APPENDIX G

Geosynthetic Conformance Test Results

- Interface Friction Testing
- Geosynthetic Clay Liner
- Geomembrane (60-mil)
- Geotextile

Interface Friction Testing

TABLE 1

ONONDAGA LAKE SEDIMENT CONSOLIDATION AREA
Camillus, NY

TESTED COMPONENTS	SHEAR RATE	REF TEST No.	SUMMARY OF STRESSES												SUMMARY OF RESULTS			
			PEAK						LARGE DISPLACEMENT						PEAK		RESIDUAL	
			Normal Stress (psi)						Normal Stress (psi)						n	Friction Angle	n	Friction Angle
			5	5	15	15	24	24	5	5	15	15	24	24				
			Normal Stress (psf)						Normal Stress (psf)									
			700	700	2,100	2,100	3,500	3,500	700	700	2,100	2,100	3,500	3,500				
			Shear Stress						Shear Stress									
Phase I			(psi)	(^{o})	(psi)	(^{o})	(psi)	(^{o})	(psi)	(^{o})	(psi)	(^{o})	(psi)	(^{o})	(psf)	(^{o})	(psf)	(^{o})
Gravel/24 oz Geotextile/60 mil HDPE/Mar. Clay	@ 0.04 in/min	C1	3.1	32.6	8.8	31.1	12.9	28.0	2.3	25.4	7.7	27.8	10.9	24.1	131	27	77	24
Gravel/24 oz Geotextile/60 mil HDPE/Blk Crk Clay	@ 0.04 in/min	C2	2.5	27.4	6.9	25.2	8.7	19.6	2.4	26.5	6.4	23.7	8.2	0.1	203	18	196	16

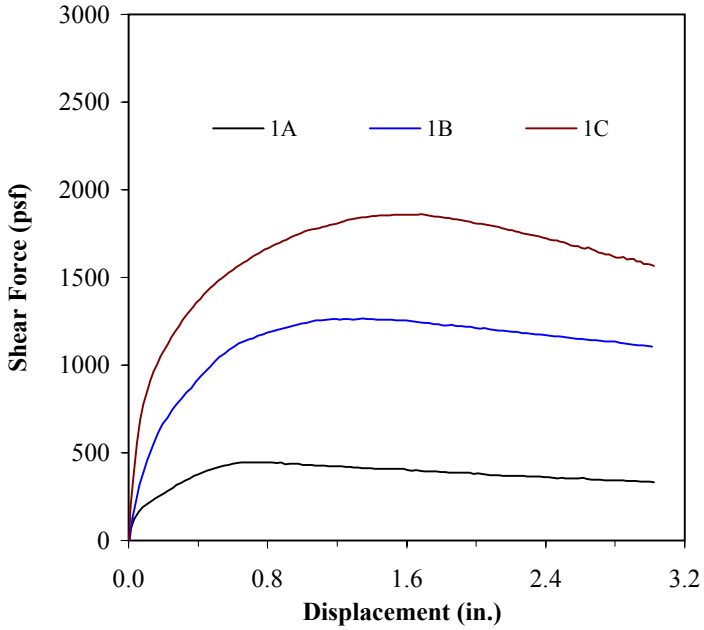
Notes:

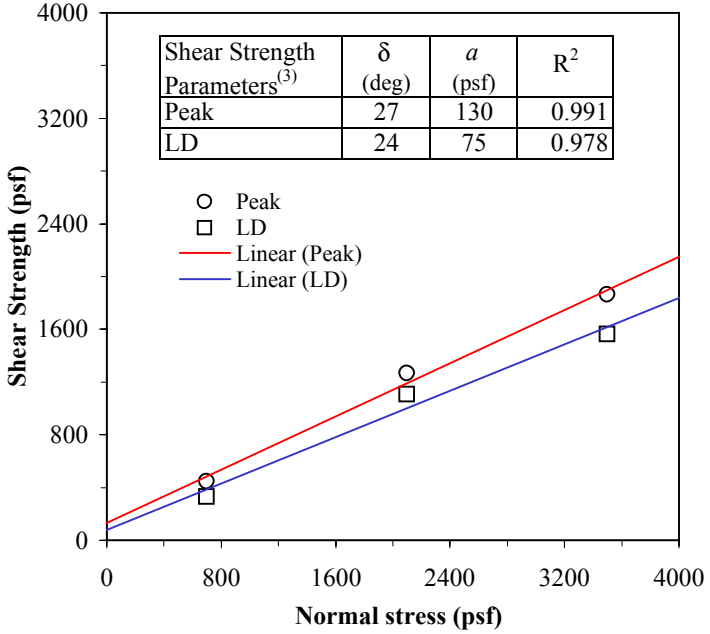
(1) Apparent friction angles are calculated by taking the arctan of shear stress /normal stress.

(2) Large displacement shear strength using the shear force at the end of the test.

GEOSYNTEC CONSULTANTS - ONONDAGA SCA PHASE 1
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)

Upper Shear Box: Drainage gravel nominally compacted/
GSE 240E (24 oz) nonwoven geotextile #130401943 with heart-treated side up/
GSE 60-mil textured HDPE geomembrane # 102158865/
Lower Shear Box: Marcellus clay #LP-087compacted to approximately 95% of max standard Proctor density at 3% wet of OMC (OMC = 19.5%)





Shear Strength Parameters[3]	δ (deg)	*a* (psf)	R^2
Peak	27	130	0.991
LD	24	75	0.978

Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	Soaking		Consolidation		Drainage Gravel			Clay			GCL		Shear Strength		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_f (%)	γ_d (pcf)	ω_i (%)	ω_f (%)	ω_i (%)	ω_f (%)	τ_P (psf)	τ_{LD} (psf)	
1A	12 x 12	700	0.004	-	-	700	24	-	-	-	102.8	21.7	20.5	-	-	447	332	(1)
1B	12 x 12	2100	0.004	-	-	2100	24	-	-	-	102.5	22.1	20.1	-	-	1268	1107	(2)
1C	12 x 12	3500	0.004	-	-	3500	24	-	-	-	102.6	21.9	19.0	-	-	1862	1565	(2)

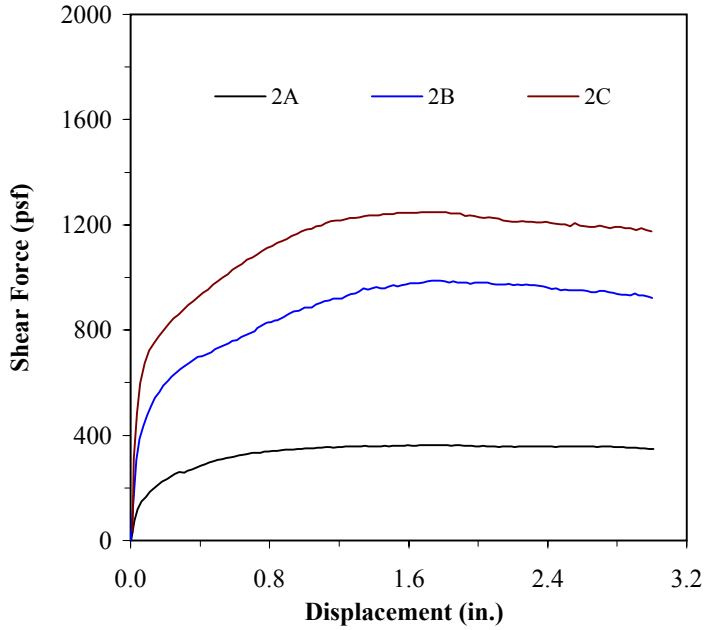
NOTES:
(1) Sliding occurred at the interface between the geotextile and geomembrane
(2) Sliding occurred at the interface between the geomembrane and clay.
(3) The reported total-stress parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using these strength parameters for applications involving normal stresses outside the range of the stresses covered by the test series. The large-displacement (LD) shear strength was calculated using the shear force measured at the end of the test.

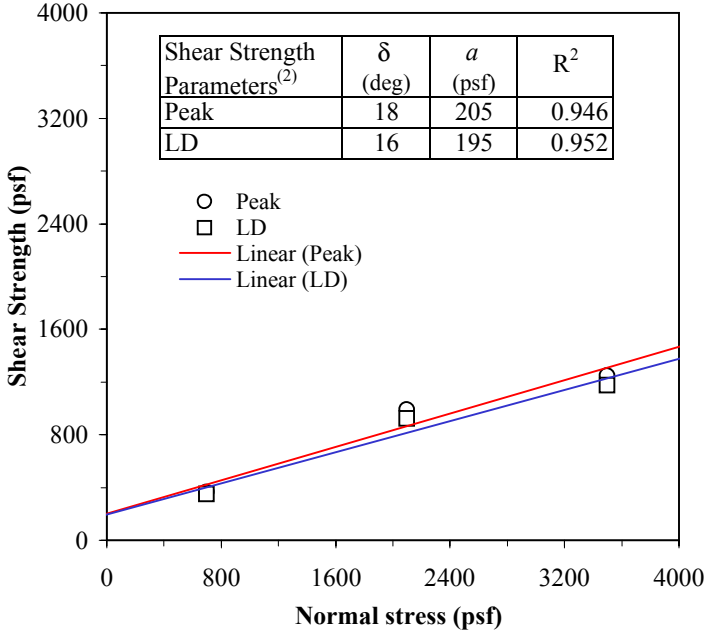
SGI TESTING SERVICES, LLC

DATE OF REPORT:	7/31/2011
FIGURE NO.	C-1
PROJECT NO.	SGI11017
DOCUMENT NO.	
FILE NO.	

GEOSYNTEC CONSULTANTS - ONONDAGA SCA PHASE 1
INTERFACE DIRECT SHEAR TESTING (ASTM D 5321)

Upper Shear Box: Drainage gravel nominally compacted/
GSE 240E (24 oz) nonwoven geotextile #130401943 with heart-treated side up/
GSE 60-mil textured HDPE geomembrane # 102158865/
Lower Shear Box: Black Creek clay #LP-088 compacted to approximately 95% of max standard Proctor density at 3% wet of OMC (OMC = 22%)





Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	Soaking		Consolidation		Drainage Gravel			Clay			GCL		Shear Strength		Failure Mode
				Stress (psf)	Time (hour)	Stress (psf)	Time (hour)	γ_d (pcf)	ω_i (%)	ω_f (%)	γ_d (pcf)	ω_i (%)	ω_f (%)	ω_i (%)	ω_f (%)	τ_P (psf)	τ_{LD} (psf)	
2A	12 x 12	700	0.004	-	-	700	24	-	-	-	97.1	24.7	23.4	-	-	363	349	(1)
2B	12 x 12	2100	0.004	-	-	2100	24	-	-	-	97.4	24.4	23.7	-	-	989	923	(1)
2C	12 x 12	3500	0.004	-	-	3500	24	-	-	-	97.6	24.1	23.2	-	-	1249	1175	(1)

NOTES:
(1) Sliding occurred at the interface between the geomembrane and clay.
(2) The reported total-stress parameters of friction angle and adhesion were determined from a best-fit line drawn through the test data. Caution should be exercised in using these strength parameters for applications involving normal stresses outside the range of the stresses covered by the test series. The large-displacement (LD) shear strength was calculated using the shear force measured at the end of the test.

SGI TESTING SERVICES, LLC

DATE OF REPORT:	7/31/2011
FIGURE NO.	C-2
PROJECT NO.	SGI11017
DOCUMENT NO.	
FILE NO.	

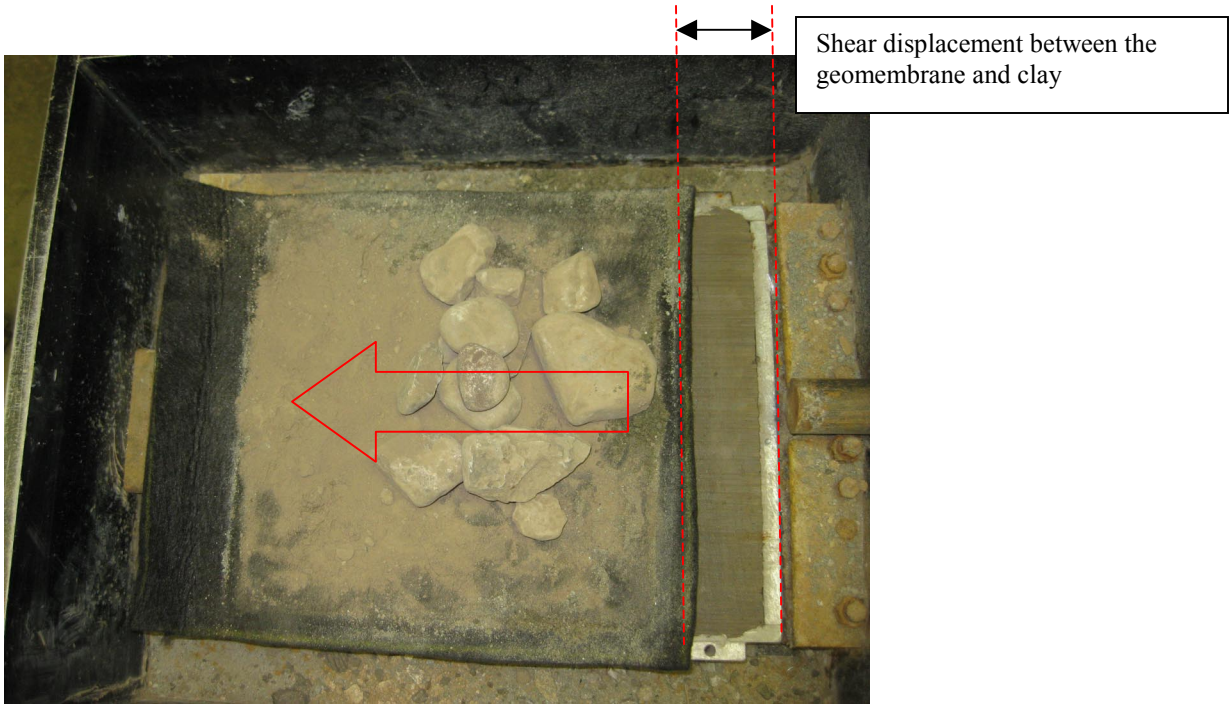


Figure 1. Sliding at the interface between the geomembrane and clay #LP-088 (Test #2B at 2100 psf).

Figure 2. Deformed top surface of the geomembrane at the completion of Test #2C at 3500 psf.

Figure 3. . Top surface of the clay at the completion of Test #2C at 3500 psf.

Figure 4. Deformed top surface of the geomembrane at the completion of Test #1C at 3500 psf.

Figure 5. Top surface of the clay at the completion of Test #1C at 3500 psf.

Figure 6. Sliding (shear failure) at the interface between the geotextile and geomembrane (Test #1A at 700 psf).

Geosynthetic Clay Liner

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetics Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	06/10/11	Checked By: jdt
Sample ID:	GCL Roll #502182230 (GC-01) Cap/Top	
Description:	GSE Bentoliner NSL (white non-woven/gray woven) White non-woven textile portion tested.	

Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	7.9	268
2	6.9	234
3	8.4	286
4	7.5	253
5	7.0	237
Average	7.5	256
Standard Deviation	0.6	21.5

Comments: Specimen Size, in: 4 inch x 8 inch

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetics Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	06/10/11	Checked By: jdt
Sample ID:	GCL Roll #502182230 (GC-01) Carrier/Bottom	
Description:	GSE Bentoliner NSL (white non-woven/gray woven) Gray woven textile portion tested.	

Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	3.9	131
2	3.9	131
3	3.8	128
4	3.8	128
5	4.0	137
Average	3.9	131
Standard Deviation	0.1	3.7

Comments: Specimen Size, in: 4 inch x 8 inch

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	06/20/11	Checked By:	jdt

Fluid Loss of Clay Component of Geosynthetic Clay Liners by ASTM D 5891

Sample ID	Start Temperature, °C	End Temperature, °C	Collected Volume, mL	Fluid Loss, mL
GCL Roll #502182230 (GC-01) GSE Bentoliner NSL (white non-woven/gray woven)	23.7	23.1	8.45	16.90

≤ 18 mL

PGR

Comments: Sampling Method: Obtained from center of GCL sample provided.

