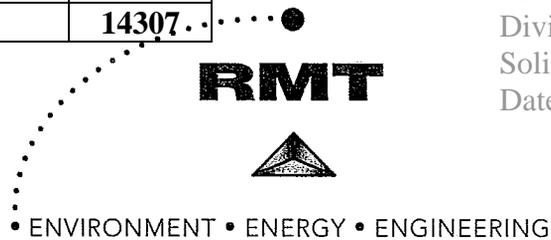


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Solid Waste Section
Date September 20, 2011 By LY Frost

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Asheville Regional Office



June 29, 2011

Mr. Larry Frost
North Carolina Department of Environment and Natural Resources
Division of Waste Management - Solid Waste Section
Asheville Regional Office
2090 U.S. Highway 70
Swannanoa, NC 28778

Subject: Domtar Paper Company, LLC (Domtar) - Landfill No. 3, Plymouth, NC
Phase 1A & 1B Closure – Construction Quality Assurance Report

Dear Mr. Frost:

As you are aware Domtar Paper Company, LLC (Domtar), Plymouth, NC initiated closure activities of Phase 1A and 1B of landfill No. 3 at the mill last October. The closure project was completed in January 2011. Enclosed are one hard copy and a CD of the *Landfill No.3 – Phase 1A & 1B Closure, Construction Quality Assurance Report* for your review and approval.

If you have any question or comment, please don't hesitate to contact me at 864-234-9462.

Sincerely,

RMT North Carolina, Inc.

A handwritten signature in black ink that reads 'Michael B. Parker'.

Michael B. Parker, P.E.
President and Project Manager

Attachments

cc: Bill Morris – Domtar Paper Company, LLC
Kari Cahoon – Domtar Paper Company, LLC
Todd Martin – RMT, Inc.
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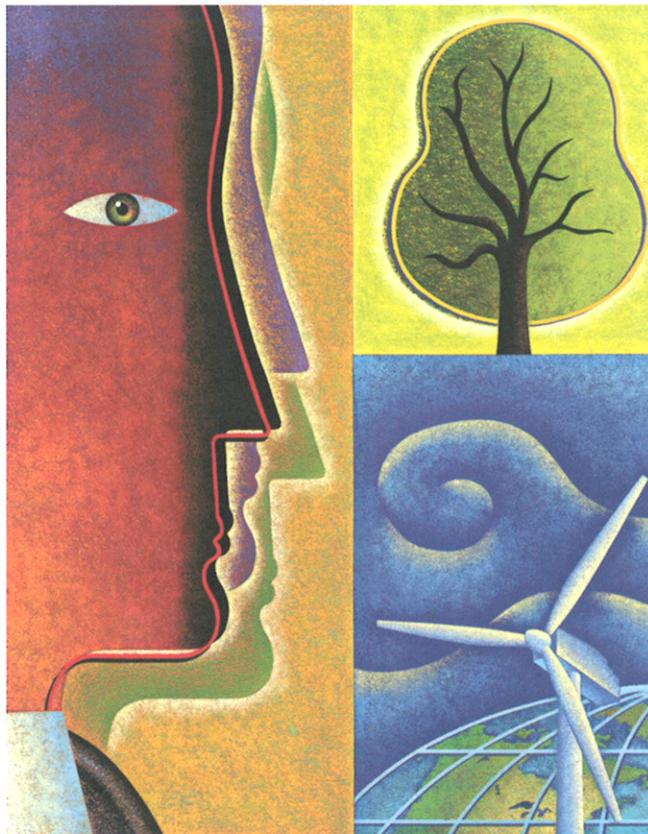
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Landfill No. 3 – Phase 1A & 1B Closure, Construction Quality Assurance Report

Domtar Paper Company, LLC
Plymouth, North Carolina

June 2011





Landfill No. 3 – Phase 1A & 1B Closure, Construction Quality Assurance Report

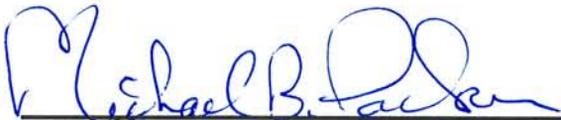
Domtar Paper Company, LLC
Plymouth, North Carolina

June 2011

Prepared For
Domtar Paper Company, LLC
Plymouth, North Carolina



RMT North Carolina, Inc., License No. F-0490


Michael B. Parker, P.E.
President and Project Manager


Todd Martin
Team Leader, Solid Waste


Nathan Braun
Construction Manager

RMT North Carolina, Inc. | Domtar Paper Company, LLC

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Plan Sheet 5	Final Grades
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Plan Sheet 11	Details
Plan Sheet 12	Details
Plan Sheet 13	Details

Project Summary

- Project name: Domtar Paper Company, LLC
Plymouth, North Carolina
Landfill No. 3 – Phase 1A & 1B Closure
Documentation Report
- Contractors: Ryan Central, Inc. – General Contractor
Chesapeake Containment Systems, Inc. –
Geomembrane Installer
Chance & Associates, Inc. - Surveyor
- Construction quality assurance: RMT North Carolina, Inc.
- Soil testing laboratory: RMT, Inc.
- Construction start: October 2010
- Construction substantial completion: December 2010
- Area constructed: Approximately 13 acres of final cover
- Grading select ash layer: October 11, 2010 – October 20, 2010
- 40-mil LLDPE Installation:
 - Placement dates: October 21, 2010 – November 11, 2010
 - Quantity: Approximately 578,000 square feet
- Geosynthetic Clay Liner:
 - Placement dates: October 21, 2010 – November 11, 2010
 - Quantity: Approximately 578,000 square feet
- Drainage Geocomposite:
 - Placement dates: October 31, 2010 – November 19, 2010
 - Quantity: Approximately 578,000 square feet

- General Fill – Rooting Zone:
 - Placement dates: November 1, 2010 – December 4, 2010
 - Quantity: Approximately 22,600 cubic yards

- Topsoil:
 - Placement dates: December 4, 2010 – December 17, 2010
 - Quantity: Approximately 11,300 cubic yards

Section 1 Certifications

1.1 Certification

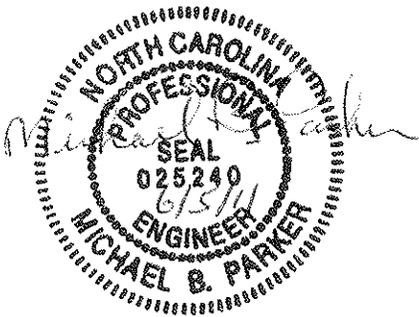
I, Michael B. Parker, certify that, to the best of my knowledge, information, and
Michael B. Parker

belief, the Landfill No. 3 Phase 1A and 1B final cover was constructed in substantial conformance with the approved construction plan application (CPA), the requirements of Subchapter 13B of the 15 NCAC, and standard engineering practices. This certification may not be construed to be either an implied or express guarantee or warranty regarding the performance of the construction documented in this report.

This certification is based on personal observations, photographs, and the daily construction reports.

1.2 Conclusions and Recommendations

On the basis of RMT's construction observations, soil testing, and record surveys, Landfill No. 3 Phase 1A and 1B final cover construction activities have been performed in substantial conformance with the project plans and specifications and the requirements established by the North Carolina Department of Environment and Natural Resources (NCDENR). Therefore, it is recommended that Phase 1A and 1B final cover construction at the Domtar Paper Company, LLC Landfill be approved.



Section 2

Introduction

2.1 Project Background

The Domtar Paper Company, LLC (Domtar [formerly the Weyerhaeuser Company]) facility in Plymouth, North Carolina, consists of an integrated kraft process pulp mill. Solid wastes generated by facility operations are disposed of in a state-permitted, on-site landfill (Landfill No. 3). On May 16, 2000, North Carolina Department of Environment and Natural Resources (NCDENR) issued a Permit-To-Construct, No. 94-01, for Phase 1A of Landfill No. 3. In December 2000, NCDENR granted approval to operate Phase 1A of Landfill No. 3. In December 2003, NCDENR granted approval to operate Phase 1B and 2 of Landfill No. 3.

This report documents the closure of Phases 1A and 1B in Landfill No. 3.

Construction observation, documentation services, geomembrane destructive testing and laboratory soil testing were performed by RMT. Chance & Associates, Inc. (CAI) of New Bern, North Carolina, performed the surveying.

An RMT representative was on-site full-time during the following construction events:

- Observation of the finished top of subbase select ash
- Installation of the Geosynthetic Clay Liner (GCL)
- Installation of the 40-mil LLDPE geomembrane
- Installation of the drainage geocomposite
- Placement of the general fill rooting zone layer
- Placement of the topsoil layer
- Application of seed, fertilizer, and mulch
- Installation of the downslope flumes
- Installation of the toe drain collection and discharge pipes
- Tie-in of the final cover into the landfill perimeter berm
- Observation of survey documentation performed by the surveyor

Upon completion of these items, RMT documented that they were constructed in substantial conformance with the project plans and specifications.

2.2 Purpose and Scope

This Report and its accompanying plan set detail RMT's construction observation that was conducted during the Domtar Landfill No. 3 Phase 1A & 1B final cover construction. The survey data document RMT's findings and compare record drawings with the Phase 1A & 1B final cover construction plans and project specifications; address the requirements of NCDENR approval letters and the Erosion Control and Sedimentation Plan.

The scope of this Report includes documentation of the following construction activities:

- Subbase select ash preparation and earthwork
- GCL
- 40-mil LLDPE geomembrane
- Drainage geocomposite
- General fill rooting zone layer
- Topsoil vegetation layer
- Downslope flumes
- Toe drain collection and discharge pipes
- Seed, fertilizer, and mulch

The following items were used in preparing this Report:

- Daily construction observation reports
- Project plans and specifications
- Construction photographs (Appendix B)
- Field/Laboratory testing results (Appendix I and Table 2)
- Manufacturers' information (Appendix C)

Section 3

Construction Roles and Responsibilities

The names and addresses of the companies who performed the tasks and carried out the roles and responsibilities are as follows:

ROLE/RESPONSIBILITY	COMPANY
Owner/Operator	Domtar Paper Company, LLC. P.O. Box 747 Highway 149 North Plymouth, NC 27962
Project Manager	RMT North Carolina, Inc. 744 Heartland Trail Madison, WI 53717
Construction Manager	RMT North Carolina, Inc. 744 Heartland Trail Madison, WI 53717
Construction general contractor	Ryan Central, Inc. 2700 East Racine Street Racine, WI 53545
Soil testing laboratory	RMT, Inc. 744 Heartland Trail Madison, WI 53717
Survey documentation	Chance & Associates, Inc. 201 East Camp Kiro Road New Bern, NC 28560
GCL, geomembrane, and drainage geocomposite installation	Chesapeake Containment Systems, Inc. 352 Earls Road Middle River, MD 21220

Section 4

Site Survey and Construction Control

The record surveys were performed by Chance & Associates, Inc (CAI). CAI currently provides Domtar with surveying services for landfill operations, and thus was familiar with the site and site control. Existing control points were used to establish the site grid (see Plan Sheet 2). The construction items documented included the following:

- Top of select ash grades on a maximum 50-foot grid pattern, on select contour intervals and at key locations.
- Geomembrane seams, panel corners, and repairs.
- Invert locations & elevations of miscellaneous HDPE piping.
- Top of final cover on a maximum 50-foot grid pattern on select contour intervals and at key locations.

Section 5

Preparation for Top of Subbase Select Ash

Subbase select ash preparation consisted of excavating and placing select ash in locations to obtain maximum slopes of 3(horizontal) to 1(vertical) and to establish drainage patterns consistent with the design. After grading commenced, it was determined that design grades would not be met without moving significant amounts of select ash. Upon raising concerns that the select ash layer may be compromised and angular waste may be exposed to reach design subgrade, Domtar consulted with NCDENR. Domtar proposed that only enough select ash would be relocated to obtain 3(horizontal) to 1(vertical) (maximum) slopes and to establish drainage benches that would be constructed consistent with the details of the construction drawings. Domtar's proposed approach altered the top of select ash grades, but not the general drainage patterns of the Phase 1A and 1B final cover. NCDENR provided verbal approval of this design change on October 4, 2010 (see Appendix A). A John Deere 450D hydraulic excavator and a Volvo A40E haul truck were used to load and haul excavated material. Caterpillar D6 dozers were used to place and fine-grade the top of the subbase (see Photographs 1 and 2 in Appendix B).

RMT observed the subbase select ash prior to the placement of the GCL and 40-mil LLDPE geomembrane. No unsuitable areas were identified.

Subbase grades were documented on a maximum 50-foot grid pattern, on select contour intervals, and at key locations by CAI using a total station (see Plan Sheet 3). These survey locations were determined in the field since the grades had been modified from the design.

Section 6

Geosynthetics

6.1 Introduction

The geosynthetic cover included a geosynthetic clay liner (GCL), a 40-mil-thick linear low density polyethylene (LLDPE) geomembrane (textured) and a drainage geocomposite for the Phase 1A and 1B Final Cover. The GCL, LLDPE geomembrane and drainage geocomposite was installed by Chesapeake Containment Systems, Inc (CCS). The GCL was manufactured by Colloid Environmental Technologies Company (CETCO) of Hoffman Estates, Illinois, the geomembrane was manufactured by Agru America, Inc., of Georgetown, South Carolina, and the drainage geocomposite was manufactured by SKAPS of Athens, Georgia. Placement of the GCL, geomembrane, and drainage geocomposite began on October 21, 2010 and was completed on November 19, 2010.

Appendix C contains the manufacturers' specifications for the GCL, geomembrane and drainage geocomposite. Appendix D contains the manufacturer's GCL, geomembrane and drainage geocomposite quality assurance certificates. Appendix F contains the copies of the completed geomembrane forms, which are referenced in conjunction with the daily construction reports. Appendix G contains the resumes of the CCS staff who installed the geomembrane.

6.2 Geomembrane Installation

The panel placement forms are included in Appendix F. Installation procedures are discussed below.

6.2.1 Top of Select Ash Preparation

Prior to the installation of the GCL & geomembrane, the top of select ash subgrade for the Phase 1A & 1B final cover was smooth drum-rolled and observed. The observation of the surface was performed for the presence of irregularities, protrusions, loose soil, and abrupt changes in grade, stones larger than ½ inch in diameter, grade stakes, construction debris, and excessively soft areas.

Stones and other debris were removed, and holes left by their removal were filled in with select ash. Tire tracks and other ruts were also repaired prior to placing the panels and the top of subbase select ash surface was again smooth drum-rolled. The GCL subbase was inspected by CCS and observed by RMT personnel just prior to

deployment of each panel, to confirm that the subbase surface was acceptable (see Photographs 3 and 4 in Appendix B). Appendix F contains the top of subbase select ash acceptance forms.

Top of subbase preparation also included excavating the toe drain collection trench along the outer edge of Phase 1A & 1B. See Subsection 9.2 for additional information.

6.2.2 Placement

GCL and geomembrane deployment began in the southeastern corner of Phase 1A and 1B, with the panels deployed on the final cover in a west-east direction. The GCL and geomembrane was suspended with a tracked vehicle equipped with a spreader bar and unrolled by CCS personnel (see Photographs 5 and 6 in Appendix B). GCL was usually deployed in the morning till about midday and then the geomembrane was deployed in the afternoon so that that the GCL deployed in the morning would be covered the same day and not left uncovered over night.

Care was taken during the placement of GCL and geomembrane so that no potentially damaging objects were placed directly on top of the GCL or geomembrane. As the GCL panels were placed, if defects were found they were patched and fixed right away. As the geomembrane panels were being placed and seamed, they were inspected for defects. Observed defects were marked for repair on the geomembrane and logged on panel repair forms, which are included in Appendix F. Observed defects were repaired and nondestructively tested. Panels were also periodically inspected for damage after the installation and seaming activities were completed just prior to the drainage composite installation. Geomembrane panel and repair locations are shown on Plan Sheet 8. The installed GCL and geomembrane is shown on Photographs 7 and 8 in Appendix B.

6.2.3 Seaming

The GCL panels when deployed were overlapped 6-inches to 9-inches on longitudinal seams and a minimum of 24-inches overlap at the panel end seams. The panels end seams had granular bentonite placed as recommended by the GCL manufacturer (see Photograph 9 in Appendix B). The geomembrane panels were seamed immediately after placement. The primary seaming method was dual hot wedge fusion. Extrusion welds were performed on caps, patches, repairs, and short seams. Typical field methods were followed in performing the seaming. Field seaming data are presented in Appendix F. Refer to Photographs 10, 11, and 12 in Appendix B for depiction of the seaming

methods. Generators that were used in the seaming process were set on geomembrane slip sheets to protect the 40-mil LLDPE (see photograph 13 in Appendix B).

6.2.4 Trial Seams

Trial welds were performed at the start of each day, and every 4 hours thereafter, for each fusion and extrusion welding machine by the seaming technician performing the welding. Additional trial welds were performed following work interruptions, weather delays, or as directed by the quality assurance personnel. Trial weld data are presented in Appendix F.

The trial welds were tested in the field for acceptable tensile strength. Appendix D includes the results of the field tensiometer calibration.

6.3 Geomembrane Testing

Geomembrane testing was performed both in the field and in the laboratory. Nondestructive testing was performed in the field, while the destructive testing was performed in the field by CCS and in the laboratory by RMT. Table 1 provides a summary of the required and actual number of tests performed on the geomembrane.

6.3.1 Conformance Testing

Thirty nine geomembrane rolls were delivered to the site to be used for Phase 1A and 1B construction (578,000 square feet). The geomembrane rolls contained two batches of material (see the geosynthetic material inventory form contained in Appendix F). Geomembrane conformance testing was performed by TRI.

Geomembrane thicknesses on the thirty nine textured geomembrane rolls were measured by TRI in 10 locations on each of the rolls. Appendix H contain the thickness results, which are also included on the Geosynthetic Material Inventory Form in Appendix F.

A shear test was conducted for the select ash vs. GCL, GCL vs. geomembrane, geomembrane vs. geocomposite, and geocomposite vs. general fill interfaces in accordance with ASTM Method D5321. Refer to Appendix H for the geosynthetic tension calculations.

6.3.2 Nondestructive Testing

Each geomembrane seam was nondestructively tested in the field. Nondestructive tests consisted of air pressure–testing the fusion welded seams and vacuum box–testing the

extrusion-welded seams, repairs, and capped seams. Nondestructive testing methods are shown on Photographs 14 and 15 in Appendix B. Appendix F contains the nondestructive seam testing documentation.

6.3.3 Destructive Testing

Destructive seam samples were obtained for field and laboratory testing. The destructive samples were obtained by CCS at locations selected by RMT.

Destructive samples were taken at a minimum of one test per 500 linear feet of seam. Appendix H contains the acceptance criteria for destructive testing. The destructive samples were tested in the field by CCS with the field tensiometer for both peel and shear. The results of these field tests are provided on a Destructive Testing form in Appendix H. Three samples were tested for peel and one for shear in the field, while five samples were tested for both peel and shear in the laboratory. Appendix H contains the laboratory test results. The destructive testing locations are shown on Plan Sheet 8. After the destructive samples were collected, the geomembrane was repaired with patches and nondestructively tested at the destructive sample locations. A total of 57 destructive samples were obtained in the field.

6.3.4 Drainage Geocomposite

The drainage geocomposite was installed after all the non-destructive testing and destructive testing was completed on a section of 40-mil LLDPE. The drainage composite was deployed in a manner so there were no horizontal seams on slopes steeper than 5H: 1V (see Photograph 16 in Appendix B).

Section 7

General Fill Rooting Zone Layer

The rooting zone layer consists of a 1.0-foot-thick layer of general fill material (see Detail 1 on Plan Sheet 10). Before the general fill material was placed, the 4-inch-diameter corrugated perforated drainage pipe was installed on the drainage benches (see Details 2 and 5 of 10). The locations of the discharge pipes to the lower drainage benches can be found on Plan Sheet 6. Placement of the general fill began on November 1, 2010, and was completed on December 4, 2010.

General fill material was taken from the borrow area to be used for the landfill final cover (see Plan Sheet 3). The borrow area was used in accordance with the Erosion and Sedimentation Control Plan (RMT, 2010). A John Deere 450D hydraulic excavator was used to load Volvo A40E haul trucks for hauling the general fill material to the Phase 1A & 1B final cover area (see Photographs 17, 18, and 19 in Appendix B). The general fill rooting zone layer material was end-dumped from hauling trucks, and Caterpillar D6 dozers were used to place the material to a minimum 1.0-foot thickness using GPS on the dozers along with cones that had a 1.0 foot depth marked on them.

Section 8 Topsoil Layer

After completion of the general fill rooting zone, the 6-inch-thick layer of topsoil was placed starting on December 4, 2010, and was substantially completed on December 17, 2010. Topsoil was taken from an existing stockpile located on-site. A John Deere 450D hydraulic excavator was used to load the Volvo A40E haul trucks to haul the topsoil to the top of the landfill, where it was placed and graded by Caterpillar D6 dozers to the proper thickness and design grades (see Photographs 20 and 21 in Appendix B).

The thickness of the Phase 1A and 1B final cover was documented by surveying the subbase locations and top of final cover on cross sections, spaced 50 feet apart, by CAI. Digital surfaces of the subbase grades and final grades were created and then an isopach comparing the difference between the two surfaces was generated. The results of the isopach are shown on Plan Sheet 5 as numbers indicating cover soil thickness in feet (i.e., 1.7F). The isopach shows that the minimum thickness of 1.5 feet was met. Topsoil thickness was measured by hand digging test pits at random locations to check the minimum 6-inch thickness.

Section 9

Miscellaneous Construction Activities

9.1 Extension of Leachate Collection Line Cleanouts

Ryan extended leachate collection line cleanouts on the western & eastern sides of Phase 1A & Phase 1B. The leachate collection line cleanouts were extended on December 11, 2010. The leachate collection lines were extended by welding an additional piece of HDPE pipe onto the existing HDPE cleanouts. Two steel pipe bollards filled with concrete and painted safety yellow were installed to protect the cleanouts (see Photograph 22 in Appendix B).

9.2 Installation of Toe Drain Collection and Discharge Pipes

A toe drain collection pipe was installed at the bottom of the slope on the inside edge of the outer drainage ditch of Phase 1A and 1B. The 40-mil LLDPE was placed across the trench when installed. A geotextile cushion was then placed over the toe drain collection trench to protect the 40-mil LLDPE from the toe drain bedding stone. The bedding stone was placed at the bottom of the trench, and the 4-inch-diameter corrugated HDPE (smooth interior) perforated pipe was installed on top of the stone. Appendix C contains the manufacturer's product information. The trench was backfilled with the bedding stone; and once the trench was backfilled, the geotextile cushion was wrapped over the bedding stone to keep the general fill from infiltrating into the bedding stone (see Detail 4 on Plan Sheet 10). The toe drain discharge pipes were installed approximately every 200 feet along the perimeter of the final cover (see Detail 3 on Plan Sheet 10). The toe drain collection pipe sloped down to the perimeter drainage ditch. At each discharge pipe location, a granular bentonite seal was placed (see Photograph 23 in Appendix B). A rodent screen was installed on each of the 14 discharge pipes to keep wildlife from going into the pipes. A select aggregate fill apron was installed below the discharge pipe to control erosion of the perimeter drainage ditch (see Photograph 24 in Appendix B).

9.3 Surface Gas Venting System

A surface gas venting system was installed at the crest of the Phase 1A & 1B final cover system. 4-inch-diameter (SDR 17) perforated HDPE pipe was placed in a 3-foot by 3-foot trench that was lined in geotextile and filled with select aggregate fill (see Detail 1 of 11). Nine vertical gas vents were installed to vent gas to the atmosphere (see Plan Sheet 5) and (Photograph 25 in Appendix B).

9.4 Downslope Flumes & Energy Dissipater

The downslope flumes and energy dissipater on the northern end of the final cover were constructed according to Details 2 and 3 on Plan Sheet 12; and Details 1, 2, and 3 on Plan Sheet 13 (see Photographs 26, 27, and 28 in Appendix B). See Appendix A for correspondence to NCDENR.

9.5 Application of Seed, Fertilizer, and Mulch

Following placement of the topsoil, final landscaping was completed by a subcontractor (General Maintenance, Inc.) of Ryan, Inc. The topsoil was raked and dragged, followed by application of the seed and fertilizer using a broadcast spreader. For an area covering approximately 13 acres, a permanent seed mixture of Kentucky (31) Tall Fescue, Common Bermuda Grass, Annual Ryegrass, and Crimson Clover was utilized.

General Maintenance, Inc., also applied 10-10-10 fertilizer according to the specifications. See Appendix C for more information.

9.6 TRM and ECRM

Following placement of the seed, fertilizer, and mulch, Turf Reinforcement Mat (TRM) and Erosion Control and Revegetation Mat (ECRM) was installed in the locations as indicated on Plan Sheet 5 and Details 2 and 3 on Plan Sheet 10. Appendix C contains the manufacturer's specifications for the TRM and ECRM. See Photographs 31 and 32 in Appendix B for the installed TRM and ECRM.

9.7 Drainage Bench/Drainage Layer Discharge

Following placement of the drainage geocomposite, a 4-inch-diameter perforated ADS polyethylene drainage pipe was installed on the drainage benches. In addition, four drainage layer discharge locations were installed as shown on Plan Sheet 6 (see Details 2 and 5 on Plan Sheet 10). Table 2 shows a summary of the laboratory testing results for the select aggregate fill used. The discharge locations will drain any surface water that infiltrates in the final cover, reaches the geomembrane, and collects in the perforated pipe on the drainage benches. See Photographs 33 and 34 in Appendix B. See Appendix A for correspondence to NCDENR.

Table 1
Testing Frequency Summary
Domtar Paper Company, LLC
Landfill No. 3 - Phase 1A & 1B Closure Construction
Plymouth, North Carolina

TEST	REQUIRED TEST FREQUENCY ⁽¹⁾	MATERIAL QUANTITY ⁽²⁾	REQUIRED NUMBER OF TESTS	NUMBER OF TESTS PERFORMED
Select Aggregate Fill				
Grain-Size Analysis	1 every 1,000 linear foot placed	7,100 LF	8	8
Remolded Constant Head Hydraulic Conductivity	1 every 2,000 linear foot placed	7,100 LF	4	4
Geomembrane				
Thickness	10 per roll	39 rolls	390	400
Laboratory Peel and Shear Strength	1 per 500 ft of seam	27,780 LF	56	57
GCL				
Mass/Unit Area (ASTM D5993)	1 per 100,000 sf	637,000	7	7
Bentonite-Fluid Loss (ASTM D5891)	1 per 100,000 sf	637,000	7	7
Bentonite-Swell Index (ASTM D5890)	1 per 100,000 sf	637,000	7	7
Index Flux (ASTM 5887)	1 per 100,000 sf	637,000	7	7

1. Based on project specifications.

2. Based on in-place quantities, except for geomembrane quantities, which are based on material delivered to the site.

Created By: N. Braun, 11/22/10

Checked By: S. Inman, 5/18/11

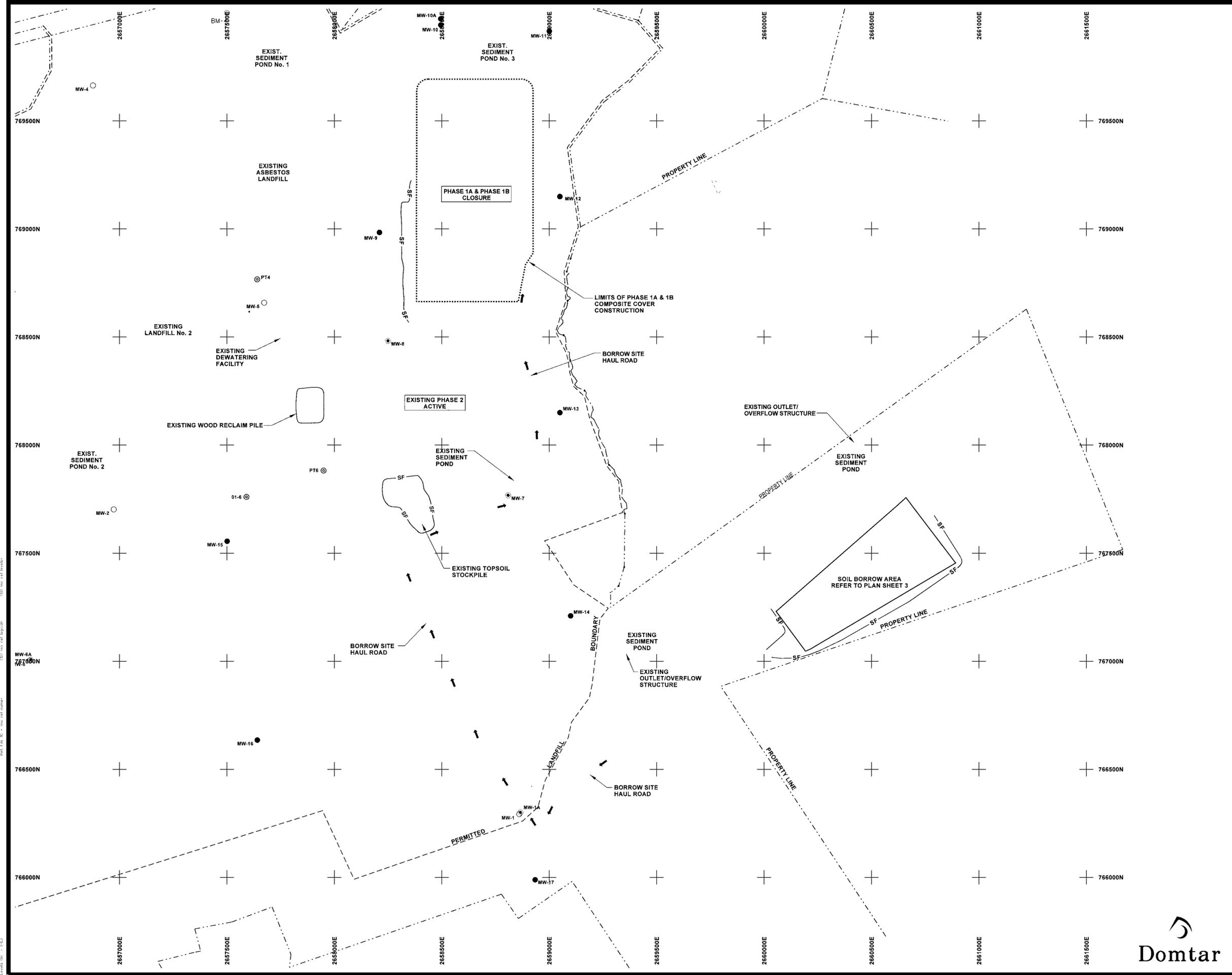
Table 2
 Summary of Select Aggregate Material Laboratory Test Results
 Domtar Paper Company, LLC
 Landfill No. 3 - Phase 1A & 1B Closure Construction
 Plymouth, North Carolina

REFERENCE NO.	NORTHING	EASTING	P1 (%)	P0.75 (%)	P#8 (%)	Cu (%)	UNIFIED SOIL CLASSIFICATION	HYDRAULIC CONDUCTIVITY (cm/sec)	COMMENTS
Select Aggregate Fill									
1	769200	2658650	100	92.9	3.2	1.96	GP	8.4	Minimum of at least 1 cm/s
2	769400	2658900	100	98.4	6.9	3.36	GP	8.9	Minimum of at least 1 cm/s
3	769400	2658800	100	95.6	3.8	2.21	GP	--	Minimum of at least 1 cm/s
4	768800	2658400	100	97.1	3.3	1.83	GP	--	Minimum of at least 1 cm/s
5	769200	2658450	100	98.8	3.8	2.71	GP	--	Minimum of at least 1 cm/s
6	769050	2658500	100	98.3	3.5	2.11	GP	9.7	Minimum of at least 1 cm/s
7	769400	2658575	100	96.6	2.6	1.8	GP		Minimum of at least 1 cm/s
8	769600	2658800	100	94.5	3.0	1.96	GP	9.0	Minimum of at least 1 cm/s

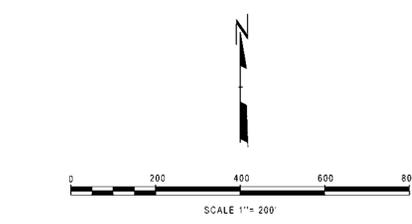
By: Nathan Braun, 11/22/10

Checked By: E. Mergen, 3/7/11

NOTES
 1. REFER TO PLAN SHEET 1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.



HORIZONTAL/VERTICAL CONTROL POINTS			
POINT I.D.	NORTH COORDINATE	EAST COORDINATE	COMMENT
PT4	768785.97	2657640.89	IRS CAP - ELEV. 37.28 MSL
PT6	767882.15	2657950.26	IRS CAP - ELEV. 42.10 MSL
01-6	767755.89	2657590.77	ELEV. 59.00 MSL



NOTE: THESE PLANS ARE ACCOMPANIED BY A DOCUMENTATION REPORT OF THE SAME TITLE. THESE DOCUMENTS ARE INTERRELATED AND ARE INTENDED TO BE USED TOGETHER.

NO.	BY	DATE	REVISION	APP'D.
3.				
2.				
1.				

PROJECT: **LANDFILL No. 3 - PHASE 1A & 1B CLOSURE**
 DOCUMENTATION REPORT
 DOMTAR PAPER COMPANY, LLC
 PLYMOUTH, NORTH CAROLINA

SHEET TITLE:
EXISTING CONDITIONS MAP AND SITE LAYOUT

DRAWN BY: stormer	SCALE: 1"=200'	PROJ. NO. 05794.46.001
CHECKED BY: NFB	DATE PRINTED:	FILE NO. EXISTING FLT
APPROVED BY: TWM	DATE: JUNE 2011	SHEET 2 OF 13



RMT NORTH CAROLINA, INC.
 LICENSE NO. F-0490

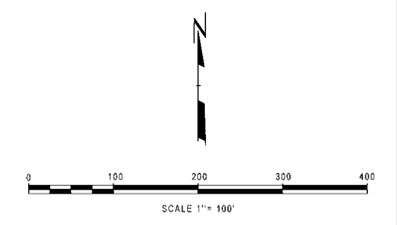
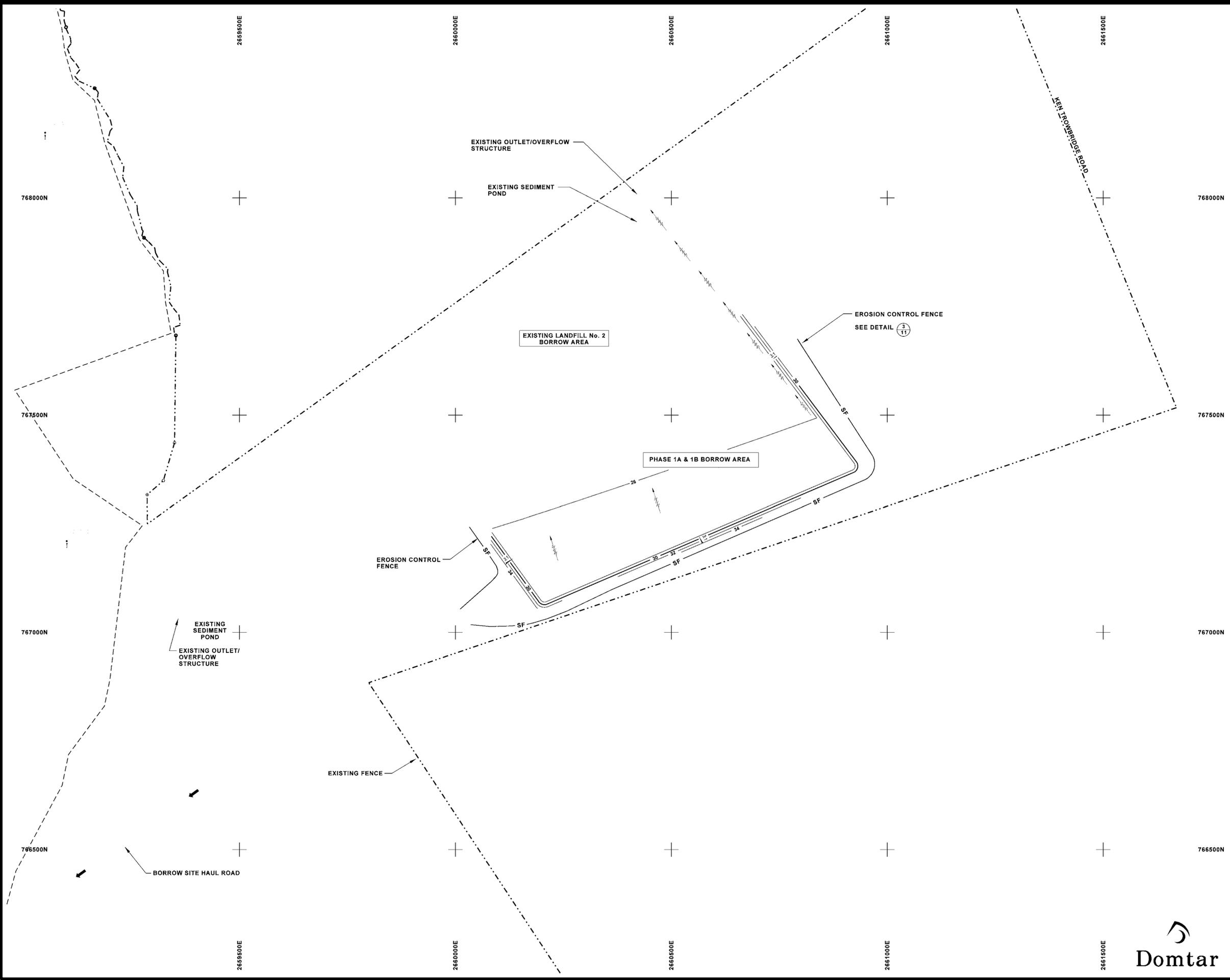
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 Ref. File 9 - J:\05794\48\Documentation\Report\isting.rvt
 Ref. File 10 - J:\05794\48\Documentation\Report\isting.rvt

Levels:
 01-6 - 59.00 MSL
 PT-4 - 37.28 MSL
 PT-6 - 42.10 MSL

Logical Names:
 01-6 - 59.00 MSL
 PT-4 - 37.28 MSL
 PT-6 - 42.10 MSL

Plot Data:
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 Plot File: J:\05794\48\Documentation\Report\isting.rvt
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 Plot Scale: 1"=200'
 Plot Date: 06/20/2011 11:24:02 AM

NOTES
 1. REFER TO PLAN SHEET 1 FOR STANDARD LEGEND, ABBREVIATIONS AND GENERAL NOTES.



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 Ref File 8 - J:\05794\48\Documentation\Report\borrow.plt
 Ref File 9 - J:\05794\48\Documentation\Report\borrow.plt
 Ref File 10 - J:\05794\48\Documentation\Report\borrow.plt

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Plot Data:
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 Plot Date: 06/01/2011
 Plot Time: 11:24:45 AM
 Plot User: jmc
 Plot Path: J:\05794\48\Documentation\Report\borrow.plt

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PROJECT: **LANDFILL No. 3 - PHASE 1A & 1B CLOSURE**
 DOCUMENTATION REPORT
 DOMTAR PAPER COMPANY, LLC
 PLYMOUTH, NORTH CAROLINA

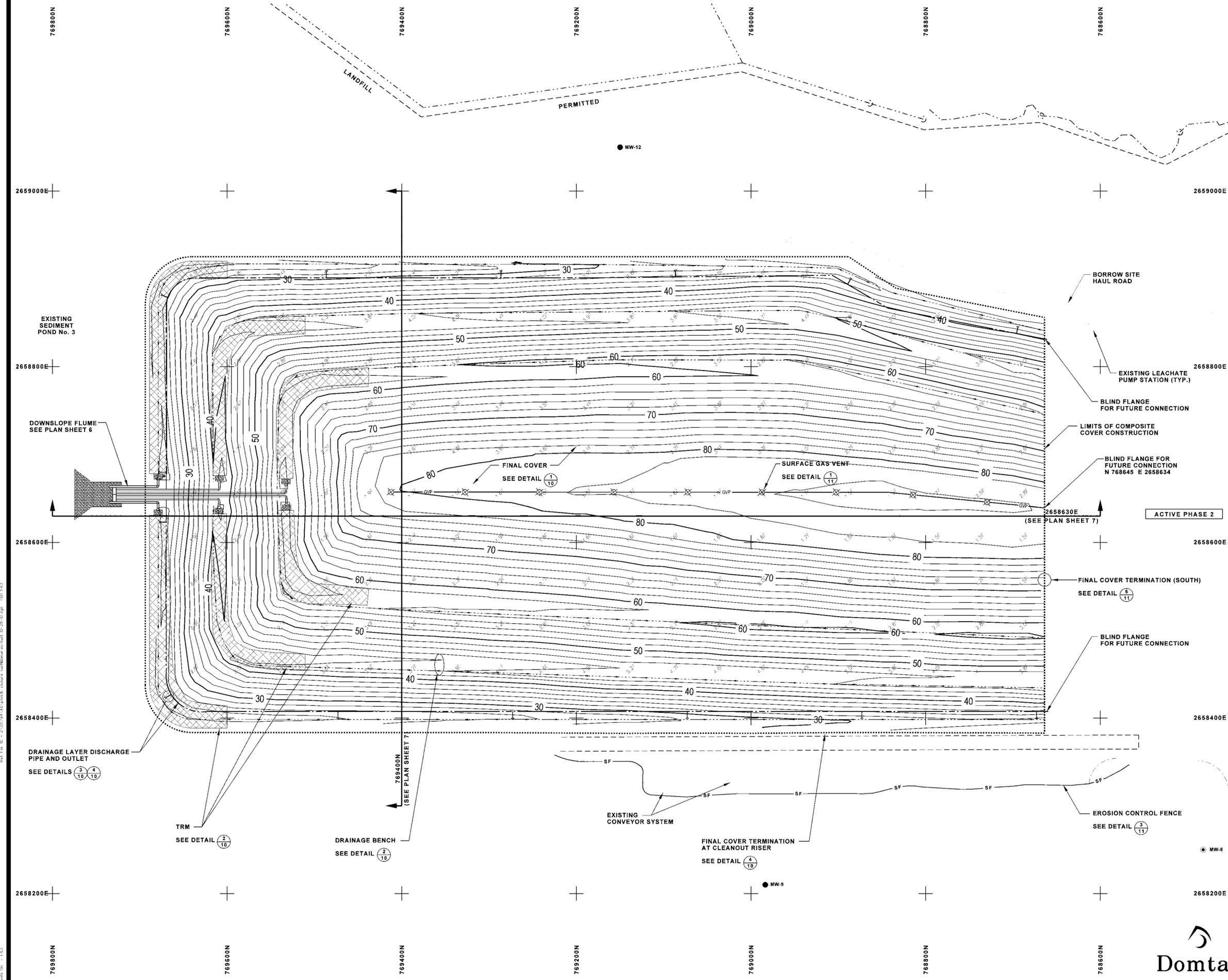
SHEET TITLE: **BORROW AREA SITE PLAN**

DRAWN BY: stormet	SCALE: 1" = 100'	PROJ. NO. 05794.46.001
CHECKED BY: NFB	DATE PRINTED:	FILE NO. BORROW.PLT
APPROVED BY: TWM	DATE: JUNE 2011	SHEET 3 OF 13

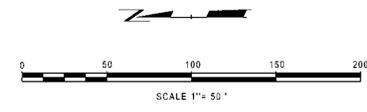


RMT NORTH CAROLINA, INC.
 LICENSE NO. F-0490

- NOTES**
- REFER TO PLAN SHEET 1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
 - THE CONTOURS WITHIN THE LIMITS OF COMPOSITE COVER REPRESENT THE AS CONSTRUCTED TOP OF THE FINAL COVER (FINAL GRADES).



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NO.	BY	DATE	REVISION	APP'D.
3.				
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PROJECT: **LANDFILL No. 3 - PHASE 1A & 1B CLOSURE**
 DOCUMENTATION REPORT
 DOMTAR PAPER COMPANY, LLC
 PLYMOUTH, NORTH CAROLINA

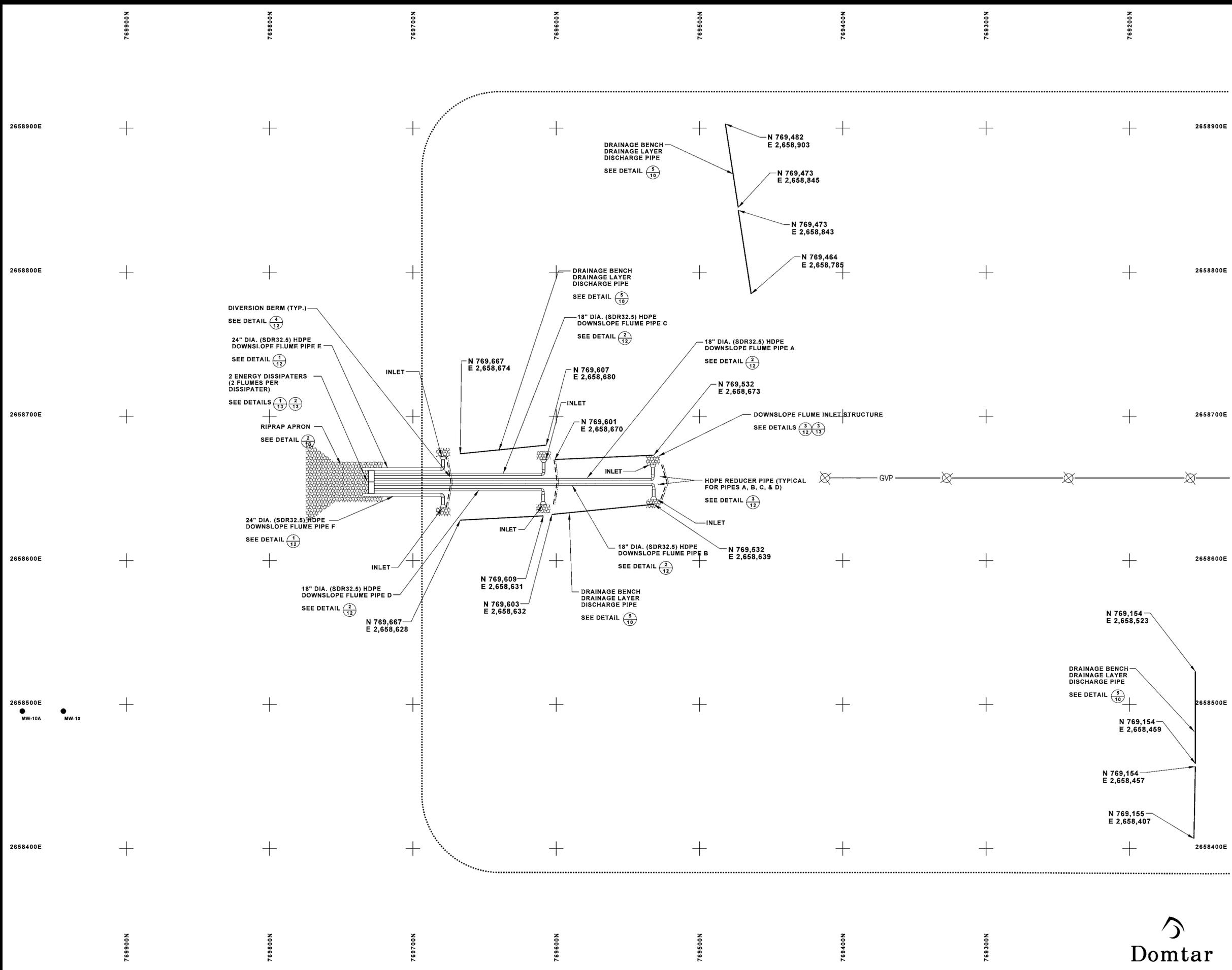
SHEET TITLE: **FINAL GRADES**

DRAWN BY: stormer	SCALE: 1" = 50'	PROJ. NO: 05794.46.001
CHECKED BY: NFB	DATE PRINTED:	FILE NO. PH1A&1BGRADE.PLT
APPROVED BY: TWM		SHEET 5 OF 13
DATE: JUNE 2011		



RMT NORTH CAROLINA, INC. LICENSE NO. F-0490

- NOTES**
1. REFER TO PLAN SHEET 1 FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES.
 2. THE CONTOURS WITHIN THE LIMITS OF COMPOSITE COVER REPRESENT THE AS CONSTRUCTED TOP OF THE FINAL COVER (FINAL GRADES).



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NOTE: THESE PLANS ARE ACCOMPANIED BY A DOCUMENTATION REPORT OF THE SAME TITLE. THESE DOCUMENTS ARE INTERRELATED AND ARE INTENDED TO BE USED TOGETHER.

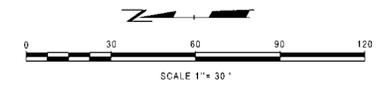
NO.	BY	DATE	REVISION	APP'D.
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PROJECT: **LANDFILL No. 3 - PHASE 1A & 1B CLOSURE**
 DOCUMENTATION REPORT
 DOMTAR PAPER COMPANY, LLC
 PLYMOUTH, NORTH CAROLINA

SHEET TITLE: **DOWNSLOPE FLUME LAYOUT**

DRAWN BY: stormet	SCALE: 1" = 30'	PROJ. NO: 05794.46.001
CHECKED BY: NFB	DATE PRINTED:	FILE NO: FLUMES.PLT
APPROVED BY: TWB	DATE: JUNE 2011	SHEET 6 OF 13

RMT NORTH CAROLINA, INC.
 LICENSE NO. F-0490

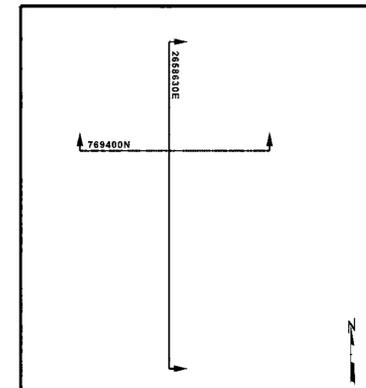
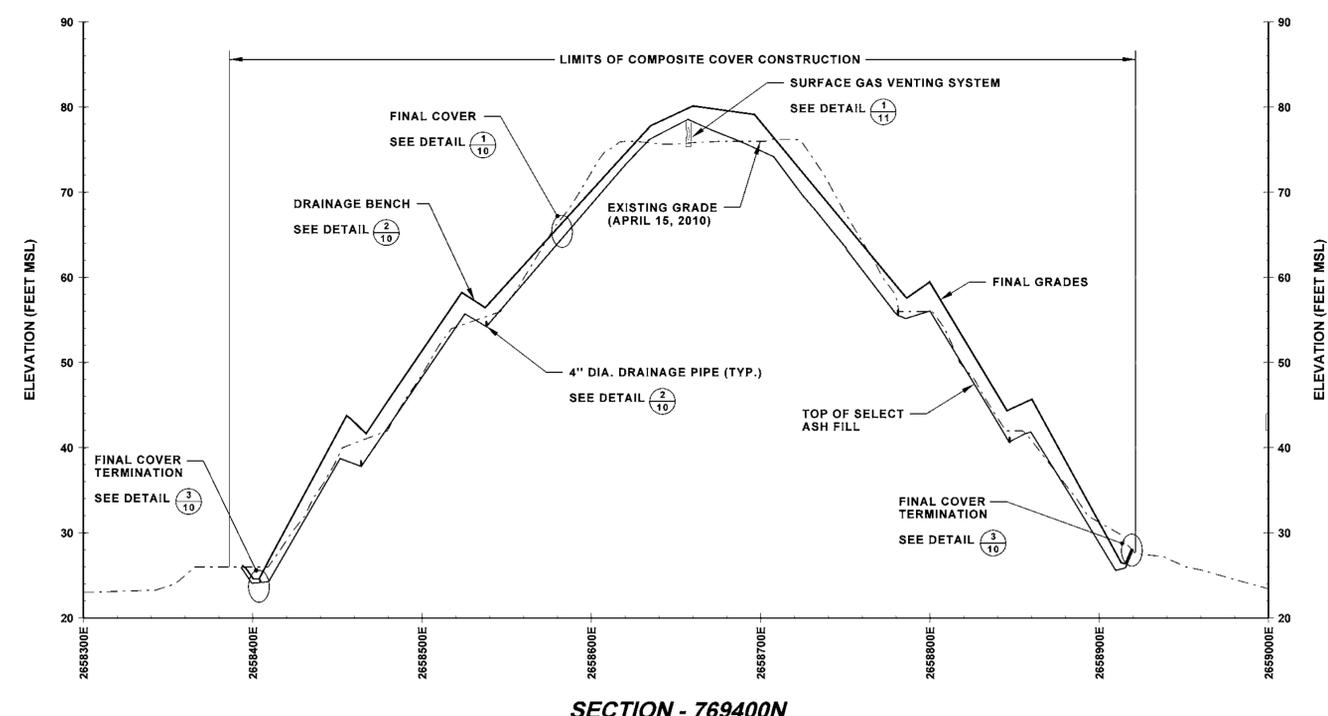
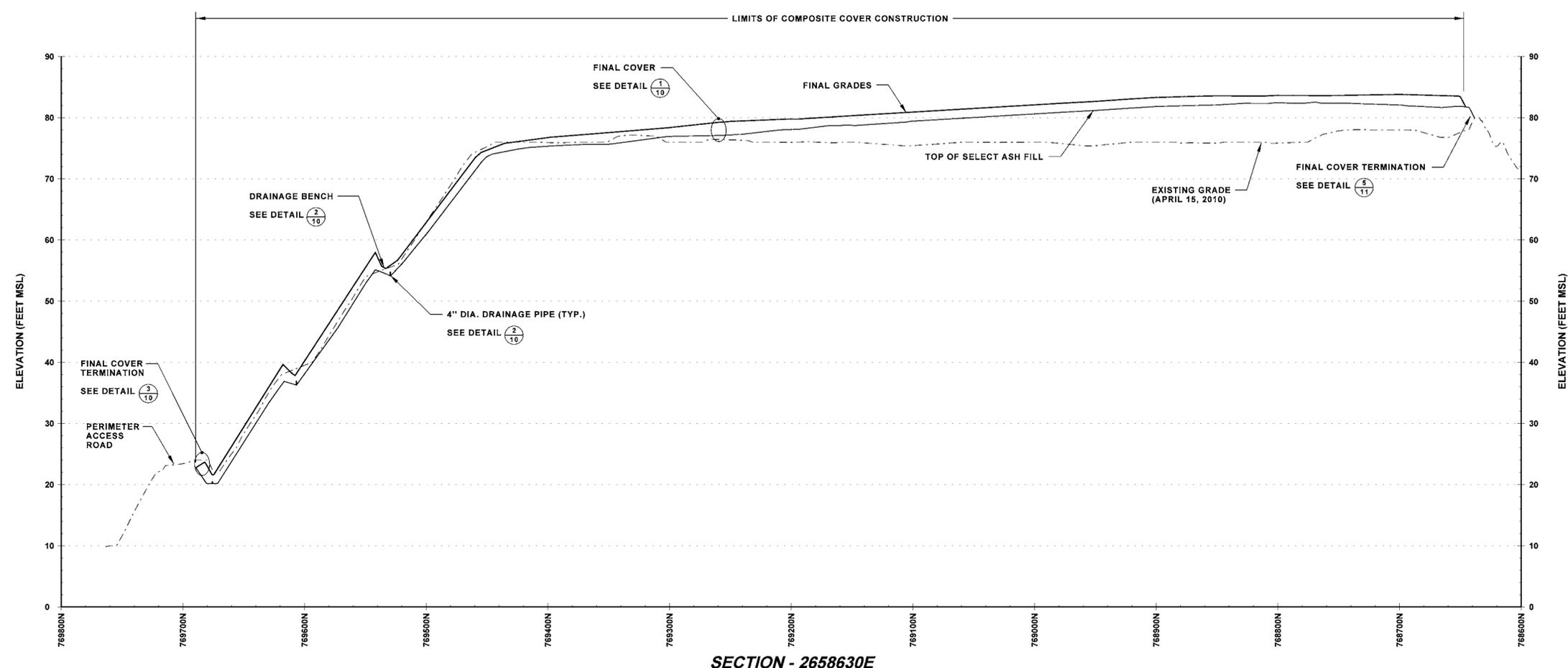


LEGEND

- TOP OF TOPSOIL
- TOP OF SELECT ASH FILL
- - - - EXISTING GRADE

NOTES

1. REFER TO PLAN SHEET 1 FOR BASE MAP NOTES.
2. EXISTING GRADE ELEVATIONS ARE BASED ON TOPOGRAPHIC SURVEY PERFORMED BY CHANCE & ASSOCIATES, INC., NEW BERN, NC. DATE OF SURVEY: APRIL 15, 2010.
3. REFER TO PLAN SHEET 5 FOR FINAL GRADES.



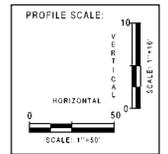
NOTE: THESE PLANS ARE ACCOMPANIED BY A DOCUMENTATION REPORT OF THE SAME TITLE. THESE DOCUMENTS ARE INTERRELATED AND ARE INTENDED TO BE USED TOGETHER.

NO.	BY	DATE	REVISION	APP'D.
1.				
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PROJECT: **LANDFILL No. 3 - PHASE 1A & 1B CLOSURE**
DOCUMENTATION REPORT
DOMTAR PAPER COMPANY, LLC
PLYMOUTH, NORTH CAROLINA

SHEET TITLE:
ENGINEERING CROSS SECTIONS 769400N & 2658630E

DRAWN BY: stormet SCALE: PROJ. NO. 05794.46.001
 CHECKED BY: NFB AS SHOWN FILE NO. XSECTION.PLT
 APPROVED BY: TWM DATE PRINTED: SHEET 7 OF 13
 DATE: JUNE 2011

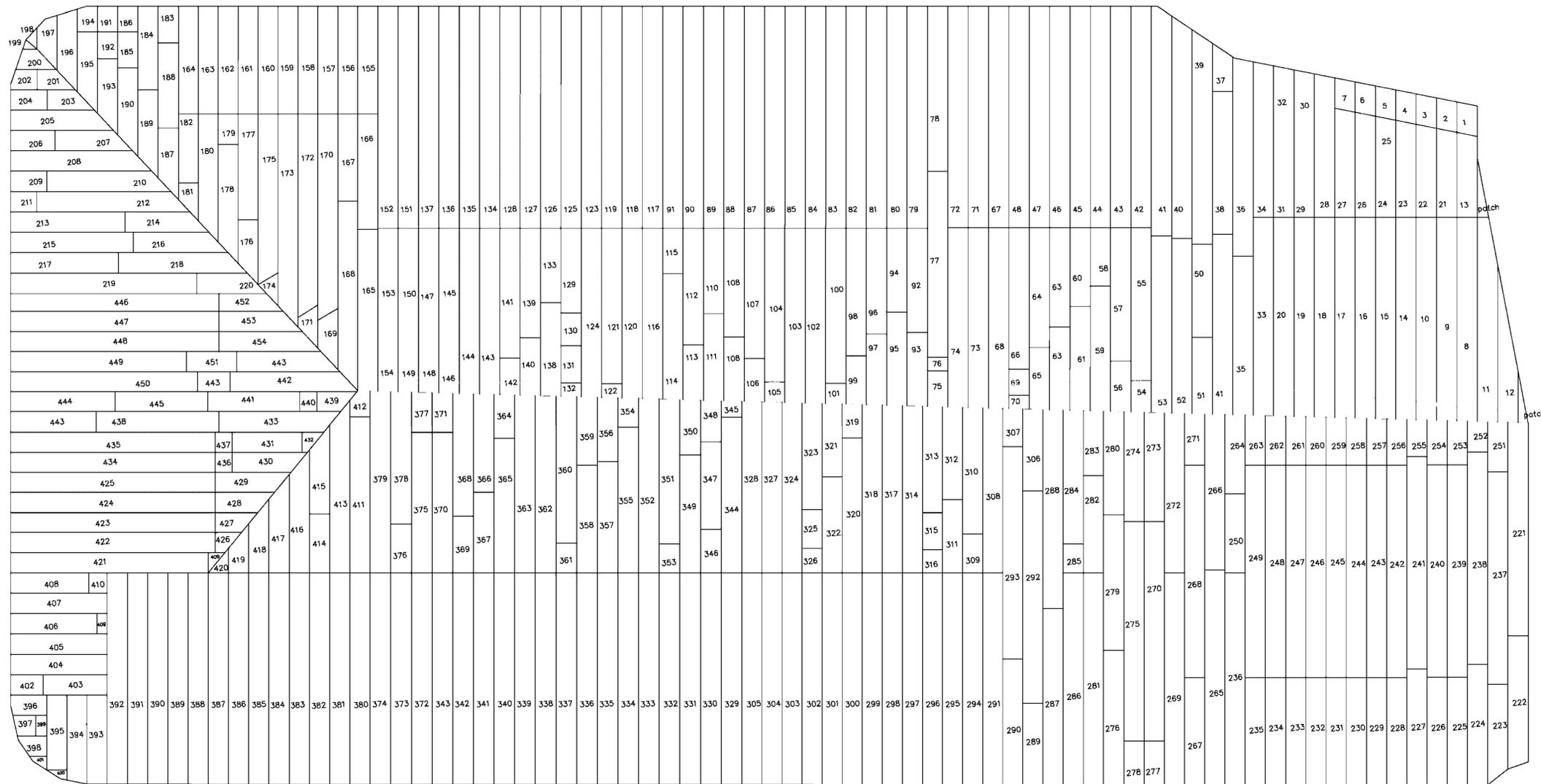


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 Ref File 10 - J:\05794\48\Documentation\Report\Section.dwg

Levels:
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 Level 2 - 10.00
 Level 3 - 10.00
 Level 4 - 10.00
 Level 5 - 10.00
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Plot Date: 06/20/2011 11:21:17 AM
 Plot Path: J:\05794\48\Documentation\Report\Section.dwg
 Plot Scale: 1" = 50'
 Plot Title: ENGINEERING CROSS SECTIONS 769400N & 2658630E
 Plot User: stormet



LEGEND

3 3 4 PANEL NUMBER (TOTAL OF 454 PANELS)

PANEL OUTLINE

NOTE: THESE PLANS ARE ACCOMPANIED BY A DOCUMENTATION REPORT OF THE SAME TITLE. THESE DOCUMENTS ARE INTERRELATED AND ARE INTENDED TO BE USED TOGETHER.

NO.	BY	DATE	REVISION	APP'D.
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PROJECT: **LANDFILL No. 3 - PHASE 1A & 1B CLOSURE**
DOCUMENTATION REPORT
DOMTAR PAPER COMPANY, LLC
PLYMOUTH, NORTH CAROLINA

SHEET TITLE: **GCL PANEL LAYOUT**

DRAWN BY: stormer	SCALE: NOT TO SCALE	PROJ. NO. 05794.46.001
CHECKED BY: NFB	DATE PRINTED:	FILE NO. SHEETS P.L.T
APPROVED BY: TWM		SHEET 9 OF 13
DATE: JUNE 2011		



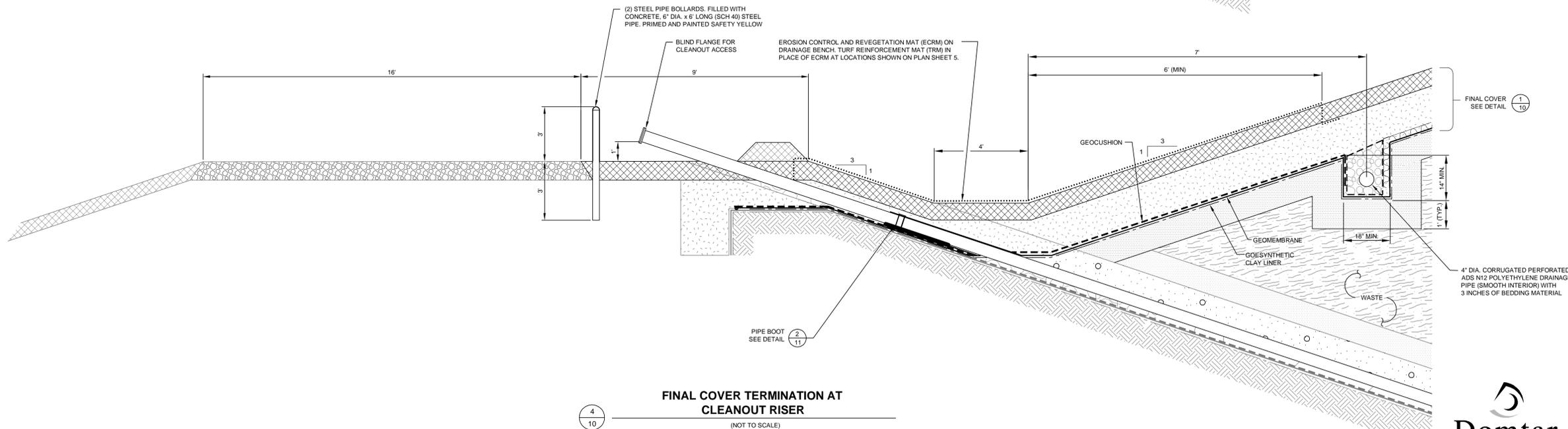
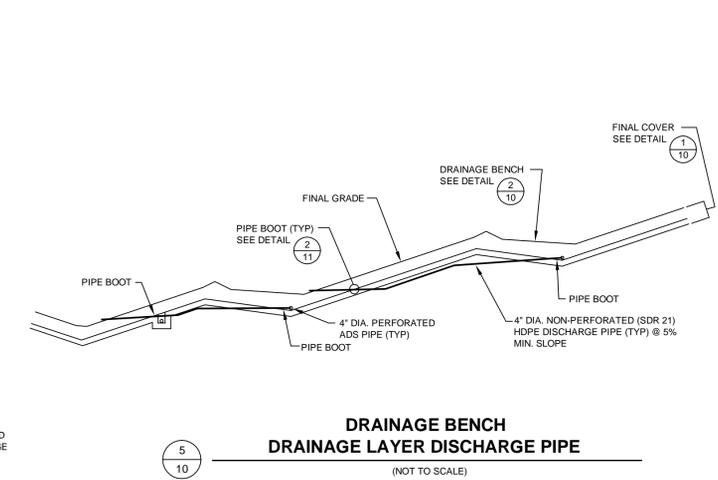
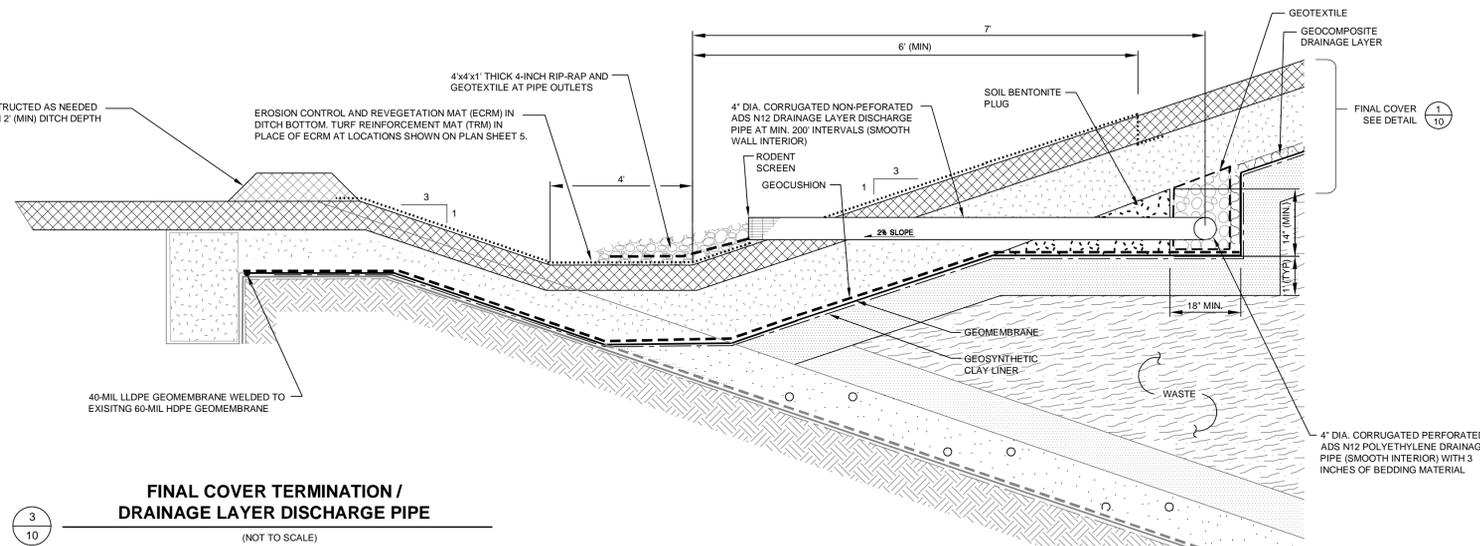
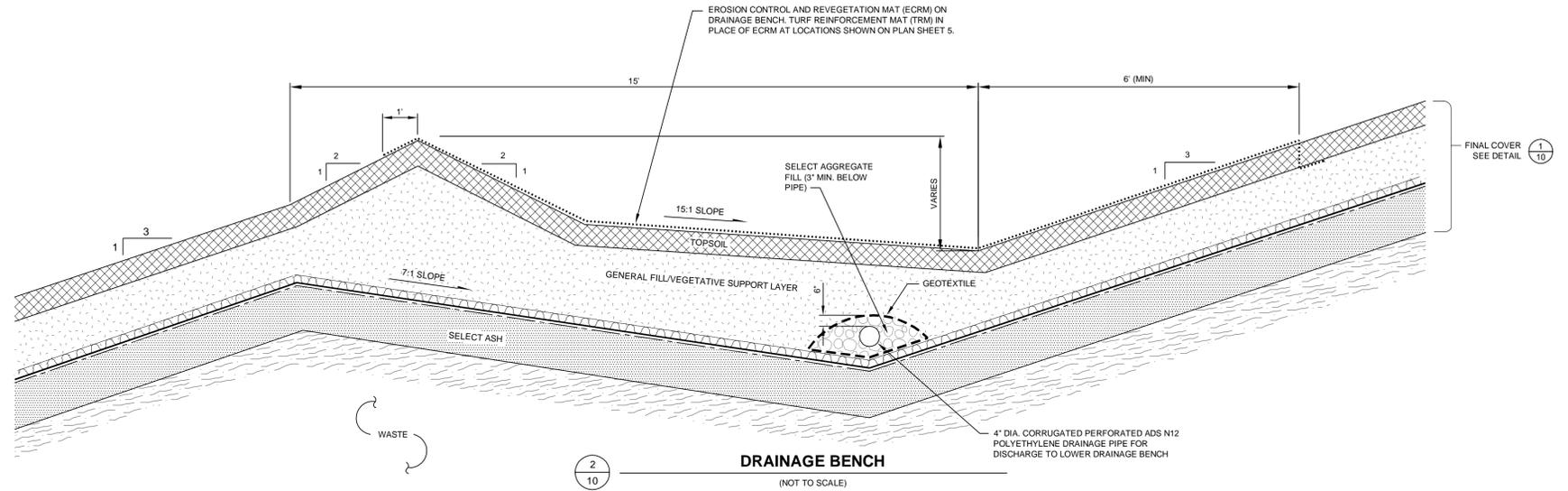
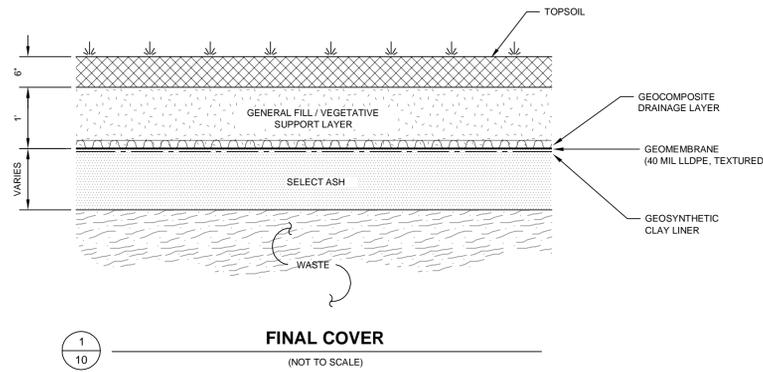
RMT NORTH CAROLINA, INC.
 LICENSE NO. F-0490

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 Proj File 3 - J:\05794\18\Documentation\Report\Sheet11.dwg
 Proj File 4 - J:\05794\18\Documentation\Report\Sheet12.dwg
 Proj File 5 - J:\05794\18\Documentation\Report\Sheet13.dwg
 Proj File 6 - J:\05794\18\Documentation\Report\Sheet14.dwg
 Proj File 7 - J:\05794\18\Documentation\Report\Sheet15.dwg
 Proj File 8 - J:\05794\18\Documentation\Report\Sheet16.dwg
 Proj File 9 - J:\05794\18\Documentation\Report\Sheet17.dwg
 Proj File 10 - J:\05794\18\Documentation\Report\Sheet18.dwg

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 (9) - no fill logic
 (10) - no fill logic

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LINE AND SHADING LEGEND

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--- GEOMEMBRANE	TOPSOIL
--- GEOCOMPOSITE	NATIVE SOIL
--- GEOSYNTHETIC CLAY LINER	CONCRETE
--- EROSION CONTROL VEGETATION MAT (ECRM)	GENERAL FILL
--- SELECT ASH	WASTE
--- SELECT AGGREGATE FILL	
--- AGGREGATE BASE COURSE	
--- RIP-RAP	

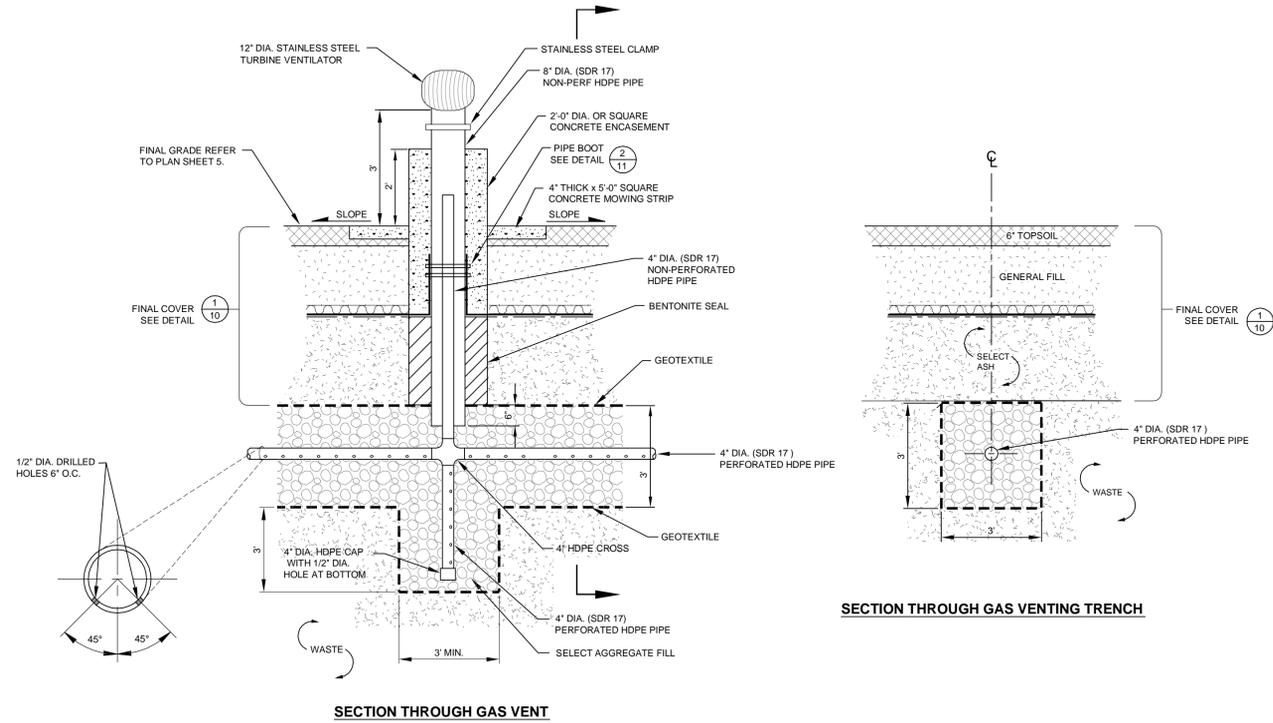
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SHEET TITLE: DETAILS				
DRAWN BY: STORMERL	SCALE: NOT TO SCALE	PROJ. NO. 05794.46.001		
CHECKED BY: NFB	DATE PRINTED:	FILE NO. 05794.46.DET.DWG		
APPROVED BY: TWM				
DATE: JUNE 2011			SHEET 10 OF 13	



NORTH CAROLINA INC.
LICENSE NO. F-0490

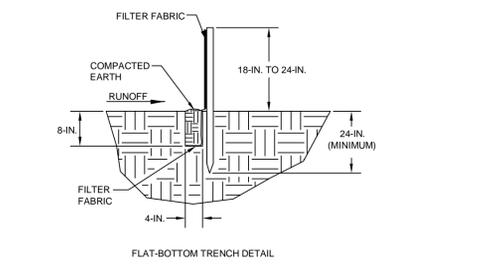
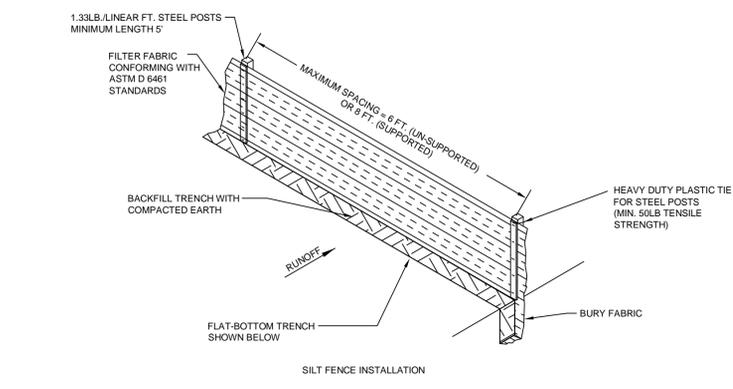
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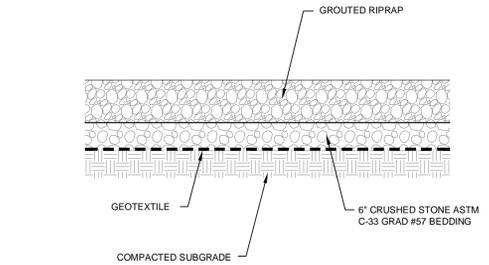
SECTION THROUGH GAS VENT

SECTION THROUGH GAS VENTING TRENCH

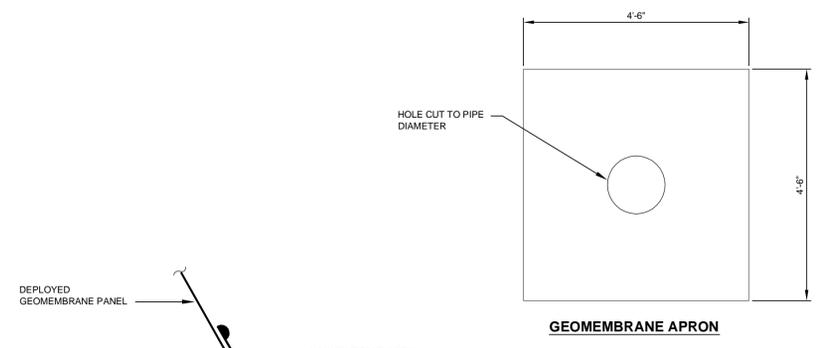
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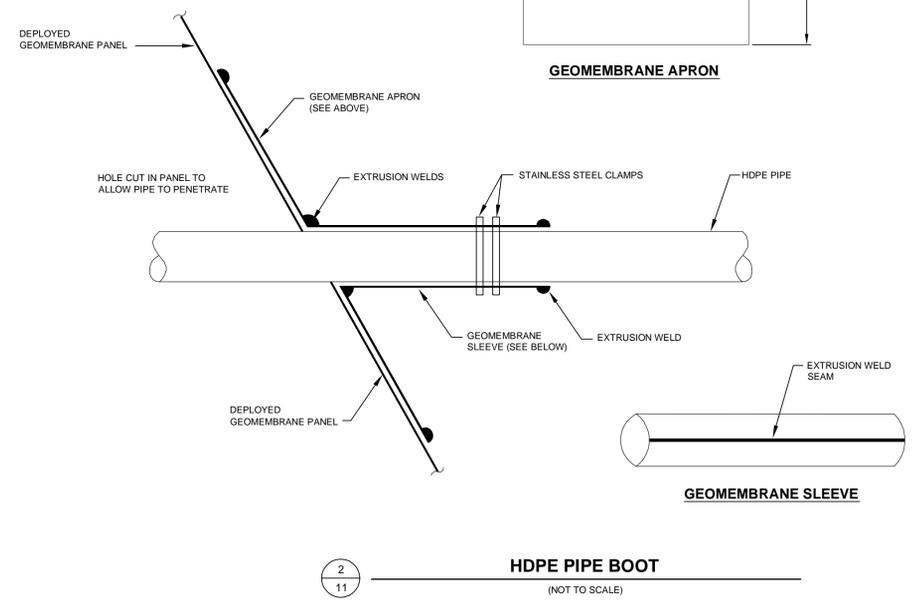
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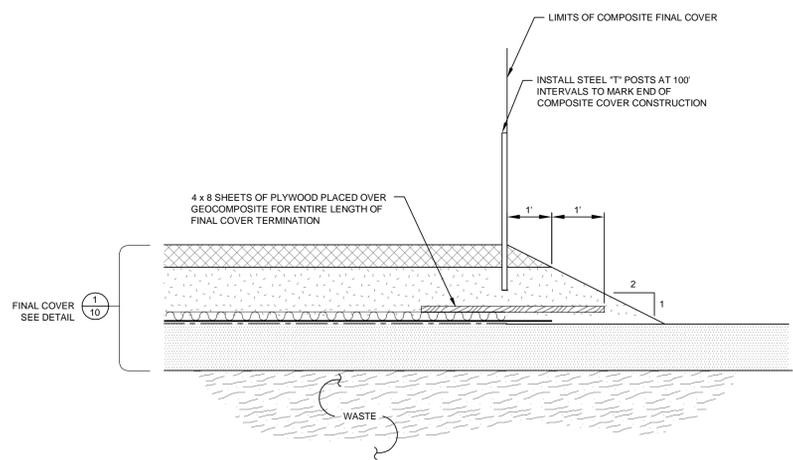
4 GROUTED RIP RAP (NOT TO SCALE)



GEOMEMBRANE APRON



2 HDPE PIPE BOOT (NOT TO SCALE)



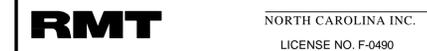
5 FINAL COVER TERMINATION (SOUTH) (NOT TO SCALE)

LINE AND SHADING LEGEND

--- GEOTEXTILE	TOPSOIL
--- GEOMEMBRANE	NATIVE SOIL
--- GEOCOMPOSITE	CONCRETE
--- GEOSYNTHETIC CLAY LINER	GENERAL FILL
--- EROSION CONTROL VEGETATION MAT (ECRM)	WASTE
--- SELECT ASH	
--- SELECT AGGREGATE FILL	
--- AGGREGATE BASE COURSE	
--- RIP-RAP	

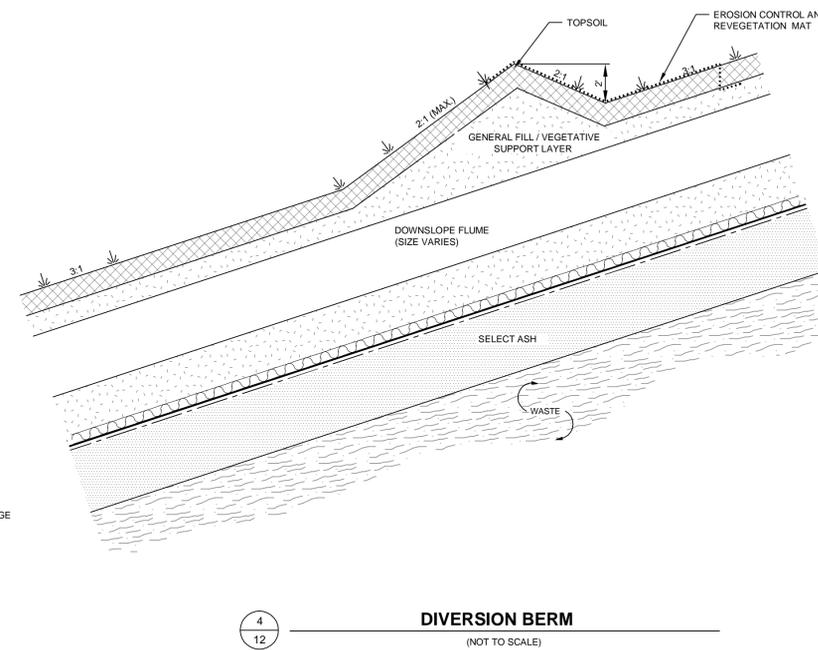
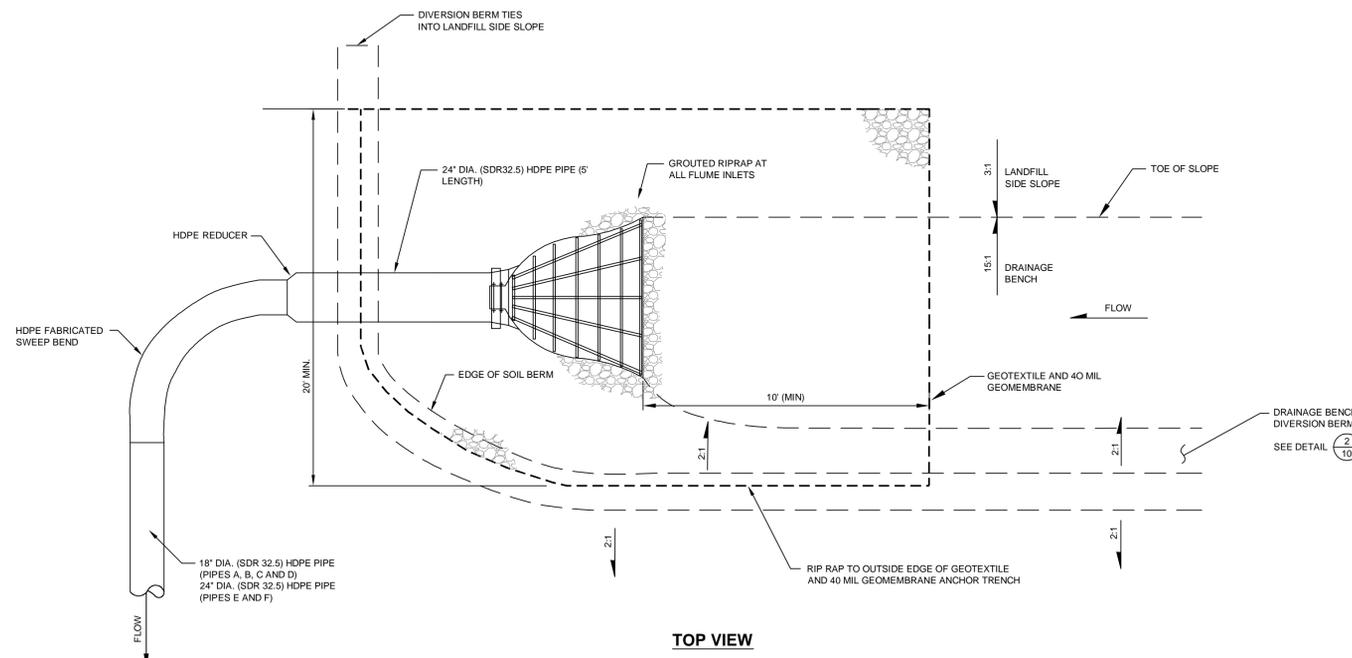
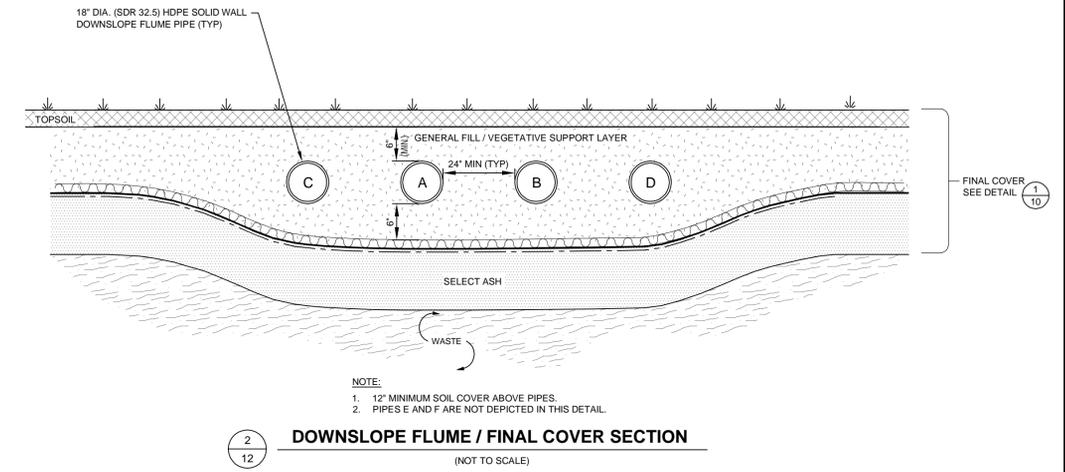
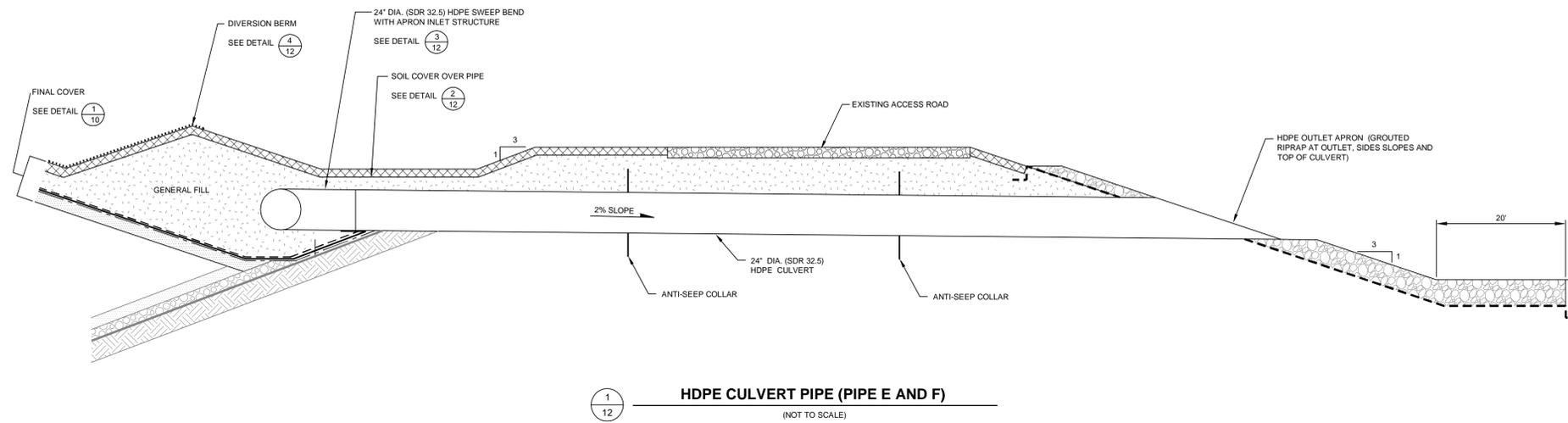
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DOMTAR PAPER COMPANY, LLC				
PLYMOUTH, NORTH CAROLINA				
SHEET TITLE:				
DETAILS				
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CHECKED BY:	NFB	NOT TO SCALE	FILE NO.	05794.46.DET.DWG
APPROVED BY:	TWM	DATE PRINTED:		
DATE:	JUNE 2011		SHEET	11 OF 13



NORTH CAROLINA INC.
LICENSE NO. F-0490

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LINE AND SHADING LEGEND

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--- GEOCOMPOSITE	[Pattern] CONCRETE
--- GEOSYNTHETIC CLAY LINER	[Pattern] GENERAL FILL
--- EROSION CONTROL VEGETATION MAT (ECRM)	[Pattern] WASTE
[Pattern] SELECT ASH	
[Pattern] SELECT AGGREGATE FILL	
[Pattern] AGGREGATE BASE COURSE	
[Pattern] RIP-RAP	

NOTE: THESE PLANS ARE ACCOMPANIED BY A DOCUMENTATION REPORT OF THE SAME TITLE. THESE DOCUMENTS ARE INTERRELATED AND ARE INTENDED TO BE USED TOGETHER.

3.					
2.					
1.					
NO.	BY	DATE	REVISION	APP'D.	

PROJECT:
LANDFILL No. 3 PHASE 1A & 1B CLOSURE DOCUMENTATION REPORT
DOMTAR PAPER COMPANY, LLC
PLYMOUTH, NORTH CAROLINA

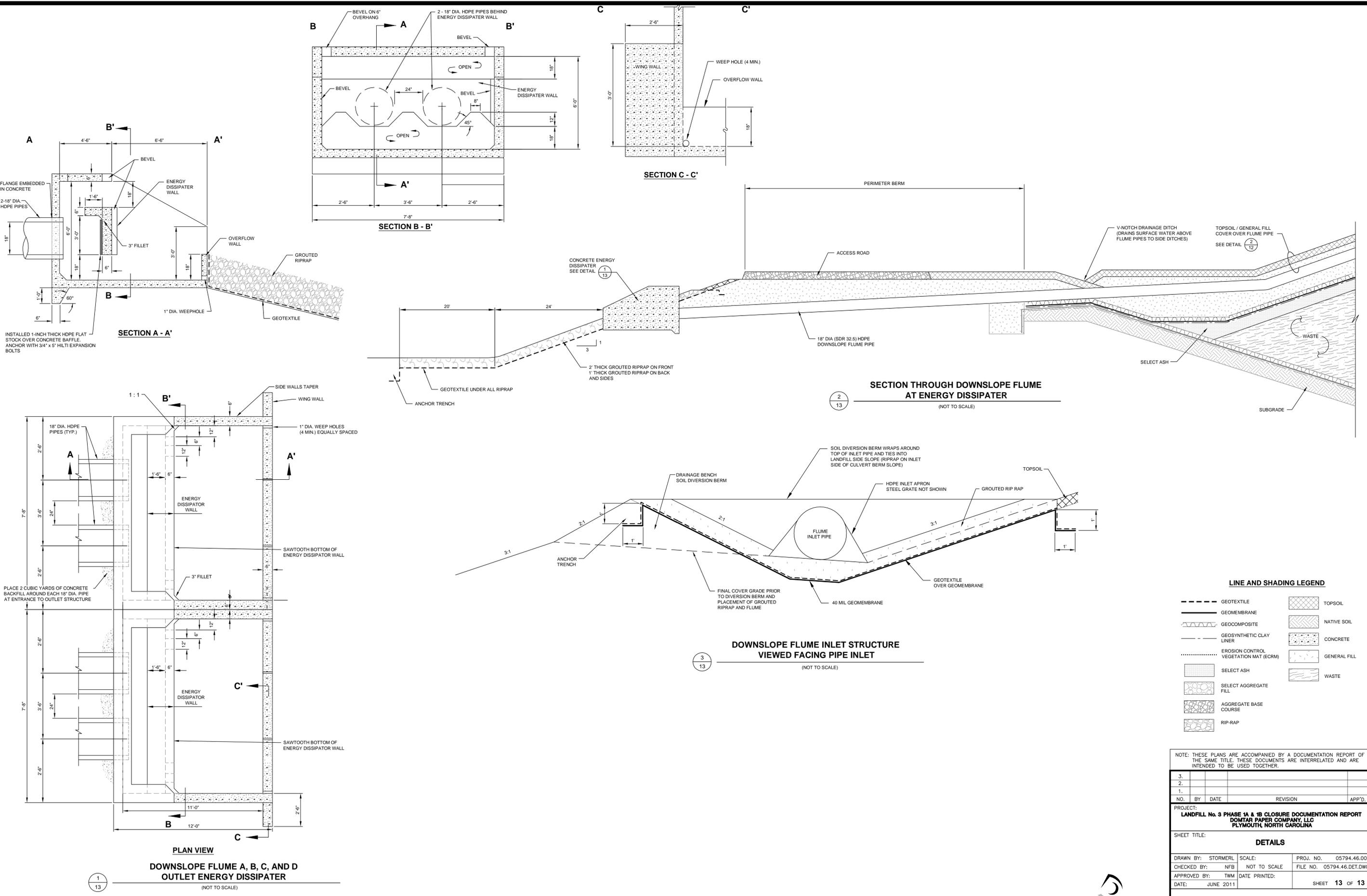
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APPROVED BY: TWM		SHEET 12 OF 13
DATE: JUNE 2011		



NORTH CAROLINA INC.
LICENSE NO. F-0490

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LINE AND SHADING LEGEND

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— (solid line)	GEOMEMBRANE	[Diagonal lines]	NATIVE SOIL
-.-.- (dotted line)	GEOSYNTHETIC CLAY LINER	[Stippled pattern]	CONCRETE
..... (dotted line)	EROSION CONTROL VEGETATION MAT (ECRM)	[Stippled pattern]	GENERAL FILL
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[Stippled pattern]	SELECT AGGREGATE FILL	[Stippled pattern]	
[Stippled pattern]	AGGREGATE BASE COURSE	[Stippled pattern]	
[Stippled pattern]	RIP-RAP	[Stippled pattern]	

NOTE: THESE PLANS ARE ACCOMPANIED BY A DOCUMENTATION REPORT OF THE SAME TITLE. THESE DOCUMENTS ARE INTERRELATED AND ARE INTENDED TO BE USED TOGETHER.

3.				
2.				
1.				
NO.	BY	DATE	REVISION	APP'D.

PROJECT: **LANDFILL No. 3 PHASE 1A & 1B CLOSURE DOCUMENTATION REPORT**
 DOMTAR PAPER COMPANY, LLC
 PLYMOUTH, NORTH CAROLINA

SHEET TITLE: **DETAILS**

DRAWN BY: STORMERL	SCALE: NOT TO SCALE	PROJ. NO. 05794.46.001
CHECKED BY: NFB	DATE PRINTED: JUNE 2011	FILE NO. 05794.46.DET.DWG
APPROVED BY: TWM		SHEET 13 OF 13



RMT NORTH CAROLINA INC.
 LICENSE NO. F-0490

Appendix A

Correspondence

Table of Contents

- October 4, 2010 – Email from Bill Morris (Domtar) – Larry Frost (NCDENR)
- September 17, 2010 – PTC Phase 3 and 4 – Variance Request
- August 13, 2010 – Variance Requests

October 4, 2010
Email from Bill Morris (Domtar) – Larry Frost (NCDENR)

Braun, Nathan

From: Morris, Bill [Bill.Morris@domtar.com]
Sent: Monday, October 04, 2010 9:21 AM
To: Martin, Todd
Cc: Parker, Mike; Braun, Nathan; Hardison, Diane
Subject: FW: Landfill closure

Good Morning Guys,

I just got off the phone with Larry Frost in reference to the message below. He concurs with my thoughts. His only suggestion was to submit as built drawings if we had a significant change from design drawings.

Bill Morris
Environmental Engineer
Domtar Plymouth
PO Box 747
Plymouth, NC 27962
252--793-8494
bill.morris@domtar.com

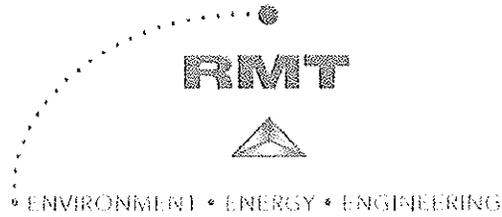
Bill
r, September 28, 2010 2:57 PM
it@ncdenr.gov
andfill closure

Larry,

We have had some recent discussion with RMT, our engineering consultant, in reference to final grade and elevation tolerances. I would like to avoid cutting as much as possible if we have areas that may be slightly overfilled, and the same if we have slight under filled areas. We believe we have achieved positive drainage and a minimum of 3:1 slopes on the phase. What is the agencies policy on this? If we have need to discuss the issue, please give me a call at the number below. Thanks, Larry for any information you may be able to share with us on this.

Bill Morris
Environmental Engineer
Domtar Plymouth
PO Box 747
Plymouth, NC 27962
252--793-8494
bill.morris@domtar.com

September 17, 2010
PTC Phase 3 and 4 – Variance Request



September 17, 2010

Mr. Larry Frost
Environmental Engineer
North Carolina Department of Environment and Natural Resources
2090 US Highway 70
Swannanoa, North Carolina 28778

Subject: Domtar Paper Company Landfill No. 3
Permit to Construct (PTC) Phase 3 and Phase 4 – Variance Request
NC DENR DIN 10869

Dear Mr. Frost:

Please find the revised design drawing Sheet 7 of 10 from the Permit to Construct (PTC) Phase 3 and Phase 4 application attached to this document. Details 2 of 7 and 5 of 7 have been revised to reflect the design change to the drainage bench discharge pipe trench.

