WASTE MANAGEMENT

TEKOI LANDFILL
2016 MSW PHASE 2C

CONSTRUCTION DOCUMENTATION SUBMITTAL

Prepared by:
Hansen, Allen & Luce, Inc.

November 2016

HANSEN ALLEN & LUCE inc
ENGINEERS

WASTE MANAGEMENT - TEKOI LANDFILL

2016 MSW PHASE 2C CONSTRUCTION PROJECT
CONSTRUCTION DOCUMENTATION

NOVEMBER 2016

HANSEN ALLEN & LUCE INC
ENGINEERS

WASTE MANAGEMENT

TEKOI LANDFILL
2016 MSW PHASE 2C

CONSTRUCTION DOCUMENTATION SUBMITTAL

November 2016

HANSEN ALLEN & LUCE inc
ENGINEERS

CERTIFICATION LETTER

HANSEN ALLEN & LUCE inc
ENGINEERS

SALT LAKE AREA OFFICE
6771 South 900 East
Midvale, Utah 84047
Phone: (801) 566-5599

Candace Bear
Chairwoman
Skull Valley Band of Goshute Indians
407 Skull Valley Road
Skull Valley, Utah 84029

November 10, 2016

Attn: Tribal EPA

Re: Tekoi Balefill Facility - Completion of 2016 MSW Phase 2C Construction
Construction Documentation Submittal for Geosynthetics

Dear Chairwoman:

Submitted herewith is construction documentation for deployment of geosynthetic materials associated with construction of the area associated with 2016 MSW Phase 2C Construction of the facility located within Section 26, Township 5 South, Range 8 West, Salt Lake Base & Meridian and on the Skull Valley Band of Goshute Indians Reservation. This submittal provides the geosynthetics documentation necessary for the completed cell construction project. Geosynthetic Clay Liner (GCL) was used in lieu of compacted clay liner based on the approval provided by the Goshute Tribal EPA and by Regional 8 US EPA for the Phase 1C 2007a construction area and all subsequent construction areas.

Included in the documentation are daily construction reports, sub-grade acceptance, GCL deployment, trial seam tests, HDPE geomembrane deployment, seam acceptance, seam non-destructive testing, seam destructive testing, a log of geomembrane repairs, geomembrane as-built drawings, geocomposite deployment and photographs. Manufacturer's material certifications for geosynthetic materials used for construction associated with this submittal are also provided.

CONSTRUCTION DOCUMENTATION

Daily Construction Reports

Daily Construction Reports for the geosynthetics installation were written by CQA personnel from Hansen, Allen & Luce (HAL) for each day that the geosynthetics installation activities were observed. Geosynthetics daily construction reports are dated September 14 through September 20, 2011 and include report numbers 160914-1 through 160920-1, referencing the dates for each report numbered consecutively. These reports provide a description of activities and weather conditions for each day that the geosynthetics installer's personnel were on site.

Geosynthetics

Sub-grade Acceptance. Sub-grade acceptance was provided by the geosynthetics installer and by the CQA observer prior to installation of any geosynthetic materials over prepared sub-grades.

The sub-grade acceptance forms indicate that the subrade surface is free of objects and has been constructed such that no damage is expected to the overlying geosynthetic materials.

Material Certifications. Manufacturer's material certifications for the Geosynthetic Clay Liner (GCL), HDPE geomembrane, and geocomposite materials were reviewed and results were tabulated for approval by CQA personnel. The tabulated review and all certifications provided are included with this 2016 MSW Phase 2C construction documentation.

Geosynthetic Clay Liner (GCL). The GCL was deployed following the sub-grade acceptance. The GCL was deployed starting on September 15, 2016 and completed on September 19, 2016, concurrent with the HDPE geomembrane deployment. The GCL was covered by the HDPE geomembrane the same working day the GCL was placed. Each roll of deployed GCL was checked against the list of approved rolls of GCL material compiled during the material certification review. Several rolls that were used were left over following the previous expansion project in 2011. These rolls were covered and kept inside a maintenance storage structure during that entire period. There were no defects (equipment damage, holes, thin spots, areas where bentonite has become displaced through hydration, etc) observed during the placement of the GCL.

60-mil HDPE Geomembrane Liners. Deployed panels of 60-mil geomembrane were provided a panel number (P-1 through P-53) and manufactured roll numbers were documented with each panel of geomembrane deployed. Each panel of liner deployed was checked against the list of approved rolls of geomembrane material resulting from the material certification review. The panels of liner were also observed for defects during and after deployment. All defects were noted on cap inventory forms provided with this submittal. The defects were tracked using the cap inventory forms to ensure repairs were made prior to deployment or placement of any materials overlying the geomembrane liner. A total of 115 repairs were documented with all repairs being tracked, repaired, and non-destructively tested. The lining system associated with this submittal consists 60-mil smooth HDPE geomembrane on the floor and 60-mil textured HDPE geomembrane on the north and south interior slopes.

Prior to welding each day, trial weld seams were completed and tested for peel and shear. Production welding in the cell was only approved after passing results from the trial welds were achieved. The trial weld logs providing the results of the trial weld seams are provided with this submittal.

The entire length of all welded seams were "non-destructive" tested using either air pressure testing for fusion welded seams and vacuum testing for extrusion welded seams. All air pressure tests are documented in the non-destructive testing forms for hot wedge welding included in this submittal. Extrusion welding was completed on seams and patches placed over locations requiring liner repairs. Vacuum testing for the extrusion welded seams are provided on the vacuum test forms for extrusion welding. Vacuum testing for repairs are all documented on the cap inventory forms. All welds associated with seaming and repairs were tested "non-destructively" in their entirety prior to acceptance of liner installation.

Twenty-four destructive seam tests D-1 through D-24 were completed on the approximately 10,000 feet of total seaming length completed (representing about one test per 417 feet compared to the required one test per 500 feet) and all destructive seam tests passed. Additionally, D-1 and D-3 were sent to an independent laboratory (TRI Environmental) for quality assurance testing. Results

from the independent laboratory showed passing results on all samples. The complete tabulation of destructive seam tests and results are included with this submittal.

Geocomposite. The geocomposite (bonded drainage net and filter fabric) materials were placed above the liner system on the floor of the landfill. Each roll of geocomposite delivered to the site was checked against the list of approved rolls of material resulting from the material certification review. Several rolls were also left over from the 2011 project. These rolls were covered and kept inside a maintenance storage structure during that entire period. The rolls were observed for overlap and tie frequency and for damaged or defective areas during deployment. Any damage during placement was repaired by installing additional geocomposite material in the damaged or defective areas prior to placing overlying materials. The transmissivity requirement was recalculated, as presented in the Appendix, which resulted in a slightly lower requirement due to the use of a geocomposite versus a geonet with an overlying geotextile.

Geomembrane "As-Built" Drawings. Record drawings showing geomembrane panel locations, seams, tested seams, etc. are provided as Sheets 1 through 5 with this submittal.

GEOSYNTHETICS INSTALLATION CERTIFICATION

Based on on-site CQA observation and on our review of the documentation provided herein, it is our opinion that the geosynthetic materials installed for this 2016 MSW Phase 2C construction area were installed in general accordance with the design and with the CQA plan. Please contact us with any questions or comments regarding information contained in this letter.

Sincerely,
HANSEN, ALLEN & LUCE, INC.

Gordon L. Jones, P.E.
Project Engineer/Geosynthetics CQA Officer

DAILY CONSTRUCTION REPORTS

HANSEN ALLEN & LUCE inc
ENGINEERS

DAILY CONSTRUCTION REPORT

HANSEN ALLEN & LUCE inc
ENGINEERS

CLIENT:	Waste Management
PROJECT NO.:	290.02.160
PROJECT:	Tekoi 2016 Cell Expansion
CONTRACTOR:	ESI (Environmental Specialties International)

REPORT NO.	160914-1
DATE	9/14/2016
TIME	1115 TO 1415

CONDITIONS

WEATHER	CL	X	PC		OC		RN		SN		MIN TEMP	50°F	MAX TEMP	67°F
WIND	STILL	X	LOW	X	MOD.		HIGH				PRECIP	none		

AVERAGE FIELD FORCE

Name of Contractor	Non-M.	Man.	Name of Contractor	Non-M.	Man.
ESI (Environmental Specialties International)	2	9			
Hughes General Contractors	2	2			

MAJOR EQUIPMENT USED ON SITE

No.	Description	Used	No.	Description	Used
1	Telescopic Forklift	Y			
1	Kubota SVL90-2 Skid Steer	Y			
1	Kubota RTV900XT Side-by-side	Y			

VISITORS

Time	Name	Representing	Remarks

CONSTRUCTION ACTIVITIES

Arrived on site at 1115.

Liner crew was doing prep work filling sandbags, etc.

Excavating crew was still prepping the floor; adding fill, grading, and rolling it. Was working north to south, west to east, beginning in the far northeast corner.

As floor wasn't ready to begin deployment, ESI liner crew left site at 1200.

The west 50 feet or so was prepped at the time I left.

Left site at 1415.

BY: Mike Price

DAILY CONSTRUCTION REPORT

HANSEN ALLEN & LUCE inc
ENGINEERS

CLIENT:	Waste Management
PROJECT NO.:	290.02.160
PROJECT:	Tekoi 2016 Cell Expansion
CONTRACTOR:	ESI (Environmental Specialties International)

REPORT NO.	160915-1
DATE	9/15/2016
TIME	0705 TO 1740

CONDITIONS

WEATHER	CL	X	PC		OC		RN		SN		MIN TEMP	40°F	MAX TEMP	70°F
WIND	STILL	X	LOW	X	MOD.		HIGH				PRECIP	none		

AVERAGE FIELD FORCE

Name of Contractor	Non-M.	Man.	Name of Contractor	Non-M.	Man.
ESI (Environmental Specialties International)	2	9			
Hughes General Contractors	1	3			

MAJOR EQUIPMENT USED ON SITE

No.	Description	Used	No.	Description	Used
1	Telescopic Forklift	Y			
1	Kubota SVL90-2 Skid Steer	Y			
1	Kubota RTV900XT Side-by-side	Y			

VISITORS

Time	Name	Representing	Remarks

CONSTRUCTION ACTIVITIES

Arrived on site at 0705.

Liner crew deployed GCL and liner over approved subgrade. Deployed from the far northwest corner of project area, from north to south, west to east. Began at existing tie in on west end of north bench, working south then east.

Typical Deployment Notes:
- All latitudinal seams were reinforced with supplemental bentonite and fused with a torch.
- All liner seams were wedge welded after welders had qualified via passing trial welds. All seams then passed non-destructive air tests.
- Multiple destructive samples were taken from liner and passed CQC tests.

Excavation crew continued prepping the subgrade, working north to south, west to east.

At end of day, no GCL was left exposed from under liner. Ended day having deployed liner panels P1-P8 and associated GCL. Floor was 70% prepped.

Left site at 1740.

BY: Mike Price

HANSEN ALLEN & LUCE inc
ENGINEERS

DAILY CONSTRUCTION REPORT

CLIENT:	Waste Management
PROJECT NO.:	290.02.160
PROJECT:	Tekoi 2016 Cell Expansion
CONTRACTOR:	ESI (Environmental Specialties International)

REPORT NO.	160916-1
DATE	9/16/2016
TIME	0710 TO 1820

CONDITIONS

WEATHER	CL	X	PC		OC		RN		SN		MIN TEMP	41°F	MAX TEMP	81°F
WIND	STILL	X	LOW	X	MOD.		HIGH				PRECIP	none		

AVERAGE FIELD FORCE

Name of Contractor	Non-M.	Man.	Name of Contractor	Non-M.	Man.
ESI (Environmental Specialties International)	2	9			
Hughes General Contractors	1	3			

MAJOR EQUIPMENT USED ON SITE

No.	Description	Used	No.	Description	Used
1	Telescopic Forklift	Y			
1	Kubota SVL90-2 Skid Steer	Y			
1	Kubota RTV900XT Side-by-side	Y			

VISITORS

Time	Name	Representing	Remarks

CONSTRUCTION ACTIVITIES

Arrived on site at 0710.

Liner crew continued deploying GCL and liner over approved subgrade, continuing north to south, west to east.

See Typical Deployment Notes from 9/15/2016 construction report.

Excavation crew continued prepping the subgrade, working north to south, west to east. Completed subgrade preparation at approx. 1330. Excavation crew left site at approx. 1430.

At end of day, no GCL was left exposed from under liner. Ended day having deployed liner panels P9-P24 and associated GCL.

Left site at 1820.

BY: Mike Price

HANSEN ALLEN & LUCE inc
ENGINEERS

DAILY CONSTRUCTION REPORT

CLIENT:	Waste Management
PROJECT NO.:	290.02.160
PROJECT:	Tekoi 2016 Cell Expansion
CONTRACTOR:	ESI (Environmental Specialties International)

REPORT NO.	160917-1
DATE	9/17/2016
TIME	0730 TO 1800

CONDITIONS

WEATHER	CL	X	PC		OC		RN		SN		MIN TEMP	42°F	MAX TEMP	81°F
WIND	STILL	X	LOW	X	MOD.		HIGH				PRECIP	none		

AVERAGE FIELD FORCE

Name of Contractor	Non-M.	Man.	Name of Contractor	Non-M.	Man.
ESI (Environmental Specialties International)	2	9			

MAJOR EQUIPMENT USED ON SITE

No.	Description	Used	No.	Description	Used
1	Telescopic Forklift	Y			
1	Kubota SVL90-2 Skid Steer	Y			
1	Kubota RTV900XT Side-by-side	Y			
1	Bobcat T630 Skid Steer	Y			

VISITORS

Time	Name	Representing	Remarks

CONSTRUCTION ACTIVITIES

Arrived on site at 0730.

Liner crew continued deploying GCL and liner over approved subgrade, continuing north to south, west to east.

See Typical Deployment Notes from 9/15/2016 construction report.

Liner crew's Kubota skid steer broke down. As a result of the equipment failure, progress was delayed for half the day until a replacement unit (Bobcat T630) was brought out to the site.

At end of day, no GCL was left exposed from under liner. Ended day having deployed liner panels P25-P36 and associated GCL.

Left site at 1800.

BY: Mike Price

DAILY CONSTRUCTION REPORT

HANSEN ALLEN & LUCE inc ENGINEERS

CLIENT:	Waste Management
PROJECT NO.:	290.02.160
PROJECT:	Tekoi 2016 Cell Expansion
CONTRACTOR:	ESI (Environmental Specialties International)

REPORT NO.	160918-1
DATE	9/18/2016
TIME	0725 TO 1705

CONDITIONS

WEATHER	CL	X	PC		OC		RN		SN		MIN TEMP	43°F	MAX TEMP	78°F
WIND	STILL	X	LOW	X	MOD.		HIGH				PRECIP	none		

AVERAGE FIELD FORCE

Name of Contractor	Non-M.	Man.	Name of Contractor	Non-M.	Man.
ESI (Environmental Specialties International)	2	9			

MAJOR EQUIPMENT USED ON SITE

No.	Description	Used	No.	Description	Used
1	Telescopic Forklift	Y			
1	Kubota RTV900XT Side-by-side	Y			
1	Bobcat T630 Skid Steer	Y			

VISITORS

Time	Name	Representing	Remarks

CONSTRUCTION ACTIVITIES

Arrived on site at 0725.

Liner crew continued deploying GCL and liner over approved subgrade, continuing north to south, west to east.

See Typical Deployment Notes from 9/15/2016 construction report.

At end of day, no GCL was left exposed from under liner. Ended day having deployed liner panels P37-P51 and associated GCL.

Left site at 1705.

BY: Mike Price

DAILY CONSTRUCTION REPORT

HANSEN ALLEN & LUCE inc
ENGINEERS

CLIENT:	Waste Management
PROJECT NO.:	290.02.160
PROJECT:	Tekoi 2016 Cell Expansion
CONTRACTOR:	ESI (Environmental Specialties International)

REPORT NO.	160919-1
DATE	9/19/2016
TIME	0725 TO 1615

CONDITIONS

WEATHER	CL	X	PC		OC		RN		SN		MIN TEMP	43°F	MAX TEMP	77°F
WIND	STILL	X	LOW	X	MOD.		HIGH				PRECIP	none		

AVERAGE FIELD FORCE

Name of Contractor	Non-M.	Man.	Name of Contractor	Non-M.	Man.
ESI (Environmental Specialties International)	2	10			

MAJOR EQUIPMENT USED ON SITE

No.	Description	Used	No.	Description	Used
1	Telescopic Forklift	Y			
1	Kubota RTV900XT Side-by-side	Y			
1	Bobcat T630 Skid Steer	Y			

VISITORS

Time	Name	Representing	Remarks
1430	Gordon Jones	Hansen, Allen & Luce	On site for progress review

CONSTRUCTION ACTIVITIES

Arrived on site at 0725.

Liner crew continued deploying GCL and liner over approved subgrade, continuing north to south, west to east.

See Typical Deployment Notes from 9/15/2016 construction report.

Crew completed liner installation.

Deployed geocomposite on the floor beginning in the extreme southwest corner of the project area and working west to east, south to north. Geonet portion of the composite material was secured with heavy duty cable ties, 4-5' OC along longitudinal seams, and 1' OC along latitudinal butt ends. The geotextile of the composite was then sewn.

Ended day having deployed liner panels P52-P53 and associated GCL, as well as 14 rolls of geocomposite.

Left site at 1615.

BY: Mike Price

HANSEN ALLEN & LUCE inc
ENGINEERS

DAILY CONSTRUCTION REPORT

CLIENT:	Waste Management
PROJECT NO.:	290.02.160
PROJECT:	Tekoi 2016 Cell Expansion
CONTRACTOR:	ESI (Environmental Specialties International)

REPORT NO.	160920-1
DATE	9/20/2016
TIME	0730 TO 1805

CONDITIONS

WEATHER	CL	X	PC		OC		RN		SN		MIN TEMP	47°F	MAX TEMP	88°F
WIND	STILL	X	LOW	X	MOD.		HIGH				PRECIP	none		

AVERAGE FIELD FORCE

Name of Contractor	Non-M.	Man.	Name of Contractor	Non-M.	Man.
ESI (Environmental Specialties International)	2	10			

MAJOR EQUIPMENT USED ON SITE

No.	Description	Used	No.	Description	Used
1	Telescopic Forklift	Y			
1	Kubota RTV900XT Side-by-side	Y			
1	Bobcat T630 Skid Steer	Y			

VISITORS

Time	Name	Representing	Remarks

CONSTRUCTION ACTIVITIES

Arrived on site at 0730.

Crew deployed geocomposite on the floor continuing west to east, south to north. See geocomposite installation notes on 9/19/2016 construction report. Ended up using all new rolls of geocomposite as well as 6.5 of 8 old rolls on site.

Ended day having completed geocomposite deployment. The next morning, crew was planning to complete some minor patches on the geocomposite, as well as trim the geocomposite extending beyond the liner on the east end.

Left site at 1805.

BY: Mike Price

SUBGRADE ACCEPTANCE

HANSEN ALLEN & LUCE inc
ENGINEERS

GEOSYNTHETICS SUB-GRADE ACCEPTANCE

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

The areas of prepared soil surfaces providing the sub-grade for the installation of the geosynthetic materials is approved as provided and is free of sharp objects and debris that would cause damage to the installation of the geosynthetic materials installed.

Acceptable areas are below the following HDPE geomembrane panels:

Beginning Panel	Ending Panel	Acceptance Date	Accepted By	Comments
P1	P8	9 / 15 / 16	RM	
P9	P24	9 / 16 / 16	RM	
P25	P36	9 / 17 / 16	RM	
P37	P51	9 / 18 / 16	RM	
P52	P53	9 / 19 / 16	RM	
		/ /		
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ROBERTO MILLAN

CQC Geosynthetics Installer

GCL DEPLOYED ROLL ACCEPTANCE

HANSEN ALLEN & LUCE inc
ENGINEERS

GCL DEPLOYED ROLL ACCEPTANCE

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

Slope

ROLL NUMBER	LOT NUMBER	VISUAL ACCEPTANCE	LOCATION	DATE DEPLOYED	APPV'D BY
~~4930~~				9/ /16	
00004959	20105LO	Y	N slope, partial roll	9/ 15 /16	MCP
4930	"	Y	N slope, row 2,3	9/ 15 /16	MCP
"	"	Y	S slope row 1, W end	9/ 15 /16	MCP
4232	LL-30-2016	Y	S slope row 1,2, 3	9/ 15 /16	MCP
4234	"	Y	N slope row 4,5, ~~6~~	9/ 16 /16	MCP
4231	"	Y	N slope row 6, 7	9/ 16 /16	MCP
4230	"	Y	S slope rows 4,5	9/ 16 /16	MCP
4238	"	Y	N slope rows 8, 9	9/ 16 /16	MCP
4223	"	Y	N slope rows 10,	9/ 16 /16	MCP
4228	"	Y	S slope row 10, N row 11,12	9/ 16 /16	MCP
4225	"	Y	N slope rows 12, 13, 14	9/ 17 /16	MCP
4235	"	Y	S slope rows 11, 12, 13	9/ 17 /16	MCP
4237	"	Y	N slope rows 16, 17	9/ 18 /16	MCP
4226	"	Y	N slope rows 18, 19	9/ 18 /16	MCP
4224	"	Y	N slope rows 20, 21	9/ 18 /16	MCP
4233	"	Y	S slope	9/ 18 /16	MCP
4227	"	Y	N slope + S slope	9/ 18 /16	MCP
49~~1~~54	20105LO	Y	S slope, E end 2 panels	9/ 19 /16	MCP
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	

CQA Officer Review Signature

CQA Field Signature

GCL DEPLOYED ROLL ACCEPTANCE

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

Floor

ROLL NUMBER	LOT NUMBER	VISUAL ACCEPTANCE	LOCATION	DATE DEPLOYED	APPV'D BY
00000253	201103LO	Y	Floor W rail at N	9/ 15 /16	MCP
264	"	Y	rail - 2	9/ 15 /16	MCP
270	"	Y	row 1 - 3	9/ 15 /16	MCP
255	"	Y	row 1 - 4	9/ 15 /16	MCP
257	"	Y	row 2 - 1	9/ 15 /16	MCP
256	"	Y	row 2 - 2	9/ 15 /16	MCP
252	"	Y	row 2 - 3	9/ 15 /16	MCP
254	"	Y	row 2 - 4	9/ 15 /16	MCP
267	"	Y	row 3 - 1	9/ 15 /16	MCP
266	"	Y	row 3 - 2	9/ 15 /16	MCP
268	"	Y	row 3 - 3	9/ 15 /16	MCP
1988	LL-30-2016	Y	row 3 - 4	9/ 15 /16	MCP
1969	"	Y	row 12 5	9/ 15 /16	MCP
~~1959~~ "		Y	row 4 - 1	9/ 16 /16	MCP
1959	"	Y	row 5 - 1	9/ 16 /16	MCP
1961	"	Y	row 6 - 1	9/ 16 /16	MCP
2003	"	Y	row 7 - 1	9/ 16 /16	MCP
1929	"	Y	row 4 - 2	9/ 16 /16	MCP
1939	"	Y	row 5 - 2	9/ 16 /16	MCP
1972	"	Y	row 7 - 2	9/ 16 /16	MCP
1991	"	Y	row 6 - 2	9/ 16 /16	MCP
1979	"	Y	row 5 - 3	9/ 16 /16	MCP
1994	"	Y	row 4 - ~~3~~ 4	9/ 16 /16	MCP
1944	"	Y	row 5 - 4	9/ 16 /16	MCP
1990	"	Y	row 6 - 3	9/ 16 /16	MCP
1937	"	Y	row 7 - 3	9/ 16 /16	MCP

CQA Officer Review Signature

CQA Field Signature

GCL DEPLOYED ROLL ACCEPTANCE

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

Floor

ROLL NUMBER	LOT NUMBER	VISUAL ACCEPTANCE	LOCATION	DATE DEPLOYED	APPV'D BY
1926	LL-30 -2016	Y	row5 - 5 ~~row 6 4 5 5~~	9/ 16 /16	MCP
1943	"	Y	row 4-5, row 5-5	9/ 16 /16	MCP
1960	"	Y	row 6-4	9/ 16 /16	MCP
1941	"	Y	row 7-4	9/ 16 /16	MCP
1940	"	Y	row 6-5, row 7-5, row 5-6	9/ 16 /16	MCP
1970	"	Y	row 8-1	9/ 16 /16	MCP
1993	"	Y	row 9-1	9/ 16 /16	MCP
1963	"	Y	row 10-1	9/ 16 /16	MCP
1935	"	Y	row 8-2	9/ 16 /16	MCP
1964	"	Y	row 9-2	9/ 16 /16	MCP
1966	"	Y	row 10-2	9/ 16 /16	MCP
1934	"	Y	row 8-3	9/ 16 /16	MCP
1982	"	Y	row 9-3	9/ 16 /16	MCP
2005	"	Y	row 10-3	9/ 16 /16	MCP
1967	"	Y	row 8-4	9/ 16 /16	MCP
1942	"	Y	row 9-4	9/ 16 /16	MCP
1930	"	Y	rows 8-5, 9-5, 10-5	9/ 16 /16	MCP
1962	"	Y	row 11-1	9/ ~~16~~ 17 /16	MCP
1978	"	Y	row 12-1	9/ 17 /16	MCP
2002	"	Y	row 13-1	9/ 17 /16	MCP
1974	"	Y	row 11-2	9/ 17 /16	MCP
1947	"	Y	row 12-2	9/ 17 /16	MCP
1928	"	Y	row 13-2	9/ 17 /16	MCP
1992	"	Y	row 11-3	9/ 17 /16	MCP
1933	"	Y	row 12-3	9/ 17 /16	MCP
1952	"	Y	row 13-3	9/ 17 /16	MCP

CQA Officer Review Signature

CQA Field Signature

GCL DEPLOYED ROLL ACCEPTANCE

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

ROLL NUMBER	LOT NUMBER	VISUAL ACCEPTANCE	LOCATION	DATE DEPLOYED	APPV'D BY
2004	LL-30-2016	Y	row 11-4	9/ 17 /16	MCP
1968	"	Y	row 12-4	9/ 17 /16	MCP
1989	"	Y	row 13-4	9/ 17 /16	MCP
2001	"	Y	row 11-5, 12-5, 13-5	9/ 17 /16	MCP
1950	"	Y	row 13-5, row 18-3	9/ 17-18/16	MCP
2014	"	Y	row 14-1	9/ 17 /16	MCP
1981	"	Y	row 15-1	9/ 17 /16	MCP
1971	"	Y	row 14-2	9/ 17 /16	MCP
1938	"	Y	row 15-2	9/ 17 /16	MCP
1946	"	Y	row 14-3	9/ 17 /16	MCP
1925	"	Y	row 15-3	9/ 17 /16	MCP
1927	"	Y	row 14-4	9/ 17 /16	MCP
1965	"	Y	row 15-4	9/ 17 /16	MCP
1973	"	Y	row 16-1	9/ 18 /16	MCP
1932	"	Y	row 17-1	9/ 18 /16	MCP
1996	"	Y	row 18-1	9/ 18 /16	MCP
1953	"	Y	row 19-1	9/ 18 /16	MCP
1955	"	Y	row 20-1	9/ 18 /16	MCP
1949	"	Y	row 21-1	9/ 18 /16	MCP
2000	"	Y	row 16-2	9/ 18 /16	MCP
1945	"	Y	row 17-2	9/ 18 /16	MCP
1954	"	Y	row 18-2	9/ 18 /16	MCP
1948	"	Y	row 19-2	9/ 18 /16	MCP
1985	"	Y	row 20-2	9/ 18 /16	MCP
1977	"	Y	row 21-2	9/ 18 /16	MCP
"	"	Y	row 16-3	9/ 18 /16	MCP

CQA Officer Review Signature

CQA Field Signature

GCL DEPLOYED ROLL ACCEPTANCE

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

ROLL NUMBER	LOT NUMBER	VISUAL ACCEPTANCE	LOCATION	DATE DEPLOYED	APPV'D BY
	LL-30-2016	Y	row 17-3	9/ 18 /16	MCP
1931	"	Y	row 16-4	9/ 18 /16	MCP
1997	"	Y	row 17-4	9/ 18 /16	MCP
2013	"	Y	row 18-4, 14-5, 15-6	9/ 18 /16	MCP
1987	"	Y	row 18-5	9/ 18 /16	MCP
1983	"	Y	row 19-3	9/ 18 /16	MCP
1995	"	Y	row 20-3	9/ 18 /16	MCP
1986	"	Y	row 21-3	9/ 18 /16	MCP
1984	"	Y	row 19-4	9/ 18 /16	MCP
2012	"	Y	row 20-4	9/ 18 /16	MCP
1998	"	Y	row 21-4	9/ 18 /16	MCP
1999	"	Y	rows 15-5, 16-5, 17-5	9/ 18 /16	MCP
"	"	Y	row 18-6	9/ 18 /16	MCP
1956	"	Y	rows 18-7, 19-5, 20-5	9/ 18 /16	MCP
2006	"	Y	partial remaining	9/ 18 /16	MCP
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	
				9/ /16	

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE TRIAL SEAM LOGS

HANSEN ALLEN & LUCE inc
ENGINEERS

HDPE GEOMEMBRANE TRIAL SEAM LOG

2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

Sample	Date	Time	Mach#	Tech	Amb	Hot Shoe Temp/Speed	Extrusion Gun Temp/Preheat	Peel (lbs.) In / Out	Shear Pounds	P/F	Failure Mode FTB/Non - FTB
	9/15/16	1053	4171	ML	65F	850 / 4.5	/	126 / 129	160	P/F	
Remarks: Textured to smooth HDPE								132 / 133	163		
								134 / 138	165		
								139 / 131	163		
								135 / 143	165		
	9/15/16	1045	2028	CC	65F	850 / 3.5	/	133 / 136	152	P/F	
Remarks: Textured to smooth HDPE								130 / 136	158		
								133 / 136	156		
								143 / 141	160		
								146 / 140	157		
	9/15/16	1045	4171	ML	65F	850 / 6.5	/	134 / 140	155	P/F	
Remarks: Smooth to smooth HDPE								137 / 133	155		
								128 / 134	157		
								133 / 136	154		
								137 / 143	156		
	9/15/16	1050	2028	CC	65F	850 / 4.0	/	140 / 136	160	P/F	
Remarks: Smooth to smooth HDPE								137 / 131	156		
								128 / 139	158		
								139 / 136	160		
								140 / 141	157		
	9/15/16	1544	5379	OM	65F	/	500 / 500	124 /	140	P/F	
Remarks: Textured to textured HDPE								126 /	143		
								127 /	145		
								125 /	136		
								130 /	139		
	9/15/16	1542	5379	OM	65F	/	500 / 500	128 /	145	P/F	
Remarks: Smooth to smooth HDPE								130 /	144		
								130 /	143		
								131 /	145		
								133 /	146		

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE
TRIAL SEAM LOG
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

Sample	Date	Time	Mach#	Tech	Amb	Hot Shoe Temp/Speed	Extrusion Gun Temp/Preheat	Peel (lbs.) In / Out	Shear Pounds	P/F	Failure Mode FTB/Non - FTB
	9/15/16	1540	5379	OM	65F	/	500 / 500	126 /	147	P/F	
Remarks: Textured to smooth HDPE								128 /	146		
								130 /	147		
								131 /	148		
								129 /	147		
	9/16/16	0745	5379	OM	42F	/	500 / 500	108 /	163	P/F	
Remarks: Smooth to smooth HDPE								106 /	163		
								112 /	165		
								107 /	160		
								110 /	162		
	9/16/16	1016	4171	ML	57F	850 / 6.5	/	124 / 114	161	P/F	
Remarks: Smooth to smooth HDPE								113 / 119	161		
								112 / 115	163		
								116 / 111	162		
								118 / 115	160		
	9/16/16	1015	2028	CC	57F	850 / 4.0	/	123 / 113	167	P/F	
Remarks: Smooth to smooth HDPE								126 / 114	163		
								112 / 118	165		
								128 / 116	167		
								115 / 110	163		
	9/16/16	1310	4163	ML	66F	860 / 6.5	/	117 / 122	136	P/F	
Remarks: Smooth to smooth HDPE								122 / 120	140		
								121 / 113	133		
								110 / 118	137		
								125 / 125	138		
	9/16/16	1505	2028	CC	70F	850 / 3.5	/	130 / 131	143	P/F	
Remarks: Smooth to textured HDPE								127 / 125	140		
								129 / 126	141		
								130 / 125	140		
								123 / 119	139		

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE TRIAL SEAM LOG

2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

Sample	Date	Time	Mach#	Tech	Amb	Hot Shoe Temp/Speed	Extrusion Gun Temp/Preheat	Peel (lbs.) In / Out	Shear Pounds	P/F	Failure Mode FTB/Non - FTB
	9/16/16	1500	2028	CC	70F	850 / 4.0	/	130 / 122	139	P/F	
Remarks: Smooth to smooth								125 / 117	140		
								123 / 116	142		
								125 / 115	140		
								121 / 116	138		
	9/16/16	1456	5379	OM	70F	15 /	500 / 500	125	140	P/F	
Remarks: Smooth to textured								133 /	139		
								129 /	143		
								130 /	141		
								129 /	138		
	9/16/16	1458	5379	OM	70F	/	500 / 500	125 /	137	P/F	
Remarks: Smooth to smooth								125 /	139		
								123 /	140		
								129 /	136		
								127 /	139		
	9/16/16	1430	5379	OM	70F	/	500 / 500	128 /	140	P/F	
Remarks: Textured to textured								130 /	137		
								132 /	139		
								131 /	137		
								129 /	140		
	9/17/16	0810	5379	OM	60F	/	500 / 500	141 /	167	P/F	
Remarks: Smooth to textured								137 /	172		
								137 /	170		
								135	170		
								139 /	168		
	9/17/16	0813	5379	OM	60F	/	500 / 500	146 /	164	P/F	
Remarks: Smooth to smooth								140 /	158		
								147 /	160		
								152 /	160		
								145 /	163		

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE TRIAL SEAM LOG

2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

Sample	Date	Time	Mach#	Tech	Amb	Hot Shoe Temp/Speed	Extrusion Gun Temp/Preheat	Peel (lbs.) In / Out	Shear Pounds	P/F	Failure Mode FTB/Non - FTB
	9/17/16	1027	4163	ML	70F	860 / 6.5	/	105 / 109	147	P/F	
Remarks: Smooth to smooth								113 / 116	149		
								114 / 118	147		
								118 / 117	150		
								115 / 113	143		
	9/17/16	1025	2028	CL	70F	860 / 4.0	/	114 / 106	151	P/F	
Remarks: Smooth to smooth								110 / 117	153		
								107 / 107	150		
								111 / 109	153		
								109 / 113	152		
	9/17/16	1420	4180	CL	73F	850 / 6.5	/	109 / 110	139	P/F	
Remarks: Smooth to smooth								103 / 109	141		
								108 / 104	141		
								114 / 114	143		
								108 / 109	140		
	9/17/16	1430	4180	CL	73F	850 / 6.0	/	127 / 114	139	P/F	
Remarks: Smooth to textured								119 / 110	137		
								114 / 121	140		
								107 / 114	138		
								120 / 109	139		
	9/17/16	1555	4163	ML	77F	860 / 6.5	/	110 / 120	134	P/F	
Remarks: Smooth to smooth								109 / 108	133		
								100 / 103	133		
								102 / 103	131		
								105 / 102	135		
	9/17/16	1324	5379	OM	75F	/	500 / 500	123 /	139	P/F	
Remarks: Smooth to smooth								120 /	137		
								125 /	135		
								127 /	136		
								126 /	137		

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE TRIAL SEAM LOG

2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

Sample	Date	Time	Mach#	Tech	Amb	Hot Shoe Temp/Speed	Extrusion Gun Temp/Preheat	Peel (lbs.) In / Out	Shear Pounds	P/F	Failure Mode FTB/Non - FTB
	9/17/16	1327	5379	OM	75 F	/	500 / 500	130 /	138	P/F	
Remarks: Textured to textured								129 /	137		
								131 /	140		
								132 /	141		
								130 /	143		
	9/17/16	1330	5379	OM	75 F	/	500 / 500	127 /	140	P/F	
Remarks: Smooth to textured								130 /	143		
								131 /	138		
								129 /	140		
								130 /	141		
	9/18/16	1120	2028	LC		850 / 4.0	/	124 / 119	141	P/F	
Remarks: Smooth to smooth								119 / 116	139		
								122 / 120	137		
								124 / 119	140		
								126 / 122	139		
	9/18/16	1018	4163	ML		860 / 6.5	/	124 / 126	134	P/F	
Remarks: Smooth to smooth								112 / 127	135		
								116 / 118	132		
								124 / 117	133		
								115 / 120	133		
	9/18/16	0850	5379	OM	61 F	/	500 / 500	147 /	160	P/F	
Remarks: Smooth to smooth								145 /	165		
								148 /	159		
								143 /	163		
								146 /	160		
	9/18/16	0855	5379	OM	61 F	/	500 / 500	143 /	160	P/F	
Remarks: Textured to textured								145 /	161		
								141 /	163		
								143 /	162		
								140 /	160		

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE
TRIAL SEAM LOG
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

Sample	Date	Time	Mach#	Tech	Amb	Hot Shoe Temp/Speed	Extrusion Gun Temp/Preheat	Peel (lbs.) In / Out	Shear Pounds	P/F	Failure Mode FTB/Non - FTB
	9/18/16	0855	5379	OM	61F	/	500 / 500	145	165	P/F	
Remarks: Smooth to textured								140	166		
								146	163		
								143	166		
								145	162		
	9/18/16	1340	2028	CL	80F	860 / 3.5	/	132 / 129	140	P/F	
Remarks: Smooth to textured								128 / 127	135		
								132 / 132	140		
								136 / 129	137		
								131 / 127	133		
	9/18/16	1338	4180	EG	80F	850 / 6.5	/	118 / 120	127	P/F	
Remarks: Smooth to smooth								109 / 117	130		
								121 / 112	130		
								113 / 119	129		
								120 / 114	131		
	9/ /16					/	/	/		P/F	
Remarks:								/			
								/			
								/			
								/			
	9/ /16					/	/	/		P/F	
Remarks:								/			
								/			
								/			
								/			
	9/ /16					/	/	/		P/F	
Remarks:								/			
								/			
								/			
								/			

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CQA Field Signature

HDPE GEOMEMBRANE DEPLOYMENT

HANSEN ALLEN & LUCE inc
ENGINEERS

HDPE DEPLOYED ROLL ACCEPTANCE

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

Slope

LINER 60 MIL HDPE

ROLL NUMBER	DATE DEPLOYED	PANEL NO. / LOCATION	DATE ACCEPTED	APPV'D BY
F16B000 632	9/15/16	P1, P2, P7, P8, ~~P9, P10~~ Slope W	9/15/16	MCP
633	9/16/16	P15, P16, P23, P24, P31, P17, P18	9/16/16	MCP
634	9/17/16	P25, P26, P32, P49, P33, P34	9/17/16	MCP
631	9/18/16	P37, P38, P39, P50, P51, ~~P52~~	9/18/16	MCP
"	9/19/16	P52, P53 ~~P53~~	9/19/16	MCP
632	9/16/16	P9, P10	9/16/16	MCP
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	

CQA Officer Review Signature

CQA Field Signature

HDPE DEPLOYED ROLL ACCEPTANCE

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

Floor

LINER 60 MIL HDPE

ROLL NUMBER	DATE DEPLOYED	PANEL NO. / LOCATION	DATE ACCEPTED	APPV'D BY
F16D000 369	9/15/16	P3 W row 1 from N slope	9/15/16	MCP
367	9/15/16	P4	9/15/16	MCP
377	9/15/16	P5, P6	9/15/16	MCP
368	9/16/16	P11	9/16/16	MCP
375	9/16/16	P12	9/16/16	MCP
377	9/16/16	P13, P14, P21, P22, P48	9/16/16	MCP
370	9/16/16	P19	9/16/16	MCP
376	9/16/16	P20	9/16/16	MCP
366	9/17/16	P27	9/17/16	MCP
365	9/17/16	P28	9/17/16	MCP
364	9/17/16	P29, P30	9/17/16	MCP
372	9/17/16	P35	9/17/16	MCP
374	9/17/16	P36	9/17/16	MCP
362	9/18/16	P40	9/18/16	MCP
373	9/18/16	P41	9/18/16	MCP
371	9/18/16	P42	9/18/16	MCP
363	9/ /16	Surplus, Unused	9/ /16	
364	9/18/16	P43, P44, P45, P46, P47	9/18/16	MCP
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	
	9/ /16		9/ /16	

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE SEAM ACCEPTANCE

HANSEN ALLEN & LUCE inc
ENGINEERS

SEAM ACCEPTANCE
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

SEAM NUMBER	DATE WELDED	WELDING MACHINE #	WELDER	DATE ACCEPTED	APPV'D BY
P1 / P2	9/15/16	2028	CC	9/15/16	MCP
P1 / P3	9/15/16	2028	CC	9/15/16	MCP
P1 / ExW	9/15/16	4171	ML	9/15/16	MCP
P3 / ExW	9/15/16	4171	ML	9/15/16	MCP
P2 / P4	9/15/16	2028	CC	9/15/16	MCP
P3 / P4	9/15/16	2028	CC	9/15/16	MCP
P3 / P5	9/15/16	2028	CC	9/15/16	MCP
P4 / P6	9/15/16	2028	CC	9/15/16	MCP
P4 / P5	9/15/16	2028	CC	9/15/16	MCP
P5 / P6	9/15/16	2028	CC	9/15/16	MCP
P5 / ExW	9/15/16	4171	ML	9/15/16	MCP
P5 / P7	9/15/16	4171	ML	9/15/16	MCP
P6 / P8	9/15/16	4171	ML	9/15/16	MCP
P7 / P8	9/15/16	2028	CC	9/15/16	MCP
P7 / ExW	9/15/16	4171	ML	9/16/16	MCP
P2 / P9	9/16/16	2028	CC	9/16/16	MCP
P9 / P10	9/16/16	4171	ML	9/16/16	MCP
P9 / P11	9/16/16	2028	CC	9/16/16	MCP
P10 / P12	9/16/16	2028	CC	9/16/16	MCP
P4 / P11	9/16/16	2028	CC	9/16/16	MCP
P11 / P12	9/16/16	4171	ML	9/16/16	MCP
P6 / P13	9/16/16	2028	CC	9/16/16	MCP
P11 / P13	9/16/16	2028	CC	9/16/16	MCP
P12 / P14	9/16/16	4171	ML	9/16/16	MCP
P11 / P14	9/16/16	2028	CC	9/16/16	MCP
P13 / P14	9/16/16	2028	CC	9/16/16	MCP
P8 / P15	9/16/16	2028	CC	9/16/16	MCP

CQA Officer Review Signature

CQA Field Signature

SEAM ACCEPTANCE
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

SEAM NUMBER	DATE WELDED	WELDING MACHINE #	WELDER	DATE ACCEPTED	APPV'D BY
P13 / P15	9/16/16	2028	CC	9/16/16	MCP
P15 / P16	9/16/16	4163	ML	9/16/16	MCP
P14 / P16	9/16/16	2028	CC	9/16/16	MCP
P10 / P17	9/16/16	2028	CC	9/16/16	MCP
P17 / P19	9/16/16	2028	CC	9/16/16	MCP
P12 / P19	9/16/16	2028	CC	9/16/16	MCP
P17 / P18	9/16/16	4163	ML	9/16/16	MCP
P19 / P20	9/16/16	4163	ML	9/16/16	MCP
P14 / P21	9/16/16	2028	CC	9/16/16	MCP
P21 / P22	9/16/16	4163	ML	9/16/16	MCP
P19 / P21	9/16/16	2028	CC	9/16/16	MCP
P20 / P22	9/16/16	2028	CC	9/16/16	MCP
P16 / P23	9/16/16	2028	CC	9/16/16	MCP
P23 / P24	9/16/16	4163	ML	9/16/16	MCP
P21 / P23	9/16/16	2028	CC	9/16/16	MCP
P22 / P24	9/16/16	2028	CC	9/16/16	MCP
P18 / P20	9/16/16	2028	CC	9/16/16	MCP
P20 / P27	9/17/16	2028	CC	9/~~16~~17/16	MCP
P27 / P28	9/17/16	4163	ML	9/17/16	MCP
P18 / P25	9/17/16	2028	CC	9/17/16	MCP
P25 / P27	9/17/16	4180	CC	9/17/16	MCP
P25 / P26	9/17/16	4180	CC	9/17/16	MCP
P26 / P28	9/17/16	4180	CC	9/17/16	MCP
P24 / P31	9/17/16	4163	ML	9/17/16	MCP
P31 / P32	9/17/16	4163	ML	9/17/16	MCP
P29 / P31	9/17/16	4180	CC	9/18/16	MCP
P29 / P30	9/17/16	4163	ML	9/17/16	MCP

