

	: Winnipeg Water Treatment Plant N: Freeze/Thaw Lagoon - N 5523678.036 E 647727.041	CLIENT: City of V	Vinnipeg	(Ea	rth T	ech Can Ltd)		HOLE NO: 04-25 ECT NO.: 3398-055-0	0.01
	CTOR: Paddock Drilling Ltd.	METHOD: Acker	DM5 125	mm	. Cali	d Stom Augor		TION (m): 236.448	0-01
SAMPLE		SPLIT SPOON	BU	ILK	1 3011		RECOVE		
DEPTH (m)		١		SAMPLE TYPE	SAMPLE#	+ Torvane (s (kPa) 50 100 115	50 200 (Su) △ 50 200 LIQUID	COMMENTS	ELEVATION (m)
- <u>\</u>	ORGANIC MAT (25mm) CLAY (FILL) - trace to some organics (rootlets and topsoil inclusion - black and dark grey - stiff, moist - high plasticity ORGANIC CLAY - trace organics (rootlets), trace fine sand, trace see				G238 G239 G240 G34 G241 G242	-J∆			<u>▼</u> 236 -
-1 - - - - - -	- black - very stiff, moist - high plasticity CLAY - silty, trace organics (rootlets < 2%), trace oxidation - brown - stiff, moist - high plasticity - trace silt inclusions (< 5mm diam.) below 1.7m				G243 G244 G35 G245	Δ			235 -
	CLAY AND SILT (LAMINATED) - trace fine sand, trace gravel, trac - mottled brown and grey - stiff, moist - high plasticity - laminations (<1mm thick)	e oxidation			G36 G247 G248 G249 G37	+Φ Δ			234 -
-3 - - - - - - - -					G38	A •			233
	- firm below 4.3m END OF TEST HOLE AT 4.6m IN SILTY CLAY Notes: 1. Sloughing below 2.14m				G39	<i>A</i> - •			232 -
5 5	Seepage at 1.83m Water level at 0.41m below ground surface two hours after drilling								231 -
	UMA AECOM	REVIE	ED BY: NEWED BY:	Ne	lson F			TION DEPTH: 1.40 m TION DATE: 9/9/04 Page	1 of 1

PROJE	ECT:	Winnipeg Water Treatment Plant CLIENT: C	ry of Winnipeg (Earth Tech Can Ltd) TESTHOLE NO: 04-26	
		Freeze/Thaw Lagoon - N 5523473.747 E 647749.616	PROJECT NO.: 3398-055-00)-01
CONT	RACT		Acker RM5 125mm Solid Stem Augers ELEVATION (m): 235.813	
SAMP	LE TY	PE GRAB SHELBY TUBE SPLIT SP	ON ■BULK NO RECOVERY ■CORE	
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	## # HTORVING (SU) + (kPa) 50 100 150 200 COMMENTS A POCKET PEN. (SU) \(\triangle \) (kPa) 50 100 150 200 A POCKET PEN. (SU) \(\triangle \) (kPa) 50 100 150 200 PLASTIC M.C. LIQUID 100 150 200 PL	ELEVATION (m)
0		ORGANIC MAT (25mm) CLAY (FILL) - trace to some organics (rootlets and topsoil inclusions), trace fine sar	trace oxidation G42A G267 G267 G367 G367 G367 G367 G367 G367 G367 G3	
		- black - stiff, moist - high plasticity - mottled brown and grey, trace organics (rootlets) below 0.2m	G268 G269 A	_
-	\bowtie		G270 •	23
-1	\mathbb{Z}	CLAY AND SILT (LAMINATED) - trace fine sand, trace gravel, trace oxidation - mottled brown and grey	G43 F	
		- stiff, moist - intermediate to high plasticity - laminations (< 1mm thick)	G271 + OA	23
2			G44	
3		- trace sulphates and firm below 2.6m	G45 1	2
		SILT - clayey, trace fine sand, trace oxidation		
		- mottled brown and grey, loose, moist to wet - intermediate plasticity, laminations (< 1mm thick)	G46 △ •	
4		CLAY - silty, trace silt lenses (<4mm diam.) - mottled brown and grey - firm, moist - high plasticity		2
			G47	
5	//	END OF TEST HOLE AT 4.6m IN SILTY CLAY Notes: 1. Sloughing below 1.22m 2. Seepage at 1.22m 3. Water level at 0.74m below ground surface one hour after drilling		2
-				
6				2
		III A LECON	LOGGED BY: Nelson Ferreira COMPLETION DEPTH: 1.40 m REVIEWED BY: Nelson Ferreira COMPLETION DATE: 9/9/04	
		UMA AECOM	REVIEWED BY: Nelson Ferreira COMPLETION DATE: 9/9/04 PROJECT ENGINEER: Ken Skaftfeld Page	1