Please call me with any questions or concerns you may have regarding this submittal.

Sincerely,

RMT North Carolina, Inc.

Michael B. Parker, P.E.
President and Client Service Manager

Attachments

cc: Bill Morris, Domtar
Todd Martin, RMT
Central Files

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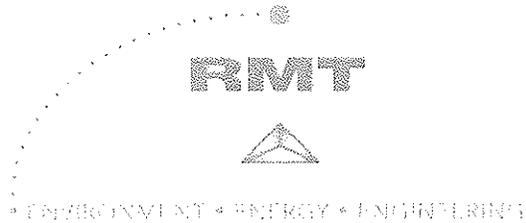
30 Patewood Drive, Suite 100 • Greenville, SC 29615-3535 • (864) 281-0030 • (864) 281-0288 FAX • www.rmlinc.com

CREATING BALANCE™

7

Attachment 1
Sheet 7 of 10
(Revised September 2010)

**August 13, 2010
Variance Requests**



August 13, 2010

Mr. Larry Frost
Environmental Engineer
North Carolina Department of Natural Resources (NCDENR)
2090 US Highway 70
Swannanoa, North Carolina 28778

Dear Mr. Frost:

This letter serves to document two design variances requested by RMT during your visit to Domtar's Landfill No. 3 in Plymouth, NC on June 10, 2010 in regards to the closure of Phase 1a and 1b.

The first variance was the design change of downslope flume pipes and energy dissipaters replacing the previously specified articulated block channels. It has been RMT's experience in construction, operation, and maintenance that the downslope flume design is superior to articulated block channels. Revised stormwater calculations and design drawings are given in the *Erosion and Sediment Control Plan (ESCP) for Landfill No. 3 Phase 1a and 1b Closure* (RMT, 2010). A copy of the design drawings, including details and specifications, is given as Attachment 1 to this letter.

The Construction Permit Application for On-Site Industrial Waste Landfill No. 3 (RMT, 1999), Phase 1B and Phase 2 Construction Plan Application for On-Site Industrial Waste Landfill Number 3 (RMT, 2002), and Phase 3 and Phase 4 Construction Plan Application for On-Site Industrial Waste Landfill Number 3 (RMT, 2008, Amended 2009), describe a select waste layer meant to protect the geocomposite layers from potential damage during construction activities. Current grading activities by mill contractors to bring the waste material to final grade have ensured a select ash fill layer is present, and objects that could possibly damage the composite liner during or after construction have been removed. Based on your visual observation during your June 2010 visit, a verbal agreement was made to eliminate the need for a survey of the bottom of the select waste layer. The top of the select ash fill layer will be surveyed prior to construction of the composite liner to ensure that final waste elevations have been met.

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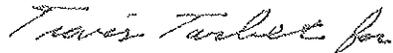
15

Mr. Larry Frost
North Carolina Department of Natural Resources (NCDENR)
August 13, 2010
Page 2

Please contact me if you have any questions at (864)234-9462.

Sincerely,

RMT North Carolina, Inc.



Mike Parker
Senior Client Service Manager

Attachments

cc: Todd Martin
Travis Tarbet
Central Files

Appendix B

Construction Photographs

Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 1	Date 10/11/10
-----------------------	-------------------------

Description
Cat D6 Dozer grading the select ash subbase.

(looking north)



Photo No. 2	Date 10/12/10
-----------------------	-------------------------

Description
John Deere 450D hydraulic excavator and Volvo A40E haul truck moving excess select ash from a high spot to a low spot.

(looking south)



1/18

Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 3	Date 10/21/10	 <p style="text-align: right; color: yellow;">2010/10/20</p>
Description Top of select ash subbase smooth drum rolled ready to have GCL & geomembrane deployed on it. (looking south)		

Photo No. 4	Date 10/27/10	 <p style="text-align: right; color: yellow;">2010/10/27</p>
Description Cat smooth drum roller preparing the select ash subbase. (looking east)		

Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 5	Date 10/21/10
-----------------------	-------------------------

Description
A Cat tracked skid steer deploying the GCL onto the select ash subbase.

(looking north)



Photo No. 6	Date 10/23/10
-----------------------	-------------------------

Description
A Cat tracked skid steer deploying the 40-mil LLDPE over the GCL.

(looking east)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 7	Date 10/23/10
-----------------------	-------------------------

Description
The southeastern corner with the GCL deployed.

(looking north)



Photo No. 8	Date 10/25/10
-----------------------	-------------------------

Description
The southeast corner with the geomembrane deployed and seamed together.

(looking southwest)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 9	Date 10/21/10
-----------------------	-------------------------

Description
Chesapeake Containment Systems placing granular bentonite at the panel end seam.

(looking west)



Photo No. 10	Date 10/22/10
------------------------	-------------------------

Description
A dual hot wedge fusion machine welding two LLDPE panels together.

(looking east)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 11	Date 10/24/10
------------------------	-------------------------

Description
Welding a repair at the cross seams of three panels with an extrusion gun.

(looking east)



Photo No. 12	Date 10/24/10
------------------------	-------------------------

Description
Chesapeake Containment Systems lustering and grinding a patch so it could be extrusion welded.

(looking east)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 13	Date 10/21/10
------------------------	-------------------------

Description
A geomembrane slip sheet under the generator to protect the liner.



Photo No. 14	Date 10/29/10
------------------------	-------------------------

Description
Nondestructively testing the fusion-welded seams.



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 15	Date 10/30/10
------------------------	-------------------------

Description
Vacuum box testing the repairs that were extrusion welded.



Photo No. 16	Date 11/04/10
------------------------	-------------------------

Description
The drainage geocomposite installed on the eastern slope.

(looking west)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 17	Date 11/18/10
------------------------	-------------------------

Description
Loading general fill into the haul trucks from the borrow area.

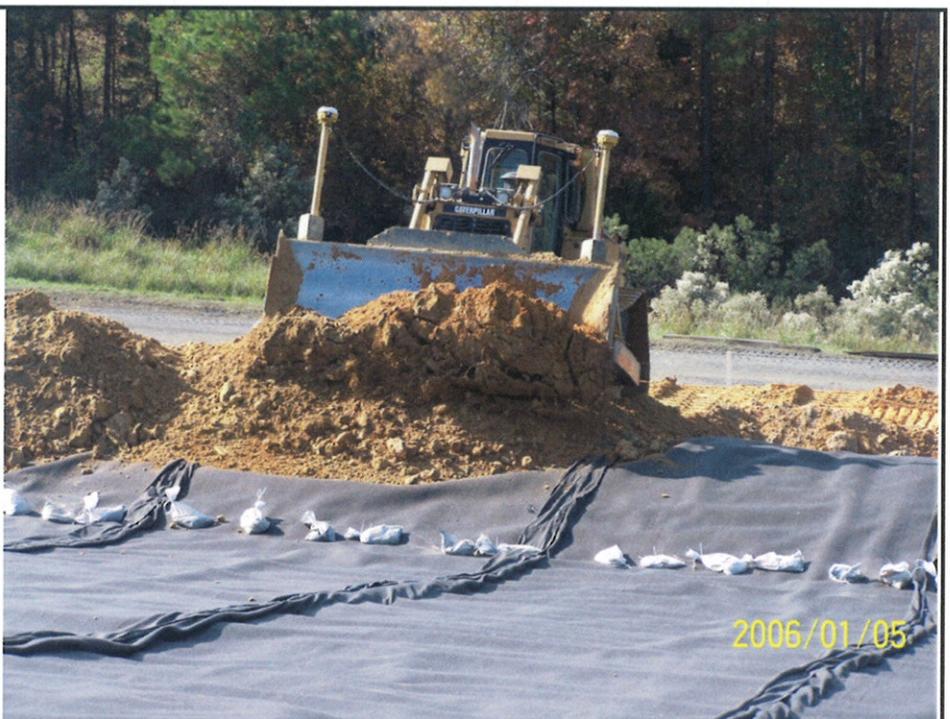
(looking east)



Photo No. 18	Date 11/23/10
------------------------	-------------------------

Description
Caterpillar D6 dozer spreading the general fill over the drainage geocomposite.

(looking west)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 19	Date 11/01/10
------------------------	-------------------------

Description
Making a 3-foot thick road of general fill on the top of final cover so the haul trucks could drive on the final cover.

(looking south)



Photo No. 20	Date 12/6/10
------------------------	------------------------

Description
Grading the 6-inches of topsoil on top of the 1-foot of general fill.

(looking south)



Photographic Log

Client Name: Domtar Paper Company, LLC		Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
Photo No. 21	Date 12/9/10		
Description Excavator loading haul trucks at the topsoil stockpile. (looking north)			

Photo No. 22	Date 4/18/11		
Description Two steel pipe bollards filled with concrete and painted safety yellow to protect leachate collection line cleanouts. (looking east)			

Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

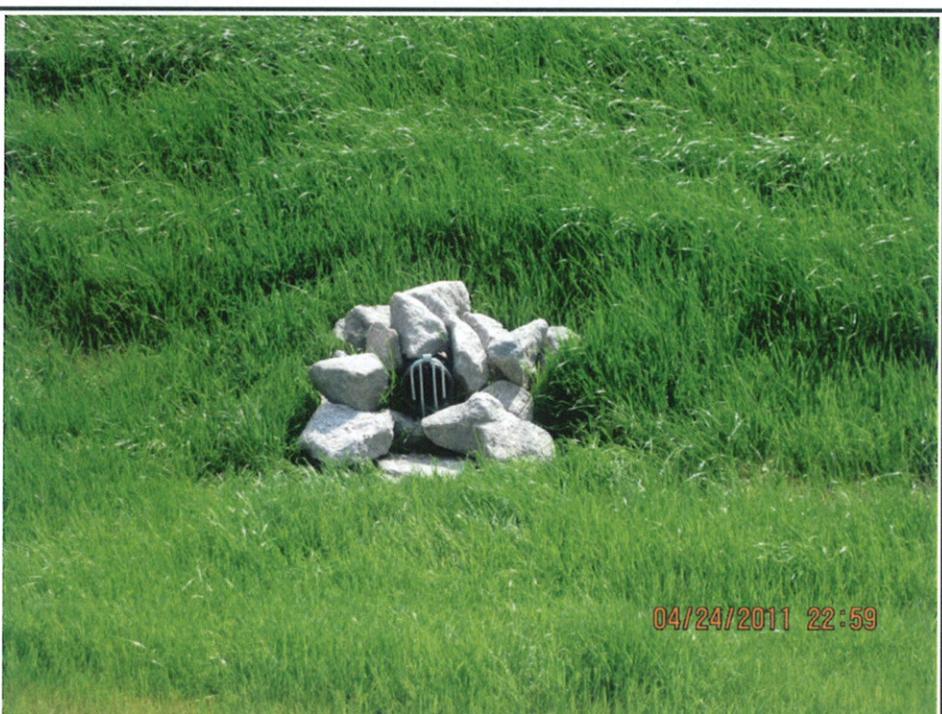
Photo No. 23	Date 12/8/10
------------------------	------------------------

Description
Ryan placing a bentonite plug at each of the toe drain discharge pipes every 200 feet around the perimeter of the landfill.



Photo No. 24	Date 4/24/11
------------------------	------------------------

Description
Riprap apron installed below the discharge pipes for the toe drain collection pipe.



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 25	Date 3/2/11
------------------------	-----------------------

Description
Vertical gas vents installed on the Phase 1A and 1B final cover to vent any gas to the atmosphere.

(looking south)



Photo No. 26	Date 3/2/11
------------------------	-----------------------

Description
Energy dissipater with grouted riprap.

(looking south)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 27	Date 12/16/10
------------------------	-------------------------

Description
6-inches of crushed stone being installed over the Geotextile to create the base for the grouted riprap.

(looking west)



Photo No. 28	Date 3/2/11
------------------------	-----------------------

Description
Grouted riprap installed over the crushed stone. Pipe grate installed over opening of inlet as well.

(looking northeast)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 29	Date 3/15/11
------------------------	------------------------

Description
Mulching final cover.

(looking north)



Photo No. 30	Date 3/15/11
------------------------	------------------------

Description
Topsoil being raked and dragged.

(looking east)



Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 31	Date 3/9/11	
Description Installed TRM and ECRM in the designated locations in the drawings. (looking south)		

Photo No. 32	Date 3/8/11	
Description TRM installed on the drainage benches leading up to the downslope flume inlets. (looking east)		

Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05794.46.001
--	---	-------------------------------------

Photo No. 33	Date 11/30/10
------------------------	-------------------------

Description
Drainage layer discharge location for the drainage bench.



Photo No. 34	Date 11-23-10
------------------------	-------------------------

Description
4-inch diameter perforated ADS pipe being installed on a drainage bench.

(looking north)



Appendix C

Manufacturers' Information

Table of Contents

- GCL Data Sheet
- Geomembrane Data Sheet
- Geotextile Cushion Data Sheet
- Drainage Geocomposite Data Sheet
- Geotextile Data Sheet
- HDPE SDR17 Pipe Specifications
- Corrugated PE Pipe (Perforated/Nonperforated)
- Seed and Fertilizer Data Sheets
- Erosion Control and Revegetation Mat (ECRM) and Turf Reinforcement Mat (TRM)

GCL Data Sheet

BENTOMAT® DN CERTIFIED PROPERTIES

MATERIAL PROPERTY	TEST METHOD	TEST FREQUENCY ft ² (m ²)	REQUIRED VALUES
Bentonite Swell Index ¹	ASTM D 5890	1 per 50 tonnes	24 mL/2g min.
Bentonite Fluid Loss ¹	ASTM D 5891	1 per 50 tonnes	18 mL max.
Bentonite Mass/Area ²	ASTM D 5993	40,000 ft ² (4,000 m ²)	0.75 lb/ft ² (3.6 kg/m ²) min
GCL Grab Strength ³	ASTM D 6768	200,000 ft ² (20,000 m ²)	50 lbs/in (88 N/cm) MARV
GCL Peel Strength ³	ASTM D 6496	40,000 ft ² (4,000 m ²)	3.5 lbs/in (6.1 N/cm) min
GCL Index Flux ⁴	ASTM D 5887	Weekly	1 x 10 ⁻⁸ m ³ /m ² /sec max
GCL Hydraulic Conductivity ⁴	ASTM D 5887	Weekly	5 x 10 ⁻⁹ cm/sec max
GCL Hydrated Internal Shear Strength ⁵	ASTM D 5321 ASTM D 6243	Periodic	500 psf (24 kPa) typ @ 200 psf

Bentomat DN is a reinforced GCL consisting of a layer of sodium bentonite between two nonwoven geotextiles, which are needlepunched together.

Notes

¹ Bentonite property tests performed at a bentonite processing facility before shipment to CETCO's GCL production facilities.

² Bentonite mass/area reported at 0 percent moisture content.

³ All tensile strength testing is performed 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.

⁴ Index flux and permeability testing with deaired distilled/deionized water at 80 psi (551kPa) cell pressure, 77 psi (531 kPa) headwater pressure and 75 psi (517 kPa) tailwater pressure. Reported value is equivalent to 925 gal/acre/day. This flux value is equivalent to a permeability of 5x10⁻⁹ cm/sec for typical GCL thickness. Actual flux values vary with field condition pressures. The last 20 weekly values prior the end of the production date of the supplied GCL may be provided.

⁵ Peak values measured at 200 psf (10 kPa) normal stress for a specimen hydrated for 48 hours. Site-specific materials, GCL products, and test conditions must be used to verify internal and interface strength of the proposed design.

CETCO has developed an edge enhancement system that eliminates the need to use additional granular sodium bentonite within the overlap area of the seams. We call this edge enhancement, SuperGroove™, and it comes standard on both longitudinal edges of Bentomat® DN. It should be noted that SuperGroove™ does not appear on the end-of-roll overlaps and recommend the continued use of supplemental bentonite for all end-of-roll seams.

TR 401-BMDN
5/07

800.527.9948 Fax 847.851.1899

For the most up-to-date product information, please visit our website, www.cetco.com.

A wholly owned subsidiary of AMCOL International Corporation. The information and data contained herein are believed to be accurate and reliable. CETCO makes no warranty of any kind and accepts no responsibility for the results obtained through application of this information.



BENTOMAT®

THE GCL WITH THE “WINNING EDGE™”

Available now and standard on all Bentomat products, the “Winning Edge™” is a new overlapped seam enhancement system that brings higher levels of performance and convenience to the world’s best-selling GCL. The patented SuperGroove™ eliminates the need for accessory bentonite in the overlapped seam. Available only on Bentomat products, the SuperGroove will increase performance and decrease GCL installation headaches.

The SuperGroove™

All Bentomat products have at least one nonwoven needlepunched geotextile. In comparison to woven geotextiles, needlepunched nonwovens are thicker and can transmit flow in the plane of the geotextile. Planar flow can cause excessive leakage in the overlapped seam of a GCL. The addition of granular bentonite within the overlap area can eliminate this preferential flow by sealing the nonwoven geotextile, which has been the standard of practice for many years.

The SuperGroove is a precision cut in the nonwoven geotextile of Bentomat that allows bentonite to more freely extrude into the overlap zone (Figure 1). Upon hydration, a seal is formed, eliminating the possibility of preferential seam flow (Figure 2). Supplemental bentonite is not required.

Figure 1. The SuperGroove on Bentomat.

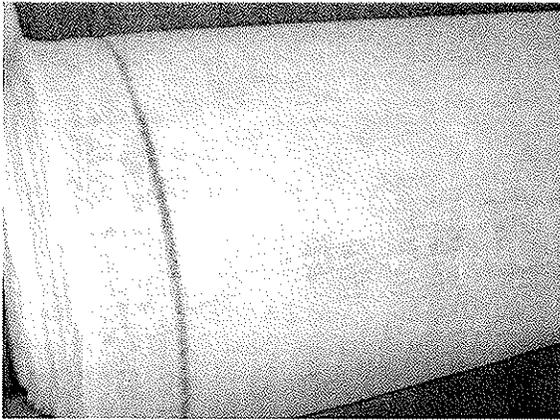
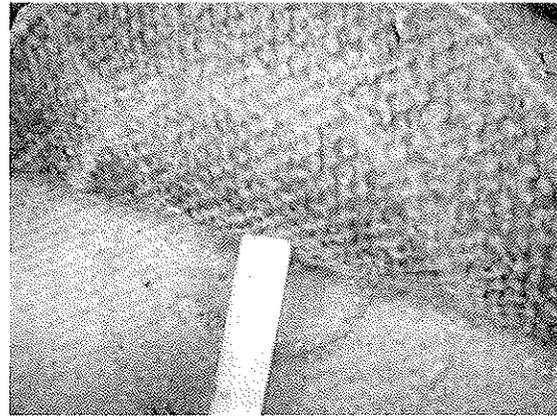


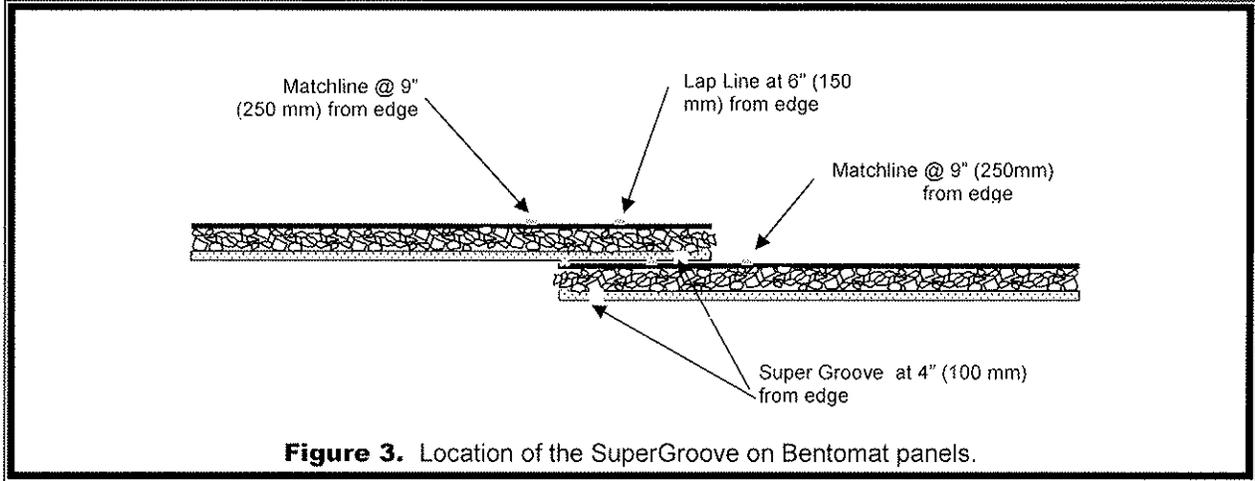
Figure 2. A test overlap showing bentonite "stain" on the surface of the woven geotextile, indicating extrusion from the non-woven.



The SuperGroove ensures that the hydraulic performance of the entire seamed GCL system is equal to that of unseamed portions. Added benefits include:

- No need for supplemental bentonite
- No concerns over improper seaming technique
- Eliminates labor associated with adding bentonite
- Simplifies CQA/CQC procedures
- Eliminates a source of geomembrane seam contamination

The SuperGroove is located approximately 3 inches (75 mm) inside the outermost limit of the bentonite clay component of the GCL, about 4 inches (100 mm) outside the first lap line (Figure 3). The SuperGroove is placed on both longitudinal edges of the Bentomat product.



Performance of the SuperGroove seam was evaluated in comparison to a traditional bentonite-enhanced seam. Third-party laboratory tests were performed under a variety of head pressures and confining pressures. A test at low confining pressure is a "worst-case" scenario because the volume of void spaces in the overlap is larger than when a higher confining pressure is applied. Even in low-stress conditions, test data shows that the SuperGroove still allowed extrusion to completely seal the overlap (Table 1).

Table 1. Comparative performance of Bentomat ST with traditional bentonite-enhanced seam and with new SuperGroove™.

Hydraulic Pressure (psi)	Unseamed Flux (m ³ /m ² /s)	Seamed Flux (m ³ /m ² /s)	Flux difference (m ³ /m ² /s)	Seam correction factor*	Seam flux (m ³ /m ² /s)**	Seam flux, % of total flux of seamed sample
2	4.4 x 10 ⁻¹⁰	5.28 x 10 ⁻¹⁰	8.8 x 10 ⁻¹¹	13.7	6.42 x 10 ⁻¹²	1.2%
5	1.37 x 10 ⁻⁹	1.63 x 10 ⁻⁹	2.6 x 10 ⁻¹⁰	13.7	1.90 x 10 ⁻¹¹	1.2%
10	3.41 x 10 ⁻⁹	3.85 x 10 ⁻⁹	4.4 x 10 ⁻¹⁰	13.7	3.21 x 10 ⁻¹⁰	0.8%

*Laboratory tests are performed with 13.7 times more seam length (per unit area of GCL) than in field seams.
 **Flux difference divided by seam correction factor results in estimated preferential flow per unit area through field seam.

The test data shows that in all test conditions, there is a very small component of the total flux that is attributable to the overlapped seams. Expressed as a percentage of total seam area (3.9% on full-size GCL rolls laid in a large area, it can be seen that the percentage of total seam flux is proportionally less than the percentage of seamed area. Thus, it can be concluded that SuperGroove seams function effectively.

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It should be noted that the SuperGroove does not appear on end-of-roll overlaps. CETCO recommends the continued use of supplemental bentonite for all end-of-roll overlaps of Bentomat.

Bentomat—the GCL with the Winning Edge™

The Winning Edge, featuring the SuperGroove, comes on all orders of Bentomat ST, Bentomat DN, Bentomat SDN and Bentomat YSDN. For more information about the Winning Edge, contact your local CETCO representative.

References

SGI Project No. SGI1029, Document No. SGI 01071, "Final Report, Large-Scale Flow Rate Testing, Seamed and Unseamed Bentomat GCL," 3 August 2001.

SGI Project No. SGI1029, Document No. SGI 01071, SGI02037, "Final Report, Large-Scale Flow Rate Testing, Seamed and Unseamed Bentomat GCL," 4 February 2002.

1



FAQs ABOUT THE WINNING EDGE

Does the bentonite fall out of the SuperGroove during handling? No. CETCO's production process allows most of the bentonite to remain within the SuperGroove. Even if small amounts of bentonite are lost during installation, the resulting void spaces are rapidly filled by swelling bentonite particles immediately adjacent to the SuperGroove.

Will the SuperGroove affect the strength of the Bentomat? No. The narrow groove affects a tiny percentage of one geotextile component of Bentomat. The nonwoven geotextile is still securely needlepunched on either side of the SuperGroove and therefore does not affect the shear or tensile strength of the product.

Will bentonite extrusion from the SuperGroove leave a void where preferential leakage can occur downward through the GCL? No. The bentonite does not leave a large void, and the SuperGroove is located only where there is already a double layer of bentonite (in the overlap), so there is no possibility of a "short circuit" around or through it.

How do I know the SuperGroove is really present? The SuperGroove is on the bottom of the Bentomat, such that it faces the installer and inspector as the roll is unrolled and installed. The SuperGroove is in plain sight throughout the deployment process. Random checks after installation can also be included in a CQA plan as needed to document its continuous presence.

Is the SuperGroove present in the upper geotextile component of Bentomat also? No. It is only present in the lower geotextile.

How do I specify the Winning Edge? CETCO has modified its GCL specification guidelines to include generic language regarding GCL edge treatment. Please visit our GCL engineering website for the latest Bentomat specification document.

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Geomembrane Data Sheet



Domtar Paper Landfill Closure
Plymouth, NC

This is to confirm that the requirements for Agru America's 40 mil LLDPE Microspike[®] material shall meet the property requirements in the Table 02072-2, Page 02072-8 of the specifications.

Paul Barker

Paul W. Barker
Technical Director

Date: September 22, 2010



Domtar Paper Landfill Closure
Plymouth, NC

Agru America certifies that no reclaimed polymer will be added to the resin and no more than 10% rework of the same type of material will be added to the resin during geomembrane manufacturing.

A handwritten signature in black ink that reads "Paul W. Barker" followed by a circular flourish.

Paul W. Barker
Technical Director

Date: September 22, 2010

For more information and technical assistance contact:

Chevron Phillips Chemical Company LP
P.O. Box 4910
The Woodlands, TX 77387-4910
800.231.1212



PREMIUM EXTRUSION AND RIGID PACKAGING RESINS

Marlex® 7104

LINEAR LOW DENSITY POLYETHYLENE

This linear low density, high molecular weight hexene copolymer is tailored for sheet and geomembrane applications that require:

- Outstanding ESCR
- Good melt strength
- Excellent flexibility
- Good processability
- Good gloss
- High coefficient-of-friction values

Typical sheet applications for 7104 include:

- Coextruded cap layers on HDPE
- Blends with HDPE

This resin meets these specifications:

- ASTM D4976 - PE 215
- FDA 21 CFR 177.1520(c) 3.2a, use conditions B through H per 21 CFR 176.170(c)

Typical geomembrane applications for 7104 include:

- Landfill covers
- Flat and round-die products

NOMINAL PHYSICAL PROPERTIES ⁽¹⁾	English	SI	Method
Density	---	0.918 g/cm ³	ASTM D1505
Melt Index, 190/2.16	---	0.35 g/10 min	ASTM D1238
Tensile Strength at Yield, 2 in/min, Type IV bar	1,600 psi	11 MPa	ASTM D638
Elongation at Break, 2 in/min, Type IV bar	700%	700%	ASTM D638
Flexural Modulus, Tangent - 16:1 span:depth, 0.5 in/min	60,000 psi	410 MPa	ASTM D790
ESCR, Condition B (10% Igepal), F ₅₀	>2,000 h	>2,000 h	ASTM D1693
ESCR, Condition C (100% Igepal), F ₅₀	>2,000 h	>2,000 h	ASTM D1693
SP-NCTL	>1,000 h	>1,000 h	ASTM D5397 (Appendix)
Durometer Hardness, Type D (Shore D)	51	51	ASTM D2240
Vicat Softening Temperature, Loading 1, Rate A	212°F	100°C	ASTM D1525
Heat Deflection Temperature, 66 psi, Method A	123°F	51°C	ASTM D648
Brittleness Temperature, Type A, Type I specimen	<-103°F	<-75°C	ASTM D746
Oxidative Induction Time, 200°C	>100 min	>100 min	ASTM D3895

1. The nominal properties reported herein are typical of the product, but do not reflect normal testing variance and therefore should not be used for specification purposes. Values are rounded. The physical properties were determined on compression molded specimens that were prepared in accordance with Procedure C of ASTM D4703, Annex A1.

MSDS #240370

Revision Date July, 2004

Another quality product from



Before using this product, the user is advised and cautioned to make its own determination and assessment of the safety and suitability of the product for the specific use in question and is further advised against relying on the information contained herein as it may relate to any specific use or application. It is the ultimate responsibility of the user to ensure that the product is suited and the information is applicable to the user's specific application. Chevron Phillips Chemical Company LP does not make, and expressly disclaims, all warranties, including warranties of merchantability or fitness for a particular purpose, regardless of whether oral or written, express or implied, or allegedly arising from any usage of any trade or from any course of dealing in connection with the use of the information contained herein or the product itself. The user expressly assumes all risk and liability, whether based in contract, tort or otherwise, in connection with the use of the information contained herein or the product itself. Further, information contained herein is given without reference to any intellectual property issues, as well as federal, state or local laws which may be encountered in the use thereof. Such questions should be investigated by the user.

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Domtar Paper Landfill Closure
Plymouth, NC

Agru America confirms that each roll shall identify the manufacturer's name, product identification, thickness, roll number, length and width.

A handwritten signature in cursive script that reads "Paul Barker" followed by a circled "P" or similar mark.

Paul W. Barker
Technical Director

Date: September 22, 2010



Domtar Paper Landfill Closure
Plymouth, NC

This is to confirm that all extrudate is manufactured by one Manufacturer, Agru America, Inc. and the resin is supplied from the same supplier, has the same properties, and matches the sheet resin.

Paul Barker (with a circled checkmark)

Paul W. Barker
Technical Director

Date: September 22, 2010

Geotextile Cushion Data Sheet



SKAPS Industries (Nonwoven Division)
 335, Athena Drive
 Athens, GA 30601 (U.S.A.)
 Phone (706) 354-3700 Fax (706) 354-3737
 E-mail: info@skaps.com

Sales Office:
 Engineered Synthetic Product Inc.
 Phone: (770)564-1857
 Fax: (770)564-1818

October 29, 2010
Chesapeake Containment Systems, Inc.

Ref : Domtar Paper
PO : PO10-084

Dear Sir/Madam:

This is to certify that SKAPS GE320 is a high quality needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, randomly networked to form a high strength dimensionally stable fabric. SKAPS GE320 resists ultraviolet deterioration, rotting, biological degradation. The fabric is inert to commonly encountered soil chemicals. Polypropylene is stable within a pH range of 2 to 13. SKAPS GE320 conforms to the property values listed below:

PROPERTY	TEST METHOD	UNITS	M.A.R.V. Minimum Average Roll Value
Weight	ASTM D 5261	oz/sy (g/m ²)	32.00 (1085)
Grab Tensile	ASTM D 4632	lbs (kN)	600 (2.67)
Grab Elongation	ASTM D 4632	%	50
Trapezoidal Tear	ASTM D 4533	lbs (kN)	270 (1.20)
Puncture Resistance	ASTM D 4833	lbs (kN)	350 (1.56)
UV Resistance	ASTM D 4355	%/hrs	70/500

Notes:

* At the time of manufacturing. Handling may change these properties.

ANURAG SHAH
 QUALITY CONTROL MANAGER

www.skaps.com

www.espgeosynthetics.com

Geotextile Data Sheet

PRODUCT DATA SHEET

GEOTEX® 861

GEOTEX 861 is a polypropylene, staple fiber, needlepunched nonwoven geotextile produced by Propex and will meet the following Minimum Average Roll Values (MARV) when tested in accordance with the methods listed below. The fibers are needled to form a stable network that retains dimensional stability relative to each other. The geotextile is resistant to ultraviolet degradation and to biological and chemical environments normally found in soils.

GEOTEX 861 conforms to the property values listed below.¹ Propex performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute - Laboratory Accreditation Program (GAI-LAP).

PROPERTY	TEST METHOD	MARV ²	
		ENGLISH	METRIC
Physical			
Mass/Unit Area	ASTM D-5261	8.0 oz/yd ²	271 g/m ²
Thickness	ASTM D-5199	90 mils	2.3 mm
Mechanical			
Tensile Strength (Grab)	ASTM D-4632	220 lbs	979 N
Elongation	ASTM D-4632	50%	50%
Puncture	ASTM D-4833	135 lbs	601 N
CBR Puncture	ASTM D-6241	575 lbs	2558 N
Mullen Burst	ASTM D-3786	420 psi	2895 kPa
Trapezoidal Tear	ASTM D-4533	95 lbs	423 N
Durability			
UV Resistance	ASTM D-4355	70%	70%
Hydraulic			
Apparent Opening Size (AOS) ³	ASTM D-4751	80 US Std. Sieve	0.180 mm
Permittivity	ASTM D-4491	1.5 sec ⁻¹	1.5 sec ⁻¹
Permeability	ASTM D-4491	0.38 cm/sec	0.38 cm/sec
Water Flow Rate	ASTM D-4491	110 gpm/ft ²	4480 l/min/m ²
Roll Sizes		15 ft x 300 ft	4.57 m x 91.5 m

NOTES:

1. The property values listed above are effective 08/2006 and are subject to change without notice.
2. Values shown are in weaker principal direction. Minimum average roll values (MARV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
3. Maximum average roll value.



THE ADVANTAGE. CREATORS.™

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PO Box 22788
Chattanooga, TN 37422

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Drainage Geocomposite Data Sheet



**Engineered Synthetic
Products, Inc.**

October 26, 2010
Chesapeake Containment Systems Inc.
4622 Wilmslow Road
Baltimore, MD 21210

**Ref. : Domtar Paper, NC
Customer P.O. # PO 10-084
TN250-2-6/8**

We certify that the TN250-2-6/8 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
Geonet³				
Mass per Unit Area	ASTM D 5261	lbs/ft ²	0.180	Minimum
Thickness	ASTM D 5199	mil	225 ✓	Minimum
Carbon Black	ASTM D 4218	%	2.0 - 3.0 ✓	Range
Tensile Strength	ASTM D 5035	lbs/in	55 ✓	Minimum
Melt Flow	ASTM D 1238 ²	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 ⁵
Transmissivity ¹	ASTM D 4716	m ² /sec	2.0 x 10 ⁻⁴ ✓	MARV
Geotextile^{3 & 4}				
Fabric Weight	ASTM D 5261	oz/yd ²	6.0 ✓ 8.0 ✓	MARV
Grab Strength	ASTM D 4632	lbs	160 ✓ 220 ✓	MARV
Grab Elongation	ASTM D 4632	%	50 50	MARV
Tear Strength	ASTM D 4533	lbs	60 ✓ 85 ✓	MARV
Puncture Resistance	ASTM D 4833	lbs	90 ✓ 120 ✓	MARV
Water Flow Rate	ASTM D 4491	gpm/ft ²	110 ✓ 95 ✓	MARV
AOS	ASTM D 4751	US Sieve	70 ✓ 80 ✓	MARV
UV Resistance	ASTM D 4355	%/hrs	70/500 70/500	MARV

Notes:

- ✓ 1 Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.33 and a confining pressure of 250 psf between sand and liner after 15 mins.
- 2 Condition 190/2.16
- 3 Geotextile and Geonet properties are prior to lamination.
- 4 Geotextile data is provided by the supplier.
- 5 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

HDPE SDR17 Pipe Specifications



FORRER SUPPLY CO., INC.
 W194 N11811 McCORMICK DRIVE
 GERMANTOWN, WI 53022
 (262)255-3030 FAX(262)255-4064

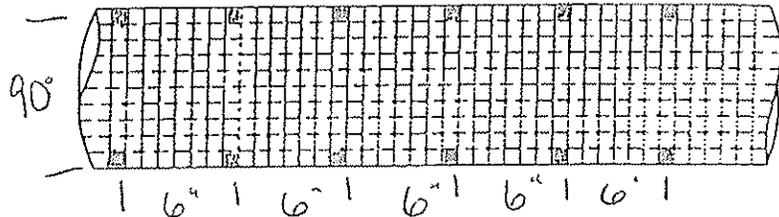
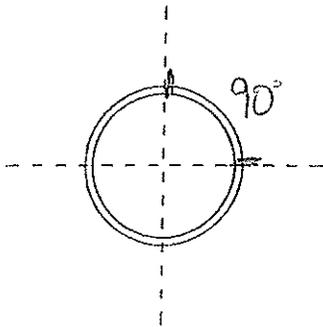
HDPE PERFORATED PIPE FORM

DATE: 9/27/10

CUSTOMER/JOB NAME: Ryan / Domtar

SALES PERSON/ASSISTANT WJ/TS

SHIP DATE: _____



PERFORATION SPECIFICATIONS:

1. PIPE SIZE, SDR, SERIES/ASTM: 4" SDR17 ✓
2. TOTAL NUMBER OF ROWS 2 ✓
3. DEGREES BETWEEN ROWS 90° ✓
4. HOLE DIAMETER 1/2" ✓
5. SPACING BETWEEN HOLES 6" ✓
6. STAGGERED YES / NO _____
7. TOTAL FEET OF PIPE TO BE PERFORATED 760' ✓
8. ADDITIONAL NOTES: _____

40' STICKS

50' STICKS

CUSTOMER APPROVAL:

SHOP USE ONLY

START DATE _____	FINISH DATE: _____	NUMBER OF PEOPLE: _____	TOTAL MANHOURS _____
START TIME _____	FINISH TIME: _____	TOTAL HOURS _____	INITIALS _____



JMM HIGH DENSITY POLYETHYLENE (HDPE) PE4710 PRODUCT SPECIFICATION

Description:

JMM manufactures High Density Polyethylene (HDPE) water pressure pipes for municipal and industrial transmission systems. Our pressure pipe is used in many types of applications such as potable water, sewer, drain, mining, irrigation, slip lining, and reclaimed water.

Materials:

JMM HDPE pressure pipe is manufactured with premium, highly engineered PE4710 resin that provides maximum performance benefits to service today's municipal and industrial water needs. The PE4710 material conforms to ASTM D3350 with the cell classification of 445574C/E and is listed with the Plastic Pipe Institute's (PPI) TR4. It is formulated with carbon black and/or ultraviolet stabilizer for maximum protection against UV rays for added assurance.

Size	Type	DR	Standard (If Applicable)
4" – 63"	IPS / DIPS	7 – 41	ASTM F714

Quality Assurance:

JMM takes great pride in the quality and workmanship of all of our products. JMM quality control programs monitor three critical aspects of the manufacturing process: the raw material, pipe production, and the finished goods. Incoming raw material is inspected and tested to ensure the material meets all applicable requirements before its release for production. During production, the pipe will be examined and pipe samples will be collected for physical verification and testing for compliance. The finished product is subjected to further visual inspection to ensure it has met all the appropriate specifications and packaging requirements. Our pipes are continuously monitored throughout the entire manufacturing process to validate that they are in accordance with all applicable specifications. Certificates of Compliance are available upon request.

Lengths & Bending Radius:

Standard laying lengths of HDPE pressure water pipe is 40/50 foot lengths. Pipe sizes under 6" may be coiled at continuous longer lengths upon request.

Marking:

The standard markings printed on JMM pipes generally consist of the JMM logo, nominal size and OD base, material code, dimension ratio, pressure class, current AWWA C906 (if applicable), ASTM F714 (if applicable), and production date (day, month, & year).

✘

Pipe Size	DR 21 (80 psi)			DR 26 (64 psi)			DR 32.5 (50 psi)			
	Avg. OD	Min. Wall	Avg. ID	Weight lb/ft	Min. Wall	Avg. ID	Weight lb/ft	Min. Wall	Avg. ID	Weight lb/ft
3	3.500	0.167	3.146	0.77	0.135	3.214	0.63	0.108	3.271	0.50
4	4.500	0.214	4.046	1.26	0.173	4.133	1.03	0.138	4.207	0.83
5-3/8	5.375	0.256	4.832	1.80	0.207	4.936	1.47	0.165	5.025	1.18
5	5.563	0.265	5.001	1.93	0.214	5.109	1.57	0.171	5.203	1.27
6	6.625	0.315	5.957	2.73	0.255	6.084	2.23	0.204	6.193	1.80
7	7.125	0.339	6.406	3.16	0.274	6.544	2.58	0.219	6.661	2.08
8	8.625	0.411	7.754	4.64	0.332	7.921	3.79	0.265	8.063	3.05
10	10.750	0.512	9.665	7.21	0.413	9.874	5.67	0.331	10.048	4.75
12	12.750	0.607	11.443	10.13	0.490	11.711	8.26	0.392	11.919	6.67
14	14.000	0.667	12.586	12.22	0.538	12.859	9.96	0.431	13.086	8.05
16	16.000	0.762	14.385	15.96	0.615	14.696	13.01	0.492	14.957	10.50
18	18.000	0.857	16.183	20.20	0.692	16.533	16.47	0.554	16.826	13.30
20	20.000	0.952	17.982	24.93	0.769	18.370	20.34	0.615	18.694	16.41
22	22.000	1.048	19.778	30.18	0.846	20.206	24.61	0.677	20.565	19.86
24	24.000	1.143	21.577	35.19	0.923	22.043	29.33	0.738	22.435	23.62
26	26.000	1.238	23.375	42.14	1.000	23.880	34.39	0.800	24.304	27.74
28	28.000	1.333	25.174	49.66	1.077	25.717	39.88	0.862	26.173	32.19
30	30.000	1.429	26.971	56.12	1.154	27.554	45.79	0.923	28.043	36.93
32	32.000	1.542	28.720	63.64	1.231	29.390	52.10	0.985	29.912	42.04
34	34.000	1.619	30.568	72.06	1.308	31.227	59.81	1.046	31.782	47.43
36	36.000	1.714	32.366	80.78	1.385	33.064	68.94	1.108	33.651	53.20
42	42.000	2.000	37.760	109.97	1.615	38.576	99.71	1.292	39.261	72.37
48	48.000	2.286	43.154	143.65	1.846	44.066	117.18	1.477	44.869	94.56
54	54.000	2.571	48.549	181.75	2.077	49.597	148.33	1.622	50.477	119.70
63	63.000	3.000	56.640	247.42	2.423	57.863	201.88	1.938	58.891	162.84

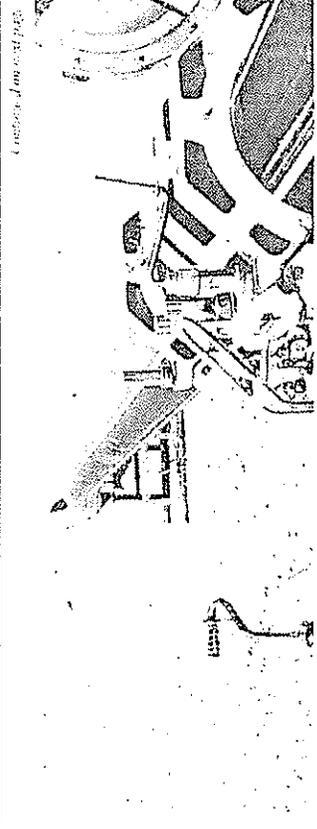
* For custom DR, perforated pipe, or sizes larger than 36" DR, please contact J-M PE Sales at (800) 821-4400 for availability.
 * All dimensions are in inches unless noted otherwise.

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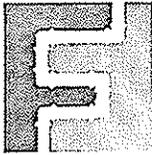
TABLE 3 J-M HDPE DUCTILE IRON PIPE SIZE (DIPS) PRESSURE PIPE

Pipe Size	Avg. OD	DR 7 (265 psi)			DR 9 (200 psi)			DR 11 (160 psi)		
		Min. Wall	Avg. ID	Weight lb/ft	Min. Wall	Avg. ID	Weight lb/ft	Min. Wall	Avg. ID	Weight lb/ft
4	4.800	0.686	3.346	3.85	0.533	3.670	3.11	0.436	3.876	2.61
6	6.900	0.946	4.894	7.96	0.767	5.274	6.43	0.627	5.571	5.39
8	9.050	1.293	6.309	13.69	1.006	6.917	11.07	0.823	7.305	9.28
10	11.100	1.586	7.738	20.59	1.233	8.486	16.65	1.009	8.961	13.95
12	13.200	1.886	9.202	29.12	1.467	10.090	23.55	1.200	10.656	19.73
14	15.300	2.186	10.666	39.12	1.700	11.696	31.64	1.391	12.351	26.51
16	17.400	2.486	12.130	50.60	1.933	13.302	40.92	1.582	14.046	34.29
18	19.500	2.786	13.594	63.55	2.167	14.906	51.39	1.773	15.741	43.07
20	21.600	3.086	15.058	77.98	2.403	16.512	63.05	1.964	17.436	52.85
24	25.800				2.867	19.722	89.96	2.345	20.829	75.38
30	32.000							2.909	25.833	115.97
36										
42										
48										
54										



HDPE Pressure Pipe

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Forrer Supply Company, Inc.

W194 N11811 McCormick Drive • PO Box 220 • Germantown, WI 53022

Phone (262) 255-3030 Toll Free (800) 255-1030 Fax, Sales (262) 255-2088 Fax, Admin (262) 255-2088

www.forrersupply.com

PE3408 Resin Physical Properties

Property	UNITS		TYPICAL VALUES		TEST METHODS
	S.I.	ENG.	S.I.	ENG.	
Flow Rate	g/10 min.	-	>8	-	ASTM D 1238 (1)
Melt Index	g/10 min.	-	<0.15	-	ASTM D 1238 (2)
Density (Base)	g/cm ³	-	0.945	-	ASTM D 1505
Density (Compounded)	g/cm ³	-	0.955	-	ASTM D 1505
Tensile Strength at Yield	MPa	psi	22	3,200	ASTM D 638 (3)
Tesile Strength at Break	MPa	psi	31	4,500	ASTM D 638 (3)
Ultimate Elongation	%	%	>800	>800	ASTM D 638 (3)
Secant Flexural Modulus (@ 2% strain)	MPa	psi	820	119,000	ASTM D 790
Tangent Flexural Modulus	MPa	psi	1,200	175,000	ASTM D 790
Compressive Strength	MPa	psi	>11	>1,600	ASTM D 695
Izod Impact Resistance	J/cm	ft-lbf/in.	>213	>4.0	ASTM D 256
Vicat Softening Point	°C	°F	124	255	ASTM D 1525
Melting Point	°C	°F	128	262	ASTM D 3417
Thermal Stability	°C	°F	>220	>428	ASTM D 3350
Environmental Stress Crack Resistance, F ₀	hours	hours	>5000	>5000 ✓	ASTM D 1693 (4)
PENT Lifetime (Slow Crack Growth Resistance)	hours	hours	>100	>100	ASTM F 1473
Brittleness Temperature	°C	°F	<-78	<-100	ASTM D 746
Coefficient of Linear Thermal Expansion	cm/cm°C	in/in/°F	1.4 x 10 ⁻⁴	0.8 x 10 ⁻⁴	ASTM D 696
Hardness, Shore D	-	-	60	60	ASTM D 2240
Pipe Ring Tensile Strength at Yield	Mpa	psi	23	3,300	ASTM D 2290 (5)
Long Term Hydrostatic Strength, Nominal @ 23°C	Mpa	psi	11	1,600	ASTM D 2837 (5)
Sustained Pressure Tests					ASTM D 1598 (5)
- at 725 psi and 80°C	hours	hours	1,000	1,000	
- at 580 psi and 80°C	hours	hours	3,500	3,500	
UV Stabilizer (Carbon Black)	%	%	>2.0	>2.0	ASTM D 4218
Material Designation			PE3408		PPI/ASTM
Material Classification			III C 5 P34		ASTM D 1248
Cell Classification			345464C ✓ OK		ASTM D 3350

- (1) Condition 190/21.6
- (2) Condition 190/2.16
- (3) Extension rate 2 inches/minute
- (4) Condition C
- (5) 1 inch nominal diameter black laboratory pipe, SDR 13.5

Germantown, WI • Stockton, CA • Troy, IL • Indianapolis, IN • Eldridge, IA • Grand Ledge, MI
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Revised 03-17-2008

PE3608 (PE3408)

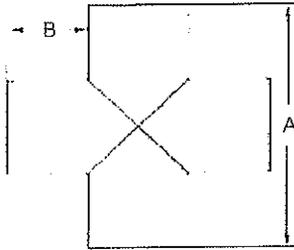
IPS Size and Dimension Data

Municipal & Industrial & Energy Series/IPS Pipe Data

Pressure Ratings are calculated using 0.50 design factor for HDPE at 73°F as listed in PPI TR-4 for PE 3608 materials. Temperature, Chemical, and Environmental use considerations may require use of additional design factors.

IPS Pipe Size	Nominal OD (in)	100 psi DR 17.0			80 psi DR 21.0			65 psi DR 26.0			50 psi DR 32.5			IPS Pipe Size
		Minimum Wall (in)	Average ID (in)	Weight (lbs/ft)	Minimum Wall (in)	Average ID (in)	Weight (lbs/ft)	Minimum Wall (in)	Average ID (in)	Weight (lbs/ft)	Minimum Wall (in)	Average ID (in)	Weight (lbs/ft)	
1 1/4"	1.660													1 1/4"
1 1/2"	1.900													1 1/2"
2"	2.375	0.140	2.078	0.43										2"
3"	3.500	0.205	3.063	0.93										3"
4"	4.500	0.265	3.938	1.54	0.214	4.046	1.26							4"
6"	6.625	0.390	5.798	3.34	0.315	5.957	2.74	0.255	6.084	2.23	0.204	6.193	1.80	6"
8"	8.625	0.507	7.550	5.66	0.411	7.754	4.64	0.332	7.921	3.78	0.265	8.063	3.05	8"
10"	10.750	0.632	9.410	8.79	0.512	9.665	7.20	0.413	9.874	5.88	0.331	10.048	4.74	10"
12"	12.750	0.750	11.160	12.36	0.607	11.463	10.13	0.490	11.711	8.27	0.392	11.919	6.67	12"
14"	14.000	0.824	12.253	14.90	0.667	12.586	12.22	0.538	12.859	9.97	0.431	13.086	8.04	14"
16"	16.000	0.941	14.005	19.47	0.762	14.385	15.96	0.615	14.696	13.02	0.492	14.957	10.51	16"
18"	18.000	1.059	15.755	24.64	0.857	16.183	20.20	0.692	16.533	16.48	0.554	16.826	13.30	18"
20"	20.000	1.176	17.507	30.42	0.952	17.982	24.94	0.769	18.370	20.35	0.615	18.696	16.42	20"
22"	22.000	1.294	19.257	36.81	1.048	19.778	30.17	0.846	20.206	24.62	0.677	20.565	19.86	22"
24"	24.000	1.412	21.007	43.80	1.143	21.577	35.91	0.923	22.043	29.30	0.738	22.435	23.64	24"
26"	26.000	1.529	22.759	51.41	1.238	23.375	42.14	1.000	23.860	34.39	0.800	24.304	27.74	26"
28"	28.000	1.647	24.508	59.62	1.333	26.174	48.87	1.077	25.717	39.88	0.862	26.173	32.17	28"
30"	30.000	1.765	26.258	68.44	1.429	26.971	56.11	1.154	27.554	45.78	0.923	28.043	36.93	30"
32"	32.000	1.882	28.010	77.87	1.524	28.769	63.84	1.231	29.390	52.09	0.985	29.912	42.02	32"
34"	34.000	2.000	29.760	87.91	1.619	30.566	72.06	1.308	31.227	58.80	1.046	31.782	47.44	34"
36"	36.000	2.118	31.510	98.55	1.714	32.366	80.79	1.385	33.064	65.92	1.108	33.551	53.19	36"
42"	42.000	2.471	36.761	134.14	2.000	37.760	109.97	1.615	36.576	89.73	1.292	39.261	72.39	42"
48"	48.000	2.824	42.013	175.21	2.286	43.154	143.63	1.846	44.086	117.19	1.477	44.869	94.55	48"
54"	54.000				2.571	48.549	181.78	2.077	49.597	148.32	1.662	50.477	119.67	54"

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**Fabricated Line
Cross - IPS**
(Dimensions in Inches)

IPS Size	A	B	SDR	WPR (psi)	Weight (lbs)
2"	9.0	3.3	11	160	2
3"	10.3	3.4	11	160	3
4"	16.5	6.0	7	200	10
			9	160	8
			11	128	7
6"	18.6	6.0	7	200	22
			9	160	18
			11	128	16
8"	24.6	8.0	7	200	50
			9	160	41
			11	128	34
10"	26.8	8.0	7	200	83
			9	160	67
			11	128	55
			17	80	38
12"	28.8	8.0	7	200	123
			9	160	99
			11	128	84
			17	80	56
14"	32.0	9.0	7	200	165
			9	160	132
			11	128	109
			17	80	74
16"	34.0	9.0	7	200	236
			9	160	1192
			11	128	159
18"	38.0	10.0	7	200	328
			9	160	267
			11	128	224
			17	80	152

• IPS Line Cross Continued Next Page •

Other sizes and DR's not listed are available - Call For Quick Quote

Sizes 24" and smaller meet AWWA C906 fitting requirements, sizes 26" and larger are quoted per fitting.

WPR represents the long term hydrostatic pressure capacity of the fabricated cross with a 1.5:1 safety factor. To achieve a 2:1 safety factor like that of the straight pipe the WPR will be reduced.

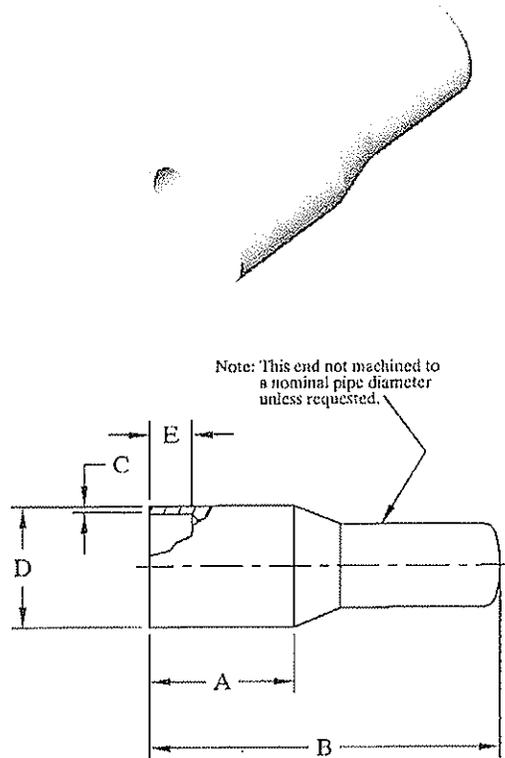
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END CAPS

(BUTT)

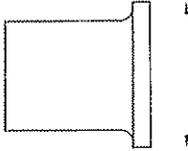
BUTT FUSION FITTINGS

FOR REFERENCE ONLY



NOMINAL SIZE	DIMENSION A	DIMENSION B	DIMENSION C	DIAMETER D	DIAMETER E
2" IPS (SDR 11)	3.13	7.00	.216 +.043	2.375 ±.010	1.00 MIN.
	79.5 mm	177.8 mm	5.49 mm	60.33 mm	25.4 mm
3" IPS (SDR 11)	2.88	7.43	.318 +.064	3.500 ±.012	1.00 MIN.
	73.2 mm	188.7 mm	8.08 mm	88.90 mm	25.4 mm
4" IPS (SDR 11)	3.00	7.75	.409 +.082	4.500 ±.015	1.00 MIN.
	76.2 mm	196.9 mm	10.39 mm	114.30 mm	25.4 mm
6" IPS (SDR 11)	4.22	10.25	.603 +.121	6.625 ±.018	1.37 MIN.
	107.2 mm	260.4 mm	15.32 mm	168.28 mm	34.8 mm
8" IPS (SDR 11)	4.00	11.13	.785 +.157	8.625 ±.025	3.00 MIN.
	101.6 mm	282.7 mm	19.94 mm	219.08 mm	76.2 mm

ns shown are standard sizes and wall thicknesses. Fitting sizes other than those shown can be furnished upon request.



IPS Flange Adapters

PRODUCED TO AWWA C901-02/C906-99 AND
ASTM D2513 & D3261

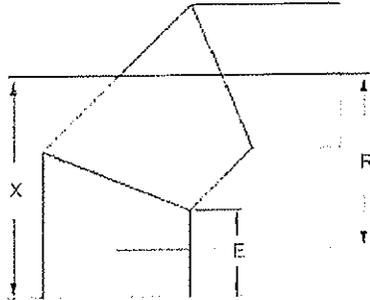
Nominal Size Actual Size	DR	Dimensions B x C (in)	Dimension T (in)	Package Qty.	Package Weight (lbs.)	Std. Item	FM		Reference Code
							150	200	
1 1/2" 1.900"	DR 9	3 1/8 x 6	0.4	10	4	Y			*M1.5*ADFL*
	DR 11		0.3		6				
2" 2.375"	DR 7	3 3/4 x 6	0.4	15	7	Y		x	*M020*ADFL*
	DR 9				6				
	DR 11	3 3/4 x 6 1/8	0.3		5	N	x		
	DR 17								
3" 3.500"	DR 7	4 3/4 x 6	0.6	12	14	Y		x	*M030*ADFL*
	DR 9				12				
	DR 11	4 5/8 x 6 1/8	0.4		10	N	x		
	DR 17								
4" 4.500"	DR 7	6 5/8 x 6	0.8	10	23	Y		x	*M040*ADFL*
	DR 9				21				
	DR 11	6 1/8 x 7 1/8	0.5		17	N	x		
	DR 17				13				
6" 6.625"	DR 7	8 5/8 x 8 1/8	1.1	10	68	Y		x	*M060*ADFL*
	DR 9				66				
	DR 11	8 1/8 x 8	0.7		60	N	x		
	DR 17				50				
8" 8.625"	DR 7	10 3/4 x 8 5/8	1.4	1	11	Y		x	*M080*ADFL*
	DR 9				10				
	DR 11				9			x	
	DR 17	10 3/4 x 11	0.9		5	N			
	DR 21				3				
	DR 26								
10" 10.750"	DR 7	13 x 8 3/4	1.7	1	17	Y		x	*M100*ADFL*
	DR 9				15				
	DR 11				11			x	
	DR 17	13 x 12	1.1		8	N			
	DR 21				7				
	DR 26				6				
12" 12.750"	DR 7	15 1/8 x 9 1/8	2.1	1	25	Y		x	*M120*ADFL*
	DR 9				22				
	DR 11				17			x	
	DR 17	15 1/2 x 12	1.3		13	N			
	DR 21				11				
	DR 26				9				

x - Indicates certification/approval for application at additional charge.
 - Dimensions and weights are approximate and subject to change.
 - Drawing No. CU70D275

INDEPENDENT PIPE PRODUCTS



"BETTER BY DESIGN"



IPS 90° 3 Segment Elbow Fabricated (1/4 Bend) (Dimensions in Inches)

IPS Size	R/D Ratio	R	X	E	SDR	WPR (psi)	Weight (lbs)
4"	1.5	6.8	10.9	6.0	7	200	7
					9	160	6
					11&17	128/80	5
6"	1.5	10.0	13.2	6.0	7	200	16
					9	160	13
					11&17	128/80	11
8"	1.25	10.7	14.6	6.5	7	200	29
					9	160	23
					11	128	20
					17	80	14
10"	1.25	13.5	16.6	6.5	7	200	51
					9	160	42
					11	128	34
					17	80	24
12"	1.25	16.0	20.0	8.0	7	200	84
					9	160	68
					11	128	57
					17	80	39
14"	1.05	14.5	19.4	8.0	7	200	99
					9	160	80
					11	128	66
					17	80	45
16"	1.05	16.8	21.2	8.0	7	200	138
					9	160	112
					11	128	93
					17	80	63
18"	1.02	18.4	22.5	8.0	7	200	184
					9	160	150
					11	128	126
					17	80	85
20"	1.02	20.4	24.1	8.0	7	200	241
					9	160	196
					11	128	162
					17	80	111

• IPS 3 Segment 90's Continued Next Page •

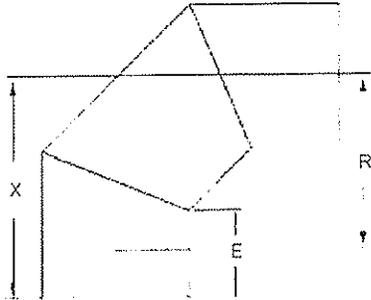
Other sizes, DR's and custom radius ell's not listed are available - Call For Quick Quote

Sizes 24" and smaller meet AWWA C906 fitting requirements, sizes 26" and larger are quoted per fitting.

INDEPENDENT PIPE PRODUCTS



"BETTER BY DESIGN"



IPS 90° 3 Segment Elbow Fabricated (1/4 Bend) (continued) (Dimensions in Inches)

IPS Size	R/D Ratio	R	X	E	SDR	WPR (psi)	Weight (lbs)
22"	1.02	22.4	25.7	8.0	7	200	308
					9	160	251
					11	128	209
					17	80	141
24"	1.02	24.5	27.3	8.0	7	200	394
					9	160	320
					11	128	267
					17	80	181
26"	1.02	26.5	30.9	10.0	9	160	421
					11	128	354
					17	80	239
28"	1.02	28.5	32.5	10.0	9	160	509
					11	128	427
					17	80	283
30"	1.02	30.5	34.1	10.0	11	128	510
					17	80	345
32"	1.20	38.0	38.9	10.0	11	128	738
					17	80	496
34"	1.20	41.0	41.0	10.0	11	128	871
					17	80	585
36"	1.20	43.0	42.6	10.0	11	128	1019
					17	80	686
42"	1.20	50.0	54.0	16.0	17	80	1050
					21	65	856
48"	1.20	58.0	59.9	16.0	21	65	1208
					26	50	984
54"	1.20	64.0	64.7	16.0	26	50	1401
					32.5	40	1126

Other sizes, DR's and custom radius ell's not listed are available - Call For Quick Quote

Sizes 24" and smaller meet AWWA C906 fitting requirements, sizes 26" and larger are quoted per fitting.

Call Toll FREE (800) 499-6927

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Fax (800) 499-7124

Issued January 1, 2005

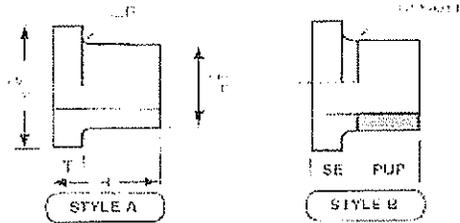
Version 1.3.1

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INDEPENDENT PIPE PRODUCTS



"BETTER BY DESIGN"



IPS Flange Adapters

Pressure Rated for DR Ordered
(Dimensions in Inches)

Nominal Size	H (OAL)	T	Face Diameter	R (Radius)	Style	DR	Weight (lbs)
3/4"	4.0	0.20	2.000	1/4	A	7-11	.1
1"	4.0	0.21	2.375	1/4	A	7-11	1
1-1/4"	4.0	0.25	2.750	1/4	A	7-11	2
1-1/2"	4.0	0.30	3.125	1/4	A	7-11	2
2"	5.5	0.39	3.900	1/4	A	7-9 11-17	1 1
3"	6.0	0.63	5.000	1/4	A	7-9 11-32.5	2 2
4"	6.0	0.75	6.600	3/8	A	7-9 11-32.5	3 3
5"	6.0	0.75	7.500	3/8	A	7-9 11-32.5	4 4
6"	8.0 1.00	1.13 1.00	8.500	3/8	A	7-9 11-32.5	8 7
8"	9.0 11.0	1.44 1.00	10.630	3/8	A	7-9 11-32.5	11 10
10"	9.0 12.0	2.00 1.25	12.750	3/8	A	7-9 11-32.5	19 18
12"	11.0	2.30 1.50	15.000	3/8	A	7-9 11-32.5	25 24
14"	11.0	1.60	17.500	1/2	A	11-32.5	40
16"	12.0	1.80	20.000	1/2	A	11-32.5	60
18"	12.0	2.00	21.120	1/2	A	11-32.5	64

• IPS Flange Adapters Continued Next Page •

Other sizes, styles, and DR's not listed are available - Call For Quick Quote

Sizes 24" and smaller meet AWWA C906 fitting requirements, sizes 26" and larger are quoted per fitting.

Call Toll FREE (800) 499-6927

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Fax (800) 499-7124

Issued January 1, 2005

Version 1.3.1

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G (HDPE) PHYSICAL PROPERTIES

Polystone® G Chemical Properties

Property	Units	ASTM Test	Value
Density	gm/cm ³	D792	0.95
Tensile Strength at Yield	psi	D638	3000
Flexural Modulus	psi	D790	175,000
Izod Impact-Notched @ 73°	ft-lbs/inch	D256	3.1
Heat Deflection Temperature 73°	°F@66 psi	D648	175
Mean Coefficient of Linear Thermal Expansion	in/in/°F	D696	7 x 10 ⁻⁵
Hardness	Shore D	D785	67
Water Absorption	%	D570	0<0.1

Values shown are averages and should not be used as contractual property values. Specific property value requirements should be specified in the purchase agreement.

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Site Design and Maintenance by Atlantic BT

**Corrugated PE Pipe
(Perforated/Nonperforated)**

ADS N-12® PLAIN END PIPE (per AASHTO) SPECIFICATION

Scope

This specification describes 4- through 60-inch (100 to 1500 mm) ADS N-12 plain end pipe (per AASHTO) for use in gravity-flow drainage applications.

Pipe Requirements

ADS N-12 plain end pipe (per AASHTO) shall have a smooth interior and annular exterior corrugations.

- 4- through 10-inch (100 to 250 mm) shall meet AASHTO M252, Type S.
- 12- through 60-inch (300 to 1500 mm) shall meet AASHTO M294, Type S or ASTM F2306.
- Manning's "n" value for use in design shall be 0.012.

Joint Performance

Pipe shall be joined with coupling bands covering at least two full corrugations on each end of the pipe. Standard connections shall meet or exceed the soil-tight requirements of AASHTO M252, AASHTO M294, or ASTM F2306. Gasketed connections shall incorporate a closed-cell synthetic expanded rubber gasket meeting the requirements of ASTM D1056 Grade 2A2. Gaskets, when applicable, shall be installed by the pipe manufacturer.

Fittings

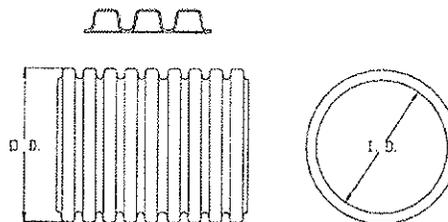
Fittings shall conform to AASHTO M252, AASHTO M294 or ASTM F2306.

Material Properties

Virgin material for pipe and fitting production shall be high density polyethylene conforming with the minimum requirements of cell classification 424420C for 4- through 10-inch (100 to 250 mm) diameters, and 435400C for 12- through 60-inch (300 to 1500 mm) diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%. The 12- through 60-inch (300 to 1500mm) virgin pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306 respectively.

Installation

Installation shall be in accordance with ASTM D2321 and ADS's published installation guidelines, with the exception that minimum cover in trafficked areas for 4- through 48-inch (100 to 1200 mm) diameters shall be one foot. (0.3 m) and for 54- and 60-inch (1350 and 1500 mm) diameters, the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 90%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.01. Contact your local ADS representative or visit our website at www.ads-pipe.com for a copy of the latest installation guidelines.



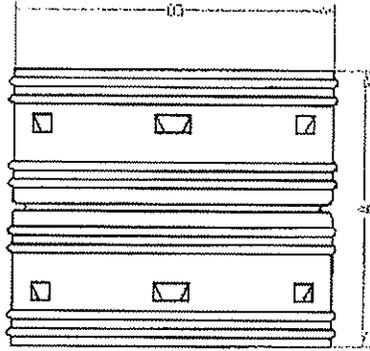
Pipe Dimensions

	Nominal Diameter, in (mm)													
Pipe I.D. in (mm)	4 (100)	6 (150)	8 (200)	10 (250)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	54* (1350)	60 (1500)
Pipe O.D.** in (mm)	4.8 (122)	6.9 (175)	9.1 (231)	11.4 (290)	14.5 (368)	18 (457)	22 (559)	28 (711)	36 (914)	42 (1067)	48 (1219)	54 (1372)	61 (1549)	67 (1702)
Perforations	All diameters available with or without perforations													

**Pipe O.D. values are provided for reference purposes only, values stated for 12- through 60-inch are ± 1 inch. Contact a sales representative for exact values.

EXTERNAL SNAP COUPLER

PART #	PIPE SIZE	A	B
0312AA	3 in (75 mm)	4.0 in (102 mm)	4.0 in (102 mm)
0412AA*	4 in (100 mm)	4.3 in (108 mm)	5.1 in (130 mm)
0512AA	5 in (125 mm)	4.4 in (111 mm)	6.3 in (159 mm)
0612AA	6 in (150 mm)	5.6 in (143 mm)	7.4 in (187 mm)
0812AA	8 in (200 mm)	6.0 in (152 mm)	10.0 in (254 mm)
1012AA	10 in (250 mm)	10.3 in (260 mm)	12.5 in (316 mm)

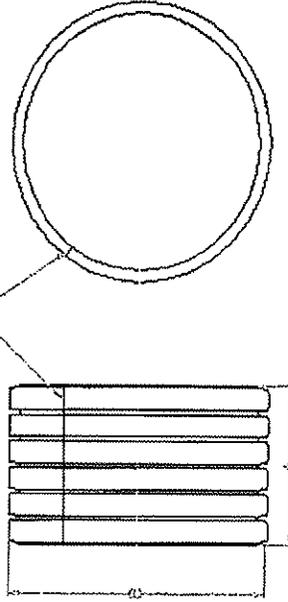


SINGLE WALL SPLIT COUPLER

PART #	PIPE SIZE	A	B
0311AA	3 in (75 mm)	3.0 in (76 mm)	4.0 in (102 mm)
0411AA	4 in (100 mm)	3.8 in (95 mm)	5.1 in (130 mm)
0511AA	5 in (125 mm)	4.0 in (102 mm)	6.3 in (159 mm)
0611AA	6 in (150 mm)	4.0 in (102 mm)	7.4 in (187 mm)
0811AA*	8 in (200 mm)	6.0 in (152 mm)	10.0 in (254 mm)
1011AA*	10 in (250 mm)	5.5 in (140 mm)	12.5 in (316 mm)
1211AA	12 in (300 mm)	8.3 in (210 mm)	15.5 in (394 mm)

COUPLERS BOUND BY SPECIFICATIONS OF
MATERIALS AND FINISHING OF
1011-14. SEE DRAWING 2030
CABLES. SEE DRAWING 2030

FACTORY CUT LINE



* DENOTES PARTS THAT CAN ALSO BE USED ON DUAL WALL PIPE

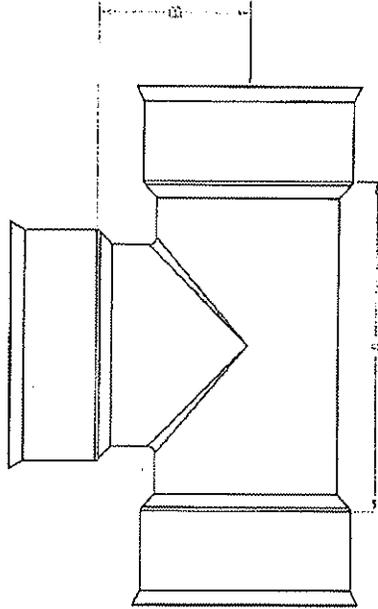
NOTE: ALL DIMENSIONS ARE NOMINAL

DRAWING #:	1000
DRAWN BY:	CRM
APPROVED BY:	JCB
REVISIONS:	NJP
	08:11:06
	08:22:07
	08:12:07



INJECTION MOLDED TEE
4" - 12" DIAMETER

PART #	PIPE SIZE	A	B	JOINT
0460ST	4 in (100 mm)	7.4 in (187 mm)	3.7 in (93 mm)	ST
0460WT	4 in (100 mm)	7.4 in (187 mm)	3.7 in (93 mm)	WT
0661ST	6 in (150 mm)	10.5 in (266 mm)	5.2 in (133 mm)	ST
0661WT	6 in (150 mm)	10.5 in (266 mm)	5.2 in (133 mm)	WT
0862ST	8 in (200 mm)	13.8 in (350 mm)	6.9 in (175 mm)	ST
0862WT	8 in (200 mm)	13.8 in (350 mm)	6.9 in (175 mm)	WT
1063ST	10 in (250 mm)	17.9 in (454 mm)	8.9 in (227 mm)	ST
1063WT	10 in (250 mm)	17.9 in (454 mm)	8.9 in (227 mm)	WT
1264ST	12 in (300 mm)	22.5 in (572 mm)	11.3 in (286 mm)	ST
1264WT	12 in (300 mm)	22.5 in (572 mm)	11.3 in (286 mm)	WT



NOTE:
FITTINGS WHOSE PART NUMBERS END WITH "WT"
HAVE WATER TIGHT BELL CONNECTIONS. WATER
TIGHT BELLS ARE SHOWN HERE IN THIS DRAWING AND
REQUIRE GASKETS TO BE FITTED TO DUAL WALL PIPE
TO FORM A WATER TIGHT JOINT. (GASKETS INCLUDED)

FITTINGS WHOSE PART NUMBERS END WITH "ST"
HAVE SOIL TIGHT BELL CONNECTIONS. SOIL TIGHT
BELLS HAVE MOLDED CLEATS AND REQUIRE NO
GASKET TO MAKE CONNECTION TO DUAL WALL PIPE.

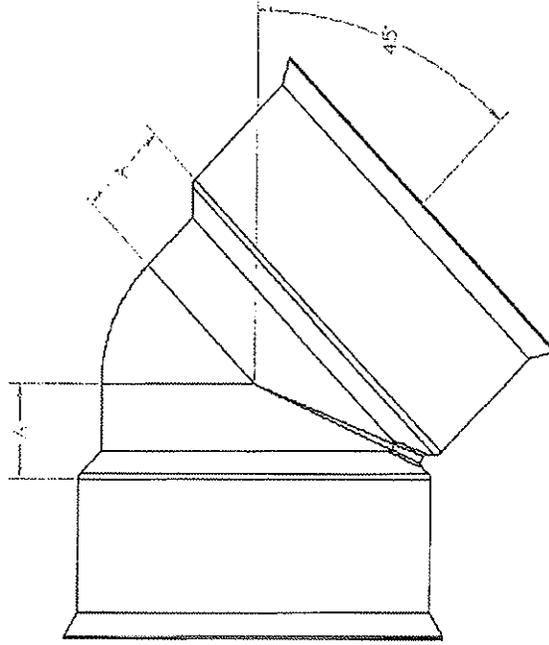
NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY



DRAWING #:	3000	JOB
DRAWN BY:	JOB	07.28.06
APPROVED BY:	JOB	06.26.07
REVISIONS:	NJP	06.15.07

INJECTION MOLDED 45° BEND
4" - 12" DIAMETER

PART #	PIPE SIZE	A	JOINT
0494ST	4 in (100 mm)	1.3 in (33 mm)	ST
0494WT	4 in (100 mm)	1.3 in (33 mm)	WT
0694ST	6 in (150 mm)	1.8 in (46 mm)	ST
0694WT	6 in (150 mm)	1.8 in (46 mm)	WT
0894ST	8 in (200 mm)	2.4 in (60 mm)	ST
0894WT	8 in (200 mm)	2.4 in (60 mm)	WT
1094ST	10 in (250 mm)	3.4 in (87 mm)	ST
1094WT	10 in (250 mm)	3.4 in (87 mm)	WT
1294ST	12 in (300 mm)	4.4 in (112 mm)	ST
1294WT	12 in (300 mm)	4.4 in (112 mm)	WT



NOTE:

FITTINGS WHOSE PART NUMBERS END WITH "WT"
HAVE WATER TIGHT BELL CONNECTIONS. WATER
TIGHT BELLS ARE SHOWN HERE IN THIS DRAWING AND
REQUIRE GASKETS TO BE FITTED TO DUAL WALL PIPE
TO FORM A WATER TIGHT JOINT. (GASKETS INCLUDED)

FITTINGS WHOSE PART NUMBERS END WITH "ST"
HAVE SOIL TIGHT BELL CONNECTIONS. SOIL TIGHT
BELLS HAVE MOLDED CLEATS AND REQUIRE NO
GASKET TO MAKE CONNECTION TO DUAL WALL PIPE.

NOTE: ALL FITTINGS DIMENSIONS ARE FOR REFERENCE ONLY

DRAWING #:	3200
DRAWN BY:	JCB
APPROVED BY:	
REVISIONS:	NJP
	07.31.06
	08.15.07



Seed and Fertilizer Data Sheets

Photographic Log

Client Name: Domtar Paper Company, LLC		Site Location: Plymouth, North Carolina	Project No.: 05749.46.001
Photo No. 1	Date		
Description Seed that was planted on the final cover.			

Photo No. 2	Date		
Description Seed that was planted on the final cover.			

Photographic Log

Client Name: Domtar Paper Company, LLC	Site Location: Plymouth, North Carolina	Project No.: 05749.46.001
--	---	-------------------------------------

Photo No. 3	Date	
Description Seed that was planted on the final cover.		

Photo No. 4	Date	
Description Seed that was planted on the final cover.		

General Maintenance, Inc

P O Box 578
Plymouth, NC 27962
(252) 793 2770

Attn: Joe VanRemortel

General Maintenance Inc spread 12.5 tons of 10-10-10 fertilizer on Landfill job no 7017 per RMT specifications.



Robert Saunders

(252) 793-2770

saunders@greenvillenc.com

General Maintenance, Inc

**Erosion Control and Revegetation Mat (ECRM)
and Turf Reinforcement Mat (TRM)**



EASTCOAST
erosion blankets

443 Bricker Road
Bernville, PA 19506
610-488-8496
fax: 610-488-8494
www.erosionblankets.com

ECS-2™

TWELVE MONTH STRAW DOUBLE NET BLANKET

Intended for quick vegetation growth and to degrade for up to 12 months, the ECS-2™ is an erosion control blanket designed for moderate flow rainfall and runoff and on slopes ranging from 3:1 to 2:1. The blanket is made from 100% agricultural straw that is stitched with degradable thread between two layers of degradable polypropylene netting. The double netting ensures more efficient erosion protection and plant growth than the single layer of netting.

For best performance, the following installation guidelines are recommended:

- Final grade must be properly prepared and free of ruts or projecting stones to insure complete soil contact.
- Seed, fertilize, and lime must be distributed before the installation of the blankets.
- Blankets should be unrolled as close to the intended position as possible.
- To eliminate the blankets from being lifted by wind during installation, the use of temporary weights is suggested.
- Stretch the roll to remove folds.
- Blankets must be in direct contact with the soil.
- Staples should be an industry-accepted gauge and be in accordance to the specific geographical region's specifications.
- Staples must be installed flush with the ground.
- For maximum performance, intermittent check slots are suggested for long slopes at 25'-40' intervals.
- If a repair is required, place a patch of the same type blanket over the damaged area extending it beyond the edges of the immediate region and secure firmly.

21015101A

Standard Size is 7'-6" x 120'-0" = 100 square yards

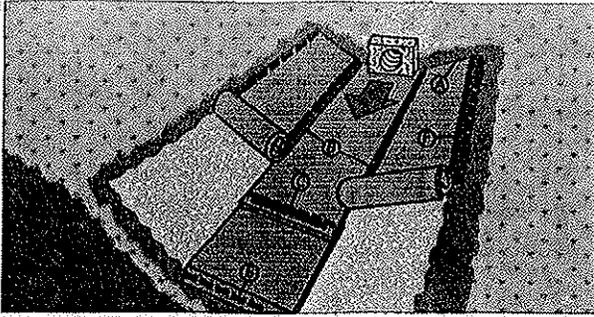
ECTC PRODUCT PARTICIPANT OF



East Coast Erosion Blanket, LLC warrants this product to be manufactured free of defects. Due to the many variables uncontrolled by the manufacturer (such as soil conditions, weather, installation process, etc.) we will not be held liable for any type of damage or losses, directly, or indirectly for failure of this product.

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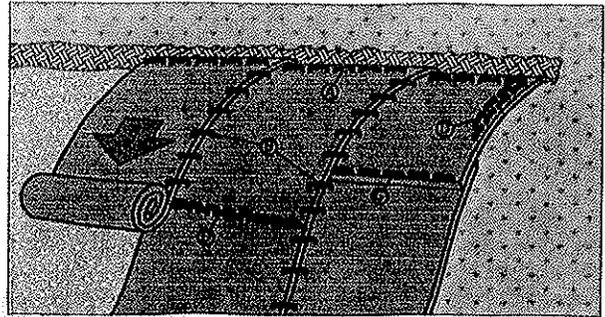
Channel Installation Detail



Channel Installation Instructions:

1. Dig a 6" by 6" (15.24cm by 15.24cm) trench both up-slope, down-slope, and along the top side of the channel. Prepare the slope soil surface (raking, seeding and fertilizing). Note, if used with stormwater discharge, place the up-slope trench at the face of the discharge structure footer.
2. Begin by placing the center blanket a minimum of 12" (30.48cm) down-slope of the up-slope trench. Secure the blanket at the bottom of the trench with staples placed 12" (30.48cm) apart. Backfill and compact the trench. Apply seed, and fold the blanket over soil, secure with a row of staples placed 12" (30.48cm) apart across the width of the blanket (See Diagram A).
3. Roll the blanket vertically down the slope. Secure using the appropriate staple pattern below, specified by slope. (See Staple Patterns)
4. Continue placing blankets up the slopes on both sides, with a minimum 4" (10.16cm) overlapping (Diagram B), and securing each blanket in the beginning trench (Diagram A).
5. Additional horizontal blankets can be joined using a minimum 4" (10.16cm) overlapping or shingle style in the direction of water flow. Connect the blankets by placing staples approximately 5" (12.70cm) apart across the width of the blankets. (Diagram C)
6. For maximum performance a check slot should be placed at 25'-40' (7.62m-12.19m) intervals. Place a row of staples 4" (10.16cm) apart along the entire width of the channel. A second row should be placed 4" below in a staggered pattern. (Diagram D)
7. The end of the blanket must be secured in a 6" x 6" (15.24cm by 15.24cm) trench by a row of staples placed at 12" (30.48cm) intervals. (Diagram E)
8. At the top edge of the side slope, fasten the blanket in a 6" x 6" (15.24cm by 15.24cm) trench with staples placed at 12" (30.48cm) intervals. Install an additional row of staples 1'-0" (30.48cm) down slope of the trench along the width of the fabric. (Diagram F)

Slope Installation Detail



Slope Installation Guidelines:

These guidelines are recommendations only. Any questions with the installation should be confirmed with your local distributor.

1. Dig a 6" by 6" (15.24cm by 15.24cm) trench both up-slope and down-slope of the area the matting is to be applied. Prepare the slope soil surface (raking, seeding and fertilizing).
2. Begin by placing the blanket a minimum of 12" (30.48cm) down-slope of the up-slope trench. Secure the blanket at the bottom of the trench with staples placed 12" (30.48cm) apart. Backfill and compact the trench. Apply seed, and fold the blanket over soil, secure with a row of staples placed 12" (30.48cm) apart across the width of the blanket. (See Diagram A)
3. Roll the blanket vertically down the slope. Secure using the appropriate staple pattern below, specified by slope. (See Staple Patterns)
4. Parallel blankets must be overlapped by a minimum of 4" (10.16cm), and secured with a row of staples placed approximately 3'-0" (0.914m) apart. (See Diagram B)
5. Additional vertical blankets can be joined using a minimum 4" (10.16cm) overlapping or shingle style (See Diagrams C) in the direction of water flow. Connect the blankets by placing staples approximately 12" (30.48cm) apart across the width of the blankets.
6. For maximum performance a check slot should be placed at 25'-40' (7.62m-12.19m) intervals. Place a row of staples 4" (10.16cm) apart along the entire width of the slope. A second row should be placed 4" (10.16cm) below in a staggered pattern. (See Diagrams D)
7. The end of blanket must be secured in a 6" x 6" (15.24cm by 15.24cm) trench with a row of staples placed at 12" (30.48cm) intervals. (Diagram E)

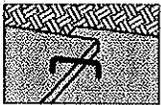


DIAGRAM B

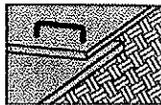


DIAGRAM C



DIAGRAM D

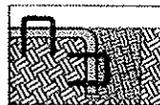
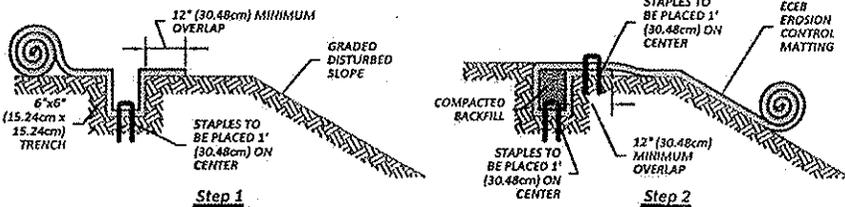


DIAGRAM E

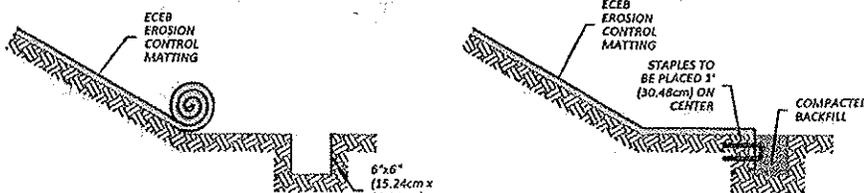
Up-slope Trench Installation Detail (Diagram A)



Step 1

Step 2

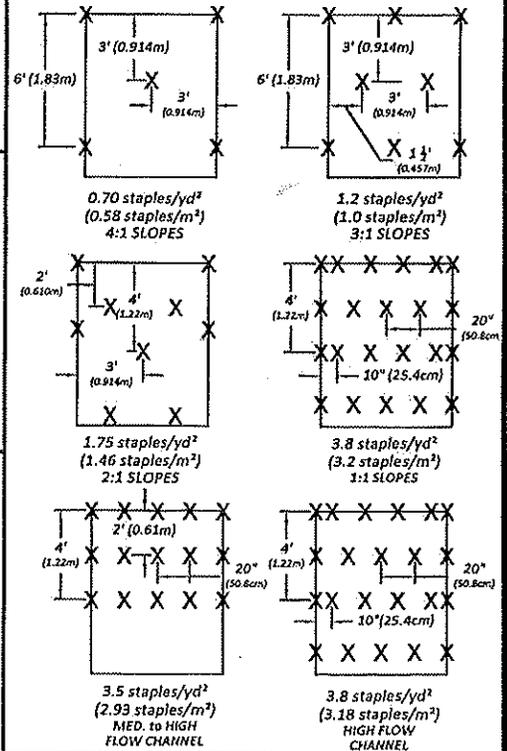
Down-slope Trench Installation Detail (Diagram E)



Step 1

Step 2

Staple Patterns:



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erosion blankets

443 Bricker Road Bernville, PA 19506

Toll Free: 1-800-582-4005 * Phone: +1-610-488-8496 * Fax: +1-610-488-8494

Proud Member of:



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1.800.582.4005
+1.610.488.8496 Fax +1.610.488.8494
www.eastcoasterosion.com

Material and Performance Specification

ECSC-2 Double Net Straw/Coconut Rolled Erosion Control Product

Description: The ECSC-2 is made with uniformly distributed 70% agricultural straw, 30% coconut fiber and two polypropylene nets securely sewn together with degradable thread. The tightly compressed blankets are wrapped and include a product label, code and installation guide. The blankets are palletized for easy transportation. The ECSC-2 has functional longevity of approximately 24 months, but will vary depending on soil and climatic conditions, and is suitable for slopes 2:1 to 1:1 and low to medium flow channels. The ECSC-2 meets Type 3.B specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.17.

Materials:	Netting	Matrix	Thread
	<i>Top</i>		
	Mediumweight Photodegradable Polypropylene 0.75" x 0.75" Opening	70% Agricultural Straw 0.385 lbs yd ² 208.9 g/m ²	Degradable 1.50" stitch spacing
	<i>Bottom</i>		
	Lightweight Photodegradable Polypropylene 0.50" x 0.50" Opening	30% Coconut Fiber 0.165 lbs yd ² 89.5 g/m ²	

Roll Sizes:	Standard	Mega
Width:	7.5 ft (2.3 m)	15.0 ft (4.6 m)
Length:	120.0 ft (36.6 m)	120.0 ft (36.6 m)
Weight ±10%:	60.0 lbs (27.2 kg)	120.0 lbs (54.4 kg)
Area:	100 yd ² (83.6 m ²)	200 yd ² (167.2 m ²)
#/Pallet:	16	16

Index Value Properties*:

Property	Test Method	Typical
Mass/Unit Area	ASTM D6475	9.45 oz/yd ² (320.4 g/m ²)
Thickness	ASTM D6525	.40 in (10.2 mm)
Tensile Strength-MD	ASTM D6818	178 lb/ft (2.6 kN/m)
Elongation-MD	ASTM D6818	31.3 %
Tensile Strength-TD	ASTM D6818	148 lb/ft (2.2 kN/m)
Elongation-TD	ASTM D6818	22.4 %
Light Penetration	ASTM D6567	13 %
Water Absorption	ASTM D1117	339 %

* May differ depending upon raw material variations

Bench-Scale Testing* (NTPEP*):**

Test Method	Parameters	Results
ECTC Method 2 Rainfall	50mm (2in) / hr-30 min	SLR**=4.78
	100mm (4in) / hr-30 min	SLR**=8.03
	150mm (6in) / hr-30 min	SLR**=13.49
ECTC Method 3 Shear Resistance	Shear at 50 lb soil loss	2.08 lb/ft ²
ECTC Method 4 Germination	Top soil; Fescue; 21 day incubation	214% improvement!

*Bench scale tests should not be used for design purposes.
**Soil Loss Ratio=Soil Loss Bare Soil/Soil Loss with RECP=1/C-Factor
***The preceding test data excerpts were reproduced with the permission of AASHTO, however, this does not constitute endorsement or approval of the product, material or device by AASHTO

Slope Performance Design Values:**

Property	Test Method	Value	
Manning's N	Calculated	0.015	
C-Factors	ASTM D6459		
Slope Length (L)	≤ 3:1	3:1-2:1	≥ 2:1
< 50 ft (15 m)	0.017	0.028	0.080
50 ft - 100 ft	0.031	0.059	0.125
>100 ft (30 m)	0.080	0.090	0.170

**Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

Channel Performance Design Values:**

Property	Test Method	Value
Unvegetated Shear Stress	ASTM D 6460	2.60 lbs/ft ² (125 Pa)
Unvegetated Velocity	ASTM D 6460	8.0 ft/s (2.4 m/s)
Vegetated Shear Stress	NA	NA
Vegetated Velocity	NA	NA

**Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory



Proud Member of:

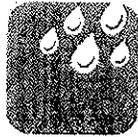


Product Participant of:

All Value Properties, Test Results and Design Values were derived from independent laboratory testing. East Coast Erosion Blankets, LLC will not be held liable for any type of damage or losses, directly, or indirectly for failure of this product. Current revision supersedes all previous versions.

Revised 03052010

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erosion blankets.

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+1.610.488.8496 Fax +1.610.488.8494
www.eastcoasterosion.com

Material and Performance Specification

ECSC-2B Double Net Straw/Coconut Biodegradable Rolled Erosion Control Product

Description: The ECSC-2B is made with uniformly distributed 70% agricultural straw, 30% coconut fiber and two organic jute nets securely sewn together with biodegradable thread. The tightly compressed blankets are wrapped and include a product label, code and installation guide. The blankets are palletized for easy transportation. The ECSC-2B has functional longevity of approximately 18 months, but will vary depending on soil and climatic conditions, and is suitable for slopes 2:1 to 1:1 and low to medium flow channels. The ECSC-2B meets Type 3.B specification requirements established by the Erosion Control Technology Council (ECTC) and Federal Highway Administration's (FHWA) FP-03 Section 713.17.

Materials:	Netting- Top and Bottom	Matrix	Thread
	Organic Leno Weave Jute 100% Biodegradable 0.50" x 1.00" Opening	70% Agricultural Straw 0.385 lbs yd ² 208.9 g/m ² 30% Coconut Fiber 0.165 lbs yd ² 89.5 g/m ²	Biodegradable 1.50" stitch spacing

Roll Sizes:	Standard	Mega
Width:	7.5 ft (2.3 m)	15.0 ft (4.6 m)
Length:	120.0 ft (36.6 m)	120.0 ft (36.6 m)
Weight ±10%:	60.0 lbs (27.2 kg)	120.0 lbs (54.4 kg)
Area:	100 yd ² (83.6 m ²)	200 yd ² (167.2 m ²)
#/Pallet:	16	16

Index Value Properties*:

Property	Test Method	Typical
Mass/Unit Area	ASTM D6475	11.2 oz/yd ² (379.8 g/m ²)
Thickness	ASTM D6525	.33 in (8.4 mm)
Tensile Strength-MD	ASTM D6818	270 lb/ft (3.9 kN/m)
Elongation-MD	ASTM D6818	4.1 %
Tensile Strength-TD	ASTM D6818	195 lb/ft (2.9 kN/m)
Elongation-TD	ASTM D6818	4.8 %
Light Penetration	ASTM D6567	11.5 %
Water Absorption	ASTM D1117	385 %

* May differ depending upon raw material variations

Bench-Scale Testing* (NTPEP*):**

Test Method	Parameters	Results
ECTC Method 2 Rainfall	50mm (2in) / hr-30 min	SLR**=11.36
	100mm (4in) / hr-30 min	SLR**=17.05
	150mm (6in) / hr-30 min	SLR**=25.61
ECTC Method 3 Shear Resistance	Shear at .50 in soil loss	2.21 lb/ft ²
ECTC Method 4 Germination	Top soil; Fescue; 21 day incubation	575% improvement

* Bench scale tests should not be used for design purposes.
** Soil Loss Ratio=Soil Loss Bare Soil/Soil Loss with RECP=1/C-Factor
*** The preceding test data excerpts were reproduced with the permission of AASHTO, however, this does not constitute endorsement or approval of the product, material or device by AASHTO

Slope Performance Design Values*:

Property	Test Method	Value	
Manning's N	Calculated	0.015	
C-Factors	ASTM D6459		
Slope Length (L)	≤ 3:1	3:1-2:1	≥ 2:1
< 50 ft (15 m)	0.055	0.070	0.122
50 ft - 100 ft	0.073	0.101	0.167
>100 ft (30 m)	0.122	0.132	0.212

* Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

Channel Performance Design Values*:

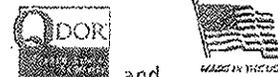
Property	Test Method	Value
Unvegetated Shear Stress	ASTM D 6460	2.0 lbs/ft ² (96 Pa)
Unvegetated Velocity	ASTM D 6460	8.0 ft/s (2.4 m/s)
Vegetated Shear Stress	NA	NA
Vegetated Velocity	NA	NA

* Large-Scale Results obtained by 3rd Party GAI Accredited Independent Laboratory

Proud Member of:



Product Participant of:



All Value Properties, Test Results and Design Values were derived from independent laboratory testing. East Coast Erosion Blankets, LLC will not be held liable for any type of damage or losses, directly, or indirectly for failure of this product. Current revision supersedes all previous versions.

Revised 03/05/2010

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PRODUCT DATA SHEET

LANDLOK® 450

LANDLOK 450 turf reinforcement mat (TRM) features X3™ technology that consists of a dense web of crimped, interlocking, multi-lobed polypropylene fibers positioned between two biaxially oriented nets and mechanically bound together by parallel stitching with polypropylene thread. The TRM is designed to accelerate seedling emergence, exhibit high resiliency, and possess strength and elongation properties to limit stretching in a saturated condition. Every component of LANDLOK 450 is stabilized against chemical and ultraviolet degradation which are normally found in a natural soil environment. Furthermore, the TRM contains no biodegradable components.

LANDLOK 450 conforms to the property values listed below¹ and is manufactured at a Propex facility having achieved ISO 9001:2000 certification. Propex performs internal Manufacturing Quality Control (MQC) tests that have been accredited by the Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP).

PROPERTY	TEST METHOD	MARV ²	
		ENGLISH	METRIC
Physical			
Mass/Unit Area	ASTM D-6566	10.0 oz/yc ²	340 g/m ²
Thickness	ASTM D-6525	0.40 in	10.1 mm
Light Penetration (% Passing)	ASTM D-6567	20%	20%
Color	Visual	Green or Tan	
Mechanical			
Tensile Strength (Grab)	ASTM D-6818	400 x 300 lb/ft	5.8 x 4.3 kN/m
Elongation	ASTM D-6818	50% (max)	50% (max)
Resiliency	ASTM D-6524	90%	90%
Flexibility	ASTM D-6575	0.026 in-lb (avg)	30,000 mg-cm (avg)
Endurance			
UV Resistance @ 1000 hours	ASTM D-4355	80%	80%
Performance			
Velocity ³ (Vegetated)	Large Scale	18 ft/s	5.5 m/s
Shear Stress ³ (Vegetated)	Large Scale	10 lb/ft ²	479 Pa
Mannings n ⁴ (Unvegetated)	Calculated	0.025	0.025
Seedling Emergence	ECTC Draft Method #4	409%	409%
Roll Sizes		6.5 ft x 138.5 ft	2.0 m x 42.2 m

NOTES

1. The property values listed are effective 08/2006 and are subject to change without notice.
2. MARV indicates minimum average roll value calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any sample taken during quality assurance testing will exceed the value reported.
3. Maximum permissible velocity and shear stress has been obtained through vegetated testing programs featuring specific soil types, vegetation classes, flow conditions, and failure criteria. These conditions may not be relevant to every project nor are they replicated by other manufacturers. Please contact Propex for further information.
4. Calculated as typical values from large-scale flexible channel lining test programs with a flow depth of 6 to 12 inches.

PROPEX
GEOSYNTHETICS

THE ADVANTAGE CREATORS.™

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INSTALLATION GUIDELINES

FOR LANDLOK® TRMs AND PYRAMAT® HPTRMs

BEFORE YOU BEGIN

Thank you for purchasing high quality Landlok® Turf Reinforcement Mats (TRMs) and Pyramat® High Performance Turf Reinforcement Mats (HPTRMs) from Propex. We're committed to offering the best erosion control products in the industry.

It is important to follow these installation guidelines for a successful project. (Note: Construction shall be performed in accordance with the specific project bid documents, construction drawings, and specifications.) In addition, we suggest that a pre-installation meeting be held with the construction team and a representative from Propex. This meeting shall be scheduled by the contractor with at least two weeks notice. Also, Propex suggests that installation monitoring of our TRMs and HPTRMs be performed by a qualified independent third party.

SITE PREPARATION

- ▶ Grade and compact area of TRM/HPTRM installation as directed and approved by Engineer. Subgrade shall be uniform and smooth. Remove all rocks, clods, vegetation or other objects so the installed mat will have direct contact with soil surface.
- ▶ Prepare seedbed by loosening the top 2-3 in (50-75 mm) minimum of soil.
- ▶ Incorporate amendments such as lime and fertilizer and/or wet the soil, if needed.
- ▶ Do not mulch areas where mat is to be placed.

SEEDING

- ▶ Apply seed to soil surface before installing mat. Disturbed areas shall be reseeded.
- ▶ When soil filling, first install the mat, apply seed and then soil-fill per guidelines (see page 8).
- ▶ Consult project plans and/or specifications for seed types and application rates.

INSTALLATION GUIDELINES

FOR LANDLOK® TRMs AND PYRAMAT® HPTRMs

INSTALLATION ON STABLE SOIL SLOPES

- ▶ Excavate a 12 x 6 in (300 x 15 mm) minimum longitudinal anchor trench 2-3 ft (600-900 mm) over crest of slope (see Figure 2).
- ▶ Install top end of mat into trench and secure to bottom using suggested ground anchoring devices (see Tables 1 and 2 on page 7) spaced every 12 in (300 mm) minimum. Backfill and compact soil into trench (see Figure 2).
- ▶ Unroll mat down slope. Landlok® 1051 shall have the geotextile on bottom.
- ▶ Overlaps shall be 6 in (150 mm) minimum and anchored every 18 in (450 mm) minimum along the overlap. Secure using suggested ground anchoring devices shown in Table 1 for appropriate frequency and pattern. Overlaps are shingled away from prevailing winds (see Figure 1).
- ▶ Unroll mat in a manner to maintain direct contact with soil. Secure mat to ground surface using ground anchoring devices (see Table 1). Anchors shall be placed in accordance with the Anchor Pattern Guide on page 7.
- ▶ Excavate a 12 x 6 in (300 x 150 mm) key anchor trench at toe of slope (see Figure 3).
- ▶ Place bottom end of mat into key anchor trench at toe of slope and secure to bottom of trench using suggested ground anchoring devices (see Tables 1 and 2) spaced every 12 in (300 mm) minimum. Backfill and compact soil into trench (see Figure 3).
- ▶ If the potential for standing and/or flowing water exists at the toe of slope, the key anchor trench at the toe detail (see Figure 3) is not sufficient. Consult the project engineer for the appropriate detail.
- ▶ Irrigate as necessary to establish/maintain vegetation. Do not over-irrigate.

