Geosyntec consultants

5901 Broken Sound Parkway, NW, Suite 300
Boca Raton, Florida 33487
PH 561.995.0900
FAX 561.995.0925
www.geosyntec.com

December 23, 2009

Mr. Thomas Lubozynski, P.E.
Environmental Administrator – Waste Management
Florida Department of Environmental Protection
Central District Office
3319 Maguire Boulevard, Suite 232
Orlando, Florida 32803

RE: Vista Class III Landfill
SC48-0165969-014
Certification of Construction Completion
Cell 2 Liner System and Leachate Collection System

Dear Mr. Lubozynski:

On behalf of Waste Management of Florida, Inc., Geosyntec Consultants (Geosyntec) is pleased to submit the enclosed construction certification documents to the Florida Department of Environmental Protection (FDEP) for the above referenced project. These documents include the FDEP Certification of Construction Completion Form 62-701.900(2)2 and Geosyntec's Final Construction Quality Assurance Certification Report and associated As-Built Drawings.

If you have any questions regarding the submittal please contact me at my email address dschauer@geosyntec.com or mobile telephone 561-239-9467.

Respectfully,

Dan Schauer, P.G.
Principal

Enclosures

Copies To: Sheree Grant, District Engineer, WMIF
Jay Davoll, P.E., City of Apopka
Juan Quiroz, P.E., Geosyntec Consultants
John Ladner, P.E., CDM

DEP Form # 62-701.900(2)
Form Title Certification of Construction Completion
Effective Date May 19, 1994

DEP Application No. _____
(Filled by DEP)

Florida Department of Environmental Protection
Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, FL 32399-2400

Certification of Construction Completion of a Solid Waste Management Facility

DEP Construction Permit No: SC48-0165969-014 County: Orange

Name of Project: Cell 2 Construction

Name of Owner: Vista Landfill, LLC

Name of Engineer: Geosyntec Consultants

Type of Project: Class III landfill cell construction.

Cost: Estimate $ 806,000 Actual $ 806,000

Site Design: Quantity: 2500 ton/day Site Acreage: 150 (total site) / 10 (Cell 2) Acres

Deviations from Plans and Application Approved by DEP:

No substantial deviations from the Plans, see attached as-built drawings.

Address and Telephone No. of Site: 242 West Keene Road, Apopka, Florida 32703
(Telephone: 407-886-2920)

Name(s) of Site Supervisor: Sheree Grant (Cell Phone: 407-902-1469)

Date Site inspection is requested: January 6, 2010

This is to certify that, with the exception of any deviation noted above, the construction of the project has been completed in substantial accordance with the plans authorized by Construction

Permit No. SC48-0165969-014 :Dated: 22 February 2008

Date: December 23, 2009

Juan D. Quiroz
23 Dec. 2009
Signature of Professional Engineer

Northwest District
160 Governmental Center
Pensacola, FL 32501-5794
850-595-8360

Northeast District
7825 Baymeadows Way, Ste. B200
Jacksonville, FL 32256-7590
904-448-4300

Central District
3319 Maguire Blvd., Ste. 232
Orlando, FL 32803-3767
407-894-7555

Southwest District
3804 Coconut Palm Dr.
Tampa, FL 33619
813-744-6100

South District
2295 Victoria Ave., Ste. 364
Fort Myers, FL 33901-3881
941-332-6975

Southeast District
400 North Congress Ave.
West Palm Beach, FL 33401
561-681-6600

Vista Landfill, Class III, Cell 2
Construction Certification Report
Apopka, Orange County, Florida

FINAL CERTIFICATION REPORT
FOR CONSTRUCTION QUALITY
ASSURANCE SERVICES

DECEMBER 2009

Prepared For:

Vista Landfill, LLC
Attn: Sheree Grant
242 West Keene Road
Apopka, FL 32703

Submitted By:

Geosyntec consultants
engineers | scientists | innovators

5901 Broken Sound Parkway, N.W.
Suite 300
Boca Raton, Florida 33487
www.geosyntec.com

CELL 2 CONSTRUCTION
VISTA LANDFILL, CLASS III

TABLE OF CONTENTS

TABLE OF CONTENTS CONT.

APPENDICES

SECTION 1: INTRODUCTION

1.1 Terms of Reference

This certification report summarizes the construction quality assurance (CQA) activities performed by Geosyntec Consultants (Geosyntec) of Boca Raton, Florida during construction of the Cell 2 liner and leachate collection system at Vista Landfill, Class III (Vista Landfill) facility located in Apopka, Florida. The Vista Landfill is owned and operated by Vista Landfill, LLC, a wholly owned subsidiary of Waste Management, Inc. of Florida (WMIF).

The CQA monitoring activities for construction of Cell 2 were performed to confirm compliance with the solid waste management facility's construction and operation permits (Permit Nos. SC48-0165969-014 and S048-0165969-015) issued by Florida Department of Environmental Protection (FDEP), Central District on 22 February 2008 and in accordance with Chapter 62-701 – *Solid Waste Management Facilities* of the Florida Administrative Code (FAC).

Cell 2 was constructed in accordance with the above mentioned permits and associated plans and technical specifications. This certification report was prepared for Ms. Sheree Grant, District Engineer for Vista Landfill, LLC. This CQA report was prepared by the Geosyntec CQA Site Manager, Mr. Doug Hamilton, and Project Manager, Mr. Dan Schauer, P.G., and was reviewed by the Geosyntec CQA Engineer-of-Record, Dr. Juan D. Quiroz, P.E.

A description of the report content is provided below.

1.2 Report Organization

This certification report is organized as described below.

- A brief description of the project is provided in Section 2;
- A summary of the CQA program is presented in Section 3;
- A description of the CQA monitoring and testing activities performed during earthwork related construction activities for Cell 2 is provided in Section 4;
- A description of the CQA monitoring and testing activities performed during the geosynthetics installation for Cell 2 is provided in Section 5; and
- A summary of the observations resulting from the CQA monitoring and testing activities performed by Geosyntec and a certification statement signed and sealed by the CQA Engineer-of-Record, a professional engineer registered in the State of Florida, are presented in Section 6.

The geotechnical laboratory and field test results are presented in Appendix A. The geosynthetic manufacturer's quality control test results are presented in Appendix B. The independent CQA laboratory conformance test results are presented in Appendix C. The geosynthetics field CQA logs are provided in Appendix D. A record drawing depicting the cell limits and geomembrane panel layout is included in Appendix E. Finally, a photographic log of major construction activities for Cell 2 is included in Appendix F of this report.

SECTION 2: PROJECT DESCRIPTION

2.1 General

The Cell 2 construction activities included installation of a liner and leachate collection system over an approximate 10-acre area at the Class III disposal facility. The cell construction limits included perimeter berms, and the floor and side slopes of the landfill cell. As indicated on the project plans and specifications, Cell 2 construction included the following: (i) excavation of existing soil within the cell footprint to the desired soil subbase elevation; (ii) preparation of the liner subbase; (iii) installation of the geosynthetics [60-mil thick textured, high-density polyethylene (HDPE) geomembrane; double-sided geocomposite lateral drainage layer; and geosynthetic clay liner (only under the leachate collection and cleanout pipes and sump area)]; (iv) placement of a 2 ft-thick liner protective cover soil layer; and (v) installation of leachate collection system (LCS) components (including but not limited to a perforated leachate collection pipe along the cell floor and solid side slope riser leachate conveyance pipes, drainage gravels, and filter geotextiles). In addition, construction of the leachate transmission Forcemain from Cell 2 to the existing Cell 1 Forcemain. However, construction of ancillary items (i.e., surface water runoff drainage system, access roads, etc.) were undertaken as part of this project, however the construction of these items is considered outside the certification requirements of this CQA report.

The CQA monitoring services included the following:

- CQA testing and monitoring services for the Cell 2 liner system and LCS components;
- review and approval of earthwork contractor and geosynthetic manufacturer submittals (e.g., catalog cut sheets, shop drawings, as-built drawings, manufacturer quality control test results);
- compilation of daily field reports, field and laboratory results, and photographic documentation;
- coordination of the geomembrane panel layout survey and preparation of the resulting record drawing; and
- preparation of this final CQA certification report for submittal to FDEP.

2.2 Construction Activities

This certification report documents the CQA monitoring activities performed for construction of the Cell 2 liner and leachate collection system, and includes both earthwork and geosynthetics installation as indicated in the approved permit drawings.

The Cell 2 liner and leachate collection system design exceeds the current requirements of Chapter 62-701, FAC for Class III disposal facilities. The Cell 2 liner system consists of the following components (from top to bottom):

- minimum 24-in thick protective soil layer;
- leachate collection system, consisting of a perforated leachate collection pipe wrapped in drainage gravel and geotextile filter fabric along the cell floor, a solid leachate collection sump riser pipe, and a leachate collection sump;

- geocomposite drainage layer, consisting of an HDPE geonet with a needle-punched, non-woven geotextile heat bonded to each side, hereafter referred to as geocomposite;
- geomembrane liner, consisting of a 60-mil thick textured, HDPE geomembrane;
- geosynthetic clay liner (GCL), consisting of a Bentonite layer with a needle-punched, non-woven geotextile on both sides; and
- prepared subbase.

SECTION 3: CONSTRUCTION QUALITY ASSURANCE PROGRAM

3.1 General

The scope of the CQA monitoring, testing, and documentation services performed by Geosyntec during the construction of Cell 2 at Vista Landfill, included review of project documents, field CQA operations, and preparation of this final certification report which includes a geomembrane panel layout record drawing. These activities are described in the following sections of this report.

The earthwork construction for Cell 2 was performed by Total Site Development, Inc. of Orlando, Florida and ERC General Contractors of Winter Garden, Florida under direct contract with Vista Landfill, LLC. Installation of the geosynthetics was performed by Environmental Specialties International, Inc. (ESI) of Baton Rouge, Louisiana. Geosyntec provided the CQA monitoring, testing, and documentation during construction. A list of personnel involved in construction of Cell 2 is included in Section 3.5 of this report. The construction of Cell 2 commenced in 2009 and was substantially complete on 10 December 2009.

3.2 Related Documents

As previously noted, this certification report summarizes the CQA activities performed by Geosyntec during construction of Cell 2 at Vista Landfill. The CQA activities conducted by Geosyntec were performed in general accordance with the requirements of the following documents:

- "*Project Specifications, Vista Landfill*, Class III Facility, *Apopka, Florida*", prepared by Geosyntec, dated October 2009; and
- "*Construction Quality Assurance (CQA) Plan, Vista Landfill*, Class III, *Apopka, Florida*", prepared by Geosyntec, dated October 2009;
- "*Cell 2 Construction, Vista Class III Landfill, Apopka, Florida*," prepared by Geosyntec, dated February 2008, and "*Permit Modification Drawings, Vista Class III Landfill, Apopka, Florida*", prepared by Geosyntec, dated October 2009; and
- *Design and Engineering Guide for Polyethylene Piping*, prepared by PolyPipe® dated December, 2005.

All of the above documents are hereafter collectively referred to as the CQA Documents in this certification report. During construction, minor modifications were made to these documents to accommodate existing site conditions. These major modifications are described in more detail below. However, no substantial changes were made to the CQA Documents.

3.3 Field CQA Operations

The following activities were performed as part of Geosyntec's on-site CQA services:

Earthwork:

- monitoring the landfill subbase surface preparation prior to installation of the geosynthetics;
- collecting samples of soils and aggregates used in construction of the cell;

- reviewing and evaluating geotechnical laboratory test results to ensure compliance of soils and aggregates with the requirements of the CQA Documents;
- monitoring soil placement, grading, and compaction of earthwork related construction activities; and
- monitoring of the protective cover soil layer placement activities.

Geosynthetics:

- monitoring delivery, storage, and tracking the inventory of geosynthetic materials delivered for the project;
- coordinating the collection of geosynthetic conformance samples from in-plant sources or delivered rolls and forwarding samples to an off-site geosynthetics testing laboratory;
- collecting and reviewing geosynthetic manufacturers' quality control (MQC) certification documents and geosynthetic laboratory conformance test results to verify compliance with the requirements of the CQA Documents;
- monitoring installation of geosynthetic materials in trial seam testing, production seaming, nondestructive testing, and repair operations; and
- coordinating destructive testing of geomembrane seams at the minimum frequency required by the CQA Documents.

3.4 Certification Report and Record Drawings

This CQA certification report was prepared for construction of Cell 2. The geomembrane panel layout record drawing is included in Appendix E of this report. During the construction of Cell 2, CQA monitoring and testing activities were documented by CQA personnel in Daily Field Reports (DFRs) and various other forms. In addition, MQC certificates for the geosynthetics and independent laboratory conformance results were provided to Geosyntec for review and inclusion with this report. Results of CQA monitoring and testing activities that are critical with respect to the satisfactory performance of the Cell 2 liner system and protection of the surrounding environment are included in the report appendices and are summarized in the following sections in this certification report.

3.5 Project Personnel

Major personnel or representatives of the firms involved in the project are as follows:

Owner: Vista Landfill, LLC – Apopka, Florida

- Sheree Grant, District Engineer

CQA Consultant: Geosyntec Consultants, Inc. (Geosyntec) – Boca Raton, Florida

- Juan D. Quiroz, Ph.D., P.E., Engineer-of-Record
- Dan Schauer, P.G., CQA Project Manager
- Doug Hamilton, Site CQA Manager

Geosynthetics Installer: Environmental Specialties International Inc. (ESI) – Baton Rouge, LA

- Mohamed Malimar, Superintendent

Earthwork Subcontractor: Total Site Development, Inc. – Orlando, Florida

- Ronnie Stalvey, Superintendent

ERC General Contracting, Inc. – Winter Garden, Florida

- Jerry Pinder, Owner

Surveyor: Invisions Surveying and Mapping Inc. Bartow, Florida

- Deborah L. Peavey, Professional Surveyor

Geotechnical Laboratory: Excel Geotechnical Testing, Inc. (EGT) – Roswell, Georgia

- Nader Rad, Ph.D., P.E., Project Manager

Geosynthetics Laboratory: TRI/Environmental (TRI) – Austin, Texas

- Sam Allen, Project Manager

SECTION 4: CONSTRUCTION QUALITY ASSURANCE – EARTHWORK

4.1 General

Geosyntec monitored earthwork related to construction of the Cell 2 liner and leachate collection system which included subbase preparation prior to placement of the geosynthetics and subsequent placement of protective soil and leachate collection system above the liner system. During construction, Geosyntec was responsible for collection of representative soil and gravel samples for laboratory testing. The off-site geotechnical laboratory tests were performed by Excel Geotechnical Testing, Inc. (EGT) of Roswell, Georgia.

4.2 Soil and Drainage Gravel Source and Requirements

The Cell 2 soil subbase surface was prepared by excavation of existing soil from the cell footprint to the desired elevations. Representative samples of the existing soil subbase were obtained by Geosyntec CQA personnel and tested by EGT to assure that the minimum specified requirements were achieved. The results of the geotechnical laboratory tests for the subbase are presented in Appendix A-1. The results of the in-situ (i.e., field) moisture and density testing are presented in Appendix A-2.

The protective cover soils were generated from the segregation of soil excavated from the Cell 2 footprint during the subbase preparation activities. During the segregation process, the protective cover soils were stockpiled on-site adjacent to the Cell 2 construction area. Representative samples of protective cover soil were obtained from the on-site stockpile and from material hauled to the cell during placement operations. These samples were tested for grain size distribution, engineering classification, carbonate content and hydraulic conductivity. In addition, Geosyntec verified the protective cover soil layer thickness by direct measurement at random locations across the cell area once placement activities were complete. These thickness measurements and a sketch showing the measurement locations are presented in Appendix A-3. The results of the geotechnical tests for the protective cover are presented in Appendix A-1.

The drainage gravel materials used for the leachate collection system were obtained from Conrad Yelvington Distributors, Inc. and Pebble Junction both located in Orlando, Florida. Representative samples of drainage gravel were obtained and tested for grain-size distribution and carbonate content. The results of the geotechnical tests for the drainage gravel are presented in Appendix A-1.

4.3 Subbase Preparation and Testing

Upon completion of the Cell 2 footprint excavation to the desired lines and grades, the soil subbase surface was compacted with a vibratory smooth drum roller. In addition, proof rolling of the subbase was performed in accordance with the specifications and any areas which exhibited unacceptable yielding were reworked until acceptable results were achieved. A copy of the subbase acceptance form is provided in Appendix D-1; and a sealed as-built drawing for the top of subbase grades is provided in Appendix E. Representative samples of the soil subbase were collected by Geosyntec CQA personnel and tested by EGT for standard proctor (ASTM D 698), grain-size distribution (ASTM D 422) and engineering classification (ASTM D 2487). In-situ surface moisture and density tests (ASTM D 6938) were also performed to assure that the minimum compaction requirements were achieved. Copies of the CQA laboratory and field moisture/density results are presented in Appendices A-1 and A-2, respectively.

4.4 Protective Soil Layer

A total of approximately 32,300 cy of protective soil was placed in Cell 2. Grain-size distribution analyses (ASTM D 422), soil classification (ASTM D 2487), carbonate content (ASTM D 4373) and hydraulic conductivity (ASTM D 2434) were performed on samples of protective soil by EGT. A total of eleven (11) protective soil samples (referred as PC-1 through PC-11) were collected from materials placed in Cell 2. Grain-size distribution, soil classification and hydraulic conductivity analyses were performed on the protective layer soils. The hydraulic conductivity of the protective soil samples ranged from 1.8×10^{-2} cm/sec to 9.4×10^{-3} cm/sec which exceeded the specified minimum hydraulic conductivity of 1.0×10^{-4} cm/sec. The actual CQA test frequency of 1 test per 2,936 cy exceeded the minimum testing frequency of 1 test per 3,000 cy of in-place protective soil required by the CQA Documents. The laboratory test results for the protective soil are presented in Appendix A; and a sealed as-built drawing for the top of protective soil grades is provided in Appendix E.

4.5 Granular Drainage Materials

Granular drainage stone meeting the requirements of No. 57 stone (per ASTM D 448) were placed around the leachate collection pipe running the length of the Cell 2 floor. Granular drainage materials meeting the requirements of No. 4 stone (per ASTM D 448) were used in the Cell 2 leachate collection sump area. Grain-size distribution analyses (ASTM C 136) were performed by EGT on samples of drainage gravel collected by Geosyntec prior to installation. Results for the analyses indicating compliance of the materials with the project specifications and the laboratory results are presented in Appendix A. The No. 4 granular drainage material was supplied by Pebble Junction. The No. 57 granular drainage material was supplied by Conrad Yelvington Distributors. Both suppliers are located in Orlando, Florida.

The hydraulic conductivity (ASTM D 2434) of the No. 57 stone was measured to be 14 cm/sec, which exceeded the minimum specified requirement of 1 cm/sec. The hydraulic conductivity of the No. 4 stone was measured to be 25 cm/sec, which exceeded the minimum specified requirement of 10 cm/sec. Carbonate content analyses (ASTM D 3042) were also performed on the No. 57 and No. 4 stone granular drainage materials. The No. 57 and No. 4 stone used in construction of the leachate collection system were found to contain less than 5 percent carbonate.

A total of 35 cy of No. 4 drainage gravel and 120 cy of No. 57 gravel were placed in Cell 2. One (1) grain-size distribution analysis was performed on each of the drainage gravels placed in Cell 2. The laboratory test results are presented in Appendix A-1. The actual CQA test frequency for grain-size distribution analysis exceeded the minimum testing frequency of one test per 2,000 cy as required by the CQA Documents.

CQA personnel monitored the placement of the granular drainage material to ensure (i) the underlying geosynthetics were not damaged; (ii) the perforated pipes were properly surrounded by the drainage materials and the geotextile; and (iii) the drainage materials were placed in accordance with the requirements of the CQA Documents.

SECTION 5: CONSTRUCTION QUALITY ASSURANCE – GEOSYNTHETICS

5.1 General

Geosyntec monitored the installation of the geosynthetic components of the system in Cell 2, as described in Section 2. At times, several system installation operations were conducted simultaneously during construction. When this occurred, the on-site CQA personnel monitored the operations that were considered most critical to the performance of the system.

Also included in this section is the installation of the leachate transmission Forcemain from Cell2 to the existing Cell 1 Forcemain.

5.2 CQA of Textured Geomembrane

5.2.1 Conformance Testing and Documentation

The 60-mil thick textured, HDPE geomembrane was supplied by Agru America, Inc. (Agru) of Georgetown, South Carolina. Conformance samples of textured geomembrane were collected (from the rolls produced for the project) by TRI, which coordinated with the manufacturer to collect the CQA samples at Agru's manufacturing plant. TRI also performed the CQA conformance testing in accordance with the CQA Documents on the samples of textured geomembrane collected.

The MQC certificates, test results and the CQA conformance test results were reviewed by CQA personnel and were found to be in compliance with the CQA Documents. The MQC certificates are presented in Appendix B and the CQA conformance tests are presented in Appendix C. Geosyntecs' review of the MQC and CQA tests results indicate the tests were conducted at the required test frequencies, and the acceptance criteria are in accordance with the CQA Documents.

A total of five (5) CQA conformance samples were tested for 52 rolls and 490,360 ft^2 of textured geomembrane delivered to the site for installation in Cell 2. The actual CQA test frequency of 1 test per 98,072 ft^2 for the textured geomembrane exceeded the minimum frequency of 1 test per 100,000 ft^2 required by the CQA Documents. As a minimum, one conformance sample was tested during CQA from each resin lot supplied for the project.

5.2.2 Interface Friction Testing

As discussed in Section 2, the liner system components used in Cell 2 consists of (from top to bottom) the protective soil layer, geocomposite, geomembrane liner, and prepared subbase. One (1) interface friction test was performed in accordance with the CQA Documents to evaluate the interface shear strength for the various components of the liner system. A composite configuration (i.e., "sandwich test"), which represents the as-built liner system, was utilized for the interface friction testing. The tests for interface friction were performed by TRI.

The interface shear tests were performed as part of the CQA testing program. The test was performed using samples of geosynthetics collected from rolls that were actually installed in Cell 2. The soils for the protective cover soil and liner subbase soil were obtained from the materials placed in Cell 2.

The CQA Documents required the evaluation of two specific cases for interface friction which simulated both high normal stress (Case 1) and low normal stress (Case 2). In Case 1, three different interfaces between the various components of the liner system were tested at normal stresses of 2,000, 7,000 and 12,000 psf. In Case 2, the three interfaces were tested at normal stresses of 100, 300 and 500 psf. Peak (at small displacements) and residual (at large displacements) shear strengths were measured at each normal stress. The interface shear tests were conducted under wetted/saturated conditions. The following liner system interfaces were tested (from top to bottom):

1 - Protective cover soil layer / geocomposite;

2 - geocomposite / textured geomembrane; and

3 - textured geomembrane / subbase soil

The measured peak and residual shear strengths exceeded the minimum specification requirements. Copies of the interface friction tests are provided in Appendix C-4.

5.2.3 Field Monitoring Activities

5.2.3.1 Delivery and On-Site Storage

Upon delivery to the site, geomembrane rolls were stored in an area located northeast of Cell 2. The rolls were typically transported by an off-road forklift with a spreader bar attachment or using the nylon slings which were attached to each roll. CQA personnel periodically monitored the installer's delivery, unloading, and storage procedures to ensure that the material was handled in an appropriate manner. The CQA personnel also compared the roll numbers of the geomembrane rolls delivered to the manufacturer's bill of lading. An inventory of the rolls delivered for the project was maintained by the CQA personnel and is included in Appendix D-2.

5.2.3.2 Deployment

The geomembrane rolls were lifted using a spreader bar attached to an off-road forklift. The panels were positioned using laborers assisted by a track-mounted, low-ground pressure, all-terrain vehicle (ATV). CQA personnel monitored the deployment of each geomembrane panel. During deployment, the CQA personnel checked for the following:

- manufacturing defects;
- damage that may have occurred during shipment, storage, and handling; and
- damage resulting from installation activities, including damage as a consequence of panel placement, seaming operations, or weather.

If any materials were observed to be damaged or deficient, the installer was notified and the damaged materials were either discarded or repaired. CQA personnel observed and documented the repair locations to verify compliance with the CQA Documents. Details of the geomembrane panel placement were recorded by CQA personnel on panel placement logs, which are included in Appendix D-3 of this report.

5.2.3.3 *Trial Seams*

Prior to production seaming, the installer prepared geomembrane trial seams for each piece of seaming equipment to be used. Additional trial seams were prepared approximately every five hours or when field conditions changed. CQA personnel evaluated the trial seams as follows:

- trial seams were welded under similar conditions as production seaming;
- test strips were cut from the trial seams at random locations with a die press;
- six (6) test strips were tested using a field tensiometer and compared to the passing criteria for the tests, which were as follows:

Fusion

- *Peel tests* - a minimum bonded seam strength of 91 lb/in (inside/outside); and
- *Shear test* - a minimum bonded seam strength of 120 lb/in.

Extrusion

- *Peel test* - a minimum bonded seam strength of 78 lb/in; and
- *Shear test* - a minimum bonded seam strength of 120 lb/in.

If trial welds failed, the machine or welding process was adjusted and a new trial seam was prepared. The new sample was tested to ensure compliance with the above strength requirements. The procedure was repeated, as needed, until passing results were obtained.

Trial seam samples were not archived. Details of the trial seams, including the trial seam test results, are included in Appendix D-4 of this report.

5.2.3.4 *Production Seams*

Geomembrane production seaming operations were monitored by CQA personnel. The majority of the geomembrane production seams were fabricated using double-track fusion welders. Seam repairs were made using hand-held extrusion welders. Rub sheets were periodically used during production seaming to provide a clean surface to weld over. During or after fabrication, the geomembrane seams were visually examined for workmanship and continuity. Geomembrane seaming logs are included in Appendix D-5 of this report.

5.2.4 Nondestructive Seam Testing

5.2.4.1 *Scope*

Nondestructive testing of geomembrane seams was periodically monitored by CQA personnel. All geomembrane seams were nondestructively tested for continuity by the installer using the air pressure procedure for double-track fusion seams and the vacuum-box test procedure for extrusion welded seams. Failed air pressure seams, if applicable, were capped and then retested using vacuum-box test methods after determining the failed seam length. Leaks identified using the vacuum-box method were repaired and retested as described in Section 5.2.5.

5.2.4.2 Air Pressure Testing

Accessible double-track fusion seams were nondestructively tested using the air pressure test. The procedure used by the installer for air pressure testing was as follows:

- visually observe the integrity of the annulus of the section of seam being tested and isolating the section by sealing the ends using heat and pressure;
- insert the needle of a pressure test apparatus into the annulus at one end of the seam;
- inflate the annulus to a gauge pressure between 25-30 pounds per square inch (psi) with an air pump and maintain the gauge pressure for at least 5 minutes;
- repair faulty area in accordance with Section 5.2.5 if the pressure loss exceeds 3 psi or if the pressure does not stabilize; and
- confirm airflow through the entire annulus by releasing the air from the seam at the opposite end from where the needle was inserted.

5.2.4.3 Vacuum-Box Testing

The vacuum-box was used by the installer to nondestructively test extrusion seams and repairs. The procedure used by the installer for vacuum testing was as follows:

- wet a strip of seam with a soapy solution;
- place the vacuum-box assembly over the wetted area, close the bleed valve and open the vacuum valve;
- force the box onto the sheet until a vacuum is observed;
- examine the seam through the viewing window for a period of approximately 20 seconds for the occurrence of air bubbles;
- remove the assembly and continue the process over the entire length of the seam; and
- record the location of any leaks.

Nondestructive seam test results for the closure in Cell 2 are presented in Appendix D-5 and D-7. If nondestructive testing indicated that repairs were necessary, repairs were made in accordance with procedures presented in Section 5.2.5. All repairs were tested using the vacuum-box test procedure.

5.2.5 Destructive Seam Sample Testing

5.2.5.1 Scope

In accordance with the CQA Documents, CQA personnel identified and collected geomembrane seam samples for destructive testing. The samples were tested by the off-site geosynthetics laboratory, TRI.

For a destructive seam sample to be considered as passing, the seam strength criteria described in Section 5.2.2.3 had to be met for at least four out of the five test specimens obtained from the sample. In addition, if one failure was observed, the seam strength of the 5th specimen must achieve 80% of the required value.

5.2.5.2 *Sampling Procedures*

The full destructive seam sample was removed by the installer and test strips were cut from the ends of sample with a die press. Each strip was peel and shear-tested in the field. At each destructive seam sample location, a test sample measuring approximately 12 inches across the seam and 42 inches along the seam was obtained. The sample was divided into three pieces and distributed to: (i) the independent off-site geosynthetics laboratory for testing, (ii) the installer for field testing, and (iii) the owner as an archive sample.

5.2.5.3 *Test Results*

Off-site laboratory testing of geomembrane seam samples was performed in accordance with the CQA Documents. At the off-site geosynthetics laboratory, five 1-inch wide test specimens were removed from the destructive seam sample using a die press. On a calibrated tensiometer, five test specimens were peel-tested for adhesion strength. For fusion seams, peel tests were performed on both the bottom (inside track) and top (outside track) edges. Additionally, five specimens were tested for shear strength. The seam acceptance/rejection criteria described in Sections 5.2.2.3 and 5.2.4.1 were used to evaluate the destructive seam samples.

The destructive seam test results are presented in Appendix D-6. A total of forty-six (46) destructive seam samples were tested for a total seam length of approximately 21,346 lineal ft (lf). This corresponds to an approximate sample frequency of 1 per 464 lf of seam. The actual destructive seam test frequencies exceeded the minimum frequency of 1 per 500 lf of production seams required by the CQA Documents.

All geomembrane seam samples tested destructively during construction of Cell 2 met the testing criteria noted in Section 5.2.2.3.

5.2.6 Geomembrane Repairs

The repair procedures presented in this subsection were used by the installer to patch holes and tears, spot-extrude impact damage or other minor defects, and for grinding and extrusion welding small sections of failed fusion seams (if the exposed edge was accessible). In the cases where patches or caps were used to repair the damaged geomembrane (i.e., small holes, tears, or on seams which failed nondestructive or destructive testing), an approximately 12-inches wide capping strip was used.

During the repair or panel tie-in operations, the following procedures were implemented:

- technicians and seaming equipment used were required to pass trial welds;
- patches or caps extended at least 6 inches beyond the edge of the defect and all corners were rounded; and
- repairs were tested using vacuum box and visually observed for continuity.

Repair summary logs prepared by Geosyntec during CQA activities are included in Appendix D-7 of this report. A record drawing illustrating layout of panels, location of seams, destructive samples, and repairs are included in Appendix E.

5.3 CQA of Geocomposite

5.3.1 Conformance Testing and Documentation

The geocomposite used was Transnet 330-2-8 manufactured by SKAPS Industries of Georgetown, South Carolina. The geocomposite conformance samples were collected by TRI, which coordinated with the manufacturer to collect the CQA samples at the SKAPS Industries manufacturing plant in Georgetown, South Carolina. TRI also performed the CQA conformance testing on the samples of geocomposite collected.

The MQC certificates and test results and the CQA conformance test results were reviewed by CQA personnel and were found to be in compliance with the CQA Documents. The results of the MQC and CQA conformance tests for 194 rolls (473,620 ft^2) of geocomposite are presented in Appendix B and C, respectively.

A total of three (3) CQA conformance samples were tested for 473,620 ft^2 of geocomposite approved for installation in Cell 2. The actual CQA test frequency of 1 test per 157,873 ft^2 (approx.) of the geocomposite exceeded the frequency of 1 test per 200,000 ft^2 required by the CQA Documents.

5.3.2 Field Monitoring Activities

5.3.2.1 Delivery and On-Site Storage

Upon delivery to the site, geocomposite rolls were stored in an area located northeast of the Cell 2. The rolls were typically transported by an off-road forklift. CQA personnel periodically monitored the installer's delivery, unloading, and storage procedures to ensure that the material was handled in an appropriate manner. The CQA personnel also compared the roll numbers of the geocomposite rolls delivered to the manufacturer's bill of lading. An inventory of the rolls delivered for the project was maintained by the CQA personnel and is presented in Appendix D-2.

5.3.2.2 Deployment

CQA personnel monitored the deployment of the primary geocomposite for the following:

- manufacturing defects;
- damage that may have occurred during shipment, storage, and handling; and
- damage resulting from installation activities.

If the materials were observed to be damaged, the installer was notified and the damaged materials were either discarded or repaired. CQA personnel observed repair locations to verify conformance with the CQA Documents.

CQA personnel periodically monitored the deployment of the primary geocomposite, as well as its condition after installation, to confirm that the installer took measures to:

- securely anchor the geocomposite in the anchor trench or ballast it with sand bags;

- unroll the geocomposite down the slope (i.e., rolls were aligned perpendicular to the slope contours) in a manner that kept the panel in sufficient tension to avoid excessive wrinkling;
- avoid entrapment of dust, stones, or other objects that would damage or clog the geocomposite;
- avoid damaging the underlying geomembrane during deployment;
- overlap the bottom geotextile edges;
- secure the geonet component of adjacent geocomposite panels with nylon fasteners, installed on a maximum 5-ft spacing laterally and at 2-ft spacing on end seams; and
- overlap and continuously sew the upper geotextile edges.

Any observed holes in the geotextile component of the geocomposite were repaired by placing a patch of non-woven geotextile over the hole that extended at least one foot beyond the edge of the hole. These patches were continuously thermally bonded to the undamaged portion of the geocomposite. This method was also used along the tie-in at the toe of the slope and along trimmed panels. Any observed holes or tears in the geonet component of the composite were repaired by the installer by placing a patch of the same material over or under the hole or tear, at least 2-ft beyond the edges of the hole or tear. These patches were secured using nylon fasteners, followed by thermal bonding of the uppermost geotextile of the patch to the undamaged portion of the geocomposite.

5.4 CQA of Geosynthetic Clay Liner

5.4.1 Conformance Testing and Documentation

A geosynthetic clay liner (GCL) was used for construction of the liner system within the sump area and underneath the leachate collection pipe alignment in Cell 2. Bentomat-ST GCL, used for construction of Cell 2, was manufactured by Colloid Environmental Technologies Company (CETCO) of Cartersville, Georgia. Conformance samples of the GCL were collected (from the rolls produced for the project) by TRI, which coordinated with the manufacturer to collect the CQA samples at CETCO's manufacturing plant. TRI also performed the CQA conformance testing in accordance with the CQA Documents on the samples of the GCL collected.

The MQC certificates and test results and the CQA conformance test results were reviewed by CQA personnel and were found to be in compliance with the CQA Documents. The results of the MQC and CQA conformance tests for 8 rolls (18,000 ft^2) of GCL are presented in Appendix B and C, respectively.

A total of one (1) CQA conformance sample was tested for 18,000 square feet (ft^2) of GCL delivered to the site for installation in Cell 2. The actual CQA test frequency of 1 test per 18,000 ft^2 of GCL exceeded the minimum testing frequency of 1 test per 200,000 ft^2 required by the CQA Documents.

5.4.2 Field Monitoring Activities

5.4.2.1 Delivery and On-Site Storage

Upon delivery, GCL rolls were unloaded in an area located southeast of the Cell 2 construction area, stacked on an elevated soil berm, and covered with plastic tarps. The rolls were typically transported on site by an off-road forklift equipped with a stinger bar. CQA personnel periodically monitored the installer's delivery, unloading, and storage procedures and observed that the GCL was handled in an appropriate manner. The CQA personnel also compared the roll numbers of the GCL rolls delivered to the manufacturer's bill of lading. An inventory of the rolls delivered for the project was maintained by the CQA personnel. This inventory also includes the rolls that were approved for installation based on MQC and CQA test results and the rolls that were used during construction. Only approved rolls were incorporated into the work.

5.4.2.2 Deployment

The GCL rolls were lifted using a spreader with cargo straps attached to a low-ground pressure forklift. The rolls were deployed by unrolling the GCL rolls attached to the low-ground pressure forklift. Panels were re-positioned as necessary using laborers.

CQA personnel monitored the deployment of the GCL rolls. During deployment, the CQA personnel checked for the following:

- manufacturing defects;
- damage that may have occurred during shipment, storage, and handling; and
- damage resulting from installation activities.

If any materials were observed to be damaged, the installer was notified and the damaged materials were either discarded or repaired. CQA personnel observed repair locations to verify conformance with the requirements of the CQA Documents.

CQA personnel also periodically monitored the deployment of the GCL as well as its condition after installation to ensure that the installer followed the following procedures:

- the GCL was unrolled and placed in a manner which kept the GCL in sufficient tension to avoid excessive wrinkling and was securely anchored in the anchor trench or ballasted with sand bags;
- the rolls were deployed with the woven geotextile in contact with the geomembrane;
- adjacent GCL panels in the sump area were overlapped a minimum of 6 inches along the length of the panels and 12 inches along the width of the panels; and
- granular bentonite was added between overlap along the width of panels and repaired areas;
- measures were taken to keep the GCL free of contamination and protected from premature hydration; and

- geomembrane installation immediately followed installation of the GCL.

5.5 Leachate Forcemain Testing

As part of the Cell 2 Construction Project, ESI installed the dual-containment leachate transmission Forcemain which connects the Cell 2 leachate collection system at the top of the north slope of Cell 2 to the leachate manhole located south of the auxiliary leachate storage tank area along the northwest portion of the landfill. The leachate transmission Forcemain consisted of a dual-wall HDPE pipe installed outside and along the perimeter of Cell 2. The inner solid-wall HDPE pipe measured six (6) inches in diameter, and the outer HDPE solid-wall pipe was ten (10) inches in diameter.

ESI hydrostatically tested the outer 10-inch HDPE pipe on 1 December 2009; and the inner 6-inch HDPE pipe was hydrostatically tested on 1 December 2009. Various detailed drawings of the leachate transmission system are presented in Appendix F.

5.5.1 Hydrostatic Testing

The hydrostatic tests were performed after the leachate Forcemain pipe was fabricated and placed in the open trench. The hydrostatic tests were performed in accordance with the guidelines for Hydrostatic Testing as provided by the pipe manufacturer recommendations. The tests were performed by filling the outside and inside pipes with water and pressurized with air. The inner 6-inch diameter pipe was pressurized to 145 psi and allowed to stabilize for one hour. The outer 10-inch diameter pipe was pressurized to 145 psi and allowed to stabilize for one hour. The hydrostatic tests commenced following the one hour stabilization period. Both, the 6-inch and 10-inch pipe passed the specified hydrostatic testing requirement.

SECTION 6: SUMMARY

Observation of the construction of Cell 2 at the Vista Landfill, Class III facility was performed by Geosyntec during the period of 20 October to 14 December 2009. During this time, CQA personnel monitored the installation of the following components of Cell 2:

- earthwork (sub-base, perimeter berms, leachate collection system and protective soil layer);
- leachate transmission forcemain from Cell 2 to the existing forcemain at Cell 1; and
- liner system geosynthetics in Cell 2.

During construction of the above components, CQA personnel verified that performance and conformance testing was performed at the frequencies required by the CQA Documents and that the installation met or exceeded the requirements of the CQA Documents. CQA personnel also verified that conditions or materials identified as not conforming to the CQA Plan were replaced, repaired, and/or retested, as described in this report.

The results of the CQA activities undertaken by Geosyntec as described in this report indicate that Cell 2 was constructed in accordance with the CQA Documents and the solid waste permit issued for the Vista Landfill, Class III facility.

Dan Schauer, P.G.
CQA/Project Manager

Juan D. Quiroz, Ph.D., P.E.
CQA Engineer-of-Record
Florida P.E. # 65275
Expiration Date: 28 February 2011

APPENDIX A

GEOTECHNICAL LABORATORY AND FIELD TEST RESULTS

SUB APPENDIX A-1

LABORATORY TEST RESULTS

Soil Subbase

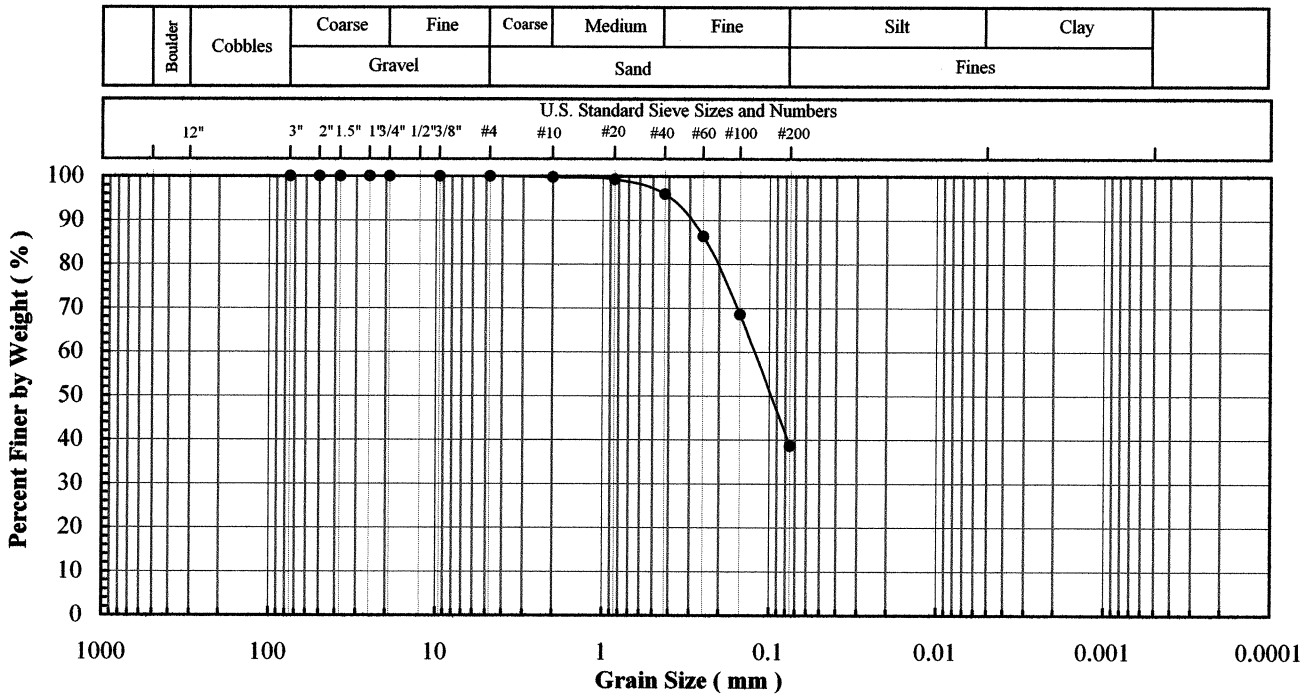
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	SB-01
Lab Sample No:	J047

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



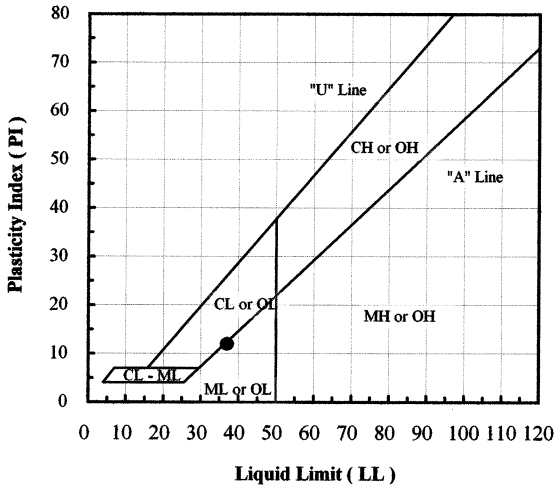
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	99.8
#20	0.850	99.3
#40	0.425	95.9
#60	0.250	86.3
#100	0.150	68.5
#200	0.075	38.6

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	61.4
Fines (%):	38.6
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
SB-01	J047	13.8	38.6	37	25	12	SC - Clayey sand

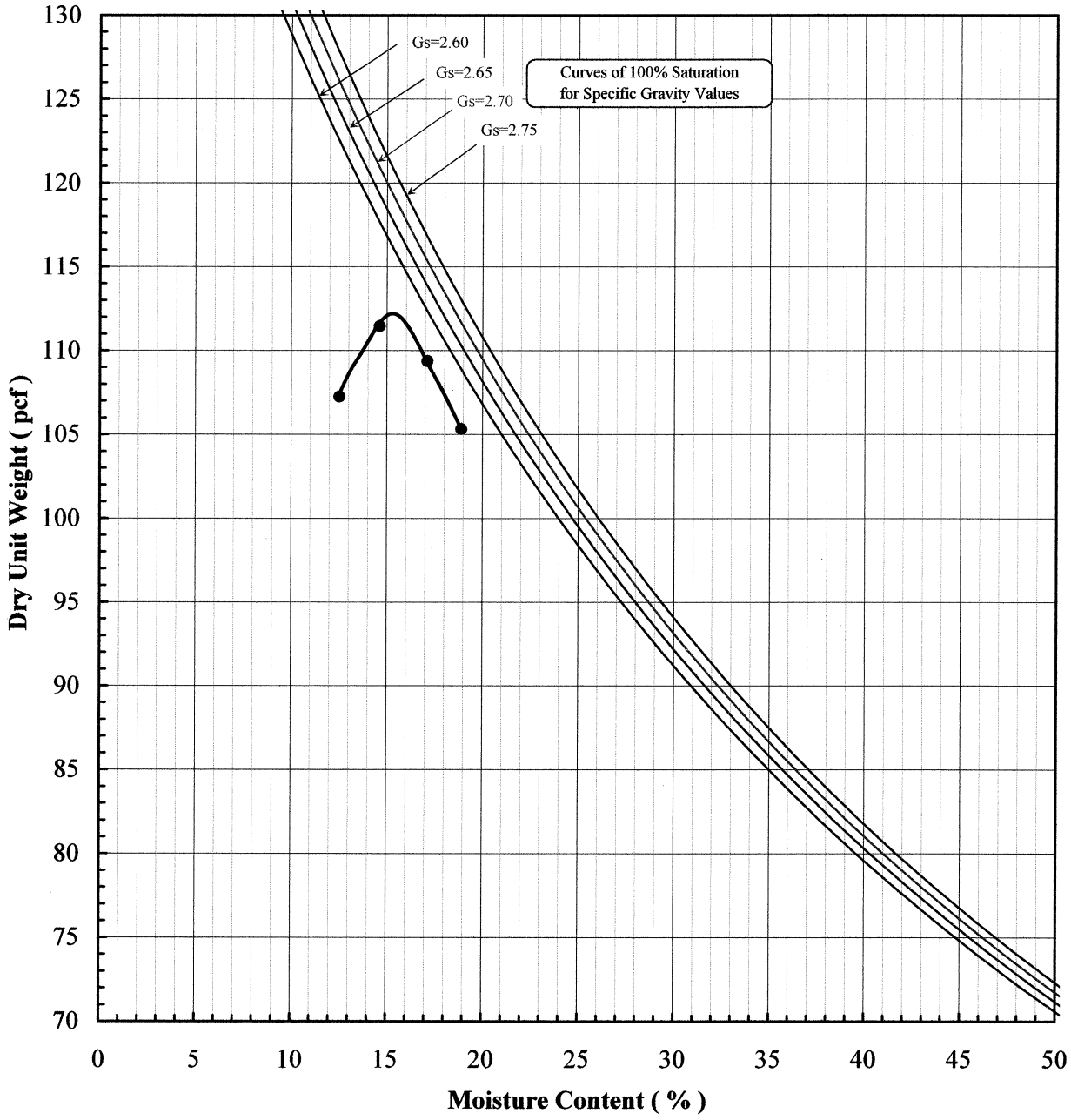
Note(s):

Engineering classification is based on the assumption that the fines are either CL or CH.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	SB-01
Lab Sample No:	J047

ASTM D 698 **COMPACTION MOISTURE-DENSITY RELATIONSHIP** **Standard - Method B**



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
SB-01	J047	112.1	15.3	

Note(s):

