APPENDIX A

SOILS INVESTIGATION REPORT

19 March 2010
Project No. WX16182

Manitoba Housing and Renewal Corporation
c/o
Stantec Consulting Ltd.
905 Waverly Street
Winnipeg, MB V
R3T 5P4

Re: Test Hole Program
Waverley West Subdivision Phase II
Winnipeg, Manitoba

1.0 INTRODUCTION

As authorized by the Manitoba Housing and Renewal Corporation (MHRC), AMEC, Earth & Environmental, a division of AMEC Americas Ltd. (AMEC), has completed a test hole drilling program for a proposed subdivision located west of the current Waverley West Subdivision in Winnipeg, Manitoba.

The Terms of Reference were present in AMEC's proposal WPG2010.036, dated 29 January 2010. The purpose of the test hole drilling was to determine the general subsurface soil and groundwater conditions, at the site, based on the findings of 33 test holes drilled along the proposed roadways and retention ponds.

2.0 SITE CONDITIONS

At the time of the field investigation, the site consisted of undeveloped farm land and was snow covered. The area was generally flat lying.

3.0 FIELD INVESTIGATION

Between the dates of 18th February to 5th March 2010, 33 test holes (TH01 to TH33) were drilled within the proposed subdivision at locations pre-selected by Stantec Consulting, the civil engineer for the project. The test holes were advanced, utilizing a CME Truck mounted drill rig equipped with 125mm solid stem augers, and operated by Subterranean (Manitoba) Ltd. of Winnipeg, Manitoba. Test hole logging and site supervision was provided by Mr. Brad Humbert and Mr. Anthony Lospe, of AMEC on a full-time basis. The test holes were each advanced to the depths pre-determined by Stantec, and were either 3.1m or 6.1m below existing grade. The test hole locations are located on Figure 1 attached to this report. All test holes were located with our handheld Garmin GPS with an accuracy of +/-3m.

All soils observed during test hole drilling were visually classified on site according to the Modified Unified Soil Classification System. Groundwater and drilling conditions, as well as any pertinent subsurface observations, were also recorded at the time of the investigation. Disturbed soil samples were taken at regular depth intervals from the auger cuttings. Pocket Penetrometer tests were performed on the auger cuttings.

Upon completion of drilling, the test holes were backfilled with auger cuttings, after verification of the short-term sloughing and seepage conditions, with excess cuttings left adjacent to the test holes.

The test hole logs are presented in Figures 2 through 34 and show the soil profiles, results of the laboratory testing, and comments relative to groundwater and sloughing conditions encountered.

4.0 LABORATORY TESTING

All soil samples obtained during the field investigation were labeled, sealed in plastic bags to limit moisture loss and transported to AMEC's Soils Laboratory in Winnipeg for further examination and testing. All samples were visually classified by the Project Engineer to confirm the field classifications and soil samples from select test holes were tested to determine their natural moisture contents. The laboratory testing results are shown on the individual test hole logs.

5.0 SUBSURFACE CONDITIONS

5.1 SOIL PROFILE

In general a layer of clay topsoil was present at each of the test holes and varied from 75 to 300 mm thick. Generally, below the topsoil was a medium plastic silty clay which was damp to moist and firm. Underlying the medium plastic clay was a high plastic lacustrine clay. The lacustrine clay was generally, silty, brown, damp to moist and stiff to very stiff. In the 6.1 m deep holes, the clay often became firm and grey with increasing depth.

In many of the test holes a low plastic silt layer was observed within the high plastic clay. This layer was generally less than about 0.5 m thick and was moist to very moist, soft to firm and tan-brown.

A detailed description of the soil profile encountered at the test hole locations can be found on the test hole logs, Figures 2 to 34.

5.2 GROUNDWATER CONDITIONS

The test holes were left open for approximately five minutes after completion of drilling to observe the short-term groundwater seepage and sloughing conditions. No sloughing or water seepage was encountered within any of the test holes during this time period. However, it should be noted that only short-term seepage and sloughing conditions were observed and that groundwater levels can fluctuate annually, seasonally, or as a result of construction activity.

5.3 POWER AUGER REFUSAL

Auger refusal was not encountered during the field investigation as noted above.

6.0 CLOSURE

The finding of this report were based on the results of field and laboratory investigations, combined with the soil and ground water conditions encountered at the 33 test holes. If conditions are encountered that appear to be different from those shown by the test holes drilled at this site and described in this reported this office should be notified.

The site investigation was conducted for the sole purpose of assessing soil conditions. No engineering recommendations are provided herein. Although no environmental issues were identified during the fieldwork, this does not indicate that no such issues exist. If the owner or other parties have any concern regarding the presence of environmental issues, then an appropriate level environmental assessment should be conducted.

Soil conditions, by their nature, can be highly variable across a site. The placement of fill and prior construction activities on a site can contribute to the variability especially near surface soil conditions. A contingency should always be included in any construction budge to allow for the possibility of variation in soil conditions, which may result in modification of the design and construction procedures.

This report was prepared exclusively for MHRC and their agents for the proposed development as described in the report. The data provided herein should not be sued for any other purpose, or by any other parties, without written authorization of AMEC. The use of this report by third parties is done so at the risk and responsibility of those parties. The findings of the report were prepared in accordance with generally accepted professional engineering principles and practice. No other warranty, expressed or implied, is given.