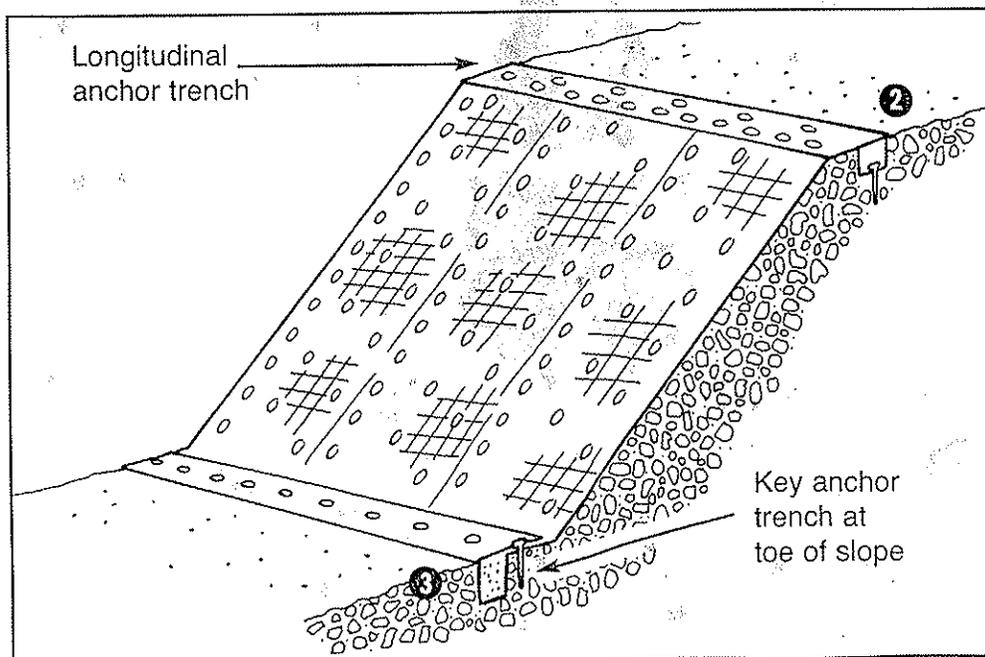


FIGURE 1
Installation of permanent turf reinforcement mat on slope

- Overlaps 6 in (150 mm) minimum
- Space anchors 18 in along overlaps down the slope
- Anchor pattern shall be in accordance with the "Anchor Pattern Guide" found on page 7

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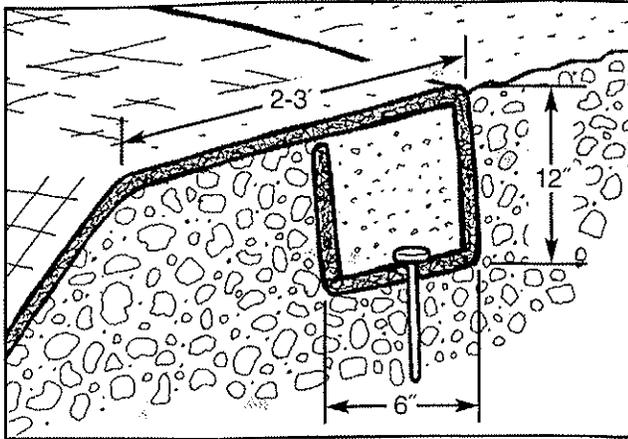


FIGURE 2

Longitudinal anchor trench at top of slope

- Space anchors 12 in (300 mm) along bottom of trench

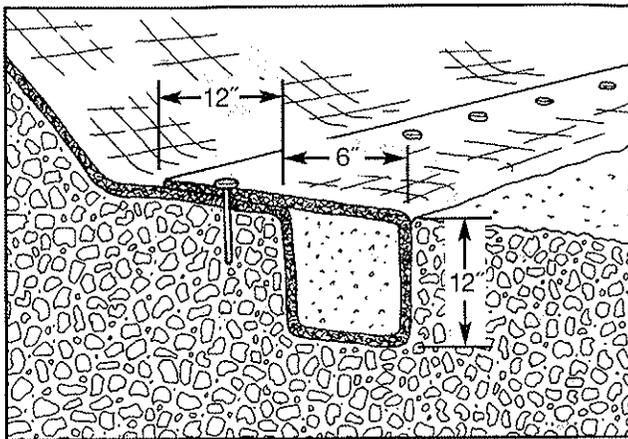


FIGURE 3

Key anchor trench at toe of slope

INSTALLATION IN STORM WATER CHANNELS

- ▶ Figure 4 shows general installation layout and details for TRMs and HPTRMs in storm water channels.
- ▶ Excavate an initial anchor trench 12 in (300 mm) minimum deep and 12 in (300 mm) minimum wide across the channel at downstream end of project (see Figure 5). Deeper initial anchor trench is needed in channels that have the potential for scour.
- ▶ Excavate longitudinal anchor trenches 12 in (300 mm) minimum deep and 6 in (150 mm) minimum wide along both sides of the installation to bury edges of mat (see Figure 6). The trench shall be located 2-3 ft (600-900 mm) over crest of slope.
- ▶ Place roll end into the initial anchor trench and secure with anchoring devices at 12 in (300 mm) minimum intervals (see Figure 5). Position adjacent rolls and secure in anchor trench in same manner. Backfill and compact soil into trench.
- ▶ Unroll mat in the upstream direction over the compacted trench.
- ▶ Continue installation as described above, overlapping adjacent rolls as follows:
 - Roll edge: 6 in (150 mm) minimum with upslope mat on top. Secure with one row of ground anchoring devices on 12 in (300 mm) minimum intervals (see Figure 7).
 - Roll end: 12 in (300 mm) minimum with upstream mat on top. Secure with two rows of ground anchoring devices staggered 12 in (300 mm) minimum apart on 12 in (300 mm) minimum intervals (see Figure 8).
- ▶ Fold and secure mat rolls snugly into intermittent check slots. Lay mat in the bottom and fold back against itself. Anchor through both layers of blanket or mat at 1 ft (300 mm) intervals then backfill and compact soil (Figure 9). Continue rolling upstream over the compacted slot to the next check slot or terminal anchor trench. Check slots are placed at 25 to 30 ft (7.6 to 9.1 m) intervals perpendicular to flow.

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INSTALLATION GUIDELINES

FOR LANDLOK® TRMs AND PYRAMAT® HPTRMs

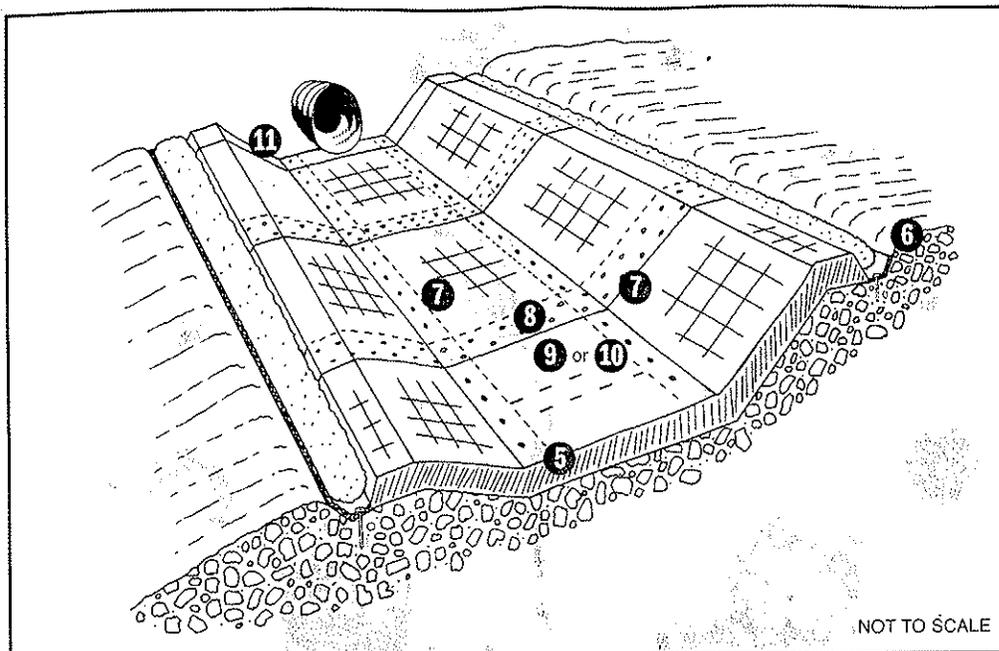


FIGURE 4 Installation of TRMs & HPTRMs in storm water channels

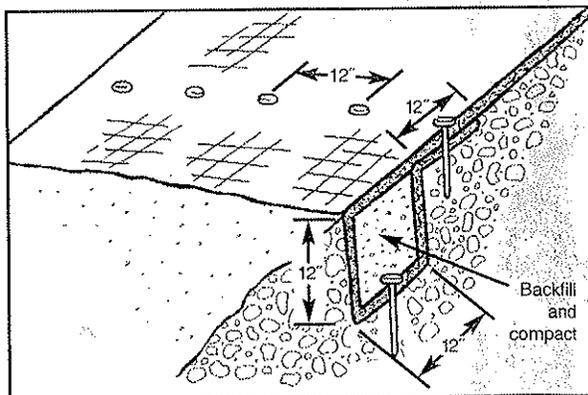


FIGURE 5 Initial anchor trench (downstream) detail

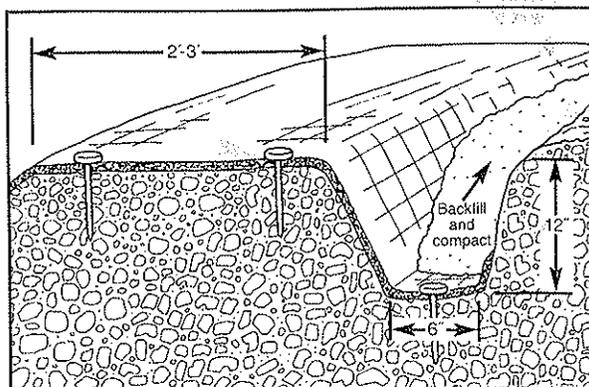


FIGURE 6 Longitudinal anchor trench detail (trapezoidal channel)

- ▶ An alternate method to the intermittent check slot is the simulated check slot. This method includes placing two staggered rows of anchors on 4 in (100 mm) centers at 30 ft (9.1 m) intervals (see Figure 10).
- ▶ Excavate terminal anchor trench 12 in wide x 12 in deep (300 x 300 mm) minimum across the channel at the upstream end of the project (see Figure 11). Deeper terminal anchor trench is needed in channels that have the potential for scour.
- ▶ Anchor, backfill and compact upstream end of mat in 12 x 12 in (300 x 300 mm) minimum terminal anchor trench (see Figure 11). Unroll mat in downstream direction over compacted trench with a minimum 2 ft (600 mm) lap. Secure with anchors in accordance with Figure 8.
- ▶ Secure mat using suggested ground anchoring devices (see Tables 1 and 2 on page 7) for appropriate frequency and pattern (see Anchor Pattern Guide on page 7).
- ▶ Seed and fill with soil for enhanced performance. See Soil Filling Section on page 8.
- ▶ When using Landlok® 1051, seed after installing mat and then fill with soil.
- ▶ Irrigate as necessary to establish/maintain vegetation. Do not over irrigate.

NOTE: If you encounter roll with factory overlap, install factory seam such that it shingles in the direction of the flow of water. Place anchoring devices in accordance with Figure 8 "Overlap at roll end" on page 5.

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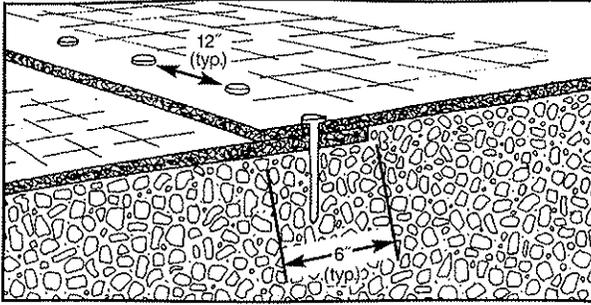


FIGURE 7 Overlap at roll edge

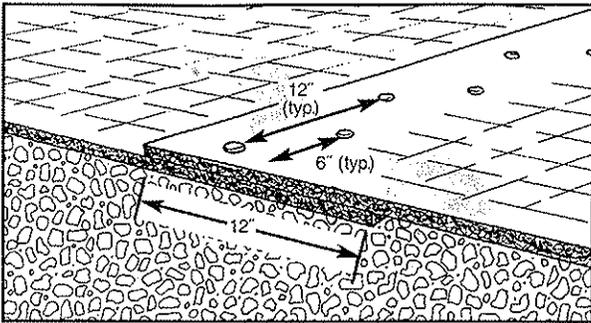


FIGURE 8 Overlap at roll end

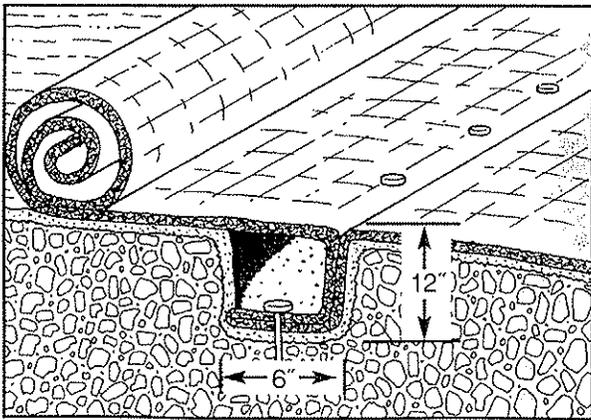


FIGURE 9 Intermittent check slot (channels)

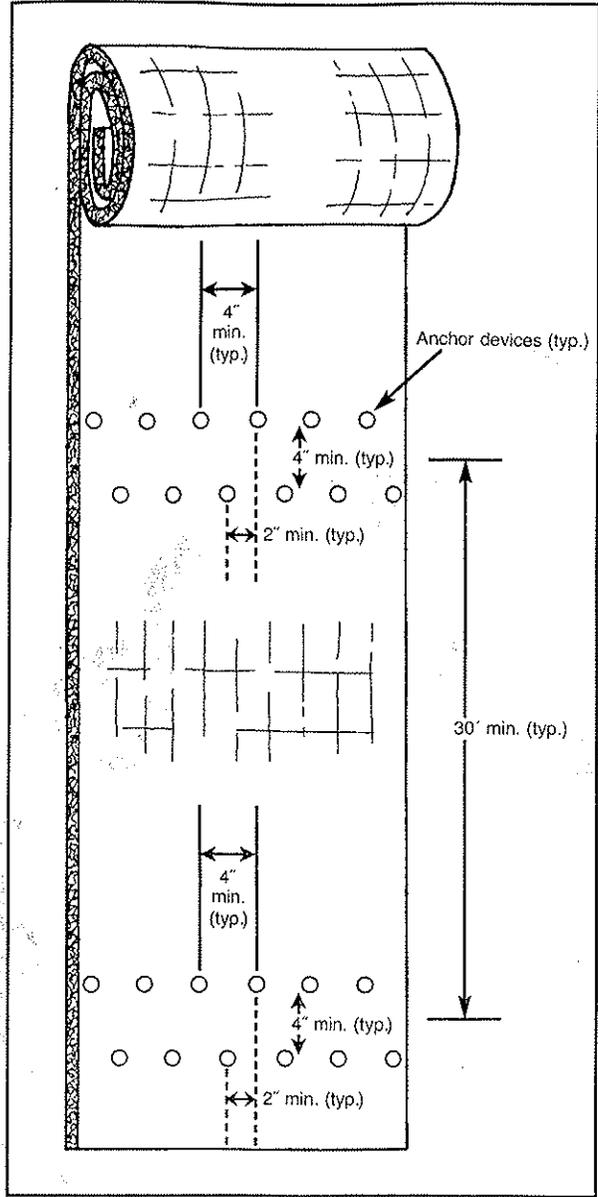


FIGURE 10 Simulated check slot

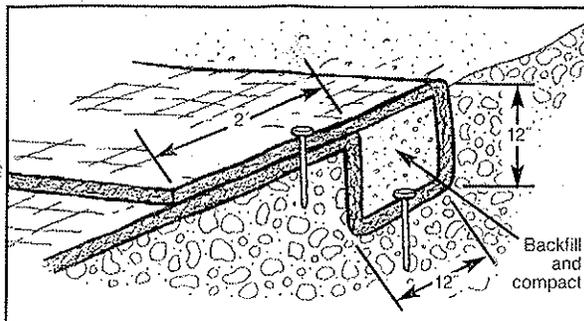


FIGURE 11 Terminal anchor trench (upstream) detail

Lebo

INSTALLATION GUIDELINES

FOR LANDLOK® TRMs AND PYRAMAT® HPTRMs

SPECIAL TRANSITION GUIDELINES

► Rock Riprap

- Excavate an anchor trench 12 x 12 in (300 x 300 mm) minimum at the transition between the mat and the rock riprap.
- Place roll end into anchor trench and secure with suggested anchoring devices at 12 in (300 mm) minimum intervals. Position adjacent rolls and secure in anchor trench in same manner.
- Backfill the anchor trench with rock riprap.
- Place rock riprap as specified, extending approximately 3 ft (1 m) minimum beyond the anchor trench onto the mat.

► Concrete

· Alternative 1: Concrete Apron

- Place ready mixed concrete directly onto a 3 ft (0.9 m) wide minimum strip of mat.

· Alternative 2: Concrete Backfill

- Excavate an anchor trench 12 x 12 in (300 x 300 mm) minimum at the edge of the concrete structure.
- Place roll end into anchor trench and secure with suggested anchoring devices at 12 in (300 mm) minimum intervals. Position adjacent rolls and secure in anchor trench in same manner.
- Backfill trench with concrete slurry.

· Alternative 3: Bolt to Structure (HPTRMs Only)

- Cast threaded dowel in fresh ready mix concrete or install expanding bolt into cured concrete. Then affix HPTRM with washer (minimum 2 in or 50 mm diameter) or batten strip and bolt.

► Pipe Inlets/Outlets (HPTRMs Only)

- Review the construction drawings and project specifications to evaluate the required area to be treated.
- Excavate an anchor trench 12 x 12 in (300 x 300 mm) minimum above the pipe to bury end of HPTRM roll. The trench shall be located a minimum 2-3 ft (600-900 mm) above the pipe inlet/outlet.
- Backfill and compact soil into trench.
- Cut HPTRM to meet project requirements, slope length and pipe diameter.
- Unroll HPTRM down the slope and secure around pipe circumference with ground anchoring devices spaced 6 in (150 mm) minimum. Also, the HPTRM can be secured around the pipe in a 12 x 12 in (300 x 300 mm) minimum trench filled with concrete slurry.

GROUND ANCHORING DEVICES

- Ground anchoring devices are used to secure the mat to the soil using the suggested anchor device (see Tables 1 and 2 on page 7) at a minimum frequency and pattern shown on the Anchor Pattern Guide on page 7.
- U-shaped wire staples or metal geotextile pins can be used to anchor mat to the ground surface. Wire staples should be a minimum thickness of 8 gauge (4.3 mm). Metal pins should be at least 0.20 in (5 mm) diameter steel with a 1 1/2 in (38 mm) steel washer at the head of the pin. Wire staples and metal pins should be driven flush to the soil surface. All anchors should be between 6-24 in (150-600 mm) long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils. Heavier metal stakes may be required in rocky soils.

SOIL FILLING

- ▶ Soil filling is suggested for optimum performance.
- ▶ After seeding, spread and lightly rake $\frac{1}{2}$ - $\frac{3}{4}$ in (12-19 mm) minimum of fine site soil or topsoil into the mat and completely fill the voids using backside of rake or other flat tool.
- ▶ If equipment must operate on the mat, make sure it is of the rubber-tired type. No tracked equipment or sharp turns are allowed on the mat.
- ▶ Avoid any traffic over the mat if loose or wet soil conditions exist.
- ▶ Smooth soil-fill in order to just expose the top netting of matrix. Do not place excessive soil above the mat.
- ▶ Broadcast additional seed and install a Landlok® ECB above the soil-filled mat (if desired).
- ▶ Hydraulically-applied mulch or seed may be used as an alternate to soil-fill on select applications. Consult manufacturer's technical representative for more information.
- ▶ Consult manufacturer's technical representative or local distributor for installation assistance, particularly if unique conditions apply (sandy soils and infertile environments).

MAINTENANCE

All slopes, channels, banks and other transition structures shall be maintained to assure the expected design life of the reinforced vegetated system. Here are a few tips that should prove helpful:

- ▶ **Monitoring**
 - Should be conducted semi-annually and after major storm events. This should include: observing the condition of the vegetation; testing the irrigation system; checking condition of all permanent erosion control systems; observing sediment and debris deposits that need removal.
- ▶ **Vegetation**
 - Repair and maintenance of various types of vegetation shall be consistent with their original design intent, including:
 - Grass/Turf Areas: applications shall be maintained for adequate cover and height.
 - Mowing: grasses shall be mowed according to normal maintenance schedules as determined by local jurisdictions or maintenance agreements; operations shall not start until vegetation achieves a minimum height of 6 in (150 mm); mower blades shall be greater than 6 in (150 mm) above the mat.
 - Unvegetated Areas: shall be re-seeded and soil-filled (if applicable).
- ▶ **Sediment and Debris Deposits**
 - Accumulation of sediment and debris can reduce the hydraulic capacity of channels, clog inlet and outlet structures and can damage existing vegetation. Sediment and debris removal is a vital part of system maintenance.
 - Removal: shall be done carefully to avoid damage. When excavation is within 12 in (300 mm) minimum of matting, removal shall be done by hand or with a visual "spotter." If equipment must operate on the mat, make sure it is of the rubber-tired type. No tracked equipment or sharp turns are allowed on the mat.
 - Alternatively, "stake chasers" or some other form of permanent visual markers can be utilized to provide a visual marker for maintenance activities.
- ▶ **Damaged Sections**
 - Missing or damaged sections of the matting should be replaced per the installation guidelines.
 - Repairing Rips or Holes: these should be patched with identical matting material. First, carefully cut out the damaged section with a knife. Then replace and compact soil to the elevation of the surrounding subgrade and plant seed. Cut a piece of replacement material a minimum of 12 in (300 mm) larger than the rip or tear. Use ties to attach the replacement material to the existing material. At overlaps, the upstream and upslope material should be on top. Secure the replacement material with ground anchoring devices spaced every 6 in (150 mm) around the circumference of the repair and at the frequency and spacing shown in the Anchor Pattern Guide on page 7. Seed and soil fill replacement area.

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Appendix D

Quality Assurance and Tensiometer Calibration Certificates

Table of Contents

- Polyethylene Resin Certificates of Analysis/Geomembrane Certification
- Geomembrane, GCL, Geocomposite, and Geocushion Certification
- Field Tensiometer Calibration Documentation

**Polyethylene Resin Certificates of
Analysis/Geomembrane Certification**



Certificate of Analysis

Shipped To: AGRU AMERICA INC 500 GARRISON RD GEORGETOWN SC 29440 USA	CPC Delivery #: 88125033 PO #: 5590 Weight: 183100 LB Ship Date: 09/10/2010 Package: BULK Mode: Hopper Car Car #: UTCX047216 Seal No: 507036
Recipient: PALMER Fax:	

Product: PE 7104 BULK

Lot Number: CAH811720

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10mi
HLMI	ASTM D1238	14.73	g/10mi
Pellet Count	ST-905	40	pel/g
Production date		20100826	
Density	D1505 or D4883	0.919	g/cm3

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

Kevin Ayres
Quality Control Supervisor

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



Certificate of Analysis

Shipped To: AGRU AMERICA INC 500 GARRISON RD GEORGETOWN SC 29440 USA	CPC Delivery #: 88125033 PO #: 5590 Weight: 183100 LB Ship Date: 09/10/2010 Package: BULK
Recipient: PALMER Fax:	Mode: Hopper Car Car #: UTCX047216 Seal No: 507036

Product: PE 7104 BULK

Lot Number: CAH811720

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.35	g/10mi
HLMi	ASTM D1238	14.73	g/10mi
Pellet Count	ST-905	40	pel/g
Production date		20100826	
Density	D1505 or D4883	0.919	g/cm3

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

Kevin Ayres
Quality Control Supervisor

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



CoA Date: 09/22/2010

Certificate of Analysis

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

CPC Delivery #. 88132101
PO #: 5590
Weight: 184500 LE
Ship Date: 09/22/2010
Package: BULK
Mode: Hopper Car
Car #: PSPX002076
Seal No: 506657

Recipient: PALMER
Fax:

Product: PE 7104 BULK

Lot Number: CAH811900

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.36	g/10mi
HLMI	ASTM D1238	14.55	g/10mi
Pellet Count	ST-905	41	pel/g
Production date		20100829	
Density	D1505 or D4883	0.919	g/cm3

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

Kevin Ayres
Quality Control Supervisor

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



POLYETHYLENE RESIN CERTIFICATION

Customer Name : Chesapeake Containment Systems Inc.
Project Name : Dornstar Paper, NC
Geocomposite Manufacturer : SKAPS Industries
Geocomposite Production Plant : Commerce, GA
Geocomposite Brand Name : TN250-2-6/8

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*
Chevron Phillips Chemical Co.	Chevron, TX	HDPE	CPCX002182	Density	ASTM D1505	gm / cc	0.9541	0.9521
				Melt flow Index	ASTM D1238 ^(a)	gm / 10 min	0.33	0.33

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



6



POLYETHYLENE RESIN CERTIFICATION

Customer Name :

Project Name :

Geocomposite Manufacturer :

Geocomposite Production Plant :

Geocomposite Brand Name :

Chesapeake Containment Systems Inc.

Domtar Paper, NC

SKAPS Industries

Commerce, GA

TN250-2-6/8

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*
Chevron Phillips Chemical Co.	Chevron, TX	HDPE	CPCX002182	Density	ASTM D1505	gm / cc	0.9541	0.9521
				Melt flow Index	ASTM D1238 ^(a)	gm / 10 min	0.33	0.33

(a) Condition 190/2.16

* Data from SKAPS Quality Control



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**Geomembrane, GCL, Geocomposite, and
Geocushion Certification**



quality certificate

ROLL # **241229-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.02 mm	40 mil
MAX:	1.19 mm	47 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **31/34** mil
TOP / BOTTOM

AVE: **1.07** mm **42** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.11**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break 22 N/mm 126 ppi **2,981** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **478.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.5** N **31.823** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **382.9** N **86.073** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **441.3** N **99.220** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-12-10**

Signature:

Quality Control Department

40LLmic.FRM
REV 02
12/23/05

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quality certificate

ROLL # **241230-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.02 mm	40 mil
MAX:	1.18 mm	46 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/33** mil
TOP / BOTTOM

AVE: **1.08** mm **43** mil

TEST RESULTS
OIT(Standard) ASTM D3895 minutes **173**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.11**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm **127** ppi **2,981** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **478.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.5** N **31.823** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **382.9** N **86.073** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **441.3** N **99.220** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-12-10**

Signature: *[Handwritten Signature]*

Quality Control Department

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ROLL # **241231-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.97 mm	38 mil
MAX:	1.12 mm	44 mil

Thickness.....	1.0 mm	40 mil
Length.....	216,411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **30/31** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.11**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **21** N/mm **122** ppi **2,981** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **478.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.5** N **31.823** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **382.9** N **86.073** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **441.3** N **99.220** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date:..... **10-12-10**

Signature.....
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ROLL # **241232-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.01 mm	40 mil
MAX:	1.21 mm	48 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **28/37** mil
TOP / BOTTOM

AVE: **1.08** mm **43** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.11**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm **127** ppi **2,981** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **478.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.5** N **31.823** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **382.9** N **86.073** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **441.3** N **99.220** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-12-10**

Signature: 
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ROLL # **241233-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.96 mm	38 mil
MAX:	1.17 mm	46 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **26/38** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc

.934

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min

.35

Carbon Black Content
ASTM D4218

Range %

2.11

Carbon Black Dispersion
ASTM D5596

Category

10 In Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break

21 N/mm **122** ppi **2,981** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break

% **478.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change %

-1.03

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

141.5 N **31.823** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

382.9 N **86.073** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

441.3 N **99.220** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs

CERTIFIED

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-12-10**

Signature: 
Quality Control Department

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ROLL # **241234-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.94 mm	37 mil
MAX:	1.09 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/36** mil
TOP / BOTTOM

AVE: **1.02** mm **40** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.15**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **21** N/mm **117** ppi **2,916** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **489.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.6** N **31.842** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **350.7** N **78.842** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **384.8** N **86.520** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-12-10**

Signature: *[Handwritten Signature]*
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ROLL # **241335-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.97 mm	38 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **33/38** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.15**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **21** N/mm **119** ppi **2,916** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **489.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.6** N **31.842** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **350.7** N **78.842** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **384.8** N **86.520** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-13-10**

Signature: 
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ROLL # **241336-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.95 mm	37 mil
MAX:	1.08 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **35/38** mil
TOP / BOTTOM

AVE: **1.02** mm **40** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.15**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **21** N/mm **117** ppi **2,916** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **489.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.6** N **31.842** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **350.7** N **78.842** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **384.8** N **86.520** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-13-10**

Signature:

Quality Control Department

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ROLL # **241337-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.94 mm	37 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **36/38** mil
TOP / BOTTOM

AVE: **1.02** mm **40** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.15**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **21** N/mm **117** ppi **2,916** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **489.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.6** N **31.842** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **350.7** N **78.842** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **384.8** N **86.520** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date:..... **10-13-10**

Signature.....
Quality Control Department

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ROLL # **241338-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.96 mm	38 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/34** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.15**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **21** N/mm **119** ppi **2,916** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **489.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.6** N **31.842** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **350.7** N **78.842** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **384.8** N **86.520** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-13-10**

Signature: 
Quality Control Department

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ROLL # **241339-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.0 mm	40 mil
ASTM D5994	MIN:	0.96 mm	38 mil	Length.....	216.411 m	710.0 feet
(Modified)	MAX:	1.09 mm	43 mil	Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **33/35** mil AVE: **1.02** mm **40** mil
 TOP / BOTTOM OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
 ASTM D792 Density g/cc **.934**

MFI ASTM D1238
 COND. E Melt Flow Index 190°C /2160 g g/10 min **.35**
 GRADE: **7104**

Carbon Black Content
 ASTM D4218 Range % **2.16**

Carbon Black Dispersion
 ASTM D5596 Category **10 In Cat 1**

Tensile Strength
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute) Average Strength @ Break **22** N/mm **128** ppi **3,178** psi

Elongation ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute) Average Elongation @ Break % **488.1**
 Lo = 1.3" Yield
 Lo = 2.0" Break

Dimensional Stability
 ASTM D1204 (Modified) Average Dimensional change % **-1.03**

Tear Resistance
 ASTM D-1004 (Modified) Average Tear Resistance **141.6** N **31.842** lbs

Puncture Resistance
 FTMS 101 Method 2065 (Modified) Load **350.7** N **78.842** lbs

Puncture Resistance
 ASTM D4833 (Modified) Load **384.8** N **86.520** lbs

ESCR
 ASTM D1693 Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
 PO: **P10-083 Domtar Paper**
 Destination **Plymouth, NC**

Date: **10-13-10**

Signature: 
 Quality Control Department

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ROLL # **241340-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.0 mm	40 mil
ASTM D5994	MIN:	0.93 mm	37 mil	Length.....	216.411 m	710.0 feet
(Modified)	MAX:	1.14 mm	45 mil	Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **31/32** mil AVE: **1.04** mm **41** mil
 TOP / BOTTOM OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
 ASTM D792 Density g/cc **.934**

MFI ASTM D1238
 COND. E Melt Flow Index 190°C /2160 g g/10 min **.35**
 GRADE: **7104**

Carbon Black Content
 ASTM D4218 Range % **2.16**

Carbon Black Dispersion
 ASTM D5596 Category **10 In Cat 1**

Tensile Strength
 ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute) Average Strength @ Break **23** N/mm **130** ppi **3,178** psi

Elongation ASTM D6693
 ASTM D638 (Modified)
 (2 inches / minute) Average Elongation @ Break % **488.1**
 Lo = 1.3" Yield
 Lo = 2.0" Break

Dimensional Stability
 ASTM D1204 (Modified) Average Dimensional change % **-1.03**

Tear Resistance
 ASTM D-1004 (Modified) Average Tear Resistance **141.6** N **31.842** lbs

Puncture Resistance
 FTMS 101 Method 2065 (Modified) Load **350.7** N **78.842** lbs

Puncture Resistance
 ASTM D4833 (Modified) Load **384.8** N **86.520** lbs

ESCR
 ASTM D1693 Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
 PO: **P10-083 Domtar Paper**
 Destination **Plymouth, NC**

Date: **10-13-10**

Signature: 
 Quality Control Department

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ROLL # **241453-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.00 mm	39 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **36/37** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.05**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **24** N/mm **138** ppi **3,380** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **484.4**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **149.7** N **33.653** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **372.2** N **83.682** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **408.0** N **91.736** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date:..... **10-14-10**

Signature..... *[Handwritten Signature]*
Quality Control Department

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quality certificate

ROLL # **241454-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.0 mm	40 mil
ASTM D5994	MIN:	0.97 mm	38 mil	Length.....	216.411 m	710.0 feet
(Modified)	MAX:	1.08 mm	43 mil	Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **35/37 mil** AVE: **1.02 mm 40 mil** OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792 Density g/cc **.934**

MFI ASTM D1238
COND. E Melt Flow Index 190°C /2160 g g/10 min **.35**
GRADE: **7104**

Carbon Black Content
ASTM D4218 Range % **2.22**

Carbon Black Dispersion
ASTM D5596 Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute) Average Strength @ Break **23 N/mm 130 ppi 3,234 psi**

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute) Average Elongation @ Break **% 475.6**
Lo = 1.3" Yield
Lo = 2.0" Break

Dimensional Stability
ASTM D1204 (Modified) Average Dimensional change **% -1.03**

Tear Resistance
ASTM D-1004 (Modified) Average Tear Resistance **141.8 N 31.890 lbs**

Puncture Resistance
FTMS 101 Method 2065 (Modified) Load **365.5 N 82.182 lbs**

Puncture Resistance
ASTM D4833 (Modified) Load **406.7 N 91.424 lbs**

ESCR
ASTM D1693 Minimum Hrs w/o Failures **1500 hrs CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: *[Handwritten Signature]*
Quality Control Department

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ROLL # **241455-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.00 mm	39 mil
MAX:	1.15 mm	45 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **34/35** mil
TOP / BOTTOM

AVE: **1.06** mm **42** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.22**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **24** N/mm **135** ppi **3,234** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **475.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.8** N **31.890** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **365.5** N **82.182** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **406.7** N **91.424** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: 
Quality Control Department

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ROLL # **241456-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.98 mm	39 mil
MAX:	1.11 mm	44 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **36/36** mil
TOP / BOTTOM

AVE: **1.06** mm **42** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.22**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **24** N/mm **135** ppi **3,234** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **475.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.8** N **31.890** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **365.5** N **82.182** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **406.7** N **91.424** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: 
Quality Control Department

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ROLL # **241457-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.96 mm	38 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **34/35** mil
TOP / BOTTOM

AVE: **1.03** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.22**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **23** N/mm **131** ppi **3,234** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **475.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.8** N **31.890** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **365.5** N **82.182** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **406.7** N **91.424** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: *[Handwritten Signature]*
Quality Control Department

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ROLL # **241458-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.94 mm	37 mil
MAX:	1.09 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m;	23.0 feet

Asperity ASTM D7466: **34/35** mil
TOP / BOTTOM

AVE: **1.03** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.22**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **23** N/mm **131** ppi **3,234** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **475.6**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.8** N **31.890** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **365.5** N **82.182** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **406.7** N **91.424** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: 
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ROLL # **241459-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.99 mm	39 mil
MAX:	1.29 mm	51 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **36/36** mil
TOP / BOTTOM

AVE: **1.06** mm **42** mil

OIT(Standard) ASTM D3895 minutes **173**

TEST RESULTS

Specific Gravity
ASTM D792

Density

g/cc

.934

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g

g/10 min

.35

Carbon Black Content
ASTM D4218

Range

%

2.09

Carbon Black Dispersion
ASTM D5596

Category

10 In Cat 1

Tensile Strength
ASTM D6693

ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break

23 N/mm

129 ppi

3,092 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break

%

488.7

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-1.03

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

141.8 N

31.890 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

365.5 N

82.182 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

406.7 N

91.424 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: 
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ROLL # **241460-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.96 mm	38 mil
MAX:	1.08 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **34/35** mil
TOP / BOTTOM

AVE: **1.03** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173**

TEST RESULTS

Specific Gravity
ASTM D792

Density

g/cc

.934

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g

g/10 min

.35

Carbon Black Content
ASTM D4218

Range

%

2.09

Carbon Black Dispersion
ASTM D5596

Category

10 In Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break

22 N/mm

125 ppi

3,092 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break

%

488.7

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-1.03

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

141.8 N

31.890 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

365.5 N

82.182 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

406.7 N

91.424 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: 
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ROLL # **241461-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.99 mm	39 mil
MAX:	1.20 mm	47 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/33** mil
TOP / BOTTOM

AVE: **1.08** mm **43** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.09**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **23** N/mm **131** ppi **3,092** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **488.7**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.8** N **31.890** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **365.5** N **82.182** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **406.7** N **91.424** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: 
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ROLL # **241462-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.95 mm	37 mil
MAX:	1.11 mm	44 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **33/33** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **173**

TEST RESULTS

Specific Gravity
ASTM D792

Density g/cc

.934

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min

.35

Carbon Black Content
ASTM D4218

Range %

2.09

Carbon Black Dispersion
ASTM D5596

Category

10 In Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break

22 N/mm **127** psi **3,092** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break

% **488.7**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change %

-1.03

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

141.8 N **31.890** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

365.5 N **82.182** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

406.7 N **91.424** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs

CERTIFIED

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: *[Handwritten Signature]*
Quality Control Department

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ROLL # **241563-10**

Lot #: **CAH811720**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.00 mm	39 mil
MAX:	1.18 mm	46 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **31/34** mil
TOP / BOTTOM

AVE: **1.10** mm **43** mil

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.09**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **23** N/mm **134** ppi **3,092** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **488.7**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **141.8** N **31.890** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **365.5** N **82.182** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **406.7** N **91.424** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: 
Quality Control Department

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ROLL # **241564-10**

Lot #: **CAH811720** Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.02 mm	40 mil
MAX:	1.16 mm	46 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/33** mil
TOP / BOTTOM

AVE: **1.08 mm 43 mil**

OIT(Standard) ASTM D3895 minutes **173** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.934**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.35**

Carbon Black Content
ASTM D4218

Range % **2.11**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22 N/mm 128 ppi 3,014 psi**

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **496.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.03**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **145.4 N 32.695 lbs**

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **361.3 N 81.222 lbs**

Puncture Resistance
ASTM D4833 (Modified)

Load **379.9 N 85.408 lbs**

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-14-10**

Signature: 
Quality Control Department

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ROLL # **241691-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.00 mm	39 mil
MAX:	1.22 mm	48 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m;	23.0 feet

Asperity ASTM D7466: **31/35** mil
TOP / BOTTOM

AVE: **1.09** mm **43** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.32**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **24** N/mm **136** ppi **3,163** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **459.1**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **143.6** N **32.282** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **352.6** N **79.268** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **417.4** N **93.846** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures 1500 hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date:..... **10-16-10**

Signature.....
Quality Control Department

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quality certificate

ROLL # **241692-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.00 mm	39 mil
MAX:	1.14 mm	45 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/33** mil
TOP / BOTTOM

AVE: 1.05 mm 41 mil

OIT(Standard) ASTM D3895 minutes **179**

TEST RESULTS

Specific Gravity
ASTM D792

Density

g/cc

.933

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g

g/10 min

.36

Carbon Black Content
ASTM D4218

Range

%

2.32

Carbon Black Dispersion
ASTM D5596

Category

10 In Cat 1

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break

23 N/mm

131 ppi

3,163 psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break

%

459.1

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change

%

-1.02

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance

143.6 N

32.282 lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load

352.6 N

79.268 lbs

Puncture Resistance
ASTM D4833 (Modified)

Load

417.4 N

93.846 lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures

1500 hrs

CERTIFIED

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-16-10**

Signature: 
Quality Control Department

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quality certificate

ROLL # **241793-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.95 mm	37 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/33** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.32**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **23** N/mm **129** ppi **3,163** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **459.1**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **143.6** N **32.282** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **352.6** N **79.268** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **417.4** N **93.846** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-16-10**

Signature: 
Quality Control Department

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ROLL # **241794-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement		METRIC	ENGLISH	Thickness.....	1.0 mm	40 mil
ASTM D5994	MIN:	0.93 mm	37 mil	Length.....	216.411 m	710.0 feet
(Modified)	MAX:	1.13 mm	44 mil	Width.....	7.00 m	23.0 feet
Asperity ASTM D7466:	32/34 mil AVE:	1.03 mm	41 mil	OIT(Standard) ASTM D3895	minutes	179
TOP / BOTTOM						TEST RESULTS

Specific Gravity	Density					
ASTM D792				g/cc		.933

MFI ASTM D1238	Melt Flow Index 190°C /2160 g			g/10 min		.36
COND. E						
GRADE:	7104					

Carbon Black Content	Range			%		2.13
ASTM D4218						

Carbon Black Dispersion	Category					10 in Cat 1
ASTM D5596						

Tensile Strength						
ASTM D6693						
ASTM D638 (Modified)	Average Strength @ Break			25 N/mm	144 ppi	3,557 psi
(2 inches / minute)						

Elongation ASTM D6693						
ASTM D638 (Modified)						
(2 inches / minute)	Average Elongation @ Break			%		556.3
Lo = 1.3" Yield						
Lo = 2.0" Break						

Dimensional Stability	Average Dimensional change			%		-1.02
ASTM D1204 (Modified)						

Tear Resistance						
ASTM D-1004 (Modified)	Average Tear Resistance			144.2 N		32.412 lbs

Puncture Resistance	Load			375.2 N		84.344 lbs
FTMS 101 Method 2065 (Modified)						

Puncture Resistance	Load			402.5 N		90.487 lbs
ASTM D4833 (Modified)						

ESCR	Minimum Hrs w/o Failures	1500 hrs				CERTIFIED
ASTM D1693						

Customer: **Chesapeake Containment Systems**
 PO: **P10-083 Domtar Paper**
 Destination **Plymouth, NC**

Date:..... **10-16-10**

Signature..... *[Handwritten Signature]*
 Quality Control Department

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ROLL # **241795-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	1.01 mm	40 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/34** mil
TOP / BOTTOM

AVE: **1.07** mm **42** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.13**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **26** N/mm **150** ppi **3,557** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **556.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **144.2** N **32.412** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **375.2** N **84.344** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **402.5** N **90.487** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature: 
Quality Control Department

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ROLL # **241796-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.98 mm	39 mil
MAX:	1.17 mm	46 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **30/35** mil
TOP / BOTTOM

AVE: **1.05** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.13**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **26** N/mm **147** ppi **3,557** psi

Elongation ASTM D6693
ASTM D628 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **556.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **144.2** N **32.412** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **375.2** N **84.344** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **402.5** N **90.487** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Dorntar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature: 
Quality Control Department

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ROLL # **241797-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.95 mm	37 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **31/33** mil
TOP / BOTTOM

AVE: **1.05** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.13**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **26** N/mm **147** ppi **3,557** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **556.3**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **144.2** N **32.412** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **375.2** N **84.344** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **402.5** N **90.487** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature: 
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ROLL # **241799-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.95 mm	37 mil
MAX:	1.14 mm	45 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **32/36** mil
TOP / BOTTOM

AVE: **1.06** mm **42** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.11**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693

ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **23** N/mm **129** ppi **3,100** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **497.9**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **144.2** N **32.412** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **375.2** N **84.344** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **402.5** N **90.487** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature:
Quality Control Department

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ROLL # **241700-10**

Lot #: **CAH811900** Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.93 mm	37 mil
MAX:	1.10 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **33/37** mil
TOP / BOTTOM

AVE: **1.03** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.11**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm **125** ppi **3,100** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **497.9**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **144.2** N **32.412** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **375.2** N **84.344** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **402.5** N **90.487** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature:
Quality Control Department

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ROLL # **241701-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.99 mm	39 mil
MAX:	1.09 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **33/36** mil
TOP / BOTTOM

AVE: **1.05** mm **41** mil

CIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.11**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm **128** ppi **3,100** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **497.9**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **144.2** N **32.412** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **375.2** N **84.344** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **402.5** N **90.487** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature: *[Handwritten Signature]*
Quality Control Department

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ROLL # **241702-10**

Lot #: **CAH811900** Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.97 mm	38 mil
MAX:	1.09 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **33/37** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.16**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm **127** ppi **3,100** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **497.9**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **144.2** N **32.412** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **375.2** N **84.344** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **402.5** N **90.487** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature: 
Quality Control Department

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quality certificate

ROLL # **241703-10**

Lot # **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.95 mm	37 mil
MAX:	1.12 mm	44 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **35/37** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.16**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm **127** ppi **3,100** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **497.9**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **144.2** N **32.412** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **375.2** N **84.344** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **402.5** N **90.487** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature *[Signature]*
Quality Control Department

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ROLL # **241704-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.96 mm	38 mil
MAX:	1.15 mm	45 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **35/37** mil
TOP / BOTTOM

AVE: **1.03** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.21**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693

ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm **125** psi **3,095** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **491.7**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **153.9** N **34.596** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **391.9** N **88.111** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **410.4** N **92.257** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature: *[Handwritten Signature]*

Quality Control Department

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quality certificate

ROLL # **241705-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.95 mm	37 mil
MAX:	1.09 mm	43 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **29/29** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.21**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693

ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm **127** ppi **3,095** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **491.7**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **153.9** N **34.596** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **391.9** N **88.111** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **410.4** N **92.257** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature: 
Quality Control Department

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quality certificate

ROLL # **241706-10**

Lot #: **CAH811900**

Liner Type: **MICROSPIKE™ LLDPE**

Measurement
ASTM D5994
(Modified)

	METRIC	ENGLISH
MIN:	0.93 mm	37 mil
MAX:	1.13 mm	44 mil

Thickness.....	1.0 mm	40 mil
Length.....	216.411 m	710.0 feet
Width.....	7.00 m	23.0 feet

Asperity ASTM D7466: **34/34** mil
TOP / BOTTOM

AVE: **1.04** mm **41** mil

OIT(Standard) ASTM D3895 minutes **179** **TEST RESULTS**

Specific Gravity
ASTM D792

Density g/cc **.933**

MFI ASTM D1238
COND. E
GRADE: **7104**

Melt Flow Index 190°C /2160 g g/10 min **.36**

Carbon Black Content
ASTM D4218

Range % **2.21**

Carbon Black Dispersion
ASTM D5596

Category **10 In Cat 1**

Tensile Strength
ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)

Average Strength @ Break **22** N/mm² **127** psi **3,095** psi

Elongation ASTM D6693
ASTM D638 (Modified)
(2 inches / minute)
Lo = 1.3" Yield
Lo = 2.0" Break

Average Elongation @ Break % **491.7**

Dimensional Stability
ASTM D1204 (Modified)

Average Dimensional change % **-1.02**

Tear Resistance
ASTM D-1004 (Modified)

Average Tear Resistance **153.9** N **34.596** lbs

Puncture Resistance
FTMS 101 Method 2065 (Modified)

Load **391.9** N **88.111** lbs

Puncture Resistance
ASTM D4833 (Modified)

Load **410.4** N **92.257** lbs

ESCR
ASTM D1693

Minimum Hrs w/o Failures **1500** hrs **CERTIFIED**

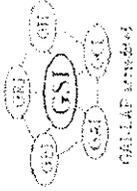
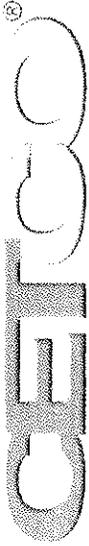
Customer: **Chesapeake Containment Systems**
PO: **P10-083 Domtar Paper**
Destination **Plymouth, NC**

Date: **10-17-10**

Signature: 
Quality Control Department

49LL mic.FRM
REV 02
12/23/05

49



Date: 10/14/2010
 Purchase Order: 10-082
 ORDER NUMBERS: 026644211, 026644212, 026644213, 026644214, 026644215

Ryan Kamp
 Chesapeake Containment Systems

Middle River, MD 21220
 rkamp@ccsliners.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to Chesapeake Containment Systems.

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: Dometar Paper Closure Cell 3
CUSTOMER P.O.: 10-082
ORDER NUMBERS: 026644211, 026644212, 026644213, 026644214, 026644215
PREPARED FOR: Chesapeake Containment Systems

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: Dornier Paper Closure Cell 3
CUSTOMER P.O.: 10-082
ORDER NUMBERS: 026644211, 026644212, 026644213, 026644214, 026644215
PREPARED FOR: Chesapeake Containment Systems

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 DN

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)	50 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 m ³ /m ² /s Max
ASTM D 6496	GCL Peel Strength	40,000 sq ft (4000 sq m)	3.5 lbs/in Min

SPECIALY REQUESTED CERTIFIED PROPERTIES FOR THIS ORDER OF BENTOMAT DN

Test Method Test Method Property Requested Frequency Requested Value Requested Conditions

ASTM D 5887	GCL Hydraulic Conductivity	1/270,000sf	Standard	Standard
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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

Melanie King
Quality Assurance Coordinator



GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 026644211

Order	GCL Lot #	GCL Roll #	CV-BENTONMATE DN		width	weight	sq ft	Roll #	Tested	Cap Lot #	Geotextiles		BLK N/W	Clay
			Length	Width							N/W-WHITE	Cap Roll #		
026644211	201041CV	6982	150	14.5	2774	2175	6974	201041CV	00004545	00004544	2021244008	982315A		
026644215	201041CV	6983	150	14.5	2774	2175	6974	201041CV	00004545	00004544	2021244008	982315A		
026644215	201041CV	6984	150	14.5	2780	2175	6974	201041CV	00004545	00004544	2021244008	982315A		
026644211	201041CV	6985	150	14.5	2794	2175	6974	201041CV	00004545	00004544	2021244008	982315A		
026644212	201041CV	6986	150	14.5	2788	2175	6974	201041CV	00004545	00004544	2021244008	982315A		
026644215	201041CV	6987	150	14.5	2788	2175	6974	201041CV	00004545	00004544	2021225044	982315A		
026644211	201041CV	6991	150	14.5	2768	2175	6989	201041CV	00004571	00004566	2021225044	982315B		
026644211	201041CV	6992	150	14.5	2768	2175	6989	201041CV	00004571	00004566	2021225044	982315B		
026644211	201041CV	6993	150	14.5	2768	2175	6989	201041CV	00004571	00004566	2021225044	982315B		
026644214	201041CV	6994	150	14.5	2782	2175	6989	201041CV	00004571	00004566	2021225044	982315B		
026644214	201041CV	6995	150	14.5	2788	2175	6989	201041CV	00004572	00004566	2021225044	982315B		
026644211	201041CV	6999	150	14.5	2782	2175	6989	201041CV	00004572	00004566	2021225044	982315B		
026644213	201041CV	7000	150	14.5	2788	2175	6989	201041CV	00004572	00004566	2021234940	982315B		
026644211	201041CV	7001	150	14.5	2778	2175	6989	201041CV	00004581	00004576	2021234940	982315B		
026644214	201041CV	7002	150	14.5	2740	2175	6989	201041CV	00004581	00004576	2021234940	982315B		
026644213	201041CV	7003	150	14.5	2728	2175	6989	201041CV	00004581	00004576	2021234940	982315B		
026644215	201041CV	7007	150	14.5	2752	2175	7004	201041CV	00004581	00004576	2021234940	982315B		
026644214	201041CV	7008	150	14.5	2744	2175	7004	201041CV	00004581	00004576	2021234940	982315B		
026644213	201041CV	7009	150	14.5	2728	2175	7004	201041CV	00004505	00004503	2021234940	982315B		
026644213	201041CV	7010	150	14.5	2744	2175	7004	201041CV	00004505	00004503	2021234940	982315B		
026644213	201041CV	7019	150	14.5	2778	2175	7019	201041CV	00004537	00004534	2021244007	982315B		
026644213	201041CV	7023	150	14.5	2786	2175	7019	201041CV	00004532	00004528	2021244007	982315B		
026644213	201041CV	7028	150	14.5	2772	2175	7019	201041CV	00004532	00004528	2021244004	982315B		
026644214	201041CV	7029	150	14.5	2768	2175	7019	201041CV	00004532	00004528	2021244004	982315B		
026644214	201041CV	7030	150	14.5	2736	2175	7019	201041CV	00004507	00004503	2021244004	982315B		
026644214	201041CV	7031	150	14.5	2788	2175	7019	201041CV	00004507	00004503	2021244004	982315B		
026644213	201041CV	7032	150	14.5	2760	2175	7019	201041CV	00004507	00004503	2021244004	982315B		
026644214	201041CV	7033	150	14.5	2756	2175	7019	201041CV	00004507	00004503	2021244004	982315B		
026644213	201041CV	7038	150	14.5	2748	2175	7034	201041CV	00004504	00004503	2021244004	982316A		
026644213	201041CV	7040	150	14.5	2728	2175	7034	201041CV	00004504	00004503	2021244019	982316A		
026644214	201041CV	7042	150	14.5	2760	2175	7034	201041CV	00004504	00004503	2021244019	982316A		

Order	GCL Lot #	GCL Roll #	Length	Width	Weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026644213	201041CV	7045	150	14.5	2774	2175	7034	201041CV	00004536	00004534	2021244019	982316A
026644214	201041CV	7051	150	14.5	2760	2175	7049	201041CV	00004503	00004503	2021244019	982316A
026644214	201041CV	7052	150	14.5	2748	2175	7049	201041CV	00004503	00004503	2021244019	982316A
026644214	201041CV	7053	150	14.5	2748	2175	7049	201041CV	00004503	00004503	2021244019	982316A
026644213	201041CV	7054	150	14.5	2740	2175	7049	201041CV	00004503	00004503	2021225080	982316A
026644214	201041CV	7055	150	14.5	2772	2175	7049	201041CV	00004503	00004503	2021225080	982316A
026644213	201041CV	7056	150	14.5	2744	2175	7049	201041CV	00004503	00004503	2021225080	982316A
026644213	201041CV	7060	150	14.5	2758	2175	7049	201041CV	00004502	00004498	2021225080	982316A
026644213	201041CV	7061	150	14.5	2756	2175	7049	201041CV	00004502	00004498	2021225080	982316A
026644214	201041CV	7062	150	14.5	2754	2175	7049	201041CV	00004502	00004498	2021225080	982316A
026644214	201041CV	7063	150	14.5	2764	2175	7049	201041CV	00004502	00004498	2021225080	982316A
026644214	201041CV	7065	150	14.5	2776	2175	7064	201041CV	00004569	00004566	2021225059	982316A
026644214	201041CV	7070	150	14.5	2766	2175	7064	201041CV	00004569	00004566	2021225059	982316A
026644211	201041CV	7077	150	14.5	2736	2175	7064	201041CV	00004534	00004534	2021225059	982316A
026644215	201041CV	7079	150	14.5	2792	2175	7079	201041CV	00004534	00004534	2021225059	982316A
026644215	201041CV	7080	150	14.5	2750	2175	7079	201041CV	00004534	00004534	2021225058	982316A
026644211	201041CV	7082	150	14.5	2718	2175	7079	201041CV	00004483	00004481	2021225058	982316A
026644211	201041CV	7083	150	14.5	2732	2175	7079	201040CV	00004483	00004481	2021225058	982316A
026644213	201041CV	7084	150	14.5	2728	2175	7079	201040CV	00004483	00004481	2021225058	982316A
026644211	201041CV	7085	150	14.5	2758	2175	7079	201040CV	00004483	00004481	2021225058	982316A
026644212	201041CV	7089	150	14.5	2736	2175	7079	201040CV	00004483	00004481	2021225058	982316B
026644211	201041CV	7090	150	14.5	2728	2175	7079	201040CV	00004492	00004491	2021225058	982316B
026644212	201041CV	7091	150	14.5	2732	2175	7079	201040CV	00004492	00004491	2021225058	982316B
026644212	201041CV	7093	150	14.5	2728	2175	7079	201040CV	00004492	00004491	2021225058	982316B
026644211	201041CV	7094	150	14.5	2722	2175	7094	201040CV	00004492	00004491	2021225058	982316B
026644212	201041CV	7099	150	14.5	2732	2175	7094	201040CV	00004424	00004421	2021225043	982316B
026644212	201041CV	7100	150	14.5	2722	2175	7094	201040CV	00004424	00004421	2021225043	982316B
026644215	201041CV	7101	150	14.5	2724	2175	7094	201040CV	00004424	00004421	2021225043	982316B
026644211	201041CV	7102	150	14.5	2730	2175	7094	201040CV	00004424	00004421	2021225043	982316B
026644215	201041CV	7103	150	14.5	2726	2175	7094	201040CV	00004425	00004421	2021225043	982316B
026644215	201041CV	7104	150	14.5	2732	2175	7094	201040CV	00004425	00004421	2021225043	982316B
026644215	201041CV	7111	150	14.5	2724	2175	7109	201040CV	00004451	00004444	2021225050	982316B
026644215	201041CV	7112	150	14.5	2734	2175	7109	201040CV	00004451	00004444	2021225050	982316B
026644212	201041CV	7113	150	14.5	2728	2175	7109	201040CV	00004451	00004444	2021225050	982316B
026644215	201041CV	7114	150	14.5	2722	2175	7109	201040CV	00004451	00004444	2021225050	982316B
026644211	201041CV	7115	150	14.5	2718	2175	7109	201040CV	00004451	00004444	2021225050	982316B
026644211	201041CV	7118	150	14.5	2718	2175	7109	201040CV	00004452	00004444	2021225050	982316B
026644211	201041CV	7119	150	14.5	2724	2175	7109	201040CV	00004452	00004444	2021225050	982316B
026644212	201041CV	7120	150	14.5	2710	2175	7109	201040CV	00004452	00004444	2021225050	982316B

Order	GCL Lot #	GCL Roll #	Length	Width	Weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026644215	201041CV	7121	150	14.5	2708	2175	7109	201040CV	00004452	00004444	2021225026	982316B
026644212	201041CV	7122	150	14.5	2720	2175	7109	201040CV	00004452	00004444	2021225026	982316B
026644215	201041CV	7123	150	14.5	2740	2175	7109	201040CV	00004452	00004444	2021225026	982316B
026644212	201041CV	7124	150	14.5	2740	2175	7124	201040CV	00004452	00004444	2021225026	982316B
026644215	201041CV	7126	150	14.5	2704	2175	7124	201040CV	00004459	00004454	2021225026	982316B
026644212	201041CV	7127	150	14.5	2710	2175	7124	201040CV	00004459	00004454	2021225026	982316B
026644212	201041CV	7128	150	14.5	2704	2175	7124	201040CV	00004459	00004454	2021225026	982316B
026644212	201041CV	7129	150	14.5	2710	2175	7124	201040CV	00004459	00004454	2021225026	982316B
026644215	201041CV	7131	150	14.5	2686	2175	7124	201040CV	00004493	00004491	2021225026	982316B
026644215	201041CV	7132	150	14.5	2694	2175	7124	201040CV	00004493	00004491	2021225026	982316B
026644212	201041CV	7135	150	14.5	2706	2175	7124	201040CV	00004493	00004491	2021225024	982316B
026644212	201041CV	7137	150	14.5	2738	2175	7124	201040CV	00004493	00004491	2021225024	982312A
026644213	201041CV	7242	103	14.5	1982	1493	7229	201040CV	00004449	00004444	2021234942	982311A
026644212	201042CV	7266	150	14.5	2778	2175	7258	201042CV	00004588	00004582	2021225041	982301A
026644212	201042CV	7267	150	14.5	2778	2175	7258	201042CV	00004588	00004582	2021225041	982301A

Total sq ft. 184193 Total Number of Rolls Certified: 85



GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 026644211 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area		Grab Strength		Peel Strength 6496	
			D 5993	D 6768	D 6768	D 6496		
CV-BENTOMAT DN	201041CV	6974	0.90	52.9	52.9	9.0	9.0	
CV-BENTOMAT DN	201041CV	6989	0.88	52.9	52.9	10.1	10.1	
CV-BENTOMAT DN	201041CV	7004	0.96	52.9	52.9	9.3	9.3	
CV-BENTOMAT DN	201041CV	7019	0.87	52.9	52.9	10.4	10.4	
CV-BENTOMAT DN	201041CV	7034	0.85	52.9	52.9	10.2	10.2	
CV-BENTOMAT DN	201041CV	7049	0.89	52.9	52.9	8.9	8.9	
CV-BENTOMAT DN	201041CV	7064	0.89	57.0	57.0	8.4	8.4	
CV-BENTOMAT DN	201041CV	7079	0.86	57.0	57.0	8.2	8.2	
CV-BENTOMAT DN	201041CV	7094	0.97	57.0	57.0	7.7	7.7	
CV-BENTOMAT DN	201041CV	7109	0.93	57.0	57.0	7.7	7.7	
CV-BENTOMAT DN	201041CV	7124	0.92	57.0	57.0	10.5	10.5	
CV-BENTOMAT DN	201041CV	7229	0.86	50.9	50.9	8.9	8.9	
CV-BENTOMAT DN	201042CV	7258	0.87	53.8	53.8	12.3	12.3	



BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 026644211

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/Zg Min 18 ml Max			
982311A	8.70	29.00	16.00
982312A	8.10	32.00	17.40
982315A	8.50	30.00	16.80
982315B	8.40	30.00	17.00
982316A	9.20	29.00	17.20
982316B	9.10	30.00	17.40
982301A	8.70	30.00	17.40



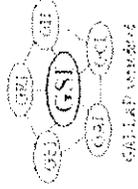
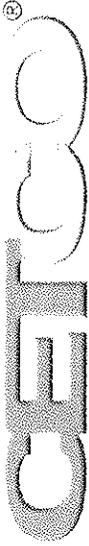
GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 026644211 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE			COVER GEOTEXTILE				
Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs	Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PPX HH65L	2021225024	7.4	172.3	CV-NON-WOVEN	00004421	6.9	41.6
PPX HH65L	2021225026	6.0	149.1	CV-NON-WOVEN	00004444	6.7	41.7
PPX HH65L	2021225041	7.3	206.4	CV-NON-WOVEN	00004454	6.6	42.6
PPX HH65L	2021225043	7.3	206.4	CV-NON-WOVEN	00004481	6.7	34.8
PPX HH65L	2021225044	7.3	206.4	CV-NON-WOVEN	00004491	6.7	37.5
PPX HH65L	2021225050	6.5	158.8	CV-NON-WOVEN	00004498	6.2	20.6
PPX HH65L	2021225058	6.5	185.5	CV-NON-WOVEN	00004503	6.5	59.5
PPX HH65L	2021225059	6.5	185.5	CV-NON-WOVEN	00004528	6.4	53.6
PPX HH65L	2021225080	6.5	180.8	CV-NON-WOVEN	00004534	6.5	55.8
PPX HH65L	2021234940	6.7	187.3	CV-NON-WOVEN	00004544	6.6	53.3
PPX HH65L	2021234942	6.7	178.4	CV-NON-WOVEN	00004566	6.6	56.7
PPX HH65L	2021244004	6.7	187.0	CV-NON-WOVEN	00004576	6.7	59.8
PPX HH65L	2021244007	6.2	185.5	CV-NON-WOVEN	00004582	6.4	52.5
PPX HH65L	2021244008	6.3	195.0				
PPX HH65L	2021244019	7.5	211.4				

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

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



Date: 10/15/2010
 Purchase Order: 10-082
 ORDER NUMBERS: 026644216, 026644217, 026644218

Ryan Kamp
 Chesapeake Containment Systems
 Middle River, MD 21220
 rkamp@ccsliners.com

To Whom it May Concern:
 Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to Chesapeake Containment Systems.

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,

Melanic King
 Quality Assurance Coordinator
 CETCO Cartersville Plant



**GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE**

PROJECT NAME: Dometar Paper Closure Cell 3
CUSTOMER P.O.: 10-082
ORDER NUMBERS: 026644216, 026644217, 026644218
PREPARED FOR: Chesapeake Containment Systems

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

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PRODUCT CERTIFICATIONS

PROJECT NAME: Dometar Paper Closure Cell 3
CUSTOMER P.O.: 10-082
ORDER NUMBERS: 026644216, 026644217, 026644218
PREPARED FOR: Chesapeake Containment Systems

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 DN

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)	50 lbs/m 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 m ² /m ² /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 DN

Test Method Test Method Property Requested Frequency Requested Value Requested Conditions

ASTM D 5887 GCL Hydraulic Conductivity 1/270,000sf Standard 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

Melanie King
Quality Assurance Coordinator



GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 026644216

Order	GCL Lot #	GCL				Geotextiles				Clay			
		CV-BENTOMAT DN		NW-WHITE		BLK N/W		CV-CG 50					
		Length	Width	weight	sq ft	Roll #	Tested		Cap Lot #		Roll #	Tested	Base Roll #
026644218	201041CV	6974	150	14.5	2972	2175	6974	6974	201041CV	00004551	00004550	2021244008	982315A
026644216	201041CV	6975	150	14.5	2772	2175	6974	6974	201041CV	00004551	00004550	2021244008	982315A
026644218	201041CV	6976	150	14.5	2774	2175	6974	6974	201041CV	00004551	00004550	2021244008	982315A
026644218	201041CV	6977	150	14.5	2774	2175	6974	6974	201041CV	00004551	00004550	2021244008	982315A
026644217	201041CV	6978	150	14.5	2826	2175	6974	6974	201041CV	00004551	00004550	2021244008	982315A
026644218	201041CV	6989	150	14.5	2802	2175	6989	6989	201041CV	00004571	00004566	2021225044	982315B
026644217	201041CV	6996	150	14.5	2788	2175	6989	6989	201041CV	00004572	00004566	2021225044	982315B
026644217	201041CV	6997	150	14.5	2798	2175	6989	6989	201041CV	00004572	00004566	2021225044	982315B
026644217	201041CV	6998	150	14.5	2766	2175	6989	6989	201041CV	00004572	00004566	2021225044	982315B
026644217	201041CV	7005	150	14.5	2748	2175	7004	7004	201041CV	00004581	00004576	2021234940	982315B
026644217	201041CV	7006	150	14.5	2748	2175	7004	7004	201041CV	00004581	00004576	2021234940	982315B
026644218	201041CV	7011	150	14.5	2752	2175	7004	7004	201041CV	00004505	00004503	2021234940	982315B
026644218	201041CV	7012	150	14.5	2758	2175	7004	7004	201041CV	00004505	00004503	2021234940	982315B
026644217	201041CV	7013	150	14.5	2756	2175	7004	7004	201041CV	00004505	00004503	2021234940	982315B
026644217	201041CV	7014	150	14.5	2762	2175	7004	7004	201041CV	00004505	00004503	2021244007	982315B
026644216	201041CV	7015	150	14.5	2786	2175	7004	7004	201041CV	00004537	00004534	2021244007	982315B
026644218	201041CV	7016	150	14.5	2780	2175	7004	7004	201041CV	00004537	00004534	2021244007	982315B
026644217	201041CV	7017	150	14.5	2770	2175	7004	7004	201041CV	00004537	00004534	2021244007	982315B
026644218	201041CV	7018	150	14.5	2780	2175	7004	7004	201041CV	00004537	00004534	2021244007	982315B
026644218	201041CV	7020	150	14.5	2782	2175	7019	7019	201041CV	00004537	00004534	2021244007	982315B
026644216	201041CV	7021	150	14.5	2786	2175	7019	7019	201041CV	00004537	00004534	2021244007	982315B
026644216	201041CV	7022	150	14.5	2770	2175	7019	7019	201041CV	00004537	00004534	2021244007	982315B
026644216	201041CV	7024	150	14.5	2790	2175	7019	7019	201041CV	00004532	00004528	2021244007	982315B
026644217	201041CV	7025	150	14.5	2788	2175	7019	7019	201041CV	00004532	00004528	2021244007	982315B
026644217	201041CV	7026	150	14.5	2776	2175	7019	7019	201041CV	00004532	00004528	2021244007	982315B
026644218	201041CV	7027	150	14.5	2768	2175	7019	7019	201041CV	00004532	00004528	2021244004	982315B
026644217	201041CV	7036	150	14.5	2768	2175	7034	7034	201041CV	00004507	00004503	2021244004	982315B
026644217	201041CV	7041	150	14.5	2753	2175	7034	7034	201041CV	00004504	00004503	2021244019	982316A
026644217	201041CV	7043	150	14.5	2764	2175	7034	7034	201041CV	00004504	00004503	2021244019	982316A
026644217	201041CV	7044	150	14.5	2742	2175	7034	7034	201041CV	00004536	00004534	2021244019	982316A
026644218	201041CV	7047	150	14.5	2738	2175	7034	7034	201041CV	00004536	00004534	2021244019	982316A

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Order	GCL Lot #	GCL Roll #	Length	Width	Weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026644218	201041CV	7049	150	14.5	2798	2175	7049	201041CV	00004536	00004534	2021244019	982316A
026644216	201041CV	7057	150	14.5	2746	2175	7049	201041CV	00004503	00004503	2021225080	982316A
026644217	201041CV	7058	150	14.5	2746	2175	7049	201041CV	00004503	00004503	2021225080	982316A
026644218	201041CV	7059	150	14.5	2756	2175	7049	201041CV	00004502	00004498	2021225080	982316A
026644218	201041CV	7064	150	14.5	2802	2175	7064	201041CV	00004502	00004498	2021225080	982316A
026644216	201041CV	7068	150	14.5	2770	2175	7064	201041CV	00004569	00004566	2021225059	982316A
026644218	201041CV	7069	150	14.5	2768	2175	7064	201041CV	00004569	00004566	2021225059	982316A
026644218	201041CV	7072	150	14.5	2768	2175	7064	201041CV	00004550	00004550	2021225059	982316A
026644217	201041CV	7073	150	14.5	2754	2175	7064	201041CV	00004550	00004550	2021225059	982316A
Total sq ft							87000	Total Number of Rolls Certified: 40				

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GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 026644216 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area	Grab Strength	Peel Strength
			D 5993	D 6768	D 6496
			ASTM Test Method: 0.75 lb /sq ft Min 50 lbs/in MARV 3.5 lbs/in Min		
			Required Value: 0.75 lb /sq ft Min 50 lbs/in MARV 3.5 lbs/in Min		
CV-BENTOMAT DN	201041CV	6974	0.90	52.9	9.0
CV-BENTOMAT DN	201041CV	6989	0.88	52.9	10.1
CV-BENTOMAT DN	201041CV	7004	0.96	52.9	9.3
CV-BENTOMAT DN	201041CV	7019	0.87	52.9	10.4
CV-BENTOMAT DN	201041CV	7034	0.85	52.9	10.2
CV-BENTOMAT DN	201041CV	7049	0.89	52.9	8.9
CV-BENTOMAT DN	201041CV	7064	0.89	57.0	8.4

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 026644216

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

Clay Lot #	Moist	Swell	Fluid Loss
	D 2216	D 5890	D 5891
	ASTM Test Method: 12% Max 24 ml/2g Min 18 ml Max		
	Required Value: 12% Max 24 ml/2g Min 18 ml Max		
982315A	8.50	30.00	16.80
982315B	8.40	30.00	17.00
982316A	9.20	29.00	17.20

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GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

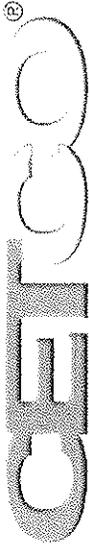
The GCL in certification package number 026644216 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE				COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs	Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PPX HH65L	2021225044	7.3	206.4	CV-NON-WOVEN	00004498	6.2	20.6
PPX HH65L	2021225039	6.5	185.5	CV-NON-WOVEN	00004503	6.5	59.5
PPX HH65L	2021225080	6.5	180.8	CV-NON-WOVEN	00004528	6.4	53.6
PPX HH65L	2021234940	6.7	187.3	CV-NON-WOVEN	00004534	6.5	55.8
PPX HH65L	2021244004	6.7	187.0	CV-NON-WOVEN	00004550	6.8	62.2
PPX HH65L	2021244007	6.2	185.5	CV-NON-WOVEN	00004566	6.6	56.7
PPX HH65L	2021244008	6.3	195.0	CV-NON-WOVEN	00004576	6.7	59.8
PPX HH65L	2021244019	7.5	211.4				

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

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

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Date: 10/15/2010
 Purchase Order: 10-082
 ORDER NUMBERS: 026644216, 026644217, 026644218

Ryan Kamp
 Chesapeake Containment Systems

Middle River, MD 21220
 rkamp@ccsliners.com

To Whom it May Concern:

Please find enclosed the MQA/MQC test data package for Geosynthetic Clay Liner shipments to Chesapeake Containment Systems.

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

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**GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE**

PROJECT NAME: Dornier Paper Closure Cell 3
CUSTOMER P.O.: 10-082
ORDER NUMBERS: 026644216, 026644217, 026644218
PREPARED FOR: Chesapeake Containment Systems

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: Melanic King
Quality Assurance Coordinator
CETCO
218 Industrial Park

Cartersville, GA 30121
Telephone: (770) 387-7773
E-Mail: melanic.king@cetco.com



PRODUCT CERTIFICATIONS

PROJECT NAME: Domtar Paper Closure Cell 3
CUSTOMER P.O.: 10-082
ORDER NUMBERS: 026644216, 026644217, 026644218
PREPARED FOR: Chesapeake Containment Systems

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 DN

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)	50 lbs/m 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 m ³ /m ² /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 DN

Test Method Test Method Property Requested Frequency Requested Value Requested Conditions

ASTM D 5887	GCL Hydraulic Conductivity	1/270,000sf	Standard	Standard
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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 6708. 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

Melanie King
Quality Assurance Coordinator

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GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 026644216

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Geotextiles		Clay		
										N/W-WHITE			BLK N/W	CV-CC 50
										Roll # Tested	Roll #		Base Roll #	Clay Lot #
026644218	201041CV	6974	150	14.5	2972	2175	6974	201041CV	00004551	00004550	2021244008	982315A		
026644216	201041CV	6975	150	14.5	2772	2175	6974	201041CV	00004551	00004550	2021244008	982315A		
026644218	201041CV	6976	150	14.5	2774	2175	6974	201041CV	00004551	00004550	2021244008	982315A		
026644218	201041CV	6977	150	14.5	2774	2175	6974	201041CV	00004551	00004550	2021244008	982315A		
026644217	201041CV	6978	150	14.5	2826	2175	6974	201041CV	00004551	00004550	2021244008	982315A		
026644218	201041CV	6989	150	14.5	2802	2175	6989	201041CV	00004571	00004566	2021225044	982315B		
026644217	201041CV	6996	150	14.5	2788	2175	6989	201041CV	00004572	00004566	2021225044	982315B		
026644217	201041CV	6997	150	14.5	2798	2175	6989	201041CV	00004572	00004566	2021225044	982315B		
026644217	201041CV	6998	150	14.5	2766	2175	6989	201041CV	00004572	00004566	2021225044	982315B		
026644217	201041CV	7005	150	14.5	2748	2175	7004	201041CV	00004581	00004576	2021234940	982315B		
026644217	201041CV	7006	150	14.5	2748	2175	7004	201041CV	00004581	00004576	2021234940	982315B		
026644218	201041CV	7011	150	14.5	2752	2175	7004	201041CV	00004505	00004503	2021234940	982315B		
026644218	201041CV	7012	150	14.5	2758	2175	7004	201041CV	00004505	00004503	2021234940	982315B		
026644217	201041CV	7013	150	14.5	2756	2175	7004	201041CV	00004505	00004503	2021234940	982315B		
026644217	201041CV	7014	150	14.5	2762	2175	7004	201041CV	00004505	00004503	2021244007	982315B		
026644216	201041CV	7015	150	14.5	2786	2175	7004	201041CV	00004537	00004534	2021244007	982315B		
026644218	201041CV	7016	150	14.5	2780	2175	7004	201041CV	00004537	00004534	2021244007	982315B		
026644217	201041CV	7017	150	14.5	2770	2175	7004	201041CV	00004537	00004534	2021244007	982315B		
026644218	201041CV	7018	150	14.5	2780	2175	7004	201041CV	00004537	00004534	2021244007	982315B		
026644218	201041CV	7020	150	14.5	2782	2175	7019	201041CV	00004532	00004528	2021244007	982315B		
026644216	201041CV	7021	150	14.5	2786	2175	7019	201041CV	00004537	00004534	2021244007	982315B		
026644217	201041CV	7022	150	14.5	2770	2175	7019	201041CV	00004537	00004534	2021244007	982315B		
026644216	201041CV	7024	150	14.5	2790	2175	7019	201041CV	00004532	00004528	2021244007	982315B		
026644217	201041CV	7025	150	14.5	2788	2175	7019	201041CV	00004532	00004528	2021244007	982315B		
026644217	201041CV	7026	150	14.5	2776	2175	7019	201041CV	00004537	00004534	2021244007	982315B		
026644218	201041CV	7027	150	14.5	2768	2175	7019	201041CV	00004532	00004528	2021244007	982315B		
026644217	201041CV	7036	150	14.5	2768	2175	7034	201041CV	00004507	00004503	2021244004	982315B		
026644217	201041CV	7041	150	14.5	2753	2175	7034	201041CV	00004504	00004503	2021244019	982316A		
026644217	201041CV	7043	150	14.5	2764	2175	7034	201041CV	00004504	00004503	2021244019	982316A		
026644217	201041CV	7044	150	14.5	2742	2175	7034	201041CV	00004536	00004534	2021244019	982316A		
026644218	201041CV	7047	150	14.5	2738	2175	7034	201041CV	00004536	00004534	2021244019	982316A		

Order	GCL Lot #	GCL Roll #	Length	Width	weight	sq ft	Roll # Tested	Cap Lot #	Cap Roll #	Roll # Tested	Base Roll #	Clay Lot #
026644218	201041CV	7049	150	14.5	2798	2175	7049	201041CV	00004536	00004534	2021244019	982316A
026644216	201041CV	7057	150	14.5	2746	2175	7049	201041CV	00004503	00004503	2021225080	982316A
026644217	201041CV	7058	150	14.5	2746	2175	7049	201041CV	00004503	00004503	2021225080	982316A
026644218	201041CV	7059	150	14.5	2756	2175	7049	201041CV	00004502	00004498	2021225080	982316A
026644218	201041CV	7064	150	14.5	2802	2175	7064	201041CV	00004502	00004498	2021225080	982316A
026644216	201041CV	7068	150	14.5	2770	2175	7064	201041CV	00004569	00004566	2021225059	982316A
026644218	201041CV	7069	150	14.5	2768	2175	7064	201041CV	00004569	00004566	2021225059	982316A
026644218	201041CV	7072	150	14.5	2768	2175	7064	201041CV	00004550	00004550	2021225059	982316A
026644217	201041CV	7073	150	14.5	2754	2175	7064	201041CV	00004550	00004550	2021225059	982316A

Total sq ft: 87000

Total Number of Rolls Certified: 40



GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 026644216 have been tested in our production facility lab.

Product	Lot # Tested	Roll # Tested	Mass Area		Grab Strength		Peel Strength 6496	
			D 5993	D 6768	D 6768	D 6496		
ASTM Test Method: D 5993								
Required Value: 0.75 lb /sq ft Min 50 lbs/in MARV 3.5 lbs/in Min								
CV-BENTOMAT DN	201041CV	6974	0.90	52.9	52.9	9.0		
CV-BENTOMAT DN	201041CV	6989	0.88	52.9	52.9	10.1		
CV-BENTOMAT DN	201041CV	7004	0.96	52.9	52.9	9.3		
CV-BENTOMAT DN	201041CV	7019	0.87	52.9	52.9	10.4		
CV-BENTOMAT DN	201041CV	7034	0.85	52.9	52.9	10.2		
CV-BENTOMAT DN	201041CV	7049	0.89	52.9	52.9	8.9		
CV-BENTOMAT DN	201041CV	7064	0.89	57.0	57.0	8.4		

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 026644216

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

Clay Lot #	Moist	Swell	Fluid Loss	
			D 5890	D 5891
ASTM Test Method: D 2216				
Required Value: 12% Max 24 ml/Zg Min 18 ml Max				
982315A	8.50	30.00	16.80	
982315B	8.40	30.00	17.00	
982316A	9.20	29.00	17.20	

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GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 026644216 was manufactured with geotextiles which were tested with the following results.

BASE GEOTEXTILE				COVER GEOTEXTILE			
Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs	Material	Roll Number	Mass Area oz/yd ²	Grab Strength lbs
PPX HH65L	2021225044	7.3	206.4	CV-NON-WOVEN	00004498	6.2	20.6
PPX HH65L	2021225059	6.5	185.5	CV-NON-WOVEN	00004503	6.5	59.5
PPX HH65L	2021225080	6.5	180.8	CV-NON-WOVEN	00004528	6.4	53.6
PPX HH65L	2021234940	6.7	187.3	CV-NON-WOVEN	09004534	6.5	55.8
PPX HH65L	2021244004	6.7	187.0	CV-NON-WOVEN	09004550	6.8	62.2
PPX HH65L	2021244007	6.2	185.5	CV-NON-WOVEN	00004566	6.6	56.7
PPX HH65L	2021244008	6.3	195.0	CV-NON-WOVEN	00004576	6.7	59.8
PPX HH65L	2021244019	7.5	211.4				

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

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

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**Engineered Synthetic
Products, Inc.**

October 26, 2010
Chesapeake Containment Systems Inc.
4622 Wilmslow Road
Baltimore, MD 21210

**Ref. : Domtar Paper, NC
Customer P.O. # PO 10-084
TN250-2-6/8**

We certify that the TN250-2-6/8 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
Geonet³					
Mass per Unit Area	ASTM D 5261	lbs/ft ²	0.180		Minimum
Thickness	ASTM D 5199	mil	225		Minimum
Carbon Black	ASTM D 4218	%	2.0 - 3.0		Range
Tensile Strength	ASTM D 5035	lbs/in	55		Minimum
Melt Flow	ASTM D 1238 ²	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 ⁵
Transmissivity ¹	ASTM D 4716	m ² /sec	2.0 x 10 ⁻⁴		MARV
Geotextile^{3 & 4}					
Fabric Weight	ASTM D 5261	oz/yd ²	6.0	8.0	MARV
Grab Strength	ASTM D 4632	lbs	160	220	MARV
Grab Elongation	ASTM D 4632	%	50	50	MARV
Tear Strength	ASTM D 4533	lbs	60	85	MARV
Puncture Resistance	ASTM D 4833	lbs	90	120	MARV
Water Flow Rate	ASTM D 4491	gpm/ft ²	110	95	MARV
AOS	ASTM D 4751	US Sieve	70	80	MARV
UV Resistance	ASTM D 4355	%/hrs	70/500	70/500	MARV

Notes:

- 1 Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.33 and a confining pressure of 250 psf between sand and liner after 15 mins.
- 2 Condition 190/2.16
- 3 Geotextile and Geonet properties are prior to lamination.
- 4 Geotextile data is provided by the supplier.
- 5 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



Product : TN250-2-6/8
Project : Domtar Paper, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Side A	Side B	Minimum	Average	
1	396610001	396610001 - N	3966.026	3966.278	1.57	2.14	3.94 x 10 ⁻⁴
2	396610002	396610002 - N	3966.026	3966.278			
3	396610003	396610003 - N	3966.026	3966.278			
4	396610004	396610004 - N	3966.026	3966.278			
5	396610005	396610005 - N	3966.026	3966.278			
6	396610006	396610006 - N	3966.026	3966.278			
7	396610007	396610007 - N	3966.026	3966.268			
8	396610008	396610008 - N	3966.017	3966.268			
9	396610009	396610009 - N	3966.017	3966.268			
10	396610010	396610010 - N	3966.017	3966.268	1.43	2.26	
11	396610011	396610011 - N	3966.017	3966.268			
12	396610012	396610012 - N	3966.017	3966.268			
13	396610013	396610013 - N	3966.017	3966.251			
14	396610014	396610014 - N	3966.017	3966.251			
15	396610015	396610015 - N	3966.022	3966.251			
16	396610016	396610016 - N	3966.022	3966.251			
17	396610017	396610017 - N	3966.022	3966.251			
18	396610018	396610018 - N	3966.022	3966.251			
19	396610019	396610019 - N	3966.022	3966.253			
20	396610020	396610020 - N	3966.022	3966.263	1.23	1.96	
21	396610021	396610021 - N	3966.022	3966.263			
22	396610022	396610022 - N	3966.004	3966.263			
23	396610023	396610023 - N	3966.004	3966.263			
24	396610024	396610024 - N	3966.004	3966.263			
25	396610025	396610025 - N	3966.004	3966.284			
26	396610026	396610026 - N	3966.004	3966.284			
27	396610027	396610027 - N	3966.004	3966.284			

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Product : TN250-2-6/8
Project : Domtar Paper, NC

We, the Geonet Manufacturer, hereby certify 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)
396610001 - N	CPCX002182	0.9563	0.248	244	2.41	82	
396610002 - N	CPCX002182	0.9563					
396610003 - N	CPCX002182	0.9563					
396610004 - N	CPCX002182	0.9563					
396610005 - N	CPCX002182	0.9563					
396610006 - N	CPCX002182	0.9563					
396610007 - N	CPCX002182	0.9563					
396610008 - N	CPCX002182	0.9563					
396610009 - N	CPCX002182	0.9563					
396610010 - N	CPCX002182	0.9563	0.239	246	2.45	87	
396610011 - N	CPCX002182	0.9563					
396610012 - N	CPCX002182	0.9563					
396610013 - N	CPCX002182	0.9563					
396610014 - N	CPCX002182	0.9563					
396610015 - N	CPCX002182	0.9563					
396610016 - N	CPCX002182	0.9563					
396610017 - N	CPCX002182	0.9563					
396610018 - N	CPCX002182	0.9563					
396610019 - N	CPCX002182	0.9563					
396610020 - N	CPCX002182	0.9563	0.241	246	2.26	80	
396610021 - N	CPCX002182	0.9563					
396610022 - N	CPCX002182	0.9563					
396610023 - N	CPCX002182	0.9563					
396610024 - N	CPCX002182	0.9563					
396610025 - N	CPCX002182	0.9563					
396610026 - N	CPCX002182	0.9563					
396610027 - N	CPCX002182	0.9563					



Product : TN250-2-6/8
Project : Domtar Paper, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Side A	Side B	Minimum	Average	
28	396610028	396610028 - N	3966.004	3966.284			
29	396610029	396610029 - N	3966.001	3966.284			
30	396610030	396610030 - N	3966.001	3966.284	1.31	1.93	
31	396610031	396610031 - N	3966.001	3966.260			
32	396610032	396610032 - N	3966.001	3966.260			
33	396610033	396610033 - N	3966.001	3966.260			
34	396610034	396610034 - N	3966.001	3966.260			
35	396610035	396610035 - N	3966.001	3966.260			3.96 x 10 ⁻⁴
36	396610036	396610036 - N	3966.011	3966.260			
37	396610037	396610037 - N	3966.011	3966.286			
38	396610038	396610038 - N	3966.011	3966.286			
39	396610039	396610039 - N	3966.011	3966.286			
40	396610040	396610040 - N	3966.011	3966.286	1.48	1.99	
41	396610041	396610041 - N	3966.011	3966.286			
42	396610042	396610042 - N	3966.011	3966.286			
43	396610043	396610043 - N	3966.002	3966.282			
44	396610044	396610044 - N	3966.002	3966.282			
45	396610045	396610045 - N	3966.002	3966.282			
46	396610046	396610046 - N	3966.002	3966.282			
47	396610047	396610047 - N	3966.002	3966.282			
48	396610048	396610048 - N	3966.002	3966.282			
49	396610049	396610049 - N	3966.002	3966.256			
50	396610050	396610050 - N	3966.023	3966.256	1.30	2.03	
51	396610051	396610051 - N	3966.023	3966.256			
52	396610052	396610052 - N	3966.023	3966.256			
53	396610053	396610053 - N	3966.023	3966.256			
54	396610054	396610054 - N	3966.023	3966.256			



Product : TN250-2-6/8
Project : Domtar Paper, NC

We, the Geonet Manufacturer, hereby certify 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)
396610028 - N	CPCX002182	0.9563					
396610029 - N	CPCX002182	0.9563					
396610030 - N	CPCX002182	0.9563	0.239	242	2.54	85	
396610031 - N	CPCX002182	0.9563					
396610032 - N	CPCX002182	0.9563					
396610033 - N	CPCX002182	0.9563					
396610034 - N	CPCX002182	0.9563					
396610035 - N	CPCX002182	0.9563					
396610036 - N	CPCX002182	0.9563					
396610037 - N	CPCX002182	0.9563					
396610038 - N	CPCX002182	0.9563					
396610039 - N	CPCX002182	0.9563					
396610040 - N	CPCX002182	0.9563	0.249	252	2.34	83	
396610041 - N	CPCX002182	0.9563					
396610042 - N	CPCX002182	0.9563					
396610043 - N	CPCX002182	0.9563					
396610044 - N	CPCX002182	0.9563					
396610045 - N	CPCX002182	0.9563					
396610046 - N	CPCX002182	0.9563					
396610047 - N	CPCX002182	0.9563					
396610048 - N	CPCX002182	0.9563					
396610049 - N	CPCX002182	0.9563					
396610050 - N	CPCX002182	0.9563	0.236	244	2.55	82	
396610051 - N	CPCX002182	0.9563					
396610052 - N	CPCX002182	0.9563					
396610053 - N	CPCX002182	0.9563					
396610054 - N	CPCX002182	0.9563					



Product : TN250-2-6/8
Project : Domtar Paper, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Side A	Side B	Minimum	Average	
55	396610055	396610055 - N	3966.023	3966.261			
56	396610056	396610056 - N	3966.023	3966.261			
57	396610057	396610057 - N	3966.030	3966.261			
58	396610058	396610058 - N	3966.030	3966.261			
59	396610059	396610059 - N	3966.030	3966.261			
60	396610060	396610060 - N	3966.030	3966.261	1.55	2.20	
61	396610061	396610061 - N	3966.030	3966.277			
62	396610062	396610062 - N	3966.030	3966.277			
63	396610063	396610063 - N	3966.030	3966.277			
64	396610064	396610064 - N	3966.024	3966.277			
65	396610065	396610065 - N	3966.024	3966.277			
66	396610066	396610066 - N	3966.024	3966.277			
67	396610067	396610067 - N	3966.024	3966.272			
68	396610068	396610068 - N	3966.024	3966.272			
69	396610069	396610069 - N	3966.024	3966.272			
70	396610070	396610070 - N	3966.024	3966.272	1.35	1.95	4.24 x 10 ⁻⁴
71	396610071	396610071 - N	3966.013	3966.272			
72	396610072	396610072 - N	3966.013	3966.272			
73	396610073	396610073 - N	3966.013	3966.281			
74	396610074	396610074 - N	3966.013	3966.281			
75	396610075	396610075 - N	3966.013	3966.281			
76	396610076	396610076 - N	3966.013	3966.281			
77	396610077	396610077 - N	3966.013	3966.281			
78	396610078	396610078 - N	3966.019	3966.281			
79	396610079	396610079 - N	3966.019	3966.258			
80	396610080	396610080 - N	3966.019	3966.258	1.47	1.98	
81	396610081	396610081 - N	3966.019	3966.258			



Product : TN250-2-6/8
Project : Domtar Paper, NC

We, the Geonet Manufacturer, hereby certify 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)
396610055 - N	CPCX002182	0.9563					
396610056 - N	CPCX002182	0.9563					
396610057 - N	CPCX002182	0.9563					
396610058 - N	CPCX002182	0.9563					
396610059 - N	CPCX002182	0.9563					
396610060 - N	CPCX002182	0.9563	0.248	247	2.39	87	
396610061 - N	CPCX002182	0.9563					
396610062 - N	CPCX002182	0.9563					
396610063 - N	CPCX002182	0.9563					
396610064 - N	CPCX002182	0.9563					
396610065 - N	CPCX002182	0.9563					
396610066 - N	CPCX002182	0.9563					
396610067 - N	CPCX002182	0.9563					
396610068 - N	CPCX002182	0.9563					
396610069 - N	CPCX002182	0.9563					
396610070 - N	CPCX002182	0.9563	0.241	251	2.24	83	
396610071 - N	CPCX002182	0.9563					
396610072 - N	CPCX002182	0.9563					
396610073 - N	CPCX002182	0.9563					
396610074 - N	CPCX002182	0.9563					
396610075 - N	CPCX002182	0.9563					
396610076 - N	CPCX002182	0.9563					
396610077 - N	CPCX002182	0.9563					
396610078 - N	CPCX002182	0.9563					
396610079 - N	CPCX002182	0.9563					
396610080 - N	CPCX002182	0.9563	0.244	246	2.27	83	
396610081 - N	CPCX002182	0.9563					



Product : TN250-2-6/8
Project : Domtar Paper, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Side A	Side B	Minimum	Average	
82	396610082	396610082 - N	3966.019	3966.258			
83	396610083	396610083 - N	3966.019	3966.258			
84	396610084	396610084 - N	3966.019	3966.258			
85	396610085	396610085 - N	3966.016	3966.287			
86	396610086	396610086 - N	3966.016	3966.287			
87	396610087	396610087 - N	3966.016	3966.287			
88	396610088	396610088 - N	3966.016	3966.287			
89	396610089	396610089 - N	3966.016	3966.287			
90	396610090	396610090 - N	3966.016	3966.287	1.33	2.19	
91	396610091	396610091 - N	3966.016	3966.279			
92	396610092	396610092 - N	3966.014	3966.279			
93	396610093	396610093 - N	3966.014	3966.279			
94	396610094	396610094 - N	3966.014	3966.279			
95	396610095	396610095 - N	3966.014	3966.279			
96	396610096	396610096 - N	3966.014	3966.279			
97	396610097	396610097 - N	3966.014	3966.275			
98	396610098	396610098 - N	3966.014	3966.275			
99	396610099	396610099 - N	3966.021	3966.275			
100	396610100	396610100 - N	3966.021	3966.275	1.26	1.91	
101	396610101	396610101 - N	3966.021	3966.275			
102	396610102	396610102 - N	3966.021	3966.275			
103	396610103	396610103 - N	3966.021	3966.257			
104	396610104	396610104 - N	3966.021	3966.257			
105	396610105	396610105 - N	3966.021	3966.257			4.1 x 10 ⁻⁴
106	396610106	396610106 - N	3966.015	3966.257			
107	396610107	396610107 - N	3966.015	3966.257			
108	396610108	396610108 - N	3966.015	3966.257			

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Product : TN250-2-6/8
Project : Domtar Paper, NC

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

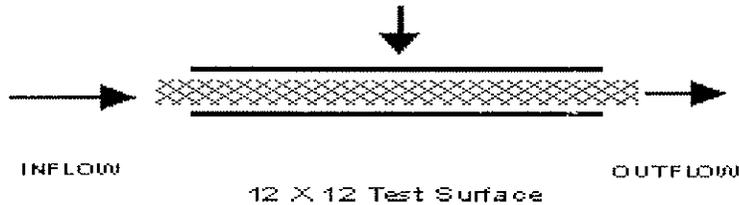
Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft ²)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m ² /sec)
396610082 - N	CPCX002182	0.9563					
396610083 - N	CPCX002182	0.9563					
396610084 - N	CPCX002182	0.9563					
396610085 - N	CPCX002182	0.9563					
396610086 - N	CPCX002182	0.9563					
396610087 - N	CPCX002182	0.9563					
396610088 - N	CPCX002182	0.9563					
396610089 - N	CPCX002182	0.9563					
396610090 - N	CPCX002182	0.9563	0.242	249	2.50	84	
396610091 - N	CPCX002182	0.9563					
396610092 - N	CPCX002182	0.9563					
396610093 - N	CPCX002182	0.9563					
396610094 - N	CPCX002182	0.9563					
396610095 - N	CPCX002182	0.9563					
396610096 - N	CPCX002182	0.9563					
396610097 - N	CPCX002182	0.9563					
396610098 - N	CPCX002182	0.9563					
396610099 - N	CPCX002182	0.9563					
396610100 - N	CPCX002182	0.9563	0.245	252	2.37	84	
396610101 - N	CPCX002182	0.9563					
396610102 - N	CPCX002182	0.9563					
396610103 - N	CPCX002182	0.9563					
396610104 - N	CPCX002182	0.9563					
396610105 - N	CPCX002182	0.9563					
396610106 - N	CPCX002182	0.9563					
396610107 - N	CPCX002182	0.9563					
396610108 - N	CPCX002182	0.9563					



ASTM D 4716

Client: Chesapeake Containment Systems Inc.	Job # 3966
Project: Domtar Paper, NC	
Product: TN250-2-6/8	

Test Configuration:



Test Information:

Boundary Conditions:	Sand Geocomposite Liner	Normal Load: 250 psf Gradient: 0.33 Seating Time: 15 mins Flow Direction: MD
-----------------------------	-------------------------------	---

Test Results:

Roll No.	Pressure, psf	Gradient	Transmissivity, m ² /sec
			15 mins
396610001	250 psf	0.33	3.94×10^{-4}
396610035			3.96×10^{-4}
396610070			4.24×10^{-4}
396610105			4.1×10^{-4}

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Product : TN250-2-6/8
Project : Domtar Paper, NC

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.	AOS us sieve	WATER- FLOW gpm/sq f
396610001	3966.026	6.32	160	69	172	75	77	90	100	70	136
	3966.278	8.21	226	66	235	75	102	119	140	80	101
396610035	3966.001	6.69	163	73	174	84	79	84	99	70	136
	3966.260	8.21	226	66	235	75	102	119	140	80	101
396610070	3966.024	6.51	166	74	180	85	77	90	100	70	136
	3966.272	8.17	228	68	233	79	96	113	136	80	101
396610105	3966.021	6.51	166	74	180	85	77	90	100	70	136
	3966.257	8.54	234	74	241	82	96	113	136	80	101



**Engineered Synthetic
Products, Inc.**

October 26, 2010
Chesapeake Containment Systems Inc.
4622 Wilmslow Road
Baltimore, MD 21210

**Ref. : Domtar Paper, NC
Customer P.O. # PO 10-084
TN250-2-6/8**

We certify that the TN250-2-6/8 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
Geonet¹					
Mass per Unit Area	ASTM D 5261	lbs/ft ²	0.180		Minimum
Thickness	ASTM D 5199	mil	225		Minimum
Carbon Black	ASTM D 4218	%	2.0 - 3.0		Range
Tensile Strength	ASTM D 5035	lbs/in	55		Minimum
Melt Flow	ASTM D 1238 ²	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 ⁵
Transmissivity ²	ASTM D 4716	m ² /sec	2.0 x 10 ⁻⁴		MARV
Geotextile^{3,4}					
Fabric Weight	ASTM D 5261	oz/yd ²	6.0	8.0	MARV
Grab Strength	ASTM D 4632	lbs	160	220	MARV
Grab Elongation	ASTM D 4632	%	50	50	MARV
Tear Strength	ASTM D 4533	lbs	60	85	MARV
Puncture Resistance	ASTM D 4833	lbs	90	120	MARV
Water Flow Rate	ASTM D 4491	gpm/ft ²	110	95	MARV
AOS	ASTM D 4751	US Sieve	70	80	MARV
UV Resistance	ASTM D 4355	%/hrs	70/500	70/500	MARV

Notes:

- 1 Transmissivity measured using water at 21 ± 2 °C (70 ± 4 °F) with a gradient of 0.33 and a confining pressure of 250 psf between sand and liner after 15 mins.
- 2 Condition 190/2.16
- 3 Geotextile and Geonet properties are prior to lamination.
- 4 Geotextile data is provided by the supplier.
- 5 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



Product : TN250-2-6/8
Project : Domtar Paper, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Side A	Side B	Minimum	Average	
109	396610109	396610109 - N	3966.015	3966.253			
110	396610110	396610110 - N	3966.015	3966.253	1.29	2.00	
111	396610111	396610111 - N	3966.015	3966.253			
112	396610112	396610112 - N	3966.015	3966.253			
113	396610113	396610113 - N	3966.031	3966.253			
114	396610114	396610114 - N	3966.031	3966.253			
115	396610115	396610115 - N	3966.031	3966.270			
116	396610116	396610116 - N	3966.031	3966.270			
117	396610117	396610117 - N	3966.031	3966.270			
118	396610118	396610118 - N	3966.031	3966.270			
119	396610119	396610119 - N	3966.031	3966.270			
120	396610120	396610120 - N	3966.029	3966.270	1.40	2.18	
121	396610121	396610121 - N	3966.029	3966.276			
122	396610122	396610122 - N	3966.029	3966.276			
123	396610123	396610123 - N	3966.029	3966.276			
124	396610124	396610124 - N	3966.029	3966.276			
125	396610125	396610125 - N	3966.029	3966.276			
126	396610126	396610126 - N	3966.029	3966.276			
127	396610127	396610127 - N	3966.028	3966.266			
128	396610128	396610128 - N	3966.028	3966.266			
129	396610129	396610129 - N	3966.028	3966.266			
130	396610130	396610130 - N	3966.028	3966.266	1.42	2.16	
131	396610131	396610131 - N	3966.028	3966.266			
132	396610132	396610132 - N	3966.028	3966.266			
133	396610133	396610133 - N	3966.028	3966.264			
134	396610134	396610134 - N	3966.006	3966.264			
135	396610135	396610135 - N	3966.006	3966.264			



Product : TN250-2-6/8
Project : Domtar Paper, NC

We, the Geonet Manufacturer, hereby certify 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)
396610109 - N	CPCX002182	0.9563					
396610110 - N	CPCX002182	0.9563	0.249	252	2.31	86	
396610111 - N	CPCX002182	0.9563					
396610112 - N	CPCX002182	0.9563					
396610113 - N	CPCX002182	0.9563					
396610114 - N	CPCX002182	0.9563					
396610115 - N	CPCX002182	0.9563					
396610116 - N	CPCX002182	0.9563					
396610117 - N	CPCX002182	0.9563					
396610118 - N	CPCX002182	0.9563					
396610119 - N	CPCX002182	0.9563					
396610120 - N	CPCX002182	0.9563	0.236	244	2.49	81	
396610121 - N	CPCX002182	0.9563					
396610122 - N	CPCX002182	0.9563					
396610123 - N	CPCX002182	0.9563					
396610124 - N	CPCX002182	0.9563					
396610125 - N	CPCX002182	0.9563					
396610126 - N	CPCX002182	0.9563					
396610127 - N	CPCX002182	0.9563					
396610128 - N	CPCX002182	0.9563					
396610129 - N	CPCX002182	0.9563					
396610130 - N	CPCX002182	0.9563	0.247	251	2.35	86	
396610131 - N	CPCX002182	0.9563					
396610132 - N	CPCX002182	0.9563					
396610133 - N	CPCX002182	0.9563					
396610134 - N	CPCX002182	0.9563					
396610135 - N	CPCX002182	0.9563					

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Product : TN250-2-6/8
Project : Domtar Paper, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Side A	Side B	Minimum	Average	
136	396610136	396610136 - N	3966.006	3966.264			
137	396610137	396610137 - N	3966.006	3966.264			
138	396610138	396610138 - N	3966.006	3966.264			
139	396610139	396610139 - N	3966.006	3966.255			
140	396610140	396610140 - N	3966.006	3966.255	1.45	2.17	4.17 x 10 ⁻⁴
141	396610141	396610141 - N	3966.009	3966.255			
142	396610142	396610142 - N	3966.009	3966.255			
143	396610143	396610143 - N	3966.009	3966.255			
144	396610144	396610144 - N	3966.009	3966.255			
145	396610145	396610145 - N	3966.009	3966.252			
146	396610146	396610146 - N	3966.009	3966.252			
147	396610147	396610147 - N	3966.009	3966.252			
148	396610148	396610148 - N	3966.003	3966.252			
149	396610149	396610149 - N	3966.003	3966.252			
150	396610150	396610150 - N	3966.003	3966.252	1.38	2.22	
151	396610151	396610151 - N	3966.003	3966.254			
152	396610152	396610152 - N	3966.003	3966.254			
153	396610153	396610153 - N	3966.003	3966.254			
154	396610154	396610154 - N	3966.003	3966.254			
155	396610155	396610155 - N	3966.020	3966.254			
156	396610156	396610156 - N	3966.020	3966.254			
157	396610157	396610157 - N	3966.020	3966.265			
158	396610158	396610158 - N	3966.020	3966.265			
159	396610159	396610159 - N	3966.020	3966.265			
160	396610160	396610160 - N	3966.020	3966.265	1.44	2.25	
161	396610161	396610161 - N	3966.020	3966.265			
162	396610162	396610162 - N	3966.018	3966.265			



Product : TN250-2-6/8
Project : Domtar Paper, NC

We, the Geonet Manufacturer, hereby certify 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)
396610136 - N	CPCX002182	0.9563					
396610137 - N	CPCX002182	0.9563					
396610138 - N	CPCX002182	0.9563					
396610139 - N	CPCX002182	0.9563					
396610140 - N	CPCX002182	0.9563	0.246	247	2.44	81	
396610141 - N	CPCX002182	0.9563					
396610142 - N	CPCX002182	0.9563					
396610143 - N	CPCX002182	0.9563					
396610144 - N	CPCX002182	0.9563					
396610145 - N	CPCX002182	0.9563					
396610146 - N	CPCX002182	0.9563					
396610147 - N	CPCX002182	0.9563					
396610148 - N	CPCX002182	0.9563					
396610149 - N	CPCX002182	0.9563					
396610150 - N	CPCX002182	0.9563	0.245	248	2.36	82	
396610151 - N	CPCX002182	0.9563					
396610152 - N	CPCX002182	0.9563					
396610153 - N	CPCX002182	0.9563					
396610154 - N	CPCX002182	0.9563					
396610155 - N	CPCX002182	0.9563					
396610156 - N	CPCX002182	0.9563					
396610157 - N	CPCX002182	0.9563					
396610158 - N	CPCX002182	0.9563					
396610159 - N	CPCX002182	0.9563					
396610160 - N	CPCX002182	0.9563	0.243	244	2.57	82	
396610161 - N	CPCX002182	0.9563					
396610162 - N	CPCX002182	0.9563					

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Product : TN250-2-6/8
Project : Domtar Paper, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Side A	Side B	Minimum	Average	
163	396610163	396610163 - N	3966.018	3966.271			
164	396610164	396610164 - N	3966.018	3966.271			
165	396610165	396610165 - N	3966.018	3966.271			
166	396610166	396610166 - N	3966.018	3966.271			
167	396610167	396610167 - N	3966.018	3966.271			
168	396610168	396610168 - N	3966.018	3966.271			
169	396610169	396610169 - N	3966.007	3966.285			
170	396610170	396610170 - N	3966.007	3966.285	1.51	2.24	
171	396610171	396610171 - N	3966.007	3966.285			
172	396610172	396610172 - N	3966.007	3966.285			
173	396610173	396610173 - N	3966.007	3966.285			
174	396610174	396610174 - N	3966.007	3966.285			
175	396610175	396610175 - N	3966.007	3966.262			4.03 x 10 ⁻⁴
176	396610176	396610176 - N	3966.008	3966.262			
177	396610177	396610177 - N	3966.008	3966.262			
178	396610178	396610178 - N	3966.008	3966.262			
179	396610179	396610179 - N	3966.008	3966.262			
180	396610180	396610180 - N	3966.008	3966.262	1.37	2.01	
181	396610181	396610181 - N	3966.008	3966.259			
182	396610182	396610182 - N	3966.008	3966.259			
183	396610183	396610183 - N	3966.010	3966.259			
184	396610184	396610184 - N	3966.010	3966.259			
185	396610185	396610185 - N	3966.010	3966.259			
186	396610186	396610186 - N	3966.010	3966.259			
187	396610187	396610187 - N	3966.010	3966.283			
188	396610188	396610188 - N	3966.010	3966.283			
189	396610189	396610189 - N	3966.010	3966.283			

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Product : TN250-2-6/8
Project : Domtar Paper, NC

We, the Geonet Manufacturer, hereby certify 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)
396610163 - N	CPCX002182	0.9563					
396610164 - N	CPCX002182	0.9563					
396610165 - N	CPCX002182	0.9563					
396610166 - N	CPCX002182	0.9563					
396610167 - N	CPCX002182	0.9563					
396610168 - N	CPCX002182	0.9563					
396610169 - N	CPCX002182	0.9563					
396610170 - N	CPCX002182	0.9563	0.240	249	2.38	81	
396610171 - N	CPCX002182	0.9563					
396610172 - N	CPCX002182	0.9563					
396610173 - N	CPCX002182	0.9563					
396610174 - N	CPCX002182	0.9563					
396610175 - N	CPCX002182	0.9563					
396610176 - N	CPCX002182	0.9563					
396610177 - N	CPCX002182	0.9563					
396610178 - N	CPCX002182	0.9563					
396610179 - N	CPCX002182	0.9563					
396610180 - N	CPCX002182	0.9563	0.242	242	2.43	85	
396610181 - N	CPCX002182	0.9563					
396610182 - N	CPCX002182	0.9563					
396610183 - N	CPCX002182	0.9563					
396610184 - N	CPCX002182	0.9563					
396610185 - N	CPCX002182	0.9563					
396610186 - N	CPCX002182	0.9563					
396610187 - N	CPCX002182	0.9563					
396610188 - N	CPCX002182	0.9563					
396610189 - N	CPCX002182	0.9563					

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Product : TN250-2-6/8
Project : Domtar Paper, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m ² /sec)
			Side A	Side B	Minimum	Average	
190	396610190	396610190 - N	3966.012	3966.283	1.27	1.97	
191	396610191	396610191 - N	3966.012	3966.283			
192	396610192	396610192 - N	3966.012	3966.283			
193	396610193	396610193 - N	3966.012	3966.267			
194	396610194	396610194 - N	3966.012	3966.267			
195	396610195	396610195 - N	3966.012	3966.267			
196	396610196	396610196 - N	3966.012	3966.267			
197	396610197	396610197 - N	3966.027	3966.267			
198	396610198	396610198 - N	3966.027	3966.267			
199	396610199	396610199 - N	3966.027	3966.269			
200	396610200	396610200 - N	3966.027	3966.269	1.52	2.02	
201	396610201	396610201 - N	3966.027	3966.269			
202	396610202	396610202 - N	3966.027	3966.269			
203	396610203	396610203 - N	3966.027	3966.269			
204	396610204	396610204 - N	3966.005	3966.269			
205	396610205	396610205 - N	3966.005	3966.290			
206	396610206	396610206 - N	3966.005	3966.280			
207	396610207	396610207 - N	3966.005	3966.280			
208	396610208	396610208 - N	3966.005	3966.280			
209	396610209	396610209 - N	3966.005	3966.280			
210	396610210	396610210 - N	3966.005	3966.280	1.34	2.13	4.25 x 10 ⁻⁴
211	396610211	396610211 - N	3966.025	3966.274			
212	396610212	396610212 - N	3966.025	3966.274			
213	396610213	396610213 - N	3966.025	3966.274			
214	396610214	396610214 - N	3966.025	3966.274			
215	396610215	396610215 - N	3966.025	3966.274			
216	396610216	396610216 - N	3966.025	3966.274			



Product : TN250-2-6/8
Project : Domtar Paper, NC

We, the Geonet Manufacturer, hereby certify 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)
396610190 - N	CPCX002182	0.9563	0.243	251	2.33	82	
396610191 - N	CPCX002182	0.9563					
396610192 - N	CPCX002182	0.9563					
396610193 - N	CPCX002182	0.9563					
396610194 - N	CPCX002182	0.9563					
396610195 - N	CPCX002182	0.9563					
396610196 - N	CPCX002182	0.9563					
396610197 - N	CPCX002182	0.9563					
396610198 - N	CPCX002182	0.9563					
396610199 - N	CPCX002182	0.9563					
396610200 - N	CPCX002182	0.9563	0.242	245	2.46	83	
396610201 - N	CPCX002182	0.9563					
396610202 - N	CPCX002182	0.9563					
396610203 - N	CPCX002182	0.9563					
396610204 - N	CPCX002182	0.9563					
396610205 - N	CPCX002182	0.9563					
396610206 - N	CPCX002182	0.9563					
396610207 - N	CPCX002182	0.9563					
396610208 - N	CPCX002182	0.9563					
396610209 - N	CPCX002182	0.9563					
396610210 - N	CPCX002182	0.9563	0.244	247	2.56	87	
396610211 - N	CPCX002182	0.9563					
396610212 - N	CPCX002182	0.9563					
396610213 - N	CPCX002182	0.9563					
396610214 - N	CPCX002182	0.9563					
396610215 - N	CPCX002182	0.9563					
396610216 - N	CPCX002182	0.9563					

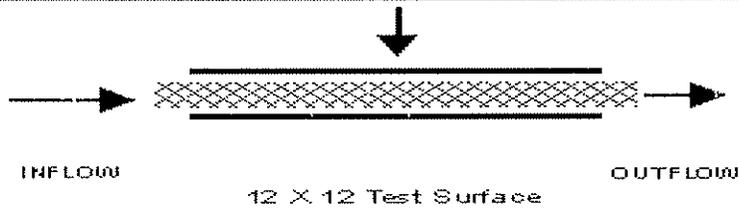
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ASTM D 4716

Client: Chesapeake Containment Systems Inc.	Job # 3966
Project: Domtar Paper, NC	
Product: TN250-2-6/8	

Test Configuration:



Test Information:

Boundary Conditions:	Sand	Normal Load: 250 psf
	Geocomposite	Gradient: 0.33
	Liner	Seating Time: 15 mins
		Flow Direction: MD

Test Results:

Roll No.	Pressure, psf	Gradient	Transmissivity, m ² /sec
			15 mins
396610140	250 psf	0.33	4.17 x 10 ⁻⁴
396610175			4.03 x 10 ⁻⁴
396610210			4.25 x 10 ⁻⁴

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Product : TN250-2-6/8
Project : Domtar Paper, NC

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.	AOS us sieve	WATER- FLOW gpm/sq f
396610140	3966.006	6.64	161	73	171	77	74	89	100	70	136
	3966.255	8.54	234	74	241	82	96	113	136	80	101
396610175	3966.007	6.64	161	73	171	77	74	89	100	70	136
	3966.262	8.21	226	66	235	75	102	119	140	80	101
396610210	3966.005	6.64	161	73	171	77	74	89	100	70	136
	3966.280	8.21	226	66	235	75	102	119	140	80	101

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SKAPS Industries (Nonwoven Division)
335, Athena Drive
Athens, GA 30601 (U.S.A.)
Phone (706) 354-3700 Fax (706) 354-3737
E-mail: info@skaps.com

Sales Office:
Engineered Synthetic Product Inc.
Phone: (770)564-1857
Fax: (770)564-1818

October 29, 2010
Chesapeake Containment Systems, Inc.

