEST HOLE AT 3.61 m</b>	[Dotted]	3.3						
229			[Diagonal lines]		[Dotted]	3.6						
228.5			[Diagonal lines]		[Dotted]							
228	4		[Diagonal lines]		[Dotted]							
227	5		[Diagonal lines]		[Dotted]							
226	6		[Diagonal lines]		[Dotted]							
225	7		[Diagonal lines]		[Dotted]							
224	8		[Diagonal lines]		[Dotted]							
223	9		[Diagonal lines]		[Dotted]							

Notes:  
 1. Auger refusal at 3.15 m.  
 2. Installed Casagrande standpipe at a depth of 3.61 m and a stick-up of 0.91 m. Backfilled with silica sand from 3.61 to 2.84 m, bentonite chips from 2.84 to 2.57 m and bentonite grout mixture from 2.57 m to grade.  
 3. Torvanes and pocket pens were performed but maxed out due to the stiffness of the soil.

SAMPLE TYPE [Symbol] Split Barrel

CONTRACTOR **Paddock Drilling Ltd.**

INSPECTOR **C. FRIESEN**

APPROVED **DRAFT**

DATE **10/30/12**

GEO-TECHNICAL - SOIL LOG P:\PROJECTS\2012\12-0107-013\DESIGN\GEOLOGS\OAKCREST & OLIVE OUTFALLS.GPJ

**CLIENT** CITY OF WINNIPEG - WATER AND WASTE DEPARTMENT  
**PROJECT** 2012/2013 Outfall Repairs & Rehabilitation  
**SITE** Oakcrest Place Outfall  
**LOCATION** Upper Bank  
**DRILLING METHOD** 200 mm ø Hollow Stem Auger, Continuous Sampling

**JOB NO.** 12-0107-013  
**GROUND ELEV.** 230.64 m  
**TOP OF PVC ELEV.**  
**WATER ELEV.**  
**DATE DRILLED** 10/3/2012  
**UTM (m)** N 5,523,902  
 E 634,513

ELEVATION (m)	DEPTH		GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	SPT (N) blows/0.15 m ▲ DYNAMIC CONE (N) blows/ft △	Cu POCKET PEN (kPa) ★ Cu TORVANE (kPa) ◆		
	(m)	(ft)								PL	MC	LL
230				<b>SILTY CLAY FILL</b> - Black, damp, very stiff, low to no plasticity, trace medium to coarse grained sand, trace fine grained gravel, trace rootlets.								
229.6	1			<b>SILTY CLAY</b> - Dark brown/grey, damp, very stiff, low plasticity, trace rootlets, trace silt nodules (~ 3-10 mm diameter), slightly crumbly when disturbed. - No rootlets below 1.37 m.								
229	5											
228	2			- Brown, moist, high plasticity, reduced silt nodules (~ 1-5 mm diameter) below 2.74 m. - Stiff, increased silt content, no silt nodules below 3.05 m.								
227	3	10										
226	4			- Mottled grey and brown, trace fine grained sand below 4.57 m.								
225	5	15										
225	6			- Firm below 5.49 m.								
224	6	20										
224	7			- Brown below 6.10 m. - Stiff between 6.10 and 7.16 m.								
223	7	25										
223	8			- Increased moisture content below 7.16 m. - Water noted at 7.32 m when sampler was pulled.								
222	8	30										
222	9			- Grey, stiff, high plasticity, reduced silt content below 8.69 m.								
221	9	30										

SAMPLE TYPE  Split Barrel  Split Spoon

CONTRACTOR **Paddock Drilling Ltd.**

INSPECTOR **C. FRIESEN**

APPROVED **DRAFT**

DATE **10/30/12**

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ELEVATION (m)	DEPTH		GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	SPT (N) blows/0.15 m ▲ DYNAMIC CONE (N) blows/ft △	Cu POCKET PEN (kPa) ★ Cu TORVANE (kPa) ◆								
	(m)	(ft)								PL	MC	LL						
220	35	11		- Medium to coarse grained sand and fine grained gravel layer between 9.91 and 9.93 m. - 70 mm diameter coarse gravel piece at 10.01 m. - Firm below 10.36 m. - Trace silt nodules (~ 2-5 mm diameter) below 10.67 m.		14.7	S14	100	46	50	◆	◆						
219	40	12		- Trace silt till below 11.89 m.									S15	100	46	50	◆	◆
218	45	13											S16	100	46	50	◆	◆
217	45	14											S17	100	46	50	◆	◆
216.6	45	14		<b>SILT TILL</b> - Grey, damp, compact becoming dense with depth, medium to coarse grained sand, fine to coarse grained gravel.		14.7	S18	100	46	50	◆	◆						
225.6	50	15		<b>REFUSAL AT 14.71 m</b>									S19	100	46	50	◆	◆
215	50	15		Notes: 1. Installed SI to a depth of 14.71 m with a stick-up of 0.61 m. 2. Backfilled test hole with bentonite grout mixture from 14.71 m to grade. 3. Water level at 12.50 m below grade after drilling.		14.7	S20	100	46	50	◆	◆						
214	55	16																
213	55	17																
212	60	18																
211	65	19																
210	65	20																
209	70	21																

