

Laboratory Determination of Water Content of Soil and Rock

ASTM D 2216-05

Project #: 09-1428-5007

Short Title: Meadowbank Gold Project

Client AEM Location Nunavut

Lab ID 41

Field Label	SWD110609-1	SWD110609-2		
Sample Number	194	195		
Sample Location	Sta. 10+565	Sta. 10+440		
Depth (m)				
Mass of Dry Soil (g)	4101.5	4229.3		
Water Content W (%)	1.5	1.2		
Field Label				
Sample Number				
Sample Location				
Depth (m)				
Mass of Dry Soil (g)				
Water Content W (%)				
	, , , , , , , , , , , , , , , , , , ,	1		
Field Label				
Sample Number				
Sample Location				
Depth (m)				
Mass of Dry Soil (g)				
Water Content W (%)				
Field Label				
Sample Number				
Sample Location				
Depth (m)				
Mass of Dry Soil (g)				
Water Content W (%)				
vvater Content vv (70)				

PC Mar 12-10 LP March 15,2010
TESTED BY DATE TESTED CHECKED BY DATE CHECKED



Golder Associates Ltd.

500 - 4260 Still Creek Drive, Burnaby, British
Columbia, Canada V5C 6C6
Tel: +1 (604) 296 4200 Fax: +1 (604) 298 5253 www.golder.com



^{*} The test data given herein pertain to the sample provided only. This report constitutes a testing service only.



Laboratory Determination of Water Content of Soil and Rock

ASTM D 2216-05

Project #: 08-1429-0029

Short Title: Meadowbank Gold Mine

Client AEM
Location Nunavut
Lab ID Sheet No. 1

Field Label	SWD091909-1	SWD091909-2	SWD091909-4
Sample Number	71	72	74
Sample Location	SWD Sta. 10+380	SWD Sta. 10+360	SWD Sta. 10+430
Material Spec.	Fine filter	Fine filter	Fine filter
Depth (m)	-	-	-
Mass of Dry Soil (g)	2984.6	2527.6	2312.9
Water Content W (%)	5.6	5.9	6.9

RB

September 22, 2009

TESTED BY

DATE TESTED

CHECKED BY

DATE CHECKED

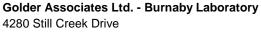


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PARTICLE SIZE ANALYSIS OF SOILS

Reference

DATE

ASTM C136-06 & C117-04

Project No.: 08-1428-0029

Client: AEM

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content = 1.3%

TESTED BY

Sa. Location: SWD Sta. 10+460 Bedding layer in place

Sample No.: 28

Field Label: TSF090409-01

Depth (m): NA Lab ID No: **SA28**

Date Sampled: September 4, 2009

Material Specification: Fine Filter

CHECKED BY

COMBINED, WASHED Method:

							Da	ate Testec	i:	September	5, 2009		
Sieve (USS)	Size (mm)	Passing %											
3.5"	87.5	100.0	S	ize of oper 24 1	ning,inches	3 11/2 3			ve Size, opening 0 #40 #60	g in meshes / inch #200	USCS GR	AIN SIZE SCALE	
3"	75.0	100.0	100	24	12 6	3 11/2 3	/4 3/6 #	4 #10 #2	0 #40 #60	#200	1111111111		
2"	50.0	100.0				 	, `						
1.5"	37.5	100.0	90				1						
1"	25.0	100.0					•						
3/4"	19.0	96.7	80				<u> </u>						
1/2"	12.5	85.6											
3/8"	9.5	73.2	70				\ \ \						
#4	4.8	53.4					N						
#10	2.0	34.6	60 9				1						
#20	0.9	23.9	Mas				1	! `\					
#40	0.4	18.8	By I 50 50				1						
#60	0.3	16.1	Eine 40				\						
#100	0.2	14.3	Percent Finer By Mass 00 04 05				N.	1 1					
#200	0.1	12.8	9 30				1 3		N				
			20					,					
									900	-,-			
			10										
			0 1	000	100)	10	1		0.1	0.01	0.001	0.0001
								Gra	in Size (mm	1)			
				BOULDER	COBBLE	GR	RAVEL	1	SAND		FINES	(Silt, Clay)	
			* 7	The test	data give					nly. This repor rovided upon ı		es a testing se	rvice
	DE	1		Sept	ember	5, 2009							





PARTICLE SIZE ANALYSIS OF SOILS

Reference

ASTM C136-06 & C117-04

Project No.: 08-1428-0029

Client: AEM

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=1.4%

Sa. Location: SWD Sta. 10+470 Bedding layer in place

Sample No.: 38

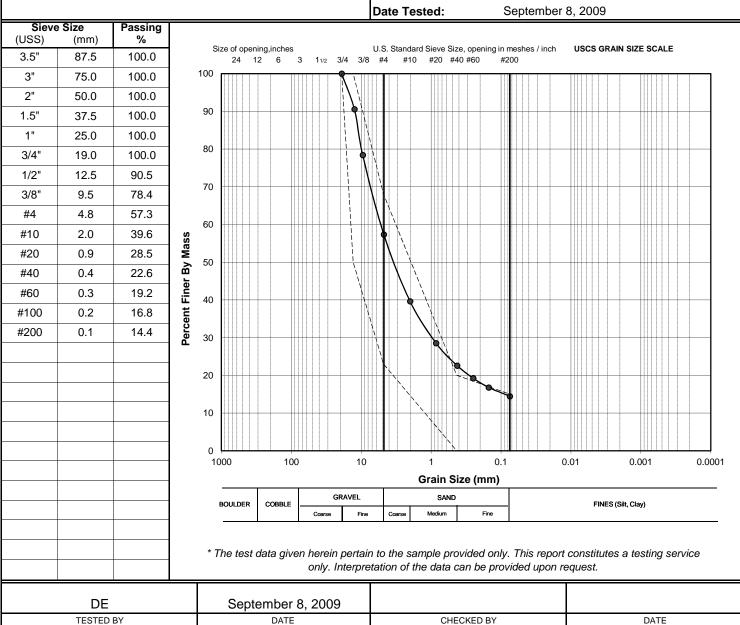
Field Label: TSF090609-05

Depth (m): NA Lab ID No: SA38

Date Sampled: September 6, 2009

Material Specification: Fine Filter

Method: COMBINED, WASHED









PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

Project No.: 08-1428-0029 (5000)