Ref : Domtar Paper
PO : PO10-084

Dear Sir/Madam:

This is to certify that SKAPS GE320 is a high quality needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, randomly networked to form a high strength dimensionally stable fabric. SKAPS GE320 resists ultraviolet deterioration, rotting, biological degradation. The fabric is inert to commonly encountered soil chemicals. Polypropylene is stable within a pH range of 2 to 13. SKAPS GE320 conforms to the property values listed below:

PROPERTY	TEST METHOD	UNITS	M.A.R.V. Minimum Average Roll Value
Weight	ASTM D 5261	oz/sy (g/m ²)	32.00 (1085)
Grab Tensile	ASTM D 4632	lbs (kN)	600 (2.67)
Grab Elongation	ASTM D 4632	%	50
Trapezoidal Tear	ASTM D 4533	lbs (kN)	270 (1.20)
Puncture Resistance	ASTM D 4833	lbs (kN)	350 (1.56)
UV Resistance	ASTM D 4355	%/hrs	70/500

Notes:

* At the time of manufacturing, Handling may change these properties.

ANURAG SHAH
QUALITY CONTROL MANAGER

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Product : GE320-15

ROLL #	WEIGHT	MD TENSILE	MD ELONG	XMD TENSILE	XMD ELONG	MD TRAP	XMD TRAP	PUNCTURE
ASTM METHOD UNITS TARGET	D5261 oz/sq yd 32.00	D4632 lbs. 600	D4632 % 50	D4632 lbs 600	D4632 % 50	D4533 lbs. 270	D4533 lbs 270	D4833 lbs. 350
17884.01	32.05	809	87	903	94	284	292	353
17884.02	32.05	809	87	903	94	284	292	353
17884.03	32.05	809	87	903	94	284	292	353
17884.04	32.05	809	87	903	94	284	292	353
17884.05	32.85	877	98	945	119	284	292	353
17884.06	32.85	877	98	945	119	284	292	353
17884.07	32.85	877	98	945	119	284	292	353
17884.08	32.85	877	98	945	119	284	292	353
17884.09	32.85	877	98	945	119	284	292	353
17884.10	32.16	814	82	897	100	291	304	357
17884.11	32.16	814	82	897	100	291	304	357
17884.12	32.16	814	82	897	100	291	304	357
17884.13	32.16	814	82	897	100	291	304	357
17884.14	32.16	814	82	897	100	291	304	357
17884.15	32.74	862	95	934	115	291	304	357
17884.16	32.74	862	95	934	115	291	304	357
17884.17	32.74	862	95	934	115	291	304	357
17884.18	32.74	862	95	934	115	291	304	357
17884.19	32.74	862	95	934	115	291	304	357
17884.20	32.23	829	88	878	97	280	296	351
17884.21	32.23	829	88	878	97	280	296	351
17884.22	32.23	829	88	878	97	280	296	351
17884.23	32.23	829	88	878	97	280	296	351
17884.24	32.23	829	88	878	97	280	296	351
17884.25	32.67	889	100	950	111	280	296	351
17884.26	32.67	889	100	950	111	280	296	351
17884.27	32.67	889	100	950	111	280	296	351
17884.28	32.67	889	100	950	111	280	296	351
17884.29	32.67	889	100	950	111	280	296	351
17884.30	32.38	844	84	899	103	293	301	355
17884.31	32.38	844	84	899	103	293	301	355
17884.32	32.38	844	84	899	103	293	301	355
17884.33	32.38	844	84	899	103	293	301	355
17884.34	32.38	844	84	899	103	293	301	355

*All Values are MARV.

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Field Tensiometer Calibration Documentation

T3

Demtech Services, Inc.
Placerville, California, USA

CALIBRATION CERTIFICATE

Chesapeak Containment Systems

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension
Model No: M2405-750#
Serial No: 236089

Calibration Apparatus:
Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
A/D Module Serial No: 11098236089
Channel No: N/A

Dead Weight:		Reference Cell:	
W1	<u>2</u>	R1	<u>2</u>
W2	<u>152</u>	R2	<u>152</u>
W3	<u>302</u>	R3	<u>302</u>

Indicator reading with no load: 0

Offset: 2.675926

Scale: 5.125405

Applied Force lbs.

Cell Response:

Deviation Error:

<u>2</u>
<u>52</u>
<u>102</u>
<u>152</u>
<u>202</u>
<u>252</u>
<u>302</u>

<u>2</u>
<u>52</u>
<u>102</u>
<u>152</u>
<u>202</u>
<u>252</u>
<u>302</u>

<u>0.00</u>

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F
Excitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Cody Pebley

Date: 10/08/09

Cody Pebley

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Appendix E

Daily Construction Reports



DAILY CONSTRUCTION REPORT

Report No. 1

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 11 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:00 pm	Hrs: 11
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered: 1-load of GCL & equipment for geomembrane crew

Weather: Sunny, slight breeze		Temp.: 80
Humidity: %	Rain: in.	Pressure: @ Wind: mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6(full day)	<input checked="" type="checkbox"/> Cat Dozer D6 (full day)	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck (full day)	<input checked="" type="checkbox"/> Volvo A40E Haul Truck (full day)	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe (half day)	<input checked="" type="checkbox"/> John Deere 40D Trackhoe (half day)	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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Report No. 1

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

1. Geomembrane installer is scheduled for Monday next week.
2. Will plan on adjusting perimeter ditch to get the 3:1 slope to work up to the first bench.

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 1

Daily Communications:

Name/Representing: Todd Martin, RMT Inc.

Time: 10:00

Subject/Comments: Slope/Grades

Spoke to Todd about how the bottom slopes were fat around the entire landfill. Explained John's idea of keeping the 3:1 slope present and working the ditch in by building a berm on the outside slope between the ditch & road.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:



DAILY CONSTRUCTION REPORT

Report No. 2

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 10 / 12 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 6:00 pm		Hrs: 11
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered: 5 loads of GCL

Weather: Sunny, slight breeze				Temp.: 80
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6(full day)			<input checked="" type="checkbox"/> Cat Dozer D6 (full day)	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck			<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/> John Deere 160C Trackhoe			<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	

Report No. 2

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

1. Ryan had a little trouble with their GPS system, but was back up & running relatively soon.

Notices To/From Contractors:

1. John Knoth said that Steve (Ryan Central) will be onsite this afternoon and will stake some points in the east ditch so we can visually see what is going on with the toe of slope & the bottom of the ditch.

Work Decisions:

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DAILY CONSTRUCTION REPORT

Report No. 1

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT Inc.	Time: 10:00
Subject/Comments: Slope/Grades	
1. Called Todd and left him a message about how Steve (Ryan Central Inc) is coming this afternoon to stake out points in the east perimeter ditch so we can visually see what is going on.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 3

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 10 / 13 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 6:00 pm		Hrs: 11
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered: 3 loads of GCL & two loads of pipe

Weather: Sunny, slight breeze, partially cloudy				Temp.: 80
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

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Report No. 3

Testing Performed/Samples Collected:

1. Grabbed a five gallon bucket of general fill from the borrow site and a gallon bag of topsoil from the topsoil pile to send back to Terry H. in Madison.

Field Problems and Nonconforming Materials or Work:

1. Ryan hit the east/west berm delineating the two cells when excavating extra ash from the western ditch. Will need to figure out how to work around that, while maintaing drainage through the ditch.

Notices To/From Contractors:

Work Decisions:

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT Inc.	Time: 10:00
Subject/Comments: GCL	
1. Wanted me to write down all the roll numbers, talk to Bill Morris about the grading of waste, look at x-sections of the ditch & work with Mike Amstadt on the testing frequencies.	
Name/Representing: Terry Halena, RMT Inc.	Time: 11:00
Subject/Comments: General Fill & Topsoil Samples	
1. Terry needed me to send him a sample of general fill & topsoil to be used in laboratory testing.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 4

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 14 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 2:00 pm	Hrs: 7 hrs
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered: 3 loads of GCL, load of geotextile, & load of geomembrane

Weather: Partly cloudy, rain		Temp.: 75
Humidity: %	Rain: in.	Pressure: Wind: West @ 10-20 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

Report No. 4

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 4

Daily Communications:

Name/Representing: Todd Martin, RMT Inc.

Time: 9:30

Subject/Comments: Miscellaneous

1. I told him I would send him an excel file with all the roll information for the GCL & geomembrane. I explained that I had talked to Bill Morris about the grading issues and he was aware of what we were planning on working on. Todd wanted to me ask Bill about the pumps in the side slope riser

Name/Representing: Terry Halena, RMT Inc.

Time: 9:00

Subject/Comments: General Fill & Topsoil Samples

1. Checked with Terry to make sure that he got the bucket of general fill.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

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DAILY CONSTRUCTION REPORT

Report No. 5

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input checked="" type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 15 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:00 pm	Hrs: 11 hrs
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered: 4 loads of GCL.

Weather: Cool in am, sunny pleasant in the pm		Temp.: 75
Humidity: %	Rain: in.	Pressure: Wind: West @ 10-20 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
7:00 am	Arrived onsite. Talked to John Knoth about test pits in borrow area. He said Sam could go back with me
	and dig them for me. A load of GCL arrived.
8:00 am	Dug test pits in borrow area to confirm presence of clay on the eastern edge of the borrow area. Could not
	dig test pits farther to the east due to a thick stand of trees. A test pit on the western end of the borrow
	site showed clay 3 feet bgs.
9:15 am	Two more loads of GCL arrived.
12:30 pm	Ryan working on grading west slope and placing excess ash at the top of the landfill.
2:30 pm	Todd M. called.
3:00 pm	Bill Morris stopped by to go over Appendix Y "Safety Orientation" with me.
4:00 pm	Another load of GCL arrived.
5:30 pm	John Knoth took me around the site and filled in on their plan of attack for next week. They will continue
	grading subgrade on Monday, gas trench on Tuesday & start deploying on Wednesday.

Quantities of Pay Items Placed:	
Item:	Quantity:
Item:	Quantity:
Item:	Quantity:

Report No. 5

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

1. John Knoth said that we could still plan on having the surveyor come Monday to survey top of ash. I emailed the surveyor and Joe Chance said that he would be here early afternoon on Monday the 18th.

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 5

Daily Communications:	
Name/Representing: Todd Martin, RMT	Time: 2:30
Subject/Comments: Update for the day	
1. Todd called and said that as long as we use the clay material in the borrow site that the geocomposite layer will work as designed in the final cover system. Todd M. said to email Steve (Ryan) to see if he could email us his topo information for the top of ash grades.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 6

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 18 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:00 pm	Hrs: 11 hrs
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: <u> </u> days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, <u> </u> Laborers, <u> </u> Engineer.
Subcontractors:
Equipment/Materials Delivered: 2 loads of GCL & 1 load of geomembrane

Weather: Cool in am, sunny warm in the pm		Temp.: 80s
Humidity: %	Rain: in.	Pressure: Wind: West @ 5-10 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
7:00 am	Arrived onsite. 1 load of GCL & 1 load of 40-mil arrived.
8:00 am	Ryan continued to work grading select ash.
9:50 am	Called Todd M.(See Communications)
10:15 am	Called Joe Chance.(See Communications)
12:30 pm	Joe showed up to do survey. Explained to him what I needed. Ryan started digging the gas trench at the southern most end of the cover. Ryan also welding the 4-inch HDPE pipe together for the gas collection trench. They continued to work on the subgrade on the northern end.
3:15 pm	Joe Chance left after surveying the east slope. Told him I would keep him in the loop regarding the schedule for surveying the membrane.
4:00 pm	Talked to John K. and he said they are going to wait to dig the lower drainage trench until the entire slope has been rolled. Cleaning up subgrade on the north end and hauling excess ash to top of landfill on the north end.
6:00 pm	Left site.

Quantities of Pay Items Placed:	
Item:	Quantity:
Item:	Quantity:
Item:	Quantity:

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Report No. 6

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

1. Liner crew is still coming on Tuesday to fill sandbags and scheduled to deploy on Wednesday.

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 6

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT	Time: 9:50
Subject/Comments: Update for the day	
1. Called Todd and he said to have Joe Chance survey the toe of slope, top/bottom of benches, crest, & any breaks/	
changes in grade on a 50' grid pattern. He then wanted me to ask Ryan what the level of effort/cost would be to clear/	
grub trees to a distance of 100' east of the eastern borrow site edge.	
Name/Representing: Joe Chance, Chance & Associates	Time: 10:15
Subject/Comments: Survey	
1. Called Joe and told him where the construction entrance was so he could come into the site without having to worry	
about a pass to get in.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 7

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 19 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:00 pm	Hrs: 11 hrs
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: <u> </u> days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, <u> </u> Laborers, <u> </u> Engineer.
Subcontractors:
Equipment/Materials Delivered: rock for the gas collection trench

Weather: Cool in am, sunny warm in the pm		Temp.: 80s
Humidity: %	Rain: in.	Pressure: Wind: West @ 5-10 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
7:00 am	Arrived onsite. Ryan was going to start rolling the east slope and put gas collection trench together.
7:30 am	Dave Ventress from Chesapeake Containment Systems, Inc. arrived onsite with the liner crew.
8:30 am	Ryan started to dig the drainage trench in the southeastern corner of the final cover.
10:00 am	Chesapeake is filling sand bags and will start to deploy on Wednesday. Bill Morris stopped by and
	to see how things were progressing. He asked that we were taking pictures and I told him he would
	definitely get a copy of all them in the doc report. He said to call if I had any questions/concerns.
11:00 am	Todd M. called for the day(Communication Section). Ryan starting to clean membrane off in SE corner.
1:00 pm	Ryan backfilling gas collection trench with aggregate. Grabbed Select Aggregate Fill Sample #1.
3:00 pm	Todd M called again.
4:00 pm	Talked to Steve V. from Ryan about the borrow site and which way we would like to extend it out. He was
	also wondering if we could go closer to the fence along the entire width of the borrow area.
5:45 pm	Talked with Ryan K. (Chesapeake) to let him know the conformance tests won't be ready till Wednesday or
	Thursday morning.
6:00 pm	Left site.

Quantities of Pay Items Placed:	
Item:	Quantity:
Item:	Quantity:
Item:	Quantity:

de

Report No. 7

Testing Performed/Samples Collected:

1. Grabbed Select Aggregate Sample #1 from the gas collection trench. (located about 20-feet south of the first vent on the southern end of the trench).

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

1. Told Chesapeake that the conformance tests wouldn't be ready for the GCL till Wednesday or Thursday. Told them we do have a few of the membrane conformance tests for 10-12 rolls approximately.

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 7

Daily Communications:

Name/Representing: Todd Martin, RMT

Time: 11:00

Subject/Comments: Update for the day

1. Todd said he was looking at the conformance data for membrane & GCL, along with the survey data from Joe C. & Steve V. He also mentioned that the bottom of the perimeter ditch & outside berm should be clay material. He passed on some of the conformance tests for the membrane. He said to make sure that the rest of the survey info is done on a 50-foot (Joe Chance).

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

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DAILY CONSTRUCTION REPORT

Report No. 8

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 10 / 20 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 5:30 pm		Hrs: 10.5 hrs
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input checked="" type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth -(super) & Steve Vorpahl(surveyor)
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors: Chesapeake Containment Systems, Inc.
Equipment/Materials Delivered:

Weather: cool in am, partly cloudy in pm				Temp.: 50-75
Humidity: %	Rain: in.	Pressure:	Wind: West	@ 0-5 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6			<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck			<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe			<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	

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Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

1. We have the conformance testing for the 40-mil onsite, however still waiting results for the GCL.

Notices To/From Contractors:

1. Talked to Ryan & Chesapeake and discussed that no GCL would be placed until conformance testing was received & verified.

Work Decisions:

31

DAILY CONSTRUCTION REPORT

Report No. 8

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT	Time: 11:00
Subject/Comments: Update for the day	
1. Todd had me find out the status of the GCL panel layout diagram, index flux & hydraulic conductivity manufacturers data. I emailed Ryan K. and the manufacturers data should be done early next week for the above items. Todd said he would look at the GCL submittals and email me once he looked at them.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 9

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 10 / 21 / 10	
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company					
RMT Project Manager: Mike Parker			Office Contact: Todd Martin		
RMT Representatives: Nathan Braun					
Time Arrived On-Site: 6:45 am		Time Left Site: 6:15 pm		Hrs: 11.5	
Client Representative(s): Bill Morris					

Status of Project in Relation to Schedule: ___ days <input type="checkbox"/> ahead of schedule <input checked="" type="checkbox"/> behind schedule <input type="checkbox"/> on schedule					
Contractors: Ryan Central Inc.					
Superintendent/Foreman: John Knoth -(super)					
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.					
Subcontractors: Chesapeake Containment Systems, Inc.					
Equipment/Materials Delivered:					

Weather: cool in am, sunny in pm, very windy					Temp.: 50-75
Humidity: %	Rain: in.	Pressure:	Wind: West	@ 15-30	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)					
<input checked="" type="checkbox"/> Cat Dozer D6		<input checked="" type="checkbox"/> Cat Dozer D6			
<input checked="" type="checkbox"/> Volvo A40E Haul Truck		<input checked="" type="checkbox"/> Volvo A40E Haul Truck			
<input checked="" type="checkbox"/> John Deere 160C Trackhoe		<input checked="" type="checkbox"/> John Deere 40D Trackhoe			
<input checked="" type="checkbox"/> Cat Smooth Drum Roller		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			

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DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
6:45 am	Arrived onsite early so I could make sure we only used the smaller GCL roll #'s since conformance testing
	was not 100% complete. Told Dave(Chesapeake) that we need to stay below roll # 7243. Ryan working
	on gas trench and the perimeter ditch/drainage ditch.
8:00 am	Started to deploy GCL. The plan is to deploy to lunch and then deploy membrane in the afternoon.
11:00 am	Todd Martin called (See Communications)
11:45 am	Called Todd Martin about the use of 45's on the slope. He said that it be the last resort & try aiming for one
	of the benches or do a full length pull.
4:30 pm	Done deploying & seaming membrane for the day.
5:45 pm	Talked to John K. about scheduling Joe Chance to come out next Monday to shoot the remainder of the
	top of waste & geomembrane.
6:15 pm	Left site.

Quantities of Pay Items Placed:	
Item: GCL	Quantity: Panels (1-)
Item: 40-mil LLDPE	Quantity: Panels (1-11)
Item:	Quantity:

34

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

1. Using 45 degree seams on the 3:1 slope is the last option. Exhaust other ones first.

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DAILY CONSTRUCTION REPORT

Report No. 9

Daily Communications:	
Name/Representing: Todd Martin, RMT	Time: 11:00
Subject/Comments: Update for the day	
1. Todd said that using 45 degree seams on the slopes are a last resort & try to do the full length pull or do a horizontal seam on one of the benches. Todd asked me where the pictures & daily reports were & told him that they were on the p:drive under the new filing system.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 10

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input checked="" type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 22 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 7:00 pm	Hrs: 12 hrs
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered: 2 loads of geomembrane

Weather: Sunny, slight breeze				Temp.: 50-70	
Humidity: %	Rain: in.	Pressure:	Wind:	@	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)					
<input checked="" type="checkbox"/> Cat Dozer D6		<input checked="" type="checkbox"/> Cat Dozer D6			
<input checked="" type="checkbox"/> Volvo A40E Haul Truck		<input checked="" type="checkbox"/> Volvo A40E Haul Truck			
<input checked="" type="checkbox"/> John Deere 160C Trackhoe		<input checked="" type="checkbox"/> John Deere 40D Trackhoe			
<input checked="" type="checkbox"/> Cat Smooth Drum Roller		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

1. Surveyor will be here on Monday to survey the remainder of the subgrade and the geomembrane that we have down.

Work Decisions:

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DAILY CONSTRUCTION REPORT

Report No. 10

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT Inc.	Time: 3:00
Subject/Comments: Call-In	
1. Spoke with Todd and he said he would have the next batch of geomembrane conformance results looked at by tonight.	
He said to take a few more pictures and at different angles. He wanted me to ask John K. if we were holding them up on anything.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 11

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input checked="" type="checkbox"/> S	Date: 10 / 23 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:30 pm	Hrs: 10.5 hrs
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>3</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Sunny, warm		Temp.: 50-75	
Humidity: %	Rain: in.	Pressure:	Wind: West @ 5 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)			
<input type="checkbox"/> Cat Dozer D6			<input type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck			<input type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe			<input checked="" type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

1. Surveyor will be here on Monday to survey the remainder of the subgrade and the geomembrane that we have down.

Work Decisions:

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DAILY CONSTRUCTION REPORT

Report No. 11

Daily Communications:

Name/Representing: Todd Martin, RMT Inc.

Time: 9:00

Subject/Comments: Call-In

1. Todd called and told me that we need to put the extra 4-inch drain pipes in on the eastern & western slopes for sure.

Discussed with Ryan & Todd and will end up putting it on a 20/80 split on the eastern side so we don't slow down the liner crew.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:



DAILY CONSTRUCTION REPORT

Report No. 12

Project No.: 05794.46.001		Day: <input checked="" type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 10 / 24 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 5:00 pm		Hrs: 10 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>3</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Sunny, warm				Temp.: 50-75
Humidity: %	Rain: in.	Pressure:	Wind: West	@ 5 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6			<input type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck			<input type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe			<input type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
7:00 am	Arrived onsite. Chesapeake getting ready to start detailing.
8:00 am	Dave wanted to talk t o John K. about placing diversion berms in the drainage ditches on the southern end of the final cover to prevent water from coming onto the membrane. Need to talk to Todd M. about what we should consider the tie-in. Just one large repair or more seams, sincie it is outside the limits of waste.
9:00am	Ryan working on cleaning off more membrane on the north end of the job and digging the bottom drainage ditch.
10:00 am	Ryan used the excavator to make small berms in the waste just south of the geomembrane edge to prevent water from getting onto the liner.
1:00 pm	Working on repairs.
3:00 pm	Ryan left for the day.
4:00 pm	Chesapeake done for the day.
5:00 pm	Left site after doing paperwork.

Quantities of Pay Items Placed:	
Item:	Quantity:
Item:	Quantity:
Item:	Quantity:

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

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DAILY CONSTRUCTION REPORT

Report No. 12

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 13

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 25 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:30 pm	Hrs: 10.5 hrs
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Partly cloudy, off and on rain in afternoon		Temp.: 50-75
Humidity: %	Rain: in.	Pressure:
Wind: SW		@ 10-15 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
7:00 am	Arrived onsite. Grabbed DTs 1-10 to send to RMT lab in Madison, along with a 1-gallon bag of aggregate
	Called John Hanson to let him know to be expecting the samples tomorrow morning.
9:30 am	Called Todd M. for the day.
10:15 am	Joe Chance onsite to survey the north & west top of select ash grades.
10:30 am	Talked to Bill Morris about the borrow site & he said to expand east as far as we need to be able to get the
	right amount of fill for the cover. He told me to make sure we are in compliance with the erosion control
	plan as well for both the borrow site & landfill construction.
12:30 pm	Ryan working on stripping topsoil off the borrow area & stockpiling it.
1:00 pm	Chesapeake going to try to detail/do repairs before the rain starts. Started raining at 2 pm.
	Chesapeake filled sandbags for awhile in between showers and then about 4:30 the rain started to fall
	very hard & consistently.
5:00 pm	Left site for the day due to the rain.

Quantities of Pay Items Placed:	
Item: GCL	Quantity: P(?-?)
Item: 40 mil	Quantity: P39-P45
Item:	Quantity:

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

Daily Communications:

Name/Representing: Todd Martin, RMT Inc.

Time: 9:30

Subject/Comments: Call-In

1. Called Todd and asked him about the geomembrane tie-in to the 60-mil & we decided that we would just VT & not take destructs out of it. He wanted me to talk to Bill Morris about the borrow site and to make sure he was still good with us moving to the east to get more general fill.

Name/Representing: Joe Chance, Chane & Associates, Inc.

Time: 4:30

Subject/Comments: Geomembrane Survey

1. Joe said he would be back on Wednesday to survey the geomembrane & I told him that I would show him exactly what I was looking for.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:



DAILY CONSTRUCTION REPORT

Report No. 14

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 10 / 25 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 8:30 am		Hrs: 1.5 hrs
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Very heavy rain in morning				Temp.: 70
Humidity: %	Rain: in.	Pressure:	Wind: SW	@ 10-15 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6				<input type="checkbox"/> Cat Dozer D6
<input type="checkbox"/> Volvo A40E Haul Truck				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/> John Deere 160C Trackhoe				<input type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

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DAILY CONSTRUCTION REPORT

Report No. 15

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 27 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:00 pm	Hrs: 11 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: P. cloudy to mostly sunny, very warm & humid/windy		Temp.: 70-85
Humidity: %	Rain: in.	Pressure:
Wind: West		@ 15-25 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
7:00 am	Arrived onsite. Chesapeake working on cleaning up water and other items from the rain yesterday.
	Will work on repairs and finish air testing since the subgrade is still pretty wet & the geonet is not here yet.
9:00 am	Todd M. called to let me know that the manufacturers specs for the geonet was good so they could ship
	it to the site.
10:00 am	Ryan working on cleaning more geomembrane off at the bottom of the slope, digging the bottom drainage
	ditch & clearing/grubbing more of the borrow area.
11:00 am	Working on repairs.
1:00 pm	Chesapeake said they were going to fill sandbags and the geonet should be arriving tomorrow.
3:00 pm	Ryan working on rolling the west slope and cutting out some of the steeper slopes to make them closer to
	3:1. They were still working on clearing/grubbing additional areas in the borrow area as well.
6:00 pm	Left site.

Quantities of Pay Items Placed:	
Item:	Quantity:
Item:	Quantity:
Item:	Quantity:

58

Testing Performed/Samples Collected:

1. DTs 16-19 were tested in the field and will be sent out tomorrow morning.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

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DAILY CONSTRUCTION REPORT

Report No. 15

Daily Communications:

Name/Representing: Todd Martin, RMT

Time: 9:00

Subject/Comments: Update for the day

1. Todd called and told me that the manufacturers data for the geonet was good and I could have Chesapeake ship the geonet to the site. He asked to see some pictures of the pipe that went in on the east side as well. Todd also said that we put the 8oz on the bottom and that we need to sew the geonet together instead of welding it.

Name/Representing: Joe Chance, Chance & Associates

Time: 9:30

Subject/Comments: Schedule

I called Joe & asked him when we would be here on Thursday & said he would be here by 9 for the entire day.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:



DAILY CONSTRUCTION REPORT

Report No. 16

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 28 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:30 pm	Hrs: 11.5
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: P. cloudy to mostly sunny, very warm & humid		Temp.: 70-85
Humidity: %	Rain: in.	Pressure: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

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Daily Communications:

Name/Representing: Todd Martin, RMT

Time: 9:00

Subject/Comments: Update for the day

Talked to Todd and asked him if we needed to reshoot the portion of the western slope that we regraded, he said to do that. Informed him that there wasn't else much going on, just working on deploying more material.

Name/Representing: Joe Chance, Chance & Associates

Time: 1:00

Subject/Comments: Schedule

Joe left after shooting the geomembrane & re-shooting the western slope south of the conveyor belt from the 1st bench to the 2nd bench. He asked me to just give him a call when I had an idea of when I would need him out here again to document more of the geomembrane.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

64



DAILY CONSTRUCTION REPORT

Report No. 17

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input checked="" type="checkbox"/> F <input type="checkbox"/> S		Date: 10 / 29 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 5:00 pm		Hrs: 10 hrs
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>5</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: P. cloudy to mostly sunny,				Temp.: 45-65
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 40D Trackhoe
<input checked="" type="checkbox"/> Cat Smooth Drum Roller				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

65

DAILY CONSTRUCTION REPORT

Report No. 17

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

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DAILY CONSTRUCTION REPORT

Report No. 17

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT	Time: 9:00
Subject/Comments: Update for the day	
Updated Todd on our progress for the day.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 18

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input checked="" type="checkbox"/> S	Date: 10 / 30 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:00 pm	Hrs: 11 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>2</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear cool to sunny in the pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input type="checkbox"/> John Deere 450D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Report No. 18

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 18

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 19

Project No.: 05794.46.001	Day: <input checked="" type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 10 / 31 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 4:30 pm	Hrs: 9.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: _____ Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear cool in the am, sunny warm in the pm				Temp.: 50-70	
Humidity: %	Rain: in.	Pressure:	Wind:	@	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)					
<input type="checkbox"/> Cat Dozer D6					<input type="checkbox"/> Cat Dozer D6
<input type="checkbox"/> Volvo A40E Haul Truck					<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/> John Deere 160C Trackhoe					<input type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller					<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>					<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>
<input type="checkbox"/>					<input type="checkbox"/>

DAILY CONSTRUCTION REPORT

Report No. 19

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 19

Daily Communications:	
Name/Representing: Todd Martin, RMT	Time: 10:20
Subject/Comments: Call In	
1. He called to let me know about not having any seams on the slopes with the geonet. Need to have them on the Benches.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 20

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 01 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:00 pm	Hrs: 11 hrs.
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Cool in morning, breezy very nice in the afternoon		Temp.: 45-65
Humidity: %	Rain: in.	Pressure:
Wind: West		@ 10-15 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Report No. 20

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 20

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 21

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 02 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 6:00 pm	Hrs: 11 hrs.
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: ___ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, ___ Laborers, ___ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Cool in morning, breezy very nice in the afternoon		Temp.: 45-65
Humidity: %	Rain: in.	Pressure:
Wind: West		@ 10-15 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input checked="" type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	

Testing Performed/Samples Collected:
Field Problems and Nonconforming Materials or Work:
Notices To/From Contractors:
Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 21

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 22

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 03 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 2:30 pm	Hrs: 7.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered: 1 load of geonet

Weather: Cool in morning, rain in the afternoon		Temp.: 40-50
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Report No. 22

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

JS



DAILY CONSTRUCTION REPORT

Report No. 23

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 04 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 2:30 pm	Hrs: 7.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: <u> </u> days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>3</u> Operators, <u> </u> Laborers, <u> </u> Engineer.
Subcontractors:
Equipment/Materials Delivered: 2 loads of 32 oz. geocushion

Weather: Cool in morning, rain in the afternoon		Temp.: 40-50
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

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DAILY CONSTRUCTION REPORT

Report No. 23

Daily Communications:

Name/Representing: Todd Martin, RMT

Time: 9:00

Subject/Comments: Call-In for the Day

1. Todd talked to me about the Ryan pay request on how things looked good. I sent him an email confirming I agreed with everything except the gas venting system. He asked me for more pictures of the borrow area, silt fence, 3-foot road on top & the toe drains. He also wanted me to locate the silt fence on the drawings & then fax him the sheet.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:



DAILY CONSTRUCTION REPORT

Report No. 24

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input checked="" type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 05 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:30 pm	Hrs: 10.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>3</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered: 4 loads of geonet

Weather: cloudy & wet in the am, sunny, pleasant in pm		Temp.: 40-60
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	

93

<u>Testing Performed/Samples Collected:</u>
<u>Field Problems and Nonconforming Materials or Work:</u>
<u>Notices To/From Contractors:</u>
<u>Work Decisions:</u>

95

DAILY CONSTRUCTION REPORT

Report No. 24

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 25

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input checked="" type="checkbox"/> S		Date: 11 / 06 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 6:00 pm		Hrs: 11 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>3</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: cloudy & cool				Temp.: 40-55
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

99

DAILY CONSTRUCTION REPORT

Report No. 25

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 26

Project No.: 05794.46.001	Day: <input checked="" type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 07 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 3:30 pm	Hrs: 8.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: _____ Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: partly cloudy & cool		Temp.: 40-55	
Humidity: %	Rain: in.	Pressure:	Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)			
<input type="checkbox"/> Cat Dozer D6			<input type="checkbox"/> Cat Dozer D6
<input type="checkbox"/> Volvo A40E Haul Truck			<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/> John Deere 160C Trackhoe			<input type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller			<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>

101

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

103

Daily Communications:

Name/Representing: John Knoth, Ryan Central Inc.

Time: 1:00

Subject/Comments: North slope/downslope flumes

1. John wanted me to discuss with Todd M. about how the downslope flumes will go underneath the road/through the geomembrane liner. It seems like the inverts of the bottom 24 inch pipes are low and will be hitting the liner if we need go deeper to hit the design grade.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:



DAILY CONSTRUCTION REPORT

Report No. 27

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 08 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:30 pm	Hrs: 10.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>7</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm				Temp.: 35-65	
Humidity: _____ %	Rain: _____ in.	Pressure: _____	Wind: _____ @ _____ mph		
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)					
<input checked="" type="checkbox"/> Cat Dozer D6		<input checked="" type="checkbox"/> Cat Dozer D6			
<input checked="" type="checkbox"/> Volvo A40E Haul Truck		<input checked="" type="checkbox"/> Volvo A40E Haul Truck			
<input checked="" type="checkbox"/> John Deere 160C Trackhoe		<input checked="" type="checkbox"/> John Deere 40D Trackhoe			
<input type="checkbox"/> Cat Smooth Drum Roller		<input checked="" type="checkbox"/> Volvo A40E Haul Truck			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			
<input type="checkbox"/>		<input type="checkbox"/>			

Report No. 27

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

107

Daily Communications:

Name/Representing: Todd Martin, RMT

Time:

Subject/Comments: Check-in

1. Spoke with Todd about surveying all the pipe. Need to have Joe Chance shoot the toe drainage ditch when he comes back & then we can adjust grades with the 3 inches of rock under pipe. Told Todd I would send him info regarding the northern end of the landfill.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:



DAILY CONSTRUCTION REPORT

Report No. 28

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 09 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 6:30 am	Time Left Site: 6:00 pm	Hrs: 11.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: 7 Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

1. Joe Chance won't be coming till Friday to survey membrane & toe drain ditch.

Work Decisions:

U1

DAILY CONSTRUCTION REPORT

Report No. 28

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT	Time: 4:00
Subject/Comments: Check-in	
1. Discussed the downslope flumes with Todd & we came to the conclusion that we need to do whatever it takes to keep the invert the way it is, without digging a huge chunk out of the slope. Updated him on where we were looking for the membrane schedule & what Ryan was working on.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 29

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 10 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 6:30 am	Time Left Site: 6:00 pm	Hrs: 11.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: ___ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>7</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Report No. 29

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

115

Daily Communications:

Name/Representing: Todd Martin, RMT

Time: 4:00

Subject/Comments: Check-in

1. Discussed downslope flume & told him that John thought he could get the 24-inch pipe to work with no extra removal of ash and/or additional pipe bends, it would just mean a steeper slope. Todd wanted me to have Joe Chance shoot road & ditch information, 4-inch pipe, toe drain, etc, when he comes out again.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:



DAILY CONSTRUCTION REPORT

Report No. 30

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 11 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 6:30 am	Time Left Site: 5:30 pm	Hrs: 11 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: 7 Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Report No. 30

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

119

DAILY CONSTRUCTION REPORT

Report No. 30

Daily Communications:

Name/Representing: Todd Martin, RMT

Time: 4:00

Subject/Comments: Check-in

1. Spoke with him about our progress onsite and what our schedule looked like the next week.

Name/Representing: Bill Morris, Domtar

Time: 9:30

Subject/Comments: Update

1. Spoke with Bill and let him know our progress onsite and he said that things were looking real good and that he was very pleased with how things were going.

Name/Representing: John Knoth, Ryan

Time:

Subject/Comments: Update

1. Talked to John about the general fill, downslope flumes and the bench drains. He also gave me a key to the construction gate for future use.

Name/Representing:

Time:

Subject/Comments:

120



DAILY CONSTRUCTION REPORT

Report No. 31

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input checked="" type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 12 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 6:30 am	Time Left Site: 6:00 pm	Hrs: 11.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm				Temp.: 40-65
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6		<input checked="" type="checkbox"/> Cat Dozer D6		
<input checked="" type="checkbox"/> Volvo A40E Haul Truck		<input checked="" type="checkbox"/> Volvo A40E Haul Truck		
<input checked="" type="checkbox"/> John Deere 160C Trackhoe		<input checked="" type="checkbox"/> John Deere 40D Trackhoe		
<input type="checkbox"/> Cat Smooth Drum Roller		<input checked="" type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		

DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
6:30 am	Arrived onsite. Chesapeake working on repairs and doing the tie in at the bottom to the existing 60 mil HDPE liner.
7:00 am	Ryan working on placing general fill on the east slope.
8:00 am	Found a geonet panel that needs to have some geotextile heat tacked to cover a few holes in the top geotextile. Chesapeake said they would take care of it before lunch. Told them that they need to add a metal band & neoprene to the pipe boots on the 4 inch lines.
9:00 am	Working on air testing the remainder of the seams.
12:00 pm	Lunch meeting with John K. & Bill Morris.
1:00 pm	Continued to do air testing and marking the remainder of the destructive test locations.
5:00 pm	Chesapeake done for the day.
6:00 pm	Left site for the day.

Quantities of Pay Items Placed:	
Item:	Quantity:
Item:	Quantity:
Item:	Quantity:

Testing Performed/Samples Collected:

1. Air testing seams.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

123

DAILY CONSTRUCTION REPORT

Report No. 31

Daily Communications:	
Name/Representing: Todd Martin, RMT	Time: 12:00
Subject/Comments: Check-in	
1. Updated him on how things were going for the day and what we were planning on doing for the remainder of the weekend.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 32

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input checked="" type="checkbox"/> S		Date: 11 / 13 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 6:30 am		Time Left Site: 5:00 pm		Hrs: 10.5 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: 4 Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm				Temp.: 40-65
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6			<input type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck			<input type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe			<input type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller			<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>			<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	

Testing Performed/Samples Collected:

1. Air testing seams.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

127

DAILY CONSTRUCTION REPORT

Report No. 32

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 33

Project No.: 05794.46.001		Day: <input checked="" type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 11 / 14 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 6:30 am		Time Left Site: 4:30 pm		Hrs: 10 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>4</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm				Temp.: 40-65
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6		<input type="checkbox"/> Cat Dozer D6		
<input type="checkbox"/> Volvo A40E Haul Truck		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/> John Deere 160C Trackhoe		<input type="checkbox"/> John Deere 40D Trackhoe		
<input type="checkbox"/> Cat Smooth Drum Roller		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		

Testing Performed/Samples Collected:

- 1. Air testing seams.
- 2. Vacuum boxing all extrusion seams & repairs.
- 3. Will be sending the remaining destructive tests out on Monday. The last DT is DT-57.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:



DAILY CONSTRUCTION REPORT

Report No. 34

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 15 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 6:30 am	Time Left Site: 5:30 pm	Hrs: 11.0 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>7</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

DAILY CONSTRUCTION REPORT

Time	Description of Work in Progress:
6:30 am	Arrived onsite. Chesapeake working on deploying remainder of the 32 oz. fabric in the ditch in the
	northeast corner. Ryan will continue to place general fill and 4-inch corrugated pipe on the drainage
	benches. Joe Chance will be coming this afternoon to pick up the remainder of the survey points on the
	liner.
10:00 am	Vacuum testing the repairs on the north slope.
12:45 pm	Surveyor showed up.
1:00 pm	Chesapeake deploying geonet on the north slope. I told Dave V. that it was at their risk with not having
	the DT's passed in the lab yet. He said he understood the risk.
4:30 pm	Chesapeake done deploying geonet for the day.
5:30 pm	Left site.

Quantities of Pay Items Placed:	
Item:	Quantity:
Item:	Quantity:
Item:	Quantity:

DAILY CONSTRUCTION REPORT

Report No. 34

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

135

DAILY CONSTRUCTION REPORT

Report No. 34

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 35

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 11 / 16 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 6:30 am		Time Left Site: 4:15		Hrs: 9.75
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>7</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm, rain after 2pm				Temp.: 40-65
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6		<input checked="" type="checkbox"/> Cat Dozer D6		
<input checked="" type="checkbox"/> Volvo A40E Haul Truck		<input checked="" type="checkbox"/> Volvo A40E Haul Truck		
<input checked="" type="checkbox"/> John Deere 160C Trackhoe		<input checked="" type="checkbox"/> John Deere 40D Trackhoe		
<input type="checkbox"/> Cat Smooth Drum Roller		<input checked="" type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		

Testing Performed/Samples Collected:

1. Vacuum testing completed on all repairs.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

139

DAILY CONSTRUCTION REPORT

Report No. 35

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT	Time: 3:00
Subject/Comments: Check In	
1. Called to get an update on things and told him what we had left with geonet and where Ryan was at with pushing dirt.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 36

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 17 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 6:30 am	Time Left Site: 5:00 pm	Hrs: 10.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: _____ Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input type="checkbox"/> Cat Dozer D6	
<input type="checkbox"/> Volvo A40E Haul Truck	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/> John Deere 160C Trackhoe	<input type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

1. I notified Chesapeake that all the destructive tests had passed in the lab.

Work Decisions:

HB

DAILY CONSTRUCTION REPORT

Report No. 36

Daily Communications:

Name/Representing: Todd Martin, RMT

Time: 9:30

Subject/Comments: Check In

1. Todd called to see how things were going. I updated him on what was going on onsite. Ryan was not going to work today due to being to wet. Chesapeake working on deploying geonet on the west slope.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

144



DAILY CONSTRUCTION REPORT

Report No. 37

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 11 / 18 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 6:30 am		Time Left Site: 5:00 pm		Hrs: 10.5 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm				Temp.: 40-65
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

Testing Performed/Samples Collected:

1. I inspected the borrow area to make sure the silt fence was holding up and to make sure nothing was migrating off site from the rain the other day. Everything looked like it was working correctly and nothing was out of place.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

147

DAILY CONSTRUCTION REPORT

Report No. 37

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

148



DAILY CONSTRUCTION REPORT

Report No. 38

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input checked="" type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 19 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 6:30 am	Time Left Site: 5:00 pm	Hrs: 10.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

Testing Performed/Samples Collected:
Field Problems and Nonconforming Materials or Work:
Notices To/From Contractors:
Work Decisions:

151

DAILY CONSTRUCTION REPORT

Report No. 38

<u>Daily Communications:</u>	
Name/Representing: John Knoth, Ryan Central	Time:
Subject/Comments: Drainage Discharge Pipe	
1. I showed John where we need to add one additional T & discharge pipe on the east side. He said they would take care of it.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 39

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input checked="" type="checkbox"/> S		Date: 11 / 20 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 3:00 pm		Hrs: 8 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm				Temp.: 40-65
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input checked="" type="checkbox"/> Cat Dozer D6		<input checked="" type="checkbox"/> Cat Dozer D6		
<input checked="" type="checkbox"/> Volvo A40E Haul Truck		<input checked="" type="checkbox"/> Volvo A40E Haul Truck		
<input checked="" type="checkbox"/> John Deere 160C Trackhoe		<input checked="" type="checkbox"/> John Deere 40D Trackhoe		
<input type="checkbox"/> Cat Smooth Drum Roller		<input checked="" type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		

Report No. 39

Testing Performed/Samples Collected:

1. Grabbed Agg Sample No. 5.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 39

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 40

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 22 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:00 pm	Hrs: 10 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: <u> </u> days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, <u> </u> Laborers, <u> </u> Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure: Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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DAILY CONSTRUCTION REPORT

Report No. 40

Testing Performed/Samples Collected:

1. Grabbed Agg Sample No. 6.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 40

Daily Communications:	
Name/Representing: Bill Morris, Domtar	Time: 9:00
Subject/Comments: Site Visit	
1. Bill stopped to get the hours worked last week from Ryan and asked how things were going and said he would be back out later in the day.	
Name/Representing: Todd Martin, RMT	Time: 8:30
Subject/Comments: Daily Call In	
1. Todd explained to me that we needed to have those 4-inch drain pipes daylight out of the final cover. Will talk to Ryan and fix the one on the west side and one on the east side.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 41

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 23 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:00 pm	Hrs: 10 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: ___ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, ___ Laborers, ___ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure:
		Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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Report No. 41

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

163

DAILY CONSTRUCTION REPORT

Report No. 41

Daily Communications:	
Name/Representing: Todd Martin, RMT	Time: 9:30
Subject/Comments: Call-In	
Todd asked how things were going & wanted to know if there was anything new going on. Explained what we were working on & how we were able to fix the 4-inch drain pipe so it would daylight outside the final cover.	
Name/Representing: Bill Morris, Domtar	Time: 11:00
Subject/Comments: Check-In	
Bill was curious on how things were going & what Ryan would be working on tomorrow when I leave early to go to the airport. Explained to him they would be working on hauling general fill & placing more 4-inch corrugated pipe.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 42

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 24 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 12:00 pm	Hrs: 5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 40-65
Humidity: %	Rain: in.	Pressure: @ Wind: mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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Report No. 42

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

167



DAILY CONSTRUCTION REPORT

Report No. 43

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 29 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:00 pm	Hrs: 10 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: 6 Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: clear cool in am, sunny pleasant in pm		Temp.: 35-65
Humidity: %	Rain: in.	Pressure: @ Wind: mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input checked="" type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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DAILY CONSTRUCTION REPORT

Report No. 43

<u>Testing Performed/Samples Collected:</u>
<u>Field Problems and Nonconforming Materials or Work:</u>
<u>Notices To/From Contractors:</u>
<u>Work Decisions:</u>

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DAILY CONSTRUCTION REPORT

Report No. 43

<u>Daily Communications:</u>	
Name/Representing: Bill Morris, Domtar	Time: 10:15
Subject/Comments: Check-In	
Spoke with Bill about our progress onsite & we discussed how we both thought that Ryan would still have the job completed before xmas.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 44

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 11 / 30 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:00 pm	Hrs: 10 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: muggy in am, sunny pleasant in pm				Temp.: 55-65	
Humidity: %	Rain: in.	Pressure:	Wind:	@	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)					
<input checked="" type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller				<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>				<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	

173

Report No. 44

Testing Performed/Samples Collected:

1. Grabbed Select Aggregate Sample #8.

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

175

DAILY CONSTRUCTION REPORT

Report No. 44

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT	Time: 9:00
Subject/Comments: Check In	
1. Todd called to see how things were progressing and to see if there was anything new going on. He asked when they thought they would start on the perimeter diversion berm. I told him I would talk to John when he got back tomorrow and find out.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 45

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 12 / 01 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site:		Time Left Site:		Hrs: Rain day
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Rain				Temp.:
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6		<input type="checkbox"/> Cat Dozer D6		
<input type="checkbox"/> Volvo A40E Haul Truck		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/> John Deere 160C Trackhoe		<input type="checkbox"/> John Deere 40D Trackhoe		
<input type="checkbox"/> Cat Smooth Drum Roller		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		
<input type="checkbox"/>		<input type="checkbox"/>		

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DAILY CONSTRUCTION REPORT

Report No. 45

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

179

DAILY CONSTRUCTION REPORT

Report No. 45

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 46

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 12 / 02 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 5:00 pm		Hrs: 10 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear, sunny				Temp.: 35-50	
Humidity: %	Rain: in.	Pressure:	Wind: @	mph	
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)					
<input checked="" type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller				<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>				<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	

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Report No. 46

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

183

<u>Daily Communications:</u>	
Name/Representing: John Knoth, Ryan Central	Time: 7:30
Subject/Comments: Update	
1. John said they would place more general fill on the north slope & then start welding pipe tomorrow. I mentioned to John about the 4-inch HDPE drains, bentonite in the toe drain outfalls and concrete around the gas vents.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 47

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input checked="" type="checkbox"/> F <input type="checkbox"/> S		Date: 12 / 03 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 5:00 pm		Hrs: 10 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear, sunny				Temp.: 35-45
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller				<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

185

Report No. 47

<u>Testing Performed/Samples Collected:</u>
<u>Field Problems and Nonconforming Materials or Work:</u>
<u>Notices To/From Contractors:</u>
<u>Work Decisions:</u>

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DAILY CONSTRUCTION REPORT

Report No. 47

<u>Daily Communications:</u>	
Name/Representing: Todd Martin, RMT	Time: 9:00
Subject/Comments: Check-In	
Told Todd that we were working on placing more general fill and welding 24-inch HDPE pipe together. Need to keep in mind that when we build the small outside berm for the bottom drainage ditch that we don't take up any of the access road. Todd said to see what the subcontractor recommends for seeding.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 48

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input checked="" type="checkbox"/> S	Date: 12 / 04 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 3:00 pm	Hrs: 8 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear, sunny		Temp.: 35-45	
Humidity: %	Rain: in.	Pressure:	Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)			
<input type="checkbox"/> Cat Dozer D6			<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck			<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe			<input checked="" type="checkbox"/> John Deere 40D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller			<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>			<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>
<input type="checkbox"/>			<input type="checkbox"/>

189

Report No. 48

<u>Testing Performed/Samples Collected:</u>
<u>Field Problems and Nonconforming Materials or Work:</u>
<u>Notices To/From Contractors:</u>
<u>Work Decisions:</u>

191

DAILY CONSTRUCTION REPORT

Report No. 48

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

192



DAILY CONSTRUCTION REPORT

Report No. 49

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 12 / 06 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:00 pm	Hrs: 10 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear, sunny		Temp.: 35-45
Humidity: %	Rain: in.	Pressure: @ Wind: mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 40D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

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Report No. 49

<u>Testing Performed/Samples Collected:</u>
<u>Field Problems and Nonconforming Materials or Work:</u>
<u>Notices To/From Contractors:</u>
<u>Work Decisions:</u>

195

Daily Communications:	
Name/Representing: Joe Chance, Chance & Associates	Time: 8:30
Subject/Comments: Scheduling	
Called Joe to let him know that he could come early next week to shoot the top of topsoil on the 50-grid.	
Name/Representing: John Knoth, Ryan Central	Time: 11:30
Subject/Comments: Updates	
1. Talked to John about pay request #2, the perimeter drainage ditch, lunch with Bill Morris & Mike Parker tomorrow when Mike makes his PE visit.	
Name/Representing: Todd Martin, RMT	Time: 10:00
Subject/Comments: Call-In	
1. Updated Todd on what we were working on and told him I was looking through the second pay request and would get back to him after looking at it.	
Name/Representing:	Time:
Subject/Comments:	

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DAILY CONSTRUCTION REPORT

Report No. 50

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 12 / 07 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 5:00 pm		Hrs: 10 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear, sunny				Temp.: 35-45
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 450D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

197

Report No. 50

<u>Testing Performed/Samples Collected:</u>
<u>Field Problems and Nonconforming Materials or Work:</u>
<u>Notices To/From Contractors:</u>
<u>Work Decisions:</u>

199

<u>Daily Communications:</u>	
Name/Representing: Joe V., Ryan Central	Time: 1:00
Subject/Comments: Pay App #2	
Talked to Joe V. about the Pay App #2 and we were able to figure things out so we were all on the same page.	
Name/Representing: Todd Martin, RMT	Time: 2:30
Subject/Comments: Call-In	
I told Todd that Pay App #2 was approved. He said that we should have somebody here for the installation for the grouted rip-rap & energy dissipater. He said I should talk to Bill Morris about the different items that I should be here to watch.	
Name/Representing: Mike Parker, RMT	Time: 11:00
Subject/Comments: Onsite-Visit	
Mike made a site visit today for his PE and said things were looking really good.	
Name/Representing:	Time:
Subject/Comments:	

JOD



DAILY CONSTRUCTION REPORT

Report No. 51

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 12 / 08 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 5:00 pm		Hrs: 10 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear, sunny				Temp.: 25-45
Humidity: %	Rain: in.	Pressure:	Wind: @	mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6			<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck			<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe			<input checked="" type="checkbox"/> John Deere 450D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller			<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>			<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	
<input type="checkbox"/>			<input type="checkbox"/>	

201

Report No. 51

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

DAILY CONSTRUCTION REPORT

Report No. 51

Daily Communications:

Name/Representing: Bill Morris, Domtar

Time: 8:30

Subject/Comments: Update

- 1. Saw Bill and told him what we were working on and he said things were looking good.
- 2. He said he would like a CD with all the pictures taken on the job burned for him when the job is done.

Name/Representing: Todd Martin, RMT

Time: 5:00

Subject/Comments: Call-In

- 1. He called to let me know that I need to have outer berm surveyed as well so we can tell if there is enough freeboard in the perimeter ditch. In addition, he mentioned for the anti-seep collars that we need to use HDPE stock & bentonite.

Name/Representing:

Time:

Subject/Comments:

Name/Representing:

Time:

Subject/Comments:

204



DAILY CONSTRUCTION REPORT

Report No. 52

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 12 / 09 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker		Office Contact: Todd Martin
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:00 pm	Hrs: 10 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear, sunny		Temp.: 25-45	
Humidity: %	Rain: in.	Pressure:	Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)			
<input type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6		
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck		
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 450D Trackhoe		
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck		
<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	<input type="checkbox"/>		

205

DAILY CONSTRUCTION REPORT

Report No. 52

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

207

DAILY CONSTRUCTION REPORT

Report No. 52

Daily Communications:	
Name/Representing: Todd Martin, RMT	Time: 9:00
Subject/Comments: Email/Phone Call	
1. Todd said we only need the anti-seep collars on the 2-24" HDPE downslope flumes. He did agree that placing bentonite around the 18" HDPE pipes and at all the inlets behind the geomembrane sleeve would also be a good idea. He said that we need the HDPE stock on the 24" pipe, so we will just go according to plan on the downslope flumes.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

206



DAILY CONSTRUCTION REPORT

Report No. 53

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input checked="" type="checkbox"/> F <input type="checkbox"/> S	Date: 12 / 10 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 5:00 pm	Hrs: 10 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: 6 Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Clear, sunny		Temp.: 25-45
Humidity: %	Rain: in.	Pressure: @ Wind: mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 450D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

209

Report No. 53

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

211



DAILY CONSTRUCTION REPORT

Report No. 54

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input checked="" type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 12 / 13 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 4:15 pm	Hrs: 9.25 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: <u> </u> days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, <u> </u> Laborers, <u> </u> Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Cloudy, overcast, flurries		Temp.: 20-30
Humidity: %	Rain: in.	Pressure: Wind: @ mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 450D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

213

Report No. 54

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

215

DAILY CONSTRUCTION REPORT

Report No. 54

Daily Communications:	
Name/Representing: Mike Parker (RMT), Todd Martin (RMT), & Bill Morris (Domtar)	Time: 2:00
Subject/Comments: Conference Call	
Had a conference call to decide when I could go home. It was decided later this week would work well. Bill M. would be able to take pictures of things still needed after I leave. I will measure topsoil thicknesses tomorrow and report back on that.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

2/6



DAILY CONSTRUCTION REPORT

Report No. 55

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input checked="" type="checkbox"/> T <input type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 12 / 14 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 4:30 pm		Hrs: 9.5 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors: Chesapeake Containment Systems
Equipment/Materials Delivered:

Weather: Clear, cold breezy				Temp.: 20-30
Humidity: %	Rain: in.	Pressure:	Wind: NW	@ 10-25 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 450D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

217

Report No. 55

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

219

DAILY CONSTRUCTION REPORT

Report No. 55

<u>Daily Communications:</u>	
Name/Representing: Joe Chance, Chance & Associates	Time: 11:00
Subject/Comments: Update	
Joe called to see when the final cover would be ready to be surveyed. I told him to call back at the end of the week & we would figure it out for sure. I let him know that there is no rush on having it done and that I would be flying home on Friday.	
Name/Representing: Todd Martin, RMT	Time: 2:30
Subject/Comments: Call in	
Todd was checking in to see how things were going. I told him what we were working on.	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	



DAILY CONSTRUCTION REPORT

Report No. 56

Project No.: 05794.46.001	Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input checked="" type="checkbox"/> W <input type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S	Date: 12 / 15 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company		
RMT Project Manager: Mike Parker	Office Contact: Todd Martin	
RMT Representatives: Nathan Braun		
Time Arrived On-Site: 7:00 am	Time Left Site: 4:30 pm	Hrs: 9.5 hours
Client Representative(s): Bill Morris		

Status of Project in Relation to Schedule: <u> </u> days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, <u> </u> Laborers, <u> </u> Engineer.
Subcontractors: Chesapeake Containment Systems
Equipment/Materials Delivered:

Weather: Clear, cold breezy		Temp.: 20-30
Humidity: %	Rain: in.	Pressure: Wind: NW @ 10-25 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)		
<input type="checkbox"/> Cat Dozer D6	<input checked="" type="checkbox"/> Cat Dozer D6	
<input checked="" type="checkbox"/> Volvo A40E Haul Truck	<input checked="" type="checkbox"/> Volvo A40E Haul Truck	
<input checked="" type="checkbox"/> John Deere 160C Trackhoe	<input checked="" type="checkbox"/> John Deere 450D Trackhoe	
<input type="checkbox"/> Cat Smooth Drum Roller	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/> Volvo A40E Haul Truck	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

221

Report No. 56

<u>Testing Performed/Samples Collected:</u>
<u>Field Problems and Nonconforming Materials or Work:</u>
<u>Notices To/From Contractors:</u>
<u>Work Decisions:</u>

223

DAILY CONSTRUCTION REPORT

Report No. 56

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

224



DAILY CONSTRUCTION REPORT

Report No. 57

Project No.: 05794.46.001		Day: <input type="checkbox"/> S <input type="checkbox"/> M <input type="checkbox"/> T <input type="checkbox"/> W <input checked="" type="checkbox"/> Th <input type="checkbox"/> F <input type="checkbox"/> S		Date: 12 / 16 / 10
Project Name: Landfill No. 3 Phase 1A & 1B Closure Domtar Paper Company				
RMT Project Manager: Mike Parker			Office Contact: Todd Martin	
RMT Representatives: Nathan Braun				
Time Arrived On-Site: 7:00 am		Time Left Site: 10:00 am		Hrs: 3 hours
Client Representative(s): Bill Morris				

Status of Project in Relation to Schedule: _____ days <input type="checkbox"/> ahead of schedule <input type="checkbox"/> behind schedule <input type="checkbox"/> on schedule
Contractors: Ryan Central Inc.
Superintendent/Foreman: John Knoth
Operators/Laborers: <u>6</u> Operators, _____ Laborers, _____ Engineer.
Subcontractors:
Equipment/Materials Delivered:

Weather: Overcast, snow				Temp.: 20-30
Humidity: %	Rain: in.	Pressure:	Wind: NW	@ 10-25 mph
Contractor's Equipment (<input checked="" type="checkbox"/> Denotes equipment in use today, otherwise idled)				
<input type="checkbox"/> Cat Dozer D6				<input checked="" type="checkbox"/> Cat Dozer D6
<input checked="" type="checkbox"/> Volvo A40E Haul Truck				<input checked="" type="checkbox"/> Volvo A40E Haul Truck
<input checked="" type="checkbox"/> John Deere 160C Trackhoe				<input checked="" type="checkbox"/> John Deere 450D Trackhoe
<input type="checkbox"/> Cat Smooth Drum Roller				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/> Volvo A40E Haul Truck
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>
<input type="checkbox"/>				<input type="checkbox"/>

225

Report No. 57

Testing Performed/Samples Collected:

Field Problems and Nonconforming Materials or Work:

Notices To/From Contractors:

Work Decisions:

227

DAILY CONSTRUCTION REPORT

Report No. 57

<u>Daily Communications:</u>	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	
Name/Representing:	Time:
Subject/Comments:	

Appendix F

Geomembrane Installation Forms

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- Geomembrane Inventory Form
- Geomembrane Panel Placement Information
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- Geomembrane Seam Destructive Testing Information
- Subgrade Surface Acceptance Form
- Installation Certification

Geomembrane Inventory Form

Geomembrane Inventory Form

Project: Landfill No. 3 - Phase 1A & 1BC I	RPR: Nathan Braun
Project Num: 05749.46.001	Material: 40-mil LLDPE
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.

Product Code	Batch No.	Roll No.	Width/ Length (ft)	Roll Area (sf)	QA or QC Certificate	Conformance Sample Taken	Measured Thickness (mils)
Agru 40-mil Microspike LLDPE	811720	241231	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241454	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241462	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241460	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241458	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241456	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241455	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241234	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241339	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241230	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241461	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241340	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241337	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241335	23 x 710	16330	Yes	Yes	
Agru 40-mil Microspike LLDPE	811720	241336	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241233	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241229	23 x 710	16330	Yes	Yes	
Agru 40-mil Microspike LLDPE	811720	241338	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811720	241232	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811900	241795	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811900	241705	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811900	241704	23 x 710	16330	Yes	Yes	
Agru 40-mil Microspike LLDPE	811900	241703	23 x 710	16330	Yes		
Agru 40-mil Microspike LLDPE	811900	241702	23 x 710	16330	Yes		

Product Code	Batch No.	Roll No.	Width/ Length (ft)	Roll Area (sf)	QA or QC Certificate	Conformance Sample Taken	Measured Thickness (mils)
Agru 40-mil Microspike LLDPE	811900	241701	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811900	241700	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811900	241799	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811720	241453	23 x 710	16330	Yes	Yes	1535
Agru 40-mil Microspike LLDPE	811900	241796	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811720	241459	23 x 710	16330	Yes	Yes	1535
Agru 40-mil Microspike LLDPE	811900	241794	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811900	241793	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811900	241692	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811900	241691	23 x 710	16330	Yes	Yes	1535
Agru 40-mil Microspike LLDPE	811720	241564	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811720	241563	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811720	241457	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811900	241706	23 x 710	16330	Yes		1535
Agru 40-mil Microspike LLDPE	811900	241797	23 x 710	16330	Yes	Yes	1535

Geomembrane Panel Placement Information

Table 11

Geomembrane Panel Placement Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Panel Number	Liner Type Roll Num	Irreg	Date of Placement	Amb. Temp	Wind MPH	Weather	Width (ft)	Length (ft)	Area (Sq ft)	Comments
P 1	T 241456		10/21/2010	75	25-30 West	Sunny, windy	23	244	5612	
P 2	T 241456		10/21/2010	75	25-30 West	Sunny, windy	23	244	5612	
P 3	T 241229		10/21/2010	75	25-30 West	Sunny, windy	23	43	989	
P 4	T 241456		10/21/2010	75	25-30 West	Sunny, windy	23	202	4646	
P 5	T 241229		10/21/2010	75	25-30 West	Sunny, windy	23	247	5681	
P 6	T 241229		10/21/2010	75	25-30 West	Sunny, windy	23	247	5681	
P 7	T 241339		10/21/2010	75	25-30 West	Sunny, windy	23	139	3197	
P 8	T 241229		10/21/2010	75	25-30 West	Sunny, windy	23	115	2645	
P 9	T 241339		10/21/2010	75	25-30 West	Sunny, windy	23	240	5520	
P 10	T 241339	Yes	10/21/2010	75	25-30 West	Sunny, windy	23	185	4255	
P 11	T 241339	Yes	10/21/2010	75	25-30 West	Sunny, windy	15	82	1230	
P 12	T 241230		10/22/2010	65	5-10 North	Sunny	23	181	4163	
P 13	T 241339		10/22/2010	65	5-10 North	Sunny	23	80	1840	
P 14	T 241230		10/22/2010	65	5-10 North	Sunny	23	218	5014	
P 15	T 241232		10/22/2010	65	5-10 North	Sunny	23	49	1127	
P 16	T 241230		10/22/2010	65	5-10 North	Sunny	23	218	5014	
P 17	T 241232		10/22/2010	65	5-10 North	Sunny	23	292	6716	
P 18	T 241232		10/22/2010	65	5-10 North	Sunny	23	290	6670	
P 19	T 241335		10/22/2010	65	5-10 North	Sunny	23	290	6670	
P 20	T 241335		10/22/2010	65	5-10 North	Sunny	23	283	6509	
P 21	T 241563		10/22/2010	70	10-15 West	Sunny, breezy	23	162	3726	
P 22	T 241335		10/22/2010	70	10-15 West	Sunny, breezy	23	122	2806	
P 23	T 241563		10/22/2010	70	10-15 West	Sunny, breezy	23	285	6555	
P 24	T 241563		10/22/2010	70	10-15 West	Sunny, breezy	23	249	5727	

Table 11

Geomembrane Panel Placement Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Panel Number	Liner Type Roll Num	Irreg	Date of Placement	Amb. Temp	Wind MPH	Weather	Width (ft)	Length (ft)	Area (Sq ft)	Comments
P 25	T 241457		10/22/2010	70	10-15 West	Sunny, breezy	23	36	828	
P 26	T 241457		10/23/2010	80	5-10 West	sunny, warm	23	282	6486	
P 27	T 241457		10/23/2010	80	5-10 West	sunny, warm	23	282	6486	
P 28	T 241461		10/23/2010	80	5-10 West	sunny, warm	23	202	4646	
P 29	T 241457		10/23/2010	80	5-10 West	sunny, warm	23	80	1840	
P 30	T 241461		10/23/2010	80	5-10 West	sunny, warm	23	282	6486	
P 31	T 241564		10/23/2010	80	5-10 West	sunny, warm	23	96	2208	
P 32	T 241461		10/23/2010	80	5-10 West	sunny, warm	23	181	4163	
P 33	T 241564		10/23/2010	80	5-10 West	sunny, warm	23	284	6532	
P 34	T 241564		10/23/2010	80	5-10 West	sunny, warm	23	284	6532	
P 35	T 241453		10/23/2010	80	5-10 West	sunny, warm	23	284	6532	
P 36	T 241453		10/23/2010	80	5-10 West	sunny, warm	23	284	6532	
P 37	T 241453		10/23/2010	80	5-10 West	sunny, warm	23	128	2944	
P 38	T 241704		10/23/2010	80	5-10 West	sunny, warm	23	154	3542	
P 39	T 241704		10/25/2010	70	-	P. cloudy	23	283	6509	
P 40	T 241704		10/25/2010	70	-	P. cloudy	23	250	5750	
P 41	T 241794		10/25/2010	70	-	P. cloudy	23	30	690	
P 42	T 241794		10/25/2010	70	-	P. cloudy	23	274	6302	
P 43	T 241794		10/25/2010	70	20-25	P. cloudy, windy	23	273	6279	
P 44	T 241705		10/25/2010	70	20-25	P. cloudy, windy	23	211	4853	
P 45	T 241794		10/25/2010	70	20-25	P. cloudy, windy	23	90	2070	
P 46	T 241705		10/25/2010	70	20-25	P. cloudy, windy	23	273	6279	
P 47	T 241797		10/28/2010	75	-	P. cloudy	23	52	1196	
P 48	T 241705		10/28/2010	75	-	P. cloudy	23	207	4761	



Table 11

Geomembrane Panel Placement Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Panel Number	Liner Type Roll Num	Irreg	Date of Placement	Amb. Temp	Wind MPH	Weather	Width (ft)	Length (ft)	Area (Sq ft)	Comments
P 49	T 241797		10/28/2010	75	-	P. cloudy	23	237	5451	
P 50	T 241796		10/28/2010	75	-	P. cloudy	23	170	3910	
P 51	T 241796		10/28/2010	75	-	P. cloudy	23	72	1656	
P 52	T 241796		10/28/2010	75	-	P. cloudy, muggy	23	72	1656	
P 53	T 241796		10/28/2010	75	-	P. cloudy, muggy	23	72	1656	
P 54	T 241796		10/28/2010	75	-	P. cloudy, muggy	23	110	2530	
P 55	T 241796		10/28/2010	75	-	P. cloudy, muggy	23	72	1656	
P 56	T 241796		10/28/2010	80	-	P. cloudy	23	65	1495	
P 57	T 241793		10/28/2010	80	-	P. cloudy	23	72	1656	
P 58	T 241796		10/28/2010	80	-	P. cloudy	23	70	1610	
P 59	T 241793		10/28/2010	80	-	P. cloudy	23	83	1909	
P 60	T 241793		10/28/2010	80	-	P. cloudy	23	98	2254	
P 61	T 241793		10/28/2010	80	-	P. cloudy	23	78	1794	
P 62	T 241793		10/28/2010	80	-	P. cloudy	23	78	1794	
P 63	T 241793		10/28/2010	80	-	P. cloudy	23	37	851	
P 64	T 241793		10/28/2010	80	-	P. cloudy	23	37	851	
P 65	T 241793		10/29/2010	50	15-20 West	Clear, windy	23	32	736	
P 66	T 241793		10/29/2010	50	15-20 West	Clear, windy	23	32	736	
P 67	T 241793		10/29/2010	50	15-20 West	Clear, windy	23	27	621	
P 68	T 241454		10/29/2010	50	15-20 West	Clear, windy	23	68	1564	
P 69	T 241454		10/29/2010	50	15-20 West	Clear, windy	23	123	2829	
P 70	T 241454		10/29/2010	50	15-20 West	Clear, windy	23	123	2829	
P 71	T 241454		10/29/2010	50	15-20 West	Clear, windy	23	167	3841	
P 72	T 241454		10/29/2010	55	-	Clear, windy	23	167	3841	

Table 11

Geomembrane Panel Placement Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Panel Number	Liner Type Roll Num	Irreg	Date of Placement	Amb. Temp	Wind MPH	Weather	Width (ft)	Length (ft)	Area (Sq ft)	Comments
P 73	T 241799		11/2/2010	55	10-15 North	Sunny	23	248	5704	
P 74	T 241799		11/2/2010	55	10-15 North	Sunny	23	248	5704	
P 75	T 241799		11/2/2010	60	10-15 North	Sunny	23	210	4830	
P 76	T 241232		11/2/2010	60	10-15 North	Sunny	23	40	920	
P 77	T 241340		11/2/2010	60	10-15 North	Sunny	23	252	5796	
P 78	T 241340		11/2/2010	60	10-15 North	Sunny	23	252	5796	
P 79	T 241340		11/2/2010	60	10-15 North	Sunny	23	171	3933	
P 80	T 241701		11/2/2010	60	10-15 North	Sunny	23	88	2024	
P 81	T 241701		11/2/2010	60	10-15 North	Sunny	23	255	5865	
P 82	T 241701		11/2/2010	60	10-15 North	Sunny	23	255	5865	
P 83	T 241701		11/2/2010	60	10-15 North	Sunny	23	57	1311	
P 84	T 241691		11/2/2010	60	10-15 North	Sunny	23	200	4600	
P 85	T 241691		11/2/2010	60	10-15 North	Sunny	23	257	5911	
P 86	T 241691		11/3/2010	50	-	Mostly cloudy, cool	23	158	3634	
P 87	T 241706		11/3/2010	50	-	Mostly cloudy, cool	23	115	2645	
P 88	T 241706		11/3/2010	50	-	Mostly cloudy, cool	23	265	6095	
P 89	T 241706		11/3/2010	50	-	Mostly cloudy, cool	23	266	6118	
P 90	T 241337		11/3/2010	50	-	Mostly cloudy, cool	23	267	6141	
P 91	T 241337		11/3/2010	50	-	Mostly cloudy, cool	23	267	6141	
P 92	T 241337		11/8/2010	60	-	Sunny	23	121	2783	
P 93	T 241795		11/8/2010	60	-	Sunny	23	140	3220	
P 94	T 241795		11/8/2010	60	-	Sunny	23	276	6348	
P 95	T 241795		11/8/2010	65	-	Sunny	23	276	6348	
P 96	T 241692		11/8/2010	65	-	Sunny	23	277	6371	

Table 11

Geomembrane Panel Placement Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Panel Number	Liner Type Roll Num	Irreg	Date of Placement	Amb. Temp	Wind MPH	Weather	Width (ft)	Length (ft)	Area (Sq ft)	Comments
P 97	T 241692		11/8/2010	65	-	Sunny	23	277	6371	
P 98	T 241692		11/8/2010	65	-	Sunny	23	126	2898	
P 99	T 241338		11/8/2010	65	-	Sunny	23	151	3473	
P 100	T 241338		11/8/2010	65	-	Sunny	23	277	6371	
P 101	T 241338		11/8/2010	65	-	Sunny	23	277	6371	
P 102	T 241700		11/8/2010	65	-	Sunny	23	278	6394	
P 103	T 241700		11/9/2010	65	-	Sunny	23	275	6325	
P 104	T 241700		11/9/2010	65	-	Sunny	23	142	3266	
P 105	T 241702		11/9/2010	65	-	Sunny	23	133	3059	
P 106	T 241702		11/9/2010	65	-	Sunny	23	275	6325	
P 107	T 241702		11/9/2010	65	-	Sunny	23	275	6325	
P 108	T 241703		11/9/2010	65	-	Sunny	23	275	6325	
P 109	T 241703		11/9/2010	65	-	Sunny	23	275	6325	
P 110	T 241703		11/9/2010	65	-	Sunny	23	141	3243	
P 111	T 241455		11/9/2010	65	-	Sunny	23	125	2875	
P 112	T 241455		11/9/2010	65	-	Sunny	23	275	6325	
P 113	T 241455		11/9/2010	65	-	Sunny	23	275	6325	
P 114	T 241231		11/9/2010	65	-	Sunny	23	275	6325	
P 115	T 241231		11/9/2010	65	-	Sunny	23	275	6325	
P 116	T 241231		11/10/2010	60	10-15 East	Sunny	23	114	2622	
P 117	T 241458		11/10/2010	60	10-15 East	Sunny	23	117	2691	
P 118	T 241458		11/10/2010	60	10-15 East	Sunny	23	223	5129	
P 119	T 241458		11/10/2010	60	10-15 East	Sunny	23	223	5129	
P 120	T 241458		11/10/2010	65	-	Sunny	23	70	1610	

Table 11

Geomembrane Panel Placement Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Panel Number	Liner Type Roll Num	Irreg	Date of Placement	Amb. Temp	Wind MPH	Weather	Width (ft)	Length (ft)	Area (Sq ft)	Comments
P 121	T 241460		11/10/2010	60	10-15 East	Sunny	23	137	3151	
P 122	T 241460		11/10/2010	60	10-15 East	Sunny	23	156	3588	
P 123	T 241460		11/10/2010	65	-	Sunny	23	156	3588	
P 124	T 241460		11/10/2010	65	-	Sunny	23	106	2438	
P 125	T 241460		11/10/2010	65	-	Sunny	23	106	2438	
P 126	T 241336		11/10/2010	65	-	Sunny	23	60	1380	
P 127	T 241336		11/10/2010	65	-	Sunny	23	60	1380	
P 128	T 241336		11/10/2010	65	-	Sunny	23	35	805	
P 129	T 241336		11/10/2010	65	-	Sunny	23	139	3197	
P 130	T 241336		11/10/2010	65	-	Sunny	23	126	2898	
P 131	T 241336		11/10/2010	65	-	Sunny	23	89	2047	
P 132	T 241459		11/10/2010	65	-	Sunny	23	65	1495	
P 133	T 241336		11/10/2010	65	-	Sunny	23	37	851	
P 134	T 241459		11/10/2010	65	-	Sunny	23	32	736	
P 135	T 241459		11/11/2010	45	-	Sunny	23	184	4232	
P 136	T 241459		11/11/2010	45	-	Sunny	23	184	4232	
P 137	T 241459		11/11/2010	55	-	Sunny	23	178	4094	
P 138	T 241462		11/11/2010	55	-	Sunny	23	31	713	
P 139	T 241462		11/11/2010	60	10-15 East	Sunny	23	256	5888	
P 140	T 241462		11/11/2010	60	10-15 East	Sunny	23	256	5888	
P 141	T 241462		11/11/2010	60	10-15 East	Sunny	23	109	2507	
P 142	T 241233		11/11/2010	60	10-15 East	Sunny	23	162	3726	
P 143	T 241233		11/11/2010	60	10-15 East	Sunny	23	250	5750	
P 144	T 241233		11/11/2010	60	10-15 East	Sunny	23	251	5773	

Table 11

Geomembrane Panel Placement Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure			RPR:	Nathan Braun			Checked By:	Nathan Braun		
Project Num:	05749.46.001			Material:	40-mil LLDPE						
Location:	Plymouth, NC			Installer:	Chesapeake Containment Systems, Inc.						

Panel Number	Liner Type	Roll Num	Irreg	Date of Placement	Amb. Temp	Wind MPH	Weather	Width (ft)	Length (ft)	Area (Sq ft)	Comments
P 145	T 241234			11/11/2010	60	10-15 East	Sunny	23	228	5244	
P 146	T 241234			11/11/2010	60	10-15 East	Sunny	23	183	4209	

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Geomembrane Trial Seam Information

Table 12

Geomembrane Trial Seams Information

Project:	Landfill No. 3 - Phase IA & IB Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Trial Num	Date	Time	Amb. Temp.	Weather	Seam Type	Oper	Mach	Set Speed	Set Temp	Peel Values (1)	Shear Values (2)	Pass/Fail	Comments/Location
1	10/21/2010	1252	75	Sunny, windy	FU	TR	9	8	860	81-84-82-80	84---	Pass	Peel-83.81
2	10/21/2010	1555	75	Sunny, windy	FU	CF	1	8	860	88-81-80-82	91---	Pass	Peel-84.81
3	10/22/2010	1227	65	Sunny	FU	CF	1	8	860	90-95-88-81	111---	Pass	Peel-81.83
4	10/22/2010	1235	65	Sunny	FU	TR	9	8	860	85-90-82-92	109---	Pass	Peel-88.94
5	10/23/2010	1250	80	sunny, warm	FU	TR	9	8	860	81-86-81-84	102---	Pass	Peel-87.86
6	10/23/2010	1245	80	sunny, warm	FU	CF	1	8	860	90-97-92-84	100---	Pass	Peel-99.78
7	10/24/2010	740	70	Sunny	EX	CF	5	400	400	58-61-61-72	84---	Pass	
8	10/24/2010	912	70	Sunny	EX	EW	9	500	500	75-72-84-72	81---	Pass	
9	10/24/2010	848	70	Sunny	EX	KX	1	500	500	96-95-102-	102---	Pass	
10	10/24/2010	1300	75	Sunny, breezy	EX	CF	5	400	400	84-83-88-	91---	Pass	
11	10/24/2010	1321	75	Sunny, breezy	EX	EW	9	500	500	85-81-83-	88---	Pass	
12	10/24/2010	1300	75	Sunny, breezy	EX	KX	1	500	500	88-84-80-	89---	Pass	
13	10/25/2010	923	70	P. cloudy	FU	CF	1	8	860	83-80-79-81	106---	Pass	Peel-85.85
14	10/25/2010	935	70	P. cloudy	FU	TR	9	8	860	92-80-91-75	105---	Pass	Peel-94.90
15	10/27/2010	825	80	P. cloudy, windy	EX	VD	5	400	400	81-83-88-	106---	Pass	
16	10/27/2010	831	80	P. cloudy, windy	EX	EW	9	500	500	86-83-87-	111---	Pass	
17	10/27/2010	829	80	P. cloudy, windy	EX	KX	1	500	500	87-89-90-	101---	Pass	
18	10/28/2010	1350	75	P. cloudy, muggy	FU	TR	9	8	860	87-85-87-80	105---	Pass	Peel-82.91
19	10/28/2010	1116	75	P. cloudy	FU	CF	1	8	860	81-81-80-78	98---	Pass	Peel-85.82
20	10/28/2010	1115	75	P. cloudy	FU	TR	9	8	860	78-76-82-86	104---	Pass	Peel-82.79
21	10/28/2010	1330	75	P. cloudy, muggy	FU	CF	1	8	860	78-86-84-77	100---	Pass	Peel-76.75
22	10/29/2010	940	50	Clear, windy	FU	CF	1	8	860	88-82-81-80	100---	Pass	Peel-85.84
23	10/29/2010	1015	50	Clear, windy	FU	TR	9	8	860	79-81-84-82	101---	Pass	Peel-85.82
24	10/29/2010	1315	75	Sunny	FU	TR	9	8	860	76-79-71-80	103---	Pass	Peel-78.82

Table 12

Geomembrane Trial Seams Information

Project: Landfill No. 3 - Phase 1A & 1B Closure	RPR: Nathan Braun	Checked By: Nathan Braun
Project Num: 05749.46.001	Material: 40-mil LLDPE	
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.	

Trial Num	Date	Time	Amb. Temp.	Weather	Seam Type	Oper	Mach	Set Speed	Set Temp	Peel Values (1)	Shear Values (2)	Pass/Fail	Comments/Location
25	10/29/2010	1400	75	Sunny	EX	KX	1	500	84-86-87-	105---	105---	Pass	
26	10/29/2010	1441	75	Sunny	EX	CF	5	500	82-87-85-	102---	102---	Pass	
27	10/29/2010	1443	75	Sunny	EX	EW	9	500	87-80-83-	103---	103---	Pass	
31	11/2/2010	1100	55	Sunny	FU	TR	9	860	105-85-78-68	108---	108---	Pass	Peel-68.92
32	11/2/2010	1046	55	Sunny	FU	CF	1	860	73-99-85-90	115---	115---	Pass	Peel-89.91
33	11/2/2010	1554	60	Sunny	FU	TR	9	860	89-91-88-84	112---	112---	Pass	Peel-89.87
34	11/2/2010	1600	60	Sunny	FU	CF	1	860	87-91-90-92	111---	111---	Pass	Peel-90.88
35	11/3/2010	930	50	Mostly cloudy, cool	FU	CF	1	860	88-91-89-94	111---	111---	Pass	Peel-93.84
36	11/3/2010	930	50	Mostly cloudy, cool	FU	TR	9	860	83-95-86-89	115---	115---	Pass	Peel-83.90
37	11/3/2010	800	50	Mostly cloudy, cool	EX	KX	1	500	94-91-99-	106---	106---	Pass	
38	11/6/2010	800	45	P. cloudy, cool	FU	EW	9	860	83-81-88-84	116---	116---	Pass	Peel-90.85
39	11/6/2010	900	45	P. cloudy, cool	FU	KX	1	860	81-84-83-85	111---	111---	Pass	Peel-91.86
40	11/6/2010	901	45	P. cloudy, cool	FU	CF	5	860	86-85-89-85	109---	109---	Pass	Peel-86.87
41	11/6/2010	1315	50	P. cloudy, cool	EX	KX	1	500	89-84-83-	112---	112---	Pass	
42	11/6/2010	1311	50	P. cloudy, cool	EX	CF	5	500	88-80-81-	110---	110---	Pass	
43	11/6/2010	1545	50	P. cloudy, cool	EX	EW	9	500	84-85-81-	109---	109---	Pass	
45	11/8/2010	1303	65	Sunny	FU	TR	9	860	87-89-90-91	109---	109---	Pass	Peel-88.85
46	11/8/2010	1258	60	Sunny	FU	CF	1	860	77-72-88-92	115---	115---	Pass	Peel-84.92
47	11/9/2010	1330	65	Sunny	FU	TR	9	860	87-83-77-80	101---	101---	Pass	Peel-83.90
48	11/9/2010	1220	65	Sunny	FU	CF	1	860	86-97-88-86	121---	121---	Pass	Peel-90.92
49	11/10/2010	1227	60	Sunny	FU	CF	1	860	86-83-84-77	111---	111---	Pass	Peel-90.86
50	11/10/2010	1230	60	Sunny	FU	TR	9	860	92-84-73-95	114---	114---	Pass	Peel-78.89
51	11/11/2010	839	45	Sunny	FU	CF	1	860	86-88-81-80	111---	111---	Pass	Peel-87.94
52	11/11/2010	900	55	Sunny	FU	TR	9	860	88-94-91-83	113---	113---	Pass	Peel-87.85

Table 12

Geomembrane Trial Seams Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Trial Num	Date	Time	Amb. Temp.	Weather	Seam Type	Oper	Mach	Set Speed	Set Temp	Peel Values (1)	Shear Values (2)	Pass/Fail		Comments/Location
												Pass	Fail	
53	11/1/2010	1343	60	Sunny	FU	CF	1	8	860	106-83-86-84	92---	Pass	Fail	Peel-81.80
54	11/1/2010	1345	60	Sunny	FU	TR	9	8	860	78-79-78-87	100---	Pass	Fail	Peel-88.86
55	11/12/2010	830	40	Sunny	EX	EW	9	500	500	91-93-90-	112---	Pass	Fail	
56	11/12/2010	832	40	Sunny	EX	CF	5	500	500	92-89-92-	113---	Pass	Fail	
57	11/12/2010	850	40	Sunny	EX	KX	1	500	500	91-93-93-	98---	Pass	Fail	
58	11/12/2010	1330	60	Sunny	EX	KX	1	500	500	90-87-89-	100---	Pass	Fail	
59	11/12/2010	746	40	Sunny	FU	CF	1	8	860	93-81-73-76	85---	Pass	Fail	Peel-94.86
60	11/12/2010	1310	60	Sunny	EX	CF	5	500	500	91-96-93-	104---	Pass	Fail	
61	11/12/2010	1300	60	Sunny	EX	EW	9	500	500	88-85-90-	106---	Pass	Fail	

NOTES:

- (1) The requirement for peel strength is a minimum value of ~~60~~ **90** ppi for both a non-textured fusion weld and for a textured fusion weld, and ~~40~~ **60** ppi for both a non-textured extrusion weld and for a textured extrusion weld.
- (2) The requirement for shear strength is a minimum value of ~~60~~ **80** ppi for non-textured and textured fusion and extrusion welds.