PROJ	JECT:	Winnipeg Water Treatment Plant	CLIENT: City of \	Vinnipeg	(Ea	rth T	ech Can Ltd)	TESTH	OLE NO: 04-27	
		Freeze/Thaw Lagoon - N 5523265.177 E 647752.426							CT NO.: 3398-055-0	0-01
		TOR: Paddock Drilling Ltd.	METHOD: Acker	RM5 125	mm	Soli	d Stem Auger	S ELEVA	TION (m): 235.97 RY	
SAME	PLE T	PE GRAB ∭SHELBY TUBE	SPLIT SPOON	BU	LK		∠ NO	RECOVE	RY LILICORE	I
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	N		SAMPLE TYPE	SAMPLE#	+ Torvane (S (kPa) 50 100 15	0 200 Su) △ 0 200 LIQUID	COMMENTS	ELEVATION (m)
- 0	, 💥	ORGANIC MAT CLAY (FILL) - trace to some organics (rootlets and topsoil inclusion	s), trace fine sand			G277	•			<u></u>
- ¥		- black and dark grey - stiff, moist - high plasticity CLAY - silty, trace organics (rootlets, < 2%), trace oxidation	-1			G278 G279 G52	8			÷ .
-		- brown and grey				G280	Y			235 -
-1		- stiff, moist - high plasticity				G281				235 -
ŀ						G53	Φ Δ			
F		SILT (100mm)- clayey, light grey and brown, moist, soft, intermedia	te plasticity			G282				
-		CLAY - silty, trace organics (rootlets < 2%), trace oxidation - brown and grey - stiff, moist								
-2		- high plasticity				G54	Δ •			234 -
-						G283				
-		CLAY AND SILT (LAMINATED) - trace fine sand, trace oxidation								
-3		- mottled brown and grey - firm, moist - intermediate to high plasticity - laminations (< 1mm thick)				G55				233 -
-		- Idililiauolis (< mini ulick)				G56	Δ			
-		CLAY - silty, trace silt lenses (<3mm diam.) - mottled brown and grey - firm, moist								
-4		- high plasticity								232 -
1,17/06					V	G57	4			
LOG OF TESTHOLE FREEZE THAW LAGOON GPJ UMA GDT 2/17/06	//	END OF TEST HOLE AT 4.6m IN SILTY CLAY								53 52 34
ON.GPJ U		Notes: 1. Seepage at 1.73m 2. Water Level at 0.2m below ground surface 45 minutes after drillin	g							231 -
WLAGOC										
EZE THA										
OLE FRE										
HS 6			lico	GED BY: 1	Volo	on E	····i····i····i	COMPL	ETION DEPTH: 1.40 m	
OF T		UMA AECOM		IEWED BY					ETION DEPTH. 1.40 III	
ဗို			PRO	JECT ENG	INE	ER:	Ken Skaftfeld		Page	1 of 1