Client: **AEM**

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=5.5%

Sa. Location: SWD Sta. 10+380 Bedding layer in place

Sample No.: 71

Field Label: SWD 091909-03

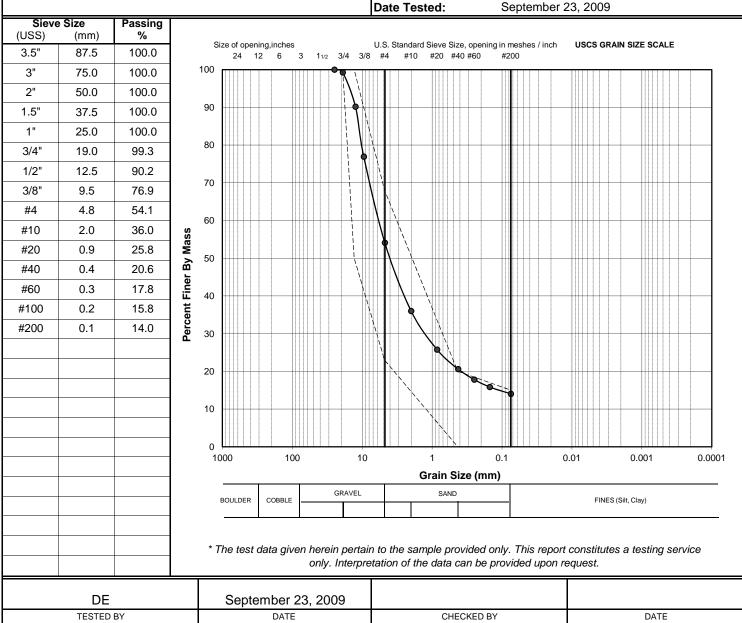
Depth (m): NA Lab ID No: SA71

Date Sampled: September 19, 2009

Material Specification: Fine Filter

COMBINED, WASHED Method:

September 23, 2009 Date Tested:







PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

Project No.: 08-1428-0029 (5000)

Client: **AEM**

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=2.0%

Sa. Location: SWD Sta. 10+360 Bedding layer in place

Sample No.: **72**

Field Label: SWD 091909-04

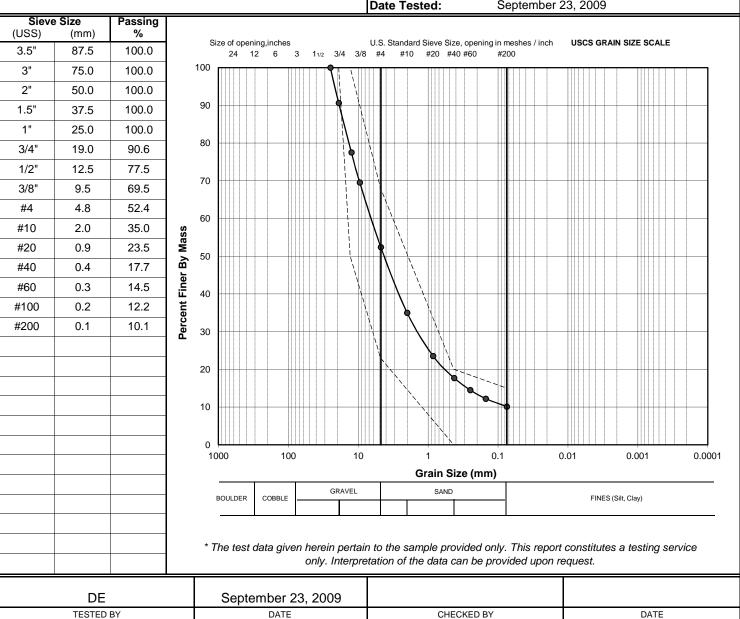
Depth (m): NA Lab ID No: **SA72**

Date Sampled: September 19, 2009

Material Specification: Fine Filter

COMBINED, WASHED Method:

September 23, 2009 Date Tested:







PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

Project No.: 08-1428-0029 (5000)

Client: AEM

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=3.1%

Sa. Location: SWD Sta. 10+310 Bedding layer in place

Sample No.: 73

Field Label: SWD 091909-05

Depth (m): NA Lab ID No: SA73

Date Sampled: September 19, 2009

Material Specification: Fine Filter

Method: COMBINED, WASHED

Date Tested: September 23, 2009

										Dat	te Tes	ted:		Sep	tember	123,	200	9					
Sieve (USS)	Size (mm)	Passing %																					
3.5"	87.5	100.0			pening,inch		140	2 3/4				Sieve Si #20 #	ze, openin	g in mes #200	hes / inch	US	scs o	RAIN	SIZE	SCAL	E		
3"	75.0	100.0	,	100	TT T		11/2	2 3/4 T Q II	\	#4	#10	#20 #	1 1 1	#200			111					—	
2"	50.0	100.0						1	`\														
1.5"	37.5	100.0		90				1	\ \														
1"	25.0	100.0							l N														
3/4"	19.0	95.7		80				i															
1/2"	12.5	75.7							4	Ì													
3/8"	9.5	66.4	-	70						Ì													
#4	4.8	48.1	-						١ 🛚														
#10	2.0	34.0	SS	60					! \		Ì.												
#20	0.9	24.2	Percent Finer By Mass	50						V													
#40	0.4	19.2	r By	50					\ <u>\</u>	ħ	1												
#60	0.3	16.5	Fine	40					\		\												
#100	0.2	14.5	ent						\ \ \		/	\											
#200	0.1	12.7	Perc	30					1,	ackslash												_	
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				40									0	4									
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				1000		100			10			1		0.1		0.01			0.00	1		0.000	J1
											(ize (mn	1)									-
				BOULDER COBBLE GRAVEL					/EL			SAND	· 				FIN	NES (Silt	t, Clay)				
			-										1										-
				* The tes	st data ç	given							ovided o can be p					ıtes a	a test	ing s	servio	е	
			<u> </u>	I I				<i></i> 0	01 011	- data			за ароп	1									
	DE			Sep	tembe	er 23	3, 20	009															
	TESTED BY DATE				CHI	ECKED B	Y					D	ATE										





PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

Project No.: 08-1428-0029 (5000)

Client: AEM

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=5.3%

Sa. Location: SWD Sta. 10+430 Bedding layer in place

Sample No.: 74

Field Label: SWD 091909-06

Depth (m): NA Lab ID No: SA74

Date Sampled: September 19, 2009

Material Specification: Fine filter

Method: COMBINED, WASHED

Date Tested: September 23, 2009

Sieve Size Passing (USS) (mm) **USCS GRAIN SIZE SCALE** U.S. Standard Sieve Size, opening in meshes / inch Size of opening, inches 100.0 3.5" 87.5 11/2 3/4 3/8 #4 3 #20 #40 #60 12 #10 #200 100 3" 75.0 100.0 2" 50.0 100.0 90 1.5" 100.0 37.5 1" 25.0 100.0 80 3/4" 19.0 98.9 1/2" 12.5 89.2 70 3/8" 78.8 9.5 #4 4.8 59.4 60 #10 2.0 42.1 Percent Finer By Mass #20 0.9 30.5 50 #40 0.4 24.5 21.3 #60 0.3 40 #100 0.2 19.0 #200 0.1 16.7 30 20 10 0 1000 100 10 0.1 0.01 0.001 0.0001 Grain Size (mm) GRAVEL SAND BOULDER COBBLE FINES (Silt, Clay)

^{*} The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request.