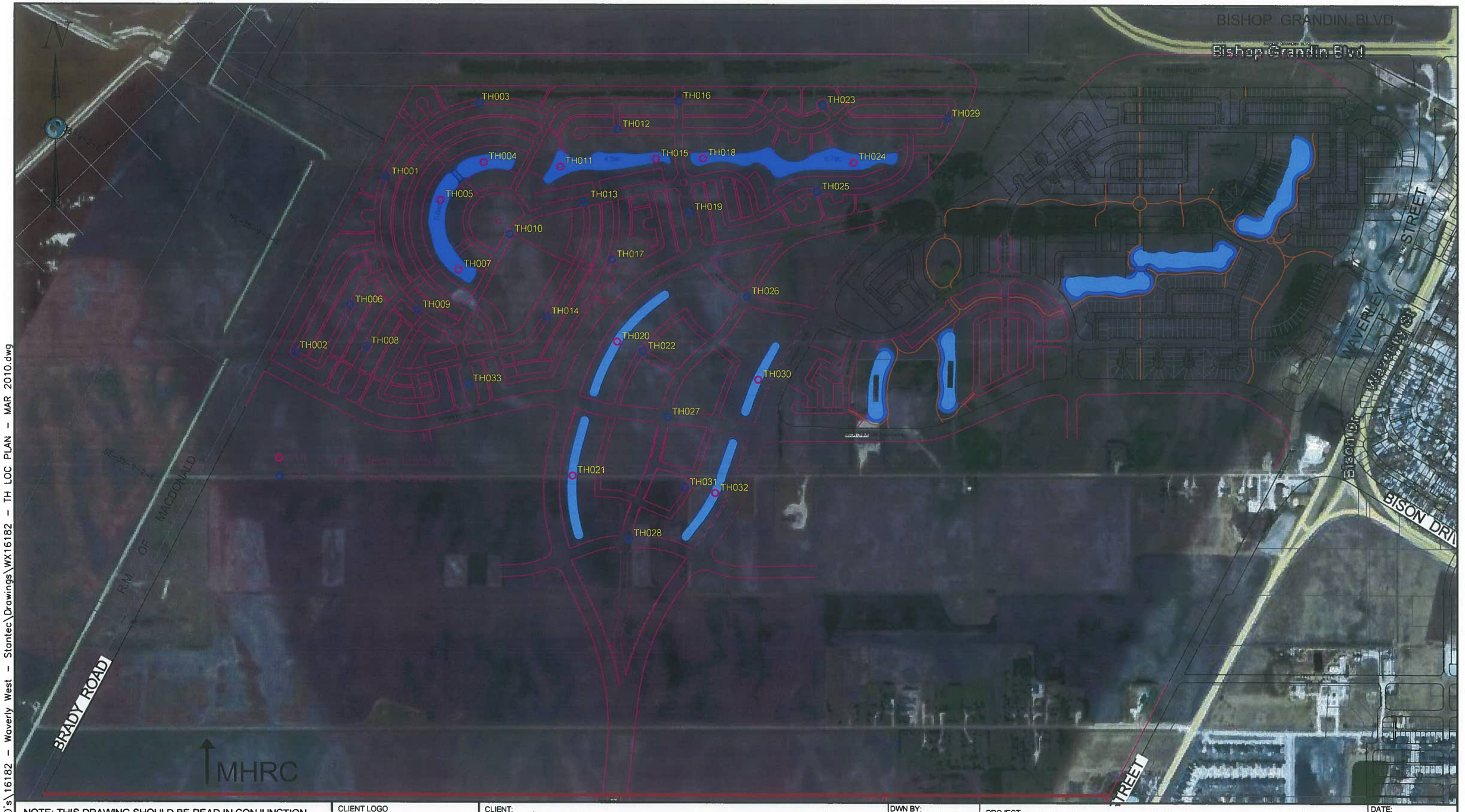
Yours truly,
AMEC Earth & Environmental

Brad Humbert, GIT

Trevor Gluck, P. Eng.
Staff Geotechnical Engineer

Reviewed By:

Harley Pankratz, P. Eng.
Vice President Man/Sask



P:\Jobs\16100's\16180's\16182 - Waverly West - Stantec\Drawings\WX16182 - TH LOC PLAN - MAR 2010.dwg

NOTE: THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH THE AMEC EARTH & ENVIRONMENTAL REPORT No. WX16182 DATED MARCH 2010.

CLIENT LOGO

CLIENT:
MANITOBA HOUSING AND RENEWAL CORPORATION
C/O STANTEC CONSULTING LTD.

AMEC Earth & Environmental
440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

DWN BY:	AL
CHK'D BY:	TG
DATUM:	NAD83
PROJECTION:	UTM Zone 14U
SCALE:	AS SHOWN

PROJECT
TEST HOLE PROGRAM
WAVERLEY WEST SUBDIVISION PHASE II
WINNIPEG, MANITOBA

TITLE
TEST HOLE LOCATION PLAN

DATE:	MARCH 2010
PROJECT NO:	WX16182
REV. NO.:	A
FIGURE No.	FIGURE 01

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH01**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75 mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, grey to brown, trace sand		1			
		CH	CLAY - silty, high plastic, damp, frozen to 1.4m, brown, abundant sulphate inclusions		2			1
			- very stiff below 1.4m		3			
		ML	SILT - some clay, low plastic, moist to very moist, soft, tan, trace sand		4			
2		CH	CLAY - silty, high plastic, moist, firm, brown-grey					2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

16182 - WAVERLEY WEST.GPJ 10/03/19 09:54 AM (GEOTECHNICAL REVISED)

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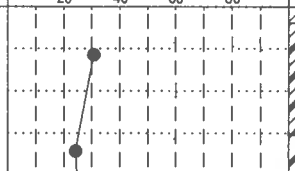
AMEC Earth and Environmental
Winnipeg, Manitoba