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Geomembrane Seaming Information

Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:		Nathan Braun	
Project Num:		05749.46.001										Material:		40-mil LLDPE					
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.					
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location					
S 1/2	FU	10/21/2010	244	TR	9	9	1340	1410	860	75	Sunny, windy	-	-						
S 1/10	FU	10/21/2010	190	TR	9	9	1550	1608	860	75	Sunny, windy	-	-						
S 1/74	FU	11/2/2010	15	TR	9	8	1635	1638	860	60	Sunny	-	-						
S 1/76	FU	11/2/2010	8	TR	9	8	1638	1639	860	60	Sunny	-	-						
S 2/3	FU	10/21/2010	43	CF	1	8	1404	1408	860	75	Sunny, windy	-	-						
S 2/4	FU	10/21/2010	202	CF	1	8	1408	1422	860	75	Sunny, windy	-	-						
S 2/76	FU	11/2/2010	158	TR	9	8	1639	1641	860	60	Sunny	-	-						
S 2/77	FU	11/2/2010	15	TR	9	8	1641	1642	860	60	Sunny	-	-						
S 3/4	FU	10/21/2010	23	CF	1	8	1400	1403	860	75	Sunny, windy	-	-						
S 3/5	FU	10/21/2010	43	TR	9	9	1412	1413	860	75	Sunny, windy	-	-						
S 3/77	FU	11/2/2010	8	TR	9	8	1642	1644	860	60	Sunny	-	-						
S 3/78	FU	11/2/2010	15	TR	9	8	1644	1645	860	60	Sunny	-	-						
S 4/5	FU	10/21/2010	203	TR	9	9	1416	1440	860	75	Sunny, windy	-	-						
S 5/6	FU	10/21/2010	247	CF	1	8	1429	1450	860	75	Sunny, windy	-	-						
S 5/78	FU	11/2/2010	8	TR	9	8	1645	1647	860	60	Sunny	-	-						
S 5/80	FU	11/2/2010	15	TR	9	8	1647	1648	860	60	Sunny	-	-						
S 6/7	FU	10/21/2010	139	TR	9	9	1450	1450	860	75	Sunny, windy	-	-						
S 6/8	FU	10/21/2010	117	TR	9	9	1458	1510	860	75	Sunny, windy	-	-						
S 6/80	FU	11/2/2010	8	TR	9	8	1648	1650	860	60	Sunny	-	-						
S 6/81	FU	11/2/2010	15	TR	9	8	1650	1651	860	60	Sunny	-	-						
S 7/8	FU	10/21/2010	23	TR	9	9	1445	1447	860	75	Sunny, windy	-	-						
S 7/9	FU	10/21/2010	139	CF	1	8	1504	1515	860	75	Sunny, windy	-	-						
S 7/81	FU	11/2/2010	8	TR	9	8	1651	1653	860	60	Sunny	-	-						
S 7/82	FU	11/2/2010	15	TR	9	8	1653	1654	860	60	Sunny	-	-						

Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Checked By:	
Project Num:		05749.46.001										Material:		Nathan Braun	
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.	
Seam Num	Seam Type	Seam Date	Seam Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location	
S 8 / 9	FU	10/21/2010	119	CF	1	8	1515	1526	860	75	Sunny, windy	-	-		
S 9 / 12	FU	10/22/2010	181	CF	1	8	1244	1257	860	65	Sunny	-	-		
S 9 / 13	FU	10/22/2010	83	CF	1	8	1257	1301	860	65	Sunny	-	-		
S 9 / 82	FU	11/2/2010	8	TR	9	8	1654	1656	860	60	Sunny	-	-		
S 9 / 84	FU	11/2/2010	15	TR	9	8	1656	1657	860	60	Sunny	-	-		
S 10 / 11	FU	10/21/2010	82	CF	1	8	1608	1617	860	75	Sunny, windy	-	-		
S 10 / 73	FU	11/2/2010	16	TR	9	8	1633	1635	860	60	Sunny	-	-		
S 10 / 74	FU	11/2/2010	8	TR	9	8	1635	1636	860	60	Sunny	-	-		
S 11 / 73	FU	11/2/2010	7	TR	9	8	1632	1633	860	60	Sunny	-	-		
S 12 / 13	FU	10/22/2010	29	TR	9	8	1245	1248	860	65	Sunny	-	-		
S 12 / 14	FU	10/22/2010	161	TR	9	8	1300	1315	860	65	Sunny	-	-		
S 12 / 84	FU	11/2/2010	8	TR	9	8	1657	1659	860	60	Sunny	-	-		
S 12 / 85	FU	11/2/2010	15	TR	9	8	1659	1700	860	60	Sunny	-	-		
S 13 / 14	FU	10/22/2010	102	TR	9	8	1315	1325	860	65	Sunny	-	-		
S 14 / 15	FU	10/22/2010	49	CF	1	8	1320	1324	860	65	Sunny	-	-		
S 14 / 16	FU	10/22/2010	218	CF	1	8	1324	1342	860	65	Sunny	-	-		
S 14 / 85	FU	11/3/2010	15	CF	1	8	1140	1142	860	50	Mostly cloudy	-	-		
S 14 / 87	FU	11/3/2010	8	CF	1	8	1142	1143	860	50	Mostly cloudy	-	-		
S 15 / 16	FU	10/22/2010	29	CF	1	8	1315	1317	860	65	Sunny	-	-		
S 15 / 17	FU	10/22/2010	29	TR	9	8	1335	1337	860	65	Sunny	-	-		
S 15 / 87	FU	11/3/2010	15	CF	1	8	1143	1145	860	50	Mostly cloudy	-	-		
S 15 / 88	FU	11/3/2010	8	CF	1	8	1145	1146	860	50	Mostly cloudy	-	-		
S 16 / 17	FU	10/22/2010	252	TR	9	8	1337	1358	860	65	Sunny	-	-		
S 17 / 18	FU	10/22/2010	292	CF	1	8	1401	1427	860	65	Sunny	-	-		

Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Checked By:	
Project Num:		05749.46.001										Material:		Nathan Braun	
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.	
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location	
S 17/88	FU	11/3/2010	15	CF	1	8	1146	1148	860	50	Mostly cloudy	-	-		
S 17/89	FU	11/3/2010	8	CF	1	8	1148	1149	860	50	Mostly cloudy	-	-		
S 18/19	FU	10/22/2010	290	TR	9	8	1420	1447	860	65	Sunny	-	-		
S 18/89	FU	11/3/2010	15	CF	1	8	1149	1151	860	50	Mostly cloudy	-	-		
S 18/90	FU	11/3/2010	8	CF	1	8	1151	1152	860	50	Mostly cloudy	-	-		
S 19/20	FU	10/22/2010	283	CF	1	8	1441	1507	860	65	Sunny	-	-		
S 19/90	FU	11/3/2010	15	CF	1	8	1152	1154	860	50	Mostly cloudy	-	-		
S 19/91	FU	11/8/2010	8	CF	1	8	1520	1521	860	65	Sunny	-	-		
S 19/91	FU	11/3/2010	8	CF	1	8	1154	1155	860	50	Mostly cloudy	-	-		
S 20/21	FU	10/22/2010	162	TR	9	8	1510	1525	860	70	Sunny, breezy	-	-		
S 20/22	FU	10/22/2010	122	TR	9	8	1525	1535	860	70	Sunny, breezy	-	-		
S 20/91	FU	11/8/2010	15	CF	1	8	1521	1523	860	65	Sunny	-	-		
S 20/93	FU	11/8/2010	8	CF	1	8	1523	1524	860	65	Sunny	-	-		
S 21/22	FU	10/22/2010	23	CF	1	8	1512	1514	860	70	Sunny, breezy	-	-		
S 21/23	FU	10/22/2010	166	CF	1	8	1638	1651	860	70	Sunny, breezy	-	-		
S 21/93	FU	11/8/2010	15	CF	1	8	1524	1526	860	65	Sunny	-	-		
S 21/94	FU	11/8/2010	8	CF	1	8	1526	1527	860	65	Sunny	-	-		
S 22/23	FU	10/22/2010	118	CF	1	8	1651	1705	860	70	Sunny, breezy	-	-		
S 23/24	FU	10/22/2010	249	TR	9	8	1704	1730	860	70	Sunny, breezy	-	-		
S 23/25	FU	10/22/2010	36	TR	9	8	1700	1704	860	70	Sunny, breezy	-	-		
S 23/94	FU	11/8/2010	15	CF	1	8	1527	1529	860	65	Sunny	-	-		
S 23/95	FU	11/8/2010	8	CF	1	8	1529	1530	860	65	Sunny	-	-		
S 24/25	FU	10/22/2010	22	TR	9	8	1655	1700	860	70	Sunny, breezy	-	-		
S 24/26	FU	10/23/2010	246	TR	9	8	1258	1320	860	80	sunny, warm	-	-		

Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure		RPR:		Nathan Braun		Checked By:						
Project Num:		05749.46.001		Material:		40-mil LLDPE		Nathan Braun						
Location:		Plymouth, NC		Installer:		Chesapeake Containment Systems, Inc.								
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location
S 25 / 26	FU	10/23/2010	36	TR	9	8	1255	1258	860	80	sunny, warm	-	-	
S 25 / 95	FU	11/8/2010	15	CF	1	8	1530	1532	860	65	Sunny	-	-	
S 25 / 96	FU	11/8/2010	8	CF	1	8	1532	1533	860	65	Sunny	-	-	
S 26 / 27	FU	10/23/2010	282	CF	1	8	1247	1305	860	80	sunny, warm	-	-	
S 26 / 96	FU	11/8/2010	15	CF	1	8	1533	1535	860	65	Sunny	-	-	
S 26 / 97	FU	11/8/2010	8	CF	1	8	1535	1536	860	65	Sunny	-	-	
S 27 / 28	FU	10/23/2010	202	CF	1	8	1325	1340	860	80	sunny, warm	-	-	
S 27 / 29	FU	10/23/2010	80	CF	1	8	1340	1348	860	80	sunny, warm	-	-	
S 27 / 97	FU	11/8/2010	15	CF	1	8	1536	1538	860	65	Sunny	-	-	
S 27 / 99	FU	11/8/2010	8	CF	1	8	1538	1539	860	65	Sunny	-	-	
S 28 / 29	FU	10/23/2010	30	CF	1	8	1315	1318	860	80	sunny, warm	-	-	
S 28 / 30	FU	10/23/2010	183	TR	9	8	1335	1350	860	80	sunny, warm	-	-	
S 28 / 99	FU	11/8/2010	15	CF	1	8	1539	1541	860	65	Sunny	-	-	
S 28 / 100	FU	11/8/2010	8	CF	1	8	1541	1542	860	65	Sunny	-	-	
S 29 / 30	FU	10/23/2010	100	TR	9	8	1350	1402	860	80	sunny, warm	-	-	
S 30 / 31	FU	10/23/2010	96	CF	1	8	1402	1408	860	80	sunny, warm	-	-	
S 30 / 32	FU	10/23/2010	181	CF	1	8	1408	1425	860	80	sunny, warm	-	-	
S 30 / 100	FU	11/8/2010	15	CF	1	8	1542	1543	860	65	Sunny	-	-	
S 30 / 101	FU	11/8/2010	8	CF	1	8	1543	1545	860	65	Sunny	-	-	
S 31 / 32	FU	10/23/2010	30	CF	1	8	1353	1356	860	80	sunny, warm	-	-	
S 31 / 33	FU	10/23/2010	75	TR	9	8	1408	1411	860	80	sunny, warm	-	-	
S 31 / 101	FU	11/8/2010	15	CF	1	8	1545	1546	860	65	Sunny	-	-	
S 31 / 102	FU	11/8/2010	8	CF	1	8	1546	1547	860	65	Sunny	-	-	
S 32 / 33	FU	10/23/2010	209	TR	9	8	1411	1432	860	80	sunny, warm	-	-	

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Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Checked By:	
Project Num:		05749.46.001										Material:		Nathan Braun	
Location:		Plymouth, NC										Installer:		Comments/Location	
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location	
														Time Start	Time Stop
S 33 / 34	FU	10/23/2010	284	CF	1	8	1434	1458	860	80	sunny, warm	-	-		
S 35 / 102	FU	11/9/2010	8	TR	9	8	1629	1630	860	65	Sunny	-	-		
S 35 / 102	FU	11/8/2010	15	CF	1	8	1547	1549	860	65	Sunny	-	-		
S 33 / 103	FU	11/9/2010	15	TR	9	8	1630	1632	860	65	Sunny	-	-		
S 34 / 35	FU	10/23/2010	284	TR	9	8	1445	1508	860	80	sunny, warm	-	-		
S 34 / 103	FU	11/9/2010	8	TR	9	8	1632	1633	860	65	Sunny	-	-		
S 34 / 105	FU	11/9/2010	15	TR	9	8	1633	1635	860	65	Sunny	-	-		
S 35 / 36	FU	10/23/2010	284	CF	1	8	1503	1526	860	80	sunny, warm	-	-		
S 35 / 105	FU	11/9/2010	8	TR	9	8	1635	1636	860	65	Sunny	-	-		
S 35 / 106	FU	11/9/2010	15	TR	9	8	1636	1368	860	65	Sunny	-	-		
S 36 / 37	FU	10/23/2010	128	TR	9	8	1549	1600	860	80	sunny, warm	-	-		
S 36 / 38	FU	10/23/2010	154	TR	9	8	1536	1549	860	80	sunny, warm	-	-		
S 36 / 106	FU	11/9/2010	8	TR	9	8	1638	1639	860	65	Sunny	-	-		
S 36 / 107	FU	11/9/2010	15	TR	9	8	1639	1641	860	65	Sunny	-	-		
S 37 / 38	FU	10/23/2010	23	CF	1	8	1538	1541	860	80	sunny, warm	-	-		
S 37 / 39	FU	10/25/2010	129	CF	1	8	942	1000	860	70	P. cloudy	-	-		
S 38 / 39	FU	10/25/2010	154	CF	1	8	927	942	860	70	P. cloudy	-	-		
S 38 / 107	FU	11/9/2010	8	TR	9	8	1641	1642	860	65	Sunny	-	-		
S 38 / 108	FU	11/9/2010	15	TR	9	8	1642	1644	860	65	Sunny	-	-		
S 39 / 40	FU	10/25/2010	250	TR	9	8	957	1020	860	70	P. cloudy	-	-		
S 39 / 41	FU	10/25/2010	30	TR	9	8	955	957	860	70	P. cloudy	-	-		
S 39 / 108	FU	11/9/2010	8	TR	9	8	1644	1645	860	65	Sunny	-	-		
S 39 / 109	FU	11/9/2010	15	TR	9	8	1646	1648	860	65	Sunny	-	-		
S 40 / 41	FU	10/25/2010	23	TR	9	8	950	953	860	70	P. cloudy	-	-		

Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:	
Project Num:		05749.46.001										Material:		40-mil LLDPE		Nathan Braun	
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.			
Seam Num	Seam Type	Seam Date	Seam Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location			
S 40 / 42	FU	10/25/2010	80	CF	1	8	1007	1025	860	70	P. cloudy, win	-	-				
S 41 / 42	FU	10/25/2010	31	CF	1	8	1004	1007	860	70	P. cloudy, win	-	-				
S 41 / 109	FU	11/9/2010	8	TR	9	8	1648	1649	860	65	Sunny	-	-				
S 41 / 111	FU	11/9/2010	15	TR	9	8	1649	1651	860	65	Sunny	-	-				
S 42 / 43	FU	10/25/2010	274	TR	9	8	1025	1045	860	70	P. cloudy, win	-	-				
S 42 / 111	FU	11/9/2010	8	TR	9	8	1651	1652	860	65	Sunny	-	-				
S 42 / 112	FU	11/9/2010	15	TR	9	8	1652	1654	860	65	Sunny	-	-				
S 43 / 44	FU	10/25/2010	211	CF	1	8	1049	1100	860	70	P. cloudy, win	-	-				
S 43 / 45	FU	10/25/2010	62	CF	1	8	1100	1115	860	70	P. cloudy, win	-	-				
S 43 / 112	FU	11/9/2010	8	TR	9	8	1654	1655	860	65	Sunny	-	-				
S 43 / 113	FU	11/9/2010	15	TR	9	8	1655	1657	860	65	Sunny	-	-				
S 44 / 45	FU	10/25/2010	35	TR	9	8	1100	1105	860	70	P. cloudy, win	-	-				
S 44 / 46	FU	10/25/2010	183	TR	9	8	1150	1200	860	70	P. cloudy, win	-	-				
S 44 / 113	FU	11/9/2010	8	TR	9	8	1657	1658	860	65	Sunny	-	-				
S 44 / 114	FU	11/9/2010	15	TR	9	8	1658	1700	860	65	Sunny	-	-				
S 45 / 46	FU	10/25/2010	90	TR	9	8	1200	1215	860	70	P. cloudy, win	-	-				
S 46 / 47	FU	10/28/2010	94	CF	1	8	1118	1128	860	75	P. cloudy	-	-				
S 46 / 48	FU	10/28/2010	185	CF	1	8	1128	1135	860	75	P. cloudy	-	-				
S 46 / 114	FU	11/9/2010	8	TR	9	8	1700	1701	860	65	Sunny	-	-				
S 46 / 115	FU	11/9/2010	15	TR	9	8	1701	1703	860	65	Sunny	-	-				
S 47 / 48	FU	10/28/2010	29	TR	9	8	1132	1135	860	75	P. cloudy	-	-				
S 47 / 49	FU	10/28/2010	52	TR	9	8	1130	1140	860	75	P. cloudy	-	-				
S 47 / 141	FU	11/12/2010	23	CF	1	8	747	750	860	40	Sunny	-	-				
S 48 / 49	FU	10/28/2010	207	TR	9	8	1140	1145	860	75	P. cloudy	-	-				

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Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:		Nathan Braun	
Project Num:		05749.46.001										Material:		40-mil LLDPE					
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.					
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location					
S 49 / 50	FU	10/28/2010	237	CF	1	8	1146	1250	860	75	P. cloudy	-	-						
S 49 / 143	FU	11/12/2010	30	CF	1	8	752	755	860	40	Sunny	-	-						
S 50 / 51	FU	10/28/2010	80	TR	9	8	1205	1210	860	75	P. cloudy, mu	-	-						
S 50 / 54	FU	10/28/2010	142	CF	1	8	1408	1420	860	75	P. cloudy, mu	-	-						
S 50 / 144	FU	11/12/2010	30	CF	1	8	755	758	860	40	Sunny	-	-						
S 51 / 52	FU	10/28/2010	80	TR	9	8	1210	1215	860	75	P. cloudy, mu	-	-						
S 51 / 54	FU	10/28/2010	23	TR	9	8	1624	1626	860	80	P. cloudy	-	-						
S 52 / 53	FU	10/28/2010	80	CF	1	8	1213	1223	860	75	P. cloudy, mu	-	-						
S 52 / 55	FU	10/28/2010	23	TR	9	8	1614	1616	860	80	P. cloudy	-	-						
S 53 / 56	FU	10/28/2010	23	TR	9	8	1612	1614	860	80	P. cloudy	-	-						
S 53 / 58	FU	10/28/2010	80	TR	9	8	1550	1555	860	80	P. cloudy	-	-						
S 54 / 55	FU	10/28/2010	95	TR	9	8	1420	1435	860	75	P. cloudy, mu	-	-						
S 54 / 145	FU	11/12/2010	30	CF	1	8	758	802	860	40	Sunny	-	-						
S 55 / 56	FU	10/28/2010	83	CF	1	8	1510	1518	860	80	P. cloudy	-	-						
S 55 / 145	FU	11/12/2010	23	CF	1	8	802	805	860	40	Sunny	-	-						
S 56 / 57	FU	10/28/2010	72	TR	9	8	1525	1529	860	80	P. cloudy	-	-						
S 56 / 71	FU	10/29/2010	14	TR	9	8	1340	1341	860	75	Sunny	-	-						
S 57 / 58	FU	10/28/2010	23	TR	9	8	1610	1612	860	80	P. cloudy	-	-						
S 57 / 59	FU	10/28/2010	54	CF	1	8	1527	1532	860	80	P. cloudy	-	-						
S 57 / 70	FU	10/29/2010	12	TR	9	8	1342	1343	860	75	Sunny	-	-						
S 57 / 71	FU	10/29/2010	16	TR	9	8	1341	1342	860	75	Sunny	-	-						
S 58 / 59	FU	10/28/2010	83	CF	1	8	1533	1540	860	80	P. cloudy	-	-						
S 59 / 60	FU	10/28/2010	116	TR	9	8	1623	1632	860	80	P. cloudy	-	-						
S 59 / 69	FU	10/29/2010	8	TR	9	8	1344	1345	860	75	Sunny	-	-						

Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:		Nathan Braun	
Project Num:		05749.46.001										Material:		40-mil LLDPE					
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.					
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location					
S 59 / 70	FU	10/29/2010	7	TR	9	8	1343	1344	860	75	Sunny	-	-						
S 60 / 61	FU	10/28/2010	98	CF	1	8	1636	1644	860	80	P. cloudy	-	-						
S 60 / 69	FU	10/29/2010	27	TR	9	8	1345	1347	860	75	Sunny	-	-						
S 61 / 62	FU	10/28/2010	78	TR	9	8	1650	1655	860	80	P. cloudy	-	-						
S 61 / 67	FU	10/29/2010	19	TR	9	8	1403	1404	860	75	Sunny	-	-						
S 61 / 69	FU	10/29/2010	8	TR	9	8	1347	1348	860	75	Sunny	-	-						
S 62 / 63	FU	10/28/2010	46	CF	1	8	1653	1657	860	80	P. cloudy	-	-						
S 62 / 66	FU	10/29/2010	11	TR	9	8	1405	1406	860	75	Sunny	-	-						
S 62 / 67	FU	10/29/2010	17	TR	9	8	1404	1405	860	75	Sunny	-	-						
S 63 / 64	FU	10/28/2010	37	CF	1	8	1702	1704	860	80	P. cloudy	-	-						
S 63 / 66	FU	10/29/2010	27	TR	9	8	1406	1409	860	75	Sunny	-	-						
S 64 / 65	FU	10/29/2010	32	TR	9	8	1409	1411	860	75	Sunny	-	-						
S 65 / 66	FU	10/29/2010	32	CF	1	8	946	948	860	50	Clear, windy	-	-						
S 66 / 67	FU	10/29/2010	18	CF	1	8	1027	1028	860	50	Clear, windy	-	-						
S 66 / 68	FU	10/29/2010	47	CF	1	8	1027	1035	860	50	Clear, windy	-	-						
S 67 / 68	FU	10/29/2010	47	CF	1	8	1028	1032	860	50	Clear, windy	-	-						
S 67 / 68	FU	10/29/2010	29	CF	1	8	1020	1022	860	50	Clear, windy	-	-						
S 67 / 69	FU	10/29/2010	27	TR	9	8	1025	1027	860	50	Clear, windy	-	-						
S 68 / 69	FU	10/29/2010	68	TR	9	8	1027	1036	860	50	Clear, windy	-	-						
S 69 / 70	FU	10/29/2010	123	CF	1	8	1042	1052	860	50	Clear, windy	-	-						
S 70 / 71	FU	10/29/2010	152	TR	9	8	1050	1105	860	50	Clear, windy	-	-						
S 71 / 72	FU	10/29/2010	167	CF	1	8	1150	1200	860	55	Clear, windy	-	-						
S 73 / 74	FU	11/2/2010	248	CF	1	8	1254	1315	860	55	Sunny	-	-						
S 74 / 75	FU	11/2/2010	210	TR	9	8	1320	1335	860	60	Sunny	-	-						

Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:		Nathan Braun	
Project Num:		05749.46.001										Material:		40-mil LLDPE		EOS Peel (1)		EOS Shear (2)	
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.					
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location					
S 74 / 76	FU	11/2/2010	40	TR	9	8	1347	1350	860	60	Sunny	-	-						
S 75 / 76	FU	11/2/2010	23	TR	9	8	1355	1400	860	60	Sunny	-	-						
S 75 / 77	FU	11/2/2010	210	CF	1	8	1339	1356	860	60	Sunny	-	-						
S 75 / 146	FU	11/11/2010	183	CF	1	8	1605	1630	860	60	Sunny	-	-						
S 76 / 77	FU	11/2/2010	40	CF	1	8	1356	1400	860	60	Sunny	-	-						
S 77 / 78	FU	11/2/2010	252	TR	9	8	1425	1422	860	60	Sunny	-	-						
S 78 / 79	FU	11/2/2010	171	CF	1	8	1413	1426	860	60	Sunny	-	-						
S 78 / 80	FU	11/2/2010	88	CF	1	8	1426	1435	860	60	Sunny	-	-						
S 79 / 80	FU	11/2/2010	29	TR	9	8	1429	1431	860	60	Sunny	-	-						
S 79 / 81	FU	11/2/2010	191	TR	9	8	1440	1453	860	60	Sunny	-	-						
S 80 / 81	FU	11/2/2010	68	TR	9	8	1453	1500	860	60	Sunny	-	-						
S 81 / 82	FU	11/2/2010	255	CF	1	8	1452	1510	860	60	Sunny	-	-						
S 82 / 83	FU	11/2/2010	57	TR	9	8	1520	1527	860	60	Sunny	-	-						
S 82 / 84	FU	11/2/2010	200	TR	9	8	1527	1547	860	60	Sunny	-	-						
S 83 / 84	FU	11/2/2010	23	TR	9	8	1520	1523	860	60	Sunny	-	-						
S 83 / 85	FU	11/2/2010	57	CF	1	8	1600	1607	860	60	Sunny	-	-						
S 84 / 85	FU	11/2/2010	200	CF	1	8	1607	1627	860	60	Sunny	-	-						
S 85 / 86	FU	11/3/2010	115	TR	9	8	920	930	860	50	Mostly cloudy	-	-						
S 85 / 87	FU	11/3/2010	150	TR	9	8	935	940	860	50	Mostly cloudy	-	-						
S 86 / 87	FU	11/3/2010	23	TR	9	8	930	932	860	50	Mostly cloudy	-	-						
S 86 / 88	FU	11/3/2010	115	CF	1	8	951	1003	860	50	Mostly cloudy	-	-						
S 87 / 88	FU	11/3/2010	115	CF	1	8	1003	1015	860	50	Mostly cloudy	-	-						
S 88 / 89	FU	11/3/2010	265	TR	9	8	1040	1100	860	50	Mostly cloudy	-	-						
S 89 / 90	FU	11/3/2010	265	CF	1	8	1100	1120	860	50	Mostly cloudy	-	-						

Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:		Nathan Braun	
Project Num:		05749.46.001										Material:		40-mil LLDPE		EOS Peel (1)		EOS Shear (2)	
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.					
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location					
S 90 / 91	FU	11/3/2010	267	TR	9	8	1115	1130	860	50	Mostly cloudy	-	-						
S 91 / 92	FU	11/8/2010	121	TR	9	8	1400	1415	860	65	Sunny	-	-						
S 91 / 93	FU	11/8/2010	140	TR	9	8	1415	1430	860	65	Sunny	-	-						
S 92 / 93	FU	11/8/2010	23	CF	1	8	1300	1303	860	65	Sunny	-	-						
S 92 / 94	FU	11/8/2010	121	CF	1	8	1306	1321	860	65	Sunny	-	-						
S 93 / 94	FU	11/8/2010	140	CF	1	8	1321	1336	860	65	Sunny	-	-						
S 94 / 95	FU	11/8/2010	276	TR	9	8	1330	1400	860	65	Sunny	-	-						
S 95 / 96	FU	11/8/2010	277	CF	1	8	1331	1401	860	65	Sunny	-	-						
S 96 / 97	FU	11/8/2010	277	TR	9	8	1405	1435	860	65	Sunny	-	-						
S 97 / 98	FU	11/8/2010	126	CF	1	8	1400	1410	860	65	Sunny	-	-						
S 97 / 99	FU	11/8/2010	151	CF	1	8	1410	1430	860	65	Sunny	-	-						
S 98 / 99	FU	11/8/2010	230	CF	1	8	1411	1414	860	65	Sunny	-	-						
S 98 / 100	FU	11/8/2010	126	TR	9	8	1430	1445	860	65	Sunny	-	-						
S 99 / 100	FU	11/8/2010	151	TR	9	8	1445	1500	860	65	Sunny	-	-						
S 100 / 101	FU	11/8/2010	277	CF	1	8	1437	1507	860	65	Sunny	-	-						
S 101 / 102	FU	11/8/2010	278	TR	9	8	1500	1530	860	65	Sunny	-	-						
S 102 / 103	FU	11/9/2010	275	TR	9	8	1240	1300	860	65	Sunny	-	-						
S 103 / 104	FU	11/9/2010	142	CF	1	8	1241	1255	860	65	Sunny	-	-						
S 103 / 105	FU	11/9/2010	133	CF	1	8	1255	1320	860	65	Sunny	-	-						
S 104 / 105	FU	11/9/2010	23	CF	1	8	1256	1259	860	65	Sunny	-	-						
S 104 / 106	FU	11/9/2010	142	TR	9	8	1415	1429	860	65	Sunny	-	-						
S 105 / 106	FU	11/9/2010	133	TR	9	8	1429	1455	860	65	Sunny	-	-						
S 106 / 107	FU	11/9/2010	275	CF	1	8	1330	1355	860	65	Sunny	-	-						
S 107 / 108	FU	11/9/2010	275	TR	9	8	1455	1510	860	65	Sunny	-	-						

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Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Checked By:	
Project Num:		05749.46.001										Material:		Nathan Braun	
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.	
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location	
S 108 / 109	FU	11/9/2010	275	CF	1	8	1411	1430	860	65	Sunny	-	-		
S 109 / 110	FU	11/9/2010	175	TR	9	8	1430	1445	860	65	Sunny	-	-		
S 109 / 111	FU	11/9/2010	100	TR	9	8	1445	1500	860	65	Sunny	-	-		
S 110 / 111	FU	11/9/2010	23	TR	9	8	1450	1453	860	65	Sunny	-	-		
S 110 / 112	FU	11/9/2010	141	CF	1	8	1451	1505	860	65	Sunny	-	-		
S 111 / 112	FU	11/9/2010	125	CF	1	8	1505	1525	860	65	Sunny	-	-		
S 112 / 113	FU	11/9/2010	275	TR	9	8	1510	1540	860	65	Sunny	-	-		
S 113 / 114	FU	11/9/2010	275	CF	1	8	1529	1545	860	65	Sunny	-	-		
S 114 / 115	FU	11/9/2010	275	CF	1	8	1554	1615	860	65	Sunny	-	-		
S 115 / 116	FU	11/10/2010	114	TR	9	8	1250	1315	860	60	Sunny	-	-		
S 115 / 117	FU	11/10/2010	117	TR	9	8	1315	1325	860	60	Sunny	-	-		
S 116 / 117	FU	11/10/2010	23	CF	1	8	1250	1253	860	60	Sunny	-	-		
S 116 / 117	FU	11/10/2010	23	CF	1	8	1250	1253	860	60	Sunny	-	-		
S 116 / 118	FU	11/10/2010	160	CF	1	8	1255	1305	860	60	Sunny	-	-		
S 117 / 118	FU	11/10/2010	101	CF	1	8	1255	1305	860	60	Sunny	-	-		
S 117 / 139	FU	11/11/2010	8	TR	9	8	1703	1704	860	60	Sunny	-	-		
S 117 / 140	FU	11/11/2010	25	TR	9	8	1704	1708	860	60	Sunny	-	-		
S 118 / 119	FU	11/10/2010	223	TR	9	8	1420	1430	860	65	Sunny	-	-		
S 118 / 137	FU	11/11/2010	8	TR	9	8	1658	1700	860	60	Sunny	-	-		
S 118 / 139	FU	11/11/2010	25	TR	9	8	1700	1703	860	60	Sunny	-	-		
S 119 / 120	FU	11/10/2010	70	CF	1	8	1320	1325	860	60	Sunny	-	-		
S 119 / 121	FU	11/10/2010	137	CF	1	8	1325	1340	860	60	Sunny	-	-		
S 119 / 136	FU	11/11/2010	8	TR	9	8	1654	1655	860	60	Sunny	-	-		
S 119 / 137	FU	11/11/2010	25	TR	9	8	1655	1658	860	60	Sunny	-	-		

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Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:		Nathan Braun	
Project Num:		05749.46.001										Material:		40-mil LLDPE		EOS Peel (1)		EOS Shear (2)	
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.					
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location					
S 120 / 121	FU	11/10/2010	23	CF	1	8	1321	1324	860	60	Sunny	-	-						
S 120 / 122	FU	11/10/2010	68	TR	9	8	1400	1410	860	65	Sunny	-	-						
S 121 / 122	FU	11/10/2010	116	TR	9	8	1410	1425	860	65	Sunny	-	-						
S 121 / 135	FU	11/11/2010	8	TR	9	8	1650	1651	860	60	Sunny	-	-						
S 121 / 136	FU	11/11/2010	25	TR	9	8	1651	1654	860	60	Sunny	-	-						
S 122 / 123	FU	11/10/2010	156	CF	1	8	1357	1410	860	65	Sunny	-	-						
S 122 / 129	FU	11/11/2010	8	TR	9	8	1646	1647	860	60	Sunny	-	-						
S 122 / 135	FU	11/11/2010	25	TR	9	8	1647	1650	860	60	Sunny	-	-						
S 123 / 124	FU	11/10/2010	128	TR	9	8	1420	1430	860	65	Sunny	-	-						
S 123 / 129	FU	11/10/2010	25	CF	1	8	1635	1647	860	65	Sunny	-	-						
S 123 / 130	FU	11/10/2010	8	CF	1	8	1634	1635	860	65	Sunny	-	-						
S 124 / 125	FU	11/10/2010	106	CF	1	8	1418	1425	860	65	Sunny	-	-						
S 124 / 130	FU	11/10/2010	25	CF	1	8	1631	1634	860	65	Sunny	-	-						
S 124 / 131	FU	11/10/2010	8	CF	1	8	1630	1631	860	65	Sunny	-	-						
S 125 / 126	FU	11/10/2010	83	CF	1	8	1445	1455	860	65	Sunny	-	-						
S 125 / 131	FU	11/10/2010	25	CF	1	8	1627	1630	860	65	Sunny	-	-						
S 125 / 132	FU	11/10/2010	8	CF	1	8	1626	1627	860	65	Sunny	-	-						
S 126 / 127	FU	11/10/2010	60	TR	9	8	1450	1457	860	65	Sunny	-	-						
S 126 / 132	FU	11/10/2010	25	CF	1	8	1623	1626	860	65	Sunny	-	-						
S 126 / 133	FU	11/10/2010	8	CF	1	8	1622	1623	860	65	Sunny	-	-						
S 127 / 128	FU	11/10/2010	35	TR	9	8	1505	1510	860	65	Sunny	-	-						
S 127 / 133	FU	11/10/2010	25	CF	1	8	1619	1622	860	65	Sunny	-	-						
S 127 / 134	FU	11/10/2010	4	CF	1	8	1618	1619	860	65	Sunny	-	-						
S 128 / 134	FU	11/10/2010	32	CF	1	8	1615	1620	860	65	Sunny	-	-						

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Table 13

Geomembrane Seaming Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Checked By:	
Project Num:		05749.46.001										Material:		Nathan Braun	
Location:		Plymouth, NC										Installer:		Nathan Braun	
Location:		Chesapeake Containment Systems, Inc.										Amb Tem		Comments/Location	
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Weather	EOS Peel (1)	EOS Shear (2)			
S 128 / 134	FU	11/10/2010	32	CF	1	8	1615	1618	860	65	Sunny	-	-		
S 129 / 130	FU	11/10/2010	139	CF	1	8	1538	1550	860	65	Sunny	-	-		
S 129 / 135	FU	11/11/2010	161	CF	1	8	853	910	860	45	Sunny	-	-		
S 130 / 131	FU	11/10/2010	126	TR	9	8	1515	1535	860	65	Sunny	-	-		
S 131 / 132	FU	11/10/2010	89	TR	9	8	1550	1600	860	65	Sunny	-	-		
S 132 / 133	FU	11/10/2010	65	CF	1	8	1554	1605	860	65	Sunny	-	-		
S 133 / 134	FU	11/10/2010	37	CF	1	8	1610	1615	860	65	Sunny	-	-		
S 135 / 136	FU	11/11/2010	184	TR	9	8	920	935	860	55	Sunny	-	-		
S 136 / 137	FU	11/11/2010	178	CF	1	8	935	955	860	55	Sunny	-	-		
S 136 / 138	FU	11/11/2010	23	CF	1	8	927	935	860	55	Sunny	-	-		
S 137 / 138	FU	11/11/2010	23	CF	1	8	933	936	860	55	Sunny	-	-		
S 137 / 139	FU	11/11/2010	205	TR	9	8	1417	1438	860	60	Sunny	-	-		
S 138 / 139	FU	11/11/2010	31	TR	9	8	1415	1417	860	60	Sunny	-	-		
S 139 / 140	FU	11/11/2010	256	CF	1	8	1430	1453	860	60	Sunny	-	-		
S 140 / 141	FU	11/11/2010	109	TR	9	8	1525	1432	860	60	Sunny	-	-		
S 140 / 142	FU	11/11/2010	162	TR	9	8	1506	1524	860	60	Sunny	-	-		
S 141 / 142	FU	11/11/2010	23	CF	1	8	1505	1508	860	60	Sunny	-	-		
S 141 / 143	FU	11/11/2010	109	CF	1	8	1519	1525	860	60	Sunny	-	-		
S 142 / 143	FU	11/11/2010	162	CF	1	8	1525	1540	860	60	Sunny	-	-		
S 143 / 144	FU	11/11/2010	225	TR	9	8	1542	1600	860	60	Sunny	-	-		
S 144 / 145	FU	11/11/2010	228	CF	1	8	1545	1605	860	60	Sunny	-	-		
S 145 / 146	FU	11/11/2010	180	TR	9	8	1600	1615	860	60	Sunny	-	-		

Table 13

Geomembrane Seaming Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure										Checked By:	Nathan Braun		
Project Num:	05749.46.001										RPR:	Nathan Braun		
Location:	Plymouth, NC										Material:	40-mil LLDPE		
Seam Num	Seam Type	Seam Date	Len	Oper	Mach	Set Speed	Time Start	Time Stop	Set Tem	Amb Tem	Weather	EOS Peel (1)	EOS Shear (2)	Comments/Location
Installer: Chesapeake Containment Systems, Inc.														

NOTES:

- (1) The requirement for peel strength is a minimum value of 50 ppi for both a non-textured fusion weld and for a textured fusion weld; and 40 ppi for both a non-textured extrusion weld and for a textured extrusion weld.
- (2) The requirement for shear strength is a minimum value of 60 ppi for non-textured and textured fusion and extrusion welds.

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Geomembrane Seam Nondestructive Testing Information

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 1/2	AT	BF	Y		244	10/22/2010	852	857	30	30	Pass	
S 1/10	AT	BF	Y		190	10/22/2010	852	857	30	28	Pass	
S 1/74	AT	BF	Y		15	11/6/2010	838	843	30	30	Pass	
S 1/76	AT	BF	Y		8	11/6/2010	859	904	30	29	Pass	
S 2/3	AT	BF	Y		43	10/22/2010	905	910	30	29	Pass	
S 2/4	AT	BF	Y		202	10/22/2010	905	910	30	30	Pass	
S 2/76	AT	BF	Y		158	11/6/2010	859	904	30	30	Pass	
S 2/77	AT	BF	Y		15	11/6/2010	859	904	30	29	Pass	
S 3/4	AT	BF	Y		23	10/22/2010	905	910	30	30	Pass	
S 3/5	AT	BF	Y		43	10/22/2010	905	910	30	30	Pass	
S 3/77	AT	BF	Y		8	11/6/2010	915	920	30	30	Pass	
S 3/78	AT	BF	Y		15	11/6/2010	915	920	30	30	Pass	
S 4/5	AT	BF	Y		203	10/22/2010	905	910	30	30	Pass	
S 5/6	AT	BF	Y		247	10/22/2010	920	925	30	29	Pass	
S 5/78	AT	BF	Y		8	11/6/2010	915	920	30	29	Pass	
S 5/80	AT	BF	Y		15	11/6/2010	915	920	30	30	Pass	
S 6/7	AT	BF	Y		139	10/22/2010	920	925	30	30	Pass	
S 6/8	AT	BF	N	A	65	10/22/2010	929	934	30	30	Pass	
S 6/8	AT	BF	N	B	42	10/22/2010	946	951	30	28	Pass	
S 6/8	AT	BF	N	C	10	10/22/2010	936	941	30	30	Pass	
S 6/80	AT	BF	Y		8	11/6/2010	1058	1103	30	29	Pass	
S 6/81	AT	BF	Y		15	11/6/2010	1058	1103	30	29	Pass	
S 7/8	AT	BF	Y		23	10/22/2010	924	929	30	29	Pass	

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Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 7/9	AT	BF	Y		139	10/22/2010	920	925	30	30	Pass	
S 7/81	AT	BF	Y		8	11/6/2010	1058	1103	30	29	Pass	
S 7/82	AT	BF	Y		15	11/6/2010	1250	1255	30	29	Pass	
S 8/9	AT	BF	Y		119	10/22/2010	924	929	30	29	Pass	
S 9/12	AT	BF	Y		181	10/22/2010	1605	1610	30	30	Pass	
S 9/13	AT	BF	Y		83	10/22/2010	1700	1705	30	28	Pass	
S 9/82	AT	BF	Y		8	11/6/2010	1250	1255	30	30	Pass	
S 9/84	AT	BF	Y		15	11/6/2010	1600	1605	30	30	Pass	
S 10/11	AT	BF	Y		82	10/22/2010	852	857	30	28	Pass	
S 10/73	AT	BF	Y		16	11/6/2010	838	843	30	29	Pass	
S 10/74	AT	BF	Y		8	11/6/2010	838	843	30	30	Pass	
S 11/73	AT	BF	Y		7	11/6/2010	838	843	30	30	Pass	
S 12/13	AT	BF	Y		29	10/22/2010	1710	1715	30	30	Pass	
S 12/14	AT	BF	N	A	100	10/22/2010	1605	1610	30	30	Pass	
S 12/14	AT	BF	N	B	61	10/22/2010	1605	1610	30	30	Pass	
S 12/84	AT	BF	Y		8	11/6/2010	1600	1605	30	29	Pass	
S 12/85	AT	BF	Y		15	11/6/2010	1600	1605	30	30	Pass	
S 13/14	AT	BF	Y		102	10/22/2010	1705	1710	30	28	Pass	
S 14/15	AT	BF	Y		49	10/22/2010	1605	1610	30	30	Pass	
S 14/16	AT	BF	Y		218	10/22/2010	1642	1647	30	30	Pass	
S 14/85	AT	BF	Y		15	11/6/2010	1643	1648	30	28	Pass	
S 14/87	AT	BF	Y		8	11/6/2010	1643	1648	30	30	Pass	
S 15/16	AT	BF	Y		29	10/22/2010	1642	1647	30	30	Pass	

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:		Nathan Braun	
Project Num:		05749.46.001										Material:		40-mil LLDPE					
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.					
Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments							
S 15/17	AT	BF	Y		29	10/22/2010	1605	1610	30	29	Pass								
S 15/87	AT	BF	Y		15	11/6/2010	1643	1648	30	30	Pass								
S 15/88	AT	BF	Y		8	11/6/2010	1643	1648	30	30	Pass								
S 16/17	AT	BF	Y		252	10/22/2010	1642	1647	30	28	Pass								
S 17/18	AT	BF	N	A	100	10/22/2010	1618	1623	30	29	Pass								
S 17/18	AT	BF	N	B	100	10/22/2010	1723	1728	30	30	Pass								
S 17/18	AT	BF	N	C	92	10/22/2010	1015	1018	30	29	Pass								
S 17/88	AT	BF	Y		15	11/6/2010	1703	1708	30	28	Pass								
S 17/89	AT	BF	Y		8	11/6/2010	1703	1708	30	29	Pass								
S 18/19	AT	BF	N	A	200	10/22/2010	1618	1623	30	29	Pass								
S 18/19	AT	BF	N	B	10	10/22/2010	1723	1728	30	28	Pass								
S 18/19	AT	BF	N	C	80	10/22/2010	1723	1728	30	30	Pass								
S 18/89	AT	BF	Y		15	11/6/2010	1703	1708	30	28	Pass								
S 18/90	AT	BF	Y		8	11/6/2010	1703	1708	30	28	Pass								
S 19/20	AT	BF	Y		283	10/22/2010	1618	1623	30	30	Pass								
S 19/90	AT	BF	Y		15	11/6/2010	1710	1715	30	30	Pass								
S 19/91	AT	BF	Y		8	11/9/2010	849	854			Fail	Cap							
S 19/91	AT	BF	Y		8	11/9/2010	849	854			Fail	Cap							
S 20/21	AT	BF	N	A	152	10/22/2010	1618	1623	30	30	Pass								
S 20/21	AT	BF	N	B	10	10/22/2010	1635	1640	30	28	Pass								
S 20/22	AT	BF	N	A	61	10/23/2010	939	944	30	30	Pass								
S 20/22	AT	BF	N	B	61	10/23/2010	1002	1007	30	29	Pass								
S 20/91	AT	BF	Y		15	11/9/2010	849	854	30	28	Pass								

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 20/93	AT	BF	Y		8	11/9/2010	849	854			Fail	Cap
S 21/22	AT	BF	N	A	5	10/23/2010	925	930	30	29	Pass	
S 21/22	AT	BF	N	B	18	10/23/2010	925	930	30	29	Pass	
S 21/23	AT	BF	Y		166	10/23/2010	918	923	30	29	Pass	
S 21/93	AT	BF	Y		15	11/9/2010	849	854	30	28	Pass	
S 21/94	AT	BF	Y		8	11/9/2010	904	909	30	30	Pass	
S 22/23	AT	BF	N	A	59	10/23/2010	939	944	30	28	Pass	
S 22/23	AT	BF	N	B	59	10/23/2010	1002	1007	30	28	Pass	
S 23/24	AT	BF	N	A	200	10/23/2010	918	923	30	29	Pass	
S 23/24	AT	BF	N	B	49	10/23/2010	939	944	30	29	Pass	
S 23/25	AT	BF	Y		36	10/23/2010	918	923	30	30	Pass	
S 23/94	AT	BF	Y		15	11/9/2010	904	909	30	30	Pass	
S 23/95	AT	BF	Y		8	11/9/2010	917	922	30	28	Pass	
S 24/25	AT	BF	Y		22	10/23/2010	918	923	30	30	Pass	
S 24/26	AT	BF	Y		246	10/24/2010	1105	1109	30	30	Pass	
S 25/26	AT	BF	Y		36	10/24/2010	1104	1109	30	28	Pass	
S 25/95	AT	BF	Y		15	11/9/2010	917	922	30	28	Pass	
S 25/96	AT	BF	Y		8	11/9/2010	917	922			Fail	Cap
S 26/27	AT	BF	Y		282	10/24/2010	1125	1130	30	29	Pass	
S 26/96	AT	BF	Y		15	11/9/2010	917	922	30	29	Pass	
S 26/97	AT	BF	Y		8	11/9/2010	932	937	30	29	Pass	
S 27/28	AT	BF	Y		202	10/24/2010	1125	1130	30	28	Pass	
S 27/29	AT	BF	Y		80	10/24/2010	1340	1345	30	28	Pass	



Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 27/97	AT	BF	Y		15	11/9/2010	932	937	30	30	Pass	
S 27/99	AT	BF	Y		8	11/9/2010	946	951	30	30	Pass	
S 28/29	AT	BF	N	A	5	10/24/2010	1340	1345	30	30	Pass	
S 28/29	AT	BF	N	B	15	10/24/2010	1340	1345	30	28	Pass	
S 28/29	AT	BF	N	C	10	10/24/2010	1340	1345	30	28	Pass	
S 28/30	AT	BF	Y		183	10/24/2010	1125	1130	30	29	Pass	
S 28/99	AT	BF	Y		15	11/9/2010	946	951	30	29	Pass	
S 28/100	AT	BF	Y		8	11/9/2010	946	951	30	30	Pass	
S 29/30	AT	BF	Y		100	10/24/2010	1340	1345	30	28	Pass	
S 30/31	AT	BF	N	A	48	10/24/2010	1125	1130	30	29	Pass	
S 30/31	AT	BF	N	B	48	10/24/2010	1130	1135	30	29	Pass	
S 30/32	AT	BF	Y		181	10/24/2010	1310	1315	30	30	Pass	
S 30/100	AT	BF	Y		15	11/9/2010	959	1004	30	29	Pass	
S 30/101	AT	BF	Y		8	11/9/2010	959	1004	30	30	Pass	
S 31/32	AT	BF	N	A	5	10/24/2010	1310	1315	30	28	Pass	
S 31/32	AT	BF	N	B	25	10/24/2010	1310	1315	30	29	Pass	
S 31/33	AT	BF	Y		75	10/24/2010	1142	1147	30	30	Pass	
S 31/101	AT	BF	Y		15	11/9/2010	1013	1018	30	30	Pass	
S 31/102	AT	BF	Y		8	11/9/2010	1013	1018	30	29	Pass	
S 32/33	AT	BF	N	A	40	10/24/2010	1310	1315	30	29	Pass	
S 32/33	AT	BF	N	B	169	10/24/2010	1325	1330	30	30	Pass	
S 33/34	AT	BF	Y		284	10/24/2010	1142	1147	30	30	Pass	
S 33/102	AT	BF	Y		8	11/10/2010		0	30		Fail	Cap

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (1)	Time Stop (1)	Pressure Start (1)	Pressure Stop (1)	Pass/Fail	Comments
S 33/102	AT	BF	Y		15	11/9/2010	1013	1018	30	30	Pass	
S 33/102	AT	BF	Y		15	11/10/2010		0	30		Fail	Cap
S 33/102	AT	BF	Y		8	11/9/2010	1013	1018	30	30	Pass	
S 33/103	AT	BF	Y		15	11/10/2010	848	853	30	30	Pass	
S 34/35	AT	BF	Y		284	10/24/2010	1142	1147	30	29	Pass	
S 34/103	AT	BF	Y		8	11/10/2010	848	853	30	28	Pass	
S 34/105	AT	BF	Y		15	11/10/2010	903	908	30	29	Pass	
S 35/36	AT	BF	Y		284	10/24/2010	1255	1300	30	30	Pass	
S 35/105	AT	BF	Y		8	11/10/2010	903	908	30	30	Pass	
S 35/106	AT	BF	Y		15	11/10/2010		0	30		Fail	Cap
S 36/37	AT	BF	N	A	70	10/24/2010	1421	1426	30	30	Pass	
S 36/37	AT	BF	N	B	58	10/24/2010	1314	1319	30	29	Pass	
S 36/38	AT	BF	Y		154	10/24/2010	1255	1300	30	30	Pass	
S 36/106	AT	BF	Y		8	11/10/2010	903	908	30	30	Pass	
S 36/107	AT	BF	Y		15	11/10/2010		0	30		Fail	Cap
S 37/38	AT	BF	Y		23	10/24/2010	1314	1319	30	30	Pass	
S 37/39	AT	BF	Y		129	10/27/2010	800	805	30	30	Pass	
S 38/39	AT	BF	Y		154	10/27/2010	800	805	30	30	Pass	
S 38/107	AT	BF	Y		8	11/10/2010	916	921	30	28	Pass	
S 38/108	AT	BF	Y		15	11/10/2010		0	30		Fail	Cap
S 39/40	AT	BF	Y		250	10/27/2010	831	836	30	30	Pass	
S 39/41	AT	BF	Y		30	10/27/2010	815	820	30	30	Pass	
S 39/108	AT	BF	Y		8	11/10/2010	916	921	30	29	Pass	



Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure		RPR:		Nathan Braun		Checked By:				
Project Num:		05749.46.001		Material:		40-mil LLDPE		Nathan Braun				
Location:		Plymouth, NC		Installer:		Chesapeake Containment Systems, Inc.						
Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 39/109	AT	BF	Y		15	11/10/2010	0	30	30		Fail	Cap
S 40/41	AT	BF	Y		23	10/27/2010	815	820	30	28	Pass	
S 40/42	AT	BF	Y		80	10/27/2010	831	836	30	29	Pass	
S 41/42	AT	BF	Y		31	10/27/2010	815	820	30	28	Pass	
S 41/109	AT	BF	Y		8	11/10/2010	935	940	30	29	Pass	
S 41/111	AT	BF	Y		15	11/10/2010	935	940	30	30	Pass	
S 42/43	AT	BF	Y		274	10/27/2010	815	820	30	30	Pass	
S 42/111	AT	BF	Y		8	11/10/2010	949	954	30	29	Pass	
S 42/112	AT	BF	Y		15	11/10/2010	949	954	30	29	Pass	
S 43/44	AT	BF	Y		211	10/27/2010	850	855	30	30	Pass	
S 43/45	AT	BF	N	A	31	10/27/2010	914	919	30	28	Pass	
S 43/45	AT	BF	N	B	31	10/27/2010	914	919	30	28	Pass	
S 43/112	AT	BF	Y		8	11/10/2010		0	30		Fail	Cap
S 43/113	AT	BF	Y		15	11/10/2010	1002	1007	30	29	Pass	
S 44/45	AT	BF	Y		35	10/27/2010	905	910	30	29	Pass	
S 44/46	AT	BF	Y		183	10/27/2010	850	855	30	30	Pass	
S 44/113	AT	BF	Y		8	11/10/2010	1002	1007	30	29	Pass	
S 44/114	AT	BF	Y		15	11/13/2010	1015	1020	30	28	Pass	
S 45/46	AT	BF	Y		90	10/27/2010	905	910	30	28	Pass	
S 46/47	AT	BF	Y		94	10/29/2010	1400	1405	30	30	Pass	
S 46/48	AT	BF	N	A	100	10/29/2010	1400	1405	30	30	Pass	
S 46/48	AT	BF	N	B	55	10/29/2010	1400	1405	30	28	Pass	
S 46/48	AT	BF	N	C	30	10/29/2010	1427	1432	30	29	Pass	

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Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase IA & IB Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 46/114	AT	BF	Y		8	11/13/2010	1015	1020	30	30	Pass	
S 46/115	AT	BF	Y		15	11/13/2010		0	30		Fail	Cap
S 47/48	AT	BF	N	A	10	10/29/2010	1400	1405	30	30	Pass	
S 47/48	AT	BF	N	B	19	10/29/2010	1400	1405	30	28	Pass	
S 47/49	AT	BF	Y		52	10/29/2010	1419	1424	30	28	Pass	
S 47/141	AT	BF	Y		23	11/13/2010	645	650	30	29	Pass	
S 48/49	AT	BF	N	A	100	10/29/2010	1419	1424	30	30	Pass	
S 48/49	AT	BF	N	B	107	10/29/2010	1427	1432	30	28	Pass	
S 49/50	AT	BF	N	A	100	10/29/2010	1427	1432	30	29	Pass	
S 49/50	AT	BF	N	B	137	10/29/2010	1427	1432	30	29	Pass	
S 49/143	AT	BF	Y		30	11/13/2010	708	713	30	30	Pass	
S 50/51	AT	BF	Y		80	10/29/2010	1512	1517	30	28	Pass	
S 50/54	AT	BF	N	A	70	10/29/2010	1415	1420	30	29	Pass	
S 50/54	AT	BF	N	B	72	10/29/2010	1415	1420	30	28	Pass	
S 50/144	AT	BF	Y		30	11/13/2010	708	713	30	29	Pass	
S 51/52	AT	BF	Y		80	10/29/2010	1512	1517	30	30	Pass	
S 51/54	AT	BF	N	A	15	10/29/2010		0			Fail	Cap
S 51/54	AT	BF	N	B	8	10/29/2010	1512	1517	30	30	Pass	
S 52/53	AT	BF	N	A	65	10/29/2010	1527	1532	30	29	Pass	
S 52/53	AT	BF	N	B	15	10/29/2010	1543	1548	30	29	Pass	
S 52/55	AT	BF	Y		23	10/29/2010	1527	1532	30	29	Pass	
S 53/56	AT	BF	Y		23	10/29/2010	1527	1532	30	29	Pass	
S 53/58	AT	BF	Y		80	10/29/2010	1551	1556	30	29	Pass	

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Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure		RPR:		Nathan Braun		Checked By:				
Project Num:		05749.46.001		Material:		40-mil LLDPE		Nathan Braun				
Location:		Plymouth, NC		Installer:		Chesapeake Containment Systems, Inc.						
Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 54/55	AT	BF	Y		95	10/29/2010	1512	1517	30	30	Pass	
S 54/145	AT	BF	Y		30	11/13/2010	810	815	30	30	Pass	
S 55/56	AT	BF	Y		83	10/29/2010	1527	1532	30	29	Pass	
S 55/145	AT	BF	Y		23	11/13/2010	810	815	30	30	Pass	
S 56/57	AT	BF	Y		72	10/29/2010	1551	1556	30	30	Pass	
S 56/71	AT	BF	Y		14	10/30/2010	749	754	30	30	Pass	
S 57/58	AT	BF	Y		23	10/29/2010	1551	1556	30	30	Pass	
S 57/59	AT	BF	Y		54	10/29/2010	1551	1556	30	28	Pass	
S 57/70	AT	BF	Y		12	10/30/2010	736	741	30	29	Pass	
S 57/71	AT	BF	Y		16	10/30/2010		0			Fail	Cap
S 58/59	AT	BF	Y		83	10/29/2010	1551	1556	30	30	Pass	
S 59/60	AT	BF	N	A	40	10/29/2010	1605	1610	30	30	Pass	
S 59/60	AT	BF	N	B	76	10/29/2010	1605	1610	30	30	Pass	
S 59/69	AT	BF	Y		8	10/30/2010		0			Fail	Cap
S 59/70	AT	BF	Y		7	10/30/2010	736	741	30	29	Pass	
S 60/61	AT	BF	Y		98	10/29/2010	1605	1610	30	30	Pass	
S 60/69	AT	BF	Y		27	10/29/2010	1605	1610	30	28	Pass	
S 61/62	AT	BF	Y		78	10/29/2010	1623	1628	30	30	Pass	
S 61/67	AT	BF	Y		19	10/29/2010	1623	1628	30	30	Pass	
S 61/69	AT	BF	Y		8	10/29/2010	1605	1610	30	28	Pass	
S 62/63	AT	BF	Y		46	10/29/2010	1645	1650	30	29	Pass	
S 62/66	AT	BF	Y		11	10/29/2010	1645	1650	30	29	Pass	
S 62/67	AT	BF	Y		17	10/29/2010	1623	1628	30	29	Pass	

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.

Checked By:
Nathan Braun

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (1)	Time Stop (1)	Pressure Start (1)	Pressure Stop (1)	Pass/Fail	Comments
S 63/64	AT	BF	Y		37	10/29/2010	1702	1707	30	30	Pass	
S 63/66	AT	BF	Y		27	10/29/2010	1645	1650	30	29	Pass	
S 64/65	AT	BF	Y		32	10/29/2010	1702	1707	30	29	Pass	
S 65/66	AT	BF	Y		32	10/29/2010	1702	1707	30	30	Pass	
S 66/67	AT	BF	Y		18	10/29/2010	1623	1628	30	30	Pass	
S 66/68	AT	BF	Y		47	10/29/2010	1645	1650	30	28	Pass	
S 67/68	AT	BF	Y		29	10/30/2010	715	720	30	29	Pass	
S 67/68	AT	BF	Y		47	10/30/2010	715	720	30	29	Pass	
S 67/69	AT	BF	Y		27	10/29/2010	1623	1628	30	28	Pass	
S 68/69	AT	BF	Y		68	10/30/2010	715	720	30	30	Pass	
S 69/70	AT	BF	Y		123	10/30/2010	736	741	30	30	Pass	
S 70/71	AT	BF	N	A	100	10/30/2010	725	730	30	30	Pass	
S 70/71	AT	BF	N	B	52	10/30/2010	725	730	30	30	Pass	
S 71/72	AT	BF	Y		167	10/30/2010	749	754	30	29	Pass	
S 73/74	AT	BF	Y		248	11/6/2010	802	807	30	30	Pass	
S 74/75	AT	BF	Y		210	11/6/2010	802	807	30	30	Pass	
S 74/76	AT	BF	Y		40	11/6/2010	859	904	30	29	Pass	
S 75/76	AT	BF	Y		23	11/6/2010	1112	1117	30	28	Pass	
S 75/77	AT	BF	Y		210	11/6/2010	802	807	30	29	Pass	
S 75/146	AT	BF	Y		183	11/13/2010	851	856	30	30	Pass	
S 76/77	AT	BF	Y		40	11/6/2010	859	904	30	30	Pass	
S 77/78	AT	BF	Y		252	11/6/2010	802	807	30	30	Pass	
S 78/79	AT	BF	N	A	100	11/6/2010	945	950	30	30	Pass	

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (1)	Time Stop (1)	Pressure Start (1)	Pressure Stop (1)	Pass/Fail	Comments
S 78/79	AT	BF	N	B	71	11/6/2010	1300	1305	30	28	Pass	
S 78/80	AT	BF	Y		88	11/6/2010	915	923	30	30	Pass	
S 79/80	AT	BF	Y		29	11/6/2010	1120	1125	30	29	Pass	
S 79/81	AT	BF	Y		191	11/6/2010	945	950	30	30	Pass	
S 80/81	AT	BF	Y		68	11/6/2010	1058	1103	30	29	Pass	
S 81/82	AT	BF	N	A	200	11/6/2010	945	950	30	29	Pass	
S 81/82	AT	BF	N	B	55	11/6/2010	1250	1255	30	30	Pass	
S 82/83	AT	BF	Y		57	11/6/2010	945	950	30	30	Pass	
S 82/84	AT	BF	Y		200	11/6/2010	1315	1320	30	30	Pass	
S 83/84	AT	BF	Y		23	11/6/2010	1230	1235	30	29	Pass	
S 83/85	AT	BF	Y		57	11/6/2010	945	950	30	29	Pass	
S 84/85	AT	BF	N	A	100	11/6/2010	1600	1605	30	30	Pass	
S 84/85	AT	BF	N	B	100	11/6/2010	1615	1620	30	29	Pass	
S 85/86	AT	BF	Y		115	11/6/2010	1017	1022	30	30	Pass	
S 85/87	AT	BF	Y		150	11/6/2010	1630	1635	30	30	Pass	
S 86/87	AT	BF	Y		23	11/6/2010	1238	1243	30	30	Pass	
S 86/88	AT	BF	Y		115	11/6/2010	1017	1022	30	28	Pass	
S 87/88	AT	BF	Y		115	11/6/2010	1630	1635	30	28	Pass	
S 88/89	AT	BF	Y		265	11/6/2010	1017	1022	30	30	Pass	
S 89/90	AT	BF	Y		265	11/6/2010	1017	1022	30	30	Pass	
S 90/91	AT	BF	Y		267	11/6/2010	1035	1040	30	30	Pass	
S 91/92	AT	BF	Y		121	11/9/2010	1044	1049	30	29	Pass	
S 91/93	AT	BF	Y		140	11/9/2010	849	854	30	29	Pass	

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Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.
		Checked By:	Nathan Braun

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 92/93	AT	BF	Y		23	11/9/2010	1044	1049	30	30	Pass	
S 92/94	AT	BF	Y		121	11/9/2010	1044	1049	30	30	Pass	
S 93/94	AT	BF	Y		140	11/9/2010	904	909	30	30	Pass	
S 94/95	AT	BF	Y		276	11/9/2010	904	909	30	30	Pass	
S 95/96	AT	BF	Y		277	11/9/2010	917	922	30	30	Pass	
S 96/97	AT	BF	Y		277	11/9/2010	932	937	30	30	Pass	
S 97/98	AT	BF	Y		126	11/9/2010	1022	1027	30	30	Pass	
S 97/99	AT	BF	Y		151	11/9/2010	932	937	30	30	Pass	
S 98/99	AT	BF	Y		230	11/9/2010	1022	1027	30	30	Pass	
S 98/100	AT	BF	Y		126	11/9/2010	1022	1027	30	29	Pass	
S 99/100	AT	BF	Y		151	11/9/2010	946	951	30	30	Pass	
S 100/101	AT	BF	Y		277	11/9/2010	959	1004	30	30	Pass	
S 101/102	AT	BF	Y		278	11/9/2010	959	1004	30	30	Pass	
S 102/103	AT	BF	Y		275	11/10/2010	848	853	30	30	Pass	
S 103/104	AT	BF	Y		142	11/10/2010	1048	1053	30	30	Pass	
S 103/105	AT	BF	Y		133	11/10/2010	848	853	30	30	Pass	
S 104/105	AT	BF	Y		23	11/10/2010	1048	1053	30	30	Pass	
S 104/106	AT	BF	Y		142	11/10/2010	1048	1053	30	30	Pass	
S 105/106	AT	BF	Y		133	11/10/2010	903	908	30	30	Pass	
S 106/107	AT	BF	Y		275	11/10/2010	916	921	30	30	Pass	
S 107/108	AT	BF	Y		275	11/10/2010	916	921	30	30	Pass	
S 108/109	AT	BF	Y		275	11/10/2010	935	940	30	30	Pass	
S 109/110	AT	BF	Y		175	11/10/2010	1026	1031	30	30	Pass	

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure										RPR:		Nathan Braun		Checked By:		Nathan Braun	
Project Num:		05749.46.001										Material:		40-mil LLDPE					
Location:		Plymouth, NC										Installer:		Chesapeake Containment Systems, Inc.					
Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments							
S 109/111	AT	BF	Y		100	11/10/2010	935	940	30	30	Pass								
S 110/111	AT	BF	Y		23	11/10/2010	1026	1031	30	28	Pass								
S 110/112	AT	BF	Y		141	11/10/2010	1026	1031	30	30	Pass								
S 111/112	AT	BF	Y		125	11/10/2010	949	954	30	29	Pass								
S 112/113	AT	BF	Y		275	11/10/2010	949	954	30	30	Pass								
S 113/114	AT	BF	Y		275	11/10/2010	1002	1007	30	29	Pass								
S 114/115	AT	BF	Y		275	11/10/2010	1002	1007	30	30	Pass								
S 115/116	AT	BF	Y		114	11/12/2010	913	918	30	29	Pass								
S 115/117	AT	BF	Y		117	11/12/2010	1018	1023	30	30	Pass								
S 116/117	AT	BF	Y		23	11/12/2010	1018	1023	30	30	Pass								
S 116/117	AT	BF	Y		23	11/12/2010	1018	1023	30	30	Pass								
S 116/118	AT	BF	Y		160	11/12/2010	913	918	30	30	Pass								
S 117/118	AT	BF	Y		101	11/12/2010	1018	1023	30	30	Pass								
S 117/139	AT	BF	Y		8	11/12/2010	1032	1038	30	30	Pass								
S 117/140	AT	BF	Y		25	11/12/2010	1032	1037	30	29	Pass								
S 118/119	AT	BF	Y		223	11/12/2010	913	918	30	29	Pass								
S 118/137	AT	BF	Y		8	11/12/2010	1032	1037	30	29	Pass								
S 118/139	AT	BF	Y		25	11/12/2010	1032	1037	30	30	Pass								
S 119/120	AT	BF	Y		70	11/12/2010	913	918	30	30	Pass								
S 119/121	AT	BF	Y		137	11/12/2010	1004	1009	30	29	Pass								
S 119/136	AT	BF	Y		8	11/12/2010	1057	1102	30	28	Pass								
S 119/137	AT	BF	Y		25	11/12/2010	1057	1102	30	29	Pass								
S 120/121	AT	BF	Y		23	11/12/2010	1004	1009	30	30	Pass								

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Svstems, Inc.
		Checked By:	Nathan Braun

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 120/122	AT	BF	Y		68	11/12/2010	928	933	30	30	Pass	
S 121/122	AT	BF	Y		116	11/12/2010	1004	1009	30	30	Pass	
S 121/135	AT	BF	Y		8	11/12/2010	1057	1102	30	29	Pass	
S 121/136	AT	BF	Y		25	11/12/2010	1057	1102	30	29	Pass	
S 122/123	AT	BF	Y		156	11/12/2010	928	933	30	30	Pass	
S 122/129	AT	BF	Y		8	11/12/2010		0	30		Fail	Cap
S 122/135	AT	BF	Y		25	11/12/2010	1108	1113	30	29	Pass	
S 123/124	AT	BF	Y		128	11/12/2010	928	933	30	30	Pass	
S 123/129	AT	BF	Y		25	11/12/2010	1108	1113	30	30	Pass	
S 123/130	AT	BF	Y		8	11/12/2010	1108	1113	30	30	Pass	
S 124/125	AT	BF	Y		106	11/12/2010	928	933	30	29	Pass	
S 124/130	AT	BF	Y		25	11/12/2010	1108	1113	30	28	Pass	
S 124/131	AT	BF	Y		8	11/12/2010	1117	1122	30	30	Pass	
S 125/126	AT	BF	Y		83	11/12/2010	950	955	30	28	Pass	
S 125/131	AT	BF	Y		25	11/12/2010		0	30		Fail	Cap
S 125/132	AT	BF	Y		8	11/12/2010	1128	1133	30	29	Pass	
S 126/127	AT	BF	Y		60	11/12/2010	950	955	30	30	Pass	
S 126/132	AT	BF	Y		25	11/12/2010	1128	1133	30	28	Pass	
S 126/133	AT	BF	Y		8	11/12/2010	1140	1145	30	29	Pass	
S 127/128	AT	BF	Y		35	11/12/2010	950	955	30	28	Pass	
S 127/133	AT	BF	Y		25	11/12/2010	1140	1145	30	30	Pass	
S 127/134	AT	BF	Y		4	11/12/2010		0	30		Fail	Cap
S 128/134	AT	BF	Y		32	11/12/2010	1140	1145	30	30	Pass	

Table 14

Geomembrane Seams Non-Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Seam Reference	Test Type	NDT Oper	Whole Seam	Part Label	Length	Testing Date	Time Start (I)	Time Stop (I)	Pressure Start (I)	Pressure Stop (I)	Pass/Fail	Comments
S 128/134	AT	BF	Y		32	11/12/2010	1140	1145	30	30	Pass	
S 129/130	AT	BF	Y		139	11/13/2010	1521	1526	30	30	Pass	
S 129/135	AT	BF	Y		161	11/13/2010	1521	1526	30	28	Pass	
S 130/131	AT	BF	Y		126	11/13/2010	1315	1320	30	30	Pass	
S 131/132	AT	BF	Y		89	11/13/2010	1315	1320	30	28	Pass	
S 132/133	AT	BF	Y		65	11/13/2010	1315	1320	30	29	Pass	
S 133/134	AT	BF	Y		37	11/13/2010	1315	1320	30	29	Pass	
S 135/136	AT	BF	Y		184	11/13/2010	1521	1526	30	30	Pass	
S 136/137	AT	BF	Y		178	11/13/2010	1521	1526	30	30	Pass	
S 136/138	AT	BF	Y		23	11/13/2010	1533	1538	30	28	Pass	
S 137/138	AT	BF	Y		23	11/13/2010	1533	1538	30	29	Pass	
S 137/139	AT	BF	Y		205	11/13/2010	1533	1538	30	30	Pass	
S 138/139	AT	BF	Y		31	11/13/2010	1533	1538	30	30	Pass	
S 139/140	AT	BF	Y		256	11/13/2010	645	650	30	30	Pass	
S 140/141	AT	BF	Y		109	11/13/2010	645	650	30	30	Pass	
S 140/142	AT	BF	Y		162	11/13/2010	729	734	30	30	Pass	
S 141/142	AT	BF	Y		23	11/13/2010	743	748	30	30	Pass	
S 141/143	AT	BF	Y		109	11/13/2010	645	650	30	30	Pass	
S 142/143	AT	BF	Y		162	11/13/2010	743	748	30	30	Pass	
S 143/144	AT	BF	Y		225	11/13/2010	708	713	30	29	Pass	
S 144/145	AT	BF	Y		228	11/13/2010	708	713	30	30	Pass	
S 145/146	AT	BF	Y		180	11/13/2010	810	815	30	30	Pass	

NOTES:
 (1) The maximum allowable pressure loss over a five-minute period is 2 psig.

Geomembrane Repair Information

Table 16

Geomembrane Repairs Information

Project:	Landfill No. 3 - Phase IA & IB Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 1	3 - 5 - -	DT	10/24/2010	Patch	2 x 6	CF	5	812	VN 10/30/2010	
R 2	2 - 3 - 4 -	CS	10/24/2010	Patch	2 x 2	CF	5	821	VN 10/30/2010	
R 3	3 - 4 - 5 -	CS	10/24/2010	Patch	2 x 2	CF	5	818	VN 10/30/2010	
R 4	7 - 9 - -	DT	10/24/2010	Patch	2 x 6	CF	5	838	VN 10/30/2010	
R 5	7 - 8 - 9 -	CS	10/24/2010	Patch	2 x 2	CF	5	903	VN 10/30/2010	
R 6	6 - 7 - 8 -	CS	10/24/2010	Patch	2 x 3	CF	5	900	VN 10/30/2010	
R 7	12 - 14 - -	AT	10/24/2010	Patch	2 x 8	CF	5	854	VN 10/30/2010	
R 8	12 - 14 - -	DT	10/24/2010	Patch	2 x 6	CF	5	842	VN 10/30/2010	
R 9	14 - 15 - 16 -	CS	10/24/2010	Patch	2 x 2	CF	5	933	VN 10/30/2010	
R 10	15 - 16 - 17 -	CS	10/24/2010	Patch	2 x 2	CF	5	937	VN 10/30/2010	
R 11	17 - 18 - -	DT	10/24/2010	Patch	2 x 6	CF	5	945	VN 10/30/2010	
R 12	17 - 18 - -	AT	10/24/2010	Patch	2 x 4	CF	5	910	VN 10/30/2010	
R 13	18 - 19 - -	AT	10/24/2010	Patch	2 x 4	CF	5	922	VN 10/30/2010	
R 14	18 - 19 - -	AT	10/24/2010	Patch	2 x 3	CF	5	927	VN 10/30/2010	
R 15	18 - 19 - -	BO	10/24/2010	Patch	2 x 2	CF	5	1000	VN 10/30/2010	
R 16	21 - 23 - -	DT	10/24/2010	Patch	2 x 6	CF	5	1000	VN 10/30/2010	
R 17	23 - 24 - 25 -	CS	10/24/2010	Patch	1 x 2	CF	5	1012	VN 10/30/2010	
R 18	24 - 25 - 26 -	CS	10/24/2010	Patch	3 x 5	CF	5	1442	VN 10/30/2010	
R 19	27 - 28 - -	DT	10/24/2010	Patch	2 x 7	CF	5	1509	VN 10/30/2010	
R 20	30 - 31 - 32 -	CS	10/24/2010	Patch	3 x 3	CF	5	1414	VN 10/30/2010	
R 21	31 - 32 - -	AT	10/24/2010	Patch	1 x 3	CF	5	1418	VN 10/30/2010	
R 22	32 - 33 - -	AT	10/24/2010	Patch	1 x 3	CF	5	1427	VN 10/30/2010	
R 23	31 - 32 - 33 -	CS	10/24/2010	Patch	1 x 3	CF	5	1422	VN 10/30/2010	
R 24	34 - 35 - -	DT	10/24/2010	Patch	2 x 7	CF	5	1530	VN 10/30/2010	

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Table 16

Geomembrane Repairs Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 25	35 - 35 - -	DT	10/24/2010	Patch	2 x 7	CF	5	1523	VN 10/30/2010	
R 26	36 - 37 - 38 -	CS	10/24/2010	Patch	2 x 3	CF	5	1557	VN 10/30/2010	
R 27	35 - 36 - -	AT	10/24/2010	Patch	2 x 3	CF	5	1553	VN 10/30/2010	
R 28	33 - 34 - -	DT	10/24/2010	Patch	2 x 7	CF	5	1558	VN 10/30/2010	
R 29	32 - 33 - -	DT	10/24/2010	Patch	2 x 7	CF	5	1558	VN 10/30/2010	
R 30	23 - 24 - -	DT	10/24/2010	Patch	2 x 7	CF	5	1033	VN 10/30/2010	
R 31	23 - 24 - -	AT	10/24/2010	Patch	2 x 2	CF	5	1053	VN 10/30/2010	
R 32	21 - 22 - 23 -	CS	10/24/2010	Patch	3 x 3	CF	5	1053	VN 10/30/2010	
R 33	21 - 22 - -	AT	10/24/2010	Patch	2 x 2	CF	5	1101	VN 10/30/2010	
R 34	20 - 21 - 22 -	CS	10/24/2010	Patch	2 x 2	CF	5	1106	VN 10/30/2010	
R 35	12 - 13 - 14 -	CS	10/24/2010	Patch	3 x 6	CF	5	1315	VN 10/30/2010	
R 36	9 - 12 - 13 -	CS	10/24/2010	Patch	2 x 2	CF	5	1319	VN 10/30/2010	
R 37	5 - 6 - -	DT	10/24/2010	Patch	2 x 6	CF	5	1330	VN 10/30/2010	
R 38	1 - 2 - -	DT	10/24/2010	Patch	2 x 6	CF	5	1343	VN 10/30/2010	
R 39	6 - 8 - -	AT	10/24/2010	Patch	2 x 2	CF	5	1328	VN 10/30/2010	
R 40	17 - 19 - -	AT	10/24/2010	Patch	2 x 3	CF	5	1148	VN 10/30/2010	
R 41	18 - 20 - -	DT	10/24/2010	Patch	2 x 6	CF	5	1139	VN 10/30/2010	
R 42	19 - 20 - -	DT	10/24/2010	Patch	2 x 6	EW	9	1300	VN 10/30/2010	
R 43	20 - 22 - -	AT	10/24/2010	Patch	2 x 3	CF	5	1127	VN 10/30/2010	
R 44	22 - 23 - -	AT	10/24/2010	Patch	2 x 2	CF	5	1122	VN 10/30/2010	
R 45	24 - 26 - -	AT	10/24/2010	Patch	2 x 5	CF	5	1025	VN 10/30/2010	
R 46	24 - 26 - -	AT	10/24/2010	Patch	1 x 2	EW	9	1020	VN 10/30/2010	
R 47	32 - 33 - -	AT	10/24/2010	Patch	1 x 1	EW	9	1015	VN 11/5/2010	

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Table 16

Geomembrane Repairs Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 48	19 - - -		10/24/2010	Patch	7 x 7	EW	9	1010	VN 11/5/2010	Pipe Boot Pipe Boot
R 49	18 - 19 - -	AT	10/24/2010	Patch	2 x 7	EW	9	1000	VN 11/5/2010	
R 50	16 - 17 - -	BO	10/24/2010	Patch	2 x 6	EW	9	1005	VN 11/5/2010	
R 51	14 - - -		10/24/2010	Patch	6 x 6	KX	1	1100	Phet 10/24/2010	Pipe Boot
R 52	39 - 40 - 41 -	CS	10/27/2010	Patch	2 x 3	EW	9	852	VN 11/1/2010	
R 53	40 - 41 - 42 -	CS	10/27/2010	Patch	2 x 2	EW	9	900	VN 11/1/2010	
R 54	37 - 38 - 39 -	CS	10/27/2010	Patch	2 x 3	EW	9	915	VN 10/30/2010	
R 55	36 - 37 - -	DT	10/27/2010	Patch	2 x 3	EW	9	1115	VN 11/1/2010	
R 56	36 - 37 - -	AT	10/27/2010	Patch	3 x 4	EW	9	1055	VN 11/1/2010	
R 57	35 - - -	DE	10/27/2010	Patch	2 x 2	EW	9	1045	VN 11/1/2010	
R 58	27 - 28 - 29 -	CS	10/27/2010	Patch	2 x 2	EW	9	1100	VN 10/30/2010	
R 59	28 - 29 - -	AT	10/27/2010	Patch	2 x 4	EW	9	1055	VN 10/30/2010	
R 60	28 - 29 - -	AT	10/27/2010	Patch	2 x 4	EW	9	1050	VN 10/30/2010	
R 61	28 - 29 - 30 -	CS	10/27/2010	Patch	2 x 3	EW	9	935	VN 10/30/2010	
R 62	38 - 39 - -	DT	10/27/2010	Patch	2 x 6	KX	1	1125	VN 10/30/2010	
R 63	42 - 43 - -	DT	10/27/2010	Patch	2 x 6	KX	1	1130	VN 11/1/2010	
R 64	43 - 45 - -	AT	10/27/2010	Patch	1 x 3	KX	1	1100	KX 11/5/2010	
R 65	43 - 44 - 45 -	CS	10/27/2010	Patch	2 x 2	EW	9	1142	VN 11/1/2010	
R 66	44 - 45 - -	AT	10/27/2010	Patch	1 x 2	EW	9	1148	VN 11/1/2010	
R 67	44 - 45 - 46 -	CS	10/27/2010	Patch	2 x 3	EW	9	1152	VN 11/1/2010	
R 68	44 - 46 - -	DT	10/27/2010	Patch	2 x 6	KX	1	1140	VN 11/15/2010	
R 69	46 - 48 - -	AT	10/29/2010	Patch	5 x 6	EW	9	1540	KX 11/5/2010	
R 70	48 - 49 - -	AT	10/29/2010	Patch	2 x 4	EW	9	1530	KX 11/5/2010	

Table 16

Geomembrane Repairs Information

Project: Landfill No. 3 - Phase 1A & 1B Closure	RPR: Nathan Braun	Checked By: Nathan Braun
Project Num: 05749.46.001	Material: 40-mil LLDPE	
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.	

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 71	49 - 50 - -	AT	10/29/2010	Patch	2 x 3	EW	9	1535	KX 11/5/2010	
R 72	46 - 48 - -	AT	10/29/2010	Patch	2 x 3	CF	5	1603	VN 11/7/2010	
R 73	46 - 47 - 48 -	CS	10/29/2010	Patch	2 x 3	CF	5	1539	VN 11/7/2010	
R 74	47 - - -	DE	10/29/2010	Patch	1 x 1	CF	5	1534	VN 11/7/2010	
R 75	47 - 48 - -	AT	10/29/2010	Patch	2 x 3	CF	5	1532	VN 11/7/2010	
R 76	47 - 48 - -	AT	10/29/2010	Patch	1 x 1	CF	5	1527	VN 11/7/2010	
R 77	47 - 48 - 49 -	CS	10/29/2010	Patch	2 x 4	CF	5	1525	VN 11/7/2010	
R 78	47 - - -	DE	10/29/2010	Patch	2 x 2	CF	5	1520	VN 11/7/2010	
R 79	47 - - -	DE	10/29/2010	Patch	2 x 2	CF	5	1517	VN 11/7/2010	
R 80	47 - - -	DE	10/29/2010	Patch	2 x 2	CF	5	1515	VN 11/7/2010	
R 81	47 - - -	DE	10/29/2010	Patch	1 x 1	CF	5	1512	VN 11/7/2010	
R 82	47 - - -	DE	10/30/2010	Patch	1 x 1	CF	5	957	VN 11/7/2010	
R 83	49 - 50 - -	DT	10/29/2010	Patch	2 x 6	CF	5	1532	VN 11/7/2010	
R 84	50 - 54 - -		10/29/2010	Patch	4 x 8	EW	9	1500	VN 11/7/2010	Pipe Boot
R 85	54 - 55 - -	DT	10/29/2010	Patch	2 x 6	CF	5	1615	VN 11/7/2010	
R 86	56 - 71 - 72 -	CS	10/30/2010	Patch	3 x 4	CF	5	924	VN 11/7/2010	
R 87	56 - 57 - 71 -	CS	10/30/2010	Patch	3 x 4	CF	5	1030	VN 11/7/2010	
R 88	57 - 71 - -	AT	10/30/2010	Cap	2 x 15	CF	5	915	VN 11/7/2010	Cap whole seam
R 89	57 - 70 - 71 -	CS	10/30/2010	Patch	2 x 5	CF	5	920	VN 11/7/2010	
R 90	3 - - -		10/30/2010	Patch	7 x 8	EW	9	1615	VN 10/30/2010	Pipe boot
R 91	9 - - -		10/30/2010	Patch	8 x 9	EW	9	1620	VN 10/30/2010	Pipe boot
R 92	17 - - -		10/30/2010	Patch	8 x 9	EW	9	1640	VN 10/30/2010	Pipe boot
R 93	20 - 21 - -		10/30/2010	Patch	5 x 5	EW	9	1650	VN 10/30/2010	Pipe boot
R 94	30 - - -	DE	10/30/2010	Patch	1 x 1	CF	5	1556	VN 10/30/2010	

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Table 16

Geomembrane Repairs Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 95	26 - 27 - -		10/30/2010	Patch	6 x 8	EW	9	1536	VN 10/30/2010	Pipe boot
R 96	31 - - -		10/30/2010	Patch	5 x 8	CF	5	1547	VN 10/30/2010	Pipe boot
R 97	36 - - -		10/30/2010	Patch	6 x 7	CF	5	1533	VN 10/30/2010	Pipe Boot
R 98	41 - 42 - -		10/30/2010	Patch	6 x 7	CF	5	1702	VN 11/1/2010	Pipe Boot
R 99	46 - 47 - -		10/30/2010	Patch	4 x 5	CF	5	1751	VN 11/15/2010	Pipe Boot
R 100	15 - 16 - -	IN	10/30/2010	Patch	1 x 1	CF	5	1330	BF 10/30/2010	
R 101	57 - 59 - 70 -	CS	10/30/2010	Patch	2 x 2	CF	5	853	VN 11/7/2010	
R 102	59 - 60 - 69 - 70	CS	10/30/2010	Patch	2 x 8	CF	5	847	VN 11/7/2010	
R 103	60 - 61 - 69 -	CS	10/29/2010	Patch	2 x 3	CF	5	1644	VN 11/7/2010	
R 104	61 - 67 - 69 -	CS	10/29/2010	Patch	2 x 7	CF	5	1757	VN 11/7/2010	
R 105	61 - 62 - 67 -	CS	10/29/2010	Patch	2 x 2	CF	5	1801	VN 11/7/2010	
R 106	62 - 66 - 67 -	CS	10/29/2010	Patch	2 x 2	CF	5	1805	VN 11/7/2010	
R 107	62 - 63 - 66 -	CS	10/29/2010	Patch	2 x 3	CF	5	1810	VN 11/7/2010	
R 108	66 - 67 - 68 -	CS	10/30/2010	Patch	1 x 4	CF	5	825	VN 11/7/2010	
R 109	63 - 64 - 65 - 66	CS	10/30/2010	Patch	2 x 3	CF	5	800	KX 11/5/2010	
R 110	63 - - -		10/30/2010	Patch	5 x 10	KX	1	830	VN 11/15/2010	Pipe Boot
R 111	62 - 63 - -		10/30/2010	Patch	10 x 15	KX	1	1000	KX 11/5/2010	Pipe Boot
R 112	68 - 69 - -	AT	10/30/2010	Patch	1 x 3	CF	5	1113	VN 11/7/2010	
R 113	67 - 68 - 69 -	CS	10/30/2010	Patch	2 x 2	CF	5	830	VN 11/7/2010	
R 114	70 - 71 - -	AT	10/30/2010	Patch	2 x 3	CF	5	942	VN 11/15/2010	
R 115	59 - 60 - -	AT	10/30/2010	Patch	2 x 3	EW	9	745	VN 11/7/2010	
R 116	59 - 60 - -	DT	10/30/2010	Patch	2 x 6	EW	9	1105	VN 11/7/2010	
R 117	57 - 58 - 59 -	CS	10/30/2010	Patch	3 x 3	EW	9	1740	VN 11/7/2010	
R 118	53 - 56 - 57 - 58	CS	10/30/2010	Patch	2 x 3	EW	9	1720	VN 11/7/2010	

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Table 16

Geomembrane Repairs Information

Project: Landfill No. 3 - Phase 1A & 1B Closure	RPR: Nathan Braun	Checked By: Nathan Braun
Project Num: 05749.46.001	Material: 40-mil LLDPE	
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.	

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 119	52 - 53 - 55 - 56	CS	10/30/2010	Patch	2 x 3	EW	9	1700	VN 11/7/2010	
R 120	52 - - -		10/29/2010	Patch	10 x 20	KX	1	1745	VN 11/7/2010	Pipe Boot
R 121	52 - 53 - -	AT	10/29/2010	Patch	2 x 3	EW	9	1800	KX 11/7/2010	
R 122	52 - 53 - -	DT	10/30/2010	Patch	2 x 6	EW	9	750	VN 11/7/2010	
R 123	51 - 52 - 54 - 55	CS	10/30/2010	Patch	4 x 5	EW	9	1710	VN 11/7/2010	
R 124	51 - 54 - -		10/30/2010	Patch	4 x 10	EW	9	1720	VN 11/7/2010	Pipe Boot
R 125	50 - 51 - 54 -	CS	10/30/2010	Patch	2 x 8	EW	9	1630	VN 11/7/2010	
R 126	51 - 54 - -	AT	10/30/2010	Cap	2 x 12	EW	9	1000	VN 11/7/2010	Cap whole seam
R 127	77 - - -	IN	11/6/2010	Patch	2 x 2	EW	9	905	VN 11/7/2010	
R 128	77 - - -	IN	11/6/2010	Patch	1 x 1	EW	9	900	VN 11/7/2010	
R 129	82 - - -	IN	11/6/2010	Patch	3 x 7	KX	1	900	VN 11/7/2010	
R 130	89 - - -	IN	11/6/2010	Patch	5 x 8	KX	1	1500	KX 11/6/2010	
R 131	71 - 72 - -	DT	11/7/2010	Patch	2 x 7	VN	1	1130	VN 11/6/2010	
R 132	10 - 11 - 73 -	CS	11/6/2010	Patch	2 x 2	CF	5	934	VN 11/6/2010	
R 133	10 - 73 - 74 -	CS	11/6/2010	Patch	2 x 3	CF	5	949	VN 11/6/2010	
R 134	1 - 10 - 74 -	CS	11/6/2010	Patch	2 x 2	CF	5	955	VN 11/6/2010	
R 135	1 - 74 - 76 -	CS	11/6/2010	Patch	2 x 2	CF	5	1000	VN 11/6/2010	
R 136	1 - 2 - 76 -	CS	11/6/2010	Patch	2 x 2	CF	5	1003	VN 11/6/2010	
R 137	2 - 76 - 77 -	CS	11/6/2010	Patch	2 x 2	CF	5	1019	VN 11/6/2010	
R 138	2 - 3 - 77 -	CS	11/6/2010	Patch	2 x 2	CF	5	1025	VN 11/6/2010	
R 139	3 - 77 - 78 -	CS	11/6/2010	Patch	2 x 2	CF	5	1043	VN 11/6/2010	
R 140	3 - 5 - 78 -	CS	11/6/2010	Patch	2 x 2	CF	5	1028	VN 11/6/2010	
R 141	5 - 78 - 80 -	CS	11/6/2010	Patch	2 x 2	CF	5	1056	VN 11/6/2010	
R 142	5 - 6 - 80 -	CS	11/6/2010	Patch	2 x 2	CF	5	1059	VN 11/6/2010	

Table 16

Geomembrane Repairs Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 143	6-80--	AT	11/6/2010	Patch	2 x 2	CF	5	1133	VN 11/6/2010	
R 144	80-81--	DT	11/6/2010	Patch	2 x 6	CF	5	1135	VN 11/6/2010	
R 145	6-80-81-	CS	11/6/2010	Patch	2 x 2	CF	5	1126	VN 11/6/2010	
R 146	6-7-81-	CS	11/6/2010	Patch	2 x 2	CF	5	1242	VN 11/6/2010	
R 147	7-81-82-	CS	11/6/2010	Patch	2 x 2	CF	5	1558	VN 11/6/2010	
R 148	7-9-82-	CS	11/6/2010	Patch	2 x 2	CF	5	1601	VN 11/6/2010	
R 149	9-82-84-	CS	11/6/2010	Patch	2 x 2	CF	5	1617	VN 11/6/2010	
R 150	9-12-84-	CS	11/6/2010	Patch	2 x 2	CF	5	1625	VN 11/6/2010	
R 151	12-84-85-	CS	11/6/2010	Patch	3 x 4	CF	5	1643	VN 11/6/2010	
R 152	12-14-85-	CS	11/6/2010	Patch	3 x 5	CF	5	1712	VN 11/6/2010	
R 153	14-85-87-	CS	11/6/2010	Patch	2 x 2	CF	5	1716	VN 11/6/2010	
R 154	14-15-87-	CS	11/6/2010	Patch	2 x 4	CF	5	1725	VN 11/6/2010	
R 155	15-87-88-	CS	11/6/2010	Patch	2 x 2	CF	5	1728	VN 11/6/2010	
R 156	15-17-88-	CS	11/6/2010	Patch	2 x 2	CF	5	1731	VN 11/6/2010	
R 157	17-88-89-	CS	11/6/2010	Patch	2 x 2	CF	5	1734	VN 11/6/2010	
R 158	17-18-89-	CS	11/6/2010	Patch	2 x 4	CF	5	1744	VN 11/6/2010	
R 159	82-84--	DT	11/6/2010	Patch	2 x 6	EW	9	1700	VN 11/6/2010	
R 160	79-80-81-	CS	11/6/2010	Patch	2 x 2	EW	9	1555	VN 11/6/2010	
R 161	78-79-80-	CS	11/6/2010	Patch	2 x 3	EW	9	1600	VN 11/6/2010	
R 162	75-86-77-	CS	11/6/2010	Patch	2 x 3	CF	5	1303	VN 11/6/2010	
R 163	75-77--	DT	11/6/2010	Patch	2 x 6	CF	5	1111	VN 11/6/2010	
R 164	74-75-76-	CS	11/6/2010	Patch	2 x 6	CF	5	1300	VN 11/6/2010	
R 165	86-87-88-	CS	11/6/2010	Patch	2 x 2	KX	1	1730	VN 11/6/2010	
R 166	87--	IN	11/6/2010	Patch	1 x 1	KX	1	1600	VN 11/6/2010	

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Table 16

Geomembrane Repairs Information

Project:	Landfill No. 3 - Phase IA & IB Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 167	85 - 86 - 87 -	CS	11/6/2010	Patch	3 x 3	KX	1	1710	VN 11/6/2010	
R 168	84 - 85 - -	AT	11/6/2010	Patch	1 x 1	KX	1	1630	VN 11/6/2010	
R 169	84 - 85 - -	DT	11/6/2010	Patch	2 x 6	KX	1	1740	VN 11/6/2010	
R 170	83 - 84 - 85 -	CS	11/6/2010	Patch	2 x 2	KX	1	1715	VN 11/6/2010	
R 171	82 - 83 - 84 -	CS	11/6/2010	Patch	2 x 3	EW	9	1615	VN 11/6/2010	
R 172	81 - 82 - -	AT	11/6/2010	Patch	1 x 3	EW	9	1530	VN 11/6/2010	
R 173	78 - 79 - -	AT	11/6/2010	Patch	1 x 3	EW	9	1610	VN 11/6/2010	
R 174	74 - 75 - -	DT	11/6/2010	Patch	2 x 6	EW	9	1124	VN 11/6/2010	
R 175	78 - 79 - -	DT	11/6/2010	Patch	2 x 6	EW	9	1000	VN 11/6/2010	
R 176	87 - 88 - -	DT	11/12/2010	Patch	2 x 6	CF	5	928	VN 11/16/2010	
R 177	88 - 89 - -	DT	11/13/2010	Patch	2 x 6	EW	9	720	VN 11/16/2010	
R 178	18 - 89 - 90 -	CS	11/12/2010	Patch	2 x 2	CF	5	855	VN 11/15/2010	
R 179	18 - 19 - 90 -	CS	11/12/2010	Patch	1 x 1	CF	5	857	VN 11/15/2010	
R 180	19 - 90 - 91 -	CS	11/12/2010	Patch	2 x 8	CF	5	910	VN 11/15/2010	
R 181	20 - 90 - -	AT	11/12/2010	Patch	2 x 3	CF	5	911	VN 11/15/2010	
R 182	20 - 91 - 93 -	CS	11/12/2010	Patch	3 x 7	CF	5	931	VN 11/15/2010	
R 183	20 - 21 - 93 -	CS	11/12/2010	Patch	2 x 2	CF	5	935	VN 11/15/2010	
R 184	21 - 93 - 94 -	CS	11/12/2010	Patch	2 x 2	CF	5	947	VN 11/15/2010	
R 185	23 - 23 - 94 -	CS	11/12/2010	Patch	2 x 2	CF	5	950	VN 11/15/2010	
R 186	23 - 94 - 95 -	CS	11/12/2010	Patch	2 x 2	CF	5	953	VN 11/15/2010	
R 187	25 - 25 - 94 -	CS	11/12/2010	Patch	2 x 2	CF	5	956	VN 11/15/2010	
R 188	26 - 95 - 96 -	CS	11/12/2010	Patch	3 x 10	CF	5	1023	VN 11/15/2010	
R 189	26 - 96 - 97 -	CS	11/12/2010	Patch	2 x 2	CF	5	1026	VN 11/15/2010	
R 190	26 - 27 - 97 -	CS	11/12/2010	Patch	2 x 3	CF	5	1050	VN 11/16/2010	

EB

Table 16

Geomembrane Repairs Information

Project: Landfill No. 3 - Phase 1A & 1B Closure	RPR: Nathan Braun	Checked By: Nathan Braun
Project Num: 05749-46-001	Material: 40-mil LLDPE	
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.	

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 191	27 - 97 - 99 -	CS	11/12/2010	Patch	2 x 2	CF	5	1035	VN 11/16/2010	
R 192	97 - 99 - -	DT	11/12/2010	Patch	2 x 6	CF	5	1050	VN 11/16/2010	
R 193	94 - 95 - -	DT	11/12/2010	Patch	2 x 6	CF	5	1010	VN 11/16/2010	
R 194	27 - 28 - 96 -	CS	11/12/2010	Patch	2 x 3	CF	5	1500	VN 11/16/2010	
R 195	28 - 99 - 100 -	CS	11/12/2010	Patch	2 x 2	CF	5	1051	VN 11/16/2010	
R 196	28 - 30 - 100 -	CS	11/12/2010	Patch	2 x 4	CF	5	1103	VN 11/16/2010	
R 197	30 - 100 - 101 -	CS	11/12/2010	Patch	2 x 2	CF	5	1108	VN 11/16/2010	
R 198	30 - 31 - 101 -	CS	11/12/2010	Patch	2 x 2	CF	5	1117	VN 11/16/2010	
R 199	31 - 101 - 102 -	CS	11/12/2010	Patch	2 x 2	CF	5	1112	VN 11/16/2010	
R 200	31 - 33 - 102 -	CS	11/12/2010	Patch	2 x 4	CF	5	1124	VN 11/16/2010	
R 201	33 - 102 - 103 -	CS	11/12/2010	Patch	2 x 6	CF	5	1137	VN 11/16/2010	
R 202	33 - 34 - 103 -	CS	11/12/2010	Patch	2 x 4	CF	5	1315	VN 11/16/2010	
R 203	34 - 103 - 105 -	CS	11/12/2010	Patch	2 x 2	CF	5	1320	VN 11/16/2010	
R 204	34 - 35 - 105 -	CS	11/12/2010	Patch	3 x 3	CF	5	1327	VN 11/16/2010	
R 205	35 - 105 - 106 -	CS	11/10/2010	Patch	3 x 8	CF	5	1341	VN 11/16/2010	Cap 35-106
R 206	36 - 38 - 107 -	CS	11/10/2010	Patch	3 x 8	CF	5	1400	VN 11/16/2010	Cap 36-107
R 207	38 - 107 - 108 -	CS	11/10/2010	Patch	2 x 8	CF	5	1410	VN 11/16/2010	Cap 38-108
R 208	39 - 108 - 109 -	CS	11/10/2010	Patch	2 x 3	CF	5	1429	VN 11/16/2010	
R 209	39 - 41 - 109 -	CS	11/10/2010	Patch	4 x 7	CF	5	1422	VN 11/16/2010	
R 210	41 - 109 - 111 -	CS	11/10/2010	Patch	2 x 2	CF	5	1441	VN 11/16/2010	
R 211	41 - 42 - 111 -	CS	11/10/2010	Patch	2 x 2	CF	5	1446	VN 11/16/2010	
R 212	42 - 111 - 112 -	CS	11/10/2010	Patch	2 x 2	CF	5	1454	VN 11/16/2010	
R 213	42 - 43 - 112 -	CS	11/10/2010	Patch	2 x 4	CF	5	1524	VN 11/16/2010	
R 214	43 - 112 - 113 -	CS	11/10/2010	Patch	2 x 10	CF	5	1559	VN 11/16/2010	

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Table 16

Geomembrane Repairs Information

Project: Landfill No. 3 - Phase 1A & 1B Closure	RPR: Nathan Braun	Checked By: Nathan Braun
Project Num: 05749.46.001	Material: 40-mil LLDPE	
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.	

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 215	43 - 44 - 113 -	CS	11/10/2010	Patch	2 x 2	CF	5	1653	VN 11/16/2010	
R 216	44 - 113 - 114 -	CS	11/10/2010	Patch	2 x 2	CF	5	1610	VN 11/16/2010	
R 217	44 - - -	IN	11/10/2010	Patch	1 x 1	CF	5	1619	VN 11/16/2010	
R 218	44 - 46 - 114 -	CS	11/10/2010	Patch	2 x 3	CF	5	1617	VN 11/16/2010	
R 219	46 - 114 - -	AT	11/10/2010	Patch	2 x 3	CF	5	1632	VN 11/16/2010	
R 220	46 - 114 - 115 -	CS	11/10/2010	Patch	2 x 5	CF	5	1644	VN 11/16/2010	
R 221	47 - 115 - -	AT	11/10/2010	Patch	2 x 3	CF	5	1657	VN 11/15/2010	
R 222	47 - 115 - 117 - 140	CS	11/13/2010	Patch	8 x 8	CF	5	729	VN 11/15/2010	141
R 223	117 - 139 - 140 -	CS	11/13/2010	Patch	5 x 6	CF	5	829	VN 11/15/2010	
R 224	117 - 118 - 139 -	CS	11/13/2010	Patch	2 x 2	CF	5	834	VN 11/15/2010	
R 225	118 - 137 - 139 -	CS	11/13/2010	Patch	2 x 2	CF	5	840	VN 11/15/2010	
R 226	118 - 119 - 137 -	CS	11/13/2010	Patch	2 x 3	CF	5	845	VN 11/15/2010	
R 227	119 - 136 - 137 -	CS	11/13/2010	Patch	1 x 1	CF	5	849	VN 11/15/2010	
R 228	119 - 121 - 136 -	CS	11/13/2010	Patch	1 x 2	CF	5	853	VN 11/15/2010	
R 229	121 - 135 - 136 -	CS	11/13/2010	Patch	1 x 1	CF	5	856	VN 11/15/2010	
R 230	121 - 122 - 135 -	CS	11/13/2010	Patch	1 x 1	CF	5	900	VN 11/15/2010	
R 231	122 - 123 - 129 - 135	CS	11/13/2010	Patch	2 x 10	CF	5	926	VN 11/15/2010	
R 232	121 - 122 - -	DT	11/13/2010	Patch	2 x 6	CF	5	933	VN 11/15/2010	
R 233	216 - 217 - 218 -	CS	11/13/2010	Patch	1 x 1	EW	9	1525	VN 11/15/2010	
R 234	115 - 116 - 117 -	CS	11/13/2010	Patch	1 x 1	EW	9	1530	VN 11/15/2010	
R 235	115 - 117 - -	DT	11/13/2010	Patch	2 x 6	EW	9	1535	VN 11/15/2010	
R 236	113 - 114 - -	DT	11/13/2010	Patch	2 x 6	EW	9	1600	VN 11/15/2010	
R 237	111 - - -	IN	11/13/2010	Patch	1 x 1	EW	9	1445	VN 11/15/2010	
R 238	111 - - -	IN	11/13/2010	Patch	1 x 1	EW	9	1435	VN 11/15/2010	

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Table 16

Geomembrane Repairs Information

Project: Landfill No. 3 - Phase IA & IB Closure	RPR: Nathan Braun	Checked By: Nathan Braun
Project Num: 05749.46.001	Material: 40-mil LLDPE	
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.	

