Duke Energy®

CORPORATE EHS SERVICES

Duke Energy Corporation
526 South Church St.
Charlotte, NC 28202

Mailing Address:
EC13K / PO Box 1006
Charlotte, NC 28201-1006

February 23, 2009

North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
Asheville Regional Office
2090 US Highway 70
Swannanoa, N.C. 28778

Fac/Perm/Co ID #	Date	Doc ID#
85-03	2/25/09	6872

Attention: Mr. Larry Frost

Subject: Duke Energy – Belews Creek Steam Station
Pine Hall Road Ash Landfill Closure
Solid Waste Facility Permit No: 85-03
Construction Certification Report, Volumes I and II

Dear Mr. Frost:

Attached are Volumes I and II of the Closure Construction Certification Reports for the Pine Hall Rd. Ash Landfill at Duke Energy's Belews Creek Steam Station. Included is an electronic copy of each report. The landfill is permitted under Permit No. 85-03. The reports were developed by Duke Energy's engineer for this project, S&ME, Inc.

The Certification Report documents the closure of the landfill facility in accordance with the Closure Plan developed by S&ME, Inc., dated June 21, 2007 and approved by the Solid Waste Section of NCDENR on December 7, 2007. Construction of the closure cover system began in April 2008 and was substantially completed by December 16, 2008.

Please let me know if any questions or if additional information is needed. I can be reached at 980-373-7892.

Sincerely,

Christopher D. Hallman
Duke Energy Corporate EHS

RECEIVED
FEB 24 2009
SOLID WASTE SECTION
ASHEVILLE REGIONAL OFFICE

RECEIVED
FEB 24 2009
SOLID WASTE SECTION
ASHEVILLE REGIONAL OFFICE

Attachments

cc (w/all att): Mr. Ed Mussler (NCDENR – Raleigh)

cc (w/CD only): Mike Cook (Belews Creek Steam Station)
cc (wo/att): Ken Daly - S&ME, Inc. Bill McCabe Ed Sullivan

RECEIVED
FEB 24 2009
SOLID WASTE SECTION
ASHEVILLE REGIONAL OFFICE

CONSTRUCTION CERTIFICATION REPORT
VOLUME I OF II

PINE HALL ROAD ASH LANDFILL CLOSURE
PERMIT NO. 85-03
DUKE ENERGY
BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA
S&ME PROJECT NO. 1356-07-017 PH. 3

Prepared for:

Duke Energy
526 South Church Street
Mail Code EC10c
Charlotte, North Carolina 28202

Prepared by:

S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273
(704) 523-4726

January 2009

CONSTRUCTION CERTIFICATION REPORT
VOLUME II OF II

PINE HALL ROAD ASH LANDFILL CLOSURE
PERMIT NO. 85-03
DUKE ENERGY
BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA
S&ME PROJECT NO. 1356-07-017 PH. 3

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Prepared by:

S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273
(704) 523-4726

January 2009

S&ME

Celebrating 35 Years
1973 • 2008

January 30, 2009

Duke Energy
526 South Church Street
Mail Code: EC10c
Charlotte, North Carolina 28202

Attention: Mr. Chris Hallman

Reference: **Pine Hall Road Ash Landfill Closure**
Construction Certification Report
Volumes I and II
Belews Creek, North Carolina
S&ME Project No. 1356-07-017 Ph. 3

Dear Mr. Hallman:

S&ME, Inc. is pleased to present the attached Construction Quality Assurance (CQA) documentation for the Pine Hall Road Ash Landfill Closure. Presented herein is an Executive Summary and the CQA documentation for Structural Fill (Submittal 1), Linear Low-Density Polyethylene (LLDPE) Geomembrane (Submittal No. 2), Geonet Composite (Submittal No. 3), Construction Photographs (Submittal No. 4), and Project Documentation (Submittal No. 5).

S&ME sincerely appreciates the continued opportunity to be of service to Duke Energy. Please contact us at your convenience if you have any questions. Thank you for choosing S&ME.

Sincerely,

S&ME, Inc.

Cedric H. Ruhl, E.I.
Staff Professional

Kenneth R. Daly, P.E.
Senior Project Engineer

NORTH CAROLINA PROFESSIONAL SEAL 032153 ENGINEER KENNETH R. DALY 1/30/09

Senior Reviewed by: Jason S. Reeves, P.E.

Attachments: Volume I of II
Volume II of II

CONSTRUCTION CERTIFICATION REPORT
PINE HALL ROAD ASH LANDFILL CLOSURE
DUKE ENERGY - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA
S&ME Project No. 1356-07-017 Ph. 3

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Submittal

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4	**Construction Photographs**
5	**Project Documentation**

SUBMITTAL NO. 4

CONSTRUCTION PHOTOGRAPHS

PINE HALL ROAD ASH LANDFILL CLOSURE
PERMIT NO. 85-03
DUKE ENERGY
BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA
S&ME Project No. 1356-07-017 Ph. 3

Prepared for:

Duke Energy
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:

S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273
(704) 523-4726

January 2009

Pine Hall Road Ash Landfill Closure
Belews Creek, NC
Project #: 1356-07-017 Ph. 3

S&ME
9751 Southern Pine Blvd.
Charlotte, NC 28273

Photo 1

Date: 3-19-08

Photographer: Cedric Ruhl

Location / Orientation	From access road on east side of Closure Area facing west
Remarks	Closure Area side slopes preconstruction conditions

Photo 2

Date: 3-19-08

Photographer: Cedric Ruhl

Location / Orientation	From Closure Area slope facing east towards Flat Area
Remarks	Flat Area preconstruction conditions

S&ME
9751 Southern Pine Blvd.
Charlotte, NC 28273

Photo 3

Date: March, 08

Photographer: Jimmy Addis

Location / Orientation	Borrow Area from top of Closure Area facing southeast
Remarks	Stripping/grubbing in progress, vegetation being stockpiled for burning

Photo 4

Date: 4-16-08

Photographer: Cedric Ruhl

Location / Orientation	Top of Closure Area facing west
Remarks	Surface stripped of vegetation and topsoil

S&ME
9751 Southern Pine Blvd.
Charlotte, NC 28273

Photo 5

Date: 5-7-08

Photographer: Jimmy Addis

Location / Orientation	North side of Flat Area facing west
Remarks	Vegetated channel C7 construction

Photo 6

Date: 5-8-08

Photographer: Jimmy Addis

Location / Orientation	Sediment basin east of Flat Area, facing east
Remarks	Existing sediment basin / primary BMP improvements included raising the existing BMP berm, grading an overflow spillway, matting berm side slopes, and seeding

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Charlotte, NC 28273

Photo 7

Date: 5-22-08

Photographer: Jimmy Addis

Location / Orientation	Top of Closure Area facing northeast
Remarks	Scrapers performing cut and fill operations of ash waste for Closure Area geosynthetics subgrade

Photo 8

Date: 6-6-08

Photographer: Jimmy Addis

Location / Orientation	Top of Closure Area facing west
Remarks	Vibratory compaction of subgrade materials with smooth-drum rollers

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Photo 9

Date: 6-11-08

Photographer: Jimmy Addis

Location / Orientation	Closure Area slope
Remarks	Subgrade preparation including moisture conditioning and smooth-drum rolling

Photo 10

Date: 6-24-08

Photographer: Jimmy Addis

Location / Orientation	Flat Area facing west towards Closure Area
Remarks	Flat Area subgrade shown in foreground, Closure Area subgrade (slopes) shown in background

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Charlotte, NC 28273

Photo 11

Date: 6-18-08

Photographer: Jimmy Addis

Location / Orientation	Top of Closure Area facing south
Remarks	40-mil LLDPE geomembrane deployment

Photo 12

Date: 6-18-08

Photographer: Jimmy Addis

Location / Orientation	Southwest corner of Closure Area
Remarks	Geomembrane tie-in seam using double-hot wedge fusion welder

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Charlotte, NC 28273

Photo 13

Date: 6-21-08

Photographer: Jimmy Addis

Location / Orientation	Closure Area
Remarks	Non-destructive testing of geomembrane patches using a vacuum box

Photo 14

Date: 6-21-08

Photographer: Jimmy Addis

Location / Orientation	Closure Area
Remarks	The geonet portion of the geonet composite was tied with zip ties

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Charlotte, NC 28273

Photo 15

Date: 6-21-08

Photographer: Jimmy Addis

Location / Orientation	Closure Area
Remarks	Sewing the geotextile portion of the geonet composite

Photo 16

Date: 6-24-08

Photographer: Jimmy Addis

Location / Orientation	Closure Area southwest toe of slope facing east
Remarks	Geosynthetics anchor trench

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Charlotte, NC 28273

Photo 17

Date: 6-30-08

Photographer: Jimmy Addis

Location / Orientation	South side of the Closure Area toe of slope facing east
Remarks	Panel drain installation

Photo 18

Date: 7-3-08

Photographer: Jimmy Addis

Location / Orientation	Closure Area toe of slope
Remarks	Finished panel drain installation showing stub-out for panel drain outlet pipe

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Charlotte, NC 28273

Photo 19

Date: July 08

Photographer: Jimmy Addis

Location / Orientation	Top of Closure Area
Remarks	Top of Closure Area underdrain installation

Photo 20

Date: 7-29-08

Photographer: Jimmy Addis

Location / Orientation	Flat Area facing west towards east side of Closure Area slopes
Remarks	The 18-inch thick soil protective cover was placed in one lift to minimize detrimental impacts to underlying geosynthetics

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Charlotte, NC 28273

Photo 21

Date: 7-29-08

Photographer: Jimmy Addis

Location / Orientation	Flat Area facing southwest towards east side of Closure Area
Remarks	Spreading, moisture conditioning, and compacting soil cover fill over geosynthetics

Photo 22

Date: 8-14-08

Photographer: Jimmy Addis

Location / Orientation	East side of Closure Area facing west
Remarks	Placement of Drop Inlet 8

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Charlotte, NC 28273

Photo 23

Date: 8-19-08

Photographer: Jimmy Addis

Location / Orientation	Top of Closure Area facing east
Remarks	Compaction of stormwater pipe section CVT-7 between Drop Inlets 7 and 8. Drop Inlet 9 can be seen in the background.

Photo 24

Date: 9-24-08

Photographer: Jimmy Addis

Location / Orientation	South side of the Closure Area facing east
Remarks	Vegetative cover soil (topsoil) placement

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Charlotte, NC 28273

Photo 25

Date: 9-30-08

Photographer: Jimmy Addis

Location / Orientation	Top of Closure Area
Remarks	Creating vegetative cover soil blend with a roto-tiller attached to a rubber-tracked tractor

Photo 26

Date: 10-4-08

Photographer: Jimmy Addis

Location / Orientation	East side of Closure Area side slope
Remarks	Fine grading of vegetative cover soil (topsoil)

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Charlotte, NC 28273

Photo 27

Date: 10-8-08

Photographer: Jimmy Addis

Location / Orientation	Top of Closure Area
Remarks	Seed, fertilizer, and lime were applied using a hopper attached to a rubber-tired tractor

Photo 28

Date: 10-8-08

Photographer: Jimmy Addis

Location / Orientation	Top of Closure Area facing east
Remarks	After applying seed and soil amendments, straw was spread

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Charlotte, NC 28273

Photo 29

Date: 10-10-08

Photographer: Jimmy Addis

Location / Orientation	South side of the Closure Area facing east
Remarks	Grass-lined channel matting installation

Photo 30

Date: 10-20-08

Photographer: Jimmy Addis

Location / Orientation	East side of Closure Area facing north
Remarks	Erosion control matting was installed on slopes and benches within the Closure Area

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Photo 31

Date: 10-20-08

Photographer: Jimmy Addis

Location / Orientation	East side of Closure Area facing north
Remarks	Completion of matting stabilization of slopes and benches within the Closure Area

Photo 32

Date: 10-24-08

Photographer: Jimmy Addis

Location / Orientation	Closure Area southwest toe of slope facing west
Remarks	A synthetic weaved matting was installed in several high-capacity or steep channels

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Charlotte, NC 28273

Photo 33

Date: 11-6-08

Photographer: Jimmy Addis

Location / Orientation	South side of Closure Area facing east
Remarks	The slope access road to the top of the Closure Area was surfaced with 12-inches of ABC stone underlain by a woven geotextile

Photo 34

Date: 11-12-08

Photographer: Jimmy Addis

Location / Orientation	South side of Closure Area facing east
Remarks	Completion of the slope access road

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Charlotte, NC 28273

Photo 35

Date: 11-11-08

Photographer: Jimmy Addis

Location / Orientation	North side of Flat Area facing east, channel C7
Remarks	Wattles were installed in some vegetated channels in accordance with the plans

Photo 36

Date: 11-12-08

Photographer: Jimmy Addis

Location / Orientation	Closure Area slope
Remarks	Rock pads were installed around the panel drain outlets around the Closure Area

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Charlotte, NC 28273

Photo 37

Date: 11-19-08

Photographer: Jimmy Addis

Location / Orientation	Northeast corner of Closure Area toe of slope facing north
Remarks	Scour protection was installed where Channels C2 and C3 merge before entering culvert CVT 5 (discharging to the right in the picture)

Photo 38

Date: 11-25-08

Photographer: Jimmy Addis

Location / Orientation	Perimeter access road on east side of Closure Area facing south
Remarks	Cement spreading for soil/cement stabilization

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Photo 39

Date: 11-25-08

Photographer: Jimmy Addis

Location / Orientation	Perimeter access road on south side of Closure Area facing south
Remarks	During soil/cement stabilization, the mixing truck nursed off of a water truck and the soil/cement mixture was compacted with a sheepsfoot roller

Photo 40

Date: 12-12-08

Photographer: Jimmy Addis

Location / Orientation	North side of Closure Area facing southeast
Remarks	Concrete aprons were poured around the drop inlets

S&ME
9751 Southern Pine Blvd.
Charlotte, NC 28273

Photo 41

Date: 12-12-08

Photographer: Jimmy Addis

Location / Orientation	East of Flat Area facing southwest
Remarks	Riprap aprons were constructed in general accordance with the plans and specifications

Photo 42

Date: 12-12-08

Photographer: Jimmy Addis

Location / Orientation	North side of Closure Area facing west
Remarks	The seed mixture consisted of both annual plants for short-term soil stabilization and perennial plants to provide long-term soil stabilization

SUBMITTAL NO. 3

GEONET COMPOSITE

PINE HALL ROAD ASH LANDFILL CLOSURE
PERMIT NO. 85-03
DUKE ENERGY
BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA
S&ME Project No. 1356-07-017 Ph. 3

Prepared for:

Duke Energy
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:

S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273
(704) 523-4726

January 2009

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APPENDIX I I-1
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1. MATERIALS

A 40-mil thick linear low density polyethylene (LLDPE) geomembrane liner and Skaps double-sided geonet composite drainage layer were installed above the compacted Subgrade. The geocomposite, “Transnet™ GeoComposite" was manufactured by Skaps Industries of Athens, Georgia and consisted of a 330-mil thick geonet bonded on both sides to an 8 oz/sy nonwoven geotextile.

2. GEONET COMPOSITE MANUFACTURER AND CONTRACTOR

The geosynthetic contractor was the party responsible for installation of the geonet composite. The manufacturer was the party that supplies the geosynthetic products. The geonet composite was supplied by Skaps and installed by ESI.

3. GEONET COMPOSITE MATERIALS TESTING

3.1 Manufacturer Quality Control (MQC) Testing

MQC test samples were taken at the manufacturing plant and tested in accordance with the approved plans and specifications. The MQC testing results and material certifications are included in the attached Appendix I.

3.2 Conformance Testing

Additional samples were taken at the factory and sent to an independent laboratory for conformance testing in accordance with the approved plans and specifications. Conformance test results are presented in Appendix II.

A summary of MQC and conformance testing is presented in the Executive Summary, Appendix II.

4. GEONET COMPOSITE INSTALLATION

When the material arrived on-site, the material was observed and monitored during unloading. The material was temporarily stored on site until installation. Installation and CQA activities were performed in general accordance with the approved plans and specifications.

The geonet composite was deployed using a telescoping forklift. The forklift supported a steel rod with straps attached to the rod that inserted into the ends of each roll and allowed the material to be pulled directly off of the roll while suspended above the ground. The material was aligned utilizing manpower. Where possible, the geocomposite was shingled in the direction of stormwater flow.

Once the panels were placed, each panel was overlapped approximately four inches side-to-side and ten inches end-to-end. The geonet component was tied using plastic

fasteners, the top geotextile component was continuously sewn to provide a connection between adjacent panels. Wrinkles in the geonet composite were repaired by manually straightening the panels or by cutting the geocomposite such that it laid flat and tack-bonding a layer of 8 oz/sy nonwoven geotextile on top of the cut portion. Pictures of geonet composite installation are included in Submittal 4.

APPENDIX I

(MATERIAL CERTIFICATIONS AND FACTORY TESTING)

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.
7943 PECUE LANE SUITE A BATON ROUGE, LA 70809 TEL (225) 291–2700 FAX (225) 291-2788

TO: Morgan Corporation
11700 Reames Road
Charlotte, NC 28269
TEL # : (704) 598-9117
ATTENTION: D. Craig Greeson

DATE: June 19, 2008
JOB NAME: Duke Power
Pine Hall Road Ash Landfill Closure
TRANSMITTAL NUMBER: 08
ESI PROJECT NUMBER: 07-12-1269

WE ARE SENDING YOU [X] ATTACHED [ ] UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

[ ] SHOP DRAWINGS [ ] PRINTS [ ] PLANS [ ] SAMPLES [ ] SPECIFICATIONS

[ ] COPY OF LETTER [ ] CHANGE ORDER [ ] _____

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
1	6/19/08	02675-1.4.B.4		Required Certification Letter for Composite	

ACTION (*)

[ ] AS - AS REQUESTED [ ] FA - FOR APPROVAL [ ] _____

[ ] F – FILE [ ] RC - REVIEW & COMMENT [ ] _____

COMMENTS: THE MANUFACTURERS CERTIFICATION ONEACH ROLL HAS BEEN SUBMITTED ON TRANSMITTAL NUMBER 03

SENT VIA:

[X] E-MAIL [ ] MAIL [ ] OVERNIGHT [ ] HAND DELIVERY [ ] OTHER

COPY TO: _____

BY: Kevin Simms

If enclosures are not as noted, please notify us at once.....

SKAPS Industries

Engineered Synthetic Products, Inc.

To,
June 18, 2008
Environmental Specialties Int'L
7943 Pecue Lane, Suite A
Baton Rouge, LA 70809

Ref. : Pine Hall Road Ash Landfill, NC
Customer P.O. # 9054
Transnet 330-2-8

The following is the information for the lot numbers and production dates for the geocomposite material for the Pine Hall Ash Landfill, NC.

Roll Numbers	Production Dates	Lot Number
266910001 to 266910100	April 10, 2008	CCBX59798
266910101 to 266910189	April 11, 2008	CCBX59798
266910190 to 266910288	April 12, 2008	DOWX21936
266910289 to 266910379	April 13, 2008	DOWX21936
266910380 to 266910468	April 14, 2008	TQEX58429
266910469 to 266910569	April 15, 2008	TQEX58429
266910570 to 266910675	April 16, 2008	DOWX67473

The typical width of each roll is 14 ft and typical length of each roll is 200 ft. ASTM D 4354 - Standard Practice for sampling geosynthetics has been followed for the sampling of geocomposite for this project.

Sincerely,
Perry Vyas
SKAPS Industries

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

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.
7943 PECUE LANE SUITE A BATON ROUGE, LA 70809 TEL (225) 291–2700 FAX (225) 291-2788

TO: Morgan Corporation
11700 Reames Road
Charlotte, NC 28269
TEL # : (704) 598-9117
ATTENTION: D. Craig Greeson

DATE: August 27, 2008
JOB NAME: Duke Power
Pine Hall Road Ash Landfill Closure
TRANSMITTAL NUMBER: 15
ESI PROJECT NUMBER: 07-12-1269

WE ARE SENDING YOU [X] ATTACHED [ ] UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

[ ] SHOP DRAWINGS [ ] PRINTS [ ] PLANS [ ] SAMPLES [ ] SPECIFICATIONS

[ ] COPY OF LETTER [ ] CHANGE ORDER [ ] _____

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
1	8/27/08			Certs for ALL composite rolls	

ACTION (*)

[ ] AS - AS REQUESTED [ ] FA - FOR APPROVAL [ ] _____

[ ] F – FILE [ ] RC - REVIEW & COMMENT [ ] _____

COMMENTS:

SENT VIA:

[X] E-MAIL [ ] MAIL [ ] OVERNIGHT [ ] HAND DELIVERY [ ] OTHER

COPY TO: _____

BY: Kevin Simms

If enclosures are not as noted, please notify us at once.....

SKAPS Industries

Engineered Synthetic Products, Inc.

August 27, 2008
Environmental Specialties Int'L
7943 Pecue Lane, Suite A
Baton Rouge, LA 70809

Ref. : Pine Hall Road Ash Landfill, NC
Customer P.O. # 9054
Transnet 330-2-8

We certify that the Transnet 330-2-8 drainage composite, meets the project requirements as stated in the specifications. The properties listed in this section are:

Property	Test Method	Unit	Required Value	Qualifier
Geonet[3]				
Mass per Unit Area	ASTM D 5261	lbs/ft^2	0.162	Minimum
Thickness	ASTM D 5199	mil	200	Minimum
Carbon Black	ASTM D 4218	%	2.0	Minimum
Tensile Strength	ASTM D 5035	lbs/in	45	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	GRI GC7	lb/in	1.0	MARV[5]
Transmissivity[1]	ASTM D 4716	m^2/sec	1.4×10^{-3}	MARV
Geotextile[3 & 4]				
Fabric Weight	ASTM D 5261	oz/yd^2	8.0	MARV
Grab Strength	ASTM D 4632	lbs	200	MARV
Puncture Resistance	ASTM D 4833	lbs	110	MARV
Permeability	ASTM D 4491	cm/sec	0.3	MARV
AOS	ASTM D 4751	US Sieve	80	MARV

Notes:

1 Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

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

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910001	266910001 - N	2669.004	2669.016	1.49	2.12	1.56×10^{-3}
2	266910002	266910002 - N	2669.004	2669.016			
3	266910003	266910003 - N	2669.004	2669.016			
4	266910004	266910004 - N	2669.004	2669.016			
5	266910005	266910005 - N	2669.004	2669.016			
6	266910006	266910006 - N	2669.004	2669.016			
7	266910007	266910007 - N	2669.018	2669.002			
8	266910008	266910008 - N	2669.018	2669.002			
9	266910009	266910009 - N	2669.018	2669.002			
10	266910010	266910010 - N	2669.018	2669.002	1.38	1.97	
11	266910011	266910011 - N	2669.018	2669.002			
12	266910012	266910012 - N	2669.018	2669.002			
13	266910013	266910013 - N	2669.001	2669.025			
14	266910014	266910014 - N	2669.001	2669.025			
15	266910015	266910015 - N	2669.001	2669.025			
16	266910016	266910016 - N	2669.001	2669.025			
17	266910017	266910017 - N	2669.001	2669.025			
18	266910018	266910018 - N	2669.001	2669.025			
19	266910019	266910019 - N	2669.022	2669.006			
20	266910020	266910020 - N	2669.022	2669.006	1.50	2.09	
21	266910021	266910021 - N	2669.022	2669.006			
22	266910022	266910022 - N	2669.022	2669.006			
23	266910023	266910023 - N	2669.022	2669.006			
24	266910024	266910024 - N	2669.022	2669.006			
25	266910025	266910025 - N	2669.008	2669.020			
26	266910026	266910026 - N	2669.008	2669.020			
27	266910027	266910027 - N	2669.008	2669.020			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910001 - N	CCBX59798	0.9528	0.352	315	2.69	106	
266910002 - N	CCBX59798	0.9528					
266910003 - N	CCBX59798	0.9528					
266910004 - N	CCBX59798	0.9528					
266910005 - N	CCBX59798	0.9528					
266910006 - N	CCBX59798	0.9528					
266910007 - N	CCBX59798	0.9528					
266910008 - N	CCBX59798	0.9528					
266910009 - N	CCBX59798	0.9528					
266910010 - N	CCBX59798	0.9523	0.344	311	2.44	102	
266910011 - N	CCBX59798	0.9523					
266910012 - N	CCBX59798	0.9523					
266910013 - N	CCBX59798	0.9523					
266910014 - N	CCBX59798	0.9523					
266910015 - N	CCBX59798	0.9523					
266910016 - N	CCBX59798	0.9523					
266910017 - N	CCBX59798	0.9523					
266910018 - N	CCBX59798	0.9523					
266910019 - N	CCBX59798	0.9523					
266910020 - N	CCBX59798	0.9526	0.349	319	2.73	108	
266910021 - N	CCBX59798	0.9526					
266910022 - N	CCBX59798	0.9526					
266910023 - N	CCBX59798	0.9526					
266910024 - N	CCBX59798	0.9526					
266910025 - N	CCBX59798	0.9526					
266910026 - N	CCBX59798	0.9526					
266910027 - N	CCBX59798	0.9526					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910028	266910028 - N	2669.008	2669.020			
2	266910029	266910029 - N	2669.008	2669.020			
3	266910030	266910030 - N	2669.008	2669.020	1.29	1.80	
4	266910031	266910031 - N	2669.015	2669.005			
5	266910032	266910032 - N	2669.015	2669.005			
6	266910033	266910033 - N	2669.015	2669.005			
7	266910034	266910034 - N	2669.015	2669.005			
8	266910035	266910035 - N	2669.015	2669.005			
9	266910036	266910036 - N	2669.015	2669.005			
10	266910037	266910037 - N	2669.003	2669.017			
11	266910038	266910038 - N	2669.003	2669.017			
12	266910039	266910039 - N	2669.003	2669.017			
13	266910040	266910040 - N	2669.003	2669.017	1.41	2.18	
14	266910041	266910041 - N	2669.003	2669.017			
15	266910042	266910042 - N	2669.003	2669.017			
16	266910043	266910043 - N	2669.019	2669.010			
17	266910044	266910044 - N	2669.019	2669.010			
18	266910045	266910045 - N	2669.019	2669.010			
19	266910046	266910046 - N	2669.019	2669.010			
20	266910047	266910047 - N	2669.019	2669.010			
21	266910048	266910048 - N	2669.019	2669.010			
22	266910049	266910049 - N	2669.007	2669.023			
23	266910050	266910050 - N	2669.007	2669.023	1.32	1.91	
24	266910051	266910051 - N	2669.007	2669.023			
25	266910052	266910052 - N	2669.007	2669.023			
26	266910053	266910053 - N	2669.007	2669.023			
27	266910054	266910054 - N	2669.007	2669.023			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910028 - N	CCBX59798	0.9526					
266910029 - N	CCBX59798	0.9526					
266910030 - N	CCBX59798	0.9524	0.345	313	2.50	105	
266910031 - N	CCBX59798	0.9524					
266910032 - N	CCBX59798	0.9524					
266910033 - N	CCBX59798	0.9524					
266910034 - N	CCBX59798	0.9524					
266910035 - N	CCBX59798	0.9524					
266910036 - N	CCBX59798	0.9524					
266910037 - N	CCBX59798	0.9524					
266910038 - N	CCBX59798	0.9524					
266910039 - N	CCBX59798	0.9524					
266910040 - N	CCBX59798	0.9530	0.356	317	2.63	107	
266910041 - N	CCBX59798	0.9530					
266910042 - N	CCBX59798	0.9530					
266910043 - N	CCBX59798	0.9530					
266910044 - N	CCBX59798	0.9530					
266910045 - N	CCBX59798	0.9530					
266910046 - N	CCBX59798	0.9530					
266910047 - N	CCBX59798	0.9530					
266910048 - N	CCBX59798	0.9530					
266910049 - N	CCBX59798	0.9530					
266910050 - N	CCBX59798	0.9527	0.350	309	2.41	103	
266910051 - N	CCBX59798	0.9527					
266910052 - N	CCBX59798	0.9527					
266910053 - N	CCBX59798	0.9527					
266910054 - N	CCBX59798	0.9527					

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Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910055	266910055 - N	2669.026	2669.009			
2	266910056	266910056 - N	2669.026	2669.009			
3	266910057	266910057 - N	2669.026	2669.009			
4	266910058	266910058 - N	2669.026	2669.009			
5	266910059	266910059 - N	2669.026	2669.009			
6	266910060	266910060 - N	2669.026	2669.009	1.56	2.03	
7	266910061	266910061 - N	2669.011	2669.027			
8	266910062	266910062 - N	2669.011	2669.027			
9	266910063	266910063 - N	2669.011	2669.027			
10	266910064	266910064 - N	2669.011	2669.027			
11	266910065	266910065 - N	2669.011	2669.027			
12	266910066	266910066 - N	2669.011	2669.027			
13	266910067	266910067 - N	2669.021	2669.014			
14	266910068	266910068 - N	2669.021	2669.014			
15	266910069	266910069 - N	2669.021	2669.014			
16	266910070	266910070 - N	2669.021	2669.014	1.21	1.88	
17	266910071	266910071 - N	2669.021	2669.014			
18	266910072	266910072 - N	2669.021	2669.014			
19	266910073	266910073 - N	2669.013	2669.039			
20	266910074	266910074 - N	2669.013	2669.039			
21	266910075	266910075 - N	2669.013	2669.039			
22	266910076	266910076 - N	2669.013	2669.039			
23	266910077	266910077 - N	2669.013	2669.039			
24	266910078	266910078 - N	2669.013	2669.039			
25	266910079	266910079 - N	2669.024	2669.028			
26	266910080	266910080 - N	2669.024	2669.028	1.47	2.10	
27	266910081	266910081 - N	2669.024	2669.028			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

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Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910055 - N	CCBX59798	0.9527					
266910056 - N	CCBX59798	0.9527					
266910057 - N	CCBX59798	0.9527					
266910058 - N	CCBX59798	0.9527					
266910059 - N	CCBX59798	0.9527					
266910060 - N	CCBX59798	0.9532	0.353	312	2.70	106	
266910061 - N	CCBX59798	0.9532					
266910062 - N	CCBX59798	0.9532					
266910063 - N	CCBX59798	0.9532					
266910064 - N	CCBX59798	0.9532					
266910065 - N	CCBX59798	0.9532					
266910066 - N	CCBX59798	0.9532					
266910067 - N	CCBX59798	0.9532					
266910068 - N	CCBX59798	0.9532					
266910069 - N	CCBX59798	0.9532					
266910070 - N	CCBX59798	0.9525	0.341	310	2.54	104	
266910071 - N	CCBX59798	0.9525					
266910072 - N	CCBX59798	0.9525					
266910073 - N	CCBX59798	0.9525					
266910074 - N	CCBX59798	0.9525					
266910075 - N	CCBX59798	0.9525					
266910076 - N	CCBX59798	0.9525					
266910077 - N	CCBX59798	0.9525					
266910078 - N	CCBX59798	0.9525					
266910079 - N	CCBX59798	0.9525					
266910080 - N	CCBX59798	0.9529	0.347	316	2.61	108	
266910081 - N	CCBX59798	0.9529					

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910082	266910082 - N	2669.024	2669.028			
2	266910083	266910083 - N	2669.024	2669.028			
3	266910084	266910084 - N	2669.024	2669.028			
4	266910085	266910085 - N	2669.012	2669.044			
5	266910086	266910086 - N	2669.012	2669.044			
6	266910087	266910087 - N	2669.012	2669.044			
7	266910088	266910088 - N	2669.012	2669.044			
8	266910089	266910089 - N	2669.012	2669.044			
9	266910090	266910090 - N	2669.012	2669.044	1.30	1.95	
10	266910091	266910091 - N	2669.042	2669.033			
11	266910092	266910092 - N	2669.042	2669.033			
12	266910093	266910093 - N	2669.042	2669.033			
13	266910094	266910094 - N	2669.042	2669.033			
14	266910095	266910095 - N	2669.042	2669.033			
15	266910096	266910096 - N	2669.042	2669.033			
16	266910097	266910097 - N	2669.031	2669.047			
17	266910098	266910098 - N	2669.031	2669.047			
18	266910099	266910099 - N	2669.031	2669.047			
19	266910100	266910100 - N	2669.031	2669.047	1.52	2.01	
20	266910101	266910101 - N	2669.031	2669.047			
21	266910102	266910102 - N	2669.031	2669.047			
22	266910103	266910103 - N	2669.040	2669.036			
23	266910104	266910104 - N	2669.040	2669.036			
24	266910105	266910105 - N	2669.040	2669.036			
25	266910106	266910106 - N	2669.040	2669.036			
26	266910107	266910107 - N	2669.040	2669.036			
27	266910108	266910108 - N	2669.040	2669.036			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910082 - N	CCBX59798	0.9529					
266910083 - N	CCBX59798	0.9529					
266910084 - N	CCBX59798	0.9529					
266910085 - N	CCBX59798	0.9529					
266910086 - N	CCBX59798	0.9529					
266910087 - N	CCBX59798	0.9529					
266910088 - N	CCBX59798	0.9529					
266910089 - N	CCBX59798	0.9529					
266910090 - N	CCBX59798	0.9524	0.343	314	2.43	103	
266910091 - N	CCBX59798	0.9524					
266910092 - N	CCBX59798	0.9524					
266910093 - N	CCBX59798	0.9524					
266910094 - N	CCBX59798	0.9524					
266910095 - N	CCBX59798	0.9524					
266910096 - N	CCBX59798	0.9524					
266910097 - N	CCBX59798	0.9524					
266910098 - N	CCBX59798	0.9524					
266910099 - N	CCBX59798	0.9524					
266910100 - N	CCBX59798	0.9531	0.348	318	2.71	105	
266910101 - N	CCBX59798	0.9531					
266910102 - N	CCBX59798	0.9531					
266910103 - N	CCBX59798	0.9531					
266910104 - N	CCBX59798	0.9531					
266910105 - N	CCBX59798	0.9531					
266910106 - N	CCBX59798	0.9531					
266910107 - N	CCBX59798	0.9531					
266910108 - N	CCBX59798	0.9531					

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910109	266910109 - N	2669.029	2669.049			
2	266910110	266910110 - N	2669.029	2669.049	1.27	1.82	
3	266910111	266910111 - N	2669.029	2669.049			
4	266910112	266910112 - N	2669.029	2669.049			
5	266910113	266910113 - N	2669.029	2669.049			
6	266910114	266910114 - N	2669.029	2669.049			
7	266910115	266910115 - N	2669.045	2669.032			
8	266910116	266910116 - N	2669.045	2669.032			
9	266910117	266910117 - N	2669.045	2669.032			
10	266910118	266910118 - N	2669.045	2669.032			
11	266910119	266910119 - N	2669.045	2669.032			
12	266910120	266910120 - N	2669.045	2669.032	1.43	2.16	
13	266910121	266910121 - N	2669.030	2669.046			
14	266910122	266910122 - N	2669.030	2669.046			
15	266910123	266910123 - N	2669.030	2669.046			
16	266910124	266910124 - N	2669.030	2669.046			
17	266910125	266910125 - N	2669.030	2669.046			
18	266910126	266910126 - N	2669.030	2669.046			
19	266910127	266910127 - N	2669.048	2669.038			
20	266910128	266910128 - N	2669.048	2669.038			
21	266910129	266910129 - N	2669.048	2669.038			
22	266910130	266910130 - N	2669.048	2669.038	1.36	1.93	
23	266910131	266910131 - N	2669.048	2669.038			
24	266910132	266910132 - N	2669.048	2669.038			
25	266910133	266910133 - N	2669.034	2669.051			
26	266910134	266910134 - N	2669.034	2669.051			
27	266910135	266910135 - N	2669.034	2669.051			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

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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)
266910109 - N	CCBX59798	0.9531					
266910110 - N	CCBX59798	0.9528	0.346	311	2.52	102	
266910111 - N	CCBX59798	0.9528					
266910112 - N	CCBX59798	0.9528					
266910113 - N	CCBX59798	0.9528					
266910114 - N	CCBX59798	0.9528					
266910115 - N	CCBX59798	0.9528					
266910116 - N	CCBX59798	0.9528					
266910117 - N	CCBX59798	0.9528					
266910118 - N	CCBX59798	0.9528					
266910119 - N	CCBX59798	0.9528					
266910120 - N	CCBX59798	0.9532	0.354	317	2.67	106	
266910121 - N	CCBX59798	0.9532					
266910122 - N	CCBX59798	0.9532					
266910123 - N	CCBX59798	0.9532					
266910124 - N	CCBX59798	0.9532					
266910125 - N	CCBX59798	0.9532					
266910126 - N	CCBX59798	0.9532					
266910127 - N	CCBX59798	0.9532					
266910128 - N	CCBX59798	0.9532					
266910129 - N	CCBX59798	0.9532					
266910130 - N	CCBX59798	0.9523	0.351	313	2.40	104	
266910131 - N	CCBX59798	0.9523					
266910132 - N	CCBX59798	0.9523					
266910133 - N	CCBX59798	0.9523					
266910134 - N	CCBX59798	0.9523					
266910135 - N	CCBX59798	0.9523					

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Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910136	266910136 - N	2669.034	2669.051			
2	266910137	266910137 - N	2669.034	2669.051			
3	266910138	266910138 - N	2669.034	2669.051			
4	266910139	266910139 - N	2669.052	2669.043			
5	266910140	266910140 - N	2669.052	2669.043	1.54	2.07	
6	266910141	266910141 - N	2669.052	2669.043			
7	266910142	266910142 - N	2669.052	2669.043			
8	266910143	266910143 - N	2669.052	2669.043			
9	266910144	266910144 - N	2669.052	2669.043			
10	266910145	266910145 - N	2669.037	2669.050			
11	266910146	266910146 - N	2669.037	2669.050			
12	266910147	266910147 - N	2669.037	2669.050			
13	266910148	266910148 - N	2669.037	2669.050			
14	266910149	266910149 - N	2669.037	2669.050			
15	266910150	266910150 - N	2669.037	2669.050	1.25	1.84	
16	266910151	266910151 - N	2669.054	2669.035			
17	266910152	266910152 - N	2669.054	2669.035			
18	266910153	266910153 - N	2669.054	2669.035			
19	266910154	266910154 - N	2669.054	2669.035			
20	266910155	266910155 - N	2669.054	2669.035			
21	266910156	266910156 - N	2669.054	2669.035			
22	266910157	266910157 - N	2669.041	2669.053			
23	266910158	266910158 - N	2669.041	2669.053			
24	266910159	266910159 - N	2669.041	2669.053			
25	266910160	266910160 - N	2669.041	2669.053	1.45	2.14	
26	266910161	266910161 - N	2669.041	2669.053			
27	266910162	266910162 - N	2669.041	2669.053			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910136 - N	CCBX59798	0.9523					
266910137 - N	CCBX59798	0.9523					
266910138 - N	CCBX59798	0.9523					
266910139 - N	CCBX59798	0.9523					
266910140 - N	CCBX59798	0.9526	0.355	319	2.72	108	
266910141 - N	CCBX59798	0.9526					
266910142 - N	CCBX59798	0.9526					
266910143 - N	CCBX59798	0.9526					
266910144 - N	CCBX59798	0.9526					
266910145 - N	CCBX59798	0.9526					
266910146 - N	CCBX59798	0.9526					
266910147 - N	CCBX59798	0.9526					
266910148 - N	CCBX59798	0.9526					
266910149 - N	CCBX59798	0.9526					
266910150 - N	CCBX59798	0.9524	0.342	309	2.53	105	
266910151 - N	CCBX59798	0.9524					
266910152 - N	CCBX59798	0.9524					
266910153 - N	CCBX59798	0.9524					
266910154 - N	CCBX59798	0.9524					
266910155 - N	CCBX59798	0.9524					
266910156 - N	CCBX59798	0.9524					
266910157 - N	CCBX59798	0.9524					
266910158 - N	CCBX59798	0.9524					
266910159 - N	CCBX59798	0.9524					
266910160 - N	CCBX59798	0.9530	0.350	315	2.65	107	
266910161 - N	CCBX59798	0.9530					
266910162 - N	CCBX59798	0.9530					

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910163	266910163 - N	2669.067	2669.059			
2	266910164	266910164 - N	2669.067	2669.059			
3	266910165	266910165 - N	2669.067	2669.059			
4	266910166	266910166 - N	2669.067	2669.059			
5	266910167	266910167 - N	2669.067	2669.059			
6	266910168	266910168 - N	2669.067	2669.059			
7	266910169	266910169 - N	2669.055	2669.074			
8	266910170	266910170 - N	2669.055	2669.074	1.34	1.90	
9	266910171	266910171 - N	2669.055	2669.074			
10	266910172	266910172 - N	2669.055	2669.074			
11	266910173	266910173 - N	2669.055	2669.074			
12	266910174	266910174 - N	2669.055	2669.074			
13	266910175	266910175 - N	2669.072	2669.057			
14	266910176	266910176 - N	2669.072	2669.057			
15	266910177	266910177 - N	2669.072	2669.057			
16	266910178	266910178 - N	2669.072	2669.057			
17	266910179	266910179 - N	2669.072	2669.057			
18	266910180	266910180 - N	2669.072	2669.057	1.39	2.05	
19	266910181	266910181 - N	2669.061	2669.070			
20	266910182	266910182 - N	2669.061	2669.070			
21	266910183	266910183 - N	2669.061	2669.070			
22	266910184	266910184 - N	2669.061	2669.070			
23	266910185	266910185 - N	2669.061	2669.070			
24	266910186	266910186 - N	2669.061	2669.070			
25	266910187	266910187 - N	2669.069	2669.056			
26	266910188	266910188 - N	2669.069	2669.056			
27	266910189	266910189 - N	2669.069	2669.056			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910163 - N	CCBX59798	0.9530					
266910164 - N	CCBX59798	0.9530					
266910165 - N	CCBX59798	0.9530					
266910166 - N	CCBX59798	0.9530					
266910167 - N	CCBX59798	0.9530					
266910168 - N	CCBX59798	0.9530					
266910169 - N	CCBX59798	0.9530					
266910170 - N	CCBX59798	0.9525	0.344	312	2.42	103	
266910171 - N	CCBX59798	0.9525					
266910172 - N	CCBX59798	0.9525					
266910173 - N	CCBX59798	0.9525					
266910174 - N	CCBX59798	0.9525					
266910175 - N	CCBX59798	0.9525					
266910176 - N	CCBX59798	0.9525					
266910177 - N	CCBX59798	0.9525					
266910178 - N	CCBX59798	0.9525					
266910179 - N	CCBX59798	0.9525					
266910180 - N	CCBX59798	0.9529	0.349	314	2.59	106	
266910181 - N	CCBX59798	0.9529					
266910182 - N	CCBX59798	0.9529					
266910183 - N	CCBX59798	0.9529					
266910184 - N	CCBX59798	0.9529					
266910185 - N	CCBX59798	0.9529					
266910186 - N	CCBX59798	0.9529					
266910187 - N	CCBX59798	0.9529					
266910188 - N	CCBX59798	0.9529					
266910189 - N	CCBX59798	0.9529					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910190	266910190 - N	2669.069	2669.056	1.23	1.86	1.53×10^{-3}
2	266910191	266910191 - N	2669.069	2669.056			
3	266910192	266910192 - N	2669.069	2669.056			
4	266910193	266910193 - N	2669.058	2669.073			
5	266910194	266910194 - N	2669.058	2669.073			
6	266910195	266910195 - N	2669.058	2669.073			
7	266910196	266910196 - N	2669.058	2669.073			
8	266910197	266910197 - N	2669.058	2669.073			
9	266910198	266910198 - N	2669.058	2669.073			
10	266910199	266910199 - N	2669.077	2669.060			
11	266910200	266910200 - N	2669.077	2669.060	1.42	1.98	
12	266910201	266910201 - N	2669.077	2669.060			
13	266910202	266910202 - N	2669.077	2669.060			
14	266910203	266910203 - N	2669.077	2669.060			
15	266910204	266910204 - N	2669.077	2669.060			
16	266910205	266910205 - N	2669.064	2669.080			
17	266910206	266910206 - N	2669.064	2669.080			
18	266910207	266910207 - N	2669.064	2669.080			
19	266910208	266910208 - N	2669.064	2669.080			
20	266910209	266910209 - N	2669.064	2669.080			
21	266910210	266910210 - N	2669.064	2669.080	1.37	1.92	
22	266910211	266910211 - N	2669.075	2669.068			
23	266910212	266910212 - N	2669.075	2669.068			
24	266910213	266910213 - N	2669.075	2669.068			
25	266910214	266910214 - N	2669.075	2669.068			
26	266910215	266910215 - N	2669.075	2669.068			
27	266910216	266910216 - N	2669.075	2669.068			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910190 - N	DOWX21936	0.9558	0.341	310	2.51	102	
266910191 - N	DOWX21936	0.9558					
266910192 - N	DOWX21936	0.9558					
266910193 - N	DOWX21936	0.9558					
266910194 - N	DOWX21936	0.9558					
266910195 - N	DOWX21936	0.9558					
266910196 - N	DOWX21936	0.9558					
266910197 - N	DOWX21936	0.9558					
266910198 - N	DOWX21936	0.9558					
266910199 - N	DOWX21936	0.9558					
266910200 - N	DOWX21936	0.9552	0.347	316	2.60	107	
266910201 - N	DOWX21936	0.9552					
266910202 - N	DOWX21936	0.9552					
266910203 - N	DOWX21936	0.9552					
266910204 - N	DOWX21936	0.9552					
266910205 - N	DOWX21936	0.9552					
266910206 - N	DOWX21936	0.9552					
266910207 - N	DOWX21936	0.9552					
266910208 - N	DOWX21936	0.9552					
266910209 - N	DOWX21936	0.9552					
266910210 - N	DOWX21936	0.9554	0.345	313	2.36	104	
266910211 - N	DOWX21936	0.9554					
266910212 - N	DOWX21936	0.9554					
266910213 - N	DOWX21936	0.9554					
266910214 - N	DOWX21936	0.9554					
266910215 - N	DOWX21936	0.9554					
266910216 - N	DOWX21936	0.9554					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910217	266910217 - N	2669.063	2669.076			
2	266910218	266910218 - N	2669.063	2669.076			
3	266910219	266910219 - N	2669.063	2669.076			
4	266910220	266910220 - N	2669.063	2669.076	1.51	1.99	
5	266910221	266910221 - N	2669.063	2669.076			
6	266910222	266910222 - N	2669.063	2669.076			
7	266910223	266910223 - N	2669.078	2669.062			
8	266910224	266910224 - N	2669.078	2669.062			
9	266910225	266910225 - N	2669.078	2669.062			
10	266910226	266910226 - N	2669.078	2669.062			
11	266910227	266910227 - N	2669.078	2669.062			
12	266910228	266910228 - N	2669.078	2669.062			
13	266910229	266910229 - N	2669.066	2669.079			
14	266910230	266910230 - N	2669.066	2669.079	1.28	1.79	
15	266910231	266910231 - N	2669.066	2669.079			
16	266910232	266910232 - N	2669.066	2669.079			
17	266910233	266910233 - N	2669.066	2669.079			
18	266910234	266910234 - N	2669.066	2669.079			
19	266910235	266910235 - N	2669.081	2669.065			
20	266910236	266910236 - N	2669.081	2669.065			
21	266910237	266910237 - N	2669.081	2669.065			
22	266910238	266910238 - N	2669.081	2669.065			
23	266910239	266910239 - N	2669.081	2669.065			
24	266910240	266910240 - N	2669.081	2669.065	1.40	2.00	
25	266910241	266910241 - N	2669.071	2669.093			
26	266910242	266910242 - N	2669.071	2669.093			
27	266910243	266910243 - N	2669.071	2669.093			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910217 - N	DOWX21936	0.9554					
266910218 - N	DOWX21936	0.9554					
266910219 - N	DOWX21936	0.9554					
266910220 - N	DOWX21936	0.9550	0.356	317	2.55	108	
266910221 - N	DOWX21936	0.9550					
266910222 - N	DOWX21936	0.9550					
266910223 - N	DOWX21936	0.9550					
266910224 - N	DOWX21936	0.9550					
266910225 - N	DOWX21936	0.9550					
266910226 - N	DOWX21936	0.9550					
266910227 - N	DOWX21936	0.9550					
266910228 - N	DOWX21936	0.9550					
266910229 - N	DOWX21936	0.9550					
266910230 - N	DOWX21936	0.9559	0.352	315	2.39	105	
266910231 - N	DOWX21936	0.9559					
266910232 - N	DOWX21936	0.9559					
266910233 - N	DOWX21936	0.9559					
266910234 - N	DOWX21936	0.9559					
266910235 - N	DOWX21936	0.9559					
266910236 - N	DOWX21936	0.9559					
266910237 - N	DOWX21936	0.9559					
266910238 - N	DOWX21936	0.9559					
266910239 - N	DOWX21936	0.9559					
266910240 - N	DOWX21936	0.9553	0.354	319	2.56	107	
266910241 - N	DOWX21936	0.9553					
266910242 - N	DOWX21936	0.9553					
266910243 - N	DOWX21936	0.9553					

APPROVED 5 QA

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SKAPS Industries

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Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910244	266910244 - N	2669.071	2669.093			
2	266910245	266910245 - N	2669.071	2669.093			
3	266910246	266910246 - N	2669.071	2669.093			
4	266910247	266910247 - N	2669.098	2669.086			
5	266910248	266910248 - N	2669.098	2669.086			
6	266910249	266910249 - N	2669.098	2669.086			
7	266910250	266910250 - N	2669.098	2669.086	1.31	1.96	
8	266910251	266910251 - N	2669.098	2669.086			
9	266910252	266910252 - N	2669.098	2669.086			
10	266910253	266910253 - N	2669.082	2669.101			
11	266910254	266910254 - N	2669.082	2669.101			
12	266910255	266910255 - N	2669.082	2669.101			
13	266910256	266910256 - N	2669.082	2669.101			
14	266910257	266910257 - N	2669.082	2669.101			
15	266910258	266910258 - N	2669.082	2669.101			
16	266910259	266910259 - N	2669.094	2669.089			
17	266910260	266910260 - N	2669.094	2669.089	1.55	2.23	
18	266910261	266910261 - N	2669.094	2669.089			
19	266910262	266910262 - N	2669.094	2669.089			
20	266910263	266910263 - N	2669.094	2669.089			
21	266910264	266910264 - N	2669.094	2669.089			
22	266910265	266910265 - N	2669.085	2669.099			
23	266910266	266910266 - N	2669.085	2669.099			
24	266910267	266910267 - N	2669.085	2669.099			
25	266910268	266910268 - N	2669.085	2669.099			
26	266910269	266910269 - N	2669.085	2669.099			
27	266910270	266910270 - N	2669.085	2669.099	1.22	1.73	

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910244 - N	DOWX21936	0.9553					
266910245 - N	DOWX21936	0.9553					
266910246 - N	DOWX21936	0.9553					
266910247 - N	DOWX21936	0.9553					
266910248 - N	DOWX21936	0.9553					
266910249 - N	DOWX21936	0.9553					
266910250 - N	DOWX21936	0.9557	0.346	311	2.37	103	
266910251 - N	DOWX21936	0.9557					
266910252 - N	DOWX21936	0.9557					
266910253 - N	DOWX21936	0.9557					
266910254 - N	DOWX21936	0.9557					
266910255 - N	DOWX21936	0.9557					
266910256 - N	DOWX21936	0.9557					
266910257 - N	DOWX21936	0.9557					
266910258 - N	DOWX21936	0.9557					
266910259 - N	DOWX21936	0.9557					
266910260 - N	DOWX21936	0.9551	0.349	314	2.57	106	
266910261 - N	DOWX21936	0.9551					
266910262 - N	DOWX21936	0.9551					
266910263 - N	DOWX21936	0.9551					
266910264 - N	DOWX21936	0.9551					
266910265 - N	DOWX21936	0.9551					
266910266 - N	DOWX21936	0.9551					
266910267 - N	DOWX21936	0.9551					
266910268 - N	DOWX21936	0.9551					
266910269 - N	DOWX21936	0.9551					
266910270 - N	DOWX21936	0.9560	0.343	309	2.38	102	

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SKAPS Industries

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Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910271	266910271 - N	2669.096	2669.088			
2	266910272	266910272 - N	2669.096	2669.088			
3	266910273	266910273 - N	2669.096	2669.088			
4	266910274	266910274 - N	2669.096	2669.088			
5	266910275	266910275 - N	2669.096	2669.088			
6	266910276	266910276 - N	2669.096	2669.088			
7	266910277	266910277 - N	2669.083	2669.092			
8	266910278	266910278 - N	2669.083	2669.092			
9	266910279	266910279 - N	2669.083	2669.092			
10	266910280	266910280 - N	2669.083	2669.092	1.46	2.21	
11	266910281	266910281 - N	2669.083	2669.092			
12	266910282	266910282 - N	2669.083	2669.092			
13	266910283	266910283 - N	2669.104	2669.084			
14	266910284	266910284 - N	2669.104	2669.084			
15	266910285	266910285 - N	2669.104	2669.084			
16	266910286	266910286 - N	2669.104	2669.084			
17	266910287	266910287 - N	2669.104	2669.084			
18	266910288	266910288 - N	2669.104	2669.084			
19	266910289	266910289 - N	2669.090	2669.106			
20	266910290	266910290 - N	2669.090	2669.106	1.35	1.94	
21	266910291	266910291 - N	2669.090	2669.106			
22	266910292	266910292 - N	2669.090	2669.106			
23	266910293	266910293 - N	2669.090	2669.106			
24	266910294	266910294 - N	2669.090	2669.106			
25	266910295	266910295 - N	2669.102	2669.095			
26	266910296	266910296 - N	2669.102	2669.095			
27	266910297	266910297 - N	2669.102	2669.095			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910271 - N	DOWX21936	0.9560					
266910272 - N	DOWX21936	0.9560					
266910273 - N	DOWX21936	0.9560					
266910274 - N	DOWX21936	0.9560					
266910275 - N	DOWX21936	0.9560					
266910276 - N	DOWX21936	0.9560					
266910277 - N	DOWX21936	0.9560					
266910278 - N	DOWX21936	0.9560					
266910279 - N	DOWX21936	0.9560					
266910280 - N	DOWX21936	0.9555	0.347	316	2.58	108	
266910281 - N	DOWX21936	0.9555					
266910282 - N	DOWX21936	0.9555					
266910283 - N	DOWX21936	0.9555					
266910284 - N	DOWX21936	0.9555					
266910285 - N	DOWX21936	0.9555					
266910286 - N	DOWX21936	0.9555					
266910287 - N	DOWX21936	0.9555					
266910288 - N	DOWX21936	0.9555					
266910289 - N	DOWX21936	0.9555					
266910290 - N	DOWX21936	0.9558	0.342	312	2.54	104	
266910291 - N	DOWX21936	0.9558					
266910292 - N	DOWX21936	0.9558					
266910293 - N	DOWX21936	0.9558					
266910294 - N	DOWX21936	0.9558					
266910295 - N	DOWX21936	0.9558					
266910296 - N	DOWX21936	0.9558					
266910297 - N	DOWX21936	0.9558					

APPROVED 5 QA

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910298	266910298 - N	2669.102	2669.095			
2	266910299	266910299 - N	2669.102	2669.095			
3	266910300	266910300 - N	2669.102	2669.095	1.53	2.22	
4	266910301	266910301 - N	2669.091	2669.108			
5	266910302	266910302 - N	2669.091	2669.108			
6	266910303	266910303 - N	2669.091	2669.108			
7	266910304	266910304 - N	2669.091	2669.108			
8	266910305	266910305 - N	2669.091	2669.108			
9	266910306	266910306 - N	2669.091	2669.108			
10	266910307	266910307 - N	2669.100	2669.103			
11	266910308	266910308 - N	2669.100	2669.103			
12	266910309	266910309 - N	2669.100	2669.103			
13	266910310	266910310 - N	2669.100	2669.103	1.26	1.75	
14	266910311	266910311 - N	2669.100	2669.103			
15	266910312	266910312 - N	2669.100	2669.103			
16	266910313	266910313 - N	2669.087	2669.105			
17	266910314	266910314 - N	2669.087	2669.105			
18	266910315	266910315 - N	2669.087	2669.105			
19	266910316	266910316 - N	2669.087	2669.105			
20	266910317	266910317 - N	2669.087	2669.105			
21	266910318	266910318 - N	2669.087	2669.105			
22	266910319	266910319 - N	2669.107	2669.097			
23	266910320	266910320 - N	2669.107	2669.097	1.44	2.19	
24	266910321	266910321 - N	2669.107	2669.097			
25	266910322	266910322 - N	2669.107	2669.097			
26	266910323	266910323 - N	2669.107	2669.097			
27	266910324	266910324 - N	2669.107	2669.097			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910298 - N	DOWX21936	0.9558					
266910299 - N	DOWX21936	0.9558					
266910300 - N	DOWX21936	0.9556	0.348	319	2.68	107	
266910301 - N	DOWX21936	0.9556					
266910302 - N	DOWX21936	0.9556					
266910303 - N	DOWX21936	0.9556					
266910304 - N	DOWX21936	0.9556					
266910305 - N	DOWX21936	0.9556					
266910306 - N	DOWX21936	0.9556					
266910307 - N	DOWX21936	0.9556					
266910308 - N	DOWX21936	0.9556					
266910309 - N	DOWX21936	0.9556					
266910310 - N	DOWX21936	0.9559	0.344	313	2.41	103	
266910311 - N	DOWX21936	0.9559					
266910312 - N	DOWX21936	0.9559					
266910313 - N	DOWX21936	0.9559					
266910314 - N	DOWX21936	0.9559					
266910315 - N	DOWX21936	0.9559					
266910316 - N	DOWX21936	0.9559					
266910317 - N	DOWX21936	0.9559					
266910318 - N	DOWX21936	0.9559					
266910319 - N	DOWX21936	0.9559					
266910320 - N	DOWX21936	0.9552	0.355	310	2.62	105	
266910321 - N	DOWX21936	0.9552					
266910322 - N	DOWX21936	0.9552					
266910323 - N	DOWX21936	0.9552					
266910324 - N	DOWX21936	0.9552					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910325	266910325 - N	2669.115	2669.124			
2	266910326	266910326 - N	2669.115	2669.124			
3	266910327	266910327 - N	2669.115	2669.124			
4	266910328	266910328 - N	2669.115	2669.124			
5	266910329	266910329 - N	2669.115	2669.124			
6	266910330	266910330 - N	2669.115	2669.124	1.33	1.89	
7	266910331	266910331 - N	2669.122	2669.112			
8	266910332	266910332 - N	2669.122	2669.112			
9	266910333	266910333 - N	2669.122	2669.112			
10	266910334	266910334 - N	2669.122	2669.112			
11	266910335	266910335 - N	2669.122	2669.112			
12	266910336	266910336 - N	2669.122	2669.112			
13	266910337	266910337 - N	2669.109	2669.131			
14	266910338	266910338 - N	2669.109	2669.131			
15	266910339	266910339 - N	2669.109	2669.131			
16	266910340	266910340 - N	2669.109	2669.131	1.48	2.02	
17	266910341	266910341 - N	2669.109	2669.131			
18	266910342	266910342 - N	2669.109	2669.131			
19	266910343	266910343 - N	2669.128	2669.120			
20	266910344	266910344 - N	2669.128	2669.120			
21	266910345	266910345 - N	2669.128	2669.120			
22	266910346	266910346 - N	2669.128	2669.120			
23	266910347	266910347 - N	2669.128	2669.120			
24	266910348	266910348 - N	2669.128	2669.120			
25	266910349	266910349 - N	2669.117	2669.133			
26	266910350	266910350 - N	2669.117	2669.133	1.24	1.77	
27	266910351	266910351 - N	2669.117	2669.133			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910325 - N	DOWX21936	0.9552					
266910326 - N	DOWX21936	0.9552					
266910327 - N	DOWX21936	0.9552					
266910328 - N	DOWX21936	0.9552					
266910329 - N	DOWX21936	0.9552					
266910330 - N	DOWX21936	0.9557	0.351	315	2.44	102	
266910331 - N	DOWX21936	0.9557					
266910332 - N	DOWX21936	0.9557					
266910333 - N	DOWX21936	0.9557					
266910334 - N	DOWX21936	0.9557					
266910335 - N	DOWX21936	0.9557					
266910336 - N	DOWX21936	0.9557					
266910337 - N	DOWX21936	0.9557					
266910338 - N	DOWX21936	0.9557					
266910339 - N	DOWX21936	0.9557					
266910340 - N	DOWX21936	0.9553	0.353	311	2.66	106	
266910341 - N	DOWX21936	0.9553					
266910342 - N	DOWX21936	0.9553					
266910343 - N	DOWX21936	0.9553					
266910344 - N	DOWX21936	0.9553					
266910345 - N	DOWX21936	0.9553					
266910346 - N	DOWX21936	0.9553					
266910347 - N	DOWX21936	0.9553					
266910348 - N	DOWX21936	0.9553					
266910349 - N	DOWX21936	0.9553					
266910350 - N	DOWX21936	0.9558	0.346	317	2.50	104	
266910351 - N	DOWX21936	0.9558					

APPROVED 5 QA

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : TN330-2-8
Project : Pine Hall Road Ash Landfill, NC

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910352	266910352 - N	2669.117	2669.133			
2	266910353	266910353 - N	2669.117	2669.133			
3	266910354	266910354 - N	2669.117	2669.133			
4	266910355	266910355 - N	2669.129	2669.119			
5	266910356	266910356 - N	2669.129	2669.119			
6	266910357	266910357 - N	2669.129	2669.119			
7	266910358	266910358 - N	2669.129	2669.119			
8	266910359	266910359 - N	2669.129	2669.119			
9	266910360	266910360 - N	2669.129	2669.119	1.41	2.11	
10	266910361	266910361 - N	2669.110	2669.127			
11	266910362	266910362 - N	2669.110	2669.127			
12	266910363	266910363 - N	2669.110	2669.127			
13	266910364	266910364 - N	2669.110	2669.127			
14	266910365	266910365 - N	2669.110	2669.127			
15	266910366	266910366 - N	2669.110	2669.127			
16	266910367	266910367 - N	2669.125	2669.113			
17	266910368	266910368 - N	2669.125	2669.113			
18	266910369	266910369 - N	2669.125	2669.113			
19	266910370	266910370 - N	2669.125	2669.113	1.38	1.81	
20	266910371	266910371 - N	2669.125	2669.113			
21	266910372	266910372 - N	2669.125	2669.113			
22	266910373	266910373 - N	2669.114	2669.132			
23	266910374	266910374 - N	2669.114	2669.132			
24	266910375	266910375 - N	2669.114	2669.132			
25	266910376	266910376 - N	2669.114	2669.132			
26	266910377	266910377 - N	2669.114	2669.132			
27	266910378	266910378 - N	2669.114	2669.132			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910352 - N	DOWX21936	0.9558					
266910353 - N	DOWX21936	0.9558					
266910354 - N	DOWX21936	0.9558					
266910355 - N	DOWX21936	0.9558					
266910356 - N	DOWX21936	0.9558					
266910357 - N	DOWX21936	0.9558					
266910358 - N	DOWX21936	0.9558					
266910359 - N	DOWX21936	0.9558					
266910360 - N	DOWX21936	0.9554	0.354	309	2.64	108	
266910361 - N	DOWX21936	0.9554					
266910362 - N	DOWX21936	0.9554					
266910363 - N	DOWX21936	0.9554					
266910364 - N	DOWX21936	0.9554					
266910365 - N	DOWX21936	0.9554					
266910366 - N	DOWX21936	0.9554					
266910367 - N	DOWX21936	0.9554					
266910368 - N	DOWX21936	0.9554					
266910369 - N	DOWX21936	0.9554					
266910370 - N	DOWX21936	0.9560	0.350	316	2.53	105	
266910371 - N	DOWX21936	0.9560					
266910372 - N	DOWX21936	0.9560					
266910373 - N	DOWX21936	0.9560					
266910374 - N	DOWX21936	0.9560					
266910375 - N	DOWX21936	0.9560					
266910376 - N	DOWX21936	0.9560					
266910377 - N	DOWX21936	0.9560					
266910378 - N	DOWX21936	0.9560					

APPROVED 5 QA

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Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910379	266910379 - N	2669.130	2669.116			
2	266910380	266910380 - N	2669.130	2669.116	1.49	2.08	1.59×10^{-3}
3	266910381	266910381 - N	2669.130	2669.116			
4	266910382	266910382 - N	2669.130	2669.116			
5	266910383	266910383 - N	2669.130	2669.116			
6	266910384	266910384 - N	2669.130	2669.116			
7	266910385	266910385 - N	2669.123	2669.121			
8	266910386	266910386 - N	2669.123	2669.121			
9	266910387	266910387 - N	2669.123	2669.121			
10	266910388	266910388 - N	2669.123	2669.121			
11	266910389	266910389 - N	2669.123	2669.121			
12	266910390	266910390 - N	2669.123	2669.121	1.29	1.78	
13	266910391	266910391 - N	2669.134	2669.111			
14	266910392	266910392 - N	2669.134	2669.111			
15	266910393	266910393 - N	2669.134	2669.111			
16	266910394	266910394 - N	2669.134	2669.111			
17	266910395	266910395 - N	2669.134	2669.111			
18	266910396	266910396 - N	2669.134	2669.111			
19	266910397	266910397 - N	2669.118	2669.135			
20	266910398	266910398 - N	2669.118	2669.135			
21	266910399	266910399 - N	2669.118	2669.135			
22	266910400	266910400 - N	2669.118	2669.135	1.50	2.13	
23	266910401	266910401 - N	2669.118	2669.135			
24	266910402	266910402 - N	2669.118	2669.135			
25	266910403	266910403 - N	2669.126	2669.150			
26	266910404	266910404 - N	2669.126	2669.150			
27	266910405	266910405 - N	2669.126	2669.150			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910379 - N	DOWX21936	0.9560					
266910380 - N	TQEX58429	0.9551	0.356	312	2.69	107	
266910381 - N	TQEX58429	0.9551					
266910382 - N	TQEX58429	0.9551					
266910383 - N	TQEX58429	0.9551					
266910384 - N	TQEX58429	0.9551					
266910385 - N	TQEX58429	0.9551					
266910386 - N	TQEX58429	0.9551					
266910387 - N	TQEX58429	0.9551					
266910388 - N	TQEX58429	0.9551					
266910389 - N	TQEX58429	0.9551					
266910390 - N	TQEX58429	0.9547	0.347	319	2.40	103	
266910391 - N	TQEX58429	0.9547					
266910392 - N	TQEX58429	0.9547					
266910393 - N	TQEX58429	0.9547					
266910394 - N	TQEX58429	0.9547					
266910395 - N	TQEX58429	0.9547					
266910396 - N	TQEX58429	0.9547					
266910397 - N	TQEX58429	0.9547					
266910398 - N	TQEX58429	0.9547					
266910399 - N	TQEX58429	0.9547					
266910400 - N	TQEX58429	0.9553	0.349	314	2.73	106	
266910401 - N	TQEX58429	0.9553					
266910402 - N	TQEX58429	0.9553					
266910403 - N	TQEX58429	0.9553					
266910404 - N	TQEX58429	0.9553					
266910405 - N	TQEX58429	0.9553					

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910406	266910406 - N	2669.126	2669.150			
2	266910407	266910407 - N	2669.126	2669.150			
3	266910408	266910408 - N	2669.126	2669.150			
4	266910409	266910409 - N	2669.147	2669.139			
5	266910410	266910410 - N	2669.147	2669.139	1.32	1.83	
6	266910411	266910411 - N	2669.147	2669.139			
7	266910412	266910412 - N	2669.147	2669.139			
8	266910413	266910413 - N	2669.147	2669.139			
9	266910414	266910414 - N	2669.147	2669.139			
10	266910415	266910415 - N	2669.137	2669.152			
11	266910416	266910416 - N	2669.137	2669.152			
12	266910417	266910417 - N	2669.137	2669.152			
13	266910418	266910418 - N	2669.137	2669.152			
14	266910419	266910419 - N	2669.137	2669.152			
15	266910420	266910420 - N	2669.137	2669.152	1.52	2.04	
16	266910421	266910421 - N	2669.154	2669.136			
17	266910422	266910422 - N	2669.154	2669.136			
18	266910423	266910423 - N	2669.154	2669.136			
19	266910424	266910424 - N	2669.154	2669.136			
20	266910425	266910425 - N	2669.154	2669.136			
21	266910426	266910426 - N	2669.154	2669.136			
22	266910427	266910427 - N	2669.141	2669.158			
23	266910428	266910428 - N	2669.141	2669.158			
24	266910429	266910429 - N	2669.141	2669.158			
25	266910430	266910430 - N	2669.141	2669.158	1.21	1.74	
26	266910431	266910431 - N	2669.141	2669.158			
27	266910432	266910432 - N	2669.141	2669.158			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910406 - N	TQEX58429	0.9553					
266910407 - N	TQEX58429	0.9553					
266910408 - N	TQEX58429	0.9553					
266910409 - N	TQEX58429	0.9553					
266910410 - N	TQEX58429	0.9549	0.343	318	2.43	102	
266910411 - N	TQEX58429	0.9549					
266910412 - N	TQEX58429	0.9549					
266910413 - N	TQEX58429	0.9549					
266910414 - N	TQEX58429	0.9549					
266910415 - N	TQEX58429	0.9549					
266910416 - N	TQEX58429	0.9549					
266910417 - N	TQEX58429	0.9549					
266910418 - N	TQEX58429	0.9549					
266910419 - N	TQEX58429	0.9549					
266910420 - N	TQEX58429	0.9552	0.348	315	2.63	108	
266910421 - N	TQEX58429	0.9552					
266910422 - N	TQEX58429	0.9552					
266910423 - N	TQEX58429	0.9552					
266910424 - N	TQEX58429	0.9552					
266910425 - N	TQEX58429	0.9552					
266910426 - N	TQEX58429	0.9552					
266910427 - N	TQEX58429	0.9552					
266910428 - N	TQEX58429	0.9552					
266910429 - N	TQEX58429	0.9552					
266910430 - N	TQEX58429	0.9546	0.341	317	2.52	105	
266910431 - N	TQEX58429	0.9546					
266910432 - N	TQEX58429	0.9546					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910433	266910433 - N	2669.156	2669.143			
2	266910434	266910434 - N	2669.156	2669.143			
3	266910435	266910435 - N	2669.156	2669.143			
4	266910436	266910436 - N	2669.156	2669.143			
5	266910437	266910437 - N	2669.156	2669.143			
6	266910438	266910438 - N	2669.156	2669.143			
7	266910439	266910439 - N	2669.138	2669.162			
8	266910440	266910440 - N	2669.138	2669.162	1.47	2.17	
9	266910441	266910441 - N	2669.138	2669.162			
10	266910442	266910442 - N	2669.138	2669.162			
11	266910443	266910443 - N	2669.138	2669.162			
12	266910444	266910444 - N	2669.138	2669.162			
13	266910445	266910445 - N	2669.159	2669.148			
14	266910446	266910446 - N	2669.159	2669.148			
15	266910447	266910447 - N	2669.159	2669.148			
16	266910448	266910448 - N	2669.159	2669.148			
17	266910449	266910449 - N	2669.159	2669.148			
18	266910450	266910450 - N	2669.159	2669.148	1.30	1.87	
19	266910451	266910451 - N	2669.144	2669.157			
20	266910452	266910452 - N	2669.144	2669.157			
21	266910453	266910453 - N	2669.144	2669.157			
22	266910454	266910454 - N	2669.144	2669.157			
23	266910455	266910455 - N	2669.144	2669.157			
24	266910456	266910456 - N	2669.144	2669.157			
25	266910457	266910457 - N	2669.153	2669.142			
26	266910458	266910458 - N	2669.153	2669.142			
27	266910459	266910459 - N	2669.153	2669.142			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910433 - N	TQEX58429	0.9546					
266910434 - N	TQEX58429	0.9546					
266910435 - N	TQEX58429	0.9546					
266910436 - N	TQEX58429	0.9546					
266910437 - N	TQEX58429	0.9546					
266910438 - N	TQEX58429	0.9546					
266910439 - N	TQEX58429	0.9546					
266910440 - N	TQEX58429	0.9550	0.346	311	2.70	107	
266910441 - N	TQEX58429	0.9550					
266910442 - N	TQEX58429	0.9550					
266910443 - N	TQEX58429	0.9550					
266910444 - N	TQEX58429	0.9550					
266910445 - N	TQEX58429	0.9550					
266910446 - N	TQEX58429	0.9550					
266910447 - N	TQEX58429	0.9550					
266910448 - N	TQEX58429	0.9550					
266910449 - N	TQEX58429	0.9550					
266910450 - N	TQEX58429	0.9548	0.342	316	2.39	103	
266910451 - N	TQEX58429	0.9548					
266910452 - N	TQEX58429	0.9548					
266910453 - N	TQEX58429	0.9548					
266910454 - N	TQEX58429	0.9548					
266910455 - N	TQEX58429	0.9548					
266910456 - N	TQEX58429	0.9548					
266910457 - N	TQEX58429	0.9548					
266910458 - N	TQEX58429	0.9548					
266910459 - N	TQEX58429	0.9548					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910460	266910460 - N	2669.153	2669.142	1.56	2.06	
2	266910461	266910461 - N	2669.153	2669.142			
3	266910462	266910462 - N	2669.153	2669.142			
4	266910463	266910463 - N	2669.145	2669.151			
5	266910464	266910464 - N	2669.145	2669.151			
6	266910465	266910465 - N	2669.145	2669.151			
7	266910466	266910466 - N	2669.145	2669.151			
8	266910467	266910467 - N	2669.145	2669.151			
9	266910468	266910468 - N	2669.145	2669.151			
10	266910469	266910469 - N	2669.160	2669.140			
11	266910470	266910470 - N	2669.160	2669.140	1.27	1.76	
12	266910471	266910471 - N	2669.160	2669.140			
13	266910472	266910472 - N	2669.160	2669.140			
14	266910473	266910473 - N	2669.160	2669.140			
15	266910474	266910474 - N	2669.160	2669.140			
16	266910475	266910475 - N	2669.146	2669.161			
17	266910476	266910476 - N	2669.146	2669.161			
18	266910477	266910477 - N	2669.146	2669.161			
19	266910478	266910478 - N	2669.146	2669.161			
20	266910479	266910479 - N	2669.146	2669.161			
21	266910480	266910480 - N	2669.146	2669.161	1.45	2.15	
22	266910481	266910481 - N	2669.155	2669.149			
23	266910482	266910482 - N	2669.155	2669.149			
24	266910483	266910483 - N	2669.155	2669.149			
25	266910484	266910484 - N	2669.155	2669.149			
26	266910485	266910485 - N	2669.155	2669.149			
27	266910486	266910486 - N	2669.155	2669.149			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910460 - N	TQEX58429	0.9553	0.352	309	2.61	106	
266910461 - N	TQEX58429	0.9553					
266910462 - N	TQEX58429	0.9553					
266910463 - N	TQEX58429	0.9553					
266910464 - N	TQEX58429	0.9553					
266910465 - N	TQEX58429	0.9553					
266910466 - N	TQEX58429	0.9553					
266910467 - N	TQEX58429	0.9553					
266910468 - N	TQEX58429	0.9553					
266910469 - N	TQEX58429	0.9553					
266910470 - N	TQEX58429	0.9547	0.344	313	2.36	104	
266910471 - N	TQEX58429	0.9547					
266910472 - N	TQEX58429	0.9547					
266910473 - N	TQEX58429	0.9547					
266910474 - N	TQEX58429	0.9547					
266910475 - N	TQEX58429	0.9547					
266910476 - N	TQEX58429	0.9547					
266910477 - N	TQEX58429	0.9547					
266910478 - N	TQEX58429	0.9547					
266910479 - N	TQEX58429	0.9547					
266910480 - N	TQEX58429	0.9551	0.355	310	2.71	108	
266910481 - N	TQEX58429	0.9551					
266910482 - N	TQEX58429	0.9551					
266910483 - N	TQEX58429	0.9551					
266910484 - N	TQEX58429	0.9551					
266910485 - N	TQEX58429	0.9551					
266910486 - N	TQEX58429	0.9551					

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Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910487	266910487 - N	2669.167	2669.182			
2	266910488	266910488 - N	2669.167	2669.182			
3	266910489	266910489 - N	2669.167	2669.182			
4	266910490	266910490 - N	2669.167	2669.182	1.36	1.85	
5	266910491	266910491 - N	2669.167	2669.182			
6	266910492	266910492 - N	2669.167	2669.182			
7	266910493	266910493 - N	2669.179	2669.171			
8	266910494	266910494 - N	2669.179	2669.171			
9	266910495	266910495 - N	2669.179	2669.171			
10	266910496	266910496 - N	2669.179	2669.171			
11	266910497	266910497 - N	2669.179	2669.171			
12	266910498	266910498 - N	2669.179	2669.171			
13	266910499	266910499 - N	2669.164	2669.186			
14	266910500	266910500 - N	2669.164	2669.186	1.43	2.12	
15	266910501	266910501 - N	2669.164	2669.186			
16	266910502	266910502 - N	2669.164	2669.186			
17	266910503	266910503 - N	2669.164	2669.186			
18	266910504	266910504 - N	2669.164	2669.186			
19	266910505	266910505 - N	2669.176	2669.166			
20	266910506	266910506 - N	2669.176	2669.166			
21	266910507	266910507 - N	2669.176	2669.166			
22	266910508	266910508 - N	2669.176	2669.166			
23	266910509	266910509 - N	2669.176	2669.166			
24	266910510	266910510 - N	2669.176	2669.166	1.25	1.82	
25	266910511	266910511 - N	2669.169	2669.184			
26	266910512	266910512 - N	2669.169	2669.184			
27	266910513	266910513 - N	2669.169	2669.184			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910487 - N	TQEX58429	0.9551					
266910488 - N	TQEX58429	0.9551					
266910489 - N	TQEX58429	0.9551					
266910490 - N	TQEX58429	0.9549	0.351	319	2.42	102	
266910491 - N	TQEX58429	0.9549					
266910492 - N	TQEX58429	0.9549					
266910493 - N	TQEX58429	0.9549					
266910494 - N	TQEX58429	0.9549					
266910495 - N	TQEX58429	0.9549					
266910496 - N	TQEX58429	0.9549					
266910497 - N	TQEX58429	0.9549					
266910498 - N	TQEX58429	0.9549					
266910499 - N	TQEX58429	0.9549					
266910500 - N	TQEX58429	0.9552	0.356	312	2.67	105	
266910501 - N	TQEX58429	0.9552					
266910502 - N	TQEX58429	0.9552					
266910503 - N	TQEX58429	0.9552					
266910504 - N	TQEX58429	0.9552					
266910505 - N	TQEX58429	0.9552					
266910506 - N	TQEX58429	0.9552					
266910507 - N	TQEX58429	0.9552					
266910508 - N	TQEX58429	0.9552					
266910509 - N	TQEX58429	0.9552					
266910510 - N	TQEX58429	0.9550	0.343	318	2.51	103	
266910511 - N	TQEX58429	0.9550					
266910512 - N	TQEX58429	0.9550					
266910513 - N	TQEX58429	0.9550					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910514	266910514 - N	2669.169	2669.184			
2	266910515	266910515 - N	2669.169	2669.184			
3	266910516	266910516 - N	2669.169	2669.184			
4	266910517	266910517 - N	2669.183	2669.172			
5	266910518	266910518 - N	2669.183	2669.172			
6	266910519	266910519 - N	2669.183	2669.172			
7	266910520	266910520 - N	2669.183	2669.172	1.54	2.09	
8	266910521	266910521 - N	2669.183	2669.172			
9	266910522	266910522 - N	2669.183	2669.172			
10	266910523	266910523 - N	2669.165	2669.180			
11	266910524	266910524 - N	2669.165	2669.180			
12	266910525	266910525 - N	2669.165	2669.180			
13	266910526	266910526 - N	2669.165	2669.180			
14	266910527	266910527 - N	2669.165	2669.180			
15	266910528	266910528 - N	2669.165	2669.180			
16	266910529	266910529 - N	2669.174	2669.168			
17	266910530	266910530 - N	2669.174	2669.168	1.34	1.88	
18	266910531	266910531 - N	2669.174	2669.168			
19	266910532	266910532 - N	2669.174	2669.168			
20	266910533	266910533 - N	2669.174	2669.168			
21	266910534	266910534 - N	2669.174	2669.168			
22	266910535	266910535 - N	2669.163	2669.187			
23	266910536	266910536 - N	2669.163	2669.187			
24	266910537	266910537 - N	2669.163	2669.187			
25	266910538	266910538 - N	2669.163	2669.187			
26	266910539	266910539 - N	2669.163	2669.187			
27	266910540	266910540 - N	2669.163	2669.187	1.51	2.18	

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910514 - N	TQEX58429	0.9550					
266910515 - N	TQEX58429	0.9550					
266910516 - N	TQEX58429	0.9550					
266910517 - N	TQEX58429	0.9550					
266910518 - N	TQEX58429	0.9550					
266910519 - N	TQEX58429	0.9550					
266910520 - N	TQEX58429	0.9553	0.349	314	2.72	107	
266910521 - N	TQEX58429	0.9553					
266910522 - N	TQEX58429	0.9553					
266910523 - N	TQEX58429	0.9553					
266910524 - N	TQEX58429	0.9553					
266910525 - N	TQEX58429	0.9553					
266910526 - N	TQEX58429	0.9553					
266910527 - N	TQEX58429	0.9553					
266910528 - N	TQEX58429	0.9553					
266910529 - N	TQEX58429	0.9553					
266910530 - N	TQEX58429	0.9548	0.345	316	2.38	104	
266910531 - N	TQEX58429	0.9548					
266910532 - N	TQEX58429	0.9548					
266910533 - N	TQEX58429	0.9548					
266910534 - N	TQEX58429	0.9548					
266910535 - N	TQEX58429	0.9548					
266910536 - N	TQEX58429	0.9548					
266910537 - N	TQEX58429	0.9548					
266910538 - N	TQEX58429	0.9548					
266910539 - N	TQEX58429	0.9548					
266910540 - N	TQEX58429	0.9551	0.350	311	2.65	106	

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910541	266910541 - N	2669.178	2669.170			
2	266910542	266910542 - N	2669.178	2669.170			
3	266910543	266910543 - N	2669.178	2669.170			
4	266910544	266910544 - N	2669.178	2669.170			
5	266910545	266910545 - N	2669.178	2669.170			
6	266910546	266910546 - N	2669.178	2669.170			
7	266910547	266910547 - N	2669.173	2669.189			
8	266910548	266910548 - N	2669.173	2669.189			
9	266910549	266910549 - N	2669.173	2669.189			
10	266910550	266910550 - N	2669.173	2669.189	1.23	1.95	
11	266910551	266910551 - N	2669.173	2669.189			
12	266910552	266910552 - N	2669.173	2669.189			
13	266910553	266910553 - N	2669.185	2669.177			
14	266910554	266910554 - N	2669.185	2669.177			
15	266910555	266910555 - N	2669.185	2669.177			
16	266910556	266910556 - N	2669.185	2669.177			
17	266910557	266910557 - N	2669.185	2669.177			
18	266910558	266910558 - N	2669.185	2669.177			
19	266910559	266910559 - N	2669.175	2669.195			
20	266910560	266910560 - N	2669.175	2669.195	1.42	2.03	
21	266910561	266910561 - N	2669.175	2669.195			
22	266910562	266910562 - N	2669.175	2669.195			
23	266910563	266910563 - N	2669.175	2669.195			
24	266910564	266910564 - N	2669.175	2669.195			
25	266910565	266910565 - N	2669.188	2669.181			
26	266910566	266910566 - N	2669.188	2669.181			
27	266910567	266910567 - N	2669.188	2669.181			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910541 - N	TQEX58429	0.9551					
266910542 - N	TQEX58429	0.9551					
266910543 - N	TQEX58429	0.9551					
266910544 - N	TQEX58429	0.9551					
266910545 - N	TQEX58429	0.9551					
266910546 - N	TQEX58429	0.9551					
266910547 - N	TQEX58429	0.9551					
266910548 - N	TQEX58429	0.9551					
266910549 - N	TQEX58429	0.9551					
266910550 - N	TQEX58429	0.9546	0.341	317	2.39	102	
266910551 - N	TQEX58429	0.9546					
266910552 - N	TQEX58429	0.9546					
266910553 - N	TQEX58429	0.9546					
266910554 - N	TQEX58429	0.9546					
266910555 - N	TQEX58429	0.9546					
266910556 - N	TQEX58429	0.9546					
266910557 - N	TQEX58429	0.9546					
266910558 - N	TQEX58429	0.9546					
266910559 - N	TQEX58429	0.9546					
266910560 - N	TQEX58429	0.9549	0.353	309	2.59	108	
266910561 - N	TQEX58429	0.9549					
266910562 - N	TQEX58429	0.9549					
266910563 - N	TQEX58429	0.9549					
266910564 - N	TQEX58429	0.9549					
266910565 - N	TQEX58429	0.9549					
266910566 - N	TQEX58429	0.9549					
266910567 - N	TQEX58429	0.9549					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910568	266910568 - N	2669.188	2669.181			
2	266910569	266910569 - N	2669.188	2669.181			
3	266910570	266910570 - N	2669.188	2669.181	1.26	1.91	1.55×10^{-3}
4	266910571	266910571 - N	2669.194	2669.206			
5	266910572	266910572 - N	2669.194	2669.206			
6	266910573	266910573 - N	2669.194	2669.206			
7	266910574	266910574 - N	2669.194	2669.206			
8	266910575	266910575 - N	2669.194	2669.206			
9	266910576	266910576 - N	2669.194	2669.206			
10	266910577	266910577 - N	2669.204	2669.197			
11	266910578	266910578 - N	2669.204	2669.197			
12	266910579	266910579 - N	2669.204	2669.197			
13	266910580	266910580 - N	2669.204	2669.197	1.39	2.10	
14	266910581	266910581 - N	2669.204	2669.197			
15	266910582	266910582 - N	2669.204	2669.197			
16	266910583	266910583 - N	2669.190	2669.211			
17	266910584	266910584 - N	2669.190	2669.211			
18	266910585	266910585 - N	2669.190	2669.211			
19	266910586	266910586 - N	2669.190	2669.211			
20	266910587	266910587 - N	2669.190	2669.211			
21	266910588	266910588 - N	2669.190	2669.211			
22	266910589	266910589 - N	2669.208	2669.199			
23	266910590	266910590 - N	2669.208	2669.199	1.28	1.97	
24	266910591	266910591 - N	2669.208	2669.199			
25	266910592	266910592 - N	2669.208	2669.199			
26	266910593	266910593 - N	2669.208	2669.199			
27	266910594	266910594 - N	2669.208	2669.199			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910568 - N	TQEX58429	0.9549					
266910569 - N	TQEX58429	0.9549					
266910570 - N	DOWX67473	0.9530	0.348	313	2.37	103	
266910571 - N	DOWX67473	0.9530					
266910572 - N	DOWX67473	0.9530					
266910573 - N	DOWX67473	0.9530					
266910574 - N	DOWX67473	0.9530					
266910575 - N	DOWX67473	0.9530					
266910576 - N	DOWX67473	0.9530					
266910577 - N	DOWX67473	0.9530					
266910578 - N	DOWX67473	0.9530					
266910579 - N	DOWX67473	0.9530					
266910580 - N	DOWX67473	0.9526	0.354	310	2.60	107	
266910581 - N	DOWX67473	0.9526					
266910582 - N	DOWX67473	0.9526					
266910583 - N	DOWX67473	0.9526					
266910584 - N	DOWX67473	0.9526					
266910585 - N	DOWX67473	0.9526					
266910586 - N	DOWX67473	0.9526					
266910587 - N	DOWX67473	0.9526					
266910588 - N	DOWX67473	0.9526					
266910589 - N	DOWX67473	0.9526					
266910590 - N	DOWX67473	0.9533	0.347	319	2.36	104	
266910591 - N	DOWX67473	0.9533					
266910592 - N	DOWX67473	0.9533					
266910593 - N	DOWX67473	0.9533					
266910594 - N	DOWX67473	0.9533					

APPROVED 5 QA

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910595	266910595 - N	2669.192	2669.205			
2	266910596	266910596 - N	2669.192	2669.205			
3	266910597	266910597 - N	2669.192	2669.205			
4	266910598	266910598 - N	2669.192	2669.205			
5	266910599	266910599 - N	2669.192	2669.205			
6	266910600	266910600 - N	2669.192	2669.205	1.46	2.01	
7	266910601	266910601 - N	2669.212	2669.193			
8	266910602	266910602 - N	2669.212	2669.193			
9	266910603	266910603 - N	2669.212	2669.193			
10	266910604	266910604 - N	2669.212	2669.193			
11	266910605	266910605 - N	2669.212	2669.193			
12	266910606	266910606 - N	2669.212	2669.193			
13	266910607	266910607 - N	2669.196	2669.201			
14	266910608	266910608 - N	2669.196	2669.201			
15	266910609	266910609 - N	2669.196	2669.201			
16	266910610	266910610 - N	2669.196	2669.201	1.31	1.80	
17	266910611	266910611 - N	2669.196	2669.201			
18	266910612	266910612 - N	2669.196	2669.201			
19	266910613	266910613 - N	2669.209	2669.191			
20	266910614	266910614 - N	2669.209	2669.191			
21	266910615	266910615 - N	2669.209	2669.191			
22	266910616	266910616 - N	2669.209	2669.191			
23	266910617	266910617 - N	2669.209	2669.191			
24	266910618	266910618 - N	2669.209	2669.191			
25	266910619	266910619 - N	2669.198	2669.213			
26	266910620	266910620 - N	2669.198	2669.213	1.40	2.16	
27	266910621	266910621 - N	2669.198	2669.213			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910595 - N	DOWX67473	0.9533					
266910596 - N	DOWX67473	0.9533					
266910597 - N	DOWX67473	0.9533					
266910598 - N	DOWX67473	0.9533					
266910599 - N	DOWX67473	0.9533					
266910600 - N	DOWX67473	0.9531	0.343	315	2.55	106	
266910601 - N	DOWX67473	0.9531					
266910602 - N	DOWX67473	0.9531					
266910603 - N	DOWX67473	0.9531					
266910604 - N	DOWX67473	0.9531					
266910605 - N	DOWX67473	0.9531					
266910606 - N	DOWX67473	0.9531					
266910607 - N	DOWX67473	0.9531					
266910608 - N	DOWX67473	0.9531					
266910609 - N	DOWX67473	0.9531					
266910610 - N	DOWX67473	0.9534	0.349	318	2.54	102	
266910611 - N	DOWX67473	0.9534					
266910612 - N	DOWX67473	0.9534					
266910613 - N	DOWX67473	0.9534					
266910614 - N	DOWX67473	0.9534					
266910615 - N	DOWX67473	0.9534					
266910616 - N	DOWX67473	0.9534					
266910617 - N	DOWX67473	0.9534					
266910618 - N	DOWX67473	0.9534					
266910619 - N	DOWX67473	0.9534					
266910620 - N	DOWX67473	0.9528	0.344	311	2.68	105	
266910621 - N	DOWX67473	0.9528					

APPROVED 5 QA

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910622	266910622 - N	2669.198	2669.213			
2	266910623	266910623 - N	2669.198	2669.213			
3	266910624	266910624 - N	2669.198	2669.213			
4	266910625	266910625 - N	2669.214	2669.200			
5	266910626	266910626 - N	2669.214	2669.200			
6	266910627	266910627 - N	2669.214	2669.200			
7	266910628	266910628 - N	2669.214	2669.200			
8	266910629	266910629 - N	2669.214	2669.200			
9	266910630	266910630 - N	2669.214	2669.200	1.22	1.90	
10	266910631	266910631 - N	2669.202	2669.210			
11	266910632	266910632 - N	2669.202	2669.210			
12	266910633	266910633 - N	2669.202	2669.210			
13	266910634	266910634 - N	2669.202	2669.210			
14	266910635	266910635 - N	2669.202	2669.210			
15	266910636	266910636 - N	2669.202	2669.210			
16	266910637	266910637 - N	2669.216	2669.203			
17	266910638	266910638 - N	2669.216	2669.203			
18	266910639	266910639 - N	2669.216	2669.203			
19	266910640	266910640 - N	2669.216	2669.203	1.55	2.07	
20	266910641	266910641 - N	2669.216	2669.203			
21	266910642	266910642 - N	2669.216	2669.203			
22	266910643	266910643 - N	2669.207	2669.215			
23	266910644	266910644 - N	2669.207	2669.215			
24	266910645	266910645 - N	2669.207	2669.215			
25	266910646	266910646 - N	2669.207	2669.215			
26	266910647	266910647 - N	2669.207	2669.215			
27	266910648	266910648 - N	2669.207	2669.215			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910622 - N	DOWX67473	0.9528					
266910623 - N	DOWX67473	0.9528					
266910624 - N	DOWX67473	0.9528					
266910625 - N	DOWX67473	0.9528					
266910626 - N	DOWX67473	0.9528					
266910627 - N	DOWX67473	0.9528					
266910628 - N	DOWX67473	0.9528					
266910629 - N	DOWX67473	0.9528					
266910630 - N	DOWX67473	0.9532	0.352	314	2.41	103	
266910631 - N	DOWX67473	0.9532					
266910632 - N	DOWX67473	0.9532					
266910633 - N	DOWX67473	0.9532					
266910634 - N	DOWX67473	0.9532					
266910635 - N	DOWX67473	0.9532					
266910636 - N	DOWX67473	0.9532					
266910637 - N	DOWX67473	0.9532					
266910638 - N	DOWX67473	0.9532					
266910639 - N	DOWX67473	0.9532					
266910640 - N	DOWX67473	0.9527	0.346	312	2.56	108	
266910641 - N	DOWX67473	0.9527					
266910642 - N	DOWX67473	0.9527					
266910643 - N	DOWX67473	0.9527					
266910644 - N	DOWX67473	0.9527					
266910645 - N	DOWX67473	0.9527					
266910646 - N	DOWX67473	0.9527					
266910647 - N	DOWX67473	0.9527					
266910648 - N	DOWX67473	0.9527					

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SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910649	266910649 - N	2669.221	2669.219			
2	266910650	266910650 - N	2669.221	2669.219	1.35	1.93	
3	266910651	266910651 - N	2669.221	2669.219			
4	266910652	266910652 - N	2669.221	2669.219			
5	266910653	266910653 - N	2669.221	2669.219			
6	266910654	266910654 - N	2669.221	2669.219			
7	266910655	266910655 - N	2669.218	2669.223			
8	266910656	266910656 - N	2669.218	2669.223			
9	266910657	266910657 - N	2669.218	2669.223			
10	266910658	266910658 - N	2669.218	2669.223			
11	266910659	266910659 - N	2669.218	2669.223			
12	266910660	266910660 - N	2669.218	2669.223	1.48	2.14	
13	266910661	266910661 - N	2669.224	2669.217			
14	266910662	266910662 - N	2669.224	2669.217			
15	266910663	266910663 - N	2669.224	2669.217			
16	266910664	266910664 - N	2669.224	2669.217			
17	266910665	266910665 - N	2669.224	2669.217			
18	266910666	266910666 - N	2669.224	2669.217			
19	266910667	266910667 - N	2669.220	2669.225			
20	266910668	266910668 - N	2669.220	2669.225			
21	266910669	266910669 - N	2669.220	2669.225			
22	266910670	266910670 - N	2669.220	2669.225	1.37	1.84	
23	266910671	266910671 - N	2669.220	2669.225			
24	266910672	266910672 - N	2669.220	2669.225			
25	266910673	266910673 - N	2669.226	2669.222			
26	266910674	266910674 - N	2669.226	2669.222			
27	266910675	266910675 - N	2669.226	2669.222			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910649 - N	DOWX67473	0.9527					
266910650 - N	DOWX67473	0.9529	0.356	317	2.44	104	
266910651 - N	DOWX67473	0.9529					
266910652 - N	DOWX67473	0.9529					
266910653 - N	DOWX67473	0.9529					
266910654 - N	DOWX67473	0.9529					
266910655 - N	DOWX67473	0.9529					
266910656 - N	DOWX67473	0.9529					
266910657 - N	DOWX67473	0.9529					
266910658 - N	DOWX67473	0.9529					
266910659 - N	DOWX67473	0.9529					
266910660 - N	DOWX67473	0.9526	0.351	309	2.58	107	
266910661 - N	DOWX67473	0.9526					
266910662 - N	DOWX67473	0.9526					
266910663 - N	DOWX67473	0.9526					
266910664 - N	DOWX67473	0.9526					
266910665 - N	DOWX67473	0.9526					
266910666 - N	DOWX67473	0.9526					
266910667 - N	DOWX67473	0.9526					
266910668 - N	DOWX67473	0.9526					
266910669 - N	DOWX67473	0.9526					
266910670 - N	DOWX67473	0.9531	0.353	316	2.50	102	
266910671 - N	DOWX67473	0.9531					
266910672 - N	DOWX67473	0.9531					
266910673 - N	DOWX67473	0.9531					
266910674 - N	DOWX67473	0.9531					
266910675 - N	DOWX67473	0.9531					

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Roll	Geocomposite Roll Number	Geonet Roll Number	Geotextile Roll Number		Ply Adhesion (lb/in)		Geocomposite Transmissivity* (m^2/sec)
			Top	Bottom	Minimum	Average	
1	266910676	266910676 - N	2669.226	2669.222			
2	266910677	266910677 - N	2669.226	2669.222			
3	266910678	266910678 - N	2669.226	2669.222			
4	266910679	266910679 - N	2669.227	2669.228			
5	266910680	266910680 - N	2669.227	2669.228	1.35	1.93	
6	266910681	266910681 - N	2669.227	2669.228			
7	266910682	266910682 - N	2669.227	2669.228			
8	266910683	266910683 - N	2669.227	2669.228			
9	266910684	266910684 - N	2669.227	2669.228			

* Transmissivity measured using water at 21 $\pm$ 2 °C (70 $\pm$ 4 °F) with a gradient of 0.33 and a confining pressure of 1000 psf between sand & liner after 24 hours.

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : **TN330-2-8**
Project : **Pine Hall Road Ash Landfill, NC**

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

Geonet Roll Number	Resin Lot Number	Geonet Density (gm/cc)	Mass Per Unit Area (lb/ft^2)	Thickness (mils)	Carbon Black (%)	Tensile Strength (MD) (lb/in)	Transmissivity (m^2/sec)
266910676 - N	DOWX67473	0.9531					
266910677 - N	DOWX67473	0.9531					
266910678 - N	DOWX67473	0.9531					
266910679 - N	DOWX67473	0.9531					
266910680 - N	DOWX67473	0.9528	0.356	317	2.44	104	
266910681 - N	DOWX67473	0.9528					
266910682 - N	DOWX67473	0.9528					
266910683 - N	DOWX67473	0.9528					
266910684 - N	DOWX67473	0.9528					

APPROVED 5 QA

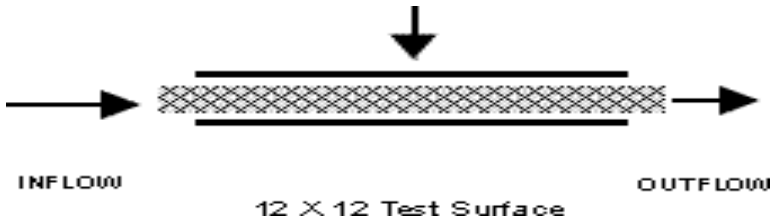
571 Industrial Parkway, Commerce, GA 30529 **Phone:** 706-336-7000 Fax: 706-336-7007 **Email:** skaps@skaps.com

SKAPS Industries

ASTM D 4716

Client:	Environmental Specialties Int'L	**Job #**	2669
Project:	Pine Hall Road Ash Landfill, NC		
Product:	TN330-2-8		

Test Configuration:



Test Information:

Boundary Conditions:	Sand Geocomposite Liner	**Normal Load:** **Gradient:** **Seating Time:** **Flow Direction:**	1000 psf 0.33 ft 24 hours MD

Test Results:

Roll No.	Pressure (psf)	Gradient, ft	Transmissivity, m^2/sec 24 hours
266910001	1000	0.33	1.56×10^{-3}
266910190			1.53×10^{-3}
266910380			1.59×10^{-3}
266910570			1.55×10^{-3}

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

SKAPS Industries

POLYETHYLENE RESIN CERTIFICATION

Customer Name : Environmental Specialties Int'L
Project Name : Pine Hall Road Ash Landfill, NC
Geocomposite Manufacturer : SKAPS Industries
Geocomposite Production Plant : Commerce, GA
Geocomposite Brand Name : TN330-2-8

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

Resin Supplier	Resin Production Plant	Resin Brand Name	Resin Lot Number	Property	Test Method	Units	Resin Supplier Value	Tested Value*
Trademark Plastics Corporation	Chevron, TX	HDPE	CCBX59798	Density	ASTM D 1505	gm/cc	0.948	0.948
				Melt Flow Index	ASTM D 1238[(a)]	gm/10 min	0.06	0.09
			DOWX21936	Density	ASTM D 1505	gm/cc	0.952	0.950
				Melt Flow Index	ASTM D 1238[(a)]	gm/10 min	0.07	0.08
			TQEX58429	Density	ASTM D 1505	gm/cc	0.950	0.950
				Melt Flow Index	ASTM D 1238[(a)]	gm/10 min	0.07	0.08
			DOWX67473	Density	ASTM D 1505	gm/cc	0.948	0.948
				Melt Flow Index	ASTM D 1238[(a)]	gm/10 min	0.06	0.08

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

APPROVED 5 QA

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : TN330-2-8
Project : Pine Hall Road Ash Landfill, 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.	XMD TENSILE lbs.	PUNCTURE lbs.	AOS us sieve	PERM-ABL cm/sec
266910001	2669.004	8.45	231	244	137	80	0.42
	2669.016	8.31	229	233	133	80	0.42
266910035	2669.015	8.31	229	233	133	80	0.42
	2669.005	8.29	227	231	137	80	0.42
266910070	2669.021	8.44	232	235	139	80	0.42
	2669.014	8.36	235	239	133	80	0.42
266910105	2669.040	8.29	234	242	135	80	0.42
	2669.036	8.13	228	232	131	80	0.42
266910140	2669.052	8.59	233	239	133	80	0.43
	2669.043	8.29	234	242	135	80	0.42
266910175	2669.072	8.37	230	241	130	80	0.43
	2669.057	8.20	226	233	133	80	0.43
266910210	2669.064	8.43	235	237	138	80	0.43
	2669.080	8.40	232	238	134	80	0.43
266910245	2669.071	8.37	230	241	130	80	0.43
	2669.093	8.48	235	236	132	80	0.43
266910280	2669.083	8.40	232	238	134	80	0.43
	2669.092	8.48	235	236	132	80	0.43
266910315	2669.087	8.21	226	233	134	80	0.43
	2669.105	8.19	228	239	140	80	0.42

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

SKAPS Industries

Engineered Synthetic Products, Inc.

Product : TN330-2-8
Project : Pine Hall Road Ash Landfill, 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.	XMD TENSILE lbs.	PUNCTURE lbs.	AOS us sieve	PERM-ABL cm/sec
266910350	2669.117	8.21	230	237	134	80	0.42
	2669.133	8.37	231	239	132	80	0.42
266910385	2669.123	8.48	233	235	137	80	0.42
	2669.121	8.48	233	235	137	80	0.42
266910420	2669.137	8.14	229	244	132	80	0.42
	2669.152	8.48	228	232	130	80	0.43
266910455	2669.144	8.40	225	230	138	80	0.42
	2669.157	8.31	230	243	130	80	0.43
266910490	2669.167	8.26	233	241	136	80	0.43
	2669.182	8.39	227	232	139	80	0.43
266910525	2669.165	8.26	233	241	136	80	0.43
	2669.180	8.39	227	232	139	80	0.43
266910560	2669.175	8.14	235	240	133	80	0.43
	2669.195	8.21	234	243	131	80	0.43
266910595	2669.192	8.60	230	234	131	80	0.43
	2669.205	8.15	231	238	136	80	0.43
266910630	2669.214	8.48	229	236	133	80	0.43
	2669.200	8.36	227	240	136	80	0.43
266910665	2669.224	8.32	226	230	139	80	0.43
	2669.217	8.13	235	242	133	80	0.43

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

APPENDIX II

(LABORATORY CONFORMANCE TESTING)

April 28, 2008

Mail To:

Mr. Cedric Ruhl
S & ME, Inc.
9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2310-41-05
Material(s) Tested:	10 SKAPS Double Sided Geocomposite(s)
Test(s) Requested:	Peel Strength (GRI-GC7) - GC Thickness (ASTM D 5199) - GN Density (ASTM D 1505) - GN

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

Sincerely,

Jarrett A. Nelson

Jarrett A. Nelson
Special Projects Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910001
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	5.8	6.7	8.2	6.9	8.8						**7.3**	1.2	1 min
A - MD Average Peel Strength (g/in)	2633	3042	3723	3133	3995						**3305**	548	
B - MD Average Peel Strength (ppi)	6.8	3.4	6.6	4.2	5.0						**5.2**	1.5	1 min
B - MD Average Peel Strength (g/in)	3087	1544	2996	1907	2270						**2361**	673	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	341	352	349	346	328	338	341	341	347	335	**342**	7	200 min
											328	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910037
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	7.6	6.6	5.3	3.7	10.3						**6.7**	2.5	1 min
A - MD Average Peel Strength (g/in)	3450	2996	2406	1680	4676						**3042**	1129	
B - MD Average Peel Strength (ppi)	5.5	4.1	4.6	2.6	7.0						**4.8**	1.6	1 min
B - MD Average Peel Strength (g/in)	2497	1861	2088	1180	3178						**2161**	742	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	322	344	326	340	332	338	347	347	343	345	**338**	9	200 min
											322	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910072
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	9.4	10.3	4.8	9.7	8.9						**8.6**	2.2	1 min
A - MD Average Peel Strength (g/in)	4268	4676	2179	4404	4041						**3913**	996	
B - MD Average Peel Strength (ppi)	4.7	8.0	4.9	6.2	6.2						**6.0**	1.3	1 min
B - MD Average Peel Strength (g/in)	2134	3632	2225	2815	2815						**2724**	600	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	350	329	341	345	352	344	343	347	345	327	**342**	8	200 min
											327	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910108
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	5.0	7.5	2.5	11.5	4.6						**6.2**	3.4	1 min
A - MD Average Peel Strength (g/in)	2270	3405	1135	5221	2088						**2824**	1564	
B - MD Average Peel Strength (ppi)	3.0	4.6	7.0	6.7	3.9						**5.0**	1.8	1 min
B - MD Average Peel Strength (g/in)	1362	2088	3178	3042	1771						**2288**	795	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	330	335	335	326	334	334	341	347	337	334	**335**	6	200 min
											326	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.953	0.954	0.954								**0.954**	0.001	0.94 min

MD Machine Direction TD Transverse Direction

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

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910143
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	4.6	6.7	8.1	8.6	10.8						**7.8**	2.3	1 min
A - MD Average Peel Strength (g/in)	2088	3042	3677	3904	4903						**3523**	1044	
B - MD Average Peel Strength (ppi)	5.6	5.0	4.5	6.3	6.5						**5.6**	0.8	1 min
B - MD Average Peel Strength (g/in)	2542	2270	2043	2860	2951						**2533**	384	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	343	329	348	331	352	351	349	345	348	344	**344**	8	200 min
											329	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910178
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	4.3	9.7	9.4	5.5	5.8						**6.9**	2.5	1 min
A - MD Average Peel Strength (g/in)	1952	4404	4268	2497	2633						**3151**	1112	
B - MD Average Peel Strength (ppi)	2.9	6.9	4.0	3.8	3.8						**4.3**	1.5	1 min
B - MD Average Peel Strength (g/in)	1317	3133	1816	1725	1725						**1943**	693	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	326	331	338	330	337	331	337	336	324	318	**331**	7	200 min
											318	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910215
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	8.2	8.7	7.7	4.0	6.9						**7.1**	1.9	1 min
A - MD Average Peel Strength (g/in)	3723	3950	3496	1816	3133						**3223**	843	
B - MD Average Peel Strength (ppi)	6.2	5.4	4.3	1.4	3.4						**4.1**	1.9	1 min
B - MD Average Peel Strength (g/in)	2815	2452	1952	636	1544						**1880**	847	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	352	352	349	349	349	339	342	345	340	354	**347**	5	200 min
											339	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910250
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	3.6	7.6	9.3	13.2	6.9						**8.1**	3.5	1 min
A - MD Average Peel Strength (g/in)	1634	3450	4222	5993	3133						**3686**	1595	
B - MD Average Peel Strength (ppi)	7.5	4.8	6.4	8.7	6.0						**6.7**	1.5	1 min
B - MD Average Peel Strength (g/in)	3405	2179	2906	3950	2724						**3033**	674	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	340	345	341	344	346	347	333	334	337	344	**341**	5	200 min
											333	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910287
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	7.5	4.3	9.1	12.3	6.9						**8.0**	3.0	1 min
A - MD Average Peel Strength (g/in)	3405	1952	4131	5584	3133						**3641**	1340	
B - MD Average Peel Strength (ppi)	7.0	2.3	7.0	7.1	5.7						**5.8**	2.1	1 min
B - MD Average Peel Strength (g/in)	3178	1044	3178	3223	2588						**2642**	931	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	335	343	339	342	343	343	340	345	343	342	**342**	3	200 min
											335	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910324
TRI Log #: E2310-41-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	11.1	2.7	7.0	10.1	11.1						**8.4**	3.6	1 min
A - MD Average Peel Strength (g/in)	5039	1226	3178	4585	5039						**3814**	1636	
B - MD Average Peel Strength (ppi)	6.4	1.8	6.6	5.4	5.6						**5.2**	1.9	1 min
B - MD Average Peel Strength (g/in)	2906	817	2996	2452	2542						**2343**	884	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	332	331	334	336	336	327	324	326	332	323	**330**	5	200 min
											323	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.953	0.953	0.953								**0.953**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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April 28, 2008

Mail To:

Mr. Cedric Ruhl
S & ME, Inc.
9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2310-41-06
Material(s) Tested:	9 SKAPS Double Sided Geocomposite(s)
Test(s) Requested:	Peel Strength (GRI-GC7) - GC Thickness (ASTM D 5199) - GN Density (ASTM D 1505) - GN

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

Sincerely,

Jarrett A. Nelson

Jarrett A. Nelson
Special Projects Manager
Geosynthetic Services Division
www.GeosyntheticTesting.com

GeosyntheticTesting.com
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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910360
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	7.4	8.3	2.5	7.9	10.1						**7.2**	2.8	1 min
A - MD Average Peel Strength (g/in)	3360	3768	1135	3587	4585						**3287**	1289	
B - MD Average Peel Strength (ppi)	5.1	5.6	6.6	6.4	5.6						**5.9**	0.6	1 min
B - MD Average Peel Strength (g/in)	2315	2542	2996	2906	2542						**2660**	283	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	322	331	334	338	331	330	337	338	330	337	**333**	5	200 min
											322	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910398
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	8.1	6.6	11.4	11.5	8.0						**9.1**	2.2	1 min
A - MD Average Peel Strength (g/in)	3677	2996	5176	5221	3632						**4140**	1003	
B - MD Average Peel Strength (ppi)	3.5	4.2	4.4	5.7	4.5						**4.5**	0.8	1 min
B - MD Average Peel Strength (g/in)	1589	1907	1998	2588	2043						**2025**	361	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	345	353	349	351	330	364	355	331	336	343	**346**	11	200 min
											330	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910432
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	7.4	4.2	5.9	9.3	5.9						**6.5**	1.9	1 min
A - MD Average Peel Strength (g/in)	3360	1907	2679	4222	2679						**2969**	869	
B - MD Average Peel Strength (ppi)	5.6	6.9	1.6	5.5	4.4						**4.8**	2.0	1 min
B - MD Average Peel Strength (g/in)	2542	3133	726	2497	1998						**2179**	906	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	337	334	329	339	344	333	339	347	349	331	**338**	7	200 min
											329	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910472
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	8.2	11.0	7.5	4.5	7.6						**7.8**	2.3	1 min
A - MD Average Peel Strength (g/in)	3723	4994	3405	2043	3450						**3523**	1050	
B - MD Average Peel Strength (ppi)	4.6	6.4	5.5	7.8	0.8						**5.0**	2.6	1 min
B - MD Average Peel Strength (g/in)	2088	2906	2497	3541	363						**2279**	1198	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	352	331	338	327	334	338	331	331	349	322	**335**	9	200 min
											322	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910512
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	9.4	3.9	10.1	10.1	11.8						**9.1**	3.0	1 min
A - MD Average Peel Strength (g/in)	4268	1771	4585	4585	5357						**4113**	1370	
B - MD Average Peel Strength (ppi)	6.2	4.3	8.1	5.9	8.1						**6.5**	1.6	1 min
B - MD Average Peel Strength (g/in)	2815	1952	3677	2679	3677						**2960**	732	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	331	331	330	336	335	338	333	319	336	339	**333** **319**	6 << min	200 min
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910544
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	6.5	10.4	12.3	3.2	7.1						**7.9**	3.5	1 min
A - MD Average Peel Strength (g/in)	2951	4722	5584	1453	3223						**3587**	1610	
B - MD Average Peel Strength (ppi)	5.9	5.5	8.5	6.5	9.4						**7.2**	1.7	1 min
B - MD Average Peel Strength (g/in)	2679	2497	3859	2951	4268						**3251**	773	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	355	338	321	348	311	328	345	334	336	338	**335**	13	200 min
											311	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910584
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	7.9	5.3	10.7	9.7	8.6						**8.4**	2.1	1 min
A - MD Average Peel Strength (g/in)	3587	2406	4858	4404	3904						**3832**	932	
B - MD Average Peel Strength (ppi)	4.8	2.0	4.6	6.1	5.9						**4.7**	1.6	1 min
B - MD Average Peel Strength (g/in)	2179	908	2088	2769	2679						**2125**	743	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	340	348	349	353	332	333	343	329	337	333	**340**	8	200 min
											329	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.955	0.955	0.955								**0.955**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910620
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	10.5	8.3	3.8	8.9	15.1						**9.3**	4.1	1 min
A - MD Average Peel Strength (g/in)	4767	3768	1725	4041	6855						**4231**	1851	
B - MD Average Peel Strength (ppi)	5.4	6.3	2.7	5.0	9.0						**5.7**	2.3	1 min
B - MD Average Peel Strength (g/in)	2452	2860	1226	2270	4086						**2579**	1036	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	324	331	335	324	349	348	352	343	335	348	**339**	11	200 min
											324	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.954	0.954	0.954								**0.954**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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GEOCOMPOSITE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: SKAPS Double Sided Geocomposite
Sample Identification: 266910655
TRI Log #: E2310-41-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Peel Strength (GRI GC7)													
A - MD Average Peel Strength (ppi)	6.6	9.9	9.5	8.9	7.9						**8.6**	1.3	1 min
A - MD Average Peel Strength (g/in)	2996	4495	4313	4041	3587						**3886**	604	
B - MD Average Peel Strength (ppi)	3.4	7.4	5.6	5.7	4.5						**5.3**	1.5	1 min
B - MD Average Peel Strength (g/in)	1544	3360	2542	2588	2043						**2415**	678	
Note: A and B represent a randomly assigned top and bottom of the sample													
Thickness (ASTM D 5199)				**Geonet Component**									
Thickness (mils)	339	327	339	344	335	338	344	338	340	329	**337**	6	200 min
											327	<< min	
Density (ASTM D 1505)				**Geonet Component**									
Density (g/cm3)	0.953	0.953	0.953								**0.953**	0.000	0.94 min

MD Machine Direction TD Transverse Direction

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SUBMITTAL NO. 2

LINEAR LOW-DENSITY POLYETHYLENE (LLDPE) GEOMEMBRANE

PINE HALL ROAD ASH LANDFILL CLOSURE
PERMIT NO. 85-03
DUKE ENERGY
BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA
S&ME Project No. 1356-07-017 Ph. 3

Prepared for:

Duke Energy
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:

S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273
(704) 523-4726

January 2009

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1. MATERIAL

A 40-mil thick linear low density polyethylene (LLDPE) geomembrane and SKAPS double-sided geonet composite drainage layer were installed above the compacted Subgrade. The geomembrane, “Microspike™" was manufactured by Agru America of Georgetown, South Carolina and consisted of a 40-mil thick double-sided textured geomembrane with asperity formed by flat die extrusion calendaring.

2. LLDPE GEOMEMBRANE MANUFACTURER AND CONTRACTOR

The geosynthetic contractor was the party responsible for installation of the geomembrane. The manufacturer was the party that supplies the geomembrane products. The geomembrane was installed by ESI and supplied by Agru America.

3. GEOMEMBRANE MATERIALS TESTING

3.1 Manufacturer Quality Control (MQC) Testing

MQC test samples were collected at the manufacturing plant and tested in accordance with the approved plans and specifications. The MQC testing results and material certifications are included in the attached Appendix I.

3.2 Conformance Testing

Prior to material production, interface friction testing was performed on representative samples for the following interfaces:

- Subgrade (ash) to LLDPE (long spike side)
- Subgrade (ash) to LLDPE (short spike side)
- Subgrade (soil) to LLDPE (long spike side)
- Subgrade (soil) to LLDPE (short spike side)
- LLDPE (long spike side) to Geonet Composite
- LLDPE (short spike side) to Geonet Composite
- Geonet Composite to Compacted Soil Cover.

Interface friction results are included in Appendix II.

Following material production, samples were taken at the factory and sent to an independent laboratory for conformance testing in accordance with the approved plans and specifications. Conformance test results are presented in Appendix III.

A summary of interface friction, MQC, and conformance testing is presented in the Executive Summary, Appendix II.

4. GEOMEMBRANE INSTALLATION

When the material arrived on-site, the material was observed and monitored during unloading. The material was temporarily stored on site until deployment. Installation and CQA activities were performed in general accordance with the approved plans and specifications.

4.1 Subgrade Certification

Prior to the placement of geomembrane, a construction quality assurance officer and the Geosynthetic Installer's superintendent observed the subgrade condition. For this project, the subgrade was monitored and accepted daily for each day of geomembrane deployment. The installer's superintendent and construction quality assurance officer signed a "Subgrade Certification" form as presented in Appendix IV. In general, the subgrade was rolled with a smooth drum roller prior to geomembrane placement.

4.2 Geomembrane Deployment

The LLDPE geomembrane was deployed using a telescoping forklift. The forklift supported a steel rod with straps attached to the rod that inserted into the ends of each roll and allowed the material to be pulled directly off of the roll while suspended above the ground. The material was aligned utilizing manpower.

Once the panels were placed, each panel was assigned a panel number. The panel number, length, corresponding roll number, and date were recorded and documented on the “Geomembrane Deployment Report” CQA forms included in Appendix V. Care was taken to provide excess length through the anchor trenches to allow for thermal expansion and contraction of the geomembrane. The panels were then overlapped approximately four inches in preparation for double hot wedge fusion welding.

4.3 Field Seaming

In general, panel to panel field seams were constructed by double hot wedge fusion welding, several seams were welded using extrusion welding. Prior to welding, a trial seam was performed in accordance with the specifications. The “Geomembrane Trial Seam Log” CQA forms are included in Appendix VI for reference. At the beginning of each seam, the welding machine number, welding technician's initials, welding speed and temperature, and the time for beginning the seam were recorded on the geomembrane and in the "Geomembrane Seam Log" CQA forms included in Appendix VII.

Upon completion of each seam, the seam was non-destructively tested in accordance with the project requirements. Fusion welds were air pressure tested and extrusion welds were tested using a vacuum box. The non-destructive testing results were recorded on the "Geomembrane Seam" forms included in Appendix VII.

4.4 Defects and Repairs

S&ME personnel observed panel deployment and field seaming activities and recorded defects and repairs resulting from installation damage, laboratory destructive test sampling, improper welding techniques, or seam ends and intersections. Defects found on the panels were identified and repaired as documented on the “Geomembrane Defect Log” in Appendix VIII.

Defects that did not fully penetrate the liner were repaired with a "grind-and-weld" repair. Repairs were patched using geomembrane pieces by grinding the periphery of the area to be patched, using a heat gun to “tack” the patch over the defect, then extrusion welding the patch over the defect. Repairs were then vacuum box tested as recorded in the "Geomembrane Repair Testing Log" forms in Appendix IX.

The Geosynthetic Installer repair logs are also included in Appendix IX to supplement S&ME “Geomembrane Defect Logs” and “Geomembrane Repair Testing Logs”.

4.5 Laboratory Destructive Testing

Laboratory Destructive Test (LDT) samples were taken at approximately every 500 linear feet of field seaming. Approximately 83,927 linear feet of seam was installed within the landfill closure area. Samples were taken from 168 test locations and tested by S&ME, Inc. using a calibrated tensiometer. Ten 1-inch wide specimens were cut from each LDT sample. Five specimens were tested for peel adhesion and the other five tested for bonded shear strength.

Of the 170 LDT samples tested, one LDT sample did not conform to the performance criteria described in the approved CQA plan and technical specifications. The failing destructive test was located on a tie-in seam, the failure was isolated by retrieving additional LDT samples 10 feet from each end of the failing destructive test sample. The entire tie-in seam from that day’s work was capped. An LDT sample taken from the previous day’s work met the project testing requirements. The results of the laboratory destructive testing are included in Appendix X. A summary of laboratory destructive testing is also presented in the Executive Summary, Appendix II.

4.6 Geomembrane As-Built Drawing

Geomembrane as-built drawings are included in Appendix XI for reference. Drawing 1, “LLDPE Geomembrane Panel Layout and Repairs”, shows the location of panels, seams, and repairs including LDT locations.

APPENDIX I

(MATERIAL CERTIFICATIONS AND FACTORY TESTING)

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.
7943 PECUE LANE SUITE A BATON ROUGE, LA 70809 TEL (225) 291–2700 FAX (225) 291-2788

TO: Morgan Corporation
11700 Reames Road
Charlotte, NC 28269
TEL # : (704) 598-9117
ATTENTION: D. Craig Greeson

DATE: June 13, 2008
JOB NAME: Duke Power
Pine Hall Road Ash Landfill Closure
TRANSMITTAL NUMBER: 06
ESI PROJECT NUMBER: 07-12-1269

WE ARE SENDING YOU [X] ATTACHED [ ] UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

[ ] SHOP DRAWINGS [ ] PRINTS [ ] PLANS [ ] SAMPLES [ ] SPECIFICATIONS

[ ] COPY OF LETTER [ ] CHANGE ORDER [ ] _____

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
1	6/13/08			AGRU 60 Mil HDPE Textured Liner certs for rolls 1 -1 4	

ACTION (*)

[ ] AS - AS REQUESTED [ ] FA - FOR APPROVAL [ ] _____

[ ] F – FILE [ ] RC - REVIEW & COMMENT [ ] _____

COMMENTS: ROLLS SAMPLED AND SENT TO TRI 212115 AND 212224

SENT VIA:

[X] E-MAIL [ ] MAIL [ ] OVERNIGHT [ ] HAND DELIVERY [ ] OTHER

COPY TO: _____

BY: Kevin Simms

If enclosures are not as noted, please notify us at once.....

microspike liner				ESI Pine Hall Rd Ash LF doc 10168				PO#	9038
LLDPE				Belews Creek, NC					
40 mil	DIMENSIONS			131 rolls 40 LL microspike			131		left
		appx							
roll #	width	length	area	26 spools 5mm LL weld rod >> check qty !			wgt		lot
(C)212115 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	1	3062	sqs	CWN811430
(C)212116 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	2	3062		CWN811430
(C)212117 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	3	3070		CWN811430
(C)212120 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	4	3072		CWN811430
(C)212121 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	5	3086		CWN811430
(C)212222 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	6	3076		CWN811430
(C)212223 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	7	3084		CWN811430
(C)212224 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	8	3074	sqs	CWN811430
(C)212225 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	9	3064		CWN811430
(C)212226 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	10	3066		CWN811430
(C)212227 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	11	3078		CWN811430
(C)212228 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	12	3072		CWN811430
(C)212229 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	13	3080		CWN811430
(C)212230 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	14	3068		CWN811430

agru america quality control dept.

quality certificate

ROLL # **212115-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.94**	mm	**37**	mil
	MAX:	**1.13**	mm	**44**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.06**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.33**	
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	**23**	N/mm	**131**	ppi			**3,150**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**525.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**145.5**	N					**32.704**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**359.7**	N					**80.861**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.0**	N					**90.368**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

Signature.....
Quality Control Department

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ROLL # **212116-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.33**	
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	**23**	N/mm	**134**	ppi			**3,150**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**525.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**145.5**	N					**32.704**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**359.7**	N					**80.861**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.0**	N					**90.368**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
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Destination **Belews Creek, NC**

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ROLL # **212117-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.07**	mm	**42**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.04**	mm	**41**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.33**	
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	**22**	N/mm	**127**	ppi	**3,099**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**506.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**145.5**	N			**32.704**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**359.7**	N			**80.861**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.0**	N			**90.368**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
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Destination **Belews Creek, NC**

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ROLL # **212120-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.97**	mm	**38**	mil
	MAX:	**1.09**	mm	**43**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.04**	mm	**41**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.33**	
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	**22**	N/mm	**127**	ppi			**3,099**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**506.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**145.5**	N					**32.704**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**359.7**	N					**80.861**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.0**	N					**90.368**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
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ROLL # **212121-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.14**	mm	**45**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.06**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.33**	
Carbon Black Content ASTM D4218	Range	%				**2.27**	
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	**3,099**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**506.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**145.5**	N			**32.704**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**359.7**	N			**80.861**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.0**	N			**90.368**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

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ROLL # **212222-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.94**	mm	**37**	mil
	MAX:	**1.14**	mm	**45**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.06**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.33**	
Carbon Black Content ASTM D4218	Range		%					**2.26**	
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			**3,057**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**521.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N					**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N					**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N					**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

Signature.....
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quality certificate

ROLL # **212223-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet
OIT(Standard) ASTM D3895 minutes	**173**	

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.33**	
Carbon Black Content ASTM D4218	Range	%						**2.26**	
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	**132**	ppi			**3,057**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**521.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N					**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N					**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N					**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

Signature.....
Quality Control Department

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agru america quality control dept.

quality certificate

ROLL # **212224-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.94**	mm	**37**	mil
	MAX:	**1.08**	mm	**43**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.04**	mm	**41**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.33**	
Carbon Black Content ASTM D4218	Range	%				**2.26**	
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	**3,057**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**521.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N			**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N			**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N			**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

Signature.....
Quality Control Department

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quality certificate

ROLL # **212225-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.09**	mm	**43**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.06**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.33**	
Carbon Black Content ASTM D4218	Range		%					**2.26**	
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			**3,057**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**521.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N					**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N					**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N					**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

Signature.....
Quality Control Department

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quality certificate

ROLL # **212226-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.98**	mm	**39**	mil
	MAX:	**1.12**	mm	**44**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.06**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.33**	
Carbon Black Content ASTM D4218	Range			%				**2.26**	
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		**3,057**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**521.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N					**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N					**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N					**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

Signature.....
Quality Control Department

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agru america quality control dept.

quality certificate

ROLL # **212227-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.14**	mm	**45**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.07**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.33**	
Carbon Black Content ASTM D4218	Range		%					**2.17**	
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			**2,963**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**484.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N					**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N					**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N					**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

Signature.....
Quality Control Department

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quality certificate

ROLL # **212228-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.09**	mm	**43**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.07**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.33**	
Carbon Black Content ASTM D4218	Range			%				**2.17**	
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		**2,963**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**484.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N					**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N					**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N					**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-18-08**

Signature.....
Quality Control Department

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12/23/05

agru america quality control dept.

quality certificate

ROLL # **212229-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.14**	mm	**45**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.04**	mm	**41**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.33**	
Carbon Black Content ASTM D4218	Range			%				**2.17**	
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		**121**	ppi		**2,963**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**484.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N					**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N					**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N					**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-21-08**

Signature.....
Quality Control Department

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12/23/05

agru america quality control dept.

quality certificate

ROLL # **212230-08** Lot #: **CWN811430** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.10**	mm	**43**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.06**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

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

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.932**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.33**	
Carbon Black Content ASTM D4218	Range			%				**2.17**	
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		**124**	ppi		**2,963**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**484.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.30**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**139.6**	N					**31.389**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**351.7**	N					**79.080**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**410.5**	N					**92.280**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **3-21-08**

Signature.....

Quality Control Department

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CoA Date: 01/28/2008

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87579777
PO #: 004726
Weight: 183350 LB
Ship Date: 01/28/2008
Package: BULK
Mode: Hopper Car
Car #: GOCX058019
Seal No: 471431

Product: PE 7104 BULK

Lot Number: CWN811430

Property	Test Method	Value	Unit
Melt Index	ST-103	0.33	g/10mi
HLMI	ST-122	14.55	g/10mi
Pellet Count	ST-905	41	pel/g
Production date		20071229	
Density	ST-292	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.

Kay F. Donaldson
Quality Control Supervisor

For CoA questions contact Tom Scheirman at 832-813-4637

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.
7943 PECUE LANE SUITE A BATON ROUGE, LA 70809 TEL (225) 291–2700 FAX (225) 291-2788

TO: Morgan Corporation
11700 Reames Road
Charlotte, NC 28269
TEL # : (704) 598-9117
ATTENTION: D. Craig Greeson

DATE: June 16, 2008
JOB NAME: Duke Power
Pine Hall Road Ash Landfill Closure
TRANSMITTAL NUMBER: 07
ESI PROJECT NUMBER: 07-12-1269

WE ARE SENDING YOU [X] ATTACHED [ ] UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

[ ] SHOP DRAWINGS [ ] PRINTS [ ] PLANS [ ] SAMPLES [ ] SPECIFICATIONS

[ ] COPY OF LETTER [ ] CHANGE ORDER [ ] _____

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
1	6/16/08			AGRU 60 Mil HDPE Textured Liner certs for rolls 15 -80	

ACTION (*)

[ ] AS - AS REQUESTED [ ] FA - FOR APPROVAL [ ] _____

[ ] F – FILE [ ] RC - REVIEW & COMMENT [ ] _____

COMMENTS: ROLLS SAMPLED BY TRI ARE HIGHLIGHTED ON ROLL LIST

SENT VIA:

[X] E-MAIL [ ] MAIL [ ] OVERNIGHT [ ] HAND DELIVERY [ ] OTHER

COPY TO: _____

BY: Kevin Simms

If enclosures are not as noted, please notify us at once.....

microspike liner				ESI Pine Hall Rd Ash LF doc 10168				PO#	9038
LLDPE				Belews Creek, NC					
40 mil		DIMENSIONS		131 rolls 40 LL microspike			117		left
		appx							
roll #	width	length	area	26 spools 5mm LL weld rod			wgt		lot
(C)224468 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	15	3300	Stage	CXB810670
(C)224469 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	16	3304		CXB810670
(C)224470 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	17	3300		CXB810670
(C)224571 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	18	3308		CXB810670
(C)224572 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	19	3300		CXB810670
(C)224573 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	20	3296		CXB810670
(C)224574 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	21	3238		CXB810670
(C)224575 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	22	3226	Stage	CXB810670
(C)224576 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	23	3236		CXB810670
(C)224577 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	24	3232		CXB810670
(C)224578 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	25	3242		CXB810670
(C)224579 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	26	3238		CXB810670
(C)224580 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	27	3224		CXB810670
(C)224581 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	28	3240		CXB810670
(C)224582 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	29	3236	Stage	CXB810670
(C)224583 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	30	3226		CXB810670
(C)224584 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	31	3232		CXB810670
(C)224585 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	32	3226		CXB810670
(C)224586 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	33	3226		CXB810670
(C)224587 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	34	3236		CXB810670
(C)224588 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	35	3228		CXB810670
(C)224689 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	36	3238		CXB810670
(C)224690 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	37	3234	Stage	CXB810670
(C)224691 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	38	3230		CXB810670
(C)224692 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	39	3233		CXB810670
(C)224693 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	40	3226		CXB810670
(C)224694 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	41	3226		CXB810670
(C)224695 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	42	3232		CXB810670
(C)224696 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	43	3236		CXB810670
(C)224697 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	44	3234	Stage	CXB810670
(C)224698 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	45	3232		CXB810670
(C)224699 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	46	3224		CXB810670
(C)224600 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	47	3226		CXB810670
(C)224601 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	48	3232		CXB810670
(C)224602 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	49	3236		CXB810670
(C)224603 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	50	3234		CXB810670
(C)224604 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	51	3232	Stage	CXB810670
(C)224605 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	52	3220		CXC811720
(C)224606 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	53	3226		CXC811720
(C)224607 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	54	3232		CXC811720
(C)224608 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	55	3246		CXC811720
(C)224609 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	56	3238		CXC811720
(C)224710 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	57	3246		CXC811720
(C)224711 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	58	3238	Stage	CXC811720
(C)224712 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	59	3224		CXC811720
(C)224713 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	60	3228		CXC811720
(C)224714 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	61	3202		CXC811720
(C)224715 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	62	3218		CXC811720
(C)224716 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	63	3220		CXC811720
(C)224717 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	64	3228		CXC811720
(C)224718 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	65	3226		CXC811720
(C)224719 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	66	3248	Stage	CXC811720
(C)224720 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	67	3246		CXC811720
(C)224721 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot	68	3248		CXC811720

microspike liner				ESI Pine Hall Rd Ash LF doc 10168		PO#	9038
LLDPE				Belews Creek, NC			
40 mil	DIMENSIONS			131 rolls 40 LL microspike	117		left
		appx					
roll #	width	length	area	26 spools 5mm LL weld rod	wgt		lot
(C)224722 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 69	3222		CXC811720
(C)224723 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 70	3224		CXC811720
(C)224724 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 71	3228		CXC811720
(C)224725 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 72	3218		CXC811720
(C)224726 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 73	3218	Stage	CXC811720
(C)224727 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 74	3214		CXC811720
(C)224728 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 75	3228		CXC811720
(C)225101 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 76			CXC811720
(C)225102 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 77			CXC811720
(C)225103 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 78			CXC811720
(C)225104 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 79			CXC811720
(C)225105 .08	7	182.9	1280.3	ESI Belews Creek, NC 131tot 80		Stage	CXC811720

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ROLL # **224468-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.07**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range			%				**2.75**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**140**	ppi		**3,323**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**521.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**169.7**	N					**38.152**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**426.3**	N					**95.850**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**438.3**	N					**98.532**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224469-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.41**	mm	**56**	mil
Asperity GRI GM12: **24** mil	AVE:	**1.16**	mm	**46**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range			%				**2.75**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm		**152**	ppi		**3,323**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**521.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**169.7**	N					**38.152**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**426.3**	N					**95.850**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**438.3**	N					**98.532**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224470-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.75**	
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	**148**	ppi			**3,323**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**521.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**169.7**	N					**38.152**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**426.3**	N					**95.850**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**438.3**	N					**98.532**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224571-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.09**	mm	**43**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.15**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.75**	
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	**3,323**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**521.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**169.7**	N			**38.152**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**426.3**	N			**95.850**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**438.3**	N			**98.532**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224572-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.75**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**145**	ppi			**3,323**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**521.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**169.7**	N					**38.152**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**426.3**	N					**95.850**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**438.3**	N					**98.532**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224573-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.18**	
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	**149**	ppi			**3,412**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**518.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N					**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N					**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N					**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224574-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.18**	
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	**148**	ppi			**3,412**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**518.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N					**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N					**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N					**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224575-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.18**	
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	**3,412**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**518.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N			**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N			**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N			**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224576-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.18**	
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	**148**	ppi	**3,412**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**518.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N			**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N			**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N			**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224577-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.35**	
Carbon Black Content ASTM D4218	Range	%						**2.18**	
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	**146**	ppi			**3,412**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**518.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N					**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N					**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N					**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224578-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.22**	mm	**48**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range			%				**2.28**	
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		**137**	ppi		**3,201**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**503.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N					**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N					**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N					**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224579-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.35**	
Carbon Black Content ASTM D4218	Range	%						**2.28**	
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			**3,201**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**503.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N					**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N					**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N					**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224580-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.35**	
Carbon Black Content ASTM D4218	Range	%						**2.28**	
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			**3,201**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**503.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N					**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N					**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N					**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224581-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range			%				**2.28**	
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		**137**	ppi		**3,201**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**503.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N					**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N					**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N					**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224582-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.28**	
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	**139**	ppi	**3,201**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**503.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**156.2**	N			**35.125**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**424.7**	N			**95.480**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.8**	N			**95.047**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224583-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **24** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.23**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**142**	ppi			**3,281**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**547.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N					**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N					**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N					**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224584-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.23**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**145**	ppi	**3,281**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**547.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N			**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N			**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N			**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224585-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.23**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**142**	ppi	**3,281**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**547.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N			**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N			**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N			**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224586-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.25**	mm	**49**	mil
Asperity GRI GM12: **35** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.23**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**143**	ppi	**3,281**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**547.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N			**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N			**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N			**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224587-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.35**	
Carbon Black Content ASTM D4218	Range	%						**2.23**	
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	**146**	ppi			**3,281**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**547.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N					**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N					**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N					**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224588-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.15**	mm	**45**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.35**	
Carbon Black Content ASTM D4218	Range	%						**2.52**	
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	**140**	ppi			**3,259**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**521.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N					**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N					**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N					**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224689-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range			%				**2.52**	
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		**140**	ppi		**3,259**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**521.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N					**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N					**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N					**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224690-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.52**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**142**	ppi	**3,259**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**521.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N			**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N			**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N			**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224691-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.35**	
Carbon Black Content ASTM D4218	Range	%						**2.52**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**141**	ppi			**3,259**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**521.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N					**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N					**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N					**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224692-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **34** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.52**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**145**	ppi	**3,259**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**521.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.6**	N			**34.992**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**380.6**	N			**85.559**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**401.1**	N			**90.180**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224693-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.52**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**143**	ppi	**3,330**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**541.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N			**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N			**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N			**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224694-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.98**	mm	**39**	mil
	MAX:	**1.21**	mm	**48**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range			%				**2.52**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**144**	ppi		**3,330**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**541.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N					**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N					**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N					**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224695-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **24** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.30**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**144**	ppi			**3,330**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**541.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N					**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N					**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N					**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224696-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.91**	mm	**36**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.30**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**142**	ppi			**3,330**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**541.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N					**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N					**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N					**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224697-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range			%				**2.30**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**142**	ppi		**3,330**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**541.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N					**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N					**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N					**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224698-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.96**	mm	**38**	mil
	MAX:	**1.21**	mm	**48**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range	%				**2.28**	
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	**149**	ppi	**3,508**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**556.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N			**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N			**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N			**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224699-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **24** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.35**	
Carbon Black Content ASTM D4218	Range			%				**2.28**	
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		**149**	ppi		**3,508**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**556.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N					**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N					**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N					**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224600-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.28**	
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	**151**	ppi			**3,508**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**556.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N					**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N					**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N					**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224601-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.15**	mm	**45**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.35**	
Carbon Black Content ASTM D4218	Range	%						**2.28**	
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	**151**	ppi			**3,508**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**556.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N					**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N					**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N					**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224602-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.28**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**152**	ppi			**3,508**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**556.1**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**153.8**	N					**34.578**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**365.7**	N					**82.215**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**406.9**	N					**91.480**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224603-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.12**	mm	**44**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.54**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**152**	ppi			**3,575**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**550.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224604-08** Lot #: **CXB810670** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.96**	mm	**38**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **142**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.35**	
Carbon Black Content ASTM D4218	Range		%					**2.54**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**155**	ppi			**3,575**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**550.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224605-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**	
Carbon Black Content ASTM D4218	Range	%						**2.45**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**28**	N/mm	**158**	ppi			**3,575**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**550.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224606-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.45**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**156**	ppi			**3,575**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**550.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224607-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **36** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.45**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**156**	ppi			**3,575**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**550.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224608-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **35** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.48**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**142**	ppi	**3,319**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**539.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N			**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N			**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N			**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224609-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.48**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**144**	ppi		**3,319**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**539.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224710-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.26**	mm	**50**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.48**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**144**	ppi		**3,319**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**539.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224711-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.48**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**144**	ppi			**3,319**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**539.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224712-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**	
Carbon Black Content ASTM D4218	Range	%						**2.48**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**144**	ppi			**3,319**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**539.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**157.1**	N					**35.322**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**355.3**	N					**79.889**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**402.2**	N					**90.424**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224713-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**	
Carbon Black Content ASTM D4218	Range	%						**2.51**	
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	**149**	ppi			**3,469**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**733.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N					**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N					**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N					**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224714-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.51**	
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		**3,469**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**733.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N					**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N					**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N					**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224715-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.51**	
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			**3,469**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**733.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N					**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N					**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N					**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224716-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.97**	mm	**38**	mil
	MAX:	**1.21**	mm	**48**	mil
Asperity GRI GM12: **32** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.51**	
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	**3,469**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**733.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N			**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N			**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N			**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224717-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.51**	
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		**3,469**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**733.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N					**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N					**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N					**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224718-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.97**	mm	**38**	mil
	MAX:	**1.21**	mm	**48**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.39**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**26**	N/mm	**146**	ppi	**3,367**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**535.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N			**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N			**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N			**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224719-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.39**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**26**	N/mm	**146**	ppi	**3,367**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**535.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N			**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N			**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N			**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224720-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.39**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**26**	N/mm	**146**	ppi			**3,367**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**535.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N					**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N					**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N					**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224721-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.96**	mm	**38**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.39**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**26**	N/mm	**146**	ppi	**3,367**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**535.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N			**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N			**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N			**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224722-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.39**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**26**	N/mm	**146**	ppi			**3,367**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**535.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.5**	N					**32.262**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**324.8**	N					**73.020**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**422.3**	N					**94.952**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224723-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.08**	mm	**43**	mil
	MAX:	**1.22**	mm	**48**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.15**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	**mm**	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS
Specific Gravity ASTM D792	Density	g/cc				**.934**
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**
Carbon Black Content ASTM D4218	Range	%				**2.40**
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**29**	N/mm	**167**	ppi	**3,680** psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**540.0**
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N			**30.703** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N			**89.703** lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N			**96.342** lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224724-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.21**	mm	**48**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.15**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.40**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**29**	N/mm		**167**	ppi		**3,680**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**540.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N					**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N					**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N					**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **224725-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.08**	mm	**43**	mil
	MAX:	**1.29**	mm	**51**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.17**	mm	**46**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.40**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**30**	N/mm		**170**	ppi		**3,680**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**540.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N					**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N					**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N					**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

Signature.....

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ROLL # **224726-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.10**	mm	**43**	mil
	MAX:	**1.37**	mm	**54**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.19**	mm	**47**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.40**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**30**	N/mm		**172**	ppi		**3,680**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**540.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N					**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N					**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N					**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

Signature.....

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quality certificate

ROLL # **224727-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.13**	mm	**44**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.19**	mm	**47**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.40**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**30**	N/mm	**172**	ppi	**3,680**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**540.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N			**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N			**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N			**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **224728-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.31**	mm	**52**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.17**	mm	**46**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.36**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**24**	N/mm	**137**	ppi	**2,971**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**553.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N			**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N			**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N			**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **225101-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.07**	mm	**42**	mil
	MAX:	**1.25**	mm	**49**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.16**	mm	**46**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.36**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**24**	N/mm	**136**	ppi	**2,971**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**553.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N			**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N			**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N			**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

Signature.....

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ROLL # **225102-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.29**	mm	**51**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.16**	mm	**46**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**	
Carbon Black Content ASTM D4218	Range	%						**2.36**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**24**	N/mm	**136**	ppi			**2,971**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**553.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N					**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N					**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N					**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

Signature.....
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ROLL # **225103-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.36**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**23**	N/mm	**130**	ppi			**2,971**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**553.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N					**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N					**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N					**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

Signature.....
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ROLL # **225104-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	**mm**	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

							TEST RESULTS
Specific Gravity ASTM D792	Density	g/cc					**.934**
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min					**.34**
Carbon Black Content ASTM D4218	Range	%					**2.36**
Carbon Black Dispersion ASTM D5596	Category						**10 in Cat. 1**
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**23**	N/mm	**131**	ppi	**2,971**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%					**553.0**
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%					**-.75**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**136.6**	N			**30.703**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**399.0**	N			**89.703**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**428.5**	N			**96.342**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

Signature.....

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ROLL # **225105-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.43**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**143**	ppi		**3,304**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**537.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

Signature.....

Quality Control Department

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12/23/05

CoA Date: 02/25/2008

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87597982
PO #: 004732
Weight: 181950 LB
Ship Date: 02/25/2008
Package: BULK
Mode: Hopper Car
Car #: PSPX006899
Seal No: 471921

Product: PE 7104 BULK

Lot Number: CXB810670

Property	Test Method	Value	Unit
Melt Index	ST-103	0.35	g/10mi
HLMI	ST-122	15.02	g/10mi
Pellet Count	ST-905	39	pel/g
Production date		20080222	
Density	ST-292	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.

Kay F. Donaldson
Quality Control Supervisor

For CoA questions contact Tom Scheirman at 832-813-4637

CoA Date: 03/29/2008

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87621824
PO #: 004732
Weight: 184400 LB
Ship Date: 03/29/2008
Package: BULK
Mode: Hopper Car
Car #: CHVX896758
Seal No: 475648

Product: PE 7104 BULK

Cust # .

Lot Number: CXC811720

Property	Test Method	Value	Unit
Melt Index	ST-103	0.34	g/10mi
HLMI	ST-122	14.39	g/10mi
Pellet Count	ST-905	40	pel/g
Production date		20080328	
Density	ST-292	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.

Kay F. Donaldson
Quality Control Supervisor

For CoA questions contact Tom Scheirman at 832-813-4637

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.
7943 PECUE LANE SUITE A BATON ROUGE, LA 70809 TEL (225) 291–2700 FAX (225) 291-2788

TO: Morgan Corporation
11700 Reames Road
Charlotte, NC 28269
TEL # : (704) 598-9117
ATTENTION: D. Craig Greeson

DATE: June 25, 2008
JOB NAME: Duke Power
Pine Hall Road Ash Landfill Closure
TRANSMITTAL NUMBER: 09
ESI PROJECT NUMBER: 07-12-1269

WE ARE SENDING YOU [X] ATTACHED [ ] UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

[ ] SHOP DRAWINGS [ ] PRINTS [ ] PLANS [ ] SAMPLES [ ] SPECIFICATIONS

[ ] COPY OF LETTER [ ] CHANGE ORDER [ ] _____

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
1	6/25/08			AGRU 60 Mil Textured HDPE Liner Certs rolls 81 to 131	

ACTION (*)

[ ] AS - AS REQUESTED [ ] FA - FOR APPROVAL [ ] _____

[ ] F – FILE [ ] RC - REVIEW & COMMENT [ ] _____

COMMENTS:

SENT VIA:

[X] E-MAIL [ ] MAIL [ ] OVERNIGHT [ ] HAND DELIVERY [ ] OTHER

COPY TO: _____

BY: Kevin Simms

If enclosures are not as noted, please notify us at once.....

microspike liner				ESI Pine Hall Rd Ash LF doc 10168			PO#	9038
LLDPE				Belews Creek, NC				
40 mil	DIMENSIONS			131 rolls 40 LL microspike		61		left
roll #	width	appx length	area	26 spools 5mm LL weld rod >> check qty !		wgt		lot
(C)225106 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 81	3210		CXC811720
(C)225107 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 82	3230		CXC811720
(C)225108 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 83	3226		CXC811720
(C)225109 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 84	3230		CXC811720
(C)225110 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 85	3232		CXC811720
(C)225111 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 86	3234		CXC811720
(C)225112 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 87	3232		CXC811720
(C)225113 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 88	3240		CXC811720
(C)225114 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 89	3236		CXC811720
(C)225115 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 90	3238		CXC811720
(C)225116 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 91	3240		CXC811720
(C)225117 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 92	3244		CXC811720
(C)225118 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 93	3246		CXC811720
(C)225119 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 94	3238		CXC811720
(C)225120 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 95	3244		CXC811720
(C)225221 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 96	3248		CXC811720
(C)225222 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 97	3234		CXC811720
(C)225223 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 98	3238		CXC811720
(C)225224 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 99	3228		CXC811720
(C)225225 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 100	3244		CXC811720
(C)225226 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 101	3244		CXC811720
(C)225227 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 102	3236		CXC811720
(C)225228 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 103	3238		CXC811720
(C)225354 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 104	3270		CXC811730
(C)225355 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 105	3278		CXC811730
(C)225356 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 106	3270		CXC811730
(C)225357 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 107	3270		CXC811730
(C)225358 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 108	3272		CXC811730
(C)225459 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 109	3270	Stage	CXC811730
(C)225460 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 110	3268		CXC811730
(C)225461 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 111	3264		CXC811730
(C)225462 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 112	3258		CXC811730
(C)225463 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 113	3256		CXC811730
(C)225464 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 114	3262		CXC811730
(C)225465 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 115	3270		CXC811730
(C)225466 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 116	3238		CXC811730
(C)225467 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 117	3288	Stage	CXC811730
(C)225468 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 118	3264		CXC811730
(C)225469 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 119	3268		CXC811730
(C)225470 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 120	3274		CXC811730
(C)225471 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 121	3276		CXC811730
(C)225472 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 122	3272		CXC811730
(C)225473 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 123	3274		CXC811730
(C)225474 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 124	3274	Stage	CXC811730
(C)225475 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 125	3270		CXC811730
(C)225476 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 126	3270		CXC811730
(C)225477 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 127	3276		CXC811730
(C)225478 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 128	3266		CXC811730
(C)225579 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 129			CXC811730
(C)225580 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 130			CXC811730
(C)225581 .08	7	182.9	1280.3	ESI Belews Creek, NC	131tot 131		Stage	CXC811730

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ROLL # **225106-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.43**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**143**	ppi		**3,304**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**537.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **225107-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.07**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	**mm**	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

							TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range	%					**2.43**	
Carbon Black Dispersion ASTM D5596	Category						**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**24**	N/mm	**139**	ppi		**3,304**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%					**537.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N				**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N				**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N				**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-16-08**

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ROLL # **225108-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.07**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**	
Carbon Black Content ASTM D4218	Range	%						**2.43**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**24**	N/mm	**139**	ppi			**3,304**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**537.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225109-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**	
Carbon Black Content ASTM D4218	Range	%						**2.43**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**144**	ppi			**3,304**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**537.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225110-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.48**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**154**	ppi			**3,518**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**538.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225111-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.99**	mm	**39**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **24** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.48**	
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		**151**	ppi		**3,518**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**538.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225112-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.48**	
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		**151**	ppi		**3,518**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**538.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225113-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.48**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm		**152**	ppi		**3,518**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**538.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225114-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.48**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**155**	ppi			**3,518**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**538.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**159.3**	N					**35.803**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**400.9**	N					**90.121**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**384.8**	N					**86.516**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-17-08**

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ROLL # **225115-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**144**	ppi	**3,286**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**520.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N			**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N			**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N			**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-17-08**

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ROLL # **225116-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**142**	ppi	**3,286**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**520.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N			**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N			**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N			**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225117-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**142**	ppi		**3,286**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**520.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N					**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N					**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N					**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225118-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**142**	ppi		**3,286**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**520.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N					**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N					**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N					**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225119-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**144**	ppi		**3,286**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**520.9**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N					**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N					**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N					**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225120-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.26**	mm	**50**	mil
Asperity GRI GM12: **36** mil	AVE:	**1.15**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**26**	N/mm		**150**	ppi		**3,312**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**519.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N					**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N					**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N					**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225221-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.21**	mm	**48**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**145**	ppi		**3,312**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**519.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N					**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N					**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N					**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-17-08**

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ROLL # **225222-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**145**	ppi	**3,312**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**519.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N			**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N			**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N			**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-17-08**

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ROLL # **225223-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**143**	ppi		**3,312**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**519.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N					**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N					**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N					**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225224-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.07**	mm	**42**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **34** mil	AVE:	**1.14**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.38**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**26**	N/mm	**149**	ppi	**3,312**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**519.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.4**	N			**32.236**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**397.1**	N			**89.273**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**420.5**	N			**94.536**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225225-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **36** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.27**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**145**	ppi	**3,357**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**546.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**152.4**	N			**34.264**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**314.1**	N			**70.610**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**424.3**	N			**95.383**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225226-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	**mm**	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.27**	
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	**3,357**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**546.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**152.4**	N			**34.264**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**314.1**	N			**70.610**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**424.3**	N			**95.383**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225227-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.27**	
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			**3,357**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**546.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**152.4**	N					**34.264**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**314.1**	N					**70.610**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**424.3**	N					**95.383**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

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ROLL # **225228-08** Lot #: **CXC811720** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.10**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.934**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.27**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm		**145**	ppi		**3,357**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**546.8**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.75**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**152.4**	N					**34.264**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**314.1**	N					**70.610**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**424.3**	N					**95.383**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225354-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.40**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**26**	N/mm	**149**	ppi			**3,386**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**547.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**147.9**	N					**33.249**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**423.9**	N					**95.293**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**446.2**	N					**100.32**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225355-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet
OIT(Standard) ASTM D3895 minutes	**165**	

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.45**	
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	**3,372**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**530.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N			**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N			**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N			**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225356-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.07**	mm	**42**	mil
	MAX:	**1.25**	mm	**49**	mil
Asperity GRI GM12: **34** mil	AVE:	**1.15**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.45**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**153**	ppi			**3,372**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**530.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N					**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N					**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N					**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

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ROLL # **225357-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.45**	
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		**3,372**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**530.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N					**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N					**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N					**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225358-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.08**	mm	**43**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.45**	
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			**3,372**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**530.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N					**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N					**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N					**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

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ROLL # **225459-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.12**	mm	**44**	mil
	MAX:	**1.28**	mm	**50**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.17**	mm	**46**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.45**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm		**155**	ppi		**3,372**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**530.0**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N					**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N					**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N					**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

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ROLL # **225460-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.97**	mm	**38**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density			g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g			g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range			%				**2.77**	
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		**146**	ppi		**3,344**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break			%				**533.4**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change			%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N					**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N					**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N					**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225461-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **29** mil	AVE:	**1.15**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.77**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**151**	ppi			**3,344**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**533.4**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N					**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N					**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N					**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225462-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.08**	mm	**43**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **35** mil	AVE:	**1.16**	mm	**46**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.77**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**153**	ppi			**3,344**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**533.4**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N					**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N					**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N					**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225463-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.77**	
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	**149**	ppi	**3,344**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**533.4**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N			**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N			**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N			**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

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ROLL # **225464-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	**mm**	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.77**	
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	**3,344**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**533.4**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**144.9**	N			**32.574**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**390.6**	N			**87.812**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**409.2**	N			**92.002**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225465-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.26**	mm	**50**	mil
Asperity GRI GM12: **24** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.62**	
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			**3,365**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**541.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N					**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N					**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N					**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225466-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **28** mil	AVE:	**1.08**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.62**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**143**	ppi	**3,365**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**541.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N			**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N			**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N			**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

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ROLL # **225467-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.62**	
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	**148**	ppi			**3,365**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**541.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N					**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N					**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N					**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225468-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **26** mil	AVE:	**1.15**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.62**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**152**	ppi			**3,365**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**541.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N					**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N					**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N					**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225469-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.22**	mm	**48**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.62**	
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	**3,365**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**541.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N			**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N			**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N			**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225470-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.04**	mm	**41**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **23** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.50**	
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	**148**	ppi	**3,442**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**545.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N			**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N			**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N			**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225471-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.01**	mm	**40**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.50**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**152**	ppi			**3,442**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**545.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N					**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N					**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N					**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225472-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.08**	mm	**43**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.12**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**	
Carbon Black Content ASTM D4218	Range	%						**2.50**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**152**	ppi			**3,442**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**545.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N					**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N					**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N					**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225473-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.24**	mm	**49**	mil
Asperity GRI GM12: **25** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.50**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**153**	ppi	**3,442**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**545.6**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N			**30.150**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N			**91.056**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N			**92.504**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

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ROLL # **225474-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.15**	mm	**45**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS
Specific Gravity ASTM D792	Density	g/cc						**.935**
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**
Carbon Black Content ASTM D4218	Range	%						**2.50**
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	**148**	ppi	**3,442**	psi	
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**545.6**
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.19**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**134.1**	N			**30.150**	lbs	
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**405.0**	N			**91.056**	lbs	
Puncture Resistance ASTM D4833 (Modified)	Load	**411.5**	N			**92.504**	lbs	
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

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ROLL # **225475-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.09**	mm	**43**	mil
	MAX:	**1.23**	mm	**48**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.15**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.42**	
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	**146**	ppi	**3,221**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**526.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.2**	N			**32.198**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**418.0**	N			**93.977**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**431.4**	N			**96.983**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

Signature.....
Quality Control Department

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quality certificate

ROLL # **225476-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.05**	mm	**41**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **32** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.42**	
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**141**	ppi	**3,221**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**526.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.2**	N			**32.198**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**418.0**	N			**93.977**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**431.4**	N			**96.983**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs			**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

Signature.....
Quality Control Department

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ROLL # **225477-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.07**	mm	**42**	mil
	MAX:	**1.19**	mm	**47**	mil
Asperity GRI GM12: **33** mil	AVE:	**1.13**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0**	mm	**40 mil**
Length.....	**182.9**	m	**600.1** feet
Width.....	**7.00**	m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.34**	
Carbon Black Content ASTM D4218	Range		%					**2.42**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**143**	ppi			**3,221**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**526.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.2**	N					**32.198**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**418.0**	N					**93.977**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**431.4**	N					**96.983**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

Signature.....

Quality Control Department

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quality certificate

ROLL # **225478-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.12**	mm	**44**	mil
	MAX:	**1.22**	mm	**48**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.16**	mm	**46**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**	
Carbon Black Content ASTM D4218	Range	%				**2.42**	
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	**3,221**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**526.3**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.2**	N			**32.198**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**418.0**	N			**93.977**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**431.4**	N			**96.983**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

Signature.....
Quality Control Department

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ROLL # **225579-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.09**	mm	**43**	mil
	MAX:	**1.18**	mm	**46**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.14**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS
Specific Gravity ASTM D792	Density	g/cc				**.935**
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**
Carbon Black Content ASTM D4218	Range	%				**2.42**
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**25**	N/mm	**145**	ppi	**3,221** psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**526.3**
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.2**	N			**32.198** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**418.0**	N			**93.977** lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**431.4**	N			**96.983** lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

Signature.....
Quality Control Department

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ROLL # **225580-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.08**	mm	**43**	mil
	MAX:	**1.17**	mm	**46**	mil
Asperity GRI GM12: **32** mil	AVE:	**1.14**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.935**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.34**	
Carbon Black Content ASTM D4218	Range	%						**2.40**	
Carbon Black Dispersion ASTM D5596	Category							**10 in Cat. 1**	
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**155**	ppi			**3,458**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**533.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-.19**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.2**	N					**32.198**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**418.0**	N					**93.977**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**431.4**	N					**96.983**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

Signature.....

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ROLL # **225581-08** Lot #: **CXC811730** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.06**	mm	**42**	mil
	MAX:	**1.21**	mm	**48**	mil
Asperity GRI GM12: **31** mil	AVE:	**1.14**	mm	**45**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **165**

						TEST RESULTS
Specific Gravity ASTM D792	Density	g/cc				**.935**
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.34**
Carbon Black Content ASTM D4218	Range	%				**2.40**
Carbon Black Dispersion ASTM D5596	Category					**10 in Cat. 1**
Tensile Strength ASTM D6693 ASTM D638 (Modified) (2 inches / minute)	Average Strength @ Break	**27**	N/mm	**155**	ppi	**3,458** psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**533.5**
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.19**
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**143.2**	N			**32.198** lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**418.0**	N			**93.977** lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**431.4**	N			**96.983** lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**

Customer: **Environmental Specialties**
PO: **9038 Pine Hall Rd Ash LF**
Destination **Belews Creek, NC**

Date:..... **6-23-08**

Signature.....
Quality Control Department

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12/23/05

CoA Date: 03/29/2008

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87621824
PO #: 004732
Weight: 184400 LB
Ship Date: 03/29/2008
Package: BULK
Mode: Hopper Car
Car #: CHVX896758
Seal No: 475648

Product: PE 7104 BULK

Cust # .

Lot Number: CXC811720

Property	Test Method	Value	Unit
Melt Index	ST-103	0.34	g/10mi
HLMI	ST-122	14.39	g/10mi
Pellet Count	ST-905	40	pel/g
Production date		20080328	
Density	ST-292	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.

Kay F. Donaldson
Quality Control Supervisor

For CoA questions contact Tom Scheirman at 832-813-4637

CoA Date: 03/29/2008

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87621825
PO #: 004732
Weight: 184350 LB
Ship Date: 03/29/2008
Package: BULK
Mode: Hopper Car
Car #: CHVX890267
Seal No: 475650

Product: PE 7104 BULK

Cust # .

Lot Number: CXC811730

Property	Test Method	Value	Unit
Melt Index	ST-103	0.34	g/10mi
HLMI	ST-122	14.41	g/10mi
Pellet Count	ST-905	42	pel/g
Production date		20080328	
Density	ST-292	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.

Kay F. Donaldson
Quality Control Supervisor

For CoA questions contact Tom Scheirman at 832-813-4637

ENVIRONMENTAL SPECIALTIES INTERNATIONAL, INC.
7943 PECUE LANE SUITE A BATON ROUGE, LA 70809 TEL (225) 291–2700 FAX (225) 291-2788

TO: Morgan Corporation
11700 Reames Road
Charlotte, NC 28269
TEL # : (704) 598-9117
ATTENTION: D. Craig Greeson

DATE: July 24, 2008
JOB NAME: Duke Power
Pine Hall Road Ash Landfill Closure
TRANSMITTAL NUMBER: 11
ESI PROJECT NUMBER: 07-12-1269

WE ARE SENDING YOU [X] ATTACHED [ ] UNDER SEPARATE COVER VIA _____ THE FOLLOWING ITEMS:

[ ] SHOP DRAWINGS [ ] PRINTS [ ] PLANS [ ] SAMPLES [ ] SPECIFICATIONS

[ ] COPY OF LETTER [ ] CHANGE ORDER [ ] _____

COPIES	DATE	DRAWING NO.	REV.	DESCRIPTION	ACTION (*)
1	7/24/08			AGRU 40 Mil LLT certs for 5 additional rolls	

ACTION (*)

[ ] AS - AS REQUESTED [ ] FA - FOR APPROVAL [ ] _____

[ ] F – FILE [ ] RC - REVIEW & COMMENT [ ] _____

COMMENTS:

SENT VIA:

[ ] E-MAIL [ ] MAIL [X] OVERNIGHT [ ] HAND DELIVERY [ ] OTHER

COPY TO: _____

BY: Kevin Simms

If enclosures are not as noted, please notify us at once.....

microspike liner

LLDPE

40 mil

ESI Pine Hall Rd adds doc 10855

Belews Creek, NC

5 rolls 40 LL micro

PO#	9038-A

roll #	width	DIMENSIONS appx length	area		wgt	lot
(C)220599 .08	7	182.9	1280.3	ESI Belews Creek, NC 5tot 1	3088	CXB810650
(C)220721 .08	7	182.9	1280.3	ESI Belews Creek, NC 5tot 2	3104	CXB810650
(C)220722 .08	7	182.9	1280.3	ESI Belews Creek, NC 5tot 3	3110	CXB810650
(C)227468 .08	7	182.9	1280.3	ESI Belews Creek, NC 5tot 4	3128	CXC811750
(C)227469 .08	7	182.9	1280.3	ESI Belews Creek, NC 5tot 5	3110	CXC811750
					15540	

agru america quality control dept.

quality certificate

ROLL # **220599-08** Lot #: **CXB810650** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.00**	mm	**39**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **22** mil	AVE:	**1.05**	mm	**41**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **166**

								TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc						**.936**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min						**.32**	
Carbon Black Content ASTM D4218	Range	%						**2.70**	
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	**137**	ppi			**3,307**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%						**530.5**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%						**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**135.8**	N					**30.521**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**373.5**	N					**83.979**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**386.2**	N					**86.822**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs						**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038-A Pine Hall Rd LF adds**
Destination **Belews Creek, NC**

Date:..... **5-16-08**

Signature.....
Quality Control Department

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ROLL # **220721-08** Lot #: **CXB810650** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.03**	mm	**41**	mil
	MAX:	**1.20**	mm	**47**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.11**	mm	**44**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **166**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.936**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.32**	
Carbon Black Content ASTM D4218	Range	%				**2.55**	
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	**3,007**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**512.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.1**	N			**34.871**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**382.3**	N			**85.948**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**443.9**	N			**99.799**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038-A Pine Hall Rd LF adds**
Destination **Belews Creek, NC**

Date:..... **5-18-08**

Signature.....
Quality Control Department

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ROLL # **220722-08** Lot #: **CXB810650** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**1.02**	mm	**40**	mil
	MAX:	**1.16**	mm	**46**	mil
Asperity GRI GM12: **27** mil	AVE:	**1.09**	mm	**43**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **166**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.936**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.32**	
Carbon Black Content ASTM D4218	Range	%				**2.55**	
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	**3,007**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**512.2**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-0.63**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**155.1**	N			**34.871**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**382.3**	N			**85.948**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**443.9**	N			**99.799**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038-A Pine Hall Rd LF adds**
Destination **Belews Creek, NC**

Date:..... **5-18-08**

Signature.....
Quality Control Department

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12/23/05

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quality certificate

ROLL # **227468-08** Lot #: **CXC811750** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.96**	mm	**38**	mil
	MAX:	**1.07**	mm	**42**	mil
Asperity GRI GM12: **30** mil	AVE:	**1.04**	mm	**41**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **152**

						TEST RESULTS	
Specific Gravity ASTM D792	Density	g/cc				**.937**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g	g/10 min				**.32**	
Carbon Black Content ASTM D4218	Range	%				**2.50**	
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	**3,085**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break	%				**529.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change	%				**-.51**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**147.5**	N			**33.157**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**414.8**	N			**93.255**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**414.7**	N			**93.224**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500 hrs				**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038-A Pine Hall Rd LF adds**
Destination **Belews Creek, NC**

Date:..... **7-3-08**

Signature.....
Quality Control Department

40LLmic.FRM
REV 02
12/23/05

agru america quality control dept.

quality certificate

ROLL # **227469-08** Lot #: **CXC811750** **Liner Type: MICROSPIKE™ LLDPE**

Measurement ASTM D5994 (Modified)		METRIC		ENGLISH	
	MIN:	**0.97**	mm	**38**	mil
	MAX:	**1.13**	mm	**44**	mil
Asperity GRI GM12: **24** mil	AVE:	**1.06**	mm	**42**	mil

ODD # : TOP EVEN #: BOTTOM

Thickness.....	**1.0 mm**	**40 mil**
Length.....	**182.9** m	**600.1** feet
Width.....	**7.00** m;	**23.0** feet

OIT(Standard) ASTM D3895 minutes **152**

								TEST RESULTS	
Specific Gravity ASTM D792	Density		g/cc					**.937**	
MFI ASTM D1238 COND. E GRADE: **7104**	Melt Flow Index 190ºC /2160 g		g/10 min					**.32**	
Carbon Black Content ASTM D4218	Range		%					**2.50**	
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			**3,085**	psi
Elongation ASTM D6693 ASTM D638 (Modified) (2 inches / minute) Lo = 1.3" Yield Lo = 2.0" Break	Average Elongation @ Break		%					**529.7**	
Dimensional Stability ASTM D1204 (Modified)	Average Dimensional change		%					**-.51**	
Tear Resistance ASTM D-1004 (Modified)	Average Tear Resistance	**147.5**	N					**33.157**	lbs
Puncture Resistance FTMS 101 Method 2065 (Modified)	Load	**414.8**	N					**93.255**	lbs
Puncture Resistance ASTM D4833 (Modified)	Load	**414.7**	N					**93.224**	lbs
ESCR ASTM D1693	Minimum Hrs w/o Failures	1500	hrs					**CERTIFIED**	

Customer: **Environmental Specialties**
PO: **9038-A Pine Hall Rd LF adds**
Destination **Belews Creek, NC**

Date:..... **7-3-08**

Signature.....
Quality Control Department

40LLmic.FRM
REV 02
12/23/05

CoA Date: 02/25/2008

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87597981
PO #: 004732
Weight: 184750 LB
Ship Date: 02/25/2008
Package: BULK
Mode: Hopper Car
Car #: PSPX002043
Seal No: 472037

Product: PE 7104 BULK

Lot Number: CXB810650

Property	Test Method	Value	Unit
Melt Index	ST-103	0.32	g/10mi
HLMI	ST-122	14.90	g/10mi
Pellet Count	ST-905	40	pel/g
Production date		20080222	
Density	ST-292	0.918	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.

Kay F. Donaldson
Quality Control Supervisor

For CoA questions contact Tom Scheirman at 832-813-4637

CoA Date: 03/29/2008

Certificate of Analysis

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

Recipient: PALMER
Fax:

CPC Delivery #: 87621827
PO #: 004732
Weight: 184550 LB
Ship Date: 03/29/2008
Package: BULK
Mode: Hopper Car
Car #: CHVX896280
Seal No: 475651

Product: PE 7104 BULK

Cust # .

Lot Number: CXC811750

Property	Test Method	Value	Unit
Melt Index	ST-103	0.32	g/10mi
HLMI	ST-122	14.40	g/10mi
Pellet Count	ST-905	39	pel/g
Production date		20080328	
Density	ST-292	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.

Kay F. Donaldson
Quality Control Supervisor

For CoA questions contact Tom Scheirman at 832-813-4637

APPENDIX II

(INTERFACE FRICTION TESTING)

Interface Friction Test Results Summary					
Interface	**Interface Description**	**Peak Friction Angle (degrees)**	**Peak Adhesion (psf)**	**Large Displacement Friction Angle (degrees)**	**Large Displacement Adhesion (psf)**
1	Subgrade (ash[1]) to LLDPE (long spike side)	21.5	95	19.6	90
2	Subgrade (ash) to LLDPE (short spike side)	30.7	54	25.8	29
3	Subgrade (soil[2,3]) to LLDPE (long spike side)	31	42	32.1	20
4	Subgrade (soil) to LLDPE (short spike side)	37.9	43	28.1	54
5	LLDPE (long spike side) to Geonet Composite	35.9	26	23.1	9
6	LLDPE (short spike side) to Geonet Composite	39.3	46	23.9	11
7	Geonet Composite to Compacted Soil Cover[4]	32.7	76	18.6	110

1. Subgrade ash is noted as Sample #7 in the test conditions section of TRI's laboratory reports
2. Subgrade soil is noted as Sample #6 in the test conditions section of TRI's laboratory reports
3. TRI notes sample 2 material In the test conditions section of TRI's laboratory report for Interface 3, the correst sample number is 6 as noted in the tested interface subtitle
4. Cover soil is noted as Sample #2 in the test conditions section of TRI's laboratory reports

Figure 1: Subgrade (ash) to LLDPE (long spike side)

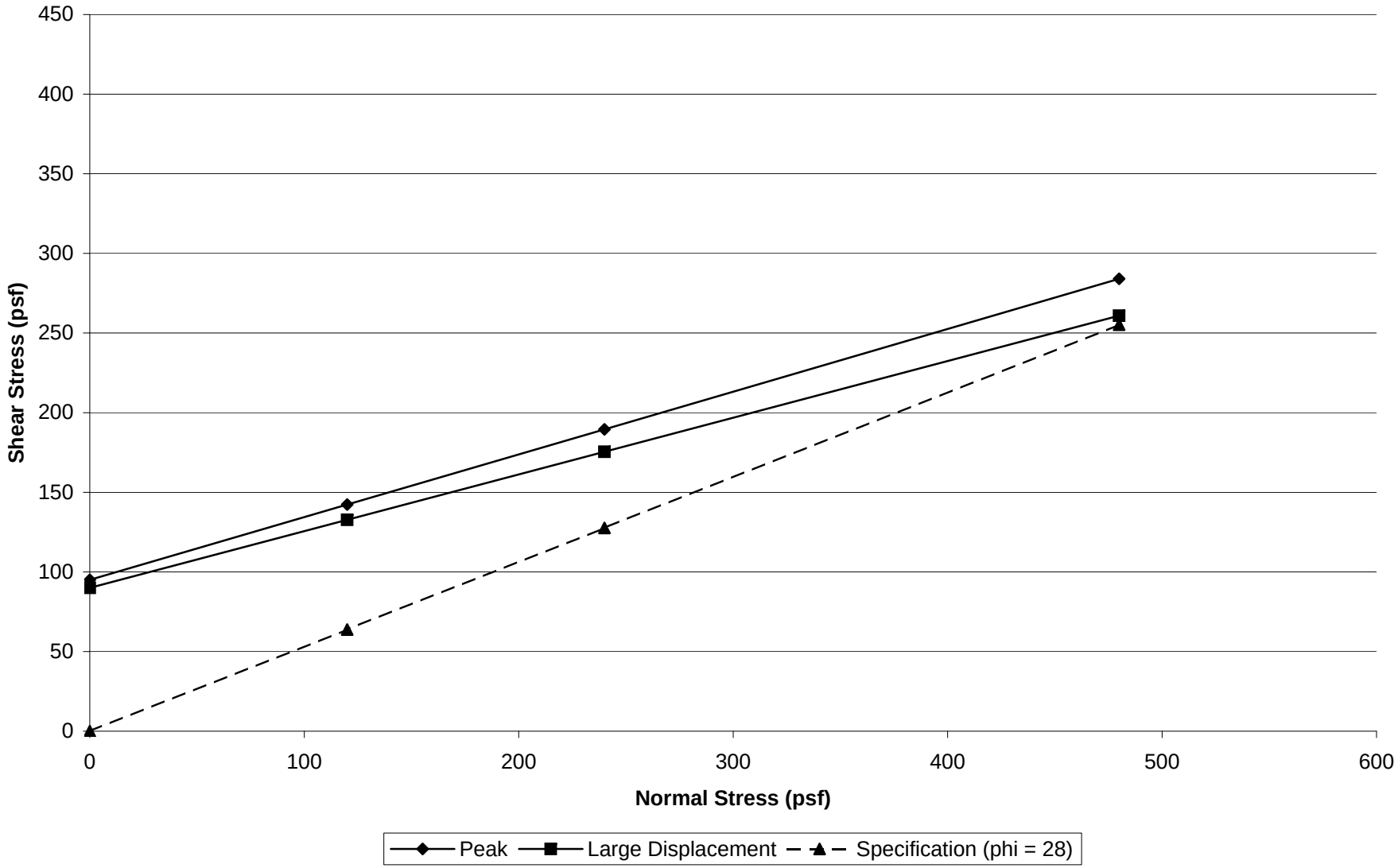


Figure 2: Subgrade (ash) to LLDPE (short spike side)

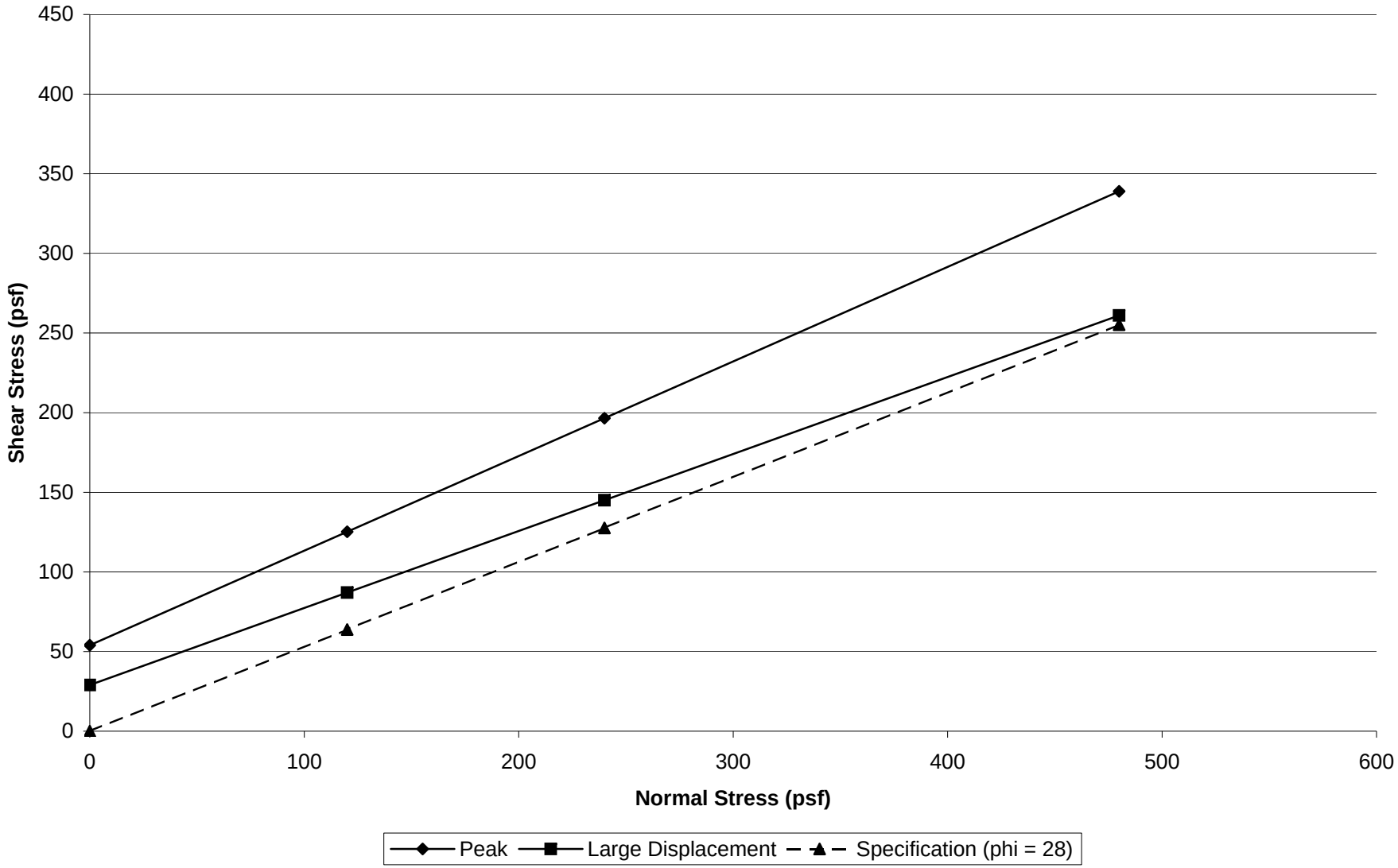


Figure 3: Subgrade (soil) to LLDPE (long spike side)

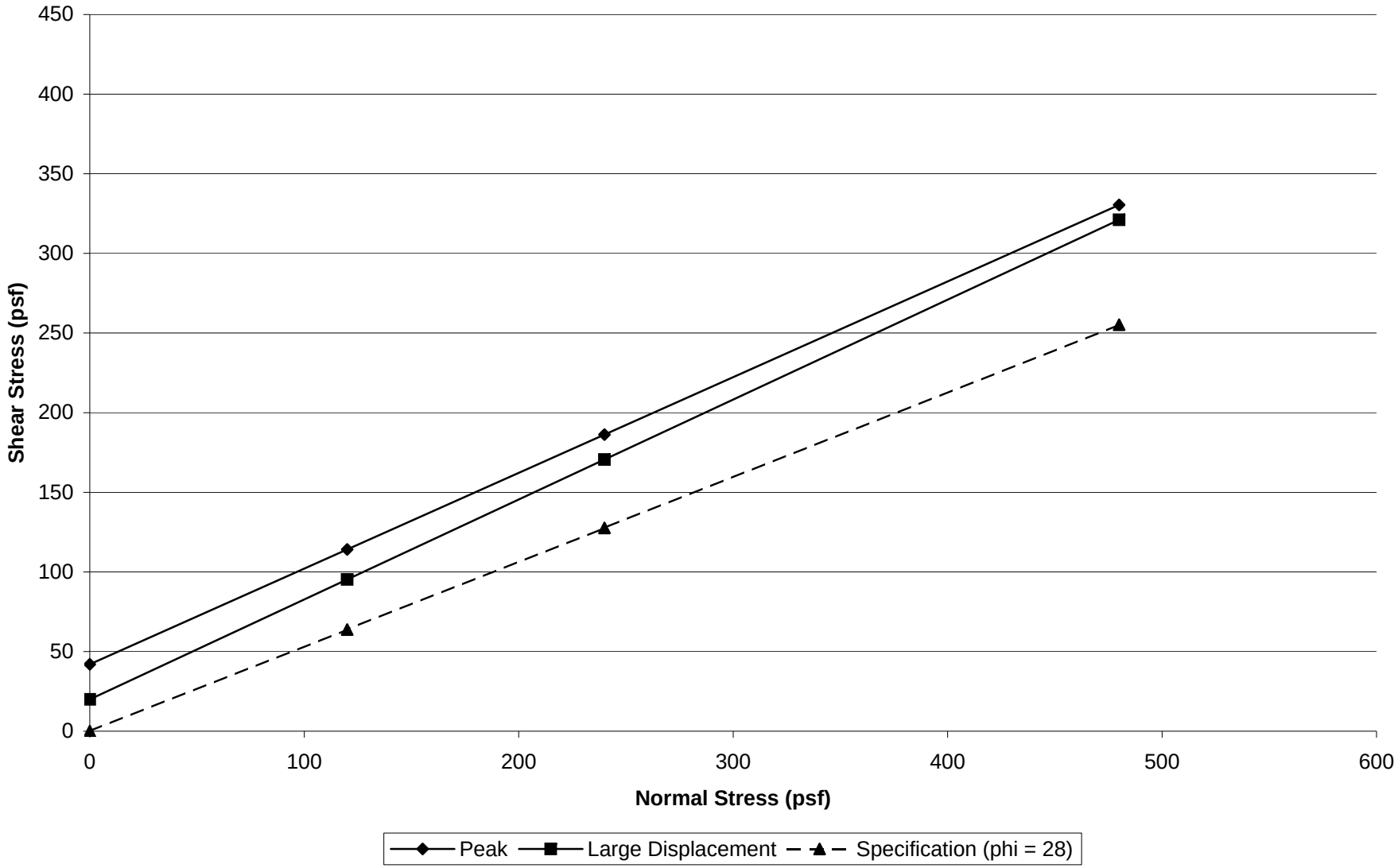


Figure 4: Subgrade (soil) to LLDPE (short spike side)

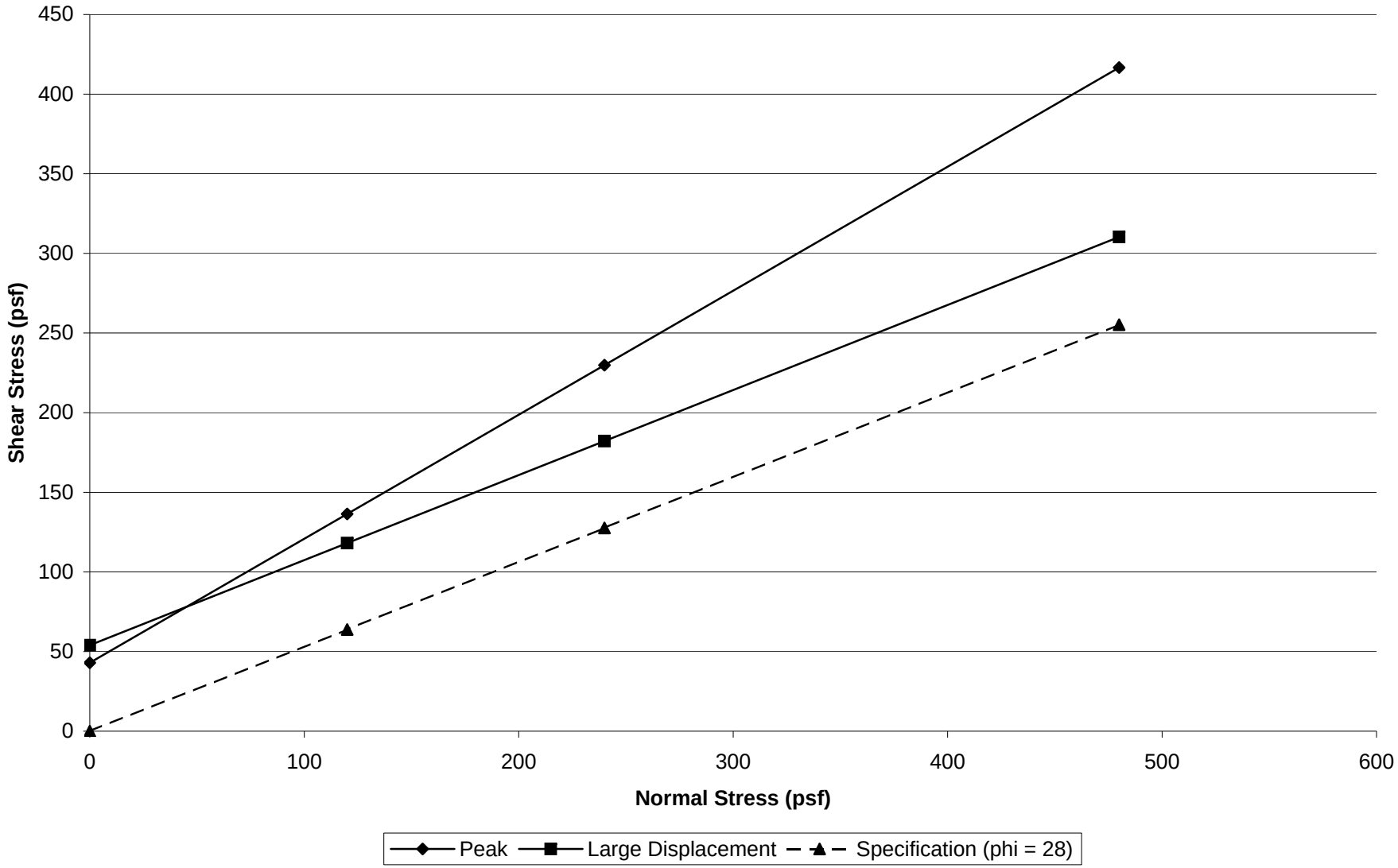


Figure 5: LLDPE (long spike side) to Geonet Composite

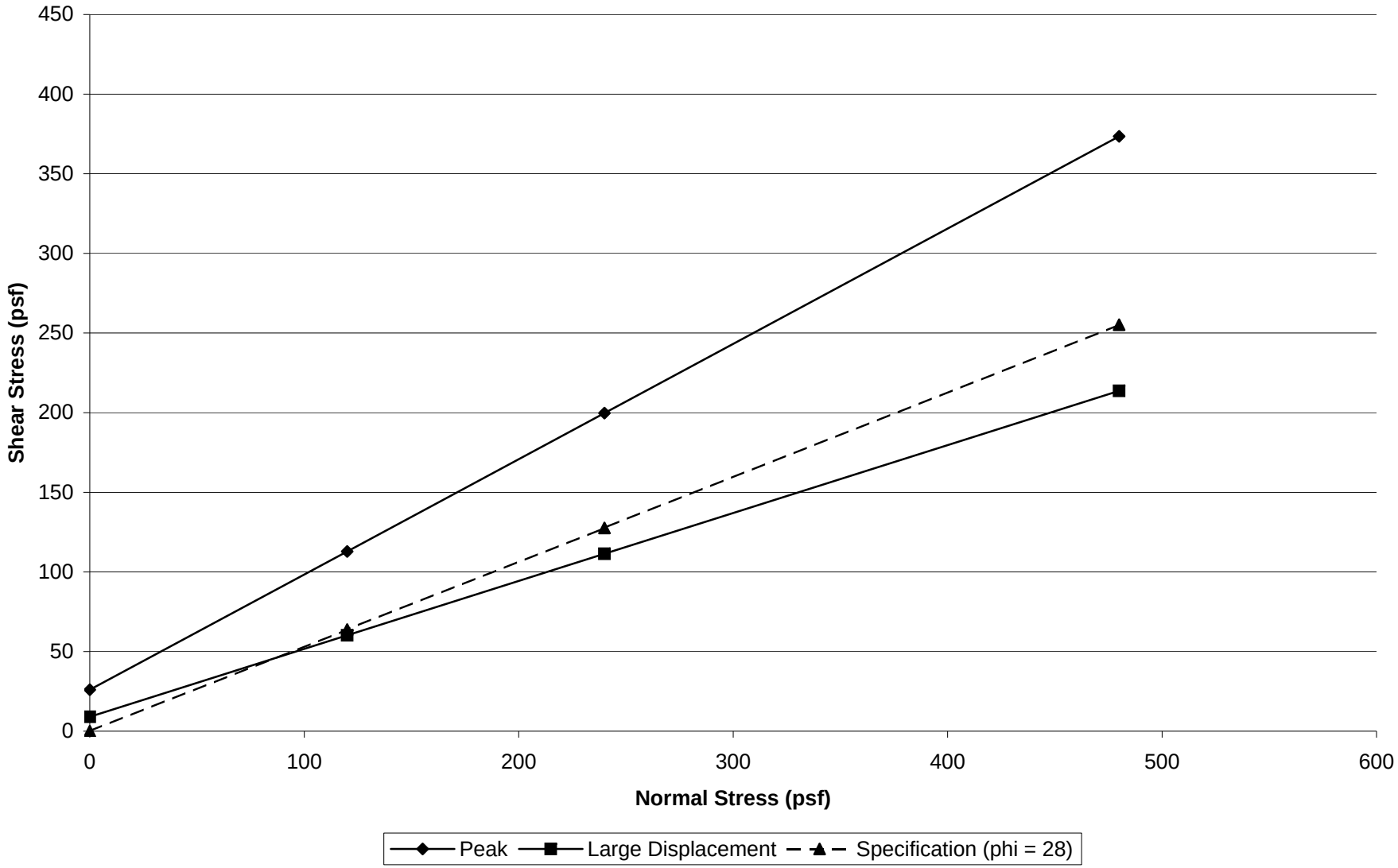


Figure 6: LLDPE (short spike side) to Geonet Composite

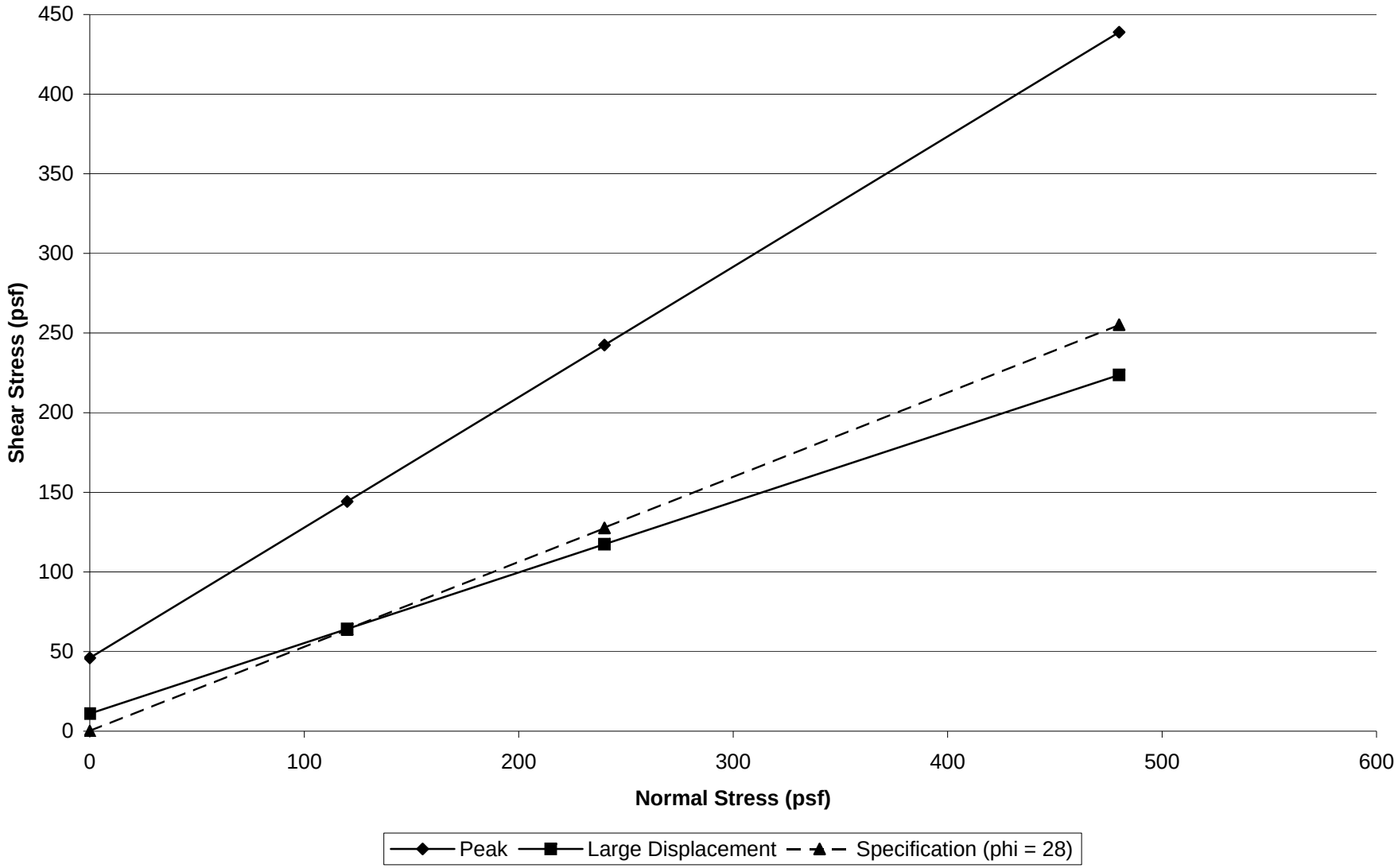
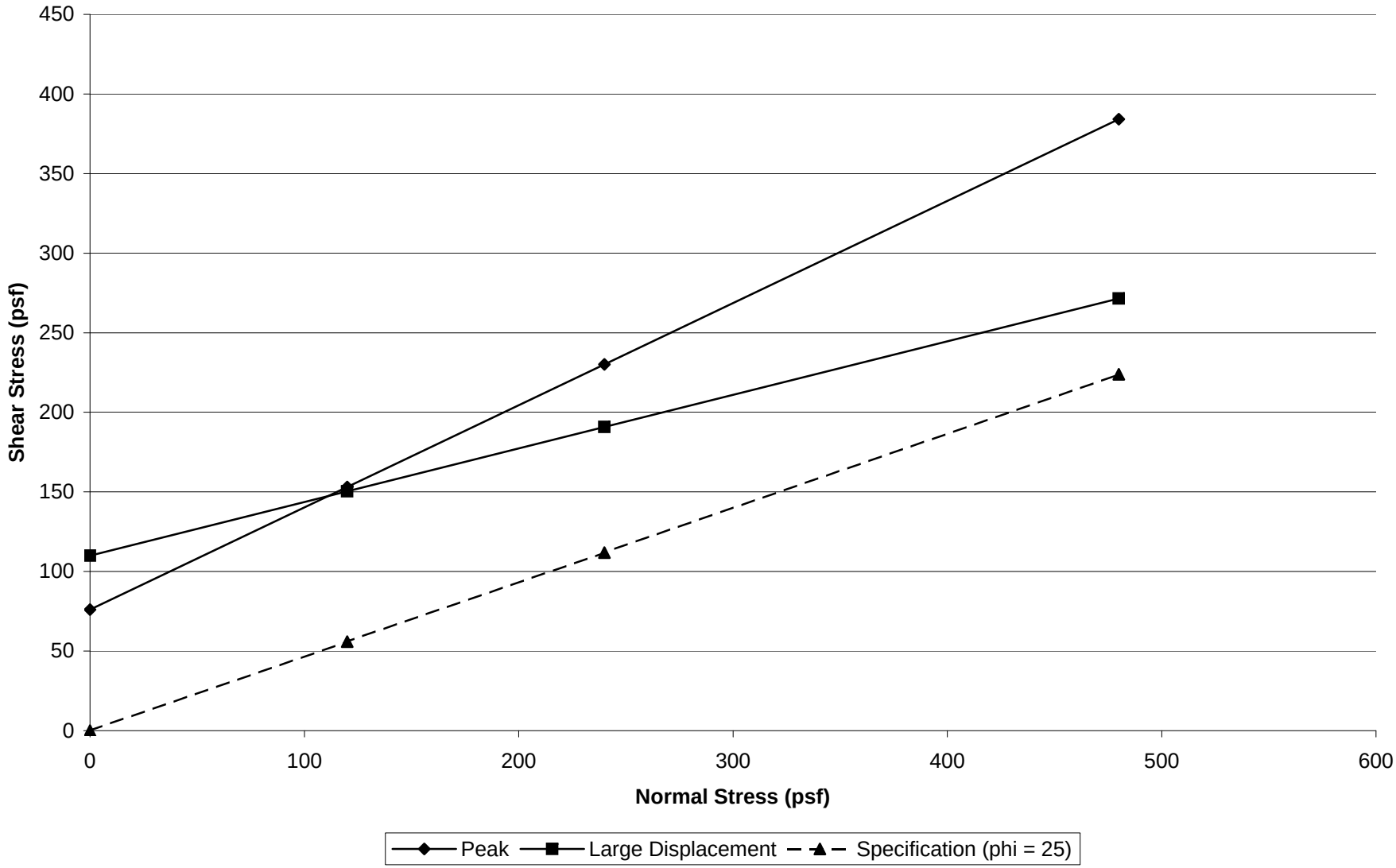


Figure 7: Geonet Composite to Compacted Soil Cover



TRI/ENVIRONMENTAL, INC.