CQA Officer Review Signature

CQA Field Signature

SEAM ACCEPTANCE
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

SEAM NUMBER	DATE WELDED	WELDING MACHINE #	WELDER	DATE ACCEPTED	APPV'D BY
P30 / P32	9/17/16	4180	CL	9/18/16	MCP
P22 / P29	9/17/16	2028	CL	9/17/16	MCP
P27 / P29	9/17/16	2028	CL	9/17/16	MCP
P28 / P30	9/17/16	4163	ML	9/17/16	MCP
P26 / P33	9/17/16	4180	CL	9/17/16	MCP
P28 / P35	9/17/16	4180	CL	9/17/16	MCP
P33 / P35	9/17/16	4180	CL	9/18/16	MCP
P33 / P34	9/17/16	4163	ML	9/17/16	MCP
P34 / P36	9/17/16	4180	CL	9/18/16	MCP
P35 / P36	9/17/16	4163	ML	9/17/16	MCP
P36 / P40	9/18/16	2028	CL	9/18/16	MCP
P34 / P37	9/18/16	4163	ML	9/18/16	MCP
P37 / P40	9/18/16	2028	CL	9/18/16	MCP
P37 / P38	9/18/16	4163	ML	9/18/16	MCP
P38 / P39	9/18/16	4163	ML	9/18/16	MCP
P40 / P41	9/18/16	4163	ML	9/18/16	MCP
P38 / P41	9/18/16	2028	CL	9/18/16	MCP
P41 / P42	9/18/16	2028	CL	9/18/16	MCP
P30 / P43	9/18/16	4180	EG	9/18/16	MCP
P43 / 49	9/18/16	2028	CL	9/18/16	MCP
P43 / P44	9/18/16	4180	EG	9/18/16	MCP
P44 / 50	9/18/16	2028	CL	9/18/16	MCP
P44 / P45	9/18/16	4163	ML	9/19/16	MCP
P45 / P46	9/18/16	4180	EG	9/18/16	MCP
P46 / P47	9/18/16	4180	EG	9/18/16	MCP
P46 / P48	9/18/16	4180	EG	9/18/16	MCP
P47 / P48	9/18/16	4163	ML	9/18/16	MCP

CQA Officer Review Signature

CQA Field Signature

SEAM ACCEPTANCE
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

SEAM NUMBER	DATE WELDED	WELDING MACHINE #	WELDER	DATE ACCEPTED	APPV'D BY
P42 / P47	9/18/16	4163	ML	9/18/16	MCP
P41 / P46	9/18/16	4163	ML	9/18/16	MCP
P40 / P45	9/18/16	4163	ML	9/18/16	MCP
P36 / P44	9/18/16	4163	ML	9/18/16	MCP
P35 / P43	9/18/16	4163	ML	9/18/16	MCP
P39 / P42	9/18/16	2028	CL	9/18/16	MCP
P32 / P49	9/18/16	4180	EG	9/18/16	MCP
P49 / P50	9/18/16	4163	ML	9/18/16	MCP
P50 / P51	9/18/16	2028	CL	9/18/16	MCP
P45 / P51	9/18/16	2028	CL	9/18/16	MCP
P45 / P46	9/18/16	4180	EG	9/19/16	MCP
P51 / P52	9/19/16	2028	CL	9/19/16	MCP
P46 / P52	9/19/16	2028	CL	9/19/16	MCP
P52 / P53	9/19/16	2028	CL	9/19/16	MCP
P48 / P53	9/19/16	2028	CC	9/19/16	MCP
P48 / P52	9/19/16	2028	CC	9/19/16	MCP
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	
	9/ /16			9/ /16	

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE NON-DESTRUCTIVE TESTING

HANSEN ALLEN & LUCE inc
ENGINEERS

NON-DESTRUCTIVE TESTING FOR HOT WEDGE WELDING
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

SEAM NO.	TEST DATE	START PSI	START TIME	END PSI	END TIME	PASS/ FAIL	LOCATION	APPV'D BY
P1 / P2	9/15/16	30	1414	30	1419	P/F		MCP
P1 / P3	9/15/16	30	1410	30	1415	P/F		MCP
P2 / P4	9/15/16	30	1417	29	1422	P/F	W 5' of seam	MCP
P2 / P4	9/15/16	30	1417	30	1422	P/F	E 15' of seam	MCP
P3 / Ex W	9/15/16	30	1409	30	1414	P/F		MCP
P3 / P5	9/15/16	30	1530	30	1535	P/F		MCP
P4 / P5	9/15/16	30	1542	30	1547	P/F		MCP
P5 / P6	9/15/16	30	1558	30	1603	P/F		MCP
P5 / Ex W	9/15/16	30	1615	30	1620	P/F	N 7', S of P3/P5	MCP
P4 / P6	9/15/16	30	1534	30	1539	P/F		MCP
P5 / Ex W	9/15/16	30	1614	30	1619	P/F	7' S of P3/P5 → P5/P7	MCP
P5 / P7	9/15/16	30	1546	30	1551	P/F		MCP
P6 / P8	9/15/16	30	1547	30	1552	P/F		MCP
P7 / P8	9/15/16	30	1559	30	1604	P/F		MCP
P1 / Ex W	9/15/16	30	1406	30	1411	P/F	Between R10/R11	MCP
"	9/15/16	30	1445	30	1440	P/F	Btwn R9/R10	MCP
"	9/15/16	30	1455	30	1500	P/F	Btwn R8/R9	MCP
"	9/15/16	30	1505	30	1510	P/F	Btwn R5/R8	MCP
P7 / Ex W	9/15/16	30	1622	30	1627	P/F	10' S of P5/P7 to SAT	MCP
P11 / P14	9/16/16	30	1329	30	1334	P/F		MCP
P12 / P14	9/16/16	30	1323	30	1328	P/F	W 14' of seam	MCP
"	9/16/16	30	1323	30	1328	P/F	E 7' of seam	MCP
P13 / P14	9/16/16	30	1329	30	1334	P/F		MCP
P11 / P13	9/16/16	30	1312	30	1317	P/F		MCP
P6 / P13	9/16/16	30	1313	30	1318	P/F		MCP
P10 / P17	9/16/16	30	1612	30	1617	P/F		MCP
P17 / P18	9/16/16	30	1613	29	1618	P/F		MCP

CQA Officer Review Signature

CQA Field Signature

NON-DESTRUCTIVE TESTING FOR HOT WEDGE WELDING
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

SEAM NO.	TEST DATE	START PSI	START TIME	END PSI	END TIME	PASS/ FAIL	LOCATION	APPV'D BY
P12 / P19	9/16/16	30	1715	30	1720	P/F		MCP
P14 / P21	9/16/16	30	1719	30	1724	P/F		MCP
P19 / P21	9/16/16	30	1719	30	1724	P/F		MCP
P19 / P20	9/16/16	30	1728	30	1733	P/F		MCP
P21 / P22	9/16/16	30	1730	30	1735	P/F		MCP
P20 / P22	9/16/16	30	1729	30	1734	P/F		MCP
P20 / P27	9/17/16	30	1333	30	1338	P/F		MCP
P27 / P29	9/17/16	30	1420	30	1425	P/F		MCP
P27 / P28	9/17/16	30	1334	30	1339	P/F		MCP
P28 / P30	9/17/16	30	1420	30	1425	P/F		MCP
P29 / P30	9/17/16	30	1419	30	1424	P/F		MCP
P22 / P29	9/17/16	30	1423	30	1428	P/F		MCP
P13 / P15	9/17/16	30	0810	30	0815	P/F		MCP
P8 / P15	9/17/16	30	0808	30	0813	P/F		MCP
P6 / P13	9/17/16	30	0809	30	0814	P/F	S 6' of seam	MCP
P15 / P16	9/17/16	30	0811	30	0816	P/F		MCP
P13 / P14	9/16/16	30	1329	30	1334	P/F		MCP
P14 / P16	9/17/16	30	0810	30	0815	P/F		MCP
P14 / P21	9/16/16	30	1719	30	1724	P/F		MCP
P16 / P23	9/17/16	30	0812	30	0817	P/F		MCP
P21 / P23	9/17/16	30	0815	30	0820	P/F		MCP
P23 / P24	9/17/16	30	0816	30	0821	P/F		MCP
P21 / P22	9/16/16	30	1730	30	1735	P/F		MCP
P22 / P24	9/17/16	30	0815	30	0820	P/F		MCP
P22 / P29	9/17/16	30	1423	30	1428	P/F		MCP
P2 / P9	9/16/16	30	1058	30	1103	P/F		MCP
P9 / P11	9/17/16	30	0914	30	0919	P/F		MCP

CQA Officer Review Signature

CQA Field Signature

NON-DESTRUCTIVE TESTING FOR HOT WEDGE WELDING
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

SEAM NO.	TEST DATE	START PSI	START TIME	END PSI	END TIME	PASS/ FAIL	LOCATION	APPV'D BY
P9 / P10	9/16/16	30	1059	30	1104	P / F		MCP
P10 / P12	9/17/16	30	0914	30	0919	P / F		MCP
P17 / P19	9/17/16	30	0915	30	0920	P / F		MCP
P18 / P20	9/17/16	30	0915	30	0920	P / F		MCP
P18 / P25	9/17/16	30	1145	30	1150	P / F		MCP
P25 / P27	9/18/16	30	0805	30	0810	P / F		MCP
P25 / P26	9/17/16	30	1146	30	1151	P / F		MCP
P26 / P28	9/18/16	30	0806	30	0811	P / F		MCP
P26 / P33	9/18/16	30	0808	30	0813	P / F		MCP
P33 / P35	9/18/16	30	0816	30	0821	P / F		MCP
P33 / P34	9/18/16	30	0809	30	0814	P / F		MCP
P34 / P36	9/18/16	30	0819	30	0824	P / F		MCP
P36 / P40	9/19/16	30	0720	30	0725	P / F		MCP
P34 / P37	9/19/16	30	0721	30	0726	P / F		MCP
P37 / P40	9/19/16	30	0722	30	0727	P / F		MCP
P37 / P38	9/19/16	30	0725	30	0730	P / F		MCP
P40 / P41	9/19/16	30	0726	30	0731	P / F		MCP
P38 / P41	9/19/16	30	0732	30	0737	P / F		MCP
P38 / P39	9/19/16	30	0730	30	0735	P / F		MCP
P39 / P42	9/19/16	30	0734	30	0739	P / F		MCP
P41 / P42	9/19/16	30	0733	30	0738	P / F		MCP
P35 / P36	9/18/16	30	0854	30	0859	P / F	210' s of N end to S end	MCP
P28 / P35	9/18/16	30	0826	30	0831	P / F		MCP
P30 / P43	9/18/16	30	0825	30	0830	P / F		MCP
P35 / P43	9/19/16	30	0826	30	0831	P / F		MCP
P43 / P44	9/19/16	30	0826	30	0831	P / F		MCP
P36 / P44	9/19/16	30	0818	30	0823	P / F		MCP

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NON-DESTRUCTIVE TESTING FOR HOT WEDGE WELDING
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

SEAM NO.	TEST DATE	START PSI	START TIME	END PSI	END TIME	PASS/ FAIL	LOCATION	APPV'D BY
P44 / P45	9/19/16	30	0819	30	0824	P/F		MLP
P40 / P45	9/19/16	30	0818	30	0823	P/F		MLP
P45 / P46	9/19/16	30	0817	30	0822	P/F		MLP
P41 / P46	9/19/16	30	0815	30	0820	P/F		MLP
P42 / P47	9/19/16	30	0815	30	0820	P/F		MLP
P46 / P47	9/19/16	30	0816	30	0821	P/F		MLP
P24 / P31	9/17/16	30	1441	30	1446	P/F		MLP
P29 / P31	9/18/16	30	0842	30	0847	P/F		MLP
P31 / P32	9/18/16	30	0844	30	0849	P/F		MLP
P30 / P32	9/18/16	30	0842	30	0847	P/F		MLP
P32 / P49	9/19/16	30	0829	30	0834	P/F		MLP
P43 / P49	9/19/16	30	0830	30	0835	P/F		MLP
P49 / P50	9/19/16	30	0831	30	0836	P/F		MLP
P44 / P50	9/19/16	30	0835	30	0840	P/F		MLP
P50 / P51	9/19/16	30	0836	30	0841	P/F		MLP
P45 / P51	9/19/16	30	0835	30	0840	P/F		MLP
P51 / P52	9/19/16	30	1150	30	1155	P/F		MLP
P52 / P53	9/19/16	30	1154	30	1159	P/F		MLP
P46 / P52	9/19/16	30	1151	30	1156	P/F		MLP
P47 / P48	9/19/16	30	0838	30	0843	P/F		MLP
P48 / P53	9/19/16	30	1155	30	1200	P/F		MLP
P48 / P52	9/19/16	30	1153	30	1158	P/F		MLP
P46 / P48	9/19/16	30	0838	30	0843	P/F		MLP
P35 / P36	9/18/16	30	0855	30	0900	P/F	N end to 210's of N	MLP
P11 / P12	9/16/16	30	1105	30	1110	P/F		MLP
P4 / P11	9/16/16	30	1143	30	1148	P/F		MLP
P3 / P4	9/16/16	30	1518	30	1523	P/F		MLP

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE DESTRUCTIVE TESTING

HANSEN ALLEN & LUCE inc
ENGINEERS

HDPE SEAM DESTRUCTIVE TEST LOG

WASTE MANAGEMENT - TEKOI

2016 CONSTRUCTION

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

DESTRUCTIVE SAMPLE NUMBER	CQC CERT. DATE	CQC CERT. P/F	CQA CERT. DATE	CQA CERT. P/F	LOCATION
DS1	9/ /16	P/F	9/ /16	P/F	P3 / ExW 425' S of N ~~tie in~~ TOE
DS2	9/ /16	P/F	9/ /16	P/F	P1 / P3 12' E of P1/P3/ExW
DS3	9/ /16	P/F	9/ /16	P/F	P3 / P4 425' ~~S~~ of N ~~tie in~~ TOE
DS4	9/ /16	P/F	9/ /16	P/F	P6 / P8 12' E of P5/P6/P7/P8
DS5	9/ /16	P/F	9/ /16	P/F	P10 / ExN 12' E of P9/P10/ExN
DS6	9/ /16	P/F	9/ /16	P/F	P4 / P11 265' S of N end panel
DS7	9/ /16	P/F	9/ /16	P/F	P12 / P19 100' S of P10 / P12
DS8	9/ /16	P/F	9/ /16	P/F	P20 / P22 12' E of P19/P20/P21/P22
DS9	9/ /16	P/F	9/ /16	P/F	P11 / P12 500' S of P9 / P11
DS10	9/ /16	P/F	9/ /16	P/F	P19 / P20 500' S of P17 / P19
DS11	9/ /16	P/F	9/ /16	P/F	P15 / P16 5' N of SAT
DS12	9/ /16	P/F	9/ /16	P/F	P20 / P27 180' S of P25 / P27
DS13	9/ /16	P/F	9/ /16	P/F	P27 / P28 340' S of P26 / P28
DS14	9/ /16	P/F	9/ /16	P/F	P28 / P35 500' N of P35 / P43
DS15	9/ /16	P/F	9/ /16	P/F	P35 / P36 160' N of S end of panel
DS16	9/ /16	P/F	9/ /16	P/F	P36 / P40 225' N of S panel end
DS17	9/ /16	P/F	9/ /16	P/F	P40 / P41 100' N of P41 / P46
DS18	9/ /16	P/F	9/ /16	P/F	P41 / P42 150' N of S end panel
DS19	9/ /16	P/F	9/ /16	P/F	P26 / P33 5' S of ExN
DS20	9/ /16	P/F	9/ /16	P/F	P38 / P39 5' S of ExN
DS21	9/ /16	P/F	9/ /16	P/F	P34 / P36 12' E of P33 / P34
DS22	9/ /16	P/F	9/ /16	P/F	P44 / P45 ~55' N of S. EOS
DS23	9/ /16	P/F	9/ /16	P/F	P46 / P47 12' S of N end panel
DS24	9/ /16	P/F	9/ /16	P/F	P50 / P51 5' N of SAT
~~DS25~~	9/ /16	P/F	9/ /16	P/F	

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE CAP/REPAIR LOG

HANSEN ALLEN & LUCE inc
ENGINEERS

CAP / REPAIR LOG
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

PATCH NUMBER	LOCATION	TYPE PATCH	TYPE CAP	TEST DATE	APPV'D BY	Photo
~~R1~~ R2	P1/P3 12' E of P1/ExW DS2	X		9/19/16	MCP	X
~~R2~~ R1	DS1	X		9/19/16	MCP	X
R3	DS3	X		9/19/16	MCP	X
R4	DS4	X		9/19/16	MCP	X
R5	P1/ExW/ExN	X		9/19/16	MCP	X
R6	P1 6' E of ExW, 9' S of P1/ExN	X		9/19/16	MCP	X
R7	P1 5' S of ExN, 6' W of P1/P2	X		9/19/16	MCP	X
R8	P1/ExW 19' S of N slope TOP	X		9/19/16	MCP	X
R9	P1/ExW 33-46' S of N TOP		X	9/19/16	MCP	X
R10	P1/ExW 50' S "	X		9/19/16	MCP	X
R11	P1/P3/ExW	X		9/19/16	MCP	X
R12	P3 5' S of P1/P3 10' W of P3/P4	X		9/19/16	MCP	X
R13	P1/P2/P3/P4	X		9/19/16	MCP	X
R14	P2/P4 6' E of P1/P2/P3/P4	X		9/19/16	MCP	X
R15	P3 10' W of P3/P4 14' S of P1/P3	X		9/19/16	MCP	X
R16	P3 10' W of P3/P4 22' S of P1/P3	X		9/19/16	MCP	X
R17	P3/ExW ~50' N of P3/P5	X		9/19/16	MCP	X
R18	P3/P5/ExW	X		9/19/16	MCP	X
R19	P5/Ex5 S 8' from P3/P5	X		9/19/16	MCP	X
R20	P3/P4/P5	X		9/19/16	MCP	X
R21	P4/P5/P6	X		9/19/16	MCP	X
R22	P5/P7/ExW	X		9/19/16	MCP	X
R23	3' S of R22	X		9/19/16	MCP	X
R24	3' S of R23	X		9/19/16	MCP	X
R25	P5/P6/P7/P8	X		9/19/16	MCP	X
R26	P7/ ExW at SAt		X	9/19/16	MCP	X
R27	DS6	X		9/19/16	MCP	X

CQA Officer Review Signature

CQA Field Signature

CAP / REPAIR LOG
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

PATCH NUMBER	LOCATION	TYPE PATCH	TYPE CAP	TEST DATE	APPV'D BY	Photo
R28	DS7	X		9/19/16	MCP	X
R29	DS8	X		9/19/16	MCP	X
R30	DS9	X		9/19/16	MCP	X
R31	DS10	X		9/19/16	MCP	X
R32	DS11	X		9/19/16	MCP	X
R33	DS12	X		9/19/16	MCP	X
R34	DS13	X		9/19/16	MCP	X
R35	DS14	X		9/19/16	MCP	X
R36	P4 / P6 / P11 / P13	X		9/19/16	MCP	X
R37	P11 / P13 / P14	X		9/19/16	MCP	X
R38	P11 / P12 / P14	X		9/19/16	MCP	X
R39	P20 / P22 / P27 / P29	X		9/19/16	MCP	X
R40	P12 / P14 8' W of P12 / P19	X		9/19/16	MCP	X
R41	P12 / P14 / P19 / P21	X		9/19/16	MCP	X
R42	P19 / P21 / P20 / P22	X		9/19/16	MCP	X
R43	P6 / P13 6' N of P13 / P15	X		9/19/16	MCP	X
R44	P6 / P8 / P13 / P15	X		9/19/16	MCP	X
R45	P13 / P14 / P15 / P16	X		9/19/16	MCP	X
R46	P14 / P16 / P21 / P23	X		9/19/16	MCP	X
R47	P16 / P23 at SAT	X		9/19/16	MCP	X
R48	P21 / P22 / P23 / P24	X		9/19/16	MCP	X
R49	P11 / P12 233' S of N end	X		9/19/16	MCP	X
R50	P11 / P12 38' S of P10 / P12	X		9/19/16	MCP	X
R51	P2 / P4 10' W of P4 / P11	X		9/19/16	MCP	X
R52	P2 / P4 / P9 / P11	X		9/19/16	MCP	X
R53	P9 / P10 / P11 / P12	X		9/19/16	MCP	X
R54	P12 9' E of P9 / P10 1' S P10 / P12	X		9/19/16	MCP	X

CQA Officer Review Signature

CQA Field Signature

CAP / REPAIR LOG
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

PATCH NUMBER	LOCATION	TYPE PATCH	TYPE CAP	TEST DATE	APPV'D BY	Photo
R55	P12 15' E P11/P12 6' S P10/P12	X		9/19/16	MCP	X
R56	P10/P12/P17/P19	X		9/19/16	MCP	X
R57	P17/P18/P19/P20	X		9/19/16	MCP	X
R58	P27 10' W of E end, 3' S of N end	X		9/19/16	MCP	X
R59	P27 9' S of N end, 13' E of W end	X		9/19/16	MCP	X
R60	P27 3' S of N end, 13' E of W end	X		9/19/16	MCP	X
R61	DS5	X		9/19/16	MCP	X
R62	P12/P19 12' N of S end panel	X		9/19/16	MCP	X
R63	DS15	X		9/19/16	MCP	X
R64	DS16	X		9/19/16	MCP	X
R65	DS17	X		9/19/16	MCP	
R66	DS18	X		9/19/16	MCP	
R67	DS19	X		9/19/16	MCP	X
R68	DS20	X		9/19/16	MCP	X
R69	DS21	X		9/19/16	MCP	X
R70	DS22	X		9/19/16	MCP	X
R71	DS23	X		9/19/16	MCP	X
R72	DS24	X		9/19/16	MCP	
R73	P27/P28/P29/P30	X		9/19/16	MCP	X
R74	P28/P43/P30	X		9/19/16	MCP	X
R75	P28/P35/P43	X		9/19/16	MCP	X
R76	P35/P36/P43/P44	X		9/19/16	MCP	X
R77	P36/P40/P44/P45	X		9/19/16	MCP	X
R78	P40/P41/P45/P46	X		9/19/16	MCP	X
R79	P41/P42/P46/P47	X		9/19/16	MCP	X
R80	P29 5' S of N end, 7' W of E end	X		9/19/16	MCP	X
R81	P22/P29/P31/P24	X		9/19/16	MCP	X

CQA Officer Review Signature

CQA Field Signature

CAP / REPAIR LOG
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

PATCH NUMBER	LOCATION	TYPE PATCH	TYPE CAP	TEST DATE	APPV'D BY	Photo
R82	P24/P31 6' S of N end	X		9/19/16	mcp	X
R83	P29/P30/P31/P32	X		9/19/16	mcp	X
R84	P30/P43/P32/P49	X		9/19/16	mcp	X
R85	P43/P44/P49/P50	X		9/19/16	mcp	X
R86	P44/P45/P50/P51	X		9/19/16	mcp	X
R87	P24 5' W of P24/P31, 8' N of SAT	X		9/19/16	mcp	X
R88	P31/P32 10' N of SAT	X		9/19/16	mcp	X
R89	P28/P35 392' N of S end	X		9/19/16	mcp	X
R90	P19 2' S of N end, 7' W of E end	X		9/19/16	mcp	X
R91	P19 8' S of N end, 7' W of E end	X		9/19/16	mcp	X
R92	P18/P20/P25/P27	X		9/19/16	mcp	X
R93	P25/P26/P27/P28	X		9/19/16	mcp	X
R94	P28 1' S of N end, 7' W of E	X		9/19/16	mcp	X
R95	P28 8' S of N, 6' W of E	X		9/19/16	mcp	X
R96	P26/P28/P33/P35	X		9/19/16	mcp	X
R97	P35 3' S of N end, 12' E of W end	X		9/19/16	mcp	X
R98	P35 4' S of N end, 4' W of E end	X		9/19/16	mcp	X
R99	P35 11' S " 4' W "	X		9/19/16	mcp	X
R100	P35 18' S " 5' W "	X		9/19/16	mcp	X
R101	P35 24' S " 5' W "	X		9/19/16	mcp	X
R102	P35 34' S " 4' W "	X		9/19/16	mcp	X
R103	P35 40' S " 4' W "	X		9/19/16	mcp	X
R104	P33/P34/P35/P36	X		9/19/16	mcp	X
R105	P34/P36/P37/P40	X		9/19/16	mcp	X
R106	~~P34/P36/P37/P40~~ P37/P38/P40/P41	X		9/19/16	mcp	X
R107	P41 4' S of N EOS, 5' W of E end	X		9/19/16	mcp	X
R108	P38/P39/P41/P42	X		9/19/16	mcp	X

CQA Officer Review Signature

CQA Field Signature

CAP / REPAIR LOG
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

LINER 60 MIL HDPE

PATCH NUMBER	LOCATION	TYPE PATCH	TYPE CAP	TEST DATE	APPV'D BY	Photo
R109	P39 / P42 7' W of E end	X		9/19/16	MCP	X
R110	P42 7' S of R109	X		9/19/16	MCP	X
R111	P45 / P51 6' W of R112	X		9/19/16	MCP	X
R112	P45 / P46 / P51 / P52	X		9/19/16	MCP	X
R113	~~P46~~ / P48 / P52 / P53	X		9/19/16	MCP	X
R114	P46 / P48 / P52	X		9/19/16	MCP	X
R115	P46 / P47 / P48	X		9/19/16	MCP	X
				9/ /16		
				9/ /16		
				9/ /16		
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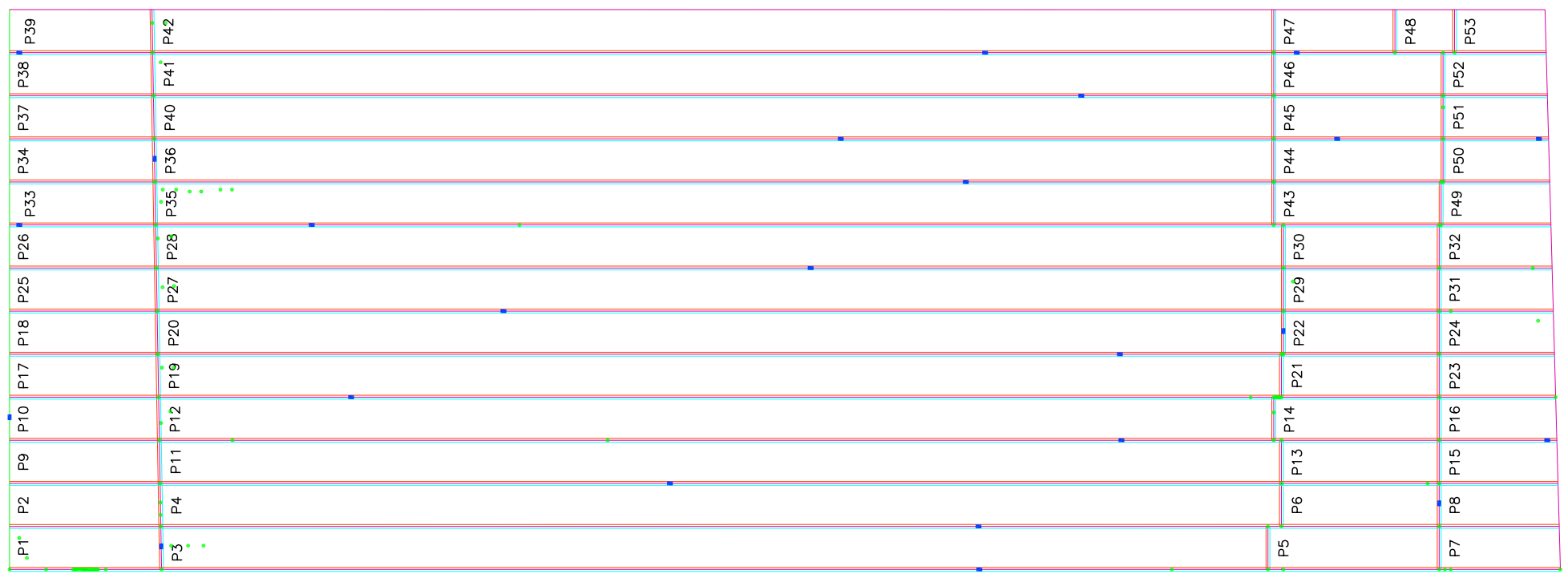
				9/ /16		
				9/ /16		

CQA Officer Review Signature

CQA Field Signature

HDPE GEOMEMBRANE AS-BUILT DRAWINGS

HANSEN ALLEN & LUCE inc
ENGINEERS



N

0 40 80
SCALE IN FEET

PANEL LAYOUT
FUSION WELD
PRESSURE TEST
EXTRUSION SEAM
VACUUM TEST EXTRUSION SEAM
REPAIR LOCATION
DESTRUCTIVE SAMPLE LOCATION

FILE NAME: PROJECTS\290 - WASTE MANAGEMENT\02.160 - TEKOI 2016 CELL EXPANSION CQA\CAD\RECORD\AS-BUILT.DWG
FILE DATE: 9.25.2016 13:55:02 (CAD STA)

HANSEN ALLEN & LUCE inc ENGINEERS

PROJECT ENGINEER

DESIGNED TGA	3				
DRAFTED MCP	2				
CHECKED GLJ	1				
DATE SEPTEMBER 2016	NO.	DATE	REVISIONS	BY	APVD.

SCALE

WASTE MANAGEMENT

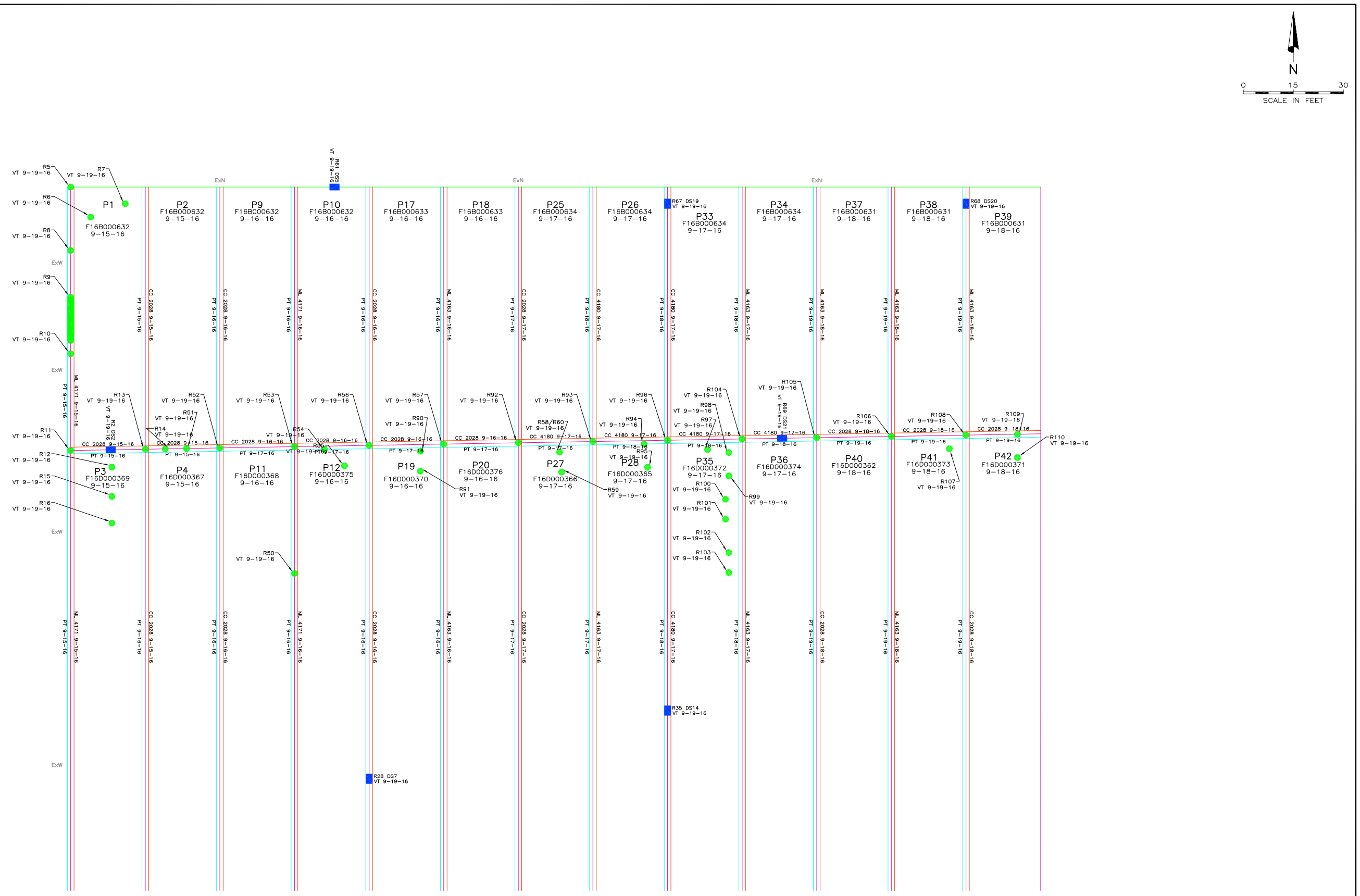
TEKOI LANDFILL FACILITY

2016 MSW PHASE 2C CONSTRUCTION DRAWINGS
LINER AS-BUILT
PLAN VIEW OVERVIEW

SHEET 1

290-02-150

7/04



PANEL LAYOUT
FUSION WELD
PRESSURE TEST
EXTRUSION SEAM
VACUUM TEST EXTRUSION SEAM
REPAIR LOCATION
DESTRUCTIVE SAMPLE LOCATION

PANEL NO. ····· P1
HDPE ROLL NO. ····· F16D000101, F16D000102
DATE DEPLOYED ····· 9-15-16
TECHNICIAN ····· CC 2028 ···· MACHINE NO.
DATE WELDED ····· 9-20-16

PRESSURE TEST ····· PT
TEST DATE ····· 9-30-16
REPAIR NO. ····· R1
VACUUM TEST ····· 9-30-16
DS1 DESTRUCTIVE SAMPLE NO.
VT 9-20-16 TEST DATE

FILE NAME: PROJECTS\290 — WASTE MANAGEMENT\02.160 — TEKOI 2016 CELL EXPANSION CQA\CAD\RECORD\AS-BUILT.DWG
FILE DATE: 9.25.2016 13:55:02 (CAD STA)

HANSEN ALLEN & LUCE inc. ENGINEERS

PROJECT ENGINEER

DESIGNED	TGA	3		
DRAFTED	MCP	2		
CHECKED	GLJ	1		
DATE	SEPTEMBER 2016	NO.	DATE	REVISIONS

BY APVD.

SCALE

WASTE MANAGEMENT

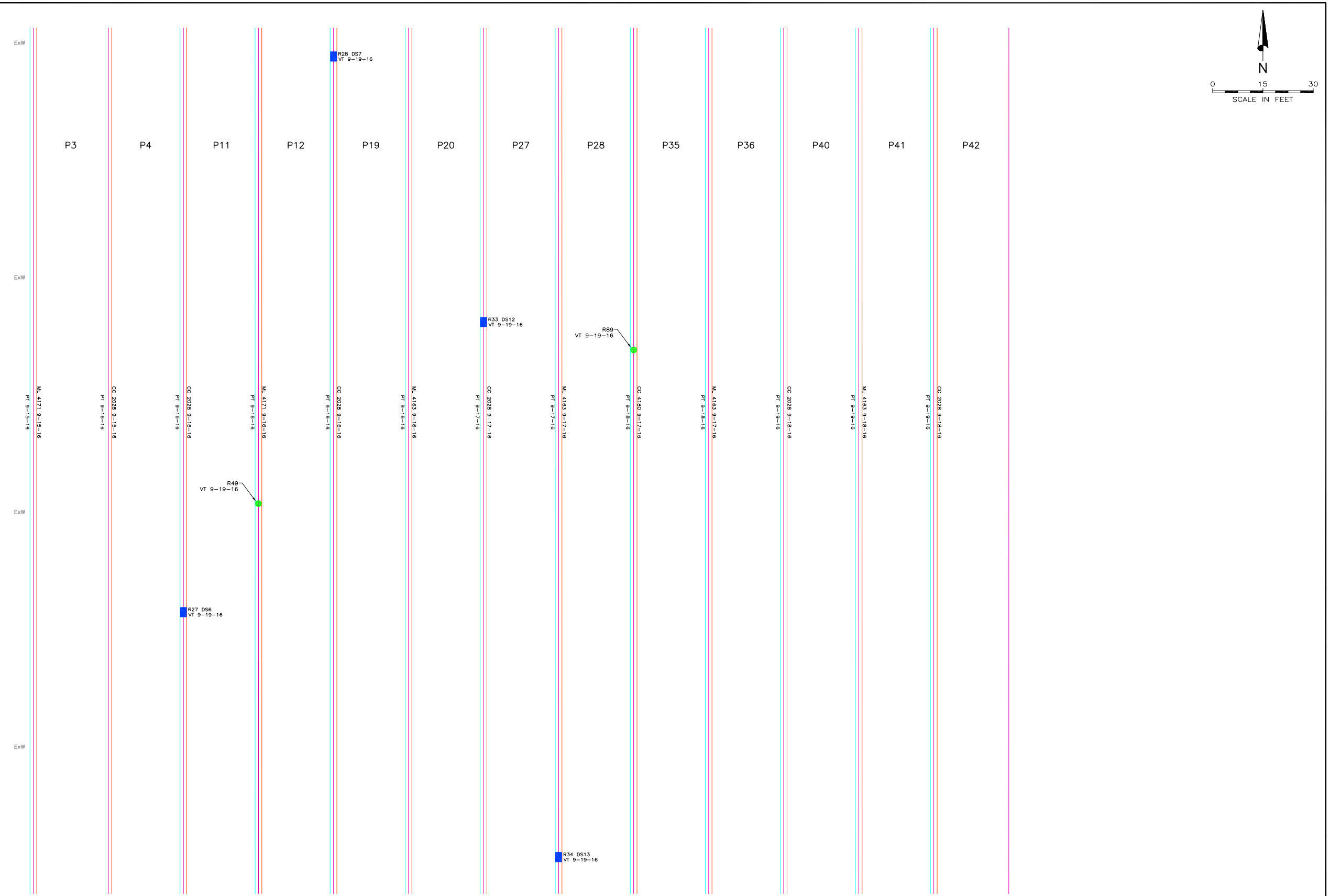
TEKOI LANDFILL FACILITY

2016 MSW PHASE 2C CONSTRUCTION DRAWINGS
LINER AS-BUILT
PLAN VIEW

SHEET 2

290-02-150

7/04



PANEL LAYOUT
FUSION WELD
PRESSURE TEST
EXTRUSION SEAM
VACUUM TEST EXTRUSION SEAM
REPAIR LOCATION
DESTRUCTIVE SAMPLE LOCATION

PANEL NO. ····· P1
HDPE ROLL NO. ····· F16D000101, F16D000102
DATE DEPLOYED ····· 9-15-16
TECHNICIAN ····· CC 2028 ···· MACHINE NO.
DATE WELDED ····· 9-20-16

PRESSURE TEST ····· PT
TEST DATE ····· 9-30-16
REPAIR NO. ····· R1
VACUUM TEST ····· 9-30-16
DS1 — DESTRUCTIVE SAMPLE NO.
VT 9-20-16 — TEST DATE

FILE NAME: PROJECTS\290 - WASTE MANAGEMENT\02.160 - TEKOI 2016 CELL EXPANSION CQA\CAD\RECORD\AS-BUILT.DWG
FILE DATE: 9.25.2016 13:55:02 (CAD STA)

HANSEN ALLEN & LUCE inc ENGINEERS

PROJECT ENGINEER

DESIGNED TGA	3				
DRAFTED MCP	2				
CHECKED GLJ	1				
DATE SEPTEMBER 2016	NO.	DATE	REVISIONS	BY	APVD.

SCALE

WASTE MANAGEMENT

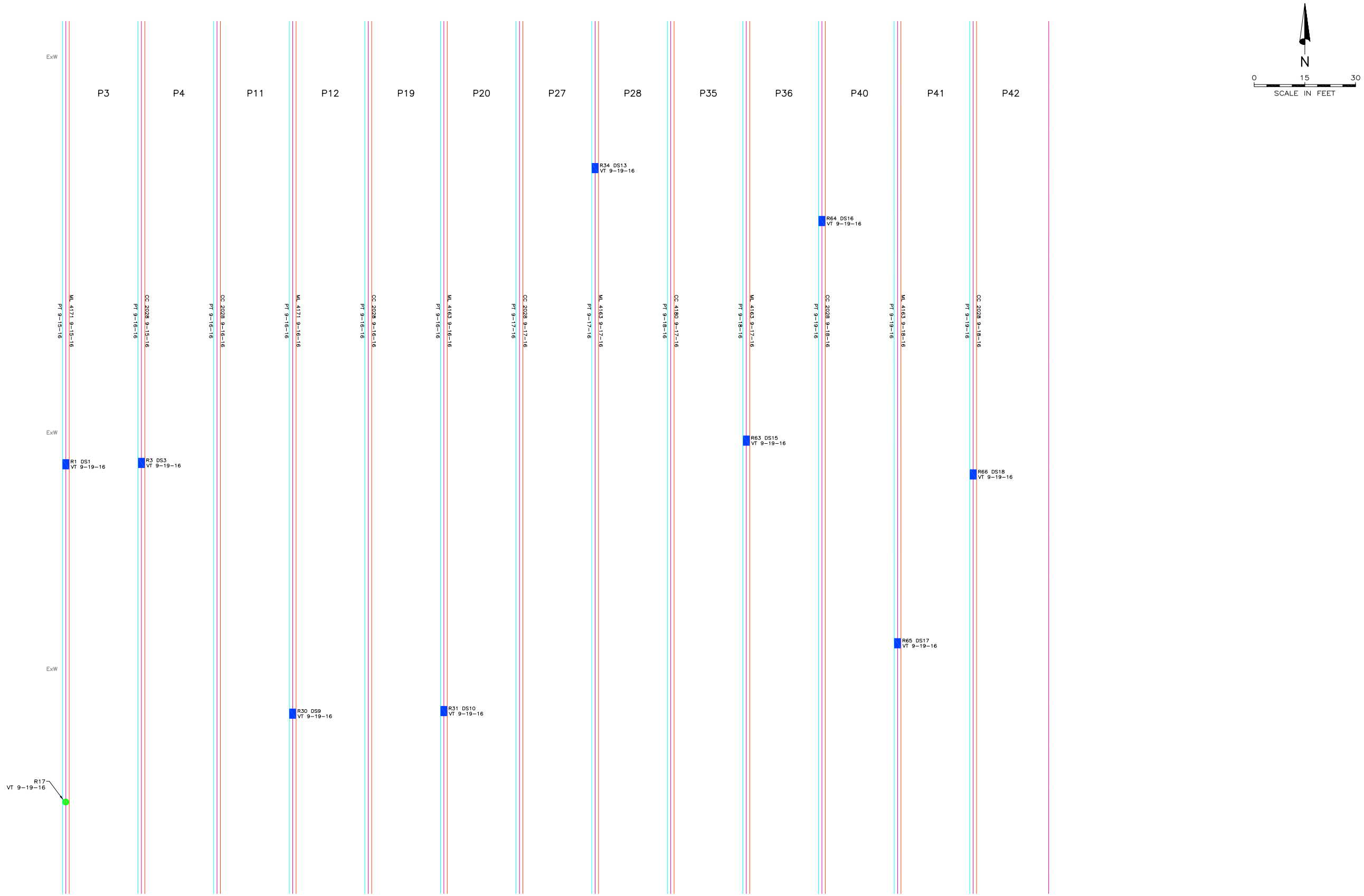
TEKOI LANDFILL FACILITY

2016 MSW PHASE 2C CONSTRUCTION DRAWINGS
LINER AS-BUILT
PLAN VIEW

SHEET 3

290-02-150

7/04



PANEL LAYOUT
FUSION WELD
PRESSURE TEST
EXTRUSION SEAM
VACUUM TEST EXTRUSION SEAM
REPAIR LOCATION
DESTRUCTIVE SAMPLE LOCATION

PANEL NO. P1
HDPE ROLL NO. F16D000101, F16D000102
DATE DEPLOYED 9-15-16
TECHNICIAN ..... CC 2028 .... MACHINE NO.
DATE WELDED 9-20-16

PRESSURE TEST ..... PT
TEST DATE 9-30-16
REPAIR NO. R1
VACUUM TEST 9-30-16
DS1 — DESTRUCTIVE SAMPLE NO.
VT 9-20-16 — TEST DATE

FILE NAME: PROJECTS\290 - WASTE MANAGEMENT\02.160 - TEKOI 2016 CELL EXPANSION CQA\CAD\RECORD\AS-BUILT.DWG
FILE DATE: 9.25.2016 13:55:02 (CAD STA)

HANSEN ALLEN & LUCE INC. ENGINEERS

PROJECT ENGINEER

DESIGNED TGA	3				
DRAFTED MCP	2				
CHECKED GLJ	1				
DATE SEPTEMBER 2016	NO.	DATE	REVISIONS	BY	APVD.