DE	September 23, 2009		
TESTED BY	DATE	CHECKED BY	DATE





PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

DATE

Project No.: 08-1428-0029 (5000)

Client: AEM

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=1.6%

TESTED BY

Sa. Location: SWD Sta. 10+270 Bedding layer in place

Sample No.: 75

Field Label: SWD 091909-07

Depth (m): NA **Lab ID No:** SA75

Date Sampled: September 19, 2009

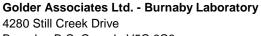
Material Specification: Fine Filter

CHECKED BY

Method: COMBINED, WASHED

Date Tested: September 23, 2009

												D	ate	Tes	ted:			Sept	ember	23,	200	9					
	Size	Passing																									
(USS)	(mm)	%		Siz	ze of c	penir	ng,inche	es				U.	.S. S	tandard	Sieve	Size, op	ening ir	n mesh	es / inch	U	SCS G	RAIN	I SIZE	SCAL	.E		
3.5"	87.5	100.0			24	12	6	3	11	1/2 3	3/4 3	3/8	#4	#10	#20	#40 #6	0 ;	‡ 200									
3"	75.0	100.0	1	100						٩	1 \ 1 \																
2"	50.0	100.0								\	¦ \																
1.5"	37.5	100.0		90							1	1															
1"	25.0	100.0									1	Ĭ,															
3/4"	19.0	90.1		80							1	1															
1/2"	12.5	73.5		70							14	\															
3/8"	9.5	65.3		70								<u> </u>															
#4	4.8	48.7		60							- '	\															
#10	2.0	32.1	SS	00							į	N															
#20	0.9	22.0	Ma	50							į	\	L	\													
#40	0.4	17.0	Percent Finer By Mass								/		1	\													
#60	0.3	14.3	Fine	40								\	\prod	L '													
#100	0.2	12.4	ent									\ \ \		\setminus	\												
#200	0.1	10.5	erc	30								1		1													
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				0 10	00		1	100			1	0			1		0.	1		0.01			0.00	01		0.000	01
														G	rair	Size	(mm)										_
			-	E	BOULD	ER	COBBL	.E _		GF	RAVEL				SA	AND					FIN	IES (Si	ilt, Clay))			
																											-
			-																								
				* T	he te	est d	lata g	iven											nis repor d upon i			ites	a tes	ting	servio	се	
			<u> </u>							,	P	1		3			- 5 610		up o// /	7 yu							—
	DE				Se	pter	nbei	r 23	3, 2	009	9																
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PARTICLE SIZE ANALYSIS OF SOILS

Reference

ASTM C136-06 & C117-04

Project No.: 08-1428-0029 (5000)

Client: AEM

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content = 5,3%

Sa. Location: SWD Sta. 10+430 Bedding layer in place

Sample No.: 76

Field Label: SWD-091909-0

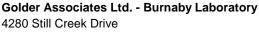
Depth (m): N/A Lab ID No: SA-76

Sampling Date: September 19, 2009

Material Specification: Fine Filter

Method: SPLIT, WASHED

							ate Te	sted:		Septer	mber 20, 2	2009	
Sieve (USS)	Size (mm)	Passing %											
3.5"	87.5	100.0	Size of ope 24	ning,inches	3 11/2	3/4 3/8			ze, opening in 1 40 #60 #2	meshes / inch	USCS GRA	IN SIZE SCALE	
3"	75.0	100.0	100										
2"	50.0	100.0				1							
1.5"	37.5	100.0	90										
1"	25.0	100.0				1							
3/4"	19.0	97.8	80										
1/2"	12.5	85.6											
3/8"	9.5	69.0	70			1							
#4	4.8	50.7	60			$ \cdot $							
#10	2.0	37.0											
#20	0.9	27.4	Ma 90 Ma			1							
#40	0.4	21.9	ır By			\\\\\\\	$N \rightarrow$	v IIIIIII					
#60	0.3	18.8	40 Hine			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	$\perp \setminus$	`\					
#100	0.2	16.5	ent				>						
#200	0.1	15.2	Percent Finer By Mass										
			20					1					
									-				
			10										
			0										
			1000	100)	10		1	0.1		0.01	0.001	0.0001
				1	1		1		ize (mm)	T			
			BOULDER	COBBLE		GRAVEL		SAND			FINES	(Silt, Clay)	
				1		1	1 1		<u> </u>	<u> </u>			
			* The test	data give	en herein	n pertain t	o the sa	mple pro	ovided only	. This report	t constitute	s a testing se	rvice
										rided upon r		_	
	ОМ		Sent	ember 2	20. 200	19							
	TESTED BY		3001	DATE				СНЕ	CKED BY			DATE	





PARTICLE SIZE ANALYSIS OF SOILS

Reference

DATE

ASTM C136-06 & C117-04

Project No.: 08-1428-0029 (5000)

Client: **AEM**

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=5.8%

Sa. Location: SWD Sta. 10+810 Bedding layer in place

Sample No.: 80

Field Label: SWD 092109-01

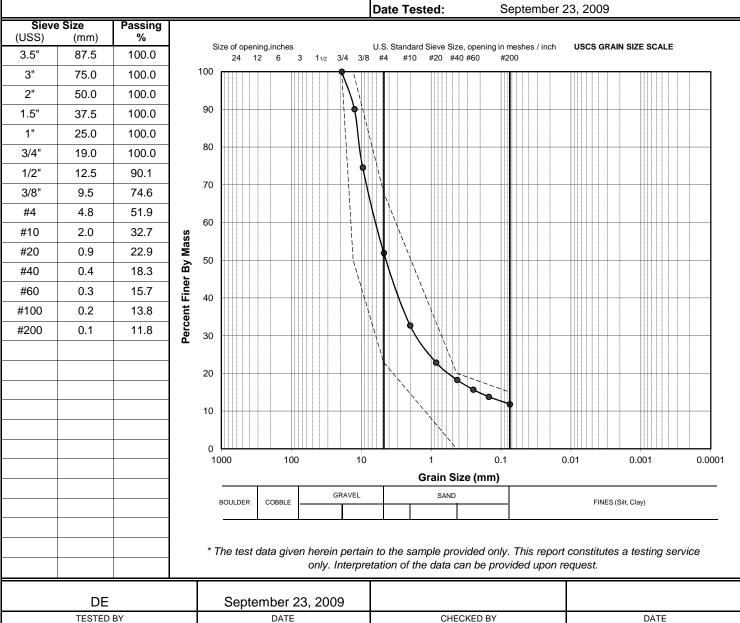
Depth (m): NA Lab ID No: **SA80**

Date Sampled: September 21, 2009

Material Specification: Fine Filter

CHECKED BY

Method: COMBINED, WASHED







PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

Project No.: 08-1428-0029 (5000)