LOGGED BY: AL	COMPLETION DEPTH: 3.1 m
REVIEWED BY: TG	COMPLETION DATE: February 18, 2010
Figure No. 2	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH02**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, brown to grey, trace sand		1			
			CLAY - silty, high plastic, damp, frozen to 1.1m, brown, sulphate inclusions		2			
1		CH	- stiff below 1.1m		3			1
			CLAY - silty, high plastic, moist, stiff, brown, tan, trace silt					
2		CH			4			2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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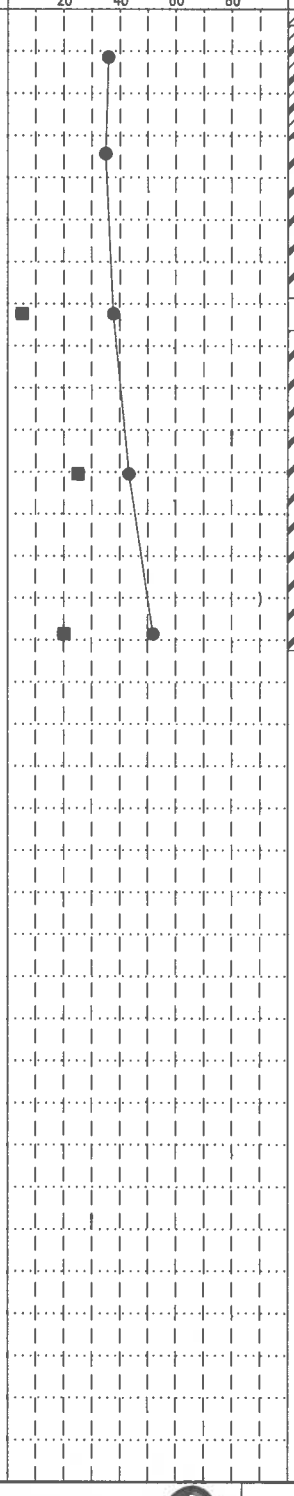
REVIEWED BY: TG	COMPLETION DATE: February 18, 2010
Figure No. 3	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH03**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, dark brown to black, some roots, trace silt inclusions.		1			
		CH	CLAY - silty, high plastic, moist, frozen, brown, abundant sulphate inclusions		2			
1		ML	SILT - clayey, low plastic, wet, tan, soft		3			1
		CH	CLAY - silty, high plastic, moist, stiff, brown-grey mottled, silt and oxidation inclusions		4			
2								2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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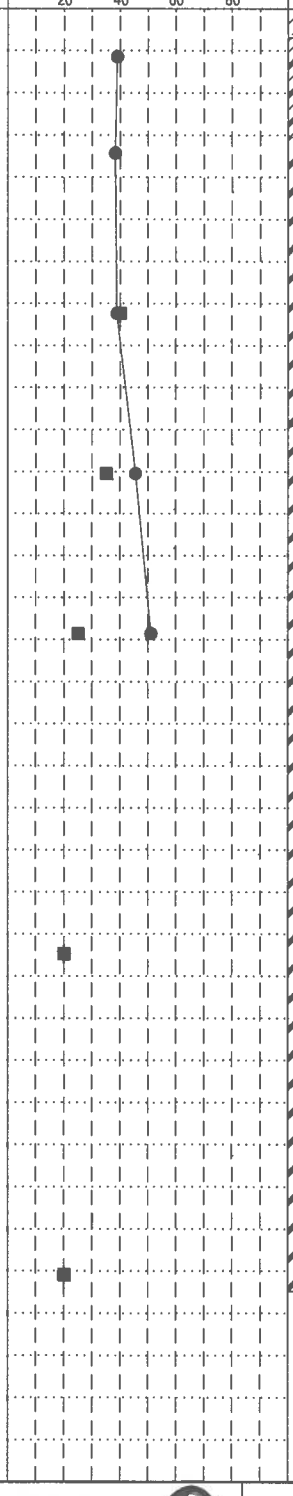
Figure No. 4	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH04**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS
0			TOPSOIL (125mm) - frozen, black				
		CI-CH	CLAY - silty, medium to high plastic, moist, frozen, brown to grey, silt inclusions, trace sand		1		
			CLAY - silty, high plastic, moist, frozen to 1.2m, brown to grey		2		
1		CH	- stiff below 1.2m		3		
2			CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace silt inclusions		4		
3					5		
			- abundant silt inclusions below 4.1m				
4		CH			6		
5							
6					7		
7			TEST HOLE TERMINATED AT 6.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.				

Depth (m) duplicated: 0, 1, 2, 3, 4, 5, 6

amec	**AMEC Earth and Environmental Winnipeg, Manitoba**	LOGGED BY: BH; REVIEWED BY: TG; Figure No. 5
		COMPLETION DEPTH: 6.1 m; COMPLETION DATE: February 19, 2010
		Page 1 of 1

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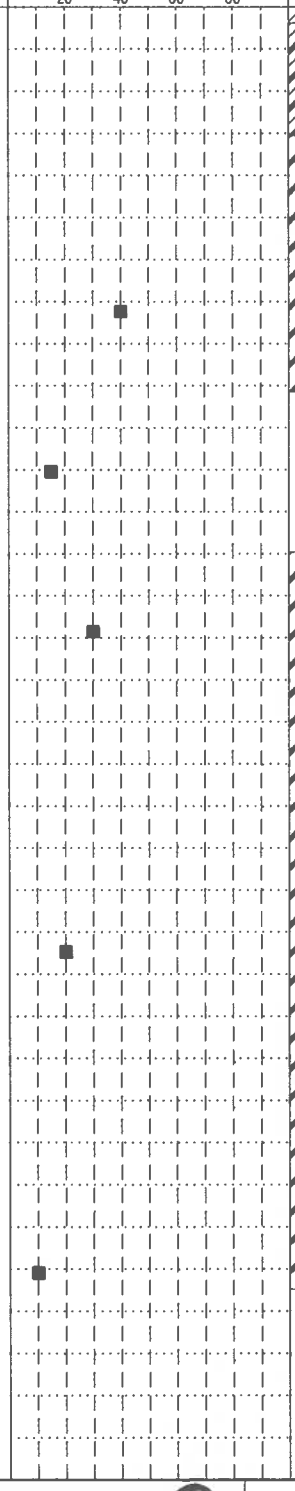
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH05**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, brown to grey, trace sand		1			
			CLAY - silty, high plastic, moist, frozen to 1.2m, brown to dark brown, sulphate inclusions		2			
1		CH	- stiff below 1.2m					1
			- 10cm silt lense at 1.4m		3			
			SILT - clayey, low plastic, moist to very moist, firm, brown to tan, trace sand					
2		ML			4			2
			CLAY - silty, high plastic, damp to moist, stiff, tan to brown, trace silt inclusions					
3					5			3
			- grey-brown mottled below 3.7m					
4		CH						4
			- firm below 4.4m		6			
			- grey below 4.7m					
5								5
6					7			6
			TEST HOLE TERMINATED AT 6.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
7								

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		REVIEWED BY: TG	COMPLETION DATE: March 2, 2010
		Figure No. 6	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH06**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa)▲ 100 200 300 400

■ POCKET PENETROMETER (kPa)■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(150mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, grey to brown, trace sand		1			
1		CH	CLAY - silty, high plastic, moist, frozen, brown to dark brown, silt and sulphate inclusions		2			1
		ML	SILT - some clay to clayey, low plastic, moist to very moist, soft, tan, trace sand		3			
2		CH	CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace silt and sulphate inclusions		4			2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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Winnipeg, Manitoba