SCALE

WASTE MANAGEMENT

TEKOI LANDFILL FACILITY

2016 MSW PHASE 2C CONSTRUCTION DRAWINGS
LINER AS-BUILT
PLAN VIEW

SHEET 4

290-02-150

7/04

PANEL LAYOUT	PANEL NO. ····· P1	PRESSURE TEST ····· PT	
FUSION WELD	HDPE ROLL NO. ····· F16D000101, F16D000102	TEST DATE ····· 9-30-16	
PRESSURE TEST	DATE DEPLOYED ····· 9-15-16	REPAIR NO. ····· R1	
EXTRUSION SEAM	TECHNICIAN ····· CC 2028 ····· MACHINE NO.	VACUUM TEST ····· 9-30-16	
VACUUM TEST EXTRUSION SEAM	DATE WELDED ····· 9-20-16	DS1 VT 9-20-16	DESTRUCTIVE SAMPLE NO. TEST DATE
REPAIR LOCATION			
DESTRUCTIVE SAMPLE LOCATION			

FILE NAME: PROJECTS\290 – WASTE MANAGEMENT\02.160 – TEKOI 2016 CELL EXPANSION CQA\CAD\RECORD\AS-BUILT.DWG
FILE DATE: 9.25.2016 13:55:02 (CAD STA)

HANSEN ALLEN & LUCE inc ENGINEERS

PROJECT ENGINEER

DESIGNED TGA	3				
DRAFTED MCP	2				
CHECKED GLJ	1				
DATE SEPTEMBER 2016	NO.	DATE	REVISIONS	BY	APVD.

SCALE

WASTE MANAGEMENT

TEKOI LANDFILL FACILITY

2016 MSW PHASE 2C CONSTRUCTION DRAWINGS
LINER AS-BUILT
PLAN VIEW

SHEET 5

290-02-150

7/04

GEOCOMPOSITE DEPLOYMENT

HANSEN ALLEN & LUCE inc
ENGINEERS

GEOCOMPOSITE DEPLOYED LANDFILL ROLL ACCEPTANCE
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

ROLL NUMBER	DATE DEPLOYED	ROLL CERT. RECEIVED	DATE ACCEPTED	APPV'D BY
G16E01 1345	9/19/16	Yes / No	9/19/16	MCP
" 1328	9/19/16	Yes / No	9/19/16	MCP
" 1336	9/19/16	Yes / No	9/19/16	MCP
" 1290	9/19/16	Yes / No	9/19/16	MCP
" 1306	9/19/16	Yes / No	9/19/16	MCP
" 1347	9/19/16	Yes / No	9/19/16	MCP
" 1324	9/19/16	Yes / No	9/19/16	MCP
" 1343	9/19/16	Yes / No	9/19/16	MCP
" 1308	9/19/16	Yes / No	9/19/16	MCP
" 1326	9/19/16	Yes / No	9/19/16	MCP
" 1349	9/19/16	Yes / No	9/19/16	MCP
" 1335	9/19/16	Yes / No	9/19/16	MCP
" 1299	9/20/16	Yes / No	9/20/16	MCP
" ~~1326~~	9/20/16	Yes / No	9/20/16	MCP
" 1304	9/20/16	Yes / No	9/20/16	MCP
" 1322	9/20/16	Yes / No	9/20/16	MCP
" 1303	9/20/16	Yes / No	9/20/16	MCP
" 1291	9/20/16	Yes / No	9/20/16	MCP
" 1309	9/20/16	Yes / No	9/20/16	MCP
" 1305	9/20/16	Yes / No	9/20/16	MCP
" 1331	9/20/16	Yes / No	9/20/16	MCP

CQA Officer Review Signature

CQA Field Signature

GEOCOMPOSITE DEPLOYED LANDFILL ROLL ACCEPTANCE
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

ROLL NUMBER	DATE DEPLOYED	ROLL CERT. RECEIVED	DATE ACCEPTED	APPV'D BY
G16E01 1292	9/20/16	Yes / No	9/20/16	MCP
" 1327	9/20/16	Yes / No	9/20/16	MCP
" 1329	9/20/16	Yes / No	9/20/16	MCP
" ~~1305~~	9/20/16	Yes / No	9/20/16	MCP
" 1295	9/20/16	Yes / No	9/20/16	MCP
" 1350	9/19/16	Yes / No	9/19/16	MCP
" 1301	9/19/16	Yes / No	9/19/16	MCP
" 1299	9/20/16	Yes / No	9/20/16	MCP
" 1302	9/20/16	Yes / No	9/20/16	MCP
" 1344	9/20/16	Yes / No	9/20/16	MCP
" 1323	9/20/16	Yes / No	9/20/16	MCP
" 1340	9/20/16	Yes / No	9/20/16	MCP
" 1296	9/20/16	Yes / No	9/20/16	MCP
" 1334	9/20/16	Yes / No	9/20/16	MCP
" 1339	9/20/16	Yes / No	9/20/16	MCP
" 1294	9/20/16	Yes / No	9/20/16	MCP
" 1321	9/20/16	Yes / No	9/20/16	MCP
" 1298	9/20/16	Yes / No	9/20/16	MCP
" 1346	9/20/16	Yes / No	9/20/16	MCP
" 1310	9/20/16	Yes / No	9/20/16	MCP
	9/ /16	Yes / No	9/ /16	

CQA Officer Review Signature

CQA Field Signature

GEOCOMPOSITE DEPLOYED LANDFILL ROLL ACCEPTANCE
2016 CONSTRUCTION

WASTE MANAGEMENT - TEKOI

CELL 2016 Cell Expansion

ROLL NUMBER	DATE DEPLOYED	ROLL CERT. RECEIVED	DATE ACCEPTED	APPV'D BY
G16E01 1330	9/20/16	Yes / No	9/20/16	MCP
" 1337	9/20/16	Yes / No	9/20/16	MCP
" 1320	9/20/16	Yes / No	9/20/16	MCP
" 1297	9/20/16	Yes / No	9/20/16	MCP
" 1333	9/20/16	Yes / No	9/20/16	MCP
" 1300	9/20/16	Yes / No	9/20/16	MCP
" 1293	9/20/16	Yes / No	9/20/16	MCP
" 1348	9/20/16	Yes / No	9/20/16	MCP
" 1332	9/20/16	Yes / No	9/20/16	MCP
" 1341	9/20/16	Yes / No	9/20/16	MCP
" 1325	9/20/16	Yes / No	9/20/16	MCP
" 1311	9/20/16	Yes / No	9/20/16	MCP
	9/ /16	Yes / No	9/ /16	
	9/ /16	Yes / No	9/ /16	
504355-11	9/20/16	Yes / No	9/20/16	MCP
504358-11	9/20/16	Yes / No	9/20/16	MCP
504352-11	9/20/16	Yes / No	9/20/16	MCP
504364-11	9/20/16	Yes / No	9/20/16	MCP
504363-11	9/20/16	Yes / No	9/20/16	MCP
504362-11	9/20/16	Yes / No	9/20/16	MCP
504359-11	9/20/16	Yes / No	9/20/16	MCP

CQA Officer Review Signature

CQA Field Signature

TRANSMISSIVITY REQUIREMENT CALCULATION UPDATE

HANSEN ALLEN & LUCE inc
ENGINEERS

1. Determine the required geocomposite transmissivity to provide sufficient capacity to conduct the leachate to the leachate conveyance pipes. This is an update to the calculation completed in 2005. Several factors have changed since the original calculation was completed. First, the waste is no longer baled waste and was switched to entirely loose waste many years ago. Second, the original calculation was completed for a geonet which has now changed to a geocomposite. The change to a geocomposite is important because the 2005 calculations assumed that the testing procedure for the transmissivity did not include an adjoining geotextile and therefore added a safety factor to account for this. Because the geotextile is now included, this safety factor is no longer necessary. Third, an alternative final cover was approved which reduces the amount of soil by 2.5 feet.

a. Bearing pressure over the geocomposite.

The Normal Bearing Pressure (P'):

160' Waste Height at 60 pcf	= 9,600 psf
2' + 2.5' Soil for Protective Cover and Closure at 120 pcf	= 540 psf
	= 10,140 psf
	(use 10,000 psf)

N TOTAL = 69.4 psi

60 pcf is a calculated value for landfill compacted loose waste based on a waste density of 1,200 lb/CY and 15% of the total landfill airspace being taken up by daily cover soil (120 pcf). Therefore the density of the waste mound is 55.8 pcf. Use 60 pcf to be conservative.

b. Results of Help Model

Results of the HELP Model

Scenario	Peak Daily Leachate Drainage Geocomposite (in.)	Average Annual Leachate Drainage Geocomposite(in.)
No Waste	0.08732	0.28963
10' Waste	0.16053	2.20132
50' Waste	0.17732	2.20141
100' Waste	0.17732	2.20142
200' Waste	0.17601	2.20142
Closed Area	0.00816	0.45519

c. Required Geocomposite Capacity

The geocomposite will be required to conduct the greatest amount of water at the low side of the planar slopes just prior to discharging leachate into the leachate

conveyance pipes. The boundary conditions for the geonet (from top to bottom) are:

Closure and Waste Loading
2' protective soil cover comprised of fine sands and silts
Geocomposite
60-mil HDPE geomembrane liner

The longest one-foot wide flow path within the geocomposite is approximately 150 feet along the resultant slope of the wider planar surfaces as leachate conveyance piping will be spaced approximately 150 feet apart to intercept leachate flows in the leachate collection system. Spacing the leachate conveyance pipes a distance of 150 feet apart results in a flow path approximately 190 feet long along the resultant angle of the floor slope. The leachate rate from this flow path length is present below.

The peak daily leachate rate to the geocomposite drainage layer is 0.17732 inch/day based with an open landfill and 0.00816 inch/day with a closed landfill on the HELP model output. The peak daily flow from the longest flow path is calculated below.

Open Landfill

$q_{leachate}$ = (190 ft)(0.17732 inches/day)(1 foot/ 12 inches)
$q_{leachate}$ = 2.81 ft^3/ft-day

Closed Landfill

$q_{leachate}$ = (190 ft)(0.00816 inches/day)(1 foot/ 12 inches)
$q_{leachate}$ = 0.13 ft^3/ft-day

The minimum slope for the planar surfaces for the geocomposite after applying the projected differential settlement is 2.0%. A steeper slope will provide a more conservative design.

The required transmissivity for the geocomposite is given by $q_{req'd}$ and is related to the leachate rate $q_{leachate}$ by applying necessary safety factors. The combination of all the necessary safety factors is a resulting safety factor. Therefore,

$$q_{req'd} = q_{leachate} \times SF_{RES}$$

"Designing with Geosynthetics" by Robert Koerner provides recommended safety factors in the design of geonets as follows:

SF_{BC} = The factor of safety for biological clogging in the core space of the geonet (1.5)
SF_{CR} = Safety factor for creep deformation of the geonet (1.5)
SF_{CC} = Safety factor for chemical clogging (2.0)

Combining all of the safety factors presented yields a resulting safety factor of:

SF_{RES} = 1.5 X 1.5 x 2.0 = 4.5

Using the information presented above, the required geocomposite transmissivity is:

(2.81)(4.5) = (Θ m^2/sec)(10.7639 ft^2/m^2)(86400 sec/day)(0.02); for open landfill areas.

(0.13)(4.5) = (Θ m^2/sec)(10.7639 ft^2/m^2)(86400 sec/day)(0.02); for closed landfill areas.

Where Θ is the hydraulic transmissivity of the geocomposite in m^2/sec

Therefore, $\Theta = 6.80 \times 10^{-4}$ m^2/sec; for open landfill areas
$\Theta = 3.15 \times 10^{-5}$ m^2/sec; for closed landfill areas

Therefore the geocomposite should be tested and test documentation provided to demonstrate the required hydraulic transmissivity is met at the loading and boundary conditions provided.

PHOTOGRAPHS

HANSEN ALLEN & LUCE inc
ENGINEERS

PHOTOGRAPHIC LOG

CLIENT: Waste Management
PROJECT NO.: 290.02.160
PROJECT: Tekoi 2016 Cell Expansion

PHOTO NO.	TAKEN BY	DATE	TIME	LOCATION	COMMENTS
001	MCP	9/14/16	1116	NE corner project area	Subgrade preparation, looking S/SW
002	MCP	9/14/16	1116	NE corner project area	Subgrade preparation, looking W/SW
003	MCP	9/14/16	1239		Excavator on site
004	MCP	9/14/16	1328	NW corner project area	Subgrade preparation, looking S
005	MCP	9/15/16	0753	NE corner project area	Subgrade preparation, looking W/SW
006	MCP	9/15/16	0753	NE corner project area	Subgrade preparation, looking SW
007	MCP	9/15/16	0945	W end along tie-in	Beginning liner deployment, looking N
008	MCP	9/15/16	1018	NW project area	Deploying liner over GCL on W end N slope
009	MCP	9/15/16	1051		Fusion welder used on site, #4171
010	MCP	9/15/16	1051		Fusion welder used on site, #2028
011	MCP	9/15/16	1052		Kubota SVL90-2 skid steer used on site
012	MCP	9/15/16	1052		Kubota side-by-side used on site
013	MCP	9/15/16	1057		Damaged roll HDPE
014	MCP	9/15/16	1343	NW corner project area	Deploying liner, GCL on W end along tie-in
015	MCP	9/15/16	1655	N tie-in on bench	Tie-in at existing, looking W/NW
016	MCP	9/15/16	1731	NE corner project area	Subgrade preparation, looking W
017	MCP	9/15/16	1731	NE corner project area	Subgrade preparation, looking SW
018	MCP	9/16/16	0811		R16, looking N
019	MCP	9/16/16	0812		R15, looking N/NW
020	MCP	9/16/16	0812		R12, looking N
021	MCP	9/16/16	0812		R11, looking N
022	MCP	9/16/16	0812		R10, looking N
023	MCP	9/16/16	0813		R9, looking N
024	MCP	9/16/16	0814		R8, looking N
025	MCP	9/16/16	0814		R5 and R6 (foreground) , looking N
026	MCP	9/16/16	0814		R5, looking N
027	MCP	9/16/16	0814		R7, looking N
028	MCP	9/16/16	0823	N Bench	Subgrade prep on N bench
029	MCP	9/16/16	0906		R3, looking N/NE
030	MCP	9/16/16	0906		R1, looking N
031	MCP	9/16/16	0914		R20, looking N/NE
032	MCP	9/16/16	0914		R21, looking N/NE
033	MCP	9/16/16	0915		R19, looking N
034	MCP	9/16/16	0915		R18, looking N
035	MCP	9/16/16	0916		R17, looking N

PHOTOGRAPHIC LOG

CLIENT: Waste Management

PROJECT NO.: 290.02.160

PHOTO NO.	TAKEN BY	DATE	TIME	LOCATION	COMMENTS
036	MCP	9/16/16	1021	N bench	Deployed liner, GCL on N bench
037	MCP	9/16/16	1028		Extrusion gun used on site
038	MCP	9/16/16	1028		Deployed liner on W end, looking N
039	MCP	9/16/16	1106		R22, R23, R24, looking N
040	MCP	9/16/16	1106		R25, looking N/NE
041	MCP	9/16/16	1107		R4, looking NE
042	MCP	9/16/16	1116	SAT (south anchor trench)	Liner at SAT, looking E
043	MCP	9/16/16	1421		Deploying liner on floor, looking N
044	MCP	9/17/16	0756		Deployed liner, GCL, looking N from SAT
045	MCP	9/17/16	0849		Swept subgrade prior to GCL deployment
046	MCP	9/17/16	1334	P23	Liner at top of S slope, looking W
047	MCP	9/17/16	1335		Deployed liner from S bench, looking NW
048	MCP	9/17/16	1335		Deployed liner from S bench, looking N/NW
049	MCP	9/17/16	1335		Deployed liner from S bench, looking NE
050	MCP	9/17/16	1507		Bentonite bead at latitudinal GCL seam
051	MCP	9/17/16	1600		R30, looking N
052	MCP	9/17/16	1600		R31, looking N
053	MCP	9/17/16	1601		R36, looking N
054	MCP	9/17/16	1601		R37, R38, looking N
055	MCP	9/17/16	1602		R40, looking N
056	MCP	9/17/16	1602		R41, looking N
057	MCP	9/17/16	1603		R42, looking N
058	MCP	9/17/16	1603		R29, looking N
059	MCP	9/17/16	1603		R48, looking N
060	MCP	9/17/16	1604		R46, looking N
061	MCP	9/17/16	1604		R45, looking N
062	MCP	9/17/16	1605		R44, looking N
063	MCP	9/17/16	1606		R26, looking SW
064	MCP	9/17/16	1607		R47, looking SE
065	MCP	9/17/16	1607	P23	Deployed liner, looking SW
066	MCP	9/17/16	1618		R51, looking N
067	MCP	9/17/16	1618		R52, looking N
068	MCP	9/17/16	1619		R50, looking N
069	MCP	9/17/16	1621		R53, looking N
070	MCP	9/17/16	1621		R54, looking N
071	MCP	9/17/16	1622		R55, looking N
072	MCP	9/17/16	1624		R56, looking N

PHOTOGRAPHIC LOG

CLIENT: Waste Management

PROJECT NO.: 290.02.160

PHOTO NO.	TAKEN BY	DATE	TIME	LOCATION	COMMENTS
073	MCP	9/17/16	1624		R57, looking N
074	MCP	9/17/16	1625		R58, R59, R60, looking N/NW
075	MCP	9/17/16	1626		R61, looking N
076	MCP	9/17/16	1627	NW corner project area	Deployed liner, looking S/SE
077	MCP	9/17/16	1627	NW corner project area	Deployed liner, looking SE
078	MCP	9/17/16	1651		Typical, frequent dirt devil on site
079	MCP	9/17/16	1712	SAT	Sand backfill, looking W
080	MCP	9/17/16	1714		R47, looking SE
081	MCP	9/17/16	1745	P32	Deployed liner at end of day, looking N
082	MCP	9/17/16	1745	P32	Deployed liner at end of day, looking NW
083	MCP	9/17/16	1745	P32	Deployed liner at end of day, looking W
084	MCP	9/18/16	0941	P31	Deploying GCL on N slope
085	MCP	9/18/16	1528		8 rolls surplus GCL at project completion
086	MCP	9/18/16	1658	P32	Deployed liner, looking W
087	MCP	9/18/16	1658	P32	Deployed liner, looking NW
088	MCP	9/18/16	1658	P32	Deployed liner, looking N
089	MCP	9/18/16	1658	P32	Deployed liner, looking NE
090	MCP	9/18/16	1659	P32	Deployed liner, looking E/NE
091	MCP	9/19/16	0759		R26, looking SW (duplicate image)
092	MCP	9/19/16	0801		Vacuum tested R4, looking NE
093	MCP	9/19/16	0819		R27, looking N
094	MCP	9/19/16	0854	NW project area, N bench	Completed liner on N bench, looking E
095	MCP	9/19/16	0854	NW project area, N bench	Deployed liner, looking S
096	MCP	9/19/16	0854	NW project area, N bench	Deployed liner, looking SE
097	MCP	9/19/16	0854	NW project area, N bench	Deployed liner, looking E
098	MCP	9/19/16	0858	NE project area, N bench	Deployed liner, looking S
099	MCP	9/19/16	0858	NE project area, N bench	Deployed liner, looking SW
100	MCP	9/19/16	0858	NE project area, N bench	Deployed liner, looking W
101	MCP	9/19/16	1117		R2, looking N/NE
102	MCP	9/19/16	1123		R32, looking NE
103	MCP	9/19/16	1129		R88, looking NE
104	MCP	9/19/16	1130		R87, looking NE
105	MCP	9/19/16	1131		R32, looking NE
106	MCP	9/19/16	1132		R4, looking N
107	MCP	9/19/16	1137		R14, looking N
108	MCP	9/19/16	1140		R67, looking N
109	MCP	9/19/16	1140		R68, looking N

PHOTOGRAPHIC LOG

CLIENT: Waste Management

PROJECT NO.: 290.02.160

PHOTO NO.	TAKEN BY	DATE	TIME	LOCATION	COMMENTS
110	MCP	9/19/16	1143		R108, looking N
111	MCP	9/19/16	1143		R107, looking N
112	MCP	9/19/16	1146		R109, looking N
113	MCP	9/19/16	1146		R110, looking N
114	MCP	9/19/16	1147		R106, looking N
115	MCP	9/19/16	1148		R105, looking N
116	MCP	9/19/16	1149		R69, looking N
117	MCP	9/19/16	1149		R93, looking N
118	MCP	9/19/16	1150		R94, looking N
119	MCP	9/19/16	1150		R95, looking N
120	MCP	9/19/16	1150		R96, looking N
121	MCP	9/19/16	1150		R97, looking N
122	MCP	9/19/16	1150		R98, looking N
123	MCP	9/19/16	1151		R99, looking N
124	MCP	9/19/16	1151		R100, looking N
125	MCP	9/19/16	1151		R101, looking N
126	MCP	9/19/16	1151		R102, looking N
127	MCP	9/19/16	1151		R103, looking N
128	MCP	9/19/16	1151		R104, looking N
129	MCP	9/19/16	1200		R90, looking N
130	MCP	9/19/16	1200		R91, looking N
131	MCP	9/19/16	1200		R92, looking N
132	MCP	9/19/16	1203		R62, looking N
133	MCP	9/19/16	1204		R28, looking N
134	MCP	9/19/16	1206		R49, looking N
135	MCP	9/19/16	1326		R81, looking N
136	MCP	9/19/16	1326		R82, looking N
137	MCP	9/19/16	1329		R39, looking N
138	MCP	9/19/16	1336		R33, looking N
139	MCP	9/19/16	1338		R35, looking N
140	MCP	9/19/16	1340		R89, looking N
141	MCP	9/19/16	1341		R34, looking N
142	MCP	9/19/16	1345		R73, looking N
143	MCP	9/19/16	1345		R80, looking N
144	MCP	9/19/16	1346		R74, R75, looking N
145	MCP	9/19/16	1346		R76, looking N
146	MCP	9/19/16	1346		R77, looking N

PHOTOGRAPHIC LOG

CLIENT: Waste Management

PROJECT NO.: 290.02.160

PHOTO NO.	TAKEN BY	DATE	TIME	LOCATION	COMMENTS
147	MCP	9/19/16	1347		R78, looking N
148	MCP	9/19/16	1347		R79, looking N
149	MCP	9/19/16	1347		R71, looking N
150	MCP	9/19/16	1352		R83, looking N
151	MCP	9/19/16	1353		R84, looking N
152	MCP	9/19/16	1353		R85, looking N
153	MCP	9/19/16	1354		R86, looking N
154	MCP	9/19/16	1412		R70, looking N
155	MCP	9/19/16	1413		R63, looking N
156	MCP	9/19/16	1414		R64, looking N
157	MCP	9/19/16	1421		R13, looking NW
158	MCP	9/19/16	1603	P50	Deploying geocomposite, looking W/NW
159	MCP	9/19/16	1603	P50	Deploying geocomposite, looking NW
160	MCP	9/19/16	1603	P50	Deploying geocomposite, looking N
161	MCP	9/19/16	1603	P50	Deployed liner
162	MCP	9/19/16	1605	P23	Deployed geocomposite on SW floor
163	MCP	9/20/16	0755		R111, looking N
164	MCP	9/20/16	0755		R112, looking N
165	MCP	9/20/16	0755		R113, R114, looking N
166	MCP	9/20/16	0756		Seam looking W along TOE of S slope
167	MCP	9/20/16	0756		R115, looking N
168	MCP	9/20/16	0800		Seam at P42/P47, looking W
169	MCP	9/20/16	0801		R71, looking N
170	MCP	9/20/16	0830	N bench, E of tie-in	Repairs E of N tie-in, looking E
171	MCP	9/20/16	0830	N bench, E of tie-in	Repairs E of N tie-in, looking NE
172	MCP	9/20/16	0831	N bench, E of tie-in	Repairs E of N tie-in, looking NE
173	MCP	9/20/16	0831	N bench, E of tie-in	Repairs E of N tie-in, looking NE
174	MCP	9/20/16	0831	N bench, E of tie-in	Repairs E of N tie-in, looking NE
175	MCP	9/20/16	0831	P39	Deployed liner on N bench, looking W
176	MCP	9/20/16	0831	P39	Deployed liner & geocomposite, looking SW
177	MCP	9/20/16	0832	P39	Deployed liner & geocomposite, looking S
178	MCP	9/20/16	0834		Seam at P39/P42, looking W
179	MCP	9/20/16	0839		Deployed liner in SAT, looking W
180	MCP	9/20/16	0839	P53	Deploying geocomposite, looking N
181	MCP	9/20/16	0839	P53	Deploying geocomposite, looking NW
182	MCP	9/20/16	0839	P53	Deploying geocomposite, looking W
183	MCP	9/20/16	0847		Telescopic forklift used on site

PHOTOGRAPHIC LOG

CLIENT: Waste Management

PROJECT NO.: 290.02.160

PHOTO NO.	TAKEN BY	DATE	TIME	LOCATION	COMMENTS
184	MCP	9/20/16	0848		Bobcat T630 skid steer used on site
185	MCP	9/20/16	0930		Sewn seam on geotextile
186	MCP	9/20/16	1058		Deploying geocomposite, looking N
187	MCP	9/20/16	1515	N end of landfill	Repair outside project area
188	MCP	9/20/16	1528		Roll number of surplus HDPE smooth liner
189	MCP	9/20/16	1529		Surplus liner, 1 full smooth, 2 partial textured
190	MCP	9/20/16	1529		2 partial rolls textured liner
191	MCP	9/20/16	1556		Old roll geocomposite used on project
192	MCP	9/20/16	1558		Old roll geocomposite used on project
193	MCP	9/20/16	1558		Old roll geocomposite used on project
194	MCP	9/20/16	1558		Old roll geocomposite used on project
195	MCP	9/20/16	1559		Old roll geocomposite not used on project
196	MCP	9/20/16	1603		Old roll geocomposite partial used on project
197	MCP	9/20/16	1605		Old roll geocomposite used on project
198	MCP	9/20/16	1712		Old roll geocomposite used on project
199	MCP	9/20/16	1742		Old roll geocomposite prior to repair work
200	MCP	9/20/16	1751		Deployed geocomposite, pending trimming
201	MCP	9/20/16	1752		Deployed geocomposite, looking N/NW
202	MCP	9/20/16	1752		Deployed geocomposite, looking W/NW
203	MCP	9/20/16	1803		Surplus old geocomposite rolls

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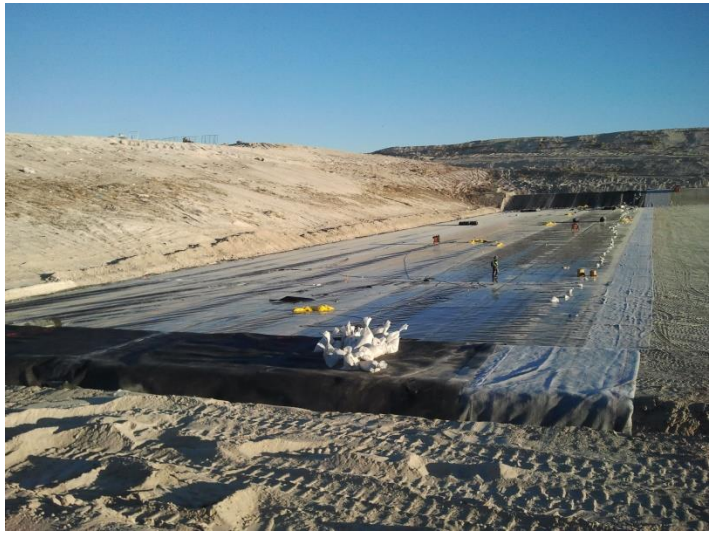

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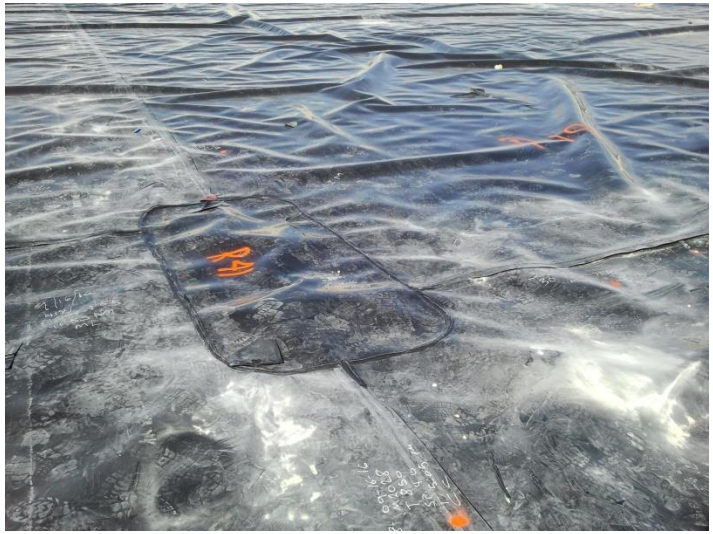

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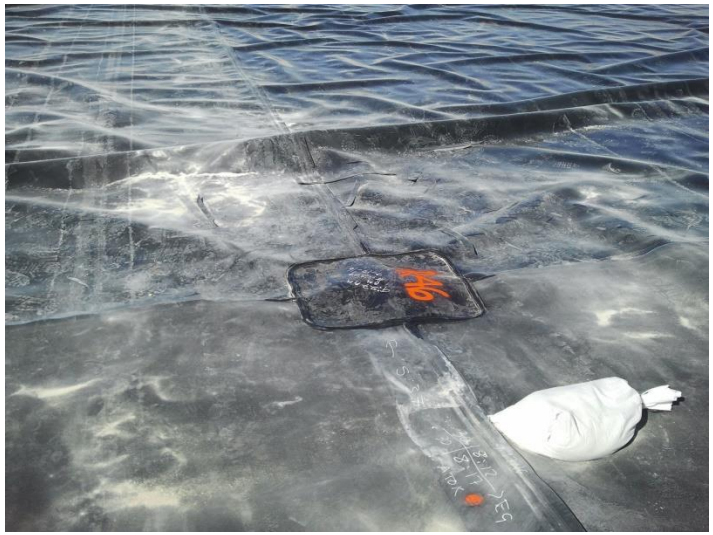

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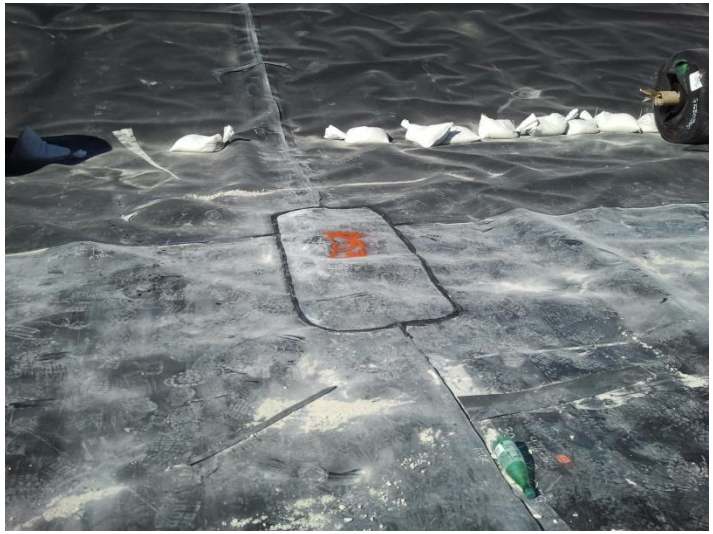

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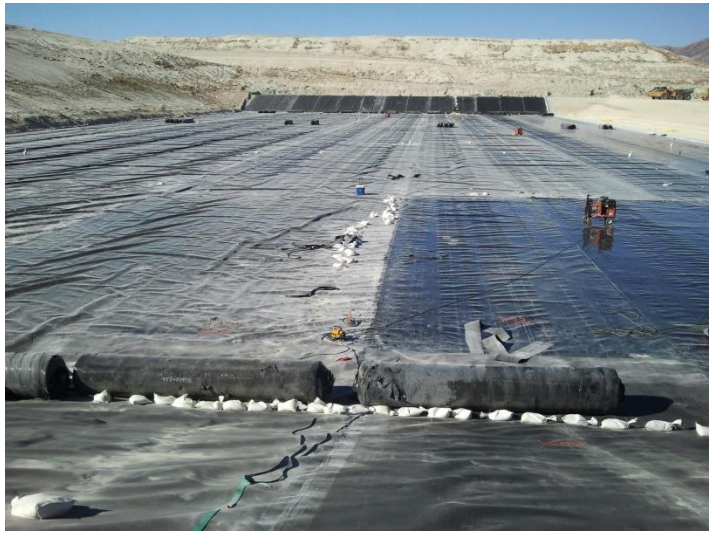

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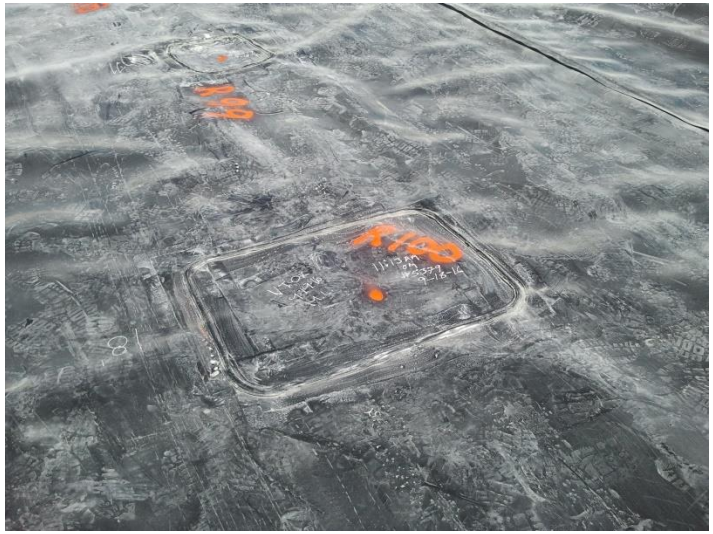

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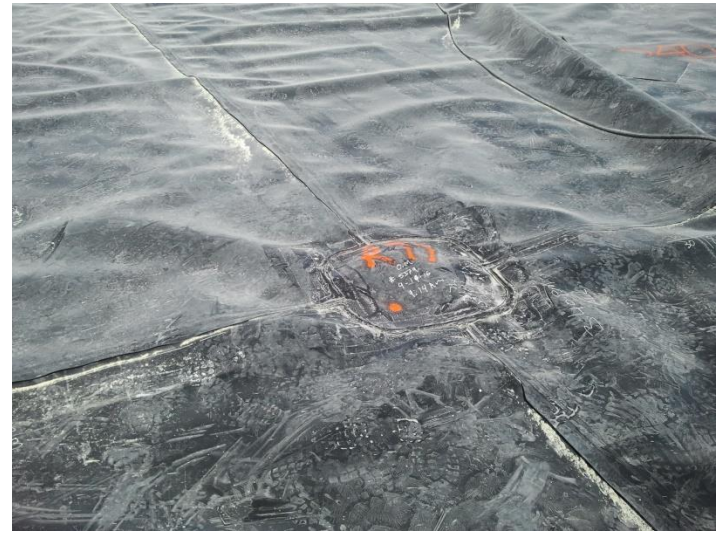

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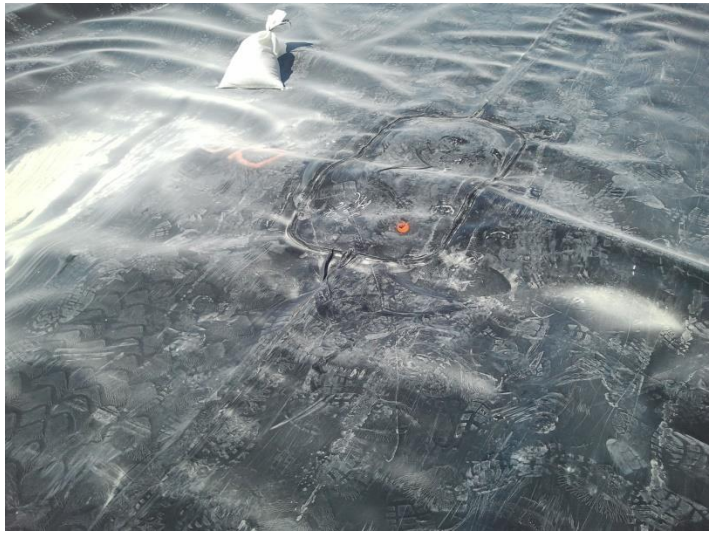

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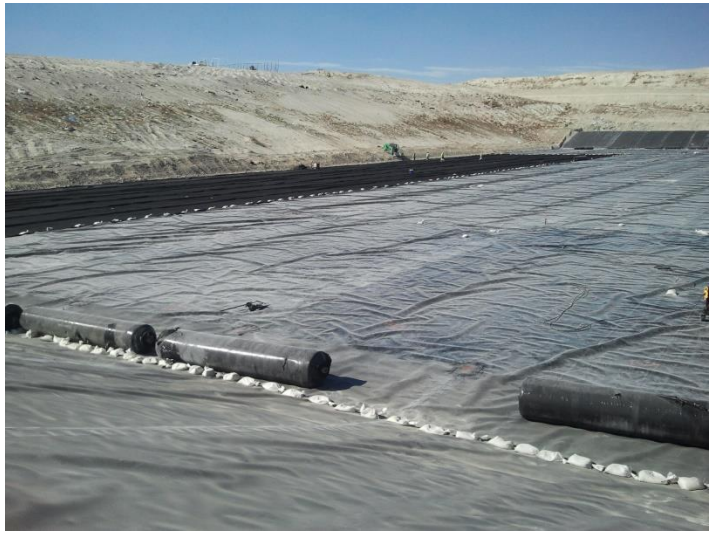

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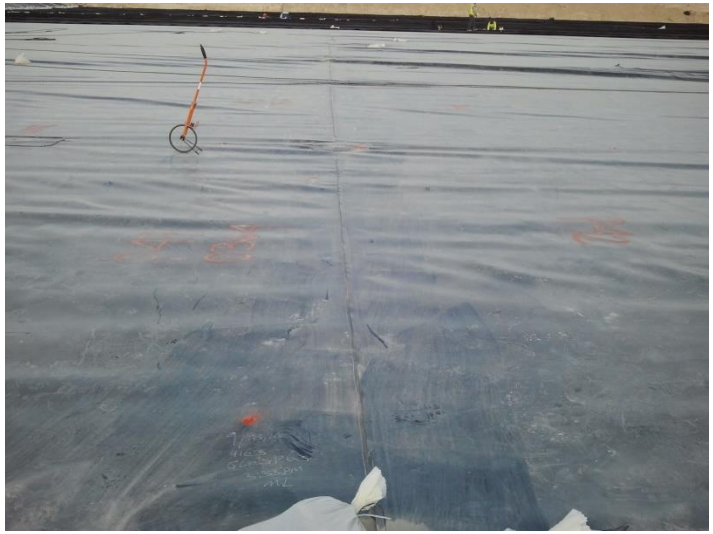

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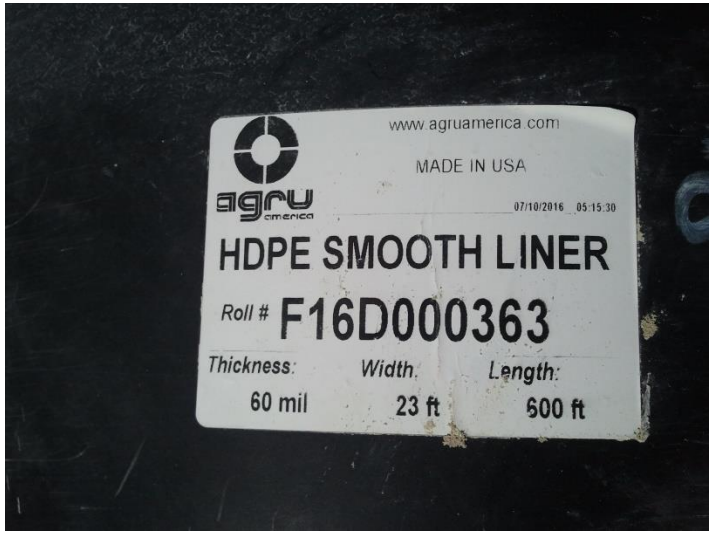

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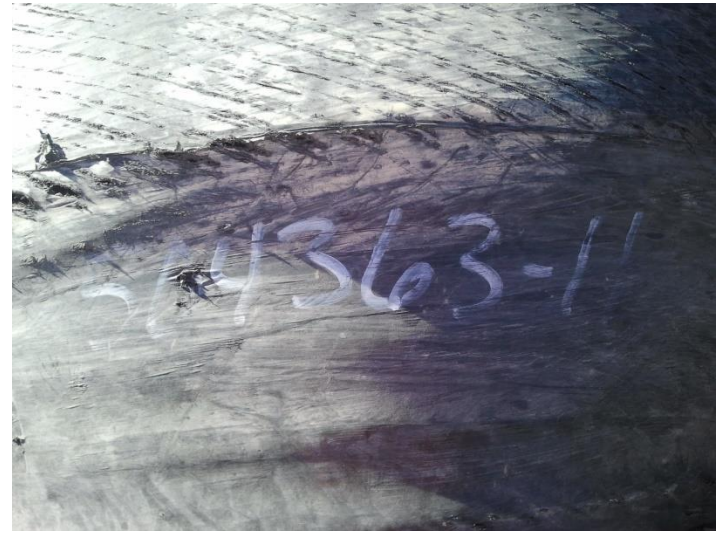

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GEOSYNTHETIC CERTIFICATIONS

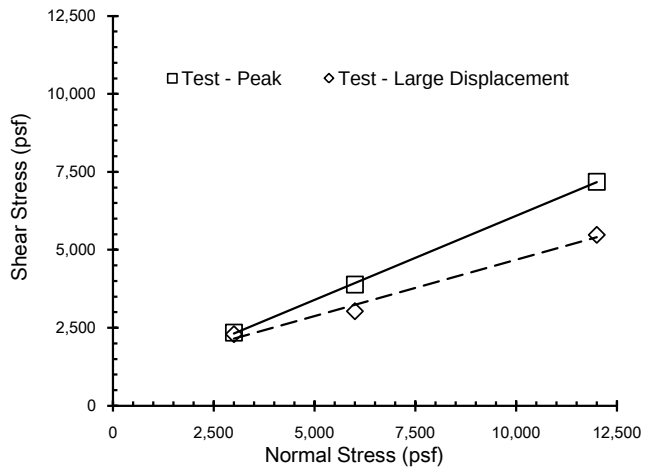
HANSEN ALLEN & LUCE inc
ENGINEERS

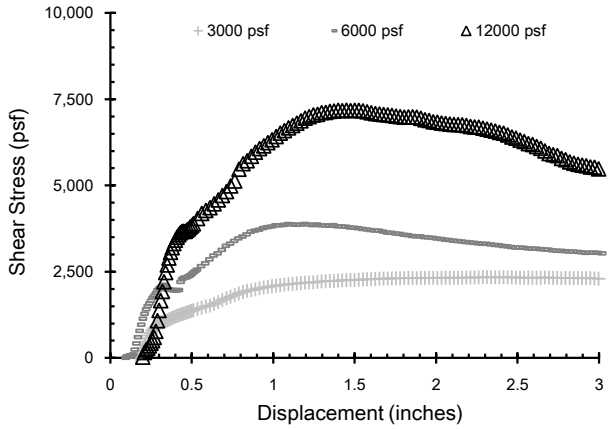
Interface Shear Strength of Geosynthetic Clay Liner by Direct Shear (ASTM D6243)

Client: Waste Management, Inc.
Project: Tekoi Landfill - Phase 2C

TRI Log #: 21907-2
Jeffrey A. Kuhn, Ph.D., P.E., 8/26/2016
Analysis & Quality Review/Date

Cetco Bentoliner ST (4226) vs. Subgrade Soil





Test Results, Linear Regression			
Mohr-Coulomb Parameters		Peak	Large Displacement
Friction Angle	Degrees	28.3	19.9
Y-intercept or Adhesion	psf	697	1,071

*3.0 inches

Test Conditions		
Upper Box	Cetco Bentoliner ST (4226)	
Lower Box	Subgrade Soil ω = 21.7%, γ_d = 93.9 pcf	
Conditioning	Wet - Interface soaked and loading applied for a minimum of 24 hours prior to shear.	
Shearing Rate	inches/minute	0.04

Test Notes
Shearing occurred at the interface at all stresses.