Clay Source: White non-woven/gray woven GCL

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	6/20/2011	Checked By: bfs

Determination of Water Content of Soil by Microwave Oven Heating (ASTM D 4643)

Testing Oven:	Rival Microwave
Testing Setting:	High

Sample ID:	Drying Cycle, minutes	Moisture Content, %
GCL Roll #502182230 (GC-01) GSE Bentoliner NSL (white non-woven/gray woven) Bentonite portion tested	3 minute	12.4
	1 minute	12.6
	1 minute	12.8
	1 minute	12.9

Comments: Minimum 100 g sample was tested.
Testing considered complete when the change of the initial wet mass of the soil is < 0.1%.

≤ 40%

JNB

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	dd
Test Date:	06/20/11	Checked By:	bfs

Swell Index of Clay Mineral Component of Geosynthetic Clay Liners by ASTM D 5890

Sample ID	Swell Index, mL/2 g	Temp., °C
GCL Roll #502182230 (GC-01) GSE Bentoliner NSL (white non-woven/gray woven)	31.0 ≥ 24	22.5

Comments: Sampling Method: Obtained from center of GCL sample provided.
Clay Source: White woven/gray non-woven GCL

DOS

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetics Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	jdw
Test Date:	06/10/11	Checked By:	jdt
Sample ID:	GCL Roll #502182230 (GC-01)		
Description:	GSE Bentoliner NSL (white non-woven/gray woven)		

Measuring Mass Per Unit Area of Geosynthetic Clay Liners by ASTM D 5993

Sample Size:	3 ft x 12 ft section	Drying Method:	oven
Specimen Size, cm:	10.16 x 10.16	Drying Time, hrs:	16 hrs
Specimen Shape:	square	Drying Temperature, °C:	110 +/- 5
Cutting Method:	rectangular die		
Assumed Mass of Synthetic Component, g/m^2:	387.0		

Specimen Number	Mass Per Unit Area				Moisture Content of Clay Component of GCL, %
	Dried GCL (m_{GCL})		Dried Clay Component of GCL (m_{clay})		
	g/m^2	lb/ft^2	g/m^2	lb/ft^2	
A	4319	0.88	3932	0.81	9.7
B	4504	0.92	4117	0.84	9.7
C	4378	0.90	3991	0.82	9.2
D	4029	0.83	3642	0.75	9.2
E	3865	0.79	3478	0.71	8.8
Average	4219	0.86	3832	0.78	9.3

Comments: Assumed mass of synthetic component taken from mass per unit area results of the top and bottom textile portions of the GCL sample provided.

0.75 lb/sft
MARV

DOS

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596		
Start Date:	06/10/11	Tested By:	ema
End Date:	06/17/11	Checked By:	jdt
Sample ID:	GCL Roll #502182230 (GC-01)		
Description:	GSE Bentoliner NSL (white non-woven/gray woven)		

Index Flux of GCL Using Flex Wall Permeameter by ASTM D 5887

Permeant Fluid: De-aired tap water
Cell #: 5/3/15
Sample Preparation: Cut with circular die, trimmed with scissors and placed into permeameter; adjacent portion moisture content = 9.2%

Parameter	Initial	Final
Height, in	0.08	0.18
Diameter, in	4.12	4.16
Area, in^2	13.3	13.6
Volume, in^3	---	2.45
Mass, g	48.0	71.1
Bulk Density, pcf	---	110
Moisture Content, %	9.2	119.3
Dry Density, pcf	---	50.3

CONSOLIDATION AND BACK PRESSURE SATURATION

Initial/Final Cell Pressure, psi: 15/80 Pressure Increment, psi: 5
Initial/Final Sample Pressure, psi: 10/75 *Final pressures maintained at least 48 hours prior to flow

FLOW DATA:

Date	Elapsed Time, sec	Pressure, psi			Flow Volume, cc				Average Flow, cc	Average Flow Rate, cc/sec	Index Flux, $(cm^3/cm^2)/sec$
		Cell	Inlet	Outlet	In	Out	Δ In	Δ Out			
6/16	---	80.0	77.0	75.0	11.00	14.20	---	---	---	---	---
6/16	5160	80.0	77.0	75.0	11.30	13.80	0.30	0.40	0.35	6.8E-05	7.7E-07
6/16	----	80.0	77.0	75.0	11.30	13.80	---	---	---	---	---
6/16	9120	80.0	77.0	75.0	11.80	13.20	0.50	0.60	0.55	6.0E-05	6.9E-07
6/16	----	80.0	77.0	75.0	11.80	13.20	---	---	---	---	---
6/16	8220	80.0	77.0	75.0	12.30	12.60	0.50	0.60	0.55	6.7E-05	7.6E-07

INDEX FLUX @ 2 PSI PRESSURE DIFFERENCE: 7.4×10^{-7} $cm^3/cm^2/sec$
7.4×10^{-9} $m^3/m^2/sec$

PERMEABILITY @ 4 PSI EFFECTIVE STRESS and 20 °C: 2.4×10^{-9} cm/sec

Comments: Actual area of specimen after test used to calculate Index Flux
After test height of bentonite measured only (geotextile portions not included)
Permeability calculation based on height of bentonite portion only

$\leq 1E\text{-}6$ cm/s
DDS

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parson Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/16/11	Checked By:	bfs
Sample ID:	GCL Roll #502182230 (GC-01)		
Description:	GSE Bentoliner NSL (white non-woven/gray woven)		

Average Bonding Peel Strength Between the Top and Bottom Layers of Needle-Punched Geosynthetic Clay Liners (GCL) by ASTM D 6496

Sample Size:	2 ft. by 2 ft. sample	Testing Machine:	Instron 1000
Specimen Size:	4" x 8"	Testing Speed:	12 in/min
Condition:	Samples tested in the as-received condition	Gripping Surface:	Minimum 1" x 4"
Cutting Method:	rectangular die	Grips:	Curtis "Geo" Grip
Full Scale Force Range:	0 - 500 lbs.	Grip Separation:	2 inches

Specimen Number	Peel Strength	
	lbs	lbs / inch
1	17.7	4.4
2	20.2	5.1
3	21.0	5.3
4	22.2	5.5
5	17.1	4.3
Average	19.6	4.9

Comments:

> 2.5 lb/in

DDS

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/16/11	Checked By:	bfs
Sample ID:	GCL Roll #502182230 (GC-01)		
Description:	GSE Bentoliner NSL (white non-woven/gray woven)		

Tensile Strength of Geosynthetic Clay Liners (GCL) by ASTM D 6768

Sample Size:	3 ft. by roll width	Testing Machine:	Instron 1000
Specimen Size:	4" x 8"	Testing Speed:	12 in/min
Condition:	Samples tested in the as-received condition	Gripping Surface:	Minimum 1" x 4"
Cutting Method:	rectangular die	Grips:	Curtis "Geo" Grip
Full Scale Force Range:	0 - 500 lbs.	Grip Separation:	4 inches

Specimen Number	Peak Tensile Strength, lbf	Tensile Strength, lbf/in
1	305.8	76.5
2	310.2	77.6
3	285.4	71.4
4	322.9	80.7
5	321.9	80.5
Average	309.2	77.3

Comments: Separation of GCL occurred in all specimens.

30 lb/in
MARV
DDR

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Geomembrane

- 60-mil

60 MIL

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ea
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158832 (GM-1)		
Sample Description:	60 mil textured HDPE Geomembrane		

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	60.8
2	61.2
3	61.1
4	61.5
5	60.8
6	61.6
7	62.1
8	61.3
9	62.0
10	60.6
Average	61.3
Standard Deviation	0.49
Coefficient of Variation, %	0.80

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ea
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158807 (GM-2)		
Sample Description:	60 mil textured HDPE Geomembrane		

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	61.1
2	61.4
3	60.4
4	60.9
5	59.9
6	61.2
7	61.1
8	60.3
9	59.2
10	61.3
Average	60.7
Standard Deviation	0.69
Coefficient of Variation, %	1.14

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ea
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158784 (GM-3)		
Sample Description:	60 mil textured HDPE Geomembrane		

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	60.3
2	61.3
3	60.7
4	61.2
5	59.9
6	60.3
7	60.6
8	61.2
9	59.1
10	62.0
Average	60.6
Standard Deviation	0.78
Coefficient of Variation, %	1.29

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ea
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158872 (GM-4)		
Sample Description:	60 mil textured HDPE Geomembrane		

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	60.2
2	60.3
3	62.1
4	61.6
5	60.3
6	62.3
7	60.3
8	61.3
9	60.3
10	60.3
Average	60.9
Standard Deviation	0.80
Coefficient of Variation, %	1.31

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158909 (GM-5)		
Sample Description:	60 mil textured HDPE Geomembrane		

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	60.1
2	58.3
3	61.1
4	60.3
5	59.9
6	58.4
7	61.2
8	61.3
9	59.5
10	60.6
Average	60.0
Standard Deviation	1.03
Coefficient of Variation, %	1.72

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158854 (GM-6)		
Sample Description:	60 mil textured HDPE Geomembrane		

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	61.3
2	60.9
3	61.4
4	57.9
5	62.6
6	59.2
7	59.4
8	62.2
9	61.2
10	61.5
Average	60.7
Standard Deviation	1.39
Coefficient of Variation, %	2.30

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158890 (GM-7)		
Sample Description:	60 mil textured HDPE Geomembrane		

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	58.8
2	60.4
3	59.8
4	58.7
5	60.4
6	59.7
7	61.6
8	63.1
9	61.1
10	62.1
Average	60.5
Standard Deviation	1.35
Coefficient of Variation, %	2.23

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158634 (GM-8)		
Sample Description:	60 mil textured HDPE Geomembrane		

Measurement of the Core Thickness of Textured Geomembranes by ASTM D 5994

Testing Machine:	Mitutoyo Digimatic Indicator, Model #: IDC-112E	Pressure:	2.0 oz
Presser Foot:	cone point	Loading Time:	5 seconds
Specimen Size:	2-inch-diameter		

Measurement Number	Thickness, mils
1	60.3
2	62.1
3	57.1
4	60.1
5	59.4
6	59.0
7	59.4
8	62.2
9	59.6
10	62.1
Average	60.1
Standard Deviation	1.53
Coefficient of Variation, %	2.55

Comments:

REVIEWED BY
M. Fountain
PASS GK
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158832 (GM-1)		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	62.0	166	2680	21	179	2889	448
	2	59.2	161	2730	19	176	2972	486
	3	60.8	166	2726	19	190	3118	494
	4	57.6	170	2947	17	200	3482	504
	5	62.6	157	2514	18	184	2937	476
	Average	60.4	164	2719	19	186	3080	482
	Standard Deviation	2.07	4.71	154.7	1.5	9.72	240.8	21.4
Cross Machine	1	59.7	166	2789	17	156	2616	473
	2	62.0	171	2761	18	110	1776	374
	3	61.8	175	2828	18	187	3025	506
	4	61.4	176	2865	21	164	2664	426
	5	60.2	165	2750	19	163	2705	475
	Average	61.0	171	2799	19	156	2557	451
	Standard Deviation	1.04	4.76	47.90	1.5	28.1	465.2	51.6

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158807 (GM-2)		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	57.7	171	2965	17	205	3558	519
	2	59.9	168	2807	15	178	2967	505
	3	61.4	169	2760	17	196	3202	541
	4	60.2	162	2692	17	200	3315	536
	5	62.1	171	2747	15	173	2787	432
	Average	60.2	168	2794	16	190	3166	507
	Standard Deviation	1.68	3.64	104.0	1.1	14.2	299.9	44.1
Cross Machine	1	62.3	175	2810	14	181	2909	508
	2	60.6	177	2927	15	119	1964	399
	3	59.5	172	2893	14	192	3226	518
	4	61.2	170	2786	14	190	3108	556
	5	63.1	168	2663	17	182	2883	486
	Average	61.3	173	2816	15	173	2818	493
	Standard Deviation	1.40	3.70	103.4	1.3	30.5	498.1	58.5

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158784 (GM-3)		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature,°F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	61.4	156 ✓	2540	17 ✓	187 ✓	3046	492 ✓
	2	59.7	163 ✓	2736	17 ✓	202 ✓	3383	535 ✓
	3	58.9	171 ✓	2908	15 ✓	172 ✓	2916	487 ✓
	4	61.6	167 ✓	2711	17 ✓	189 ✓	3065	477 ✓
	5	60.3	158 ✓	2619	19 ✓	188 ✓	3118	487 ✓
	Average	60.4	163 ✓	2703	17 ✓	187 ✓	3106	496 ✓
	Standard Deviation	1.11	6.36	138.8	1.4	10.7	171.8	22.7
Cross Machine	1	60.2	163 ✓	2706	14 ✓	193 ✓	3200	552 ✓
	2	61.9	162 ✓	2618	14 ✓	166 ✓	2680	465 ✓
	3	59.2	163 ✓	2753	17 ✓	185 ✓	3125	488 ✓
	4	59.4	178 ✓	2992	17 ✓	144 ✓	2425	418 ✓
	5	61.2	162 ✓	2644	18 ✓	192 ✓	3143	577 ✓
	Average	60.4	165 ✓	2743	16 ✓	176 ✓	2915	500 ✓
	Standard Deviation	1.15	6.81	149.2	1.9	21.0	343.7	64.7

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158872 (GM-4)		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature,°F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	61.8	193	3120	17	206	3336	580
	2	59.9	159	2654	15	194	3246	511
	3	61.6	172	2798	18	169	2739	469
	4	61.9	171	2761	17	165	2660	408
	5	62.6	166	2651	18	169	2704	446
	Average	61.5	172	2797	17	181	2937	483
	Standard Deviation	1.01	12.6	191.8	1.2	18.4	325.8	65.9
Cross Machine	1	60.9	175	2880	18	169	2784	483
	2	61.1	167	2729	18	175	2865	483
	3	58.9	170	2885	15	178	3018	520
	4	59.3	171	2878	14	150	2529	469
	5	62.2	169	2713	17	100	1601	388
	Average	60.5	170	2817	16	154	2559	469
	Standard Deviation	1.36	3.16	87.77	1.8	32.5	564.1	48.9

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158909 (GM-5)		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature,°F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	60.1	168	2790	17	177	2948	486
	2	61.1	166	2718	15	177	2894	473
	3	59.0	160	2719	17	172	2908	508
	4	58.4	166	2840	15	152	2603	495
	5	61.3	166	2700	15	176	2870	468
	Average	60.0	165	2753	16	171	2845	486
	Standard Deviation	1.29	2.70	59.50	1.1	10.7	137.9	16.3
Cross Machine	1	58.3	157	2695	14	183	3131	547
	2	60.5	159	2636	13	177	2922	517
	3	59.9	172	2871	15	206	3443	521
	4	61.2	166	2713	13	180	2935	511
	5	59.5	168	2831	17	140	2356	447
	Average	59.9	165	2749	14	177	2957	509
	Standard Deviation	1.09	6.19	98.25	1.7	23.8	396.7	37.1

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158854 (GM-6)		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	61.3	167 ✓	2727	18 ✓	190 ✓	3096	538 ✓
	2	61.4	164 ✓	2677	17 ✓	102 ✓	1662	349 ✓
	3	62.6	182 ✓	2907	15 ✓	176 ✓	2812	460 ✓
	4	59.4	166 ✓	2800	17 ✓	184 ✓	3095	467 ✓
	5	61.2	155 ✓	2540	18 ✓	160 ✓	2620	455 ✓
	Average	61.2	167 ✓	2730	17 ✓	162 ✓	2657	454 ✓
	Standard Deviation	1.14	9.61	137.21	1.22	35.5	591.3	67.6
Cross Machine	1	60.9	175 ✓	2880	15 ✓	158 ✓	2590	465 ✓
	2	57.9	156 ✓	2690	15 ✓	179 ✓	3091	530 ✓
	3	59.2	173 ✓	2923	15 ✓	168 ✓	2831	464 ✓
	4	62.2	171 ✓	2744	15 ✓	180 ✓	2891	492 ✓
	5	61.5	163 ✓	2649	18 ✓	116 ✓	1890	502 ✓
	Average	60.3	167 ✓	2777	16 ✓	160 ✓	2659	491 ✓
	Standard Deviation	1.77	8.17	119.3	1.3	26.1	465.2	27.6

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158832 (GM-7)		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	58.8	170 ✓	2902	14 ✓	191 ✓	3252	448 ✓
	2	59.8	166 ✓	2777	14 ✓	179 ✓	3000	486 ✓
	3	60.4	166 ✓	2747	14 ✓	187 ✓	3092	494 ✓
	4	61.6	170 ✓	2755	15 ✓	199 ✓	3226	504 ✓
	5	61.1	171 ✓	2793	14 ✓	187 ✓	3055	476 ✓
	Average	60.3	169 ✓	2795	14 ✓	188 ✓	3125	482 ✓
	Standard Deviation	1.10	2.41	62.5	0.4	7.04	109.6	21.4
Cross Machine	1	60.4	161 ✓	2672	13 ✓	161 ✓	2673	473 ✓
	2	58.7	170 ✓	2889	13 ✓	183 ✓	3114	374 ✓
	3	59.7	166 ✓	2781	13 ✓	182 ✓	3045	506 ✓
	4	63.1	160 ✓	2532	13 ✓	166 ✓	2626	426 ✓
	5	62.1	160 ✓	2583	15 ✓	141 ✓	2265	475 ✓
	Average	60.8	163 ✓	2691	13 ✓	166 ✓	2745	451 ✓
	Standard Deviation	1.78	4.21	145.17	0.9	17.3	345.1	51.6

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/09/11	Checked By:	jdt
Sample ID:	Roll #102158634 (GM-8)		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature,°F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	58.8	170	2902	15	191	3246	502
	2	59.8	166	2778	17	94	1570	252
	3	60.4	165	2736	17	179	2973	457
	4	61.6	170	2755	17	187	3032	477
	5	61.1	170	2780	15	190	3102	491
	Average	60.3	168	2790	16	168	2785	436
	Standard Deviation	1.10	2.43	64.84	1.1	41.7	686.4	104
Cross Machine	1	60.4	161	2672	17	158	2616	474
	2	58.7	170	2889	17	183	3114	547
	3	59.7	166	2781	18	141	2371	520
	4	63.1	160	2532	15	(83)	1320	314
	5	62.1	160	2586	18	95	1530	411
	Average	60.8	163	2692	17	132	2190	453
	Standard Deviation	1.78	4.18	144.6	1.2	42.1	751.9	93.3

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
FAIL GE
JUN 14 2011
SEE RETESTS ON FOLLOWING PAGES. GE FAILURE DUE TO LAB EQUIPMENT.