SAMPLE TYPE Split Barrel Split Spoon

CONTRACTOR  
**Paddock Drilling Ltd.**

INSPECTOR  
**C. FRIESEN**

APPROVED  
**DRAFT**

DATE  
**10/30/12**

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**CLIENT** CITY OF WINNIPEG - WATER AND WASTE DEPARTMENT  
**PROJECT** 2012/2013 Outfall Repairs & Rehabilitation  
**SITE** Oakcrest Place Outfall  
**LOCATION** Upper Bank  
**DRILLING METHOD** 125 mm ø Solid Stem Auger, ACKER Track Mounted Rig

**JOB NO.** 12-0107-013  
**GROUND ELEV.** 230.69 m  
**TOP OF PVC ELEV.**  
**WATER ELEV.**  
**DATE DRILLED** 10/3/2012  
**UTM (m)** N 5,523,902  
 E 634,515

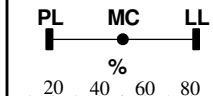
ELEVATION (m)	DEPTH		GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	SPT (N) blows/0.15 m ▲	DYNAMIC CONE (N) blows/ft △	Cu POCKET PEN (kPa) ★		Cu TORVANE (kPa) ◆	
	(m)	(ft)									PL	MC	LL	%
230				<b>SILTY CLAY FILL</b> - Black, damp, very stiff, low to no plasticity, trace medium to coarse grained sand, trace fine grained gravel, trace rootlets.										
229.6	1			<b>SILTY CLAY</b> - Dark brown/grey, damp, very stiff, low plasticity, trace rootlets, trace silt nodules (~ 3-10 mm diameter), slightly crumbly when disturbed. - No rootlets below 1.37 m.										
229	5													
228	2													
227	3	10		- Brown, moist, high plasticity, reduced silt nodules (~ 1-5 mm diameter) below 2.74 m. - Stiff, increased silt content, no silt nodules below 3.05 m.										
226	4													
225	5	15		- Mottled grey and brown, trace fine grained sand below 4.57 m.  - Firm below 5.49 m.										
224	6	20		- Brown below 6.10 m. - Stiff between 6.10 and 7.16 m.										
223	7													
222	8	25		- Increased moisture content below 7.16 m. - Water noted at 7.32 m when sampler was pulled.										
221	9	30		- Grey, stiff, high plasticity, reduced silt content below 8.69 m.										

**SAMPLE TYPE**

**CONTRACTOR** Paddock Drilling Ltd.      **INSPECTOR** C. FRIESEN      **APPROVED** DRAFT      **DATE** 10/30/12

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ELEVATION (m)	DEPTH		GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE NUMBER	RECOVERY %	SPT (N) blows/0.15 m ▲	Cu POCKET PEN (kPa) ★		
	(m)	(ft)							DYNAMIC CONE (N) blows/ft △	20	40	60
220	35	11		- Medium to coarse grained sand and fine grained gravel layer between 9.91 and 9.93 m. - 70 mm diameter coarse gravel piece at 10.01 m. - Firm below 10.36 m. - Trace silt nodules (~ 2-5 mm diameter) below 10.67 m.								
219	40	12		- Trace silt till below 11.89 m.		11.7 11.9						
218	45	13										
217	50	14		<b>SILT TILL</b> - Grey, damp, compact becoming dense with depth, medium to coarse grained sand, fine to coarse grained gravel.		14.2						
216.7	55	14.2				15.2						
216	60	15				16.2						
215	65	16				16.5						
214.2	70	16.46		<b>AUGER REFUSAL AT 16.46 m</b>								
214		17		Notes: 1. Installed Casagrande standpipe to a depth of 16.46 m with a stick-up of 0.61 m. 2. Backfilled test hole with silica sand from 16.46 to 15.24 m, bentonite chips from 15.24 to 14.17 m and bentonite grout mixture from 14.17 m to grade. 3. Stratigraphy taken from TH12-02 drilled ~ 2 m away.								
213		18										
212		19										
211		20										
210		21										
209		22										