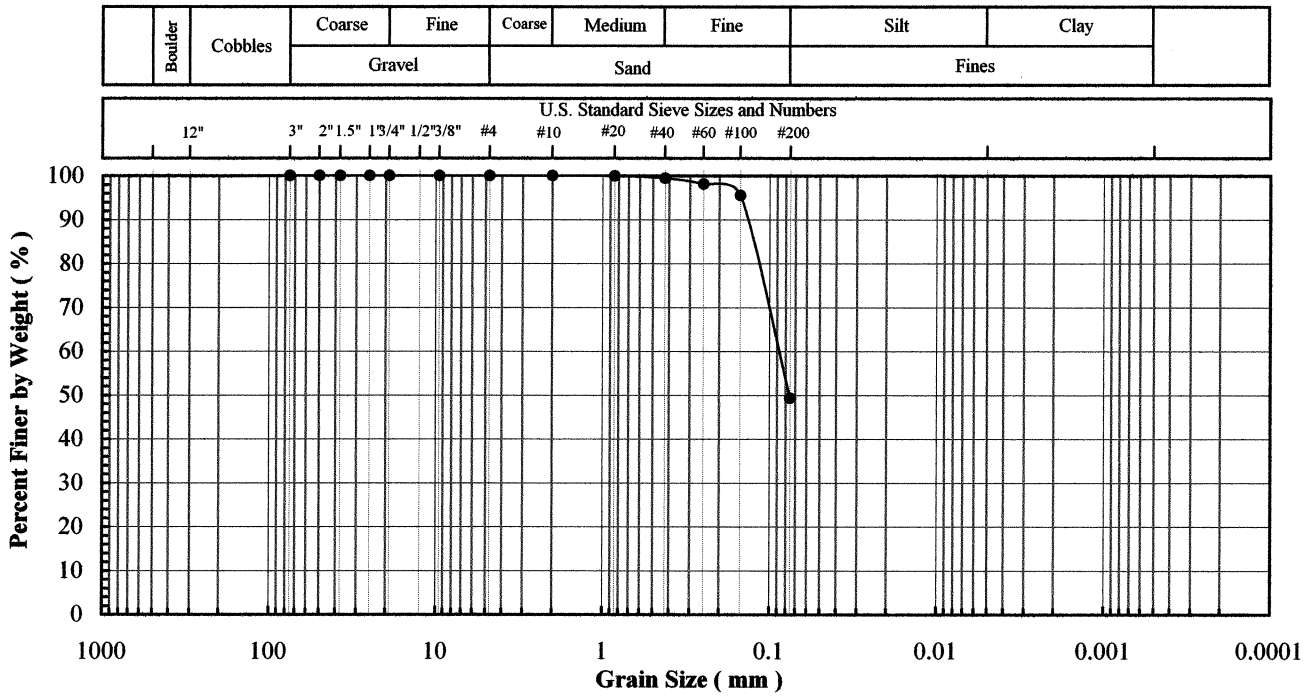
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	SB-02
Lab Sample No:	J048

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



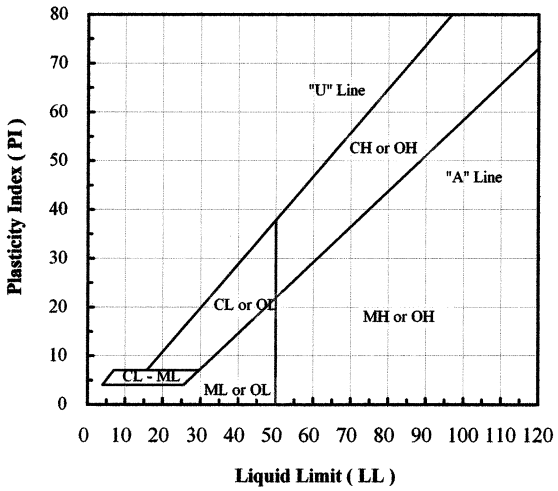
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.9
#40	0.425	99.4
#60	0.250	98.1
#100	0.150	95.5
#200	0.075	49.3

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	50.7
Fines (%):	49.3
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
SB-02	J048	30.9	49.3				SC - Clayey sand

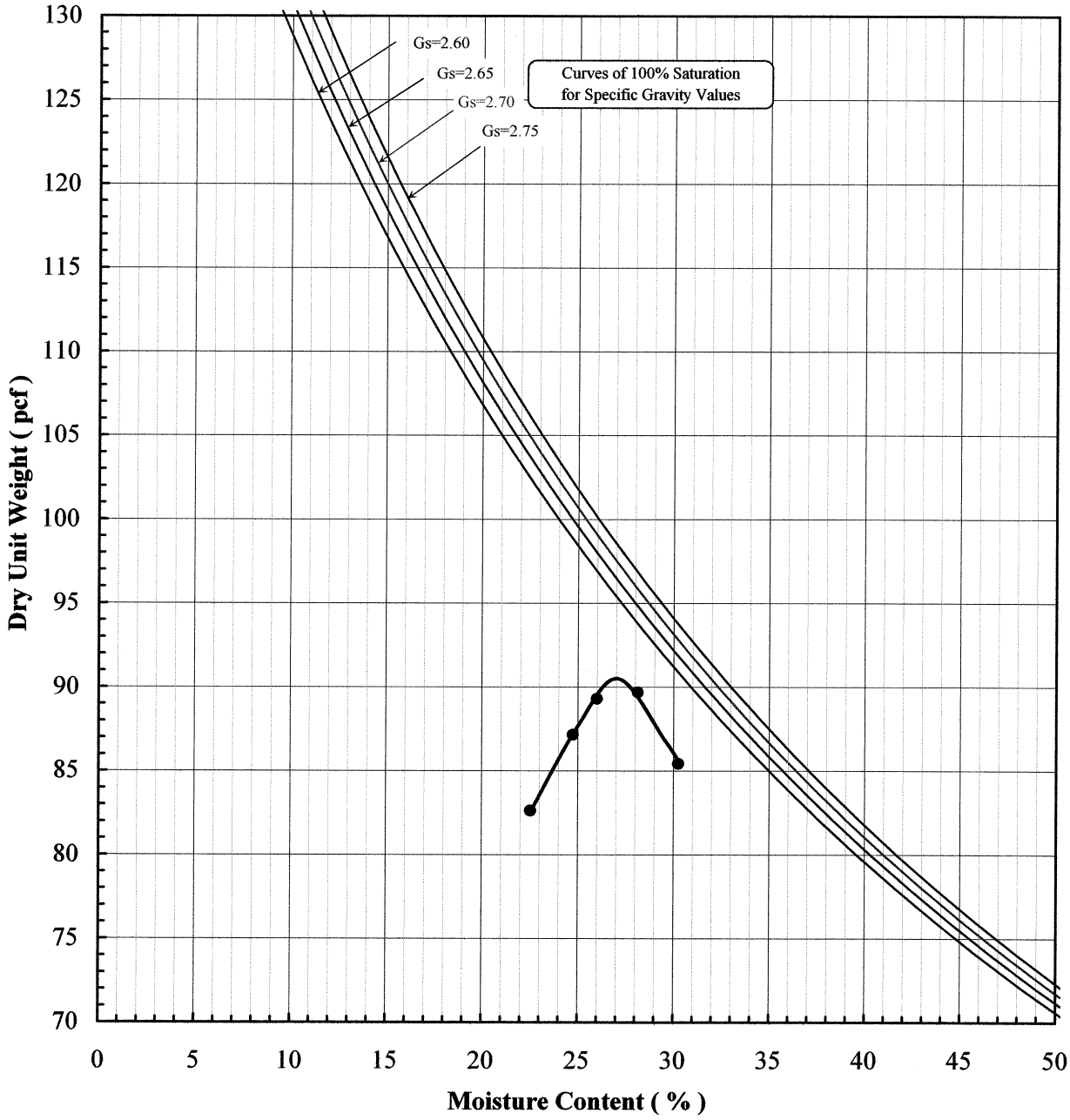
Note(s):

Engineering classification is based on the assumption that the fines are either CL or CH.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	SB-02
Lab Sample No:	J048

ASTM D 698 **COMPACTION MOISTURE-DENSITY RELATIONSHIP** **Standard - Method B**



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
SB-02	J048	90.4	26.9	

Note(s):

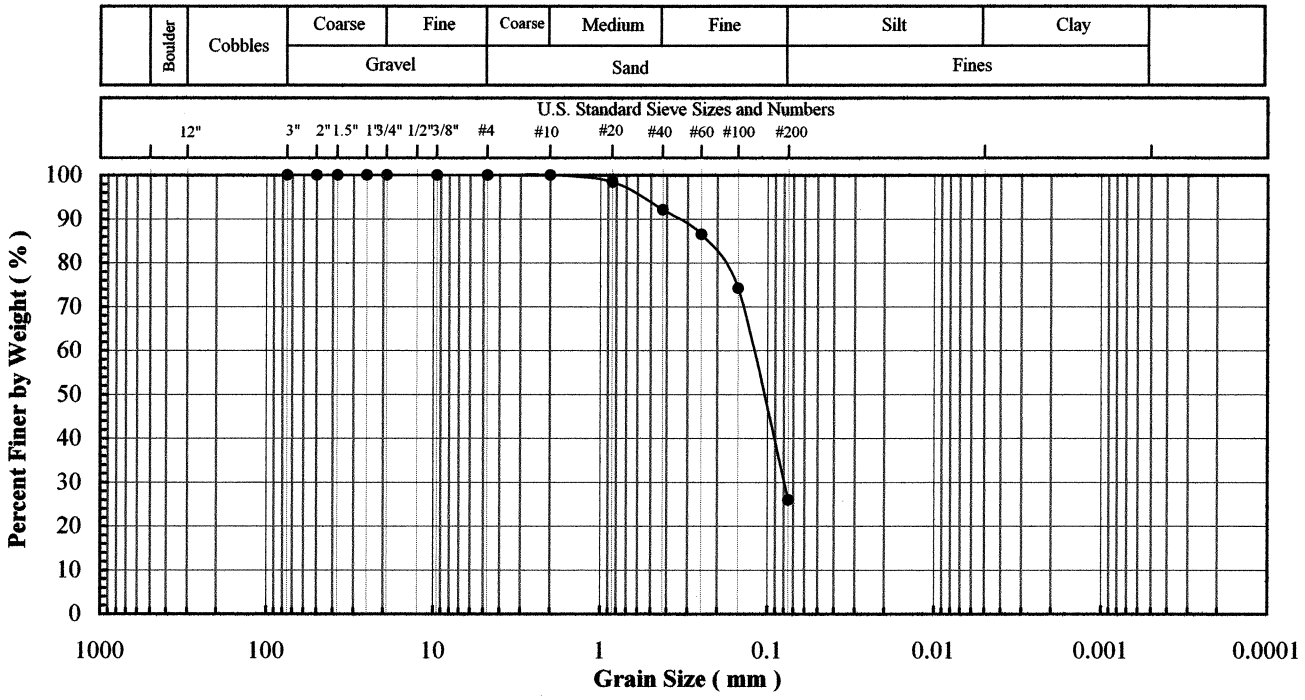
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	SB-03
Lab Sample No:	J049

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



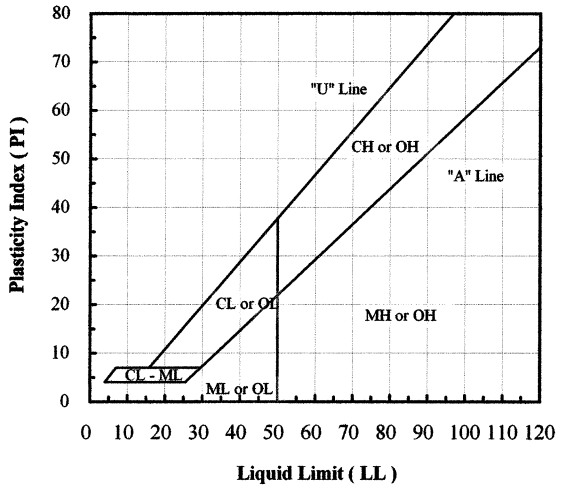
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	98.4
#40	0.425	92.1
#60	0.250	86.5
#100	0.150	74.2
#200	0.075	26.0

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	74.0
Fines (%):	26.0
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
SB-03	J049	17.1	26.0				SC - Clayey sand

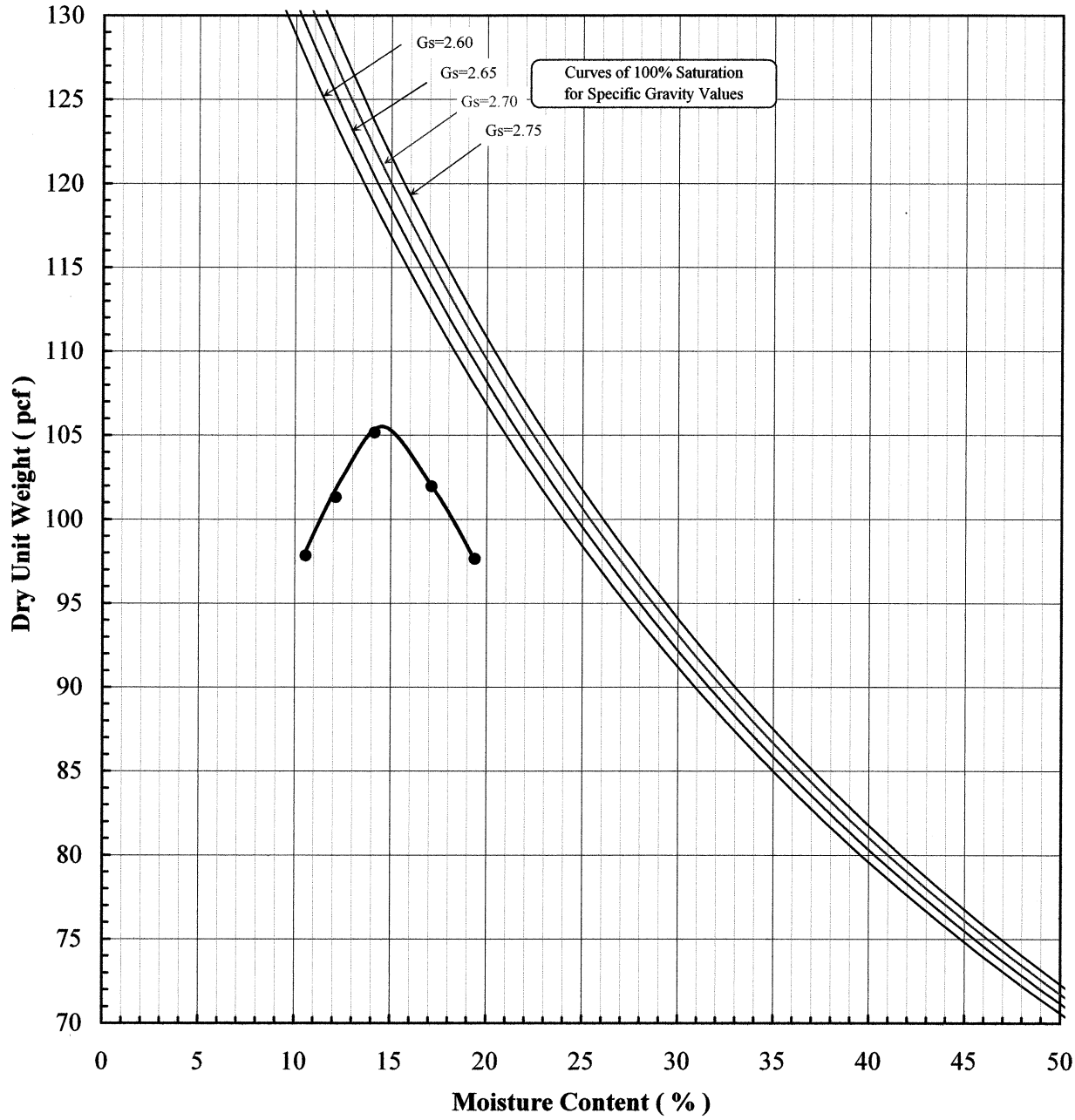
Note(s):

Engineering classification is based on the assumption that the fines are either CL or CH.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	SB-03
Lab Sample No:	J049

ASTM D 698 **COMPACTION MOISTURE-DENSITY RELATIONSHIP** **Standard - Method B**



Client/Site Sample ID.	Lab Sample No:	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Remarks
SB-03	J049	105.5	14.4	

Note(s):

Protective Cover

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST (1)

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-01
Lab Sample Number:	K042
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	11/26/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid (4)	Gradient Range	Hydraulic Conductivity
	Spec. Prep. (2) (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content(3) (%)		(-)	(cm/s)
1	R	14.2	7.6	108.2	0.0	TW	0.13 - 0.49	8.2E-3

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

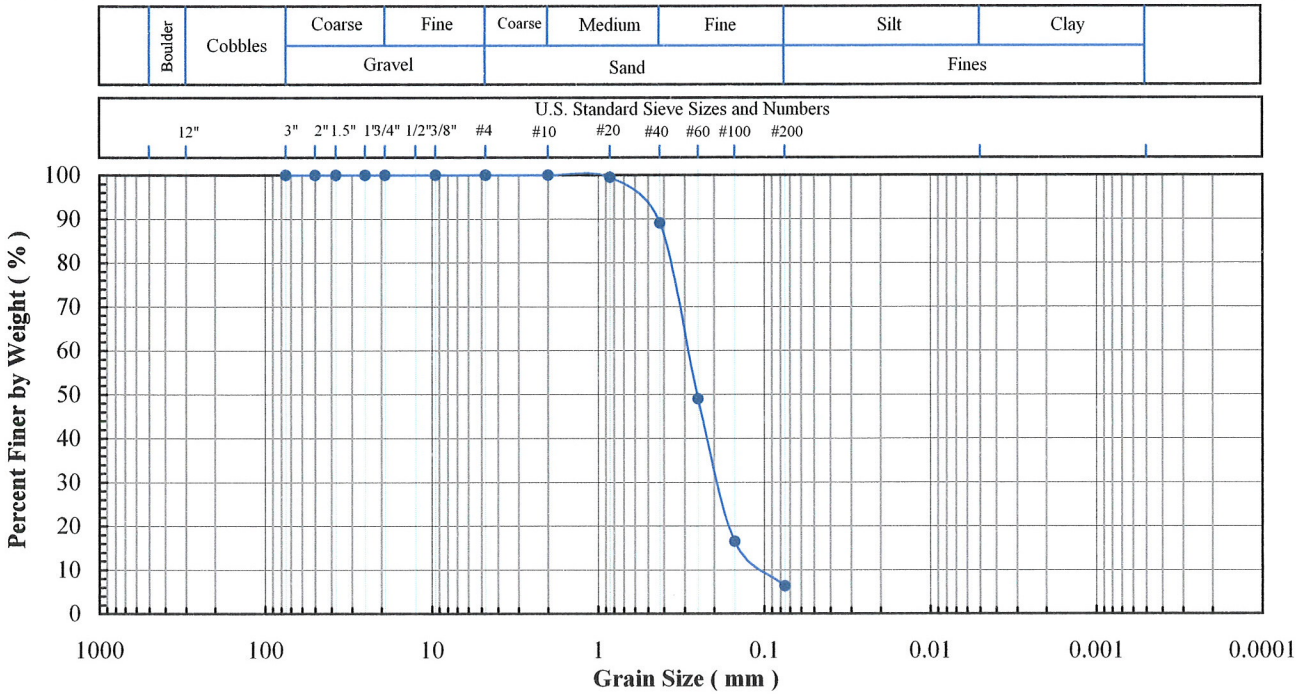
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-01
Lab Sample No:	K042

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



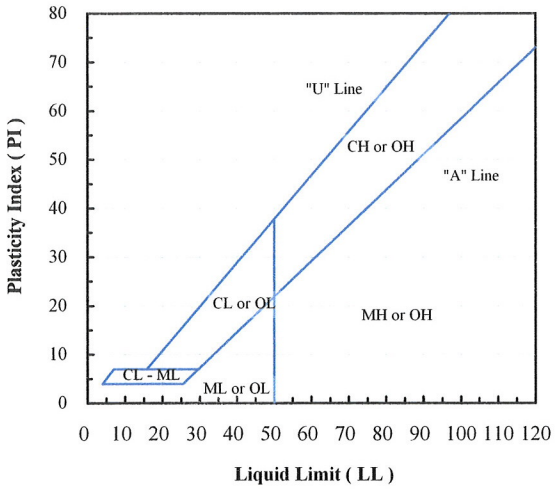
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.5
#40	0.425	89.1
#60	0.250	49.0
#100	0.150	16.5
#200	0.075	6.3

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	93.7
Fines (%):	6.3
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	2.5
Coeff. Curv. (Cc):	1.2



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
PC-01	K042	2.9	6.3				SP-SM - Poorly graded sand with silt

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Carbonate Content of Soils (ASTM D 4373): 0 %

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST [1]

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-02
Lab Sample Number:	K043
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	11/29/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid [4]	Gradient Range	Hydraulic Conductivity
	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content [3] (%)		(-)	(cm/s)
1	R	14.1	7.6	89.8	0.0	TW	0.21 - 0.43	4.7E-3

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

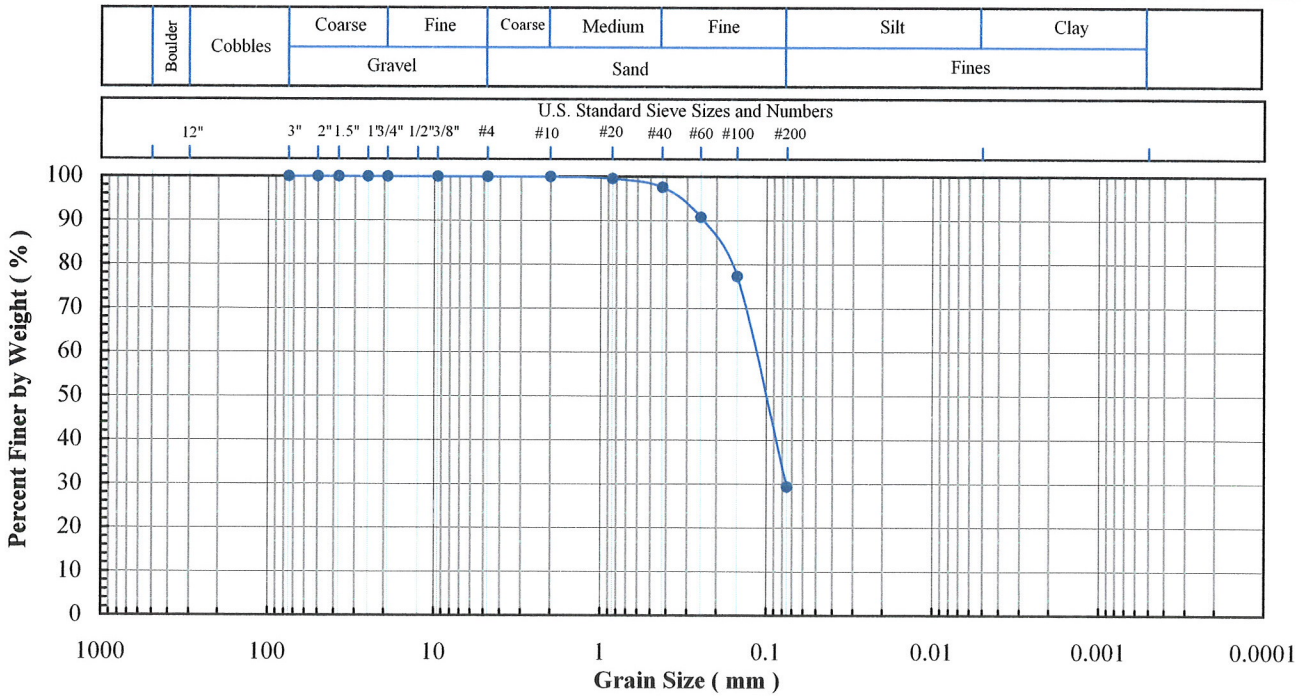
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-02
Lab Sample No:	K043

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



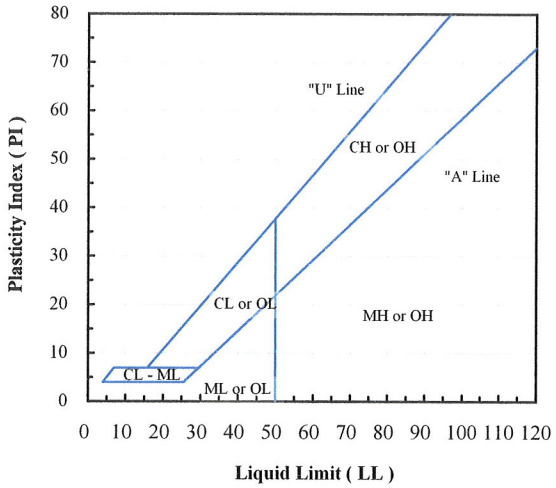
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.6
#40	0.425	97.6
#60	0.250	90.8
#100	0.150	77.3
#200	0.075	29.4

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	70.6
Fines (%):	29.4
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
PC-02	K043	19.0	29.4				SC - Clayey sand

Note(s):

Engineering classification is based on the assumption that the fines are either CL or CH.

Carbonate Content of Soils (ASTM D 4373): 0 %

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST [1]

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-03
Lab Sample Number:	K044
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	11/25/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid [4]	Gradient Range	Hydraulic Conductivity
	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content [3] (%)		(-)	(cm/s)
1	R	14.6	7.6	105.7	0.0	TW	0.13 - 0.42	1.8E-2

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

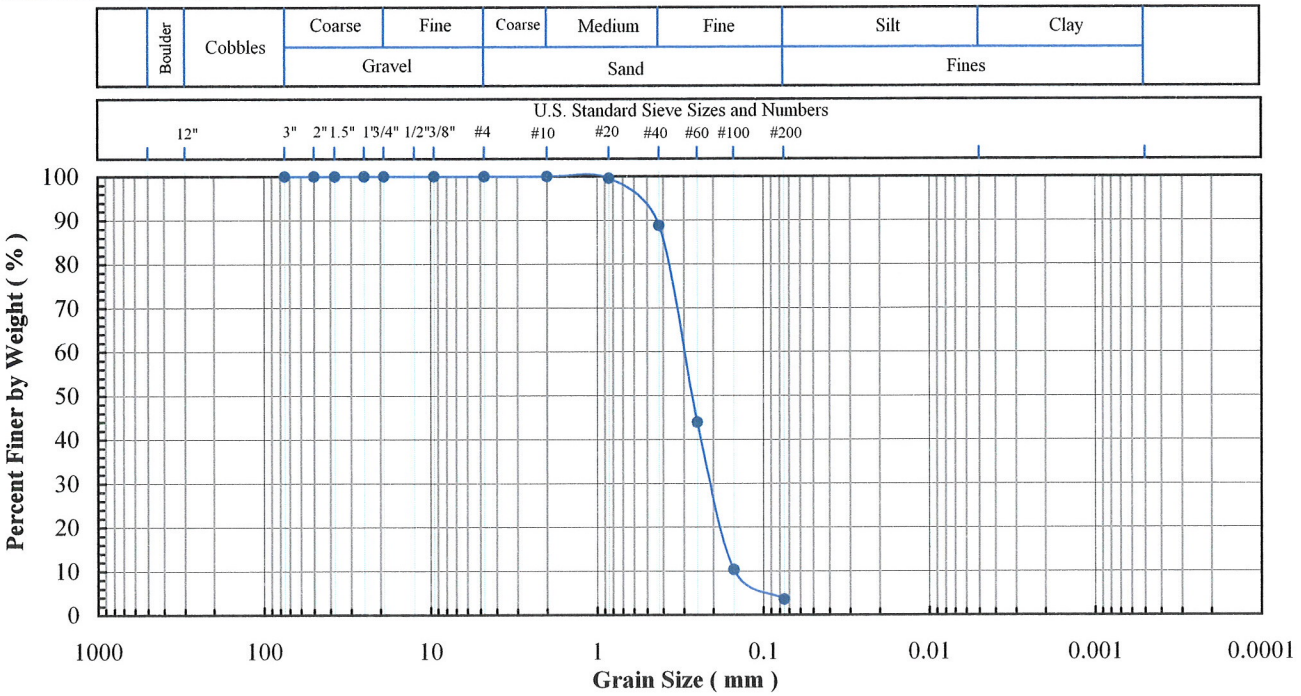
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-03
Lab Sample No:	K044

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



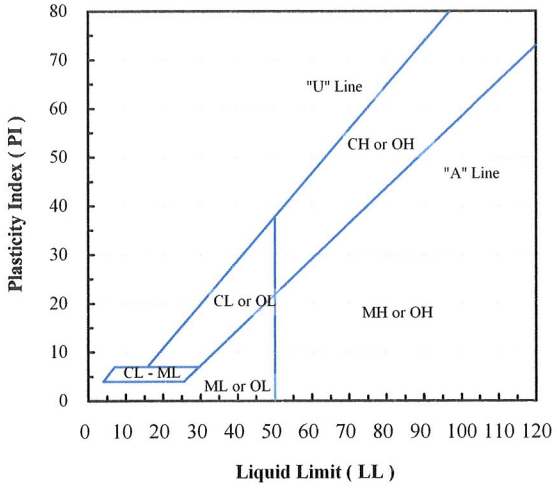
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.6
#40	0.425	88.8
#60	0.250	43.9
#100	0.150	10.3
#200	0.075	3.6

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	96.4
Fines (%):	3.6
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	2.0
Coeff. Curv. (Cc):	0.9



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
PC-03	K044	3.2	3.6				SP - Poorly graded sand

Note(s):

Carbonate Content of Soils (ASTM D 4373): 0 %

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST (1)

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-04
Lab Sample Number:	K045
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	11/27/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid (4)	Gradient Range	Hydraulic Conductivity
	Spec. Prep. (2) (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content (3) (%)		(-)	(cm/s)
1	R	14.4	7.6	99.5	0.0	TW	0.14 - 0.46	5.3E-3

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

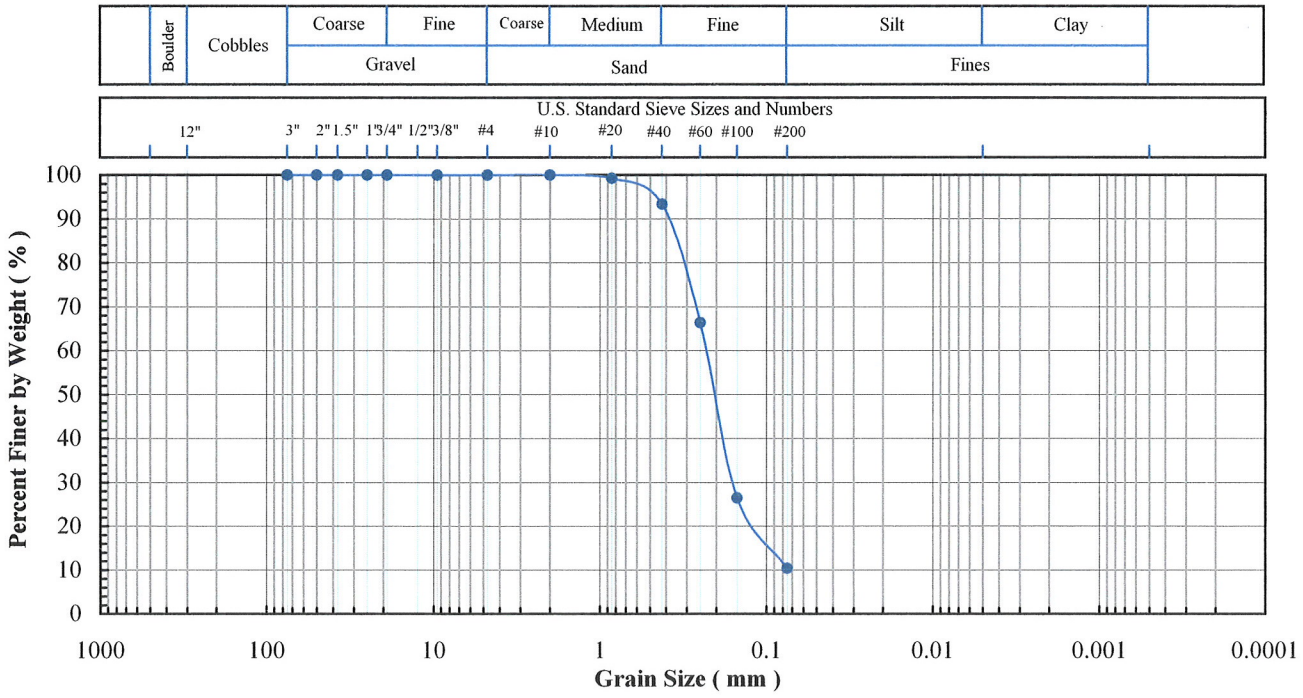
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-04
Lab Sample No:	K045

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



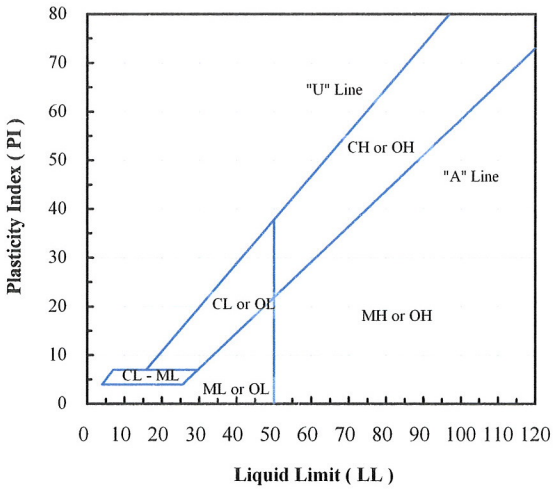
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.3
#40	0.425	93.4
#60	0.250	66.4
#100	0.150	26.5
#200	0.075	10.4

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	89.6
Fines (%):	10.4
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	3.0
Coeff. Curv. (Cc):	1.5



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
PC-04	K045	6.4	10.4				SP-SM - Poorly graded sand with silt

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Carbonate Content of Soils (ASTM D 4373): 0 %

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST [1]

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-05
Lab Sample Number:	K046
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	11/27/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid [4]	Gradient Range	Hydraulic Conductivity
	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content [3] (%)		(-)	(cm/s)
1	R	14.3	7.6	94.0	0.0	TW	0.18 - 0.46	3.3E-3

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

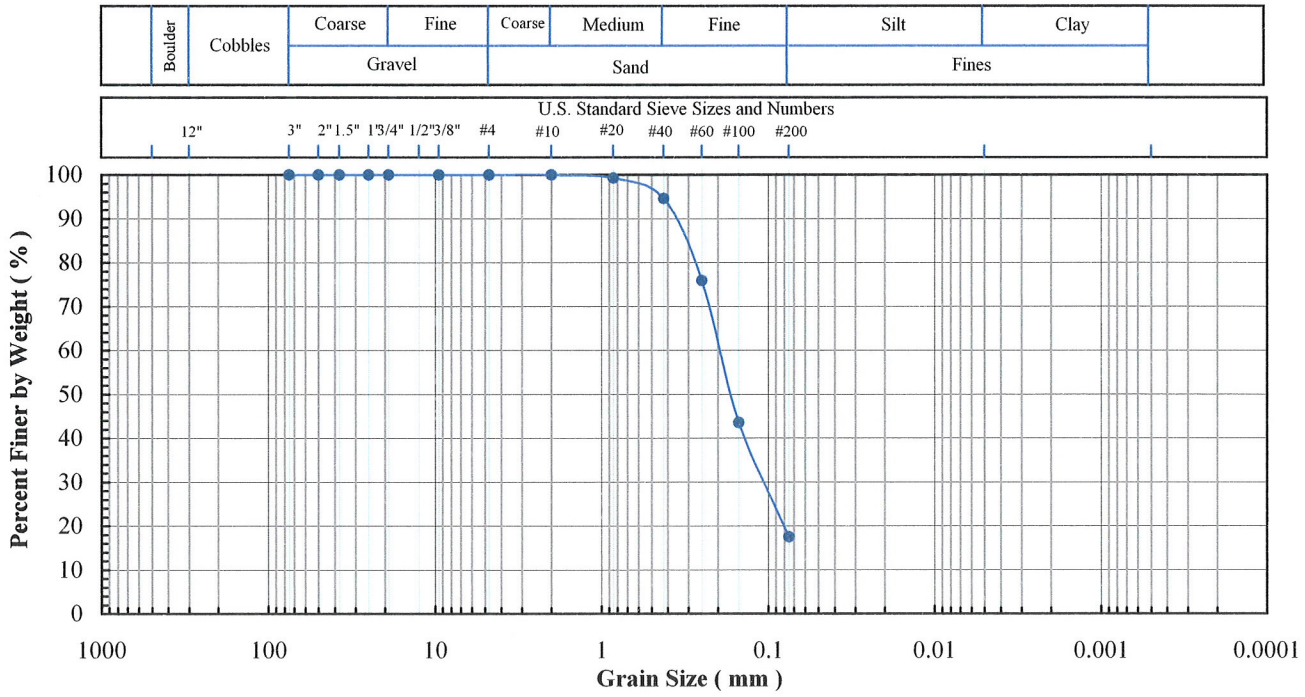
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-05
Lab Sample No:	K046

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



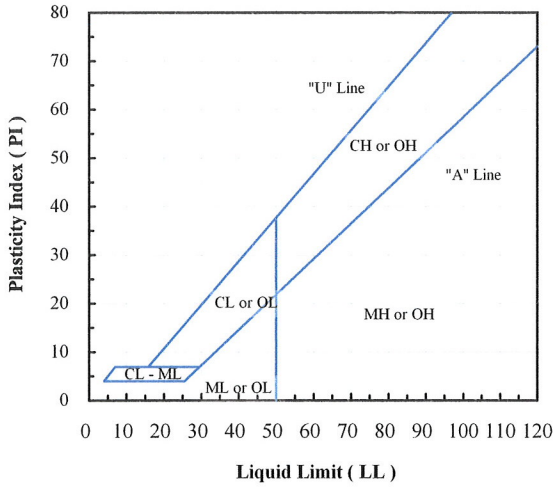
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.3
#40	0.425	94.6
#60	0.250	75.9
#100	0.150	43.6
#200	0.075	17.5

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	82.5
Fines (%):	17.5
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
PC-05	K046	9.8	17.5				SM - Silty sand

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Carbonate Content of Soils (ASTM D 4373): 0 %

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST (1)

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-06
Lab Sample Number:	L026
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	12/12/09

Specimen Number	Specimen Initial Conditions					Permeant Liquid (4)	Gradient Range	Hydraulic Conductivity
	Spec. Prep. (2) (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content(3) (%)		(-)	(cm/s)
1	R	14.2	7.6	95.5	0.0	TW	0.20 - 0.51	4.6E-3

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.
Test specimen final conditions are not presented.

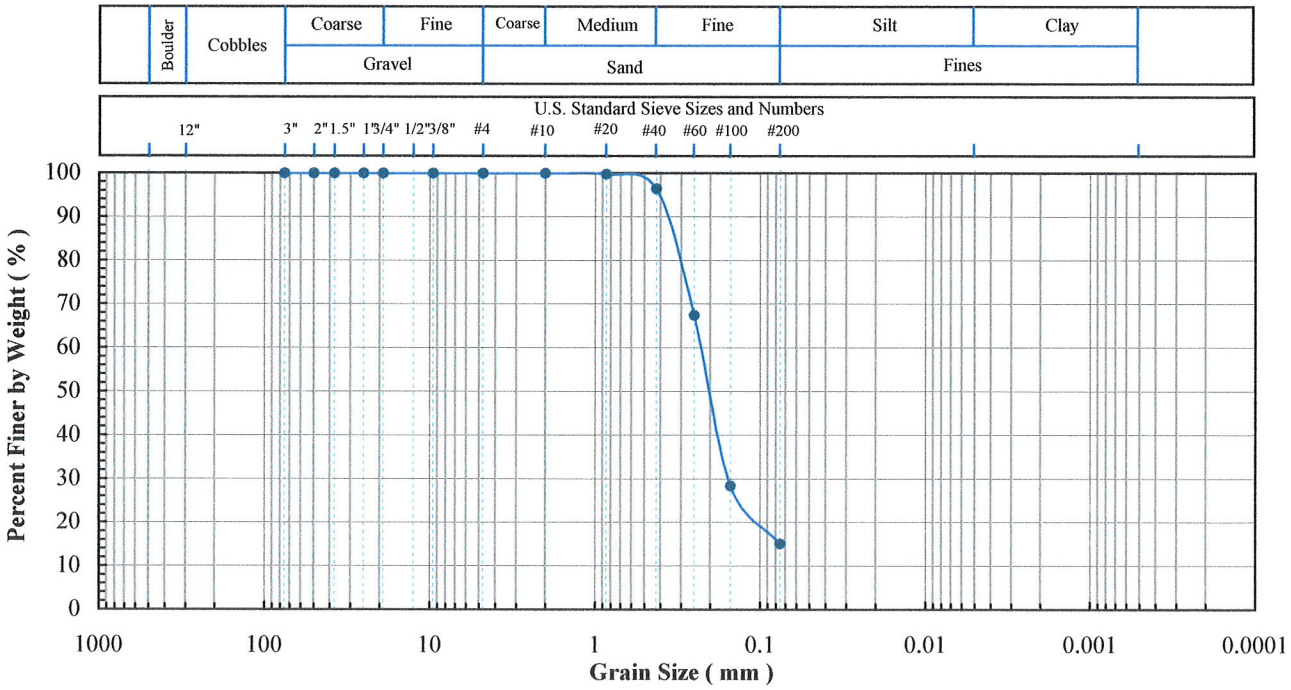
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-06
Lab Sample No:	L026

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



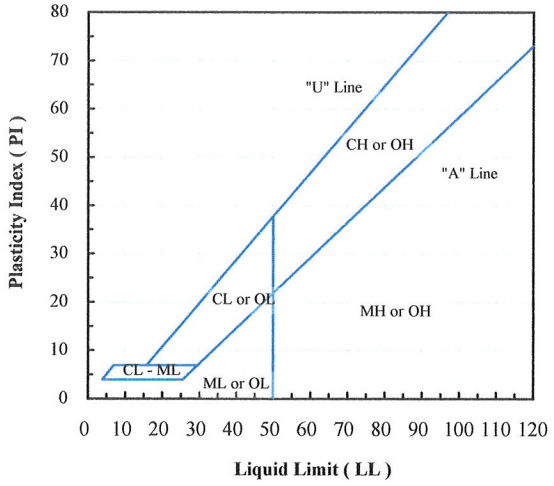
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	96.5
#60	0.250	67.5
#100	0.150	28.4
#200	0.075	15.1

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	84.9
Fines (%):	15.1
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	PL (-)	PI (-)	Engineering Classification
PC-06	L026	8.2	15.1				SM - Silty sand

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST (1)

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-07
Lab Sample Number:	L027
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	12/12/09

Specimen Number	Specimen Initial Conditions					Permeant Liquid (4)	Gradient Range	Hydraulic Conductivity
	Spec. Prep. (2) (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content(3) (%)		(-)	(cm/s)
1	R	14.4	7.6	102.1	0.0	TW	0.16 - 0.43	9.4E-3

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

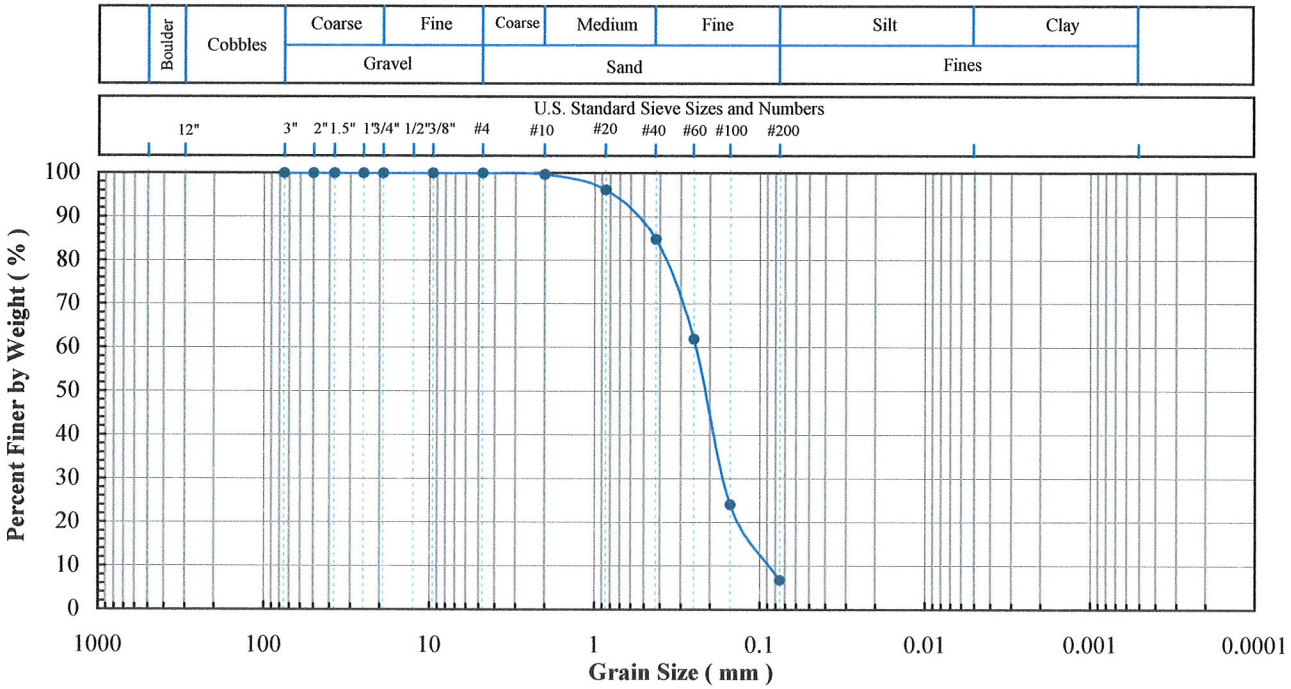
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-07
Lab Sample No:	L027

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



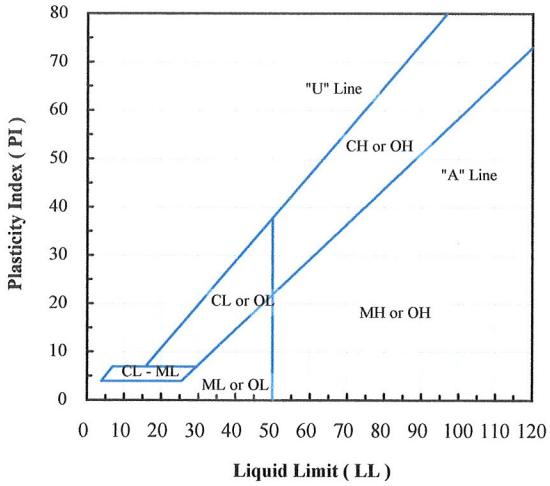
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	99.7
#20	0.850	96.2
#40	0.425	84.9
#60	0.250	62.0
#100	0.150	24.1
#200	0.075	6.8

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	93.2
Fines (%):	6.8
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	2.8
Coeff. Curv. (Cc):	1.2



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
PC-07	L027	6.3	6.8				SP-SM - Poorly graded sand with silt

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST [1]

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-08
Lab Sample Number:	L029
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	12/12/09

Specimen Number	Specimen Initial Conditions					Permeant Liquid [4]	Gradient Range	Hydraulic Conductivity
	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content [3] (%)		(-)	(cm/s)
1	R	14.1	7.6	99.4	0.0	TW	0.16 - 0.47	1.0E-2

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.
Test specimen final conditions are not presented.