Client: AEM

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=5.7%

Sa. Location: SWD Sta. 10+835 Bedding layer in place

Sample No.: 81

Field Label: SWD 092109-02

Depth (m): NA Lab ID No: SA81

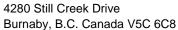
Date Sampled: September 21, 2009

Material Specification: Fine Filter

Method: COMBINED, WASHED

Sieve Sieve Passing (USS) Mm) % % % % % % % % %										inoc						וסועונ					D						
U.S. Standard Sieve Size, opening in meshes / inch U.S. Standard Sieve Size, open											Dat	e Te	estec	<u>: </u>		S	epte	emb	er 23	3, 2	009						
3.5 87.5 100.0 100.0 100.0 100.0 15.5 37.5 100.0 100.0 17.2 12.5 90.6 80.8 #4 4.8 59.1 #10 2.0 40.6 #20 0.9 28.2 #40 0.4 22.2 #60 0.3 19.0 #100 0.0 1 14.4 100 0.2 16.7 #200 0.1 14.4 14.4 15.5 100.0 100.0 100 100 10 1 0.1 0.01 0.0	(USS)	(mm)	%		Siz	e of onen	ing inches				us:	Standa	ard Siev	ve Siz	e oner	ning in	meshe	es / inc	•h	usc	S GR	ΔΙΝ 9	SIZE S	SCAL	F		
2" 50.0 100.0 1.5' 37.5 100.0 1" 25.0 100.0 3/4" 19.0 100.0 1/2" 12.5 90.6 3/8" 9.5 80.8 #4 4.8 59.1 #10 2.0 40.6 #20 0.9 28.2 #40 0.4 22.2 #60 0.3 19.0 #100 0.2 16.7 #200 0.1 14.4 #200 0.1 14.4 #200 0.1 14.4 **The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request.	3.5"	87.5	100.0		OIZ			3 1	1/2 3/4									33 / IIIC	<i>,</i> 11	000	o on		JIZE (JOAL	_		
1.5° 37.5 100.0 1° 25.0 100.0 3/4° 19.0 100.0 1/2° 12.5 90.6 3/8° 9.5 80.8 #4 4.8 59.1 #10 2.0 40.6 #20 0.9 28.2 #40 0.4 22.2 #60 0.3 19.0 #100 0.2 16.7 #200 0.1 14.4 30 20 1000 100 10 10 10 0.01 0.001 0.001 Grain Size (mm) BOULDER COBSLE GRAVEL SNND FINES (SIL Cliny) *The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request.	3"	75.0	100.0		100				18	\																	
1" 25.0 100.0 3/4" 19.0 100.0 1/2" 12.5 90.6 3/8" 9.5 80.8 #4 4.8 59.1 #10 2.0 40.6 #20 0.9 28.2 #40 0.4 22.2 #40 0.0 2.2 16.7 #200 0.1 14.4 20 1000 100 100 10 1 0.1 0.01 0.001 0.001 *The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request.	2"	50.0	100.0							$\parallel\parallel$																	
19.0 100.0	1.5"	37.5	100.0		90				1	7\																	
1/2" 12.5 90.6 3/8" 9.5 80.8 #4 4.8 59.1 #10 2.0 40.6 #20 0.9 28.2 #40 0.4 22.2 #60 0.3 19.0 #100 0.2 16.7 #200 0.1 14.4 20 10 10 10 10 10 10 10 10 10	1"	25.0	100.0						1	ΪŅ																	
3/8" 9.5 80.8 #4 4.8 59.1 #10 2.0 40.6 #20 0.9 28.2 #40 0.4 22.2 #60 0.3 19.0 #100 0.2 16.7 #200 0.1 14.4 20 10 10 10 10 10 10 10 10 10	3/4"	19.0	100.0		80																						
#4	1/2"	12.5	90.6		70					\ !	\																
#10 2.0 40.6 #20 0.9 28.2 #40 0.4 22.2 #60 0.3 19.0 #100 0.2 16.7 #200 0.1 14.4 20 10 Grain Size (mm) * The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request.	3/8"	9.5	80.8		70					\ \ \ \ \ \ \ \	$\backslash \setminus$																
#10 2.0 40.6 #20 0.9 28.2 #40 0.4 22.2 #60 0.3 19.0 #100 0.2 16.7 #200 0.1 14.4 20 1000 100 10 1 0.1 0.01 0.001 0.0001 Grain Size (mm) * The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request.	#4	4.8	59.1		60					<u> </u>	V)	\															
20 10 1000 100 10 1 0.1 0.01 0.001 0.0001 Grain Size (mm) * The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009	#10	2.0	40.6	SS						1	1																
20 10 1000 100 10 1 0.1 0.01 0.001 0.0001 Grain Size (mm) * The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009	#20	0.9	28.2	/ Ma	50					<u>i</u>		\bigvee															
20 10 1000 100 10 1 0.1 0.01 0.001 0.0001 Grain Size (mm) * The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009	#40	0.4	22.2	ır By						`\																	
20 10 1000 100 10 1 0.1 0.01 0.001 0.0001 Grain Size (mm) * The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009	#60	0.3	19.0	Fine	40					_\		/	$\frac{1}{2}$														
20 10 1000 100 10 1 0.1 0.01 0.001 0.0001 Grain Size (mm) * The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009				ent						ľ\																	
The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009	#200	0.1	14.4	Perc	30					- }	\ H			\ \ -													
The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009					20						Ì																
The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009																10	•										
* The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009 September 23, 2009																											
* The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009						00	100	0		10			1			0.1			0.0	01			0.00	1		0.00	001
* The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009													Grai	in Si	ze (n	ım)											
* The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request. DE September 23, 2009					В	OULDER	COBBLE		GRA	VEL			:	SAND							FINE	S (Silt,	Clay)				
only. Interpretation of the data can be provided upon request. DE September 23, 2009																											_
only. Interpretation of the data can be provided upon request. DE September 23, 2009					* TI	no toot	data ai u	on ho	roin n	ortois	to 1	tha a	omolo	nro	vidos	l on!	. Thi	io ror	ort -	2000	.4i4, ,4.	00.0	tost	ina	oon <i>i</i>		
					11	ie iest (uala YIVE															es a	เษรโ	ng :	servi	U U	
· · · · · · · · · · · · · · · · · · ·		DE				Septe	mber 2	23, 2	2009																		
		TESTED BY				-	DATE							CHE	CKED	BY							D	ATE			







PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

November 9, 2009

DATE

Project No.: 09-1428-5007 (2000) Sample No.:

Client: AEM

Remarks:

Project: Meadowbank Gold Project

Damian Edwards

TESTED BY

Location: Nunavut

Water content=0.8%

Sa. Location: SWD Sta. 10+640 Bedding layer in place El. 135.5m Material Specification: Fine Filter

179

Field Label: SWD 102409-02

Depth (m): NA Lab ID No: SA179

October 24, 2009 **Date Sampled:**

only. Interpretation of the data can be provided upon request.