A Texas Research International Company

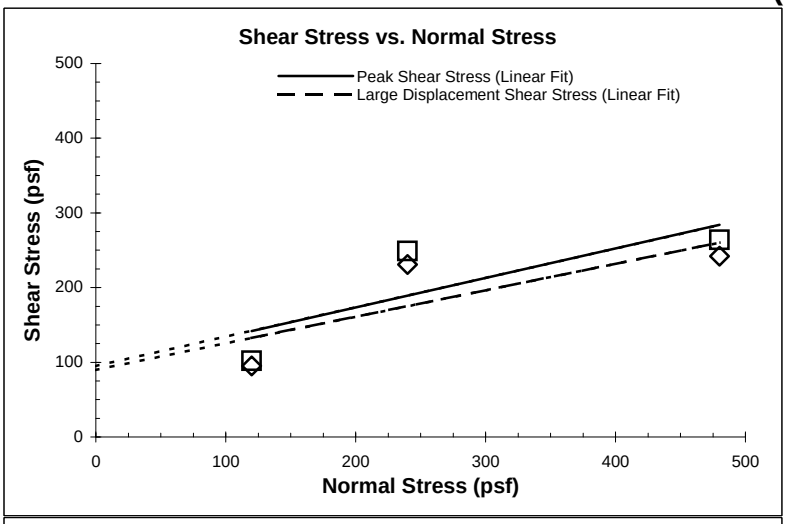
Interface Friction Test Report

Client: **S & ME**
Project: **Pine Hall Road Landfill, Cap**
Test Date: 04/17/08-04/18/08

TRI Log#: E2308-08-02
Test Method: ASTM D 5321

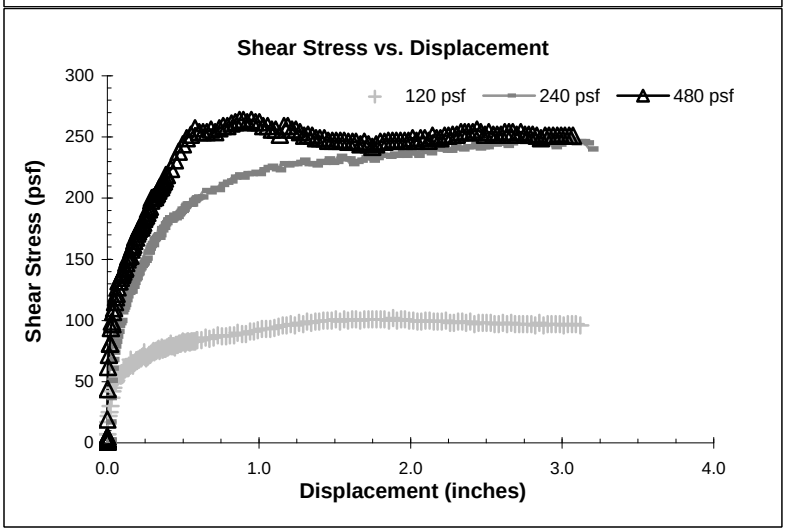
John M. Allen, E.I.T., 04/18/2008
Quality Review/Date

Tested Interface: Compacted Subgrade (Sample #7) vs. Agru 40 mil LLDPE Microspike Geomembrane (323700-07)



Test Results

	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	21.5	19.6
Y-intercept or Adhesion (psf):	95	90



Test Conditions

Upper Box & Lower Box: Compacted Subgrade soil (sample 7) remolded to 79.2 pcf at 23.6% moisture content; Agru 40 mil LLDPE Microspike geomembrane (long spike 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)	0	0	0
Normal Stress (psf)	120	240	480
Corrected Peak Shear Stress (psf)	102	249	264
Corrected Large Displacement Shear Stress (psf)	95	231	242
Peak Secant Angle (degrees)	40.4	46.1	28.8
Large Displacement Secant Angle (degrees)	38.4	43.9	26.8
Asperity (mils)	31.8	35.0	30.6

Soil Characterization performed by TRI

USCS:	Proctor Type:	standard
LL:	Max. Dry Density (pcf):	84.3
PL:	Optimum Moisture Content:	24.3

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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TRI/ENVIRONMENTAL, INC.

A Texas Research International Company

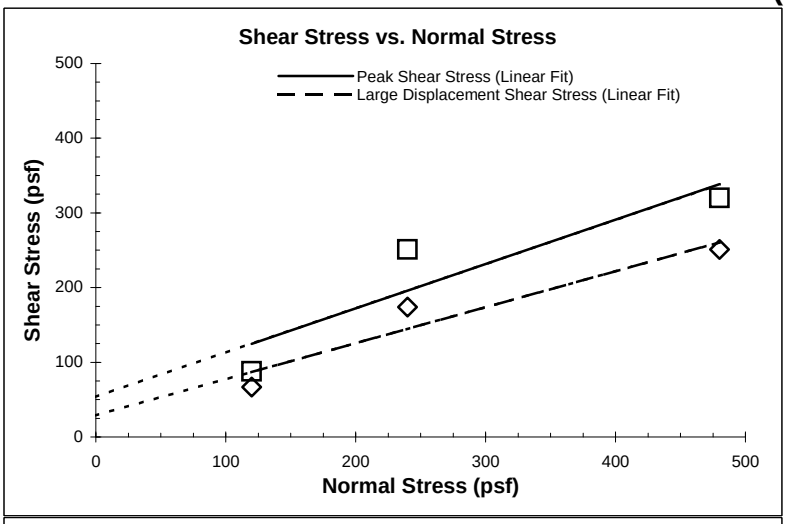
Interface Friction Test Report

Client: **S & ME**
Project: **Pine Hall Road Landfill, Cap**
Test Date: 04/24/08-04/25/08

TRI Log#: E2308-08-02
Test Method: ASTM D 5321

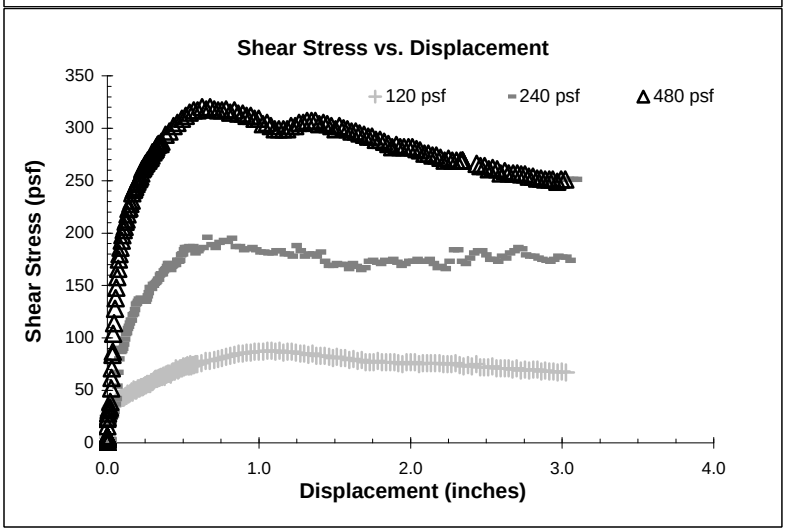
John M. Allen, E.I.T., 04/26/2008
Quality Review/Date

Tested Interface: Compacted Subgrade (Sample #7) vs. Agru 40 mil LLDPE Microspike Geomembrane (323700-07)



Test Results

	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	30.7	25.8
Y-intercept or Adhesion (psf):	54	29



Test Conditions

Upper Box & Lower Box: Compacted Subgrade soil (sample 7) remolded to 79.2 pcf at 23.6% moisture content; Agru 40 mil LLDPE Microspike geomembrane (short spike 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)	0	0	0
Normal Stress (psf)	120	240	480
Corrected Peak Shear Stress (psf)	88	251	320
Corrected Large Displacement Shear Stress (psf)	67	174	251
Peak Secant Angle (degrees)	36.3	46.3	33.7
Large Displacement Secant Angle (degrees)	29.2	35.9	27.6
Asperity (mils)	29.6	28.8	29.6

Soil Characterization performed by TRI

USCS:	Proctor Type:	standard
LL:	Max. Dry Density (pcf):	84.3
PL:	Optimum Moisture Content:	24.3

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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TRI/ENVIRONMENTAL, INC.

A Texas Research International Company

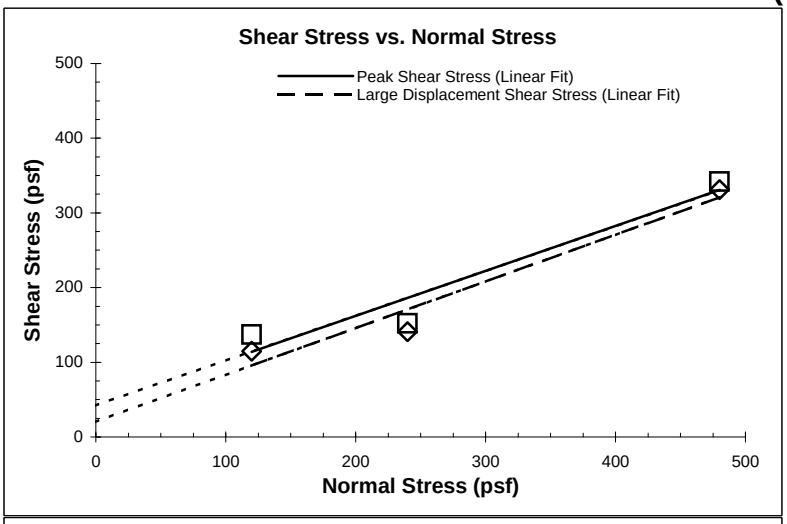
Interface Friction Test Report

Client: **S & ME**
Project: **Pine Hall Road Landfill, Cap**
Test Date: 04/16/08-04/17/08

TRI Log#: E2308-08-02
Test Method: ASTM D 5321

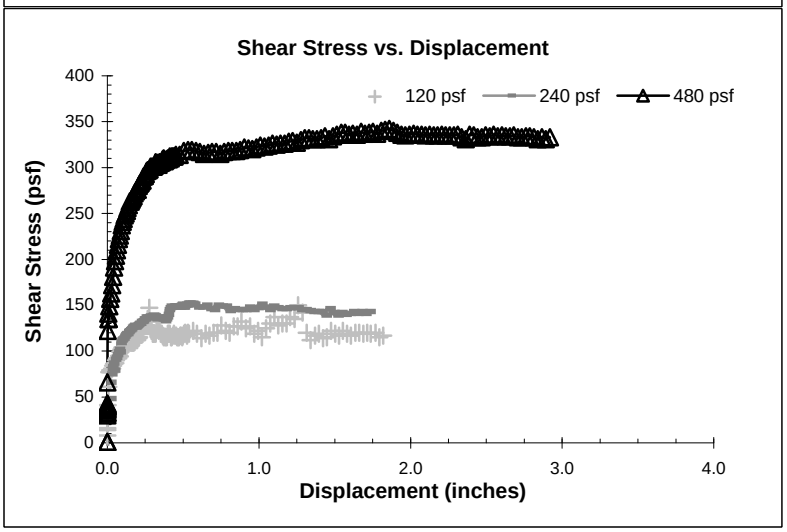
John M. Allen, E.I.T., 04/17/2008
Quality Review/Date

Tested Interface: Compacted Subbase (Sample #6) vs. Agru 40 mil LLDPE Microspike Geomembrane (323700-07)



Test Results

	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	31.0	32.1
Y-intercept or Adhesion (psf):	42	20



Test Conditions

Upper Box & Lower Box: Compacted Subbase soil (sample 2) remolded to 92 pcf at 19.5% moisture content; Agru 40 mil LLDPE Microspike geomembrane (long spike 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)	0	0	0
Normal Stress (psf)	120	240	480
Corrected Peak Shear Stress (psf)	137	152	342
Corrected Large Displacement Shear Stress (psf)	115	141	331
Peak Secant Angle (degrees)	48.8	32.3	35.5
Large Displacement Secant Angle (degrees)	43.8	30.4	34.6
Asperity (mils)	31.8	35.0	30.6

Soil Characterization performed by TRI

USCS:	Proctor Type:	standard
LL:	Max. Dry Density (pcf):	96.8
PL:	Optimum Moisture Content:	19.5

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.

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TRI/ENVIRONMENTAL, INC.

A Texas Research International Company

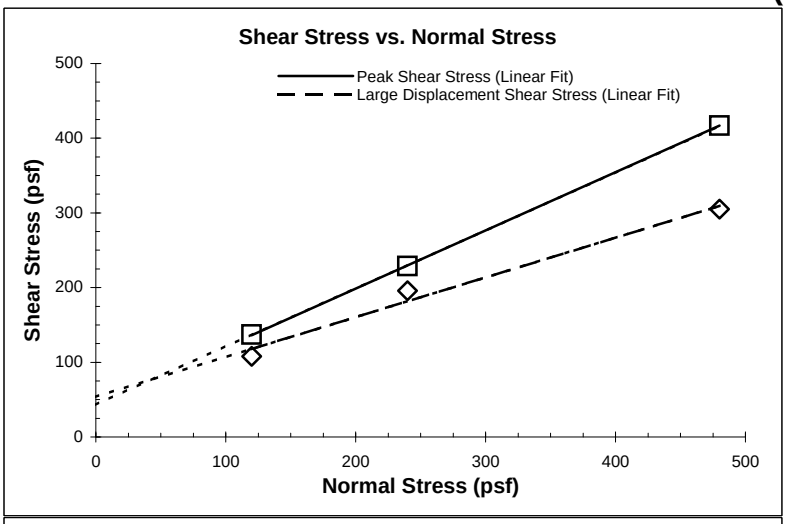
Interface Friction Test Report

Client: **S & ME**
Project: **Pine Hall Road Landfill, Cap**
Test Date: 04/23/08-04/24/08

TRI Log#: E2308-08-02
Test Method: ASTM D 5321

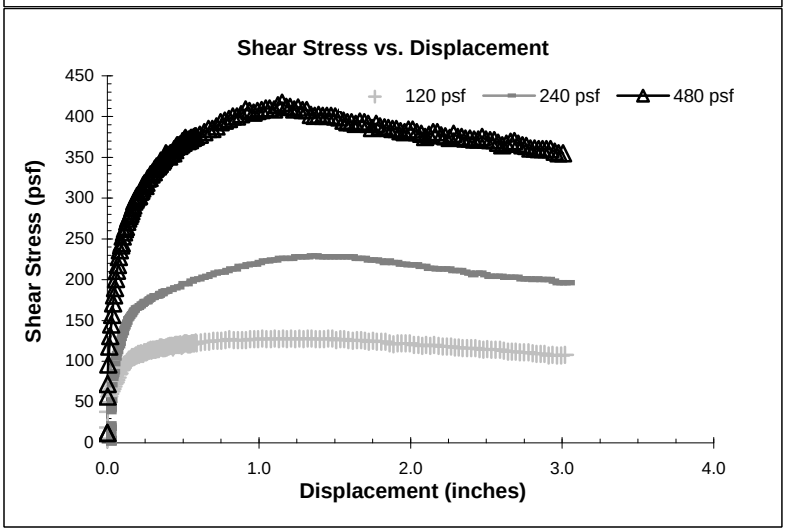
John M. Allen, E.I.T., 04/26/2008
Quality Review/Date

Tested Interface: Compacted Subbase (Sample #6) vs. Agru 40 mil LLDPE Microspike Geomembrane (323700-07)



Test Results

	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	37.9	28.1
Y-intercept or Adhesion (psf):	43	54



Test Conditions

Upper Box & Lower Box: Compacted Subbase soil (sample 6) remolded to 92 pcf at 19.5% moisture content; Agru 40 mil LLDPE Microspike geomembrane (short spike 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)	0	0	0
Normal Stress (psf)	120	240	480
Corrected Peak Shear Stress (psf)	137	229	417
Corrected Large Displacement Shear Stress (psf)	108	196	305
Peak Secant Angle (degrees)	48.8	43.7	41.0
Large Displacement Secant Angle (degrees)	42.0	39.2	32.4
Asperity (mils)	28.7	29.1	29.3

Soil Characterization performed by TRI

USCS:	Proctor Type:	standard
LL:	Max. Dry Density (pcf):	96.8
PL:	Optimum Moisture Content:	19.5

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.

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TRI/ENVIRONMENTAL, INC.

A Texas Research International Company

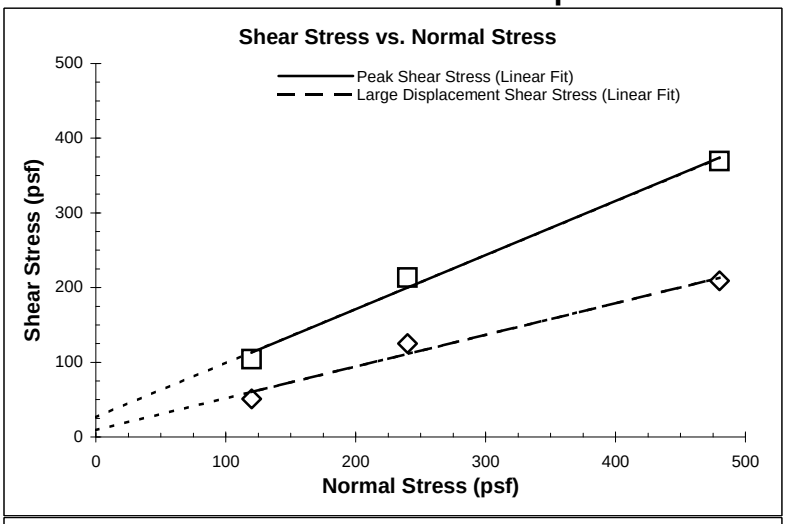
Interface Friction Test Report

Client: **S & ME**
Project: **Pine Hall Road Landfill, Cap**
Test Date: 04/24/08-04/24/08

TRI Log#: E2308-08-02
Test Method: ASTM D 5321

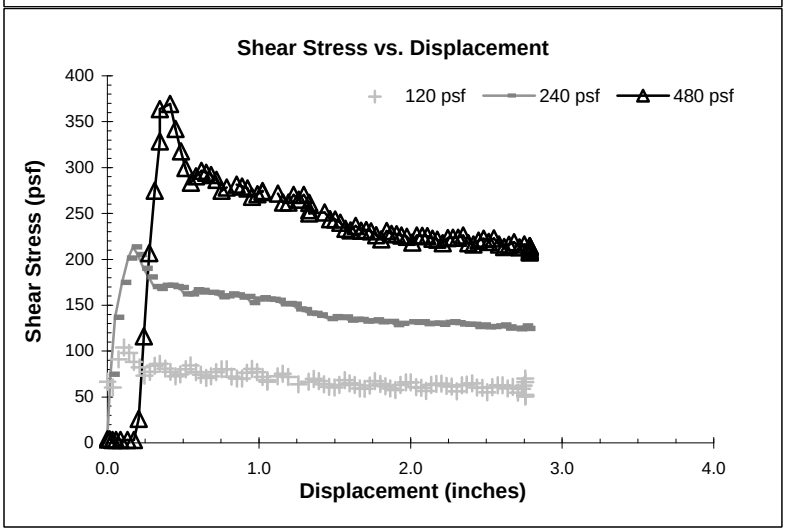
John M. Allen, E.I.T., 04/26/2008
Quality Review/Date

Tested Interface: Skaps TN330-2-8 Double-sided Geocomposite vs. Agru 40 mil LLDPE Microspike Geomembrane (323700-07)



Test Results

	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	35.9	23.1
Y-intercept or Adhesion (psf):	26	9



Test Conditions

Upper Box & Lower Box: Skaps TN330-2-8 double-sided geocomposite

Lower Box: Agru 40 mil LLDPE Microspike geomembrane (long spike 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)	0	0	0
Normal Stress (psf)	120	240	480
Corrected Peak Shear Stress (psf)	104	213	369
Corrected Large Displacement Shear Stress (psf)	51	125	209
Peak Secant Angle (degrees)	40.9	41.6	37.6
Large Displacement Secant Angle (degrees)	23.0	27.5	23.5
Asperity (mils)	38.8	36.6	38.4

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

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TRI/ENVIRONMENTAL, INC.

A Texas Research International Company

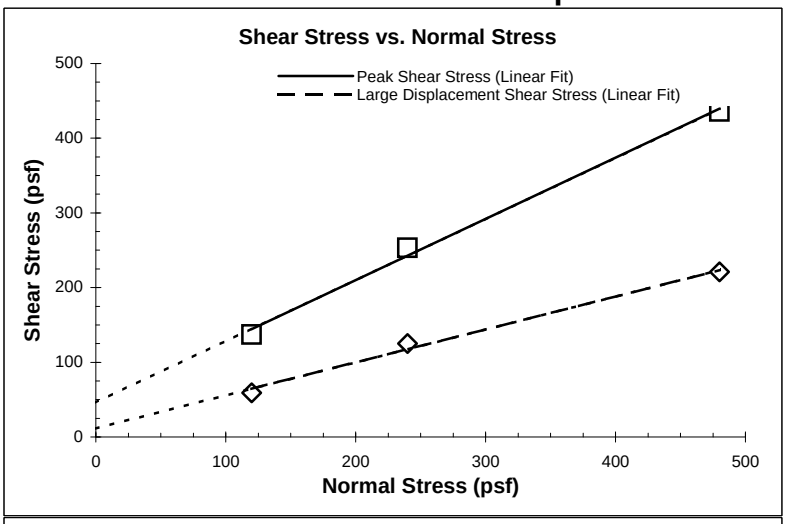
Interface Friction Test Report

Client: **S & ME**
Project: **Pine Hall Road Landfill, Cap**
Test Date: 04/03/08-04/03/08

TRI Log#: E2308-08-02
Test Method: ASTM D 5321

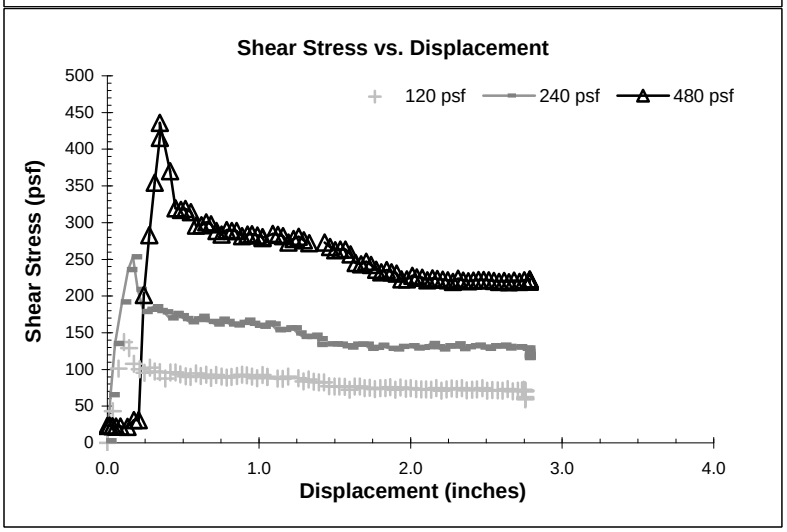
John M. Allen, E.I.T., 04/26/2008
Quality Review/Date

Tested Interface: Skaps TN330-2-8 Double-sided Geocomposite vs. Agru 40 mil LLDPE Microspike Geomembrane (323700-07)



Test Results

	Peak	Large Displacement (@ 3.0 in.)
Friction Angle (degrees):	39.3	23.9
Y-intercept or Adhesion (psf):	46	11



Test Conditions

Upper Box & Lower Box: Skaps TN330-2-8 double-sided geocomposite

Lower Box: Agru 40 mil LLDPE Microspike geomembrane (short spike 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)	0	0	0
Normal Stress (psf)	120	240	480
Corrected Peak Shear Stress (psf)	137	253	436
Corrected Large Displacement Shear Stress (psf)	59	125	221
Peak Secant Angle (degrees)	48.8	46.5	42.2
Large Displacement Secant Angle (degrees)	26.2	27.5	24.7
Asperity (mils)	27.6	28.8	29.2

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TRI/ENVIRONMENTAL, INC.

A Texas Research International Company

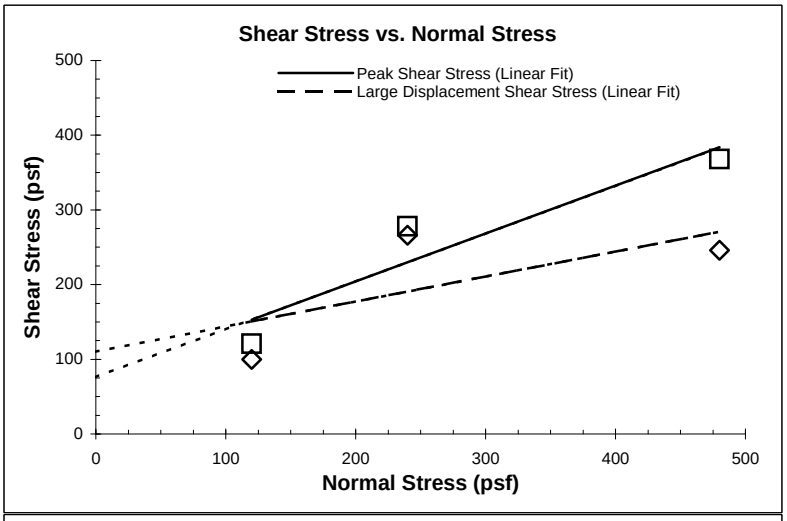
Interface Friction Test Report

Client: **S & ME**
Project: **Pine Hall Road Landfill, Cap**
Test Date: 04/22/08-04/23/08

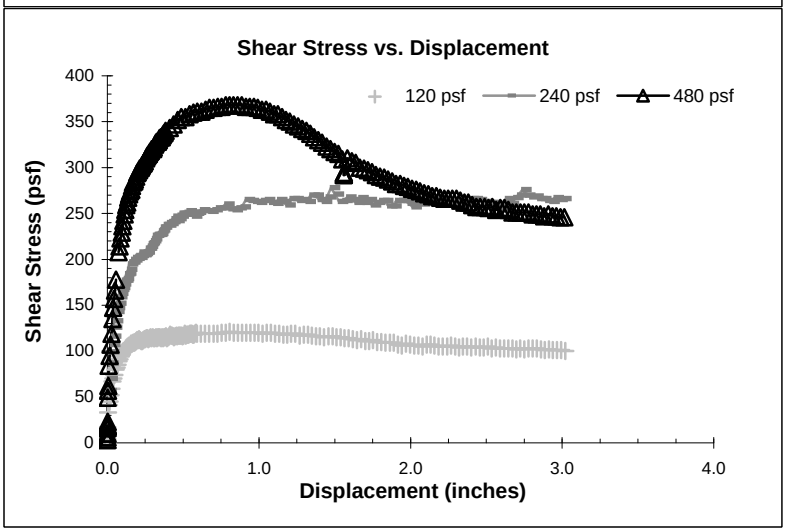
TRI Log#: E2308-08-02
Test Method: ASTM D 5321

John M. Allen, E.I.T., 04/23/2008
Quality Review/Date

Tested Interface: Skaps TN330-2-8 Double-sided Geocomposite vs. Cover Soil (#2)



Test Results		
	Peak	**Large Displacement (@ 3.0 in.)**
Friction Angle (degrees):	**32.7**	**18.6**
Y-intercept or Adhesion (psf):	**76**	**110**



Test Conditions

Upper Box & Lower Box: Cover Soil (#2) remolded to 83.8 pcf at 23.7% moisture content; Skaps TN330-2-8 double-sided geocomposite

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)	0	0	0
Normal Stress (psf)	120	240	480
Corrected Peak Shear Stress (psf)	121	278	368
Corrected Large Displacement Shear Stress (psf)	100	266	246
Peak Secant Angle (degrees)	45.2	49.2	37.5
Large Displacement Secant Angle (degrees)	39.8	47.9	27.1

Soil Characterization performed by TRI

USCS:	Proctor Type:	standard
LL:	Max. Dry Density (pcf):	88.2
PL:	Optimum Moisture Content:	23.7

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APPENDIX III

(LABORATORY CONFORMANCE TESTING)

June 13, 2008

Mail To:

Mr. Cedric Ruhl
S & ME, Inc.
9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com
cc email: kdaly@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2312-25-07
Material(s) Tested:	2 Agru 40 mil Microspike LLDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Tensile (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,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 212115.08
TRI Log #: E2312-25-07

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	43	40	41	42	44	44	40	39	46	43	**42**	2	38 min avg 8 of 10, 36 min
											39	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.934	0.934	0.934								**0.934**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.25	2.19									**2.22**	0.04	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	77	79	85	82	82						**81**	3	
TD Yield Strength (ppi)	83	86	79	83	89						**84**	4	
MD Break Strength (ppi)	156	125	147	146	143						**143**	11	60 min
TD Break Strength (ppi)	144	136	123	109	138						**130**	14	60 min
MD Yield Elongation (%)	24	24	24	24	24						**24**	0	
TD Yield Elongation (%)	19	19	19	19	19						**19**	0	
MD Break Elongation (%)	471	490	511	558	490						**504**	33	250 min
TD Break Elongation (%)	596	559	556	479	599						**558**	48	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	37	34	40	40	40	37	34	38	30	32	**36**	4	22 min
TD Tear Strength (lbs)	29	33	41	35	34	41	29	27	37	40	**35**	5	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 212224.08
TRI Log #: E2312-25-07

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	42	43	44	42	47	42	45	41	43	43	**43**	2	38 min avg 8 of 10, 36 min
											41	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.935	0.935	0.935								**0.935**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.23	2.23									**2.23**	0.00	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	87	81	82	85	89						**85**	3	
TD Yield Strength (ppi)	89	96	87	90	87						**90**	4	
MD Break Strength (ppi)	154	117	154	146	132						**141**	16	60 min
TD Break Strength (ppi)	142	138	126	119	126						**130**	9	60 min
MD Yield Elongation (%)	26	26	26	26	21						**25**	2	
TD Yield Elongation (%)	27	24	20	22	22						**23**	3	
MD Break Elongation (%)	485	451	451	443	550						**476**	44	250 min
TD Break Elongation (%)	513	553	548	506	534						**531**	21	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	36	39	35	35	37	42	38	36	38	42	**38**	3	22 min
TD Tear Strength (lbs)	37	34	34	38	35	37	34	36	39	37	**36**	2	22 min

MD Machine Direction TD Transverse Direction

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9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

June 16, 2008

Mail To:

Mr. Cedric Ruhl
S & ME, Inc.
9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com
cc email: kdaly@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2312-26-08
Material(s) Tested:	4 Agru 40 mil Microspike LLDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Tensile (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,

MPatel

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: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224468.08
TRI Log #: E2312-26-08

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	48	45	42	43	46	45	46	45	42	45	**45**	2	38 min avg 8 of 10, 36 min
											42	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.935	0.935	0.935								**0.935**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.31	2.33									**2.32**	0.01	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	81	79	82	80	79						**80**	1	
TD Yield Strength (ppi)	81	89	80	88	82						**84**	4	
MD Break Strength (ppi)	163	126	160	172	133						**151**	20	60 min
TD Break Strength (ppi)	138	148	126	149	137						**140**	9	60 min
MD Yield Elongation (%)	22	22	22	22	22						**22**	0	
TD Yield Elongation (%)	19	19	19	19	21						**19**	1	
MD Break Elongation (%)	459	468	508	475	521						**486**	27	250 min
TD Break Elongation (%)	566	590	529	579	574						**568**	23	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	37	36	37	34	33	36	37	37	37	37	**36**	1	22 min
TD Tear Strength (lbs)	34	32	30	31	32	36	33	36	34	37	**34**	2	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224575.08
TRI Log #: E2312-26-08

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	46	47	47	46	42	41	44	45	41	40	**44**	3	38 min avg 8 of 10, 36 min
											40	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.933	0.933	0.933								**0.933**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.28	2.28									**2.28**	0.00	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	78	85	83	78	81						**81**	3	
TD Yield Strength (ppi)	83	87	87	100	92						**90**	7	
MD Break Strength (ppi)	149	184	142	159	159						**159**	16	60 min
TD Break Strength (ppi)	115	127	132	157	147						**136**	17	60 min
MD Yield Elongation (%)	21	21	21	21	21						**21**	0	
TD Yield Elongation (%)	19	19	19	19	19						**19**	0	
MD Break Elongation (%)	535	496	489	449	551						**504**	40	250 min
TD Break Elongation (%)	539	536	541	601	581						**560**	30	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	40	41	35	35	35	37	36	34	35	36	**36**	2	22 min
TD Tear Strength (lbs)	38	37	34	31	33	29	30	32	32	34	**33**	3	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224582.08
TRI Log #: E2312-26-08

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	44	45	46	45	46	45	42	43	44	45	**45**	1	38 min avg 8 of 10, 36 min
											42	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.933	0.933	0.933								**0.933**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.35	2.33									**2.34**	0.01	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	81	85	77	84	73						**80**	5	
TD Yield Strength (ppi)	78	80	71	81	82						**78**	4	
MD Break Strength (ppi)	151	123	139	145	122						**136**	13	60 min
TD Break Strength (ppi)	145	159	132	156	149						**148**	11	60 min
MD Yield Elongation (%)	19	19	19	19	19						**19**	0	
TD Yield Elongation (%)	20	20	20	20	20						**20**	0	
MD Break Elongation (%)	603	504	573	593	549						**564**	39	250 min
TD Break Elongation (%)	569	525	530	499	549						**534**	26	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	36	35	35	35	36	36	35	31	37	32	**35**	2	22 min
TD Tear Strength (lbs)	35	36	32	32	31	33	29	34	31	30	**32**	2	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224690.08
TRI Log #: E2312-26-08

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	45	43	44	41	45	45	45	42	46	48	**44**	2	38 min avg 8 of 10, 36 min
											41	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.934	0.934	0.934								**0.934**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.43	2.44									**2.44**	0.01	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	80	76	79	79	81						**79**	2	
TD Yield Strength (ppi)	90	81	89	81	87						**86**	4	
MD Break Strength (ppi)	183	149	146	152	166						**159**	15	60 min
TD Break Strength (ppi)	170	139	146	116	133						**141**	20	60 min
MD Yield Elongation (%)	20	20	20	20	20						**20**	0	
TD Yield Elongation (%)	18	21	18	18	18						**19**	1	
MD Break Elongation (%)	465	471	570	475	498						**496**	43	250 min
TD Break Elongation (%)	678	574	596	510	555						**583**	62	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	30	36	34	35	35	31	36	34	37	36	**34**	2	22 min
TD Tear Strength (lbs)	36	29	33	40	34	33	29	34	38	41	**35**	4	22 min

MD Machine Direction TD Transverse Direction

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GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

June 17, 2008

Mail To:

Mr. Cedric Ruhl
S & ME, Inc.
9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com
cc email: kdaly@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2312-28-09
Material(s) Tested:	6 Agru 40 mil Microspike LLDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Tensile (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,

MPatel

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: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224604.08
TRI Log #: E2312-28-09

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	45	43	44	46	43	45	43	43	46	47	**45**	2	38 min avg 8 of 10, 36 min
											43	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.934	0.934	0.934								**0.934**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.50	2.47									**2.49**	0.02	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	80	81	76	74	77						**78**	3	
TD Yield Strength (ppi)	73	81	89	85	82						**82**	6	
MD Break Strength (ppi)	159	157	175	135	143						**154**	15	60 min
TD Break Strength (ppi)	133	122	153	127	129						**133**	12	60 min
MD Yield Elongation (%)	22	22	22	22	22						**22**	0	
TD Yield Elongation (%)	17	17	17	17	17						**17**	0	
MD Break Elongation (%)	548	569	476	550	495						**528**	40	250 min
TD Break Elongation (%)	581	503	599	548	540						**554**	38	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	33	33	32	33	33	32	34	33	35	32	**33**	1	22 min
TD Tear Strength (lbs)	35	31	30	30	31	32	35	28	28	30	**31**	2	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224697.08
TRI Log #: E2312-28-09

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	45	48	46	45	45	45	40	40	42	46	**44**	3	38 min avg 8 of 10, 36 min
											40	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.933	0.933	0.933								**0.933**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.43	2.38									**2.41**	0.04	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	67	74	76	79	77						**75**	5	
TD Yield Strength (ppi)	81	80	72	87	86						**81**	6	
MD Break Strength (ppi)	128	139	166	170	160						**153**	18	60 min
TD Break Strength (ppi)	122	135	120	152	133						**132**	13	60 min
MD Yield Elongation (%)	21	21	21	21	21						**21**	0	
TD Yield Elongation (%)	20	20	20	20	20						**20**	0	
MD Break Elongation (%)	544	515	498	498	485						**508**	23	250 min
TD Break Elongation (%)	546	568	546	626	566						**571**	33	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	38	29	29	36	39	30	38	34	36	30	**34**	4	22 min
TD Tear Strength (lbs)	32	27	31	29	27	30	31	32	29	30	**30**	2	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224711.08
TRI Log #: E2312-28-09

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	43	41	44	43	43	44	44	44	46	45	**44**	1	38 min avg 8 of 10, 36 min
											41	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.934	0.934	0.934								**0.934**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.47	2.44									**2.46**	0.02	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	85	81	80	84	83						**83**	2	
TD Yield Strength (ppi)	94	90	86	79	87						**87**	6	
MD Break Strength (ppi)	168	124	132	140	152						**143**	17	60 min
TD Break Strength (ppi)	141	147	142	121	138						**138**	10	60 min
MD Yield Elongation (%)	27	25	25	24	26						**25**	1	
TD Yield Elongation (%)	18	18	18	18	18						**18**	0	
MD Break Elongation (%)	486	494	498	536	511						**505**	20	250 min
TD Break Elongation (%)	584	598	599	544	580						**581**	22	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	33	34	33	31	37	35	30	34	34	30	**33**	2	22 min
TD Tear Strength (lbs)	30	30	31	32	32	30	31	31	32	31	**31**	1	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224719.08
TRI Log #: E2312-28-09

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	45	45	46	44	46	45	43	42	42	41	**44**	2	38 min avg 8 of 10, 36 min
											41	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.934	0.934	0.934								**0.934**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.46	2.43									**2.45**	0.02	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	84	81	76	83	71						**79**	5	
TD Yield Strength (ppi)	90	89	92	79	71						**84**	9	
MD Break Strength (ppi)	145	176	138	148	134						**148**	16	60 min
TD Break Strength (ppi)	141	141	136	114	134						**133**	11	60 min
MD Yield Elongation (%)	21	21	21	21	21						**21**	0	
TD Yield Elongation (%)	21	21	21	21	21						**21**	0	
MD Break Elongation (%)	525	511	553	504	461						**511**	33	250 min
TD Break Elongation (%)	559	564	556	516	584						**556**	25	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	31	33	33	36	34	32	33	36	34	31	**33**	2	22 min
TD Tear Strength (lbs)	28	31	32	34	29	28	31	31	34	35	**31**	2	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 224726.08
TRI Log #: E2312-28-09

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	45	46	45	43	46	44	43	40	45	47	**44**	2	38 min avg 8 of 10, 36 min
											40	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.933	0.933	0.933								**0.933**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.44	2.44									**2.44**	0.00	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	79	74	75	74	79						**76**	3	
TD Yield Strength (ppi)	81	78	82	84	76						**80**	3	
MD Break Strength (ppi)	154	159	131	125	178						**149**	22	60 min
TD Break Strength (ppi)	140	140	124	150	115						**134**	14	60 min
MD Yield Elongation (%)	21	21	21	21	21						**21**	0	
TD Yield Elongation (%)	22	22	22	22	22						**22**	0	
MD Break Elongation (%)	565	496	511	496	491						**512**	31	250 min
TD Break Elongation (%)	603	590	536	598	500						**565**	45	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	34	29	33	33	35	30	32	35	34	33	**33**	2	22 min
TD Tear Strength (lbs)	29	30	31	31	35	29	31	31	32	33	**31**	2	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 225105.08
TRI Log #: E2312-28-09

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	41	43	46	45	45	45	48	46	41	45	**45**	2	38 min avg 8 of 10, 36 min
											41	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.933	0.933	0.933								**0.933**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.40	2.45									**2.43**	0.04	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	80	82	85	73	86						**81**	5	
TD Yield Strength (ppi)	73	82	73	82	84						**79**	5	
MD Break Strength (ppi)	150	151	162	143	155						**152**	7	60 min
TD Break Strength (ppi)	137	152	123	157	141						**142**	13	60 min
MD Yield Elongation (%)	21	21	21	21	21						**21**	0	
TD Yield Elongation (%)	19	19	19	19	19						**19**	0	
MD Break Elongation (%)	573	523	531	521	525						**535**	22	250 min
TD Break Elongation (%)	590	611	559	644	578						**596**	33	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	31	33	32	36	29	33	34	32	33	33	**33**	2	22 min
TD Tear Strength (lbs)	29	31	32	31	31	27	32	31	32	27	**30**	2	22 min

MD Machine Direction TD Transverse Direction

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GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

June 18, 2008

Mail To:

Mr. Cedric Ruhl
S & ME, Inc.
9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com
cc email: kdaly@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2312-30-01
Material(s) Tested:	2 Agru 40 mil Microspike LLDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Tensile (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,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 225113.08
TRI Log #: E2312-30-01

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	46	43	44	45	45	47	43	42	45	46	**45**	2	38 min avg 8 of 10, 36 min
											42	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.934	0.934	0.934								**0.934**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.52	2.50									**2.51**	0.01	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	83	74	85	86	85						**83**	5	
TD Yield Strength (ppi)	87	78	90	86	84						**85**	4	
MD Break Strength (ppi)	152	138	145	138	143						**143**	6	60 min
TD Break Strength (ppi)	163	126	140	160	181						**154**	21	60 min
MD Yield Elongation (%)	21	21	19	19	17						**19**	2	
TD Yield Elongation (%)	22	22	22	22	22						**22**	0	
MD Break Elongation (%)	585	593	585	551	594						**582**	17	250 min
TD Break Elongation (%)	536	505	456	563	481						**508**	42	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	30	30	33	35	34	33	32	36	33	36	**33**	2	22 min
TD Tear Strength (lbs)	29	31	31	33	31	33	31	31	33	31	**31**	1	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 225120.08
TRI Log #: E2312-30-01

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	41	43	43	45	46	45	45	46	40	43	**44**	2	38 min avg 8 of 10, 36 min
											40	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.934	0.934	0.934								**0.934**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.41	2.37									**2.39**	0.03	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	87	77	89	79	83						**83**	5	
TD Yield Strength (ppi)	86	79	87	83	88						**85**	4	
MD Break Strength (ppi)	143	121	147	159	145						**143**	14	60 min
TD Break Strength (ppi)	177	125	163	136	146						**149**	21	60 min
MD Yield Elongation (%)	19	20	19	24	26						**22**	3	
TD Yield Elongation (%)	26	24	22	17	19						**22**	4	
MD Break Elongation (%)	591	536	586	484	516						**543**	46	250 min
TD Break Elongation (%)	491	500	486	580	598						**531**	53	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	34	34	32	35	33	32	35	34	34	32	**34**	1	22 min
TD Tear Strength (lbs)	27	31	30	29	28	32	29	31	30	33	**30**	2	22 min

MD Machine Direction TD Transverse Direction

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June 19, 2008

Mail To:

Mr. Cedric Ruhl
S & ME, Inc.
9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com
cc email: kdaly@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2312-31-09
Material(s) Tested:	1 Agru 40 mil Microspike LLDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Tensile (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,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 225227.08
TRI Log #: E2312-31-09

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	45	46	47	46	45	42	47	45	44	46	**45**	1	38 min avg 8 of 10, 36 min
											42	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.933	0.933	0.933								**0.933**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.52	2.50									**2.51**	0.01	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	74	76	76	76	81						**77**	3	
TD Yield Strength (ppi)	80	80	79	82	87						**82**	3	
MD Break Strength (ppi)	147	136	164	133	166						**149**	15	60 min
TD Break Strength (ppi)	114	132	140	133	132						**130**	10	60 min
MD Yield Elongation (%)	22	22	22	22	22						**22**	0	
TD Yield Elongation (%)	19	19	19	19	19						**19**	0	
MD Break Elongation (%)	486	488	459	526	526						**497**	29	250 min
TD Break Elongation (%)	484	569	579	568	541						**548**	39	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	39	39	32	34	36	35	36	32	33	30	**35**	3	22 min
TD Tear Strength (lbs)	31	30	30	31	28	33	34	30	32	32	**31**	2	22 min

MD Machine Direction TD Transverse Direction

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June 20, 2008

Mail To:

Mr. Cedric Ruhl
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9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com
cc email: kdaly@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2312-34-05
Material(s) Tested:	1 Agru 40 mil Microspike LLDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Tensile (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,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 225459.08
TRI Log #: E2312-34-05

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	44	46	44	47	48	43	44	46	45	42	**45**	2	38 min avg 8 of 10, 36 min
											42	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.935	0.935	0.935								**0.935**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.83	2.85									**2.84**	0.01	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	88	86	83	90	82						**86**	3	
TD Yield Strength (ppi)	91	96	101	91	95						**95**	4	
MD Break Strength (ppi)	171	146	154	144	168						**157**	12	60 min
TD Break Strength (ppi)	138	130	166	143	133						**142**	14	60 min
MD Yield Elongation (%)	21	21	22	21	21						**21**	0	
TD Yield Elongation (%)	19	19	19	21	17						**19**	1	
MD Break Elongation (%)	493	490	508	568	481						**508**	35	250 min
TD Break Elongation (%)	575	504	636	523	548						**557**	52	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	35	34	34	34	35	34	34	34	35	36	**35**	1	22 min
TD Tear Strength (lbs)	40	32	31	33	32	31	33	34	31	30	**33**	3	22 min

MD Machine Direction TD Transverse Direction

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June 23, 2008

Mail To:

Mr. Cedric Ruhl
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9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com
cc email: kdaly@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2312-37-03
Material(s) Tested:	3 Agru 40 mil Microspike LLDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Tensile (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: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 225467.08
TRI Log #: E2312-37-03

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	45	47	49	48	46	45	44	41	44	44	**45**	2	38 min avg 8 of 10, 36 min
											41	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.934	0.934	0.934								**0.934**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.45	2.49									**2.47**	0.03	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	77	80	82	82	82						**81**	2	
TD Yield Strength (ppi)	82	83	83	87	91						**85**	4	
MD Break Strength (ppi)	145	140	149	146	163						**149**	9	60 min
TD Break Strength (ppi)	145	135	123	135	146						**137**	9	60 min
MD Yield Elongation (%)	19	19	19	19	19						**19**	0	
TD Yield Elongation (%)	19	19	19	19	19						**19**	0	
MD Break Elongation (%)	538	525	475	500	461						**500**	32	250 min
TD Break Elongation (%)	585	549	501	560	581						**555**	34	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	38	36	36	36	36	41	34	37	35	35	**36**	2	22 min
TD Tear Strength (lbs)	35	32	36	31	37	34	32	31	35	34	**34**	2	22 min

MD Machine Direction TD Transverse Direction

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

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 225474.08
TRI Log #: E2312-37-03

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	45	44	43	45	47	46	44	42	44	46	**45**	2	38 min avg 8 of 10, 36 min
											42	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.935	0.935	0.935								**0.935**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.46	2.47									**2.47**	0.01	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	81	82	76	84	83						**81**	3	
TD Yield Strength (ppi)	89	88	92	82	90						**88**	4	
MD Break Strength (ppi)	177	165	143	149	141						**155**	15	60 min
TD Break Strength (ppi)	139	130	147	136	159						**142**	11	60 min
MD Yield Elongation (%)	24	24	22	22	22						**23**	1	
TD Yield Elongation (%)	21	21	21	21	21						**21**	0	
MD Break Elongation (%)	494	488	554	548	508						**518**	31	250 min
TD Break Elongation (%)	579	519	589	571	625						**577**	38	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	37	37	32	34	37	38	38	38	37	34	**36**	2	22 min
TD Tear Strength (lbs)	35	34	33	32	42	36	32	31	36	35	**35**	3	22 min

MD Machine Direction TD Transverse Direction

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

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 225581.08
TRI Log #: E2312-37-03

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
													38 min avg
Thickness (mils)	48	46	48	47	42	41	45	44	42	42	**45**	3	8 of 10, 36 min
											41	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.935	0.935	0.935								**0.935**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.41	2.44									**2.43**	0.02	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	78	72	78	80	80						**78**	3	
TD Yield Strength (ppi)	83	86	87	75	81						**82**	5	
MD Break Strength (ppi)	159	126	137	157	175						**151**	19	60 min
TD Break Strength (ppi)	144	153	151	137	127						**142**	11	60 min
MD Yield Elongation (%)	22	22	22	22	22						**22**	0	
TD Yield Elongation (%)	18	18	18	18	18						**18**	0	
MD Break Elongation (%)	469	498	525	526	470						**498**	28	250 min
TD Break Elongation (%)	583	623	605	595	519						**585**	40	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	41	37	37	37	37	32	35	37	35	38	**37**	2	22 min
TD Tear Strength (lbs)	34	33	40	31	35	38	30	34	33	32	**34**	3	22 min

MD Machine Direction TD Transverse Direction

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

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July 25, 2008

Mail To:

Mr. Cedric Ruhl
S & ME, Inc.
9751 Southern Pine Blvd.
Charlotte, NC 28273

email: cruhl@smeinc.com
cc email: kdaly@smeinc.com

Bill To:

<= Same

Dear Mr. Ruhl:

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:	**Pine Hall Road, Ash Landfill**
TRI Job Reference Number:	E2312-85-06
Material(s) Tested:	2 Agru 40 mil Microspike LLDPE Geomembrane(s)
Test(s) Requested:	Thickness (ASTM D 5994) Density (ASTM D 1505) Carbon Content (ASTM D 1603, mod.) Tensile (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,

MPatel

Dr. Mansukh Patel
Sr. Laboratory Coordinator
Geosynthetic Services Division
www.GeosyntheticTesting.com

cc: Sam R. Allen, Vice President and Division Manager

GeosyntheticTesting.com
9063 Bee Caves Road / Austin, TX 78733 / 512 263 2101 / fax: 512 263 2558

GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 220599.08
TRI Log #: E2312-85-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	39	40	42	44	43	41	42	43	43	41	**42**	2	38 min avg 8 of 10, 36 min
											39	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.935	0.935	0.935								**0.935**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.65	2.64									**2.65**	0.01	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	76	75	80	79	79						**78**	2	
TD Yield Strength (ppi)	84	80	88	82	86						**84**	3	
MD Break Strength (ppi)	123	131	121	120	164						**132**	19	60 min
TD Break Strength (ppi)	126	127	136	123	122						**127**	6	60 min
MD Yield Elongation (%)	22	22	22	22	22						**22**	0	
TD Yield Elongation (%)	19	19	21	21	19						**20**	1	
MD Break Elongation (%)	476	506	470	501	498						**490**	16	250 min
TD Break Elongation (%)	561	594	551	518	545						**554**	28	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	32	32	30	30	31	31	35	29	33	28	**31**	2	22 min
TD Tear Strength (lbs)	28	29	29	26	30	30	32	29	28	29	**29**	2	22 min

MD Machine Direction TD Transverse Direction

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GEOMEMBRANE TEST RESULTS

TRI Client: S & ME, Inc.
Project: Pine Hall Road, Ash Landfill

Material: Agru 40 mil Microspike LLDPE Geomembrane
Sample Identification: 227468.08
TRI Log #: E2312-85-06

PARAMETER	TEST REPLICATE NUMBER 1	2	3	4	5	6	7	8	9	10	MEAN	STD. DEV.	PROJ. SPEC.
Thickness (ASTM D 5994)													
Thickness (mils)	43	42	43	41	47	44	42	44	41	40	**43**	2	38 min avg 8 of 10, 36 min
											40	<< min	34 min
Density (ASTM D 1505)													
Density (g/cm3)	0.935	0.935	0.935								**0.935**	0.000	0.939 min
Carbon Black Content (ASTM D 1603, mod.)													
% Carbon Black	2.49	2.49									**2.49**	0.00	2 - 3%
Tensile Properties (ASTM D 6693, 2 ipm strain rate)													
MD Yield Strength (ppi)	75	73	78	80	84						**78**	4	
TD Yield Strength (ppi)	79	82	81	82	92						**83**	5	
MD Break Strength (ppi)	138	135	134	166	136						**142**	14	60 min
TD Break Strength (ppi)	115	128	145	109	138						**127**	15	60 min
MD Yield Elongation (%)	20	20	20	20	20						**20**	0	
TD Yield Elongation (%)	19	19	19	19	19						**19**	0	
MD Break Elongation (%)	534	496	516	481	483						**502**	23	250 min
TD Break Elongation (%)	499	558	618	485	561						**544**	53	250 min
Tear Resistance (ASTM D 1004)													
MD Tear Strength (lbs)	36	34	30	35	36	32	31	30	29	32	**33**	3	22 min
TD Tear Strength (lbs)	29	30	33	29	28	33	28	30	28	33	**30**	2	22 min

MD Machine Direction TD Transverse Direction

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

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APPENDIX IV

(SUBGRADE CERTIFICATION FORMS)

S&ME

SUBGRADE CERTIFICATION

Date: June 18, 2008

Material: MicroSpike Dbl Sided LL 40mil

Manufacurer: Agru/America

Installer: ESI

S&ME Project No.: 1356-07-017

Project Name: Pine Hall Road Ash Landfill Closure

Project Location: Belews Creek, North Carolina

P- 1 through P- 28

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 6-18-08

Ron Powell

Installer's Personnel

Jimmy Atkins

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: June 19, 2008

Material: MicroSpikeDbl Sided LL 40mil

Manufacurer: Agru/America

Installer: ESI

S&ME Project No.: 1356-07-017

Project Name: Pine Hall Road Ash Landfill Closure

Project Location: Belews Creek, North Carolina

P- 29 through P- 52

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 6-19-08

Ron Powell

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: June 20, 2008

Material: MicroSpike Dbl Sided LL 40mil

Manufacurer: Agru1America

Installer: ESI

S&ME Project No.: 1356-07-017

Project Name: Pine Hall Road Ash Landfill Closure

Project Location: Belews Creek, North Carolina

P- 53 through P- 74

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 6-20-08

Ron Powell

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: June 25, 2008

Material: MicroSpikeDbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru/America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 75 through P- 80

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 6-25-08

Ron Powell

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: June 26, 2008

Material: MicroSpike Dbl Sided LL 40mil

Manufacurer: Agru/America

Installer: ESI

S&ME Project No.: 1356-07-017

Project Name: Pine Hall Road Ash Landfill Closure

Project Location: Belews Creek, North Carolina

P- 81 through P- 102

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 6-26-08

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: June 27, 2008

Material: MicroSpike Dbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 103 through P- 111

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

2/10's of an inch of rainfall last evening created reels along leading edge of geomembrane, where it ran off.

CORRECTIVE ACTION:

Backdrug w/a dozer, and rolled w/a smooth drum. Some hand work performed under leading edge (ie; filled in and leveled reels).

Date Corrective Action was Implemented: 6-27-08

Date Subgrade was Accepted by Installer: 6-27-08

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: June 28, 2008

Material: MicroSpike Dbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru/America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 112 through P- 122

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

Reels along leading edge of geomembrane, and on some areas of slope.

CORRECTIVE ACTION: Geomembrane pulled back. Subgrade backdrug w/a dozer, filling in low areas. Smooth drum roller sealed off.

Date Corrective Action was Implemented: 6-28-08

Date Subgrade was Accepted by Installer: 6-28-08

Ron Powell

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: June 29, 2008

Material: MicroSpikeDbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru/America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 123 through P- 132

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 6-29-08

Installer's Personnel

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: June 30, 2008

Material: MicroSpike Dbl Sided LL 40mil

Manufacurer: Agru America

Installer: ESI

S&ME Project No.: 1356-07-017

Project Name: Pine Hall Road Ash Landfill Closure

Project Location: Belews Creek, North Carolina

P- 133 through P- 142

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 6-30-08

Installer's Personnel

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 1, 2008

Material: MicroSpike Dbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru/America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 143 through P- 161

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-1-08

Installer's Personnel

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 2, 2008

Material: MicroSpikeDbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru/America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 162 through P- 179

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-2-08

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 3, 2008

Material: MicroSpike Dbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 180 through P- 184

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-3-08

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 16, 2008

Material: MicroSpikeDbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 185 through P- 207

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-16-08

Installer's Personnel

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 17, 2008

Material: MicroSpike Dbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 208 through P- 231

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-17-08

Installer's Personnel

Jimmy Addison

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 18, 2008

Material: MicroSpikeDbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 232 through P- 262

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-18-08

Installer's Personnel

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 22, 2008

Material: MicroSpike Dbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru/America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 263 through P- 272

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-22-08

Installer's Personnel

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 23, 2008

Material: MicroSpike Dbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 273 through P- 287

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-23-08

Installer's Personnel

Jimmy Addis

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 24, 2008

Material: MicroSpikeDbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 288 through P- 301

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-24-08

Installer's Personnel

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: July 25, 2008

Material: MicroSpikeDbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 302 through P- 308

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 7-25-08

Installer's Personnel

CQA Personnel

S&ME

SUBGRADE CERTIFICATION

Date: August 1, 2008

Material: MicroSpike Dbl Sided LL 40mil

S&ME Project No.: 1356-07-017

Manufacurer: Agru1America

Project Name: Pine Hall Road Ash Landfill Closure

Installer: ESI

Project Location: Belews Creek, North Carolina

P- 309 through P- 324

THE SUBGRADE THAT THE ABOVE LISTED PANELS ARE TO BE DEPLOYED UPON WAS INSPECTED AND DETERMINED TO BE SUITABLE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

IF THE SUBGRADE IS NOT SUITABLE, STATE REASONS:

CORRECTIVE ACTION:

Date Corrective Action was Implemented:

Date Subgrade was Accepted by Installer: 8-1-08

Installer's Personnel

Jimmy Atkins

CQA Personnel

APPENDIX V

(GEOMEMBRANE DEPLOYMENT REPORTS)

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/18/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 1 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	0	0		
1	212120	292	22.5	6,570		JA	
2	212120	283	22.5	6,368		JA	
3	212117	289	22	6,358		JA	
4	212117	276	22.5	6,210		JA	
5	212228	267	22.5	6,008		JA	
6	212228	176	22.5	3,960		JA	
7	212116	201	22.5	4,523		JA	cut
8	312116	173	22.5	3,893		JA	
9	212116	131	22.5	2,948		JA	cut
10	212229	133	22.5	2,993		JA	cut
11	212228	119	22.5	2,678		JA	cut
12	212229	103	22.5	2,318		JA	
13	212229	86	22.5	1,935		JA	
14	212229	54	22.5	1,215		JA	
15	212226	33	22.5	743		JA	
16	212226	20	22.5	450		JA	cut
17	212229	163	22.5	3,668		JA	
18	212227	215	22.5	4,838		JA	
19	212227	218	22.5	4,905		JA	
20	212227	171	22.5	3,848		JA	
21	212225	224	22.5	5,040		JA	
22	212225	227	22.5	5,108		JA	
23	212225	55	22.5	1,238		JA	
24	212121	232	22.5	5,220		JA	
25	212121	226	22.5	5,085		JA	
26	212121	103	22.5	2,318		JA	
27	212225	88	22.5	1,980		JA	
28	212121	34	22.5	765		JA	
			Daily Total	103,176	0		
			Total to Date	103,176	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/19/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 2 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	103,176	0		
29	212223	227	22.5	5,108		JA	
30	212223	228	22.5	5,130		JA	
31	212223	99	22.5	2,228		JA	
32	212228	130	22.5	2,925		JA	
33	212228	225	22.5	5,063		JA	
34	212228	225	22.5	5,063		JA	
35	212115	224	22.5	5,040		JA	
36	212115	220	22.5	4,950		JA	
37	212115	157	22.5	3,533		JA	
38	212224	63	22.5	1,418		JA	
39	212224	217	22.5	4,883		JA	
40	212224	217	22.5	4,883		JA	
41	212230	94	22.5	2,115		JA	
42	212230	122	22.5	2,745		JA	
43	212230	347	22.5	7,808		JA	
44	224578	347	22.5	7,808		JA	
45	224578	236	22.5	5,310		JA	
46	212230	111	22.5	2,498		JA	
47	212222	332	22.5	7,470		JA	
48	212222	267	22.5	6,008		JA	
49	224577	53	22.5	1,193		JA	
50	224577	320	22.5	7,200		JA	
51	224577	215	22.5	4,838		JA	
52	224602	83	22.5	1,868		JA	
			Daily Total	107,078	0		
			Total to Date	210,253	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/20/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 3 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	210,253	0		
53	4577	256	22.5	5,760		JA / PB	
54	4577	194	22.5	4,365		JA / PB	
55	4577	30	22.5	675		JA / PB	
56	4577	24	22.5	540		JA / PB	
57	4600	162	22.5	3,645		JA / PB	
58	4600	139	22.5	3,128		JA / PB	
59	4600	24	22.5	540		JA / PB	
60	4600	91	22.5	2,048		JA / PB	
61	4600	65	22.5	1,463		JA / PB	
62	4600	21	22.5	473		JA / PB	
63	4722	353	22.5	7,943		JA / PB	
64	4722	243	22.5	5,468		JA / PB	
65	4721	120	22.5	2,700		JA / PB	
66	4721	372	22.5	8,370		JA / PB	
67	4571	382	22.5	8,595		JA / PB	
68	4571	217	22.5	4,883		JA / PB	
69	4588	167	22.5	3,758		JA / PB	
70	4588	388	22.5	8,730		JA / PB	
71	4588	28	22.5	630		JA / PB	
72	4715	365	22.5	8,213		JA / PB	
73	4715	235	22.5	5,288		JA / PB	
74	4724	169	22.5	3,803		JA / PB	
			Daily Total	91,013	0		
			Total to Date	301,266	0		

CQA Personnel: Jimmy Addis / Phil Banner

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/25/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 4 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	301,266	0		
75	4714	399	22.5	8,978		JA	
76	4714	202	22.5	4,545		JA	
77	4724	206	22.5	4,635		JA	
78	4724	227	22.5	5,108		JA	
79	4601	176	22.5	3,960		JA	
80	4601	413	22.5	9,293		JA	
			Daily Total	36,518	0		
			Total to Date	337,783	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/26/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 5 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	337,783	0		
81	4608	427	22.5	9,608		JA	
82	4608	170	22.5	3,825		JA	
83	4607	272	22.5	6,120		JA	
84	4607	327	22.5	7,358		JA	
85	4603	128	22.5	2,880		JA	
86	4603	469	22.5	10,553		JA	
87	4711	479	22.5	10,778		JA	
88	4711	121	22.5	2,723		JA	
89	4697	371	22.5	8,348		JA	
90	4697	214	22.5	4,815		JA	
91	4470	278	22.5	6,255		JA	
92	4470	326	22.5	7,335		JA	
93	4573	170	22.5	3,825		JA	
94	4573	434	22.5	9,765		JA	
95	4695	55	22.5	1,238		JA	
96	4695	495	22.5	11,138		JA	
97	4695	57	22.5	1,283		JA	
98	4586	422	22.5	9,495		JA	
99	4586	176	22.5	3,960		JA	
100	4579	302	22.5	6,795		JA	
101	4579	303	22.5	6,818		JA	
102	4606	175	22.5	3,938		JA	
				0			
			Daily Total	138,848	0		
			Total to Date	476,631	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/27/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 6 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	476,631	0		
103	4606	424	22.5	9,540		MS	
104	4690	56	22.5	1,260		MS	
105	4690	481	22.5	10,823		MS	
106	4690	60	22.5	1,350		MS	
107	4583	413	22.5	9,293		MS	
108	4583	180	22.5	4,050		MS	
109	4694	288	22.5	6,480		MS	
110	4694	322	22.5	7,245		MS	
111	4572	158	22.5	3,555		MS	
			Daily Total	53,595	0		
			Total to Date	530,226	0		

CQA Personnel: Michael Simms

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/28/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 7 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	530,226	0		
112	4572	431	22.5	9,698		MS	
113	4605	41	22.5	923		MS	
114	4605	470	22.5	10,575		MS	wind blew up during deployment
115	4605	87	22.5	1,958		MS	
116	4691	385	22.5	8,663		MS	wind blew up slightly during deployment
117	4691	214	22.5	4,815		MS	
118	4587	265	22.5	5,963		MS	
119	4587	334	22.5	7,515		MS	
120	4692	150	22.5	3,375		MS	
121	4692	456	22.5	10,260		MS	
122	4689	457	22.5	10,283		MS	
				0			
			Daily Total	74,025	0		
			Total to Date	604,251	0		

CQA Personnel: Michael Simms

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/29/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 8 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	604,251	0		
123	4693	382	22.5	8,595		MS	
124	4693	213	22.5	4,793		MS	
125	4689	140	22.5	3,150		MS	
126	4469	311	22.5	6,998		MS	
127	4469	291	22.5	6,548		MS	
128	4584	230	22.5	5,175		MS	
129	4584	203	22.5	4,568		MS	
130	4584	152	22.5	3,420		MS	
131	4710	132	22.5	2,970		MS	
132	4710	98	22.5	2,205		MS	
			Daily Total	48,420	0		
			Total to Date	652,671	0		

CQA Personnel: Michael Simms

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 06/30/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 9 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	652,671	0		
133	4699	287	22.5	6,458		WH	ne corner 6/30/08
134	4699	264	22.5	5,940		WH	ne corner 6/30/08
135	4718	247	22.5	5,558		WH	ne corner 6/30/08
136	4718	206	22.5	4,635		WH	ne corner 6/30/08
137	4718	147	22.5	3,308		WH	ne corner 6/30/08
138	4604	29	22.5	653		WH	Ne corner @bottom of 137 6/30/08
139	4604	138	22.5	3,105		WH	ne corner 6/30/08
140	4604	98	22.5	2,205		WH	ne corner 6/30/08
141	4604	66	22.5	1,485		WH	ne corner 6/30/08
142	4604	29	22.5	653		WH	ne corner 6/30/08 (days last)
			Daily Total	33,998	0		
			Total to Date	686,668	0		

CQA Personnel: William Harrison

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/01/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 10 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	686,668	0		
143	4710	334	22.5	7,515		JA	
144	4604	225	22.5	5,063		JA	cut
145	4582	87	22.5	1,958		JA	
146	4582	46	22.5	1,035		JA	cut
147	4582	398	22.5	8,955		JA	cut
148	5354	418	22.5	9,405		JA	
149	5478	609	22.5	13,703		JA	
150	5474	198	22.5	4,455		JA	
151	5474	169	22.5	3,803		JA	
152	5474	113	22.5	2,543		JA	cut
153	5474	55	22.5	1,238		JA	cut
154	4721	47	22.5	1,058		JA	
155	4721	48	22.5	1,080		JA	cut
156	5461	606	22.5	13,635		JA	
157	5463	605	22.5	13,613		JA	
158	5466	603	22.5	13,568		JA	
159	5114	608	22.5	13,680		JA	
160	5227	607	22.5	13,658		JA	
161	5579	613	22.5	13,793		JA	
			Daily Total	143,753	0		
			Total to Date	830,421	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/02/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 11 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	830,421	0		
162	5580	611	22.5	13,748		JA	
163	5221	609	22.5	13,703		JA	
164	5117	610	22.5	13,725		JA	
165	5118	611	22.5	13,748		JA	
166	5112	610	22.5	13,725		JA	
167	5222	613	22.5	13,793		JA	
168	5120	614	22.5	13,815		JA	
169	5460	610	22.5	13,725		JA	
170	5472	611	22.5	13,748		JA	
171	5356	608	22.5	13,680		JA	
172	4698	609	22.5	13,703		JA	
173	4609	610	22.5	13,725		JA	
174	4717	610	22.5	13,725		JA	
175	4720	609	22.5	13,703		JA	
176	4716	611	22.5	13,748		JA	
177	4713	607	22.5	13,658		JA	
178	4723	608	22.5	13,680		JA	
179	4575	608	22.5	13,680		JA	
			Daily Total	247,028	0		
			Total to Date	1,077,448	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/03/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 12 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,077,448	0		
180	5855	602	22.5	13,545		JA	
181	4576	603	22.5	13,568		JA	
182	5475	604	22.5	13,590		JA	
183	4531	568	22.5	12,780		JA	
184	5473	550	22.5	12,375		JA	
			Daily Total	65,858	0		
			Total to Date	1,143,306	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/16/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 13 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,143,306	0		
185	5464	330	22.5	7,425		JA	
186	4724	331	22.5	7,448		JA	di-6
187	5107	294	22.5	6,615		JA	
188	5107	212	22.5	4,770		JA	
189	5107	100	22.5	2,250		JA	cut
190	5468	185	22.5	4,163		JA	cut
191	5468	115	22.5	2,588		JA	cut
192	5468	94	22.5	2,115		JA	
193	5468	27	22.5	608		JA	cut
194	5468	8	11.25	90		JA	cut
195	5468	120	22.5	2,700		JA	
196	4727	180	22.5	4,050		JA	
197	5103	321	22.5	7,223		JA	
198	5103	288	22.5	6,480		JA	
199	5225	55	22.5	1,238		JA	
200	5225	365	22.5	8,213		JA	
201	5225	184	22.5	4,140		JA	
202	5358	207	22.5	4,658		JA	
203	5358	395	22.5	8,888		JA	
204	5581	380	22.5	8,550		JA	
205	5581	229	22.5	5,153		JA	
206	5476	84	22.5	1,890		JA	
207	5476	252	22.5	5,670		JA	
			Daily Total	106,920	0		
			Total to Date	1,250,226	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/17/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 14 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,250,226	0		
208	5476	211	22.5	4,748		JA	
209	5467	165	22.5	3,713		JA	
210	5467	151	22.5	3,398		JA	
211	5467	125	22.5	2,813		JA	
212	5467	92	22.5	2,070		JA	
213	5477	48	22.5	1,080		JA	
214	5477	17	22.5	383		JA	
215	5464	237	22.5	5,333		JA	E top fill in
216	5464	18	21	378		JA	cut
217	5464	13	11	143		JA	
218	5119	214	22.5	4,815		JA	S side(pm)
219	5119	214	22.5	4,815		JA	
220	5119	180	22.5	4,050		JA	
221	5477	35	22.5	788		JA	
222	5477	208	22.5	4,680		JA	
223	5477	209	22.5	4,703		JA	
224	5224	208	22.5	4,680		JA	
225	5224	207	22.5	4,658		JA	
226	5224	181	22.5	4,073		JA	
227	5477	31	22.5	698		JA	
228	5115	209	22.5	4,703		JA	
229	5115	210	22.5	4,725		JA	
230	5115	177	22.5	3,983		JA	
231	4727	33	22.5	743		JA	
				0			
			Daily Total	76,166	0		
			Total to Date	1,326,392	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/18/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 15 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,326,392	0		
232	5462	216	22.5	4,860		PB	South side 7/18/2008
233	5462	213	22.5	4,793		PB	
234	5462	177	18.5	3,275		PB	avg. Width
235	5462	31	14	434		PB	
236	5113	207	22.5	4,658		PB	
237	5113	201	22.5	4,523		PB	
238	5113	198	22.5	4,455		PB	
239	5116	197	22.5	4,433		PB	
240	5116	193	22.5	4,343		PB	
241	5116	196	22.5	4,410		PB	
242	5459	189	22.5	4,253		PB	
243	5459	187	23.5	4,395		PB	
244	5459	186	22.5	4,185		PB	
245	5471	156	22.5	3,510		PB	
246	5459	31	22.5	698		PB	
247	5471	186	22.5	4,185		PB	
248	5471	183	22.5	4,118		PB	
249	5471	63	22.5	1,418		PB	
250	5470	121	22.5	2,723		PB	
251	5470	177	22.5	3,983		PB	
252	5470	174	22.5	3,915		PB	
253	5470	119	22.5	2,678		PB	
254	5467	54	22.5	1,215		PB	
255	5108	153	22.5	3,443		PB	
256	5108	143	22.5	3,218		PB	
257	5108	151	22.5	3,398		PB	
258	5108	109	22.5	2,453		PB	
259	4581	54	22.5	1,215		PB	
260	4581	156	22.5	3,510		PB	
			Daily Total	98,688	0		
			Total to Date	1,425,080	0		

CQA Personnel: Phil Banner

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/18/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 16 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,425,080	0		
261	4581	153	22.5	3,443		PB	
262	4581	154	22.5	3,465		PB	
			Daily Total	6,908	0		
			Total to Date	1,431,987	0		

CQA Personnel: Phil Banner

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/22/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 17 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,431,987	0		
263	4725	602	22.5	13,545		PB	West top 7/22/2008
264	5104	604	22.5	13,590		PB	
265	4126	602	22.5	13,545		PB	
266	5102	604	22.5	13,590		PB	
267	5101	604	22.5	13,590		PB	
268	5106	604	22.5	13,590		PB	
269	5357	604	22.5	13,590		PB	
270	5465	608	22.5	13,680		PB	
271	5469	610	22.5	13,725		PB	
272	5110	611	22.5	13,748		PB	
			Daily Total	136,193	0		
			Total to Date	1,568,180	0		

CQA Personnel: Phil Banner

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/23/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 18 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,568,180	0		
273	4580	583	22.5	13,118		PB	
274	4585	553	22.5	12,443		PB	
275	4468	562	22.5	12,645		PB	
276	5226	558	22.5	12,555		PB	
277	5228	506	22.5	11,385		PB	
278	4719	460	22.5	10,350		PB	
279	4719	150	22.5	3,375		PB	
280	4712	261	22.5	5,873		PB	
281	4712	306	22.5	6,885		PB	
282	4712	21	22.5	473		PB	
283	5223	251	22.5	5,648		PB	
284	5223	226	22.5	5,085		PB	
285	5111	164	22.5	3,690		PB	
286	5111	108	22.5	2,430		PB	
287	5111	36	22.5	810		PB	
			Daily Total	106,763	0		
			Total to Date	1,674,942	0		

CQA Personnel: Phil Banner

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/24/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 19 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,674,942	0		
288	5111	63	22.5	1,418		JA	7/24/2008 SE Top
289	5111	110	22.5	2,475		JA	
290	5354	11	22.5	248		JA	
291	5354	53	22.5	1,193		JA	
292	5105	117	22.5	2,633		JA	
293	5105	222	22.5	4,995		JA	
294	5105	241	22.5	5,423		JA	
295	4581	40	22.5	900		JA	
296	5104	315	22.5	7,088		JA	
297	5104	261	22.5	5,873		JA	
298	4728	100	22.5	2,250		JA	
299	4728	397	22.5	8,933		JA	
300	4728	56	22.5	1,260		JA	
301	5582	386	22.5	8,685		JA	
			Daily Total	53,370	0		
			Total to Date	1,728,312	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 07/25/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 20 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,728,312	0		
302	5582	213	22.5	4,793		JA	7/25/2008 SE Top
303	721	168	22.5	3,780		JA	
304	5228	105	22.5	2,363		JA	
305	721	435	22.5	9,788		JA	
306	722	233	12	2,796		JA	Avg. width
307	722	196	5.5	1,078		JA	" "
308	722	82	14	1,148		JA	" "
			Daily Total	25,745	0		
			Total to Date	1,754,057	0		

CQA Personnel: Jimmy Addis

GEOMEMBRANE DEPLOYMENT REPORT

Material Description
Agru America: 40-mil LLDPE Liner

Date: 08/01/2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 21 **of** 21

Panel No.	Roll Number	Length (ft)	Width (ft)	Approximate Area (ft^2) Textured	Approximate Area (ft^2) Smooth	CQA Initials	Remarks
			Carry Over	1,754,057	0		
309	7469	154	22.5	3,465		JA	8/1/08 SE Cor. Blacked In
310	7469	151	22.5	3,398		JA	
311	7469	153	22.5	3,443		JA	
312	7469	145	22.5	3,263		JA	
313	599	132	22.5	2,970		JA	
314	599	135	22.5	3,038		JA	
315	599	125	22.5	2,813		JA	
316	599	122	22.5	2,745		JA	
317	722	99	22.5	2,228		JA	
318	599	83	22.5	1,868		JA	
319	722	77	22.5	1,733		JA	
320	722	66	22.5	1,485		JA	
321	5467	25	22.5	563		JA	
322	5116	21	22.5	473		JA	
323	722	30	22.5	675		JA	
324	4581	12	21	252		JA	
			Daily Total	34,407	0		
			Total to Date	1,788,464	0		

CQA Personnel: Jimmy Addis

APPENDIX VI

(GEOMEMBRANE TRIAL SEAM LOGS)

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 1 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
1	8:11	GT	832	65	8	750	88	96	88	95	82	95	99	98	110	P	F	SS	PJB	06/18/2008
2	7:50	GT	832	65	7	750	81	96	82	94	110	89	94	100	98	P	F	TT	PJB	06/18/2008
3	8:22	AP	840	65	7	750	85	89	87	83	92	87	67	83	91	P	F	TT	PJB	06/18/2008
4	8:23	AP	840	65	8	750	88	86	95	95	92	94	110	108	88	P	F	SS	PJB	06/18/2008
5	12:33	GT	832	80	8	750	92	88	87	80	93	83	99	92	101	P	F	SS	PJB	06/18/2008
6	12:35	GT	832	80	7.5	750	87	81	84	76	85	85	79	86	90	P	F	TT	PJB	06/18/2008
7	12:40	AP	840	80	8	750	86	86	83	86	84	87	92	84	94	P	F	SS	PJB	06/18/2008
8	12:42	AP	840	80	7.5	750	88	83	87	79	81	80	75	74	82	P	F	TT	PJB	06/18/2008
9	7:30	VS	840	62	8	750	95	98	89	83	96	79	106	103	112	P	F	SS	PJB	06/19/2008
10	7:31	VS	840	62	7.5	750	88	93	86	74	87	80	95	71	93	P	F	TT	PJB	06/19/2008
11	7:56	GT	832	62	7	750	83	84	84	89	88	90	95	84	98	P	F	TT	PJB	06/19/2008
12	8:00	GT	832	62	8	750	79	97	83	91	78	95	100	97	99	P	F	SS	PJB	06/19/2008
13	8:35	BN	518	65	400	420	89	0	89	0	87	0	90	86	90	P	Ex	TT	PJB	06/19/2008
14	8:40	BN	518	65	400	420	89	0	84	0	92	0	104	101	103	P	Ex	SS	PJB	06/19/2008
15	10:00	VS	840	75	7	750	83	94	87	76	72	74	86	84	87	P	F	ST	PJB	06/19/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 2 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
16	1:20	GT	832	84	8	750	82	85	81	84	76	85	95	90	89	P	F	SS	PJB	06/19/2008
17	1:20	VS	840	84	8	750	88	85	87	83	82	79	94	92	87	P	F	SS	PJB	06/19/2008
18	1:20	GT	832	84	7.5	750	69	75	70	72	75	70	93	94	94	P	F	TT	PJB	06/19/2008
19	1:20	VS	840	84	7.5	750	81	77	73	75	73	77	92	89	93	P	F	TT	PJB	06/19/2008
20	1:30	BN	518	84	400	420	74	0	74	0	80	0	74	78	78	P	Ex	SS	PJB	06/19/2008
21	7:30	GT	832	65	7	750	107	100	106	101	106	105	107	96	106	P	F	TT	PJB	06/20/2008
22	7:40	GT	832	65	8	750	83	90	86	92	88	95	90	100	100	P	F	SS	PJB	06/20/2008
23	7:45	GT	832	65	7	750	103	98	107	100	99	102	120	110	117	P	F	ST	PJB	06/20/2008
24	7:25	AP	840	65	8	750	105	99	106	109	101	110	121	128	132	P	F	SS	PJB	06/20/2008
25	7:26	AP	840	65	7.5	750	94	97	93	96	93	100	110	115	109	P	F	TT	PJB	06/20/2008
26	7:27	AP	840	65	7.5	750	101	98	108	105	92	99	107	112	107	P	F	ST	PJB	06/20/2008
27	7:40	BN	518	65	400	420	85	0	86	0	90	0	96	89	99	P	Ex	TT	PJB	06/20/2008
28	12:42	GT	832	92	7.5	750	77	97	62	73	78	69	81	72	73	P	F	TT	PJB	06/20/2008
29	12:46	GT	832	92	8	750	66	69	66	74	71	79	89	76	72	P	F	SS	PJB	06/20/2008
30	12:48	AP	840	92	8	750	84	78	86	83	87	84	98	95	89	P	F	SS	PJB	06/20/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 3 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
31	12:49	AP	840	92	7.5	750	80	89	80	82	80	90	92	89	86	P	F	TT	PJB	06/20/2008
32	12:40	BN	518	92	400	420	84	0	78	0	81	0	75	89	85	P	Ex	TT	PJB	06/20/2008
33	7:40	BN	518	72	400	420	83	0	87	0	93	0	91	92	97	P	Ex	TT	PJB	06/21/2008
34	3:00	AP	840	91	8	750	75	87	91	78	92	80	94	90	92	P	F	SS	PJB	06/25/2008
35	3:02	AP	840	91	7.5	750	81	83	84	81	84	85	77	82	87	P	F	TT	PJB	06/25/2008
36	3:03	GT	832	91	8	750	80	90	74	83	90	85	81	92	82	P	F	SS	PJB	06/25/2008
37	3:06	GT	832	91	7	750	75	82	80	84	79	82	80	80	87	P	F	TT	PJB	06/25/2008
38	7:39	AP	840	71	8	750	87	96	89	98	97	97	112	119	118	P	F	SS	PJB	06/26/2008
39	7:46	AP	840	71	7.5	750	92	90	85	78	82	77	83	85	83	P	F	TT	PJB	06/26/2008
40	7:45	GT	832	71	8	750	75	99	84	99	76	104	113	113	108	P	F	SS	PJB	06/26/2008
41	7:49	GT	832	71	7	750	95	78	92	79	85	78	95	87	85	P	F	TT	PJB	06/26/2008
42	7:35	BN	518	71	400	420	88	0	86	0	81	0	94	97	97	P	Ex	TT	PJB	06/26/2008
43	9:44	GT	847	84	8	750	88	103	86	96	87	99	92	91	103	P	F	SS	PJB	06/26/2008
44	9:49	GT	847	84	7	750	90	90	79	69	90	78	102	98	80	P	F	TT	PJB	06/26/2008
45	12:43	AP	840	94	8	750	87	87	84	83	84	86	96	92	93	P	F	SS	PJB	06/26/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 4 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
46	12:44	AP	840	94	7.5	750	79	77	85	83	77	76	81	84	83	P	F	TT	PJB	06/26/2008
47	12:50	GT	847	94	8	750	98	98	92	83	87	99	107	111	108	P	F	SS	PJB	06/26/2008
48	12:50	GT	847	94	7	750	79	80	89	82	82	83	92	95	90	P	F	TT	PJB	06/26/2008
49	12:50	BN	518	94	400	420	86	0	76	0	85	0	92	88	85	P	Ex	TT	PJB	06/26/2008
50	8:00	AP	840	72	8	750	90	100	102	99	100	94	76	111	105	P	F	SS	PJB	06/27/2008
51	8:01	AP	840	72	7.5	750	89	90	86	88	86	85	88	85	93	P	F	TT	PJB	06/27/2008
52	8:05	GT	847	72	8	750	99	104	90	98	89	99	117	114	119	P	F	SS	PJB	06/27/2008
53	8:08	GT	847	72	7	750	91	90	85	89	76	92	93	104	99	P	F	TT	PJB	06/27/2008
54	7:50	BN	518	72	400	420	99	0	92	0	96	0	90	102	103	P	Ex	TT	PJB	06/27/2008
55	12:26	GT	547	90	8	750	96	85	94	100	90	99	101	101	94	P	F	SS	PJB	06/27/2008
56	12:32	GT	847	90	7	750	80	70	73	78	72	64	77	75	81	P	F	TT	PJB	06/27/2008
57	12:37	AP	840	90	8	750	89	84	86	87	83	89	96	99	99	P	F	SS	PJB	06/27/2008
58	12:38	AP	840	90	7.5	750	80	87	81	82	81	83	71	77	77	P	F	TT	PJB	06/27/2008
59	12:45	BN	518	90	400	420	84	0	67	0	70	0	82	77	81	P	Ex	TT	PJB	06/27/2008
60	8:05	BN	518	80	400	420	84	0	81	0	90	0	90	89	80	P	Ex	TT	PJB	06/28/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 5 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
61	10:39	AP	840	90	7.5	750	79	78	74	75	73	77	77	73	83	P	F	TT	PJB	06/28/2008
62	10:42	AP	840	90	8	750	86	87	88	85	92	89	100	95	88	P	F	SS	PJB	06/28/2008
63	10:40	GT	847	90	8	750	80	71	81	77	82	76	86	86	74	P	F	SS	PJB	06/28/2008
64	10:44	GT	847	90	7	750	76	76	72	71	74	76	80	76	75	P	F	TT	PJB	06/28/2008
65	12:40	BN	518	90	400	420	75	0	76	0	80	0	74	72	74	P	Ex	TT	PJB	06/28/2008
66	7:34	AP	840	73	8	750	91	93	81	90	87	96	117	111	111	P	F	SS	PJB	06/29/2008
67	7:40	AP	840	73	7.5	750	99	91	93	94	89	88	106	99	100	P	F	TT	PJB	06/29/2008
68	7:40	BN	518	73	400	420	93	0	89	0	91	0	101	98	100	P	Ex	TT	PJB	06/29/2008
69	7:50	GT	832	73	8	750	82	88	86	83	78	83	99	98	98	P	F	SS	PJB	06/29/2008
70	7:50	GT	832	73	7.5	750	101	95	98	94	95	99	104	100	101	P	F	TT	PJB	06/29/2008
71	7:30	BN	518	70	400	420	90	0	88	0	89	0	92	87	80	P	Ex	TT	PJB	06/30/2008
72	12:40	BN	518	80	400	420	67	0	78	0	62	0	65	75	68	P	Ex	TT	PJB	06/30/2008
73	1:46	GT	832	85	8	750	94	89	93	91	94	83	97	96	98	P	F	SS	PJB	06/30/2008
74	1:50	GT	832	85	7	750	89	86	88	81	89	86	93	94	92	P	F	TT	PJB	06/30/2008
75	2:18	AP	840	85	8	750	86	91	83	87	90	89	99	96	100	P	F	SS	PJB	06/30/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 6 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
76	2:19	AP	840	85	7.5	750	82	80	81	83	85	87	89	84	89	P	F	TT	PJB	06/30/2008
77	7:40	AP	840	70	8	750	104	104	104	98	102	97	119	119	125	P	F	SS	PJB	07/01/2008
78	7:42	AP	840	70	7.5	750	94	90	91	89	95	93	98	96	98	P	F	TT	PJB	07/01/2008
79	7:45	GT	832	70	8	750	103	99	104	99	109	99	119	118	118	P	F	SS	PJB	07/01/2008
80	7:50	GT	832	70	7	750	89	102	108	92	95	102	115	107	111	P	F	TT	PJB	07/01/2008
81	7:40	BN	518	70	400	420	96	0	92	0	93	0	100	96	96	P	Ex	TT	PJB	07/01/2008
82	8:10	BA	847	75	8	860	96	100	94	103	108	96	120	116	116	P	F	SS	PJB	07/01/2008
83	8:15	BA	847	75	7	860	85	91	87	97	90	78	94	90	92	P	F	TT	PJB	07/01/2008
84	12:40	AP	840	84	8	750	97	88	98	91	106	92	106	110	107	P	F	SS	PJB	07/01/2008
85	12:41	AP	840	84	7	750	81	91	86	79	85	82	89	93	94	P	F	TT	PJB	07/01/2008
86	12:42	GT	832	84	8	750	103	87	100	93	91	90	105	101	103	P	F	SS	PJB	07/01/2008
87	12:46	GT	832	84	7	750	91	89	88	91	91	87	97	94	97	P	F	TT	PJB	07/01/2008
88	12:50	BA	847	84	7	860	85	86	86	83	83	81	109	108	111	P	F	SS	PJB	07/01/2008
89	12:40	BN	518	84	400	420	83	0	79	0	85	0	85	85	88	P	Ex	TT	PJB	07/01/2008
90	8:00	AP	840	72	8	750	98	101	99	98	102	97	116	114	114	P	F	SS	PJB	07/02/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
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					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
91	8:02	AP	840	72	7.5	750	95	84	90	88	89	91	96	102	101	P	F	TT	PJB	07/02/2008
92	7:58	GT	832	72	8	750	96	97	91	99	107	95	108	110	110	P	F	SS	PJB	07/02/2008
93	8:15	BA	847	72	7	860	86	101	88	97	97	103	112	108	110	P	F	SS	PJB	07/02/2008
94	7:50	BN	518	72	400	420	81	0	84	0	79	0	92	98	95	P	Ex	TT	PJB	07/02/2008
95	1:27	AP	840	88	8	750	84	82	86	90	83	87	94	94	91	P	F	SS	PJB	07/02/2008
96	1:30	AP	840	88	7.5	750	82	82	81	84	83	90	92	96	100	P	F	TT	PJB	07/02/2008
97	1:43	GT	832	88	7	750	88	83	88	90	85	86	94	97	92	P	F	SS	PJB	07/02/2008
98	1:40	BA	847	88	7	860	98	86	91	90	85	87	91	94	92	P	F	SS	PJB	07/02/2008
99	12:50	BN	518	88	400	420	81	0	79	0	84	0	90	89	92	P	Ex	TT	PJB	07/02/2008
100	8:30	AP	840	71	8	750	103	89	102	100	95	92	108	108	105	P	F	SS	PJB	07/03/2008
101	8:31	AP	840	71	7.5	750	89	86	87	88	84	82	89	86	89	P	F	TT	PJB	07/03/2008
102	8:08	GT	832	71	8	750	105	92	107	109	100	92	118	115	119	P	F	SS	PJB	07/03/2008
103	7:50	BN	518	71	400	420	92	0	93	0	81	0	90	93	92	P	Ex	TT	PJB	07/03/2008
104	12:50	BN	518	86	400	420	78	80	80	0	79	0	90	91	88	P	Ex	TT	PJB	07/03/2008
105	1:00	AP	840	86	7.5	750	89	84	83	84	82	82	90	87	89	P	F	SS	PJB	07/03/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 8 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
106	2:30	BN	518	85	400	420	80	0	88	0	81	0	94	87	88	P	Ex	TT	PJB	07/11/2008
107	10:00	BN	518	80	400	420	94	0	94	0	95	0	98	99	85	P	Ex	TT	PJB	07/12/2008
108	12:45	BN	518	90	400	420	70	0	78	0	78	0	87	77	82	P	Ex	TT	PJB	07/15/2008
109	8:00	GT	832	70	8	750	101	108	103	106	103	100	116	110	119	P	F	SS	PJB	07/16/2008
110	8:06	GT	832	70	7	750	88	89	88	86	93	94	94	91	87	P	F	TT	PJB	07/16/2008
111	8:07	AP	840	70	8	750	95	100	98	98	93	87	117	114	110	P	F	SS	PJB	07/16/2008
112	8:10	AP	840	70	7.5	750	91	83	92	89	91	91	95	90	96	P	F	TT	PJB	07/16/2008
113	11:15	GT	847	91	8	750	92	95	90	90	89	90	104	101	101	P	F	SS	PJB	07/16/2008
114	11:20	GT	847	91	7.5	750	85	83	80	80	82	81	85	85	86	P	F	TT	PJB	07/16/2008
115	12:40	AP	840	91	8	750	83	92	86	92	84	92	93	92	94	P	F	SS	PJB	07/16/2008
116	12:41	AP	840	91	8	750	91	90	82	85	84	84	90	89	94	P	F	TT	PJB	07/16/2008
117	7:42	GT	841	70	8	750	102	103	103	103	101	102	120	111	118	P	F	SS	PJB	07/17/2008
118	7:45	GT	841	70	7	750	94	103	94	99	96	105	110	109	109	P	F	TT	PJB	07/17/2008
119	7:47	AP	840	70	8	750	92	103	103	101	94	97	114	116	108	P	F	SS	PJB	07/17/2008
120	7:45	AP	840	70	7.5	750	88	93	87	93	89	90	102	99	101	P	F	TT	PJB	07/17/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 9 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
121	7:30	BN	518	70	400	420	80	0	90	0	84	0	83	79	82	P	Ex	TT	PJB	07/17/2008
122	12:55	GT	841	90	8	750	92	86	80	82	83	86	98	90	95	P	F	SS	PJB	07/17/2008
123	12:58	GT	841	90	7.5	750	81	87	83	84	81	87	92	90	93	P	F	TT	PJB	07/17/2008
124	1:00	AP	840	90	8	750	89	91	90	91	87	85	96	96	98	P	F	SS	PJB	07/17/2008
125	1:02	AP	840	90	7.5	750	80	83	81	81	80	77	83	79	83	P	F	TT	PJB	07/17/2008
126	12:55	BN	518	90	400	420	76	0	74	0	75	0	85	80	85	P	Ex	TT	PJB	07/17/2008
127	7:48	GT	841	70	8	750	105	105	103	99	103	105	106	101	102	P	F	TT	PJB	07/18/2008
128	7:50	GT	841	70	7	750	90	95	98	99	106	101	111	112	112	P	F	SS	PJB	07/18/2008
129	7:50	AP	840	70	8	750	93	97	95	93	95	93	115	112	111	P	F	SS	PJB	07/18/2008
130	7:57	AP	840	70	7.5	750	88	91	87	80	88	84	89	84	89	P	F	TT	PJB	07/18/2008
131	7:40	BN	518	70	400	420	109	0	105	0	106	0	103	106	110	P	Ex	TT	PJB	07/18/2008
132	1:00	AP	840	90	8	750	83	82	78	77	80	77	95	96	100	P	F	SS	PJB	07/18/2008
133	1:01	AP	840	90	7.5	750	86	90	78	86	79	88	90	83	90	P	F	TT	PJB	07/18/2008
134	1:01	GT	841	90	8	750	91	86	87	82	86	90	97	97	96	P	F	SS	PJB	07/18/2008
135	1:04	GT	841	90	7	750	85	84	86	83	84	83	89	91	91	P	F	TT	PJB	07/18/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 10 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
136	12:40	BN	518	90	400	420	91	0	88	0	87	0	91	94	92	P	Ex	TT	PJB	07/18/2008
137	7:40	BN	518	80	400	420	87	0	84	0	87	0	88	82	88	P	Ex	TT	PJB	07/19/2008
138	12:45	BN	518	100	400	420	76	0	72	0	76	0	81	77	80	P	Ex	TT	PJB	07/19/2008
139	7:40	BN	518	70	400	420	80	0	86	0	90	0	90	86	90	P	Ex	TT	PJB	07/21/2008
140	8:28	AP	840	90	8	750	93	95	85	90	91	93	100	102	105	P	F	SS	PJB	07/22/2008
141	8:30	AP	840	90	8	750	90	79	79	83	87	85	95	95	94	P	F	TT	PJB	07/22/2008
142	8:34	GT	841	90	8	750	93	85	79	85	84	84	102	101	86	P	F	SS	PJB	07/22/2008
143	8:44	GT	841	90	7	750	88	85	78	90	78	89	93	95	91	P	F	TT	PJB	07/22/2008
144	8:49	AP	840	90	7.5	750	87	89	80	79	79	81	95	92	93	P	F	ST	PJB	07/22/2008
145	8:50	BN	518	90	400	420	86	0	81	0	85	0	89	88	88	P	Ex	TT	PJB	07/22/2008
146	12:44	AP	840	100	8	750	84	80	87	80	80	82	87	85	86	P	F	SS	PJB	07/22/2008
147	12:43	AP	840	100	7.5	750	76	76	76	72	75	74	83	78	78	P	F	TT	PJB	07/22/2008
148	12:45	BN	518	100	400	420	64	0	71	0	66	0	74	72	71	P	Ex	TT	PJB	07/22/2008
149	12:55	GT	841	100	8	750	91	85	89	86	90	83	94	91	88	P	F	SS	PJB	07/22/2008
150	12:58	GT	841	100	7	750	81	65	80	77	81	74	84	82	84	P	F	TT	PJB	07/22/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 11 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
151	7:23	AP	840	70	8	750	98	103	97	100	95	101	112	114	111	P	F	SS	PJB	07/23/2008
152	7:24	AP	840	70	7.5	750	98	93	95	94	95	88	104	103	103	P	F	TT	PJB	07/23/2008
153	7:55	GT	841	70	8	750	97	95	102	101	98	106	117	114	119	P	F	SS	PJB	07/23/2008
154	8:05	BN	518	70	400	420	98	0	100	0	91	0	104	100	101	P	Ex	TT	PJB	07/23/2008
155	12:35	AP	840	80	8	750	90	89	84	82	89	86	102	97	98	P	F	SS	PJB	07/23/2008
156	12:37	AP	840	80	7.5	750	86	83	86	83	85	82	100	98	97	P	F	TT	PJB	07/23/2008
157	12:45	GT	841	80	8	750	97	86	93	92	96	95	109	110	104	P	F	SS	PJB	07/23/2008
158	12:45	BN	518	80	400	420	78	0	85	0	81	0	86	85	84	P	Ex	TT	PJB	07/23/2008
159	7:28	AP	840	70	8	750	98	93	105	95	104	99	123	118	120	P	F	SS	PJB	07/24/2008
160	7:30	AP	840	70	7.5	750	88	90	92	96	89	93	106	108	110	P	F	TT	PJB	07/24/2008
161	8:15	BN	518	80	400	420	95	0	100	0	91	0	98	95	95	P	Ex	TT	PJB	07/24/2008
162	9:09	GT	841	80	7	750	91	92	87	86	92	91	94	91	94	P	F	TT	PJB	07/24/2008
163	12:45	BN	518	90	400	420	74	0	70	0	77	0	80	75	79	P	Ex	TT	PJB	07/24/2008
164	12:45	AP	840	90	8	750	86	84	87	84	81	82	102	101	99	P	F	SS	PJB	07/24/2008
165	12:45	AP	840	90	7.5	750	82	87	86	81	86	80	90	90	92	P	F	TT	PJB	07/24/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 12 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
166	1:50	GT	841	90	8	750	87	89	86	93	84	82	106	108	107	P	F	SS	PJB	07/24/2008
167	1:50	GT	841	90	7.5	750	91	92	83	90	79	84	97	95	98	P	F	TT	PJB	07/24/2008
168	7:15	AP	840	70	8	750	99	94	95	96	100	98	113	114	110	P	F	SS	PJB	07/25/2008
169	7:40	AP	840	70	7.5	750	92	88	93	92	93	86	104	103	108	P	F	TT	PJB	07/25/2008
170	7:40	BN	518	70	400	420	72	0	89	0	88	0	114	108	114	P	Ex	TT	PJB	07/25/2008
171	12:40	AP	840	90	8	750	82	83	79	80	82	82	93	95	97	P	F	SS	PJB	07/25/2008
172	12:41	AP	840	90	7.5	750	87	86	85	86	90	89	96	92	91	P	F	TT	PJB	07/25/2008
173	12:50	GT	841	90	8	750	88	91	88	93	98	92	106	106	102	P	F	SS	PJB	07/25/2008
174	12:52	GT	841	90	7	750	74	81	92	86	86	80	98	97	99	P	F	TT	PJB	07/25/2008
175	12:45	BN	518	90	400	420	81	0	79	0	81	0	81	79	83	P	Ex	TT	PJB	07/25/2008
176	7:55	BN	518	80	400	420	92	0	90	0	92	0	95	93	100	P	Ex	TT	PJB	07/26/2008
177	7:55	BN	518	90	400	420	81	0	84	0	86	0	89	85	87	P	Ex	ST	PJB	07/26/2008
178	7:35	BN	518	78	400	420	82	0	81	0	83	0	85	85	80	P	Ex	TT	PJB	07/28/2008
179	2:13	AP	840	100	8	750	86	81	81	80	80	84	86	83	88	P	F	SS	PJB	08/01/2008
180	2:15	AP	840	100	7.5	750	82	83	77	80	82	84	84	81	84	P	F	TT	PJB	08/01/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

GEOMEMBRANE TRIAL SEAM LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 13 **of** 13

					Machine Settings		Peel Test Results						Shear Test Results							
Sample No.	Approx. Time	Tech. Init.	Mach. No.	Ambient Temp.	Preheat or Speed	Temp. Setting	1		2		3		1	2	3	Pass/ Fail	Weld Type	Material	CQA Init.	Date
181	2:24	GT	841	100	8	750	82	83	83	82	88	83	95	93	97	P	F	SS	PJB	08/01/2008
182	2:26	GT	841	100	7	750	81	83	76	82	79	83	89	86	88	P	F	TT	PJB	08/01/2008
183	7:45	GT	841	80	7	750	81	85	82	82	81	82	82	80	84	P	F	ST	PJB	08/02/2008
184	7:50	BN	518	80	400	420	83	0	81	0	84	0	90	91	92	P	Ex	TT	PJB	08/02/2008
185	11:00	BN	518	86	400	420	77	0	80	0	84	0	93	95	90	P	Ex	TT	PJB	08/04/2008
186	1:10	BN	518	90	400	420	82	0	79	0	80	0	90	87	92	P	Ex	TT	PJB	08/05/2008
187	12:45	BN	518	90	400	420	81	0	86	0	83	0	87	89	90	P	Ex	TT	PJB	08/06/2008
188	10:00	JA		62	400	420	90	0	102	0	90	0	68	104	90	P	Ex	TT	PJB	09/23/2008

Weld Type: (**Ex**)trusion, (**F**)usion
Material: (**SS**) Smooth/Smooth - (**ST**) Smooth/Texture - (**TT**) Texture /Texture

CQA Personnel: Phil Banner

APPENDIX VII

(GEOMEMBRANE SEAM LOGS)

GEOMEMBRANE SEAM LOG

Date: 06-18-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 0
Welder Tech. Carry Over 0 | 0

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
1	1 / 2	E / W	8:40	GT	832	287	287		A	9:18 / 9:23	30 / 29	SN	PJB	P	06-18-2008	
3	3 / 4	E / W	9:10	GT	832	274	437/124	LDT-1	A	9:47 / 9:52	30 / 29	SN	PJB	P	06-18-2008	Z-2, 9:58-10:03, 30/30
5	5 / 7	E / W	10:14	GT	832	218	342		A	11:02 / 11:07	30 / 30	SN	PJB	P	06-18-2008	
7	8 / 9	E / W	10:50	GT	832	142	484		A	11:52 / 11:57	30 / 29	SN	PJB	P	06-18-2008	
10	10 / 11	E / W	11:41	GT	832	116	500/100	LDT-3	A	14:08 / 14:13	30 / 30	SN	PJB	P	06-18-2008	
11	9 / 12	E / W	13:05	GT	832	104	204		A	13:54 / 13:59	30 / 27	SN	PJB	P	06-18-2008	
13	11 / 14	N / S	13:21	GT	832	48	252		A	14:29 / 14:34	30 / 30	SN	PJB	P	06-18-2008	
14	14 / 15	N / S	13:29	GT	832	39	291		A	14:35 / 14:40	30 / 30	SN	PJB	P	06-18-2008	
17	15 / 16	N / S	13:49	GT	832	22	313		A	14:45 / 14:50	30 / 30	SN	PJB	P	06-18-2008	
19	13 / 14	E / W	13:58	GT	832	24	337		A	14:34 / 14:39	30 / 30	SN	PJB	P	06-18-2008	
20	13 / 15	E / W	14:04	GT	832	24	361		A	14:39 / 14:44	30 / 29	SN	PJB	P	06-18-2008	
21	13 / 16	E / W	14:10	GT	832	23	384		A	14:40 / 14:45	30 / 30	SN	PJB	P	06-18-2008	
22	5 / 17	E / W	14:13	GT	832	23	407		A	16:32 / 16:37	30 / 30	SN	PJB	P	06-18-2008	
23	3 / 18	N / S	14:18	GT	832	7	414		A	7:42 / 7:47	30 / 30	SN	JHA	P	06-19-2008	
24	4 / 18	N / S	14:23	GT	832	23	437		A	7:41 / 7:46	30 / 30	SN	JHA	P	06-19-2008	
					Sheet Total	1374	437	**Destructive Carry Over**								
					Total to Date	1374										

Notes:

CQA Personnel: Phil Banner/James Addis

GEOMEMBRANE SEAM LOG

Date: 06-18-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 2 of 70

Project Total Carry Over 0
Welder Tech. Carry Over 0 | 0

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
2	2 / 3	E / W	8:52	AP	840	281	281		A	9:42 / 9:47	30 / 30	SN	PJB	P	06-18-2008	Z-2, 9:46-9:51, 30/30
4	4 / 5	E / W	9:30	AP	840	265	485/61	LDT-2	A	10:45 / 10:50	30 / 30	SN	PJB	P	06-18-2008	
6	7 / 8	E / W	10:33	AP	840	185	246		A	11:36 / 11:41	30 / 28	SN	PJB	P	06-18-2008	
8	6 / 10	N / S	11:25	AP	840	142	388		A	12:48 / 12:53	30 / 30	SN	PJB	P	06-18-2008	
9	TIEIN /	N / S	11:46	AP	840	96	484		A	12:55 / 13:00	30 / 29	SN	PJB	P	06-18-2008	Z-1: 6/7, 7/10, 8/10, 9/11
12	12 / 13	E / W	12:07	AP	840	93	500/177	LDT-4	A	14:11 / 14:16	30 / 28	SN	PJB	P	06-18-2008	
15	11 / 12	N / S	13:40	AP	840	23	100		A	14:26 / 14:31	30 / 30	SN	PJB	P	06-18-2008	
16	11 / 13	N / S	13:43	AP	840	23	123		A	14:27 / 14:32	30 / 30	SN	PJB	P	06-18-2008	R1-N to R1-P 14:28 30/30
18	6 / 17	N / S	14:01	AP	840	162	285		A	15:01 / 15:06	30 / 29	SN	PJB	P	06-18-2008	
27	18 / 19	N / S	14:33	AP	840	216	501		A	10:41 / 10:46	30 / 30	SN	JHA	P	06-19-2008	
29	20 / 21	N / S	15:00	AP	840	172	511/162	LDT-8	A	7:57 / 8:02	30 / 29	SN	JHA	P	06-19-2008	
30	21 / 23	N / S	15:26	AP	840	55	217		A	7:55 / 8:00	30 / 30	SN	JHA	P	06-19-2008	
31	19 / 23	N / S	15:35	AP	840	55	272		A	7:50 / 7:55	30 / 29	SN	JHA	P	06-19-2008	
35	20 / 23	W / E	15:46	AP	840	23	295		A	7:51 / 7:56	30 / 30	SN	JHA	P	06-19-2008	
34	24 / 25	N / S	16:00	AP	840	227	500/22	LDT-7	A	8:13 / 8:18	30 / 30	SN	JHA	P	06-19-2008	

Sheet Total 2018 | 22 **Destructive Carry Over**
Total to Date 2018

Notes:
S-9 Z-2: P8/10, 13:02-13:07, 30/30; Z-3: P9/11, 13:09-13:14, 30/30

CQA Personnel: Phil Banner/James Addis

GEOMEMBRANE SEAM LOG

Date: 06-18-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 2018
Welder Tech. Carry Over 22 | 22

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
40	26 / 27	W / E	16:30	AP	840	23	45		A	8:35 / 8:40	30 / 30	SN	JHA	P	06-19-2008	

Sheet Total 23 | 45 **Destructive Carry Over**
Total to Date 2041

Notes:

CQA Personnel: James Addis

GEOMEMBRANE SEAM LOG

Date: 06-18-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 1374
Welder Tech. Carry Over 437 437

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
25	5 / 18	N / S	14:27	GT	832	23	460		A	16:33 / 16:38	30 / 30	SN	PJB	P	06-18-2008	
26	17 / 18	N / S	14:30	GT	832	163	508/115	LDT-5	A	16:33 / 16:38	30 / 30	SN	PJB	P	06-18-2008	
28	19 / 20	N / S	14:45	GT	832	172	287		A	7:52 / 7:57	30 / 30	SN	JHA	P	06-19-2008	Z-2, 7:59-8:04, 30/30 R-2E to SAT
32	21 / 22	N / S	15:09	GT	832	227	500/14	LDT-6	A	8:03 / 8:08	30 / 29	SN	JHA	P	06-19-2008	
33	22 / 24	N / S	15:44	GT	832	227	241		A	8:10 / 8:15	30 / 30	SN	JHA	P	06-19-2008	Z-2, 8:11-8:16, 30/30 R-1X to SAT
36	27 / 28	W / E	16:15	GT	832	23	264		A	8:23 / 8:28	30 / 29	SN	JHA	P	06-19-2008	
37	25 / 28	N / S	16:20	GT	832	34	298		A	8:21 / 8:26	30 / 28	SN	JHA	P	06-19-2008	
38	25 / 27	N / S	16:25	GT	832	88	386		A	8:26 / 8:31	30 / 27	SN	JHA	P	06-19-2008	
39	25 / 26	N / S	16:31	GT	832	102	488		A	8:34 / 8:39	30 / 30	SN	JHA	P	06-19-2008	
44	29 / 30	N / S	8:31	GT	832	224	199	LDT-9	A	9:04 / 9:09	30 / 28	SN	PJB	P	06-19-2008	
47	31 / 32	W / E	9:01	GT	832	23	222		A	9:15 / 9:20	30 / 30	SN	PJB	P	06-19-2008	
48	32 / 33	N / S	9:12	GT	832	125	347		A	9:33 / 9:38	30 / 29	SN	PJB	P	06-19-2008	
49	31 / 33	N / S	9:24	GT	832	94	441		A	9:39 / 9:44	30 / 30	SN	PJB	P	06-19-2008	
51	34 / 35	N / S	9:52	GT	832	220	450/211	LDT-11	A	10:31 / 10:36	30 / 30	SN	PJB	P	06-19-2008	
52	35 / 36	N / S	10:27	GT	832	217	428		A	11:11 / 11:16	30 / 30	SN	PJB	P	06-19-2008	
					Sheet Total	1962	428	**Destructive Carry Over**								
					Total to Date	3336										

Notes:

CQA Personnel: Phil Banner/James Addis

GEOMEMBRANE SEAM LOG

Date: 06-19-2008
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Project Total Carry Over 3336
Welder Tech. Carry Over 428 | 428

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
56	38 / 39	N / S	11:00	GT	832	59	450/37	LDT-12	A	11:15 / 11:20	30 / 30	SN	PJB	P	06-19-2008	
57	37 / 39	N / S	11:07	GT	832	158	195		A	11:31 / 11:36	30 / 30	SN	PJB	P	06-19-2008	
59	41 / 42	W / E	11:25	GT	832	23	218		A	12:42 / 12:47	30 / 30	SN	PJB	P	06-19-2008	
60	40 / 42	N / S	11:32	GT	832	121	339		A	12:43 / 12:48	30 / 30	SN	PJB	P	06-19-2008	
61	40 / 41	N / S	11:45	GT	832	95	434		A	12:56 / 13:01	30 / 30	SN	PJB	P	06-19-2008	
62	43 / 44	E / W	14:22	GT	832	346	450/330	LDT-14	A	15:16 / 15:21	30 / 30	SN	PJB	P	06-19-2008	
66	46 / 47	E / W	14:47	GT	832	113	443		A	15:17 / 15:22	30 / 30	SN	PJB	P	06-19-2008	
67	45 / 47	E / W	15:16	GT	832	219	475/187	LDT-16	A	15:29 / 15:34	30 / 30	SN	PJB	P	06-19-2008	
68	47 / 48	E / W	15:38	GT	832	260	447		A	15:45 / 15:50	30 / 30	SN	PJB	P	06-19-2008	
69	47 / 49	E / W	16:22	GT	832	69	475/41	LDT-17	A	16:47 / 16:52	30 / 30	SN	PJB	P	06-19-2008	
73	50 / 51	E / W	16:58	GT	832	240	281		A	17:33 / 17:38	30 / 30	SN	PJB	P	06-19-2008	
74	50 / 52	E / W	17:25	GT	832	91	372		A	17:48 / 17:53	30 / 29	SN	PJB	P	06-19-2008	
76	1 / 50	E / W	17:40	GT	832	7	379		A	18:00 / 18:05	30 / 30	SN	PJB	P	06-19-2008	
77	1 / 52	E / W	17:46	GT	832	35	414		A	18:03 / 18:08	30 / 30	SN	PJB	P	06-19-2008	
					Sheet Total	1836	414	**Destructive Carry Over**								
					Total to Date	5172										

Notes:
S-61 Z-2: 12:55/13:00, 30/30; Z-3: 11:53/11:58, 30/30

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-19-2008
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Project Total Carry Over 2041
Welder Tech. Carry Over 45 | 45

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
41	28 / 29	N / S	8:23	VS	840	33	78		A	8:45 / 8:50	30 / 30	SN	PJB	P	06-19-2008	
42	27 / 29	N / S	8:30	VS	840	89	167		A	8:52 / 8:57	30 / 30	SN	PJB	P	06-19-2008	
43	26 / 29	N / S	8:40	VS	840	97	264		A	8:56 / 9:10	30 / 30	SN	PJB	P	06-19-2008	
45	30 / 32	N / S	9:03	VS	840	125	389		A	9:26 / 9:31	30 / 28	SN	PJB	P	06-19-2008	
46	30 / 31	N / S	9:15	VS	840	98	450/37	LDT-10	A	9:40 / 9:45	30 / 30	SN	PJB	P	06-19-2008	
50	33 / 34	N / S	9:47	VS	840	220	257		A	10:29 / 10:34	30 / 30	SN	PJB	P	06-19-2008	
53	36 / 38	N / S	10:45	VS	840	59	316		A	11:01 / 11:06	30 / 30	SN	PJB	P	06-19-2008	
54	37 / 38	W / E	10:29	VS	840	23	339		A	10:57 / 11:02	30 / 30	SN	PJB	P	06-19-2008	
55	36 / 37	N / S	10:31	VS	840	158	450/47	LDT-13	A	10:51 / 10:56	30 / 30	SN	PJB	P	06-19-2008	
58	39 / 40	N / S	11:15	VS	840	217	264		A	11:51 / 11:56	30 / 30	SN	PJB	P	06-19-2008	
63	45 / 46	N / S	14:48	VS	840	23	287		A	15:04 / 15:09	30 / 30	SN	PJB	P	06-19-2008	
64	44 / 46	E / W	14:54	VS	840	109	396		A	15:17 / 15:22	30 / 30	SN	PJB	P	06-19-2008	
65	44 / 45	E / W	15:09	VS	840	230	450/176	LDT-15	A	16:07 / 16:12	30 / 30	SN	PJB	P	06-19-2008	
70	48 / 49	N / S	15:57	VS	840	23	199		A	16:48 / 16:53	30 / 30	SN	PJB	P	06-19-2008	
71	48 / 50	E / W	16:30	VS	840	260	459		A	17:15 / 17:20	30 / 29	SN	PJB	P	06-19-2008	
					Sheet Total	1764	459	**Destructive Carry Over**								
					Total to Date	3805										

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-19-2008
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Project Total Carry Over 3805
Welder Tech. Carry Over 459 | 459

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
72	49 / 50	E / W	17:15	VS	840	71	479/51	LDT-18	A	17:16 / 17:21	30 / 30	SN	PJB	P	06-19-2008	
75	51 / 52	S / N	17:33	VS	840	23	74		A	17:38 / 17:43	30 / 30	SN	PJB	P	06-19-2008	

Sheet Total 94 | 74 **Destructive Carry Over**
Total to Date 3899

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-20-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 5172
Welder Tech. Carry Over 414 414

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
80	54 / 55	N / S	8:02	GT	832	23	437		A	8:50 / 8:55	30 / 30	SN	PJB	P	06-20-2008	
81	53 / 55	E / W	8:07	GT	832	38	450/25	LDT-19	A	8:20 / 8:25	30 / 30	SN	PJB	P	06-20-2008	
82	53 / 54	E / W	8:45	GT	832	195	220		A	9:17 / 9:22	30 / 30	SN	PJB	P	06-20-2008	
83	55 / 56	E / W	9:21	GT	832	8	228		A	9:39 / 9:44	30 / 30	SN	PJB	P	06-20-2008	
84	54 / 56	E / W	9:21	GT	832	20	248		A	9:44 / 9:49	30 / 30	SN	PJB	P	06-20-2008	
85	54 / 57	E / W	9:23	GT	832	172	420		A	10:07 / 10:12	30 / 30	SN	PJB	P	06-20-2008	
88	59 / 60	S / N	10:08	GT	832	23	443		A	10:28 / 10:33	30 / 30	SN	PJB	P	06-20-2008	
89	58 / 59	E / W	10:11	GT	832	29	472		A	10:27 / 10:32	30 / 30	SN	PJB	P	06-20-2008	
90	58 / 60	E / W	10:14	GT	832	90	503/59	LDT-21	A	10:33 / 10:38	30 / 30	SN	PJB	P	06-20-2008	
92	1 / 53	E / W	10:45	GT	832	36	95		A	10:58 / 11:03	30 / 30	SN	PJB	P	06-20-2008	
93	1 / 55	E / W	10:57	GT	832	37	132		A	11:28 / 11:33	30 / 30	SN	PJB	P	06-20-2008	
94	1 / 56	E / W	11:15	GT	832	36	168		A	11:29 / 11:34	30 / 30	SN	PJB	P	06-20-2008	
101	43 / 63	E / W	13:04	GT	832	351	208/311	LDT-23	A	14:02 / 14:07	30 / 30	SN	PJB	P	06-20-2008	
105	65 / 66	E / W	14:06	GT	832	119	430		A	14:19 / 14:24	30 / 30	SN	PJB	P	06-20-2008	
106	64 / 66	E / W	14:28	GT	832	245	475/200	LDT-24	A	14:46 / 14:51	30 / 30	SN	PJB	P	06-20-2008	

Sheet Total 1422 200 **Destructive Carry Over**
Total to Date 6594

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-20-2008
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Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 6594
Welder Tech. Carry Over 200 | 200

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
108	68 / 69	E / W	15:14	GT	832	23	223		A	15:37 / 15:42	30 / 30	SN	PJB	P	06-20-2008	
109	67 / 69	E / W	14:50	GT	832	164	387		A	15:48 / 15:53	30 / 30	SN	PJB	P	06-20-2008	Z-2, 15:53-15:58, 30/30
110	67 / 68	E / W	15:05	GT	832	220	496/111	LDT-26	A	16:22 / 16:27	30 / 30	SN	PJB	P	06-20-2008	
113	71 / 72	S / N	15:40	GT	832	23	134		A	17:09 / 17:14	30 / 30	SN	PJB	P	06-20-2008	
114	70 / 72	E / W	16:01	GT	832	359	493		A	16:47 / 16:52	30 / 30	SN	PJB	P	06-20-2008	
115	70 / 71	E / W	16:46	GT	832	29	500/22	LDT-27	A	17:05 / 17:10	30 / 30	SN	PJB	P	06-20-2008	
118	72 / 73	E / W	17:07	GT	832	200	222		A	17:46 / 17:51	30 / 30	SN	PJB	P	06-20-2008	
119	71 / 73	E / W	17:23	GT	832	28	250		A	17:47 / 17:52	30 / 30	SN	PJB	P	06-20-2008	

Sheet Total 1046 | 250 **Destructive Carry Over**
Total to Date 7640

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-20-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 3899
Welder Tech. Carry Over 74 | 74

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
78	52 / 53	E / W	8:05	AP	840	63	137		A	8:57 / 9:02	30 / 30	SN	PJB	P	06-20-2008	
79	51 / 53	E / W	8:46	AP	840	206	343		A	9:16 / 9:21	30 / 30	SN	PJB	P	06-20-2008	
86	56 / 57	N / S	9:25	AP	840	23	366		A	9:46 / 9:51	30 / 30	SN	PJB	P	06-20-2008	
87	57 / 58	E / W	9:31	AP	840	172	454/84	LDT-20	A	9:57 / 10:02	30 / 30	SN	PJB	P	06-20-2008	
91	60 / 61	E / W	10:45	AP	840	80	164		A	10:34 / 10:39	30 / 30	SN	PJB	P	06-20-2008	
95	1 / 58	E / W	10:52	AP	840	36	200		A	11:02 / 11:07	30 / 30	SN	PJB	P	06-20-2008	
96	1 / 59	E / W	10:58	AP	840	30	230		A	11:10 / 11:15	30 / 30	SN	PJB	P	06-20-2008	
97	1 / 60	E / W	11:00	AP	840	6	236		A	11:11 / 11:16	30 / 30	SN	PJB	P	06-20-2008	
98	1 / 61	E / W	11:01	AP	840	35	271		A	11:16 / 11:21	30 / 30	SN	PJB	P	06-20-2008	
99	1 / 62	E / W	11:04	AP	840	20	291		A	11:17 / 11:22	30 / 30	SN	PJB	P	06-20-2008	
100	61 / 62	E / W	11:24	AP	840	29	320		A	11:29 / 11:34	30 / 30	SN	PJB	P	06-20-2008	
102	64 / 65	S / N	13:21	AP	840	23	343		A	13:57 / 14:02	30 / 30	SN	PJB	P	06-20-2008	
103	63 / 65	E / W	13:24	AP	840	119	462		A	13:48 / 13:53	30 / 29	SN	PJB	P	06-20-2008	
104	63 / 64	E / W	13:48	AP	840	243	481/224	LDT-22	A	14:47 / 14:52	30 / 30	SN	PJB	P	06-20-2008	
107	66 / 67	E / W	14:33	AP	840	369	460/133	LDT-25	A	15:57 / 16:02	30 / 30	SN	PJB	P	06-20-2008	
					Sheet Total	1454	133	**Destructive Carry Over**								
					Total to Date	5353										

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-20-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 5353
Welder Tech. Carry Over 133 | 133

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
111	69 / 70	E / W	15:40	AP	840	164	197		A	16:24 / 16:29	30 / 30	SN	PJB	P	06-20-2008	
112	68 / 70	E / W	16:10	AP	840	220	417		A	16:37 / 16:42	30 / 30	SN	PJB	P	06-20-2008	
116	73 / 74	S / N	17:16	AP	840	23	440		A	17:28 / 17:33	30 / 30	SN	PJB	P	06-20-2008	
117	72 / 74	E / W	17:15	AP	840	165	450/155	LDT-28	A	17:35 / 17:40	30 / 30	SN	PJB	P	06-20-2008	

Sheet Total 572 | 155 **Destructive Carry Over**
Total to Date 5925

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-25-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 7640
Welder Tech. Carry Over 250 250

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
122	75 / 77	E / W	15:31	GT	832	194	444		A	16:00 / 16:05	30 / 30	SN	PJB	P	06-25-2008	
123	76 / 77	S / N	15:50	GT	832	23	467		A	16:04 / 16:09	30 / 30	SN	PJB	P	06-25-2008	
124	75 / 76	E / W	15:54	GT	832	200	485/182	LDT-29	A	16:26 / 16:31	30 / 30	SN	PJB	P	06-25-2008	
129	79 / 80	E / W	16:27	GT	832	175	357		A	16:57 / 17:02	30 / 30	SN	PJB	P	06-25-2008	
130	78 / 80	E / W	16:48	GT	832	227	475/109	LDT-31	A	17:13 / 17:18	30 / 30	SN	PJB	P	06-25-2008	

Sheet Total 819 109 **Destructive Carry Over**
Total to Date 8459

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-25-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 5925
Welder Tech. Carry Over 155 | 155

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
120	74 / 75	E / W	15:24	AP	840	168	323		A	16:55 / 17:00	30 / 30	SW	PJB	P	06-25-2008	
121	73 / 75	E / W	15:41	AP	840	235	408/150	LDT-30	A	17:23 / 17:28	30 / 30	SN	PJB	P	06-25-2008	
125	78 / 79	S / N	16:10	AP	840	23	173		A	16:36 / 16:41	30 / 30	SN	PJB	P	06-25-2008	
126	77 / 79	E / W	16:32	AP	840	175	348		A	16:55 / 17:00	30 / 30	SN	PJB	P	06-25-2008	
127	77 / 78	E / W	16:50	AP	840	25	373		A	16:57 / 17:02	30 / 30	SN	PJB	P	06-25-2008	
128	76 / 78	E / W	16:53	AP	840	227	472/128	LDT-32	A	17:25 / 17:30	30 / 30	SN	PJB	P	06-25-2008	

Sheet Total 853 | 128 **Destructive Carry Over**
Total to Date 6778

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-26-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 8459
Welder Tech. Carry Over 109 | 109

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
131	80 / 81	E / W	8:02	GT	832	414	481/42	LDT-33	A	9:02 / 9:07	30 / 30	SN	PJB	P	06-26-2008	
136	83 / 85	E / W	9:06	GT	832	130	172		A	10:10 / 10:15	30 / 30	SN	PJB	P	06-26-2008	
137	83 / 84	E / W	10:10	GT	832	270	442		A	10:25 / 10:30	30 / 30	SN	PJB	P	06-26-2008	
138	82 / 84	E / W	10:26	GT	832	159	501/100	LDT-35	A	10:30 / 10:35	30 / 30	SN	PJB	P	06-26-2008	
142	88 / 89	E / W	10:31	GT	832	23	123		A	10:32 / 10:37	30 / 30	SN	PJB	P	06-26-2008	

Sheet Total 996 | 123 **Destructive Carry Over**
Total to Date 9455

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-26-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 6778
Welder Tech. Carry Over 128 128

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
132	81 / 83	E / W	8:06	AP	840	270	398		A	9:02 / 9:07	30 / 30	SN	PJB	P	06-26-2008	
133	81 / 82	E / W	8:42	AP	840	157	519/36	LDT-34	A	9:07 / 9:12	30 / 29	SN	PJB	P	06-26-2008	
134	82 / 83	S / N	8:36	AP	840	23	59		A	10:28 / 10:33	30 / 30	SN	PJB	P	06-26-2008	
135	84 / 85	S / N	8:45	AP	840	23	82		A	10:13 / 10:18	30 / 29	SN	PJB	P	06-26-2008	
139	85 / 86	E / W	9:30	AP	840	128	210		A	10:17 / 10:22	30 / 30	SN	PJB	P	06-26-2008	
140	84 / 86	E / W	9:47	AP	840	325	500/35	LDT-37	A	10:28 / 10:33	30 / 30	SN	PJB	P	06-26-2008	
141	86 / 87	E / W	10:23	AP	840	459	459/35	LDT-38	A	11:16 / 11:21	30 / 30	SN	PJB	P	06-26-2008	
145	90 / 91	S / N	11:47	AP	840	23	58		A	13:15 / 13:20	30 / 30	SN	PJB	P	06-26-2008	
146	89 / 91	E / W	11:50	AP	840	225	283		A	13:23 / 13:28	30 / 30	SN	PJB	P	06-26-2008	
147	89 / 90	E / W	13:00	AP	840	91	374		A	13:14 / 13:19	30 / 30	SN	PJB	P	06-26-2008	
148	88 / 90	E / W	11:42	AP	840	124	498		A	12:55 / 13:00	30 / 30	SN	PJB	P	06-26-2008	
153	94 / 95	S / N	13:43	AP	840	23	505/16	LDT-39	A	13:57 / 14:02	30 / 30	SN	PJB	P	06-26-2008	
154	93 / 95	E / W	13:51	AP	840	54	70		A	14:11 / 14:16	30 / 30	SN	PJB	P	06-26-2008	
155	93 / 94	E / W	14:06	AP	840	114	184		A	15:00 / 15:05	30 / 30	SN	PJB	P	06-26-2008	
156	92 / 94	E / W	14:19	AP	840	367	500/51	LDT-42	A	15:11 / 15:16	30 / 30	SN	PJB	P	06-26-2008	
					Sheet Total	2406	51	**Destructive Carry Over**								
					Total to Date	9184										

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-26-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 9184
Welder Tech. Carry Over 51 | 51

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
159	97 / 98	S / N	14:54	AP	840	23	74		A	16:05 / 16:10	30 / 30	SN	PJB	P	06-26-2008	
160	96 / 98	E / W	15:07	AP	840	416	490		A	16:03 / 16:08	30 / 30	SN	PJB	P	06-26-2008	
161	96 / 97	E / W	15:56	AP	840	60	500/50	LDT-44	A	16:11 / 16:16	30 / 30	SN	PJB	P	06-26-2008	
166	101 / 102	S / N	16:40	AP	840	23	73		A	16:53 / 16:58	30 / 30	SN	PJB	P	06-26-2008	
167	100 / 102	E / W	16:19	AP	840	166	239		A	16:49 / 16:54	30 / 30	SN	PJB	P	06-26-2008	
168	100 / 101	E / W	16:57	AP	840	294	500/33	LDT-45	A	17:03 / 17:08	30 / 30	SN	PJB	P	06-26-2008	
169	99 / 101	E / W	16:58	AP	840	177	210		A	17:08 / 17:13	30 / 30	SN	PJB	P	06-26-2008	

Sheet Total 1159 | 210 **Destructive Carry Over**
Total to Date 10343

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-26-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 17 of 70

Project Total Carry Over 0
Welder Tech. Carry Over 0 | 0

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
143	87 / 89	S / N	10:47	GT	847	366	366		A	11:28 / 11:33	30 / 30	SN	PJB	P	06-26-2008	
144	87 / 88	E / W	11:21	GT	847	110	378/98	LDT-36	A	11:29 / 11:34	30 / 30	SN	PJB	P	06-26-2008	
149	92 / 93	S / N	13:26	GT	847	23	121		A	13:31 / 13:36	30 / 30	SN	PJB	P	06-26-2008	
150	91 / 93	E / W	13:30	GT	847	196	317		A	13:53 / 13:58	30 / 30	SN	PJB	P	06-26-2008	
151	91 / 92	E / W	13:43	GT	847	110	427		A	15:06 / 15:11	30 / 30	SN	PJB	P	06-26-2008	
152	90 / 92	E / W	13:52	GT	847	214	500/141	LDT-41	A	15:08 / 15:13	30 / 30	SN	PJB	P	06-26-2008	
157	95 / 96	E / W	14:14	GT	847	51	192		A	15:08 / 15:13	30 / 30	SN	PJB	P	06-26-2008	
158	94 / 96	E / W	14:41	GT	847	433	360/265	LDT-40	A	15:25 / 15:30	30 / 30	SN	PJB	P	06-26-2008	
162	99 / 100	E / W	15:28	GT	847	23	288		A	16:31 / 16:36	30 / 30	SN	PJB	P	06-26-2008	
163	98 / 100	E / W	15:47	GT	847	294	500/82	LDT-43	A	16:22 / 16:27	30 / 30	SN	PJB	P	06-26-2008	
164	98 / 99	E / W	15:43	GT	847	123	205		A	17:00 / 17:05	30 / 30	SN	PJB	P	06-26-2008	
165	97 / 99	E / W	16:37	GT	847	52	257		A	17:14 / 17:19	30 / 30	SN	PJB	P	06-26-2008	

Sheet Total 1995 | 257 **Destructive Carry Over**
Total to Date 1995

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-27-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 10343
Welder Tech. Carry Over 210 | 210

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
174	104 / 105	E / W	9:48	AP	840	58	268		A	10:05 / 10:10	30 / 30	SN	PJB	P	06-27-2008	
175	103 / 105	E / W	9:55	AP	840	416	510/174	LDT-47	A	10:45 / 10:50	30 / 30	SN	PJB	P	06-27-2008	
177	105 / 106	E / W	12:50	AP	840	55	229		A	10:51 / 10:56	30 / 30	SN	PJB	P	06-27-2008	
178	105 / 107	E / W	12:57	AP	840	405	500/134	LDT-49	A	13:50 / 13:55	30 / 30	SN	PJB	P	06-27-2008	
183	109 / 111	E / W	14:00	AP	840	151	285		A	14:30 / 14:35	30 / 30	SN	PJB	P	06-27-2008	
184	110 / 111	N / S	14:15	AP	840	23	308		A	14:31 / 14:36	30 / 30	SN	PJB	P	06-27-2008	
185	109 / 110	E / W	14:17	AP	840	134	442		A	14:46 / 14:51	30 / 30	SN	PJB	P	06-27-2008	
186	108 / 110	E / W	14:33	AP	840	180	490/132	LDT-50	A	15:01 / 15:06	30 / 30	SN	PJB	P	06-27-2008	

Sheet Total 1422 | 132 **Destructive Carry Over**
Total to Date 11765

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-27-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 1995
Welder Tech. Carry Over 257 257

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
170	103 / 104	N / S	9:45	GT	847	23	280		A	10:16 / 10:21	30 / 30	SN	PJB	P	06-27-2008	
171	102 / 104	E / W	11:02	GT	847	58	338		A	12:40 / 12:45	30 / 30	SN	PJB	P	06-27-2008	
172	102 / 103	E / W	9:51	GT	847	119	457		A	10:25 / 10:30	30 / 30	SN	PJB	P	06-27-2008	
173	101 / 103	E / W	10:01	GT	847	296	500/253	LDT-46	A	10:35 / 10:40	30 / 30	SN	PJB	P	06-27-2008	
176	106 / 107	N / S	12:48	GT	847	23	276		A	13:07 / 13:12	30 / 30	SN	PJB	P	06-27-2008	
179	106 / 109	E / W	13:22	GT	847	56	332		A	13:40 / 13:45	30 / 30	SN	PJB	P	06-27-2008	
180	107 / 109	E / W	13:29	GT	847	222	386/168	LDT-48	A	13:53 / 13:58	30 / 30	SN	PJB	P	06-27-2008	
181	108 / 109	N / S	13:50	GT	847	23	191		A	14:15 / 14:20	30 / 30	SN	PJB	P	06-27-2008	
182	107 / 108	E / W	13:57	GT	847	180	371		A	14:14 / 14:19	30 / 30	SN	PJB	P	06-27-2008	

Sheet Total 1000 371 **Destructive Carry Over**
Total to Date 2995

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-28-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 20 of 70

Project Total Carry Over 11765
Welder Tech. Carry Over 132 | 132

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
187	112 / 113	N / S	11:47	AP	840	23	155		A	11:28 / 11:33	30 / 30	SN	PJB	P	06-28-2008	
191	113 / 114	E / W	12:34	AP	840	41	196		A	12:50 / 12:55	30 / 30	SN	PJB	P	06-28-2008	
192	112 / 114	E / W	12:38	AP	840	425	500/121	LDT-53	A	13:25 / 13:30	30 / 30	SN	PJB	P	06-28-2008	
197	116 / 118	E / W	14:50	AP	840	265	386		A	15:52 / 15:57	30 / 30	SN	PJB	P	06-28-2008	
198	116 / 117	E / W	15:16	AP	840	127	500/13	LDT-55	A	15:53 / 15:58	30 / 30	SN	PJB	P	06-28-2008	
199	115 / 117	E / W	15:57	AP	840	87	100		A	15:59 / 16:04	30 / 30	SN	PJB	P	06-28-2008	
204	120 / 121	E / W	16:10	AP	840	150	250		A	16:40 / 16:45	30 / 30	SN	PJB	P	06-28-2008	
205	119 / 121	E / W	16:25	AP	840	334	500/84	LDT-56	A	17:02 / 17:07	30 / 30	SN	PJB	P	06-29-2008	

Sheet Total 1452 | 84 **Destructive Carry Over**
Total to Date 13217

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-28-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 2995
Welder Tech. Carry Over 371 371

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
188	111 / 113	E / W	14:16	GT	847	41	412		A	8:11 / 8:16	30 / 30	SN	PJB	P	06-29-2008	
189	111 / 112	E / W	11:01	GT	847	115	500/27	LDT-51	A	11:28 / 11:33	30 / 30	SN	PJB	P	06-28-2008	
190	110 / 112	E / W	11:14	GT	847	312	339		A	13:00 / 13:05	30 / 30	SN	PJB	P	06-28-2008	
193	114 / 116	E / W	13:18	GT	847	385	500/224	LDT-52	A	13:50 / 13:55	30 / 30	SN	PJB	P	06-28-2008	
194	115 / 116	N / S	13:44	GT	847	23	247		A	13:51 / 13:56	30 / 30	SN	PJB	P	06-28-2008	
195	114 / 115	E / W	13:46	GT	847	87	334		A	14:03 / 14:08	30 / 30	SN	PJB	P	06-28-2008	
196	117 / 118	S / N	14:08	GT	847	23	357		A	13:54 / 13:59	30 / 30	SN	PJB	P	06-28-2008	
200	119 / 120	S / N	14:15	GT	847	23	380		A	16:10 / 16:15	30 / 30	SN	PJB	P	06-28-2008	
201	118 / 120	E / W	15:48	GT	847	150	500/30	LDT-54	A	16:28 / 16:33	30 / 30	SN	PJB	P	06-28-2008	
202	118 / 119	E / W	16:00	GT	847	120	150		A	16:21 / 16:26	30 / 30	SN	PJB	P	06-28-2008	
203	117 / 119	E / W	16:21	GT	847	214	364		A	16:45 / 16:50	30 / 30	SN	PJB	P	06-28-2008	
206	121 / 122	E / W	16:55	GT	847	450	500/314	LDT-57	A	17:22 / 17:27	30 / 30	SN	PJB	P	06-28-2008	

Sheet Total 1943 314 **Destructive Carry Over**
Total to Date 4938

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-29-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 9455
Welder Tech. Carry Over 123 | 123

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
208	123 / 125	E / W		GT	832	140	263		A	9:11 / 9:16	30 / 30	SN	PJB	P	06-29-2008	
209	124 / 125	S / N	9:20	GT	832	23	286		A	9:28 / 9:33	30 / 30	SN	PJB	P	06-29-2008	
210	123 / 124	E / W	8:44	GT	832	210	496		A	9:51 / 9:56	30 / 30	SN	PJB	P	06-29-2008	
213	126 / 127	E / W	9:57	GT	832	291	512/275	LDT-59	A	10:24 / 10:29	30 / 30	SN	PJB	P	06-29-2008	
215	128 / 129	E / W	10:56	GT	832	202	477		A	11:26 / 11:31	30 / 30	SN	PJB	P	06-29-2008	
217	130 / 131	E / W	11:39	GT	832	150	507/120	LDT-62	A	12:55 / 13:00	30 / 30	SN	PJB	P	06-29-2008	

Sheet Total 1016 | 120 **Destructive Carry Over**
Total to Date 10471

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-29-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 13217
Welder Tech. Carry Over 84 | 84

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
207	122 / 123	E / W	8:11	AP	840	375	168/291	LDT-58	A	9:48 / 9:53	30 / 30	SN	PJB	P	06-29-2008	
211	125 / 126	E / W	9:43	AP	840	101	392		A	10:08 / 10:13	30 / 30	SN	PJB	P	06-29-2008	
212	124 / 126	E / W	9:57	AP	840	204	501/95	LDT-60	A	10:22 / 10:27	30 / 30	SN	PJB	P	06-29-2008	
214	127 / 128	E / W	10:26	AP	840	239	334		A	11:15 / 11:20	30 / 30	SN	PJB	P	06-29-2008	
216	129 / 130	E / W	11:06	AP	840	149	483		A	11:40 / 11:45	30 / 30	SN	PJB	P	06-29-2008	
218	131 / 132	E / W	11:39	AP	840	150	500/133	LDT-61	A	12:56 / 13:01	30 / 30	SN	PJB	P	06-29-2008	

Sheet Total 1218 | 133 **Destructive Carry Over**
Total to Date 14435

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-30-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 10471
Welder Tech. Carry Over 120 | 120

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
219	133 / 134	S / N	14:32	GT	832	270	390		A	15:24 / 15:29	30 / 30	SN	PJB	P	06-30-2008	
220	134 / 135	S / N	15:05	GT	832	238	500/128	LDT-63	A	15:33 / 15:38	30 / 30	SN	PJB	P	06-30-2008	
222	136 / 137	S / N	15:52	GT	832	140	268		A	16:42 / 16:47	30 / 30	SN	PJB	P	06-30-2008	
224	139 / 140	S / N	16:33	GT	832	94	362		A	17:08 / 17:13	30 / 30	SN	PJB	P	06-30-2008	
228	140 / 141	S / N	16:42	GT	832	63	425		A	17:10 / 17:15	30 / 30	SN	PJB	P	06-30-2008	
229	141 / 142	S / N	17:04	GT	832	21	446		A	17:15 / 17:20	30 / 30	SN	PJB	P	06-30-2008	

Sheet Total 826 | 446 **Destructive Carry Over**
Total to Date 11297

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 06-30-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 14435
Welder Tech. Carry Over 133 | 133

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
221	135 / 136	S / N	15:38	AP	840	200	333		A	16:03 / 16:08	30 / 30	SN	PJB	P	06-30-2008	
223	137 / 139	W / E	16:40	AP	840	112	445		A	16:43 / 16:48	30 / 30	SN	PJB	P	06-30-2008	
225	137 / 138	S / N	16:43	AP	840	23	468		A	16:55 / 17:00	30 / 30	SN	PJB	P	06-30-2008	
226	136 / 138	S / N	16:45	AP	840	26	494		A	17:02 / 17:07	30 / 30	SN	PJB	P	06-30-2008	
227	138 / 139	S / N	16:53	AP	840	26	500/20	LDT-64	A	16:59 / 17:04	30 / 30	SN	PJB	P	06-30-2008	

Sheet Total 387 | 20 **Destructive Carry Over**
Total to Date 14822

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-01-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 11297
Welder Tech. Carry Over 446 446

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
231	133 / 143	S / N	8:14	GT	832	300	500/246	LDT-65	A	8:47 / 8:52	30 / 30	SN	WMH	P	07-01-2008	
237	146 / 147	S / N	9:00	GT	832	65	311		A	9:48 / 9:53	30 / 29	SN	WMH	P	07-01-2008	
238	145 / 147	S / N	9:17	GT	832	88	399		A	9:51 / 9:56	30 / 30	SN	WMH	P	07-01-2008	
239	144 / 147	S / N	9:24	GT	832	220	489/130	LDT-60	A	10:26 / 10:31	30 / 30	SN	WMH	P	07-01-2008	
230-1	121 / 147	R-11H / R-11G	10:41	GT	832	20	150		A	11:24 / 11:29	30 / 30	SN	WH/JHA	P	07-01-2008	
230-2	121 / 146	R-11J / R-11H	10:39	GT	832	18	168		A	11:25 / 11:30	30 / 30	SN	WH/JHA	P	07-01-2008	
230-3	122 / 146	R-11K / R-11J	10:36	GT	832	22	190		A	11:21 / 11:26	30 / 30	SN	WH/JHA	P	07-01-2008	
230-4	122 / 143	R-8Q / R-11K	10:31	GT	832	16	206		A	11:15 / 11:20	30 / 30	SN	WH/JHA	P	07-01-2008	
230-5	123 / 143	R-11M / R-11L	10:26	GT	832	15	221		A	10:59 / 11:04	30 / 30	SN	WH/JHA	P	07-01-2008	
243	149 / 150	S / N	13:23	GT	832	187	408		A	13:50 / 13:55	30 / 30	SN	WMH	P	07-01-2008	
246	151 / 152	S / N	13:44	GT	832	146	489/65	LDT-67	A	14:00 / 14:05	30 / 30	SN	WMH	P	07-01-2008	
242	149 / 156	S / N	14:09	GT	832	602	500/167	LDT-68	A	15:24 / 15:29	30 / 29	SN	WMH	P	07-01-2008	
253	159 / 158	S / N	15:21	GT	832	598	500/265	LDT-69	A	16:22 / 16:27	30 / 30	SN	WMH	P	07-01-2008	
249	154 / 155	S / N	16:53	GT	832	45	310			/	/					

Sheet Total 2342 310 **Destructive Carry Over**
Total to Date 13639

Notes:

CQA Personnel: William Harrison / James Addis

GEOMEMBRANE SEAM LOG

Date: 06-30-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 14822
Welder Tech. Carry Over 20 | 20

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
230-6	125 / 133	R-11M / R-11N	14:46	AP	840	35	55		A	15:23 / 15:28	30 / 30	SN	WH/JHA	P	07-01-2008	
230-7	125 / 134	R-11N / R-11P	14:50	AP	840	6	61		A	15:11 / 15:16	30 / 30	SN	WH/JHA	P	07-01-2008	
230-8	126 / 134	R-11P / R-11Q	14:50	AP	840	5	66		A	15:05 / 15:10	30 / 30	SN	WH/JHA	P	07-01-2008	
230-9	126 / 134	R-11Q / R-11R	14:51	AP	840	26	92		A	15:07 / 15:12	30 / 28	SN	WH/JHA	P	07-01-2008	
230-10	126 / 135	R-11R / R-11Y	8:06	AP	840	11	103		A	8:14 / 8:19	30 / 29	SN	WH/JHA	P	07-01-2008	
230-11	127 / 135	R-11Y / R-11T	8:09	AP	840	11	114		A	8:20 / 8:25	30 / 30	SN	WH/JHA	P	07-01-2008	
230-12	127 / 136	R-11T / R-11U	8:11	AP	840	9	123		A	8:28 / 8:33	30 / 30	SN	WH/JHA	P	07-01-2008	
230-13	128 / 136	R-11U / R-11V	8:13	AP	840	29	152		A	8:30 / 8:35	30 / 30	SN	WH/JHA	P	07-01-2008	
230-14	128 / 137	R-11V / R-11W	8:15	AP	840	13	165		A	8:37 / 8:43	30 / 30	SN	WH/JHA	P	07-01-2008	
230-15	129 / 137	R-11W / R-11X	8:25	AP	840	25	190		A	8:38 / 8:43	30 / 30	SN	WH/JHA	P	07-01-2008	
230-16	129 / 139	R-11X / R-14A	8:30	AP	840	12	202		A	8:54 / 8:59	30 / 30	SN	WH/JHA	P	07-01-2008	
230-17	130 / 139	R-14A / R-14B	8:47	AP	840	33	235		A	8:59 / 9:04	30 / 30	SN	WH/JHA	P	07-01-2008	
230-18	131 / 140	R-14B / R-14C	8:58	AP	840	41	276		A	9:25 / 9:30	30 / 30	SN	WH/JHA	P	07-01-2008	
230-19	132 / 141	R-14C / R-14D	9:17	AP	840	29	305		A	9:31 / 9:36	30 / 30	SN	WH/JHA	P	07-01-2008	
230-20	132 / 141	R-14D / R-14E	9:20	AP	840	10	315		A	9:32 / 9:37	30 / 30	SN	WH/JHA	P	07-01-2008	

Sheet Total 295 | 315 **Destructive Carry Over**
Total to Date 15117

Notes:

CQA Personnel: William Harrison / James Addis

GEOMEMBRANE SEAM LOG

Date: 07-01-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 15117
Welder Tech. Carry Over 315 | 315

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
240	147 / 148	S / N	10:02	AP	840	418	492/241	LDT-70	A	11:34 / 11:39	30 / 30	SN	PJB	P	07-01-2008	
251	156 / 157	S / N	14:29	AP	840	605	500/346	LDT-71	A	15:30 / 15:35	30 / 30	SN	PJB	P	07-01-2008	
254	159 / 160	S / N	15:43	AP	840	607	500/453	LDT-72	A	16:50 / 16:55	30 / 30	SN	PJB	P	07-01-2008	

Sheet Total 1630 | 453 **Destructive Carry Over**
Total to Date 16747

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-01-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 4938
Welder Tech. Carry Over 314 | 314

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
232	145 / 146	E / W	9:05	BA	847	23	337		A	9:44 / 9:49	30 / 30	SN	PJB	P	07-01-2008	
233	144 / 145	E / W	9:09	BA	847	23	360		A	9:57 / 10:02	30 / 29	SN	PJB	P	07-01-2008	
234	143 / 146	S / N	9:12	BA	847	31	391		A	9:45 / 9:50	30 / 30	SN	PJB	P	07-01-2008	
235	143 / 145	S / N	9:16	BA	847	89	480		A	9:46 / 9:51	30 / 30	SN	PJB	P	07-01-2008	
236	143 / 144	S / N	9:25	BA	847	222	482/220	LDT-77	A	10:34 / 10:39	30 / 30	SN	PJB	P	07-01-2008	
241	148 / 149	S / N	9:47	BA	847	418	500/138	LDT-76	A	14:39 / 14:44	30 / 30	SN	PJB	P	07-01-2008	
250	153 / 154	W / E	10:55	BA	847	23	161		A	14:01 / 14:06	30 / 30	SN	PJB	P	07-01-2008	
247	152 / 154	S / N	13:57	BA	847	45	206		A	14:11 / 14:16	30 / 30	SN	PJB	P	07-01-2008	
245	150 / 151	S / N	13:20	BA	847	187	393		A	13:52 / 13:57	30 / 30	SN	PJB	P	07-01-2008	
252	157 / 158	S / N	14:45	BA	847	603	500/496	LDT-73	A	15:50 / 15:55	30 / 30	SN	PJB	P	07-01-2008	
255	160 / 161	S / N	16:00	BA	847	607	500/500/53	LDT-74/75	A	17:05 / 17:10	30 / 30	SN	PJB	P	07-01-2008	

Sheet Total 2271 | 53 **Destructive Carry Over**
Total to Date 7209

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-02-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 13639
Welder Tech. Carry Over 310 | 310

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
256	161 / 162	S / N	8:22	GT	832	595	500/405	LDT-86	A	9:28 / 9:33	30 / 30	SN	WMH	P	07-02-2008	
259	164 / 165	S / N	9:23	GT	832	597	500/500/2	LDT-87,88	A	10:21 / 10:26	30 / 30	SN	WMH	P	07-02-2008	
262	167 / 168	S / N	10:34	GT	832	598	500/100	LDT-89	A	12:55 / 13:00	30 / 30	SN	WMH	P	07-02-2008	
264-2	169 / 170	S / N	11:30	GT	832	246	346	LDT-90	A	11:36 / 11:41	30 / 30	SN	WMH	P	07-02-2008	
266	171 / 172	S / N	13:58	GT	832	595	846/95	LDT-91	A	15:07 / 15:12	30 / 30	SN	WMH	P	07-02-2008	
269	174 / 175	S / N	15:13	GT	832	598	500/193	LDT-92	A	16:33 / 16:38	30 / 30	SN	WMH	P	07-02-2008	
272	177 / 178	S / N	16:34	GT	832	600	500/293	LDT-85	A	17:42 / 17:47	30 / 30	SN	WMH	P	07-02-2008	

Sheet Total 3829 | 293 **Destructive Carry Over**
Total to Date 17468

Notes:

CQA Personnel: William Harrison

GEOMEMBRANE SEAM LOG

Date: 07-02-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 16747
Welder Tech. Carry Over 453 453

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
258	163 / 164	S / N	9:00	AP	840	598	500/500/51	LDT-93, 94	A	10:20 / 10:25	30 / 30	SN	WMH	P	07-02-2008	
260	166 / 167	S / N	10:20	AP	840	598	500/149	LDT-95	A	11:19 / 11:24	30 / 30	SN	WMH	P	07-02-2008	
264-1	169 / 170	S / N	11:25	AP	840	352	500/1	LDT-96	A	13:23 / 13:28	30 / 30	SN	WMH	P	07-02-2008	
265	170 / 171	S / N	13:45	AP	840	598	500/99	LDT-97	A	15:05 / 15:10	30 / 30	SN	WMH	P	07-02-2008	
268	173 / 174	S / N	15:06	AP	840	600	500/199	LDT-98	A	16:23 / 16:28	30 / 30	SN	WMH	P	07-02-2008	
271	176 / 177	S / N	16:25	AP	840	599	500/298	LDT-99	A	17:40 / 17:45	30 / 30	SN	WMH	P	07-02-2008	

Sheet Total 3345 298 **Destructive Carry Over**
Total to Date 20092

Notes:

CQA Personnel: William Harrison

GEOMEMBRANE SEAM LOG

Date: 07-02-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 7209
Welder Tech. Carry Over 53 | 53

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
257	162 / 163	S / N	8:35	BA	847	605	493/165	LDT-78	A	10:18 / 10:23	30 / 30	SN	PJB	P	07-02-2008	
261	165 / 166	S / N	9:50	BA	847	595	595/165	LDT-79	A	11:18 / 11:23	30 / 30	SN	PJB	P	07-02-2008	
263	168 / 169	S / N	11:00	BA	847	594	500/259	LDT-80	A	13:30 / 13:35	30 / 30	SN	PJB	P	07-02-2008	
267	172 / 173	S / N	14:00	BA	847	610	500/369	LDT-81	A	15:09 / 15:14	30 / 30	SN	PJB	P	07-02-2008	
270	175 / 176	S / N	15:20	BA	847	608	500/477	LDT-82	A	16:42 / 16:47	30 / 30	SN	PJB	P	07-02-2008	
273	178 / 179	S / N	16:40	BA	847	604	500/510/71	LDT-83/84	A	17:46 / 17:51	30 / 30	SN	PJB	P	07-02-2008	

Sheet Total 3616 | 71 **Destructive Carry Over**
Total to Date 10825

Notes:
S-270: Z-2, 16:45-16:50, 30/30; Z-3, 16:40-16:45, 30/30

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-03-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 17468
Welder Tech. Carry Over 293 293

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
275	180 / 181	S / N	8:55	GT	832	602	500/395	LDT-101	A	9:57 / 10:02	30 / 30	SN	WMH	P	07-03-2008	
277-1	182 / 183	S / N	10:08	GT	832	564	500/459	LDT-103	A	11:07 / 11:12	30 / 30	SN	WMH	P	07-03-2008	
278-1	183 / 184	R-15T / N	11:05	GT	832	196	500/155	LDT-105	A	11:46 / 11:51	30 / 30	SN	WMH	P	07-03-2008	

Sheet Total 1362 155 **Destructive Carry Over**
Total to Date 18830

Notes:

CQA Personnel: William Harrison

GEOMEMBRANE SEAM LOG

Date: 07-03-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 20092
Welder Tech. Carry Over 298 298

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
274	179 / 180	S / N	8:40	AP	840	599	500/397	LDT-100	A	9:54 / 9:59	30 / 30	SN	WMH	P	07-03-2008	
276	181 / 182	S / N	9:54	AP	840	588	500/485	LDT-102	A	11:03 / 11:08	30 / 30	SN	WMH	P	07-03-2008	
278-2	183 / 184	S / R-15T	11:01	AP	840	342	500/327	LDT-104	A	11:45 / 11:50	30 / 30	SN	WMH	P	07-03-2008	
279-1	151 / 118	W / 116	13:01	AP	840	8	335		A	13:28 / 13:33	30 / 30	SN	WMH	P	07-03-2008	
279-2	151 / 116	116 / 114	13:14	AP	840	24	359		A	13:44 / 13:49	30 / 30	SN	WMH	P	07-03-2008	
279-3	152 / 114	152 / 113	13:17	AP	840	20	379		A	13:38 / 13:43	30 / 30	SN	WMH	P	07-03-2008	
279-4	152 / 113	113 / 153	13:19	AP	840	18	397		A	13:39 / 13:44	30 / 30	SN	WMH	P	07-03-2008	
279-5	111 / 153	R-15E / R-15F	13:22	AP	840	4	401		A	13:53 / 13:58	30 / 30	SN	WMH	P	07-03-2008	
279-6	111 / 153	R-15F / R-15H	13:23	AP	840	23	424		A	13:58 / 14:03	30 / 30	SN	WMH	P	07-03-2008	
279-7	153 / 109	R-15H / R-15K	13:25	AP	840	23	447		A	14:07 / 14:12	30 / 30	SN	WMH	P	07-03-2008	
279-8	153 / 106	R-15K / R-15L	13:32	AP	840	13	452/8	LDT-106	A	/	/		WMH		07-03-2008	R-15(k-m) were capped
279-9	155 / 105	R-15N / R-15P	13:52	AP	840	6	14		A	14:30 / 14:35	30 / 30	SN	WMH	P	07-03-2008	
279-10	155 / 104	R-15P / R-15Q	13:49	AP	840	26	40		A	14:29 / 14:34	30 / 30	SN	WMH	P	07-03-2008	

Sheet Total 1694 40 **Destructive Carry Over**
Total to Date 21786

Notes:

CQA Personnel: William Harrison

GEOMEMBRANE SEAM LOG

Date: 07-16-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 18830
Welder Tech. Carry Over 155 155

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
280	184 / 185	S / N	8:46	GT	832	330	485		A	9:55 / 10:00	30 / 30	SN	PJB	P	07-16-2008	
282	186 / 187	S / N	9:16	GT	832	290	500/275	LDT-107	A	10:57 / 11:03	30 / 30	SN	PJB	P	07-16-2008	
284	190 / 191	S / N	10:28	GT	832	125	400		A	10:52 / 10:57	30 / 30	SN	PJB	P	07-16-2008	

Sheet Total 745 400 **Destructive Carry Over**
Total to Date 19575

Notes:
#832 taken out of production after ending seam 284

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-16-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 21786
Welder Tech. Carry Over 40 | 40

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
281	185 / 186	S / N	8:43	AP	840	330	370		A	9:55 / 10:00	30 / 30	SN	PJB	P	07-16-2008	
283	187 / 188	S / N	9:19	AP	840	214	500/84	LDT-108	A	10:49 / 10:54	30 / 30	SN	PJB	P	07-16-2008	
285	188 / 189	S / N	10:45	AP	840	112	196		A	11:16 / 11:21	30 / 30	SN	PJB	P	07-16-2008	
286-1	187 / 190	S / N	11:07	AP	840	51	247		A	11:32 / 11:37	30 / 30	SN	PJB	P	07-16-2008	
286-2	188 / 190	W / E	11:14	AP	840	34	281		A	11:55 / 12:00	30 / 30	SN	PJB	P	07-16-2008	
286-3	188 / 191	S / N	11:19	AP	840	37	318		A	11:44 / 11:49	30 / 30	SN	PJB	P	07-16-2008	
286-4	188 / 192	S / N	13:04	AP	840	38	356		A	11:45 / 11:50	30 / 30	SN	PJB	P	07-16-2008	
286-5	189 / 192	S / N	13:09	AP	840	42	398		A	13:27 / 13:32	30 / 30	SN	PJB	P	07-16-2008	
286-6	192 / 193	S / N	13:19	AP	840	31	429		A	13:30 / 13:35	30 / 30	SN	PJB	P	07-16-2008	
288	189 / 193	S / N	13:30	AP	840	36	465		A	13:47 / 13:52	30 / 30	SN	PJB	P	07-16-2008	
289	193 / 194	S / N	13:45	AP	840	8	473		A	13:49 / 13:54	30 / 30	SN	PJB	P	07-16-2008	
290	189 / 194	S / N	13:41	AP	840	20	493		A	13:52 / 13:57	30 / 30	SN	PJB	P	07-16-2008	
295	196 / 197	S / N	13:55	AP	840	290	500/283	LDT-110	A	14:41 / 14:46	30 / 30	SN	PJB	P	07-16-2008	
296	195 / 197	S / N	14:17	AP	840	111	394		A	15:08 / 15:13	30 / 30	SN	PJB	P	07-16-2008	
300	199 / 200	S / N	14:45	AP	840	54	448		A	15:00 / 15:05	30 / 30	SN	PJB	P	07-16-2008	

Sheet Total 1408 | 448 **Destructive Carry Over**
Total to Date 23194

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-16-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 23194
Welder Tech. Carry Over 448 448

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
301	198 / 200	S / N	15:00	AP	840	291	490/249	LDT-111	A	16:28 / 16:33	30 / 30	SN	PJB	P	07-16-2008	
305	202 / 203	S / N	15:41	AP	840	207	456		A	16:11 / 16:16	30 / 30	SN	PJB	P	07-16-2008	
306	201 / 203	S / N	16:00	AP	840	180	600/36	LDT-112	A	16:30 / 16:35	30 / 30	SN	PJB	P	07-16-2008	
308	205 / 206	W / E	16:53	AP	840	23	59		A	17:00 / 17:05	30 / 30	SN	PJB	P	07-16-2008	
309	204 / 206	S / N	16:30	AP	840	109	168		A	16:59 / 17:04	30 / 30	SN	PJB	P	07-16-2008	
310	204 / 205	S / N	16:55	AP	840	224	392		A	17:21 / 17:26	30 / 30	SN	PJB	P	07-16-2008	

Sheet Total 1034 392 **Destructive Carry Over**
Total to Date 24228

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-16-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 38 of 70

Project Total Carry Over 10825
Welder Tech. Carry Over 71 | 71

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
287	191 / 192	S / N	13:12	GT	847	45	116		A	13:28 / 13:33	30 / 30	SN	PJB	P	07-16-2008	
291	195 / 196	S / N	13:19	GT	847	23	139		A	14:10 / 14:15	30 / 30	SN	PJB	P	07-16-2008	
292	186 / 196	S / N	13:38	GT	847	36	175		A	14:39 / 14:44	30 / 30	SN	PJB	P	07-16-2008	
293	190 / 196	S / N	13:49	GT	847	82	257		A	14:15 / 14:20	30 / 30	SN	PJB	P	07-16-2008	
294	190 / 195	S / N	14:02	GT	847	111	368		A	15:06 / 15:11	30 / 30	SN	PJB	P	07-16-2008	
297	198 / 199	W / E	14:17	GT	847	23	391		A	14:10 / 14:15	30 / 30	SN	PJB	P	07-16-2008	
298	197 / 199	S / N	14:20	GT	847	26	401/16	LDT-109	A	14:42 / 14:47	30 / 30	SN	PJB	P	07-16-2008	
299	197 / 198	S / N	14:24	GT	847	291	307		A	15:11 / 15:16	30 / 30	SN	PJB	P	07-16-2008	
302	201 / 202	W / E	15:27	GT	847	23	330		A	15:45 / 15:50	30 / 30	SN	PJB	P	07-16-2008	Z-1, Z-2 capped
303	200 / 202	S / N	15:45	GT	847	176	506		A	15:55 / 16:00	30 / 30	SN	PJB	P	07-16-2008	
304	200 / 201	S / N	16:04	GT	847	180	600/86	LDT-113	A	16:29 / 16:34	30 / 30	SN	PJB	P	07-16-2008	
307	203 / 204	S / N	16:15	GT	847	328	414		A	17:19 / 17:24	30 / 30	SN	PJB	P	07-16-2008	
311	206 / 207	S / N	16:54	GT	847	42	456		A	17:04 / 17:09	30 / 30	SN	PJB	P	07-16-2008	
312	205 / 207	S / N	16:58	GT	847	224	500/180	LDT-114	A	17:23 / 17:28	30 / 30	SN	PJB	P	07-16-2008	

Sheet Total 1610 | 180 **Destructive Carry Over**
Total to Date 12435

Notes:
#847 taken out of production after ending seam 312

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-17-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 24228
Welder Tech. Carry Over 392 392

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
314	208 / 209	S / N	8:34	AP	840	164	500/56	LDT-116	A	9:09 / 9:16	30 / 30	SN	PJB	P	07-17-2008	
316	210 / 211	S / N	9:05	AP	840	121	177		A	9:28 / 9:33	30 / 30	SN	PJB	P	07-17-2008	
319	213 / 214	W / E	10:02	AP	840	23	200		A	10:16 / 10:21	30 / 30	SN	PJB	P	07-17-2008	
320	212 / 214	S / N	10:07	AP	840	17	217		A	10:15 / 10:20	30 / 30	SN	PJB	P	07-17-2008	
277-2	182 / 183	S / N	11:00	AP	840	30	247		A	11:10 / 11:15	30 / 30	SN	PJB	P	07-17-2008	
279-11	183 / 184	N / S	11:15	AP	840	64	311		A	11:27 / 11:32	30 / 30	SN	PJB	P	07-17-2008	
321	215 / 216	S / N	11:23	AP	840	26	337		A	13:05 / 13:10	30 / 30	SN	PJB	P	07-17-2008	
322	203 / 216	W / E	11:34	AP	840	19	356		A	13:06 / 13:11	30 / 30	SN	PJB	P	07-17-2008	
323-1	216 / 217	S / N	11:50	AP	840	10	366		A	13:08 / 13:13	30 / 30	SN	PJB	P	07-17-2008	
323-2	203 / 217	S / N	11:51	AP	840	4	370		A	13:09 / 13:14	30 / 30	SN	PJB	P	07-17-2008	
324	204 / 217	W / E	11:53	AP	840	12	382		A	13:12 / 13:17	30 / 30	SN	PJB	P	07-17-2008	
333	42 / 218	W / E	13:40	AP	840	120	475/27	LDT-117	A	14:17 / 14:22	30 / 30	SN	PJB	P	07-17-2008	
334	41 / 218	W / E	13:53	AP	840	83	110		A	14:18 / 14:23	30 / 30	SN	PJB	P	07-17-2008	
336	220 / 221	S / N	14:14	AP	840	23	133		A	14:39 / 14:44	30 / 30	SN	PJB	P	07-17-2008	
337	219 / 221	W / E	14:21	AP	840	33	166		A	16:38 / 16:43	30 / 30	SN	PJB	P	07-17-2008	

Sheet Total 749 166 **Destructive Carry Over**
Total to Date 24977

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-17-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 24977
Welder Tech. Carry Over 166 166

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
338	219 / 220	W / E	14:27	AP	840	171	337		A	14:52 / 14:57	30 / 30	SN	PJB	P	07-17-2008	
341	222 / 223	W / E	14:53	AP	840	207	500/44	LDT-119	A	15:17 / 15:22	30 / 30	SN	PJB	P	07-17-2008	
343	224 / 225	W / E	15:03	AP	840	206	250		A	16:19 / 16:24	30 / 30	SN	PJB	P	07-17-2008	
347	227 / 228	W / E	15:52	AP	840	30	280		A	16:12 / 16:17	30 / 30	SN	PJB	P	07-17-2008	
348	226 / 228	W / E	15:58	AP	840	177	457		A	16:21 / 16:26	30 / 30	SN	PJB	P	07-17-2008	
350	230 / 231	N / S	16:20	AP	840	23	480		A	16:38 / 16:43	30 / 30	SN	PJB	P	07-17-2008	
351	229 / 231	W / E	16:22	AP	840	33	500/13	LDT-122	A	16:37 / 16:42	30 / 30	SN	PJB	P	07-17-2008	
352	229 / 230	W / E	16:25	AP	840	175	188		A	16:55 / 17:00	30 / 30	SN	PJB	P	07-17-2008	

Sheet Total 1022 188 **Destructive Carry Over**
Total to Date 25999

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-17-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 0
Welder Tech. Carry Over 0 | 0

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
313	207 / 208	N / S	8:15	GT	841	211	211		A	9:06 / 9:11	30 / 30	SN	PJB	P	07-17-2008	
315	209 / 210	N / S	8:45	GT	841	148	359		A	9:10 / 9:15	30 / 30	SN	PJB	P	07-17-2008	
317	211 / 212	N / S	9:15	GT	841	88	447		A	9:25 / 9:30	30 / 30	SN	PJB	P	07-17-2008	
318	212 / 213	N / S	9:25	GT	841	51	469/29	LDT-115	A	9:39 / 9:44	30 / 30	SN	PJB	P	07-17-2008	
325	196 / 215	N / S	11:12	GT	841	37	66		A	11:37 / 11:42	30 / 30	SN	PJB	P	07-17-2008	
326	197 / 215	N / S	11:16	GT	841	37	103		A	11:42 / 11:47	30 / 30	SN	PJB	P	07-17-2008	
327	199 / 215	N / S	11:20	GT	841	37	140		A	11:47 / 11:52	30 / 30	SN	PJB	P	07-17-2008	
328	200 / 215	N / S	11:41	GT	841	36	176		A	11:55 / 12:00	30 / 30	SN	PJB	P	07-17-2008	
329	202 / 215	N / S	11:45	GT	841	37	213		A	11:56 / 12:01	30 / 30	SN	PJB	P	07-17-2008	
330	203 / 215	N / S	11:48	GT	841	11	224		A	13:00 / 13:05	30 / 30	SN	PJB	P	07-17-2008	
331	185 / 215	N / S	11:03	GT	841	23	247		A	11:36 / 11:41	30 / 30	SN	PJB	P	07-17-2008	
332	184 / 215	S / N	13:12	GT	841	243	490		A	13:37 / 13:42	30 / 30	SN	PJB	P	07-17-2008	
335	218 / 219	W / E	14:03	GT	841	206	500/196	LDT-118	A	14:26 / 14:31	30 / 30	SN	PJB	P	07-17-2008	
339	221 / 222	W / E	14:29	GT	841	36	232		A	14:40 / 14:45	30 / 30	SN	PJB	P	07-17-2008	
340	220 / 222	W / E	14:33	GT	841	170	402		A	14:55 / 15:00	30 / 30	SN	PJB	P	07-17-2008	
					Sheet Total	1371	402	**Destructive Carry Over**								
					Total to Date	1371										

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-17-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 1371
Welder Tech. Carry Over 402 | 402

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
342	223 / 224	W / E	15:01	GT	841	208	484/126	LDT-120	A	15:30 / 15:35	30 / 30	SN	PJB	P	07-17-2008	Z-2, 15:29-15:34, 30/30
344	226 / 227	S / N	15:33	GT	841	23	149		A	15:39 / 15:44	30 / 30	SN	PJB	P	07-17-2008	
345	225 / 227	W / E	15:37	GT	841	30	179		A	15:47 / 15:52	30 / 30	SN	PJB	P	07-17-2008	
346	225 / 226	W / E	15:39	GT	841	181	360		A	16:20 / 16:25	30 / 30	SN	PJB	P	07-17-2008	
349	228 / 229	W / E	16:00	GT	841	204	500/64	LDT-121	A	16:25 / 16:30	30 / 30	SN	PJB	P	07-17-2008	

Sheet Total 646 | 64 **Destructive Carry Over**
Total to Date 2017

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-18-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 25999
Welder Tech. Carry Over 188 188

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
355	232 / 233	W / E	8:05	AP	840	204	392		A	9:01 / 9:06	30 / 30	SN	PJB	P	07-18-2008	
356	235 / 234	N / S	8:34	AP	840	14	406		A	8:40 / 8:45	30 / 30	SN	PJB	P	07-18-2008	
357	233 / 235	W / E	8:40	AP	840	28	434		A	8:49 / 8:54	30 / 30	SN	PJB	P	07-18-2008	
358	233 / 234	W / E	8:45	AP	840	175	500/109	LDT-123	A	9:02 / 9:07	30 / 30	SN	PJB	P	07-18-2008	
361	236 / 237	W / E	10:13	AP	840	195	304		A	11:11 / 11:16	30 / 30	SN	PJB	P	07-18-2008	
363	238 / 239	W / E	10:46	AP	840	195	499		A	11:10 / 11:15	30 / 30	SN	PJB	P	07-18-2008	
365	240 / 241	W / E	11:02	AP	840	188	589/98	LDT-125	A	11:25 / 11:30	30 / 30	SN	PJB	P	07-18-2008	
367	242 / 243	W / E	11:38	AP	840	185	283		A	11:12 / 11:17	30 / 30	SN	PJB	P	07-18-2008	
370	244 / 246	W / E	13:10	AP	840	35	318		A	13:21 / 13:26	30 / 30	SN	PJB	P	07-18-2008	
371	244 / 245	W / E	13:14	AP	840	154	376/96	LDT-127	A	13:45 / 13:50	30 / 30	SN	PJB	P	07-18-2008	
375	249 / 250	N / S	13:40	AP	840	23	119		A	14:56 / 15:01	30 / 30	SN	PJB	P	07-18-2008	
376	248 / 250	W / E	13:51	AP	840	115	234		A	14:22 / 14:27	30 / 30	SN	PJB	P	07-18-2008	
377	248 / 249	W / E	14:02	AP	840	61	295		A	14:23 / 14:28	30 / 30	SN	PJB	P	07-18-2008	
380	251 / 252	W / E	14:21	AP	840	175	470		A	14:55 / 15:00	30 / 30	SN	PJB	P	07-18-2008	
384	254 / 255	W / E	16:24	AP	840	55	525		A	14:55 / 15:00	30 / 30	SN	PJB	P	07-18-2008	

Sheet Total 1802 525 **Destructive Carry Over**
Total to Date 27801

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-18-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 27801
Welder Tech. Carry Over 525 525

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
385	253 / 255	W / E	14:48	AP	840	116	600/41	LDT-129	A	15:25 / 15:30	30 / 30	SN	PJB	P	07-18-2008	
386	255 / 256	W / E	15:15	AP	840	156	197		A	15:46 / 15:51	30 / 30	SN	PJB	P	07-18-2008	
391	259 / 260	W / E	15:36	AP	840	46	243		A	16:08 / 16:13	30 / 30	SN	PJB	P	07-18-2008	
392	258 / 260	W / E	15:43	AP	840	105	348		A	16:14 / 16:19	30 / 30	SN	PJB	P	07-18-2008	
393	260 / 261	W / E	15:55	AP	840	150	480/18	LDT-130	A	16:24 / 16:29	30 / 30	SN	PJB	P	07-18-2008	

Sheet Total 573 18 **Destructive Carry Over**
Total to Date 28374

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-18-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 2017
Welder Tech. Carry Over 64 | 64

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
353	231 / 232	W / E	8:07	GT	841	35	99		A	8:20 / 8:25	30 / 30	SN	PJB	P	07-18-2008	
354	230 / 232	W / E	8:11	GT	841	168	267		A	9:00 / 9:05	30 / 30	SN	PJB	P	07-18-2008	
359	235 / 236	W / E	9:06	GT	841	30	297		A	9:28 / 9:33	30 / 30	SN	PJB	P	07-18-2008	
360	234 / 236	W / E	9:08	GT	841	170	467		A	9:34 / 9:39	30 / 30	SN	PJB	P	07-18-2008	Z-2, 9:40-9:45, 30/30
362	237 / 238	W / E	10:03	GT	841	202	530/139	LDT-124	A	11:03 / 11:08	30 / 30	SN	PJB	P	07-18-2008	
364	239 / 240	W / E	10:27	GT	841	195	334		A	11:14 / 11:19	30 / 30	SN	PJB	P	07-18-2008	
366	241 / 242	W / E	10:54	GT	841	188	500/22	LDT-126	A	11:27 / 11:32	30 / 30	SN	PJB	P	07-18-2008	
368	243 / 244	W / E	11:17	GT	841	183	205		A	11:53 / 11:58	30 / 30	SN	PJB	P	07-18-2008	
369	245 / 246	N / S	11:40	GT	841	21	226		A	12:59 / 13:04	30 / 30	SN	PJB	P	07-18-2008	
372	246 / 247	W / E	11:43	GT	841	35	261		A	12:58 / 13:03	30 / 30	SN	PJB	P	07-18-2008	
373	245 / 247	W / E	11:46	GT	841	156	417		A	13:10 / 13:15	30 / 30	SN	PJB	P	07-18-2008	
374	247 / 248	W / E	13:20	GT	841	181	598		A	13:46 / 13:51	30 / 30	SN	PJB	P	07-18-2008	
378	250 / 251	W / E	13:37	GT	841	115	620/93	LDT-128	A	14:25 / 14:30	30 / 30	SN	PJB	P	07-18-2008	
379	249 / 251	W / E	14:51	GT	841	62	155		A	14:24 / 14:29	30 / 30	SN	PJB	P	07-18-2008	
381	253 / 254	N / S	14:27	GT	841	23	178		A	14:43 / 14:48	30 / 30	SN	PJB	P	07-18-2008	

Sheet Total 1764 | 178 **Destructive Carry Over**
Total to Date 3781

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-18-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 3781
Welder Tech. Carry Over 178 | 178

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
382	252 / 254	W / E	14:34	GT	841	45	223		A	/	30 / 30	SN	PJB	P	07-18-2008	
383	252 / 253	W / E	14:50	GT	841	119	342		A	14:54 / 14:59	30 / 30	SN	PJB	P	07-18-2008	
387	256 / 257	W / E	15:13	GT	841	154	480/16	LDT-131	A	15:47 / 15:52	30 / 30	SN	PJB	P	07-18-2008	
388	258 / 259	N / S	15:34	GT	841	23	39		A	16:06 / 16:11	30 / 30	SN	PJB	P	07-18-2008	
389	257 / 259	W / E	15:37	GT	841	46	85		A	16:05 / 16:10	30 / 30	SN	PJB	P	07-18-2008	
390	257 / 258	W / E	15:43	GT	841	105	190		A	16:07 / 16:12	30 / 30	SN	PJB	P	07-18-2008	
394	261 / 262	W / E	16:04	GT	841	149	339		A	16:23 / 16:28	30 / 30	SN	PJB	P	07-18-2008	

Sheet Total 641 | 339 **Destructive Carry Over**
Total to Date 4422

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-22-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 28374
Welder Tech. Carry Over 18 | 18

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
395	227 / 263	N / S	N/A	BN	518	22.5	40.5		V	/	/	SN	PJB	P	07-22-2008	covered by extrusion patch
396	225 / 263	N / S	10:35	AP	840	22.5	63		A	/	/	SN	PJB	P	07-22-2008	covered by rain flap
397	224 / 263	N / S	10:37	AP	840	22.5	85.5		A	14:00 / 14:05	30 / 30	SN	PJB	P	07-22-2008	
398	223 / 263	N / S	10:39	AP	840	22.5	108		A	13:50 / 13:55	30 / 30	SN	PJB	P	07-22-2008	
399	222 / 263	N / S	10:41	AP	840	22.5	130.5		A	13:25 / 13:30	30 / 30	SN	PJB	P	07-22-2008	
400	221 / 263	N / S	10:43	AP	840	22.5	153		A	13:25 / 13:30	30 / 30	SN	PJB	P	07-22-2008	
401	219 / 263	N / S	10:45	AP	840	22.5	175.5		A	13:15 / 13:20	30 / 30	SN	PJB	P	07-22-2008	
402	218 / 263	N / S	10:47	AP	840	22.5	198		A	13:05 / 13:10	30 / 29	SN	PJB	P	07-22-2008	
403	42 / 263	N / S	10:49	AP	840	22.5	220.5		A	13:05 / 13:10	30 / 30	SN	PJB	P	07-22-2008	
404	40 / 263	N / S	10:51	AP	840	22.5	243		A	13:05 / 13:10	30 / 30	SN	PJB	P	07-22-2008	
405	39 / 263	N / S	10:53	AP	840	22.5	265.5		A	13:05 / 13:10	30 / 30	SN	PJB	P	07-22-2008	
406	37 / 263	N / S	10:55	AP	840	22.5	288		A	12:50 / 12:55	30 / 29	SN	PJB	P	07-22-2008	
407	36 / 263	N / S	10:57	AP	840	22.5	310.5		A	12:50 / 12:55	30 / 30	SN	PJB	P	07-22-2008	
408	35 / 263	N / S	10:59	AP	840	22.5	333		A	12:50 / 12:55	30 / 30	SN	PJB	P	07-22-2008	
409	34 / 263	N / S	11:01	AP	840	22.5	355.5		A	12:50 / 12:55	30 / 30	SN	PJB	P	07-22-2008	

Sheet Total 337.5 | 355.5 **Destructive Carry Over**
Total to Date 28711.5

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-22-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 28711.5
Welder Tech. Carry Over 355.5 355.5