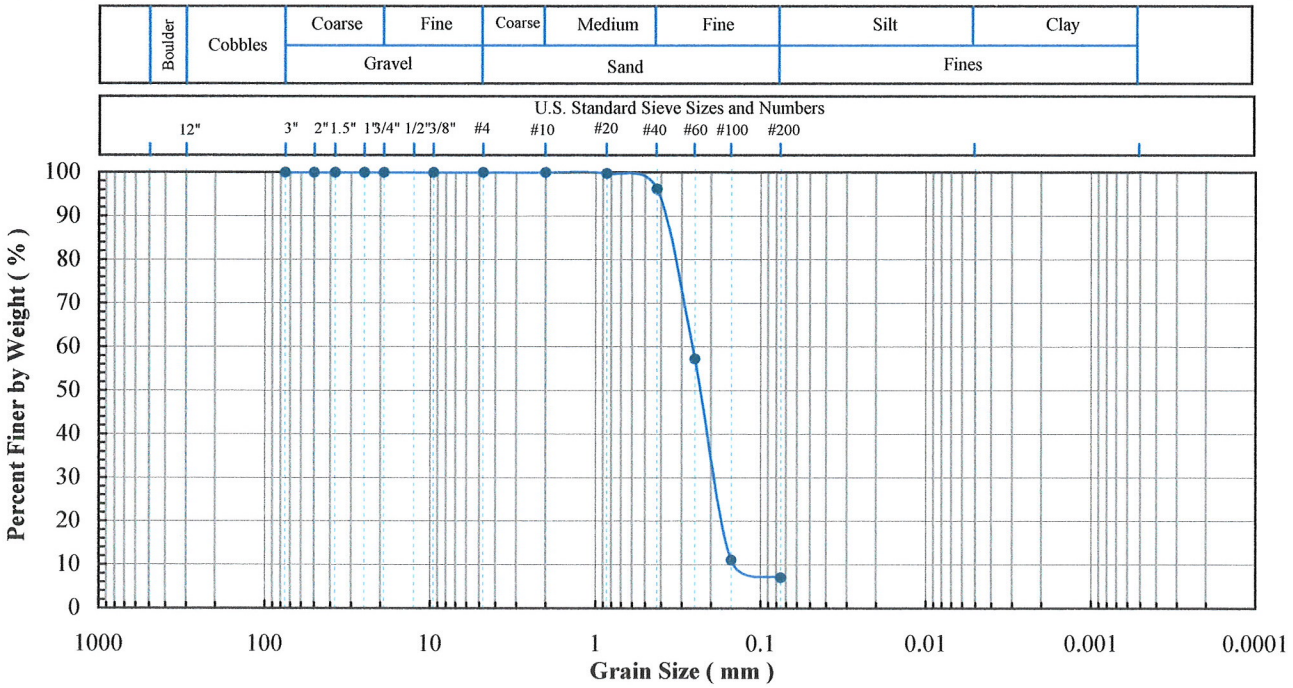
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-08
Lab Sample No:	L029

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



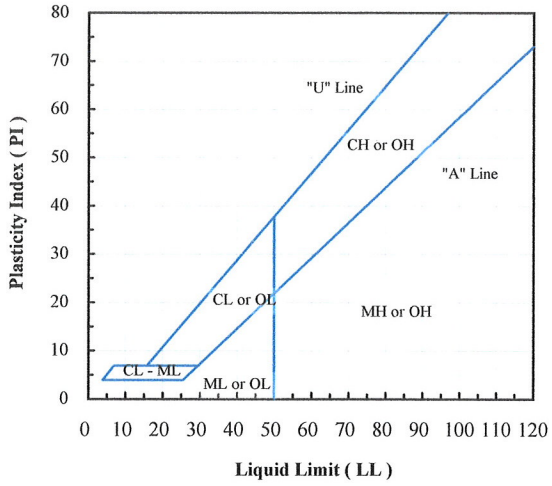
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	96.3
#60	0.250	57.3
#100	0.150	11.1
#200	0.075	7.1

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	92.9
Fines (%):	7.1
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	1.8
Coeff. Curv. (Cc):	1.0



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
PC-08	L029	6.9	7.1				SP-SM - Poorly graded sand with silt

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST [1]

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-09
Lab Sample Number:	L030
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	12/13/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid [4]	Gradient Range	Hydraulic Conductivity
	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content [3] (%)		(-)	(cm/s)
1	R	14.2	7.6	104.1	0.0	TW	0.13 - 0.45	9.0E-3

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

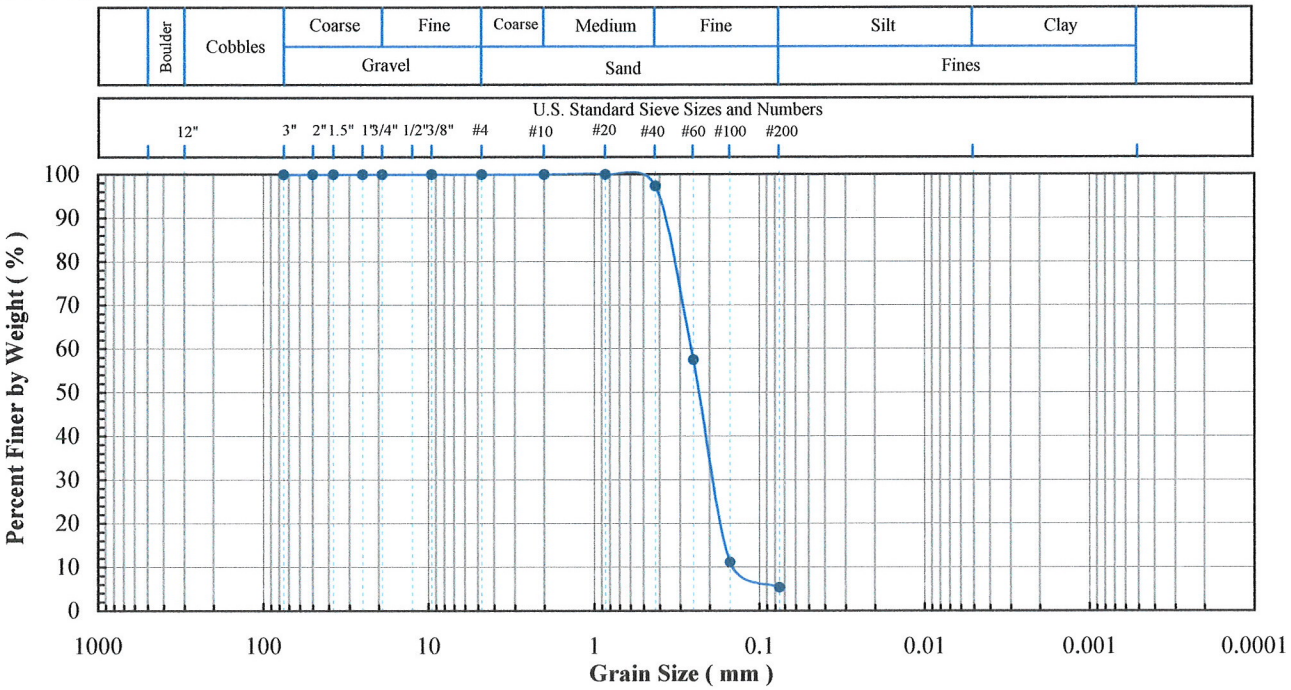
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-09
Lab Sample No:	L030

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



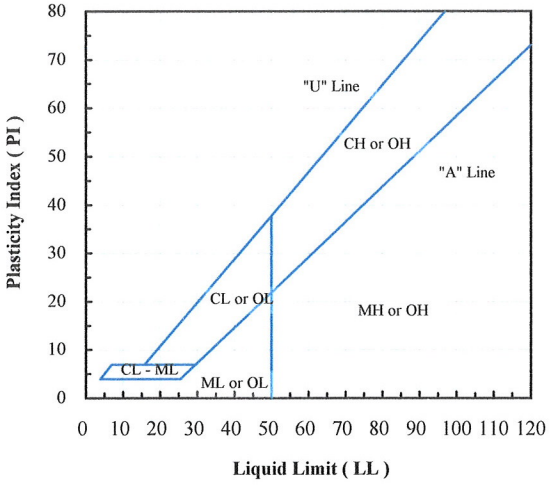
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	100.0
#40	0.425	97.4
#60	0.250	57.5
#100	0.150	11.2
#200	0.075	5.4

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	94.6
Fines (%):	5.4
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	1.7
Coeff. Curv. (Cc):	1.0



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	PL (-)	PI (-)	Engineering Classification
PC-09	L030	5.5	5.4				SP-SM - Poorly graded sand with silt

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST [1]

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-10
Lab Sample Number:	L031
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	12/15/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid [4]	Gradient Range	Hydraulic Conductivity
	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content [3] (%)		(-)	(cm/s)
1	R	14.4	7.6	94.2	0.0	TW	0.29 - 0.34	4.7E-3

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.
Test specimen final conditions are not presented.

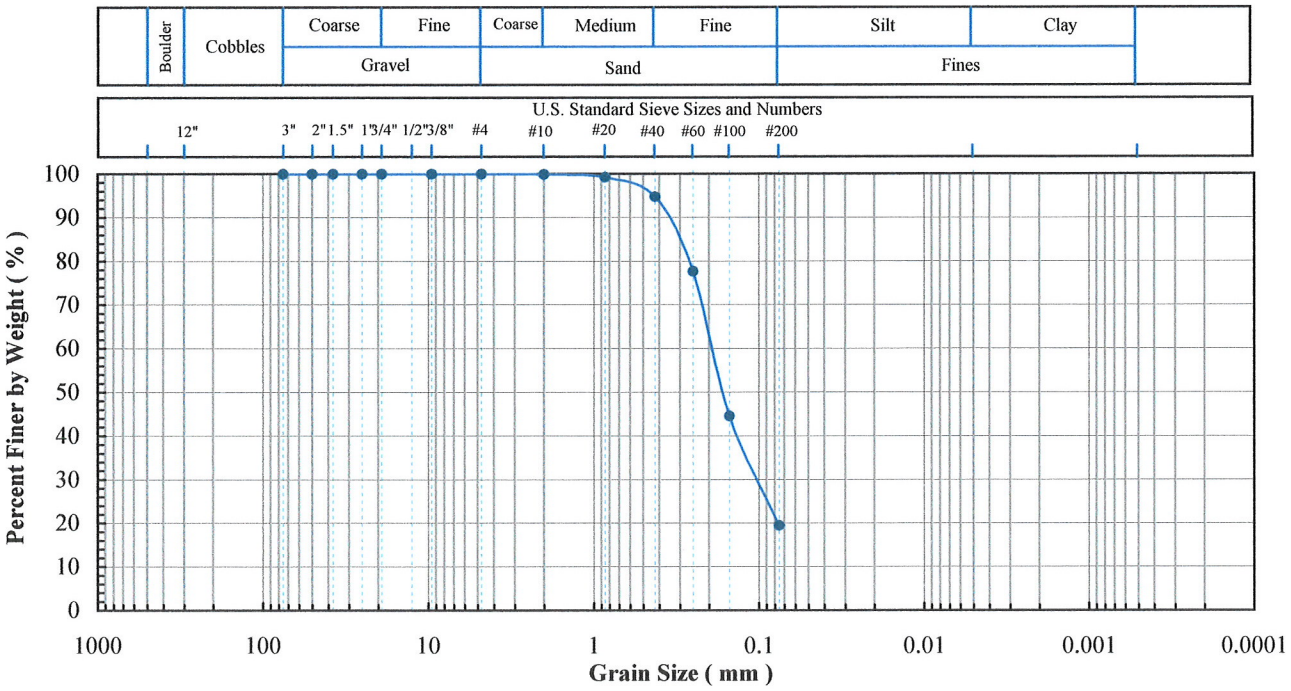
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-10
Lab Sample No:	L031

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



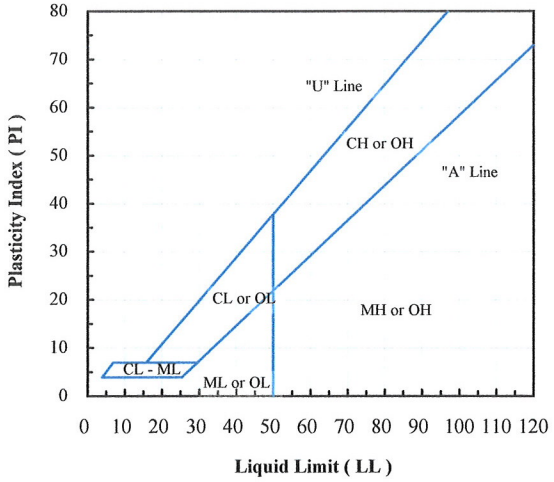
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.3
#40	0.425	94.8
#60	0.250	77.7
#100	0.150	44.6
#200	0.075	19.5

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	80.5
Fines (%):	19.5
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	PL (-)	PI (-)	Engineering Classification
PC-10	L031	13.8	19.5				SM - Silty sand

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST [1]

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	PC-11
Lab Sample Number:	L032
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	12/15/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid [4]	Gradient Range	Hydraulic Conductivity
	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content [3] (%)		(-)	(cm/s)
1	R	14.4	7.6	104.4	0.0	TW	0.12 - 0.42	2.0E-2

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 7 layers, each approximately 2.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

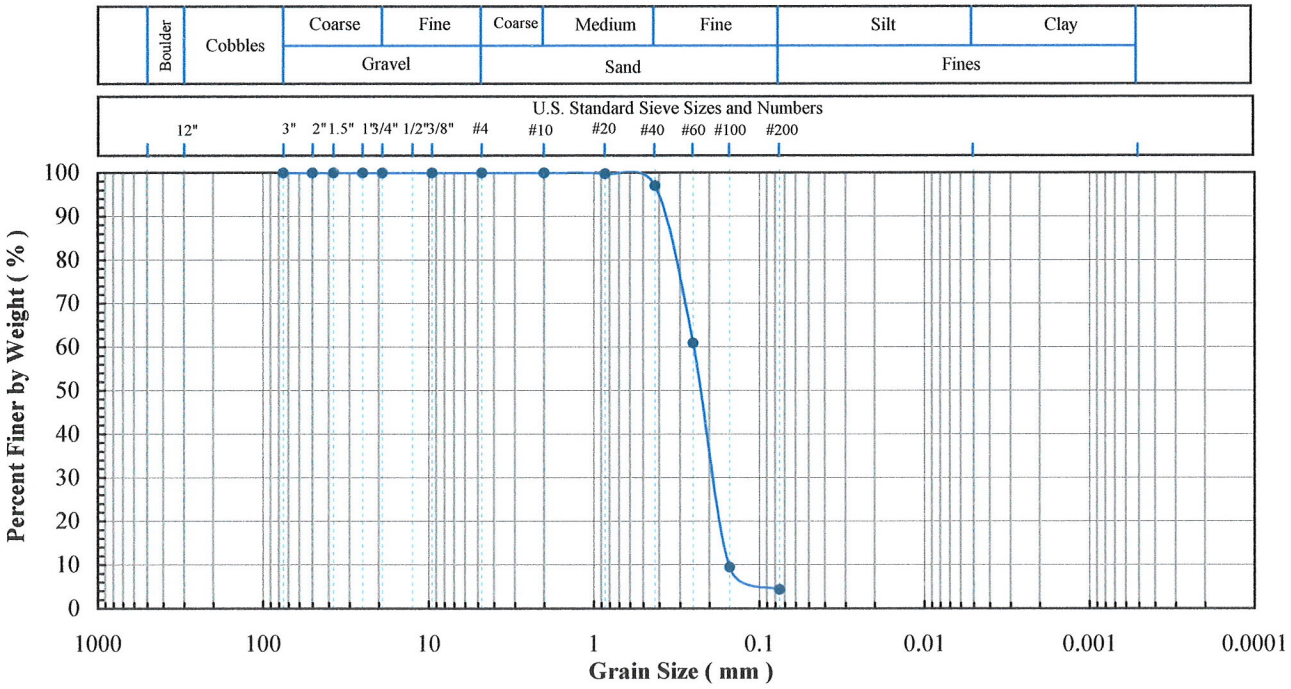
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	PC-11
Lab Sample No:	L032

ASTM C 136, D 422, D 854, D 1140, D2216, D 2487, D4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits



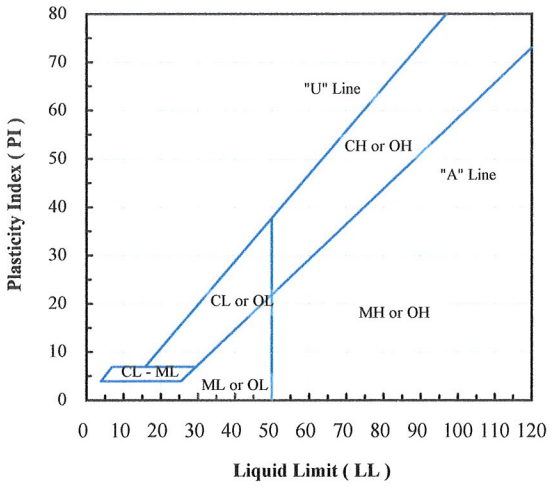
Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	100.0
3/4"	19	100.0
3/8"	9.5	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	97.1
#60	0.250	61.0
#100	0.150	9.5
#200	0.075	4.4

Specific Gravity (-):	

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	
Sand (%):	95.6
Fines (%):	4.4
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	1.5
Coeff. Curv. (Cc):	1.0



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	PL (-)	PI (-)	Engineering Classification
PC-11	L032	5.0	4.4				SP - Poorly graded sand

Note(s):

Engineering classification is based on the assumption that the fines are either ML or MH.

Drainage Gravel

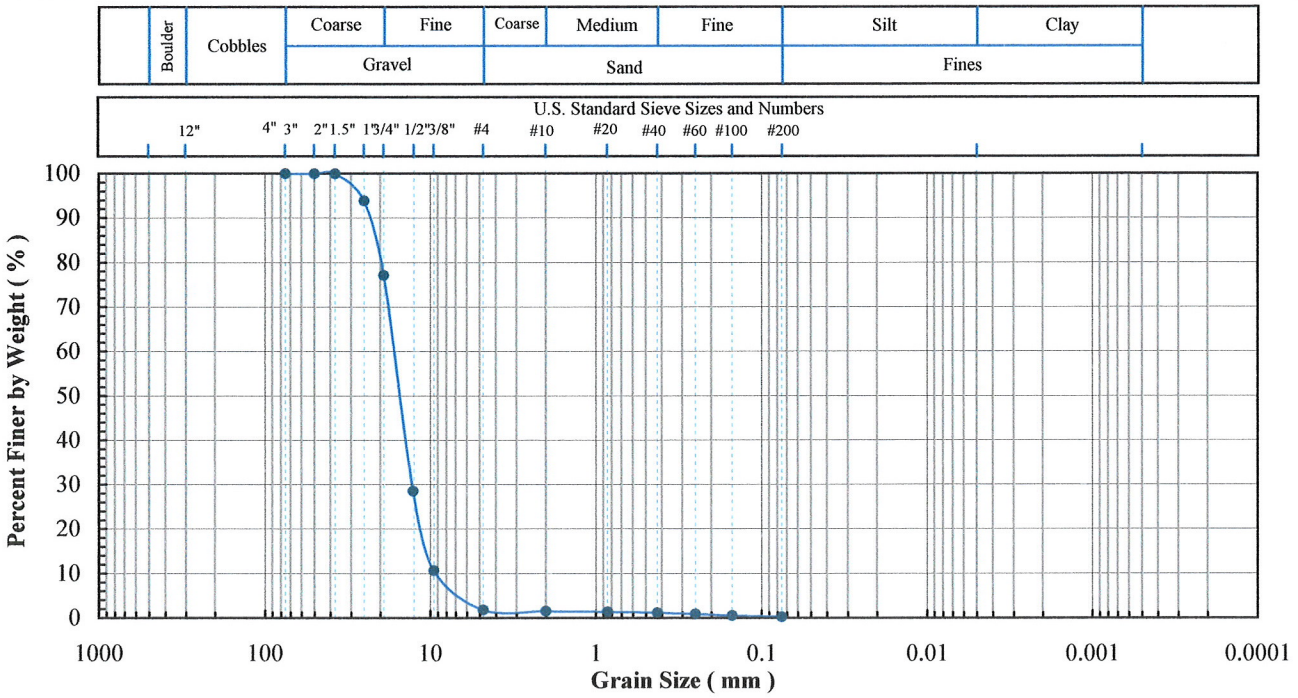
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	DA-01 (Trench)
Lab Sample No:	K033

ASTM C 136, D 422, D 854, D 1140, D 2216, D 2487, D 4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits

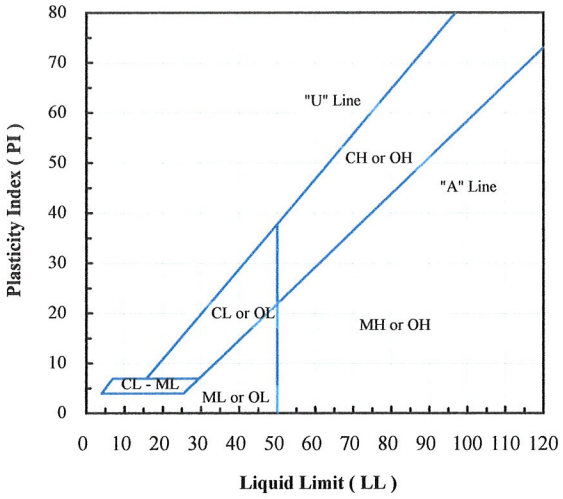


Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	100.0
1"	25	93.9
3/4"	19	77.2
1/2"	12.7	28.6
3/8"	9.5	10.7
#4	4.75	1.9
#10	2.00	1.6
#20	0.850	1.4
#40	0.425	1.2
#60	0.250	0.9
#100	0.150	0.6
#200	0.075	0.3

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	98.1
Sand (%):	1.6
Fines (%):	0.3
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
DA-01 (Trench)	K033		0.3				

Note(s):

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST (1)

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	DA-01 (Trench)
Lab Sample Number:	K033
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	11/17/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid (4)	Gradient Range	Hydraulic Conductivity
	Spec. Prep. (2) (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content (3) (%)		(-)	(cm/s)
1	R	31.1	23.0	100.6	0.0	TW	0.002 - 0.01	1.4E+1

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 5 layers, each approximately 6.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

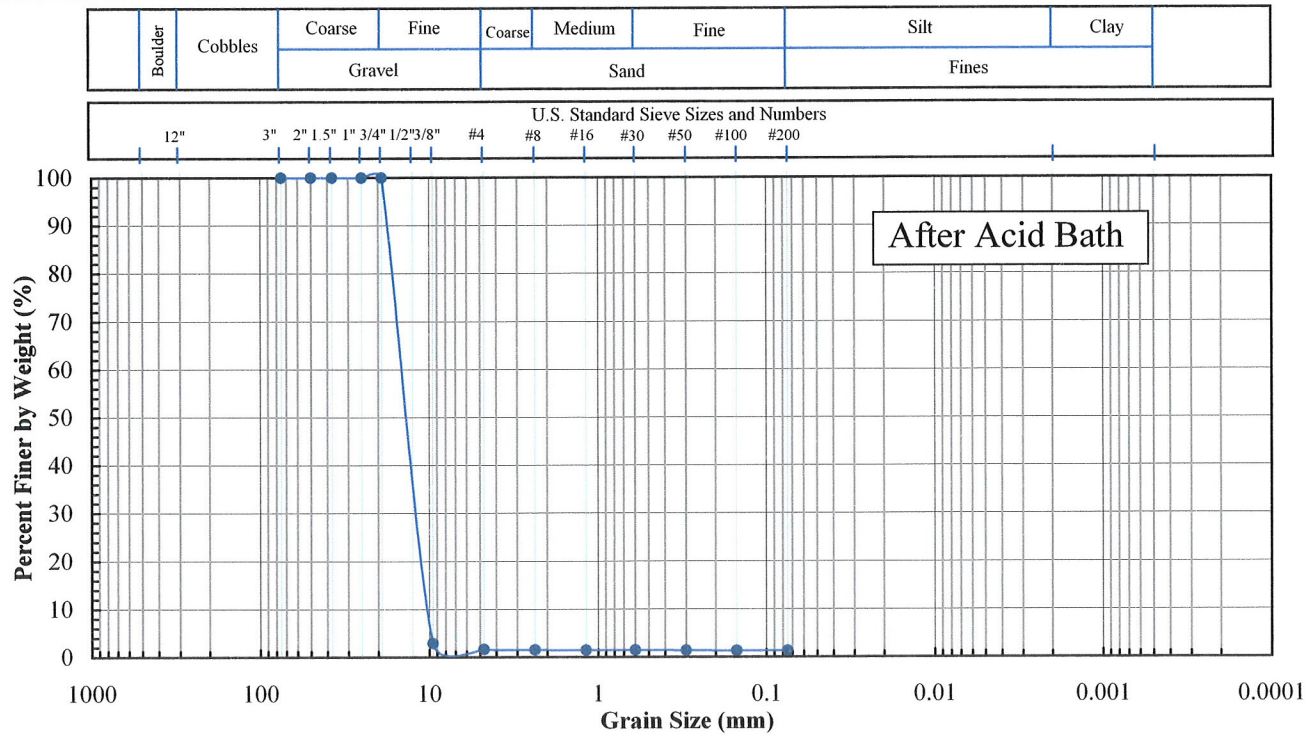
Laboratory temperature at 22±3 °C.
Test specimen final conditions are not presented.
The entire sample was used (i.e., particles larger than 3/4 in. Seive, if any, were not removed).

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID	DA-01 (Trench)
Lab Sample No:	K033

ASTM D 3042

INSOLUBLE RESIDUE IN CARBONATE AGGREGATES

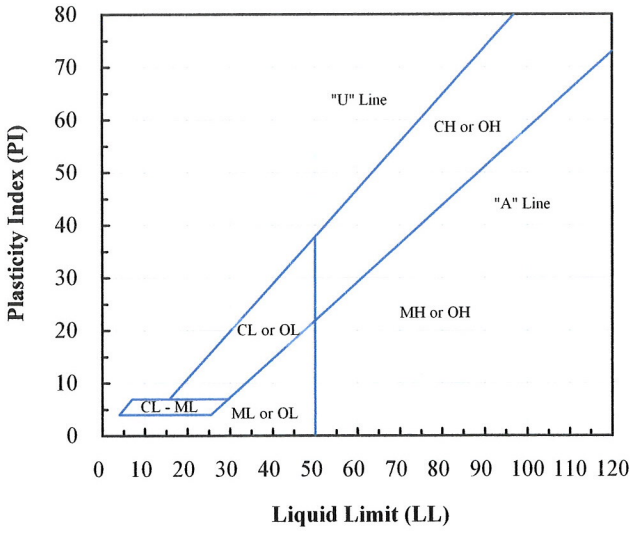


Sieve No.	Size (mm)	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.0	100.0
3/8"	9.50	2.9
#4	4.75	1.7
#8	2.00	1.5
#16	0.850	1.5
#30	0.425	1.4
#50	0.250	1.4
#100	0.150	1.4
#200	0.075	1.4

Hydrometer Particle Diameter (mm)	% Finer
0.050	
0.020	
0.005	
0.002	
0.001	

Gravel (%):	98.3
Sand (%):	0.3
Fines (%):	1.4
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	**Total Insoluble Residue** (%)
DA-01 (Trench)	K033		1.4				98.6

Note(s):

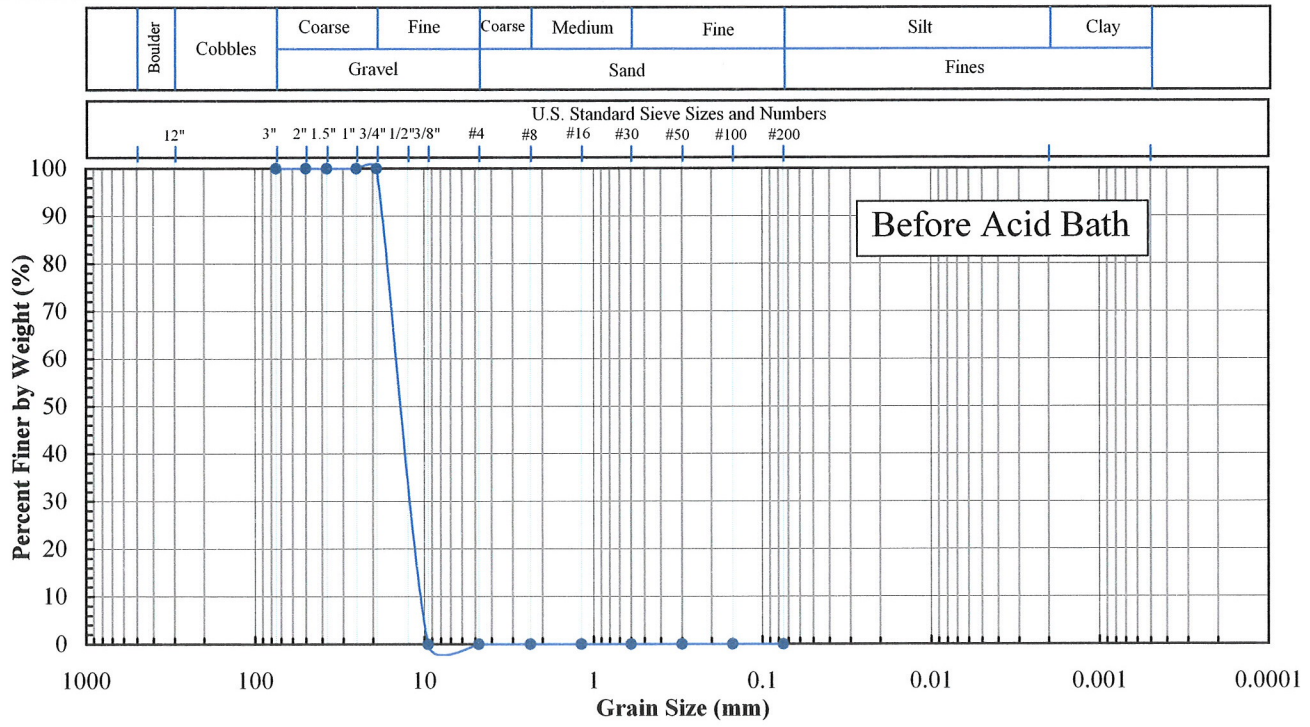
Only particles passed through 3/4 in. Sieve and washed over 3/8 in. Sieve were used.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID	DA-01 (Trench)
Lab Sample No:	K033

ASTM D 3042

INSOLUBLE RESIDUE IN CARBONATE AGGREGATES

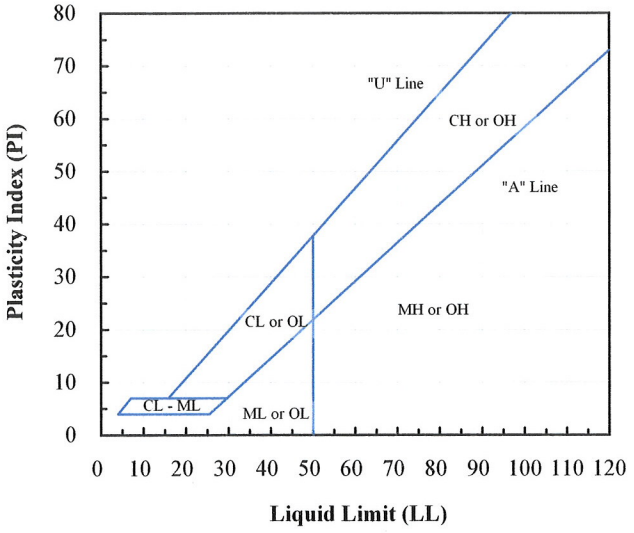


Sieve No.	Size (mm)	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.0	100.0
3/8"	9.50	
#4	4.75	
#8	2.00	
#16	0.850	
#30	0.425	
#50	0.250	
#100	0.150	
#200	0.075	

Hydrometer Particle Diameter (mm)	% Finer
0.050	
0.020	
0.005	
0.002	
0.001	

Gravel (%):	100.0
Sand (%):	
Fines (%):	
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
DA-01 (Trench)	K033						

Note(s):

Only particles passed through 3/4 in. Sieve and washed over 3/8 in. Sieve were used.

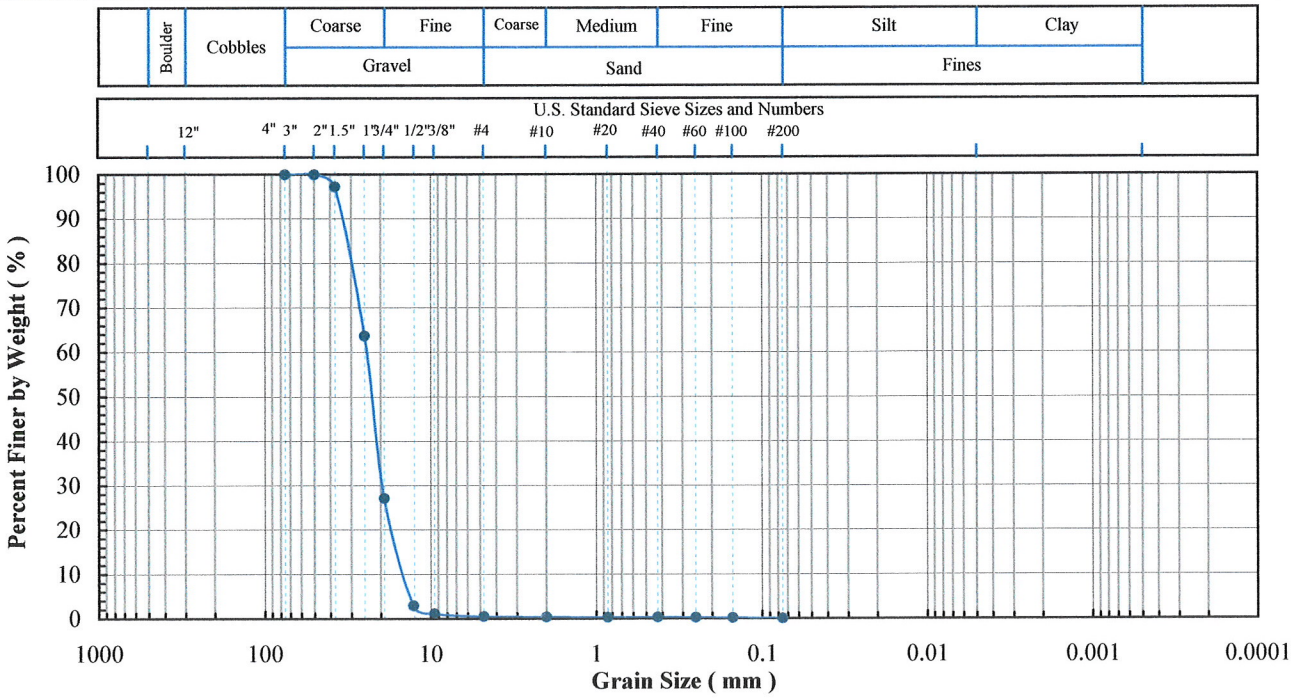
Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID:	DA-03 (Sump)
Lab Sample No:	K038

ASTM C 136, D 422, D 854, D 1140, D 2216, D 2487, D 4318

SOIL INDEX PROPERTIES

Grain Size, Spec. Gravity, Moist. Content, Eng. Classification, Atterberg Limits

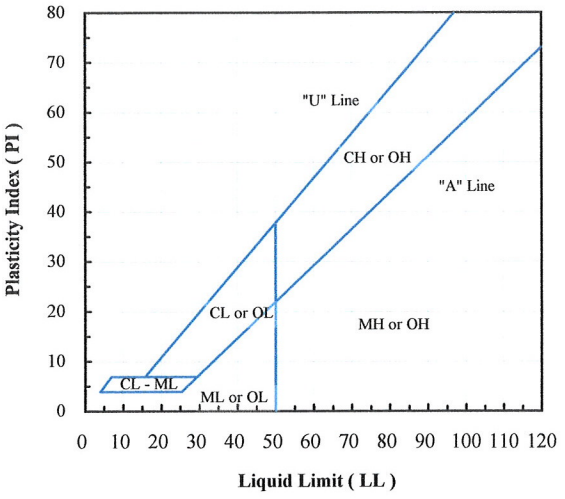


Sieve No.	Size (mm)	% Finer
3"	75	100.0
2"	50	100.0
1.5"	37.5	97.3
1"	25	63.8
3/4"	19	27.2
1/2"	12.7	3.0
3/8"	9.5	1.2
#4	4.75	0.6
#10	2.00	0.4
#20	0.850	0.4
#40	0.425	0.3
#60	0.250	0.3
#100	0.150	0.2
#200	0.075	0.1

Hydrometer Particle Diameter (mm)	% Finer

Gravel (%):	99.4
Sand (%):	0.5
Fines (%):	0.1
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
DA-03 (Sump)	K038		0.1				

Note(s):

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

RIGID WALL PERMEABILITY TEST [1]

ASTM D2434 *

Project Name:	Vista Class III Landfill - Cell 2
Project Number:	391
Client Name:	Geosyntec Consultants
Site Sample ID:	DA-03 (Sump)
Lab Sample Number:	K038
Material Type:	NA
Specified Value (cm/sec):	NA
Date Tested:	11/20/2009

Specimen Number	Specimen Initial Conditions					Permeant Liquid [4]	Gradient Range	Hydraulic Conductivity
	Spec. Prep. [2] (-)	Spec. Length (cm)	Spec. Diameter (cm)	Dry Unit Weight (pcf)	Moisture Content [3] (%)		(-)	(cm/s)
1	R	31.6	23.0	101.3	0.0	TW	0.002 - 0.01	2.5E+1

Notes:

1. Constant head test procedures were followed during the testing.
2. Remolded specimen was formed by tamping the soil in 5 layers, each approximately 6.0 cm, utilizing moderate compaction energy.
3. A moisture content of 0.0% indicates that the sample was air/oven dried before being tested.
4. Type of permeant liquid: TW = Tap Water, DTW = Deaired Tap Water, DDI = Deaired Deionized Water

* Deviations:

Laboratory temperature at 22±3 °C.

Test specimen final conditions are not presented.

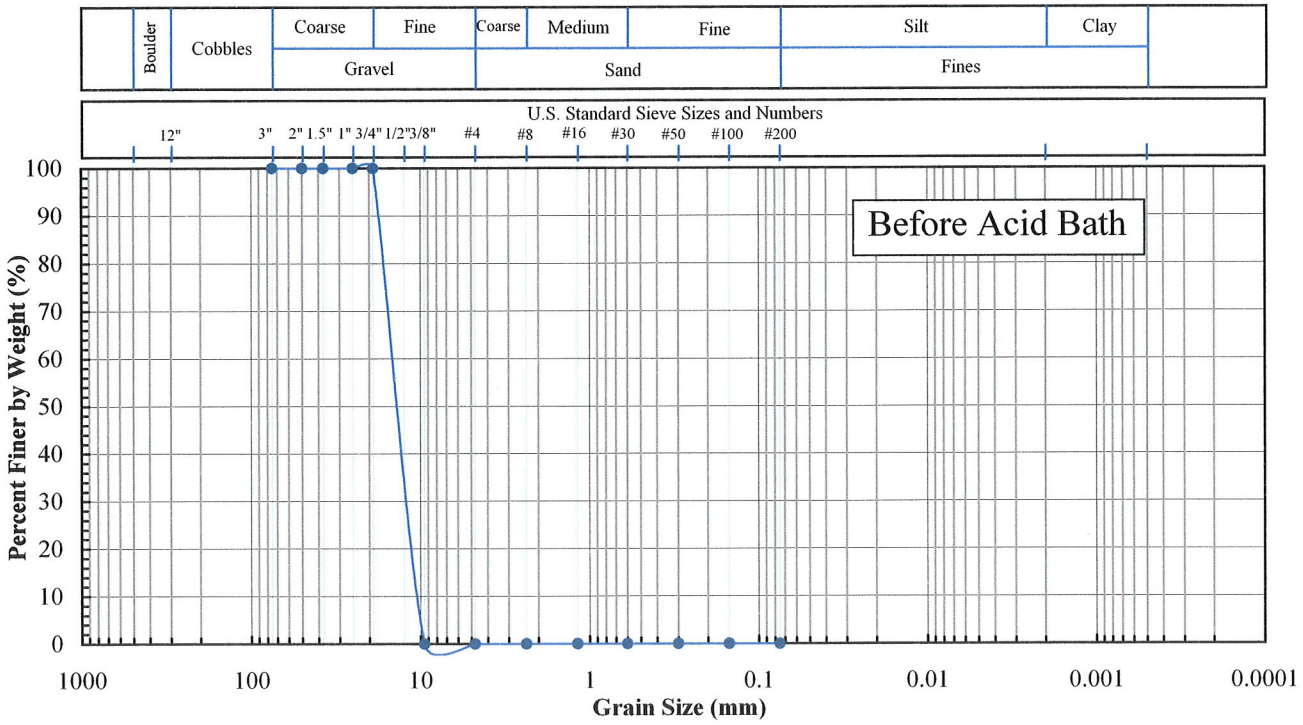
The entire sample was used (i.e., particles larger than 3/4 in. Seive, if any, were not removed).

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID	DA-03 (Sump)
Lab Sample No:	K038

ASTM D 3042

INSOLUBLE RESIDUE IN CARBONATE AGGREGATES

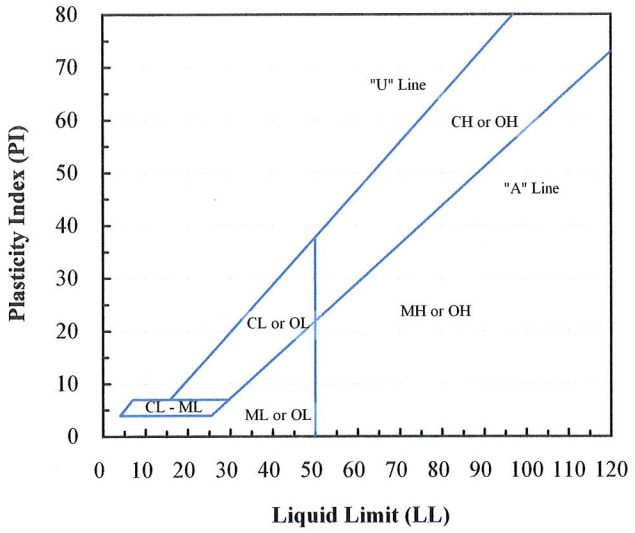


Sieve No.	Size (mm)	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.0	100.0
3/8"	9.50	
#4	4.75	
#8	2.00	
#16	0.850	
#30	0.425	
#50	0.250	
#100	0.150	
#200	0.075	

Hydrometer Particle Diameter (mm)	% Finer
0.050	
0.020	
0.005	
0.002	
0.001	

Gravel (%):	100.0
Sand (%):	
Fines (%):	
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	Engineering Classification
DA-03 (Sump)	K038						

Note(s):

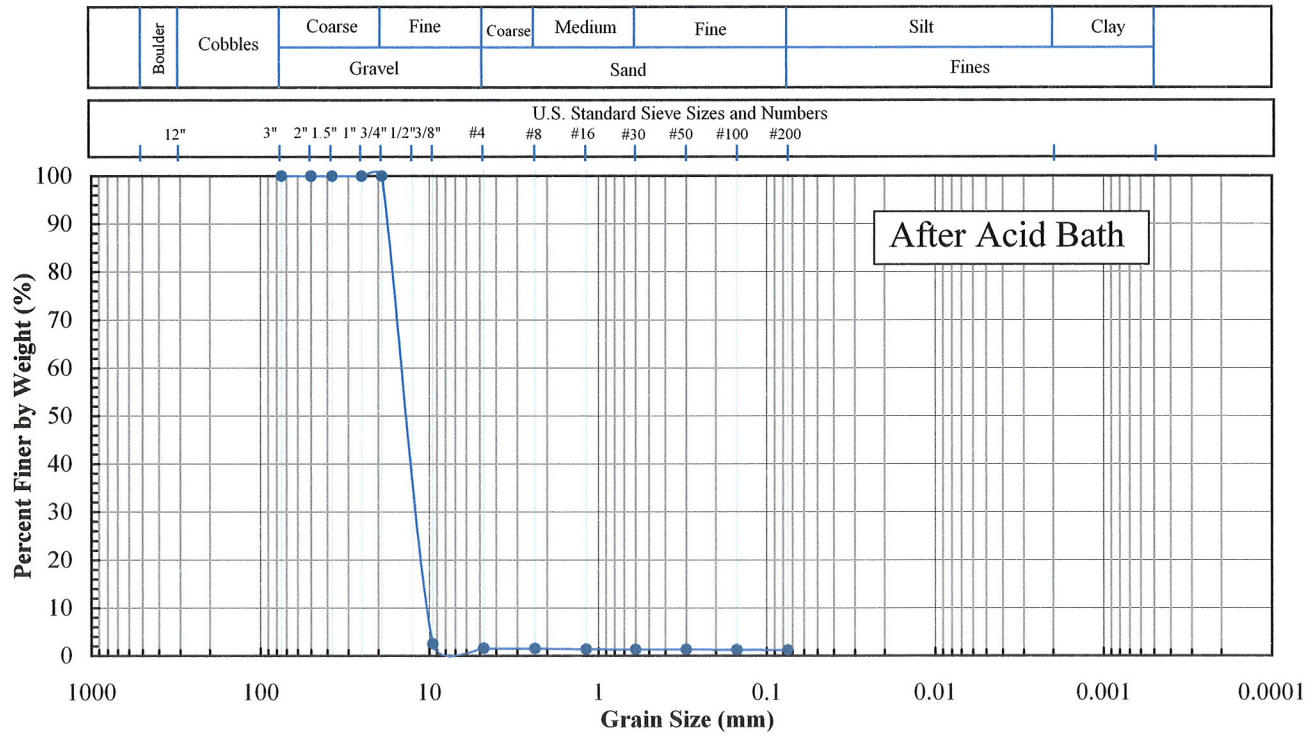
Only particles passed through 3/4 in. Sieve and washed over 3/8 in. Sieve were used.

Excel Geotechnical Testing, Inc.
"Excellence in Testing"
941 Forrest Street, Roswell, Georgia 30075
Tel: (770) 650 1666 Fax: (770) 650 5786

Project Name:	Vista Class III Landfill - Cell 2
Project No:	391
Client Sample ID	DA-03 (Sump)
Lab Sample No:	K038

ASTM D 3042

INSOLUBLE RESIDUE IN CARBONATE AGGREGATES

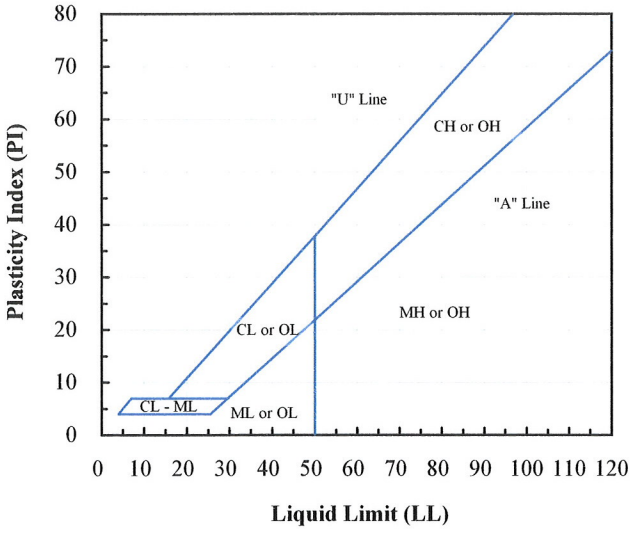


Sieve No.	Size (mm)	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.0	100.0
3/8"	9.50	2.5
#4	4.75	1.6
#8	2.00	1.5
#16	0.850	1.4
#30	0.425	1.4
#50	0.250	1.3
#100	0.150	1.3
#200	0.075	1.2

Hydrometer Particle Diameter (mm)	% Finer
0.050	
0.020	
0.005	
0.002	
0.001	

Gravel (%):	98.4
Sand (%):	0.4
Fines (%):	1.2
Silt (%):	
Clay (%):	

Coeff. Unif. (Cu):	
Coeff. Curv. (Cc):	



Client Sample ID.	Lab Sample No:	Moisture Content (%)	Fines Content < No. 200 (%)	Atterberg Limits LL (-)	Atterberg Limits PL (-)	Atterberg Limits PI (-)	**Total Insoluble Residue** (%)
DA-03 (Sump)	K038		1.2				98.8

Note(s):

Only particles passed through 3/4 in. Sieve and washed over 3/8 in. Sieve were used.

SUB APPENDIX A-2

FIELD NUCLEAR DENSITY TEST RESULTS

Geosyntec consultants

WM WASTE MANAGEMENT

FIELD NUCLEAR MOISTURE/DENSITY TEST LOG **(ASTM D 6938)**

PROJECT: VISTA CLASS III LANDFILL

LOCATION: APOPKA, FL PROJECT NO.: FQ1767 TASK NO.: 02

DESCRIPTION: CELL 2 CONSTRUCTION DATE: 28 day OCT month 2009 year

SPECIFICATION REQUIREMENTS: MATERIAL SOURCE: In Situ Material

MATERIAL TYPE: ☐ FILL ☐ SUBGRADE ☒ SUBBASE ☐ CLAY ☐ OTHER: _____ MAX. LIFT THICKNESS: -- (in.)