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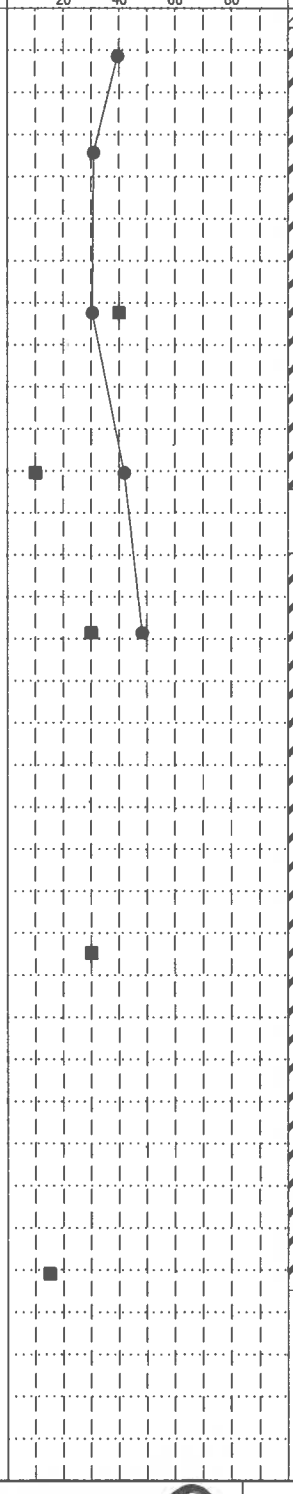
REVIEWED BY: TG	COMPLETION DATE: February 19, 2010
Figure No. 7	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: TH07
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(100mm) - frozen, black					0
			CLAY - silty, high plastic, moist, frozen to 1.4m, brown, silt inclusions		1			
			- damp to moist below 0.6m		2			
1		CH						1
			- stiff below 1.4m		3			
2					4			2
		ML	SILT - some clay, low plastic, moist, soft, brown to light brown, trace sand inclusions					
			CLAY - silty, high plastic, moist, stiff, brown-grey mottled, silt inclusions					
3					5			3
			- abundant silt inclusions below 3.8m					
4		CH						4
					6			
5								5
			- firm below 5.5m					
6					7			6
			TEST HOLE TERMINATED AT 6.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
7								

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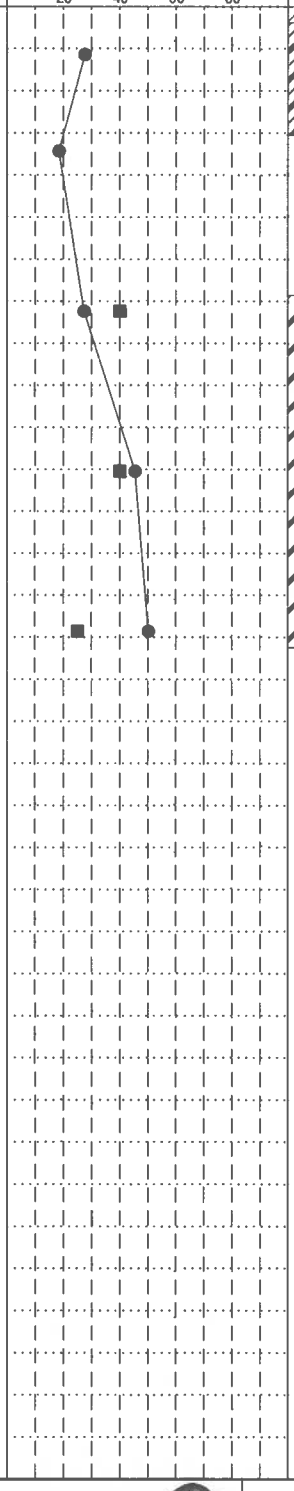
Winnipeg, Manitoba

LOGGED BY: BH	COMPLETION DEPTH: 6.1 m
REVIEWED BY: TG	COMPLETION DATE: March 5, 2010
Figure No. 8	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH08**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, damp, frozen, black to grey to brown		1			
1		ML	SILT - clayey, low plastic, moist to very moist, soft, tan, trace sand		2			1
			CLAY - silty, high plastic, damp, stiff, abundant sulphate inclusions		3			
2		CH	- moist at 2.2m		4			2
			- silt lense 75mm thick at 2.7m		5			
3			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					3
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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Winnipeg, Manitoba

LOGGED BY: BH	COMPLETION DEPTH: 3.1 m
REVIEWED BY: TG	COMPLETION DATE: February 19, 2010
Figure No. 9	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH09**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
		CI-CH	CLAY - silty, medium to high plastic, moist, frozen, brown to grey, trace silt inclusions		1			
			CLAY - silty, high plastic, damp to moist, frozen to 1.4m, brown to dark brown, silt inclusions		2			
1		CH	- moist, stiff below 1.4m		3			1
2					4			2
		CH	CLAY - high plastic, moist, stiff, brown-grey mottled, trace silt inclusions		5			
3			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					3
4								4
5								5
6								6
7								

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AMEC Earth and Environmental
Winnipeg, Manitoba

LOGGED BY: BH	COMPLETION DEPTH: 3.1 m
REVIEWED BY: TG	COMPLETION DATE: February 19, 2010
Figure No. 10	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH10**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa)▲ 100 200 300 400

■ POCKET PENETROMETER (kPa)■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
			CLAY - silty, high plastic, moist, frozen to 1.4m, brown to dark brown, silt inclusions		1			
			- damp to moist below 0.6m		2			
1		CH						1
			- stiff below 1.4m		3			
2								2
		ML	SILT - some clay, low plastic, very moist to wet, soft, tan to light brown, some sand		4			
		CH	CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace silt inclusions					
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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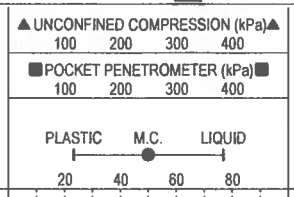
REVIEWED BY: TG	COMPLETION DATE: February 19, 2010
Figure No. 11	Page 1 of 1

PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH11**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(110mm) - frozen, black					0
		CI	CLAY - and silt, medium plastic, moist, frozen, light grey to brown to black, trace sand		1			
		ML	SILT - clayey, low plastic, moist, frozen to 1.2m, tan to dark brown trace sand, trace light grey silt pockets ~3cm in size.		2			
1			CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace silt inclusions					1
					3			
			- 15cm thick, tan, very soft silt seam at 1.8m					
2					4			2
3					5			3
		CH	- grey-brown below 3.4m					
4			- trace oxides below 4.0m					4
			- firm below 4.4m		6			
5								5
6					7			6
7			TEST HOLE TERMINATED AT 6.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					