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
410	33 / 263	N / S	11:01	AP	840	22.5	378		A	11:55 / 12:00	30 / 30	SN	PJB	P	07-22-2008	
411	32 / 263	N / S	11:03	AP	840	22.5	400.5		A	11:45 / 11:50	30 / 30	SN	PJB	P	07-22-2008	
412	30 / 263	N / S	11:05	AP	840	22.5	423		A	11:35 / 11:40	30 / 30	SN	PJB	P	07-22-2008	
413	29 / 263	N / S	11:07	AP	840	22.5	445.5		A	11:35 / 11:40	30 / 30	SN	PJB	P	07-22-2008	
414	28 / 263	N / S	11:09	AP	840	22.5	468		A	11:20 / 11:25	30 / 30	SN	PJB	P	07-22-2008	
415	25 / 263	N / S	11:11	AP	840	22.5	490.5		A	9:55 / 10:00	30 / 30	SN	PJB	P	07-22-2008	
416	24 / 263	N / S	11:13	AP	840	22.5	500/13	LDT-135	A	10:05 / 10:10	30 / 30	SN	PJB	P	07-22-2008	
417	22 / 263	N / S	11:15	AP	840	22.5	35.5		A	10:10 / 10:15	30 / 30	SN	PJB	P	07-22-2008	
418	21 / 263	N / S	11:17	AP	840	22.5	58		A	10:20 / 10:25	30 / 30	SN	PJB	P	07-22-2008	
419	23 / 263	N / S	11:19	AP	840	22.5	80.5		A	10:25 / 10:30	30 / 30	SN	PJB	P	07-22-2008	
420	19 / 263	N / S	11:20	AP	840	22.5	103		A	10:30 / 10:35	30 / 30	SN	PJB	P	07-22-2008	
421	18 / 263	N / S	11:21	AP	840	22.5	125.5		A	10:50 / 10:55	30 / 30	SN	PJB	P	07-22-2008	
422	4 / 263	N / S	11:22	AP	840	22.5	148		A	11:00 / 11:05	30 / 30	SN	PJB	P	07-22-2008	
425	265 / 266	N / S	11:35	AP	840	601	500/249	LDT-136	A	15:10 / 15:15	30 / 28	SN	PJB	P	07-22-2008	Z-2, 16:20-16:25, 30/30
427	267 / 268	N / S	14:02	AP	840	599	500/348	LDT-137	A	15:30 / 15:35	30 / 30	SN	PJB	P	07-22-2008	

Sheet Total 1492.5 348 **Destructive Carry Over**
Total to Date 30204

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-22-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 30204
Welder Tech. Carry Over 348 348

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
429	269 / 270	N / S	14:56	AP	840	588	500/436	LDT-140	A	15:50 / 15:55	30 / 30	JL	PJB	P	07-22-2008	
431-1	271 / 272	N / S	16:32	AP	840	300	700/36	LDT-141	A	7:45 / 7:50	30 / 30	JL	PJB	P	07-23-2008	

Sheet Total 888 36 **Destructive Carry Over**
Total to Date 31092

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-22-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 4422
Welder Tech. Carry Over 339 339

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
423	263 / 264	N / S	9:04	GT	841	598	500/437	LDT-132	A	11:10 / 11:15	30 / 30	SN	PJB	P	07-22-2008	
424	264 / 265	N / S	11:14	GT	841	593	500/500/30	LDT-133,134	A	14:40 / 14:45	30 / 28	SN	PJB	P	07-22-2008	Z-2, 15:50-15:55, 30/30
426	266 / 267	N / S	13:21	GT	841	596	600/26	LDT-138	A	15:20 / 15:25	30 / 28	SN	PJB	P	07-22-2008	
428	268 / 269	N / S	14:20	GT	841	601	450/177	LDT-139	A	15:45 / 15:50	30 / 30	SN	PJB	P	07-22-2008	
430	270 / 271	N / S	15:11	GT	841	598	550/225	LDT-143	A	15:50 / 15:55	30 / 30	SN	PJB	P	07-22-2008	
431-2	271 / 272	N / S	16:26	GT	841	298	475/48	LDT-142	A	7:46 / 7:51	30 / 30	SN	PJB	P	07-23-2008	

Sheet Total 3284 48 **Destructive Carry Over**
Total to Date 7706

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-23-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 31092
Welder Tech. Carry Over 36 | 36

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
433	273 / 274	S / N	9:53	AP	840	551	500/87	LDT-145	A	10:56 / 11:01	30 / 30	SN	PJB	P	07-23-2008	
435	275 / 276	S / N	12:57	AP	840	556	500/143	LDT-147	A	13:56 / 14:01	30 / 30	SN	PJB	P	07-23-2008	
437	277 / 278	S / N	14:05	AP	840	506	500/149	LDT-149	A	15:00 / 15:05	30 / 30	SN	PJB	P	07-23-2008	
441	279 / 281	S / N	15:06	AP	840	128	277		A	15:32 / 15:37	30 / 30	SN	PJB	P	07-23-2008	
442	280 / 281	S / N	15:16	AP	840	217	494		A	15:51 / 15:56	30 / 30	SN	PJB	P	07-23-2008	
444	280 / 282	S / N	15:23	AP	840	17	511		A	15:32 / 15:37	30 / 30	SN	PJB	P	07-23-2008	
446	283 / 284	S / N	15:50	AP	840	251	521/241	LDT-151	A	16:22 / 16:27	30 / 30	SN	PJB	P	07-23-2008	
449	286 / 287	S / N	16:30	AP	840	73	314		A	16:48 / 16:53	30 / 30	SN	PJB	P	07-23-2008	
450-1	67 / 272	W / E	9:27	AP	840	23	337		A	9:45 / 9:50	30 / 30	SN	PJB	P	07-23-2008	
450-2	66 / 272	W / E	9:25	AP	840	12	349		A	9:44 / 9:49	30 / 30	SN	PJB	P	07-23-2008	
450-3	66 / 271	W / E	9:15	AP	840	10	359		A	9:27 / 9:32	30 / 30	SN	PJB	P	07-23-2008	
450-4	65 / 271	W / E	9:09	AP	840	22	381		A	9:32 / 9:37	30 / 30	SN	PJB	P	07-23-2008	
450-5	63 / 270	W / E	9:04	AP	840	16	397		A	9:16 / 9:21	30 / 30	SN	PJB	P	07-23-2008	
450-6	43 / 270	W / E	9:01	AP	840	19	416		A	9:14 / 9:19	30 / 30	SN	PJB	P	07-23-2008	
450-7	44 / 269	W / E	8:43	AP	840	23	439		A	9:08 / 9:13	30 / 30	SN	PJB	P	07-23-2008	

Sheet Total 2424 | 439 **Destructive Carry Over**
Total to Date 33516

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-23-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 33516
Welder Tech. Carry Over 439 | 439

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
450-8	46 / 269	W / E	8:43	AP	840	5	444		A	9:04 / 9:09	30 / 30	SN	PJB	P	07-23-2008	
450-9	46 / 268	W / E	8:41	AP	840	18	462		A	9:03 / 9:08	30 / 30	SN	PJB	P	07-23-2008	
450-10	47 / 268	W / E	8:40	AP	840	11	473		A	9:02 / 9:07	30 / 30	SN	PJB	P	07-23-2008	
450-11	47 / 267	W / E	8:39	AP	840	12	485		A	9:01 / 9:06	30 / 30	SN	PJB	P	07-23-2008	
450-12	49 / 267	W / E	8:37	AP	840	16	501		A	9:00 / 9:05	30 / 30	SN	PJB	P	07-23-2008	
450-13	49 / 266	W / E	8:29	AP	840	7	508		A	8:47 / 8:52	30 / 30	SN	PJB	P	07-23-2008	
450-14	50 / 266	W / E	8:29	AP	840	5	513		A	8:43 / 8:48	30 / 30	SN	PJB	P	07-23-2008	
450-15	R22-P / 266	W / E	8:27	AP	840	11	524		A	8:42 / 8:47	30 / 30	SN	PJB	P	07-23-2008	
450-16	1 / 265	W / E	8:21	AP	840	23	530/17	LDT-153	A	8:41 / 8:46	30 / 30	SN	PJB	P	07-23-2008	
450-17	2 / 264	W / E	8:10	AP	840	23	40		A	8:41 / 8:46	30 / 30	SN	PJB	P	07-23-2008	
450-18	3 / 263	W / E	8:07	AP	840	24	64		A	8:40 / 8:45	30 / 30	SN	PJB	P	07-23-2008	
450-19	R22-Y / 43	W / E	N/A	BN	518	4			V	/	/				07-23-2008	covered by extrusion patch

Sheet Total 159 | 64 **Destructive Carry Over**
Total to Date 33675

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-23-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 7706
Welder Tech. Carry Over 48 | 48

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
432	272 / 273	S / N	8:57	GT	841	583	209/422	LDT-144	A	9:57 / 10:02	30 / 30	SN	PJB	P	07-23-2008	
434	274 / 275	S / N	10:03	GT	841	561	510/473	LDT-146	A	10:59 / 11:04	30 / 30	SN	PJB	P	07-23-2008	
436	276 / 277	S / N	13:05	GT	841	506	506/473	LDT-148	A	13:57 / 14:02	30 / 30	SN	PJB	P	07-23-2008	
438	279 / 280	W / E	14:08	GT	841	23	496		A	14:18 / 14:23	30 / 30	SN	PJB	P	07-23-2008	
439	278 / 279	S / N	14:15	GT	841	150	510/136	LDT-150	A	14:40 / 14:45	30 / 30	SN	PJB	P	07-23-2008	
440	278 / 280	S / N	14:19	GT	841	261	397		A	15:02 / 15:07	30 / 30	SN	PJB	P	07-23-2008	
445	281 / 283	N / S	15:08	GT	841	306	600/103	LDT-152	A	15:43 / 15:48	30 / 30	SN	PJB	P	07-23-2008	
443	281 / 282	N / S	15:13	GT	841	23	126		A	15:07 / 15:12	30 / 30	SN	PJB	P	07-23-2008	
447	284 / 285	N / S	15:43	GT	841	202	328		A	16:06 / 16:11	30 / 30	SN	PJB	P	07-23-2008	
448	285 / 286	N / S	16:06	GT	841	131	459		A	16:26 / 16:31	30 / 30	SN	PJB	P	07-23-2008	

Sheet Total 2746 | 459 **Destructive Carry Over**
Total to Date 10452

Notes:
Seam 439: Z-2, 14:39-14:44, 30/30; Z-3, 14:38-14:43, 30/30

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-24-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 33675
Welder Tech. Carry Over 64 | 64

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
451-1	69 / 272	S / N	7:41	BN	518	6			V	/	/		PJB	P	07-24-2008	extrusion seam
451-2	69 / 273	S / N	8:06	AP	840	17	81		A	8:18 / 8:23	30 / 30	SN	PJB	P	07-24-2008	
451-3	70 / 273	S / N	8:09	AP	840	23	104		A	8:24 / 8:29	30 / 30	SN	PJB	P	07-24-2008	
451-4	72 / 273	S / N	8:11	AP	840	8	112		A	8:25 / 8:30	30 / 30	SN	PJB	P	07-24-2008	
451-5	72 / 274	S / N	8:20	AP	840	15	127		A	8:40 / 8:45	30 / 30	SN	PJB	P	07-24-2008	
451-6	74 / 274	S / N	8:28	AP	840	22	149		A	8:41 / 8:46	30 / 30	SN	PJB	P	07-24-2008	
451-7	75 / 274	S / N	8:46	AP	840	8	157		A	9:06 / 9:11	30 / 30	SN	PJB	P	07-24-2008	
451-8	75 / 275	S / N	8:49	AP	840	16	173		A	9:07 / 9:12	30 / 30	SN	PJB	P	07-24-2008	
451-9	77 / 275	S / N	8:55	AP	840	16	189		A	9:09 / 9:14	30 / 30	SN	PJB	P	07-24-2008	
451-10	77 / 276	S / N	8:55	AP	840	5	194		A	9:10 / 9:15	30 / 30	SN	PJB	P	07-24-2008	
451-11	79 / 276	S / N	8:58	AP	840	23	217		A	9:11 / 9:16	30 / 30	SN	PJB	P	07-24-2008	
451-12	80 / 276	S / N	8:58	AP	840	5	222		A	9:12 / 9:17	30 / 30	SN	PJB	P	07-24-2008	
451-13	80 / 277	S / N	9:00	AP	840	17	239		A	9:14 / 9:19	30 / 30	SN	PJB	P	07-24-2008	
451-14	81 / 277	S / N	9:00	AP	840	14	253		A	9:22 / 9:27	30 / 30	SN	PJB	P	07-24-2008	
451-15	81 / 278	S / N	9:02	AP	840	10	263		A	9:23 / 9:28	30 / 30	SN	PJB	P	07-24-2008	

Sheet Total 205 | 263 **Destructive Carry Over**
Total to Date 33880

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-24-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 33880
Welder Tech. Carry Over 263 263

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
451-16	83 / 278	S / N	9:02	AP	840	23	286		A	9:24 / 9:29	30 / 30	SN	PJB	P	07-24-2008	
451-17	85 / 279	S / N	9:06	AP	840	23	309		A	9:50 / 9:55	30 / 30	SN	PJB	P	07-24-2008	
451-18	86 / 279	S / N	9:40	AP	840	16	325		A	9:55 / 10:00	30 / 30	SN	PJB	P	07-24-2008	
451-19	86 / 281	S / N	9:41	AP	840	7	332		A	9:58 / 10:03	30 / 30	SN	PJB	P	07-24-2008	
451-20	87 / 281	S / N	9:41	AP	840	22	354		A	10:00 / 10:05	30 / 30	SN	PJB	P	07-24-2008	
451-21	89 / 283	S / N	9:51	AP	840	22	376		A	10:08 / 10:13	30 / 30	SN	PJB	P	07-24-2008	
451-22	91 / 283	S / N	9:56	AP	840	12	388		A	10:10 / 10:15	30 / 30	SN	PJB	P	07-24-2008	
451-23	91 / 284	S / N	9:56	AP	840	11	399		A	10:17 / 10:22	30 / 30	SN	PJB	P	07-24-2008	
451-24	93 / 284	S / N	9:59	AP	840	22	421		A	10:19 / 10:24	30 / 30	SN	PJB	P	07-24-2008	
451-25	95 / 285	S / N	10:01	AP	840	22	443		A	10:20 / 10:25	30 / 30	SN	PJB	P	07-24-2008	
451-26	96 / 285	S / N	10:01	AP	840	15	458		A	10:21 / 10:26	30 / 30	SN	PJB	P	07-24-2008	
451-27	96 / 286	S / N	10:06	AP	840	8	466		A	10:22 / 10:27	30 / 30	SN	PJB	P	07-24-2008	
451-28	98 / 286	S / N	10:10	AP	840	22	488		A	10:25 / 10:30	30 / 30	SN	PJB	P	07-24-2008	
451-29	100 / 287	S / N	10:13	AP	840	23	511		A	10:45 / 10:50	30 / 30	SN	PJB	P	07-24-2008	
451-30	102 / 287	W / E	10:13	AP	840	25	536		A	10:47 / 10:52	30 / 30	SN	PJB	P	07-24-2008	Z-2, 10:46-10:51, 30/30

Sheet Total 273 536 **Destructive Carry Over**
Total to Date 34153

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-24-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 34153
Welder Tech. Carry Over 536 536

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
457	289 / 273	W / E	13:52	AP	840	23	559		A	14:03 / 14:08	30 / 30	SN	PJB	P	07-24-2008	
458	289 / 290	W / E	13:57	AP	840	23	565/17	LDT-156	A	14:48 / 14:53	30 / 30	SN	PJB	P	07-24-2008	
459	291 / 292	W / E	14:31	AP	840	23	40		A	14:43 / 14:48	30 / 30	SN	PJB	P	07-24-2008	
460	290 / 291	N / S	14:41	AP	840	20	60		A	14:57 / 15:02	30 / 30	SN	PJB	P	07-24-2008	
460-1	289 / 291	N / S	14:43	AP	840	22	82		A	14:56 / 15:01	30 / 30	SN	PJB	P	07-24-2008	
461	289 / 292	N / S	14:44	AP	840	81	163		A	14:38 / 14:43	30 / 30	SN	PJB	P	07-24-2008	
462	273 / 292	N / S	14:47	AP	840	28	191		A	14:34 / 14:39	30 / 30	SN	PJB	P	07-24-2008	
463	272 / 292	W / E	14:51	AP	840	23	214		A	14:27 / 14:32	30 / 30	SN	PJB	P	07-24-2008	
468	293 / 294	N / S	15:01	AP	840	223	437		A	15:55 / 16:00	30 / 30	SN	PJB	P	07-24-2008	
469	293 / 295	N / S	15:23	AP	840	8	445		V	/	/	SN	PJB	P	07-24-2008	covered by patch
470	271 / 295	N / S	15:23	AP	840	18	463		A	15:56 / 16:01	30 / 30	SN	PJB	P	07-24-2008	
471	270 / 295	W / E	15:28	AP	840	23	486		A	15:57 / 16:02	30 / 30	SN	PJB	P	07-24-2008	
472	294 / 295	W / E	16:21	AP	840	23	509		A	16:02 / 16:07	30 / 30	SN	PJB	P	07-24-2008	
476	268 / 298	W / E	16:40	AP	840	23	515/17	LDT-157	A	15:57 / 16:02	30 / 30	SN	PJB	P	07-24-2008	
477	297 / 298	W / E	16:24	AP	840	23	40		A	16:35 / 16:40	30 / 30	SN	PJB	P	07-24-2008	

Sheet Total 584 40 **Destructive Carry Over**
Total to Date 34737

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-24-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 34737
Welder Tech. Carry Over 40 | 40

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
478	296 / 297	N / S	15:57	AP	840	245	285		A	16:34 / 16:39	30 / 30	SN	PJB	P	07-24-2008	
479	296 / 298	N / S	16:14	AP	840	81	366		A	16:43 / 16:48	30 / 30	SN	PJB	P	07-24-2008	
480	269 / 298	N / S	16:35	AP	840	18	384		A	16:44 / 16:49	30 / 30	SN	PJB	P	07-24-2008	
485	300 / 301	W / E	16:52	AP	840	23	407		A	17:20 / 17:25	30 / 30	SN	PJB	P	07-24-2008	
486	299 / 300	N / S	17:01	AP	840	40	447		A	17:19 / 17:24	30 / 30	SN	PJB	P	07-24-2008	
487	299 / 301	N / S	17:05	AP	840	375	500/322	LDT-160	A	7:38 / 7:43	30 / 30	SN	PJB	P	07-25-2008	
488	267 / 301	N / S	17:41	AP	840	9	331		A	7:46 / 7:51	30 / 30	SN	PJB	P	07-25-2008	
489	266 / 301	S / N	17:50	AP	840	23	354		A	8:17 / 8:22	30 / 30	SN	PJB	P	07-25-2008	
471-1	269 / 296	W / E	15:29	AP	840	23	377		A	16:28 / 16:33	30 / 30	SN	PJB	P	07-24-2008	

Sheet Total 837 | 377 **Destructive Carry Over**
Total to Date 35574

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-24-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 10452
Welder Tech. Carry Over 459 459

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
452-1	155 / 287	W / E	9:12	GT	841	23	482		A	10:51 / 10:56	30 / 30	SN	PJB	P	07-24-2008	
452-2	154 / 287	W / E	9:14	GT	841	23	505		A	10:51 / 10:56	30 / 30	SN	PJB	P	07-24-2008	
452-3	152 / 286	W / E	9:15	GT	841	23	515/13	LDT-154	A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	air test through to 452-12
452-4	151 / 286	W / E	9:18	GT	841	18	31		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-5	151 / 285	W / E	9:18	GT	841	4	35		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-6	150 / 285	W / E	9:19	GT	841	23	58		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-7	149 / 285	W / E	9:22	GT	841	16	74		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-8	149 / 284	W / E	9:24	GT	841	8	82		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-9	156 / 284	W / E	9:27	GT	841	23	105		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-10	157 / 284	W / E	9:27	GT	841	10	115		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-11	157 / 283	W / E	9:28	GT	841	12	127		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-12	158 / 283	W / E	9:31	GT	841	23	150		A	10:58 / 11:03	30 / 30	SN	PJB	P	07-24-2008	
452-13	159 / 281	W / E	9:33	GT	841	14	164		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	
452-14	159 / 282	W / E	9:33	GT	841	7	171		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	
452-15	160 / 282	W / E	9:33	GT	841	15	186		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	

Sheet Total 242 186 **Destructive Carry Over**
Total to Date 10694

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-24-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 10694
Welder Tech. Carry Over 186 186

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
452-16	160 / 280	W / E	9:33	GT	841	8	194		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	
452-17	161 / 280	W / E	9:35	GT	841	24	218		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	
452-18	162 / 278	W / E	9:38	GT	841	23	241		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	
452-19	163 / 278	W / E	9:40	GT	841	11	252		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	
452-20	163 / 277	W / E	9:41	GT	841	12	264		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	
452-21	164 / 277	W / E	9:42	GT	841	23	287		A	11:19 / 11:24	30 / 30	SN	PJB	P	07-24-2008	
452-22	165 / 276	W / E	9:44	GT	841	33	320		A	11:21 / 11:26	30 / 30	SN	PJB	P	07-24-2008	
452-23	166 / 276	W / E	9:45	GT	841	12	332		A	11:21 / 11:26	30 / 30	SN	PJB	P	07-24-2008	
452-24	166 / 275	W / E	9:46	GT	841	12	344		A	11:21 / 11:26	30 / 30	SN	PJB	P	07-24-2008	
452-25	167 / 275	W / E	9:50	GT	841	22	366		A	11:21 / 11:26	30 / 30	SN	PJB	P	07-24-2008	
453	274 / 288	W / E	14:31	GT	841	23	389		A	16:35 / 16:40	30 / 30	SN	PJB	P	07-24-2008	
454	275 / 288	N / S	14:37	GT	841	43	432		A	14:44 / 14:49	30 / 30	SN	PJB	P	07-24-2008	
455	288 / 289	N / S	14:46	GT	841	68	480/20	LDT-155	A	14:55 / 15:00	30 / 30	SN	PJB	P	07-24-2008	
456	274 / 289	N / S	14:48	GT	841	40	60		A	15:01 / 15:06	30 / 30	SN	PJB	P	07-24-2008	
464	291 / 292	N / S	15:06	GT	841	60	120		A	15:21 / 15:26	30 / 30	SN	PJB	P	07-24-2008	

Sheet Total 414 120 **Destructive Carry Over**
Total to Date 11108

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-24-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 11108
Welder Tech. Carry Over 120 | 120

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
465	292 / 293	N / S	15:13	GT	841	116	236		A	15:48 / 15:53	30 / 30	SN	PJB	P	07-24-2008	
466	272 / 293	N / S	15:21	GT	841	30	266		A	15:46 / 15:51	30 / 30	SN	PJB	P	07-24-2008	
467	271 / 293	W / E	15:26	GT	841	23	289		A	15:47 / 15:52	30 / 30	SN	PJB	P	07-24-2008	
473	294 / 296	N / S	15:48	GT	841	247	500/36	LDT-158	A	16:13 / 16:18	30 / 30	SN	PJB	P	07-24-2008	
474	295 / 296	N / S	16:05	GT	841	40	76		A	16:19 / 16:24	30 / 30	SN	PJB	P	07-24-2008	
475	270 / 296	N / S	16:11	GT	841	8	84		A	16:20 / 16:25	30 / 30	SN	PJB	P	07-24-2008	
481	297 / 299	S / N	17:14	GT	841	271	355		A	17:39 / 17:44	30 / 30	SN	PJB	P	07-24-2008	
482	298 / 299	S / N	17:01	GT	841	100	450/5	LDT-159	A	17:12 / 17:17	30 / 30	SN	PJB	P	07-24-2008	
483	268 / 299	S / N	17:00	GT	841	13	18		A	17:02 / 17:07	30 / 30	SN	PJB	P	07-24-2008	
484	267 / 299	W / E	16:55	GT	841	23	41		A	17:05 / 17:10	30 / 30	SN	PJB	P	07-24-2008	

Sheet Total 871 | 41 **Destructive Carry Over**
Total to Date 11979

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-25-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 61 of 70

Project Total Carry Over 35574
Welder Tech. Carry Over 377 377

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
490-1	168 / 268	W / E	8:38	AP	840	23	400		A	8:40 / 8:45	30 / 30	SN	PJB	P	07-25-2008	
490-2	169 / 268	W / E	8:39	AP	840	6	406		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-3	169 / 289	W / E	8:40	AP	840	4	410		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-4	169 / 290	W / E	8:43	AP	840	14	424		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-5	170 / 290	W / E	8:46	AP	840	10	434		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-6	170 / 291	W / E	8:48	AP	840	13	447		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-7	171 / 291	W / E	8:50	AP	840	18	465		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-8	171 / 293	W / E	8:51	AP	840	5	470		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-9	172 / 293	W / E	8:53	AP	840	23	493		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-10	173 / 293	W / E	8:55	AP	840	2	495		A	9:06 / 9:11	30 / 28	SN	PJB	P	07-25-2008	
490-11	173 / 294	W / E	8:56	AP	840	21	500/16	LDT-161	A	9:30 / 9:35	30 / 28	SN	PJB	P	07-25-2008	
490-12	174 / 294	W / E	8:58	AP	840	12	28		A	9:30 / 9:35	30 / 28	SN	PJB	P	07-25-2008	
490-13	174 / 296	W / E	8:59	AP	840	11	39		A	9:30 / 9:35	30 / 28	SN	PJB	P	07-25-2008	
490-14	175 / 296	W / E	9:00	AP	840	23	62		A	9:30 / 9:35	30 / 28	SN	PJB	P	07-25-2008	
490-15	176 / 297	W / E	9:01	AP	840	23	85		A	9:30 / 9:35	30 / 28	SN	PJB	P	07-25-2008	

Sheet Total 208 85 **Destructive Carry Over**
Total to Date 35782

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-25-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 35782
Welder Tech. Carry Over 85 85

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
490-16	177 / 297	W / E	9:11	AP	840	12	97		A	9:30 / 9:35	30 / 28	SN	PJB	P	07-25-2008	
490-17	177 / 299	W / E	9:12	AP	840	10	107		A	9:45 / 9:50	30 / 30	SN	PJB	P	07-25-2008	
490-18	178 / 299	W / E	9:13	AP	840	23	130		A	9:45 / 9:50	30 / 30	SN	PJB	P	07-25-2008	
491	302 / 303	W / E	12:58	AP	840	23	153		A	13:12 / 13:17	30 / 30	SN	PJB	P	07-25-2008	
492	303 / 304	W / E	13:06	AP	840	23	176		A	13:51 / 13:56	30 / 30	SN	PJB	P	07-25-2008	
493	266 / 302	S / N	N/A	BN	518	7	183		V	/	/	SN	PJB	P	07-25-2008	seam covered by cap
494	301 / 302	S / N	11:35	AP	840	202	385		A	12:56 / 13:01	30 / 30	SN	PJB	P	07-25-2008	
495	301 / 303	S / N	13:04	AP	840	68	453		A	13:25 / 13:30	30 / 30	SN	PJB	P	07-25-2008	
496	301 / 304	S / N	13:31	AP	840	16	469		A	13:52 / 13:57	30 / 30	SN	PJB	P	07-25-2008	
497	300 / 304	S / N	13:35	AP	840	71	540		A	13:53 / 13:58	30 / 30	SN	PJB	P	07-25-2008	
498	305 / 307	S / N	13:52	AP	840	196	600/136	LDT-163	A	14:28 / 14:33	30 / 30	SN	PJB	P	07-25-2008	
499	306 / 307	W / E	N/A	BN	518	8	144		V	/	/	SN	PJB	P	07-25-2008	covered by R-30H/30G
500	305 / 306	N / S	14:57	AP	840	234	378		A	15:38 / 15:43	30 / 30	SN	PJB	P	07-25-2008	Z-2, 15:39-15:44, 30/30
501	302 / 306	S / N	15:39	AP	840	212	500/90	LDT-164	A	16:02 / 16:07	30 / 30	SN	PJB	P	07-25-2008	
502	303 / 306	N / S	15:50	AP	840	20	110		A	16:03 / 16:08	30 / 30	SN	PJB	P	07-25-2008	

Sheet Total 1125 110 **Destructive Carry Over**
Total to Date 36907

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-25-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 36907
Welder Tech. Carry Over 110 | 110

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
503	303 / 307	S / N	15:54	AP	840	147	257		A	16:21 / 16:26	30 / 30	SN	PJB	P	07-25-2008	
504	304 / 307	S / N	16:02	AP	840	49	306		A	16:28 / 16:33	30 / 30	SN	PJB	P	07-25-2008	
505	304 / 308	S / N	16:21	AP	840	64	370		A	16:40 / 16:45	30 / 30	SN	PJB	P	07-25-2008	
506	307 / 308	W / E	N/A	BN	518	2	372		V	/	/	SN	PJB	P	07-25-2008	covered by R-30J
507	305 / 308	W / E	16:24	AP	840	15	387		A	16:34 / 16:39	30 / 30	SN	PJB	P	07-25-2008	
512-25	204 / 262	N / S	17:10	AP	840	14	401		A	8:13 / 8:18	30 / 30	SN	PJB	P	07-26-2008	
512-26	204 / 261	N / S	17:14	AP	840	16	417		A	8:11 / 8:17	30 / 29	SN	PJB	P	07-26-2008	
512-27	217 / 261	N / S	17:17	AP	840	7	424		A	8:08 / 8:13	30 / 28	SN	PJB	P	07-26-2008	
512-28	217 / 260	N / S	17:18	AP	840	6	430		A	8:08 / 8:13	30 / 28	SN	PJB	P	07-26-2008	
512-29	216 / 260	N / S	17:18	AP	840	17	447		A	8:08 / 8:13	30 / 28	SN	PJB	P	07-26-2008	
512-30	216 / 259	N / S	17:21	AP	840	9	456		A	8:08 / 8:13	30 / 28	SN	PJB	P	07-26-2008	
512-31	215 / 259	N / S	17:22	AP	840	16	472		A	8:20 / 8:25	30 / 30	SN	PJB	P	07-26-2008	
512-32	215 / 257	N / S	17:24	AP	840	15	487		A	8:23 / 8:28	30 / 30	SN	PJB	P	07-26-2008	
512-33	184 / 257	N / S	17:24	AP	840	7	494		A	8:30 / 8:35	30 / 30	SN	PJB	P	07-26-2008	
512-34	184 / 256	N / S	17:25	AP	840	19	513		A	8:30 / 8:35	30 / 30	SN	PJB	P	07-26-2008	

Sheet Total 403 | 513 **Destructive Carry Over**
Total to Date 37310

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-25-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 64 of 70

Project Total Carry Over 11979
Welder Tech. Carry Over 41 41

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
512-1	305 / 250	N / S	14:49	GT	841	23	64		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	tested through 512-20
512-2	305 / 248	N / S	14:50	GT	841	23	87		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-3	305 / 247	N / S	14:51	GT	841	23	110		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-4	305 / 246	N / S	14:53	GT	841	23	133		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-5	305 / 244	N / S	14:55	GT	841	23	156		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-6	305 / 243	N / S	14:57	GT	841	23	179		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-7	305 / 242	N / S	14:59	GT	841	23	202		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-8	305 / 241	N / S	15:01	GT	841	23	225		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-9	305 / 240	N / S	15:02	GT	841	23	248		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-10	305 / 239	N / S	15:04	GT	841	23	271		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-11	305 / 238	N / S	15:07	GT	841	23	294		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-12	305 / 237	N / S	15:10	GT	841	23	317		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-13	305 / 236	N / S	15:12	GT	841	23	340		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-14	305 / 235	N / S	15:14	GT	841	23	363		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-15	305 / 233	N / S	15:17	GT	841	23	386		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	

Sheet Total 345 386 **Destructive Carry Over**
Total to Date 12324

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-25-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 12324
Welder Tech. Carry Over 386 386

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
512-16	305 / 232	N / S	15:21	GT	841	23	409		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-17	305 / 231	N / S	15:23	GT	841	23	432		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-18	305 / 229	N / S	15:25	GT	841	23	455		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-19	305 / 228	N / S	15:27	GT	841	23	478		A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
512-20	305 / 227	N / S	15:29	GT	841	17	485/10	LDT-162	A	15:50 / 15:55	30 / 30	SN	PJB	P	07-25-2008	
508	302 / 265	W / E	N/A	BN	518	27	37		V	/	/	GT	PJB	P	07-25-2008	covered by R-31X
509	306 / 264	W / E	16:00	GT	841	23	60		A	16:15 / 16:20	30 / 30	SN	PJB	P	07-25-2008	
510	305 / 264	W / E	16:01	GT	841	6	66		A	16:14 / 16:19	30 / 30	SN	PJB	P	07-25-2008	
511	305 / 263	W / E	16:02	GT	841	23	89		A	16:14 / 16:19	30 / 30	SN	PJB	P	07-25-2008	
512-21	308 / 251	S / N	16:50	GT	841	15	104		A	16:39 / 16:44	30 / 30	SN	PJB	P	07-25-2008	
512-22	308 / 252	S / N	16:29	GT	841	23	127		A	16:39 / 16:44	30 / 30	SN	PJB	P	07-25-2008	
512-23	308 / 254	S / N	16:25	GT	841	23	150		A	16:39 / 16:44	30 / 30	SN	PJB	P	07-25-2008	
512-24	308 / 255	S / N	16:23	GT	841	19	169		A	16:39 / 16:44	30 / 30	SN	PJB	P	07-25-2008	
512-35	183 / 256	E / W	N/A	BN	518	3	172		V	/	/	GT	PJB	P	07-26-2008	covered by R-32C
512-36	183 / 255	E / W	17:07	GT	841	11	183		A	8:18 / 8:23	30 / 30	SN	PJB	P	07-26-2008	start at R-32C

Sheet Total 282 183 **Destructive Carry Over**
Total to Date 12606

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 07-25-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
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Project Total Carry Over 12606
Welder Tech. Carry Over 183 | 183

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
512-37	183 / 308	E / W	17:08	GT	841	9	192		A	17:18 / 17:23	30 / 30	SN	PJB	P	07-25-2008	
512-38	182 / 308	E / W	17:08	GT	841	13	205		A	17:17 / 17:22	30 / 30	SN	PJB	P	07-25-2008	
512-39	182 / 304	E / W	17:10	GT	841	10	215		A	17:17 / 17:22	30 / 30	SN	PJB	P	07-25-2008	
512-40	181 / 304	E / W	16:43	GT	841	23	238		A	17:17 / 17:22	30 / 30	SN	PJB	P	07-25-2008	
512-41	180 / 304	E / W	16:43	GT	841	4	242		A	16:58 / 17:03	30 / 30	SN	PJB	P	07-25-2008	
512-42	180 / 300	E / W	16:46	GT	841	19	261		A	16:58 / 17:03	30 / 30	SN	PJB	P	07-25-2008	
512-43	179 / 300	E / W	16:47	GT	841	19	280		A	16:58 / 17:03	30 / 30	SN	PJB	P	07-25-2008	

Sheet Total 97 | 280 **Destructive Carry Over**
Total to Date 12703

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 08-01-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 67 of 70

Project Total Carry Over 37310
Welder Tech. Carry Over 513 513

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
513	162 / 309	W / E	14:21	AP	840	149	520/142	LDT-165	A	14:41 / 14:46	30 / 30	SN	PJB	P	08-01-2008	
515	310 / 311	W / E	14:51	AP	840	144	286		A	15:13 / 15:18	30 / 30	SN	PJB	P	08-01-2008	
517	312 / 313	W / E	15:13	AP	840	130	416		A	15:42 / 15:48	30 / 30	SN	PJB	P	08-01-2008	
519	314 / 315	W / E	15:36	AP	840	120	500/36	LDT-167	A	15:54 / 15:59	30 / 30	SN	PJB	P	08-01-2008	Z-2, 16:00-16:05, 30/28
521	316 / 317	W / E	15:55	AP	840	96	132		A	16:26 / 16:31	30 / 30	SN	PJB	P	08-01-2008	
523	318 / 319	W / E	16:12	AP	840	89	221		A	16:29 / 16:34	30 / 30	SN	PJB	P	08-01-2008	
525	321 / 322	N / S	16:26	AP	840	23	244		A	17:04 / 17:09	30 / 30	SN	PJB	P	08-01-2008	
526	320 / 321	N / S	16:43	AP	840	26	270		A	16:49 / 16:54	30 / 30	SN	PJB	P	08-01-2008	
527	320 / 322	N / S	16:47	AP	840	20	290		A	16:48 / 16:53	30 / 30	SN	PJB	P	08-01-2008	
531-1	208 / 316	S / N	16:43	AP	840	12	302		A	7:42 / 7:49	30 / 30	SN	PJB	P	08-02-2008	
531-2	208 / 315	S / N	17:00	AP	840	23	325		A	7:42 / 7:49	30 / 30	SN	PJB	P	08-02-2008	
531-3	208 / 314	S / N	17:04	AP	840	17	342		A	7:42 / 7:49	30 / 30	SN	PJB	P	08-02-2008	
531-4	207 / 313	S / N	17:05	AP	840	17	359		A	7:41 / 7:46	30 / 30	SN	PJB	P	08-02-2008	
531-5	207 / 312	S / N	17:09	AP	840	22	381		A	7:41 / 7:46	30 / 30	SN	PJB	P	08-02-2008	
531-6	207 / 312	S / N	17:13	BN	518	6	387		V	/	/		PJB	P	08-02-2008	extrusion seam

Sheet Total 894 387 **Destructive Carry Over**
Total to Date 38204

Notes:
Seam 513: Z-2, 14:44-14:49, 30/30; Z-3, 14:45-14:50, 30/30

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 08-01-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 68 of 70

Project Total Carry Over 38204
Welder Tech. Carry Over 387 387

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	AIR PRESSURE TEST Pressure Start/ Finish	AIR PRESSURE TEST Tech. Init.	AIR PRESSURE TEST QC Init.	Pass /Fail	Date	Remarks (ZONE)
531-7	206 / 311	S / N	17:13	AP	840	18	405		A	7:35 / 7:40	30 / 30	SN	PJB	P	08-02-2008	
531-8	206 / 310	S / N	17:17	AP	840	23	428		A	7:34 / 7:39	30 / 30	SN	PJB	P	08-02-2008	
531-9	206 / 309	S / N	17:21	AP	840	23	451		A	7:34 / 7:39	30 / 30	SN	PJB	P	08-02-2008	

Sheet Total 64 451 **Destructive Carry Over**
Total to Date 38268

Notes:
#840 taken out of production after ending seam 531

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 08-01-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 69 of 70

Project Total Carry Over 12703
Welder Tech. Carry Over 280 280

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
514	309 / 310	W / E	14:32	GT	841	149	429		A	14:54 / 14:59	30 / 30	SN	PJB	P	08-01-2008	
516	310 / 311	W / E	14:52	GT	841	143	501/71	LDT-166	A	15:14 / 15:19	30 / 30	SN	PJB	P	08-01-2008	
518	313 / 314	W / E	15:12	GT	841	131	202		A	15:43 / 15:48	30 / 30	SN	PJB	P	08-01-2008	
520	315 / 316	W / E	15:36	GT	841	120	322		A	16:04 / 16:09	30 / 30	SN	PJB	P	08-01-2008	
522	317 / 318	W / E	14:55	GT	841	91	413		A	16:27 / 16:32	30 / 30	SN	PJB	P	08-01-2008	
524	319 / 320	W / E	16:09	GT	841	87	500		A	16:34 / 16:39	30 / 30	SN	PJB	P	08-01-2008	
528	321 / 323	W / E	16:32	GT	841	21	505/16	LDT-168	A	17:18 / 17:23	30 / 30	SN	PJB	P	08-01-2008	
529	322 / 323	W / E	16:34	GT	841	18	34		A	7:18 / 7:23	30 / 30	SN	PJB	P	08-02-2008	
530	323 / 324	W / E	16:39	GT	841	16	50		A	7:16 / 7:21	30 / 30	SN	PJB	P	08-02-2008	

Sheet Total 776 50 **Destructive Carry Over**
Total to Date 13479

Notes:

CQA Personnel: Phil Banner

GEOMEMBRANE SEAM LOG

Date: 08-02-2008
S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill
Project Location: Belews Creek, North Carolina
Page: 70 of 70

Project Total Carry Over 13479
Welder Tech. Carry Over 50 | 50

Seam No.	Seam Panels	Seam Start/Finish	Time	Tech. Init.	Mach. No.	Length Welded	Length From Previous Destr.	Located Destr. Number	Test Type (Air / Vac.)	AIR PRESSURE TEST Time Start/ Finish	Pressure Start/ Finish	Tech. Init.	QC Init.	Pass /Fail	Date	Remarks (ZONE)
532-1	316 / 209	W / E	8:11	GT	841	14	64		A	8:34 / 8:39	30 / 28	SN	PJB/JHA	P	08-02-2008	
532-2	317 / 209	W / E	8:12	GT	841	10	74		A	8:34 / 8:39	30 / 28	SN	PJB/JHA	P	08-02-2008	
532-3	317 / 210	W / E	8:13	GT	841	16	90		A	8:34 / 8:39	30 / 28	SN	PJB/JHA	P	08-02-2008	
532-4	318 / 210	W / E	8:14	GT	841	15	105		A	8:34 / 8:39	30 / 28	SN	PJB/JHA	P	08-02-2008	
532-5	318 / 211	W / E	8:16	GT	841	11	116		A	8:34 / 8:39	30 / 28	SN	PJB/JHA	P	08-02-2008	
532-6	319 / 211	W / E	8:17	GT	841	23	139		A	8:34 / 8:39	30 / 28	SN	PJB/JHA	P	08-02-2008	
532-7	320 / 212	W / E	8:28	GT	841	26	165		A	8:22 / 8:27	30 / 29	SN	PJB/JHA	P	08-02-2008	
532-8	321 / 213	W / E	8:31	GT	841	23	188		A	8:48 / 8:53	30 / 29	SN	PJB/JHA	P	08-02-2008	
532-9	323 / 213	W / E	8:42	GT	841	23	211		A	8:54 / 8:59	30 / 30	SN	PJB/JHA	P	08-02-2008	
532-10	324 / 213	W / E	8:47	GT	841	9	220		A	8:59 / 9:04	30 / 30	SN	PJB/JHA	P	08-02-2008	

Sheet Total 170 | 220 **Destructive Carry Over**
Total to Date 13649

Notes:
#841 taken out of production after ending seam 532

CQA Personnel: Phil Banner / James Addis

APPENDIX VIII

(GEOMEMBRANE DEFECT LOGS)

GEOMEMBRANE DEFECT LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 1 of 34

Defect Log No.
1

Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S2	49' W OF EEOS	O	06-18-2008		06-19-2008	JHA
B	S3	61' E OF WEOS	LDT	06-18-2008	LDT-1	06-19-2008	JHA
C	S4	61' E OF WEOS	LDT	06-18-2008	LDT-2	06-19-2008	JHA
D	S10	16' S OF NEOS	LDT	06-18-2008	LDT-3	06-19-2008	JHA
E	S12	16' S OF NEOS	LDT	06-18-2008	LDT-4	06-19-2008	JHA
F	S3	108' W OF EEOS	O	06-18-2008	BURNOUT	06-19-2008	JHA
G	S5	EEOS	O	06-18-2008	NEOS 9 & 18 / WEOS 22	06-19-2008	JHA
H	S6	EEOS	O	06-18-2008	NEOS 8	06-19-2008	JHA
J	S9	SEOS	O	06-18-2008	INTERSECTION OF P9, 11, AND 12	06-19-2008	JHA
K	S11	EEOS TO 30' W	O	06-18-2008	CAP	06-19-2008	JHA
L	S7	EEOS	O	06-18-2008	INTERSECTION OF P8, 9, 10, AND 11	06-19-2008	JHA
M	S12	EEOS	O	06-18-2008		06-19-2008	JHA
N	S16	7' N OF EEOS 19	O	06-18-2008		06-19-2008	JHA
P	S19	EEOS	O	06-18-2008		06-19-2008	JHA
Q	S14	NEOS	O	06-18-2008		06-19-2008	JHA
R	S20	21' E OF WEOS	O	06-18-2008	COVERS NEOS 17	06-19-2008	JHA
T	S17	IN ANCHOR TRENCH	O	06-18-2008		06-19-2008	JHA
U	S26	11' S OF NEOS	LDT	06-18-2008	LDT-5	06-19-2008	JHA
V	S32	4' N OF SAT	LDT	06-18-2008	LDT-6	06-20-2008	JHA
W	S34	12' N OF SAT	LDT	06-18-2008	LDT-7	06-20-2008	JHA
X	S33	51' N OF SAT	O	06-18-2008		06-20-2008	JHA
Y	S22	EEOS	O	06-18-2008		06-20-2008	JHA

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : James Addis

GEOMEMBRANE DEFECT LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 2 of 34

Defect Log No.
2

Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S24	SEOS	O	06-19-2008	P4/5	06-19-2008	JHA
B	S35	WEOS	O	06-19-2008		06-19-2008	JHA
C	S35	EEOS	O	06-19-2008		06-19-2008	JHA
D	S29	10' S OF NEOS	LDT	06-19-2008	LDT-8	06-19-2008	JHA
E	S28	51' S OF NEOS	O	06-19-2008		06-19-2008	JHA
F	P4	4' S / 10' N OF S3 EEOS	O	06-19-2008	FUEL LEAK	06-19-2008	JHA
G	S40	EEOS	O	06-19-2008	BUTT	06-19-2008	JHA
H	S40	WEOS	O	06-19-2008	BUTT	06-19-2008	JHA
J	S47	EEOS	O	06-19-2008	BUTT	06-19-2008	JHA
K	S47	WEOS	O	06-19-2008	BUTT	06-19-2008	JHA
L	S54	EEOS	O	06-19-2008	BUTT	06-19-2008	JHA
M	S54	WEOS	O	06-19-2008	BUTT	06-19-2008	JHA
N	S44	NEOS TO 12' S OF NEOS	O	06-19-2008		06-19-2008	JHA
P	S44	11' S OF R-2N	LDT	06-19-2008	LDT-9	06-19-2008	JHA
Q	S36	EEOS	O	06-19-2008	BUTT	06-19-2008	JHA
R	S36	WEOS	O	06-19-2008	BUTT	06-19-2008	JHA
T	S46	37' N OF SAT	LDT	06-19-2008	LDT-10	06-19-2008	JHA
U	S51	77' N OF SAT	O	06-19-2008	BURNOUT	06-19-2008	JHA
V	S51	6' S OF NEOS	LDT	06-19-2008	LDT-11	06-19-2008	JHA
W	S56	18' S OF NEOS	LDT	06-19-2008	LDT-12	06-19-2008	JHA
X	S55	47' N OF SAT	LDT	06-19-2008	LDT-13	06-19-2008	JHA
Y	S61	15' N OF SAT	O	06-19-2008	OFFGAP	06-19-2008	JHA

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : James Addis

GEOMEMBRANE DEFECT LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
Page: 3 of 34

Defect Log No.
3

Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S61	40' N OF SAT	O	06-19-2008		06-20-2008	JHA/PJB
B	S59	WEOS	O	06-19-2008	BUTT	06-20-2008	JHA/PJB
C	S63	EEOS	O	06-19-2008	BUTT	06-20-2008	JHA/PJB
D	S63	WEOS	O	06-19-2008	BUTT	06-20-2008	JHA/PJB
E	S62	17' N OF SEOS	LDT	06-19-2008	LDT-14	06-20-2008	JHA/PJB
F	S68	30' N OF SEOS	O	06-19-2008		06-20-2008	JHA/PJB
G	S65	165' N OF SEOS	LDT	06-19-2008	LDT-15	06-20-2008	JHA/PJB
H	S67	154' N OF SEOS	LDT	06-19-2008	LDT-16	06-20-2008	JHA/PJB
J	S67	134' N OF SEOS	O	06-19-2008		06-20-2008	JHA/PJB
K	S67	220' N OF SEOS	O	06-19-2008	CAP	06-20-2008	JHA/PJB
L	S70	EEOS	O	06-19-2008	BUTT	06-20-2008	JHA/PJB
M	S70	WEOS	O	06-19-2008	BUTT	06-20-2008	JHA/PJB
N	S75	EEOS	O	06-19-2008		06-20-2008	JHA/PJB
P	P52	3'S / 3'W OF NEOS 74	O	06-19-2008	HOLE	06-20-2008	JHA/PJB
Q	S72	20' W OF EEOS	LDT	06-20-2008	LDT-18	06-20-2008	JHA/PJB
R	S69	28' W OF EEOS	LDT	06-20-2008	LDT-17	06-20-2008	JHA/PJB
T	S77/S78	INTERSECTION OF SAME	O	06-20-2008	W TIEIN CREST	06-20-2008	JHA/PJB
U	S78/S79/S75	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	JHA/PJB
V	S80/S81/S82	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	JHA/PJB
W	S80/S83/S84	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	JHA/PJB
X	S83/S93/S94	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	JHA/PJB
Y	S81/S92/S93	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	JHA/PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : James Addis / Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S77/S78	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB
B	S81	LDT-19	LDT	06-20-2008	LDT-19	06-20-2008	PJB
C	S84/S85/S86	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB
D	S87	88' W OF EEOS	LDT	06-20-2008	LDT-20	06-20-2008	PJB
E	S88/S89/S90	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB
F	S88/S96/S97	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB
G	S91-97/S98	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB
H	S90	31' W OF EEOS	LDT	06-20-2008	LDT-21	06-20-2008	PJB
J	S85	0'-20' N OF SEOS	O	06-20-2008	CAP	06-20-2008	PJB
K	S86/S94/S95	INTERSECTION OF SAME	O	06-20-2008	INCLUDES R4K, R4R	06-20-2008	PJB
L	S89/S95/S96	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB
M	S98/S99/S100	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB
N	S74/S76/S77	INTERSECTION OF SAME	O	06-20-2008	BUTT	06-20-2008	PJB
P	S102/S103/S104	INTERSECTION OF SAME	O	06-20-2008	BUTT	06-20-2008	PJB
Q	S102/S105/S106	INTERSECTION OF SAME	O	06-20-2008	BUTT	06-20-2008	PJB
R	S104	19' W OF EEOS	LDT	06-20-2008	LDT-22	06-21-2008	PJB
T	S106	45' W OF EEOS	LDT	06-20-2008	LDT-24	06-21-2008	PJB
U	S101	40' W OF EEOS	LDT	06-20-2008	LDT-23	06-21-2008	PJB
V	S107	236' W OF EEOS	LDT	06-20-2008	LDT-25	06-21-2008	PJB
W	P67	10' E OF WAT, CL PANEL (3)	O	06-20-2008	"A" - "B" - "C"	06-21-2008	PJB
X	S112	70' E OF WEOS	O	06-20-2008		06-21-2008	PJB
Y	S108/S109/S110	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S108/S111/S112	INTERSECTION OF SAME	O	06-20-2008		06-20-2008	PJB
B	S109	65' W OF EEOS	O	06-20-2008		06-20-2008	PJB
C	S109	75' W OF EEOS	O	06-20-2008		06-20-2008	PJB
D	S110	111' W OF EEOS	LDT	06-20-2008	LDT-26	06-21-2008	PJB
E	S115	7' W OF EEOS	LDT	06-20-2008	LDT-27	06-21-2008	PJB
F	S113/S114/S115	INTERSECTION OF SAME	O	06-20-2008		06-21-2008	PJB
G	S113/S118/S119	INTERSECTION OF SAME	O	06-20-2008		06-21-2008	PJB
H	S112	30' E OF WAT	O	06-20-2008		06-21-2008	PJB
J	S116/S117/S118	INTERSECTION OF SAME	O	06-20-2008		06-21-2008	PJB
K	P44/P45	WAT CREST	O	06-20-2008		06-21-2008	PJB
L	S117	10' W OF EEOS	LDT	06-20-2008	LDT-28	06-21-2008	PJB
M	S125	WEOS	O	06-25-2008	BUTT	06-27-2008	JHA
N	S125	EEOS	O	06-25-2008	BUTT	06-27-2008	JHA
P	S123	EEOS	O	06-25-2008	BUTT	06-27-2008	JHA
Q	S123	WEOS	O	06-25-2008	BUTT, COVERS WEOS S123	06-27-2008	JHA
R	S116	EEOS	O	06-25-2008		06-27-2008	JHA
T	S124	8' N WEOS	LDT	06-26-2008	LDT-29	06-27-2008	JHA
U	S121	83' W EEOS	LDT	06-26-2008	LDT-30	06-27-2008	JHA
V	P75	22' N, 13' W OF EEOS 124	O	06-26-2008	SANDBAG	06-27-2008	JHA
W	S128	128' E OF WEOS	LDT	06-26-2008	LDT-32	06-27-2008	JHA
X	S130	109' E OF WEOS	LDT	06-26-2008	LDT-31	06-27-2008	JHA
Y	S131	42' E OF WEOS	LDT	06-26-2008	LDT-33	06-27-2008	JHA

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : James Addis / Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	P39	15' S / 5' W OF N EDGE	O	06-21-2008		06-21-2008	JHA
B	S72	PATCH PANEL T, END OF SEAM	O	06-21-2008		06-21-2008	PJB
C	S69	PATCH PANEL T, END OF SEAM	O	06-21-2008		06-21-2008	PJB
D	S118	40' W OF EEOS	O	06-25-2008	ROCK DAMAGE	06-25-2008	JHA
E	S134	EEOS	O	06-27-2008	BUTT	06-26-2008	JHA
F	S134	WEOS	O	06-27-2008	BUTT	06-26-2008	JHA
G	S135	EEOS	O	06-27-2008	BUTT	06-27-2008	JHA
H	S135	WEOS	O	06-27-2008	BUTT	06-26-2008	JHA
J	S133	36' E OF WEOS	LDT	06-27-2008	LDT-34	06-26-2008	JHA
K	S138	58' W OF EEOS	LDT	06-27-2008	LDT-35	06-26-2008	JHA
L	S144	12' W OF EEOS 142	LDT	06-27-2008	LDT-36	06-27-2008	JHA
M	S140	35' W OF EEOS	LDT	06-27-2008	LDT-37	06-26-2008	JHA
N	S142	EEOS	O	06-27-2008	BUTT	06-26-2008	JHA
P	S142	WEOS	O	06-27-2008	BUTT	06-26-2008	JHA
Q	S145	EEOS	O	06-27-2008	BUTT	06-26-2008	JHA
R	S145	WEOS	O	06-27-2008	BUTT	06-26-2008	JHA
T	S149	EEOS	O	06-27-2008	BUTT	06-26-2008	JHA
U	S149	WEOS	O	06-27-2008	BUTT	06-26-2008	JHA
V	S153	EEOS	O	06-27-2008	BUTT	06-27-2008	JHA
W	S153	WEOS	O	06-27-2008	BUTT	06-27-2008	JHA
X	P87	260' W / 4' E OF TOP	O	06-27-2008		06-26-2008	JHA
Y	P94	211' W / 1' E OF TOP	O	06-27-2008		06-27-2008	JHA

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : James Addis / Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S141	35' E OF WEOS	LDT	06-27-2008	LDT-38	06-28-2008	JHA
B	S153	16'S OF NEOS	LDT	06-27-2008	LDT-39	06-27-2008	JHA
C	S159	NEOS	O	06-27-2008	BUTT	06-27-2008	JHA
D	S159	SEOS	O	06-27-2008	BUTT	06-27-2008	JHA
E	S166	EEOS	O	06-27-2008	BUTT	06-28-2008	JHA
F	S166	WEOS	O	06-27-2008	BUTT	06-28-2008	JHA
G	P100	128' N / 1' W	O	06-27-2008		06-27-2008	JHA
H	S166	SEOS	O	06-27-2008	BUTT	06-27-2008	JHA
J	S166	NEOS	O	06-27-2008	BUTT	06-27-2008	JHA
K	S169	20' N OF EEOS 166	O	06-27-2008		06-27-2008	JHA
L	S144	20' W OF WEOS 142	O	06-27-2008	SANDBAG	06-26-2008	JHA
M	S139	70' W OF EEOS	O	06-27-2008		06-27-2008	JHA
N	P93	71' N / 2' W OF WEOS 146	O	06-27-2008		06-27-2008	JHA
P	P93	72' N / 3' W OF WEOS 146	O	06-27-2008		06-27-2008	JHA
Q	P94	9' N / 6' W OF EEOS 153	O	06-27-2008		06-27-2008	JHA
R	P96	8' N / 8' E OF EEOS 153	O	06-27-2008		06-27-2008	JHA
T	P100	54' N / 6' W OF SEOS 167	O	06-27-2008		06-27-2008	JHA
U	S170	E TO WEOS	O	06-27-2008	AT CAPPED	06-27-2008	JHA
V	S155	65' N OF SEOS	O	06-27-2008		06-27-2008	JHA
W	P94	75' N / 13' W OF SEOS 158	O	06-27-2008		06-27-2008	JHA
X	P96	125' N / 5' W OF SEOS 160	O	06-27-2008		06-27-2008	JHA
Y	P94	110' N / 5' W OF SEOS 158	O	06-27-2008		06-27-2008	JHA

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : James Addis

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	P96	175' N / 13' W OF SEOS	O	06-27-2008		06-27-2008	JHA
B	S156	51' W OF EEOS	LDT	06-27-2008	LDT-42	06-27-2008	JHA
C	P96	205' N / 14' W OF SEOS	O	06-27-2008		06-28-2008	JHA
D	S163	13' E OF WEOS	LDT	06-27-2008	LDT-43	06-28-2008	JHA
E	S152	72' W OF EEOS	LDT	06-27-2008	LDT-41	06-27-2008	JHA
F	S161	11' E OF WEOS	LDT	06-27-2008	LDT-44	06-27-2008	JHA
G	S158	91' W OF R6Y	LDT	06-27-2008	LDT-40	06-27-2008	JHA
H	P105	305' W OF EEOS	O	06-28-2008	ROCK DAMAGE	06-29-2008	MCS
J	S184	5' W OF EEOS	O	06-29-2008		06-29-2008	MCS
K	P116	30' W / 1' S OF EEOS	O	06-29-2008		06-29-2008	MCS
L	S197	50' W OF EEOS	O	06-29-2008		06-29-2008	MCS
M	S203	15' W OF EEOS	O	06-29-2008		06-28-2008	MCS
N	S203	20' W OF EEOS	O	06-29-2008		06-28-2008	MCS
P	P121	120' W / 10' S OF EEOS	O	06-29-2008		06-29-2008	MCS
Q	S207	8' W OF EEOS	O	06-29-2008		06-29-2008	MCS
R	S110	40' W OF EEOS	O	06-29-2008		06-29-2008	MCS
T	S214	42' W OF EEOS	O	06-29-2008		06-29-2008	MCS
U	S208/S209/S210	INTERSECTION OF SAME	O	06-29-2008		06-30-2008	MCS
V	S209/S211/S212	INTERSECTION OF SAME	O	06-29-2008		06-30-2008	MCS
W	S215	10' W OF EEOS	O	06-29-2008		06-30-2008	MCS
X	S213	40' W OF EEOS	O	06-29-2008		06-30-2008	MCS
Y	S246	98' E OF WEOS	O	07-01-2008		07-02-2008	MCS

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : James Addis / Michael Simms

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S141	35' E OF WEOS	LDT	06-28-2008	LDT-38	06-28-2008	PJB
B	S178	185' W OF EEOS	O	06-28-2008	DEPLOYMENT DAMAGE	06-28-2008	PJB
C	S173	43' W OF EEOS	LDT	06-27-2008	LDT-46	06-28-2008	PJB
D	S175	245' W OF EEOS	LDT	06-27-2008	LDT-47	06-28-2008	PJB
E	S168	35' W OF EEOS	LDT	06-27-2008	LDT-45	06-27-2008	PJB
F	S180	54' E OF WEOS	LDT	06-27-2008	LDT-48	06-27-2008	PJB
G	S178	285' W OF EEOS	LDT	06-28-2008	LDT-49	06-28-2008	PJB
H	S186	48' W OF EEOS	LDT	06-28-2008	LDT-50	06-28-2008	PJB
J	S176/S177/S178	INTERSECTION OF SAME	O	06-28-2008		06-28-2008	PJB
K	S176/S179/S180	INTERSECTION OF SAME	O	06-28-2008		06-28-2008	PJB
L	S183/S184/S185	INTERSECTION OF SAME	O	06-28-2008		06-28-2008	PJB
M	S184/S189/S190	INTERSECTION OF SAME	O	06-28-2008		06-28-2008	PJB
N	S183/S184/S185	INTERSECTION OF SAME	O	06-28-2008		06-28-2008	PJB
P	S187/S188/S189	INTERSECTION OF SAME	O	06-28-2008		06-29-2008	PJB
Q	S197/S191/S192	INTERSECTION OF SAME	O	06-28-2008		06-29-2008	PJB
R	S189	88' W OF EEOS	LDT	06-28-2008	LDT-51	06-29-2008	PJB
T	S193	161' W OF EEOS	LDT	06-28-2008	LDT-52	06-28-2008	PJB
U	S192	304' W OF EEOS	LDT	06-28-2008	LDT-53	06-28-2008	PJB
V	S193/S194/S195	INTERSECTION OF SAME	O	06-28-2008		06-30-2008	PJB
W	S194/S198/S199	INTERSECTION OF SAME	O	06-28-2008		06-30-2008	PJB
X	S196/S197/S198	INTERSECTION OF SAME	O	06-28-2008		06-30-2008	PJB
Y	S196/S202/S203	INTERSECTION OF SAME	O	06-28-2008		06-30-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S200/S201/S202	INTERSECTION OF SAME	O	06-28-2008		06-29-2008	PJB
B	S200/S204/S205	INTERSECTION OF SAME	O	06-28-2008		06-29-2008	PJB
C	S198	13' W OF EEOS	LDT	06-28-2008	LDT-55	06-30-2008	PJB
D	S201	20' E OF WEOS	LDT	06-28-2008	LDT-54	06-29-2008	PJB
E	S206	136' W OF EEOS	LDT	06-29-2008	LDT-57	06-30-2008	PJB
F	S207	325' W OF EEOS	O	06-29-2008		06-30-2008	PJB
G	S205	250' W OF EEOS	LDT	06-29-2008	LDT-56	06-30-2008	PJB
H	S207	84' W OF EEOS	LDT	06-29-2008	LDT-58	06-29-2008	PJB
J	P121	45' W OF EEOS	O	06-29-2008	DEPLOYMENT DAMAGE	06-29-2008	PJB
K	S212	109' W OF EEOS	LDT	06-29-2008	LDT-60	06-30-2008	PJB
L	S211	60' W OF EEOS	O	06-29-2008		06-30-2008	PJB
M	S213	32' W OF EEOS	LDT	06-29-2008	LDT-59	06-30-2008	PJB
N	S218	15' W OF EEOS	LDT	06-29-2008	LDT-61	06-30-2008	PJB
P	S217	30' W OF EEOS	LDT	06-29-2008	LDT-62	06-30-2008	PJB
Q	S207	225' W OF EEOS	O	06-30-2008		06-30-2008	PJB
R	S215	25' W OF EEOS	O	06-30-2008	BURNOUT	06-30-2008	PJB
T	P98/P100	125' W OF EEOS	O	06-30-2008	DEPLOYMENT DAMAGE	06-30-2008	PJB
U	S262	498' N OF SEOS	LDT	07-02-2008	LDT-89	07-03-2008	PJB
V	S264	400' N OF SEOS	LDT	07-02-2008	LDT-90	07-03-2008	PJB
W	S264	350' N OF SEOS	LDT	07-02-2008	LDT-96	07-03-2008	PJB
X	S264	353' N OF SEOS	O	07-02-2008	WELDER CHANGE	07-03-2008	PJB
Y	S261	449' N OF SEOS	LDT	07-02-2008	LDT-95	07-02-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	P125	70' W OF EEOS	O	06-30-2008	INSTALLER DAMAGE	06-30-2008	PJB
B	S231	54' N OF SEOS	LDT	06-30-2008	LDT-65	06-30-2008	PJB
C	S220	105' N OF SEOS	LDT	06-30-2008	LDT-63	06-30-2008	PJB
D	S227	6' N OF SEOS	LDT	06-30-2008	LDT-64	06-30-2008	PJB
E	S223/S225/S227	INTERSECTION OF SAME	O	06-30-2008		06-30-2008	PJB
F	S222/S225/S226	INTERSECTION OF SAME	O	06-30-2008		06-30-2008	PJB
G	S230	EEOS	O	07-01-2008	BEGIN NW TIE IN	06-30-2008	PJB
H	S230/S237	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB
J	S230	33' N OF SEOS	O	07-01-2008		06-30-2008	PJB
K	S230/S234	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB
L	S230	73' W OF EEOS	O	07-01-2008		06-30-2008	PJB
M	S230/S231/S232	INTERSECTION OF SAME	O	07-01-2008	END #832, START #840	06-30-2008	PJB
N	S230/S219	INTERSECTION OF SAME	O	07-01-2008	TWO PATCHES	06-30-2008	PJB
P	S230/S211	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB
Q	S230	155' W OF EEOS	O	07-01-2008		06-30-2008	PJB
R	S230/S220	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB
T	S230/S221	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB
U	S230/S214	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB
V	S230/S222	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB
W	S230	274' W OF EEOS	O	07-01-2008		06-30-2008	PJB
X	S230/S223	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB
Y	S230/S213	INTERSECTION OF SAME	O	07-01-2008		06-30-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S239	90' N OF SEOS	LDT	07-01-2008	LDT-66	07-01-2008	WMH
B	S239	145' N OF SEOS	LDT	07-01-2008	BURNOUT	07-01-2008	WMH
C	S233	WEOS	LDT	07-01-2008		07-01-2008	WMH
D	S233	EEOS	O	07-01-2008		07-01-2008	WMH
E	S239	20' N OF SEOS	O	07-01-2008	BURNOUT	07-01-2008	WMH
F	S232	WEOS	O	07-01-2008		07-01-2008	WMH
G	S232	EEOS	O	07-01-2008		07-01-2008	WMH
H	S246	81' N OF SEOS	LDT	07-01-2008	LDT-67	07-02-2008	WMH
J	S250	45' N OF SEOS	O	07-01-2008		07-03-2008	WMH
K	S250	435' N OF SEOS	LDT	07-01-2008	LDT-68	07-02-2008	WMH
L	S253	333' N OF SEOS	LDT	07-01-2008	LDT-69	07-02-2008	WMH
M	S254	154' N OF SEOS	LDT	07-01-2008	LDT-72	07-02-2008	WMH
N	S251	259' N OF SEOS	LDT	07-01-2008	LDT-71	07-02-2008	WMH
P	S158	15' S OF NEOS	O	07-01-2008	HOLE IN LINER	07-02-2008	WMH
Q	S256	175' N OF SEOS	LDT	07-02-2008	LDT-86	07-02-2008	WMH
R	S258	45' N OF SEOS	LDT	07-02-2008	LDT-93	07-02-2008	WMH
T	S258	525' N OF SEOS	LDT	07-02-2008	LDT-94	07-03-2008	WMH
U	S259	43' N OF SEOS	LDT	07-02-2008	LDT-88	07-02-2008	WMH
V	S262	90' N OF SEOS	O	07-02-2008		07-02-2008	WMH
W	S258	50' S OF NEOS	O	07-02-2008		07-02-2008	WMH
X	S259	9' S OF NEOS	O	07-02-2008		07-02-2008	WMH
Y	S262	83' N OF SEOS	O	07-02-2008		07-02-2008	WMH

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : William Harrison

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S264	55' N OF SEOS	O	07-02-2008		07-02-2008	PJB
B	S262	120' N OF SEOS	O	07-02-2008		07-02-2008	PJB
C	S262	165' N OF SEOS	O	07-02-2008		07-02-2008	PJB
D	S241/S243/S244	INTERSECTION OF SAME	O	07-02-2008		07-02-2008	PJB
E	P118/P148/P150	INTERSECTION OF SAME	O	07-02-2008		07-02-2008	PJB
F	P148/P118/P120	INTERSECTION OF SAME	O	07-02-2008		07-02-2008	PJB
G	P118	14 WEST, 5 SOUTH OF SEAM	O	07-02-2008		07-02-2008	PJB
H	S265	360' N OF SEOS	O	07-02-2008		07-03-2008	PJB
J	S265	498' N OF SEOS	LDT	07-02-2008	LDT-97	07-03-2008	PJB
K	S266	500' N OF SEOS	LDT	07-02-2008	LDT-91	07-03-2008	PJB
L	S268	400' N OF SEOS	LDT	07-02-2008	LDT-98	07-03-2008	PJB
M	S269	405' N OF SEOS	LDT	07-02-2008	LDT-92	07-03-2008	PJB
N	S272	307' N OF SEOS	LDT	07-02-2008	LDT-85	07-03-2008	PJB
P	S271	300' N OF SEOS	LDT	07-02-2008	LDT-99	07-03-2008	PJB
Q	S270	320' N OF SEOS	O	07-03-2008	BURNOUT	07-03-2008	PJB
R	S274	202' N OF SEOS	LDT	07-03-2008	LDT-100	07-03-2008	PJB
T	S275	207' N OF SEOS	LDT	07-03-2008	LDT-101	07-03-2008	PJB
U	S273	375' N OF SEOS	O	07-03-2008		07-03-2008	PJB
V	S276	107' N OF SEOS	LDT	07-03-2008	LDT-102	07-03-2008	PJB
W	S270	117' W OF EEOS	O	07-03-2008	BURNOUT	07-03-2008	PJB
X	S270	78' W OF EEOS	O	07-03-2008		07-03-2008	PJB
Y	S277	105' N OF SEOS	LDT	07-03-2008	LDT-103	07-03-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Log No.
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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S230/S216	INTERSECTION OF SAME	O	07-01-2008		07-01-2008	PJB
B	S230/S217/S224	INTERSECTION OF SAME	O	07-01-2008		07-01-2008	PJB
C	S230/S228/S218	INTERSECTION OF SAME	O	07-01-2008		07-01-2008	PJB
D	S230	417' W OF EEOS	O	07-01-2008		07-01-2008	PJB
E	S230/S229	INTERSECTION OF SAME	O	07-01-2008		07-01-2008	PJB
F	S255	54' N OF SEOS	LDT	07-01-2008	LDT-74	07-01-2008	PJB
G	S252	105' N OF SEOS	LDT	07-01-2008	LDT-73	07-01-2008	PJB
H	S255	554' N OF SEOS	LDT	07-01-2008	LDT-75	07-01-2008	PJB
J	S165	WAT	O	07-11-2008	ANCHOR TRENCH REPAIR	07-11-2008	PJB
K	P114/P115/P117	INTERSECTION OF SAME	O	07-11-2008	ANCHOR TRENCH REPAIR	07-11-2008	PJB
L	S236	20' N OF SEOS	LDT	07-01-2008	LDT-77	07-01-2008	PJB
M	S241	280' N OF SEOS	LDT	07-01-2008	LDT-76	07-02-2008	PJB
N	S257	440' N OF SEOS	LDT	07-02-2008	LDT-78	07-02-2008	PJB
P	S260	335' N OF SEOS	LDT	07-02-2008	LDT-79	07-02-2008	PJB
Q	S263	335' N OF SEOS	LDT	07-02-2008	LDT-80	07-02-2008	PJB
R	S119	WAT	O	07-02-2008	DAMAGED DURING AT PULL BACK	07-02-2008	PJB
T	S129	WAT	O	07-02-2008	DAMAGED DURING AT PULL BACK	07-02-2008	PJB
U	S270	131' W OF EEOS	LDT	07-02-2008	LDT-82	07-02-2008	PJB
V	S267	241' N OF SEOS	LDT	07-02-2008	LDT-81	07-02-2008	PJB
W	S273	33' N OF SEOS	LDT	07-02-2008	LDT-83	07-02-2008	PJB
X	S273	533' N OF SEOS	LDT	07-02-2008	LDT-84	07-02-2008	PJB
Y	S240	177' N OF SEOS	LDT	07-01-2008	LDT-70	07-02-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Log No.
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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S279	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
B	S197	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
C	S193	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
D	S191	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
E	S279	6' N OF S188 EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
F	S188	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
G	S279	8' W OF S188 EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
H	S183	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
J	S279	11' N OF S179 EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
K	S179	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
L	S279	3' N OF S250 SEOS	O	07-03-2008	COVERED BY CAP STRIP R14K	07-03-2008	WMH
M	S279	16' N OF S250 SEOS	LDT	07-03-2008	LDT-106	07-03-2008	WMH
N	S177	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
P	S174	EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
Q	S279	8' N OF S171 EEOS	O	07-03-2008	NORTHWEST TIE IN	07-03-2008	WMH
R	S278	383' N OF SEOS	LDT	07-03-2008	LDT-105	07-03-2008	WMH
T	S278	342' N OF SEOS	O	07-03-2008	STOP #840, START #832	07-03-2008	WMH
U	S278	15' N OF SEOS	LDT	07-03-2008	LDT-104	07-03-2008	WMH
V	S247/S248/S250	INTERSECTION OF SAME	O	07-07-2008	REPLACES R12I	07-03-2008	PJB
W	S257	95' N OF SEOS	LDT	07-07-2008		07-03-2008	PJB
X	P148	CL OF PANEL; 30' N OF S	O	07-09-2008	INSTALLER DAMAGE	07-09-2008	PJB
Y	P158	CL OF PANEL; 10' S OF N	O	07-09-2008	INSTALLER DAMAGE	07-09-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner / William Harrison

GEOMEMBRANE DEFECT LOG

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Defect Log No.
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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S112 to S217	WAT	O	07-12-2008	REPAIR COVERS BOTTOM 5-8 FT	07-12-2008	PJB
B	NOT LOCATED	NOT LOCATED	O	07-12-2008	SAND BAGS	07-12-2008	PJB
C	S208	EEOS	O	07-12-2008		07-12-2008	PJB
D	S273	30' N OF SEOS	O	07-15-2008	INSTALLER DAMAGE	07-15-2008	PJB
E	S282	15' N OF SEOS	LDT	07-16-2008	LDT-107	07-17-2008	PJB
F	S286/S293	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
G	S283/S286	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
H	S286	13' W OF R16J	O	07-16-2008		07-17-2008	PJB
J	S284/S286	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
K	S286/S287	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
L	S285/S286	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
M	S286/S288	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
N	S288/S289/S290	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
P	S291/S295/S296	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
Q	S291/S293/S294	INTERSECTION OF SAME	O	07-16-2008		07-17-2008	PJB
R	S282	116' E OF WEOS	O	07-16-2008		07-17-2008	PJB
T	S283	130' E OF WEOS	LDT	07-16-2008	LDT-108	07-17-2008	PJB
U	S297/S298/S299	INTERSECTION OF SAME	O	07-16-2008		07-18-2008	PJB
V	S297/S300/S301	INTERSECTION OF SAME	O	07-16-2008		07-18-2008	PJB
W	S302/S303/S304	INTERSECTION OF SAME	O	07-16-2008		07-18-2008	PJB
X	S302/S305/S306	INTERSECTION OF SAME	O	07-16-2008		07-18-2008	PJB
Y	S308/S309/S310	INTERSECTION OF SAME	O	07-16-2008		07-18-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S308/S311/S312	INTERSECTION OF SAME	O	07-16-2008		07-18-2008	PJB
B	S325/S326/S295	7' E OF WEOS	LDT	07-16-2008	LDT-110	07-18-2008	PJB
C	S298/S326/S327	INTERSECTION OF SAME	LDT	07-16-2008	LDT-109	07-18-2008	PJB
D	S303	95' N OF SEOS	LDT	07-16-2008	LDT-113	07-18-2008	PJB
E	S310	44' E OF WEOS	LDT	07-16-2008		07-18-2008	PJB
F	S318	22' W OF EEOS	LDT	07-17-2008		07-18-2008	PJB
G	S314	108' W OF EEOS	LDT	07-17-2008		07-18-2008	PJB
H	S318/S319/S320	INTERSECTION OF SAME	O	07-17-2008		07-18-2008	PJB
J	S318	20' N OF SEOS	O	07-17-2008		07-18-2008	PJB
K	S318	15' N OF SEOS	O	07-17-2008		08-02-2008	PJB
L	S292/S293/S282	INTERSECTION OF SAME	O	07-17-2008		07-17-2008	PJB
M	S292	9' S OF R17L	O	07-17-2008		07-17-2008	PJB
N	S281/S292	INTERSECTION OF SAME	O	07-17-2008		07-18-2008	PJB
P	P185	15' N / 3' W OF EEOS S331	O	07-17-2008		07-18-2008	PJB
Q	INFORMATION SUPPLEMENTED BY ESI						
R	INFORMATION SUPPLEMENTED BY ESI						
T	INFORMATION SUPPLEMENTED BY ESI						
U	INFORMATION SUPPLEMENTED BY ESI						
V	INFORMATION SUPPLEMENTED BY ESI						
W	INFORMATION SUPPLEMENTED BY ESI						
X	S300/S327/S328	INTERSECTION OF SAME	O	07-17-2008		07-18-2008	PJB
Y	S321/S322/S330	INTERSECTION OF SAME	O	07-17-2008		07-18-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S303/S328/S329	INTERSECTION OF SAME	O	07-17-2008		07-18-2008	PJB
B	S305/S329/S330	INTERSECTION OF SAME	O	07-17-2008		07-18-2008	PJB
C	S301/S324	INTERSECTION OF SAME	O	07-17-2008		07-18-2008	PJB
D	S307	WEOS	O	07-17-2008		07-18-2008	PJB
E	S278	50' E OF WEOS	O	07-17-2008		07-18-2008	PJB
F	S277	31' E OF WEOS	O	07-17-2008		07-19-2008	PJB
G	S279	15' E OF WEOS	O	07-17-2008		07-18-2008	PJB
H	S280/S331/S332	INTERSECTION OF SAME	O	07-17-2008		07-18-2008	PJB
J	S333/S334	INTERSECTION OF SAME	O	07-17-2008		07-19-2008	PJB
K	S336/S337/S338	INTERSECTION OF SAME	O	07-17-2008		07-19-2008	PJB
L	S336/S339/S340	INTERSECTION OF SAME	O	07-17-2008		07-19-2008	PJB
M	S335	10' E OF WEOS	LDT	07-17-2008		07-19-2008	PJB
N	S333	93' E OF WEOS	LDT	07-17-2008	LDT-127	07-19-2008	PJB
P	S344/S345/S346	INTERSECTION OF SAME	O	07-17-2008		07-19-2008	PJB
Q	S344/S347/S348	INTERSECTION OF SAME	O	07-17-2008		07-19-2008	PJB
R	S341	163' N OF SEOS	LDT	07-17-2008	LDT-119	07-18-2008	PJB
T	S342	112' E OF WEOS	O	07-17-2008		07-19-2008	PJB
U	S342	82' E OF WEOS	LDT	07-17-2008	LDT-120	07-19-2008	PJB
V	S350/S351/S352	INTERSECTION OF SAME	O	07-17-2008		07-19-2008	PJB
W	S349	140' E OF WEOS	LDT	07-17-2008		07-19-2008	PJB
X	S351	20' E OF WEOS	LDT	07-17-2008	LDT-122	07-19-2008	PJB
Y	S350/S353/S354	INTERSECTION OF SAME	O	07-18-2008		07-19-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S301	45' N OF SEOS	LDT	07-16-2008	LDT-112	07-18-2008	PJB
B	S305	44' N OF SEOS	LDT	07-16-2008		07-18-2008	PJB
C	S356/S357/S358	INTERSECTION OF SAME	O	07-18-2008		07-19-2008	PJB
D	S356/S359/S360	INTERSECTION OF SAME	O	07-18-2008		07-19-2008	PJB
E	S360	50' E OF WEOS	O	07-18-2008		07-19-2008	PJB
F	S358	66' E OF WEOS	LDT	07-18-2008	LDT-123	07-19-2008	PJB
G	S361	32' E OF WEOS	O	07-18-2008		07-18-2008	PJB
H	S262	63' E OF WEOS	LDT	07-18-2008	LDT-124	07-19-2008	PJB
J	S365	90' E OF WEOS	LDT	07-18-2008	LDT-125	07-19-2008	PJB
K	S366	166' E OF WEOS	LDT	07-18-2008	LDT-126	07-19-2008	PJB
L	S369/S370/S371	INTERSECTION OF SAME	O	07-18-2008		07-19-2008	PJB
M	S369/S372/S373	INTERSECTION OF SAME	O	07-18-2008		07-19-2008	PJB
N	S361	75' E OF WEOS	O	07-18-2008		07-19-2008	PJB
P	S375/S376/S377	INTERSECTION OF SAME	O	07-18-2008		07-19-2008	PJB
Q	S375/S378/S379	INTERSECTION OF SAME	O	07-19-2008		07-19-2008	PJB
R	S371	63' E OF WEOS	LDT	07-18-2008		07-18-2008	PJB
T	S378	10' E OF WEOS	LDT	07-19-2008		07-19-2008	PJB
U	S381/S382/S383	INTERSECTION OF SAME	O	07-18-2008		07-19-2008	PJB
V	S381/S384/S385	INTERSECTION OF SAME	O	07-18-2008		07-19-2008	PJB
W	S388/S389/S390	INTERSECTION OF SAME	O	07-19-2008		07-19-2008	PJB
X	S388/S391/S392	INTERSECTION OF SAME	O	07-19-2008		07-19-2008	PJB
Y	S385	80' E OF WEOS	LDT	07-19-2008	LDT-129	07-19-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S393	132' E OF WEOS	LDT	07-19-2008	LDT-130	07-29-2008	PJB
B	S387	138' E OF WEOS	LDT	07-19-2008	LDT-131	07-21-2008	PJB
C	S374	40' E OF WEOS	O	07-18-2008		07-19-2008	PJB
D	S382	30' E OF WEOS	O	07-18-2008		07-19-2008	PJB
E	DEFECT IDENTIFICATION NUMBERS NOT USED						
F	DEFECT IDENTIFICATION NUMBERS NOT USED						
G	DEFECT IDENTIFICATION NUMBERS NOT USED						
H	DEFECT IDENTIFICATION NUMBERS NOT USED						
J	DEFECT IDENTIFICATION NUMBERS NOT USED						
K	DEFECT IDENTIFICATION NUMBERS NOT USED						
L	DEFECT IDENTIFICATION NUMBERS NOT USED						
M	DEFECT IDENTIFICATION NUMBERS NOT USED						
N	DEFECT IDENTIFICATION NUMBERS NOT USED						
P	DEFECT IDENTIFICATION NUMBERS NOT USED						
Q	DEFECT IDENTIFICATION NUMBERS NOT USED						
R	DEFECT IDENTIFICATION NUMBERS NOT USED						
T	DEFECT IDENTIFICATION NUMBERS NOT USED						
U	DEFECT IDENTIFICATION NUMBERS NOT USED						
V	DEFECT IDENTIFICATION NUMBERS NOT USED						
W	DEFECT IDENTIFICATION NUMBERS NOT USED						
X	DEFECT IDENTIFICATION NUMBERS NOT USED						
Y	DEFECT IDENTIFICATION NUMBERS NOT USED						

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S324	5' E OF WEOS	O	07-18-2008		07-18-2008	PJB
B	S215	50' N OF SEOS	O	07-18-2008		07-18-2008	PJB
C	S423	160' S OF NEOS	LDT	07-15-2008	LDT-132	07-18-2008	PJB
D	S423	160' S OF NEOS	LDT	07-23-2008		07-22-2008	PJB
E	S424	58' S OF NEOS	LDT	07-23-2008		07-23-2008	PJB
F	S395	6' N OF SEOS	O	07-17-2008		07-26-2008	PJB
G	S345/S395/S396	INTERSECTION OF SAME	O	07-17-2008		07-26-2008	PJB
H	S343/S396/S397	INTERSECTION OF SAME	O	07-17-2008		07-26-2008	PJB
J	S397/S399/S342	INTERSECTION OF SAME	O	07-17-2008		07-26-2008	PJB
K	S398/S399/S341	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
L	S399/S400/S339	INTERSECTION OF SAME	O	08-22-2008		07-22-2008	PJB
M	S400/S401/S337	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
N	S401/S402/S335	INTERSECTION OF SAME	O	07-22-2008		08-22-2008	PJB
P	S402/S403	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
Q	S403/S404	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
R	S404/S405	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
T	S404/S405	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
U	S406/S407	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
V	S407/S408	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
W	S408/S409	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
X	S409/S410	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
Y	S410/S411	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S411/S412	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
B	S412/S413	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
C	S37/S415/S416	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
D	S416/S417	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
E	S417/S418/S33	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
F	S418/S419/S32	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
G	S419/S420	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
H	S420/S421/S31	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
J	S421/S422/S27	INTERSECTION OF SAME	O	07-22-2008		07-22-2008	PJB
K	S24/S421/S422	INTERSECTION OF SAME	O	07-22-2008		07-23-2008	PJB
L	P227	6' S OF S395/396/345 INT	O	07-25-2008		07-25-2008	PJB
M	S2/S450/S423	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB
N	S1/S424/S450	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB
P	S450	10' S OF R22Q	O	07-23-2008		07-23-2008	PJB
Q	S71/S450	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB
R	S426/S450	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB
T	S68/S450	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB
U	S427/S450	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB
V	S66/S450	INTERSECTION OF SAME	O	07-31-2008		07-23-2008	PJB
W	S428/S450	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB
X	S64/S450	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB
Y	S429/S450	INTERSECTION OF SAME	O	07-23-2008		07-23-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S424	558' S OF NEOS	LDT	07-22-2008	LDT-134	07-23-2008	PJB
B	DEFECT IDENTIFICATION NUMBERS NOT USED						
C	S425	20' N OF SEOS	O	07-22-2008		07-23-2008	PJB
D	S425	352' S OF NEOS	LDT	07-22-2008		07-23-2008	PJB
E	S426	470' S OF NEOS	LDT	07-22-2008		07-23-2008	PJB
F	S427	251' S OF NEOS	LDT	07-22-2008	LDT-137	07-23-2008	PJB
G	S428	474' S OF NEOS	LDT	07-22-2008	LDT-139	07-23-2008	PJB
H	S429	152' S OF NEOS	LDT	07-22-2008		07-23-2008	PJB
J	S428	377' S OF NEOS	O	07-22-2008		07-23-2008	PJB
K	S430	373' S OF NEOS	LDT	07-23-2008	LDT-143	07-23-2008	PJB
L	S431	58' S OF NEOS	LDT	07-23-2008		07-23-2008	PJB
M	S431	550' S OF NEOS	LDT	07-23-2008		07-23-2008	PJB
N	S432	290' TO 300' S OF NEOS	LDT	07-23-2008		07-23-2008	PJB
P	S432	161' S OF NEOS	LDT	07-23-2008	LDT-144	07-24-2008	PJB
Q	S433	464' N OF SEOS	LDT	07-23-2008	LDT-145	07-24-2008	PJB
R	S434	88' N OF SEOS	LDT	07-23-2008	LDT-146	07-24-2008	PJB
T	S435	413' N OF SEOS	LDT	07-23-2008	LDT-147	07-24-2008	PJB
U	S436	33' N OF SEOS	LDT	07-23-2008	LDT-148	07-24-2008	PJB
V	S437	357' S OF NEOS	LDT	07-23-2008	LDT-149	07-24-2008	PJB
W	S439	14' S OF NEOS	LDT	07-23-2008	LDT-150	07-24-2008	PJB
X	DEFECT IDENTIFICATION NUMBERS NOT USED						
Y	DEFECT IDENTIFICATION NUMBERS NOT USED						

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S277	NAT	O	07-23-2008	LINER PULL BACK	07-23-2008	PJB
B	P186	CL PANEL, WEST AT CREST	O	07-23-2008	INSTALLER DAMAGE	07-23-2008	PJB
C	S101	EEOS	O	07-22-2008		07-23-2008	PJB
D	S430	WEOS	O	07-22-2008		07-23-2008	PJB
E	S105	EEOS	O	07-22-2008		07-23-2008	PJB
F	S431	WEOS	O	07-22-2008		07-23-2008	PJB
G	S107	EEOS	O	07-22-2008		07-23-2008	PJB
H	S109	EEOS	O	07-24-2008		07-23-2008	PJB
J	S439	50' N OF SEOS	O	07-23-2008	BURNOUT	07-24-2008	PJB
K	S438	SEOS	O	07-23-2008		07-24-2008	PJB
L	S438	NEOS	O	07-23-2008		07-24-2008	PJB
M	S439	100' E OF WEOS		07-23-2008	BURNOUT	07-24-2008	PJB
N	S443	SEOS	O	07-23-2008		07-23-2008	PJB
P	S445	203' N OF SEOS	LDT	07-23-2008	LDT-152	07-23-2008	PJB
Q	S445	45' N OF SEOS	O	07-23-2008		07-24-2008	PJB
R	S423	30' N OF SEOS	O	07-23-2008		07-23-2008	PJB
T	S446	10' N OF SEOS	LDT	07-23-2008	LDT-151	07-24-2008	PJB
U	DEFECT IDENTIFICATION NUMBERS NOT USED						
V	S432	WEOS	O	07-23-2008		07-23-2008	PJB
W	S111	EEOS	O	07-24-2008		07-24-2008	PJB
X	S114	EEOS	O	07-24-2008		07-24-2008	PJB
Y	S433	WEOS	O	07-24-2008		07-24-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S117	EEOS	O	07-24-2008		07-24-2008	PJB
B	S120	EEOS	O	07-24-2008		07-24-2008	PJB
C	S451	16' S EEOS S122	O	07-24-2008		07-24-2008	PJB
D	S122	EEOS	O	07-24-2008		07-24-2008	PJB
E	S435	WEOS	O	07-24-2008		07-24-2008	PJB
F	S126	EEOS	O	07-24-2008		07-24-2008	PJB
G	S129	EEOS	O	07-24-2008		07-24-2008	PJB
H	S436	WEOS	O	07-24-2008		07-24-2008	PJB
J	S131	EEOS	O	07-24-2008		07-24-2008	PJB
K	S437	WEOS	O	07-24-2008		07-24-2008	PJB
L	S132	EEOS	O	07-24-2008		07-24-2008	PJB
M	S439	WEOS	O	07-24-2008		07-24-2008	PJB
N	S139	EEOS	O	07-24-2008		07-24-2008	PJB
P	S441	WEOS	O	07-24-2008		07-24-2008	PJB
Q	S141	EEOS	O	07-24-2008		07-24-2008	PJB
R	S445	WEOS	O	07-24-2008		07-24-2008	PJB
T	S146	EEOS	O	07-24-2008		07-24-2008	PJB
U	S446	WEOS	O	07-24-2008		07-24-2008	PJB
V	S150	EEOS	O	07-24-2008		07-24-2008	PJB
W	S447	WEOS	O	07-24-2008		07-24-2008	PJB
X	S157	EEOS	O	07-24-2008		07-24-2008	PJB
Y	S448	WEOS	O	07-24-2008		07-24-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S160	EEOS	O	07-24-2008		07-24-2008	PJB
B	S163	EEOS	O	07-24-2008		07-24-2008	PJB
C	S167	EEOS	O	07-24-2008		07-24-2008	PJB
D	S451	5' N OF EEOS S167	O	07-24-2008		07-24-2008	PJB
E	S171	EEOS	O	07-24-2008		07-24-2008	PJB
F	S249	SEOS	O	07-24-2008		07-24-2008	PJB
G	S449	EEOS	O	07-24-2008		07-24-2008	PJB
H	S246	SEOS	O	07-24-2008		07-24-2008	PJB
J	S448	EEOS	O	07-24-2008		07-28-2008	PJB
K	S245	SEOS	O	07-24-2008		07-28-2008	PJB
L	S243	SEOS	O	07-24-2008		07-28-2008	PJB
M	S447	EEOS	O	07-24-2008		07-28-2008	PJB
N	S242	SEOS	O	07-24-2008		07-28-2008	PJB
P	S251	SEOS	O	07-24-2008		07-28-2008	PJB
Q	S446	EEOS	O	07-24-2008		07-28-2008	PJB
R	S252	SEOS	O	07-24-2008		07-28-2008	PJB
T	S253	SEOS	O	07-24-2008		07-24-2008	PJB
U	S443	NEOS	O	07-24-2008		07-24-2008	PJB
V	S254	SEOS	O	07-24-2008		07-28-2008	PJB
W	S444	EEOS	O	07-24-2008		07-28-2008	PJB
X	S255	SEOS	O	07-24-2008		07-28-2008	PJB
Y	S440	EEOS	O	07-24-2008		07-28-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S257	SEOS	T	07-28-2008		07-24-2008	PJB
B	S437	EEOS	O	07-28-2008		07-24-2008	PJB
C	S258	SEOS	O	07-28-2008		07-24-2008	PJB
D	S452	10' E OF SEOS S258	T	07-28-2008		07-24-2008	PJB
E	S259	SEOS	O	07-28-2008		07-24-2008	PJB
F	S261	SEOS	T	07-28-2008		07-24-2008	PJB
G	S435	EEOS	O	07-28-2008		07-24-2008	PJB
H	S260	SEOS	T	07-28-2008		07-24-2008	PJB
J	S452	9' E OF SEOS S260	O	07-28-2008		07-24-2008	PJB
K	S452	8' W OF SEOS S246	O	07-24-2008	COVERED BY R24J	07-25-2008	PJB
L	S453	NEOS	O	07-24-2008		07-25-2008	PJB
M	S453	SEOS	O	07-24-2008		07-25-2008	PJB
N	S457	SEOS	O	07-24-2008		07-25-2008	PJB
P	S457	NEOS	O	07-24-2008		07-25-2008	PJB
Q	S463	NEOS	O	07-24-2008		07-25-2008	PJB
R	S463	SEOS	O	07-24-2008		07-25-2008	PJB
T	S467	NEOS	O	07-24-2008		07-25-2008	PJB
U	S467	SEOS	O	07-24-2008		07-25-2008	PJB
V	S472	NEOS	O	07-24-2008		07-25-2008	PJB
W	S472	SEOS	O	07-24-2008		07-25-2008	PJB
X	S471	NEOS	O	07-24-2008		07-25-2008	PJB
Y	S471	SEOS	O	07-24-2008		07-25-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S471-1	NEOS	O	07-24-2008		07-25-2008	PJB
B	S471-1	SEOS	O	07-24-2008		07-25-2008	PJB
C	S476	NEOS	O	07-24-2008		07-25-2008	PJB
D	S476	SEOS	O	07-24-2008		07-25-2008	PJB
E	S484	NEOS	O	07-24-2008		07-25-2008	PJB
F	S484	SEOS	O	07-24-2008		07-25-2008	PJB
G	S489	NEOS	O	07-24-2008		07-25-2008	PJB
H	S459	SEOS	O	07-24-2008		07-25-2008	PJB
J	S459	NEOS	O	07-24-2008		07-25-2008	PJB
K	S458	SEOS	O	07-24-2008		07-25-2008	PJB
L	S477	NEOS	O	07-24-2008		07-25-2008	PJB
M	S477	SEOS	O	07-24-2008		07-25-2008	PJB
N	S485	NEOS	O	07-24-2008		07-25-2008	PJB
P	S473	211' N OF SEOS	LDT	07-24-2008		07-25-2008	PJB
Q	S455	48' W OF EEOS	LDT	07-24-2008	LDT-155	07-25-2008	PJB
R	S458	10' E OF WEOS	LDT	07-24-2008	LDT-156	07-25-2008	PJB
T	S476	13' E OF WEOS	LDT	07-24-2008		07-25-2008	PJB
U	S482	95' N OF SEOS	LDT	07-24-2008		07-25-2008	PJB
V	S487	53' N OF SEOS	LDT	07-24-2008		07-25-2008	PJB
W	S485	SEOS	O	07-24-2008		07-25-2008	PJB
X	S492	NEOS	O	07-24-2008		07-25-2008	PJB
Y	S492	SEOS	O	07-24-2008		07-25-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S263	SEOS	T	07-25-2008		07-25-2008	PJB
B	S455	EEOS	O	07-25-2008		07-25-2008	PJB
C	S458	NEOS	T	07-25-2008		07-25-2008	PJB
D	S264	SEOS	T	07-25-2008		07-25-2008	PJB
E	S460	EEOS	T	07-25-2008		07-25-2008	PJB
F	S265	SEOS	T	07-25-2008		07-25-2008	PJB
G	S464	EEOS	T	07-25-2008		07-25-2008	PJB
H	S266	SEOS	T	07-25-2008		07-25-2008	PJB
J	S267	SEOS	T	07-25-2008		07-25-2008	PJB
K	S468	EEOS	O	07-25-2008		07-25-2008	PJB
L	S268	SEOS	T	07-25-2008		07-25-2008	PJB
M	S473	EEOS	O	07-25-2008		07-25-2008	PJB
N	S269	SEOS	T	07-25-2008		07-25-2008	PJB
P	S270	SEOS	O	07-25-2008		07-25-2008	PJB
Q	S271	SEOS	T	07-25-2008		07-25-2008	PJB
R	S481	EEOS	T	07-25-2008		07-25-2008	PJB
T	S72	SEOS	T	07-25-2008		07-26-2008	PJB
U	S490	2' W OF SEOS S273	O	07-25-2008		07-26-2008	PJB
V	S273	SEOS	O	07-25-2008	COVERED BY R29U	07-26-2008	PJB
W	S491	NEOS	O	07-25-2008		07-26-2008	PJB
X	S491	SEOS	O	07-25-2008		07-26-2008	PJB
Y	S501	122' N OF SEOS	O	07-25-2008		07-26-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S498	EEOS	O	07-26-2008		07-26-2008	PJB
B	S424	EEOS	O	07-26-2008		07-26-2008	PJB
C	S500	WEOS	O	07-26-2008		07-26-2008	PJB
D	S423	EEOS	O	07-26-2008		07-26-2008	PJB
E	S511	SEOS	O	07-26-2008		07-26-2008	PJB
F	S500	50' N OF SEOS	O	07-26-2008		07-26-2008	PJB
G	S499	SEOS	O	07-26-2008		07-26-2008	PJB
H	S499	NEOS	O	07-26-2008		07-26-2008	PJB
J	S507	NEOS	O	07-26-2008		07-26-2008	PJB
K	DEFECT IDENTIFICATION NUMBERS NOT USED						
L	DEFECT IDENTIFICATION NUMBERS NOT USED						
M	DEFECT IDENTIFICATION NUMBERS NOT USED						
N	DEFECT IDENTIFICATION NUMBERS NOT USED						
P	DEFECT IDENTIFICATION NUMBERS NOT USED						
Q	DEFECT IDENTIFICATION NUMBERS NOT USED						
R	DEFECT IDENTIFICATION NUMBERS NOT USED						
T	DEFECT IDENTIFICATION NUMBERS NOT USED						
U	DEFECT IDENTIFICATION NUMBERS NOT USED						
V	DEFECT IDENTIFICATION NUMBERS NOT USED						
W	DEFECT IDENTIFICATION NUMBERS NOT USED						
X	DEFECT IDENTIFICATION NUMBERS NOT USED						
Y	DEFECT IDENTIFICATION NUMBERS NOT USED						

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S507	SEOS	O	07-25-2008		07-26-2008	PJB
B	S376	NEOS	T	07-25-2008		07-26-2008	PJB
C	S374	NEOS	T	07-25-2008		07-26-2008	PJB
D	S372	NEOS	T	07-25-2008		07-26-2008	PJB
E	S370	NEOS	T	07-25-2008		07-26-2008	PJB
F	S368	NEOS	T	07-25-2008		07-26-2008	PJB
G	S367	NEOS	T	07-25-2008		07-26-2008	PJB
H	S366	NEOS	T	07-25-2008		07-26-2008	PJB
J	S365	NEOS	T	07-25-2008		07-26-2008	PJB
K	S364	NEOS	T	07-25-2008		07-26-2008	PJB
L	S363	NEOS	T	07-25-2008		07-26-2008	PJB
M	S362	NEOS	T	07-25-2008		07-26-2008	PJB
N	S361	NEOS	T	07-25-2008		07-26-2008	PJB
P	S359	NEOS	T	07-25-2008		07-26-2008	PJB
Q	S357	NEOS	T	07-25-2008		07-26-2008	PJB
R	S355	NEOS	T	07-25-2008		07-26-2008	PJB
T	S353	NEOS	T	07-25-2008		07-26-2008	PJB
U	S351	NEOS	T	07-25-2008		07-26-2008	PJB
V	S349	NEOS	T	07-25-2008		07-26-2008	PJB
W	S347	NEOS	T	07-25-2008		07-26-2008	PJB
X	S380	NEOS	T	07-25-2008		07-26-2008	PJB
Y	DEFECT IDENTIFICATION NUMBERS NOT USED						

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

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A	S382	NEOS	T	07-25-2008		07-25-2008	PJB
B	S384	NEOS	T	07-25-2008		07-25-2008	PJB
C	S386	NEOS	O	07-25-2008		07-25-2008	PJB
D	S387	NEOS	O	07-25-2008		07-25-2008	PJB
E	S389	NEOS	O	07-25-2008		07-25-2008	PJB
F	S321	SEOS	O	07-25-2008		07-25-2008	PJB
G	S391	NEOS	O	07-25-2008		07-25-2008	PJB
H	S323	SEOS	T	07-25-2008		07-25-2008	PJB
J	S393	NEOS	T	07-25-2008		07-25-2008	PJB
K	S324	SEOS	O	07-25-2008		07-25-2008	PJB
L	S394	NEOS	O	07-25-2008		07-25-2008	PJB
M	S513	NEOS	O	07-25-2008		07-25-2008	PJB
N	S277	SEOS	T	07-26-2008		07-25-2008	PJB
P	S505	EEOS	T	07-26-2008		07-25-2008	PJB
Q	S276	SEOS	O	07-26-2008		07-25-2008	PJB
R	S275	SEOS	T	07-26-2008		07-25-2008	PJB
T	S497	EEOS	T	07-26-2008		07-25-2008	PJB
U	S274	SEOS	T	07-26-2008		07-25-2008	PJB
V	S512	EEOS	T	07-26-2008		07-25-2008	PJB
W	S332	SEOS	O	07-26-2008		07-25-2008	PJB
X	DEFECT IDENTIFICATION NUMBERS NOT USED						
Y	S501	122' N OF SEOS	LDT	07-26-2008	LDT-164	07-25-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
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Defect Log No.
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Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S513	70' S OF NEOS	O	08-01-2008		08-02-2008	PJB
B	S513	30' S OF NEOS	O	08-01-2008		08-02-2008	PJB
C	S513	10' S OF NEOS	LDT	08-01-2008		08-02-2008	PJB
D	S516	72' S OF NEOS	LDT	08-01-2008	LDT-166	08-02-2008	PJB
E	S519	9' N OF SEOS	O	08-01-2008		08-02-2008	PJB
F	S528	10' S OF NEOS	LDT	08-01-2008		08-02-2008	PJB
G	S525	EEOS	O	08-01-2008		08-02-2008	PJB
H	S525	WEOS	O	08-01-2008		08-02-2008	PJB
J	S518	NEOS	O	08-01-2008		08-02-2008	PJB
K	S531	SEOS	O	08-01-2008		08-02-2008	PJB
L	S513	NEOS	O	08-01-2008		08-02-2008	PJB
M	S314	WEOS	O	08-01-2008		08-02-2008	PJB
N	S520	NEOS	T	08-01-2008		08-02-2008	PJB
P	S519	NEOS	T	08-01-2008		08-02-2008	PJB
Q	S517	NEOS	T	08-01-2008		08-02-2008	PJB
R	S516	NEOS	O	08-01-2008		08-02-2008	PJB
T	S515	NEOS	O	08-01-2008		08-02-2008	PJB
U	S514	NEOS	T	08-01-2008		08-02-2008	PJB
V	S521	NEOS	O	08-01-2008		08-02-2008	PJB
W	S315	WEOS	O	08-01-2008		08-02-2008	PJB
X	S522	NEOS	T	08-01-2008		08-02-2008	PJB
Y	S316	SEOS	T	08-01-2008		08-02-2008	PJB

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

GEOMEMBRANE DEFECT LOG

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Defect Log No.
34

Defect Code	Defect Seam or Panel	Location of Defect	Defect Type	Log Date	Remarks	Repair Date	CQA Initial
A	S523	NEOS	O	08-01-2008		08-02-2008	PJB
B	S524	NEOS	O	08-01-2008		08-02-2008	PJB
C	S526	NEOS	O	08-01-2008		08-02-2008	PJB
D	S528	NEOS	O	08-01-2008		08-02-2008	PJB
E	S530	NEOS	O	08-01-2008		08-02-2008	PJB
F	S528	10' N OF SEOS	LDT	08-01-2008	LDT-168	08-02-2008	PJB
G	S318	SEOS	O	08-01-2008		08-02-2008	PJB
H	S519	42' N OF SEOS	LDT	08-01-2008	LDT-167	08-02-2008	PJB
J	S317	EAT	O	08-01-2008		08-02-2008	PJB
K	S365	SAT	O	08-01-2008		08-02-2008	PJB
L	N/A	DI-1 TO DI-2	O	08-01-2008		08-02-2008	PJB
M	S523	SAT	O	08-01-2008		08-02-2008	PJB
N	S373	SAT	O	08-01-2008		08-06-2008	PJB
P	S518	SAT	O	08-01-2008		08-06-2008	PJB
Q	DEFECT IDENTIFICATION NUMBERS NOT USED						
R	DEFECT IDENTIFICATION NUMBERS NOT USED						
T	DEFECT IDENTIFICATION NUMBERS NOT USED						
U	DEFECT IDENTIFICATION NUMBERS NOT USED						
V	DEFECT IDENTIFICATION NUMBERS NOT USED						
W	DEFECT IDENTIFICATION NUMBERS NOT USED						
X	DEFECT IDENTIFICATION NUMBERS NOT USED						
Y	DEFECT IDENTIFICATION NUMBERS NOT USED						

Defect Type: **LDT** - Laboratory Destructive Testing, **FDT** - Field Destructive Testing, **T** - T weld, **O** - Other

CQA Personnel : Phil Banner

APPENDIX IX

(GEOMEMBRANE REPAIR TESTING LOGS)

GEOMEMBRANE REPAIR TESTING LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
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Repair Log No.
1

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	1.5x1.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
B	P	5x1.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-1
C	P	4.5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-2
D	P	4x1.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-3
E	P	4x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-4
F	P	2x1	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
G	P	4x3	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
H	P	4x2.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
J	P	4x3	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
K	CAP	30x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
L	P	5x2.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
M	P	2x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
N	P	2.5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
P	P	4x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
Q	P	2x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
R	P	4x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
T	P	2x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	PASSED RETEST
U	P	5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-5
V	P	4x2	BN	JHA	06-20-2008	VB	GT	JHA	P	06-21-2008	LDT-6
W	P	4x2	BN	JHA	06-20-2008	VB	GT	JHA	P	06-21-2008	LDT-7
X	P	3x2	BN	JHA	06-20-2008	VB	GT	JHA	P	06-21-2008	
Y	P	3.5x3	BN	JHA	06-20-2008	VB	GT	JHA	P	06-21-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: James Addis

GEOMEMBRANE REPAIR TESTING LOG

S&ME Project No.: 1356-07-017
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Project Location: Belews Creek, North Carolina
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Repair Log No.
2

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x1	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
B	P	2.5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
C	P	2x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
D	P	4.5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-8
E	P	3.5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
F	P	11x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	FUEL LEAK
G	P	1.5x1.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
H	P	3x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
J	P	2x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
K	P	1.5x1.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
L	P	3.5x2.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
M	P	2x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
N	P	1.5x1	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
P	P	4.5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-9
Q	P	2x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
R	P	2.5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
T	P	4x2.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-10
U	P	3.5x2.5	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	
V	P	5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-11
W	P	4x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-12
X	P	5x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	LDT-13
Y	CAP	8x2	BN	JHA	06-19-2008	VB	GT	JHA	P	06-21-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: James Addis

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
3

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	1x1	BN	JHA	06-20-2008	VB	GT	JHA	P	06-21-2008	
B	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
C	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
D	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
E	P	2x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
F	P	2x3	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
G	P	2x5	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
H	P	2x5	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
J	P	1x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
K	CAP	2x15	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
L	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
M	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
N	P	2x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
P	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
Q	P	2x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
R	P	2x6	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
T	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
U	P	2x3	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
V	P	2x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
W	P	2x3	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
X	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
Y	P	4x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: James Addis / Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
4

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	4x3	BN	JHA	06-20-2008	VB	LS	JHA	P	06-21-2008	
B	P	2.25x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
C	CAP	2x15	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
D	P	2x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
E	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
F	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
G	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
H	P	2x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
J	CAP	2x15	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
K	P	4x4 & 1x1	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
L	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
M	P	3' DIA.	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
N	P	2x2	BN	PJB	06-20-2008	VB	LS	PJB	P	06-23-2008	
P	P	2x5	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
Q	P	2.5x2.5	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
R	P	2x4	BN	PJB	06-21-2008	VB	LS	PJB	P	06-24-2008	
T	P	2x4	BN	PJB	06-21-2008	VB	LS	PJB	P	06-24-2008	
U	P	2x5	BN	PJB	06-21-2008	VB	LS	PJB	P	06-24-2008	
V	P	2x5	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	
W	P (3)	1', 1', 2' DIA.	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	"A" - "B" - "C" (3)
X	P	2x2	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	
Y	P	2x4	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: James Addis / Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
5

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2.5	BN	PJB	06-20-2008	VB	LS	PJB	P	06-25-2008	
B	P	2x2.5	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
C	P	1.5x1.5	BN	PJB	06-20-2008	VB	LS	PJB	P	06-24-2008	
D	P	2x5	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	
E	P	2x5	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	
F	P	2x4	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	
G	P	2x2.5	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	
H	P	2x2	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	
J	P	4x2	BN	PJB	06-21-2008	VB	LS	PJB	P	06-25-2008	
K	P	2x2	BN	PJB	06-21-2008	VB	LS	PJB	P	06-24-2008	
L	P	2x4	BN	PJB	06-21-2008	VB	LS	PJB	P	06-24-2008	LDT-28
M	P	2x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	
N	P	2x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	
P	P	2x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	
Q	P	5x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	
R	P	3x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	
T	P	4.5x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	LDT-29
U	P	4.5x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	LDT-30
V	P	1.5x1.5	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	
W	P	4.5x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	LDT-32
X	P	4.5x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	LDT-31
Y	P	5x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	LDT-33

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: James Addis / Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
6

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2	BN	JHA	06-21-2008	VB	GT	JHA	P	06-21-2008	
B	P	2x2	BN	PJB	06-21-2008	VB	LS	PJB	P	06-24-2008	
C	P	2x2	BN	PJB	06-21-2008	VB	LS	PJB	P	06-24-2008	
D	G&W	1' & 2' DIA.	BN	PJB	06-25-2008	VB	LS	PJB	P	06-27-2008	
E	P	2x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
F	P	4.5x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
G	P	1.5x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	
H	P	5x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
J	P	4.5x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
K	P	4.5x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
L	P	4x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
M	P	4.5x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
N	P	3x3	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
P	P	3x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
Q	P	2x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
R	P	3x1.5	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
T	P	2.5x1.5	BN	JHA	06-26-2008	VB	LS	JHA	P	06-28-2008	
U	P	2.5x1.5	BN	JHA	06-26-2008	VB	LS	JHA	P	06-28-2008	
V	P	1.5x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
W	P	4x3	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
X	P	2x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
Y	P	1x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: James Addis / Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

S&ME Project No.: 1356-07-017
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Repair Log No.
7

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x4	BN	MCS	06-28-2008	VB	LS	MCS	P	06-28-2008	
B	P	5x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
C	P	2x2	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
D	P	3x3	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
E	P	2x2	BN	JHA	06-28-2008	VB	LS	JHA	P	06-28-2008	
F	P	2.5x2	BN	JHA	06-28-2008	VB	LS	JHA	P	06-28-2008	
G	P	1x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
H	P	3x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
J	P	1.5x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
K	P	2x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
L	P	2x2	BN	JHA	06-26-2008	VB	LS	JHA	P	06-27-2008	
M	P	2x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-27-2008	
N	P	2.5x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
P	P	0.5x0.5	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
Q	P	0.5x0.5	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
R	P	1x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
T	P	1x1	BN	MCS	06-27-2008	VB	LS	MCS	P	06-28-2008	
U	CAP	24x1.5	BN	JHA	06-27-2008	VB	LS	JHA	P	06-30-2008	
V	P	1x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
W	P	2.5x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
X	P	0.5x0.5	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	
Y	P	1x1	BN	JHA	06-27-2008	VB	LS	JHA	P	06-28-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: James Addis / Michael Simms

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	1x2.5	BN	MCS	06-27-2008	VB	LS	MCS	P	06-28-2008	
B	P	4.5x2	BN	MCS	06-27-2008	VB	LS	MCS	P	06-28-2008	
C	P	1x1	BN	MCS	06-28-2008	VB	LS	MCS	P	06-28-2008	
D	P	4.5x2	BN	MCS	06-28-2008	VB	LS	MCS	P	06-28-2008	
E	P	4.5x2	BN	MCS	06-27-2008	VB	LS	MCS	P	06-28-2008	
F	P	4.5x2	BN	MCS	06-27-2008	VB	LS	MCS	P	06-28-2008	
G	P	4.5x2	BN	MCS	06-27-2008	VB	LS	MCS	P	06-28-2008	
H	P	2' DIA.	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
J	P	2x2	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
K	P	1.5x1.5	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
L	P	1.5x2	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
M	P	2x5	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
N	P	2x3	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
P	P	1x1	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
Q	P	2x19	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
R	P	3x1.5	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
T	P	1x1	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
U	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
V	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
W	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
X	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
Y	P	2x2	BN	PJB	07-02-2008	VB	LS	PJB	P	06-30-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner / Michael Simms

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x4	BN	MCS	06-28-2008	VB	LS	MCS	P	06-28-2008	
B	P	2x2	BN	PJB	06-28-2008	VB	LS	PJB	P	06-28-2008	
C	P	2x4	BN	PJB	06-28-2008	VB	LS	PJB	P	06-28-2008	
D	P	2x4	BN	PJB	06-28-2008	VB	LS	PJB	P	06-28-2008	
E	P	2x4	BN	PJB	06-27-2008	VB	LS	PJB	P	06-28-2008	
F	P	2x4	BN	PJB	06-27-2008	VB	LS	PJB	P	06-30-2008	
G	P	2x4	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
H	P	2x4	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
J	P	2x2	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
K	P	2x2	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
L	P	2x2	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
M	P	2x2	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
N	P	2x2	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
P	P	2x2	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
Q	P	2x2	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
R	P	2x2	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
T	P	2x5	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
U	P	2x4	BN	PJB	06-28-2008	VB	LS	PJB	P	06-30-2008	
V	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
W	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
X	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
Y	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner / Michael Simms

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
B	P	2x2	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
C	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
D	P	2x4	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
E	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
F	P	1x1	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
G	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
H	P	2x4	BN	PJB	06-29-2008	VB	LS	PJB	P	06-30-2008	
J	CAP	2x20	BN	PJB	06-29-2008	VB	LS	PJB	P	07-08-2008	
K	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
L	P	1x1	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
M	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
N	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
P	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
Q	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	06-30-2008	
R	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
T	P	1x2	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
U	P	2x4	BN	PJB	07-03-2008	VB	GT	PJB	P	07-12-2008	
V	P	2x4	BN	PJB	07-03-2008	VB	GT	PJB	P	07-12-2008	
W	P	2x4	BN	PJB	07-03-2008	VB	GT	PJB	P	07-12-2008	
X	P	2x2	BN	PJB	07-03-2008	VB	GT	PJB	P	07-12-2008	
Y	P	2x4	BN	PJB	07-02-2008	VB	GT	PJB	P	07-09-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	1ft	BN	PJB	06-30-2008	VB	LS	PJB	P	07-09-2008	
B	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	07-09-2008	
C	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	07-09-2008	
D	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	07-09-2008	
E	P	2x4	BN	PJB	06-30-2008	VB	LS	PJB	P	07-09-2008	
F	P	1x1	BN	PJB	06-30-2008	VB	LS	PJB	P	07-09-2008	
G	P	5x15	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
H	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
J	P	2x1	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
K	CAP	3x10	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
L	CAP	2x20	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
M	CAP	3x7	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
N	P	(2) @ 2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
P	P	1x2	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
Q	P	3x6	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
R	P	4x4	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
T	P	3x9	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
U	P	2x2	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
V	P	2x3	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
W	P	1x1	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
X	P	2x3	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	
Y	P	2x3	BN	PJB	06-30-2008	VB	LS	PJB	P	07-08-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x4	BN	WMH	07-01-2008	VB	LS	WMH	P	07-09-2008	
B	INFORMATION SUPPLEMENTED BY ESI										
C	P	2x2	BN	WMH	07-01-2008	VB	LS	WMH	P	07-09-2008	
D	P	1x1	BN	WMH	07-01-2008	VB	LS	WMH	P	07-09-2008	
E	P	2x2	BN	WMH	07-01-2008	VB	LS	WMH	P	07-09-2008	
F	P	1x1	BN	WMH	07-01-2008	VB	LS	WMH			
G	P	1x2	BN	WMH	07-01-2008	VB	LS	WMH	P	07-09-2008	
H	P	2x4	BN	WMH	07-02-2008	VB	LS	WMH	P	07-09-2008	
J	P	2x2	BN	WMH	07-03-2008	VB	LS	WMH	P	07-08-2008	
K	P	2x4	BN	WMH	07-02-2008	VB	LS	WMH	P	07-09-2008	
L	P	2x4	BN	WMH	07-02-2008	VB	LS	WMH	P	07-11-2008	
M	P	2x4	BN	WMH	07-02-2008	VB	LS	WMH	P	07-11-2008	
N	P	2x4	BN	WMH	07-02-2008	VB	LS	WMH	P	07-09-2008	
P	INFORMATION SUPPLEMENTED BY ESI # 239										
Q	P	2x4	BN	WMH	07-02-2008	VB	LS	WMH	P	07-11-2008	
R	P	2x4	BN	WMH	07-02-2008	VB	LS	WMH	P	07-11-2008	
T	P	2x4	BN	WMH	07-03-2008	VB	LS	WMH	P	07-11-2008	
U	P	2x4	BN	WMH	07-02-2008	VB	LS	WMH	F	07-11-2008	
V	P	2x3	BN	WMH	07-02-2008	VB	LS	WMH	P	07-12-2008	
W	INFORMATION SUPPLEMENTED BY ESI										
X	INFORMATION SUPPLEMENTED BY ESI # 279										
Y	INFORMATION SUPPLEMENTED BY ESI # 246										

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: James Addis

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	CAP	2x15	BN	PJB	07-02-2008	VB	LS	PJB	P	07-15-2008	
B	P	2x2	BN	PJB	07-02-2008	VB	LS	PJB	P	07-12-2008	
C	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-12-2008	
D	P	2x3	BN	PJB	07-02-2008	VB	LS	PJB	P	07-12-2008	
E	P	2x3	BN	PJB	07-02-2008	VB	LS	PJB	P	07-12-2008	
F	P	2x1.5	BN	PJB	07-02-2008	VB	LS	PJB	P	07-09-2008	
G	P	1x1	BN	PJB	07-02-2008	VB	LS	PJB	P	07-07-2008	
H	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
J	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
K	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
L	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
M	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
N	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
P	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
Q	CAP	2x10	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
R	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
T	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
U	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
V	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-15-2008	
W	P	1x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
X	P	2x3	BN	PJB	07-03-2008	VB	LS	PJB	P	07-12-2008	
Y	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-15-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
B	P	2x2	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
C	P	2x2	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
D	P	2x2	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
E	P	2x2	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
F	P	2x4	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
G	P	2x4	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
H	P	2x4	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
J	P	2x4	BN	PJB	07-11-2008	VB	LS	PJB	P	07-08-2008	
K	CAP	5x69	BN	PJB	07-11-2008	VB	LS	PJB	P	07-08-2008	
L	P	2x4	BN	PJB	07-01-2008	VB	LS	PJB	P	07-08-2008	
M	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
N	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
P	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
Q	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
R	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
T	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
U	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
V	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
W	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
X	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	
Y	P	2x4	BN	PJB	07-02-2008	VB	LS	PJB	P	07-08-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x3	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
B	P	1x1	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
C	P	2x8	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
D	P	1x1	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
E	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
F	P	1x3	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
G	P	2x2.5	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
H	P	2x2	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
J	P	2x2	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
K	CAP	2x24	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
L	CAP	2x24	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
M	CAP	2x24	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
N	P	3x5	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
P	P	2x3	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
Q	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
R	P	2x2	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
T	P	2x2	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
U	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
V	P	2x2	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
W	P	2x4	BN	PJB	07-03-2008	VB	LS	PJB	P	07-08-2008	
X	P	2x2	BN	PJB	07-09-2008	VB	LS	PJB	P	07-09-2008	
Y	P	2' DIA.	BN	PJB	07-09-2008	VB	LS	PJB	P	07-09-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	CAP	6x115	BN	PJB	07-12-2008	VB	BN	PJB	P	07-12-2008	
B	P	2x2	BN	PJB	07-12-2008	VB	BN	PJB	P	07-12-2008	
C	P	5x5	BN	PJB	07-12-2008	VB	BN	PJB	P	07-12-2008	
D	P	1x1	BN	PJB	07-15-2008	VB	BN	PJB	P	07-15-2008	
E	P	2x4	BN	PJB	07-17-2008	VB	BN	PJB	P	07-19-2008	
F	CAP	2x13	BN	PJB	07-17-2008	VB	BN	PJB	P	07-19-2008	
G	P	2x2	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
H	P	2x15	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
J	P	2x5	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
K	P	4x6	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
L	P	2x3	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
M	P	3x3	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
N	P	3x4	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
P	P	1x1	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
Q	P	1x1	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
R	P	2x7	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
T	P	2x4	BN	PJB	07-17-2008	VB	BN	PJB	P	07-21-2008	
U	P	1x1	BN	PJB	07-18-2008	VB	BN	PJB	P	07-19-2008	
V	P	2' DIA.	BN	PJB	07-18-2008	VB	BN	PJB	P	07-19-2008	
W	P	2x4	BN	PJB	07-18-2008	VB	BN	PJB	P	07-26-2008	
X	CAP	2x16	BN	PJB	07-18-2008	VB	BN	PJB	P	07-26-2008	
Y	P	2x4	BN	PJB	07-18-2008	VB	BN	PJB	P	07-26-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
B	P	3x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
C	P	5x10	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
D	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
E	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
F	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
G	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
H	P	3x3	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
J	P	1x1	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
K	P	1x1	BN	PJB	08-02-2008	VB	GT	PJB	P	08-04-2008	
L	P	2x3	BN	PJB	07-17-2008	VB	GT	PJB	P	07-19-2008	
M	P	2x6	BN	PJB	07-17-2008	VB	GT	PJB	P	07-19-2008	
N	P	2x3	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
P	P	2' DIA.	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
Q	INFORMATION SUPPLEMENTED BY ESI										
R	INFORMATION SUPPLEMENTED BY ESI										
T	INFORMATION SUPPLEMENTED BY ESI										
U	INFORMATION SUPPLEMENTED BY ESI										
V	INFORMATION SUPPLEMENTED BY ESI										
W	INFORMATION SUPPLEMENTED BY ESI										
X	P	2x3	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
Y	P	3x3	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
B	P	2x2	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
C	P	2x3	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
D	P	2x3	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
E	P	3x3	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
F	P	3x3	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
G	P	1x2	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
H	P	3x5	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
J	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
K	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
L	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
M	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
N	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
P	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
Q	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
R	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-19-2008	
T	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
U	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
V	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
W	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
X	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	
Y	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-19-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
B	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
C	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
D	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
E	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
F	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
G	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
H	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
J	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
K	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
L	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
M	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
N	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
P	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
Q	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
R	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-26-2008	
T	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
U	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
V	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
W	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
X	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	
Y	P	2x4	BN	PJB	07-19-2008	VB	GT	PJB	P	07-26-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
20

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x4	BN	PJB	07-29-2008	VB	GT	PJB	P	07-29-2008	
B	P	2x4	BN	PJB	07-21-2008	VB	GT	PJB	P	07-28-2008	
C	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-29-2008	
D	P	2x2	BN	PJB	07-19-2008	VB	GT	PJB	P	07-29-2008	
E	DEFECT IDENTIFICATION NUMBERS NOT USED										
F	DEFECT IDENTIFICATION NUMBERS NOT USED										
G	DEFECT IDENTIFICATION NUMBERS NOT USED										
H	DEFECT IDENTIFICATION NUMBERS NOT USED										
J	DEFECT IDENTIFICATION NUMBERS NOT USED										
K	DEFECT IDENTIFICATION NUMBERS NOT USED										
L	DEFECT IDENTIFICATION NUMBERS NOT USED										
M	DEFECT IDENTIFICATION NUMBERS NOT USED										
N	DEFECT IDENTIFICATION NUMBERS NOT USED										
P	DEFECT IDENTIFICATION NUMBERS NOT USED										
Q	DEFECT IDENTIFICATION NUMBERS NOT USED										
R	DEFECT IDENTIFICATION NUMBERS NOT USED										
T	DEFECT IDENTIFICATION NUMBERS NOT USED										
U	DEFECT IDENTIFICATION NUMBERS NOT USED										
V	DEFECT IDENTIFICATION NUMBERS NOT USED										
W	DEFECT IDENTIFICATION NUMBERS NOT USED										
X	DEFECT IDENTIFICATION NUMBERS NOT USED										
Y	DEFECT IDENTIFICATION NUMBERS NOT USED										

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	3x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-21-2008	
B	P	4x6	BN	PJB	07-18-2008	VB	GT	PJB	P	07-21-2008	
C	P	2x4	BN	PJB	07-18-2008	VB	GT	PJB	P	07-21-2008	
D	P	2x4	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
E	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
F	P	2x4	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
G	P	2x2	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
H	P	2x2	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
J	P	2x2	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
K	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-28-2008	
L	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-28-2008	
M	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-28-2008	
N	P	2x2	BN	PJB	08-22-2008	VB	GT	PJB	P	07-28-2008	
P	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-28-2008	
Q	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-30-2008	
R	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-30-2008	
T	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-30-2008	
U	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-30-2008	
V	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
W	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
X	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
Y	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Repair Log No.
22

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-28-2008	
B	P	2x3	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
C	P	2x3	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
D	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
E	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
F	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
G	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
H	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
J	P	2x2	BN	PJB	07-22-2008	VB	GT	PJB	P	07-31-2008	
K	P	3x3	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
L	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-31-2008	
M	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	08-01-2008	
N	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	08-01-2008	
P	P	10x15/2	BN	PJB	07-23-2008	VB	GT	PJB	P	08-01-2008	
Q	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	08-01-2008	
R	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	08-01-2008	
T	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	08-01-2008	
U	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
V	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
W	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
X	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
Y	P	2x7	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
B	DEFECT IDENTIFICATION NUMBERS NOT USED										
C	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
D	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
E	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
F	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
G	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
H	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
J	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
K	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
L	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
M	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
N	CAP	2x20	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
P	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
Q	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
R	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
T	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
U	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
V	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
W	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
X	DEFECT IDENTIFICATION NUMBERS NOT USED										
Y	DEFECT IDENTIFICATION NUMBERS NOT USED										

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x4	BN	PJB	07-23-2008	VB	LS	PJB	P	07-23-2008	
B	P	2' DIA.	BN	PJB	07-23-2008	VB	GT	PJB	P	07-23-2008	
C	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
D	P	4x9	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
E	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
F	P	2x3	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
G	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
H	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-30-2008	
J	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
K	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
L	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
M	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
N	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
P	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
Q	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
R	P	2x4	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
T	P	2x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-31-2008	
U	DEFECT IDENTIFICATION NUMBERS NOT USED										
V	P	2x2	BN	PJB	07-23-2008	VB	GT	PJB	P	07-31-2008	
W	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
X	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
Y	P	4x5	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
B	P	3' DIA.	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
C	P	3x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
D	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
E	P	2x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
F	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
G	P	2x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
H	P	2x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
J	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
K	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
L	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
M	P	2x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
N	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
P	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
Q	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
R	P	3x6	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
T	P	1x1	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
U	P	1x1	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
V	P	3x4	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
W	P	1x1	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
X	P	1x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
Y	P	2x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

S&ME Project No.: 1356-07-017
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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	1x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
B	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
C	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-28-2008	
D	P	1x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-28-2008	
E	P	2x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-28-2008	
F	G&W	T	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
G	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
H	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
J	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
K	CAP	2x48	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
L	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
M	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
N	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
P	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
Q	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
R	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
T	P	1x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
U	P	1x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
V	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
W	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
X	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	
Y	G&W	T	BN	PJB	07-28-2008	VB	GT	PJB	P	07-29-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	G&W	T	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
B	P	2x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
C	P	2x2	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
D	G&W	T	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
E	P	3x7	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
F	G&W	T	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
G	P	3x3	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
H	G&W	T	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
J	P	6x10	BN	PJB	07-24-2008	VB	GT	PJB	P	07-29-2008	
K	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
L	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
M	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
N	P	2x3	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
P	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
Q	P	2x3	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
R	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
T	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
U	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
V	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
W	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
X	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
Y	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x3	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
B	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
C	P	3x3	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
D	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
E	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
F	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
G	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
H	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
J	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
K	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
L	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
M	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
N	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
P	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
Q	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
R	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
T	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
U	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
V	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
W	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
X	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
Y	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
B	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
C	P	2x3	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
D	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
E	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
F	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
G	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
H	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
J	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
K	P	2x3	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
L	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
M	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
N	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
P	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
Q	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
R	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-29-2008	
T	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-29-2008	
U	P	4x6	BN	PJB	07-26-2008	VB	GT	PJB	P	07-29-2008	
V	P	4x6	BN	PJB	07-26-2008	VB	GT	PJB	P	07-29-2008	
W	P	3x3	BN	PJB	07-26-2008	VB	GT	PJB	P	07-29-2008	
X	P	2x3	BN	PJB	07-26-2008	VB	GT	PJB	P	07-29-2008	
Y	P	2x3	BN	PJB	07-26-2008	VB	GT	PJB	P	07-29-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	CAP	2x27	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
B	P	2x4	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
C	P	2x2	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
D	P	2x2	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
E	P	4x6	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
F	P	2x3	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
G	P	2x3	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
H	P	2x3	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
J	P	2x4	BN	PJB	07-26-2008	VB	GT	PJB	P	07-31-2008	
K	DEFECT IDENTIFICATION NUMBERS NOT USED										
L	DEFECT IDENTIFICATION NUMBERS NOT USED										
M	DEFECT IDENTIFICATION NUMBERS NOT USED										
N	DEFECT IDENTIFICATION NUMBERS NOT USED										
P	DEFECT IDENTIFICATION NUMBERS NOT USED										
Q	DEFECT IDENTIFICATION NUMBERS NOT USED										
R	DEFECT IDENTIFICATION NUMBERS NOT USED										
T	DEFECT IDENTIFICATION NUMBERS NOT USED										
U	DEFECT IDENTIFICATION NUMBERS NOT USED										
V	DEFECT IDENTIFICATION NUMBERS NOT USED										
W	DEFECT IDENTIFICATION NUMBERS NOT USED										
X	DEFECT IDENTIFICATION NUMBERS NOT USED										
Y	DEFECT IDENTIFICATION NUMBERS NOT USED										

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x3	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
B	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
C	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
D	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
E	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
F	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
G	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
H	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
J	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
K	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
L	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
M	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
N	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
P	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
Q	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
R	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
T	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
U	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
V	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
W	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
X	G&W	T	BN	PJB	07-26-2008	VB	GT	PJB	P	07-28-2008	
Y	DEFECT IDENTIFICATION NUMBERS NOT USED										

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
32

Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
B	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
C	P	2x6	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
D	P	2x3	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
E	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
F	P	2x8	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
G	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
H	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
J	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
K	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
L	P	2x2	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
M	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
N	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
P	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
Q	P	6x10	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
R	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
T	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
U	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
V	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
W	G&W	T	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	
X	DEFECT IDENTIFICATION NUMBERS NOT USED										
Y	P	2x4	BN	PJB	07-25-2008	VB	GT	PJB	P	07-28-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	3x7	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
B	P	3x7	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
C	P	2x4	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
D	P	2x4	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
E	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
F	P	2x4	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
G	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
H	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
J	P	4x5	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
K	P	2x3	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
L	P	3x8	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
M	P	2x7	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
N	P	2x4	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
P	G&W	T	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
Q	G&W	T	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
R	P	2x3	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
T	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
U	G&W	T	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
V	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
W	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
X	G&W	T	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
Y	G&W	T	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

GEOMEMBRANE REPAIR TESTING LOG

S&ME Project No.: 1356-07-017
Project Name: Pine Hall Road Ash Landfill Closure
Project Location: Belews Creek, North Carolina
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Repair Log No.
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Defect Code	Repair Type	Approximate Dimensions	Tech. Initials	CQA Initials	Date	Test Type	Tech. Initials	CQA Initials	Pass / Fail	Date	Remarks
A	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
B	P	2x4	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
C	P	2x3	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
D	P	2x3	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
E	P	2x3	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
F	P	2x4	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
G	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
H	P	2x2	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
J	P	2x6	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
K	P	2x6	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
L	CAP	2x80	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
M	P	2x6	BN	PJB	08-02-2008	VB	GT	PJB	P	08-02-2008	
N	P	2x6	VS	PJB	08-06-2008	VB	GT	PJB	P	08-06-2008	
P	P	2x6	VS	PJB	08-06-2008	VB	GT	PJB	P	08-06-2008	
Q	DEFECT IDENTIFICATION NUMBERS NOT USED										
R	DEFECT IDENTIFICATION NUMBERS NOT USED										
T	DEFECT IDENTIFICATION NUMBERS NOT USED										
U	DEFECT IDENTIFICATION NUMBERS NOT USED										
V	DEFECT IDENTIFICATION NUMBERS NOT USED										
W	DEFECT IDENTIFICATION NUMBERS NOT USED										
X	DEFECT IDENTIFICATION NUMBERS NOT USED										
Y	DEFECT IDENTIFICATION NUMBERS NOT USED										

Repair Type: **G&W** - Grind and Weld, **P**- Patch, **CAP** - Cap Strip

Testing Type: **SP** - Spark Test, **VB** - Vacuum Box Test

CQA Personnel: Phil Banner

APPENDIX X

(LABORATORY DESTRUCTIVE TESTING LOGS)

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 1
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	87.0	elongation
S2	72.0	elongation
S3	98.0	elongation
S4	80.0	elongation
S5	94.0	elongation
Average	86.2	*FTB - Film Tear Bond
Standard Deviation	9.4	
Maximum	98.0	
Minimum	72.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	77.0	FTB
P1B	84.0	FTB
P2A	75.0	FTB
P2B	76.0	FTB
P3A	87.0	FTB
P3B	85.0	FTB
P4A	80.0	FTB
P4B	74.0	FTB
P5A	78.0	FTB
P5B	82.0	FTB
Average	79.8	*FTB - Film Tear Bond
Standard Deviation	4.3	
Maximum	87.0	
Minimum	74.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 2
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	88.0	elongation
S2	78.0	elongation
S3	88.0	elongation
S4	72.0	elongation
S5	88.0	elongation
Average	82.8	*FTB - Film Tear Bond
Standard Deviation	6.6	
Maximum	88.0	
Minimum	72.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	87.0	FTB
P1B	83.0	FTB
P2A	68.0	FTB
P2B	75.0	FTB
P3A	85.0	FTB
P3B	80.0	FTB
P4A	73.0	FTB
P4B	72.0	FTB
P5A	84.0	FTB
P5B	85.0	FTB
Average	79.2	*FTB - Film Tear Bond
Standard Deviation	6.3	
Maximum	87.0	
Minimum	68.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 3
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	86.0	elongation
S2	82.0	elongation
S3	90.0	elongation
S4	79.0	elongation
S5	73.0	elongation
Average	82.0	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	90.0	
Minimum	73.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	78.0	FTB
P1B	81.0	FTB
P2A	71.0	FTB
P2B	69.0	FTB
P3A	86.0	FTB
P3B	80.0	FTB
P4A	64.0	FTB
P4B	66.0	FTB
P5A	62.0	FTB
P5B	59.0	FTB
Average	71.6	*FTB - Film Tear Bond
Standard Deviation	8.7	
Maximum	86.0	
Minimum	59.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 4
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	90.0	elongation
S2	84.0	elongation
S3	87.0	elongation
S4	79.0	elongation
S5	80.0	elongation
Average	84.0	*FTB - Film Tear Bond
Standard Deviation	4.1	
Maximum	90.0	
Minimum	79.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	88.0	FTB
P1B	87.0	FTB
P2A	80.0	FTB
P2B	77.0	FTB
P3A	86.0	FTB
P3B	88.0	FTB
P4A	78.0	FTB
P4B	82.0	FTB
P5A	75.0	FTB
P5B	77.0	FTB
Average	81.8	*FTB - Film Tear Bond
Standard Deviation	4.8	
Maximum	88.0	
Minimum	75.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 5
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	84.0	elongation
S2	78.0	elongation
S3	81.0	elongation
S4	77.0	elongation
S5	85.0	elongation
Average	81.0	*FTB - Film Tear Bond
Standard Deviation	3.2	
Maximum	85.0	
Minimum	77.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	78.0	FTB
P1B	77.0	FTB
P2A	57.0	FTB
P2B	73.0	FTB
P3A	77.0	FTB
P3B	70.0	FTB
P4A	73.0	FTB
P4B	69.0	FTB
P5A	68.0	FTB
P5B	67.0	FTB
Average	70.9	*FTB - Film Tear Bond
Standard Deviation	6.0	
Maximum	78.0	
Minimum	57.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 6
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	84.0	elongation
S2	82.0	elongation
S3	81.0	elongation
S4	79.0	elongation
S5	85.0	elongation
Average	82.2	*FTB - Film Tear Bond
Standard Deviation	2.1	
Maximum	85.0	
Minimum	79.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	79.0	FTB
P1B	84.0	FTB
P2A	74.0	FTB
P2B	79.0	FTB
P3A	78.0	FTB
P3B	84.0	FTB
P4A	62.0	FTB
P4B	74.0	FTB
P5A	68.0	FTB
P5B	76.0	FTB
Average	75.8	*FTB - Film Tear Bond
Standard Deviation	6.5	
Maximum	84.0	
Minimum	62.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 7
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	88.0	elongation
S2	81.0	elongation
S3	88.0	elongation
S4	79.0	elongation
S5	88.0	elongation
Average	84.8	*FTB - Film Tear Bond
Standard Deviation	4.0	
Maximum	88.0	
Minimum	79.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	86.0	FTB
P1B	86.0	FTB
P2A	80.0	FTB
P2B	76.0	FTB
P3A	86.0	FTB
P3B	82.0	FTB
P4A	78.0	FTB
P4B	77.0	FTB
P5A	74.0	FTB
P5B	78.0	FTB
Average	80.3	*FTB - Film Tear Bond
Standard Deviation	4.2	
Maximum	86.0	
Minimum	74.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 8
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	85.0	elongation
S2	77.0	elongation
S3	81.0	elongation
S4	75.0	elongation
S5	87.0	elongation
Average	81.0	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	87.0	
Minimum	75.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	87.0	FTB
P1B	86.0	FTB
P2A	79.0	FTB
P2B	77.0	FTB
P3A	87.0	FTB
P3B	85.0	FTB
P4A	80.0	FTB
P4B	76.0	FTB
P5A	92.0	FTB
P5B	84.0	FTB
Average	83.3	*FTB - Film Tear Bond
Standard Deviation	4.9	
Maximum	92.0	
Minimum	76.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 9
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	82.0	elongation
S2	85.0	elongation
S3	82.0	elongation
S4	79.0	elongation
S5	80.0	elongation
Average	81.6	*FTB - Film Tear Bond
Standard Deviation	2.1	
Maximum	85.0	
Minimum	79.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	79.0	FTB
P1B	77.0	FTB
P2A	69.0	FTB
P2B	68.0	FTB
P3A	73.0	FTB
P3B	72.0	FTB
P4A	71.0	FTB
P4B	59.0	FTB
P5A	78.0	FTB
P5B	75.0	FTB
Average	72.1	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	79.0	
Minimum	59.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 10
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	86.0	elongation
S2	83.0	elongation
S3	78.0	elongation
S4	80.0	elongation
S5	81.0	elongation
Average	81.6	*FTB - Film Tear Bond
Standard Deviation	2.7	
Maximum	86.0	
Minimum	78.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	82.0	FTB
P1B	85.0	FTB
P2A	73.0	FTB
P2B	75.0	FTB
P3A	81.0	FTB
P3B	86.0	FTB
P4A	71.0	FTB
P4B	78.0	FTB
P5A	83.0	FTB
P5B	78.0	FTB
Average	79.2	*FTB - Film Tear Bond
Standard Deviation	4.8	
Maximum	86.0	
Minimum	71.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 11
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	82.0	elongation
S2	80.0	elongation
S3	90.0	elongation
S4	77.0	elongation
S5	79.0	elongation
Average	81.6	*FTB - Film Tear Bond
Standard Deviation	4.5	
Maximum	90.0	
Minimum	77.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	86.0	FTB
P1B	86.0	FTB
P2A	77.0	FTB
P2B	77.0	FTB
P3A	90.0	FTB
P3B	86.0	FTB
P4A	77.0	FTB
P4B	78.0	FTB
P5A	89.0	FTB
P5B	83.0	FTB
Average	82.9	*FTB - Film Tear Bond
Standard Deviation	4.9	
Maximum	90.0	
Minimum	77.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 12
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	85.0	elongation
S2	82.0	elongation
S3	75.0	elongation
S4	79.0	elongation
S5	80.0	elongation
Average	80.2	*FTB - Film Tear Bond
Standard Deviation	3.3	
Maximum	85.0	
Minimum	75.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	88.0	FTB
P1B	85.0	FTB
P2A	77.0	FTB
P2B	77.0	FTB
P3A	87.0	FTB
P3B	88.0	FTB
P4A	77.0	FTB
P4B	83.0	FTB
P5A	79.0	FTB
P5B	81.0	FTB
Average	82.2	*FTB - Film Tear Bond
Standard Deviation	4.4	
Maximum	88.0	
Minimum	77.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 13
Tested by: James Addis
Date Tested: 06/20/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	88.0	elongation
S2	79.0	elongation
S3	88.0	elongation
S4	80.0	elongation
S5	87.0	elongation
Average	84.4	*FTB - Film Tear Bond
Standard Deviation	4.0	
Maximum	88.0	
Minimum	79.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	85.0	FTB
P1B	86.0	FTB
P2A	78.0	FTB
P2B	79.0	FTB
P3A	86.0	FTB
P3B	87.0	FTB
P4A	78.0	FTB
P4B	74.0	FTB
P5A	79.0	FTB
P5B	83.0	FTB
Average	81.5	*FTB - Film Tear Bond
Standard Deviation	4.2	
Maximum	87.0	
Minimum	74.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 14
Tested by: James Addis
Date Tested: 06/21/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	94.0	elongation
S2	72.0	elongation
S3	95.0	elongation
S4	79.0	elongation
S5	94.0	elongation
Average	86.8	*FTB - Film Tear Bond
Standard Deviation	9.5	
Maximum	95.0	
Minimum	72.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	85.0	FTB
P1B	94.0	FTB
P2A	69.0	FTB
P2B	72.0	FTB
P3A	85.0	FTB
P3B	92.0	FTB
P4A	70.0	FTB
P4B	83.0	FTB
P5A	94.0	FTB
P5B	82.0	FTB
Average	82.6	*FTB - Film Tear Bond
Standard Deviation	9.0	
Maximum	94.0	
Minimum	69.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 15
Tested by: James Addis
Date Tested: 06/21/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	106.0	elongation
S2	97.0	elongation
S3	102.0	elongation
S4	87.0	elongation
S5	92.0	elongation
Average	96.8	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	106.0	
Minimum	87.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	93.0	FTB
P1B	99.0	FTB
P2A	81.0	FTB
P2B	90.0	FTB
P3A	91.0	FTB
P3B	92.0	FTB
P4A	90.0	FTB
P4B	84.0	FTB
P5A	86.0	FTB
P5B	82.0	FTB
Average	88.8	*FTB - Film Tear Bond
Standard Deviation	5.3	
Maximum	99.0	
Minimum	81.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 16
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	113.0	elongation
S2	115.0	elongation
S3	100.0	elongation
S4	101.0	elongation
S5	107.0	elongation
Average	107.2	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	115.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	102.0	FTB
P1B	104.0	FTB
P2A	95.0	FTB
P2B	91.0	FTB
P3A	97.0	FTB
P3B	99.0	FTB
P4A	101.0	FTB
P4B	96.0	FTB
P5A	99.0	FTB
P5B	106.0	FTB
Average	99.0	*FTB - Film Tear Bond
Standard Deviation	4.2	
Maximum	106.0	
Minimum	91.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 17
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	107.0	elongation
S2	92.0	elongation
S3	106.0	elongation
S4	105.0	elongation
S5	103.0	elongation
Average	102.6	*FTB - Film Tear Bond
Standard Deviation	5.5	
Maximum	107.0	
Minimum	92.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	71.0	FTB
P1B	92.0	FTB
P2A	72.0	FTB
P2B	87.0	FTB
P3A	79.0	FTB
P3B	94.0	FTB
P4A	71.0	FTB
P4B	88.0	FTB
P5A	91.0	FTB
P5B	86.0	FTB
Average	83.1	*FTB - Film Tear Bond
Standard Deviation	8.6	
Maximum	94.0	
Minimum	71.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 18
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	101.0	elongation
S3	103.0	elongation
S4	106.0	elongation
S5	105.0	elongation
Average	107.2	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	121.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	105.0	FTB
P1B	99.0	FTB
P2A	88.0	FTB
P2B	95.0	FTB
P3A	107.0	FTB
P3B	103.0	FTB
P4A	94.0	FTB
P4B	95.0	FTB
P5A	97.0	FTB
P5B	91.0	FTB
Average	97.4	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	107.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 19
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	133.0	elongation
S2	129.0	elongation
S3	106.0	elongation
S4	111.0	elongation
S5	104.0	elongation
Average	116.6	*FTB - Film Tear Bond
Standard Deviation	12.0	
Maximum	133.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	124.0	FTB
P1B	102.0	FTB
P2A	105.0	FTB
P2B	86.0	FTB
P3A	116.0	FTB
P3B	100.0	FTB
P4A	99.0	FTB
P4B	102.0	FTB
P5A	100.0	FTB
P5B	111.0	FTB
Average	104.5	*FTB - Film Tear Bond
Standard Deviation	9.9	
Maximum	124.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 20
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	129.0	elongation
S2	112.0	elongation
S3	106.0	elongation
S4	103.0	elongation
S5	110.0	elongation
Average	112.0	*FTB - Film Tear Bond
Standard Deviation	9.1	
Maximum	129.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	105.0	FTB
P2A	91.0	FTB
P2B	98.0	FTB
P3A	108.0	FTB
P3B	107.0	FTB
P4A	94.0	FTB
P4B	89.0	FTB
P5A	110.0	FTB
P5B	106.0	FTB
Average	102.0	*FTB - Film Tear Bond
Standard Deviation	7.9	
Maximum	112.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 21
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	134.0	elongation
S2	109.0	elongation
S3	117.0	elongation
S4	109.0	elongation
S5	115.0	elongation
Average	116.8	*FTB - Film Tear Bond
Standard Deviation	9.2	
Maximum	134.0	
Minimum	109.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	107.0	FTB
P1B	109.0	FTB
P2A	96.0	FTB
P2B	101.0	FTB
P3A	102.0	FTB
P3B	94.0	FTB
P4A	96.0	FTB
P4B	102.0	FTB
P5A	108.0	FTB
P5B	117.0	FTB
Average	103.2	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	117.0	
Minimum	94.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 22
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	112.0	elongation
S2	103.0	elongation
S3	120.0	elongation
S4	110.0	elongation
S5	105.0	elongation
Average	110.0	*FTB - Film Tear Bond
Standard Deviation	6.0	
Maximum	120.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	107.0	FTB
P1B	100.0	FTB
P2A	101.0	FTB
P2B	92.0	FTB
P3A	113.0	FTB
P3B	106.0	FTB
P4A	94.0	FTB
P4B	82.0	FTB
P5A	112.0	FTB
P5B	99.0	FTB
Average	100.6	*FTB - Film Tear Bond
Standard Deviation	9.1	
Maximum	113.0	
Minimum	82.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 23
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	116.0	elongation
S2	92.0	elongation
S3	101.0	elongation
S4	112.0	elongation
S5	109.0	elongation
Average	106.0	*FTB - Film Tear Bond
Standard Deviation	8.6	
Maximum	116.0	
Minimum	92.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	86.0	FTB
P1B	86.0	FTB
P2A	91.0	FTB
P2B	78.0	FTB
P3A	111.0	FTB
P3B	88.0	FTB
P4A	79.0	FTB
P4B	84.0	FTB
P5A	83.0	FTB
P5B	87.0	FTB
Average	87.3	*FTB - Film Tear Bond
Standard Deviation	8.7	
Maximum	111.0	
Minimum	78.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 24
Tested by: James Addis
Date Tested: 06/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	114.0	elongation
S2	108.0	elongation
S3	103.0	elongation
S4	111.0	elongation
S5	119.0	elongation
Average	111.0	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	119.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	94.0	FTB
P1B	95.0	FTB
P2A	86.0	FTB
P2B	84.0	FTB
P3A	95.0	FTB
P3B	101.0	FTB
P4A	90.0	FTB
P4B	92.0	FTB
P5A	100.0	FTB
P5B	94.0	FTB
Average	93.1	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	101.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 25
Tested by: James Addis
Date Tested: 06/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	126.0	elongation
S2	106.0	elongation
S3	122.0	elongation
S4	104.0	elongation
S5	101.0	elongation
Average	111.8	*FTB - Film Tear Bond
Standard Deviation	10.2	
Maximum	126.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	117.0	FTB
P1B	113.0	FTB
P2A	103.0	FTB
P2B	99.0	FTB
P3A	117.0	FTB
P3B	111.0	FTB
P4A	105.0	FTB
P4B	102.0	FTB
P5A	102.0	FTB
P5B	94.0	FTB
Average	106.3	*FTB - Film Tear Bond
Standard Deviation	7.4	
Maximum	117.0	
Minimum	94.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 26
Tested by: James Addis
Date Tested: 06/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	107.0	elongation
S3	112.0	elongation
S4	104.0	elongation
S5	100.0	elongation
Average	108.4	*FTB - Film Tear Bond
Standard Deviation	6.6	
Maximum	119.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	115.0	FTB
P1B	99.0	FTB
P2A	90.0	FTB
P2B	90.0	FTB
P3A	95.0	FTB
P3B	95.0	FTB
P4A	87.0	FTB
P4B	89.0	FTB
P5A	91.0	FTB
P5B	101.0	FTB
Average	95.2	*FTB - Film Tear Bond
Standard Deviation	7.9	
Maximum	115.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 27
Tested by: James Addis
Date Tested: 06/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	104.0	elongation
S3	107.0	elongation
S4	112.0	elongation
S5	102.0	elongation
Average	109.2	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	121.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	99.0	FTB
P1B	101.0	FTB
P2A	91.0	FTB
P2B	94.0	FTB
P3A	97.0	FTB
P3B	103.0	FTB
P4A	88.0	FTB
P4B	92.0	FTB
P5A	90.0	FTB
P5B	92.0	FTB
Average	94.7	*FTB - Film Tear Bond
Standard Deviation	4.8	
Maximum	103.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 28
Tested by: James Addis
Date Tested: 06/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	107.0	elongation
S3	104.0	elongation
S4	108.0	elongation
S5	115.0	elongation
Average	110.6	*FTB - Film Tear Bond
Standard Deviation	5.5	
Maximum	119.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	102.0	FTB
P1B	99.0	FTB
P2A	91.0	FTB
P2B	90.0	FTB
P3A	95.0	FTB
P3B	107.0	FTB
P4A	95.0	FTB
P4B	94.0	FTB
P5A	100.0	FTB
P5B	96.0	FTB
Average	96.9	*FTB - Film Tear Bond
Standard Deviation	4.9	
Maximum	107.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 29
Tested by: Cedric Ruhl
Date Tested: 06/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	105.0	elongation
S2	95.0	elongation
S3	103.0	elongation
S4	96.0	elongation
S5	96.0	elongation
Average	99.0	*FTB - Film Tear Bond
Standard Deviation	4.1	
Maximum	105.0	
Minimum	95.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	93.0	FTB
P1B	87.0	FTB
P2A	78.0	FTB
P2B	86.0	FTB
P3A	97.0	FTB
P3B	89.0	FTB
P4A	91.0	FTB
P4B	84.0	FTB
P5A	85.0	FTB
P5B	89.0	FTB
Average	87.9	*FTB - Film Tear Bond
Standard Deviation	5.0	
Maximum	97.0	
Minimum	78.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 30
Tested by: Cedric Ruhl
Date Tested: 06/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	109.0	elongation
S2	97.0	elongation
S3	99.0	elongation
S4	95.0	elongation
S5	95.0	elongation
Average	99.0	*FTB - Film Tear Bond
Standard Deviation	5.2	
Maximum	109.0	
Minimum	95.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	97.0	FTB
P1B	99.0	FTB
P2A	94.0	FTB
P2B	91.0	FTB
P3A	101.0	FTB
P3B	100.0	FTB
P4A	90.0	FTB
P4B	89.0	FTB
P5A	89.0	FTB
P5B	89.0	FTB
Average	93.9	*FTB - Film Tear Bond
Standard Deviation	4.7	
Maximum	101.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 31
Tested by: Cedric Ruhl
Date Tested: 06/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	108.0	elongation
S2	95.0	elongation
S3	109.0	elongation
S4	94.0	elongation
S5	104.0	elongation
Average	102.0	*FTB - Film Tear Bond
Standard Deviation	6.4	
Maximum	109.0	
Minimum	94.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	75.0	FTB
P1B	92.0	FTB
P2A	87.0	FTB
P2B	78.0	FTB
P3A	91.0	FTB
P3B	91.0	FTB
P4A	84.0	FTB
P4B	90.0	FTB
P5A	80.0	FTB
P5B	77.0	FTB
Average	84.5	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	92.0	
Minimum	75.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 32
Tested by: Cedric Ruhl
Date Tested: 06/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	107.0	elongation
S2	96.0	elongation
S3	106.0	elongation
S4	97.0	elongation
S5	104.0	elongation
Average	102.0	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	107.0	
Minimum	96.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	98.0	FTB
P2A	87.0	FTB
P2B	91.0	FTB
P3A	102.0	FTB
P3B	93.0	FTB
P4A	92.0	FTB
P4B	87.0	FTB
P5A	92.0	FTB
P5B	81.0	FTB
Average	92.3	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	102.0	
Minimum	81.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 33
Tested by: Cedric Ruhl
Date Tested: 06/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	108.0	elongation
S2	95.0	elongation
S3	103.0	elongation
S4	92.0	elongation
S5	93.0	elongation
Average	98.2	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	108.0	
Minimum	92.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	99.0	FTB
P1B	95.0	FTB
P2A	88.0	FTB
P2B	88.0	FTB
P3A	101.0	FTB
P3B	100.0	FTB
P4A	90.0	FTB
P4B	79.0	FTB
P5A	90.0	FTB
P5B	85.0	FTB
Average	91.5	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	101.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 34
Tested by: Cedric Ruhl
Date Tested: 06/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	105.0	elongation
S2	93.0	elongation
S3	104.0	elongation
S4	94.0	elongation
S5	96.0	elongation
Average	98.4	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	105.0	
Minimum	93.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	110.0	FTB
P1B	99.0	FTB
P2A	93.0	FTB
P2B	94.0	FTB
P3A	101.0	FTB
P3B	107.0	FTB
P4A	73.0	FTB
P4B	89.0	FTB
P5A	93.0	FTB
P5B	92.0	FTB
Average	95.1	*FTB - Film Tear Bond
Standard Deviation	9.8	
Maximum	110.0	
Minimum	73.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 35
Tested by: Cedric Ruhl
Date Tested: 06/27/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	103.0	elongation
S2	93.0	elongation
S3	102.0	elongation
S4	95.0	elongation
S5	92.0	elongation
Average	97.0	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	103.0	
Minimum	92.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	104.0	FTB
P1B	99.0	FTB
P2A	88.0	FTB
P2B	91.0	FTB
P3A	99.0	FTB
P3B	105.0	FTB
P4A	92.0	FTB
P4B	93.0	FTB
P5A	90.0	FTB
P5B	90.0	FTB
Average	95.1	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	105.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 36
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	112.0	elongation
S2	107.0	elongation
S3	111.0	elongation
S4	102.0	elongation
S5	105.0	elongation
Average	107.4	*FTB - Film Tear Bond
Standard Deviation	3.7	
Maximum	112.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	106.0	FTB
P1B	93.0	FTB
P2A	94.0	FTB
P2B	86.0	FTB
P3A	109.0	FTB
P3B	97.0	FTB
P4A	101.0	FTB
P4B	84.0	FTB
P5A	91.0	FTB
P5B	85.0	FTB
Average	94.6	*FTB - Film Tear Bond
Standard Deviation	8.2	
Maximum	109.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 37
Tested by: Cedric Ruhl
Date Tested: 06/27/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	103.0	elongation
S2	94.0	elongation
S3	105.0	elongation
S4	96.0	elongation
S5	96.0	elongation
Average	98.8	*FTB - Film Tear Bond
Standard Deviation	4.4	
Maximum	105.0	
Minimum	94.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	101.0	FTB
P1B	99.0	FTB
P2A	90.0	FTB
P2B	89.0	FTB
P3A	100.0	FTB
P3B	103.0	FTB
P4A	83.0	FTB
P4B	93.0	FTB
P5A	92.0	FTB
P5B	89.0	FTB
Average	93.9	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	103.0	
Minimum	83.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 38
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	124.0	elongation
S2	103.0	elongation
S3	107.0	elongation
S4	100.0	elongation
S5	109.0	elongation
Average	108.6	*FTB - Film Tear Bond
Standard Deviation	8.3	
Maximum	124.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	110.0	FTB
P1B	112.0	FTB
P2A	95.0	FTB
P2B	97.0	FTB
P3A	105.0	FTB
P3B	103.0	FTB
P4A	101.0	FTB
P4B	94.0	FTB
P5A	109.0	FTB
P5B	109.0	FTB
Average	103.5	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	112.0	
Minimum	94.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 39
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	99.0	elongation
S2	94.0	elongation
S3	98.0	elongation
S4	101.0	elongation
S5	99.0	elongation
Average	98.2	*FTB - Film Tear Bond
Standard Deviation	2.3	
Maximum	101.0	
Minimum	94.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	99.0	FTB
P2A	91.0	FTB
P2B	86.0	FTB
P3A	101.0	FTB
P3B	98.0	FTB
P4A	90.0	FTB
P4B	87.0	FTB
P5A	89.0	FTB
P5B	88.0	FTB
Average	92.9	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	101.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 40
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	114.0	elongation
S2	104.0	elongation
S3	115.0	elongation
S4	106.0	elongation
S5	102.0	elongation
Average	108.2	*FTB - Film Tear Bond
Standard Deviation	5.3	
Maximum	115.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	92.0	FTB
P1B	111.0	FTB
P2A	89.0	FTB
P2B	97.0	FTB
P3A	92.0	FTB
P3B	113.0	FTB
P4A	85.0	FTB
P4B	100.0	FTB
P5A	81.0	FTB
P5B	98.0	FTB
Average	95.8	*FTB - Film Tear Bond
Standard Deviation	9.8	
Maximum	113.0	
Minimum	81.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 41
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	105.0	elongation
S3	103.0	elongation
S4	100.0	elongation
S5	106.0	elongation
Average	106.6	*FTB - Film Tear Bond
Standard Deviation	6.5	
Maximum	119.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	91.0	FTB
P1B	112.0	FTB
P2A	82.0	FTB
P2B	99.0	FTB
P3A	94.0	FTB
P3B	111.0	FTB
P4A	85.0	FTB
P4B	97.0	FTB
P5A	84.0	FTB
P5B	96.0	FTB
Average	95.1	*FTB - Film Tear Bond
Standard Deviation	9.9	
Maximum	112.0	
Minimum	82.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 42
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	118.0	elongation
S2	109.0	elongation
S3	104.0	elongation
S4	106.0	elongation
S5	110.0	elongation
Average	109.4	*FTB - Film Tear Bond
Standard Deviation	4.8	
Maximum	118.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	111.0	FTB
P1B	94.0	FTB
P2A	103.0	FTB
P2B	89.0	FTB
P3A	96.0	FTB
P3B	87.0	FTB
P4A	91.0	FTB
P4B	88.0	FTB
P5A	95.0	FTB
P5B	90.0	FTB
Average	94.4	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	111.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 43
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	115.0	elongation
S2	111.0	elongation
S3	107.0	elongation
S4	110.0	elongation
S5	105.0	elongation
Average	109.6	*FTB - Film Tear Bond
Standard Deviation	3.4	
Maximum	115.0	
Minimum	105.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	96.0	FTB
P1B	110.0	FTB
P2A	88.0	FTB
P2B	87.0	FTB
P3A	100.0	FTB
P3B	111.0	FTB
P4A	85.0	FTB
P4B	98.0	FTB
P5A	90.0	FTB
P5B	98.0	FTB
Average	96.3	*FTB - Film Tear Bond
Standard Deviation	8.6	
Maximum	111.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 44
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	118.0	elongation
S2	112.0	elongation
S3	108.0	elongation
S4	111.0	elongation
S5	107.0	elongation
Average	111.2	*FTB - Film Tear Bond
Standard Deviation	3.9	
Maximum	118.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	115.0	FTB
P1B	103.0	FTB
P2A	99.0	FTB
P2B	92.0	FTB
P3A	117.0	FTB
P3B	103.0	FTB
P4A	104.0	FTB
P4B	95.0	FTB
P5A	103.0	FTB
P5B	100.0	FTB
Average	103.1	*FTB - Film Tear Bond
Standard Deviation	7.4	
Maximum	117.0	
Minimum	92.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 45
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	107.0	elongation
S3	113.0	elongation
S4	106.0	elongation
S5	111.0	elongation
Average	111.6	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	121.0	
Minimum	106.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	110.0	FTB
P1B	98.0	FTB
P2A	103.0	FTB
P2B	93.0	FTB
P3A	96.0	FTB
P3B	92.0	FTB
P4A	111.0	FTB
P4B	100.0	FTB
P5A	101.0	FTB
P5B	90.0	FTB
Average	99.4	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	111.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 46
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	118.0	elongation
S2	104.0	elongation
S3	112.0	elongation
S4	108.0	elongation
S5	104.0	elongation
Average	109.2	*FTB - Film Tear Bond
Standard Deviation	5.3	
Maximum	118.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	96.0	FTB
P1B	112.0	FTB
P2A	86.0	FTB
P2B	98.0	FTB
P3A	92.0	FTB
P3B	97.0	FTB
P4A	93.0	FTB
P4B	109.0	FTB
P5A	87.0	FTB
P5B	96.0	FTB
Average	96.6	*FTB - Film Tear Bond
Standard Deviation	8.0	
Maximum	112.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 47
Tested by: James Addis
Date Tested: 06/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	116.0	elongation
S2	103.0	elongation
S3	113.0	elongation
S4	111.0	elongation
S5	115.0	elongation
Average	111.6	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	116.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	108.0	FTB
P2A	99.0	FTB
P2B	90.0	FTB
P3A	112.0	FTB
P3B	105.0	FTB
P4A	96.0	FTB
P4B	98.0	FTB
P5A	107.0	FTB
P5B	96.0	FTB
Average	102.3	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	112.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 48
Tested by: James Addis
Date Tested: 06/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	117.0	elongation
S2	107.0	elongation
S3	115.0	elongation
S4	103.0	elongation
S5	114.0	elongation
Average	111.2	*FTB - Film Tear Bond
Standard Deviation	5.3	
Maximum	117.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	97.0	FTB
P2A	89.0	FTB
P2B	91.0	FTB
P3A	94.0	FTB
P3B	106.0	FTB
P4A	90.0	FTB
P4B	96.0	FTB
P5A	96.0	FTB
P5B	108.0	FTB
Average	96.7	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	108.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 49
Tested by: James Addis
Date Tested: 06/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	113.0	elongation
S2	107.0	elongation
S3	110.0	elongation
S4	103.0	elongation
S5	111.0	elongation
Average	108.8	*FTB - Film Tear Bond
Standard Deviation	3.5	
Maximum	113.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	101.0	FTB
P1B	97.0	FTB
P2A	101.0	FTB
P2B	89.0	FTB
P3A	101.0	FTB
P3B	94.0	FTB
P4A	93.0	FTB
P4B	89.0	FTB
P5A	111.0	FTB
P5B	102.0	FTB
Average	97.8	*FTB - Film Tear Bond
Standard Deviation	6.4	
Maximum	111.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 50
Tested by: James Addis
Date Tested: 06/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	113.0	elongation
S2	109.0	elongation
S3	112.0	elongation
S4	104.0	elongation
S5	108.0	elongation
Average	109.2	*FTB - Film Tear Bond
Standard Deviation	3.2	
Maximum	113.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	103.0	FTB
P1B	104.0	FTB
P2A	93.0	FTB
P2B	92.0	FTB
P3A	101.0	FTB
P3B	99.0	FTB
P4A	102.0	FTB
P4B	105.0	FTB
P5A	90.0	FTB
P5B	89.0	FTB
Average	97.8	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	105.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 51
Tested by: James Addis
Date Tested: 06/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	123.0	elongation
S2	117.0	elongation
S3	109.0	elongation
S4	115.0	elongation
S5	117.0	elongation
Average	116.2	*FTB - Film Tear Bond
Standard Deviation	4.5	
Maximum	123.0	
Minimum	109.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	103.0	FTB
P1B	107.0	FTB
P2A	97.0	FTB
P2B	99.0	FTB
P3A	105.0	FTB
P3B	108.0	FTB
P4A	96.0	FTB
P4B	97.0	FTB
P5A	99.0	FTB
P5B	109.0	FTB
Average	102.0	*FTB - Film Tear Bond
Standard Deviation	4.7	
Maximum	109.0	
Minimum	96.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 52
Tested by: James Addis
Date Tested: 06/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	124.0	elongation
S2	111.0	elongation
S3	113.0	elongation
S4	108.0	elongation
S5	111.0	elongation
Average	113.4	*FTB - Film Tear Bond
Standard Deviation	5.5	
Maximum	124.0	
Minimum	108.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	106.0	FTB
P1B	100.0	FTB
P2A	82.0	FTB
P2B	89.0	FTB
P3A	104.0	FTB
P3B	101.0	FTB
P4A	108.0	FTB
P4B	104.0	FTB
P5A	91.0	FTB
P5B	93.0	FTB
Average	97.8	*FTB - Film Tear Bond
Standard Deviation	8.1	
Maximum	108.0	
Minimum	82.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 53
Tested by: James Addis
Date Tested: 06/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	116.0	elongation
S2	110.0	elongation
S3	117.0	elongation
S4	100.0	elongation
S5	100.0	elongation
Average	108.6	*FTB - Film Tear Bond
Standard Deviation	7.4	
Maximum	117.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	110.0	FTB
P1B	92.0	FTB
P2A	95.0	FTB
P2B	89.0	FTB
P3A	96.0	FTB
P3B	92.0	FTB
P4A	91.0	FTB
P4B	94.0	FTB
P5A	95.0	FTB
P5B	85.0	FTB
Average	93.9	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	110.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 54
Tested by: James Addis
Date Tested: 06/30/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	113.0	elongation
S2	103.0	elongation
S3	108.0	elongation
S4	110.0	elongation
S5	117.0	elongation
Average	110.2	*FTB - Film Tear Bond
Standard Deviation	4.7	
Maximum	117.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	98.0	FTB
P1B	107.0	FTB
P2A	89.0	FTB
P2B	100.0	FTB
P3A	98.0	FTB
P3B	111.0	FTB
P4A	89.0	FTB
P4B	99.0	FTB
P5A	89.0	FTB
P5B	89.0	FTB
Average	96.9	*FTB - Film Tear Bond
Standard Deviation	7.5	
Maximum	111.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 55
Tested by: James Addis
Date Tested: 06/30/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	112.0	elongation
S2	104.0	elongation
S3	106.0	elongation
S4	113.0	elongation
S5	93.0	elongation
Average	105.6	*FTB - Film Tear Bond
Standard Deviation	7.2	
Maximum	113.0	
Minimum	93.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	107.0	FTB
P1B	97.0	FTB
P2A	96.0	FTB
P2B	88.0	FTB
P3A	108.0	FTB
P3B	103.0	FTB
P4A	100.0	FTB
P4B	87.0	FTB
P5A	93.0	FTB
P5B	90.0	FTB
Average	96.9	*FTB - Film Tear Bond
Standard Deviation	7.2	
Maximum	108.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 56
Tested by: James Addis
Date Tested: 06/30/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	118.0	elongation
S2	107.0	elongation
S3	112.0	elongation
S4	106.0	elongation
S5	113.0	elongation
Average	111.2	*FTB - Film Tear Bond
Standard Deviation	4.4	
Maximum	118.0	
Minimum	106.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	113.0	FTB
P1B	107.0	FTB
P2A	105.0	FTB
P2B	100.0	FTB
P3A	113.0	FTB
P3B	109.0	FTB
P4A	97.0	FTB
P4B	100.0	FTB
P5A	97.0	FTB
P5B	95.0	FTB
Average	103.6	*FTB - Film Tear Bond
Standard Deviation	6.4	
Maximum	113.0	
Minimum	95.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 57
Tested by: James Addis
Date Tested: 06/30/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	113.0	elongation
S2	102.0	elongation
S3	105.0	elongation
S4	110.0	elongation
S5	102.0	elongation
Average	106.4	*FTB - Film Tear Bond
Standard Deviation	4.4	
Maximum	113.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	94.0	FTB
P1B	92.0	FTB
P2A	94.0	FTB
P2B	87.0	FTB
P3A	105.0	FTB
P3B	95.0	FTB
P4A	94.0	FTB
P4B	84.0	FTB
P5A	91.0	FTB
P5B	86.0	FTB
Average	92.2	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	105.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 58
Tested by: James Addis
Date Tested: 06/30/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	98.0	elongation
S2	105.0	elongation
S3	102.0	elongation
S4	114.0	elongation
S5	103.0	elongation
Average	104.4	*FTB - Film Tear Bond
Standard Deviation	5.3	
Maximum	114.0	
Minimum	98.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	98.0	FTB
P1B	101.0	FTB
P2A	87.0	FTB
P2B	96.0	FTB
P3A	94.0	FTB
P3B	99.0	FTB
P4A	90.0	FTB
P4B	90.0	FTB
P5A	91.0	FTB
P5B	81.0	FTB
Average	92.7	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	101.0	
Minimum	81.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 59
Tested by: James Addis
Date Tested: 07/01/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	123.0	elongation
S2	117.0	elongation
S3	111.0	elongation
S4	104.0	elongation
S5	109.0	elongation
Average	112.8	*FTB - Film Tear Bond
Standard Deviation	6.6	
Maximum	123.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	109.0	FTB
P1B	106.0	FTB
P2A	96.0	FTB
P2B	76.0	FTB
P3A	104.0	FTB
P3B	100.0	FTB
P4A	92.0	FTB
P4B	92.0	FTB
P5A	99.0	FTB
P5B	97.0	FTB
Average	97.1	*FTB - Film Tear Bond
Standard Deviation	8.8	
Maximum	109.0	
Minimum	76.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 60
Tested by: James Addis
Date Tested: 07/01/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	115.0	elongation
S2	100.0	elongation
S3	105.0	elongation
S4	107.0	elongation
S5	101.0	elongation
Average	105.6	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	115.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	114.0	FTB
P1B	98.0	FTB
P2A	95.0	FTB
P2B	90.0	FTB
P3A	110.0	FTB
P3B	95.0	FTB
P4A	100.0	FTB
P4B	89.0	FTB
P5A	94.0	FTB
P5B	91.0	FTB
Average	97.6	*FTB - Film Tear Bond
Standard Deviation	7.9	
Maximum	114.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 61
Tested by: James Addis
Date Tested: 07/01/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	103.0	elongation
S2	105.0	elongation
S3	107.0	elongation
S4	111.0	elongation
S5	100.0	elongation
Average	105.2	*FTB - Film Tear Bond
Standard Deviation	3.7	
Maximum	111.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	99.0	FTB
P1B	97.0	FTB
P2A	91.0	FTB
P2B	91.0	FTB
P3A	96.0	FTB
P3B	85.0	FTB
P4A	87.0	FTB
P4B	84.0	FTB
P5A	109.0	FTB
P5B	93.0	FTB
Average	93.2	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	109.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 62
Tested by: James Addis
Date Tested: 07/01/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	115.0	elongation
S2	83.0	elongation
S3	118.0	elongation
S4	102.0	elongation
S5	106.0	elongation
Average	104.8	*FTB - Film Tear Bond
Standard Deviation	12.4	
Maximum	118.0	
Minimum	83.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	113.0	FTB
P1B	101.0	FTB
P2A	102.0	FTB
P2B	93.0	FTB
P3A	110.0	FTB
P3B	103.0	FTB
P4A	99.0	FTB
P4B	88.0	FTB
P5A	95.0	FTB
P5B	86.0	FTB
Average	99.0	*FTB - Film Tear Bond
Standard Deviation	8.3	
Maximum	113.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 63
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	125.0	elongation
S2	112.0	elongation
S3	116.0	elongation
S4	111.0	elongation
S5	117.0	elongation
Average	116.2	*FTB - Film Tear Bond
Standard Deviation	5.0	
Maximum	125.0	
Minimum	111.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	98.0	FTB
P1B	107.0	FTB
P2A	85.0	FTB
P2B	95.0	FTB
P3A	102.0	FTB
P3B	108.0	FTB
P4A	89.0	FTB
P4B	100.0	FTB
P5A	54.0	FTB
P5B	99.0	FTB
Average	93.7	*FTB - Film Tear Bond
Standard Deviation	14.9	
Maximum	108.0	
Minimum	54.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 64
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	117.0	elongation
S2	107.0	elongation
S3	113.0	elongation
S4	115.0	elongation
S5	120.0	elongation
Average	114.4	*FTB - Film Tear Bond
Standard Deviation	4.4	
Maximum	120.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	104.0	FTB
P1B	116.0	FTB
P2A	97.0	FTB
P2B	98.0	FTB
P3A	101.0	FTB
P3B	113.0	FTB
P4A	95.0	FTB
P4B	103.0	FTB
P5A	97.0	FTB
P5B	99.0	FTB
Average	102.3	*FTB - Film Tear Bond
Standard Deviation	6.7	
Maximum	116.0	
Minimum	95.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 65
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	117.0	elongation
S2	113.0	elongation
S3	109.0	elongation
S4	121.0	elongation
S5	118.0	elongation
Average	115.6	*FTB - Film Tear Bond
Standard Deviation	4.2	
Maximum	121.0	
Minimum	109.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	104.0	FTB
P1B	100.0	FTB
P2A	108.0	FTB
P2B	96.0	FTB
P3A	102.0	FTB
P3B	91.0	FTB
P4A	109.0	FTB
P4B	104.0	FTB
P5A	99.0	FTB
P5B	93.0	FTB
Average	100.6	*FTB - Film Tear Bond
Standard Deviation	5.7	
Maximum	109.0	
Minimum	91.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 66
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	106.0	elongation
S2	116.0	elongation
S3	121.0	elongation
S4	109.0	elongation
S5	116.0	elongation
Average	113.6	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	121.0	
Minimum	106.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	111.0	FTB
P1B	99.0	FTB
P2A	99.0	FTB
P2B	90.0	FTB
P3A	100.0	FTB
P3B	104.0	FTB
P4A	112.0	FTB
P4B	100.0	FTB
P5A	109.0	FTB
P5B	79.0	FTB
Average	100.3	*FTB - Film Tear Bond
Standard Deviation	9.5	
Maximum	112.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 67
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	109.0	elongation
S2	103.0	elongation
S3	113.0	elongation
S4	117.0	elongation
S5	105.0	elongation
Average	109.4	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	117.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	95.0	FTB
P2A	105.0	FTB
P2B	99.0	FTB
P3A	93.0	FTB
P3B	97.0	FTB
P4A	94.0	FTB
P4B	89.0	FTB
P5A	95.0	FTB
P5B	83.0	FTB
Average	96.2	*FTB - Film Tear Bond
Standard Deviation	7.6	
Maximum	112.0	
Minimum	83.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 68
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	111.0	elongation
S2	98.0	elongation
S3	110.0	elongation
S4	99.0	elongation
S5	101.0	elongation
Average	103.8	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	111.0	
Minimum	98.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	103.0	FTB
P2A	95.0	FTB
P2B	91.0	FTB
P3A	89.0	FTB
P3B	84.0	FTB
P4A	95.0	FTB
P4B	91.0	FTB
P5A	100.0	FTB
P5B	97.0	FTB
Average	95.7	*FTB - Film Tear Bond
Standard Deviation	7.5	
Maximum	112.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 69
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	116.0	elongation
S2	106.0	elongation
S3	119.0	elongation
S4	123.0	elongation
S5	117.0	elongation
Average	116.2	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	123.0	
Minimum	106.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	110.0	FTB
P1B	105.0	FTB
P2A	92.0	FTB
P2B	94.0	FTB
P3A	108.0	FTB
P3B	105.0	FTB
P4A	73.0	FTB
P4B	94.0	FTB
P5A	98.0	FTB
P5B	89.0	FTB
Average	96.8	*FTB - Film Tear Bond
Standard Deviation	10.5	
Maximum	110.0	
Minimum	73.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 70
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	118.0	elongation
S2	114.0	elongation
S3	109.0	elongation
S4	119.0	elongation
S5	120.0	elongation
Average	116.0	*FTB - Film Tear Bond
Standard Deviation	4.0	
Maximum	120.0	
Minimum	109.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	97.0	FTB
P1B	102.0	FTB
P2A	85.0	FTB
P2B	95.0	FTB
P3A	103.0	FTB
P3B	100.0	FTB
P4A	99.0	FTB
P4B	95.0	FTB
P5A	89.0	FTB
P5B	93.0	FTB
Average	95.8	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	103.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 71
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	104.0	elongation
S3	115.0	elongation
S4	103.0	elongation
S5	117.0	elongation
Average	111.6	*FTB - Film Tear Bond
Standard Deviation	6.7	
Maximum	119.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	101.0	FTB
P1B	101.0	FTB
P2A	97.0	FTB
P2B	85.0	FTB
P3A	96.0	FTB
P3B	91.0	FTB
P4A	100.0	FTB
P4B	96.0	FTB
P5A	102.0	FTB
P5B	85.0	FTB
Average	95.4	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	102.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 72
Tested by: James Addis
Date Tested: 07/07/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	108.0	elongation
S3	119.0	elongation
S4	103.0	elongation
S5	104.0	elongation
Average	110.6	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	119.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	106.0	FTB
P2A	97.0	FTB
P2B	90.0	FTB
P3A	98.0	FTB
P3B	109.0	FTB
P4A	98.0	FTB
P4B	94.0	FTB
P5A	93.0	FTB
P5B	93.0	FTB
Average	97.8	*FTB - Film Tear Bond
Standard Deviation	5.7	
Maximum	109.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 73
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	101.0	elongation
S3	107.0	elongation
S4	103.0	elongation
S5	110.0	elongation
Average	108.4	*FTB - Film Tear Bond
Standard Deviation	7.0	
Maximum	121.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	106.0	FTB
P1B	109.0	FTB
P2A	101.0	FTB
P2B	96.0	FTB
P3A	109.0	FTB
P3B	96.0	FTB
P4A	102.0	FTB
P4B	93.0	FTB
P5A	103.0	FTB
P5B	88.0	FTB
Average	100.3	*FTB - Film Tear Bond
Standard Deviation	6.6	
Maximum	109.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 74
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	114.0	elongation
S2	102.0	elongation
S3	109.0	elongation
S4	103.0	elongation
S5	105.0	elongation
Average	106.6	*FTB - Film Tear Bond
Standard Deviation	4.4	
Maximum	114.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	106.0	FTB
P1B	90.0	FTB
P2A	81.0	FTB
P2B	73.0	FTB
P3A	93.0	FTB
P3B	96.0	FTB
P4A	94.0	FTB
P4B	89.0	FTB
P5A	99.0	FTB
P5B	86.0	FTB
Average	90.7	*FTB - Film Tear Bond
Standard Deviation	8.8	
Maximum	106.0	
Minimum	73.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 75
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	114.0	elongation
S2	102.0	elongation
S3	106.0	elongation
S4	104.0	elongation
S5	107.0	elongation
Average	106.6	*FTB - Film Tear Bond
Standard Deviation	4.1	
Maximum	114.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	103.0	FTB
P1B	102.0	FTB
P2A	97.0	FTB
P2B	91.0	FTB
P3A	107.0	FTB
P3B	96.0	FTB
P4A	105.0	FTB
P4B	84.0	FTB
P5A	105.0	FTB
P5B	86.0	FTB
Average	97.6	*FTB - Film Tear Bond
Standard Deviation	7.8	
Maximum	107.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 76
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	98.0	elongation
S2	100.0	elongation
S3	112.0	elongation
S4	102.0	elongation
S5	104.0	elongation
Average	103.2	*FTB - Film Tear Bond
Standard Deviation	4.8	
Maximum	112.0	
Minimum	98.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	99.0	FTB
P1B	103.0	FTB
P2A	97.0	FTB
P2B	96.0	FTB
P3A	100.0	FTB
P3B	105.0	FTB
P4A	100.0	FTB
P4B	103.0	FTB
P5A	98.0	FTB
P5B	96.0	FTB
Average	99.7	*FTB - Film Tear Bond
Standard Deviation	3.0	
Maximum	105.0	
Minimum	96.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 77
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	123.0	elongation
S2	105.0	elongation
S3	118.0	elongation
S4	107.0	elongation
S5	111.0	elongation
Average	112.8	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	123.0	
Minimum	105.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	92.0	FTB
P1B	107.0	FTB
P2A	93.0	FTB
P2B	92.0	FTB
P3A	115.0	FTB
P3B	105.0	FTB
P4A	98.0	FTB
P4B	91.0	FTB
P5A	100.0	FTB
P5B	95.0	FTB
Average	98.8	*FTB - Film Tear Bond
Standard Deviation	7.6	
Maximum	115.0	
Minimum	91.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 78
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	104.0	elongation
S2	109.0	elongation
S3	113.0	elongation
S4	101.0	elongation
S5	109.0	elongation
Average	107.2	*FTB - Film Tear Bond
Standard Deviation	4.2	
Maximum	113.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	92.0	FTB
P1B	103.0	FTB
P2A	90.0	FTB
P2B	95.0	FTB
P3A	99.0	FTB
P3B	107.0	FTB
P4A	92.0	FTB
P4B	93.0	FTB
P5A	94.0	FTB
P5B	98.0	FTB
Average	96.3	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	107.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 79
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	103.0	elongation
S3	122.0	elongation
S4	109.0	elongation
S5	106.0	elongation
Average	112.2	*FTB - Film Tear Bond
Standard Deviation	7.8	
Maximum	122.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	80.0	FTB
P2A	105.0	FTB
P2B	88.0	FTB
P3A	115.0	FTB
P3B	96.0	FTB
P4A	109.0	FTB
P4B	95.0	FTB
P5A	108.0	FTB
P5B	89.0	FTB
Average	99.7	*FTB - Film Tear Bond
Standard Deviation	11.2	
Maximum	115.0	
Minimum	80.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 80
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	120.0	elongation
S2	105.0	elongation
S3	110.0	elongation
S4	102.0	elongation
S5	106.0	elongation
Average	108.6	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	120.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	117.0	FTB
P1B	98.0	FTB
P2A	102.0	FTB
P2B	88.0	FTB
P3A	112.0	FTB
P3B	97.0	FTB
P4A	100.0	FTB
P4B	89.0	FTB
P5A	101.0	FTB
P5B	84.0	FTB
Average	98.8	*FTB - Film Tear Bond
Standard Deviation	9.8	
Maximum	117.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 81
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	114.0	elongation
S2	107.0	elongation
S3	117.0	elongation
S4	103.0	elongation
S5	104.0	elongation
Average	109.0	*FTB - Film Tear Bond
Standard Deviation	5.5	
Maximum	117.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	105.0	FTB
P2A	101.0	FTB
P2B	87.0	FTB
P3A	111.0	FTB
P3B	90.0	FTB
P4A	96.0	FTB
P4B	93.0	FTB
P5A	100.0	FTB
P5B	79.0	FTB
Average	97.4	*FTB - Film Tear Bond
Standard Deviation	10.0	
Maximum	112.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 82
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	123.0	elongation
S2	107.0	elongation
S3	113.0	elongation
S4	110.0	elongation
S5	107.0	elongation
Average	112.0	*FTB - Film Tear Bond
Standard Deviation	5.9	
Maximum	123.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	115.0	FTB
P1B	97.0	FTB
P2A	103.0	FTB
P2B	93.0	FTB
P3A	108.0	FTB
P3B	100.0	FTB
P4A	103.0	FTB
P4B	94.0	FTB
P5A	102.0	FTB
P5B	99.0	FTB
Average	101.4	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	115.0	
Minimum	93.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 83
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	102.0	elongation
S3	111.0	elongation
S4	101.0	elongation
S5	105.0	elongation
Average	107.6	*FTB - Film Tear Bond
Standard Deviation	6.7	
Maximum	119.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	107.0	FTB
P1B	95.0	FTB
P2A	98.0	FTB
P2B	93.0	FTB
P3A	95.0	FTB
P3B	97.0	FTB
P4A	92.0	FTB
P4B	89.0	FTB
P5A	95.0	FTB
P5B	92.0	FTB
Average	95.3	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	107.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 84
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	120.0	elongation
S2	110.0	elongation
S3	105.0	elongation
S4	113.0	elongation
S5	108.0	elongation
Average	111.2	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	120.0	
Minimum	105.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	108.0	FTB
P2A	93.0	FTB
P2B	85.0	FTB
P3A	112.0	FTB
P3B	93.0	FTB
P4A	102.0	FTB
P4B	93.0	FTB
P5A	93.0	FTB
P5B	96.0	FTB
Average	98.7	*FTB - Film Tear Bond
Standard Deviation	8.8	
Maximum	112.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 85
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	102.0	elongation
S2	113.0	elongation
S3	107.0	elongation
S4	101.0	elongation
S5	119.0	elongation
Average	108.4	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	119.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	107.0	FTB
P1B	101.0	FTB
P2A	105.0	FTB
P2B	100.0	FTB
P3A	102.0	FTB
P3B	88.0	FTB
P4A	114.0	FTB
P4B	102.0	FTB
P5A	98.0	FTB
P5B	90.0	FTB
Average	100.7	*FTB - Film Tear Bond
Standard Deviation	7.2	
Maximum	114.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 86
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	104.0	elongation
S2	118.0	elongation
S3	109.0	elongation
S4	102.0	elongation
S5	110.0	elongation
Average	108.6	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	118.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	114.0	FTB
P1B	109.0	FTB
P2A	93.0	FTB
P2B	92.0	FTB
P3A	108.0	FTB
P3B	106.0	FTB
P4A	100.0	FTB
P4B	92.0	FTB
P5A	103.0	FTB
P5B	100.0	FTB
Average	101.7	*FTB - Film Tear Bond
Standard Deviation	7.3	
Maximum	114.0	
Minimum	92.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 87
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	117.0	elongation
S2	95.0	elongation
S3	100.0	elongation
S4	107.0	elongation
S5	103.0	elongation
Average	104.4	*FTB - Film Tear Bond
Standard Deviation	7.4	
Maximum	117.0	
Minimum	95.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	99.0	FTB
P1B	105.0	FTB
P2A	97.0	FTB
P2B	90.0	FTB
P3A	95.0	FTB
P3B	100.0	FTB
P4A	104.0	FTB
P4B	109.0	FTB
P5A	92.0	FTB
P5B	94.0	FTB
Average	98.5	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	109.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 88
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	105.0	elongation
S2	104.0	elongation
S3	114.0	elongation
S4	116.0	elongation
S5	103.0	elongation
Average	108.4	*FTB - Film Tear Bond
Standard Deviation	5.5	
Maximum	116.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	113.0	FTB
P1B	103.0	FTB
P2A	97.0	FTB
P2B	98.0	FTB
P3A	110.0	FTB
P3B	99.0	FTB
P4A	104.0	FTB
P4B	97.0	FTB
P5A	92.0	FTB
P5B	87.0	FTB
Average	100.0	*FTB - Film Tear Bond
Standard Deviation	7.4	
Maximum	113.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 89
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	111.0	elongation
S2	97.0	elongation
S3	99.0	elongation
S4	104.0	elongation
S5	110.0	elongation
Average	104.2	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	111.0	
Minimum	97.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	108.0	FTB
P1B	97.0	FTB
P2A	100.0	FTB
P2B	81.0	FTB
P3A	111.0	FTB
P3B	98.0	FTB
P4A	96.0	FTB
P4B	91.0	FTB
P5A	97.0	FTB
P5B	94.0	FTB
Average	97.3	*FTB - Film Tear Bond
Standard Deviation	7.9	
Maximum	111.0	
Minimum	81.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 90
Tested by: James Addis
Date Tested: 07/08/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	118.0	elongation
S2	103.0	elongation
S3	114.0	elongation
S4	105.0	elongation
S5	108.0	elongation
Average	109.6	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	118.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	108.0	FTB
P1B	98.0	FTB
P2A	101.0	FTB
P2B	88.0	FTB
P3A	111.0	FTB
P3B	107.0	FTB
P4A	97.0	FTB
P4B	93.0	FTB
P5A	101.0	FTB
P5B	94.0	FTB
Average	99.8	*FTB - Film Tear Bond
Standard Deviation	6.9	
Maximum	111.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 91
Tested by: James Addis
Date Tested: 07/09/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	115.0	elongation
S2	105.0	elongation
S3	114.0	elongation
S4	102.0	elongation
S5	106.0	elongation
Average	108.4	*FTB - Film Tear Bond
Standard Deviation	5.2	
Maximum	115.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	111.0	FTB
P1B	93.0	FTB
P2A	102.0	FTB
P2B	87.0	FTB
P3A	112.0	FTB
P3B	99.0	FTB
P4A	102.0	FTB
P4B	92.0	FTB
P5A	99.0	FTB
P5B	92.0	FTB
Average	98.9	*FTB - Film Tear Bond
Standard Deviation	7.8	
Maximum	112.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 92
Tested by: James Addis
Date Tested: 07/09/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	120.0	elongation
S2	104.0	elongation
S3	117.0	elongation
S4	110.0	elongation
S5	108.0	elongation
Average	111.8	*FTB - Film Tear Bond
Standard Deviation	5.9	
Maximum	120.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	95.0	FTB
P1B	114.0	FTB
P2A	85.0	FTB
P2B	79.0	FTB
P3A	95.0	FTB
P3B	106.0	FTB
P4A	86.0	FTB
P4B	98.0	FTB
P5A	100.0	FTB
P5B	95.0	FTB
Average	95.3	*FTB - Film Tear Bond
Standard Deviation	9.8	
Maximum	114.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 93
Tested by: James Addis
Date Tested: 07/09/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	127.0	elongation
S2	114.0	elongation
S3	118.0	elongation
S4	110.0	elongation
S5	112.0	elongation
Average	116.2	*FTB - Film Tear Bond
Standard Deviation	6.0	
Maximum	127.0	
Minimum	110.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	98.0	FTB
P2A	98.0	FTB
P2B	95.0	FTB
P3A	100.0	FTB
P3B	96.0	FTB
P4A	90.0	FTB
P4B	91.0	FTB
P5A	93.0	FTB
P5B	86.0	FTB
Average	94.7	*FTB - Film Tear Bond
Standard Deviation	4.4	
Maximum	100.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 94
Tested by: James Addis
Date Tested: 07/09/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	128.0	elongation
S2	111.0	elongation
S3	125.0	elongation
S4	111.0	elongation
S5	107.0	elongation
Average	116.4	*FTB - Film Tear Bond
Standard Deviation	8.4	
Maximum	128.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	109.0	FTB
P1B	94.0	FTB
P2A	98.0	FTB
P2B	89.0	FTB
P3A	113.0	FTB
P3B	94.0	FTB
P4A	98.0	FTB
P4B	85.0	FTB
P5A	102.0	FTB
P5B	98.0	FTB
Average	98.0	*FTB - Film Tear Bond
Standard Deviation	8.0	
Maximum	113.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 95
Tested by: James Addis
Date Tested: 07/09/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	107.0	elongation
S3	118.0	elongation
S4	109.0	elongation
S5	117.0	elongation
Average	114.0	*FTB - Film Tear Bond
Standard Deviation	5.0	
Maximum	119.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	98.0	FTB
P1B	97.0	FTB
P2A	92.0	FTB
P2B	97.0	FTB
P3A	96.0	FTB
P3B	100.0	FTB
P4A	114.0	FTB
P4B	96.0	FTB
P5A	108.0	FTB
P5B	116.0	FTB
Average	101.4	*FTB - Film Tear Bond
Standard Deviation	7.8	
Maximum	116.0	
Minimum	92.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 96
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	112.0	elongation
S2	102.0	elongation
S3	115.0	elongation
S4	104.0	elongation
S5	116.0	elongation
Average	109.8	*FTB - Film Tear Bond
Standard Deviation	5.7	
Maximum	116.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	104.0	FTB
P1B	106.0	FTB
P2A	98.0	FTB
P2B	101.0	FTB
P3A	102.0	FTB
P3B	99.0	FTB
P4A	100.0	FTB
P4B	98.0	FTB
P5A	107.0	FTB
P5B	99.0	FTB
Average	101.4	*FTB - Film Tear Bond
Standard Deviation	3.1	
Maximum	107.0	
Minimum	98.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 97
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	111.0	elongation
S2	102.0	elongation
S3	115.0	elongation
S4	101.0	elongation
S5	115.0	elongation
Average	108.8	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	115.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	103.0	FTB
P1B	101.0	FTB
P2A	110.0	FTB
P2B	106.0	FTB
P3A	112.0	FTB
P3B	109.0	FTB
P4A	105.0	FTB
P4B	101.0	FTB
P5A	105.0	FTB
P5B	103.0	FTB
Average	105.5	*FTB - Film Tear Bond
Standard Deviation	3.6	
Maximum	112.0	
Minimum	101.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 98
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	117.0	elongation
S2	102.0	elongation
S3	118.0	elongation
S4	107.0	elongation
S5	121.0	elongation
Average	113.0	*FTB - Film Tear Bond
Standard Deviation	7.2	
Maximum	121.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	109.0	FTB
P1B	102.0	FTB
P2A	115.0	FTB
P2B	96.0	FTB
P3A	109.0	FTB
P3B	102.0	FTB
P4A	99.0	FTB
P4B	114.0	FTB
P5A	88.0	FTB
P5B	108.0	FTB
Average	104.2	*FTB - Film Tear Bond
Standard Deviation	8.0	
Maximum	115.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 99
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	122.0	elongation
S2	106.0	elongation
S3	124.0	elongation
S4	112.0	elongation
S5	123.0	elongation
Average	117.4	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	124.0	
Minimum	106.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	96.0	FTB
P1B	109.0	FTB
P2A	93.0	FTB
P2B	92.0	FTB
P3A	109.0	FTB
P3B	107.0	FTB
P4A	100.0	FTB
P4B	100.0	FTB
P5A	112.0	FTB
P5B	109.0	FTB
Average	102.7	*FTB - Film Tear Bond
Standard Deviation	7.0	
Maximum	112.0	
Minimum	92.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 100
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	120.0	elongation
S2	107.0	elongation
S3	124.0	elongation
S4	111.0	elongation
S5	123.0	elongation
Average	117.0	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	124.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	99.0	FTB
P2A	93.0	FTB
P2B	88.0	FTB
P3A	103.0	FTB
P3B	96.0	FTB
P4A	89.0	FTB
P4B	91.0	FTB
P5A	101.0	FTB
P5B	100.0	FTB
Average	96.0	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	103.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 101
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	104.0	elongation
S2	105.0	elongation
S3	115.0	elongation
S4	103.0	elongation
S5	115.0	elongation
Average	108.4	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	115.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	93.0	FTB
P1B	107.0	FTB
P2A	88.0	FTB
P2B	96.0	FTB
P3A	96.0	FTB
P3B	116.0	FTB
P4A	86.0	FTB
P4B	104.0	FTB
P5A	96.0	FTB
P5B	109.0	FTB
Average	99.1	*FTB - Film Tear Bond
Standard Deviation	9.1	
Maximum	116.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 102
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	110.0	elongation
S2	99.0	elongation
S3	113.0	elongation
S4	101.0	elongation
S5	115.0	elongation
Average	107.6	*FTB - Film Tear Bond
Standard Deviation	6.4	
Maximum	115.0	
Minimum	99.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	93.0	FTB
P1B	93.0	FTB
P2A	77.0	FTB
P2B	84.0	FTB
P3A	84.0	FTB
P3B	92.0	FTB
P4A	82.0	FTB
P4B	88.0	FTB
P5A	90.0	FTB
P5B	104.0	FTB
Average	88.7	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	104.0	
Minimum	77.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 103
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	117.0	elongation
S2	107.0	elongation
S3	117.0	elongation
S4	107.0	elongation
S5	118.0	elongation
Average	113.2	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	118.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	101.0	FTB
P1B	106.0	FTB
P2A	90.0	FTB
P2B	98.0	FTB
P3A	101.0	FTB
P3B	108.0	FTB
P4A	90.0	FTB
P4B	99.0	FTB
P5A	98.0	FTB
P5B	110.0	FTB
Average	100.1	*FTB - Film Tear Bond
Standard Deviation	6.4	
Maximum	110.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 104
Tested by: Kyle Baucom
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	118.0	elongation
S2	107.0	elongation
S3	116.0	elongation
S4	103.0	elongation
S5	116.0	elongation
Average	112.0	*FTB - Film Tear Bond
Standard Deviation	5.9	
Maximum	118.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	104.0	FTB
P1B	99.0	FTB
P2A	91.0	FTB
P2B	94.0	FTB
P3A	99.0	FTB
P3B	104.0	FTB
P4A	96.0	FTB
P4B	94.0	FTB
P5A	95.0	FTB
P5B	91.0	FTB
Average	96.7	*FTB - Film Tear Bond
Standard Deviation	4.5	
Maximum	104.0	
Minimum	91.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 105
Tested by: Cedric Ruhl
Date Tested: 07/18/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	103.0	elongation
S2	93.0	elongation
S3	108.0	elongation
S4	94.0	elongation
S5	103.0	elongation
Average	100.2	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	108.0	
Minimum	93.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	98.0	FTB
P1B	106.0	FTB
P2A	89.0	FTB
P2B	97.0	FTB
P3A	98.0	FTB
P3B	95.0	FTB
P4A	87.0	FTB
P4B	96.0	FTB
P5A	85.0	FTB
P5B	98.0	FTB
Average	94.9	*FTB - Film Tear Bond
Standard Deviation	5.9	
Maximum	106.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 106
Tested by: James Addis
Date Tested: 07/10/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	93.0	elongation
S2	95.0	elongation
S3	75.0	elongation
S4	77.0	elongation
S5	74.0	elongation
Average	82.8	*FTB - Film Tear Bond
Standard Deviation	9.2	
Maximum	95.0	
Minimum	74.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	87.0	FTB
P1B	86.0	FTB
P2A	72.0	FTB
P2B	75.0	FTB
P3A	68.0	FTB
P3B	77.0	FTB
P4A	76.0	FTB
P4B	75.0	FTB
P5A	77.0	FTB
P5B	62.0	FTB
Average	75.5	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	87.0	
Minimum	62.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 107
Tested by: Cedric Ruhl
Date Tested: 07/18/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	103.0	elongation
S2	91.0	elongation
S3	95.0	elongation
S4	88.0	elongation
S5	87.0	elongation
Average	92.8	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	103.0	
Minimum	87.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	94.0	FTB
P1B	95.0	FTB
P2A	87.0	FTB
P2B	84.0	FTB
P3A	94.0	FTB
P3B	98.0	FTB
P4A	85.0	FTB
P4B	91.0	FTB
P5A	86.0	FTB
P5B	91.0	FTB
Average	90.5	*FTB - Film Tear Bond
Standard Deviation	4.5	
Maximum	98.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 108
Tested by: Cedric Ruhl
Date Tested: 07/18/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	102.0	elongation
S2	88.0	elongation
S3	105.0	elongation
S4	96.0	elongation
S5	93.0	elongation
Average	96.8	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	105.0	
Minimum	88.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	100.0	FTB
P2A	90.0	FTB
P2B	94.0	FTB
P3A	100.0	FTB
P3B	103.0	FTB
P4A	86.0	FTB
P4B	88.0	FTB
P5A	90.0	FTB
P5B	87.0	FTB
Average	93.8	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	103.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 109
Tested by: Cedric Ruhl
Date Tested: 07/19/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	95.0	elongation
S2	83.0	elongation
S3	102.0	elongation
S4	91.0	elongation
S5	88.0	elongation
Average	91.8	*FTB - Film Tear Bond
Standard Deviation	6.4	
Maximum	102.0	
Minimum	83.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	92.0	FTB
P1B	97.0	FTB
P2A	89.0	FTB
P2B	89.0	FTB
P3A	98.0	FTB
P3B	96.0	FTB
P4A	86.0	FTB
P4B	86.0	FTB
P5A	85.0	FTB
P5B	84.0	FTB
Average	90.2	*FTB - Film Tear Bond
Standard Deviation	5.0	
Maximum	98.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 110
Tested by: Cedric Ruhl
Date Tested: 07/19/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	103.0	elongation
S2	90.0	elongation
S3	103.0	elongation
S4	92.0	elongation
S5	93.0	elongation
Average	96.2	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	103.0	
Minimum	90.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	96.0	FTB
P1B	96.0	FTB
P2A	87.0	FTB
P2B	86.0	FTB
P3A	97.0	FTB
P3B	100.0	FTB
P4A	89.0	FTB
P4B	91.0	FTB
P5A	89.0	FTB
P5B	88.0	FTB
Average	91.9	*FTB - Film Tear Bond
Standard Deviation	4.7	
Maximum	100.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 111
Tested by: Cedric Ruhl
Date Tested: 07/19/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	98.0	elongation
S2	90.0	elongation
S3	104.0	elongation
S4	90.0	elongation
S5	89.0	elongation
Average	94.2	*FTB - Film Tear Bond
Standard Deviation	5.9	
Maximum	104.0	
Minimum	89.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	95.0	FTB
P1B	97.0	FTB
P2A	86.0	FTB
P2B	89.0	FTB
P3A	95.0	FTB
P3B	99.0	FTB
P4A	87.0	FTB
P4B	90.0	FTB
P5A	86.0	FTB
P5B	88.0	FTB
Average	91.2	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	99.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 112
Tested by: Cedric Ruhl
Date Tested: 07/19/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	101.0	elongation
S2	95.0	elongation
S3	100.0	elongation
S4	91.0	elongation
S5	92.0	elongation
Average	95.8	*FTB - Film Tear Bond
Standard Deviation	4.1	
Maximum	101.0	
Minimum	91.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	99.0	FTB
P1B	98.0	FTB
P2A	89.0	FTB
P2B	88.0	FTB
P3A	98.0	FTB
P3B	99.0	FTB
P4A	87.0	FTB
P4B	88.0	FTB
P5A	88.0	FTB
P5B	93.0	FTB
Average	92.7	*FTB - Film Tear Bond
Standard Deviation	5.0	
Maximum	99.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 113
Tested by: Cedric Ruhl
Date Tested: 07/19/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	102.0	elongation
S2	93.0	elongation
S3	101.0	elongation
S4	83.0	elongation
S5	92.0	elongation
Average	94.2	*FTB - Film Tear Bond
Standard Deviation	6.9	
Maximum	102.0	
Minimum	83.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	99.0	FTB
P2A	90.0	FTB
P2B	91.0	FTB
P3A	97.0	FTB
P3B	98.0	FTB
P4A	91.0	FTB
P4B	91.0	FTB
P5A	86.0	FTB
P5B	90.0	FTB
Average	93.3	*FTB - Film Tear Bond
Standard Deviation	4.5	
Maximum	100.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 114
Tested by: Cedric Ruhl
Date Tested: 07/19/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	98.0	elongation
S2	90.0	elongation
S3	99.0	elongation
S4	91.0	elongation
S5	89.0	elongation
Average	93.4	*FTB - Film Tear Bond
Standard Deviation	4.2	
Maximum	99.0	
Minimum	89.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	95.0	FTB
P1B	94.0	FTB
P2A	86.0	FTB
P2B	90.0	FTB
P3A	93.0	FTB
P3B	96.0	FTB
P4A	87.0	FTB
P4B	88.0	FTB
P5A	85.0	FTB
P5B	85.0	FTB
Average	89.9	*FTB - Film Tear Bond
Standard Deviation	4.1	
Maximum	96.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 115
Tested by: Cedric Ruhl
Date Tested: 07/19/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	99.0	elongation
S2	92.0	elongation
S3	95.0	elongation
S4	91.0	elongation
S5	88.0	elongation
Average	93.0	*FTB - Film Tear Bond
Standard Deviation	3.7	
Maximum	99.0	
Minimum	88.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	93.0	FTB
P1B	79.0	FTB
P2A	86.0	FTB
P2B	85.0	FTB
P3A	82.0	FTB
P3B	93.0	FTB
P4A	83.0	FTB
P4B	85.0	FTB
P5A	83.0	FTB
P5B	82.0	FTB
Average	85.1	*FTB - Film Tear Bond
Standard Deviation	4.4	
Maximum	93.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 116
Tested by: Cedric Ruhl
Date Tested: 07/19/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	93.0	elongation
S2	85.0	elongation
S3	95.0	elongation
S4	88.0	elongation
S5	86.0	elongation
Average	89.4	*FTB - Film Tear Bond
Standard Deviation	3.9	
Maximum	95.0	
Minimum	85.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	90.0	FTB
P1B	92.0	FTB
P2A	81.0	FTB
P2B	83.0	FTB
P3A	94.0	FTB
P3B	93.0	FTB
P4A	84.0	FTB
P4B	84.0	FTB
P5A	84.0	FTB
P5B	83.0	FTB
Average	86.8	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	94.0	
Minimum	81.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 117
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	84.0	elongation
S2	95.0	elongation
S3	90.0	elongation
S4	92.0	elongation
S5	96.0	elongation
Average	91.4	*FTB - Film Tear Bond
Standard Deviation	4.3	
Maximum	96.0	
Minimum	84.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	96.0	FTB
P1B	106.0	FTB
P2A	89.0	FTB
P2B	94.0	FTB
P3A	97.0	FTB
P3B	101.0	FTB
P4A	103.0	FTB
P4B	105.0	FTB
P5A	89.0	FTB
P5B	96.0	FTB
Average	97.6	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	106.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 118
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	125.0	elongation
S2	117.0	elongation
S3	119.0	elongation
S4	114.0	elongation
S5	118.0	elongation
Average	118.6	*FTB - Film Tear Bond
Standard Deviation	3.6	
Maximum	125.0	
Minimum	114.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	113.0	FTB
P1B	102.0	FTB
P2A	100.0	FTB
P2B	97.0	FTB
P3A	109.0	FTB
P3B	108.0	FTB
P4A	103.0	FTB
P4B	98.0	FTB
P5A	102.0	FTB
P5B	106.0	FTB
Average	103.8	*FTB - Film Tear Bond
Standard Deviation	4.9	
Maximum	113.0	
Minimum	97.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 119
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	107.0	elongation
S3	115.0	elongation
S4	111.0	elongation
S5	117.0	elongation
Average	113.8	*FTB - Film Tear Bond
Standard Deviation	4.3	
Maximum	119.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	108.0	FTB
P1B	99.0	FTB
P2A	103.0	FTB
P2B	97.0	FTB
P3A	110.0	FTB
P3B	113.0	FTB
P4A	102.0	FTB
P4B	98.0	FTB
P5A	103.0	FTB
P5B	109.0	FTB
Average	104.2	*FTB - Film Tear Bond
Standard Deviation	5.2	
Maximum	113.0	
Minimum	97.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 120
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	125.0	elongation
S2	104.0	elongation
S3	108.0	elongation
S4	112.0	elongation
S5	116.0	elongation
Average	113.0	*FTB - Film Tear Bond
Standard Deviation	7.2	
Maximum	125.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	118.0	FTB
P1B	105.0	FTB
P2A	101.0	FTB
P2B	89.0	FTB
P3A	111.0	FTB
P3B	100.0	FTB
P4A	107.0	FTB
P4B	99.0	FTB
P5A	106.0	FTB
P5B	95.0	FTB
Average	103.1	*FTB - Film Tear Bond
Standard Deviation	7.8	
Maximum	118.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 121
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	103.0	elongation
S2	109.0	elongation
S3	114.0	elongation
S4	110.0	elongation
S5	102.0	elongation
Average	107.6	*FTB - Film Tear Bond
Standard Deviation	4.5	
Maximum	114.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	95.0	FTB
P2A	103.0	FTB
P2B	89.0	FTB
P3A	103.0	FTB
P3B	88.0	FTB
P4A	106.0	FTB
P4B	92.0	FTB
P5A	98.0	FTB
P5B	88.0	FTB
Average	97.4	*FTB - Film Tear Bond
Standard Deviation	8.0	
Maximum	112.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 122
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	107.0	elongation
S2	112.0	elongation
S3	119.0	elongation
S4	102.0	elongation
S5	110.0	elongation
Average	110.0	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	119.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	104.0	FTB
P1B	109.0	FTB
P2A	98.0	FTB
P2B	94.0	FTB
P3A	99.0	FTB
P3B	95.0	FTB
P4A	101.0	FTB
P4B	97.0	FTB
P5A	106.0	FTB
P5B	92.0	FTB
Average	99.5	*FTB - Film Tear Bond
Standard Deviation	5.2	
Maximum	109.0	
Minimum	92.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 123
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	105.0	elongation
S2	96.0	elongation
S3	109.0	elongation
S4	111.0	elongation
S5	114.0	elongation
Average	107.0	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	114.0	
Minimum	96.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	96.0	FTB
P1B	106.0	FTB
P2A	89.0	FTB
P2B	87.0	FTB
P3A	98.0	FTB
P3B	102.0	FTB
P4A	88.0	FTB
P4B	92.0	FTB
P5A	97.0	FTB
P5B	91.0	FTB
Average	94.6	*FTB - Film Tear Bond
Standard Deviation	6.0	
Maximum	106.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 124
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	115.0	elongation
S2	102.0	elongation
S3	99.0	elongation
S4	107.0	elongation
S5	103.0	elongation
Average	105.2	*FTB - Film Tear Bond
Standard Deviation	5.5	
Maximum	115.0	
Minimum	99.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	104.0	FTB
P1B	116.0	FTB
P2A	97.0	FTB
P2B	102.0	FTB
P3A	79.0	FTB
P3B	113.0	FTB
P4A	99.0	FTB
P4B	100.0	FTB
P5A	104.0	FTB
P5B	97.0	FTB
Average	101.1	*FTB - Film Tear Bond
Standard Deviation	9.5	
Maximum	116.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 125
Tested by: James Addis
Date Tested: 07/23/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	106.0	elongation
S2	115.0	elongation
S3	110.0	elongation
S4	107.0	elongation
S5	102.0	elongation
Average	108.0	*FTB - Film Tear Bond
Standard Deviation	4.3	
Maximum	115.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	103.0	FTB
P1B	110.0	FTB
P2A	89.0	FTB
P2B	104.0	FTB
P3A	105.0	FTB
P3B	108.0	FTB
P4A	91.0	FTB
P4B	100.0	FTB
P5A	97.0	FTB
P5B	95.0	FTB
Average	100.2	*FTB - Film Tear Bond
Standard Deviation	6.7	
Maximum	110.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 126
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	128.0	elongation
S2	111.0	elongation
S3	126.0	elongation
S4	111.0	elongation
S5	116.0	elongation
Average	118.4	*FTB - Film Tear Bond
Standard Deviation	7.3	
Maximum	128.0	
Minimum	111.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	103.0	FTB
P1B	98.0	FTB
P2A	94.0	FTB
P2B	93.0	FTB
P3A	99.0	FTB
P3B	94.0	FTB
P4A	102.0	FTB
P4B	99.0	FTB
P5A	94.0	FTB
P5B	93.0	FTB
Average	96.9	*FTB - Film Tear Bond
Standard Deviation	3.6	
Maximum	103.0	
Minimum	93.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 127
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	122.0	elongation
S2	105.0	elongation
S3	110.0	elongation
S4	117.0	elongation
S5	109.0	elongation
Average	112.6	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	122.0	
Minimum	105.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	102.0	FTB
P1B	94.0	FTB
P2A	89.0	FTB
P2B	93.0	FTB
P3A	95.0	FTB
P3B	97.0	FTB
P4A	88.0	FTB
P4B	95.0	FTB
P5A	91.0	FTB
P5B	99.0	FTB
Average	94.3	*FTB - Film Tear Bond
Standard Deviation	4.1	
Maximum	102.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 128
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	120.0	elongation
S2	104.0	elongation
S3	108.0	elongation
S4	119.0	elongation
S5	104.0	elongation
Average	111.0	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	120.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	108.0	FTB
P1B	102.0	FTB
P2A	89.0	FTB
P2B	91.0	FTB
P3A	105.0	FTB
P3B	104.0	FTB
P4A	92.0	FTB
P4B	97.0	FTB
P5A	91.0	FTB
P5B	94.0	FTB
Average	97.3	*FTB - Film Tear Bond
Standard Deviation	6.5	
Maximum	108.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 129
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	107.0	elongation
S3	121.0	elongation
S4	108.0	elongation
S5	108.0	elongation
Average	113.0	*FTB - Film Tear Bond
Standard Deviation	6.5	
Maximum	121.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	108.0	FTB
P2A	98.0	FTB
P2B	93.0	FTB
P3A	113.0	FTB
P3B	109.0	FTB
P4A	100.0	FTB
P4B	100.0	FTB
P5A	105.0	FTB
P5B	99.0	FTB
Average	103.7	*FTB - Film Tear Bond
Standard Deviation	6.3	
Maximum	113.0	
Minimum	93.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 130
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	114.0	elongation
S2	106.0	elongation
S3	112.0	elongation
S4	111.0	elongation
S5	107.0	elongation
Average	110.0	*FTB - Film Tear Bond
Standard Deviation	3.0	
Maximum	114.0	
Minimum	106.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	106.0	FTB
P1B	111.0	FTB
P2A	103.0	FTB
P2B	101.0	FTB
P3A	106.0	FTB
P3B	107.0	FTB
P4A	102.0	FTB
P4B	98.0	FTB
P5A	101.0	FTB
P5B	97.0	FTB
Average	103.2	*FTB - Film Tear Bond
Standard Deviation	4.1	
Maximum	111.0	
Minimum	97.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 131
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	114.0	elongation
S3	110.0	elongation
S4	116.0	elongation
S5	109.0	elongation
Average	113.6	*FTB - Film Tear Bond
Standard Deviation	3.7	
Maximum	119.0	
Minimum	109.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	111.0	FTB
P1B	94.0	FTB
P2A	100.0	FTB
P2B	79.0	FTB
P3A	111.0	FTB
P3B	96.0	FTB
P4A	108.0	FTB
P4B	90.0	FTB
P5A	102.0	FTB
P5B	91.0	FTB
Average	98.2	*FTB - Film Tear Bond
Standard Deviation	9.8	
Maximum	111.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 132
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	131.0	elongation
S2	116.0	elongation
S3	107.0	elongation
S4	113.0	elongation
S5	116.0	elongation
Average	116.6	*FTB - Film Tear Bond
Standard Deviation	7.9	
Maximum	131.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	104.0	FTB
P1B	102.0	FTB
P2A	93.0	FTB
P2B	93.0	FTB
P3A	103.0	FTB
P3B	108.0	FTB
P4A	86.0	FTB
P4B	88.0	FTB
P5A	95.0	FTB
P5B	95.0	FTB
Average	96.7	*FTB - Film Tear Bond
Standard Deviation	6.9	
Maximum	108.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 133
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	107.0	elongation
S2	110.0	elongation
S3	101.0	elongation
S4	104.0	elongation
S5	112.0	elongation
Average	106.8	*FTB - Film Tear Bond
Standard Deviation	4.0	
Maximum	112.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	105.0	FTB
P1B	90.0	FTB
P2A	96.0	FTB
P2B	93.0	FTB
P3A	99.0	FTB
P3B	93.0	FTB
P4A	102.0	FTB
P4B	96.0	FTB
P5A	99.0	FTB
P5B	94.0	FTB
Average	96.7	*FTB - Film Tear Bond
Standard Deviation	4.3	
Maximum	105.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 134
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	128.0	elongation
S2	112.0	elongation
S3	118.0	elongation
S4	115.0	elongation
S5	111.0	elongation
Average	116.8	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	128.0	
Minimum	111.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	103.0	FTB
P1B	96.0	FTB
P2A	94.0	FTB
P2B	89.0	FTB
P3A	102.0	FTB
P3B	99.0	FTB
P4A	97.0	FTB
P4B	87.0	FTB
P5A	94.0	FTB
P5B	87.0	FTB
Average	94.8	*FTB - Film Tear Bond
Standard Deviation	5.5	
Maximum	103.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 135
Tested by: James Addis
Date Tested: 07/24/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	106.0	elongation
S2	98.0	elongation
S3	100.0	elongation
S4	107.0	elongation
S5	101.0	elongation
Average	102.4	*FTB - Film Tear Bond
Standard Deviation	3.5	
Maximum	107.0	
Minimum	98.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	99.0	FTB
P1B	104.0	FTB
P2A	92.0	FTB
P2B	95.0	FTB
P3A	100.0	FTB
P3B	95.0	FTB
P4A	94.0	FTB
P4B	90.0	FTB
P5A	102.0	FTB
P5B	98.0	FTB
Average	96.9	*FTB - Film Tear Bond
Standard Deviation	4.2	
Maximum	104.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 136
Tested by: James Addis
Date Tested: 07/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	109.0	elongation
S2	113.0	elongation
S3	99.0	elongation
S4	105.0	elongation
S5	109.0	elongation
Average	107.0	*FTB - Film Tear Bond
Standard Deviation	4.7	
Maximum	113.0	
Minimum	99.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	114.0	FTB
P1B	105.0	FTB
P2A	102.0	FTB
P2B	97.0	FTB
P3A	106.0	FTB
P3B	106.0	FTB
P4A	99.0	FTB
P4B	99.0	FTB
P5A	111.0	FTB
P5B	103.0	FTB
Average	104.2	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	114.0	
Minimum	97.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 137
Tested by: James Addis
Date Tested: 07/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	104.0	elongation
S2	100.0	elongation
S3	110.0	elongation
S4	103.0	elongation
S5	107.0	elongation
Average	104.8	*FTB - Film Tear Bond
Standard Deviation	3.4	
Maximum	110.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	115.0	FTB
P1B	103.0	FTB
P2A	99.0	FTB
P2B	96.0	FTB
P3A	107.0	FTB
P3B	100.0	FTB
P4A	115.0	FTB
P4B	110.0	FTB
P5A	106.0	FTB
P5B	98.0	FTB
Average	104.9	*FTB - Film Tear Bond
Standard Deviation	6.5	
Maximum	115.0	
Minimum	96.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 138
Tested by: James Addis
Date Tested: 07/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	123.0	elongation
S2	116.0	elongation
S3	119.0	elongation
S4	107.0	elongation
S5	111.0	elongation
Average	115.2	*FTB - Film Tear Bond
Standard Deviation	5.7	
Maximum	123.0	
Minimum	107.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	89.0	FTB
P2A	96.0	FTB
P2B	93.0	FTB
P3A	102.0	FTB
P3B	95.0	FTB
P4A	105.0	FTB
P4B	92.0	FTB
P5A	98.0	FTB
P5B	91.0	FTB
Average	96.1	*FTB - Film Tear Bond
Standard Deviation	4.9	
Maximum	105.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 139
Tested by: James Addis
Date Tested: 07/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	101.0	elongation
S2	109.0	elongation
S3	103.0	elongation
S4	112.0	elongation
S5	115.0	elongation
Average	108.0	*FTB - Film Tear Bond
Standard Deviation	5.3	
Maximum	115.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	107.0	FTB
P1B	95.0	FTB
P2A	100.0	FTB
P2B	90.0	FTB
P3A	103.0	FTB
P3B	94.0	FTB
P4A	99.0	FTB
P4B	90.0	FTB
P5A	98.0	FTB
P5B	91.0	FTB
Average	96.7	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	107.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 140
Tested by: James Addis
Date Tested: 07/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	103.0	elongation
S2	107.0	elongation
S3	113.0	elongation
S4	102.0	elongation
S5	100.0	elongation
Average	105.0	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	113.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	105.0	FTB
P1B	106.0	FTB
P2A	86.0	FTB
P2B	93.0	FTB
P3A	102.0	FTB
P3B	106.0	FTB
P4A	98.0	FTB
P4B	95.0	FTB
P5A	102.0	FTB
P5B	94.0	FTB
Average	98.7	*FTB - Film Tear Bond
Standard Deviation	6.3	
Maximum	106.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 141
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	124.0	elongation
S2	108.0	elongation
S3	114.0	elongation
S4	106.0	elongation
S5	103.0	elongation
Average	111.0	*FTB - Film Tear Bond
Standard Deviation	7.4	
Maximum	124.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	114.0	FTB
P1B	106.0	FTB
P2A	106.0	FTB
P2B	97.0	FTB
P3A	102.0	FTB
P3B	94.0	FTB
P4A	115.0	FTB
P4B	110.0	FTB
P5A	105.0	FTB
P5B	100.0	FTB
Average	104.9	*FTB - Film Tear Bond
Standard Deviation	6.5	
Maximum	115.0	
Minimum	94.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 142
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	129.0	elongation
S2	108.0	elongation
S3	118.0	elongation
S4	110.0	elongation
S5	113.0	elongation
Average	115.6	*FTB - Film Tear Bond
Standard Deviation	7.5	
Maximum	129.0	
Minimum	108.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	111.0	FTB
P1B	106.0	FTB
P2A	102.0	FTB
P2B	88.0	FTB
P3A	114.0	FTB
P3B	96.0	FTB
P4A	107.0	FTB
P4B	91.0	FTB
P5A	99.0	FTB
P5B	99.0	FTB
Average	101.3	*FTB - Film Tear Bond
Standard Deviation	8.0	
Maximum	114.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 143
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	105.0	elongation
S2	110.0	elongation
S3	102.0	elongation
S4	107.0	elongation
S5	112.0	elongation
Average	107.2	*FTB - Film Tear Bond
Standard Deviation	3.5	
Maximum	112.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	117.0	FTB
P1B	102.0	FTB
P2A	97.0	FTB
P2B	97.0	FTB
P3A	117.0	FTB
P3B	106.0	FTB
P4A	101.0	FTB
P4B	96.0	FTB
P5A	107.0	FTB
P5B	98.0	FTB
Average	103.8	*FTB - Film Tear Bond
Standard Deviation	7.5	
Maximum	117.0	
Minimum	96.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 144
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	107.0	elongation
S3	114.0	elongation
S4	106.0	elongation
S5	101.0	elongation
Average	109.4	*FTB - Film Tear Bond
Standard Deviation	6.3	
Maximum	119.0	
Minimum	101.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	102.0	FTB
P1B	95.0	FTB
P2A	92.0	FTB
P2B	87.0	FTB
P3A	105.0	FTB
P3B	103.0	FTB
P4A	90.0	FTB
P4B	88.0	FTB
P5A	96.0	FTB
P5B	84.0	FTB
Average	94.2	*FTB - Film Tear Bond
Standard Deviation	6.9	
Maximum	105.0	
Minimum	84.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 145
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	108.0	elongation
S2	100.0	elongation
S3	105.0	elongation
S4	102.0	elongation
S5	110.0	elongation
Average	105.0	*FTB - Film Tear Bond
Standard Deviation	3.7	
Maximum	110.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	94.0	FTB
P1B	92.0	FTB
P2A	97.0	FTB
P2B	94.0	FTB
P3A	96.0	FTB
P3B	89.0	FTB
P4A	92.0	FTB
P4B	86.0	FTB
P5A	98.0	FTB
P5B	89.0	FTB
Average	92.7	*FTB - Film Tear Bond
Standard Deviation	3.7	
Maximum	98.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 146
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	123.0	elongation
S2	106.0	elongation
S3	113.0	elongation
S4	103.0	elongation
S5	109.0	elongation
Average	110.8	*FTB - Film Tear Bond
Standard Deviation	6.9	
Maximum	123.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	107.0	FTB
P1B	101.0	FTB
P2A	100.0	FTB
P2B	91.0	FTB
P3A	100.0	FTB
P3B	93.0	FTB
P4A	100.0	FTB
P4B	102.0	FTB
P5A	94.0	FTB
P5B	76.0	FTB
Average	96.4	*FTB - Film Tear Bond
Standard Deviation	8.2	
Maximum	107.0	
Minimum	76.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 147
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	128.0	elongation
S2	114.0	elongation
S3	108.0	elongation
S4	111.0	elongation
S5	109.0	elongation
Average	114.0	*FTB - Film Tear Bond
Standard Deviation	7.3	
Maximum	128.0	
Minimum	108.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	110.0	FTB
P2A	89.0	FTB
P2B	91.0	FTB
P3A	103.0	FTB
P3B	96.0	FTB
P4A	105.0	FTB
P4B	113.0	FTB
P5A	89.0	FTB
P5B	95.0	FTB
Average	100.3	*FTB - Film Tear Bond
Standard Deviation	9.0	
Maximum	113.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 148
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	109.0	elongation
S3	121.0	elongation
S4	116.0	elongation
S5	110.0	elongation
Average	115.4	*FTB - Film Tear Bond
Standard Deviation	5.2	
Maximum	121.0	
Minimum	109.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	106.0	FTB
P1B	93.0	FTB
P2A	98.0	FTB
P2B	90.0	FTB
P3A	107.0	FTB
P3B	103.0	FTB
P4A	89.0	FTB
P4B	90.0	FTB
P5A	97.0	FTB
P5B	89.0	FTB
Average	96.2	*FTB - Film Tear Bond
Standard Deviation	6.7	
Maximum	107.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 149
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	110.0	elongation
S2	112.0	elongation
S3	104.0	elongation
S4	108.0	elongation
S5	113.0	elongation
Average	109.4	*FTB - Film Tear Bond
Standard Deviation	3.2	
Maximum	113.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	111.0	FTB
P1B	102.0	FTB
P2A	104.0	FTB
P2B	98.0	FTB
P3A	106.0	FTB
P3B	99.0	FTB
P4A	106.0	FTB
P4B	95.0	FTB
P5A	100.0	FTB
P5B	90.0	FTB
Average	101.1	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	111.0	
Minimum	90.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 150
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	123.0	elongation
S2	112.0	elongation
S3	108.0	elongation
S4	111.0	elongation
S5	105.0	elongation
Average	111.8	*FTB - Film Tear Bond
Standard Deviation	6.1	
Maximum	123.0	
Minimum	105.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	111.0	FTB
P1B	110.0	FTB
P2A	78.0	FTB
P2B	92.0	FTB
P3A	112.0	FTB
P3B	99.0	FTB
P4A	110.0	FTB
P4B	100.0	FTB
P5A	101.0	FTB
P5B	95.0	FTB
Average	100.8	*FTB - Film Tear Bond
Standard Deviation	10.2	
Maximum	112.0	
Minimum	78.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 151
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	123.0	elongation
S2	107.0	elongation
S3	102.0	elongation
S4	109.0	elongation
S5	113.0	elongation
Average	110.8	*FTB - Film Tear Bond
Standard Deviation	7.1	
Maximum	123.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	108.0	FTB
P1B	105.0	FTB
P2A	106.0	FTB
P2B	93.0	FTB
P3A	99.0	FTB
P3B	96.0	FTB
P4A	111.0	FTB
P4B	106.0	FTB
P5A	99.0	FTB
P5B	95.0	FTB
Average	101.8	*FTB - Film Tear Bond
Standard Deviation	5.8	
Maximum	111.0	
Minimum	93.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 152
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	116.0	elongation
S3	108.0	elongation
S4	103.0	elongation
S5	104.0	elongation
Average	110.4	*FTB - Film Tear Bond
Standard Deviation	7.0	
Maximum	121.0	
Minimum	103.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	111.0	FTB
P1B	88.0	FTB
P2A	94.0	FTB
P2B	91.0	FTB
P3A	110.0	FTB
P3B	93.0	FTB
P4A	99.0	FTB
P4B	87.0	FTB
P5A	101.0	FTB
P5B	85.0	FTB
Average	95.9	*FTB - Film Tear Bond
Standard Deviation	8.7	
Maximum	111.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 153
Tested by: James Addis
Date Tested: 07/25/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	93.0	elongation
S2	87.0	elongation
S3	93.0	elongation
S4	83.0	elongation
S5	90.0	elongation
Average	89.2	*FTB - Film Tear Bond
Standard Deviation	3.8	
Maximum	93.0	
Minimum	83.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	86.0	Peel
P1B	82.0	FTB
P2A	78.0	Peel
P2B	79.0	FTB
P3A	81.0	Peel
P3B	90.0	FTB
P4A	84.0	Peel
P4B	84.0	FTB
P5A	74.0	Peel
P5B	77.0	FTB
Average	81.5	*FTB - Film Tear Bond
Standard Deviation	4.5	
Maximum	90.0	
Minimum	74.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 153A
Tested by: James Addis
Date Tested: 07/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	95.0	elongation
S2	87.0	elongation
S3	85.0	elongation
S4	88.0	elongation
S5	90.0	elongation
Average	89.0	*FTB - Film Tear Bond
Standard Deviation	3.4	
Maximum	95.0	
Minimum	85.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	89.0	FTB
P1B	91.0	FTB
P2A	91.0	FTB
P2B	87.0	FTB
P3A	84.0	FTB
P3B	81.0	FTB
P4A	93.0	FTB
P4B	89.0	FTB
P5A	87.0	FTB
P5B	82.0	FTB
Average	87.4	*FTB - Film Tear Bond
Standard Deviation	3.8	
Maximum	93.0	
Minimum	81.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 153B
Tested by: James Addis
Date Tested: 07/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	101.0	elongation
S2	97.0	elongation
S3	95.0	elongation
S4	99.0	elongation
S5	100.0	elongation
Average	98.4	*FTB - Film Tear Bond
Standard Deviation	2.2	
Maximum	101.0	
Minimum	95.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	113.0	FTB
P1B	99.0	FTB
P2A	96.0	FTB
P2B	89.0	FTB
P3A	102.0	FTB
P3B	93.0	FTB
P4A	105.0	FTB
P4B	95.0	FTB
P5A	94.0	FTB
P5B	91.0	FTB
Average	97.7	*FTB - Film Tear Bond
Standard Deviation	6.9	
Maximum	113.0	
Minimum	89.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 154
Tested by: James Addis
Date Tested: 07/26/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	91.0	elongation
S2	86.0	elongation
S3	89.0	elongation
S4	93.0	elongation
S5	97.0	elongation
Average	91.2	*FTB - Film Tear Bond
Standard Deviation	3.7	
Maximum	97.0	
Minimum	86.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	91.0	FTB
P1B	92.0	FTB
P2A	83.0	FTB
P2B	82.0	FTB
P3A	90.0	FTB
P3B	87.0	FTB
P4A	82.0	FTB
P4B	77.0	FTB
P5A	84.0	FTB
P5B	79.0	FTB
Average	84.7	*FTB - Film Tear Bond
Standard Deviation	4.9	
Maximum	92.0	
Minimum	77.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 155
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	127.0	elongation
S2	111.0	elongation
S3	125.0	elongation
S4	108.0	elongation
S5	115.0	elongation
Average	117.2	*FTB - Film Tear Bond
Standard Deviation	7.5	
Maximum	127.0	
Minimum	108.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	116.0	FTB
P1B	97.0	FTB
P2A	111.0	FTB
P2B	88.0	FTB
P3A	113.0	FTB
P3B	104.0	FTB
P4A	90.0	FTB
P4B	85.0	FTB
P5A	97.0	FTB
P5B	88.0	FTB
Average	98.9	*FTB - Film Tear Bond
Standard Deviation	10.9	
Maximum	116.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 156
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	105.0	elongation
S2	94.0	elongation
S3	99.0	elongation
S4	102.0	elongation
S5	100.0	elongation
Average	100.0	*FTB - Film Tear Bond
Standard Deviation	3.6	
Maximum	105.0	
Minimum	94.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	101.0	FTB
P1B	100.0	FTB
P2A	92.0	FTB
P2B	91.0	FTB
P3A	102.0	FTB
P3B	97.0	FTB
P4A	82.0	FTB
P4B	88.0	FTB
P5A	95.0	FTB
P5B	83.0	FTB
Average	93.1	*FTB - Film Tear Bond
Standard Deviation	6.8	
Maximum	102.0	
Minimum	82.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 157
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	94.0	elongation
S2	87.0	elongation
S3	91.0	elongation
S4	84.0	elongation
S5	95.0	elongation
Average	90.2	*FTB - Film Tear Bond
Standard Deviation	4.2	
Maximum	95.0	
Minimum	84.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	97.0	FTB
P1B	96.0	FTB
P2A	86.0	FTB
P2B	88.0	FTB
P3A	94.0	FTB
P3B	84.0	FTB
P4A	96.0	FTB
P4B	97.0	FTB
P5A	82.0	FTB
P5B	88.0	FTB
Average	90.8	*FTB - Film Tear Bond
Standard Deviation	5.5	
Maximum	97.0	
Minimum	82.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 158
Tested by: James Addis
Date Tested: 07/28/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	117.0	elongation
S2	107.0	elongation
S3	116.0	elongation
S4	104.0	elongation
S5	109.0	elongation
Average	110.6	*FTB - Film Tear Bond
Standard Deviation	5.1	
Maximum	117.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	107.0	FTB
P1B	109.0	FTB
P2A	91.0	FTB
P2B	93.0	FTB
P3A	102.0	FTB
P3B	104.0	FTB
P4A	92.0	FTB
P4B	93.0	FTB
P5A	95.0	FTB
P5B	97.0	FTB
Average	98.3	*FTB - Film Tear Bond
Standard Deviation	6.3	
Maximum	109.0	
Minimum	91.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 159
Tested by: James Addis
Date Tested: 07/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	121.0	elongation
S2	109.0	elongation
S3	115.0	elongation
S4	106.0	elongation
S5	107.0	elongation
Average	111.6	*FTB - Film Tear Bond
Standard Deviation	5.6	
Maximum	121.0	
Minimum	106.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	106.0	FTB
P1B	102.0	FTB
P2A	96.0	FTB
P2B	91.0	FTB
P3A	105.0	FTB
P3B	99.0	FTB
P4A	94.0	FTB
P4B	93.0	FTB
P5A	97.0	FTB
P5B	86.0	FTB
Average	96.9	*FTB - Film Tear Bond
Standard Deviation	6.0	
Maximum	106.0	
Minimum	86.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 160
Tested by: James Addis
Date Tested: 07/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	119.0	elongation
S2	109.0	elongation
S3	112.0	elongation
S4	105.0	elongation
S5	104.0	elongation
Average	109.8	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	119.0	
Minimum	104.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	112.0	FTB
P1B	105.0	FTB
P2A	92.0	FTB
P2B	88.0	FTB
P3A	110.0	FTB
P3B	105.0	FTB
P4A	96.0	FTB
P4B	95.0	FTB
P5A	93.0	FTB
P5B	89.0	FTB
Average	98.5	*FTB - Film Tear Bond
Standard Deviation	8.3	
Maximum	112.0	
Minimum	88.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 161
Tested by: James Addis
Date Tested: 07/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	95.0	elongation
S2	90.0	elongation
S3	95.0	elongation
S4	88.0	elongation
S5	90.0	elongation
Average	91.6	*FTB - Film Tear Bond
Standard Deviation	2.9	
Maximum	95.0	
Minimum	88.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	97.0	FTB
P1B	93.0	FTB
P2A	88.0	FTB
P2B	85.0	FTB
P3A	96.0	FTB
P3B	94.0	FTB
P4A	79.0	FTB
P4B	86.0	FTB
P5A	87.0	FTB
P5B	80.0	FTB
Average	88.5	*FTB - Film Tear Bond
Standard Deviation	6.0	
Maximum	97.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 162
Tested by: James Addis
Date Tested: 07/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	102.0	elongation
S2	87.0	elongation
S3	103.0	elongation
S4	94.0	elongation
S5	99.0	elongation
Average	97.0	*FTB - Film Tear Bond
Standard Deviation	5.9	
Maximum	103.0	
Minimum	87.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	88.0	FTB
P1B	97.0	FTB
P2A	85.0	FTB
P2B	92.0	FTB
P3A	94.0	FTB
P3B	70.0	FTB
P4A	89.0	FTB
P4B	73.0	FTB
P5A	70.0	FTB
P5B	79.0	FTB
Average	83.7	*FTB - Film Tear Bond
Standard Deviation	9.6	
Maximum	97.0	
Minimum	70.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 163
Tested by: James Addis
Date Tested: 07/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	106.0	elongation
S2	96.0	elongation
S3	106.0	elongation
S4	105.0	elongation
S5	98.0	elongation
Average	102.2	*FTB - Film Tear Bond
Standard Deviation	4.3	
Maximum	106.0	
Minimum	96.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	99.0	FTB
P1B	95.0	FTB
P2A	89.0	FTB
P2B	87.0	FTB
P3A	99.0	FTB
P3B	87.0	FTB
P4A	91.0	FTB
P4B	80.0	FTB
P5A	91.0	FTB
P5B	81.0	FTB
Average	89.9	*FTB - Film Tear Bond
Standard Deviation	6.2	
Maximum	99.0	
Minimum	80.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 164
Tested by: James Addis
Date Tested: 07/29/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	108.0	elongation
S2	98.0	elongation
S3	107.0	elongation
S4	102.0	elongation
S5	90.0	elongation
Average	101.0	*FTB - Film Tear Bond
Standard Deviation	6.6	
Maximum	108.0	
Minimum	90.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	100.0	FTB
P1B	99.0	FTB
P2A	90.0	FTB
P2B	92.0	FTB
P3A	98.0	FTB
P3B	98.0	FTB
P4A	89.0	FTB
P4B	88.0	FTB
P5A	90.0	FTB
P5B	87.0	FTB
Average	93.1	*FTB - Film Tear Bond
Standard Deviation	4.8	
Maximum	100.0	
Minimum	87.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 165
Tested by: James Addis
Date Tested: 08/02/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	112.0	elongation
S2	101.0	elongation
S3	107.0	elongation
S4	100.0	elongation
S5	109.0	elongation
Average	105.8	*FTB - Film Tear Bond
Standard Deviation	4.6	
Maximum	112.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	60.0	FTB
P1B	98.0	FTB
P2A	86.0	FTB
P2B	90.0	FTB
P3A	97.0	FTB
P3B	96.0	FTB
P4A	90.0	FTB
P4B	87.0	FTB
P5A	90.0	FTB
P5B	85.0	FTB
Average	87.9	*FTB - Film Tear Bond
Standard Deviation	10.3	
Maximum	98.0	
Minimum	60.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 166
Tested by: James Addis
Date Tested: 08/02/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	113.0	elongation
S2	106.0	elongation
S3	110.0	elongation
S4	102.0	elongation
S5	107.0	elongation
Average	107.6	*FTB - Film Tear Bond
Standard Deviation	3.7	
Maximum	113.0	
Minimum	102.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	91.0	FTB
P1B	102.0	FTB
P2A	85.0	FTB
P2B	90.0	FTB
P3A	93.0	FTB
P3B	99.0	FTB
P4A	85.0	FTB
P4B	89.0	FTB
P5A	86.0	FTB
P5B	91.0	FTB
Average	91.1	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	102.0	
Minimum	85.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 167
Tested by: James Addis
Date Tested: 08/02/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	99.0	elongation
S2	95.0	elongation
S3	92.0	elongation
S4	98.0	elongation
S5	91.0	elongation
Average	95.0	*FTB - Film Tear Bond
Standard Deviation	3.2	
Maximum	99.0	
Minimum	91.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	84.0	FTB
P1B	89.0	FTB
P2A	81.0	FTB
P2B	79.0	FTB
P3A	89.0	FTB
P3B	89.0	FTB
P4A	82.0	FTB
P4B	87.0	FTB
P5A	79.0	FTB
P5B	97.0	FTB
Average	85.6	*FTB - Film Tear Bond
Standard Deviation	5.4	
Maximum	97.0	
Minimum	79.0	