Glen Rutherford

CHECKED BY

COMBINED, WASHED Method:

Date Tested: October 31, 2009

Sieve Size (USS) (mr 3.5" 87 3" 75 2" 50 1.5" 37	.5 100.0	s	ize of openi													
3.5" 87 3" 75 2" 50	.5 100.0	S	ize of openi													
2" 50	0 100.0		24 1		3 11/2	3/4				eve Size, 20 #40		neshes / inch 00	USCS	GRAIN SI	ZE SCAL	E
	.00.0	100				٩.	\									
1.5" 37	.0 100.0					\\	Ì									
	.5 100.0	90														
1" 25	.0 100.0					I	Ĭ,									
3/4" 19	.0 87.3	80				1										
1/2" 12	.5 55.0					1										
3/8" 9.	5 38.2	70														
#4 4.	8 14.7	-														
#10 2.	0 6.6	ි 60 ගූ						$\prod \lambda$								
#20 0.	9 4.5	₩ 20 50					1		\setminus							
#40 0.	4 3.7	9 20					\		/							
#60 0.	3 3.3	Eine 40					\		\							
#100 0.	2 3.0	Percent Finer By Mass					7		\							
#200 0.	1 2.5	9 30					_//			N						
		_					\									
		10														
		0	000	100)		10		1		0.1		0.01	0	.001	0.00
		Ī						1	Gra		e (mm)					
			BOULDER	COBBLE		GRAV	EĹ			SAND			FII	NES (Silt, C	lay)	

October 31, 2009



180

NA

SWD 102409-02



PARTICLE SIZE ANALYSIS OF SOILS

Reference

ASTM C136-06 & C117-04

Project No.: 09-1428-5007 (2000)

Client: AEM

Remarks:

Project: Meadowbank Gold Project

Water content=1.6%

Location: Nunavut Lab ID No: SA180 **Date Sampled:** October 24, 2009

Sample No.:

Field Label:

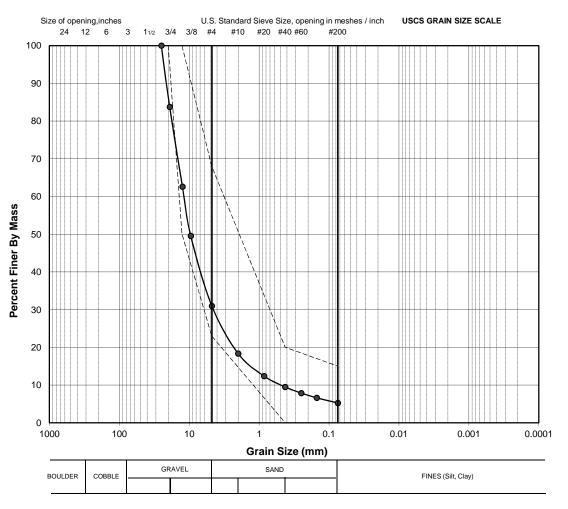
Depth (m):

Method:

Sa. Location: SWD Sta. 10+640 Bedding layer in place El. 133.5m Material Specification: Fine Filter

COMBINED, WASHED **Date Tested:** October 31, 2009

Sieve (USS)	e Size (mm)	Passing %
3.5"	87.5	100.0
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.0	83.8
1/2"	12.5	62.6
3/8"	9.5	49.6
#4	4.8	31.0
#10	2.0	18.4
#20	0.9	12.4
#40	0.4	9.5
#60	0.3	7.9
#100	0.2	6.6
#200	0.1	5.3



^{*} The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request.

Damian Edwards	October 31, 2009	Glen Rutherford	November 9, 2009
TESTED BY	DATE	CHECKED BY	DATE





PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

Project No.: 09-1428-5007 (2000)

Client: **AEM**

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=1.5%

Sa. Location: SWD Sta. 10+810 Bedding layer in place El. 138 m

Sample No.: 190

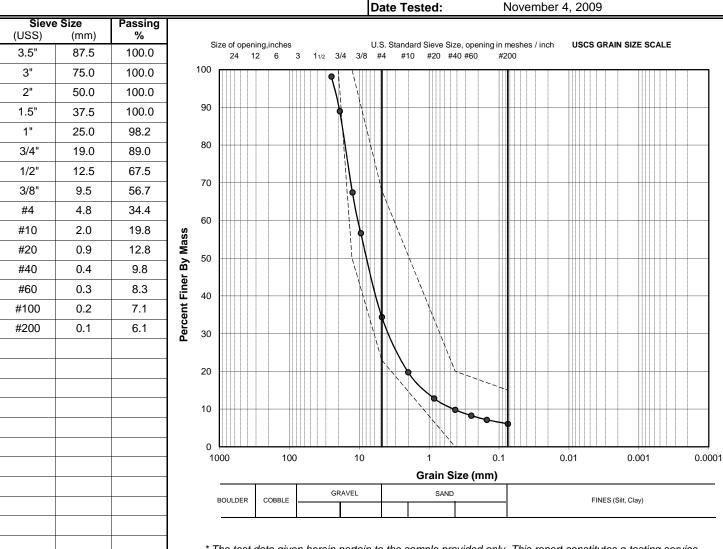
Field Label: SWD 110309-01

Depth (m): NA Lab ID No: SA190

Date Sampled: November 3, 2009

Material Specification: Fine Filter

Method: COMBINED, WASHED



^{*} The test data given herein pertain to the sample provided only. This report constitutes a testing service only. Interpretation of the data can be provided upon request.

Damian Edwards	November 4, 2009	Glen Rutherford	November 9, 2009
TESTED BY	DATE	CHECKED BY	DATE





PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

Project No.: 09-1428-5007 (2000)

Client: **AEM**

Project: Meadowbank Gold Project

Location: Nunavut

Remarks: Water content=0.7%

Sa. Location: SWD Sta. 10+770 Bedding layer in place El 137 m

Sample No.: 191

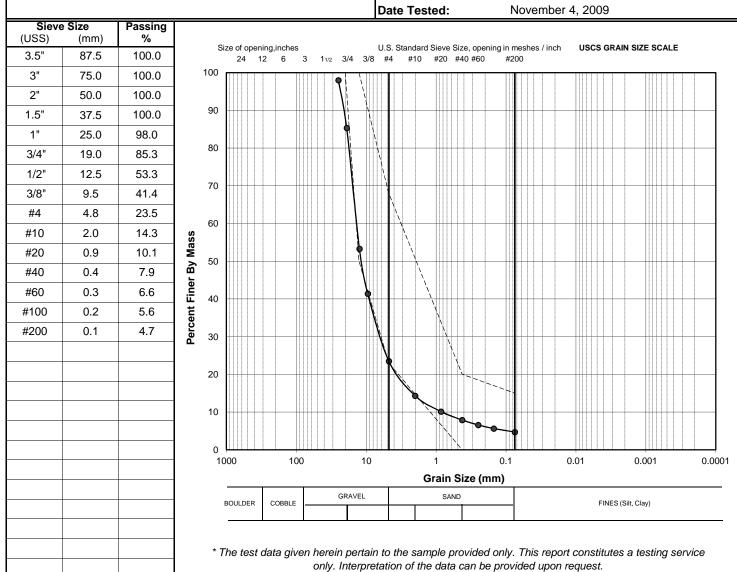
SWD 110309-02 Field Label:

Depth (m): NA Lab ID No: SA191

Date Sampled: November 3, 2009

Material Specification: Fine Filter

Method: COMBINED, WASHED



Damian Edwards November 4, 2009 Glen Rutherford November 9, 2009 TESTED BY CHECKED BY DATE DATE





PARTICLE SIZE ANALYSIS OF SOILS

Reference ASTM C136-06 & C117-04

March 15,2010

DATE

Project No.: 09-1428-5007

Client: AEM

Remarks:

Project: Meadowbank Gold Project

PC

TESTED BY

Sa. Location: SWD Sta. 10+565 Bedding layer in place El. 139 m

Location: Nunavut Sample No.: 194

SWD110609-1 Field Label

Depth (m): NA Lab ID No: 41

Date Sampled: November 6, 2009

Material Specification: Fine Filter

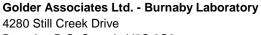
Method: SPLIT WASHED

LP

CHECKED BY

								Me	thod:			S	PLIT	, WA	SHE	D						
								Dat	e Tes	ted:			Ma	rch 1	2, 20	10						
Sieve (USS)	Size (mm)	Passing %																				
3.5"	87.5	100.0	1		f opening,ind 24 12		11/2 3/4		6. Standa		Size, ope #40 #6		eshes / ‡200	inch	U	scs	GRAIN	SIZE	SCAL	.E		
3"	75.0	100.0	1	100			7	\														\neg
2"	50.0	100.0						\														
1.5"	37.5	100.0		90			1	N. III														-
1"	25.0	100.0					\															
3/4"	19.0	87.9	1	80																		1
1/2"	12.5	68.0																				
3/8"	9.5	54.5		70				P													+	
#4	4.8	34.7																				
#10	2.0	21.8		60			1	V														
#20	0.9	15.0	Ma	50				٦	\													
#40	0.4	11.5	l B					\ \		`\												
#60	0.3	9.7	Fine	40				\mathbb{N}		`\												
#100	0.2	8.4	Percent Finer By Mass						L	Ĭ,												
#200	0.1	7.0	Perc	30					\mathbb{N}													4
] _						$ \setminus $													
				20							1										+	1
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			-	10						~\\ <u> </u>		-	•									1
			-	0																		
				1000		100		10		1		0.	1		0.01			0.0	01		0.	.000
										Grain	Size (mm)										
			1		BOULDER	COBBLE	G	RAVEL			SAND	1					FIN	IES (Silt,	, Clay)	_	_	
			-																			

March 12, 2010





PARTICLE SIZE ANALYSIS OF SOILS

Reference

ASTM C136-06 & C117-04

March 15,2010

DATE

Project No.: 09-1428-5007

Client: AEM

Remarks:

Project: Meadowbank Gold Project

PC

TESTED BY

Location: Nunavut Sample No.: 195

SWD110609-2 Field Label:

Depth (m): NA Lab ID No: 41

Date Sampled: November 6, 2009

Sa. Location: SWD Sta. 10+440 Bedding layer in place El. 138 m Material Specification: Fine Filter

Interpretation of the data can be provided upon request.

LP

CHECKED BY

Method: SPLIT, WASHED Data Tastadi March 12 2010

						D	ate Test	ed:	Ma	arch 12, 201	0		
	e Size	Passing											
(USS)	(mm)	%	Size	e of opening	inches.		U.S. Standard	Sieve Size. c	pening in meshes	/ inch US	CS GRAIN S	SIZE SCALE	
3.5"	87.5	100.0		24 12		11/2 3/4 3/8		#20 #40					
3"	75.0	100.0	100										
2"	50.0	100.0											
1.5"	37.5	100.0	90			l li N							
1"	25.0	100.0	- 00			 							
3/4"	19.0	82.0	80			l li	1						8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
1/2"	12.5	51.2	70				\						
3/8"	9.5	37.7	70										
#4	4.8	20.5	60										8 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
#10	2.0	12.1											8 8 8 8 8 8 8 8 8
#20	0.9	8.4	№ 50			•							1 1 1 1 1 1 1 1 1 1 1 1 1
#40	0.4	6.5	9				\						
#60	0.3	5.5	40 Hin			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		\					# # # # # # # # # # # # # # # # # # #
#100	0.2	4.9	Percent Finer By Mass										
#200	0.1	4.1	Per 30										
			_				\ <u>'</u>						
			20				X						
									7777				
			10				°	\					
									•••				
			100	 	100	10		\\. 1	0.1	0.01		0.001	0.0001
				50	100	10		' Grain Size		0.01		0.001	0.0001
						GRAVEL		SAND	- ()				
]	BOULDER	COBBLE			3.110			FINES (S	Silt, Clay)	
				-					!				
			* 7	he test d	ata given	herein pertain	to the sam	ple provid	ed only. This	report constitu	ıtes a tes	ting service	only.

March 12, 2010



Mrs Fiona Esford

Report:

Date: December 14, 2009 S785-003-39772A

Golder Associates Ltd IDENTIFICATION:

Bituminous membrane: Roll AA9XR Panel 273

Project name: Meadowbank Gold Project #: 09-1428-5007 Received: December 7, 2009

STANDARD:

TEST: Nominal Thickness of Geosynthetics ASTM D5199-01 (2006)

TEST CONDITIONS: Conditioned sample(s) (21 °C, 65 % R.H.);

Dimension of the test specimens: minimum diameter of 75 mm;

Apparatus: Mitutoyo - measuring unit: inch (has precedence on the values in mm);

Diameter of the presser foot: 6.35 mm;

Pressure applied: 20 kPa; Loading time interval: 5 sec.;

Tested December 11, 2009

RESULTS:		Indiv	vidual Data			Avg.	S.D.	% CV	
Thickness (mils):	187 187	193 173	180 174	180 175	179 170	180	7	4.1	
Thickness (mm):	4.75 4.75	4.89 4.38	4.56 4.42	4.56 4.43	4.55 4.31	4.56	0.19	4.1	

Prepared by:

Technician

Approved by:

Eric Blond, Eng., M.Sc

Date: December 14, 2009

Vice-President

For any information concerning this report, please contact Eric Blond



Mrs Fiona Esford **Golder Associates Ltd**

Date: December 14, 2009 Report:

S785-003-39772A

IDENTIFICATION:

Bituminous membrane: Roll AA9XR Panel 273

Project name: Meadowbank Gold Project #: 09-1428-5007 Received: December 7, 2009

STANDARD:

TEST: Density and Specific Gravity (Relative Density) of Plastics by ASTM D792 - 08 Method A

TEST CONDITIONS:

Displacement Conditioned sample(s) (21°C, 65% R.H.);

Test method A;

Temperature of water (°C): 21.1 Tested December 11 and 14, 2009

RESULTS:

Individual Data

Avg.