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 239	110 - 111 - 112 -	CS	11/13/2010	Patch	1 x 2	EW	9	1440	VN 11/15/2010	
R 240	109 - 110 - 111 -	CS	11/13/2010	Patch	1 x 2	EW	9	1430	VN 11/15/2010	
R 241	108 - 109 - -	BO	11/13/2010	Patch	2 x 6	EW	9	1425	VN 11/15/2010	
R 242	108 - 109 - -	DT	11/13/2010	Patch	2 x 6	EW	9	1431	VN 11/16/2010	
R 243	104 - 106 - -	DT	11/13/2010	Patch	2 x 6	EW	9	1415	VN 11/15/2010	CS 104-105-106
R 244	104 - 105 - -	AT	11/13/2010	Patch	1 x 3	EW	9	1410	VN 11/15/2010	
R 245	103 - 104 - 105 -	CS	11/13/2010	Patch	1 x 3	EW	9	1402	VN 11/15/2010	
R 246	101 - - -		11/13/2010	Patch	4 x 7	EW	9	1100	VN 11/15/2010	Pipe Boot 4-inch
R 247	100 - 101 - -	DT	11/13/2010	Patch	2 x 6	EW	9	915	VN 11/15/2010	
R 248	98 - 99 - 100 -	CS	11/13/2010	Patch	1 x 1	EW	9	920	VN 11/15/2010	
R 249	97 - 98 - 99 -	CS	11/13/2010	Patch	2 x 2	EW	9	940	VN 11/15/2010	
R 250	92 - 93 - 94 -	CS	11/13/2010	Patch	1 x 1	EW	9	725	VN 11/15/2010	
R 251	91 - 92 - 93 -	CS	11/13/2010	Patch	1 x 1	EW	9	730	VN 11/15/2010	
R 252	90 - 91 - -	DT	11/13/2010	Patch	2 x 6	EW	9	735	VN 11/16/2010	
R 253	101 - 102 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1144	VN 11/15/2010	
R 254	135 - 136 - -	DT	11/13/2010	Patch	2 x 6	CF	5	939	VN 11/15/2010	
R 255	123 - 129 - 130 -	CS	11/13/2010	Patch	2 x 4	CF	5	945	VN 11/15/2010	
R 256	123 - 124 - 130 -	CS	11/13/2010	Patch	3 x 6	CF	5	951	VN 11/15/2010	
R 257	124 - 130 - 131 -	CS	11/13/2010	Patch	1 x 1	CF	5	959	VN 11/15/2010	
R 258	124 - 125 - 131 -	CS	11/13/2010	Patch	3 x 6	CF	5	1007	VN 11/15/2010	
R 259	125 - 131 - -	CS	11/13/2010	Patch	3 x 4	CF	5	1030	VN 11/15/2010	
R 260	124 - 125 - -	CS	11/13/2010	Patch	3 x 5	CF	5	1022	VN 11/15/2010	
R 261	124 - 125 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1048	VN 11/15/2010	
R 262	125 - 131 - 132 -	CS	11/13/2010	Patch	2 x 2	CF	5	1038	VN 11/15/2010	

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Table 16

Geomembrane Repairs Information

Project: Landfill No. 3 - Phase JA & 1B Closure	RPR: Nathan Braun	Checked By: Nathan Braun
Project Num: 05749.46.001	Material: 40-mil LLDPE	
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.	

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing Oper/Dt	Comments/Location
R 263	125 - 126 - 132 -	CS	11/13/2010	Patch	1 x 1	CF	5	1042	VN 11/15/2010	
R 264	120 - 121 - 122 -	CS	11/13/2010	Patch	1 x 1	EW	9	1715	VN 11/15/2010	
R 265	119 - 120 - 121 -	CS	11/13/2010	Patch	1 x 1	EW	9	1515	VN 11/15/2010	
R 266	116 - 118 - -	DT	11/13/2010	Patch	2 x 6	EW	9	1500	VN 11/15/2010	
R 267	112 - 113 - -	DT	11/13/2010	Patch	2 x 6	EW	9	1450	VN 11/15/2010	
R 268	101 - - -		11/13/2010	Patch	4 x 10	EW	9	1315	VN 11/15/2010	Pipe Boot 4-inch
R 269	101 - - -		11/13/2010	Patch	4 x 12	EW	9	1400	VN 11/15/2010	Pipe Boot 4-inch
R 270	97 - 98 - -	AT	11/13/2010	Patch	1 x 1	EW	9	800	VN 11/15/2010	
R 271	96 - 97 - -	DT	11/13/2010	Patch	2 x 6	EW	9	815	VN 11/15/2010	
R 272	92 - 94 - -	DT	11/13/2010	Patch	2 x 6	EW	9	745	VN 11/15/2010	
R 273	107 - 108 - -	AT	11/13/2010	Patch	1 x 1	EW	9	1445	VN 11/15/2010	
R 274	120 - 122 - -	AT	11/13/2010	Patch	1 x 3	KX	1	1100	VN 11/15/2010	
R 275	126 - 127 - -		11/13/2010	Patch	8 x 12	KX	1	1500	VN 11/15/2010	West Sump Pipes
R 276	127 - 128 - -		11/13/2010	Patch	4 x 4	KX	1	1300	VN 11/15/2010	Pipe Boot 6-inch
R 277	126 - 127 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1116	VN 11/15/2010	
R 278	126 - 127 - 133 -	CS	11/13/2010	Patch	2 x 2	CF	5	1057	VN 11/15/2010	
R 279	126 - 132 - 133 -	CS	11/13/2010	Patch	2 x 2	CF	5	1053	VN 11/15/2010	
R 280	132 - 133 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1109	VN 11/15/2010	
R 281	127 - 128 - 133 - 134	CS	11/13/2010	Patch	2 x 4	CF	5	1135	VN 11/15/2010	
R 282	136 - 137 - 138 -	CS	11/13/2010	Patch	2 x 2	KX	1	900	VN 11/15/2010	
R 283	137 - 138 - 139 -	CS	11/13/2010	Patch	2 x 2	KX	1	915	VN 11/15/2010	
R 284	139 - - -		11/13/2010	Patch	4 x 10	KX	1	830	VN 11/15/2010	Pipe Boot 4-inch
R 285	139 - 140 - -	BO	11/13/2010	Patch	1 x 1	KX	1	835	VN 11/15/2010	
R 286	140 - - -		11/13/2010	Patch	4 x 8	KX	1	1015	VN 11/15/2010	Pipe Boot 6-inch

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Table 16

Geomembrane Repairs Information

Project: Landfill No. 3 - Phase 1A & 1B Closure	RPR: Nathan Braun	Checked By: Nathan Braun
Project Num: 05749.46.001	Material: 40-mil LLDPE	
Location: Plymouth, NC	Installer: Chesapeake Containment Systems, Inc.	

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 287	139 - 140 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1318	VN 11/15/2010	
R 288	129 - 135 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1149	VN 11/15/2010	
R 289	131 - 132 - -	BO	11/13/2010	Patch	1 x 3	CF	5	1102	VN 11/15/2010	
R 290	137 - - -	IN	11/13/2010	Patch	2 x 2	CF	5	1637	VN 11/15/2010	
R 291	137 - 139 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1325	VN 11/15/2010	
R 292	140 - 141 - 142 -	CS	11/13/2010	Patch	3 x 3	CF	5	1603	VN 11/15/2010	
R 293	142 - - -	IN	11/13/2010	Patch	1 x 1	CF	5	1609	VN 11/15/2010	
R 294	142 - - -	IN	11/13/2010	Patch	1 x 1	CF	5	1559	VN 11/15/2010	
R 295	141 - 142 - 143 -	CS	11/13/2010	Patch	2 x 3	CF	5	1554	VN 11/15/2010	
R 296	72 - 145 - 146 -	CS	11/13/2010	Patch	5 x 5	CF	5	1456	VN 11/15/2010	
R 297	56 - 72 - 145 - 146	CS	11/13/2010	Patch	4 x 12	CF	5	1533	VN 11/15/2010	
R 298	54 - 55 - 145 -	CS	11/13/2010	Patch	3 x 5	CF	5	1539	VN 11/15/2010	
R 299	50 - 54 - 144 - 145	CS	11/13/2010	Patch	3 x 5	CF	5	1617	VN 11/15/2010	
R 300	50 - 143 - 144 -	CS	11/13/2010	Patch	2 x 2	CF	5	1627	VN 11/15/2010	
R 301	49 - 50 - 143 -	CS	11/13/2010	Patch	2 x 3	CF	5	1623	VN 11/15/2010	
R 302	47 - 49 - 141 -	CS	11/13/2010	Patch	2 x 15	CF	5	819	VN 11/15/2010	
R 303	140 - 141 - -	DT	11/13/2010	Patch	2 x 6	CF	5	746	VN 11/15/2010	
R 304	141 - 143 - -	BO	11/13/2010	Patch	2 x 2	CF	5	1632	VN 11/15/2010	
R 305	143 - 144 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1547	VN 11/15/2010	
R 306	142 - 143 - -		11/14/2010	Patch	3 x 8	KX	1	800	VN 11/15/2010	Pipe Boot 4-inch
R 307	142 - - -		11/14/2010	Patch	3 x 8	KX	1	830	VN 11/15/2010	Pipe Boot 6-inch
R 308	71 - 72 - -	DT	11/7/2010	Patch	2 x 6	KX	1	1000	VN 11/15/2010	
R 309	72 - 146 - -	BO	11/14/2010	Patch	2 x 3	KX	1	845	VN 11/15/2010	
R 310	72 - 146 - -	BO	11/14/2010	Patch	3 x 3	KX	1	900	VN 11/15/2010	

Table 16

Geomembrane Repairs Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
R 311	144 - 145 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1415	VN 11/15/2010	
R 312	72 - 146 - -	BO	11/13/2010	Patch	2 x 4	CF	5	1419	VN 11/15/2010	
R 313	72 - 146 - -	BO	11/13/2010	Patch	2 x 4	CF	5	1427	VN 11/15/2010	
R 314	72 - 146 - -	BO	11/13/2010	Patch	2 x 4	CF	5	1433	VN 11/15/2010	
R 315	142 - 143 - -	DT	11/13/2010	Patch	2 x 6	CF	5	1336	VN 11/15/2010	
R 316	143 - - -		11/14/2010	Patch	3 x 6	CF	5	843	VN 11/15/2010	Pipe Boot 4-inch
R 317	142 - - -		11/14/2010	Patch	3 x 8	CF	5	951	VN 11/15/2010	Pipe Boot 4-inch
R 318	142 - 143 - -	AT	11/13/2010	Patch	3 x 4	CF	5	1355	VN 11/15/2010	
R 319	140 - 142 - -	BO	11/13/2010	Patch	2 x 7	CF	5	1407	VN 11/15/2010	
R 320	139 - 140 - -		11/14/2010	Patch	3 x 12	CF	5	1030	VN 11/15/2010	Pipe Boot 4-inch
R 321	140 - - -		11/14/2010	Patch	4 x 12	CF	5	1100	VN 11/15/2010	Pipe Boot 4-inch
R 322	141 - - -		11/14/2010	Patch	4 x 12	CF	5	1115	VN 11/15/2010	Pipe Boot 4-inch
R 323	93 - 94 - -	BO	11/14/2010	Patch	1 x 1	EW	9	750	VN 11/15/2010	
R 324	102 - - -	IN	11/14/2010	Patch	1 x 1	EW	9	1500	VN 11/15/2010	
R 325	96 - - -	IN	11/14/2010	Patch	2 x 2	EW	9	1330	VN 11/15/2010	
R 326	145 - - -	IN	11/14/2010	Patch	1 x 1	CF	5	1412	VN 11/15/2010	
R 327	106 - 107 - -	AT	11/14/2010	Patch	1 x 1	EW	9	1420	VN 11/15/2010	

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Table 16

Geomembrane Repairs Information

Project:	Landfill No. 3 - Phase IA & IB Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

Repair Number	Panels	Cause (I)	Repair Date	Repair Type	Size (ft) W x L	Oper.	Mach.	Time	Passing NDT Oper/Dt	Comments/Location
<p>NOTES:</p> <p>(I) Repair Type Summary</p> <p>CS Panel/Seam Intersections DT Destructive Seam Sample Locations BO Burnouts OP Improper Seam Overlap SG Subgrade Induced Repairs AT Non-Destructive Test Location AB Release of Trapped Air Bubble DE Panel Defects IN Installation Induced Repairs RS Cap Strips TI Repairs to Existing Liner-Tie-In DL Drainage Layer Placement Damage</p>										

Geomembrane Seam Destructive Testing Information

Table 15

Geomembrane Seams Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.

Checked By:
Nathan Braun

DT Num	Seam Ref	Seam Type	Sample Date	DT Oper	Field - Peel (1)					Field - Shear (2)					Pass/Fail Lab	Repair Ref	Comments/Location	
					1	2	3	4	5	1	2	3	4	5				
1	S 1 / 2	FU	10/21/2010	TR	Inner	80	82	85	90	95	98					Pass	38	
					Outer	94												
2	S 3 / 5	FU	10/21/2010	TR	Inner	75	85	79	83	90	105					Pass	1	
					Outer	89												
3	S 5 / 6	FU	10/21/2010	CF	Inner	77	87	78	82	85	100					Pass	37	
					Outer	90												
4	S 7 / 9	FU	10/21/2010	CF	Inner	76	82	85	86	90	99					Pass	4	
					Outer	92												
5	S 12 / 14	FU	10/21/2010	TR	Inner	82	85	95	84	85	105					Pass	8	
					Outer	90												
6	S 17 / 18	FU	10/22/2010	CF	Inner	82	83	84	84	85	92					Pass	11	
					Outer	90												
7	S 18 / 19	FU	10/22/2010	TR	Inner	84	85	90	92	94	98					Pass	41	
					Outer	95												
8	S 19 / 20	FU	10/22/2010	CF	Inner	94	95	82	86	87	100					Pass	42	
					Outer	89												
9	S 21 / 23	FU	10/22/2010	CF	Inner	92	96	95	97	85	95					Pass	16	
					Outer	81												
10	S 23 / 24	FU	10/22/2010	TR	Inner	75	78	74	75	82	98					Pass	30	
					Outer	81												
11	S 27 / 28	FU	10/23/2010	CF	Inner	90	82	71	75	74	92					Pass	19	
					Outer	86												

Table 15

Geomembrane Seams Destructive Testing Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure		RPR:		Nathan Braun		Checked By:												
Project Num:		05749.46.001		Material:		40-mil LLDPE		Nathan Braun												
Location:		Plymouth, NC		Installer:		Chesapeake Containment Systems, Inc.														
DT Num	Seam Ref	Seam Type	Sample Date	DT Oper	Field - Peel (1)					Field - Shear (2)					Pass/Fail	Repair Ref	Comments/Location			
					1	2	3	4	5	1	2	3	4	5						
12	S 32 / 33	FU	10/23/2010	TR	Inner	82	83	84	81	86	90					Pass	Pass	29		
					Outer	89														
13	S 33 / 34	FU	10/23/2010	CF	Inner	89	88	85	86	83	85					Pass	Pass	28		
					Outer	84														
14	S 34 / 35	FU	10/23/2010	TR	Inner	76	74	76	71	72	90					Pass	Pass	24		
					Outer	80														
15	S 35 / 36	FU	10/23/2010	CF	Inner	75	95	85	70	95	95					Pass	Pass	25		
					Outer	81														
16	S 36 / 37	FU	10/23/2010	TR	Inner	86	85	84	86	85	90					Pass	Pass	55		
					Outer	92														
17	S 38 / 39	FU	10/25/2010	CF	Inner	75	76	95	85	85	95					Pass	Pass	62		
					Outer	82														
18	S 42 / 43	FU	10/25/2010	TR	Inner	75	92	84	84	74	96					Pass	Pass	63		
					Outer	84														
19	S 44 / 46	FU	10/25/2010	TR	Inner	85	85	85	74	85	94					Pass	Pass	68		
					Outer	79														
20	S 49 / 50	FU	10/28/2010	CF	Inner	84	86	80	75	78	97					Pass	Pass	83		
					Outer	80														
21	S 54 / 55	FU	10/28/2010	TR	Inner	82	85	75	85	78	99					Pass	Pass	85		
					Outer	72														
22	S 52 / 53	FU	10/28/2010	CF	Inner	86	75	87	71	74	90					Pass	Pass	122		
					Outer	85														

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Table 15

Geomembrane Seams Destructive Testing Information

Project:		Landfill No. 3 - Phase 1A & 1B Closure		RPR:		Nathan Braun		Checked By:									
Project Num:		05749.46.001		Material:		40-mil LLDPE		Nathan Braun									
Location:		Plymouth, NC		Installer:		Chesapeake Containment Systems, Inc.											
DT Num	Seam Ref	Seam Type	Sample Date	DT Oper	Field - Peel (1)			Field - Shear (2)			Pass/Fail	Repair Ref	Comments/Location				
					1	2	3	4	5	1	2	3	4	5	Field Lab		
33	S 90 / 91	FU	11/3/2010	TR	Inner	86	74	94	86	84	95				Pass	252	
					Outer	96											
34	S 94 / 95	FU	11/8/2010	TR	Inner	85	79	75	95	75	98				Pass	193	
					Outer	85											
35	S 97 / 99	FU	11/8/2010	CF	Inner	89	98	76	74	95	98				Pass	192	
					Outer	96											
36	S 101 / 102	FU	11/8/2010	TR	Inner	85	95	74	85	75	90				Pass	253	
					Outer	74											
37	S 100 / 101	FU	11/8/2010	CF	Inner	84	80	73	86	70	93				Pass	247	
					Outer	85											
38	S 96 / 97	FU	11/8/2010	TR	Inner	78	85	72	85	72	100				Pass	271	
					Outer	82											
39	S 92 / 94	FU	11/8/2010	CF	Inner	89	84	82	84	73	105				Pass	272	
					Outer	83											
40	S 104 / 106	FU	11/9/2010	TR	Inner	84	82	86	84	74	108				Pass	243	
					Outer	74											
41	S 108 / 109	FU	11/9/2010	CF	Inner	85	81	95	86	76	105				Pass	242	
					Outer	83											
42	S 112 / 113	FU	11/9/2010	TR	Inner	87	86	84	78	74	105				Pass	267	
					Outer	82											
43	S 113 / 114	FU	11/9/2010	CF	Inner	85	84	85	85	85	107				Pass	236	
					Outer	81											

Table 15

Geomembrane Seams Destructive Testing Information

Project:	Landfill No. 3 - Phase 1A & 1B Closure	RPR:	Nathan Braun	Checked By:	Nathan Braun
Project Num:	05749.46.001	Material:	40-mil LLDPE		
Location:	Plymouth, NC	Installer:	Chesapeake Containment Systems, Inc.		

DT Num	Seam Ref	Seam Type	Sample Date	DT Oper	Field - Peel (1)					Field - Shear (2)					Pass/Fail Field	Repair Lab	Ref	Comments/Location
					1	2	3	4	5	1	2	3	4	5				
44	S 115 / 117	FU	11/9/2010	TR	Inner	76	85	71	95	74	104	Pass	Pass	235				
					Outer	95												
45	S 116 / 118	FU	11/10/2010	CF	Inner	76	70	75	85	81	99	Pass	Pass	266				
					Outer	74												
46	S 121 / 122	FU	11/10/2010	TR	Inner	84	82	78	84	75	98	Pass	Pass	232				
					Outer	75												
47	S 124 / 125	FU	11/10/2010	CF	Inner	85	85	84	75	84	99	Pass	Pass	261				
					Outer	76												
48	S 126 / 127	FU	11/10/2010	TR	Inner	89	76	85	84	81	97	Pass	Pass	277				
					Outer	71												
49	S 132 / 133	FU	11/10/2010	CF	Inner	89	76	72	96	85	95	Pass	Pass	280				
					Outer	85												
50	S 137 / 139	FU	11/11/2010	TR	Inner	75	80	86	82	95	96	Pass	Pass	291				
					Outer	89												
51	S 129 / 135	FU	11/11/2010	CF	Inner	78	85	75	85	84	98	Pass	Pass	288				
					Outer	85												
52	S 135 / 136	FU	11/11/2010	TR	Inner	76	75	85	96	81	95	Pass	Pass	254				
					Outer	87												
53	S 139 / 140	FU	11/11/2010	CF	Inner	74	74	87	85	85	102	Pass	Pass	287				
					Outer	78												
54	S 140 / 141	FU	11/11/2010	TR	Inner	85	95	85	75	84	103	Pass	Pass	303				
					Outer	78												

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Subgrade Surface Acceptance Form



SUBGRADE SURFACE ACCEPTANCE

Project Name: Essex Park Customer: Essex Park
Project Number: _____ Date: 10-21-10
Location: Wilmington, NC Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc. For Contractor/Owner/Inspector:

Scott Amplee C.S. AMT- Nathan Braun

Acceptance Number: 1 Area Accepted: PI-PII 42,668 sq. FT.



SUBGRADE SURFACE ACCEPTANCE

Project Name: Dominar Customer: Ryan Central
Project Number: _____ Date: 10-22-10
Location: Plymouth NC Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc.

For Contractor/Owner/Inspector:

[Signature] ees.

PMT. Nathan Buehm

Acceptance Number: 2 Area Accepted: P12-P25 65700 sq. Ft.

TOTAL = 108,368 sq. Ft.

SP



SUBGRADE SURFACE ACCEPTANCE

Project Name: DONTAE Customer: RYAN CENTRAL
Project Number: _____ Date: 10-23-10
Location: Plymouth NC Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc. For Contractor/Owner/Inspector:

[Signature] A.M.T. Nathan Braun

Acceptance Number: 3 Area Accepted: P26-P38 45,160 sq. Ft.

TOTAL: 173528 sq. Ft.

[Handwritten mark]



SUBGRADE SURFACE ACCEPTANCE

Project Name: Dental Customer: Ryan Central
Project Number: _____ Date: 10-25-10
Location: Plymouth N.C. Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc. For Contractor/Owner/Inspector:

Paul Charles C.S. AMT - Nathan Brunson

Acceptance Number: 4 Area Accepted: P39-P46 37462

Total = 210,988 sq. ft.



SUBGRADE SURFACE ACCEPTANCE

Project Name: Domtar Customer: Ryan Central
Project Number: _____ Date: 10-28-10
Location: Plymouth N.C. Partial: ✓ Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc. _____ For Contractor/Owner/Inspector: RMT - Matthew Buman
[Signature] _____

Acceptance Number: 5 Area Accepted: P47-P64 42,188 sq. Ft.

TOTAL = 253,176 sq. Ft.

CHESAPEAKE

SUBGRADE SURFACE ACCEPTANCE

Project Name: DOWTAL Customer: Ryan Central
Project Number: _____ Date: 10-29-10
Location: Plymouth NC Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc.

For Contractor/Owner/Inspector:

[Signature] ALS RMT - Nathan Bruner

Acceptance Number: 6 Area Accepted: P65-P72 16,763 sq. Ft.

Total = 269,939 sq. Ft.



SUBGRADE SURFACE ACCEPTANCE

Project Name: DOMTAR Customer: RYAN CENTRAL
Project Number: _____ Date: 11-2-10
Location: Plymouth NC. Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc. For Contractor/Owner/Inspector:

[Signature] CCS AMT - Nathan Brown

Acceptance Number: 7 Area Accepted: P73 - P85 56632 sq ft.

TOTAL ~ 275,401 sq ft. 326,573 sq ft.

CHESAPEAKE

SUBGRADE SURFACE ACCEPTANCE

Project Name: DOW#44 Customer: Ray Central
Project Number: _____ Date: 11-03-10
Location: Plymouth NC Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc. For Contractor/Owner/Inspector:

[Signature] CCS RMT - Nathan Bryan

Acceptance Number: 8 Area Accepted: P36-D91 29993 sq ft

TOTAL: 205594 sq ft 350.

CHESAPEAKE

SUBGRADE SURFACE ACCEPTANCE

Project Name: DOMTAA Customer: Ryan Central
Project Number: _____ Date: 11-8-10
Location: Plymouth NC Partial: Final:

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc.

For Contractor/Owner/Inspector:

[Signature] CCS

RMT - Nathan Brady

Acceptance Number: 9 Area Accepted: P92-P102 56003 sq. Ft

9

TOTAL = 301,597 sq. Ft
412,568

CHESAPEAKE

SUBGRADE SURFACE ACCEPTANCE

Project Name: Downtown Customer: Ryan Center
Project Number: _____ Date: 11-9-10
Location: Plymouth NC Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc.

For Contractor/Owner/Inspector:

[Signature] CCS

AMT - Northern Builders

Acceptance Number: 10 Area Accepted: P103 P115 68063 sq ft
480,630
TOTAL = 429,600 sq ft.

CHESAPEAKE

SUBGRADE SURFACE ACCEPTANCE

Project Name: Dem tire Customer: Ryan Centre
Project Number: _____ Date: 11-10-10
Location: Plymouth NC Partial: Final: _____

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc. [Signature] CCS
For Contractor/Owner/Inspector: RMT - Nathan Bullen

Acceptance Number: 11 Area Accepted: P116 - P134 47138 sq. Ft.

TOT = 527,768 sq. Ft.



SUBGRADE SURFACE ACCEPTANCE

Project Name: DOMTAR Customer: Rain Central
Project Number: _____ Date: 11-11-10
Location: Plymouth NC Partial: _____ Final:

This document only applies to the acceptability of surface conditions for installation of geosynthetic products. Chesapeake Containment Systems, Inc. does not accept responsibility for weather damage, compaction, elevation or moisture content, subsurface conditions, nor for the surface condition maintenance during deployment. Structural integrity of the subgrade and maintenance of these conditions are the responsibility of the Owner or Earthwork Contractor.

For Chesapeake Containment Systems, Inc.

[Signature] _____

For Contractor/Owner/Inspector:

RMT - Mattam Burren _____

Acceptance Number: 12 Area Accepted: 134-7146 50423 sq ft.

TOTAL P1 - P146
578,190 sq. Ft.

2

Installation Certification



352 Earks Rd. Middle River, MD 21220
1-888-50-LINER (54637) phone 443-303-1682 fax

December 22, 2010

Mr. Joe VanRemortel
Ryan Central, Inc.
2700 E. Racine St.
Janesville, WI 53545

RE: Domtar Paper Landfill No. 3 Phase 1A and 1B Closure Geosynthetic Installation
Certification

Dear Mr. VanRemortel:

In accordance with the project specifications for the above referenced project the following components were installed in accordance with the contract documents and the in place materials meet generally accepted standards of practice:

40 mil LLDPE Geomembrane (section 02072-4 G.3)
Geosynthetic Clay Liner (section 02075-5 C.1)
Geocomposite (section 02078-6 A.2.C)
Geocushion (02076)

If you have any questions please feel free to contact me.

Sincerely,

Chesapeake Containment Systems, Inc.

Ryan C. Kamp, President

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Appendix G

Resumes

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- RMT CQA Personnel Resumes
- CCS, Inc., Resumes

RMT CQA Personnel Resumes



Nathan F. Braun, P.E.
Environmental Specialist

Experience

Nathan is an environmental specialist with RMT's Solid Waste Group. For over 5 years, Nathan's responsibilities have included assisting with project plans and specifications; writing documentation, annual reports, and operation and maintenance plans; and preparing landfill permit applications for agency submittal. Nathan also serves as a resident project representative (RPR) on numerous landfill construction projects. His on-site responsibilities include providing geosynthetic and soil construction quality assurance, while providing observation and documentation.

Key Projects

Wisconsin Department of Transportation (WisDOT). (Wisconsin) Resident Project Representative.

Served as lead on-site RPR for multiple WisDOT construction jobs in 2010; ranging from petroleum contaminated soil, potential asbestos containing material, asbestos abatement in houses, site remediation of old gas stations, and Geoprobe® investigations. Responsible for scheduling and managing staff on various jobs throughout the year.

Landfill Cover Construction Documentation. Dairyland Power Cooperative Landfill Phase IV, Cell 1 (Alma, Wisconsin). Resident Project Representative.

Served as lead on-site RPR during the geomembrane installation of a 3.5-acre landfill final cover. Responsibilities included observation, documentation, and management of geosynthetic (40-mil textured linear low-density polyethylene) quality assurance testing. Responsibilities also included coordination with the geosynthetics installer regarding scheduling, destructive testing of geomembrane, and equipment issues.

Landfill Liner Construction Documentation. Lincoln County Landfill Phase 3, Module 2 (Merrill, Wisconsin). Resident Project Representative.

Served as lead on-site RPR during the geomembrane installation of a 2.0-acre landfill liner. Responsibilities included observation, documentation, and management of geosynthetic (60-mil textured high density polyethylene) quality assurance testing. Responsibilities also included coordinating with the geosynthetics installer regarding scheduling, destructive testing of geomembrane, and equipment issues.

Areas of Expertise

- ... Construction quality assurance
- ... Air, water, and gas environmental permitting



Nathan F. Braun, P.E.

Development of Onsite Borrow Areas Permit. Dairyland Power Cooperative (Alma, Wisconsin). Environmental Specialist.

Responsible for pulling together drawings and background information to complete the permit so it could be submitted to Buffalo County in a timely manner for approval. Work included communicating questions and concerns to the project team.

Feasibility Report. Veolia ES, Emerald Park Landfill (Wisconsin). Environmental Specialist.

Responsible for coordinating and compiling the Determination of Need and Practicable Alternatives Analysis sections of the Feasibility Report. Work included communicating questions and concerns to the project manager and project engineer.

Industrial Landfill Phase 3 Liner Construction Documentation. ThyssenKrupp Waupaca, Inc. (Waupaca, Wisconsin). Resident Project Representative.

Served as lead on-site RPR during the construction of a 5-acre, 4-foot-thick select clay fill liner overlain by 1-foot of select granular fill. Responsibilities included observation and documentation of subgrade excavation, select clay fill placement, pipe installation; and sand drainage layer placement. Submitted a documentation report to the State of Wisconsin after construction was finished.

Industrial Landfill Final Cover Construction Documentation. ThyssenKrupp Waupaca, Inc. (Waupaca, Wisconsin). Resident Project Representative.

Served as lead on-site RPR during the construction of a 6-acre, 2-foot-thick select foundry by-product cover overlain by a 40-mil LLDPE geomembrane. Responsibilities included observation and documentation of subgrade excavation; select foundry by-product placement; geomembrane and HDPE pipe installation; and sand drainage layer, rooting zone, and topsoil placement. Submitted a documentation report to the State of Wisconsin after construction was finished.

Blue Sky Wind Farm Construction Documentation (Fond du Lac, Wisconsin). Resident Project Representative.

Served as on-site RPR during the construction of crane pads, foundations, and access roads. Responsibilities included density testing of crane pads, access roads, and backfill over the foundation.



Nathan F. Braun, P.E.

Industrial Landfill Liner Construction Documentation. ThyssenKrupp Waupaca, Inc. (Etowah, Tennessee). Resident Project Representative.

Served as lead on-site RPR during the construction of a 4-acre, 2-foot-thick clay liner. Responsibilities included observation and documentation of subgrade excavation, blasting of pinnacles, clay placement, HDPE pipe installation, and drainage layer placement. Submitted a documentation report to the State of Tennessee after construction was finished.

Landfill Cap Construction Documentation. Sauk County Landfill (Reedsburg, Wisconsin). Resident Project Representative.

Served as lead on-site RPR during the geomembrane installation of a 9.5-acre landfill cap. Responsibilities included observation, documentation, and management of geosynthetic quality assurance testing. Responsibilities also included coordinating with the geosynthetics installer regarding scheduling, destructive testing of geomembrane, and equipment issues.

Landfill Liner Construction Documentation. Onyx Glacier Ridge-Landfill (Horicon, Wisconsin). Resident Project Representative.

Served as on-site RPR during the geomembrane installation of a 9-acre landfill liner. Responsibilities included observation, documentation, and management of geosynthetic quality assurance testing.

Phase 3, Module 1, Liner Construction. Lincoln County Landfill (Wisconsin). Resident Project Representative.

Assisted in preparing plans and specifications for a 2.5-acre composite lined landfill. Served as on-site RPR for construction of the clay liner, the geomembrane and geosynthetic installation, and the leachate drainage layer installation.

Landfill Liner Construction Documentation. Onyx Glacier Ridge Landfill (Horicon, Wisconsin). Resident Project Representative.

Served as on-site RPR during the geomembrane installation of this 6.5-acre landfill liner. Responsibilities included observation, documentation, and management of geosynthetic quality assurance testing.

Storm Water Design Plan Set. Dana Corporation (Bellefontaine, Ohio). Environmental Specialist.

Assisted in completion of the storm water design plan set for the client's engine system facility. Incorporated revisions and comments into CAD drawings for AutoCAD personnel. Performed quality control on asphalt pavement, aggregate subbase, and storm sewer design calculations.



Nathan F. Braun, P.E.

Type III Restricted Waste Site Permit Application. Ford Meter Box (Indiana). Environmental Specialist.

Responsible for coordinating and compiling a permit application for a Type III landfill. Work included communicating questions and concerns to the project manager and senior project engineer, while maintaining ongoing communication with the Indiana Department of Environmental Quality (IDEM) regarding regulatory questions.

Landfill Gas Well Installation. Waste Management H.O.D. Landfill (Antioch, Illinois). Resident Project Representative.

Served as on-site RPR during installation of three gas extraction wells. Performed a level loop to determine the elevation of the ground surface at each location. Calculated lengths of perforated and nonperforated pipe needed in the field, once an elevation was determined. Documented well installation by taking drilling and pipe installation photographs. In addition, a basic well log was created to document at what depth clay cover and waste existed during drilling.

Perimeter Berm Construction. Onyx Glacier Ridge (Horicon, Wisconsin). Resident Project Representative.

Served as on-site RPR during berm construction. Documented and tested the berm with a nuclear density gauge to ensure proper compaction and moisture content.

Landfill Clay Cover Repair Documentation. Fond du Lac Landfill (Fond du Lac, Wisconsin). Resident Project Representative.

Served as on-site RPR during the clay cover repair of areas where new gas header pipes were installed. Documented and tested clay cover with a nuclear density gauge to ensure proper compaction and moisture content for the clay liner. Additional work included documentation of new valve installation with clean-outs installed on either side of the new valve.

Landfill Liner Construction Documentation. Onyx FCR Landfill (Minnesota). Resident Project Representative.

Served as on-site RPR during the geomembrane installation of this 7-acre landfill liner. Responsibilities included observation, documentation, and management of geosynthetic quality assurance testing.



Nathan F. Braun, P.E.

Education and Training

B.S., Civil Engineering, University of Wisconsin - Platteville, 2005, Emphasis on Environmental and Geotechnical Engineering

40-Hour Hazardous Waste Operations Training and Current 8-Hour Refresher Training

Sanitary Landfill Design Course, University of Wisconsin-Madison, 2006

National Safety Council Defensive Driving Training, 2008

Construction QA/QC for Geosynthetic Installations, 2007. TRI Short Course

Construction QA/QC for Compacted Clay & GCL Liner Installations, 2007. TRI Short Course

Registrations and Certifications

Professional Engineer – Wisconsin

Certified Open Water Diver

First Aid, 2005/Adult CPR Certification, 2008

Nuclear Density Gauge Usage Certification, 2005

CCS, Inc., Resumes

Installation Resume – Barbarito Flores

Barbarito Flores

Geomembrane Experience Resume - 2009

Material	Quantity	Project	Location	Date
40 mil Textured LLDPE geomembrane	408,000 SF	Honeygo Run Reclamation Center	Perry Hall, MD	Jun-09
Geocomposite	415,000 SF	Phase 1 Cap		
10 oz. geotextile	408,000 SF			
60 mil Textured HDPE geomembrane	30,000 SF	Kraton Polymers	Belpre, OH	Jun-09
60 mil Textured HDPE geomembrane	48,000 SF	Mayapple Golf Course	Carlisle, PA	Feb-09
10 oz. geotextile	48,000 SF			
30 mil PVC geomembrane	100,000 SF	Charles St. 695 SWMP	Lutherville, MD	Jul-09
40 mil PP geomembrane	15,000 SF	Schuylkill Center Fire Pond	Philadelphia, PA	May-09
60 mil Textured LLDPE	460,000 SF	Marjol Battery	Throop, PA	Oct-09
8 oz. geotextile	460,000 SF			
Geocomposite	460,000 SF			
60 mil Textured HDPE	305,000 SF	Rumpke-Medora Landfill	Medora, IN	May-09
16 oz. geotextile	305,000 SF			
60 mil Textured HDPE	600,000 SF	Rumpke-Brown Co. Landfill	Georgetown, OH	May-09
8 oz. geotextile	600,000 SF			
80 mil Smooth HDPE	15,000 SF	Husky Energy	Lima, OH	Mar-09
40 mil Textured HDPE	40,000 SF	Warsaw WWTP	Warsaw, VA	
20 mil Rain Cover	300,000 SF	Walker Mt Landfill Rain Cover	Rome, GA	Apr-09
40 mil Textured HDPE	7,000 SF	Ridgeview Valley Water Storage	Mt. Lake Park, MD	
GCL	10,000 SF	Worton WWTP	Worton, MD	
		Norwood WWTP	Norwood, NY	
60 mil Textured HDPE	120,000 SF	Wilmington Landfill Phase 1	Wilmington, OH	Sep-09
8 oz. geotextile	120,000 SF			
60 mil Smooth HDPE geomembrane	300,000 SF	Quarry Landfill	Tulsa, OK	May-09
40 mil Textured LLDPE geomembrane	17,000 SF	Linville Dam	Linville, NC	Jun-09
45 mil EPDM geomembrane	8,000 SF	Wedgewood Business Park	Fredrick, MD	Jul-09
60 mil Textured HDPE geomembrane	56,000 SF	City of New Bern WWTP	New Bern, NC	
40 mil Smooth HDPE geomembrane	60,000 SF	Rubbermaid Site	Monaca, PA	Aug-09
8 oz. geotextile	60,000 SF			
40 mil Textured HDPE geomembrane	600,000 SF	Andrews AFB LF-05	Andrews AFB, MD	
Geocomposite	600,000 SF			
40 mil Smooth HDPE geomembrane	170,000 SF	East End Landfill	Richmond, VA	Aug-09
12 oz. geotextile	170,000 SF			

Barbarito Flores

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unir 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LFG Pipe Penetration Boots	26	EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 Oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

Installation Resume – Carmelo Ferritez

Carmelo Ferritez

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oncida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

GCL	750,000 SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000 SF			
8 oz. geotextile	750,000 SF			
40 mil HDPE textured geomembrane	48,900 SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000 SF			
GCL	310,000 SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000 SF			
8 oz. geotextile	310,000 SF			
30 mil HDPE smooth geomembrane	57,280 SF	Flighr 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000 SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000 SF			
60 mil HDPE textured geomembrane	654,000 SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000 SF			
GCL	320,000 SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000 SF			
16 oz. geotextile	320,000 SF			
LFG Pipe Penetration Boots	26 EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000 SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000 SF			
60 mil HDPE textured geomembrane	10,000 SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000 SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000 SF			
Geocomposite	755,000 SF			
GCL	590,000 SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000 SF			
Geocomposite	550,000 SF			
32 oz. geotextile	40,000 SF			
40 mil LLDPE textured geomembrane	6,000 SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000 SF			
16 oz. geotextile	6,000 SF			
60 mil HDPE textured geomembrane	30,000 SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000 SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000 SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000 SF			
	23,000 SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000 SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000 SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000 SF			
16 oz. Geotextile	256,000 SF			
40 mil PP geomembrane	12,000 SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920 SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000 SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000 SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000 SF			
16 Oz.	2,687,892 SF			
Geocomposite	684,522 SF			
50 mil PVC geomembrane	1,686,207 SF			

Installation Resume – Dave Ventress

Dave Ventress

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LF Pipe Penetration Boots	26 EA	EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 Oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

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Installation Resume – Edwin Tarley

Edwin Tarley

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

GCL	750,000 SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000 SF			
8 oz. geotextile	750,000 SF			
40 mil HDPE textured geomembrane	48,900 SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000 SF			
GCL	310,000 SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000 SF			
8 oz. geotextile	310,000 SF			
30 mil HDPE smooth geomembrane	57,280 SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000 SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000 SF			
60 mil HDPE textured geomembrane	654,000 SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000 SF			
GCL	320,000 SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000 SF			
16 oz. geotextile	320,000 SF			
LFG Pipe Penetration Boots	26 EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000 SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000 SF			
60 mil HDPE textured geomembrane	10,000 SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000 SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000 SF			
Geocomposite	755,000 SF			
GCL	590,000 SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000 SF			
Geocomposite	550,000 SF			
32 oz. geotextile	40,000 SF			
40 mil LLDPE textured geomembrane	6,000 SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000 SF			
16 oz. geotextile	6,000 SF			
60 mil HDPE textured geomembrane	30,000 SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000 SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000 SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000 SF			
	23,000 SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000 SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000 SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000 SF			
16 oz. Geotextile	256,000 SF			
40 mil PP geomembrane	12,000 SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920 SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000 SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000 SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000 SF			
16 Oz.	2,687,892 SF			
Geocomposite	684,522 SF			
50 mil PVC geomembrane	1,686,207 SF			

Installation Resume – Ephraim Wreh

Ephraim Wreh

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000	SF Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500	SF Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500	SF		
60 mil EPDM	5,000	SF Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000	SF Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000	SF		
60 mil LLDPE textured geomembrane	95,000	SF New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000	SF Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000	SF		
8 oz. geotextile	585,000	SF		
Geocomposite	585,000	SF		
60 mil HDPE textured geomembrane	15,000	SF Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000	SF		
Geocomposite	15,000	SF		
20 mil Smooth HDPE Geomembrane	37,000	SF White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025	SF Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000	SF Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821	SF The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821	SF		
60 mil HDPE liner	162,273	SF		
16 ounce geotextile	162,273	SF		
60 mil HDPE textured geomembrane	206,000	SF Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000	SF Unit 3 Cell 2		
6 oz. Geotextile	200,000	SF		
Geocomposite	6,000	SF		
60 mil hdpe textured geomembrane	309,000	SF Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000	SF		
60 mil LLDPE textured geomembrane	10,000	SF Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882	SF Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500	SF		
40 mil LLDPE	568,977	SF Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600	SF Wegmans	Frederick, MD	Jul-10
GCL	550,000	SF Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000	SF Expansion		
Geocomposite	550,000	SF		
20 mil Vaporblock	7,000	SF Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000	SF Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000	SF		
40 mil PVC	40,000	SF Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000	SF Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000	SF		
8 oz. geotextile	193,000	SF		
40 mil HDPE textured geomembrane	140,000	SF Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000	SF		
Geonet	140,000	SF		

GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LFG Pipe Penetration Boots	26	EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 Oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

Installation Resume – Khamsy Xayarath

Khamsy Xayarath

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LFG Pipe Penetration Boots	26	EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 Oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

Installation Resume – Phetsomephone Vongkham

Phetsomephone Vongkham

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LFG Pipe Penetration Boots	26	EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oncok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 Oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

Installation Resume – Photh Hongkham

Photh Hongkham

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgchampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

GCL	750,000 SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000 SF			
8 oz. geotextile	750,000 SF			
40 mil HDPE textured geomembrane	48,900 SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000 SF			
GCL	310,000 SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000 SF			
8 oz. geotextile	310,000 SF			
30 mil HDPE smooth geomembrane	57,280 SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000 SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000 SF			
60 mil HDPE textured geomembrane	654,000 SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000 SF			
GCL	320,000 SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000 SF			
16 oz. geotextile	320,000 SF			
LFG Pipe Penetration Boots	26 EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000 SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000 SF			
60 mil HDPE textured geomembrane	10,000 SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000 SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000 SF			
Geocomposite	755,000 SF			
GCL	590,000 SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000 SF			
Geocomposite	550,000 SF			
32 oz. geotextile	40,000 SF			
40 mil LLDPE textured geomembrane	6,000 SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000 SF			
16 oz. geotextile	6,000 SF			
60 mil HDPE textured geomembrane	30,000 SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000 SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000 SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000 SF			
	23,000 SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000 SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000 SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000 SF			
16 oz. Geotextile	256,000 SF			
40 mil PP geomembrane	12,000 SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920 SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000 SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000 SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000 SF			
16 oz.	2,687,892 SF			
Geocomposite	684,522 SF			
50 mil PVC geomembrane	1,686,207 SF			

Installation Resume – Robert Chandler

Robert Chandler

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LFG Pipe Penetration Boots	26	EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oncok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 Oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

Installation Resume – Toy Rattnavylay

Toy Rattanavilyay

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

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GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Miram Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LFG Pipe Penetration Boots	26	EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Miram Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

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Installation Resume – Urbano Lara

Urbano Lara

Geomembrane Experience Resume - 2009

Material	Quantity	Project	Location	Date
40 mil Textured LLDPE geomembrane	408,000 SF	Honeygo Run Reclamation Center	Perry Hall, MD	Jun-09
Geocomposite	415,000 SF	Phase 1 Cap		
10 oz. geotextile	408,000 SF			
60 mil Textured HDPE geomembrane	30,000 SF	Kraton Polymers	Belpre, OH	Jun-09
60 mil Textured HDPE geomembrane	48,000 SF	Mayapple Golf Course	Carlisle, PA	Feb-09
10 oz. geotextile	48,000 SF			
30 mil PVC geomembrane	100,000 SF	Charles St. 695 SWMP	Lutherville, MD	Jul-09
40 mil PP geomembrane	15,000 SF	Schuylkill Center Fire Pond	Philadelphia, PA	May-09
60 mil Textured LLDPE	460,000 SF	Marjol Battery	Throop, PA	Oct-09
8 oz. geotextile	460,000 SF			
Geocomposite	460,000 SF			
60 mil Textured HDPE	305,000 SF	Rumpke-Medora Landfill	Medora, IN	May-09
16 oz. geotextile	305,000 SF			
60 mil Textured HDPE	600,000 SF	Rumpke-Brown Co. Landfill	Georgetown, OH	May-09
8 oz. geotextile	600,000 SF			
80 mil Smooth HDPE	15,000 SF	Husky Energy	Lima, OH	Mar-09
40 mil Textured HDPE	40,000 SF	Warsaw WWTP	Warsaw, VA	
20 mil Rain Cover	300,000 SF	Walker Mt Landfill Rain Cover	Rome, GA	Apr-09
40 mil Textured HDPE	7,000 SF	Ridgeview Valley Water Storage	Mt. Lake Park, MD	
GCL	10,000 SF	Worton WWTP	Worton, MD	
		Norwood WWTP	Norwood, NY	
60 mil Textured HDPE	120,000 SF	Wilmington Landfill Phase 1	Wilmington, OH	Sep-09
8 oz. geotextile	120,000 SF			
60 mil Smooth HDPE geomembrane	300,000 SF	Quarry Landfill	Tulsa, OK	May-09
40 mil Textured LLDPE geomembrane	17,000 SF	Linville Dam	Linville, NC	Jun-09
45 mil EPDM geomembrane	8,000 SF	Wedgewood Business Park	Fredrick, MD	Jul-09
60 mil Textured HDPE geomembrane	56,000 SF	City of New Bern WWTP	New Bern, NC	
40 mil Smooth HDPE geomembrane	60,000 SF	Rubbermaid Site	Monaca, PA	Aug-09
8 oz. geotextile	60,000 SF			
40 mil Textured HDPE geomembrane	600,000 SF	Andrews AFB LF-05	Andrews AFB, MD	
Geocomposite	600,000 SF			
40 mil Smooth HDPE geomembrane	170,000 SF	East End Landfill	Richmond, VA	Aug-09
12 oz. geotextile	170,000 SF			

Urbano Lara

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Parapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgar, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

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GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LFG Pipe Penetration Boots	26 EA		Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oncok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Cutley Hollow LF Phase 1A	Sr. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 Oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

Installation Resume – Vongsakoon Noravong

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Vongsakoon Noravong

Geomembrane Experience Resume - 2010

Material	Quantity	Project	Location	Date
40 mil HDPE textured geomembrane	48,000 SF	Warsaw WWTP	Warsaw, VA	Current
3MM Concrete Embedment Liner	2,500 SF	Willow Lane Pumping Station	LaPlata, MD	Jul-10
5 MM Concrete Embedment Liner	500 SF			
60 mil EPDM	5,000 SF	Norwood WWTP	Norwood, NY	May-10
60 mil HDPE textured geomembrane	73,000 SF	Bandy Campground	Oneida, TN	Apr-10
16 oz. geotextile	11,000 SF			
60 mil LLDPE textured geomembrane	95,000 SF	New Campus East Pond	Springfield, VA	Jul-10
Geogrid	300,000 SF	Hilltop Sand & Gravel Closure	Alexandria, VA	May-10
40 mil LLDPE textured geomembrane	585,000 SF			
8 oz. geotextile	585,000 SF			
Geocomposite	585,000 SF			
60 mil HDPE textured geomembrane	15,000 SF	Belews Creek Repair	Belews Creek, NC	Apr-10
GCL	15,000 SF			
Geocomposite	15,000 SF			
20 mil Smooth HDPE Geomembrane	37,000 SF	White Street Landfill	Greensboro, NC	10-May
36 mil Polypropylene Reinforced Pond Liner	29,025 SF	Buller Fish Hatchery	Marion, VA	May-10
2 MM Sure Grip- Concrete Embedment Liner	88,000 SF	Patapsco WWTP	Baltimore, MD	Current
40 mil geomembrane	211,821 SF	The East End Landfill	Richmond, VA	10-May
12 oz. geotextile	400,821 SF			
60 mil HDPE liner	162,273 SF			
16 ounce geotextile	162,273 SF			
60 mil HDPE textured geomembrane	206,000 SF	Montgomery County Landfill	Jeffersonville, KY	Jul-10
GCL	206,000 SF	Unit 3 Cell 2		
6 oz. Geotextile	200,000 SF			
Geocomposite	6,000 SF			
60 mil hdpe textured geomembrane	309,000 SF	Beech Hollow LF Phase 3C	Wellston, OH	Aug-10
8 oz. geotextile	309,000 SF			
60 mil LLDPE textured geomembrane	10,000 SF	Cumberland County Vault Excavation	Carlisle, PA	Jun-10
60 mil HDPE liner	625,882 SF	Rumpke Odor Control Blanket	Cincinnati, OH	Jun-10
8 oz. non woven geotextile	37,500 SF			
40 mil LLDPE	568,977 SF	Progress Energy Phase 4	Semora, NC	Jul-10
30 mil HDPE	119,600 SF	Wegmans	Frederick, MD	Jul-10
GCL	550,000 SF	Robeson Co. MSW LF Phase 4	St. Pauls, NC	Jun-10
60 mil HDPE geomembrane	550,000 SF	Expansion		
Geocomposite	550,000 SF			
20 mil Vaporblock	7,000 SF	Levedo Building	Dorchester, MA	May-10
100 mil smooth geomembrane	9,000 SF	Mountainview Tank	Greencastle, PA	Jun-10
Geonet	9,000 SF			
40 mil PVC	40,000 SF	Ray Smith Ponds	Bridgehampton, NY	Jun-10
GCL	193,000 SF	Southeast LF	Oklahoma City, OK	Jun-10
60 mil HDPE geomembrane	193,000 SF			
8 oz. geotextile	193,000 SF			
40 mil HDPE textured geomembrane	140,000 SF	Enterprise Mocane Gas Well	Forgan, OK	Jul-10
60 mil HDPE textured geomembrane	140,000 SF			
Geonet	140,000 SF			

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GCL	750,000	SF	East Oak LF	Oklahoma City, OK	Jul-10
60 mil hdpe textured geomembrane	750,000	SF			
8 oz. geotextile	750,000	SF			
40 mil HDPE textured geomembrane	48,900	SF	Chastain Meadows	Marietta, GA	Jul-10
Woven geotextile	60,000	SF			
GCL	310,000	SF	Alderson Regional LF	Alderson, OK	Jul-10
60 mil hdpe textured geomembrane	310,000	SF			
8 oz. geotextile	310,000	SF			
30 mil HDPE smooth geomembrane	57,280	SF	Flight 93 National Memorial	Stoystown, PA	Aug-10
60 mil HDPE textured geomembrane	274,000	SF	Beulah LF Cell 5	Dorchester, MD	Nov-10
Geocomposite	274,000	SF			
60 mil HDPE textured geomembrane	654,000	SF	Rumpke Sanitary LF Phase IX	Cincinnati, OH	Sep-10
8 oz. geotextile	654,000	SF			
GCL	320,000	SF	Mirant Westland Ash B1-A	Dickerson, MD	Sep-10
60 mil HDPE textured geomembrane	320,000	SF			
16 oz. geotextile	320,000	SF			
LFG Pipe Penetration Boots	26	EA	Hoods Mill LF	Woodbine, MD	Jun-10
40 mil LLDPE textured geomembrane	802,000	SF	Hobbs Rd. LF Closure	Denton, MD	Dec-10
Geocomposite	802,000	SF			
60 mil HDPE textured geomembrane	10,000	SF	Bushton Oneok	Bushton, KS	Jul-10
GCL	755,000	SF	Asheville Airport Phase 1	Fletcher, NC	Sep-10
60 mil HDPE textured geomembrane	755,000	SF			
Geocomposite	755,000	SF			
GCL	590,000	SF	Domtar Paper	Plymouth, NC	Nov-10
40 mil LLDPE textured geomembrane	590,000	SF			
Geocomposite	550,000	SF			
32 oz. geotextile	40,000	SF			
40 mil LLDPE textured geomembrane	6,000	SF	Moosup- Remediation Site	Moosup, CT	Sep-10
8 oz. geotextile	6,000	SF			
16 oz. geotextile	6,000	SF			
60 mil HDPE textured geomembrane	30,000	SF	City of Albemarle LF Rain Flaps	Albemarle, NC	Aug-10
60 mil HDPE textured geomembrane	10,000	SF	Bethel LF- Frac Tanks	Bethel, VA	Sep-10
30 mil PVC geomembrane	6,000	SF	Spencers LF Gas Trench	Abingdon, VA	Nov-10
10 oz. geotextile	6,000	SF			
	23,000	SF	Virginia Beach LF Gas Trench	Virginia Beach, VA	Nov-10
40 mil LLDPE textured geomembrane	494,000	SF	Progress Energy Phase 5	Semora, NC	Nov-10
GCL	256,000	SF	Mirant Westland Ash Cell B1-B	Dickerson, MD	Nov-10
60 mil HDPE textured geomembrane	256,000	SF			
16 oz. Geotextile	256,000	SF			
40 mil PP geomembrane	12,000	SF	Pittsburgh- Private Residence	Pittsburgh, PA	Dec-10
8 mil Duraskrim Rain Cover	304,920	SF	Amelia LF Rain Cover	Amelia, VA	Dec-10
30 mil HDPE textured geomembrane	120,000	SF	Asheville Airport Closure	Asheville, NC	Nov-10
Geogrid	585,000	SF	Curley Hollow LF Phase 1A	St. Paul, VA	10-Nov
10 oz. geotextile	585,000	SF			
16 Oz.	2,687,892	SF			
Geocomposite	684,522	SF			
50 mil PVC geomembrane	1,686,207	SF			

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Appendix H

Geomembrane and GCL Conformance and Laboratory Seam Test Results

Table of Contents

- Geomembrane Conformance Test and Thickness Results
- GCL Conformance Test Results
- 40-mil LLDPE Geomembrane Seam Project Acceptance Criteria
- GCL Project Acceptance Criteria
- Laboratory Destructive Seam Test Results
- Geosynthetic Tension Calculations

Geomembrane Conformance Test and Thickness Results



October 19, 2010

Mail To:

Todd Martin
RMT, Inc.
744 Heartland Trail
Madison, WI 53717

Bill To:

<= Same

email: todd.martin@rmtinc.com
cc email: terry.halena@rmt.com

Dear Mr. Martin:

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: **Domtar Phase 1A & 1B Final Cover**

TRI Job Reference Number: E2348-47-08

Material(s) Tested: 12, Agru 40 mil Microspike LLDPE Geomembrane(s)

Test(s) Requested: Thickness (ASTM D 5994)
Asperity Height (GRI GM 12)
Density (ASTM D 1505)
Carbon Black Content (ASTM D 4218)
Carbon Dispersion (ASTM D 5596)
Tensile Properties (ASTM D 6693)
Tear Resistance (ASTM D 1004)

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

Sincerely,

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager



GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 241229.10
TRI Log #: E2348-47-08

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)	41	42	41	40	41	40	42	42	41	41	41	40	1	38 min ave 8 of 10,36 34 min
Asperity Height (GRI GM 12)														
Asperity Height (mils) - Side A	33	32	30	30	34	34	34	34	32	33	30	9	10 min	
Asperity Height (mils) - Side B	30	30	31	32	32	30	32	31	34	34	32	2	10 min	
Density (ASTM D 1505)														
Density (g/cm3)	0.934	0.934	0.934										0.000	0.939 max
Carbon Black Content (ASTM D 4218)														
% Carbon Black	2.20	2.21											0.01	2 - 3
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									9 in 1 or 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)	82	80	79	82	74								3	
TD Yield Strength (ppi)	85	84	81	79	81								2	
MD Break Strength (ppi)	130	145	128	121	163								17	60 min
TD Break Strength (ppi)	119	122	114	116	121								3	60 min
MD Yield Elongation (%)	24	29	29	27	30								2	
TD Yield Elongation (%)	19	19	19	20	20								1	
MD Break Elongation (%)	474	464	408	450	421								28	250 min
TD Break Elongation (%)	504	496	489	483	494								8	250 min
Tear Resistance (ASTM D 1004)														
MD Tear Strength (lbs)	33	37	36	36	29	35	38	32	31	34	34	3	3	22 min
TD Tear Strength (lbs)	41	35	32	39	34	39	34	33	31	30	35	3	3	22 min
MD Machine Direction	TD Transverse Direction					NA Not Available								

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.

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.

Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane

Sample Identification: 241335.10

TRI Log #: E2348-47-08

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)	41	41	41	41	42	42	40	40	40	40		41	1	38 min ave 8 of 10,36
												40	<< min	34 min
Asperity Height (GRI GM 12)														
Asperity Height (mils) - Side A	31	31	32	33	33	31	32	32	35	35		30	9	10 min
Asperity Height (mils) - Side B	36	38	31	31	31	32	32	32	32	33		33	2	10 min
Density (ASTM D 1505)														
Density (g/cm3)	0.934	0.934	0.934									0.934	0.000	0.939 max
Carbon Black Content (ASTM D 4218)														
% Carbon Black	2.25	2.27										2.26	0.01	2 - 3
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									9 in 1 or 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)	79	81	82	79	81							80	1	
TD Yield Strength (ppi)	71	93	86	85	79							83	8	
MD Break Strength (ppi)	148	138	116	137	142							136	12	60 min
TD Break Strength (ppi)	111	123	124	119	110							117	7	60 min
MD Yield Elongation (%)	40	40	40	40	40							40	0	
TD Yield Elongation (%)	17	26	26	26	26							24	4	
MD Break Elongation (%)	460	449	351	474	435							434	48	250 min
TD Break Elongation (%)	524	528	531	509	491							517	16	250 min
Tear Resistance (ASTM D 1004)														
MD Tear Strength (lbs)	33	34	39	33	32	33	32	33	32	35		34	2	22 min
TD Tear Strength (lbs)	34	31	30	32	29	31	31	35	38	32		32	3	22 min
MD Machine Direction	TD Transverse Direction					NA Not Available								

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.

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.

Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Thickness (ASTM D 5994)
TRI Log #: E2348-47-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Sample Identification: 241230														
Thickness (mils)	44	44	43	47	46	43	43	40	44	43	44	40	2	38 min ave 8 of 10,36
													<< min	34 min
Sample Identification: 241231														
Thickness (mils)	43	42	42	43	40	44	40	43	45	43	43	40	2	38 min ave 8 of 10,36
													<< min	34 min
Sample Identification: 241232														
Thickness (mils)	45	43	40	40	45	43	41	42	44	41	42	40	2	38 min ave 8 of 10,36
													<< min	34 min
Sample Identification: 241233														
Thickness (mils)	44	42	40	43	45	45	42	44	40	42	43	40	2	38 min ave 8 of 10,36
													<< min	34 min
Sample Identification: 241234														
Thickness (mils)	44	48	46	40	43	43	44	45	45	45	44	40	2	38 min ave 8 of 10,36
													<< min	34 min

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.

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.

Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Thickness (ASTM D 5994)
TRI Log #: E2348-47-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample Identification: 241336													
Thickness (mils)	44	42	44	42	42	40	42	44	41	45	43	2	38 min ave 8 of 10,36
											40	<< min	34 min
Sample Identification: 241337													
Thickness (mils)	42	43	42	40	40	43	44	41	42	44	42	1	38 min ave 8 of 10,36
											40	<< min	34 min
Sample Identification: 241338													
Thickness (mils)	43	44	42	43	43	40	42	42	45	44	43	1	38 min ave 8 of 10,36
											40	<< min	34 min
Sample Identification: 241339													
Thickness (mils)	46	41	46	44	44	42	40	44	44	46	44	2	38 min ave 8 of 10,36
											40	<< min	34 min
Sample Identification: 241340													
Thickness (mils)	43	44	43	40	40	40	42	46	44	42	42	2	38 min ave 8 of 10,36
											40	<< min	34 min

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.

Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Asperity Height (GRI GM 12)
TRI Log #: E2348-47-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample identification: 241230													
Asperity Height (mils) - Side A	34	33	32	34	30	29	33	31	31	33	29	9	10 min
Asperity Height (mils) - Side B	35	31	31	33	33	30	38	34	31	28	32	3	10 min
Sample identification: 241231													
Asperity Height (mils) - Side A	36	28	21	31	30	28	26	26	32	31	27	9	10 min
Asperity Height (mils) - Side B	33	36	29	33	32	36	32	34	33	37	34	2	10 min
Sample identification: 241232													
Asperity Height (mils) - Side A	31	35	33	29	24	28	31	28	33	29	28	9	10 min
Asperity Height (mils) - Side B	29	32	31	37	32	34	32	35	35	35	33	2	10 min
Sample identification: 241233													
Asperity Height (mils) - Side A	34	32	33	35	31	26	32	30	29	31	29	9	10 min
Asperity Height (mils) - Side B	35	37	42	34	32	33	30	34	33	32	34	3	10 min
Sample identification: 241234													
Asperity Height (mils) - Side A	36	32	31	32	29	29	36	26	32	35	29	9	10 min
Asperity Height (mils) - Side B	36	35	34	34	32	38	33	40	34	32	35	3	10 min

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.

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.

Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Asperity Height (GRI GM 12)
TRI Log #: E2348-47-08

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample Identification: 241336													
Asperity Height (mils) - Side A	39	31	28	34	36	36	34	35	33	35	31	10	10 min
Asperity Height (mils) - Side B	37	31	32	33	34	34	35	32	34	36	34	2	10 min
Sample Identification: 241337													
Asperity Height (mils) - Side A	38	35	32	30	36	33	36	35	34	36	32	10	10 min
Asperity Height (mils) - Side B	35	33	37	35	32	32	32	32	33	35	34	2	10 min
Sample Identification: 241338													
Asperity Height (mils) - Side A	34	32	35	34	36	32	37	33	31	33	31	9	10 min
Asperity Height (mils) - Side B	38	36	35	32	32	32	34	28	36	34	34	3	10 min
Sample Identification: 241339													
Asperity Height (mils) - Side A	38	33	30	35	33	34	36	32	36	35	31	10	10 min
Asperity Height (mils) - Side B	34	35	30	32	33	31	33	33	30	37	33	2	10 min
Sample Identification: 241340													
Asperity Height (mils) - Side A	31	34	30	35	33	31	32	33	34	35	30	9	10 min
Asperity Height (mils) - Side B	32	35	28	35	29	31	33	33	31	30	32	2	10 min

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October 19, 2010

Mail To:

Todd Martin
RMT, Inc.
744 Heartland Trail
Madison, WI 53717

Bill To:

<= Same

email: todd.martin@rmtinc.com
cc email: terry.halena@rmt.com

Dear Mr. Martin:

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: Domtar Phase 1A & 1B Final Cover

TRI Job Reference Number: E2348-49-03

Material(s) Tested: 11, Agru 40 mil Microspike LLDPE Geomembrane(s)

Test(s) Requested: Thickness (ASTM D 5994)
Asperity Height (GRI GM 12)
Density (ASTM D 1505)
Carbon Black Content (ASTM D 4218)
Carbon Dispersion (ASTM D 5596)
Tensile Properties (ASTM D 6693)
Tear Resistance (ASTM D 1004)

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

Sincerely,

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

11



GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 241459.10
TRI Log #: E2348-49-03

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)	42	43	42	40	44	43	40	40	40	40	49	42	3	38 min ave 8 of 10,36
												40	<< min	34 min
Asperity Height (GRI GM 12)														
Asperity Height (mils) - Side A	35	38	39	38	33	31	36	37	35	37		33	10	10 min
Asperity Height (mils) - Side B	35	35	34	34	34	36	35	33	35	37		35	1	10 min
Density (ASTM D 1505)														
Density (g/cm3)	0.933	0.933	0.933									0.933	0.000	0.939 max
Carbon Black Content (ASTM D 4218)														
% Carbon Black	2.30	2.28										2.29	0.01	2 - 3
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									9 in 1 or 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)	81	86	82	76	78							81	4	
TD Yield Strength (ppi)	85	83	88	82	86							85	2	
MD Break Strength (ppi)	146	111	138	133	151							136	16	60 min
TD Break Strength (ppi)	114	147	124	123	133							128	12	60 min
MD Yield Elongation (%)	24	22	22	22	28							24	3	
TD Yield Elongation (%)	21	21	21	16	19							20	2	
MD Break Elongation (%)	486	371	474	426	419							435	46	250 min
TD Break Elongation (%)	453	594	484	541	565							527	58	250 min
Tear Resistance (ASTM D 1004)														
MD Tear Strength (lbs)	35	38	33	35	34	35	36	33	33	32		34	2	22 min
TD Tear Strength (lbs)	31	29	31	31	30	32	31	29	31	34		31	1	22 min
MD Machine Direction	TD Transverse Direction					NA Not Available								

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.

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Thickness (ASTM D 5994)
TRI Log #: E2348-49-03

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Sample Identification: 241454														
Thickness (mils)	42	41	39	42	42	40	40	41	42	42	41	39	1	38 min ave 8 of 10,36
													<< min	34 min
Sample Identification: 241455														
Thickness (mils)	44	42	41	39	41	42	39	43	38	45	41	38	2	38 min ave 8 of 10,36
													<< min	34 min
Sample Identification: 241456														
Thickness (mils)	42	40	38	41	41	42	39	42	40	42	41	38	1	38 min ave 8 of 10,36
													<< min	34 min
Sample Identification: 241457														
Thickness (mils)	45	42	38	40	40	37	39	41	40	41	40	37	2	38 min ave 8 of 10,36
													<< min	34 min
Sample Identification: 241458														
Thickness (mils)	46	39	42	42	41	41	42	41	38	46	42	38	3	38 min ave 8 of 10,36
													<< min	34 min

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Thickness (ASTM D 5994)
TRI Log #: E2348-49-03

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample Identification: 241460													
Thickness (mils)	42	39	38	42	43	40	40	40	43	41	41	2	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241461													
Thickness (mils)	45	40	40	42	41	41	41	40	40	44	41	2	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241462													
Thickness (mils)	45	40	39	38	43	42	40	41	42	45	42	2	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241563													
Thickness (mils)	43	41	40	41	38	41	39	43	41	37	40	2	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241564													
Thickness (mils)	42	41	38	42	41	40	41	41	43	45	41	2	38 min ave 8 of 10,36
												<< min	34 min

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.

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Asperity Height (GRI GM 12)
TRI Log #: E2348-49-03

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample Identification: 241454													
Asperity Height (mils) - Side A	32	37	35	35	34	37	37	35	35	34	32	10	10 min
Asperity Height (mils) - Side B	30	34	32	32	33	35	31	35	32	34	33	2	10 min
Sample Identification: 241455													
Asperity Height (mils) - Side A	35	35	30	35	36	35	37	37	36	38	32	10	10 min
Asperity Height (mils) - Side B	35	31	26	26	34	34	34	31	34	37	32	4	10 min
Sample Identification: 241456													
Asperity Height (mils) - Side A	37	35	36	36	35	34	35	35	35	35	32	10	10 min
Asperity Height (mils) - Side B	38	34	35	33	34	34	34	33	35	33	34	1	10 min
Sample Identification: 241457													
Asperity Height (mils) - Side A	38	33	31	35	38	36	36	37	35	37	33	10	10 min
Asperity Height (mils) - Side B	33	34	33	33	34	32	34	35	31	33	33	1	10 min
Sample Identification: 241458													
Asperity Height (mils) - Side A	33	34	34	34	36	36	36	37	38	36	32	10	10 min
Asperity Height (mils) - Side B	33	30	32	35	33	33	35	35	33	36	34	2	10 min

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Asperity Height (GRI GM 12)
TRI Log #: E2348-49-03

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample Identification: 241460													
Asperity Height (mils) - Side A	37	36	36	36	30	36	36	35	36	35	32	10	10 min
Asperity Height (mils) - Side B	37	34	33	34	30	33	41	33	34	34	34	3	10 min
Sample Identification: 241461													
Asperity Height (mils) - Side A	35	35	37	36	34	35	36	34	34	36	32	10	10 min
Asperity Height (mils) - Side B	33	35	35	32	34	34	34	39	35	35	35	2	10 min
Sample Identification: 241462													
Asperity Height (mils) - Side A	38	35	36	37	37	36	32	31	34	35	32	10	10 min
Asperity Height (mils) - Side B	34	31	34	33	36	34	31	36	31	34	33	2	10 min
Sample Identification: 241563													
Asperity Height (mils) - Side A	37	37	32	35	37	37	34	36	37	37	33	10	10 min
Asperity Height (mils) - Side B	36	32	31	31	36	32	35	34	34	33	33	2	10 min
Sample Identification: 241564													
Asperity Height (mils) - Side A	37	39	36	37	34	36	36	37	37	37	34	10	10 min
Asperity Height (mils) - Side B	32	35	32	33	33	35	35	35	36	31	34	2	10 min

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October 19, 2010

Mail To:

Todd Martin
RMT, Inc.
744 Heartland Trail
Madison, WI 53717

Bill To:

<= Same

email: todd.martin@rmtinc.com
cc email: terry.halena@rmt.com

Dear Mr. Martin:

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: Domtar Phase 1A & 1B Final Cover

TRI Job Reference Number: E2348-47-09

Material(s) Tested: One, 40 mil Agru Microspike LLDPE Geomembrane(s)

Test(s) Requested: Thickness (ASTM D 5994)
Asperity Height (GRI GM 12)
Density (ASTM D 1505)
Carbon Black Content (ASTM D 4218)
Carbon Dispersion (ASTM D 5596)
Tensile Properties (ASTM D 6693)
Tear Resistance (ASTM D 1004)

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

Sincerely,

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

17



GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 241453.10
TRI Log #: E2348-47-09

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)	40	41	40	40	43	41	40	40	40	40	41	40	1	38 min ave 8 of 10, 36
													<< min	34 min
Asperity Height (GRI GM 12)														
Asperity Height (mils) - Side A	33	33	31	31	31	30	31	32	36	34	30	9	10 min	
Asperity Height (mils) - Side B	34	34	33	33	33	35	34	32	34	34	34	1	10 min	
Density (ASTM D 1505)														
Density (g/cm ³)	0.933	0.933	0.933								0.933	0.000	0.939 max	
Carbon Black Content (ASTM D 4218)														
% Carbon Black	2.46	2.46									2.46	0.00	2 - 3	
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1								9 in 1 or 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)	77	81	79	74	74						77	3		
TD Yield Strength (ppi)	83	85	86	79	73						81	5		
MD Break Strength (ppi)	145	127	147	96	140						131	21	60 min	
TD Break Strength (ppi)	131	135	119	122	121						126	7	60 min	
MD Yield Elongation (%)	32	30	33	26	29						30	3		
TD Yield Elongation (%)	18	21	20	19	19						19	1		
MD Break Elongation (%)	496	426	454	358	434						434	50	250 min	
TD Break Elongation (%)	535	538	470	535	535						523	29	250 min	
Tear Resistance (ASTM D 1004)														
MD Tear Strength (lbs)	29	33	32	33	32	37	33	29	34	33	33	2	22 min	
TD Tear Strength (lbs)	34	34	28	30	30	32	30	32	34	26	31	3	22 min	
MD Machine Direction	TD Transverse Direction					NA Not Available								

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.

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October 21, 2010

Mail To:

Todd Martin
RMT, Inc.
744 Heartland Trail
Madison, WI 53717

Bill To:

<= Same

email: todd.martin@rmtinc.com
cc email: terry.halena@rmt.com

Dear Mr. Martin:

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: Domtar Phase 1A & 1B Final Cover

TRI Job Reference Number: E2348-51-10

Material(s) Tested: 16, Agru 40 mil Microspike LLDPE Geomembrane(s)

Test(s) Requested: Thickness (ASTM D 5994)
Asperity Height (GRI GM 12)
Density (ASTM D 1505)
Carbon Black Content (ASTM D 4218)
Carbon Dispersion (ASTM D 5596)
Tensile Properties (ASTM D 6693)
Tear Resistance (ASTM D 1004)

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

Sincerely,

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 241691.10
TRI Log #: E2348-51-10

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)	41	41	42	42	43	43	43	42	42	41	42	41	1	38 min ave 8 of 10,36
													<< min	34 min
Asperity Height (GRI GM 12)														
Asperity Height (mils) - Side A	32	36	35	35	35	36	37	35	38	36	32	32	10	10 min
Asperity Height (mils) - Side B	37	37	36	37	38	40	38	37	35	36	37	37	1	10 min
Density (ASTM D 1505)														
Density (g/cm3)	0.932	0.932	0.932								0.932	0.000	0.939 max	
Carbon Black Content (ASTM D 4218)														
% Carbon Black	2.27	2.28									2.28	0.01	2 - 3	
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									9 in
Rating - 2nd field view	1	1	1	1	1									1 or 2 1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)														
MD Yield Strength (ppi)	77	84	77	82	78						80	3		
TD Yield Strength (ppi)	77	85	82	83	87						83	4		
MD Break Strength (ppi)	108	110	122	142	125						121	14	60 min	
TD Break Strength (ppi)	113	104	102	108	123						110	8	60 min	
MD Yield Elongation (%)	28	28	28	36	32						31	4		
TD Yield Elongation (%)	22	21	23	23	19						22	2		
MD Break Elongation (%)	410	361	445	385	419						404	32	250 min	
TD Break Elongation (%)	505	419	428	486	521						472	46	250 min	
Tear Resistance (ASTM D 1004)														
MD Tear Strength (lbs)	39	35	35	35	33	34	34	33	35	32	34	2	22 min	
TD Tear Strength (lbs)	33	29	29	30	31	34	31	41	30	36	32	4	22 min	
MD Machine Direction	TD Transverse Direction					NA Not Available								

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 241704.10
TRI Log #: E2348-51-10

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)	38	39	43	42	38	40	42	42	42	41	41	2	38 min ave 8 of 10,36
												<< min	34 min
Asperity Height (GRI GM 12)													
Asperity Height (mils) - Side A	37	35	36	35	36	37	37	38	36	37	33	10	10 min
Asperity Height (mils) - Side B	37	36	38	32	36	38	36	37	36	37	36	2	10 min
Density (ASTM D 1505)													
Density (g/cm3)	0.933	0.933	0.933								0.933	0.000	0.939 max
Carbon Black Content (ASTM D 4218)													
% Carbon Black	2.28	2.27									2.28	0.01	2 - 3
Carbon Black Dispersion (ASTM D 5596)													
Rating - 1st field view	1	1	1	1	1								9 in
Rating - 2nd field view	1	1	1	1	1								1 or 2 1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	89	83	86	81	83						84	3	
TD Yield Strength (ppi)	85	93	80	101	83						88	9	
MD Break Strength (ppi)	170	101	173	125	128						139	31	60 min
TD Break Strength (ppi)	124	131	70	137	116						116	27	60 min
MD Yield Elongation (%)	24	27	24	23	24						24	2	
TD Yield Elongation (%)	19	18	17	21	27						20	4	
MD Break Elongation (%)	446	400	450	469	439						441	25	250 min
TD Break Elongation (%)	498	543	194	523	475						446	143	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	35	41	37	34	34	32	31	37	31	37	35	3	22 min
TD Tear Strength (lbs)	30	33	32	31	34	33	31	39	42	35	34	4	22 min
MD Machine Direction	TD Transverse Direction			NA Not Available									

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 241797.10
TRI Log #: E2348-51-10

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)	39	41	40	40	39	38	40	39	40	41	40	38	1	38 min ave 8 of 10,36
													<< min	34 min
Asperity Height (GRI GM 12)														
Asperity Height (mils) - Side A	36	38	35	36	37	35	36	37	38	42	34	10	10 min	
Asperity Height (mils) - Side B	37	37	40	40	36	34	39	37	36	36	37	2	10 min	
Density (ASTM D 1505)														
Density (g/cm ³)	0.933	0.933	0.933									0.933	0.000	0.939 max
Carbon Black Content (ASTM D 4218)														
% Carbon Black	2.25	2.24										2.25	0.01	2 - 3
Carbon Black Dispersion (ASTM D 5596)														
Rating - 1st field view	1	1	1	1	1									9 in
Rating - 2nd field view	1	1	1	1	1									1 or 2 1 Cat 3
Tensile Properties (ASTM D 6693, 2 ipm strain rate)														
MD Yield Strength (ppi)	79	78	78	74	74							77	2	
TD Yield Strength (ppi)	81	89	90	85	79							85	5	
MD Break Strength (ppi)	128	145	146	112	116							129	16	60 min
TD Break Strength (ppi)	122	129	132	115	110							122	9	60 min
MD Yield Elongation (%)	30	30	30	23	28							28	3	
TD Yield Elongation (%)	22	23	19	21	27							22	3	
MD Break Elongation (%)	438	415	451	461	445							442	17	250 min
TD Break Elongation (%)	516	528	521	506	481							511	18	250 min
Tear Resistance (ASTM D 1004)														
MD Tear Strength (lbs)	32	30	34	33	36	35	40	38	36	35		35	3	22 min
TD Tear Strength (lbs)	36	35	34	34	32	31	31	32	29	32		33	2	22 min
MD Machine Direction	TD Transverse Direction					NA Not Available								

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Thickness (ASTM D 5994)
TRI Log #: E2348-51-10

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.	
	1	2	3	4	5	6	7	8	9	10				
Sample Identification: 241692.10														
Thickness (mils)	39	39	39	39	39	43	40	40	37	40	40	37	1	38 min ave 8 of 10,36 34 min
Sample Identification: 241700.10														
Thickness (mils)	43	43	42	40	40	44	43	42	42	41	42	40	1	38 min ave 8 of 10,36 34 min
Sample Identification: 241701.10														
Thickness (mils)	42	42	41	41	41	38	47	38	38	43	41	38	3	38 min ave 8 of 10,36 34 min
Sample Identification: 241702.10														
Thickness (mils)	45	41	43	44	44	42	41	41	42	42	43	41	1	38 min ave 8 of 10,36 34 min
Sample Identification: 241703.10														
Thickness (mils)	43	47	46	47	42	44	44	43	47	47	45	42	2	38 min ave 8 of 10,36 34 min

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Thickness (ASTM D 5994)
TRI Log #: E2348-51-10

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample Identification: 241706.10													
Thickness (mils)	43	43	40	44	42	42	40	41	42	43	42	1	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241706.10													
Thickness (mils)	42	42	42	43	41	43	40	40	42	44	42	1	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241707.10													
Thickness (mils)	44	43	41	42	42	44	42	43	42	44	41	1	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241793.10													
Thickness (mils)	43	44	44	43	40	41	42	39	41	39	42	2	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241794.10													
Thickness (mils)	40	41	44	45	45	44	43	43	44	40	43	2	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241795.10													
Thickness (mils)	40	43	42	42	43	41	42	44	42	40	42	1	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241796.10													
Thickness (mils)	41	40	38	38	41	41	39	38	40	44	40	2	38 min ave 8 of 10,36
												<< min	34 min
Sample Identification: 241799.10													
Thickness (mils)	41	46	36	40	44	39	40	39	41	44	41	3	38 min ave 8 of 10,36
												<< min	34 min

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Asperity Height (GR: GM 12)
TRI Log #: E2348-61-10

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample Identification: 241692.10													
Asperity Height (mils) - Side A	36	36	36	35	37	38	37	37	38	39	34	10	10 min
Asperity Height (mils) - Side B	36	38	40	37	36	35	36	38	35	38	37	1	10 min
Sample Identification: 241700.10													
Asperity Height (mils) - Side A	34	35	36	35	36	35	32	33	32	34	31	10	10 min
Asperity Height (mils) - Side B	36	35	38	37	36	36	36	37	35	34	36	1	10 min
Sample Identification: 241701.10													
Asperity Height (mils) - Side A	35	34	36	39	36	36	40	37	37	38	34	10	10 min
Asperity Height (mils) - Side B	36	35	34	30	32	38	36	32	36	38	35	3	10 min
Sample Identification: 241702.10													
Asperity Height (mils) - Side A	33	34	32	33	36	34	34	35	36	35	31	9	10 min
Asperity Height (mils) - Side B	37	38	36	34	34	34	34	36	34	36	35	1	10 min
Sample Identification: 241703.10													
Asperity Height (mils) - Side A	37	36	33	39	35	35	37	32	33	34	32	10	10 min
Asperity Height (mils) - Side B	39	36	39	35	38	38	38	33	34	35	36	2	10 min

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GEOMEMBRANE TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Agru 40 mil Microspike LLDPE Geomembrane
Asperity Height (GRI GM 12)
TRI Log #: E2348-51-10

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	PROJ. SPEC.
	1	2	3	4	5	6	7	8	9	10			
Sample Identification: 241705.10													
Asperity Height (mils) - Side A	34	32	30	32	34	33	35	32	33	34	30	9	10 min
Asperity Height (mils) - Side B	35	34	35	34	35	33	34	35	36	34	35	1	10 min
Sample Identification: 241706.10													
Asperity Height (mils) - Side A	32	34	35	35	36	33	32	33	34	32	31	9	10 min
Asperity Height (mils) - Side B	37	35	34	36	34	36	36	36	35	34	35	1	10 min
Sample Identification: 241707.10													
Asperity Height (mils) - Side A	35	33	32	29	34	36	35	34	33	37	31	10	10 min
Asperity Height (mils) - Side B	33	36	33	32	35	32	32	33	32	34	33	1	10 min
Sample Identification: 241793.10													
Asperity Height (mils) - Side A	37	36	35	32	32	35	35	36	36	34	32	10	10 min
Asperity Height (mils) - Side B	34	36	34	35	39	34	35	34	38	36	36	2	10 min
Sample Identification: 241794.10													
Asperity Height (mils) - Side A	34	38	37	34	40	36	33	39	36	36	33	10	10 min
Asperity Height (mils) - Side B	33	38	30	34	36	37	35	31	36	33	34	3	10 min
Sample Identification: 241795.10													
Asperity Height (mils) - Side A	34	35	36	34	36	34	34	35	34	36	32	10	10 min
Asperity Height (mils) - Side B	34	33	35	32	37	32	35	34	33	36	34	2	10 min
Sample Identification: 241796.10													
Asperity Height (mils) - Side A	34	35	35	35	36	38	38	36	36	37	33	10	10 min
Asperity Height (mils) - Side B	34	36	39	34	39	34	37	36	38	35	36	2	10 min
Sample Identification: 241799.10													
Asperity Height (mils) - Side A	38	38	38	40	30	38	34	37	35	37	33	10	10 min
Asperity Height (mils) - Side B	32	38	35	37	31	36	35	31	37	33	35	3	10 min

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GCL Conformance Test Results



October 20, 2010
October 21, 2010 Updated

Mail To:

Todd Martin
RMT, Inc.
744 Heartland Trail
Madison, WI 53717

Bill To:

<= Same

email: todd.martin@rmtinc.com
cc email: terry.halena@rmt.com

Dear Mr. Martin:

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: **Domtar Phase 1A & 1B Final Cover**

TRI Job Reference Number: E2347-24-04

Material(s) Tested: 7 Bentomat DN GCL(s)

Test(s) Requested: Mass/Unit Area (ASTM D 5993)
Bentonite - Fluid Loss (ASTM D 5891)
Bentonite - Swell Index (ASTM D 5890)
Index Flux (ASTM D 5887)

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

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com



GCL TEST RESULTS
TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Bentomat DN GCL
Sample Identification: 6974
TRI Log #: E2347-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.		
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.93	0.92	0.82	0.93	0.92							0.90	0.05	
Moisture Content (%)	27.6	26.4	28.5	27.8	27.1							27.5	0.8	
Bentonite - Fluid Loss (ASTM D 5891)														
Slurry temperature at test initiation (26.9 degrees C)														
Fluid Loss (mL)	14.6										15			
Note: Bentonite sample tested is taken from finished GCL product.														
Bentonite - Swell Index (ASTM D 5890)														
Water temperature at test initiation (23 degrees C)														
Swell index (mL/2g)	32										32			
Note: Bentonite sample tested is taken from finished GCL product.														
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	2.4E-09										2.4E-09			
Hydraulic Conductivity (cm/sec)	2.0E-09										2.0E-09			
MD Machine Direction	TD Transverse Direction			NA Not Available										

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GCL TEST RESULTS

TRI Client: RMT, Inc.
 Project: Domtar Phase 1A & 1B Final Cover

Material: Bentomat DN GCL
 Sample Identification: 7019
 TRI Log #: E2347-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	
	1	2	3	4	5	6	7	8	9	10			
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)													
Bentonite mass/unit area (lbs/ft ²)	0.88	0.79	0.97	0.95	0.94							0.91	0.07
Moisture Content (%)	27.3	26.8	26.9	26.7	27.8							27.1	0.5
Bentonite - Fluid Loss (ASTM D 5891)													
Slurry temperature at test initiation (26.9 degrees C)													
Fluid Loss (mL)	13.6										14		
Note: Bentonite sample tested is taken from finished GCL product.													
Bentonite - Swell Index (ASTM D 5890)													
Water temperature at test initiation (23 degrees C)													
Swell index (mL/2g)	33										33		
Note: Bentonite sample tested is taken from finished GCL product.													
Index Flux (ASTM D 5887)													
Index Flux (m ³ /m ² /sec)	3.1E-09										3.1E-09		
Hydraulic Conductivity (cm/sec)	3.1E-09										3.1E-09		
MD Machine Direction	TD Transverse Direction	NA Not Available											

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GCL TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Bentomat DN GCL
Sample Identification: 7064
TRI Log #: E2347-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	
	1	2	3	4	5	6	7	8	9	10			
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)													
Bentonite mass/unit area (lbs/ft ²)	0.88	0.91	0.83	0.87	0.84							0.87	0.03
Moisture Content (%)	28.8	27.0	29.1	27.9	29.3							28.4	1.0
Bentonite - Fluid Loss (ASTM D 5891)													
Slurry temperature at test initiation (28.2 degrees C)													
Fluid Loss (mL)	13.8										14		
Note: Bentonite sample tested is taken from finished GCL product.													
Bentonite - Swell Index (ASTM D 5890)													
Water temperature at test initiation (23 degrees C)													
Swell index (mL/2g)	34										34		
Note: Bentonite sample tested is taken from finished GCL product.													
Index Flux (ASTM D 5887)													
Index Flux (m ³ /m ² /sec)	3.2E-09										3.2E-09		
Hydraulic Conductivity (cm/sec)	3.0E-09										3.0E-09		
MD Machine Direction	TD Transverse Direction				NA Not Available								

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GCL TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Bentomat DN GCL
Sample Identification: 7109
TRI Log #: E2347-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.		
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.81	0.85	0.82	0.88	0.84							0.84	0.03	
Moisture Content (%)	28.9	26.9	29.0	28.3	28.3							28.3	0.8	
Bentonite - Fluid Loss (ASTM D 5891)														
Slurry temperature at test initiation (27.5 degrees C)														
Fluid Loss (mL)	13.6										14			
Note: Bentonite sample tested is taken from finished GCL product.														
Bentonite - Swell Index (ASTM D 5890)														
Water temperature at test initiation (23 degrees C)														
Swell index (mL/2g)	33										33			
Note: Bentonite sample tested is taken from finished GCL product.														
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	3.3E-09										3.3E-09			
Hydraulic Conductivity (cm/sec)	3.2E-09										3.2E-09			
MD Machine Direction	TD Transverse Direction				NA Not Available									

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GCL TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Bentomat DN GCL
Sample Identification: 7154
TRI Log #: E2347-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.		
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.81	0.79	0.89	0.86	0.84							0.84	0.04	
Moisture Content (%)	28.6	27.4	28.6	28.4	28.1							28.2	0.5	
Bentonite - Fluid Loss (ASTM D 5891)														
Slurry temperature at test initiation (27.9 degrees C)														
Fluid Loss (mL)	15.4										15			
Note: Bentonite sample tested is taken from finished GCL product.														
Bentonite - Swell Index (ASTM D 5890)														
Water temperature at test initiation (23 degrees C)														
Swell index (mL/2g)	33										33			
Note: Bentonite sample tested is taken from finished GCL product.														
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	3.2E-09										3.2E-09			
Hydraulic Conductivity (cm/sec)	2.9E-09										2.9E-09			
MD Machine Direction	TD Transverse Direction				NA Not Available									

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.

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GCL TEST RESULTS

TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Bentomat DN GCL
Sample Identification: 7199
TRI Log #: E2347-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.	
	1	2	3	4	5	6	7	8	9	10			
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)													
Bentonite mass/unit area (lbs/ft ²)	0.84	0.92	0.83	0.82	0.92							0.87	0.05
Moisture Content (%)	28.8	27.3	29.7	29.1	28.6							28.7	0.9
Bentonite - Fluid Loss (ASTM D 5891)													
Slurry temperature at test initiation (27.5 degrees C)													
Fluid Loss (mL)	15.8											16	
Note: Bentonite sample tested is taken from finished GCL product.													
Bentonite - Swell Index (ASTM D 5890)													
Water temperature at test initiation (23 degrees C)													
Swell index (mL/2g)	33											33	
Note: Bentonite sample tested is taken from finished GCL product.													
Index Flux (ASTM D 5887)													
Index Flux (m ³ /m ² /sec)	3.3E-09											3.3E-09	
Hydraulic Conductivity (cm/sec)	3.6E-09											3.6E-09	
MD Machine Direction	TD Transverse Direction				NA Not Available								

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.

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GCL TEST RESULTS
TRI Client: RMT, Inc.
Project: Domtar Phase 1A & 1B Final Cover

Material: Bentomat DN GCL
Sample Identification: 7243
TRI Log #: E2347-24-04

PARAMETER	TEST REPLICATE NUMBER										MEAN	STD. DEV.		
	1	2	3	4	5	6	7	8	9	10				
Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.)														
Bentonite mass/unit area (lbs/ft ²)	0.85	0.83	0.86	0.88	0.90							0.86	0.03	
Moisture Content (%)	30.1	29.2	30.1	30.5	28.8							29.7	0.7	
Bentonite - Fluid Loss (ASTM D 5891)														
Slurry temperature at test initiation (27.8 degrees C)														
Fluid Loss (mL)	15.6										16			
Note: Bentonite sample tested is taken from finished GCL product.														
Bentonite - Swell Index (ASTM D 5890)														
Water temperature at test initiation (23 degrees C)														
Swell index (mL/2g)	33										33			
Note: Bentonite sample tested is taken from finished GCL product.														
Index Flux (ASTM D 5887)														
Index Flux (m ³ /m ² /sec)	3.3E-09										3.3E-09			
Hydraulic Conductivity (cm/sec)	3.1E-09										3.1E-09			
MD Machine Direction	TD Transverse Direction				NA Not Available									

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.

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40-mil LLDPE Geomembrane Seam Project Acceptance Criteria

**Table 02072-3
40-mil LLDPE Geomembrane Acceptance Specifications**

PROPERTY	TEST METHOD	UNITS	MINIMUM AVERAGE VALUE	
			Non-Textured	Textured ⁽¹⁾
Shear Strength ⁽²⁾	ASTM D4437	ppi	60	60
Shear Elongation ⁽²⁾⁽⁶⁾	--	percent	50	50
Peel Strength ^{(3),(4)} - Fusion	ASTM D4437	ppi	50	50
Peel Strength ^{(3),(4)} - Extrusion	ASTM D4437	ppi	44	44
Peel Separation ⁽⁵⁾	--	percent	25	25

NOTES:

- (1) If the lengthwise edges of the textured geomembrane panels are nontextured, then the nontextured specifications shall apply for the testing of seams made along these edges. For textured to nontextured seams, use the textured specifications.
- (2) Five out of the five test specimens shall meet these requirements. In addition, failure type must be film-tear bond (FTB) for all five specimens.
- (3) Five out of the five specimens shall meet the three requirements.
- (4) Failure type shall be film-tear bond (FTB) for five out of five test specimens.
- (5) Maximum Acceptance Value for five out of five test specimens. The locus-of-break patterns of the different seaming methods in shear and peel, the following are unacceptable break codes per their description in ASTM D6392 (in this regard, SIP is an acceptable break code):
 - Hot Wedge: AD and AD-BrK >25%.
 - Extrusion Fillet: AD1, AD2, and AD-WLD (unless strength is achieved).
- (6) Elongation measurements shall be omitted for field testing.

GCL Project Acceptance Criteria

**Table 02075
GCL Material Tests, Test Methods, and Acceptance Specifications**

	Property	Test Method	Units	Value
Bentonite properties	Free swell Fluid loss	ASTM D5890 ASTM D5891	mL/2g mL	24 (MARV) ⁽¹⁾ (min) 18 (max)
Hydraulic properties	Flux ^{(2),(3)}	ASTM 5887	m ³ /m ² -s	1 x10 ⁻⁸ (max)
Physical GCL properties	Bentonite mass per unit area	ASTM D5993	lb/sqf	0.75 (MARV) ⁽¹⁾ (min)
GCL properties	Tensile strength Peel strength	ASTM D6768 ASTM D6496	lb/in lb/in	23 (min) 2.1 (min)

NOTES:

(1) Minimum average roll value (MARV).

(2) Flux is defined as "flow rate/unit area" which can be converted to permeability using the equation:

$$\text{permeability} = \text{flux/hydraulic gradient}$$

(3) Report results at a maximum confining stress of 34 Kpa (5 psi) and 14 Kpa (2 psi) head pressure.

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Laboratory Destructive Seam Test Results

Project Name: Dornier LF3 FHJA/B CM/DR		Project Number: 05794.46.001										QA: JPH	QC: HJW								
Sample #	Sheet or Panel	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	Strain Rate (ipm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification
DT-1	S1/2	40	LLDPE/TL	DHW	0	20	1"	101	>100	No Brk	FTB	20	101	0	BRK	FTB	20	67	0	SE1	FTB
							1"	100	>100	No Brk	FTB	96	96	0	SE1	FTB	79	79	0	SE1	FTB
							1"	98	>100	No Brk	FTB	102	102	0	BRK	FTB	70	70	0	SE1	FTB
							1"	95	>100	No Brk	FTB	97	97	0	BRK	FTB	87	87	0	SE1	FTB
							1"	100	>100	No Brk	FTB	103	103	0	BRK	FTB	83	83	0	SE1	FTB
							Ave.: 99	99	>100			Ave.: 100	100	0			Ave.: 77	77	0		
DT-2	S3/5	40	LLDPE/TL	DHW	0	20	1"	106	>100	No Brk	FTB	20	100	0	BRK	FTB	20	98	0	SE1	FTB
							1"	104	>100	No Brk	FTB	101	101	0	BRK	FTB	83	83	0	SE1	FTB
							1"	104	>100	No Brk	FTB	71	71	0	SE1	FTB	82	82	0	SE1	FTB
							1"	102	>100	No Brk	FTB	97	97	0	SE1	FTB	83	83	0	SE1	FTB
							1"	103	>100	No Brk	FTB	100	100	0	BRK	FTB	82	82	0	SE1	FTB
							1"	103	>100	No Brk	FTB	Ave.: 94	94	0			Ave.: 86	86	0		
							Ave.: 104	104	>100			Ave.: 20	20	0			Ave.: 20	84	0	SE1	FTB
DT-3	S5/6	40	LLDPE/TL	DHW	0	20	1"	102	>100	No Brk	FTB	20	94	0	SE1	FTB	20	84	0	SE1	FTB
							1"	102	>100	No Brk	FTB	98	98	0	SE1	FTB	82	82	0	SE1	FTB
							1"	103	>100	No Brk	FTB	99	99	0	SE1	FTB	74	74	0	SE1	FTB
							1"	102	>100	No Brk	FTB	98	98	0	SE1	FTB	90	90	0	SE1	FTB
							1"	100	>100	No Brk	FTB	95	95	0	SE1	FTB	84	84	0	SE1	FTB
							1"	102	>100	No Brk	FTB	Ave.: 97	97	0			Ave.: 83	83	0		
							Ave.: 102	102	>100			Ave.: 20	20	0			Ave.: 20	94	0	SE1	FTB
DT-4	S7/9	40	LLDPE/TL	DHW	0	20	1"	102	>100	No Brk	FTB	20	100	0	BRK	FTB	20	94	0	SE1	FTB
							1"	100	>100	No Brk	FTB	98	98	0	SE1	FTB	93	93	0	SE1	FTB
							1"	97	>100	No Brk	FTB	96	96	0	SE1	FTB	93	93	0	SE1	FTB
							1"	100	>100	No Brk	FTB	97	97	0	SE1	FTB	89	89	0	SE1	FTB
							1"	98	>100	No Brk	FTB	95	95	0	SE1	FTB	89	89	0	SE1	FTB
							Ave.: 99	99	>100			Ave.: 97	97	0			Ave.: 92	92	0		

Break Codes:
 AD = Adhesion Failure
 AD1 = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeting
 BRK1 = Break in bottom sheeting (shear, EXT)
 BRK2 = Break in top sheeting (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center
Break Classification:
 FTB = Film-Tear Bond
 Non-FTB = Non Film-Tear Bond

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 WLDPE = Very Low Density Polyethylene
 PVS = Polyvinyl Chloride
 XR-5 (EIA-F)

Delamination in the plane of scrim (peel, fabric-reinforced)
Fabric Pull-Out/plies break (no test, fabric-reinforced)
Break at the edge of hot tack (EXT, no test)
Break at seam edge (SVT)
Break at outer edge of seam (DHW)
Break at seam edge in bottom sheet (shear, EXT)
Break at inner edge of seam (DHW)
Break at seam edge in top sheet (shear, EXT)
Break at seam edge in bottom sheet (peel, EXT)
Break in buffed area
 No Brk = No Break

Unless otherwise noted, each coupon for the same sample had identical codes as the first coupon listed for that sample.

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Destructive Seam Analysis (ASTM D6392)

Project Name: Pomlarz IFS PH 1A/B C/M/D/R Project Number: 0579446.001 QA: JPH QC: HJW

Sample #	Sheet or Panel Number(s)	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	SHEAR				PEEL (outer weld)				PEEL (inner web)							
						Strain Rate (fpm)	Gauge Length (in.)	Strength @ Yield	Elongation Break	Break Code	Break Classification	Strain Rate (fpm)	Strength @ Yield	% Peel	Break Code	Break Classification	Strain Rate (fpm)	Strength @ Yield	% Peel	Break Code	Break Classification
DT-5	S12/14	40	LLDPE/TL	DHW	0	20	1"	181	>100	No Brk	FTB	20	91	0	BRK	FTB	20	87	0	SE1	FTB
							1"	182	>100	No Brk	FTB	89	89	0	SE1	FTB	90	90	0	SE1	FTB
							1"	100	>100	No Brk	FTB	91	91	0	SE1	FTB	86	86	0	SE1	FTB
							1"	180	>100	No Brk	FTB	89	89	0	SE1	FTB	84	84	0	SE1	FTB
							1"	101	>100	No Brk	FTB	91	91	0	SE1	FTB	84	84	0	SE1	FTB
							Ave.: 101					Ave.: 90					Ave.: 86				
DT-6	S17/18	40	LLDPE/TL	DHW	0	20	1"	98	>100	No Brk	FTB	20	80	0	BRK	FTB	20	81	0	SE1	FTB
							1"	95	>100	No Brk	FTB	77	77	0	SE1	FTB	82	82	0	SE1	FTB
							1"	94	>100	No Brk	FTB	80	80	0	SE1	FTB	80	80	0	SE1	FTB
							1"	94	>100	No Brk	FTB	82	82	0	BRK	FTB	81	81	0	SE1	FTB
							1"	96	>100	No Brk	FTB	80	80	0	SE1	FTB	83	83	0	SE1	FTB
							Ave.: 95					Ave.: 80					Ave.: 81				
DT-7	S18/19	40	LLDPE/TL	DHW	0	20	1"	97	>100	No Brk	FTB	20	89	0	BRK	FTB	20	72	0	SE1	FTB
							1"	98	>100	No Brk	FTB	88	88	0	BRK	FTB	66	66	0	SE1	FTB
							1"	98	>100	No Brk	FTB	73	73	0	BRK	FTB	90	90	0	SE1	FTB
							1"	96	>100	No Brk	FTB	85	85	0	BRK	FTB	81	81	0	SE1	FTB
							1"	94	>100	No Brk	FTB	89	89	0	BRK	FTB	92	92	0	SE1	FTB
							Ave.: 97					Ave.: 85					Ave.: 80				
DT-8	S18/19	40	LLDPE/TL	DHW	0	20	1"	102	>100	No Brk	FTB	20	92	0	SE1	FTB	20	94	0	BRK	FTB
							1"	103	>100	No Brk	FTB	98	98	0	BRK	FTB	97	97	0	BRK	FTB
							1"	105	>100	No Brk	FTB	96	96	0	SE1	FTB	98	98	0	SE1	FTB
							1"	103	>100	No Brk	FTB	100	100	0	SE1	FTB	95	95	0	SE1	FTB
							1"	102	>100	No Brk	FTB	98	98	0	SE1	FTB	94	94	0	SE1	FTB
							Ave.: 103					Ave.: 97					Ave.: 96				

Break Codes:
 AD = Adhesion Failure
 AD1 = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeting
 BRK1 = Break in bottom sheeting (shear, EXT)
 BRK2 = Break in top sheeting (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 MDPE = Very Low Density Polyethylene
 PVC = Polyvinyl Chloride
 XP-E (EIA-R)
 TL = Textured on one side.
 TB = Textured on two sides.