		Winnipeg Water Treatment Plant	CLIENT: Ci	ty of Winnipeg	(Ea	rth T	ech Can Ltd)		OLE NO: 04-28 CT NO.: 3398-055-0	0.01
		Freeze/Thaw Lagoon - N 5523134.985 E 647663.995 OR: Paddock Drilling Ltd.	METHOD:	Acker DME 125	imn	n Cali	d Stem Auger		TION (m): 235.887	U-U I
SAMPL			SPLIT SPO	ON BU	JLK	1 3011	u Stem Augen	RECOVE	RY CORE	
33 (4827	SOIL SYMBOL	SOIL DESCRIPTION	N		SAMPLE TYPE	SAMPLE#	+ Torvane (S (kPa) 50 100 15	0 200 Su) △ 0 200 LIQUID	COMMENTS	ELEVATION (m)
- 0		ORGANIC MAT CLAY (FILL) - trace to some organics (rootlets and topsoil inclusion - black and dark grey - firm, moist - high plasticity ORGANIC CLAY - trace organics (rootlets and topsoil), trace fine sa - black and brown - very stiff, moist - high plasticity CLAY - silty, trace organics (rootlets, < 2%), trace oxidation - brown - stiff, moist - high plasticity		d		G284 G285 G58	+4			235
2		CLAY AND SILT (LAMINATED) - trace fine sand, trace oxidation - mottled brown and grey - stiff, moist - intermediate to high plasticity - laminations (< 1mm thick) CLAY - silty, trace silt lenses (<3mm diam.) - mottled brown and grey - stiff, moist				G59	•			234
- - - -3 - -		- high plasticity - firm below 2.7m				G60	Δ •			233
- - - - - - - -						G61	Φ			232
		END OF TEST HOLE AT 4.6m IN SILTY CLAY Note: 1. Seepage at 1.14m 2. No sloughing							-	231
6				LOGGER	NI-1			CONDI	CTION DEDTIL: 4.40	230
		UMA AECOM		LOGGED BY: I REVIEWED BY					ETION DEPTH: 1.40 m ETION DATE: 9/9/04	
		UMA ALCOM		PROJECT ENG				23		1 of

		Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg	(Ea	rth T	ech Can Ltd)		OLE NO: 04-29	
		Freeze/Thaw Lagoon - N 5523359.007 E 647658.037			2 00			CT NO.: 3398-055-00	-01
		OR: Paddock Drilling Ltd.	METHOD: Acker RM5 125 SPLIT SPOON ■BL	<u>omn</u>	ı Soli	d Stem Augers	ELEVA RECOVER	110N (m): 236.226 RY	
SAME	PLE TY	PE GRAB SHELBY TUBE	SPEIT SPOON BE	T			NEGOVEI	(1 III)OOKE	
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	N	SAMPLE TYPE	SAMPLE#	+ Torvane (St (kPa) 50 100 150 (kPa) 50 100 150 (kPa) 50 100 150 PLASTIC M.C.	200 Su) △ 0 200 LIQUID	COMMENTS	ELEVATION (m)
0		TOPSOIL/SILTY CLAY							236 —
- 1	<u> </u>	CLAY (FILL) - trace to some organics (rootlets and topsoil inclusion - black and dark grey - stiff, moist - high plasticity	is), trace fine sand	ev.	G272 G273				▼ -
- - -1 -		CLAY - silty, trace organics (rootlets, <2%), trace oxidation			G48 G274	1 : 1: :			-
- - - -		- brown and grey - stiff, moist - high plasticity							235 — - - - -
- - - -2		CLAY AND SILT (LAMINATED) - trace fine sand, trace gravel, trace	ce oxidation		G275 G49	Δ			-
-		- mottled brown and grey - stiff, moist - intermediate to high plasticity - laminations (<1mm thick)			G276	<u>•</u> +∆			234 —
- - - - -3					G50	•			-
-		CLAY - silty, trace silt lenses (<5mm diam.) - mottled brown and grey - stiff, moist - high plasticity				Δ			233
- - -4 -					G51				-
A.GDI ZIZZIUB		END OF TEST HOLE AT 4.6m IN SILTY CLAY				<u> </u>			232
AGOON.GPJ UM.		Notes: 1. Standing water at surface 2. Seepage at 1.27m below ground surface 3. Water level at 0.53m below ground surface one hour after drilling	1						231 —
LOG OF TESTHOLE FREEZE THAW LAGOON.GFJ UMA.GJ 72/20/05									231 -
6			LOGGED BY:	Nel	son F	erreira	COMPL	·I .ETION DEPTH: 1.40 m	
심		UMA AECOM	REVIEWED B					ETION DATE: 9/9/04	
20			PROJECT EN	GIN	EER:	Ken Skaftfeld		Page	1 of 1