S.D.

% CV

Density (g/cm³):

1.268 1.271 1.270 0.002 0.2

Prepared by:

Technician

Approved by:

Eric Blond, Eng., M.Sc.A

Date: December 14, 2009

Vice-President

For any information concerning this report, please contact Eric Blond



Mrs Fiona Esford **Golder Associates Ltd** Date: December 11, 2009

S785-003-39773A Report:

Avg.

22.6

S.D.

% CV

IDENTIFICATION:

Bituminous membrane seam: DT Panel 217/218, DT Panel 224/225, DT Panel 238/239, DT Panel 241/242,

DT Panel 253/254, DT Panel 284/285 Project name: Meadowbank Gold

Project #: 09-1428-5007 Received: December 7, 2009

STANDARD:

RESULTS:

DT Panel 217/218

Maximum load value (N):

Seam strength (kN/m):

TEST: Determining the Tensile Shear Strength of Pre-Fabricated ASTM D7056 - 07

Bituminous Geomembrane Seams

TEST CONDITIONS: Apparatus used: Dynamometer with a Constant Rate of Extension (CRE);

Speed: 50 mm/min.;

5 test specimens per product;

Conditioned sample(s) 24 hours at $21 \pm 2^{\circ}$ C, 30 à 50% R.H.);

Tested December 9, 2009

Width of seam, in the direction of the test (mm):	95.0	92.0	118.0	100.0	114.0				
Width of specimen, perpendicular to the direction of the test (mm):	50.5	50.5	50.5	50.5	50.5				******
Maximum load value (N):	61.5	77.6	150.6	696.9	1214.1	440.1	505.9	114.9	*******
Seam strength (kN/m):	1.23	1.55	3.01	13.94	24.28	8.80	10.12	114.9	
DT Panel 224/225									
Width of seam, in the direction of the test (mm):	120.0	123.0	121.0						
Width of specimen, perpendicular to the direction of the test (mm):	49.5	50.5	50.5						

1137

1126

Individual Data

Prepared by:

Catherine Grokeau Rivard Catherine Groleau Rivard, Tech. Technician

Approved by:

Eric Blond, Eng., M.Sc.A

Date: December 11, 2009

Vice-President

For any information concerning this report, please contact Eric Blond



Mrs Fiona Esford

Golder Associates Ltd IDENTIFICATION:

Date: December 11, 2009

Report: S785-003-39773A

Bituminous membrane seam: DT Panel 217/218, DT Panel 224/225, DT Panel 238/239, DT Panel 241/242,

DT Panel 253/254, DT Panel 284/285 Project name: Meadowbank Gold

Project #: 09-1428-5007 Received: December 7, 2009

STANDARD:									
TEST: Determining the			of Pre-Fabri	icated		ASTM D7056	6 - 07		
RESULTS (CONT):	omemorane Se		vidual Data	a		Avg.	S.D.	% CV	
DT Panel 238/239						Ü			
Width of seam, in the direction of the test (mm):	110.0	97.0	110.0	113.0					
Width of specimen, perpendicular to the direction of the test (mm):	49.5	50.5	50.5	50.5					
Maximum load value (N):	1042	1139	1058	1059		1 075	44	4.1	
Seam strength (kN/m):	20.9	22.8	21.2	21.2		21.5	0.9	4.0	
DT Panel 241/242									
Width of seam, in the direction of the test (mm):	107.0	117.0	113.0	108.0	109.0				
Width of specimen, perpendicular to the direction of the test (mm):	50.5	50.5	50.0	50.0	50.5				
Maximum load value (N):	1227	1237	1312	1205	1236	1 243	40	3.3	
Seam strength (kN/m):	24.5	24.7	26.2	24.1	24.7	24.8	0.8	3.2	
DT Panel 253/254									
Width of seam, in the direction of the test (mm):	136.0	131.0	128.0	141.0	130.0				
Width of specimen, perpendicular to the direction of the test (mm):	50.5	50.5	50.5	50.5	50.0				
Maximum load value (N):	1291	1173	970	1188	1174	1 159	117	10.1	
Seam strength (kN/m):	25.8	23.5	19.4	23.8	23.5	23.2	2.3	10.0	

Prepared by:

Catherine Groleau Rivard, Tech.
Technician

Approved by:

Eric Blond, Eng., M.Sc.A. Vice-President

Date: December 11, 2009

For any information concerning this report, please contact Eric Blond



Mrs Fiona Esford

Golder Associates Ltd

Date: December 11, 2009

Report: \$785-003-39773A

IDENTIFICATION:

Bituminous membrane seam: DT Panel 217/218, DT Panel 224/225, DT Panel 238/239, DT Panel 241/242,

DT Panel 253/254, DT Panel 284/285

Project name: Meadowbank Gold Project #: 09-1428-5007 Received: December 7, 2009

ST	ΓA	N	DA	R	D·

TEST:	Determining the	Tensile Shear	Strength o	f Pre-Fabri	cated		ASTM D7056	5 - 07		
1	Bituminous Geor	nembrane Se	ams							
RESULTS (CONT):			Indi	vidual Data	a		Avg.	S.D.	% CV	
DT Panel 284/285										
Width of seam, in the direction (mm):	on of the test	117.0	121.0	125.0	110.0	115.0				
Width of specimen, perpendic direction of the test (mm):	cular to the	50.5	50.0	50.5	50.5	50.5				
Maximum load value (N):		1125	1111	1234	1105	1150	1 145	53	4.6	
Seam strength (kN/m);		22.5	22.2	24.7	22.1	23.0	22.9	1.1	4.7	

REMARKS:

DT Panel 224/225 and DT Panel 238/239: The size of the samples received was not sufficient to conduct the number of specimens required by the test method.

Prepared by:

Catherine Groleau Rivard, Tech.
Technician

Approved by:

Eric Blond, Eng., M.Sc.A. Vice-President Date: December 11, 2009

For any information concerning this report, please contact Eric Blond



Wits I folia Estola		Date.	December 11, 2009
Golder Associates Ltd		Report:	S785-003-39819A
IDENTIFICATION:	Bituminous membrane seam: DT Panel 270/271.	, DT Panel 275/276, DT Pa	nel 279/280, DT Panel 296/297

Date: December 11, 2009 Report:

IDENTIFICATION:

Project name: Meadowbank Gold Project #: 09-1428-5007 Received: December 9, 2009

STANDARD:

Mrs Fiona Feford

TEST: Determining the Tensile Shear Strength of Pre-Fabricated ASTM D7056 - 07

Bituminous Geomembrane Seams

TEST CONDITIONS: Apparatus used: Dynamometer with a Constant Rate of Extension (CRE);

Speed: 50 mm/min.;

5 test specimens per product;

Conditioned sample(s) 24 hours at $21 \pm 2^{\circ}$ C, 30 à 50% R.H.);