Break Classification:
 FTB = Film-Tear Bond
 Non-FTB = Non Film-Tear Bond

DEL = Delamination in the plane of scrim (peel, fabric-reinforced)
FP = Fabric Pull-Out/rip break (no test, fabric-reinforced)
HT = Break at the edge of hot tack (EXT, no test)
SE = Break at seam edge (SVT)
SE1 = Break at outer edge of seam (DHW)
SE1 = Break at seam edge in bottom sheet (shear, EXT)
SE2 = Break at inner edge of seam (DHW)
SE2 = Break at seam edge in top sheet (shear, EXT)
SE3 = Break at seam edge in bottom sheet (peel, EXT)
(B) = Break in buffed area
 No Brk = No Break

Project Name: Domtar: L3 PH 1A/1B CM/DR Project Number: 0579446.001 Q.A. IPR QC: HWJ

Sample #	Sheet or Panel Number(s)	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	Strain Rate (ipm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification
DJ-9	S21/23	40	LLDPE/TT	DHW	0	20	1"	99	>100	No Brk	FTB	20	81	0	SE1	FTB	20	91	0	SE1	FTB
							1"	103	>100	No Brk	FTB	92	92	0	SE1	FTB	82	82	0	SE1	FTB
							1"	103	>100	No Brk	FTB	94	94	0	SE1	FTB	86	86	0	SE1	FTB
							1"	103	>100	No Brk	FTB	91	91	0	SE1	FTB	83	83	0	SE1	FTB
							1"	102	>100	No Brk	FTB	93	93	0	SE1	FTB	85	85	0	SE1	FTB
							Avc.	102				Avc.	90				Avc.	85			
DJ-10	S23/24	40	LLDPE/TT	DHW	0	20	1"	98	>100	No Brk	FTB	20	88	0	SE1	FTB	20	77	0	SE1	FTB
							1"	95	>100	No Brk	FTB	92	92	0	SE1	FTB	78	78	0	SE1	FTB
							1"	101	>100	No Brk	FTB	96	96	0	BRK	FTB	69	69	0	SE1	FTB
							1"	101	>100	No Brk	FTB	96	96	0	BRK	FTB	80	80	0	SE1	FTB
							1"	100	>100	No Brk	FTB	91	91	0	BRK	FTB	78	78	0	SE1	FTB
							Avc.	99				Avc.	93				Avc.	76			

Break Codes:
 AD = Adhesion Failure
 AD1 = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeting
 BRK1 = Break in bottom sheeting (shear, EXT)
 BRK2 = Break in top sheeting (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 VLDPPE = Very Low Density Polyethylene
 PVC = Polyvinyl Chloride
 XPS-E (EIA-R)
 TT1 = Textured on one side.
 TT2 = Textured on two sides.

Break Classification:
 FTB = Film-Tear Bond
 Non-FTB = Non Film-Tear Bond

DEL = Delamination in the plane of scrim (peel, fabric-reinforced)
FP = Fabric Pull-Out/plies break (no test, fabric-reinforced)
HT = Break at the edge of hot tack (EXT, no test)
SE = Break at seam edge (SVT)
SE1 = Break at outer edge of seam (DHW)
SE1 = Break at seam edge in bottom sheet (shear, EXT)
SE2 = Break at inner edge of seam (DHW)
SE2 = Break at seam edge in top sheet (shear, EXT)
SE3 = Break at seam edge in bottom sheet (peel, EXT)
(E) = Break in burfed area
 No Brk = No Break

Sample #	Sheet or Panel Number(s)	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	Strain Rate (fpm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (fpm)	Strength @ Yield	% Peel	Break Code	Break Classification	Strain Rate (fpm)	Strength @ Yield	% Peel	Break Code	Break Classification
DF-11	S.27/28	40	LLDPE/TL	DHW	0	20	1"	103	>100	No Brk	FTB	20	97	0	SE1	FTB	20	93	0	SE1	FTB
							1"	103	>100	No Brk	FTB		95	0	SE1	FTB		84	0	SE1	FTB
							1"	100	>100	No Brk	FTB		95	0	BRK	FTB		84	0	SE1	FTB
							1"	100	>100	No Brk	FTB		94	0	BRK	FTB		90	0	SE1	FTB
							1"	99	>100	No Brk	FTB		90	0	SE1	FTB		80	0	SE1	FTB
							Ave.: 101					Ave.: 94					Ave.: 86				
DF-12	S.32/33	40	LLDPE/TL	DHW	2	20	1"	110	>100	No Brk	FTB	20	102	0	BRK	FTB	20	90	0	SE1	FTB
							1"	109	>100	No Brk	FTB		93	0	SE1	FTB		88	0	SE1	FTB
							1"	106	>100	No Brk	FTB		96	0	SE1	FTB		87	0	SE1	FTB
							1"	106	>100	No Brk	FTB		97	0	SE1	FTB		87	0	SE1	FTB
							1"	105	>100	No Brk	FTB		101	0	SE1	FTB		96	0	SE1	FTB
							1"	105	>100	No Brk	FTB		101	0	SE1	FTB		96	0	SE1	FTB
							Ave.: 107					Ave.: 98					Ave.: 90				
DF-13	S.33/34	40	LLDPE/TL	DHW	0	20	1"	103	>100	No Brk	FTB	20	101	0	BRK	FTB	20	97	0	SE1	FTB
							1"	103	>100	No Brk	FTB		98	0	SE1	FTB		98	0	SE1	FTB
							1"	103	>100	No Brk	FTB		99	0	SE1	FTB		87	0	SE1	FTB
							1"	106	>100	No Brk	FTB		96	0	SE1	FTB		91	0	SE1	FTB
							1"	104	>100	No Brk	FTB		97	0	SE1	FTB		95	0	SE1	FTB
							1"	104	>100	No Brk	FTB		97	0	SE1	FTB		95	0	SE1	FTB
							Ave.: 104					Ave.: 98					Ave.: 94				
DF-14	S.34/35	40	LLDPE/TL	DHW	2	20	1"	100	>100	No Brk	FTB	20	95	0	SE1	FTB	20	94	0	SE1	FTB
							1"	96	>100	No Brk	FTB		85	0	SE1	FTB		83	0	SE1	FTB
							1"	101	>100	No Brk	FTB		85	0	SE1	FTB		91	0	SE1	FTB
							1"	100	>100	No Brk	FTB		85	0	SE1	FTB		83	0	SE1	FTB
							1"	101	>100	No Brk	FTB		83	0	SE1	FTB		76	0	SE1	FTB
							Ave.: 100					Ave.: 87					Ave.: 85				

Break Codes:
 AD = Adhesion Failure
 AD1 = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeting
 BRK1 = Break in bottom sheeting (shear, EXT)
 BRK2 = Break in top sheeting (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 VLDPE = Very Low Density Polyethylene
 PVC = Polyvinyl Chloride
 XPE = (EVA)

Break Classification:
 FTB = Film-Tear Bond
 Non-FTB = Non Film-Tear Bond

Delamination in the plane of scrim (peel, fabric-reinforced)
 FP = Fabric Pull-Out/plies break (no test, fabric-reinforced)
 HT = Break at the edge of hot tack (EXT, no test)
 SE = Break at seam edge (SVT)
 SE1 = Break at outer edge of seam (DHW)
 SE1 = Break at seam edge in bottom sheet (shear, EXT)
 SE2 = Break at inner edge of seam (DHW)
 SE2 = Break at seam edge in top sheet (shear, EXT)
 SE3 = Break at seam edge in bottom sheet (peel, EXT)
 (B) = Break in buffed area
 No Brk = No Break

Project Name: Dometic LP3 PH1A/B CM/DR		Project Number: 05794.46.001		QA: JPH		QC: HIW														
Sample #	Sheet or Panel Numbers	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	SHEAR			PEEL (outer weld)			PEEL (inner weld)								
						Strain Rate (ipm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Classification	Break Code	% Peel	Strength @ Yield	Break Classification	Break Code	% Peel	Strength @ Yield	Break Classification	Break Code	
DT-16	S 36/37	40	LLDPE/71	DHW	0	20	2"	104	>100	FTB	No Brk	0	92	FTB	SEI	0	97	FTB	SEI	0
							2"	107	>100	FTB	No Brk	0	80	FTB	SEI	0	94	FTB	SEI	0
							2"	108	>100	FTB	No Brk	0	92	FTB	SEI	0	95	FTB	SEI	0
							2"	106	>100	FTB	No Brk	0	99	FTB	SEI	0	89	FTB	SEI	0
							2"	108	>100	FTB	No Brk	0	92	FTB	SEI	0	96	FTB	SEI	0
							Ave:	107					Ave:				94			
DT-17	S 58/59	40	LLDPE/71	DHW	C	20	2"	103	>100	FTB	No Brk	0	93	FTB	SEI	0	87	FTB	SEI	0
							2"	103	>100	FTB	No Brk	0	85	FTB	SEI	0	81	FTB	SEI	0
							2"	102	>100	FTB	No Brk	0	85	FTB	SEI	0	81	FTB	SEI	0
							2"	102	>100	FTB	No Brk	0	87	FTB	SEI	0	81	FTB	SEI	0
							2"	103	>100	FTB	No Brk	0	93	FTB	SEI	0	85	FTB	SEI	0
							Ave:	103					Ave:				83			
DT-18	S 42/43	40	LLDPE/71	DHW	C	20	2"	95	70	BRK	BRK	0	84	FTB	SEI	0	87	FTB	SEI	0
							2"	104	>100	FTB	No Brk	0	88	FTB	SEI	0	63	FTB	SEI	0
							2"	105	>100	FTB	No Brk	0	77	FTB	SEI	0	95	FTB	SEI	0
							2"	102	>100	FTB	No Brk	0	90	FTB	SEI	0	87	FTB	SEI	0
							2"	105	>100	FTB	No Brk	0	94	FTB	SEI	0	91	FTB	SEI	0
							Ave:	102					Ave:				85			
DT-19	S 44/46	40	LLDPE/71	DHW	C	20	2"	103	>100	FTB	No Brk	0	94	FTB	SEI	0	75	FTB	SEI	0
							2"	103	>100	FTB	No Brk	0	90	FTB	SEI	0	78	FTB	SEI	0
							2"	103	>100	FTB	No Brk	0	92	FTB	SEI	0	79	FTB	SEI	0
							2"	104	>100	FTB	No Brk	0	91	FTB	SEI	0	75	FTB	SEI	0
							2"	103	>100	FTB	No Brk	0	91	FTB	SEI	0	78	FTB	SEI	0
							Ave:	103					Ave:				77			

Break Codes:
 AD = Adhesion Failure
 AD1 = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeting
 BRK1 = Break in bottom sheeting (shear, EXT)
 BRK2 = Break in top sheeting (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 VLDPE = Very Low Density Polyethylene
 PVC = Polyvinyl Chloride
 XP-5 (EIA-R)
 T1 = Textured on one side.
 T2 = Textured on two sides.

Break Classification:
 FTB = Film-Tear Bond
 Non-FTB = Non Film-Tear Bond

DEL = Delamination in the plane of scrim (peel, fabric-reinforced)
FP = Fabric Pull-Out/plies break (no test, fabric-reinforced)
HT = Break at the edge of hot tack (EXT, no test)
SE = Break at seam edge (SVT)
SE1 = Break at outer edge of seam (DHW)
SE1 = Break at seam edge in bottom sheet (shear, EXT)
SE2 = Break at inner edge of seam (DHW)
SE2 = Break at seam edge in top sheet (shear, EXT)
SE3 = Break at seam edge in bottom sheet (peel, EXT)
(B) = Break in buffed area
No Brk = No Break

Project Name: Dometic LPB PH 1A/TB CMFDR		Project Number: 65794.46.001		QA: JPH		QC: HIW										
Sample #	Sheet or Panel Numbers	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	Strain Rate (ipm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification
DT-20	S 49/30	40	LLDPE/T1	DHW	0	20	2"	102	>100	No Brk	FTB	20	95	0	SE1	FTB
							2"	102	>100	No Brk	FTB		86	0	SE1	FTB
							2"	98	>100	No Brk	FTB		89	0	SE1	FTB
							2"	99	>100	No Brk	FTB		88	0	SE1	FTB
							2"	102	>100	No Brk	FTB		84	0	SE1	FTB
							Ave.: 101	101				Ave.: 88	88	0		
DT-21	S 54/55	40	LLDPE/T1	DHW	0	20	2"	102	>100	No Brk	FTB	20	83	0	SE1	FTB
							2"	101	>100	No Brk	FTB		89	0	SE1	FTB
							2"	102	>100	No Brk	FTB		79	0	SE1	FTB
							2"	104	>100	No Brk	FTB		88	0	SE1	FTB
							2"	102	>100	No Brk	FTB		92	0	SE1	FTB
							Ave.: 102	102				Ave.: 86	86	0		
DT-22	S 52/53	40	LLDPE/T1	DHW	0	20	2"	99	>100	No Brk	FTB	20	93	0	SE1	FTB
							2"	99	>100	No Brk	FTB		87	0	SE1	FTB
							2"	96	>100	No Brk	FTB		89	0	BRK	FTB
							2"	98	>100	No Brk	FTB		90	0	SE1	FTB
							2"	95	>100	No Brk	FTB		91	0	SE1	FTB
							Ave.: 97	97				Ave.: 90	90	0		
DT-25	S 59/60	40	LLDPE/T1	DHW	0	20	2"	96	>100	No Brk	FTB	20	82	0	SE1	FTB
							2"	100	>100	No Brk	FTB		85	0	SE1	FTB
							2"	99	>100	No Brk	FTB		90	0	SE1	FTB
							2"	100	>100	No Brk	FTB		82	0	SE1	FTB
							2"	102	>100	No Brk	FTB		96	0	BRK	FTB
							Ave.: 99	99				Ave.: 87	87	0		

PEEL (outer weld)

PEEL (inner web)

SHEAR

Break Codes:
 AD = Adhesion Failure
 AD1 = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (peel, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeting
 BRK1 = Break in bottom sheeting (shear, EXT)
 BRK2 = Break in top sheeting (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 VLDPE = Very Low Density Polyethylene
 PVC = Polyvinyl Chloride
 XR-5 (EIA-F)
 T1 = Textured on one side.
 T2 = Textured on two sides.

Break Classification:
 FTB = Firm-Tear Bond
 Non-FTB = Non Firm-Tear Bond

DEL = Delamination in the plane of scrim (peel, fabric-reinforced)
FP = Fabric Pull-Out/plies break (no test, fabric-reinforced)
HT = Break at the edge of hot tack (EXT, no test)
SE = Break at seam edge (SVT)
SE1 = Break at outer edge of seam (DHW)
SE1 = Break at seam edge in bottom sheet (shear, EXT)
SE2 = Break at inner edge of seam (DHW)
SE2 = Break at seam edge in top sheet (shear, EXT)
SE3 = Break at seam edge in bottom sheet (peel, EXT)
(B) = Break in buffed area
No Brk = No Break

Project Name: Donatex LVS PH 1A/B B CM/DR		Project Number: 05794 46-001										QA: JPH	QC: HWJ													
Sample #	Sheet or Panel Number(s)	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	Strain Rate (ipm)	Gauge Length (in.)	SHEAR		Break Classification	Break Code	Break Classification	Break Code	Break Classification	% Peel	Strength @ Yield	Strain Rate (ipm)	Break Classification	Break Code	Break Classification	% Peel	Strength @ Yield	Strain Rate (ipm)	Break Classification	Break Code	Break Classification
								Elongation @ Break	Strength @ Yield																	
DT-24	S71/72	40	LLDPE/TH	DHW	0	20	2"	104	>100	No Brk	No Brk	FTB	SE1	FTB	0	89	20	FTB	SE1	FTB	0	91	20	FTB	SE1	FTB
							2"	106	>100	No Brk	No Brk	FTB	SE1	FTB	0	96	20	FTB	SE1	FTB	0	84	20	FTB	SE1	FTB
							2"	105	>100	No Brk	No Brk	FTB	SE1	FTB	0	83	20	FTB	SE1	FTB	0	91	20	FTB	SE1	FTB
							2"	104	>100	No Brk	No Brk	FTB	SE1	FTB	0	99	20	FTB	SE1	FTB	0	93	20	FTB	SE1	FTB
							2"	104	>100	No Brk	No Brk	FTB	SE1	FTB	0	93	20	FTB	SE1	FTB	0	77	20	FTB	SE1	FTB
							Ave:	105								Ave:	87									
DT-25	S74/75	40	LLDPE/TH	DHW	0	20	2"	102	>100	No Brk	No Brk	FTB	SE1	FTB	0	92	20	FTB	SE1	FTB	0	96	20	FTB	SE1	FTB
							2"	104	>100	No Brk	No Brk	FTB	SE1	FTB	0	90	20	FTB	SE1	FTB	0	95	20	FTB	SE1	FTB
							2"	104	>100	No Brk	No Brk	FTB	SE1	FTB	0	91	20	FTB	SE1	FTB	0	91	20	FTB	SE1	FTB
							2"	106	>100	No Brk	No Brk	FTB	SE1	FTB	0	93	20	FTB	SE1	FTB	0	94	20	FTB	SE1	FTB
							2"	107	>100	No Brk	No Brk	FTB	SE1	FTB	0	94	20	FTB	SE1	FTB	0	96	20	FTB	SE1	FTB
							Ave:	105								Ave:	92									
DT-26	S75/77	40	LLDPE/TH	DHW	0	20	2"	99	>100	No Brk	No Brk	FTB	SE1	FTB	0	95	20	FTB	SE1	FTB	0	80	20	FTB	SE1	FTB
							2"	103	>100	No Brk	No Brk	FTB	SE1	FTB	0	95	20	FTB	SE1	FTB	0	83	20	FTB	SE1	FTB
							2"	104	>100	No Brk	No Brk	FTB	SE1	FTB	0	93	20	FTB	SE1	FTB	0	86	20	FTB	SE1	FTB
							2"	105	>100	No Brk	No Brk	FTB	SE1	FTB	0	96	20	FTB	SE1	FTB	0	74	20	FTB	SE1	FTB
							2"	104	>100	No Brk	No Brk	FTB	SE1	FTB	0	92	20	FTB	SE1	FTB	0	87	20	FTB	SE1	FTB
							Ave:	103								Ave:	94									
DT-27	S80/81	40	LLDPE/TH	DHW	0	20	2"	107	>100	No Brk	No Brk	FTB	SE1	FTB	0	89	20	FTB	SE1	FTB	0	93	20	FTB	SE1	FTB
							2"	107	>100	No Brk	No Brk	FTB	SE1	FTB	0	87	20	FTB	SE1	FTB	0	92	20	FTB	SE1	FTB
							2"	106	>100	No Brk	No Brk	FTB	SE1	FTB	0	91	20	FTB	SE1	FTB	0	89	20	FTB	SE1	FTB
							2"	105	>100	No Brk	No Brk	FTB	SE1	FTB	0	91	20	FTB	SE1	FTB	0	91	20	FTB	SE1	FTB
							2"	104	>100	No Brk	No Brk	FTB	SE1	FTB	0	88	20	FTB	SE1	FTB	0	83	20	FTB	SE1	FTB
							Ave:	106								Ave:	89									

Geomembrane Type Codes (at the seam):	Seam Type Codes:	Sample Condition Codes:	Break Codes:
HDPE = High Density Polyethylene LLDPE = Linear Low Density Polyethylene VLDPE = Very Low Density Polyethylene PVC = Polyvinyl Chloride XR-S (EIAE) = Textured on one side. TR2 = Textured on two sides.	AD = Adhesive BS = Bonded Solvent DE = Dielectric DHW = Dual Hot Wedge EXT = Extrusion SHW = Single Hot Wedge SVT = Solvent TH = Thermal TP = Tape VL = Vulcanized	0 = No visual defects 1 = Dirt inside the weld(s) 2 = One or both panels scratched 3 = Visual defects in weld(s) 4 = Extrusion bead off-center	AD = Adhesion Failure AD1 = Adhesion Failure/Bead & Top Panel (EXT) AD2 = Adhesion Failure/Bead & Bottom Panel (EXT) AD-BRK = BRK in bot. sheet after some adhesion failure (peel, EXT) AD-BRK = BRK in sheet or first seam after adhesion failure (SVT, DHW) AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced) AD-WLD = Break through fillet (EXT) BRK = Break in sheeting BRK1 = Break in bottom sheeting (shear, EXT) BRK2 = Break in top sheeting (EXT) CL = Break at clamp edge
			DEL = Delamination in the plane of scrim (peel, fabric-reinforced) FP = Fabric Pull-Out/plies break (no test, fabric-reinforced) HT = Break at the edge of hot tack (EXT, no test) SE = Break at seam edge (SVT) SE1 = Break at outer edge of seam (DHW) SE2 = Break at seam edge in bottom sheet (shear, EXT) SE2 = Break at inner edge of seam (DHW) SE3 = Break at seam edge in top sheet (shear, EXT) (B) = Break in buffed area No Brk = No Break

Project Name: Dornlar 1E3 PH 1A/1B CMDR		Project Number: 05794.46.001		QA: JPH		QC: HJW															
Sample #	Sheet or Panel Number(s)	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	SHEAR				PEEL (outer weld)				PEEL (inner weld)							
						Strain Rate (fpm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (fpm)	Strength @ Yield	% Peel	Break Code	Break Classification	Strain Rate (fpm)	Strength @ Yield	% Peel	Break Code	Break Classification
DJ-31	S-87/SS	40	LLDPE/TL	DHW	0	20	2"	107	>100	No Brk	FTB	20	93	0	BRK	FTB	20	89	0	SE1	FTB
							2"	108	>100	No Brk	FTB		94	0	SE1	FTB		87	0	SE1	FTB
							2"	108	>100	No Brk	FTB		97	0	SE1	FTB		90	0	SE1	FTB
							2"	105	>100	No Brk	FTB		96	0	SE1	FTB		85	0	SE1	FTB
							2"	104	>100	No Brk	FTB		97	0	SE1	FTB		87	0	SE1	FTB
							Ave:	106				Ave:	95				Ave:	88			
DJ-32	S-88/89	40	LLDPE/TL	DHW	1	20	1"	103	>100	No Brk	FTB	20	93	0	SE1	FTB	20	71	0	SE1	FTB
							1"	108	>100	No Brk	FTB		94	0	SE1	FTB		76	0	SE1	FTB
							1"	109	>100	No Brk	FTB		87	0	SE1	FTB		84	0	SE1	FTB
							1"	106	>100	No Brk	FTB		95	0	SE1	FTB		93	0	SE1	FTB
							1"	109	>100	No Brk	FTB		93	0	SE1	FTB		82	0	SE1	FTB
							Ave:	107				Ave:	92				Ave:	81			
DJ-33	S-90/91	40	LLDPE/TL	DHW	1	20	1"	107	>100	No Brk	FTB	20	79	0	SE1	FTB	20	74	0	SE1	FTB
							1"	106	>100	No Brk	FTB		82	0	SE1	FTB		81	0	SE1	FTB
							1"	104	>100	No Brk	FTB		78	0	SE1	FTB		75	0	SE1	FTB
							1"	102	>100	No Brk	FTB		85	0	SE1	FTB		80	0	SE1	FTB
							1"	104	>100	No Brk	FTB		74	0	SE1	FTB		84	0	SE1	FTB
							Ave:	105				Ave:	80				Ave:	79			
DJ-34	S-94/95	40	LLDPE/TL	DHW	0	20	2"	68	>100	No Brk	FTB	20	93	0	SE1	FTB	20	78	0	SE1	FTB
							2"	100	>100	No Brk	FTB		93	0	SE1	FTB		85	0	SE1	FTB
							2"	100	>100	No Brk	FTB		96	0	SE1	FTB		85	0	SE1	FTB
							2"	98	>100	No Brk	FTB		94	0	SE1	FTB		89	0	SE1	FTB
							2"	100	>100	No Brk	FTB		93	0	SE1	FTB		83	0	SE1	FTB
							Ave:	93				Ave:	94				Ave:	84			

Break Codes:
 AD = Adhesion Failure
 AD1 = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeting
 BRK1 = Break in bottom sheeting (shear, EXT)
 BRK2 = Break in top sheeting (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 VLDPE = Very Low Density Polyethylene
 PVC = Polyvinyl Chloride
 XR-5 (EIA-R)
 T1 = Textured on one side.
 T2 = Textured on two sides.
 Unless otherwise noted, each coupon for the same sample had identical codes as the first coupon listed for that sample.

Break Classification:
 FTB = Film-Tear Bond
 Non-FTB = Non Film-Tear Bond

DEL = Delamination in the plane of scrim (peel, fabric-reinforced)
FP = Fabric Pull-Out/plies break (no test, fabric-reinforced)
HT = Break at the edge of hot tack (EXT, no test)
SE = Break at seam edge (SVT)
SE1 = Break at outer edge of seam (DHW)
SE1 = Break at seam edge in bottom sheet (shear, EXT)
SE2 = Break at inner edge of seam (DHW)
SE2 = Break at seam edge in top sheet (shear, EXT)
SE3 = Break at seam edge in bottom sheet (peel, EXT)
(B) = Break in buffed area
No Brk = No Break

Project Name: Dometic LF3 FH 1A/B CMDR		Project Number: 05794.46.001		QA: JPH		QC: HJW															
Sample #	Sheet or Panel Number(s)	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	Strain Rate (fpm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (fpm)	Strength @ Yield	% Peel	Break Code	Break Classification	Strain Rate (fpm)	Strength @ Yield	% Peel	Break Code	Break Classification
DT-35	5 97/99	40	LLDPE/TL	DHW	0	20	2"	102	>100	No Brk	FTB	20	94	0	SE1	FTB	20	86	0	SE1	FTB
							2"	105	>100	No Brk	FTB	95	95	0	SE1	FTB	87	87	0	SE1	FTB
							2"	103	>100	No Brk	FTB	95	95	0	SE1	FTB	87	87	0	SE1	FTB
							2"	100	>100	No Brk	FTB	94	94	0	SE1	FTB	87	87	0	SE1	FTB
							2"	99	>100	No Brk	FTB	95	95	0	SE1	FTB	87	87	0	SE1	FTB
							Ave:	101				Ave:	95				Ave:	87			
DT-36	S 101/102	40	LLDPE/TL	DHW	0	20	2"	100	>100	No Brk	FTB	20	92	0	SE1	FTB	20	79	0	SE1	FTB
							2"	101	>100	No Brk	FTB	88	88	0	SE1	FTB	84	84	0	SE1	FTB
							2"	101	>100	No Brk	FTB	93	93	0	SE1	FTB	87	87	0	SE1	FTB
							2"	102	>100	No Brk	FTB	95	95	0	SE1	FTB	85	85	0	SE1	FTB
							2"	102	>100	No Brk	FTB	94	94	0	SE1	FTB	85	85	0	SE1	FTB
							Ave:	101				Ave:	92				Ave:	84			
DT-37	S 100/101	40	LLDPE/TL	DHW	1	20	1"	106	>100	No Brk	FTB	20	97	0	SE1	FTB	20	81	0	SE1	FTB
							1"	105	>100	No Brk	FTB	95	95	0	BRK	FTB	85	85	0	SE1	FTB
							1"	107	>100	No Brk	FTB	86	86	0	SE1	FTB	85	85	0	SE1	FTB
							1"	104	>100	No Brk	FTB	91	91	0	SE1	FTB	84	84	0	SE1	FTB
							1"	106	>100	No Brk	FTB	88	88	0	BRK	FTB	80	80	0	SE1	FTB
							Ave:	106				Ave:	91				Ave:	83			
DT-38	S 96/97	40	LLDPE/TL	DHW	1	20	1"	98	>100	No Brk	FTB	20	80	0	SE1	FTB	20	83	0	SE1	FTB
							1"	101	>100	No Brk	FTB	77	77	0	SE1	FTB	88	88	0	SE1	FTB
							1"	100	>100	No Brk	FTB	74	74	0	SE1	FTB	86	86	0	BRK	FTB
							1"	99	>100	No Brk	FTB	84	84	0	SE1	FTB	80	80	0	SE1	FTB
							1"	97	>100	No Brk	FTB	89	89	0	BRK	FTB	82	82	0	SE1	FTB
							Ave:	99				Ave:	81				Ave:	84			

Break Codes:
 AD = Adhesion Failure
 ADf = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeting
 BRK1 = Break in bottom sheeting (shear, EXT)
 BRK2 = Break in top sheeting (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 VLDPE = Very Low Density Polyethylene
 PVC = Polyvinyl Chloride
 XPE-S (EVA-R)
 T1 = Textured on one side.
 T2 = Textured on two sides.
 ? Unless otherwise noted, each coupon for the same sample had identical codes as the first coupon listed for that sample.

Delamination in the plane of scrim (peel, fabric-reinforced)
 FP = Fabric Pull-Out/rip break (no test, fabric-reinforced)
 HT = Break at the edge of hot tack (EXT, no test)
 SE = Break at seam edge (SVT)
 SE1 = Break at outer edge of seam (DHW)
 SE1 = Break at seam edge in bottom sheet (shear, EXT)
 SE2 = Break at inner edge of seam (DHW)
 SE2 = Break at seam edge in top sheet (shear, EXT)
 SE3 = Break at seam edge in bottom sheet (peel, EXT)
 (B) = Break in buffed area
 No Brk = No Break

Project Name: Dornier: EP PH 1A/B CM/DR		Project Number: 95794.46.001		QA: JPH		QC: HWJ									
Sample #	Sheet or Panel	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	SHEAR		PEEL (outer weld)		PEEL (inner weld)					
						Strain Rate (ipm)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	Break Code	Break Classification	
DTL-39	S 92/94	40	LLDPE/TL	DHW	1	20	104	>100	No Brk	FTB	20	82	0	SEI	FTB
							106	>100	No Brk	FTB		86	0	SEI	FTB
							105	>100	No Brk	FTB		92	0	SEI	FTB
							104	>100	No Brk	FTB		95	0	SEI	FTB
							96	>100	No Brk	FTB		85	0	SEI	FTB
						Ave:	103				Ave:	90			
DT-40	S 104/106	40	LLDPE/TL	DHW	0	20	100	>100	No Brk	FTB	20	99	0	SEI	FTB
							102	>100	No Brk	FTB		96	0	SEI	FTB
							101	>100	No Brk	FTB		97	0	SEI	FTB
							101	>100	No Brk	FTB		96	0	SEI	FTB
							102	>100	No Brk	FTB		97	0	SEI	FTB
						Ave:	101				Ave:	97			
DT-41	S 108/109	40	LLDPE/TL	DHW	0	20	98	>100	No Brk	FTB	20	96	0	SEI	FTB
							98	>100	No Brk	FTB		95	0	BRK	FTB
							95	>100	No Brk	FTB		96	0	SEI	FTB
							98	>100	No Brk	FTB		96	0	SEI	FTB
							100	>100	No Brk	FTB		95	0	SEI	FTB
						Ave:	98				Ave:	96			
DT-42	S 112/113	40	LLDPE/TL	DHW	0	20	104	>100	No Brk	FTB	20	96	0	SEI	FTB
							101	>100	No Brk	FTB		96	0	SEI	FTB
							103	>100	No Brk	FTB		96	0	BRK	FTB
							104	>100	No Brk	FTB		97	0	SEI	FTB
							105	>100	No Brk	FTB		94	0	SEI	FTB
						Ave:	103				Ave:	96			

Geomembrane Type Codes (at the seam):	Seam Type Codes:	Sample Condition Codes:	Break Codes:
HDPE = High Density Polyethylene LLDPE = Linear Low Density Polyethylene VLDPE = Very Low Density Polyethylene PVC = Polyvinyl Chloride XR-5 (EIA-6)	AD = Adhesive BS = Bonded Solvent DE = Dielectric DHW = Dual Hot Wedge EXT = Extrusion SHW = Single Hot Wedge SVT = Solvent TH = Thermal TP = Tape VL = Vulcanized	0 = No visual defects 1 = Dirt inside the weld(s) 2 = One or both panels scratched 3 = Visual defects in weld(s) 4 = Extrusion bead off-center	AD = Adhesion Failure AD1 = Adhesion Failure/Bead & Top Panel (EXT) AD2 = Adhesion Failure/Bead & Bottom Panel (EXT) AD-BRK = Brk. in bot. sheet after some adhesion failure (psel. EXT) AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW) AD-DEL = Delamination after adhesion failure (psel. fabric-reinforced) AD-WLD = Break through fillet (EXT) BRK = Break in sheeling BRK1 = Break in bottom sheeling (shear. EXT) BRK2 = Break in top sheeling (EXT) CL = Break at clamp edge
		Break Classification: FTB = Firm-Tear Bond Non-FTB = Non Firm-Tear Bond	DEL = Delamination in the plane of scrim (psel. fabric-reinforced) FP = Fabric Pull-Out/plies break (no test. fabric-reinforced) HT = Break at the edge of hot tack (EXT, no test) SE = Break at seam edge (SVT) SE1 = Break at outer edge of seam (DHW) SE1 = Break at seam edge in bottom sheet (shear. EXT) SE2 = Break at inner edge of seam (DHW) SE2 = Break at seam edge in top sheet (shear. EXT) SE3 = Break at seam edge in bottom sheet (psel. EXT) (B) = Break in buffed area No Brk = No Break

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Project Name: Dombat: EB PH1A/B CM/DR		Project Number: 05794.46.001		QA: JPH		QC: HWJ										
Sample #	Sheet or Panel Numbers	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	SHEAR		PEEL (outer weld)		PEEL (inner weld)						
						Strain Rate (ipm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	Break Code	Break Classification	
DT-43	S 113/114	40	LLDPE/T1	DHW	0	20	2"	104	>100	No Brk	FTB	20	88	0	SEI	FTB
							2"	102	>100	No Brk	FTB		95	0	SEI	FTB
							2"	97	>100	No Brk	FTB		86	0	SEI	FTB
							2"	96	>100	No Brk	FTB		79	0	SEI	FTB
							2"	98	>100	No Brk	FTB		83	0	SEI	FTB
							Ave.:	99				Ave.:	86			
DT-44	S 115/117	40	LLDPE/T1	DHW	0	20	2"	103	>100	No Brk	FTB	20	89	0	SEI	FTB
							2"	105	>100	No Brk	FTB		88	0	SEI	FTB
							2"	103	>100	No Brk	FTB		78	0	SEI	FTB
							2"	101	>100	No Brk	FTB		86	0	SEI	FTB
							2"	101	>100	No Brk	FTB		86	0	SEI	FTB
							Ave.:	105				Ave.:	85			
DT-45	S 116/118	40	LLDPE/T1	DHW	0	20	2"	103	>100	No Brk	FTB	20	71	0	SEI	FTB
							2"	104	>100	No Brk	FTB		76	0	SEI	FTB
							2"	103	>100	No Brk	FTB		86	0	SEI	FTB
							2"	104	>100	No Brk	FTB		91	0	SEI	FTB
							2"	104	>100	No Brk	FTB		93	0	SEI	FTB
							Ave.:	104				Ave.:	83			
DT-46	S 121/122	40	LLDPE/T1	DHW	0	20	2"	102	>100	No Brk	FTB	20	89	0	SEI	FTB
							2"	102	>100	No Brk	FTB		87	0	SEI	FTB
							2"	101	>100	No Brk	FTB		86	0	SEI	FTB
							2"	101	>100	No Brk	FTB		82	0	SEI	FTB
							2"	101	>100	No Brk	FTB		83	0	SEI	FTB
							Ave.:	101				Ave.:	85			

Geomembrane Type Codes (at the seam):	Seam Type Codes:	Sample Condition Codes:	Break Codes:
HDPE - High Density Polyethylene LLDPE - Linear Low Density Polyethylene MDPE - Very Low Density Polyethylene PVC - Polyvinyl Chloride XR-5 (EIA-R)	AD = Adhesive BS = Bonded Solvent DE = Dielectric DHW = Dual Hot Wedge EXT = Extrusion SHW = Single Hot Wedge SVT = Solvent TH = Thermal TP = Tape VL = Vulcanized	0 = No visual defects 1 = Dirt inside the weld(s) 2 = One or both panels scratched 3 = Visual defects in weld(s) 4 = Extrusion bead off-center	AD = Adhesion Failure AD1 = Adhesion Failure/Bead & Top Panel (EXT) AD2 = Adhesion Failure/Bead & Bottom Panel (EXT) AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT) AD-BRK = Brk. in sheet or first seam after adhesion failure (peel, fabric-reinforced) AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced) AD-WLD = Break through fillet (EXT) BRK = Break in sheeting BRK1 = Break in bottom sheeting (shear, EXT) BRK2 = Break in top sheeting (EXT) CL = Break at clamp edge

Project Name: Dometar LP3 PH1A/IB CMFDR		Project Number: 05794.46.001										QA: JPH		QC: HJW						
Sheet or Panel		SHEAR										PEEL (outer weld)		PEEL (inner weld)						
Sample #	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	Strain Rate (ipm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification
DT-47	S 124/125	40	LLDPE/TI	DHW	0	2"	105	>100	No Brk	FTB	20	95	0	SE1	FTB	20	89	0	SE1	FTB
						2"	104	>100	No Brk	FTB		97	0	SE1	FTB		82	0	SE1	FTB
						2"	102	>100	No Brk	FTB		78	0	SE1	FTB		83	0	SE1	FTB
						2"	99	>100	No Brk	FTB		73	0	SE1	FTB		83	0	SE1	FTB
						2"	99	>100	No Brk	FTB		94	0	SE1	FTB		86	0	SE1	FTB
						Ave.:	102				Ave.:	87				Ave.:	85			
DT-48	S 126/127	40	LLDPE/TI	DHW	0	2"	99	>100	No Brk	FTB	20	82	0	SE1	FTB	20	86	0	SE1	FTB
						2"	102	>100	No Brk	FTB		83	0	SE1	FTB		87	0	SE1	FTB
						2"	104	>100	No Brk	FTB		88	0	SE1	FTB		85	0	SE1	FTB
						2"	104	>100	No Brk	FTB		86	0	SE1	FTB		79	0	SE1	FTB
						2"	104	>100	No Brk	FTB		80	0	SE1	FTB		81	0	SE1	FTB
						Ave.:	103				Ave.:	84				Ave.:	83			
DT-49	S 132/133	40	LLDPE/TI	DHW	0	2"	104	>100	No Brk	FTB	20	83	0	SE1	FTB	20	75	0	SE1	FTB
						2"	105	>100	No Brk	FTB		83	0	SE1	FTB		83	0	SE1	FTB
						2"	104	>100	No Brk	FTB		82	0	SE1	FTB		83	0	SE1	FTB
						2"	104	>100	No Brk	FTB		88	0	SE1	FTB		81	0	SE1	FTB
						2"	105	>100	No Brk	FTB		81	0	SE1	FTB		83	0	SE1	FTB
						Ave.:	104				Ave.:	83				Ave.:	81			
DT-50	S 137/139	40	LLDPE/TI	DHW	0	2"	103	>100	No Brk	FTB	20	88	0	SE1	FTB	20	75	0	SE1	FTB
						2"	103	>100	No Brk	FTB		86	0	SE1	FTB		81	0	SE1	FTB
						2"	101	>100	No Brk	FTB		87	0	SE1	FTB		82	0	SE1	FTB
						2"	102	>100	No Brk	FTB		63	0	SE1	FTB		87	0	SE1	FTB
						2"	103	>100	No Brk	FTB		86	0	SE1	FTB		81	0	SE1	FTB
						Ave.:	102				Ave.:	82				Ave.:	81			

Geomembrane Type Codes (at the seam):	Seam Type Codes:	Sample Condition Codes:	Break Codes:
HDPE = High Density Polyethylene LLDPE = Linear Low Density Polyethylene VLDPE = Very Low Density Polyethylene PVC = Polyvinyl Chloride XPS (EIA-FI)	AD = Adhesive BS = Bonded Solvent DE = Dielectric DHW = Dual Hot Wedge EXT = Extrusion SHW = Single Hot Wedge SVT = Solvent TH = Thermal TP = Tape VL = Vulcanized	0 = No visual defects 1 = Dirt inside the weld(s) 2 = One or both panels scratched 3 = Visual defects in weld(s) 4 = Extrusion bead off-center	AD = Adhesion Failure AD1 = Adhesion Failure/Bead & Top Panel (EXT) AD2 = Adhesion Failure/Bead & Bottom Panel (EXT) AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT) AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW) AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced) AD-WLD = Break through fillet (EXT) BRK = Break in sheeting BRK1 = Break in bottom sheeting (shear, EXT) BRK2 = Break in top sheeting (EXT) CL = Break at clamp edge
TI = Textured on one side. TB = Textured on two sides.		Break Classification: FTB = Film-Tear Bond Non-FTB = Non Film-Tear Bond	DEL = Delamination in the plane of scrim (peel, fabric-reinforced) FP = Fabric Pull-Out/plies break (no test, fabric-reinforced) HT = Break at the edge of hot tack (EXT, no test) SE = Break at seam edge (SVT) SE1 = Break at outer edge of seam (DHW) SE1 = Break at seam edge in bottom sheet (shear, EXT) SE2 = Break at inner edge of seam (DHW) SE2 = Break at seam edge in top sheet (shear, EXT) SE3 = Break at seam edge in bottom sheet (peel, EXT) (B) = Break in buffed area No Brk = No Break

Project Name: Dombart: LF3 PH 1A/B CMDR		Project Number: 05794.46.001										QA: JPH		QC: HIW							
Sample #	Sheet or Panel Number(s)	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	Strain Rate (ipm)	Gauge Length (in.)	Strength @ Yield	Elongation @ Break	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification	Strain Rate (ipm)	Strength @ Yield	% Peel	Break Code	Break Classification
DT-51	S 120/135	40	LLDPE/TL	DHW	1	20	1"	103	>100	No Brk	FTB	20	73	0	SE1	FTB	20	77	0	SE1	FTB
							1"	101	>100	No Brk	FTB	20	75	0	SE1	FTB	20	82	0	SE1	FTB
							1"	103	>100	No Brk	FTB	20	79	0	SE1	FTB	20	81	0	SE1	FTB
							1"	102	>100	No Brk	FTB	20	78	0	SE1	FTB	20	84	0	SE1	FTB
							1"	108	>100	No Brk	FTB	20	81	0	SE1	FTB	20	87	0	SE1	FTB
							Ave.: 103					Ave.: 77					Ave.: 82				
DT-52	S 135/136	40	LLDPE/TL	DHW	0	20	2"	105	>100	No Brk	FTB	20	101	0	SE1	FTB	20	97	0	SE1	FTB
							2"	105	>100	No Brk	FTB	20	90	0	SE1	FTB	20	90	0	SE1	FTB
							2"	107	>100	No Brk	FTB	20	88	0	SE1	FTB	20	93	0	SE1	FTB
							2"	108	>100	No Brk	FTB	20	100	0	SE1	FTB	20	93	0	SE1	FTB
							2"	105	>100	No Brk	FTB	20	94	0	SE1	FTB	20	90	0	SE1	FTB
							Ave.: 106					Ave.: 95					Ave.: 91				
DT-53	S 139/140	40	LLDPE/TL	DHW	0	20	2"	103	>100	No Brk	FTB	20	94	0	SE1	FTB	20	91	0	SE1	FTB
							2"	104	>100	No Brk	FTB	20	80	0	SE1	FTB	20	82	0	SE1	FTB
							2"	105	>100	No Brk	FTB	20	81	0	SE1	FTB	20	86	0	SE1	FTB
							2"	102	>100	No Brk	FTB	20	75	0	SE1	FTB	20	83	0	SE1	FTB
							2"	98	>100	No Brk	FTB	20	61	0	SE1	FTB	20	89	0	SE1	FTB
							Ave.: 102					Ave.: 78					Ave.: 86				
DT-54	S 140/141	40	LLDPE/TL	DHW	0	20	2"	105	>100	No Brk	FTB	20	82	0	SE1	FTB	20	83	0	SE1	FTB
							2"	105	>100	No Brk	FTB	20	81	0	SE1	FTB	20	84	0	SE1	FTB
							2"	104	>100	No Brk	FTB	20	83	0	SE1	FTB	20	85	0	SE1	FTB
							2"	103	>100	No Brk	FTB	20	85	0	SE1	FTB	20	83	0	SE1	FTB
							2"	104	>100	No Brk	FTB	20	74	0	SE1	FTB	20	84	0	SE1	FTB
							Ave.: 104					Ave.: 81					Ave.: 84				

Break Codes:
 AD = Adhesion Failure
 AD1 = Adhesion Failure/Bead & Top Panel (EXT)
 AD2 = Adhesion Failure/Bead & Bottom Panel (EXT)
 AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT)
 AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW)
 AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced)
 AD-WLD = Break through fillet (EXT)
 BRK = Break in sheeling
 BRK1 = Break in bottom sheeling (shear, EXT)
 BRK2 = Break in top sheeling (EXT)
 CL = Break at clamp edge

Sample Condition Codes:
 0 = No visual defects
 1 = Dirt inside the weld(s)
 2 = One or both panels scratched
 3 = Visual defects in weld(s)
 4 = Extrusion bead off-center

Seam Type Codes:
 AD = Adhesive
 BS = Bonded Solvent
 DE = Dielectric
 DHW = Dual Hot Wedge
 EXT = Extrusion
 SHW = Single Hot Wedge
 SVT = Solvent
 TH = Thermal
 TP = Tape
 VL = Vulcanized

Geomembrane Type Codes (at the seam):
 HDPE = High Density Polyethylene
 LLDPE = Linear Low Density Polyethylene
 VLDPE = Very Low Density Polyethylene
 PVC = Polyvinyl Chloride
 XE-5 (EIA-F)
 T1 = Textured on one side.
 T2 = Textured on two sides.

Seam Classification:
 FTB = Film-Tear Bond
 Non-FTB = Non Film-Tear Bond

Delamination in the plane of scrim (peel, fabric-reinforced)
 FP = Fabric Pull-Out/piles break (no test, fabric-reinforced)
 HT = Break at the edge of hot tack (EXT, no test)
 SE = Break at seam edge (SVT)
 SE1 = Break at outer edge of seam (DHW)
 SE1 + Break at seam edge in bottom sheet (shear, EXT)
 SE2 = Break at inner edge of seam (DHW)
 SE2 + Break at seam edge in top sheet (shear, EXT)
 SE3 = Break at seam edge in bottom sheet (peel, EXT)
 (B) = Break in buffed area
 No Brk = No Break

Project Name: Dombor LF3 PH 1A/7B CMDR		Project Number: 05794.46.001										QA: JPH	QC: HW							
Sample #	Sheet or Panel Number(s)	Thickness (mil)	Geomembrane Type	Seam Type	Sample Condition	SHEAR					PEEL (outer weld)					PEEL (inner weld)				
						Strain Rate (fpm)	Gauge Length (in.)	Strength @ Yield	Elongation Break	Break Classification	Break Code	% Peel	Strength @ Yield	Break Classification	Break Code	% Peel	Strength @ Yield	Break Classification	Break Code	% Peel
DT-55	S 143/143	40	LLDPE/TL	DHW	0	20	2"	107	>100	FTB	No Brk	0	90	FTB	SE1	0	87	FTB	SE1	0
							2"	107	>100	FTB	No Brk	0	89	FTB	SE1	0	93	FTB	SE1	0
							2"	108	>100	FTB	No Brk	0	77	FTB	SE1	0	95	FTB	SE1	0
							2"	109	>100	FTB	No Brk	0	92	FTB	SE1	0	95	FTB	SE1	0
							2"	107	>100	FTB	No Brk	0	90	FTB	SE1	0	99	FTB	SE1	0
						Ave:	108					Ave:	88			Ave:	94			
DT-56	S 143/144	40	LLDPE/TL	DHW	0	20	2"	105	>100	FTB	No Brk	0	91	FTB	SE1	0	89	FTB	SE1	0
							2"	105	>100	FTB	No Brk	0	87	FTB	SE1	0	89	FTB	SE1	0
							2"	104	>100	FTB	No Brk	0	85	FTB	SE1	0	95	FTB	SE1	0
							2"	102	>100	FTB	No Brk	0	86	FTB	SE1	0	87	FTB	SE1	0
							2"	100	>100	FTB	No Brk	0	89	FTB	SE1	0	85	FTB	SE1	0
						Ave:	103					Ave:	88			Ave:	89			
DT-57	S 144/145	40	LLDPE/TL	DHW	0	20	2"	107	>100	FTB	No Brk	0	84	FTB	SE1	0	96	FTB	SE1	0
							2"	106	>100	FTB	No Brk	0	84	FTB	SE1	0	80	FTB	SE1	0
							2"	108	>100	FTB	No Brk	0	76	FTB	SE1	0	85	FTB	SE1	0
							2"	108	>100	FTB	No Brk	0	81	FTB	SE1	0	86	FTB	SE1	0
							2"	104	>100	FTB	No Brk	0	75	FTB	SE1	0	93	FTB	SE1	0
						Ave:	107					Ave:	80			Ave:	88			

Geomembrane Type Codes (at the seam):	Seam Type Codes:	Sample Condition Codes:	Break Codes:
HDPE = High Density Polyethylene LLDPE = Linear Low Density Polyethylene VLDPE = Very Low Density Polyethylene PVC = Polyvinyl Chloride XP-5 (EIA-R)	AD = Adhesive BS = Bonded Solvent DE = Dielectric DHW = Dual Hot Wedge EXT = Extrusion SHW = Single Hot Wedge SVT = Solvent TH = Thermal TP = Tape VL = Vulcanized	0 = No visual defects 1 = Dirt inside the weld(s) 2 = One or both panels scratched 3 = Visual defects in weld(s) 4 = Extrusion bead off-center	AD = Adhesion Failure AD1 = Adhesion Failure/Bead & Top Panel (EXT) AD2 = Adhesion Failure/Bead & Bottom Panel (EXT) AD-BRK = Brk. in bot. sheet after some adhesion failure (peel, EXT) AD-BRK = Brk. in sheet or first seam after adhesion failure (SVT, DHW) AD-DEL = Delamination after adhesion failure (peel, fabric-reinforced) AD-WLD = Break through fillet (EXT) BRK = Break in sheeting BRK1 = Break in bottom sheeting (shear, EXT) BRK2 = Break in top sheeting (EXT) CL = Break at clamp edge

DEL = Delamination in the plane of scrim (peel, fabric-reinforced)
 FP = Fabric Pull-Out/rip break (no test, fabric-reinforced)
 HT = Break at the edge of hot tack (EXT, no test)
 SE = Break at seam edge (SVT)
 SE1 = Break at outer edge of seam (DHW)
 SE1 = Break at seam edge in bottom sheet (shear, EXT)
 SE2 = Break at inner edge of seam (DHW)
 SE2 = Break at seam edge in top sheet (shear, EXT)
 SE3 = Break at seam edge in bottom sheet (peel, EXT)
 (B) = Break in buffed area
 No Brk = No Break

Geosynthetic Tension Calculations

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Interface Slope Stability Calculation

Prepared by: T. Halena 10/15/2010

Checked by: S. Jorgensen 10/18/2010

Quality Assurance review by: D. Genthe 10/19/10



PROJECT / PROPOSAL NAME / LOCATION: Domtar Landfill No. 3 - Phase 1A & 1B Closure		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		05794.46.001
PREPARED BY: T. Halena	DATE: 10/15/10	FINAL π
CHECKED BY: S. Jorgensen	DATE: 10/18/10	REVISION π

INTERFACE SLOPE STABILITY

Purpose:

The purpose of this analysis is to evaluate the stability of the Domtar Landfill No. 3, Phase 1A & 1B final cover system against slippage along the critical geosynthetic interfaces.

Methodology:

Stability Analysis

The cover system interface stability was evaluated following the procedure outlined in Giroud and Beach (1989). Giroud and Beach derived an equation using a classical two-wedge analysis that determines the magnitude of tension forces developed in the geosynthetics from the weight of the soil cover. This equation has been modified by Druschel and Underwood (1993) to include hydrostatic pressures in the cover soil, and by Bourdeau, Ludlow, and Simpson (1993) to include adhesion between the critical interface.

Assumptions:

Final Cover Design

The final cover system components consist of the following, from top to bottom, as presented in Figure 1:

- 6-inch topsoil layer
- 1-foot silty-sand general fill layer
- 250-mil Geocomposite drainage layer
- 40-mil textured LLDPE geomembrane
- Geosynthetic Clay Liner (GCL)
- 12-inch thick select ash grading layer.



PROJECT / PROPOSAL NAME / LOCATION: Domtar Landfill No. 3 - Phase 1A & 1B Closure		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		05794.46.001
PREPARED BY: T. Halena	DATE: 10/15/10	FINAL π
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Critical Interface

Interface friction tests (ASTM D6243) were performed at the following interfaces to evaluate the shear strength properties:

- GCL/Select Ash
- Geomembrane/GCL
- Geocomposite Drainage Layer/Geomembrane
- General Fill/Geocomposite drainage layer

From this evaluation, the geomembrane/GCL interface was determined to be the critical interface.

<u>Interface</u>	<u>Peak Friction Angle</u>	<u>Peak Adhesion</u>	<u>Residual Friction Angle</u>	<u>Residual Adhesion</u>
GCL/Select Ash	43.3°	0 psf	39.4°	0 psf
Geomembrane/GCL	28.9°	20 psf	22.9°	19 psf
Geocomposite drainage layer/ Geomembrane	45.2°	450 psf	8.7°	351 psf
General Fill/Geocomposite drainage layer	40.2°	38 psf	40.5°	30 psf

Note: Adhesion was ignored for most of the interfaces due to the uncertainty associated with the low values. Adhesion for the geocomposite/geomembrane was included in the analysis due to the "Velcro" effect between the two materials.

Slope Stability Analysis

The Giroud and Beach stability method assumes the following:

- Slope failures slide as a block
- The slope toe is buttressed where the cover soil on the slope meets the smaller inclined cover soil at the toe of slope
- The cover soil is free draining and has a uniform thickness

Geometry

The critical geometry for the designed landfill is at a 3:1 slope along the northern face of the landfill and is described as follows:

- Slope angle = 18.4 degrees (3:1 slope)

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PROJECT / PROPOSAL NAME / LOCATION: Domtar Landfill No. 3 - Phase 1A & 1B Closure		PROJECT / PROPOSAL NO.	
SUBJECT: Interface Slope Stability		05794.46.001	
PREPARED BY: T. Halena	DATE: 10/15/10	FINAL	π
CHECKED BY: S. Jorgensen	DATE: 10/18/10	REVISION	π

- Slope height = 59 feet (total slope height, see Figure 2)

Soil Characteristics

The silty-sand general fill characteristics are based on laboratory tests performed on a representative sample collected by RMT on 10/13/10:

- Cover soil internal friction angle = 43 degrees
- Cohesion = 0 lbs/ ft²
- Cover soil unit weight = 115 lbs/ft³
- Seepage thickness on top of the geomembrane is conservatively assumed to be equivalent to the thickness of the geocomposite. (Refer to the Infinite Slope Stability Analysis).

Results:

The cover system analysis indicates that a minimum factor of safety of 1.3 for residual strength and 1.6 for peak strength will be obtained for the critical cover interface (GCL/geomembrane) for the conditions outlined above, which are considered acceptable for standard geotechnical practice. The minimum factor of safety is where the geosynthetic tension is zero. The computer printout for the analysis is attached.

References:

1. Giroud, J.P. and Beach, J.F., (1989) Stability of Soil Layers on Geosynthetic Lining Systems, presented at the Geosynthetics 1989 Conference in San Diego, California.
2. Druschel, S.J. and Underwood, E.R., (1993) Design of Lining and Cover System Sideslopes, presented at the Geosynthetics 1993 Conference in Vancouver, Canada.
3. Bourdeau, P.L., Ludlow, S.J., and Simpson, B.E., (1993) Stability of Soil-Covered Geosynthetic-Lined Slopes: A Parametric Study, presented at the Geosynthetics 1993 Conference in Vancouver, Canada.

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Reference Information

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744 Heartland Trail
Madison, WI 53717
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SHEET 1 OF 3

PROJECT / PROPOSAL NAME / LOCATION: Domtar Phase TA & TB Final Cover Construction		PROJECT / PROPOSAL NO.	
SUBJECT: Interface Slope Stability		5794.46	
PREPARED BY: T. Halena	DATE: 10/11/10	FINAL	0
CHECKED BY: S. Jorgensen	DATE: 10/15/10	REVISION	0

GEOSYNTHETIC TENSION CALCULATION

Location/condition modeled: Domtar: 3:1 Final Cover GCL/Geomembrane Interface (Peak)

Variables

Slope Angle (deg)	18.4
Interface Friction Angle (deg)	28.9
Adhesion (psf)	0.0
Cover Soil Friction Angle (deg)	43.0
Cohesion (psf)	0
Slope Height (ft)	59
Cover Soil Thickness (ft)	1.5
Cover Soil Unit Weight (pcf)	115.0
Seepage Thickness (ft)	0.000

Calculated Values

Weight Passive (lb/ft)	432
Weight Active (lb/ft)	31811
Adhesion Force (lb/ft)	0
Cohesion Force (lb/ft)	0
Seepage Toe Weight (lb/ft)	0
Seepage Slope Weight (lb/ft)	0

Geosynthetic Tension (lb/in)

FS = 1.0	-603
FS = 1.2	-324
FS = 1.5	-68
FS = 2.0	173

Geosynthetic Tension = 0 when FS = 1.62

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SHEET 1 OF 1

PROJECT / PROPOSAL NAME / LOCATION: Domtar Phase 1A & 1B Final Cover Construction		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		5794.46
PREPARED BY: T. Halena	DATE: 10/11/10	FINAL &
CHECKED BY: S. Jorgensen	DATE: 10/15/10	REVISION &

GEOSYNTHETIC TENSION CALCULATION

Location/condition modeled: Domtar: 3:1 Final Cover Geomembrane/Geocomposite (Peak)

Variables

Slope Angle (deg)	18.4
Interface Friction Angle (deg)	45.2
Adhesion (psf)	450.0
Cover Soil Friction Angle (deg)	43.0
Cohesion (psf)	0
Slope Height (ft)	59
Cover Soil Thickness (ft)	1.5
Cover Soil Unit Weight (pcf)	115.0
Seepage Thickness (ft)	0.020 Assume Full Saturation

Calculated Values

Weight Passive (lb/ft)	432
Weight Active (lb/ft)	31811
Adhesion Force (lb/ft)	84112
Cohesion Force (lb/ft)	0
Seepage Toe Weight (lb/ft)	0
Seepage Slope Weight (lb/ft)	233

Geosynthetic Tension (lb/in)

FS = 1.0	-8738
FS = 1.2	-6968
FS = 1.5	-5311
FS = 2.0	-3724

Geosynthetic Tension = 0 when FS = >> 9.0 Program Limit!!!

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10/19



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SHEET 1 OF 1

PROJECT / PROPOSAL NAME / LOCATION: Domtar Phase 1A & 1B Final Cover Construction		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		5794.46
PREPARED BY: T. Halena	DATE: 10/11/10	FINAL G
CHECKED BY: S. Jorgenson	DATE: 10/15/10	REVISION G

GEOSYNTHETIC TENSION CALCULATION

Location/condition modeled: Domtar: 3:1 Final Cover Ash/GCL Interface (Peak)

Variables

Slope Angle (deg)	18.4
Interface Friction Angle (deg)	43.3
Adhesion (psf)	0.0
Cover Soil Friction Angle (deg)	43.0
Cohesion (psf)	0
Slope Height (ft)	59
Cover Soil Thickness (ft)	1.5
Cover Soil Unit Weight (pcf)	115.0
Seepage Thickness (ft)	0.000

Calculated Values

Weight Passive (lb/ft)	432
Weight Active (lb/ft)	31811
Adhesion Force (lb/ft)	0
Cohesion Force (lb/ft)	0
Seepage Toe Weight (lb/ft)	0
Seepage Slope Weight (lb/ft)	0

Geosynthetic Tension (lb/in)

FS = 1.0	-1585
FS = 1.2	-1032
FS = 1.5	-575
FS = 2.0	-179

Geosynthetic Tension = 0 when FS = 2.40

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11/19

PROJECT / PROPOSAL NAME / LOCATION: Domtar: 3:1 Phase 1A & 1B Final Cover		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		5794.46
PREPARED BY: T. Halena	DATE: 10/12/10	FINAL <input checked="" type="checkbox"/>
CHECKED BY: S. Jorgensen	DATE: 10/15/10	REVISION <input type="checkbox"/>

GEOSYNTHETIC TENSION CALCULATION

Location/condition modeled: Domtar: 3:1 Final Cover
 Geocomposite / General Fill Interface (Peak)

Variables

Slope Angle (deg)	18.4
Interface Friction Angle (deg)	40.2
Adhesion (psf)	0.0
Cover Soil Friction Angle (deg)	43.0
Cohesion (psf)	0
Slope Height (ft)	59
Cover Soil Thickness (ft)	1.5
Cover Soil Unit Weight (pcf)	115.0
Seepage Thickness (ft)	0.000

Calculated Values

Weight Passive (lb/ft)	432
Weight Active (lb/ft)	31811
Adhesion Force (lb/ft)	0
Cohesion Force (lb/ft)	0
Seepage Toe Weight (lb/ft)	0
Seepage Slope Weight (lb/ft)	0

Geosynthetic Tension (lb/in)

FS = 1.0	-1340
FS = 1.2	-864
FS = 1.5	-459
FS = 2.0	-101

Geosynthetic Tension = 0 when FS = 2.23

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12/19

PROJECT / PROPOSAL NAME / LOCATION: Dornar Phase 1A & 1B Final Cover Construction		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		5794.46
PREPARED BY: T. Halena	DATE: 10/11/10	FINAL 8
CHECKED BY: S. Jorgensen	DATE: 10/15/10	REVISION 8

GEOSYNTHETIC TENSION CALCULATION

Location/condition modeled: Dornar: 3:1 Final Cover
 GCL/Geomembrane Interface (Residual)

Variables

Slope Angle (deg)	18.4
Interface Friction Angle (deg)	22.9
Adhesion (psf)	0.0
Cover Soil Friction Angle (deg)	43.0
Cohesion (psf)	0
Slope Height (ft)	59
Cover Soil Thickness (ft)	1.5
Cover Soil Unit Weight (pcf)	115.0
Seepage Thickness (ft)	0.000

Calculated Values

Weight Passive (lb/ft)	432
Weight Active (lb/ft)	31811
Adhesion Force (lb/ft)	0
Cohesion Force (lb/ft)	0
Seepage Toe Weight (lb/ft)	0
Seepage Slope Weight (lb/ft)	0

Geosynthetic Tension (lb/in)

FS = 1.0	-277
FS = 1.2	-70
FS = 1.5	125
FS = 2.0	310

Geosynthetic Tension = 0 when FS = 1.30

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13/19

PROJECT / PROPOSAL NAME / LOCATION: Domtar Phase 1A & 1B Final Cover Construction		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		5794.46
PREPARED BY: T. Hafens	DATE: 10/11/10	FINAL <input type="checkbox"/>
CHECKED BY: S. Jorgensen	DATE: 10/15/10	REVISION <input type="checkbox"/>

GEOSYNTHETIC TENSION CALCULATION

Location/condition modeled: Domtar: 3:1 Final Cover Geomembrane/Geocomposite (Residual)

Variables

Slope Angle (deg)	18.4
Interface Friction Angle (deg)	8.7
Adhesion (psf)	351.0
Cover Soil Friction Angle (deg)	43.0
Cohesion (psf)	0
Slope Height (ft)	59
Cover Soil Thickness (ft)	1.5
Cover Soil Unit Weight (pcf)	115.0
Seepage Thickness (ft)	0.020 Assume Full Saturation

Calculated Values

Weight Passive (lb/ft)	432
Weight Active (lb/ft)	31811
Adhesion Force (lb/ft)	65608
Cohesion Force (lb/ft)	0
Seepage Toe Weight (lb/ft)	0
Seepage Slope Weight (lb/ft)	233

Geosynthetic Tension (lb/in)

FS = 1.0	-5064
FS = 1.2	-4073
FS = 1.5	-3087
FS = 2.0	-2104

Geosynthetic Tension = 0 when FS = 7.03

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14/19

PROJECT / PROPOSAL NAME / LOCATION: Domtar Phase 1A & 1B Final Cover Construction		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		5794.46
PREPARED BY: T. Halena	DATE: 10/11/10	FINAL <input type="checkbox"/>
CHECKED BY: S. Jorgensen	DATE: 10/15/10	REVISION <input type="checkbox"/>

GEOSYNTHETIC TENSION CALCULATION

Location/condition modeled: Domtar: 3:1 Final Cover Ash/GCL Interface (Residual)

Variables

Slope Angle (deg)	18.4
Interface Friction Angle (deg)	39.4
Adhesion (psf)	0.0
Cover Soil Friction Angle (deg)	43.0
Cohesion (psf)	0
Slope Height (ft)	59
Cover Soil Thickness (ft)	1.5
Cover Soil Unit Weight (pcf)	115.0
Seepage Thickness (ft)	0.000

Calculated Values

Weight Passive (lb/ft)	432
Weight Active (lb/ft)	31811
Adhesion Force (lb/ft)	0
Cohesion Force (lb/ft)	0
Seepage Toe Weight (lb/ft)	0
Seepage Slope Weight (lb/ft)	0

Geosynthetic Tension (lb/in)

FS = 1.0	-1281
FS = 1.2	-822
FS = 1.5	-430
FS = 2.0	-81

Geosynthetic Tension = 0 when FS = 2.18

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15/19

PROJECT / PROPOSAL NAME / LOCATION: Dointar: 3:1 Phase 1A & 1B Final Cover		PROJECT / PROPOSAL NO.
SUBJECT: Interface Slope Stability		5794.46
PREPARED BY: T. Halena	DATE: 10/12/10	FINAL &
CHECKED BY: S. Jorgensen	DATE: 10/15/10	REVISION &

GEOSYNTHETIC TENSION CALCULATION

Location/condition modeled: Dointar: 3:1 Final Cover Geocomposite / General Fill Interface (Residual)

Variables

Slope Angle (deg)	18.4
Interface Friction Angle (deg)	40.5
Adhesion (psf)	0.0
Cover Soil Friction Angle (deg)	43.0
Cohesion (psf)	0
Slope Height (ft)	59
Cover Soil Thickness (ft)	1.5
Cover Soil Unit Weight (pcf)	115.0
Seepage Thickness (ft)	0.000

Calculated Values

Weight Passive (lb/ft)	432
Weight Active (lb/ft)	31811
Adhesion Force (lb/ft)	0
Cohesion Force (lb/ft)	0
Seepage Toe Weight (lb/ft)	0
Seepage Slope Weight (lb/ft)	0

Geosynthetic Tension (lb/in)

FS = 1.0	-1363
FS = 1.2	-880
FS = 1.5	-470
FS = 2.0	-108

Geosynthetic Tension = 0 when FS = 2.24

80

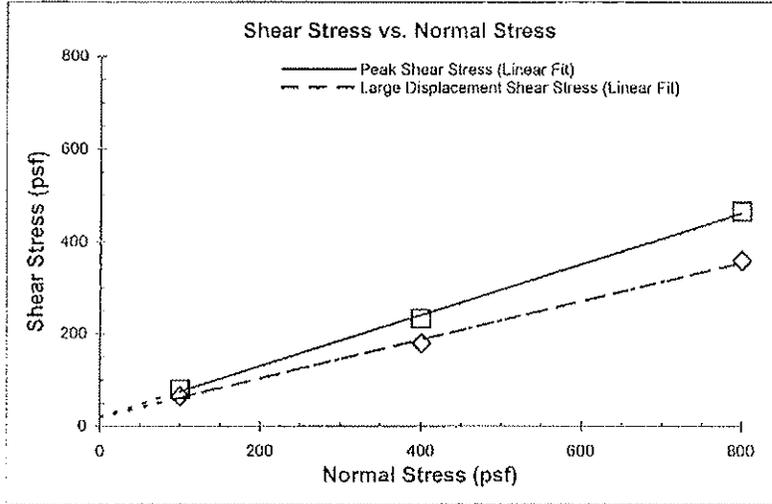


Interface Friction Test Report

Client: RMT, Inc. TRI Log#: E2347-16-10
 Project: Domtar - Phase 1A & 1B Final Cover Test Method: ASTM D 6243
 Test Date: 10/12/10-10/15/10

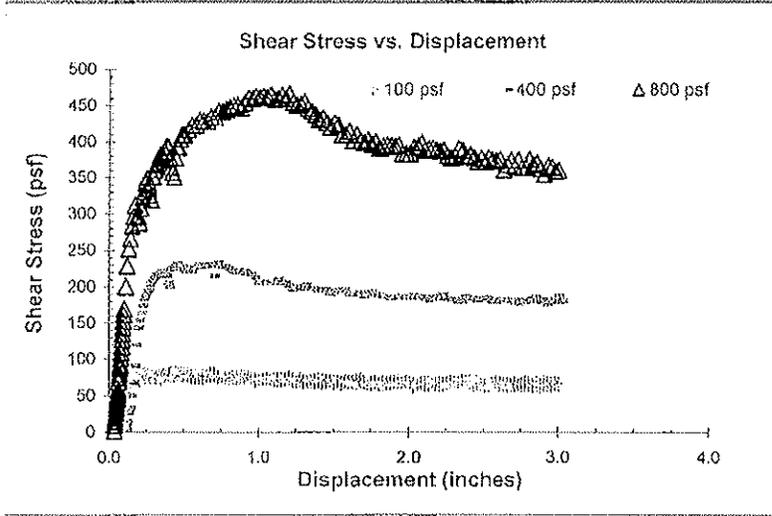
John M. Allen, P.E., 10/15/2010
 Quality Review/Date

Tested Interface: Bentomat DN GCL (6279 vs. Agru 40 mil LLDPE Microspike Geomembrane (236566.10))



Test Results		
	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	28.9	22.9
Y-intercept or Adhesion (psf):	20	19

Shearing occurred at the interface.



Test Conditions	
Upper Box &	Bentomat DN GCL (black side)
Lower Box	Agru 40 mil LLDPE Microspike geomembrane (shiny side)
Box Dimensions:	12"x12"x4"
Interface Conditioning:	Interface soaked and loading applied for a minimum of 24 hours prior to shear.
Test Condition:	Wet
Shearing Rate:	0.04 inches/minute

Test Data			
Specimen No.	1	2	3
Bearing Slide Resistance (lbs)	3	3	3
Normal Stress (psf)	100	400	800
Corrected Peak Shear Stress (psf)	80	233	466
Corrected Large Displacement Shear Stress (psf)	66	180	360
Peak Secant Angle (degrees)	38.6	30.3	30.2
Large Displacement Secant Angle (degrees)	33.4	24.2	24.2
Asperity (mils)	29.8	30.2	35.6

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

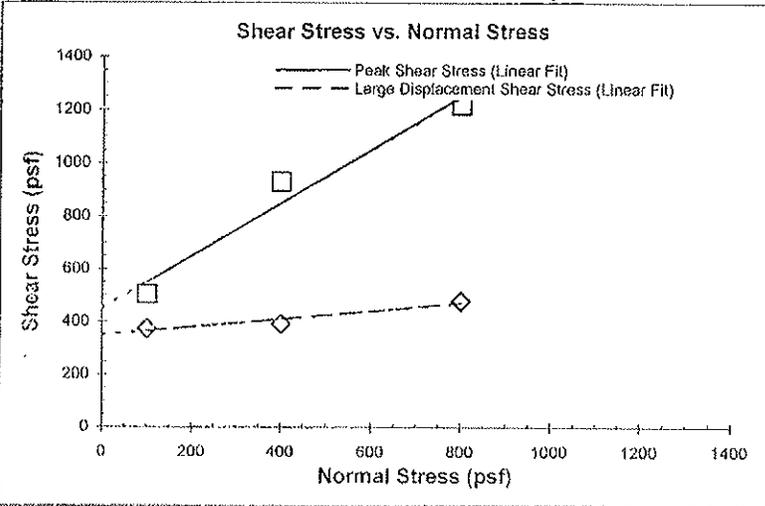


Interface Friction Test Report

Client: RMT, Inc. TRI Log#: E2347-16-10
 Project: Domtar - Phase 1A & 1B Final Cover Test Method: ASTM D 5321
 Test Date: 10/07/10-10/07/10

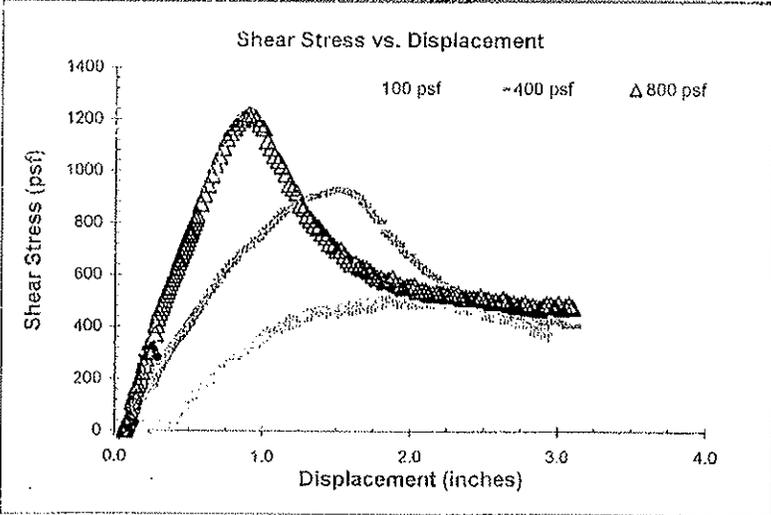
John M. Allen, P.E., 10/07/2010
 Quality Review/Date

Tested Interface: Skaps TN250-2-6/8 Double-sided Geocomposite vs. Agru 40 mil LLDPE Microspike Geomembrane (236566.10)



Test Results		
	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	45.2	8.7
Y-intercept or Adhesion (psf):	450	351

Shearing occurred at the interface.



Test Conditions	
Upper Box &	Skaps TN250-2-6/8 double-sided geocomposite
Lower Box	Agru 40 mil LLDPE Microspike geomembrane (dull side)
Box Dimensions:	12"x12"x4"
Interface Conditioning:	Interface soaked and loading applied for a minimum of 1 hour prior to shear.
Test Condition:	Wet
Shearing Rate:	0.2 inches/minute

Test Data			
Specimen No.	1	2	3
Bearing Slide Resistance (lbs)	9	12	16
Normal Stress (psf)	100	400	800
Corrected Peak Shear Stress (psf)	505	932	1220
Corrected Large Displacement Shear Stress (psf)	376	394	480
Peak Secant Angle (degrees)	78.8	66.8	56.8
Large Displacement Secant Angle (degrees)	75.1	44.6	31.0
Asperity (mils)	35.6	34.0	36.6

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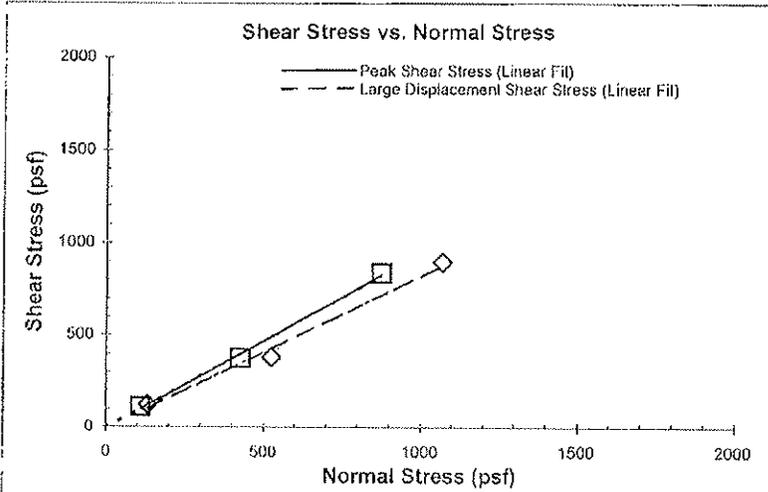
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Interface Friction Test Report

Client: **RMT, Inc.** TRI Log#: E2347-16-10
 Project: **Domtar - Phase 1A & 1B Final Cover** Test Method: ASTM D 6243
 Test Date: 10/06/10-10/08/10

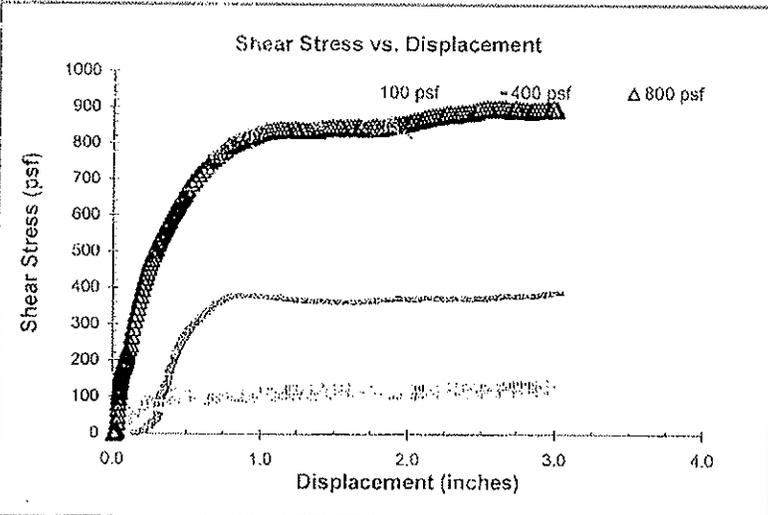
John M. Allen, P.E., 10/08/2010
 Quality Review/Date

Tested Interface: Bentomat DN GCL (6279) vs. Ash



Test Results		
	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	43.3	39.4
Y-intercept or Adhesion (psf):	0	0

Note: Regression angles include an area correction. Peak & large displacement friction angle regression analyses were adjusted to fit a zero y-intercept. Shearing occurred at the interface.



Test Conditions	
Upper Box &	Bentomat DN GCL (white side)
Lower Box	Ash tamped in place
Box Dimensions: 12"x12"x4"	
Interface	
Conditioning:	Interface soaked and loading applied for a minimum of 24 hours prior to shear.
Test Condition: Wet	
Shearing Rate: 0.04 inches/minute	

Test Data			
Specimen No.	1	2	3
Bearing Slide Resistance (lbs)	3	3	16
Area Corrected Normal Stress (psf)	111	428	875
Area Corrected Peak Shear Stress (psf)	112	377	836
Area Corrected Large Displacement Normal Stress (psf)	133	525	1067
Area Corrected Large Displacement Shear Stress (psf)	125	382	897
Peak Secant Angle (degrees)	45.3	41.4	43.7
Large Displacement Secant Angle (degrees)	43.2	36.0	40.1

The testing herein is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material.

TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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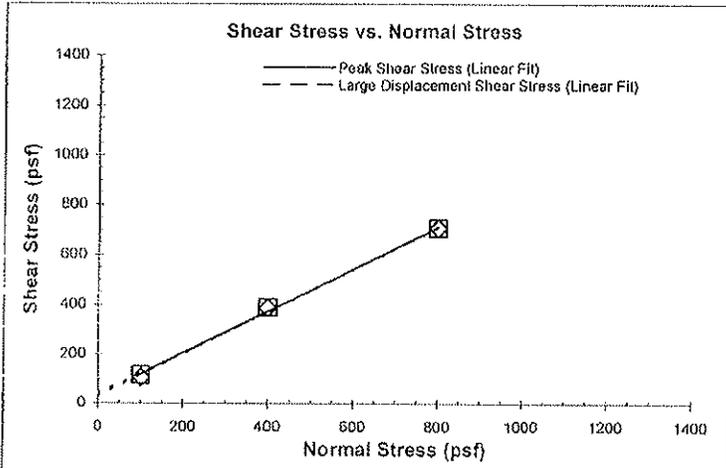


Interface Friction Test Report

Client: **RMT, Inc.** TRI Log#: E2347-16-10
 Project: **Domtar - Phase 1A & 1B Final Cover** Test Method: ASTM D 5321
 Test Date: 10/08/10-10/09/10

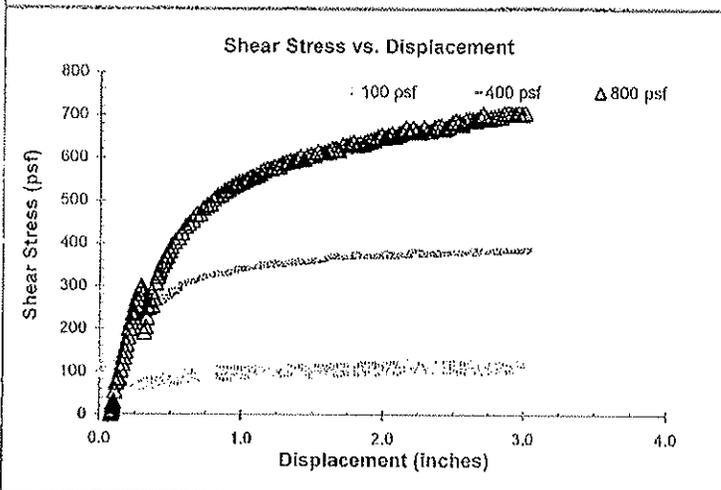
John M. Allen, P.E., 10/11/2010
 Quality Review/Date

Tested Interface: General Fill vs. Skaps TN250-2-6/8 Double-sided Geocomposite



Test Results		
	Peak	Large Displacement (@ 3.0 In.)
Friction Angle (degrees):	40.2	40.5
Y-intercept or Adhesion (psf):	38	30

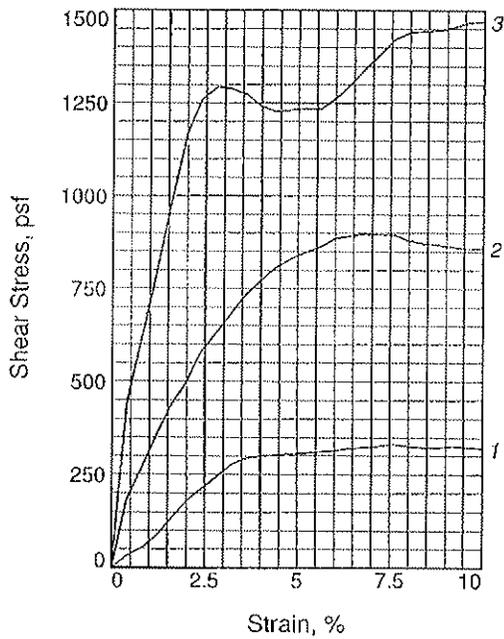
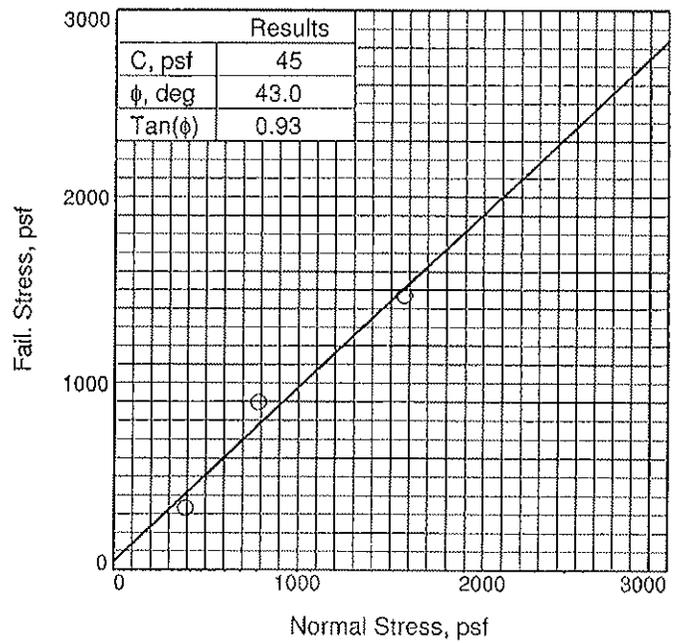
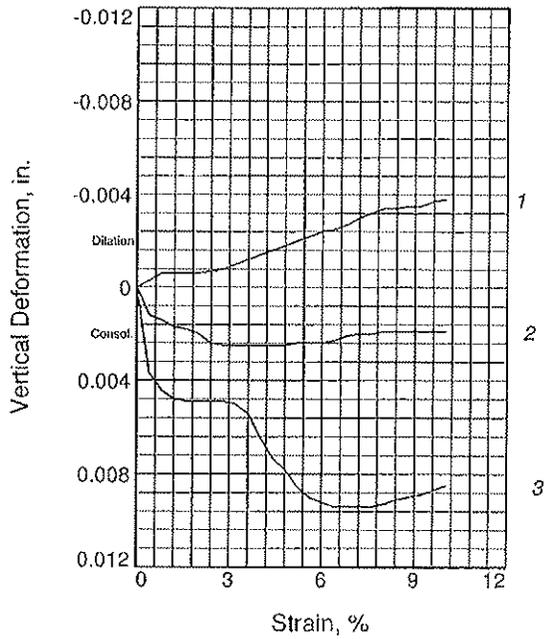
Shearing occurred at the interface.



Test Conditions	
Upper Box &	General Fill tamped in place
Lower Box	Skaps TN250-2-6/8 double-sided geocomposite (6 oz side)
Box Dimensions: 12"x12"x4"	
Interface Conditioning:	Interface soaked and loading applied for a minimum of 24 hours prior to shear.
Test Condition: Wet	
Shearing Rate: 0.04 inches/minute	

Test Data			
Specimen No.	1	2	3
Bearing Slide Resistance (lbs)	9	12	16
Normal Stress (psf)	100	400	800
Corrected Peak Shear Stress (psf)	115	388	708
Corrected Large Displacement Shear Stress (psf)	107	387	708
Peak Secant Angle (degrees)	49.1	44.1	41.5
Large Displacement Secant Angle (degrees)	46.9	44.1	41.5

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



Sample No.	1	2	3
Initial			
Water Content, %	8.5	8.5	8.5
Dry Density, pcf	108.4	108.4	108.4
Saturation, %	50.5	52.3	49.1
Void Ratio	0.4112	0.3916	0.4286
Diameter, in.	2.50	2.50	2.50
Height, in.	1.00	1.00	1.00
At Test			
Water Content, %	16.8	16.0	16.8
Dry Density, pcf	108.4	108.4	109.0
Saturation, %	99.9	99.0	99.2
Void Ratio	0.4109	0.3908	0.4200
Diameter, in.	2.50	2.50	2.50
Height, in.	1.00	1.00	0.99
Normal Stress, psf	393	786	1572
Fail. Stress, psf	331	898	1470
Strain, %	7.6	6.8	10.0
Ult. Stress, psf			
Strain, %			
Strain rate, %/min.	1.00	1.00	1.00

Sample Type: Remolded

Description: (Silty sand)

Assumed Specific Gravity= 2.45

Remarks: Sample compaction and density based on a reduced stanard proctor using 10 blows per lift.

Figure: _____

Client: Domtar

Project: Domtar: LF 3 PH 1A/1B CM/DR

Source of Sample: General Fill

Sample Number: General Fill

Proj. No.: 05794.46.001

Date Sampled: 10-13-10

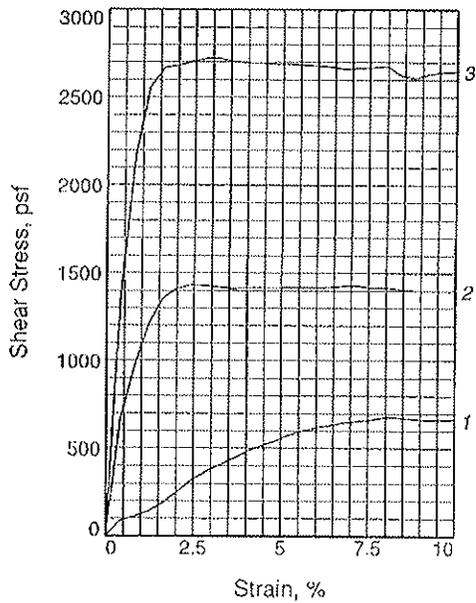
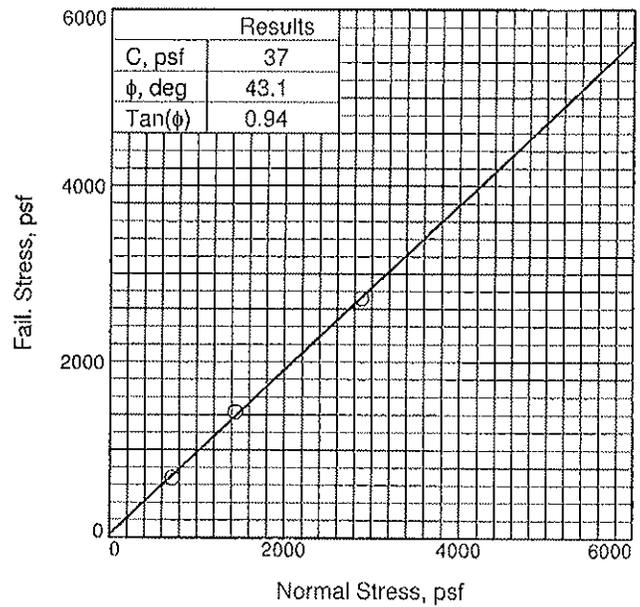
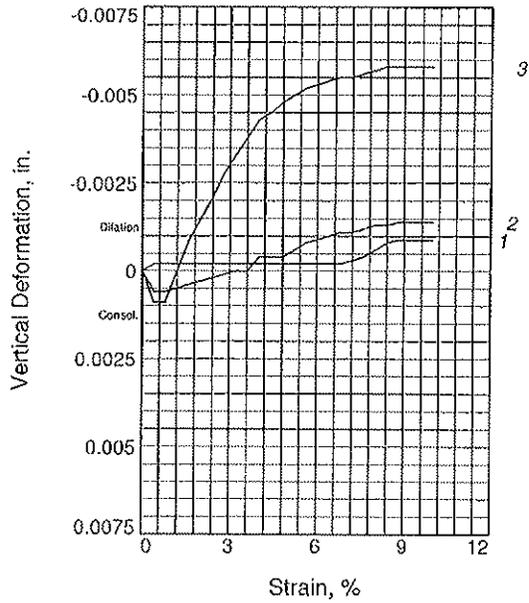
DIRECT SHEAR TEST REPORT

RMT, Inc.

Tested By: HJW

Checked By: JPH

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Sample No.	1	2	3
Initial			
Water Content, %	8.5	8.5	8.5
Dry Density, pcf	108.4	108.4	108.4
Saturation, %	51.6	51.6	51.6
Void Ratio	0.3997	0.3997	0.3997
Diameter, in.	2.50	2.50	2.50
Height, in.	1.00	1.00	1.00
At Test			
Water Content, %	16.4	16.1	16.4
Dry Density, pcf	108.4	108.9	108.4
Saturation, %	99.9	99.5	99.7
Void Ratio	0.3991	0.3930	0.3997
Diameter, in.	2.50	2.50	2.50
Height, in.	1.00	1.00	1.00
Normal Stress, psf	720	1440	2880
Fail. Stress, psf	681	1432	2719
Strain, %	8.0	2.4	2.8
Ult. Stress, psf			
Strain, %			
Strain rate, %/min.	1.00	1.00	1.00

Sample Type: Remolded
Description: (Silty sand)

Assumed Specific Gravity= 2.43

Remarks: Sample compacted and density based on a reduced standard proctor using 10 blows per lift.

Figure: _____

Client: Domtar

Project: Domtar; LF 3 PH 1A/1B CM/DR

Source of Sample: General Fill

Sample Number: General Fill

Proj. No.: 05794.46.001

Date Sampled: 10-13-10

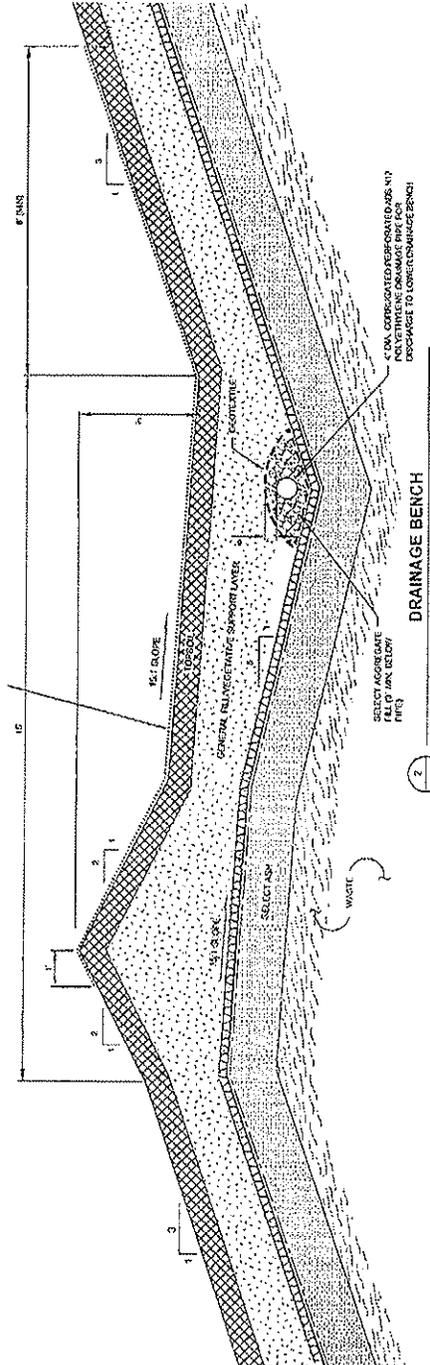
DIRECT SHEAR TEST REPORT

RMT, Inc.

Tested By: HJW

Checked By: JPH

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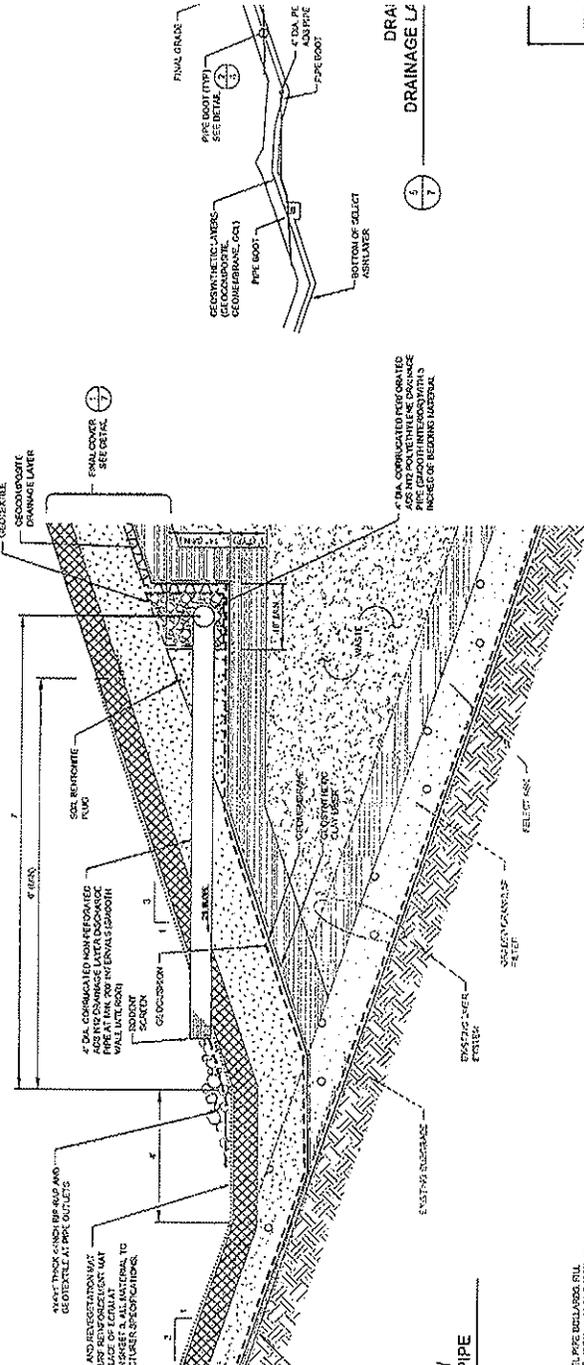


DRAINAGE BENCH
(NOT TO SCALE)

1 2

FINAL COVER
(NOT TO SCALE)

- GEOTECHNICAL LAYER (GEOTEXTILE)
- GENERAL RELINQUISHMENT DRAINAGE LAYER
- SELECT AGGREGATE (1/2\"/>

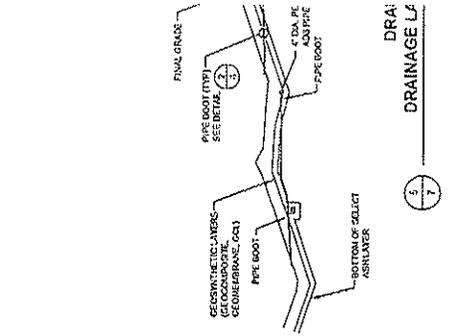


FINAL COVER TERMINATION / DRAINAGE LAYER DISCHARGE PIPE
(NOT TO SCALE)

3 7

1 2

FINAL COVER
(NOT TO SCALE)



4\"/>

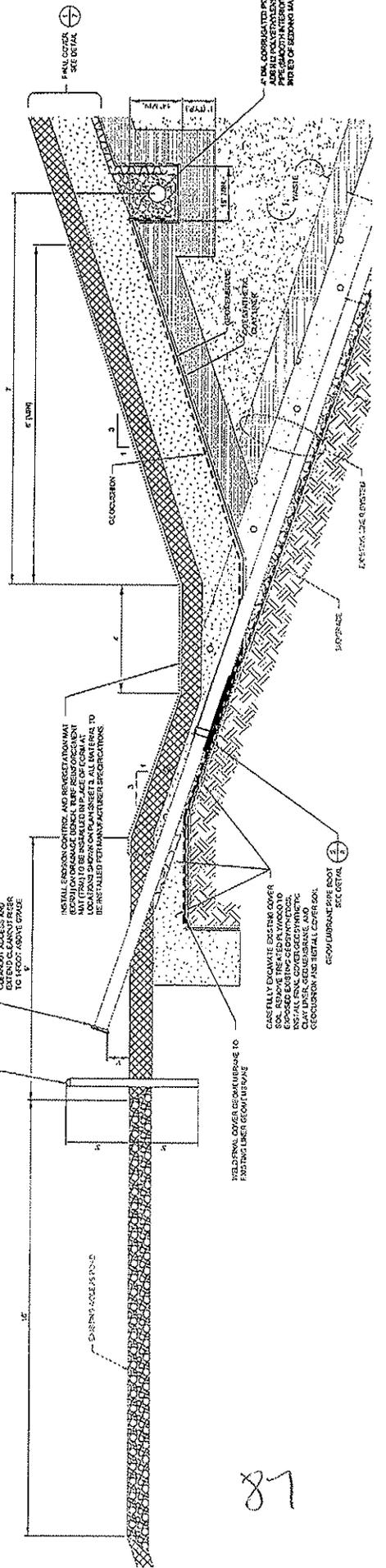
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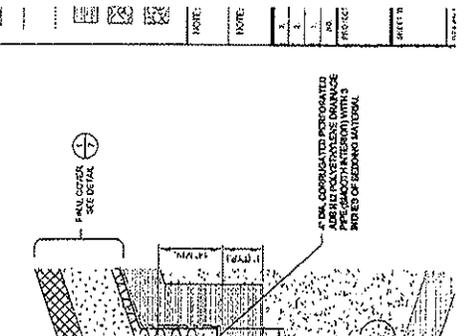


FINAL COVER TERMINATION / DRAINAGE LAYER DISCHARGE PIPE
(NOT TO SCALE)

3 7

1 2

FINAL COVER
(NOT TO SCALE)



4\"/>

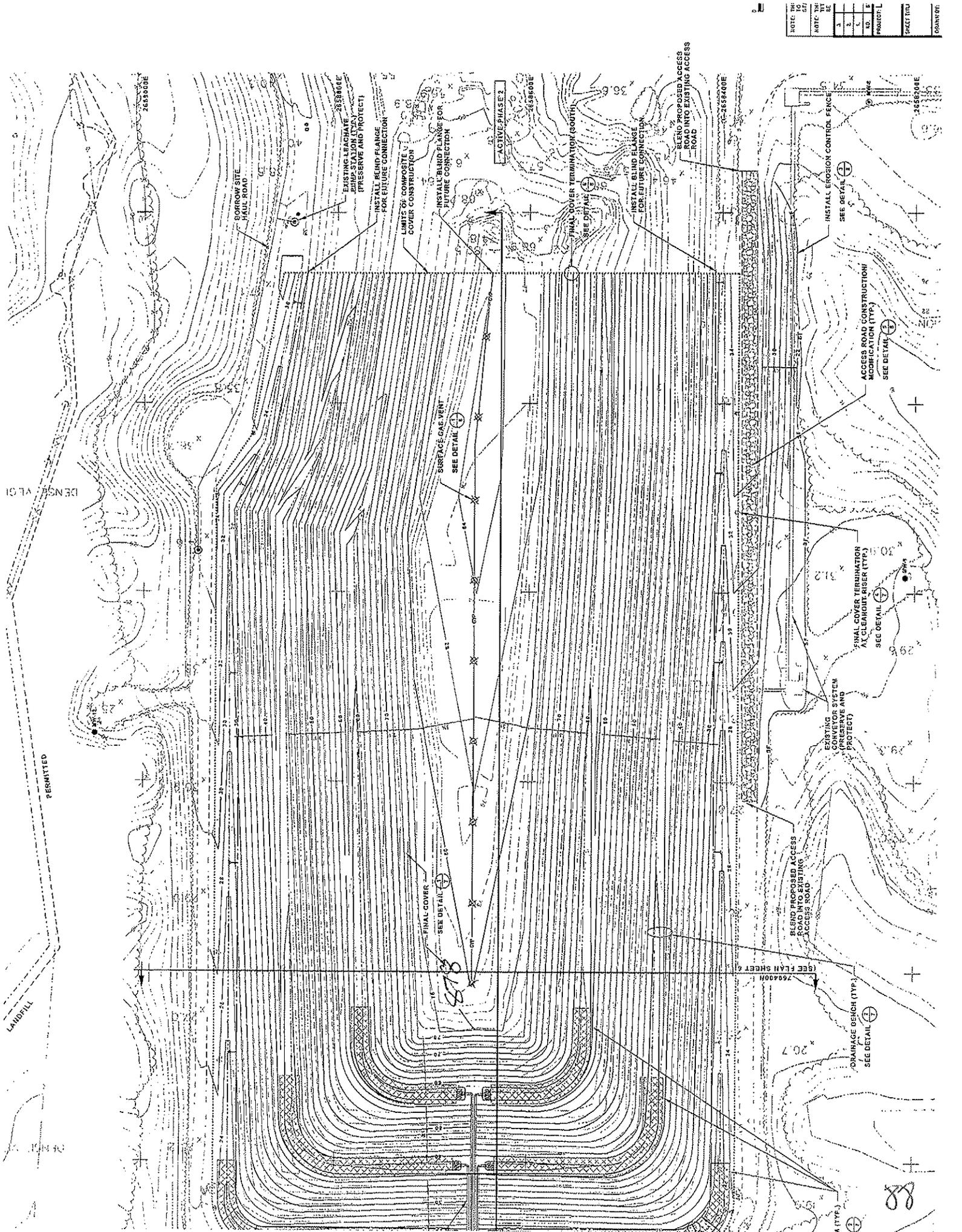
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NOTE: DWG. NO.	DATE: DWG. DATE	PROJECT: L	SHEET TITLE	COUNTY: NY
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2	2/17			
3	2/17			
4	2/17			
5	2/17			
6	2/17			
7	2/17			
8	2/17			
9	2/17			
10	2/17			

SEE PLAN SHEET 7594308

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DOMTAR COVER
INFINITE SLOPE STABILITY

Prepared by: Sam Jorgensen, 10/18/10

Checked by /QA'd by: Doug Genthe, 10/19/10

DOMTAR COVER
INFINITE SLOPE STABILITY

Table of Contents

- Purpose/Approach/Methodologies/ Assumptions/Results/
References
- Figures
- Calculations
- References



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SHEET 3 OF 8

PROJECT / PROPOSAL NAME / LOCATION: Domtar Landfill		PROJECT / PROPOSAL NO.
SUBJECT: Infinite Slope Stability		05794.46.001
PREPARED BY: Sam Jorgensen	DATE: 10/18/10	FINAL π
CHECKED BY: Doug Genthe	DATE: 10/19/10	REVISION π

INFINITE SLOPE STABILITY

Purpose:

The purpose of this analysis is to evaluate the slope stability of the proposed Domtar Landfill cover with respect to shallow failure within the cover soil.