Specimen No.		-	1	2	3
Normal Stress		psf	3,000	6,000	12,000
Box Edge Dimension		in	12	12	12
Bearing Slide Resistance		lbs	37	65	122
Peak	Shear Stress	psf	2,345	3,885	7,182
	Secant Angle	deg.	38.0	32.9	30.9
Large Displacement	Shear Stress	psf	2,295	3,031	5,480
	Secant Angle	deg.	37.4	26.8	24.5

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

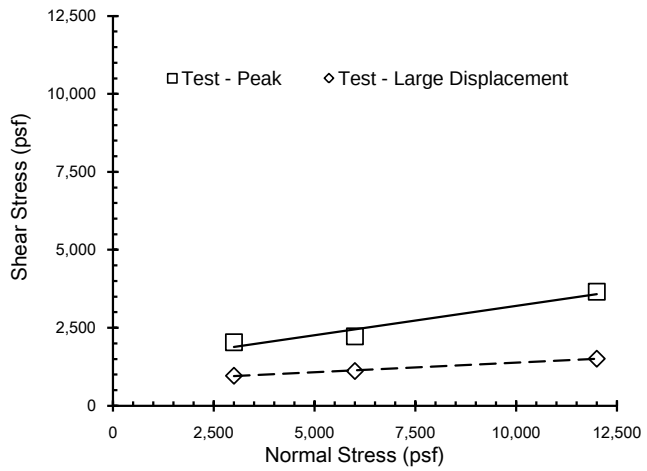
TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

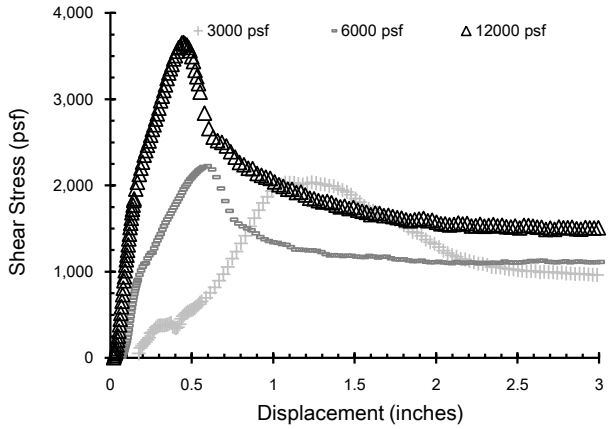
Interface Shear Strength of Geosynthetic Clay Liner by Direct Shear (ASTM D6243)

Client: Waste Management, Inc.
Project: Tekoi Landfill - Phase 2C

TRI Log #: 21907-1
Jeffrey A. Kuhn, Ph.D., P.E., 8/14/2016
Analysis & Quality Review/Date

Cetco Bentoliner ST (4226) vs. Agru GM DS Microsp 60 mil HDPE (F16B000632)





Test Results, Linear Regression			
Mohr-Coulomb Parameters		Peak	Large Displacement
Friction Angle	Degrees	10.7	3.5
Y-intercept or Adhesion	psf	1,320	764

*3.0 inches

Test Conditions		
Upper Box	Cetco Bentoliner ST (4226)	
Lower Box	Agru GM DS Microsp 60 mil HDPE (F16B000632)	
Conditioning	Wet - Interface soaked and loading applied for a minimum of 15 minutes prior to shear.	
Shearing Rate	inches/minute	0.2

Test Notes

Shearing occurred at the interface at all stresses.

Specimen No.		-	1	2	3
Normal Stress		psf	3,000	6,000	12,000
Box Edge Dimension		in	12	12	12
Bearing Slide Resistance		lbs	37	65	122
Peak	Shear Stress	psf	2,036	2,225	3,657
	Secant Angle	deg.	34.2	20.3	16.9
Large Displacement	Shear Stress	psf	962	1,113	1,509
	Secant Angle	deg.	17.8	10.5	7.2
Asperity Height, Avg. of 5 Meas.		mils	31.2	30.8	31.4

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

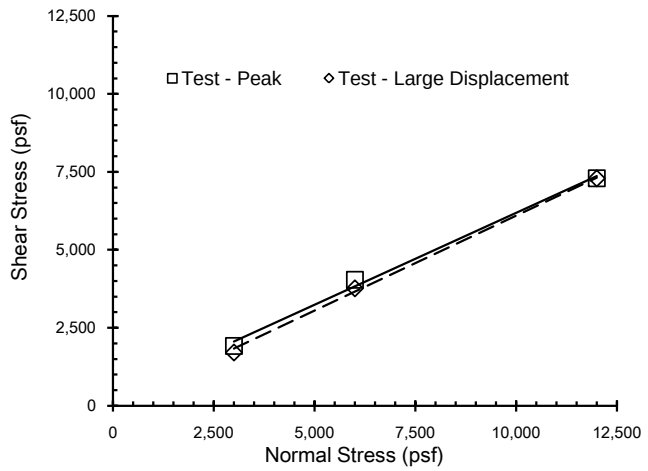
TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

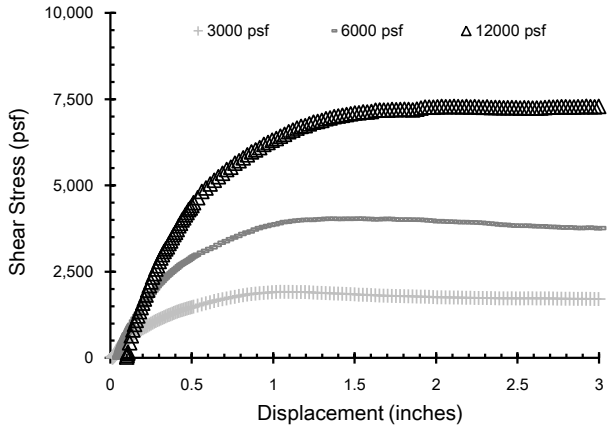
Interface Shear Strength of Geosynthetic Clay Liner by Direct Shear (ASTM D6243)

Client: Waste Management, Inc.
Project: Tekoi Landfill - Phase 2C

TRI Log #: 21907-3
Jeffrey A. Kuhn, Ph.D., P.E., 8/26/2016
Analysis & Quality Review/Date

Protective Cover Soil vs. Agru GM DS Microsp 60 mil HDPE (F16B000632)





Test Results, Linear Regression			
Mohr-Coulomb Parameters		Peak	Large Displacement
Friction Angle	Degrees	30.5	31.4
Y-intercept or Adhesion	psf	289	0 (Forced)

*3.0 inches

Test Conditions		
Upper Box	Protective Cover Soil, Tamp in Place	
Lower Box	Agru GM DS Microsp 60 mil HDPE (F16B000632)	
Conditioning	Wet - Interface soaked and loading applied for a minimum of 24 hours prior to shear.	
Shearing Rate	inches/minute	0.04

Test Notes

Shearing occurred at the interface at all stresses.

Specimen No.		-	1	2	3
Normal Stress		psf	3,000	6,000	12,000
Box Edge Dimension		in	12	12	12
Bearing Slide Resistance		lbs	37	65	122
Peak	Shear Stress	psf	1,917	4,039	7,295
	Secant Angle	deg.	32.6	33.9	31.3
Large Displacement	Shear Stress	psf	1,707	3,764	7,292
	Secant Angle	deg.	29.6	32.1	31.3
Asperity Height, Avg. of 5 Meas.		mils	27	27	27

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

CETCO
Colloid Environmental Technologies Company LLC

GRI GEI GII GSI GAI GCI
GAI-LAP accredited

Date: 29-Jul-2016 11:31
Purchase Order: 2125171652
ORDER NUMBER: 55005352

WASTE MANAGEMENT
3683 SOUTH 4975 W

WEST HAVEN,UT,84401

To Whom it May Concern:
Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to
WASTE MANAGEMENT
The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should be index flux/hydraulic conductivity test produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to CETCO Technical Services
at eptechservices@cetco.com.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005352
PREPARED FOR: WASTE MANAGEMENT

CONTENTS:

- Product Certifications
- GCL Order Packing List and MQA Tracking Form
- GCL Manufacturing Quality control test data
- Bentonite clay certification
- Raw Material Test results

PREPARED BY: NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO
AMERICAN COLLOID COMPANY
92 HIGHWAY 37
LOVELL, 82431, WY
Telephone: 800-322-1159
Email: Ryan.Nicholls@cetco.com

CETCO
Colloid Environmental Technologies Company LLC

PRODUCT CERTIFICATIONS

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005352
PREPARED FOR: WASTE MANAGEMENT

The GCL Manufactured for the above-referenced order number is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT ST-SFT

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D4643	GCL Moisture	1/100,000 lb.	35 - %
ASTM D5887	GCL-Hydraulic Conductivity	1/Order	5x10-9 - cm/s
ASTM D5887	GCL-Index Flux	1/Order	1x10-8 - m3/m2/s
ASTM D5890	Bentonite Free Swell	50 tons	24 - ml
ASTM D5891	Bentonite Fluid Loss	50 tons	18 - ml
ASTM D5993	Bentonite Mass/Area	40,000 sq ft (4,000 sq m)	.75 - lbs/sq ft
ASTM D6243	GCL Hydrated Internal Shear Strength	1/Order	500 - psf
ASTM D6496	GCL Peel Strength	40,000 sq ft (4,000 sq m)	3.5 - lbs/in
ASTM D6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 - lbs/in

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips.

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needless and fragments of needles that would negatively effect the performance of the final product.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 55005352

GCL								GEOTEXTILE			CLAY
BENTOMAT ST-SFT								01-9514	01-9865		CG 50-BLK
Order	**GCL Lot#**	**GCL Roll#**	**Length**	**Width**	**Weight**	**Sq. ft**	**Roll # Tested**	**Cap1 Roll #**	**Base1 Roll #**		**Clay Lot #**
55005352	LL-30-2016	4223	150	15	2580	2250	4223	2024527069	2024493033		L-207-16-A
55005352	LL-30-2016	4224	150	15	2575	2250	4223	2024527069	2024493033		L-207-16-A
55005352	LL-30-2016	4225	150	15	2680	2250	4223	2024527069	2024493033		L-207-16-A
55005352	LL-30-2016	4226	150	15	2660	2250	4223	2024527080	2024493033		L-207-16-A
55005352	LL-30-2016	4227	150	15	2627	2250	4223	2024527080	2024504843		L-207-16-A
55005352	LL-30-2016	4228	150	15	2635	2250	4223	2024527080	2024504843		L-207-16-A
55005352	LL-30-2016	4229	150	15	2625	2250	4223	2024527080	2024504843		L-207-16-A
55005352	LL-30-2016	4230	150	15	2605	2250	4223	2024527080	2024504843		L-207-16-A
55005352	LL-30-2016	4231	150	15	2605	2250	4223	2024527080	2024504843		L-207-16-A
55005352	LL-30-2016	4232	150	15	2595	2250	4223	2024527080	2024504843		L-207-16-A
55005352	LL-30-2016	4233	150	15	2600	2250	4223	2024526948	2024504843		L-207-16-A
55005352	LL-30-2016	4234	150	15	2635	2250	4223	2024526948	2024504843		L-207-16-A
55005352	LL-30-2016	4235	150	15	2635	2250	4223	2024526948	2024504843		L-207-16-A
55005352	LL-30-2016	4236	150	15	2600	2250	4223	2024526948	2024504843		L-207-16-A
55005352	LL-30-2016	4237	150	15	2600	2250	4223	2024526948	2024504843		L-207-16-A
55005352	LL-30-2016	4238	150	15	2605	2250	4223	2024526948	2024504843		L-207-16-A
					Total Sq Ft:	36000		Total Number of Rolls Certified: 16			

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55005352 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	GCL MOISTURE		
ASTM Test Method:			ASTM D5993	ASTM D6768	ASTM D6496	ASTM D4643		
Required Value:			.75 - lbs/sq ft	30 - lbs/in	3.5 - lbs/in	35 - %		
BENTOMAT ST-SFT	LL-30-2016	4223	.96	47	9.8	26.5		

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 55005352 has been tested by American Colloid Company and yielded the following results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	ASTM D2216	ASTM D5890	ASTM D5891
Required Value:	12 - %	24 - ml	18 - ml
L-207-16-A	9.4	28	15.8

CETCO
Colloid Environmental Technologies Company LLC

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 55005352 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9865	2024493033	3.27	136.6
01-9865	2024504843	3.22	138.5

COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9514	2024527069	7.46	193.56
01-9514	2024527080	6.4	159.25
01-9514	2024526948	6.61	166.16

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

CETCO
Colloid Environmental Technologies Company LLC

GAI-LAP accredited

Date: 02-Aug-2016 08:39
Purchase Order: 2125171652
ORDER NUMBER: 55005359

WASTE MANAGEMENT
3683 SOUTH 4975 W

WEST HAVEN,UT,84401

To Whom it May Concern:
Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to
WASTE MANAGEMENT
The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should be index flux/hydraulic conductivity test produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to CETCO Technical Services
at eptechservices@cetco.com.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005359
PREPARED FOR: WASTE MANAGEMENT

CONTENTS:

- Product Certifications
- GCL Order Packing List and MQA Tracking Form
- GCL Manufacturing Quality control test data
- Bentonite clay certification
- Raw Material Test results

PREPARED BY: NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO
AMERICAN COLLOID COMPANY
92 HIGHWAY 37
LOVELL, 82431, WY
Telephone: 800-322-1159
Email: Ryan.Nicholls@cetco.com

CETCO
Colloid Environmental Technologies Company LLC

PRODUCT CERTIFICATIONS

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005359
PREPARED FOR: WASTE MANAGEMENT

The GCL Manufactured for the above-referenced order number is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT 200R-SFT

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D4643	GCL Moisture	1/100,000 lb.	35 - %
ASTM D5887	GCL Hydraulic Conductivity	1/Order	5x10-9 - cm/s
ASTM D5887	GCL Index Flux	1/Order	1x10-8 - m3/m2/s
ASTM D5890	Bentonite Free Swell	50 tons	24 - ml
ASTM D5891	Bentonite Fluid Loss	50 tons	18 - ml
ASTM D5993	Bentonite Mass/Area	40,000 sq ft (4,000 sq m)	.75 - lbs/sq ft
ASTM D6243	GCL Hydrated Internal Shear Strength	1/Order	500 - psf
ASTM D6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	1 - lbs/in
ASTM D6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 - lbs/in

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips.

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needless and fragments of needles that would negatively effect the performance of the final product.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 55005359

GCL								GEOTEXTILE			CLAY
BENTOMAT 200R-SFT								01-9515	01-9865		CG 50-BLK
Order	**GCL Lot#**	**GCL Roll#**	**Length**	**Width**	**Weight**	**Sq. ft**	**Roll # Tested**	**Cap1 Roll #**	**Base1 Roll #**		**Clay Lot #**
55005359	LL-30-2016	1936	150	15	2730	2250	1925	2024072155	2024478209		L-207-16-A
55005359	LL-30-2016	1946	150	15	2600	2250	1942	2024496823	2024478209		L-207-16-A
55005359	LL-30-2016	1947	150	15	2660	2250	1942	2024496823	2024478209		L-207-16-A
55005359	LL-30-2016	1948	150	15	2635	2250	1942	2024496823	2024478209		L-207-16-A
55005359	LL-30-2016	1949	150	15	2700	2250	1942	2024496823	2024477412		L-207-16-A
55005359	LL-30-2016	1953	150	15	2685	2250	1942	2024496840	2024477412		L-207-16-A
55005359	LL-30-2016	1954	150	15	2645	2250	1942	2024496840	2024477412		L-207-16-A
55005359	LL-30-2016	1955	150	15	2665	2250	1942	2024496840	2024477412		L-207-16-A
55005359	LL-30-2016	1976	150	15	2645	2250	1976	2024496756	2024510037		L-207-16-B
55005359	LL-30-2016	1977	150	15	2675	2250	1976	2024496756	2024510037		L-207-16-B
					Total Sq Ft:	22500		Total Number of Rolls Certified: 10			

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55005359 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	GCL MOISTURE		
ASTM Test Method:			ASTM D5993	ASTM D6768	ASTM D6496	ASTM D4643		
Required Value:			.75 - lbs/sq ft	30 - lbs/in	1 - lbs/in	35 - %		
BENTOMAT 200R-SFT	LL-30-2016	1925	.85	51	6.3	29.7		
BENTOMAT 200R-SFT	LL-30-2016	1942	.9	51	7.3	26.4		
BENTOMAT 200R-SFT	LL-30-2016	1976	.87	51	7.3	27.9		

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 55005359 has been tested by American Colloid Company and yielded the following results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	ASTM D2216	ASTM D5890	ASTM D5891
Required Value:	12 - %	24 - ml	18 - ml
L-207-16-A	9.4	28	15.8
L-207-16-B	10.2	28	15.8

CETCO
Colloid Environmental Technologies Company LLC

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 55005359 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9865	2024478209	3.39	136.5
01-9865	2024477412	3.37	148.8
01-9865	2024510037	3.45	157

COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9515	2024072155	4.33	56.61
01-9515	2024496823	4.16	74.46
01-9515	2024496840	3.68	51.84
01-9515	2024496756	3.99	65.32

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

CETCO
Colloid Environmental Technologies Company LLC

GRI GEI GII GSI GAI GCI
GAI-LAP accredited

Date: 01-Aug-2016 10:06
Purchase Order: 2125171652
ORDER NUMBER: 55005358

WASTE MANAGEMENT
3683 SOUTH 4975 W

WEST HAVEN,UT,84401

To Whom it May Concern:
Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to
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at eptechservices@cetco.com.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005358
PREPARED FOR: WASTE MANAGEMENT

CONTENTS:

- Product Certifications
- GCL Order Packing List and MQA Tracking Form
- GCL Manufacturing Quality control test data
- Bentonite clay certification
- Raw Material Test results

PREPARED BY: NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO
AMERICAN COLLOID COMPANY
92 HIGHWAY 37
LOVELL, 82431, WY
Telephone: 800-322-1159
Email: Ryan.Nicholls@cetco.com

CETCO
Colloid Environmental Technologies Company LLC

PRODUCT CERTIFICATIONS

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005358
PREPARED FOR: WASTE MANAGEMENT

The GCL Manufactured for the above-referenced order number is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT 200R-SFT

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D4643	GCL Moisture	1/100,000 lb.	35 - %
ASTM D5887	GCL Hydraulic Conductivity	1/Order	5x10-9 - cm/s
ASTM D5887	GCL Index Flux	1/Order	1x10-8 - m3/m2/s
ASTM D5890	Bentonite Free Swell	50 tons	24 - ml
ASTM D5891	Bentonite Fluid Loss	50 tons	18 - ml
ASTM D5993	Bentonite Mass/Area	40,000 sq ft (4,000 sq m)	.75 - lbs/sq ft
ASTM D6243	GCL Hydrated Internal Shear Strength	1/Order	500 - psf
ASTM D6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	1 - lbs/in
ASTM D6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 - lbs/in

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NEEDLE DETECTION AND REMOVAL PROCEDURE

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Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 55005358

GCL								GEOTEXTILE			CLAY
BENTOMAT 200R-SFT								01-9515	01-9865		CG 50-BLK
Order	**GCL Lot#**	**GCL Roll#**	**Length**	**Width**	**Weight**	**Sq. ft**	**Roll # Tested**	**Cap1 Roll #**	**Base1 Roll #**		**Clay Lot #**
55005358	LL-30-2016	1925	150	15	2700	2250	1925	2024496733	2024478208		L-207-16-A
55005358	LL-30-2016	1927	150	15	2600	2250	1925	2024513925	2024478209		L-207-16-A
55005358	LL-30-2016	1928	150	15	2585	2250	1925	2024513925	2024478209		L-207-16-A
55005358	LL-30-2016	1964	150	15	2675	2250	1959	2024549898	2024477412		L-207-16-B
55005358	LL-30-2016	1965	150	15	2695	2250	1959	2024549898	2024477412		L-207-16-B
55005358	LL-30-2016	1966	150	15	2695	2250	1959	2024549898	2024477412		L-207-16-B
55005358	LL-30-2016	1967	150	15	2665	2250	1959	2024549898	2024477412		L-207-16-B
55005358	LL-30-2016	1988	150	15	2630	2250	1976	2024496773	2024510037		L-207-16-B
55005358	LL-30-2016	1991	150	15	2615	2250	1976	2024496773	2024510037		L-207-16-B
55005358	LL-30-2016	1992	150	15	2615	2250	1976	2024496773	2024510037		L-207-16-B
55005358	LL-30-2016	1993	150	15	2610	2250	1993	2024496773	2024510037		L-207-16-B
55005358	LL-30-2016	1994	150	15	2630	2250	1993	2024496773	2024510037		L-207-16-B
55005358	LL-30-2016	2001	150	15	2600	2250	1993	2024496739	2024510037		L-207-16-B
55005358	LL-30-2016	2002	150	15	2650	2250	1993	2024496739	2024510037		L-207-16-B
55005358	LL-30-2016	2003	150	15	2585	2250	1993	2024496739	2024510037		L-207-16-B
55005358	LL-30-2016	2014	150	15	2540	2250	2010	2024496799	2024436705		L-207-16-C
					Total Sq Ft:	36000		Total Number of Rolls Certified: 16			

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55005358 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	GCL MOISTURE		
ASTM Test Method:			ASTM D5993	ASTM D6768	ASTM D6496	ASTM D4643		
Required Value:			.75 - lbs/sq ft	30 - lbs/in	1 - lbs/in	35 - %		
BENTOMAT 200R-SFT	LL-30-2016	1925	.85	51	6.3	29.7		
BENTOMAT 200R-SFT	LL-30-2016	1959	.97	51	7.7	26.2		
BENTOMAT 200R-SFT	LL-30-2016	1976	.87	51	7.3	27.9		
BENTOMAT 200R-SFT	LL-30-2016	1993	.89	51	6.8	28.1		
BENTOMAT 200R-SFT	LL-30-2016	2010	.83	63.5	6.1	30.4		

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 55005358 has been tested by American Colloid Company and yielded the following results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	ASTM D2216	ASTM D5890	ASTM D5891
Required Value:	12 - %	24 - ml	18 - ml
L-207-16-A	9.4	28	15.8
L-207-16-B	10.2	28	15.8
L-207-16-C	10	27	15.8

CETCO
Colloid Environmental Technologies Company LLC

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 55005358 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9865	2024478208	3.39	136.5
01-9865	2024478209	3.39	136.5
01-9865	2024477412	3.37	148.8
01-9865	2024510037	3.45	157
01-9865	2024436705	3.28	148.9

COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9515	2024496733	4.26	72.89
01-9515	2024513925	4.58	87.86
01-9515	2024549898	4.02	76.54
01-9515	2024496773	3.88	63.5
01-9515	2024496739	4.45	76.58
01-9515	2024496799	4.27	77.4

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

CETCO
Colloid Environmental Technologies Company LLC

GRI GEI GII GSI GAI GCI
GAI-LAP accredited

Date: 01-Aug-2016 10:07
Purchase Order: 2125171652
ORDER NUMBER: 55005357

WASTE MANAGEMENT
3683 SOUTH 4975 W

WEST HAVEN,UT,84401

To Whom it May Concern:
Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to
WASTE MANAGEMENT
The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should be index flux/hydraulic conductivity test produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to CETCO Technical Services
at eptechservices@cetco.com.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005357
PREPARED FOR: WASTE MANAGEMENT

CONTENTS:

- Product Certifications
- GCL Order Packing List and MQA Tracking Form
- GCL Manufacturing Quality control test data
- Bentonite clay certification
- Raw Material Test results

PREPARED BY: NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO
AMERICAN COLLOID COMPANY
92 HIGHWAY 37
LOVELL, 82431, WY
Telephone: 800-322-1159
Email: Ryan.Nicholls@cetco.com

CETCO
Colloid Environmental Technologies Company LLC

PRODUCT CERTIFICATIONS

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005357
PREPARED FOR: WASTE MANAGEMENT

The GCL Manufactured for the above-referenced order number is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT 200R-SFT

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D4643	GCL Moisture	1/100,000 lb.	35 - %
ASTM D5887	GCL Hydraulic Conductivity	1/Order	5x10-9 - cm/s
ASTM D5887	GCL Index Flux	1/Order	1x10-8 - m3/m2/s
ASTM D5890	Bentonite Free Swell	50 tons	24 - ml
ASTM D5891	Bentonite Fluid Loss	50 tons	18 - ml
ASTM D5993	Bentonite Mass/Area	40,000 sq ft (4,000 sq m)	.75 - lbs/sq ft
ASTM D6243	GCL Hydrated Internal Shear Strength	1/Order	500 - psf
ASTM D6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	1 - lbs/in
ASTM D6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 - lbs/in

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips.

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needless and fragments of needles that would negatively effect the performance of the final product.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 55005357

GCL								GEOTEXTILE			CLAY
BENTOMAT 200R-SFT								01-9515	01-9865		CG 50-BLK
Order	**GCL Lot#**	**GCL Roll#**	**Length**	**Width**	**Weight**	**Sq. ft**	**Roll # Tested**	**Cap1 Roll #**	**Base1 Roll #**		**Clay Lot #**
55005357	LL-30-2016	1926	150	15	2610	2250	1925	2024513925	2024478209		L-207-16-A
55005357	LL-30-2016	1929	150	15	2650	2250	1925	2024513925	2024478209		L-207-16-A
55005357	LL-30-2016	1952	150	15	2630	2250	1942	2024496823	2024477412		L-207-16-A
55005357	LL-30-2016	1959	150	15	2650	2250	1959	2024496840	2024477412		L-207-16-B
55005357	LL-30-2016	1960	150	15	2680	2250	1959	2024496840	2024477412		L-207-16-B
55005357	LL-30-2016	1961	150	15	2670	2250	1959	2024496840	2024477412		L-207-16-B
55005357	LL-30-2016	1968	150	15	2685	2250	1959	2024549898	2024477412		L-207-16-B
55005357	LL-30-2016	1969	150	15	2680	2250	1959	2024549898	2024477412		L-207-16-B
55005357	LL-30-2016	1970	150	15	2650	2250	1959	2024549898	2024477412		L-207-16-B
55005357	LL-30-2016	1971	150	15	2665	2250	1959	2024549898	2024477412		L-207-16-B
55005357	LL-30-2016	1972	150	15	2660	2250	1959	2024549898	2024477412		L-207-16-B
55005357	LL-30-2016	1974	150	15	2670	2250	1959	2024496756	2024510037		L-207-16-B
55005357	LL-30-2016	1975	150	15	2640	2250	1959	2024496756	2024510037		L-207-16-B
55005357	LL-30-2016	1989	150	15	2640	2250	1976	2024496773	2024510037		L-207-16-B
55005357	LL-30-2016	1990	150	15	2620	2250	1976	2024496773	2024510037		L-207-16-B
55005357	LL-30-2016	2004	150	15	2570	2250	1993	2024496739	2024510037		L-207-16-B
					Total Sq Ft:	36000		Total Number of Rolls Certified: 16			

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55005357 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	GCL MOISTURE		
ASTM Test Method:			ASTM D5993	ASTM D6768	ASTM D6496	ASTM D4643		
Required Value:			.75 - lbs/sq ft	30 - lbs/in	1 - lbs/in	35 - %		
BENTOMAT 200R-SFT	LL-30-2016	1925	.85	51	6.3	29.7		
BENTOMAT 200R-SFT	LL-30-2016	1942	.9	51	7.3	26.4		
BENTOMAT 200R-SFT	LL-30-2016	1959	.97	51	7.7	26.2		
BENTOMAT 200R-SFT	LL-30-2016	1976	.87	51	7.3	27.9		
BENTOMAT 200R-SFT	LL-30-2016	1993	.89	51	6.8	28.1		

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 55005357 has been tested by American Colloid Company and yielded the following results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	ASTM D2216	ASTM D5890	ASTM D5891
Required Value:	12 - %	24 - ml	18 - ml
L-207-16-A	9.4	28	15.8
L-207-16-B	10.2	28	15.8

CETCO
Colloid Environmental Technologies Company LLC

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 55005357 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9865	2024478209	3.39	136.5
01-9865	2024477412	3.37	148.8
01-9865	2024510037	3.45	157

COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9515	2024513925	4.58	87.86
01-9515	2024496823	4.16	74.46
01-9515	2024496840	3.68	51.84
01-9515	2024549898	4.02	76.54
01-9515	2024496756	3.99	65.32
01-9515	2024496773	3.88	63.5
01-9515	2024496739	4.45	76.58

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

CETCO
Colloid Environmental Technologies Company LLC

GRI GEI GII GSI GAI GCI
GAI-LAP accredited

Date: 29-Jul-2016 11:23
Purchase Order: 2125171652
ORDER NUMBER: 55005356

WASTE MANAGEMENT
3683 SOUTH 4975 W

WEST HAVEN,UT,84401

To Whom it May Concern:
Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to
WASTE MANAGEMENT
The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should be index flux/hydraulic conductivity test produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to CETCO Technical Services
at eptechservices@cetco.com.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005356
PREPARED FOR: WASTE MANAGEMENT

CONTENTS:

- Product Certifications
- GCL Order Packing List and MQA Tracking Form
- GCL Manufacturing Quality control test data
- Bentonite clay certification
- Raw Material Test results

PREPARED BY: NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO
AMERICAN COLLOID COMPANY
92 HIGHWAY 37
LOVELL, 82431, WY
Telephone: 800-322-1159
Email: Ryan.Nicholls@cetco.com

CETCO
Colloid Environmental Technologies Company LLC

PRODUCT CERTIFICATIONS

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005356
PREPARED FOR: WASTE MANAGEMENT

The GCL Manufactured for the above-referenced order number is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT 200R-SFT

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D4643	GCL Moisture	1/100,000 lb.	35 - %
ASTM D5887	GCL Hydraulic Conductivity	1/Order	5x10-9 - cm/s
ASTM D5887	GCL Index Flux	1/Order	1x10-8 - m3/m2/s
ASTM D5890	Bentonite Free Swell	50 tons	24 - ml
ASTM D5891	Bentonite Fluid Loss	50 tons	18 - ml
ASTM D5993	Bentonite Mass/Area	40,000 sq ft (4,000 sq m)	.75 - lbs/sq ft
ASTM D6243	GCL Hydrated Internal Shear Strength	1/Order	500 - psf
ASTM D6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	1 - lbs/in
ASTM D6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 - lbs/in

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips.

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needless and fragments of needles that would negatively effect the performance of the final product.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 55005356

GCL								GEOTEXTILE			CLAY
BENTOMAT 200R-SFT								01-9515	01-9865		CG 50-BLK
Order	**GCL Lot#**	**GCL Roll#**	**Length**	**Width**	**Weight**	**Sq. ft**	**Roll # Tested**	**Cap1 Roll #**	**Base1 Roll #**		**Clay Lot #**
55005356	LL-30-2016	1951	150	15	2650	2250	1942	2024496823	2024477412		L-207-16-A
55005356	LL-30-2016	1956	150	15	2645	2250	1942	2024496840	2024477412		L-207-16-A
55005356	LL-30-2016	1957	150	15	2625	2250	1942	2024496840	2024477412		L-207-16-A
55005356	LL-30-2016	1958	150	15	2660	2250	1942	2024496840	2024477412		L-207-16-B
55005356	LL-30-2016	1983	150	15	2620	2250	1976	2024496756	2024510037		L-207-16-B
55005356	LL-30-2016	1985	150	15	2915	2250	1976	2024496756	2024510037		L-207-16-B
55005356	LL-30-2016	1986	150	15	2650	2250	1976	2024496773	2024510037		L-207-16-B
55005356	LL-30-2016	1987	150	15	2635	2250	1976	2024496773	2024510037		L-207-16-B
55005356	LL-30-2016	2006	150	15	2575	2250	1993	2024496799	2024436705		L-207-16-B
55005356	LL-30-2016	2007	150	15	2585	2250	1993	2024496799	2024436705		L-207-16-B
55005356	LL-30-2016	2008	150	15	2555	2250	1993	2024496799	2024436705		L-207-16-B
55005356	LL-30-2016	2009	150	15	2550	2250	1993	2024496799	2024436705		L-207-16-C
55005356	LL-30-2016	2010	150	15	2530	2250	2010	2024496799	2024436705		L-207-16-C
55005356	LL-30-2016	2011	150	15	2540	2250	2010	2024496799	2024436705		L-207-16-C
55005356	LL-30-2016	2012	150	15	2535	2250	2010	2024496799	2024436705		L-207-16-C
55005356	LL-30-2016	2013	150	15	2540	2250	2010	2024496799	2024436705		L-207-16-C
					Total Sq Ft:	36000		Total Number of Rolls Certified: 16			

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55005356 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	GCL MOISTURE		
ASTM Test Method:			ASTM D5993	ASTM D6768	ASTM D6496	ASTM D4643		
Required Value:			.75 - lbs/sq ft	30 - lbs/in	1 - lbs/in	35 - %		
BENTOMAT 200R-SFT	LL-30-2016	1942	.9	51	7.3	26.4		
BENTOMAT 200R-SFT	LL-30-2016	1976	.87	51	7.3	27.9		
BENTOMAT 200R-SFT	LL-30-2016	1993	.89	51	6.8	28.1		
BENTOMAT 200R-SFT	LL-30-2016	2010	.83	63.5	6.1	30.4		

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 55005356 has been tested by American Colloid Company and yielded the following results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	ASTM D2216	ASTM D5890	ASTM D5891
Required Value:	12 - %	24 - ml	18 - ml
L-207-16-A	9.4	28	15.8
L-207-16-B	10.2	28	15.8
L-207-16-C	10	27	15.8

CETCO
Colloid Environmental Technologies Company LLC

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 55005356 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9865	2024477412	3.37	148.8
01-9865	2024510037	3.45	157
01-9865	2024436705	3.28	148.9

COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9515	2024496823	4.16	74.46
01-9515	2024496840	3.68	51.84
01-9515	2024496756	3.99	65.32
01-9515	2024496773	3.88	63.5
01-9515	2024496799	4.27	77.4

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

CETCO
Colloid Environmental Technologies Company LLC

GRI GEI GII GSI GAI GCI
GAI-LAP accredited

Date: 01-Aug-2016 10:07
Purchase Order: 2125171652
ORDER NUMBER: 55005355

WASTE MANAGEMENT
3683 SOUTH 4975 W

WEST HAVEN,UT,84401

To Whom it May Concern:
Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to
WASTE MANAGEMENT
The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should be index flux/hydraulic conductivity test produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to CETCO Technical Services
at eptechservices@cetco.com.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005355
PREPARED FOR: WASTE MANAGEMENT

CONTENTS:

- Product Certifications
- GCL Order Packing List and MQA Tracking Form
- GCL Manufacturing Quality control test data
- Bentonite clay certification
- Raw Material Test results

PREPARED BY: NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO
AMERICAN COLLOID COMPANY
92 HIGHWAY 37
LOVELL, 82431, WY
Telephone: 800-322-1159
Email: Ryan.Nicholls@cetco.com

CETCO
Colloid Environmental Technologies Company LLC

PRODUCT CERTIFICATIONS

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005355
PREPARED FOR: WASTE MANAGEMENT

The GCL Manufactured for the above-referenced order number is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT 200R-SFT

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D4643	GCL Moisture	1/100,000 lb.	35 - %
ASTM D5887	GCL Hydraulic Conductivity	1/Order	5x10-9 - cm/s
ASTM D5887	GCL Index Flux	1/Order	1x10-8 - m3/m2/s
ASTM D5890	Bentonite Free Swell	50 tons	24 - ml
ASTM D5891	Bentonite Fluid Loss	50 tons	18 - ml
ASTM D5993	Bentonite Mass/Area	40,000 sq ft (4,000 sq m)	.75 - lbs/sq ft
ASTM D6243	GCL Hydrated Internal Shear Strength	1/Order	500 - psf
ASTM D6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	1 - lbs/in
ASTM D6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 - lbs/in

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips.

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needless and fragments of needles that would negatively effect the performance of the final product.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 55005355

GCL								GEOTEXTILE			CLAY
BENTOMAT 200R-SFT								01-9515	01-9865		CG 50-BLK
Order	**GCL Lot#**	**GCL Roll#**	**Length**	**Width**	**Weight**	**Sq. ft**	**Roll # Tested**	**Cap1 Roll #**	**Base1 Roll #**		**Clay Lot #**
55005355	LL-30-2016	1930	150	15	2560	2250	1925	2024072155	2024478209		L-207-16-A
55005355	LL-30-2016	1933	150	15	2530	2250	1925	2024072155	2024478209		L-207-16-A
55005355	LL-30-2016	1934	150	15	2580	2250	1925	2024072155	2024478209		L-207-16-A
55005355	LL-30-2016	1935	150	15	2580	2250	1925	2024072155	2024478209		L-207-16-A
55005355	LL-30-2016	1937	150	15	2570	2250	1925	2024072155	2024478209		L-207-16-A
55005355	LL-30-2016	1938	150	15	2585	2250	1925	2024072155	2024478209		L-207-16-A
55005355	LL-30-2016	1939	150	15	2585	2250	1925	2024072155	2024478209		L-207-16-A
55005355	LL-30-2016	1940	150	15	2720	2250	1925	2024072155	2024478209		L-207-16-A
55005355	LL-30-2016	1941	150	15	2670	2250	1925	2024496823	2024478209		L-207-16-A
55005355	LL-30-2016	1942	150	15	2785	2250	1942	2024496823	2024478209		L-207-16-A
55005355	LL-30-2016	1943	150	15	2720	2250	1942	2024496823	2024478209		L-207-16-A
55005355	LL-30-2016	1944	150	15	2645	2250	1942	2024496823	2024478209		L-207-16-A
55005355	LL-30-2016	1978	150	15	2640	2250	1976	2024496756	2024510037		L-207-16-B
55005355	LL-30-2016	1979	150	15	2650	2250	1976	2024496756	2024510037		L-207-16-B
55005355	LL-30-2016	1980	150	15	2635	2250	1976	2024496756	2024510037		L-207-16-B
55005355	LL-30-2016	1981	150	15	2645	2250	1976	2024496756	2024510037		L-207-16-B
					Total Sq Ft:	36000		Total Number of Rolls Certified: 16			

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55005355 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	GCL MOISTURE		
ASTM Test Method:			ASTM D5993	ASTM D6768	ASTM D6496	ASTM D4643		
Required Value:			.75 - lbs/sq ft	30 - lbs/in	1 - lbs/in	35 - %		
BENTOMAT 200R-SFT	LL-30-2016	1925	.85	51	6.3	29.7		
BENTOMAT 200R-SFT	LL-30-2016	1942	.9	51	7.3	26.4		
BENTOMAT 200R-SFT	LL-30-2016	1976	.87	51	7.3	27.9		

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 55005355 has been tested by American Colloid Company and yielded the following results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	ASTM D2216	ASTM D5890	ASTM D5891
Required Value:	12 - %	24 - ml	18 - ml
L-207-16-A	9.4	28	15.8
L-207-16-B	10.2	28	15.8

CETCO
Colloid Environmental Technologies Company LLC

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 55005355 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9865	2024478209	3.39	136.5
01-9865	2024510037	3.45	157

COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9515	2024072155	4.33	56.61
01-9515	2024496823	4.16	74.46
01-9515	2024496756	3.99	65.32

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

CETCO
Colloid Environmental Technologies Company LLC

GRI GEI GII GSI GAI GCI
GAI-LAP accredited

Date: 01-Aug-2016 10:06
Purchase Order: 2125171652
ORDER NUMBER: 55005354

WASTE MANAGEMENT
3683 SOUTH 4975 W

WEST HAVEN,UT,84401

To Whom it May Concern:
Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to
WASTE MANAGEMENT
The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should be index flux/hydraulic conductivity test produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to CETCO Technical Services
at eptechservices@cetco.com.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005354
PREPARED FOR: WASTE MANAGEMENT

CONTENTS:

- Product Certifications
- GCL Order Packing List and MQA Tracking Form
- GCL Manufacturing Quality control test data
- Bentonite clay certification
- Raw Material Test results

PREPARED BY: NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO
AMERICAN COLLOID COMPANY
92 HIGHWAY 37
LOVELL, 82431, WY
Telephone: 800-322-1159
Email: Ryan.Nicholls@cetco.com

CETCO
Colloid Environmental Technologies Company LLC

PRODUCT CERTIFICATIONS

PROJECT NAME:
CUSTOMER P.O.: 2125171652
ORDER NUMBER: 55005354
PREPARED FOR: WASTE MANAGEMENT

The GCL Manufactured for the above-referenced order number is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT 200R-SFT

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D4643	GCL Moisture	1/100,000 lb.	35 - %
ASTM D5887	GCL Hydraulic Conductivity	1/Order	5x10-9 - cm/s
ASTM D5887	GCL Index Flux	1/Order	1x10-8 - m3/m2/s
ASTM D5890	Bentonite Free Swell	50 tons	24 - ml
ASTM D5891	Bentonite Fluid Loss	50 tons	18 - ml
ASTM D5993	Bentonite Mass/Area	40,000 sq ft (4,000 sq m)	.75 - lbs/sq ft
ASTM D6243	GCL Hydrated Internal Shear Strength	1/Order	500 - psf
ASTM D6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	1 - lbs/in
ASTM D6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 - lbs/in

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.
All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using
ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips.