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/17/11	Checked By:	jdt
Sample ID:	Roll #102158634 (GM-8) - retest 1		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature,°F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	60.2	159	2641	14	189	3140	495
	2	61.1	171	2799	17	195	3191	425
	3	60.1	162	2696	16	175	2912	499
	4	61.2	161	2631	15	129	2108	368
	5	60.5	175	2893	14	154	2545	405
	Average	60.6	166	2732	15	168	2779	438
	Standard Deviation	0.51	6.99	111.9	1.3	27.1	453.5	57.3
Cross Machine	1	60.3	155	2570	15	151	2504	424
	2	59.8	154	2575	14	153	2559	499
	3	61.0	168	2754	15	147	2410	467
	4	60.4	149	2467	17	124	2053	356
	5	60.7	165	2718	13	161	2652	423
	Average	60.4	158	2617	15	147	2436	434
	Standard Deviation	0.45	7.98	117.8	1.5	13.9	231.2	53.9

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS
JUN 18 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/09/11	Checked By:	jdt
Sample ID:	Roll #102158634 (GM-8) - retest 2		
Description:	60 mil textured HDPE Geomembrane		

Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes by ASTM D 6693

Testing Machine:	Instron 1123	Testing Speed:	2.0 in./min.
Grip Separation:	2.5 in.	Grips:	ATS pneumatic
Temperature, °F:	66.2 - 73.4	Die Type:	IV

Direction	Specimen Number	Thickness, mil	YIELD			BREAK		
			Tensile Strength,		Elongation,	Tensile Strength,		Elongation,
			ppi	psi	%	ppi	psi	%
Machine	1	59.9	160	2671	14	194	3239	452
	2	60.1	162	2696	17	192	3195	467
	3	60.2	154	2558	16	182	3023	498
	4	60.8	157	2582	17	151	2484	354
	5	60.0	172	2867	15	170	2833	501
	Average	60.2	161	2675	16	178	2955	454
	Standard Deviation	0.35	6.86	121.9	1.3	17.8	308.1	59.8
Cross Machine	1	60.3	163	2703	14	152	2521	425
	2	60.8	155	2549	16	167	2747	524
	3	59.4	172	2896	13	154	2593	467
	4	60.4	157	2599	17	127	2103	354
	5	61.4	180	2932	15	126	2052	399
	Average	60.5	165	2736	15	145	2403	434
	Standard Deviation	0.73	10.5	172.0	1.6	18.0	308.7	65.0

Comments: yield gauge length = 1.3 in.
break gauge length = 2.0 in.
ppi = pounds per inch
psi = pounds per square inch

REVIEWED BY
M. Fountain
PASS
JUN 18 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

REVIEWED BY
M. Fountain
FAIL GJF
JUN 14 2011

DENSITY MISCALCULATED BY GTX. SEE REVISED SHEETS FOLLOWING. GJF

GeoTesting EXPRESS

Client:	Parsons Engineering Science
Project:	Geosynthetic Testing
Project Location:	Syracuse, NY
GTX Project No.:	10596
Test Date:	06/02/11
Tested By:	bfs
Checked By:	jdt

Density of Plastics by the Density-Gradient Technique by ASTM D 1505

Sample ID	Spec. #	Density, g/cm³
Roll #102158832 (GM-1)	1	0.9231
60 mil textured HDPE Geomembrane	2	0.9231
	3	0.9231
	AVG.	0.9231 MIN 0.940

Sample ID	Spec. #	Density, g/cm³
Roll #102158807 (GM-2)	1	0.9232
60 mil textured HDPE Geomembrane	2	0.9232
	3	0.9232
	AVG.	0.9232 MIN 0.940

Sample ID	Spec. #	Density, g/cm³
Roll #102158784 (GM-3)	1	0.9232
60 mil textured HDPE Geomembrane	2	0.9232
	3	0.9231
	AVG.	0.9232 MIN 0.940

Sample ID	Spec. #	Density, g/cm³
Roll #102158872 (GM-4)	1	0.9231
60 mil textured HDPE Geomembrane	2	0.9231
	3	0.9231
	AVG.	0.9231 MIN 0.940

Sample ID	Spec. #	Density, g/cm³
Roll #102158909 (GM-5)	1	0.9231
60 mil textured HDPE Geomembrane	2	0.9231
	3	0.9231
	AVG.	0.9231 MIN 0.940

Comments:

Temperature: 23°C

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

REVIEWED BY
M. Fountain
FAIL GK
JUN 14 2011

GeoTesting EXPRESS

Client:	Parsons Engineering Science
Project:	Geosynthetic Testing
Project Location:	Syracuse, NY
GTX Project No.:	10596
Test Date:	06/02/11
Tested By:	bfs
Checked By:	jdt

Sample ID	Spec. #	Density, g/cm^3
Roll #102158854 (GM-6)	1	0.9232
60 mil textured HDPE Geomembrane	2	0.9232
	3	0.9232
	AVG.	0.9232 MIN 0.940

Sample ID	Spec. #	Density, g/cm^3
Roll #102158890 (GM-7)	1	0.9231
60 mil textured HDPE Geomembrane	2	0.9231
	3	0.9231
	AVG.	0.9231 MIN 0.940

Sample ID	Spec. #	Density, g/cm^3
Roll #102158634 (GM-8)	1	0.9231
60 mil textured HDPE Geomembrane	2	0.9232
	3	0.9231
	AVG.	0.9231 MIN 0.940

Comments:

Temperature: 23°C

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

REVIEWED BY
M. Fountain
PASS
JUN 18 2011

GeoTesting EXPRESS

Client:	Parsons Engineering Science
Project:	Geosynthetic Testing
Project Location:	Syracuse, NY
GTX Project No.:	10596
Test Date:	06/02/11
Tested By:	bfs
Checked By:	jdt

Density of Plastics by the Density-Gradient Technique by ASTM D 1505

Sample ID	Spec. #	Density, g/cm^3
Roll #102158832 (GM-1)	1	0.9451
60 mil textured HDPE Geomembrane	2	0.9449
	3	0.9450
	AVG.	0.9450

Sample ID	Spec. #	Density, g/cm^3
Roll #102158807 (GM-2)	1	0.9461
60 mil textured HDPE Geomembrane	2	0.9458
	3	0.9458
	AVG.	0.9459

Sample ID	Spec. #	Density, g/cm^3
Roll #102158784 (GM-3)	1	0.9456
60 mil textured HDPE Geomembrane	2	0.9457
	3	0.9450
	AVG.	0.9454

Sample ID	Spec. #	Density, g/cm^3
Roll #102158872 (GM-4)	1	0.9449
60 mil textured HDPE Geomembrane	2	0.9445
	3	0.9448
	AVG.	0.9447

Sample ID	Spec. #	Density, g/cm^3
Roll #102158909 (GM-5)	1	0.9448
60 mil textured HDPE Geomembrane	2	0.9448
	3	0.9447
	AVG.	0.9447

Comments:

Temperature: 23°C

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science
Project:	Geosynthetic Testing
Project Location:	Syracuse, NY
GTX Project No.:	10596
Test Date:	06/02/11
Tested By:	bfs
Checked By:	jdt

Sample ID	Spec. #	Density, g/cm^3
Roll #102158854 (GM-6)	1	0.9457
60 mil textured HDPE Geomembrane	2	0.9457
	3	0.9457
	AVG.	0.9457

Sample ID	Spec. #	Density, g/cm^3
Roll #102158890 (GM-7)	1	0.9445
60 mil textured HDPE Geomembrane	2	0.9446
	3	0.9447
	AVG.	0.9446

Sample ID	Spec. #	Density, g/cm^3
Roll #102158634 (GM-8)	1	0.9448
60 mil textured HDPE Geomembrane	2	0.9453
	3	0.9451
	AVG.	0.9451

Comments:

Temperature: 23°C

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

REVIEWED BY
M. Fountain
PASS
JUN 18 2011

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetics Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: jdw
Test Date:	06/07/11	Checked By: jdt

Carbon Black in Olefin Plastics by ASTM D 1603

Sample ID	Specimen Number	Carbon Black, %
Roll #102158832 (GM-1)	1	2.65
60 mil textured HDPE Geomembrane	2	2.44
	Average	2.54 ✓

Sample ID	Specimen Number	Carbon Black, %
Roll #102158807 (GM-2)	1	2.65
60 mil textured HDPE Geomembrane	2	2.63
	Average	2.64 ✓

Sample ID	Specimen Number	Carbon Black, %
Roll #102158784 (GM-3)	1	2.52
60 mil textured HDPE Geomembrane	2	2.54
	Average	2.53 ✓

Sample ID	Specimen Number	Carbon Black, %
Roll #102158872 (GM-4)	1	2.59
60 mil textured HDPE Geomembrane	2	1.97
	Average	2.28 ✓

Sample ID	Specimen Number	Carbon Black, %
Roll #102158909 (GM-5)	1	2.22
60 mil textured HDPE Geomembrane	2	2.27
	Average	2.24 ✓

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetics Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: jdw
Test Date:	06/07/11	Checked By: jdt

Sample ID	Specimen Number	Carbon Black, %
Roll #102158854 (GM-6)	1	2.74
	2	2.09
60 mil textured HDPE Geomembrane	Average	2.42

Sample ID	Specimen Number	Carbon Black, %
Roll #102158890 (GM-7)	1	2.27
	2	2.38
60 mil textured HDPE Geomembrane	Average	2.32

Sample ID	Specimen Number	Carbon Black, %
Roll #102158634 (GM-8)	1	2.21
	2	2.37
60 mil textured HDPE Geomembrane	Average	2.29

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	06/07/11	Checked By: jdt

Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics by ASTM D 5596

Sample ID	Specimen Number	Category Rating Random Field of View R_f1	R_f2
Roll #102158832 (GM-1) 60 mil textured HDPE Geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View R_f1	R_f2
Roll #102158807 (GM-2) 60 mil textured HDPE Geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View R_f1	R_f2
Roll #102158784 (GM-3) 60 mil textured HDPE Geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View R_f1	R_f2
Roll #102158872 (GM-4) 60 mil textured HDPE Geomembrane	1	1	1
	2	1	1
	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Comments: Method of preparation: Microtome

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: bfs
Test Date:	06/07/11	Checked By: jdt

Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics by ASTM D 5596

Sample ID	Specimen Number	Category Rating Random Field of View	
		R_f1	R_f2
Roll #102158909 (GM-5)	1	1	1
	2	1	1
60 mil textured HDPE Geomembrane	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View	
		R_f1	R_f2
Roll #102158854 (GM-6)	1	1	1
	2	1	1
60 mil textured HDPE Geomembrane	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View	
		R_f1	R_f2
Roll #102158890 (GM-7)	1	1	1
	2	1	1
60 mil textured HDPE Geomembrane	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Sample ID	Specimen Number	Category Rating Random Field of View	
		R_f1	R_f2
Roll #102158634 (GM-8)	1	1	1
	2	1	2
60 mil textured HDPE Geomembrane	3	1	1
	4	1	1
	5	1	1
	Average	1	1
	Lowest Quality Observed	1	1

Comments: Method of preparation: Microtome

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158832 (GM-1)		
Description:	60 mil textured HDPE Geomembrane		

Initial Tear Resistance of Plastic Film and Sheeting by ASTM D 1004

constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	60.8	60	61.3	56
2	61.2	64	62.0	63
3	61.1	62	60.6	63
4	59.5	60	59.6	57
5	57.9	60	60.2	59
6	61.5	59	58.9	58
7	58.9	58	58.7	61
8	60.8	62	60.4	59
9	61.6	61	61.7	62
10	62.1	61	62.1	58
Average	60.5	61	60.5	60
Standard Deviation	1.34	1.9	1.23	2.5

Comments:

REVIEWED BY
M. Fountain
PASS GM
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158807 (GM-2)		
Description:	60 mil textured HDPE Geomembrane		

Initial Tear Resistance of Plastic Film and Sheeting by ASTM D 1004

constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	61.1	60	62.3	56
2	62.1	61	61.1	60
3	61.4	59	62.2	60
4	59.8	60	60.3	61
5	60.4	61	59.7	62
6	60.9	63	59.2	59
7	58.4	59	61.3	63
8	57.9	60	58.9	61
9	59.9	61	58.9	63
10	61.2	59	61.8	62
Average	60.3	60	60.5	61
Standard Deviation	1.32	1.3	1.34	2.1

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158784 (GM-3)		
Description:	60 mil textured HDPE Geomembrane		

Initial Tear Resistance of Plastic Film and Sheeting by ASTM D 1004

constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	62.3	61	60.3	57
2	60.3	60	60.6	59
3	61.3	62	63.1	62
4	58.7	62	61.2	62
5	59.1	60	59.0	57
6	60.7	56	59.1	55
7	63.3	56	58.8	56
8	61.2	62	57.2	59
9	59.9	64	62.4	60
10	58.8	63	62.0	61
Average	60.5	58	60.3	59
Standard Deviation	1.51	2.7	1.85	2.4

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158872 (GM-4)		
Description:	60 mil textured HDPE Geomembrane		

Initial Tear Resistance of Plastic Film and Sheeting by ASTM D 1004

constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	58.6	57	60.3	59
2	59.2	60	61.3	64
3	60.2	63	58.8	62
4	58.7	64	60.7	58
5	57.8	62	62.9	57
6	60.3	58	60.3	57
7	62.1	64	58.0	62
8	61.6	59	59.1	57
9	60.3	60	59.2	59
10	62.3	58	61.0	61
Average	60.1	58	60.1	60
Standard Deviation	1.54	2.7	1.43	2.6

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158909 (GM-5)		
Description:	60 mil textured HDPE Geomembrane		

Initial Tear Resistance of Plastic Film and Sheeting by ASTM D 1004

constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	63.4	57	60.1	59
2	61.6	65	59.1	58
3	59.6	63	59.6	58
4	60.0	64	62.3	59
5	60.9	60	58.7	57
6	57.8	56	61.4	54
7	60.0	57	63.2	56
8	61.4	59	61.4	60
9	60.8	63	59.2	62
10	62.3	57	58.5	63
Average	60.8	60	60.3	59
Standard Deviation	1.55	3.4	1.61	2.6