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg	(Ear	th Te	ech Can Ltd)	TESTH	OLE NO: 04-32	
LOCATION: Spoil Pile West of Freeze/Thaw Lagoon - N 5523616 E						CT NO.: 3398-055-00)-01
CONTRACTOR: UMA Engineering	METHOD: 50 mm Hand A	uger				TION (m): 240.81	
SAMPLE TYPE GRAB SHELBY TUBE	SPLIT SPOON BU	JLK		⊠NO	RECOVE	RY CORE	1
SOIL DESCRIPTION	V	SAMPLE TYPE	SAMPLE#	PLASTIC M.C.	LIQUID ————————————————————————————————————	COMMENTS	ELEVATION (m)
ONGANIC MAT (25mm) CLAY (FILL) - silty, trace fine sand. trace fine gravel, trace oxidation topsoil inclusions < 2%) - brown, grey and black - stiff, moist - high plasticity - 1	n, trace organics (rootlets and		G251 G252 G253				240
			G254 G255				239
			G256				238
END OF TEST HOLE AT 4.3m IN SILTY CLAY			G257				237
END OF TEST HOLE AT 4.3m IN SILTY CLAY Note: 1. No sloughing or seepage UMA AECOM							236 -
1 HOLE PREZE 1 HA							235
uma Aecom	LOGGED BY: PREVIEWED BY:					ETION DEPTH: 4.27 m ETION DATE: 11/5/04	
UIVIA AECOM	PROJECT ENG				OOM LE	Page	1 of

		Winnipeg Water Treatment Plant		CLIENT: City	of Winnipeg	(Ea	rth T	ech Can Ltd)	TESTP	IT NO: 05-65	
		: Water Treatment Plant Lime Set	tling Ponds							CT NO.: 3398-055-0	0-01
		FOR: Munro	Mauri by Tupe	METHOD: EX	cavator JD 6	310				TION (m): 241.6	
SAMF	LET	/PE GRAB	SHELBY TUBE	SPLIT SPOO	N B	ULK T			RECOVE	RY CORE	
DEPTH (m)	SOIL SYMBOL		_ DESCRIPTION	N		SAMPLE TYPE	SAMPLE#	PLASTIC M.C.	LIQUID 10 80	COMMENTS	ELEVATION (m)
_ 0 - - - - - - - - 1 - -		CLAY (Fill) - trace organics, trace sulfates, trace roo - moist, stiff - high plasticity	ots, trace gravel				B696			- boulder at 1.0 m	241
- - - - - - - - - - - - - - - - - - -							G694				239
- - - - - - - - - - - - - - - - - - -		END TEST PIT AT 3.5 m IN CLAY					G695				238
5 6											237
6				117	OGGED BY: J	loff 7	allin		COMPLE	TION DEPTH: 3.51 m	
		UMA AECOM			EVIEWED BY:			n		TION DATE: 5/11/05	
					ROJECT ENG					Page	1 of

PROJ	ECT:	Winnipeg Water Treatment Plant	CLIENT:	City of Winnipeg	(Ea	rth T	ech Can Ltd)	TESTP	PIT NO: 05-66	
		: Water Treatment Plant Lime Settling Ponds						PROJECT NO.: 3398-055-00-01		
		TOR: Munro		Excavator JD 6	310				TION (m): 238	
SAMP	LE T	YPE GRAB SHELBY TUB	E SPLIT SF	POON BE	JLK		NC	RECOVE	RY CORE	
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIP	TION		SAMPLE TYPE	SAMPLE #	PLASTIC M.C.	LIQUID 	COMMENTS	ELEVATION (m)
0 1 2 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		CLAY (Fill) - trace roots, trace organics - motted brown and grey - moist, firm to stiff - high plasticity TOPSOIL - trace sand, black, moist CLAY - brown, moist, stiff, high plasticity, desicated, friable END TEST PIT AT 3.5 m IN CLAY				G699 G699		0 80		237 - 236 - 235 -
6				LOGGED BY: J	leff -	Tallin	····÷····÷	COMPLE	ETION DEPTH: 3.51 m	
5		UMA AECOM		REVIEWED BY:			in		TION DATE: 5/11/05	
3				PROJECT ENG						1 of 1

	Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg	(Ear	ech Can Ltd)				
	: Water Treatment Plant Lime Settling Ponds						CT NO.: 3398-055-00	0-01
SAMPLE T	FOR: Munro /PE GRAB SHELBY TUBE	METHOD: Excavator JD 6 SPLIT SPOON ■BL			ZNC	RECOVE	TION (m): 236.5	
DEPTH (m)	SOIL DESCRIPTION		Ш	SAMPLE #	PLASTIC M.C.	LIQUID	COMMENTS	ELEVATION (m)
_ 0 	CLAY and TOPSOIL (Fill) - pieces of wood, roots - black - moist to wet, stiff			B702				236 -
	CLAY - brown - moist, stiff - high plasticity			G700				235 -
- - - - - - - - - - - - - - - - - - -	END TEST PIT AT 2.7 m IN CLAY							233 –
- - - - - - - - - - - - - - - - - - -								232 -
6	UMA AECOM	LOGGED BY: J REVIEWED BY: PROJECT ENG	Jeff	Talli			TION DEPTH: 2.71 m TION DATE: 5/11/05 Page	1 of 1

PROJE	ECT:	Winnipeg Water Treatment Plant	CLIENT: City of \	Vinnipeg	(Ea	rth To	ech Can Ltd)	TESTP	IT NO: 05-68	
LOCA	TION	Water Treatment Plant Lime Settling Ponds							CT NO.: 3398-055-00	0-01
		TOR: Munro	METHOD: Excav						TION (m): 236.5	
SAMP	LE T	PE GRAB ∭SHELBY TUBE	SPLIT SPOON	■BU	ILK		∠NO	RECOVER	RY CORE	
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	N		SAMPLE TYPE	SAMPLE#	PLASTIC M.C. 20 40 6	LIQUID 1 0 80	COMMENTS	ELEVATION (m)
- 0 		CLAY and TOPSOIL (Fill)				G703				236 -
- - - -2 - -		CLAY and SILT (Laminated) - brown - stiff - varved silt with thin clay layers				B705	•			235
-3		END TEST PIT AT 3.4 m IN CLAY AND SILT				G704				233 -
0G OF TEST PIT FREEZE THAW LAGOON GPJ UMA GDT 2/22/06 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										232 —
G OF TEST PIT FREEZE TH		UMA AECOM	REV	GED BY:	: Je	ff Tal	in Ken Skaftfeld		ETION DEPTH: 3.41 m ETION DATE: 5/11/05	231 –

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg	(Ear	th T	ech Can Ltd)		IT NO: 05-69	
LOCATION: Water Treatment Plant Lime Settling Ponds						CT NO.: 3398-055-00)-01
CONTRACTOR: Munro	METHOD: Excavator JD 6			[7]	RECOVER	TION (m): 236.6 RY	
SAMPLE TYPE GRAB SHELBY TUBE	SPLIT SPOON BU	ILK T		∠ NO	RECOVER	RY IIICORE	
SOIL DESCRIPTION	J	SAMPLE TYPE	SAMPLE#	PLASTIC M.C. 1 20 40 61	LIQUID ————————————————————————————————————	COMMENTS	ELEVATION (m)
CLAY and TOPSOIL - organics, wood pieces, roots - black			G706	•			236
- clayey - brown - moist, firm to stiff - low plasticity - friable, desicated			G707				235
			G708	•			234
END TEST PIT AT 3.4 m IN CLAY							233
							232 -
							231
	LOGGED BY: J					ETION DEPTH: 3.41 m	
uma AECOM	REVIEWED BY: PROJECT ENG				COMPLE	ETION DATE: 5/11/05 Page	1 of

		Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg	(Ear	th T	ech Can Ltd)		PIT NO: 05-70	
		: Water Treatment Plant Lime Settling Ponds	METHOD: E	10				ECT NO.: 3398-055-00 TION (m): 236.6)-01
SAMPI		FOR: Munro ✓PE GRAB SHELBY TUBE	METHOD: Excavator JD 6 ✓ SPLIT SPOON	10 JLK		✓NC	RECOVE		
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION		SAMPLE TYPE	SAMPLE #	PLASTIC M.C.	LIQUID	COMMENTS	ELEVATION (m)
_ 0 _ - - - - - - - - -		CLAY - organics, topsoil - moist to wet, firm - high plasticity			G709			- iron staining	236 -
- - - - - - - - - -		CLAY- silty - brown, moist, firm to stiff - med plasticity, dessicated, friable			G710	•			235 -
- - - - - - - - - -		CLAY and SILT (Laminated) - brown, moist, stiff - thin silt laminations, fractures							234
- - - - - - - -	7	END TEST PIT AT 3.4 m IN CLAY			G711				233
									232 -
- - - - - - - 6									231
		uma AECOM	LOGGED BY: REVIEWED BY: PROJECT ENG	: Jef	f Tall			ETION DEPTH: 3.41 m ETION DATE: 5/11/05 Page	1 of '