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needless and fragments of needles that would negatively effect the performance of the final product.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 55005354

GCL								GEOTEXTILE			CLAY
BENTOMAT 200R-SFT								01-9515	01-9865		CG 50-BLK
Order	**GCL Lot#**	**GCL Roll#**	**Length**	**Width**	**Weight**	**Sq. ft**	**Roll # Tested**	**Cap1 Roll #**	**Base1 Roll #**		**Clay Lot #**
55005354	LL-30-2016	1931	150	15	2530	2250	1925	2024072155	2024478209		L-207-16-A
55005354	LL-30-2016	1932	150	15	2525	2250	1925	2024072155	2024478209		L-207-16-A
55005354	LL-30-2016	1945	150	15	2615	2250	1942	2024496823	2024478209		L-207-16-A
55005354	LL-30-2016	1950	150	15	2695	2250	1942	2024496823	2024477412		L-207-16-A
55005354	LL-30-2016	1962	150	15	2665	2250	1959	2024496840	2024477412		L-207-16-B
55005354	LL-30-2016	1963	150	15	2680	2250	1959	2024549898	2024477412		L-207-16-B
55005354	LL-30-2016	1973	150	15	2655	2250	1959	2024549898	2024510037		L-207-16-B
55005354	LL-30-2016	1982	150	15	2665	2250	1976	2024496756	2024510037		L-207-16-B
55005354	LL-30-2016	1984	150	15	2625	2250	1976	2024496756	2024510037		L-207-16-B
55005354	LL-30-2016	1995	150	15	2630	2250	1993	2024496773	2024510037		L-207-16-B
55005354	LL-30-2016	1996	150	15	2595	2250	1993	2024496739	2024510037		L-207-16-B
55005354	LL-30-2016	1997	150	15	2635	2250	1993	2024496739	2024510037		L-207-16-B
55005354	LL-30-2016	1998	150	15	2610	2250	1993	2024496739	2024510037		L-207-16-B
55005354	LL-30-2016	1999	150	15	2605	2250	1993	2024496739	2024510037		L-207-16-B
55005354	LL-30-2016	2000	150	15	2605	2250	1993	2024496739	2024510037		L-207-16-B
55005354	LL-30-2016	2005	150	15	2565	2250	1993	2024496739	2024510037		L-207-16-B
					Total Sq Ft:	36000		Total Number of Rolls Certified: 16			

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55005354 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	GCL MOISTURE		
ASTM Test Method:			ASTM D5993	ASTM D6768	ASTM D6496	ASTM D4643		
Required Value:			.75 - lbs/sq ft	30 - lbs/in	1 - lbs/in	35 - %		
BENTOMAT 200R-SFT	LL-30-2016	1925	.85	51	6.3	29.7		
BENTOMAT 200R-SFT	LL-30-2016	1942	.9	51	7.3	26.4		
BENTOMAT 200R-SFT	LL-30-2016	1959	.97	51	7.7	26.2		
BENTOMAT 200R-SFT	LL-30-2016	1976	.87	51	7.3	27.9		
BENTOMAT 200R-SFT	LL-30-2016	1993	.89	51	6.8	28.1		

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 55005354 has been tested by American Colloid Company and yielded the following results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	ASTM D2216	ASTM D5890	ASTM D5891
Required Value:	12 - %	24 - ml	18 - ml
L-207-16-A	9.4	28	15.8
L-207-16-B	10.2	28	15.8

CETCO
Colloid Environmental Technologies Company LLC

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 55005354 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9865	2024478209	3.39	136.5
01-9865	2024477412	3.37	148.8
01-9865	2024510037	3.45	157

COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
01-9515	2024072155	4.33	56.61
01-9515	2024496823	4.16	74.46
01-9515	2024496840	3.68	51.84
01-9515	2024549898	4.02	76.54
01-9515	2024496756	3.99	65.32
01-9515	2024496773	3.88	63.5
01-9515	2024496739	4.45	76.58

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

August 3, 2016

Mail To:

Marc Franc
Waste Management, Inc

email: mfranc@wm.com
cc email: gjones@hansenallenluce.com

Bill To:

<= Same (PO # 2125173476)

Dear Mr. Franc:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report for laboratory testing.

Project:	**Tekoi Phase 2C**
TRI Job Reference Number:	22693
Material(s) Tested:	One, Cetco Bentomat 200R GCL
Test(s) Requested:	Mass/Unit Area (ASTM D5993) Peel Strength (ASTM D6496) Index Flux (ASTM D5887)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

Shawn O'Connor
Geosynthetic Services Division
www.GeosyntheticTesting.com
cc: jkuhn@tri-env.com (Jeffrey A. Kuhn, Ph.D., P.E. - Division Director)

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

GCL TEST RESULTS
TRI Client: Waste Management, Inc
Project: Tekoi Phase 2C

Material: Cetco Bentomat 200R GCL
Sample Identification: 1926
TRI Log #: 22693

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Bentonite - Mass/Unit Area (ASTM D5993, result @ 0% M.C.)													
Bentonite mass/unit area (lbs/ft^2)	0.99	0.96	0.94	0.82	1.02						**0.95**	0.08	.75 min
Moisture Content (%)	25.6	27.5	25.8	29.4	26.9						**27.0**	1.5	35 min
Peel Strength (ASTM D6496)													
MD - Peel Strength (lbs/in)	5.6	6.8	8.0	5.5	4.8						**6.2**	1.3	1.0 min
Index Flux (ASTM D5887)													
Index Flux (m^3/m^2/sec)		1.4E-09									**1.4E-09**		
Hydraulic Conductivity (cm/sec)		1.1E-09									**1.1E-09**		1.0E-06 max

MD Machine Direction TD Transverse Direction NA Not Available

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

Date: 1/17/2011
Purchase Order: 2000012220
ORDER NUMBER: 000268703

Marc Franc
Waste Management
Attn: Marc Franc
West Haven, UT 84401
mfranc@wm.com; gjones@

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to Waste Management.

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME: Tekoi LF
CUSTOMER P.O.: 2000012220
ORDER NUMBER: 000268703
PREPARED FOR: Waste Management

CONTENTS:

- Product Certifications
- GCL Order packing list and MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431
Telephone: 800-322-1149 ext. 413
E-Mail: rwilke@cetco.com

PRODUCT CERTIFICATIONS

PROJECT NAME: Tekoi LF
CUSTOMER P.O.: 2000012220
ORDER NUMBERS: 000268703
PREPARED FOR: Waste Management

The GCL manufactured for the above-referenced order number(s) is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT ST

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb /sq ft Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	30 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	500 psf typ @ 200 psf normal load
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5.0E-9 cm/s Max
ASTM D 5887	GCL Index Flux	Weekly	1.0E-8 m3/m2/s Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min

SPECIALLY REQUESTED CERTIFIED PROPERTIES FOR THIS ORDER OF BENTOMAT ST

Test Method	Test Method Property	Requested Frequency	Requested Value	Requested Conditions
ASTM D 5887	GCL Hydraulic Conductivity	1/100,000sqft	5.0E-9 cm/s Max	Standard
ASTM D 4833	GCL Puncture	1/100,000sqft	90	Standard

Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility. All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips.

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO certifies Bentomat® to be essentially free of broken needles and fragments of needles that would negatively effect the performance of the final product.

Roger B. Wilkerson
Quality Assurance Coordinator

CETCO

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000268703

GCL								Geotextiles				Clay
LO-BENTOMAT ST								LO-N/W-WHITE-ST			LO-WOVEN-ST	LO-CG 50-ST
Order	**GCL Lot #**	**GCL Roll #**	**Length**	**Width**	**weight**	**sq ft**	**Roll # Tested**	**Cap Lot #**	**Cap Roll #**	**Roll # Tested**	**Base Roll #**	**Clay Lot #**
000268703	201051LO	4926	150	15	2625	2250	4918	2021236982			2021153111	120910C
000268703	201051LO	4927	150	15	2640	2250	4918	2021236982			2021153111	120910C
000268703	201051LO	4928	150	15	2630	2250	4918	2021236982			2021153111	120910C
000268703	201051LO	4929	150	15	2635	2250	4918	2021234045			2021153111	120910C
000268703	201051LO	4930	150	15	2610	2250	4918	2021234045			2021153111	120910C
000268703	201051LO	4931	150	15	2595	2250	4918	2021234045			2021153111	120910C
000268703	201051LO	4932	150	15	2620	2250	4918	2021234045			2021153111	120910C
000268703	201051LO	4933	150	15	2595	2250	4918	2021234045			2021153111	120910C
000268703	201051LO	4934	150	15	2605	2250	4918	2021234045			2021153111	120910C
000268703	201051LO	4935	150	15	2655	2250	4935	2021234045			2021153111	120910C
000268703	201051LO	4936	150	15	2610	2250	4935	2021205046			2021153111	120910C
000268703	201051LO	4937	150	15	2615	2250	4935	2021205046			2021153111	120910C
000268703	201051LO	4938	150	15	2595	2250	4935	2021205046			2021153111	120910C
000268703	201051LO	4939	150	15	2575	2250	4935	2021205046			2021153111	120910D
000268703	201051LO	4940	150	15	2555	2250	4935	2021205046			2021153111	120910D
000268703	201051LO	4941	150	15	2545	2250	4935	2021205046			2021280132	120910D
000268703	201051LO	4942	150	15	2605	2250	4935	2021205046			2021280132	120910D
000268703	201051LO	4943	150	15	2630	2250	4935	2021205046			2021280132	120910D
000268703	201051LO	4944	150	15	2620	2250	4935	2021197377			2021280132	120910D
000268703	201051LO	4945	150	15	2595	2250	4935	2021197377			2021280132	120910D
000268703	201051LO	4946	150	15	2600	2250	4935	2021197377			2021280132	120910D
000268703	201051LO	4947	150	15	2555	2250	4935	2021197377			2021280132	120910D
000268703	201051LO	4948	150	15	2580	2250	4935	2021197377			2021280132	120910D
000268703	201051LO	4949	150	15	2585	2250	4935	2021197377			2021280132	120910D
000268703	201051LO	4950	150	15	2625	2250	4935	2021197373			2021280132	120910D
000268703	201051LO	4951	150	15	2595	2250	4935	2021197373			2021280132	120910D
000268703	201051LO	4952	150	15	2635	2250	4952	2021197373			2021280132	120910D
000268703	201051LO	4953	150	15	2660	2250	4952	2021197373			2021280132	120910D
000268703	201051LO	4954	150	15	2680	2250	4952	2021197373			2021280132	120910D
000268703	201051LO	4955	150	15	2590	2250	4952	2021197373			2021280132	120910D
000268703	201051LO	4956	150	15	2650	2250	4952	2021197373			2021280132	120910D

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
000268703	201051LO	4957	150	15	2570	2250	4952	2021197379			2021280132	120910D
000268703	201051LO	4958	150	15	2595	2250	4952	2021197379			2021280132	120910D
000268703	201051LO	4959	150	15	2555	2250	4952	2021197379			2021280132	120910D
000268703	201051LO	4960	150	15	2615	2250	4952	2021197379			2021280132	120910D
000268703	201051LO	4961	150	15	2590	2250	4952	2021197379			2021280132	120910D
000268703	201051LO	4962	150	15	2605	2250	4952	2021197379			2021280132	120910D
000268703	201051LO	4963	150	15	2585	2250	4952	2021197379			2021280132	120910D
000268703	201051LO	4964	150	15	2590	2250	4952	2021197390			2021280132	120910D
					Total sq ft:	**87750**	Total Number of Rolls Certified: **39**					

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000268703 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength 6496	Puncture
		ASTM Test Method:	D 5993	D 6768	D 6496	D 4833
		Required Value:	0.75 lb /sq ft Min	30 lbs/in MARV	3.5 lbs/in Min	90
LO-BENTOMAT ST	201051LO	4918	0.84	42.5	8.3	110.3
LO-BENTOMAT ST	201051LO	4935	0.86	42.5	4.0	110.3
LO-BENTOMAT ST	201051LO	4952	0.86	42.5	5.3	98.0

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 000268703

has been tested by American Colloid Company and yielded the following test results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	D 2216	D 5890	D 5891
Required Value:	12% Max	24 ml/2g Min	18 ml Max
120910C	12.00	24.00	17.20
120910D	11.90	24.00	17.00

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000268703 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
PPX 82TEX	2021153111	3.5	143.0
PPX 82TEX	2021280132	3.6	145.9

COVER GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
PPX 650	2021197373	6.7	97.6
PPX 650	2021197377	6.8	111.4
PPX 650	2021197379	6.8	111.4
PPX 650	2021197390	6.9	124.4
PPX 650	2021205046	6.9	83.9
PPX 650	2021234045	7.5	162.3
PPX 650	2021236982	6.9	141.4

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

Date: 1/26/2011
Purchase Order: 2000012220
ORDER NUMBERS: 0268703

Marc Franc
Waste Management
Attn: Marc Franc
West Haven, UT 84401
mfranc@wm.com; gjones@

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to Waste Management.

The enclosed data package includes results of all the MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once per production lot (once per week), unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO accepts responsibility for our GCL should the index flux/hydraulic conductivity tests produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO will replace the nonconforming material at no charge.

Questions regarding this information should be directed to Chris Athanassopoulos, Technical Support Engineer, at (847) 851-1831.

Sincerely,

Roger B. Wilkerson
Quality Assurance Coordinator
CETCO Lovell Plant

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME: Tekoi LF
CUSTOMER P.O.: 2000012220
ORDER NUMBERS: 0268703
PREPARED FOR: Waste Management

CONTENTS:

- Product Certifications
- GCL Order packing list and MQA tracking form
- GCL manufacturing quality control test data
- Bentonite clay certification
- Raw material test results

PREPARED BY: Roger B. Wilkerson
Quality Assurance Coordinator
CETCO
P.O. Box 428
92 Hwy. 37
Lovell, WY 82431
Telephone: 800-322-1149 ext. 413
E-Mail: rwilke@cetco.com

PRODUCT CERTIFICATIONS

PROJECT NAME: Tekoi LF
CUSTOMER P.O.: 2000012220
ORDER NUMBERS: 0268703
PREPARED FOR: Waste Management

The GCL manufactured for the above-referenced order number(s) is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR CLAYMAX 200R

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D 5891	Bentonite Fluid Loss	1 per 50 Tons	18 ml Max
ASTM D 5993	Bentonite Mass/Area	40,000 sq ft (4000 sq m)	0.75 lb /sq ft Min
ASTM D 5890	Bentonite Swell Index	1 per 50 Tons	24 ml/2g Min
ASTM D 6768	GCL Grab Strength	200,000 sq ft (20,000 sq m)	40 lbs/in MARV
ASTM D 6243	GCL Hydrated Internal Shear Strength	Periodic	100 psf typ @ 200 psf normal load
ASTM D 5887	GCL Hydraulic Conductivity	Weekly	5.0E-9 cm/s Max
ASTM D 5887	GCL Index Flux	Weekly	1.0E-8 m3/m2/s Max
Bentonite property tests are performed at a bentonite processing facility before shipment to CETCO's production facility.			

All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using ASTM D 6496. Upon request tensile and peel results can be reported per modified ASTM D 4632 using 4 inch grips.

Roger B. Wilkerson
Quality Assurance Coordinator
Colloid Environmental Technologies Co. (CETCO)

CETCO

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000268703

GCL								Geotextiles				Clay
LO-CLAYMAX200R								LO-N/W-BLK-200R-2.7			LO-N/W-BLK-200R-2.7	LO-CG 50-200R
Order	**GCL Lot #**	**GCL Roll #**	**Length**	**Width**	**weight**	**sq ft**	**Roll # Tested**	**Cap Lot #**	**Cap Roll #**	**Roll # Tested**	**Base Roll #**	**Clay Lot #**
026870316	201102LO	84	150	15	3030	2250	84	2021350730			2021348331	010511C
026870316	201102LO	85	150	15	3030	2250	84	2021350730			2021348331	010511C
026870316	201102LO	86	150	15	3030	2250	84	2021350730			2021348331	010511C
026870316	201102LO	87	150	15	3030	2250	84	2021350730			2021348331	010511C
026870316	201102LO	88	150	15	3030	2250	84	2021350730			2021348331	010511C
026870314	201102LO	89	150	15	3030	2250	84	2021350730			2021348331	010511C
026870314	201102LO	90	150	15	3030	2250	84	2021350730			2021348329	010511C
026870314	201102LO	91	150	15	3035	2250	84	2021350730			2021348329	010511C
026870314	201102LO	92	150	15	3035	2250	84	2021350730			2021348329	010511C
026870314	201102LO	93	150	15	3035	2250	84	2021350730			2021348329	010511C
026870314	201102LO	94	150	15	3035	2250	84	2021350730			2021348329	010511C
026870315	201102LO	95	150	15	3035	2250	84	2021350730			2021348329	010511C
026870315	201102LO	96	150	15	3035	2250	84	2021350730			2021348329	010511C
026870308	201102LO	97	150	15	3035	2250	84	2021350730			2021348329	010511C
026870316	201102LO	98	150	15	3045	2250	84	2021350729			2021348329	010511C
026870315	201102LO	99	150	15	3045	2250	84	2021350729			2021348329	010511C
026870315	201102LO	100	150	15	3045	2250	84	2021350729			2021348329	010511C
026870316	201102LO	101	150	15	3045	2250	101	2021350729			2021348329	010511C
026870316	201102LO	102	150	15	3045	2250	101	2021350729			2021348329	010511C
026870316	201102LO	103	150	15	3045	2250	101	2021350729			2021348329	010511C
026870316	201102LO	104	150	15	3045	2250	101	2021350729			2021348329	010511C
026870313	201102LO	105	150	15	3045	2250	101	2021350729			2021348329	010511C
026870313	201102LO	106	150	15	3045	2250	101	2021350729			2021348329	010511C
026870313	201102LO	107	150	15	3045	2250	101	2021350729			2021348329	010511C
026870313	201102LO	108	150	15	3045	2250	101	2021350729			2021348329	010511C
026870313	201102LO	109	150	15	3040	2250	101	2021350729			2021348323	010511C
026870314	201102LO	110	150	15	3040	2250	101	2021350729			2021348323	010511C
026870308	201102LO	111	150	15	3040	2250	101	2021350729			2021348323	010511C
026870308	201102LO	112	150	15	3040	2250	101	2021350729			2021348323	010511C
026870308	201102LO	113	150	15	3040	2250	101	2021350729			2021348323	010511C
026870308	201102LO	114	150	15	3045	2250	101	2021350729			2021348323	010511C

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026870315	201102LO	115	150	15	3050	2250	101	2021350724			2021348323	010511C
026870315	201102LO	116	150	15	3040	2250	101	2021350724			2021348323	010511C
026870315	201102LO	117	150	15	3040	2250	101	2021350724			2021348323	010511C
026870315	201102LO	118	150	15	3040	2250	118	2021350724			2021348323	010511C
026870316	201102LO	119	150	15	3040	2250	118	2021350724			2021348323	010511C
026870316	201102LO	121	150	15	2950	2250	118	2021350724			2021348323	010511C
026870313	201102LO	122	150	15	2950	2250	118	2021350724			2021348323	010511C
026870313	201102LO	123	150	15	2950	2250	118	2021350724			2021348323	010511C
026870313	201102LO	124	150	15	2950	2250	118	2021350724			2021348323	010511C
026870313	201102LO	125	150	15	2950	2250	118	2021350724			2021350470	010511C
026870313	201102LO	126	150	15	2950	2250	118	2021350724			2021350470	010511C
026870314	201102LO	127	150	15	2950	2250	118	2021350724			2021350470	010511C
026870308	201102LO	128	150	15	3055	2250	118	2021350724			2021350470	010511C
026870308	201102LO	129	150	15	3055	2250	118	2021350724			2021350470	010611A
026870308	201102LO	130	150	15	3055	2250	118	2021350724			2021350470	010611A
026870314	201102LO	131	150	15	3055	2250	118	2021350724			2021350470	010611A
026870315	201102LO	132	150	15	3055	2250	118	2021350724			2021350470	010611A
026870315	201102LO	133	150	15	3055	2250	118	2021350722			2021348323	010611A
026870315	201102LO	134	150	15	3055	2250	118	2021350722			2021350470	010611A
026870311	201102LO	135	150	15	3055	2250	135	2021350722			2021350470	010611A
026870310	201102LO	136	150	15	3055	2250	135	2021350722			2021350470	010611A
026870315	201102LO	138	150	15	3055	2250	135	2021350722			2021350470	010611A
026870315	201102LO	139	150	15	3055	2250	135	2021350722			2021350470	010611A
026870315	201102LO	140	150	15	3055	2250	135	2021350722			2021350470	010611A
026870308	201103LO	141	150	15	3050	2250	141	2021350722			2021350470	010811C
026870308	201103LO	142	150	15	3060	2250	141	2021350722			2021350470	010811C
026870308	201103LO	143	150	15	3050	2250	141	2021350722			2021350470	010811C
026870314	201103LO	144	150	15	3065	2250	141	2021350722			2021350470	010811C
026870314	201103LO	145	150	15	2980	2250	141	2021350722			2021350470	010811C
026870313	201103LO	146	150	15	3000	2250	141	2021350722			2021350470	010811C
026870310	201103LO	147	150	15	2995	2250	141	2021350722			2021348330	010811C
026870313	201103LO	148	150	15	2990	2250	141	2021350722			2021348330	010811C
026870313	201103LO	149	150	15	3005	2250	141	2021350722			2021348330	010811C
026870313	201103LO	150	150	15	3010	2250	141	2021350722			2021348330	010811C
026870310	201103LO	151	150	15	3025	2250	141	2021350722			2021348330	010811C
026870307	201103LO	152	150	15	3020	2250	141	2021350718			2021348330	010811C
026870307	201103LO	153	150	15	3030	2250	141	2021350718			2021348330	010811C
026870307	201103LO	154	150	15	3040	2250	141	2021350718			2021348330	010811C
026870308	201103LO	155	150	15	3035	2250	141	2021350718			2021348330	010811C

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026870308	201103LO	156	150	15	3025	2250	141	2021350718			2021348330	010811C
026870308	201103LO	157	150	15	3020	2250	141	2021350718			2021348330	010811C
026870314	201103LO	158	150	15	3015	2250	158	2021350718			2021348330	010811C
026870314	201103LO	159	150	15	3010	2250	158	2021350718			2021348330	010811C
026870314	201103LO	160	150	15	3015	2250	158	2021350718			2021348330	010811C
026870312	201103LO	161	150	15	3015	2250	158	2021350718			2021348330	010811C
026870311	201103LO	162	150	15	3020	2250	158	2021350718			2021348330	010811C
026870310	201103LO	163	150	15	3025	2250	158	2021350718			2021348330	010811C
026870310	201103LO	164	150	15	3030	2250	158	2021350718			2021348330	010811C
026870310	201103LO	165	150	15	3025	2250	158	2021350718			2021348325	010811C
026870310	201103LO	166	150	15	3020	2250	158	2021350718			2021348325	010811C
026870307	201103LO	167	150	15	3025	2250	158	2021350718			2021348325	010811C
026870307	201103LO	168	150	15	3020	2250	158	2021350718			2021348325	010811C
026870307	201103LO	169	150	15	3015	2250	158	2021350718			2021348325	010811C
026870307	201103LO	170	150	15	3025	2250	158	2021350718			2021348325	010811C
026870307	201103LO	171	150	15	3010	2250	158	2021350716			2021348325	010811C
026870312	201103LO	172	150	15	3005	2250	158	2021350716			2021348325	010811C
026870310	201103LO	173	150	15	3020	2250	158	2021350716			2021348325	010811C
026870310	201103LO	174	150	15	3015	2250	158	2021350716			2021348325	010811C
026870310	201103LO	175	150	15	3010	2250	175	2021350716			2021348325	010811C
026870310	201103LO	176	150	15	3015	2250	175	2021350716			2021348325	010811C
026870307	201103LO	177	150	15	3020	2250	175	2021350716			2021348325	010811C
026870307	201103LO	178	150	15	3025	2250	175	2021350716			2021348325	010811C
026870307	201103LO	179	150	15	3030	2250	175	2021350716			2021348325	010811C
026870307	201103LO	180	150	15	3035	2250	175	2021350716			2021348325	010811C
026870310	201103LO	181	150	15	3040	2250	175	2021350716			2021348325	010811C
026870310	201103LO	182	150	15	3035	2250	175	2021350716			2021348325	010811C
026870310	201103LO	183	150	15	3025	2250	175	2021350716			2021348325	010811C
026870310	201103LO	184	150	15	3020	2250	175	2021350716			2021025920	010811C
026870307	201103LO	185	150	15	3030	2250	175	2021350716			2021025920	010811C
026870307	201103LO	186	150	15	3025	2250	175	2021350716			2021025920	010811C
026870307	201103LO	187	150	15	3020	2250	175	2021350716			2021025920	010811D
026870312	201103LO	188	150	15	3015	2250	175	2021350716			2021025920	010811D
026870312	201103LO	189	150	15	3010	2250	175	2021350720			2021025920	010811D
026870312	201103LO	190	150	15	3005	2250	175	2021350720			2021025920	010811D
026870309	201103LO	191	150	15	3000	2250	175	2021350720			2021025920	010811D
026870309	201103LO	192	150	15	3010	2250	192	2021350720			2021025920	010811D
026870312	201103LO	193	150	15	3005	2250	192	2021350720			2021025920	010811D
026870309	201103LO	194	150	15	3020	2250	194	2021350720			2021025920	010911B

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026870309	201103LO	195	150	15	3025	2250	194	2021350720			2021025920	010911B
026870309	201103LO	196	150	15	3030	2250	194	2021350720			2021025920	010911B
026870312	201103LO	197	150	15	3035	2250	194	2021350720			2021025920	010911B
026870312	201103LO	198	150	15	3020	2250	194	2021350720			2021025920	010911B
026870312	201103LO	199	150	15	3015	2250	194	2021350720			2021348324	010911B
026870309	201103LO	200	150	15	3020	2250	194	2021350720			2021348324	010911B
026870312	201103LO	201	150	15	3010	2250	194	2021350720			2021348324	010911B
026870309	201103LO	202	150	15	3020	2250	194	2021350719			2021348324	010911B
026870309	201103LO	203	150	15	3015	2250	194	2021350719			2021348324	010911B
026870312	201103LO	204	150	15	3020	2250	194	2021350719			2021348324	010911B
026870309	201103LO	205	150	15	3030	2250	194	2021350719			2021348324	010911B
026870312	201103LO	206	150	15	3020	2250	194	2021350719			2021348324	010911B
026870312	201103LO	207	150	15	3015	2250	194	2021350719			2021348324	010911B
026870312	201103LO	208	150	15	3005	2250	194	2021350719			2021348324	010911B
026870312	201103LO	209	150	15	3010	2250	194	2021350719			2021348324	010911C
026870311	201103LO	210	150	15	3000	2250	194	2021350719			2021348324	010911C
026870311	201103LO	211	150	15	3015	2250	211	2021350719			2021348324	010911C
026870311	201103LO	212	150	15	3020	2250	211	2021350719			2021348324	010911C
026870311	201103LO	213	150	15	3015	2250	211	2021350719			2021348324	010911C
026870309	201103LO	214	150	15	3020	2250	211	2021350719			2021348324	010911C
026870309	201103LO	215	150	15	3010	2250	211	2021350719			2021348324	010911C
026870309	201103LO	216	150	15	3025	2250	211	2021350719			2021348324	010911C
026870304	201103LO	217	150	15	3020	2250	211	2021350719			2021348324	010911C
026870304	201103LO	218	150	15	3000	2250	211	2021350719			2021273763	010911C
026870304	201103LO	219	150	15	3005	2250	211	2021350719			2021273763	010911C
026870304	201103LO	220	150	15	3010	2250	211	2021350719			2021273763	010911C
026870304	201103LO	221	150	15	3020	2250	211	2021350719			2021273763	010911C
026870304	201103LO	222	150	15	3020	2250	211	2021350715			2021273763	010911C
026870311	201103LO	223	150	15	3015	2250	211	2021350715			2021273763	010911C
026870311	201103LO	224	150	15	3000	2250	211	2021350715			2021273763	010911C
026870311	201103LO	225	150	15	3005	2250	211	2021350715			2021273763	010911C
026870311	201103LO	226	150	15	3010	2250	211	2021350715			2021273763	010911C
026870311	201103LO	227	150	15	3015	2250	211	2021350715			2021273763	010911C
026870311	201103LO	228	150	15	3020	2250	228	2021350715			2021273763	010911C
026870309	201103LO	229	150	15	3025	2250	228	2021350715			2021273763	010911C
026870309	201103LO	230	150	15	3000	2250	228	2021350715			2021273763	010911C
026870309	201103LO	231	150	15	3010	2250	228	2021350715			2021273763	010911C
026870304	201103LO	232	150	15	3015	2250	228	2021350715			2021273763	010911C
026870304	201103LO	233	150	15	3005	2250	228	2021350715			2021273763	010911C

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026870304	201103LO	234	150	15	3010	2250	228	2021350715			2021273771	010911C
026870304	201103LO	235	150	15	3015	2250	228	2021350715			2021273771	010911C
026870303	201103LO	236	150	15	3020	2250	228	2021350715			2021273771	010911C
026870303	201103LO	237	150	15	3010	2250	228	2021350715			2021273771	010911C
026870303	201103LO	238	150	15	3015	2250	228	2021350715			2021273771	010911C
026870311	201103LO	239	150	15	3025	2250	228	2021350715			2021273771	010911C
026870311	201103LO	240	150	15	3020	2250	228	2021350715			2021273771	010911C
026870311	201103LO	241	150	15	3030	2250	228	2021272973			2021273771	010911C
026870304	201103LO	242	150	15	3025	2250	228	2021272973			2021273771	010911C
026870304	201103LO	243	150	15	3035	2250	228	2021272973			2021273771	010911C
026870304	201103LO	244	150	15	3030	2250	228	2021272973			2021273771	010911C
026870304	201103LO	245	150	15	3020	2250	245	2021272973			2021273771	010911C
026870303	201103LO	246	150	15	3015	2250	245	2021272973			2021273771	010911C
026870303	201103LO	247	150	15	3010	2250	245	2021272973			2021273771	010911C
026870303	201103LO	248	150	15	3005	2250	245	2021272973			2021273771	010911C
026870303	201103LO	249	150	15	3015	2250	245	2021272973			2021273772	010911C
026870303	201103LO	250	150	15	3025	2250	245	2021272973			2021273772	010911C
026870303	201103LO	251	150	15	3020	2250	245	2021272973			2021273772	010911C
026870305	201103LO	252	150	15	3025	2250	245	2021272973			2021273772	010911C
026870305	201103LO	253	150	15	3020	2250	245	2021272973			2021273772	010911C
026870305	201103LO	254	150	15	3015	2250	245	2021272973			2021273772	010911D
026870305	201103LO	255	150	15	3010	2250	245	2021272973			2021273772	010911D
026870305	201103LO	256	150	15	3005	2250	245	2021173276			2021273772	010911D
026870305	201103LO	257	150	15	3010	2250	245	2021173276			2021273772	010911D
026870305	201103LO	258	150	15	3025	2250	245	2021173276			2021273772	010911D
026870306	201103LO	259	150	15	3030	2250	245	2021173276			2021273772	010911D
026870306	201103LO	260	150	15	3025	2250	245	2021173276			2021273772	010911D
026870306	201103LO	261	150	15	3015	2250	245	2021173276			2021273772	010911D
026870306	201103LO	262	150	15	3010	2250	262	2021173276			2021273772	010911D
026870306	201103LO	263	150	15	3015	2250	262	2021173276			2021273772	010911D
026870305	201103LO	264	150	15	3010	2250	262	2021173276			2021274301	010911D
026870305	201103LO	265	150	15	3005	2250	262	2021173276			2021274301	010911D
026870305	201103LO	266	150	15	3015	2250	262	2021173276			2021274301	010911D
026870305	201103LO	267	150	15	3025	2250	262	2021173276			2021274301	010911D
026870305	201103LO	268	150	15	3035	2250	262	2021173276			2021274301	010911D
026870305	201103LO	269	150	15	3030	2250	262	2021173276			2021274301	010911D
026870305	201103LO	270	150	15	3025	2250	262	2021173276			2021274301	010911D
026870305	201103LO	271	150	15	3010	2250	262	2021167259			2021274301	010911D
026870306	201103LO	272	150	15	3005	2250	262	2021167259			2021274301	010911D

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026870306	201103LO	273	150	15	3000	2250	262	2021167259			2021274301	010911D
026870306	201103LO	274	150	15	3005	2250	262	2021167259			2021274301	010911D
026870306	201103LO	275	150	15	3015	2250	262	2021167259			2021274301	010911D
026870306	201103LO	276	150	15	3010	2250	262	2021167259			2021274301	010911D
026870306	201103LO	277	150	15	3025	2250	262	2021167259			2021274301	010911D
026870306	201103LO	278	150	15	3000	2250	262	2021167259			2021274301	010911D
026870306	201103LO	279	150	15	3010	2250	279	2021167259			2021274301	010911D
026870306	201103LO	280	150	15	3015	2250	279	2021167259			2021273775	010911D
026870306	201103LO	281	150	15	3000	2250	279	2021167259			2021273775	010911D
					Total sq ft:	**441000**	Total Number of Rolls Certified: **196**					

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000268703 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength
		ASTM Test Method:	D 5993	D 6768
		Required Value:	0.75 lb /sq ft Min	40 lbs/in MARV
LO-CLAYMAX200R	201102LO	84	0.86	41.70
LO-CLAYMAX200R	201102LO	101	0.85	41.70
LO-CLAYMAX200R	201102LO	118	0.83	41.70
LO-CLAYMAX200R	201102LO	135	0.85	41.70
LO-CLAYMAX200R	201103LO	141	0.85	42.70
LO-CLAYMAX200R	201103LO	158	0.86	42.70
LO-CLAYMAX200R	201103LO	175	0.85	42.70
LO-CLAYMAX200R	201103LO	192	0.84	42.70
LO-CLAYMAX200R	201103LO	194	0.84	43.00
LO-CLAYMAX200R	201103LO	211	0.88	43.00
LO-CLAYMAX200R	201103LO	228	0.85	43.00
LO-CLAYMAX200R	201103LO	245	0.85	43.00
LO-CLAYMAX200R	201103LO	262	0.85	58.50
LO-CLAYMAX200R	201103LO	279	0.83	58.50

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 000268703

has been tested by American Colloid Company and yielded the following test results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	D 2216	D 5890	D 5891
Required Value:	12% Max	24 ml/2g Min	18 ml Max
010511C	10.90	24.00	15.80
010611A	11.00	24.00	17.00
010811C	11.60	24.00	17.20
010811D	12.00	25.00	17.20
010911B	12.00	24.00	16.60
010911C	11.60	24.00	16.80
010911D	11.60	25.00	16.80

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000268703 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
PPX 311	2021025920	3.5	78.7
PPX 311	2021273763	3.6	83.3
PPX 311	2021273771	3.4	75.9
PPX 311	2021273772	3.4	75.9
PPX 311	2021273775	3.4	84.6
PPX 311	2021274301	3.7	93.4
PPX 311	2021348323	3.9	82.6
PPX 311	2021348324	3.9	82.6
PPX 311	2021348325	3.3	76.5
PPX 311	2021348329	3.3	62.8
PPX 311	2021348330	3.3	62.8
PPX 311	2021348331	3.3	62.8
PPX 311	2021350470	2.9	97.7

COVER GEOTEXTILE

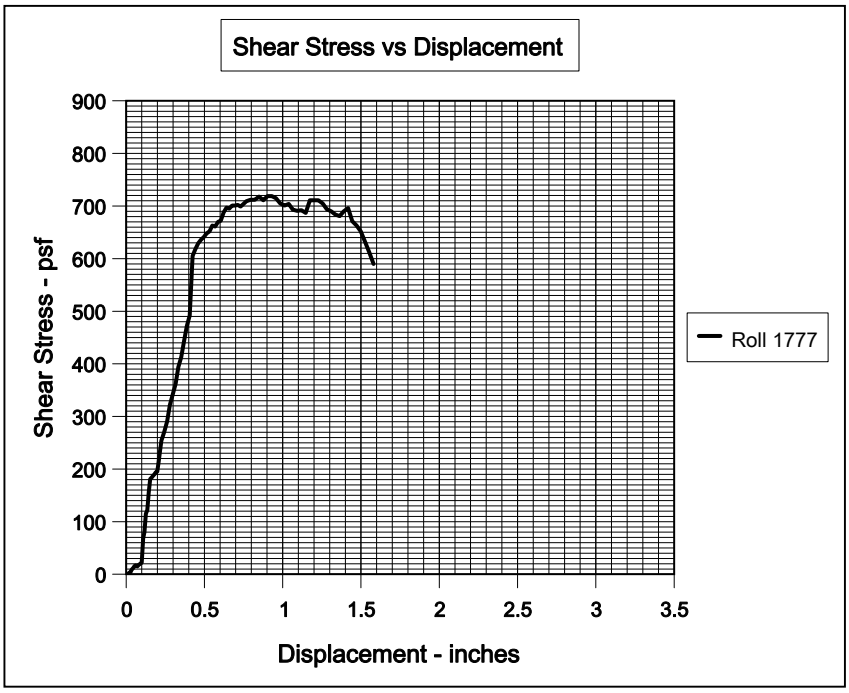
Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
PPX 311	2021167259	3.5	76.9
PPX 311	2021173276	3.8	100.4
PPX 311	2021272973	3.8	104.8
PPX 311	2021350715	3.3	80.9
PPX 311	2021350716	3.3	80.9
PPX 311	2021350718	3.1	79.5
PPX 311	2021350719	3.1	79.5
PPX 311	2021350720	3.1	79.5
PPX 311	2021350722	2.8	72.7
PPX 311	2021350724	2.8	72.7
PPX 311	2021350729	2.8	70.2
PPX 311	2021350730	2.8	70.2

Certifications from our suppliers are on file at our production facility.

An '*' or 'PT' indicates supplier certifications were unavailable prior to shipping so testing was performed at a CETCO lab.