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/07/11	Checked By:	jdt
Sample ID:	Roll #102158854 (GM-6)		
Description:	60 mil textured HDPE Geomembrane		

Initial Tear Resistance of Plastic Film and Sheeting by ASTM D 1004

constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	62.9	60	58.9	59
2	61.8	58	57.9	61
3	58.5	60	60.5	65
4	59.1	62	61.2	62
5	59.4	63	59.6	60
6	57.5	58	59.8	60
7	60.6	67	62.3	59
8	60.7	68	62.6	60
9	62.1	61	62.1	61
10	61.8	58	60.5	58
Average	60.4	61	60.5	60
Standard Deviation	1.76	3.5	1.54	1.9

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158890 (GM-7)		
Description:	60 mil textured HDPE Geomembrane		

Initial Tear Resistance of Plastic Film and Sheeting by ASTM D 1004

constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	62.5	58	60.6	54
2	60.4	60	56.9	59
3	60.2	59	59.3	60
4	62.1	62	58.9	60
5	59.1	62	62.3	61
6	57.3	62	60.2	59
7	62.4	64	60.9	59
8	62.0	62	59.1	53
9	63.8	64	63.1	61
10	61.2	59	62.5	63
Average	61.1	61	60.4	59
Standard Deviation	1.91	1.9	1.92	3.1

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158634 (GM-8)		
Description:	60 mil textured HDPE Geomembrane		

Initial Tear Resistance of Plastic Film and Sheeting by ASTM D 1004

constant rate of extension (CRE) tensile testing machine

Specimen Number	Machine Direction		Cross Machine Direction	
	Thickness, mil	Tear Resistance, lb	Thickness, mil	Tear Resistance, lb
1	63.4	60	60.8	62
2	61.7	65	60.6	62
3	62.0	66	57.3	61
4	58.8	67	59.1	65
5	59.2	63	62.0	63
6	60.4	59	63.2	63
7	58.5	59	60.1	61
8	62.1	60	58.9	62
9	61.3	65	58.7	63
10	60.9	65	61.7	58
Average	60.8	63	60.2	62
Standard Deviation	1.61	3.1	1.77	1.8

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158832 (GM-1)		
Description:	60 mil textured HDPE Geomembrane		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	139
2	144
3	159
4	148
5	154
Average	149
Standard Deviation	8.10
Coefficient of Variation, %	5.44

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158807 (GM-2)		
Description:	60 mil textured HDPE Geomembrane		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	156
2	152
3	154
4	154
5	154
Average	154
Standard Deviation	1.2
Coefficient of Variation, %	0.8

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158784 (GM-3)		
Description:	60 mil textured HDPE Geomembrane		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	154
2	151
3	156
4	149
5	153
Average	153
Standard Deviation	2.76
Coefficient of Variation, %	1.81

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158872 (GM-4)		
Description:	60 mil textured HDPE Geomembrane		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	156
2	151
3	156
4	161
5	155
Average	156
Standard Deviation	3.60
Coefficient of Variation, %	2.31

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158909 (GM-5)		
Description:	60 mil textured HDPE Geomembrane		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	149
2	151
3	157
4	152
5	152
Average	152
Standard Deviation	3.04
Coefficient of Variation, %	2.00

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158854 (GM-6)		
Description:	60 mil textured HDPE Geomembrane		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	153
2	156
3	158
4	152
5	154
Average	154
Standard Deviation	2.32
Coefficient of Variation, %	1.50

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158890 (GM-7)		
Description:	60 mil textured HDPE Geomembrane		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	149
2	151
3	151
4	152
5	143
Average	149
Standard Deviation	3.42
Coefficient of Variation, %	2.29

Comments:

REVIEWED BY
M. Fountain
PASS
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	06/08/11	Checked By:	jdt
Sample ID:	Roll #102158634 (GM-8)		
Description:	60 mil textured HDPE Geomembrane		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	148
2	152
3	157
4	156
5	154
Average	153
Standard Deviation	3.48
Coefficient of Variation, %	2.27

Comments:

REVIEWED BY
M. Fountain
PASS GF
JUN 14 2011

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

Sample Number GM-9A

Was Collected for

Interface Friction Testing

Geotextile

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: meo
Test Date:	07/29/11	Checked By: bfs
Sample ID:	GT-001	#130401943
Description:	Black, nonwoven geotextile	

Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	25.3	858
2	25.5	864
3	25.1	853
4	24.9	844
5	24.8	839
Average	25.1	851
Standard Deviation	0.29	9.9

Comments: Specimen Size, in: 4 inch x 8 inch

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	07/21/11	Checked By:	bfs
Sample ID:	GT-001		
Description:	Black, nonwoven geotextile		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	368
2	348
3	353
4	276
5	336
6	413
7	307
8	320
9	346
10	426
11	385
12	350
13	387
14	350
15	367
Average	350
Standard Deviation	367
Coefficient of Variation, %	105

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	08/02/11	Checked By:	bfs
Sample ID:	GT-001		
Description:	Black, nonwoven geotextile		

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

	Machine Direction		Cross Machine Direction	
Specimen Number	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	554	138	761	104
2	593	131	776	111
3	649	131	843	109
4	608	134	864	107
5	563	121	864	104
6	654	141	918	109
7	626	134	909	102
8	564	124	964	115
9	557	124	818	108
10	588	124	928	99.0
Average	596	130	864	107
Standard Deviation	37.5	6.73	66.8	4.66
Coefficient of Variation, %	6.30	5.17	7.73	4.37

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	08/02/11	Checked By:	bfs
Sample ID:	GT-001		
Sample Description:	Black, nonwoven geotextile		

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	250	442
2	241	515
3	212	427
4	232	392
5	264	407
6	236	458
7	264	424
8	216	403
9	252	386
10	217	437
Average	238	429
Standard Deviation	19.2	37.9
Coefficient of Variation, %	8.07	8.83

Comments:

Sample Number GT-02

Was Collected for

Interface Friction Testing

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: meo
Test Date:	07/29/11	Checked By: bfs
Sample ID:	GT-003	# 13041 1867
Description:	Black, nonwoven geotextile	

Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	23.9	810
2	24.5	832
3	24.2	820
4	23.8	806
5	23.9	811
Average	24.1	815
Standard Deviation	0.31	10.4

Comments: Specimen Size, in: 4 inch x 8 inch

NOTE GT-002 used for friction taken from GT-001

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	08/01/11	Checked By:	bfs
Sample ID:	GT-003		
Description:	Black, nonwoven geotextile		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	342
2	340
3	359
4	381
5	315
6	331
7	347
8	311
9	350
10	351
11	366
12	332
13	278
14	293
15	355
Average	337
Standard Deviation	27.7
Coefficient of Variation, %	8.21

Comments:

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	08/02/11	Checked By:	bfs
Sample ID:	GT-003		
Description:	Black, nonwoven geotextile		

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	500 lb	Padding:	---
		Condition:	dry

	Machine Direction		Cross Machine Direction	
Specimen Number	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	504	122	811	110
2	540	131	775	112
3	616	128	778	108
4	503	131	784	97.2
5	598	131	896	111
6	618	141	847	97.5
7	559	133	960	104
8	580	141	889	99.2
9	530	128	970	97.1
10	571	134	836	103
Average	562	132	855	104
Standard Deviation	42.3	5.79	72.0	6.01
Coefficient of Variation, %	7.53	4.39	8.42	5.78

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	08/02/11	Checked By:	bfs
Sample ID:	GT-003		
Sample Description:	Black, nonwoven geotextile		

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	248	406
2	266	380
3	194	385
4	203	407
5	234	386
6	185	427
7	213	461
8	207	489
9	211	373
10	197	464
Average	216	418
Standard Deviation	25.9	40.9
Coefficient of Variation, %	12.0	9.80

Comments:

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: meo
Test Date:	07/29/11	Checked By: bfs
Sample ID:	GT-004 # 130 401 774	
Description:	Black, nonwoven geotextile	

Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	25.7	872
2	25.2	853
3	25.3	859
4	26.7	907
5	26.3	893
Average	25.9	877
Standard Deviation	0.67	22.7

Comments: Specimen Size, in: 4 inch x 8 inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	08/02/11	Checked By:	bfs
Sample ID:	GT-004		
Description:	Black, nonwoven geotextile		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	351
2	324
3	296
4	339
5	346
6	355
7	360
8	295
9	343
10	406
11	303
12	347
13	336
14	371
15	377
Average	343
Standard Deviation	30.4
Coefficient of Variation, %	8.86

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	08/02/11	Checked By:	bfs
Sample ID:	GT-004		
Description:	Black, nonwoven geotextile		

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

	Machine Direction		Cross Machine Direction	
Specimen Number	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	589	134	913	104
2	587	138	855	101
3	646	134	783	104
4	592	138	905	104
5	598	131	906	103
6	581	128	918	103
7	635	134	778	112
8	595	135	982	103
9	609	131	891	101
10	572	124	802	107
Average	600	133	873	104
Standard Deviation	23.4	4.35	67.1	3.22
Coefficient of Variation, %	3.90	3.28	7.69	3.09

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	meo
Test Date:	08/02/11	Checked By:	bfs
Sample ID:	GT-004		
Sample Description:	Black, nonwoven geotextile		

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	221	466
2	248	515
3	273	454
4	276	439
5	229	465
6	224	536
7	240	498
8	231	488
9	231	564
10	287	498
Average	246	492
Standard Deviation	24.0	38.4
Coefficient of Variation, %	9.75	7.80

Comments:

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	03/22/12	Checked By: bfs
Sample ID:	GT-005 Retest	
Description:	Black, nonwoven geotextile	

Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	27.0	916
2	25.6	869
3	24.3	824
4	24.6	836
5	27.6	935
Average	25.8	876
Standard Deviation	1.44	48.8

Comments: Specimen Size, in: 4 inch x 8 inch

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	03/23/12	Checked By:	jdt
Sample ID:	GT-005 Retest		
Sample Description:	Black, nonwoven geotextile		

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	196	379
2	188	369
3	238	382
4	170	367
5	198	357
6	202	411
7	188	409
8	175	391
9	194	344
10	206	413
Average	195	382
Standard Deviation	18.7	23.8
Coefficient of Variation, %	9.56	6.24

Comments:

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	bfs
Test Date:	03/23/12	Checked By:	jdt
Sample ID:	GT-005 Retest		
Description:	Black, nonwoven geotextile		

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

Specimen Number	Machine Direction		Cross Machine Direction	
	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	616	130	676	102
2	634	134	763	94
3	587	124	819	89
4	577	139	677	106
5	624	137	801	103
6	582	133	810	90
7	619	133	826	94
8	600	131	668	94
9	549	124	782	90
10	542	126	786	87
Average	593	131	761	95
Standard Deviation	31.4	5.17	62.8	6.6
Coefficient of Variation, %	5.29	3.95	8.26	6.9

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	03/26/12	Checked By:	bfs
Sample ID:	GT-005 Retest		
Description:	Black, nonwoven geotextile		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	388
2	410
3	369
4	341
5	398
6	363
7	432
8	380
9	363
10	420
11	337
12	358
13	388
14	396
15	436
Average	385
Standard Deviation	30.9
Coefficient of Variation, %	8.01

Comments:

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	08/04/11	Checked By: jdt
Sample ID:	Geotextile: Roll #130401690	
Description:	Black, nonwoven geotextile	

Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	22.2	751
2	21.5	729
3	23.8	807
4	24.9	846
5	24.7	838
Average	23.4 (*)	794
Standard Deviation	1.53	52.0

Comments: Specimen Size, in: 4 inch x 8 inch

(*) See Retest GT-5

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	08/04/11	Checked By:	jdt
Sample ID:	Geotextile: Roll #130401690		
Sample Description:	Black, nonwoven geotextile		

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	165	364
2	172	337
3	194	411
4	182	353
5	144	439
6	188	319
7	169	338
8	154	291
9	173	310
10	138	298
Average	168	346
Standard Deviation	18.2	48.0
Coefficient of Variation, %	10.83	13.89

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	08/04/11	Checked By:	jdt
Sample ID:	Geotextile: Roll #130401690		
Description:	Black, nonwoven geotextile		

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

	Machine Direction		Cross Machine Direction	
Specimen Number	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	523	138	755	87
2	553	101	730	90
3	564	129	924	84
4	568	124	884	90
5	518	118	986	84
6	512	121	935	77
7	563	118	926	84
8	502	113	881	79
9	512	119	729	82
10	491	115	747	82
Average	531	120	850	84
Standard Deviation	28.5	9.80	98.8	4.25
Coefficient of Variation, %	5.37	8.19	11.63	5.07

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	08/04/11	Checked By:	jdt
Sample ID:	Geotextile: Roll #130401690		
Description:	Black, nonwoven geotextile		

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	352
2	287
3	289
4	300
5	336
6	236
7	316
8	331
9	353
10	341
11	285
12	299
13	359
14	281
15	265
Average	309
Standard Deviation	36.2
Coefficient of Variation, %	11.71

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	10/10/11	Checked By: jdt
Sample ID:	GT-006; Roll #130405474	
Description:	Black, nonwoven geotextile	

Mass Per Unit Area of Geotextiles by ASTM D 5261

Specimen Number	Mass Per Unit Area, oz/yd^2	Mass Per Unit Area, g/m^2
1	23.8	806
2	24.3	822
3	27.1	919
4	27.7	940
5	27.2	921
Average	26.0	882
Standard Deviation	1.85	62.7

Comments: Specimen Size, in: 4 inch x 8 inch

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	10/10/11	Checked By:	jdt
Sample ID:	GT-006; Roll #130405474		
Sample Description:	Black, nonwoven geotextile		

Index Trapezoidal Tearing Strength of Geotextiles by ASTM D 4533

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	1 in	Grips:	Curtis "Geo" Grip
Condition:	dry		

Specimen Number	Maximum Tear Strength, lb	
	Machine Direction	Cross Machine Direction
1	198	407
2	175	410
3	229	406
4	176	432
5	204	432
6	209	399
7	243	415
8	186	393
9	194	438
10	209	370
Average	202	410
Standard Deviation	21.7	20.6
Coefficient of Variation, %	10.7	5.02

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

GeoTesting EXPRESS

Client:	Parsons Engineering Science		
Project Name:	Geosynthetic Testing		
Project Location:	Syracuse, NY		
GTX #:	10596	Tested By:	ad
Test Date:	10/10/11	Checked By:	jdt
Sample ID:	GT-006; Roll #130405474		
Description:	Black, nonwoven geotextile		

Breaking Load and Elongation of Geotextiles (Grab Method) by ASTM D 4632

constant rate of extension (CRE) tensile testing machine

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Grip Separation:	3 in	Grips:	Curtis "Geo" Grip
Maximum Obtainable Load:	2500 lb	Padding:	---
		Condition:	dry

	Machine Direction		Cross Machine Direction	
Specimen Number	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %	Maximum Breaking Strength, lb	Apparent Breaking Elongation, %
1	548	134	861	127
2	586	142	859	101
3	626	144	1032	107
4	658	150	1059	116
5	592	144	775	130
6	667	147	889	120
7	633	154	1025	122
8	633	134	1010	113
9	614	147	892	117
10	572	144	752	124
Average	613	144	915	118
Standard Deviation	37.9	6.31	110	8.94
Coefficient of Variation, %	6.18	4.38	12.0	7.60

Comments:

GeoTesting EXPRESS

Client:	Parsons Engineering Science	
Project Name:	Geosynthetic Testing	
Project Location:	Syracuse, NY	
GTX #:	10596	Tested By: ad
Test Date:	10/10/11	Checked By: jdt
Sample ID:	GT-006; Roll #130405474	
Description:	Black, nonwoven geotextile	

Index Puncture Resistance of Geomembranes and Related Products by ASTM D 4833

Testing Machine:	Instron 1000	Testing Speed:	12 in/min
Clamping Method:	Circular Clamp Attachment		

Specimen Number	Puncture Resistance, lbs
1	383
2	355
3	392
4	357
5	338
6	343
7	314
8	303
9	398
10	347
11	340
12	397
13	372
14	399
15	395
Average	362
Standard Deviation	31.5
Coefficient of Variation, %	8.70

Comments:

Notes: These results apply only to the sample tested for the specific test conditions. The test procedures employed follow accepted industry practice and the indicated test method. GeoTesting Express has no specific knowledge as to conditioning, origin, sampling procedure or intended use of the material.