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		Winnipeg Water Treatmer		CLIENT: City	of Winnipeg (Earth T	ech Can Ltd)			OLE NO: 05-71	
		: Water Treatment Plant L	ime Settling Ponds						CT NO.: 3398-055-00)-01
		TOR: Munro		METHOD: H	and Auger				TION (m): 235.7	
SAMP	LE T	YPE GRAB	SHELBY TUBE	SPLIT SPOO	N BULK	NC	KE	JOVE	RY IIIGORE	
DEPTH (m)	SOIL SYMBOL		SOIL DESC	CRIPTION			SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
_ 0 - - -		CLAY - trace silt - brown, moist, stiff - high plasticity								-
- - - - -1										235 —
- - - -		END TEST HOLE AT 1.2 m IN	CLAY							234 —
- - -2 -										-
- - - - -3										233 —
- - - - - - -										232 —
		·								231 —
										230 —
6		UMA AEC	ОМ		OGGED BY: Jeff Tallin REVIEWED BY: Jeff Tal PROJECT ENGINEER:	llin			ETION DEPTH: 1.19 m ETION DATE: 5/11/05 Page	1 of 1

		Winnipeg Water Treatment Plant		LIENT: City of W	innipeg (Earth Tech Can I	td) T	ESTH	IOLE NO: 05-72	
		Water Treatment Plant Lime Settling P						CT NO.: 3398-055-00)-01
		OR: Munro		METHOD: Hand A	uger	NO RE		TION (m): 235.5	
SAMF (m) DEPTH (m)	SOIL SYMBOL		SOIL DESCRI	SPLIT SPOON PTION	BULK	I I I I I I I I I I I I I I I I I I I		COMMENTS	ELEVATION (m)
- 0 - - - - - - - - -		CLAY - trace organics, trace topsoil, black, mois CLAY - trace silt - brown, moist, stiff, high plasticity	t, stiff, high plasticity						235 —
- - - - - - - - -		END TEST HOLE AT 1.2 m IN CLAY							234 —
- - - - - - - -									233
- - - - - - - -									232 —
									231 —
6				I					230 —
		UMA AECOM		REVIE	ED BY: Jeff Tallin WED BY: Jeff Tallin ECT ENGINEER: Ken Skafff	С		ETION DEPTH: 1.19 m ETION DATE: 5/11/05	1 of 1



MATERIALS LABORATORY

UMA Engineering Ltd.

1479 Buffalo Place, Winnipeg, MB R3T 1L7 Canada tel (204) 284-0580 fax (204) 475-3646

Client:

City Of Winnipeg

Project:

Water Treatment Plant

Lab No.

S05-36

Date Sampled/Tested N

May 20, 2005

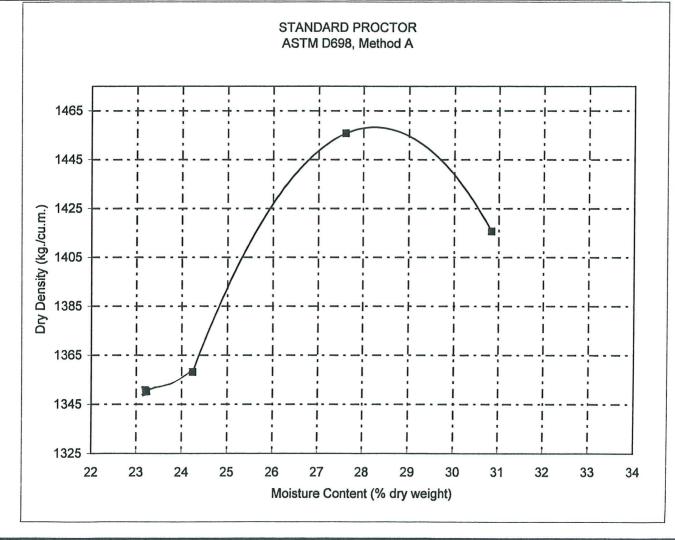
Sample:

TP 05-65 Sample B696

Source: Delivered

TRIAL NUMBER
Wet Unit Weight (kg/cu.m.)
Dry Unit Weight (kg/cu.m.)
Moisture Content (%)

1	2	3	4	
1666	1687	1858	1852	
1353	1358	1456	1416	
23.2	24.2	27.6	30.8	
	1353	1353 1358	1666 1687 1858 1353 1358 1456	1666 1687 1858 1852 1353 1358 1456 1416



Description:

Clay 100% passing No. 4

Sample B696

Maximum Dry Density:

1458 kg/cu.m.