MINIMUM COMPACTION: 90 (%) ☒ ASTM D 698 ☐ ASTM D 1557 MOISTURE CONTENT RANGE: - _____ to + _____ of OPT.

NUCLEAR GAUGE TYPE: 3430 GAUGE SERIAL NO.: 61940 CORRECTION FACTOR: Y= None

TEST NO.	TEST LOCATION	PROBE DEPTH / LIFT NO.	LABORATORY RESULTS			FIELD TEST RESULTS						RE-TEST NO.	RE-TEST	
			SAMPLE NO.	OMC (%)	MAX. DRY UNIT WT. (pcf)	FIELD MOISTURE CONTENT[1] (%)	WET UNIT WT (pcf)	DRY UNIT WT (pcf)	PERCENT COMPACT. (%)	PASS	FAIL		PASS	FAIL
1	CELL FLOOR	12 / 1	SB-1	15.3	112.1	14.0	115.9	101.7	91	X				
2	CELL FLOOR	12 / 1	SB-1	15.3	112.1	20.1	113.9	94.8	85		X	62	X	
3	CELL FLOOR	12 / 1	SB-1	15.3	112.1	16.5	107.5	92.3	82		X	63	X	
4	CELL FLOOR	12 / 1	SB-1	15.3	112.1	8.2	118.3	109.3	98	X				
5	CELL FLOOR	12 / 1	SB-1	15.3	112.1	7.4	113.3	105.5	94	X				
6	CELL FLOOR	12 / 1	SB-1	15.3	112.1	7.9	110.8	102.7	92	X				
7	CELL FLOOR	12 / 1	SB-1	15.3	112.1	7.5	124.2	115.5	103	X				
8	CELL FLOOR	12 / 1	SB-1	15.3	112.1	9.5	117.3	107.1	96	X				
9	CELL FLOOR	12 / 1	SB-1	15.3	112.1	11.3	127.2	114.3	102	X				
10	CELL FLOOR	12 / 1	SB-1	15.3	112.1	6.8	113.8	106.6	95	X				

NOTES: (1) FIELD MOISTURE CONTENT = GAUGE READING/CORRECTED MOISTURE

COMMENTS: The elevation of the surface being tested was reached by cutting the existing material to grade.

CHECKED BY: DAS

Geosyntec consultants

WM WASTE MANAGEMENT

FIELD NUCLEAR MOISTURE/DENSITY TEST LOG **(ASTM D 6938)**

PROJECT: VISTA CLASS III LANDFILL

LOCATION: APOPKA, FL PROJECT NO.: FQ1767 TASK NO.: 02

DESCRIPTION: CELL 2 CONSTRUCTION DATE: 5 day NOV month 2009 year

SPECIFICATION REQUIREMENTS: MATERIAL SOURCE: In Situ Material

MATERIAL TYPE: [ ] FILL [ ] SUBGRADE [X] SUBBASE [ ] CLAY [ ] OTHER: _____ MAX. LIFT THICKNESS: -- (in.)

MINIMUM COMPACTION: 90 (%) [X] ASTM D 698 [ ] ASTM D 1557 MOISTURE CONTENT RANGE: - _____ to + _____ of OPT.

NUCLEAR GAUGE TYPE: 3430 GAUGE SERIAL NO.: 61940 CORRECTION FACTOR: Y= None

TEST NO.	TEST LOCATION	PROBE DEPTH / LIFT NO.	LABORATORY RESULTS			FIELD TEST RESULTS						RE-TEST NO.	RE-TEST	
			SAMPLE NO.	OMC (%)	MAX. DRY UNIT WT. (pcf)	FIELD MOISTURE CONTENT[1] (%)	WET UNIT WT (pcf)	DRY UNIT WT (pcf)	PERCENT COMPACT. (%)	PASS	FAIL		PASS	FAIL
11	CELL FLOOR	12 / 1	SB-2	26.9	90.4	13.8	114.9	101.0	112	X				
12	CELL FLOOR	12 / 1	SB-2	26.9	90.4	13.1	112.2	99.2	110	X				
13	CELL FLOOR	12 / 1	SB-2	26.9	90.4	37.9	101.6	73.7	82		X	64	X	
14	CELL FLOOR	12 / 1	SB-2	26.9	90.4	28.5	102.1	79.5	88		X	61	X	
15	CELL FLOOR	12 / 1	SB-2	26.9	90.4	18.8	112.5	94.7	105	X				
16	CELL FLOOR	12 / 1	SB-2	26.9	90.4	14.0	108.8	95.4	106	X				
17	CELL FLOOR	12 / 1	SB-2	26.9	90.4	12.9	109.9	97.3	108	X				
18	CELL FLOOR	12 / 1	SB-2	26.9	90.4	28.4	105.6	82.2	91	X				
19	CELL FLOOR	12 / 1	SB-2	26.9	90.4	14.7	115.9	101.0	112	X				
20	CELL FLOOR	12 / 1	SB-2	26.9	90.4	11.7	111.9	100.2	111	X				
21	CELL FLOOR	12 / 1	SB-2	26.9	90.4	9.8	111.7	101.7	113	X				
22	CELL FLOOR	12 / 1	SB-2	26.9	90.4	8.6	117.0	107.7	119	X				
23	CELL FLOOR	12 / 1	SB-2	26.9	90.4	19.8	103.7	86.6	96	X				
24	CELL FLOOR	12 / 1	SB-2	26.9	90.4	35.8	104.3	76.8	85		X			

NOTES: (1) FIELD MOISTURE CONTENT = GAUGE READING/CORRECTED MOISTURE

COMMENTS: The elevation of the surface being tested was reached by cutting the existing material to grade.
Material within the vicinity of Test #24 was removed and replaced with dry material then recompacted and proof-rolled.

CHECKED BY: DAS

Geosyntec consultants

WM WASTE MANAGEMENT

FIELD NUCLEAR MOISTURE/DENSITY TEST LOG **(ASTM D 6938)**

PROJECT: VISTA CLASS III LANDFILL

LOCATION: APOPKA, FL PROJECT NO.: FQ1767 TASK NO.: 02

DESCRIPTION: CELL 2 CONSTRUCTION DATE: 5 day NOV month 2009 year

SPECIFICATION REQUIREMENTS: MATERIAL SOURCE: In Situ Material

MATERIAL TYPE: ☐ FILL ☐ SUBGRADE ☒ SUBBASE ☐ CLAY ☐ OTHER: _____ MAX. LIFT THICKNESS: -- (in.)

MINIMUM COMPACTION: 90 (%) ☒ ASTM D 698 ☐ ASTM D 1557 MOISTURE CONTENT RANGE: - _____ to + _____ of OPT.

NUCLEAR GAUGE TYPE: 3430 GAUGE SERIAL NO.: 61940 CORRECTION FACTOR: Y= None

TEST NO.	TEST LOCATION	PROBE DEPTH / LIFT NO.	LABORATORY RESULTS			FIELD TEST RESULTS						RE-TEST NO.	RE-TEST	
			SAMPLE NO.	OMC (%)	MAX. DRY UNIT WT. (pcf)	FIELD MOISTURE CONTENT[1] (%)	WET UNIT WT (pcf)	DRY UNIT WT (pcf)	PERCENT COMPACT. (%)	PASS	FAIL		PASS	FAIL
25	CELL FLOOR	12 / 1	SB-2	26.9	90.4	34.6	107.1	79.6	88		X			
26	CELL FLOOR	12 / 1	SB-2	26.9	90.4	14.2	113.6	99.5	110	X				
27	CELL FLOOR	12 / 1	SB-2	26.9	90.4	11.5	119.2	106.9	118	X				
28	CELL FLOOR	12 / 1	SB-2	26.9	90.4	12.7	109.2	96.9	107	X				
29	CELL FLOOR	12 / 1	SB-2	26.9	90.4	12.1	121.1	108.0	120	X				
30	CELL FLOOR	12 / 1	SB-2	26.9	90.4	7.3	114.5	106.7	118	X				
31	CELL FLOOR	12 / 1	SB-2	26.9	90.4	19	107.4	90.3	100	X				
32	CELL FLOOR	12 / 1	SB-2	26.9	90.4	10.1	112.1	101.8	113	X				
33	CELL FLOOR	12 / 1	SB-2	26.9	90.4	9.1	112.3	102.9	114	X				
34	CELL FLOOR	12 / 1	SB-2	26.9	90.4	11.4	108.9	97.8	108	X				
35	CELL FLOOR	12 / 1	SB-2	26.9	90.4	11.8	121.1	108.3	120	X				
36	CELL FLOOR	12 / 1	SB-2	26.9	90.4	15.1	120.6	104.8	116	X				
37	CELL FLOOR	12 / 1	SB-2	26.9	90.4	12.8	114.8	101.8	113	X				
38	CELL FLOOR	12 / 1	SB-2	26.9	90.4	17.6	108.6	92.3	102	X				

NOTES: (1) FIELD MOISTURE CONTENT = GAUGE READING/CORRECTED MOISTURE

COMMENTS: The elevation of the surface being tested was reached by cutting the existing material to grade.
Material within the vicinity of Test #25 was removed and replaced with dry material then recompacted and proof-rolled.

CHECKED BY: DAS

Geosyntec consultants

WM WASTE MANAGEMENT

FIELD NUCLEAR MOISTURE/DENSITY TEST LOG **(ASTM D 6938)**

PROJECT: VISTA CLASS III LANDFILL

LOCATION: APOPKA, FL PROJECT NO.: FQ1767 TASK NO.: 02

DESCRIPTION: CELL 2 CONSTRUCTION DATE: 5 day NOV month 2009 year

SPECIFICATION REQUIREMENTS: MATERIAL SOURCE: In Situ Material

MATERIAL TYPE: [ ] FILL [ ] SUBGRADE [X] SUBBASE [ ] CLAY [ ] OTHER: _____ MAX. LIFT THICKNESS: -- (in.)

MINIMUM COMPACTION: 90 (%) [X] ASTM D 698 [ ] ASTM D 1557 MOISTURE CONTENT RANGE: - _____ to + _____ of OPT.

NUCLEAR GAUGE TYPE: 3430 GAUGE SERIAL NO.: 61940 CORRECTION FACTOR: Y= None

TEST NO.	TEST LOCATION	PROBE DEPTH / LIFT NO.	LABORATORY RESULTS			FIELD TEST RESULTS						RE-TEST NO.	RE-TEST	
			SAMPLE NO.	OMC (%)	MAX. DRY UNIT WT. (pcf)	FIELD MOISTURE CONTENT[1] (%)	WET UNIT WT (pcf)	DRY UNIT WT (pcf)	PERCENT COMPACT. (%)	PASS	FAIL		PASS	FAIL
39	CELL FLOOR	12 / 1	SB-3	14.4	105.5	8.3	106.7	98.5	93	X				
40	CELL FLOOR	12 / 1	SB-3	14.4	105.5	9.5	107.8	98.4	93	X				
41	CELL FLOOR	12 / 1	SB-3	14.4	105.5	16.9	120.3	102.9	98	X				
42	CELL FLOOR	12 / 1	SB-3	14.4	105.5	8.0	110.7	102.5	97	X				
43	CELL FLOOR	12 / 1	SB-3	14.4	105.5	12.4	109.9	97.8	93	X				
44	CELL FLOOR	12 / 1	SB-3	14.4	105.5	6.2	105.1	99.0	94	X				
45	CELL FLOOR	12 / 1	SB-3	14.4	105.5	5.1	101.8	96.9	92	X				
46	CELL FLOOR	12 / 1	SB-3	14.4	105.5	6.7	104.0	97.5	92	X				
47	CELL FLOOR	12 / 1	SB-3	14.4	105.5	2.7	106.8	104.0	99	X				
48	CELL FLOOR	12 / 1	SB-3	14.4	105.5	8.8	113.7	104.5	99	X				
49	CELL FLOOR	12 / 1	SB-3	14.4	105.5	5.0	105.3	100.3	95	X				
50	CELL FLOOR	12 / 1	SB-3	14.4	105.5	3.7	103.0	99.3	94	X				
51	CELL FLOOR	12 / 1	SB-3	14.4	105.5	14.8	115.9	101.0	96	X				
52	CELL FLOOR	12 / 1	SB-3	14.4	105.5	11.1	121.0	108.9	103	X				

NOTES: (1) FIELD MOISTURE CONTENT = GAUGE READING/CORRECTED MOISTURE

COMMENTS: The elevation of the surface being tested was reached by cutting the existing material to grade.

CHECKED BY: DAS

Geosyntec consultants

WASTE MANAGEMENT

FIELD NUCLEAR MOISTURE/DENSITY TEST LOG **(ASTM D 6938)**

PROJECT: VISTA CLASS III LANDFILL

LOCATION: APOPKA, FL PROJECT NO.: FQ1767 TASK NO.: 02

DESCRIPTION: CELL 2 CONSTRUCTION DATE: 5 day NOV month 2009 year

SPECIFICATION REQUIREMENTS: MATERIAL SOURCE: In Situ Material

MATERIAL TYPE: [ ] FILL [ ] SUBGRADE [X] SUBBASE [ ] CLAY [ ] OTHER: _____ MAX. LIFT THICKNESS: -- (in.)

MINIMUM COMPACTION: 90 (%) [X] ASTM D 698 [ ] ASTM D 1557 MOISTURE CONTENT RANGE: - _____ to + _____ of OPT.

NUCLEAR GAUGE TYPE: 3430 GAUGE SERIAL NO.: 61940 CORRECTION FACTOR: Y= None

TEST NO.	TEST LOCATION	PROBE DEPTH / LIFT NO.	LABORATORY RESULTS			FIELD TEST RESULTS						RE-TEST NO.	RE-TEST	
			SAMPLE NO.	OMC (%)	MAX. DRY UNIT WT. (pcf)	FIELD MOISTURE CONTENT[1] (%)	WET UNIT WT (pcf)	DRY UNIT WT (pcf)	PERCENT COMPACT. (%)	PASS	FAIL		PASS	FAIL
53	SOUTH SLOPE	12 / 1	SB-3	14.4	105.5	5.6	107.4	101.7	96.4	X				
54	SOUTH SLOPE	12 / 1	SB-3	14.4	105.5	6.5	105.1	98.7	93.5	X				

NOTES: (1) FIELD MOISTURE CONTENT = GAUGE READING/CORRECTED MOISTURE

COMMENTS: The elevation of the surface being tested was reached by cutting the existing material to grade.

CHECKED BY: DAS

Geosyntec consultants

WM WASTE MANAGEMENT

FIELD NUCLEAR MOISTURE/DENSITY TEST LOG **(ASTM D 6938)**

PROJECT: VISTA CLASS III LANDFILL

LOCATION: APOPKA, FL PROJECT NO.: FQ1767 TASK NO.: 02

DESCRIPTION: CELL 2 CONSTRUCTION DATE: 10 day NOV month 2009 year

SPECIFICATION REQUIREMENTS: MATERIAL SOURCE: In Situ Material

MATERIAL TYPE: [ ] FILL [ ] SUBGRADE [X] SUBBASE [ ] CLAY [ ] OTHER: _____ MAX. LIFT THICKNESS: -- (in.)

MINIMUM COMPACTION: 90 (%) [X] ASTM D 698 [ ] ASTM D 1557 MOISTURE CONTENT RANGE: - _____ to + _____ of OPT.

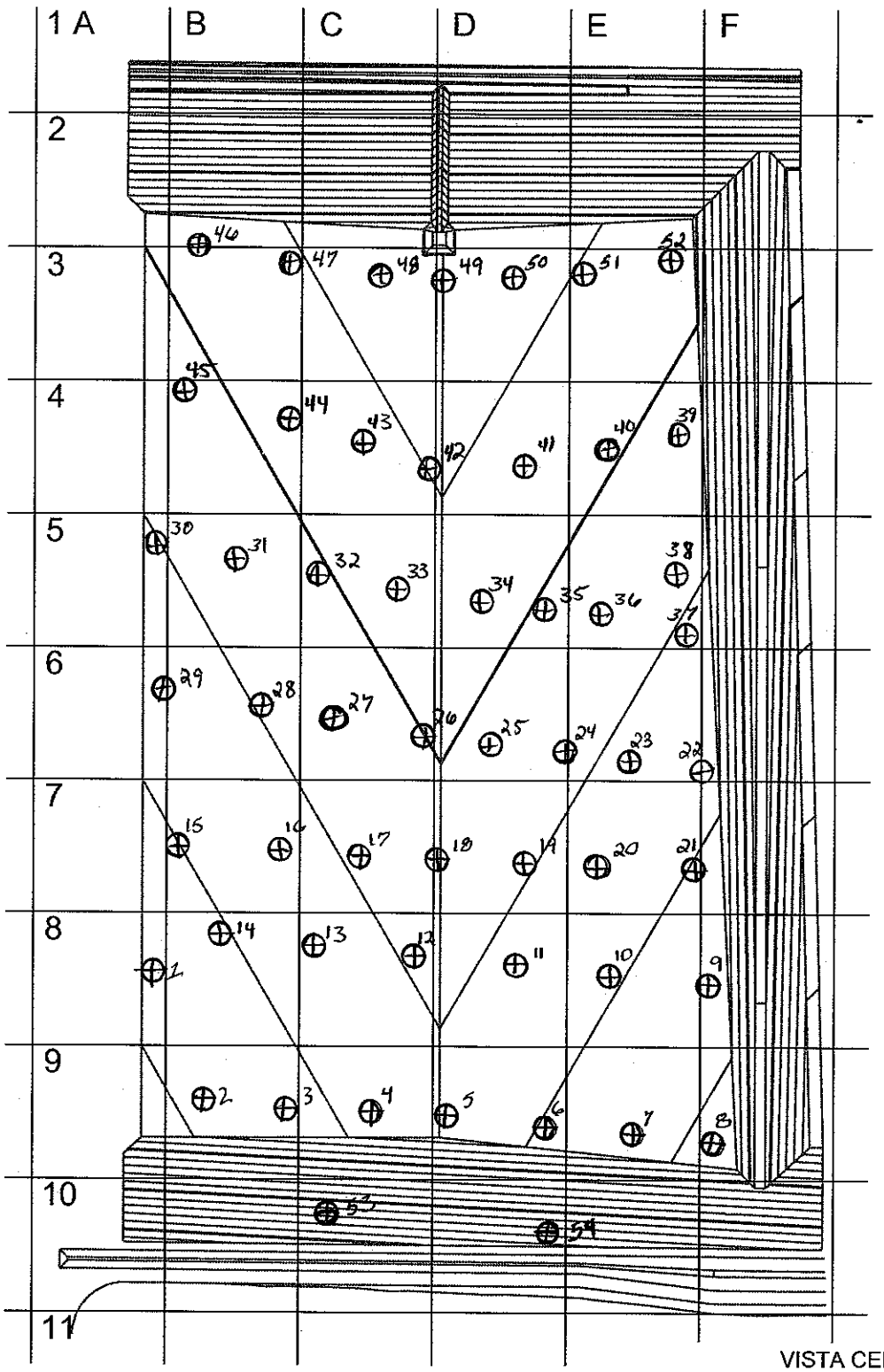
NUCLEAR GAUGE TYPE: 3430 GAUGE SERIAL NO.: 22295 CORRECTION FACTOR: Y= None

TEST NO.	TEST LOCATION	PROBE DEPTH / LIFT NO.	LABORATORY RESULTS			FIELD TEST RESULTS						RE-TEST NO.	RE-TEST	
			SAMPLE NO.	OMC (%)	MAX. DRY UNIT WT. (pcf)	FIELD MOISTURE CONTENT[1] (%)	WET UNIT WT (pcf)	DRY UNIT WT (pcf)	PERCENT COMPACT. (%)	PASS	FAIL		PASS	FAIL
55	INTERCELL BERM	12 / 1	SB-3	14.4	105.5	7.2	109.1	101.8	96	X				
56	INTERCELL BERM	12 / 1	SB-3	14.4	105.5	10.5	120.7	109.2	104	X				
57	INTERCELL BERM	12 / 1	SB-3	14.4	105.5	8.8	107.0	98.3	93	X				
58	INTERCELL BERM	12 / 1	SB-3	14.4	105.5	12.9	108.6	96.2	91	X				
59	CELL FLOOR	12 / 1	SB-2	26.9	90.4	17.9	115.6	98.0	108	X				
60	CELL FLOOR	12 / 1	SB-2	26.9	90.4	23.6	108.7	87.9	97	X				
61	CELL FLOOR	12 / 1	SB-1	15.3	112.1	14.7	118.4	103.2	92	X				
62	CELL FLOOR	12 / 1	SB-1	15.3	112.1	4.8	106.9	102.0	91	X				
63	CELL FLOOR	12 / 1	SB-1	15.3	112.1	10.1	118.3	107.4	96	X				
64	CELL FLOOR	12 / 1	SB-1	15.3	112.1	11.6	119.9	107.4	96	X				
65	NORTH SLOPE	12 / 1	SB-3	14.4	105.5	1.9	107.6	105.6	100	X				
66	NORTH SLOPE	12 / 1	SB-3	14.4	105.5	4.5	102.8	98.4	93	X				
67	NORTH SLOPE	12 / 1	SB-3	14.4	105.5	2.1	102.7	100.6	95	X				

NOTES: (1) FIELD MOISTURE CONTENT = GAUGE READING/CORRECTED MOISTURE

COMMENTS: The elevation of the surface being tested was reached by cutting the existing material to grade.

CHECKED BY: DAS



I:_CADD (PROJECTS)\V\VISTA LANDFILL\CQA\FIGURES\FQ1767.02\FQ1767.02F01

Geosyntec consultants

TAMPA, FL

DATE:		SCALE:	AS SHOWN
PROJECT NO.	FQ1767	FILE NO.	FQ1767.02F01
DOCUMENT NO.		FIGURE NO.	

APPENDIX B

MANUFACTURERS QUALITY CONTROL TEST RESULTS

SUB APPENDIX B-1

GEOMEMBRANE

microspike liner | WM Vista LF Cell 2 | doc 12356 | PO# 1000016591

HDPE | Apopka, FL

60 mil | 51 rolls 60 HD microspike | 51 | left

weld rod was ordered for this project

roll #	width	length	area						
	METRIC DIMENSIONS								
(K)337201 .09	7	125	875	WM Vista	51tot	1	3470	sqs + 2ft fric	8190367
(K)337202 .09	7	125	875	WM Vista	51tot	2	3550		8190367
(K)337203 .09	7	125	875	WM Vista	51tot	3	3470		8190367
(K)337304 .09	7	125	875	WM Vista	51tot	4	3354		8190367
(K)337306 .09	7	125	875	WM Vista	51tot	5	3196		8190367
(K)337307 .09	7	125	875	WM Vista	51tot	6	3204		8190367
(K)337308 .09	7	125	875	WM Vista	51tot	7	3304		8190367
(K)337309 .09	7	125	875	WM Vista	51tot	8	3304		8190367
(K)337310 .09	7	125	875	WM Vista	51tot	9	3294		8190367
(K)337311 .09	7	125	875	WM Vista	51tot	10	3302		8190367
(K)337312 .09	7	125	875	WM Vista	51tot	11	3284	sqs	8190367
(K)337313 .09	7	125	875	WM Vista	51tot	12	3288		8190367
(K)337314 .09	7	125	875	WM Vista	51tot	13	3288		8190367
(K)337415 .09	7	125	875	WM Vista	51tot	14	3294		8190367
(K)337416 .09	7	125	875	WM Vista	51tot	15	3292		8190367
(K)337417 .09	7	125	875	WM Vista	51tot	16	3298		8190367
(K)337418 .09	7	125	875	WM Vista	51tot	17	3300		8190367
(K)337419 .09	7	125	875	WM Vista	51tot	18	3302		8190367
(K)337420 .09	7	125	875	WM Vista	51tot	19	3296		8190366
(K)337421 .09	7	125	875	WM Vista	51tot	20	3282		8190366
(K)337422 .09	7	125	875	WM Vista	51tot	21	3268		8190366
(K)337423 .09	7	125	875	WM Vista	51tot	22	3262	sqs	8190366
(K)337424 .09	7	125	875	WM Vista	51tot	23	3248		8190366
(K)337425 .09	7	125	875	WM Vista	51tot	24	3244		8190366
(K)337533 .09	7	125	875	WM Vista	51tot	25	3250		8190366
(K)337534 .09	7	125	875	WM Vista	51tot	26	3246		8190366
(K)337535 .09	7	125	875	WM Vista	51tot	27	3242		8190366
(K)337536 .09	7	125	875	WM Vista	51tot	28	3240		8190366
(K)337537 .09	7	125	875	WM Vista	51tot	29	3238		8190366
(K)337538 .09	7	125	875	WM Vista	51tot	30	3250		8190366
(K)337539 .09	7	125	875	WM Vista	51tot	31	3260		8190366
(K)337541 .09	7	125	875	WM Vista	51tot	32	3266	sqs	8190366
(K)337542 .09	7	125	875	WM Vista	51tot	33	3256		8190366
(K)337543 .09	7	125	875	WM Vista	51tot	34	3254		8190366
(K)337544 .09	7	125	875	WM Vista	51tot	35	3256		8190366
(K)337545 .09	7	125	875	WM Vista	51tot	36	3252		8190366
(K)337546 .09	7	125	875	WM Vista	51tot	37	3258		8190366
(K)337547 .09	7	125	875	WM Vista	51tot	38	3254		8190366
(K)337650 .09	7	125	875	WM Vista	51tot	39	3256		8190366
(K)337651 .09	7	125	875	WM Vista	51tot	40	3254		8190366
(K)337652 .09	7	125	875	WM Vista	51tot	41	3252		8190366
(K)337653 .09	7	125	875	WM Vista	51tot	42	3334		8190366
(K)337654 .09	7	125	875	WM Vista	51tot	43	3324	sqs	8190366
(K)337655 .09	7	125	875	WM Vista	51tot	44	3332		8190366
(K)337656 .09	7	125	875	WM Vista	51tot	45	3316		8190366
(K)337657 .09	7	125	875	WM Vista	51tot	46	3312		8190366
(K)337658 .09	7	125	875	WM Vista	51tot	47	3322		8190366
(K)337659 .09	7	125	875	WM Vista	51tot	48	3320		8190366
(K)337660 .09	7	125	875	WM Vista	51tot	49	3310		8190366
(K)337661 .09	7	125	875	WM Vista	51tot	50	3320		8190366
(K)337662 .09	7	125	875	WM Vista	51tot	51	3326		8190366

agru america quality control dept.

quality certificate

ROLL # **337201-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	**1.5**	**mm**	**60 mil**	
	MIN:	**1.52**	mm	**60**	mil	Length.....	**125**	m	**410.1**	feet
	MAX:	**1.89**	mm	**74**	mil	Width.....	**7.00**	m;	**23.0**	feet
Asperity ASTM D7466: **33/36** mil ODD # : TOP EVEN #: BOTTOM	AVE:	**1.72**	mm	**68**	mil	OIT(Standard) ASTM D3895	minutes	**160**	**TEST RESULTS**	

Specific Gravity ASTM D792	Density	g/cc		**.945**
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min		**.23**
Carbon Black Content ASTM D4218	Range	%		**2.59**
Carbon Black Dispersion ASTM D5596	Category			**10 In Cat 1**
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**32** N/mm (kN/m)	**182** ppi	**2,690** psi
	Average Strength @ Break	**37** N/mm (kN/m)	**214** ppi	**3,160** psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%		**19.35**
	Average Elongation @ Break	%		**457.3**
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		**-0.45**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**275.3** N		**61.902** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**503.7** N		**113.23** lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**698.2** N		**156.96** lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		**CERTIFIED**
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		**ONGOING**

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-8-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337202-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.58**	mm	**62**	mil
	MAX:	**1.80**	mm	**71**	mil
Asperity ASTM D7466: **33/34** mil	AVE:	**1.70**	mm	**67**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**160**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g		g/10 min			**.23**	
Carbon Black Content ASTM D4218	Range		%			**2.59**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**32**	N/mm (kN/m)	**180**	ppi	**2,690**	psi
	Average Strength @ Break	**37**	N/mm (kN/m)	**211**	ppi	**3,160**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			**19.35**	
Lo = 2.0" Break	Average Elongation @ Break		%			**457.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**275.3**	N			**61.902**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**503.7**	N			**113.23**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**698.2**	N			**156.96**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-8-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337203-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.52**	mm	**60**	mil
	MAX:	**1.76**	mm	**69**	mil
Asperity ASTM D7466: **32/34** mil	AVE:	**1.66**	mm	**65**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**160**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.23**	
Carbon Black Content ASTM D4218	Range	%			**2.38**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**31** N/mm (kN/m)	**176** ppi		**2,690**	psi
	Average Strength @ Break	**36** N/mm (kN/m)	**207** ppi		**3,160**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			**19.35**	
Lo = 2.0" Break	Average Elongation @ Break	%			**457.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**275.3** N			**61.902**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**503.7** N			**113.23**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**698.2** N			**156.96**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-8-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337304-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.61	mm	63	mil	Length.....	125 m	410.1 feet
	MAX:	1.84	mm	72	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 32/33 mil ODD # : TOP EVEN #: BOTTOM	AVE:	1.71	mm	67	mil	OIT(Standard) ASTM D3895 minutes	160	

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g		g/10 min			.23	
Carbon Black Content ASTM D4218	Range		%			2.38	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	32	N/mm (kN/m)	181	ppi	2,690	psi
	Average Strength @ Break	37	N/mm (kN/m)	213	ppi	3,160	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			19.35	
Lo = 2.0" Break	Average Elongation @ Break		%			457.3	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.45	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.3	N			61.902	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	503.7	N			113.23	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	698.2	N			156.96	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-8-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337306-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.46	mm	57	mil	Length.....	125 m	410.1 feet
	MAX:	1.59	mm	63	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 35/37 mil	AVE:	1.53	mm	60	mil	OIT(Standard) ASTM D3895 minutes	160	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g		g/10 min			.23	
Carbon Black Content ASTM D4218	Range		%			2.34	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28	N/mm (kN/m)	162	ppi	2,688	psi
	Average Strength @ Break	34	N/mm (kN/m)	196	ppi	3,258	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			18.46	
Lo = 2.0" Break	Average Elongation @ Break		%			489.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.45	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.3	N			61.902	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	503.7	N			113.23	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	698.2	N			156.96	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337307-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.40	mm	55	mil	Length.....	125 m	410.1 feet
	MAX:	1.75	mm	69	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 34/35 mil	AVE:	1.54	mm	61	mil	OIT(Standard) ASTM D3895 minutes	160	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g		g/10 min			.23	
Carbon Black Content ASTM D4218	Range		%			2.34	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29	N/mm (kN/m)	163	ppi	2,688	psi
	Average Strength @ Break	35	N/mm (kN/m)	198	ppi	3,258	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			18.46	
Lo = 2.0" Break	Average Elongation @ Break		%			489.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.45	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.3	N			61.902	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	503.7	N			113.23	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	698.2	N			156.96	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337308-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.54	mm	61	mil	Length.....	125 m	410.1 feet
	MAX:	1.63	mm	64	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 33/35 mil	AVE:	1.57	mm	62	mil	OIT(Standard) ASTM D3895 minutes	160	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min				.23	
Carbon Black Content ASTM D4218	Range	%				2.34	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29	N/mm (kN/m)	166	ppi	2,688	psi
	Average Strength @ Break	35	N/mm (kN/m)	201	ppi	3,258	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%				18.46	
Lo = 2.0" Break	Average Elongation @ Break	%				489.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				-0.45	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	275.3	N			61.902	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	503.7	N			113.23	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	698.2	N			156.96	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337309-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.44**	mm	**57**	mil
	MAX:	**1.76**	mm	**69**	mil
Asperity ASTM D7466: **31/36** mil	AVE:	**1.60**	mm	**63**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**160**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.23**	
Carbon Black Content ASTM D4218	Range	%			**2.30**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**30** N/mm (kN/m)	**169** ppi		**2,688**	psi
	Average Strength @ Break	**36** N/mm (kN/m)	**205** ppi		**3,258**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			**18.46**	
Lo = 2.0" Break	Average Elongation @ Break	%			**489.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**275.3** N			**61.902**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**503.7** N			**113.23**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**698.2** N			**156.96**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337310-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.50**	mm	**59**	mil
	MAX:	**1.70**	mm	**67**	mil
Asperity ASTM D7466: **31/34** mil	AVE:	**1.57**	mm	**62**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**160**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g		g/10 min			**.23**	
Carbon Black Content ASTM D4218	Range		%			**2.30**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29**	N/mm (kN/m)	**166**	ppi	**2,688**	psi
	Average Strength @ Break	**35**	N/mm (kN/m)	**201**	ppi	**3,258**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			**18.46**	
Lo = 2.0" Break	Average Elongation @ Break		%			**489.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**275.3**	N			**61.902**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**503.7**	N			**113.23**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**698.2**	N			**156.96**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337311-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.50	mm	59	mil	Length.....	125 m	410.1 feet
	MAX:	1.66	mm	65	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 33/34 mil	AVE:	1.55	mm	61	mil	OIT(Standard) ASTM D3895 minutes	160	

ODD # : TOP EVEN #: BOTTOM

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min			.23	
Carbon Black Content ASTM D4218	Range	%			2.43	
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm (kN/m)	161 ppi		2,635	psi
	Average Strength @ Break	36 N/mm (kN/m)	207 ppi		3,397	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			18.47	
Lo = 2.0" Break	Average Elongation @ Break	%			494.3	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-0.45	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	259.8 N			58.411	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	407.7 N			91.656	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	605.7 N			136.17	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337312-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.48	mm	58	mil	Length.....	125 m	410.1 feet
	MAX:	1.69	mm	67	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 32/34 mil	AVE:	1.56	mm	61	mil			
ODD # : TOP EVEN #: BOTTOM						OIT(Standard) ASTM D3895	minutes 160	

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min			.23	
Carbon Black Content ASTM D4218	Range	%			2.43	
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm (kN/m)	162 ppi		2,635	psi
	Average Strength @ Break	37 N/mm (kN/m)	209 ppi		3,397	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			18.47	
Lo = 2.0" Break	Average Elongation @ Break	%			494.3	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-0.45	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	259.8 N			58.411	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	407.7 N			91.656	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	605.7 N			136.17	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337313-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.47**	mm	**58**	mil
	MAX:	**1.72**	mm	**68**	mil
Asperity ASTM D7466: **36/36** mil	AVE:	**1.59**	mm	**63**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**160**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.23**	
Carbon Black Content ASTM D4218	Range	%			**2.43**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29** N/mm (kN/m)	**165** ppi		**2,635**	psi
	Average Strength @ Break	**37** N/mm (kN/m)	**213** ppi		**3,397**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			**18.47**	
Lo = 2.0" Break	Average Elongation @ Break	%			**494.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.8** N			**58.411**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**407.7** N			**91.656**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**605.7** N			**136.17**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337314-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	**1.5**	**mm**	**60 mil**	
	MIN:	**1.48**	mm	**58**	mil	Length.....	**125**	m	**410.1**	feet
	MAX:	**1.70**	mm	**67**	mil	Width.....	**7.00**	m;	**23.0**	feet
Asperity ASTM D7466: **31/35** mil ODD # : TOP EVEN #: BOTTOM	AVE:	**1.56**	mm	**61**	mil	OIT(Standard) ASTM D3895	minutes	**160**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min				**.23**	
Carbon Black Content ASTM D4218	Range	%				**2.49**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**28**	N/mm (kN/m)	**162**	ppi	**2,635**	psi
	Average Strength @ Break	**37**	N/mm (kN/m)	**209**	ppi	**3,397**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				**18.47**	
	Average Elongation @ Break	%				**494.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.8**	N			**58.411**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**407.7**	N			**91.656**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**605.7**	N			**136.17**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-9-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337415-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	**1.5**	**mm**	**60 mil**	
	MIN:	**1.48**	mm	**58**	mil	Length.....	**125**	m	**410.1**	feet
	MAX:	**1.69**	mm	**67**	mil	Width.....	**7.00**	m;	**23.0**	feet
Asperity ASTM D7466: **34/35** mil ODD # : TOP EVEN #: BOTTOM	AVE:	**1.58**	mm	**62**	mil	OIT(Standard) ASTM D3895	minutes	**160**		

							TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc					**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min					**.23**	
Carbon Black Content ASTM D4218	Range	%					**2.49**	
Carbon Black Dispersion ASTM D5596	Category						**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29**	N/mm (kN/m)	**164**	ppi		**2,635**	psi
	Average Strength @ Break	**37**	N/mm (kN/m)	**211**	ppi		**3,397**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%					**18.47**	
	Average Elongation @ Break	%					**494.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%					**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.8**	N				**58.411**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**407.7**	N				**91.656**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**605.7**	N				**136.17**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337416-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.45	mm	57	mil	Length.....	125 m	410.1 feet
	MAX:	1.67	mm	66	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 31/35 mil	AVE:	1.56	mm	61	mil	OIT(Standard) ASTM D3895 minutes	160	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				.945	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min				.23	
Carbon Black Content ASTM D4218	Range	%				2.38	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27	N/mm (kN/m)	156	ppi	2,541	psi
	Average Strength @ Break	34	N/mm (kN/m)	193	ppi	3,137	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%				17.51	
Lo = 2.0" Break	Average Elongation @ Break	%				487.9	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				-0.45	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	259.8	N			58.411	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	407.7	N			91.656	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	605.7	N			136.17	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337417-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.51**	mm	**59**	mil
	MAX:	**1.76**	mm	**69**	mil
Asperity ASTM D7466: **35/37** mil	AVE:	**1.60**	mm	**63**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60 mil**
Length.....	**125**	m	**410.1** feet
Width.....	**7.00**	m;	**23.0** feet
OIT(Standard) ASTM D3895	minutes	**160**	

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min				**.23**	
Carbon Black Content ASTM D4218	Range	%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**28**	N/mm (kN/m)	**160**	ppi	**2,541**	psi
	Average Strength @ Break	**35**	N/mm (kN/m)	**198**	ppi	**3,137**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%				**17.51**	
Lo = 2.0" Break	Average Elongation @ Break	%				**487.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.8**	N			**58.411**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**407.7**	N			**91.656**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**605.7**	N			**136.17**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337418-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.53**	mm	**60**	mil
	MAX:	**1.68**	mm	**66**	mil
Asperity ASTM D7466: **35/36** mil	AVE:	**1.58**	mm	**62**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**160**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.23**	
Carbon Black Content ASTM D4218	Range	%			**2.38**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**28** N/mm (kN/m)	**158** ppi		**2,541**	psi
	Average Strength @ Break	**34** N/mm (kN/m)	**195** ppi		**3,137**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			**17.51**	
Lo = 2.0" Break	Average Elongation @ Break	%			**487.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.8** N			**58.411**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**407.7** N			**91.656**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**605.7** N			**136.17**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337419-09** Lot #: **8190367** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	**1.5**	**mm**	**60 mil**	
	MIN:	**1.46**	mm	**57**	mil	Length.....	**125**	m	**410.1**	feet
	MAX:	**1.69**	mm	**67**	mil	Width.....	**7.00**	m;	**23.0**	feet
Asperity ASTM D7466: **32/36** mil ODD # : TOP EVEN #: BOTTOM	AVE:	**1.57**	mm	**62**	mil	OIT(Standard) ASTM D3895	minutes	**160**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.945**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min				**.23**	
Carbon Black Content ASTM D4218	Range	%				**2.39**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**28**	N/mm (kN/m)	**157**	ppi	**2,541**	psi
	Average Strength @ Break	**34**	N/mm (kN/m)	**194**	ppi	**3,137**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				**17.51**	
	Average Elongation @ Break	%				**487.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.45**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.8**	N			**58.411**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**407.7**	N			**91.656**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**605.7**	N			**136.17**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337420-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.50**	mm	**59**	mil
	MAX:	**1.70**	mm	**67**	mil
Asperity ASTM D7466: **33/35** mil	AVE:	**1.60**	mm	**63**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

							TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g			g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range			%			**2.39**	
Carbon Black Dispersion ASTM D5596	Category						**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**28**	N/mm (kN/m)	**160**	ppi		**2,541**	psi
	Average Strength @ Break	**35**	N/mm (kN/m)	**198**	ppi		**3,137**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%			**17.51**	
	Average Elongation @ Break			%			**487.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.8**	N				**58.411**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**407.7**	N				**91.656**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**605.7**	N				**136.17**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337421-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.50	mm	59	mil	Length.....	125 m	410.1 feet
	MAX:	1.74	mm	69	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 33/36 mil	AVE:	1.60	mm	63	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min			.21	
Carbon Black Content ASTM D4218	Range	%			2.63	
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm (kN/m)	160 ppi		2,546	psi
	Average Strength @ Break	32 N/mm (kN/m)	183 ppi		2,911	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			18.89	
Lo = 2.0" Break	Average Elongation @ Break	%			455.8	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.1 N			60.715	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	470.6 N			105.80	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	655.8 N			147.42	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337422-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.46	mm	57	mil	Length.....	125 m	410.1 feet
	MAX:	1.63	mm	64	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 31/36 mil	AVE:	1.55	mm	61	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min				.21	
Carbon Black Content ASTM D4218	Range	%				2.63	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27	N/mm (kN/m)	155	ppi	2,546	psi
	Average Strength @ Break	31	N/mm (kN/m)	178	ppi	2,911	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%				18.89	
Lo = 2.0" Break	Average Elongation @ Break	%				455.8	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.1	N			60.715	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	470.6	N			105.80	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	655.8	N			147.42	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337423-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.43	mm	56	mil	Length.....	125 m	410.1 feet
	MAX:	1.68	mm	66	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 30/36 mil	AVE:	1.55	mm	61	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min				.21	
Carbon Black Content ASTM D4218	Range	%				2.63	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	27	N/mm (kN/m)	155	ppi	2,546	psi
	Average Strength @ Break	31	N/mm (kN/m)	178	ppi	2,911	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%				18.89	
Lo = 2.0" Break	Average Elongation @ Break	%				455.8	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	270.1	N			60.715	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	470.6	N			105.80	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	655.8	N			147.42	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337424-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.52**	mm	**60**	mil
	MAX:	**1.59**	mm	**63**	mil
Asperity ASTM D7466: **32/33** mil	AVE:	**1.55**	mm	**61**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g		g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range		%			**2.20**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**27**	N/mm (kN/m)	**155**	ppi	**2,546**	psi
	Average Strength @ Break	**31**	N/mm (kN/m)	**178**	ppi	**2,911**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			**18.89**	
Lo = 2.0" Break	Average Elongation @ Break		%			**455.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**270.1**	N			**60.715**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**470.6**	N			**105.80**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**655.8**	N			**147.42**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337425-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.53**	mm	**60**	mil
	MAX:	**1.61**	mm	**63**	mil
Asperity ASTM D7466: **33/34** mil	AVE:	**1.56**	mm	**61**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60 mil**	
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g		g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range		%			**2.20**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**27**	N/mm (kN/m)	**156**	ppi	**2,546**	psi
	Average Strength @ Break	**31**	N/mm (kN/m)	**179**	ppi	**2,911**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			**18.89**	
Lo = 2.0" Break	Average Elongation @ Break		%			**455.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**270.1**	N			**60.715**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**470.6**	N			**105.80**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**655.8**	N			**147.42**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337533-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.38**	mm	**54**	mil
	MAX:	**1.66**	mm	**65**	mil
Asperity ASTM D7466: **34/36** mil	AVE:	**1.52**	mm	**60**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

							TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g			g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range			%			**2.30**	
Carbon Black Dispersion ASTM D5596	Category						**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**27**	N/mm (kN/m)	**156**	ppi	**2,612**	psi	
	Average Strength @ Break	**36**	N/mm (kN/m)	**203**	ppi	**3,389**	psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield			%			**18.36**	
	Average Elongation @ Break			%			**504.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.4**	N			**58.317**	lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**415.3**	N			**93.377**	lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	**654.1**	N			**147.06**	lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**		
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				**ONGOING**		

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337534-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.50**	mm	**59**	mil
	MAX:	**1.67**	mm	**66**	mil
Asperity ASTM D7466: **31/35** mil	AVE:	**1.56**	mm	**61**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min				**.21**	
Carbon Black Content ASTM D4218	Range	%				**2.30**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**28** N/mm (kN/m)		**160** ppi		**2,612**	psi
	Average Strength @ Break	**36** N/mm (kN/m)		**208** ppi		**3,389**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%				**18.36**	
Lo = 2.0" Break	Average Elongation @ Break	%				**504.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.4**	N			**58.317**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**415.3**	N			**93.377**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**654.1**	N			**147.06**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337535-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.48	mm	58	mil	Length.....	125 m	410.1 feet
	MAX:	1.66	mm	65	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 32/37 mil	AVE:	1.56	mm	61	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g		g/10 min			.21	
Carbon Black Content ASTM D4218	Range		%			2.30	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28	N/mm (kN/m)	160	ppi	2,612	psi
	Average Strength @ Break	36	N/mm (kN/m)	208	ppi	3,389	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			18.36	
Lo = 2.0" Break	Average Elongation @ Break		%			504.7	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	259.4	N			58.317	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	415.3	N			93.377	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	654.1	N			147.06	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337536-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.45	mm	57	mil	Length.....	125 m	410.1 feet
	MAX:	1.60	mm	63	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 32/36 mil	AVE:	1.52	mm	60	mil			
ODD # : TOP EVEN #: BOTTOM						OIT(Standard) ASTM D3895	minutes 181	

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min			.21	
Carbon Black Content ASTM D4218	Range	%			2.43	
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	28 N/mm (kN/m)	162 ppi		2,708	psi
	Average Strength @ Break	35 N/mm (kN/m)	202 ppi		3,370	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			18.91	
Lo = 2.0" Break	Average Elongation @ Break	%			492.7	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	259.4 N			58.317	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	415.3 N			93.377	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	654.1 N			147.06	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337537-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.50**	mm	**59**	mil
	MAX:	**1.73**	mm	**68**	mil
Asperity ASTM D7466: **36/40** mil	AVE:	**1.58**	mm	**62**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

							TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g			g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range			%			**2.43**	
Carbon Black Dispersion ASTM D5596	Category						**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29**	N/mm (kN/m)	**168**	ppi	**2,708**	psi	
	Average Strength @ Break	**37**	N/mm (kN/m)	**210**	ppi	**3,370**	psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield			%			**18.91**	
Lo = 2.0" Break	Average Elongation @ Break			%			**492.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.4**	N			**58.317**	lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**415.3**	N			**93.377**	lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	**654.1**	N			**147.06**	lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**		
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**		

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337538-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.49**	mm	**59**	mil
	MAX:	**1.68**	mm	**66**	mil
Asperity ASTM D7466: **34/36** mil	AVE:	**1.58**	mm	**62**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

							TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g			g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range			%			**2.43**	
Carbon Black Dispersion ASTM D5596	Category						**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29**	N/mm (kN/m)	**168**	ppi	**2,708**	psi	
	Average Strength @ Break	**37**	N/mm (kN/m)	**210**	ppi	**3,370**	psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield			%			**18.91**	
Lo = 2.0" Break	Average Elongation @ Break			%			**492.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.4**	N			**58.317**	lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**415.3**	N			**93.377**	lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	**654.1**	N			**147.06**	lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**		
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				**ONGOING**		