PARSONS - ONONDAGA LAKE
PHYSICAL, MECHANICAL, AND HYDRAULIC PROPERTIES
24 oz/square yard Nonwoven Geotextile GT-007 (80 day UV exposure)
SGI Lab Sample ID: S16391

Test No.	Physical Properties		Mechanical Properties										Hydraulic Properties			
	Thickness ASTM D 5199	Mass ASTM D 5261	Mullen Burst ASTM D 3786	Puncture ASTM D 4833	CBR Puncture ASTM D 6241	Grab Tensile ASTM D 4632				Trapezoidal Tear ASTM D 4533		AOS ASTM D 4751		Permittivity ASTM D 4491	
						MD		XD		Strength					
						Strength	Elongation	Strength	Elongation	MD	XD	O_{95}	Sieve No.	Flow Rate	Permittivity
	(mils)	(oz/yd^2)	(psi)	(lbs)	(lbs)	(lbs)	(%)	(lbs)	(%)	(lbs)	(lbs)	(mm)	No. (-)	Rate ($gal/min/ft^2$)	(1/s)
1		25.5		365		637	76.3	621	76.6	198	345				
2		25.9		405		580	68.3	995	66.4	176	310				
3		26.8		346		687	76.3	908	65.3	191	337				
4		23.4		368		664	79.3	960	67.3	191	269				
5		26.0		375		601	74.0	925	66.2	169	303				
6		25.4				588	82.7	812	70.2	180	309				
7		24.9				597	76.7	834	71.8	191	387				
8		25.7				585	91.3	867	72.8	175	337				
9		25.9				602	85.3	846	68.2	211	405				
10		25.8				593	75.3	861	65.7	187	345				
11															
12															
13															
14															
15															
Mean:		25.5		372		613	78.6	863	69.1	187	335				
STD:		0.9		21		37	6.5	103	3.7	12	40				

NOTES:

MD = machine direction, XD = cross-machine direction, STD = standard deviation, and NA = not applicable.

SGI TESTING SERVICES, LLC

DATE OF REPORT:	3/30/2012
FIGURE NO.	1
PROJECT NO.	SGI10043
DOCUMENT NO.	
FILE NO.	

APPENDIX H

Installer's Certificate of Acceptance of Subgrade Surface

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed ~~and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications~~. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
8/19/2011	1 thru 12	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed ~~and shall be responsible for, maintaining the suitability of this surface, in accordance with the project specifications~~. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
8/20/2011	13 thru 30	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
9/2/2011	31 thru 75	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
9/13/2011	76 thru 99	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
9/18/2011	100 thru 124	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
9/19/2011	125 thru 140	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
9/26/2011	141 thru 145	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
9/27/2011	146 thru 163	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
9/28/2011	164 thru 171	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
10/8/2011	172 thru 186	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
10/9/2011	187 thru 199	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Chenango Contracting
ADDRESS:	29 Arbutus Road
	Johnson City, NY 13790
INSTALLER AUTHORIZED REPRESENTATIVE:	Martin Bystrak

PROJECT	
NAME:	Lake Onondaga SCA Phase I
LOCATION:	522 Gerelock Road
	Camillus, NY 13209
OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
10/10/2011	200 thru 220	
NOTE:	Subgrade is soft and uneven, inconsistent and pumping under traffic.	

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER		PROJECT	
NAME:	Chenango Contracting	NAME:	~~East Basin~~ DW Lake Onondaga SCA Phase 1
ADDRESS:	29 Arbutus Road Johnson City, NY 13790	LOCATION:	522 Gerelock Road Camillus, NY 13209
INSTALLER AUTHORIZED REPRESENTATIVE:	Matt Bilodeau for CHARLIE PARKS ~~Martin Bystrak~~ DWH	OWNER:	Honeywell / Parsons

I, The undersigned, duly authorized representative of Chenango Contractors do hereby accept the surface on which the geosynthetics will be installed and shall be responsible for maintaining the suitability of this surface, in accordance with the project specifications. (i.e., The contractor shall not install the geosynthetics until the subgrade surface is acceptable. Installation of the geosynthetics will be considered acceptance of the subgrade.)

PRIMARY: [X] SECONDARY: [ ] OTHER: _____

DATE	PANEL NOS.	SIGNATURE
10/11/2011	Panels #221 thru #265	Matt
	Subgrade doesn't support equipment traffic is soft and uneven.	

APPENDIX I

Geomembrane Panel Placement Monitoring Logs

Geosyntec
consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706
TaskNo: 07

Primary / Secondary: Primary | Series: 1 | Material Type: gml

Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
1	8201500-102158873	8/19/2011	11:42	Phase IA	21	509.5	DWH
2	8201499-102158767	8/19/2011	13:00	Phase IA	22	508	DWH
3	8201500-102158844	8/19/2011	13:20	Phase IA	22	165	DWH
4	8201500-102158844	8/19/2011	13:37	Phase IA	22	165	DWH
5	8201500-102158867	8/19/2011	14:30	Phase IA	22	510	DWH
6	8201507-102158898	8/19/2011	14:55	Phase IA	22	512.5	DWH
7	8201507-102158876	8/19/2011	15:20	Phase IA	22	511	DWH
8	8201500-102158844	8/19/2011	15:45	Phase IA	22	165	DWH
9	8201500-102158850	8/19/2011	15:59	Phase IA	22	165	DWH
10	8201500-102158850	8/19/2011	16:15	Phase IA	22	165	DWH
11	8201500-102158851	8/19/2011	17:19	Phase IA	22	512	DWH
12	8201500-102158850	8/19/2011	18:12	Phase IA	22	165	DWH
13	8201499-102158788	8/20/2011	8:05	Phase IA	22	514.5	DWH
14	8201500-102158864	8/20/2011	8:27	Phase IA	22	515	DWH
15	8201499-102158801	8/20/2011	8:45	Phase IA	22	516.5	DWH
16	8201499-102158769	8/20/2011	9:00	Phase IA	22	518	DWH
17	8201499-102158800	8/20/2011	10:05	Phase IA	22	519	DWH
18	8201499-102158779	8/20/2011	10:30	Phase IA	22	520.5	DWH
19	8201499-102158807	8/20/2011	13:00	Phase IA	22	165	DWH
20	8201499-102158807	8/20/2011	13:10	Phase IA	22	172	DWH
21	8201499-102158807	8/20/2011	13:20	Phase IA	22	165	DWH
22	8201500-102158868	8/20/2011	13:35	Phase IA	22	171	DWH
23	8201500-102158868	8/20/2011	13:50	Phase IA	22	170	DWH
24	8201500-102158868	8/20/2011	14:00	Phase IA	22	165	DWH
25	8201499-102158784	8/20/2011	14:10	Phase IA	22	516	DWH
26	8201507-102158875	8/20/2011	14:30	Phase IA	22	512	DWH
27	8201499-102158768	8/20/2011	14:45	Phase IA	22	165	DWH
28	8201499-102158768	8/20/2011	15:00	Phase IA	22	165	DWH
29	8201499-102158768	8/20/2011	15:10	Phase IA	22	5	DWH
30	8201499-102158768	8/20/2011	15:15	Phase IA	22	6	DWH
31	8201499-102158785	9/2/2011	8:10	Phase IA	22	290	DWH

Geosyntec
consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706
TaskNo: 07

Primary / Secondary: Primary | Series: 1 | Material Type: gml

Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
32	8201499-102158785	9/2/2011	8:21	Phase IA	22	226	DWH
33	8201507-102158908	9/2/2011	8:27	Phase IA	22	290	DWH
34	8201507-102158908	9/2/2011	8:33	Phase IA	22	214	DWH
35	8201500-102158858	9/2/2011	8:41	Phase IA	22	290	DWH
36	8201500-102158858	9/2/2011	8:48	Phase IA	22	217	DWH
37	8201499-102158797	9/2/2011	9:00	Phase IA	22	290	DWH
38	8201499-102158797	9/2/2011	9:07	Phase IA	22	217	DWH
39	8201500-102158832	9/2/2011	9:15	Phase IA	22	290	DWH
40	8201500-102158832	9/2/2011	9:23	Phase IA	22	211.5	DWH
41	8201500-102158831	9/2/2011	10:00	Phase IA	22	64	DWH
42	8201500-102158831	9/2/2011	10:12	Phase IA	22	76	DWH
43	8201500-102158831	9/2/2011	10:15	Phase IA	22	73	DWH
44	8201500-102158831	9/2/2011	10:19	Phase IA	22	73	DWH
45	8201500-102158831	9/2/2011	10:26	Phase IA	22	78.5	DWH
46	8201500-102158860	9/2/2011	10:45	Phase IA	22	290	DWH
47	8201500-102158860	9/2/2011	11:05	Phase IA	22	217	DWH
48	8201500-102158831	9/2/2011	11:15	Phase IA	22	73	DWH
49	8201507-102158910	9/2/2011	13:00	Phase IA	22	290	DWH
50	8201507-102158910	9/2/2011	13:05	Phase IA	22	222	DWH
51	8201500-102158842	9/2/2011	13:08	Phase IA	22	68	DWH
52	8201500-102158842	9/2/2011	13:12	Phase IA	22	290	DWH
53	8201500-102158842	9/2/2011	13:36	Phase IA	22	156.5	DWH
54	8201500-102158845	9/2/2011	13:48	Phase IA	22	133.5	DWH
55	8201500-102158845	9/2/2011	13:54	Phase IA	22	290	DWH
56	8201500-102158845	9/2/2011	14:11	Phase IA	22	90	DWH
57	8201499-102158774	9/2/2011	14:20	Phase IA	22	200	DWH
58	8201499-102158774	9/2/2011	14:45	Phase IA	22	286	DWH
59	8201499-102158765	9/2/2011	15:00	Phase IA	22	286.5	DWH
60	8201499-102158765	9/2/2011	15:10	Phase IA	22	218	DWH
61	8201500-102158843	9/2/2011	15:25	Phase IA	22	59	DWH
62	8201500-102158843	9/2/2011	15:47	Phase IA	22	50	DWH

Geosyntec
consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706
TaskNo: 07

Primary / Secondary: Primary | Series: 1 | Material Type: gml

Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
63	8201500-102158843	9/2/2011	15:51	Phase IA	22	50	DWH
64	8201500-102158843	9/2/2011	15:54	Phase IA	22	50	DWH
65	8201500-102158843	9/2/2011	16:15	Phase IA	22	50	DWH
66	8201500-102158843	9/2/2011	16:20	Phase IA	22	50	DWH
67	8201500-102158843	9/2/2011	16:38	Phase IA	22	50	DWH
68	8201500-102158843	9/2/2011	16:40	Phase IA	22	50	DWH
69	8201499-102158791	9/2/2011	17:00	Phase IA	22	49.5	DWH
70	8201499-102158791	9/2/2011	17:05	Phase IA	22	49	DWH
71	8201499-102158791	9/2/2011	17:10	Phase IA	22	49	DWH
72	8201499-102158791	9/2/2011	17:25	Phase IA	22	49	DWH
73	8201499-102158791	9/2/2011	17:28	Phase IA	22	49	DWH
74	8201499-102158791	9/2/2011	17:33	Phase IA	22	49	DWH
75	8201499-102158791	9/2/2011	17:43	Phase IA	22	49	DWH
76	8201499-102158764	9/13/2011	13:20	Phase IA	22	394	DWH
77	8201499-102158764	9/13/2011	13:32	Phase IA	22	108	DWH
78	8201499-102158799	9/13/2011	13:48	Phase IA	22	285	DWH
79	8201499-102158799	9/13/2011	14:14	Phase IA	22	218	DWH
80	8201500-102158835	9/13/2011	14:32	Phase IA	22	174	DWH
81	8201500-102158835	9/13/2011	15:00	Phase IA	22	49	DWH
82	8201500-102158835	9/13/2011	15:27	Phase IA	22	49.5	DWH
83	8201500-102158835	9/13/2011	15:30	Phase IA	22	50.5	DWH
84	8201500-102158835	9/13/2011	15:37	Phase IA	22	51	DWH
85	8201500-102158835	9/13/2011	15:45	Phase IA	22	51	DWH
86	8201500-102158835	9/13/2011	15:50	Phase IA	22	28	DWH
87	8201499-102158804	9/13/2011	16:32	Phase IA	22	22	DWH
88	8201499-102158804	9/13/2011	16:41	Phase IA	22	52.5	DWH
89	8201499-102158804	9/13/2011	16:45	Phase IA	22	52.5	DWH
90	8201499-102158804	9/13/2011	16:50	Phase IA	22	52	DWH
91	8201499-102158804	9/13/2011	16:52	Phase IA	22	52.5	DWH
92	8201499-102158804	9/13/2011	16:55	Phase IA	22	53	DWH
93	8201499-102158804	9/13/2011	17:09	Phase IA	22	53	DWH

Geosyntec
consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706
TaskNo: 07

Primary / Secondary: Primary | Series: 1 | Material Type: gml

Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
94	8201499-102158804	9/13/2011	17:12	Phase IA	22	53	DWH
95	8201499-102158804	9/13/2011	17:18	Phase IA	22	53	DWH
96	8201500-102158840	9/13/2011	17:36	Phase IA	22	53	DWH
97	8201500-102158840	9/13/2011	17:40	Phase IA	22	53	DWH
98	8201500-102158840	9/13/2011	17:43	Phase IA	22	53.5	DWH
99	8201500-102158840	9/13/2011	17:49	Phase IA	22	54	DWH
100	8201500-102158840	9/18/2011	10:10	Phase IA	22	285	DWH
101	8201499-102158778	9/18/2011	10:20	Phase IA	22	109	DWH
102	8201499-102158778	9/18/2011	10:30	Phase IA	22	393.5	DWH
103	8201499-102158777	9/18/2011	10:45	Phase IA	22	396	DWH
104	8201499-102158777	9/18/2011	11:36	Phase IA	22	105.5	DWH
105	8201499-102158796	9/18/2011	11:46	Phase IA	22	291.5	DWH
106	8201499-102158796	9/18/2011	13:21	Phase IA	22	157	DWH
107	8201499-102158796	9/18/2011	13:25	Phase IA	22	55	DWH
108	8201499-102158783	9/18/2011	13:30	Phase IA	22	131	DWH
109	8201499-102158783	9/18/2011	14:26	Phase IA	22	385	DWH
110	8201500-102158836	9/18/2011	14:35	Phase IA	22	8	DWH
111	8201500-102158836	9/18/2011	14:41	Phase IA	22	393	DWH
112	8201500-102158836	9/18/2011	14:50	Phase IA	22	94.5	DWH
113	8201500-102158823	9/18/2011	15:06	Phase IA	22	298.5	DWH
114	8201500-102158823	9/18/2011	15:12	Phase IA	22	210	DWH
115	8201499-102158776	9/18/2011	15:25	Phase IA	22	183.5	DWH
116	8201499-102158776	9/18/2011	15:35	Phase IA	22	332.5	DWH
117	8201499-102158805	9/18/2011	15:46	Phase IA	22	61.5	DWH
118	8201499-102158805	9/18/2011	15:50	Phase IA	22	393.5	DWH
119	8201499-102158805	9/18/2011	16:01	Phase IA	22	43.5	DWH
120	8201499-102158803	9/18/2011	17:10	Phase IA	22	351	DWH
121	8201499-102158803	9/18/2011	17:15	Phase IA	22	149	DWH
122	8201500-102158818	9/18/2011	17:42	Phase IA	22	246	DWH
123	8201500-102158818	9/18/2011	17:55	Phase IA	22	265	DWH
124	8201500-102158817	9/18/2011	16:02	Phase IA	22	130	DWH

Geosyntec consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA) ProjNo: GJ4706
Location: Camillus, New York TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