S&ME, Inc. - CHARLOTTE, NC
Geosynthetic Laboratory Test Result Summary

Project Name: Pine Hall Road Ash Landfill Closure
S&ME Project No.: 1356-07-017
Material Description: 40-mil Textured LLDPE Liner
Weld Type: DblHW
Sample: 168
Tested by: James Addis
Date Tested: 08/02/2008 Date of Summary: 08/08/2008

SHEAR TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
S1	109.0	elongation
S2	100.0	elongation
S3	111.0	elongation
S4	104.0	elongation
S5	100.0	elongation
Average	104.8	*FTB - Film Tear Bond
Standard Deviation	4.5	
Maximum	111.0	
Minimum	100.0	

PEEL TESTING (ASTM D-4437)

Specimen No.	Load at Yield (lbs/in)	Failure Description
P1A	98.0	FTB
P1B	93.0	FTB
P2A	92.0	FTB
P2B	85.0	FTB
P3A	102.0	FTB
P3B	94.0	FTB
P4A	88.0	FTB
P4B	85.0	FTB
P5A	90.0	FTB
P5B	88.0	FTB
Average	91.5	*FTB - Film Tear Bond
Standard Deviation	5.2	
Maximum	102.0	
Minimum	85.0	

APPENDIX XI

(GEOMEMBRANE LINER AS-BUILT)

REPAIR.

ESI

REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 1

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
1	2/3		19-Jun	BN	518	20-Jun	S	P	47' WoE
2	3/4		19-Jun	BN	518	20-Jun	S	P	82' WoE
3	3/4		19-Jun	BN	518	20-Jun	S	P	DS-1
4	4/5		19-Jun	BN	518	20-Jun	S	P	DS-2
5	_	4	19-Jun	BN	518	20-Jun	S	P	20' CAP
6	9/12		19-Jun	BN	518	20-Jun	S	P	74' CAP
7	9/11/12		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
8	12/13		19-Jun	BN	518	20-Jun	S	P	DS-4
9	11/12/13		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
10	11/13		19-Jun	BN	518	20-Jun	S	P	14' SoN
11	11/13/14		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
12	13/14//15		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
13	13/15/16		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
14	15/16/CAP		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
15	10/11		19-Jun	BN	518	20-Jun	S	P	DS-3
16	8/9/10/11		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
17	7/8/10/11		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
18	6/7/8/10		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
19	5/6/7/17		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
20	5/17/18		19-Jun	BN	518	20-Jun	S	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 2

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
21	17/18		19-Jun	BN	518	20-Jun	S	P	DS-5
22	4/5/18		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
23	3/4/18		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
24	19/20		19-Jun	BN	518	20-Jun	S	P	133' NoS
25	19/20/23		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
26	20/21/23		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
27	21/22		19-Jun	BN	518	20-Jun	S	P	DS-6
28	22/24		19-Jun	BN	518	20-Jun	S	P	163' SoN
29	24/25		19-Jun	BN	518	20-Jun	S	P	DS-7
30	25/26/27		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
31	25/27/28		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
32	26/27/29		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
33	27/28/29		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
34	29/30		19-Jun	BN	518	20-Jun	S	P	0-15' SoN 30' CAP
35	29/30		19-Jun	BN	518	20-Jun	S	P	DS-9
36	20/21		19-Jun	BN	518	20-Jun	S	P	DS-8
37	30/31/32		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
38	31/32/33		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
39	30/31		19-Jun	BN	518	20-Jun	S	P	DS-10
40	34/35		19-Jun	BN	518	20-Jun	S	P	DS-11

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 3

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
41	34/35		19-Jun	BN	518	20-Jun	S	P	65' NoS
42	38/39		19-Jun	BN	518	20-Jun	S	P	DS-12
43	36/37/38		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
44	37/38/39		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
45	36/37		19-Jun	BN	518	20-Jun	S	P	DS-13
46	40/41/42		19-Jun	BN	518	20-Jun	S	P	INTERSECTION
47	40/41		19-Jun	BN	518	20-Jun	S	P	40'-47 SoN
48	40/41		19-Jun	BN	518	20-Jun	S	P	63-71' SoN
49	43/44		20-Jun	BN	518	21-Jun	S	P	DS-14
50	44/45/46		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
51	45/46/47		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
52	47/48/49		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
53	45/47		20-Jun	BN	518	21-Jun	S	P	13-16' WoE
54	44/45		20-Jun	BN	518	21-Jun	S	P	106-114' (20' CAP)
55	48/49/50		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
56	44/45		20-Jun	BN	518	21-Jun	S	P	DS-15
57	45/47		20-Jun	BN	518	21-Jun	S	P	DS-16
58	50/51/52		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
59	51/52/53		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
60	1/50/52		20-Jun	BN	518	21-Jun	S	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 4

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
61	1/52/53		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
62	1/53/55		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
63	53/54/55		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
64	1/55/56		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
65	54/55/56		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
66		52	20-Jun	BN	518	21-Jun	S	P	3' EoW
67	54/57		20-Jun	BN	518	21-Jun	S	P	0-10' (22' CAP)
68	54/56/57		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
69	1/56/57		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
70	1/58/59		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
71	58/59/60		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
72	1/59/60		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
73	1/60/61		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
74	1/61/62		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
75	56/57/58		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
76	53/55		20-Jun	BN	518	21-Jun	S	P	DS-19
77	57/58		20-Jun	BN	518	21-Jun	S	P	DS-20
78	58/60		20-Jun	BN	518	21-Jun	S	P	DS-21
79	63/64/65		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
80	64/65/66		20-Jun	BN	518	21-Jun	S	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 5

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
81	67/68/69		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
82	68/69/70		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
83		67	20-Jun	BN	518	21-Jun	S	P	14' EoW
84		67	20-Jun	BN	518	21-Jun	S	P	21' EoW
85	70/71/72		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
86	71/72/73		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
87	72/73/74		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
88	73/74/75		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
89	68/70		20-Jun	BN	518	21-Jun	S	P	150' WoE
90	68/70		20-Jun	BN	518	21-Jun	S	P	185' WoE
91	63/64		20-Jun	BN	518	21-Jun	S	P	DS-22
92	43/63		20-Jun	BN	518	21-Jun	S	P	DS-23
93	64/66		20-Jun	BN	518	21-Jun	S	P	DS-24
94	66/67		20-Jun	BN	518	21-Jun	S	P	DS-25
95	67/68		20-Jun	BN	518	21-Jun	S	P	DS-26
96	70/71		20-Jun	BN	518	21-Jun	S	P	DS-27
97	75/76/77		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
98	76/77/78		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
99	77/78/79		20-Jun	BN	518	21-Jun	S	P	INTERSECTION
100	78/79/80		20-Jun	BN	518	21-Jun	S	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 6

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
101	75/76		20-Jun	BN	518	21-Jun	S	P	DS-29
102	73/75		20-Jun	BN	518	21-Jun	S	P	DS-30
103	78/80		20-Jun	BN	518	21-Jun	S	P	DS-31
104	76/78		20-Jun	BN	518	21-Jun	S	P	DS-32
105	81/82/83		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
106	82/83/84		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
107	83/84/85		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
108	84/85/86		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
109	85/86		26-Jun	BN	518	27-Jun	S	P	76' WoE
110	87/88/89		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
111	88/89/90		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
112	80/81		26-Jun	BN	518	27-Jun	S	P	DS-33
113	81/82		26-Jun	BN	518	27-Jun	S	P	DS-34
114	90/91/92		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
115	87/88		26-Jun	BN	518	27-Jun	S	P	20' WoE
116	91/92/93		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
117	93/94/95		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
118	94/95/96		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
119	96/97/98		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
120	82/84		26-Jun	BN	518	27-Jun	S	P	DS-35

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
121	86/87		26-Jun	BN	518	27-Jun	S	P	DS-36
122	84/86		26-Jun	BN	518	27-Jun	S	P	DS-37
123	99/100		26-Jun	BN	518	27-Jun	S	P	20' WoE
124	97/98/99		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
125	98/99/100		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
126	99/100/101		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
127	100/101/102		26-Jun	BN	518	27-Jun	S	P	INTERSECTION
128	86/87		26-Jun	BN	518	27-Jun	S	P	DS-38
129	94/95		26-Jun	BN	518	27-Jun	S	P	DS-39
130	94/96		26-Jun	BN	518	27-Jun	S	P	DS-40
131	90/92		26-Jun	BN	518	27-Jun	S	P	DS-41
132	92/94		26-Jun	BN	518	27-Jun	S	P	DS-42
133	98/100		26-Jun	BN	518	27-Jun	S	P	DS-43
134	96/97		26-Jun	BN	518	27-Jun	S	P	DS-44
135	101/102/103		27-Jun	BN	518	28-Jun	S	P	INTERSECTION
136	102/103/104		27-Jun	BN	518	28-Jun	S	P	INTERSECTION
137	103/104/105		27-Jun	BN	518	28-Jun	S	P	INTERSECTION
138	105/106/107		27-Jun	BN	518	28-Jun	S	P	INTERSECTION
139	107/108/109		27-Jun	BN	518	28-Jun	S	P	INTERSECTION
140	106/107/109		27-Jun	BN	518	28-Jun	S	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
141	108/109/110		27-Jun	BN	518	28-Jun	JL	P	INTERSECTION
142	109/110/111		27-Jun	BN	518	28-Jun	JL	P	INTERSECTION
143	103/104		27-Jun	BN	518	28-Jun	JL	P	0-6' NoS
144		100	27-Jun	BN	518	28-Jul	JL	P	56' WoE
145		87	27-Jun	BN	518	28-Jun	JL	P	258' WoE
146		96	27-Jun	BN	518	28-Jun	JL	P	122' WoE
147		94	27-Jun	BN	518	28-Jun	JL	P	9' WoE
148		94	27-Jun	BN	518	28-Jun	JL	P	84' WoE
149		94	27-Jun	BN	518	28-Jun	JL	P	111' WoE
150		93	27-Jun	BN	518	28-Jun	JL	P	72' WoE
151		96	27-Jun	BN	518	28-Jun	JL	P	276' WoE
152	101/103		27-Jun	BN	518	28-Jun	JL	P	DS-46
153	103/105		27-Jun	BN	518	27-Jun	JL	P	DS-47
154	107/109		27-Jun	BN	518	28-Jun	JL	P	DS-48
155	105/107		27-Jun	BN	518	28-Jun	JL	P	DS-49
156	108/110		27-Jun	BN	518	28-Jun	JL	P	DS-50
157	111/112		28-Jun	BN	518	29-Jun	JL	P	5' WoE
158	116/118		28-Jun	BN	518	29-Jun	JL	P	48' WoE
159	118/119		28-Jun	BN	518	29-Jun	JL	P	13-17' WoE
160	118/119		28-Jun	BN	518	29-Jun	JL	P	22-25' WoE

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 9

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
161		116	28-Jun	BN	518	29-Jun	JL	P	35' WoE
162	103/104		28-Jun	BN	518	29-Jun	JL	P	22' CAP
163	110/111/112		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
164	111/112/113		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
165	112/113/114		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
166	114/115/116		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
167	115/116/117		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
168	116/117/118		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
169	117/118/119		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
170	118/119/120		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
171	119/120/121		28-Jun	BN	518	29-Jun	JL	P	INTERSECTION
172	111/112		28-Jun	BN	518	29-Jun	JL	P	DS-51
173	114/116		28-Jun	BN	518	29-Jun	JL	P	DS-52
174	112/114		28-Jun	BN	518	29-Jun	JL	P	DS-53
175	118/120		28-Jun	BN	518	29-Jun	JL	P	DS-54
176	116/117		28-Jun	BN	518	29-Jun	JL	P	DS-55
177	119/121		28-Jun	BN	518	29-Jun	JL	P	DS-56
178	121/122		28-Jun	BN	518	29-Jun	JL	P	DS-57
179	122/123		29-Jun	BN	518	30-Jun	JL	P	6' WoE (36' cap)
180	123/125		29-Jun	BN	518	30-Jun	JL	P	31' WoE

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 10

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
181	122/123		29-Jun	BN	518	30-Jun	JL	P	25' WoE
182	126/127		29-Jun	BN	518	30-Jun	JL	P	25' WoE
183	128/129		29-Jun	BN	518	30-Jun	JL	P	18' WoE
184	129/130		29-Jun	BN	518	30-Jun	JL	P	22' WoE
185	125/126		29-Jun	BN	518	30-Jun	JL	P	33' WoE
186	125/126		29-Jun	BN	518	30-Jun	JL	P	55' WoE
187	122/123		29-Jun	BN	518	30-Jun	JL	P	228' WoE
188	123/124/125		29-Jun	BN	518	30-Jun	JL	P	INTERSECTION
189	124/125/126		29-Jun	BN	518	30-Jun	JL	P	INTERSECTION
190	122/123		29-Jun	BN	518	30-Jun	JL	P	DS-58
191	126/127		29-Jun	BN	518	30-Jun	JL	P	DS-59
192	124/126		29-Jun	BN	518	30-Jun	JL	P	DS-60
193	131/132		29-Jun	BN	518	30-Jun	JL	P	DS-61
194	130/131		29-Jun	BN	518	30-Jun	JL	P	DS-62
195	126/134		30-Jun	BN	518	1-Jul	JL	P	5-10' NWoSE
196	116/117		28-Jun	BN	518	29-Jun	JL	P	DS-55
197	123/133		30-Jun	BN	518	1-Jul	JL	P	SEAM
198	136/137/138		30-Jun	BN	518	1-Jul	JL	P	INTERSECTION
199	137/138/139		30-Jun	BN	518	1-Jul	JL	P	INTERSECTION
200	125/133/134		30-Jun	BN	518	1-Jul	JL	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 11

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
201	125/126/134		30-Jun	BN	518	1-Jul	JL	P	INTERSECTION
202	126/134/135		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
203	126/127/135		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
204	127/135/136		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
205	127/128/136		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
206	128/136/137		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
207	123/133/143		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
208		125	30-Jun	BN	518	1-Jul	S	P	1' SWoNE
209	128/129/137		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
210	129/137/138		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
211	129/130/139		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
212	130/139/140/141		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
213	131/132/140/141		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
214	132/141/142		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
215	122/123/143		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
216	122/143/146		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
217	121/122/146		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
218	121/146/147		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
219	120/121/147		30-Jun	BN	518	1-Jul	S	P	INTERSECTION
220	120/147/148		30-Jun	BN	518	1-Jul	S	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 12

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
221	134/135		30-Jun	BN	518	1-Jul	JL	P	DS-63
222	138/139		30-Jun	BN	518	1-Jul	JL	P	DS-64
223	127/135		1-Jul	BN	518	2-Jul	JL	P	27' NWoSE
224	144/147		1-Jul	BN	518	2-Jul	JL	P	20' NoS
225	132/141		1-Jul	BN	518	2-Jul	JL	P	28' NWoSE
226	144/147		1-Jul	BN	518	2-Jul	JL	P	142' NoS
227	123/143		1-Jul	BN	518	2-Jul	JL	P	15-28' SEoNW
228	122/143		1-Jul	BN	518	2-Jul	JL	P	4' NWoSE
229	143/145/146		1-Jul	BN	518	2-Jul	JL	P	INTERSECTION
230	143/144/145		1-Jul	BN	518	2-Jul	JL	P	INTERSECTION
231	144/145/147		1-Jul	BN	518	2-Jul	JL	P	INTERSECTION
232	145/146/147		1-Jul	BN	518	2-Jul	JL	P	INTERSECTION
233	133/143		1-Jul	BN	518	2-Jul	JL	P	DS-65
234	144/147		1-Jul	BN	518	2-Jul	JL	P	DS-66
235	151/152		1-Jul	BN	518	2-Jul	JL	P	DS-67
236	149/156		1-Jul	BN	518	2-Jul	JL	P	DS-68
237	158/159		1-Jul	BN	518	2-Jul	JL	P	DS-69
238	147/148		1-Jul	BN	518	2-Jul	JL	P	DS-70
239	156/157		1-Jul	BN	518	2-Jul	JL	P	DS-71
240	159/160		1-Jul	BN	518	2-Jul	JL	P	DS-72

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 13

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
241	157/158		1-Jul	BN	518	2-Jul	JL	P	DS-73
242	160/161		1-Jul	BN	518	2-Jul	JL	P	DS-74
243	160/161		1-Jul	BN	518	2-Jul	JL	P	DS-75
244	148/149		1-Jul	BN	518	2-Jul	JL	P	DS-76
245	143/144		1-Jul	BN	518	2-Jul	JL	P	DS-77
246	167/168		2-Jul	BN	518	3-Jul	JL	P	88' NoS
247	167/168		2-Jul	BN	518	3-Jul	JL	P	120' NoS
248	167/168		2-Jul	BN	518	3-Jul	JL	P	166' NoS
249	169/170		2-Jul	BN	518	3-Jul	JL	P	354' NoS
250	170/171		2-Jul	BN	518	3-Jul	JL	P	367' NoS
251	175/176		2-Jul	BN	518	3-Jul	JL	P	313-322' NoS
252	175/176		2-Jul	BN	518	3-Jul	JL	P	521' NoS
253	178/179		2-Jul	BN	518	3-Jul	JL	P	394' NoS
254	118/120/148		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
255	118/148/150		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
256	118/150/151		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
257	116/118/151		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
258	116/151/152		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
259	113/114/152		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
260	114/116/151		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 14

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
261	113/152/153		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
262	109/111/153		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
263	106/109/153		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
264	105/106/153/154		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
265	169/170		2-Jul	BN	518	3-Jul	JL	P	62' NoS (24' CAP)
266	104/105/155		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
267	152/153/154		2-Jul	BN	518	3-Jul	JL	P	INTERSECTION
268	147/120		2-Jul	BN	518	3-Jul	JL	P	60' CAP
269	162/163		2-Jul	BN	518	3-Jul	JL	P	DS-78
270	165/166		2-Jul	BN	518	3-Jul	JL	P	DS-79
271	168/169		2-Jul	BN	518	3-Jul	JL	P	DS-80
272	172/173		2-Jul	BN	518	3-Jul	JL	P	DS-81
273	175/176		2-Jul	BN	518	3-Jul	JL	P	DS-82
274	178/179		2-Jul	BN	518	3-Jul	JL	P	DS-83
275	178/179		2-Jul	BN	518	3-Jul	JL	P	DS-84
276	177/178		2-Jul	BN	518	3-Jul	JL	P	DS-85
277	161/162		2-Jul	BN	518	3-Jul	JL	P	DS-86
278	164/165		2-Jul	BN	518	3-Jul	JL	P	DS-87
279	164/165		2-Jul	BN	518	3-Jul	JL	P	DS-88
280	167/168		2-Jul	BN	518	3-Jul	JL	P	DS-89

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 15

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
281	169/170		2-Jul	BN	518	3-Jul	JL	P	DS-90
282	171/172		2-Jul	BN	518	3-Jul	JL	P	DS-91
283	174/175		2-Jul	BN	518	3-Jul	JL	P	DS-92
284	163/164		2-Jul	BN	518	3-Jul	JL	P	DS-93
285	163/164		2-Jul	BN	518	3-Jul	JL	P	DS-94
286	166/167		2-Jul	BN	518	3-Jul	JL	P	DS-95
287	169/170		2-Jul	BN	518	3-Jul	JL	P	DS-96
288	170/171		2-Jul	BN	518	3-Jul	JL	P	DS-97
289	173/174		2-Jul	BN	518	3-Jul	JL	P	DS-98
290	176/177		2-Jul	BN	518	3-Jul	JL	P	DS-99
291	178/179		2-Jul	BN	518	3-Jul	JL	P	DS-100
292	183/184		3-Jul	BN	518	7-Jul	JL	P	342' NoS
293	111/153		3-Jul	BN	518	7-Jul	JL	P	8' SoN
294	109/153		3-Jul	BN	518	7-Jul	JL	P	11' SoN
295	106/153		3-Jul	BN	518	7-Jul	JL	P	42' CAP
296	106/155		3-Jul	BN	518	7-Jul	JL	P	SEAM
297	114/151		3-Jul	BN	518	7-Jul	JL	P	SEAM
298	180/181		3-Jul	BN	518	7-Jul	JL	P	DS-101
299	181/182		3-Jul	BN	518	7-Jul	JL	P	DS-102
300	182/183		3-Jul	BN	518	7-Jul	JL	P	DS-103

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 16

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
301	183/184		3-Jul	BN	518	7-Jul	JL	P	DS-104
302	183/184		3-Jul	BN	518	7-Jul	JL	P	DS-105
303	106/153		3-Jul	BN	518	7-Jul	JL	P	DS-106
304	186/187		16-Jul	BN	518	17-Jul	JL	P	122' NoS
305	188/190		16-Jul	BN	518	17-Jul	JL	P	20' NoS (26' CAP)
306	185/186		16-Jul	BN	518	17-Jul	JL	P	0-3' NoS
307		185	16-Jul	BN	518	17-Jul	JL	P	7' SoN
308	189/193/194		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
309	189/192/193		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
310	188/189/192		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
311	188/191/192		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
312	188/190/191		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
313	187/188/190		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
314	187/190/196		16-Jul	BN	518	17-Jul	JL	P	I NTERSECTION 36' CAP
315	186/187/196		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
316		185	16-Jul	BN	518	17-Jul	JL	P	13' NoS
317	190/195/196		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
318	195/196/197		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
319	197/198/199		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
320	198/199/200		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION

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Project Name: Duke Energy PROJECT NO. 07-12-1269 17

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
321	200/201/202		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
322	201/202/203		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
323	201/202		16-Jul	BN	518	17-Jul	JL	P	11' CAP
324	204/205/206		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
325	205/206/207		16-Jul	BN	518	17-Jul	JL	P	INTERSECTION
326	186/187		16-Jul	BN	518	17-Jul	JL	P	DS-107
327	187/188		16-Jul	BN	518	17-Jul	JL	P	DS-108
328	197/199		16-Jul	BN	518	17-Jul	JL	P	DS-109
329	196/197		16-Jul	BN	518	17-Jul	JL	P	DS-110
330	198/200		16-Jul	BN	518	17-Jul	JL	P	DS-111
331	201/203		16-Jul	BN	518	17-Jul	JL	P	DS-112
332	200/201		16-Jul	BN	518	17-Jul	JL	P	DS-113
333	205/207		16-Jul	BN	518	17-Jul	JL	P	DS-114
334	186/196		16-Jul	BN	518	17-Jul	JL	P	24' NoS
335	212/213		17-Jul	BN	518	18-Jul	JL	P	11-17' NoS
336	183/184		17-Jul	BN	518	18-Jul	JL	P	23' NoS
337	204/217		17-Jul	BN	518	18-Jul	JL	P	5' EoW
338	212/213/241		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
339	182/183		17-Jul	BN	518	18-Jul	JL	P	29' NoS
340	183/184		17-Jul	BN	518	18-Jul	JL	P	65' NoS

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Project Name: Duke Energy PROJECT NO. 07-12-1269 18

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
341	185/186/196/215		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
342	184/185/215		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
343	196/197/215		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
344	197/199/215		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
345	199/200/215		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
346	200/202/215		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
347	202/203/215		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
348	203/215/216		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
349	203/204/216/217		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
350	41/42/128		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
351	219/220/221		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
352	220/221/222		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
353	225/226/227		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
354	226/227/228		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
355	229/230/231		17-Jul	BN	518	18-Jul	JL	P	INTERSECTION
356		215	17-Jul	BN	518	18-Jul	JL	P	7' WoE and 45' [illegible]
357	212/213		17-Jul	BN	518	18-Jul	JL	P	DS-115
358	208/209		17-Jul	BN	518	18-Jul	JL	P	DS-116
359	42/218		17-Jul	BN	518	18-Jul	JL	P	DS-117
360	218/219		17-Jul	BN	518	18-Jul	JL	P	DS-118

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Project Name: Duke Energy PROJECT NO. 07-12-1269 19

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
361	222/223		17-Jul	BN	518	18-Jul	JL	P	DS-119
362	223/224		17-Jul	BN	518	18-Jul	JL	P	DS-120
363	228/229		17-Jul	BN	518	18-Jul	JL	P	DS-121
364	229/231		17-Jul	BN	518	18-Jul	JL	P	DS-122
365	223/224		17-Jul	BN	518	18-Jul	JL	P	115' EoW
366	236/237		18-Jul	BN	518	19-Jul	JL	P	29' EoW
367	247/248		18-Jul	BN	518	19-Jul	JL	P	35' EoW
368	230/231/232		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
369	233/234/235		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
370	234/235/236		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
371	252/254		18-Jul	BN	518	19-Jul	JL	P	36' EoW
372	244/245/246		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
373	245/246/247		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
374	248/249/250		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
375	249/250/251		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
376	252/253/254		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
377	253/254/255		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
378	257/258/259		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
379	258/259/260		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION
380	258/259/260		18-Jul	BN	518	19-Jul	JL	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 20

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
381	234/236		18-Jul	BN	518	19-Jul	JL	P	50' EoW
382	233/234		18-Jul	BN	518	19-Jul	JL	P	DS-123
383	237/238		18-Jul	BN	518	19-Jul	JL	P	DS-124
384	240/241		18-Jul	BN	518	19-Jul	JL	P	DS-125
385	241/242		18-Jul	BN	518	19-Jul	JL	P	DS-126
386	244/245		18-Jul	BN	518	19-Jul	JL	P	DS-127
387	250/251		18-Jul	BN	518	19-Jul	JL	P	DS-128
388	253/255		18-Jul	BN	518	19-Jul	JL	P	DS-129
389	260/261		18-Jul	BN	518	19-Jul	JL	P	DS-130
390	256/257		18-Jul	BN	518	19-Jul	JL	P	DS-131
391	28/263		22-Jul	BN	518	23-Jul	JL	P	7' NoE
392	264/265		22-Jul	BN	518	23-Jul	JL	P	8' SoN
393	265/266		22-Jul	BN	518	23-Jul	JL	P	576' SoN
394	268/269		22-Jul	BN	518	23-Jul	JL	P	373' SoN
395	202/203/263/264		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
396	203/204/18/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
397	18/19/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
398	19/23/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
399	21/23/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
400	21/22/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 21

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
401	22/24/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
402	24/25/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
403	25/28/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
404	28/29/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
405	29/30/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
406	30/32/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
407	32/33/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
408	33/34/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
409	34/35/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
410	35/36/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
411	36/38/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
412	37/39/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
413	39/40/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
414	40/42/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
415	42/218/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
416	218/219/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
417	219/221/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
418	221/222/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
419	222/223/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
420	223/224/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 22

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
421	224/225/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
422	225/227/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
423	29/CAP/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
424	28/CAP/263		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
425	28/29/CAP		22-Jul	BN	518	23-Jul	JL	P	INTERSECTION
426	263/264		22-Jul	BN	518	23-Jul	JL	P	DS-132
427	264/265		22-Jul	BN	518	23-Jul	JL	P	DS-133
428	264/265		22-Jul	BN	518	23-Jul	JL	P	DS-134
429	25/263		22-Jul	BN	518	23-Jul	JL	P	DS-135
430	265/266		22-Jul	BN	518	23-Jul	JL	P	DS-136
431	267/268		22-Jul	BN	518	23-Jul	JL	P	DS-137
432	266/267		22-Jul	BN	518	23-Jul	JL	P	DS-138
433	268/269		22-Jul	BN	518	23-Jul	JL	P	DS-139
434	269/270		22-Jul	BN	518	23-Jul	JL	P	DS-140
435	271/272		22-Jul	BN	518	23-Jul	JL	P	DS-141
436	271/272		22-Jul	BN	518	23-Jul	JL	P	DS-142
437	270/271		22-Jul	BN	518	23-Jul	JL	P	DS-143
438	43/269		23-Jul	BN	518	24-Jul	JL	P	SEAM
439	43/270		23-Jul	BN	518	24-Jul	JL	P	SEAM
440	63/271		23-Jul	BN	518	24-Jul	JL	P	SEAM

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 23

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
441	69/272		23-Jul	BN	518	24-Jul	JL	P	SEAM
442	278/279		23-Jul	BN	518	24-Jul	JL	P	57' WoE
443	278/279		23-Jul	BN	518	24-Jul	JL	P	99' WoE
444	281/283		23-Jul	BN	518	24-Jul	JL	P	259' WoE
445	1/2/264/265		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
446	1/CAP/265/266		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
447	50/CAP/266		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
448	49/50/266		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
449	49/266/267		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
450	47/49/267		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
451	47/267/268		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
452	46/47/268		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
453	46/268/269		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
454	44/46/269		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
455		46	23-Jul	BN	518	24-Jul	JL	P	1' WoE
456	43/44/269		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
457	43/269/270		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
458	43/63/270		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
459	63/270/271		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
460	63/65/271		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 24

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
461	65/66/271		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
462	66/271/272		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
463	66/67/272		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
464	67/69/272		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
465	278/279/280		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
466	279/280/281		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
467	280/281/282		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
468	281/282/283		23-Jul	BN	518	24-Jul	JL	P	INTERSECTION
469	272/273		23-Jul	BN	518	24-Jul	JL	P	DS-144
470	273/274		23-Jul	BN	518	24-Jul	JL	P	DS-145
471	274/275		23-Jul	BN	518	24-Jul	JL	P	DS-146
472	275/276		23-Jul	BN	518	24-Jul	JL	P	DS-147
473	276/277		23-Jul	BN	518	24-Jul	JL	P	DS-148
474	277/278		23-Jul	BN	518	24-Jul	JL	P	DS-149
475	278/279		23-Jul	BN	518	24-Jul	JL	P	DS-150
476	283/284		23-Jul	BN	518	24-Jul	JL	P	DS-151
477	281/283		23-Jul	BN	518	24-Jul	JL	P	DS-152
478	1/265		23-Jul	BN	518	24-Jul	JL	P	DS-152
479	102/287		24-Jul	BN	518	25-Jul	JL	P	4' NoS
480	154/286		24-Jul	BN	518	25-Jul	JL	P	SEAM 3'

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REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 25

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
481	163/277		24-Jul	BN	518	25-Jul	JL	P	7' EoW
482	288/289		24-Jul	BN	518	25-Jul	JL	P	6' SoN
483	69/272/273		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
484	69/70/273		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
485	70/72/273		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
486	273/274/72		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
487	72/74/274		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
488	74/75/274		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
489	274/275/75		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
490	75/77/275		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
491	77/275/276		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
492	77/79/276		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
493	79/80/276		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
494	276/277/80		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
495	80/81/277		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
496	81/277/278		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
497	81/83/278		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
498	83/85/278/279		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
499	85/86/279		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
500	279/280/86		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION

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Project Name: Duke Energy PROJECT NO. 07-12-1269 26

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
501	86/87/281		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
502	87/89/281		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
503	89/281/283		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
504	89/91/283		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
505	91/283/284		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
506	91/93/284		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
507	93/95/284		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
508	95/284/285		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
509	95/96/285		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
510	95/285/286		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
511	96/98/287		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
512	98/100/286/287		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
513	100/102/187		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
514	102/104/155		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
515	102/155/287		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
516	155/154/287		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
517	154/286/287		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
518	152/154/286		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
519	151/152/286		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
520	151/285/286		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION

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Project Name: Duke Energy PROJECT NO. 07-12-1269

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
521	150/151/285		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
522	149/150/285		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
523	149/285/284		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
524	149/156/284		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
525	156/157/284		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
526	157/283/284		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
527	157/158/283		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
528	158/159/281/283		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
529	159/281/283		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
530	159/160/282		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
531	160/280/282		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
532	160/161/280		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
533	161/162/278		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
534	162/163/278		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
535	163/277/278		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
536	163/164/278		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
537	164/165/276/277		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
538	165/166/276		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
539	166/275/276		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION
540	166/167/275		24-Jul	BN	518	25-Jul	JL	P	INTERSECTION

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Project Name: Duke Energy PROJECT NO. 07-12-1269 28

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
541	85/279		24-Jul	BN	518	25-Jul	JL	P	1' SEAM
542	159/283		24-Jul	BN	518	25-Jul	JL	P	1' SEAM
543	162/280		24-Jul	BN	518	25-Jul	JL	P	1' SEAM
544		89	24-Jul	BN	518	25-Jul	JL	P	1' WoE & 10' NoS
545	152/286		24-Jul	BN	518	25-Jul	JL	P	DS-154
546	288/289		24-Jul	BN	518	25-Jul	JL	P	DS-155
547	289/290		24-Jul	BN	518	25-Jul	JL	P	DS-156
548	268/298		24-Jul	BN	518	25-Jul	JL	P	DS-157
549	294/296		24-Jul	BN	518	25-Jul	JL	P	DS-158
550	298/299		24-Jul	BN	518	25-Jul	JL	P	DS-159
551	299/301		24-Jul	BN	518	25-Jul	JL	P	DS-160
552	169/2[illegible] 289		25-Jul	BN	518	26-Jul	JL	P	3' SEAM
553	174/296		25-Jul	BN	518	26-Jul	JL	P	0-6' EoW
554	266/301		25-Jul	BN	518	26-Jul	JL	P	4' SEAM
555	306/307		25-Jul	BN	518	26-Jul	JL	P	8' SEAM
556	305/306		25-Jul	BN	518	26-Jul	JL	P	178' SoN
557	274/275/288		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
558	274/288/289		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
559	273/274/289		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
560	295/293		25-Jul	BN	518	26-Jul	JL	P	3' SEAM

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Project Name: Duke Energy PROJECT NO. 07-12-1269

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
561	274/275/288		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
562	274/288/289		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
563	273/274/289		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
564	273/289/292		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
565	289/291/292		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
566	291/292/293		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
567	272/273/292		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
568	272/292/293		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
569	271/272/293		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
570	293/294/295		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
571	271/293/295		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
572	270/271/295		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
573	294/295/296		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
574	270/295/296		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
575	269/270/296		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
576	296/297/298		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
577	269/296/298		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
578	268/269/298		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
579	297/298/299		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
580	268/298/299		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION

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Project Name: Duke Energy PROJECT NO. 07-12-1269 30

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
581	267/268/299		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
582	267/299/301		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
583	266/267/301		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
584	299/300/301		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
585	289/290/291		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
586	167/275/168/288		25-Jul	BN	518	26-Jul	JL	P	60' CAP INTER.
587	169/289		25-Jul	BN	518	26-Jul	JL	P	3' SEAM
588	168/169/288		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
589	73/293		25-Jul	BN	518	26-Jul	JL	P	2' SEAM
590	169/288/289		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
591	169/289/290		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
592	169/170/290		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
593	170/290/291		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
594	170/171/291		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
595	171/291/293		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
596	171/172/293		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
597	172/173/293/294		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
598	173/174/294		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
599	174/294/296		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
600	174/175/296		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION

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Project Name: Duke Energy PROJECT NO. 07-12-1269

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
601	175/176/296/297		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
602	176/177/297		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
603	177/297/299		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
604	177/178/299		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
605	178/179/299		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
606	299/300/179		25-Jul	BN	518	26-Jul	JL	P	INTERSECTION
607	266/301/302		26-Jun	BN	518	28-Jun	JL	P	INTERSECTION
608	265/266/302		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
609	264/265/302/306		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
610	264/305/306		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
611	263/264/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
612	301/302/303		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
613	302/303/306		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
614	303/306/307		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
615	306/307/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
616	301/303/304		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
617	303/304/307		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
618	300/301/304		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
619	304/305/308		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
620	305/308		26-Jul	BN	518	28-Jul	JL	P	0-3' EoW

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Project Name: Duke Energy PROJECT NO. 07-12-1269 32

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
621	250/251/305/308		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
622	248/250/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
623	247/248/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
624	246/247/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
625	244/246/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
626	243/244/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
627	242/243/305		26-Jun	BN	518	28-Jun	JL	P	INTERSECTION
628	241/242/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
629	240/241/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
630	239/240/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
631	238/239/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
632	237/238/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
633	236/235/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
634	235/236/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
635	233/235/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
636	232/233/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
637	231/232/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
638	229/231/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
639	228/229/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
640	227/228/305		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION

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Project Name: Duke Energy PROJECT NO. 07-12-1269 33

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
641	225/227/263		26-Jul	BN	518	28-Jun	JL	P	INTERSECTION
642	307/304		26-Jul	BN	518	28-Jun	JL	P	0-4' NoS
643	265/302		26-Jul	BN	518	28-Jul	JL	P	SEAM (22' cap)
644	179/180/300		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
645	180/300/304		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
646	180/181/304		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
647	181/182/304		26-Jun	BN	518	28-Jul	JL	P	50' CAP INTER.
648	182/304/308		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
649	182/183/308		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
650	183/255/308		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
651	254/255/308		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
652	252/254/308		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
653	251/252/308		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
654	255/183/184/256		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
655	184/256/257		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
656	184/215/257		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
657	215/257/259		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
658	215/216/259		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
659	216/259/260		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
660	216/217/260		26-Jul	BN	518	28 Jul	JL	P	INT.

ESI

REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 34

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
661	217/260/261		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
662	204/217/261		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
663	204/261/262		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
664	204/206/262		26-Jul	BN	518	28-Jul	JL	P	INTERSECTION
665	3/263		26-Jul	BN	518	28-Jul	JL	P	21'CAP SEAM
666	2/264		26-Jul	BN	518	28-Jul	JL	P	21' CAP SEAM
667	1/265		26-Jul	BN	518	28-Jul	JL	P	21' CAP SEAM
668	266/CAP		26-Jul	BN	518	28-Jul	JL	P	9' CAP SEAM
669	50/266		26-Jul	BN	518	28-Jul	JL	P	3' CAP SEAM
670	49/266		26-Jul	BN	518	28-Jul	JL	P	7' CAP SEAM
671	49/267		26-Jul	BN	518	28-Jul	JL	P	12' CAP SEAM
672	47/267		26-Jul	BN	518	28-Jul	JL	P	10' CAP SEAM
673	47/268		26-Jul	BN	518	28-Jul	JL	P	8' CAP SEAM
674	271/272		26-Jul	BN	518	27-Jul	JL	P	DS-153 B
675	47/268		26-Jul	BN	518	28-Jul	JL	P	DS-153 A
676	173/294		26-Jul	BN	518	28-Jul	JL	P	DS-161
677	227/305		26-Jul	BN	518	28-Jul	JL	P	DS-162
678	305/307		26-Jul	BN	518	28-Jul	JL	P	DS-163
679	302/306		26-Jul	BN	518	28-Jul	JL	P	DS-164
680	262/309		1-Aug	BN	518	2-Aug	JL	P	72' EoW

ESI
REPAIR REPORT

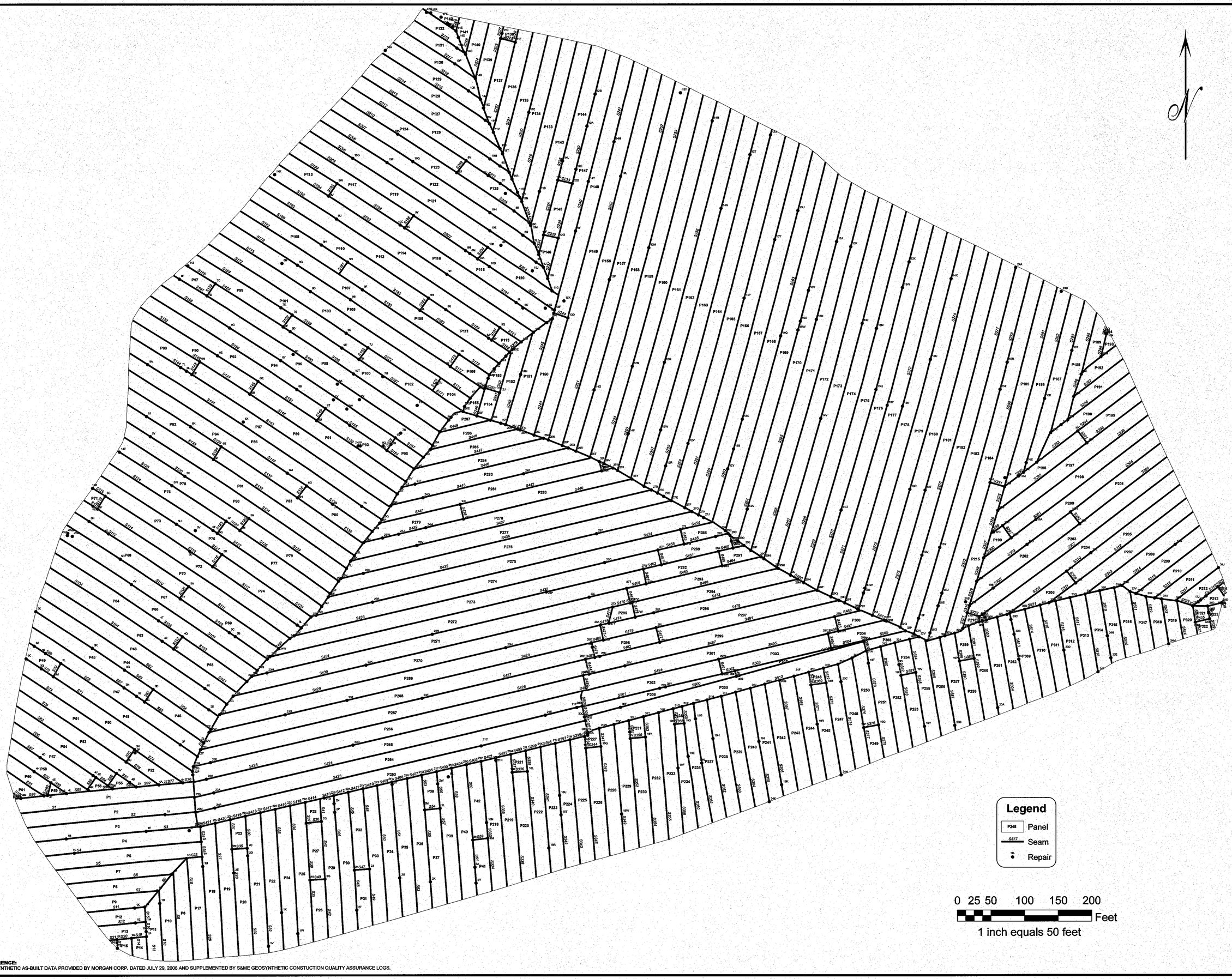
Project Name: Duke Energy PROJECT NO. 07-12-1269 35

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
681	262/309		1-Aug	BN	518	2-Aug	JL	P	118' EoW
682	314/315		1-Aug	BN	518	2-Aug	JL	P	103-106' EoW
683	207/314		1-Aug	BN	518	2-Aug	JL	P	4' Seam
684	207/311		1-Aug	BN	518	2-Aug	JL	P	4' Seam
685	208/315/216		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
686	208/314/315		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
687	207/208/314		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
688	207/208/313/314		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
689	207/312/313		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
690	207/311/312		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
691	206/207/311		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
692	206/310/311		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
693	206/309/310		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
694	206/262/309		1-Aug	BN	518	2-Aug	JL	P	INTERSECTION
695	204/206/262/309		1-Aug	BN	518	2-Aug	JL	P	20' CAP INTER.
696	315/316		1-Aug	BN	518	2-Aug	JL	P	3' EoW
697		262	2-Aug	BN	518	2-Aug	JL	P	70' EoW (18' CAP)
698		262	2-Aug	BN	518	2-Aug	JL	P	116' EoW (22' CAP)
699	213/214/3214		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
700	213/323/324		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION

ESI
REPAIR REPORT

Project Name: Duke Energy PROJECT NO. 07-12-1269 36

Repair #	Field Seam	Panel #	Repair Date	Repair Crew	Machine #	Non-DestructiveTest Date	Test Crew	Non-Destructive Test P/F	Comments
701	213/321/323		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
702	212/213/320/321		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
703	211/212/319/320		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
704	211/318/319		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
705	210/211/318		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
706	210/317/318		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
707	209/210/317		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
708	209/316/317		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
709	208/209/316		2-Aug	BN	518	2-Aug	JL	P	INTERSECTION
710	321/322		2-Aug	BN	518	2-Aug	JL	P	5' SoN (17' CAP)
711	262/309		2-Aug	BN	518	2-Aug	JL	P	DS-165
712	310/311		2-Aug	BN	518	2-Aug	JL	P	DS-166
713	314/315		2-Aug	BN	518	2-Aug	JL	P	DS-167
714	321/323		2-Aug	BN	518	2-Aug	JL	P	DS-168



REFERENCE:
GEOSYNTHETIC AS-BUILT DATA PROVIDED BY MORGAN CORP. DATED JULY 29, 2008 AND SUPPLEMENTED BY S&ME GEOSYNTHETIC CONSTUCTION QUALITY ASSURANCE LOGS.

S&ME
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NO.	DATE	DESCRIPTION	BY
0	1/30/09	CONSTRUCTION CERTIFICATION REPORT	KRD

GEOMEMBRANE LINER AS-BUILT
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE ENERGY - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CHR	CHECKED BY: KRD
DESIGNED BY: CHR	APPROVED BY: KRD
PROJECT NO: 1356-07-017 PH. 3	
SCALE: 1" = 50'	DATE: 1/30/09
DRAWING: 1	OF: 1

DRAWING PATH:

SUBMITTAL NO. 1

STRUCTURAL FILL

PINE HALL ROAD ASH LANDFILL CLOSURE
PERMIT NO. 85-03
DUKE ENERGY
BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

S&ME Project No. 1356-07-017 Ph. 3

Prepared for:

Duke Energy
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:

S&ME, Inc.
9751 Southern Pine Boulevard
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(704) 523-4726

January 2009

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1. MATERIALS

Structural fill materials generally consisted of soil and aggregate used as fill material for subgrade, compacted soil cover, vegetative cover, area fill, surface water control systems, and roadways.

Supporting documentation of structural fill operations are included as appendices to this report. Appendix I includes soil laboratory test data, Appendix II includes field density test results, and Appendix III includes record drawings documenting thickness of soil cover, field density test locations, and final grades and stormwater system locations and dimensions.

2. CONSTRUCTION

2.1 Subgrade Construction

Subgrade construction operations occurred within the Closure and the Flat Area, and generally consisted of cutting material from one location and placing as structural fill in another location to reach subgrade elevations.

In general, soil for the subgrade construction was cut and subsequently placed using scrapers. The soil was then spread using dozers and moisture conditioned with water wagons before being compacted using sheepsfoot rollers and vibratory smooth-drum rollers.

Subgrade construction within the Closure Area began in May 2008 and was substantially completed by June 2008. Within the Flat Area, the soil structural fill was generally constructed immediately following the subgrade construction. The subgrade construction and soil structural fill placement within the Flat Area began in April 2008, and was substantially completed by November 2008.

2.2 Soil Structural Fill

The soil structural fill operations included grading for access roads and constructing 18 inches of soil cover over the Flat Area subgrade and the geosynthetic cover system within the Closure Area. In general, soil structural fill was placed in 18-inch compacted lifts over the geosynthetics within the Closure Area and 6-inch compacted lifts elsewhere.

Structural fill operations for protective cover within the Closure Area began in early July 2008 and were substantially complete by October 2008. Within the Flat Area, the soil structural fill was generally constructed immediately following the subgrade construction. The subgrade construction and soil structural fill within the Flat Area began in April 2008 and was substantially completed by November 2008.

2.3 Vegetative Cover Soil

A 6-inch vegetative cover soil blend was provided over the Closure Area, the Flat Area, and the slopes within the Additional Infrastructure Area. The vegetative soil cover was

constructed by blending organic-laden material from on-site sources, material from topsoil import, and on-site soils.

The vegetative cover soil was placed at a thickness of 6 inches on slopes of 3H:1V or greater within the Closure Area. Two inches of vegetative cover soil were placed on slopes of less than 3H:1V within the Closure Area, within the Flat Area, and on slopes within the Additional Infrastructure Area, and blended with the top four inches of the underlying structural fill to construct a 6-inch vegetative cover soil blend. The Borrow Area did not receive vegetative cover soil.

In general, the vegetative cover soil was collected from on-site and off-site sources and stockpiled on site until application. During application, the vegetative cover soil was excavated from the stockpile with a track-mounted backhoe and loaded into articulated dump trucks. After the dump trucks deposited the soil at the desired location, the vegetative cover soil was spread using dozers. A roto-tiller machine was used when blending was required. Vegetative cover soil was not subjected to compaction requirements.

The required minimum thickness of soil structural fill and vegetative cover soil within the Closure Area and the Flat Area was 24 inches. The as-built thickness of soil cover at the survey grid points was 24 inches or greater as documented in the Drawings in Appendix III.

2.4 Soil-Cement Access Road

An access road approximately 5,150 feet long encircles the Closure Area. This access road was stabilized by mixing 50 pounds of Portland Type I/II cement into each square yard of road surface to a depth of eight inches. Cement stabilization was constructed on November 24 and 25, 2008.

In general, the sequence of construction for cement stabilization was as follows: Cement was applied to the surface of the soil with a spreader truck. Next, a mixing truck simultaneously mixed the cement into the soil and applied an appropriate amount of water. Following mixing, the soil/cement mixture was compacted with a sheepsfoot roller and then graded with a motorgrader. Following grading, the soil/cement was sealed with a smooth-drum roller. The day after completion of soil/cement construction, a water truck was used to lightly spray water on the access road to aid in curing.

2.5 ABC Stone Access Road

An access road to the top of the Closure Area approximately 1,245 feet long received a road surfacing consisting of 12 inches of ABC stone underlain by a woven geotextile. Access road surfacing was constructed on November 6 and 7, 2008.

3. OBSERVATIONS AND TESTING

S&ME observed, monitored, and provided field and laboratory testing during the structural fill construction. Borrow soils used during construction were monitored to evaluate that the materials were free of deleterious materials and conformance with project specifications.

3.1 Field Testing

Field testing primarily consisted of performing field density and moisture content tests by means of the drive cylinder method (ASTM D2937) and the nuclear gauge method (ASTM D2922). The drive cylinder method of field density testing was performed during fill placement for the subgrade and structural fill operations at an average frequency of one test per lift per acre. The drive cylinder method of field density testing was performed on anchor trench and pipe backfill at an average frequency of one test per 100 linear feet. The nuclear gauge method of field density testing was performed on ABC access road surfacing at an average frequency of one test per 200 linear feet. The nuclear gauge method of field density testing was performed on the cement stabilized soil at an average frequency of one test per 100 linear feet.

Additional field testing performed during the soil stabilization included checking the depth and consistency of mixing at a rate of once per 500 linear feet, and checking the cement application rate at a frequency of once per day.

Field density test results are included in Appendix II with the approximate field density test locations included in Appendix III.

3.2 Laboratory Testing

Structural fill laboratory testing was initially performed at a frequency of approximately one suite of tests per 10,000 cubic yards of material placed. During subgrade operations, the testing frequency was reduced upon visual observation of material consistency. A total of 30 suites of tests were performed during construction. In general, each suite included the following tests:

- Water (Moisture) Content (ASTM D2216)
- Particle Size (ASTM D422)
- Liquid Limit, Plastic Limit, and Plasticity Index (ASTM D4318)
- Standard Proctor Compaction (ASTM D698).

Laboratory testing was performed on two samples of both the on-site and import vegetative cover soil materials. Each sample was tested for nutrient loading and percentage of organic material by the combustion method.

The soil/cement stabilization design mix was evaluated by performing laboratory testing including Standard Proctor Compaction to develop density test requirements and 7-day compressive strength testing. The laboratory test results are included in Appendix I.

APPENDIX I

(SOIL LABORATORY TEST RESULTS)

Subgrade Soil Laboratory Test Results

Subgrade Soil Laboratory Test Results Summary								
Sample No.	**Description**	**Location**	**Liquid Limit [ASTM D4318]**	**Plastic Limit [ASTM D4318]**	**Plasticity Index[1] [ASTM D4318]**	**USCS Classification**	**Maximum Dry Density (pcf) [ASTM D698]**	**Optimum Moisture Content [ASTM D698]**
S-1	Tan Sandy Clayey Silt	Flat Area	32	20	12	CL	111.9	15.0%
S-2	Reddish Silty Clay with some Sand	Flat Area	68	20	48	CH	92.2	27.5%
S-3	Light Brown Sandy Silty Clay	Flat Area	41	19	22	CL	105	18.4%
S-5[2]	Fine to Medium Sandy Clayey Silt	Northeast existing cover [Closure Area]	44	30	14	CL	96.8	18.5%
S-6[3]	Gray Black Fly Ash	northeast [Closure Area]	-	-	NP	ML	83.4	23.6%
S-7	Tan Brown Coarse to Fine Sandy Silt with Gravel and Fly Ash	Flat Area	-	-	NP	ML	94.6	21.8%
S-8	Black Gray Silt with Coarse to Fine Sand	east top of cell "-4 ft" [Closure Area]	33	26	7	ML	90.2	19.3%
S-9[4]	Fly Ash	[Closure Area]	NOT TESTED				79.5	24.9%
S-10	Gray Silty Clay with Sand (Fly Ash)	north side between benches [Closure Area]	24	20	4	CL-ML	96.7	17.5%
S-11	Tan Brown Coarse to Fine Sandy Silt	lower northeast corner of Closure Area	35	25	10	ML	102.6	17.0%

1. NP = Non Plastic
2. S&ME laboratory sample S-5 is the same material as TRI laboratory Sample No. 6
3. S&ME laboratory sample S-6 is the same material as TRI laboratory Sample No. 7
4. S&ME laboratory sample 4 is renumbered as sample S-9

Lab Record V4.2

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

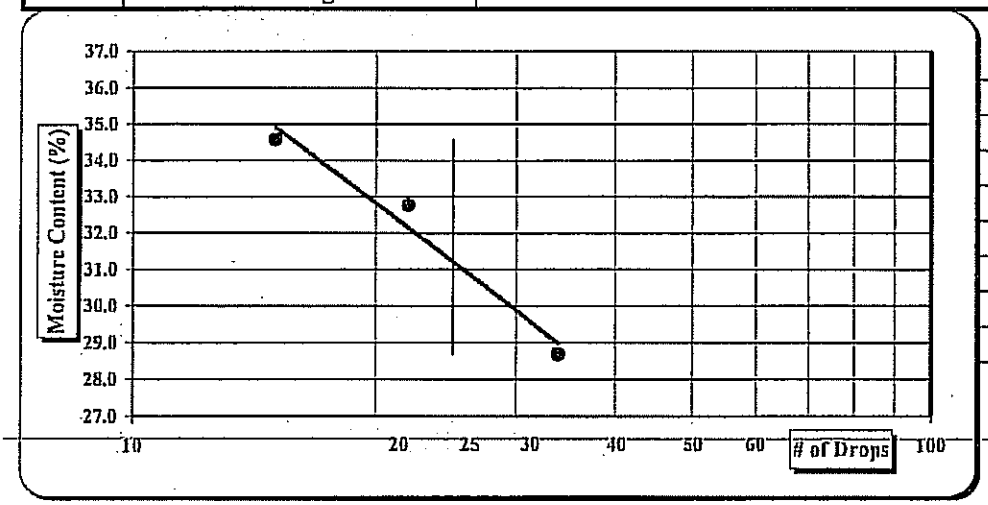
(ASTM D4318)

Project #: 1356-07-017-03-02
Project Name: Pine Hall Rd. Ash Landfill Closure
Client Name: Duke Energy
Client Address: Belews Creek Steam Station

Report Date: April 15, 2008
Test Date(s): April 15, 2008
Lab Log No.

Boring #: NA Sample #: S-1 (CCR) Sample Date: 04/02/08
Location: Flat Area Offset: NA Depth: NA
Sample Description: Tan Sandy Clayey Silt

Pan #		Liquid Limit						Plastic Limit		
	Test #	1	2	3	4	5	6	1	2	3
	Tare #									
A	Tare Weight	15.84	15.80	15.88				11.28	11.30	
B	Wet Soil Weight + A	22.48	23.58	26.00				17.06	17.28	
C	Dry Soil Weight + A	21.00	21.66	23.40				16.12	16.24	
D	Water Weight (B-C)	1.48	1.92	2.60				0.94	1.04	
E	Dry Soil Weight (C-A)	5.16	5.86	7.52				4.84	4.94	
F	% Moisture Content (D/E)*100	28.7	32.8	34.6				19.4%	21.1%	
N	# OF DROPS	34	22	15				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							20.24%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes:

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☐	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	32
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	20
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	11
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	CL

Technician Name: Jimmy Thomasson

Technical Responsibility: Chris Busch

Position

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Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #:	1356-07-017-03-02
Project Name:	Pine Hall Rd. Ash Landfill Closure
Client Name:	Duke Energy
Client Address:	Belews Creek Steam Station

Test Date(s): 4-14-08
Report Date: 4-14-08

Boring #: NA Sample #: S- 1 CCR Sample Date: 4-2-08
Location: Flat Area Offset: NA Elevation: NA
Sample Description: Tan Sandy Clayey Silt

Pan #:	text	Beaker #:		Apparent Relative Density		2.465	
Hydrometer Jar #:							
Pan Tare Weight (grams):			0.00	Moisture Content		Hygroscopic	Natural
Total Sample Air Dried Wt. + tare wt. (grams):			531.72		Tare #		
Weight of Total Sample Air Dried:			531.72	A	Tare Wt.	9.28	
Weight of Air Dried Hydrometer Sample (g):			53.31	B	Wet Wt. + A	27.88	
Total Sample Oven Dried:			514.65	C	Dry Wt. + A	27.26	
Hydrometer Sample Oven Dried (W):			51.53	D	Water Wt. (B-C)	0.62	
% Passing #10:			96.2%	E	Dry Wt. (C-A)	17.98	
Correction Factor a (Table 1):			1.04		% Moisture (100 x D/E)	3.45%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	6.9	Soil Mortar	98.7%
#10	19.6	100.0%	96.2%
#20	1.4	97.4%	93.7%
#40	2.1	96.0%	92.4%
#60	2.7	94.7%	91.1%
#100	4.2	91.9%	88.4%
#200	10.7	79.3%	76.2%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand: 22.4%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	1.3%	< 75 mm and > 4.75 mm	Silt & Clay: 76.2%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	2.5%	< 4.75 mm and > 2.00 mm	Silt:	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	3.8%	< 2.00 mm and > 0.425 mm	Clay:	< 0.005 mm	
Fine Sand:	16.1%	< 0.425 mm and > 0.075 mm	Colloids:	< 0.001 mm	Control Cylinder ☐ Composite Correction ☒

Liquid Limit Plastic Limit Plastic Index Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	2	23.0	33.5	5.0	6.60	28.50	57.5%	55.3%	11.6	0.01398	0.03369
	5	23.0	29.5	5.0	6.60	24.50	49.4%	47.6%	12.3	0.01398	0.02190
	15	23.0	25.5	5.0	6.60	20.50	41.4%	39.8%	12.9	0.01398	0.01298
	30	23.0	23.5	5.0	6.60	18.50	37.3%	35.9%	13.3	0.01398	0.00929
	60	23.0	21.5	5.0	6.60	16.50	33.3%	32.0%	13.6	0.01398	0.00665
	250	23.0	18.0	5.0	6.60	13.00	26.2%	25.2%	14.2	0.01398	0.00333
	1440	23.0	15.0	5.0	6.60	10.00	20.2%	19.4%	14.7	0.01398	0.00141
	2880				#N/A	#N/A	#N/A	19.4%	#N/A	#N/A	#N/A

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Jimmy Thomasson 119392 *Certification #*

Technical Responsibility: Chris Busch *Signature* *Position*

S&ME, INC. 3718 Old Battleground Rd., Greensboro, NC., 27410 S-1 Gr. Sz..xls

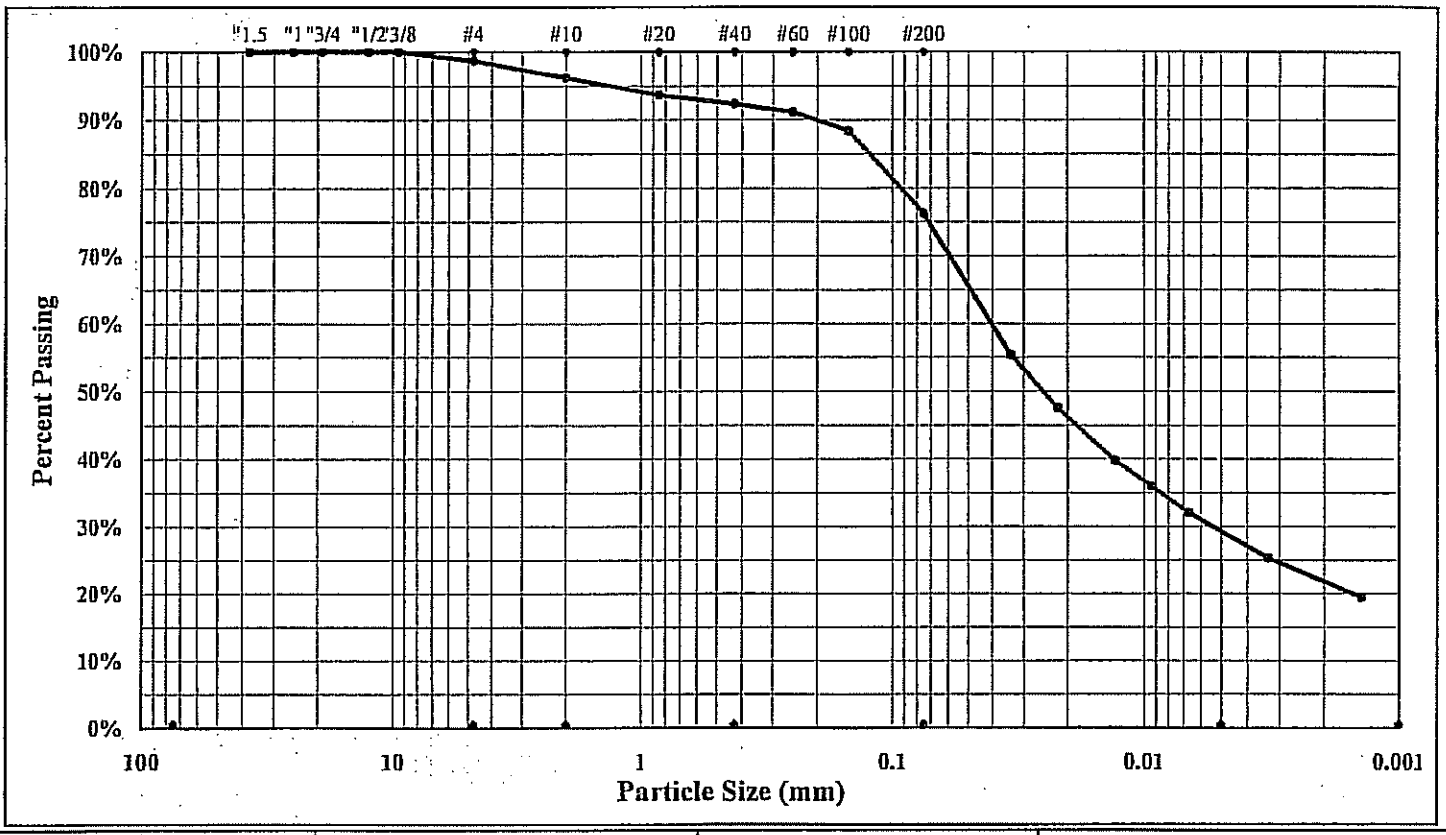
Laboratory Report Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03-02**	Report Date:	4-14-08
Project Name:	**Pine Hall Rd. Ash Landfill Closure**	Test Date(s):	4-14-08
Client Name:	Duke Energy		
Client Address:	Belews Creek Steam Station		

Boring #:	NA	Sample #:	S-1 (CR)	Sample Date:	4-2-08
Location:	Flat Area	Offset:	NA	Elevation:	NA
Sample Description:	Tan Sandy Clayey Silt				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.3%	Silt
Silt & Clay (% Passing #200)	76.2%	Sand	22.4%	Clay
Apparent Relative Density	2.465	Moisture Content		Colloids
Liquid Limit		Plastic Limit		Plastic Index

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Direct entry in this cell is allowed

ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
Direct entry in this cell is allowed
Direct entry in this cell is allowed

Technical Responsibility: Chris Busch

Signature Position

Moisture - Density Report

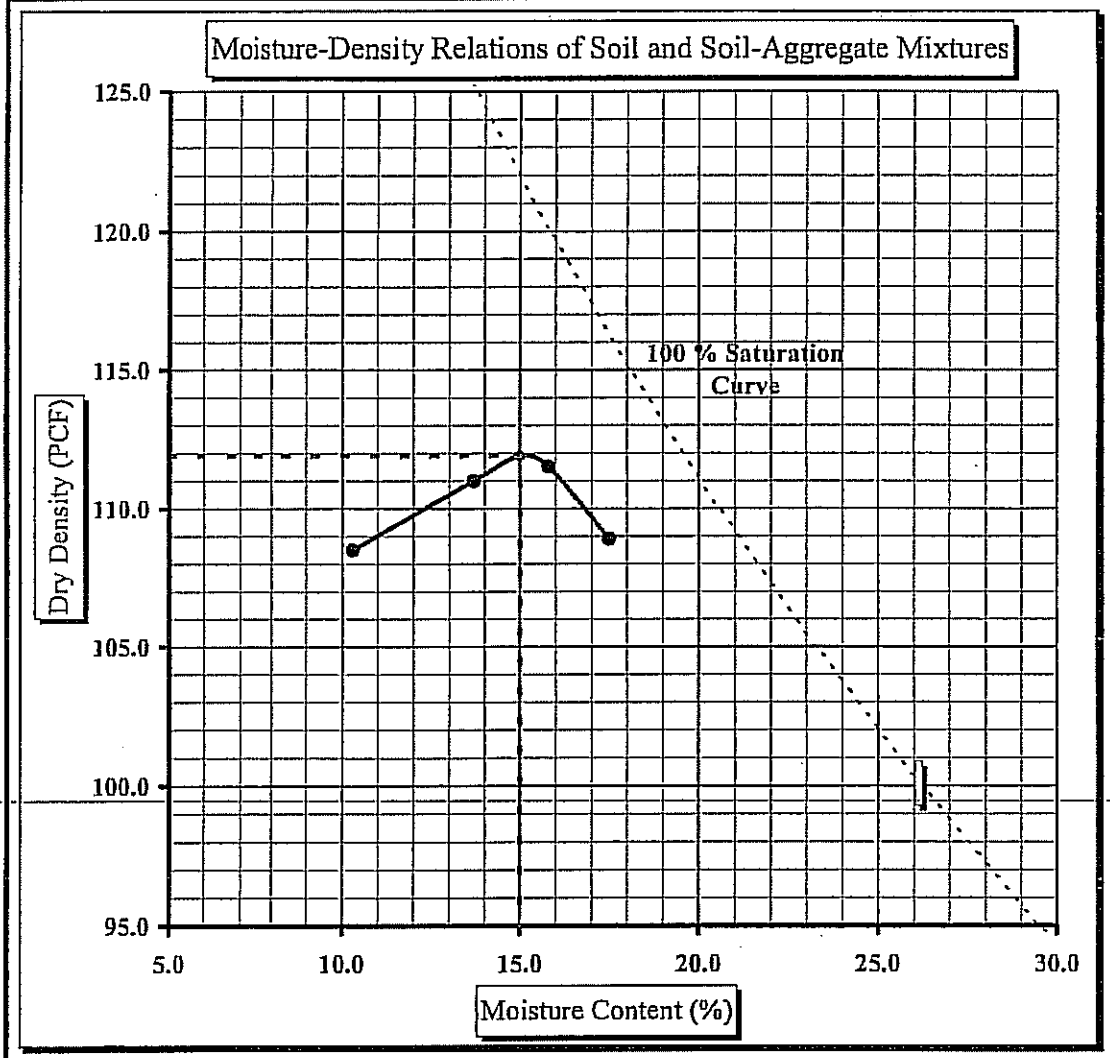
S&ME

S&ME Project #:	**1356-07-017-03-02**	Report Date:	April 15, 2008
Project Name:	**Pine Hall Rd. Ash Landfill Closure**	Test Date(s):	April 11, 2008
Client Name:	Duke Energy		
Client Address:	Belews Creek Steam Station		

Boring #:	NA	Sample #:	S-1 (cl)	Sample Date:	April 2, 2008
Location:	Flat Area	Offset:	NA	Depth:	NA
Sample Description:	Tan Sandy Clayey Silt				

Maximum Dry Density **111.9** **PCF.** **Optimum Moisture Content** **15.0** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	18.4%
Liquid Limit:	32
Plastic Limit:	20
Plastic Index:	
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	
#4	98.2

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☐ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☐ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☐ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Soil Discription is based on a visual classification.

Technical Responsibility: #REF! _____ #REF!
Signature

Lab Record V4.2

Liquid Limit, Plastic Limit, and Plastic Index

(ASTM D4318)

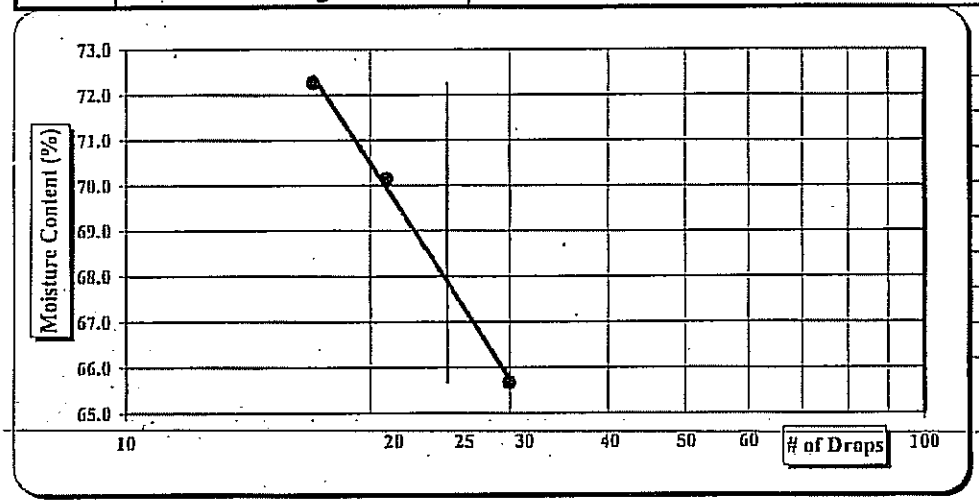
S&ME

Project #: 1356-07-017-03-02
Project Name: Pine Hall Rd. Ash Landfill Closure
Client Name: Duke Energy
Client Address: Belews Creek Steam Station

Report Date: April 15, 2008
Test Date(s): April 15, 2008
Lab Log No.

Boring #: NA Sample #: S-2 (CCR) Sample Date: 04/02/08
Location: Flat Area Offset: NA Depth: NA
Sample Description: Reddish Silty Clay with some Sand

Pan #		Liquid Limit						Plastic Limit		
	Test #	1	2	3	4	5	6	1	2	3
	Tare #									
A	Tare Weight	15.90	15.84	15.85				11.19	11.20	
B	Wet Soil Weight + A	23.09	23.65	23.24				16.59	16.85	
C	Dry Soil Weight + A	20.24	20.43	20.14				15.65	15.94	
D	Water Weight (B-C)	2.85	3.22	3.10				0.94	0.91	
E	Dry Soil Weight (C-A)	4.34	4.59	4.29				4.46	4.74	
F	% Moisture Content (D/E)*100	65.7	70.2	72.3				21.1%	19.2%	
N	# OF DROPS	30	21	17				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							20.14%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes:

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☐	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	68
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	20
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	48
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	CH

Technician Name: Jimmy Thomasson

Technical Responsibility: Chris Busch

Position

3718 Old Battleground Road Greensboro, North Carolina 27410
p: (336) 288-7180 / f: (336) 288-8980 / www.smeinc.com

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03-02
Project Name: Pine Hall Rd. Ash Landfill Closure
Client Name: Duke Energy
Client Address: Belews Creek Steam Station

Test Date(s): 4-14-08
Report Date: 4-14-08

Boring #: NA | Sample #: S-2 (CCR) | Sample Date: 4-2-08
Location: Flat Area | Offset: NA | Elevation: NA
Sample Description: Reddish Silty Clay with Some Sand

Pan #	text	Beaker #:		Apparent Relative Density	2.465		
Hydrometer Jar #:							
Pan Tare Weight (grams):			0.00	Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):			532.95		Tare #		
Weight of Total Sample Air Dried:			532.95	A	Tare Wt.	9.17	
Weight of Air Dried Hydrometer Sample (g):			53.86	B	Wet Wt. + A	31.99	
Total Sample Oven Dried:			473.84	C	Dry Wt. + A	29.45	
Hydrometer Sample Oven Dried (W):			47.87	D	Water Wt. (B-C)	2.54	
% Passing #10:			99.6%	E	Dry Wt. (C-A)	20.28	
Correction Factor a (Table 1):			1.04		% Moisture (100 x D/E)	12.52%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	0.0	Soil Mortar	100.0%
#10	1.9	100.0%	99.6%
#20	0.3	99.5%	99.1%
#40	0.4	99.2%	98.8%
#60	0.5	98.9%	98.5%
#100	0.7	98.6%	98.2%
#200	2.1	95.5%	95.2%

Notes: Description of Sand & Gravel Particles | Rounded ☐ | Angular ☐ | Hard & Durable ☐ | Soft ☐ | Weathered & Friable ☐

Maximum Particle Size:			Total Sand: 4.8%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	0.0%	< 75 mm and > 4.75 mm	Silt & Clay: 95.2%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	0.4%	< 4.75 mm and > 2.00 mm	Silt:	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	0.8%	< 2.00 mm and > 0.425 mm	Clay:	< 0.005 mm	
Fine Sand:	3.6%	< 0.425 mm and > 0.075 mm	Colloids:	< 0.001 mm	Control Cylinder ☐ / Composite Correction ☒

Liquid Limit | Plastic Limit | Plastic Index | Hydrometer: 151H ☐ 152H ☒

Time Clock	Time T (Min.)	Temp. (0.5 °C)	Hydrometer Reading	Corrections: Control Cylinder	Corrections: Composite Correction	Hydrometer R	Percent Passing: P(#10) = (R x a / W) x 100	Percent Passing: P (total) = P x % Passing #10	Effective Depth L	Table 3 K	Diameter D = K x ((L/T)^1/2
	2	23.0	43.0	5.0	6.60	38.00	82.6%	82.2%	10.1	0.01398	0.03135
	5	23.0	38.5	5.0	6.60	33.50	72.8%	72.5%	10.8	0.01398	0.02054
	15	23.0	34.0	5.0	6.60	29.00	63.0%	62.8%	11.5	0.01398	0.01226
	30	23.0	31.5	5.0	6.60	26.50	57.6%	57.4%	11.9	0.01398	0.00882
	60	23.0	29.0	5.0	6.60	24.00	52.1%	51.9%	12.4	0.01398	0.00634
	250	23.0	26.5	5.0	6.60	21.50	46.7%	46.5%	12.8	0.01398	0.00316
	1440	23.0	24.0	5.0	6.60	19.00	41.3%	41.1%	13.2	0.01398	0.00134
	2880				#N/A	#N/A	#N/A	41.1%	#N/A	#N/A	#N/A

References: ASTM D 422: Particle Size Analysis of Soils | ASTM D 421: Dry Preparation of Soil Samples | ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils | ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Jimmy Thomasson — 119392 (Certification #)

Technical Responsibility: Chris Busch

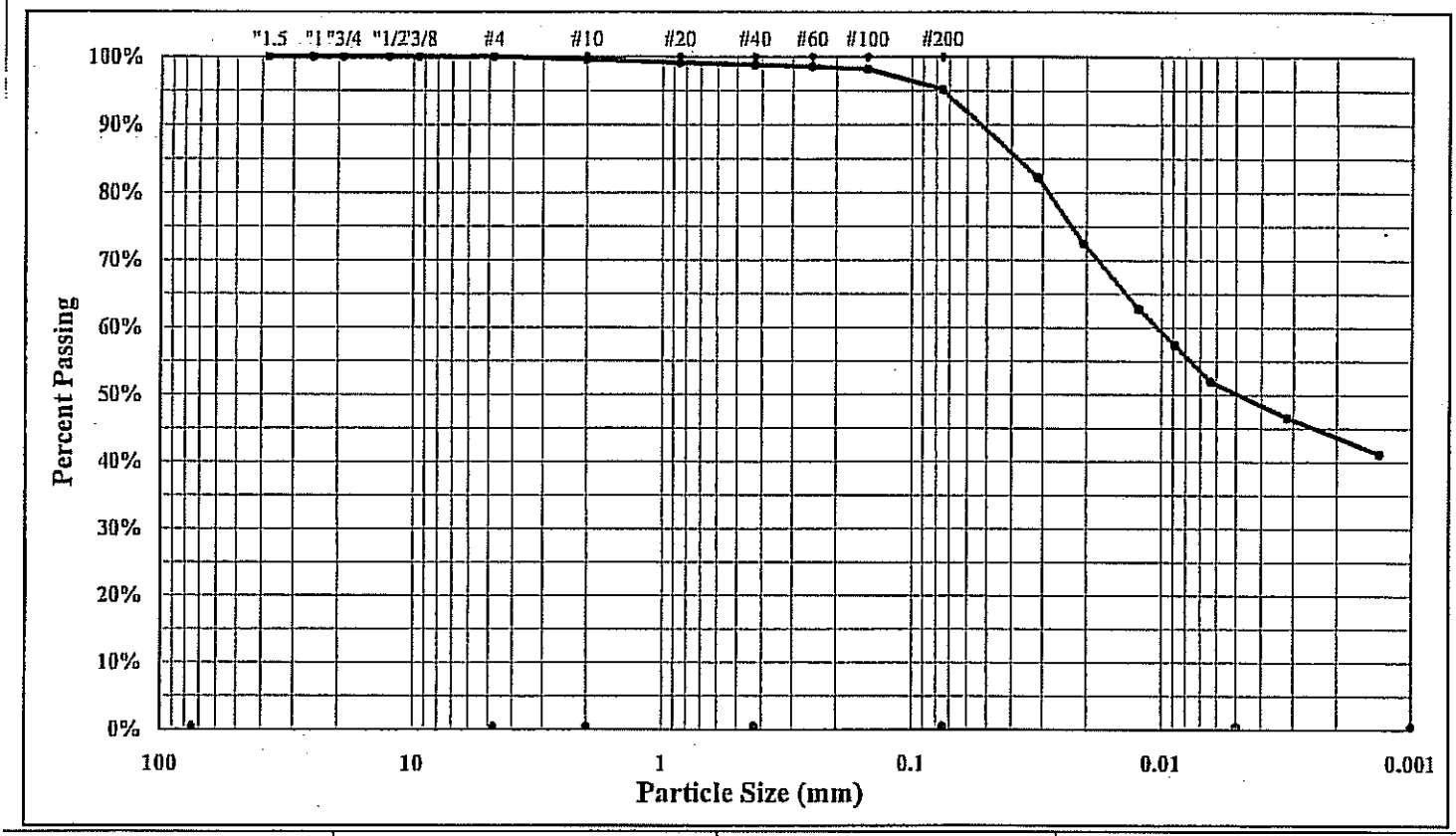
Signature | Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03-02**	Report Date:	4-14-08
Project Name:	**Pine Hall Rd. Ash Landfill Closure**	Test Date(s):	4-14-08
Client Name:	Duke Energy		
Client Address:	Belews Creek Steam Station		

Boring #:	NA	Sample #:	S-2 (cl)	Sample Date:	4-2-08
Location:	Flat Area	Offset:	NA	Elevation:	NA
Sample Description:	Reddish Silty Clay with Some Sand				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	0.0%	Silt
Silt & Clay (% Passing #200)	95.2%	Sand	4.8%	Clay
Apparent Relative Density	2.465	Moisture Content		Colloids
Liquid Limit		Plastic Limit		Plastic Index

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Direct entry in this cell is allowed

ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
Direct entry in this cell is allowed
Direct entry in this cell is allowed

Technical Responsibility: Chris Busch

Signature Position

Moisture - Density Report

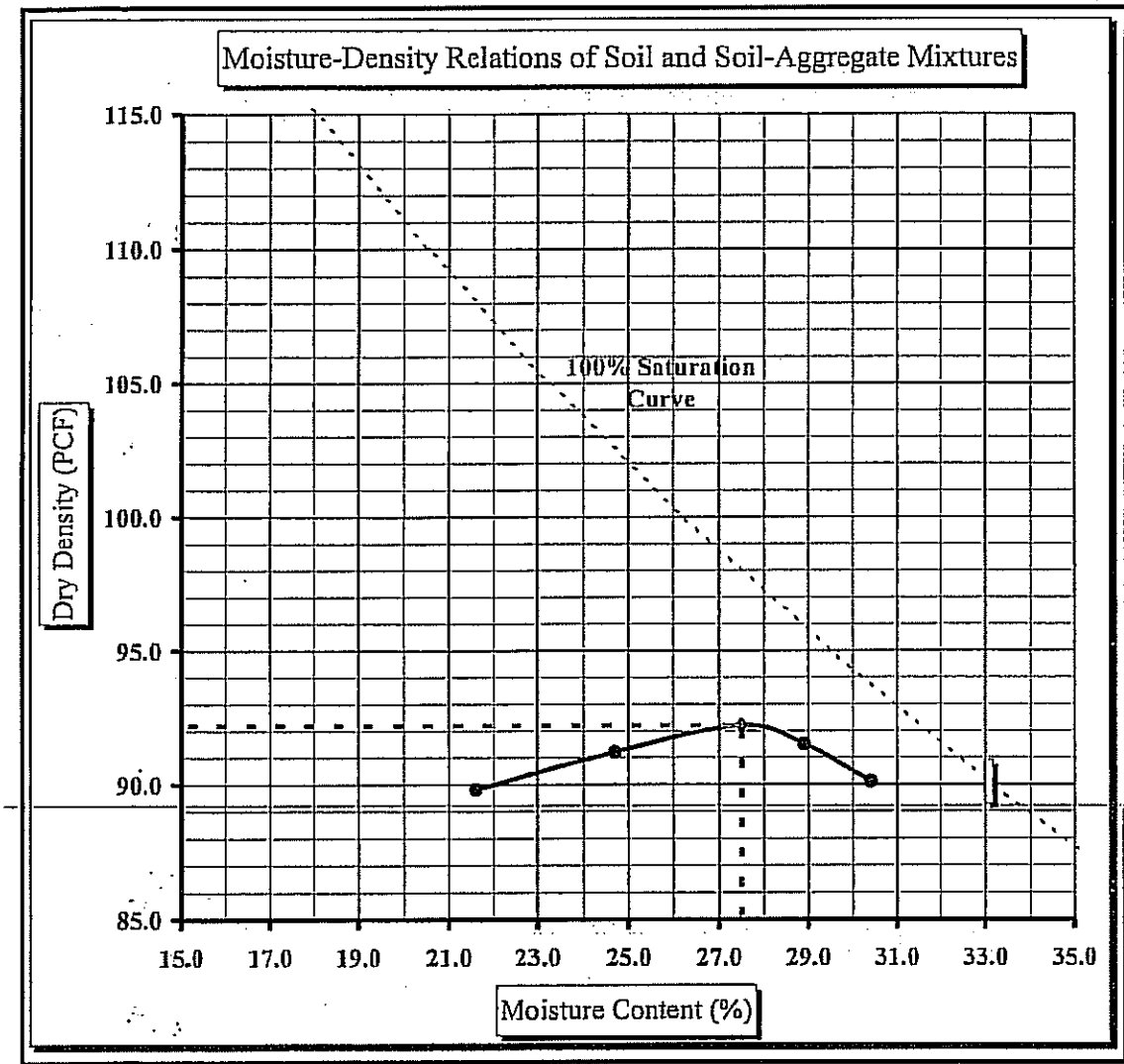
S&ME

S&ME Project #:	**1356-07-017-03-02**	Report Date:	April 15, 2008
Project Name:	**Pine Hall Rd. Ash Landfill Closure**	Test Date(s):	April 11, 2008
Client Name:	Duke Energy		
Client Address:	Belews Creek Steam Station		

Boring #:	NA	Sample #:	S-2 (CCR)	Sample Date:	April 2, 2008
Location:	Flat Area	Offset:	NA	Depth:	NA
Sample Description:	Reddish Silty Clay with some Sand				

Maximum Dry Density **92.2** **PCF.** **Optimum Moisture Content** **27.5** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	30.1%
Liquid Limit:	68
Plastic Limit:	20
Plastic Index:	
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	
#4	100

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☐ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☐ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☐ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Soil Discription is based on a visual classification.

Technical Responsibility: #REF! _____ #REF!
Signature

Lab Record V4.2

Liquid Limit, Plastic Limit, and Plastic Index

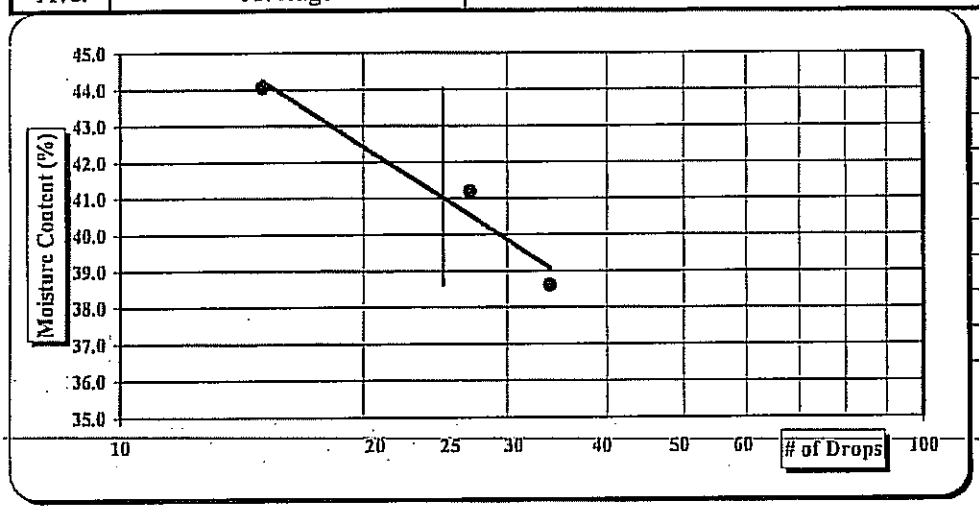
(ASTM D4318)

Project #: 1356-07-017-03-02
Project Name: Pine Hall Rd. Ash Landfill Closure
Client Name: Duke Energy
Client Address: Belews Creek Steam Station

Report Date: April 15, 2008
Test Date(s): April 15, 2008
Lab Log No.

Boring #: NA Sample #: S-3 (CCR) Sample Date: 04/02/08
Location: Flat Area Offset: NA Depth: NA
Sample Description: Lt. Brown Sandy Silty Clay

Pan #		Liquid Limit						Plastic Limit		
	Test #	1	2	3	4	5	6	1	2	3
	Tare #									
A	Tare Weight	15.80	16.03	15.75				11.34	11.40	
B	Wet Soil Weight + A	25.10	25.80	25.20				16.72	16.87	
C	Dry Soil Weight + A	22.51	22.95	22.31				15.84	15.98	
D	Water Weight (B-C)	2.59	2.85	2.89				0.88	0.89	
E	Dry Soil Weight (C-A)	6.71	6.92	6.56				4.50	4.58	
F	% Moisture Content (D/E)*100	38.6	41.2	44.1				19.6%	19.4%	
N	# OF DROPS	34	27	15				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							19.49%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes:

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☐	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	41
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	19
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	22
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	CL

Technician Name: Jimmy Thomasson

Technical Responsibility: Chris Busch

Position

3718 Old Battleground Road Greensboro, North Carolina 27410
p: (336) 288-7180 / f: (336) 288-8980 / www.smeinc.com

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03-02
Project Name: Pine Hall Rd. Ash Landfill Closure
Client Name: Duke Energy
Client Address: Belews Creek Steam Station

Test Date(s): 4-14-08
Report Date: 4-14-08

Boring #: NA | Sample #: S. 3 (CCR) | Sample Date: 4-2-08
Location: Flat Area | Offset: NA | Elevation: NA
Sample Description: Lt Brown Sandy Silty Clay

Pan #:	text	Beaker #:			Apparent Relative Density		2.465
Hydrometer Jar #:							
Pan Tare Weight (grams):			0.00		Moisture Content	Hygroscopic	Natural
Total Sample Air Dried Wt. + tare wt. (grams):			529.86		Tare #		
Weight of Total Sample Air Dried:			529.86	A	Tare Wt.	7.50	
Weight of Air Dried Hydrometer Sample (g):			57.33	B	Wet Wt. + A	26.29	
Total Sample Oven Dried:			497.49	C	Dry Wt. + A	25.12	
Hydrometer Sample Oven Dried (W):			53.76	D	Water Wt. (B-C)	1.17	
% Passing #10:			98.0%	E	Dry Wt. (C-A)	17.62	
Correction Factor a (Table 1):			1.04		% Moisture (100 x D/E)	6.64%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	0.0	Soil Mortar	100.0%
#10	10.1	100.0%	98.0%
#20	1.3	97.6%	95.6%
#40	2.2	95.9%	94.0%
#60	2.9	94.5%	92.6%
#100	4.5	91.7%	89.8%
#200	10.6	80.3%	78.7%

Notes: Description of Sand & Gravel Particles | Rounded ☐ Angular ☐ | Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand: 21.3%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	0.0%	< 75 mm and > 4.75 mm	Silt & Clay: 78.7%	< 0.075	Dispersion Time: 1 min.
Course Sand:	2.0%	< 4.75 mm and > 2.00 mm	Silt:	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	4.0%	< 2.00 mm and > 0.425 mm	Clay:	< 0.005 mm	
Fine Sand:	15.3%	< 0.425 mm and > 0.075 mm	Colloids:	< 0.001 mm	Control Cylinder ☐ Composite Correction ☒

Liquid Limit | Plastic Limit | Plastic Index | Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	2	23.0	38.5	5.0	6.60	33.50	64.8%	63.5%	10.8	0.01398	0.03248
	5	23.0	35.0	5.0	6.60	30.00	58.0%	56.9%	11.4	0.01398	0.02108
	15	23.0	31.5	5.0	6.60	26.50	51.3%	50.2%	11.9	0.01398	0.01247
	30	23.0	29.5	5.0	6.60	24.50	47.4%	46.4%	12.3	0.01398	0.00894
	60	23.0	27.0	5.0	6.60	22.00	42.6%	41.7%	12.7	0.01398	0.00643
	250	23.0	24.0	5.0	6.60	19.00	36.8%	36.0%	13.2	0.01398	0.00321
	1440	23.0	19.5	5.0	6.60	14.50	28.1%	27.5%	13.9	0.01398	0.00137
	2880				#N/A	#N/A	#N/A	27.5%	#N/A	#N/A	#N/A

References: ASTM D 422: Particle Size Analysis of Soils | ASTM D 421: Dry Preparation of Soil Samples | ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils | ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Jimmy Thomasson | 119392 (Certification #)

Technical Responsibility: Chris Busch

Signature | Position

S&ME, INC. | 3718 Old Battleground Rd., Greensboro, NC., 27410

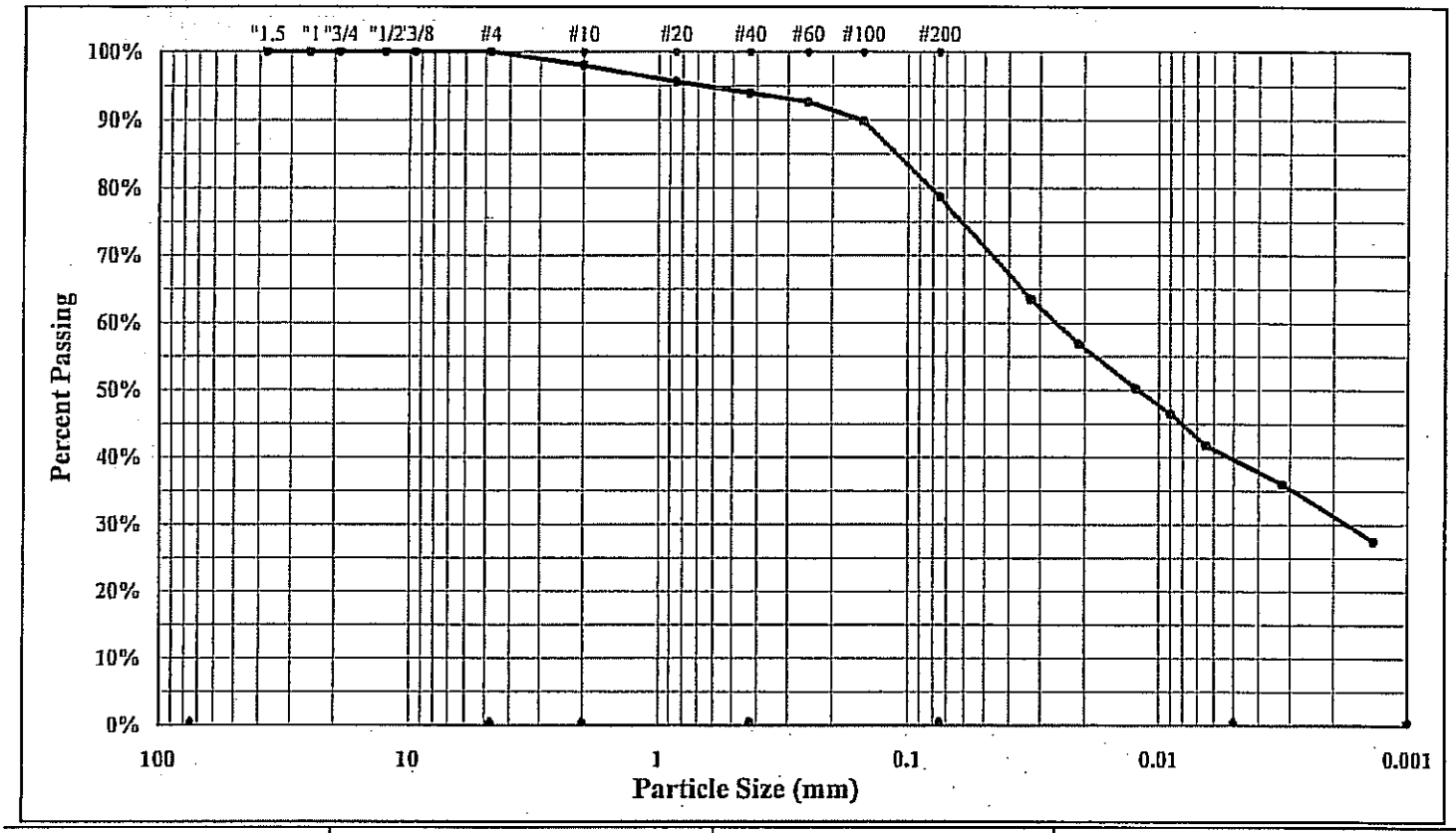
S-3 Gr. Sz..xls

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03-02**	Report Date:	4-14-08
Project Name:	**Pine Hall Rd. Ash Landfill Closure**	Test Date(s):	4-14-08
Client Name:	Duke Energy		
Client Address:	Belews Creek Steam Station		

Boring #:	NA	Sample #:	S-3 (CCR)	Sample Date:	4-2-08
Location:	Flat Area	Offset:	NA	Elevation:	NA
Sample Description:	Lt Brown Sandy Silty Clay				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	0.0%	Silt
Silt & Clay (% Passing #200)	78.7%	Sand	21.3%	Clay
Apparent Relative Density	2.465	Moisture Content		Colloids
Liquid Limit		Plastic Limit		Plastic Index

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils — ASTM D 421: Dry Preparation of Soil Samples

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils — ASTM D 854: Specific Gravity of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System) — Direct entry in this cell is allowed

Direct entry in this cell is allowed — Direct entry in this cell is allowed

Technical Responsibility: Chris Busch

Signature *Position*

Moisture - Density Report

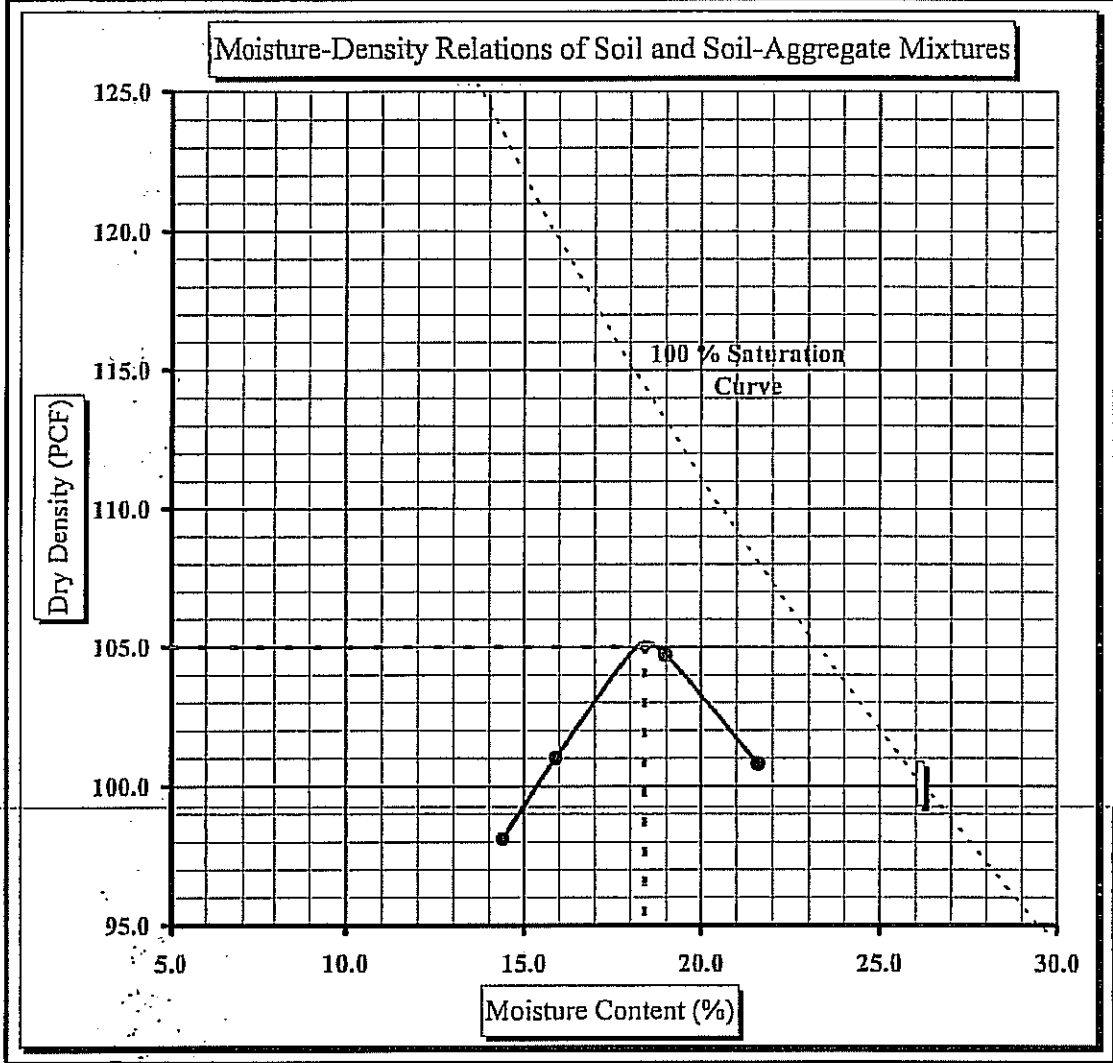
S&ME

S&ME Project #:	**1356-07-017-03-02**	Report Date:	April 15, 2008
Project Name:	**Pine Hall Rd. Ash Landfill Closure**	Test Date(s):	April 11, 2008
Client Name:	Duke Energy		
Client Address:	Belews Creek Steam Station		

Boring #:	NA	Sample #:	S-3 (CL)	Sample Date:	April 2, 2008
Location:	Flat Area	Offset:	NA	Depth:	NA
Sample Description:	Lt. Brown Sandy Silty Clay				

Maximum Dry Density **105.0** **PCF.** **Optimum Moisture Content** **18.4** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	22.1%
Liquid Limit:	41
Plastic Limit:	19
Plastic Index:	
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	
#4	98.5

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☐ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☐ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☐ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☐

References: : ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Soil Description is based on a visual classification.

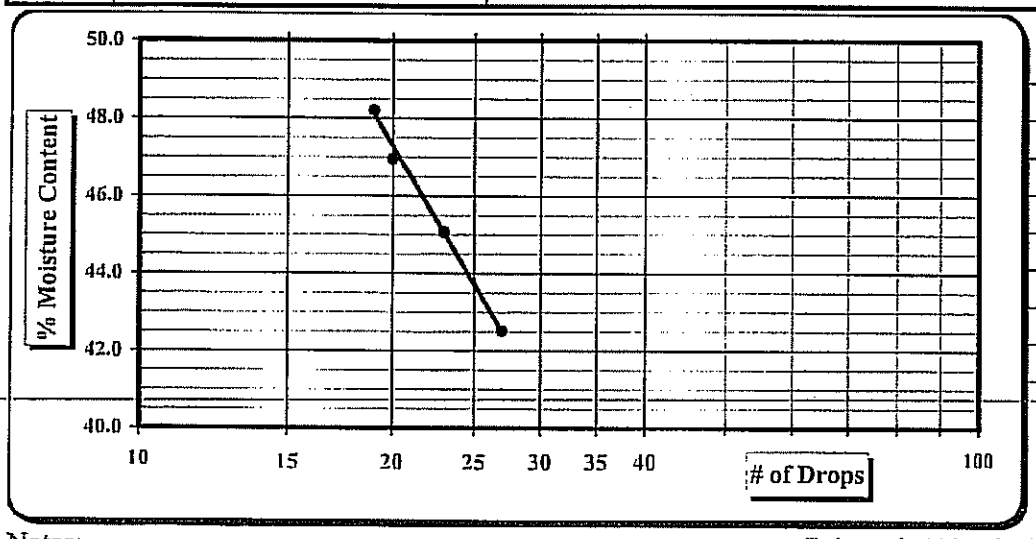
Technical Responsibility: #REF! #REF!
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03-02 | Report Date: 4/8/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 4/2-8/08
Client Name: Duke Energy
Client Address:
Boring #: | Sample #: S-5 | Sample Date: 3/19/08
Location: NE Existing Cover | Offset: | Depth:
Sample Description: Fine to Medium Sandy Clayey Silt (CL)

Pan #		Liquid Limit						Plastic Limit		
	Test #	1	2	3	4	5	6	1	2	3
	Tare #	9	54	VV	1			31	LL	
A	Tare Weight	13.92	14.10	16.04	13.86			13.96	16.95	
B	Wet Soil Weight + A	26.69	24.85	26.90	24.16			20.31	23.30	
C	Dry Soil Weight + A	22.88	21.51	23.43	20.81			18.83	21.83	
D	Water Weight (B-C)	3.81	3.34	3.47	3.35			1.48	1.47	
E	Dry Soil Weight (C-A)	8.96	7.41	7.39	6.95			4.87	4.88	
F	% Moisture Content (D/E)*100	42.5%	45.1%	47.0%	48.2%			30.4%	30.1%	
N	# OF DROPS	27	23	20	19			*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							30.3%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	44
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	30
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	14
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	CL

Technician Name: Jennifer Olsen — 117926 (Certification #)

Technical Responsibility: Kenneth Daly — Signature — Position

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03-02
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Client Address:

Test Date(s): 4/2-9/08
Report Date: 4/9/08

Boring #: Sample #: S-5 Sample Date: 3/19/08
Location: NE Existing Cover Offset: Depth:
Sample Description: Fine to Medium Sandy Clayey Silt (CL)

Pan #:	997	Beaker #:	ZZ	Apparent Relative Density (Assumed)		2.650			
Hydrometer Jar #:			1						
Pan Tare Weight (grams):			0.00	Moisture Content	Hygroscopic	Natural			
Total Sample Air Dried Wt. + tare wt. (grams):			326.61	Tare #	TT	O			
Weight of Total Sample Air Dried:			326.61	A Tare Wt.	15.93	81.56			
Weight of Air Dried Hydrometer Sample (g):			50.00	B Wet Wt. + A	27.23	353.96			
Total Sample Oven Dried:			319.47	C Dry Wt. + A	26.98	308.05			
Hydrometer Sample Oven Dried (W):			48.89	D Water Wt. (B-C)	0.25	45.91			
% Passing #10:			98.8%	E Dry Wt. (C-A)	11.05	226.49			
Correction Factor a (Table 1):			1.00	% Moisture (100 x D/E)	2.26%	20.3%			

Sieve	Retained Wt.	Percent Passing	
3.0"		Pan # (washed)	100.0%
1.5"			100.0%
1.0"			100.0%
3/4"		41	100.0%
1/2"			100.0%
3/8"	0.0		100.0%
#4	0.4	Soil Mortar	99.9%
#10	4.0	100.0%	98.8%
#20	1.1	97.7%	96.5%
#40	2.5	94.9%	93.8%
#60	4.4	91.1%	89.9%
#100	7.4	84.8%	83.8%
#200	14.8	69.8%	68.9%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand: 31.0%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	0.1%	< 75 mm and > 4.75 mm	Silt & Clay: 68.9%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	1.1%	< 4.75 mm and > 2.00 mm	Silt: 42.4%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	5.0%	< 2.00 mm and > 0.425 mm	Clay: 26.5%	< 0.005 mm	
Fine Sand:	24.9%	< 0.425 mm and > 0.075 mm	Colloids:	< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 44 Plastic Limit 30 Plastic Index 14 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.5	34.5	5.0		29.50	60.3%	59.6%	11.5	0.01340	0.04536
	2	21.5	31.0	5.0		26.00	53.2%	52.5%	12.0	0.01340	0.03287
	5	21.5	26.5	5.0		21.50	44.0%	43.4%	12.8	0.01340	0.02141
	15	21.5	23.0	5.0		18.00	36.8%	36.4%	13.3	0.01340	0.01264
	30	21.5	21.0	5.0		16.00	32.7%	32.3%	13.7	0.01340	0.00905
	60	21.5	19.5	5.0		14.50	29.7%	29.3%	13.9	0.01340	0.00645
	250	21.5	16.0	5.0		11.00	22.5%	22.2%	14.5	0.01340	0.00323
	1440	21.5	13.5	5.0		8.50	17.4%	17.2%	14.9	0.01340	0.00136

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$
(152H) .164cm per increment,
$V_B=67.0cm^3$, $L_2=14cm$, $A=27.8cm^2$

Technician Name: Jennifer Olsen 117926 (Certification #)

Technical Responsibility: Kenneth Daly

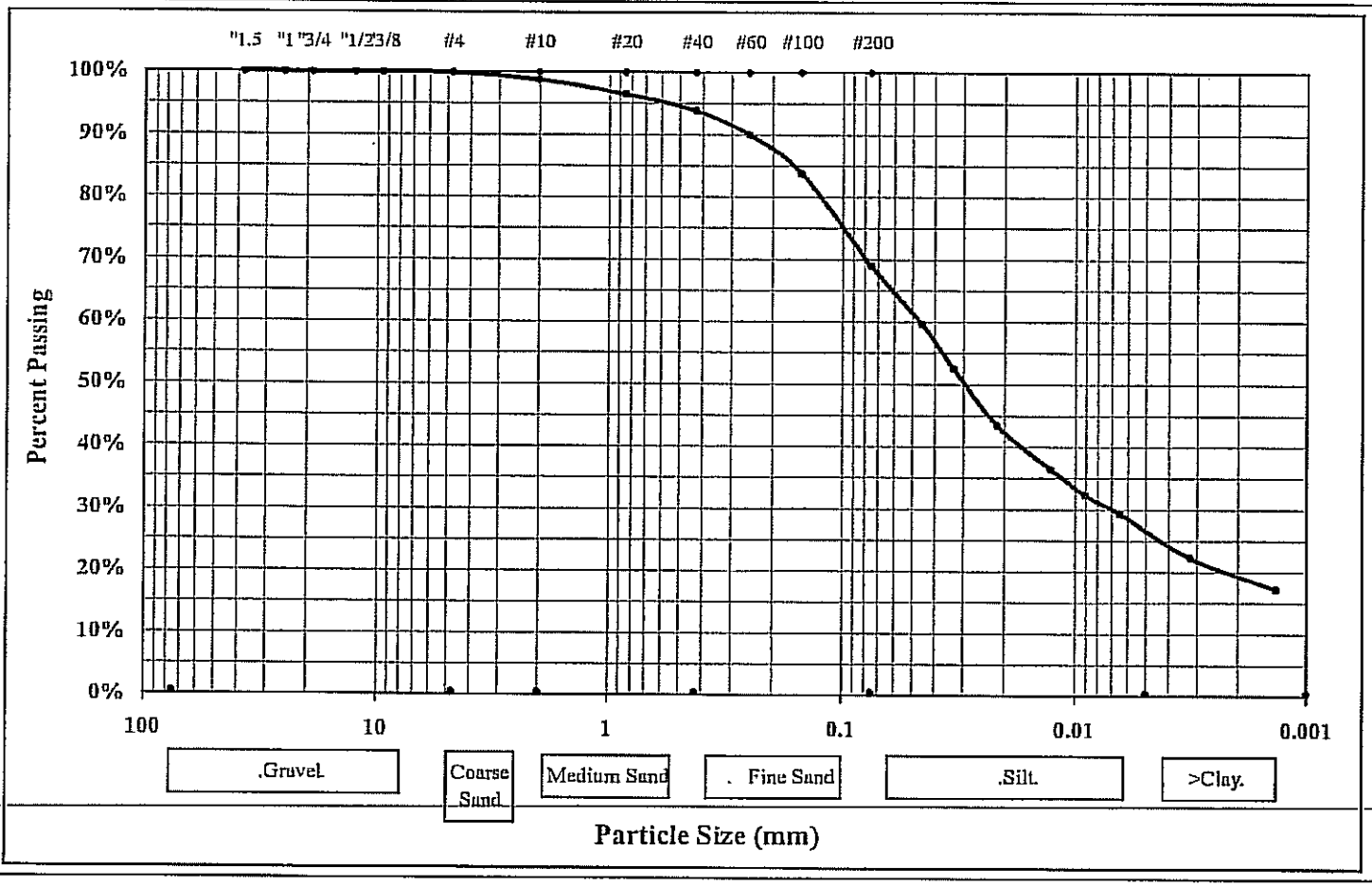
Signature Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03-02**	Report Date:	4/9/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	4/2-9/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S-5	Sample Date:	3/19/08
Location:	NE Existing Cover	Offset:		Depth:	
Sample Description:	Fine to Medium Sandy Clayey Silt (CL)				



Maximum Particle Size	0	Gravel	0.1%	Silt	42.4%
Silt & Clay (% Passing #200)	68.9%	Sand	31.0%	Clay	26.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	20.3%	Colloids	
Liquid Limit	44	Plastic Limit	30	Plastic Index	14

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 421: Dry Preparation of Soil Samples

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System) Direct entry in this cell is allowed

Direct entry in this cell is allowed Direct entry in this cell is allowed

Technical Responsibility: Kenneth Daly

Signature Position

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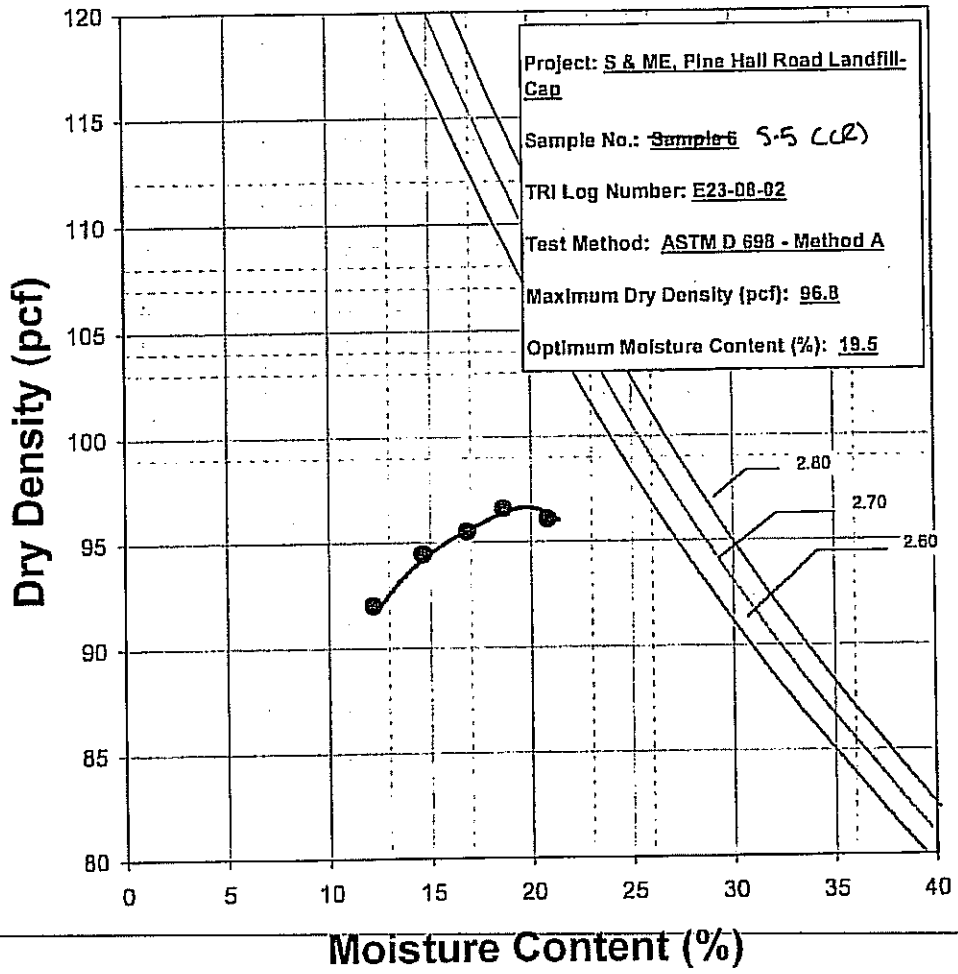
Proctor Compaction Test



John M. Allen, 04/14/2008

Quality Review/Date

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.

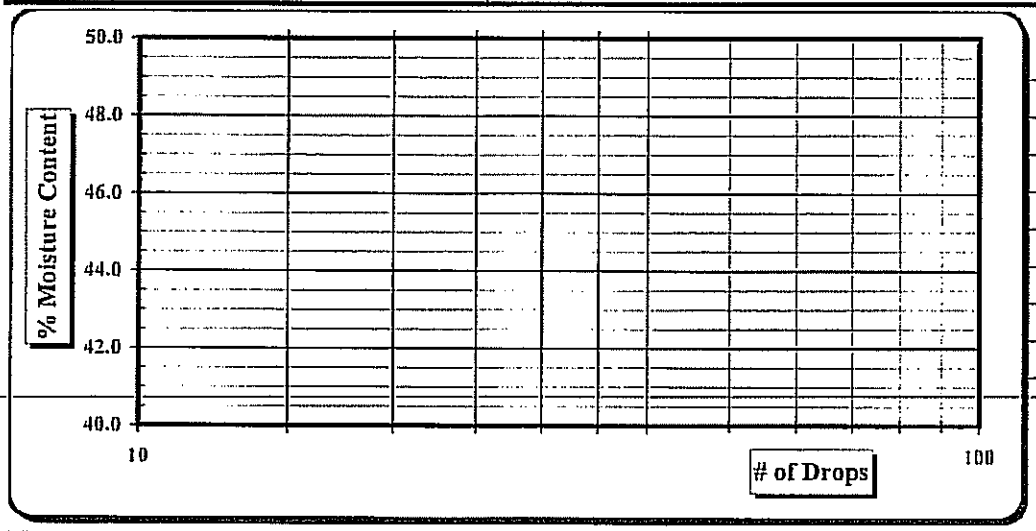
9063 Bee Caves Road □ Austin, TX 78733-6201 □ (512) 263-2101 □ (512) 263-2558 □ 1-800-880-TEST

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03-02 | Report Date: 4/7/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 4/2-7/08
Client Name: Duke Energy
Client Address:
Boring #: NE | Sample #: S-6 | Sample Date: 3/19/08
Location: | Offset: | Depth:
Sample Description: Gray Black Fly Ash [Gray Black Silt (ML)]

Pan #		Liquid Limit						Plastic Limit		
	Test #	1	2	3	4	5	6	1	2	3
	Tare #									
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture Content (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average									



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☒
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Jennifer Olsen — 117926 (Certification #)

Technical Responsibility: Kenneth Daly — Signature — Position

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03-02
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Client Address:

Test Date(s): 4/2-9/08
Report Date: 4/9/08

Boring #: Sample #: S-6 Sample Date: 3/19/08
Location: NE Offset: Depth:
Sample Description: Gray Black Fly Ash [Gray Black Silt (ML)]

Pan #:	538	Beaker #:	PDQ		Apparent Relative Density		2.250				
Hydrometer Jar #:			6								
Pan Tare Weight (grams):			0.00		Moisture Content	Hygroscopic	Natural				
Total Sample Air Dried Wt. + tare wt. (grams):			253.30		Tare #	XX	Paul				
Weight of Total Sample Air Dried:			253.30	A	Tare Wt.	16.05	81.78				
Weight of Air Dried Hydrometer Sample (g):			50.00	B	Wet Wt. + A	27.17	273.51				
Total Sample Oven Dried:			252.39	C	Dry Wt. + A	27.13	241.03				
Hydrometer Sample Oven Dried (W):			49.82	D	Water Wt. (B-C)	0.04	32.48				
% Passing #10:			100.0%	E	Dry Wt. (C-A)	11.08	159.25				
Correction Factor a (Table 1):			1.08		% Moisture (100 x D/E)	0.36%	20.4%				

Sieve	Retained Wt.	Percent Passing	
3.0"		Pan # (washed)	100.0%
1.5"			100.0%
1.0"			100.0%
3/4"			100.0%
1/2"			100.0%
3/8"			100.0%
#4		Soil Mortar	100.0%
#10	0.0	**100.0%**	100.0%
#20	0.1	99.9%	99.9%
#40	0.3	99.5%	99.5%
#60	0.6	98.9%	98.9%
#100	1.3	97.5%	97.5%
#200	5.8	88.3%	88.3%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	11.7%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	0.0%	< 75 mm and > 4.75 mm	Silt & Clay:	88.3%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	0.0%	< 4.75 mm and > 2.00 mm	Silt:	82.8%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	0.5%	< 2.00 mm and > 0.425 mm	Clay:	5.5%	< 0.005 mm	
Fine Sand:	11.2%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit NP Plastic Limit NP Plastic Index NP Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.5	39.5	5.0		34.50	74.8%	74.8%	10.6	0.01540	0.05021
	2	21.5	35.0	5.0		30.00	65.0%	65.0%	11.4	0.01540	0.03672
	5	21.5	28.5	5.0		23.50	50.9%	50.9%	12.4	0.01540	0.02428
	15	21.5	18.0	5.0		13.00	28.2%	28.2%	14.2	0.01540	0.01496
	30	21.5	13.0	5.0		8.00	17.3%	17.3%	15.0	0.01540	0.01088
	60	21.5	10.0	5.0		5.00	10.8%	10.8%	15.5	0.01540	0.00782
	250	21.5	6.5	5.0		1.50	3.3%	3.3%	16.0	0.01540	0.00390
	1440	21.5	5.0	5.0		0.00	0.0%	0.0%	16.3	0.01540	0.00164

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Jennifer Olsen

Technical Responsibility: Kenneth Daly

117926
Certification #

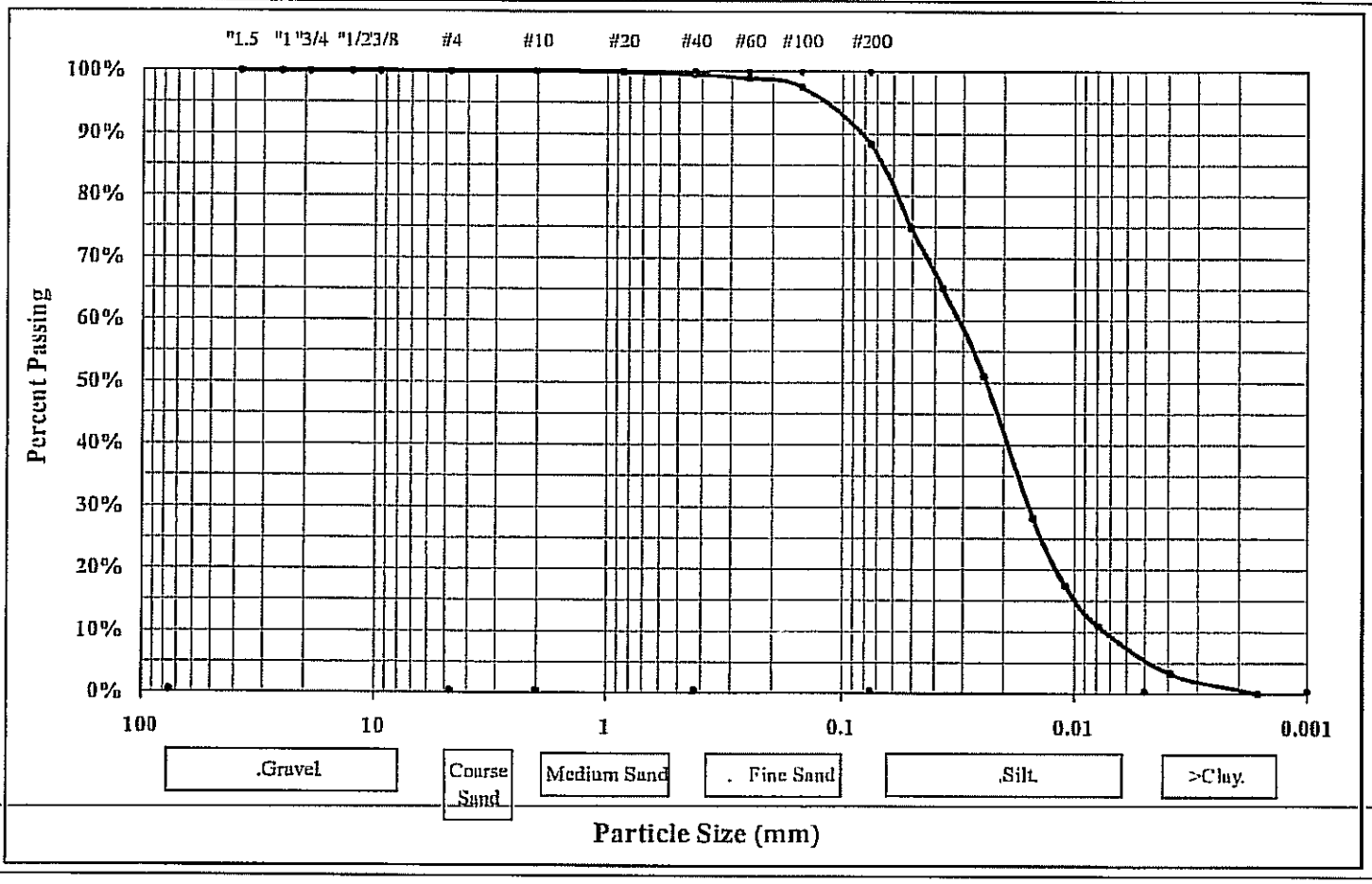
Signature *Position*

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	1356-07-017-03-02	Report Date:	4/9/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	4/2-9/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S-6	Sample Date:	3/19/08
Location:	NE	Offset:		Depth:	
Sample Description:	Gray Black Fly Ash [Gray Black Silt (ML)]				



Maximum Particle Size	0	Gravel	0.0%	Silt	82.8%
Silt & Clay (% Passing #200)	88.3%	Sand	11.7%	Clay	5.5%
Apparent Relative Density	2.250	Moisture Content	20.4%	Colloids	
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 421: Dry Preparation of Soil Samples

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System) Direct entry in this cell is allowed

Direct entry in this cell is allowed Direct entry in this cell is allowed

Technical Responsibility: Kenneth Daly

Signature Position

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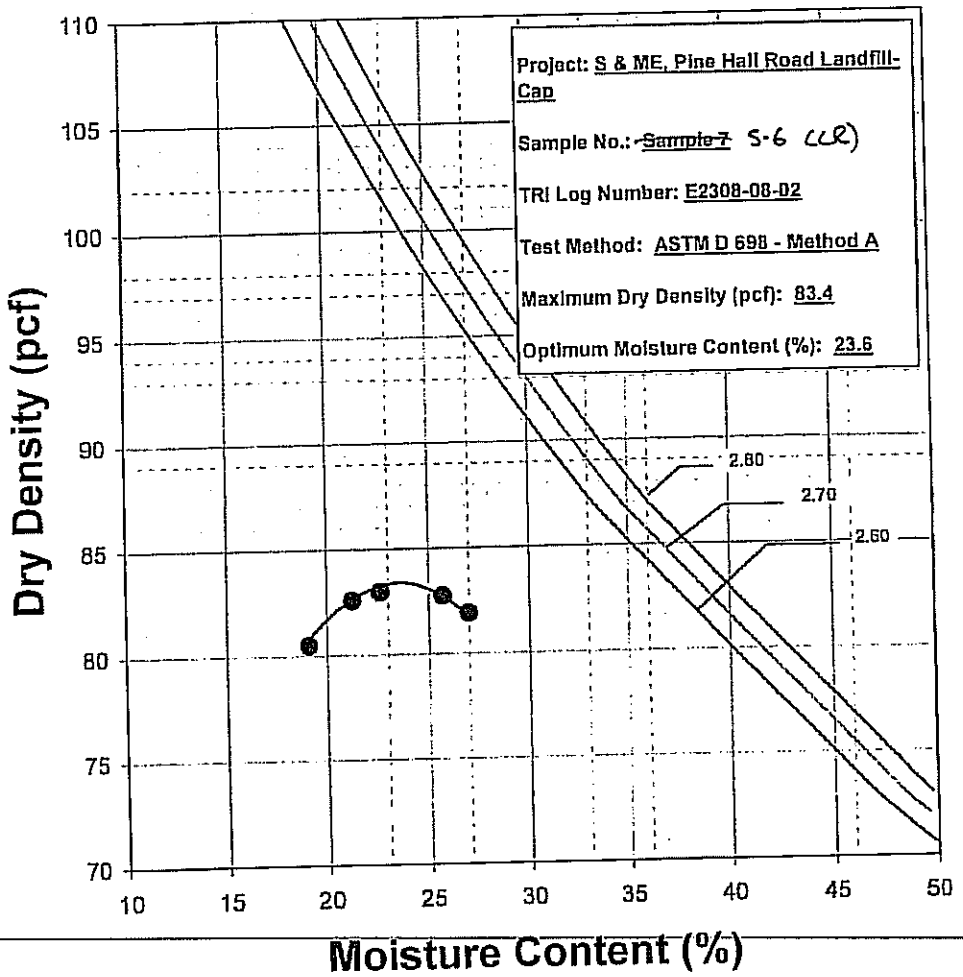
Proctor Compaction Test



John M. Allen, 04/16/2008

Quality Review/Date

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Laboratory Report Version 4.2

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	**1356-07-017-03**	Report Date:	4/30/08
Project Name:	Pine Hall Road Ash Landfill	Test Date(s):	4/29-30/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		
Sample by:	J.Addis	Sample Dates:	4/26/08
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
NA	S-7	Bulk	T-6	81.42	440.20	395.80	44.40	**14.1%**

Notes: Oven Temperature Set at 60C

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Karen Warner — 117900 (Certification #)

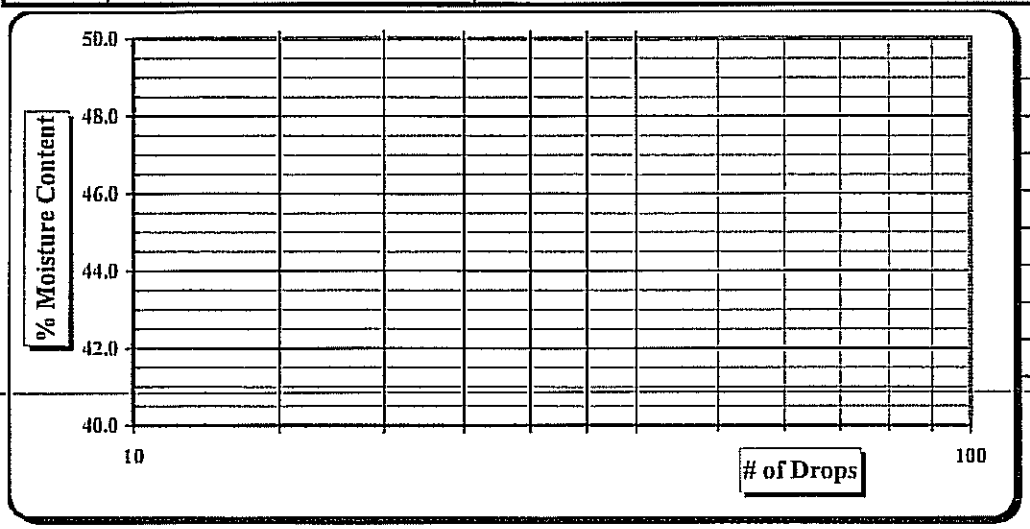
Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 5/5/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 5/2-5/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: | Sample #: S-7 | Sample Date: 4/26/08
Location: Flat Area | Offset: | Depth: Bulk
Sample Description: Tan Brown Coarse to Fine Sandy Silt w/Gravel & FlyAsh (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #									
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture Content (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average									



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods: Oven Temperature Set at 60C.

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☒
Liquid limit Test:	Multipoint Method ☐	One-point Method ☐		Liquid Limit	
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 4/29-5/5/08
Report Date: 5/5/08

Boring #: Sample #: S-7 Sample Date: 4/26/08
Location: Flat Area Offset: Depth: Bulk
Sample Description: Tan Brown Coarse to Fine Sandy Silt w/Gravel & FlyAsh (ML)

Pan #:		Beaker #:			Apparent Relative Density (Assumed)		2.650
Hydrometer Jar #:							
Pan Tare Weight (grams):					Moisture Content	Hygroscopic	Natural
Total Sample Air Dried Wt. + tare wt. (grams):			485.33		Tare #	BB	S-7
Weight of Total Sample Air Dried:			485.33	A	Tare Wt.	16.16	81.42
Weight of Air Dried Hydrometer Sample (g):			50.00	B	Wet Wt. + A	29.99	440.20
Total Sample Oven Dried:			470.45	C	Dry Wt. + A	29.48	395.80
Hydrometer Sample Oven Dried (W):			48.16	D	Water Wt. (B-C)	0.51	44.40
% Passing #10:			82.6%	E	Dry Wt. (C-A)	13.32	314.38
Correction Factor a (Table 1):			1.00		% Moisture (100 x D/E)	3.83%	14.1%

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	24.3		94.8%
3/4"	32.1		93.2%
1/2"	47.0		90.0%
3/8"	55.5		88.2%
#4	73.8	Soil Mortar	84.3%
#10	81.8	100.0%	82.6%
#20	1.0	97.9%	80.9%
#40	2.0	95.9%	79.2%
#60	3.1	93.6%	77.3%
#100	5.1	89.5%	73.9%
#200	12.3	74.5%	61.6%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	22.7%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	15.7%	< 75 mm and > 4.75 mm	Silt & Clay:	61.6%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	1.7%	< 4.75 mm and > 2.00 mm	Silt:	50.6%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	3.4%	< 2.00 mm and > 0.425 mm	Clay:	11.0%	< 0.005 mm		
Fine Sand:	17.6%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit NP Plastic Limit NP Plastic Index NP Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.5	37.0	5.0		32.00	66.5%	54.9%	11.0	0.01340	0.04454
	2	21.5	32.5	5.0		27.50	57.1%	47.2%	11.8	0.01340	0.03253
	5	21.5	29.0	5.0		24.00	49.8%	41.2%	12.4	0.01340	0.02107
	15	21.5	20.0	5.0		15.00	31.1%	25.7%	13.8	0.01340	0.01287
	30	21.5	16.0	5.0		11.00	22.8%	18.9%	14.5	0.01340	0.00931
	60	21.5	13.0	5.0		8.00	16.6%	13.7%	15.0	0.01340	0.00670
	250	22.5	9.0	4.0		5.00	10.4%	8.6%	15.5	0.01325	0.00330
	1440	22.5	8.5	4.0		4.50	9.3%	7.7%	15.6	0.01325	0.00138

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner

Technical Responsibility: Kenneth Daly

117900
Certification #

Signature

Project Engineer
Position

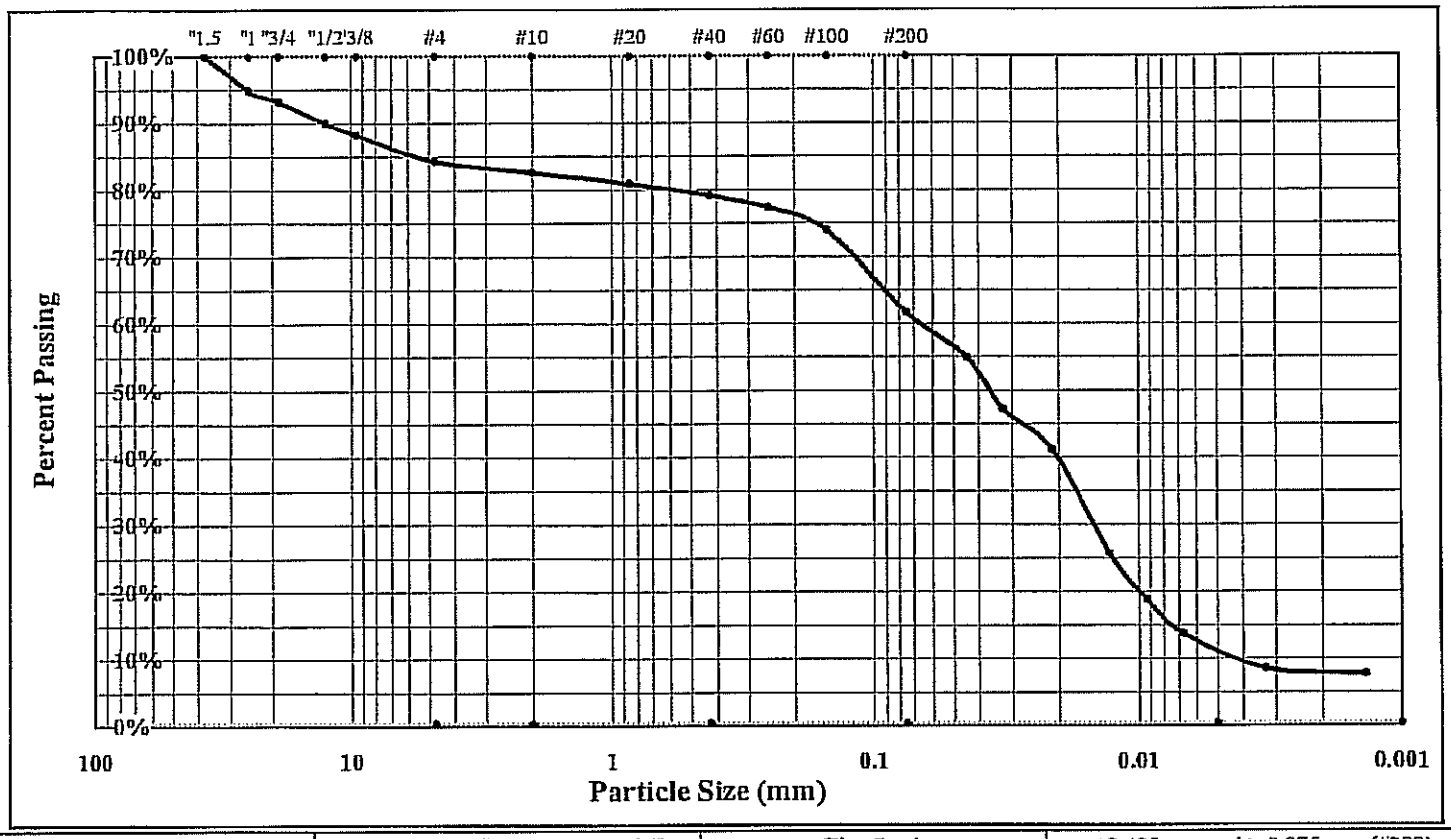
Laboratory Report Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	1356-07-017-03	Report Date:	5/5/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	4/29-5/5/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-7	Sample Date:	4/26/08
Location:	Flat Area	Offset:		Depth:	Bulk
Sample Description:	Tan Brown Coarse to Fine Sandy Silt w/Gravel & FlyAsh (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	15.7%	Silt	50.6%
Silt & Clay (% Passing #200)	61.6%	Sand	22.7%	Clay	11.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	14.1%	Colloids	
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

*Oven Temperature Set at 60C.