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337539-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.47**	mm	**58**	mil
	MAX:	**1.63**	mm	**64**	mil
Asperity ASTM D7466: **30/34** mil	AVE:	**1.56**	mm	**61**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range	%			**2.43**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29** N/mm (kN/m)	**166** ppi		**2,708**	psi
	Average Strength @ Break	**36** N/mm (kN/m)	**207** ppi		**3,370**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%			**18.91**	
	Average Elongation @ Break	%			**492.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**259.4** N			**58.317**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**415.3** N			**93.377**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**654.1** N			**147.06**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337541-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.49	mm	59	mil	Length.....	125 m	410.1 feet
	MAX:	1.68	mm	66	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 34/40 mil	AVE:	1.58	mm	62	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min			.21	
Carbon Black Content ASTM D4218	Range	%			2.25	
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm (kN/m)	170 ppi		2,725	psi
	Average Strength @ Break	36 N/mm (kN/m)	203 ppi		3,264	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			18.65	
Lo = 2.0" Break	Average Elongation @ Break	%			480.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	249.1 N			56.003	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.3 N			98.534	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	638.4 N			143.53	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337542-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	**1.5**	**mm**	**60 mil**	
	MIN:	**1.50**	mm	**59**	mil	Length.....	**125**	m	**410.1**	feet
	MAX:	**1.69**	mm	**67**	mil	Width.....	**7.00**	m;	**23.0**	feet
Asperity ASTM D7466: **32/34** mil ODD # : TOP EVEN #: BOTTOM	AVE:	**1.58**	mm	**62**	mil	OIT(Standard) ASTM D3895	minutes	**181**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g		g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range		%			**2.25**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**30**	N/mm (kN/m)	**170**	ppi	**2,725**	psi
	Average Strength @ Break	**36**	N/mm (kN/m)	**203**	ppi	**3,264**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			**18.65**	
Lo = 2.0" Break	Average Elongation @ Break		%			**480.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**249.1**	N			**56.003**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**438.3**	N			**98.534**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**638.4**	N			**143.53**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337543-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.40	mm	55	mil	Length.....	125 m	410.1 feet
	MAX:	1.70	mm	67	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 30/36 mil	AVE:	1.55	mm	61	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min			.21	
Carbon Black Content ASTM D4218	Range	%			2.25	
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29 N/mm (kN/m)	166 ppi		2,725	psi
	Average Strength @ Break	35 N/mm (kN/m)	199 ppi		3,264	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			18.65	
Lo = 2.0" Break	Average Elongation @ Break	%			480.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	249.1 N			56.003	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.3 N			98.534	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	638.4 N			143.53	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337544-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.48**	mm	**58**	mil
	MAX:	**1.68**	mm	**66**	mil
Asperity ASTM D7466: **32/36** mil	AVE:	**1.56**	mm	**61**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

							TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g			g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range			%			**2.44**	
Carbon Black Dispersion ASTM D5596	Category						**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29**	N/mm (kN/m)	**167**	ppi		**2,725**	psi
	Average Strength @ Break	**35**	N/mm (kN/m)	**200**	ppi		**3,264**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield			%			**18.65**	
Lo = 2.0" Break	Average Elongation @ Break			%			**480.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**249.1**	N				**56.003**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**438.3**	N				**98.534**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**638.4**	N				**143.53**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs					**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs					**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337545-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.43	mm	56	mil	Length.....	125 m	410.1 feet
	MAX:	1.69	mm	67	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 34/36 mil	AVE:	1.54	mm	61	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g		g/10 min			.21	
Carbon Black Content ASTM D4218	Range		%			2.44	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29	N/mm (kN/m)	165	ppi	2,725	psi
	Average Strength @ Break	35	N/mm (kN/m)	198	ppi	3,264	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			18.65	
Lo = 2.0" Break	Average Elongation @ Break		%			480.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	249.1	N			56.003	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.3	N			98.534	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	638.4	N			143.53	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337546-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.49**	mm	**59**	mil
	MAX:	**1.70**	mm	**67**	mil
Asperity ASTM D7466: **34/36** mil	AVE:	**1.57**	mm	**62**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

							TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g			g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range			%			**2.41**	
Carbon Black Dispersion ASTM D5596	Category						**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29**	N/mm (kN/m)	**167**	ppi		**2,708**	psi
	Average Strength @ Break	**36**	N/mm (kN/m)	**203**	ppi		**3,280**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield			%			**17.84**	
Lo = 2.0" Break	Average Elongation @ Break			%			**490.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**249.1**	N				**56.003**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**438.3**	N				**98.534**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**638.4**	N				**143.53**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america
quality control dept.

quality certificate

ROLL # **337547-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.45**	mm	**57**	mil
	MAX:	**1.71**	mm	**67**	mil
Asperity ASTM D7466: **35/37** mil	AVE:	**1.59**	mm	**63**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60 mil**
Length.....	**125**	m	**410.1** feet
Width.....	**7.00**	m;	**23.0** feet
OIT(Standard) ASTM D3895 minutes	**181**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min				**.21**	
Carbon Black Content ASTM D4218	Range	%				**2.41**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**30** N/mm (kN/m)		**170** ppi		**2,708**	psi
	Average Strength @ Break	**36** N/mm (kN/m)		**205** ppi		**3,280**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%				**17.84**	
Lo = 2.0" Break	Average Elongation @ Break	%				**490.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**249.1**	N			**56.003**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**438.3**	N			**98.534**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**638.4**	N			**143.53**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337650-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.47	mm	58	mil	Length.....	125 m	410.1 feet
	MAX:	1.67	mm	66	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 34/35 mil	AVE:	1.58	mm	62	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g		g/10 min			.21	
Carbon Black Content ASTM D4218	Range		%			2.41	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30	N/mm (kN/m)	168	ppi	2,708	psi
	Average Strength @ Break	36	N/mm (kN/m)	204	ppi	3,280	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			17.84	
Lo = 2.0" Break	Average Elongation @ Break		%			490.0	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	249.1	N			56.003	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	438.3	N			98.534	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	638.4	N			143.53	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-10-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337651-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.46**	mm	**57**	mil
	MAX:	**1.69**	mm	**67**	mil
Asperity ASTM D7466: **31/33** mil	AVE:	**1.58**	mm	**62**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60 mil**
Length.....	**125**	m	**410.1** feet
Width.....	**7.00**	m;	**23.0** feet
OIT(Standard) ASTM D3895	minutes	**181**	

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min				**.21**	
Carbon Black Content ASTM D4218	Range	%				**2.61**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29**	N/mm (kN/m)	**166**	ppi	**2,661**	psi
	Average Strength @ Break	**32**	N/mm (kN/m)	**181**	ppi	**2,918**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				**19.19**	
	Average Elongation @ Break	%				**414.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**257.8**	N			**57.949**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**445.3**	N			**100.11**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**668.3**	N			**150.23**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-11-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337652-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.52**	mm	**60**	mil
	MAX:	**1.63**	mm	**64**	mil
Asperity ASTM D7466: **31/34** mil	AVE:	**1.57**	mm	**62**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range	%			**2.61**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**29** N/mm (kN/m)	**164** ppi		**2,661**	psi
	Average Strength @ Break	**32** N/mm (kN/m)	**180** ppi		**2,918**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			**19.19**	
Lo = 2.0" Break	Average Elongation @ Break	%			**414.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**257.8** N			**57.949**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**445.3** N			**100.11**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**668.3** N			**150.23**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-11-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337653-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.53	mm	60	mil	Length.....	125 m	410.1 feet
	MAX:	1.70	mm	67	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 32/34 mil	AVE:	1.60	mm	63	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

						TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g		g/10 min			.21	
Carbon Black Content ASTM D4218	Range		%			2.61	
Carbon Black Dispersion ASTM D5596	Category					10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	29	N/mm (kN/m)	168	ppi	2,661	psi
	Average Strength @ Break	32	N/mm (kN/m)	184	ppi	2,918	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%			19.19	
Lo = 2.0" Break	Average Elongation @ Break		%			414.2	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	257.8	N			57.949	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.3	N			100.11	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	668.3	N			150.23	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-11-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337654-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.50	mm	59	mil	Length.....	125 m	410.1 feet
	MAX:	1.76	mm	69	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 34/37 mil	AVE:	1.62	mm	64	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min			.21	
Carbon Black Content ASTM D4218	Range	%			2.36	
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30 N/mm (kN/m)	170 ppi		2,661	psi
	Average Strength @ Break	33 N/mm (kN/m)	186 ppi		2,918	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			19.19	
Lo = 2.0" Break	Average Elongation @ Break	%			414.2	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	257.8 N			57.949	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.3 N			100.11	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	668.3 N			150.23	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337655-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.52**	mm	**60**	mil
	MAX:	**1.80**	mm	**71**	mil
Asperity ASTM D7466: **35/36** mil	AVE:	**1.63**	mm	**64**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range	%			**2.36**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**30** N/mm (kN/m)	**171** ppi		**2,661**	psi
	Average Strength @ Break	**33** N/mm (kN/m)	**187** ppi		**2,918**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			**19.19**	
Lo = 2.0" Break	Average Elongation @ Break	%			**414.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**257.8** N			**57.949**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**445.3** N			**100.11**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**668.3** N			**150.23**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337656-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.44**	mm	**57**	mil
	MAX:	**1.76**	mm	**69**	mil
Asperity ASTM D7466: **34/36** mil	AVE:	**1.61**	mm	**63**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60 mil**
Length.....	**125**	m	**410.1** feet
Width.....	**7.00**	m;	**23.0** feet
OIT(Standard) ASTM D3895	minutes	**181**	

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min				**.21**	
Carbon Black Content ASTM D4218	Range	%				**2.40**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**30**	N/mm (kN/m)	**174**	ppi	**2,738**	psi
	Average Strength @ Break	**35**	N/mm (kN/m)	**197**	ppi	**3,114**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				**17.67**	
	Average Elongation @ Break	%				**474.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**257.8**	N			**57.949**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**445.3**	N			**100.11**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**668.3**	N			**150.23**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337657-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.50**	mm	**59**	mil
	MAX:	**1.70**	mm	**67**	mil
Asperity ASTM D7466: **34/36** mil	AVE:	**1.60**	mm	**63**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range	%			**2.40**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**30** N/mm (kN/m)	**172**	ppi	**2,738**	psi
	Average Strength @ Break	**34** N/mm (kN/m)	**196**	ppi	**3,114**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			**17.67**	
Lo = 2.0" Break	Average Elongation @ Break	%			**474.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**257.8** N			**57.949**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**445.3** N			**100.11**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**668.3** N			**150.23**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337658-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.54**	mm	**61**	mil
	MAX:	**1.81**	mm	**71**	mil
Asperity ASTM D7466: **36/37** mil	AVE:	**1.66**	mm	**65**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

					TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range	%			**2.40**	
Carbon Black Dispersion ASTM D5596	Category				**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**31** N/mm (kN/m)	**179**	ppi	**2,738**	psi
	Average Strength @ Break	**36** N/mm (kN/m)	**204**	ppi	**3,114**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%			**17.67**	
Lo = 2.0" Break	Average Elongation @ Break	%			**474.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**257.8** N			**57.949**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**445.3** N			**100.11**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**668.3** N			**150.23**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337659-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.45	mm	57	mil	Length.....	125 m	410.1 feet
	MAX:	2.00	mm	79	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 35/36 mil	AVE:	1.65	mm	65	mil	OIT(Standard) ASTM D3895 minutes	181	

ODD # : TOP EVEN #: BOTTOM

				TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc		.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g	g/10 min		.21	
Carbon Black Content ASTM D4218	Range	%		2.40	
Carbon Black Dispersion ASTM D5596	Category			10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	31 N/mm (kN/m)	178 ppi	2,738	psi
	Average Strength @ Break	35 N/mm (kN/m)	202 ppi	3,114	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield	%		17.67	
Lo = 2.0" Break	Average Elongation @ Break	%		474.8	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%		-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	257.8 N		57.949	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	445.3 N		100.11	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	668.3 N		150.23	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs		CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs		ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337660-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	**1.5**	**mm**	**60 mil**	
	MIN:	**1.48**	mm	**58**	mil	Length.....	**125**	m	**410.1**	feet
	MAX:	**1.70**	mm	**67**	mil	Width.....	**7.00**	m;	**23.0**	feet
Asperity ASTM D7466: **34/36** mil ODD # : TOP EVEN #: BOTTOM	AVE:	**1.58**	mm	**62**	mil	OIT(Standard) ASTM D3895	minutes	**181**		

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g	g/10 min				**.21**	
Carbon Black Content ASTM D4218	Range	%				**2.40**	
Carbon Black Dispersion ASTM D5596	Category					**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**30**	N/mm (kN/m)	**170**	ppi	**2,738**	psi
	Average Strength @ Break	**34**	N/mm (kN/m)	**194**	ppi	**3,114**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Yield	%				**17.67**	
	Average Elongation @ Break	%				**474.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**257.8**	N			**57.949**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**445.3**	N			**100.11**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**668.3**	N			**150.23**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337661-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.49**	mm	**59**	mil
	MAX:	**1.73**	mm	**68**	mil
Asperity ASTM D7466: **33/34** mil	AVE:	**1.61**	mm	**63**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.5**	**mm**	**60**	**mil**
Length.....	**125**	m	**410.1**	feet
Width.....	**7.00**	m;	**23.0**	feet
OIT(Standard) ASTM D3895	minutes	**181**		

							TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc			**.949**	
MFI ASTM D1238 COND. E GRADE: **K307**	Melt Flow Index 190ºC /2160 g			g/10 min			**.21**	
Carbon Black Content ASTM D4218	Range			%			**2.40**	
Carbon Black Dispersion ASTM D5596	Category						**10 In Cat 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	**30**	N/mm (kN/m)	**169**	ppi		**2,668**	psi
	Average Strength @ Break	**36**	N/mm (kN/m)	**206**	ppi		**3,243**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield			%			**17.79**	
Lo = 2.0" Break	Average Elongation @ Break			%			**492.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%			**-0.54**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**255.8**	N				**57.499**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**462.3**	N				**103.92**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**651.6**	N				**146.49**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs				**CERTIFIED**	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300	hrs				**ONGOING**	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

agru america quality control dept.

quality certificate

ROLL # **337662-09** Lot #: **8190366** **Liner Type: MICROSPIKE™ HDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH		Thickness.....	1.5 mm	60 mil
	MIN:	1.50	mm	59	mil	Length.....	125 m	410.1 feet
	MAX:	1.76	mm	69	mil	Width.....	7.00 m;	23.0 feet
Asperity ASTM D7466: 34/34 mil ODD # : TOP EVEN #: BOTTOM	AVE:	1.61	mm	63	mil	OIT(Standard) ASTM D3895 minutes	181	

					TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc		.949	
MFI ASTM D1238 COND. E GRADE: K307	Melt Flow Index 190ºC /2160 g		g/10 min		.21	
Carbon Black Content ASTM D4218	Range		%		2.40	
Carbon Black Dispersion ASTM D5596	Category				10 In Cat 1	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Yield	30	N/mm (kN/m)	169 ppi	2,668	psi
	Average Strength @ Break	36	N/mm (kN/m)	206 ppi	3,243	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield	Average Elongation @ Yield		%		17.79	
Lo = 2.0" Break	Average Elongation @ Break		%		492.5	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%		-0.54	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	255.8	N		57.499	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	462.3	N		103.92	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	651.6	N		146.49	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs			CERTIFIED	
Notched Constant Tensile Load ASTM D5397	pass / fail @ 30%	300 hrs			ONGOING	

Customer: **Waste Management. Inc. Of Florida**
PO: **1000016591 Vista Landfill Cell 2**
Destination **Apopka, FL**

Date:..... **9-12-09**

Signature.....

Quality Control Department

60HDmic.FRM
REV 03
12/23/05

CoA Date: 03/31/2009

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87834889
PO #: 4962
Weight: 179400 LB
Ship Date: 03/31/2009
Package: BULK
Mode: Hopper Car
Car #: PSPX005877
Seal No: 259682

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8190367

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.230	g/10mi
HLMI Flow Rate	ASTM D1238	19.00	g/10mi
Density	ASTM D1505	0.9370	g/cm3
Pellet Count	P02.08.03	34.000	pel/g
Production Date		03/19/2009	

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.

Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4637

CoA Date: 03/31/2009

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87834894
PO #: 4962
Weight: 186600 LB
Ship Date: 03/31/2009
Package: BULK
Mode: Hopper Car
Car #: PSPX002430
Seal No: 259675

Product:
MARLEX POLYETHYLENE K307 BULK

Lot Number: 8190366

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.210	g/10mi
HLMI Flow Rate	ASTM D1238	18.00	g/10mi
Density	ASTM D1505	0.9370	g/cm3
Pellet Count	P02.08.03	31.000	pel/g
Production Date		03/18/2009	

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.

Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at +1-832-813-4637

SUB APPENDIX B-2

GEOCOMPOSITE

SKAPS Industries

Engineered Synthetic Products, Inc.

October 29, 2009
Waste Management

Ref. : WM Vista Landfill, FL
Customer P.O. # 1000016592
Transnet 300-2-8

We certify that the Transnet 300-2-8 drainage composite, meets the project requirements as stated in the specifications. The properties listed in this section are:

Property	Test Method	Unit	Required Value	Qualifier
Geonet[4]				
Mass per Unit Area	ASTM D 5261	lbs/ft^2	0.162	Minimum
Thickness	ASTM D 5199	mil	200	Minimum
Carbon Black	ASTM D 4218	%	2 - 3	Range
Tensile Strength	ASTM D 5035	lbs/in	45	Minimum
Melt Flow	ASTM D 1238[3]	g/10 min	1.0	Maximum
Density	ASTM D 1505	g/cm^3	0.94	Minimum
Composite				
Ply Adhesion	ASTM D 7005	lb/in	1.0	MARV[6]
Transmissivity[1]	ASTM D 4716	m^2/sec	9.0 x 10^{-4}	MARV
Transmissivity[2]	ASTM D 4716	m^2/sec	7.9 x 10^{-4}	MARV
Geotextile[4 & 5]				
Fabric Weight	ASTM D 5261	oz/yd^2	8.0	MARV
Grab Strength	ASTM D 4632	lbs	200	MARV
Grab Elongation	ASTM D 4632	%	50	MARV
Tear Strength	ASTM D 4533	lbs	75	MARV
Puncture Resistance	ASTM D 4833	lbs	90	MARV
Static Puncture	ASTM D 6241	lbs	500	MARV
AOS	ASTM D 4751	US Sieve	80	MARV
UV Resistance	ASTM D 4355	%/hrs	70/500	MARV

Notes:

1 Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.02 and a confining pressure of 500 psf between sand & liner after 24 hours.

2 Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.02 and a confining pressure of 12000 psf between sand & liner after 100 hours.

3 Condition 190/2.16

4 Geotextile and Geonet properties are prior to lamination.

5 Geotextile data is provided by the supplier.

6 MARV is statistically defined as mean minus two standard deviations and it is the value which is exceeded by 97.5% of all the test data.

Sincerely,

Nilay Patel

Nilay Patel
QA Manager

571 Industrial Parkway, Commerce, GA 30529 **Phone**: 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geocomposite manufacturer, hereby certify the following for the material delievered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity (m^2/sec)
			Top	Bottom	Minimum	Average	
1	328310001	328310001 - N	3283.014	3283.053	1.24	2.96	
2	328310002	328310002 - N	3283.014	3283.053			
3	328310003	328310003 - N	3283.014	3283.053			
4	328310004	328310004 - N	3283.014	3283.053			
5	328310005	328310005 - N	3283.014	3283.053			
6	328310006	328310006 - N	3283.014	3283.053			
7	328310007	328310007 - N	3283.025	3283.010			
8	328310008	328310008 - N	3283.025	3283.010			
9	328310009	328310009 - N	3283.025	3283.010			
10	328310010	328310010 - N	3283.025	3283.010			
11	328310011	328310011 - N	3283.025	3283.010			
12	328310012	328310012 - N	3283.025	3283.010			
13	328310013	328310013 - N	3283.003	3283.020			
14	328310014	328310014 - N	3283.003	3283.020			
15	328310015	328310015 - N	3283.003	3283.020	1.55	3.21	
16	328310016	328310016 - N	3283.003	3283.020			
17	328310017	328310017 - N	3283.003	3283.020			
18	328310018	328310018 - N	3283.003	3283.020			
19	328310019	328310019 - N	3283.021	3283.004			
20	328310020	328310020 - N	3283.021	3283.004			
21	328310021	328310021 - N	3283.021	3283.004			
22	328310022	328310022 - N	3283.021	3283.004			
23	328310023	328310023 - N	3283.021	3283.004			
24	328310024	328310024 - N	3283.021	3283.004			
25	328310025	328310025 - N	3283.009	3283.026			
26	328310026	328310026 - N	3283.009	3283.026			
27	328310027	328310027 - N	3283.009	3283.026			

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geonet Manufacturer, hereby ceritify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
328310001 - N	4080-04	0.9534	0.345	312	2.35	105	
328310002 - N	4080-04	0.9534					
328310003 - N	4080-04	0.9534					
328310004 - N	4080-04	0.9534					
328310005 - N	4080-04	0.9534					
328310006 - N	4080-04	0.9534					
328310007 - N	4080-04	0.9534					
328310008 - N	4080-04	0.9534					
328310009 - N	4080-04	0.9534					
328310010 - N	4080-04	0.9534					
328310011 - N	4080-04	0.9534					
328310012 - N	4080-04	0.9534					
328310013 - N	4080-04	0.9534					
328310014 - N	4080-04	0.9534					
328310015 - N	4080-04	0.9534	0.359	319	2.66	110	
328310016 - N	4080-04	0.9534					
328310017 - N	4080-04	0.9534					
328310018 - N	4080-04	0.9534					
328310019 - N	4080-04	0.9534					
328310020 - N	4080-04	0.9534					
328310021 - N	4080-04	0.9534					
328310022 - N	4080-04	0.9534					
328310023 - N	4080-04	0.9534					
328310024 - N	4080-04	0.9534					
328310025 - N	4080-04	0.9534					
328310026 - N	4080-04	0.9534					
328310027 - N	4080-04	0.9534					

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 Fax: 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geocomposite manufacturer, hereby certify the following for the material delievered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity (m^2/sec)
			Top	Bottom	Minimum	Average	
1	328310028	328310028 - N	3283.009	3283.026			
2	328310029	328310029 - N	3283.009	3283.026			
3	328310030	328310030 - N	3283.009	3283.026	1.27	2.99	
4	328310031	328310031 - N	3283.023	3283.012			
5	328310032	328310032 - N	3283.023	3283.012			
6	328310033	328310033 - N	3283.023	3283.012			
7	328310034	328310034 - N	3283.023	3283.012			
8	328310035	328310035 - N	3283.023	3283.012			
9	328310036	328310036 - N	3283.023	3283.012			
10	328310037	328310037 - N	3283.005	3283.018			
11	328310038	328310038 - N	3283.005	3283.018			
12	328310039	328310039 - N	3283.005	3283.018			
13	328310040	328310040 - N	3283.005	3283.018			
14	328310041	328310041 - N	3283.005	3283.018			
15	328310042	328310042 - N	3283.005	3283.018			
16	328310043	328310043 - N	3283.019	3283.002			
17	328310044	328310044 - N	3283.019	3283.002			
18	328310045	328310045 - N	3283.019	3283.002	1.52	3.18	
19	328310046	328310046 - N	3283.019	3283.002			
20	328310047	328310047 - N	3283.019	3283.002			
21	328310048	328310048 - N	3283.019	3283.002			
22	328310049	328310049 - N	3283.011	3283.016			
23	328310050	328310050 - N	3283.011	3283.016			
24	328310051	328310051 - N	3283.011	3283.016			
25	328310052	328310052 - N	3283.011	3283.016			
26	328310053	328310053 - N	3283.011	3283.016			
27	328310054	328310054 - N	3283.011	3283.016			

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geonet Manufacturer, hereby ceritify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
328310028 - N	4080-04	0.9534					
328310029 - N	4080-04	0.9534					
328310030 - N	4080-04	0.9534	0.347	314	2.38	107	
328310031 - N	4080-04	0.9534					
328310032 - N	4080-04	0.9534					
328310033 - N	4080-04	0.9534					
328310034 - N	4080-04	0.9534					
328310035 - N	4080-04	0.9541					
328310036 - N	4080-04	0.9541					
328310037 - N	4080-04	0.9541					
328310038 - N	4080-04	0.9541					
328310039 - N	4080-04	0.9541					
328310040 - N	4080-04	0.9541					
328310041 - N	4080-04	0.9541					
328310042 - N	4080-04	0.9541					
328310043 - N	4080-04	0.9541					
328310044 - N	4080-04	0.9541					
328310045 - N	4080-04	0.9541	0.355	317	2.63	109	
328310046 - N	4080-04	0.9541					
328310047 - N	4080-04	0.9541					
328310048 - N	4080-04	0.9541					
328310049 - N	4080-04	0.9541					
328310050 - N	4080-04	0.9541					
328310051 - N	4080-04	0.9541					
328310052 - N	4080-04	0.9541					
328310053 - N	4080-04	0.9541					
328310054 - N	4080-04	0.9541					

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 Fax: 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geocomposite manufacturer, hereby certify the following for the material delievered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity (m^2/sec)
			Top	Bottom	Minimum	Average	
1	328310055	328310055 - N	3283.017	3283.008			
2	328310056	328310056 - N	3283.017	3283.008			
3	328310057	328310057 - N	3283.017	3283.008			
4	328310058	328310058 - N	3283.017	3283.008			
5	328310059	328310059 - N	3283.017	3283.008			
6	328310060	328310060 - N	3283.017	3283.008	1.30	3.02	
7	328310061	328310061 - N	3283.034	3283.022			
8	328310062	328310062 - N	3283.034	3283.022			
9	328310063	328310063 - N	3283.034	3283.022			
10	328310064	328310064 - N	3283.034	3283.022			
11	328310065	328310065 - N	3283.034	3283.022			
12	328310066	328310066 - N	3283.034	3283.022			
13	328310067	328310067 - N	3283.001	3283.015			
14	328310068	328310068 - N	3283.001	3283.015			
15	328310069	328310069 - N	3283.001	3283.015			
16	328310070	328310070 - N	3283.001	3283.015			
17	328310071	328310071 - N	3283.001	3283.015			
18	328310072	328310072 - N	3283.001	3283.015			
19	328310073	328310073 - N	3283.027	3283.006			
20	328310074	328310074 - N	3283.027	3283.006			
21	328310075	328310075 - N	3283.027	3283.006	1.49	3.15	
22	328310076	328310076 - N	3283.027	3283.006			
23	328310077	328310077 - N	3283.027	3283.006			
24	328310078	328310078 - N	3283.027	3283.006			
25	328310079	328310079 - N	3283.013	3283.024			
26	328310080	328310080 - N	3283.013	3283.024			
27	328310081	328310081 - N	3283.013	3283.024			

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geonet Manufacturer, hereby ceritify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
328310055 - N	4080-04	0.9541					
328310056 - N	4080-04	0.9541					
328310057 - N	4080-04	0.9541					
328310058 - N	4080-04	0.9541					
328310059 - N	4080-04	0.9541					
328310060 - N	4080-04	0.9541	0.343	311	2.41	104	
328310061 - N	4080-04	0.9541					
328310062 - N	4080-04	0.9541					
328310063 - N	4080-04	0.9541					
328310064 - N	4080-04	0.9541					
328310065 - N	4080-04	0.9541					
328310066 - N	4080-04	0.9541					
328310067 - N	4080-04	0.9541					
328310068 - N	4080-04	0.9541					
328310069 - N	4080-04	0.9541					
328310070 - N	4080-04	0.9536					
328310071 - N	4080-04	0.9536					
328310072 - N	4080-04	0.9536					
328310073 - N	4080-04	0.9536					
328310074 - N	4080-04	0.9536					
328310075 - N	4080-04	0.9536	0.352	320	2.60	108	
328310076 - N	4080-04	0.9536					
328310077 - N	4080-04	0.9536					
328310078 - N	4080-04	0.9536					
328310079 - N	4080-04	0.9536					
328310080 - N	4080-04	0.9536					
328310081 - N	4080-04	0.9536					

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 Fax: 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geocomposite manufacturer, hereby certify the following for the material delievered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity (m^2/sec)
			Top	Bottom	Minimum	Average	
1	328310082	328310082 - N	3283.013	3283.024			
2	328310083	328310083 - N	3283.013	3283.024			
3	328310084	328310084 - N	3283.013	3283.024			
4	328310085	328310085 - N	3283.050	3283.033			
5	328310086	328310086 - N	3283.050	3283.033			
6	328310087	328310087 - N	3283.050	3283.033			
7	328310088	328310088 - N	3283.050	3283.033			
8	328310089	328310089 - N	3283.050	3283.033			
9	328310090	328310090 - N	3283.050	3283.033	1.33	3.05	
10	328310091	328310091 - N	3283.036	3283.045			
11	328310092	328310092 - N	3283.036	3283.045			
12	328310093	328310093 - N	3283.036	3283.045			
13	328310094	328310094 - N	3283.036	3283.045			
14	328310095	328310095 - N	3283.036	3283.045			
15	328310096	328310096 - N	3283.036	3283.045			
16	328310097	328310097 - N	3283.048	3283.037			
17	328310098	328310098 - N	3283.048	3283.037			
18	328310099	328310099 - N	3283.048	3283.037			
19	328310100	328310100 - N	3283.048	3283.037			
20	328310101	328310101 - N	3283.048	3283.037			
21	328310102	328310102 - N	3283.048	3283.037			
22	328310103	328310103 - N	3283.039	3283.051			
23	328310104	328310104 - N	3283.039	3283.051			
24	328310105	328310105 - N	3283.039	3283.051	1.46	3.22	
25	328310106	328310106 - N	3283.039	3283.051			
26	328310107	328310107 - N	3283.039	3283.051			
27	328310108	328310108 - N	3283.039	3283.051			

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geonet Manufacturer, hereby ceritify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
328310082 - N	4080-04	0.9536					
328310083 - N	4080-04	0.9536					
328310084 - N	4080-04	0.9536					
328310085 - N	4080-04	0.9536					
328310086 - N	4080-04	0.9536					
328310087 - N	4080-04	0.9536					
328310088 - N	4080-04	0.9536					
328310089 - N	4080-04	0.9536					
328310090 - N	4080-04	0.9536	0.346	313	2.44	106	
328310091 - N	4080-04	0.9536					
328310092 - N	4080-04	0.9536					
328310093 - N	4080-04	0.9536					
328310094 - N	4080-04	0.9536					
328310095 - N	4080-04	0.9536					
328310096 - N	4080-04	0.9536					
328310097 - N	4080-04	0.9536					
328310098 - N	4080-04	0.9536					
328310099 - N	4080-04	0.9536					
328310100 - N	4080-04	0.9536					
328310101 - N	4080-04	0.9536					
328310102 - N	4080-04	0.9536					
328310103 - N	4080-04	0.9536					
328310104 - N	4080-04	0.9536					
328310105 - N	4080-04	0.9539	0.360	318	2.57	110	
328310106 - N	4080-04	0.9539					
328310107 - N	4080-04	0.9539					
328310108 - N	4080-04	0.9539					

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 Fax: 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geocomposite manufacturer, hereby certify the following for the material delievered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity (m^2/sec)
			Top	Bottom	Minimum	Average	
1	328310109	328310109 - N	3283.032	3283.047			
2	328310110	328310110 - N	3283.032	3283.047			
3	328310111	328310111 - N	3283.032	3283.047			
4	328310112	328310112 - N	3283.032	3283.047			
5	328310113	328310113 - N	3283.032	3283.047			
6	328310114	328310114 - N	3283.032	3283.047			
7	328310115	328310115 - N	3283.046	3283.031			
8	328310116	328310116 - N	3283.046	3283.031			
9	328310117	328310117 - N	3283.046	3283.031			
10	328310118	328310118 - N	3283.046	3283.031			
11	328310119	328310119 - N	3283.046	3283.031			
12	328310120	328310120 - N	3283.046	3283.031	1.36	2.91	
13	328310121	328310121 - N	3283.007	3283.040			
14	328310122	328310122 - N	3283.007	3283.040			
15	328310123	328310123 - N	3283.007	3283.040			
16	328310124	328310124 - N	3283.007	3283.040			
17	328310125	328310125 - N	3283.007	3283.040			
18	328310126	328310126 - N	3283.007	3283.040			
19	328310127	328310127 - N	3283.052	3283.029			
20	328310128	328310128 - N	3283.052	3283.029			
21	328310129	328310129 - N	3283.052	3283.029			
22	328310130	328310130 - N	3283.052	3283.029			
23	328310131	328310131 - N	3283.052	3283.029			
24	328310132	328310132 - N	3283.052	3283.029			
25	328310133	328310133 - N	3283.030	3283.043			
26	328310134	328310134 - N	3283.030	3283.043			
27	328310135	328310135 - N	3283.030	3283.043	1.43	3.19	

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geonet Manufacturer, hereby ceritify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
328310109 - N	4080-04	0.9539					
328310110 - N	4080-04	0.9539					
328310111 - N	4080-04	0.9539					
328310112 - N	4080-04	0.9539					
328310113 - N	4080-04	0.9539					
328310114 - N	4080-04	0.9539					
328310115 - N	4080-04	0.9539					
328310116 - N	4080-04	0.9539					
328310117 - N	4080-04	0.9539					
328310118 - N	4080-04	0.9539					
328310119 - N	4080-04	0.9539					
328310120 - N	4080-04	0.9539	0.344	310	2.47	105	
328310121 - N	4080-04	0.9539					
328310122 - N	4080-04	0.9539					
328310123 - N	4080-04	0.9539					
328310124 - N	4080-04	0.9539					
328310125 - N	4080-04	0.9539					
328310126 - N	4080-04	0.9539					
328310127 - N	4080-04	0.9539					
328310128 - N	4080-04	0.9539					
328310129 - N	4080-04	0.9539					
328310130 - N	4080-04	0.9539					
328310131 - N	4080-04	0.9539					
328310132 - N	4080-04	0.9539					
328310133 - N	4080-04	0.9539					
328310134 - N	4080-04	0.9539					
328310135 - N	4080-04	0.9539	0.358	316	2.53	109	

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 Fax: 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geocomposite manufacturer, hereby certify the following for the material delievered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity (m^2/sec)
			Top	Bottom	Minimum	Average	
1	328310136	328310136 - N	3283.030	3283.043			
2	328310137	328310137 - N	3283.030	3283.043			
3	328310138	328310138 - N	3283.030	3283.043			
4	328310139	328310139 - N	3283.054	3283.035			
5	328310140	328310140 - N	3283.054	3283.035			
6	328310141	328310141 - N	3283.054	3283.035			
7	328310142	328310142 - N	3283.054	3283.035			
8	328310143	328310143 - N	3283.054	3283.035			
9	328310144	328310144 - N	3283.054	3283.035			
10	328310145	328310145 - N	3283.038	3283.049			
11	328310146	328310146 - N	3283.038	3283.049			
12	328310147	328310147 - N	3283.038	3283.049			
13	328310148	328310148 - N	3283.038	3283.049			
14	328310149	328310149 - N	3283.038	3283.049			
15	328310150	328310150 - N	3283.038	3283.049	1.21	2.87	
16	328310151	328310151 - N	3283.044	3283.041			
17	328310152	328310152 - N	3283.044	3283.041			
18	328310153	328310153 - N	3283.044	3283.041			
19	328310154	328310154 - N	3283.044	3283.041			
20	328310155	328310155 - N	3283.044	3283.041			
21	328310156	328310156 - N	3283.044	3283.041			
22	328310157	328310157 - N	3283.028	3283.062			
23	328310158	328310158 - N	3283.028	3283.062			
24	328310159	328310159 - N	3283.028	3283.062			
25	328310160	328310160 - N	3283.028	3283.062			
26	328310161	328310161 - N	3283.028	3283.062			
27	328310162	328310162 - N	3283.028	3283.062			

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geonet Manufacturer, hereby ceritify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
328310136 - N	4080-04	0.9539					
328310137 - N	4080-04	0.9539					
328310138 - N	4080-04	0.9539					
328310139 - N	4080-04	0.9539					
328310140 - N	4080-04	0.9533					
328310141 - N	4080-04	0.9533					
328310142 - N	4080-04	0.9533					
328310143 - N	4080-04	0.9533					
328310144 - N	4080-04	0.9533					
328310145 - N	4080-04	0.9533					
328310146 - N	4080-04	0.9533					
328310147 - N	4080-04	0.9533					
328310148 - N	4080-04	0.9533					
328310149 - N	4080-04	0.9533					
328310150 - N	4080-04	0.9533	0.348	312	2.33	107	
328310151 - N	4080-04	0.9533					
328310152 - N	4080-04	0.9533					
328310153 - N	4080-04	0.9533					
328310154 - N	4080-04	0.9533					
328310155 - N	4080-04	0.9533					
328310156 - N	4080-04	0.9533					
328310157 - N	4080-04	0.9533					
328310158 - N	4080-04	0.9533					
328310159 - N	4080-04	0.9533					
328310160 - N	4080-04	0.9533					
328310161 - N	4080-04	0.9533					
328310162 - N	4080-04	0.9533					

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 Fax: 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geocomposite manufacturer, hereby certify the following for the material delievered to the above referenced project :

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity (m^2/sec)
			Top	Bottom	Minimum	Average	
1	328310163	328310163 - N	3283.061	3283.058			
2	328310164	328310164 - N	3283.061	3283.058			
3	328310165	328310165 - N	3283.061	3283.058	1.40	3.16	
4	328310166	328310166 - N	3283.061	3283.058			
5	328310167	328310167 - N	3283.061	3283.058			
6	328310168	328310168 - N	3283.061	3283.058			
7	328310169	328310169 - N	3283.042	3283.060			
8	328310170	328310170 - N	3283.042	3283.060			
9	328310171	328310171 - N	3283.042	3283.060			
10	328310172	328310172 - N	3283.042	3283.060			
11	328310173	328310173 - N	3283.042	3283.060			
12	328310174	328310174 - N	3283.042	3283.060			
13	328310175	328310175 - N	3283.059	3283.055			
14	328310176	328310176 - N	3283.059	3283.055			
15	328310177	328310177 - N	3283.059	3283.055			
16	328310178	328310178 - N	3283.059	3283.055			
17	328310179	328310179 - N	3283.059	3283.055			
18	328310180	328310180 - N	3283.059	3283.055	1.28	2.84	
19	328310181	328310181 - N	3283.056	3283.064			
20	328310182	328310182 - N	3283.056	3283.064			
21	328310183	328310183 - N	3283.056	3283.064			
22	328310184	328310184 - N	3283.056	3283.064			
23	328310185	328310185 - N	3283.056	3283.064			
24	328310186	328310186 - N	3283.056	3283.064			
25	328310187	328310187 - N	3283.063	3283.057			
26	328310188	328310188 - N	3283.063	3283.057			
27	328310189	328310189 - N	3283.063	3283.057			

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN300-2-8**
Project : **WM Vista Landfill, FL**

We, the Geonet Manufacturer, hereby ceritify the following for the material sent to the above referenced project :

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
328310163 - N	4080-04	0.9533					
328310164 - N	4080-04	0.9533					
328310165 - N	4080-04	0.9533	0.356	319	2.50	110	
328310166 - N	4080-04	0.9533					
328310167 - N	4080-04	0.9533					
328310168 - N	4080-04	0.9533					
328310169 - N	4080-04	0.9533					
328310170 - N	4080-04	0.9533					
328310171 - N	4080-04	0.9533					
328310172 - N	4080-04	0.9533					
328310173 - N	4080-04	0.9533					
328310174 - N	4080-04	0.9533					
328310175 - N	4080-04	0.9537					
328310176 - N	4080-04	0.9537					
328310177 - N	4080-04	0.9537					
328310178 - N	4080-04	0.9537					
328310179 - N	4080-04	0.9537					
328310180 - N	4080-04	0.9537	0.350	315	2.39	104	
328310181 - N	4080-04	0.9537					
328310182 - N	4080-04	0.9537					
328310183 - N	4080-04	0.9537					
328310184 - N	4080-04	0.9537					
328310185 - N	4080-04	0.9537					
328310186 - N	4080-04	0.9537					
328310187 - N	4080-04	0.9537					
328310188 - N	4080-04	0.9537					
328310189 - N	4080-04	0.9537					

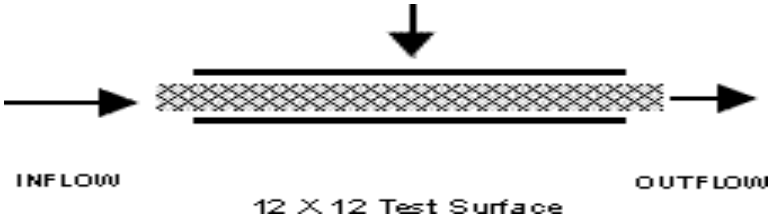
571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 Fax: 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

ASTM D 4716

Client:	Waste Management	**Job #**	3283
Project:	WM Vista Landfill, FL		
Product:	TN300-2-8		

Test Configuration:



Test Information:

Boundary Conditions:	Sand Geocomposite Liner	**Normal Load:** **Gradient:** **Seating Time:** **Flow Direction:**	500 psf 0.02 ft 24 hours MD

Test Results:

Roll No.	Pressure (psf)	Gradient, ft	Transmissivity, m^2/sec
			24 hours
328310001	500	0.02	1.45×10^{-3}
328310035			1.53×10^{-3}
328310070			1.48×10^{-3}
328310105			1.56×10^{-3}
328310140			1.43×10^{-3}
328310175			1.51×10^{-3}

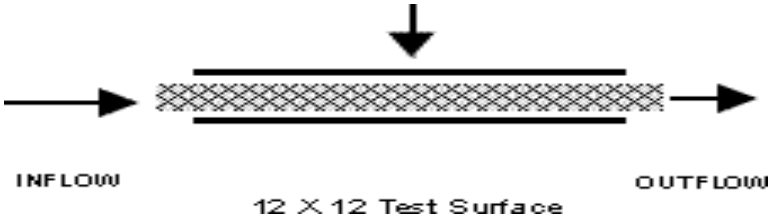
571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

ASTM D 4716

Client:	Waste Management	**Job #**	3283
Project:	WM Vista Landfill, FL		
Product:	TN300-2-8		

Test Configuration:



Test Information:

Boundary Conditions:	Sand Geocomposite Liner	**Normal Load:** **Gradient:** **Seating Time:** **Flow Direction:**	12000 psf 0.02 ft 100 hours MD

Test Results:

Roll No.	Pressure (psf)	Gradient, ft	Transmissivity, m^2/sec
			100 hours
328310001	12000	0.02	9.55×10^{-4}
328310035			9.87×10^{-4}
328310070			9.61×10^{-4}
328310105			9.84×10^{-4}
328310140			9.66×10^{-4}
328310175			9.80×10^{-4}

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

POLYETHYLENE RESIN CERTIFICATION

Customer Name : Waste Management
Project Name : WM Vista Landfill, FL
Geocomposite Manufacturer : SKAPS Industries
Geocomposite Production Plant : Commerce, GA
Geocomposite Brand Name : TN300-2-8

We, the Geonet Manufacturer, hereby certify the following for the material delivered to the above referenced project:

Resin Supplier	Resin Production Plant	Resin Brand Name	Resin Lot Number	Property	Test Method	Units	Resin Supplier Value	Tested Value*
New South Polymers Inc	Chevron, TX	HDPE	4080-04	Density	ASTM D 1505	gm/cc	0.949	0.949
				Melt Flow Index	ASTM D 1238[(a)]	gm/10 min	0.25	0.26

(a) Condition 190/2.16
* Data from SKAPS Quality Control

APPROVED 5 QA

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : TN300-2-8
Project : WM Vista Landfill, FL

We, the Geocomposite Manufacturer, hereby certify the following for the material delivered to the above referenced project :

GEOCOMP ROLL#	FABRIC ROLL#	WEIGHT oz/sq yd	MD TENSILE lbs.	MD ELONG %	XMD TENSILE lbs.	XMD ELONG %	MD TRAP lbs.	XMD TRAP lbs.	PUNCTURE lbs.	STATIC PUNCTURE lbs.	AOS us sieve
328310001	3283.014	8.21	225	65	230	80	103	116	137	663	80
	3283.053	8.25	230	70	233	76	105	114	136	665	80
328310035	3283.023	8.17	229	69	232	75	95	106	131	654	80
	3283.012	8.21	225	65	230	80	103	116	137	663	80
328310070	3283.001	8.15	227	67	232	78	97	102	133	652	80
	3283.015	8.43	231	75	242	82	103	116	137	663	80
328310105	3283.039	8.45	232	74	238	81	101	112	139	661	80
	3283.051	8.25	230	70	233	76	105	114	136	665	80
328310140	3283.054	8.25	230	70	233	76	105	114	136	665	80
	3283.035	8.45	232	74	238	81	101	112	139	661	80
328310175	3283.059	8.59	232	74	241	82	105	114	136	665	80
	3283.055	8.59	232	74	241	82	105	114	136	665	80

571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 **Fax:** 706-336-7007 **Email:** skaps@skaps.com

SUB APPENDIX B-3

GEOSYNTHETIC CLAY LINER

Date: 10/20/2009
Purchase Order: 1000016941
ORDER NUMBER: 000256128

Sheree Grant
Waste Management

Apopka, FL 32703
sgrant@wm.com

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,

Melanie King

Melanie King
Quality Assurance Coordinator
CETCO Cartersville Plant

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME: Vista LF
CUSTOMER P.O.: 1000016941
ORDER NUMBER: 000256128
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: Melanie King
Quality Assurance Coordinator
CETCO
218 Industrial Park

Cartersville, GA 30121
Telephone: (770) 387-7773
E-Mail: melanie.king@cetco.com

PRODUCT CERTIFICATIONS

PROJECT NAME: Vista LF
CUSTOMER P.O.: 1000016941
ORDER NUMBERS: 000256128
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	1/100,000sf	5x10-9cm/sec	Standard
ASTM D4632*	Grab Strength*modified with 4-inch grips	1/40,000sf	90lbs	Standard
ASTM D 4643	GCL Moisture	1/40,000sf	25-30% typical	Standard
ASTM D4632*	Peel Strength*modified with 4-inch grips	1/40,000sf	15lbs	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.

Melanie King
Quality Assurance Coordinator

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 000256128

GCL								Geotextiles				Clay
CV-BENTOMAT ST								N/W-WHITE			WOVEN	CV-CG 50
Order	**GCL Lot #**	**GCL Roll #**	**Length**	**Width**	**weight**	**sq ft**	**Roll # Tested**	**Cap Lot #**	**Cap Roll #**	**Roll # Tested**	**Base Roll #**	**Clay Lot #**
000256128	200942CV	9125	150	15	2730	2250	9125	200942CV	00004143	00004138	2020351536	929877B
000256128	200942CV	9127	150	15	2642	2250	9125	200942CV	00004143	00004138	2020351536	929877B
000256128	200942CV	9128	150	15	2632	2250	9125	200942CV	00004139	00004138	2020351536	929877B
000256128	200942CV	9129	150	15	2630	2250	9125	200942CV	00004139	00004138	2020351536	929877B
000256128	200942CV	9130	150	15	2638	2250	9125	200942CV	00004139	00004138	2020351536	929877B
000256128	200942CV	9131	150	15	2618	2250	9125	200942CV	00004139	00004138	2020351536	929877B
000256128	200942CV	9132	150	15	2626	2250	9125	200942CV	00004139	00004138	2020351536	929877B
000256128	200942CV	9133	150	15	2636	2250	9125	200942CV	00004139	00004138	2020351536	929877B
						Total sq ft:	**18000**			Total Number of Rolls Certified: **8**		

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 000256128 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength 6496
		ASTM Test Method:	D 5993	D 6768	D 6496
		Required Value:	0.75 lb /sq ft Min	30 lbs/in MARV	3.5 lbs/in Min
CV-BENTOMAT ST	200942CV	9125	0.92	52.6	7.1

Grab 4632 Modified	Moisture	Peel 4632 Modified
D4632*	D 4643	D4632*
90lbs	25-30% typical	15lbs
210.6	28.1	34.8

modified ASTM D 4632 using 4 inch grips.

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 000256128

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
929877B	10.40	26.00	15.60

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 000256128 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	2020351536	3.4	206.4

COVER GEOTEXTILE

Material	Roll Number	Mass Area oz/yd2	Grab Strength lbs
CV-NON-WOVEN	00004138	6.8	41.0

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.