Primary / Secondary: Primary Series: 1 Material Type: gml

Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
125	8201500-102158817	9/19/2011	13:15	Phase IA	22	167.5	DWH
126	8201500-102158817	9/19/2011	13:16	Phase IA	22	177.5	DWH
127	8201499-102158806	9/19/2011	13:26	Phase IA	22	187	DWH
128	8201499-102158806	9/19/2011	13:38	Phase IA	22	164	DWH
129	8201499-102158806	9/19/2011	13:50	Phase IA	22	48.5	DWH
130	8201499-102158806	9/19/2011	14:00	Phase IA	22	42.5	DWH
131	8201499-102158806	9/19/2011	14:15	Phase IA	15	30	DWH
132	8201499-102158806	9/19/2011	14:28	Phase IA	1	75	DWH
133	8201500-102158819	9/19/2011	14:29	Phase IA	22	196.5	DWH
134	8201500-102158819	9/19/2011	14:45	Phase IA	22	209.5	DWH
135	8201500-102158819	9/19/2011	15:07	Phase IA	22	78.5	DWH
136	8201500-102158819	9/19/2011	16:00	Phase IA	22	6	DWH
137	8201500-102158822	9/19/2011	16:55	Phase IA	22	109.5	DWH
138	8201500-102158822	9/19/2011	16:59	Phase IA	22	200	DWH
139	8201500-102158822	9/19/2011	17:15	Phase IA	22	30	DWH
140	8201500-102158822	9/19/2011	17:25	Phase IA	22	24	DWH
141	8201499-102158786	9/26/2011	18:31	Phase IB	22	510	DWH
142	8201499-102158802	9/26/2011	18:50	Phase IB	22	508	DWH
143	8201499-102158793	9/26/2011	19:30	Phase IB	22	508	DWH
144	8201500-102158822	9/26/2011	20:30	Phase IA	22	80	DWH
145	8201499-102158773	9/26/2011	20:55	Phase IA	22	75	DWH
146	8201499-102158773	9/27/2011	8:12	Phase IB	22	425	DWH
147	8201500-102158829	9/27/2011	8:23	Phase IB	22	508	DWH
148	8201500-102158828	9/27/2011	8:42	Phase IB	22	509	DWH
149	8201500-102158827	9/27/2011	9:15	Phase IB	22	508	DWH
150	8201499-102158792	9/27/2011	10:40	Phase IB	22	178	DWH
151	8201499-102158792	9/27/2011	10:54	Phase IB	22	179	DWH
152	8201499-102158792	9/27/2011	10:58	Phase IB	22	146	DWH
153	8201500-102158834	9/27/2011	11:18	Phase IB	22	263	DWH
154	8201500-102158834	9/27/2011	11:30	Phase IB	22	180	DWH
155	8201500-102158834	9/27/2011	11:35	Phase IB	22	34	DWH

Geosyntec
consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706
TaskNo: 07

Primary / Secondary: Primary | Series: 1 | Material Type: gml

Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
156	8201499-102158781	9/27/2011	14:09	Phase IB	22	509	DWH
157	8201499-102158794	9/27/2011	14:35	Phase IB	22	509	DWH
158	8201499-102158771	9/27/2011	14:50	Phase IB	22	179	DWH
159	8201499-102158771	9/27/2011	15:02	Phase IB	22	179.5	DWH
160	8201499-102158771	9/27/2011	15:08	Phase IB	22	153	DWH
161	8201500-102158826	9/27/2011	15:16	Phase IB	22	179	DWH
162	8201500-102158826	9/27/2011	15:20	Phase IB	22	26.5	DWH
163	8201499-102158772	9/27/2011	15:44	Phase IB	22	508	DWH
164	8201500-102158841	9/28/2011	11:00	Phase IB	22	179.5	DWH
165	8201500-102158841	9/28/2011	11:05	Phase IB	22	322.5	DWH
166	8201500-102158826	9/28/2011	12:57	Phase IB	22	301	DWH
167	8201500-102158830	9/28/2011	13:15	Phase IB	22	66	DWH
168	8201500-102158830	9/28/2011	13:28	Phase IB	22	437	DWH
169	8201500-102158866	9/28/2011	13:46	Phase IB	22	251	DWH
170	8201500-102158866	9/28/2011	14:32	Phase IB	22	252.5	DWH
171	8201499-102158795	9/28/2011	14:48	Phase IB	22	440	DWH
172	8201500-102158837	10/8/2011	8:55	Phase IB	22	519	DWH
173	8201507-102158877	10/8/2011	9:15	Phase IB	22	519	DWH
174	8201507-102158894	10/8/2011	9:28	Phase IB	22	520.5	DWH
175	8201507-102158911	10/8/2011	10:00	Phase IB	22	522.5	DWH
176	8201507-102158880	10/8/2011	10:18	Phase IB	22	522	DWH
177	8201500-102158870	10/8/2011	10:48	Phase IB	22	512	DWH
178	8201507-102158897	10/8/2011	11:05	Phase IB	22	509.5	DWH
179	8201500-102158862	10/8/2011	12:55	Phase IB	22	169.5	DWH
180	8201500-102158862	10/8/2011	13:00	Phase IB	22	170	DWH
181	8201500-102158862	10/8/2011	13:03	Phase IB	22	150.5	DWH
182	8201507-102158909	10/8/2011	13:10	Phase IB	22	168	DWH
183	8201507-102158909	10/8/2011	13:15	Phase IB	22	167.5	DWH
184	8201507-102158909	10/8/2011	13:20	Phase IB	22	145	DWH
185	8201507-102158881	10/8/2011	13:23	Phase IB	22	22	DWH
186	8201507-102158881	10/8/2011	13:26	Phase IB	22	18.5	DWH

Geosyntec
consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706
TaskNo: 07

Primary / Secondary: Primary | Series: 1 | Material Type: gml

Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
187	8201507-102158881	10/9/2011	7:45	Phase IB	22	363	DWH
188	8201507-102158900	10/9/2011	8:00	Phase IB	22	364	DWH
189	8201500-102158863	10/9/2011	8:45	Phase IB	22	364.5	DWH
190	8201507-102158887	10/9/2011	9:00	Phase IB	22	366.5	DWH
191	8201500-102158852	10/9/2011	9:12	Phase IB	22	370.5	DWH
192	8201507-102158901	10/9/2011	10:00	Phase IB	22	373	DWH
193	8201500-102158853	10/9/2011	10:15	Phase IB	22	375.5	DWH
194	8201507-102158879	10/9/2011	10:30	Phase IB	22	376.5	DWH
195	8201500-102158859	10/9/2011	10:50	Phase IB	22	377.5	DWH
196	8201507-102158883	10/9/2011	13:00	Phase IB	22	379	DWH
197	8201507-102158885	10/9/2011	13:45	Phase IB	22	380	DWH
198	8201507-102158902	10/9/2011	14:00	Phase IB	22	380	DWH
199	8201507-102158895	10/9/2011	14:30	Phase IB	22	380	DWH
200	8201507-102158878	10/10/2011	12:54	Phase IB	22	185.5	DWH
201	8201507-102158878	10/10/2011	13:00	Phase IB	22	325	DWH
202	8201507-102158913	10/10/2011	13:10	Phase IB	22	330	DWH
203	8201507-102158913	10/10/2011	13:54	Phase IB	22	175.5	DWH
204	8201507-102158882	10/10/2011	14:00	Phase IB	22	152.5	DWH
205	8201507-102158882	10/10/2011	14:20	Phase IB	22	323	DWH
206	8201507-102158889	10/10/2011	15:37	Phase IB	22	323	DWH
207	8201507-102158889	10/10/2011	15:48	Phase IB	22	183	DWH
208	8201507-102158874	10/10/2011	16:01	Phase IB	22	110.5	DWH
209	8201507-102158874	10/10/2011	16:50	Phase IB	22	320	DWH
210	8201507-102158874	10/10/2011	17:00	Phase IB	22	31.5	DWH
211	8201507-102158882	10/10/2011	17:05	Phase IB	22	14	DWH
212	8201507-102158874	10/10/2011	17:10	Phase IB	22	17	DWH
213	8201494-102158632	10/10/2011	17:54	Phase IB	22	183	DWH
214	8201494-102158632	10/10/2011	18:00	Phase IB	22	180	DWH
215	8201494-102158632	10/10/2011	18:06	Phase IB	22	78	DWH
216	8201499-102158808	10/10/2011	18:39	Phase IB	22	45	DWH
217	8201499-102158808	10/10/2011	18:45	Phase IB	22	315	DWH

Geosyntec
consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706
TaskNo: 07

Primary / Secondary: Primary | Series: 1 | Material Type: gml

Panel	Batch-Roll	Date	Time	Placement/Location/Comments	Width (ft.)	Length (ft.)	QA ID
218	8201499-102158808	10/10/2011	18:58	Phase IB	22	41	DWH
219	8201499-102158808	10/10/2011	19:08	Phase IB	11	30	DWH
220	8201499-102158808	10/10/2011	19:12	Phase IB	11	33	DWH
221	8201494-102158632	10/11/2011	8:45	Phase IB	22	7.5	DWH
222	8201507-102158886	10/11/2011	9:28	Phase IB	22	316.5	DWH
223	8201507-102158886	10/11/2011	9:37	Phase IB	22	194	DWH
224	8201500-102158821	10/11/2011	9:47	Phase IB	22	120	DWH
225	8201500-102158821	10/11/2011	9:57	Phase IB	22	316.5	DWH
226	8201500-102158821	10/11/2011	10:58	Phase IB	17	63	DWH
227	8201507-102158912	10/11/2011	11:07	Phase IB	17	67	DWH
228	8201507-102158912	10/11/2011	11:16	Phase IB	22	130.5	DWH
229	8201507-102158912	10/11/2011	11:20	Phase IB	22	131	DWH
230	8201507-102158912	10/11/2011	11:25	Phase IB	22	131.5	DWH
231	8201507-102158912	10/11/2011	11:30	Phase IB	22	30	DWH
232	8201500-102158816	10/11/2011	11:45	Phase IB	22	102	DWH
233	8201500-102158816	10/11/2011	11:50	Phase IB	22	133	DWH
234	8201500-102158816	10/11/2011	11:53	Phase IB	22	133	DWH
235	8201500-102158816	10/11/2011	11:56	Phase IB	22	133.5	DWH
236	8201507-102158899	10/11/2011	12:45	Phase IB	22	134	DWH
237	8201507-102158899	10/11/2011	12:50	Phase IB	22	134.5	DWH
238	8201507-102158899	10/11/2011	12:55	Phase IB	22	135	DWH
239	8201507-102158899	10/11/2011	13:00	Phase IB	22	97.5	DWH
240	8201499-102158809	10/11/2011	13:12	Phase IB	22	38.5	DWH
241	8201499-102158809	10/11/2011	13:19	Phase IB	22	137	DWH
242	8201499-102158809	10/11/2011	13:27	Phase IB	22	137.5	DWH
243	8201499-102158809	10/11/2011	14:26	Phase IB	22	138	DWH
244	8201499-102158809	10/12/2011	14:28	Phase IB	22	52	DWH
245	8201500-102158833	10/11/2011	14:40	Phase IB	22	86	DWH
246	8201500-102158833	10/11/2011	14:43	Phase IB	22	139	DWH
247	8201500-102158833	10/11/2011	14:46	Phase IB	22	140.5	DWH
248	8201500-102158833	10/11/2011	14:52	Phase IB	22	135	DWH

Geosyntec
consultants

Panel Placement Log

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

ProjNo: GJ4706
TaskNo: 07

Primary / Secondary: Primary | Series: 1 | Material Type: gml

Panel	*Batch-Roll*	*Date*	*Time*	*Placement/Location/Comments*	*Width (ft.)*	*Length (ft.)*	*QA ID*
249	8201499-102158808	10/11/2011	14:59	Phase IB	22	5.5	DWH
250	8201500-102158824	10/11/2011	15:05	Phase IB	22	140	DWH
251	8201500-102158824	10/11/2011	15:31	Phase IB	22	140.5	DWH
252	8201500-102158824	10/11/2011	15:33	Phase IB	22	141	DWH
253	8201500-102158824	10/11/2011	15:43	Phase IB	22	80	DWH
254	8201500-102158861	10/11/2011	15:48	Phase IB	22	61	DWH
255	8201500-102158861	10/11/2011	15:50	Phase IB	22	141.5	DWH
256	8201500-102158861	10/11/2011	15:58	Phase IB	22	142	DWH
257	8201500-102158861	10/11/2011	16:02	Phase IB	22	142	DWH
258	8201500-102158861	10/11/2011	16:06	Phase IB	22	19.5	DWH
259	8201500-102158825	10/11/2011	16:15	Phase IB	22	122	DWH
260	8201500-102158825	10/11/2011	16:23	Phase IB	22	140	DWH
261	8201500-102158825	10/11/2011	16:26	Phase IB	22	139	DWH
262	8201500-102158825	10/11/2011	16:30	Phase IB	22	101	DWH
263	8201494-102158634	10/11/2011	16:45	Phase IB	22	35.5	DWH
264	8201494-102158634	10/11/2011	16:48	Phase IB	22	135	DWH
265	8201494-102158634	10/11/2011	16:58	Phase IB	13	134.5	DWH

Number of Panels: 265 | Approx. Area (sq. ft). 1159909

APPENDIX J

Geomembrane Trial Seam Logs

- Calibration of Field Tensiometer
- Fusion
- Extrusion

Calibration of Field Tensiometer

10th Anniversary
CALSOURCE
Metrology Solutions
Celebrating 10 years of excellence

Tensiometer

ID Number	NAL-0802
Certificate Number	262958
Technician	Ryan Rigby
Date	February 23, 2011

Force(lbs.):

Range: 0-500 lbs. Accuracy +/- 1% ind.

Nominal	Minimum	As Found	As Left	Maximum
100	99	100		101
200	198	200		202
300	297	300		303
400	396	399		404
500	495	497		505

Notes:

Out of Tolerance Readings Highlighted
All Transferred Values Reviewed for Accuracy
Unless otherwise stated, As Left = As Found

RECEIVED
AUG - 8 2011
PARSONS

CalSource, Inc.
1005 West Fayette St
Suite 4D
Syracuse, NY 13204
866-895-8648
calsource.com

CALSOURCE
Metrology Solutions
Celebrating 10 years of excellence

CERTIFICATE OF CALIBRATION

ISSUED TO		EQUIPMENT INFORMATION	
CHENANGO CONTRACTING 29 ARBUTUS ROAD JOHNSON CITY NY 13790		ASSET NUMBER	NAL-1203
		MANUFACTURER	TEMPLETON KENLY & CO
		MODEL NUMBER	AL-0102
		DESCRIPTION	TENSIOMETER
CUSTOMER PO NUMBER:	03102011	SERIAL NUMBER	NAL-1203

TEST RESULTS

CERTIFICATE NUMBER	266834	PROCEDURE	33K6-4-1756-1
AS RECEIVED	IN TOLERANCE	INTERVAL	12 MONTHS
AS RETURNED	PASS	CALIBRATION DATE	3/23/2011
LAB TEMPERATURE	70.0 F	CALIBRATION DUE DATE	3/23/2012
LAB HUMIDITY	30.0 %	TECHNICIAN	RYAN RIGBY

COMMENTS

CALIBRATION STANDARDS

ASSET NUMBER	MANFACTURER	MODEL NUMBER	SERIAL NUMBER	DESCRIPTION	CAL DATE	CAL DUE
CAL-00278	BEOWULF	N-1	124	FORCE CAL KIT	12/16/2010	12/16/2011

CalSource certifies this instrument to have been calibrated using standards with accuracies traceable to the National Institute of Standards and Technology, derived from natural physical constants, derived from ratio measurements, or compared to consensus standards. CalSources' calibration system complies to the requirements of ISO-9002, ISO/IEC Guide 25 / 17025, ISO 10012-1, ANSI/NCSL Z540-1-1994 and MIL-STD-45662A Unless otherwise indicated, the Test Uncertainty Ratio (TUR) for each calibrated parameter is at least 4:1. The results contained are valid only for the unit listed above.

CERTIFIED BY _____ 3/23/2011
RYAN RIGBY

10th Anniversary
CALSOURCE
Metrology Solutions
Celebrating 10 years of excellence

Tensiometer

ID Number	NAL-1203
Certificate Number	266834
Technician	Ryan Rigby
Date	March 23, 2011

Force(lbs.):

Range: 0-500 lbs. Accuracy +/- 1% of ind.