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer,

Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

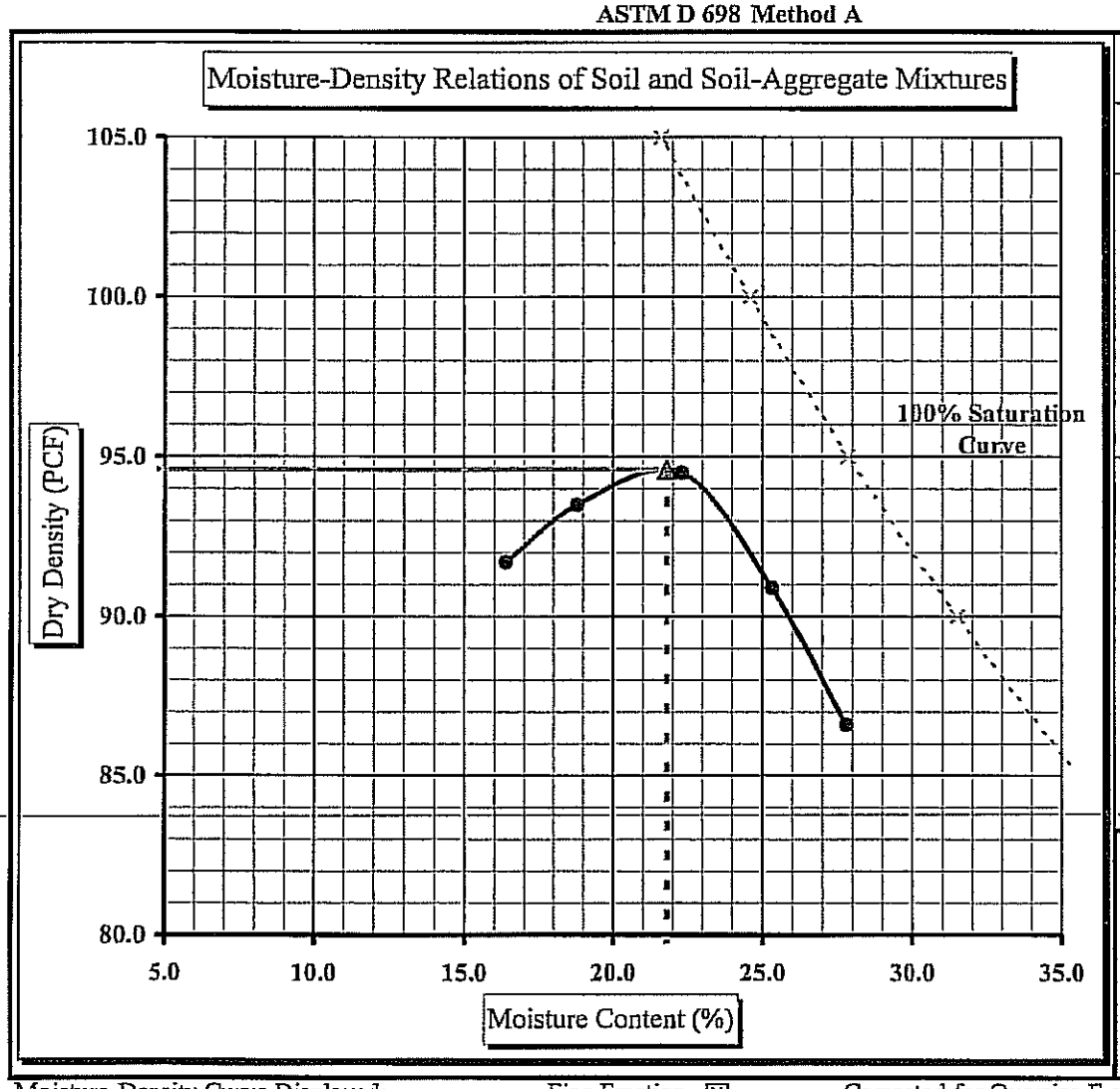
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	May 2, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	4/30-5/2/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-7	Sample Date:	April 26, 2008
Location:	Flat Area	Offset:		Depth:	Bulk
Sample Description:	Tan Brown Coarse to Fine Sandy Silt w/Gravel & Fly Ash (ML)				

Maximum Dry Density **94.6** **PCF.** **Optimum Moisture Content** **21.8** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	14.1%
Liquid Limit:	NP
Plastic Limit:	NP
Plastic Index:	NP
Specific Gravity:	

% Passing	
1	94.8
3/4"	93.2
1/2"	90
3/8"	88.2
#4	84.3

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Laboratory Report Version 4.2

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	**1356-07-017-03**	Report Date:	5/15/08
Project Name:	Pine Hall Road Ash Landfill	Test Date(s):	5/14-15/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		
Sample by:	J. Addis	Sample Dates:	5/14/08
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
NA	8	-4'	Rahim	86.99	339.17	307.27	31.90	**14.5%**

Notes: Oven Temperature Set at 60C

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

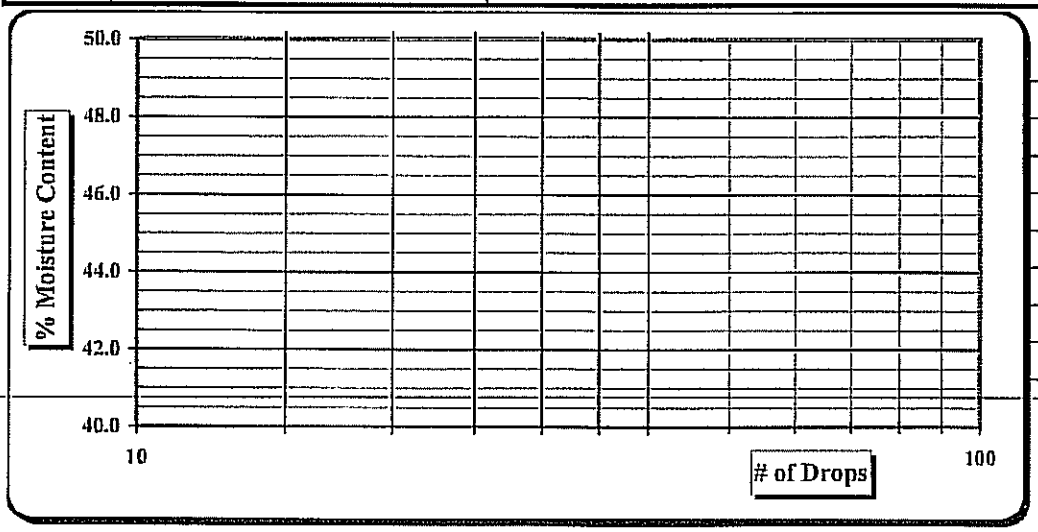
Project #:	1356-07-017-03	Report Date:	5/27/07
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	5/20-27/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: Sample #: S-8 Sample Date: 5/14/08

Location: East Top of Cell "-4ft" Offset: Depth: "-4ft "

Sample Description: Black Gray Silt w/Coarse to Fine Sand (ML) (Fly Ash/Soil Mixture)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	25						CC	45	
A	Tare Weight	14.39						16.81	13.98	
B	Wet Soil Weight + A	23.57						23.38	20.19	
C	Dry Soil Weight + A	21.27						22.02	18.89	
D	Water Weight (B-C)	2.30						1.36	1.30	
E	Dry Soil Weight (C-A)	6.88						5.21	4.91	
F	% Moisture Content (D/E)*100	33.4%						26.1%	26.5%	
N	# OF DROPS	22						*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR	32.7%								
Ave.	Average	32.7%						26.3%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☐	One-point Method ☒		Liquid Limit	33
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	26
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	7
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 5/14-23/08
Report Date: 5/23/08

Boring #: Sample #: S-8 (CCE) Sample Date: 5/14/08
Location: East Top of Cell "-4ft" Offset: Depth: -4'
Sample Description: Black Gray Silt w/Coarse to Fine Sand (ML) (Fly Ash / Soil Mixture)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.600	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):	245.66			Tare #	50	Rahim	
Weight of Total Sample Air Dried:	245.66		A	Tare Wt.	15.78	86.99	
Weight of Air Dried Hydrometer Sample (g):	50.00		B	Wet Wt. + A	29.11	339.17	
Total Sample Oven Dried:	239.67		C	Dry Wt. + A	28.78	307.27	
Hydrometer Sample Oven Dried (W):	48.76		D	Water Wt. (B-C)	0.33	31.90	
% Passing #10:	98.4%		E	Dry Wt. (C-A)	13.00	220.28	
Correction Factor a (Table 1):	1.01			% Moisture (100 x D/E)	2.54%	14.5%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	0.6	Soil Mortar	99.8%
#10	3.8	**100.0%**	98.4%
#20	0.7	98.6%	97.1%
#40	1.2	97.5%	96.0%
#60	2.0	95.8%	94.3%
#100	3.5	92.8%	91.3%
#200	9.7	80.0%	78.8%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	21.0%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	0.2%	< 75 mm and > 4.75 mm	Silt & Clay:	78.8%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	1.3%	< 4.75 mm and > 2.00 mm	Silt:	64.8%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	2.5%	< 2.00 mm and > 0.425 mm	Clay:	14.0%	< 0.005 mm		
Fine Sand:	17.2%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 33 Plastic Limit 26 Plastic Index 7 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	22.5	39.5	5.0		34.50	71.5%	70.3%	10.6	0.01345	0.04387
	2	22.5	34.5	5.0		29.50	61.1%	60.1%	11.5	0.01345	0.03219
	5	22.5	30.0	5.0		25.00	51.8%	51.0%	12.2	0.01345	0.02101
	15	22.5	20.0	5.0		15.00	31.1%	30.6%	13.8	0.01345	0.01292
	30	22.5	16.0	5.0		11.00	22.8%	22.4%	14.5	0.01345	0.00935
	60	22.5	13.0	5.0		8.00	16.6%	16.3%	15.0	0.01345	0.00672
	250	22.0	10.0	4.5		5.50	11.4%	11.2%	15.4	0.01353	0.00336
	1440	22.0	8.5	4.5		4.00	8.3%	8.2%	15.6	0.01353	0.00141

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$
(152H) .164cm per increment,
$V_B=67.0cm^3$, $L_2=14cm$, $A=27.8cm^2$

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly _____ (Signature) *Project Engineer* (Position)

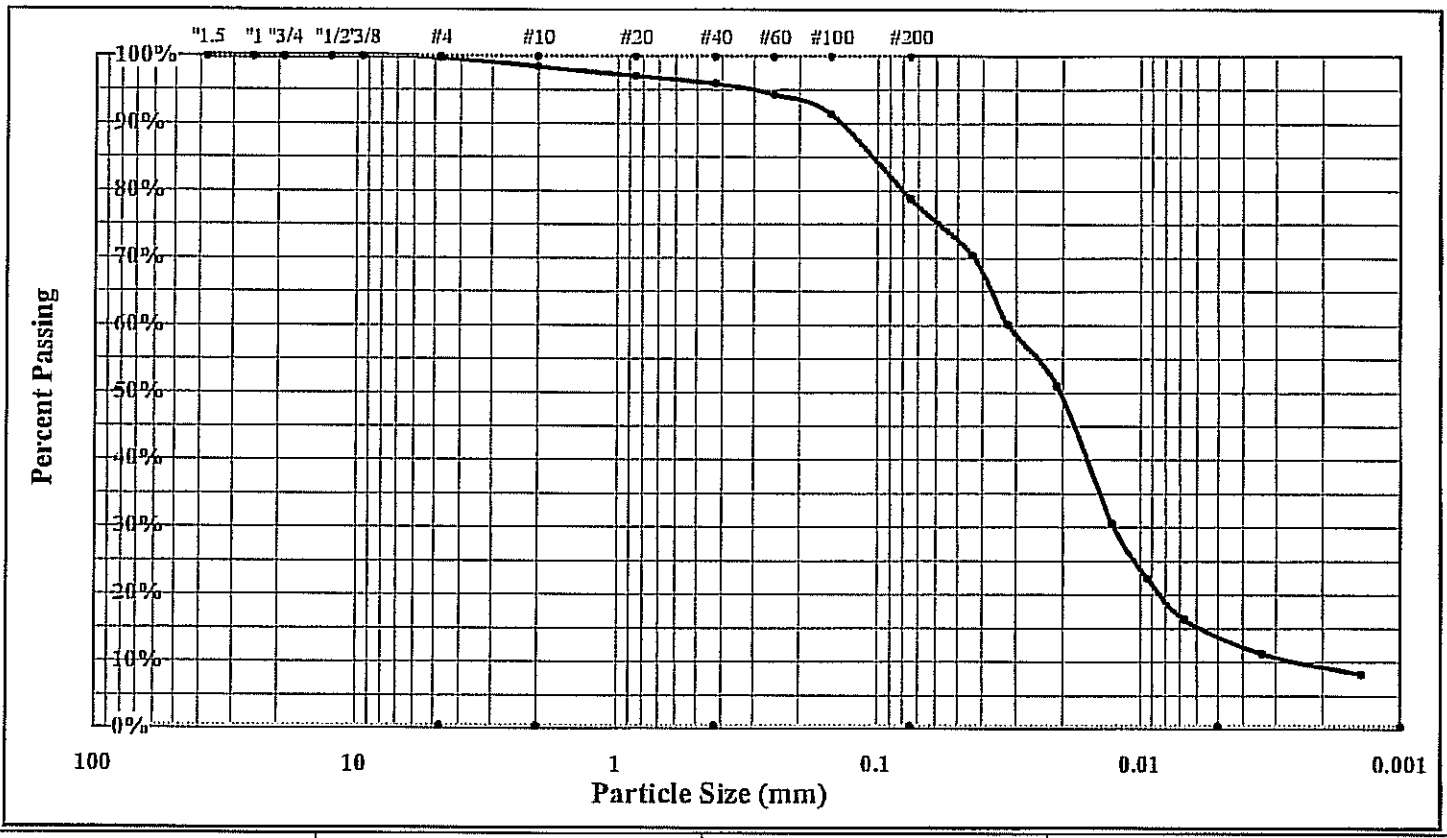
Laboratory Report Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	5/23/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	5/14-23/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #: S- 8 (CCR)	Sample Date: 5/14/08
Location:	East Top of Cell "-4ft"	Offset:	Depth: -4'
Sample Description:	Black Gray Silt w/Coarse to Fine Sand (ML)		(Fly Ash / Soil Mixture)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	0.2%	Silt	64.8%
Silt & Clay (% Passing #200)	78.8%	Sand	21.0%	Clay	14.0%
Apparent Relative Density (Assumed)	2.600	Moisture Content	14.5%	Colloids	
Liquid Limit	33	Plastic Limit	26	Plastic Index	7

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer

Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

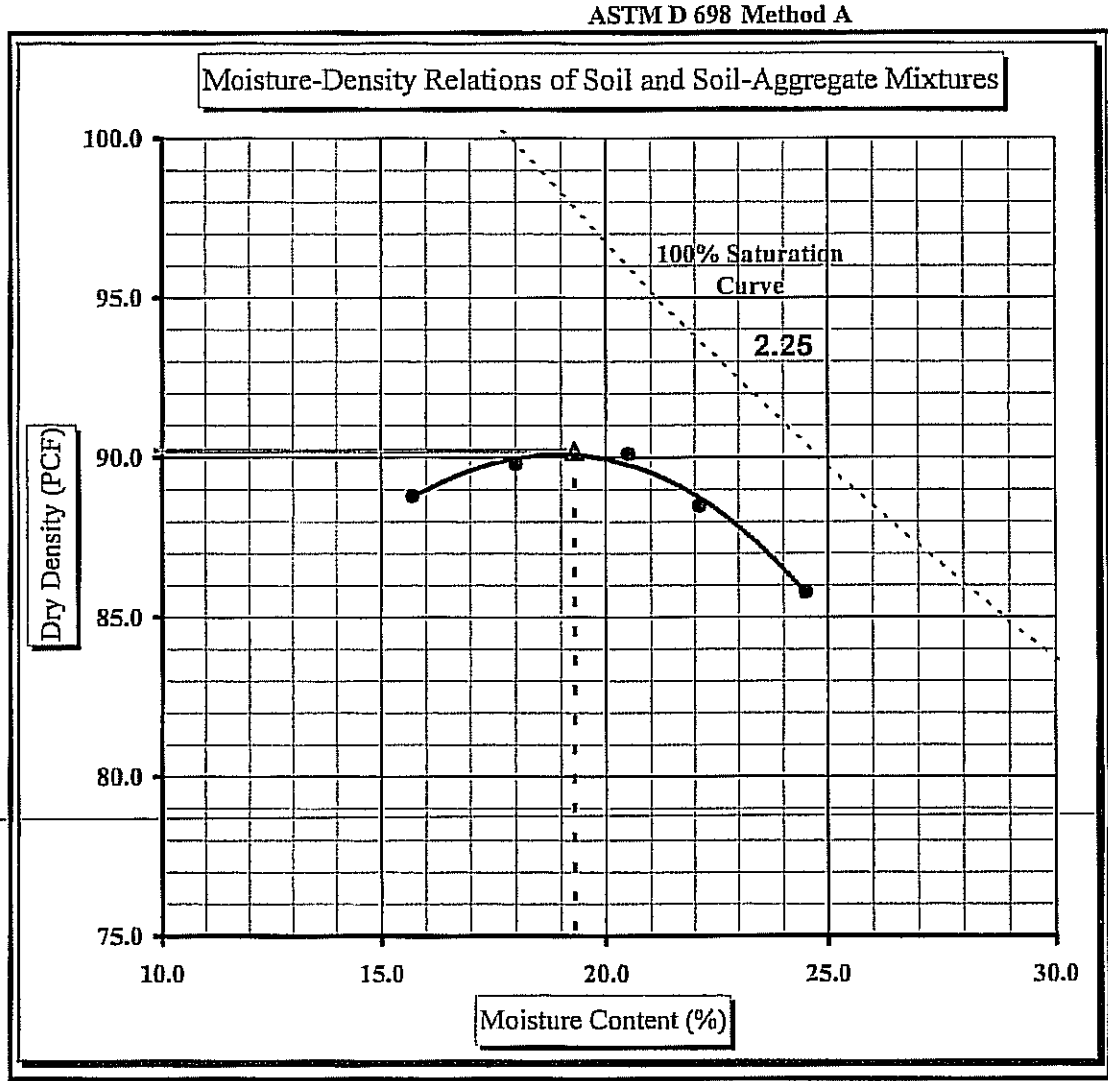
S&ME

S&ME Project #:	**1356-07-017**	Report Date:	May 20, 2008
Project Name:	**Pine Hall Road Ash Landfill**	Test Date(s):	5/14-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-8 CCR	Sample Date:	May 14, 2008
Location:	East Top of Cell	Offset:		Depth:	-4'
Sample Description:	FlyAsh				

Maximum Dry Density **90.2** **PCF.** **Optimum Moisture Content** **19.3** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	14.5%
Liquid Limit:	
Plastic Limit:	
Plastic Index:	
Specific Gravity:	

% Passing

3/4"
1/2"
3/8"
#4

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Laboratory Report Version 4.2

Moisture - Density Report

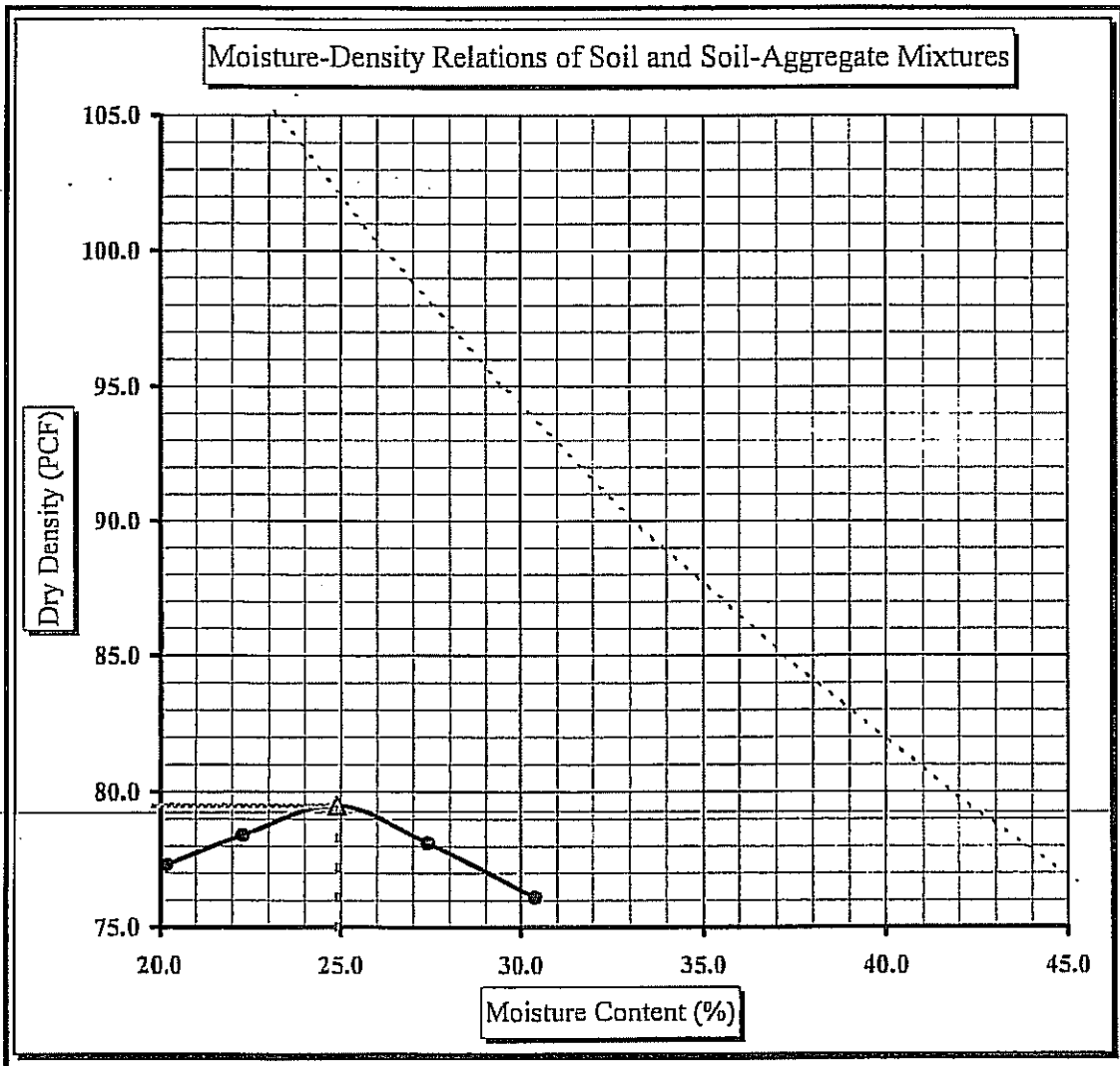
S&ME

S&ME Project #:	1356-07-017-03-02	Report Date:	May 23, 2008
Project Name:	**Pine Hall Rd. Ash Landfill**	Test Date(s):	May 23, 2008
Client Name:			
Client Address:			

Boring #:	NA	Sample #:	4 5-9 ccR\	Sample Date:	May 16, 2008
Location:	NA	Offset:	NA	Depth:	NA
Sample Description:	Belews Creek Fly Ash				

Maximum Dry Density 79.5 **PCF.** **Optimum Moisture Content** 24.9 **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	15.8%
Liquid Limit:	
Plastic Limit:	
Plastic Index:	
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	
#4	100

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☐ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☐ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☐ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Soil Discription is based on a visual classification.

Technical Responsibility: #REF! _____ #REF!

Signature

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	1356-07-017-03	Report Date:	6/12/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	6/11-12/08
Client Name:	Duke Energy		
Client Address:			
Sample by:	J.Addis	Sample Dates:	5/23 & 6/7
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
B-10	S-10	BULK	G-13	81.27	343.69	309.72	33.97	**14.9%**
B-11	S-11	BULK	JAZZ	81.27	387.19	354.32	32.87	**12.0%**
B-10	S-12	BULK	G-8	81.80	348.03	312.84	35.19	**15.2%**
B-12	S-13	BULK	T-1	83.16	309.59	273.43	36.16	**19.0%**
B-13	S-14	BULK	G-12	82.67	369.53	323.86	45.67	**18.9%**
B-16	S-15	BULK	G-15	81.33	359.96	318.25	41.71	**17.6%**
B-19	S-16	BULK	S-7	81.50	326.29	296.94	29.35	**13.6%**

Notes: No moisture jars in sample buckets. Sampled from bottom of bucket.

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

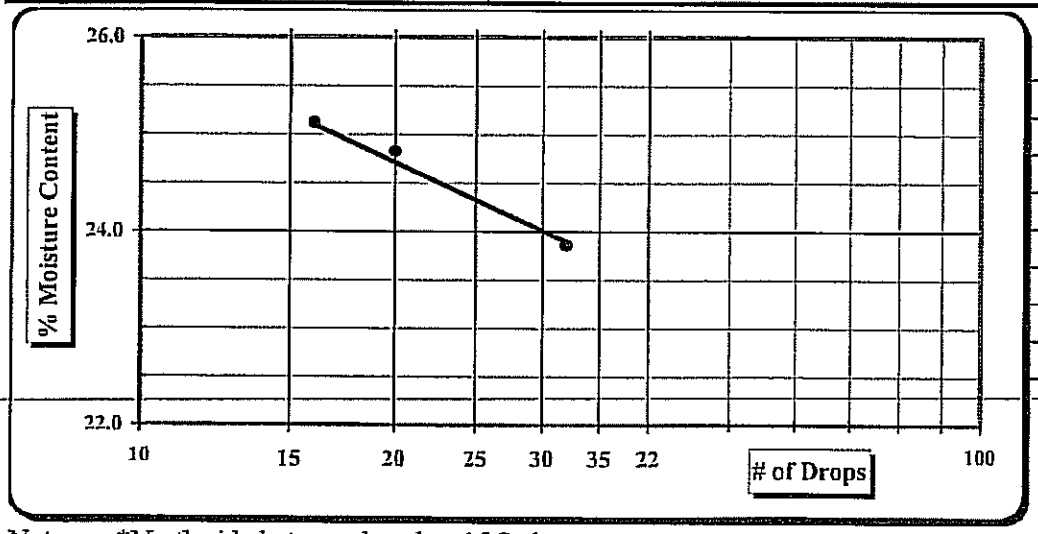
Project #:	1356-07-017-03	Report Date:	6/18/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	6/12-18/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: B-10 Sample #: S-10 Sample Date: 5/23 & 6/7

Location: *See Notes Offset: Depth:

Sample Description: Gray Silty Clay w/Sand (CL-ML) Fly Ash

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	OO	51	54				JORDI	24	
A	Tare Weight	16.31	15.76	14.12				15.96	13.85	
B	Wet Soil Weight + A	27.47	24.81	21.64				24.54	20.81	
C	Dry Soil Weight + A	25.32	23.01	20.13				23.11	19.67	
D	Water Weight (B-C)	2.15	1.80	1.51				1.43	1.14	
E	Dry Soil Weight (C-A)	9.01	7.25	6.01				7.15	5.82	
F	% Moisture Content (D/E)*100	23.9%	24.8%	25.1%				20.0%	19.6%	
N	# OF DROPS	32	20	16				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							19.8%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: *North side between benches 1&2 closure area Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	24
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	20
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	4
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	CL-ML

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly _____ (Signature) Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 6/12-20/08
Report Date: 6/20/08

Boring #: B-10 Sample #: S-10 Sample Date: 5/23 & 6/7
Location: N side between benches 1& Offset: Depth:
Sample Description: Gray Silty Clay w/Sand (CL-ML) Fly Ash

Pan #:		Beaker #:					
Hydrometer Jar #:							
Pan Tare Weight (grams):							
Total Sample Air Dried Wt. + tare wt. (grams):	284.80						
Weight of Total Sample Air Dried:	284.80						
Weight of Air Dried Hydrometer Sample (g):	50.00						
Total Sample Oven Dried:	283.22						
Hydrometer Sample Oven Dried (W):	49.72						
% Passing #10:	98.2%						
Correction Factor a (Table 1):	1.00						

Apparent Relative Density (Assumed) 2.650

	Moisture Content	Hygroscopic	Natural
	Tare #	29	G13
A	Tare Wt.	14.13	81.27
B	Wet Wt. + A	26.49	343.69
C	Dry Wt. + A	26.42	309.72
D	Water Wt. (B-C)	0.07	33.97
E	Dry Wt. (C-A)	12.29	228.45
	% Moisture (100 x D/E)	0.57%	14.9%

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	3.8		98.7%
#4	4.1	Soil Mortar	98.5%
#10	5.0	100.0%	98.2%
#20	0.3	99.5%	97.7%
#40	1.3	97.3%	95.6%
#60	2.4	95.1%	93.4%
#100	4.1	91.8%	90.2%
#200	9.6	80.7%	79.3%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	19.3%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	1.5%	< 75 mm and > 4.75 mm	Silt & Clay:	79.3%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	0.3%	< 4.75 mm and > 2.00 mm	Silt:	60.8%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	2.6%	< 2.00 mm and > 0.425 mm	Clay:	18.5%	< 0.005 mm	
Fine Sand:	16.3%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 24 Plastic Limit 20 Plastic Index 4 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	39.5	4.5		35.00	70.4%	69.2%	10.6	0.01317	0.04279
	2	23.0	36.0	4.5		31.50	63.4%	62.2%	11.1	0.01317	0.03107
	5	23.0	31.0	4.5		26.50	53.3%	52.4%	11.9	0.01317	0.02036
	15	23.0	24.0	4.5		19.50	39.2%	38.5%	13.1	0.01317	0.01231
	30	23.0	20.0	4.5		15.50	31.2%	30.6%	13.8	0.01317	0.00892
	60	23.0	16.0	4.5		11.50	23.1%	22.7%	14.4	0.01317	0.00645
	250	23.0	11.0	4.5		6.50	13.1%	12.8%	15.2	0.01317	0.00325
	1440	22.0	8.0	5.0		3.00	6.0%	5.9%	15.8	0.01332	0.00140

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner

Technical Responsibility: Kenneth Daly

117900
Certification #

Signature

Project Engineer
Position

S&ME, INC. 9751Southern Pine Blvd., Charlotte, NC 28273 1356-07-017-03 B-10 S-10 Hydro.xls

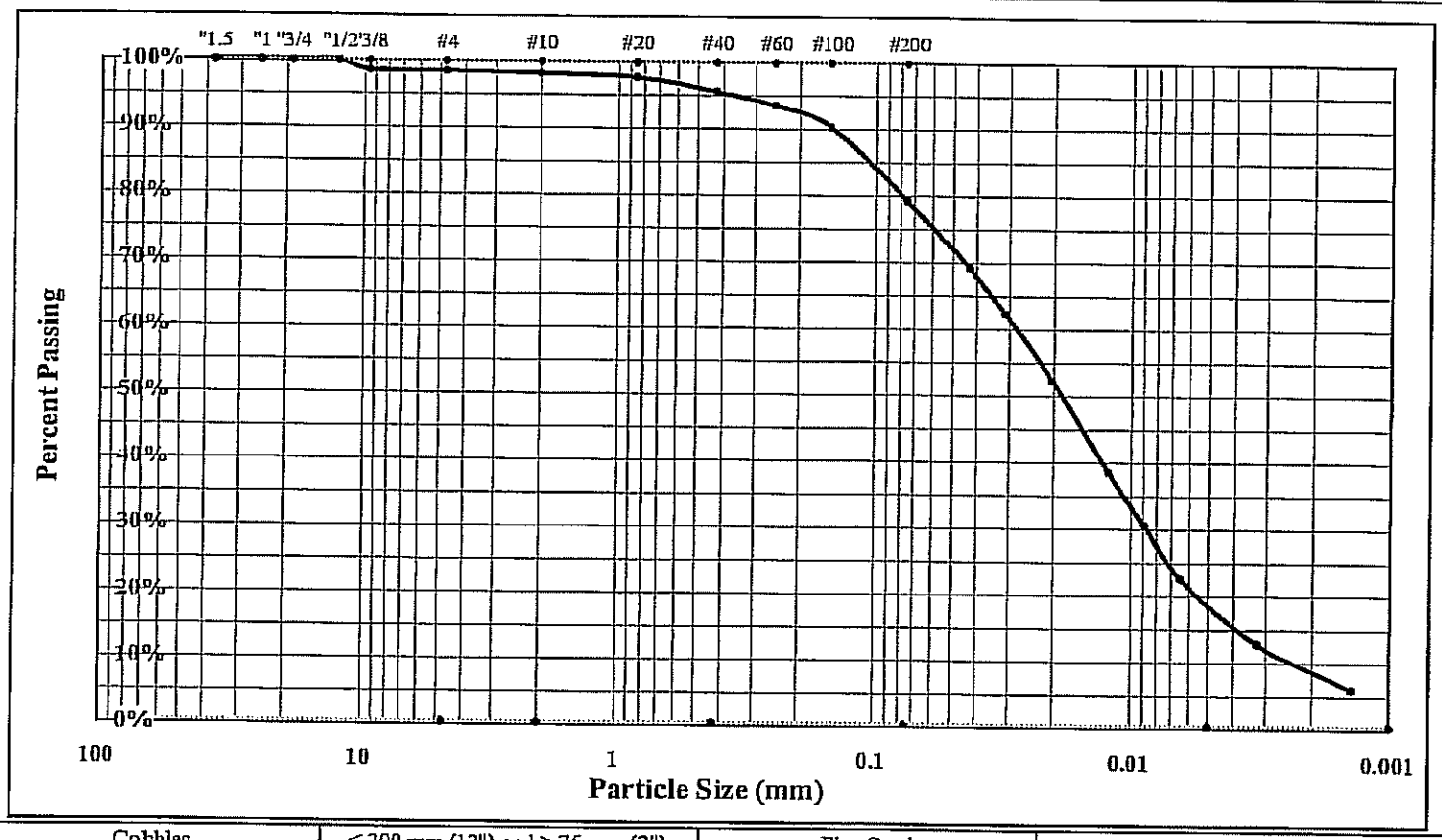
Particle Size Analysis of Soils

ASTM D 422

S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	6/20/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-10	Sample #:	S-10	Sample Date:	5/23 & 6/7
Location:	N side between benches	Offset:		Depth:	
Sample Description:	Gray Silty Clay w/Sand (CL-ML) Fly Ash				



Cobbles	<300 mm (12") and >75 mm (3")	Fine Sand	<0.425 mm and >0.075 mm (#200)
Gravel	<75 mm and >4.75 mm (#4)	Silt	<0.075 and >0.005 mm
Coarse Sand	<4.75 mm and >2.00 mm (#10)	Clay	<0.005 mm
Medium Sand	<2.00 mm and >0.425 mm (#40)	Colloids	<0.001 mm

Maximum Particle Size	0	Gravel	1.5%	Silt	60.8%
Silt & Clay (% Passing #200)	79.3%	Sand	19.3%	Clay	18.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	14.9%	Colloids	
Liquid Limit	24	Plastic Limit	20	Plastic Index	4

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

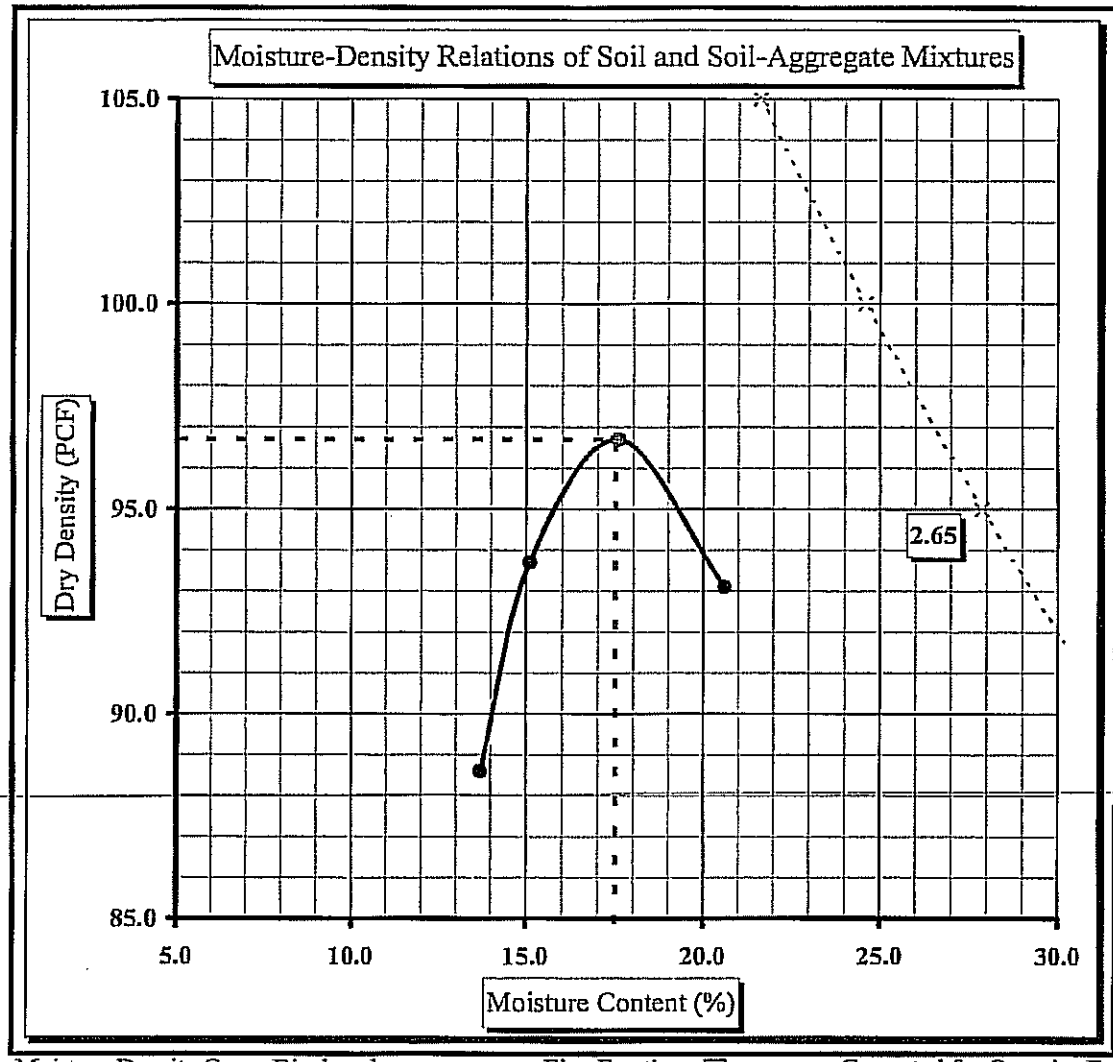
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	June 30, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-30/08
Client Name:	Duke Energy		
Project Address:	Belews Creek		

Boring #:	B-10	Sample #:	S-10	Sample Date:	5/23 & 6/7
Location:	N Side Between Benches	Offset:		Depth:	Bulk
Sample Description:	Gray Silty Clay w/Sand (CL-ML)		Fly Ash		

Maximum Dry Density **96.7** **PCF.** **Optimum Moisture Content** **17.5** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	14.9%
Liquid Limit:	24
Plastic Limit:	20
Plastic Index:	4
Specific Gravity:	

% Passing

3/4"	
1/2"	100
3/8"	98.7
#4	98.5

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

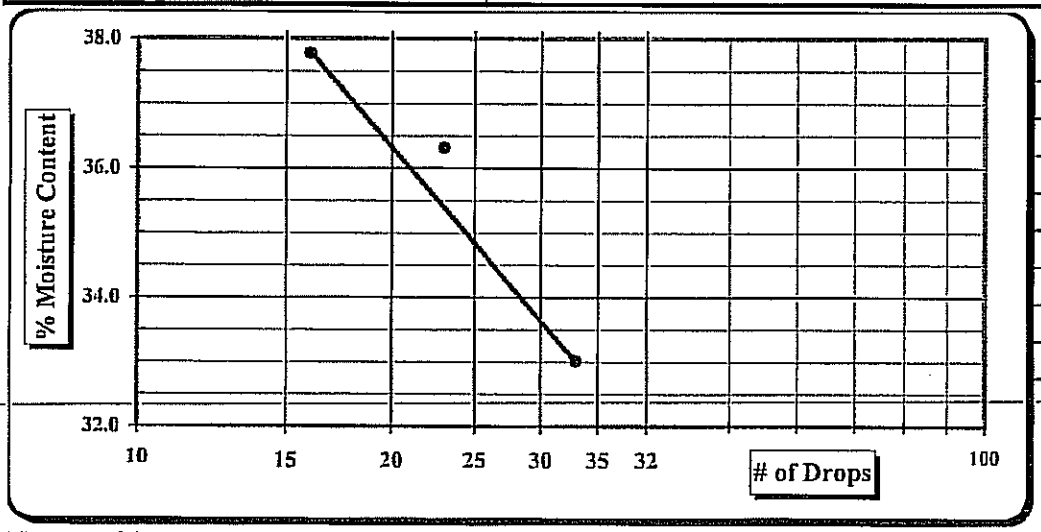
Technical Responsibility: Kenneth Daly _____ Signature Project Engineer

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: **1356-07-017-03** Report Date: 6/18/08
Project Name: Pine Hall Road Ash Landfill Closure Test Date(s): 6/12-18/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: B-11 Sample #: S-11 Sample Date: 5/23 & 6/7
Location: * See Notes Offset: Depth: Bulk
Sample Description: Tan Brown Coarse to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	PP	10	BB				42	34	
A	Tare Weight	16.17	14.00	16.17				13.99	13.97	
B	Wet Soil Weight + A	24.59	22.67	23.50				20.54	20.69	
C	Dry Soil Weight + A	22.50	20.36	21.49				19.23	19.32	
D	Water Weight (B-C)	2.09	2.31	2.01				1.31	1.37	
E	Dry Soil Weight (C-A)	6.33	6.36	5.32				5.24	5.35	
F	% Moisture Content (D/E)*100	33.0%	36.3%	37.8%				25.0%	25.6%	
N	# OF DROPS	33	23	16				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							25.3%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: *Lower NE corner of closure area. Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	35
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	25
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	10
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 6/12-20/08
Report Date: 6/20/08

Boring #: B-11 Sample #: S-11 Sample Date: 5/23 & 6/7
Location: Lower NE Corner Closure Offset: Depth:
Sample Description: Tan Brown Coarse to Fine Sandy Silt (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):		814.10		Tare #	34	Jazz	
Weight of Total Sample Air Dried:		814.10	A	Tare Wt.	13.97	81.27	
Weight of Air Dried Hydrometer Sample (g):		50.00	B	Wet Wt. + A	27.19	387.19	
Total Sample Oven Dried:		810.40	C	Dry Wt. + A	27.03	354.32	
Hydrometer Sample Oven Dried (W):		49.39	D	Water Wt. (B-C)	0.16	32.87	
% Passing #10:		97.2%	E	Dry Wt. (C-A)	13.06	273.05	
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	1.23%	12.0%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	3.4		98.9%
#4	5.3	Soil Mortar	98.3%
#10	8.8	100.0%	97.2%
#20	0.9	98.3%	95.5%
#40	1.8	96.4%	93.6%
#60	3.0	93.9%	91.3%
#100	6.2	87.5%	85.0%
#200	15.3	68.9%	67.0%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	31.3%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	1.7%	< 75 mm and > 4.75 mm	Silt & Clay:	67.0%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	1.1%	< 4.75 mm and > 2.00 mm	Silt:	44.5%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	3.5%	< 2.00 mm and > 0.425 mm	Clay:	22.5%	< 0.005 mm	
Fine Sand:	26.6%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐
Liquid Limit	35	Plastic Limit 25	Plastic Index	10		Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	34.0	4.5		29.50	59.7%	58.0%	11.5	0.01317	0.04458
	2	23.0	27.5	4.5		23.00	46.6%	45.2%	12.5	0.01317	0.03296
	5	23.0	24.5	4.5		20.00	40.5%	39.3%	13.0	0.01317	0.02125
	15	23.0	20.5	4.5		16.00	32.4%	31.5%	13.7	0.01317	0.01257
	30	23.0	18.0	4.5		13.50	27.3%	26.6%	14.1	0.01317	0.00902
	60	23.0	16.5	4.5		12.00	24.3%	23.6%	14.3	0.01317	0.00644
	250	23.0	14.0	4.5		9.50	19.2%	18.7%	14.7	0.01317	0.00320
	1440	22.0	12.0	5.0		7.00	14.2%	13.8%	15.1	0.01332	0.00137

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))

(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner

Technical Responsibility: Kenneth Daly

117900
Certification #

Signature

Project Engineer
Position

S&ME, INC. 9751Southern Pine Blvd., Charlotte, NC 28273

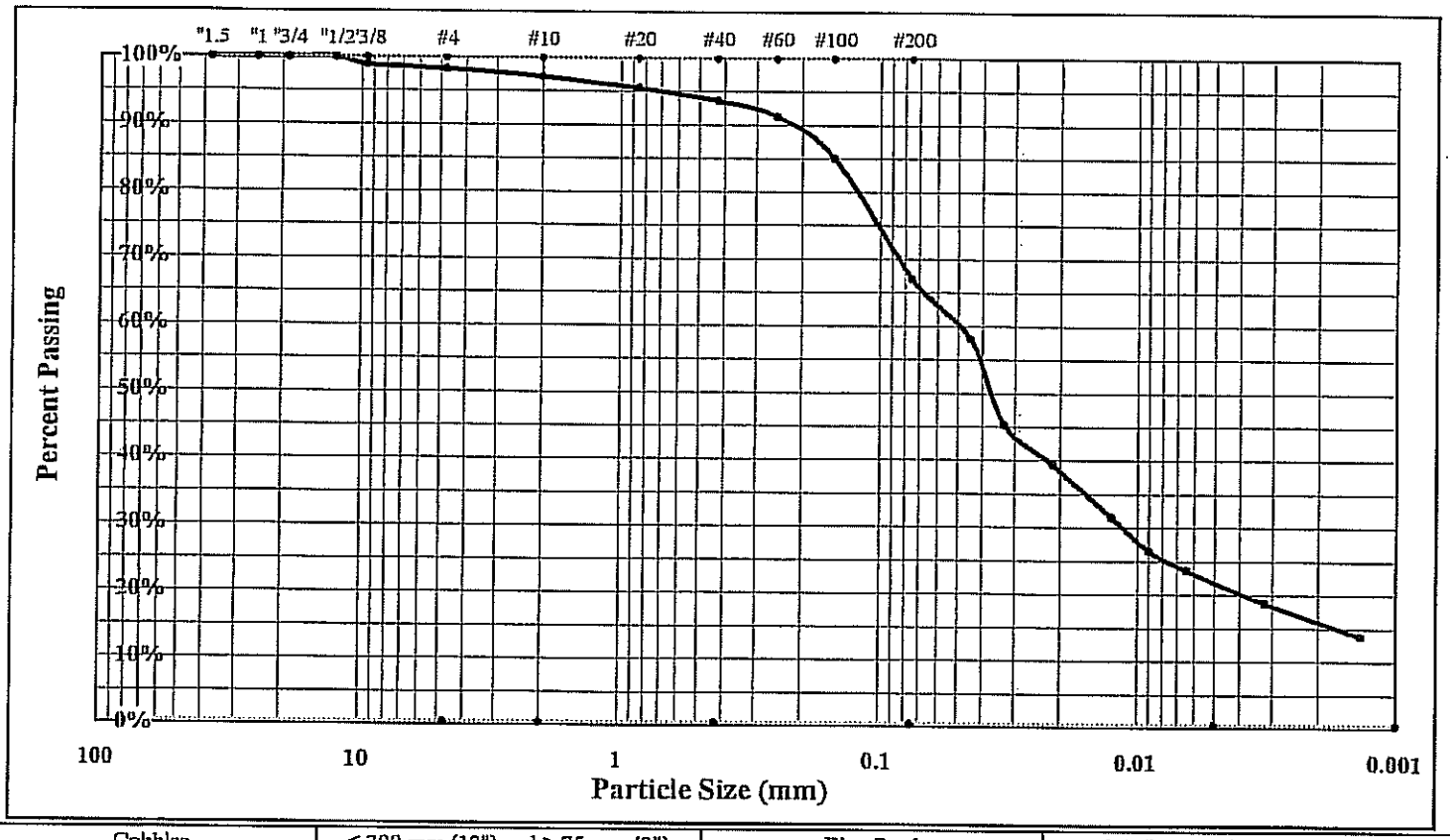
1356-07-017-03 B-11 S-11 Hydro.xls

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	6/20/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-11	Sample #:	S-11	Sample Date:	5/23 & 6/7
Location:	Lower NE Corner	Offset:		Depth:	
Sample Description:	Tan Brown Coarse to Fine Sandy Silt (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.7%	Silt	44.5%
Silt & Clay (% Passing #200)	67.0%	Sand	31.3%	Clay	22.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	12.0%	Colloids	
Liquid Limit	35	Plastic Limit	25	Plastic Index	10

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

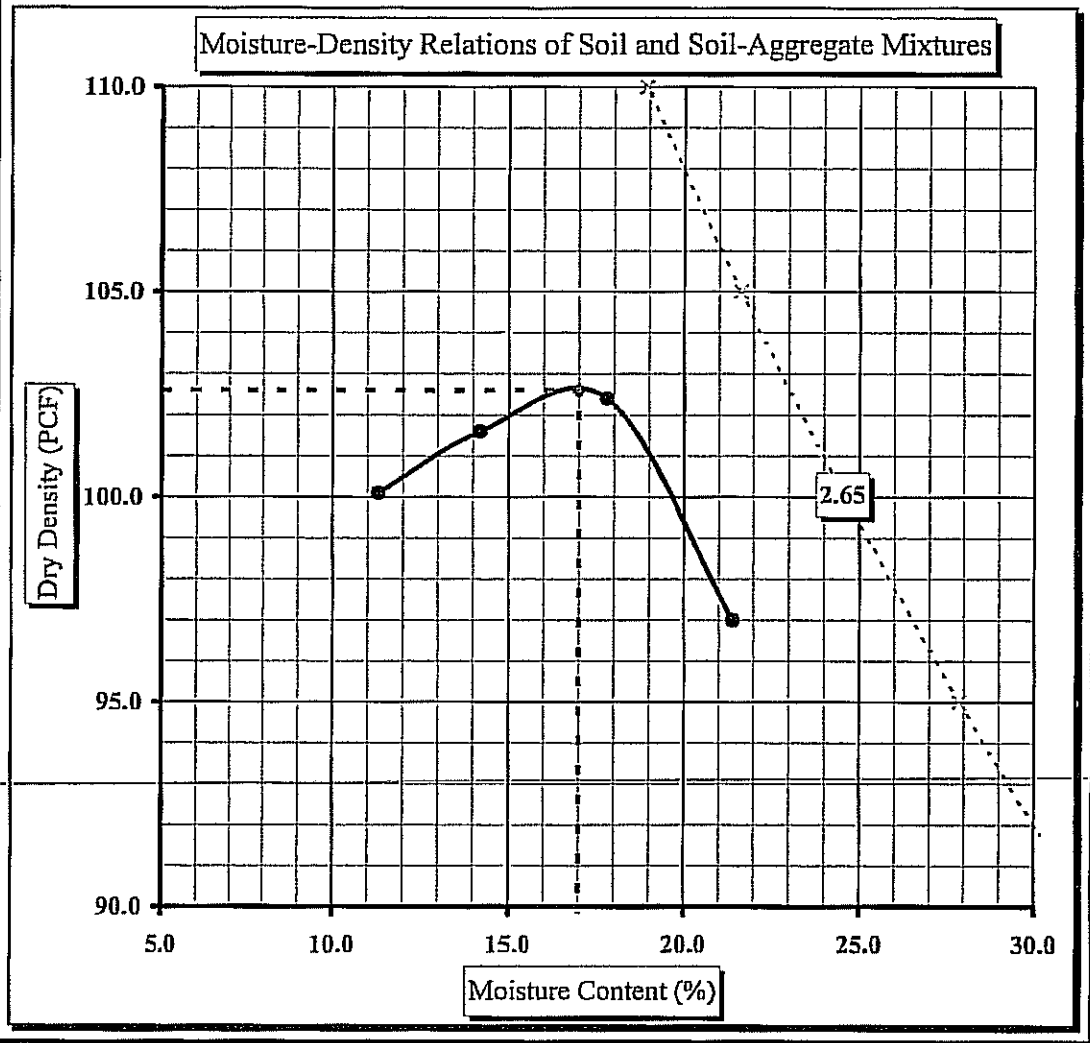
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	June 21, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-21/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-11	Sample #:	S-11	Sample Date:	5/23 & 6/7
Location:	NE Corner of Closure	Offset:		Depth:	Bulk
Sample Description:	Tan Brown Coarse to Fine Sandy Silt (ML)				

Maximum Dry Density **102.6** **PCF.** **Optimum Moisture Content** **17.0** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	12.0%
Liquid Limit:	35
Plastic Limit:	25
Plastic Index:	10
Specific Gravity:	

% Passing

3/4"	100
1/2"	100
3/8"	98.9
#4	98.3

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Cover Soil Laboratory Test Results

Cover Soil Laboratory Test Results Summary								
Sample No.	**Description**	**Location**	**Liquid Limit [ASTM D4318]**	**Plastic Limit [ASTM D4318]**	**Plasticity Index[1] [ASTM D4318]**	**USCS Classification**	**Maximum Dry Density (pcf) [ASTM D698]**	**Optimum Moisture Content [ASTM D698]**
S-4[2]	Tan Brown Silty Fine to Medium Sand with Mica	Borrow Area	-	-	NP	SM	88.2	23.7%
S-12	Tan Brown Medium to Fine Sandy Silt	TP-4B [Borrow Area]	42	35	7	ML	100.8	17.6%
S-13	Brown Coarse to Fine Sandy Silt	TP-6B [Borrow Area]	48	43	5	ML	87.7	25.7%
S-14	Brown Micaceous Silty Medium to Coarse to Fine Sand	TP-7B [Borrow Area]	40	27	13	SM	106.8	16.9%
S-15	Red Orange Brown Medium to Fine Sandy Silt	TP-11B [Borrow Area]	44	40	4	ML	90.7	25.0%
S-16	Tan Brown Medium to Fine Sandy Silt	TP-14B [Borrow Area]	-	-	NP	ML	95.7	22.0%
S-17	Orange Brown Coarse to Fine Sandy Silt	north side middle of Closure Area	46	36	10	ML	90.2	25.0%
S-18	Tan Brown Coarse to Fine Sandy Silt	east side near northeast corner [Closure Area]	46	37	9	ML	92.8	21.4%
S-19	Tan Brown Coarse to Fine Sandy Silt	east side of Closure Area	45	36	9	ML	93.4	23.0%
S-20	Orange Brown Medium to Fine Sandy Silt	southeast side of Closure Area	49	46	3	ML	84	28.2%
S-21	Orange Brown Silt with Medium to Fine Sand	west top of Closure Area	49	38	11	ML	92	25.2%
S-22	White Tan Medium to Fine Sandy Silt	middle top of Closure Area	-	-	NP	ML	92.1	19.9%
S-23	Tan Orange Coarse to Fine Sandy Silt	DI-1 Backfill [Closure Area]	36	29	7	ML	99.1	21.0%
S-24	Red Orange Brown Clayey Silt with Medium to Fine Sand	south top of Closure Area	53	36	17	MH	88.8	28.1%
S-25	Brown Coarse to Fine Sandy Silt	southeast top [Closure Area]	42	35	7	ML	93.5	22.3%
S-26	Tan Brown Silty Medium to Coarse to Fine Sand	southeast top of Closure Area	34	27	7	SM	105.7	16.7%
S-27	Tan Silt with Coarse to Fine Sand	TP-17 [Borrow Area]	35	34	1	ML	95.2	22.7%
S-28	Tan Silt with Medium to Coarse to Fine Sand	TP-16 [Borrow Area]	49	41	8	ML	88.4	26.5%
S-29	Tan Clayey Silt with Fine Sand	northeast side of Flat Area	37	25	12	ML	102.5	18.7%
S-30	Tan Clayey Silt with Fine Sand	southeast side of Flat Area	41	28	13	ML	98.6	21.4%

1. NP = Non Plastic
2. S&ME laboratory sample S-4 is the same material as TRI laboratory Sample No. 2

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	**1356-07-017-03-02**	Report Date:	4/3/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	4/2-3/08
Client Name:	Duke Energy		
Client Address:			
Sample by:	Jimmy Addis	Sample Dates:	3/19/08
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
	S-4		T-8	81.10	427.60	399.51	28.09	**8.8%**
	S-5		O	81.56	353.96	308.05	45.91	**20.3%**
	S-6		Paul	81.78	273.51	241.03	32.48	**20.4%**

Notes:

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Jennifer Olsen 117926
Certification #

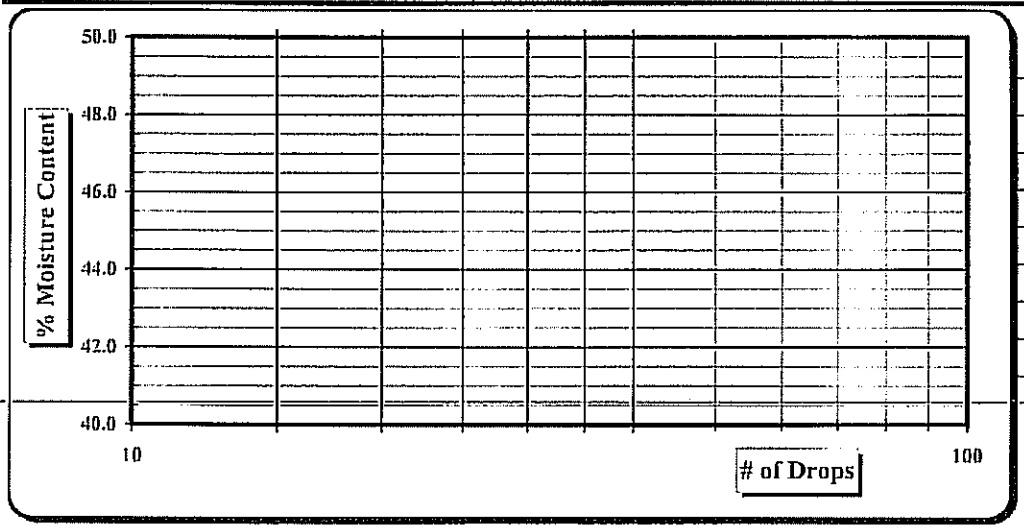
Technical Responsibility: Kenneth Daly _____ _____
Signature Position

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03-02 | Report Date: 4/7/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 4/2-7/08
Client Name: Duke Energy
Client Address:
Boring #: | Sample #: S-4 | Sample Date: 3/19/08
Location: Borrow area | Offset: | Depth: 0-9'
Sample Description: Tan Brown Silty Fine to Medium Sand (SM) with Mica

Pan #		Liquid Limit						Plastic Limit		
	Test #	1	2	3	4	5	6	1	2	3
	Tare #									
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture Content (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average									



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☒
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	SM

Technician Name: Jennifer Olsen — 117926 (Certification #)

Technical Responsibility: Kenneth Daly — Signature — Position

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03-02
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Client Address:

Test Date(s): 4/2-9/08
Report Date: 4/9/08

Boring #: Sample #: S-4 Sample Date: 3/19/08
Location: Borrow area Offset: Depth: 0-9'
Sample Description: Tan Brown Silty Fine to Medium Sand (SM) with Mica

Pan #:	AICS	Beaker #:	TY
Hydrometer Jar #:			A
Pan Tare Weight (grams):			0.00
Total Sample Air Dried Wt. + tare wt. (grams):			433.60
Weight of Total Sample Air Dried:			433.60
Weight of Air Dried Hydrometer Sample (g):			100.00
Total Sample Oven Dried:			428.07
Hydrometer Sample Oven Dried (W):			98.66
% Passing #10:			94.9%
Correction Factor a (Table 1):			1.00

Apparent Relative Density (Assumed) 2.650

	Moisture Content	Hygroscopic	Natural
	Tare #	35	T-8
A	Tare Wt.	15.64	81.10
B	Wet Wt. + A	27.55	427.60
C	Dry Wt. + A	27.39	399.51
D	Water Wt. (B-C)	0.16	28.09
E	Dry Wt. (C-A)	11.75	318.41
	% Moisture (100 x D/E)	1.36%	8.8%

Sieve	Retained Wt.	Percent Passing	
3.0"		Pan # (washed)	100.0%
1.5"			100.0%
1.0"			100.0%
3/4"	0.0	29	100.0%
1/2"	3.6		99.2%
3/8"	3.6		99.2%
#4	8.6	Soil Mortar	98.0%
#10	21.8	100.0%	94.9%
#20	9.8	90.0%	85.4%
#40	19.7	80.0%	76.0%
#60	29.5	70.1%	66.6%
#100	42.3	57.1%	54.2%
#200	64.9	34.2%	32.5%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	65.5%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	2.0%	< 75 mm and > 4.75 mm	Silt & Clay:	32.5%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	3.1%	< 4.75 mm and > 2.00 mm	Silt:	29.0%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	19.0%	< 2.00 mm and > 0.425 mm	Clay:	3.5%	< 0.005 mm		
Fine Sand:	43.5%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit NP Plastic Limit NP Plastic Index NP Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.5	33.5	5.0		28.50	28.9%	27.4%	11.6	0.01340	0.04568
	2	21.5	24.5	5.0		19.50	19.8%	18.8%	13.1	0.01340	0.03429
	5	21.5	16.5	5.0		11.50	11.7%	11.1%	14.4	0.01340	0.02275
	15	21.5	12.0	5.0		7.00	7.1%	6.7%	15.1	0.01340	0.01347
	30	21.5	10.0	5.0		5.00	5.1%	4.8%	15.5	0.01340	0.00962
	60	21.5	9.5	5.0		4.50	4.6%	4.3%	15.6	0.01340	0.00682
	250	21.5	8.0	5.0		3.00	3.0%	2.9%	15.8	0.01340	0.00337
	1440	21.5	6.5	5.0		1.50	1.5%	1.4%	16.0	0.01340	0.00141

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Jennifer Olsen 117926
Certification #

Technical Responsibility: Kenneth Daly

Signature *Position*

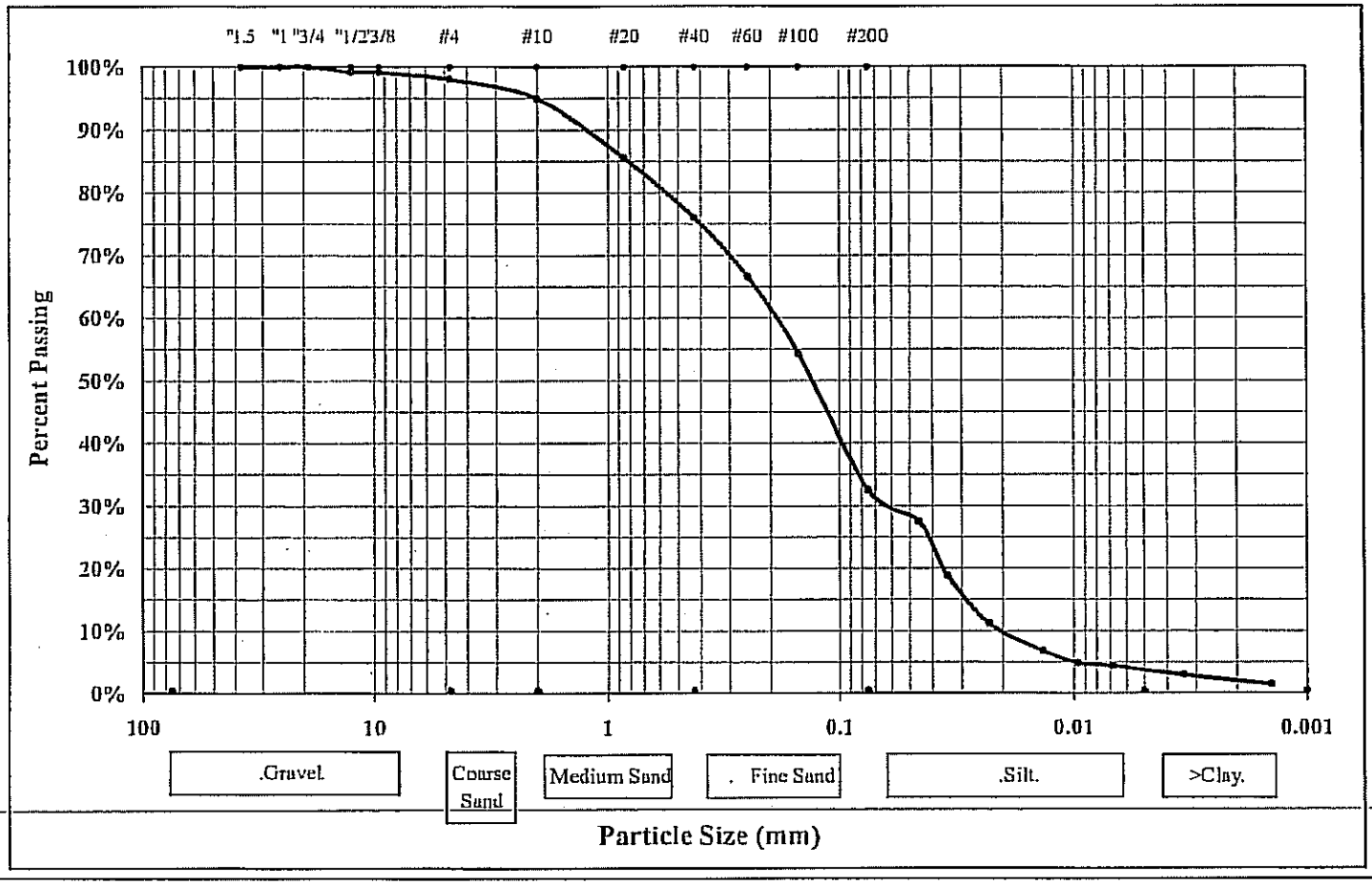
Laboratory Report Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	1356-07-017-03-02	Report Date:	4/9/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	4/2-9/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S-4	Sample Date:	3/19/08
Location:	Borrow area	Offset:		Depth:	0-9'
Sample Description:	Tan Brown Silty Fine to Medium Sand (SM) with Mica				



Maximum Particle Size	0	Gravel	2.0%	Silt	29.0%
Silt & Clay (% Passing #200)	32.5%	Sand	65.5%	Clay	3.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	8.8%	Colloids	
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 421: Dry Preparation of Soil Samples

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System) Direct entry in this cell is allowed

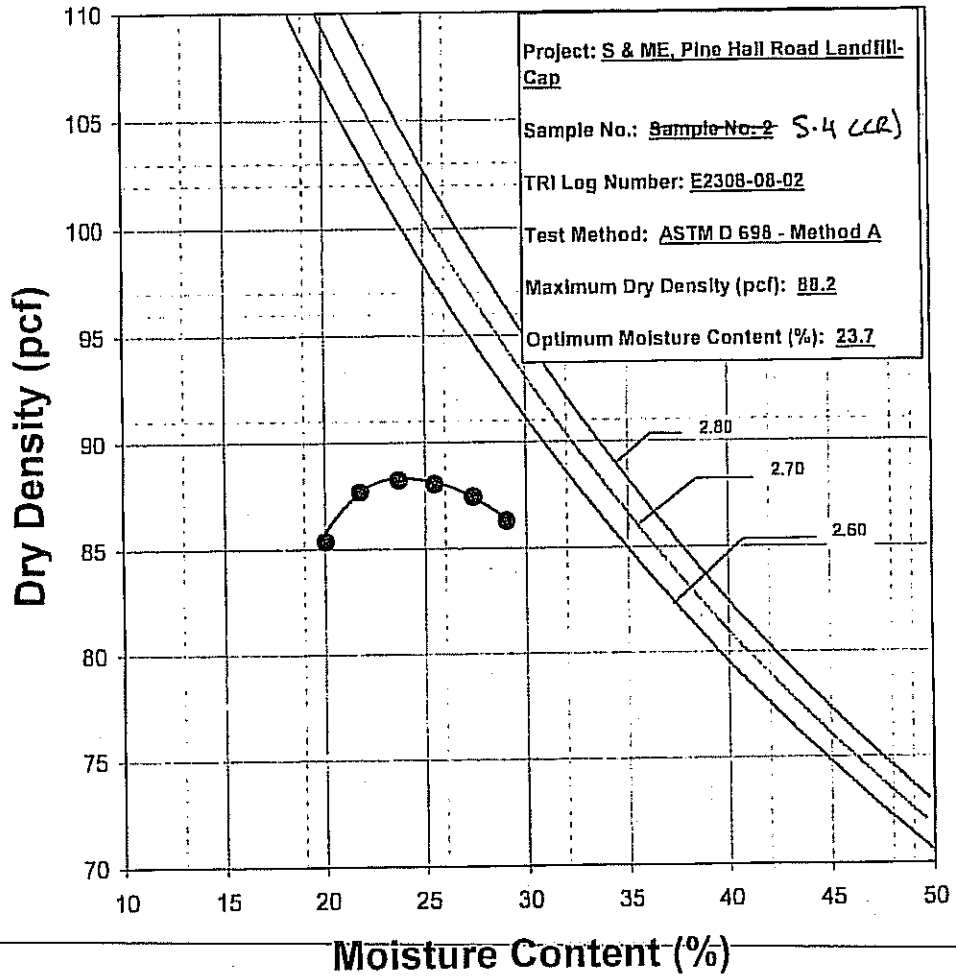
Direct entry in this cell is allowed Direct entry in this cell is allowed

Technical Responsibility: Kenneth Daly

Signature Position

TRI/ENVIRONMENTAL, INC.
A Texas Research International Company

Proctor Compaction Test



John M. Allen, 04/18/2008

Quality Review/Date

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.

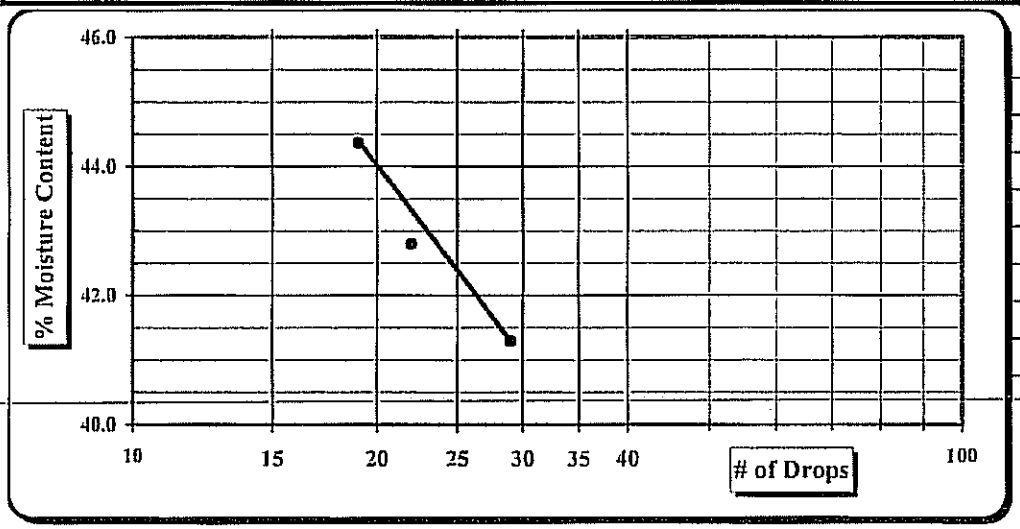
9063 Bee Caves Road □ Austin, TX 78733-6201 □ (512) 263-2101 □ (512) 263-2558 □ 1-800-880-TEST

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 6/18/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 6/12-18/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: B-10 | Sample #: S-12 | Sample Date: 5/23 & 6/7
Location: TP-4B | Offset: | Depth: Bulk
Sample Description: Tan Brown Medium to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	45	Z	2				5	47	
A	Tare Weight	13.95	16.90	15.82				15.71	15.68	
B	Wet Soil Weight + A	25.14	27.31	26.07				22.79	22.17	
C	Dry Soil Weight + A	21.87	24.19	22.92				20.98	20.50	
D	Water Weight (B-C)	3.27	3.12	3.15				1.81	1.67	
E	Dry Soil Weight (C-A)	7.92	7.29	7.10				5.27	4.82	
F	% Moisture Content (D/E)*100	41.3%	42.8%	44.4%				34.3%	34.6%	
N	# OF DROPS	29	22	19				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							34.5%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	42
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	35
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	7
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 6/12-20/08
Report Date: 6/20/08

Boring #: B-10 Sample #: S-12 Sample Date: 5/23 & 6/7
Location: TP-4B Offset: Depth:
Sample Description: Tan Brown Medium to Fine Sandy Silt (ML)

Pan #:		Beaker #:	
Hydrometer Jar #:			
Pan Tare Weight (grams):			
Total Sample Air Dried Wt. + tare wt. (grams):	329.34		
Weight of Total Sample Air Dried:	329.34		
Weight of Air Dried Hydrometer Sample (g):	50.00		
Total Sample Oven Dried:	321.11		
Hydrometer Sample Oven Dried (W):	48.74		
% Passing #10:	98.8%		
Correction Factor a (Table 1):	1.00		

Apparent Relative Density (Assumed) 2.650

	Moisture Content	Hygroscopic	Natural
	Tare #	41	G-8
A	Tare Wt.	15.77	81.80
B	Wet Wt. + A	28.42	348.03
C	Dry Wt. + A	28.10	312.84
D	Water Wt. (B-C)	0.32	35.19
E	Dry Wt. (C-A)	12.33	231.04
	% Moisture (100 x D/E)	2.60%	15.2%

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"			100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	0.9	Soil Mortar	99.7%
#10	3.8	100.0%	98.8%
#20	1.1	97.8%	96.6%
#40	3.1	93.7%	92.6%
#60	5.3	89.1%	88.1%
#100	10.3	79.0%	78.0%
#200	23.9	51.1%	50.5%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	49.3%	< 4.74 mm and > 0.075 mm
% Gravel:	0.3%	< 75 mm and > 4.75 mm	Silt & Clay:	50.5%	< 0.075
Coarse Sand:	0.9%	< 4.75 mm and > 2.00 mm	Silt:	36.0%	< 0.075 and > 0.005 mm
Medium Sand:	6.2%	< 2.00 mm and > 0.425 mm	Clay:	14.5%	< 0.005 mm
Fine Sand:	42.1%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm

Type: Mechanical Stirring Apparatus (A)
Dispersion Time: 1 min.
Sodium Hexametaphosphate: 40 g./ Liter
Control Cylinder ☒ Composite Correction ☐

Liquid Limit 42 Plastic Limit 35 Plastic Index 7 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	26.0	4.5		21.50	44.1%	43.6%	12.8	0.01317	0.04706
	2	23.0	22.0	4.5		17.50	35.9%	35.5%	13.4	0.01317	0.03412
	5	23.0	17.5	4.5		13.00	26.7%	26.4%	14.2	0.01317	0.02217
	15	23.0	14.0	4.5		9.50	19.5%	19.3%	14.7	0.01317	0.01305
	30	23.0	12.5	4.5		8.00	16.4%	16.2%	15.0	0.01317	0.00931
	60	23.0	12.0	4.5		7.50	15.4%	15.2%	15.1	0.01317	0.00660
	250	23.0	11.0	4.5		6.50	13.3%	13.2%	15.2	0.01317	0.00325
	1440	22.0	10.0	5.0		5.00	10.3%	10.1%	15.5	0.01332	0.00138

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner
Technical Responsibility: Kenneth Daly

117900
Certification #

Signature

Project Engineer
Position

S&ME, INC. 9751Southern Pine Blvd., Charlotte, NC 28273

1356-07-013-03 B-10 S-12 Hydro.xls

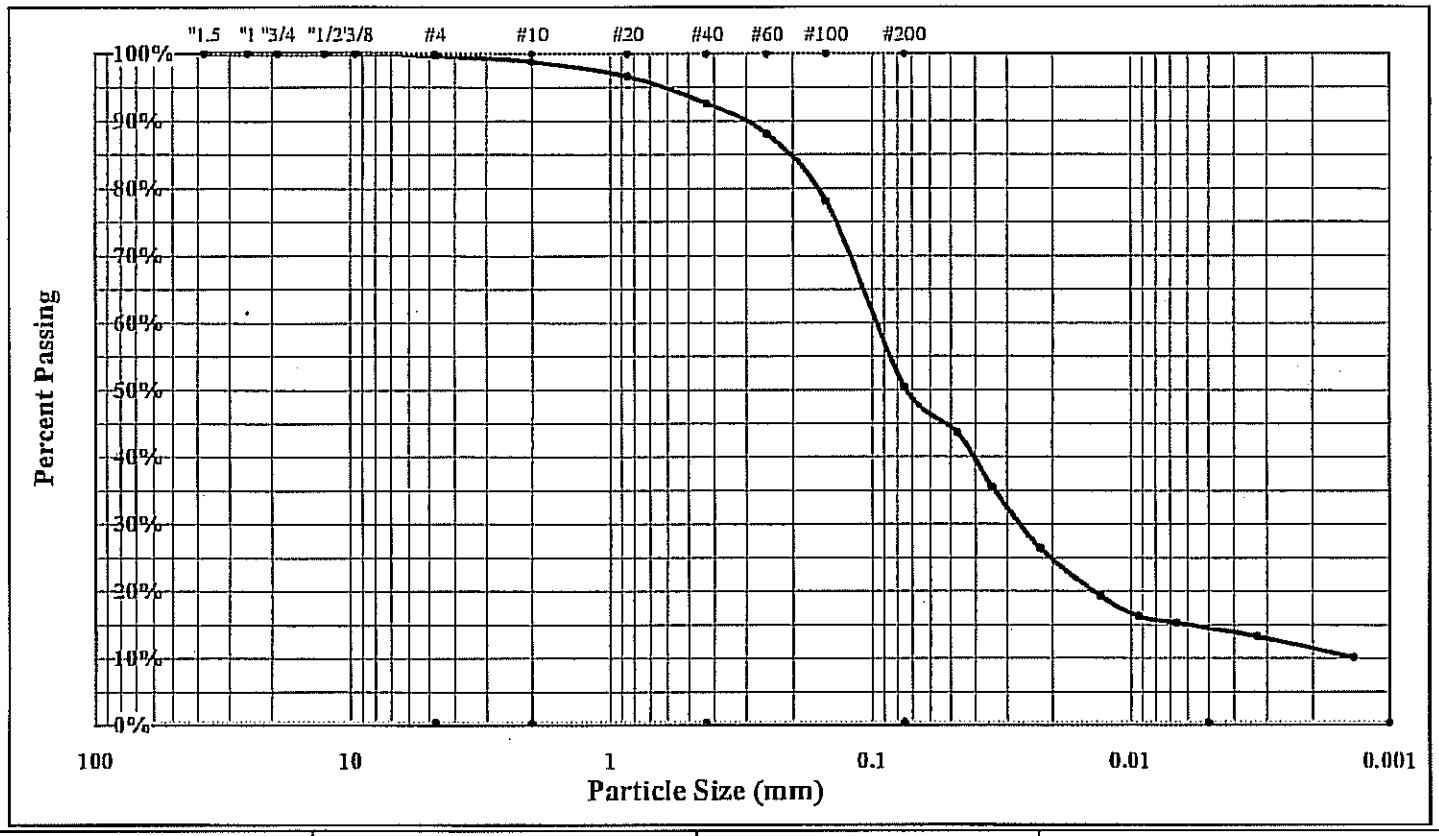
Laboratory Report Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	6/20/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-10	Sample #:	S-12	Sample Date:	5/23 & 6/7
Location:	TP-4B	Offset:		Depth:	
Sample Description:	Tan Brown Medium to Fine Sandy Silt (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	0.3%	Silt	36.0%
Silt & Clay (% Passing #200)	50.5%	Sand	49.3%	Clay	14.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	15.2%	Colloids	
Liquid Limit	42	Plastic Limit	35	Plastic Index	7

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Moisture - Density Report

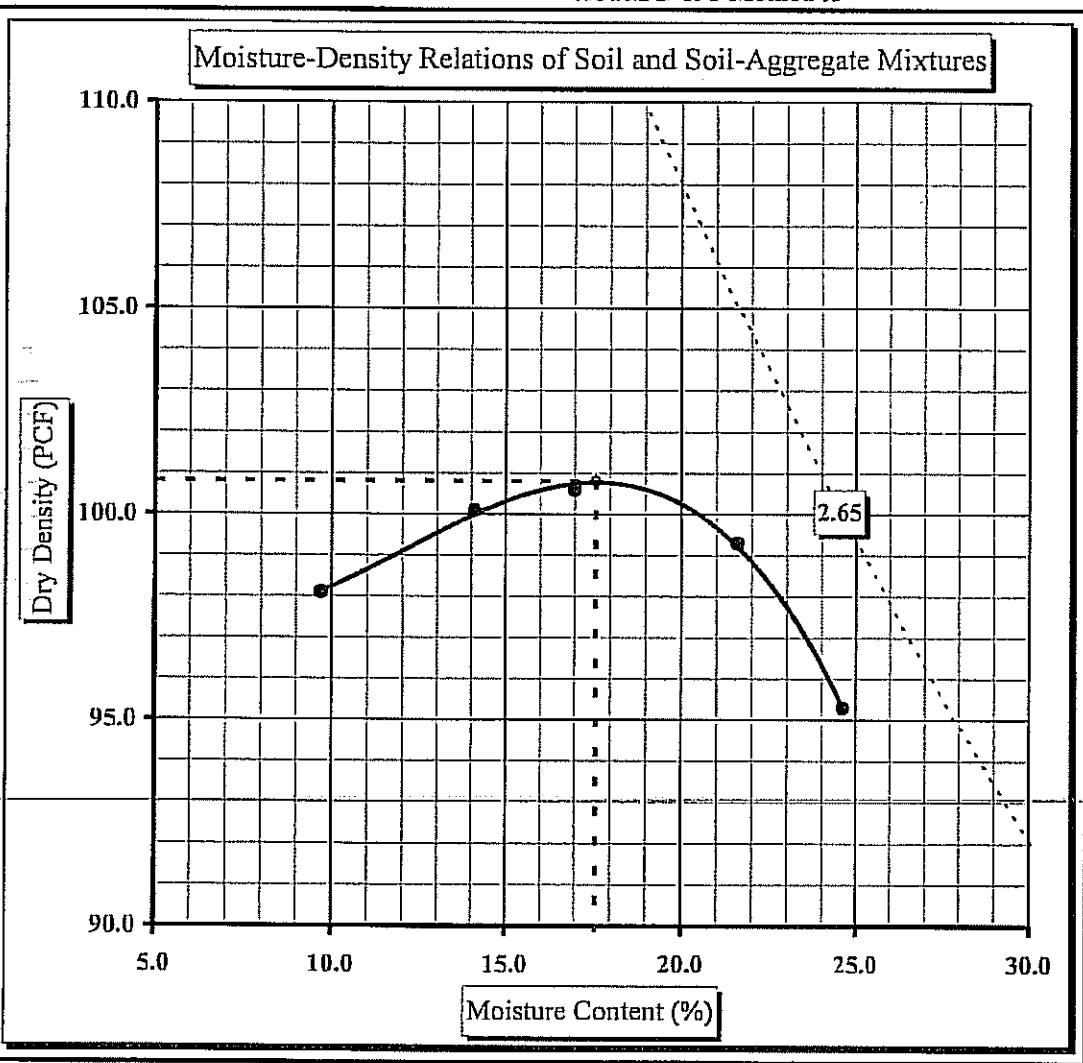
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	June 30, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-21/08
Client Name:	Duke Energy		
Project Address:	Belews Creek		

Boring #:	B-10	Sample #:	S-12	Sample Date:	5/23 & 6/7
Location:	TP-4B	Offset:		Depth:	Bulk
Sample Description:	Tan Brown Medium to Fine Sandy Silt (ML)				

Maximum Dry Density 100.8 PCF. **Optimum Moisture Content 17.6 %**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	15.2%
Liquid Limit:	42
Plastic Limit:	35
Plastic Index:	7
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	100
#4	99.7

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

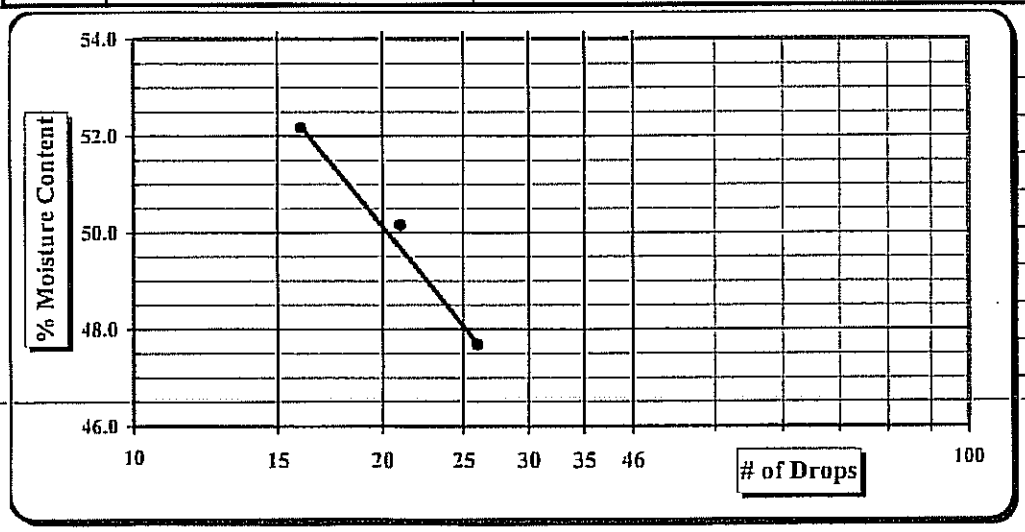
Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 6/18/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 6/12-18/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: B-12 | Sample #: S-13 | Sample Date: 5/23 & 6/7
Location: TP-6B | Offset: | Depth: Bulk
Sample Description: Brown Coarse to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	M	SSS	53				23	27	
A	Tare Weight	16.58	16.57	15.84				**14.08**	13.92	
B	Wet Soil Weight + A	25.84	26.21	22.87				20.24	19.99	
C	Dry Soil Weight + A	22.85	22.99	20.46				18.38	18.17	
D	Water Weight (B-C)	2.99	3.22	2.41				1.86	1.82	
E	Dry Soil Weight (C-A)	6.27	6.42	4.62				4.30	4.25	
F	% Moisture Content (D/E)*100	47.7%	50.2%	52.2%				43.3%	42.8%	
N	# OF DROPS	26	21	16				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							43.0%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	48
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	43
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	5
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 6/12-20/08
Report Date: 6/20/08

Boring #: B-12 Sample #: S-13 Sample Date: 5/23 & 6/7
Location: TP-6B Offset: Depth:
Sample Description: Brown Coarse to Fine Sandy Silt (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):	285.03			Tare #	42	T-1	
Weight of Total Sample Air Dried:	285.03		A	Tare Wt.	13.97	83.16	
Weight of Air Dried Hydrometer Sample (g):	50.00		B	Wet Wt. + A	25.14	309.59	
Total Sample Oven Dried:	281.76		C	Dry Wt. + A	25.01	273.43	
Hydrometer Sample Oven Dried (W):	49.42		D	Water Wt. (B-C)	0.13	36.16	
% Passing #10:	98.6%		E	Dry Wt. (C-A)	11.04	190.27	
Correction Factor a (Table 1):	1.00			% Moisture (100 x D/E)	1.18%	19.0%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	1.3	Soil Mortar	99.5%
#10	4.1	100.0%	98.6%
#20	0.8	98.5%	97.1%
#40	1.5	96.9%	95.5%
#60	2.9	94.1%	92.7%
#100	6.2	87.4%	86.1%
#200	21.8	55.9%	55.1%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	44.4%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	0.5%	< 75 mm and > 4.75 mm	Silt & Clay:	55.1%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	1.0%	< 4.75 mm and > 2.00 mm	Silt:	47.6%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	3.1%	< 2.00 mm and > 0.425 mm	Clay:	7.5%	< 0.005 mm	
Fine Sand:	40.4%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 48 Plastic Limit 43 Plastic Index 5 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	30.0	4.5		25.50	51.6%	50.9%	12.1	0.01317	0.04584
	2	23.0	23.0	4.5		18.50	37.4%	36.9%	13.3	0.01317	0.03391
	5	23.0	15.0	4.5		10.50	21.2%	20.9%	14.6	0.01317	0.02248
	15	23.0	12.5	4.5		8.00	16.2%	16.0%	15.0	0.01317	0.01316
	30	23.0	10.0	4.5		5.50	11.1%	11.0%	15.4	0.01317	0.00943
	60	23.0	9.5	4.5		5.00	10.1%	10.0%	15.5	0.01317	0.00669
	250	23.0	7.0	4.5		2.50	5.1%	5.0%	15.9	0.01317	0.00332
	1440	22.0	7.0	5.0		2.00	4.0%	4.0%	16.0	0.01332	0.00140

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner

Technical Responsibility: Kenneth Daly

117900
Certification #

Signature

Project Engineer
Position

S&ME, INC.

9751Southern Pine Blvd., Charlotte, NC 28273

1356-07-017-03 B-12 S-13 Hydro.xls

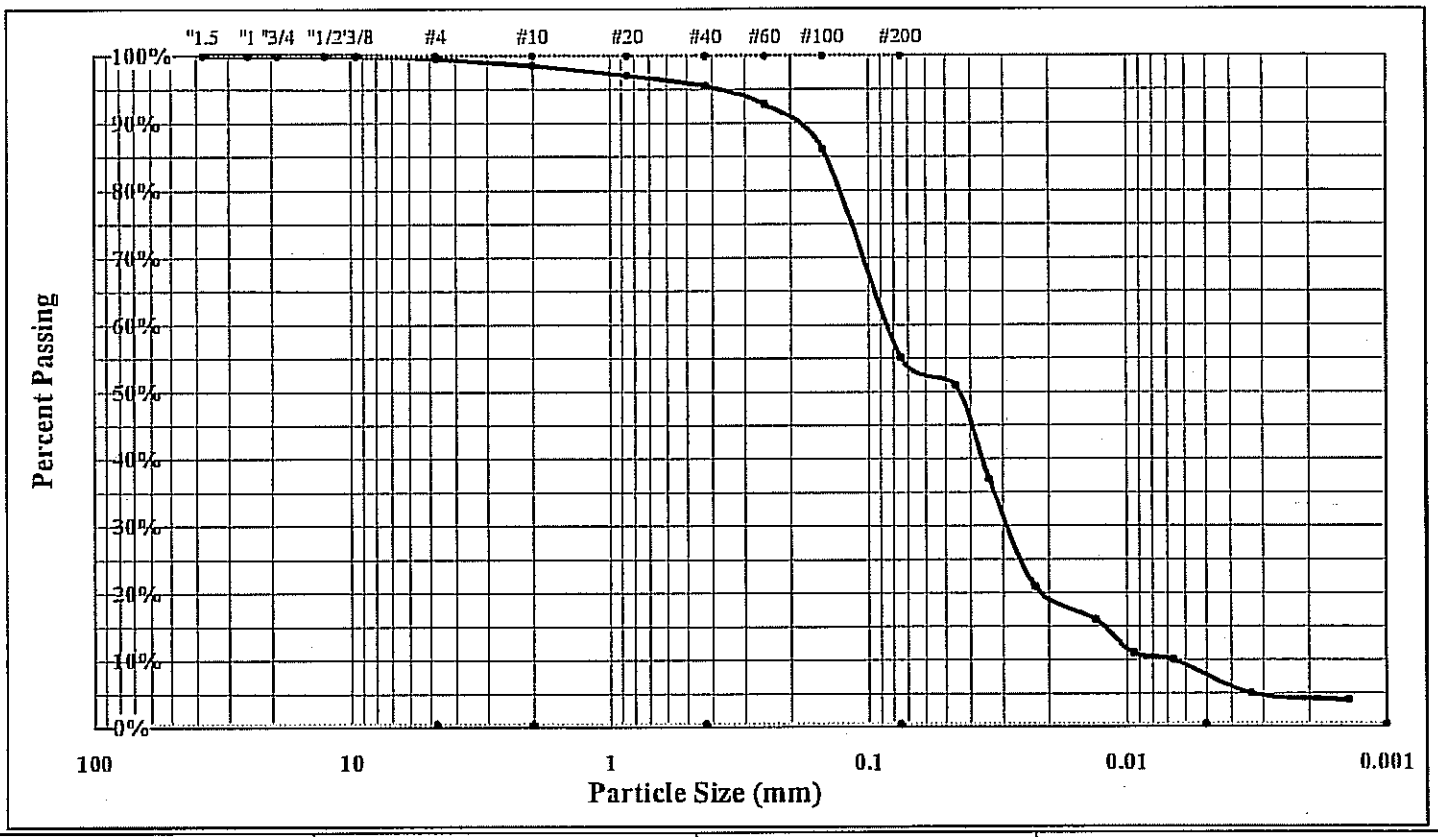
Laboratory Report Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	1356-07-017-03	Report Date:	6/20/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-12	Sample #:	S-13	Sample Date:	5/23 & 6/7
Location:	TP-6B	Offset:		Depth:	
Sample Description:	Brown Coarse to Fine Sandy Silt (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	0.5%	Silt	47.6%
Silt & Clay (% Passing #200)	55.1%	Sand	44.4%	Clay	7.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	19.0%	Colloids	
Liquid Limit	48	Plastic Limit	43	Plastic Index	5

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

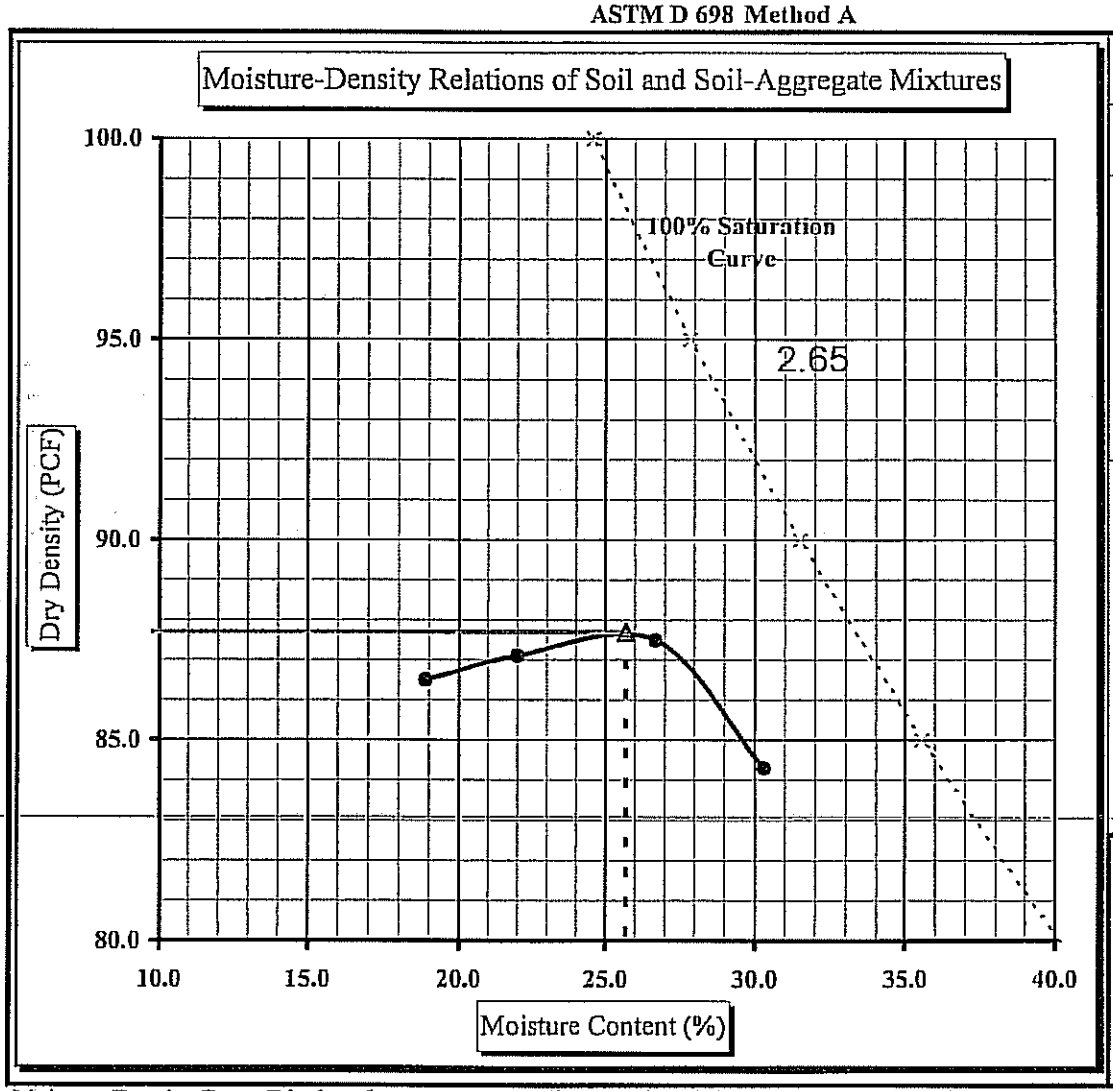
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	June 21, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-21/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-12	Sample #:	S-13	Sample Date:	5/23 &6/7
Location:	TP-6B	Offset:		Depth:	Bulk
Sample Description:	Brown Coarse to Fine Sandy Silt (ML)				

Maximum Dry Density **87.7** **PCF.** **Optimum Moisture Content** **25.7** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	19.0%
Liquid Limit:	48
Plastic Limit:	43
Plastic Index:	5
Specific Gravity:	

% Passing

3/4"	100
1/2"	100
3/8"	100
#4	99.5

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Laboratory Record Version 4.2

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

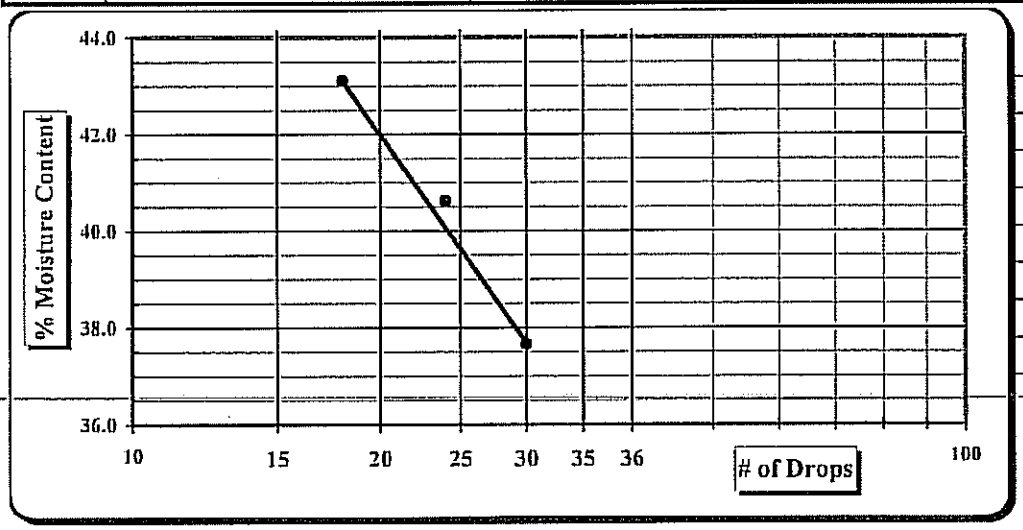
Project #:	**1356-07-017-03**	Report Date:	6/18/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	6/12-18/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: B-13 Sample #: S-14 Sample Date: 5/23 & 6/7

Location: TP-7B Offset: Depth: Bulk

Sample Description: Brown Micaceous Silty Medium to Coarse to Fine Sand (SM)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	FF	LL	9				31	41	
A	Tare Weight	16.85	16.97	13.92				**13.95**	15.79	
B	Wet Soil Weight + A	28.73	25.90	22.12				20.64	22.86	
C	Dry Soil Weight + A	25.48	23.32	19.65				19.21	21.34	
D	Water Weight (B-C)	3.25	2.58	2.47				1.43	1.52	
E	Dry Soil Weight (C-A)	8.63	6.35	5.73				5.26	5.55	
F	% Moisture Content (D/E)*100	37.7%	40.6%	43.1%				27.2%	27.4%	
N	# OF DROPS	30	24	18				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							27.3%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	40
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	27
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	13
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	SM

Technician Name: Karen Warner 117900 *Certification #*

Technical Responsibility: Kenneth Daly _____ *Signature* Project Engineer *Position*

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 6/12-20/08
Report Date: 6/20/08

Boring #: B-13 Sample #: S-14 Sample Date: 5/23 & 6/7
Location: TP-7B Offset: Depth:
Sample Description: Brown Micaceous Silty Medium to Coarse to Fine Sand (SM)

Pan #:		Beaker #:			Apparent Relative Density (Assumed)		2.650		
Hydrometer Jar #:									
Pan Tare Weight (grams):					Moisture Content	Hygroscopic	Natural		
Total Sample Air Dried Wt. + tare wt. (grams):			291.16		Tare #	10	G-2		
Weight of Total Sample Air Dried:			291.16	A	Tare Wt.	13.99	82.67		
Weight of Air Dried Hydrometer Sample (g):			50.00	B	Wet Wt. + A	26.15	369.53		
Total Sample Oven Dried:			284.52	C	Dry Wt. + A	25.81	323.86		
Hydrometer Sample Oven Dried (W):			48.60	D	Water Wt. (B-C)	0.34	45.67		
% Passing #10:			81.1%	E	Dry Wt. (C-A)	11.82	241.19		
Correction Factor a (Table 1):			1.00		% Moisture (100 x D/E)	2.88%	18.9%		

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	12.6		95.6%
3/8"	12.6		95.6%
#4	20.9	Soil Mortar	92.6%
#10	53.6	100.0%	81.1%
#20	2.6	94.7%	76.8%
#40	5.7	88.2%	71.6%
#60	8.9	81.6%	66.3%
#100	13.6	72.1%	58.5%
#200	24.4	49.9%	40.5%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand: 52.2%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	7.4%	< 75 mm and > 4.75 mm	Silt & Clay: 40.5%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	11.5%	< 4.75 mm and > 2.00 mm	Silt: 27.0%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	9.6%	< 2.00 mm and > 0.425 mm	Clay: 13.5%	< 0.005 mm	
Fine Sand:	31.1%	< 0.425 mm and > 0.075 mm	Colloids:	< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 40 Plastic Limit 27 Plastic Index 13 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	27.0	4.5		22.50	46.3%	37.6%	12.6	0.01317	0.04676
	2	23.0	22.5	4.5		18.00	37.0%	30.1%	13.3	0.01317	0.03402
	5	23.0	17.5	4.5		13.00	26.7%	21.7%	14.2	0.01317	0.02217
	15	23.0	15.5	4.5		11.00	22.6%	18.4%	14.5	0.01317	0.01294
	30	23.0	14.0	4.5		9.50	19.5%	15.9%	14.7	0.01317	0.00923
	60	23.0	13.0	4.5		8.50	17.5%	14.2%	14.9	0.01317	0.00656
	250	23.0	11.5	4.5		7.00	14.4%	11.7%	15.1	0.01317	0.00324
	1440	22.0	11.0	5.0		6.00	12.3%	10.0%	15.3	0.01332	0.00137

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner 117900 *Certification #*

Technical Responsibility: Kenneth Daly *Signature* *Project Engineer* *Position*

S&ME, INC. 9751 Southern Pine Blvd., Charlotte, NC 28273 1356-07-017-03 B-13 S-14 Hydro.xls

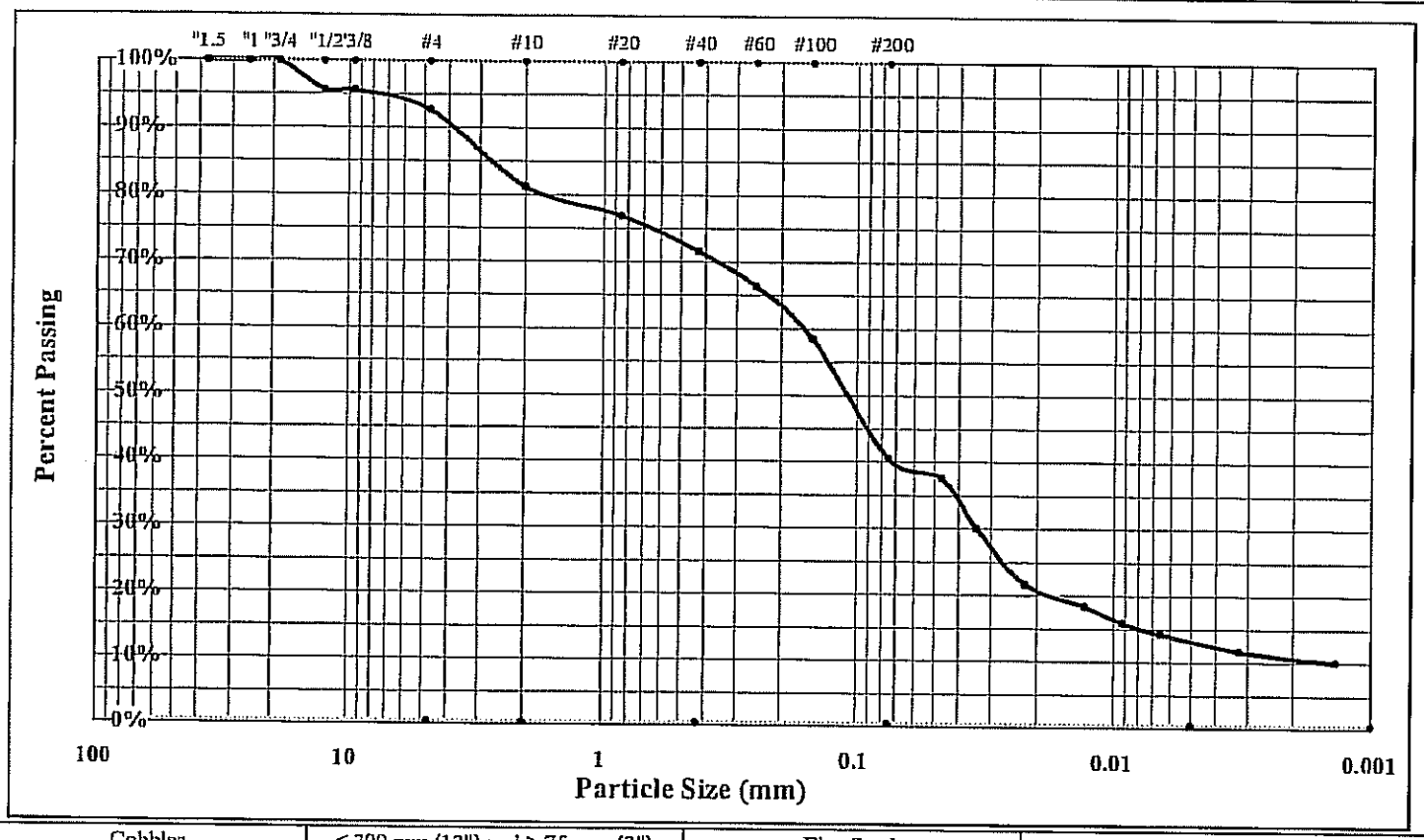
Particle Size Analysis of Soils

ASTM D 422

S&ME

S&ME Project #:	1356-07-017-03	Report Date:	6/20/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	6/12-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-13	Sample #:	S-14	Sample Date:	5/23 & 6/7
Location:	TP-7B	Offset:		Depth:	
Sample Description:	Brown Micaceous Silty Medium to Coarse to Fine Sand (SM)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	7.4%	Silt	27.0%
Silt & Clay (% Passing #200)	40.5%	Sand	52.2%	Clay	13.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	18.9%	Colloids	
Liquid Limit	40	Plastic Limit	27	Plastic Index	13

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Laboratory Report Version 4.2

Moisture - Density Report

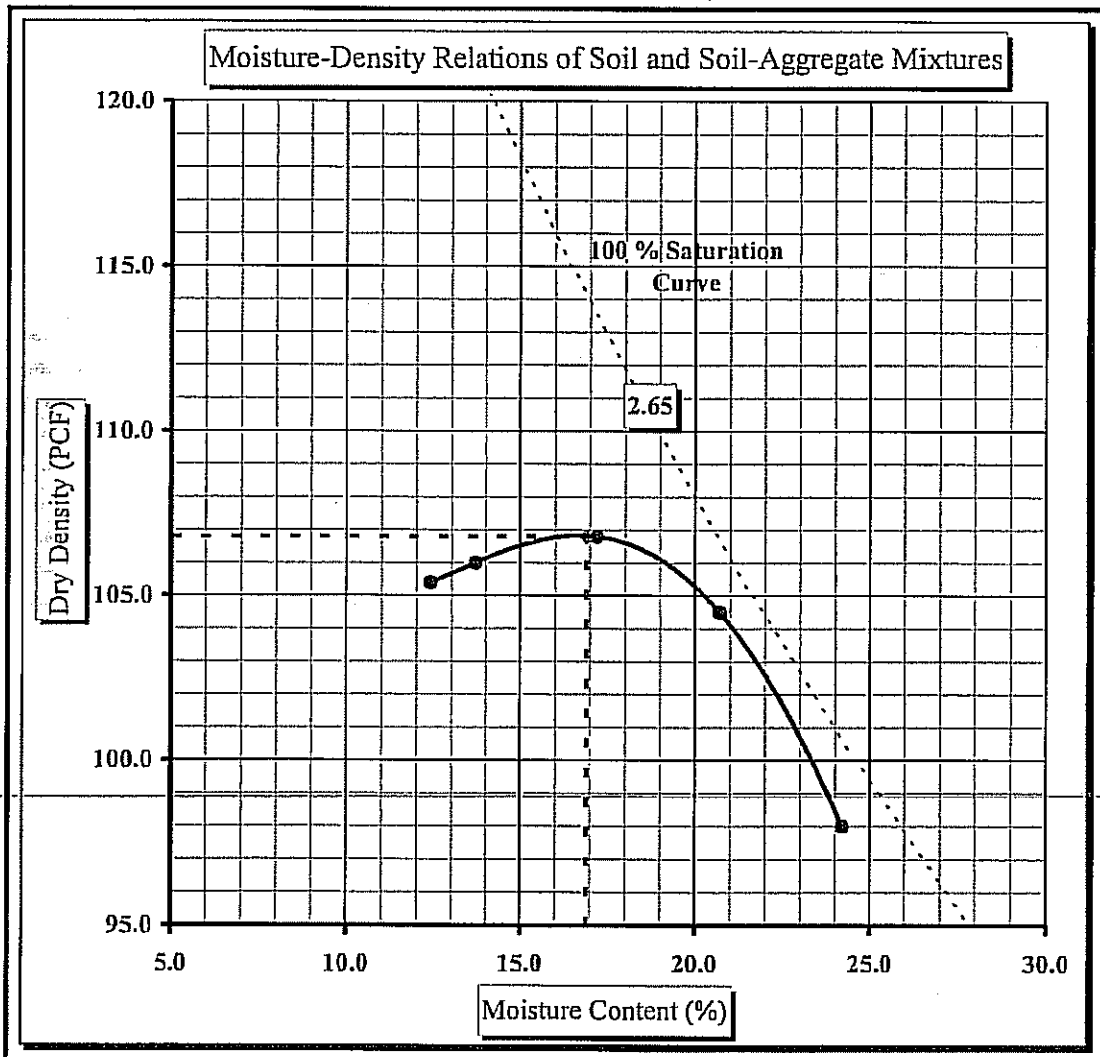
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	June 21, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-21/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-13	Sample #:	S-14	Sample Date:	5/23 7 6/7
Location:	TP-7B	Offset:		Depth:	Bulk
Sample Description:	Brown Micaceous Silty Medium to Coarse to Fine Sand (SM)				

Maximum Dry Density **106.8** **PCF.** **Optimum Moisture Content** **16.9** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	18.9%
Liquid Limit:	40
Plastic Limit:	27
Plastic Index:	13
Specific Gravity:	

% Passing

3/4"	100
1/2"	95.6
3/8"	95.6
#4	92.6

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

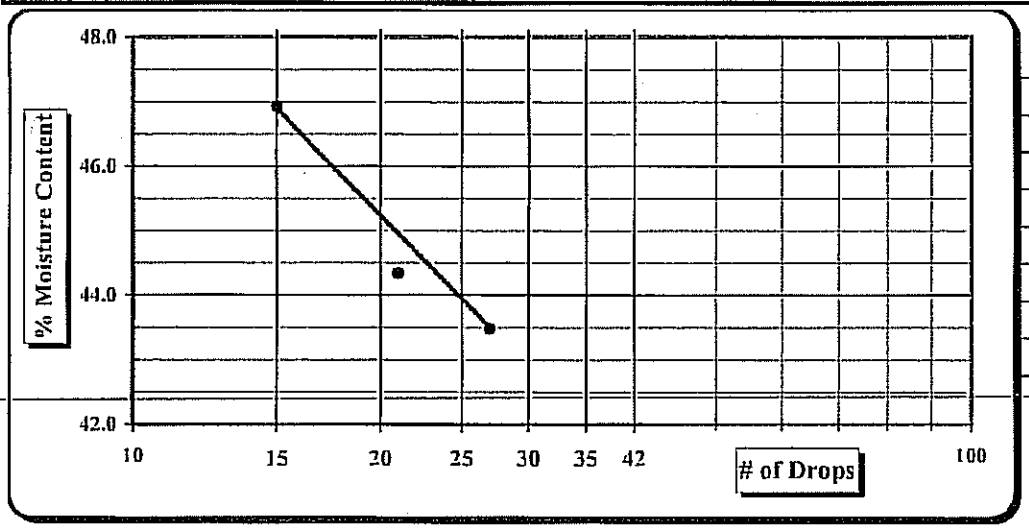
Laboratory Record Version 4.2

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 6/18/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 6/12-18/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: B-16 | Sample #: S-15 | Sample Date: 5/23 & 6/7
Location: TP-11B | Offset: | Depth: Bulk
Sample Description: Red Orange Brown Medium to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	33	XX	43				19	35	
A	Tare Weight	15.89	16.05	13.84				15.84	15.68	
B	Wet Soil Weight + A	24.70	25.36	24.14				22.20	22.35	
C	Dry Soil Weight + A	22.03	22.50	20.85				20.37	20.44	
D	Water Weight (B-C)	2.67	2.86	3.29				1.83	1.91	
E	Dry Soil Weight (C-A)	6.14	6.45	7.01				4.53	4.76	
F	% Moisture Content (D/E)*100	43.5%	44.3%	46.9%				40.4%	40.1%	
N	# OF DROPS	27	21	15				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							40.3%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	44
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	40
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	4
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 6/12-20/08
Report Date: 6/20/08

Boring #: B-16 Sample #: S-15 Sample Date: 5/23 & 6/7
Location: TP-11B Offset: Depth:
Sample Description: Red Orange Brown Medium to Fine Sandy Silt (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):	300.50			Tare #	9	G-15	
Weight of Total Sample Air Dried:	300.50		A	Tare Wt.	13.92	81.33	
Weight of Air Dried Hydrometer Sample (g):	50.00		B	Wet Wt. + A	28.22	359.96	
Total Sample Oven Dried:	297.16		C	Dry Wt. + A	28.06	318.25	
Hydrometer Sample Oven Dried (W):	49.44		D	Water Wt. (B-C)	0.16	41.71	
% Passing #10:	99.4%		E	Dry Wt. (C-A)	14.14	236.92	
Correction Factor a (Table 1):	1.00			% Moisture (100 x D/E)	1.13%	17.6%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	0.6	Soil Mortar	99.8%
#10	1.7	**100.0%**	99.4%
#20	0.5	98.9%	98.3%
#40	1.5	97.0%	96.5%
#60	3.4	93.2%	92.7%
#100	7.7	84.5%	84.0%
#200	20.1	59.3%	59.0%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	40.8%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	0.2%	< 75 mm and > 4.75 mm	Silt & Clay:	59.0%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	0.4%	< 4.75 mm and > 2.00 mm	Silt:	51.0%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	3.0%	< 2.00 mm and > 0.425 mm	Clay:	8.0%	< 0.005 mm		
Fine Sand:	37.4%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 44 Plastic Limit 40 Plastic Index 4 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	30.0	4.5		25.50	51.6%	51.3%	12.1	0.01317	0.04584
	2	23.0	23.5	4.5		19.00	38.4%	38.2%	13.2	0.01317	0.03381
	5	23.0	18.0	4.5		13.50	27.3%	27.1%	14.1	0.01317	0.02210
	15	23.0	12.5	4.5		8.00	16.2%	16.1%	15.0	0.01317	0.01316
	30	23.0	10.0	4.5		5.50	11.1%	11.1%	15.4	0.01317	0.00943
	60	23.0	9.5	4.5		5.00	10.1%	10.1%	15.5	0.01317	0.00669
	250	23.0	7.0	4.5		2.50	5.1%	5.0%	15.9	0.01317	0.00332
	1440	22.0	6.0	5.0		1.00	2.0%	2.0%	16.1	0.01332	0.00141

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$
(152H) .164cm per increment,
$V_B=67.0cm^3$, $L_2=14cm$, $A=27.8cm^2$

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly _____ (Signature) *Project Engineer* (Position)

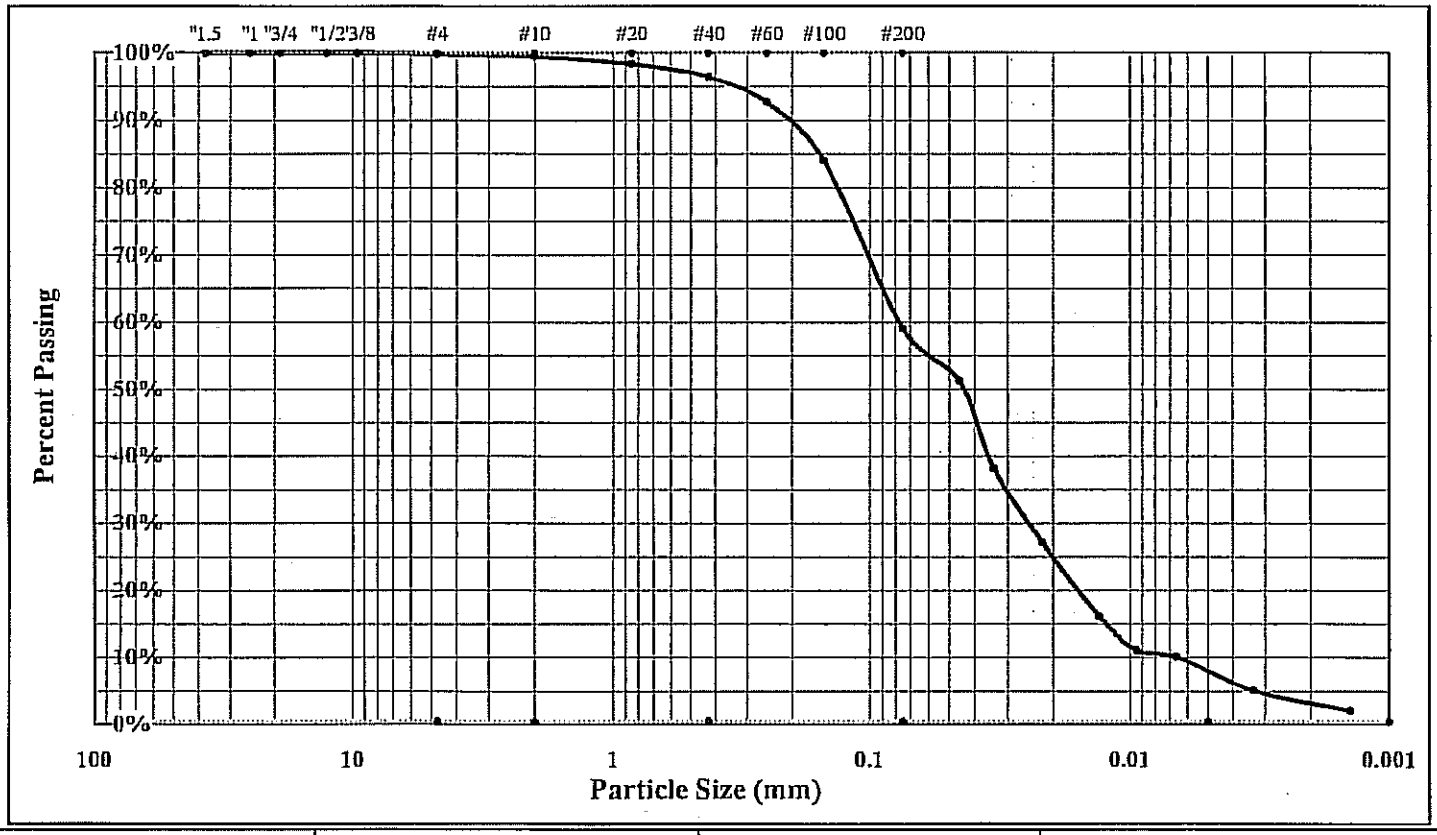
Laboratory Report Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	6/20/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-16	Sample #:	S-15	Sample Date:	5/23 & 6/7
Location:	TP-11B	Offset:		Depth:	
Sample Description:	Red Orange Brown Medium to Fine Sandy Silt (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	0.2%	Silt	51.0%
Silt & Clay (% Passing #200)	59.0%	Sand	40.8%	Clay	8.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	17.6%	Colloids	
Liquid Limit	44	Plastic Limit	40	Plastic Index	4

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature *Position*

Moisture - Density Report

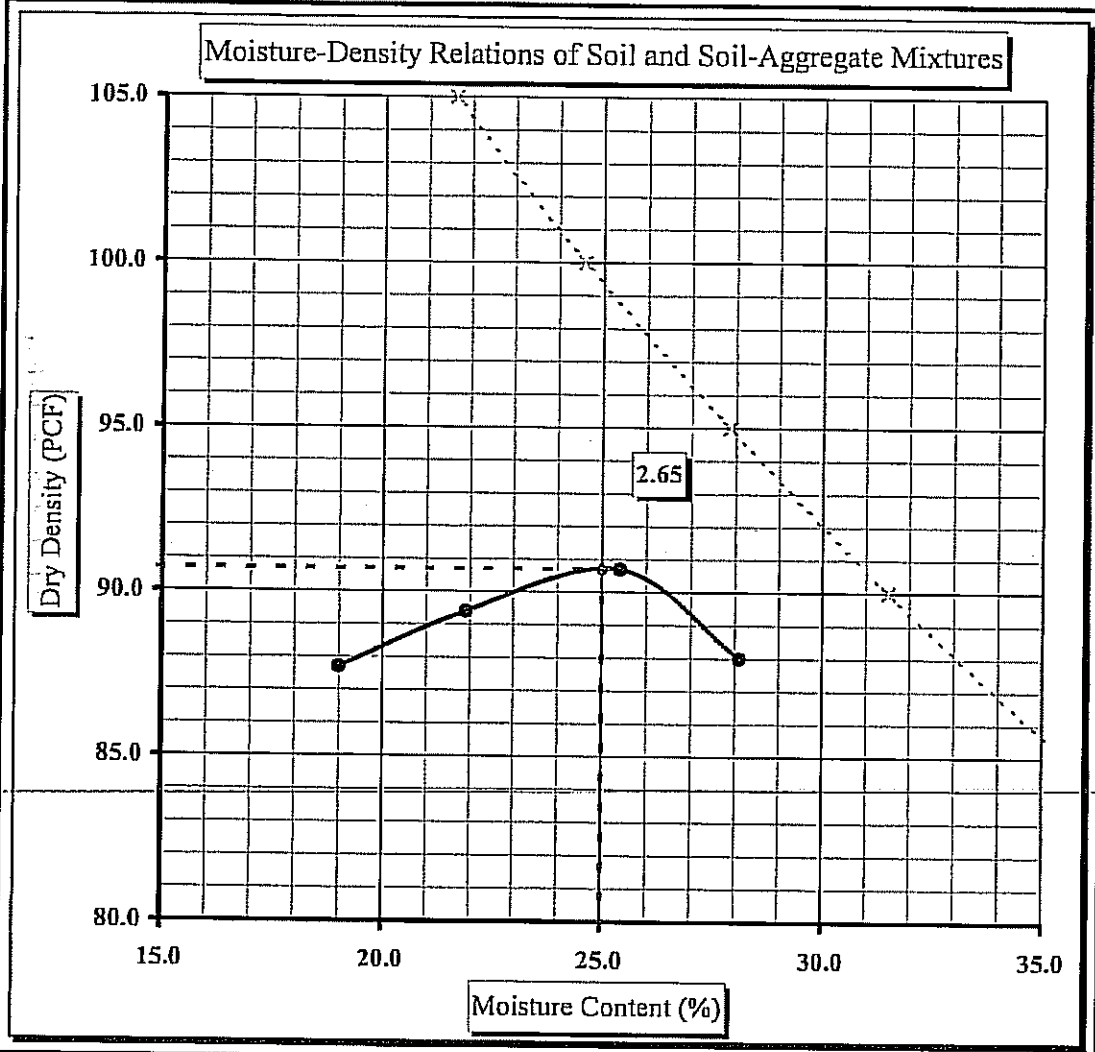
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	June 21, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-21/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-16	Sample #:	S-15	Sample Date:	5/23 & 6/7
Location:	TP-11B	Offset:		Depth:	Bulk
Sample Description:	Red Orange Brown Medium to Fine Sandy Silt (ML)				

Maximum Dry Density **90.7** **PCF.** **Optimum Moisture Content** **25.0** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	17.6%
Liquid Limit:	44
Plastic Limit:	40
Plastic Index:	4
Specific Gravity:	

% Passing

3/4"	100
1/2"	100
3/8"	100
#4	99.8

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

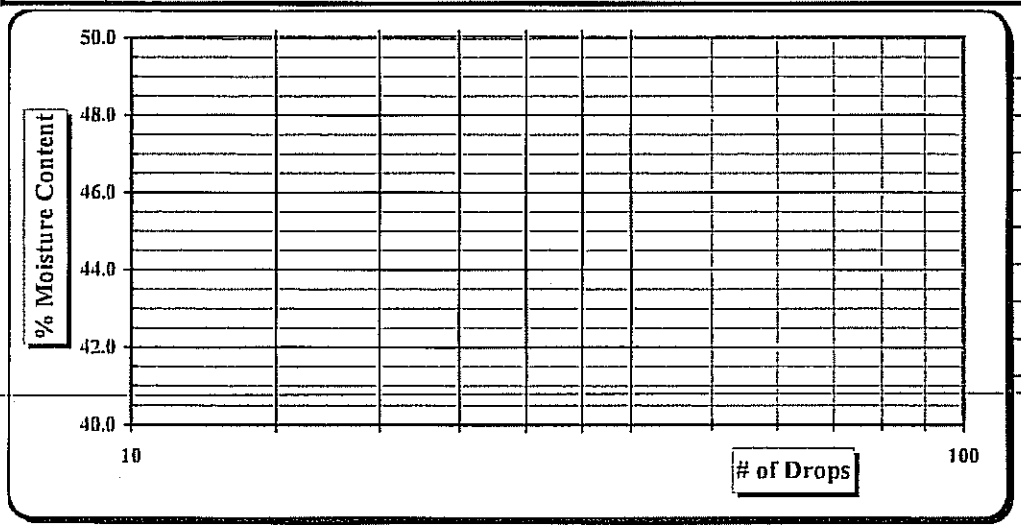
Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 6/18/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 6/12-18/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: B-19 | Sample #: S-16 | Sample Date: 5/23 & 6/7
Location: TP-14B | Offset: | Depth: Bulk
Sample Description: Tan Brown Medium to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #									
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture Content (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average									



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☒
Liquid limit Test:	Multipoint Method ☐	One-point Method ☐		Liquid Limit	
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 6/12-20/08
Report Date: 6/20/08

Boring #: B-19 Sample #: S-16 Sample Date: 5/23 & 6/7
Location: TP-14B Offset: Depth:
Sample Description: Tan Brown Medium to Fine Sandy Silt (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):	311.90			Tare #	45	S-7	
Weight of Total Sample Air Dried:	311.90		A	Tare Wt.	13.94	81.50	
Weight of Air Dried Hydrometer Sample (g):	50.00		B	Wet Wt. + A	27.38	326.29	
Total Sample Oven Dried:	307.82		C	Dry Wt. + A	27.20	296.94	
Hydrometer Sample Oven Dried (W):	49.33		D	Water Wt. (B-C)	0.18	29.35	
% Passing #10:	97.5%		E	Dry Wt. (C-A)	13.26	215.44	
Correction Factor a (Table 1):	1.00			% Moisture (100 x D/E)	1.36%	13.6%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	4.7	Soil Mortar	98.5%
#10	7.6	100.0%	97.5%
#20	1.4	97.2%	94.8%
#40	2.6	94.7%	92.4%
#60	3.9	92.0%	89.7%
#100	8.6	82.5%	80.5%
#200	23.3	52.7%	51.4%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	47.1%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	1.5%	< 75 mm and > 4.75 mm	Silt & Clay:	51.4%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	0.9%	< 4.75 mm and > 2.00 mm	Silt:	48.4%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	5.1%	< 2.00 mm and > 0.425 mm	Clay:	3.0%	< 0.005 mm		
Fine Sand:	41.0%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit NP Plastic Limit Plastic Index NP Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	24.5	4.5		20.00	40.5%	39.5%	13.0	0.01317	0.04751
	2	23.0	18.0	4.5		13.50	27.4%	26.7%	14.1	0.01317	0.03495
	5	23.0	13.0	4.5		8.50	17.2%	16.8%	14.9	0.01317	0.02274
	15	23.0	10.0	4.5		5.50	11.1%	10.9%	15.4	0.01317	0.01334
	30	23.0	7.5	4.5		3.00	6.1%	5.9%	15.8	0.01317	0.00956
	60	23.0	6.5	4.5		2.00	4.1%	4.0%	16.0	0.01317	0.00679
	250	23.0	5.5	4.5		1.00	2.0%	2.0%	16.1	0.01317	0.00335
	1440	22.0	5.0	5.0		0.00	0.0%	0.0%	16.3	0.01332	0.00142

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner 117900 *Certification #*

Technical Responsibility: Kenneth Daly *Signature* *Project Engineer* *Position*

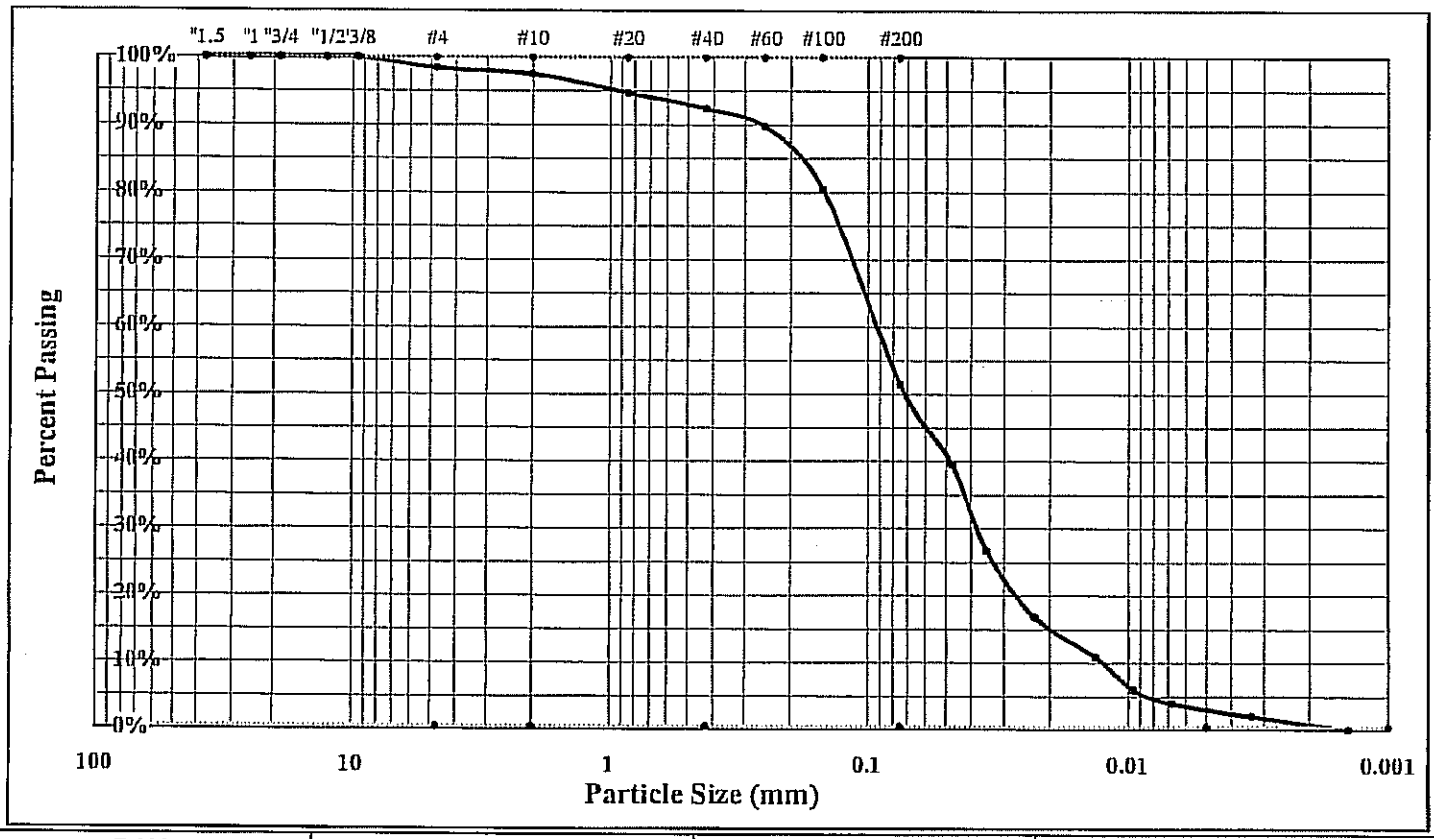
S&ME, INC. 9751 Southern Pine Blvd., Charlotte, NC 28273 1356-07-017-03 B-19 S-15.xls

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	1356-07-017-03	Report Date:	6/20/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	6/12-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-19	Sample #:	S-16	Sample Date:	5/23 & 6/7
Location:	TP-14B	Offset:		Depth:	
Sample Description:	Tan Brown Medium to Fine Sandy Silt (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Course Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.5%	Silt	48.4%
Silt & Clay (% Passing #200)	51.4%	Sand	47.1%	Clay	3.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	13.6%	Colloids	
Liquid Limit	NP	Plastic Limit		Plastic Index	NP

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g/ Liter

References: ASTM D 422: Particle Size Analysis of Soils; ASTM D 421: Dry Preparation of Soil Samples; ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils; ASTM D 854: Specific Gravity of Soils; ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Moisture - Density Report

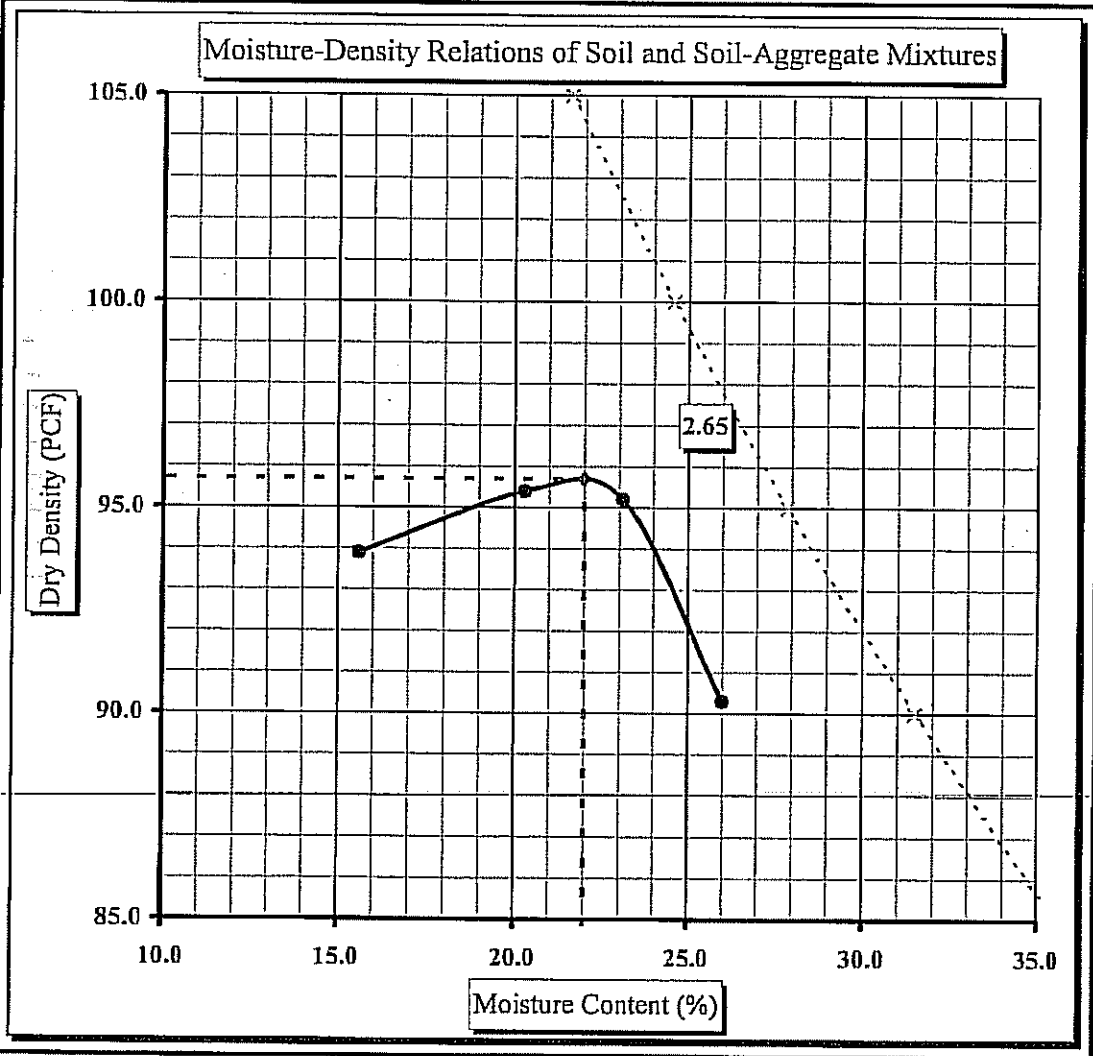
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	June 21, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	6/12-21/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	B-19	Sample #:	S-16	Sample Date:	5/23 & 6/7
Location:	TP-14B	Offset:		Depth:	Bulk
Sample Description:	Tan Brown Medium to Fine Sandy Silt (ML)				

Maximum Dry Density **95.7** **PCF.** **Optimum Moisture Content** **22.0** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	13.6%
Liquid Limit:	NP
Plastic Limit:	NP
Plastic Index:	NP
Specific Gravity:	

% Passing

3/4"	100
1/2"	100
3/8"	100
#4	98.5

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Laboratory Report Version 4.2

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	**1356-07-017-03**	Report Date:	8/12/08
Project Name:	Pine Hall Road Ash Landfill	Test Date(s):	8/11-12/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		
Sample by:		Sample Dates:	8/10/08
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
NA	17	Bulk	Jazz	81.17	401.85	340.04	61.81	**23.9%**
NA	18	Bulk	G-10	81.56	397.79	357.23	40.56	**14.7%**

Notes:

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Karen Warner — 117900 (*Certification #*)

Technical Responsibility: Ken Daly — _____ (*Signature*) — Project Engineer (*Position*)

Laboratory Record Version 4.2

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

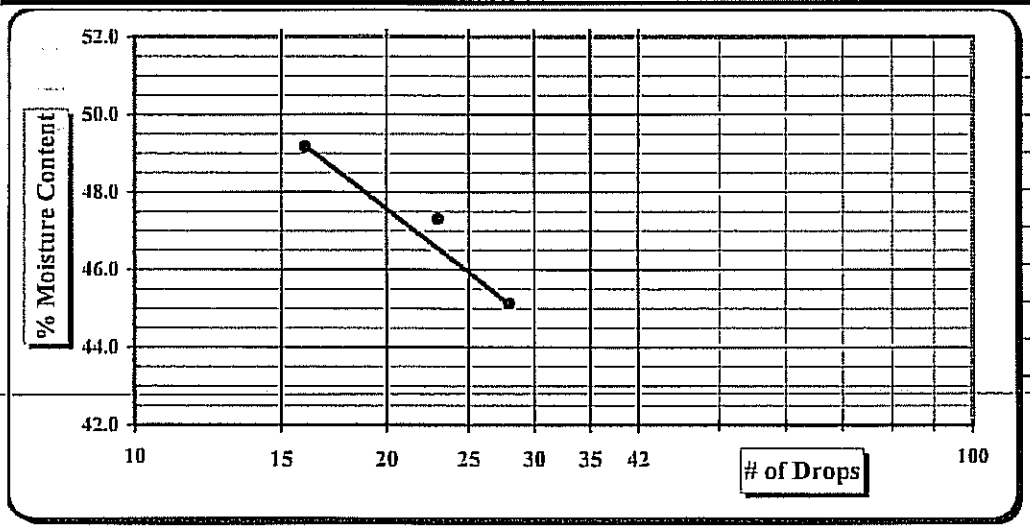
Project #:	1356-07-017-03	Report Date:	8/26/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	8/12-26/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: Sample #: S- 17 (cc) Sample Date: 8/10/08

Location: N. Side Middle of Closure Offset: Depth: Bulk

Sample Description: Orange Brown Coarse to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	TT	41	BB				5	XY	
A	Tare Weight	15.93	15.78	16.17				15.72	15.54	
B	Wet Soil Weight + A	25.61	26.21	26.15				22.51	23.42	
C	Dry Soil Weight + A	22.60	22.86	22.86				20.68	21.34	
D	Water Weight (B-C)	3.01	3.35	3.29				1.83	2.08	
E	Dry Soil Weight (C-A)	6.67	7.08	6.69				4.96	5.80	
F	% Moisture Content (D/E)*100	45.1%	47.3%	49.2%				36.9%	35.9%	
N	# OF DROPS	28	23	16				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							36.4%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	46
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	36
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	10
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 8/11-20/08
Report Date: 8/20/08

Boring #: Sample #: S- 17 (CR) Sample Date: 8/10/08
Location: N side Middle of Closure Offset: Depth: Bulk
Sample Description: Orange Brown Coarse to Fine Sandy Silt (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):	323.78			Tare #	47	Jazz	
Weight of Total Sample Air Dried:	323.78		A	Tare Wt.	15.70	81.17	
Weight of Air Dried Hydrometer Sample (g):	50.00		B	Wet Wt. + A	26.76	401.85	
Total Sample Oven Dried:	304.12		C	Dry Wt. + A	26.06	340.04	
Hydrometer Sample Oven Dried (W):	46.84		D	Water Wt. (B-C)	0.70	61.81	
% Passing #10:	95.7%		E	Dry Wt. (C-A)	10.36	258.87	
Correction Factor a (Table 1):	1.00			% Moisture (100 x D/E)	6.76%	23.9%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	4.6		98.5%
#4	8.1	Soil Mortar	97.3%
#10	13.1	100.0%	95.7%
#20	1.3	97.2%	93.0%
#40	2.5	94.6%	90.5%
#60	3.9	91.6%	87.7%
#100	6.5	86.1%	82.4%
#200	15.7	66.5%	63.6%

Notes: Description of Sand & Gravel Particles: Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	33.7%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	2.7%	< 75 mm and > 4.75 mm	Silt & Clay:	63.6%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	1.6%	< 4.75 mm and > 2.00 mm	Silt:	46.6%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	5.1%	< 2.00 mm and > 0.425 mm	Clay:	17.0%	< 0.005 mm	
Fine Sand:	26.9%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 46 Plastic Limit 36 Plastic Index 10 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.0	35.0	4.5		30.50	65.1%	62.3%	11.3	0.01348	0.04530
	2	21.0	29.5	4.5		25.00	53.4%	51.1%	12.2	0.01348	0.03329
	5	21.0	23.5	4.5		19.00	40.6%	38.8%	13.2	0.01348	0.02188
	15	21.0	16.5	4.5		12.00	25.6%	24.5%	14.3	0.01348	0.01317
	30	21.0	15.5	4.5		11.00	23.5%	22.5%	14.5	0.01348	0.00937
	60	21.0	13.5	4.5		9.00	19.2%	18.4%	14.8	0.01348	0.00670
	250	21.0	12.0	4.5		7.50	16.0%	15.3%	15.1	0.01348	0.00331
	1440	21.5	10.0	4.0		6.00	12.8%	12.3%	15.3	0.01340	0.00138

References: ASTM D 422: Particle Size Analysis of Soils; ASTM D 421: Dry Preparation of Soil Samples; ASTM D 854: Specific Gravity of Soils; ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils; ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner

Technical Responsibility: Kenneth Daly

117900
Certification #

Signature

Project Engineer
Position

S&ME, INC.

9751Southern Pine Blvd., Charlotte, NC 28273

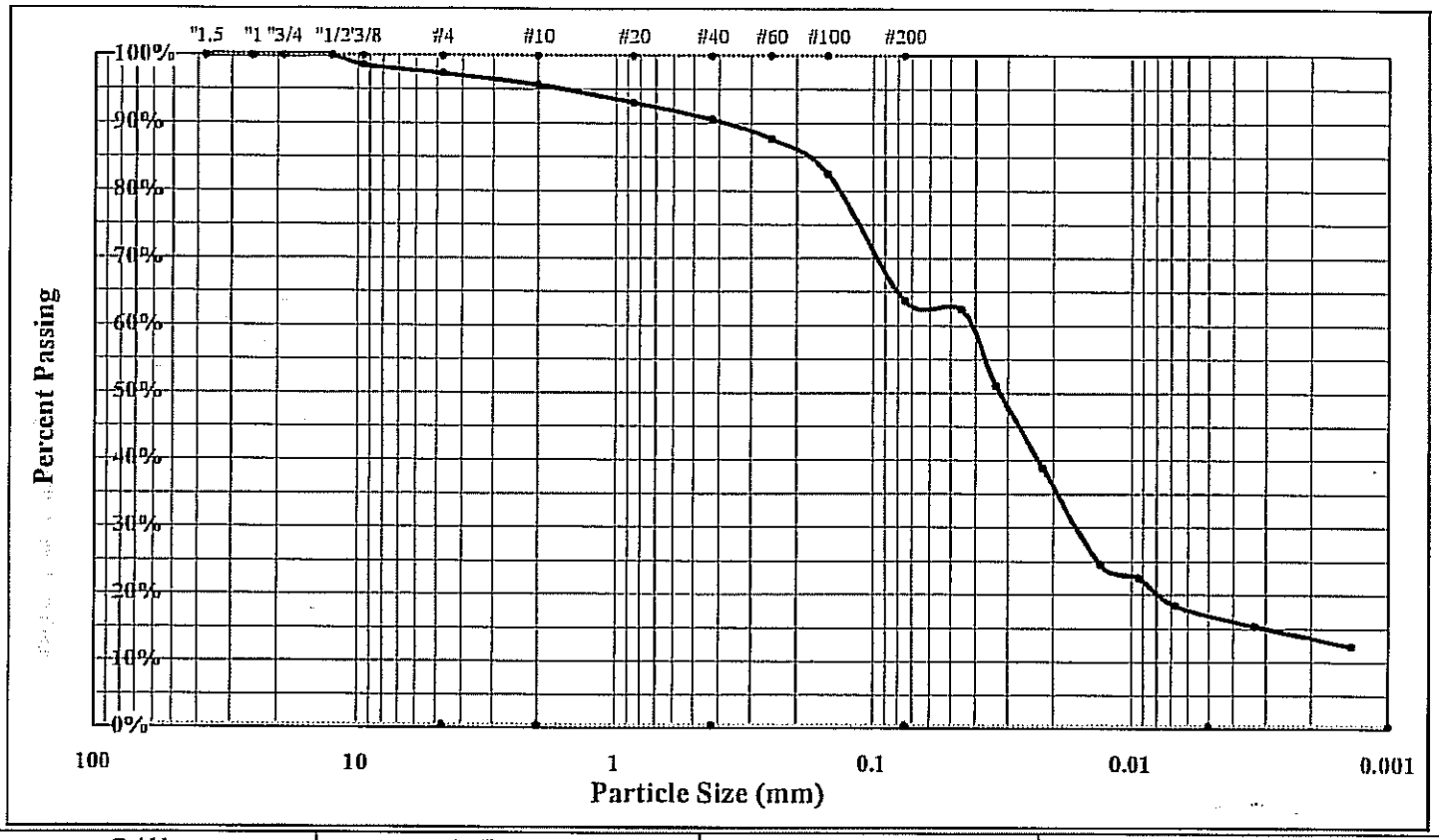
1356-07-017-03 17 Hydro.xls

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	8/20/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/11-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	Sample #: S-17 (CCR)	Sample Date:	8/10/08
Location: N side Middle of Closure	Offset:	Depth:	Bulk
Sample Description:	Orange Brown Coarse to Fine Sandy Silt (ML)		



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	2.7%	Silt	46.6%
Silt & Clay (% Passing #200)	63.6%	Sand	33.7%	Clay	17.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	23.9%	Colloids	
Liquid Limit	46	Plastic Limit	36	Plastic Index	10

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g/ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

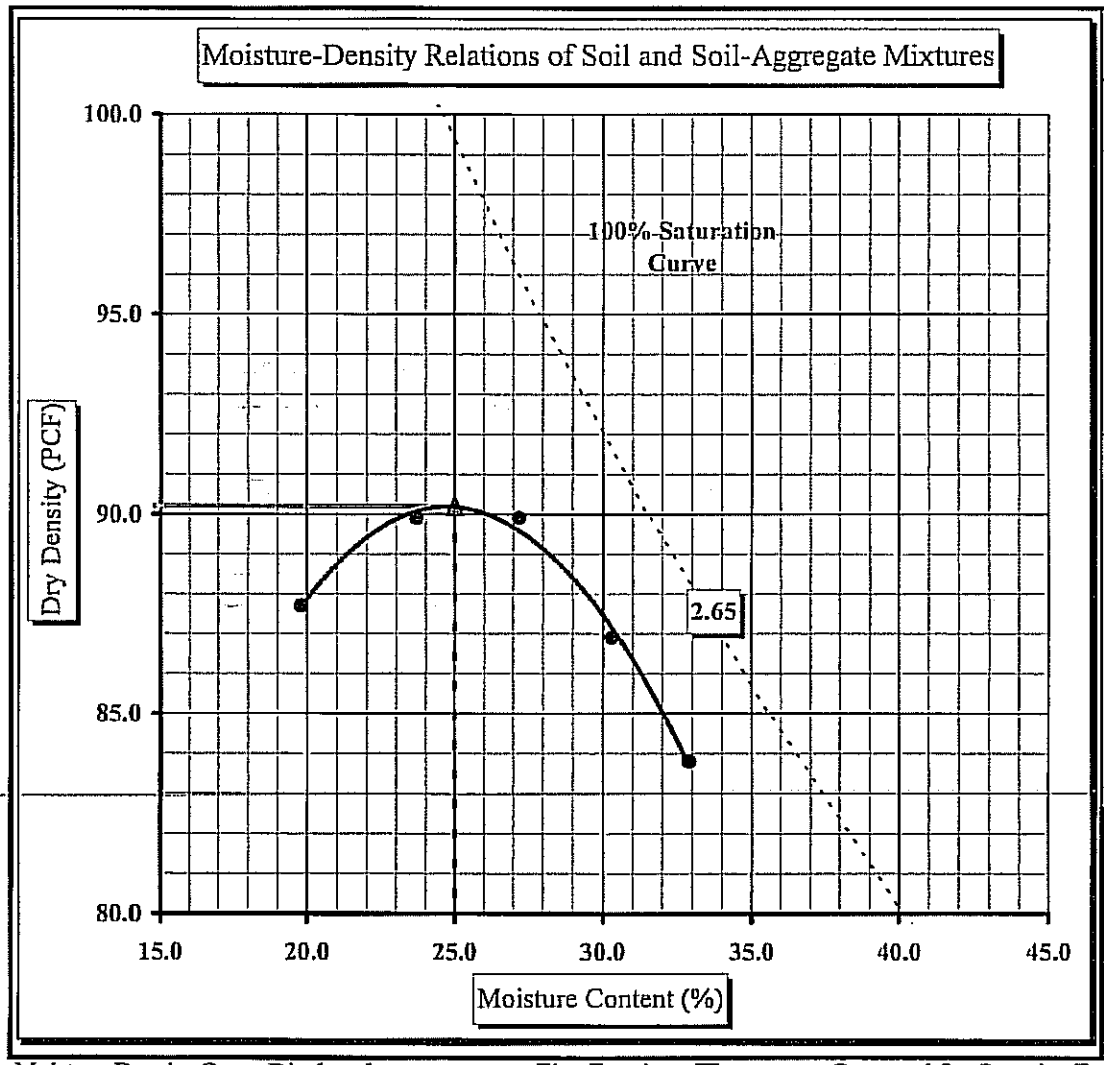
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	August 26, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/22-25/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-17 (cl)	Sample Date:	August 10, 2008
Location:	N Side Middle of Closure	Offset:		Depth:	Bulk
Sample Description:	Tan Orange Brown Coarse to Fine Sandy Silt (ML)				

Maximum Dry Density 90.2 PCF. **Optimum Moisture Content 25.0 %**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	23.9%
Liquid Limit:	46
Plastic Limit:	36
Plastic Index:	10
Specific Gravity:	

% Passing

3/4"	
1/2"	100
3/8"	98.5
#4	97.3

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Ken Daly _____ Project Engineer
Signature

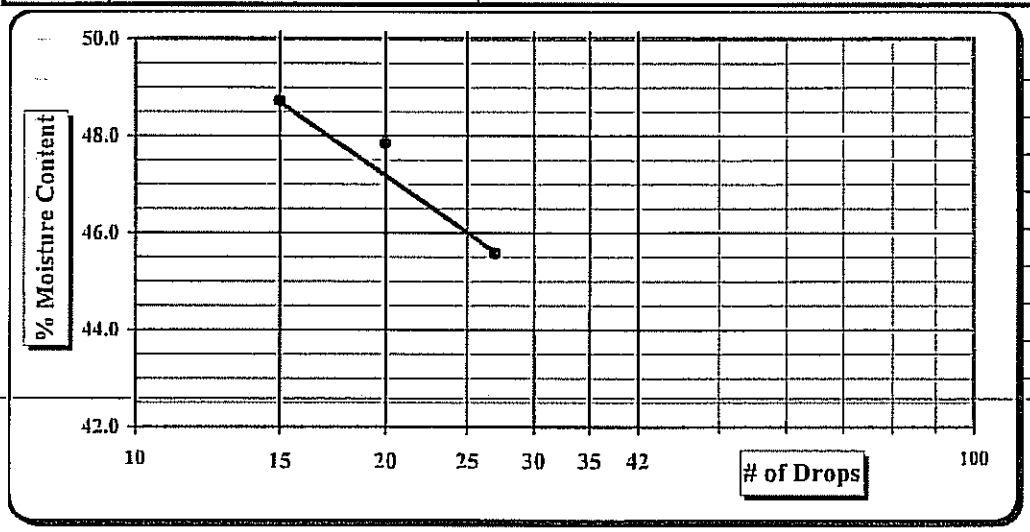
Laboratory Record Version 4.2

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: **1356-07-017-03** Report Date: 8/26/08
Project Name: Pine Hall Road Ash Landfill Closure Test Date(s): 8/12-25/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: Sample #: S-18 ccl Sample Date: 8/10/08
Location: E side Near NE Corner of Offset: Depth: Bulk
Sample Description: Tan Brown Coarse to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	Z	PP	55				57	33	
A	Tare Weight	16.87	16.15	14.32				13.87	15.88	
B	Wet Soil Weight + A	29.23	26.84	24.27				21.66	22.52	
C	Dry Soil Weight + A	25.36	23.38	21.01				19.53	20.72	
D	Water Weight (B-C)	3.87	3.46	3.26				2.13	1.80	
E	Dry Soil Weight (C-A)	8.49	7.23	6.69				5.66	4.84	
F	% Moisture Content (D/E)*100	45.6%	47.9%	48.7%				37.6%	37.2%	
N	# OF DROPS	27	20	15				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							37.4%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	46
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	37
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	9
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 8/11-20/08
Report Date: 8/20/08

Boring #: Sample #: S-18 (CCR) Sample Date: 8/10/08
Location: E side near NE Corner of (Offset: Depth: Bulk
Sample Description: Tan Brown Coarse to Fine Sandy Silt (ML)

Pan #:		Beaker #:			Apparent Relative Density (Assumed)		2.650
Hydrometer Jar #:							
Pan Tare Weight (grams):					Moisture Content	Hygroscopic	Natural
Total Sample Air Dried Wt. + tare wt. (grams):			252.76		Tare #	1	G-10
Weight of Total Sample Air Dried:			252.76	A	Tare Wt.	13.89	81.56
Weight of Air Dried Hydrometer Sample (g):			50.00	B	Wet Wt. + A	26.54	397.79
Total Sample Oven Dried:			247.95	C	Dry Wt. + A	26.29	357.23
Hydrometer Sample Oven Dried (W):			49.01	D	Water Wt. (B-C)	0.25	40.56
% Passing #10:			96.3%	E	Dry Wt. (C-A)	12.40	275.67
Correction Factor a (Table 1):			1.00		% Moisture (100 x D/E)	2.02%	14.7%

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	3.4	Soil Mortar	98.6%
#10	9.2	**100.0%**	96.3%
#20	1.2	97.6%	94.0%
#40	2.3	95.2%	91.7%
#60	3.9	92.0%	88.6%
#100	7.3	85.0%	81.9%
#200	19.0	61.3%	59.0%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	39.6%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	1.4%	< 75 mm and > 4.75 mm	Silt & Clay:	59.0%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	2.3%	< 4.75 mm and > 2.00 mm	Silt:	49.5%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	4.6%	< 2.00 mm and > 0.425 mm	Clay:	9.5%	< 0.005 mm		
Fine Sand:	32.7%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 46 Plastic Limit 37 Plastic Index 9 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.0	33.0	4.5		28.50	58.1%	56.0%	11.6	0.01348	0.04595
	2	21.0	27.0	4.5		22.50	45.9%	44.2%	12.6	0.01348	0.03384
	5	21.0	20.0	4.5		15.50	31.6%	30.5%	13.8	0.01348	0.02236
	15	21.0	15.0	4.5		10.50	21.4%	20.6%	14.6	0.01348	0.01329
	30	21.0	12.0	4.5		7.50	15.3%	14.7%	15.1	0.01348	0.00955
	60	21.0	10.0	4.5		5.50	11.2%	10.8%	15.4	0.01348	0.00683
	250	21.0	9.0	4.5		4.50	9.2%	8.8%	15.6	0.01348	0.00336
	1440	21.5	6.5	4.0		2.50	5.1%	4.9%	15.9	0.01340	0.00141

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner
Technical Responsibility: Ken Daly

117900
Certification #

Signature

Project Engineer
Position

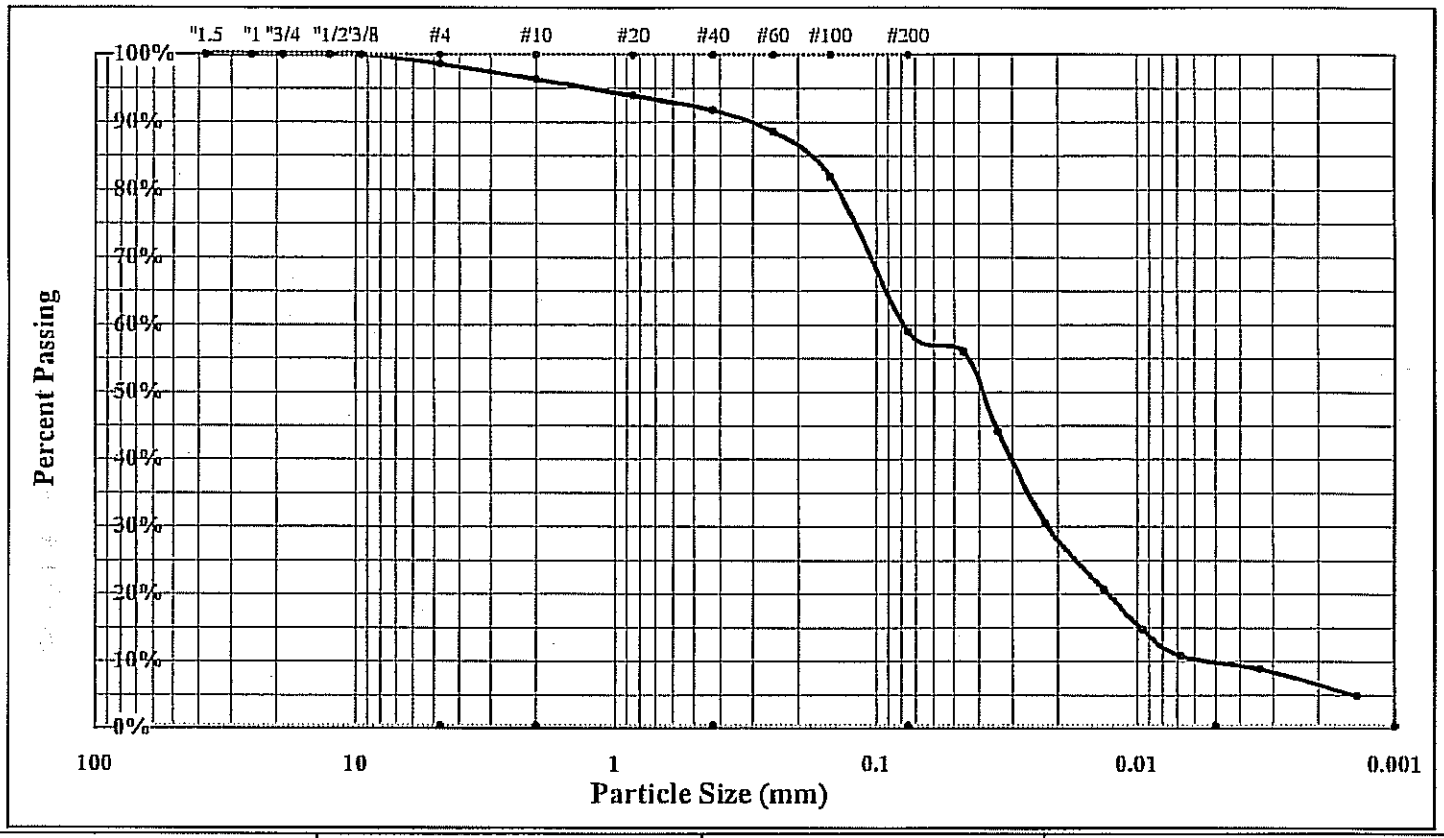
S&ME, INC. 9751 Southern Pine Blvd., Charlotte, NC 28273 1356-07-017-03 18 Hydro.xls

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	8/20/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/11-20/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	Sample #: S-18 (CCR)	Sample Date:	8/10/08
Location: E side near NE Corner of	Offset:	Depth:	Bulk
Sample Description:	Tan Brown Coarse to Fine Sandy Silt (ML)		



Cobbles	> 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.4%	Silt	49.5%
Silt & Clay (% Passing #200)	59.0%	Sand	39.6%	Clay	9.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	14.7%	Colloids	
Liquid Limit	46	Plastic Limit	37	Plastic Index	9

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Ken Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	August 26, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/22-25/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

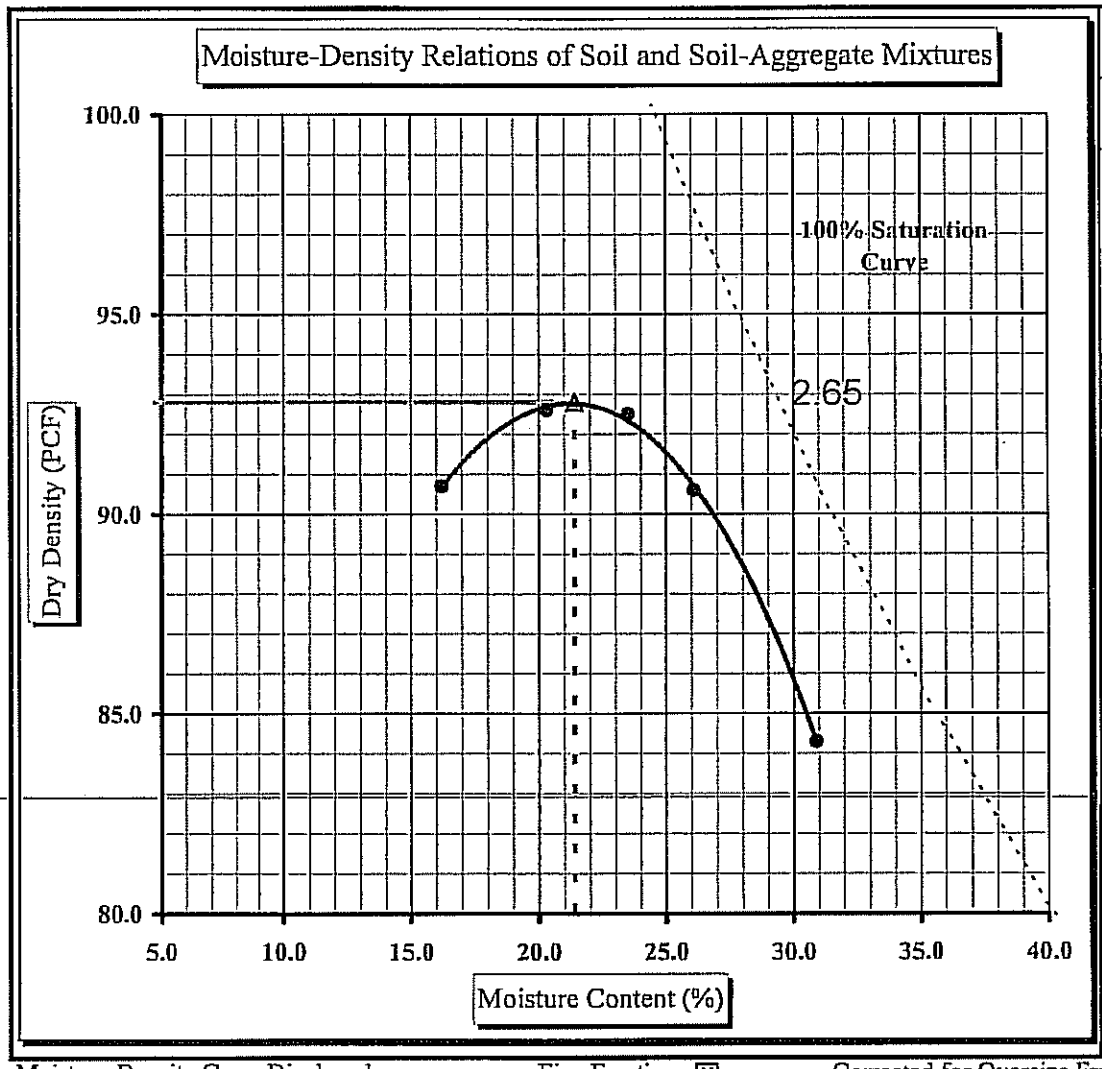
Boring #: Sample #: S-18 (CCR) Sample Date: August 10, 2008

Location: E side near NE corner of Closur Offset: Depth: Bulk

Sample Description: Tan Brown Coarse to Fine Sandy Silt (ML)

Maximum Dry Density 92.8 PCF. **Optimum Moisture Content 21.4 %**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	14.7%
Liquid Limit:	46
Plastic Limit:	37
Plastic Index:	9
Specific Gravity:	

% Passing

3/4"	
1/2"	100
3/8"	100
#4	98.6

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Ken Daly _____ Project Engineer
Signature

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	1356-07-017-03	Report Date:	8/27/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	8/26-27/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		
Sample by:	J.Addis	Sample Dates:	8/21/07
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
NA	19	Bulk	G-14	82.01	374.45	339.35	35.10	**13.6%**
NA	20	Bulk	S-4	80.60	356.02	312.69	43.33	**18.7%**
NA	21	Bulk	G-13	81.23	451.20	386.20	65.00	**21.3%**
NA	22	Bulk	T-4	81.60	499.30	464.80	34.50	**9.0%**

Notes: Closure Areas S1 Fill Placement

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Karen Warner 117900
Certification #

Technical Responsibility: Ken Daly _____ Project Engineer
Signature *Position*

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

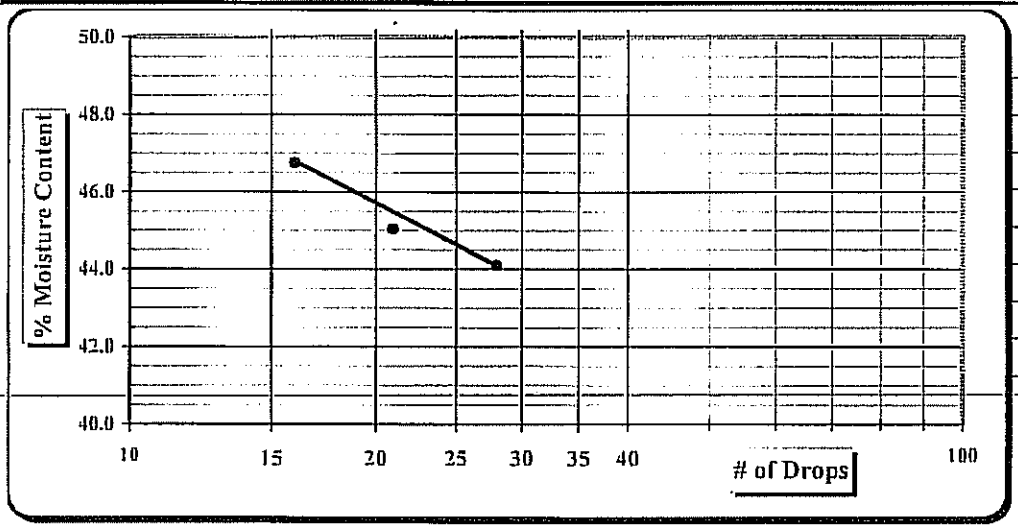
Project #:	1356-07-017-03	Report Date:	8/26-9/5/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/5/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: Sample #: S-19 Sample Date: 8/21/08

Location: E Side of Closure Offset: Depth: Bulk

Sample Description: Tan Brown Coarse to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	46	55	41				6	TT	
A	Tare Weight	13.74	14.31	15.77				14.04	15.92	
B	Wet Soil Weight + A	22.30	22.94	25.94				20.36	24.00	
C	Dry Soil Weight + A	19.68	20.26	22.70				18.66	21.86	
D	Water Weight (B-C)	2.62	2.68	3.24				1.70	2.14	
E	Dry Soil Weight (C-A)	5.94	5.95	6.93				4.62	5.94	
F	% Moisture Content (D/E)*100	44.1%	45.0%	46.8%				36.8%	36.0%	
N	# OF DROPS	28	21	16				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							36.4%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	45
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	36
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	9
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Karen Warner 11790 (Certification #)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 8/26-9/2/08
Report Date: 9/2/08

Boring #: Sample #: S-19 Sample Date: 8/21/08
Location: E Side of Closure Offset: Depth: Bulk
Sample Description: Tan Brown Coarse to Fine Sandy Silt (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):		348.75		Tare #	50	G-14	
Weight of Total Sample Air Dried:		348.75	A	Tare Wt.	15.81	82.01	
Weight of Air Dried Hydrometer Sample (g):		50.00	B	Wet Wt. + A	27.61	374.45	
Total Sample Oven Dried:		343.83	C	Dry Wt. + A	27.44	339.35	
Hydrometer Sample Oven Dried (W):		49.28	D	Water Wt. (B-C)	0.17	35.10	
% Passing #10:		97.8%	E	Dry Wt. (C-A)	11.63	257.34	
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	1.46%	13.6%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	4.2	Soil Mortar	98.8%
#10	7.5	100.0%	97.8%
#20	1.1	97.8%	95.7%
#40	2.1	95.7%	93.6%
#60	3.7	92.5%	90.5%
#100	6.5	86.8%	84.9%
#200	16.3	67.0%	65.5%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	33.3%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	1.2%	< 75 mm and > 4.75 mm	Silt & Clay:	65.5%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	1.0%	< 4.75 mm and > 2.00 mm	Silt:	51.5%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	4.2%	< 2.00 mm and > 0.425 mm	Clay:	14.0%	< 0.005 mm		
Fine Sand:	28.1%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 45 Plastic Limit 36 Plastic Index 9 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.0	36.0	5.0		31.00	62.9%	61.5%	11.2	0.01348	0.04513
	2	21.0	30.0	5.0		25.00	50.7%	49.6%	12.2	0.01348	0.03329
	5	21.0	23.0	5.0		18.00	36.5%	35.7%	13.3	0.01348	0.02202
	15	21.0	17.5	5.0		12.50	25.4%	24.8%	14.2	0.01348	0.01314
	30	21.0	14.5	5.0		9.50	19.3%	18.9%	14.7	0.01348	0.00945
	60	21.0	13.0	5.0		8.00	16.2%	15.9%	15.0	0.01348	0.00674
	250	21.0	10.5	5.0		5.50	11.2%	10.9%	15.4	0.01348	0.00334
	1440	22.0	8.5	5.5		3.00	6.1%	6.0%	15.8	0.01332	0.00140

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_3=14cm, A=27.8cm^2

Technician Name: Karen Warner 117900 *Certification #*

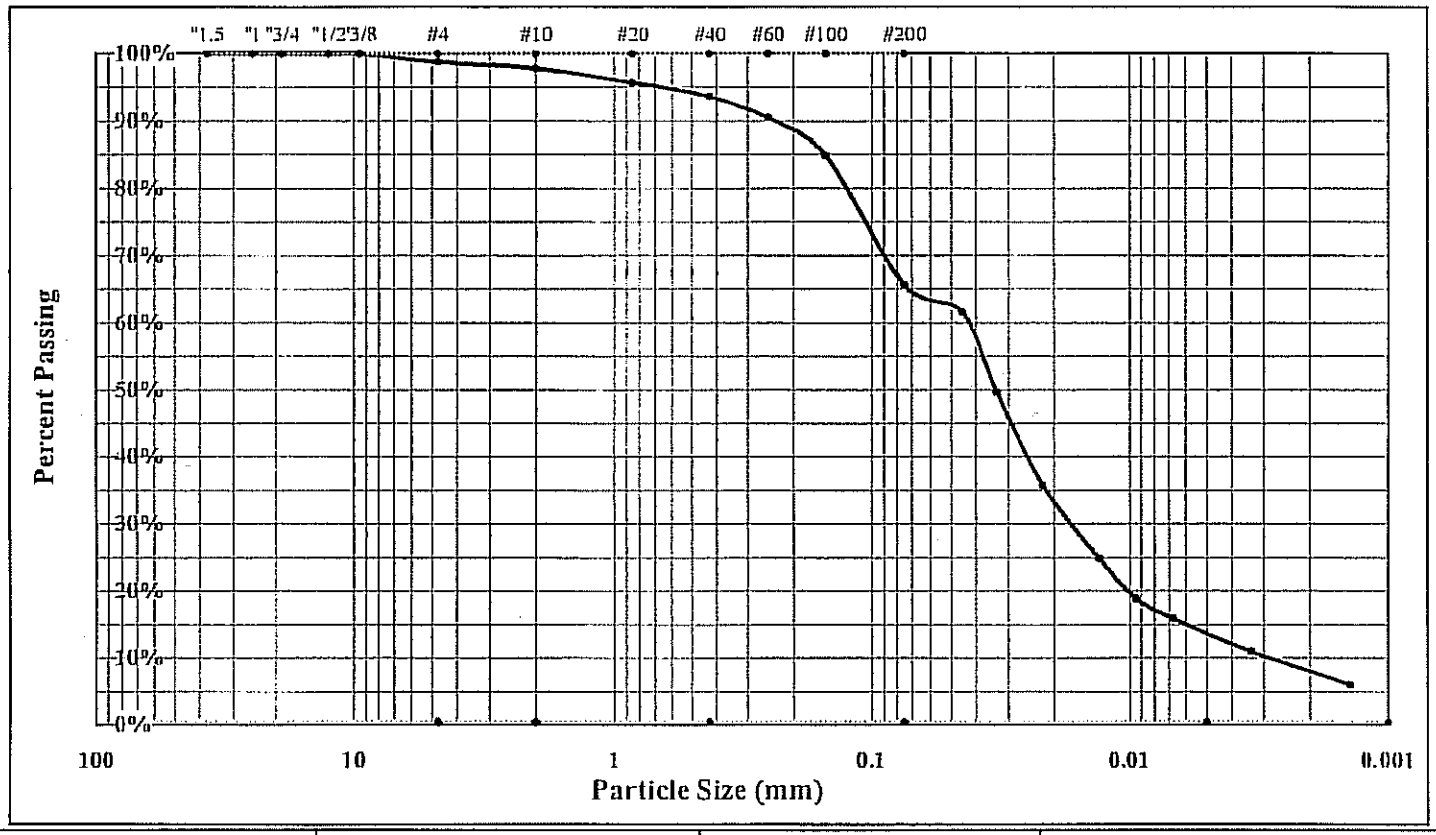
Technical Responsibility: Kenneth Daly *Signature* *Project Engineer* *Position*

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	1356-07-017-03	Report Date:	9/2/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	8/26-9/2/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-19	Sample Date:	8/21/08
Location:	E Side of Closure	Offset:		Depth:	Bulk
Sample Description:	Tan Brown Coarse to Fine Sandy Silt (ML)				



~~Cobbles~~	~~< 300 mm (12") and > 75 mm (3")~~	~~Fine Sand~~	~~< 0.425 mm and > 0.075 mm (#200)~~
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.2%	Silt	51.5%
Silt & Clay (% Passing #200)	65.5%	Sand	33.3%	Clay	14.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	13.6%	Colloids	
Liquid Limit	45	Plastic Limit	36	Plastic Index	9

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature *Position*

Laboratory Report Version 4.2

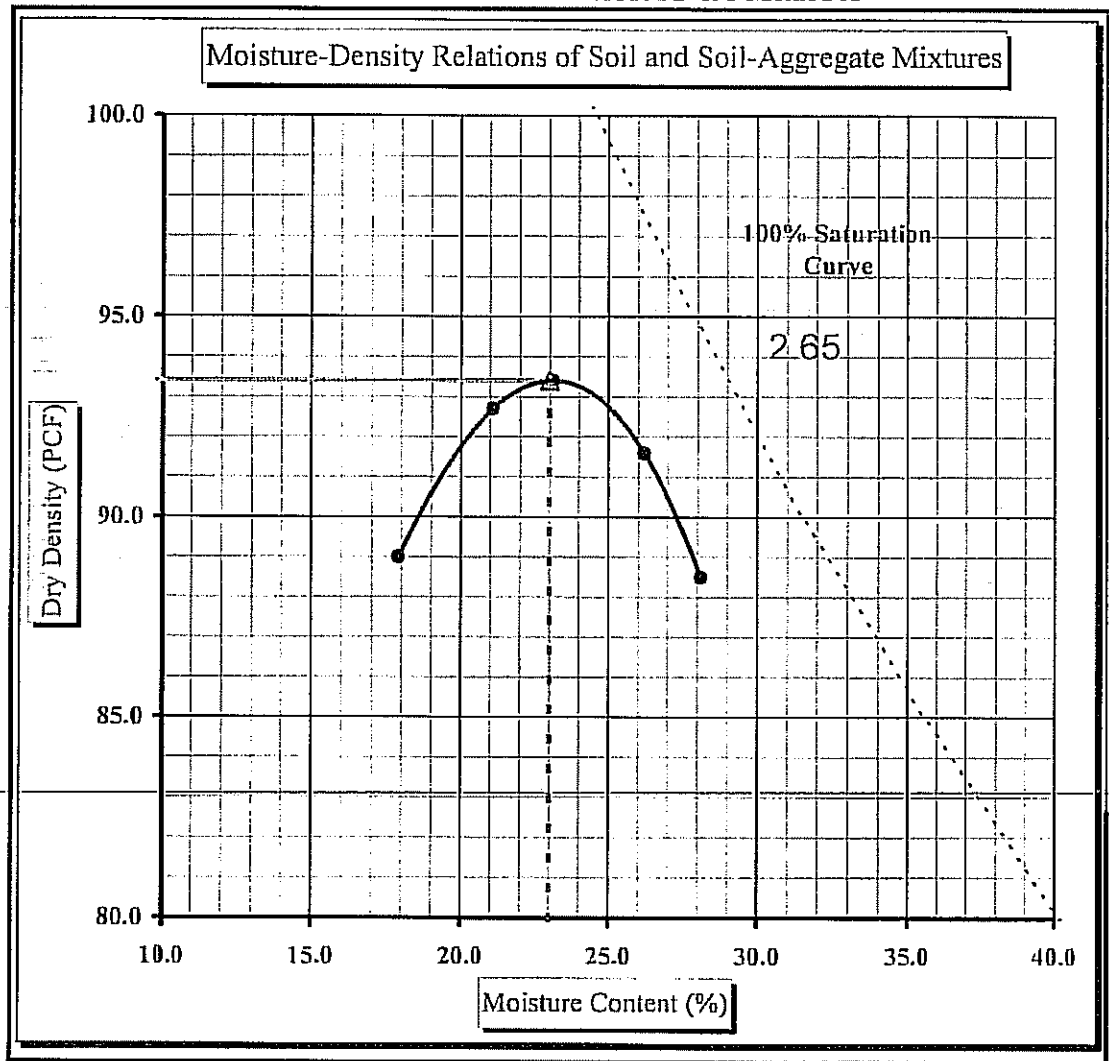
Moisture - Density Report

S&ME Project #:	**1356-07-017-03**	Report Date:	September 2, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/26-9/2/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-19	Sample Date:	August 21, 2008
Location:	E Side of Closure	Offset:		Depth:	Bulk
Sample Description:	Tan Brown Coarse to Fine Sandy Silt (ML)				

Maximum Dry Density 93.4 **PCF.** **Optimum Moisture Content** 23.0 %

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	13.6%
Liquid Limit:	45
Plastic Limit:	36
Plastic Index:	9
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	100
#4	98.8

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

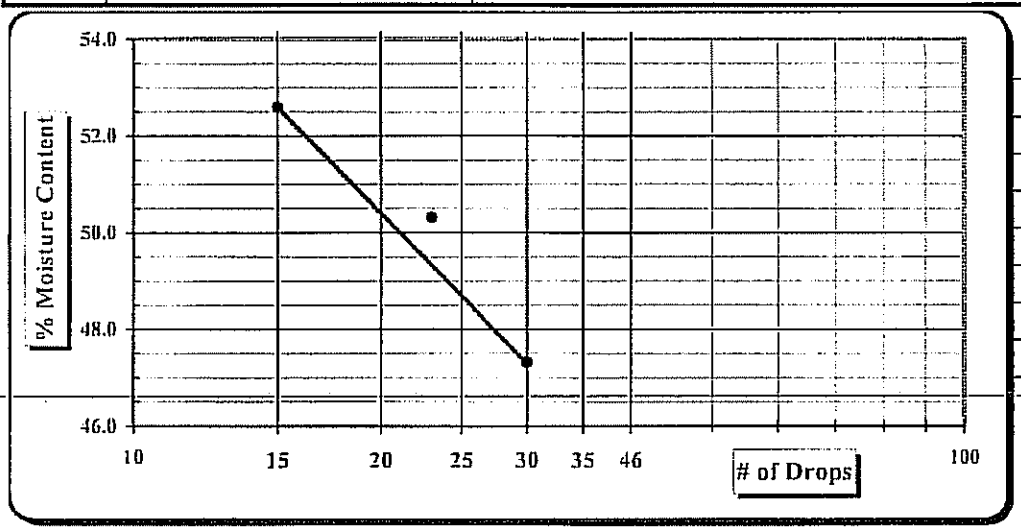
Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 8/26-9/5/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 9/5/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: | Sample #: S-20 | Sample Date: 8/21/08
Location: SE Side of Closure | Offset: | Depth: Bulk
Sample Description: Orange Brown Medium to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	PP	XY	NN				47	BB	
A	Tare Weight	16.16	15.93	15.27				**15.69**	16.15	
B	Wet Soil Weight + A	25.25	25.43	23.19				22.36	23.55	
C	Dry Soil Weight + A	22.33	22.25	20.46				20.29	21.21	
D	Water Weight (B-C)	2.92	3.18	2.73				2.07	2.34	
E	Dry Soil Weight (C-A)	6.17	6.32	5.19				4.60	5.06	
F	% Moisture Content (D/E)*100	47.3%	50.3%	52.6%				45.0%	46.2%	
N	# OF DROPS	30	23	15				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							45.6%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	49
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	46
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	3
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner — 11790 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 8/26-9/2/08
Report Date: 9/2/08

Boring #: Sample #: S-20 Sample Date: 8/21/08
Location: SE Side of Closure Offset: Depth: Bulk
Sample Description: Orange Brown Medium to Fine Sandy Silt (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):		301.06		Tare #	43	S-4	
Weight of Total Sample Air Dried:		301.06	A	Tare Wt.	13.85	80.60	
Weight of Air Dried Hydrometer Sample (g):		50.00	B	Wet Wt. + A	25.55	356.02	
Total Sample Oven Dried:		296.25	C	Dry Wt. + A	25.36	312.69	
Hydrometer Sample Oven Dried (W):		49.19	D	Water Wt. (B-C)	0.19	43.33	
% Passing #10:		98.4%	E	Dry Wt. (C-A)	11.51	232.09	
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	1.65%	18.7%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	1.6		99.4%
#4	3.2	Soil Mortar	98.9%
#10	4.7	100.0%	98.4%
#20	0.1	99.9%	98.3%
#40	1.2	97.5%	96.0%
#60	2.2	95.4%	93.9%
#100	5.6	88.6%	87.2%
#200	17.0	65.5%	64.5%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	34.4%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	1.1%	< 75 mm and > 4.75 mm	Silt & Clay:	64.5%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	0.5%	< 4.75 mm and > 2.00 mm	Silt:	54.5%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	2.5%	< 2.00 mm and > 0.425 mm	Clay:	10.0%	< 0.005 mm	
Fine Sand:	31.5%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 49 Plastic Limit 46 Plastic Index 3 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.0	36.0	5.0		31.00	63.0%	62.0%	11.2	0.01348	0.04513
	2	21.0	28.5	5.0		23.50	47.8%	47.0%	12.4	0.01348	0.03362
	5	21.0	21.5	5.0		16.50	33.5%	33.0%	13.6	0.01348	0.02222
	15	21.0	14.5	5.0		9.50	19.3%	19.0%	14.7	0.01348	0.01336
	30	21.0	12.5	5.0		7.50	15.2%	15.0%	15.1	0.01348	0.00955
	60	21.0	11.0	5.0		6.00	12.2%	12.0%	15.3	0.01348	0.00681
	250	21.0	9.0	5.0		4.00	8.1%	8.0%	15.6	0.01348	0.00337
	1440	22.0	7.5	5.5		2.00	4.1%	4.0%	16.0	0.01332	0.00140

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$
(152H) .164cm per increment,
$V_B=67.0cm^3$, $L_2=14cm$, $A=27.8cm^2$