APPENDIX C

CONFORMANCE TEST RESULTS

SUB APPENDIX C-1

GEOMEMBRANE

September 18, 2009

Mail To:	**Bill To:**
Ms. Sheree Grant **Waste Management, Inc.**	**<= Same**

email: sgrant@wm.com
cc email: dschauer@geosyntec.com

Dear Ms. Grant:

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:	**Vista Landfill - Cell 2**
TRI Job Reference Number:	E2333-99-07
Material(s) Tested:	1 Agru 60 mil Microspike HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile (ASTM D 6693)

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

Sincerely,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill - Cell 2

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 337423.09
TRI Log #: E2333-99-07

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	61	61	61	62	67	69	62	61	63	61	**63**	3	60 avg
											61	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.945	0.945	0.945								**0.945**	0.000	0.94 min
Carbon Black Content (ASTM D 4218)													
% Carbon Black	2.53	2.49									**2.51**	0.03	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	149	173	157	154	153						**157**	9	126 min
TD Yield Strength (ppi)	156	164	159	189	165						**167**	13	126 min
MD Break Strength (ppi)	194	240	194	186	205						**204**	21	90 min
TD Break Strength (ppi)	162	178	166	207	124						**167**	30	90 min
MD Yield Elongation (%)	21	21	21	21	21						**21**	0	12 min
TD Yield Elongation (%)	17	17	17	17	17						**17**	0	12 min
MD Break Elongation (%)	416	444	454	439	388						**428**	26	100 min
TD Break Elongation (%)	446	519	475	549	89						**416**	187	100 min

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

September 18, 2009

Mail To:	**Bill To:**
Ms. Sheree Grant **Waste Management, Inc.**	**<= Same**

email: sgrant@wm.com
cc email: dschauer@geosyntec.com

Dear Ms. Grant:

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:	**Vista Landfill - Cell 2**
TRI Job Reference Number:	E2334-03-01
Material(s) Tested:	2 Agru 60 mil Microspike HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile (ASTM D 6693)

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

Sincerely,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill - Cell 2

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 337541.09
TRI Log #: E2334-03-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	62	65	69	61	65	65	66	69	64	65	**65**	3	60 avg
											61	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.946	0.946	0.946								**0.946**	0.000	0.94 min
Carbon Black Content (ASTM D 4218)													
% Carbon Black	2.58	2.55									**2.57**	0.02	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	155	158	173	162	156						**161**	7	126 min
TD Yield Strength (ppi)	155	156	173	154	162						**160**	8	126 min
MD Break Strength (ppi)	181	174	229	195	219						**200**	24	90 min
TD Break Strength (ppi)	185	170	161	173	195						**177**	13	90 min
MD Yield Elongation (%)	27	26	25	27	27						**26**	1	12 min
TD Yield Elongation (%)	19	19	18	20	25						**20**	3	12 min
MD Break Elongation (%)	460	413	435	438	433						**436**	17	100 min
TD Break Elongation (%)	551	475	451	491	553						**504**	46	100 min

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill - Cell 2

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 337654.09
TRI Log #: E2334-03-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	61	64	67	63	67	62	65	68	63	67	**65**	2	60 avg
											61	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.947	0.947	0.947								**0.947**	0.000	0.94 min
Carbon Black Content (ASTM D 4218)													
% Carbon Black	2.55	2.56									**2.56**	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	151	158	169	160	152						**158**	7	126 min
TD Yield Strength (ppi)	173	172	195	173	180						**179**	10	126 min
MD Break Strength (ppi)	226	216	225	203	180						**210**	19	90 min
TD Break Strength (ppi)	153	194	189	160	164						**172**	18	90 min
MD Yield Elongation (%)	27	28	26	25	25						**26**	1	12 min
TD Yield Elongation (%)	17	20	21	22	21						**20**	2	12 min
MD Break Elongation (%)	423	488	410	473	446						**448**	33	100 min
TD Break Elongation (%)	414	551	498	439	419						**464**	59	100 min

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

September 16, 2009

Mail To:	**Bill To:**
Ms. Sheree Grant **Waste Management, Inc.**	**<= Same**

email: sgrant@wm.com
cc email: dschauer@geosyntec.com

Dear Ms. Grant:

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:	**Vista Landfill - Cell 2**
TRI Job Reference Number:	E2333-96-04
Material(s) Tested:	1 Agru 60 mil Microspike HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Carbon Dispersion (ASTM D 5596) Tensile (ASTM D 6693)

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

Sincerely,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill - Cell 2

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 337312.09
TRI Log #: E2333-96-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	66	64	63	66	67	69	60	62	67	65	**65**	3	60 avg
											60	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.946	0.946	0.946								**0.946**	0.000	0.94 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.45	2.47									**2.46**	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	169	177	161	161	162						**166**	7	126 min
TD Yield Strength (ppi)	174	166	168	191	179						**176**	10	126 min
MD Break Strength (ppi)	210	232	189	227	210						**214**	17	90 min
TD Break Strength (ppi)	193	144	173	184	191						**177**	20	90 min
MD Yield Elongation (%)	21	26	23	24	24						**24**	2	12 min
TD Yield Elongation (%)	18	18	17	16	18						**17**	1	12 min
MD Break Elongation (%)	514	416	476	439	460						**461**	37	100 min
TD Break Elongation (%)	519	393	478	469	531						**478**	55	100 min

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

November 19, 2009

Mail To:	**Bill To:**
Ms. Sheree Grant **Waste Management, Inc.**	**<= Same**

email: sgrant@wm.com
cc email: dschauer@geosyntec.com
ccemail: dhamilton@geosyntec.com

Dear Ms. Grant:

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:	**Vista Landfill**
TRI Job Reference Number:	E2334-94-10
Material(s) Tested:	1 Agru 60 mil Microspike HDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 4218) Carbon Dispersion (ASTM D 5596) Tensile (ASTM D 6693)

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

Sincerely,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill

Material: Agru 60 mil Microspike HDPE Geomembrane
Sample Identification: 135768-04
TRI Log #: E2334-94-10

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Thickness (ASTM D 5994)													
Thickness (mils)	61	68	65	60	70	72	69	68	63	66	**66**	4	60 avg
											60	<< min	54 min
Density (ASTM D 1505)													
Density (g/cm3)	0.946	0.945	0.945								**0.945**	0.001	0.94 min
Carbon Black Content (ASTM D 4218)													
% Carbon Black	2.60	2.61									**2.61**	0.01	2 - 3%
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 Cat 1, 2
Rating - 2nd field view	1	1	1	1	1								1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	168	170	192	190	178						**180**	11	126 min
TD Yield Strength (ppi)	200	203	205	186	192						**197**	8	126 min
MD Break Strength (ppi)	230	241	263	249	293						**255**	24	90 min
TD Break Strength (ppi)	221	146	196	179	196						**188**	28	90 min
MD Yield Elongation (%)	26	26	26	24	24						**25**	1	12 min
TD Yield Elongation (%)	15	17	17	16	17						**16**	1	12 min
MD Break Elongation (%)	479	434	514	511	505						**489**	34	100 min
TD Break Elongation (%)	625	416	495	498	559						**519**	78	100 min

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

SUB APPENDIX C-2

GEOCOMPOSITE

September 8, 2009

Mail To:	**Bill To:**
Ms. Sheree Grant **Waste Management, Inc.** Street Address City, State Zip COUNTRY email: sgrant@wm.com cc email: shenning@wm.com	**<= Same**

Dear Ms. Grant:

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:	**Vista**
TRI Job Reference Number:	E2330-88-01
Material(s) Tested:	3 SKAPS TN300-2-8 Geocomposite(s)
Test(s) Requested:	Transmissivity (ASTM D 4716) - GC Peel Strength (ASTM D 7005) - GC Mass/Unit Area (ASTM D 5261) - GT Grab Tensile (ASTM D 4632) - GT Trapezoidal Tear (ASTM D 4533) - GT Apparent Opening Size (ASTM D 4751) - GT Permittivity (ASTM D 4491) - GT

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

Sincerely,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista

Material: SKAPS TN300-2-8 Geocomposite
Sample Identification: 328310001
TRI Log #: E2330-88-01

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	500
Hydraulic Gradient:	0.02
Test Length (in)	12
Test Width (in)	12

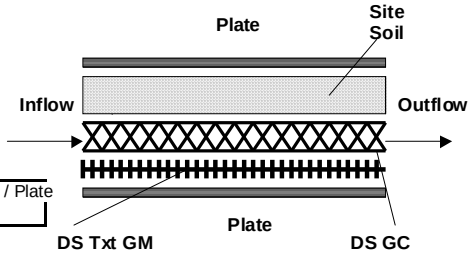


Plate / Protective Cover Site Soil / Sample / 60 mil Microspike Geomembrane / Plate

Seat Time (hours)		Specimen	1			MEAN	STD. DEV.	PROJ. SPEC.
		TEST REPLICATE NUMBER	1	2	3			
24	Volume (cc)		553	557	554			
	Time (s)		25.11	25.15	25.12			
	Flow Rate (GPM/ft width)		0.35	0.35	0.35	**0.35**	0.00	
	Transmissivity (m^2/s)		3.61E-03	3.63E-03	3.62E-03	**3.62E-03**	1.06E-05	
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				
100	Volume (cc)		537	537	535			
	Time (s)		25.13	25.15	25.09			
	Flow Rate (GPM/ft width)		0.34	0.34	0.34	**0.34**	0.00	
	Transmissivity (m^2/s)		3.51E-03	3.50E-03	3.50E-03	**3.50E-03**	3.78E-06	9.0E-4 min
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	12,000
Hydraulic Gradient:	0.02
Test Length (in)	12
Test Width (in)	12

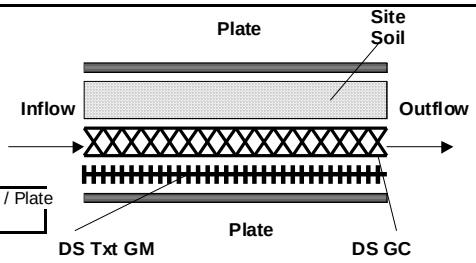


Plate / Protective Cover Site Soil / Sample / 60 mil Microspike Geomembrane / Plate

Seat Time (hours)		Specimen	1			MEAN	STD. DEV.	PROJ. SPEC.
		TEST REPLICATE NUMBER	1	2	3			
24	Volume (cc)		559	561	561			
	Time (s)		49.95	50.01	50.00			
	Flow Rate (GPM/ft width)		0.18	0.18	0.18	**0.18**	0.00	
	Transmissivity (m^2/s)		1.84E-03	1.84E-03	1.84E-03	**1.84E-03**	2.63E-06	
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				
100	Volume (cc)		539	546	542			
	Time (s)		49.95	50.56	50.03			
	Flow Rate (GPM/ft width)		0.17	0.17	0.17	**0.17**	0.00	
	Transmissivity (m^2/s)		1.77E-03	1.77E-03	1.78E-03	**1.77E-03**	3.72E-06	7.9E-4 min
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				

Peel Strength (ASTM D 7005)

A - MD Average Peel Strength (ppi)	5.0	6.4	7.5	7.7	7.4	**6.8**	1.1	1 min
A - MD Average Peel Strength (g/in)	2270	2906	3405	3496	3360	**3087**	511	
B - MD Average Peel Strength (ppi)	6.9	8.7	7.5	4.8	7.2	**7.0**	1.4	1 min
B - MD Average Peel Strength (g/in)	3133	3950	3405	2179	3269	**3187**	643	

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction TD Transverse Direction

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista

Material: SKAPS TN300-2-8 Geocomposite
Sample Identification: 328310001 **Geotextile Component - Side A**
TRI Log #: E2330-88-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Mass/Unit Area (ASTM D 5261)													
5" diameter circle (grams)	3.86	3.75	5.14	3.89	3.88	4.10	3.91	3.83	3.65	4.37	**4.04**	0.43	
Mass/Unit Area (oz/sq.yd)	8.98	8.72	11.96	9.05	9.02	9.54	9.09	8.91	8.49	10.16	**9.39**	1.01	8 min
Grab Tensile Properties (ASTM D 4632)													
MD - Tensile Strength (lbs)	278	348	199	316	284	283	369	266	267	255	**287**	48	200 min
TD - Tensile Strength (lbs)	303	336	319	301	319	328	297	319	270	317	**311**	19	200 min
MD - Elong. @ Max. Load (%)	87	93	84	85	91	95	74	87	91	95	**88**	6	
TD - Elong. @ Max. Load (%)	113	101	106	97	100	103	119	95	89	97	**102**	9	
Trapezoidal Tear (ASTM D 4533)													
MD - Tear Strength (lbs)	114	108	96	126	144	128	125	133	102	130	**121**	15	75 min
TD - Tear Strength (lbs)	128	118	132	126	120	95	99	114	98	145	**118**	16	75 min
Apparent Opening Size (ASTM D 4751)													
Opening Size Diameter (mm)	0.090	0.075	0.090	0.090	0.075						**0.084**	0.008	0.21 max
Sieve No.	170	200	170	170	200						**170**		
Falling Head Permittivity (ASTM D 4491, 9-in Upper Standpipe; 2 in opening)													
Water Temp. (C):	19.5												
Correction Factor:	1.012												
Test Speciemn No. >:	**1**					**2**							
Thickness (mils)	114	114	114	114	114	111	111	111	111	111			
Time (s)	14.6	15.6	15.2	14.9	15.8	13.6	13.0	13.6	13.8	13.6			
Specimen Permittivity (s-1)	1.94	1.82	1.87	1.90	1.80	2.09	2.18	2.09	2.06	2.09			
Specimen Permittivity @20°C (sec-1)	1.97	1.84	1.89	1.93	1.82	2.11	2.21	2.11	2.08	2.11			
Specimen Flow rate (GPM/ft2)	147	138	141	144	136	158	165	158	156	158			
Specimen Permeability (cm/s)	0.57	0.53	0.55	0.56	0.53	0.60	0.62	0.60	0.59	0.60			
Test Speciemn No. >:	**3**					**4**							
Thickness (mils)	108	108	108	108	108	115	115	115	115	115			
Time (s)	15.2	15.5	15.8	15.5	16.2	16.4	16.4	16.8	16.8	17.0			
Permittivity (s-1)	1.87	1.83	1.80	1.83	1.75	1.73	1.73	1.69	1.69	1.67			
Specimen Permittivity @20°C (sec-1)	1.89	1.85	1.82	1.85	1.77	1.75	1.75	1.71	1.71	1.69			
Specimen Flow rate (GPM/ft2)	141	139	136	139	133	131	131	128	128	126			
Specimen Permeability (cm/s)	0.52	0.51	0.50	0.51	0.49	0.51	0.51	0.50	0.50	0.49			
	TEMPERATURE CORRECTED VALUES					**Permittivity (s-1)**					**1.89**		0.5 min
						Flow rate (GPM/ft2)					**142**		
						Permeability (cm/s)					**0.54**		

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista

Material: SKAPS TN300-2-8 Geocomposite
Sample Identification: 328310001 **Geotextile Component - Side B**
TRI Log #: E2330-88-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Mass/Unit Area (ASTM D 5261)													
5" diameter circle (grams)	4.18	3.66	4.07	3.39	4.39	4.16	3.68	3.97	3.99	4.62	**4.01**	0.36	
Mass/Unit Area (oz/sq.yd)	9.72	8.51	9.47	7.89	10.21	9.68	8.56	9.23	9.28	10.75	**9.33**	0.85	8 min
Grab Tensile Properties (ASTM D 4632)													
MD - Tensile Strength (lbs)	344	298	255	237	274	273	433	262	248	260	**288**	59	200 min
TD - Tensile Strength (lbs)	327	343	296	332	350	289	321	312	293	310	**317**	21	200 min
MD - Elong. @ Max. Load (%)	85	97	84	81	91	86	88	84	85	91	**87**	5	
TD - Elong. @ Max. Load (%)	122	103	102	105	103	91	97	93	117	94	**103**	10	
Trapezoidal Tear (ASTM D 4533)													
MD - Tear Strength (lbs)	134	110	104	105	109	136	99	121	99	92	**111**	15	75 min
TD - Tear Strength (lbs)	142	124	131	113	147	146	117	168	163	121	**137**	19	75 min
Apparent Opening Size (ASTM D 4751)													
Opening Size Diameter (mm)	0.090	0.075	0.090	0.075	0.090						**0.084**	0.008	0.21 max
Sieve No.	170	200	170	200	170						**170**		
Falling Head Permittivity (ASTM D 4491, 9-in Upper Standpipe; 2 in opening)													
Water Temp. (C):	19.5												
Correction Factor:	1.012												
Test Speciemn No. >:	**1**					**2**							
Thickness (mils)	98	98	98	98	98	106	106	106	106	106			
Time (s)	12.4	12.7	12.2	12.4	12.7	15.8	15.2	15.5	15.9	15.8			
Specimen Permittivity (s-1)	2.29	2.23	2.33	2.29	2.23	1.80	1.87	1.83	1.78	1.80			
Specimen Permittivity @20°C (sec-1)	2.32	2.26	2.35	2.32	2.26	1.82	1.89	1.85	1.81	1.82			
Specimen Flow rate (GPM/ft2)	173	169	176	173	169	136	141	139	135	136			
Specimen Permeability (cm/s)	0.58	0.56	0.59	0.58	0.56	0.49	0.51	0.50	0.49	0.49			
Test Speciemn No. >:	**3**					**4**							
Thickness (mils)	102	102	102	102	102	111	111	111	111	111			
Time (s)	13.7	13.9	13.5	13.0	13.4	14.2	14.5	15.2	14.6	14.6			
Permittivity (s-1)	2.07	2.04	2.10	2.18	2.12	2.00	1.96	1.87	1.94	1.94			
Specimen Permittivity @20°C (sec-1)	2.10	2.07	2.13	2.21	2.14	2.02	1.98	1.89	1.97	1.97			
Specimen Flow rate (GPM/ft2)	157	155	159	165	160	151	148	141	147	147			
Specimen Permeability (cm/s)	0.54	0.54	0.55	0.57	0.56	0.57	0.56	0.53	0.55	0.55			
TEMPERATURE CORRECTED VALUES											**Permittivity (s-1)** **Flow rate (GPM/ft2)** **Permeability (cm/s)**		0.5 min
											2.06 **154** **0.54**		

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista

Material: SKAPS TN300-2-8 Geocomposite
Sample Identification: 328310063
TRI Log #: E2330-88-01

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	500
Hydraulic Gradient:	0.02
Test Length (in)	12
Test Width (in)	12

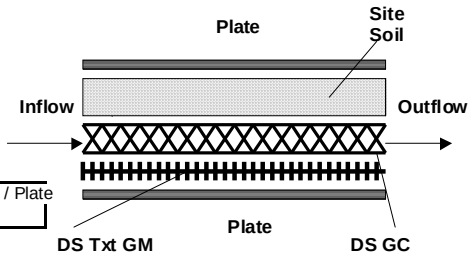


Plate / Protective Cover Site Soil / Sample / 60 mil Microspike Geomembrane / Plate

Seat Time (hours)		Specimen	1			MEAN	STD. DEV.	PROJ. SPEC.
	Volume (cc)		600	598	600			
	Time (s)		25.10	25.06	25.12			
24	Flow Rate (GPM/ft width)		0.38	0.38	0.38	**0.38**	0.00	
	Transmissivity (m^2/s)		3.92E-03	3.91E-03	3.92E-03	**3.92E-03**	3.42E-06	
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				
	Volume (cc)		590	588	588			
	Time (s)		25.07	25.03	24.96			
100	Flow Rate (GPM/ft width)		0.37	0.37	0.37	**0.37**	0.00	
	Transmissivity (m^2/s)		3.86E-03	3.85E-03	3.86E-03	**3.86E-03**	5.48E-06	9.0E-4 min
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	12,000
Hydraulic Gradient:	0.02
Test Length (in)	12
Test Width (in)	12

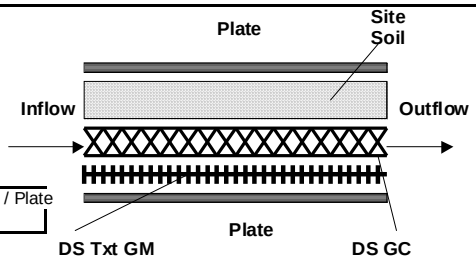


Plate / Protective Cover Site Soil / Sample / 60 mil Microspike Geomembrane / Plate

Seat Time (hours)		Specimen	1			MEAN	STD. DEV.	PROJ. SPEC.
	Volume (cc)		568	567	565			
	Time (s)		60.04	60.01	60.01			
24	Flow Rate (GPM/ft width)		0.15	0.15	0.15	**0.15**	0.00	
	Transmissivity (m^2/s)		1.55E-03	1.55E-03	1.54E-03	**1.55E-03**	3.85E-06	
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				
	Volume (cc)		537	537	539			
	Time (s)		60.01	60.00	60.03			
100	Flow Rate (GPM/ft width)		0.14	0.14	0.14	**0.14**	0.00	
	Transmissivity (m^2/s)		1.47E-03	1.47E-03	1.47E-03	**1.47E-03**	2.81E-06	7.9E-4 min
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				

Peel Strength (ASTM D 7005)

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	STD. DEV.	PROJ. SPEC.
A - MD Average Peel Strength (ppi)	3.6	4.6	8.9	5.4	8.3	**6.2**	2.3	1 min
A - MD Average Peel Strength (g/in)	1634	2088	4041	2452	3768	**2797**	1056	
B - MD Average Peel Strength (ppi)	4.5	7.1	5.5	3.6	7.2	**5.6**	1.6	1 min
B - MD Average Peel Strength (g/in)	2043	3223	2497	1634	3269	**2533**	719	

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction TD Transverse Direction

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista

Material: SKAPS TN300-2-8 Geocomposite
Sample Identification: 328310063
TRI Log #: E2330-88-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Mass/Unit Area (ASTM D 5261)	**Geotextile Component - Side A**												
5" diameter circle (grams)	3.40	3.77	4.74	3.72	3.83	3.86	4.12	4.57	3.87	4.03	**3.99**	0.40	
Mass/Unit Area (oz/sq.yd)	7.91	8.77	11.03	8.65	8.91	8.98	9.58	10.63	9.00	9.37	**9.28**	0.93	8 min
Grab Tensile Properties (ASTM D 4632)	**Geotextile Component - Side A**												
MD - Tensile Strength (lbs)	281	319	299	240	311	232	284	392	282	233	**287**	48	200 min
TD - Tensile Strength (lbs)	290	277	312	340	274	305	316	323	315	313	**307**	21	200 min
MD - Elong. @ Max. Load (%)	93	87	86	89	93	83	88	79	87	86	**87**	4	
TD - Elong. @ Max. Load (%)	104	90	103	103	90	97	97	119	101	99	**100**	8	
Trapezoidal Tear (ASTM D 4533)	**Geotextile Component - Side A**												
MD - Tear Strength (lbs)	112	121	132	108	108	111	131	97	122	117	**116**	11	75 min
TD - Tear Strength (lbs)	139	128	131	138	141	149	128	116	128	116	**131**	11	75 min
Mass/Unit Area (ASTM D 5261)	**Geotextile Component - Side B**												
5" diameter circle (grams)	3.78	3.89	4.02	3.38	3.68	4.21	4.07	3.92	3.98	4.58	**3.95**	0.32	
Mass/Unit Area (oz/sq.yd)	8.79	9.05	9.35	7.86	8.56	9.79	9.47	9.12	9.26	10.65	**9.19**	0.74	8 min
Grab Tensile Properties (ASTM D 4632)	**Geotextile Component - Side B**												
MD - Tensile Strength (lbs)	362	281	314	251	298	249	253	403	288	263	**296**	51	200 min
TD - Tensile Strength (lbs)	306	331	318	320	308	340	313	335	308	330	**321**	12	200 min
MD - Elong. @ Max. Load (%)	78	95	90	83	89	84	79	81	88	89	**86**	5	
TD - Elong. @ Max. Load (%)	121	97	102	105	96	107	99	131	101	95	**105**	12	
Trapezoidal Tear (ASTM D 4533)	**Geotextile Component - Side B**												
MD - Tear Strength (lbs)	115	114	94	95	132	109	119	127	106	95	**111**	13	75 min
TD - Tear Strength (lbs)	139	128	133	141	150	145	107	135	124	138	**134**	12	75 min

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista

Material: SKAPS TN300-2-8 Geocomposite
Sample Identification: 328310123
TRI Log #: E2330-88-01

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	500
Hydraulic Gradient:	0.02
Test Length (in)	12
Test Width (in)	12

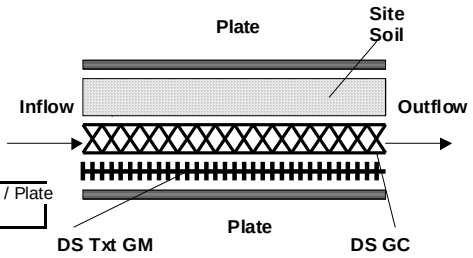


Plate / Protective Cover Site Soil / Sample / 60 mil Microspike Geomembrane / Plate

Seat Time (hours)		Specimen	1			MEAN	STD. DEV.	PROJ. SPEC.
		TEST REPLICATE NUMBER	1	2	3			
24	Volume (cc)		509	512	509			
	Time (s)		25.04	25.16	25.10			
	Flow Rate (GPM/ft width)		0.32	0.32	0.32	**0.32**	0.00	
	Transmissivity (m^2/s)		3.33E-03	3.34E-03	3.33E-03	**3.33E-03**	5.95E-06	
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				
100	Volume (cc)		524	524	522			
	Time (s)		30.01	30.00	29.96			
	Flow Rate (GPM/ft width)		0.28	0.28	0.28	**0.28**	0.00	
	Transmissivity (m^2/s)		2.86E-03	2.87E-03	2.86E-03	**2.86E-03**	3.87E-06	9.0E-4 min
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				

Hydraulic Transmissivity (ASTM D 4716)

Direction Tested: Machine Direction

Normal Load (psf):	12,000
Hydraulic Gradient:	0.02
Test Length (in)	12
Test Width (in)	12

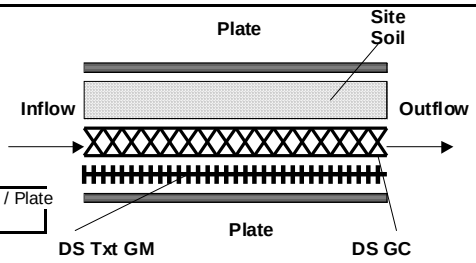


Plate / Protective Cover Site Soil / Sample / 60 mil Microspike Geomembrane / Plate

Seat Time (hours)		Specimen	1			MEAN	STD. DEV.	PROJ. SPEC.
		TEST REPLICATE NUMBER	1	2	3			
24	Volume (cc)		589	587	588			
	Time (s)		50.07	50.03	50.03			
	Flow Rate (GPM/ft width)		0.19	0.19	0.19	**0.19**	0.00	
	Transmissivity (m^2/s)		1.93E-03	1.92E-03	1.93E-03	**1.93E-03**	2.55E-06	
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				
100	Volume (cc)		502	505	503			
	Time (s)		50.00	50.00	50.00			
	Flow Rate (GPM/ft width)		0.16	0.16	0.16	**0.16**	0.00	
	Transmissivity (m^2/s)		1.65E-03	1.66E-03	1.65E-03	**1.65E-03**	5.01E-06	7.9E-4 min
	Test Temp (C)			20.0				
	Temp. Corr. Factor			1.000				

Peel Strength (ASTM D 7005)

	1	2	3	4	5	MEAN	STD. DEV.	PROJ. SPEC.
A - MD Average Peel Strength (ppi)	6.2	6.0	2.7	1.6	3.8	**4.1**	2.0	1 min
A - MD Average Peel Strength (g/in)	2815	2724	1226	726	1725	**1843**	917	
B - MD Average Peel Strength (ppi)	6.9	3.5	3.7	3.8	5.8	**4.7**	1.5	1 min
B - MD Average Peel Strength (g/in)	3133	1589	1680	1725	2633	**2152**	692	

Note: A and B represent a randomly assigned top and bottom of the sample

MD Machine Direction TD Transverse Direction

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOCOMPOSITE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista

Material: SKAPS TN300-2-8 Geocomposite
Sample Identification: 328310123
TRI Log #: E2330-88-01

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Mass/Unit Area (ASTM D 5261)	**Geotextile Component - Side A**												
5" diameter circle (grams)	3.47	3.91	4.19	4.27	3.63	3.97	3.98	4.12	3.99	4.24	**3.98**	0.26	
Mass/Unit Area (oz/sq.yd)	8.07	9.09	9.75	9.93	8.44	9.23	9.26	9.58	9.28	9.86	**9.25**	0.60	8 min
Grab Tensile Properties (ASTM D 4632)	**Geotextile Component - Side A**												
MD - Tensile Strength (lbs)	308	247	310	284	281	240	302	390	270	247	**288**	44	200 min
TD - Tensile Strength (lbs)	337	343	322	345	347	366	297	262	333	333	**329**	29	200 min
MD - Elong. @ Max. Load (%)	83	89	83	89	88	94	89	76	81	92	**86**	6	
TD - Elong. @ Max. Load (%)	114	98	111	110	103	109	97	112	104	99	**106**	6	
Trapezoidal Tear (ASTM D 4533)	**Geotextile Component - Side A**												
MD - Tear Strength (lbs)	99	106	96	107	119	102	99	144	110	122	**110**	15	75 min
TD - Tear Strength (lbs)	156	104	122	117	145	138	119	128	147	132	**131**	16	75 min
Mass/Unit Area (ASTM D 5261)	**Geotextile Component - Side B**												
5" diameter circle (grams)	3.84	3.90	4.74	4.03	3.77	4.58	3.84	3.84	3.76	3.96	**4.03**	0.35	
Mass/Unit Area (oz/sq.yd)	8.93	9.07	11.03	9.37	8.77	10.65	8.93	8.93	8.75	9.21	**9.36**	0.80	8 min
Grab Tensile Properties (ASTM D 4632)	**Geotextile Component - Side B**												
MD - Tensile Strength (lbs)	290	340	320	269	311	281	284	375	283	225	**298**	41	200 min
TD - Tensile Strength (lbs)	339	339	335	335	343	299	288	311	350	318	**326**	21	200 min
MD - Elong. @ Max. Load (%)	103	99	86	95	85	93	85	78	91	95	**91**	8	
TD - Elong. @ Max. Load (%)	104	99	105	100	102	97	128	91	103	97	**103**	10	
Trapezoidal Tear (ASTM D 4533)	**Geotextile Component - Side B**												
MD - Tear Strength (lbs)	131	86	108	116	127	121	96	143	91	96	**112**	19	75 min
TD - Tear Strength (lbs)	142	128	135	121	142	132	140	126	126	146	**134**	8	75 min

MD Machine Direction TD Transverse Direction

The testing 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.

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

SUB APPENDIX C-3

GEOSYNTHETIC CLAY LINER

October 30, 2009

Mail To: **Bill To:**

Mail To: **<= Same**

Ms. Sheree Grant
Waste Management, Inc.

email: sgrant@wm.com
cc email: dschauer@geosyntec.com

Dear Ms. Grant:

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:	**Vista Landfill**
TRI Job Reference Number:	E2325-91-10
Material(s) Tested:	1 Bentomat ST GCL
Test(s) Requested:	Index Flux (ASTM D 5887)

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

Sincerely,

Richard S. Lacey, P.E.
Senior Engineer
Geosynthetic Services Division
www.GeosyntheticTesting.com

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GCL TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill

Material: Bentomat ST GCL
Sample Identification: Roll No. 9125
TRI Log #: E2325-91-10

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.
	1	2	3	4	5	6	7	8	9	10		
Index Flux (ASTM D 5887)												
Index Flux ($m^3/m^2/sec$)	3.1E-09										**3.1E-09**	
Permeability (cm/sec)	2.4E-09										**2.4E-09**	

MD Machine Direction TD Transverse Direction

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

SUB APPENDIX C-4

INTERFACE FRICTION TEST RESULTS

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

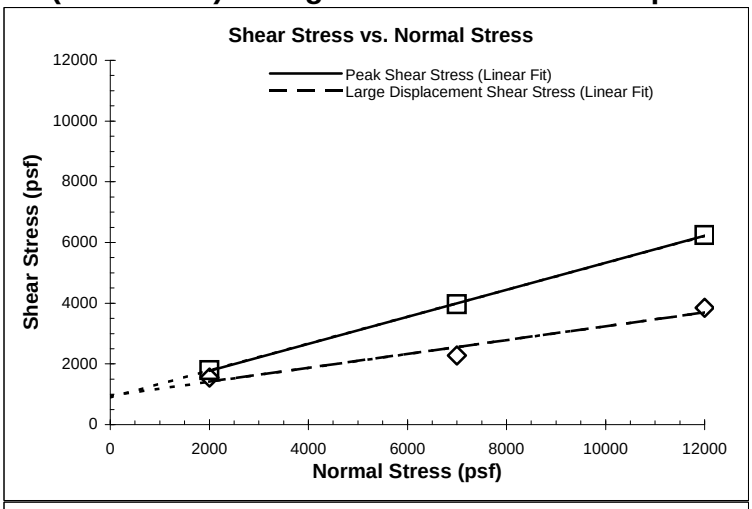
Interface Friction Test Report

Client: **Waste Management**
Project: **Vista Landfill, Cell 2**
Test Date: 09/16/09-09/16/09

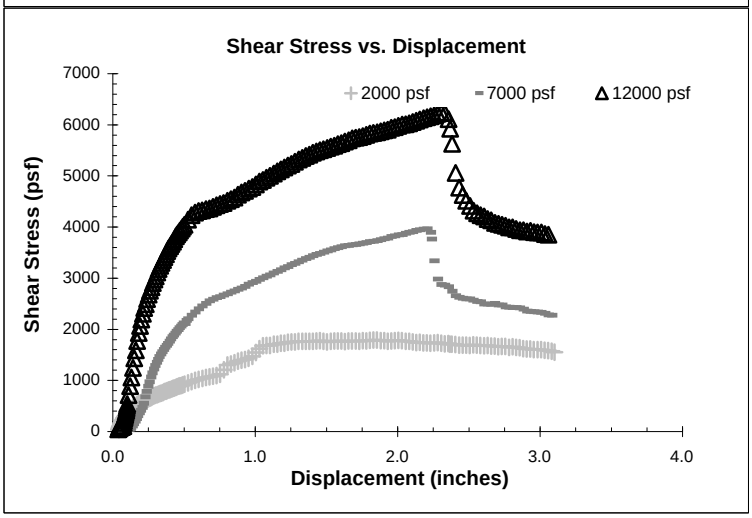
TRI Log#: E2325-60-03
Test Method: ASTM D 5321

John M. Allen, P.E., 09/16/2009
Quality Review/Date

Tested Interface: Liner Protective Soil vs. Skaps TN300-2-8 Double-sided Geocomposite (328310123) vs. Agru 60 mil HDPE Microspike Geomembrane (337201.09) vs. Sub-base Soil



Test Results		
	Peak	**Large Displacement (@ 3.0 in.)**
Friction Angle (degrees):	**24.0**	**12.9**
Y-intercept or Adhesion (psf):	**882**	**953**



Test Conditions

Upper Box &	Skaps TN300-2-8 double-sided geocomposite (not attached) overlain by liner protective soil tamped in place
Lower Box	Agru 60 mil HDPE Microspike geomembrane (not attached) dull side to the geocomposite, over sub-base soil remolded at 112 pcf at 13% moisture content

Box Dimensions: 12"x12"x4"

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear.

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Test Data

Specimen No.	1	2	3
Bearing Slide Resistance (lbs)	27	75	122
Normal Stress (psf)	2000	7000	12000
Corrected Peak Shear Stress (psf)	1789	3966	6242
Corrected Large Displacement Shear Stress (psf)	1554	2275	3848
Peak Secant Angle (degrees)	41.8	29.5	27.5
Large Displacement Secant Angle (degrees)	37.8	18.0	17.8
Asperity (mils)	37.6	36.2	32.2

Shearing occurred at the sub-base soil/geomembrane interface under the 2000 psf load. Shearing occurred partially at the geomembrane/geocomposite interface and then transferred to the soil/geocomposite interface under the 7000 & 12000 psf loads.

9063 Bee Caves Road □ Austin, TX 78733-6201 □ (512) 263-2101 □ (512) 263-2558 □ 1-800-880-TEST

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

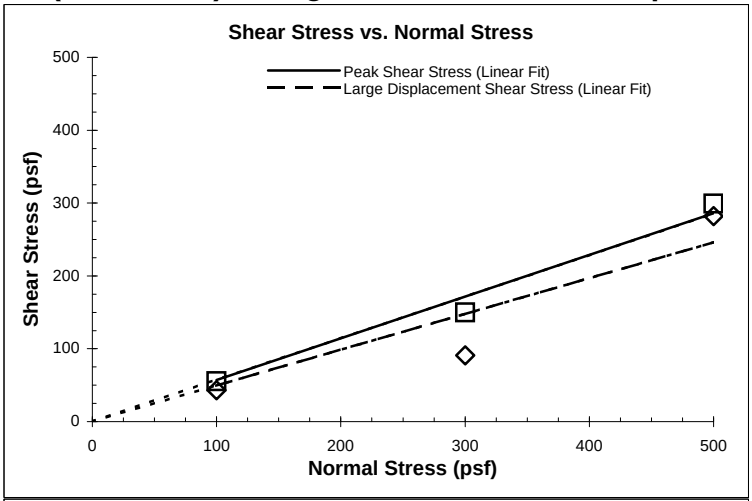
Interface Friction Test Report

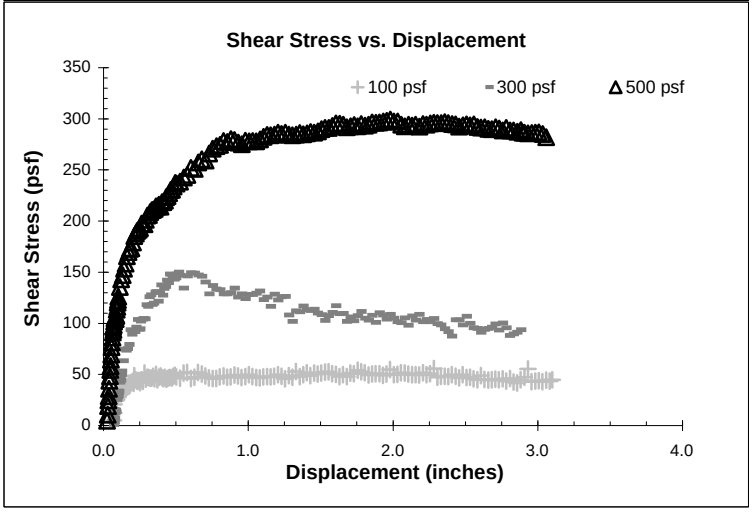
Client: **Waste Management**
Project: **Vista Landfill, Cell 2**
Test Date: 09/18/09-09/18/09

TRI Log#: E2325-60-03
Test Method: ASTM D 5321

John M. Allen, P.E., 09/18/2009
Quality Review/Date

Tested Interface: Liner Protective Soil vs. Skaps TN300-2-8 Double-sided Geocomposite (328310123) vs. Agru 60 mil HDPE Microspike Geomembrane (337201.09) vs. Sub-base Soil





Test Results		
	Peak	**Large Displacement (@ 3.0 in.)**
Friction Angle (degrees):	**29.8**	**26.2**
Y-intercept or Adhesion (psf):	**0**	**0**

Regression angles include the origin.

Test Conditions

Upper Box &	Skaps TN300-2-8 double-sided geocomposite (not attached) overlain by liner protective soil tamped in place
Lower Box	Agru 60 mil HDPE Microspike geomembrane (not attached) dull side to the geocomposite, over sub-base soil remolded at 112 pcf at 13% moisture content

Box Dimensions: 12"x12"x4"

Interface Conditioning: Interface soaked and loading applied for a minimum of 15 minutes prior to shear.

Test Condition: Wet

Shearing Rate: 0.04 inches/minute

Test Data

Specimen No.	1	2	3
Bearing Slide Resistance (lbs)	9	11	13
Normal Stress (psf)	100	300	500
Corrected Peak Shear Stress (psf)	56	150	299
Corrected Large Displacement Shear Stress (psf)	43	91	282
Peak Secant Angle (degrees)	29.1	26.6	30.9
Large Displacement Secant Angle (degrees)	23.3	16.9	29.4
Asperity (mils)	35.0	37.0	34.2

Shearing occurred at the sub-base soil/geomembrane interface under all loads.

9063 Bee Caves Road □ Austin, TX 78733-6201 □ (512) 263-2101 □ (512) 263-2558 □ 1-800-880-TEST

APPENDIX D

GEOSYNTHETICS FIELD CQA LOGS

SUB APPENDIX D-1

SUBBASE ACCEPTANCE FORMS

CERTIFICATE OF ACCEPTANCE
SUBGRADE SURFACE

INSTALLER	
NAME:	Environmental Specialities International
ADDRESS:	7943 Pecue Ln.
	Baton Rogue, LA. 70809
INSTALLER AUTHORIZED REPRESENTATIVE:	Mohammed Malimar

PROJECT	
NAME:	Vista Landfill Class III
	Cell 2
LOCATION:	Apopka, Florida
OWNER:	Waste Management

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

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

DATE	PANEL NOS.	SIGNATURE
11-11-09	1-24	
11-12-09	25-62	
11-13-09	63-86	

SUB APPENDIX D-2

MATERIAL INVENTORY LOG

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gcl : 2 ***Manufacturer:*** Cetco ***Product Type:*** Bentomat St

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
Accepted Rolls												
11/8/2009	200942/9125	15	150	DWH								
11/8/2009	200942/9127	15	150	DWH								
11/8/2009	200942/9128	15	150	DWH								
11/8/2009	200942/9129	15	150	DWH								
11/8/2009	200942/9130	15	150	DWH								
11/8/2009	200942/9131	15	150	DWH								
11/8/2009	200942/9132	15	150	DWH								
11/8/2009	200942/9133	15	150	DWH								

Average Roll Width(ft.): 15 ***Average Roll Length(ft.): 150***

Total Number of Rolls: 8 ***Cumulative Area(sq.ft.): 18000***

Total Number of Conformance Tests: 0

Comments:

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gml : 1 ***Manufacturer:*** Agru ***Product Type:*** 60 Mil HD Microspike

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
Accepted Rolls												
11/17/2009	135678-04	23	410	DWH								
11/8/2009	337201-09	23	410	RKD								
11/8/2009	337202-09	23	410	RKD								
11/8/2009	337203-09	23	410	RKD								
11/8/2009	337304-09	23	410	RKD								
11/8/2009	337306-09	23	410	RKD								
11/8/2009	337307-09	23	410	RKD								
11/8/2009	337308-09	23	410	RKD								
11/8/2009	337309-09	23	410	RKD								
11/8/2009	337310-09	23	410	RKD								
11/8/2009	337311-09	23	410	RKD								
11/8/2009	337312-09	23	410	RKD	9/16/2009	1	P	DAS				
11/8/2009	337313-09	23	410	RKD								
11/8/2009	337314-09	23	410	RKD								
11/8/2009	337415-09	23	410	RKD								
11/8/2009	337416-09	23	410	RKD								
11/8/2009	337417-09	23	410	RKD								
11/8/2009	337418-09	23	410	RKD								
11/8/2009	337419-09	23	410	RKD								
11/8/2009	337420-09	23	410	RKD								
11/8/2009	337421-09	23	410	RKD								
11/8/2009	337422-09	23	410	RKD								
11/8/2009	337423-09	23	410	RKD	9/18/2009	4	P	DAS				
11/8/2009	337424-09	23	410	RKD								
11/8/2009	337425-09	23	410	RKD								
11/8/2009	337533-09	23	410	RKD								
11/8/2009	337534-09	23	410	RKD								
11/8/2009	337535-09	23	410	RKD								
11/8/2009	337536-09	23	410	RKD								

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gml : 1 ***Manufacturer:*** Agru ***Product Type:*** 60 Mil HD Microspike

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
11/8/2009	337537-09	23	410	RKD								
11/8/2009	337538-09	23	410	RKD								
11/8/2009	337539-09	23	410	RKD								
11/8/2009	337541-09	23	410	RKD	9/18/2009	2	P	DAS				
11/8/2009	337542-09	23	410	RKD								
11/8/2009	337543-09	23	410	RKD								
11/8/2009	337544-09	23	410	RKD								
11/8/2009	337545-09	23	410	RKD								
11/8/2009	337546	23	410	RKD								
11/8/2009	337547	23	410	RKD								
11/8/2009	337650	23	410	RKD								
11/8/2009	337651	23	410	RKD								
11/8/2009	337652	23	410	RKD								
11/8/2009	337653	23	410	RKD								
11/8/2009	337654	23	410	RKD	9/18/2009	3	P	DAS				
11/8/2009	337655	23	410	RKD								
11/8/2009	337656	23	410	RKD								
11/8/2009	337657	23	410	RKD								
11/8/2009	337658	23	410	RKD								
11/8/2009	337659	23	410	RKD								
11/8/2009	337660	23	410	RKD								
11/8/2009	337661	23	410	RKD								
11/8/2009	337662-09	23	410	RKD								

Average Roll Width(ft.): 23 ***Average Roll Length(ft.): 410***

Total Number of Rolls: 52 ***Cumulative Area(sq.ft.): 490360***

Total Number of Conformance Tests: 4

Comments:

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gt : 3 ***Manufacturer:*** ***Product Type:*** Geocomposite

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
Accepted Rolls												
11/8/2009	328310001	14	180	DWH								
11/8/2009	328310002	14	180	DWH								
11/8/2009	328310003	14	180	DWH								
11/8/2009	328310004	14	180	DWH								
11/8/2009	328310005	14	180	DWH								
11/8/2009	328310006	14	180	DWH								
11/8/2009	328310007	14	180	DWH								
11/8/2009	328310008	14	180	DWH								
11/8/2009	328310009	14	170	DWH								
11/8/2009	328310010	14	180	DWH								
11/8/2009	328310011	14	180	DWH								
11/8/2009	328310012	14	180	DWH								
11/8/2009	328310013	14	180	DWH								
11/8/2009	328310014	14	180	DWH								
11/8/2009	328310015	14	180	DWH								
11/8/2009	328310016	14	180	DWH								
11/8/2009	328310017	14	180	DWH								
11/8/2009	328310018	14	180	DWH								
11/8/2009	328310019	14	180	DWH								
11/8/2009	328310020	14	180	DWH								
11/8/2009	328310021	14	180	DWH								
11/8/2009	328310022	14	180	DWH								
11/8/2009	328310023	14	180	DWH								
11/8/2009	328310024	14	180	DWH								
11/8/2009	328310025	14	180	DWH								
11/8/2009	328310026	14	180	DWH								
11/8/2009	328310027	14	180	DWH								
11/8/2009	328310028	14	180	DWH								
11/8/2009	328310029	14	180	DWH								

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gt : 3 ***Manufacturer:*** ***Product Type:*** Geocomposite

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
11/8/2009	328310030	14	180	DWH								
11/8/2009	328310031	14	180	DWH								
11/8/2009	328310032	14	180	DWH								
11/8/2009	328310033	14	180	DWH								
11/8/2009	328310034	14	180	DWH								
11/8/2009	328310035	14	180	DWH								
11/8/2009	328310036	14	170	DWH								
11/8/2009	328310037	14	180	DWH								
11/8/2009	328310038	14	180	DWH								
11/8/2009	328310039	14	180	DWH								
11/8/2009	328310040	14	180	DWH								
11/8/2009	328310041	14	180	DWH								
11/8/2009	328310042	14	180	DWH								
11/8/2009	328310043	14	180	DWH								
11/8/2009	328310044	14	180	DWH								
11/8/2009	328310045	14	180	DWH								
11/8/2009	328310046	14	180	DWH								
11/8/2009	328310047	14	175	DWH								
11/8/2009	328310048	14	180	DWH								
11/8/2009	328310049	14	180	DWH								
11/8/2009	328310050	14	180	DWH								
11/8/2009	328310051	14	200	DWH								
11/8/2009	328310052	14	180	DWH								
11/8/2009	328310053	14	175	DWH								
11/8/2009	328310054	14	180	DWH								
11/8/2009	328310055	14	180	DWH								
11/8/2009	328310056	14	180	DWH								
11/8/2009	328310057	14	180	DWH								
11/8/2009	328310058	14	180	DWH								
11/8/2009	328310059	14	180	DWH								

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gt : 3 ***Manufacturer:*** ***Product Type:*** Geocomposite