Nominal	Minimum	As Found	As Left	Maximum
100	99	101		101
200	198	200		202
300	297	302		303
400	396	400		404
450	445	447		455

Notes:

Out of Tolerance Readings Highlighted
All Transferred Values Reviewed for Accuracy
Unless otherwise stated, As Left = As Found

Fusion

Geosyntec
consultants

Trial Seam Log - Fusion

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York ProjNo: GJ4706 TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase 1 Cell

Tensiometer Description: NAL-0802

Material Type gml : 2 Peel Inside: 91 ppi Shear: 120 ppi
Peel Outside: 91 ppi

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge ° Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-001	8/19/2011	12:30	W-39	VS	S/S	450	10	110-113	121-115	155-162	PPI	P	DWH
1-002	8/19/2011	12:35	W-39	VS	T/T	450	8	128-123	138-119	156-150	PPI	P	DWH
1-003	8/19/2011	12:40	W-32	TS	S/S	450	10	126-117	135-125	176-164	PPI	P	DWH
1-004	8/19/2011	12:45	W-32	TS	T/T	450	8	124-137	135-136	155-155	PPI	P	DWH
1-005	8/19/2011	16:30	W-32	TS	S/S	450	10	121-127	109-111	163-170	PPI	P	DWH
1-006	8/19/2011	16:30	W-32	TS	T/T	450	8	113-113	145-136	143-146	PPI	P	DWH
1-007	8/19/2011	17:00	W-39	VS	S/S	450	10	104-113	115-120	144-168	PPI	P	DWH
1-008	8/20/2011	8:00	W-39	VS	S/S	450	10.5	127-131	129-133	195-199	PPI	P	DWH
1-009	8/20/2011	8:05	W-39	VS	T/T	450	8	144-146	138-136	180-176	PPI	P	DWH
1-010	8/20/2011	8:05	W-20	TS	S/S	450	10	112-111	127-118	187-182	PPI	P	DWH
1-011	8/20/2011	8:10	W-20	TS	T/T	450	8	120-134	120-120	185-175	PPI	P	DWH
1-012	8/20/2011	12:15	W-39	VS	S/S	450	10.5	121-129	125-119	170-170	PPI	P	DWH
1-013	8/20/2011	13:00	W-20	TS	S/S	450	10	121-116	114-134	158-160	PPI	P	DWH
1-014	8/20/2011	13:05	W-20	TS	T/T	450	8	120-114	116-104	152-153	PPI	P	DWH
1-015	8/20/2011	13:20	W-32	DS	S/S	450	10	118-116	110-126	161-163	PPI	P	DWH
1-016	9/2/2011	8:00	W-39	VS	S/S	750	10	125-133	143-135	214-215	PPI	P	DWH
1-017	9/2/2011	8:05	W-39	VS	T/T	750	8	157-148	134-122	186-185	PPI	P	DWH
1-018	9/2/2011	8:10	W-8	TS	S/S	365	8	130-115	110-113	171-185	PPI	P	DWH
1-019	9/2/2011	8:15	W-2	DS	S/S	365	9	119-135	135-123	191-191	PPI	P	DWH
1-020	9/2/2011	12:00	W-8	TS	S/S	365	8	107-106	108-114	166-162	PPI	P	DWH
1-021	9/2/2011	12:00	W-39	VS	S/S	750	10	127-134	136-124	164-166	PPI	P	DWH
1-022	9/2/2011	13:00	W-39	VS	T/T	750	8	138-145	153-136	168-164	PPI	P	DWH
1-023	9/2/2011	13:10	W-2	DS	S/S	365	9	129-120	125-121	166-161	PPI	P	DWH
1-024	9/2/2011	16:06	W-39	VS	S/T	750	8	134-138	124-126	163-161	PPI	P	DWH
1-025	9/2/2011	16:15	W-8	TS	S/S	365	8	146-153	140-114	172-172	PPI	P	DWH
1-026	9/13/2011	10:22	W-39	VS	S/S	750	10.5	104-119	130-139	179-179	PPI	P	DWH
1-027	9/13/2011	10:23	W-39	VS	T/T	750	8	128-124	137-151	171-179	PPI	P	DWH
1-028	9/13/2011	10:24	W-8	TS	S/S	750	8	125-124	117-110	165-180	PPI	P	DWH
1-029	9/13/2011	14:50	W-8	TS	S/S	750	8	133-131	116-119	178-178	PPI	P	DWH
1-030	9/13/2011	14:51	W-39	VS	S/S	750	10.5	126-133	117-121	178-177	PPI	P	DWH
1-031	9/13/2011	14:52	W-39	VS	S/T	750	8	133-123	119-120	167-159	PPI	P	DWH
1-032	9/18/2011	10:10	W-39	VS	S/S	750	10.5	126-116	127-129	202-198	PPI	P	DWH
1-033	9/18/2011	10:11	W-39	VS	T/T	750	8	126-124	129-129	196-192	PPI	P	DWH
1-034	9/18/2011	10:15	W-8	TS	S/S	375	8	125-118	141-138	207-199	PPI	P	DWH

Geosyntec
consultants

Trial Seam Log - Fusion

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York ProjNo: GJ4706 TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase 1 Cell

Tensiometer Description: NAL-0802

Material Type gml : 2 Peel Inside: 91 ppi Shear: 120 ppi
Peel Outside: 91 ppi

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge ° Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-035	9/18/2011	10:15	W-2	CP	S/S	360	7.0	133-113	140-123	207-208	PPI	P	DWH
1-036	9/18/2011	14:00	W-2	CP	S/S	360	7.0	133-115	137-130	199-199	PPI	P	DWH
1-037	9/18/2011	14:05	W-39	VS	S/S	750	10.5	113-125	110-131	198-191	PPI	P	DWH
1-038	9/18/2011	14:06	W-39	VS	T/T	750	8	138-144	136-135	181-188	PPI	P	DWH
1-039	9/18/2011	14:15	W-8	TS	S/S	375	8	120-121	110-102	184-182	PPI	P	DWH
1-040	9/18/2011	18:00	W-39	VS	S/S	750	10.5	141-127	128-121	188-208	PPI	P	DWH
1-041	9/18/2011	18:00	W-8	TS	S/S	375	8	125-135	148-124	209-211	PPI	P	DWH
1-042	9/19/2011	8:10	W-39	VS	S/S	750	10.5	146-144	125-139	228-219	PPI	P	DWH
1-043	9/19/2011	8:10	W-39	VS	T/T	750	8	164-161	127-146	204-215	PPI	P	DWH
1-044	9/19/2011	9:00	W-2	CP	S/S	370	7	138-129	121-111	212-210	PPI	P	DWH
1-045	9/19/2011	9:55	W-8	TS	S/S	375	8	122-115	101-101	188-208	PPI	P	DWH
1-046	9/19/2011	12:50	W-2	CP	S/S	370	7	123-123	127-140	186-191	PPI	P	DWH
1-047	9/19/2011	13:00	W-39	VS	S/S	750	10.5	124-127	125-112	190-191	PPI	P	DWH
1-048	9/19/2011	13:04	W-39	VS	T/T	750	8	148-143	141-138	185-184	PPI	P	DWH
1-049	9/19/2011	14:00	W-8	TS	S/S	375	8	132-133	143-143	188-193	PPI	P	DWH
1-050	9/19/2011	17:00	W-39	VS	S/T	750	8	128-128	133-148	156-196	PPI	P	DWH
1-051	9/19/2011	17:00	W-2	CP	S/S	370	7	126-119	128-126	205-180	PPI	P	DWH
1-052	9/19/2011	18:00	W-8	TS	S/T	375	6.5	135-146	155-153	187-187	PPI	P	DWH
1-053	9/26/2011	18:00	W-8	TS	S/S	375	7	128-125	130-108	200-195	PPI	P	DWH
1-054	9/26/2011	18:00	W-39	VS	S/S	750	10	125-110	147-141	201-205	PPI	P	DWH
1-055	9/26/2011	18:03	W-39	VS	T/T	750	8	149-141	133-143	189-192	PPI	P	DWH
1-056	9/26/2011	18:05	W-39	VS	S/T	750	7	118-118	136-138	200-198	PPI	P	DWH
1-057	9/27/2011	8:00	W-39	VS	S/S	750	10.5	134-129	159-120	200-207	PPI	F	DWH
1-058	9/27/2011	8:05	W-39	VS	T/T	750	8	147-128	140-130	191-192	PPI	P	DWH
1-059	9/27/2011	8:45	W-8	TS	S/S	375	8	130-130	135-151	210-200	PPI	P	DWH
1-060	9/27/2011	8:45	W-2	CP	S/S	370	7	105-123	123-128	199-204	PPI	P	DWH
1-061	9/27/2011	9:00	W-39	VS	S/S	750	9	132-124	133-124	183-193	PPI	P	DWH
1-062	9/27/2011	12:40	W-8	TS	S/T	375	7	118-104	122-151	199-183	PPI	P	DWH
1-063	9/27/2011	14:00	W-39	VS	S/S	750	9	123-108	126-120	183-180	PPI	P	DWH
1-064	9/27/2011	14:05	W-39	VS	T/T	750	8	138-134	136-96	172-181	PPI	P	DWH
1-065	9/27/2011	14:40	W-8	TS	S/S	375	8	126-116	96-109	177-183	PPI	P	DWH
1-066	9/27/2011	14:30	W-2	CP	S/S	370	7	123-128	114-119	181-177	PPI	P	DWH
1-067	9/28/2011	8:30	W-39	VS	S/S	750	9	149-152	119-123	194-202	PPI	P	DWH
1-068	9/28/2011	8:35	W-39	VS	T/T	750	8	137-144	133-134	194-193	PPI	P	DWH

Geosyntec
consultants

Trial Seam Log - Fusion

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York ProjNo: GJ4706 TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

Tensiometer Description: NAL-0802

Material Type gml : 2 Peel Inside: 91 ppi Shear: 120 ppi
Peel Outside: 91 ppi

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge ° Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-069	9/28/2011	8:45	W-8	TS	S/S	375	8	117-131	130-133	200-201	PPI	P	DWH
1-070	9/28/2011	13:00	W-39	VS	S/S	750	9	120-119	131-129	182-178	PPI	P	DWH
1-071	9/28/2011	13:10	W-39	VS	T/T	750	8	141-160	124-138	179-184	PPI	P	DWH
1-072	9/28/2011	13:30	W-8	TS	S/S	375	8	108-106	114-111	168-175	PPI	P	DWH
1-073	10/8/2011	8:00	W-8	TS	S/S	380	7.5	117-117	113-116	206-206	PPI	P	DWH
1-074	10/8/2011	8:05	W-39	VS	S/S	750	9	127-124	97-128	212-209	PPI	P	DWH
1-075	10/8/2011	8:10	W-39	VS	T/T	750	8	131-131	143-159	207-207	PPI	P	DWH
1-076	10/8/2011	13:10	W-8	TS	S/S	380	7.5	91-94	108-102	168-166	PPI	P	DWH
1-077	10/8/2011	13:15	W-39	VS	S/S	750	10	121-117	128-122	184-178	PPI	P	DWH
1-078	10/8/2011	13:16	W-39	VS	T/T	750	8	143-150	136-138	169-175	PPI	P	DWH
1-079	10/9/2011	7:45	W-39	VS	S/S	750	9.5	146-134	131-130	225-198	PPI	P	DWH
1-080	10/9/2011	8:10	W-8	TS	S/S	380	7.5	122-127	125-133	202-228	PPI	P	DWH
1-081	10/9/2011	13:00	W-8	TS	S/S	380	7.5	106-108	116-110	155-159	PPI	P	DWH
1-082	10/9/2011	13:10	W-39	VS	S/S	750	10	120-126	116-107	167-175	PPI	P	DWH
1-083	10/10/2011	12:30	W-39	VS	S/S	750	10	120-129	131-126	168-173	PPI	P	DWH
1-084	10/10/2011	12:31	W-39	VS	T/T	750	8	129-120	125-138	158-163	PPI	P	DWH
1-085	10/10/2011	12:31	W-2	KP	S/S	365	8	117-108	99-119	168-166	PPI	P	DWH
1-086	10/10/2011	12:31	W-8	TS	S/S	380	7.5	122-114	119-106	169-173	PPI	P	DWH
1-087	10/10/2011	16:30	W-39	VS	S/S	750	10	157-155	166-139	206-204	PPI	P	DWH
1-088	10/10/2011	16:30	W-8	TS	S/S	380	7.5	128-120	141-144	192-195	PPI	P	DWH
1-089	10/10/2011	16:30	W-2	KP	S/S	380	8.5	136-136	123-136	196-201	PPI	P	DWH
1-090	10/11/2011	8:11	W-8	TS	S/S	380	7.5	124-115	138-112	202-205	PPI	P	DWH
1-091	10/11/2011	8:20	W-39	VS	S/S	750	9	130-138	117-136	210-221	PPI	P	DWH
1-092	10/11/2011	8:21	W-39	VS	T/T	750	8	155-150	140-152	201-208	PPI	P	DWH
1-093	10/11/2011	8:25	W-2	DS	S/S	380	8.5	114-120	117-128	238-198	PPI	P	DWH
1-094	10/11/2011	13:25	W-8	TS	S/S	380	7.5	122-144	120-119	177-176	PPI	P	DWH
1-095	10/11/2011	13:26	W-2	DS	S/S	380	8.5	115-114	102-111	183-188	PPI	P	DWH
1-096	10/11/2011	13:28	W-39	VS	S/S	750	10	115-123	116-127	185-188	PPI	P	DWH
1-097	10/11/2011	13:30	W-39	VS	T/T	750	8	130-126	118-115	174-179	PPI	P	DWH
1-098	10/11/2011	17:30	W-8	TS	S/S	380	7.5	141-154	129-131	208-209	PPI	P	DWH
1-099	10/11/2011	17:36	W-39	VS	S/T	750	8	137-143	132-133	188-183	PPI	P	DWH
1-100	10/31/2011	9:00	W-39	VS	S/S	750	8.5	146-140	138-133	247-226	PPI	P	DWH
1-101	10/1/2011	9:05	W-39	VS	T/T	750	7.5	136-140	131-131	213-218	PPI	P	DWH
1-102	10/1/2011	9:20	W-2	KP	S/S	365	8.5	156-153	126-139	232-235	PPI	P	DWH

Geosyntec
consultants

Trial Seam Log - Fusion

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York ProjNo: GJ4706 TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