Technician Name: Karen Warner 117900
Certification #

Technical Responsibility: Kenneth Daly

Signature

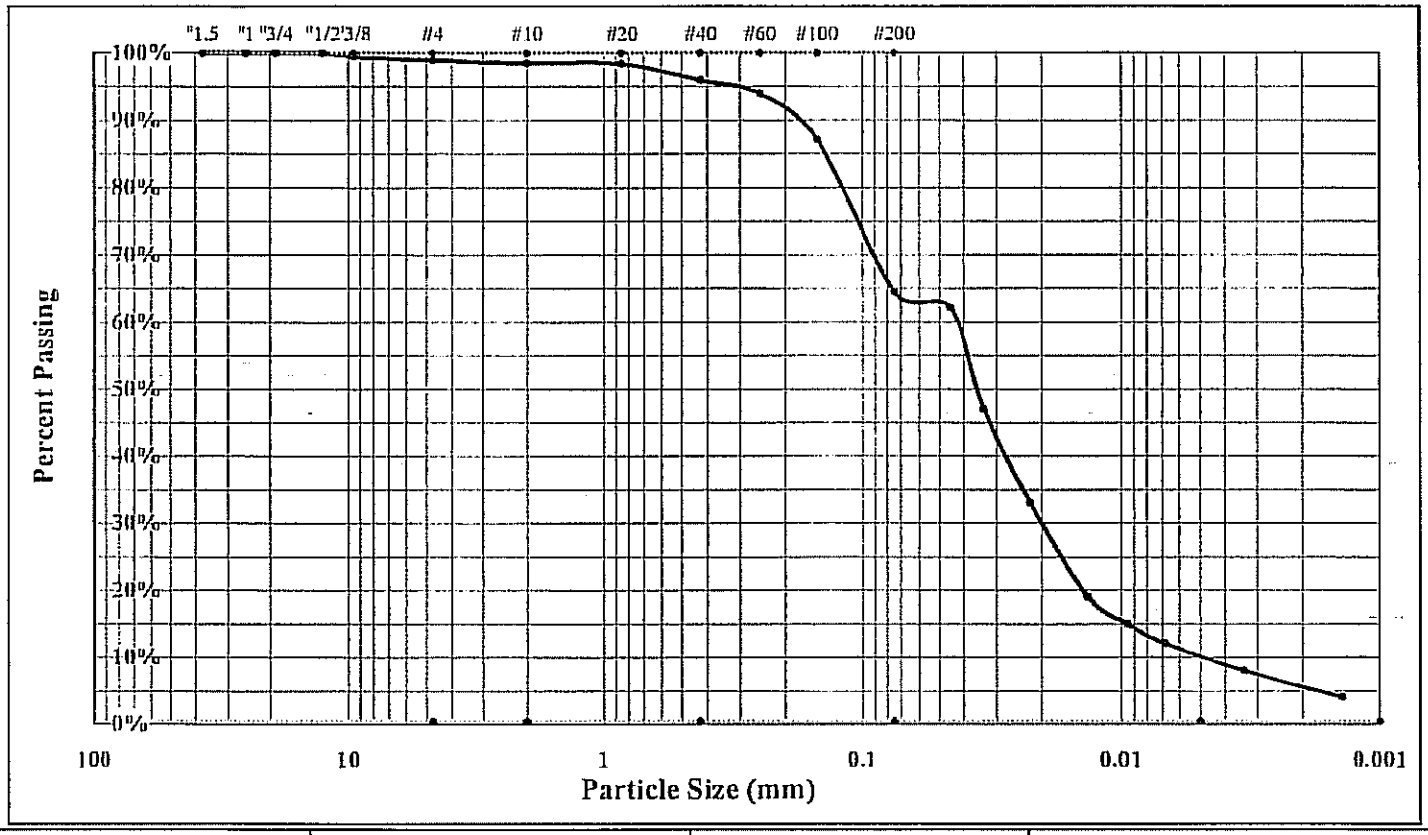
Project Engineer
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	9/2/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/26-9/2/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-20	Sample Date:	8/21/08
Location:	SE Side of Closure	Offset:		Depth:	Bulk
Sample Description:	Orange Brown Medium to Fine Sandy Silt (ML)				



~~Cobbles~~	~~< 300 mm (12") and > 75 mm (3")~~	~~Fine Sand~~	~~< 0.425 mm and > 0.075 mm (#200)~~
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.1%	Silt	54.5%
Silt & Clay (% Passing #200)	64.5%	Sand	34.4%	Clay	10.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	18.7%	Colloids	
Liquid Limit	49	Plastic Limit	46	Plastic Index	3

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Moisture - Density Report

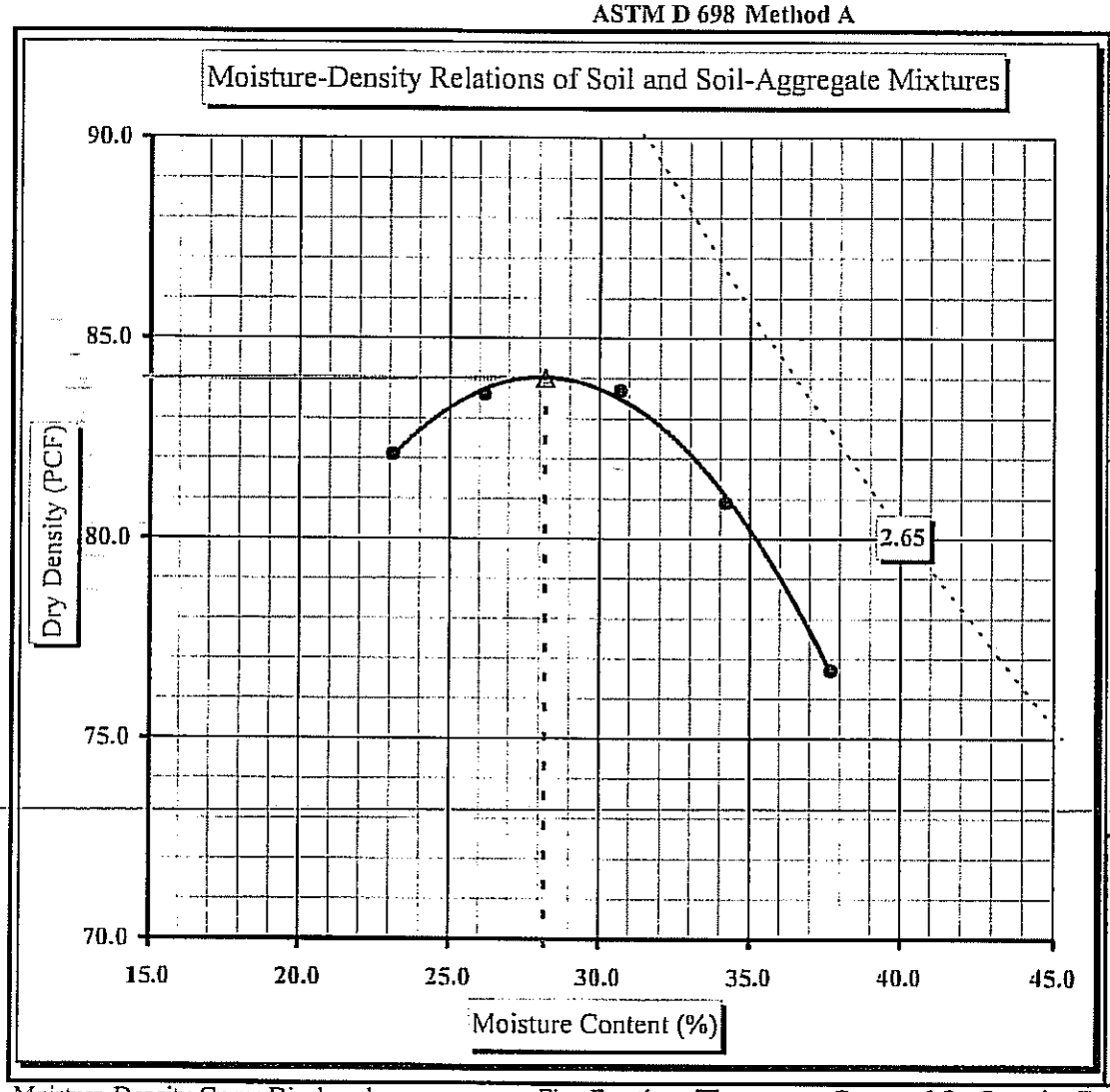
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	August 28, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/26-28/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-20	Sample Date:	August 21, 2008
Location:	SE Side of Closure	Offset:		Depth:	Bulk
Sample Description:	Tan Orange Medium to Fine Sandy Silt (ML)				

Maximum Dry Density **84.0** **PCF.** **Optimum Moisture Content** **28.2** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	18.7%
Liquid Limit:	49
Plastic Limit:	46
Plastic Index:	3
Specific Gravity:	

% Passing

3/4"	
1/2"	100
3/8"	99.4
#4	98.9

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

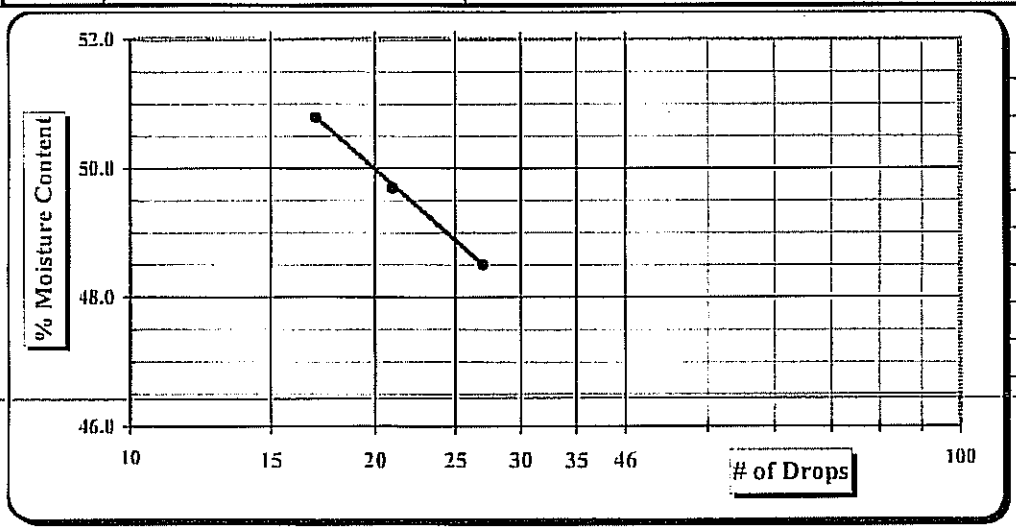
Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 8/26-9/5/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 9/5/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: | Sample #: S-21 | Sample Date: 8/21/08
Location: W Top of Closure | Offset: | Depth: Bulk
Sample Description: Oragne Brown Silt w/Medium to Fine Sand (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	33	23	53				FF	35	
A	Tare Weight	15.91	14.09	15.82				16.86	15.63	
B	Wet Soil Weight + A	24.82	23.82	24.37				24.93	23.20	
C	Dry Soil Weight + A	21.91	20.59	21.49				22.72	21.14	
D	Water Weight (B-C)	2.91	3.23	2.88				2.21	2.06	
E	Dry Soil Weight (C-A)	6.00	6.50	5.67				5.86	5.51	
F	% Moisture Content (D/E)*100	48.5%	49.7%	50.8%				37.7%	37.4%	
N	# OF DROPS	27	21	17				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							37.5%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	49
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	38
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	11
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Karen Warner — 11790 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Laboratory Record Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 8/26-9/2/08
Report Date: 9/2/08

Boring #: Sample #: Sample Date: 8/21/08
Location: W Top of Closure Offset: S-21 Depth: Bulk
Sample Description: Orange Brown Silt w/Medium to Fine Sand (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650			
Hydrometer Jar #:									
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural			
Total Sample Air Dried Wt. + tare wt. (grams):		390.86		Tare #	33	G-13			
Weight of Total Sample Air Dried:		390.86	A	Tare Wt.	15.89	81.23			
Weight of Air Dried Hydrometer Sample (g):		60.00	B	Wet Wt. + A	28.97	451.20			
Total Sample Oven Dried:		381.74	C	Dry Wt. + A	28.66	386.20			
Hydrometer Sample Oven Dried (W):		48.81	D	Water Wt. (B-C)	0.31	65.00			
% Passing #10:		98.4%	E	Dry Wt. (C-A)	12.77	304.97			
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	2.43%	21.3%			

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	3.9	Soil Mortar	99.0%
#10	6.3	100.0%	98.4%
#20	0.7	98.6%	97.0%
#40	1.4	97.2%	95.6%
#60	2.3	95.4%	93.8%
#100	4.2	91.3%	89.8%
#200	12.7	74.0%	72.8%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	26.2%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	1.0%	< 75 mm and > 4.75 mm	Silt & Clay:	72.8%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	0.6%	< 4.75 mm and > 2.00 mm	Silt:	54.8%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	2.8%	< 2.00 mm and > 0.425 mm	Clay:	18.0%	< 0.005 mm		
Fine Sand:	22.8%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 49 Plastic Limit 38 Plastic Index 11 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.0	38.0	5.0		33.00	67.6%	66.5%	10.9	0.01348	0.04447
	2	21.0	33.0	5.0		28.00	57.4%	56.4%	11.7	0.01348	0.03261
	5	21.0	27.0	5.0		22.00	45.1%	44.3%	12.7	0.01348	0.02147
	15	21.0	20.5	5.0		15.50	31.8%	31.2%	13.8	0.01348	0.01291
	30	21.0	16.5	5.0		11.50	23.6%	23.2%	14.4	0.01348	0.00934
	60	21.0	15.0	5.0		10.00	20.5%	20.1%	14.7	0.01348	0.00666
	250	21.0	13.0	5.0		8.00	16.4%	16.1%	15.0	0.01348	0.00330
	1440	22.0	11.0	5.5		5.50	11.3%	11.1%	15.4	0.01332	0.00138

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$
(152H) .164cm per increment,
$V_B=67.0cm^3$, $L_2=14cm$, $A=27.8cm^2$

Technician Name: Karen Warner

Technical Responsibility: Kenneth Daly

117900
Certification #

Signature

Project Engineer
Position

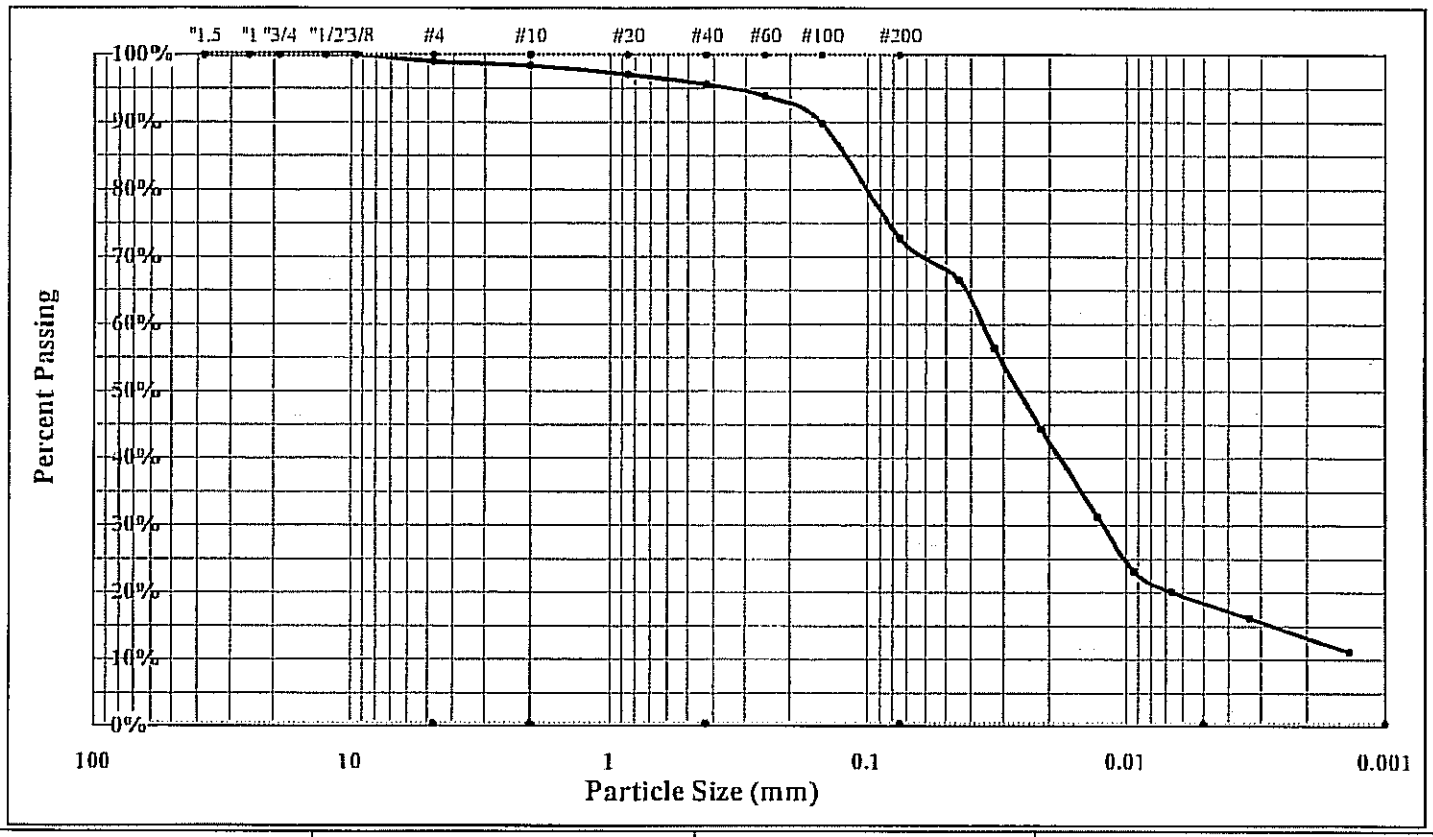
S&ME, INC. 9751Southern Pine Blvd., Charlotte, NC 28273 1356-07-017-03 S-21 Hydro.xls

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	9/2/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/26-9/2/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:		Sample Date:	8/21/08
Location:	W Top of Closure	Offset:	S-21	Depth:	Bulk
Sample Description:	Orange Brown Silt w/Medium to Fine Sand (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.0%	Silt	54.8%
Silt & Clay (% Passing #200)	72.8%	Sand	26.2%	Clay	18.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	21.3%	Colloids	
Liquid Limit	49	Plastic Limit	38	Plastic Index	11

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

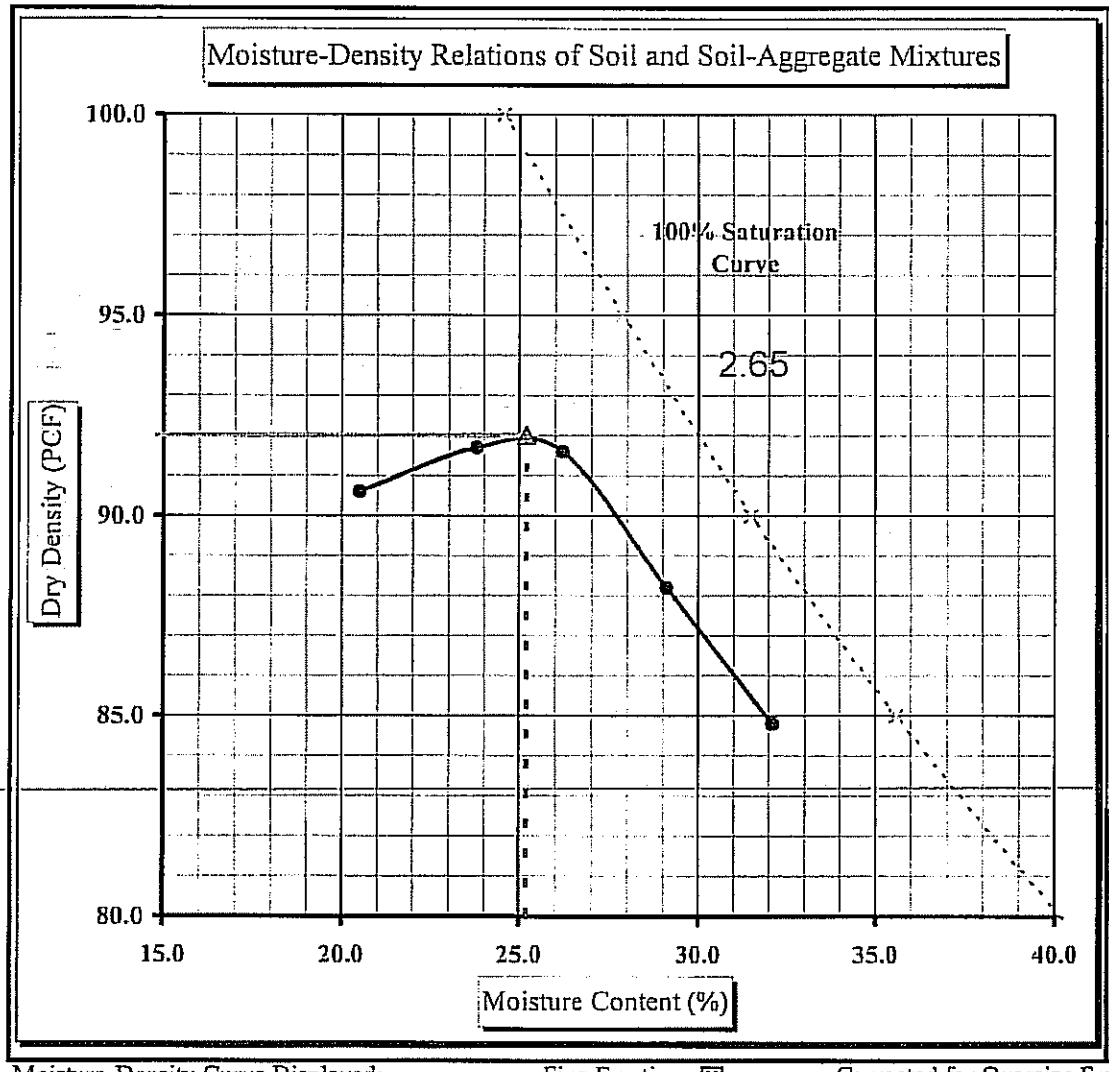
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	August 28, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/26-28/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-21	Sample Date:	August 21, 2008
Location:	Middle Top of Closure	Offset:		Depth:	Bulk
Sample Description:	Orange Brown Silt w/Medium to Fine Sand (ML)				

Maximum Dry Density 92.0 PCF. **Optimum Moisture Content 25.2 %**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	21.3%
Liquid Limit:	49
Plastic Limit:	38
Plastic Index:	11
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	100
#4	99

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

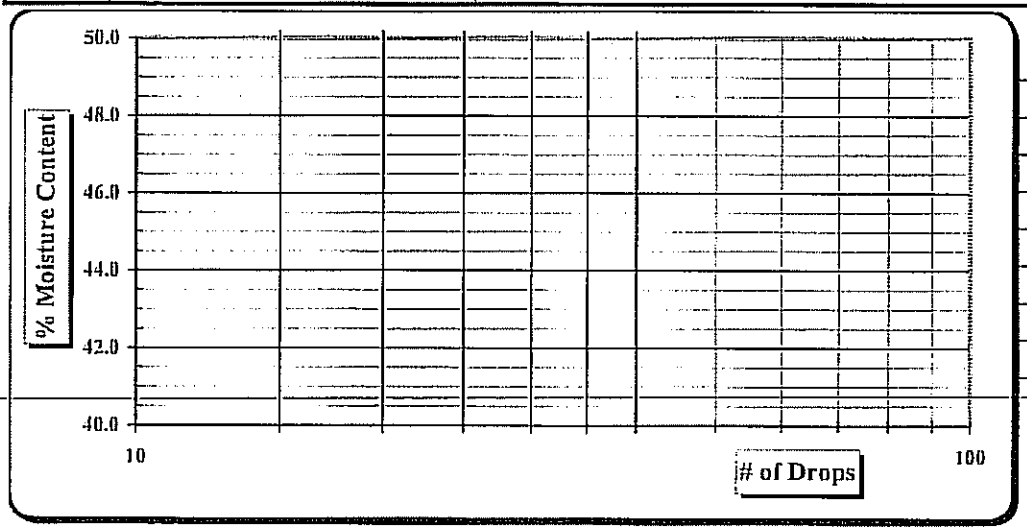
Project #:	1356-07-017-03	Report Date:	8/26-9/5/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/5/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: Sample #: S-22 Sample Date: 8/21/08

Location: Middle Top of Closure Offset: Depth: Bulk

Sample Description: White Tan Medium to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #									
A	Tare Weight									
B	Wet Soil Weight + A									
C	Dry Soil Weight + A									
D	Water Weight (B-C)									
E	Dry Soil Weight (C-A)									
F	% Moisture Content (D/E)*100									
N	# OF DROPS							*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average									



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☒
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Karen Warner 11790 (Certification #)

Technical Responsibility: Kenneth Daly _____ (Signature) Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 8/26-9/2/08
Report Date: 9/2/08

Boring #: Sample #: S-22 Sample Date: 8/21/08
Location: Middle Top of Closure Offset: Depth: Bulk
Sample Description: White Tan Medium to Fine Sandy Silt (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):		380.93		Tare #	5	T-4	
Weight of Total Sample Air Dried:		380.93	A	Tare Wt.	15.70	81.60	
Weight of Air Dried Hydrometer Sample (g):		50.00	B	Wet Wt. + A	29.46	499.30	
Total Sample Oven Dried:		379.03	C	Dry Wt. + A	29.39	464.80	
Hydrometer Sample Oven Dried (W):		49.75	D	Water Wt. (B-C)	0.07	34.50	
% Passing #10:		98.1%	E	Dry Wt. (C-A)	13.69	383.20	
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	0.51%	9.0%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	3.9	Soil Mortar	99.0%
#10	7.3	100.0%	98.1%
#20	1.0	98.1%	96.2%
#40	2.5	95.0%	93.2%
#60	5.1	89.7%	88.0%
#100	10.2	79.5%	78.0%
#200	24.1	51.6%	50.6%

Notes: Description of Sand & Gravel Particles — Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	48.3%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	1.0%	< 75 mm and > 4.75 mm	Silt & Clay:	50.6%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	0.9%	< 4.75 mm and > 2.00 mm	Silt:	45.1%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	4.9%	< 2.00 mm and > 0.425 mm	Clay:	5.5%	< 0.005 mm	
Fine Sand:	42.5%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit NP Plastic Limit NP Plastic Index NP Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	21.0	28.0	5.0		23.00	46.2%	45.3%	12.5	0.01348	0.04770
	2	21.0	23.0	5.0		18.00	36.2%	35.5%	13.3	0.01348	0.03482
	5	21.0	16.0	5.0		11.00	22.1%	21.7%	14.5	0.01348	0.02295
	15	21.0	11.0	5.0		6.00	12.1%	11.8%	15.3	0.01348	0.01362
	30	21.0	10.0	5.0		5.00	10.1%	9.9%	15.5	0.01348	0.00968
	60	21.0	8.0	5.0		3.00	6.0%	5.9%	15.8	0.01348	0.00692
	250	21.0	7.5	5.0		2.50	5.0%	4.9%	15.9	0.01348	0.00340
	1440	22.0	6.0	5.5		0.50	1.0%	1.0%	16.2	0.01332	0.00141

References: ASTM D 422: Particle Size Analysis of Soils; ASTM D 421: Dry Preparation of Soil Samples; ASTM D 854: Specific Gravity of Soils; ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils; ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$
(152H) .164cm per increment, $V_B=67.0cm^3$, $L_2=14cm$, $A=27.8cm^2$

Technician Name: Karen Warner — 117900 (Certification #)

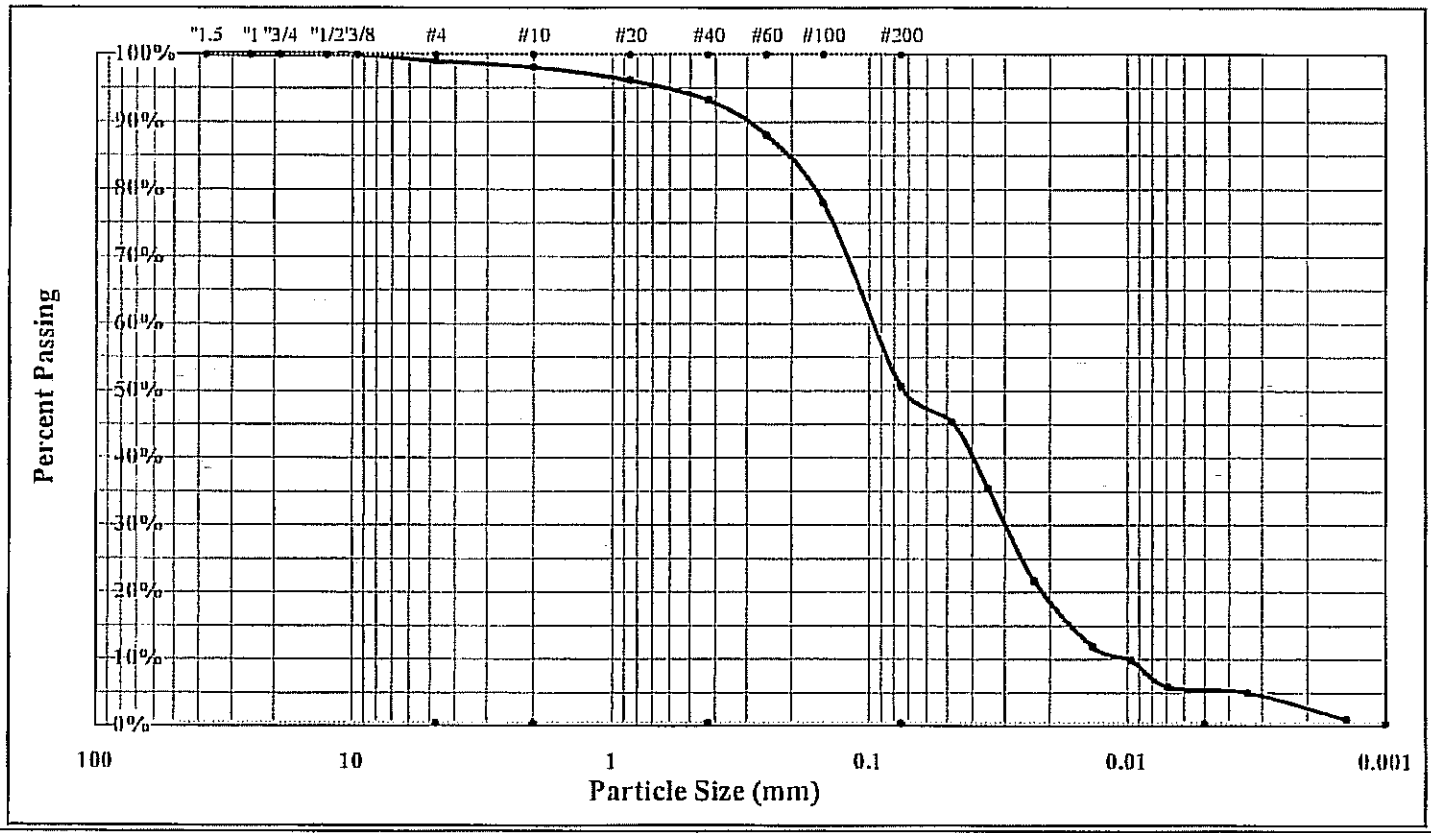
Technical Responsibility: Kenneth Daly — Signature — Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	9/2/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/26-9/2/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-22	Sample Date:	8/21/08
Location:	Middle Top of Closure	Offset:		Depth:	Bulk
Sample Description:	White Tan Medium to Fine Sandy Silt (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Course Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.0%	Silt	45.1%
Silt & Clay (% Passing #200)	50.6%	Sand	48.3%	Clay	5.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	9.0%	Colloids	
Liquid Limit	NP	Plastic Limit	NP	Plastic Index	NP

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

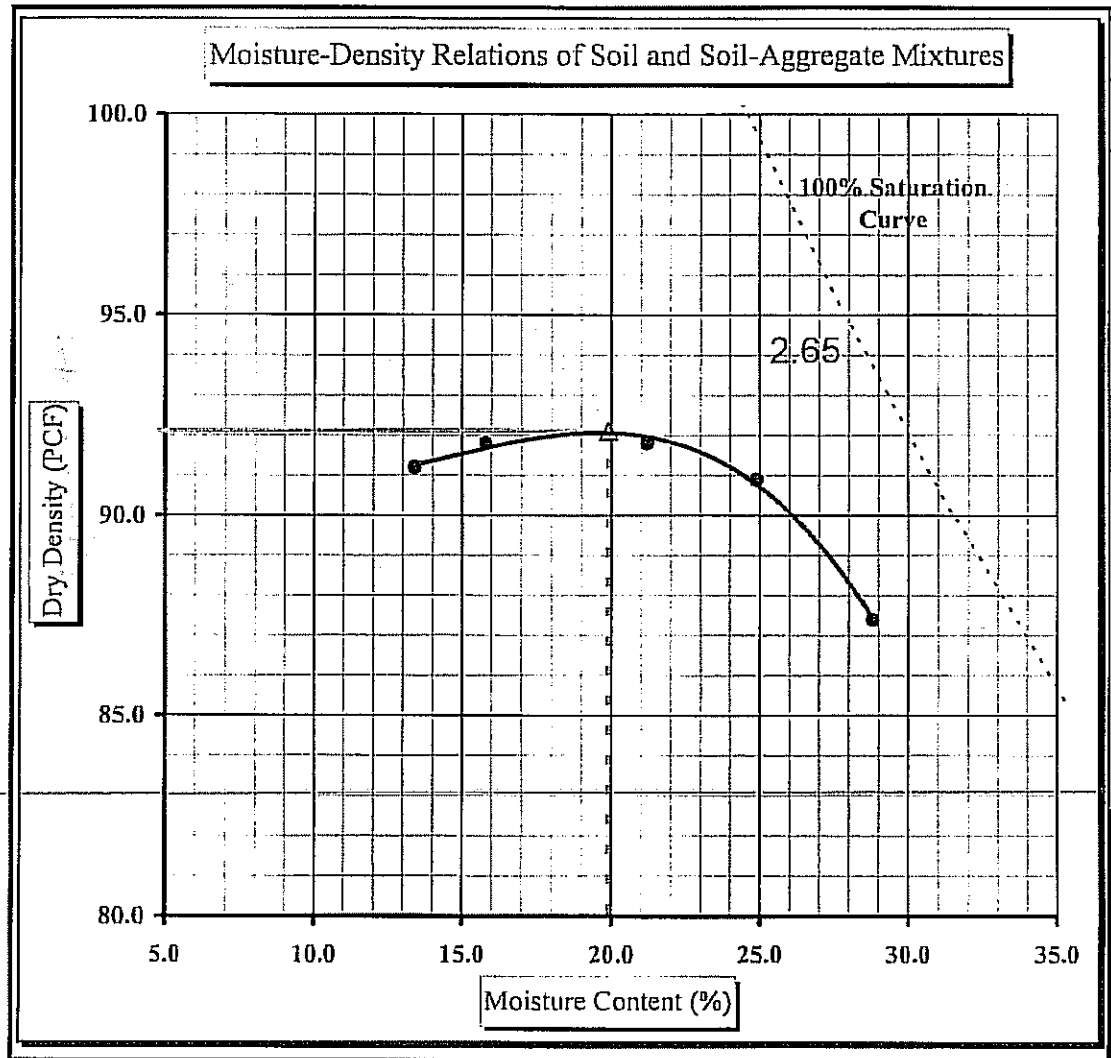
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	August 28, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	8/26-28/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-22	Sample Date:	August 21, 2008
Location:	Middle Top of Closure	Offset:		Depth:	Bulk
Sample Description:	White Tan Medium to Fine Sandy Silt (ML)				

Maximum Dry Density **92.1** **PCF.** **Optimum Moisture Content** **19.9** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:

Liquid Limit:	NP
Plastic Limit:	NP
Plastic Index:	NP
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	100
#4	99

Oversize Fraction

Bulk Sp. Gravity

% Moisture 9.0%

Oversize Fraction

MDD

Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Laboratory Report Version 4.2

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	**1356-07-017-03**	Report Date:	9/9/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/8-9/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		
Sample by:	JA	Sample Dates:	9/5/08
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
NA	S-23	Bulk	T-1	83.13	469.10	414.60	54.50	**16.4%**
NA	S-24	Bulk	G-9	82.19	370.90	323.40	47.50	**19.7%**
NA	S-25	Bulk	S-9	83.22	409.40	353.20	56.20	**20.8%**

Notes: No Jar Samples

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Karen Warner — 117900 (*Certification #*)

Technical Responsibility: Ken Daly — _____ (*Signature*) — Project Engineer (*Position*)

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

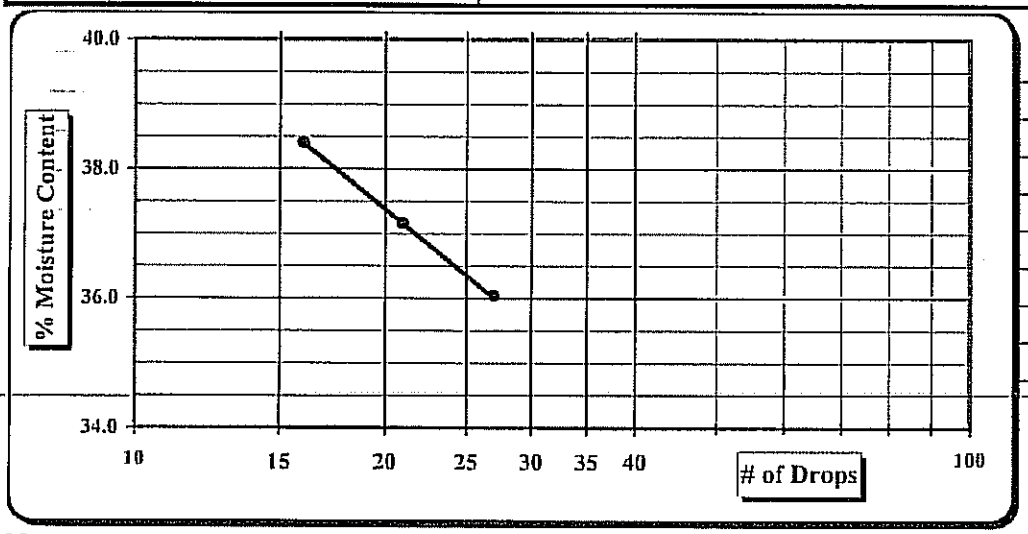
Project #:	1356-07-017-03	Report Date:	9/16/-08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/9-16/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: Sample #: S-23 Sample Date: 9/5/08

Location: DI-1 Backfill Offset: Depth: Bulk

Sample Description: Tan Orange Coarse to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	Z	2	19				TT	51	
A	Tare Weight	16.87	15.77	15.82				15.93	15.75	
B	Wet Soil Weight + A	27.59	26.51	27.82				24.74	22.74	
C	Dry Soil Weight + A	24.75	23.60	24.49				22.75	21.16	
D	Water Weight (B-C)	2.84	2.91	3.33				1.99	1.58	
E	Dry Soil Weight (C-A)	7.88	7.83	8.67				6.82	5.41	
F	% Moisture Content (D/E)*100	36.0%	37.2%	38.4%				29.2%	29.2%	
N	# OF DROPS	27	21	16				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							29.2%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	36
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	29
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	7
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 9/8-15/08
Report Date: 9/15/08

Boring #: Sample #: S-23 Sample Date: 9/5/08
Location: DI-1 Backfill Offset: Depth: Bulk
Sample Description: Tan Orange Coarse to Fine Sandy Silt (ML)

Pan #:		Beaker #:			Apparent Relative Density (Assumed)		2.650		
Hydrometer Jar #:									
Pan Tare Weight (grams):					Moisture Content	Hygroscopic	Natural		
Total Sample Air Dried Wt. + tare wt. (grams):			247.82		Tare #	50	T-1		
Weight of Total Sample Air Dried:			247.82	A	Tare Wt.	15.79	83.10		
Weight of Air Dried Hydrometer Sample (g):			50.00	B	Wet Wt. + A	27.40	469.10		
Total Sample Oven Dried:			244.90	C	Dry Wt. + A	27.26	414.60		
Hydrometer Sample Oven Dried (W):			49.40	D	Water Wt. (B-C)	0.14	54.50		
% Passing #10:			97.7%	E	Dry Wt. (C-A)	11.47	331.50		
Correction Factor a (Table 1):			1.00		% Moisture (100 x D/E)	1.22%	16.4%		

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	0.9	Soil Mortar	99.6%
#10	5.6	100.0%	97.7%
#20	0.3	99.4%	97.1%
#40	1.5	97.0%	94.8%
#60	3.3	93.3%	91.1%
#100	8.8	82.3%	80.4%
#200	18.8	62.0%	60.6%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	39.1%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	0.4%	< 75 mm and > 4.75 mm	Silt & Clay:	60.6%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	1.9%	< 4.75 mm and > 2.00 mm	Silt:	43.6%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	3.0%	< 2.00 mm and > 0.425 mm	Clay:	17.0%	< 0.005 mm		
Fine Sand:	34.2%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 36 Plastic Limit 29 Plastic Index 7 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	28.0	4.5		23.50	47.6%	46.5%	12.4	0.01317	0.04645
	2	23.0	25.5	4.5		21.00	42.5%	41.5%	12.9	0.01317	0.03338
	5	23.0	21.0	4.5		16.50	33.4%	32.6%	13.6	0.01317	0.02171
	15	23.0	17.0	4.5		12.50	25.3%	24.7%	14.2	0.01317	0.01283
	30	23.0	15.5	4.5		11.00	22.3%	21.8%	14.5	0.01317	0.00915
	60	23.0	14.0	4.5		9.50	19.2%	18.8%	14.7	0.01317	0.00653
	250	22.0	12.5	5.0		7.50	15.2%	14.8%	15.1	0.01332	0.00327
	1440	22.0	11.5	5.0		6.50	13.2%	12.9%	15.2	0.01332	0.00137

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner
Technical Responsibility: Kenneth Daly

117900
Certification #

Signature

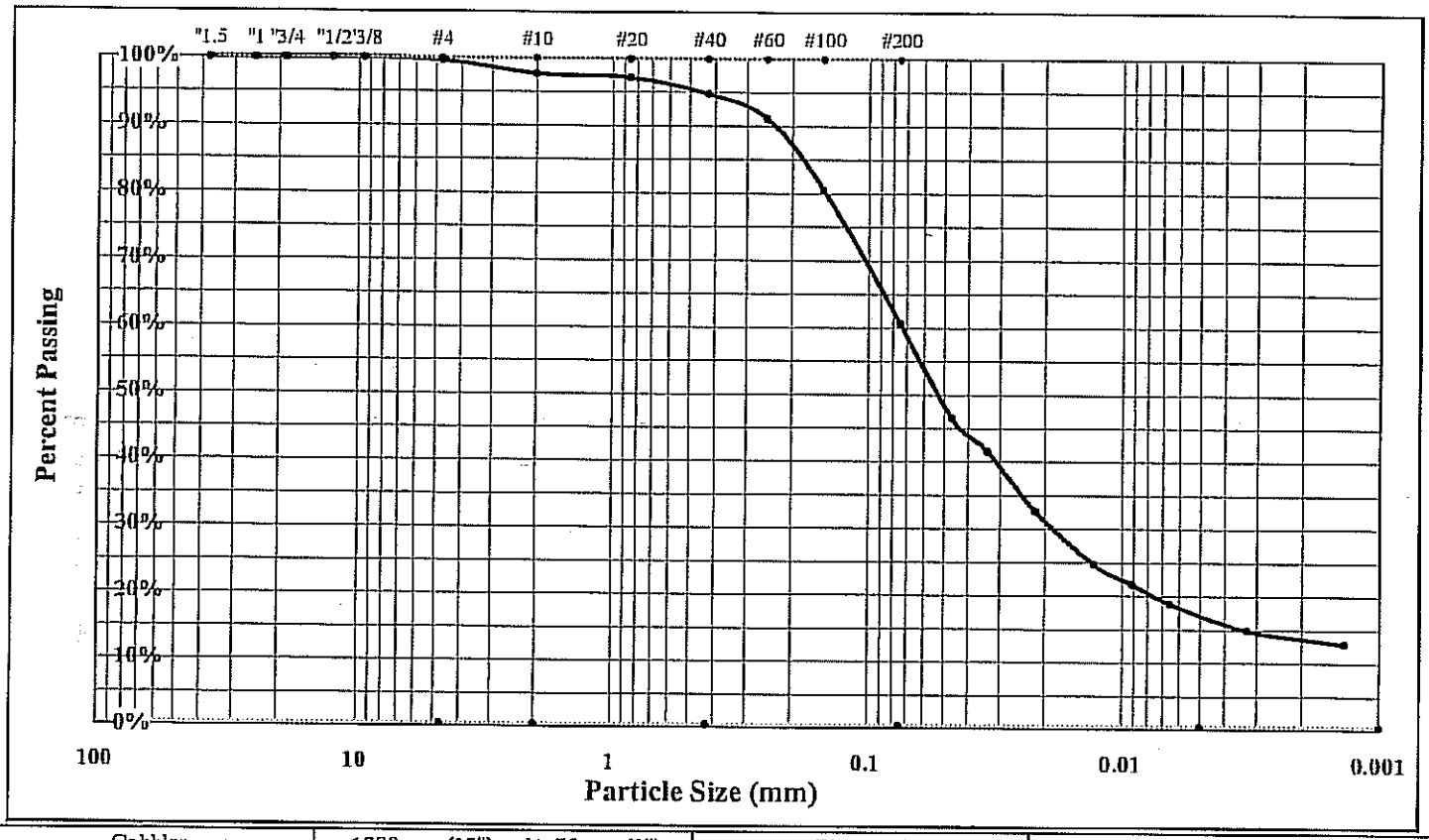
Project Engineer
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	9/15/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/8-15/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-23	Sample Date:	9/5/08
Location:	DI-1 Backfill	Offset:		Depth:	Bulk
Sample Description:	Tan Orange Coarse to Fine Sandy Silt (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	0.4%	Silt	43.6%
Silt & Clay (% Passing #200)	60.6%	Sand	39.1%	Clay	17.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	16.4%	Colloids	
Liquid Limit	36	Plastic Limit	29	Plastic Index	7

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

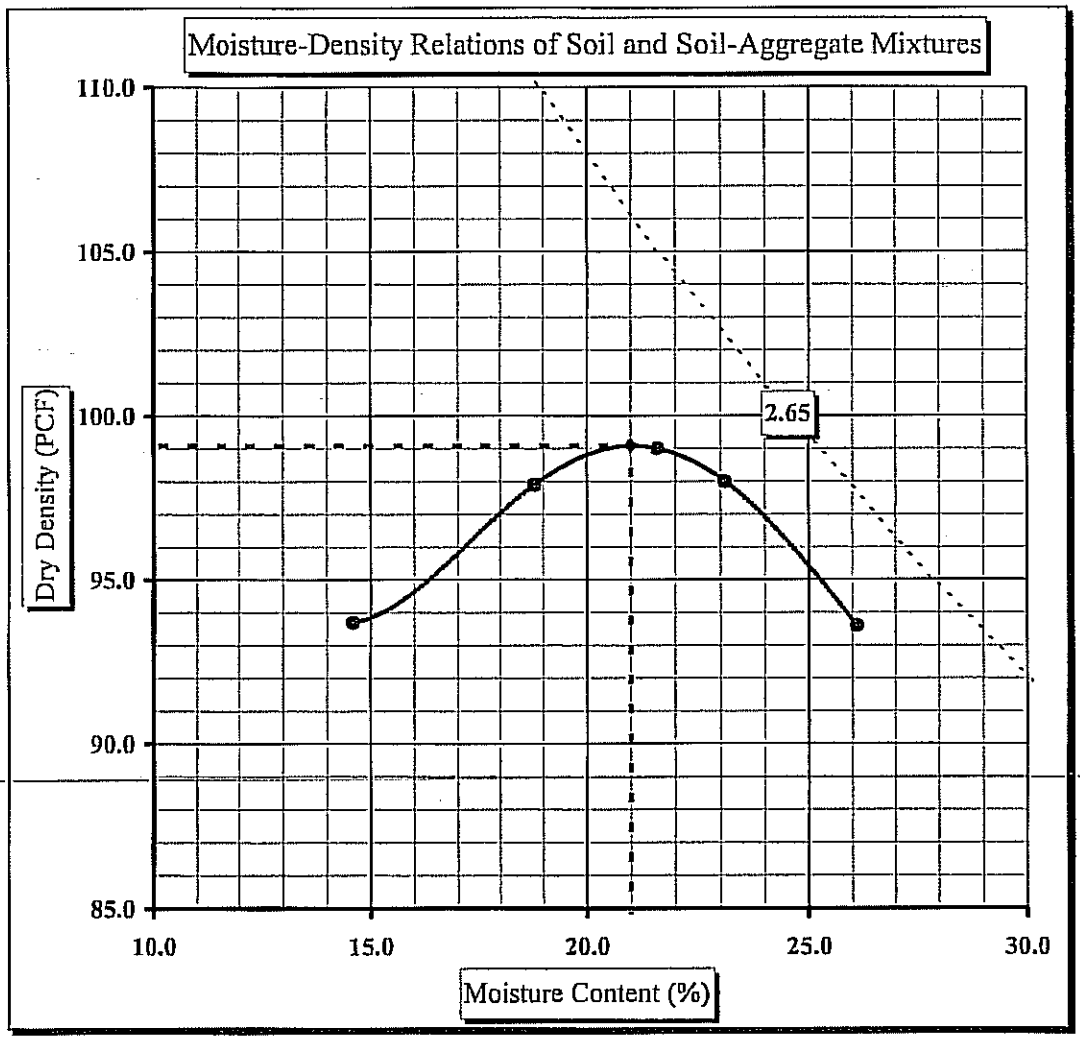
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	September 11, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/8-11/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-23	Sample Date:	September 5, 2008
Location:	DI-1 Backfill	Offset:		Depth:	Bulk
Sample Description:	Tan Orange Coarse to Fine Sandy Silt (ML)				

Maximum Dry Density **99.1** **PCF.** **Optimum Moisture Content** **21.0** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	16.4%
Liquid Limit:	36
Plastic Limit:	29
Plastic Index:	7
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	100
#4	99.6

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daley _____ Project Engineer
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

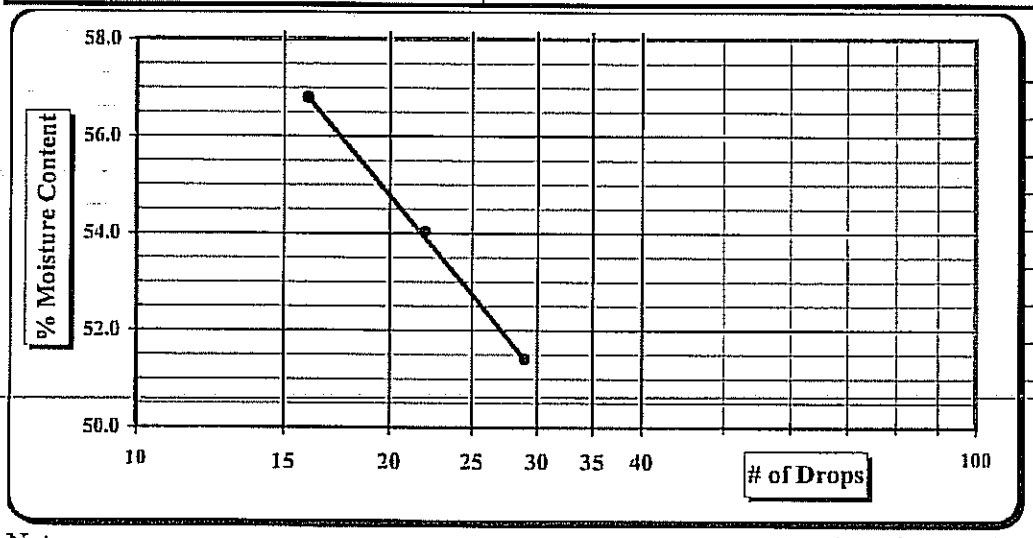
Project #:	1356-07-017-03	Report Date:	9/16/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/9-16/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: Sample #: S-24 Sample Date: 9/5/08

Location: S Top of Closure Offset: Depth: Bulk

Sample Description: Red Orange Brown Clayey Silt w/Medium toFine Sand (MH)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	55	10	LL				MM	49	
A	Tare Weight	14.33	13.98	16.94				**16.53**	15.66	
B	Wet Soil Weight + A	24.52	24.47	26.85				23.29	22.37	
C	Dry Soil Weight + A	21.06	20.79	23.26				21.51	20.59	
D	Water Weight (B-C)	3.46	3.68	3.59				1.78	1.78	
E	Dry Soil Weight (C-A)	6.73	6.81	6.32				4.98	4.93	
F	% Moisture Content (D/E)*100	51.4%	54.0%	56.8%				35.7%	36.1%	
N	# OF DROPS	29	22	16				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							35.9%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	53
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	36
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	17
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	MH

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 9/8-15/08
Report Date: 9/15/08

Boring #: Sample #: S-24 Sample Date: 9/5/08
Location: S Top of Closure Offset: Depth: Bulk
Sample Description: Red Orange Brown Clayey Silt w/Medium to Fine Sand (MH)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650			
Hydrometer Jar #:									
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural			
Total Sample Air Dried Wt. + tare wt. (grams):		362.54		Tare #	58	G-9			
Weight of Total Sample Air Dried:		362.54	A	Tare Wt.	13.94	82.19			
Weight of Air Dried Hydrometer Sample (g):		50.00	B	Wet Wt. + A	26.87	370.90			
Total Sample Oven Dried:		352.83	C	Dry Wt. + A	26.52	323.40			
Hydrometer Sample Oven Dried (W):		48.65	D	Water Wt. (B-C)	0.35	47.50			
% Passing #10:		98.9%	E	Dry Wt. (C-A)	12.58	241.21			
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	2.78%	19.7%			

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	3.6	Soil Mortar	99.0%
#10	3.9	100.0%	98.9%
#20	0.1	99.8%	98.6%
#40	0.4	99.2%	98.0%
#60	0.9	98.1%	97.1%
#100	2.3	95.3%	94.2%
#200	8.1	83.4%	82.4%

Notes: Description of Sand & Gravel Particles: Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	16.5%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	1.0%	< 75 mm and > 4.75 mm	Silt & Clay:	82.4%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	0.1%	< 4.75 mm and > 2.00 mm	Silt:	46.4%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	0.8%	< 2.00 mm and > 0.425 mm	Clay:	36.0%	< 0.005 mm	
Fine Sand:	15.6%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 53 Plastic Limit 36 Plastic Index 17 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	41.5	4.5		37.00	76.1%	75.2%	10.2	0.01317	0.04212
	2	23.0	37.0	4.5		32.50	66.8%	66.1%	11.0	0.01317	0.03084
	5	23.0	32.0	4.5		27.50	56.5%	55.9%	11.8	0.01317	0.02022
	15	23.0	28.5	4.5		24.00	49.3%	48.8%	12.4	0.01317	0.01195
	30	23.0	25.0	4.5		20.50	42.1%	41.7%	12.9	0.01317	0.00865
	60	23.0	23.0	4.5		18.50	38.0%	37.6%	13.3	0.01317	0.00619
	250	22.0	21.5	5.0		16.50	33.9%	33.5%	13.6	0.01332	0.00311
	1440	22.0	20.0	5.0		15.00	30.8%	30.5%	13.8	0.01332	0.00131

References: ASTM D 422: Particle Size Analysis of Soils; ASTM D 421: Dry Preparation of Soil Samples; ASTM D 854: Specific Gravity of Soils; ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils; ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner — 117900 *Certification #*

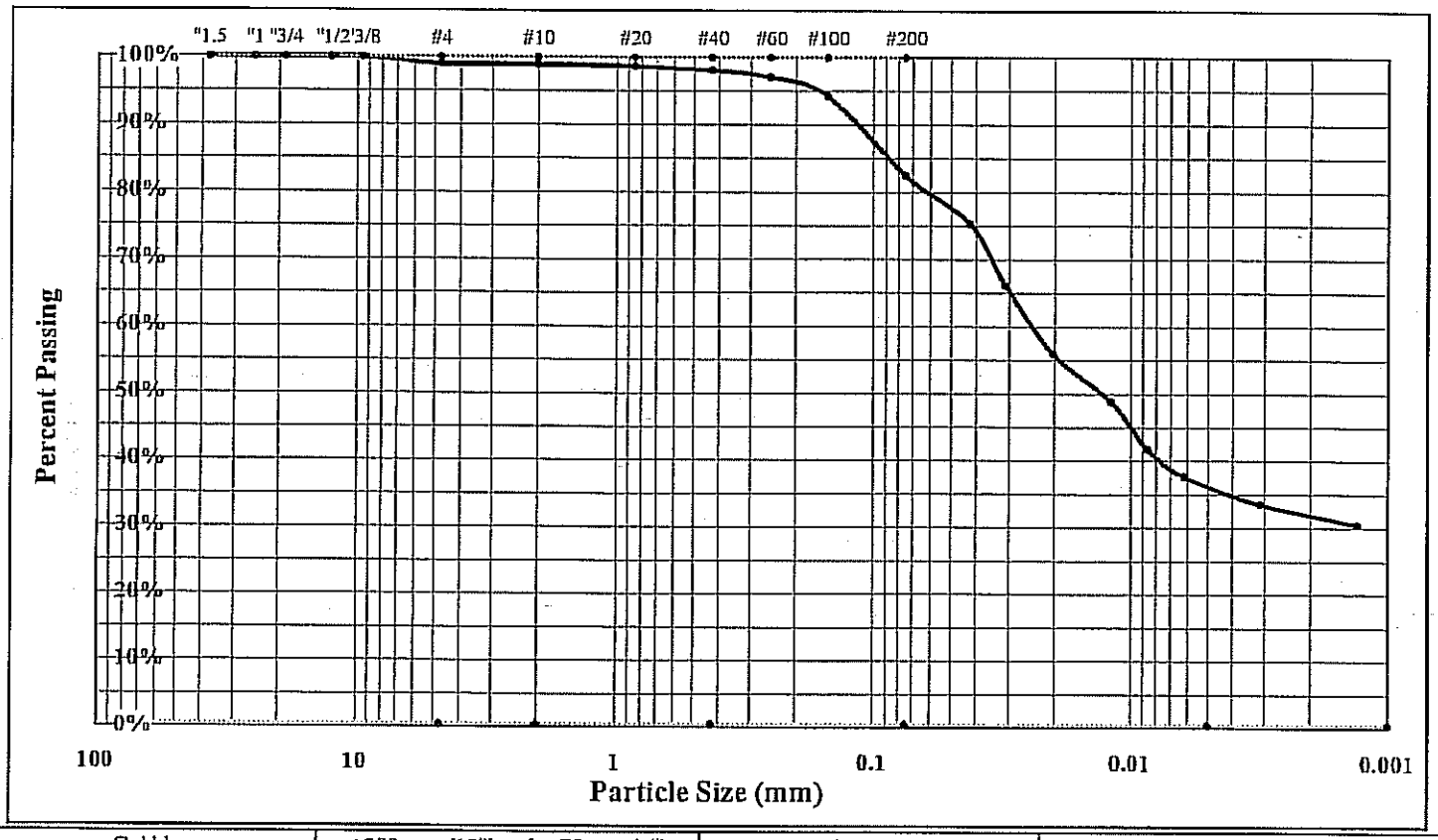
Technical Responsibility: Kenneth Daly — *Signature* — *Project Engineer* *Position*

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	9/15/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/8-15/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-24	Sample Date:	9/5/08
Location:	S Top of Closure	Offset:		Depth:	Bulk
Sample Description:	Red Orange Brown Clayey Silt w/Medium to Fine Sand (MH)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Course Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.0%	Silt	46.4%
Silt & Clay (% Passing #200)	82.4%	Sand	16.5%	Clay	36.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	19.7%	Colloids	
Liquid Limit	53	Plastic Limit	36	Plastic Index	17

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

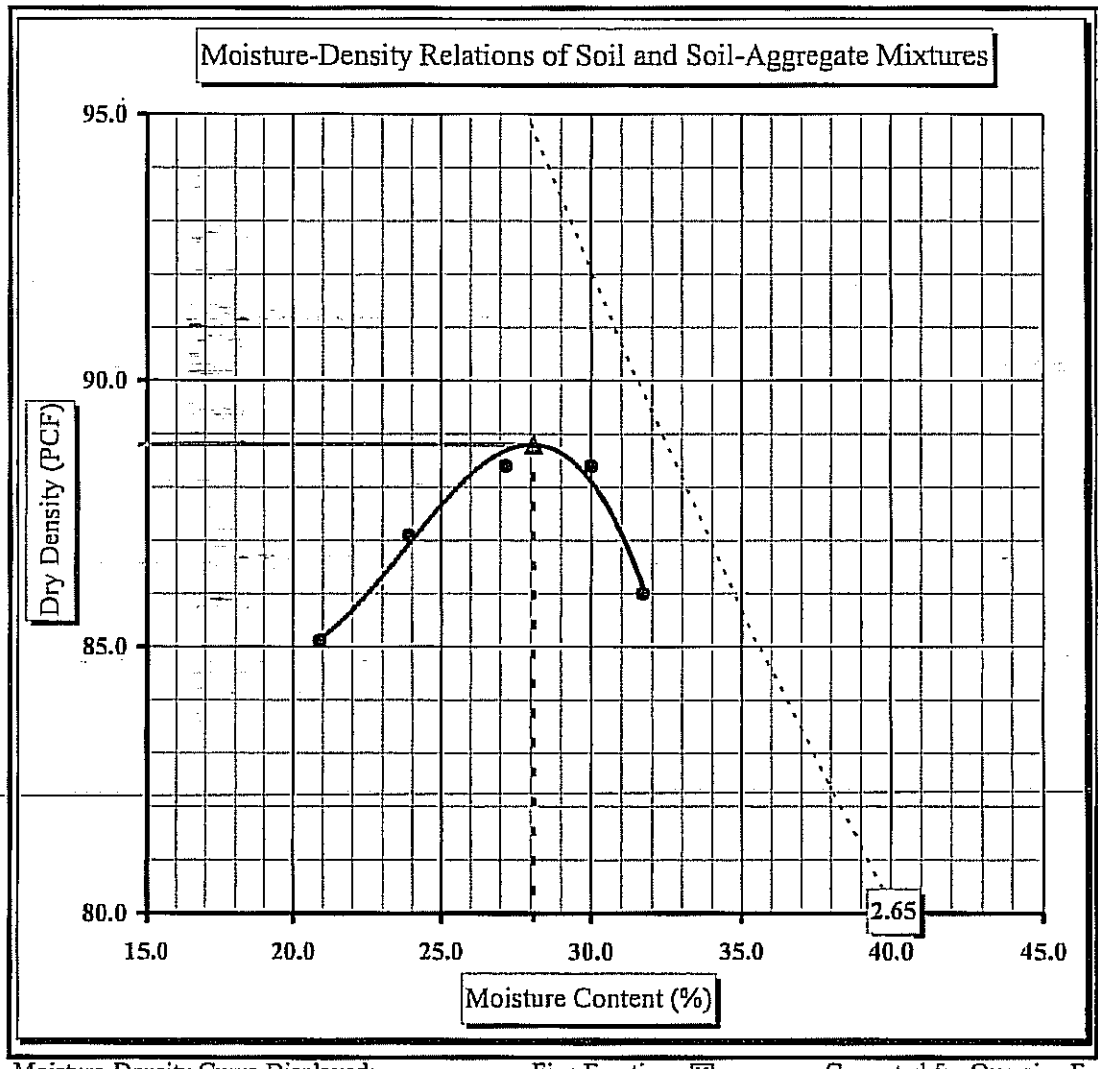
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	September 11, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/8-11/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-24	Sample Date:	September 5, 2008
Location:	S Top of Closure	Offset:		Depth:	Bulk
Sample Description:	Red Orange Brown Clayey Silt w/Medium to Fine Sand (MH)				

Maximum Dry Density 88.8 PCF. **Optimum Moisture Content 28.1 %**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	19.7%
Liquid Limit:	53
Plastic Limit:	36
Plastic Index:	17
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	100
#4	99

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daley _____ Project Engineer
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

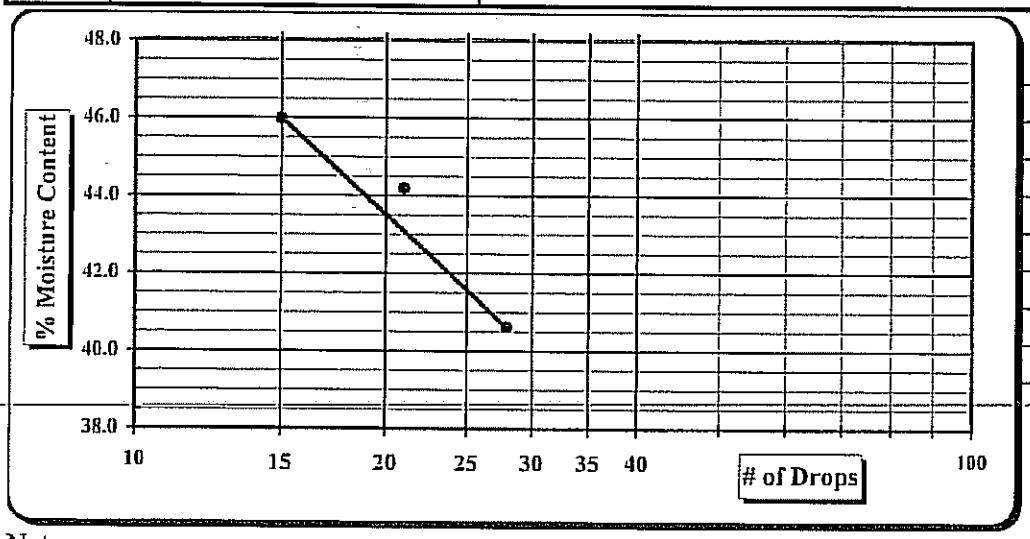
Project #:	1356-07-017-03	Report Date:	9/16/-08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/9-16/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: Sample #: S-25 Sample Date: 9/5/08

Location: SE Top Offset: Depth: Bulk

Sample Description: Brown Coarse to Fine Sandy Silt (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	33	54	FF				52	35	
A	Tare Weight	15.90	14.09	16.86				**15.71**	15.63	
B	Wet Soil Weight + A	25.49	24.63	27.05				21.83	22.85	
C	Dry Soil Weight + A	22.72	21.40	23.84				20.26	20.96	
D	Water Weight (B-C)	2.77	3.23	3.21				1.57	1.89	
E	Dry Soil Weight (C-A)	6.82	7.31	6.98				4.55	5.33	
F	% Moisture Content (D/E)*100	40.6%	44.2%	46.0%				34.5%	35.5%	
N	# OF DROPS	28	21	15				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							35.0%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	42
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	35
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	7
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner 117900 (Certification #)

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Project Address: Belews Creek Steam Station

Test Date(s): 9/8-15/08
Report Date: 9/15/08

Boring #: Sample #: S-25 Sample Date: 9/5/08
Location: SE Top Offset: Depth: Bulk
Sample Description: Brown Coarse to Fine Sandy Silt (ML)

Pan #:		Beaker #:			Apparent Relative Density (Assumed)		2.650		
Hydrometer Jar #:									
Pan Tare Weight (grams):					Moisture Content	Hygroscopic	Natural		
Total Sample Air Dried Wt. + tare wt. (grams):		282.45			Tare #	57	S-9		
Weight of Total Sample Air Dried:		282.45		A	Tare Wt.	13.89	83.22		
Weight of Air Dried Hydrometer Sample (g):		50.00		B	Wet Wt. + A	24.16	409.40		
Total Sample Oven Dried:		277.38		C	Dry Wt. + A	23.97	353.20		
Hydrometer Sample Oven Dried (W):		49.07		D	Water Wt. (B-C)	0.19	56.20		
% Passing #10:		97.1%		E	Dry Wt. (C-A)	10.08	269.98		
Correction Factor a (Table 1):		1.00			% Moisture (100 x D/E)	1.88%	20.8%		

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	2.8	Soil Mortar	99.0%
#10	8.2	100.0%	97.1%
#20	0.5	98.9%	96.0%
#40	1.8	96.3%	93.4%
#60	3.8	92.2%	89.5%
#100	9.3	81.0%	78.6%
#200	20.2	58.8%	57.1%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	41.9%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	1.0%	< 75 mm and > 4.75 mm	Silt & Clay:	57.1%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	1.9%	< 4.75 mm and > 2.00 mm	Silt:	42.1%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	3.6%	< 2.00 mm and > 0.425 mm	Clay:	15.0%	< 0.005 mm	
Fine Sand:	36.3%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 42 Plastic Limit 35 Plastic Index 7 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	23.0	31.5	4.5		27.00	55.0%	53.4%	11.9	0.01317	0.04537
	2	23.0	27.0	4.5		22.50	45.8%	44.5%	12.6	0.01317	0.03306
	5	23.0	22.0	4.5		17.50	35.7%	34.6%	13.4	0.01317	0.02158
	15	23.0	17.0	4.5		12.50	25.5%	24.7%	14.2	0.01317	0.01283
	30	23.0	15.0	4.5		10.50	21.4%	20.8%	14.6	0.01317	0.00918
	60	23.0	13.0	4.5		8.50	17.3%	16.8%	14.9	0.01317	0.00656
	250	22.0	11.5	5.0		6.50	13.2%	12.9%	15.2	0.01332	0.00329
	1440	22.0	10.0	5.0		5.00	10.2%	9.9%	15.5	0.01332	0.00138

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner 117900
Certification #

Technical Responsibility: Kenneth Daly

Signature

Project Engineer
Position

S&ME, INC. 9751 Southern Pine Blvd., Charlotte, NC 28273

1356-07-017-03 S-25 Hydro.xls

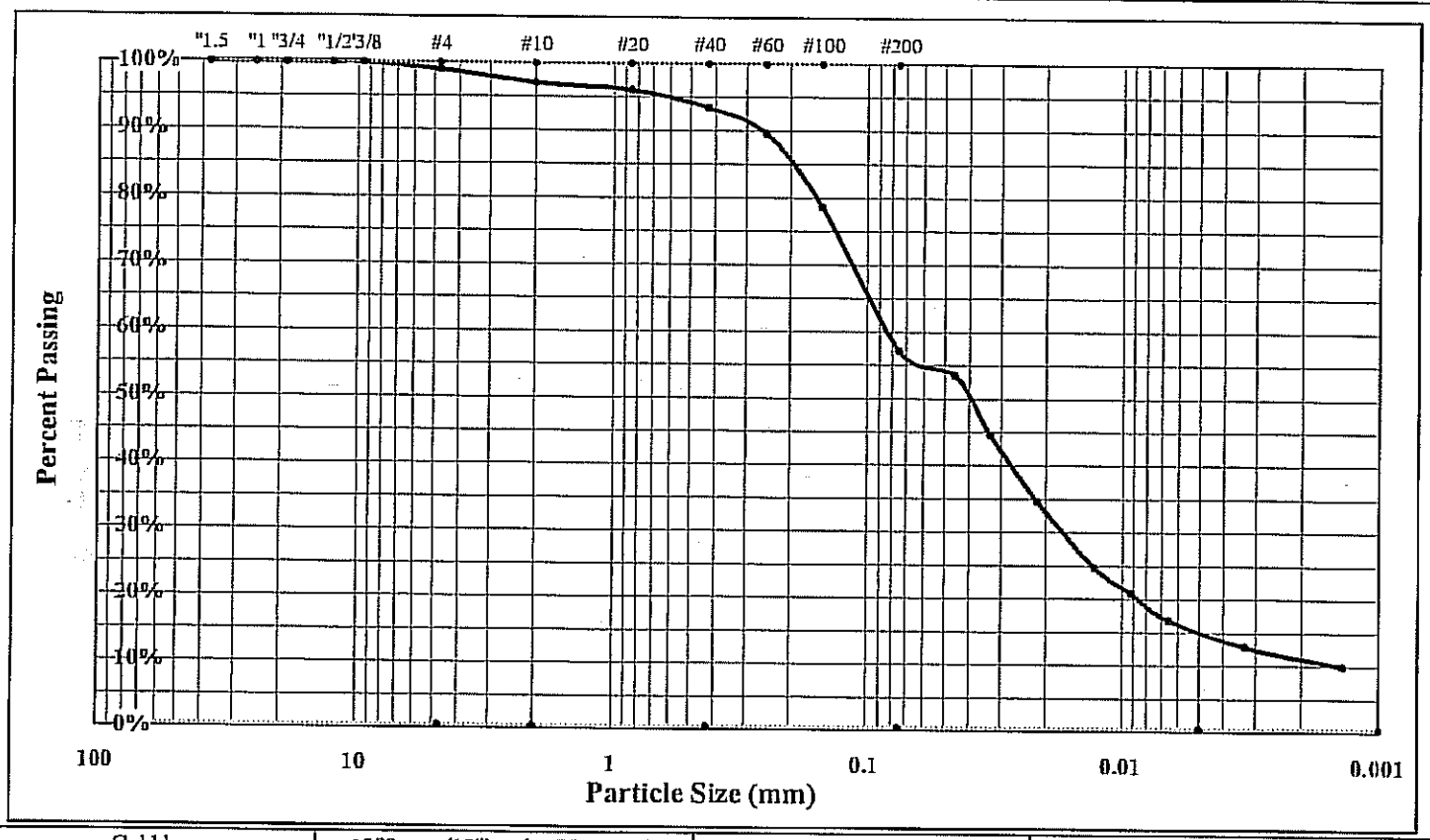
Particle Size Analysis of Soils

ASTM D 422

S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	9/15/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/8-15/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-25	Sample Date:	9/5/08
Location:	SE Top	Offset:		Depth:	Bulk
Sample Description:	Brown Coarse to Fine Sandy Silt (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.0%	Silt	42.1%
Silt & Clay (% Passing #200)	57.1%	Sand	41.9%	Clay	15.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	20.8%	Colloids	
Liquid Limit	42	Plastic Limit	35	Plastic Index	7

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./Liter

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

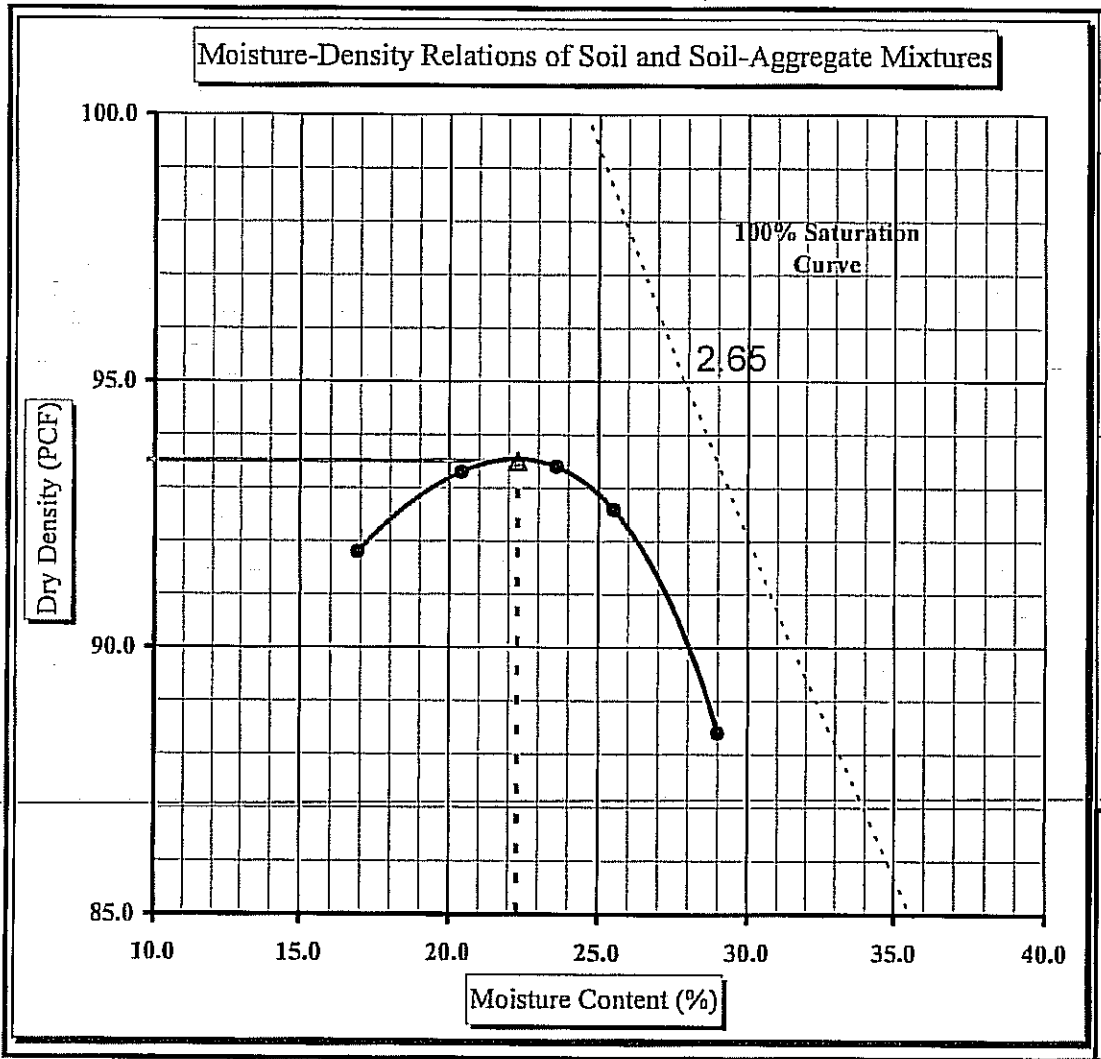
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	September 11, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/8-11/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-25	Sample Date:	September 5, 2008
Location:	SE Top	Offset:		Depth:	Bulk
Sample Description:	Brown Coarse to Fine Sandy Silt (ML)				

Maximum Dry Density 93.5 **PCF.** **Optimum Moisture Content** 22.3 %

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	20.8%
Liquid Limit:	42
Plastic Limit:	35
Plastic Index:	7
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	100
#4	99

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daley _____ Project Engineer
Signature

Laboratory Report Version 4.2

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	**1356-07-017-03**	Report Date:	9/16/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/15-16/08
Client Name:	Duke Energy		
Client Address:			
Sample by:		Sample Dates:	9/14/08
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
NA	S-26	NA	S-4	80.61	519.50	461.60	57.90	**15.2%**

Notes:

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Karen Warner — 117900 (*Certification #*)

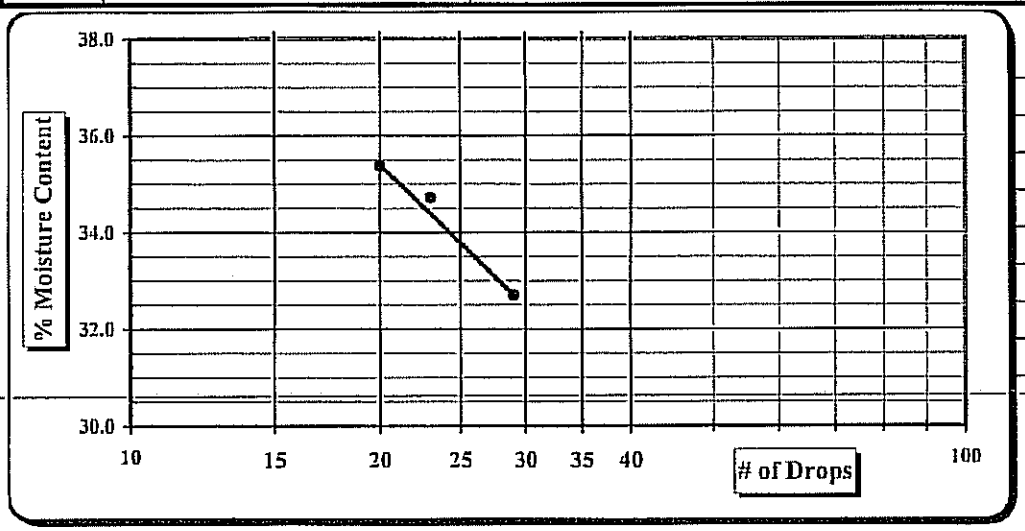
Technical Responsibility: Kenneth Daly — _____ (*Signature*) — Project Engineer (*Position*)

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 9/15-30/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 9/30/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: | Sample #: S-26 | Sample Date: 9/14/08
Location: SE Top of Closure | Offset: | Depth: Bulk
Sample Description: Tan Brown Silty Medium to Coarse toFine Sand (SM)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	51	Z	PP				27	35	
A	Tare Weight	15.72	16.85	16.15				13.87	15.61	
B	Wet Soil Weight + A	27.61	26.55	28.24				20.46	22.63	
C	Dry Soil Weight + A	24.68	24.05	25.08				19.07	21.10	
D	Water Weight (B-C)	2.93	2.50	3.16				1.39	1.53	
E	Dry Soil Weight (C-A)	8.96	7.20	8.93				5.20	5.49	
F	% Moisture Content (D/E)*100	32.7%	34.7%	35.4%				26.7%	27.9%	
N	# OF DROPS	29	23	20				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							27.3%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	34
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	27
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	7
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	SM

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Client Address:

Test Date(s): 9/15-20/08
Report Date: 9/20/08

Boring #: Sample #: S-26 Sample Date: 9/14/08
Location: SE Top of Closure Offset: Depth:
Sample Description: Brown Tan Silty Medium to Coarse to Fine Sand (SM)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):		446.58		Tare #	CC	S-4	
Weight of Total Sample Air Dried:		446.58	A	Tare Wt.	16.70	80.61	
Weight of Air Dried Hydrometer Sample (g):		50.00	B	Wet Wt. + A	29.84	519.50	
Total Sample Oven Dried:		438.26	C	Dry Wt. + A	29.55	461.60	
Hydrometer Sample Oven Dried (W):		48.90	D	Water Wt. (B-C)	0.29	57.90	
% Passing #10:		84.1%	E	Dry Wt. (C-A)	12.85	380.99	
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	2.26%	15.2%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	21.2		95.2%
3/8"	25.6		94.2%
#4	44.8	Soil Mortar	89.8%
#10	69.8	**100.0%**	84.1%
#20	0.7	98.5%	82.8%
#40	2.4	95.1%	80.0%
#60	5.2	89.4%	75.2%
#100	10.5	78.5%	66.0%
#200	22.2	54.6%	45.9%

Notes: Description of Sand & Gravel Particles — Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	43.8%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	10.2%	< 75 mm and > 4.75 mm	Silt & Clay:	45.9%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	5.7%	< 4.75 mm and > 2.00 mm	Silt:	31.4%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	4.1%	< 2.00 mm and > 0.425 mm	Clay:	14.5%	< 0.005 mm		
Fine Sand:	34.0%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 34 Plastic Limit 27 Plastic Index 7 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	22.0	30.0	5.0		25.00	51.1%	43.0%	12.2	0.01332	0.04652
	2	22.0	24.0	5.0		19.00	38.9%	32.7%	13.2	0.01332	0.03419
	5	22.0	20.0	5.0		15.00	30.7%	25.8%	13.8	0.01332	0.02216
	15	22.0	17.0	5.0		12.00	24.5%	20.6%	14.3	0.01332	0.01302
	30	22.0	14.5	5.0		9.50	19.4%	16.3%	14.7	0.01332	0.00934
	60	22.0	13.5	5.0		8.50	17.4%	14.6%	14.9	0.01332	0.00664
	250	22.0	12.5	5.0		7.50	15.3%	12.9%	15.1	0.01332	0.00327
	1440	22.0	10.0	5.0		5.00	10.2%	8.6%	15.5	0.01332	0.00138

References: ASTM D 422: Particle Size Analysis of Soils; ASTM D 421: Dry Preparation of Soil Samples; ASTM D 854: Specific Gravity of Soils; ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils; ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$
(152H) .164cm per increment,
$V_B=67.0cm^3$, $L_2=14cm$, $A=27.8cm^2$

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — Signature — Project Engineer (Position)

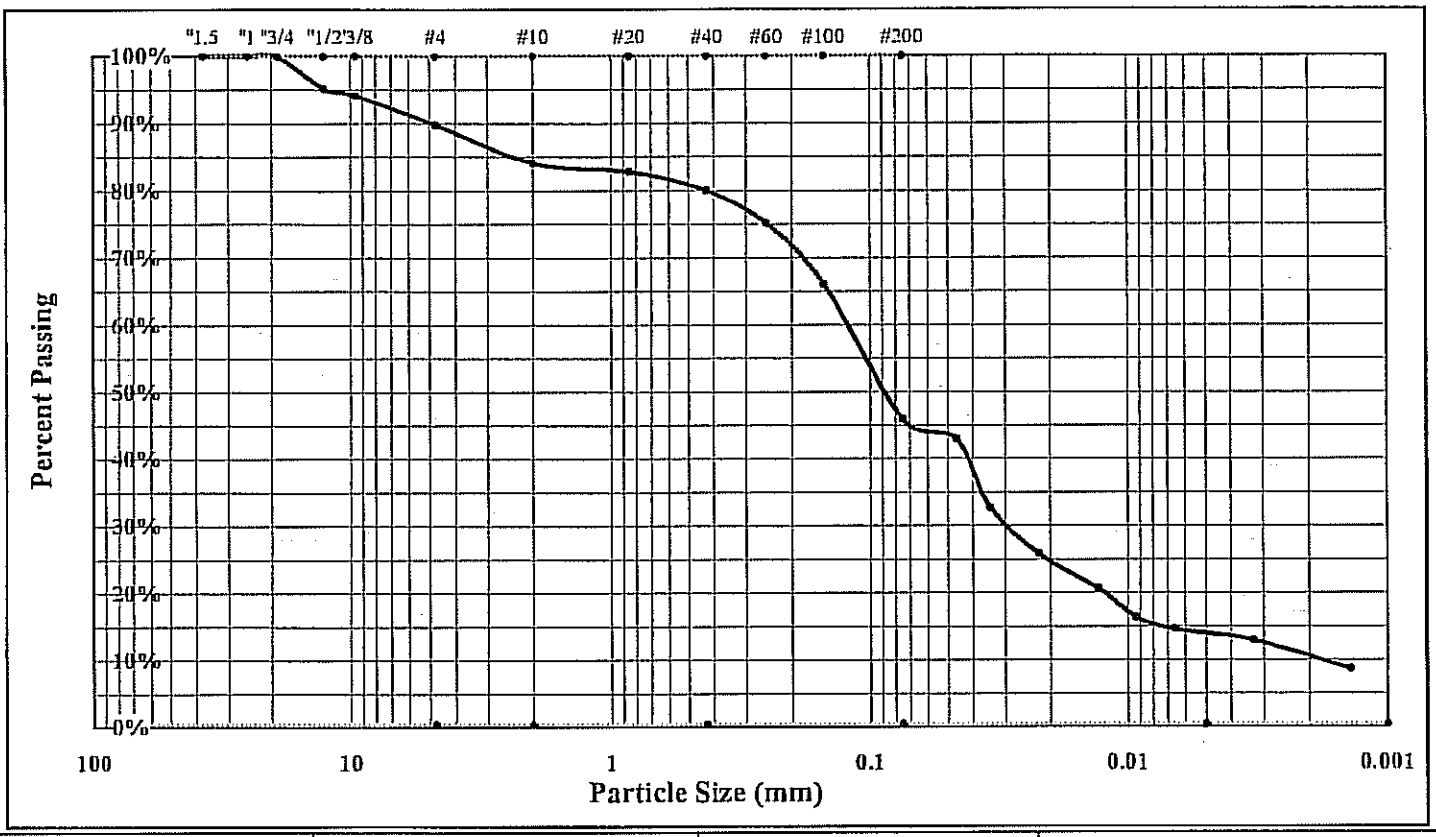
Laboratory Report Version 4.2

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	9/20/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/15-20/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S-26	Sample Date:	9/14/08
Location:	SE Top of Closure	Offset:		Depth:	
Sample Description:	Brown Tan Silty Medium to Coarse to Fine Sand (SM)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	10.2%	Silt	31.4%
Silt & Clay (% Passing #200)	45.9%	Sand	43.8%	Clay	14.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	15.2%	Colloids	
Liquid Limit	34	Plastic Limit	27	Plastic Index	7

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

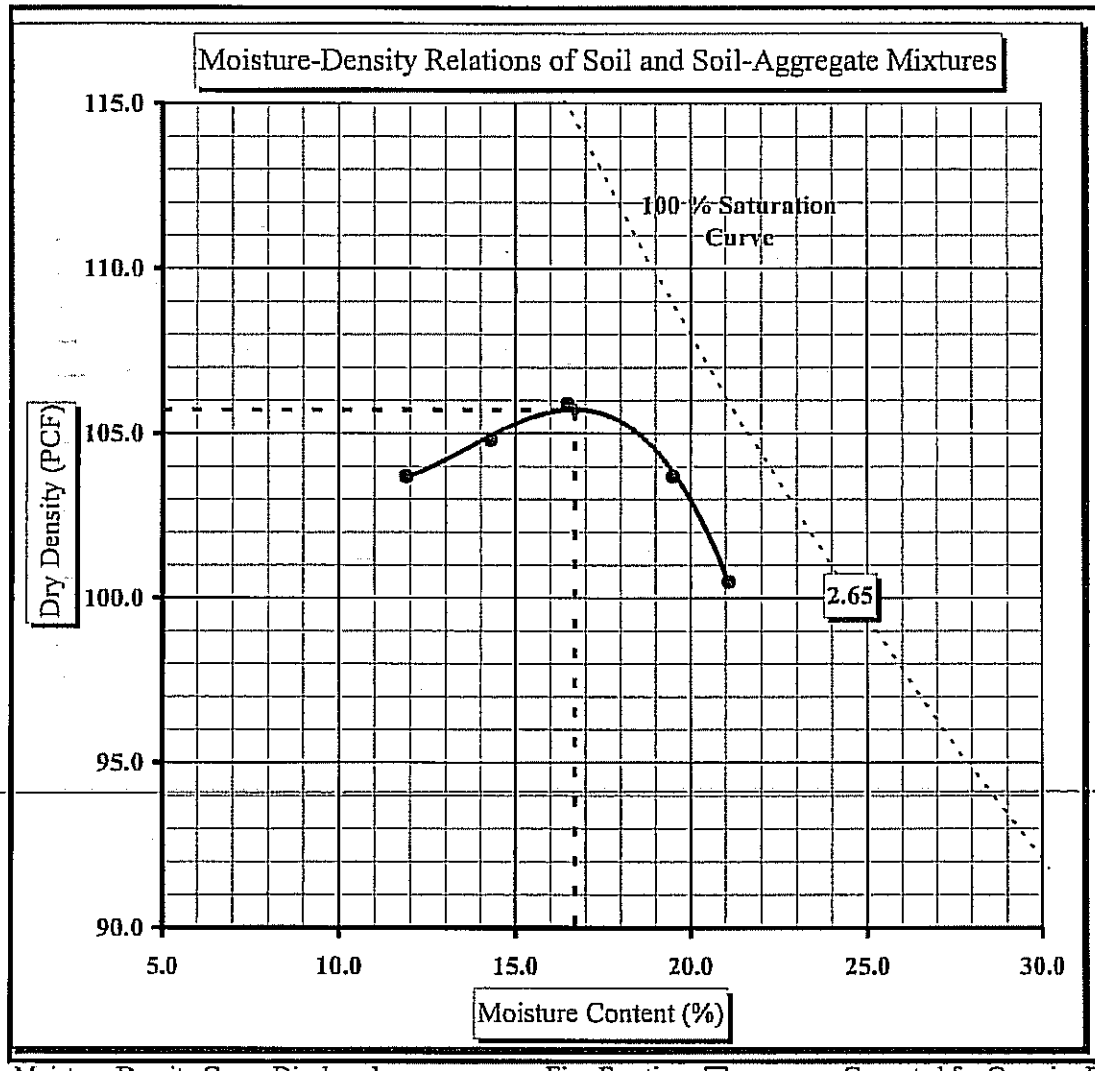
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	September 24, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/15-23/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-26	Sample Date:	September 14, 2008
Location:	SE Top of Closure	Offset:		Depth:	Bulk
Sample Description:	Brown Tan Silty Medium to Coarse to Fine Sand (SM)				

Maximum Dry Density 105.7 PCF. **Optimum Moisture Content 16.7 %**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	15.2%
Liquid Limit:	34
Plastic Limit:	27
Plastic Index:	7
Specific Gravity:	

% Passing

3/4"	100
1/2"	95.2
3/8"	94.2
#4	89.8

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #:	1356-07-017-03	Report Date:	9/20/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/19-20/08
Client Name:	Duke Energy		
Client Address:			
Sample by:		Sample Dates:	7/24/08
Sampling Method:			

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
TP-17	S-27		G-9	82.20	475.20	451.80	23.40	**6.3%**
TP-16	S-28		T-1	83.15	297.73	285.20	12.53	**6.2%**

Notes:

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name: Karen Warner — 117900 (*Certification #*)

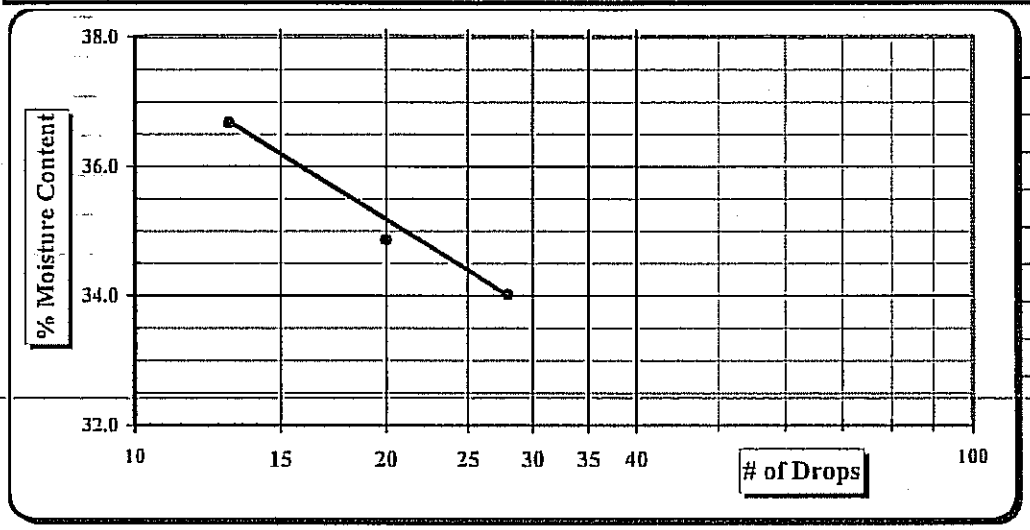
Technical Responsibility: Kenneth Daly — _____ (*Signature*) — Project Engineer (*Position*)

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017-03 | Report Date: 9/15-30/08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 9/30/08
Client Name: Duke Energy
Project Address: Belews Creek Steam Station
Boring #: | Sample #: S-27 | Sample Date: 9/14/08
Location: TP-17 | Offset: | Depth: Bulk
Sample Description: Tan Silt w/Coarse to Fine Sand (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	34	RR	XX				57	31	
A	Tare Weight	13.97	15.26	16.03				13.86	13.93	
B	Wet Soil Weight + A	24.37	28.49	26.24				20.85	21.88	
C	Dry Soil Weight + A	21.73	25.07	23.50				19.06	19.84	
D	Water Weight (B-C)	2.64	3.42	2.74				1.79	2.04	
E	Dry Soil Weight (C-A)	7.76	9.81	7.47				5.20	5.91	
F	% Moisture Content (D/E)*100	34.0%	34.9%	36.7%				34.4%	34.5%	
N	# OF DROPS	28	20	13				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							34.5%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☒
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	34
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	35
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	-1
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: Karen Warner — 117900 (Certification #)

Technical Responsibility: Kenneth Daly — _____ (Signature) — Project Engineer (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Client Address:

Test Date(s): 9/19-24/08
Report Date: 9/24/08

Boring #: Sample #: S-27 Sample Date: 7/24/08
Location: TP-17 Offset: Depth:
Sample Description: Tan Silt w/Coarse to Fine Sand (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650			
Hydrometer Jar #:									
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural			
Total Sample Air Dried Wt. + tare wt. (grams):		447.00		Tare #	MM	G-9			
Weight of Total Sample Air Dried:		447.00	A	Tare Wt.	16.57	82.20			
Weight of Air Dried Hydrometer Sample (g):		50.00	B	Wet Wt. + A	29.33	475.20			
Total Sample Oven Dried:		423.74	C	Dry Wt. + A	28.65	451.80			
Hydrometer Sample Oven Dried (W):		47.34	D	Water Wt. (B-C)	0.68	23.40			
% Passing #10:		97.5%	E	Dry Wt. (C-A)	12.08	369.60			
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	5.63%	6.3%			

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	1.3		99.7%
#4	4.2	Soil Mortar	99.0%
#10	10.6	100.0%	97.5%
#20	0.7	98.6%	96.2%
#40	2.0	95.8%	93.4%
#60	4.6	90.4%	88.1%
#100	10.1	78.7%	76.8%
#200	20.7	56.3%	54.9%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	44.1%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	1.0%	< 75 mm and > 4.75 mm	Silt & Clay:	54.9%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	1.5%	< 4.75 mm and > 2.00 mm	Silt:	43.9%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	4.1%	< 2.00 mm and > 0.425 mm	Clay:	11.0%	< 0.005 mm		
Fine Sand:	38.5%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 34 Plastic Limit 35 Plastic Index -1 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	22.0	29.5	5.0		24.50	51.8%	50.5%	12.3	0.01332	0.04667
	2	22.0	22.0	5.0		17.00	35.9%	35.0%	13.5	0.01332	0.03462
	5	22.0	18.0	5.0		13.00	27.5%	26.8%	14.2	0.01332	0.02242
	15	22.0	13.5	5.0		8.50	18.0%	17.5%	14.9	0.01332	0.01328
	30	22.0	12.0	5.0		7.00	14.8%	14.4%	15.1	0.01332	0.00946
	60	22.0	11.0	5.0		6.00	12.7%	12.4%	15.3	0.01332	0.00673
	250	22.0	9.5	5.0		4.50	9.5%	9.3%	15.6	0.01332	0.00332
	1440	22.0	7.5	5.0		2.50	5.3%	5.1%	15.9	0.01332	0.00140

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner 117900
Certification #

Technical Responsibility: Kenneth Daly

Signature

Project Engineer
Position

S&ME, INC. 9751Southern Pine Blvd., Charlotte, NC 28273 1356-07-017-03 S-27 Hydro.xls

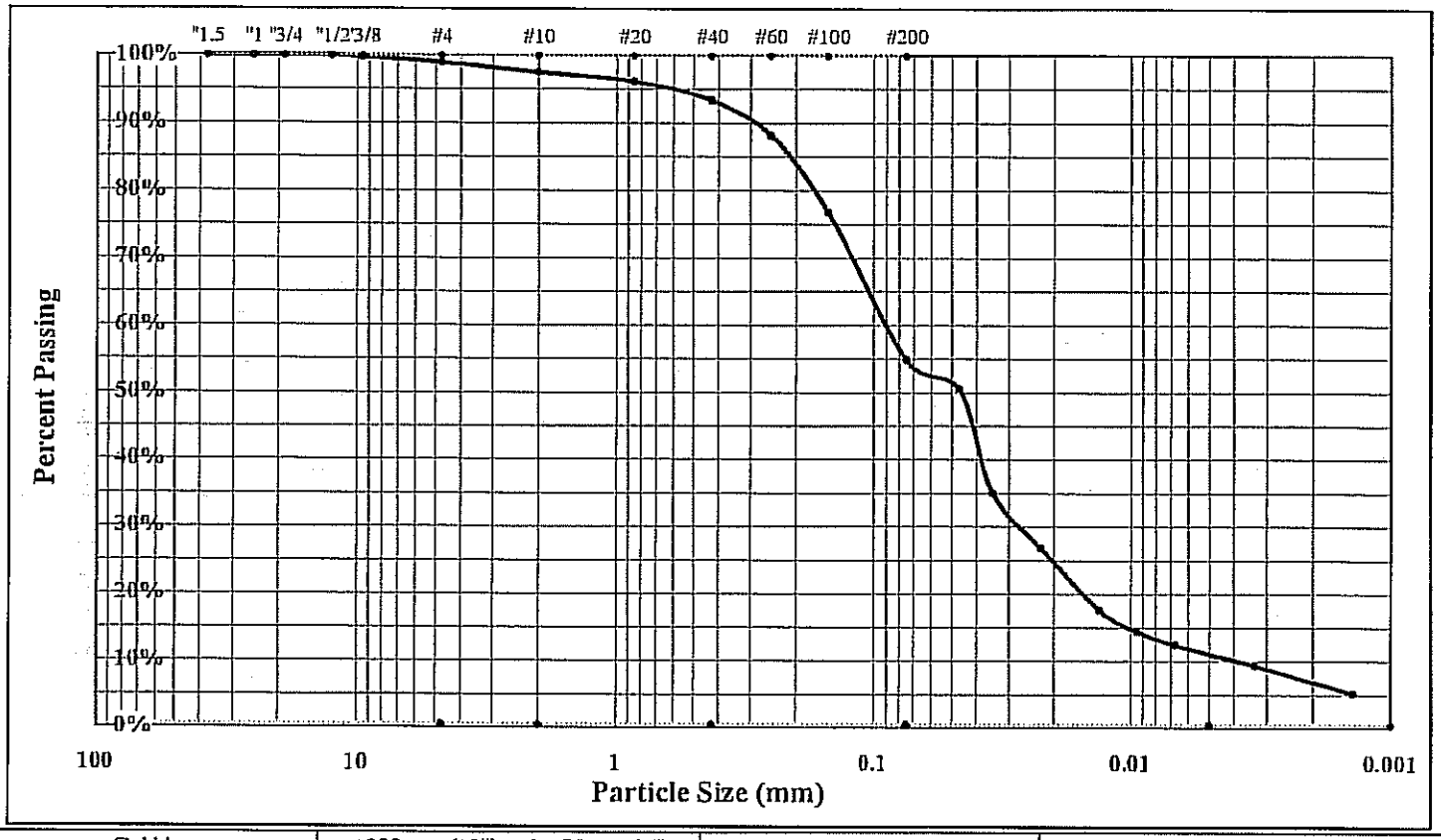
Particle Size Analysis of Soils

ASTM D 422

S&ME

S&ME Project #:	1356-07-017-03	Report Date:	9/24/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/19-24/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S-27	Sample Date:	7/24/08
Location:	TP-17	Offset:		Depth:	
Sample Description:	Tan Silt w/Coarse to Fine Sand (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.0%	Silt	43.9%
Silt & Clay (% Passing #200)	54.9%	Sand	44.1%	Clay	11.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content	6.3%	Colloids	
Liquid Limit	34	Plastic Limit	35	Plastic Index	-1

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

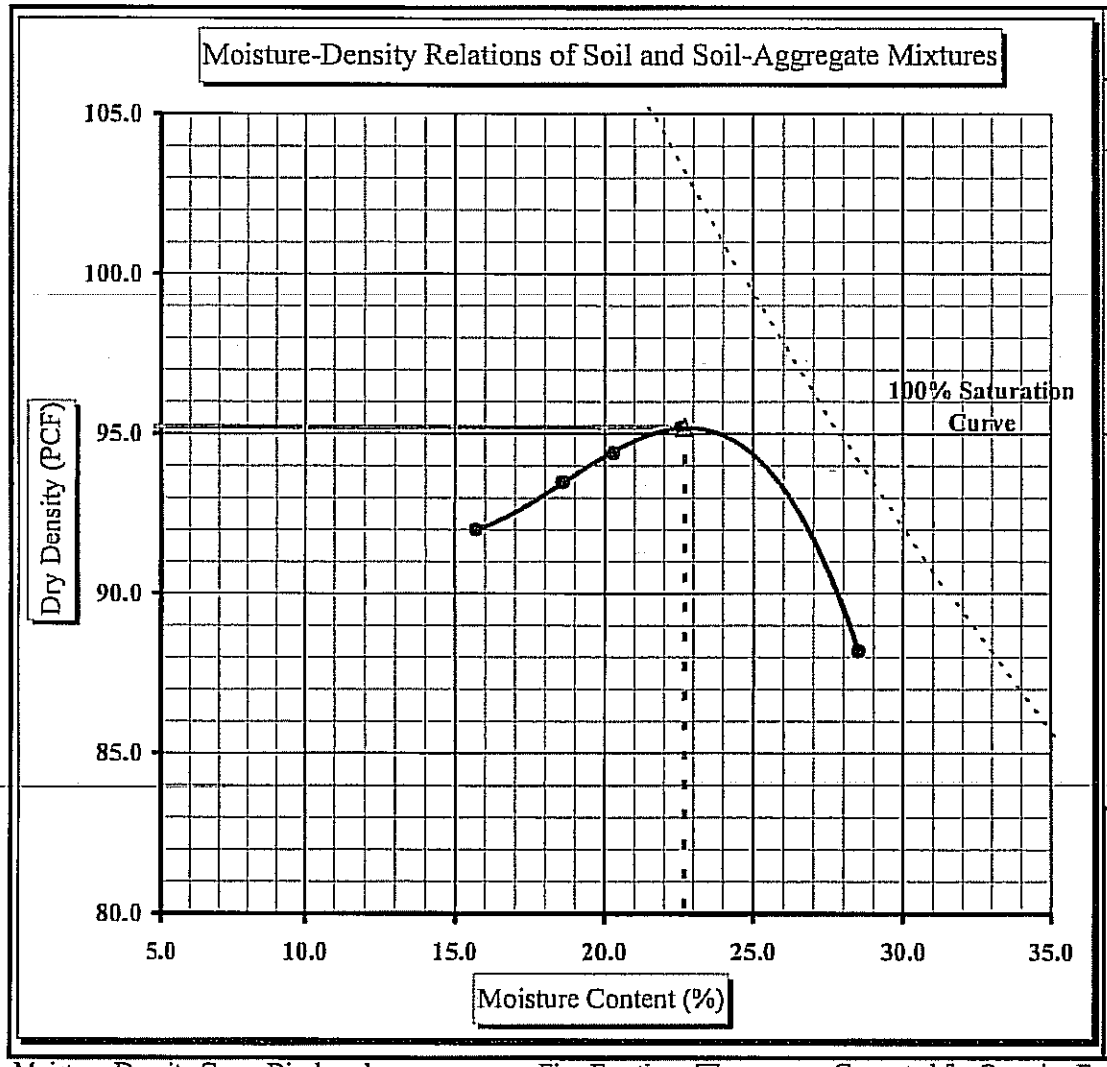
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	September 30, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/15-30/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-27	Sample Date:	September 14, 2008
Location:	TP-17	Offset:		Depth:	Bulk
Sample Description:	Tan Silt w/Coarse to Fine Sand (ML)				

Maximum Dry Density **95.2** **PCF.** **Optimum Moisture Content** **22.7** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	6.3%
Liquid Limit:	34
Plastic Limit:	35
Plastic Index:	-1
Specific Gravity:	

% Passing

3/4"	
1/2"	100
3/8"	99.7
#4	99

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Laboratory Record Version 4.2

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

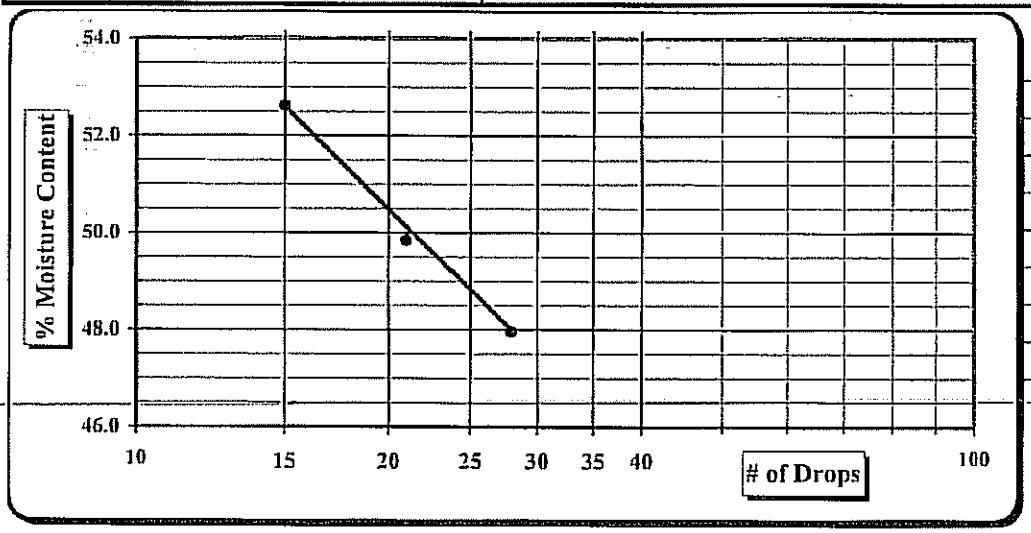
Project #:	1356-07-017-03	Report Date:	9/15-30/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/30/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #: Sample #: S-28 Sample Date: 9/14/08

Location: TP-16 Offset: Depth: Bulk

Sample Description: Tan Silt w/Medium to Coarse to Fine Sand (ML)

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	BB	MM	45				KK	W	
A	Tare Weight	16.13	16.54	13.91				16.06	16.02	
B	Wet Soil Weight + A	25.60	26.16	23.51				22.90	22.83	
C	Dry Soil Weight + A	22.53	22.96	20.20				20.91	20.87	
D	Water Weight (B-C)	3.07	3.20	3.31				1.99	1.96	
E	Dry Soil Weight (C-A)	6.40	6.42	6.29				4.85	4.85	
F	% Moisture Content (D/E)*100	48.0%	49.8%	52.6%				41.0%	40.4%	
N	# OF DROPS	28	21	15				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							40.7%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	49
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	41
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	8
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: Karen Warner 117900 *Certification #*

Technical Responsibility: Kenneth Daly _____ *Signature* Project Engineer *Position*

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Client Address:

Test Date(s): 9/19-24/08
Report Date: 9/24/08

Boring #: Sample #: S-28 Sample Date: 7/24/08
Location: TP-16 Offset: Depth:
Sample Description: Tan Silt w/Medium to Coarse to Fine Sand (ML)

Pan #:		Beaker #:		Apparent Relative Density (Assumed)		2.650	
Hydrometer Jar #:							
Pan Tare Weight (grams):				Moisture Content	Hygroscopic	Natural	
Total Sample Air Dried Wt. + tare wt. (grams):		349.00		Tare #	QQ	T-1	
Weight of Total Sample Air Dried:		349.00	A	Tare Wt.	16.87	83.15	
Weight of Air Dried Hydrometer Sample (g):		50.00	B	Wet Wt. + A	29.46	297.73	
Total Sample Oven Dried:		332.69	C	Dry Wt. + A	28.86	285.20	
Hydrometer Sample Oven Dried (W):		47.62	D	Water Wt. (B-C)	0.60	12.53	
% Passing #10:		98.0%	E	Dry Wt. (C-A)	11.99	202.05	
Correction Factor a (Table 1):		1.00		% Moisture (100 x D/E)	5.00%	6.2%	

Sieve	Retained Wt.	Percent Passing	
3.0"	0.0	Pan # (washed)	100.0%
1.5"	0.0		100.0%
1.0"	0.0		100.0%
3/4"	0.0		100.0%
1/2"	0.0		100.0%
3/8"	0.0		100.0%
#4	2.9	Soil Mortar	99.1%
#10	6.7	100.0%	98.0%
#20	0.2	99.7%	97.7%
#40	0.5	99.1%	97.1%
#60	0.9	98.1%	96.2%
#100	2.4	95.0%	93.1%
#200	11.4	76.0%	74.5%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	24.6%	< 4.74 mm and > 0.075 mm	Type: Mechanical Stirring Apparatus (A)
% Gravel:	0.9%	< 75 mm and > 4.75 mm	Silt & Clay:	74.5%	< 0.075	Dispersion Time: 1 min.
Coarse Sand:	1.1%	< 4.75 mm and > 2.00 mm	Silt:	58.0%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate: 40 g./ Liter
Medium Sand:	0.9%	< 2.00 mm and > 0.425 mm	Clay:	16.5%	< 0.005 mm	
Fine Sand:	22.6%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒ Composite Correction ☐

Liquid Limit 49 Plastic Limit 41 Plastic Index 8 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	22.0	39.0	5.0		34.00	71.4%	70.0%	10.7	0.01332	0.04361
	2	22.0	35.0	5.0		30.00	63.0%	61.7%	11.4	0.01332	0.03177
	5	22.0	23.0	5.0		18.00	37.8%	37.0%	13.3	0.01332	0.02176
	15	22.0	20.0	5.0		15.00	31.5%	30.9%	13.8	0.01332	0.01279
	30	22.0	16.5	5.0		11.50	24.2%	23.7%	14.4	0.01332	0.00923
	60	22.0	14.5	5.0		9.50	20.0%	19.5%	14.7	0.01332	0.00660
	250	22.0	11.5	5.0		6.50	13.7%	13.4%	15.2	0.01332	0.00329
	1440	22.0	9.5	5.0		4.50	9.5%	9.3%	15.6	0.01332	0.00138

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Karen Warner 117900 *Certification #*

Technical Responsibility: Kenneth Daly *Signature* *Project Engineer* *Position*

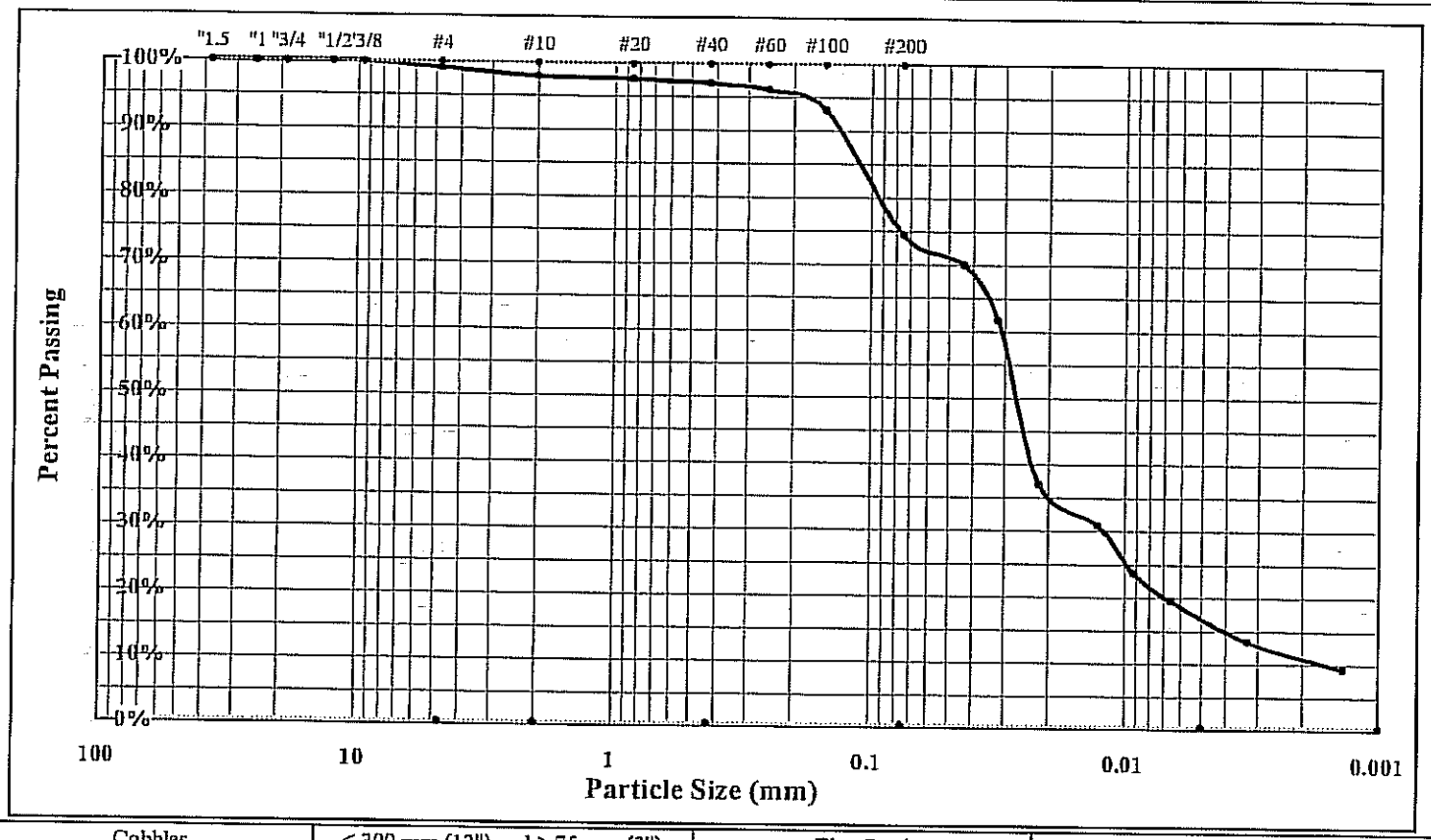
Particle Size Analysis of Soils

ASTM D 422

S&ME

S&ME Project #:	1356-07-017-03	Report Date:	9/24/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	9/19-24/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S-28	Sample Date:	7/24/08
Location:	TP-16	Offset:		Depth:	
Sample Description:	Tan Silt w/Medium to Coarse to Fine Sand (ML)				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	0.9%	Silt	58.0%
Silt & Clay (% Passing #200)	74.5%	Sand	24.6%	Clay	16.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content	6.2%	Colloids	
Liquid Limit	49	Plastic Limit	41	Plastic Index	8

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils

Technical Responsibility: Kenneth Daly (Signature) Project Engineer (Position)

Laboratory Report Version 4.2

Moisture - Density Report

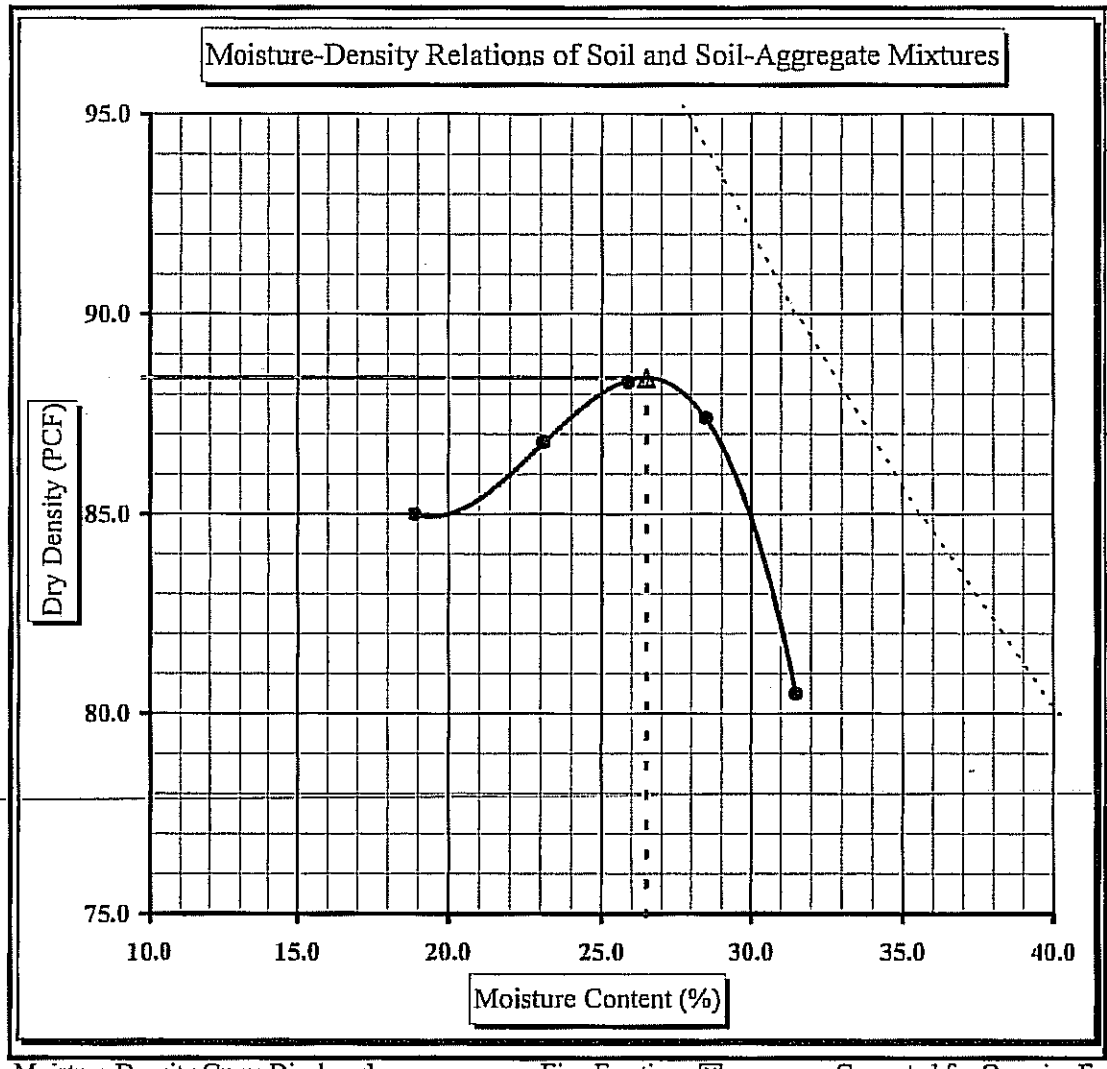
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	September 24, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	9/19-24/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-28	Sample Date:	July 24, 2008
Location:	TP-16	Offset:		Depth:	Bulk
Sample Description:	Tan Silt w/Medium to Coarse to Fine Sand (ML)				

Maximum Dry Density 88.4 PCF. **Optimum Moisture Content 26.5 %**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	6.2%
Liquid Limit:	49
Plastic Limit:	41
Plastic Index:	8
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	100
#4	99.1

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐
Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☒ Dry Preparation ☐

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

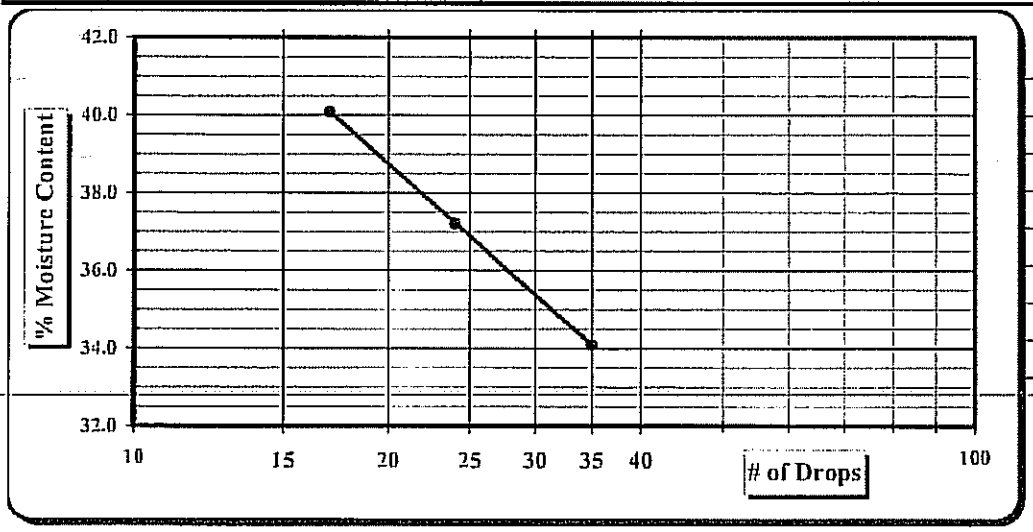
Laboratory Record Version 4.2

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: **1356-07-017-03** Report Date: 11/25/08
Project Name: Pine Hall Road Ash Landfill Closure Test Date(s): 11/13-25/08
Client Name: Duke Energy
Client Address:
Boring #: Sample #: S. 29 (CCR) Sample Date: 10/31/08
Location: Flat Area NE Offset: Depth:
Sample Description: Tan Clayey Silt (ML) with Fine Sand

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	43	xx	49				34	SSS	
A	Tare Weight	13.84	16.02	15.64				13.96	16.52	
B	Wet Soil Weight + A	23.99	27.34	28.43				21.08	23.45	
C	Dry Soil Weight + A	21.41	24.27	24.77				19.67	22.07	
D	Water Weight (B-C)	2.58	3.07	3.66				1.41	1.38	
E	Dry Soil Weight (C-A)	7.57	8.25	9.13				5.71	5.55	
F	% Moisture Content (D/E)*100	34.1%	37.2%	40.1%				24.7%	24.9%	
N	# OF DROPS	35	24	17				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							24.8%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation	☐	Dry Preparation	☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method	☒	One-point Method	☐		Liquid Limit	37
Classification:	ASTM D 2487	☒	AASHTO M 145	☐		Plastic Limit	25
Liquid limit Test:	ASTM D 4318	☒	AASHTO T 89	☐		Plastic Index	12
Plastic limit Test:	ASTM D 4318	☒	AASHTO T 90	☐		Group Symbol	ML

Technician Name: John Grupp

Certification #

Technical Responsibility: Ken Daly

Signature Position

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Client Address:

Test Date(s): 11/13-25/08
Report Date: 11/25/08

Boring #: Sample #: S- 29 CCR Sample Date: 10/31/08
Location: Flat Area NE Offset: Depth:
Sample Description: Tan Clayey Silt (ML) with Fine Sand

Pan #:	MGJ	Beaker #:	RR	Apparent Relative Density (Assumed)	2.650				
Hydrometer Jar #:			3						
Pan Tare Weight (grams):			0.00	Moisture Content		Hygroscopic	Natural		
Total Sample Air Dried Wt. + tare wt. (grams):			315.80		Tare #	51			
Weight of Total Sample Air Dried:			315.80	A	Tare Wt.	15.74			
Weight of Air Dried Hydrometer Sample (g):			50.00	B	Wet Wt. + A	27.67			
Total Sample Oven Dried:			310.68	C	Dry Wt. + A	27.47			
Hydrometer Sample Oven Dried (W):			49.16	D	Water Wt. (B-C)	0.20			
% Passing #10:			96.6%	E	Dry Wt. (C-A)	11.73			
Correction Factor a (Table 1):			1.00		% Moisture (100 x D/E)	1.71%			

Sieve	Retained Wt.	Percent Passing	
3.0"		Pan # (washed) 2	100.0%
1.5"			100.0%
1.0"			100.0%
3/4"	0.0		100.0%
1/2"	1.5		99.5%
3/8"	1.5		99.5%
#4	5.4	Soil Mortar	98.3%
#10	10.5	100.0%	96.6%
#20	0.7	98.7%	95.3%
#40	1.5	97.0%	93.7%
#60	2.5	95.0%	91.8%
#100	4.7	90.5%	87.5%
#200	11.7	76.2%	73.6%

Notes: Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	24.6%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	1.7%	< 75 mm and > 4.75 mm	Silt & Clay:	73.6%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	1.7%	< 4.75 mm and > 2.00 mm	Silt:	47.1%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	2.9%	< 2.00 mm and > 0.425 mm	Clay:	26.5%	< 0.005 mm		
Fine Sand:	20.1%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 37 Plastic Limit 25 Plastic Index 12 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	22.5	36.0	5.0		31.00	63.1%	60.9%	11.2	0.01325	0.04435
	2	22.5	33.0	5.0		28.00	57.0%	55.0%	11.7	0.01325	0.03204
	5	22.5	28.0	5.0		23.00	46.8%	45.2%	12.5	0.01325	0.02096
	15	22.5	22.5	5.0		17.50	35.6%	34.4%	13.4	0.01325	0.01253
	30	23.0	20.5	4.0		16.50	33.6%	32.4%	13.6	0.01317	0.00886
	60	23.0	18.5	4.0		14.50	29.5%	28.5%	13.9	0.01317	0.00634
	250	23.0	15.5	4.0		11.50	23.4%	22.6%	14.4	0.01317	0.00316
	1440	21.5	14.0	4.5		9.50	19.3%	18.7%	14.7	0.01340	0.00136

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
L=L1+0.5(L2-(VB/A))
(152H) .164cm per increment,
V_B=67.0cm^3, L_2=14cm, A=27.8cm^2

Technician Name: Jennifer Olsen 117926
Certification #

Technical Responsibility: Ken Daly

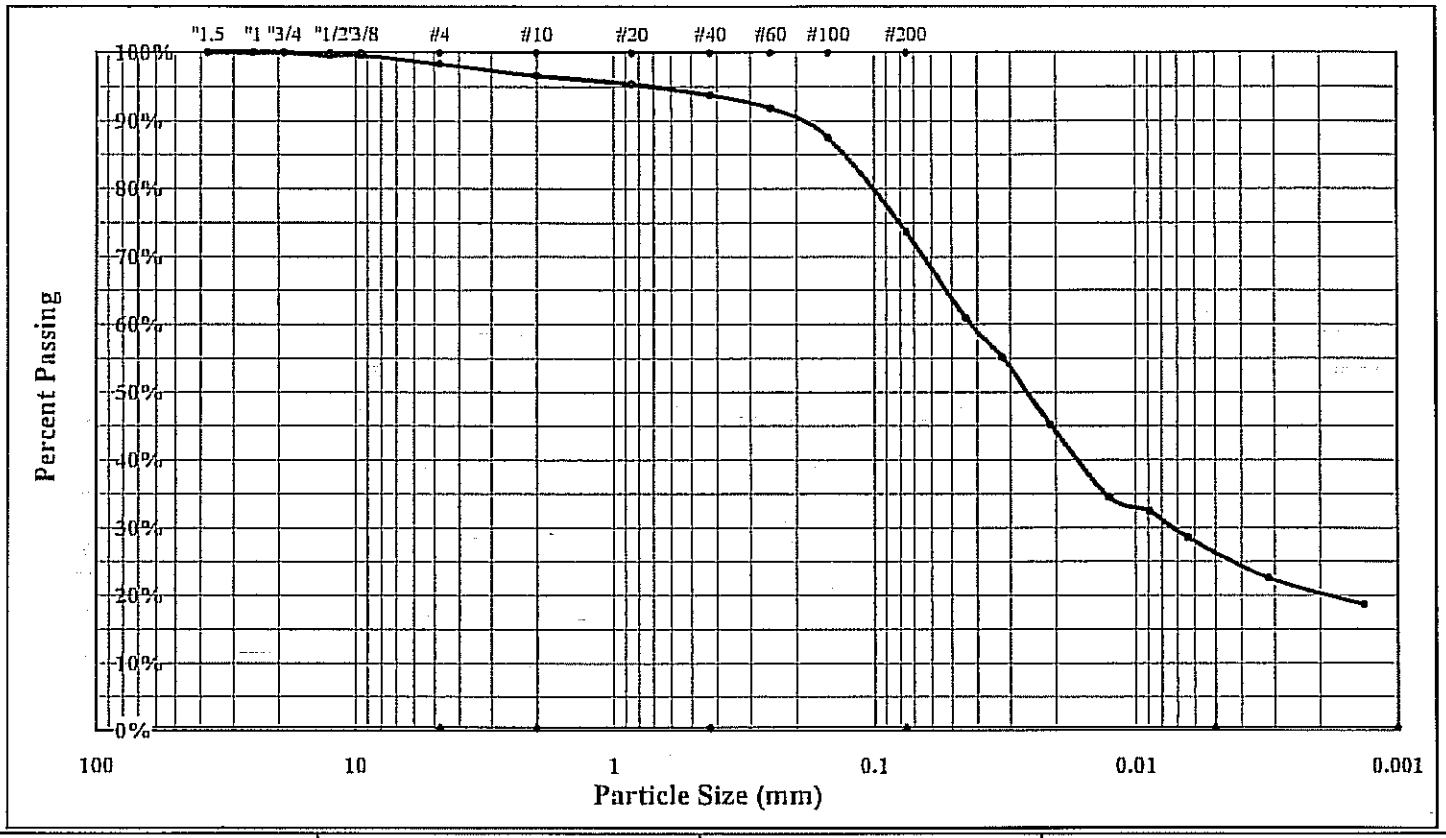
Signature *Position*

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1356-07-017-03**	Report Date:	11/25/08
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	11/13-25/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S-29 (CCL)	Sample Date:	10/31/08
Location:	Flat Area NE	Offset:		Depth:	
Sample Description:	Tan Clayey Silt (ML) with Fine Sand				



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	1.7%	Silt	47.1%
Silt & Clay (% Passing #200)	73.6%	Sand	24.6%	Clay	26.5%
Apparent Relative Density (Assumed)	2.650	Moisture Content		Colloids	
Liquid Limit	37	Plastic Limit	25	Plastic Index	12

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Ken Daly

Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

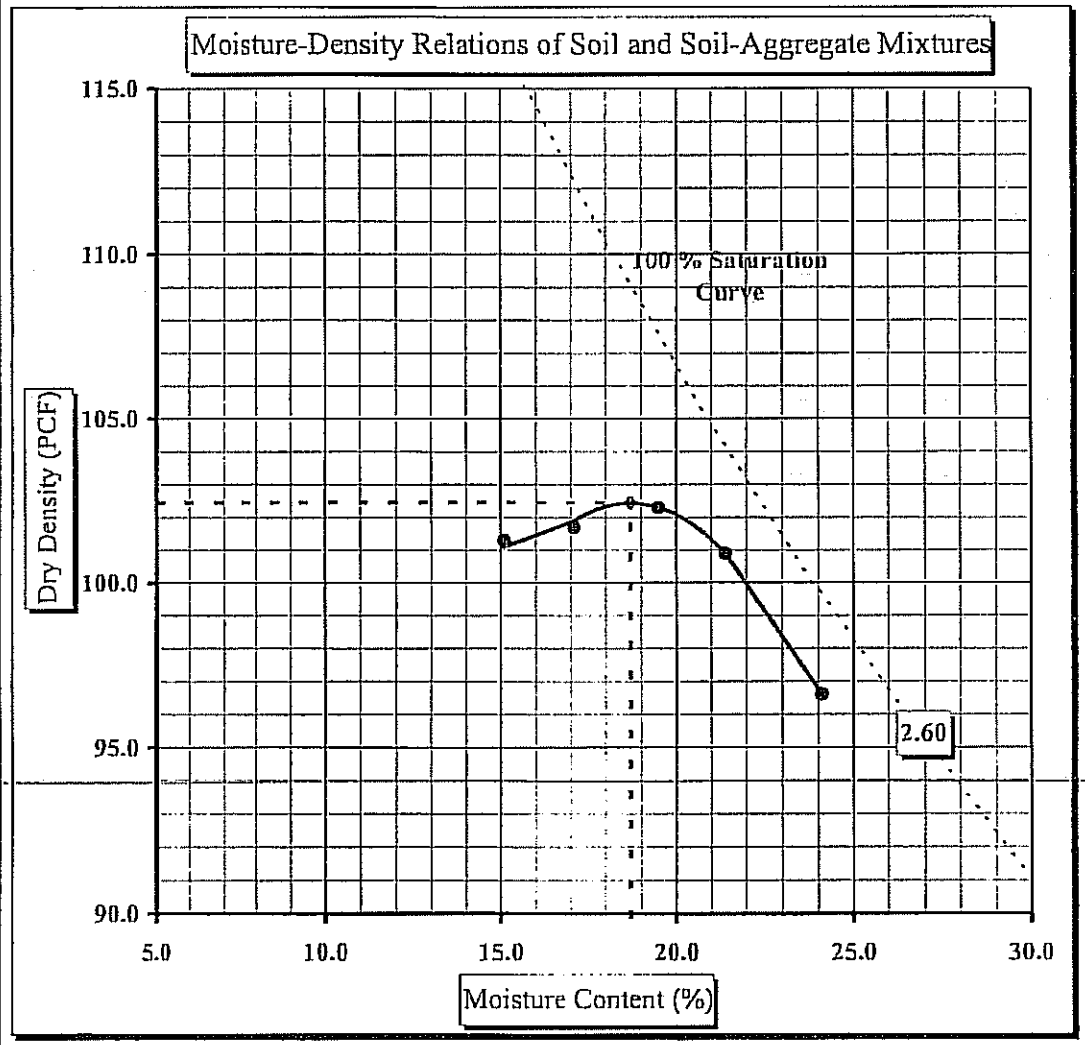
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	November 22, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	11/18-22/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S-29 CCR	Sample Date:	October 31, 2008
Location:	Flat Area NE	Offset:		Depth:	
Sample Description:	Tan Clayey Silt (ML) with Fine Sand				

Maximum Dry Density **102.5** **PCF.** **Optimum Moisture Content** **18.7** **%**

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	
Liquid Limit:	37
Plastic Limit:	25
Plastic Index:	12
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	
#4	98.3

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

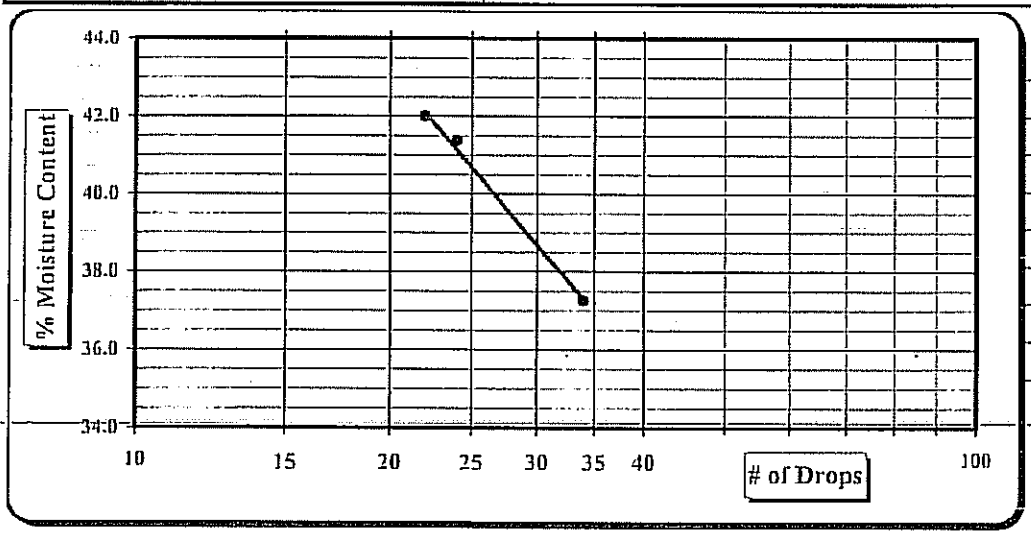
Technical Responsibility: Ken Daly _____ 0
Signature

Liquid Limit, Plastic Limit, and Plastic Index

S&ME

Project #: 1356-07-017 | Report Date: 11-24-08
Project Name: Pine Hall Road Ash Landfill Closure | Test Date(s): 11-22-08
Client Name: Duke Energy
Client Address:
Boring #: | Sample #: 5. 30 cce) | Sample Date: 10/31/08
Location: Flat Area SE | Offset: | Depth:
Sample Description: Tan Clayey Silt (ML) with Fine Sand

Pan #		Liquid Limit						Plastic Limit		
	Test #							1	2	3
	Tare #	35	33	10				LL	46	
A	Tare Weight	15.61	15.89	13.99				16.92	13.74	
B	Wet Soil Weight + A	30.64	28.60	27.68				23.87	21.92	
C	Dry Soil Weight + A	26.56	24.88	23.63				22.36	20.09	
D	Water Weight (B-C)	4.08	3.72	4.05				1.51	1.83	
E	Dry Soil Weight (C-A)	10.95	8.99	9.64				5.44	6.35	
F	% Moisture Content (D/E)*100	37.3%	41.4%	42.0%				27.8%	28.8%	
N	# OF DROPS	34	24	22				*Moisture Contents determined by ASTM D 2216*		
LL	LL = F * FACTOR									
Ave.	Average							28.3%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.990	29	1.018
24	0.995	30	1.022
25	1.000		

Notes: Estimate the % Retained on the #40 Sieve

Special Sampling Methods:

Sample Preparation:	Wet Preparation ☐	Dry Preparation ☒	Air Dried ☒	NP, Non-Plastic	☐
Liquid limit Test:	Multipoint Method ☒	One-point Method ☐		Liquid Limit	41
Classification:	ASTM D 2487 ☒	AASHTO M 145 ☐		Plastic Limit	28
Liquid limit Test:	ASTM D 4318 ☒	AASHTO T 89 ☐		Plastic Index	13
Plastic limit Test:	ASTM D 4318 ☒	AASHTO T 90 ☐		Group Symbol	ML

Technician Name: John Grupp
Certification #
Technical Responsibility: Ken Daly
Signature | Position

Particle Size Analysis of Soils

ASTM D 422

S&ME

Project #: 1356-07-017-03
Project Name: Pine Hall Road Ash Landfill Closure
Client Name: Duke Energy
Client Address:

Test Date(s): 11/13-25/08
Report Date: 11/25/08

Boring #: Sample #: S-30 CCR Sample Date: 10/31/08
Location: Flat Area SE Offset: Depth:
Sample Description: Tan Clayey Silt (ML) with Fine Sand

Pan #:	MTY	Beaker #:	PP	Apparent Relative Density (Assumed)			2.650		
Hydrometer Jar #:			I						
Pan Tare Weight (grams):			0.00	Moisture Content		Hygroscopic	Natural		
Total Sample Air Dried Wt. + tare wt. (grams):			352.41		Tare #	I			
Weight of Total Sample Air Dried:			352.41	A	Tare Wt.	13.86			
Weight of Air Dried Hydrometer Sample (g):			50.00	B	Wet Wt. + A	24.95			
Total Sample Oven Dried:			346.90	C	Dry Wt. + A	24.77			
Hydrometer Sample Oven Dried (W):			49.19	D	Water Wt. (B-C)	0.18			
% Passing #10:			96.3%	E	Dry Wt. (C-A)	10.91			
Correction Factor a (Table 1):			1.00		% Moisture (100 x D/E)	1.65%			

Sieve	Retained Wt.	Percent Passing	
3.0"		Pan # (washed)	100.0%
1.5"			100.0%
1.0"			100.0%
3/4"		24	100.0%
1/2"	0.0		100.0%
3/8"	1.8		99.5%
#4	6.8	Soil Mortar	98.0%
#10	12.9	100.0%	96.3%
#20	0.7	98.6%	94.9%
#40	1.6	96.7%	93.2%
#60	3.0	94.0%	90.5%
#100	5.7	88.3%	85.1%
#200	13.3	73.0%	70.3%

Notes: Description of Sand & Gravel Particles: Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Maximum Particle Size:			Total Sand:	27.8%	< 4.74 mm and > 0.075 mm	Type:	Mechanical Stirring Apparatus (A)
% Gravel:	2.0%	< 75 mm and > 4.75 mm	Silt & Clay:	70.3%	< 0.075	Dispersion Time:	1 min.
Coarse Sand:	1.8%	< 4.75 mm and > 2.00 mm	Silt:	43.3%	< 0.075 and > 0.005 mm	Sodium Hexametaphosphate:	40 g./ Liter
Medium Sand:	3.1%	< 2.00 mm and > 0.425 mm	Clay:	27.0%	< 0.005 mm		
Fine Sand:	22.9%	< 0.425 mm and > 0.075 mm	Colloids:		< 0.001 mm	Control Cylinder ☒	Composite Correction ☐

Liquid Limit 41 Plastic Limit 28 Plastic Index 13 Hydrometer: 151H ☐ 152H ☒

Time		Temp.	Hydrometer	Corrections		Hydrometer	Percent Passing		Effective Depth	Table 3	Diameter
Clock	T (Min.)	(0.5 °C)	Reading	Control Cylinder	Composite Correction	R	P(-#10) = (R x a / W) x 100	P (total) = P x % Passing #10	L	K	D = K x ((L/T)^1/2
	1	22.5	36.0	5.0		31.00	63.0%	60.7%	11.2	0.01325	0.04435
	2	22.5	31.5	5.0		26.50	53.9%	51.9%	11.9	0.01325	0.03237
	5	22.5	27.0	5.0		22.00	44.7%	43.1%	12.7	0.01325	0.02110
	15	22.5	22.5	5.0		17.50	35.6%	34.3%	13.4	0.01325	0.01253
	30	23.0	20.5	4.0		16.50	33.5%	32.3%	13.6	0.01317	0.00886
	60	23.0	18.5	4.0		14.50	29.5%	28.4%	13.9	0.01317	0.00634
	250	23.0	16.0	4.0		12.00	24.4%	23.5%	14.3	0.01317	0.00315
	1440	21.5	14.0	4.5		9.50	19.3%	18.6%	14.7	0.01340	0.00136

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Effective Depth (cm)
$L=L1+0.5(L2-(VB/A))$

(152H) .164cm per increment,
$V_B=67.0cm^3$, $L_2=14cm$, $A=27.8cm^2$

Technician Name: Jennifer Olsen 117926
Certification #

Technical Responsibility: Ken Daly

Signature *Position*

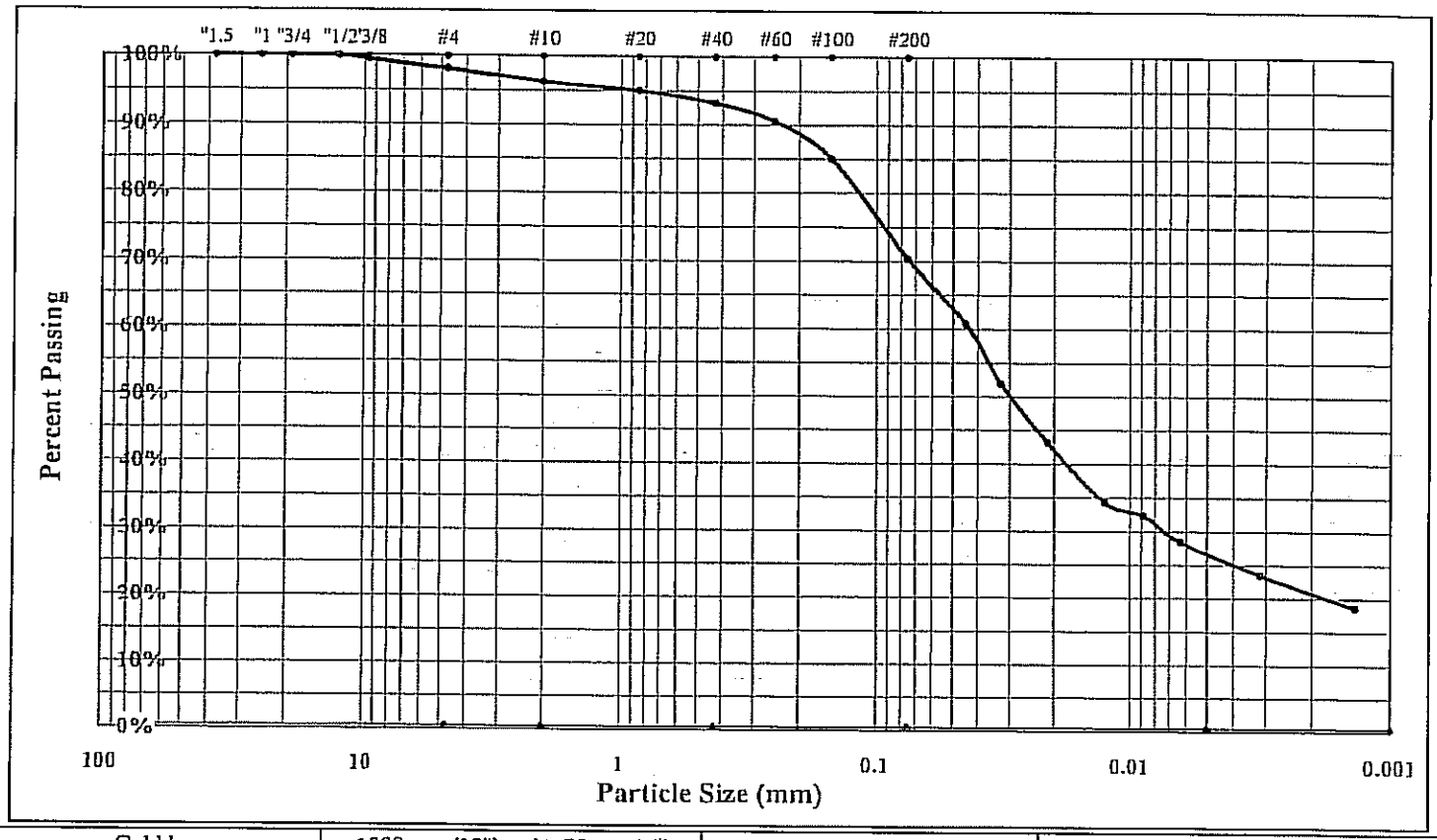
Particle Size Analysis of Soils

ASTM D 422

S&ME

S&ME Project #:	1356-07-017-03	Report Date:	11/25/08
Project Name:	Pine Hall Road Ash Landfill Closure	Test Date(s):	11/13-25/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #: S-30 (CCR)	Sample Date: 10/31/08
Location:	Flat Area SE	Offset:	Depth:
Sample Description:	Tan Clayey Silt (ML) with Fine Sand		



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	0	Gravel	2.0%	Silt	43.3%
Silt & Clay (% Passing #200)	70.3%	Sand	27.8%	Clay	27.0%
Apparent Relative Density (Assumed)	2.650	Moisture Content		Colloids	
Liquid Limit	41	Plastic Limit	28	Plastic Index	13

Description of Sand & Gravel Particles Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Mechanical Stirring Apparatus (A) Length of Dispersion Period: 1 min. Dispersing Agent: Sodium Hexametaphosphate: 40 g./ Liter

References: ASTM D 422: Particle Size Analysis of Soils ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils ASTM D 854: Specific Gravity of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Ken Daly

Signature Position

Laboratory Report Version 4.2

Moisture - Density Report

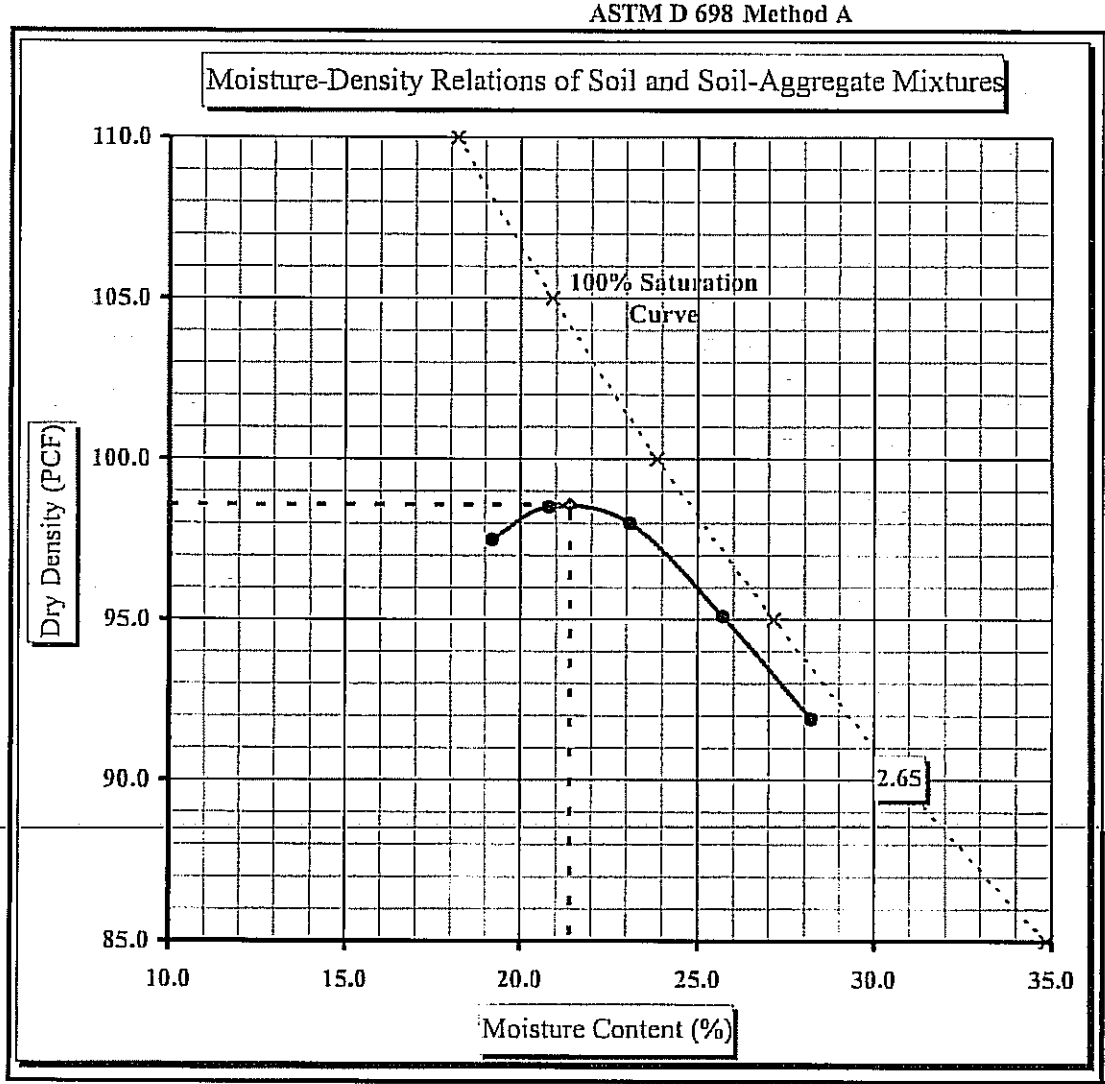
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	November 24, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	11/18-24/08
Client Name:	Duke Energy		
Client Address:			

Boring #:		Sample #:	S- 30 (CR)	Sample Date:	October 31, 2008
Location:	Flat Area SE	Offset:		Depth:	
Sample Description:	Tan Clayey Silt (ML) with Fine Sand				

Maximum Dry Density 98.6 **PCF.** **Optimum Moisture Content** 21.4 %

ASTM D 698 Method A



Soil Properties

Natural Moisture Content:	
Liquid Limit:	41
Plastic Limit:	28
Plastic Index:	13
Specific Gravity:	

% Passing

3/4"	
1/2"	
3/8"	
#4	98

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 422: Particle Size Analysis of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Ken Daly _____ 0
Signature

Topsoil Laboratory Test Results

Topsoil Laboratory Test Results	
Sample No.	**Source**
OST-1	On-Site
OST-2	On-Site
IT-1	Import
IT-2	Import

Report Number
08-133-0229

Account Number
00983

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The One Source.

Send To: S&ME , Inc
Karen Warner
9751 Southern Pine Blvd
Charlotte , NC 28273

Purchase Order :

Project : Cedric Ruhl

Report Date : 05/22/2008
Date Received : 05/12/2008

REPORT OF ANALYSIS

Date Sampled :

Lab Number: 67678
Sample Id : OST-1

Analysis	Result	Quantitation Limit	Method	Date and Time Test Started	Analyst
Organic Matter (Combustion) , %	7	0.1	SOIL LOI	May/21/2008 10:10	AG

Method Reference:
Methods of Soil Analysis, Part 3 - Chemical Methods, 2nd Ed. Rev. Soil Science Society of America, Black, C.A et al. 1982, p. 1004-1005
Comments:

Nathan Pera, IV

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SOIL ANALYSIS

Client :	Grower :	Report No: 08-121-0506
S&ME , Inc	CEDRIC RUHL	Cust No: 00983
9751 Southern Pine Blvd		Date Printed: 05/01/2008
Charlotte NC 28273		Page : 1 of 4
	Date Received : 04/30/2008	

Lab Number : 19818 **Field Id :** **Sample Id :** OST-1

Test	Results
Soil pH	5.2
Buffer pH	7.67
Phosphorus (P)	24 LB/ACRE
Potassium (K)	272 LB/ACRE
Calcium (Ca)	586 LB/ACRE
Magnesium (Mg)	206 LB/ACRE
Sulfur (S)	
Boron (B)	
Copper (Cu)	
Iron (Fe)	
Manganese (Mn)	
Zinc (Zn)	
Sodium (Na)	
Soluble Salts	
Organic Matter	2.2 % ENR 88
Nitrate Nitrogen	

SOIL TEST RATINGS

Very Low | Low | Medium | Optimum | Very High

Calculated Cation Exchange Capacity

5.3

meq/100g

Calculated Cation Saturation

%K	6.6
%Ca	27.6
%Mg	16.2
%H	49.8

K : Mg Ratio

0.41

SOIL FERTILITY GUIDELINES

Crop : **Rec Units:**

(lbs) LIME (tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe

Crop : **Rec Units:**

Comments :

Patent Pending 1999

Report Number
08-133-0229 **Page:** 2 of 4

Account Number
00983

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Karen Warner
9751 Southern Pine Blvd
Charlotte , NC 28273

Project : Cedric Ruhl

Purchase Order :
Report Date : 05/22/2008
Date Received : 05/12/2008

REPORT OF ANALYSIS

Date Sampled :

Lab Number: 67679
Sample Id : OST-2

Analysis	Result	Quantitation Limit	Method	Date and Time Test Started	Analyst
Organic Matter (Combustion) , %	9.1	0.1	SOIL LOI	May/21/2008 10:10	AG

Method Reference:
Methods of Soil Analysis, Part 3 - Chemical Methods, 2nd Ed. Rev. Soil Science Society of America, Black, C.A et al. 1982, p. 1004-1005
Comments:

Nathan Pera, IV

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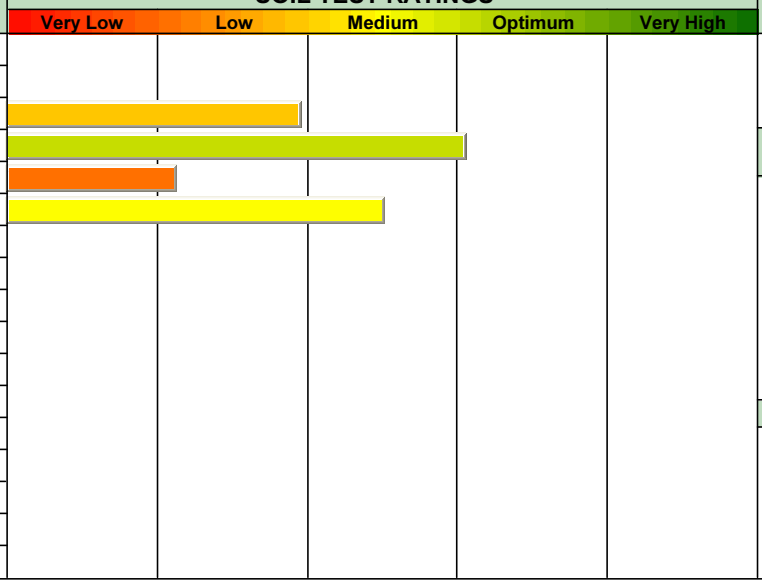
SOIL ANALYSIS

Client :	Grower :	
S&ME , Inc 9751 Southern Pine Blvd Charlotte NC 28273	CEDRIC RUHL Date Received : 04/30/2008	Report No: 08-121-0506 Cust No: 00983 Date Printed: 05/01/2008 Page : 2 of 4

Lab Number : 19819 **Field Id :** **Sample Id :** OST-2

Test	Results
Soil pH	5.2
Buffer pH	7.66
Phosphorus (P)	28 LB/ACRE
Potassium (K)	260 LB/ACRE
Calcium (Ca)	780 LB/ACRE
Magnesium (Mg)	206 LB/ACRE
Sulfur (S)	
Boron (B)	
Copper (Cu)	
Iron (Fe)	
Manganese (Mn)	
Zinc (Zn)	
Sodium (Na)	
Soluble Salts	
Organic Matter	2.7 % ENR 98
Nitrate Nitrogen	

SOIL TEST RATINGS



Calculated Cation Exchange Capacity

5.9

meq/100g

Calculated Cation Saturation

%K	5.6
%Ca	33.1
%Mg	14.5
%H	46.1

K : Mg Ratio

0.39

SOIL FERTILITY GUIDELINES

Crop : **Rec Units:**

(lbs) LIME (tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe

Crop : **Rec Units:**

Comments :

Patent Pending 1999

Report Number
08-133-0229

Account Number
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Karen Warner
9751 Southern Pine Blvd
Charlotte , NC 28273

Project : Cedric Ruhl

Purchase Order :
Report Date : 05/22/2008
Date Received : 05/12/2008

REPORT OF ANALYSIS

Date Sampled :

Lab Number: 67680
Sample Id : IT-1

Analysis	Result	Quantitation Limit	Method	Date and Time Test Started	Analyst
Organic Matter (Combustion) , %	5.1	0.1	SOIL LOI	May/21/2008 10:10	AG

Method Reference:
Methods of Soil Analysis, Part 3 - Chemical Methods, 2nd Ed. Rev. Soil Science Society of America, Black, C.A et al. 1982, p. 1004-1005
Comments:

Nathan Pera, IV

A&L Analytical Laboratories, Inc.

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SOIL ANALYSIS

Client :	Grower :	
S&ME , Inc 9751 Southern Pine Blvd Charlotte NC 28273	CEDRIC RUHL Date Received : 04/30/2008	Report No: 08-121-0506 Cust No: 00983 Date Printed: 05/01/2008 Page : 3 of 4

Lab Number : 19820 **Field Id :** **Sample Id :** IT-1

Test	Results
Soil pH	6.5
Buffer pH	7.82
Phosphorus (P)	224 LB/ACRE
Potassium (K)	136 LB/ACRE
Calcium (Ca)	710 LB/ACRE
Magnesium (Mg)	194 LB/ACRE
Sulfur (S)	
Boron (B)	
Copper (Cu)	
Iron (Fe)	
Manganese (Mn)	
Zinc (Zn)	
Sodium (Na)	
Soluble Salts	
Organic Matter	2.7 % ENR 98
Nitrate Nitrogen	

SOIL TEST RATINGS

Calculated Cation Exchange Capacity

4.2 meq/100g

Calculated Cation Saturation

%K	4.2
%Ca	42.3
%Mg	19.2
%H	34.3

K : Mg Ratio

0.22

SOIL FERTILITY GUIDELINES

Crop : **Rec Units:**

(lbs)	LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe

Crop : **Rec Units:**

Comments :

Report Number
08-133-0229 **Page:** 4 of 4

Account Number
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Send To: S&ME , Inc
Karen Warner
9751 Southern Pine Blvd
Charlotte , NC 28273

Project : Cedric Ruhl

Purchase Order :
Report Date : 05/22/2008
Date Received : 05/12/2008

REPORT OF ANALYSIS

Date Sampled :

Lab Number: 67681
Sample Id : IT-2

Analysis	Result	Quantitation Limit	Method	Date and Time Test Started	Analyst
Organic Matter (Combustion) , %	5.1	0.1	SOIL LOI	May/21/2008 10:10	AG

Method Reference:
Methods of Soil Analysis, Part 3 - Chemical Methods, 2nd Ed. Rev. Soil Science Society of America, Black, C.A et al. 1982, p. 1004-1005
Comments:

Nathan Pera, IV

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SOIL ANALYSIS

Client :	Grower :	
S&ME , Inc 9751 Southern Pine Blvd Charlotte NC 28273	CEDRIC RUHL Date Received : 04/30/2008	Report No: 08-121-0506 Cust No: 00983 Date Printed: 05/01/2008 Page : 4 of 4

Lab Number : 19821 **Field Id :** **Sample Id :** IT-2

Test	Results
Soil pH	6.2
Buffer pH	7.84
Phosphorus (P)	202 LB/ACRE
Potassium (K)	172 LB/ACRE
Calcium (Ca)	594 LB/ACRE
Magnesium (Mg)	132 LB/ACRE
Sulfur (S)	
Boron (B)	
Copper (Cu)	
Iron (Fe)	
Manganese (Mn)	
Zinc (Zn)	
Sodium (Na)	
Soluble Salts	
Organic Matter	2.1 % ENR 86
Nitrate Nitrogen	

Calculated Cation Exchange Capacity	
3.5 meq/100g	
Calculated Cation Saturation	
%K	6.3
%Ca	42.4
%Mg	15.7
%H	36.6
K : Mg Ratio	
0.40	

SOIL FERTILITY GUIDELINES

Crop : **Rec Units:**

(lbs) LIME (tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe

Crop : **Rec Units:**

Comments :

Patent Pending 1999

Soil/Cement Laboratory Test Results

Soil/Cement Laboratory Test Results Summary		
Sample No.	**Maximum Dry Density (pcf)**	**Optimum Moisture Content**
S-1	106.9	15.5%
S-2	103.2	17.3%
S-3	104.4	16.5%
S-4	102.1	17.4%

Soil/Cement Compressive Test Results Summary				
Sample No.	**Curing Time (days)**	**Diameter (in)**	**Maximum Load (lbf)**	**Compressive Strength (psi)**
S-1A	7	4	3785	300
S-1B	7	4	3730	295
S-2A	7	4	2700	215
S-2B	7	4	2845	225
S-3A	7	4	2220	175
S-3B	7	4	2465	195
S-4A	7	4	2240	180
S-4B	7	4	3080	245

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #: 1356-07-017-03 Report Date:

Project Name: Pine Hall Road Ash Landfill Closure Test Date(s):

Client Name:

Client Address:

Sample by: Sample Dates:

Sampling Method: Before Shear Moistures Soil / Cement

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
Before	S-1	A	S-4	80.63	475.55	427.17	48.38	**14.0%**
Shear		B	T-1	83.13	465.73	418.49	47.24	**14.1%**
Before	S-2	A	G-9	82.27	366.27	329.26	37.01	**15.0%**
Shear		B	G-15	81.36	238.56	217.51	21.05	**15.5%**
Before	S-3	A	G-P	82.98	374.78	338.21	36.57	**14.3%**
Shear		B	T-6	81.45	311.85	282.34	29.51	**14.7%**
Before	S-4	A	S-5	82.01	259.23	235.26	23.97	**15.6%**
Shear		B	G-11	82.82	278.02	251.02	27.00	**16.1%**

Notes:

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name:

Technical Responsibility:

Certification #

Signature *Position*

Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

S&ME

Project #: 1356-07-017-03 Report Date:

Project Name: Pine Hall Road Ash Landfill Closure Test Date(s):

Client Name:

Client Address:

Sample by: Sample Dates:

Sampling Method: After Shear Moistures / Soil Cement

Boring #	Sample #	Sample Depth	Tare #	Tare Weight	Tare Wt.+ Wet Wt	Tare Wt. + Dry Wt	Water Wt.	Percent Moisture
		ft. or m.		grams	grams	grams	grams	%
After	S-1	A	101	74.70	1363.40	1155.08	208.32	**19.3%**
Shear		B	36	16.80	993.10	833.80	159.30	**19.5%**
After	S-2	A	SEJ	85.77	1216.00	1014.00	202.00	**21.8%**
Shear		B	35	16.80	1097.80	907.10	190.70	**21.4%**
After	S-3	A	34	19.40	1038.60	874.20	164.40	**19.2%**
Shear		B	38	16.56	1091.00	914.80	176.20	**19.6%**
After	S-4	A	39	16.18	1052.70	872.50	180.20	**21.0%**
Shear		B	33	16.25	991.30	818.50	172.80	**21.5%**

Notes:

References: ASTM D2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Technician Name:

Technical Responsibility:

Certification #

Signature *Position*

Moisture - Density Report

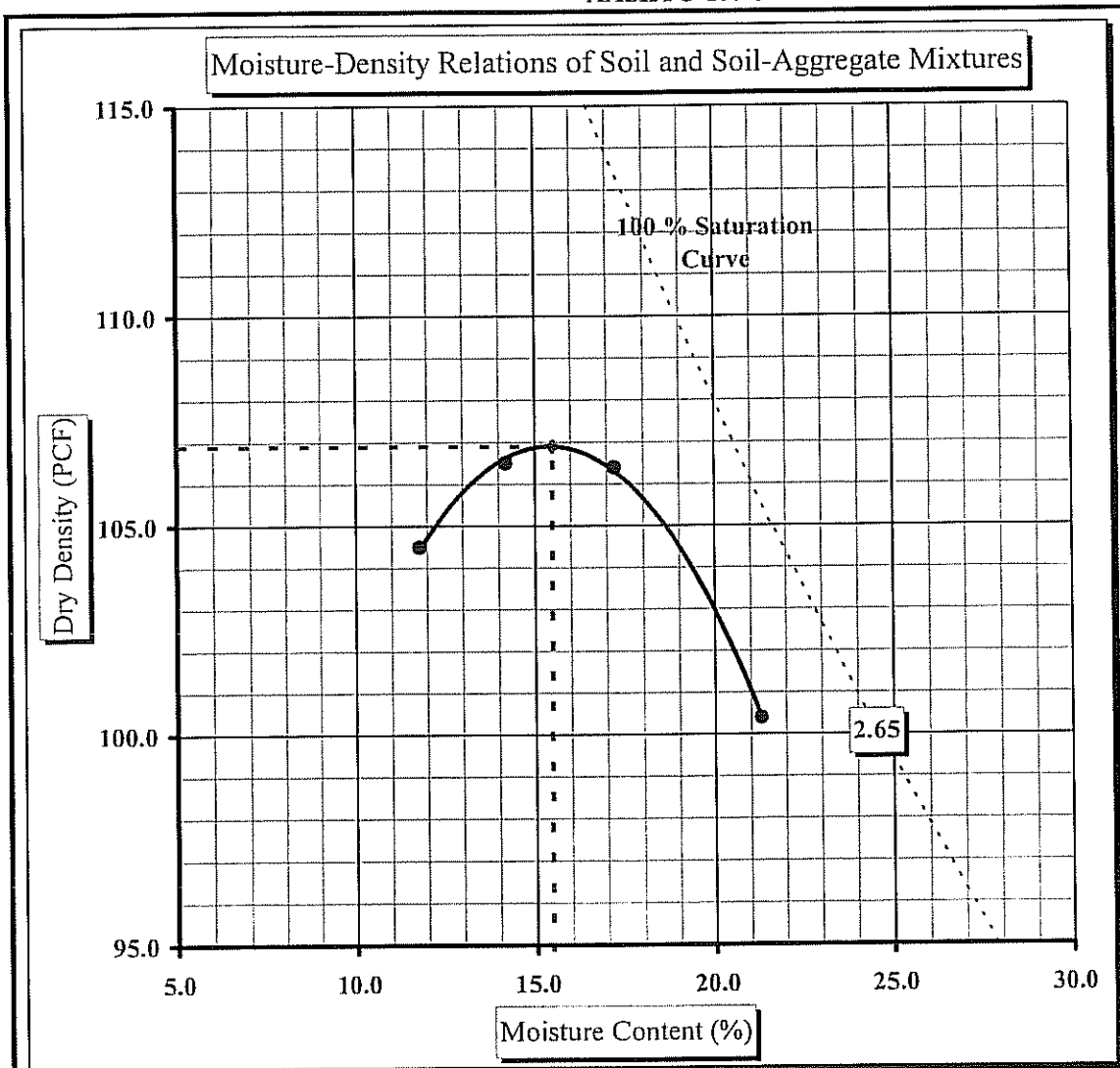
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	November 5, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	11/1-5/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-1	Sample Date:	October 21, 2008
Location:		Offset:		Depth:	
Sample Description:	Brown Tan Fine to Medium Sandy Silt				

Maximum Dry Density **106.9** **PCF.** **Optimum Moisture Content** **15.5** **%**

AASHTO T99 Method A



Soil Properties

Natural Moisture Content:

Liquid Limit:

Plastic Limit:

Plastic Index:

Specific Gravity:

% Passing

3/4"
1/2"
3/8"
#4

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Soil Description is based on a visual classification.

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Moisture - Density Report

S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	November 5, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	11/1-5/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

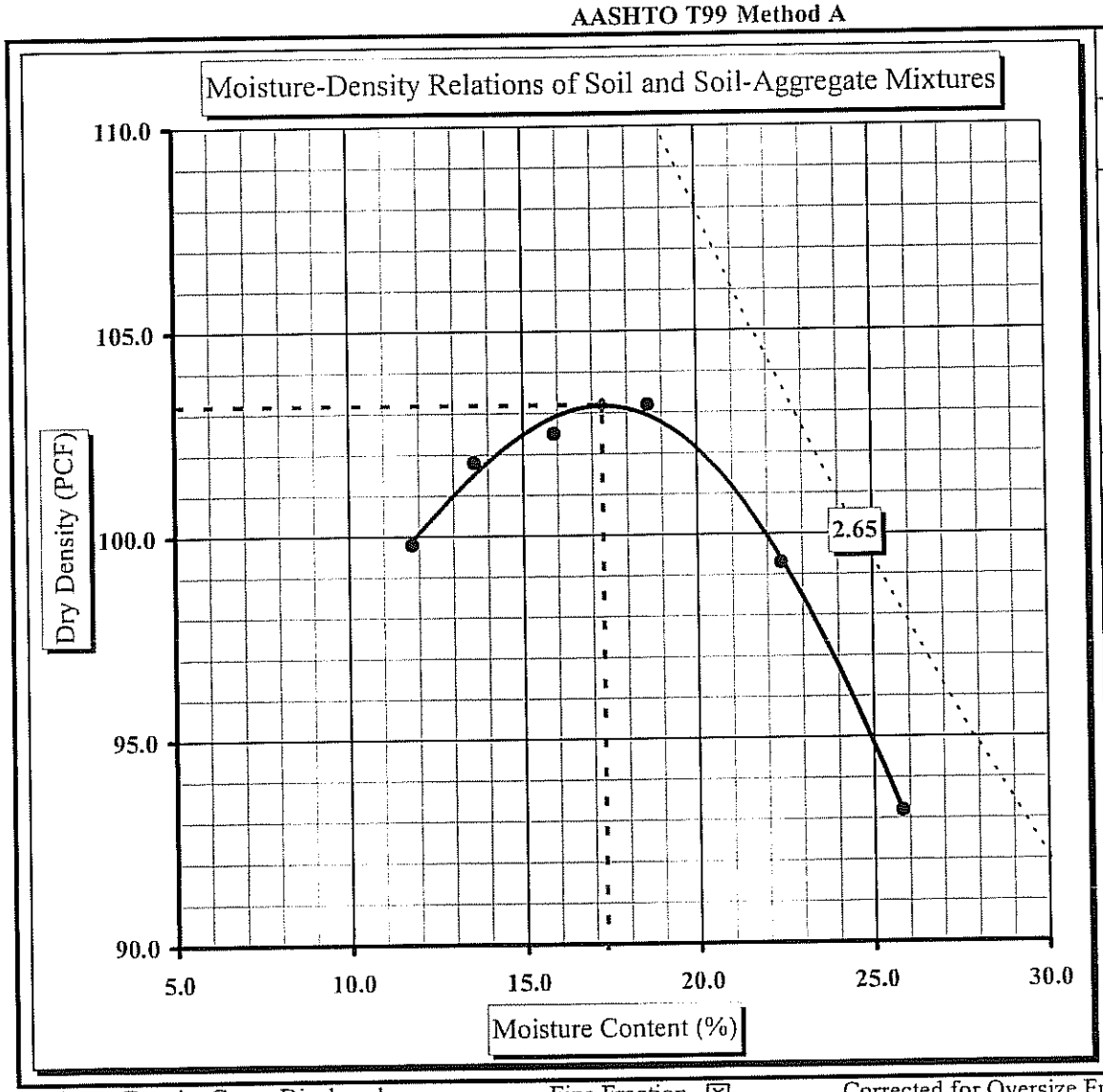
Boring #: Sample #: S-2 Sample Date: October 21, 2008

Location: Offset: Depth:

Sample Description: Tan Brown Medium to Fine Sandy Silt

Maximum Dry Density **103.2** **PCF.** **Optimum Moisture Content** **17.3** **%**

AASHTO T99 Method A



Soil Properties

Natural Moisture Content:

Liquid Limit:

Plastic Limit:

Plastic Index:

Specific Gravity:

% Passing

3/4"
1/2"
3/8"
#4

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction

MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Soil Description is based on a visual classification.

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Moisture - Density Report

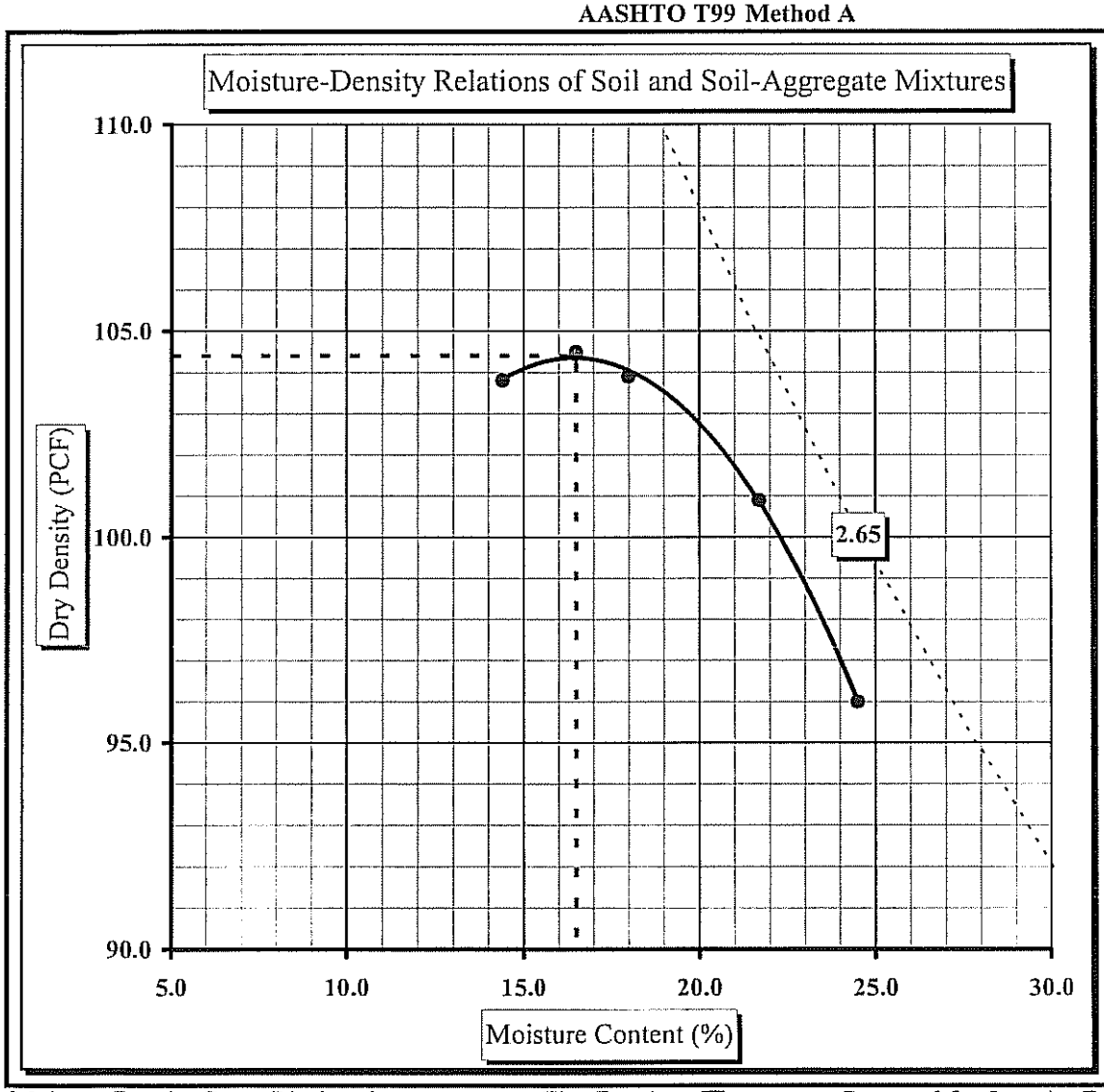
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	November 5, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	11/1-5/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:		Sample #:	S-3	Sample Date:	October 21, 2008
Location:		Offset:		Depth:	
Sample Description:	Tan Brown Medium to Fine Sandy Silt				

Maximum Dry Density **104.4** **PCF.** **Optimum Moisture Content** **16.5** **%**

AASHTO T99 Method A



Soil Properties

Natural Moisture Content:

Liquid Limit:

Plastic Limit:

Plastic Index:

Specific Gravity:

% Passing

3/4"
1/2"
3/8"
#4

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop
ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

Soil Description is based on a visual classification.

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

Moisture - Density Report

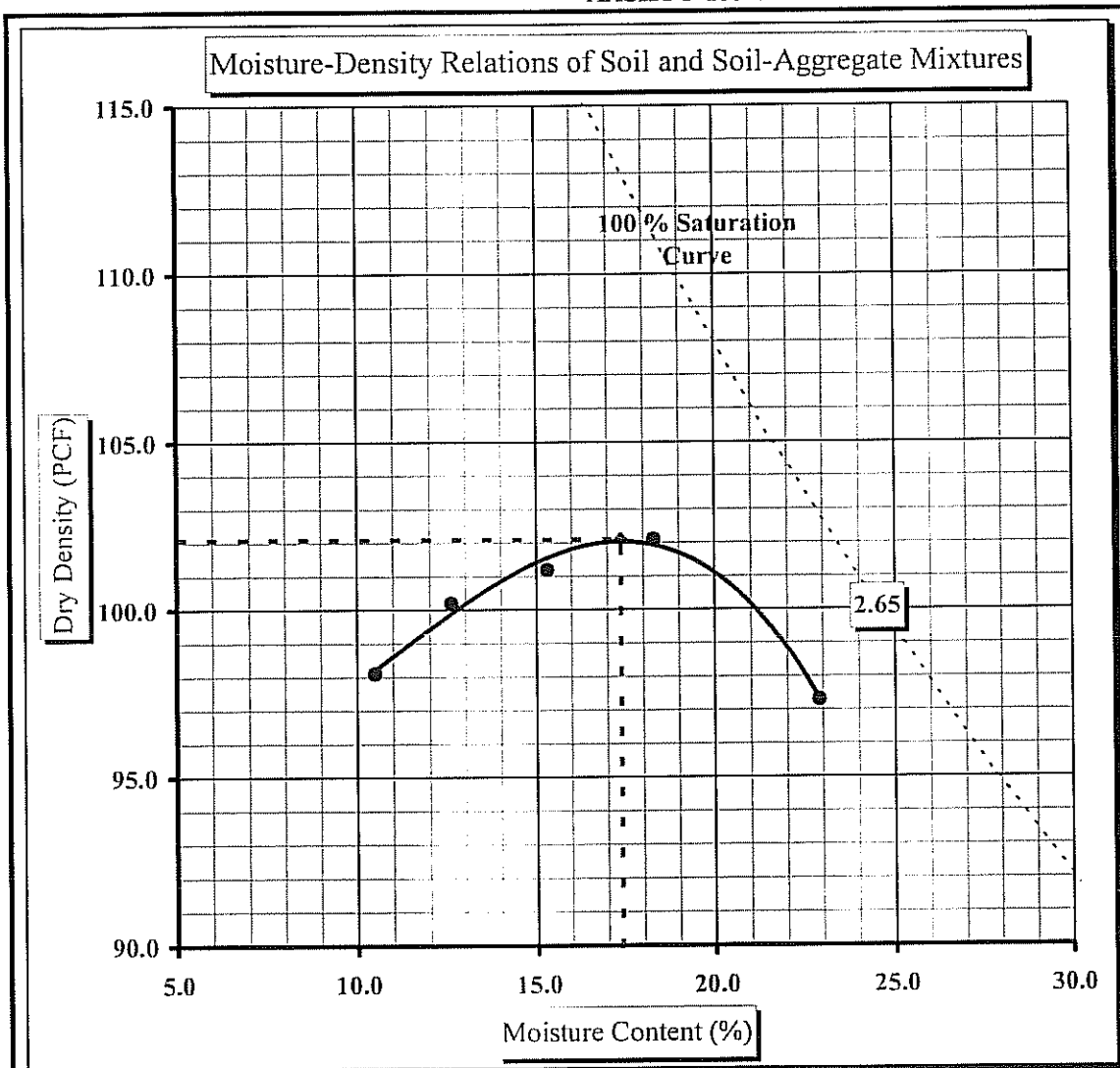
S&ME

S&ME Project #:	**1356-07-017-03**	Report Date:	November 5, 2008
Project Name:	**Pine Hall Road Ash Landfill Closure**	Test Date(s):	11/1-5/08
Client Name:	Duke Energy		
Project Address:	Belews Creek Steam Station		

Boring #:	0	Sample #:	S-4	Sample Date:	October 21, 2008
Location:		Offset:		Depth:	
Sample Description:	Tan Brown Medium to Fine Sandy Silt				

Maximum Dry Density **102.1** **PCF.** **Optimum Moisture Content** **17.4** **%**

AASHTO T99 Method A



Soil Properties

Natural Moisture Content:

Liquid Limit:

Plastic Limit:

Plastic Index:

Specific Gravity:

% Passing

3/4"
1/2"
3/8"
#4

Oversize Fraction

Bulk Sp. Gravity
% Moisture
Oversize Fraction
MDD
Opt. MC

Moisture-Density Curve Displayed: Fine Fraction ☒ Corrected for Oversize Fraction (ASTM D 4718) ☐

Sieve Size used to separate the Oversize Fraction: #4 Sieve ☒ 3/8 inch Sieve ☐ 3/4 inch Sieve ☐

Mechanical Hammer ☒ Manual Hammer ☐ Moist Preparation ☐ Dry Preparation ☒

References: AASHTO T 99: Moisture-Density Relations of Soil Using a 5.5 Lb. Rammer and a 12" Drop
AASHTO T265: Laboratory Determination of Moisture Content of Soils

Soil Description is based on a visual classification.