Tested December 11, 2009

RESULTS:		Indi	vidual Data	1		Avg.	S.D.	% CV	_
DT Panel 270/271									
Width of seam, in the direction of the test (mm):	91.0	78.0	80.0	78.0	84.0				
Width of specimen, perpendicular to the direction of the test (mm):	50.5	50.5	50.5	50.5	50.5				12.22
Maximum load value (N):	1088	908	1012	1013	1192	1 043	105	10.1	
Seam strength (kN/m):	21.8	18.2	20.2	20.3	23.8	20.9	2.1	10.0	

DT Panel 275/276									
Width of seam, in the direction of the test (mm):	68.0	70.0	90.0	98.0	114.0				
Width of specimen, perpendicular to the direction of the test (mm):	50.5	50.5	50.5	50.5	50.5	*********			
Maximum load value (N):	1226	1139	1061	1175	1186	1 157	62	5.4	
Seam strength (kN/m):	24.5	22.8	21.2	23.5	23.7	23.1	1.2	5.4	

Prepared by:

Catherine Groleau Rivard, Tech. Technician

Approved by:

Eric Blond, Eng., M.Sc.A. Vice-President

Date: December 11, 2009

For any information concerning this report, please contact Eric Blond



Mrs Fiona Esford
Golder Associates Ltd

Date: December 11, 2009

Report:

S785-003-39819A

IDENTIFICATION:

Bituminous membrane seam: DT Panel 270/271, DT Panel 275/276, DT Panel 279/280, DT Panel 296/297

Project name: Meadowbank Gold Project #: 09-1428-5007

Received: December 9, 2009

STANDARD:	ST	'AN	\mathbb{D}^{A}	١R	D:
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TEST: Determining the Bituminous Geo		_	of Pre-Fabri	cated		ASTM D7056	5 - 07		
RESULTS (CONT):	illembrane se		vidual Data	a.	-	Avg.	S.D.	% CV	
DT Panel 279/280									
Width of seam, in the direction of the test (mm):	94.0	93.0	98.0	100.0	90.0				
Width of specimen, perpendicular to the direction of the test (mm):	50.5	50.5	50.5	50.5	50.5			*****	
Maximum load value (N):	1225	1175	1142	1201	1066	1 162	62	5.3	
Seam strength (kN/m);	24.5	23.5	22.8	24.0	21.3	23.2	1.2	5.4	
DT Panel 296/297									
Width of seam, in the direction of the test (mm):	170.0	168.0	171.0	173.0	165.0				
Width of specimen, perpendicular to the direction of the test (mm):	50.5	50.5	50.5	50.5	50.5	**********	*****		
Maximum load value (N):	1152	1288	1115	1250	1224	1 206	71	5.9	
Seam strength (kN/m):	23.1	25.8	22.3	25.0	24.5	24.1	1.4	5.9	

Prepared by:

Catherine Groleau Rivard, Tech.
Technician

Approved by:

Eric Blond, Eng., M.Sc.A. Vice-President Date: December 11, 2009

For any information concerning this report, please contact Eric Blond



		S	CC Acer	eunanon	NU.: 40						
Mrs Fiona Esford							Date:	Janu	ary 25,	2010	
Golder Associates Ltd						I	Report:	S785	5-003-4	0733A	
IDENTIFICATION:	Bituminous men	nbrane sear	n: DT Par	nel 228/22	9, DT Pan	el 246/247	7, DT Pa	nel 25	8/259,	DT Panel	267/268
	Project name: Me		fold								
	Project #: 09-1428 Received: January										
STANDARD:	Received: January	21, 2010									
TEST:	Determining the T Bituminous Geom			of Pre-Fabr	cated		ASTM D	7056 -	- 07		
TEST CONDITIONS:	Apparatus used: D		r with a Co	nstant Rate	of Extensi	on (CRE);					
	Speed: 50 mm/min 5 test specimens p										
	Conditioned samp		rs at 21 + 2	°C 55 à 70)% R H) ·						
	Tested January 25		10 41 21 22	. c, 55 u /	, , ,						
RESULTS:			Indi	vidual Data	1		A	vg.	S.D.	% CV	
DT Panel 228/229											
Width of seam, in the direct (mm):	ion of the test	85.0	88.0	90.0							
Width of specimen, perpend direction of the test (mm):		50.5	50.5	50.5							
Maximum load value (N):		1155	1140	1226			1 17	4	46	3.9	•••••
Seam strength (kN/m):		23.1	22.8	24.5		********	23.	5	0.9	3.9	

DT Panel 246/247											
Width of seam, in the direct (mm):	ion of the test	106.0	112.0	113.0	112.0	109.0					
Width of specimen, perpend direction of the test (mm):	licular to the	49.5	50.5	50.5	50.5	50.0	******		*****	****	
Maximum load value (N):		1258	1162	1241	1235	1180	1 21	5	42	3.4	
Seam strength (kN/m):		25.2	23.2	24.8	24.7	23.6	24.	3	0.9	3.5	

Prepared by:

Catherine Grokeau Rivard Catherine Groleau Rivard, Tech. Technician

Approved by:

Eric Blond, Eng., M.Sc.A. Vice-President

Date: January 25, 2010

For any information concerning this report, please contact Eric Blond



Mrs Fiona Esford

Golder Associates Ltd

Date: January 25, 2010

Report: S785-003-40733A

IDENTIFICATION:

Bituminous membrane seam: DT Panel 228/229, DT Panel 246/247, DT Panel 258/259, DT Panel 267/268

Project name: Meadowbank Gold Project #: 09-1428-5007

Received: January 21, 2010

STANDARD:									
		Tensile Shear Strength of Pre-Fabricated omembrane Seams				ASTM D7056 - 07			
RESULTS (CONT):		Individual Data					S.D.	% CV	
DT Panel 258/259									
Width of seam, in the direction of the test (mm):	147.0	147.0	105.0	125.0	148.0				
Width of specimen, perpendicular to the direction of the test (mm):	49.5	50.5	50.0	50.0	50.0				
Maximum load value (N):	1092	1078	975	1101	1182	1 086	74	6.8	•••••
Seam strength (kN/m):	21.8	21.6	19.5	22.0	23.6	21.7	1.5	6.7	
DT Panel 267/268									
Width of seam, in the direction of the test (mm):	70.0	75.0	91.0	100.0					
Width of specimen, perpendicular to the direction of the test (mm):	50.5	50.0	50.5	50.5		******			
Maximum load value (N):	594	488	1148	1192		856	366	42.8	
Seam strength (kN/m):	11.9	9.8	23.0	23.8		17.1	7.3	42.6	

REMARKS:

DT Panel 228/229 and DT Panel 267/268: The size of the samples received was not sufficient to conduct the number of specimens required by the test method.

Prepared by:

Catherine Groleau Rivard, Tech.
Technician

Approved by:

Eric Blond, Eng., M.Sc.A. Vice-President

Date: January 25, 2010

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