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		REVIEWED BY: TG
		Figure No. 12
		COMPLETION DEPTH: 6.1 m
		COMPLETION DATE: February 19, 2010
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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH12**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(100mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, light grey to brown to black, trace sand, organics		1			
			SILT - some clay, low plastic, moist, soft, tan to light brown, trace sand		2			
1		ML			3			1
			CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace silt inclusions					
2		CH			4			2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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REVIEWED BY: TG	COMPLETION DATE: February 19, 2010
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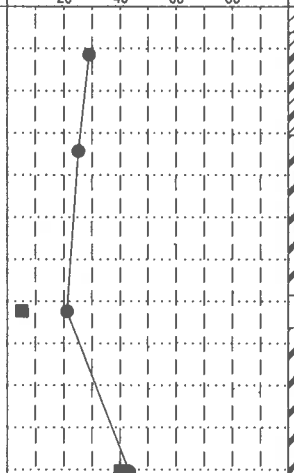
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH13**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(125mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, dark brown, trace silt inclusions - trace rootlets end at 0.3m		1			
			CLAY - silty, high plastic, damp, frozen, brown to dark brown, silt inclusions		2			
1		CH						1
		ML	SILT - some clay, low plastic, moist, soft, light brown to light grey, trace sand		3			
			CLAY - silty, high plastic, moist, stiff, grey-brown mottled, silt inclusions - 9cm thick silt seam, light brown, soft at 2.0m		4			
2		CH						2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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REVIEWED BY: TG	COMPLETION DATE: March 5, 2010
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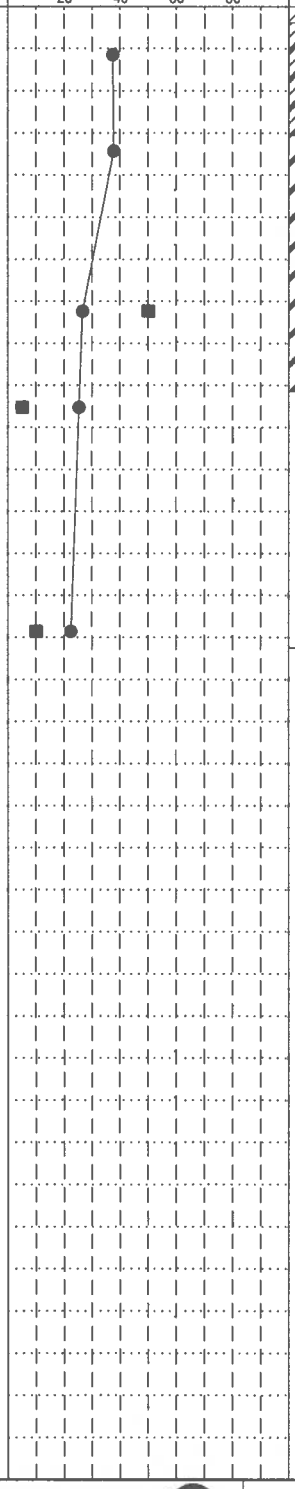
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH14**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, grey, trace sand, trace gravel, trace silt		1			
1		CH	CLAY - silty, high plastic, moist, frozen to 1.1m, brown to grey, silt inclusions - damp and very stiff below 1.1m		2 3			1
2		ML	SILT - clayey, low plastic, moist to very moist, soft, tan to grey		4			2
3			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.		5			3
4								4
5								5
6								6
7								

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REVIEWED BY: TG	COMPLETION DATE: February 18, 2010
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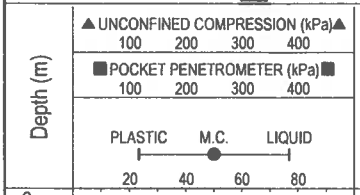
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH15**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(125mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, dark brown, trace silt inclusions, trace silt layers ~2mm width		1			
		CH	CLAY - silty, high plastic, moist, frozen to 1.5m, brown to dark brown, silt inclusions - trace pebbles from 0.9 to 1.2 m		2			1
		ML	SILT - clayey, low to medium plastic, moist, soft, light brown to grey		3			
			CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace silt inclusions		4			
2					5			2
3					6			3
		CH	- firm below 4.0m					
4					7			4
5								5
6					8			6
			TEST HOLE TERMINATED AT 6.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
7								

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REVIEWED BY: TG	COMPLETION DATE: March 5, 2010
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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH16**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲UNCONFINED COMPRESSION (kPa)▲ 100 200 300 400

■POCKET PENETROMETER (kPa)■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(125mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, grey to dark brown, trace silt inclusions		1			
			CLAY - silty, high plastic, moist, frozen to 1.4m, brown to dark brown, silt and sulphate inclusions		2			
1		CH	- stiff below 1.4m		3			1
2			CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace silt inclusions		4			2
		CH						
3			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.		5			3
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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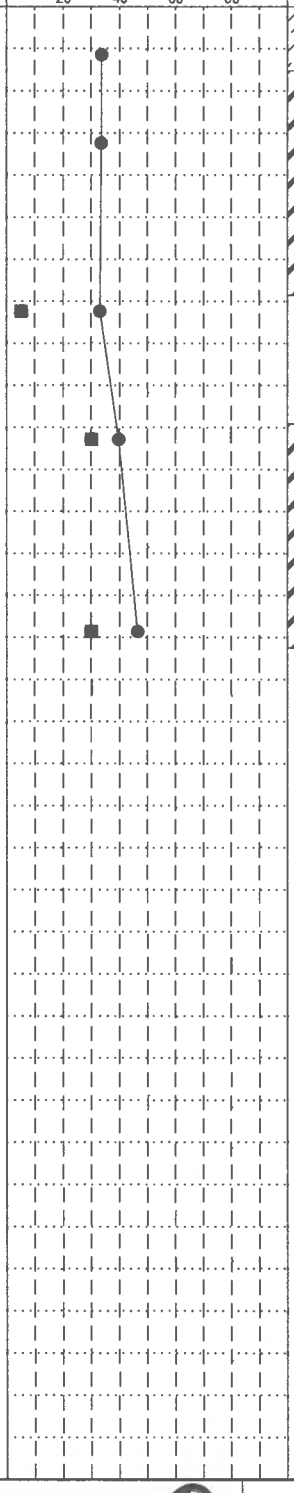
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH17**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(300mm) - frozen, black		1			0
		CH	CLAY - silty, high plastic, frozen, brown to dark brown, silt inclusions - trace organics from 0.55 to 0.6 m		2			
1								1
		ML	SILT - and sand, low plastic, very moist, soft, light grey - clayey, light brown below 1.7m		3			
2					4			2
		CH	CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace to some silt inclusions					
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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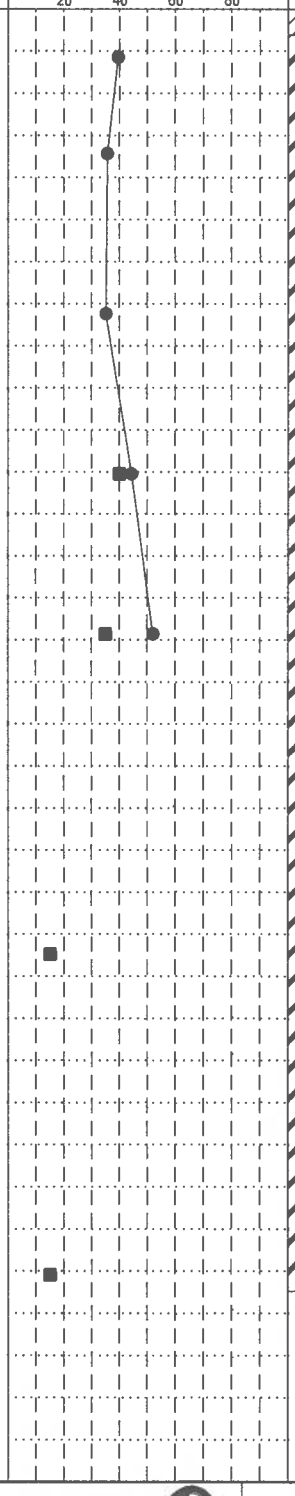
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH18**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(125mm) - frozen, black					0
			CLAY - silty, high plastic, moist, frozen to 1.5m, brown to dark brown, silt and sulphate inclusions, trace organics		1			
			- organics end at 0.5m		2			
1								1
					3			
			- moist, stiff below 1.5m					
2								2
			- brown-grey mottled, trace silt inclusions below 2.1m		4			
3		CH			5			3
			- firm below 3.8m					
4								4
					6			
5								5
			- grey-brown mottled below 5.6m					
6					7			6
			TEST HOLE TERMINATED AT 6.1m BELOW GRADE.					
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
7								