Technical Responsibility: Kenneth Daly _____ Project Engineer
Signature

APPENDIX II

(SUMMARY OF DENSITY TEST RESULTS)

Summary of Density Test Results

Report Date: January 05, 2009

Project Name: Duke Pine Hall Road- CM/CQA

Project No.: 1356-07-017

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
1	04/23/08	D 2937	**109.6**	**13.2**	108.6	10.1	D 698	S-1	114.0	15.0	95	**96**	Grid C7	-3
2	04/23/08	D 2937	**105.1**	**15.8**	105.9	13.8	D 698	S-1	110.0	17.0	95	**96**	Grid C6	-4
3	04/24/08	D 2937	**103.2**	**12.7**	103.9	10.2	D 698	S-1	108.0	16.5	95	**96**	Grid C6	-6
4	04/24/08	D 2937	**92.7**	**27.1**	92.0	25.5	D 698	S-2	94.0	27.0	95	**99**	Grid D6	-6
5	04/24/08	D 2937	**102.0**	**16.9**	101.2	15.5	D 698	S-3	106.0	18.0	95	**96**	Grid D5	-6
6	04/24/08	D 2937	**93.1**	**27.5**			D 698	S-2	94.0	27.0	95	**99**	Grid D6	-5
7	04/24/08	D 2937	**96.5**	**14.4**	95.4	12.0	D 698	S-1	103.0	18.0	95	**94 ***	Grid C7	-4
8	04/24/08	D 2937	**94.7**	**19.7**	94.2	18.0	D 698	S-1	101.0	22.0	95	**94 ***	Grid C7	-3
9	04/24/08	D 2937	**97.0**	**16.8**			D 698	S-1	102.0	18.0	95	**95**	Grid C7	-2
10	04/24/08	D 2937	**97.7**	**17.4**			D 698	S-1	102.0	18.0	95	**96**	Grid C6	-5
11	04/25/08	D 2937	**96.1**	**16.7**	96.3	15.0	D 698	S-1	101.0	18.0	95	**95**	Retest of #7	-4
12	04/25/08	D 2937	**96.8**	**20.4**	93.6	16.4	D 698	S-1	102.0	21.0	95	**95**	Retest of #8	-3
13	04/25/08	D 2937	**91.6**	**26.8**	90.3	24.3	D 698	S-2	92.2	27.5	95	**99**	Grid D6	-4
14	04/25/08	D 2937	**92.3**	**27.6**			D 698	S-2	92.2	27.5	95	**100**	Grid D6	-3
15	04/25/08	D 2937	**108.9**	**14.8**	108.5	11.1	D 698	S-1	111.9	15.0	95	**97**	Grid D7	-3
16	04/25/08	D 2937	**107.7**	**13.6**			D 698	S-1	111.9	15.0	95	**96**	Grid D7	-2
17	04/30/08	D 2937	**100.9**	**17.1**	99.4	15.8	D 698	S-3	105.0	18.4	95	**96**	Grid C8	-2
18	04/30/08	D 2937	**97.8**	**18.0**	92.1	12.5	D 698	S-7	97.0	20.0	95	**100+**	Grid C-7	-1
19	04/30/08	D 2937	**97.7**	**19.0**			D 698	S-7	97.0	20.0	95	**100+**	Grid C-6	-3

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.	Cedric Ruhl	Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
20	04/30/08	D 2937	**101.0**	**18.4**			D 698	S-3	105.0	18.4	95	**96**	Grid D-5	-3
21	04/30/08	D 2937	**100.7**	**20.7**			D 698	S-3	105.0	18.4	95	**96**	Grid D-6	-2
22	04/30/08	D 2937	**97.7**	**19.4**			D 698	S-7	97.0	20.0	95	**100+**	Grid D-7	-1
23	04/30/08	D 2937	**90.6**	**27.0**	88.8	23.1	D 698	S-2	92.0	26.5	95	**99**	Grid C-6	-2
24	04/30/08	D 2937	**100.6**	**18.8**			D 698	S-3	105.0	18.4	95	**96**	Grid D-5	-2
25	05/01/08	D 2937	**97.6**	**20.4**	97.0	18.1	D 698	S-7	99.0	20.0	95	**99**	Grid C-8	-1
26	05/01/08	D 2937	**97.3**	**19.8**			D 698	S-7	99.0	20.0	95	**98**	Grid C-7	SG
27	05/01/08	D 2937	**100.4**	**17.8**	96.9	13.7	D 698	S-3	105.0	18.4	95	**96**	Grid C-6	-1
28	05/01/08	D 2937	**99.7**	**17.5**			D 698	S-3	105.0	18.4	95	**95**	Grid D-6	-1
29	05/01/08	D 2937	**98.5**	**21.2**			D 698	S-7	99.0	20.0	95	**100**	Grid D-5	-1
30	05/01/08	D 2937	**108.2**	**14.7**	104.8	11.3	D 698	S-1	111.5	15.8	95	**97**	Grid D-7	SG
31	05/01/08	D 2937	**100.5**	**16.9**			D 698	S-3	105.0	18.4	95	**96**	Grid H1	-10
32	05/01/08	D 2937	**99.7**	**15.3**			D 698	S-3	105.0	18.4	95	**95**	Grid I1	-9
33	05/02/08	D 2937	**107.3**	**14.5**	103.6	10.2	D 698	S-1	111.5	16.0	95	**96**	Grid C-8	SG
34	05/02/08	D 2937	**100.2**	**17.6**	98.3	14.6	D 698	S-3	105.0	18.4	95	**95**	Grid C-6	SG
35	05/02/08	D 2937	**83.2**	**21.8**	82.5	19.1	D 698	S-6	85.0	24.0	95	**98**	Grid D-6	SG
36	05/02/08	D 2937	**101.4**	**17.4**			D 698	S-3	105.0	18.4	95	**97**	Grid D-5	SG
37	05/03/08	D 2937	**100.4**	**15.2**	98.9	13.3	D 698	S-3	105.8	18.2	95	**95**	Grid D-5	-9
38	05/03/08	D 2937	**92.2**	**21.5**	90.2	19.9	D 698	S-4	93.0	24.0	95	**99**	Grid D-6	-9

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Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.	Cedric Ruhl	Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
39	05/03/08	D 2937	**92.4**	**22.2**			D 698	S-4	93.0	24.0	95	**99**	Grid D-7	-9
40	05/03/08	D 2937	**108.8**	**14.3**	105.1	10.4	D 698	S-1	111.9	15.0	95	**97**	Grid C-6	-9
41	05/03/08	D 2937	**91.3**	**26.9**	89.6	23.6	D 698	S-4	93.5	27.0	95	**98**	Grid C-7	-9
42	05/03/08	D 2937	**94.6**	**17.7**	93.6	16.4	D 698	S-7	97.0	21.0	95	**97**	Grid C-8	-9
43	05/03/08	D 2937	**96.5**	**18.6**			D 698	S-7	97.0	21.0	95	**100**	Grid C-9	-9
44	05/03/08	D 2937	**100.7**	**16.3**			D 698	S-3	105.8	18.2	95	**95**	Grid B-8	-9
45	05/03/08	D 2937	**101.4**	**18.0**			D 698	S-3	105.8	18.2	95	**96**	Grid D-5	SG
46	05/03/08	D 2937	**96.5**	**19.4**			D 698	S-6	97.0	20.0	95	**99**	Grid D-6	SG
47	05/05/08	D 2937	**103.3**	**17.8**	101.0	12.2	D 698	S-3	108.0	18.6	95	**96**	Grid C6	SG
48	05/05/08	D 2937	**102.6**	**16.3**			D 698	S-3	108.0	18.6	95	**95**	Grid C7	SG
49	05/05/08	D 2937	**91.3**	**26.6**	90.0	23.4	D 698	S-2	94.0	27.5	95	**97**	Grid D7	SG
50	05/05/08	D 2937	**85.5**	**22.4**	84.6	21.1	D 698	S-4	88.2	23.7	95	**97**	Grid C8	SG
51	05/05/08	D 2937	**84.4**	**21.3**			D 698	S-4	88.2	23.7	95	**96**	Grid B8	SG
52	05/05/08	D 2937	**102.4**	**15.9**			D 698	S-3	108.0	18.6	95	**95**	Grid C9	SG
53	05/06/08	D 2937	**106.5**	**13.2**	104.9	10.3	D 698	S-1	111.9	15.0	95	**95**	Grid I1	-8
54	05/06/08	D 2937	**101.8**	**17.5**	98.2	14.0	D 698	S-3	105.4	18.5	95	**97**	Grid I1	-7
55	05/06/08	D 2937	**107.3**	**14.5**			D 698	S-1	111.9	15.0	95	**96**	Grid I1	-6
56	05/06/08	D 2937	**81.0**	**21.6**	80.1	19.3	D 698	S-6	83.4	23.6	95	**97**	Grid I1	-5
57	05/06/08	D 2937	**91.8**	**26.0**	90.3	24.3	D 698	S-2	92.5	27.5	95	**99**	Grid A9 Sed. Basin	-2

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Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.	Cedric Ruhl	Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
58	05/06/08	D 2937	**91.2**	**25.0**			D 698	S-2	92.5	27.5	95	**99**	Grid A10 Sed. Basin	-1
59	05/08/08	D 2937	**100.0**	**16.3**	100.0	15.1	D 698	S-3	105.2	18.5	95	**95**	Grid I1	-5
60	05/08/08	D 2937	**110.1**	**14.9**	109.5	12.5	D 698	S-1	112.0	15.0	95	**98**	Grid I1	-4
61	05/08/08	D 2937	**84.1**	**17.9**	83.5	16.2	D 698	S-6	88.0	19.0	95	**96**	Grid I3	-12
62	05/08/08	D 2937	**85.6**	**18.4**			D 698	S-6	88.0	19.0	95	**97**	Grid J3	-13
63	05/08/08	D 2937	**86.5**	**19.1**			D 698	S-6	88.0	19.0	95	**98**	Grid J4	-11
64	05/08/08	D 2937	**93.0**	**19.3**	92.2	17.3	D 698	S-7	94.6	21.8	95	**98**	Grid I4	-12
65	05/13/08	D 2937	**93.3**	**17.1**	92.9	15.7	D 698	S-5	97.0	19.5	95	**96**	J3	-12
66	05/13/08	D 2937	**101.2**	**19.1**	100.3	17.7	D 698	S-3	104.0	19.6	95	**97**	I3	-11
67	05/13/08	D 2937	**106.6**	**13.2**	105.2	10.3	D 698	S-1	111.9	15.0	95	**95**	H4	-9
68	05/13/08	D 2937	**93.3**	**20.5**			D 698	S-5	97.0	19.5	95	**96**	I4	-11
69	05/13/08	D 2937	**93.7**	**19.1**			D 698	S-5	97.0	19.5	95	**97**	J4	-11
70	05/13/08	D 2937	**99.3**	**19.9**			D 698	S-3	104.0	19.6	95	**95**	I5	-10
71	05/13/08	D 2937	**97.5**	**18.4**			D 698	S-5	97.0	19.5	95	**100**	H5	-8
72	05/13/08	D 2937	**93.6**	**20.9**	92.1	17.0	D 698	S-7	96.0	22.0	95	**98**	H6	-6
73	05/14/08	D 2937	**100.9**	**16.7**	99.1	14.0	D 698	S-3	106.0	19.0	95	**95**	J-3	-11
74	05/14/08	D 2937	**96.2**	**17.1**	100.6	14.1	D 698	S-5	101.5	19.0	95	**95**	I-4	-11
75	05/15/08	D 2937	**88.0**	**21.7**	82.2	15.6	D 698	S-8	87.0	22.0	95	**100+**	Test strip J-4	-10
75A	05/15/08	D 2922	**86.3**	**21.7**			D 698	S-8	87.0	22.0	95	**99**	J-4	-10

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Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.	Cedric Ruhl	Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

S&ME, Inc. 9751 So. Pine Blvd., Charlotte, NC 28273 (704) 523-4726 Fax (704) 525-3953

Summary of Density Test Results

Report Date: January 05, 2009

Project Name: Duke Pine Hall Road- CM/CQA

Project No.: 1356-07-017

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
76	05/15/08	D 2937	86.5	19.1			D 698	S-8	87.0	22.0	95	99	J3	-11
76A	05/15/08	D 2922	87.9	19.1			D 698	S-8	87.0	22.0	95	100+	J3	-11
77	05/15/08	D 2937	88.4	18.5			D 698	S-8	87.0	22.0	95	100+	I4	-10
77A	05/15/08	D 2922	86.2	18.5			D 698	S-8	87.0	22.0	95	99	I4	-10
78	05/15/08	D 2937	85.6	20.4			D 698	S-8	87.0	22.0	95	98	J3	-10
78A	05/15/08	D 2922	84.9	23.3			D 698	S-8	87.0	22.0	95	98	J3	10
79	05/15/08	D 2937	92.4	25.7			D 698	S-7	94.6	21.8	95	98	H4	-8
79A	05/15/08	D 2922	85.8	20.9			D 698	S-8	87.0	22.0	95	99	H4	-8
80	05/15/08	D 2937	91.0	19.9			D 698	S-7	94.6	21.8	95	96	I3	-8
80A	05/15/08	D 2922	91.6	19.8			D 698	S-7	94.6	21.8	95	97	I3	-8
81	05/15/08	D 2937	85.2	19.7			D 698	S-8	87.0	22.0	95	98	J3	-9
81A	05/15/08	D 2922	92.9	25.7			D 698	S-7	94.6	21.8	95	98	J3	-9
82	05/19/08	D 2937	87.7	18.7	83.8	17.2	D 698	S-8	87.0	22.0	95	100+	I6	-8
83	05/19/08	D 2937	84.1	17.5	82.3	14.9	D 698	S-8	87.0	22.0	95	97	J5	-2
84	05/19/08	D 2937	89.4	19.3			D 698	S-8	87.0	22.0	95	100+	J4	-9
85	05/19/08	D 2937	91.7	18.3	89.6	16.6	D 698	S-8	90.2	19.3	95	100+	H6	-5
86	05/19/08	D 2937	91.3	21.2			D 698	S-8	92.0	19.3	95	99	I5	-9
87	05/19/08	D 2937	91.9	18.8			D 698	S-8	90.2	19.3	95	100+	I4	-9
88	05/19/08	D 2937	92.7	18.5			D 698	S-8	90.3	19.3	95	100+	I3	-9

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Notes:

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Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
89	05/19/08	D 2937	**88.9**	**17.9**			D 698	S-8	90.2	19.3	95	**99**	H5	-7
90	05/20/08	D 2937	**107.5**	**13.2**	107.2	11.8	D 698	S-1	110.0	16.0	95	**98**	K4 Roadway	-4
91	05/20/08	D 2937	**105.7**	**11.7**			D 698	S-1	110.0	16.0	95	**96**	K5 Roadway	-3
92	05/20/08	D 2937	**83.4**	**21.5**	81.2	19.8	D 698	S-6	83.4	23.6	95	**100**	H4	-7
93	05/20/08	D 2937	**84.3**	**17.7**			D 698	S-6	83.4	23.6	95	**100+**	G5	-4
94	05/21/08	D 2937	**93.5**	**14.6**	92.1	13.8	D 698	S-7	97.0	19.6	95	**96**	G4	-4
95	05/21/08	D 2937	**87.7**	**18.1**	83.3	11.7	D 698	S-8	89.0	20.0	95	**99**	I6	-7
96	05/21/08	D 2937	**85.9**	**16.9**			D 698	S-8	89.0	20.0	95	**97**	I5	-8
97	05/21/08	D 2937	**86.0**	**16.7**			D 698	S-8	89.0	20.0	95	**97**	J4	-8
98	05/21/08	D 2937	**84.6**	**16.4**			D 698	S-8	89.0	20.0	95	**95**	J3	-8
99	05/21/08	D 2937	**85.0**	**16.7**			D 698	S-8	89.0	20.0	95	**96**	H5	-6
100	05/21/08	D 2937	**87.9**	**18.6**			D 698	S-8	89.0	20.0	95	**99**	I4	-8
101	05/22/08	D 2937	**85.3**	**17.1**	84.2	15.9	D 698	S-8	90.0	20.0	95	**95**	I3	-8
102	05/22/08	D 2937	**89.8**	**19.4**	88.9	16.2	D 698	S-8	90.2	19.3	95	**100**	G5	-3
103	05/22/08	D 2937	**90.0**	**19.4**			D 698	S-8	90.2	19.3	95	**100**	H4	-6
104	05/22/08	D 2937	**83.3**	**15.5**	81.9	13.7	D 698	S-8	88.0	18.5	95	**95**	J2 Slope	-3
105	05/22/08	D 2937	**84.8**	**17.2**			D 698	S-8	88.0	18.5	95	**96**	I2 Slope	-3
106	05/22/08	D 2937	**87.2**	**16.9**			D 698	S-8	90.2	19.3	95	**97**	I6	-6
107	05/22/08	D 2937	**87.0**	**16.2**			D 698	S-8	90.2	19.3	95	**96**	I5	-7

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

S&ME, Inc. 9751 So. Pine Blvd., Charlotte, NC 28273 (704) 523-4726 Fax (704) 525-3953

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
108	05/22/08	D 2937	**87.7**	**17.7**			D 698	S-8	90.2	19.3	95	**97**	I4	-7
109	05/23/08	D 2937	**85.0**	**18.5**			D 698	S-4	88.2	23.7	95	**96**	I3	-7
110	05/23/08	D 2937	**85.9**	**14.9**			D 698	S-4	88.2	23.7	95	**97**	H4	-7
111	05/23/08	D 2937	**80.0**	**19.5**			D 698	S-6	83.4	23.6	95	**96**	H5	-7
112	05/27/08	D 2937	**80.2**	**23.8**	78.9	18.7	D 698	S-6	82.0	24.0	95	**98**	J4	-7
113	05/27/08	D 2937	**85.8**	**18.6**	83.1	15.7	D 698	S-8	89.5	21.0	95	**96**	J3	-7
114	05/27/08	D 2937	**85.1**	**15.9**			D 698	S-8	89.5	21.0	95	**95**	I5	-6
115	05/27/08	D 2937	**79.4**	**19.7**			D 698	S-6	82.0	24.0	95	**97**	I4	-6
116	05/28/08	D 2937	**97.5**	**17.1**	96.9	14.7	D 698	S-5	98.0	19.5	95	**100**	I2 Slope	-2
117	05/28/08	D 2937	**98.1**	**17.6**			D 698	S-5	98.0	19.5	95	**100**	J2 Slope	-2
118	05/29/08	D 2937	**83.7**	**15.8**	83.5	14.4	D 698	S-8	89.0	19.5	95	**94 ***	I3	-6
119	05/29/08	D 2937	**86.7**	**18.1**	84.7	16.3	D 698	S-8	90.0	20.0	95	**96**	H6	-4
120	05/29/08	D 2937	**84.3**	**16.2**			D 698	S-8	89.0	19.5	95	**95**	H5	-4
121	05/29/08	D 2937	**85.4**	**16.5**			D 698	S-8	90.0	20.0	95	**95**	H4	-4
122	05/29/08	D 2937	**108.3**	**15.7**	107.7	13.0	D 698	S-1	111.8	15.9	95	**97**	K4 Roadway	-3
123	05/29/08	D 2937	**107.3**	**14.0**			D 698	S-1	111.8	15.9	95	**96**	K5 Roadway	-2
124	05/29/08	D 2937	**86.1**	**17.2**			D 698	S-8	90.0	20.0	95	**96**	J2 Slope	-1
125	05/29/08	D 2937	**87.0**	**18.5**			D 698	S-8	90.0	20.0	95	**97**	I1 Roadway	-3
126	05/30/08	D 2937	**84.8**	**16.7**	83.1	14.2	D 698	S-8	89.0	19.0	95	**95**	Retest of #118	-6

* = Failed Specified Compaction, ** = Failed Specified Moisture Content

All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.	Cedric Ruhl	Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
127	05/30/08	D 2937	**85.5**	**14.9**			D 698	S-8	89.0	19.0	95	**96**	G5	-2
128	05/30/08	D 2937	**83.6**	**14.0**			D 698	S-8	89.0	19.0	95	**94 ***	G4	-3
129	05/30/08	D 2937	**85.4**	**15.1**			D 698	S-8	89.0	19.0	95	**96**	J5	-1
130	05/30/08	D 2937	**87.6**	**18.9**			D 698	S-8	89.0	19.0	95	**98**	J4	-6
131	05/30/08	D 2937	**100.2**	**14.9**	100.4	14.9	D 698	S-3	105.5	18.5	95	**95**	K5 Roadway	-1
132	05/30/08	D 2937	**103.6**	**18.4**			D 698	S-3	105.5	18.5	95	**98**	K4 Roadway	-2
133	05/30/08	D 2937	**101.6**	**16.7**			D 698	S-3	105.5	18.5	95	**96**	K3 Roadway	-2
134	05/30/08	D 2937	**86.9**	**16.9**			D 698	S-8	89.0	19.0	95	**98**	J3	-6
135	05/30/08	D 2937	**85.8**	**14.5**			D 698	S-8	89.0	19.0	95	**96**	I6	-5
136	05/30/08	D 2937	**92.1**	**20.9**	91.5	19.4	D 698	S-7	94.6	21.8	95	**97**	I5	-5
137	05/30/08	D 2937	**91.5**	**19.8**			D 698	S-7	94.6	21.8	95	**97**	I4	-5
138	05/31/08	D 2937	**87.1**	**16.8**	85.6	14.0	D 698	S-8	90.0	18.8	95	**97**	I3	-5
139	05/31/08	D 2937	**87.3**	**18.3**			D 698	S-8	90.0	18.8	95	**97**	H6	-3
140	05/31/08	D 2937	**90.9**	**22.2**	89.0	18.4	D 698	S-8	90.2	19.3	95	**100+**	H5	-3
141	05/31/08	D 2937	**85.9**	**15.5**			D 698	S-8	90.0	18.8	95	**95**	H4	-3
142	05/31/08	D 2937	**87.9**	**19.9**			D 698	S-8	90.0	18.8	95	**98**	G5	-1
143	05/31/08	D 2937	**86.5**	**15.9**			D 698	S-8	90.0	18.8	95	**96**	Retest of 128	-3
144	06/02/08	D 2937	**93.6**	**20.5**	93.9	18.0	D 698	S-7	95.0	22.0	95	**99**	J1	-8
145	06/02/08	D 2937	**91.5**	**21.1**			D 698	S-7	95.0	22.0	95	**96**	J1	-6

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
146	06/02/08	D 2937	**91.7**	**21.1**			D 698	S-7	95.0	22.0	95	**97**	J1	-4
147	06/02/08	D 2937	**91.1**	**19.5**			D 698	S-7	95.0	22.0	95	**96**	J3	-5
148	06/02/08	D 2937	**88.7**	**17.5**	88.3	16.3	D 698	S-8	90.2	19.3	95	**98**	I3	-4
149	06/02/08	D 2937	**89.1**	**17.8**			D 698	S-8	90.2	19.3	95	**99**	J4	-5
150	06/02/08	D 2937	**93.3**	**20.1**			D 698	S-7	95.0	22.0	95	**98**	I4	-4
151	06/02/08	D 2937	**90.3**	**18.4**			D 698	S-8	90.2	19.3	95	**100**	I5	-4
152	06/02/08	D 2937	**90.4**	**19.7**			D 698	S-8	90.2	19.3	95	**100**	I6	-4
153	06/02/08	D 2937	**89.2**	**18.2**			D 698	S-8	90.2	19.3	95	**99**	J3	-4
154	06/02/08	D 2937	**89.4**	**17.1**			D 698	S-8	90.2	19.3	95	**99**	J4	-4
155	06/03/08	D 2937	**97.1**	**19.2**	95.3	16.6	D 698	S-5	96.8	19.5	95	**100**	J3	-3
156	06/03/08	D 2937	**88.5**	**16.7**	86.6	13.7	D 698	S-8	90.5	20.0	95	**98**	I3	-3
157	06/03/08	D 2937	**89.7**	**18.5**			D 698	S-8	90.5	20.0	95	**99**	J4	-3
158	06/03/08	D 2937	**87.4**	**16.3**			D 698	S-8	90.5	20.0	95	**97**	I4	-3
159	06/03/08	D 2937	**89.4**	**17.2**			D 698	S-8	90.5	20.0	95	**99**	I5	-3
160	06/03/08	D 2937	**99.7**	**21.2**			D 698	S-3	105.0	18.8	95	**95**	I6	-3
161	06/03/08	D 2937	**101.5**	**19.6**	100.3	16.6	D 698	S-3	105.0	18.8	95	**97**	J3	-2
162	06/03/08	D 2937	**96.6**	**18.1**			D 698	S-5	96.8	19.5	95	**100**	I3	-2
163	06/03/08	D 2937	**87.8**	**16.0**			D 698	S-8	90.5	20.0	95	**97**	J4	-2
164	06/03/08	D 2937	**86.9**	**15.1**			D 698	S-8	90.5	20.0	95	**96**	I4	-2

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Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.	Cedric Ruhl	Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
165	06/04/08	D 2937	**97.0**	**18.0**	96.2	16.4	D 698	S-5	97.5	19.8	95	**100**	J3	-1
166	06/04/08	D 2937	**89.6**	**16.3**	85.3	12.6	D 698	S-8	91.5	19.0	95	**98**	I3	-1
167	06/04/08	D 2937	**87.6**	**15.0**			D 698	S-8	91.5	19.0	95	**96**	J4	-1
168	06/04/08	D 2937	**89.4**	**17.7**			D 698	S-8	91.5	19.0	95	**98**	I4	-1
169	06/04/08	D 2937	**104.6**	**17.6**	103.8	14.1	D 698	S-3	107.0	19.0	95	**98**	I1 Roadway	-2
170	06/04/08	D 2937	**92.7**	**21.0**	91.4	18.3	D 698	S-7	94.6	21.8	95	**98**	I1 Roadway	-1
171	06/05/08	D 2937	**92.6**	**17.0**	87.0	14.6	D 698	S-8	92.0	19.5	95	**100+**	H4	-2
172	06/05/08	D 2937	**90.2**	**18.2**	85.7	14.9	D 698	S-8	91.0	20.0	95	**99**	G4	-2
173	06/05/08	D 2937	**90.1**	**17.7**			D 698	S-8	91.0	20.0	95	**99**	H5	-2
174	06/05/08	D 2937	**89.7**	**16.9**			D 698	S-8	91.0	20.0	95	**99**	I5	-2
175	06/05/08	D 2937	**89.4**	**15.9**			D 698	S-8	91.0	20.0	95	**98**	I6	-2
176	06/05/08	D 2937	**89.2**	**17.0**			D 698	S-8	91.0	20.0	95	**98**	H6	-2
177	06/05/08	D 2937	**90.1**	**15.0**			D 698	S-8	91.0	20.0	95	**99**	I2 slope	-1
178	06/05/08	D 2937	**88.8**	**17.3**			D 698	S-8	91.0	20.0	95	**98**	J2 slope	SG
179	06/05/08	D 2937	**94.3**	**21.4**	91.2	16.9	D 698	S-7	95.0	22.0	95	**99**	J1	-3
180	06/05/08	D 2937	**93.2**	**20.1**			D 698	S-7	95.0	22.0	95	**98**	J1	-2
181	06/06/08	D 2937	**100.3**	**18.1**	97.3	14.2	D 698	S-3	105.0	18.4	95	**95**	J1	-1
182	06/06/08	D 2937	**97.6**	**20.4**	95.1	15.2	D 698	S-5	97.0	20.0	95	**100+**	I2	SG
183	06/06/08	D 2937	**100.8**	**14.7**			D 698	S-3	105.0	18.4	95	**96**	J3	SG

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
184	06/06/08	D 2937	**99.8**	**14.4**			D 698	S-3	105.0	18.4	95	**95**	I3	SG
185	06/06/08	D 2937	**90.2**	**18.9**	87.5	15.0	D 698	S-8	91.0	20.5	95	**99**	J4	SG
186	06/06/08	D 2937	**88.0**	**16.3**			D 698	S-8	91.0	20.5	95	**97**	I4	SG
187	06/06/08	D 2937	**101.9**	**19.7**			D 698	S-3	105.0	18.4	95	**97**	J5	SG
188	06/07/08	D 2937	**89.6**	**15.8**	87.9	15.8	D 698	S-8	90.5	19.5	95	**99**	H1 Rdwy.	-3
189	06/07/08	D 2937	**101.9**	**17.1**	99.0	14.5	D 698	S-3	105.5	19.0	95	**97**	H1 slope	-2
190	06/07/08	D 2937	**89.4**	**16.2**			D 698	S-8	90.5	19.5	95	**99**	G2	-1
191	06/07/08	D 2937	**89.4**	**16.4**			D 698	S-8	90.5	19.5	95	**99**	H4	-1
192	06/07/08	D 2937	**90.3**	**18.0**			D 698	S-8	90.5	19.5	95	**100**	G4	-1
193	06/07/08	D 2937	**90.5**	**17.3**			D 698	S-8	90.5	19.5	95	**100**	F3 slope	-3
194	06/07/08	D 2937	**92.3**	**20.0**	91.1	18.0	D 698	S-7	94.6	21.8	95	**98**	F3 slope	-2
195	06/09/08	D 2937	**89.5**	**20.4**	88.4	18.5	D 698	S-7	94.0	23.0	95	**95**	F4 Slope	-4
196	06/09/08	D 2937	**86.3**	**16.6**	86.1	15.1	D 698	S-8	90.0	19.0	95	**96**	G4 Slope	-4
197	06/09/08	D 2937	**86.0**	**15.0**			D 698	S-8	90.0	19.0	95	**96**	G3 Slope	-4
198	06/09/08	D 2937	**91.1**	**21.7**			D 698	S-7	94.0	23.0	95	**97**	I5	-1
199	06/09/08	D 2937	**91.7**	**22.1**			D 698	S-7	94.0	23.0	95	**98**	H5	-1
200	06/09/08	D 2937	**87.1**	**17.1**			D 698	S-8	90.0	19.0	95	**97**	I6	-1
201	06/09/08	D 2937	**102.4**	**17.1**	99.4	13.4	D 698	S-3	105.5	18.5	95	**97**	H6	-1
202	06/09/08	D 2937	**85.5**	**18.5**			D 698	S-8	90.0	19.0	95	**95**	F4 Slope	-3

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.
Name (Technical Responsibility)

Signature

Staff Professional
Position

S&ME, Inc. 9751 So. Pine Blvd., Charlotte, NC 28273 (704) 523-4726 Fax (704) 525-3953

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
203	06/09/08	D 2937	**86.8**	**19.1**			D 698	S-8	90.0	19.0	95	**96**	G4 Slope	-3
204	06/09/08	D 2937	**87.4**	**19.9**			D 698	S-8	90.0	19.0	95	**97**	G3 Slope	-3
205	06/10/08	D 2937	**89.3**	**17.3**	87.8	15.3	D 698	S-8	90.8	19.0	95	**98**	I5	SG
206	06/10/08	D 2937	**86.8**	**15.6**			D 698	S-8	90.8	19.0	95	**96**	H4	SG
207	06/10/08	D 2937	**87.0**	**18.5**			D 698	S-8	90.8	19.0	95	**96**	H5	SG
208	06/10/08	D 2937	**95.4**	**19.7**	93.8	17.5	D 698	S-5	97.0	20.0	95	**98**	G4	SG
209	06/10/08	D 2937	**88.8**	**17.4**			D 698	S-8	90.8	19.0	95	**98**	F4 Slope	-2
210	06/10/08	D 2937	**91.4**	**26.9**	90.4	25.0	D 698	S-2	92.5	28.0	95	**99**	G4 Slope	-2
211	06/10/08	D 2937	**95.2**	**19.3**			D 698	S-5	97.0	20.0	95	**98**	G3 Slope	-2
212	06/10/08	D 2937	**101.0**	**17.7**	96.5	14.5	D 698	S-3	105.0	19.0	95	**96**	F3 Slope	-1
213	06/10/08	D 2937	**94.8**	**17.0**			D 698	S-5	97.0	20.0	95	**98**	G3 Slope	-1
214	06/10/08	D 2937	**101.5**	**18.2**			D 698	S-3	105.0	19.0	95	**97**	F4 Slope	-1
215	06/10/08	D 2937	**95.6**	**16.1**			D 698	S-5	97.0	20.0	95	**99**	G4 Slope	-1
216	06/11/08	D 2937	**95.2**	**17.9**	94.4	15.5	D 698	S-5	97.0	19.5	95	**98**	G5	SG
217	06/11/08	D 2937	**90.4**	**20.2**	91.9	14.0	D 698	S-8	93.5	19.0	95	**97**	H6	SG
218	06/11/08	D 2937	**89.0**	**17.8**			D 698	S-8	93.5	19.0	95	**95**	I6	SG
219	06/11/08	D 2937	**88.5**	**16.8**			D 698	S-8	93.5	19.0	95	**95**	F4 Slope	SG
220	06/11/08	D 2937	**89.5**	**18.4**			D 698	S-8	93.5	19.0	95	**96**	G4 Slope	SG
221	06/11/08	D 2937	**89.1**	**18.9**			D 698	S-8	93.5	19.0	95	**95**	F3 Slope	SG

* = Failed Specified Compaction, ** = Failed Specified Moisture Content

All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

S&ME, Inc. 9751 So. Pine Blvd., Charlotte, NC 28273 (704) 523-4726 Fax (704) 525-3953

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
222	06/11/08	D 2937	**88.7**	**16.1**			D 698	S-8	93.5	19.0	95	**95**	G3 Slope	SG
223	06/11/08	D 2937	**95.8**	**18.8**			D 698	S-5	97.0	19.5	95	**99**	E7	-4
224	06/11/08	D 2937	**94.3**	**16.7**			D 698	S-5	97.0	19.5	95	**97**	F7	-4
225	06/11/08	D 2937	**95.4**	**17.0**			D 698	S-5	97.0	19.5	95	**98**	F8	-4
226	06/12/08	D 2937	**83.3**	**13.9**	82.0	13.9	D 698	S-8	90.2	19.3	95	**92 ***	E7 Slope	-3
227	06/12/08	D 2937	**86.0**	**16.7**			D 698	S-8	90.2	19.3	95	**95**	F7 Slope	-3
228	06/12/08	D 2937	**83.9**	**14.3**			D 698	S-8	90.2	19.3	95	**93 ***	F8 Slope	-3
229	06/12/08	D 2937	**86.2**	**15.5**			D 698	S-8	90.2	19.3	95	**96**	Retest of 226	-3
230	06/12/08	D 2937	**86.6**	**15.1**			D 698	S-8	90.2	19.3	95	**96**	Retest of 228	-3
231	06/12/08	D 2937	**81.8**	**20.6**	82.2	15.3	D 698	S-6	83.0	21.5	95	**99**	F-7	-2
232	06/12/08	D 2937	**97.7**	**23.7**	94.3	19.4	D 698	S-7	96.0	21.5	95	**100+**	F-8	-2
233	06/12/08	D 2937	**75.8**	**20.8**	75.6	18.0	D 698	S-6	78.0	23.5	95	**97**	J-5	-7
234	06/12/08	D 2937	**75.9**	**20.9**	75.6	18.0	D 698	S-6	78.2	23.5	95	**97**	J-6	-6
235	06/12/08	D 2937	**82.8**	**18.0**			D 698	S-6	83.0	21.5	95	**100**	E-6	-3
236	06/12/08	D 2937	**83.2**	**18.7**			D 698	S-6	83.0	21.5	95	**100**	F-6	-2
237	06/13/08	D 2937	**77.0**	**22.4**	73.3	17.0	D 698	S-6	77.0	23.5	95	**100**	E-6	-1
238	06/13/08	D 2937	**77.5**	**22.4**			D 698	S-6	77.0	23.5	95	**100+**	F-6	-1
239	06/13/08	D 2937	**81.9**	**17.9**	79.6	15.7	D 698	S-6	83.4	22.0	95	**98**	F-8	-2
240	06/13/08	D 2937	**81.5**	**17.9**			D 698	S-6	83.4	22.0	95	**98**	E-7	-2

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Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
241	06/13/08	D 2937	79.9	19.9	75.1	17.6	D 698	S-6	79.2	23.5	95	100+	E-6	-2
242	06/13/08	D 2937	96.9	20.5			D 698	S-5	97.0	20.0	95	100	J-7	-8
243	06/13/08	D 2937	86.7	19.5			D 698	S-6	83.4	23.6	95	100+	J-5	-6
244	06/16/08	D 2937	77.1	21.2	76.3	21.2	D 698	S-9	80.0	25.0	95	96	E6	SG
245	06/16/08	D 2937	89.1	21.6	87.5	17.7	D 698	S-8	90.0	20.0	95	99	E7	-1
246	06/16/08	D 2937	78.2	23.4			D 698	S-9	80.0	25.0	95	98	F6	SG
247	06/16/08	D 2937	87.8	19.5			D 698	S-8	90.0	20.0	95	98	F7	-1
248	06/16/08	D 2937	86.3	17.9			D 698	S-8	90.0	20.0	95	96	J5	-5
249	06/16/08	D 2937	85.2	16.5			D 698	S-8	90.0	20.0	95	95	J6	-5
250	06/16/08	D 2937	86.8	17.0			D 698	S-8	90.0	20.0	95	96	J7	-7
251	06/17/08	D 2937	78.9	18.8	77.4	18.8	D 698	S-9	81.0	23.0	95	97	J7	-6
252	06/17/08	D 2937	79.9	20.5			D 698	S-9	81.0	23.0	95	99	J6	-4
253	06/17/08	D 2937	80.4	20.1			D 698	S-9	81.0	23.0	95	99	J5	-4
254	06/17/08	D 2937	79.4	19.7			D 698	S-9	81.0	23.0	95	98	J7	-5
255	06/18/08	D 2937	78.4	19.0	78.4	16.7	D 698	S-9	82.5	22.5	95	95	J5	-4
256	06/18/08	D 2937	88.7	17.6	88.8	16.2	D 698	S-8	90.0	19.0	95	99	J5	-3
257	06/18/08	D 2937	82.7	20.9			D 698	S-6	83.4	23.6	95	99	J6	-3
258	06/18/08	D 2937	82.7	20.0			D 698	S-6	83.4	23.6	95	99	J6	-4
259	06/18/08	D 2937	75.7	18.1			D 698	S-8	90.0	19.0	95	84 *	J7	-4

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Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.
Name (Technical Responsibility)

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Signature

Staff Professional
Position

S&ME, Inc. 9751 So. Pine Blvd., Charlotte, NC 28273 (704) 523-4726 Fax (704) 525-3953

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
260	06/18/08	D 2937	**89.7**	**20.0**			D 698	S-8	90.2	19.3	95	**99**	Retest of 259	-4
261	06/18/08	D 2937	**78.6**	**20.4**	75.5	17.6	D 698	S-9	80.5	24.5	95	**98**	J6	-2
262	06/19/08	D 2937	**86.6**	**16.7**	85.3	14.9	D 698	S-8	88.5	20.0	95	**98**	J6	-7
263	06/20/08	D 2937	**79.9**	**21.4**	77.3	18.1	D 698	S-6	83.0	24.5	95	**96**	J7	-2
264	06/20/08	D 2937	**79.8**	**21.4**			D 698	S-6	83.0	24.5	95	**96**	J7	-2
265	06/20/08	D 2937	**82.4**	**18.7**	83.7	16.7	D 698	S-8	87.0	22.0	95	**95**	Undercut area on N-slope center of undercut, D4	-2
266	06/21/08	D 2937	**86.2**	**20.0**	88.9	17.1	D 698	S-8	90.0	19.0	95	**96**	J6	-4
267	06/21/08	D 2937	**86.0**	**16.7**			D 698	S-8	90.0	19.0	95	**96**	K5	-3
268	06/21/08	D 2937	**90.0**	**19.0**			D 698	S-8	90.0	19.0	95	**100**	J6	-3
269	06/21/08	D 2937	**85.2**	**19.0**			D 698	S-8	90.0	19.0	95	**95**	J7	-1
270	06/24/08	D 2937	**88.2**	**14.9**		15.8	D 698	S-8	90.2	19.3	95	**98**	I8	-5
271	06/24/08	D 2937	**89.0**	**18.5**			D 698	S-8	90.2	19.3	95	**99**	I8	-6
272	06/24/08	D 2937	**93.8**	**17.6**			D 698	S-7	102.0	17.5	90	**92**	Anchor Trench SW	-1
273	06/24/08	D 2937	**94.7**	**16.7**			D 698	S-7	102.0	17.5	90	**93**	Anchor Trench SW	-1.5
274	06/25/08	D 2937	**96.8**	**21.9**	106.1	16.2	D 698	S-3	107.5	17.0	90	**90**	Anchor Trench	-1
275	06/25/08	D 2937	**77.5**	**20.4**			D 698	S-9	79.5	24.9	95	**97**	J6	-2
276	06/25/08	D 2937	**80.6**	**20.4**			D 698	S-6	83.4	23.6	95	**97**	I7	-3
277	06/25/08	D 2937	**89.5**	**19.0**			D 698	S-7	94.6	21.8	95	**95**	I7	-4
278	06/25/08	D 2937	**77.4**	**19.0**			D 698	S-9	79.5	24.9	95	**97**	J5	-1

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Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
279	06/25/08	D 2937	78.6	18.5			D 698	S-9	79.5	24.9	95	99	South-W slope 5-J	SG
280	06/25/08	D 2937	84.2	15.8	96.7	13.2	D 698	S-9	98.0	16.5	90	86 *	Anchor Trench, material removed	-1.5
281	06/25/08	D 2937	86.7	14.9	97.1	14.9	D 698	S-9	98.0	16.5	90	88 *	Anchor Trench, material removed	-1.5
282	06/26/08	D 2937	0.0	20.4			D 698	S-2			90	0 *	Moisture test for Trench Backfill	Borrow Pit
283	06/26/08	D 2937	77.9	19.0	76.3	19.0	D 698	S-8	81.0	24.5	95	96	F7	SG
284	06/26/08	D 2937	78.8	19.0			D 698	S-8	81.0	24.5	95	97	E7	SG
285	06/26/08	D 2937	85.1	21.9	89.1	21.9	D 698	S-2	92.0		90	93	Anchor Trench Station 44+00	-2
286	06/27/08	D 2937	90.4	23.4	89.5	22.4	D 698	S-2	91.5	27.5	90	99	Anchor Trench station 36+50	-1
287	06/27/08	D 2937	87.8	25.0			D 698	S-2	91.5	27.5	90	96	F7	-1
288	06/28/08	D 2937	84.0	29.8	89.0	23.4	D 698	S-2	91.5	27.5	90	92	Anchor Trench station 36+25	-2
289	06/28/08	D 2937	84.2	29.3			D 698	S-2	91.5	27.5	90	92	Anchor Trench station 37+00	-2
290	06/28/08	D 2937	87.1	28.2			D 698	S-2	91.5	27.5	90	95	Anchor Trench station 35+00	-2
291	06/30/08	D 2937	85.8	35.1	93.2	25.5	D 698	S-2	93.5	26.5	90	92	Anchor Trench K-2 station 33+90	-1
292	06/30/08	D 2937	87.9	26.5	92.9	25.0	D 698	S-2	93.5	26.5	90	94	Anchor Trench K-1 station 32+00	-2
293	06/30/08	D 2937	86.3	28.7			D 698	S-2	93.5	26.5	90	92	Anchor Trench K3, station 31+50	-1
294	06/30/08	D 2937	0.0	28.7			D 698	S-2			90	0 *	Moisture check	
295	06/30/08	D 2937	89.1	28.2			D 698	S-2	93.5	26.5	90	95	Anchor Trench I-1 station 30+50	-1
296	07/01/08	D 2937	0.0	24.4			D 698	S-2			90	0 *	Moisture tests for S-1 slope	
297	07/01/08	D 2937	81.1	28.7	84.2	25.0	D 698	S-13	85.0	28.0	90	95	Anchor Trench I-1 station 30+50	-1

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Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.	Cedric Ruhl	Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
298	07/01/08	D 2937	**82.6**	**26.5**	86.4	22.9	D 698	S-13	87.0	26.0	90	**95**	Anchor Trench H-1 station 29+50	-2
299	07/02/08	D 2937	**80.6**	**27.1**	86.1	21.9	D 698	S-13	87.0	26.0	90	**93**	Anchor Trench H-1 station37+50	-2
300	07/02/08	D 2937	**85.7**	**21.9**			D 698	S-13	87.0	26.0	90	**99**	Anchor Trench H-1 station 26+50	-1
301	07/02/08	D 2937	**84.7**	**22.4**			D 698	S-13	87.0	26.0	90	**97**	Anchor Trench G2, station 25+50	-2
302	07/03/08	D 2937	**88.8**	**26.5**	88.8	25.0	D 698	S-2	90.0	28.0	90	**99**	Anchor Trench G-2 station 24+50	-2
303	07/03/08	D 2937	**82.2**	**31.0**			D 698	S-2	90.0	28.0	90	**91**	Anchor Trench F-2 station 23+50	-2
304	07/03/08	D 2937	**85.3**	**28.7**			D 698	S-2	90.0	28.0	90	**95**	Anchor Trench F-2 station 22+50	-1
305	07/03/08	D 2937	**87.5**	**27.6**			D 698	S-2	90.0	28.0	90	**97**	Anchor Trench F-2 station 22+50	-2
306	07/07/08	D 2937	**86.5**	**25.2**	86.1	21.9	D 698	S-15	88.5	26.5	95	**98**	J5	SG
307	07/07/08	D 2937	**73.2**	**22.4**	83.4	17.6	D 698	S-13	85.0	27.0	95	**86 ***	J4	SG
307A	07/08/08	D 2937	**75.6**	**16.9**	77.4	14.2	D 698	S-13	84.8	24.8	95	**89 ***	Retest for 307	SG
307B	07/09/08	D 2937	**78.7**	**21.1**	83.9	16.9	D 698	S-13	87.5	22.5	95	**90 ***	Retest for 307	SG
307C	07/14/08	D 2937	**84.0**	**19.5**	85.9	17.6	D 698	S-13	89.0	23.5	95	**94 ***	Retest for 307	SG
307D	07/15/08	D 2937	**83.6**	**24.0**	81.3	22.2	D 698	S-13	87.5	27.0	95	**95**	Retest for 307	SG
308	07/07/08	D 2937	**74.1**	**23.9**	92.4	20.4	D 698	S-13	93.5	23.5	95	**79 ***	K4	SG
308A	07/08/08	D 2937	**73.0**	**23.2**	84.9	19.0	D 698	S-15	88.0	26.0	95	**83 ***	Retest for 308	SG
308B	07/08/08	D 2937	**73.3**	**25.7**	83.6	20.9	D 698	S-15	87.0	27.0	95	**84 ***	Retest for 308	SG
308C	07/08/08	D 2937	**82.4**	**25.7**	88.7	20.0	D 698	S-15	90.8	23.8	95	**91 ***	Retest for 308	SG
308D	07/09/08	D 2937	**78.8**	**22.6**	85.1	16.7	D 698	S-15	90.0	22.5	95	**88 ***	Retest for 308	SG

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References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
308E	07/14/08	D 2937	**80.8**	**21.2**	83.7	19.0	D 698	S-13	87.0	25.5	95	**93 ***	Retest for 308	SG
308F	07/15/08	D 2937	**85.7**	**25.4**	84.8	23.2	D 698	S-15	90.4	26.0	95	**95**	Retest for 308	SG
309	07/07/08	D 2937	**83.6**	**20.4**	87.4	21.9	D 698	S-15	88.0	25.5	95	**95**	K3	SG
309A	07/15/08	D 2937	**85.5**	**23.7**			D 698	S-15	90.4	26.0	95	**95**	Retest for 309	SG
310	07/07/08	D 2937	**83.8**	**22.4**			D 698	S-15	88.0	25.5	95	**95**	K2	SG
311	07/09/08	D 2937	**82.6**	**22.0**	84.3	20.9	D 698	S-13	87.0	25.0	95	**95**	J2	SG
312	07/10/08	D 2937	**86.7**	**22.1**	91.0	18.3	D 698	S-16	92.7	23.5	95	**94 ***	H2	SG
312A	07/15/08	D 2937	**95.4**	**18.4**			D 698	S-12	100.6	18.0	95	**95**	Retest for 312	SG
312B	07/16/08	D 2937	**85.2**	**20.0**	92.4	18.4	D 698	S-16	94.5	22.0	95	**90 ***	Retest for 312	SG
312C	07/16/08	D 2937	**84.3**	**27.8**	86.4	19.7	D 698	S-13	87.0	24.0	95	**97**	Retest for 312	SG
313	07/10/08	D 2937	**82.6**	**20.9**	82.7	19.0	D 698	S-13	86.5	24.0	95	**95**	J1	SG
314	07/11/08	D 2937	**89.0**	**24.1**	89.0	18.3	D 698	S-15	90.8	22.0	95	**98**	I1	SG
315	07/11/08	D 2937	**90.8**	**16.7**	88.4	16.7	D 698	S-8	90.0	19.3	95	**100+**	G9	-2
316	07/11/08	D 2937	**86.2**	**19.0**	87.1	18.1	D 698	S-8	88.0	20.5	95	**98**	G9	-1
317	07/11/08	D 2937	**81.7**	**17.7**	74.5	17.7	D 698	S-6	83.0	23.0	95	**98**	G8 closure repair	-11
318	07/11/08	D 2937	**84.5**	**19.8**	81.0	19.8	D 698	S-6	84.0	23.0	95	**100+**	G8 closure repair	-10
319	07/11/08	D 2937	**84.2**	**19.7**			D 698	S-6	84.0	23.0	95	**100**	G8 closure repair	-9
320	07/11/08	D 2937	**85.7**	**23.7**			D 698	S-6	84.0	23.0	95	**100+**	G9 closure repair	-7
321	07/11/08	D 2937	**84.6**	**22.3**			D 698	S-6	84.0	23.0	95	**100+**	G9 closure repair	-6

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
322	07/11/08	D 2937	**84.4**	**22.0**			D 698	S-6	84.0	23.0	95	**100+**	G8 closure repair	-8
323	07/12/08	D 2937	**81.8**	**20.2**	83.3	19.5	D 698	S-13	86.2	25.5	95	**95**	G8 closure repair	SG
324	07/12/08	D 2937	**82.0**	**25.5**	84.5	20.0	D 698	S-15	86.5	22.5	95	**95**	G8 closure repair	-1
325	07/12/08	D 2937	**91.1**	**18.2**	90.5	16.4	D 698	S-5	96.0	20.0	95	**95**	G9 closure repair	-5
326	07/12/08	D 2937	**93.0**	**20.8**			D 698	S-5	96.0	20.0	95	**97**	G9 closure repair	-7
327	07/12/08	D 2937	**83.2**	**22.2**	82.4	17.0	D 698	S-6	85.0	24.0	95	**98**	G8 closure repair	-6
328	07/12/08	D 2937	**83.4**	**26.8**			D 698	S-6	85.0	24.0	95	**98**	G9 closure repair	-5
329	07/12/08	D 2937	**86.9**	**20.9**	85.8	17.2	D 698	S-8	90.0	20.2	95	**97**	G8 Closure repair	-4
330	07/12/08	D 2937	**85.6**	**18.5**			D 698	S-8	90.0	20.2	95	**95**	G8 closure repair	-3
331	07/12/08	D 2937	**86.0**	**19.1**			D 698	S-8	90.0	20.2	95	**96**	G8 closure repair	-2
332	07/14/08	D 2937	**79.4**	**20.7**	77.6	20.7	D 698	S-6	83.5	24.0	95	**95**	G8 closure slope repair	-1
332A	07/14/08	D 2937	**81.6**	**22.5**			D 698	S-6	83.5	24.0	95	**98**	G8 closure repair	SG
333	07/14/08	D 2937	**96.4**	**13.3**	98.9	13.3	D 698	S-12	100.8	17.6	95	**96**	G8 closure repair	SG
334	07/14/08	D 2937	**95.4**	**11.7**			D 698	S-12	100.8	17.6	95	**95**	G8 closure repair	SG
335	07/15/08	D 2937	**87.2**	**28.0**	89.2	22.6	D 698	S-15	90.7	25.0	90	**96**	Anchor trench station 21+55	-1
336	07/15/08	D 2937	**89.0**	**25.0**	89.8	22.4	D 698	S-15	90.7	25.0	90	**98**	Anchor trench station 20+55	-2
337	07/15/08	D 2937	**93.1**	**25.1**	90.5	20.2	D 698	S-15	92.8	23.5	90	**100**	Anchor trench station 19+50	-2
338	07/15/08	D 2937	**92.1**	**25.5**	90.5	20.2	D 698	S-15	92.8	22.5	90	**99**	Anchor trench station 18+50	-1
339	07/15/08	D 2937	**84.6**	**26.3**	89.0	22.9	D 698	S-15	89.5	25.0	90	**95**	Anchor trench station 17+75	-1

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project Name: Duke Pine Hall Road- CM/CQA

Project No.: 1356-07-017

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
340	07/16/08	D 2937	**83.7**	**27.9**	85.4	23.9	D 698	S-17	86.2	26.0	90	**97**	Anchor trench D-5 station 16+25	-2
341	07/16/08	D 2937	**86.8**	**28.2**	85.4	23.9	D 698	S-13	86.2	26.0	90	**100+**	Anchor trench D-5 station 16+00	-1
342	07/17/08	D 2937	**90.9**	**20.1**	91.4	15.8	D 698	S-16	94.8	22.0	95	**96**	G3	SG
343	07/17/08	D 2937	**92.4**	**22.5**	91.4	15.8	D 698	S-16	94.8	22.0	95	**97**	G2	SG
344	07/17/08	D 2937	**81.4**	**29.0**	84.1	24.7	D 698	S-13	85.2	27.0	90	**95**	Anchor trench @ station 14+50	-2
345	07/17/08	D 2937	**91.4**	**22.4**	89.3	20.2	D 698	S-15	92.0	23.0	90	**99**	Anchor trench @ station 15+50	-1
346	07/17/08	D 2937	**90.5**	**22.9**	89.3	20.2	D 698	S-15	92.0	23.0	90	**98**	Anchor trench @ station 17+30	-1
347	07/18/08	D 2937	**84.3**	**26.5**	87.3	23.3	D 698	S-15	88.5	25.8	90	**95**	Anchor trench @ station 13+20	-2
348	07/18/08	D 2937	**85.9**	**26.0**	86.6	23.9	D 698	S-15	87.5	26.5	90	**98**	Anchor trench @ station 12+00	-1
349	07/18/08	D 2937	**84.5**	**27.1**	86.6	23.9	D 698	S-15	87.5	26.5	90	**97**	Anchor trench @ 13+35	-1
350	07/21/08	D 2937	**96.3**	**17.2**	94.1	15.8	D 698	S-16	95.7	22.0	90	**100+**	Anchor Trench station 11+00	-1
351	07/21/08	D 2937	**96.0**	**16.7**			D 698	S-16	95.7	22.0	90	**100**	Anchor Trench station 10+00	SG
352	07/22/08	D 2937	**86.9**	**21.9**	90.6	21.9	D 698	S-13	93.0	25.0	95	**93 ***	G4	SG
353	07/22/08	D 2937	**94.1**	**21.1**	91.6	17.7	D 698	S-16	95.7	22.0	90	**98**	Anchor Trench station 9+00	-1
354	07/22/08	D 2937	**89.7**	**26.5**	88.6	23.4	D 698	S-15	90.7	25.0	90	**99**	Anchor Trench station 8+00	SG
355	07/22/08	D 2937	**90.6**	**26.0**	89.4	24.6	D 698	S-13	91.0	27.0	95	**100**	Retest of #352	SG
356	07/23/08	D 2937	**91.8**	**20.4**	96.3	18.3	D 698	S-16	96.8	20.5	95	**95**	F2	SG
357	07/23/08	D 2937	**90.0**	**21.7**	92.8	18.2	D 698	S-16	94.5	23.0	95	**95**	F3	SG
358	07/23/08	D 2937	**91.1**	**22.4**	90.1	18.1	D 698	S-16	93.3	23.0	95	**98**	F4	SG

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
359	07/23/08	D 2937	**93.1**	**20.7**	97.5	16.5	D 698	S-12	98.0	18.2	90	**95**	Anchor Trench @ station 8+50	-2
360	07/23/08	D 2937	**92.7**	**20.0**	93.6	18.1	D 698	S-15	95.5	21.8	90	**97**	Anchor Trench @ station 7+50	-1
361	07/24/08	D 2937	**87.9**	**26.5**	94.3	21.7	D 698	S-16	94.8	22.8	95	**93 ***	N. slope @ E-3	SG
361A	07/24/08	D 2937	**82.0**	**25.0**	83.2	20.0	D 698	S-13	86.4	25.0	95	**95**	R.T. 361 N. slope @ E-3	SG
362	07/24/08	D 2937	**93.1**	**20.4**	91.1	18.1	D 698	S-16	94.0	22.5	95	**99**	E4	SG
363	07/25/08	D 2937	**90.2**	**22.5**	90.3	18.1	D 698	S-16	93.5	23.0	95	**96**	D4	SG
364	09/02/08	D 2937	**85.2**	**23.6**	84.2	19.9	D 698	S-15	91.0	25.0	90	**94**	Anchor Trench sta. 4+00	SG
365	09/02/08	D 2937	**86.6**	**25.5**			D 698	S-15	91.0	25.0	90	**95**	Anchor Trench sta. 3+00	SG
366	09/02/08	D 2937	**86.3**	**25.2**			D 698	S-15	91.0	25.0	90	**95**	Anchor Trench sta. 2+00	SG
367	07/29/08	D 2937	**79.1**	**27.4**	84.3	18.3	D 698	S-13	90.0	25.3	95	**88 ***	E. Slope @ D-5	SG
367A	07/29/08	D 2937	**79.5**	**22.4**	83.6	18.1	D 698	S-13	90.0	25.3	95	**88 ***	Retest of 367	SG
367B	07/30/08	D 2937	**85.1**	**21.9**	87.6	16.2	D 698	S-13	90.0	20.0	95	**95**	Retest of 367	SG
368	07/29/08	D 2937	**89.6**	**19.1**	85.5	17.7	D 698	S-13	91.7	24.5	95	**98**	D5	SG
368A	07/30/08	D 2937	**87.0**	**24.7**	92.7	16.0	D 698	S-16	96.5	22.0	95	**90 ***	Retest of 368	SG
368B	07/30/08	D 2937	**85.2**	**23.9**			D 698	S-13	88.0	26.0	90	**97**	Retest of 368	SG
369	07/29/08	D 2937	**77.6**	**23.4**	79.8	18.1	D 698	S-13	90.0	25.3	90	**86 ***	Anchor Trench @ sta. 1+75	-2
369A	07/30/08	D 2937	**91.3**	**25.1**	90.8	23.0	D 698	S-2	95.0	27.0	90	**96**	Retest of #369	-1
370	07/29/08	D 2937	**90.4**	**24.4**	92.3	20.4	D 698	S-16	93.8	22.4	95	**96**	F5	SG
371	07/30/08	D 2937	**87.5**	**22.4**	83.1	17.1	D 698	S-13	86.0	27.0	90	**100+**	Anchor Trench @ sta. 42+00	-2

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
372	07/30/08	D 2937	**87.5**	**24.4**			D 698	S-13	86.0	27.0	90	**100+**	I2	-1
373	07/30/08	D 2937	**84.9**	**23.4**	83.8	22.2	D 698	S-13	88.0	26.0	90	**96**	E6	SG
374	07/30/08	D 2937	**91.6**	**20.0**	90.0	18.5	D 698	S-16	95.5	22.8	90	**96**	F6	SG
375	07/31/08	D 2937	**86.9**	**16.3**	93.6	10.1	D 698	S-16	97.0	15.0	95	**90 ***	E7	SG
375A	08/04/08	D 2937	**89.0**	**24.2**			D 698	S-13	88.0	26.0	95	**100+**	Retest of 375	-1
376	07/31/08	D 2937	**97.5**	**17.1**	100.4	14.0	D 698	S-12	101.0	16.0	95	**97**	F7	SG
377	07/31/08	D 2937	**88.0**	**23.4**	82.5	17.6	D 698	S-13	86.0	27.0	95	**100+**	Anchor Trench @ sta. 44+00	-2
378	08/01/08	D 2937	**93.9**	**20.0**	97.0	17.6	D 698	S-12	102.0	23.0	90	**92**	Anchor Trench @ sta. 43+00	-1
379	08/04/08	D 2937	**92.2**	**25.8**	91.0	21.1	D 698	S-15	93.0	25.0	95	**99**	G8	SG
380	08/04/08	D 2937	**89.4**	**23.0**	86.4	23.0	D 698	S-13	88.0	26.0	95	**100+**	F8	SG
381	08/04/08	D 2937	**90.0**	**18.0**	92.9	18.0	D 698	S-16	94.0	22.9	90	**96**	Anchor Trench sta. 45+00	-1
382	08/04/08	D 2937	**91.9**	**20.6**			D 698	S-16	94.0	22.9	90	**98**	Anchor Trench sta. 46+00	SG
383	08/05/08	D 2937	**95.8**	**19.0**	94.7	17.0	D 698	S-12	100.0	21.0	90	**96**	Anchor Trench sta. 0+00	-1
384	08/05/08	D 2937	**88.2**	**23.2**	89.0	23.2	D 698	S-15	92.0	26.0	90	**96**	Anchor Trench sta. 1+00	SG
385	08/05/08	D 2937	**83.3**	**24.7**	81.4	22.8	D 698	S-13	88.0	27.5	95	**95**	G9	SG
386	08/05/08	D 2937	**84.5**	**26.4**			D 698	S-13	88.0	27.5	95	**96**	F9	SG
387	08/06/08	D 2937	**88.7**	**24.2**	85.8	21.5	D 698	S-15	91.0	26.0	90	**97**	Anchor Trench sta. 47+50	-1
388	08/06/08	D 2937	**86.6**	**22.4**			D 698	S-15	91.0	26.0	90	**95**	Anchor Trench sta. 49+00	-1
389	08/06/08	D 2937	**89.2**	**24.6**			D 698	S-15	91.0	26.0	90	**98**	Anchor Trench sta. 50+50	SG

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

S&ME, Inc. 9751 So. Pine Blvd., Charlotte, NC 28273 (704) 523-4726 Fax (704) 525-3953

Summary of Density Test Results

Report Date: January 05, 2009

Project Name: Duke Pine Hall Road- CM/CQA

Project No.: 1356-07-017

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
390	08/11/08	D 2937	**84.2**	**23.0**	83.8	20.1	D 698	S-13	88.0	26.0	95	**96**	50'N of DI-1.@ side of pipe	-2
391	08/11/08	D 2937	**85.3**	**25.0**			D 698	S-13	88.0	26.0	95	**97**	25'N of DI-2 E side of pipe	-2
392	08/11/08	D 2937	**85.5**	**25.6**			D 698	S-13	88.0	26.0	95	**97**	75'N of DI-3 W side of pipe	-2
393	08/11/08	D 2937	**92.8**	**19.1**	91.3	19.1	D 698	S-16	96.0	22.0	95	**97**	J6	SG
394	08/11/08	D 2937	**93.0**	**19.3**			D 698	S-16	96.0	22.0	95	**97**	J7	SG
395	08/14/08	D 2937	**87.8**	**25.0**	86.5	23.3	D 698	S-15	91.0	25.8	95	**97**	G6	SG
396	08/14/08	D 2937	**86.4**	**23.7**			D 698	S-15	91.0	25.8	95	**95**	G7	SG
397	08/19/08	D 2937	**88.7**	**23.8**	86.2	21.3	D 698	S-13	89.5	25.5	95	**99**	J3	SG
398	08/19/08	D 2937	**87.4**	**23.0**			D 698	S-13	89.5	25.5	95	**98**	I3	SG
399	08/19/08	D 2937	**90.5**	**22.5**	86.2	15.7	D 698	S-15	91.4	25.0	95	**99**	I4	SG
400	08/19/08	D 2937	**92.2**	**21.0**	89.4	18.2	D 698	S-16	95.5	23.0	95	**97**	50'N of DI-4	-2
401	08/19/08	D 2937	**91.9**	**20.3**			D 698	S-16	95.5	23.0	95	**96**	15'N of DI-1	-1
402	08/19/08	D 2937	**90.5**	**25.8**			D 698	S-16	95.5	23.0	95	**95**	55'N of DI-2	-1
403	08/20/08	D 2937	**92.7**	**19.7**	92.5	18.1	D 698	S-15	96.0	22.0	95	**97**	50'E of DI-6	-2
404	08/20/08	D 2937	**91.9**	**18.6**			D 698	S-15	96.0	22.0	95	**96**	50'E of DI-7	-2
405	08/20/08	D 2937	**92.6**	**20.9**			D 698	S-16	96.0	22.0	95	**97**	25'E of DI-8	-2
406	08/20/08	D 2937	**92.0**	**19.0**			D 698	S-16	96.0	22.0	95	**96**	Retest of #404	-2
407	08/20/08	D 2937	**93.8**	**21.7**			D 698	S-16	96.0	22.0	95	**98**	20'E of DI-6	-1
408	08/20/08	D 2937	**92.5**	**19.5**			D 698	S-16	96.0	22.0	95	**96**	75'E of DI-7	-1

* = Failed Specified Compaction, ** = Failed Specified Moisture Content

All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
409	08/21/08	D 2937	**84.0**	**22.9**	83.0	20.9	D 698	S-13	87.7	25.7	95	**96**	25'N of DI-3	-1
410	08/21/08	D 2937	**93.3**	**18.8**	92.4	17.7	D 698	S-16	96.0	21.5	95	**97**	80'N of DI-4	-1
411	08/21/08	D 2937	**85.5**	**24.7**			D 698	S-13	87.7	25.7	95	**97**	75'N of DI-1	SG
412	08/21/08	D 2937	**89.1**	**24.1**	87.4	21.0	D 698	S-15	91.0	25.0	95	**98**	90'N of DI-2	SG
413	08/21/08	D 2937	**86.5**	**22.1**			D 698	S-15	91.0	25.0	95	**95**	50'N of DI-3	SG
414	08/21/08	D 2937	**85.4**	**24.2**			D 698	S-13	87.7	25.7	95	**97**	20'N of DI-4	SG
415	08/25/08	D 2937	**86.0**	**23.8**	84.4	23.1	D 698	S-15	90.7	25.0	95	**95**	H4	SG
416	08/25/08	D 2937	**87.3**	**25.5**			D 698	S-15	90.7	25.0	95	**96**	I5	SG
417	08/25/08	D 2937	**84.3**	**24.0**	82.0	20.5	D 698	S-13	88.0	26.0	95	**96**	10'E of DI-8	-1
418	08/25/08	D 2937	**83.6**	**23.0**			D 698	S-13	88.0	26.0	95	**95**	15'E of DI-6	SG
419	08/25/08	D 2937	**91.1**	**19.9**	91.8	17.4	D 698	S-16	96.0	21.0	95	**95**	25'E of DI-7	SG
420	08/25/08	D 2937	**84.9**	**25.5**			D 698	S-13	88.0	26.0	95	**97**	30'E of DI-8	SG
421	08/26/08	D 2937	**83.8**	**22.8**	84.1	22.8	D 698	S-13	87.7	25.7	95	**96**	G5	SG
422	08/26/08	D 2937	**86.9**	**24.0**	83.4	19.9	D 698	S-15	90.7	25.0	95	**96**	H5	SG
423	09/03/08	D 2937	**109.2**	**15.8**	104.7	9.6	D 698	S-14	108.0	17.0	95	**100+**	I6	SG
424	09/03/08	D 2937	**85.5**	**27.9**	84.4	24.9	D 698	S-13	87.3	27.8	95	**98**	H6	SG
425	09/03/08	D 2937	**88.3**	**21.8**	88.2	20.5	D 698	S-4	90.0	22.0	95	**98**	H7	SG
426	09/08/08	D 2937	**101.2**	**21.1**	97.5	16.2	D 698	S-11	101.0	19.0	95	**100**	H8	SG
427	09/08/08	D 2937	**89.7**	**25.9**	87.1	21.4	D 698	S-15	90.7	25.0	95	**99**	I7	SG

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
428	09/10/08	D 2937	**97.7**	**18.1**	95.8	14.4	D 698	S-12	101.0	18.0	95	**97**	I8	SG
429	09/10/08	D 2937	**99.3**	**20.2**			D 698	S-12	101.0	18.0	95	**98**	H9	SG
430	09/15/08	D 2937	**106.8**	**17.3**	106.1	14.1	D 698	S-14	106.8	16.9	95	**100**	I9	SG
431	09/15/08	D 2937	**84.4**	**23.8**	83.3	22.9	D 698	S-13	88.0	26.0	95	**96**	H10	SG
432	09/18/08	D 2937	**89.3**	**22.6**	88.4	20.6	D 698	S-19	93.5	24.0	95	**96**	25'S of DI-10	-2
433	09/18/08	D 2937	**90.2**	**24.8**			D 698	S-19	93.5	24.0	95	**96**	50'S of DI-10	-1
434	09/18/08	D 2937	**96.5**	**20.7**	95.1	17.8	D 698	S-23	99.0	21.5	95	**97**	75'S of DI-10	SG
435	09/20/08	D 2937	**85.3**	**28.8**	82.5	23.8	D 698	S-20	84.0	28.2	95	**100+**	15'E of DI-9	-3
436	09/22/08	D 2937	**90.6**	**22.5**	89.6	20.3	D 698	S-19	93.4	23.0	95	**97**	25'E of DI-9	-2
437	09/22/08	D 2937	**90.2**	**21.8**			D 698	S-19	93.4	23.0	95	**97**	45'E of DI-9	-1
438	10/01/08	D 2937	**94.9**	**20.4**	92.8	17.1	D 698	S-23	99.0	21.0	95	**96**	Station 7+00 Perimeter Road	SG
439	10/01/08	D 2937	**95.8**	**22.4**			D 698	S-23	99.0	21.0	95	**97**	Station 10+00 Perimeter Road	SG
440	10/14/08	D 2937	**100.3**	**17.1**	96.9	13.7	D 698	S-11	102.5	17.6	95	**98**	F9	-1
441	10/14/08	D 2937	**99.7**	**15.7**			D 698	S-11	102.5	17.6	95	**97**	E9	-1
442	10/14/08	D 2937	**100.8**	**19.3**			D 698	S-11	102.5	17.6	95	**98**	E8	-1
443	10/14/08	D 2937	**100.5**	**17.5**			D 698	S-11	102.5	17.6	95	**98**	E7	-1
444	10/20/08	D 2937	**91.6**	**20.5**	90.9	19.2	D 698	S-25	93.5	23.0	95	**98**	D8	-1
445	10/20/08	D 2937	**93.1**	**22.0**			D 698	S-25	93.5	23.0	95	**100**	F9	SG
446	10/20/08	D 2937	**98.7**	**16.5**	95.1	11.1	D 698	S-12	101.0	18.0	95	**98**	E9	SG

* = Failed Specified Compaction, ** = Failed Specified Moisture Content

All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

S&ME, Inc. 9751 So. Pine Blvd., Charlotte, NC 28273 (704) 523-4726 Fax (704) 525-3953

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
447	10/21/08	D 2937	**100.7**	**18.5**	98.8	14.1	D 698	S-11	102.6	17.0	95	**98**	E8	SG
448	10/21/08	D 2937	**100.1**	**17.4**			D 698	S-11	102.6	17.0	95	**98**	E7	SG
449	10/21/08	D 2937	**94.1**	**20.9**	92.3	18.4	D 698	S-16	95.8	22.2	95	**98**	D8	SG
450	10/28/08	D 2937	**99.2**	**16.6**	98.0	14.6	D 698	S-11	102.6	17.0	95	**97**	C8	-1
451	10/28/08	D 2937	**100.5**	**18.7**			D 698	S-11	102.6	17.0	95	**98**	B8	-1
452	10/28/08	D 2937	**90.0**	**24.5**	88.5	22.2	D 698	S-21	92.0	25.5	95	**98**	B9	-1
453	10/28/08	D 2937	**88.5**	**20.3**	86.4	18.5	D 698	S-8	90.0	20.0	95	**98**	C9	-5
454	10/28/08	D 2937	**88.1**	**19.6**			D 698	S-8	90.0	20.0	95	**98**	C9	-4
455	10/28/08	D 2937	**87.3**	**17.7**			D 698	S-8	90.0	20.0	95	**97**	C9	-3
456	10/29/08	D 2937	**99.1**	**20.7**	97.7	17.2	D 698	S-23	100.4	21.0	95	**99**	C8	SG
457	10/29/08	D 2937	**98.1**	**18.0**			D 698	S-23	100.4	21.0	95	**98**	B8	SG
458	10/29/08	D 2937	**98.7**	**18.9**			D 698	S-23	100.4	21.0	95	**98**	B9	SG
459	10/30/08	D 2937	**88.9**	**26.5**	87.0	25.3	D 698	S-2	92.2	27.5	95	**96**	C9	-2
460	10/30/08	D 2937	**90.1**	**27.8**			D 698	S-2	92.2	27.5	95	**98**	C9	-1
461	10/30/08	D 2937	**99.9**	**16.0**	96.6	13.4	D 698	S-11	102.6	17.5	95	**97**	C9	SG
462	11/03/08	D 2937	**90.8**	**21.9**	88.9	18.6	D 698	S-25	93.5	23.5	95	**97**	D9	-1
463	11/03/08	D 2937	**91.3**	**22.7**			D 698	S-25	93.5	23.5	95	**98**	D9	SG
464	11/24/08	D 2922	**107.7**	**17.5**			D 698	S-1	106.9	15.5	98	**100+**	Approx. sta. 41+00 Perimeter Access Rd.	Subbase
465	11/24/08	D 2922	**105.7**	**19.5**			D 698	S-1	106.9	15.5	98	**99**	Approx. sta. 42+00 Perimeter Access Rd.	Subbase

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
466	11/24/08	D 2922	**105.7**	**17.2**			D 698	S-1	106.9	15.5	98	**99**	Approx. sta. 43+00 Perimeter Access Rd.	Subbase
467	11/24/08	D 2922	**102.2**	**21.1**			D 698	S-4	102.1	17.4	98	**100**	Approx. sta. 44+00 Perimeter Access Rd.	SG
468	11/24/08	D 2922	**100.3**	**21.7**			D 698	S-4	102.1	17.4	98	**98**	Approx. sta. 45+00 Perimeter Access Rd.	SG
469	11/24/08	D 2922	**100.6**	**21.1**			D 698	S-4	102.1	17.4	98	**99**	Approx. sta. 46+00 Perimeter Access Rd.	SG
470	11/24/08	D 2922	**102.6**	**21.1**			D 698	S-4	102.1	17.4	98	**100**	Approx. sta. 47+00 Perimeter Access Rd.	SG
471	11/24/08	D 2922	**101.4**	**22.4**			D 698	S-4	102.1	17.4	98	**99**	Approx. sta. 48+00 Perimeter Access Rd.	SG
472	11/24/08	D 2922	**101.9**	**20.6**			D 698	S-4	102.1	17.4	98	**100**	Approx. sta. 49+00 Perimeter Access Rd.	SG
473	11/24/08	D 2922	**105.2**	**20.3**			D 698	S-1	106.9	15.5	98	**98**	Approx. sta. 50+00 Perimeter Access Rd.	SG
474	11/24/08	D 2922	**108.2**	**18.1**			D 698	S-1	106.9	15.5	98	**100+**	Approx. sta. 51+00 Perimeter Access Rd.	SG
475	11/25/08	D 2922	**105.6**	**17.3**			D 698	S-1	106.9	15.5	98	**99**	Approx. sta. 40+00 Perimeter Access Rd.	SG
476	11/25/08	D 2922	**102.9**	**19.4**			D 698	S-4	102.1	17.4	98	**100+**	Approx. sta. 39+00 Perimter Access Rd.	SG
477	11/25/08	D 2922	**101.2**	**20.0**			D 698	S-4	102.1	17.4	98	**99**	Approx. sta. 38+00 Perimeter Access Rd.	SG
478	11/25/08	D 2922	**104.4**	**20.7**			D 698	S-1	106.9	15.5	98	**98**	Approx. sta. 37+00 Perimeter Access Rd.	SG
479	11/25/08	D 2922	**102.2**	**20.5**			D 698	S-4	102.1	17.4	98	**100**	Approx. sta. 36+00 Perimeter Access Rd.	SG
480	11/25/08	D 2922	**100.3**	**22.1**			D 698	S-4	102.1	17.4	98	**98**	Approx. sta. 35+00 Perimter Access Rd.	SG
481	11/25/08	D 2922	**100.0**	**24.1**			D 698	S-4	102.1	17.4	98	**98**	Approx. sta. 34+00 Perimeter Access Rd.	SG
482	11/25/08	D 2922	**101.2**	**21.5**			D 698	S-4	102.1	17.4	98	**99**	Approx. sta. 33+00 Perimeter Access Rd.	SG
483	11/25/08	D 2922	**100.3**	**20.3**			D 698	S-4	102.1	17.4	98	**98**	Approx. sta. 32+00 Perimeter Access Rd.	SG
484	11/25/08	D 2922	**106.2**	**18.3**			D 698	S-1	106.9	15.5	98	**99**	Approx. sta. 31+00 Perimeter Access Rd.	SG

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project No.: 1356-07-017

Project Name: Duke Pine Hall Road- CM/CQA

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
485	11/25/08	D 2922	**105.7**	**15.2**			D 698	S-1	106.9	15.5	98	**99**	Approx. sta. 30+00 Perimeter Access Rd.	SG
486	11/25/08	D 2922	**102.0**	**17.9**			D 698	S-4	102.1	17.4	98	**100**	Approx. sta. 29+00 Perimeter Access Rd.	SG
487	11/25/08	D 2922	**105.2**	**16.4**			D 698	S-1	106.9	15.5	98	**98**	Approx. sta. 28+00 Perimeter Access Rd.	SG
488	11/25/08	D 2922	**99.7**	**18.9**			D 698	S-4	102.1	17.4	98	**98**	Approx. sta. 27+00 Perimeter Access Rd.	SG
489	11/25/08	D 2922	**105.2**	**16.5**			D 698	S-1	106.9	15.5	98	**98**	Approx. sta. 26+00 Perimeter Access Rd.	SG
490	11/25/08	D 2922	**101.6**	**17.0**			D 698	S-4	102.1	17.4	98	**100**	Approx. sta. 25+00 Perimeter Access Rd.	SG
491	11/25/08	D 2922	**101.5**	**16.8**			D 698	S-4	102.1	17.4	98	**99**	Approx. sta. 24+00 Perimeter Access Rd.	SG
492	11/25/08	D 2922	**103.6**	**20.7**			D 698	S-4	102.1	17.4	98	**100+**	Approx. sta. 23+00 Perimeter Access Rd.	SG
493	11/25/08	D 2922	**109.7**	**15.7**			D 698	S-1	106.9	15.5	98	**100+**	Approx. sta. 22+00 Perimeter Access Rd.	SG
494	11/25/08	D 2922	**103.2**	**19.4**			D 698	S-4	102.1	17.4	98	**100+**	Approx. sta. 21+00 Perimeter Access Rd.	SG
495	11/25/08	D 2922	**106.0**	**18.0**			D 698	S-1	106.9	15.5	98	**99**	Approx. sta. 20+00 Perimeter Access Rd.	SG
496	11/25/08	D 2922	**103.0**	**16.7**			D 698	S-4	102.1	17.4	98	**100+**	Approx. sta. 19+00 Perimeter Access Rd.	SG
497	11/25/08	D 2922	**101.1**	**16.4**			D 698	S-4	102.1	17.4	98	**99**	Approx. sta. 18+00 Perimeter Access Rd.	SG
498	11/25/08	D 2922	**105.1**	**18.6**			D 698	S-1	106.9	15.5	98	**98**	Approx. sta. 17+00 Perimeter Access Rd.	SG
499	11/25/08	D 2922	**101.5**	**21.6**			D 698	S-4	102.1	17.4	98	**99**	Approx. sta. 16+00 Perimeter Access Rd.	SG
500	11/25/08	D 2922	**105.5**	**14.3**			D 698	S-1	106.9	15.5	98	**99**	Approx. sta. 15+00 Perimeter Access Rd.	SG
501	11/25/08	D 2922	**105.3**	**14.3**			D 698	S-1	106.9	15.5	98	**98**	Approx. sta. 14+00 Perimeter Access Rd.	SG
502	11/25/08	D 2922	**102.1**	**15.3**			D 698	S-4	102.1	17.4	98	**100**	Approx. sta. 13+00 Perimeter Access Rd.	SG
503	11/25/08	D 2922	**103.3**	**17.7**			D 698	S-4	102.1	17.4	98	**100+**	Approx. sta. 12+00 Perimeter Access Rd.	SG

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All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.		Staff Professional
Name (Technical Responsibility)	*Signature*	*Position*

Summary of Density Test Results

Report Date: January 05, 2009

Project Name: Duke Pine Hall Road- CM/CQA

Project No.: 1356-07-017

Client: Duke Energy Belews Creek, 3195 Pine Hall Road, Belews Creek, North Carolina 27009

Test		In-Place Density Test			Check Plug Data		Reference Standard				Compaction		Location	Elevation or Stone Depth
No.	Date	Type	Dry Density	Moisture Content	Dry Density	Moisture Content	Type	Ref. Curve	MDD	Optimum Moisture Content	Percent Specified	Percent In-Place		
504	11/25/08	D 2922	100.6	20.8			D 698	S-4	102.1	17.4	98	99	Approx. sta. 11+00 Perimeter Access Rd.	SG
505	11/25/08	D 2922	101.5	23.0			D 698	S-4	102.1	17.4	98	99	Approx. sta. 10+00 Perimeter Access Rd.	SG
506	11/25/08	D 2922	103.3	20.7			D 698	S-4	102.1	17.4	98	100+	Approx. sta. 9+00 Perimeter Access Rd.	SG
507	11/25/08	D 2922	101.5	19.2			D 698	S-4	102.1	17.4	98	99	Approx. sta. 8+00 Perimeter Access Rd.	SG
508	11/25/08	D 2922	100.8	21.9			D 698	S-4	102.1	17.4	98	99	Approx. sta. 7+00 Perimeter Access Rd.	SG
509	11/25/08	D 2922	99.8	22.4			D 698	S-4	102.1	17.4	98	98	Approx. sta. 6+00 Perimeter Access Rd.	SG
510	11/25/08	D 2922	100.8	22.7			D 698	S-4	102.1	17.4	98	99	Approx. sta. 5+00 Perimeter Access Rd.	SG
511	11/25/08	D 2922	100.5	20.3			D 698	S-4	102.1	17.4	98	98	Approx. sta. 4+00 Perimeter Access Rd.	SG
512	11/25/08	D 2922	105.0	21.1			D 698	S-1	106.9	15.5	98	98	Approx. sta. 3+00 Perimeter Access Rd.	SG
513	11/25/08	D 2922	105.3	18.5			D 698	S-1	106.9	15.5	98	99	Approx. sta. 2+00 Perimeter Access Rd.	SG
514	11/25/08	D 2922	99.8	20.0			D 698	S-4	102.1	17.4	98	98	Approx. sta. 1+00 Perimeter Access Rd.	SG
515	11/25/08	D 2922	99.9	20.0			D 698	S-4	102.1	17.4	98	98	Approx. sta. 0+00 Perimeter Access Rd.	SG
516	11/25/08	D 2922	140.7	5.3			D 698	ABC1	141.1	5.5	100	100	Access Rd. station 11+75	FG
517	11/25/08	D 2922	139.8	6.2			D 698	ABC1	141.1	5.5	100	99 *	Access Rd. station 09+75	FG
518	11/25/08	D 2922	140.0	5.7			D 698	ABC1	141.1	5.5	100	99 *	Access Rd. station 07+75	FG
519	11/25/08	D 2922	141.8	5.4			D 698	ABC1	141.1	5.5	100	100	Access Rd. station 05+75	FG
520	11/25/08	D 2922	143.4	5.3			D 698	ABC1	141.1	5.5	100	100+	Access Rd. station 03+75	FG
521	11/25/08	D 2922	140.5	5.7			D 698	ABC1	141.1	5.5	100	100	Access Rd. station 01+75	FG

* = Failed Specified Compaction, ** = Failed Specified Moisture Content

All Test Locations and Elevations are Approximate

Notes:

References: ASTM D 2937: Density of Soil In Place by the Drive Cylinder Method, ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort, ASTM D 2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

Distribution: Lewis Withers/Duke Energy BC

Cedric Ruhl/S&ME, Inc.
Name (Technical Responsibility)

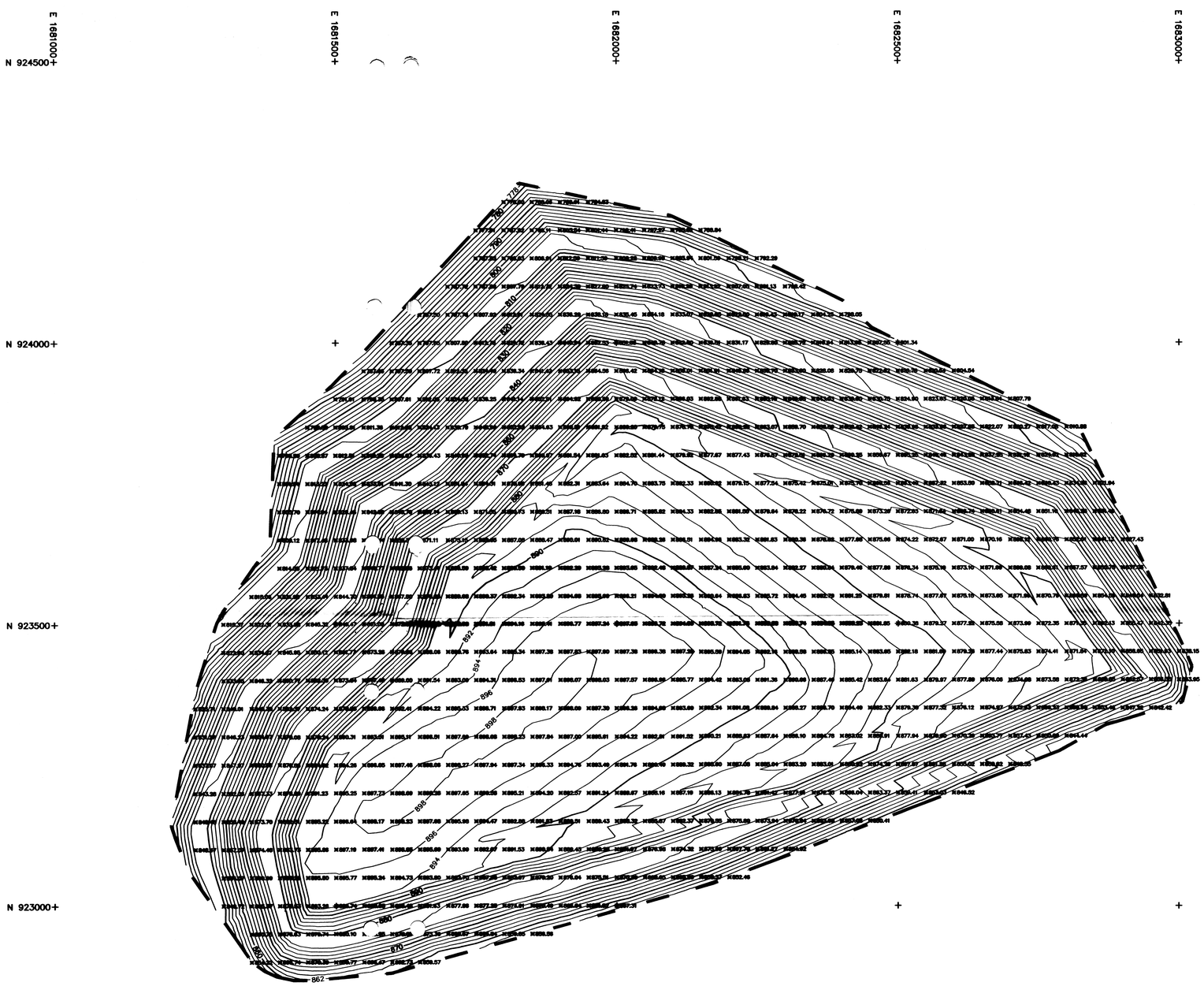
Signature

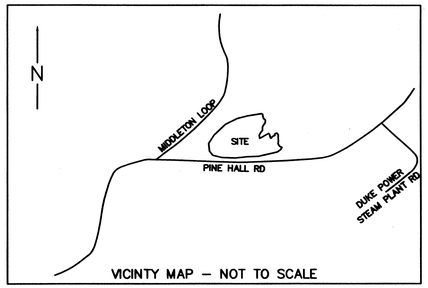
Staff Professional
Position

APPENDIX III

(AS-BUILT DRAWINGS)

Closure Area Subgrade Asbuilt (1 of 1)
Closure Area Finish Grade Asbuilt (1 of 2)
Closure Area Finish Grade Asbuilt (2 of 2)
Flat Area Subgrade Asbuilt (1 of 1)
Flat Area Finish Grade Asbuilt (1 of 1)
Subgrade Grading Field Density Test Locations (1 of 1)
Cover Grading Field Density Test Locations (1 of 1)
Storm Drainage Asbuilt (1 of 1)





VICINTY MAP – NOT TO SCALE

NOTES

1. THE STREET ADDRESS OF THE PROPERTY SHOWN ON THIS SURVEY IS 3195 PINE HALL ROAD, WALNUT COVE, NORTH CAROLINA.
2. DONALDSON, GARRETT, & ASSOCIATES, INC. AND THE LAND SURVEYOR WHOSE SEAL IS AFFIXED HEREON DO NOT GUARANTEE THAT ALL THE EASEMENTS WHICH MAY AFFECT THIS PROPERTY ARE SHOWN.
3. THIS DRAWING WAS CREATED ELECTRONICALLY. THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT UNLESS IT HAS BEEN PROPERLY SEALED AND ORIGINALLY SIGNED BY A LAND SURVEYOR OF DONALDSON, GARRETT, & ASSOCIATES, INC.
4. TWO–FOOT CONTOUR INTERVALS ARE SHOWN.
5. THE ELEVATIONS ON THIS SURVEY ARE REFERENCED TO NCGS BENCHMARK "METTS" (PID AF9381). ELEVATION = 808.00 NAVD88.
6. ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THAT AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. BEFORE BEGINNING ANY CONSTRUCTION OR BORINGS, CONTACT THE UTILITIES PROTECTION CENTER AT 1–800–632–4949.

LEGEND

CONTOUR	890
PROPOSED ANCHOR TRENCH	
ASBUILT GRID POINT	N853.25

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

EARTHWORK VOLUME REPORT

Shrinkage/swell factors:	Excavation 1.0000	Fill	1.0000
First Surface		Second Surface	
Pre–Construction Topographic		Closure Area Subgrade	
Survey Less 3" of Stripping		Asbuilt	
Excavation Volume (Cu. Yd.)		Fill Volume (Cu. Yd.)	
207,416		160,316	

REVISED:
AUGUST 22, 2008 – GRADE ADJUSTED FOR ADDITIONAL TOPO.

NORTH CAROLINA REGISTERED SEAL L-3840 LAND SURVEYOR JOHN M. STONE
8/26/2008

TOPOGRAPHIC SURVEY
FOR
DUKE ENERGY, BELEWS CREEK STEAM STATION
OF
PINE HALL ROAD ASH LANDFILL CLOSURE
CLOSURE AREA SUBGRADE ASBUILT

BELEWS CREEK STOKES COUNTY NORTH CAROLINA

CAD DWG NO.: N907 – 001	DSGN: N/A
DATE: JULY 31, 2008	DRWN: C.P.S.
R.L.S. NO.: L–3840	CHKD: J.M.S.
DWG NO.: NC–755–08–D	FIELD BOOK:
SHEET 1 OF 1	PROJ. NO.:
	SCALE: 1" = 100'

Donaldson Garrett & Associates, Inc.
MACON • CHARLOTTE
500 EAST MOREHEAD STREET, SUITE 103
CHARLOTTE, N.C. 28202-2006
(704) 374-1955 Fax: (704) 374-1956
http://www.dg-a.com

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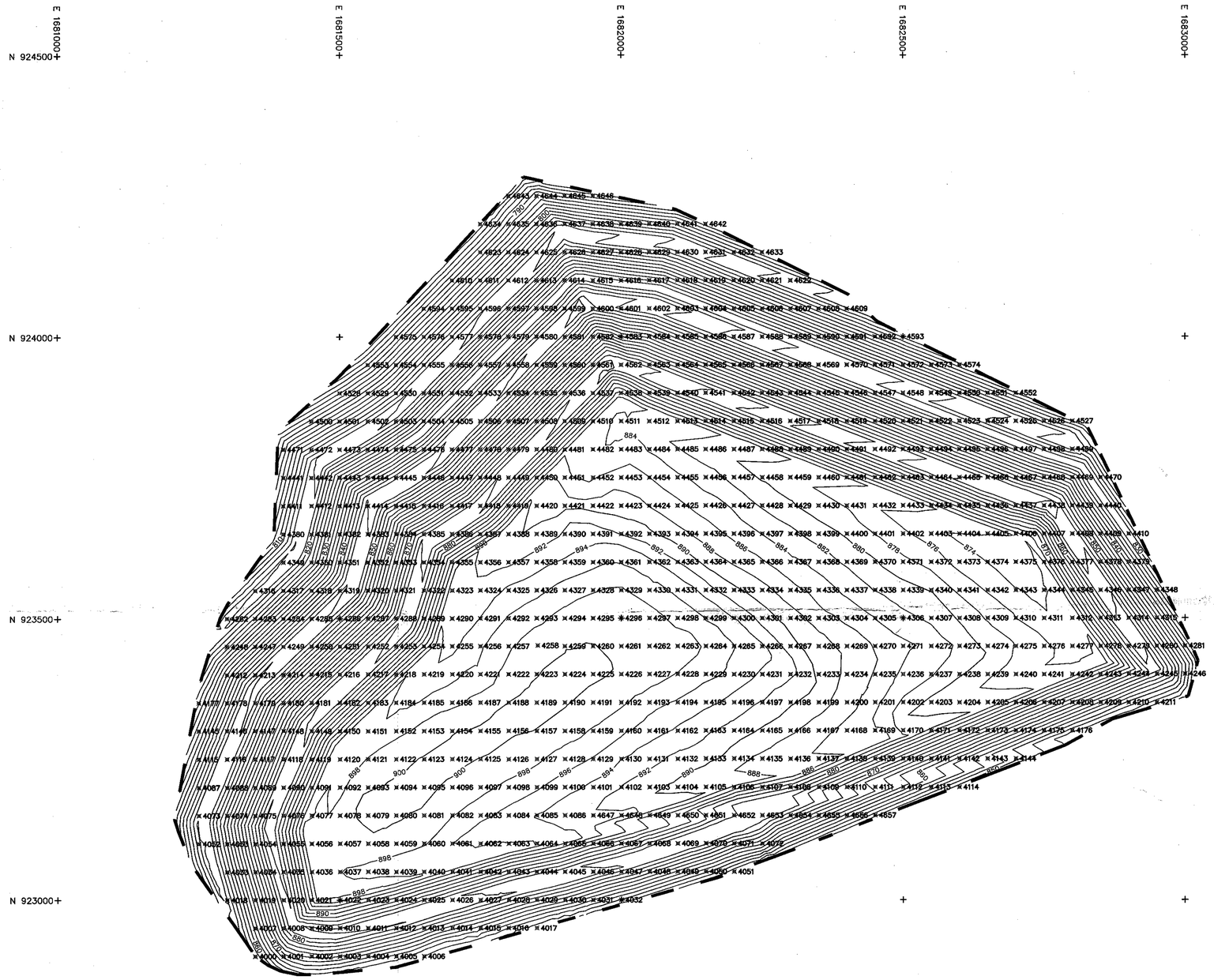

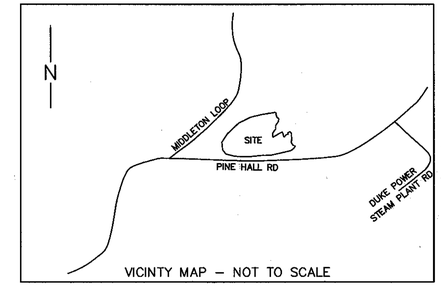

VICINTY MAP – NOT TO SCALE

NOTES

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LEGEND

CONTOUR — 890 —

PROPOSED ANCHOR TRENCH — — —

ASBUILT GRID POINT × 4176

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

EARTHWORK VOLUME REPORT

Shrinkage/swell factors:	Excavation	1.0000	Fill	1.0000
First Surface		Second Surface		
CLOSURE SUBGRADE ASBUILT		CLOSURE FINISH GRADE ASBUILT		
Excavation Volume (Cu. Yd.)		Fill Volume (Cu. Yd.)		
0		148,076.1		

NORTH CAROLINA REGISTERED SEAL L-3840 LAND SURVEYOR JOHN M. STONY

11/20/2008

TOPOGRAPHIC SURVEY
FOR
DUKE ENERGY, BELEWS CREEK STEAM STATION
OF
PINE HALL ROAD ASH LANDFILL CLOSURE
CLOSURE AREA FINISH GRADE ASBUILT

BELEWS CREEK STOKES COUNTY NORTH CAROLINA

CAD DWG NO.: N907 – 001	DSGN: N/A
DATE: NOVEMBER 20, 2008	DRWN: C.P.S.
R.L.S. NO.: L–3840	CHKD: J.M.S.
DWG NO.: NC–755–08–D	FIELD BOOK:
SHEET 1 OF 2	PROJ. NO.:
	SCALE: 1" = 100'

Donaldson Garrett & Associates, Inc.
MACON • CHARLOTTE
500 EAST MOREHEAD STREET SUITE 103
CHARLOTTE, N.C. 28202–2606
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POINT NUMBER	SUBGRADE ELEVATION	FINISH GRADE ELEVATION	COVER DEPTH
4000	854.22	856.36	2.14
4001	866.74	868.87	2.13
4002	870.39	872.50	2.11
4003	869.77	872.02	2.25
4004	866.47	868.58	2.11
4005	862.73	865.16	2.43
4006	859.57	862.03	2.46
4007	860.75	862.86	2.11
4008	876.63	878.94	2.31
4009	879.74	881.77	2.03
4010	880.10	882.21	2.11
4011	878.95	881.72	2.77
4012	878.06	880.24	2.18
4013	873.30	875.47	2.17
4014	868.67	870.81	2.14
4015	864.84	866.95	2.11
4016	859.85	862.01	2.16
4017	856.56	859.21	2.65
4018	849.72	852.11	2.39
4019	865.37	867.51	2.14
4020	879.53	882.47	2.94
4021	893.26	895.37	2.11
4022	894.74	896.87	2.13
4023	890.65	892.77	2.12
4024	886.46	888.64	2.18
4025	881.63	883.76	2.13
4026	877.96	880.29	2.33
4027	877.25	880.47	3.22
4028	874.61	876.76	2.15
4029	870.49	872.62	2.13
4030	866.64	868.75	2.11
4031	861.82	863.98	2.16
4032	857.31	859.42	2.11
4033	854.07	856.24	2.17
4034	869.99	872.23	2.24
4035	880.26	882.38	2.12
4036	895.80	897.98	2.18
4037	895.77	898.07	2.30
4038	895.24	897.39	2.15
4039	894.73	897.76	3.03
4040	893.80	897.90	4.10
4041	892.70	894.84	2.14
4042	887.85	889.98	2.13
4043	882.97	885.08	2.11
4044	879.20	881.32	2.12
4045	876.04	878.23	2.19
4046	875.51	878.35	2.84
4047	873.49	875.61	2.12
4048	868.65	870.76	2.11
4049	863.56	865.67	2.11
4050	858.37	860.61	2.24
4051	852.46	854.57	2.11
4052	848.47	851.26	2.79
4053	857.07	860.10	3.03
4054	874.48	876.56	2.08
4055	883.73	885.84	2.11
4056	895.86	898.15	2.29
4057	897.19	899.19	2.00
4058	897.41	899.43	2.02
4059	896.85	898.86	2.01
4060	895.69	897.72	2.03
4061	893.99	896.02	2.03
4062	892.67	895.50	2.83
4063	891.53	896.22	4.69
4064	890.54	895.84	5.30
4065	889.43	893.69	4.26
4066	886.28	888.41	2.13
4067	881.97	884.09	2.12
4068	876.98	879.16	2.18
4069	874.32	876.69	2.37
4070	873.69	876.32	2.63
4071	867.78	870.12	2.34
4072	861.27	865.80	4.53
4073	848.48	851.77	3.29
4074	858.49	860.61	2.12
4075	873.70	875.83	2.13
4076	882.51	884.65	2.14
4077	895.22	897.85	2.63
4078	896.64	898.77	2.13
4079	898.17	900.18	2.01
4080	898.23	900.25	2.02
4081	897.68	899.69	2.01
4082	895.98	898.06	2.08
4083	894.47	896.52	2.05
4084	892.88	895.11	2.23
4085	891.83	893.91	2.08
4086	889.51	892.67	3.16
4087	843.28	845.56	2.28
4088	852.06	854.19	2.13
4089	867.33	869.46	2.13
4090	878.29	880.93	2.64
4091	891.23	893.47	2.24
4092	895.25	897.41	2.16
4093	897.73	899.82	2.09
4094	898.09	900.39	2.30
4095	898.28	900.29	2.01
4096	897.65	899.67	2.02
4097	896.58	898.71	2.13
4098	895.21	897.39	2.18
4099	894.20	896.25	2.05
4100	892.57	894.82	2.25
4101	891.24	893.32	2.08
4102	889.67	891.89	2.22
4103	888.16	890.50	2.34
4104	887.19	889.38	2.19
4105	886.13	889.35	3.22
4106	884.78	887.36	2.58
4107	881.42	883.67	2.25
4108	877.91	880.16	2.25
4109	872.25	874.38	2.13
4110	866.04	868.13	2.09
4111	863.37	865.53	2.16
4112	859.41	861.58	2.17
4113	853.03	855.27	2.24
4114	846.52	848.58	2.06
4115	837.07	839.28	2.21
4116	847.97	850.59	2.62
4117	860.86	863.25	2.39
4118	876.56	878.87	2.31
4119	884.82	886.94	2.12
4120	894.26	897.40	3.14
4121	896.05	898.15	2.10
4122	897.46	899.51	2.05
4123	898.06	900.13	2.07
4124	898.27	900.28	2.01
4125	897.94	899.96	2.02
4126	897.25	899.31	2.06
4127	896.33	898.38	2.05
4128	894.76	896.95	2.19
4129	893.49	895.76	2.27
4130	891.76	894.02	2.26
4131	890.49	892.66	2.17
4132	889.32	891.36	2.04
4133	888.60	890.62	2.02
4134	887.08	889.10	2.02
4135	885.04	887.44	2.40
4136	883.20	886.11	2.91
4137	883.01	886.09	3.08
4138	880.92	883.13	2.21
4139	874.29	876.48	2.19
4140	867.87	869.98	2.11
4141	861.28	863.56	2.28
4142	855.02	857.15	2.13
4143	850.62	852.74	2.12
4144	848.55	850.76	2.21
4145	831.27	833.45	2.18
4146	846.23	848.34	2.11
4147	854.67	856.97	2.30
4148	870.08	872.34	2.26
4149	878.24	880.42	2.18
4150	890.31	892.44	2.13
4151	893.51	896.33	2.82
4152	895.11	897.15	2.04
4153	896.51	898.53	2.02
4154	897.69	899.73	2.04
4155	898.08	900.25	2.17
4156	898.23	900.23	2.00
4157	897.84	899.96	2.12
4158	897.00	899.04	2.04
4159	895.61	897.70	2.09
4160	894.22	896.22	2.00
4161	892.81	894.82	2.01
4162	891.52	893.62	2.10
4163	890.21	892.25	2.04
4164	888.83	890.95	2.12
4165	887.64	889.79	2.15
4166	886.10	888.30	2.20
4167	884.78	886.84	2.06
4168	883.02	885.23	2.21
4169	880.91	884.13	3.22
4170	877.94	881.61	3.67
4171	876.60	878.94	2.34
4172	870.29	872.56	2.27
4173	863.77	866.03	2.26
4174	857.43	859.54	2.11
4175	850.89	853.07	2.18
4176	844.44	846.58	2.14
4177	825.71	827.83	2.12
4178	840.01	842.14	2.13
4179	848.30	850.57	2.27
4180	862.37	864.76	2.39
4181	874.24	876.52	2.28
4182	878.26	880.38	2.12
4183	889.66	891.78	2.12
4184	892.41	895.43	3.02
4185	894.22	896.29	2.07
4186	895.33	897.45	2.12
4187	896.71	898.71	2.00
4188	897.93	900.02	2.09
4189	898.17	900.35	2.18
4190	898.09	900.17	2.08
4191	897.30	899.32	2.02
4192	896.26	898.32	2.06
4193	894.68	896.70	2.02
4194	893.69	895.75	2.06
4195	892.34	894.36	2.02
4196	891.08	893.24	2.16
4197	889.84	891.85	2.01
4198	888.27	890.28	2.01
4199	886.70	888.89	2.19
4200	884.49	886.94	2.45
4201	882.33	884.35	2.02
4202	879.30	881.55	2.25
4203	877.32	879.46	2.14
4204	876.12	878.90	2.78
4205	874.97	879.00	4.03
4206	872.63	874.87	2.24
4207	866.23	868.41	2.18
4208	859.90	862.03	2.13
4209	853.46	855.68	2.22
4210	847.22	849.36	2.14
4211	842.42	844.82	2.40
4212	833.65	836.03	2.38
4213	846.32	848.44	2.12
4214	850.77	853.03	2.26
4215	862.36	864.60	2.24
4216	873.84	875.95	2.11
4217	877.46	879.59	2.13
4218	889.00	891.15	2.15
4219	891.54	894.18	2.64
4220	893.09	895.25	2.16
4221	894.31	896.37	2.06
4222	896.53	898.61	2.08
4223	897.61	899.81	2.20
4224	898.07	900.09	2.02
4225	898.03	900.05	2.02
4226	897.57	899.57	2.00
4227	896.96	898.96	2.00
4228	895.77	897.89	2.12
4229	894.42	896.43	2.01
4230	893.08	895.22	2.14
4231	891.36	893.60	2.24
4232	890.06	892.30	2.24
4233	887.49	889.56	2.07
4234	885.42	887.50	2.08
4235	883.64	885.79	2.15
4236	881.63	883.65	2.02
4237	879.97	881.99	2.02
4238	877.89	880.19	2.30
4239	876.06	878.37	2.31
4240	874.08	876.99	2.91
4241	873.58	876.65	3.07
4242	872.36	876.60	4.24
4243	868.85	871.11	2.26
4244	862.57	864.71	2.14
4245	856.35	858.47	2.12
4246	843.95	846.21	2.26
4247	834.27	836.50	2.23
4248	822.60	824.89	2.29
4249	845.95	848.09	2.14
4250	850.12	852.56	2.44
4251	861.77	863.94	2.17
4252	873.26	875.44	2.18
4253	876.86	879.05	2.19
4254	888.06	890.18	2.12
4255	890.76	893.37	2.61
4256	893.64	895.76	2.12
4257	895.34	897.58	2.24
4258	896.83	898.89	2.06
4259	897.83	899.89	2.06
4260	897.90	900.05	2.15
4261	897.38	899.59	2.21
4262	896.38	898.57	2.19
4263	897.28	899.36	2.08
4264	895.59	897.59	2.00
4265	894.05	896.07	2.02
4266	892.16	894.29	2.13
4267	888.58	890.74	2.16
4268	886.55	888.63	2.08
4269	885.14	887.58	2.44
4270	883.65	885.79	2.14
4271	882.18	884.19	2.01
4272	881.69	883.72	2.03
4273	879.26	881.37	2.11
4274	877.44	879.46	2.02
4275	875.83	877.83	2.00
4276	874.41	876.55	2.14
4277	871.84	874.81	2.97
4278	872.10	874.38	2.28
4279	858.65	860.95	2.30
4280	851.93	854.04	2.11
4281	838.15	840.39	2.24
4282	815.37	818.17	2.80
4283	822.31	824.46	2.15
4284	833.98	836.22	2.24
4285	845.32	847.54	2.22
4286	849.47	851.97	2.50
4287	861.08	863.20	2.12
4288	872.69	874.83	2.14
4289	880.82	883.05	2.23
4290	890.08	893.13	3.05
4291	891.81	893.98	2.17
4292	894.16	896.19	2.03
4293	895.41	897.50	2.09
4294	896.77	898.87	2.10
4295	897.24	899.27	2.03
4296	897.83	899.85	2.02
4297	896.72	898.72	2.00
4298	894.86	897.18	2.32
4299	893.72	895.79	2.07
4300	891.73	893.84	2.11
4301	888.88	890.96	2.08
4302	886.74	889.14	2.40
4303	884.85	886.87	2.02
4304	883.23	885.37	2.14
4305	881.85	883.93	2.08
4306	880.38	882.43	2.05
4307	879.27	881.45	2.18
4308	877.15	879.32	2.17
4309	875.58	877.64	2.06
4310	873.99	876.00	2.01
4311	872.35	874.45	2.10
4312	871.35	875.33	3.98
4313	862.13	864.46	2.33
4314	855.47	858.27	2.80
4315	842.35	844.57	2.22
4316	815.06	818.00	2.94
4317	821.95	824.20	2.25
4318	833.44	835.93	2.49
4319	844.70	847.46	2.76
4320	851.55	853.76	2.21
4321	867.50	869.72	2.22
4322	876.06	878.21	2.15
4323	889.08	892.95	3.87
4324	890.37	892.54	2.17
4325	892.34	894.44	2.10
4326	893.20	895.45	2.25
4327	894.68	896.88	2.20
4328	895.60	897.72	2.12
4329	896.21	898.22	2.01
4330	894.60	896.60	2.00
4331	893.26	895.59	2.33
4332	890.64	892.96	2.32
4333	888.29	890.55	2.26
4334	886.40	888.72	2.32
4335	884.45	886.46	2.01
4336	882.79	885.11	2.32
4337	881.25	883.45	2.20
4338	879.81	881.83	2.02
4339	878.74	880.88	2.14
4340	877.67	879.75	2.08
4341	875.15	877.31	2.16
4342	873.65	875.75	2.10
4343	871.99	874.10	2.11
4344	870.79	873.77	2.98
4345	866.59	868.86	2.27
4346	854.56	856.67	2.11
4347	846.54	848.65	2.11
4348	832.81	834.97	2.16
4349	814.55	817.67	3.12
4350	821.73	824.04	2.31
4351	837.84	840.08	2.24
4352	846.77	849.28	2.51
4353	862.86	865.14	2.28
4354	873.41	875.75	2.34
4355	886.59	888.92	2.33
4356	888.42	891.65	3.23
4357	889.50	891.56	2.06
4358	891.10	893.13	2.03
4359	892.29	894.31	2.02
4360	893.28	895.39	2.11
4361	893.65	895.86	2.21
4362	892.48	894.53	2.05
4363	889.87	892.06	2.19
4364	887.24	889.31	2.07
4365	885.60	887.72	2.12
4366	883.84	886.21	2.37
4367	882.27	884.37	2.10
4368	880.84	883.06	2.22
4369	879.46	881.57	2.11
4370	877.86	879.88	2.02
4371	876.34	878.36	2.02
4372	875.19	877.28	2.09
4373	873.10	875.31	2.21
4374	871.69	873.91	2.22
4375	869.08	872.98	3.90
4376	869.61	873.80	4.19
4377	857.57	859.77	2.20
4378	850.75	852.88	2.13
4379	837.03	839.15	2.12
4380	809.12	811.25	2.13
4381	817.48	819.60	2.12
4382	833.68	835.79	2.11
4383	843.44	845.97	2.53
4384	858.36	860.58	2.22
4385	871.11	873.45	2.34
4386	873.15	875.26	2.11
4387	882.05	884.22	2.17
4388	887.08	891.02	3.94
4389	888.47	890.52	2.05
4390	890.01	892.06	2.05
4391	890.82	892.87	2.05
4392	889.68	891.90	2.22
4393	888.26	890.40	2.14
4394	886.51	888.69	2.18
4395	884.96	886.99	2.03
4396	883.32	885.45	2.13
4397	881.83	883.93	2.10
4398	880.36	882.64	2.28
4399	878.62	881.02	2.40
4400	877.68	879.69	2.01
4401	875.66	877.87	2.21
4402	874.22	876.34	2.12
4403	872.67	874.84	2.17
4404	871.00	873.73	2.73
4405	870.16	874.02	3.86
4406	869.12	872.79	3.67
4407	860.76	866.30	5.54
4408	852.01	855.08	3.07
4409	841.13	843.25	2.12
4410	827.43	829.56	2.13
4411	805.70	807.86	2.16
4412	814.04	816.11	2.07
4413	829.45	831.63	2.18
4414	842.89	845.96	3.07
4415	848.79	850.90	2.11
4416	857.14	859.27	2.13
4417	866.13	868.36	2.23
4418	871.55	874.37	2.82
4419	880.73	883.01	2.28
4420	886.51	889.55	3.04
4421	887.18	889.22	2.04
4422	886.80	888.81	2.01
4423	886.71	888.92	2.21
4424	885.82	887.88	2.06
4425	884.33	886.35	2.02
4426	882.85	884.99	2.14
4427	881.50	883.58	2.08
4428	879.64	881.76	2.12
4429	878.22	880.28	2.06
4430	876.72	878.87	2.15
4431	875.09	877.85	2.76
4432	873.26	876.33	3.07
4433	872.63	876.49	3.86
4434	871.64	874.98	3.34
4435	866.74	869.12	2.38
4436	860.61	862.85	2.24
4437	854.48	857.05	2.57
4438	851.10	853.33	2.23
4439	845.26	848.01	2.75
4440	831.49	833.61	2.12
4441	801.94	804.43	2.49
4442	813.22	816.24	3.02
4443	824.58	826.92	2.34
4444	833.01	835.14	2.13
4445	841.30	843.44	2.14
4446	843.12	845.34	2.22
4447	851.94	854.15	2.21
4448	864.31	866.49	2.18
4449	870.96	873.07	2.11
4450	881.48	883.67	2.19
4451	882.31	886.87	4.56
4452	883.64	885.86	2.22
4453	884.70	886.95	2.25
4454	883.75	886.02	2.27
4455	882.33	884.34	2.01
4456	880.92	882.92	2.00
4457	879.15	881.34	2.19
4458	877.54	879.67	2.13
4459	875.42	878.87	3.45
4460	875.01	878.62	3.61
4461	875.70	877.83	2.13
4462	869.56	871.80	2.24
4463	863.49	865.62	2.13
4464	857.32	859.47	2.15
4465	853.50	856.08	2.58
4466	852.21	854.95	2.74
4467	846.42	848.79	2.37
4468	840.43	843.46	3.03
4469	834.36	838.19	3.83
4470	821.94	824.05	2.11
4471	798.59	800.64	2.05
4472	808.87	811.15	2.28
4473	812.51	815.05	2.54
4474	818.28	820.59	2.31
4475	826.97	829.36	2.39
4476	836.43	838.55	2.12
4477	840.95	843.15	2.20
4478	852.74	854.99	2.25
4479	864.79	866.97	2.18
4480	869.97	872.28	2.31
4481	881.54	883.65	2.11
4482	881.03	884.44	3.41
4483	882.52	884.60	2.08
4484	881.44	883.68	2.24
4485	879.92	882.03	2.11
4486	877.67	881.25	3.58
4487	877.43	880.96	3.53
4488	876.57	880.76	4.19
4489	872.51	874.68	2.17
4490	866.29	868.50	2.21
4491	860.25	862.46	2.21
4492	856.67	859.17	2.50
4493	855.25	857.83	2.58
4494	849.46	851.73	2.27
4495	843.28	845.43	2.15
4496	837.25	839.47	2.22
4497	831.19	833.35	2.16
4498	824.92	827.21	2.29
4499	818.82	821.45	2.63
4500	796.59	798.80	2.21
4501	803.81	806.05	2.24
4502	811.36	813.41	2.05
4503	812.98	815.24	2.26
4504	824.13	826.28	2.15
4505	835.79	838.27	2.48
4506	840.99	843.34	2.35
4507	852.92	855.14	2.22
4508	864.63	867.00	2.37
4509	869.81	871.94	2.13
4510	881.52	883.65	2.13
4511	880.20	883.22	3.02
4512	879.75	883.20	3.45
4513	878.78	883.13	4.35
4514	875.42	877.55	2.13
4515	869.28	871.43	2.15
4516	863.07	865.27	2.20
4517	859.70	862.36	2.66
4518	858.50	860.75	2.25
4519	852.42	854.55	2.13
4520	846.24	848.46	2.22
4521	839.95	842.49	2.54
4522	833.96	836.27	2.31
4523	827.83	830.00	2.17
4524	822.07	824.27	2.20
4525	820.27	823.56	3.29
4526	817.08	819.31	2.23
4527	810.88	814.12	3.24
4528	791.61	793.87	2.26
4529	799.35	801.60	2.25
4530	807.61	809.85	2.24
4531	812.05	814.50	2.45
4532	824.39	826.55	2.16
4533	836.25	838.38	2.13
4534	841.14	843.42	2.28
4535	852.91	855.26	2.35
4536	864.92	867.09	2.17
4537	869.59	871.83	2.24
4538	879.09	882.47	3.38
4539	872.12	874.62	2.50
4540	866.03	868.17	2.14
4541	862.88	865.67	2.79
4542	861.63	863.74	2.11
4543	855.19	857.41	2.22
4544	849.05	851.34	2.29
4545	843.03	845.21	2.18
4546	836.90	839.06	2.16
4547	830.75	832.89	2.14
4548	824.90	827.02	2.12
4549	823.63	826.78	3.15
4550	820.05	822.30	2.25
4551	813.84	816.01	2.17
4552	807.79	809.93	2.14
4553	787.66	790.11	2.45
4554	797.59	799.70	2.11
4555	807.72	809.75	2.03
4556	812.33	814.79	2.46
4557	824.49	826.87	2.38
4558	836.34	838.67	2.33
4559	841.42	843.63	2.21
4560	853.15	855.42	2.27
4561	864.56	866.87	2.31
4562	866.42	869.19	2.77
4563	864.18	866.46	2.28
4564	858.01	860.42	2.41
4565	851.91	854.29	2.38
4566	845.89	848.17	2.28
4567	839.70	841.97	2.27
4568	833.60	835.74	2.14
4569	828.08	830.19	2.11
4570	826.75	829.93	3.18
4571	822.82	825.23	2.41
4572	816.76	818.88	2.12
4573	810.54	812.88	2.34
4574	804.54	806.75	2.21
4575	787.35	789.50	2.15
4576	797.65	799.85	2.20
4577	807.80	809.96	2.16
4578	812.78	815.02	2.24
4579	824.72	826.89	2.17
4580	836.43	838.56	2.13
4581	840.94	843.21	2.27
4582	852.53	855.25	2.72
4583	851.36	853.97	2.61
4584	848.78	851.19	2.41
4585	842.60	844.90	2.30
4586	836.51	838.67	2.16
4587	831.17	833.30	2.13
4588	829.80	833.18	3.38
4589	825.72	827.94	2.22
4590	819.64	821.89	2.25
4591	813.65	815.78	2.13
4592	807.55	809.72	2.17
4593	801.34	803.61	2.27
4594	787.50	789.66	2.16
4595	797.76	799.88	2.12
4596	807.92	810.12	2.20
4597	812.91	815.07	2.16
4598	824.55	826.75	2.20
4599	836.29	838.41	2.12
4600	838.18	841.07	2.89
4601	835.45	837.75	2.30
4602	834.18	836.64	2.46
4603	833.07	836.39	3.32
4604	828.65	830.98	2.33
4605	822.50	824.81	2.31
4606	816.43	818.62	2.19
4607	810.17	812.54	2.37
4608	804.25	806.43	2.18
4609	798.05	800.30	2.25
4610	787.72	789.93	2.21
4611	797.88	800.20	2.32
4612	807.79	810.18	2.39
4613	812.72	814.83	2.11
4614	824.39	827.11	2.72
4615	827.80	830.61	2.81
4616	825.74	827.91	2.17
4617	823.73	825.95	2.22
4618	819.29	821.55	2.26
4619	813.22	815.37	2.15
4620	807.05	809.32	2.27
4621	801.13	803.26	2.13
4622	798.42	801.23	2.81
4623	787.83	790.02	2.19
4624	798.03	800.33	2.30
4625	806.91	810.24	3.33
4626	812.59	814.86	2.27
4627	811.30	813.68	2.38
4628	809.22	811.58	2.36
4629	806.99	809.28	2.29
4630	803.94	806.13	2.19
4631	801.59	804.48	2.89
4632	798.21	800.46	2.25
4633	792.29	794.63	2.34
4634	777.61	780.31	2.70
4635	787.92	790.92	3.00
4636	798.11	800.40	2.29
4637	803.54	807.54	4.00
4638	801.44	803.61	2.17
4639	799.41	801.54	2.13
4640	797.27	799.43	2.16
4641	795.02	797.31	2.29
4642	788.84	791.07	2.23
4643	778.00	781.31	3.31
4644	788.06	791.53	3.47
4645	786.91	789.20	2.29
4646	784.83	786.95	2.12
4647	889.43	892.25	2.82
4648	888.32	892.14	3.82
4649	885.87	888.65	2.78
4650	882.37	884.57	2.20
4651	879.55	881.68	2.13
4652	875.80	878.11	2.31
4653	873.94	876.38	2.44
4654	870.04	872.33	2.29
4655	863.68	865.79	2.11
4656	857.06	859.19	2.13
4657	850.41	852.62	2.21

NOTES

1. THE STREET ADDRESS OF THE PROPERTY SHOWN ON THIS SURVEY IS 3195 PINE HALL ROAD, WALNUT COVE, NORTH CAROLINA.

2. DONALDSON, GARRETT, & ASSOCIATES, INC. AND THE LAND SURVEYOR WHOSE SEAL IS AFFIXED HEREON DO NOT GUARANTEE THAT ALL THE EASEMENTS WHICH MAY AFFECT THIS PROPERTY ARE SHOWN.

3. THIS DRAWING WAS CREATED ELECTRONICALLY. THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT UNLESS IT HAS BEEN PROPERLY SEALED AND ORIGINALLY SIGNED BY A LAND SURVEYOR OF DONALDSON, GARRETT, & ASSOCIATES, INC.

4. TWO-FOOT CONTOUR INTERVALS ARE SHOWN.

5. THE ELEVATIONS ON THIS SURVEY ARE REFERENCED TO NCGS BENCHMARK "METTS" (PID AF9381). ELEVATION = 808.00 NAVD88.

6. ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THAT AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. BEFORE BEGINNING ANY CONSTRUCTION OR BORINGS, CONTACT THE UTILITIES PROTECTION CENTER AT 1-800-632-4949.

LEGEND

CONTOUR — 890 —

PROPOSED ANCHOR TRENCH

ASBUILT GRID POINT ×4176

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

NORTH CAROLINA REGISTERED SEAL L-3840 LAND SURVEYOR JOHN M. STORY 11/20/2008

TOPOGRAPHIC SURVEY
FOR
DUKE ENERGY, BELEWS CREEK STEAM STATION
OF
PINE HALL ROAD ASH LANDFILL CLOSURE
CLOSURE AREA FINISH GRADE ASBUILT

BELEWS CREEK — STOKES COUNTY — NORTH CAROLINA

CAD DWG NO.: N907 - 001	DSGN: N/A
DATE: NOVEMBER 20, 2008	DRWN: C.P.S.
R.L.S. NO.: L-3840	CHKD: J.M.S.
DWG NO.: NC-755-08-D	FIELD BOOK:
SHEET 2 OF 2	PROJ. NO.:
	SCALE: 1" = 100'

Donaldson Garrett & Associates, Inc.
MACON • CHARLOTTE
500 EAST MOREHEAD STREET SUITE 103
CHARLOTTE, N.C. 28202-2606
(704) 374-1955 Fax: (704) 374-1956
http://www.dg-a.com

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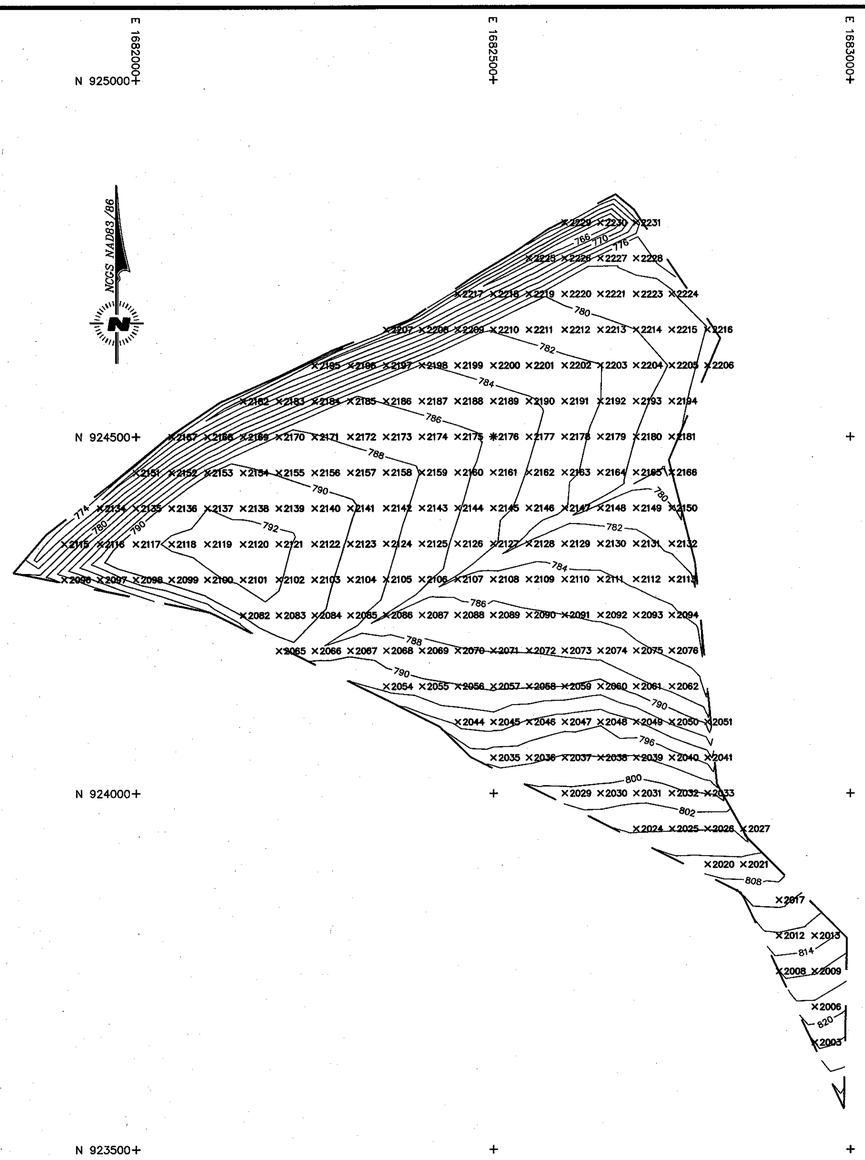
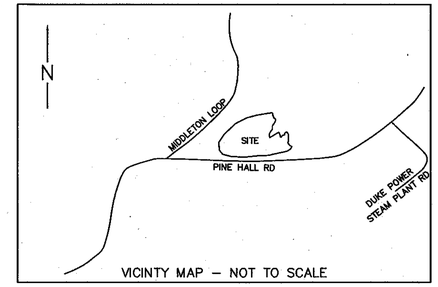


POINT NUMBER	SUBGRADE ELEVATION
2003	822.12
2006	818.49
2008	816.47
2009	815.75
2012	812.25
2013	812.88
2017	809.38
2020	806.66
2021	806.56
2024	803.72
2025	803.82
2026	803.91
2027	804.05
2029	800.42
2030	800.70
2031	801.29
2032	800.67
2033	799.90
2035	797.30
2036	797.48
2037	798.26
2038	798.07
2039	798.25
2040	797.02
2041	795.16
2044	793.34
2045	792.93
2046	794.24
2047	795.16
2048	795.74
2049	794.19
2050	791.55
2051	789.39
2054	791.01
2055	790.44
2056	790.12
2057	789.60
2058	789.81
2059	790.00
2060	790.81
2061	788.79
2062	787.29
2065	789.00
2066	788.80
2067	789.49
2068	789.04
2069	788.46
2070	788.13
2071	787.93
2072	787.88
2073	787.54
2074	787.44
2075	786.38
2076	785.61
2082	790.14
2083	791.69
2084	790.40
2085	788.95
2086	785.71
2087	787.17
2088	786.83
2089	786.58
2090	786.22
2091	786.01
2092	785.66
2093	785.09
2094	784.37
2096	780.92
2097	784.83
2098	789.30
2099	790.56
2100	791.60
2101	792.50
2102	792.14
2103	790.73
2104	789.35
2105	788.04
2106	786.69
2107	784.47
2108	785.14
2109	784.92
2110	784.44
2111	784.39
2112	783.62
2113	783.08
2115	776.12
2116	785.11
2117	791.17
2118	792.35
2119	792.83
2120	792.80
2121	792.51
2122	791.07
2123	789.79
2124	788.44
2125	787.08
2126	785.69
2127	784.37
2128	783.15
2129	782.99
2130	782.80
2131	782.65
2132	781.57
2134	774.52
2135	783.89
2136	791.01
2137	791.99
2138	791.63
2139	791.23
2140	790.73
2141	790.21
2142	788.80
2143	787.52
2144	786.14
2145	784.71
2146	783.40
2147	782.29
2148	781.19
2149	781.01
2150	780.10
2151	771.97
2152	781.29
2153	789.31
2154	790.28
2155	789.88

POINT NUMBER	SUBGRADE ELEVATION
2156	789.44
2157	789.00
2158	788.61
2159	787.92
2160	786.49
2161	785.24
2162	783.88
2163	782.57
2164	781.15
2165	779.54
2166	778.82
2167	773.62
2168	776.29
2169	782.99
2170	788.49
2171	788.12
2172	787.66
2173	787.20
2174	786.86
2175	786.44
2176	785.55
2177	784.29
2178	782.90
2179	781.47
2180	779.97
2181	779.03
2182	769.89
2183	775.62
2184	781.29
2185	786.30
2186	785.88
2187	785.47
2188	785.06
2189	784.63
2190	784.19
2191	783.31
2192	782.01
2193	780.49
2194	779.13
2195	768.83
2196	773.45
2197	778.64
2198	784.07
2199	783.68
2200	783.25
2201	782.87
2202	782.41
2203	782.04
2204	781.02
2205	779.86
2206	777.65
2207	771.38
2208	770.26
2209	776.83
2210	781.98
2211	781.48
2212	781.10
2213	780.57
2214	780.00
2215	779.66
2216	778.40
2217	769.32
2218	770.36
2219	776.74
2220	779.45
2221	779.00
2223	778.55
2224	778.37
2225	767.01
2226	770.58
2227	777.45
2228	777.50
2229	774.96
2230	765.78
2231	772.45



NOTES

1. THE STREET ADDRESS OF THE PROPERTY SHOWN ON THIS SURVEY IS 3195 PINE HALL ROAD, WALNUT COVE, NORTH CAROLINA.
2. DONALDSON, GARRETT, & ASSOCIATES, INC. AND THE LAND SURVEYOR WHOSE SEAL IS AFFIXED HEREON DO NOT GUARANTEE THAT ALL THE EASEMENTS WHICH MAY AFFECT THIS PROPERTY ARE SHOWN.
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LEGEND

CONTOUR ——890——

LIMITS OF FLAT AREA — — — — —

ASBUILT GRID POINT ×2006

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

EARTHWORK VOLUME REPORT

Shrinkage/swell factors:	Excavation	1.0000	Fill	1.0000
First Surface		Second Surface		
PRECONSTRUCTION TOPO MINUS 3"		FLAT AREA SUBGRADE ASBUILT		
Excavation Volume (Cu. Yd.)		Fill Volume (Cu. Yd.)		
28,949.6		25,490.9		

REVISIONS:
JANUARY 02, 2009 – CLIENT COMMENTS

NORTH CAROLINA PROFESSIONAL SEAL L-3840 LAND SURVEYOR JOHN M. STORY
1/12/09

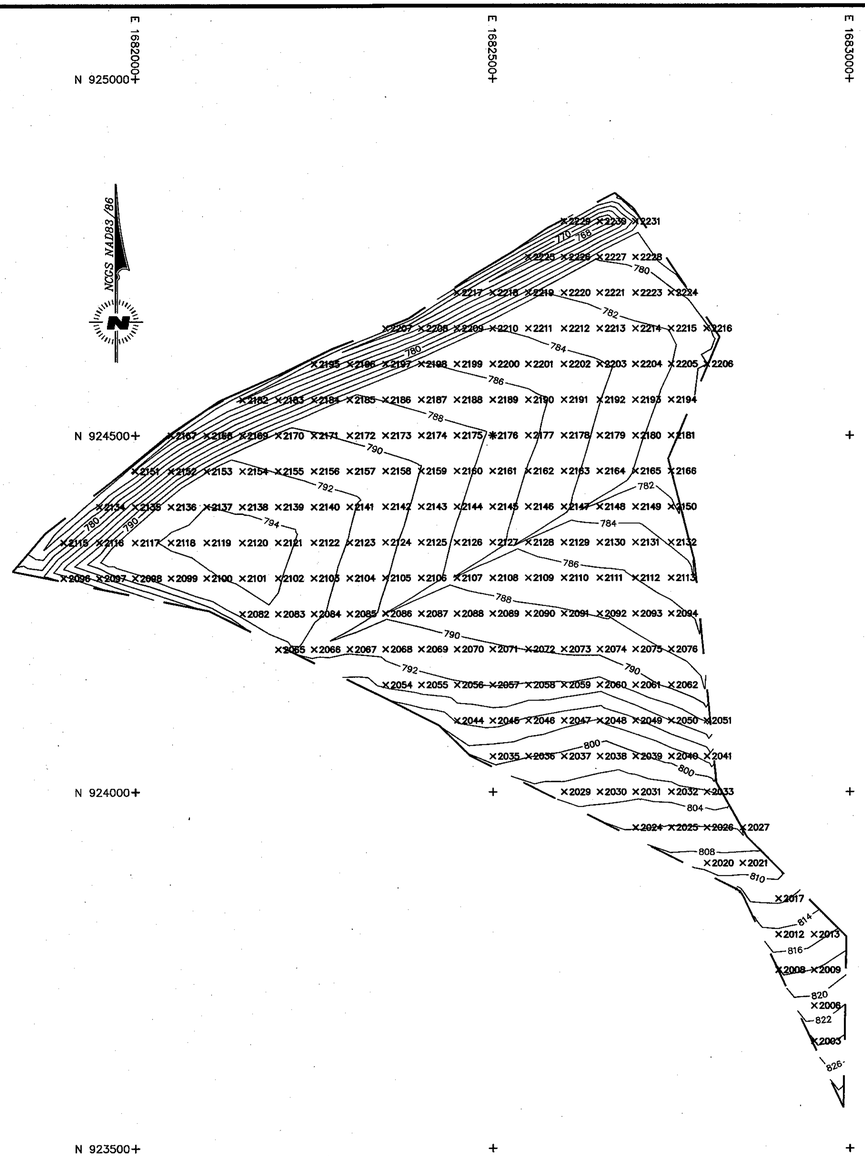
TOPOGRAPHIC SURVEY
FOR
DUKE ENERGY, BELEWS CREEK STEAM STATION
OF
PINE HALL ROAD ASH LANDFILL CLOSURE
FLAT AREA SUBGRADE ASBUILT

BELEWS CREEK STOKES COUNTY NORTH CAROLINA

CAD DWG NO.: N907 – 001	DSGN: N/A
DATE: DECEMBER 01, 2008	DRWN: C.P.S.
R.L.S. NO.: L–3840	CHKD: J.M.S.
DWG NO.: NC–755–08–D	FIELD BOOK:
SHEET 1 OF 1	PROJ. NO.:
	SCALE: 1" = 100'

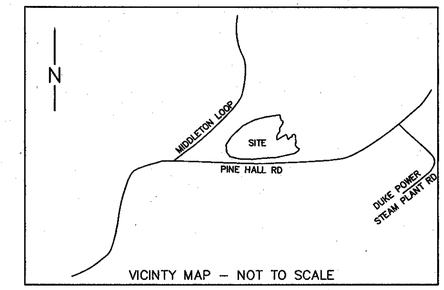
Donaldson Garrett & Associates, Inc.
MACON • CHARLOTTE
500 EAST MOREHEAD STREET SUITE 103
CHARLOTTE, N.C. 28202–2606
(704) 374–1955 Fax: (704) 374–1956
http://www.dg-a.com

THESE DOCUMENTS, AS INSTRUMENTS OF SERVICE, REMAIN THE PROPERTY OF D, G & A AND NO PART THEREOF MAY BE USED OR REPRODUCED IN ANY FORM WITHOUT WRITTEN PERMISSION.



POINT NUMBER	SUBGRADE ELEVATION	FINISH GRADE ELEVATION	COVER DEPTH
2003	822.12	824.30	2.18
2006	818.49	820.72	2.23
2008	816.47	818.49	2.02
2009	815.75	818.03	2.28
2012	812.25	814.45	2.20
2013	812.88	815.34	2.46
2017	809.38	811.61	2.23
2020	806.66	808.92	2.26
2021	806.56	809.05	2.49
2024	803.72	805.82	2.10
2025	803.82	806.18	2.36
2026	803.91	806.09	2.18
2027	804.05	806.25	2.20
2029	800.42	802.63	2.21
2030	800.70	803.13	2.43
2031	801.29	803.57	2.28
2032	800.67	803.04	2.37
2033	799.90	802.19	2.29
2035	797.30	799.48	2.18
2036	797.48	799.92	2.44
2037	798.26	800.43	2.17
2038	798.07	800.99	2.92
2039	798.25	800.32	2.07
2040	797.02	799.22	2.20
2041	795.16	797.38	2.22
2044	793.34	795.74	2.40
2045	792.93	795.18	2.25
2046	794.24	796.40	2.16
2047	795.16	797.37	2.21
2048	795.74	798.17	2.43
2049	794.19	796.33	2.14
2050	791.55	793.93	2.38
2051	789.39	791.53	2.14
2054	791.01	793.50	2.49
2055	790.44	792.67	2.23
2056	790.12	792.19	2.07
2057	789.60	791.89	2.29
2058	789.81	792.13	2.32
2059	790.00	792.21	2.21
2060	790.81	793.05	2.24
2061	788.79	790.91	2.12
2062	787.29	789.52	2.23
2065	789.00	791.16	2.16
2066	788.80	791.00	2.20
2067	789.49	791.59	2.10
2068	789.04	791.27	2.23
2069	788.46	790.87	2.41
2070	788.13	790.59	2.46
2071	787.93	790.24	2.31
2072	787.88	789.95	2.07
2073	787.54	789.60	2.06
2074	787.44	789.62	2.18
2075	786.38	788.62	2.24
2076	785.61	787.80	2.19
2082	790.14	792.33	2.19
2083	791.69	793.79	2.10
2084	790.40	792.46	2.06
2085	788.96	791.03	2.07
2086	785.71	787.71	2.00
2087	787.17	789.45	2.28
2088	786.83	789.06	2.23
2089	786.58	788.78	2.20
2090	786.22	788.38	2.16
2091	786.01	788.19	2.18
2092	785.66	787.85	2.19
2093	785.09	787.24	2.15
2094	784.37	786.52	2.15
2096	780.92	783.04	2.12
2097	784.83	787.00	2.17
2098	789.30	791.53	2.23
2099	790.56	792.67	2.11
2100	791.60	793.63	2.03
2101	792.50	794.60	2.10
2102	792.14	794.14	2.00
2103	790.73	792.89	2.16
2104	789.35	791.40	2.05
2105	788.04	790.10	2.06
2106	786.69	788.79	2.11
2107	784.47	786.59	2.12
2108	785.14	787.23	2.09
2109	784.92	787.05	2.13
2110	784.44	786.67	2.23
2111	784.39	786.45	2.06
2112	783.62	785.97	2.35
2113	783.08	785.14	2.06
2115	776.12	778.34	2.22
2116	785.11	787.13	2.02
2117	791.17	793.31	2.14
2118	792.35	794.39	2.04
2119	792.83	794.95	2.12
2120	792.80	794.97	2.17
2121	792.51	794.56	2.05
2122	791.07	793.23	2.16
2123	789.79	791.89	2.10
2124	788.44	790.45	2.01
2125	787.08	789.16	2.08
2126	785.69	787.75	2.06
2127	784.37	786.57	2.20
2128	783.15	785.19	2.04
2129	782.99	785.09	2.10
2130	782.80	784.87	2.07
2131	782.65	784.83	2.18
2132	781.57	783.83	2.26
2134	774.52	776.61	2.09
2135	783.89	786.02	2.13
2136	791.01	793.05	2.04
2137	791.99	794.03	2.04
2138	791.63	793.77	2.14
2139	791.23	793.31	2.08
2140	790.73	792.84	2.11
2141	790.21	792.23	2.02
2142	788.80	790.93	2.13
2143	787.52	789.54	2.02
2144	786.14	788.17	2.03
2145	784.71	786.83	2.13
2146	783.40	785.51	2.11
2147	782.29	784.31	2.02
2148	781.19	783.22	2.03
2149	781.01	783.19	2.18
2150	780.10	782.46	2.36
2151	771.97	774.07	2.10
2152	781.29	783.55	2.26
2153	789.31	791.59	2.28
2154	790.28	792.36	2.08
2155	789.88	791.91	2.03

POINT NUMBER	SUBGRADE ELEVATION	FINISH GRADE ELEVATION	COVER DEPTH
2156	789.44	791.52	2.08
2157	789.00	791.15	2.15
2158	788.61	790.68	2.07
2159	787.92	789.95	2.03
2160	786.49	788.58	2.09
2161	785.24	787.29	2.05
2162	783.88	785.90	2.02
2163	782.57	784.67	2.10
2164	781.15	783.21	2.06
2165	779.54	781.90	2.36
2166	778.82	780.84	2.02
2167	773.62	775.70	2.08
2168	776.29	778.43	2.14
2169	782.99	785.09	2.10
2170	788.49	790.53	2.04
2171	788.12	790.16	2.04
2172	787.66	789.74	2.08
2173	787.20	789.36	2.16
2174	786.86	788.93	2.07
2175	786.44	788.46	2.02
2176	785.55	787.71	2.16
2177	784.29	786.39	2.10
2178	782.90	785.06	2.16
2179	781.47	783.64	2.17
2180	779.97	782.33	2.36
2181	779.03	781.05	2.02
2182	769.89	772.01	2.12
2183	775.62	777.62	2.00
2184	781.29	783.43	2.14
2185	786.30	788.31	2.01
2186	785.88	787.92	2.04
2187	785.47	787.51	2.04
2188	785.06	787.10	2.04
2189	784.63	786.77	2.14
2190	784.19	786.42	2.23
2191	783.31	785.44	2.13
2192	782.01	784.04	2.03
2193	780.49	782.78	2.29
2194	779.13	781.52	2.39
2195	768.63	770.70	2.07
2196	773.45	775.49	2.04
2197	776.64	780.78	2.14
2198	784.07	786.11	2.04
2199	783.68	785.74	2.06
2200	783.25	785.40	2.15
2201	782.87	785.05	2.18
2202	782.41	784.48	2.07
2203	782.04	784.15	2.11
2204	781.02	783.20	2.18
2205	779.86	782.05	2.19
2206	777.65	780.04	2.39
2207	771.38	773.56	2.18
2208	770.26	772.36	2.10
2209	776.83	778.88	2.05
2210	781.98	784.04	2.06
2211	781.48	783.66	2.18
2212	781.10	783.31	2.21
2213	780.57	782.73	2.16
2214	780.00	782.28	2.28
2215	779.66	781.91	2.25
2216	778.40	781.00	2.60
2217	769.32	771.40	2.08
2218	770.36	772.39	2.03
2219	776.74	778.85	2.11
2220	779.45	781.78	2.33
2221	779.00	781.38	2.38
2223	778.55	780.88	2.33
2224	778.37	780.58	2.21
2225	767.01	769.07	2.06
2226	770.58	772.62	2.04
2227	777.45	779.85	2.40
2228	777.50	779.60	2.10
2229	774.96	777.07	2.11
2230	765.78	767.86	2.08
2231	772.45	774.82	2.37



VICINTY MAP – NOT TO SCALE

NOTES

1. THE STREET ADDRESS OF THE PROPERTY SHOWN ON THIS SURVEY IS 3195 PINE HALL ROAD, WALNUT COVE, NORTH CAROLINA.
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LEGEND

CONTOUR —890—

LIMITS OF FLAT AREA

ASBUILT GRID POINT ×2006

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

EARTHWORK VOLUME REPORT

Shrinkage/swell factors:	Excavation 1.0000	Fill 1.0000	
First Surface		Second Surface	
FLAT AREA SUBGRADE ASBUILT		FLAT AREA FINISH GRADE ASBUILT	
Excavation Volume (Cu. Yd.)		Fill Volume (Cu. Yd.)	
0		40,782.0	

REVISIONS:
JANUARY 02, 2009 – CLIENT COMMENTS

NORTH CAROLINA REGISTERED SEAL L-3840 LAND SURVEYOR JOHN M. STORY 11/12/09

TOPOGRAPHIC SURVEY
FOR
DUKE ENERGY, BELEWS CREEK STEAM STATION
OF
PINE HALL ROAD ASH LANDFILL CLOSURE
FLAT AREA FINISH GRADE ASBUILT

BELEWS CREEK STOKES COUNTY NORTH CAROLINA

CAD DWG NO.: N907 – 001	DSGN: N/A
DATE: DECEMBER 01, 2008	DRWN: C.P.S.
R.L.S. NO.: L–3840	CHKD: J.M.S.
DWG NO.: NC–755–08–D	FIELD BOOK:
SHEET 1 OF 1	PROJ. NO.:
	SCALE: 1" = 100'

Donaldson Garrett & Associates, Inc.
MACON • CHARLOTTE
500 EAST MOREHEAD STREET SUITE 103
CHARLOTTE, N.C. 28202–2606
(704) 374–1955 Fax: (704) 374–1956
http://www.dg–a.com

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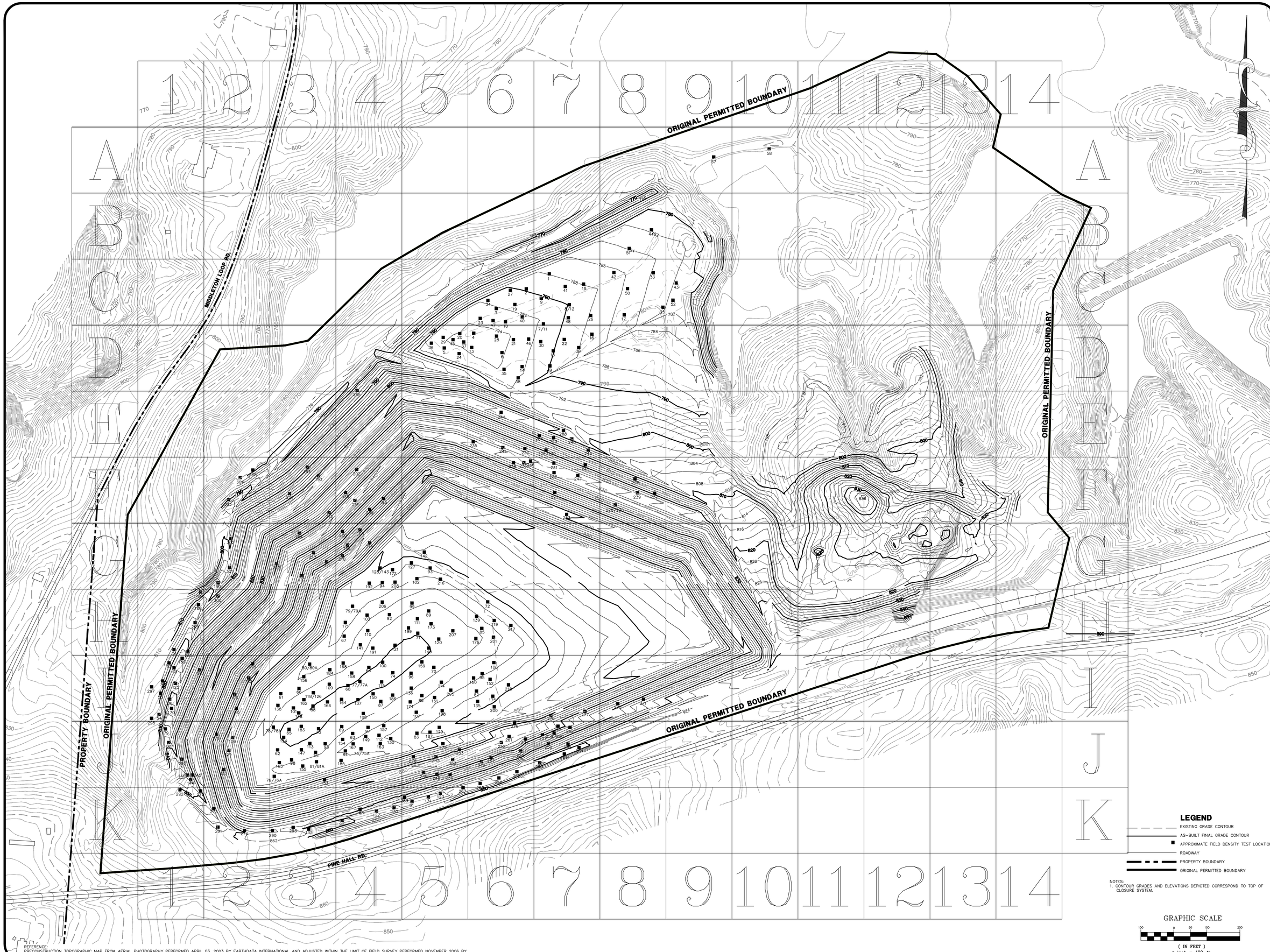

REFERENCE:
PRECONSTRUCTION TOPOGRAPHIC MAP FROM AERIAL PHOTOGRAPHY PERFORMED APRIL 03, 2003 BY EARTHDATA INTERNATIONAL AND ADJUSTED WITHIN THE LIMIT OF FIELD SURVEY PERFORMED NOVEMBER 2006 BY STANTEC INC. AS-BUILT TOPOGRAPHIC MAP FROM SURVEY DATA PROVIDED BY MORGAN CORP. IN A DRAWING DATED DECEMBER 12, 2008. ALL FIELD DENSITY TEST LOCATIONS ARE APPROXIMATE.

Duke Energy ©

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WWW.SMEINC.COM

NO.	DATE	DESCRIPTION	BY

SUBGRADE GRADING FIELD DENSITY TEST LOCATIONS
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE ENERGY - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CHR	CHECKED BY:
DESIGNED BY:	APPROVED BY:
PROJECT NUMBER: 1356-07-017 PH. 3	
SCALE: 1" = 100'	DATE: 1-20-09
DRAWING: 1	OF: 1

FILE: J:\PROJECTS\DUKE ENERGY\BELEWS CREEK\CLOSURE\CAD\PH 3 DRAWINGS

ORIGINAL PERMITTED BOUNDARY

MIDDLETON LOOP RD.

PROPERTY BOUNDARY

PINE HALL RD.

LEGEND

- EXISTING GRADE CONTOUR
- AS-BUILT FINAL GRADE CONTOUR
- APPROXIMATE FIELD DENSITY TEST LOCATION
- ROADWAY
- PROPERTY BOUNDARY
- ORIGINAL PERMITTED BOUNDARY

NOTES:
1. CONTOUR GRADES AND ELEVATIONS DEPICTED CORRESPOND TO TOP OF CLOSURE SYSTEM.

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.

REFERENCE:
PRECONSTRUCTION TOPOGRAPHIC MAP FROM AERIAL PHOTOGRAPHY PERFORMED APRIL 03, 2003 BY EARTHDATA INTERNATIONAL AND ADJUSTED WITHIN THE LIMIT OF FIELD SURVEY PERFORMED NOVEMBER 2006 BY STANTEC INC. AS-BUILT TOPOGRAPHIC MAP FROM SURVEY DATA PROVIDED BY MORGAN CORP. IN A DRAWING DATED DECEMBER 12, 2008. ALL FIELD DENSITY TEST LOCATIONS ARE APPROXIMATE.

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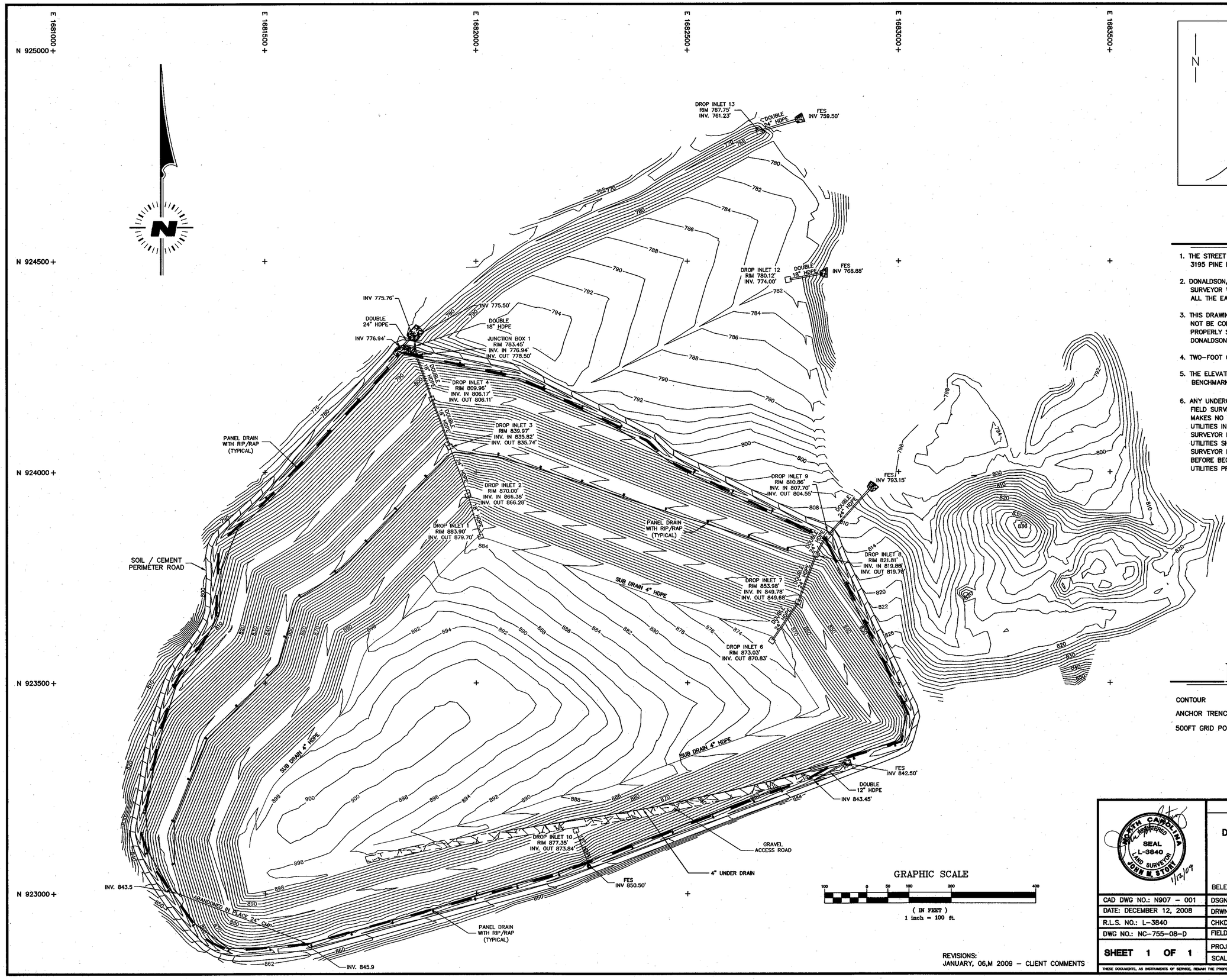
NO.	DATE	DESCRIPTION	BY

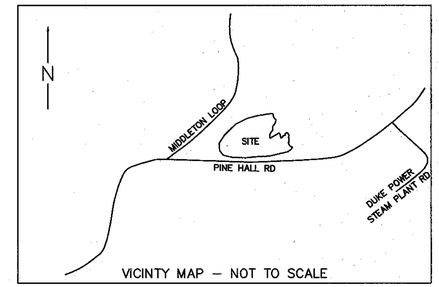
COVER GRADING FIELD DENSITY TEST LOCATIONS
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE ENERGY - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CHR	CHECKED BY:
DESIGNED BY:	APPROVED BY:
PROJECT NUMBER: 1356-07-017 PH. 3	
SCALE: 1" = 100'	DATE: 1-20-09
DRAWING: 1	OF: 1

SCALE:1" = 100' DRAWN BY:CHR DATE:1-20-09 FILE:J:\PROJECTS\DUKE ENERGY\PINE HALL ASH\DWG\PH3\PH3.DWG





VICINTY MAP – NOT TO SCALE

NOTES

1. THE STREET ADDRESS OF THE PROPERTY SHOWN ON THIS SURVEY IS 3195 PINE HALL ROAD, WALNUT COVE, NORTH CAROLINA.
2. DONALDSON, GARRETT, & ASSOCIATES, INC. AND THE LAND SURVEYOR WHOSE SEAL IS AFFIXED HEREON DO NOT GUARANTEE THAT ALL THE EASEMENTS WHICH MAY AFFECT THIS PROPERTY ARE SHOWN.
3. THIS DRAWING WAS CREATED ELECTRONICALLY. THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT UNLESS IT HAS BEEN PROPERLY SEALED AND ORIGINALLY SIGNED BY A LAND SURVEYOR OF DONALDSON, GARRETT, & ASSOCIATES, INC.
4. TWO–FOOT CONTOUR INTERVALS ARE SHOWN.
5. THE ELEVATIONS ON THIS SURVEY ARE REFERENCED TO NCGS BENCHMARK "METTS" (PID AF9381). ELEVATION = 808.00 NAVD88.
6. ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THAT AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. BEFORE BEGINNING ANY CONSTRUCTION OR BORINGS, CONTACT THE UTILITIES PROTECTION CENTER AT 1–800–632–4949.

LEGEND

CONTOUR	890
ANCHOR TRENCH	
500FT GRID POINT	N 923500 +

NORTH CAROLINA REGISTERED SEAL L-3840 LAND SURVEYOR JOHN M. STORY
1/12/09

TOPOGRAPHIC SURVEY
FOR
DUKE ENERGY, BELEWS CREEK STEAM STATION
OF
PINE HALL ROAD ASH LANDFILL CLOSURE
STORM DRAINAGE ASBUILT

BELEWS CREEK | STOKES COUNTY | NORTH CAROLINA

CAD DWG NO.: N907 – 001	DSGN: N/A
DATE: DECEMBER 12, 2008	DRWN: C.P.S.
R.L.S. NO.: L–3840	CHKD: J.M.S.
DWG NO.: NC–755–08–D	FIELD BOOK:
SHEET 1 OF 1	PROJ. NO.:
	SCALE: 1" = 100'

Donaldson Garrett & Associates, Inc.
MACON • CHARLOTTE
500 EAST MOREHEAD STREET SUITE 103
CHARLOTTE, N.C. 28202–2606
(704) 374–1955 Fax: (704) 374–1956
http://www.dg–a.com

REVISIONS:
JANUARY, 06,M 2009 – CLIENT COMMENTS

THESE DOCUMENTS, AS INSTRUMENTS OF SERVICE, REMAIN THE PROPERTY OF D, G & A AND NO PART THEROF MAY BE USED OR REPRODUCED IN ANY FORM WITHOUT WRITTEN PERMISSION.

EXECUTIVE SUMMARY

CONSTRUCTION CERTIFICATION REPORT

PINE HALL ROAD ASH LANDFILL CLOSURE
PERMIT NO. 85-03
DUKE ENERGY
BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

S&ME Project No. 1356-07-017 Ph. 3

Prepared for:

Duke Energy
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:

S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273
(704) 523-4726

January 2009
Revised February 2009

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1. PROJECT DESCRIPTION

The Pine Hall Road Ash Landfill (Permit No. 85-03) is a landfill facility owned and operated by Duke Energy. The landfill facility is located near the Belews Creek Steam Station in Belews Creek, North Carolina. This Certification Report documents the closure of the landfill facility in accordance with the Closure Plan developed by S&ME, Inc. (S&ME), dated June 21, 2007, and approved by the North Carolina Department of Environment and Natural Resources (NCDENR). The Certification Report is organized into five submittals:

- Submittal 1 discusses structural fill
- Submittal 2 discusses the installation of the linear low-density polyethylene (LLDPE) geomembrane
- Submittal 3 discusses the installation of the geonet composite
- Submittal 4 includes construction photographs
- Submittal 5 includes field reports and progress meeting minutes.

Pertinent documentation, including Construction Quality Assurance (CQA) forms, field and laboratory test results, and record drawings are included in the associated submittals.

The Pine Hall Road Ash Landfill Closure project site can be generally characterized into four areas: the Closure Area, the Flat Area, the Additional Infrastructure Area, and the Borrow Area. The four main project areas are shown in Figure 1, Appendix I.

2. CLOSURE AREA

The Closure Area is approximately 37.9 acres and was defined as being bounded by the geosynthetic cover system anchor trench (see Figure 1). The cover system Alternative 1, as discussed in the Closure Plan, was constructed over the Closure Area. This consisted of, from bottom to top, 40-mil LLDPE geomembrane, geonet composite, 18 inches of compacted soil cover, and 6 inches of vegetative soil cover. Construction activities within the Closure Area generally included earthworks cut and fill for subgrade, geosynthetics installation, compacted soil cover grading, drainage structure installation, seeding, matting, and access road construction.

3. FLAT AREA

The area adjacent to the northeast slope of the Closure Area was termed the Flat Area and is approximately 14.5 acres (see Figure 1). The Flat Area was defined as including the access road on the north, east, and south and bounded on the west by the Closure Area. Construction activities within the Flat Area generally consisted of earthworks cut and fill for subgrade, grading for soil cover, drainage structure installation, seeding, matting, and soil/cement stabilization for an access road.

4. BORROW AREA

The Borrow Area is approximately 10.1 acres and was defined as the area bounded by the Flat Area on the west and the clearing limits on the north, east, and south (see Figure 1). Construction activities within the Borrow Area generally consisted of soil cut, grading for drainage, and seeding.

5. ADDITIONAL INFRASTRUCTURE AREA

The Additional Infrastructure Area is approximately 4.7 acres and was bounded by the Flat Area on the east, the Closure Area anchor trench on the inside, and the tie-in with existing grades on the outside (see Figure 1). Construction activities within the Additional Infrastructure Area generally consisted of grading for subgrade, grading for final grade, seeding, matting, and soil/cement stabilization for an access road.

6. CONSTRUCTION

Construction of the Pine Hall Road Ash Landfill Closure was performed by Morgan Corp. and started in April 2008. Construction was substantially completed by December 16, 2008. S&ME monitored construction activities, including coordinating prequalification and conformance testing for geosynthetics before installation, geosynthetics performance testing during installation, participation in erosion and sediment control inspections, and monitoring and testing earthworks.

The attached appendices include the following:

- Appendix I – Figure 1: Site Definitions
- Appendix II – Summary of Geosynthetics Test Results
  - Interface Friction Testing Summary
  - 40-mil LLDPE Textured Geomembrane Physical Properties and Conformance Testing Summary
  - Geonet Composite Physical Properties and Conformance Testing Summary
  - 40-mil LLDPE Textured Geomembrane Destructive Seam Sample Testing Summary
- Appendix III – Certificate of Completion for Pine Hall Road Ash Landfill Closure.

7. CERTIFICATION

Results of construction monitoring activities indicate that the Pine Hall Road Ash Landfill Closure was constructed in general accordance with the approved Closure Plan. A Construction Certification Statement signed and sealed by an engineer registered in the state of North Carolina is included in Appendix III.

8. POST-CLOSURE USE

Duke Energy currently has no plans for post-closure use of the site. Any future post-closure use will be discussed with and approved by NCDENR and will maintain the geosynthetic cover system.

Post-closure maintenance shall be conducted in accordance with the Closure Plan and will generally include observation, inspection, and maintenance of the stormwater management system and final cover system integrity.

9. GROUNDWATER CORRECTIVE ACTION PLAN

The Pine Hall Road ash landfill was originally permitted in 1983. The original landfill was unlined and was permitted with a soil cap one foot thick on the side slopes and two feet thick on flatter areas. A subsequent expansion (Phase I Expansion) was permitted in 2003. This phase was also unlined, but was permitted with a synthetic cap system to be applied at closure.

After groundwater monitoring results in excess of the standards found in NCAC T15A .0200 were observed in wells adjacent to the ash basin and the landfill expansion, the placement of additional ash in the Phase I Expansion was halted. Duke Energy responded by stopping ash landfill operations and developing and implementing the landfill Closure Plan which included the engineered synthetic cover system for the entire landfill, both the original landfill and the Phase 1 Expansion. The construction of the synthetic cover system was completed in December 2008.

Prior to finalizing the design for the closure, Duke conducted discussions with the NCDENR Solid Waste section to develop the Facility Boundary, Review Boundary, and Compliance Boundary for the landfill. The discussions considered the proximity of the landfill to the ash basin and the configuration of the Review and Compliance Boundaries for both the landfill and the ash basin. In these discussions, Duke and NCDENR representatives discussed abandonment of several monitoring wells and the installation of additional monitoring wells. These wells are noted in the Closure Approval Plan[1]. At the conclusion of those discussions, Duke's understanding was that:

1. The cover system will significantly reduce infiltration into the landfill, thereby reducing the migration of potential waste-related constituents into groundwater. Therefore, the landfill closure serves substantively, as a groundwater corrective action. Specifically, the landfill closure entailed regrading the landfill side slopes

[1] Pine Hall Road Ash Landfill Closure Plan Approval Document ID RC03425, dated December 7, 2007.

and top deck to improve stormwater management and construction of a geosynthetic and soil cover system.

2. Several of the wells which had monitoring results in excess of 2L standards were located either a) within the waste of the Review Boundary for the landfill, b) abandoned because of construction activities associated with the closure, or c) within the Review Boundary for the ash basin.

3. As a result, Duke agreed to install the additional groundwater monitoring wells described in the Closure Plan Approval. Duke also would continue to sample the new and existing groundwater monitoring wells and surface water sample locations associated with the finalized Review and Compliance Boundaries. A decision concerning further action relative to development of a Corrective Action Plan would be deferred until a later date.

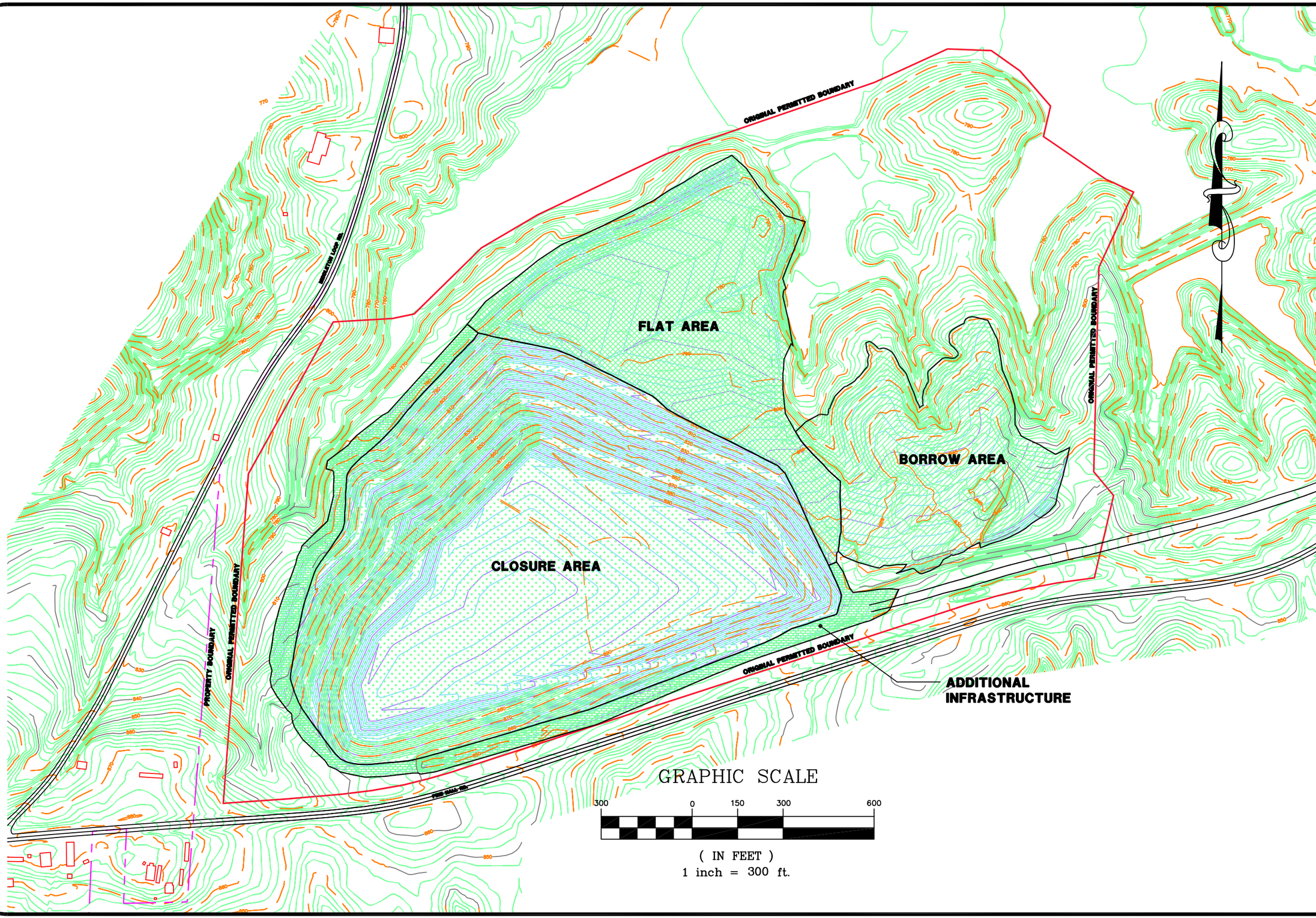
Duke Energy has installed additional ground water monitoring wells in accordance with the Closure Approval Plan. Duke will sample all groundwater monitoring wells and surface water sample locations for Appendix I constituents, in addition to the currently analyzed constituents in accordance with the approved Closure Plan and permit requirements.

10. GAS MONITORING

The landfill is a monofill, containing fly ash from the combustion of coal at Belews Creek Steam Station. No other wastes were permitted to be disposed of in this landfill, nor have any other types of wastes been placed in this landfill. Rule .0503(2)(a) requires that the concentration of explosive gases be monitored at site structures and at the property boundary. The presence of methane gas (odor and distressed vegetation) was not observed during closure construction. Fly ash from combustion of coal is not known to generate or emit explosive gases. Based on this information, no monitoring for landfill gases is recommended.

APPENDIX I

(FIGURE I)



SCALE: 1" = 300'

PROJECT NO. 1356-07-017-3

DATE: 12/14/08

DRAWN BY: CHR

CHECKED BY:

S&ME
WWW.SMEINC.COM

EXECUTIVE SUMMARY
SITE DEFINITIONS

PINE HALL ROAD ASH LANDFILL CLOSURE
BELEWS CREEK, NORTH CAROLINA

FIGURE NO.

1

APPENDIX II

(Summary of Geosynthetics Test Results)

PINE HALL ROAD ASH LANDFILL CLOSURE
BELEWS CREEK, NORTH CAROLINA
S&ME PROJECT NO. 1356-07-017 PH. 3

INTERFACE FRICTION TESTING SUMMARY

INTERFACE 1	INTERFACE 2	TESTED FRICTION ANGLE (DEGREES)(1)	TESTED ADHESION (PSF)(1)	EFFECTIVE NORMAL STRESS (PSF)(2)	EFFECTIVE FRICTION ANGLE (DEGREES)(3)	REQUIRED FRICTION ANGLE (DEGREES)(4)
Subgrade - Soil	LLDPE - Tall Spike Side	31.0	42	480	34.5	28
Subgrade - Soil	LLDPE - Short Spike Side	37.9	43	480	41.0	28
Subgrade - Ash	LLDPE - Tall Spike Side	21.5	95	480	30.6	28
Subgrade - Ash	LLDPE - Short Spike Side	30.7	54	480	35.2	28
LLDPE - Tall Spike Side	Geonet Composite	35.9	26	480	37.9	28
LLDPE - Short Spike Side	Geonet Composite	39.3	46	480	42.4	28
Geonet Composite	Cover Soil	32.7	76	480	38.7	25

Notes:
(1) Interface friction testing performed by TRI/Environmental.
(2) The effective normal stress assumed to be two feet of soil with a unit weight of 120 pcf and a live load of 240 psf.
(3) The effective friction angle is calculated by drawing a straight line from the origin to the peak friction angle envelope at the effective normal stress.
(4) Reference Specification 02672, Page 8, and Specification 02675, Page 6.

PINE HALL ROAD ASH LANDFILL CLOSURE
BELEWS CREEK, NORTH CAROLINA
S&ME PROJECT NO. 1356-07-017 PH. 3

40-MIL LLDPE TEXTURED GEOMEMBRANE
PHYSICAL PROPERTIES AND CONFORMANCE TESTING SUMMARY

DESCRIPTION	TEST STANDARD	PROJECT SPECIFICATIONS (1)	TEST FREQUENCY		NUMBER OF TESTS(3)			
			MANF. QC(1) (lbs)	CONF. QA(2) (ft^2)	REQUIRED		PASSING	
					MANF. QC	CONF. QA	MANF. QC	CONF. QA
Thickness (mil)	ASTM D 5994	40	each roll	100,000	136	19	136	21
Asperity Height (mil)	GM 12	10	every 2nd roll	N/A	68	N/A	136	N/A
Density (g/cm^3)	ASTM D 792 / ASTM D 1505	0.939	200,000	100,000	2	19	6	21
Yield Strength (lb/in)	ASTM D 6693	N/A	N/A	100,000	N/A	19	N/A	21
Yield Elongation (%)	ASTM D 6693	N/A	N/A	100,000	N/A	19	N/A	21
Break Strength (lb/in)	ASTM D 6693	60	20,000	100,000	22	19	33	21
Break Elongation (%)	ASTM D 6693	250	20,000	100,000	22	19	33	21
2% Modulus (lb/in)	ASTM D 5323	2400	ea. formulation	N/A	6	N/A	N/R	N/A
Tear Resistance (lb)	ASTM D 1004	22	45,000	100,000	10	19	19	21
Puncture Resistance (lb)	ASTM D 4833	44	45,000	N/A	10	N/A	19	N/A
Axi-Symmetric Break Resistance Strain (%)	ASTM D 5617	30	ea. formulation	N/A	6	N/A	N/R	N/A
Carbon Black Content (%)	ASTM D 1603	2 - 3	45,000	100,000	10	19	33	21
Carbon Black Dispersion	ASTM D 5596	9 in Categories 1 or 2 and 1 in Category 3	45,000	N/A	10	N/A	33	N/A
Oxidative Inductive Time - Standard (min)	ASTM D 3895	100	200,000	N/A	2	N/A	5	N/A
Oxidative Inductive Time - High Pressure (min)	ASTM D 5885	400	200,000	N/A	2	N/A	N/R	N/A
Oven Aging at 85° C - Standard (%)	ASTM D 3895	35	ea. formulation	N/A	6	N/A	N/R	N/A
Oven Aging at 85° C - High Pressure (%)	ASTM D 5885	60	ea. formulation	N/A	6	N/A	N/R	N/A

Total Number of Rolls Delivered to Site:	136
Total Area of Rolls Delivered to Site (ft^2):	1,874,352
Total Weight of Geomembrane Delivered to Site (lbs):	444,805
Total Number of Formulations:	6

Notes:
(1) Reference Specification 02672, Pages 11 and 12, Tables 2672-C and 2672-D.
(2) Reference "Construction Quality Assurance Plan", S&ME, Inc., October, 2007.
(3) The total number of tests required is based on the total quantity of material delivered to the site.
N/A – Not Applicable
N/R – Not Requested

PINE HALL ROAD ASH LANDFILL CLOSURE
BELEWS CREEK, NORTH CAROLINA
S&ME PROJECT NO. 1356-07-017 PH. 3

GEONET COMPOSITE
PHYSICAL PROPERTIES AND CONFORMANCE TESTING SUMMARY

DESCRIPTION	TEST STANDARD	PROJECT SPECIFICATIONS (1)	TEST FREQUENCY		NUMBER OF TESTS(3)			
			MANF. QC(1) (ft^2)	CONF. QA(2) (ft^2)	REQUIRED		PASSING	
					MANF. QC	CONF. QA	MANF. QC	CONF. QA
Geonet								
Thickness (mil)	ASTM D 5199	200	50,000	100,000	38	19	69	21
Density (g/cm^3)	ASTM D 1505	0.94	50,000	100,000	38	19	69	21
Tensile Strength (lb/in)	ASTM D 5035	45	50,000	N/A	38	N/A	69	21
Carbon Black Content (%)	ASTM D 1603	2 - 3	50,000	N/A	38	N/A	69	21
Resin								
Polymer Density (g/cm^3)	ASTM D 1505	0.94	once per lot	N/A	4	N/A	4	N/A
Melt Flow Index (g/10 min)	ASTM D 1238	1	once per lot	N/A	4	N/A	4	N/A
Geotextile								
Mass per Unit Area (oz/yd^2)	ASTM D 5261	8	100,000	N/A	19	N/A	40	N/A
Grab Tensile Strength (lb)	ASTM D 4632	200	100,000	N/A	19	N/A	40	N/A
Puncture (lb)	ASTM D 4833	110	100,000	N/A	19	N/A	40	N/A
AOS, US Sieve	ASTM D 4751	80	100,000	N/A	19	N/A	40	N/A
Water Flow Rate (cm/s)	ASTM D 4491	0.3	100,000	N/A	19	N/A	40	N/A
UV Resistance	ASTM D 4355	N/A	once per resin formulation	N/A	4	N/A	N/R	N/A
Geonet Composite								
Ply Adhesion (lb/in)	GRI GC-7	1	50,000	100,000	19	19	69	N/R
Transmissivity ($m^3/m/s$)	ASTM D 4716	$1.4x10^{-3}$	540,000	N/A	4	N/A	4	N/A

Total Number of Rolls Delivered to Site:	686
Total Area of Rolls Delivered to Site (ft^2):	1,901,200
Total Weight of Geomembrane Delivered to Site (lbs):	853,772
Total Number of Formulations:	4

Notes:
(1) Reference Specification 02675, Pages 8 and 9, Tables 2675-A and 2675-B.
(2) Reference "Construction Quality Assurance Plan", S&ME, Inc., October, 2007.
(3) The total number of tests required is based on the total quantity of material delivered to the site.
N/A – Not Applicable
N/R – Not Requested

PINE HALL ROAD ASH LANDFILL CLOSURE
BELEWS CREEK, NORTH CAROLINA
S&ME PROJECT NO. 1356-07-017 PH. 3

40-MIL LLDPE TEXTURED GEOMEMBRANE
DESTRUCTIVE SEAM SAMPLE TESTING SUMMARY

DESCRIPTION	TEST STANDARD	PROJECT SPECIFICATIONS (1)		TEST FREQUENCY	NUMBER OF SAMPLES	NUMBER OF FAILURES	ADDITIONAL NUMBER OF SAMPLES TO ISOLATE FAILURES	TOTAL NUMBER OF SAMPLES
		Peel (lb/in)	Shear (lb/in)					
Fusion Seams	ASTM D 6392	50	60	1 / 500 linear feet	168	1	2	170
Extrusion Seams	ASTM D 6392	44	60	1 / 500 linear feet	0	0	0	0

Total Length of Fusion Seams: 83,927
Total Length of Extrusion Seams 85.5

Notes: (1) Reference Specification 02675, Pages 8 and 9, Tables 2675-A and 2675-B.

APPENDIX III

(Certificate of Completion)

CONSTRUCTION CERTIFICATION STATEMENT
FOR
PINE HALL ROAD ASH LANDFILL CLOSURE

OWNER: DUKE ENERGY
OPERATOR: DUKE ENERGY

by:

S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273-5560

I hereby certify that the results of construction quality assurance activities conducted by S&ME Inc., as summarized in this report, indicate that the Pine Hall Road Ash Landfill Closure was constructed in general accordance with the requirements of the approved Closure Plan.

NORTH CAROLINA PROFESSIONAL SEAL 032153 ENGINEER KENNETH R. DALY

1/8/09

Kenneth R. Daly, P.E.
N.C. Registration No. 032153

SUBMITTAL NO. 5

PROJECT DOCUMENTATION

PINE HALL ROAD ASH LANDFILL CLOSURE
PERMIT NO. 85-03
DUKE ENERGY
BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA
S&ME Project No. 1356-07-017 Ph. 3

Prepared for:

Duke Energy
526 South Church Street
Charlotte, North Carolina 28202

Prepared by:

S&ME, Inc.
9751 Southern Pine Boulevard
Charlotte, North Carolina 28273
(704) 523-4726

January 2009

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1. PROJECT DOCUMENTATION

Construction activities and project progress were documented throughout construction. While on site, S&ME technicians observed construction activities and prepared field reports which are included in Appendix I. Project meetings including the preconstruction meeting, the geosynthetics preconstruction meeting, and general progress meetings were documented in meeting minutes and included in Appendix II. Changes to the project plans and specifications were documented with a Notice of Change and are included in Appendix III.

APPENDIX I

(FIELD REPORTS)

FIELD REPORTS

APRIL 2008

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
April 8, 2008	1356-07-017

Project/Location: Pine Hall Rd LF / Belews Creek NC

Contractor: Morgan Corp.

Weather/Temp: PC / 70's

Present at Site: Bill Waggoner, Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Test pits

Observations/Remarks:

Went onsite to observe test pit excavation along northern flat area embankment. Some design/regrade may take place in this area. Small four test pits excavated to minus 15 feet, refer to attached sheet. Obtained bucket samples on TP's 1 and 4, took into soils lab.

Jimmy Atkins

On-Site Representative/Company | **S&ME Personnel**

Disclaimer: The presence of S&ME at the project site shall not be construed as an acceptance or approval of activities at the site. S&ME is at the project site to perform specific services and has certain responsibilities which are limited to those specifically authorized in our agreement with our client. In no event shall S&ME be responsible for the safety or the means and methods of other parties at the project site. **The information presented in this field report has not been reviewed by an engineer and is to be considered preliminary.**

ENGINEERING INTEGRITY.

S&ME

Pine Hall Rd LF

4-8-08 Test Pits

Pt. 1: E1682561 / N924746 "Cut 8/10" Moved approximately 50's

" " E1682577.05 / N924715.46 "Cut 0.30"

0-1' Tan Br Sa Si

1'-9' Flyash

9'-14' Lt. Br Sa Si Got bucket sample

Pt. 2: E1682418 / N924606 "Fill 2.70"

0-2.5' Br Sa Si

2.5'-15' Flyash

Pt. 3: E1682214 / N924506 "Fill 6.80"

0-1 Tan Br Sa Si

1'-15' Flyash

Pt. 4: E1681946 / N924313 "Fill 1.30"

0-1' Topsoil-Roots Br Sa Si

1'-5' Flyash

5'-15' Tan Br Sa Si Got bucket sample

S&ME
ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
April 16, 2008	13560-07-017

Project/Location: Pine Hall Rd LF Closure/Belews Creek NC

Contractor	Weather/Temp
Morgan Corp.	Sunny/50's

Present at Site: Bill Waggoner - Mike Cook, Mark Webb - Craig Greeson, Cedric Ruhl

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend weekly construction meeting. Morgan still stripping topsoil off the North bench, and hauling to stockpile w/ two 627 scrapers. Offsite topsoil being hauled in w/ dump trucks (tandem & tri-axles). Morgan keeping up w/ load count. Dozer w/ root rake cleaning up in borrow area. Client concerned about excess stripping. Flat area grades lowered 15 inches for balance purposes.

Equipment onsite: 3 dozers D-6N-R&T
2-627 scrapers
2-trackhoes 320 & 330
1-815 sheepsfoot
1-smooth drum
1-rubbertire loader
1-skidsteer
1-waterwagon 5000g
1-challenger

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

Disclaimer: The presence of S&ME at the project site shall not be construed as an acceptance or approval of activities at the site. S&ME is at the project site to perform specific services and has certain responsibilities which are limited to those specifically authorized in our agreement with our client. In no event shall S&ME be responsible for the safety or the means and methods of other parties at the project site. **The information presented in this field report has not been reviewed by an engineer and is to be considered preliminary.**

S&ME Form FR1F03

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
April 17, 2008	1356-07-017
Project/Location	
Pine Hall Rd LF Closure/Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny/40-70's
Present at Site	
Bill Waggoner Mark Webb	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend daily safety meeting 7-7:15. Observed earthwork contractor stripping topsoil off of the NE bench area, material hauled to stockpile. Contractor utilizing two 627 scrapers for stripping topsoil. Offsite topsoil continues to be hauled in. I proofrolled the W half of the flat area N of existing drainage feature, w/a loaded 627 scraper. Area appears stable, o.k. to fill on. Started existing drainage pipe removal from closure area (SE). Three lines (#'s 13, 14 & 15) taken out today, 300lf total, all 12 inch CPP. Stripped existing sediment basin dam ~ top & both sides. Placed a little fill (S1) on flat area (N side) w/ scrapers, cut off of NE flat area. This filling was stopped by client, until design changes approved. Clean up of borrow area continues w/ dozer mounted root rake. Contractor taking care to salvage all pipe / drop boxes / flared ends etc... during removal.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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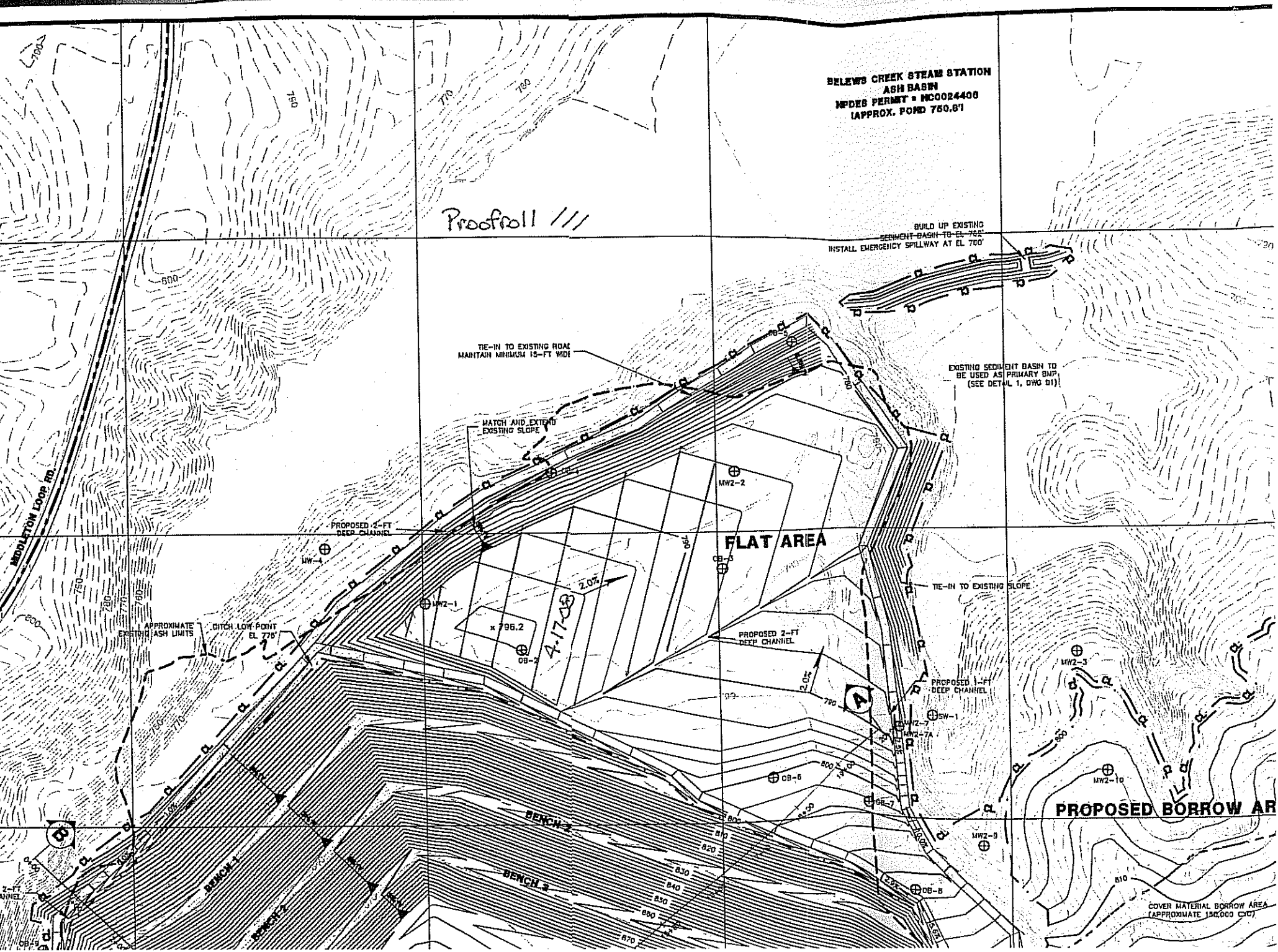
BELEWS CREEK STEAM STATION
ASH BASIN
NPDES PERMIT = NC0024406
(APPROX. POND 750.6')
Proofroll ///
BUILD UP EXISTING
SEDIMENT BASIN TO EL 782'
INSTALL EMERGENCY SPILLWAY AT EL 780'
TIE-IN TO EXISTING ROAD
MAINTAIN MINIMUM 15-FT WIDE
EXISTING SEDIMENT BASIN TO
BE USED AS PRIMARY BMP
(SEE DETAIL 1, DWG 01)
MATCH AND EXTEND
EXISTING SLOPE
MIDDLETON LOOP RD.
PROPOSED 2-FT
DEEP CHANNEL
FLAT AREA
TIE-IN TO EXISTING SLOPE
APPROXIMATE
EXISTING ASH LIMITS
DITCH LOW POINT
EL 775'
x 796.2
4.17
2.0%
PROPOSED 2-FT
DEEP CHANNEL
PROPOSED 1-FT
DEEP CHANNEL
BENCH 1
BENCH 2
BENCH 3
PROPOSED BORROW AR
COVER MATERIAL BORROW AREA
(APPROXIMATE 150,000 CYD)
MW2-1
MW2-2
MW2-3
MW2-7
MW2-7A
MW2-8
MW2-10
MW-4
SW-1
OB-1
OB-2
OB-3
OB-5
OB-6
OB-7
OB-8

S&ME
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Field Report

Date	Job No.
April 18, 2008	13560-07-017
Project/Location	
Pine Hall Rd LF Closure / Belews Creek NC	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny / 40-70's
Present at Site	
Bill W. Mark W. - Marty H.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend daily safety meeting 7-7:20. Observed scrapers picking up topsoil piles from around closure area. Material laid on topsoil stockpile. Topsoil continues to be hauled in. Existing storm drain pipe removal continues. Line #16 - 1401f - 12" CPP, started on lines 11 & 12 - 24", this afternoon.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
April 21, 2008	1356-07-017

Project/Location: Pine Hall Rd LF Closure / Belews Creek

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Contractor	Weather/Temp
Morgan Corp.	Cloudy Rain/40's

Present at Site: Mark Webb, Bill Waggoner

Time	Mileage

Observations/Remarks:

Attend safety meeting. Contractor got another 30 day burning permit on Friday 4-18-08. Approximately 120LF of 24 inch HDPE pipe, excavated and removed on Friday 4-18-08, from closure area ~ line #12. Excavated area backfilled. No earthwork today, to wet, half an inch of rain measured in guage this morning, by 7am. Contractor to inspect silt fences, and turn brush piles today.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
April 22, 2008	1356-07-017

Project/Location: Pinehall Rd LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy / 50's

Present at Site: Mark Webb

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting at 7am this morning. A quarter inch of rain measured since yesterday morning. No earthwork today, still to wet, contractor to let dry.