INTERNAL SHEAR TEST RESULTS
ASTM D-6243

Client:	CETCO	Date:	12/24/10
Project:	WM - TEKOI	Project No.:	10LG2306.01
Material Description:	GCL - Non-woven Side vs GCL - Woven Side	Perf'd By:	TM - MLB
		Chk'd By:	JB



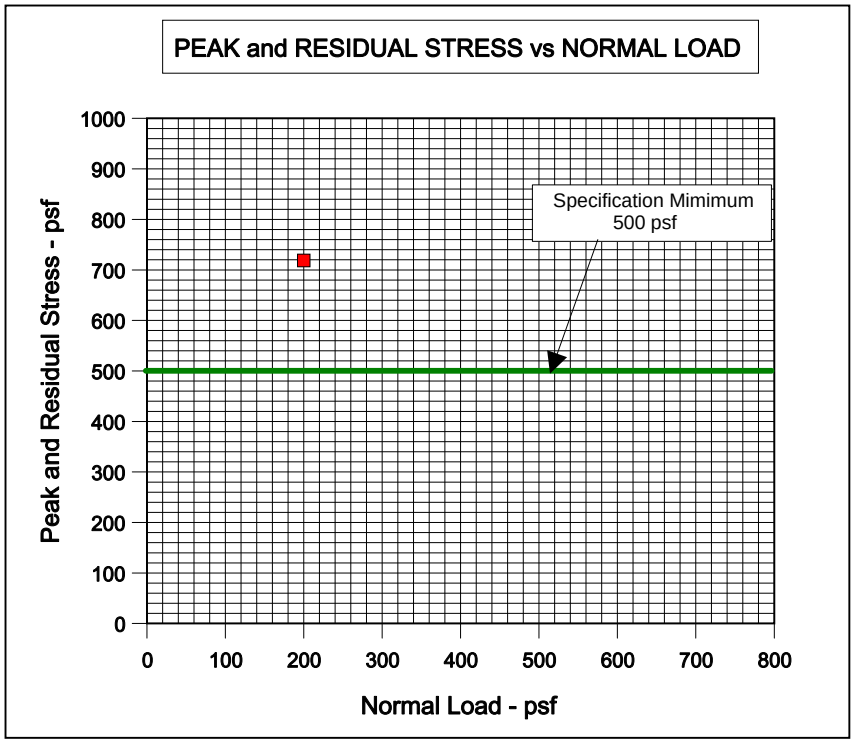
Top Box : GCL - Bentomat ST
MD : Virgin Material
White Side - NW

Bottom Box : GCL - Bentomat ST
MD : Virgin Material
Black Side - W

Roll No. : 4954 Lot No 201051LO

CURVE DATA

	Normal Load	Peak Strength	Spec Pk minimum
	psf	psf	psf
Roll 4954	200	719	500



Displacement Rate: 0.04 in/min
Inundation: Yes 48 hours

Comments:

1. GCL hydrated under a 200 psf normal load for 48 hours
2. Top and Bottom plates fitted with a high friction locking surface

FIGURE - GCL Internal - 4954-ST

CETCO
WM - TEKOI
GCL - Non-woven Side
vs
GCL - Woven Side

Date: 12/24/10
Project No.: 10LG2306.01
Perf'd By: TM - MLB
Chk'd By: JB

UPPER GRAPH

Displacement inches	Point 1 Roll 4954 lbs	lbs	lbs	lbs	lbs
0.000	0				
0.009	0				
0.018	2				
0.027	4				
0.036	9				
0.045	12				
0.054	16				
0.063	17				
0.072	15				
0.081	18				
0.090	20				
0.099	22				
0.108	68				
0.117	80				
0.126	115				
0.135	122				
0.144	156				
0.153	181				
0.163	184				
0.172	187				
0.181	190				
0.190	194				
0.199	195				
0.208	214				
0.217	236				
0.226	254				
0.244	271				
0.262	291				
0.280	322				
0.298	342				
0.316	362				
0.334	394				
0.352	413				
0.370	444				
0.388	472				
0.406	492				
0.424	605				
0.442	618				
0.460	629				
0.479	636				
0.497	641				
0.515	648				
0.533	652				
0.551	663				
0.569	661				
0.587	670				
0.605	672				
0.623	688				
0.641	697				
0.659	695				
0.677	701				

LOWER GRAPH

Pn	Peak	Residual
200	719	NA

Engineering Properties
Best Fit via Linear Regression

	Peak	Residual
Slope, m		
Adhesion		
Phi, degrees		

Page 1

GCL - Non-woven Side
vs
GCL - Woven Side

0.695	701				
0.713	702				
0.731	699				
0.749	704				
0.767	709				
0.795	712				
0.822	712				
0.849	718				
0.876	711				
0.903	719	◄			
0.930	719				
0.957	715				
0.984	705				
1.011	701				
1.038	704				
1.065	693				
1.092	691				
1.120	692				
1.147	687				
1.174	711				
1.201	711				
1.228	711				
1.255	705				
1.282	694				
1.309	690				
1.336	684				
1.363	681				
1.390	690				
1.418	696				
1.445	671				
1.472	663				
1.499	652				
1.526	632				
1.553	612				
1.580	590	Test Terminated			
1.634					
1.688					
1.743					
1.797					
1.851					
1.905					
1.959					
2.013					
2.068					
2.122					
2.176					
2.230					
2.284					
2.338					
2.393					
2.447					
2.501					

GCL - Non-woven Side
vs
GCL - Woven Side
Page 2

INDEX FLUX AND PERMEABILITY OF GCL's
TEST RESULTS
ASTM D-5887 / D-5084

Client	: CETCO		Date	:	12/26/10
Project Location	: WM - TEKOI		Job No.	:	10LG2306.01
Sample Number	: Roll 4935		Tested By	:	RL / TM
Description	: Bentomat ST	Lot: 201051LO	Checked By	:	JBJr
Permeant Fluid	: De-Aired Water				

Physical Property Data

		Total Sample			Total Sample
Initial Clay Height (in)	:	0.19	Final Height of Clay (in)	:	0.21
Initial Diameter (in)	:	4.00	Final Diameter of Clay (in)	:	4.00
Initial Wet Weight (g)	:	43.00	Final Wet Weight(Clay) (g)	:	68.50
Wet Density (pcf)	:	68.55	Wet Density (pcf)	:	98.80
Moisture Content %	:	23.60	Moisture Content %	:	96.80
Dry Density (pcf)	:	55.46	Dry Density (pcf)	:	50.20

Test Parameters

Fluid	:	De-Aired Water	**Average Effective**		
Cell Pressure (psi)	:	80.00	**Confining Pressure (psi)**	:	**4**
Head Water (psi)	:	77.00	Gradient	:	262.86
Tail Water (psi)	:	75.00	Effective Stress at Base	:	5

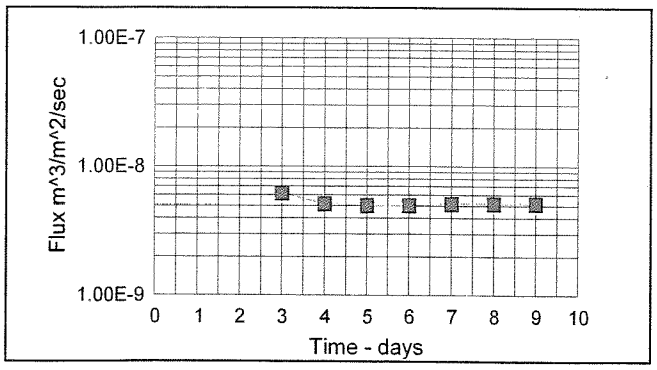
Flux and Permeability Input Data

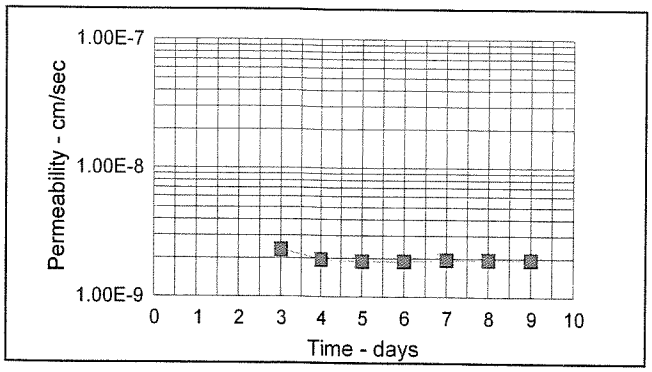
Minimum Saturation Time is 48 hours

Area, A = 0.00811 m^2
Thickness, t = 0.21 in

Days	Date	Flow	Time	Elapsed	Flux	k
		cc	min	Time (sec)	(m^3/m^2)/sec	cm/sec
1	12/17/2010	48 hours of hydration per ASTM				
2	12/18/2010					
3	12/19/2010	4.30	1442	86520	6.13E-009	2.33E-009
4	12/20/2010	3.60	1441	86460	5.14E-009	1.95E-009
5	12/21/2010	3.50	1440	86400	5.00E-009	1.90E-009
6	12/22/2010	3.50	1442	86520	4.99E-009	1.90E-009
7	12/23/2010	3.60	1439	86340	5.14E-009	1.96E-009
8	12/24/2010	3.60	1438	86280	5.15E-009	1.96E-009
9	12/25/2010	3.60	1442	86520	5.13E-009	1.95E-009

Average of Last 3 Test Readings : 5.14E-009 1.96E-009





JLT Laboratories, Inc. *938 S Central Ave, Canonsburg, Pa. 15317 Tel 724-746-4441 , Fax 724-745-4261*

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Cust: Waste Management-West
PO#: 2125171653 Tekoi LF Ph 2C
Dest: Dugway, UT

Doc#: 33038

16 rolls 60HD smooth (600)
4 rolls 60HD micro (540)
60 rolls 8-200SS (250)

roll #	width	English length	area	check weld rod qty (if ordered)	wgt	resin lot #
	ft.	ft.	ft².		lbs.	
TRI-TX						
F16D000362	23	600	13800	60HD smooth 16tot 1	4302	HGF820540
F16D000363	23	600	13800	60HD smooth 16tot 2	4256	HGF820540
F16D000364	23	600	13800	60HD smooth 16tot 3	4178	HGF820540
F16D000365	23	600	13800	60HD smooth 16tot 4	4106	HGF820540
F16D000366	23	600	13800	60HD smooth 16tot 5	4092	HGF820540
F16D000367	23	600	13800	60HD smooth 16tot 6	4098	HGF820540
F16D000368	23	600	13800	60HD smooth 16tot 7	4080	HGF820540
F16D000369	23	600	13800	60HD smooth 16tot 8	4076	HGF820540
F16D000370	23	600	13800	60HD smooth 16tot 9	4070	HGF820540
F16D000371	23	600	13800	60HD smooth 16tot 10	4060	HGF820540
F16D000372	23	600	13800	60HD smooth 16tot 11	4060	HGF820540
F16D000373	23	600	13800	60HD smooth 16tot 12	4052	HGF820540
F16D000374	23	600	13800	60HD smooth 16tot 13	4055	HGF820540
F16D000375	23	600	13800	60HD smooth 16tot 14	4050	HGF820540
F16D000376	23	600	13800	60HD smooth 16tot 15	4056	HGF820540
F16D000377	23	600	13800	60HD smooth 16tot 16	4066	HGF820540
F16B000631	23	500	11500	60HD micro 4tot 1	3742	HFM820470
F16B000632	23	500	11500	60HD micro 4tot 2	3686	HFM820470
F16B000633	23	500	11500	60HD micro 4tot 3	3712	HFM820470
F16B000634	23	500	11500	60HD micro 4tot 4	3682	HFM820470

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quality certificate

ROLL # **F16D000362** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.52** mm	**60** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.69** mm	**67** mil		Length	**182.883** m	**600** feet
	AVE	**1.59** mm	**63** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**27** N/mm	**152** ppi	**2536** psi
		TD	**27** N/mm	**157** ppi	**2614** psi
	Average Strength @ Break	MD	**50** N/mm	**284** ppi	**4727** psi
		TD	**46** N/mm	**264** ppi	**4393** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**16** %
		TD			**16** %
	Average Elongation @Break	MD			**781** %
		TD			**817** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**249.1** N	**56** lbs.
		TD		**240.2** N	**54** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**622.7** N	**140** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

Signature: _____
Maria Coffey
Quality Control Department

agru america
quality control dept.

quality certificate

ROLL # **F16D000363** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.53** mm	**60** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.64** mm	**65** mil		Length	**182.883** m	**600** feet
	AVE	**1.58** mm	**62** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**27** N/mm	**152** ppi	**2536** psi
		TD	**27** N/mm	**157** ppi	**2614** psi
	Average Strength @ Break	MD	**50** N/mm	**284** ppi	**4727** psi
		TD	**46** N/mm	**264** ppi	**4393** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**16** %
		TD			**16** %
	Average Elongation @Break	MD			**781** %
		TD			**817** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**249.1** N	**56** lbs.
		TD		**240.2** N	**54** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**622.7** N	**140** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

Signature: _____
Maria Coffey
Quality Control Department

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quality control dept.

quality certificate

ROLL # **F16D000364** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.55** mm	**61** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.63** mm	**64** mil	Length	**182.883** m	**600** feet
	AVE	**1.58** mm	**62** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**27** N/mm	**152** ppi	**2536** psi
		TD	**27** N/mm	**157** ppi	**2614** psi
	Average Strength @ Break	MD	**50** N/mm	**284** ppi	**4727** psi
		TD	**46** N/mm	**264** ppi	**4393** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**16** %
		TD			**16** %
	Average Elongation @Break	MD			**781** %
		TD			**817** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**249.1** N	**56** lbs.
		TD		**240.2** N	**54** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**622.7** N	**140** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

Signature: _____
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ROLL # **F16D000365** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.53** mm	**60** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.62** mm	**64** mil	Length	**182.883** m	**600** feet
	AVE	**1.57** mm	**62** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.4** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**25** N/mm	**145** ppi	**2417** psi
		TD	**27** N/mm	**157** ppi	**2616** psi
	Average Strength @ Break	MD	**50** N/mm	**287** ppi	**4776** psi
		TD	**52** N/mm	**298** ppi	**4971** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**17** %
		TD			**16** %
	Average Elongation @Break	MD			**789** %
		TD			**910** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**235.7** N	**53** lbs.
		TD		**226.8** N	**51** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**600.5** N	**135** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000366** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.49** mm	**59** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.64** mm	**65** mil		Length	**182.883** m	**600** feet
	AVE	**1.56** mm	**61** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.4** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**25** N/mm	**145** ppi	**2417** psi
		TD	**27** N/mm	**157** ppi	**2616** psi
	Average Strength @ Break	MD	**50** N/mm	**287** ppi	**4776** psi
		TD	**52** N/mm	**298** ppi	**4971** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**17** %
		TD			**16** %
	Average Elongation @Break	MD			**789** %
		TD			**910** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**235.7** N	**53** lbs.
		TD		**226.8** N	**51** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**600.5** N	**135** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000367** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.52** mm	**60** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.66** mm	**65** mil	Length	**182.883** m	**600** feet
	AVE	**1.57** mm	**62** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.4** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**25** N/mm	**145** ppi	**2417** psi
		TD	**27** N/mm	**157** ppi	**2616** psi
	Average Strength @ Break	MD	**50** N/mm	**287** ppi	**4776** psi
		TD	**52** N/mm	**298** ppi	**4971** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**17** %
		TD			**16** %
	Average Elongation @Break	MD			**789** %
		TD			**910** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**235.7** N	**53** lbs.
		TD		**226.8** N	**51** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**600.5** N	**135** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000368** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.53** mm	**60** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.64** mm	**65** mil		Length	**182.883** m	**600** feet
	AVE	**1.57** mm	**62** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.943** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**25** N/mm	**143** ppi	**2375** psi
		TD	**27** N/mm	**152** ppi	**2538** psi
	Average Strength @ Break	MD	**50** N/mm	**287** ppi	**4782** psi
		TD	**52** N/mm	**296** ppi	**4936** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**18** %
		TD			**16** %
	Average Elongation @Break	MD			**801** %
		TD			**890** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**240.2** N	**54** lbs.
		TD		**226.8** N	**51** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**600.5** N	**135** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000369** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.50** mm	**59** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.65** mm	**65** mil	Length	**182.883** m	**600** feet
	AVE	**1.55** mm	**61** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.943** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**25** N/mm	**143** ppi	**2375** psi
		TD	**27** N/mm	**152** ppi	**2538** psi
	Average Strength @ Break	MD	**50** N/mm	**287** ppi	**4782** psi
		TD	**52** N/mm	**296** ppi	**4936** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**18** %
		TD			**16** %
	Average Elongation @Break	MD			**801** %
		TD			**890** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**240.2** N	**54** lbs.
		TD		**226.8** N	**51** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**600.5** N	**135** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000370** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.50** mm	**59** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.63** mm	**64** mil	Length	**182.883** m	**600** feet
	AVE	**1.56** mm	**61** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.943** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**25** N/mm	**143** ppi	**2375** psi
		TD	**27** N/mm	**152** ppi	**2538** psi
	Average Strength @ Break	MD	**50** N/mm	**287** ppi	**4782** psi
		TD	**52** N/mm	**296** ppi	**4936** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**18** %
		TD			**16** %
	Average Elongation @Break	MD			**801** %
		TD			**890** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**240.2** N	**54** lbs.
		TD		**226.8** N	**51** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**600.5** N	**135** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000371** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.51** mm	**60** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.66** mm	**65** mil	Length	**182.883** m	**600** feet
	AVE	**1.57** mm	**62** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**27** N/mm	**156** ppi	**2592** psi
		TD	**28** N/mm	**161** ppi	**2691** psi
	Average Strength @ Break	MD	**51** N/mm	**292** ppi	**4863** psi
		TD	**54** N/mm	**311** ppi	**5181** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**16** %
		TD			**16** %
	Average Elongation @Break	MD			**777** %
		TD			**924** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**249.1** N	**56** lbs.
		TD		**231.3** N	**52** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**613.8** N	**138** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000372** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.48** mm	**58** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.66** mm	**65** mil		Length	**182.883** m	**600** feet
	AVE	**1.55** mm	**61** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**27** N/mm	**156** ppi	**2592** psi
		TD	**28** N/mm	**161** ppi	**2691** psi
	Average Strength @ Break	MD	**51** N/mm	**292** ppi	**4863** psi
		TD	**54** N/mm	**311** ppi	**5181** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**16** %
		TD			**16** %
	Average Elongation @Break	MD			**777** %
		TD			**924** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**249.1** N	**56** lbs.
		TD		**231.3** N	**52** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**613.8** N	**138** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000373** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.48** mm	**58** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.64** mm	**64** mil		Length	**182.883** m	**600** feet
	AVE	**1.55** mm	**61** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.3** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**27** N/mm	**156** ppi	**2592** psi
		TD	**28** N/mm	**161** ppi	**2691** psi
	Average Strength @ Break	MD	**51** N/mm	**292** ppi	**4863** psi
		TD	**54** N/mm	**311** ppi	**5181** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**16** %
		TD			**16** %
	Average Elongation @Break	MD			**777** %
		TD			**924** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**249.1** N	**56** lbs.
		TD		**231.3** N	**52** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**613.8** N	**138** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/10/2016** OA#: **33038**

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ROLL # **F16D000374** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.52** mm	**60** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.63** mm	**64** mil	Length	**182.883** m	**600** feet
	AVE	**1.56** mm	**61** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.4** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**26** N/mm	**148** ppi	**2474** psi
		TD	**27** N/mm	**153** ppi	**2551** psi
	Average Strength @ Break	MD	**49** N/mm	**280** ppi	**4672** psi
		TD	**53** N/mm	**302** ppi	**5038** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**19** %
		TD			**17** %
	Average Elongation @Break	MD			**768** %
		TD			**921** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**262.4** N	**59** lbs.
		TD		**253.5** N	**57** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**622.7** N	**140** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/11/2016** OA#: **33038**

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ROLL # **F16D000375** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.47** mm	**58** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.63** mm	**64** mil		Length	**182.883** m	**600** feet
	AVE	**1.55** mm	**61** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.4** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**26** N/mm	**148** ppi	**2474** psi
		TD	**27** N/mm	**153** ppi	**2551** psi
	Average Strength @ Break	MD	**49** N/mm	**280** ppi	**4672** psi
		TD	**53** N/mm	**302** ppi	**5038** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**19** %
		TD			**17** %
	Average Elongation @Break	MD			**768** %
		TD			**921** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**262.4** N	**59** lbs.
		TD		**253.5** N	**57** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**622.7** N	**140** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/11/2016** OA#: **33038**

Signature: _____
Maria Coffey
Quality Control Department

agru america
quality control dept.

quality certificate

ROLL # **F16D000376** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.53** mm	**60** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.64** mm	**65** mil		Length	**182.883** m	**600** feet
	AVE	**1.56** mm	**62** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.942** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.4** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**26** N/mm	**148** ppi	**2474** psi
		TD	**27** N/mm	**153** ppi	**2551** psi
	Average Strength @ Break	MD	**49** N/mm	**280** ppi	**4672** psi
		TD	**53** N/mm	**302** ppi	**5038** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**19** %
		TD			**17** %
	Average Elongation @Break	MD			**768** %
		TD			**921** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**262.4** N	**59** lbs.
		TD		**253.5** N	**57** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**622.7** N	**140** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/11/2016** OA#: **33038**

Signature: _____
Maria Coffey
Quality Control Department

agru america
quality control dept.

quality certificate

ROLL # **F16D000377** **LOT #** **HGF820540** **LINER TYPE** **60 HD SMOOTH**

		METRIC	ENGLISH			METRIC	ENGLISH
Thickness Measurement ASTM D5199 (Modified)	MIN	**1.52** mm	**60** mil		Thickness	**1.52** mm	**60** mil
	MAX	**1.65** mm	**65** mil		Length	**182.883** m	**600** feet
	AVE	**1.57** mm	**62** mil		Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**219** minutes
Specific Gravity ASTM D792	Average Density				**.944** g/cc
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.19**
Carbon Black Content ASTM D4218	Range				**2.4** %
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**25** N/mm	**143** ppi	**2378** psi
		TD	**27** N/mm	**155** ppi	**2577** psi
	Average Strength @ Break	MD	**49** N/mm	**281** ppi	**4677** psi
		TD	**54** N/mm	**310** ppi	**5174** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD			**15** %
		TD			**16** %
	Average Elongation @Break	MD			**756** %
		TD			**938** %
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD		**244.6** N	**55** lbs.
		TD		**235.7** N	**53** lbs.
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load			**596.0** N	**134** lbs.
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%			500 Hrs.	**ONGOING**

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **7/11/2016** OA#: **33038**

Signature: _____
Maria Coffey
Quality Control Department

CoA Date: 06/15/2016

Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

Delivery #: 89277082
PO #: 010479
Weight: 175300 LB
Ship Date: 06/15/2016
Package: BULK
Mode: Hopper Car
Car #: CHVX889283
Seal No: 61405

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: HGF820540

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.19	g/10mi
HLMI Flow Rate	ASTM D1238	19	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Pellet Count	P02.08.03	22	pel/g
Production Date		06/12/2016	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4806

agru america
quality control dept.

quality certificate

ROLL # **F16B000631** **LOT #** **HFM820470** **LINER TYPE** **60 HD MICROSPIKE**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5994 (Modified)	MIN	**1.48** mm	**58** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.60** mm	**63** mil	Length	**152.402** m	**500** feet
	AVE	**1.55** mm	**61** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895					**212** minutes
Asperity ASTM D7466	Average	Top		**.69** mm	**27** mil
		Bottom		**.79** mm	**31** mil
Specific Gravity ASTM D792	Average Density			g/cc	**.944**
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min				**.24**
Carbon Black Content ASTM D4218	Range			%	**2.2**
Carbon Black Dispersion ASTM D5596	Category				**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**28** N/mm	**157** ppi	**2619** psi
		TD	**28** N/mm	**160** ppi	**2670** psi
	Average Strength @ Break	MD	**32** N/mm	**182** ppi	**3032** psi
		TD	**35** N/mm	**198** ppi	**3293** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD		%	**15**
		TD		%	**15**
	Average Elongation @Break	MD		%	**464**
		TD		%	**482**
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD	**271.3** N		**61** lbs
		TD	**244.6** N		**55** lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load		**631.6** N		**142** lbs
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%		500 Hrs		**PASS**
Smooth Edge ASTM D1004	Average Tear				**53** lbs

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **3/30/2016** OA#: **33038**

Signature: _____
Maria Coffey
Quality Control Department

agru america
quality control dept.

quality certificate

ROLL # **F16B000632** **LOT #** **HFM820470** **LINER TYPE** **60 HD MICROSPIKE**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5994 (Modified)	MIN	**1.45** mm	**57** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.62** mm	**64** mil	Length	**152.402** m	**500** feet
	AVE	**1.55** mm	**61** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895				**212** minutes
Asperity ASTM D7466	Average	Top	**.66** mm	**26** mil
		Bottom	**.79** mm	**31** mil
Specific Gravity ASTM D792	Average Density		g/cc	**.944**
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min			**.24**
Carbon Black Content ASTM D4218	Range		%	**2.2**
Carbon Black Dispersion ASTM D5596	Category			**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**28** N/mm **157** ppi	**2619** psi
		TD	**28** N/mm **160** ppi	**2670** psi
	Average Strength @ Break	MD	**32** N/mm **182** ppi	**3032** psi
		TD	**35** N/mm **198** ppi	**3293** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD	%	**15**
		TD	%	**15**
	Average Elongation @Break	MD	%	**464**
		TD	%	**482**
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD	**271.3** N	**61** lbs
		TD	**244.6** N	**55** lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load		**631.6** N	**142** lbs
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%		500 Hrs	**PASS**
Smooth Edge ASTM D1004	Average Tear			**53** lbs

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **3/30/2016** OA#: **33038**

Signature: _____

Maria Coffey
Quality Control Department

agru america
quality control dept.

quality certificate

ROLL # **F16B000633** **LOT #** **HFM820470** **LINER TYPE** **60 HD MICROSPIKE**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5994 (Modified)	MIN	**1.47** mm	**58** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.60** mm	**63** mil	Length	**152.402** m	**500** feet
	AVE	**1.54** mm	**61** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895				**212** minutes
Asperity ASTM D7466	Average	Top	**.64** mm	**25** mil
		Bottom	**.89** mm	**35** mil
Specific Gravity ASTM D792	Average Density		g/cc	**.944**
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min			**.24**
Carbon Black Content ASTM D4218	Range		%	**2.2**
Carbon Black Dispersion ASTM D5596	Category			**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**28** N/mm **157** ppi	**2619** psi
		TD	**28** N/mm **160** ppi	**2670** psi
	Average Strength @ Break	MD	**32** N/mm **182** ppi	**3032** psi
		TD	**35** N/mm **198** ppi	**3293** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD	%	**15**
		TD	%	**15**
	Average Elongation @Break	MD	%	**464**
		TD	%	**482**
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD	**271.3** N	**61** lbs
		TD	**244.6** N	**55** lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load		**631.6** N	**142** lbs
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%		500 Hrs	**PASS**
Smooth Edge ASTM D1004	Average Tear			**53** lbs

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **3/30/2016** OA#: **33038**

Signature: _____
Maria Coffey
Quality Control Department

agru america
quality control dept.

quality certificate

ROLL # **F16B000634** **LOT #** **HFM820470** **LINER TYPE** **60 HD MICROSPIKE**

		METRIC	ENGLISH		METRIC	ENGLISH
Thickness Measurement ASTM D5994 (Modified)	MIN	**1.46** mm	**57** mil	Thickness	**1.52** mm	**60** mil
	MAX	**1.62** mm	**64** mil	Length	**152.402** m	**500** feet
	AVE	**1.54** mm	**61** mil	Width	**7.01** m	**23** feet

OIT(Standard) ASTM D 3895				**212** minutes
Asperity ASTM D7466	Average	Top	**.69** mm	**27** mil
		Bottom	**.79** mm	**31** mil
Specific Gravity ASTM D792	Average Density		g/cc	**.944**
MFI ASTM D1238 COND. E Grade **K307**	Melt Flow Index 190C/2160 g - g/10 min			**.24**
Carbon Black Content ASTM D4218	Range		%	**2.2**
Carbon Black Dispersion ASTM D5596	Category			**10 in Category 1**
Tensile Strength ASTM D6693 (2 inches / minute)	Average Strength @ Yield	MD	**28** N/mm **157** ppi	**2619** psi
		TD	**28** N/mm **160** ppi	**2670** psi
	Average Strength @ Break	MD	**32** N/mm **182** ppi	**3032** psi
		TD	**35** N/mm **198** ppi	**3293** psi
Tensile Elongation ASTM D6693 (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	MD	%	**15**
		TD	%	**15**
	Average Elongation @Break	MD	%	**464**
		TD	%	**482**
Tear Resistance ASTM D1004 (Modified)	Average Tear Resistance	MD	**271.3** N	**61** lbs
		TD	**244.6** N	**55** lbs
Puncture Resistance ASTM D4833 (Modified)	Average Peak Load		**631.6** N	**142** lbs
Notched Constant Tensile Load ASTM D5397	Pass/Fail @ 30%		500 Hrs	**PASS**
Smooth Edge ASTM D1004	Average Tear			**53** lbs

Customer: Waste Management-West
PO: 2125171653 Tekoi LF Ph 2C
Destination: Dugway, UT

Production Date: **3/30/2016** OA#: **33038**

Signature: _____
Maria Coffey
Quality Control Department

CoA Date: 01/11/2016

Certificate of Analysis

Shipped To: AGRU AMERICA INC:FERNLEY
2000 EAST NEWLANDS
FERNLEY NV 89408
USA

Recipient: PALMER
Fax:

Delivery #: 89188412
PO #: 010021
Weight: 177400 LB
Ship Date: 01/11/2016
Package: BULK
Mode: Hopper Car
Car #: NAHX620105
Seal No: 44987

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: HFM820470

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.24	g/10mi
HLMI Flow Rate	ASTM D1238	20	g/10mi
Density	D1505 or D4883	0.937	g/cm3
Pellet Count	P02.08.03	24	pel/g
Production Date		11/11/2015	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP (CPChem).
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4806

Yingying Lu, Ph.D., Geomembrane Technical Service & Applications Development
Highways 60 & 123, Bartlesville Research and Technology Center, Room 149 PTC
Bartlesville, OK 74003
■ 918-977-6894 ■ luyy@cpchem.com ■ Fax: 918-977-7599 ■ www.cpchem.com

June 17, 2015

Grant Palmer
Agru America
500 Garrison Road
Georgetown, SC 29440

Dear Grant:

This letter is to report the final results of oven-aging and UV-aging tests (according to GRI-GM13 and GRI-GM17) on Agru America black sheet samples that you provided to us recently. These tests were performed by CPChem's Materials Evaluation Laboratory in Bartlesville, OK. The tests were completed June 2015.

The GRI-GM13 (HDPE) and GRI-GM17 (LLDPE) durability tests were done according to the following procedures.

Test	Exposure	Method
HP-OIT	150 °C, 500 psi oxygen	D5885
Oven Aging	90 days, 85 °C	D5721
UV Aging	1600 UV hrs (Conditions were 20 hours UVA-340 at 75 °C followed by 4 hrs dark with condensation at 60 °C. Irradiance was 0.72 W/m^2 at 340 nm.)	D7238

Oven-Aging Results

Sample	Initial HP-OIT (min)	HP-OIT Value after Oven Aging 90 Days (min)	% HP-OIT Retained after Oven Aging 90 Days	GRI-GM13 and GRI-GM17% Retained Requirement (Oven Aging 90 Days)
60 mil HDPE Roll # G14F514045 from Marlex® K307 Polyethylene Lot # H71-4-1337	1066	883	**83**	**80**
40 mil LLDPE Roll # G14C243027 from Marlex® 7104 Polyethylene Lot # CEC810320	512	422	**82**	**60**

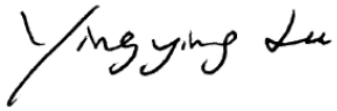
UV-Aging Results

Sample	Initial HP-OIT (min)	HP-OIT Value after UV Aging (min)	% HP-OIT Retained	GRI-GM13 and GRI-GM17 % Retained Requirement
60 mil HDPE Roll # G14F514045 from Marlex® K307 Polyethylene Lot # H71-4-1337	1066	930	**87**	**50**
40 mil LLDPE Roll # G14C243027 from Marlex® 7104 Polyethylene Lot # CEC810320	512	351	**69**	**35**

According to these test results, the durability requirements are met.

If you have any questions, please call me at 918-977-6894.

Sincerely,



Yingying Lu, Ph. D.

Polyethylene Technical Service and Applications Development

Any technical advice, recommendations, results, or analysis ("Information") contained herein, including, without limitation, Information as it may relate to the selection of a specific product ("Product") for your use and application, is given ***without warranty or guarantee*** *and is accepted at your sole risk. It is imperative that you test the Information (and Product, if applicable) to determine to your own satisfaction whether the Information (and Product, if applicable) are suitable for your intended use and application.* ***You expressly assume, and release Chevron Phillips Chemical Company, from all risk and liability, whether based in contract, tort or otherwise, in connection with the use of, or results obtained from, such Information (and Product, if applicable).***

July 26, 2016

Mail To:

Mark Franc
Waste Management, Inc

Bill To:

<= Same

email: mfranc@wm.com
cc email: gjones@hansenallenluce.com

Dear Mr. Franc:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**Tekoi Landfill**
TRI Job Reference Number:	22518
Material(s) Tested:	One, Agru 60 mil MicroSpike HDPE Geomembrane
Test(s) Requested:	Thickness (ASTM D 5994) Asperity Height (ASTM D 7466) Density (ASTM D 1505) Carbon Black Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile Properties (ASTM D 6693) Puncture Strength (ASTM D 4833) Tear Resistance (ASTM D 1004)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

*Signature is on file

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

GEOMEMBRANE TEST RESULTS
TRI Client: Waste Management, Inc
Project: Tekoi Landfill

Material: Agru 60 mil MicroSpike HDPE Geomembrane
Sample Identification: F16B000632
TRI Log #: 22518

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Thickness (ASTM D 5994)												
Thickness (mils)	69	64	62	64	63	65	65	60	66	65	**64**	2
											60	<< min
Asperity Height (ASTM D 7466)												
Asperity Height (mils) - Side A	34	36	35	35	36	38	35	35	38	37	**36**	1
Asperity Height (mils) - Side B	28	27	25	28	27	26	31	30	28	30	**28**	2
Density (ASTM D 1505)												
Density (g/cm3)	0.944	0.945	0.945								**0.945**	0.001
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.20	2.20									**2.20**	0.00
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	177	171	167	168	155						**168**	8
TD Yield Strength (ppi)	195	188	179	186	166						**183**	11
MD Break Strength (ppi)	241	238	151	202	159						**198**	42
TD Break Strength (ppi)	133	134	125	123	151						**133**	11
MD Yield Elongation (%)	25	24	21	22	23						**23**	2
TD Yield Elongation (%)	16	16	18	16	17						**17**	1
MD Break Elongation (%)	437	433	365	401	391						**405**	30
TD Break Elongation (%)	439	410	92	178	468						**317**	170
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	131	133	142	130	136						**134**	5
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	67.6	64.1	55.6	59.6	52.2	67.1	63.2	57.4	60.9	53.8	**60.1**	5.4
TD Tear Strength (lbs)	56.0	53.7	52.4	54.6	49.9	52.8	55.2	49.7	56.9	54.0	**53.5**	2.4

MD Machine Direction TD Transverse Direction

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

July 18, 2016

Mail To:

Mark Franc
Waste Management, Inc

email: mfranc@wm.com
CC email: gjones@hansenallenluce.com

Bill To:

<= Same

Dear Mr. Franc:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**Tekoi Landfill**
TRI Job Reference Number:	22240
Material(s) Tested:	One, Agru 60 mil Smooth HDPE Geomembrane
Test(s) Requested:	Thickness (ASTM D 5199) Density (ASTM D 1505) Carbon Black Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile Properties (ASTM D 6693) Puncture Strength (ASTM D 4833) Tear Resistance (ASTM D 1004)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

*Signature is on file

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

GEOMEMBRANE TEST RESULTS
TRI Client: Waste Management, Inc
Project: Tekoi Landfill

Material: Agru 60 mil Smooth HDPE Geomembrane
Sample Identification: F16D000362
TRI Log #: 22240

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Thickness (ASTM D 5199)												
Thickness (mils)	66.0	67.6	64.9	68.4	62.9	67.6	62.7	65.4	62.9	64.1	**65.3**	2.1
											62.7	<< min
Density (ASTM D 1505)												
Density (g/cm3)	0.943	0.944	0.944								**0.944**	0.001
Carbon Black Content (ASTM D 4218)												
% Carbon Black	2.32	2.36									**2.34**	0.03
Carbon Black Dispersion (ASTM D 5596)												
Rating - 1st field view	1	1	1	1	1							
Rating - 2nd field view	1	1	1	1	1							
Tensile Properties (ASTM D 6693, 2 ipm strain rate)												
MD Yield Strength (ppi)	148	153	152	160	168						**156**	8
TD Yield Strength (ppi)	157	173	170	171	178						**170**	8
MD Break Strength (ppi)	249	278	239	277	294						**267**	23
TD Break Strength (ppi)	286	339	337	311	352						**325**	26
MD Yield Elongation (%)	20	22	18	22	22						**21**	2
TD Yield Elongation (%)	18	19	18	19	19						**19**	1
MD Break Elongation (%)	678	691	698	738	713						**704**	23
TD Break Elongation (%)	789	908	921	860	926						**881**	58
Puncture Resistance (ASTM D 4833)												
Puncture Strength (lbs)	149	145	142	137	135						**142**	6
Tear Resistance (ASTM D 1004)												
MD Tear Strength (lbs)	52.7	51.4	49.4	52.6	52.2	49.1	52.4	51.3	52.6	53.8	**51.7**	1.5
TD Tear Strength (lbs)	47.6	46.9	47.4	47.0	51.7	50.2	49.9	50.8	50.0	51.7	**49.3**	1.9

MD Machine Direction TD Transverse Direction

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

Geotextile Quality Certification

agru america quality control dept.

OA # / PROJECT: DOC 33038 W M W EST TEKOI -
Customer: W M W EST
Destination: DUGW AY UT
Item Code/Description TEX 08M
DATE: 6/21/2016

ASTM	D5261	D4632				D4533		D4491			D6241	D475	D4355	
Method	Average Weight	Average Grab Tensile(MD)	Average Grab Tensile(CD)	Average Elongation (MD)	Average Elongation (CD)	Average Trap Tear (MD)	Average TRAP Tear (CD)	Water Flow Rate	Permeab.	Permitiv.	Average CBR Puncture	Apparent Opening Size	UV Resist % Retained @ 500 hrs	Roll Length
Units	oz / yd^2	Lbs	Lbs	%	%	Lbs	Lbs	gpm / ft^2	cm / sec	sec^{-1}	Units: Lbs	sieve	* % ret.	yds
Roll Number														
1111212573	8.40	295.00	375.00	99	104	113.00	159.00	106.00	.34	1.44	820	80	70.000	400
1111212574	8.40	295.00	375.00	99	104	113.00	159.00	106.00	.34	1.44	820	80	70.000	400
1111212575	8.30	296.00	384.00	97	97	149.00	111.00	107.00	.33	1.50	820	80	70.000	400
1111212576	8.30	296.00	384.00	97	97	149.00	111.00	107.00	.33	1.50	820	80	70.000	400
1111212577	8.30	296.00	384.00	97	97	149.00	111.00	107.00	.33	1.50	820	80	70.000	400
1111212578	8.30	296.00	384.00	97	97	149.00	111.00	107.00	.33	1.50	820	80	70.000	400
1111212579	8.70	304.00	380.00	105	101	114.00	140.00	98.00	.31	1.33	820	80	70.000	400
1111212580	8.70	304.00	380.00	105	101	114.00	140.00	98.00	.31	1.33	820	80	70.000	400
1111212581	8.70	304.00	380.00	105	101	114.00	140.00	98.00	.31	1.33	820	80	70.000	400
1111212582	8.70	304.00	380.00	105	101	114.00	140.00	98.00	.31	1.33	820	80	70.000	400
1111212583	8.62	280.00	390.00	94	108	116.00	156.00	103.00	.32	1.40	820	80	70.000	400
1111212584	8.62	280.00	390.00	94	108	116.00	156.00	103.00	.32	1.40	820	80	70.000	400
1111212585	8.62	280.00	390.00	94	108	116.00	156.00	103.00	.32	1.40	820	80	70.000	400
1111212586	8.62	280.00	390.00	94	108	116.00	156.00	103.00	.32	1.40	820	80	70.000	400
MIN	**8.3**	**280**	**375**	**94**	**97**	**113**	**111**	**98**	**.31**	**1.3**	**820.00**	**80.00**	**70.00**	14 ROLLS

Norman A. Legette

Norman Legette, Plant Manager, Agru Andrews
Date: 6/21/2016

For Questions, Please Contact: Lab Manager, Agru Andrews
Mark Lockliear

* UV test results are based on test performed at TRI Environmental Laboratory on similar weight products with the same raw material components per ASTM D-4355

Geocomposite Quality Certification	
Customer:	Waste Management-West
PO#:	2125171653 Tekoi LF Ph 2C
Destination:	Dugway, UT
doc #:	33038

Agru America
500 Garrison Road
Georgetown, SC 29440
ph: 843-546-0600

Maria Coffey
Quality Control Manager

Agru America certifies the following results for the above project

Geocomposite *Transmissivity Conditions:	Geonet *Transmissivity Conditions:
0.1 gradient 10,000 psf 15 minute seating time	0.1 gradient 10,000 psf 15 minute seating time

GEOCOMPOSITE

8-200-SS

SINGLE SIDED COMPOSITE

Reflects Conformance Sample

	Roll #	Width	Length	Area	GEOTEXTILE 8 oz Non Woven Roll #	Comp ASTM D7005 Ply A	Comp ASTM D4716 *Transmisivity	Net ASTM D5199 Thickness	Net ASTM D4218 Carbon	Net ASTM D792 Density	Net ASTM D5035 Tensile	Net ASTM D4716 *Transmisivity	Resin Lot #	Weight
		ft.	ft.	sqft.		lb/in	m²/sec	mil	%	g/cc	lb/in	m²/sec		
1 .	G16E011290	14.5	250	3625	1111212586	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	926
2 .	G16E011291	14.5	250	3625	1111212586	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	940
3 .	G16E011292	14.5	250	3625	1111212586	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	938
4 .	G16E011293	14.5	250	3625	1111212586	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	938
5 .	G16E011294	14.5	250	3625	1111212586	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	938
6 .	G16E011295	14.5	250	3625	1111212586	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	938
7 .	G16E011296	14.5	250	3625	1111212575	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	936
8 .	G16E011297	14.5	250	3625	1111212575	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	938
9 .	G16E011298	14.5	265	3842.5	1111212575	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	1002
10 .	G16E011299	14.5	189	2740.5	1111212575	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	712
11 .	G16E011300	14.5	250	3625	1111212575	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	946
12 .	G16E011301	14.5	250	3625	1111212575	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	938
13 .	G16E011302	14.5	250	3625	1111212584	2.43	1.99X10-3	238	2.3	0.961	69.3	4.84X10-3	16F1239	942
14 .	G16E011303	14.5	250	3625	1111212584	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	934
15 .	G16E011304	14.5	250	3625	1111212584	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	932
16 .	G16E011305	14.5	273	3958.5	1111212584	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	1014
17 .	G16E011306	14.5	273	3958.5	1111212584	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	1024
18 .	G16E011307	14.5	250	3625	1111212578	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	934
19 .	G16E011308	14.5	250	3625	1111212578	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	940
20 .	G16E011309	14.5	250	3625	1111212578	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	940
21 .	G16E011310	14.5	250	3625	1111212578	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	934
22 .	G16E011311	14.5	250	3625	1111212578	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	938
23 .	G16E011320	14.5	250	3625	1111212581	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	884
24 .	G16E011321	14.5	250	3625	1111212581	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	882
25 .	G16E011322	14.5	250	3625	1111212581	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	876
26 .	G16E011323	14.5	250	3625	1111212581	2.35	1.99X10-3	240	2.3	0.961	66.7	4.84X10-3	16F1239	882
27 .	G16E011324	14.5	250	3625	1111212582	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	872
28 .	G16E011325	14.5	250	3625	1111212582	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	876
29 .	G16E011326	14.5	250	3625	1111212582	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	874
30 .	G16E011327	14.5	250	3625	1111212582	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	874
31 .	G16E011328	14.5	250	3625	1111212582	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	874
32 .	G16E011329	14.5	250	3625	1111212576	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	876
33 .	G16E011330	14.5	250	3625	1111212576	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	872
34 .	G16E011331	14.5	250	3625	1111212576	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	870
35 .	G16E011332	14.5	250	3625	1111212576	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	874
36 .	G16E011333	14.5	250	3625	1111212576	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	872
37 .	G16E011334	14.5	250	3625	1111212573	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	872
38 .	G16E011335	14.5	250	3625	1111212573	1.83	1.99X10-3	223	2.3	0.961	58.7	4.84X10-3	16F1239	872
39 .	G16E011336	14.5	250	3625	1111212573	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	868
40 .	G16E011337	14.5	250	3625	1111212573	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	870
41 .	G16E011338	14.5	250	3625	1111212573	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	872
42 .	G16E011339	14.5	250	3625	1111212577	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	874
43 .	G16E011340	14.5	250	3625	1111212577	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	878
44 .	G16E011341	14.5	250	3625	1111212577	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	866
45 .	G16E011343	14.5	250	3625	1111212577	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	876
46 .	G16E011344	14.5	250	3625	1111212574	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	868
47 .	G16E011345	14.5	250	3625	1111212574	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	874
48 .	G16E011346	14.5	250	3625	1111212574	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	872
49 .	G16E011347	14.5	250	3625	1111212574	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	868
50 .	G16E011348	14.5	250	3625	1111212574	1.69	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	16F1239	868

Geocomposite Quality Certification	
Customer:	Waste Management-West
PO#:	2125171653 Tekoi LF Ph 2C
Destination:	Dugway, UT
doc #:	33038

Agru America
500 Garrison Road
Georgetown, SC 29440
ph: 843-546-0600

Maria Coffey
Quality Control Manager

Agru America certifies the following results for the above project

Geocomposite *Transmissivity Conditions:	Geonet *Transmissivity Conditions:
0.1 gradient 10,000 psf 15 minute seating time	0.1 gradient 10,000 psf 15 minute seating time

GEOCOMPOSITE

8-200-SS

SINGLE SIDED COMPOSITE

Reflects Conformance Sample

	Roll #	Width	Length	Area	GEOTEXTILE 8 oz Non Woven Roll #	Comp ASTM D7005 Ply A	Comp ASTM D4716 *Transmisivity	Net ASTM D5199 Thickness	Net ASTM D4218 Carbon	Net ASTM D792 Density	Net ASTM D5035 Tensile	Net ASTM D4716 *Transmisivity	Resin Lot #	Weight
		ft.	ft.	sqft.		lb/in	m²/sec	mil	%	g/cc	lb/in	m²/sec		
51 .	**G16E011349**	14.5	250	3625	1111212579	**1.69**	1.99X10-3	242	2.3	0.961	69.8	4.84X10-3	**16F1239**	858
52 .	**G16E011350**	14.5	250	3625	1111212579	**3.35**	1.99X10-3	240	2.3	0.963	69.8	4.84X10-3	**16F1239**	858

Advantage Polymers, Inc.
Dba API Resins
1019 Estate Drive
Moon Township PA 15108
Office; 412-576-1966
Fax; 724-457-5253

Certificate of Quality

Grant Palmer
GP@AGRUAMERICA.COM
AGRU/AMERICA, INC.
GEORGETOWN, SC 29440
Phone; 843-325-8753

PURCHASE ORDER NUMBER; PO#010561 1 OF 6 JULY
SHIP TO LOCATION: AGRU/AMERICA, GEORGETOWN, SC 29440
CONTAINER; **FPAX980410**

POLYMER; POLYETHYLENE
PRODUCT TYPE; HDPE
PRODUCT CODE; HD252BP PRIME HDPE COPOLYMER
LOT#; API 16F1239
QUANTITY (ACTUAL); 198,300 lbs.
SHIP DATE; 7-1-16
CARRIER; CSX TO GEORGETOWN
MELT INDEX ASTM D1238; 0.37 GM/10 MIN.
DENSITY, ASTM D1505; 0.9545 GM/CM3

This is to certify that this material satisfies specifications set forth by AGRU/AMERICA and agreed to by API Resins.
COMMENTS; The data set forth herein have been carefully compiled by the Producer, however, there is no warranty of any kind, either expressed or implied, applicable to its use, and user assumes all risk and liability in connection therewith.

Thanks again,
Tom Klein
API Resins
kleintjk@aol.com
412-576-1966

www.apiresin.com

Geotextile Quality Certification

agru america quality control dept.