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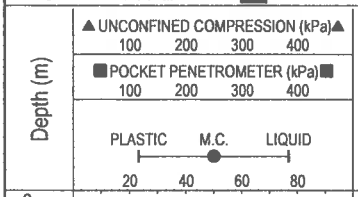
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH19**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(300mm) - frozen, black		1			0
		ML	SILT - clayey, low to medium plastic, moist, frozen, light brown to dark brown to grey, trace sand, trace organics to 0.5m - poor sample recovery from 0.3 to 0.8 m		2			
1			CLAY - silty, high plastic, moist, frozen to 1.5m, moist, stiff, brown-grey mottled, some silt inclusions		3			1
2		CH	- trace silt inclusions and layers at 2.0m		4			2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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REVIEWED BY: TG	COMPLETION DATE: March 5, 2010
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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH20**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, grey, trace sand, trace gravel		1			
			CLAY - silty, high plastic, moist, frozen to 1.1m, brown to grey, silt and sulphate inclusions		2			
1		CH	- damp to moist, very stiff below 1.1m		3			1
			SILT - clayey, low plastic, moist, firm, brown to tan, trace clay lenses					
2		ML			4			2
			CLAY - silty, high plastic, moist, stiff, brown to tan, trace sand		5			
3			- grey-brown mottled below 3.4m					3
4			- grey below 4.0m					4
		CH			6			
5			- soft below 5.2m					5
6					7			6
			TEST HOLE TERMINATED AT 6.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
7								

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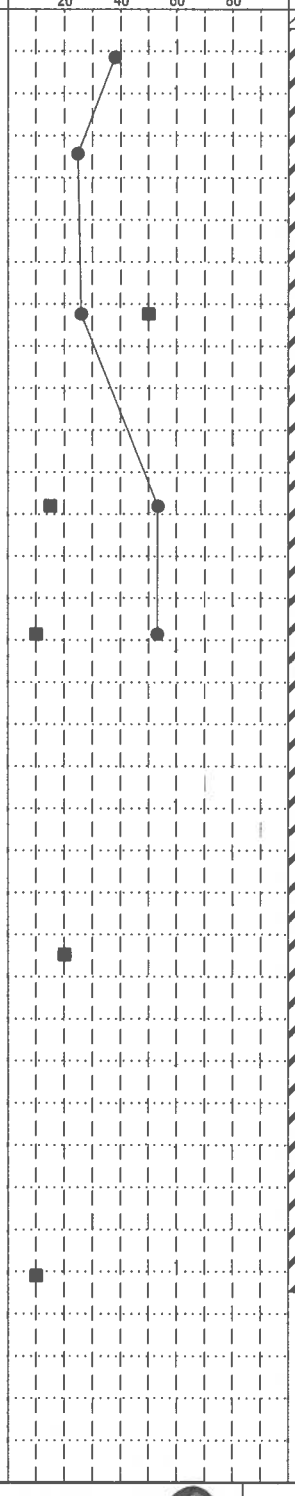
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH21**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(90mm) - frozen, black					0
			CLAY - silty, high plastic, damp to moist, frozen to 1.1m, brown to grey, trace sand		1			
			- damp to moist below 0.6m		2			
1			- very stiff below 1.1m		3			1
			- grey, firm, moist below 1.8m					
2					4			2
			- 10cm silt layer at 2.4m					
3		CH			5			3
			- abundant silt pockets below 3.7m					
4								4
			- trace oxidation inclusions below 4.6m		6			
5								5
6					7			6
			TEST HOLE TERMINATED AT 6.1m BELOW GRADE.					
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
7								