Methodology:

The factor of safety against shallow slope failures in cohesionless material with an angle of friction of ϕ and a slope angle of β may be estimated using the infinite slope equation:

$$FS = \frac{\tan \phi}{\tan \beta}$$

The infinite slope stability equation has been expanded to include cohesion, seismic loading, and seepage forces parallel to the slope. Refer to page 9-12 of the OhioEPA Geotechnical and Stability Analyses for Ohio Waste Containment Facilities guidance document (2004) for the methodology used in this analysis.

The stability of geosynthetic interfaces within the cover was evaluated in a separate analysis.

Assumptions:

- The slope is of infinite extent
- Sliding occurs along a planar surface parallel to the face of the slope
- The passive buttress force at the slope toe is insignificant
- No surcharge loads

The following assumptions were made to provide the necessary information for the model.

- **Geometry** – The proposed cover slopes are 3H:1V (18.43°) and are comprised of 6 inches of topsoil overlying 12 inches of silty sand general fill material. Underlying the general fill is a 250 mil geocomposite drainage layer underlain by a geomembrane barrier. The maximum slope length is 60 feet (used in seepage thickness analysis).



PROJECT / PROPOSAL NAME / LOCATION: Dontar Landfill		PROJECT / PROPOSAL NO.
SUBJECT: Infinite Slope Stability		05794.46.001
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CHECKED BY: Doug Genthe	DATE: 10/19/10	REVISION π

- **Seepage Thickness** - The expected head within the general fill was estimated using the methodology outlined in OhioEPA, 2004. The cover soil is conservatively assumed to be at field capacity, and therefore, has no additional storage capacity available. The seepage thickness was estimated for a 100-year, 1-hour storm event of 3.6 inches based on a separate HydroCAD analysis (HydroCAD, 2004). The runoff coefficient is 0.75 for a good stand of grass. The transmissivity of the geocomposite is 3.51×10^{-4} m²/sec based on test results from the manufacturer. The transmissivity was reduced by a factor 1.9 to account for clogging and creep.
- **Cover Soil** - The cover soil consists of 6 inches of sandy topsoil overlying 12 inches of silty sand general fill. The friction angle, unit weight, and hydraulic conductivity of the general fill is 43 degrees, 116 pcf, and 8.9×10^{-5} cm/sec, respectively, based on laboratory tests performed on a representative sample collected by RMT on 10/13/10. The hydraulic conductivity of the topsoil is 6.4×10^{-5} cm/sec, which is slightly less than the hydraulic conductivity of the general fill and was therefore used in this analysis.
- **Earthquake loading** - The peak horizontal acceleration at the ground surface is 0.06g (USGS, 2003), which increases to 0.10g at the top of 100 feet of refuse fill (Figure 9-9, OhioEPA, 2004).

Results and Conclusions:

The proposed landfill cover has a factor of safety against shallow slope failure within the cover soil of 2.1 for seismic loading and 2.8 for saturated conditions, which are considered acceptable for standard geotechnical practice.

The estimated seepage thickness for saturated conditions is 0.05 inches, which is less than the thickness of the geocomposite (0.25 inches), indicating that seepage parallel to the slope will be contained within the geocomposite and will not develop within the cover soil.

The hydraulic conductivity of the general fill controls seepage thickness. Less permeable general fill will reduce infiltration and seepage thickness, thereby increasing the safety factor (assuming other parameters remain unchanged). More permeable general fill (e.g., clean sand) may allow head to build up on the liner and into the cover soils, thereby creating seepage conditions and reducing the safety factor.

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PROJECT / PROPOSAL NAME / LOCATION: Domtar Landfill		PROJECT / PROPOSAL NO.
SUBJECT: Infinite Slope Stability		05794.46.001
PREPARED BY: Sam Jorgensen	DATE: 10/18/10	FINAL π
CHECKED BY: Doug Genthe	DATE: 10/19/10	REVISION π

References:

OhioEPA. 2004. Geotechnical and Stability Analyses for Ohio Waste Containment Facilities. September 2004.

HydroCAD®. 2006. Stormwater Modeling System. Version 8.

United States Geologic Society (USGS). 2003. 2002 Interactive Deaggregations.
<http://eqint.cr.usgs.gov/deaggint/2002/>



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SHEET 6 OF 8

PROJECT / PROPOSAL NAME / LOCATION: Dountar Landfill		PROJECT / PROPOSAL NO.
SUBJECT: Infinite Slope Stability		05794.46.001
PREPARED BY: Sam Jorgensen	DATE: 10/18/10	FINAL π
CHECKED BY: Doug Genthe	DATE: 10/19/10	REVISION π

Figures

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SHEET 7 OF 8

PROJECT / PROPOSAL NAME / LOCATION: Domtar Landfill		PROJECT / PROPOSAL NO.
SUBJECT: Infinite Slope Stability		05794.46.001
PREPARED BY: Sam Jorgensen	DATE: 10/18/10	FINAL π
CHECKED BY: Doug Genthe	DATE: 10/19/10	REVISION π

Calculations

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SHEET 8 OF 8

PROJECT / PROPOSAL NAME / LOCATION: Domtar Landfill		PROJECT / PROPOSAL NO.	
SUBJECT: Infinite Slope Stability		05794.46.001	
PREPARED BY: Sam Jorgensen	DATE: 10/18/10	FINAL	κ
CHECKED BY: Doug Genthe	DATE: 10/19/10	REVISION	κ

References

Shallow Slope Failure Analysis

Project: Domtar Cover - Saturated Conditions

Slope	3 H:1V	
β	18.43 deg	Slope angle
γ	116 pcf	Field unit weight of cover soil
Φ	43 deg	Internal angle of friction
c	0 psf	Cohesion of failure surface
n_g	0.0 %g	Peak horizontal acceleration at the failure surface
z_c	1.50 ft	Depth of cover soil
P	3.6 in/hr	Precipitation (100-yr, 1-hr storm event)
L	60 ft	Slope length
RC	0.75	Runoff coefficient (SCS Runoff Curve Number/100)
T_d	3.51E-04 m ² /sec	Transmissivity of geonet at 250 psf normal load and gradient = 0.33
SF _d	1.90	Geocomposite safety factors (1.3*1.2*1.0*1.2=1.9)
k_d	2.89E+00 cm/sec	Permeability of drainage layer (with reduction factors)
k_d	4.1E+03 in/hour	
t_d	0.021 ft	Thickness of drainage layer
k_c	6.4E-05 cm/sec	Permeability of cover material
k_c	9.1E-02 in/hour	
h_{avg}	0.004 ft	Average head (seepage thickness)
h_{avg}	0.048 in	
d_w	1.52 ft	Depth to water table assume parallel to slope
FS	2.79	Factor of safety against shallow failure

Shallow Slope Failure Analysis

Project: Domtar Cover - Seismic Conditions

Slope	3 H:1V	
β	18.43 deg	Slope angle
γ	116 pcf	Field unit weight of cover soil
Φ	43 deg	Internal angle of friction
c	0 psf	Cohesion of failure surface
n_g	0.10 g	Peak horizontal acceleration at the failure surface
z_c	1.50 ft	Depth of cover soil
P	0.0 in/hr	Precipitation (100-yr, 1-hr storm event)
L	60 ft	Slope length
RC	0.75	Runoff coefficient (SCS Runoff Curve Number/100)
T_d	3.51E-04 m ² /sec	Transmissivity of geonet at 250 psf normal load and gradient = 0.33
SF _d	1.90	Geocomposite safety factors (1.3*1.2*1.0*1.2=1.9)
k_d	2.89E+00 cm/sec	Permeability of drainage layer (with reduction factors)
k_d	4.1E+03 in/hour	
t_d	0.021 ft	Thickness of drainage layer
k_c	6.4E-05 cm/sec	Permeability of cover material
k_c	9.1E-02 in/hour	
h_{avg}	0.000 ft	Average head (seepage thickness)
h_{avg}	0.000 in	
d_w	1.52 ft	Depth to water table assume parallel to slope
FS	2.08	Factor of safety against shallow failure

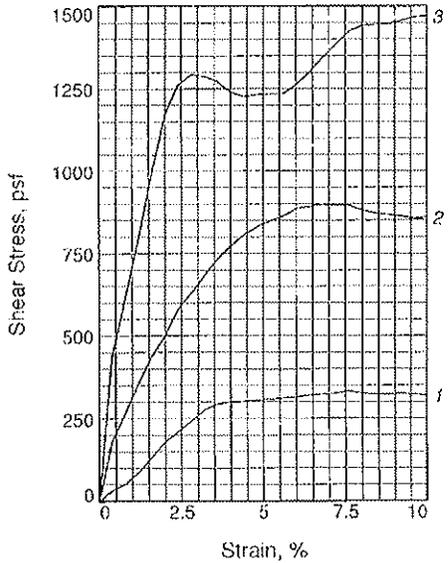
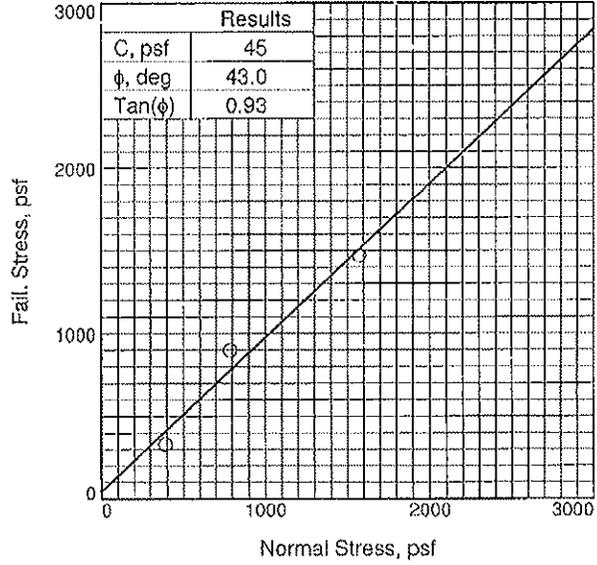
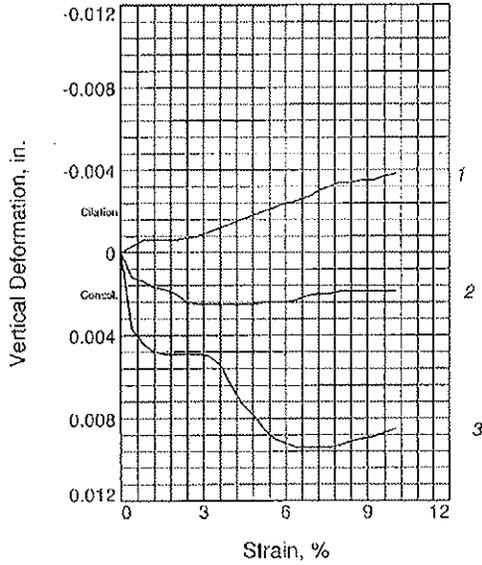


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SHEET 8 OF 8

PROJECT / PROPOSAL NAME / LOCATION: Domtar Landfill		PROJECT / PROPOSAL NO.
SUBJECT: Infinite Slope Stability		05794.46.001
PREPARED BY: Sam Jorgensen	DATE: 10/18/10	FINAL π
CHECKED BY: Doug Genthe	DATE: 10/19/10	REVISION π

References



Sample No.	1	2	3
Water Content, %	8.5	8.5	8.5
Dry Density, pcf	108.4	108.4	108.4
Saturation, %	50.5	52.3	49.1
Void Ratio	0.4112	0.3916	0.4286
Diameter, in.	2.50	2.50	2.50
Height, in.	1.00	1.00	1.00
Water Content, %	16.8	16.0	16.8
Dry Density, pcf	108.4	108.4	109.0
Saturation, %	99.9	99.0	99.2
Void Ratio	0.4109	0.3908	0.4200
Diameter, in.	2.50	2.50	2.50
Height, in.	1.00	1.00	0.99
Normal Stress, psf	393	786	1572
Fail. Stress, psf	331	898	1470
Strain, %	7.6	6.8	10.0
Ult. Stress, psf			
Strain, %			
Strain rate, %/min.	1.00	1.00	1.00

Sample Type: Remolded
Description: (Silty sand)

Assumed Specific Gravity = 2.45
Remarks: Sample compaction and density based on a reduced standard proctor using 10 blows per lift.

Figure: _____

Client: Domtar

Project: Domtar: LF 3 PH 1A/1B CM/DR

Source of Sample: General Fill

Sample Number: General Fill

Proj. No.: 05794.46.001

Date Sampled: 10-13-10

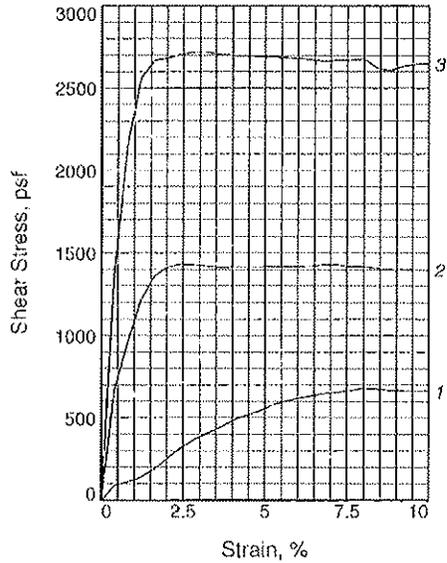
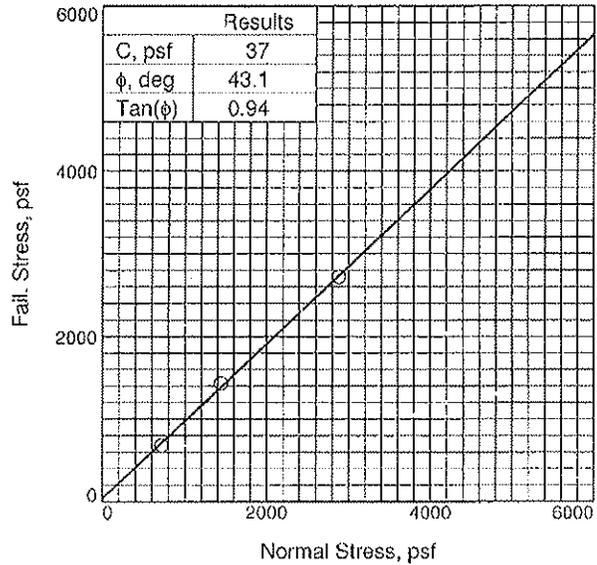
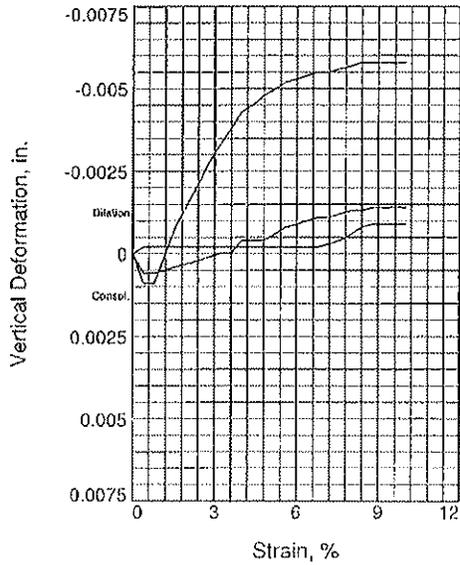
DIRECT SHEAR TEST REPORT

RMT, Inc.

Tested By: HJW

Checked By: JPH

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Sample No.	1	2	3	
Initial	Water Content, %	8.5	8.5	8.5
	Dry Density, pcf	108.4	108.4	108.4
	Saturation, %	51.6	51.6	51.6
	Void Ratio	0.3997	0.3997	0.3997
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	16.4	16.1	16.4
	Dry Density, pcf	108.4	108.9	108.4
	Saturation, %	99.9	99.5	99.7
	Void Ratio	0.3991	0.3930	0.3997
	Diameter, in.	2.50	2.50	2.50
	Height, in.	1.00	1.00	1.00
Normal Stress, psf	720	1440	2880	
Fail. Stress, psf	681	1432	2719	
Strain, %	8.0	2.4	2.8	
Ult. Stress, psf				
Strain, %				
Strain rate, %/min.	1.00	1.00	1.00	

Sample Type: Remolded
Description: (Silty sand)

Assumed Specific Gravity= 2.43

Remarks: Sample compacted and density based on a reduced standard proctor using 10 blows per lift.

Figure: _____

Client: Domtar

Project: Domtar: LF 3 PH 1A/1B CM/DR

Source of Sample: General Fill

Sample Number: General Fill

Proj. No.: 05794.46.001

Date Sampled: 10-13-10

DIRECT SHEAR TEST REPORT

RMT, Inc.

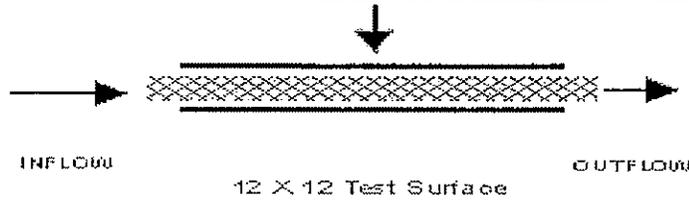
Tested By: HJW

Checked By: JPH

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Project: Domtar Paper, NC
 Product: TN250-2-6

Test Configuration:



Test Information:

Boundary Conditions:	Sand	Normal Load:	250 psf
	Geocomposite	Gradient:	0.33
	Textured Liner	Seating Time:	15 minutes
		Flow Direction:	MD

Test Results:

Pressure, psf	Gradient	Transmissivity, m ² /sec
		15 minutes
250	0.3	3.51 x 10 ⁻⁴

$$K = \frac{T}{t} \times \frac{1}{SF} = \frac{3.51 \times 10^{-4} \frac{m^2}{s}}{(0.25 \text{ in} \times \frac{0.0254 \text{ m}}{1 \text{ in}})} \times \frac{1}{1.3 \times 1.2 \times 1.0 \times 1.2} \times \frac{100 \text{ cm}}{m}$$

$$K = 2.9 \frac{cm}{s}$$

generated value is an ultimate value which, using ASTM D4716 for flow rate determination, must be reduced before use in design; that is,

$$q_{allow} < q_{ult}$$

One way of doing this is to ascribe partial factors of safety on each of the items not adequately assessed in the laboratory test. For example,

$$q_{allow} = q_{ult} \left[\frac{1}{FS_{IN} \times FS_{CR} \times FS_{CC} \times FS_{BC}} \right] \quad (4.5)$$

or if all of the partial factors of safety are lumped together,

$$q_{allow} = q_{ult} \left[\frac{1}{\sum FS_p} \right] \quad (4.6)$$

where q_{ult} = the flow rate determined from ASTM D4716 for short-term tests between solid plates using water as the transported liquid under laboratory test temperatures,

q_{allow} = the allowable flow rate to be used in Equation 4.3 for final design purposes,

FS_{IN} = the factor of safety for elastic deformation, or intrusion, of the adjacent geosynthetics into the geonet's core space,

FS_{CR} = the factor of safety for creep deformation of the geonet and/or adjacent geosynthetics into the geonet's core space,

FS_{CC} = the factor of safety for chemical clogging and/or precipitation of chemicals in the geonet's core space,

FS_{BC} = the factor of safety for biological clogging in the geonet's core space, and

$\sum FS_p$ = the *product* of all partial factors of safety for the site-specific conditions.

Some guidelines for various factors of safety to be used in different situations are given in Table 4.2. Example problems follow, which illustrate the use of geonets and point out that high factors of safety are warranted in critical situations. Please note that these values are based on preliminary and relatively sparse information. Other factors of safety, such as installation damage, temperature effects, and liquid turbidity, could also have been included. If needed they can be included on a site-specific basis. On the other hand, if the test method has included the particular item, it would appear in the foregoing formulation as a value of unity.

Example: _____

What is the allowable geonet flow rate to be used in the design of a capillary break beneath a roadway to prevent frost heave? Assume that laboratory testing was

Table 4.2 Recommended preliminary factor of safety values for determining allowable flow rate or transmissivity of geonets

Application Area	Partial Factor of Safety Value in Equation 4.5			
	FS_{IS}	FS_{CR}^*	FS_{CC}	FS_{BC}
Sport fields	1.0 to 1.2	1.0 to 1.5	1.0 to 1.2	1.1 to 1.3
Capillary breaks	1.1 to 1.3	1.0 to 1.2	1.1 to 1.5	1.1 to 1.3
Roof and plaza decks	1.2 to 1.4	1.0 to 1.2	1.0 to 1.2	1.1 to 1.3
Retaining walls, seeping rock and soil slopes	1.3 to 1.5	1.2 to 1.4	1.1 to 1.5	1.0 to 1.5
Drainage blankets	1.3 to 1.5	1.2 to 1.4	1.0 to 1.2	1.0 to 1.2
Surface water drains for landfill caps	1.3 to 1.5	1.2 to 1.4	1.0 to 1.2	1.2 to 1.5
Secondary leachate collection (landfills)	1.5 to 2.0	1.4 to 2.0	1.5 to 2.0	1.5 to 2.0
Primary leachate collection (landfills)	1.5 to 2.0	1.4 to 2.0	1.5 to 2.0	1.5 to 2.0

*These values assume that the q_{ch} value was obtained using an applied normal pressure of 1.5 to 2 times the field-anticipated maximum value. If not, values must be increased.

done at the proper design load and hydraulic gradient and that this testing yielded a short-term between-rigid-plates value of 1.2 gal./min.-ft.

Solution: Since better information is not known, average values from Table 4.2 are used.

$$\begin{aligned}
 q_{allow} &= q_{ch} \left[\frac{1}{FS_{IS} \times FS_{CR} \times FS_{CC} \times FS_{BC}} \right] \quad (4.5) \\
 &= 1.2 \left[\frac{1}{1.1 \times 1.1 \times 1.1 \times 1.2} \right] \\
 &= 1.2 \left[\frac{1}{1.60} \right] \\
 &= 0.75 \text{ gal./min.-ft.}
 \end{aligned}$$

Example:

What is the allowable geonet flow rate to be used in the design of a secondary leachate collection system? Assume that laboratory testing at proper design load and proper hydraulic gradient gave a short-term between-rigid-plates value of 1.2 gal./min.-ft.

Solution: Average values from Table 4.2 are used; however, note the large reduction.

RMT, Inc														QC:	HJW					
Falling Head Permeability Test (ASTM D5084)														QA:	JPH					
Project Name: Duntar							Cell #:							2						
Project #: 05794.46.001							USCS Description:							N/A						
Sample Name: Topsoil							USCS Classification:							N/A						
Visual Descript: Silty Sand							Average Kv =							6.4E-05 cm/sec						
Sample Type: Remolded			Initial Values		Final Values															
Sample Dia. (in)			3.00		3.00		Permeant:			Water										
Sample Ht. (in)			2.50		2.50		Permeant Specific Gravity:			1.00										
Tare & Wet (g)			497.25		841.00		Sample Specific Gravity:			2.62			Est.							
Tare & Dry (g)			476.57		733.60		Confining Pressure (psi):			100.0										
Tare (g)			268.08		259.72		Burette Diameter (in):			0.250										
Sample Wt. (g)			523.48		581.28		Burette Zero (cm):			100.0										
Moisture (%)			10.2		22.7		Max. Effect. Stress (psi):			5.8										
Wet Density (pcf)			112.9		125.8		Min. Effect. Stress (psi):			4.3										
Dry Density (pcf)			102.4		102.6		Ave. Effect. Stress (psi):			5.0										
Saturation (%)			44.7		100.0															
Date	Time	Run	Temp	Pressure (psi)	Cham.	Bot.	Top	Cham.	Bot.	Top	Flow	Kv ***	Ave. *							
Yr.	Mo.	Day	Hr.	Min.	Time	C***	Bot	Top	Cham	Dif.	Bot	Dif.	Top	Dif.	Dif. %	cm/sec	0.1			
1	2010	10	14	14	47.00		95	95	38.70		5.90		97.15							
2	2010	10	14	14	48.00	60	20.0	95	95	38.70	0.00	18.00	12.10	85.05	12.10	0.0	1.1E-04			
3	2010	10	14	14	49.00	60	20.0	95	95	38.70	0.00	24.80	6.80	78.25	6.80	0.0	8.3E-05			
4	2010	10	14	14	50.00	60	20.0	95	95	38.70	0.00	30.00	5.20	73.05	5.20	0.0	8.0E-05			
5	2010	10	14	14	51.00	60	20.0	95	95	38.70	0.00	33.70	3.70	69.35	3.70	0.0	6.9E-05			
6	2010	10	14	14	52.00	60	20.0	95	95	38.70	0.00	36.80	3.10	66.75	3.10	0.0	7.0E-05			
7	2010	10	14	14	53.00	60	20.0	95	95	38.70	0.00	39.40	2.60	63.65	2.60	0.0	7.1E-05			
8	2010	10	15	7	46.00		95	95	55.20		4.00		102.30							
9	2010	10	15	7	48.50	30	20.0	95	95	55.20	0.00	13.70	9.70	92.60	9.70	0.0	1.6E-04			
10	2010	10	15	7	49.00	30	20.0	95	95	55.20	0.00	20.00	6.30	86.30	6.30	0.0	1.3E-04			
11	2010	10	15	7	49.50	30	20.0	95	95	55.20	0.00	25.10	5.10	81.20	5.10	0.0	1.2E-04			
12	2010	10	15	7	50.00	30	20.0	95	95	55.20	0.00	29.30	4.20	77.00	4.20	0.0	1.2E-04			
13	2010	10	15	7	50.50	30	20.0	95	95	55.20	0.00	32.70	3.40	73.60	3.40	0.0	1.1E-04			
14	2010	10	15	7	51.00	30	20.0	95	95	55.20	0.00	35.50	2.80	70.80	2.80	0.0	1.1E-04			
15	2010	10	15	7	51.50	30	20.0	95	95	55.20	0.00	37.80	2.30	68.50	2.30	0.0	1.0E-04			
16	2010	10	15	7	52.00	30	20.0	95	95	55.20	0.00	39.80	2.00	66.50	2.00	0.0	1.0E-04			
17	2010	10	15	7	52.50	30	20.0	95	95	55.20	0.00	41.40	1.60	64.90	1.60	0.0	9.4E-05			
18	2010	10	15	7	53.00	30	20.0	95	95	55.20	0.00	42.80	1.40	63.50	1.40	0.0	9.3E-05			
19	2010	10	15	13	5.00		3.0	95	95	56.20		3.50		102.90						
20	2010	10	15	13	5.50	30	20.0	95	95	56.20	0.00	12.20	8.70	94.20	8.70	0.0	1.4E-04			
21	2010	10	15	13	6.00	30	20.0	95	95	56.20	0.00	17.50	5.30	88.90	5.30	0.0	1.0E-04			
22	2010	10	15	13	6.50	30	20.0	95	95	56.20	0.00	21.90	4.40	84.50	4.40	0.0	9.7E-05			
23	2010	10	15	13	7.00	30	20.0	95	95	56.20	0.00	25.50	3.60	80.90	3.60	0.0	9.0E-05			
24	2010	10	15	13	7.50	30	20.0	95	95	56.20	0.00	28.70	3.20	77.70	3.20	0.0	9.0E-05			
25	2010	10	15	13	8.00	30	20.0	95	95	56.20	0.00	31.40	2.70	75.00	2.70	0.0	8.6E-05			
26	2010	10	15	13	8.50	30	20.0	95	95	56.20	0.00	33.80	2.40	72.60	2.40	0.0	8.6E-05			

**A zero in this column starts a series of measurements.

*Average Kv for those rows with a 1 in the Ave. column.

(Termination determined by stable Kv and low flow differential.)

***Kv adjusted for temperature.

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RMT, Inc.														QC: HJW			
Falling Head Permeability Test (ASTM D5084)														QA: JPH			
Project Name: Domtar						Cell #:						2					
Project #: 05794.46.001						USCS Description:						N/A					
Sample Name: Topsoil						USCS Classification:						N/A					
Visual Descript: Silty Sand																	
Sample Type: Remolded						Initial Values		Final Values									
Sample Dia. (in)						3.00		3.00		Permeant: Water							
Sample Ht. (in)						2.50		2.50		Permeant Specific Gravity: 1.00							
Tare & Wet (g)						497.75		841.00		Sample Specific Gravity: 2.62 Est.							
Tare & Dry (g)						476.57		733.60		Confining Pressure (psi): 100.0							
Tare (g)						268.08		259.72		Burette Diameter (in): 0.250							
Sample Wt. (g)						523.48		581.28		Burette Zero (cm): 100.0							
Moisture (%)						10.2		22.7		Maximum Gradient: 11.9							
Wet Density (pcf)						112.9		125.8		Average Gradient: 8.8							
Dry Density (pcf)						102.4		102.6		Max. Effect. Stress (psi): 5.6							
Saturation (%)						44.7		100.0		Min. Effect. Stress (psi): 4.1							
										Ave. Effect. Stress (psi): 4.8							
1	Date			Time		Run Time	Temp C ^{***}	Pressure (psi)			Cham. Dif.	Flow			Kv ^{***} cm/sec	Ave. ⁴ 0.1	
	Yr.	Mo.	Day	Hr.	Min.			Bot	Top	Cham		Bot	Bot. Dif.	Top			Top Dif.
1	2010	10	18	8	6.00		0.0	95	95	62.70		3.60		102.90			
2	2010	10	18	8	6.50	30	20.0	95	95	62.70	0.00	12.60	9.00	93.90	9.00	0.0	1.5E-04
3	2010	10	18	8	7.00	30	20.0	95	95	62.70	0.00	18.10	5.50	88.40	5.50	0.0	1.3E-04
4	2010	10	18	8	7.50	30	20.0	95	95	62.70	0.00	22.70	4.60	83.80	4.60	0.0	1.0E-04
5	2010	10	18	8	8.00	30	20.0	95	95	62.70	0.00	26.40	3.70	80.10	3.70	0.0	9.5E-05
6	2010	10	18	8	8.50	30	20.0	95	95	62.70	0.00	29.40	3.00	77.10	3.00	0.0	8.7E-05
7	2010	10	18	8	9.00	30	20.0	95	95	62.70	0.00	32.10	2.70	74.40	2.70	0.0	8.8E-05
8	2010	10	18	8	9.50	30	20.0	95	95	62.70	0.00	34.30	2.20	72.20	2.20	0.0	8.1E-05
9	2010	10	18	8	10.00	30	20.0	95	95	62.70	0.00	36.30	2.00	70.20	2.00	0.0	8.2E-05
10	2010	10	18	8	10.50	30	20.0	95	95	62.70	0.00	38.10	1.80	68.40	1.30	0.0	8.3E-05
11	2010	10	18	8	11.00	30	20.0	95	95	62.70	0.00	39.60	1.50	66.90	1.50	0.0	7.7E-05
12	2010	10	19	7	56.00		0.0	95	95	64.20		3.80		101.90			
13	2010	10	19	7	56.50	30	20.0	95	95	64.20	0.00	10.90	7.10	94.80	7.10	0.0	1.1E-04
14	2010	10	19	7	57.00	30	20.0	95	95	64.20	0.00	15.20	4.30	90.50	4.30	0.0	7.9E-05
15	2010	10	19	7	57.50	30	20.0	95	95	64.20	0.00	18.70	3.50	87.00	3.50	0.0	7.2E-05 1
16	2010	10	19	7	58.00	30	20.0	95	95	64.20	0.00	21.80	3.10	83.90	3.10	0.0	7.0E-05 1
17	2010	10	19	7	58.50	30	20.0	95	95	64.20	0.00	24.30	2.50	81.40	2.50	0.0	6.2E-05 1
18	2010	10	19	7	59.00	30	20.0	95	95	64.20	0.00	26.70	2.40	79.00	2.40	0.0	6.5E-05 1
19	2010	10	19	8	0.00	60	20.0	95	95	64.20	0.00	30.50	3.80	75.20	3.80	0.0	5.8E-05 1
20	2010	10	19	8	0.50	30	20.0	95	95	64.20	0.00	32.20	1.70	73.50	1.70	0.0	5.8E-05 1
21																	
22																	
23																	
24																	
25																	
26																	
**A zero in this column starts a series of measurements.														*Average Kv for those rows with a 1 in the Ave. column.		6.4E-05 cm/sec	
(Termination determined by stable Kv and low flow differential.)														***Kv adjusted for temperature.			

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RMT, Inc.															QC:	HJW		
Falling Head Permeability Test (ASTM D5084)															QA:	JPH		
Project Name: Dowlar					Cell #:					1								
Project #: 05794.46.001					USCS Description:					N/A								
Sample Name: General Fill					USCS Classification:					N/A								
Visual Descript: Silty Sand					Average Kv =					8.9E-05			cm/sec					
Sample Type: Remolded		Initial Values		Final Values														
Sample Dia. (in)		3.00		3.00		Permeant:					Water							
Sample Ht. (in)		2.50		2.50		Permeant Specific Gravity:					1.00							
Tare & Wet (g)		539.97		858.20		Sample Specific Gravity:					2.60 Est.							
Tare & Dry (g)		518.34		762.70		Confining Pressure (psi):					100.0							
Tare (g)		263.39		261.62		Burette Diameter (in):					0.250							
Sample Wt. (g)		545.42		596.58		Burette Zero (cm):					100.0							
Moisture (%)		8.5		19.1		Max. Effect. Stress (psi):					6.0							
Wet Density (pcf)		117.6		129.2		Min. Effect. Stress (psi):					4.5							
Dry Density (pcf)		108.4		108.5		Ave. Effect. Stress (psi):					5.2							
Saturation (%)		44.4		100.0														
1	Yr.	Mo.	Day	Time	Run	Temp	Pressure (psi)			Cham.	Cham.	Bot.	Bot.	Top	Top	Flow	Kv***	Ave.*
							Bot	Top	Cham									
1	2010	10	14	14	22.00	0.0	95	95	31.40			5.10		101.20				
2	2010	10	14	14	22.50	30	20.0	95	95	31.40	0.00	13.90	8.80	92.40	8.80	0.0	1.5E-04	
3	2010	10	14	14	23.00	30	20.0	95	95	31.40	0.00	18.40	4.50	87.90	4.50	0.0	9.0E-05	
4	2010	10	14	14	23.50	30	20.0	95	95	31.40	0.00	22.10	3.70	84.20	3.70	0.0	8.3E-05	
5	2010	10	14	14	24.00	30	20.0	95	95	31.40	0.00	25.05	2.95	81.25	2.95	0.0	7.3E-05	
6	2010	10	14	14	24.50	30	20.0	95	95	31.40	0.00	27.70	2.65	78.60	2.65	0.0	7.3E-05	
7	2010	10	14	14	25.00	30	20.0	95	95	31.40	0.00	30.00	2.30	76.30	2.30	0.0	7.0E-05	
8	2010	10	14	14	25.50	30	20.0	95	95	31.40	0.00	32.10	2.10	74.20	2.10	0.0	7.0E-05	
9	2010	10	15	7	39.00	0.0	95	95	38.40			4.60		101.40				
10	2010	10	15	7	39.50	30	20.0	95	95	38.40	0.00	11.80	6.40	95.80	6.40	0.0	1.0E-04	
11	2010	10	15	7	40.00	30	20.0	95	95	38.40	0.00	15.10	4.10	90.90	4.10	0.0	7.6E-05	
12	2010	10	15	7	40.50	30	20.0	95	95	38.40	0.00	18.70	3.60	87.30	3.60	0.0	7.3E-05	
13	2010	10	15	7	41.00	30	20.0	95	95	38.40	0.00	21.90	3.20	84.10	3.20	0.0	7.2E-05	
14	2010	10	15	7	41.50	30	20.0	95	95	38.40	0.00	24.70	2.80	81.30	2.80	0.0	6.9E-05	
15	2010	10	15	7	42.00	30	20.0	95	55	38.40	0.00	27.30	2.60	78.70	2.60	0.0	7.1E-05	
16	2010	10	15	7	42.50	30	20.0	95	95	38.40	0.00	29.60	2.30	76.40	2.30	0.0	6.9E-05	
17	2010	10	15	7	43.00	30	20.0	95	95	38.40	0.00	31.60	2.00	74.40	2.00	0.0	6.6E-05	
18	2010	10	15	7	43.50	30	20.0	95	95	38.40	0.00	33.40	1.80	72.60	1.80	0.0	6.5E-05	
19	2010	10	15	7	44.00	30	20.0	95	95	38.40	0.00	35.20	1.80	70.80	1.80	0.0	7.1E-05	
20	2010	10	15	7	44.50	30	20.0	95	95	38.40	0.00	36.80	1.60	69.20	1.60	0.0	6.9E-05	
21	2010	10	15	12	52.00	0.0	95	95	39.30			4.75		101.10				
22	2010	10	15	12	53.00	60	20.0	95	95	39.30	0.00	14.90	10.15	90.95	10.15	0.0	8.7E-05	
23	2010	10	15	12	54.00	60	20.0	95	95	39.30	0.00	21.20	6.30	84.65	6.30	0.0	6.7E-05	
24	2010	10	15	12	55.00	60	20.0	95	95	39.30	0.00	26.30	5.10	79.55	5.10	0.0	6.4E-05	
25	2010	10	15	12	56.00	60	20.0	95	95	39.30	0.00	30.40	4.10	75.45	4.10	0.0	6.2E-05	
26	2010	10	15	12	57.00	60	20.0	95	95	39.30	0.00	33.90	3.50	71.95	3.50	0.0	6.2E-05	
**A zero in this column starts a series of measurements.						*Average Kv for those rows with a 1 in the Ave. column.												
(Termination determined by stable Kv and low flow differential.)															***Kv adjusted for temperature.			

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RMT, Inc.															QC: HJW			
Falling Head Permeability Test (ASTM D5084)															QA: JPH			
Project Name: Domtar					Cell #:					1								
Project #: 05794.46.001					USCS Description:					N/A								
Sample Name: General FHL					USCS Classification:					N/A								
Visual Descript: Silty Sand																		
Sample Type: Remolded		Initial Values		Final Values														
Sample Dia. (in)		3.00		3.00		Permeant:					Water							
Sample Ht. (in)		2.50		2.50		Permeant Specific Gravity:					1.00							
Tare & Wet (g)		539.97		858.20		Sample Specific Gravity:					2.60 Est.							
Tare & Dry (g)		518.34		762.70		Confining Pressure (psi):					103.0							
Tare (g)		263.39		261.62		Burette Diameter (in):					0.250							
Sample Wt. (g)		545.42		596.58		Burette Zero (cm):					100.0							
Moisture (%)		8.5		19.1		Maximum Gradient:					11.5							
Wet Density (pcf)		117.6		129.2		Average Gradient:					6.7							
Dry Density (pcf)		108.4		108.5		Max. Effect. Stress (psi):					5.8							
Saturation (%)		44.4		100.0		Min. Effect. Stress (psi):					4.4							
						Ave. Effect. Stress (psi):					5.1							
Yr.	Mo.	Day	Time		Run Time	Temp C***	Pressure (psi)			Chan. Dif.	Flow			Kv *** cm/sec	Ave. #			
			Bot	Top			Chan	Bot	Dif.		Top	Dif.	Dif. %					
1	2010	10	18	7	53.00	0.0	95	95	44.50	0.00	4.40	101.50						
2	2010	10	18	7	54.00	60	20.0	95	95	44.50	0.00	16.70	12.30	89.20	12.30	0.0	1.1E-04	
3	2010	10	18	7	55.00	60	20.0	95	95	44.50	0.00	24.30	7.60	81.60	7.60	0.0	8.7E-05	
4	2010	10	18	7	56.00	60	20.0	95	95	44.50	0.00	30.00	5.70	75.90	5.70	0.0	8.2E-05	
5	2010	10	18	7	57.00	60	20.0	95	95	44.50	0.00	34.50	4.50	71.40	4.50	0.0	8.0E-05	
6	2010	10	18	7	58.00	60	20.0	95	95	44.50	0.00	38.10	3.60	67.80	3.60	0.0	3.0E-05	
7	2010	10	18	7	59.00	60	20.0	95	95	44.50	0.00	41.00	2.90	64.90	2.90	0.0	8.0E-05	
8	2010	10	18	8	0.00	60	20.0	95	95	44.50	0.00	43.30	2.30	62.60	2.30	0.0	7.9E-05	
9	2010	10	19	7	46.00	0.0	95	95	45.20	0.00	4.40	102.20						
10	2010	10	19	7	47.00	60	20.0	95	95	45.20	0.00	16.70	12.30	89.90	12.30	0.0	1.1E-04	
11	2010	10	19	7	48.00	60	20.0	95	95	45.20	0.00	24.60	7.90	82.00	7.90	0.0	3.9E-05	1
12	2010	10	19	7	49.00	60	20.0	95	95	45.20	0.00	30.70	6.10	75.90	6.10	0.0	3.8E-05	1
13	2010	10	19	7	50.00	60	20.0	95	95	45.20	0.00	35.60	4.90	71.00	4.90	0.0	9.0E-05	1
14	2010	10	19	7	51.00	60	20.0	95	95	45.20	0.00	39.40	3.80	67.20	3.80	0.0	8.9E-05	1
15	2010	10	19	7	52.00	60	20.0	95	95	45.20	0.00	42.40	3.00	64.20	3.00	0.0	8.9E-05	1
16																		
17																		
18																		
19																		
20																		
21																		
22																		
23																		
24																		
25																		
26																		

** A zero in this column starts a series of measurements. *Average Kv for those rows with a 1 in the Ave. column. 8.9E-05 cm/sec
(Termination determined by stable Kv and low flow differential.) ***Kv adjusted for temperature.

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Domtar rainfall

Type III 24-hr 100-year Rainfall=9.00"

Prepared by {enter your company name here}

HydroCAD® 8.00 s/n 004531 © 2006 HydroCAD Software Solutions LLC

10/18/2010

Hydrograph for Subcatchment 1S: Domtar

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.51	0.00	0.00	18.00	8.35	5.24	1.47
5.25	0.54	0.00	0.00	18.25	8.39	5.27	1.42
5.50	0.58	0.00	0.00	18.50	8.42	5.31	1.38
5.75	0.61	0.00	0.00	18.75	8.46	5.34	1.35
6.00	0.65	0.00	0.00	19.00	8.49	5.37	1.32
6.25	0.69	0.00	0.00	19.25	8.52	5.39	1.28
6.50	0.73	0.00	0.01	19.50	8.55	5.42	1.25
6.75	0.77	0.00	0.06	19.75	8.58	5.45	1.22
7.00	0.81	0.00	0.11	20.00	8.61	5.48	1.19
7.25	0.86	0.01	0.17				
7.50	0.91	0.01	0.24				
7.75	0.97	0.02	0.31				
8.00	1.03	0.03	0.39				
8.25	1.09	0.04	0.50				
8.50	1.16	0.05	0.64				
8.75	1.23	0.07	0.79				
9.00	1.31	0.09	0.97				
9.25	1.40	0.12	1.16				
9.50	1.49	0.15	1.37				
9.75	1.59	0.18	1.60				
10.00	1.70	0.22	1.85				
10.25	1.82	0.27	2.20				
10.50	1.95	0.33	2.63				
10.75	2.09	0.39	3.10				
11.00	2.25	0.47	3.61				
11.25	2.44	0.57	4.80				
11.50	2.68	0.71	6.47				
11.75	3.20	1.04	17.17				
12.00	4.50	1.97	50.16				
12.25	5.80	3.02	34.21				
12.50	6.32	3.45	15.82				
12.75	6.56	3.66	8.83				
13.00	6.75	3.82	6.90				
13.25	6.91	3.96	5.97				
13.50	7.05	4.09	5.47				
13.75	7.18	4.20	4.97				
14.00	7.30	4.30	4.46				
14.25	7.41	4.40	4.13				
14.50	7.51	4.49	3.89				
14.75	7.60	4.57	3.65				
15.00	7.69	4.65	3.40				
15.25	7.77	4.72	3.15				
15.50	7.84	4.79	2.90				
15.75	7.91	4.85	2.65				
16.00	7.97	4.90	2.40				
16.25	8.03	4.95	2.24				
16.50	8.09	5.00	2.14				
16.75	8.14	5.05	2.03				
17.00	8.19	5.09	1.92				
17.25	8.23	5.13	1.81				
17.50	8.27	5.17	1.70				
17.75	8.31	5.21	1.58				

→ P = 3.64 in/hr

Prob. Seismic Hazard Deaggregation

Domtar 76.738° W, 35.852° N.

Peak Horiz. Ground Accel. ≥ 0.05693 g

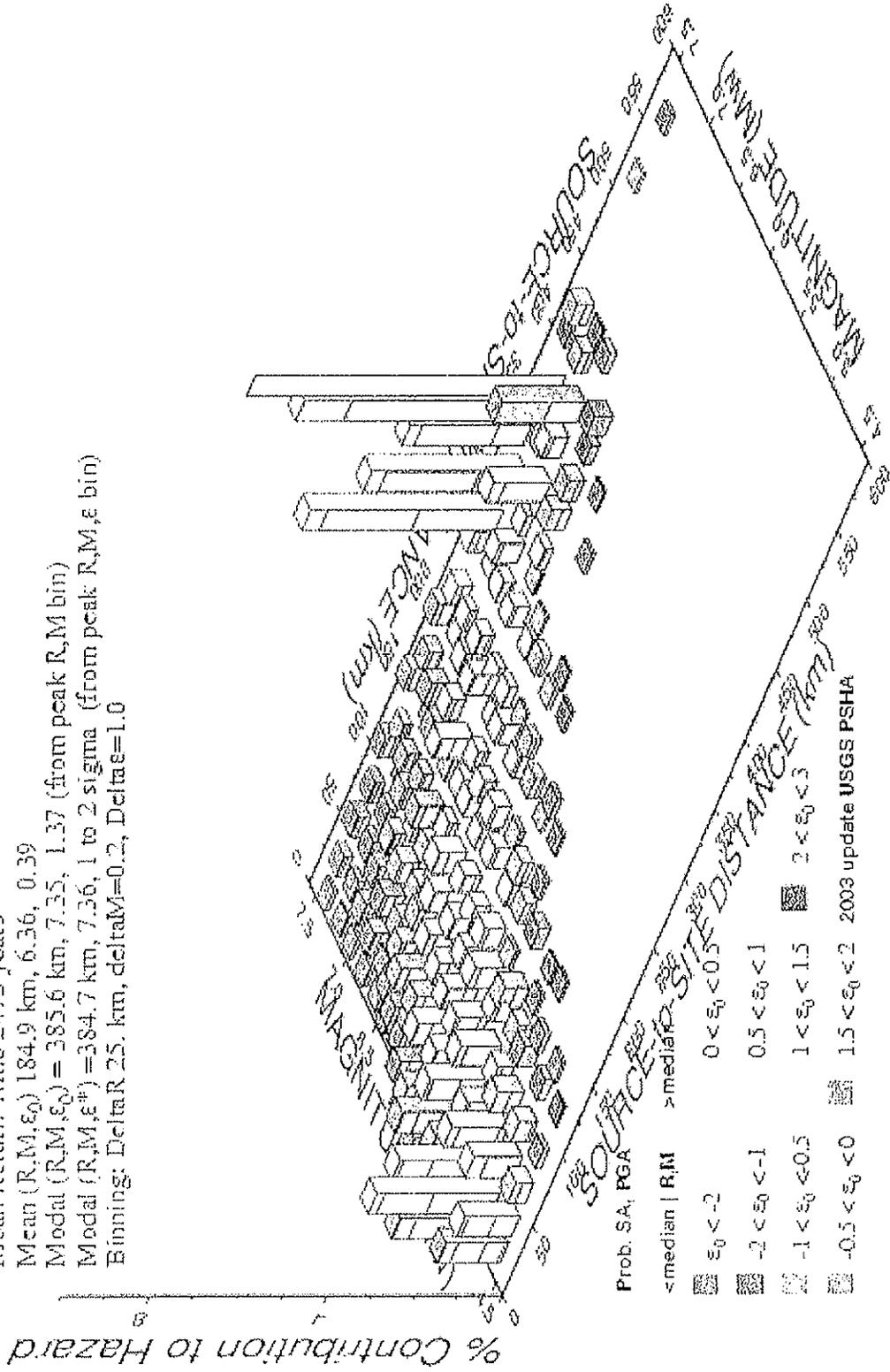
Mean Return Time 2475 years

Mean (R,M, ϵ_0) 184.9 km, 6.36, 0.39

Modal (R,M, ϵ_0) = 385.6 km, 7.35, 1.37 (from peak R,M bin)

Modal (R,M, ϵ^*) = 384.7 km, 7.36, 1 to 2 sigma (from peak R,M, ϵ bin)

Binning: Delta R 25. km, delta M = 0.2, Delta ϵ = 1.0



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Appendix I

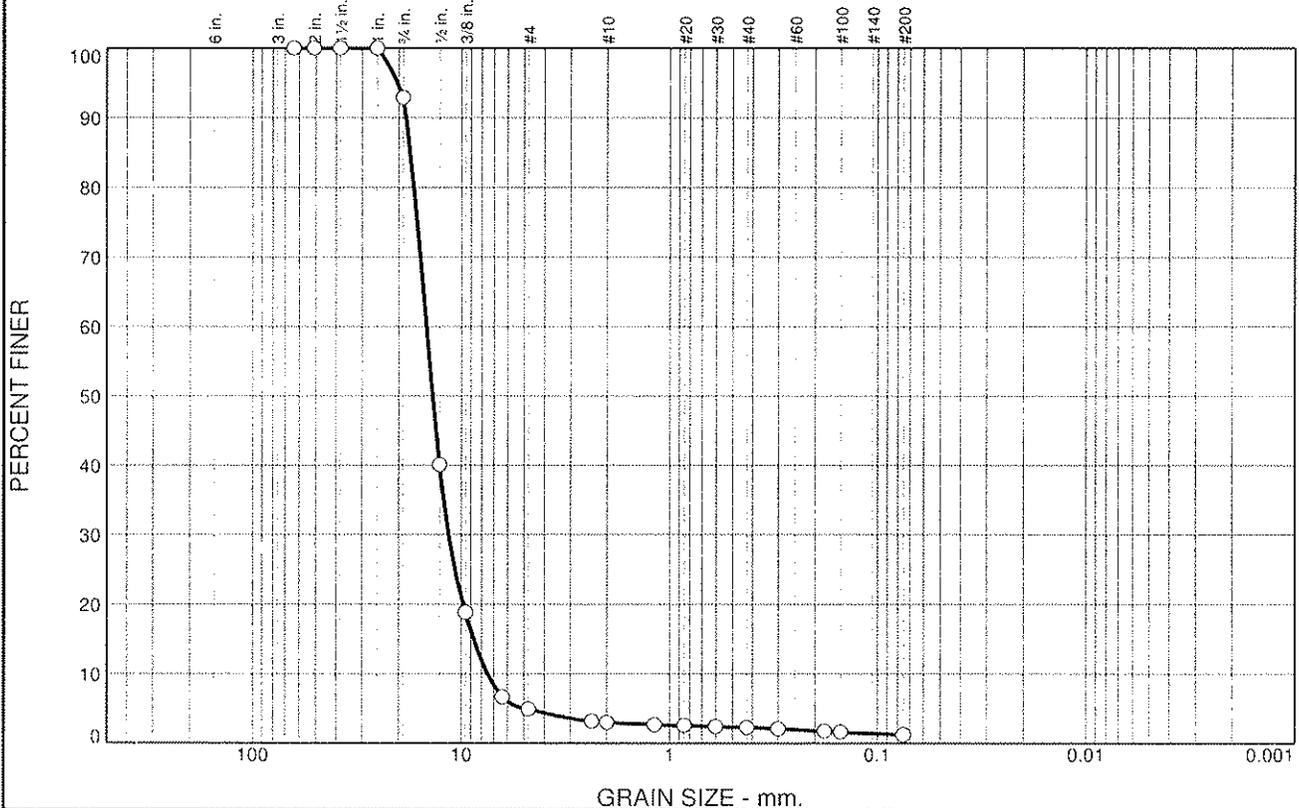
Granular Material Laboratory Test Results

Table of Contents

- Grain Size
- Constant Head Permeability Tests

Grain Size

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.1	88.0	1.9	0.7	1.1	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	92.9		
.5	40.1		
.375	18.8		
.25	6.7		
#4	4.9		
#8	3.2		
#10	3.0		
#16	2.7		
#20	2.6		
#30	2.4		
#40	2.3		
#50	2.1		
#80	1.7		
#100	1.6		
#200	1.2		

Material Description

Poorly graded gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 18.4312 D₈₅= 17.5938 D₆₀= 14.6994
D₅₀= 13.7167 D₃₀= 11.4504 D₁₅= 8.7176
D₁₀= 7.4895 C_u= 1.96 C_c= 1.19

Classification

USCS= GP AASHTO=

Remarks

* (or) specification provided)

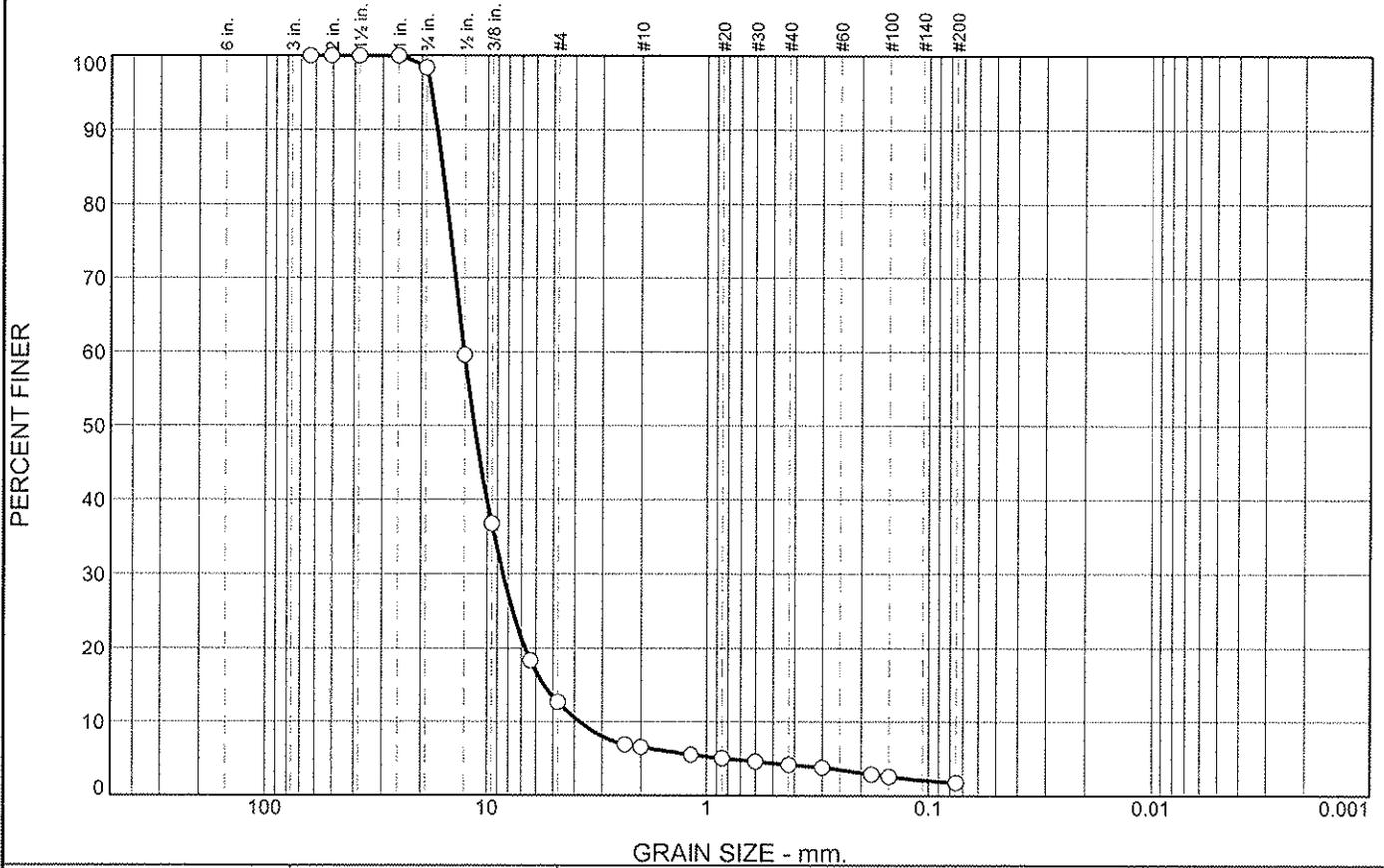
Source of Sample: Select Aggregate
Sample Number: Select Aggregate #1

Date: 10-26-10

RMT, Inc. Madison, Wisconsin	Client: Domtar Project: Domtar: LF 3 PH 1A/1B CM/DR Project No: 05794.46.001
Figure:	

Tested By: HJW Checked By: JPH

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.6	85.8	6.0	2.4	2.4	1.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	98.4		
.5	59.6		
.375	36.8		
.25	18.2		
#4	12.6		
#8	6.9		
#10	6.6		
#16	5.5		
#20	5.1		
#30	4.6		
#40	4.2		
#50	3.8		
#80	2.9		
#100	2.6		
#200	1.8		

Material Description

Poorly graded gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 16.8935 D₈₅= 16.0385 D₆₀= 12.7509
D₅₀= 11.4439 D₃₀= 8.4681 D₁₅= 5.5246
D₁₀= 3.7987 C_u= 3.36 C_c= 1.48

Classification

USCS= GP AASHTO=

Remarks

* (no specification provided)

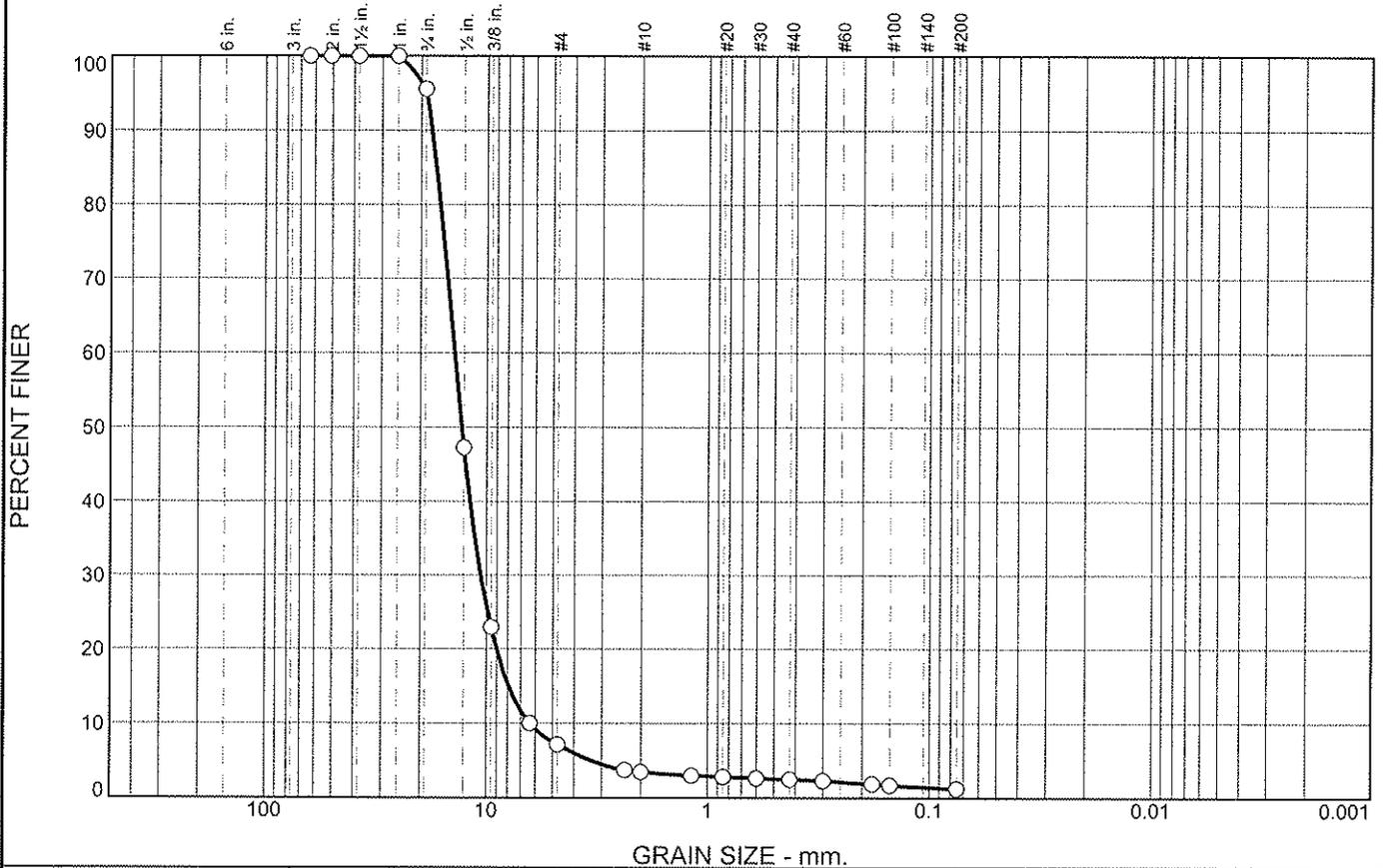
Source of Sample: Select Aggregate
Sample Number: Select Aggregate #2

Date: 11-24-10

RMT, Inc. Madison, Wisconsin	Client: Domtar Project: Domtar: LF 3 PH 1A/1B CM/DR Project No: 05794.46.001
Figure:	

Tested By: HJW Checked By: JPH

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.4	88.4	3.7	1.0	1.2	1.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	95.6		
.5	47.3		
.375	22.9		
.25	10.0		
#4	7.2		
#8	3.8		
#10	3.5		
#16	3.0		
#20	2.8		
#30	2.7		
#40	2.5		
#50	2.3		
#80	1.9		
#100	1.7		
#200	1.3		

Material Description

Poorly graded gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 17.7873 D₈₅= 16.9668 D₆₀= 14.0198
D₅₀= 12.9901 D₃₀= 10.6105 D₁₅= 7.9395
D₁₀= 6.3454 C_u= 2.21 C_c= 1.27

Classification

USCS= GP AASHTO=

Remarks

* (no specification provided)

Source of Sample: Select Aggregate
Sample Number: Select Aggregate #3

Date: 11-24-10

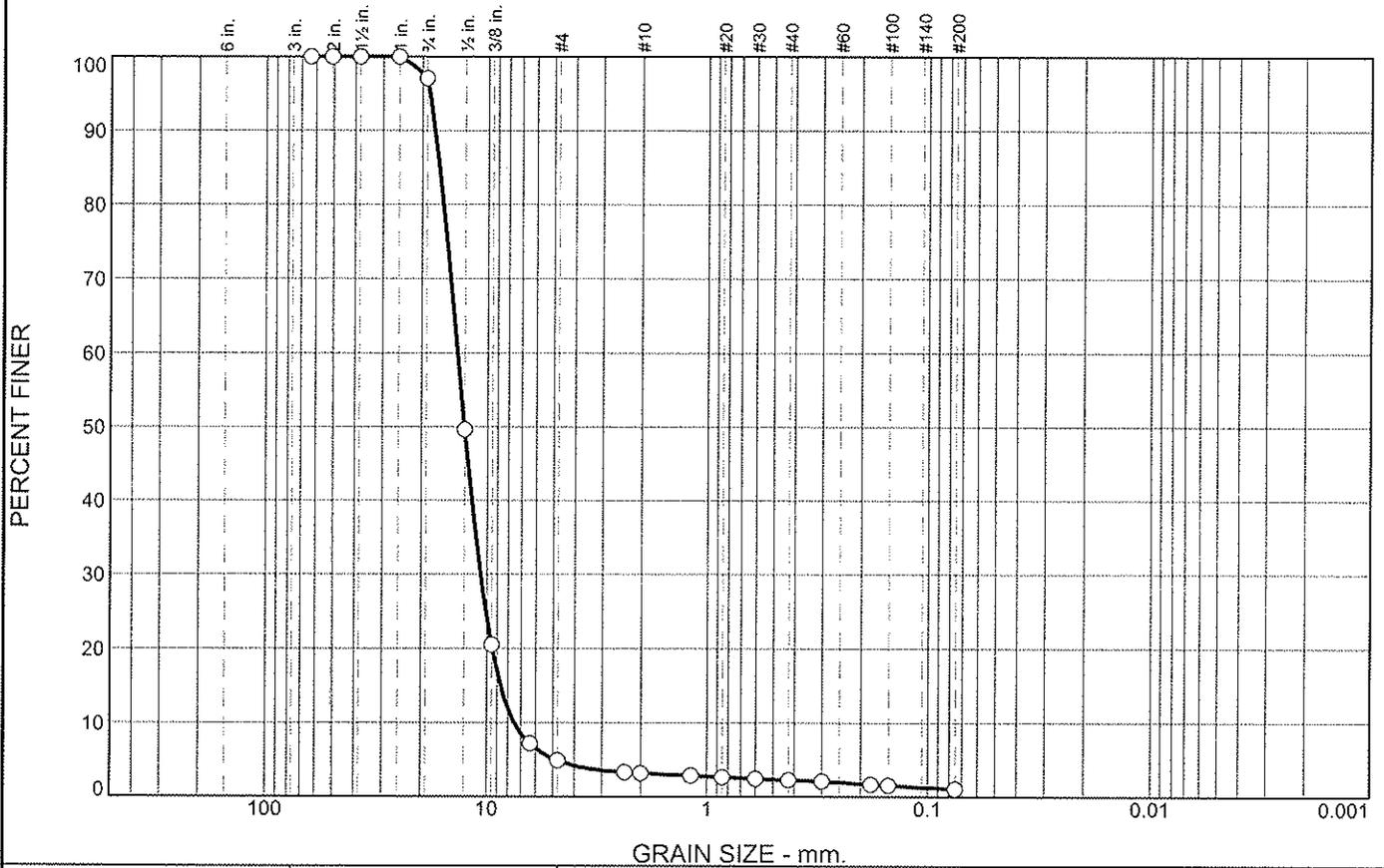
<h2 style="margin: 0;">RMT, Inc.</h2> <h3 style="margin: 0;">Madison, Wisconsin</h3>	<p>Client: Domtar</p> <p>Project: Domtar: LF 3 PH 1A/1B CM/DR</p> <p>Project No: 05794.46.001</p>
	<p>Figure:</p>

Tested By: HJW

Checked By: JPH

5

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.9	92.2	1.7	0.9	1.2	1.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	97.1		
.5	49.6		
.375	20.5		
.25	7.2		
#4	4.9		
#8	3.3		
#10	3.2		
#16	2.9		
#20	2.7		
#30	2.5		
#40	2.3		
#50	2.1		
#80	1.7		
#100	1.5		
#200	1.1		

Material Description

Poorly graded gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 17.4108 D₈₅= 16.6083 D₆₀= 13.7191
D₅₀= 12.7370 D₃₀= 10.6811 D₁₅= 8.6557
D₁₀= 7.5072 C_u= 1.83 C_c= 1.11

Classification

USCS= GP AASHTO=

Remarks

* (no specification provided)

Source of Sample: Select Aggregate
Sample Number: Select Aggregate #4

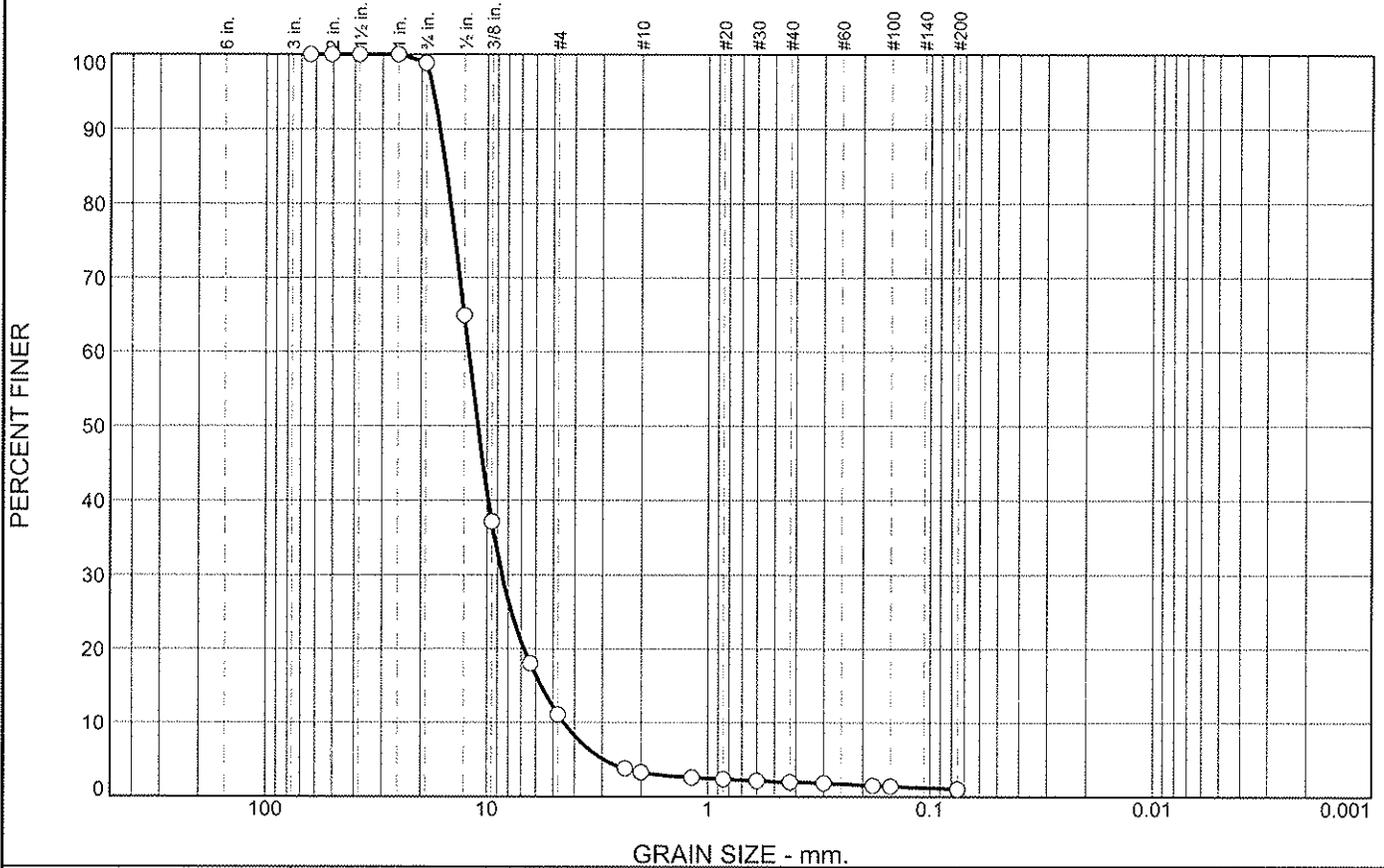
Date: 11-24-10

<h2 style="margin: 0;">RMT, Inc.</h2> <h3 style="margin: 0;">Madison, Wisconsin</h3>	<p>Client: Domtar Project: Domtar: LF 3 PH 1A/1B CM/DR Project No: 05794.46.001</p>
Figure:	

Tested By: HJW Checked By: JPH

ll

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.2	87.7	7.8	1.3	0.9	1.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	98.8		
.5	64.9		
.375	37.2		
.25	18.0		
#4	11.1		
#8	3.8		
#10	3.3		
#16	2.6		
#20	2.4		
#30	2.2		
#40	2.0		
#50	1.9		
#80	1.5		
#100	1.4		
#200	1.1		

Material Description

Poorly graded gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 16.4014 D₈₅= 15.4675 D₆₀= 12.1249
D₅₀= 11.0013 D₃₀= 8.5551 D₁₅= 5.6757
D₁₀= 4.4743 C_u= 2.71 C_c= 1.35

Classification

USCS= GP AASHTO=

Remarks

* (no specification provided)

Source of Sample: Select Aggregate
Sample Number: Select Aggregate #5

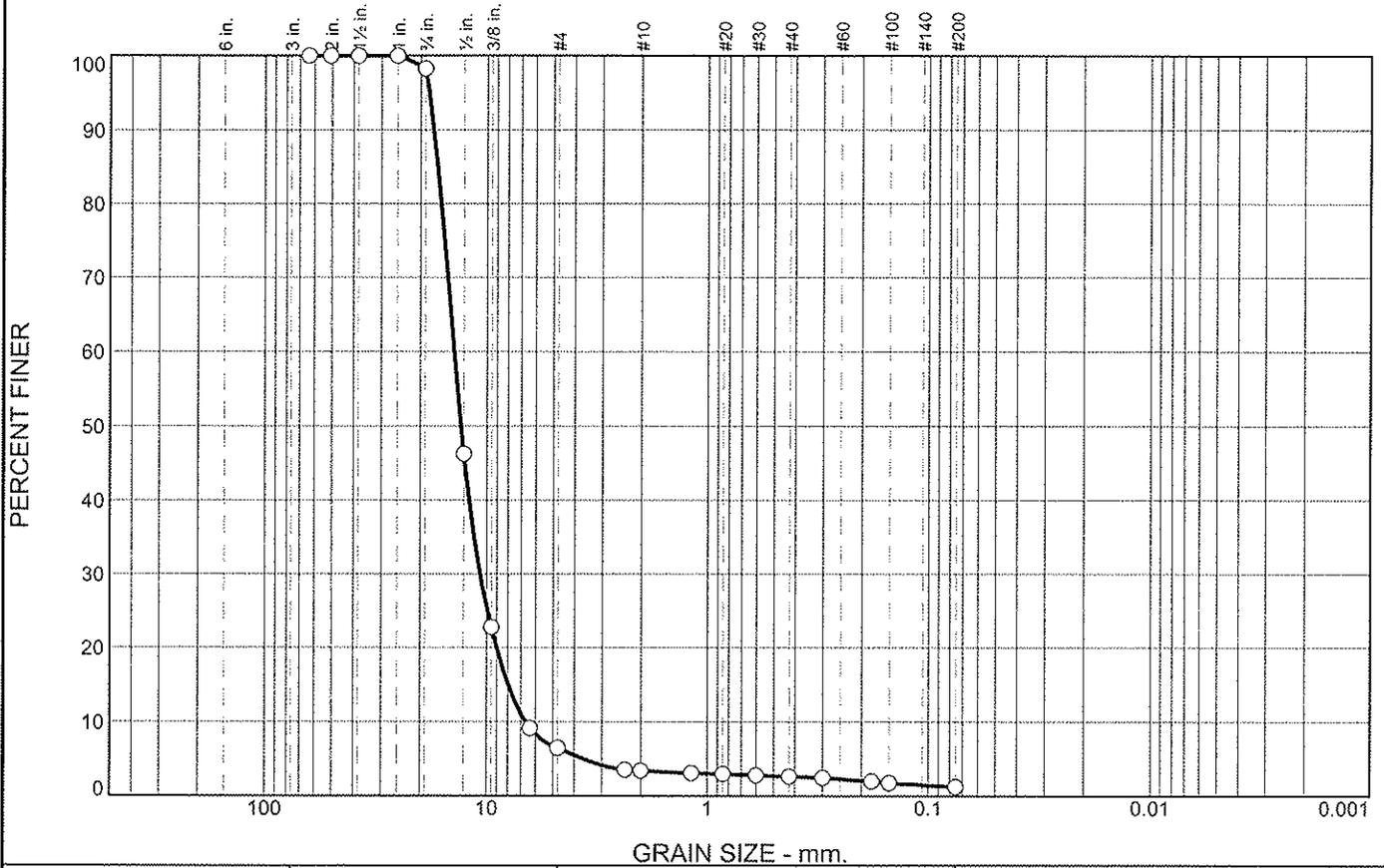
Date: 11-24-10

<h2 style="margin: 0;">RMT, Inc.</h2> <h3 style="margin: 0;">Madison, Wisconsin</h3>	<p>Client: Domtar Project: Domtar: LF 3 PH 1A/1B CM/DR Project No: 05794.46.001</p>
Figure:	

Tested By: HJW Checked By: JPH

7

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.7	91.8	3.1	0.8	1.4	1.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	98.3		
.5	46.3		
.375	22.8		
.25	9.2		
#4	6.5		
#8	3.5		
#10	3.4		
#16	3.1		
#20	3.0		
#30	2.8		
#40	2.6		
#50	2.5		
#80	2.0		
#100	1.8		
#200	1.2		

Material Description

Poorly graded gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 17.3838 D₈₅= 16.6856 D₆₀= 14.0380
D₅₀= 13.0768 D₃₀= 10.7066 D₁₅= 7.9843
D₁₀= 6.6521 C_u= 2.11 C_c= 1.23

Classification

USCS= GP AASHTO=

Remarks

* (no specification provided)

Source of Sample: Select Aggregate
Sample Number: Select Aggregate #6

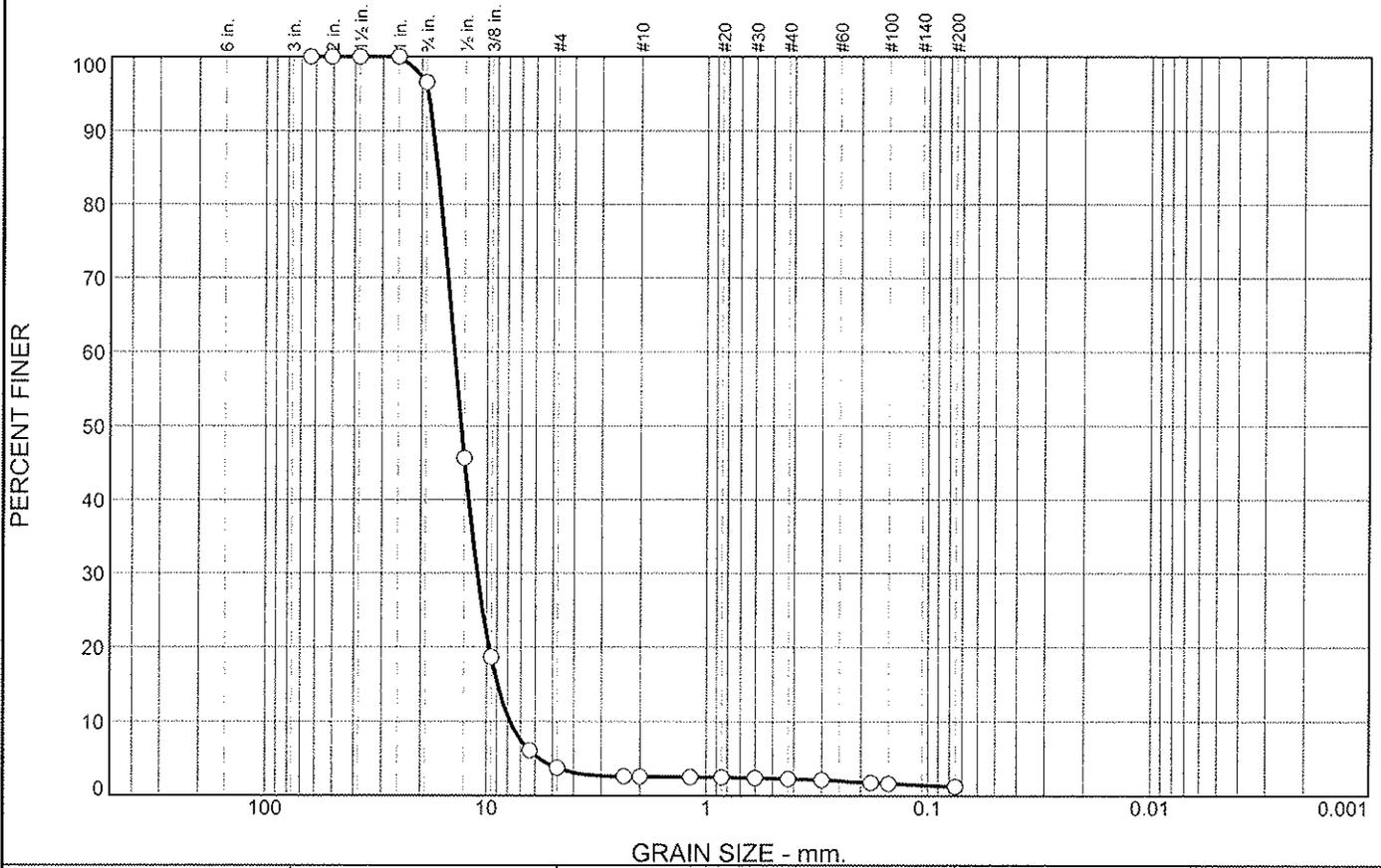
Date: 11-24-10

<p>RMT, Inc.</p> <p>Madison, Wisconsin</p>	<p>Client: Domtar Project: Domtar: LF 3 PH 1A/1B CM/DR Project No: 05794.46.001</p>
<p>Figure: _____</p>	

Tested By: HJW Checked By: JPH

8

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	3.4	92.8	1.2	0.3	1.0	1.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	96.6		
.5	45.7		
.375	18.7		
.25	6.1		
#4	3.8		
#8	2.6		
#10	2.6		
#16	2.5		
#20	2.5		
#30	2.4		
#40	2.3		
#50	2.2		
#80	1.8		
#100	1.7		
#200	1.3		

Material Description

Poorly graded gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 17.6319 D₈₅= 16.8630 D₆₀= 14.0783
D₅₀= 13.1209 D₃₀= 11.0323 D₁₅= 8.9080
D₁₀= 7.8030 C_u= 1.80 C_c= 1.11

Classification

USCS= GP AASHTO=

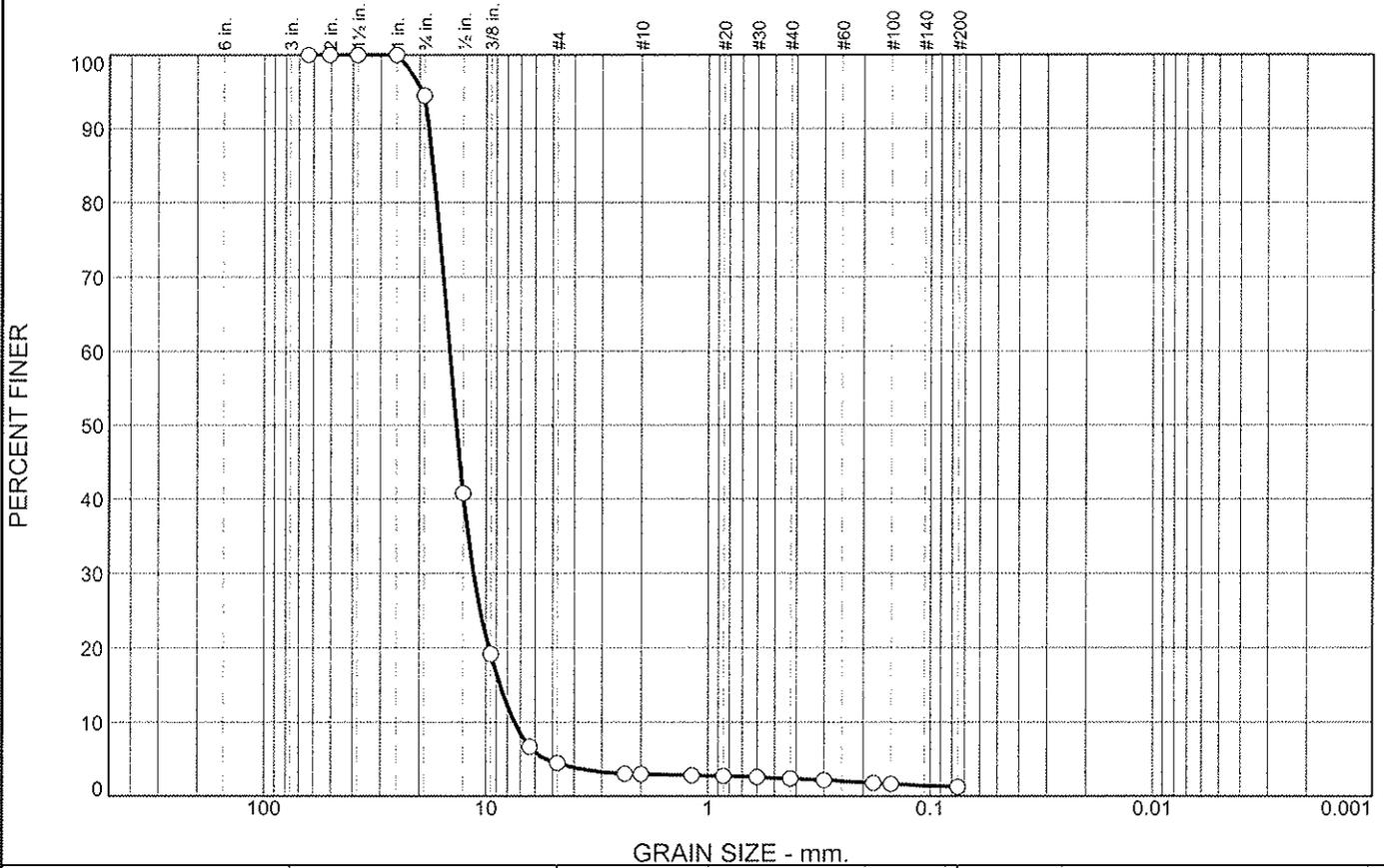
Remarks

* (no specification provided)

Source of Sample: Select Aggregate Date: 12-06-10
Sample Number: Select Aggregate #7

RMT, Inc. Madison, Wisconsin	Client: Domtar Project: Domtar: LF 3 PH 1A/1B CM/DR Project No: 05794.46.001
Figure:	

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.5	90.0	1.5	0.6	1.1	1.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2.5	100.0		
2.0	100.0		
1.5	100.0		
1.0	100.0		
.75	94.5		
.5	40.8		
.375	19.2		
.25	6.7		
#4	4.5		
#8	3.0		
#10	3.0		
#16	2.8		
#20	2.7		
#30	2.6		
#40	2.4		
#50	2.2		
#80	1.8		
#100	1.6		
#200	1.3		

Material Description

Poorly graded gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D₉₀= 18.1289 D₈₅= 17.3515 D₆₀= 14.5824
D₅₀= 13.6259 D₃₀= 11.3823 D₁₅= 8.6434
D₁₀= 7.4288 C_u= 1.96 C_c= 1.20

Classification

USCS= GP AASHTO=

Remarks

* (no specification provided)

Source of Sample: Select Aggregate
Sample Number: Select Aggregate #8

Date: 12-06-10

RMT, Inc. Madison, Wisconsin	Client: Domtar Project: Domtar: LF 3 PH 1A/1B CM/DR Project No: 05794.46.001
Figure:	

Tested By: HJW

Checked By: JPH

10

Constant Head Permeability Tests

RMT, Inc.										QC:	
Constant Head Permeability Test (ASTM D2434)										QA:	
Project Name:		Domtar LFS PH IA/IB CM/DR									
Project #:		05794.46.001				USCS Description:				Poorly graded gravel	
Sample Name:		Select Aggregate #1				USCS Classification:				GP	
Visual Descript:		Poorly graded gravel				Average k_v =				8.4E+00 cm./sec.	
Sample Diameter (in):		4.00									
Sample Height (in):		4.63									
Specific Gravity:		2.70									
Tare & Wet Soil (g):		2243.90									
Tare & Dry Soil (g):		2224.80				Sample Type:				Remolded	
Tare (g):		430.00				Beaker Tare Wt. (g):				392.32	
Initial Values						Final Values					
Mold & Wet Soil (g):		4897.00				Mold & Wet Soil (g):					
Mold & Dry Soil (g):		4880.58				Mold & Dry Soil (g):		4880.58			
Tare of Mold (g):		3337.30				Tare of Mold (g):		3337.30			
Wet Density (pcf):		102.23				Wet Density (pcf):					
Dry Density (pcf):		101.16				Dry Density (pcf):		0.00			
% Saturation:		4.32%				% Saturation:					
% Moisture:		1.06%				% Moisture:					
Date		Time		Flow Vol		Flow		Head		k_v^*	
YY MM DD		Sec.		Readings		Vol.		Bottom Top		h cm/sec	
2010 10 26		60		686.7		294.38		62.25 62.30		0.05 8.5E+00	
2010 10 26		60		681.7		289.38		62.25 62.30		0.05 8.3E+00	
2010 10 26		60		685.7		293.38		62.25 62.30		0.05 8.4E+00	
2010 10 26		60		686.2		293.88		62.25 62.30		0.05 8.5E+00	
<div style="border: 1px solid black; display: inline-block; padding: 5px; margin-bottom: 10px;"> $k_v = QL/Aht$ cm./sec. </div> <p> $Q = 292.76$ ml. (ave. measured flow volume) $L = 3.313$ in. (flow length) $A = 12.57$ sq. in. (area of sample) $h = 0.05$ cm. (ave. head) $t = 60.00$ sec. (average run time) $i = 0.01$ (average gradient) </p> <div style="border: 1px solid black; display: inline-block; padding: 5px; margin-top: 10px;"> $k_v = 8.4E+00$ cm/sec (ave. k value) </div> <div style="float: right; margin-top: 10px;">* k_v adjusted for temperature</div>											

RMT, Inc.
Constant Head Permeability Test (ASTM D2434)

QC: HJW
QA: JPH

Project Name: Domtar: LF3 PH 1A/1B CM/DR
 Project #: 05794.46.001 USCS Description: Poorly graded gravel
 Sample Name: Select Aggregate #2 USCS Classification: GP
 Visual Descript: Poorly graded gravel Average k_v = 8.9E+00 cm./sec.

Sample Diameter (in): 4.00
 Sample Height (in): 4.63
 Specific Gravity: 2.70
 Tare & Wet Soil (g): 1699.90
 Tare & Dry Soil (g):
 Tare (g): 354.21 Sample Type: Remolded
 Beaker Tare Wt. (g): 392.32

	Initial Values	Final Values
Mold & Wet Soil (g):	4871.50	Mold & Wet Soil (g):
Mold & Dry Soil (g):	2936.88	Mold & Dry Soil (g): 2936.88
Tare of Mold (g):	3340.00	Tare of Mold (g): 3340.00
Wet Density (pcf):	100.38	Wet Density (pcf):
Dry Density (pcf):	-26.42	Dry Density (pcf): 0.00
% Saturation:	175.67%	% Saturation:
% Moisture:	-479.91%	% Moisture:

Date			Time	Temp.	Flow Vol	Flow	Head		h	k_v *
YY	MM	DD	Sec.		Readings	Vol.	Bottom	Top		cm/sec
2010	11	24	60	24	676.7	284.38	90.40	90.45	0.05	9.0E+00
2010	11	24	60	24	676.2	283.88	90.40	90.45	0.05	8.9E+00
2010	11	24	60	24	675.0	282.68	90.40	90.45	0.05	8.9E+00
2010	11	24	60	24	675.9	283.58	90.40	90.45	0.05	8.9E+00

$$k_v = QL/Aht \text{ cm./sec.}$$

- Q = 283.63 ml. (ave. measured flow volume)
- L = 3.313 in. (flow length)
- A = 12.57 sq. in. (area of sample)
- h = 0.05 cm. (ave. head)
- t = 60.00 sec. (average run time)
- i = 0.01 (average gradient)

$$k_v = 8.9E+00 \text{ cm/sec (ave. k value)}$$

* k_v adjusted for temperature

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RMT, Inc. Constant Head Permeability Test (ASTM D2434)								QC: HJW		
								QA: JPH		
Project Name: Domtar: LF3 PH 1A/1B CM/DR		Project #: 05794.46.001		USCS Description: Poorly graded gravel						
Sample Name: Select Aggregate #6		USCS Classification: GP								
Visual Descript: Poorly graded gravel		Average k_v =		9.7E+00		cm./sec.				
Sample Diameter (in): 4.00		Sample Height (in): 4.63		Specific Gravity: 2.70						
Tare & Wet Soil (g): 1866.60		Tare & Dry Soil (g):		Sample Type: Remolded						
Tare (g): 356.44		Beaker Tare Wt. (g): 392.32								
Initial Values				Final Values						
Mold & Wet Soil (g): 4843.00		Mold & Dry Soil (g): 2985.25		Mold & Wet Soil (g):		Mold & Dry Soil (g): 2985.25				
Tare of Mold (g): 3340.00		Wet Density (pcf): 98.52		Tare of Mold (g): 3340.00		Wet Density (pcf):				
Dry Density (pcf): -23.25		% Saturation: 171.48%		Dry Density (pcf): 0.00		% Saturation:				
% Moisture: -523.68%				% Moisture:						
Date			Time	Temp.	Flow Vol	Flow	Head		k_v *	
YY	MM	DD	Sec.		Readings	Vol.	Bottom	Top	h	cm/sec
2010	11	24	60	24	698.3	305.98	87.80	87.85	0.05	9.6E+00
2010	11	24	60	24	699.5	307.18	87.80	87.85	0.05	9.7E+00
2010	11	24	60	24	699.2	306.88	87.80	87.85	0.05	9.7E+00
2010	11	24	60	24	699.1	306.78	87.80	87.85	0.05	9.7E+00
<div style="border: 1px solid black; display: inline-block; padding: 5px; margin-bottom: 10px;"> $k_v = QL/Aht \text{ cm./sec.}$ </div> <p>Q = 306.71 ml. (ave. measured flow volume)</p> <p>L = 3.313 in. (flow length)</p> <p>A = 12.57 sq. in. (area of sample)</p> <p>h = 0.05 cm. (ave. head)</p> <p>t = 60.00 sec. (average run time)</p> <p>i = 0.01 (average gradient)</p> <div style="border: 1px solid black; display: inline-block; padding: 5px; margin-top: 10px; width: 300px;"> $k_v = 9.7E+00 \text{ cm/sec (ave. k value)}$ </div> <div style="float: right; margin-top: 10px;">* k_v adjusted for temperature</div>										

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RMT, Inc.							QC:	HJW				
Constant Head Permeability Test (ASTM D2434)							QA:	JPH				
Project Name: Domtar: LF3 PH 1A/1B CM/DR												
Project #:			05794.46.001			USCS Description:			Poorly graded gravel			
Sample Name:			Select Aggregate #8			USCS Classification:			GP			
Visual Descript:			Poorly graded gravel			Average $k_v =$			9.0E+00 cm./sec.			
Sample Diameter (in):			4.00									
Sample Height (in):			4.63									
Specific Gravity:			2.70									
Tare & Wet Soil (g):			2259.00									
Tare & Dry Soil (g):			2245.00			Sample Type:			Remolded			
Tare (g):			359.03			Beaker Tare Wt. (g):			392.32			
Initial Values						Final Values						
Mold & Wet Soil (g):			4834.00			Mold & Wet Soil (g):			4878.00			
Mold & Dry Soil (g):			4822.99			Mold & Dry Soil (g):			4822.99			
Tare of Mold (g):			3340.00			Tare of Mold (g):			3340.00			
Wet Density (pcf):			97.93			Wet Density (pcf):			100.81			
Dry Density (pcf):			97.20			Dry Density (pcf):			97.20			
% Saturation:			2.73%			% Saturation:			13.66%			
% Moisture:			0.74%			% Moisture:			3.71%			
Date		Time		Flow Vol		Flow		Head		k_v		
YY	MM	DD	Sec.	Temp.	Readings	Vol.	Bottom	Top	h	cm/sec		
2010	12	6	60	22	664.6	272.28	84.40	84.45	0.05	9.0E+00		
2010	12	6	60	22	665.2	272.88	84.40	84.45	0.05	9.0E+00		
2010	12	6	60	22	665.5	273.18	84.40	84.45	0.05	9.0E+00		
2010	12	6	60	22	666.5	274.18	84.40	84.45	0.05	9.0E+00		
<div style="border: 1px solid black; display: inline-block; padding: 5px; margin: 10px 0;"> $k_v = QL/Aht$ cm./sec. </div> <p style="margin-left: 100px;"> Q = 273.13 ml. (ave. measured flow volume) L = 3.313 in. (flow length) A = 12.57 sq. in. (area of sample) h = 0.05 cm. (ave. head) t = 60.00 sec. (average run time) i = 0.01 (average gradient) </p> <div style="border: 1px solid black; display: inline-block; padding: 5px; margin: 10px 0;"> $k_v = 9.0E+00$ cm/sec (ave. k value) </div> <div style="float: right; margin-top: 10px;"> k_v adjusted for temperature </div>												

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