OA # / PROJECT: DOC 33038 W M W EST TEKOI -
Customer: W M W EST
Destination: DUGW AY UT
Item Code/Description TEX 08M
DATE: 6/21/2016

ASTM	D5261	D4632				D4533		D4491			D6241	D475	D4355	
Method	Average Weight	Average Grab Tensile(MD)	Average Grab Tensile(CD)	Average Elongation (MD)	Average Elongation (CD)	Average Trap Tear (MD)	Average TRAP Tear (CD)	Water Flow Rate	Permeab.	Permitiv.	Average CBR Puncture	Apparent Opening Size	UV Resist % Retained @ 500 hrs	Roll Length
Units	oz / yd^2	Lbs	Lbs	%	%	Lbs	Lbs	gpm / ft^2	cm / sec	sec^{-1}	Units: Lbs	sieve	* % ret.	yds
Roll Number														
1111212573	8.40	295.00	375.00	99	104	113.00	159.00	106.00	.34	1.44	820	80	70.000	400
1111212574	8.40	295.00	375.00	99	104	113.00	159.00	106.00	.34	1.44	820	80	70.000	400
1111212575	8.30	296.00	384.00	97	97	149.00	111.00	107.00	.33	1.50	820	80	70.000	400
1111212576	8.30	296.00	384.00	97	97	149.00	111.00	107.00	.33	1.50	820	80	70.000	400
1111212577	8.30	296.00	384.00	97	97	149.00	111.00	107.00	.33	1.50	820	80	70.000	400
1111212578	8.30	296.00	384.00	97	97	149.00	111.00	107.00	.33	1.50	820	80	70.000	400
1111212579	8.70	304.00	380.00	105	101	114.00	140.00	98.00	.31	1.33	820	80	70.000	400
1111212580	8.70	304.00	380.00	105	101	114.00	140.00	98.00	.31	1.33	820	80	70.000	400
1111212581	8.70	304.00	380.00	105	101	114.00	140.00	98.00	.31	1.33	820	80	70.000	400
1111212582	8.70	304.00	380.00	105	101	114.00	140.00	98.00	.31	1.33	820	80	70.000	400
1111212583	8.62	280.00	390.00	94	108	116.00	156.00	103.00	.32	1.40	820	80	70.000	400
1111212584	8.62	280.00	390.00	94	108	116.00	156.00	103.00	.32	1.40	820	80	70.000	400
1111212585	8.62	280.00	390.00	94	108	116.00	156.00	103.00	.32	1.40	820	80	70.000	400
1111212586	8.62	280.00	390.00	94	108	116.00	156.00	103.00	.32	1.40	820	80	70.000	400
MIN	**8.3**	**280**	**375**	**94**	**97**	**113**	**111**	**98**	**.31**	**1.3**	**820.00**	**80.00**	**70.00**	14 ROLLS

Norman A. Legette

Norman Legette, Plant Manager, Agru Andrews
Date: 6/21/2016

For Questions, Please Contact: Lab Manager, Agru Andrews
Mark Lockliear

* UV test results are based on test performed at TRI Environmental Laboratory on similar weight products with the same raw material components per ASTM D-4355

7/28/2016

Mail To:

Mark Franc
Waste Management, Inc

email: mfranc@wm.com
CC email: gjones@hansenallenluce.com

Bill To:

<= Same

Dear Mr. Franc:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs.
TRI is pleased to submit this final report of the laboratory testing for the sample(s) listed below.

Project:	**Tekoi Landfill Phase 2C**
TRI Job Reference Number:	22488
Material(s) Tested:	One, Agru 8-200 Single Sided Geocomposite
Test(s) Requested:	Transmissivity (ASTM D 4716) - GC Peel Strength (ASTM D 7005) - GC Thickness (ASTM D 5199) - GN Density (ASTM D 1505) - GN Carbon Content (ASTM D 4218) - GN Tensile Properties (ASTM D 7179)

If you have any questions or require any additional information, please call us at 1-800-880-8378

Sincerely,

Mansukh Patel
Laboratory Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

*Signature is on file

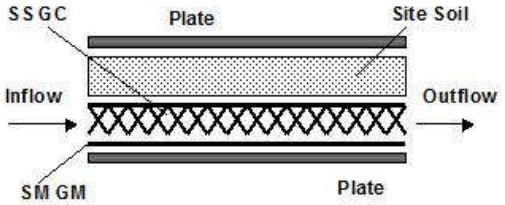
The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

GEOCOMPOSITE TEST RESULTS
TRI Client: Waste Management, Inc
Project: Tekoi Landfill Phase 2C

Material: Agru 8-200 Single Sided Geocomposite
Sample Identification: G16E011290
TRI Log #: 22488

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.
Hydraulic Transmissivity (ASTM D 4716)												
Direction Tested: Machine Direction												
Normal Load (psf): 13,000												
Hydraulic Gradient: 0.1												
Test Length (in) 12												
Test Width (in) 12												
Plate / Site Soil / SSGC / 60 MSHDGM / Plate												
Seat Time (hours)	Specimen		1			2						
	Volume (cc)	561	558	556	571	571	569					
	Time (s)	20.35	20.37	20.43	20.37	20.44	20.38					
0.25	Flow Rate (GPM/ft width)	0.42	0.42	0.42	0.43	0.43	0.43				0.42	0.00
	Transmissivity (m^2/s)	8.71E-04	8.65E-04	8.60E-04	8.83E-04	8.80E-04	8.80E-04				8.73E-04	9.49E-06
	Test Temp (C)		21.8			21.9						
	Temp. Corr. Factor		0.963			0.961						
Peel Strength (ASTM D 7005)												
MD Average Peel Strength (ppi)	3.0	3.7	2.2	3.2	2.4						2.9	0.6
MD Average Peel Strength (g/in)	1362	1675	976	1435	1090						1308	279
Thickness (ASTM D 5199)					GEONET COMPONENT							
Thickness (mils)	256	249	244	237	249	253	251	250	241	244	247	6
											237	<< min
Density (ASTM D 1505)					GEONET COMPONENT							
Density (g/cm3)	0.950	0.950	0.951								0.950	0.001
Carbon Black Content (ASTM D 4218)					GEONET COMPONENT							
% Carbon Black	2.25	2.20									2.23	0.04
Tensile Properties (ASTM D 7179, 12 ipm strain rate)					GEONET COMPONENT							
MD Max. Strength (ppi)	70	66	59	82	77						71	9
MD Elong. @ Max. Strength (%)	24	20	21	21	24						22	2
MD Machine Direction												



The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

TRI ENVIRONMENTAL, INC.
9063 BEE CAVES RD. – AUSTIN, TX 78733 – USA | PH: 800.880.TEST OR 512.263.2101

Geocomposite Quality Certification

Customer:	**Waste Management - West**
PO#:	**2000012219 Tekoi LF**
Destination:	**Tooele, UT**
doc #:	**15602**

Agru America certifies the following results fo

Agru America
500 Garrison Road
Georgetown, SC 29440
ph: 843-546-0600

Quality Control Manager

agru america quality control dept.

Type: **8-275 comp**

	roll #	wid	len	area	TEX. ROLL #	COMP ASTM D7005 PLY	COMP ASTM D4716 Trans*	NET ASTM D5199 lo	NET ASTM D5199 hi	NET ASTM D5199 ave	NET ASTM D4218 Car	NET ASTM D792 Den	NET ASTM D5035 Ten	NET ASTM D5261 M/U	NET ASTM D4716 Trans**	Geocomposite *Transmissivity Conditions: 0.1 gradient, 10,000 psf 15 minute seating time	Geonet Component **Transmissivity Conditions: 0.1 gradient, 10,000 psf 15 minute seating time
		ft	ft	sqft		lb/in	m²/sec	mil	mil	mil	%	g/cc	lb/in	lb/ft²	m²/sec	Resin Lot #	
1 .	504351 .11	14.5	200	2900	690-100066	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	conf
2 .	504352 .11	14.5	200	2900	690-100066	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
3 .	504353 .11	14.5	200	2900	690-100066	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
4 .	504354 .11	14.5	200	2900	690-100060	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
5 .	504355 .11	14.5	200	2900	690-100060	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
6 .	504356 .11	14.5	200	2900	690-100060	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
7 .	504357 .11	14.5	200	2900	690-100060	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
8 .	504358 .11	14.5	200	2900	690-100049	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
9 .	504359 .11	14.5	200	2900	690-100049	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
10 .	504360 .11	14.5	200	2900	690-100049	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
11 .	504361 .11	14.5	200	2900	690-100051	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
12 .	504362 .11	14.5	200	2900	690-100051	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
13 .	504363 .11	14.5	200	2900	690-100051	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
14 .	504364 .11	14.5	200	2900	690-100051	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
15 .	504365 .11	14.5	200	2900	690-100091	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
16 .	504366 .11	14.5	200	2900	690-100091	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
17 .	504367 .11	14.5	200	2900	690-100091	3.69	3.68 x 10-3	301	328	314	2.68	0.967	123.5	0.30	1.10 x 10-2	CAK610120	
18 .	504371 .11	14.5	200	2900	690-100079	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
19 .	504372 .11	14.5	200	2900	690-100079	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
20 .	504373 .11	14.5	200	2900	690-100079	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
21 .	504374 .11	14.5	200	2900	690-100079	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
22 .	504375 .11	14.5	200	2900	690-100090	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
23 .	504376 .11	14.5	200	2900	690-100090	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
24 .	504377 .11	14.5	200	2900	690-100090	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
25 .	504378 .11	14.5	200	2900	690-100085	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
26 .	504379 .11	14.5	200	2900	690-100085	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
27 .	504380 .11	14.5	200	2900	690-100085	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
28 .	504381 .11	14.5	200	2900	690-100085	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
29 .	504382 .11	14.5	200	2900	690-100048	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
30 .	504383 .11	14.5	200	2900	690-100048	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
31 .	504384 .11	14.5	200	2900	690-100048	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
32 .	504385 .11	14.5	200	2900	690-100089	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
33 .	504386 .11	14.5	200	2900	690-100089	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
34 .	504387 .11	14.5	200	2900	690-100089	3.00	3.68 x 10-3	298	348	313	2.67	0.967	127.2	0.31	1.10 x 10-2	CAK610120	
35 .	504391 .11	14.5	200	2900	690-100089	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
36 .	504392 .11	14.5	200	2900	690-100080	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
37 .	504393 .11	14.5	200	2900	690-100080	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
38 .	504394 .11	14.5	200	2900	690-100080	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
39 .	504395 .11	14.5	200	2900	690-100088	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
40 .	504396 .11	14.5	200	2900	690-100088	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
41 .	504397 .11	14.5	200	2900	690-100088	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
42 .	504398 .11	14.5	200	2900	690-100088	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
43 .	504499 .11	14.5	200	2900	690-100058	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
44 .	504400 .11	14.5	200	2900	690-100058	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
45 .	504401 .11	14.5	200	2900	690-100058	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
46 .	504402 .11	14.5	200	2900	690-100076	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
47 .	504406 .11	14.5	200	2900	690-100076	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
48 .	504407 .11	14.5	200	2900	690-100076	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
49 .	504408 .11	14.5	200	2900	690-100076	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
50 .	504409 .11	14.5	200	2900	690-100071	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
51 .	504410 .11	14.5	200	2900	690-100071	3.69	3.68 x 10-3	298	327	308	2.90	0.968	131.0	0.33	1.10 x 10-2	CAK610120	
52 .	504411 .11	14.5	200	2900	690-100071	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
53 .	504412 .11	14.5	209	3030.5	690-100069	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
54 .	504413 .11	14.5	209	3030.5	690-100069	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
55 .	504414 .11	14.5	209	3030.5	690-100069	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	

Geocomposite Quality Certification

Customer:	**Waste Management - West**
PO#:	**2000012219 Tekoi LF**
Destination:	**Tooele, UT**
doc #:	**15602**

Agru America certifies the following results fo

Agru America
500 Garrison Road
Georgetown, SC 29440
ph: 843-546-0600

Quality Control Manager

agru america quality control dept.

Type: **8-275 comp**

	roll #	wid	len	area	TEX. ROLL #	COMP ASTM D7005 PLY	COMP ASTM D4716 Trans*	NET ASTM D5199 lo	NET ASTM D5199 hi	NET ASTM D5199 ave	NET ASTM D4218 Car	NET ASTM D792 Den	NET ASTM D5035 Ten	NET ASTM D5261 M/U	NET ASTM D4716 Trans**	Geocomposite *Transmissivity Conditions: 0.1 gradient, 10,000 psf 15 minute seating time	Geonet Component **Transmissivity Conditions: 0.1 gradient, 10,000 psf 15 minute seating time
		ft	ft	sqft		lb/in	m²/sec	mil	mil	mil	%	g/cc	lb/in	lb/ft²	m²/sec	Resin Lot #	
56 .	504415 .11	14.5	200	2900	690-100069	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
57 .	504416 .11	14.5	200	2900	690-100073	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
58 .	504417 .11	14.5	200	2900	690-100073	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
59 .	504418 .11	14.5	200	2900	690-100073	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
60 .	504419 .11	14.5	200	2900	690-100093	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
61 .	504420 .11	14.5	200	2900	690-100093	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
62 .	504421 .11	14.5	200	2900	690-100093	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
63 .	504422 .11	14.5	200	2900	690-100093	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
64 .	504423 .11	14.5	200	2900	690-100070	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
65 .	504424 .11	14.5	200	2900	690-100070	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
66 .	504425 .11	14.5	200	2900	690-100070	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
67 .	504426 .11	14.5	200	2900	690-100070	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
68 .	504427 .11	14.5	200	2900	690-100055	5.80	3.68 x 10-3	255	275	264	2.61	0.967	197.1	0.23	1.10 x 10-2	CAK610120	
69 .	504431 .11	14.5	200	2900	690-100055	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
70 .	504432 .11	14.5	200	2900	690-100055	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
71 .	504433 .11	14.5	200	2900	690-100055	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
72 .	504434 .11	14.5	200	2900	690-100067	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
73 .	504435 .11	14.5	200	2900	690-100067	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
74 .	504436 .11	14.5	200	2900	690-100067	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
75 .	504437 .11	14.5	191	2769.5	690-100067	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
76 .	504438 .11	14.5	191	2769.5	690-100059	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
77 .	504439 .11	14.5	191	2769.5	690-100059	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
78 .	504440 .11	14.5	200	2900	690-100059	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
79 .	504441 .11	14.5	200	2900	690-100059	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
80 .	504442 .11	14.5	200	2900	690-100046	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
81 .	504443 .11	14.5	200	2900	690-100046	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
82 .	504444 .11	14.5	200	2900	690-100046	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
83 .	504445 .11	14.5	200	2900	690-100046	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
84 .	504446 .11	14.5	200	2900	690-100087	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
85 .	504447 .11	14.5	200	2900	690-100087	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
86 .	504448 .11	14.5	200	2900	690-100087	7.57	3.68 x 10-3	259	283	272	2.56	0.967	104.0	0.25	1.10 x 10-2	CAK610120	
87 .	504452 .11	14.5	200	2900	690-100087	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	CAK610120	conf
88 .	504453 .11	14.5	200	2900	690-100062	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	CAK610120	
89 .	504454 .11	14.5	200	2900	690-100062	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	CAK610120	
90 .	504555 .11	14.5	200	2900	690-100062	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	CAK610120	
91 .	504556 .11	14.5	200	2900	690-100062	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	CAK610120	
92 .	504557 .11	14.5	200	2900	690-100047	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	CAK610120	
93 .	504558 .11	14.5	200	2900	690-100047	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	CAK610120	
94 .	504559 .11	14.5	200	2900	690-100047	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	CAK610120	
95 .	504581 .11	14.5	200	2900	690-100047	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
96 .	504582 .11	14.5	200	2900	690-100065	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
97 .	504583 .11	14.5	200	2900	690-100065	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
98 .	504584 .11	14.5	200	2900	690-100065	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
99 .	504585 .11	14.5	200	2900	690-100065	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
100 .	504586 .11	14.5	200	2900	690-100092	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
101 .	504587 .11	14.5	200	2900	690-100092	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
102 .	504588 .11	14.5	200	2900	690-100092	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
103 .	504589 .11	14.5	200	2900	690-100092	5.24	3.68 x 10-3	293	319	305	2.42	0.965	121.4	0.31	1.10 x 10-2	10H1233	
104 .	504590 .11	14.5	200	2900	690-100054	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
105 .	504591 .11	14.5	200	2900	690-100054	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
106 .	504592 .11	14.5	200	2900	690-100054	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
107 .	504593 .11	14.5	200	2900	690-100054	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
108 .	504594 .11	14.5	200	2900	690-100068	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
109 .	504595 .11	14.5	200	2900	690-100068	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
110 .	504596 .11	14.5	200	2900	690-100068	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	

Geocomposite Quality Certification

Customer:	**Waste Management - West**
PO#:	**2000012219 Tekoi LF**
Destination:	**Tooele, UT**
doc #:	**15602**

Agru America certifies the following results fo

Agru America
500 Garrison Road
Georgetown, SC 29440
ph: 843-546-0600

Quality Control Manager

agru america quality control dept.

Type: **8-275 comp**

	roll #	wid	len	area	TEX. ROLL #	COMP ASTM D7005 PLY	COMP ASTM D4716 Trans*	NET ASTM D5199 lo	NET ASTM D5199 hi	NET ASTM D5199 ave	NET ASTM D4218 Car	NET ASTM D792 Den	NET ASTM D5035 Ten	NET ASTM D5261 M/U	NET ASTM D4716 Trans**	Geocomposite *Transmissivity Conditions: 0.1 gradient, 10,000 psf 15 minute seating time	Geonet Component **Transmissivity Conditions: 0.1 gradient, 10,000 psf 15 minute seating time
		ft	ft	sqft		lb/in	m²/sec	mil	mil	mil	%	g/cc	lb/in	lb/ft²	m²/sec	Resin Lot #	
111 .	504597 .11	14.5	200	2900	690-100068	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
112 .	504598 .11	14.5	200	2900	690-100072	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
113 .	504599 .11	14.5	200	2900	690-100072	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
114 .	504500 .11	14.5	200	2900	690-100072	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
115 .	504501 .11	14.5	200	2900	690-100072	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
116 .	504502 .11	14.5	200	2900	690-100074	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
117 .	504503 .11	14.5	200	2900	690-100074	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
118 .	504504 .11	14.5	200	2900	690-100074	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
119 .	504505 .11	14.5	200	2900	690-100074	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
120 .	504506 .11	14.5	200	2900	690-100075	5.41	3.68 x 10-3	300	324	313	2.91	0.967	132.9	0.31	1.08 x 10-2	10H1233	
121 .	504510 .11	14.5	200	2900	690-100075	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
122 .	504511 .11	14.5	200	2900	690-100075	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
123 .	504512 .11	14.5	200	2900	690-100075	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
124 .	504513 .11	14.5	200	2900	690-100077	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
125 .	504514 .11	14.5	200	2900	690-100077	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
126 .	504515 .11	14.5	200	2900	690-100077	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
127 .	504616 .11	14.5	200	2900	690-100077	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
128 .	504617 .11	14.5	200	2900	690-100078	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
129 .	504618 .11	14.5	200	2900	690-100078	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
130 .	504619 .11	14.5	200	2900	690-100078	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
131 .	504620 .11	14.5	200	2900	690-100078	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
132 .	504621 .11	14.5	200	2900	690-100081	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
133 .	504622 .11	14.5	200	2900	690-100081	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
134 .	504623 .11	14.5	200	2900	690-100081	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
135 .	504624 .11	14.5	200	2900	690-100081	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
136 .	504625 .11	14.5	200	2900	690-100082	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
137 .	504626 .11	14.5	200	2900	690-100082	7.41	3.68 x 10-3	293	313	300	2.95	0.964	122.9	0.30	1.08 x 10-2	10H1233	
138 .	504630 .11	14.5	200	2900	690-100082	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
139 .	504631 .11	14.5	200	2900	690-100082	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
140 .	504632 .11	14.5	200	2900	690-100083	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
141 .	504633 .11	14.5	200	2900	690-100083	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
142 .	504634 .11	14.5	200	2900	690-100083	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
143 .	504635 .11	14.5	200	2900	690-100083	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
144 .	504636 .11	14.5	200	2900	690-100084	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
145 .	504637 .11	14.5	200	2900	690-100084	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
146 .	504638 .11	14.5	200	2900	690-100084	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
147 .	504639 .11	14.5	200	2900	690-100084	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
148 .	504640 .11	14.5	200	2900	690-100086	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	
149 .	504641 .11	14.5	200	2900	690-100086	5.27	3.68 x 10-3	296	316	305	2.50	0.967	108.7	0.30	1.08 x 10-2	10H1233	

CoA Date: 10/12/2010

Certificate of Analysis

Shipped To: AGRU AMERICA INC
500 GARRISON RD
GEORGETOWN SC 29440
USA

Recipient: PALMER
Fax:

CPC Delivery #: 88143569
PO #: 5636
Weight: 205050 LB
Ship Date: 10/12/2010
Package: BULK
Mode: Hopper Car
Car #: HCBX001574
Seal No: 505628

Product:
Marlex HHM 5502BN HDPE

Lot Number: CAK610120

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.34	g/10mi
Density	D1505 or D4883	0.9545	g/cm3

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Kevin Ayres
Quality Control Supervisor

For CoA questions contact Customer Service Representative at +1-832-813-4782

Formosa Plastics

FORMOSA PLASTICS CORPORATION, TEXAS
201 FORMOSA DRIVE PHONE:(888)FPCUSA3
PO BOX 700
POINT COMFORT TX 77978

Certificate of Analysis

CUSTOMER:AGRU AMERICA, INC.
500 GARRISON ROAD
GEORGETOWN SC 29440
PRODUCT :HB5502B
RAILCAR FPAX980011

S/O NO : EK8A395
CUSTOMER PO : 005554
DATE SHIPPED: 8/31/10
LOT NO : 10H1233
WEIGHT : 195,250.00
CUSTID:FT03888 SPIDM1

TEST ITEM	REFERENCE METHOD	TEST VALUE
Melt Index,g/10min	ASTM D1238	.35
Density, g/cm3	ASTM D1505	.9549

QC SUPERVISOR: JESSE CHANG

DALCO NONWOVENS, LLC

January 7, 2011

Agru/America, Inc.
500 Garrison Road
Georgetown, SC 29440

Re: DalTex 1080NHB
Purchase Order Number: 00005770
Doc #: 15602 TEKOI
Roll Numbers: AGR-690-100046 thru AGR-690-100051, AGR-690-100053 thru AGR-690-100062, AGR-690-100064 thru AGR-690-100093, AGR-390-100052 & AGR-390-100063
AGR-300-000245 & AGR-300-000256

Dear Sir/Madam:

This is to certify that DalTex 1080 NHB is a high quality needle-punched nonwoven geotextile manufactured by DALCO Nonwovens, LLC of 100% polypropylene staple fibers. Stable within a pH range of 2 to 13, the fibers are randomly networked to form a high strength dimensionally stable fabric. This fabric resists ultraviolet deterioration, rotting and biological degradation and it is inert to commonly encountered soil chemicals. It meets or exceeds the following physical properties:

Fabric Property	Test Method	Units	Minimum Average Roll Value
Grab Tensile	ASTM D 4632	lbs.	205 (.91 kN)
Grab Elongation	ASTM D 4632	%	50
Trap Tear	ASTM D 4533	lbs.	85 (.38 kN)
Puncture	ASTM D 4833	lbs.	130 (.58 kN)
Mullen Burst	ASTM D 3786	psi	400 (2756 kPa)
Permittivity	ASTM D 4491	sec^{-1}	1.4
Water Flow Rate	ASTM D 4491	gpm/ft^2	90 (3675 $l/min/m^2$)
AOS	ASTM D 4751	US Sieve	80 (.180 mm)
UV Resistance after 500 hrs.	ASTM D 4355	% Strength Retained	70

Sincerely,

John Shave
Quality Assurance Manager

DALCO NONWOVENS, LLC ROLL DATA

PURCHASE ORDER NUMBER: **5770** **DOC #: 15602 TEKOI**
PRODUCT / STYLE NAME: **DalTex 1080**

ROLL NUMBER	AVERAGE WEIGHT MD	AVERAGE GRAB TENSILE MD	AVG ELONG MD	AVERAGE GRAB TENSILE XMD	AVG ELONG XMD	AVERAGE TRAP TEAR MD	AVERAGE TRAP TEAR XMD	AVERAGE PUNCTURE RESISTANCE	AVERAGE MULLEN BURST	PERMITTIVITY	WATER FLOW RATE	AOS
AGR-690-100046	9	217	71	254	76	101	129	146	418	1.4	99	80
AGR-690-100055	8.3	231	78	223	83	106	107	134	409	1.4	99	80
AGR-690-100064	8.1	218	77	225	81	87	113	130	412	1.4	99	80
AGR-690-100073	8.3	219	73	240	82	109	122	136	407	1.4	99	80
AGR-690-100082	8	209	76	231	83	91	104	132	406	1.4	99	80
AGR-690-100091	8.1	214	71	234	82	103	120	136	407	1.4	99	80
6	**8.3**	**218**	**74**	**235**	**81**	**100**	**116**	**136**	**410**	**1.4**	**99**	**80**

John V Shave
Quality Manager

DALCO NONWOVENS, LLC ROLL DATA

PURCHASE ORDER NUMBER: **5770** **DOC #: 15602 TEKOI**
PRODUCT / STYLE NAME: **DalTex 1080**

ROLL NUMBER	AVERAGE WEIGHT MD	AVERAGE GRAB TENSILE MD	AVG ELONG MD	AVERAGE GRAB TENSILE XMD	AVG ELONG XMD	AVERAGE TRAP TEAR MD	AVERAGE TRAP TEAR XMD	AVERAGE PUNCTURE RESISTANCE	AVERAGE MULLEN BURST	PERMITTIVITY	WATER FLOW RATE	AOS
AGR-300-000245	8.1	209	74	248	83	89	108	131	402	1.4	97	80
1	**8.1**	**209**	**74**	**248**	**83**	**89**	**108**	**131**	**402**	**1.4**	**97**	**80**

John V Shave
Quality Manager

SURVEY CQA

HANSEN ALLEN & LUCE inc
ENGINEERS

Subgrade Comparisons

See Drawing: Subgrade to Design Comparison.dwg

Specification indicates in 3.2 Finish Grading

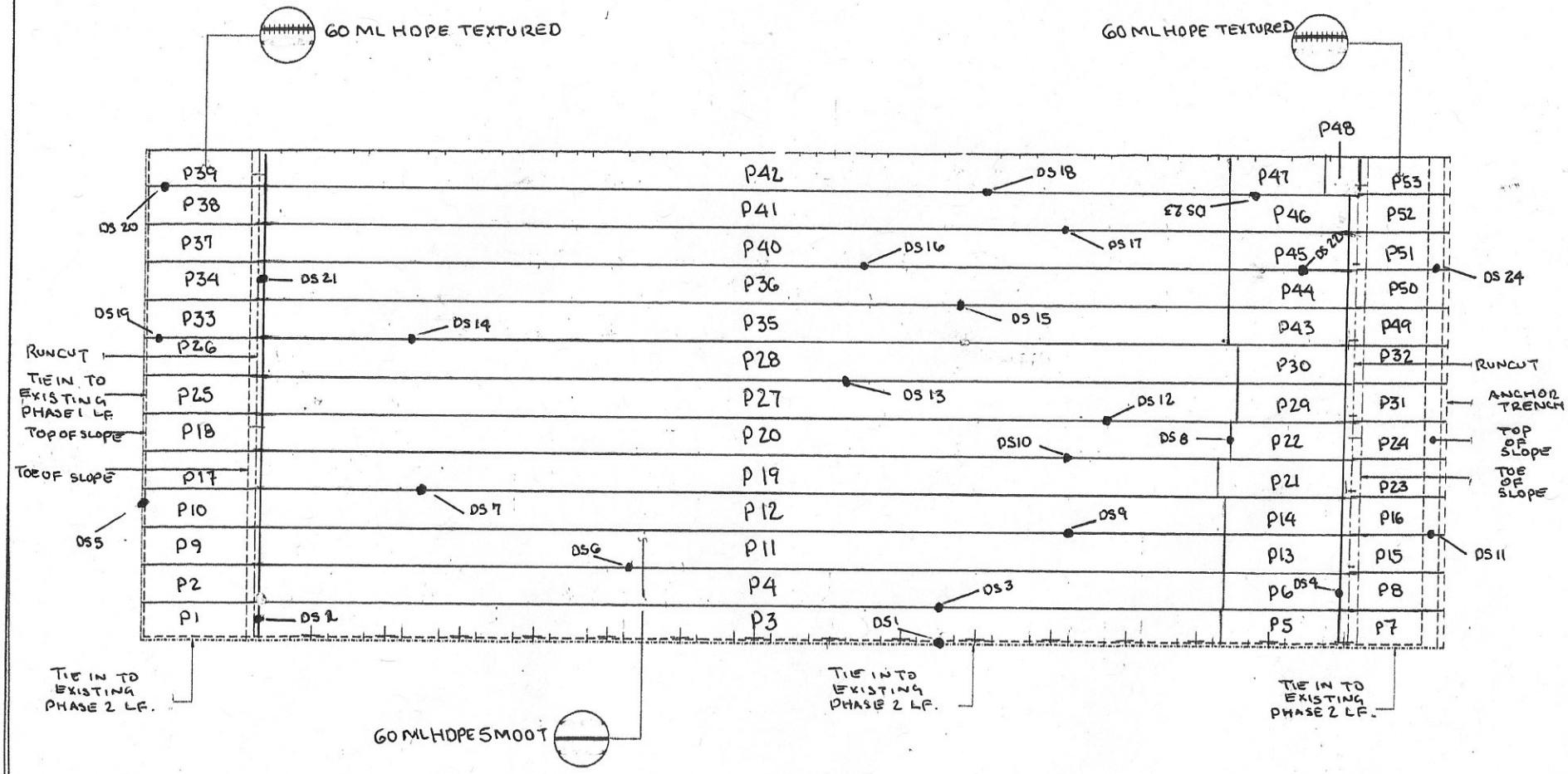
D. Excavated surfaces providing the subgrade to the geosynthetic materials shall be graded to within plus one-tenth (0.1) to minus two-tenths (0.2) of a foot from design grade

Point #	Survey Elev	Point # Final Design Surface	Intended Design Elev	Dif	OK/FAIL
3390	4839.05	4	4839.195	-0.145	OK
3389	4838.383	5	4838.461	-0.078	OK
3388	4837.616	6	4837.694	-0.078	OK
3387	4836.774	7	4836.919	-0.145	OK
3386	4835.925	8	4836.114	-0.189	OK
3385	4835.235	9	4835.303	-0.068	OK
3384	4834.479	10	4834.501	-0.022	OK
3383	4833.721	11	4833.701	0.020	OK
3382	4832.866	12	4832.91	-0.044	OK
3381	4832.046	13	4832.129	-0.083	OK
3379	4831.264	58	4831.316	-0.052	OK
3401	4832.245	15	4832.335	-0.090	OK
3400	4832.847	16	4832.996	-0.149	OK
3399	4833.712	17	4833.795	-0.083	OK
3398	4834.497	18	4834.582	-0.085	OK
3397	4835.229	19	4835.372	-0.143	OK
3396	4836.035	20	4836.159	-0.124	OK
3395	4836.877	21	4836.957	-0.080	OK
3394	4837.64	22	4837.737	-0.097	OK
3393	4838.422	23	4838.513	-0.091	OK
3392	4839.103	24	4839.264	-0.161	OK
3391	4839.989	25	4840.022	-0.033	OK
3418	4840.779	26	4840.909	-0.130	OK
3417	4840.05	27	4840.161	-0.111	OK
3416	4839.415	28	4839.412	0.003	OK
3415	4838.619	29	4838.637	-0.018	OK
3414	4837.723	30	4837.861	-0.138	OK
3413	4836.933	31	4837.051	-0.118	OK
3412	4836.134	32	4836.238	-0.104	OK
3411	4835.309	33	4835.432	-0.123	OK
3410	4834.527	34	4834.632	-0.105	OK
3409	4833.768	35	4833.822	-0.054	OK
3408	4832.939	36	4833.035	-0.096	OK
3429	4833.721	37	4833.84	-0.119	OK
3428	4834.478	38	4834.678	-0.200	OK

3427	4835.319	39	4835.487	-0.168	OK
3426	4836.156	40	4836.288	-0.132	OK
3425	4836.97	41	4837.075	-0.105	OK
3424	4837.722	42	4837.865	-0.143	OK
3423	4838.49	43	4838.65	-0.160	OK
3422	4839.294	44	4839.42	-0.126	OK
3421	4840.107	45	4840.178	-0.071	OK
3420	4840.831	46	4840.958	-0.127	OK
3419	4841.609	47	4841.732	-0.123	OK
3444	4842.413	48	4842.494	-0.081	OK
3443	4841.609	49	4841.698	-0.089	OK
3442	4840.809	50	4840.914	-0.105	OK
3441	4840.015	51	4840.127	-0.112	OK
3440	4839.188	52	4839.32	-0.132	OK
3439	4838.4	53	4838.524	-0.124	OK
3438	4837.628	54	4837.737	-0.109	OK
3437	4836.802	55	4836.937	-0.135	OK
3436	4836.058	56	4836.16	-0.102	OK
3435	4835.27	57	4835.399	-0.129	OK
3353	4846.399	59	4846.46	-0.061	OK
3342	4848.497	60	4848.672	-0.175	OK
3335	4848.449	61	4848.586	-0.137	OK

GEOSYNTHETICS CONTRACTOR QC DOCUMENTATION

HANSEN ALLEN & LUCE inc
ENGINEERS



60 MIL TEXTURED/SMOOTH GEOMEMBRANE PROPOSED PANEL LAYOUT

ENVIRONMENTAL SPECIALTIES INTERNATIONAL
7943 PECUE LANE SUITE A
BATON ROUGE, LOUISIANA 70809

TITLE: WASTE MANAGEMENT, INC.
TEKOI LANDFILL
PHASE 2C
DOUGWAY, UTAH

SHEET NUMBER
1 of 1

Daily Panel Placement

Page 1

Project Name: WMI TEKOI LANDFILL **Job #** _____ **Deployment Date** _____

Superintendent: _____ **Material Type:** _____

☐ **Primary** **Secondary** ☐ **Cell** ☐ **Pond** ☐ **Cap** ☐ **Other:** _____

Description (i.e. Phase #, Cell #, Pond # etc.) _____ **Roll Stock Width** _____

Panel #	Roll #	Final Length Avg.	Final Width Avg.	Initial Length Avg.	Initial Width Avg.	Initial SF	Final SF	Lineal Feet Trench
1(T)	F16B000632	79.00 LF	22.25 LF			-	1,758	
2(T)	F16B000632	79.00 LF	22.50 LF			-	1,778	
3(S)		572.00 LF	21.50 LF			-	12,298	
4(S)		580.00 LF	21.50 LF			-	12,470	
5(S)		90.00 LF	21.00 LF			-	1,890	
6(S)		83.00 LF	22.50 LF			-	1,868	
7(T)	F16B000632	64.00 LF	21.75 LF			-	1,392	21
8(T)	F16B000632	64.00 LF	22.50 LF			-	1,440	22.5

Notes:

Panel #	Top	Left	Right	Bottom
1(T)	22.5	79	79	22
2(T)	22.5	79	79	22.5
3(S)	22	572	572	21
4(S)	22	580	580	21
5(S)	21	90	90	21
6(S)	22.5	83	83	22.5
7(T)	21	64	64	22.5
8(T)	22.5	64	64	22.5

Material in Anchor Trench

Total LF In Trench This Page	43.50	LF
Depth and Width Allowed in Trench	5	LF
Total SF Trench This Page	**218**	**SF**
Total Panel SF This Page	**34,893**	**SF**
Total Pay Area This Page	**35,110**	**SF**
LF In Trench Previous	-	LF
LF In Trench To Date	44	LF
SF In Trench Previous	-	SF
Total SF in Trench to Date	218	SF
Total Panel SF Previous	-	SF
Total Panel SF To Date	34,893	SF
Total Pay Area To Date Including Anchor Trench	**35,110**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	-	SF
Initial Quantity To Date	-	SF

Daily Panel Placement

Page 2

Project Name: WMI TEKOI LANDFILL **Job #** _____ **Deployment Date** 09/16/16

Superintendent: _____ **Material Type:** _____

☐ **Primary** **Secondary** ☐ **Cell** ☐ **Pond** ☐ **Cap** ☐ **Other:** _____

Description (i.e. Phase #, Cell #, Pond # etc.) _____ **Roll Stock Width** _____

Panel #	Roll #	Final Length Avg.	Final Width Avg.	Initial Length Avg.	Initial Width Avg.	Initial SF	Final SF	Lineal Feet Trench
9(T)	F16B000632	76.00 LF	22.50 LF			-	1,710	
10(T)	F16B000632	75.00 LF	password 22.50 LF			-	1,688	
11(S)		580.00 LF	22.50 LF			-	13,050	
12(S)		574.00 LF	22.50 LF			-	12,915	
13(S)		81.00 LF	22.50 LF			-	1,823	
14(S)		87.00 LF	22.50 LF			-	1,958	
15(T)		65.00 LF	22.50 LF			-	1,463	22.5
16(T)		66.00 LF	22.50 LF			-	1,485	22.5

Notes:

Panel #	Top	Left	Right	Bottom
9(T)	22.5	76	76	22.5
10(T)	22.5	75	75	22.5
11(S)	22.5	580	580	22.5
12(S)	22.5	574	574	22.5
13(S)	22.5	81	81	22.5
14(S)	22.5	87	87	22.5
15(T)	22.5	65	65	22.5
16(T)	22.5	66	66	22.5

Material in Anchor Trench

Total LF In Trench This Page	45.00	LF
Depth and Width Allowed in Trench	5	LF
Total SF Trench This Page	**225**	**SF**
Total Panel SF This Page	**36,090**	**SF**
Total Pay Area This Page	**36,315**	**SF**
LF In Trench Previous	44	LF
LF In Trench To Date	89	LF
SF In Trench Previous	218	SF
Total SF in Trench to Date	443	SF
Total Panel SF Previous	34,893	SF
Total Panel SF To Date	70,983	SF
Total Pay Area To Date Including Anchor Trench	**71,425**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	-	SF
Initial Quantity To Date	-	SF

Daily Panel Placement

Page 3

Project Name: WMI TEKOI LANDFILL **Job #** _____ **Deployment Date** 09/16/16

Superintendent: _____ **Material Type:** _____

☐ **Primary** **Secondary** ☐ **Cell** ☐ **Pond** ☐ **Cap** ☐ **Other:** _____

Description (i.e. Phase #, Cell #, Pond # etc.) _____ **Roll Stock Width** _____

Panel #	Roll #	Final Length Avg.	Final Width Avg.	Initial Length Avg.	Initial Width Avg.	Notes:	Initial SF	Final SF	Lineal Feet Trench
17(T)		75.00 LF	22.50 LF	LF	LF	22.5 / 75 75 / 22.5	-	1,688	
18(T)		75.00 LF	22.50 LF	LF	LF	22.5 / 75 75 / 22.5	-	1,688	
19(S)		578.00 LF	22.50 LF	LF	LF	22.5 / 578 578 / 22.5	-	13,005	
20(S)		579.00 LF	22.50 LF	LF	LF	22.5 / 579 579 / 22.5	-	13,028	
21(S)		83.00 LF	22.50 LF	LF	LF	22.5 / 83 83 / 22.5	-	1,868	
22(S)		81.00 LF	22.50 LF	LF	LF	22.5 / 81 81 / 22.5	-	1,823	
23(T)		66.00 LF	22.50 LF	LF	LF	22.5 / 66 66 / 22.5	-	1,485	22.5
24(T)		67.00 LF	22.50 LF	LF	LF	22.5 / 67 67 / 22.5	-	1,508	22.5

Material in Anchor Trench

Total LF In Trench This Page	45.00	LF
Depth and Width Allowed in Trench	5	LF
Total SF Trench This Page	**225**	**SF**
Total Panel SF This Page	**36,090**	**SF**
Total Pay Area This Page	**36,315**	**SF**
LF In Trench Previous	89	LF
LF In Trench To Date	134	LF
SF In Trench Previous	443	SF
Total SF in Trench to Date	668	SF
Total Panel SF Previous	70,983	SF
Total Panel SF To Date	107,073	SF
Total Pay Area To Date Including Anchor Trench	**107,740**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	-	SF
Initial Quantity To Date	-	SF

Daily Panel Placement

Page 4

Project Name: WMI TEKOI LANDFILL **Job #** _____ **Deployment Date** 09/17/16

Superintendent: _____ **Material Type:** _____

☐ **Primary** **Secondary** ☐ **Cell** ☐ **Pond** ☐ **Cap** ☐ **Other:** _____

Description (i.e. Phase #, Cell #, Pond # etc.) _____ **Roll Stock Width** _____

Panel #	Roll #	Final Length Avg.	Final Width Avg.	Initial Length Avg.	Initial Width Avg.	Top	Left	Right	Bottom	Initial SF	Final SF	Lineal Feet Trench
25(T)	F16B000634	75.00 LF	22.50 LF	LF	LF	22.5	75	75	22.5	-	1,688	
26(T)		75.00 LF	22.50 LF	LF	LF	22.5	75	75	22.5	-	1,688	
27(S)	F16D000366	581.00 LF	22.50 LF	LF	LF	22.5	581	581	22.5	-	13,073	
28(S)	F16D000365	581.00 LF	22.50 LF	LF	LF	22.5	581	581	22.5	-	13,073	
29(S)	F16D000364	80.00 LF	22.50 LF	LF	LF	22.5	80	80	22.5	-	1,800	
30(S)	F16D000364	80.00 LF	22.50 LF	LF	LF	22.5	80	80	22.5	-	1,800	
31(T)	F16D000363	66.00 LF	22.50 LF	LF	LF	22.5	66	66	22.5	-	1,485	22.5
32(T)	F16D000364	66.00 LF	22.50 LF	LF	LF	22.5	66	66	22.5	-	1,485	22.5

Notes:

Material in Anchor Trench

Total LF In Trench This Page	45.00	LF
Depth and Width Allowed in Trench	5	LF
Total SF Trench This Page	**225**	**SF**
Total Panel SF This Page	**36,090**	**SF**
Total Pay Area This Page	**36,315**	**SF**
LF In Trench Previous	134	LF
LF In Trench To Date	179	LF
SF In Trench Previous	668	SF
Total SF in Trench to Date	893	SF
Total Panel SF Previous	107,073	SF
Total Panel SF To Date	143,163	SF
Total Pay Area To Date Including Anchor Trench	**144,055**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	-	SF
Initial Quantity To Date	-	SF

Daily Panel Placement

Page 5

Project Name: WMI TEKOI LANDFILL **Job #** _____ **Deployment Date** 09/17/16

Superintendent: _____ **Material Type:** _____

☐ **Primary** **Secondary** ☐ **Cell** ☐ **Pond** ☐ **Cap** ☐ **Other:** _____

Description (i.e. Phase #, Cell #, Pond # etc.) _____ **Roll Stock Width** _____

Panel #	Roll #	Final Length Avg.	Final Width Avg.	Initial Length Avg.	Initial Width Avg.	Notes:	Initial SF	Final SF	Lineal Feet Trench
33(T)	F16B000633	75.00 LF	22.50 LF			22.5; 75 75; 22.5	-	1,688	
34(T)	F16B000633	75.00 LF	22.50 LF			22.5; 75 75; 22.5	-	1,688	
35(S)	F16D000372	579.00 LF	22.50 LF			22.5; 579 579; 22.5	-	13,028	
36(S)	F16D000374	578.00 LF	22.50 LF			22.5; 578 578; 22.5	-	13,005	
							-	-	
							-	-	
							-	-	
							-	-	

Material in Anchor Trench		
Total LF In Trench This Page	-	LF
Depth and Width Allowed in Trench	5	LF
Total SF Trench This Page	**-**	**SF**
Total Panel SF This Page	**29,408**	**SF**
Total Pay Area This Page	**29,408**	**SF**
LF In Trench Previous	179	LF
LF In Trench To Date	179	LF
SF In Trench Previous	893	SF
Total SF in Trench to Date	893	SF
Total Panel SF Previous	143,163	SF
Total Panel SF To Date	172,570	SF
Total Pay Area To Date Including Anchor Trench	**173,463**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	-	SF
Initial Quantity To Date	-	SF

Daily Panel Placement

Page 6

Project Name: WMI TEKOI LANDFILL **Job #** _____ **Deployment Date** 09/19/16

Superintendent: _____ **Material Type:** _____

☐ **Primary** **Secondary** ☐ **Cell** ☐ **Pond** ☐ **Cap** ☐ **Other:** _____

Description (i.e. Phase #, Cell #, Pond # etc.) _____ **Roll Stock Width** _____

Panel # 37(T) Roll #

Final Length Avg.	75.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.		LF
Initial Width Avg.		LF

22.5
75 75
22.5

Notes:

Initial SF	-	Lineal Feet Trench
Final SF	1,688	

Panel # 38(T) Roll #

Final Length Avg.	75.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.		LF
Initial Width Avg.		LF