Tensiometer Description: NAL-0802

Material Type gml : 2 Peel Inside: 91 ppi Shear: 120 ppi
Peel Outside: 91 ppi

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge ° Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-103	10/31/2011	9:50	W-8	TS	S/S	380	7	117-113	124-119	224-219	PPI	P	DWH
1-104	10/1/2011	13:05	W-8	TS	S/S	380	7	132-136	137-124	209-224	PPI	P	DWH
1-105	10/31/2011	13:06	W-39	VS	S/S	750	8.5	141-142	135-139	210-212	PPI	P	DWH
1-106	10/31/2011	13:10	W-39	VS	T/T	750	7.5	146-150	139-137	210-190	PPI	P	DWH
1-107	10/31/2011	13:10	W-2	KP	S/S	365	8.5	144-132	165-140	241-227	PPI	P	DWH
1-108	10/31/2011	15:00	W-8	TS	T/T	380	6.5	136-156	154-139	197-195	ppi	P	DWH
1-109	11/1/2011	8:20	W-8	TS	S/S	380	7	138-135	138-143	234-226	PPI	P	DWH
1-110	11/1/2011	8:25	W-2	KP	S/S	365	7	136-154	133-143	239-239	PPI	P	DWH
1-111	11/1/2011	8:30	W-39	VS	S/S	750	8	151-154	138-155	232-236	PPI	P	DWH
1-112	11/1/2011	8:35	W-39	VS	T/T	750	7	144-142	127-119	228-236	PPI	P	DWH
1-113	11/1/2011	13:00	W-8	TS	S/S	380	7	117-126	124-111	195-197	PPI	P	DWH
1-114	11/1/2011	13:05	W-8	TS	T/T	380	6.5	133-142	132-126	189-194	PPI	P	DWH
1-115	11/1/2011	13:10	W-2	KP	S/S	365	7	134-132	135-138	205-208	PPI	P	DWH
1-116	11/1/2011	13:15	W-39	VS	S/S	750	8	117-119	150-134	203-199	PPI	P	DWH
1-117	11/1/2011	13:20	W-39	VS	S/T	750	7	116-113	134-141	173-203	PPI	P	DWH
1-118	11/1/2011	13:25	W-39	VS	T/T	750	7.0	114-111	128-132	188-202	PPI	P	DWH
1-119	11/2/2011	8:05	W-2	KP	S/S	365	7	157-141	136-146	247-231	PPI	P	DWH
1-120	11/2/2011	8:10	W-8	TS	S/S	380	7.5	135-145	115-126	214-211	PPI	P	DWH
1-121	11/2/2011	8:12	W-8	TS	T/T	380	6.5	132-137	149-130	212-204	PPI	P	DWH
1-122	11/2/2011	8:20	W-39	VS	S/S	750	8	133-141	130-130	233-231	PPI	P	DWH
1-123	11/2/2011	8:25	W-39	VS	S/T	750	7	146-135	148-156	222-216	PPI	P	DWH
1-124	11/2/2011	13:00	W-8	TS	S/S	380	7.5	118-119	123-123	196-200	PPI	P	DWH
1-125	11/2/2011	13:02	W-8	TS	T/T	380	6.5	141-133	124-130	180-182	PPI	P	DWH
1-126	11/2/2011	13:20	W-39	VS	S/S	750	8	125-123	127-127	201-200	PPI	P	DWH
1-127	11/2/2011	13:25	W-39	VS	S/T	750	7	166-153	145-150	193-200	PPI	P	DWH
1-128	11/2/2011	14:00	W-2	TS	S/S	380	7.5	137-149	137-135	211-214	PPI	P	DWH
1-129	11/2/2011	14:02	W-2	TS	T/T	380	6.5	139-140	133-136	181-185	PPI	P	DWH
1-130	11/8/2011	8:20	W-39	VS	S/S	750	8.5	129-136	125-103	205-191	PPI	P	DWH
1-131	11/8/2011	8:21	W-39	VS	T/T	750	7	153-145	154-143	201-209	PPI	P	DWH
1-132	11/8/2011	8:25	W-2	KP	S/S	375	8	149-139	144-121	219-219	PPI	P	DWH
1-133	11/8/2011	10:10	W-8	TS	S/S	380	7.5	118-116	119-126	182-182	PPI	P	DWH
1-134	11/8/2011	10:12	W-8	TS	T/T	380	6.5	133-141	150-144	178-178	PPI	P	DWH
1-135	11/8/2011	12:30	W-2	KP	S/S	375	8	113-118	118-125	209-205	PPI	P	DWH
1-136	11/8/2011	13:40	W-39	VS	S/S	750	8.5	121-120	121-104	184-180	PPI	P	DWH

Geosyntec
consultants

Trial Seam Log - Fusion

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York ProjNo: GJ4706 TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

Tensiometer Description: NAL-0802

Material Type gml : 2 Peel Inside: 91 ppi Shear: 120 ppi
Peel Outside: 91 ppi

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge ° Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-137	11/8/2011	13:45	W-39	VS	T/T	750	7	125-129	134-142	172-173	PPI	P	DWH
1-138	11/8/2011	14:10	W-8	TS	S/S	380	7.5	118-132	116-112	176-176	PPI	P	DWH
1-139	11/8/2011	14:15	W-8	TS	T/T	380	6.5	117-117	130-118	168-168	PPI	P	DWH
1-140	11/9/2011	7:30	W-8	TS	S/S	380	8	130-139	121-138	205-207	PPI	P	DWH
1-141	11/9/2011	7:32	W-8	TS	T/T	380	7	135-138	136-133	186-195	PPI	P	DWH
1-142	11/9/2011	7:35	W-39	VS	S/S	750	8.5	114-127	130-145	193-215	PPI	P	DWH
1-143	11/9/2011	7:38	W-39	VS	T/T	750	7	170-170	139-150	206-194	PPI	P	DWH
1-144	11/9/2011	7:38	W-2	KP	S/S	375	8	138-141	126-143	207-211	PPI	P	DWH
1-145	11/9/2011	13:00	W-39	VS	S/S	750	8.5	129-125	139-135	191-186	PPI	P	DWH
1-146	11/9/2011	13:01	W-39	VS	T/T	750	7	126-134	143-152	186-188	PPI	P	DWH
1-147	11/9/2011	13:02	W-2	KP	S/S	375	7	114-128	125-131	196-196	PPI	P	DWH
1-148	11/9/2011	13:10	W-8	TS	S/S	380	8	107-113	125-115	177-180	PPI	P	DWH
1-149	11/9/2011	13:15	W-8	TS	T/T	380	7	99-106	109-117	159-166	PPI	P	DWH
1-150	12/20/2011	9:20	W-2	TS	S/S	380	7	138-163	138-165	223-234	ppi	p	AR
1-151	12/20/2011	13:00	W-2	TS	S/S	380	6.8	149-143	142-136	190-197	ppi	p	AR
1-152	12/22/2011	9:00	W-2	TS	S/S	385	7	158-157	164-150	240-243	ppi	p	AR

Extrusion

Geosyntec
consultants

Trial Seam Log - Extrusion

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York ProjNo: GJ4706 TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell
Tensiometer Description: NAL-0802

Material Type gml : 2 **Peel:** 78 ppi **Shear:** 120 ppi

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Extrusion		Test Results				Retest No	QA ID
						Pre heat ° Celsius	Barrel ° Celsius	Peel	Shear	Unit ppi/psi	Result P/F		
001	8/22/2011	13:30	MX-8	VS	T/T	475	500	116-137	174-172	PPI	P		DWH
002	8/23/2011	8:10	MX-8	VS	T/T	475	500	143-130	176-186	PPI	P		DWH
003	8/23/2011	13:10	MX-8	VS	T/T	475	500	132-128	178-170	PPI	P		DWH
004	8/24/2011	8:51	MX-14	DS	T/T	500	475	109-114	167-172	PPI	P		DWH
005	8/24/2011	13:05	MX-14	DS	T/T	500	475	129-103	169-178	PPI	P		DWH
006	8/26/2011	9:56	MX-14	KP	T/T	475	500	115-147	187-186	PPI	P		DWH
007	8/26/2011	12:50	MX-14	KP	T/T	475	500	125-117	166-159	PPI	P		DWH
008	8/29/2011	9:35	MX-8	VS	T/T	500	475	153-135	175-168	PPI	P		DWH
009	9/12/2011	7:58	MX-2	VS	T/T	500	500	124-111	218-210	PPI	P		DWH
010	9/12/2011	13:02	MX-14	VS	T/T	500	500	130-122	173-177	PPI	P		DWH
011	9/13/2011	7:44	MX-8	VS	T/T	500	500	126-141	188-186	PPI	P		DWH
012	9/14/2011	8:20	MX-8	VS	T/T	500	500	140-144	195-203	PPI	P		DWH
013	9/14/2011	13:00	MX-8	VS	T/T	500	500	124-134	195-193	PPI	P		DWH
014	9/16/2011	9:30	MX-8	VS	T/T	500	500	147-155	194-196	PPI	P		DWH
015	9/16/2011	13:00	MX-8	VS	T/T	500	500	126-153	178-179	PPI	P		DWH
016	9/17/2011	7:59	MX-8	VS	T/T	500	500	148-164	215-215	PPI	P		DWH
017	9/19/2011	16:15	MX-8	CP	T/T	500	525	140-131	165-170	PPI	P		DWH
018	9/21/2011	8:00	MX-8	VS	T/T	500	500	149-147	208-213	PPI	P		DWH
019	9/21/2011	13:00	MX-8	VS	T/T	500	500	124-126	176-180	PPI	P		DWH
020	9/26/2011	8:00	MX-8	VS	T/T	500	500	147-152	201-191	PPI	P		DWH
021	9/26/2011	13:00	MX-8	VS	T/T	500	500	132-141	186-181	PPI	P		DWH
022	9/29/2011	8:30	MX-8	VS	T/T	500	500	175-171	185-203	PPI	P		DWH
023	9/29/2011	13:10	MX-8	VS	T/T	500	500	135-133	189-186	PPI	P		DWH
024	10/5/2011	8:20	MX-8	VS	T/T	500	500	119-120	212-203	PPI	P		DWH
025	10/5/2011	10:45	MX-14	LV	T/T	500	500	126-118	177-175	PPI	P		DWH
026	10/5/2011	13:00	MX-8	VS	T/T	500	500	140-132	194-190	PPI	P		DWH
027	10/6/2011	8:15	MX-14	LV	T/T	500	500	125-118	216-223	PPI	P		DWH
028	10/6/2011	13:15	MX-14	LV	T/T	500	500	95-120	168-179	PPI	P		DWH
029	10/7/2011	8:05	MX-14	LV	T/T	500	500	138-141	206-209	PPI	P		DWH
030	10/7/2011	8:45	MX-8	VS	T/T	500	500	140-130	210-208	PPI	P		DWH
031	10/7/2011	13:00	MX-8	VS	T/T	500	500	142-140	188-184	PPI	P		DWH
032	10/7/2011	13:15	MX-14	LV	T/T	500	500	122-122	173-187	PPI	P		DWH
033	10/10/2011	8:00	MX-8	VS	T/T	500	500	139-140	209-205	PPI	P		DWH
034	10/11/2011	8:45	MX-8	KP	T/T	500	500	117-144	183-193	PPI	P		DWH
035	10/11/2011	12:00	MX-8	KP	T/T	500	500	143-154	179-180	PPI	P		DWH
036	10/12/2011	8:00	MX-8	VS	T/T	500	500	139-131	191-193	PPI	P		DWH

Geosyntec
consultants

Trial Seam Log - Extrusion

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York ProjNo: GJ4706 TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

Tensiometer Description: NAL-0802

Material Type gml : 2 *Peel:* 78 ppi *Shear:* 120 ppi

Trial Seam No	*Date*	*Time*	*Mach ID*	*Oper ID*	*Mat Desc*	*Extrusion*		*Test Results*				*Retest No*	*QA ID*
						Pre heat ° Celsius	*Barrel ° Celsius*	*Peel*	*Shear*	*Unit ppi/psi*	*Result P/F*		
037	10/12/2011	13:00	MX-8	VS	T/T	500	500	142-143	190-181	PPI	P		DWH
038	10/17/2011	8:30	MX-8	VS	T/T	535	500	154-143	208-215	PPI	P		DWH
039	10/17/2011	9:00	MX-5	DS	T/T	535	525	121-109	219-200	PPI	P		DWH
040	10/17/2011	13:00	MX-8	VS	T/T	535	520	128-137	205-201	PPI	P		DWH
041	10/17/2011	13:10	MX-5	DS	T/T	535	525	80-108	177-185	PPI	P		DWH
042	10/18/2011	8:00	MX-8	VS	T/T	535	500	151-147	199-194	PPI	P		DWH
043	10/18/2011	8:05	MX-5	DS	T/T	535	525	82-90	191-170	PPI	P		DWH
044	10/18/2011	13:00	MX-8	VS	T/T	535	500	132-139	183-180	PPI	P		DWH
045	10/18/2011	13:00	MX-5	DS	T/T	535	500	122-123	175-153	PPI	P		DWH
046	10/21/2011	10:45	MX-8	VS	T/T	535	500	160-142	209-211	PPI	P		DWH
047	10/24/2011	13:00	MX-8	VS	T/T	535	500	133-158	220-212	PPI	P		DWH
048	10/25/2011	8:00	MX-8	VS	T/T	535	520	146-142	219-208	PPI	P		DWH
049	10/25/2011	11:45	MX-8	VS	T/T	535	500	130-146	196-198	PPI	P		DWH
050	10/28/2011	10:11	MX-8	VS	T/T	535	525	144-140	212-209	PPI	P		DWH
051	10/28/2011	13:45	MX-8	VS	T/T	535	525	158-162	210-215	PPI	P		DWH
052	11/2/2011	14:15	MX-5	LV	T/T	500	500	152-150	186-186	PPI	P		DWH
053	11/3/2011	8:30	MX-8	VS	T/T	500	500	137-138	204-213	PPI	P		DWH
054	11/3/2011	8:45	MX-5	LV	T/T	500	500	119-121	204-210	PPI	P		DWH
055	11/3/2011	12:45	MX-5	LV	T/T	500	500	141-148	180-205	PPI	P		DWH
056	11/3/2011	12:45	MX-8	VS	T/T	500	500	132-129	177-173	PPI	P		DWH
057	11/4/2011	8:30	MX-8	VS	T/T	535	500	147-144	215-225	PPI	P		DWH
058	11/7/2011	8:00	MX-8	VS	T/T	535	500	149-162	230-208	PPI	P		DWH
059	11/7/2011	12:45	MX-8	VS	T/T	535	500	130-143	200-196	PPI	P		DWH
060	11/9/2011	15:40	MX-14	CP	T/T	465	500	137-130	225-218	PPI	P		DWH
061	11/10/2011	8:00	MX-5	LV	T/T	500	500	145-130	203-201	PPI	P		DWH
062	11/10/2011	8:00	MX-8	VS	T/T	535	500	140-142	210-189	PPI	P		DWH
063	11/10/2011	12:45	MX-8	VS	T/T	535	500	136-151	200-204	PPI	P		DWH
064	11/10/2011	12:50	MX-5	LV	T/T	500	500	111-124	204-184	PPI	P		DWH
065	11/11/2011	8:00	MX-8	VS	T/T	535	500	131-135	216-224	PPI	P		DWH
066	11/11/2011	8:00	MX-5	KP	T/T	550	500	129-151	210-218	PPI	P		DWH
067	11/14/2011	8:00	MX-8	VS	T/T	535	500	125-131	206-201	PPI	P		DWH
068	11/14/2011	8:00	MX-5	KP	T/T	535	500	139-143	202-203	PPI	P		DWH
069	11/15/2011	8:00	MX-8	VS	T/T	535	500	131-141	205-207	PPI	P		DWH
070	11/15/2011	8:30	MX-5	KP	T/T	535	500	138-135	215-210	PPI	P		DWH
071	11/15/2011	12:40	MX-5	KP	T/T	535	500	187-167	176-205	PPI	P		DWH
072	11/15/2011	13:45	MX-8	VS	T/T	535	500	110-138	187-210	PPI	P		DWH

Geosyntec
consultants

Trial Seam Log - Extrusion

Project: Onondaga Lake Sediment Consolidation Area (SCA)
Location: Camillus, New York ProjNo: GJ4706 TaskNo: 07
Description: Construction Quality Assurance for Onondaga SCA Phase I Cell

Tensiometer Description: NAL-0802

Material Type gml : 2 *Peel:* 78 ppi *Shear:* 120 ppi

Trial Seam No	*Date*	*Time*	*Mach ID*	*Oper ID*	*Mat Desc*	*Extrusion*		*Test Results*				*Retest No*	*QA ID*
						Pre heat ° Celsius	*Barrel ° Celsius*	*Peel*	*Shear*	*Unit ppi/psi*	*Result P/F*		
073	11/22/2011	9:00	MX-5	KP	T/T	500	500	152-152	230-232	PPI	P		DWH
074	12/13/2011	14:00	MX-8	LV	T/T	500	500	90-83	217-219	PPI	P		DWH
075	12/14/2011	9:30	MX-8	LV	T/T	500	500	109-101	215-214	PPI	P		DWH
076	12/20/2011	9:15	MX-14	VC	T/T	550	525	109-140	216-218	PPI	P		AR
077	12/20/2011	12:45	MX-14	VC	T/T	550	525	142-140	220-219	PPI	P		AR
078	12/20/2011	13:00	MX-8	VS	T/T	550	550	150-142	221-218	PPI	P		AR
079	12/22/2011	9:05	MX-19	MB	T/T	425	525	114-140	221-204	PPI	P		AR
080	12/22/2011	9:00	MX-8	VS	T/T	550	535	113-131	212-194	PPI	P		AR
081	12/22/2011	13:00	MX-19	MB	T/T	550	525	120-106	190-205	PPI	P		AR
082	12/22/2011	13:00	MX-8	VS	T/T	550	535	108-118	200-210	PPI	P		AR
083	5/21/2012	9:30	X16	VC	T/T	475	500	118-108	168-174	ppi	p		BC