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		Figure No. 22
		COMPLETION DEPTH: 6.1 m
		COMPLETION DATE: February 18, 2010
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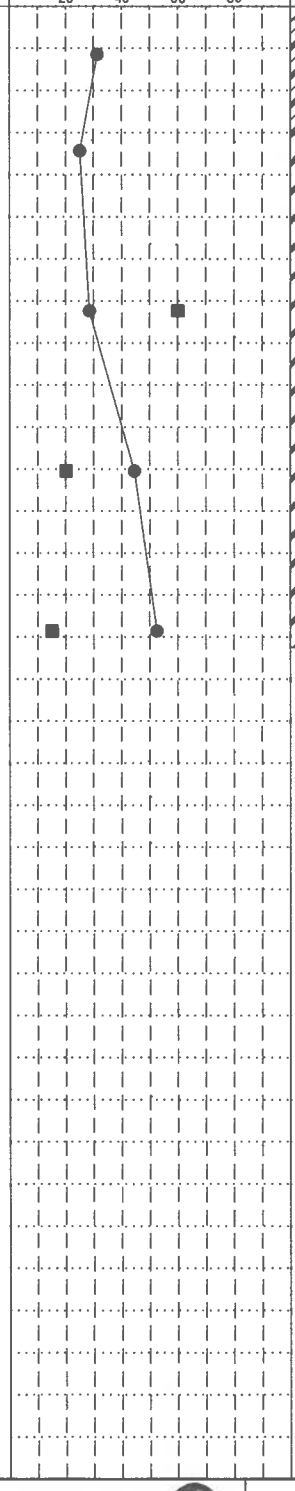
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH22**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(65mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, grey to black, trace sand		1			
			CLAY - silty, high plastic, damp to moist, very stiff, brown-grey mottled, trace sand		2			
1					3			1
		CH						
2			- firm, moist below 2.0m		4			2
			- grey-brown mottled below 2.3m - 7cm thick silt layer at 2.4m					
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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REVIEWED BY: TG	COMPLETION DATE: February 18, 2010
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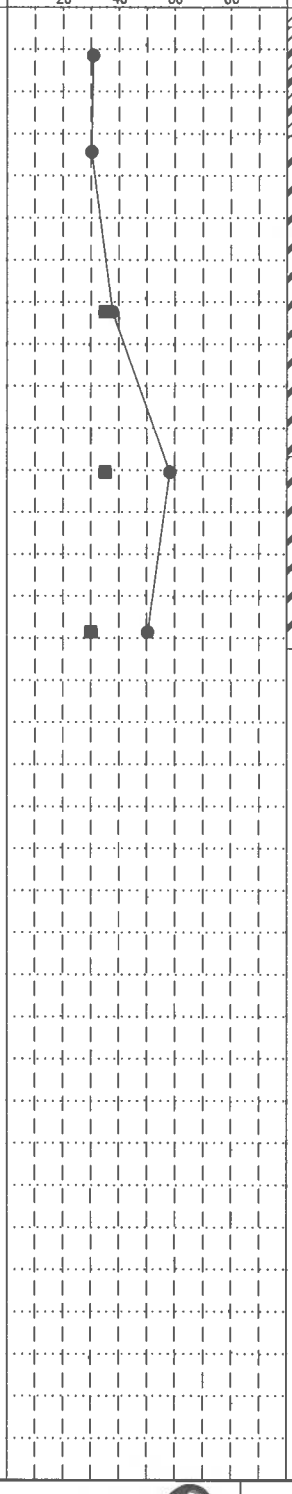
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: TH23
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(100mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, dark brown to grey, trace sand, trace silt inclusions		1			
1			CLAY - silty, high plastic, damp to moist, frozen to 1.2m, brown to grey, silt and sulphate inclusions		2			1
		CH	- moist, stiff below 1.2m		3			
2			CLAY - silty, high plastic, very moist, stiff, brown-grey mottled, silt and sulphate inclusions		4			2
		CH						
3			- moist at 3m		5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH24**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(100mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, black to light grey to brown, trace sand, organics, and silt inclusions		1			
			CLAY - silty, high plastic, moist, frozen to 1.2m, brown to dark brown, silt inclusions		2			
1		CH	- stiff below 1.2m		3			1
			CLAY - silty, high plastic, moist, stiff, brow-grey mottled, silt inclusions		4			
2					5			2
3					6			3
4		CH	- sulphate inclusions below 4.0m		7			4
5			- firm below 5.5m					5
6					8			6
			TEST HOLE TERMINATED AT 6.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
7								

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REVIEWED BY: TG	COMPLETION DATE: February 19, 2010
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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH25**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(100mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, light grey to grey to brown, trace sand, organics, silt and sulphate inclusions		1			
			CLAY - silty, high plastic, moist, frozen to 1.2m, brown to grey, silt and sulphate inclusions		2			
1		CH	- moist, stiff below 1.2m		3			1
2			- brown-grey mottled below 2.1m		4			2
3			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.		5			3
4								4
5								5
6								6
7								

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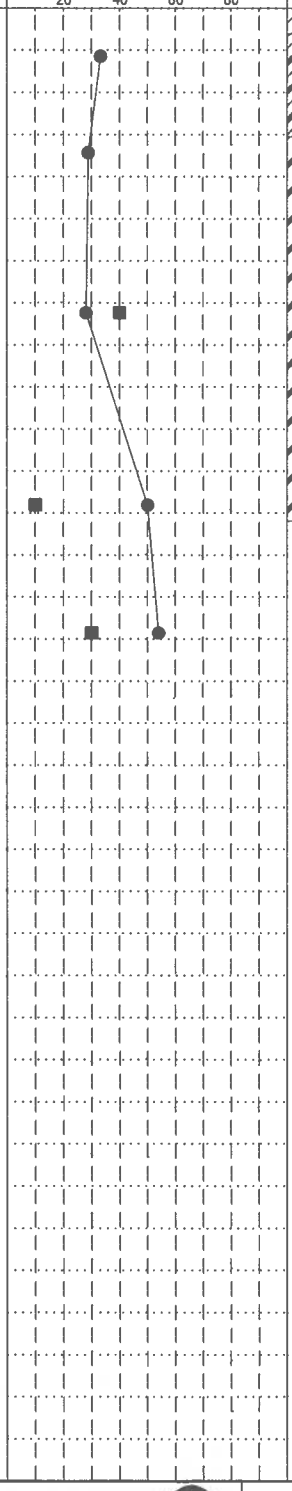
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH26**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(125mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, brown to grey, trace sand, trace silt inclusions, weakly fissured.		1			
1			CLAY - silty, high plastic, damp to moist, frozen to 1.2m, brown to grey, silt inclusions		2			1
		CH			3			
2			- moist, firm at 2.2m		4			2
			- brown-grey mottled below 2.4m					
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					
			NOTES:					
			No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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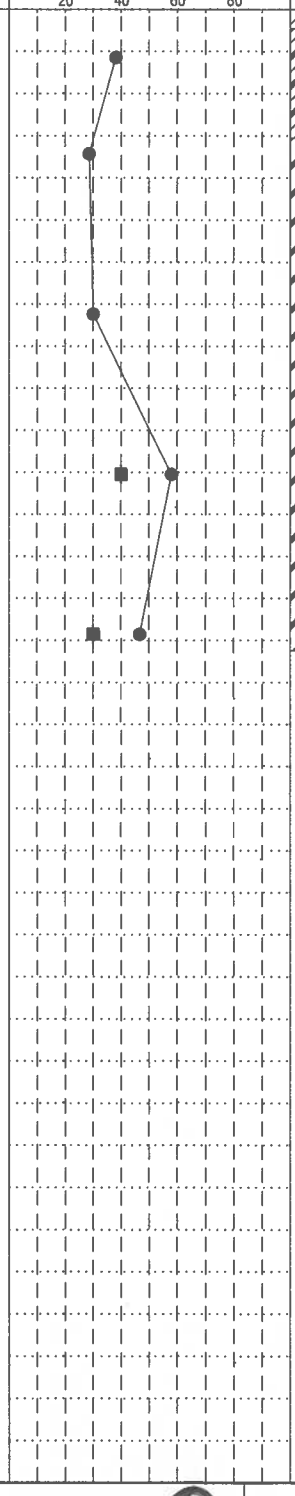
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH27**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(100mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, frozen, dark brown, trace silt inclusions, trace organics		1			
			- trace organics end at 0.5m					
1			CLAY - silty, high plastic, damp to moist, frozen to 1.5m, brown to dark brown, silt inclusions		2			1
			- stiff below 1.5m		3			
2		CH			4			2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH28**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(75mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, dark brown, trace silt inclusions		1			
			CLAY - silty, high plastic, moist, frozen to 1.5m, brown to grey, silt inclusions		2			
1								1
			- stiff below 1.5m		3			
		CH						
2			- 2 cm silt lense at 2.0 m		4			2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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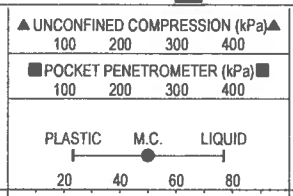
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH29**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(300mm) - frozen, black		1			0
		ML	SILT - some clay, low plastic, moist, frozen, tan to light brown, trace sand, trace organics					
			CLAY - silty, high plastic, moist, frozen to 1.4m, light brown to brown, trace silt inclusions		2			
1								1
			- stiff below 1.4m		3			
		CH						
2								2
			- 9cm thick silt layer at 2.1m		4			
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					
			NOTES:					
			No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH30**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(100mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, black to brown to grey trace sand		1			
			SILT - some clay, low to medium plastic, moist, frozen, tan to light brown, trace sand		2			
1		ML						1
			CLAY - silty, high plastic, moist, very stiff to stiff, brown-grey mottled, silt and sulphate inclusions		3			
2					4			2
3					5			3
		CH						
4			- stiff at 4.3m					4
			- grey-brown mottled below 4.6m		6			
5								5
			- firm below 5.5m					
6					7			6
			TEST HOLE TERMINATED AT 6.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
7								