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
11/8/2009	328310060	14	180	DWH								
11/8/2009	328310061	14	180	DWH								
11/8/2009	328310062	14	180	DWH								
11/8/2009	328310063	14	180	DWH								
11/8/2009	328310064	14	180	DWH								
11/8/2009	328310065	14	180	DWH								
11/8/2009	328310066	14	180	DWH								
11/8/2009	328310067	14	180	DWH								
11/8/2009	328310068	14	170	DWH								
11/8/2009	328310069	14	180	DWH								
11/8/2009	328310070	14	180	DWH								
11/8/2009	328310071	14	170	DWH								
11/8/2009	328310072	14	180	DWH								
11/8/2009	328310073	14	180	DWH								
11/8/2009	328310074	14	180	DWH								
11/8/2009	328310075	14	180	DWH								
11/8/2009	328310076	14	130	DWH								
11/8/2009	328310077	14	140	DWH								
11/8/2009	328310078	14	170	DWH								
11/8/2009	328310079	14	180	DWH								
11/8/2009	328310080	14	180	DWH								
11/8/2009	328310081	14	180	DWH								
11/8/2009	328310082	14	180	DWH								
11/8/2009	328310083	14	180	DWH								
11/8/2009	328310084	14	180	DWH								
11/8/2009	328310085	14	180	DWH								
11/8/2009	328310086	14	180	DWH								
11/8/2009	328310087	14	180	DWH								
11/8/2009	328310088A	14	85	DWH								
11/8/2009	328310088B	14	80	DWH								

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gt : 3 ***Manufacturer:*** ***Product Type:*** Geocomposite

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
11/8/2009	328310089	14	180	DWH								
11/8/2009	328310090	14	180	DWH								
11/8/2009	328310091	14	180	DWH								
11/8/2009	328310092	14	180	DWH								
11/8/2009	328310093	14	180	DWH								
11/8/2009	328310094	14	180	DWH								
11/8/2009	328310095	14	180	DWH								
11/8/2009	328310096	14	180	DWH								
11/8/2009	328310097	14	180	DWH								
11/8/2009	328310098	14	180	DWH								
11/8/2009	328310099	14	180	DWH								
11/8/2009	328310100	14	180	DWH								
11/8/2009	328310101	14	180	DWH								
11/8/2009	328310102	14	180	DWH								
11/8/2009	328310103	14	180	DWH								
11/8/2009	328310104	14	180	DWH								
11/8/2009	328310105	14	180	DWH								
11/8/2009	328310106	14	180	DWH								
11/8/2009	328310107	14	180	DWH								
11/8/2009	328310108	14	180	DWH								
11/8/2009	328310109	14	180	DWH								
11/9/2009	328310110	14	180	DWH								
11/9/2009	328310111	14	180	DWH								
11/9/2009	328310112	14	180	DWH								
11/9/2009	328310113	14	180	DWH								
11/9/2009	328310114	14	180	DWH								
11/9/2009	328310115	14	180	DWH								
11/9/2009	328310116	14	180	178								
11/9/2009	328310117	14	180	DWH								
11/9/2009	328310118	14	180	DWH								

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gt : 3 ***Manufacturer:*** ***Product Type:*** Geocomposite

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
11/9/2009	328310119	14	170	DWH								
11/9/2009	328310120	14	180	DWH								
11/9/2009	328310121	14	180	DWH								
11/9/2009	328310122	14	180	DWH								
11/9/2009	328310123	14	180	DWH								
11/9/2009	328310124	14	180	DWH								
11/9/2009	328310125	14	180	DWH								
11/8/2009	328310126A	14	90	DWH								
11/8/2009	328310126B	14	80	DWH								
11/9/2009	328310127	14	180	DWH								
11/9/2009	328310128	14	180	DWH								
11/9/2009	328310129	14	180	DWH								
11/9/2009	328310130	14	180	DWH								
11/9/2009	328310131	14	180	DWH								
11/9/2009	328310132	14	180	DWH								
11/9/2009	328310133	14	180	DWH								
11/9/2009	328310134	14	180	DWH								
11/9/2009	328310135	14	180	DWH								
11/9/2009	328310136	14	180	DWH								
11/9/2009	328310137	14	180	DWH								
11/10/2009	328310138	14	180	DWH								
11/10/2009	328310139	14	180	DWH								
11/10/2009	328310140	14	180	DWH								
11/10/2009	328310141	14	180	DWH								
11/10/2009	328310142	14	180	DWH								
11/10/2009	328310143	14	180	DWH								
11/10/2009	328310144	14	180	DWH								
11/10/2009	328310145	14	180	DWH								
11/10/2009	328310146	14	180	DWH								
11/10/2009	328310147A	14	80	DWH								

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gt : 3 ***Manufacturer:*** ***Product Type:*** Geocomposite

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
11/10/2009	328310147B	14	80	DWH								
11/10/2009	328310148	14	180	DWH								
11/10/2009	328310149	14	180	DWH								
11/10/2009	328310150	14	180	DWH								
11/10/2009	328310151	14	180	DWH								
11/10/2009	328310152	14	180	DWH								
11/10/2009	328310153	14	180	DWH								
11/10/2009	328310154	14	180	DWH								
11/10/2009	328310155	14	170	DWH								
11/10/2009	328310156	14	180	DWH								
11/10/2009	328310157	14	180	DWH								
11/10/2009	328310158	14	180	DWH								
11/10/2009	328310159	14	180	DWH								
11/10/2009	328310160	14	170	DWH								
11/10/2009	328310161	14	175	DWH								
11/10/2009	328310162	14	180	DWH								
11/10/2009	328310163	14	180	DWH								
11/10/2009	328310164	14	180	DWH								
11/10/2009	328310165	14	180	DWH								
11/10/2009	328310166	14	180	DWH								
11/10/2009	328310167	14	180	DWH								
11/10/2009	328310168	14	180	DWH								
11/10/2009	328310169	14	180	DWH								
11/10/2009	328310170	14	180	DWH								
11/10/2009	328310171	14	180	DWH								
11/10/2009	328310172	14	180	DWH								
11/10/2009	328310173	14	180	DWH								
11/10/2009	328310174	14	180	DWH								
11/10/2009	328310175	14	180	DWH								
11/10/2009	328310176	14	180	DWH								

Geosyntec consultants

WASTE MANAGEMENT

Material Inventory

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type: gt : 3 ***Manufacturer:*** ***Product Type:*** Geocomposite

Inventory					*Q.A. Conformance*				*Q.C. Documents*			
Inv Date	***Batch-Roll***	***Width*** (ft.)	***Length*** (ft.)	***QA ID***	***Date***	***Samp No***	***Result***	***QAID***	***Date Rec***	***Date Ckk***	***Result***	***QAID***
11/10/2009	328310177	14	180	DWH								
11/10/2009	328310178	14	180	DWH								
11/10/2009	328310179	14	180	DWH								
11/10/2009	328310180	14	180	DWH								
11/10/2009	328310181	14	180	DWH								
11/10/2009	328310182	14	180	DWH								
11/10/2009	328310183	14	180	DWH								
11/10/2009	328310184	14	180	DWH								
11/10/2009	328310185	14	180	DWH								
11/10/2009	328310186	14	180	DWH								
11/10/2009	328310187	14	115	DWH								
11/10/2009	328310188	14	180	DWH								
11/10/2009	328310189A	14	100	DWH								
11/10/2009	328310189B	14	95	DWH								
11/10/2009	328310189C	14	70	DWH								

Average Roll Width(ft.): 14 ***Average Roll Length(ft.): 174***

Total Number of Rolls: 194 ***Cumulative Area(sq.ft.): 473620***

Total Number of Conformance Tests: 0

Comments:

SUB APPENDIX D-3

PANEL PLACEMENT LOG

Geosyntec consultants

WASTE MANAGEMENT

Panel Placement Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

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

Panel	*Batch-Roll*	*Date*	*Time*	*Placement/Location/Comments*	*Width (ft.)*	*Length (ft.)*	*QA ID*
1	337308-09	11/11/2009	8:50	South Slope/Cell Floor	16	398	DWH
2	337306-09	11/11/2009	9:04	South Slope/Cell Floor	22.5	399	DWH
3	337309-09	11/11/2009	9:11	South Slope/Cell Floor	22.5	400.5	DWH
4	337416-09	11/11/2009	9:20	South Slope/Cell Floor	22.5	400	DWH
5	337203-09	11/11/2009	9:31	South Slope/Cell Floor	22.5	400	DWH
6	337307-09	11/11/2009	9:37	South Slope/Cell Floor	22.5	400	DWH
7	337202-09	11/11/2009	9:46	South Slope/Cell Floor	22.5	400.5	DWH
8	337541-09	11/11/2009	9:50	South Slope/Cell Floor	22.5	401	DWH
9	337314-09	11/11/2009	10:25	South Slope/Cell Floor	22.5	401	DWH
10	337417-09	11/11/2009	10:58	South Slope/Cell Floor	22.5	401	DWH
11	337335-09	11/11/2009	11:07	South Slope/Cell Floor	22.5	401	DWH
12	337313-09	11/11/2009	11:14	South Slope/Cell Floor	22.5	401	DWH
13	337419-09	11/11/2009	13:03	South Slope/Cell Floor	22.5	399	DWH
14	337415-09	11/11/2009	13:06	South Slope/Cell Floor	22.5	400	DWH
15	337654-09	11/11/2009	13:14	South Slope/Cell Floor	22.5	401	DWH
16	337418-09	11/11/2009	13:22	South Slope/Cell Floor	22.5	400.5	DWH
17	337534-09	11/11/2009	13:48	South Slope/Cell Floor	22.5	400	DWH
18	337536-09	11/11/2009	14:38	North Slope/Cell Floor	22.5	397	DWH
19	337658-09	11/11/2009	14:53	North Slope/Cell Floor	22.5	397	DWH
20	337547-09	11/11/2009	15:04	North Slope/Cell Floor	22.5	396.5	DWH
21	337201-09	11/11/2009	15:09	North Slope/Cell Floor	22.5	394	DWH
22	337662-09	11/11/2009	15:50	Cell Floor (Center)	22.5	380	DWH
23	337421-09	11/11/2009	16:07	Cell Floor @ Cell One Tie-in	4	54	DWH
24	337421-09	11/11/2009	16:10	Cell Floor @ Cell one Tie-in	2	41	DWH
25	337657-09	11/12/2009	7:30	North Slope/Cell Floor	22.5	395.5	DWH
26	337311-09	11/12/2009	7:37	North Slope/Cell Floor	22.5	396	DWH
27	337304-09	11/12/2009	7:50	North Slope/Cell Floor	22.5	394	DWH
28	337424-09	11/12/2009	7:56	North Slope/Cell Floor	22.5	394	DWH
29	337546-09	11/12/2009	8:05	North Slope/Cell Floor	22.5	394	DWH
30	337310-09	11/12/2009	8:28	Cell Floor (Center)	22.5	380	DWH
31	337650-09	11/12/2009	8:33	Cell Floor (Center)	22.5	380	DWH

Geosyntec consultants

WASTE MANAGEMENT

Panel Placement Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

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

Panel	*Batch-Roll*	*Date*	*Time*	*Placement/Location/Comments*	*Width (ft.)*	*Length (ft.)*	*QA ID*
32	337545-09	11/12/2009	8:48	Cell Floor (Center)	22.5	380	DWH
33	337659-09	11/12/2009	9:43	East Intercell Berm (South End)	22.5	93.5	DWH
34	337659-09	11/12/2009	9:47	East Intercell Berm (South End)	22.5	95	DWH
35	337659-09	11/12/2009	9:49	East Intercell Berm (South End)	22.5	96.5	DWH
36	337423-09	11/12/2009	9:56	East Intercell Berm (South End)	22.5	98.5	DWH
37	337423-09	11/12/2009	10:00	East Intercell Berm (South End)	22.5	115	DWH
38	337423-09	11/12/2009	10:03	East Intercell Berm (South End)	22.5	116	DWH
39	337655-09	11/12/2009	10:12	East Intercell Berm (South End)	22.5	117.5	DWH
40	337655-09	11/12/2009	10:17	East Intercell Berm (South End)	22.5	118.5	DWH
41	337655-09	11/12/2009	10:20	East Intercell Berm (South End)	22.5	120.5	DWH
42	337420-09	11/12/2009	10:27	East Intercell Berm (South End)	22.5	122.5	DWH
43	337420-09	11/12/2009	10:30	East Intercell Berm (South End)	22.5	123.5	DWH
44	337420-09	11/12/2009	10:35	East Intercell Berm (South End)	22.5	125.5	DWH
45	337537-09	11/12/2009	10:41	East Intercell Berm (South End)	22.5	128	DWH
46	337537-09	11/12/2009	10:46	East Intercell Berm (South End)	22.5	128.5	DWH
47	337587-09	11/12/2009	10:50	South Slope	22.5	85	DWH
48	337533-09	11/12/2009	10:55	South Slope	22.5	85	DWH
49	337533-09	11/12/2009	11:01	South Slope	22.5	70.5	DWH
50	337533-09	11/12/2009	11:05	South Slope	22.5	56.5	DWH
51	337533-09	11/12/2009	11:12	South Slope	22.5	64	DWH
52	337659-09	11/12/2009	11:17	South Slope	22.5	83	DWH
53	337423-09	11/12/2009	11:29	East Intercell Berm (South End)	22.5	34.5	DWH
54	337653-09	11/12/2009	12:45	East Intercell Berm (South End)	22.5	130.5	DWH
55	337653-09	11/12/2009	12:55	East Intercell Berm (South End)	22.5	131.5	DWH
56	337653-09	11/12/2009	13:00	East Intercell Berm (South End)	22.5	134	DWH
57	337425-09	11/12/2009	13:02	East Intercell Berm (South End)	22.5	134	DWH
58	337425-09	11/12/2009	13:10	East Intercell Berm (South End)	8.5	72	DWH
59	337542-09	11/12/2009	14:46	North Slope/Cell Floor/Sump	22.5	394	DWH
60	337544-09	11/12/2009	15:04	North Slope/Cell Floor	22.5	394	DWH
61	337422-09	11/12/2009	15:09	North Slope/Cell Floor	22.5	393.5	DWH
62	337539-09	11/12/2009	15:29	North Slope/Cell Floor	22.5	394	DWH

Geosyntec consultants

WASTE MANAGEMENT

Panel Placement Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

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

Panel	*Batch-Roll*	*Date*	*Time*	*Placement/Location/Comments*	*Width (ft.)*	*Length (ft.)*	*QA ID*
63	337543-09	11/13/2009	7:15	East Intercell Berm (North End)	22.5	92.5	DWH
64	337543-09	11/13/2009	7:20	East Intercell Berm (North End)	22.5	92	DWH
65	337543-09	11/13/2009	7:22	East Intercell Berm (North End)	22.5	92.5	DWH
66	337543-09	11/13/2009	7:25	East Intercell Berm (North End)	22.5	93.5	DWH
67	337421-09	11/13/2009	7:27	East Intercell Berm (North End)	22.5	94	DWH
68	337421-09	11/13/2009	7:30	East Intercell Berm (North End)	22.5	94.5	DWH
69	337421-09	11/13/2009	8:07	East Intercell Berm (North End)	22.5	95.5	DWH
70	337425-09	11/13/2009	8:11	East Intercell Berm (North End)	22.5	96.5	DWH
71	337660-09	11/13/2009	8:16	East Intercell Berm (North End)	22.5	97	DWH
72	337660-09	11/13/2009	8:19	East Intercell Berm (North End)	22.5	98	DWH
73	337660-09	11/13/2009	8:21	East Intercell Berm (North End)	22.5	99	DWH
74	337312-09	11/13/2009	8:58	North Slope/Cell Floor	22.5	394	DWH
75	337651-09	11/13/2009	9:05	North Slope/Cell Floor	22.5	394	DWH
76	337652-09	11/13/2009	9:12	North Slope/Cell Floor	22.5	394	DWH
77	337656-09	11/13/2009	9:18	North Slope/Cell Floor	22.5	394	DWH
78	337535-09	11/13/2009	9:40	East Intercell Berm (North End)	18.5	394	DWH
79	337661-09	11/13/2009	9:49	East Intercell Berm (North End)	22.5	99.5	DWH
80	337661-09	11/13/2009	9:52	East Intercell Berm (North End)	22.5	93.5	DWH
81	337661-09	11/13/2009	9:54	East Intercell Berm (North End)	22.5	77	DWH
82	337661-09	11/13/2009	10:04	North Slope	22.5	89.5	DWH
83	135678-04	11/13/2009	10:09	North Slope	22.5	66	DWH
84	135678-04	11/13/2009	10:15	North Slope	22.5	54	DWH
85	135678-04	11/13/2009	10:17	North Slope	22.5	63	DWH
86	337660-09	11/13/2009	10:39	East Intercell Berm (North End)	22.5	45	DWH

Number of Panels: 86 | Approx. Area (sq. ft). 439254.5

SUB APPENDIX D-4

TRIAL SEAM LOG

Geosyntec consultants

WASTE MANAGEMENT

Trial Seam Log - Extrusion

Project: Vista Class III Landfill
Location: Apopka, FL ProjNo: FQ1767 TaskNo: 02
Description: Cell 2 Construction

Tensiometer Description: 085/06

Material Type gml : 1 **Peel:** 78 ppi **Shear:** 120 ppi

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Extrusion		Test Results				Retest No	QA ID
						Pre heat ° Celsius	Barrel ° Celsius	Peel	Shear	Unit ppi/psi	Result P/F		
1-001	11/13/2009	7:30	5171	JT	T/T	500	550	140	194	PPI	P		DWH
1-002	11/13/2009	13:00	5171	JT	T/T	500	550	149	157	PPI	P		DWH
1-003	11/13/2009	13:00	5155	JC	T/T	500	550	137	145	PPI	P		DWH
1-004	11/13/2009	13:00	5171	MV	T/T	500	550	110	148	PPI	P		DWH
1-005	11/13/2009	13:05	512	MV	T/T	500	550	129	164	PPI	P		DWH
1-006	11/14/2009	7:23	5171	JT	T/T	500	550	145	172	PPI	P		DWH
1-007	11/14/2009	7:25	5155	JC	T/T	500	550	133	145	PPI	P		DWH
1-008	11/14/2009	7:27	512	MV	T/T	500	550	145	176	PPI	P		DWH

Geosyntec consultants

WASTE MANAGEMENT

Trial Seam Log - Fusion

Project: Vista Class III Landfill
Location: Apopka, FL ProjNo: FQ1767 TaskNo: 02
Description: Cell 2 Construction

Tensiometer Description: 085/06

Material Type gml : 1 Peel Inside: 91 ppi Shear: 120 ppi
Peel Outside: 91 ppi

Trial Seam No	Date	Time	Mach ID	Oper ID	Mat Desc	Fusion		Test Results					QA ID
						Wedge ° Celsius	Speed ft./Min	Peel In	Peel Out	Shear	Unit ppi/psi	Result	
1-001	11/11/2009	9:11	1220	LN	S/S	860	6.0	106	115	161	PPI	P	DWH
1-002	11/11/2009	9:17	1218	DC	S/S	860	7.0	104	115	159	PPI	P	DWH
1-003	11/11/2009	9:19	1219	BV	S/S	860	7.0	118	119	166	PPI	P	DWH
1-004	11/11/2009	9:23	1221	BM	S/S	860	7.0	118	118	160	PPI	P	DWH
1-005	11/11/2009	13:07	1218	DC	S/S	860	7.0	96	99	137	PPI	P	DWH
1-006	11/11/2009	13:11	1221	BM	S/S	860	7.0	105	107	146	PPI	P	DWH
1-007	11/11/2009	13:15	1220	LN	S/S	860	6.0	113	111	149	PPI	P	DWH
1-008	11/11/2009	13:20	1219	BV	S/T	860	4.0	105	113	149	PPI	P	DWH
1-009	11/11/2009	13:24	1219	BV	T/T	860	4.0	105	98	127	PPI	P	DWH
1-010	11/11/2009	13:30	1219	BV	T/T	860	4.0	107	103	128	PPI	P	DWH
1-011	11/11/2009	15:58	1221	BM	S/T	860	4.0	125	137	163	PPI	P	DWH
1-012	11/12/2009	7:00	1218	DC	S/S	860	7.0	146	143	212	PPI	P	DWH
1-013	11/12/2009	7:05	1220	LN	S/S	860	6.0	150	150	220	PPI	P	DWH
1-014	11/12/2009	7:11	1221	BM	S/S	860	7.0	142	136	185	PPI	P	DWH
1-015	11/12/2009	7:12	1219	BV	S/S	860	7.0	128	143	210	PPI	P	DWH
1-016	11/12/2009	7:25	1219	BV	T/T	860	4.0	132	125	200	PPI	P	DWH
1-017	11/12/2009	9:31	1218	DC	S/T	860	4.0	147	153	208	PPI	P	DWH
1-018	11/12/2009	13:11	1221	BM	S/S	860	7.0	135	133	183	PPI	P	DWH
1-019	11/12/2009	13:16	1218	DC	S/S	860	7.0	129	100	150	PPI	P	DWH
1-020	11/12/2009	13:20	1220	LN	S/S	860	6.0	-	-	-	PPI	F	DWH
1-021	11/12/2009	13:23	1219	BV	S/S	860	7.0	135	152	188	PPI	P	DWH
1-022	11/12/2009	13:29	1218	DC	T/T	860	4.0	140	133	165	PPI	P	DWH
1-023	11/12/2009	13:37	1218	DC	S/T	860	4.0	140	147	210	PPI	P	DWH
1-024	11/12/2009	15:27	1220	LN	S/S	860	6.0	140	152	205	PPI	P	DWH
1-025	11/12/2009	15:30	1220	LN	S/S	860	6.0	123	124	192	PPI	P	DWH
1-026	11/13/2009	7:09	1220	LN	S/S	860	6.0	131	136	261	PPI	P	DWH
1-027	11/13/2009	7:11	1219	BV	S/S	860	7.0	132	122	221	PPI	P	DWH
1-028	11/13/2009	7:12	1218	DC	S/S	860	7.0	142	148	227	PPI	P	DWH
1-029	11/13/2009	7:14	1218	DC	S/T	860	4.0	140	132	172	PPI	P	DWH
1-030	11/13/2009	7:34	1221	BM	S/S	860	7.0	141	139	189	PPI	P	DWH
1-031	11/13/2009	10:08	1218	DC	T/T	860	4.0	122	128	135	PPI	P	DWH

SUB APPENDIX D-5

PRODUCTION SEAM LOG

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/11/2009	9:20	1218	DC	F	1-001-002 403-0	403	RKD	0-403	30/30	RC	P	AT OK	RKD
11/11/2009	9:24	1219	BV	F	1-002-003 404-0	404	RKD	0-404	30/30	RC	P	AT OK	RKD
11/11/2009	9:32	1221	BM	F	1-003-004 405-0	405	RKD	0-405	30/30	RC	P	AT OK	RKD
11/11/2009	9:36	1220	LN	F	1-004-005 403-0	403	RKD	0-403	30/29	RC	P	AT OK	RKD
11/11/2009	10:10	1218	DC	F	1-005-006 402-0	402	RKD	0-402	30/30	RC	P	AT OK	RKD
11/11/2009	10:12	1219	BV	F	1-006-007 403-0	403	RKD	0-403	30/30	RC	P	AT OK	RKD
11/11/2009	10:23	1221	BM	F	1-007-008 402-0	402	RKD	0-402	30/29	RC	P	AT OK	RKD
11/11/2009	10:34	1220	LN	F	1-008-009 403-0	403	RKD	0-403	30/29	RC	P	AT OK	RKD
11/11/2009	11:08	1218	DC	F	1-010-011 0-403	403	RKD	0-403	30/30	RC	P	AT OK	RKD
11/11/2009	11:10	1219	BV	F	1-009-010 403-0	403	RKD	0-403	30/30	RC	P	AT OK	RKD
11/11/2009	11:20	1221	BM	F	1-011-012 0-403	403	RKD	0-403	30/30	RC	P	AT OK	RKD
11/11/2009	13:14	1220	LN	F	1-012-013 0-404	404	RKD	0-404	30/30	RC	P	AT OK	RKD
11/11/2009	13:19	1218	DC	F	1-013-014 0-404	404	RKD	0-404	30/29	RC	P	AT OK	RKD
11/11/2009	13:21	1221	BM	F	1-014-015 0-406	406	RKD	0-406	30/30	RC	P	AT OK	RKD
11/11/2009	14:04	1220	LN	F	1-015-016 0-402	402	RKD	0-402	30/30	RC	P	AT OK	RKD
11/11/2009	14:11	1219	BV	F	1-001-T015 0-10	10	RKD	0-10	30/28	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/11/2009	14:11	1218	DC	F	1-016-017 0-403	403	RKD	0-403	30/29	RC	P	AT OK	RKD
11/11/2009	14:13	1219	BV	F	1-001-T014 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/11/2009	14:17	1219	BV	F	1-001-T013 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	14:21	1219	BV	F	1-001-T012 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	14:25	1219	BV	F	1-001-T011 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	14:29	1219	BV	F	1-001-T010 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	14:40	1219	BV	F	1-001-T009 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/11/2009	14:44	1219	BV	F	1-001-T008 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	14:48	1219	BV	F	1-001-T007 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	14:52	1219	BV	F	1-001-T006 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	14:56	1219	BV	F	1-001-T005 0-22	22	RKD	0-22	30/28	RC	P	AT OK	RKD
11/11/2009	14:58	1221	BM	F	1-018-019 0-403	403	RKD	0-403	30/30	RC	P	AT OK	RKD
11/11/2009	15:00	1219	BV	F	1-001-T004 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	15:03	1219	BV	F	1-001-T003 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/11/2009	15:10	1220	LN	F	1-019-020 0-402	402	RKD	0-402	30/29	RC	P	AT OK	RKD
11/11/2009	15:13	1219	BV	F	1-001-T002 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/11/2009	15:17	1219	BV	F	1-001-T001 0-100	100	RKD	0-100	30/30	RC	P	AT OK	RKD
11/11/2009	15:22	1218	DC	F	1-020-021 0-401	401	RKD	0-401	30/29	RC	P	AT OK	RKD
11/11/2009	16:02	1219	BV	F	1-018-T032 0-76	76	RKD	0-76	30/30	RC	P	AT OK	RKD
11/11/2009	16:08	1218	DC	F	1-018-023-0-54	54	RKD	0-54	30/30	RC	P	AT OK	RKD
11/11/2009	16:10	1221	BM	F	1-001-022-0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:13	1221	BM	F	1-002-022 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/11/2009	16:15	1218	DC	F	1-018-024 0-41	41	RKD	0-41	30/29	RC	P	AT OK	RKD
11/11/2009	16:16	1221	BM	F	1-003-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:19	1221	BM	F	1-004-022 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/11/2009	16:22	1221	BM	F	1-005-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:25	1221	BM	F	1-006-022 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/11/2009	16:28	1221	BM	F	1-007-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:30	1219	BV	F	1-023-T032 0-21	21	RKD	0-21	30/28	RC	P	AT OK	RKD
11/11/2009	16:31	1221	BM	F	1-008-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:34	1221	BM	F	1-009-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:35	1219	BV	F	1-023-T031-0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/11/2009	16:37	1221	BM	F	1-010-022 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/11/2009	16:39	1219	BV	F	1-023-T030 0-9	9	RKD	0-9	30/28	RC	P	AT OK	RKD
11/11/2009	16:40	1221	BM	F	1-011-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:42	1219	BV	F	1-024-T030 0-13	13	RKD	0-13	30/30	RC	P	AT OK	RKD
11/11/2009	16:43	1221	BM	F	1-012-022 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/11/2009	16:45	1219	BV	F	1-024-T029 0-21	21	RKD	0-21	30/30	RC	P	AT OK	RKD
11/11/2009	16:46	1221	BM	F	1-013-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:49	1221	BM	F	1-014-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:50	1219	BV	F	1-024-T028 0-4	4	RKD	0-4	VT	HG	P	VT OK	DWH
11/11/2009	16:52	1221	BM	F	1-015-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:52	1219	BV	F	1-018-T028 0-18	18	RKD	0-18	30/30	RC	P	AT OK	RKD
11/11/2009	16:55	1221	BM	F	1-016-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	16:55	1219	BV	F	1-018-T027 0-11	11	RKD	0-11	30/29	RC	P	AT OK	RKD
11/11/2009	16:58	1221	BM	F	1-017-022 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	17:01	1219	BV	F	1-018-T025 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/11/2009	17:07	1219	BV	F	1-018-T024 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/12/2009	7:30	1219	BV	F	1-018-T023 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	7:41	1219	BV	F	1-018-T022 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	7:44	1218	DC	F	1-025-026 0-401	401	RKD	0-401	30/29	RC	P	AT OK	RKD
11/12/2009	7:45	1220	LN	F	1-021-025 0-398	398	RKD	0-398	30/29	RC	P	AT OK	RKD
11/12/2009	7:49	1219	BV	F	1-018-T021 0-22	22	RKD	0-22	30/28	RC	P	AT OK	RKD
11/12/2009	7:54	1219	BV	F	1-018-T020 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	7:55	1221	BM	F	1-026-027 0-401	401	RKD	0-401	30/30	RC	P	AT OK	RKD
11/12/2009	7:58	1219	BV	F	1-018-T019 0-22	22	RKD	0-18	30/30	RC	P	AT OK	RKD
11/12/2009	8:11	1219	BV	F	1-022-T015 0-19	19	RKD	0-19	30/30	RC	P	AT OK	RKD
11/12/2009	8:31	1219	BV	F	1-028-029 0-399	399	RKD	0-399	30/30	RC	P	AT OK	RKD
11/12/2009	8:38	1218	DC	F	1-027-028 0-399	399	RKD	0-399	30/29	RC	P	AT OK	RKD
11/12/2009	8:45	1220	LN	F	1-022-030 0-400	400	RKD	0-400	30/30	RC	P	AT OK	RKD
11/12/2009	8:55	1221	BM	F	1-030-031 0-400	400	RKD	0-400	30/29	RC	P	AT OK	RKD
11/12/2009	9:19	1219	BV	F	1-031-032 0-400	400	RKD	0-400	30/29	RC	P	AT OK	RKD
11/12/2009	9:40	1218	DC	F	1-018-032 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	9:42	1218	DC	F	1-019-032 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/12/2009	9:45	1218	DC	F	1-020-032 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	9:48	1218	DC	F	1-021-032 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	9:51	1218	DC	F	1-025-032 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	9:52	1221	BM	F	1-033-034 0-94	94	RKD	0-94	30/30	RC	P	AT OK	RKD
11/12/2009	9:54	1218	DC	F	1-026-032 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	9:56	1220	LN	F	1-034-035 0-96	96	RKD	0-96	30/29	RC	P	AT OK	RKD
11/12/2009	9:57	1218	DC	F	1-027-032 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	10:02	1218	DC	F	1-028-032 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	10:05	1218	DC	F	1-029-032 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	10:10	1221	BM	F	1-035-036 0-97	97	RKD	0-97	30/30	RC	P	AT OK	RKD
11/12/2009	10:13	1220	LN	F	1-036-037 15-115	100	RKD	0-100	30/30	RC	P	AT OK	RKD
11/12/2009	10:15	1220	LN	F	1-022-037 0-15	15	RKD	0-15	30/30	RC	P	AT OK	RKD
11/12/2009	10:20	1218	DC	F	1-039-040 0-118	118	RKD	0-118	30/30	RC	P	AT OK	RKD
11/12/2009	10:25	1221	BM	F	1-037-038 0-115	115	RKD	0-115	30/30	RC	P	AT OK	RKD
11/12/2009	10:37	1220	LN	F	1-038-039 0-117	117	RKD	0-117	30/30	RC	P	AT OK	RKD
11/12/2009	10:38	1218	DC	F	1-042-043 0-123	123	RKD	0-123	30/30	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/12/2009	10:44	1219	BV	F	1-032-T019 0-4	4	RKD	0-4	CAPPED	HG	P	VT OK	DWH
11/12/2009	10:44	1221	BM	F	1-040-041 0-119	119	RKD	0-119	30/30	RC	P	AT OK	RKD
11/12/2009	10:45	1219	BV	F	1-032-T018 0-18	18	RKD	0-18	30/30	RC	P	AT OK	RKD
11/12/2009	10:50	1219	BV	F	1-031-T018 0-4	4	RKD	0-4	CAPPED	HG	P	VT OK	DWH
11/12/2009	10:51	1219	BV	F	1-031-T017 0-18	18	RKD	0-18	30/30	RC	P	AT OK	RKD
11/12/2009	10:54	1219	BV	F	1-030-T017 0-4	4	RKD	0-4	30/29	RC	P	AT OK	RKD
11/12/2009	10:54	1218	DC	F	1-044-045 0-127	127	RKD	0-127	30/30	RC	P	AT OK	RKD
11/12/2009	10:55	1219	BV	F	1-030-T016 0-18	18	RKD	0-18	30/29	RC	P	AT OK	RKD
11/12/2009	10:57	1220	LN	F	1-041-042 0-122	122	RKD	0-122	30/30	RC	P	AT OK	RKD
11/12/2009	11:02	1221	BM	F	1-043-044 0-124	124	RKD	0-124	30/30	RC	P	AT OK	RKD
11/12/2009	11:10	1219	BV	F	1-017-047 0-92	92	RKD	0-92	30/30	RC	P	AT OK	RKD
11/12/2009	11:10	1218	DC	F	1-045-046 0-127	127	RKD	0-127	30/30	RC	P	AT OK	RKD
11/12/2009	11:21	1220	LN	F	1-048-049 0-88	88	RKD	0-88	30/30	RC	P	AT OK	RKD
11/12/2009	11:27	1221	BM	F	1-047-048 0-89	89	RKD	0-89	30/30	RC	P	AT OK	RKD
11/12/2009	11:31	1219	BV	F	1-049-050 0-62	62	RKD	0-62	30/30	RC	P	AT OK	RKD
11/12/2009	11:34	1218	DC	F	1-050-051 0-53	53	RKD	0-53	30/30	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/12/2009	11:35	1220	LN	F	1-051-052 0-75	75	RKD	0-75	30/30	RC	P	AT OK	RKD
11/12/2009	11:43	1219	BV	F	1-049-053 0-14	14	RKD	0-14	30/30	RC	P	AT OK	RKD
11/12/2009	11:45	1219	BV	F	1-050-053 0-28	28	RKD	0-28	30/30	RC	P	AT OK	RKD
11/12/2009	11:49	1219	BV	F	1-051-053 0-30	30	RKD	0-30	30/30	RC	P	AT OK	RKD
11/12/2009	13:10	1221	BM	F	1-054-055 0-131	131	RKD	0-131	30/30	RC	P	AT OK	RKD
11/12/2009	13:13	1218	DC	F	1-046-054 0-130	130	RKD	0-130	30/29	RC	P	AT OK	RKD
11/12/2009	13:15	1220	LN	F	1-055-056 0-50	50	RKD	0-50	CAPPED	RC	P	AT OK	DWH
11/12/2009	13:19	1219	BV	F	1-056-057 0-132	132	RKD	0-132	30/30	RC	P	AT OK	RKD
11/12/2009	13:28	1221	BM	F	1-057-058 46-132	86	RKD	0-86	30/29	RC	P	AT OK	RKD
11/12/2009	13:35	1219	BV	F	1-055-056 50-132	82	RKD	50-132	30/30	RC	P	AT OK	RKD
11/12/2009	13:37	1218	DC	F	1-047-057 0-23	23	RKD	0-23	30/30	RC	P	AT OK	RKD
11/12/2009	13:40	1218	DC	F	1-048-057 23-46	23	RKD	0-23	30/30	RC	P	AT OK	RKD
11/12/2009	13:43	1218	DC	F	1-049-058 0-16	16	RKD	0-16	30/30	RC	P	AT OK	RKD
11/12/2009	13:49	1218	DC	F	1-053-058 0-58	58	RKD	0-58	30/30	RC	P	AT OK	RKD
11/12/2009	14:06	1218	DC	F	1-052-058 0-15	15	RKD	0-15	30/30	RC	P	AT OK	RKD
11/12/2009	14:08	1218	DC	F	1-052-057 0-6	6	RKD	0-6	30/29	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/12/2009	14:43	1218	DC	F	1-017-057 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	14:46	1218	DC	F	1-017-056 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	14:49	1218	DC	F	1-017-055 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	14:52	1218	DC	F	1-017-054 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	14:54	1221	BM	F	1-029-059 0-394	394	RKD	0-394	30/30	RC	P	AT OK	RKD
11/12/2009	14:55	1218	DC	F	1-017-046 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	14:59	1218	DC	F	1-017-045 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	15:03	1218	DC	F	1-017-044 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	15:07	1218	DC	F	1-017-043 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	15:07	1219	BV	F	1-059-060 0-395	395	RKD	0-395	30/30	RC	P	AT OK	RKD
11/12/2009	15:10	1218	DC	F	1-017-042 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	15:14	1218	DC	F	1-017-041 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	15:17	1218	DC	F	1-017-040 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	15:19	1218	DC	F	1-017-039 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	15:22	1218	DC	F	1-017-038 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	15:25	1218	DC	F	1-017-037 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/12/2009	15:40	1220	LN	F	1-060-061 0-395	395	RKD	0-395	30/30	RC	P	AT OK	RKD
11/12/2009	15:45	1218	DC	F	1-022-036 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	15:45	1218	DC	F	1-030-035 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	15:48	1218	DC	F	1-031-034 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	15:49	1221	BM	F	1-061-062 0-395	395	RKD	0-395	30/29	RC	P	AT OK	RKD
11/12/2009	15:51	1218	DC	F	1-032-033 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	16:02	1218	DC	F	1-032-059 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	16:07	1218	DC	F	1-032-060 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/12/2009	16:09	1218	DC	F	1-032-061 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/12/2009	16:12	1218	DC	F	1-032-062 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	7:40	1219	BV	F	1-065-066 0-93	93	RKD	0-93	30/29	RC	P	AT OK	RKD
11/13/2009	7:43	1221	BM	F	1-067-068 0-94	94	RKD	0-94	30/30	RC	P	AT OK	RKD
11/13/2009	7:46	1218	DC	F	1-033-063 0-93	93	RKD	0-93	30/30	RC	P	AT OK	RKD
11/13/2009	7:50	1219	BV	F	1-064-065 0-92	92	RKD	0-92	30/30	RC	P	AT OK	RKD
11/13/2009	7:56	1221	BM	F	1-066-067 0-94	94	RKD	0-94	30/30	RC	P	AT OK	RKD
11/13/2009	8:10	1219	BV	F	1-063-064 0-92	92	RKD	0-92	30/29	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/13/2009	8:11	1221	BM	F	1-068-069 0-95	95	RKD	0-95	30/30	RC	P	AT OK	RKD
11/13/2009	8:15	1220	LN	F	1-069-070 0-96	96	RKD	0-96	30/30	RC	P	AT OK	RKD
11/13/2009	8:23	1218	DC	F	1-071-072 0-97	97	RKD	0-97	30/30	RC	P	AT OK	RKD
11/13/2009	8:26	1221	BM	F	1-070-071 0-97	97	RKD	0-97	30/29	RC	P	AT OK	RKD
11/13/2009	8:27	1219	BV	F	1-072-073 0-99	99	RKD	0-99	30/30	RC	P	AT OK	RKD
11/13/2009	9:07	1220	LN	F	1-062-074 394-0	394	RKD	0-394	30/30	RC	P	AT OK	RKD
11/13/2009	9:10	1221	BM	F	1-074-075 393-0	393	RKD	0-393	30/29	RC	P	AT OK	RKD
11/13/2009	9:17	1218	DC	F	1-075-076 393-0	393	RKD	0-393	30/29	RC	P	AT OK	RKD
11/13/2009	9:26	1219	BV	F	1-076-077 393-0	393	RKD	0-393	30/30	RC	P	AT OK	RKD
11/13/2009	9:59	1221	BM	F	1-073-079 0-99	99	RKD	0-99	30/30	RC	P	AT OK	RKD
11/13/2009	10:05	1220	LN	F	1-077-078 393-0	393	RKD	0-393	30/29	RC	P	AT OK	RKD
11/13/2009	10:07	1219	BV	F	1-079-080 0-100	100	RKD	0-100	30/29	RC	P	AT OK	RKD
11/13/2009	10:19	1221	BM	F	1-080-081-87-0	87	RKD	0-87	30/30	RC	P	AT OK	RKD
11/13/2009	10:20	1218	DC	F	1-032-074 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	10:24	1218	DC	F	1-032-075 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/13/2009	10:27	1218	DC	F	1-032-076 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	*Time*	*Mach. ID*	*Oper. ID*	*Ext/ Fus:*	*SeamNo* Series-Seam1-Seam2-Begin-End	*Length* (ft.)	*QA ID*	*Location*	*Detail*	*Oper.*	*Result*	*Action*	*QA ID*
11/13/2009	10:30	1218	DC	F	1-032-077 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/13/2009	10:33	1218	DC	F	1-032-078 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/13/2009	10:38	1219	BV	F	1-078-082 0-102	102	RKD	0-102	30/30	RC	P	AT OK	RKD
11/13/2009	10:42	1221	BM	F	1-082-083 78-0	78	RKD	0-78	30/30	RC	P	AT OK	RKD
11/13/2009	10:45	1219	BV	F	1-081-086 67-0	67	RKD	0-67	30/30	RC	P	AT OK	RKD
11/13/2009	10:49	1218	DC	F	1-063-078 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	10:52	1218	DC	F	1-064-078 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	10:55	1218	DC	F	1-065-078 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	10:56	1221	BM	F	1-083-084 54-0	54	RKD	0-54	30/29	RC	P	AT OK	RKD
11/13/2009	10:58	1218	DC	F	1-066-078 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/13/2009	11:00	1220	LN	F	1-084-085 0-54	54	RKD	0-54	30/30	RC	P	AT OK	RKD
11/13/2009	11:01	1218	DC	F	1-067-078 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	11:04	1218	DC	F	1-068-078 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	11:08	1218	DC	F	1-069-078 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/13/2009	11:10	1221	BM	F	1-081-082 0-28	28	RKD	0-28	30/30	RC	P	AT OK	RKD
11/13/2009	11:11	1218	DC	F	1-070-078 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Production Seam Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Material Type gml : 1 Specifications: Seam Pressure: 25-30 psi for 5 min. ≤ 3 psi drop Vacuum Box: 5 psi for 20 seconds

Primary / Secondary: Primary Series: 1

Production Seam					Location			Nondestructive Test					
Date	***Time***	***Mach. ID***	***Oper. ID***	***Ext/ Fus:***	***SeamNo*** Series-Seam1-Seam2-Begin-End	***Length*** (ft.)	***QA ID***	***Location***	***Detail***	***Oper.***	***Result***	***Action***	***QA ID***
11/13/2009	11:14	1218	DC	F	1-071-078 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	11:16	1221	BM	F	1-083-086 0-29	29	RKD	0-29	30/29	RC	P	AT OK	RKD
11/13/2009	11:17	1218	DC	F	1-072-078 0-22	22	RKD	0-22	30/29	RC	P	AT OK	RKD
11/13/2009	11:20	1218	DC	F	1-073-078 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	11:22	1221	BM	F	1-084-086 0-23	23	RKD	0-23	30/30	RC	P	AT OK	RKD
11/13/2009	11:23	1218	DC	F	1-078-079 0-22	22	RKD	0-22	30/30	RC	P	AT OK	RKD
11/13/2009	11:25	1221	BM	F	1-085-086 0-28	28	RKD	0-28	30/30	RC	P	AT OK	RKD
11/13/2009	12:26	1218	DC	F	1-078-080 0-21	21	RKD	0-21	30/29	RC	P	AT OK	RKD

Total Length Fusion: 21346 Total Length Extrusion: 0

Comments:

Sub Appendix D-6

Destructive Test Log

Geosyntec consultants

WASTE MANAGEMENT

Destructive Test Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Test Reqs: Fusion: Peel Inside: 91 Peel Outside: 91 Shear: 120
Extrusion: Peel: 78 Shear: 120

Primary / Secondary: Primary Series: 1 MaterialType: 1

Sample Data									Test Data							
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp		Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	Re test 1	Re test 2
			Seam	Dist. (ft.)					Inside	Outside						
1-001	F	D	1-2	43 N	1218	DC	11/11/2009	Lab	149	134	173	PPI	P	-	-	-
								Field	131	136	215	PPI	P	DWH		
1-002	F	D	2-3	79 N	1219	BV	11/11/2009	Lab	130	126	169	PPI	P	-	-	-
								Field	144	140	210	PPI	P	DWH		
1-003	F	D	3-4	115 N	1221	BM	11/11/2009	Lab	148	142	180	PPI	P	-	-	-
								Field	136	128	217	PPI	P	DWH		
1-004	F	D	4-5	150 N	1220	LN	11/11/2009	Lab	139	147	180	PPI	P	-	-	-
								Field	142	136	200	PPI	P	DWH		
1-005	F	D	6-7	200 N	1219	BV	11/11/2009	Lab	147	146	187	PPI	P	-	-	-
								Field	140	146	206	PPI	P	DWH		
1-006	F	D	7-8	232 N	1221	BM	11/11/2009	Lab	141	128	178	PPI	P	-	-	-
								Field	132	128	210	PPI	P	DWH		
1-007	F	D	8-9	167 N	1220	LN	11/11/2009	Lab	142	147	178	PPI	P	-	-	-
								Field	141	139	213	PPI	P	DWH		
1-008	F	D	9-10	300 N	1219	BV	11/11/2009	Lab	133	153	171	PPI	P	-	-	-
								Field	132	136	210	PPI	P	DWH		
1-009	F	D	10-11	350 N	1218	DC	11/11/2009	Lab	150	143	175	PPI	P	-	-	-
								Field	128	132	198	PPI	P	DWH		
1-010	F	D	13-14	36 N	1218	DC	11/11/2009	Lab	156	122	175	PPI	P	-	-	-
								Field	127	124	184	PPI	P	DWH		

Geosyntec consultants

WASTE MANAGEMENT

Destructive Test Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Test Reqs: Fusion: Peel Inside: 91 Peel Outside: 91 Shear: 120
Extrusion: Peel: 78 Shear: 120

Primary / Secondary: Primary Series: 1 MaterialType: 1

Sample Data									Test Data							
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp		Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	Re test 1	Re test 2
			Seam	Dist. (ft.)					Inside	Outside						
1-011	F	D	14-15	100 N	1221	BM	11/11/2009	Lab	164	151	193	PPI	P	-	-	-
								Field	122	131	198	PPI	P	DWH		
1-012	F	D	15-16	200 N	1220	LN	11/11/2009	Lab	130	121	179	PPI	P	-	-	-
								Field	120	126	191	PPI	P	DWH		
1-013	F	D	16-17	265 N	1218	DC	11/11/2009	Lab	151	123	172	PPI	P	-	-	-
								Field	128	136	195	PPI	P	DWH		
1-014	F	D	1-T-11	7 N	1219	BV	11/11/2009	Lab	125	137	159	PPI	P	-	-	-
								Field	122	115	192	PPI	P	DWH		
1-015	F	D	18-19	115 S	1221	BM	11/11/2009	Lab	124	124	161	PPI	P	-	-	-
								Field	134	128	185	PPI	P	DWH		
1-016	F	D	19-20	200 S	1220	LN	11/11/2009	Lab	135	118	162	PPI	P	-	-	-
								Field	120	131	198	PPI	P	DWH		
1-017	F	D	18-T-23	12 N	1219	BV	11/12/2009	Lab	135	136	179	PPI	P	-	-	-
								Field	140	139	206	PPI	P	DWH		
1-018	F	D	5-22	AT T	1221	BM	11/12/2009	Lab	161	150	165	PPI	P	-	-	-
								Field	120	114	186	PPI	P	DWH		
1-019	F	D	21-25	139 S	1220	LN	11/12/2009	Lab	134	122	189	PPI	P	-	-	-
								Field	119	126	194	PPI	P	DWH		
1-020	F	D	25-26	179 S	1218	DC	11/12/2009	Lab	144	142	192	PPI	P	-	-	-
								Field	136	127	199	PPI	P	DWH		

Geosyntec consultants

WASTE MANAGEMENT

Destructive Test Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Test Reqs: Fusion: Peel Inside: 91 Peel Outside: 91 Shear: 120
Extrusion: Peel: 78 Shear: 120