Optimum Moisture:

28.2 %

PLAN NO:

P1130



MATERIALS LABORATORY

UMA Engineering Ltd.

1479 Buffalo Place, Winnipeg, MB R3T 1L7 Canada tel (204) 284-0580 tax (204) 4/5-3646

Client:

City of Winnipeg

Project:

Water Treatment Plant

Lab No.

S05-36-A

Sample:

Date Sampled/Tested

May 17/05

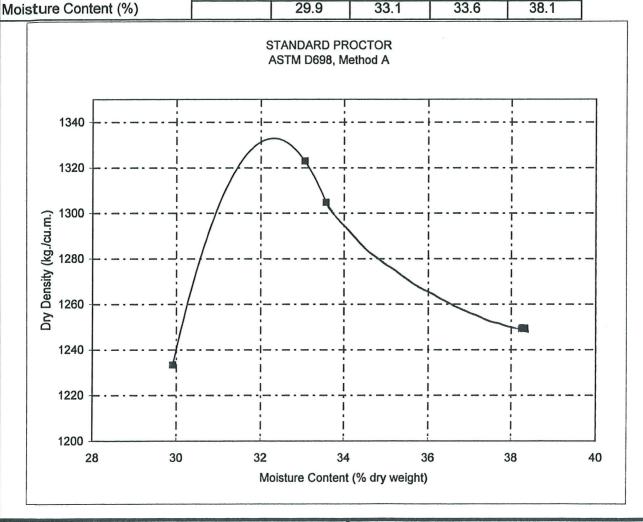
Wet Unit Weight (kg/cu.m.) Dry Unit Weight (kg/cu.m.)

TRIAL NUMBER

TP 05-67 Sample B702

Source: Delivered

1	2	3	4
1602	1760	1743	1734
1233	1323	1305	1256
00.0	00.4	00.0	20.4



Clay 100% passing No. 4 Description:

Sample B702

Maximum Dry Density:

1333 kg/cu.m.

Optimum Moisture:

32.3 %

PLAN NO:

P1129

Field Density Report

UMA JOB No. 3398-055-0304

CLIENT: Earth Tech

PROJECT: Winnipeg Water Treatment Plant CONTRACTOR: Mulder Construction and Materials Ltd.

Material Tested: Backfill Clay

Location: As per Plan

DATE TESTED: 2-Feb-06

TESTED BY:

ML

Max. Dry Densit

n/a

kg/m³

Optimum Moistu

n/a

Plan No.

Fig 01

TEST No.	TEST LOCATION	INSITU DRY DEN.	WET DENSITY	MOISTURE CONTENT	AREA OF TEST
.,		(kg/m³)	(kg/m³)	(%)	
1	DT-06-01	1363	1763	29.3	WTP stock pile
2	DT-06-02	1467	1893	29.0	WTP stock pile
3	DT-06-03	1353	1844	36.3	WTP stock pile
					<u> </u>
4	DT-06-04	1399	1809	29.3	WTP stock pile
5	DT-06-05	1101	1581	43.6	WTP stock pile
6	DT-06-06	1124	1680	49.5	WTP stock pile
7	DT-06-07	1352	1918	41.9	Floodway spoil pile
8	DT-06-08	1278	1773	38.7	Floodway spoil pile
9	DT-06-09	1317	1816	37.9	Floodway spoil pile
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10	DT-06-10	1266	1743	37.7	Floodway spoil pile
11	DT-06-11	1363	1773	30.1	Floodway spoil pile
12	DT-06-12	1404	1918	36.6	Floodway spoil pile
13	DT-06-13	1378	1902	38.0	Floodway spoil pile

Note: Refer to Figure 1- Freeze Thaw Ponds Test Hole Location Plan for test locations

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