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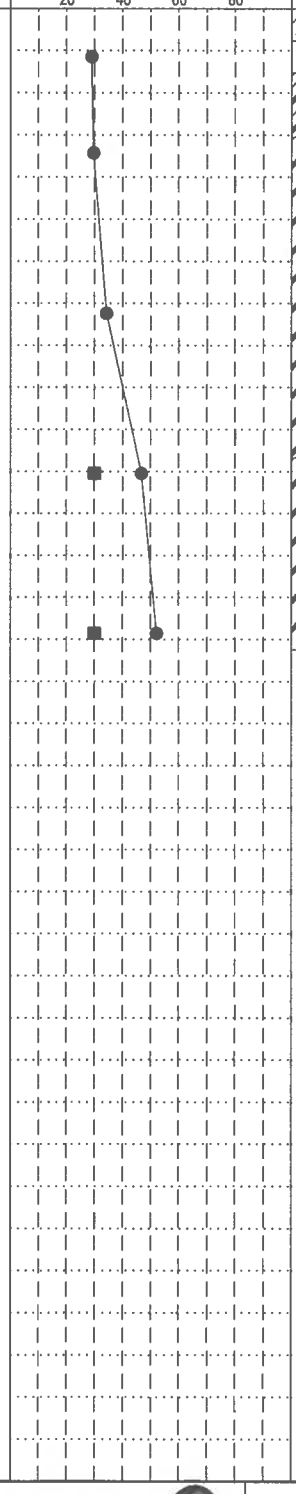
PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH31**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand



Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(150mm) - frozen, black					0
		ML	SILT - sandy, low plastic, frozen, light brown, trace clay, trace organics		1			
		CI	CLAY - silty, medium plastic, moist, frozen, dark brown, trace silt inclusions, trace pebbles					
			CLAY - silty, high plastic, damp to moist, frozen to 1.5m, dark brown, trace to some silt inclusions		2			
1								1
		CH	- moist, stiff below 1.5m		3			
2								2
			- 9 cm thick silt layer at 2.1m		4			
			CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace to some silt inclusions					
		CH						
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE.					
			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH32**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube; No Recovery; SPT (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Drill Cuttings; Grout; Slough; Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(100mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, dark brown, trace organics to 0.5m		1			
			CLAY - silty, high plastic, moist, frozen to 1.5m, dark brown to brown, trace to some silt inclusions		2			
1		CH	- stiff below 1.5m		3			1
2			CLAY - silty, high plastic, moist, stiff, brown-grey mottled, trace to some silt inclusions		4			2
3					5			3
4		CH	- firm below 4.6m		6			4
5								5
6			TEST HOLE TERMINATED AT 6.1m BELOW GRADE.		7			6
7			NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					

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PROJECT: Waverley West Subdivison Phase II	DRILLED BY: Subterranean (Manitoba) Ltd.	BORE HOLE NO: **TH33**
CLIENT: Stantec Consulting Ltd.	DRILL TYPE: CME Tandem Axle	PROJECT NO: WX16182
LOCATION: Waverley West, Winnipeg, MB	DRILL METHOD: 125mm SSA	ELEVATION:

SAMPLE TYPE: Shelby Tube | No Recovery | SPT (N) | Grab Sample | Split-Pen | Core

BACKFILL TYPE: Bentonite | Pea Gravel | Drill Cuttings | Grout | Slough | Sand

▲ UNCONFINED COMPRESSION (kPa) ▲ 100 200 300 400

■ POCKET PENETROMETER (kPa) ■ 100 200 300 400

PLASTIC M.C. LIQUID 20 40 60 80

Depth (m)	SOIL SYMBOL	MUSCS	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	Depth (m)
0			TOPSOIL(125mm) - frozen, black					0
		CI	CLAY - silty, medium plastic, moist, frozen, brown to grey, fissured, trace sand		1			
			CLAY - silty, high plastic, moist, frozen to 1.2m, brown to grey, fissured, silt inclusions, trace sand		2			
1		CH	- fissures end at 1.2m - moist, stiff below 1.2m		3			1
			CLAY - silty, high plastic, moist, stiff, light brown-grey mottled, trace silt inclusions		4			
2		CH						2
3					5			3
			TEST HOLE TERMINATED AT 3.1m BELOW GRADE. NOTES: No sloughing or seepage encountered during drilling. Test hole backfilled with drill cuttings.					
4								4
5								5
6								6
7								

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