Primary / Secondary: Primary Series: 1 MaterialType: 1

Sample Data									Test Data							
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp		Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	Re test 1	Re test 2
			Seam	Dist. (ft.)					Inside	Outside						
1-021	F	D	26-27	250 S	1221	BM	11/12/2009	Lab	131	118	179	PPI	P	-	-	-
								Field	121	124	196	PPI	P	DWH		
1-022	F	D	28-29	300 S	1219	BV	11/12/2009	Lab	152	139	181	PPI	P	-	-	-
								Field	118	124	194	PPI	P	DWH		
1-023	F	D	57-58	78 E	1221	BM	11/13/2009	Lab	145	119	184	PPI	P	-	-	-
								Field	128	132	176	PPI	P	DWH		
1-024	F	D	47-48	50 N	1221	BM	11/13/2009	Lab	120	120	180	PPI	P	-	-	-
								Field	128	132	159	PPI	P	DWH		
1-025	F	D	17-54	8 N	1218	DC	11/13/2009	Lab	136	146	171	PPI	P	-	-	-
								Field	126	114	170	PPI	P	DWH		
1-026	F	D	45-46	50 E	1218	DC	11/13/2009	Lab	132	117	174	PPI	P	-	-	-
								Field	121	130	166	PPI	P	DWH		
1-027	F	D	41-42	32 E	1220	LN	11/13/2009	Lab	105	118	184	PPI	P	-	-	-
								Field	131	140	169	PPI	P	DWH		
1-028	F	D	38-39	50 E	1220	LN	11/13/2009	Lab	114	122	187	PPI	P	-	-	-
								Field	136	128	159	PPI	P	DWH		
1-029	F	D	32-62	10 E	1218	DC	11/13/2009	Lab	144	134	176	PPI	P	-	-	-
								Field	131	131	160	PPI	P	DWH		
1-030	F	D	31-32	201 E	1219	BV	11/13/2009	Lab	139	133	186	PPI	P	-	-	-
								Field	139	136	186	PPI	P	DWH		

Geosyntec consultants

WASTE MANAGEMENT

Destructive Test Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction

ProjNo: FQ1767
TaskNo: 02

Test Reqs: Fusion: Peel Inside: 91 Peel Outside: 91 Shear: 120
Extrusion: Peel: 78 Shear: 120

Primary / Secondary: Primary Series: 1 MaterialType: 1

Sample Data									Test Data							
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp		Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	Re test 1	Re test 2
			Seam	Dist. (ft.)					Inside	Outside						
1-031	F	D	30-31	100 E	1221	BM	11/13/2009	Lab	132	139	183	PPI	P	-	-	-
								Field	138	140	191	PPI	P	DWH		
1-032	F	D	29-59	49 S	1221	BM	11/13/2009	Lab	144	130	177	PPI	P	-	-	-
								Field	133	137	188	PPI	P	DWH		
1-033	F	D	59-60	73 S	1219	BV	11/13/2009	Lab	134	148	190	PPI	P	-	-	-
								Field	135	130	188	PPI	P	DWH		
1-034	F	D	60-61	134 S	1220	LN	11/13/2009	Lab	134	130	198	PPI	P	-	-	-
								Field	136	141	185	PPI	P	DWH		
1-035	F	D	61-62	161 S	1221	BM	11/13/2009	Lab	124	134	195	PPI	P	-	-	-
								Field	131	138	152	PPI	P	DWH		
1-036	F	D	74-75	200 S	1221	BM	11/13/2009	Lab	132	129	194	PPI	P	-	-	-
								Field	122	126	142	PPI	P	DWH		
1-037	F	D	75-76	240 S	1218	DC	11/13/2009	Lab	131	143	202	PPI	P	-	-	-
								Field	134	129	151	PPI	P	DWH		
1-038	F	D	76-77	270 S	1219	BV	11/13/2009	Lab	138	131	196	PPI	P	-	-	-
								Field	126	120	148	PPI	P	DWH		
1-039	F	D	77-78	328 S	1220	LN	11/13/2009	Lab	137	124	179	PPI	P	-	-	-
								Field	129	132	140	PPI	P	DWH		
1-040	F	D	63-78	9 S	1218	DC	11/13/2009	Lab	142	158	180	PPI	P	-	-	-
								Field	130	129	155	PPI	P	DWH		

Geosyntec consultants

WASTE MANAGEMENT

Destructive Test Log

Project: Vista Class III Landfill ProjNo: FQ1767
Location: Apopka, FL TaskNo: 02
Description: Cell 2 Construction

Test Reqs: Fusion: Peel Inside: 91 Peel Outside: 91 Shear: 120
Extrusion: Peel: 78 Shear: 120

Primary / Secondary: Primary Series: 1 MaterialType: 1

Sample Data									Test Data							
Samp No	Weld Type	Track Type	Location		Mach ID	Oper ID	Date Samp		Peel		Shear	Unit ppi/psi	Result (P/F)	QA ID	Re test 1	Re test 2
			Seam	Dist. (ft.)					Inside	Outside						
1-041	F	D	83-84	40 S	1219	BV	11/13/2009	Lab	134	143	192	PPI	P	-	-	-
								Field	126	130	147	PPI	P	DWH		
1-042	F	D	80-81	50 E	1221	BM	11/13/2009	Lab	141	134	191	PPI	P	-	-	-
								Field	130	126	146	PPI	P	DWH		
1-043	F	D	72-73	22 E	1219	BV	11/13/2009	Lab	161	144	185	PPI	P	-	-	-
								Field	131	127	156	PPI	P	DWH		
1-044	F	D	68-69	17 E	1221	BM	11/13/2009	Lab	148	140	185	PPI	P	-	-	-
								Field	115	126	159	PPI	P	DWH		
1-045	F	D	69-70	50 E	1220	LN	11/13/2009	Lab	138	128	183	PPI	P	-	-	-
								Field	131	131	160	PPI	P	DWH		
1-046	E	S	78-Patch	101 S	5171	JT	11/14/2009	Lab	125	-	169	PPI	P	-	-	-
								Field	118	-	148	PPI	P	DWH		

Comments:

SUB APPENDIX D-7

REPAIR SUMMARY LOG

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767 TaskNo: 02

Primary / Secondary: Primary Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-001	1-001	P	1-2		43 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-002		P	2-3		1 N		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-003	1-002	P	2-3		79 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-004	1-003	P	3-4		115 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-005	1-004	P	4-5		150 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-006		P	1-T1-T2		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-007		P	1-T2-T3		AT T		4	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-008		P	1-T3-T4		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-009		P	1-T4-T5		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-010		P	1-T5-T6		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-011		P	1-T6-T7		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-012		P	1-T7-T8		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-013		P	1-T8-T9		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-014		P	1-T9-T10		AT T		4	3		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-015		P	1-T10		3 N		3	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-016		P	1-T10-T11		AT T		2	2		5155	JC	RKD	12/13/2009	HG	P	VT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767 TaskNo: 02

Primary / Secondary: Primary Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-017	1-014	P	1-T11		6 N		3	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-018		P	1-T11-T12		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-019		P	1-T12-T13		AT T		3	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-020		P	1-T13-T14		AT T		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-021		P	1-T14		7 N		3	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/14/2009	1-022		P	1-22-TI		AT T		6	4		5155	JC	DWH	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-023		P	Cell 1		7 W	8 S	5	3		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-024		P	1-2-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-025		P	2-3-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-026		P	3-4-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-027		P	4-5-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-028	1-018	P	5-6-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-029		P	5-6-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-030		P	6-7-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-031		P	7-8-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-032		P	8-9-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767 TaskNo: 02

Primary / Secondary: Primary Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-033		P	9-10-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-034		P	10-11-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-035		P	11-12-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-036		P	12-13-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	DWH
11/13/2009	1-037		P	13-14-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-038		P	14-15-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-039		P	15-16-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-040		P	16-17-22		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-041	1-005	P	6-7		200 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-042	1-006	P	7-8		232 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-043	1-007	P	8-9		167 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-044	1-008	P	9-10		300 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-045	1-009	P	10-11		350 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-046		P	13-14		1 S		6	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-047		P	14-15		2 N		6	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-048	1-010	P	13-14		36 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767
TaskNo: 02

Primary / Secondary: Primary
Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-049	1-011	P	14-15		100 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-050	1-012	P	15-16		200 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-051	1-013	P	16-17		265 N		5	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-052	1-024	P	47-48		50 N		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-053		P	17-47		1 N		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-054		P	47-48		1 N		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-055		P	52-57-58		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-056		P	51-52-53-58		AT T		4	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-057		P	50-51-53		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-058		P	49-50-53		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-059		P	49-53-58		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-060	1-023	P	57-58		78 E		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-061		P	48-49-57-58		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-062		P	47-48-57		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-063		P	17-47-57		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-064		P	17-56-57		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767 TaskNo: 02

Primary / Secondary: Primary Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-065		P	17-55-56		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	DWH
11/12/2009	1-066		C	55-56		0-53		53	3		1218	DC	RKD	11/12/2009	RC	P	AT OK	RKD
11/13/2009	1-067		P	55-56		53 E		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-068	1-026	P	45-46		50 E		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-069		P	17-54-55		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-070	1-025	P	17-54		8 N		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-071		P	17-46-54		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-072		P	17-45-46		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-073		P	17-44-45		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-074		P	17-43-44		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-075		P	17-42-43		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-076		P	17-41-42		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-077	1-027	P	41-42		32 E		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-078		P	17-40-41		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-079		P	17-39-40		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-080		P	17-38-39		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767
TaskNo: 02

Primary / Secondary: Primary
Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-081	1-028	P	38-39		50 E		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-082		P	17-37-38		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-083		P	17-22-37		AT T		3	3		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-084		P	22-36-37		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-085		P	22-30-35-36		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-086		P	30-31-34-35		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-087		P	31-32-33-34		AT T		2	2		5155	JT	DWH	11/14/2009	HG	P	VT OK	DWH
11/13/2009	1-088		P	22-T15		6 N		2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-089		P		22	11 N	8 E	2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-090		P		22	11 N	3 E	2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-091		P	18-30-T15-T16		AT T		5	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-092		P		T16	2 S	3 W	2	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-093		P	30-30-T16-T17		AT T		6	2		5155	JC	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-094		P	31-32-T17-T18		AT T		6	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-095	1-031	P	30-31		100 E		5	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-096	1-030	P	31-32		201 E		5	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767 TaskNo: 02

Primary / Secondary: Primary Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-097		P	32-T18		11 N		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-098		P	18-32-T18-T19		AT T		6	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-099		P	18-19-32		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-100		P	18-T19-T20		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-101		P	18-T20-T21		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-102		P	18-T21-T22		AT T		3	3		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-103		P	18-T22-T23		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-104	1-017	P	18-T23		16 N		5	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-105		P	18-T23-T24		AT T		3	3		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-106		P	18-T24-T25		AT T		2	2		512	MV	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-107		P	18-T25-T26-T27		AT T		32	3		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-108		P	18-T27-T28		AT T		3	2		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-109		P	18-24-T28-T29		AT T		11	3		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-110		P	24-T29		11 N		3	2		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-111		P	24-T29-T30		AT T		6	2		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-112		P	18-23-24-T30		AT T		3	4		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767 TaskNo: 02

Primary / Secondary: Primary Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-113		P	23-T30-T31		AT T		3	3		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-114		P		T31	2 N	1 W	2	2		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-115		P	23-T31		6 N		4	2		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-116		P	23-T31-T32		AT T		3	3		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-117		P	23-T32		15 N	1 W	2	2		512	MV	RKD	11/13/2009	HG	P	VT OK	DWH
11/13/2009	1-118		P	18-23-T32		AT T		10	5		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-119		P	18-T32		1 S		4	2		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-120		P		18	1 S	14 W	2	2		512	MV	RKD	11/13/2009	HG	P	VT OK	RKD
11/14/2009	1-121	1-015	P	18-19		115 S		5	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-122	1-016	P	19-20		200 S		5	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-123	1-019	P	21-25		139 S		5	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-124	1-020	P	25-26		179 S		5	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-125	1-021	P	26-27		250 S		5	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-126		P		26	1 S	10 E	2	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-127		P	26 -27		1 S		4	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-128		P		27	3 S	7 E	3	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH

Geosyntec consultants

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767
TaskNo: 02

Primary / Secondary: Primary
Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/14/2009	1-129		P		27	2 S	10 E	2	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-130		P		27	8 S	10 E	2	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-131		P		27	10 S	6 E	2	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-132		P		27	21 S	10 E	2	2		512	MV	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-133		P		27	15 S	10 E	2	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-134		P		27	27 S	10 E	2	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-135		P		27	35 S	10 E	2	2		512	MV	RKD	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-136		P		29	1 S	5 W	1	1		512	MV	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-137	1-032	P	29-59		49 S		6	2		512	MV	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-138		P	29-59		121 S		6	4		512	MV	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-139	1-022	P	28-29		300 S		6	2		5155	JC	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-140		P	59-60		107 S		3	2		5155	JC	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-141	1-033	P	59-60		73 S		6	2		512	MV	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-142		P	60-61		1 S		3	3		512	MV	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-143		P	60-61		94 S		8	3		5155	JC	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-144	1-034	P	60-61		134 S		6	2		5155	JC	DWH	11/14/2009	HG	P	VT OK	DWH

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767 TaskNo: 02

Primary / Secondary: Primary Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/14/2009	1-145	1-035	P	61-62		161 S		6	2		5155	JC	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-146		P	65-74		115 S		6	6		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-147	1-036	P	74-75		200 S		5	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-148	1-037	P	75-76		240 S		5	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-149	1-038	P	76-77		275 S		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-150	1-039	P	77-78		325 S		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-151		P	19-20-32		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-152		P	20-21-32		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-153		P	21-25-32		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-154		P	25-26-32		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-155		P	26-27-32		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-156		P	27-28-32		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/13/2009	1-157		P	28-29-32		AT T		2	2		5171	JT	RKD	11/13/2009	HG	P	VT OK	RKD
11/14/2009	1-158		P	29-32-59		AT T		3	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-159		P	32-59-60		AT T		4	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-160		P	32-60-61		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767
TaskNo: 02

Primary / Secondary: Primary
Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/14/2009	1-161		P	32-61-62		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-162	1-029	P	32-62		10 E		5	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-163		P	32-62-74		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-164		P	32-74-75		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-165		P	32-75-76		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-166		P	32-76-77		AT T		2	2		5155	JC	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-167		P	32-77-78		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-168		P	32-33-63-78		AT T		3	3		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-169	1-040	P	63-78		11 N		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-170		P	63-64-78		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-171		P	64-65-78		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-172		P	65-66-78		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-173		P	66-67-78		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-174		P	67-68-78		AT T		2	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-175		P	68-69-78		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-176	1-044	P	68-69		20 E		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD

Geosyntec consultants

WASTE MANAGEMENT

Repair Summary Log

Project: Vista Class III Landfill
Location: Apopka, FL
Description: Cell 2 Construction
Installer: ESI

ProjNo: FQ1767 TaskNo: 02

Primary / Secondary: Primary Series: 1

Repair Date	Repair ID	DS No	Repair Type	Location				Size			Welder I.D.		QA ID	Non-Destructive Testing				
				Seam	Panel	Distance (ft.)	Offset (ft.)	Length (ft.)	Width (ft.)	Dia. (ft.)	Mach ID	Oper ID		Date	Oper ID	Result (p/f)	Action	QA ID
11/13/2009	1-177		P	69-70-78		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-178	1-045	P	69-70		50 E		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/13/2009	1-179		P	70-71-78		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-180		P	71-72-78		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-181		P	72-73-78		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-182	1-043	P	72-73		25 E		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-183		P	73-78-79		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-184		P	78-79-80		AT T		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-185		P	79-80		23 E		3	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-186		P	78-80-81-82		AT T		6	4		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-187	1-046	P	78-R186		101 S		5	2		5171	JT	RKD	11/14/2009	HG	P	VT OK	RKD
11/14/2009	1-188	1-042	P	80-81		50 W		6	2		5171	JT	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-189		P	81-82-83-86		AT T		6	2		5171	JT	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-190		P	83-84-86		AT T		3	1		5171	JT	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-191		P	84-85-86		AT T		3	2		5171	JT	DWH	11/14/2009	HG	P	VT OK	DWH
11/14/2009	1-192	1-041	P	83-84		40 S		6	2		5171	JT	DWH	11/14/2009	HG	P	VT OK	DWH

SUB APPENDIX D-8

LABORATORY DESTRUCTIVE TEST RESULTS

November 14, 2009

Mail To:

Ms. Sheree Grant
Waste Management, Inc.

email: sgrant@wm.com
cc email: dschauer@geosyntec.com
ccemail: dhamilton@geosyntec.com
ccemail: mmalimar@hotmail.com

Bill To:

<= Same

Dear Ms. Grant:

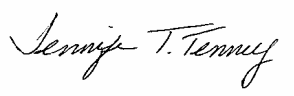
Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**Vista Landfill, Cell 2**
TRI Job Reference Number:	E2334-88-06
Material(s) Tested:	23 Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes	
AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

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

Sincerely,



Jennifer Tenney
Project Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-23**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	141	143	134	154	155	145	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	113	116	110	111	145	119	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	188	186	175	187	183	184	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-24**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	123	126	117	117	118	120	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	122	121	114	120	123	120	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	174	179	188	180	181	180	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-25**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	150	127	133	140	128	136	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	148	142	136	163	141	146	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	170	171	169	171	172	171	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-26**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	147	136	115	136	124	132	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	124	121	111	113	115	117	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	165	169	179	177	179	174	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-27**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	108	108	107	101	102	105	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	126	118	118	115	112	118	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	176	184	188	188	183	184	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-28**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	116	110	115	110	121	114	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	139	115	115	121	118	122	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	178	189	192	192	186	187	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-29**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	149	148	139	147	138	144	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	129	145	142	125	127	134	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	180	172	178	171	178	176	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-30**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	163	125	147	131	131	139	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	135	146	112	158	113	133	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	180	179	185	184	200	186	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

		TEST REPLICATE NUMBER						PROJ
PARAMETER		**1**	**2**	**3**	**4**	**5**	**MEAN**	**SPEC.**
Sample ID:	**DS-31**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	135	135	126	131	132	132	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	152	136	131	136	139	139	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	174	190	179	180	191	183	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-32**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	146	144	145	139	146	144	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	145	136	131	103	135	130	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	171	177	184	175	178	177	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
	Sample ID: DS-33							
	Weld: Heat Fusion							
Side A	Peel Strength (ppi)	142	124	139	131	133	Peel 134	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Side B	Peel Strength (ppi)	159	132	148	143	159	Peel 148	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
	Shear Strength (ppi)	193	187	192	189	187	Shear 190	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
	Sample ID: DS-34							
	Weld: Heat Fusion							
Side A	Peel Strength (ppi)	138	136	136	130	130	Peel 134	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
Side B	Peel Strength (ppi)	132	121	146	116	133	Peel 130	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
	Shear Strength (ppi)	193	196	208	202	190	Shear 198	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-35**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	128	129	122	122	120	124	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	149	141	128	125	129	134	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	196	195	194	197	195	195	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-36**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	130	139	136	127	130	132	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	133	129	144	115	123	129	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	187	191	198	197	197	194	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-37**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	140	135	129	123	130	131	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	161	139	151	131	134	143	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	197	207	209	197	202	202	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-38**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	137	130	149	129	144	138	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	131	127	119	135	141	131	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	192	198	197	194	198	196	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-39**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	145	134	134	135	138	137	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	131	124	117	131	119	124	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	176	177	182	180	179	179	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-40**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	147	138	143	143	140	142	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	165	162	153	155	153	158	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	180	185	177	181	175	180	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

		TEST REPLICATE NUMBER						
PARAMETER		**1**	**2**	**3**	**4**	**5**	**MEAN**	**PROJ SPEC.**
Sample ID:	**DS-41**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	137	124	140	126	141	134	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	148	140	141	148	138	143	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	189	189	193	192	198	192	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-42**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	145	136	134	153	138	141	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	143	137	130	143	117	134	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	197	186	192	190	190	191	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-43**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	166	155	161	154	168	161	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	150	146	135	142	145	144	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	179	182	186	189	190	185	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-44**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	150	154	145	145	148	148	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	146	122	154	130	147	140	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	181	185	186	183	192	185	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.

Project: Vista Landfill, Cell 2

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

TRI Log #: E2334-88-06

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
	Sample ID: **DS-45**							
	Weld: **Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	142	142	133	137	136	138	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	127	142	123	125	121	128	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	182	188	178	192	175	183	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

November 13, 2009

Mail To:

Ms. Sheree Grant
Waste Management, Inc.

email: sgrant@wm.com
cc email: dschauer@geosyntec.com
ccemail: dhamilton@geosyntec.com
ccemail: mmalimar@hotmail.com

Bill To:

<= Same

Dear Ms. Grant:

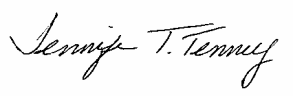
Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**Vista Landfill, Cell 2**
TRI Job Reference Number:	E2334-86-07
Material(s) Tested:	22 Heat Fusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes	
AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

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

Sincerely,



Jennifer Tenney
Project Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-1**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	161	136	153	149	147	149	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	122	117	136	154	141	134	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	173	176	172	172	173	173	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-2**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	130	138	126	131	123	130	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	118	116	120	122	154	126	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	166	169	170	173	167	169	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-3**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	145	152	154	149	139	148	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	142	143	141	147	136	142	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	178	178	180	180	182	180	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-4**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	151	134	134	134	141	139	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	163	133	144	154	140	147	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	182	181	178	181	177	180	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-5**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	141	158	157	144	137	147	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	161	156	134	138	139	146	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	189	187	187	185	187	187	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-6**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	150	137	137	142	138	141	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	133	132	120	124	132	128	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	179	169	179	175	190	178	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-7**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	150	149	137	139	134	142	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	145	145	150	143	150	147	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	180	178	177	178	175	178	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-8**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	140	140	124	129	130	133	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	161	161	153	146	142	153	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	170	172	170	172	172	171	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-9**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	167	142	129	155	158	150	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	145	142	142	134	153	143	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	174	174	187	168	171	175	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-10**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	167	169	145	156	144	156	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	125	113	120	130	122	122	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	178	177	174	172	173	175	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-11**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	175	159	160	165	161	164	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	159	143	159	150	145	151	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	202	193	190	189	190	193	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-12**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	137	118	133	134	129	130	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	123	123	118	120	120	121	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	179	178	180	180	177	179	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-13**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	153	150	140	165	145	151	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	133	126	119	119	120	123	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	173	170	172	173	173	172	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-14**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	126	134	116	120	129	125	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	136	140	129	141	141	137	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	161	158	158	157	159	159	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-15**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	118	130	118	133	121	124	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	137	136	129	110	107	124	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	165	157	161	161	162	161	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-16**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	141	133	138	133	130	135	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	120	113	127	113	115	118	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	167	152	164	152	177	162	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-17**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	149	133	132	134	128	135	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	146	126	148	134	128	136	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	179	173	176	182	183	179	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-18**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	170	154	160	156	166	161	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	149	149	145	150	158	150	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	161	174	157	166	167	165	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-19**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	124	146	115	163	123	134	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	125	123	116	130	115	122	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	190	192	186	185	192	189	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-20**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	152	141	135	143	150	144	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	164	156	115	152	158	149	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	189	196	188	188	198	192	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.
Project: Vista Landfill, Cell 2

Material: 60 mil HDPE
SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)
TRI Log #: E2334-86-07

	PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-21**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	143	143	126	121	121	131	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	124	124	116	116	112	118	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	176	184	180	179	176	179	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		
Sample ID:	**DS-22**							
Weld:	**Heat Fusion**							
							Peel	
Side A	Peel Strength (ppi)	163	148	150	151	147	152	91 min
Side A	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side A	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side A	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Peel	
Side B	Peel Strength (ppi)	158	117	151	115	156	139	91 min
Side B	Peel Incursion (%)	<10	<10	<10	<10	<10		
Side B	Peel Locus of Failure Code	SE	SE	SE	SE	SE		
Side B	Peel NSF Failure Code	FTB	FTB	FTB	FTB	FTB		
							Shear	
	Shear Strength (ppi)	175	178	187	181	183	181	120 min
	Shear Elongation @ Break (%)	>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

November 17, 2009

Mail To:

Ms. Sheree Grant
Waste Management, Inc.

email: sgrant@wm.com
cc email: dschauer@geosyntec.com
ccemail: dhamilton@geosyntec.com
ccemail: mmalimar@hotmail.com

Bill To:

<= Same

Dear Ms. Grant:

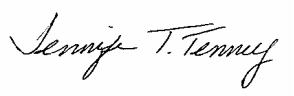
Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project:	**Vista Landfill, Cell 2**
TRI Job Reference Number:	E2334-91-07
Material(s) Tested:	1 Single Extrusion Weld Seam(s)
Test(s) Requested:	SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

Codes	
AD	Adhesion failure (100% Peel)
BRK	Break in sheeting away from Seam edge
SE	Break in sheeting at edge of seam
AD-BRK	Break in sheeting after some adhesion failure - partial peel
SIP	Separation in the plane of the sheet (leaving the bond intact)
FTB	Film tearing bond (all non "AD" failures)
NON-FTB	100% peel

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

Sincerely,



Jennifer Tenney
Project Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

DESTRUCTIVE SEAM QUALITY ASSURANCE TEST RESULTS

TRI Client: Waste Management, Inc.

Project: Vista Landfill, Cell 2

Material: 60 mil HDPE

SAME DAY Peel and Shear (ASTM D 6392/GRI GM19/D 4437/NSF 54)

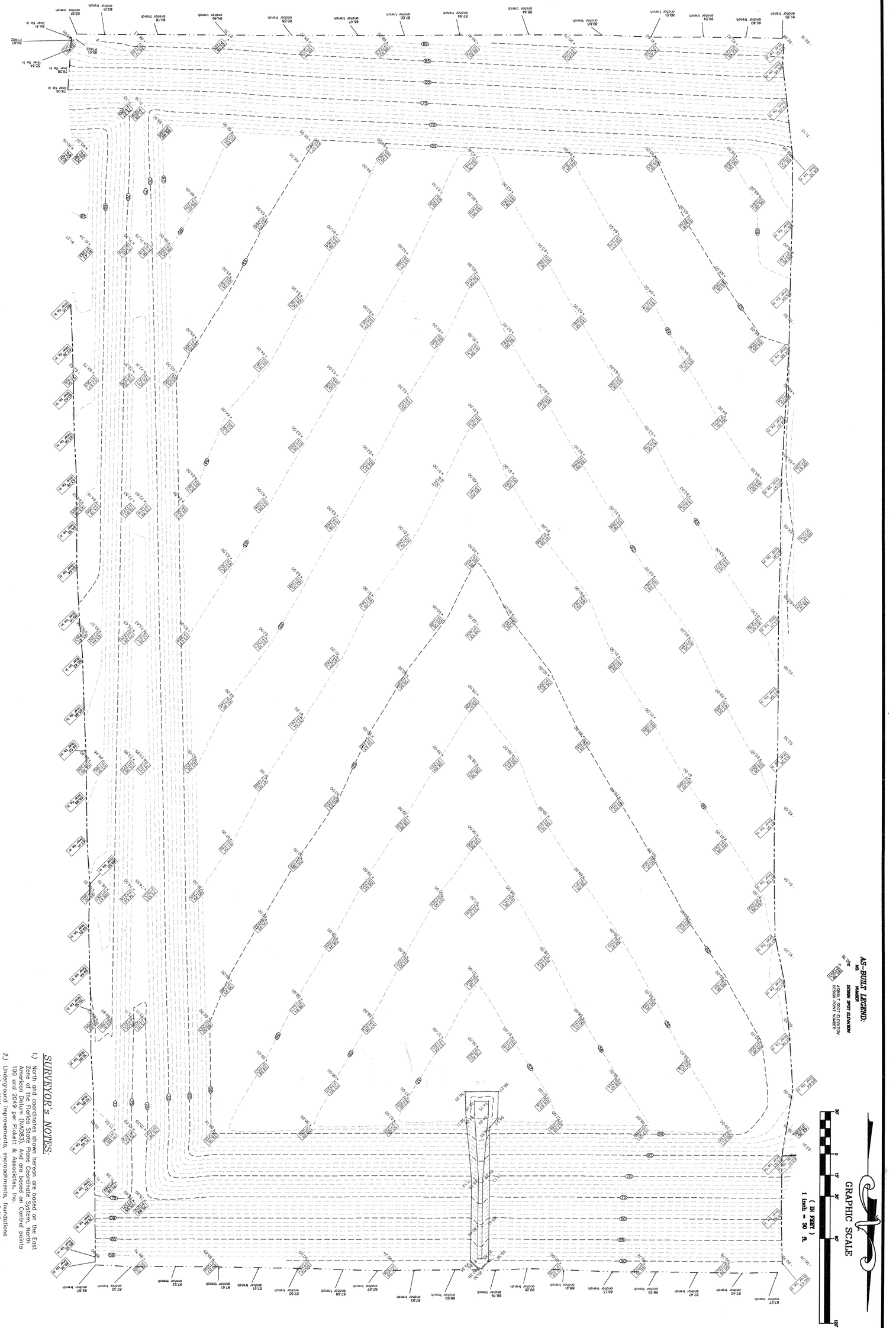
TRI Log #: E2334-91-07

PARAMETER		TEST REPLICATE NUMBER 1	2	3	4	5	MEAN	PROJ SPEC.
Sample ID:	**DS-46**							
Weld:	**Single Extrusion**							
							Peel	
Peel Strength (ppi)		135	141	124	109	116	125	78 min
Peel Incursion (%)		<10	<10	<10	<10	<10		
Peel Locus of Failure Code		SE	SE	SE	SE	SE		
Peel NSF Failure Code		FTB	FTB	FTB	FTB	FTB		
							Shear	
Shear Strength (ppi)		169	168	168	172	166	169	120 min
Shear Elongation @ Break (%)		>50	>50	>50	>50	>50		

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

APPENDIX E

AS-BUILT SURVEY – TOP OF SUBBASE
AS-BUILT SURVEY – TOP OF PIPE
AS-BUILT SURVEY – TOP OF FINAL COVER
GEOMEMBRANE PANEL RECORD DRAWING



SURVEYOR's NOTES:

1) North and coordinates shown hereon are based on the East Zone of the Florida State Plane Coordinate System, North American Datum (NAD83), And are based on Control points 100 and 2049 per Pickett & Associates, Inc.
2) Underground improvements, encroachments, foundations and/or utilities were not located as a part of this survey.
3) This survey is valid only if print has original signature and seal. Information only and is not a certification of correctness.
4) Vertical information depicted on this survey is based on Control points 100 and 2049 per Pickett & Associates, Inc. and is National Geodetic Vertical Datum of 1929(NGVD29).
5) This asbuilt survey was performed on the following dates: 11/5/2009-12/14/2009

ASBUILT SURVEY OF SUBGRADE
VISTA - CELL 2
KEENE ROAD RECYCLING AND DISPOSAL FACILITY LOCATED IN APOPKA, FL

CLIENT:

ERC GENERAL CONTRACTOR
890 Carter Road Suite 170
Winter Garden, Fl 34787

INVISIONS
SURVEYING & MAPPING, INC.
850 EAST LEMON STREET
BARTOW, FL 33830
PHONE: 863-738-4960

Drawn By:	DLP
Party Chief:	DR
Field Book:	18
Page:	2-26

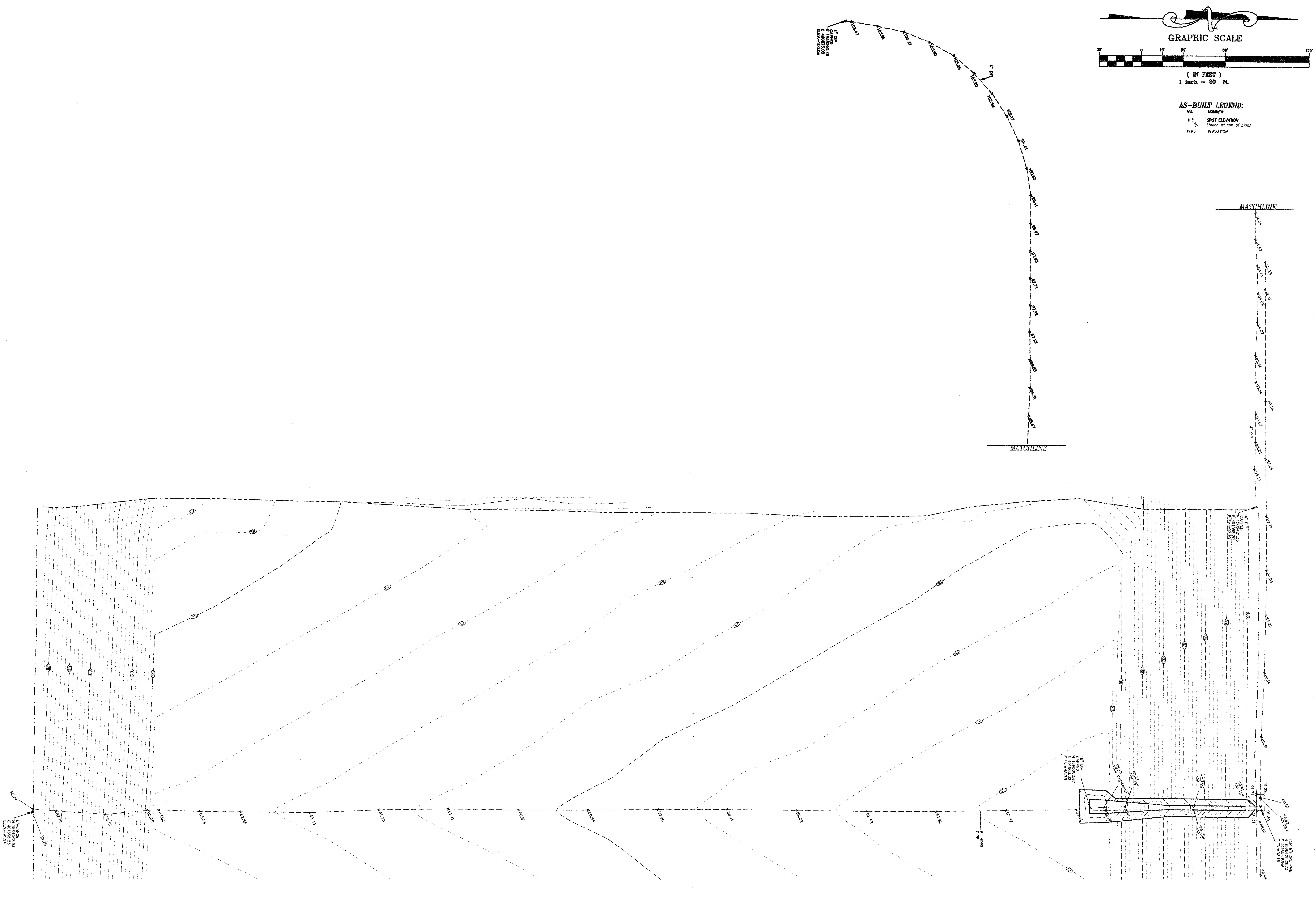
THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

FILE NAME: 109-erc-vista.dwg

NO.	DATE	REVISION

SCALE	1"=30'
PROJECT NO.	109
SHEET	1 OF 3
DRAWING NO.	147

JOHN F. PEARCE
REGISTERED SURVEYOR & MAPPER
CERTIFICATE NO. 5247
STATE OF FLORIDA



NO.	DATE	REVISION

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

FILE NAME: 109-erc-vista-pipe.dwg

Drawn By: DLP
Party Chief: DR
Field Book: 18
Page: 2-26

INVISIONS

SURVEYING & MAPPING, INC.

850 EAST LEMON STREET
BARTOW, FL 33830
PHONE: 863-738-4960

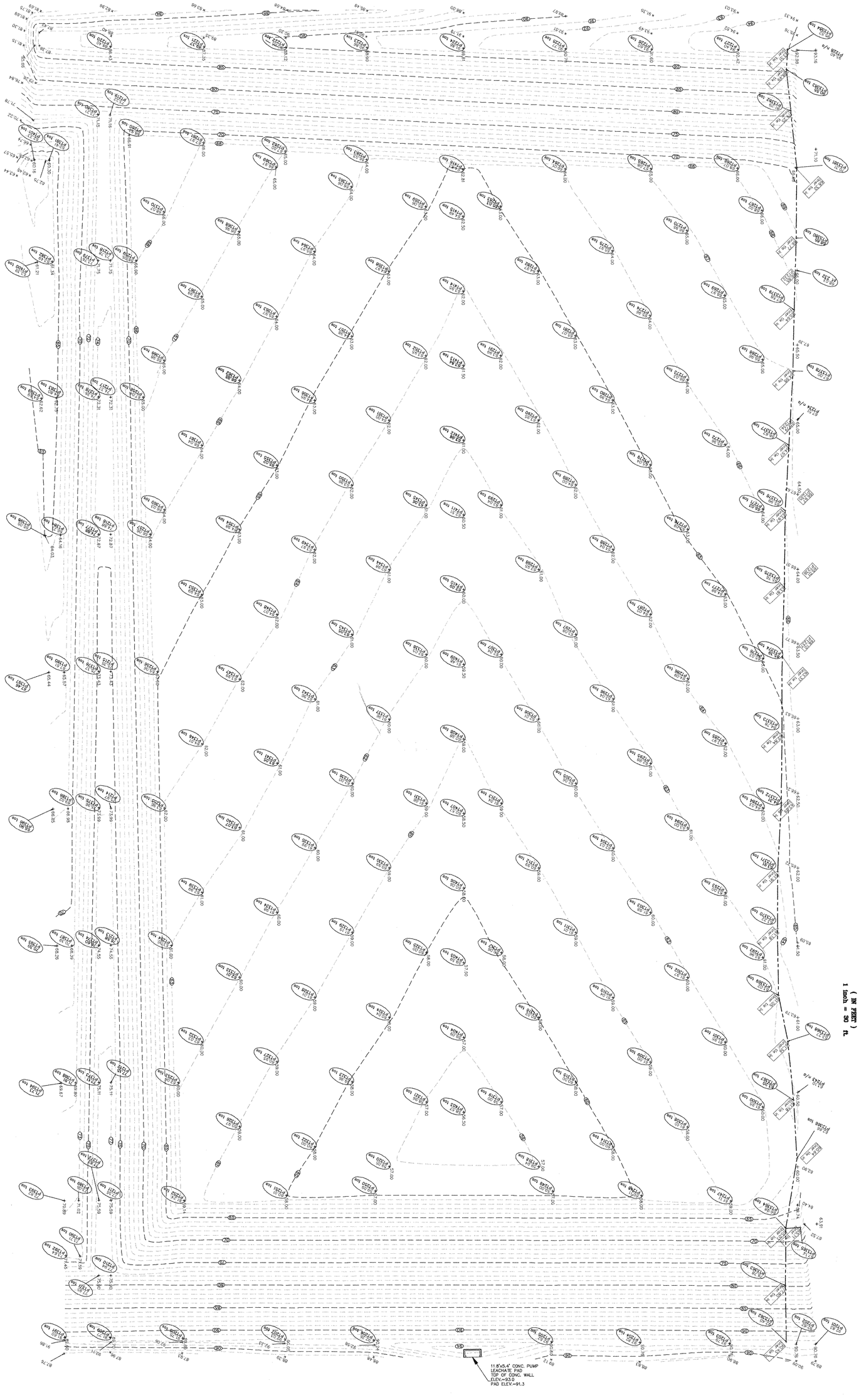
CLIENT:

ERC GENERAL CONTRACTOR
890 Carter Road Suite 170
Winter Garden, Fl 34787

ASBUILT SURVEY OF PIPE VISTA - CELL 2 KEENE ROAD RECYCLING AND DISPOSAL FACILITY LOCATED IN APOPKA, FL

DEBORAH L. PEAVEY P.S.M.
FLORIDA REGISTRATION NUMBER 5345
FLORIDA BUSINESS NUMBER 7720

SCALE	DRAWING NO.
1"=30'	147
PROJECT NO.	SHEET
109	2 OF 3



GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

AS-BUILT LEGEND:
PROP. TOE
PROP. TOP
DESIGN SPOT ELEVATION
ASBUILT SPOT ELEVATION
DESIGN POINT NUMBER
top of bank

ASBUILT SURVEY OF FINAL COVER
VISTA - CELL 2
KEENE ROAD RECYCLING AND DISPOSAL FACILITY LOCATED IN APOPKA, FL

CLIENT:
ERC GENERAL CONTRACTOR
890 Carter Road Suite 170
Winter Garden, Fl 34787

INVISIONS
SURVEYING & MAPPING, INC.
850 EAST LEMON STREET
BARTOW, FL 33830
PHONE: 863-738-4960

Drawn By:	DLP
Party Chief:	DR
Field Book:	18
Page:	2-26

THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

FILE NAME: 109-erc-vista-FINAL COVER

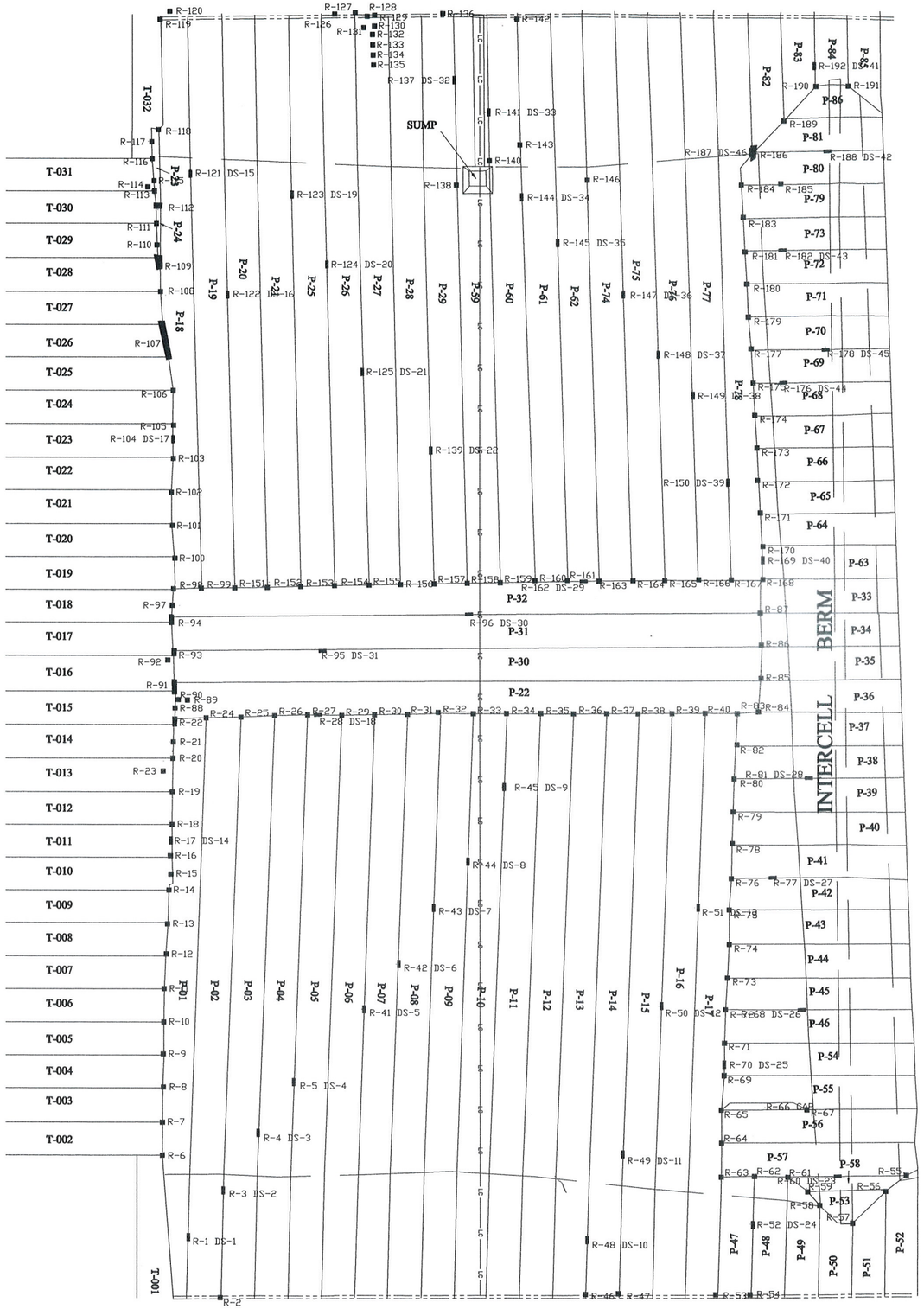
NO.	DATE	REVISION

PROJECT NO.	109
SCALE:	1"=30'
DRAWING NO.	147
SHEET	3 OF 3

STEPHEN L. LEPESHKA, P.S.M.
PROFESSIONAL SURVEYOR & MAPPER
LICENSE NUMBER 5749
STATE OF FLORIDA

EXISTING CELL 1

FUTURE CELL 3



LEGEND

- SEAM
- CREST AND TOE OF SLOPE
- ANCHOR TRENCH
- LC LC LEACHATE COLLECTION PIPE
- R-31 REPAIR NUMBER
- DS-18 DESTRUCTIVE SAMPLE NUMBER
- P-231 PANEL NUMBER

REV	DATE	DESCRIPTION	DRN	APP
0				

Geosyntec consultants
5901 BROKEN SOUND PKWY., SUITE 300
BOCA RATON, FLORIDA 33487 USA
PH: 561.995.0900 - FAX: 561-995.0925

WASTE MANAGEMENT
243 WEST KEENE ROAD
APOPKA, FLORIDA 32703
PH: 407.886.2939

TITLE: GEOMEMBRANE RECORD DRAWING

PROJECT: CELL 2 CONSTRUCTION

SITE: VISTA CLASS III LANDFILL
APOPKA, FLORIDA

THIS DRAWING MAY NOT BE ISSUED FOR PROJECT TENDER OR CONSTRUCTION, UNLESS SEALED

Juan D. Quiroz
SIGNATURE
23 Dec. 2009
DATE

JUAN D. QUIROZ, PE-LICENSE NO.65275

DESIGN BY:	---	DATE:	23 DECEMBER 2009
DRAWN BY:	RKD	PROJECT NO.:	FQ1767
CHECKED BY:	DWH	FILE:	VISTA AS-BUILT
REVIEWED BY:	DAS	DRAWING NO.:	1 OF 1
APPROVED BY:	JDQ		

G:\DRAWINGS AND SETTINGS\RLAPAN\ MY DOCUMENTS\VISTA AS-BUILT (23 December 2009 - 2:13 PM) Rlapan

Appendix F

Photographic Log

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Vista Landfill, LLC	Project Number: FQ1767
Site Name: Vista Class III Landfill Cell 2 Construction	Site Location: 242 West Keene Road Apopka, Florida 32703

Photograph 1	
Date: 7 November 2009	
Direction: South	
Comments: View of a Bobcat with smooth drum roller compacting the subgrade in southeast corner of cell.	

Photograph 2	
Date: 11 November 2009	
Direction: North	
Comments: View of ESI technicians deploying the 60-mil thick HDPE Microspike geomembrane along the south slope and southwest corner of cell. Note active Cell 1 on left side of photo.	

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Vista Landfill, LLC	Project Number: FQ1767
Site Name: Vista Class III Landfill Cell 2 Construction	Site Location: 242 West Keene Road Apopka, Florida 32703

Photograph 3	
Date: 11 November 2009	
Direction: N/A	
Comments: View of ESI Technician fusion welding a geomembrane seam.	

Photograph 4	
Date: 11 November 2009	
Direction: N/A	
Comments: View of air pressure testing being done on a completed fusion welded seam.	

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Vista Landfill, LLC	Project Number: FQ1767
Site Name: Vista Class III Landfill Cell 2 Construction	Site Location: 242 West Keene Road Apopka, Florida 32703

Photograph 5	
Date: 11 November 2009	
Direction: South	
Comments: View of the Geosynthetic Clay Liner (GCL) being installed in the leachate collection trench.	

Photograph 6	
Date: 14 November 2009	
Direction: West	
Comments: View of ESI Technician extrusion seaming a repair on the installed geomembrane.	

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Vista Landfill, LLC	Project Number: FQ1767
Site Name: Vista Class III Landfill Cell 2 Construction	Site Location: 242 West Keene Road Apopka, Florida 32703

Photograph 7	
Date: 14 November 2009	
Direction: North	
Comments: View of ESI Technician vacuum testing an extrusion seam.	

Photograph 8	
Date: 30 November 2009	
Direction: South	
Comments: View of protective cover soil placement activities within Cell 2.	