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SAMPLE TYPE			
CONTRACTOR <b>Paddock Drilling Ltd.</b>	INSPECTOR <b>C. FRIESEN</b>	APPROVED <b>DRAFT</b>	DATE <b>10/30/12</b>

**CLIENT PROJECT**

**SITE** St. James Bridge  
**LOCATION** South of wellington crescent between north & South Kenaston boulevard  
**DRILLING METHOD** 125 mm ø Solid Stem Auger, Track Mounted; 63.5 mm ø HQ Core

**JOB NO.**  
**GROUND ELEV.**  
**TOP OF CASING ELEV.**  
**WATER ELEV.**  
**DATE DRILLED** 08/11/2017  
**UTM (m)** N 5,526,417  
 E 629,148

ELEVATION (m)	DEPTH		GRAPHICS	DESCRIPTION AND CLASSIFICATION	SAMPLE TYPE NUMBER	RECOVERY %	SPT (N) blows/0.15 m ▲ DYNAMIC CONE (N) blows/ft △	Cu POCKET PEN (kPa) ★ Cu TORVANE (kPa) ◆	
	(m)	(ft)						PL	MC
				<u>SAND</u> - Brown, damp, fine grained sand.					
	1	5		<u>FILL</u> - Black, firm, damp, low plasticity, Some silty clay, trace organics, trace coarse grained sand.	S1				
	2			<u>SILTY CLAY</u> - Brown, damp, stiff, high plasticity, trace oxidation.	S2				
	3	10		- Trace silt inclusions below 3.35 m.	S3				
	4			- Soft below 4.57 m.	S4				
	5	15							
	6	20		<u>SILT TILL</u> - Grey, damp, very stiff, trace fine to coarse grained sand, trace fine gravel.	S5				
	7				S6	100	▲ 23 ▲ 28 ▲ 50		

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SAMPLE TYPE Auger Grab Split Spoon Core Barrel

CONTRACTOR  
Maple Leaf Drilling

INSPECTOR  
J.WILCOX

APPROVED  
DRAFT

DATE  
5/12/17

ELEVATION (m)	DEPTH (m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	SAMPLE TYPE	NUMBER	RECOVERY %	SPT (N) blows/0.15 m ▲	Cu POCKET PEN (kPa) ★
							DYNAMIC CONE (N) blows/ft △	Cu TORVANE (kPa) ◆
							20 40 60 80	20 40 60 80
							20 40 60	PL MC LL %
							20 40 60 80	20 40 60 80
			- Water encountered at 8.22 m.					
9	30			S8	100		▲ 17 ▲ 27 ▲ 35	
10	35		<b>COBBLES</b> - Tan/white/orange, limestone, mixed with silt till.	S7	80		▲ 19 ▲ 21 ▲ 50	
11	40			S9	100		▲ 50	38 mm remaining in first set.
12	45		<b>LIMESTONE</b> - Tan/white/orange, vesicular.	R1	90			
13	50			R2	33			
14	55			R3	98			
15				R4	54			
16				R5	100			
17				R6	100			

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SAMPLE TYPE Auger Grab Split Spoon Core Barrel

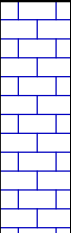
CONTRACTOR  
**Maple Leaf Drilling**

INSPECTOR  
**J.WILCOX**

APPROVED  
**DRAFT**

DATE  
**5/12/17**



ELEVATION (m)	DEPTH (m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	SAMPLE TYPE	NUMBER	RECOVERY %	SPT (N) blows/0.15 m ▲	DYNAMIC CONE (N) blows/ft △	Cu POCKET PEN (kPa) ★	Cu TORVANE (kPa) ◆
							20 40 60 80	20 40 60	20 40 60 80	20 40 60 80
18	60									
19			<b>END OF TEST HOLE IN LIMESTONE AT 18.9 m.</b>							
20	65		Notes: 1. Test hole opened to 8.22 m upon completion of drilling. 2. Water level at 8.22 m below grade. 3. Installed two RST pneumatic piezometers. - (Pn 037767) at 5.18 m below grade. - (Pn 037763) at 7.01 m below grade. 4. Installed casagrande stand pipe at 18.90 m below grade. 5. NQ coring equipment used from power auger refusal 10.06 m to 18.9 m below grade to determine bedrock. 5. Backfilled the test hole with sand, bentonite chips and cement bentonite grout to grade.							
21	70									
22										
23	75									
24	80									
25	85									
26										

SAMPLE TYPE  Auger Grab  Split Spoon  Core Barrel

CONTRACTOR  
**Maple Leaf Drilling**

INSPECTOR  
**J.WILCOX**

APPROVED  
DRAFT

DATE  
5/12/17