22.5
75 75
22.5

Notes:

Initial SF	-	Lineal Feet Trench
Final SF	1,688	

Panel # 39(T) Roll #

Final Length Avg.	75.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.		LF
Initial Width Avg.		LF

22.5
75 75
22.5

Notes:

Initial SF	-	Lineal Feet Trench
Final SF	1,688	

Panel # 40(S) Roll #

Final Length Avg.	578.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.		LF
Initial Width Avg.		LF

22.5
578 578
22.5

Notes:

Initial SF	-	Lineal Feet Trench
Final SF	13,005	

Panel # 41(S) Roll #

Final Length Avg.	577.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.		LF
Initial Width Avg.		LF

22.5
577 577
22.5

Notes:

Initial SF	-	Lineal Feet Trench
Final SF	12,983	

Panel # 42(S) Roll #

Final Length Avg.	577.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.		LF
Initial Width Avg.		LF

22.5
577 577
22.5

Notes:

Initial SF	-	Lineal Feet Trench
Final SF	12,983	

Panel # 43(S) Roll #

Final Length Avg.	83.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.		LF
Initial Width Avg.		LF

22.5
83 83
22.5

Notes:

Initial SF	-	Lineal Feet Trench
Final SF	1,868	

Panel # 44(S) Roll #

Final Length Avg.	84.00	LF
Final Width Avg.	22.50	LF
Initial Length Avg.		LF
Initial Width Avg.		LF

22.5
84 84
22.5

Notes:

Initial SF	-	Lineal Feet Trench
Final SF	1,890	

Material in Anchor Trench

Total LF In Trench This Page	-	LF
Depth and Width Allowed in Trench	5	LF
Total SF Trench This Page	**-**	**SF**
Total Panel SF This Page	**47,790**	**SF**
Total Pay Area This Page	**47,790**	**SF**
LF In Trench Previous	179	LF
LF In Trench To Date	179	LF
SF In Trench Previous	893	SF
Total SF in Trench to Date	893	SF
Total Panel SF Previous	172,570	SF
Total Panel SF To Date	220,360	SF
Total Pay Area To Date Including Anchor Trench	**221,253**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	-	SF
Initial Quantity To Date	-	SF

Daily Panel Placement

Page 7

Project Name: WMI TEKOI LANDFILL **Job #** _____ **Deployment Date** 09/17/16

Superintendent: _____ **Material Type:** _____

☐ **Primary** **Secondary** ☐ **Cell** ☐ **Pond** ☐ **Cap** ☐ **Other:** _____

Description (i.e. Phase #, Cell #, Pond # etc.) _____ **Roll Stock Width** _____

Panel #	Roll #	Final Length Avg.	Final Width Avg.	Initial Length Avg.	Initial Width Avg.	Initial SF	Final SF	Lineal Feet Trench
45(S)		81.00 LF	22.50 LF	LF	LF	-	1,823	
46(S)		85.00 LF	22.50 LF	LF	LF	-	1,913	
47(S		62.00 LF	22.50 LF	LF	LF	-	1,395	
48(S)		28.00 LF	22.50 LF	LF	LF	-	630	
49(T)		67.50 LF	22.50 LF	LF	LF	-	1,519	
50(T)		67.00 LF	22.50 LF	LF	LF	-	1,508	
51(T)		68.00 LF	22.50 LF	LF	LF	-	1,530	
		LF	LF	LF	LF	-	-	

Notes:

Panel #	Top	Left	Right	Bottom
45(S)	22.5	81	81	22.5
46(S)	22.5	85	85	22.5
47(S	22.5	62	62	22.5
48(S)	22.5	28	28	22.5
49(T)	22.5	68	67	22.5
50(T)	22.5	67	67	22.5
51(T)	22.5	68	68	22.5

Material in Anchor Trench

Total LF In Trench This Page	-	LF
Depth and Width Allowed in Trench	5	LF
Total SF Trench This Page	**-**	**SF**
Total Panel SF This Page	**10,316**	**SF**
Total Pay Area This Page	**10,316**	**SF**
LF In Trench Previous	179	LF
LF In Trench To Date	179	LF
SF In Trench Previous	893	SF
Total SF in Trench to Date	893	SF
Total Panel SF Previous	220,360	SF
Total Panel SF To Date	230,677	SF
Total Pay Area To Date Including Anchor Trench	**231,569**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	-	SF
Initial Quantity To Date	-	SF

Daily Panel Placement

Page 8

Project Name: WMI TEKOI LANDFILL **Job #** _____ **Deployment Date** 09/19/16

Superintendent: _____ **Material Type:** _____

☐ **Primary** **Secondary** ☐ **Cell** ☐ **Pond** ☐ **Cap** ☐ **Other:** _____

Description (i.e. Phase #, Cell #, Pond # etc.) _____ **Roll Stock Width** _____

Panel #	Roll #	Final Length Avg.	Final Width Avg.	Initial Length Avg.	Initial Width Avg.	Notes:	Initial SF	Final SF	Lineal Feet Trench
52(T)		67.00 LF	22.50 LF			22.5; 67; 67; 22.5	-	1,508	22.5
53(T)		60.00 LF	22.50 LF			22.5; 60; 60; 22.5	-	1,350	22.5
							-	-	
							-	-	
							-	-	
							-	-	
							-	-	
							-	-	

Material in Anchor Trench		
Total LF In Trench This Page	45.00	LF
Depth and Width Allowed in Trench	5	LF
Total SF Trench This Page	**225**	**SF**
Total Panel SF This Page	**2,858**	**SF**
Total Pay Area This Page	**3,083**	**SF**
LF In Trench Previous	179	LF
LF In Trench To Date	224	LF
SF In Trench Previous	893	SF
Total SF in Trench to Date	1,118	SF
Total Panel SF Previous	230,677	SF
Total Panel SF To Date	233,534	SF
Total Pay Area To Date Including Anchor Trench	**234,652**	
Initial Quantity Previous	-	SF
Initial Quantity This Page	-	SF
Initial Quantity To Date	-	SF

Environmental Specialties International Inc.
Repair Report

Project Name WMI TEKOI LANFILL **Job # :** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond**

Job Description: PHASE 2C **Secondary** **Cell** X

Reported by : FERNANDO CABRERA **Cap**

Other:

Damage Codes				
CR --Crease	FS --Failed Seam	MatD --Material Defect	LL --Lost Lap	CF --Custom Fit
DS --Destruct Sample	WR --Wrinkle	WS --Welder Restart	MD --Mechanical Damage	PB --Pipe Boot
SI --Subgrade Irregularity	AV --Airvent	RW --Roller Wrinkle	DO --Damage By Others	BO --Burn Out
SJ --Seam Joint	AO --Add On	CS --Concrete Structure		AT -Air Test

SF Patch Material	Test Type	Abbrv.	Repair Types
684	Vacuum	*S=South	C--Cap Strip
	Air Pressure	*N=North	P--Patch
LF Welded	Spark	*W=West	B--Extrusion Bead
1304.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam or Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
1	DS1	TIE IN/ 3	425' N EOS S	P	5	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
2	DS2	1 / 3	9' W EOS E	P	5	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
3	DS3	3 / 4	425' N EOS S	P	5	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
4	DS4	7/8	10' W EOS E	P	6	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
5	SJ	TI(W)/TI(N)/1	INTERSECTION	P	3	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
6	DO	1	6' N EOS S AND 6' TO E(TI(W) / 1	P	2	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
7	DO	1	4' N EOS S AND 6' TO W(1/2)	P	2	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
8	AT	TIE IN/ 1	33' N EOS S	P	2	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
9	FS	TIE IN/ 1	52' N EOS S	C	13	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
10	AT	TIE IN/ 1	62' N EOS S	P	2	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
11	SJ	TIE IN/1/3	INTERSECTION	P	4	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
12	DO	3	5' N EOS S AND 8' TO W(3/4)	P	2	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
13	SJ	1/2/3/4	INTERSECTION	P	3	x	2		9/15/16	OM	5379	Vacuum	Pass	8/19/16
14	BO	2/4	5' W EOS E	P	2	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
15	DO	3	11' N EOS S AND 8' TO W (3/4)	P	2	x	2		9/15/16	OM	5379	Vacuum	Pass	9/19/16
16	DO	3	18' N EOS S AND 8' TO W(3/4)	P	2	x	2		9/15/16	OM	5379	Vacuum	Pass	8/19/16
17	AT	TIE IN/ 3	531' N EOS S	P	2		2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
18	SJ	TIE IN/ 3/ 5	INTERSECTION	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
19	AT	TIE IN/ 5	7' N EOS S	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
20	SJ	3/4/5/6	INTERSECTION	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16

Environmental Specialties International Inc.
Repair Report

Project Name WMI TEKOI LANFILL **Job # :** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond**

Job Description: PHASE 2C **Secondary** **Cell** X

Reported by : FERNANDO CABRERA **Cap**

Other:

Damage Codes				
CR --Crease	FS --Failed Seam	MatD --Material Defect	LL --Lost Lap	CF --Custom Fit
DS --Destruct Sample	WR --Wrinkle	WS --Welder Restart	MD --Mechanical Damage	PB --Pipe Boot
SI --Subgrade Irregularity	AV --Airvent	RW --Roller Wrinkle	DO --Damage By Others	BO --Burn Out
SJ --Seam Joint	AO --Add On	CS --Concrete Structure		AT -Air Test

SF Patch Material	Test Type	Abbrv.	Repair Types
684	Vacuum	*S=South	C--Cap Strip
	Air Pressure	*N=North	P--Patch
LF Welded	Spark	*W=West	B--Extrusion Bead
1304.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam or Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
21	SJ	5/4/6	INTERSECTION	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
22	SJ	TIE IN/5/7	INTERSECTION	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
23	DO	TIE IN/ 7	3' N EOS S	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
24	AT	TIE IN/ 7	6' NEOS S	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
25	SJ	5/6/7/8	INTERSECTION	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	8/19/16
26	DO	TIE IN/7	TOP OF ANCHOR TRENCH	P	7	x	3		9/16/16	OM	5379	Vacuum	Pass	9/19/16
27	DS6	4/11	265' N EOS S	P	4	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
28	DS7	12/19	100' N EOS S	P	4	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
29	DS8	20/22	11' E EOS W	P	4	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
30	DS9	11/12	500' N EOS S	P	4	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
31	DS10	19/20	500' N EOS S	P	4	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
32	DS11	15/16	5' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
33	DS12	20/27	400' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
34	DS13	27/28	340' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
35	DS14	28/35	500' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
36	SJ	4/11/6/13	INTERSECTION	P	3	x	3		9/16/16	OM	5379	Vacuum	Pass	9/19/16
37	SJ	11/13/14	INTERSECTION	P	2	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
38	SJ	11/12/14	INTERSECTION	P	4	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
39	SJ	20/27/22/29	INTERSECTION	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
40	BO	12/14	8' E EOS W	P	3	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16

Environmental Specialties International Inc.
Repair Report

Project Name WMI TEKOI LANFILL **Job # :** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond**

Job Description: PHASE 2C **Secondary** **Cell** X

Reported by : FERNANDO CABRERA **Cap**

Other:

Damage Codes				
CR --Crease	FS --Failed Seam	MatD --Material Defect	LL --Lost Lap	CF --Custom Fit
DS --Destruct Sample	WR --Wrinkle	WS --Welder Restart	MD --Mechanical Damage	PB --Pipe Boot
SI --Subgrade Irregularity	AV --Airvent	RW --Roller Wrinkle	DO --Damage By Others	BO --Burn Out
SJ --Seam Joint	AO --Add On	CS --Concrete Structure		AT -Air Test

SF Patch Material	Test Type	Abbrv.	Repair Types
684	Vacuum	*S=South	C--Cap Strip
	Air Pressure	*N=North	P--Patch
LF Welded	Spark	*W=West	B--Extrusion Bead
1304.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam or Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
41	SJ	12/19/14/21	INTERSECTION	P	6	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
42	SJ	19/20/21/22	INTERSECTION	P	3	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
43	AT	6/13	76' N EOS S	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
44	SJ	6/13/8/15	INTERSECTION	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
45	SJ	13/14/15/16	INTERSECTION	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
46	SJ	14/21/16/23	INTERSECTION	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
47	BO	16/23	TOP OF ANCHOR TRENCH	P	6	x	2		6/17/16	OM	5379	Vacuum	Pass	9/19/16
48	SJ	21/22/23/24	INTERSECTION	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
49	BO	11/12	273' N EOS S	P	3	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
50	BO	11/12	38' N EOS S	P	3	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
51	DO	2/4	9' E EOS W	P	1	x	1		9/17/16	OM	5379	Vacuum	Pass	9/19/16
52	SJ	2/9/4/11	INTERSECTION	P	3	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
53	SJ	9/10/11/12	INTERSECTION	P	5	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
54	DO	13	8' E EOS E AND 1' TO S(10/12)	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
55	DO	12	5' N EOS S AND 7' TO W(12/19)	O	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
56	SJ	10/17/12/19	INTERSECTION	P"	3	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
57	SJ	17/18/19/20	INTERSECTION	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
58	DO	27	3' N TO S MIDDLE PANEL	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
59	DO	27	10' N TO S	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
60	DO	27	4' N TO S MIDDLE PANEL	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16

Environmental Specialties International Inc.
Repair Report

Project Name WMI TEKOI LANFILL **Job # :** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond**

Job Description: PHASE 2C **Secondary** **Cell** X

Reported by : FERNANDO CABRERA **Cap**

Other:

Damage Codes				
CR --Crease	FS --Failed Seam	MatD --Material Defect	LL --Lost Lap	CF --Custom Fit
DS --Destruct Sample	WR --Wrinkle	WS --Welder Restart	MD --Mechanical Damage	PB --Pipe Boot
SI --Subgrade Irregularity	AV --Airvent	RW --Roller Wrinkle	DO --Damage By Others	BO --Burn Out
SJ --Seam Joint	AO --Add On	CS --Concrete Structure		AT -Air Test

SF Patch Material	Test Type	Abbrv.	Repair Types
684	Vacuum	*S=South	C--Cap Strip
	Air Pressure	*N=North	P--Patch
LF Welded	Spark	*W=West	B--Extrusion Bead
1304.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam or Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
61	DS5	TIE IN / 10	7' W TO E	P	4	x	2		9/16/16	OM	5379	Vacuum	Pass	9/19/16
62	DO	12	12' N EOS S AND 7' TO W(12/19)	P	2	x	2		9/17/16	OM	5379	Vacuum	Pass	9/19/16
63	DS15	35/36	160' S EOS N	P	4	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
64	DS16		225' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
65	DS17	40/41	100' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
66	DS18	41/42	150' SBEOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
67	DS19	26/33	5' N EOS S	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
68	DS20	38/39	5' N EOS S	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
69	DS21	36/34	11' E EOS W	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
70	DS22	44/45	25' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
71	DS23	46/47	50' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
72	DS24	50/51	5' S EOS N	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
73	SJ	27/28/29/38	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
74	SJ	28/30/43	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
75	SJ	28/35/43	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
76	SJ	35/36/43/44	INTERSECTION	P	4	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
77	SJ	36/40/44/45	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
78	SJ	40/41/46/46	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
79	SJ	41/42/46/47	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
80	DO	29	7' E EOS W AND 5' TO W(27/29)	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16

Environmental Specialties International Inc.
Repair Report

Project Name WMI TEKOI LANFILL **Job # :** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond**

Job Description: PHASE 2C **Secondary** **Cell** X

Reported by : FERNANDO CABRERA **Cap**

Other:

Damage Codes				
CR --Crease	FS --Failed Seam	MatD --Material Defect	LL --Lost Lap	CF --Custom Fit
DS --Destruct Sample	WR --Wrinkle	WS --Welder Restart	MD --Mechanical Damage	PB --Pipe Boot
SI --Subgrade Irregularity	AV --Airvent	RW --Roller Wrinkle	DO --Damage By Others	BO --Burn Out
SJ --Seam Joint	AO --Add On	CS --Concrete Structure		AT -Air Test

SF Patch Material	Test Type	Abbrv.	Repair Types
684	Vacuum	*S=South	C--Cap Strip
	Air Pressure	*N=North	P--Patch
LF Welded	Spark	*W=West	B--Extrusion Bead
1304.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam or Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
81	SJ	22/29/24/31	INTERSECTION	P	3	x	3		9/19/16	OM	5379	Vacuum	Pass	9/19/16
82	BO	24/31	4' N EOS	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
83	SJ	29/30/31/32	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
84	SJ	32/49/30/43	INTERSECTION	P	3	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
85	SJ	43/44/49/50	INTERSECTION	P	3	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
86	SJ	44/45/50/51	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
87	DO	24	5' S EOS N AND 4' TO W(24/31)	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
88	BO	31/32	8' S EOS N	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
89	BO	28/35	392' S EOS N	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
90	DO	19	6' E EOS W AND 2' TO S(17/19)	P	1	x	1		9/18/16	OM	5379	Vacuum	Pass	9/19/16
91	DO	19	6' E EOS W AND 8' TO S(17/19)	P	1	x	1		9/18/16	OM	5379	Vacuum	Pass	9/19/16
92	SJ	18/25/20/27	INTERSECTION	P	3	x	3		9/18/16	OM	5379	Vacuum	Pass	9/19/16
93	SJ	25/26/27/28	INTERSECTION	P	5	x	3		9/18/16	OM	5379	Vacuum	Pass	9/19/16
94	DO	28	6' E EOS W ANDB1' TO S(26/28)	P	2	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
95	DO	28	6' E EOS W AND 8' TO S(26/28	P	2	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
96	SJ	26/33/28/35	INTERSECTION	P	2	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
97	DO	35	12' E EOS W AND 3' TO S(33/35)	P	2	x	1		9/18/16	OM	5379	Vacuum	Pass	9/19/16
98	DO	35	4' E EOS W AND 4' TO S(33/35	P	4	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
99	DO	35	4' E EOS W AND 11' TO S(33/35)	P	1	x	1		9/19/16	OM	5379	Vacuum	Pass	9/19/16
100	DO	35	4' E EOS W AND 18' TO W(33/35)	P	3	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16

Environmental Specialties International Inc.
Repair Report

Project Name WMI TEKOI LANFILL **Job # :** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond**

Job Description: PHASE 2C **Secondary** **Cell** X

Reported by : FERNANDO CABRERA **Cap**

Other:

Damage Codes				
CR --Crease	FS --Failed Seam	MatD --Material Defect	LL --Lost Lap	CF --Custom Fit
DS --Destruct Sample	WR --Wrinkle	WS --Welder Restart	MD --Mechanical Damage	PB --Pipe Boot
SI --Subgrade Irregularity	AV --Airvent	RW --Roller Wrinkle	DO --Damage By Others	BO --Burn Out
SJ --Seam Joint	AO --Add On	CS --Concrete Structure		AT -Air Test

SF Patch Material	Test Type	Abbrv.	Repair Types
684	Vacuum	*S=South	C--Cap Strip
	Air Pressure	*N=North	P--Patch
LF Welded	Spark	*W=West	B--Extrusion Bead
1304.00	Air Lance	*E=East	

Repair Number	Damage Code	Seam or Panel Number	Location	Repair Type	Patch (Feet)			Bead (Inches)	Date Welded	Operator Name	Machine Number	Test Type	Test Results	Date Complete
101	DO	35	4' E EOS W AND 24' TO S(33/35)	P	1	x	1		9/19/16	OM	5379	Vacuum	Pass	9/19/16
102	DO	35	4' E EOS W AND 34' TO S(33/35	P	2	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
103	DO	35	4' E EOS W AND 40' TO S(33/35)	P	2	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
104	SJ	33/34/35/36	INTERSECTION	P	2	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
105	SJ	34/37/36/40	INTERSECTION	P	5	x	2		9/18/16	OM	5379	Vacuum	Pass	9/19/16
106	SJ	37/38/40/41	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
107	DO	41	4' E EOS W AND 3' TO S	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
108	SJ	38/39/41/42	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
109	BO	39/42	8' E EIS W	P	2	x	3		9/19/16	OM	5379	Vacuum	Pass	9/19/16
110	DO	42	7' E EOS E AND 6' TO S(39/42)	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
111	BO	45/51	5' E EOS W	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
112	SJ	45/46/51/52	INTERSECTION	P	3	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
113	SJ	48/52/53	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
114	SJ	46/48/52	INTERSECTION	P	2	x	2		9/19/16	OM	5379	Vacuum	Pass	9/19/16
115						x								
116						x								
117						x								
118						x								
119						x								
120						x								

Environmental Specialties International Inc.

Seam Control Form

Project Name: WMI TEKOI LANFILL **Job #** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond** **Air Pressure Test** 30 PSI

Job Description: PHASE 2C **Secondary** **Cell** X **Air Pressure Hold Time** 5 Minutes

Reported By FERNANDO CABRERA **Cap** **Allowable Air Pressure Loss** 3 PSI

Other

11,054 **Total LF of Welding to Date Combined** **Extrusion LF Weld Total To Date** **374** **Fusion LF Weld Total To Date:** **10,680**

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In / PSI IN	AT Time Out / PSI OUT	PSI Loss	Test Results
9/15/16	TIE IN / 1	31	11:10 AM	ML	4171	4.5	850		9/15/16	Air Pressure	3:05 PM / 30	3:10 PM / 30		Pass
9/15/16	TIE IN / 1	15	11:10 AM	ML	4171	4.5	850		9/15/16	Air Pressure	2:55 PM / 30	3:00 PM / 30		Pass
9/15/16	TIE IN / 1	5	11:10 AM	ML	4171	4.5	850		9/15/16	Air Pressure	2:40 PM / 30	2:45 PM / 30		Pass
9/15/16	TIE IN / 1	9	11:10 AM	ML	4171	4.5	850		9/15/16	Air Pressure	2:06 PM / 30	2:11 PM / 30		Pass
9/15/16	TIE IN / 3	531	11:34 AM	ML	4171	6.5	850		9/15/16	Air Pressure	2:09 PM / 30	2:14 PM / 30		Pass
9/15/16	TIE IN / 3	44	11:34 AM	ML	4171	6.5	850		9/15/16	Air Pressure	3:15 PM / 30	3:20 PM / 30		Pass
9/15/16	1 / 3	22	11:30 AM	CC	2028	4	850		9/15/16	Air Pressure	2:10 PM / 30	2:15 PM / 30		Pass
9/15/16	1 / 2	80	11:20 AM	CC	2028	4	850		9/15/16	Air Pressure	2:14 PM / 30	2:19 PM / 30		Pass
9/15/16	2 / 4	4	1:54 PM	CC	2028	35	850		9/15/16	Air Pressure	2:17 PM / 30	2:22 PM / 30		Pass
9/15/16	2 / 4	16	1:54 PM	CC	2028	3.5	850		9/15/16	Air Pressure	2:17 PM / 30	2:22 PM / 30		Pass
9/15/16	3 / 4	572	1:58 PM	CC	2028	4	850		9/15/16	Air Pressure	2:11 PM / 30	2:16 PM / 30		Pass
9/15/16	3 / 5	21	3:18 PM	CC	2028	3.5	850		9/15/16	Air Pressure	3:30 PM / 30	15'35 / 30		Pass
9/15/16	4 / 6	22.5	3:26 PM	CC	2028	3.5	850		9/15/16	Air Pressure	3:34 PM / 30	3:39 PM / 30		Pass
9/15/16	5 / 7	21	3:15 PM	ML	4171	4.5	850		8/15/16	Air Pressure	3:46 PM / 30	3:51 PM / 30		Pass
9/15/16	6 / 8	22.5	3:21 PM	ML	4171	4.5	850		9/15/16	Air Pressure	3:47 PM / 30	3:52 PM / 30		Pass
9/15/16	TIE IN / 5	7	3:55 PM	ML	4171	6.6	850		9/15/16	Air Pressure	4:14 PM / 30	4:19 PM / 30		Pass
9/15/16	TIE IN / 5	76	3:55 PM	ML	4171	6.5	850		9/15/16	Air Pressure	3:15 PM / 30	4:20 PM / 30		Pass

Environmental Specialties International Inc.

Seam Control Form

Project Name: WMI TEKOI LANFILL **Job #** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond** **Air Pressure Test** 30 PSI

Job Description: PHASE 2C **Secondary** **Cell** X **Air Pressure Hold Time** 5 Minutes

Reported By FERNANDO CABRERA **Cap** **Allowable Air Pressure Loss** 3 PSI

Other

11,054 **Total LF of Welding to Date Combined** **Extrusion LF Weld Total To Date** **374** **Fusion LF Weld Total To Date:** **10,680**

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In / PSI IN	AT Time Out / PSI OUT	PSI Loss	Test Results
9/15/16	TIE IN / 7	61	4:06 PM	ML	4171	65	850		9/15/16	Air Pressure	4:23 PM / 30	4:28 PM / 30		Pass
9/15/16	5 / 4	7	3:35 PM	CC	2028	4	850		9/15/16	Air Pressure	3:42 PM / 30	3:47 PM / 30		Pass
9/15/16	5 / 6	83	3:36 PM	CC	2028	4	850		9/15/16	Air Pressure	3:58 PM / 30	4:03 PM / 30		Pass
9/15/16	7 / 8	64	3:45 PM	CC	2028	4	858		9/15/16	Air Pressure	3:59 PM / 30	4:04 PM / 30		Pass
9/15/16	TIE IN / 1	23	4:29 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/15/16	TIE IN / 2	15	4:37 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/16/16	2 / 9	78	10:30 AM	CC	2028	4	850		9/16/16	Air Pressure	10:58 AM / 30	11:03 AM / 30		Pass
9/16/16	9 / 10	78	10:30 AM	ML	4171	6.5	850		9/16/16	Air Pressure	10:59 AM / 30	11:04 AM / 30		Pass
9/16/16	4 / 11	578	'10:40 AM	CC	2028	4	850		9/16/16	Air Pressure	11:43 AM / 30	11:48 AM / 30		Pass
9/16/16	11 / 12	34	10:55 AM	ML	4171	6.5	850		9/16/16	Air Pressure	11:05 AM / 0:00	11:10 AM / 30		Pass
9/16/16	11 / 12	233	10:55 AM	ML	4171	6.5	850		9/16/16	Air Pressure	1:50 PM / 30	1:55 PM / 30		Pass
9/16/16	11 / 12	299	10:55 AM	ML	4171	6.5	850		9/16/16	Air Pressure	1:15 PM / 30	1:20 PM / 30		Pass
9/16/16	11 / 13	22.5	11:35 AM	CC	2028	4	850		9/16/16	Air Pressure	1:12 PM / 30	1:17 PM / 30		Pass
9/16/16	6 / 13	76	11:55 AM	CC	2028	4	850		9/16/16	Air Pressure	1:13 PM / 30	1:18 PM / 30		Pass
9/16/16	12 / 14	7	1:23 PM	ML	4171	6.5	850		9/16/16	Air Pressure	1:23 PM / 30	1:28 PM / 30		Pass
9/16/16	12 / 14	17		ML	4171	6.5	850		9/16/16	Air Pressure	1:23 PM / 30	1:28 PM / 30		Pass
9/16/16	11 / 14	4	1:07 PM	CC	2028	4	850		9/16/16	Air Pressure	1:29 PM / 30	1:34 PM / 30		Pass
9/16/16	13 / 14	82	1:07 PM	CC	2028	4	858		9/16/16	Air Pressure	1:29 PM / 30	1:34 PM / 30		Pass
9/16/16	8 / 15	64	1:19 PM	CC	2028	4	850		9/17/16	Air Pressure	8:08 AM / 30	8:13 AM / 30		Pass
9/16/16	15 / 16	65	1:22 PM	ML	4163	6.5	850		9/17/16	Air Pressure	8:11 AM / 30	8:16 AM / 30		Pass
9/16/16	10 / 17	74	3:28 PM	CC	2028	4	850		9/16/16	Air Pressure	4:12 PM / 30	4:17 PM / 30		Pass
9/16/16	17 / 18	75	3:39 PM	ML	2028	4	850		9/16/16	Air Pressure	4:13 PM / 30	4:18 PM / 30		Pass
9/16/16	12 / 19	574	3:45 PM	CC	2028	4	850		9/16/16	Air Pressure	5:15 PM / 30	5:20 PM / 30		Pass
9/16/16	19 / 20	578	4:42 PM	ML	4163	6.5	860		9/16/16	Air Pressure	8:09 AM / 30	8:14 AM / 30		Pass

Environmental Specialties International Inc.

Seam Control Form

Project Name: WMI TEKOI LANFILL **Job #** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond** **Air Pressure Test** 30 PSI

Job Description: PHASE 2C **Secondary** **Cell** X **Air Pressure Hold Time** 5 Minutes

Reported By FERNANDO CABRERA **Cap** **Allowable Air Pressure Loss** 3 PSI

Other

11,054 **Total LF of Welding to Date Combined** **Extrusion LF Weld Total To Date** **374** **Fusion LF Weld Total To Date:** **10,680**

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In / PSI IN	AT Time Out / PSI OUT	PSI Loss	Test Results
9/16/16	6 / 13	5	11:55 AM	CC	2028	4	850		9/17/16	Air Pressure	8:09 AM / 30	8:14 AM / 30		Pass
9/16/16	19 / 21	22.5	5:02 PM	CC	2028	4	850		9/16/16	Air Pressure	5:19 PM / 30	5:24 PM / 30		Pass
9/16/16	14 / 21	83	5:05 PM	CC	2028	4	850		9/16/16	Air Pressure	5:19 PM / 30	5:24 PM / 30		Pass
9/16/16	20 / 22	22.5	4:58 PM	CC	2028	4	850		9/16/16	Air Pressure	5:29 PM / 30	5:34 PM / 30		Pass
9/16/16	21 / 22	81	5:13 PM	ML	4163	6.5	860		9/16/16	Air Pressure	5:30 PM / 30	5:35 PM / 30		Pass
9/16/16	16 / 23	66	5:15 PM	CC	2028	4	850		9/17/16	Air Pressure	8:12 AM / 30	8:17 AM / 30		Pass
9/16/16	23 / 24	66	5:18 PM	ML	4163	6.5	860		9/17/16	Air Pressure	8:16 AM / 30	8:21 AM / 30		Pass
9/16/16	13 / 15	22.5	5:31 PM	CC	2028	3.5	850		9/17/16	Air Pressure	8:10 AM / 30	8:15 AM / 30		Pass
9/16/16	14 / 16	22.5	5:34 PM	CC	2028	3.5	850		9/17/16	Air Pressure	8:10 AM / 30	8:15 AM / 30		Pass
1/6/00	21 / 23	22.5	5:37 PM	CC	2028	3.5	850		9/17/16	Air Pressure	8:15 AM / 30	8:20 AM / 30		Pass
9/16/16	22 / 24	22.5	5:40 PM	CC	2028	3.5	850		9/17/16	Air Pressure	8:15 AM / 30	8:20 AM / 30		Pass
9/16/16	18 / 20	22.5	6:00 PM	CC	2028	3.5	850		9/17/16	Air Pressure	9:15 AM / 30	9:20 AM / 30		Pass
9/16/16	17 / 19	22.5	6:04 PM	CC	2028	3.5	850		9/17/16	Air Pressure	9:15 AM / 30	9:20 AM / 30		Pass
9/16/16	10 / 12	22.5	6:07 PM	CC	2028	3.5	850		9/17/16	Air Pressure	9:14 AM / 30	9:19 AM / 30		Pass
9/16/16	9 / 11	22.5	6:10 PM	CC	2028	3.5	850		9/17/16	Air Pressure	9:14 AM / 30	9:19 AM / 30		Pass
9/16/16	TIE IN / 2	7	9:09 AM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/16/16	TIE IN / 9	22.5	9:10 AM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/16/16	TIE IN / 10	22.5	9:22 AM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/16/16	TIE IN / 17	22.5	3:22 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/16/16	TIE IN / 18	12.5	4:32 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/17/16	18 / 25	75	10:40 AM	CC	2028	4	850		9/17/16	Air Pressure				Pass
9/17/16	25 / 26	75	10:45 AM	ML	4163	6.5	860		9/17/16	Air Pressure	11:45 AM / 30	11:50 AM / 30		Pass
9/17/16	20 / 27	579	11:14 AM	CC	2028	4	850		9/17/16	Air Pressure	1:33 PM / 30	1:38 PM / 30		Pass
9/17/16	27 / 28	580	11:27 AM	ML	4163	6.5	860		9/17/16	Air Pressure	1:34 PM / 30	1:39 PM / 30		Pass

Environmental Specialties International Inc.

Seam Control Form

Project Name: WMI TEKOI LANFILL **Job #** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond** **Air Pressure Test** 30 PSI

Job Description: PHASE 2C **Secondary** **Cell** X **Air Pressure Hold Time** 5 Minutes

Reported By FERNANDO CABRERA **Cap** **Allowable Air Pressure Loss** 3 PSI

Other

11,054 **Total LF of Welding to Date Combined** **Extrusion LF Weld Total To Date** **374** **Fusion LF Weld Total To Date:** **10,680**

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In / PSI IN	AT Time Out / PSI OUT	PSI Loss	Test Results
9/17/16	27 / 29	22.5	1:51 PM	CC	2028	4	850		9/17/16	Air Pressure	2:20 PM / 30	2:25 PM / 30		Pass
9/17/16	22 / 29	79	1:57 PM	CC	2028	4	850		9/17/16	Air Pressure	2:23 PM / 30	2:28 PM / 30		Pass
9/17/16	28 / 30	22.5	2:00 PM	ML	4163	6.4	860		9/17/16	Air Pressure	12:20 AM / 30	2:25 PM / 30		Pass
9/17/16	29 / 30	78	2:06 PM	ML	4163	6.5	860		9/17/16	Air Pressure	2:19 PM / 30	2:24 PM / 30		Pass
9/17/16	29 / 31	22.5	6:28 PM	CC	4180	6	850		9/18/16	Air Pressure	8:42 AM / 30	8:47 AM / 30		Pass
9/17/16	30 / 32	22.5	6:31 PM	CC	4180	6	850		9/18/16	Air Pressure	8:42 AM / 30	8:47 AM / 30		Pass
9/17/16	24 / 31	65	14:20 PM	ML	4163	6.5	860		9/17/16	Air Pressure	2:41 PM / 30	2:46 PM / 30		Pass
9/17/16	31 / 32	10	14:33 PM	ML	4163	6.5	860		9/18/16	Air Pressure	8:44 AM / 30	8:49 AM / 30		Pass
9/17/16	31 / 32	53	14:33 PM	ML	4163	6.5	860		9/18/16	Air Pressure	8:44 AM / 30	8:49 AM / 30		Pass
9/17/16	26 / 33	75	15:02 PM	CC	4180	6.5	850		9/18/16	Air Pressure	8:08 AM / 30	8:13 AM / 30		Pass
9/17/16	33 / 34	75	4:06 PM	ML	4163	6.5	850		9/18/16	Air Pressure	8:09 AM / 30	8:14 AM / 30		Pass
9/17/16	28 / 35	392	4:34 PM	CC	4180	6.5	850		9/18/16	Air Pressure	8:26 AM / 30	8:31 AM / 30		Pass
9/17/16	28 / 35	186	4:34 PM	CC	4180	6.5	850		9/18/16	Air Pressure	8:25 AM / 38	8:30 AM / 30		Pass
9/17/16	35 / 36	40	4:45 PM	ML	4163	6.5	860		9/18/16	Air Pressure	8:54 AM / 30	8:59 AM / 30		Pass
9/17/16	34 / 36	22.5	6:05 PM	CC	4180	6	850		9/18/16	Air Pressure	8:19 AM / 30	8:24 AM / 30		Pass
9/17/16	33 / 35	22.5	6:08 PM	CC	4180	6	850		9/18/16	Air Pressure	8:16 AM / 37	8:21 AM / 30		Pass
8/17/16	26 / 28	22.5	6:11 PM	CC	4180	6	858		9/18/16	Air Pressure	8:06 AM / 30	8:11 AM / 30		Pass
9/17/16	25 / 27	22.5	6:14 PM	CC	4188	6	850		9/18/16	Air Pressure	8:05 AM / 30	8:10 AM / 30		Pass
9/18/16	34 / 37	75	10:24 AM	ML	4163	6.5	860		9/18/16	Air Pressure	7:21 AM / 30	7:26 AM / 30		Pass
9/18/16	37 / 38	75	10:34 AM	ML	4163	6.5	860		9/18/16	Air Pressure	7:25 AM / 30	7:30 AM / 30		Pass
9/18/16	38 / 39	75	10:45 AM	ML	4163	6.5	868		9/18/16	Air Pressure	7:30 AM / 30	7:35 AM / 30		Pass
9/18/16	36 / 40	379	11:20 AM	CC	2028	6.5	850		9/18/16	Air Pressure	7:20 AM / 30	7:25 AM / 30		Pass
9/18/16	40 / 41	378	1:35 PM	ML	4163	6.5	850		9/19/16	Air Pressure	7:26 AM / 30	7:31 AM / 30		Pass
9/18/16	41 / 42	379	1:58 PM	CC	2028	4	850		9/19/16	Air Pressure	7:33 AM / 30	7:38 AM / 30		Pass

Environmental Specialties International Inc.
Seam Control Form

Project Name: WMI TEKOI LANFILL **Job #** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond** **Air Pressure Test** 30 PSI

Job Description: PHASE 2C **Secondary** **Cell** X **Air Pressure Hold Time** 5 Minutes

Reported By FERNANDO CABRERA **Cap** **Allowable Air Pressure Loss** 3 PSI

Other

11,054 **Total LF of Welding to Date Combined** **Extrusion LF Weld Total To Date** **374** **Fusion LF Weld Total To Date:** **10,680**

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In PSI IN	AT Time Out PSI OUT	PSI Loss	Test Results
9/18/16	30 / 43	83	2:42 PM	EG	4180	6.5	850		9/19/16	Air Pressure	8:28 AM / 37	8:33 AM / 30		Pass
9/18/16	43 / 44	83	2:52 PM	EG	4180	6.5	850		9/19/16	Air Pressure	8:26 AM / 30	8:31 AM / 30		Pass
9/18/16	44 / 45	83	2:55 PM	ML	4163	6.5	860		9/19/16	Air Pressure	8:19 AM / 30	8:24 AM / 30		Pass
9/18/16	45 / 46	84	3:02 PM	EG	4180	6.5	850		9/19/16	Air Pressure	8:17 AM / 30	8:22 AM / 30		Pass
9/18/16	46 / 48	21	3:14 PM	EG	4180	6.5	850		9/19/16	Air Pressure	8:38 AM / 30	8:43 AM / 30		Pass
9/18/16	46 / 47	62	3:18 PM	EG	4180	6.5	850		9/19/16	Air Pressure	8:16 AM / 30	8:21 AM / 30		Pass
9/18/16	47 / 48	22.5	3:15 PM	ML	4163	6.5	860		9/19/16	Air Pressure	8:38 AM / 30	8:43 AM / 30		Pass
9/18/16	42 / 47	22.5	3:33 PM	ML	4163	6.5	860		9/19/16	Air Pressure	8:15 AM / 30	8:20 AM / 30		Pass
9/18/16	41 / 46	22.5	3:35 PM	ML	4163	6.5	860		8/19/16	Air Pressure	8:15 AM / 30	8:20 AM / 30		Pass
9/18/16	40 / 45	22.5	3:37 PM	ML	4163	6.5	860		9/19/16	Air Pressure	8:18 AM / 30	8:22 AM / 30		Pass
9/18/16	36 / 44	22.5	3:40 PM	ML	4163	6.5	860		9/19/16	Air Pressure	8:18 AM / 30	8:22 AM / 30		Pass
9/18/16	35 / 43	22.5	3:43 PM	ML	4163	6.5	850		9/19/16	Air Pressure	8:26 AM / 30	8:31 AM / 30		Pass
9/18/16	49 / 43	22.5	4:45 PM	CC	2028	3.5	850		9/19/16	Air Pressure	8:30 AM / 30	8:35 AM / 30		Pass
9/18/16	44 / 50	22.5	4:18 PM	CC	2028	3.5	850		9/19/16	Air Pressure	8:35 AM / 30	8:40 AM / 30		Pass
9/18/16	45 / 51	22.5	4:57 PM	CC	2028	3.5	850		9/19/16	Air Pressure	8:35 AM / 30	8:40 AM / 30		Pass
9/18/16	34 / 49	66	3:50 PM	EG	4180	6.5	850		9/19/16	Air Pressure	8:29 AM / 30	8:34 AM / 30		Pass
9/18/16	49 / 50	66	3:58 PM	ML	4163	6.5	860		9/18/16	Air Pressure	8:31 AM / 30	8:36 AM / 30		Pass
9/18/16	50 / 51	67	4:45 PM	CC	2028	4	850		9/19/16	Air Pressure	8:36 AM / 30	8:41 AM / 30		Pass
9/18/16	39 / 42	8	3:25 PM	CC	2028	3.5	850		9/19/16	Air Pressure	7:43 AM / 30	7:48 AM / 30		Pass
9/18/16	39 / 42	13	3:25 PM	CC	2028	3.5	858		9/19/16	Air Pressure	7:39 AM / 30	7:44 AM / 30		Pass
9/18/16	38 / 41	22.5	3:28 PM	CC	2028	3.5	850		9/19/16	Air Pressure	7:32 AM / 30	7:37 AM / 30		Pass
9/18/16	37 / 40	22.5	3:31 PM	CC	2028	3.5	850		9/19/16	Air Pressure	7:22 AM / 38	7:27 AM / 30		Pass
9/17/16	TIE IN / 18	10	3:20 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/17/16	TIE IN / 25	22.5	3:24 PM	OM	5379		500	500	9/19/16	Vacuum				Pass

Environmental Specialties International Inc.

Seam Control Form

Project Name: WMI TEKOI LANFILL **Job #** 16-05-1249 **Superintendent:** ROBERTO MILLAN

Material Type: 60MLHDPE TEXTURED/SMOOTH **Primary** X **Pond** **Air Pressure Test** 30 PSI

Job Description: PHASE 2C **Secondary** **Cell** X **Air Pressure Hold Time** 5 Minutes

Reported By FERNANDO CABRERA **Cap** **Allowable Air Pressure Loss** 3 PSI

Other

11,054 **Total LF of Welding to Date Combined** **Extrusion LF Weld Total To Date** **374** **Fusion LF Weld Total To Date:** **10,680**

Weld Date	Seam No.	Seam Length	Time Welded	Operator Name/ ID	Mach No.	Mach Speed	Mach Temp	Preheat Temp	Test Date	Test Type	AT Time In / PSI IN	AT Time Out / PSI OUT	PSI Loss	Test Results
9/17/16	TIE IN / 26	22.5	3:33 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/17/16	TIE IN / 33	22.5	5:40 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/17/16	TIE IN / 34	9	5:49 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/18/16	TIE IN / 34	13.5	3:25 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/18/16	TIE IN / 37	22.5	3:30 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/18/16	TIE IN / 38	22.5	3:37 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/18/16	TIE IN / 39	22.5	3:50 PM	OM	5379		500	500	9/19/16	Vacuum				Pass
9/18/16	35 / 36	538		ML	4163	6.5	860		9/18/16	Air Pressure	8:55 AM / 30	9:00 AM / 30		Pass
9/19/16	51 / 52	67	11:20 AM	CC	2028	4	850		9/19/16	Air Pressure	11:50 AM / 30	11:55 AM / 30		Pass
9/19/16	52 / 53	60	11:30 AM	CC	2028	4	850		9/19/16	Air Pressure	11:54 AM / 30	11:59 AM / 30		Pass
9/19/16	48 / 52	5	11:35 AM	CC	2028	4	850		9/19/16	Air Pressure	11:53 AM / 30	11:58 AM / 30		Pass
9/19/16	46 / 52	22.5	11:43 AM	CC	2028	3.5	850		9/19/16	Air Pressure	11:51 AM / 30	11:56 AM / 30		Pass
9/19/16	48 / 53	22.5	11:47 AM	CC	2028	3.5	850		9/19/16	Air Pressure	11'55 / 30	12:00 PM / 30		Pass
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