Jimmy Adkins

On-Site Representative/Company — **S&ME Personnel**

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Field Report

Date	Job No.
April 23, 2008	13560-07-017

Project/Location: Pine Hall Rd LF Closure/Belews Creek

Contractor: Morgan Corp

Weather/Temp: PC/Sunny-50-70's

Present at Site: Bill W. - Mike C. Mark W. - Craig G - Earl W. Ken D. - Cedric R.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend weekly construction meeting. Looked at wet/soft area along existing drainage feature in the flat area. Contractor excavated two test pits in the wet area, both minus 5 to 6 feet before stabilizing conditions. S&ME recommends to undercut 2 to 3 feet, and then place a bridge lift (3 to 4 feet) across. Contractor spent the morning blading up haul roads and fill area. Continued clean up of borrow area. This afternoon I observed S1 fill placement on the North flat area, with two 627 scrapers. Two field density test (#'s 1 & 2) were performed (shelby tube method). Both test exceed 95% compaction. Informed contractor of test results. Today the utilities crew removed 120LF of 12 inch CPP (line #12) from the closure area. Area was backfilled for safety.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
April 24, 2008	13556-07-017

Project/Location: Pine Hall Rd LF Closure/Belews Creek

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Contractor	Weather/Temp
Morgan Corp	Sunny/50-70's

Present at Site: Mark Webb, Bill Waggoner

Time	Mileage

Observations/Remarks:

Attend safety meeting, 7-7:20am.
Observed ST fill placement on the North Flat Area.
Today eight field density test (#'s 3-10) were performed.
Test #'s 7 and 8 failed. Informed contractor of test results. Non-compliance test areas to be recompacted for retest. Existing storm pipe removed today. Line 9 finished - 80 feet of 12 inch CPP / Line 11 - 110 feet of 24" CPP and Line 12 - 120 feet of 24" CPP. Continued import of topsoil.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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Field Report

Date	Job No.
April 25, 2008	1356-07-017

Project/Location: Pine Hall Rd LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny/50s-80s

Present at Site: Bill W., Mark W.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend contractor safety meeting 7-7:30.
Observed dozers pushing flyash off of NE closure out onto the West flat area. I ran six field density test today (#'s 11-16) on the flat area, two of these were retest. All test exceeded 95% compaction. Informed contractor of test results. Fill area sealed down w/ smooth drum roller. Contractor stripping the borrow area w/ 2-627 scrapers, material hauled to stockpile. Also finished stripping the closure area S & N of existing ramp to top ~5.8 acres total today. A D6 dozer utilizied for stripping closure area, piled up and will be loaded onto off-road truck later. Continued import of topsoil. Existing storm pipe removed today - Line 8 - 24" HDPE - 90 feet and Line 10 - 12" CPP - 125 feet.

Jimmy Addis

On-Site Representative/Company

S&ME Personnel

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Field Report

Date	Job No.
April 26, 2008	1356-07-017

Project/Location: Pine Hall Rd LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC/50-70's

Present at Site: Bill W. Mark W. - Marty H.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Set in on contractors safety meeting 7-7:15. Contractor continued stripping the borrow area w/ 2-627 scrapers, material hauled to stockpile. Loaded up strippings from closure area (4/25/08), hauled to stockpile. Importing topsoil, Morgan to stop this at days end. I picked up topsoil samples and a proctor sample (soil/ash mix), transported to soils lab. Completed field reports for the week, and expense report.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
April 28, 2008	1356-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp.	Cloudy-Rain 60's
Present at Site	
Bill Waggoner Mark Webb	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend contractor safety meeting 7-7:45.
Jobsite wet, 6 tenths of an inch of rain measured in onsite rain guage. No earthwork today. Inserted the CD from the wireless internet card into my lap top and followed the on-screen instructions. When prompted I inserted the wireless internet card. Something still not right, could not access the internet. Informed Cedric of situation.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date: April 29, 2008	Job No.: 13560-07-017
Project/Location: Pine Hall Rd Ash LF Closure	
Contractor: Morgan Corp.	Weather/Temp: Sunny Windy / 50's
Present at Site: Bill Waggoner, Mark Webb	
Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 7-7:30.
Two tenths of an inch of rain measured in onsite guage this morning. Contractor performed an erosion and sedimentation control inspection this morning. Some of the silt fence outlets, in need of repairs. Contractor pushing mud off of haul roads and bladeing flat area fill to allow to dry. This afternoon the turning over of the flat area fill continued, and contractor put sheepsfoot roller on as well. One scraper stripped topsoil in the borrow area, and laid on the stockpile.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
April 30, 2008	B56-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp	Sunny/40-70's
Present at Site	
Mark Webb Bill Waggoner	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed earthwork contractor paving down the north slope in flat area, and using for SI fill on flat area. This material removal will relocate the embankment 15 feet in. I performed eight field density test (#'s 17-24) on the flat area today. All test exceeded 95% compaction, informed contractor of test results. Contractor undercut the wet spot in flat area today, average 4 feet in depth. A total of 35 loads (420 cy/yds.) removed. A three foot bridge lift was placed into undercut area and tracked in w/a D6 bulldozer. Contractor resumed import of topsoil today. Completed silt fence outlet repairs today. Storm pipe removal today line #7-92 feet of 24 inch CMP, trench backfilled. I proofrolled proposed 2 ft. deep channel in the flat area w/a loaded Cat 730 articulate dump truck, area stable - o.k. to fill on. Fill area sealed off w/ smooth drum roller.

Jimmy Adkins

On-Site Representative/Company — **S&ME Personnel**

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FIELD REPORTS

MAY 2008

S&ME
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Field Report

Date	Job No.
May 1, 2008	1356-07-017

Project/Location: Pine Hall Rd Ash LF Closure

Contractor: Morgan Corp

Weather/Temp: Sunny / 40-70's

Present at Site: Bill Waggoner, Mark Webb

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 7-7:30.
Contractor continued slope cut/realignment on the North flat area. Material (SI) hauled and placed on the flat area. I proofrolled an area on the backside of the closure that previously held water, was cut loose weeks ago. This area was cleaned up today. I used a loaded Cat 730 articulate dump truck to pass over, area appeared stable, o.k. to fill on. Contractor filled on this area today also. Material pushed off adjacent side slope into low area. Today eight field density test were performed (#'s 25-32), all exceeded 95% compaction. Informed contractor of test results. Storm pipe removal today - line #6 ~ 204 feet of 30 inch CMP. Trench backfilled. Fill area (flats) sealed down. Flat close to subgrade (minus the 2 feet protective cover). Surveyors shooting today.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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Field Report

Date	Job No.
May 2, 2008	13556-07-017

Project/Location: Pine Hall Rd Ash LF Closure

Contractor	Weather/Temp
Morgan Corp.	Sunny/50-70's

Present at Site: Bill W. Mark W.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 7-7:20.
Contractor started placing the S1 cover on flat area. Two dozers pushing out off West end of the flat area, and two 627 pans hauling out of the borrow area. Today four density test run (#'s 33-36), all exceeded 95% compaction. Informed contractor of test results. Pipe removal today line #4 ~ 104 feet of 30 inch cmp, trench backfilled. Truck (off-road) and trackhoe cleaning up topsoil piles from around closure area. Advised contractor to keep the cover being placed clean, noticed some large boulders and roots in fill area. These were removed.
Line #2 - 7.5ft. - 30" cmp.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
May 3, 2008	1356-07-017

Project/Location: Pine Hall Rd Ash LF Closure

Contractor	Weather/Temp
Morgan Corp.	PC/50-70's

Present at Site: Bill W. Mark W.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 7-7:20.
Observed contractor placing second lift of the 18 inch cover, on the flat area. 5 scrapers hauling out of the borrow area, and 1 dozer cutting / pushing off the flat area west end. Today I performed 10 field density test on the flat area cover, 1st lift and 2nd lift. All test exceeded 95% compaction. Informed contractor of test results. 5 storm pipe removed today - Line #5 - 131 feet of 30 inch cmp. Fill area sealed down w/ smooth drum roller.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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Field Report

Date	Job No.
May 5, 2008	1356-07-017

Project/Location: Pine Hall Rd Ash LF Closure

Contractor	Weather/Temp
Morgan Corp	PC/51°-77°

Present at Site: Bill Waggoner, Mark Webb

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Time	Mileage

Observations/Remarks:

Observed earthwork contractor placing S1 material (18 inch cover) on the flat area, N of proposed 2 foot deep channel. Today six field density test (#'s 47-52) were performed, all test passed. Informed contractor of test results. Flat area is to grade, or majority of minus the six inches of topsoil. Contractor to fine grade flat area tomorrow and balance out (ie; fill/cut low & high areas). The off-road truck hauled flyash out of proposed C7 channel, to backside of closure rdwy. area, and piled up. Morgan continues to import topsoil from Walkertown construction site. Storm pipe removal today: line #2 - 82 ft. of 30 inch cmp and line #3 - 100 ft. of 30 inch cmp. Trenches backfilled, little compactive effort.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
May 6, 2008	1356-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp	Sunny / 52°-79°
Present at Site	
Bill Waggoner Mark Webb	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 7-7:15.

Contractor started fine grading the flat area, North of the two foot deep channel. Observed fill placement on the sediment basin dam, material used came out of C7 excavation. Two field density test run, both exceeded 95% compaction. Informed contractor of test results. Also observed fill placement on closure backside, future roadway. Four fdt's performed all passed. Contractor informed to bench in to existing side slopes when filling on closure area. Storm pipe removal today, line #17 could not be located, and line #1 - 80 feet of 30 inch cmp, to get inside liner limits (deep cut). Remaining downstream pipe to be plugged by masonary. I proofrolled the West end top of closure, from top of access ramp to W top edge and N to S edges. A loaded 627 scraper was used to pass over subgrade, appeared stable, o.k. to fill on. Contractor started cut/fill on closure top, but was shut down by Bill W. because of dust. Both water wagons, wet the top, til quitting time.

Jimmy Aldio

On-Site Representative/Company | **S&ME Personnel**

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S&ME
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Charlotte, NC 28273
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(704) 525-3953 fax

Field Report

Date	Job No.
May 7, 2008	1356-07-017

Project/Location: Pine Hall Rd Ash LF Closure

Contractor	Weather/Temp
Morgan Corp.	Cloudy/50-70's

Present at Site: Bill W. Mike C. Mark W. Jay L. Craig G Ken D. Cedric R.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 7-7:30. Contractor has contracted another water truck (2500gal.) for dust control and to maintain near optimum moisture content. Observed cut/fill operations on the closure top w/ one 627 scraper, the other scraper was down until 4:30 today. The side slopes of the existing sediment basin dam, were shaped and smoothed w/a trackhoe today, preparing for erosion mat placement. Contractor completed fine grading of the flat area, section North of channel 8. Excavation continues on channel 7, material hauled to closure backside and piled up. I attended progress meeting, Morgan presented a new schedule. Today I proofrolled more of the closure top fill area (E end) w/a loaded Cat 730 articulate dump truck. Area appears stable - O.K. to fill on. Contractor quit work at 5:30 today, both of their 613 water wagons went down around 5 pm.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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Charlotte, NC 28273
(704) 523-4726
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Field Report

Date	Job No.
May 8, 2008	13560-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp.	Cloudy/52°-78°
Present at Site	
Bill Waggoner Mark Webb - Marty Hylton	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 7-7:20am. Observed earthwork contractor cutting and filling on the closure top and backside. Cut on the West top, placed on the East top, and NE backside rdwy./embankment. Today six field density test were performed (#'s 59-64), all test exceeded 95% compaction. Informed contractor of test results. Contractor continues to prepare slope fill areas by cutting benches into existing side slopes. Work (excavation) continues on channel #7, this material was hauled to future flat area embankment, behind topsoil stockpile, its a mixture of soil & flyash. Today trenches were hand dug at each crest of the sediment basin dam to anchor erosion mat. Erosion mat (DS-75) installed per plan on dam side slopes. The dam was seeded w/ fescue & millet, lime and 10-10-10 fertilizer. Mulch (wheat straw) applied to the top of dam. Morgan has contracted another 2500 gallon water truck, to assist in wetting the flyash & dust control. Temporary ditch excavated at dam, to divert runoff. Rain in forecast tonight.

Jimmy Addie

On-Site Representative/Company — **S&ME Personnel**

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S&ME
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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 9, 2008	13560-07-017
Project/Location	
Pine Hall Rd LF Closure	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny / 51°
Present at Site	
Bill W. Mark W. - Earl W.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:45. Jobsite saturated from 1.6 inches of rainfall last evening. No earthwork today. Morgan to work on erosion control, a couple of the silt fence outlets blew out last night. Three loads of class B rip rap ordered this morning. Morgan to resume earthwork on monday. Completed field reports for this week, and timesheet for Duke Energy.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Charlotte, NC 28273
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(704) 525-3953 fax

Field Report

Date	Job No.
May 12, 2008	1356-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp.	Cloudy-Windy 72°
Present at Site	
Bill W. Mark W.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:45. Six tenths of an inch of rainfall recorded last evening. Contractor spent the day drying up haul roads and 51 fill on closure area. Also performed E&S maintenance around jobsite. Runoff collected in channel #7, was released via temporary ditch into existing sediment basin, a check dam was installed in outlet ditch prior to release.

Jimmy Adkins

On-Site Representative/Company

S&ME Personnel

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S&ME INC. *ENVIRONMENTAL * ENGINEERING TESTING
CHARLOTTE, NORTH CAROLINA

TECHNICIANS DAILY FIELD REPORT

GENERAL FIELD TESTING SERVICES

Job Name: Pine Hell Rd. CM/CQA	Technician: Jim McCutcheon
Contractor:	Job Number: 1356-07-017-03
Weather: Clear	Job Date: 5-12-08
Travel Time: (hrs.)	Total Job Time: 1. (hrs.)
On-Site Time: (hrs.)	Total Miles: 10 (miles)

Start Time:	(Circle one) am / pm	Stop Time:	(Circle one) am / pm

CONSTRUCTION ACTIVITIES: Went to Contractors Med. for drug Screening. For job at Belews Chk.

TEST CONDUCTED AND THE RESULTS:

THE FOLLOWING TEST(s) PERFORMED TODAY WILL REQUIRE SUBSEQUENT RETESTING:

Non-compliance Test Results, Name of Contractors/Owners Representative Informed:
S&ME's Staff Representative Notified:
Other Discussions with Contractor

Technician Initials JCM

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
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Field Report

Date	Job No.
May 13 2008	1356-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny/50-74°
Present at Site	
Bill Waggoner Mark Webb	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:45. I observed contractor's cut/fill operation on top of the closure area today. Two scrapers (down to one pm) trackhoe - truck D6 dozer - 815 sheepsfoot - smooth drum - disk harrow and two 613 water wagons utilized. Materials coming out of East end cut, are on the dry side. Wetting of the cut & fill a continuous process, contractor doing a good job thus far. Today I performed eight field density test (#s 65-72), all test exceeded 95% compaction. Informed contractor of test results. Contractor hauled off two loads of crushed cmp today.

*Note: materials out of cut are still mainly soils w/ some flyash (60/40). The flyash is on the dry side of our proctor curve.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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S&ME Form FRIFD3

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 14, 2008	1356-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp	PC/47°-72°
Present at Site	
Bill W. - Mike C. Mark W. - Marty H. - Jerry T. Phil B.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:40.
Monitor cut/fill and conditioning of soil/ash mixture on the closure top. Contractor continues cut on the East and placement on the West, w/ one scraper (#2 back up and running at 1:30), and one articulate dump truck and backhoe. Phil onsite at 8am, orientated him to jobsite, introduced him to contractor's foremen. Today I ran two fdt's (#'s 73-74), both passed, informed contractor of test results. After lunch, East side cut on top of closure, has turned to pretty much all flyash now. Took moisture content samples of the ash, and found it to be dry of optimum: ranging from 9 to 12%, optimum being 23%. Informed contractor of this, discussed/and made recommendations to increase conditioning effort, take the sheepsfoot off top placement and compact w/ smooth drum & empty pans. Also suggest to cut down on conditioning area. Phil to do a test trip on the flyash, see his report. I gave Phil, fdt grid and my density equipment. I left site @ 4:30.

Jimmy A Adkins

On-Site Representative/Company | **S&ME Personnel**

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S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
5-14-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy & Breezy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0700-1800 11.0	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☒ In-Place Density

Earthworks Operations:

The Contractor continued cut and fill operations within the ash waste landfill footprint. Borrow continues from over-filled waste areas in the Northwest portion of the ash landfill footprint and fill continues in under-filled areas within the Southwest portion of the ash landfill footprint. The resultant borrow is primarily ash with less than 5% soil.

The Contractor continued to cut to rough subgrade elevations for the South and Southwest slopes. Mixed soil spoils are being pushed down slope as benches are being cut to grade.

Testing and Inspections:

S&ME continued moisture density testing in current fill areas of the ash waste landfill footprint. See M.A. daily report for details related to tests and inspections performed.

Moisture Density Testing:

Two (2) moisture density tests were completed by Phil Banner late in the day. The results of the drive tube density tests indicate that the ash tested is not in accordance with the project specifications due to low moisture content in place. The tests results indicate that in place dry densities are in excess of 95% of the standard proctor. The Owner and the Contractor were notified of the test results immediately.

Attachments

Phillip J. Banner
S&ME Personnel

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(336) 288-7180
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Field Report

Date	Job No.
5-15-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ■ In-Place Density

Contractor	Weather/Temp
Morgan Construction	Cldy, scat PM shwrs

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0530-1830 11.0	50

Earthworks Operations:

The Contractor continued cut and fill operations within the ash waste landfill footprint. Borrow continues from over-filled waste areas in the Northwest portion of the ash landfill footprint and fill continues in under-filled areas within the Southwest portion of the ash landfill footprint. The resultant borrow is primarily ash with less than 5% soil.

The Contractor completed three (3) ash fill test strips to gauge the effectiveness of three (3) types of compaction with equal amounts of water being added to each. The compaction methods were as follows; a vibratory smooth drum roller with varied static and vibratory passes, an 815 compactor with a smooth drum vibratory roller as a finish roller, and wheel rolling using loaded pans with a smooth drum vibratory roller as a finish roller. In each test strip a box blade was being used to aid in leveling the fill and smoothing the wheel ruts.

The Contractor also continued to cut South and Southwest slopes and benches to rough subgrade elevations. Waste spoils are being moved downhill to the next bench location.

Tests and Inspections:

Moisture Density Testing: (Ash Fill Test Strips)

S&ME completed moisture density tests using drive tubes and a nuclear density gauge. The drive tubes were used a the primary test method. The nuclear density gauge moistures and densities were being correlated to the drive tubes. The densities for each test method were comparable, however the moisture contents varied from drive tubes to the nuclear density gauge by an average of 5.1%. The overall results indicate that the target dry densities can easily be achieved using the compaction methods described. The moisture contents required are not easily being reached due to the permeability of the ash. The water being added during compaction is flowing through the ash lift until it reaches a lower permeability layer such as soil, or soil and ash. The test results completed deeper in the ash fill showed higher moisture contents and higher dry densities than the tests being conducted in the compaction zones. It is advised that an adequate layer of ash be in place prior to testing so that the Contractor will be able to cut down into the compacted ash where moisture contents and dry densities will be higher.

Laboratory Testing:

S&ME continued to run moisture content tests on the ash being cut and placed. The test results indicate that the moisture content of the ash being placed is 16.5%. The moisture content of the ash will need to be raised approximately 4.2% to meet the low end of the optimum moisture required (20.7 to 26.7) additional water will be required to account for evaporation during handling and compaction.

S&ME continued to oven dry samples from all tests being completed to correlate the drive tubes and the nuclear density gauge dry densities and moisture contents. The average moisture correction for the nuclear density gauge is plus 5.1%. No density corrections were required.

Meetings:

A site meeting was held with the Owner, the Contractor, and S&ME. The meeting was held to discuss the results of the ash fill test strips and the project specifications related to ash waste fill areas. It was agreed that the Owner will call an S&ME staff professional to discuss the test strip results and the project specifications related to filling with ash waste.

Attachments

Phillip J. Banner
S&ME Personnel

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S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
5-16-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ■ In-Place Density

Contractor	Weather/Temp
Morgan Construction	Cldy to Clear; 0.56" R

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0530-1500 9.0	50

Earthworks Operations:

The Contractor continued cut and fill operations early AM until equipment failure forced them to cease operations.

The Contractor also continued to cut South and Southwest slopes and benches to rough subgrade elevations. Waste spoils are being moved downhill to the next bench location.

Moisture Density Testing: (Existing Ash Waste Pile)

S&ME completed six (6) moisture density tests using drive tubes in the existing waste cut areas to determine actual in place values of the waste pile. The test results indicate the following averages based on a MDD of 88.2 pcf and OM of 23.7%:

Moisture Content: **16.5%**

Dry Density: **76.2pcf**

Compaction: **86.4%**

Laboratory Testing:

S&ME completed testing for the moisture tests described at S&ME's Greensboro lab.

Material Sampling:

S&ME obtained one (1) ash sample for standard proctor analysis from the current cut areas. The test results will be available mid next week.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
5-17-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ■ In-Place Density

Contractor	Weather/Temp
Morgan Construction	Clear

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-0900 2.5	50

Earthworks Operations:

The Contractor has suspended operations until next Monday.

Tests and Inspections:

S&ME was on site to complete oven dry moisture samples created during the last day's operations.

Attachments

Phillip J. Banner
S&ME Personnel

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S&ME
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Greensboro, NC 27410
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(336) 288-8980

Field Report

Date	Job No.
5-19-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1130 5.0	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ■ In-Place Density

Earthworks Operations:

The Contractor resumed cut and fill operations within the ash landfill footprint.

Tests and Inspections:

S&ME technician Phil Banner was on site for early morning operations only. Please refer to Jimmy Addis' report for details of today's tests and inspections.

Attachments

Phillip J. Banner
S&ME Personnel

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S&ME
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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 19, 2008	1356-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp	PC / 51°-77°
Present at Site	
Bill Waggoner Mark Webb Phil Banner til 10am	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Technician onsite at 8:30am. Phil got me back up to speed on jobsite progress. Problems encountered last week with the flyash conditioning, and contractor's equipment failure. Contractor in the process of placing a lift of flyash over the West end of the closure top, but could not condition due to both water wagons being down for repairs. Due to dust conditions, owner request pans (4-627's onsite now) be shut down until, water wagons are up and running again. During the day I proofrolled a section of the access roadway (South side) from split w/ ramp to top, to approximately 150' East of the pipe removal area on the SW corner of landfill. A loaded Cat 730 articulate dump truck was used to pass over the rdwy., area appears stable; o.k. to fill on. Contractor cutting to subgrade on the SW slope, material being pushed down slope and piled, to be used in rdwy.. Water wagons and pans fired back up at 3:30, completed lift across West top. I ran eight fdt's (#'s 82-89), all passed, informed contractor of test results. Left site at 8pm.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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Field Report

Date	Job No.
May 20, 2008	1356-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp.	PC/ 56°-77°
Present at Site	
Bill W. Mark W. - Marty H.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:45. Observed cut/fill and conditioning of the SI material on top of the closure. Contractor utilizing four 627 scrapers, one D6 dozer, two vibratory smooth drums, and two 613 water wagons. Fill placement also in progress on the South access road. D6 dozer cutting slope to subgrade, material (soil/ash mix) being pushed down to roadway, and spread onto. Today four fdt's run (#'s 90-93), all test passed, informed contractor of test results. Tossed away two fdt's, heavy rain storm hit jobsite around 2:30. Had 9/10's of an inch of rainfall in less than 1 hour this afternoon. Operators sent home at 4pm today. Contractor received a 623 water wagon today (10,000 gallon capacity). Also set up watering stand today, so vehicles can pull under and load.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FRIF02

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 21, 2008	1356-07-017

Project/Location: Pine Hall Rd Ash LF Closure

Contractor	Weather/Temp
Morgan Corp.	Sunny/52°-78°

Present at Site: Bill W. - Mike C. Mark W. - Jay L. - Craig G. - Chris S. Ken D. - Cedric R.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Jobsite got hit w/ 9/10's of an inch of rainfall yesterday afternoon. Contractor working on erosion control maintenance, blading mud off haul roads, and scarifying cut and fill areas this morning. I sat in on progress meeting from 10-12 today. Toured site w/ Ken, Cedric, Bill and Mike from 12-1:30. Observed contractor cut/fill operation on the closure top this afternoon. Contractor continues to shape w/a D6 down the West end slope/bench area. The 815 sheepsfoot taken offsite, and replaced w/a vibratory sheepsfoot today, contractor utilizing this piece on the slopes for compaction. Today seven fdt's performed (#'s 94-100), all passed required specifications. S&ME loosened the moisture criteria in today's meeting, from +/-3% to +/-5%, 95% compaction still required, per Ken Daly. Contractor running three water wagons (2-6500gal. & 1-10,000gal.) to condition flyash. More test pits to be excavated in borrow area, locations tbd.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 22, 2008	1356-07-017
Project/Location	
Pine Hall Rd Ash LF Closure	
Contractor	**Weather/Temp**
Morgan Corp	Sunny / 53°-79°
Present at Site	
Mark W. - Marty H. - Pat H. - Earl W. Bill W.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:50. I monitored earthwork contractor's cut/fill operation on top of the closure area. Cut mostly flyash coming off the East side w/ four 627 scrapers, w/ material being placed on the West half. A GPS equipped D6 dozer working fill lay down area. Three water wagons wetting flyash, and two smooth drum rollers making three passes in the same line, first pass no vibration, the next two w/ vibration. Slope shaping continues on the backside (NW) of closure area w/a D6 dozer and vibratory sheepsfoot roller. During the day eight field density test were performed (#'s 101-108) shelby tube method. All test met minimum project specifications, refer to attached data sheets. I informed contractor of test results. Pipe crew mucking out silt fence outlets, Bill W. observing work. Morgan's surveyors staked 14 test pits in the borrow area, will excavate tomorrow. I procured 5 gallon buckets after work this evening.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
3718 Old Battleground Road
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980 fac
(800) 849-2985

Field Report

Date	Job No.
5-23-08	13556-07-017-03-C2
Project/Location: Pine Hall Rd. Ash Landfill Closure	
Contractor: Morgan Corp	Weather/Temp: 80° P. Cloudy
Present at Site: K. Turnelier / J. Adolphi	
Time: 10	Mileage: 65

To: _____

Observations/Remarks:

On site as requested to perform sampling/testing for the following items:

☐ Subgrade Observations ☐ Proofroll

☑ Other observe placement of flyash

Deficiencies Noted ☐ Yes (see comments) ☐ No

Equipment Utilized: 4-CL627 scrapers, 2-D6 dozers, 2-smooth drum rollers, 2-water trucks

Location: Fly ash landfill for Duke energy Steam plant. (Belews Creek Steam Station)

Density testing of compacted material

☐ Soil ☐ Stone ☐ Asphalt ✓ Fly Ash

Using: ☐ Nuclear Density Gauge ☑ Test results and locations attached

☑ Drive Tubes All tests met specifications ☑ Yes ☐ No

☐ Sand Cone Collected Bulk Sample(s) ☐ Yes ☐ No

General locations: _____

Foundation bearing materials evaluation

Design allowable bearing capacity: _____ psf

☐ Deficiencies Noted ☐ Yes (see comments) ☐ No

Location: _____

Comments: Arrived on-site as requested to observe placement of fly ash from existing and to new landfill. Testing was performed by way of Shelby tubes and results are attached along with this field report.

On-Site Representative/Company

K. Turnelier
S&ME Personnel

Disclaimer: The presence of S&ME at the project site shall not be construed as an acceptance or approval of activities at the site. S&ME is at the project site to perform specific services and has certain responsibilities which are limited to those specifically authorized in our agreement with our client. In no event shall S&ME be responsible for the safety or the means and methods of other parties at the project site. The information presented in this field report has not been reviewed by an engineer and is to be considered preliminary.

S&ME Form FRSF03

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date May 23, 2008	**Job No.** 1356-07-017
Project/Location Pine Hall Rd Ash LF Closure	
Contractor Morgan Corp.	**Weather/Temp** PC/56°-80°
Present at Site Bill W. Marty H. Kristen J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain) Test pits

Observations/Remarks:

Safety meeting 6:30-6:45. Observed earthwork contractor as they cut/fill on the closure top. Lift finished to the North edge, I had KJ test completed lift area. Contractor bounced around filling low areas, for positive drainage, due to site being down for the next 3 days, 60% chance of rain tonight and tomorrow. Slope shaping in progress on backside of closure, also performing erosion preventive maintenance on slopes & benches. Pipe crew doing E&S maintenance around site. This afternoon I observed test pit excavation in the borrow area, omitted TP-8B (close proximity to 3/08 TP), and no bulk samples taken on TP's 1B & 2B. In all eleven bulk samples obtained and transported into Charlotte soils lab, these were logged in. Took pictures of test pits, prior to backfill. Kristen ran three fdt's (#'s 109-111), all passed. Fill areas sealed down.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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SUMMARY OF HAND AUGER BORING

S&ME
ENVIRONMENTAL SERVICES
ENGINEERING • TESTING

Project Name PHR Test Pits

Job No. 13560-07-017

DATE	TEST LOCATION	DEPTH FEET	STRATIFICATION SOIL DESCRIPTION	DEPTH (FEET)	Dynamic Cone Penetrometer Resistance HAMMER BLOWS INCREMENT 1st	2nd	3rd	AVERAGE
5/23/08	TP-108 9B C-5.0'	0-3'	Tan Br m to f Sa Si			Pic 1		
		3'-5'	Lt. Br/White m to f Sa Si					
	TP 113 C-3.2' 14B	0-3'	Tan Br f to m Sa Si w/ pwr			Pic 2		
		3'-8'	" " " " " "					
	TP 112 C-14.8' 13B	0-6'	Br f to m Sa Si w/ rock frag			Pic 3		
		6'-13'	Tan Br f to m Sa Si w/ rock					
	TP 111 12B C-21.0'	0-12'	Yellow/Tan Br m to f Sa Si			Pic 4		
		12'-20'	Tan Br m to f Sa Si					
	TP-110 C-12.2' 11B	0-2'	Red Br m to f Sa Cl Si			Pic 5		
		2'-10'	Tan/Orange Br f to m Sa Si					
		10'-13'	Lt. Br f to m Sa Si ~ sandrock					
		13'-17'	Br m to f Si Sa					

Excavated w/ Cat 330D trackhoe.

S&ME SFD-004
(REV. 5/93)

Cat 330D

(2)

SUMMARY OF HAND AUGER BORING

TP-107 "8B" did not open
close to previous TP"

S&ME
ENVIRONMENTAL SERVICES
ENGINEERING • TESTING

Project Name PHR Test Pits

Job No. 13560-07-017

DATE	TEST LOCATION	DEPTH FEET	STRATIFICATION SOIL DESCRIPTION	DEPTH (FEET)	Dynamic Cone Penetrometer Resistance HAMMER BLOWS INCREMENT 1st	2nd	3rd	AVERAGE
5/23/08	TP 109 10B C-6.2'	0-3' 3-14'	Red Br f to m Sa Cl Si Tan Br m to f Sa Si			Pic6		
	TP-106 7B C-24.3'	0-13' 13'-18'	Br m to f Sa Si Tan B m to c Sa Si w/ rock			Pic7		
	TP-104 5B C-17.2'	0-5' 5'-17'	Orange Br f to m Sa Cl Si Tan Br f to m Sa Si-some rock frag			Pic8		
	TP-105 6B C-10.0'	0-17'	Br f to m Sa Cl Si			Pic9		
	TP-103 4B C-11.7'	0-1' 1'-7.5'	Br f to m Sa Cl Si Yellow Br m to f Sa Si Rock @ 4'			Pic10		
	TP 102 C-12.0' 3B	0-2' 2'-5'	Tan Br f to m Sa Si Br m to f Sa Si w/ rock (pwr)			Pic11		

S&ME SFD-004
(REV. 5/93)

SUMMARY OF HAND AUGER BORING

S&ME
ENVIRONMENTAL SERVICES
ENGINEERING • TESTING

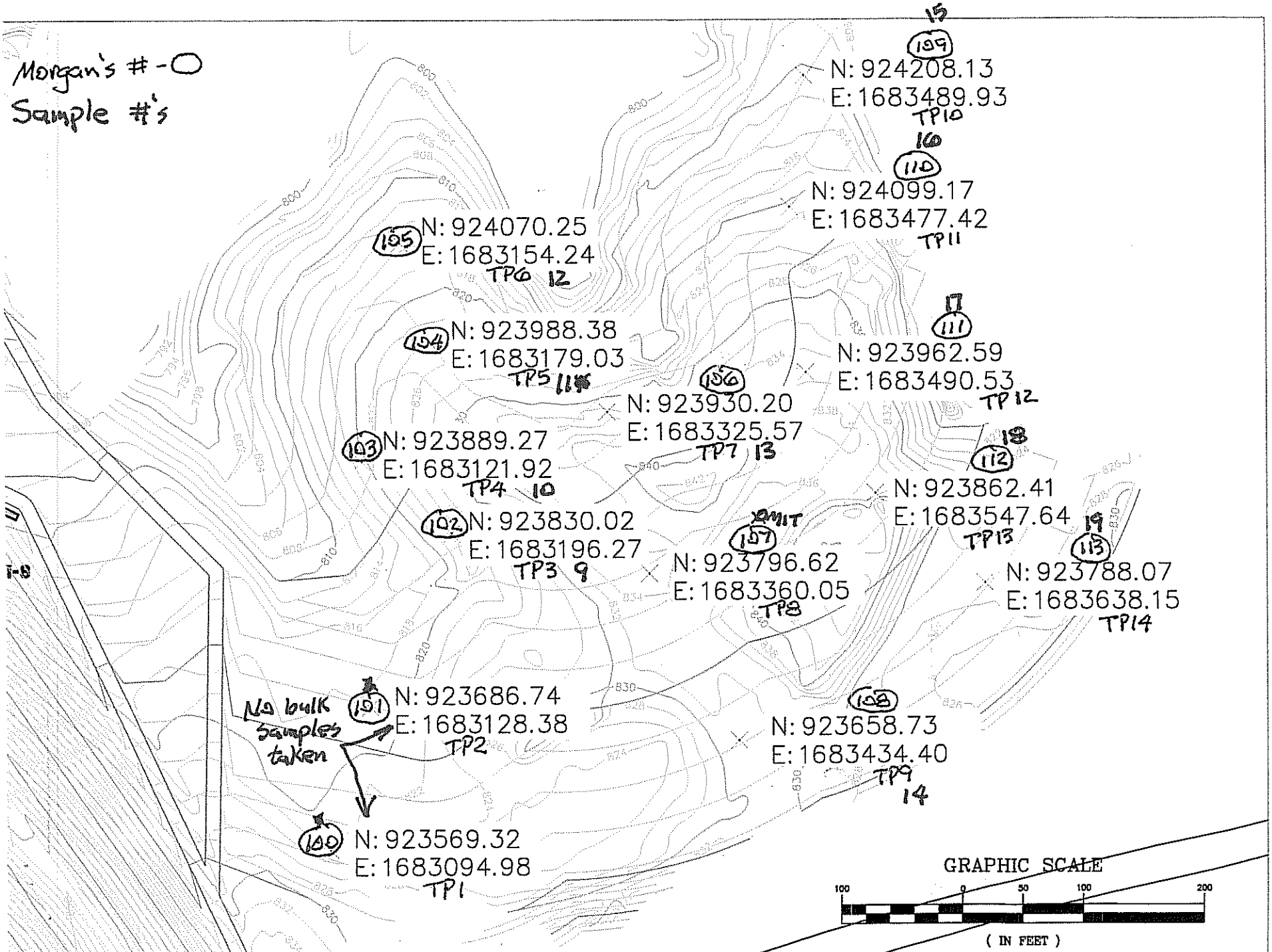
Project Name PHR Test Pits

Job No. 1356-07-017

DATE	TEST LOCATION	DEPTH FEET	STRATIFICATION SOIL DESCRIPTION	DEPTH (FEET)	Dynamic Cone Penetrometer Resistance HAMMER BLOWS INCREMENT 1st	2nd	3rd	AVERAGE
5/23/08	TP 100 F-1.9' TP-1B	0-12'	Br f to m Sa Cl Si ~ logs-organics @ 3' Hit rock @ 12' * No samples			Pic 12		
	TP-101 2B C-1.2'	0-2' 2'-4'	Organics - pushed in Br f to m Sa Si Rock @ 5' * No sample			Pic 13		

S&ME SFD-004
(REV. 5/93)

PHR Test Pit Locations



S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 27, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp	Sunny / 65°-84°

Present at Site: Bill Waggoner, Mark Webb - Marty Hylton

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed cut/fill on the closure top w/ 3 scrapers (1 down til 2:30). A D6 dozer and vibratory sheepsfoot shaping slope (NW) on backside of closure. Dust an issue today, w/ site being down the past three days, and also the big water wagon (623) was down til 2pm w/a flat tire. Today four fdt's (#'s 112-115) were performed on top, all test passed minimum job specifications for compaction & moisture criteria. Informed contractor of test results. I got an e-mail from the Greensboro office w/ their proctor results on the flyash 79.5 & 24.9%. Morgan brought a small rubber tracked trackhoe (Komatsu PC78MR) onsite, will use for anchor trench excavation. Spoke w/ Cedric Ruhl today, about 5/23/08 test pit data.

Jimmy Atkins

On-Site Representative/Company — **S&ME Personnel**

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 28, 2008	B56-07-017
Project/Location	
PHR Ash LF Closure / Belewsck	
Contractor	**Weather/Temp**
Morgan Corp	Cloudy-Rain/69°
Present at Site	
Bill Waggoner Mark Webb - Marty Hlyton - Craig G Ronald Powell - ESI	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:50. Monitored earthwork on the closure top today, cut continues on the East top w/ 4-627 scrapers. The S1 material is being placed on the West side top of closure, contractor utilizing D6 to work fill, 2-613 water wagons wetting, and 2-smooth drum vibratory rollers compacting. It started raining around 10am, till 4pm, contractor kept hauling, we need the moisture. Morgan sealed off existing line #1 (30" CMP) storm drain on the SW corner of closure area. Crushed ~~out~~ upstream end of pipe, then covered w/ cap blocks & portland cement. The downstream end is in cut, will let pans move overburden before pipe is removed. Set in on conference call 10-10:50. Met w/ earthwork contractor and their liner sub, discussed deployment plans etc... Contractor lost 1 hour after lunch, due to rainfall, had to block ramp and cut the get pans back on top. Two field's (#'s 116; 117) run (am), both passed. Informed contractor of test results.

Line #1 30" cmp
N-922888.24 Top of hole 858.85
E-1681570.02 " " pipe -11.50
Elev. " 847.35

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 29, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	Sunny / 61-75°

Present at Site: Bill Waggoner, Mark Webb - Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 6:30-6:50. Observed / monitored earthwork contractor's cut / fill operation on the closure top w/ 4-627 scrapers. Contractor has a GPS equipped D6 dozer shaping on the backside (slope) of closure. Today, contractor also had a trackhoe and articulate dump truck excavating soil & flyash off the closure N side between benches 2 & 3. Material hauled on top, and some went to the D6 that was shaping. Fill also placed on the South perimeter rdwy. w/ 2-pans. Both 623 water wagons, controlling dust and wetting fill areas, the 623 was back up and running around 2pm. During the day I performed eight field density test (#'s 118-125), #118 failed, remaining test passed. Informed contractor of test results. Will rework non-compliance test area, for retest.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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S&ME
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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 30, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure/Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny/64°-85°
Present at Site	
Bill Waggoner Mark Webb	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Set in on contractor's safety meeting 6:30-6:45. Monitored the cut/fill earthwork on top of the closure area. A D6 dozer continues to shape the side slopes, worked on the West side today and also worked fill being placed on the SW perimeter road. Trackhoe and truck continue cutting in North side bench #3, material being hauled on top. Pans close to cutting in bench #3 on the East side (N to S), moved to NE corner late today, and started paning off. Twelve fdt's were run today (#'s 126-137), retest of #118 passed, but test #128 failed today, remaining test all exceeded 95% compaction. Informed contractor of test results, and non compliance test (#128). Contractor to rework for retest. Contractor had a good day, no equipment breakdowns, and they moved over 800 cy/yds. of flyash and soil.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
May 31, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	PC/Rain-67-86°

Present at Site: Bill Waggoner, Mark Webb

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:45. Monitored earthwork contractor cut/fill operation on top of the cell closure today. Cut coming off of bench #3 SE side of cell, mostly flyash, less than 5% soil. Material being laid on the West top. Shaping continues on the SW corner. During the day I performed six density test on the SI material one was a retest, which passed (#'s 138-143). Informed contractor of test results. Thunderstorm hit site @ 3:30, all equipment parked. Contractor held another safety meeting during storm on lightning strikes. Morgan shut job down @ 4:30. Will return Monday morning.

Jimmy Adkins

On-Site Representative/Company | **S&ME Personnel**

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FIELD REPORTS

JUNE 2008

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 2, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews CK

Contractor	Weather/Temp
Morgan Corp.	Sunny/64°-84°

Present at Site: Bill Waggoner, Mark Webb

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Jobsite had half an inch of rainfall this weekend. Today Morgan excavated the remaining line of existing storm drain (30 inch cmp) on the West side of the closure. Approximately 90 feet of pipe removed, and the remaining end was crushed shut w/ trackhoe bucket. Pipe removed at least 10 feet inside the liner limits, Morgan's surveyor located. The other end of this was previously abandoned. I monitored backfill of the excavation, and performed 3 density test (#'s 144-146), all exceeded 95% compaction. Observed cut/fill on closure top w/ 4 scrapers, cut coming off East end bench. Trackhoe and truck excavating off North side slope, material hauled to top, and placed w/ scraper fill on West end. I performed 8 field density test (#'s 147-154) on top, all passed. Informed contractor of test results. Erosion control maintenance in progress at silt fence outlets.

*30" cmp "downstream location"
N: 922977.04
E: 1681318.87
≈ Elev. 845.78

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 3, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC / 63°-85°

Present at Site: Bill Waggoner, Mark Webb - Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend contractors safety meeting 6:30-6:45. Monitored cut/fill on top of the closure area, 2 pans cutting excess off N slope, and 2 pans on the E lower slope cut. All material hauled to the West top, contractor switched fill placement (SI) from E to W to S to N, and traffic pattern, existing ramp a haul route now. During the day I performed ten field density test (#'s 155-164) all test exceed minimum job specifications. Informed contractor of test results, refer to attached data sheets. Erosion control maintenance continues at silt fence outlets. Contractor shut down from 4-4:30, waited on storm to pass (lightning and 1/10 of rainfall). Fired equipment back up at 4:30. Contractor had 613 water wagon go down today, parts ordered, another 613 to be delivered tomorrow. Overcast skies and the little rainfall received today (lite shower during am hours) helpful to Morgan.

Jimmy Addison

On-Site Representative/Company — **S&ME Personnel**

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 4, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Mostly Sunny/69°-90°

Present at Site: B.W.-M.C. M.W.-J.L.-C.G.-C.S.-E.W.-G.Q.&D.J. K.D.-C.R. R.P. w/ ESI

Time

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:50. Monitored cut/fill (S1) operation on the closure top, and NW roadway. Scrapers split up; 2 panning off the NE slope and 2 panning on the N-slope between benches 1&2. I ran six field density test today (#'s 165-170), all exceeded 95% compaction, and were w/in 5% of the optimum moisture content. Informed contractor of test results. I set in on progress meeting 10-11:15, S&ME provided notice of change #'s 3,4,5&6. Number 6 was a new design add on. Afterlunch the liner pre-construction meeting was held 1-3:00. The geomembrane is not in production as of yet, schedule date of installation for Morgan Corp. 6-16-08, might not happen. Spoke w/ Cedric about S&ME Greensboro technician fdt's, ran on 5-23-08. Also talked about scheduling S&ME personnel during geosynthetic construction. Morgan brought in another D6 dozer (no GPS) for fine grading, which is in progress on the West slope, and replaced 613 water wagon back up to three now (2-613's & 1-623).

Jimmy Addis

On-Site Representative/Company

S&ME Personnel

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 5, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews CK

Contractor: Morgan Corp.

Weather/Temp: Sunny-Hot/67°-95°

Present at Site: Bill W. Mark W.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:50. I monitored SI fill placement on the closure top and slope today. All scrapers cutting on the lower North side this morning were split up this afternoon: 2 on N side and 2 on the NE corner slope. Fine grading in progress on the SW slopes and end of the W top of closure. Contractor utilizing 3 water wagons and 3 smooth drum rollers for conditioning and compactive effort on the SI material, which consist mostly of flyash. Today I performed ten field density test (#'s 171-180). All test exceeded 95% compaction, and were w/in the required moisture criteria of +/- 5% of optimum. Informed contractor of test results. Learned today that the geomembrane production would commence on 6-11-08.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 6, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny-Hot/71°-95°

Present at Site: Bill W. Mark W. - Craig G. - Jeff H. - Chris S.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 6:30-6:50. I monitored SI placement on top of the closure area. Contractor utilizing 4-627 scrapers - 1 drag box pulled by tractor leveling fill - 3 water wagons and 3 - smooth drum rollers to place - condition and compact SI fill material. Today all 4 pans cutting together on the lower North bench/slope around to the Northeast corner. Fine grading continues on the West top and Southwest corner. Trackhoe and 1 off road truck moving fine grade excess SI material to the top of closure. I performed 7 field density test today (#'s 181-187), all test exceeded 95% compaction and were w/in 5% of optimum moisture content. Informed contractor of test results.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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S&ME Form FR1502

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 7, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure/Belews CK	
Contractor	**Weather/Temp**
Morgan Corp	Sunny-Hot/72-97°
Present at Site	
Bill Waggoner Mark Webb	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety meeting 6:30-6:45. I monitored fill placement on the closure top and North side slope and roadway today. Fill material placed on top, was panned off the lower NE side of closure area, and slope and roadway fill came from adjacent cut. Today seven Dett's were performed (#'s 188-194), all test exceed 95% compaction, and were w/in 5% of optimum moisture content. I informed contractor of test results. Fine grading continues on top, and on the NW & SW slopes/benches. Trackhoe and truck roughing in perimeter access road ditch from SW corner to near OB-9. Material out of ditch, hauled to the top of closure. Contractor excavated (widened) washes (2) on the E slope of closure. I took in 3 more proctor samples to lab, we have a total of 12 now.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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Field Report

Date	Job No.
June 9, 2008	1356-07-017

Project/Location
PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny-Hot/71°-97°

Present at Site
Bill Waggoner
Mark Webb-Marty Hylton

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Monitored fill placement on the closure top and North side slope, w/ four scrapers and one articulate dump truck hauling. Scrapers cutting on the NE corner near bottom of closure area. Fine grading continues on top of closure area w/a D6 dozer and motorgrader (both non GPS), surveyors setting operators grade stakes. Surveyors started subgrade 50 foot grid today on the West end of closure. Contractor is wetting and smooth drum rolling slope areas that are at subgrade. The trackhoe and truck started channel rough in on perimeter top West end, material hauled to fill areas. Dust an issue this morning, had to stop scrapers a few times, until water wagons got caught up. Morgan hauled in two more articulate dump trucks (Komatsu 400's), three total off-road trucks onsite now. Today I performed ten field density test (#'s 195-204), all exceeded 95% compaction, and met moisture criteria. Informed Marty of test results. I'm starting to inspect subgrade for protrusions. The SW corner slope, needs cleaning up, I notified Mark Webb.

Jimmy Addis

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S&ME Form - FRIF03

S&ME
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Charlotte, NC 28273
(704) 523-4726
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Field Report

Date	Job No.
June 10, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews CK

Contractor	Weather/Temp
Morgan Corp.	Sunny-Hot/70-98°

Present at Site: Bill W. Mark W. - Marty H.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 6:30-6:50. I monitored fill placement on top and on the North side slope of closure area. Four scrapers cut on the SE corner and on existing access roadway, and hauled material to top and onto slope, which were benched at two levels, in between future Benches 1 & 2 and 2 & 3. Trackhoe and one off-road truck continue to rough in channel for future underdrain. Fine grading continues on top w/a D6 and motorgrader. Wetting and smooth drum rolling of completed slopes, in progress. I performed eleven fdt's today (#'s 205-215), all of which exceeded 95% compaction, and were w/in 5% of optimum moisture content. I informed Marty of test results. The scrapers were shut down around 3pm today, contractor possibly out of cut for scrapers. Marty said it was to allow for dozers to catch up on shaping. Morgan's surveyors switched from doing 50'x50' grid, they were topoing today as requested by Chris Shuster.

Jimmy Addis

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S&ME Form FR1F02

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 11, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews CK

Contractor	Weather/Temp
Morgan Corp	Sunny/66-90°

Present at Site: Mark W - Marty H - Earl W - Pat H
Craig G - Jeff H - Christ S
Bill W - Mike C
Ken D - Cedric R

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Subgrade Inspection

Observations/Remarks:

Attend safety meeting 6:30-6:50. Morgan is pretty much out of cut on the closure area, scrapers & trucks parked during am. Dozers (4) and motorgrader fine grading & shaping w/ materials picked up during process on the closure top and North slope/roadway. Wetting and smooth drum rolling continues on the North closure slope and benches, half of backside from W to E nearing completion. Closure top fill area close to being fine graded, wetting continues. I performed final subgrade field density test this morning (#'s 216-218), all passed job specs.. Attend progress meeting (10-11:30), Morgan estimates a 23,000 cu/yd shortage of subgrade material, no reason given on how this happened. They proposed and S&ME agreed to lower the top (again) two feet over half of the 15 acres. Need to maintain 3:1 slopes and 5% grade. Liner (40mil LLDPE) production has still not started, deployment on the 16th might not happen. Most of the precast structures approved, per K. Daly. Underdrain design approved by S&ME, and change order by Duke Energy. This afternoon Morgan

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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S&ME F FR1F02

S&ME
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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
6-11-08	1356-07-017

Project/Location

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Contractor	Weather/Temp

Present at Site

Time	Mileage

Observations/Remarks:

had trackhoe and three off-road trucks on the SE top corner of closure, taking two feet of flyash off. This material was hauled to the East slope. Dozers have cut in ~~flatse~~ false benches along the East side of closure for haul roads and vertical fill placement between proposed benches 1 & 2. I monitored fill placement this afternoon, and performed seven fdt's, refer to attached data sheets. All test (#'s 219-225) passed, I informed Marty of all test results. Fine grading and shaping on closure back NE area this afternoon, wetting continues, and smooth drumming. Wet spot near toe of slope on NE closure, shown to K Daly, may need to dewater w/ trenches. Morgan started cleaning up finished subgrade (root/rock removal) that I've inspected thus far.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
9751 Southern Pine Blvd
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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 12, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC/68-88°

Present at Site: Bill Waggoner, Mark Webb - Marty Hylton, Jim McCutheon

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Time	Mileage

Observations/Remarks:

Set in contractor's safety meeting 6:30-6:45. I monitored subgrade fill placement on the South and East slopes, contractor benched in false benches between proposed to haul material in and raise. Trackhoe and three off-road trucks taking a two foot cut off the closure East top, towards cff line, which Morgan staked per Bill Waggoner's request, today. Two scrapers also cutting off East closure top, and hauling to lower East slope. Wetting and smooth drum rolling in progress on backside slope, and one smooth drum at each fill location. Jim Mac onsite around 9:15am, took site safety training w/ Earl Whitehurst. I performed five fdt's today (#'s 226-230), #'s 226 & 228 failed. I informed Marty of non-compliance test results. Failing areas wet and recompacted for retesting. Retest run, both passed. Excavated wet spot on NE slope, no observed seepage, but material is saturated, took pictures. Morgan had two laborers cleaning protrusions out of finished subgrade. ES1 pulled trailer onsite. See Jim Macs report also for fdt's.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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S&ME Form FR/ES03

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Charlotte, NC 28273
(704) 523-4726
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Field Report

Date 6-12-08	**Job No.** 1356-07-017
Project/Location Pinehall Rd Ash Landfill Clover	
Contractor Magan	**Weather/Temp** P/Cloudy 85°
Present at Site Bill Duke, Jim S&ME, Earl Magan	
Time 12	**Mileage** 110

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Travel to Clover Site. Pinehall Ash Landfill. Have Safety Brief Walk site Brief. Tour. Area. Conduct density tests at Placed Ash various location marked on drawings. 16 tests conducted. 4 pass Compaction & Moisture

On-Site Representative/Company

S&ME Personnel

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date 6-13-08	**Job No.** Phase 3 Task 1 1356-07-017
Project/Location Pine Hall Rd Closure Rocky Creek	
Contractor Morgan	**Weather/Temp** P/Cloudy
Present at Site Bill - Duke Power Jim - S&ME	
Time 12.	**Mileage** 110

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Safety Brief Am. Field density tests in various locations. Seven tests conducted and documented per plans. No failing tests today. Travel Back to Charlotte.

On-Site Representative/Company

JEM Cutheon

S&ME Personnel

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S&ME Form FRIF02

S&ME
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Charlotte, NC 28273
(704) 523-4726
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Field Report

Date	Job No.
June 16, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny / 65°-90°
Present at Site	
Mark Webb Ron Powell	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Subgrade Inspection

Observations/Remarks:

Observed earthwork contractor as they continue lowering the East top of closure area. Mark Webb informed me that they were making a 3 foot cut over the East top half now, new model installed this morning. Three off-road trucks hauling to the East side, and two scrapers hauling to the South slope/ramp. During the day I performed 7 field's (#'s 244-250), all test met minimum job specifications for compaction and moisture content. Refer to attached data sheets. Informed contractor of test results. Inspect liner subgrade w/ Mark & Ron, areas that need attention (ie; wet & soft) were marked. Morgan's surveyors, taking 50x50 grid shots.

ESI onsite, 14 people on the crew. Started filling sand bags, used ABC screenings. Ron wants 4000 bags filled today & tomorrow. One load of 40mil came in today, 14 rolls, I cross referenced bill of laden w/ roll sticker numbers, all O.K.. Also rec'd 14 spools of 5mm welding rod.

Jimmy Atkins

On-Site Representative/Company | **S&ME Personnel**

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ENVIRONMENTAL SERVICES

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Field Report

Date	Job No.
June 17, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Ck

Contractor	Weather/Temp
Morgan Corp	Sunny/63°-86°

Present at Site: Bill Waggoner, Mark Webb

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 6:30-6:50. Morgan continued to lower the East top half of the closure area, only 1 off-road truck and 2 scrapers hauling today. Most of the material hauled to the South side. Two dozers shaping on the East slope. Inspected more subgrade today, I recommended that contractor wet and smooth drum slope and bench areas that are complete. During the day, I ran 4 fdt's (#'s 251-254), all passed. Informed contractor of test results.

ESI continued to fill sandbags. Broke out wedges and did some trial runs. Will start deployment tomorrow.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FRLF03

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 18, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny / 57°-82°

Present at Site: Bill W. - Mike C. Mark W - Craig G - Jeff H - Earl W Phil B - Kristin J Ken D - Cedric R

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Observations/Remarks:

Attend earthwork contractor's safety meeting 6:30-6:50. Had Phil and Kristin who are out of S&ME's Greensboro office onsite today. Kristin monitored earthwork, and performed field density testing, refer to her report. Morgan continued to cut off the East top of closure, placed on South and East slopes/benches. Wetting continously for dust control & moisture criteria.

ESI accepted subgrade conditions S&ME O.K. with also. Started deployment of the geomembrane (40mil LLDPE Dbl. sided Microspike ~ Agru America produced), on the West side. Today panels 1-28 deployed, which I monitored, approximate area = 103,297 sq. ft.. No anchor trench excavated as of yet, this was ESI's choice. Panels pulled beyond anchor trench and about 40 feet back on top, which will be trimmed and temporary anchored. Leading edges sand bagged, some on toe of benches, and full bells of liner placed on top at panel edge, for ballast. I also marked repairs, and observed some seam pressure testing. Phil tracked two wedges and marked LDT's 1-7. Set in on weekly progress meeting ~ CQA part.

Jimmy Adelia

On-Site Representative/Company

S&ME Personnel

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S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
6-18-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0530-1800 12.5	50

Geomembrane Deployment:

The Contractor deployed 40 mil textured geomembrane across the south slope. See Jimmy Addis' report for deployment totals.

Geomembrane Seaming:

The Contractor used two (2) fusion welders during seaming operations today. Fusion welders 832 and 840 were used today.

The total combined seaming total for today was noted to equal approximately 4,474 linear feet.

Destructive Samples:

Destructive samples **DS001** through **DS008** were marked during today's seaming operations.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
6-18-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp.	83°-P.Cloudy

Present at Site: K. Tumelier / T. Addis / P. Banner

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observations

Time	Mileage
11.5	50

Observations/Remarks:

Arrived on-site, as requested, to observe the placement of flyash on the South facing slope. Material is being placed by D6 Dozers, Cat. End-dumps and compacted with Smooth-drum rollers. The material also requires wetting as it is compacted, so 3 water trucks are acting in this process.

Testing was performed, by way of Shelby tubes and results/locations may be found attached with this field report. Lines is also being "laid-out" on the slopes and T. Addis and P. Banner are monitoring and recording these activities. (Geosynthetic lines)

_____ K. Tumelier

On-Site Representative/Company — S&ME Personnel

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S&ME
ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

9751 Southern Pine Blvd
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(704) 525-3953 fax

Field Report

Date: June 19, 2008	Job No.: 13565-07-017
Project/Location: PHR Ash LF Closure / Belews Ck.	
Contractor: Morgan Corp.	Weather/Temp: Sunny / 60°-83°
Present at Site: Bill W. Mark W. Ron P.	
Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Observations/Remarks:

Attend earthwork contractor's safety meeting 6:30-6:45, also at geosynthetic contractor's meeting as well 7:00-7:15. Kristin Quevlier monitored earthwork today, fill being placed on the South & East embankments, East nearing completion. I got a call from Bill, to look at undercut of wet spot, near NE toe of closure. I called Ron Daly for recommendation, there is a 2 feet layer of wet flyash in sidewall of undercut w/ 4 feet of dry stable flyash above and 2 feet of residual below. Ron recommends backfilling to w/in 2 feet of subgrade w/ rocky material, and finish w/ clean soils. Nine loads of undercut taken out 198 yds³. One load of 40mil liner delivered (14 rolls).

ESI accept subgrade, deployed panels 29-42 on South slope and 43-52 on West slope, shingled back to P1. Still have gap on lower bench, will fill in tomorrow. I measured panels, marked defects, and watched some air test. Phil Banner tracked two wedges #'s 832 & 840, laid out LDT's, and observed some of the air test. One extrusion gun ran all day, patches done on P1 to P42.

Jimmy Addis

On-Site Representative/Company

S&ME Personnel

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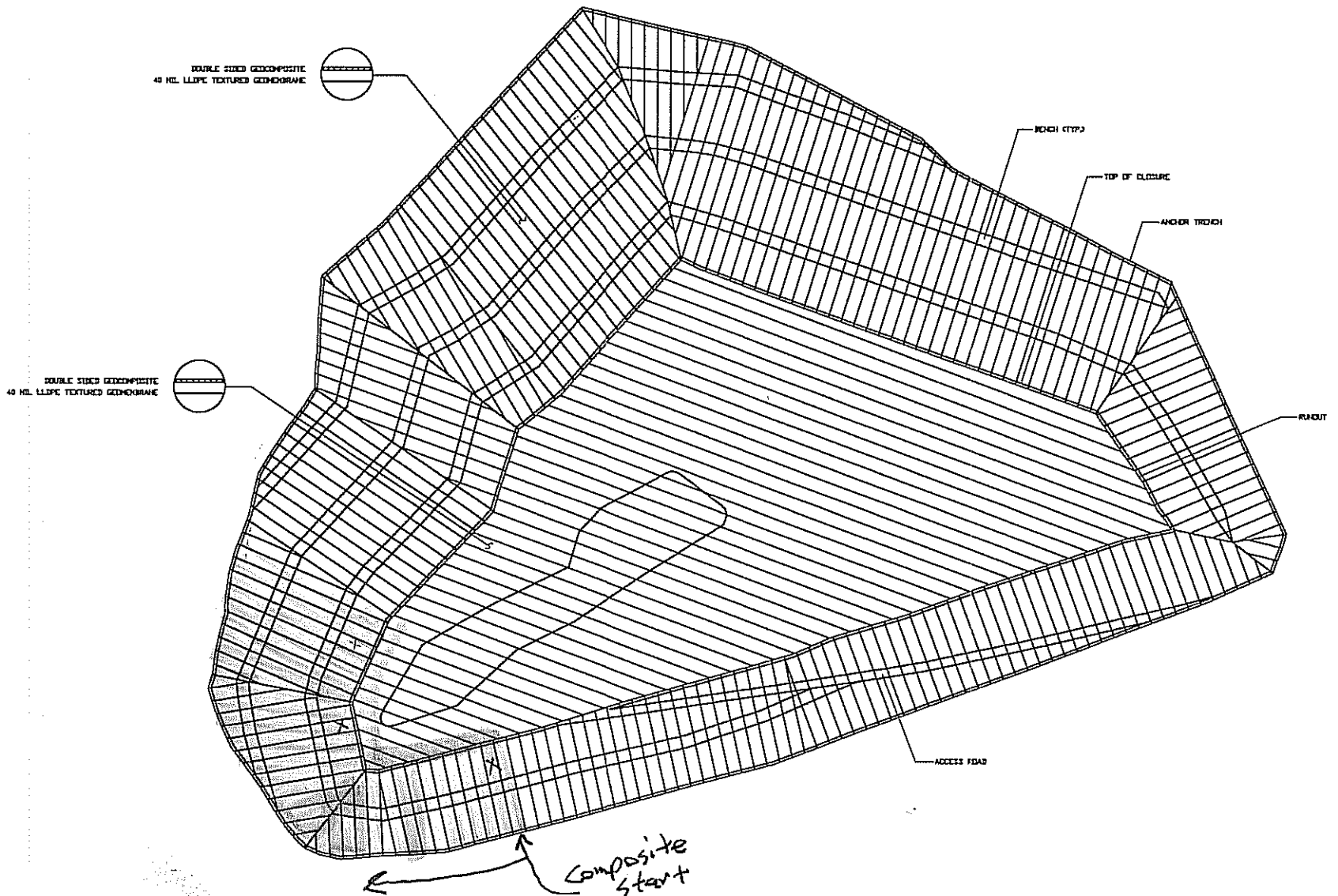
S&ME Form FR1F03



SCALE-1"= 80'

80 0 80 160

40 MIL LLDPE TEXTURED GEOMEMBRANE PROPOSED PANEL LAYOUT

NOTES:

1. PROPOSED PANEL LAYOUT IS TENTATIVE AND MAY BE MODIFIED BY THE CEI SITE SUPERINTENDANT AS FIELD CONDITIONS DICTATE.
2. GEOSYNTHETICS LINER TERMINATION DETAILS WILL BE IN ACCORDANCE WITH THE DESIGN CONSTRUCTION DRAWINGS.

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

NORTH

DATE	BY	DESCRIPTION

TITLE
DUKE ENERGY
PINE HALL ROAD ASH LANDFILL
CLOSURE
BELEWS CREEK, NORTH CAROLINA

DESIGNED BY DATE
DRAWN BY DATE
CHECKED BY DATE
SCALE
1"=80'
JOB NUMBER
SHEET NUMBER
1 of 1

Cedric,
This is our deployment thus far.
Started composite on Sat..

70 rolls liner delivered
27 rolls geocomposite "

S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
6-19-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1800 11.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor deployed 40 mil textured geomembrane across the south slope. See Jimmy Addis' report for deployment totals.

Geomembrane Seaming:

The Contractor used two (2) fusion welders during seaming operations today. Fusion welders 832 and 840 were used today.

The total combined seaming total for today was noted to equal approximately 4,390 linear feet.

Destructive Samples:

Destructive samples **DS009** through **DS018** were marked during today's seaming operations.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
6-19-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observations

Contractor	Weather/Temp
Morgan Corp.	85°- P. Cloudy

Present at Site: K. Jurelier / J. Oddis / P. Banner

Time	Mileage
11.5	50 ~~65~~

Observations/Remarks:

Arrived on-site, as requested. An area on the North side slope near the bottom and where the drainage ditch will be, was determined by J. Oddis of S&ME to be needing removal. The area had had water draining down off the slope to the place in slope where it appears to be collecting. A backhoe was brought in and removed an area. Location and quantified amount of the material removed may be found attached with J. Oddis's report for this date. The materials were then removed and hauled to the service road access on the South facing slope. Tests were performed on this area and may be found attached with this report. Testing was performed by way of Shelby Tubes.

K. Jurelier

On-Site Representative/Company — S&ME Personnel

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Field Report

Date	Job No.
June 20, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure/Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny/57°-85°
Present at Site	
Bill W., Ron P., Mark W., Phil B.-Kristin J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Observations/Remarks:

Attend ESI's safety meeting this morning. I procured LDT's 1-13 from ESI, so I could test. ESI deployed liner on the North slope today (P53 to P74, approximately 91,012.5 ft.²). Phil monitored all field seaming and deployment today, refer to his report. I pulled LDT's 1-13, took about all day to test, all passed job specifications for double hot-wedge weld for peel & shear. Informed Ron of LDT results. I looked at wet spot, 2 to 3 feet layer of flyash ~4 feet below subgrade still saturated. A D6 dozer started flooring in hole w/ granular soil, and it was not long (15 min.) I got a call from Bill to come back down. The entire back wall (40 ft.) sheared off ~4 feet thick. I called Ken to inform of situation. D6 moved up on slope above hole, and started cutting down & shoveing into hole to reduce shear effect (laid back). A total of 11 loads undercut 242 cu/yds., back out of hole, material hauled to South rdwy.. Kristin monitored earthwork, refer to her report. East slope close to completion. Three loads (42 rolls) of 40 mil and 1 load of composite (27 rolls) delivered today.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
6-20-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1900 12.5	50

Geomembrane Deployment:

The Contractor deployed 40 mil textured geomembrane across the West slope. Approximately 91,012.5 square feet of 40 mil geomembrane was deployed today.

Geomembrane Seaming:

The Contractor used two (2) fusion welders during seaming operations today. Fusion welders 832 and 840 were used today. The total combined seaming total for today was noted to equal approximately 4494 linear feet.

Geomembrane Repairs:

The Contractor continued repair and detailing operations for areas deployed during the last three days. One (1) extrusion welder was used during repair and detailing operations. Extrusion welder 518 was used during today's operations

Destructive Samples:

Destructive samples **DS019** through **DS028** were marked during today's seaming operations.

Attachments

Phillip J. Banner
S&ME Personnel

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(800) 849-2985

Field Report

Date	Job No.
6-20-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 79°- Cloudy

Present at Site: K. Jumelin / J. Addis / P. Barner

Time: 11.5

Mileage: 50 ~~tb~~

To:

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observations

Observations/Remarks:

Arrived on-site, as requested. Area of undercut was beginning to be ready for fill to be added when part of the sides caved in because area had been cleaned out with straight up and down walls with no bench. It was then determined more would need to be removed further up the slope to minimize danger of collapse or injury to operators and more wet material was removed. For approx. amount of undercut quantities, please refer to J. Addis' field report for this date. Undercut was cleaned up and fill consisting of a tan, brown silty sand was hauled in for replacing material removed. Field density tests were performed on this area and are attached with this report. Work continued later into the p.m. and the service road on the South facing slope.

On-Site Representative/Company

K. Jumelin
S&ME Personnel

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S&ME
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Field Report

Date	Job No.
June 21, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Ck

Contractor	Weather/Temp
Morgan/ESI	PC/64°-82°

Present at Site: Bill W., Mark W. Ron P. Phil B. Kristin J.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Attend ESI's safety meeting 6:45-7:00. ESI to detail, really already started on 6/19, welding patches. Should complete today. I monitored non-destructive testing (V-box) from P1-P42 approximately, 1 leak found and repaired. Phil caught up paperwork from yesterday's deployment and seaming. ESI started deployment of the TN 330-2-8 geocomposite, mid morning, after V-box and clean up were performed. They started at P42 and deployed to the West. I procured LDT's 14-28 from ESI, and pulled #'s 14, 15 & 16, which all passed. I observed geocomposite installation thru out the day, material tied & sewn per specifications. No material deliveries today.

Kristin monitored earthwork.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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S&ME

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Greensboro, NC 27410
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Field Report

Date	Job No.
6-21-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1700 11.0	50

Geomembrane Deployment:

The Contractor suspended deployment until further notice.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations for areas recently deployed. One (1) extrusion welder was used during repair and detailing operations. Extrusion welder 518 was used during today's operations

Geocomposite Deployment:

The Contractor began deploying geocomposite over approved areas of the East slope. Geocomposite was placed up to panel 21/22.

Attachments

Phillip J. Banner
S&ME Personnel

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(800) 849-2985

Field Report

Date	Job No.
6-21-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 80° Cloudy

Present at Site: K. Jurelin / J. Odelis / P. Banner

Time: 10.5

Mileage: 50 ~~tes~~

To:

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observations

Observations/Remarks:

Arrived on-site as requested. Work is continuing on the Service road that goes around the landfill area. Crews are working on the South road, bringing it up to grade. Flyash is being placed with Off-Road end dumps and worked with D6 dozers. Water is being added with the help of water-trucks and material is rolled in with Smooth-Drum rollers. Tests were performed by way of Shelby tubes. Results and locations may be found attached with this field report.

Geosynthetic liner is also being rolled down and placed on the slopes by ESI. These areas are being monitored and tests are being performed by J. Odelis and P. Banner.

On-Site Representative/Company

K. Jurelin
S&ME Personnel

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(704) 525-3953 fax

Field Report

Date	Job No.
June 23, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Ck

Contractor	Weather/Temp
Morgan / ESI	PC / 67°-89°

Present at Site: Bill W., Mark W., Ron P., Phil B. - Kristin J.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

All three of the earthwork contractor's water wagons were down this morning, two up and running by noon. No fill placed this morning, contractor filled on the South ramp/embankment this afternoon, Kristin monitored. Issues today ① location of anchor trench from access road drainage ditch ② panel drain on bench #2, left out of engineers estimate, and Morgan missed also. Approximately 2300 lf to be installed. Bill called Cedric to discuss, Morgan faxed price to Mike Cook. Four loads (108 rolls) of composite TN 330-2-8 "SRAPS" delivered today. ESI deployed composite all day, got around SW corner today, approximately 72,000 sq. ft. installed. Phil monitored composite, and U-Box testing of defects. I pulled LDT's 16-24, all passed. Informed Ron of destruct results.

Jimmy Adkins

On-Site Representative/Company | **S&ME Personnel**

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(336) 288-7180
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Field Report

Date	Job No.
6-23-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Clear to cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1600 10.0	50

Geomembrane Deployment:

The Contractor suspended geomembrane deployment until further notice.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming until further notice.

Geomembrane Repairs:

The Contractor suspended repair and detailing operations until further notice.

Geocomposite Deployment:

The Contractor continued deploying geocomposite over approved areas of the liner from panel 21/22 to panel 2. Approximately 70,000 square feet of geocomposite was deployed today.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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3718 Old Battleground Road
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980 fac
(800) 849-2985

Field Report

Date: 6-23-08	Job No.: 1356-01-017-03-02
Project/Location: Pine Hall Rd. Ash Landfill Closure	
Contractor: Morgan Corp.	Weather/Temp: 90°+ P. Cloudy
Present at Site: K. Tuvelie / T. Addis / P. Banner	
Time: 8.5	Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): observations

Observations/Remarks:

Arrived on-site, as requested. All 3 water trucks are broken down and are currently being fixed. Areas where fill are being placed are shut down as far as fill placement. Dozers are working material to build the slopes. Liner and Geosynthetic grid is being placed on finished slopes by EST.

K. Tuvelie

On-Site Representative/Company **S&ME Personnel**

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 24, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Contractor	Weather/Temp
Morgan / ESI	Sunny / 60°-90°

Present at Site: Bill W., Mark W., Ron P., Phil B. - Kristin J.

Time	Mileage

Observations/Remarks:

Attend Morgan Corp. safety meeting 6:30-6:45. I pulled LDT's 25-28, all passed job specifications, this is all destructs to date. ESI deployed geocomposite on the North slope today, moving East, stopped at P44, 33 rolls installed today ~92,400 sq. ft.. ESI pulled back the liner on South side for Morgan to open anchor trench. Approximately 450 feet opened today, trench is 6 feet off center line of drainage ditch, Ken O.K. w/ this. Kristin monitored backfill of anchor trench, and fill placement on the South ramp/slope.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
6-24-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Clear to cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1800 11.5	50

Geomembrane Deployment:

The Contractor suspended geomembrane deployment until further notice.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming until further notice.

Geomembrane Repairs:

The Contractor continued repair and detailing operations out to panel 64.

Geocomposite Deployment:

The Contractor continued deploying geocomposite over approved areas of the liner along the southeast corner. Approximately 95,200 square feet of geocomposite was deployed today.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
6-24-08	13560-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observations

Contractor	Weather/Temp
Morgan Corp.	90°+ P. Cloudy

Present at Site: K. Turelin / J. Addis / P. Banner

Time	Mileage
11.5	50

Observations/Remarks:

Arrived on-site, as requested. Anchor Trench, which anchors the liner, is being excavated. Materials, liner/Geosyntetic, wasn't cut properly and needed to be trimmed better. Backfill material is sandy and mixed with Flyash and is not compacting well. (2) water trucks are also not in service as of yet, so getting enough water on the material to get optimum % of moisture. Needed 95% or better for compaction and + or - 3% for moisture. (2 failing tests.) Tests were performed by way of Shelby tube and are attached with this field report.

_____ K. Turelin

On-Site Representative/Company **S&ME Personnel**

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S&ME
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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 25, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews Ck	
Contractor	**Weather/Temp**
Morgan / ESI	Sunny / 62°-90°
Present at Site	
Bill W., Mark W., Ron P, Phil B.-Kristin J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Earthwork contractor continues to place fill on the South slope and ramp onto top of closure, also trying to backfill anchor trench, having problems w/ moisture content. Anchor trench location around SW corner, back to plan design - 9 feet off centerline of ditch. Kristin monitoring earthwork, see her report.

ESI put down geocomposite on the NW slope til around 1pm. Phil & I observed installation. ESI assist Morgan w/ pulling back the liner for anchor trench excavation, and also placing liner in anchor trench, and trimming excess, scrap hauled to roll off dumpster. ESI started liner deployment around 3pm. Panels 75-80 (36,517.5 ft²) pulled on N slope. I marked repairs and observed some of the air test. Phil monitored field seaming w/ 2 wedges. I was informed that ESI has another crew coming, should be onsite Friday.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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(336) 288-8980

Field Report

Date	Job No.
6-25-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Clear to cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1800 12.0	50

Geomembrane Deployment:

The Contractor resumed geomembrane deployment. See JHA daily for details.

Geomembrane Seaming:

The Contractor resumed geomembrane seaming today. A total of 1672 LF of seaming was completed today using two wedges. Destructives DS-029 to DS-032 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the west slope.

Geocomposite Deployment:

The Contractor continued deploying geocomposite over approved areas of the liner out to seam 115/117 Approximately 64,400 square feet of geocomposite was deployed today.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
6-25-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp.	95°+ P. Cloudy

Present at Site: K. Jurelier / J. Addis / P. Banner

Time	Mileage
12	50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observations

Observations/Remarks:

Work is continuing on the permanent access road to the top of the landfill and around the landfill. Tests were performed on the S.W. slope and anchor trench, and are attached with this field report. Rainfall has made the material too wet in the trench and is being hand-shoveled out. Areas are not compacting, a hand-tamper was being used, now a plate vibrator is being used. Liner and geosynthetic grid is being put on slopes.

_____ K. Jurelier

On-Site Representative/Company — **S&ME Personnel**

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S&ME Form FR1503

S&ME
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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 26, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan / ESI	Sunny / 65°-96°
Present at Site	
Bill W. Mark W. Ron P. Phil B. - Kristin J Cedric R.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Attend Morgan's safety meeting 6:30-6:45. Kristin monitored earthwork at the South slope, and anchor trench on South side. Morgan still having problems w/ anchor trench backfill. I recommended they waste excavated materials (flyash/soil), and bring soil out of borrow area. They achieved 92% compaction in trench (1st lift), but spec. requires 95%. Cedric called Ken Daly, who lessened compaction criteria to 90% and moisture to stay same +/- 3%, on soils. Fine grading East top.

ESI deployed panels 81-102 (138,847.5 ft.²) on the N slope. I monitored deployment and marked repairs. Special agent Phil Banner monitored field seaming, and laid out LDT's. Cedric pulled LDT's 29-34, all passed. Rain hit site around 6pm, 3/10's of an inch recorded. Cedric and I rode around site during rain event, checking on run off areas.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
6-26-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	PM T-storms

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1830 12.0	50

Geomembrane Deployment:

The Contractor continued geomembrane deployment. See JHA daily for details.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. A total of 4,986 LF of seaming was completed today using two wedges. Destructives DS-033 to DS-044 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the west slope.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment until later in the week.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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(800) 849-2985

Field Report

Date	Job No.
6-26-08	1356-01-017-03-07

Project/Location: Pine Hall Rd. Ash Landfill C.

Contractor	Weather/Temp
Morgan Corp.	95° + Cloudy

Present at Site: K. Tunelier / J. Addis / P. Banner

Time	Mileage
11.5	50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

New material had been hauled over from borrow pit area, on-site. Material is RO Sandy Silt. Engineers have dropped the % of compaction to 90%, + or - 3% moisture. Test 289 passed but % of moisture is -6%. Liner and Geogrid is being put on the slopes. Tests were performed by way of Shelby tubes and are attached with field report. Material for trench is compacting well. (if time/effort to roll is used.)

K. Tunelier

On-Site Representative/Company | **S&ME Personnel**

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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 27, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Ck

Contractor	Weather/Temp
Morgan / ESI	Sunny / 67-92°

Present at Site: Mark W. / Marty H. / Earl W. / Craig G. / Bill W. / Ron P. / Phil B. / Kristin J. / Michael S.

~~Time~~ Cedric R.

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

2/10's rain last evening

Observations/Remarks:

Morgan continued to try and compact anchor trench, mucked out mud from last evening rain event. Got some better results on compaction today, Kristin monitored. Started grading for drop inlet depressions at DI-1, down to DI-2 today, 18 to 24 inches below subgrade. Trackhoe bucket used to compact and smooth trench, could not get smooth drum into. Had to regrade subgrade for deployment today, deeper backdrag and filled in voids, smooth drum rolled in.

ESI started liner deployment around 9am, panels 103-111 installed on North slope (53,595 ft²). Michael observed, measured panels. Phil monitored field seaming and laid out destructs. I walked over panels 73-90, marked missed defects, observed some vacuum box testing - no leaks today. One extrusion gun detailing. Site rained out around 4 pm.

* Second ESI crew onsite (11 guys), took site safety training this afternoon.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
6-27-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	PM T-storms

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1630 10.5	50

Geomembrane Deployment:

The Contractor continued geomembrane deployment. See JHA daily for details.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. A total of 3,874 LF of seaming was completed today using two wedges. Destructives DS-045 to DS-050 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the west slope.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment until later in the week.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
6-27-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp.	95°+ Cloudy

Present at Site: K. Tumlin / J. Addis / P. Banner

Time	Mileage
7	50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Material used for trench backfill is compacting. % moisture is within +or- 3% but method of compacting has been a problem. Rainfall is again predicted so work is moving faster than filling/compacting can keep up with. Tests have been performed by way of Shelby tubes and are attached with this field report.

K. Tumlin

On-Site Representative/Company | **S&ME Personnel**

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S&ME Form FRI502

S&ME
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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
June 28, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan / ESI	Sunny / 65°-90°

Present at Site: Bill W. / Craig G. / Marty H. / Earl W. / Phil B / Kristin J. / Michael S. / Ron P. / Vong C

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Attend Morgan Corp. safety meeting 6:30-6:45. Backfilling of anchor trench continues along Southwest side of closure. Some mucking out of anchor trench performed, prior to backfill. Kristin monitored, refer to her report. Liner subgrade not suitable, Morgan had to blade and smooth drum roll, where run off from ~~last~~ yesterday's rain event (4/10's) left sheet leading edge. I recommended to Ron, to roll over leading edge of sheet and then sandbag, it will stay cleaner. Morgan excavating CVT 3, 4 and JB-1. Used trackhoe bucket to compact and smooth. Also 60 feet approximately of 24 inch HDPE pipe laid at low point across from C2-C7 intersection on access road. It floods and crosses rdwy. at this point. Drainage is into existing drop inlet, where old rip-rap was bermed around.

ESI (Ron's crew) deployed panels 112-122 (74,825 ft.²), on NE corner. Phil & Michael monitored geomembrane. Vong's crew put down geocomposite P73 to P83, tied & seam per spec.. I pulled LDT's 36 & 38-47, all passed.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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(336) 288-8980

Field Report

Date	Job No.
6-28-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	PM T-storms

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1830 12.5	50

Geomembrane Deployment:

The Contractor continued geomembrane deployment. See JHA or MCS daily for details.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. A total of 3,395 LF of seaming was completed today using two wedges. Destructives DS-051 to DS-057 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the West slope.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the West slope.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
6-28-08	1356-07-017-0302

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp.	95°+ Cloudy

Present at Site: K. Turelin / J. Addis / P. Banner

Time	Mileage
12	50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

400'+ of the wet material had to be removed after rainfall filled end of trench. J. Addis has allowed a bridge lift to be placed over the material left. (after all mud/water was removed) Tests performed on refilled backfill is passing and % of moisture is good. The backfill earlier removed was pulled back, dozer is working the material in and Rampax is rolling in. A smooth drum roller is also rolling in. Tests performed by way of Shelby tubes and are attached with this field report.

K. Turelin

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date June 29, 2008	**Job No.** 1356-07-017
Project/Location PHR Ash LF Closure/Belews Creek	
Contractor Morgan/ESI	**Weather/Temp** Sunny/67°-88°
Present at Site Bill W. Jeff H.-Earl W. Ron P.-Vong N. Phil B.-Mike S.-Kristin J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain) Geosynthetics

Observations/Remarks:

Morgan prepad ahead of liner deployment, w/a water-wagon and smooth drum roller. Later in the day they prepared tomorrow's lay down area, w/a box scraper, water wagon, and smooth drum roller. Small crew today.

ESI deployed panels 123-132 on the NE corner (app. 48,420 ft²) lined thru DI trench (1-4), leading edge 2 foot over JB-1 excavation, will need to patch in a panel, informed Ron. Deployment, field seaming and air testing monitored by Mike and Phil. Kristin walked over panels 85-111, double checking repairs, looking also for any missed. Second ESI crew deployed geocomposite (TN 330-2-8), over its P95. Leading edges of geosynthetics sand bagged, and rolls placed on top flat areas. I test LDT's 48-53, all had passing results. Catching up on field reports.

Jimmy Aldis

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
6-29-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Clear, PM shwrs 0.2"

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-16000 10.0	50

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor continued geomembrane deployment. See JHA report for details.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. A total of 2,099 LF of seaming was completed today using two wedges. Destructives DS-058 through DS-062 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the West slope.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the West slope.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
6-29-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 90°+ / Clear!

Present at Site: K. Tunelier / J. Addis / P. Banner

Time: 7.5

Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Liner / GeoGrid Placement

Observations/Remarks:

Arrived on-site, as requested. Inspected liner for defects, recorded, marked if they were not yet vacuum tested or repaired. Recorded if they had been fixed. Liner and GeoGrid was being placed on the West slope. Also made sure areas that needed repaired were not covered by GeoGrid before they could be fixed properly. EST quit operations at 3pm that afternoon. J. Addis and P. Banner also were on-site to inspect and record results of the days activities.

_____ K. Tunelier

On-Site Representative/Company — S&ME Personnel

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Field Report

Date	Job No.
June 30, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan / ESI	PC-Sunny / 67-85°
Present at Site	
Bill W. Jeff H.-Marty H. Ron P.-Vong C Phil B.-Will H.-Kristin J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain) Geosynthetics

Observations/Remarks:

Attend Morgan's safety meeting 6:30-6:50. Today the earthwork contractor continued preparing the East top and slope for liner deployment, wetting and smooth drum rolling. Also smooth drum rolling nits made by ESI during today's deployment. Excavation of anchor trench along NW corner and backfill today, monitored by Kristin. Started panel drain placement on South side today, approximately 300 feet installed today, pipe adapter every 100 ft. (pipe not placed yet). One load (14 rolls) of LLDPE 40 mil delivered.

ESI deployed geomembrane panels 133-142 (33,997 ft²) on the NE corner, pulled one straight panel and shingled back to existing, corner is black now. Will and Phil monitored field seaming and marked repairs. I measured panels, along w/ Will. Instruct Will on CQA, One extrusion gun detailing. I pulled LDT's 54-58, all passed.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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Field Report

Date	Job No.
6-30-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Clear

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1730 11.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor continued geomembrane deployment. See JHA report for details.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. A total of 1,213 LF of seaming was completed today using two wedges. Destructives DS-063 through DS-064 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the West slope.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the West slope.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
6-30-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Cl.

Contractor	Weather/Temp
Morgan Corp.	90° - P. Cloudy

Present at Site: K. Tunelier / J. Addis / P. Banner

Time	Mileage
12	50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observations

Observations/Remarks:

Areas of anchor trench left exposed to rainfall 6-29-08 had to have 6" removed of the wet material. (mud, water ....) Fill in some of the trench (towards where it was done for the day of 6-28) was not finished being compacted and had the Rammax roll there areas better. Tested an area around Sta. 33+90 and no backfill had yet been placed here since 6-28. This area passed but the moisture was +7% and requires +/- 3%. Advised (Morgan did not agree to remover more wet soil) bridge over area where it was left open with 2' bridge and roll well. Area was around 35+00 to 32+00.

Testing was performed by way of Shelby tubes and results/locations are attached with this report. Geomembrane and Geogrid are also being put on the slopes of the landfill. There areas are being inspected by J. Addis / P. Banner

_____ K. Tunelier

On-Site Representative/Company — S&ME Personnel

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FIELD REPORTS

JULY 2008

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Field Report

Date	Job No.
July 1, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan / ESI	Sunny / 57°-81°

Present at Site
Bill W.
Marty H. - Craig G - Earl W.
Ron P. - Jong K.
Phil B. - Will H. - Kristin J.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetic's

Observations/Remarks:

The earthwork contractor continued excavating and backfilling anchor trench along North side of closure. Kristin monitored, got to bench #2 today. Installation of panel drain continued, appears to be satisfactory, around to West side, approximately 300 feet today. SI cover started today on South side, a 4 foot thick lift pushed up slope at P31-33, by DGN dozer, two off road trucks (400 Komatsu) hauling. One laborer inspecting loads, (ie; keeping clean) picking out roots & rocks >3 inches. I observed start of placement emphasized to operator to keep eye out for wrinkles and don't create, drop blade at leading edge of lift, and let soil free fall. Craig w/ Morgan Corp., has concern w/ rocky material in borrow. Bill & I both informed him to make effort to remove, by hand. ESI deployed panels 143-161 (143,752 ft.²) on the East slope, full rolls pulled out, taking them back app. 240 feet on top. I measured panels. Phil & Will monitored field seaming/air test and marked repairs. One extrusion gun detailing. LDT's 59-62, pulled all passed specs..

Jimmy Addie

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
7-1-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Ptly cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1730 11.5	50

Geomembrane Deployment:

The Contractor continued geomembrane deployment. See JHA report for details.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. A total of 6,577 LF of seaming was completed today using three wedges. Destructives DS-065 to DS-077 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the West slope.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the West slope.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
7-1-08	1356-07-07-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp	87°- Clear

Present at Site: K. Tunelier / J. Addis / P. Barner

Time	Mileage
12	50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observations

Observations/Remarks:

Arrived on-site, as requested. Crews are working on Anchor trench from Sta. 31+00 to about Sta. 28+00. Backfilling began after 1pm and contractor/operators needed to be reminded 8" lifts so material would compact. Liner and Geogrid/trench was inspected before backfill began on this section of trench.

Dozer began working a "road" up the liner with S-1, to start the covering up of the liner/Geogrid. Later in the day, trucks had hauled in material containing as considerable amount of rocks that needed to be "hand" removed.

Tests were performed on the Anchor Trench, by way of Shelby tubes, and results of the testing and locations are attached with this field report.

K. Tunelier

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
July 2, 2008	13560-07-017

Project/Location
PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan/ESI	Sunny/66-89°

Present at Site
Bill W.
Marty H.-Craig G-Earl W.
Ron P-Vong K
Phil B-Will H-Kristin J.-Cedric R

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain) Geosynthetics

Observations/Remarks:

Earthwork contractor placing S1 cover, full depth on the South side of closure. A D6N dozer and three off-road trucks building 4 foot thick ramps up slope, between panel drain outlets. A second D6 w/ GPS is cutting down behind ramp operation, and spreading S1 across and up the geosynthetics, in approximately 20-21 inch lift. Morgan has 2 to 3 laborers, picking out roots and rocks >3 inches. Anchor trench excavation and backfill taking place on backside of closure, Kristin J. monitoring earthwork full time. The under drain was started today at the NW top corner, approximately 200 feet installed. I recommended capping the start end of pipe.

ESI deployed panels 162-179 (246,208 ft.²) on the E slope, full rolls laying back, up to 300 feet on top now, kinda on an angle. Phil and Will monitored field seaming, and laid out destructs and marked repairs. Both observed air test. I measured panels. One extrusion gun detailing. Both crews on liner today. Best production day thus far.

Jimmy A Tolive

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
7-2-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Ptly cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1800 12.0	50

Geomembrane Deployment:

The Contractor continued geomembrane deployment. See JHA report for details.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. A total of 9,642 LF of seaming was completed today using three wedges. Destructives DS-078 to DS-099 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the West slope.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment along the West slope until tomorrow.

Vacuum Testing:

The Contractor suspended vacuum testing repairs until next week.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
7-2-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp

Weather/Temp: 90°+ P. Cloudy

Present at Site: K. Jumelin / J. Addis / P. Banner

Time: 12

Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): observation of S-1, Repairs

Observations/Remarks:

Arrived on-site, as requested. Crews are at work putting S-1 and panel chains. Material for S-1 contains considerable amounts of rocks/organics. These are being hand-picked by Morgan Corp. Walked the Geo-Grid where they are placing S-1 for holes/rips in the fabric. 3 holes were located, marked and fixed by ESI. Entire area of all benches and slopes were checked for trash/holes. Any found were marked to be fixed by ESI. Liner and Geo-grid had been pulled back from Sta. to Sta. so Anchor Trench could be excavated. When placed into the ditch, so backfill could resume, holes in the Geogrid and 2 rips (cuts) in the liner were located, marked and repaired. These locations may be found with P. Banner's report. Trench was filled starting after 1:30pm with first lift done at 3-3:30pm. Tests were performed on backfill, by way of Shelby tubes and are attached with this field report. 2nd lift wasn't finished until quitting time. Will test 2nd lift, 7-3-08, before work continues in this area

K. Jumelin

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
July 3, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan / ESI	Sunny / 67-91°

Present at Site: Bill W. - Mike C. Marty H. - Jeff H. - Earl W. Ron P. - Vong K. Phil B. - Will H. - Kristin J.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Earthwork contractor continued S1 cover placement on the Southwest corner of closure. Utilized 2-D6 dozers, both w/ GPS, and 3 off-road trucks. Contractor had 2 laborers hand picking roots and rocks >3 inches, out of S1 cover. Installing panel drain on West side bottom and started out bench #2 on West side. Backfilling anchor trench, on North side, have caught up w/ composite. Kristin monitoring earthwork full time. Safed up jobsite for holiday weekend.

ESI deployed panels 180-184 (65,857 ft.²) on the East slope and top. I measured panels. Will & Phil monitored field seaming, air test, and marked repairs. I did seam sheet on NE corner tie in, this was lacking from paperwork. ESI had one extrusion gun detailing repairs. Second crew put composite down this afternoon. I finally got destructs from ESI late today 63-78, did not have time to test any. Jobsite closed at 4:30.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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S&ME
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(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-3-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Ptly cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
1200 - 1600 4.0	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor continued geomembrane deployment. See JHA report for details.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. A total of 3,056 LF of seaming was completed today using three wedges. Destructive samples DS-100 through DS-106 were marked today.

Geomembrane Repairs:

The Contractor continued repair and detailing operations along the North slope.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the West slope.

Vacuum Testing:

The Contractor continued vacuum testing repairs prior to geocomposite placement.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
7-3-08	1356-07-07-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp	90°+ / Clear

Present at Site: K. Tumelin / T. Addis

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observation of S-1, Trench

Time	Mileage
1	60

Observations/Remarks:

S-1 and panel drains are being placed on the S.W. slope areas. Again material is not "clean" (but better than 7-2-08) and is being hand-picked by Morgan Corp. Walked the Geogrid again to check for any holes/trash that may compromise the liner or Geogrid before S-1 is placed.

Anchor Trench is being backfilled to Sta. and liner/trench and Geogrid was inspected for any defects that needed repaired. Several seams needed put back together and patches on the Geogrid where the trench and slope come together.

Tests were performed, by way of Shelby tubes, on backfill placed yesterday and fill also placed today. These results and location are attached with this field report. Soil that was used for backfill on the Anchor Trench was (what was left over) bladed by the motor grader and will need to be tested 7-7-08. This should be considered a lift because it was put in about 1-2' in some areas (Sta. 24+00 – Sta. 21+00)

K. Tumelin

On-Site Representative/Company — S&ME Personnel

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Field Report

Date July 7, 2008	**Job No.** B56-07-017
Project/Location PHR Ash LF Closure / Belews Creek	
Contractor Morgan / ESI	**Weather/Temp** PC / 68-85°
Present at Site Bill W. Mark W. Ron P. Phil B - Kristin J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain) Geosynthetics

Observations/Remarks:

Earthwork contractor placing S1 cover on the west side of closure area today, with two D6 GPS dozers and four off-road trucks. Started compaction effort on S1 today (South side) w/a skidsteer w/ sheepsfoot attachment. Kristin monitored. Installing panel drain on lower closure area (N side) and on bench #2, 900 feet total installed today. Tail ditches opened on lower East toe off slope, to aid in runoff off liner.

ESI deploying composite towards the NE corner, finishing the day at P121. Phil monitored composite install and non-destructive testing ~ V-box. I pulled LDT's 63-72, all passed.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FR1F03

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Field Report

Date	Job No.
7-7-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Ptly cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1800 12.0	50

Geomembrane Deployment:

The Contractor suspended geomembrane deployment until next week.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming until next week.

Geomembrane Repairs:

The Contractor suspended geomembrane repairs until further notice.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the northwest slope.

Vacuum Testing:

The Contractor suspended vacuum testing repairs until needed.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
7-7-08	13356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 85° - Cloudy

Present at Site: K. Tumelin / J. Addis / P. Banner

Time: 11.0

Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Observation of S-1 placement

Observations/Remarks:

Arrived on-site, as requested. Dozer is placing S-1 on the West slope and working it to the top of the landfill. Material is still being picked by hand of rocks, organics.... by Morgan Corp. employees. Skid-Steer with a small sheep-foot roller attached to the front is making top-bottom passes compacting the material, S-1 placed last week.

Tests were performed by way of Shelby tubes and showed % of moisture needed to be raised. Informed J. Addis of results (also Bill Waggoner of Duke Energy) and he advised to use the water trucks to add some water to the slopes. Results and locations are attached with this field report. Geocomposite is being placed by ESI. Advised/Informed J. Addis and B. Waggoner that large chunks were not being broken up and were sitting on top of and rolling down to the bottom of the slope.

_____ K. Tumelin

On-Site Representative/Company — S&ME Personnel

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Field Report

Date	Job No.
July 8, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan / ESI	PC / 69-88°

Present at Site: Bill W., Mark W., Ron P., Phil B. - Kristin J.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Earthwork contractor placing SI cover on the NW side of closure. Contractor having problem getting compaction, moisture content below optimum. Contractor advised to increase wetting effort, and to add additional passes w/ compactive equipment. Kristin monitored earthwork.

ESI deploying geocomposite over to P131 today. Phil monitored composite install and V-box testing. I pulled LDT's T3-90, all passed. One load (27 rolls) of geocomposite delivered today.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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Field Report

Date	Job No.
7-8-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy, PM storms

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1830 12.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor suspended geomembrane deployment until next week.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming until next week.

Geomembrane Repairs:

The Contractor suspended geomembrane repairs until further notice.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the northwest slope.

Vacuum Testing:

The Contractor completed vacuum testing repairs up to the Northwest tie in.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
7-8-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp.	85° - Rain/cloudy

Present at Site: K. Tumelin / J. Addis / P. Banner

Time	Mileage
13	50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

Arrived on-site, as requested. Morgan Corp. crews are working S-1 cover. Dozer is pushing S-1 up the West Slope and workers are hand-picking rocks, organics out of the material. Brought to the attention, 7-7-08, of J. Addis and B. Waggner that there were large "chuncks" of S-1 in the fill and are visable upon inspection. Specifications of the job do specify not chuncks bigger that 4" may be used as fill material. This material should be worked and re-worked before it arrives at the slope area.

Retesting of failed areas was performed today and still shows a need for better compaction. The Skid-Steer was removed and a Smooth-Drum Vibratory roller was used to see if better compaction achieved. Test results and locations are attached with this field report. Results show % of moisture is within specifications and compaction is getting better but not yet passing in areas tested

K. Tumelin

On-Site Representative/Company — S&ME Personnel

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Field Report

Date July 9, 2008	**Job No.** 13560-07-017
Project/Location PHR Ash LF Closure / Belews Creek	
Contractor Morgan / ESI	**Weather/Temp** PC / Sunny 68-90°
Present at Site Bill W. Mike C. Mark W. - Craig G - Earl W. Ken D - Cedric R. - Phil B. Kyle B - KJ Ron P.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain) Geosynthetics

Observations/Remarks:

Earthwork contractor placing SI cover soil around the Northwest corner of closure, one D6 dozer and 4 off-road trucks ramping up closure side slopes about every 100 feet w/a 4 foot thick lift. Second dozer D6, thinning SI down to approximately 20-22 inches. Sheepsfoot down, contractor wetting slopes as best can w/ cannon on water wagons and compacting w/a smooth drum roller (rubber tired). Two laborers picking out roots/rocks from the SI cover, at dump point. Kristin monitoring earthwork full time. Panel drain being installed on bench #2 nearing NE corner. Set in on progress meeting, inspect site w/ Ken, Cedric and Mark; Craig looked at borrow and ESI deploying geocomposite SKAPS 330-2-8 around the NE corner, need to fill in lower bench #1 area to complete. Phil monitoring composite install and any nondestructive testing "V-box". I pulled LDT's 91-95 today, all passed spec. criteria for peal & shear. Two loads of geocomposite delivered today ~6 loads remaining. Site rained out @ 4:30, 3/10" in rain gauge.

Jimmy Adkins

On-Site Representative/Company — **S&ME Personnel**

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S&ME Form FR1502

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Field Report

Date	Job No.
7-9-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Cloudy, PM storms

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1630 10.5	50

Geomembrane Deployment:

The Contractor suspended geomembrane deployment until next week.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming until next week.

Geomembrane Repairs:

The Contractor suspended geomembrane repairs until further notice.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the northwest slope.

Vacuum Testing:

The Contractor suspended vacuum testing repairs until further need.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
7-9-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 89°+/Rain

Present at Site: K. Tumelin / J. Addis / P. Banner

Time: 10.5

Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

Arrived on-site, as requested. S-1 Cover continues to be placed, currently on the N.W./West slope, by dozers. S-1 that has already been worked to grade and rolled in (compacted) by a Smooth-Drum Roller is around 5 acres + of cover. Retesting of failed areas showed it is not achieving compaction yet in this area. A test performed on the upper slope (Grid # J-2) had good % moisture but was not compacted. Smooth-Drum is currently vibrating up slope and static down. Tests were performed by way of Shelby tube and results/locations are attached with this field report. Severe weather in the area has cancelled work this p.m.

On-Site Representative/Company

K. Tumelin
S&ME Personnel

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Field Report

Date	Job No.
July 10, 2008	13560-07-017

Project/Location
PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan/ESI	Cloudy/65-86°

Present at Site
Bill W.
Mark W. - Earl W.
Ron P.
Phil B. - Kristin J. - Kyle B.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Earthwork contractor placing S1 soil cover on the North side of closure. Wetting and compacting S1 in progress. Kristin is monitoring. Morgan did some soil processing in the borrow area this afternoon, ripping/furrowing w/a dozer, then wetting. Installed underdrain today, approximately 160 feet, up to DI-1. Took Kyle around jobsite, looked at construction progress.

ESI deploying composite on the lower East slope. NID testing monitored by Phil. I trained Kyle on operation of the tensiometer. Test LDT's 96-106 (excluding #105 not cut out yet), all passed job specifications.

Jimmy Addie

On-Site Representative/Company

S&ME Personnel

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Field Report

Date	Job No.
7-10-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy, PM storms

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1900 13.0	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor suspended geomembrane deployment until next week.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming until next week.

Geomembrane Repairs:

The Contractor suspended geomembrane repairs until further notice.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the northwest slope.

Vacuum Testing:

The Contractor suspended vacuum testing repairs until further need.

Data Entry:

Phil Banner worked on project related data entry after leaving the site.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
7-10-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 90°+ Cloudy

Present at Site: K. Jumelin / J. Addis / R. Banner

Time: 12.5

Mileage: 50

To:

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 continues to be placed on the West-North West slopes/benches, by the contractor. A smooth-Drum roller (vibratory) and Skid-Steer with a smooth roller attachment both have been used for compaction. Using vibration up the slopes and static down the slopes. Dozers continue to work excess and to sub-grade.

Test results showed passing results, test #313 however the % of moisture was -3.1% but had a pass of 95.4%. Results and locations are attached with this field report.

Geocomposite continues to be placed by ESI.

K. Jumelin

On-Site Representative/Company

S&ME Personnel

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ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
July 11, 2008	13560-07-017

Project/Location: PHR Ash LFC/osure/Belews Creek

Contractor	Weather/Temp
Morgan/ESI	PC-Sunny/65-85°

Present at Site: Bill W., Mark W., Ron P., Phil B.-Kristin J.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Geosynthetics

Time	Mileage

Observations/Remarks:

Earthwork contractor started work on closure repair (leading edge runoff/erosion). ESI pulled back and sand bagged P-184, entire panel. Underdrain trench washed out at panel edge and DI-6 depression w/ tail ditch cut towards crest, allowed recent rain events runoff, which just eroded the flyash, this is located in cut area. A D6N dozer pushed out seeps on slope, which were 5 to 7 feet deep in places. This area was widened to allow for smooth drum to get into (width of blade), and deepened. I probed this area, before any ~~[illegible]~~ subgrade fill was placed, probed stable enough to fill on. A 330 trackhoe laid back sides and excavated hole at underdrain trench along P-184. I monitored hole backfill (GS) and upper slope fill, and Kristin monitored lower slope fill. I performed six field's all passed.

ESI put down composite, Phil monitored.

On-Site Representative/Company

Jimmy Adelio
S&ME Personnel

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S&ME Form FR1502

S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-11-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Partly cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1730 11.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor suspended geomembrane deployment until next week.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming until next week.

Geomembrane Repairs:

The Contractor worked on panel extension repairs in the West anchor trench. Repairs were necessary due to errors in the anchor trench location survey. Actual time and material hours were not recorded on this date.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the North slope.

Vacuum Testing:

The Contractor completed vacuum testing for existing repairs and new repairs being completed at the West anchor trench.

Liner Anchor Trench:

The Contractor pulled back liner and composite from the West and North anchor trenches. Minor panel patches were required in the West anchor trench to maintain minimum liner and composite lengths through the anchor trench.

Attachments

Phillip J. Banner
S&ME Personnel

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(800) 849-2985

Field Report

Date	Job No.
7-11-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan C.

Weather/Temp: 90°+ Cloudy

Present at Site: K. Tumlin/T. Oddis // P. Barner

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Time: 11.5

Mileage: 50

Observations/Remarks:

S-1 continues to be placed on the N-W. Slopes/Benches by the contractor. Material is still being hand-picked of rocks, organics, etc. S-1 is being compacted with a skid-steer with a smooth-drum attachment. The area (G-9) that had erosion and washed away and created a large hole is in the beginning stages of being fixed. The erosion was fixed by chozen. Areas were then refilled, compacted and tested. Another trench is also being worked today with first lift finished by 5pm. Tests and results/locations are attached with this report.

K. Tumlin

On-Site Representative/Company

S&ME Personnel

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S&ME Form FR1503

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9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
July 12, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan/ESI	Sunny/67-92°

Present at Site: Bill W., Mark W., Ron P., Phil B. - Kristin J.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Earthwork contractor placing S1 soil cover over geosynthetics on North side of closure. Excavating and backfilling anchor trench towards the NE corner of closure. Kristin monitored above mentioned earthwork, refer to her report. I monitored closure repair (erosion) earthwork in grids G8 & G9. Today I ran seven density test (#'s 328-334), all passed. Informed contractor of test results.

ESI deploying composite on the East slope & top. Having to add 40 mil liner at anchor trench to have enough to bury. This is due to wrong layout of anchor trench by Morgan. Phil is monitoring geosynthetics, see his report.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FRIF03

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Greensboro, NC 27410
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(336) 288-8980

Field Report

Date	Job No.
7-12-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File 1356-07-017

Services Performed	
☐ Concrete Testing	☐ Asphalt Coring
☐ Cylinder Pickup	☐ Concrete Coring
☐ Asphalt Testing	☐ Undercut Evaluation
☐ Steel Testing	☐ Foundation Evaluation
	☐ Proofrolling
	☐ In-Place Density
Geosynthetics CQA	

Contractor	Weather/Temp
Morgan Construction	Partly cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1730 11.0	50

Geomembrane Deployment:

The Contractor suspended geomembrane deployment until next week.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming until next week.

Geomembrane Repairs: (West anchor trench; T&M)

The Contractor continued time and material repairs at the West anchor trench. Work began at approximately 09:30 and continued until 16:30. The Contractor spent approximately 6.5 hours with two men on the repairs at the West anchor trench.

Geocomposite Deployment:

The Contractor continued geocomposite deployment along the North slope and flat areas.

Vacuum Testing:

The Contractor continued vacuum testing for existing repairs and new repairs being completed at the West anchor trench.

Attachments

Phillip J. Banner
S&ME Personnel

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(800) 849-2985

Field Report

Date	Job No.
7-12-08	1350-07-017-03-02

Project/Location: Pine Hall Rd. Ash landfill Cleanup

Contractor	Weather/Temp
Morgan C.	90°+ Cloudy

Present at Site: K. Tumlin / J. Addis / P. Banner

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observation

Time	Mileage
11-5	50

Observations/Remarks:

S-1 is being placed on the N.W. Slopes / Benches by the contractor. Material is still being hand-picked of rocks, organics. Material has been placed and not re-worked for several days and is drying-out. Anchor trench is continuing but upgrade to the lines and geocomposite took well up to 5pm and some 100' of trench was left open. Tests were performed on the trench and are attached with this report.

K. Tumlin

On-Site Representative/Company

S&ME Personnel

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S&ME Form FR1F02

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(704) 523-4726
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Field Report

Date	Job No.
July 14, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan / ESI

Weather/Temp: Lt. Rain am / Sunny pm 68-87°

Present at Site: Bill W., Mark W., Ron P., Phil B. - Kristin J.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Time:

Mileage:

Observations/Remarks:

Attend Morgan Corp. safety meeting 6:30-6:50. Observed S1 cover placement on North side of closure, with three 40 ton articulate dump trucks hauling. Contractor had 3 to 4 laborers thru out the day, picking up rocks, better effort could be applied by a couple of them. Jobsite had 4/10's of an inch of rainfall last night and this morning. Approximately 100 feet of anchor trench left open on 7-12-08, filled up w/ water from rainfall and drainage off liner. This water was pumped out, and bottom of excavation mucked out. No anchor trench opened today. I had Kristin go back and redo density test run last week, that no check plugs were beat out. I monitored closure slope repair and S1 cover compaction. The two fdt's on repair both passed, and the two on S1 failed. Informed contractor of test results. Need more moisture on non-compliance test areas.

ESI onsite at 7am, to wet for them, crew left site around 7:45, did not return.

On-Site Representative/Company

Jimmy Aldis
S&ME Personnel

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S&ME Form FRIF03

5

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Field Report

Date	Job No.
7-14-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Contractor	Weather/Temp
Morgan Construction	Showers AM, Cldy PM

Present at Site
Phil Banner; S&ME; Greensboro

Geosynthetics CQA	Time	Mileage
	0615-0900 2.75	50

Geomembrane Deployment:

The Contractor suspended geomembrane deployment due to rain.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming due to rain.

Geomembrane Repairs:

The Contractor suspended repairs due to rain.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment due to rain.

Vacuum Testing:

The Contractor suspended vacuum testing due to rain.

Liner Anchor Trench:

The Contractor suspended anchor trench work due to rain.

Attachments

Phillip J. Banner
S&ME Personnel

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(336) 288-7180
(336) 288-8980 fac
(800) 849-2985

Field Report

Date	Job No.
7-14-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 89° - P. Cloudy

Present at Site: K. Jurelier / J. Adelis / P. Banner

Time: 12.5

Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

Rainfall on 7-13-08 has postponed work until haul roads and fill areas can be bladed so work can continue. S-1 was placed after lunchtime. S-1 is continuously hand-picked of rocks and organics by contractor. Work on the anchor trench consisted of draining excess water that had collected from rainfall. All wet material was removed. No fill was placed today by contractor. 2 areas on the S. Slope that had been failing was tested again and did show failing tests. (tests 307 & 308) Area was later scarified, opened up and water was added to it and recompacted. Tests were performed by way of drive tubes and results/locations are attached with this field report.

K. Jurelier

On-Site Representative/Company

S&ME Personnel

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(704) 523-4726
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Field Report

Date	Job No.
July 15, 2008	13560-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan / ESI	Sunny / 65-87°
Present at Site	
Bill W. Mark W. - Marty H - Earl W. Ron P. Phil B - Kristin J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Earthwork contractor placed S1 cover on North side of closure until 10:30 w/ three off-road trucks. Stopped due to outstanding failing densities, and too much soil. Need to spread out and fine grade & let bulldozers catch up. I ran retest on S1 cover in grids K4-J4-K3-H2 & H3, all test passed. Informed contractor of test results. Kristin monitored anchor trench backfill up to the NE corner. Installing panel drain, approximately 500 feet today, to near the NE corner of access road. Contractor using 3½ inch firehouse hooked to water wagon cannon, to wet slopes not reachable from the top or bottom of closure. Also brought back a vibratory sheepsfoot compactor, to use on S1.

ESI put out approximately 35 to 40 rolls of geocomposite on the East end top. Phil monitoring all geosynthetic work today, see his report.

On-Site Representative/Company

Jimmy Addio
S&ME Personnel

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S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
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Field Report

Date	Job No.
7-15-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Clear to Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1800 11.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor suspended geomembrane deployment due to insufficient prepared subgrade.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming.

Geomembrane Repairs:

The Contractor completed repairs out to S278.

Geocomposite Deployment:

The Contractor continued geocomposite deployment over the North slope and plateau areas.

Vacuum Testing:

The Contractor completed vacuum testing out to S278.

Liner Anchor Trench:

The Contractor pulled back 40 mil and geocomposite in the North anchor trench for access by the earthworks Contractor to grade and excavate anchor trench.

Attachments

Phillip J. Banner
S&ME Personnel

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(336) 288-7180
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(800) 849-2985

Field Report

Date	Job No.
7-15-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 89° - P. Cloudy

Present at Site: K. Tunelier / J. Addis / P. Banner

Time: 1.0

Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 continues to be placed on the north slope by the contractor. Continues to be hand picked of rocks, organics. Anchor trench has been cleaned of wet material and ready for fill, compaction and testing. Area scarified, watered and recompacted was tested by J. Addis and results and locations are attached with his field report. Anchor trench was tested by way of chino tubes and results / locations are attached with this field report.

K. Tunelier

On-Site Representative/Company

S&ME Personnel

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Field Report

Date	Job No.
July 16, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan / ESI	Sunny / 66°-88°

Present at Site: Bill W. Mark W. Ron P. Phil B. - Kristin J.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Morgan thinning / fine grading SI cover on the North side of closure. Did not haul any SI today. Installed approximately 400 feet of panel drain today on the East side of closure. Anchor trench excavated and backfilled on the East side today, approximately 200 feet. Kristin monitored earthwork. Contractor kept liner deployment area wet, and used smooth drum roller. Started D1-1A depression grading.

ESI deployed panels 185-207 (106,920 ft.²) on the East side of closure. I monitored deployment, Phil monitored field seaming, and marked destructs / repairs. Leading edge secured w/ sand bags, rolls of liner & composite laid on top for ballast.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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S&ME Form FR1F07

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S&ME

3718 Old Battleground Rd
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Field Report

Date	Job No.
7-16-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Clear to partly cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-19:30 13.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor resumed 40 mil LLDPE deployment. Please see J.A. report for totals and details.

Geomembrane Seaming:

The Contractor resumed geomembrane seaming today. Approximately 3,725 liner feet of fusion welding was completed using three fusion welders. Destructive samples DS107 through DS114 were accumulated and marked for removal.

Geomembrane Repairs:

The Contractor leistered patches for repair locations only.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment over the North slope and plateau areas until further notice.

Vacuum Testing:

The Contractor suspended vacuum testing until further notice..

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the West and North side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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(800) 849-2985

Field Report

Date	Job No.
7-16-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp:

Present at Site: K. Tunelier / T. Addis / P. Banner

Time: 11.5

Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 continues to be placed, on the North slope, by the contractor. Material is still being hand-picked of rocks, organics. Testing was performed on an area that had previously failed and showed a failing test. Gave the sheepfoot roller time to roll the material better, get some water in the soil and retested later in the afternoon with a passing test. Testing was performed on the anchor trench. Repairs were made to the Composite before fill began. Tests were performed by way of drive tubes and results/locations are attached with this field report

K. Tunelier

On-Site Representative/Company

S&ME Personnel

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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
July 17, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan/ESI	Sunny/65-89°

Present at Site: Bill W., Mark W., Ron P., Phil B.-Kristin J.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Morgan hauling S1 cover today, to the North side of closure, w/ four off-road trucks. They continue to push up approximate four feet thick lifts up to the upper crest (top of cell) about every 100 feet along access road. Two GPS D6 dozers thinning / fine grading previous placed ramps up. Wetting w/ 2½ inch hose and compaction w/a sheepsfoot roller following behind fine grading. Contractor has 4 to 5 rock doctors picking out unacceptable materials. Kristin monitored earthwork, see her report. Excavation and backfill of the anchor trench continues, approximately 300 feet today. Also installing panel drain on East side, right behind anchor trench.

ESI deployed panels 208-217 (24,056 ft.²) to the SE corner this morning. Put down panels 218-231 (52,110 ft.²) on the South side this afternoon. I monitored deployment, Phil tracked 2 wedges and marked repairs. Leading edge of East top panels were buried. Repairs made to JB-5 liner, extended into excavation.

On-Site Representative/Company

Jimmy Aldridge
S&ME Personnel

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S&ME Form FRIEO3

S&ME
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Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Dat 7-17-2008	Job No. 1356-07-017-03-01
Project/Location Pinehall Road Ash Landfill Closure	
Contractor Morgan Construction	Weather/Temp Clear to partly cloudy
Present at Site Phil Banner; S&ME; Greensboro	
Time 0600-1800 12.0	Mileage 50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor resumed 40 mil LLDPE deployment. Please see J.A. report for totals and details.

Geomembrane Seaming:

The Contractor resumed geomembrane seaming today. Approximately 3,825 liner feet of fusion welding was completed using two fusion welders. Destructive samples DS115 through DS122 were accumulated and marked for removal.

Geomembrane Repairs:

The Contractor resumed geomembrane repairs across the North slope and plateau areas.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment over the North slope and plateau areas until further notice.

Vacuum Testing:

The Contractor suspended vacuum testing until further notice..

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the West and North side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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(336) 288-8980 fac
(800) 849-2985

Field Report

Date	Job No.
7-17-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp.	90°+ Clear

Present at Site: K. Jurelier / J. Adelis / P. Banner

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Time	Mileage
8.5	50

Observations/Remarks:

S-1 continues to be placed, by the contractor, on the North slope. Material still contains rocks, organics, and is being hand-picked by the contractor. Tests performed on the north slope showed passing tests. Anchor trench continues to be excavated and liner/composite repaired before any fill is placed and compacted. There are 2 areas at the bottom of the north slope that are pumping/rutting from traffic of off-road trucks. Trucks and traffic in general have traveled too close to the anchor trench and have caused water trapped/moving in the trench to pump up near the surface. Advised contractor to keep off-road trucks away from the edge of the landfill and anchor trench. Tests were performed by way of drive tubes and results/locations are attached with this field report.

_____ K. Jurelier

On-Site Representative/Company — S&ME Personnel

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5

S&ME
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(336) 288-8980

Field Report

Dat	Job No.
7-18-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Contractor	Weather/Temp
Morgan Construction	Clear

Present at Site
Phil Banner; S&ME; Greensboro

Geosynthetics CQA	Time	Mileage
	0600-1800 12.0	50

Geomembrane Deployment:

The Contractor continued 40 mil LLDPE deployment. Please see J.A. report for totals and details.

Geomembrane Seaming:

The Contractor resumed geomembrane seaming today. Approximately 4,780 liner feet of fusion welding was completed using two fusion welders. Destructive samples DS123 through DS131 were accumulated and marked for removal.

Geomembrane Repairs:

The Contractor continued geomembrane repairs across the North slope and plateau and across the East slope and plateau.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment over the North slope and plateau areas until further notice.

Vacuum Testing:

The Contractor suspended vacuum testing until further notice..

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the West and North side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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(800) 849-2985

Field Report

Date	Job No.
7-18-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 90°+ - Clear

Present at Site: K. Tunelier / P. Banner

Time: 10.5

Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 continues to be placed, by the contractor, on the north slope. Material is still being hand-picked of rocks, organics, by the contractor. Advised 7-17-08, contractor should keep heavy equipment away from all anchor trench and liner without S-1 cover. Several areas along the haul road, near the anchor trench, have begun to pump from traffic of heavy trucks. Anchor trench continues to be excavated along the East slope and repairs to liner/geocomposite were repaired before any backfilling was begun. No S-1 is currently being worked to subgrade by dozers and rolled/watered, therefore no tests were performed on S-1/slopes today. Testing on anchor trench backfill was done, by way of drive tubes, and results/locations may be found attached with this field report.

K. Tunelier

On-Site Representative/Company

S&ME Personnel

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(336) 288-8980

Field Report

Date	Job No.
7-19-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Time	Mileage
0600-1545 9.5	50

Geomembrane Deployment:

The Contractor continued 40 mil LLDPE deployment. Approximately 98, 557 square feet of 40 mil LLDPE was deployed today. Panels 232 through 262 were deployed today.

Geomembrane Seaming:

The Contractor resumed geomembrane seaming today. Approximately 4,780 liner feet of fusion welding was completed using two fusion welders. Destructive samples DS123 through DS131 were accumulated and marked for removal.

Geomembrane Repairs:

The Contractor continued geomembrane repairs across the East slope and plateau.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment over the North slope and plateau areas until further notice.

Vacuum Testing:

The Contractor suspended vacuum testing until further notice..

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the West and North side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date July 21, 2008	**Job No.** 1356-07-017
Project/Location PHR Ash LF Closure / Belews Creek	
Contractor Morgan / ESI	**Weather/Temp** Sunny-Hot / 71-95°
Present at Site Bill W, Mark W. - Marty H., Ron P., Phil B.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Earthwork contractor placed SI cover on North side of closure w/ 4 off-road trucks and 3 D6 dozers w/ GPS. A total of 4KΔ cu/yds. placed today. No conditioning of SI today, manpower shortage. Approximately 40 feet of anchor trench (E side) excavated today (cm). I monitored backfill of anchor trench this afternoon. Two density test performed, both exceed job specifications for compaction & moisture, refer to attached data sheet.

ESI deployed geocomposite on East side of closure. They also performed non-destructive testing (U-box). Phil monitored all geosynthetics construction.

Jimmy A Adkins

On-Site Representative/Company

S&ME Personnel

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S&ME Form FRIF03

S&ME

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(336) 288-7180
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Field Report

Date	Job No.
7-21-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Clear and hot

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1700 11.0	50

Geomembrane Deployment:

The Contractor suspended 40 mil LLDPE deployment.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming today.

Geomembrane Repairs:

The Contractor continued geomembrane repairs in various areas.

Geocomposite Deployment:

The Contractor continued geocomposite deployment over the North slope and plateau areas.

Vacuum Testing:

The Contractor continued vacuum testing for geocomposite deployment areas only.

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the North and East side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
July 22, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure/Belews Creek	
Contractor	**Weather/Temp**
Morgan/ES1	Sunny-Hot/72-97°
Present at Site	
Bill W. Mark W. Ron P. Phil B	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

I observed placement of S1 cover on the North side of closure. Contractor utilizing 4-40 ton off-road dump trucks backing up on approximately 4 feet thick lift of S1. One D6 dozer building 4 feet thick ramp for trucks, two D6's spreading previous ramps out to approximately 21 to 22 inches. Contractor conditioned S1 today. Had failing felt today, informed contractor of non-compliance test results. Area was reworked, retest passed. Approximately 200 feet of anchor trench opened today (am). I monitored backfill of anchor trench, two felt & run, both passed. Informed contractor of test results. Observed installation of panel drain (E side - lower), 300 feet placed today, per plan. Also observed installation of 80 feet of underdrain today on the East top.

ES1 deployed 40 mil geomembrane on the West top, panels 263-272 (136,925 ft.^{2}). Panel 263 tied in w/ South side panels, West tie-in not welded. Cut off trench plowed in on N leading edge. Phil monitored all geosynthetics.

Jimmy Atkins

On-Site Representative/Company | **S&ME Personnel**

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S&ME Form FR1F03

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Field Report

Date	Job No.
7-22-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Contractor	Weather/Temp
Morgan Construction	Clear and hot

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1900 12.5	50

Geomembrane Deployment:

The Contractor continued 40 mil LLDPE deployment. Approximately ???,??? square feet of 40 mil LLDPE was deployed today. Panels ??? through ??? were deployed today.

Geomembrane Seaming:

The Contractor resumed geomembrane seaming today. Approximately 6002 feet of fusion welding was completed using two fusion welders. Destructive samples DS132 through DS143 were accumulated and marked for removal.

Geomembrane Repairs:

The Contractor continued geomembrane repairs across the East slope and plateau.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment over the North slope and plateau areas until further notice.

Vacuum Testing:

The Contractor suspended vacuum testing until further notice..

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the North and East side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
July 23, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan/ESI	PC/68-88°

Present at Site: Bill W.-Mike C. Mark W.-Jay L.-Craig G-Earl W. Ken D.-Cedric R-Phil B.-Kristin J. Ron P.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Observations/Remarks:

Earthwork contractor placed S1 cover soils on the North side of closure today, they are close to the NE corner. Conditioning S1 soils in F grid today. Anchor trench excavated (am) and backfilled (pm) on East side of closure, approximately 200 feet today. Kristin monitored earthwork, see her report. Contractor installed 300 feet of panel drain (lower E side), and 200 feet of underdrain (E top) today. I attend construction progress meeting, rode site w/ Ken & Cedric.

ESI deployed panels 273-287 (106,762 ft.²) on the NE top today. Phil monitored all the geosynthetics today. I pulled destructs 117-125, all passed job specs for shear and peel. Informed ESI of test results.

On-Site Representative/Company

Jimmy Adelio
S&ME Personnel

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S&ME Form FRLF03

S&ME

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Field Report

Date	Job No.
7-23-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1845 12.25	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor continued 40 mil LLDPE deployment. Approximately ???,??? square feet of 40 mil LLDPE was deployed today. Panels ??? through ??? were deployed today.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. Approximately 4823 feet of fusion welding was completed using two fusion welders. Destructive samples DS134 through DS153 were accumulated and marked for removal.

Geomembrane Repairs:

The Contractor continued geomembrane repairs.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment over the North slope and plateau areas until further notice.

Vacuum Testing:

The Contractor suspended vacuum testing until further notice..

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the North and East side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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(336) 288-7180
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(800) 849-2985

Field Report

Date	Job No.
7-23-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash landfill Closure

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 observations

Contractor	Weather/Temp
Morgan Corp.	90° + - P. Cloudy

Present at Site: K. Jumelin / J. Addis / P. Banner

Time	Mileage
12.5	50

Observations/Remarks:

S-1 continues to be placed, on the north slope and has started on the east slope, by the contractor. Material is being hand-picked of rocks, organics, by the contractor. Anchor trench was excavated up to where the geocomposite ends. Liner had several repairs made to it and results/locations may be found attached with P. Banner's field report for this date. Placement of backfill was approved and tests were performed on this backfill, by way of drive tubes, and results/locations may be found attached with this field report.

_____ K. Jumelin

On-Site Representative/Company — S&ME Personnel

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(704) 523-4726
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Field Report

Date: July 24, 2008	Job No.: 1356-07-017
Project/Location: PHR Ash LF Closure / Belews Creek	
Contractor: Morgan / ESI	Weather/Temp: Sunny / 67-86°
Present at Site: Bill W., Mark W., Ron P., Phil B. - Kristin J.	
Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Observations/Remarks:

Earthwork contractor had two dozers down until the afternoon. One dozer fine grading S1, this morning. Conditioned S1 today, Kristin monitored earthwork, see her report. Started hauling S1 this afternoon, laborers picking out rocks >3 inches.

ESI making tie-in welds along the N & E sides this morning, also detailing w/ one extrusion gun. Deployed panels 288-301 (53,370 ft.²) this afternoon on the SE top. I measured panels, Phil monitored field seaming production. I pulled LDT's 126-135, all passed.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FRIF03

S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-24-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0545-1945 13.0	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor continued 40 mil LLDPE deployment. See JHA report for deployment totals.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. Approximately 3143 feet of fusion welding was completed using two fusion welders. Destructive samples DS154 through DS164 were accumulated and marked for removal.

Geomembrane Repairs:

The Contractor continued geomembrane repairs.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment over the North slope and plateau areas until further notice.

Vacuum Testing:

The Contractor suspended vacuum testing until further notice..

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the North and East side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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S&ME
3718 Old Battleground Road
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980 fac
(800) 849-2985

Field Report

Date	Job No.
7-24-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor: Morgan Corp.

Weather/Temp: 89°. P. Cloudy

Present at Site: K. Jurelier / J. Addis / P. Banner

Time:

Mileage: 50

To:

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 continues to be placed, on the east slope, by the contractor. Some of the S-1 had 75% weathered rock and advised Morgan Corp. to move their trackhoe out of this material. Material is being hand-picked, by Morgan Corp., of rocks, organics. Large weathered rocks are being reworked into the 4'-6' lift and should be broken-up by the dozer/truck's weight. No anchor trench was excavated today because more composite needs to be put on the liner. Areas tested on the North slope showed a failing test in the morning. Advised Morgan C. to open up the area to let it air out and will test in the P.M. Other test showed a passing test. Tests were performed by way of drive tube and results/locations may be found attached with this field report

K. Jurelier

On-Site Representative/Company

S&ME Personnel

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ENVIRONMENTAL SERVICES

9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
July 25, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan / ESI

Weather/Temp: PC / 65-84°

Present at Site: Bill W. Mark W. Ron P. Phil B. - Kristin J.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Observations/Remarks:

Attend Morgan's safety meeting 6:30-6:50. S1 cover being placed, they are around on the East side now ramping up. Two D6 dozers and four off-road trucks being utilized. Contractor had plenty (7) of rock pickers today, w/ no work on anchor trench or drains going on today. Kristin monitored S1 cover. Observed excavation of four test pits in the borrow area, and N of. Refer to attached boring log and survey locations. Two 5 gallon buckets samples obtained, transported into soils lab.

ESI completed tie in welds this morning w/ 7/24 panels, #'s 288-299. One extrusion gun detailing all day. This afternoon panels 302-308 (25,744.5 ft.²) were deployed on the SE top. I measured panels and Phil monitored field seaming. All panels put down today were tied in. Contractor informed me that DS-153 peeled >25%. I obtained my portion of DS-153, and test, all 5 coupons peeled on one side (dirty sheet). Informed Ron to track DS-153, 10 feet each side (A & B sample) until passing results are found.

On-Site Representative/Company

Jimmy A. Hollis
S&ME Personnel

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S&ME Form FR1F02

SUMMARY OF Test Pits ~~HAND AUGER BORING~~

S&ME
ENVIRONMENTAL SERVICES
ENGINEERING • TESTING

Project Name PHR Ash LF Closure

Job No. 1356-07-017

DATE	TEST LOCATION	DEPTH FEET	STRATIFICATION SOIL DESCRIPTION	DEPTH (FEET)	Dynamic Cone Penetrometer Resistance HAMMER BLOWS INCREMENT 1st	2nd	3rd	AVERAGE
7-25-08	TP-15 offset from TP-10	0-13'	Tan Brown f to m Sa Si 3-5' Started seeing rock fragments Hit hard rock at 13'					
	TP-16 In woods N of ~~B~~W Peninsula	0-4" 4"-2' 2'-10' 10'-19'	Rootmat Tan Brown m to f Sa Si Orange Br m to f Sa Si Tan to Yellow Br f to m Sa Si *Bucket Sample					
	TP-17 W Peninsula at silt fence	0-20'	Tan~Lite Br m to f Sa Cl Si -PWR at 17' *Bucket Sample					
	TP-18 W Peninsula 200' N of TP-4	0-4' 4'-13.5'	Orange Br m to f Sa Cl Si Tan-Yellow Br f to m Sa Si w/ rock frag					

S&ME SFD-004
(REV. 5/93)

S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-25-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0545-1715 11.0	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor continued 40 mil LLDPE deployment. See JHA report for deployment totals.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. Approximately 2450 feet of fusion welding was completed using two fusion welders. Destructive samples DS161 through DS164 were accumulated and marked for removal.

Geomembrane Repairs:

The Contractor continued geomembrane repairs.

Geocomposite Deployment:

The Contractor suspended geocomposite deployment over the North slope and plateau areas until further notice.

Vacuum Testing:

The Contractor suspended vacuum testing until further notice..

Liner Anchor Trench:

The Contractor continued to backfill anchor trenches on the North and East side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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(336) 288-7180
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(800) 849-2985

Field Report

Date	Job No.
7-25-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash Landfill Closure

Contractor	Weather/Temp
Morgan Corp.	90 - Cloudy

Present at Site: K. Jurelier / J. Addis / P. Banner

Time: 9-5 | Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 continues to be placed, by the contractor on the east slope. Material contains a considerable amount of weathered rock, sandrock and some organics which is still being hand worked by the contractor. Material coming from the borrow area is becoming more and more sandy and rocky. Conferred Morgan Corp. and Duke Energy rep. B. Waggoner rocks along the edges of the material pushed up by the dozers needs to be worked also. Large rocks, weathered or not, bigger than 4" are unsable. New test pits are to be excavated today for a better material. Areas on the north slope were being worked by the dozer and sheepfoot. Test areas were ready by the p.m. and tests were performed, by way of drive tube, and results/locations are attached with this field report. No anchor trench was worked today. More geocomposite needs to be deployed before work can continue.

_____ K. Jurelier

On-Site Representative/Company — S&ME Personnel

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9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
July 26, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan / ESI

Weather/Temp: PC / 67-86°

Present at Site: Bill W. Marty H. - Earl W. Ron P. Phil B.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Observations/Remarks:

I monitored non-destructive testing this morning. V-box on the SE corner, no leaks found. This NID testing opened up the SE corner for geocomposite (330-2-3) deployment. ESI put down geocomposite to w/in one panel from the SE corner. ESI tracked LDT-153. One extrusion gun detailing, all day. Phil catching up w/ tie in seaming from past two days. I pulled LDT's 136-140 and 153 A and B, and 154, all passed job specifications for peel & shear. ESI capped DS-153 seam from start to ~~[illegible]~~ DS-153A repair, 130 feet total (60'S/70'NE). Destruct 153B cut off prior day last seam for wedge #340/AP. Refer to Phil's report for geosynthetic data also. Leading edges of the geocomposite sand bagged, and full rolls of composite placed on. Approximately 35 rolls put down today. ESI cleaned up strap, placed in 2 dumpters onsite.

Jimmy A[illegible]

On-Site Representative/Company | **S&ME Personnel**

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S&ME Form FRIF03

S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-26-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1715 10.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor suspended 40 mil LLDPE deployment.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming today.

Geomembrane Repairs:

The Contractor continued geomembrane repairs.

Geocomposite Deployment:

The Contractor resumed geocomposite deployment over the North slope and plateau areas.

Vacuum Testing:

The Contractor continued vacuum testing.

Liner Anchor Trench:

The Contractor suspended backfill of anchor trenches on the North and East side of the landfill.

Attachments

Phillip J. Banner
S&ME Personnel

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(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-27-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	N/A

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
PM Data Entry 6.0	N/A

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Data Entry:

S&ME technician Phil Banner compiled and entered geomembrane seaming records. Data entered for 7-18 to 7-24.

Phillip J. Banner
S&ME Personnel

Attachments

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9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date July 28, 2008	**Job No.** 1356-07-017
Project/Location PHR Ash LF Closure / Belews Creek	
Contractor Morgan / ESI	**Weather/Temp** Sunny / 61-90°
Present at Site Bill W. Mark W. - Earl W. Ron P. Phil B. - Kristin J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain) Geomembrane

Observations/Remarks:

I observed Morgan placing SI cover on the East side of closure area, w/ 2-D6 dozers and 4 trucks. Rejected a few loads, due to rocky conditions (50/50). Moved trackhoe more than once in borrow area today, having to get more selective w/ material choice. Anchor trench opened and backfilled on East side today, approximately 200 feet. Kristin monitored earthwork, refer to her report.

ESI deployed geocomposite (33 rolls) on the SE corner laying off 1 panel from leading edge. Moved to S side and deployed to the East. Phil monitored geosynthetics. I pulled LDT's 141-152 and 155-158, all passed. Informed Ron of results.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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S&ME F ... FR1503

S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-28-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Clear to partly cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1930 13.75	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor suspended 40 mil LLDPE deployment.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming today. S&ME continued data entry into project database.

Geomembrane Repairs:

The Contractor continued geomembrane repairs.

Geocomposite Deployment:

The Contractor deployed 37 rolls (92,400 sq/ft) of geocomposite today.

Vacuum Testing:

The Contractor continued vacuum testing repairs along the primary tie in seams and East plateau areas

Liner Anchor Trench:

The Contractor continued backfill of anchor trenches on the North and East side of the landfill.

Protective Cover:

The Contractor continued protective cover placement along the North and East slopes.

Phillip J. Banner
S&ME Personnel

Attachments

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Greensboro, NC 27410
(336) 288-7180
(336) 288-8980 fac
(800) 849-2985

Field Report

Date: 7-28-08	Job No.: 1356-07-017-03-02
Project/Location: Pine Hall Rd. Cyh landfill Closure	
Contractor: Morgan Corp.	Weather/Temp: 90°+ - P. Cloudy
Present at Site: K. Jumelin / P. Banner / J. Addis	
Time: 11.5	Mileage: 50

To:

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 Observations – S-1 is being pushed by dozer up the east slope, by contractor. Advised 7-25-08 that the material needed better attention in removing rocks larger than 4", by hand. Recommended today that rocks, regardless if they're weathered rock or not, that are on top of the liner/geocomposite itself need to be removed. Weathered rock may be put back with fill to be broken up by the dozers. Depending on where in the borrow area the trackhoe is, some trucks contain loads of 75% weathered rock, silt. Large rocks bigger than 4" can be seen and when a test is taken, there is always rock present.

Anchor Trench was excavated today, liner replaced and had (1) repair that was recorded by J. Addis. Backfill was placed, some water was added to the fill used for backfill because it was exposed over the w/end. to temps., weather, etc. Tests were performed by way of drive tube and results/locations are attached with the report

K. Jumelin

On-Site Representative/Company

S&ME Personnel

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ENVIRONMENTAL SERVICES

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
July 29, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan / ESI	Sunny / 70-92°

Present at Site
Bill W.
Mark W. - Earl W.
Ron P.
Phil B. - Kristin J.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Observations/Remarks:

Morgan placing SI cover on the East side of closure area w/ 3-D6 dozers and 4-off road trucks. Six laborers hand picking out roots & rocks while SI is dumped and spread. About to exhaust East side of borrow area, backhoe moving around, made the day. Called Ken Daly per request from Bill Waggoner, to try and get him onsite to make call on material usage. Will try and keep Morgan on East side of borrow thru Friday, getting every useable SI load possible. Approximately 55,000 yds.^{3} moved out of borrow thus far, and used as SI cover. Anchor trench excavated and backfilled on East side today (150-200ft.). Kristin monitored earthwork, see her report. Panel drain installed today, 300ft on lower East side.

ESI put down geocomposite on the South side of closure, and did some n/d testing, Phil monitored. I test LDT's 159-164, all passed, informed Ron of results. I entered panels 277-308 to COA web site.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FR1F02

S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-29-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0630-1930 13.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor suspended 40 mil LLDPE deployment.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming today. S&ME continued seaming log data entry into project database.

Geomembrane Repairs:

The Contractor continued geomembrane repairs.

Geocomposite Deployment:

The Contractor deployed 37 rolls (103,600 sq/ft) of geocomposite over the East slopes.

Vacuum Testing:

The Contractor continued vacuum testing repairs along the primary tie in seams and East plateau areas

Liner Anchor Trench:

The Contractor continued backfill of anchor trenches on the North and East side of the landfill.

Protective Cover:

The Contractor continued protective cover placement along the North and East slopes.

Phillip J. Banner
S&ME Personnel

Attachments

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S&ME
3718 Old Battleground Road
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980 fac
(800) 849-2985

Field Report

Date: 7-29-08	Job No.: 1356-07-017-03-02
Project/Location: Pine Hall Rd. Ash Landfill Closure	
Contractor: Morgan Corp.	Weather/Temp: 90°+ / P. Cloudy
Present at Site: K. Jurelier / P. Banner / J. Addis	
Time: 12.0	Mileage: 50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☑ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 continues to be placed on the East slope, by the contractor. Material is not as "rocky" and has less organics but is still being hand-picked of any rocks larger than 4". Several tests were performed, by way of drive tubes, on the East slope and had failing tests because areas were not compacting well or % of moisture was not +/- 3%. Contractor has remarked the areas and testing will be done 7-30-08. Anchor trench was excavated and repairs were made to liner/Geocomposite. Results/locations for these (drive tubes) tests are attached with this field report

_____ On-Site Representative/Company

K. Jurelier
S&ME Personnel

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ENVIRONMENTAL SERVICES

9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
July 30, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan/ESI	PC/68-90°

Present at Site: Bill W. Mark W.-Earl W. Ron P. Phil B.-Kristin J.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Geosynthetics

Time	Mileage

Observations/Remarks:

Observed placement of the SI cover on the East side of closure. Laborers (6) hand picking roots and rocks. Approximately 200 feet of anchor trench excavated & backfilled today. Kristin monitoring earthwork. Underdrain installed (140 lf) today on the South top, and 300 lf of panel drain on East side. I assisted Kristin w/ fdt's, to help her catch up. I ran four, two were retest, all passed. SI yardage today = 3920 cu/yds.. 62,532 cu/yds. total to date.

ESI deployed geocomposite on top. Phil monitoring all geosynthetic construction. Two loads (54 rolls) of geocomposite (330-2-2) delivered to site today. 648 rolls total to date.

On-Site Representative/Company

Jimmy Addio
S&ME Personnel

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S&ME Form FRIF03

S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
7-30-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Partly Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0615-1945 13.0	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:
The Contractor suspended 40 mil LLDPE deployment.

Geomembrane Seaming:
The Contractor suspended geomembrane seaming today. S&ME continued seaming log data entry into project database.

Geomembrane Repairs:
The Contractor continued geomembrane repairs.

Geocomposite Deployment:
The Contractor deployed 42 rolls (117,600 sq/ft) of geocomposite over the East slopes.

Vacuum Testing:
The Contractor continued vacuum testing repairs along the primary tie in seams and East plateau areas

Liner Anchor Trench:
The Contractor continued backfill of anchor trenches on the North and East side of the landfill.

Protective Cover:
The Contractor continued protective cover placement along the North and East slopes.

Phillip J. Banner
S&ME Personnel

Attachments

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(800) 849-2985

Field Report

Date	Job No.
7-30-08	1356-07-017-03-02

Project/Location: Pine Hall Rd. Ash landfill Closure

Contractor	Weather/Temp
Morgan Corp.	90°+ / Cloudy

Present at Site: K. Tumelin / J. Addis / P. Banner

Time	Mileage
12	50

To: _____

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks: S-1 continues to be placed, by the contractor, on the East slope by dozers and water added and rolled/compacted by sheepfoot roller. Areas that had failed 7-29-08 were retested by J. Addis and show passing tests. A test that had failed on the anchor trench was also retested by J. Addis and has passed. These results/locations will be found attached to J. Addis's field report. Anchor trench was excavated and repairs made to the liner and recorded by P. Banner. Tests were performed by way of drive tube and results are attached with this field report.

_____ On-Site Representative/Company

K. Tumelin
S&ME Personnel

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S&ME
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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
July 31, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure/Belews Ck.	
Contractor	**Weather/Temp**
Morgan/ESI	Sunny/70-92°
Present at Site	
Bill W. Mark W. - Earl W. Ron B. Phil B. - Kristin J.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Jobsite had 3/10's of an inch of rainfall overnight. Contractor had to blade off haul road, ramps and borrow pit before any hauling today. Observed SI cover placement on East side of closure, contractor continues to have laborers hand pick roots and rocks >3 inches out. Today 2320 yds.^{3} of SI hauled out of borrow pit. Anchor trench excavated and backfilled today ~150 feet more or less. Kristin monitored earthwork, see her report. Morgan took out temporary ramp that accessed to top of closure, this area yielded 480 yds.^{3} of flyash, which was hauled behind topsoil stockpile. This area was fine graded for final day of liner placement. Trackhoe (Cat 345) moved to West side of borrow area this afternoon. 200 lf of sub drain installed today on South top.

ESI deployed composite on top today (3 rolls). Made repairs on liner at anchor trench, where they peeled back for Morgan, to excavate. Site rained out at 3pm today 3/10's in rain guage.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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(336) 288-7180
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Field Report

Date 7-31-2008	Job No. 1356-07-017-03-01
Project/Location Pinehall Road Ash Landfill Closure	
Contractor Morgan Construction	Weather/Temp PM Tstms ¾ " Rain
Present at Site Phil Banner; S&ME; Greensboro	
Time 0600-1500 9.0	Mileage 50

To: Project File 1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor suspended 40 mil LLDPE deployment.

Geomembrane Seaming:

The Contractor suspended geomembrane seaming today.

Geomembrane Repairs:

The Contractor continued geomembrane repairs.

Geocomposite Deployment:

The Contractor deployed 13 rolls (36,400 sq/ft) of geocomposite over the East slopes.

Vacuum Testing:

The Contractor continued vacuum testing repairs along the primary tie in seams and East plateau areas

Liner Anchor Trench:

The Contractor continued backfill of anchor trenches on the North and East side of the landfill.

Protective Cover:

The Contractor continued protective cover placement along the North and East slopes.

Phillip J. Banner
S&ME Personnel

Attachments

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(800) 849-2985

Field Report

Date: 7-31-08	Job No.: 1356-07-017-03-02
Project/Location: Pine Hall Rd. Gsh Landfill Closure	
Contractor: Morgan Corp.	Weather/Temp: 90°+/ Rain
Present at Site: K. Tunelier/P. Banner/J. Addis	
Time: 7	Mileage: 50

To:

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks: S-1 Cover continues to be placed, by the contractor, on the east slope. Material has improved but still needs to be hand-picked of rocks, organics by the contractor. Tests were performed, by way of drive tubes, and showed one failing and one passing test.

Anchor trench was excavated, liner had repairs made and were recorded by P. Banner. Liner/Geocomposite put into the trench and backfilled. Rainfall, however, halted finishing the remaining lift and will need wet material removed tomorrow before work continues. Tests results and locations are attached with this field report

K. Tunelier

On-Site Representative/Company

S&ME Personnel

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FIELD REPORTS

AUGUST 2008

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 1, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Cr.

Contractor	Weather/Temp
Morgan / ESI	Sunny / 69-93°

Present at Site: Bill W. - Mike C. Mark W. - Craig G - Chris S. - [redacted] Dean W. Ken D. - Cedrik R Ron P.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Time	Mileage

Observations/Remarks:

Onsite at 6:25am, waited two hours on Morgan's safety man to arrive, and conduct meeting. No equipment fired up until after safety meeting. Site got another 1/10 of an inch of rainfall last night. Started bladeing up site around 9am. Today 2480 cu/yds. of SI hauled to East side of closure, mean SE corner. Had to muck out some of the anchor trench backfill from yesterday. Kristin monitored earthwork, see her report. Installed 190 lf of sub-drain on South top today. I sat in on const. progress meeting today, and monthly pay out discussion.

ESI put out 23 rolls of composite on top this am. Blacked in closure this afternoon, panels 309-324 deployed on the SE corner (34,407 ft.²), S&ME's total = 1,788,074 ft.². Phil monitored field seaming, I measured panels, and observed air test.

* 56,430 ft.² 330-2-8 geocomposite.

Jimmy A Idlop

On-Site Representative/Company | **S&ME Personnel**

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S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date 8-1-2008	Job No. 1356-07-017-03-01
Project/Location Pinehall Road Ash Landfill Closure	
Contractor Morgan Construction	Weather/Temp Clear to partly cloudy
Present at Site Phil Banner; S&ME; Greensboro	
Time 0600-1845 12.75	Mileage 50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor resumed 40 mil LLDPE deployment over the NE' slope corner. See JHA report for details.

Geomembrane Seaming:

The Contractor resumed geomembrane seaming today. Approximately 1,724 linear feet of fusion welding was completed using two fusion welders. Destructive samples DS165 to DS168 were accumulated and marked for removal. Seams 513-531-9 were completed today.

Geomembrane Repairs:

The Contractor continued geomembrane repairs along panels and seams placed today.

Geocomposite Deployment:

The Contractor placed 23 rolls (64,400²ft) of geocomposite today.

Vacuum Testing:

The Contractor continued vacuum testing repairs.

Phillip J. Banner
S&ME Personnel

Attachments

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Greensboro, NC 27410
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(800) 849-2985

Field Report

Date: 8-1-08	Job No.: 1356-07-017-03-02
Project/Location: Pine Hall Rd. Ash Landfill Closure	
Contractor: Morgan Corp.	Weather/Temp: 90°+ / P. Cloudy
Present at Site: K. Turnelin / P. Banner / J. Addis	
Time: 12	Mileage: 50

To:

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): S-1 Observations

Observations/Remarks:

S-1 continues to be placed on the East slope, by the contractor. 3/4" of rainfall the afternoon before (7-31-08) added much needed water to the fill material already in-place on the slope. Material still contains rocks and organics, still is hand-picked by contractor. Visiable large clods of material (2x2x2) are present, as the material changes.

Anchor trench needed to be cleaned of wet material and water scooped out of an area where it has drained off the liner. The material has changed slightly to a tan brown orange soil and was placed in a 2' windrow lift to bridge the wetter material underneath. The area where the water is visable will be left open to help air/dry as best as possible over the weekend.

On-Site Representative/Company

S&ME Personnel

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 2, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan/ESI	PC / 70-91°

Present at Site: Marty H - Earl W. Ron P. Phil B.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): Geomembrane

Time	Mileage

Observations/Remarks:

Morgan had two operators onsite today, they performed some dress up grading on the East side of the borrow w/a D6 and trackhoe. Did some erosion control, cleaned out in front of check dams on C8 channel. Two of the silt fence outlets need attention.

ESI detailing panels 309-324, finished air testing of 8-1-08 seams. Finished final tie-in weld down SE corner to anchor trench. Phil catching up seaming, marking repairs. I observed air test, and pulled LDT's 165-168, all o.k.. Informed Ron of results. 43,605 ft.² of geocomposite deployed on top today.

Jimmy Addington

On-Site Representative/Company — **S&ME Personnel**

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S&ME Form FRLF03

S&ME
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Greensboro, NC 27410
(336) 288-7180
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Field Report

Date 8-2-2008	Job No. 1356-07-017-03-01
Project/Location Pinehall Road Ash Landfill Closure	
Contractor Morgan Construction	Weather/Temp PM thunderstorms
Present at Site Phil Banner; S&ME; Greensboro	
Time 0600-1630 10.0	Mileage 50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Deployment:

The Contractor has completed geomembrane installation.

Geomembrane Seaming:

The Contractor continued geomembrane seaming today. Approximately 170 linear feet of fusion welding was completed using one fusion welder. Destructive samples DS165 to DS168 were removed and tested today. S&ME completed seaming data input after leaving the site.

Geomembrane Repairs:

The Contractor continued geomembrane repairs along panels and seams placed today.

Geocomposite Deployment:

The Contractor placed rolls ( ) of geocomposite today.

Vacuum Testing:

The Contractor continued vacuum testing prior to composite placement.

Phillip J. Banner
S&ME Personnel

Attachments

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Charlotte, NC 28273
(704) 523-4726
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Field Report

Date: August 4, 2008	Job No.: 1356-07-017
Project/Location: PHR Ash LF Closure / Belews Ck.	
Contractor: Morgan / ESI	Weather/Temp: Sunny / 72-92°
Present at Site: Mark W. - Earl W., Ron P., Phil B.	
Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

I observed placement of the SI cover on East side of closure. Contractor utilizing 3 GPS D6 dozers and 4 off-road trucks on SI. Laborers picking out roots & rocks >3" out of SI material, as its dumped and spread. A total of 5630 yds³ hauled today. I performed three field density test on SI today, one was a retest, all fdt's passed. Informed Marty of test results. Anchor trench excavated & backfilled today on South side. I ran two fdt's on anchor trench backfill today, both test passed, informed contractor of results. Drop inlets 1, 2 and 3 set today on the NE corner, SI placed underneath to level. Installed 275 lf of panel drain today.

ESI deploying geocomposite on the SE side of closure, 61,500 ft² today. Phil monitored composite installation. I had ESI cut liner adjacent to DI-1 to DI-2 "

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FRLFO3

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Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
8-4-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1800 12.5	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Repairs:

The Contractor continued geomembrane repairs along panels and seams previously placed.

Geocomposite Deployment:

The Contractor placed 24 rolls (67,200 ²ft) of geocomposite today.

Vacuum Testing:

The Contractor continued vacuum testing prior to composite placement along the northeast slope.

Anchor Trench Backfill:

The Contractor continued anchor trench backfill; north and east.

Protective Cover Soil:

The Contractor continued installation and grading protective cover soils; north and east.

Attachments

Phillip J. Banner
S&ME Personnel

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Field Report

Date	Job No.
August 5 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan / ESI	Sunny-Hot / 72-94°

Present at Site: Mark W. - Earl W.
Ron P.
Cedric R. - Phil B.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Geosynthetics

Observations/Remarks:

Attend Morgan Corp. safety meeting 6:30-6:50. Contractor changed SI placement area this morning, until anchor trench could be excavated around the SE corner. Moved to S side where they started SI on 7-1-08, and placed to the E, moved back to SE top before noon. I monitored earthwork ~ SI & anchor trench backfill. Four field's run today, all passed, informed Marty & Jamie of test results, refer to attached data sheet. Started setting 18 inch drainage pipe out of DI-1. Installed 1401f of sub drain, and 100 ft of panel drain today.

ESI deployed geocomposite on the W top. Made repairs at anchor trench, where liner was cut to be pulled back for excavation. Non-destructive testing done between DI's 1 & 2. ESI 3 rolls short on composite. Will pickup rolls tomorrow, themself, at SKAPS plant in Commerce Ga.. Phil monitoring liner work.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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S&ME Form FRLF03

S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
8-5-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0800-1615 10.25	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Repairs:

The Contractor continued geomembrane repairs for anchor trench repairs only.

Geocomposite Deployment:

The Contractor placed 15 rolls (42,000 ²ft) of geocomposite today.

Vacuum Testing:

The Contractor continued vacuum testing for anchor trench repairs only.

Anchor Trench Backfill:

The Contractor continued anchor trench backfill; east.

Protective Cover Soil:

The Contractor continued installation and grading protective cover soils; north and east.

Attachments

Phillip J. Banner
S&ME Personnel

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S&ME
ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 6, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Geosynthetics

Contractor	Weather/Temp
Morgan / ESI	Sunny / 69-91°

Present at Site: Mark W. - Earl W.
Ron P.
Cedric R. - Phil B.

Time	Mileage

Observations/Remarks:

I observed placement of SI cover on the E top, Morgan started 4 feet thick lift, pushed beyond sub drain and working towards the NE corner. Laborers picking out roots & rocks >3", not to bad today, soils fairly clean. No conditioning of SI today. A total of 233 loads = 4660 cu/yds. today. I monitored anchor trench excavation and backfill today, the last 300 to 400 feet completed today. One area left open for air release near SE corner (30' wide). I ran three fdt's on trench backfill, all passed, informed Jamie of test results. Pipe crew backfilled to secure only 18 inch pipe run between DI-1 & 2. Panel drain installed on S side today ~ 100 lf.

ESI cleaning up scrap, and pulling or cutting wrinkles in the geocomposite, under direction of Phil. The 3 rolls of composite got onsite around 1:30, Cedric got a sample and roll #'s. ESI installed composite, they are 100% complete. ESI moved offsite.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FR1F03

S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
8-6-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1800 12.0	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

Geomembrane Repairs:

The Contractor continued geomembrane repairs for anchor trench repairs only.

Geocomposite Deployment:

The Contractor placed 3 rolls (8,400 ²ft) of geocomposite today.

Vacuum Testing:

The Contractor continued vacuum testing for anchor trench repairs only.

Anchor Trench Backfill:

The Contractor continued anchor trench backfill; east.

Protective Cover Soil:

The Contractor continued installation and grading protective cover soils; north and east.

Attachments

Phillip J. Banner
S&ME Personnel

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9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 7, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan / ESI	PC / 68-90°

Present at Site: Mark W. - Earl W. - Craig G. Phil B.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

I observed placement of SI cover soil on the NE top of closure. Contractor placing a 4 feet thick lift around the perimeter on top, to use for haul road. No conditioning of SI today. Total SI hauled today 400 cu/yds. Contractor installed panel drain on South side today ~550 lf. I took in two SI soil samples to lab for proctor testing (#'s 7 & 8). Phil monitored storm drain pipe (18" & 24") install to DI-3 and DI-4, see his report. Craig and I signed ESI's acceptance for work completed: 40 mil = 1,745,250 ft.^{2} / same # for composite. Had Morgan's surveyors locate the last 3 rolls of composite installed.

Jimmy A Lobis

On-Site Representative/Company — **S&ME Personnel**

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S&ME Form FRIF03

S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7160
(336) 288-8980

Field Report

Date	Job No.
8-7-2008	1356-07-017-03-01

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
0600-1645 10.75	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

6" Sub-Drains:

The Contractor continued installation of 6" Sub-Drains along the East drainage swale.

Panel Drains:

The Contractor continued installation of panel drains along the east slope.

Protective Cover Soil:

The Contractor continued installation and grading protective cover soils; north and east.

Stormwater Piping:

The Contractor continued installation of HDPE piping between DI-1 and DI-4.

Tests and Inspections:

S&ME monitored installation of panel drains, 6" sub-drains, HDPE pipe installation, and protective cover placement.

No discrepancies were identified.

Attachments

Phillip J. Banner
S&ME Personnel

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S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
8-8-2008	1356-07-017-03-01

Project/Location: Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Cloudy

Present at Site: Phil Banner; S&ME; Greensboro

Time	Mileage
0800-1545 9.75	50

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density

Geosynthetics CQA

6" Sub-Drains:

The Contractor continued installation of 6" Sub-Drains along the East drainage swale.

Protective Cover Soil:

The Contractor continued installation and grading protective cover soils; north and east.

Stormwater Piping:

The Contractor continued installation of HDPE piping between DI-1 and DI-4.

Tests and Inspections:

S&ME monitored installation of panel drains, 6" sub-drains, HDPE pipe installation, and protective cover placement.

No discrepancies were identified.

Attachments

Phillip J. Banner
S&ME Personnel

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S&ME
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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 11, 2008	13556-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan/ESI	Sunny/64-83°

Present at Site: Mark W. - Earl W. - Marty H.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

I observed placement of the eighteen inch S1 cover on the South side slope, below the access ramp this morning. Contractor started up the access ramp w/a four foot thick lift of S1 this afternoon. Laborers hand picking rocks >3 inches, although today soils were fairly clean. Total S1 today = 440 cu yds. The remaining subdrain completed today on South top ~200 ft. Contractor cored DI's 1 & 6 for subdrain pipe penetration, Oldcastle did not have big enough. Pipe placed (Dbl. line of 18 inch) towards JB-1, 200 ft altogether. Today I performed five field density test, 3 on pipe backfill and 2 on S1 cover. All test passed, refer to attached data sheet. Informed Marty & Pat of test results.

Jimmy Adkins

On-Site Representative/Company — **S&ME Personnel**

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(704) 523-4726
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Field Report

Date	Job No.
August 12, 2008	13566-07-017
Project/Location	
PHR Ash LF Closure/Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny / 61-86°
Present at Site	
Mark W. - Earl W. - Marty H. Cedric R.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting from 6:30-6:50. Observed placement of SI cover (4 feet thick) up the access ramp and onto the top pushing towards the West, approximately 40 feet wide. Trucks split up two on the South & two on the North top, building haul road around perimeter top. Laborers at each dump point, keeping SI clean. No conditioning of SI today. Eighteen inch pipe, two 5 foot sections laid into JB-1. Contractor set DI's 6 & 7 this afternoon.
Total SI today = 3980 cu/yds.. Load count total to date 96,642 cu/yds.. Waiting on recommendation from Ken Daly about DI-6, which is 6 inches to high.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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S&ME
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(704) 523-4726
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Field Report

Date	Job No.
August 13, 2008	13556-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy-Showers/75°

Present at Site
Mark Webb
Cedric Ruhl

Time

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan's safety meeting from 6:30-6:50. Today I observed placement of SI (4 feet thick lift), 2 trucks hauling to South top, and 2 to North top, continuing to build haul road around top of closure. Laborers at each dump point keeping SI clean. A double run of 24 inch pipe (250 lf) placed out of DI-6 into DI-7. Backfilled to secure pipe, no compactive effort. SI total today = 3100 cu/yds. Site rained out at 2:30.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Charlotte, NC 28273
(704) 523-4726
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Field Report

Date	Job No.
August 14, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC/66-86°

Present at Site: Mark Webb, Cedric Ruhl

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Slow start this morning, jobsite had 4/10's of an inch of rainfall yesterday. Contractor bladed off haul roads and the closure top this morning before any hauling started. I monitored SI placement on the North & South top of closure, continuing to build four feet thick haul road, both layers close to meeting on West end. Laborers keeping SI clean. Contractor spread and conditioned some SI on the East top. I performed two felt's (#'s 395-396) on the SI, both passed. Informed contractor of test results. DI's 8 & 9 set today. Took into soils lab, SI samples # 9 & 10.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 18, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Sunny/67°-87°

Present at Site: Mark W.-Craig G.-Earl W.-Chris S. Ken D.-Cedric R.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed placement of the SI cover on the West top. The four feet thick lift was connected today on the West end, haul trucks can now come up access ramp and travel around the outside top and exit down temporary ramp on Southeast corner, one way traffic only. Laborers keeping SI clean. One dozer starting to cover storm drain pipe between DI's 1 to 4. I set in on construction progress meeting. 250 LF of 24 inch pipe placed today between DI's 7 and 8. SI total today 434 cy.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 19, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Beleus CK

Contractor	Weather/Temp
Morgan Corp	Sunny/65-90°

Present at Site: Mark W. - Earl W. - Marty H. - Patti

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Time	Mileage

Observations/Remarks:

Attend contractor's safety meeting this morning from 6:30-6:50. I observed placement of the SI cover soil on west closure top today. Contractor utilizing 3-D6 GPS equipped dozers and 4 off-road articulate dump trucks. load count total today was 3720 cy. Contractor thinned out overbuilt lift (3 to 4 ft.) which is near center of W top going E approximately 300 to 400 feet. SI soils were conditioned and compacted today. I ran 3 fdt's on the SI all test passed. Pipe crew making drainage pipe adjustments at DI-7 and 8, mucked out around DI-9. Observed backfill between CVT 1 to 4, not exactly as pipe cover section A-A B-B show, more rounded. I ran 3 fdt's on pipe backfill, all passed. Informed contractor of test results.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 20, 2008	13560-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp	Sunny / 61-88°
Present at Site	
Mark W. - Earl W. - Marty H. - Craig G.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 6:30-6:50. I observed placement of S1 on the West top, trucks split between two dozers, trying to square off. It appears the latest fine grade model #5, I think, is off, it's 4 inches low. Operator discovered today, Chris Shuler informed. I let contractor borrow my hand auger, will use tomorrow for depth check of S1 on W top. Welds say slopes o.k. No conditioning of S1 today. Monitored backfill of CVT6 to 8. Six Felt's run today, had one test that did not meet moisture criteria, informed contractor. Retest run passed, refer to attached data sheet. D1-6 saw cut 6 inches from top on 3 sides, N side removed, corners left in to support lid. Found out this afternoon, D1-6 top elevation was right after all. I informed Pat, if this is true, replace cut out section and mud, do saw cut also. Borrow area still yielding S1. Morgan anticipating to expand borrow area. S1 = 4300 cy.

Jimmy Addison

On-Site Representative/Company — **S&ME Personnel**

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 21, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Ck.

Contractor: Morgan Corp

Weather/Temp: Cloudy / 69-85°

Present at Site: Mark W. - Earl W. - Marty H. - Chris S. Langdon S.

Time:

Mileage:

To: File

Services Performed

- [x] Concrete Testing
- [ ] Cylinder Pickup
- [ ] Asphalt Testing
- [ ] Steel Testing
- [ ] Asphalt Coring
- [ ] Concrete Coring
- [ ] Undercut Evaluation
- [ ] Foundation Evaluation
- [ ] Proofrolling
- [x] In-Place Density
- [ ] Other (Explain)

Observations/Remarks:

Contractor mixed up a concrete sample for testing, needs to achieve 3000 psi for use as casing around drainage pipe. Mix consist of CEMEX type I-II Portland cement ~ 94 lb. bag - 10 shovels of masonary sand and 3 gallons of water. I molded 3 ~ 4x8 test cylinders. Observed placement of SI on top, contractor building 4 ft. lift across middle top of closure, close to tying in w/ existing SI on East side. No conditioning of SI today. I monitored backfill over drainage pipe CVT1 to CVT4. Six field's run today, all test passed, refer to attached data sheet. Informed contractor of test results. Patching of DI's started today, 1 and 2 completed, non-shrink grout and cut jumbo bricks used to fill in. Contractor did depth checks today on SI around closure. They are low on West top end in some areas, they say slopes are o.k.. They seem to think the base station was cause for error.
SI = 4580 cy hauled today.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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(704) 525-3953 fax

Field Report

Date	Job No.
August 25, 2008	13556-07-017

Project/Location: PHR Ash LF Closure/Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	PC/65-85°

Present at Site: Mark W. - Earl W. - Marty H. - Chris S.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Time	Mileage

Observations/Remarks:

Attend contractors safety meeting from 6:30-6:50. Observed placement of S1 on middle top of closure. Contractor building two 4 feet thick lifts towards the East, w/ 2-D6 dozers and 4 articulate dump trucks. Load count today was 224x20=4480 cy.. A third D6 dozer, thinning down S1 on top. S1 was wet and compacted w/a vibratory sheepsfoot roller. Contractor finished CVT 6-8 backfill, still lack backfill near & around JB-1 & DI-9. Today six fdt's were performed, all test passed, refer to attached data sheet. Patching DI's today 3, 6, 7 completed and #4 ~50%. Contractor using non-shrink grout and cut jumbo bricks. Surveyors continue to check S1 depths on top (50x50 grid) w/a hand auger. S1 is running 22-24 inches. I reminded contractor that 2 inches of topsoil is required on top. Chris changed out the GPS base station.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
August 26, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	Cloudy-Showers/70's

Present at Site: Mark W. - Earl W. - Marty H.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

I observed placement of the SI cover on the top East side. Contractor continued w/a 4 foot thick lift about middle way of East top. One dozer thinning previous placed 4 foot lift on NE side, closing in gaps. I ran two fdt's today on the SI, both passed. Informed contractor of test results. Contractor finished patching DI #4 today. Contractor tore the liner, just West of JB-1, excavating a tail ditch to temporary drain pipe under haul road. Tear is about 3 feet long at crest of anchor trench. A scrap piece of 40 mil was laid over hole and sand bagged. Morgan contacted ESI, and informed of damage. Surveyors continue to hand auger SI on top and check depth of. SI total today was 2300 cy.. Site rained out at 2 pm.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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S&ME Form FRIF03

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Field Report

Date	Job No.
August 27, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp	Rain / 67-76°

Present at Site: Mark W. - Carl W. - Marty H. Craig G. Mike C. Cedric R.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Time	Mileage

Observations/Remarks:

Three inches of rain recorded in rain guage by 8:30 this morning. No earthwork today, Morgan shut jobsite down until 9-2-08. I sat in on meeting about existing borrow pit, and went over August payment numbers. Completed paperwork for the week.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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S&ME F... FRIF03

FIELD REPORTS

SEPTEMBER 2008

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Sept. 2, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Ck

Contractor	Weather/Temp
Morgan Corp.	Sunny/65-85°

Present at Site: Mark W.-Earl W.-Marty H.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Time	Mileage

Observations/Remarks:

Approximately 4.5 inches of rainfall recorded onsite from 2pm on 8/26 to 6:30am this morning 9/2/08. Contractor started the day by blading up the borrow and closure areas, low areas still muddy. Started hauling S1 around 9:45 w/ 4 off-road trucks, material being placed on the SE top of closure. Three laborers picking out rocks and roots where S1 is dumped. Contractor used a 330 trackhoe and D6 dozer in the borrow area (2-3 ha), excavated out existing burned clearing material. Piled up, did not haul away. Started DI-1 pipe casing w/ portland cement cap blocks & jumbo bricks mud and covered. Completed #s 1 and 6 today. Cleaned out mud in JB-1, patched w/ grout, moved to DI-8. I ran 3 fdtts on anchor trench (#s 364-366), all passed. The double layed 24 inch entering DI-7, was undermined by runoff and bands snapped, Morgan to repair. Morgan also extrusion weld temporary patch over tear in 40 mil, at anchor trench on NE corner.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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S&ME Form FR1F03

S&ME
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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Sept. 3, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Sunny / 62-89°

Present at Site: Mark W. - Earl W. - Marty H. Cedric R.

Time

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend contractor safety meeting 6:30-6:55 am. Observed SI placement on SE top of closure, w/ 4 off road trucks and 2-D6 GPS equipped dozers. Laborers (4) picking out unsuitable materials (ie; roots & rocks). SI conditioned today wet w/ fire hoses and compacted w/a vibratory sheepsfoot roller. I performed three fdt's (drive tube method) #'s 423-425 on the SI, refer to attached data sheet. All test passed, informed contractor of test results. Pipe casing being constructed w/ cap blocks - jumbo bricks and portland cement, DI's 2 & 3 completed today. Drop Inlet #9 patched today w/ non-shrink grout. Exhaust SI material in equipment parking area, hit hard rock. A D6 dozer spread existing brushed clearing debris into parking area and leveled. Morgan started T&M in borrow area, refer to attached page.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
Sept. 4, 2008	13560-07-017

Project/Location
PHR Ash LF Closure/Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	Sunny/62-88°

Present at Site
Mark W.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed placement of the SI cover soil, contractor pushing four foot thick lift across the SE top of closure. Laborers trying to pickout roots/rock >3", and stand on wrinkles. Contractor put a D6 dozer in the borrow area, cleaned off part of the high ground on west side. A D8 dozer w/ ripper arrived late today, worked one hour in borrow area cleaning up cut. Mark and I performed erosion control inspection, report uploaded to collaborate website. Pipe crew uncovered double barrel 24 inch storm drain line, just above and below DI-7, it is 1 foot to high according to surveyors. Evidently during last weeks rain event, the box floated (?). Box and grouted pipes removed at bands, set out to the side, so trench could be mucked out and regraded. Masonry crew completed pipe casings on DI-4 ~ JB-1 and DI-9. Total SI today (load count) ≅ 4300cy..

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
Sept. 5, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews CK

Contractor	Weather/Temp
Morgan Corp.	PC / 63-87°

Present at Site: Mark W. - Craig G - Earl W. - Marty H. Mike C. Ken D. - Cedric R.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed earthwork contractor placing S1 cover soil, in a four feet thick lift pushing towards the SE corner on top of closure. Drop Inlets 1 & 2 mucked out and backfilled today, silt fence put around. Pipe crew reset DI-7, its low 4500 on N side, contractor to make ditch work. Completed pipe casing on both sides of DI-7. I set in on progress meeting today. D8 cleaning up borrow pit, filling to drain. (9 hrs.) T&M.

*S1 = 3860 cy..

Started raining around 4:15, contractor got day in.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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Field Report

Date	Job No.
Sept. 8, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp	Sunny / 69-90°

Present at Site: Mark W. - Marty H. - Earl W.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend contractor's safety meeting from 6:30-6:50. Jobsite had 1 2/10's of an inch of rainfall since 9/5/08. Contractor had to blade off the closure top, borrow and haul road areas before commencing to haul. I observed placement of S1 on the SE top of closure. Contractor had laborers picking out roots and rocks >3 inches. S1 total today = 3440 cy.. Pipe crew mucked out DI-3, and backfilled. I ran two fdt's today (#'s 426-427) on the S1, both passed. Informed contractor of test results.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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ENGINEERING • TESTING
ENVIRONMENTAL SERVICES

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Field Report

Date	Job No.
Sept. 9, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Cloudy / 67-85°
Present at Site	
Mark W. - Earl W. - Marty H.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor hauled SI until 8:45, stopped trucks to let dozers catch up. Resumed SI haul around 4pm, placing on the SE top and started up slope also. Contractor should get geocomposite covered by noon tomorrow. Pipe crew mucked out & backfilled around DI's 4 & 6, silt fence put around. T&M today 8.5 hrs. w/ D8T, grading borrow area to drain. Total SI today by load count = 2740cy..

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Sept. 10, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	Cloudy/65-72°

Present at Site: Mark W. - Marty H. - Earl W.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed placement of the SI cover soil on the SE slope of closure. Closure is covered now w/ SI, all SI came out of existing borrow area. I ran two field's (#'s 428-429) on SI, both test passed. Informed contractor of test results. DI-7 mucked out and backfilled, started on DI-8, but the rain ~~stopped~~ started falling harder and pipe crew stopped. Site rained out at 3:30. I picked up proctor sample #16 of SI material.
SI = 1860 cy.
Webb gave me a T&M sheet for today.

Jimmy Ardlip

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Sept. 11, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure/Belews CK	
Contractor	**Weather/Temp**
Morgan Corp	Cloudy/68°
Present at Site	
Mark W.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

No earthwork today, jobsite muddy from 1.5 inches of rainfall. Mark Webb and I performed a erosion control inspection. Contractor worked on erosion control this morning. I caught up of field reports.

On-Site Representative/Company

Jimmy Ashley
S&ME Personnel

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S&ME
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Field Report

Date	Job No.
Sept. 15, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews CK

Contractor	Weather/Temp
Morgan Corp.	PC / 65°-83°

Present at Site: Mark Webb

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan's safety meeting from 6:30-6:50. Contractor dropped back to the west top of closure and started a ramp (S→N) for trucks to access. Survey indicates S1 is low (1 to 2 tenths). S1 spread across the west top, also fine graded the SE corner and compacted. I ran two fdt's on S1, both passed. Informed contractor of test results. Pipe casing built on both sides of DI-8. DI-10 set and 3 points & one ellbow placed out of (60 lf). Total S1 today = 1520 cy..

T&M = DST 9.5 hrs. clean up and grading to drain in borrow area.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Sept. 16, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy-Rain / 65°

Present at Site
Mark Webb

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend contractor's safety meeting from 7-7:15.
No earthwork today, raining at the moment.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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Field Report

Date	Job No.
Sept. 17, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC / 63-79°

Present at Site
Mark Webb - Craig G. - Jeff H.
Ken Daly - Cedric Ruhl
Mike Cook

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Set in on safety meeting 7-7:15. 1.75 inches of rainfall recorded onsite yesterday. Contractor and ~~spent most of the day~~ myself performed erosion contractor inspection this morning. Most of the day spent on erosion control issues, and repairs. I attended the construction progress meeting, 10-12:30. Contractor mucked out around DI's 8 & 9 in backfilling today. DI-10 storm line installation completed ~30 lf of 12 inch put in. T&M in borrow area today DST ~5 hours
DON ~9 hours

Jimmy Addison
S&ME Personnel

On-Site Representative/Company

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(704) 523-4726
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Field Report

Date	Job No.
Sept. 18, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews CK	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny / 60-78°
Present at Site	
Mark W. - Earl W. - Marty H. Jamie P.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting from 7-7:15. Observed contractor as they started placement of the S2 on the middle top of closure. A two foot thick lift was built from South towards the North. For trucks to access, they backed out across. Trucks (4) quit hauling at 11:30, 71 loads total = 1065 cy (15 cy/load), all loads came out of the import stockpile. Two GPS equipped D6 dozers, spread S2 this afternoon, in approximately a 2 inch lift, which contractor will blend w/ S1 at a later date. Pipe crew backfilled CVT-10 line. Three fdt's performed (#'s 432-434), all test passed. Informed Jamie of test results. T&M in borrow area ~ DST =

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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(704) 523-4726
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Field Report

Date	Job No.
Sept. 19, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	PC / 58-77°

Present at Site: Mark W. - Marty H. - Earl W.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan Corp. safety meeting 7-7:15. Observed contractor as they continue to place S2 on closure top w/ 4 off-road trucks. Moved Dum(E) to where S2 spreading stopped yesterday, and started another 2 feet thick lift (N→S). Did not spread S2 today, the other D6 dozer redressed the benches. Pipe crew backfilled around DI-8 and excavated out of DI-9, laid four joints of 24" storm pipe (80 lf). Backfilled late, will test tomorrow. No T&M work today.

* S2 = 187 loads = 2805 cy..

Jimmy Addie

On-Site Representative/Company | **S&ME Personnel**

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S&ME
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Field Report

Date	Job No.
Sept. 20, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny / 57°-76°

Present at Site
Mark W. - Earl W. - Marty H.

Time

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan Corp. safety meeting from 7-7:15. Observed placement of S2 on the closure East Top. One D6 ramping across top near subdrain ditch, the other D6 spreading yesterday's placement. Contractor continues to have at least 4 laborers picking out roots & rocks. Pipe crew grout patched 24 inch outlet pipes and built collars on DI-9. Backfilled around DI-10. I performed one field on pipe backfill at DI-9, test passed. Informed Jamie of test results. Ditches cut on top and at bottom of ramp, increase of inclement weather.

S2 ~ 146 loads = 2190 cy.

Jimmy Addis

On-Site Representative/Company

S&ME Personnel

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Field Report

Date	Job No.
Sept. 22, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny / 57-80°

Present at Site: Mark Webb - Marty Hlyton - Jamie P. Mark Donnarumma

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor hauling S2 to the East top and South slope, dumping loads around top crest. One D6 dozer spreading 2 inch lift on East top. Contractor has 4 laborers picking out roots. Today's S2 quantity was 3930cy / 262 loads w/ 4 off-road trucks. Two loads 40cy of S1 hauled to DI-9 for backfill. Pipe crew laid 8 joints ~160 lf of 24 inch Hancor storm drain pipe for CUT9 line. I monitored backfill on CUT9 run, two fdt's performed, both passed. Informed Jamie of test results. Grassing crew onsite ~ 3 guys Mark Donnarumma in charge of.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Sept. 23, 2008	13556-07-017
Project/Location	
PHR Ash LF Closure/Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Cloudy/55°-75°
Present at Site	
Mark W.-Marty H.-Jamie P. Mark D. Randy Story w/ ES1	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor continued to dump S2 around the top crest of closure area. Two Dozers spreading S2 on top ~2 inches for blend w/ S1, one on the East side & one of the West side. Pipe crew laid 581lf of 24 inch pipe, and two flared ends, completed CUT-9. Pipe crew moved to JB-1 and mucked out inside & outside of box. Four joints of 18 inch laid out of JB-1 ~ 40lf, no backfill today on CUT5A. ES1 onsite to repair liner, I stayed w/ these guys the entire time onsite. I observed prep of repair area, trial seam & vacuum box ~ passed. Repair area recovered w/ 8 ounce dbl-sided geocomposite, and tied inplace.

S2 quantity today: 289 loads = 4335 cy..

Jimmy Addio

On-Site Representative/Company — **S&ME Personnel**

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Field Report

Date	Job No.
Sept. 24, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny-Cool/53-77°

Present at Site: Mark W.-Marty H.-Jamie P. Mark D.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor continues to haul S2 to top of closure and dumping on the Northeast crest. Two D6 dozers spreading/cutting down S2 to a depth of six inches, one worked the South slope and the other was on East top today. Laborers picking out roots. I performed some depth checks today on the S2, top had two inches plus, and South slope had five to six inches. I mentioned to Mark Webb about <6" areas, adjustment made to GPS. S2 today = 248 loads ~ 372 cy. Pipe crew patched JB-1 pipes w/ non-shrink grout, and built pipe collars downstream side. Elevated lids set on DI's 1 and 6, only 4 inch opening, need min. 6 inches. Informed Jamie to raise 2 more inches. Tried rotatiller on top this morning in the S2, it broke after two passes.

On-Site Representative/Company

Jimmy Aldrich
S&ME Personnel

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Field Report

Date	Job No.
Sept. 25, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC-Windy / 58-65°

Present at Site
Mark Webb - Marty H. - Dick K.
Jamie P. - Mark D. - Jeff H.
Mike Cook

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan Corp's safety meeting 7-7:15. Contractor continued hauling S2 to closure area, building ramps around bottom up to nearest bench for trucks to back up. Two D6 dozers spreading S2 on the North and East slopes, pushing down from the top. Cut trucks off at 3pm, so dozers could catch up, resumed hauling at 4:15. S2 load count today 171 = 2565 cy.. Pipe crew backfilled around JB-1, set lid on, and patched inside of box. Started raining around 5pm, contractor got the day in. Ditches cut around site for drainage, rain in forecast the next few days. One load of erosion control mat delivered today (30 rolls).

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
Sept. 26, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy-Rain / 60°

Present at Site
Mark W. - Steve C. - Marty H.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 7-7:20. No earthwork today due to rainfall. Jobsite down until Monday the 29th. Completed field reports for this week. Total S2 load count to date = 20,610 cy..

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Sept. 29, 2008	13560-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp	Sunny / 57-78°
Present at Site	
Mark Webb	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Site had approximately 2.75 inches of rainfall since last Thursday. Performed erosion control inspection w/ Webb. Contractor spent half the day working on erosion control. This afternoon contractor resumed spreading S2 on the North slope w/ 2-D6 dozers. Pipe crew cleaned out DI 1 & 6 boxes, reset lids, have 2 inch opening now, jumbo bricks used for legs. Placed rip-rap rings around DI's 1, 6 & 9, set lid on 9 also. Built protection apron A2 today also. Grassing crew started blending S1/S2 on the South top of closure, this afternoon, cutting about 4 inches in depth on average.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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Field Report

Date	Job No.
Sept. 30, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy/59-80°

Present at Site: Mark Webb

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan Corp. safety meeting this morning 7-7:15. Contractor continues to spread S2 on the North slopes of closure area. Filled in washes (N&E slopes) w/ S1, tracked in w/ D6 dozer. I recommended these areas be surveyed again, told Mark Webb. These loads were not recorded. Blending continued on top (S1/S2) w/ the rotatiller. Pipe crew cleaned out mud inside D1's 2-4 and 7&8, set lids on. Placed rip-rap rings around D1's 7,8&9, pretty much uses up the 666.13 tons of class B delivered last week. Excavated for D1-13, set base. 480cy of S2 hauled today. Surveyors taking shots on top of closure.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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FIELD REPORTS

OCTOBER 2008

S&ME
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(704) 523-4726
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Field Report

Date	Job No.
Oct. 1 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC / 57°-76°

Present at Site: Mark Webb - Craig G - Jay L Jeff H.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Jobsite safety meeting held from 7-7:20. Had 2/10's of an inch of rainfall last evening onsite. Contractor bladed up access roads, first thing this morning. Continued spreading S2 w/ 2-D6 GPS equipped dozers, on the North side of closure. Contractor has 5 laborers picking out roots. Pushed out the temporary access ramp located on the SE corner of closure, hauled this material (S1) to perimeter road just past D1-9. I ran two felt's on this material placement, both passed. Informed contractor of test results. Pipe crew installing double line of 24" storm pipe out of D1-13. Cast holes in structure #13 were 24" also, to tight for watertight rubber seal to fit. Informed Cedric of situation. Rejected D1-13 as is, contractor to notify precast manufacturer. Morgan went ahead and laid entire lines (1301f) w/ flared end sections. Sat down w/ Mark & Craig, went over #'s for Sept. payment. New safety man onsite "Rory Williamson".

On-Site Representative/Company

Jimmy Addison
S&ME Personnel

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S&ME Form FRLF03

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Charlotte, NC 28273
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Field Report

Date	Job No.
Oct. 2, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny/46°-77°

Present at Site: Mark Webb, Cedric Ruhl

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor spreading SZ on the North side of closure, w/ two D6 dozers. One thinning SZ and the other fine grading. Excess SZ pushed down to perimeter road, and loaded onto trucks, hauled to East side of closure, and third dozer ramped up East slope, at three areas today. Contractor continues to have laborers pick out roots and rocks. Contractor uncovering cap drain @ outlet adapters. Backfilling CVT 13 run, stayed 10 ft. off DI-13. Old Castle picked up DI-13 today, after Morgan removed, will try to ~~m~~core holes larger for 24 inch pipe. 120 rolls of matting delivered — CS-3, and 16 boxes of 6 inch sod staples also. I met w/ Mike Cook today, and went over September progress tracking w/ him. Toured site w/ Cedric this afternoon. DI-10 uncovered, to be relocated.

On-Site Representative/Company

Jimmy Addie
S&ME Personnel

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Field Report

Date	Job No.
Oct. 6, 2008	1356-07-017

Project/Location
PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny/54°-80°

Present at Site
Mark. W.-Marty H.-Mark D.-Rary W.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor spreading/fine grading S2 on the East slope of closure, nearing the SE corner. Laborers digging out cap drain outlet adapters, covered during S2 placement on bench #2. Surveyor taking shots on the S2, E slope. Pipe crew patched and built collars for D1-12. Seeding crew receiveing materials 1100 bags of 10-5-10 fertilizer/3584 bags of lime and 2 loads of CS-3 matting. Raked E half of closure top this afternoon. Started stageing grassing materials on top this afternoon, 7 acres worth.

Material total to date

1100 bags (50lbs./per) = 55,000lbs. (1000lbs./per acre) = 55Ac. ~ 10-5-10
3584 " (" " ") = 179,200lbs. (4000lbs./per ac.) = 44.8Ac. ~ Lime
179 straw rolls (900lb/per) = (4000lbs./per ac.) = 40.2Ac.
Erosion control matting "CS-3" 634 rolls ~ 120'x7.5' each

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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Field Report

Date	Job No.
Oct. 7, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC/ 55°-71°

Present at Site: Mark W.-Marty H.-Mark D.-Jamie P. Craig G.-Chris S. Cedric R.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor continued to spread/fine grade S2 on the South slope, above & below ~~[illegible]~~ slope access road. Started cutting down slope access road (left a little high 4-5 tenths incase of bad weather, it can be clipped). This material was hauled to adjacent perimeter access road sta. 37+00-50+00 approximately, and to CVT-5. Set in on construction progress meeting 1-3:00. Pipe crew laid 80lf of 24 inch storm pipe (double barrel) for CVT-5. Started lime/fertilizer placement on SE top of closure this afternoon, approximately 4.9 acres. Ten loads (150 cy) of S2 hauled today, to S slope. Remaining lime for closure/flat areas delivered today 1 load 16 pallets (56 bags/per = 896 bags).

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
Oct. 8, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC / 54-68°

Present at Site: Mark W. - Marty H. - Jamie P. - Mark D. Rory W.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor finished for time being, cutting down slope access road (left entire ramp a little high, incase of inclement weather). Most of this soil went to CUT-12. Finished spreading / fine grading S2 on South closure slope, only lack perimeter ditch. Started cutting in access road perimeter ditch w/ two dozers, one started just past slope access road working W, the other started on the SE corner working N. Seed arrived onsite around noon ~ 143-50 lb. bags. Grassing crew started on the closure top ~ 4.1 acres completed today. Had contractor cut labels off material bags, to keep up w/ quantity. Materials used: 328 bags of lime & 32 bags of fertilizer / 15.6 bags of seed / 18.2 rolls of straw. Need to rethink quantify method w/ contractor. Also prepped 5.26 acres (NE) w/ lime 420.8 bags and fertilizer 105.2 bags.

Hopper capacity: Yellow = 1250 lbs. / 25 bags • Green = 600 lbs. / 12 bags
Red = 650 lbs. / 13 bags.
* S2 ~ 17 loads = 255 cy..

Jimmy Adkins

On-Site Representative/Company | **S&ME Personnel**

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S&ME Form FRIF03

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Field Report

Date	Job No.
Oct. 9, 2008	13556-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy/64-72°

Present at Site: Mark W.-Marty H.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor continued cutting in perimeter access road ditch on the W & E sides of closure today w/ two GPS equipped D6 dozers. Hand excavated for concrete pads at DI's 1, 6 & 10. Hauled 83 loads of S1 (1660 CY) to flat area, dumped in piles did not spread. I don't think there are any subgrade shots on record, underneath topsoil stockpile, and out to haul road. Continued seeding on top (NE area) of closure, 5.26 acres completed. Materials used: 421 bags of lime / 105 bags of fertilizer / 13.6 bags of seed and 23 rolls of straw. Six loads of class B rip-rap (91.58 tons) and 1 load of class A rock (filter) 15.00 tons hauled in today.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FRIF03

S&ME
9751 Southern Pine Blvd
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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Oct. 10, 2008	13506-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy-Showers / 74°

Present at Site: Marty H. - Rory W. - Jamie P. - Mark D.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan Corp. safety meeting 7-7:15am. Contractor continued cutting in perimeter access road ditch, both dozers on N side of closure now, preparing outside slopes for topsoil (52) as they work towards each other. Hauled 12 loads ~2120 cy of S1 to flat area, some of this placed on perimeter road, the rest dumped in piles, to be spread. Hand dug for concrete pad around D1-7. Seeding on closure top ~ 3.69 acres completed today (W end). Materials used: 295 bags of lime / 74 bags of fertilizer / 9.5 bags of seed and 16 rolls of straw. Started matting in subdrain swale, w/ Excel CS-3, in B2, top ramp to SW corner, 393 lf installed today. Matting is not quite 40 feet wide as per plan, only 35 feet. To match plan, more materials will be needed, than were ordered. Told Mark not to bury edges yet, until I could talk w/ Ken or Cedric.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Oct. 11, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny-Windy/77°

Present at Site: Marty H.-Rory W.-Jamie P.-Mark D.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☑ Other (Explain): SG evaluation (flyash)

Observations/Remarks:

Contractor continued cutting in perimeter access road ditch, on the North side of closure, this was completed today, entire ditch open now. Three loads of S2 (60cy) dumped on the SE corner of closure, to be spread (6 inches) into ditch. Contractor pot holed flat area South of channel #8 today, for SG shots, ash encountered, needs to be removed for 2 foot separation. Installed 690 lf of erosion control mat (CS-3) on closure top North swale. Informed Mark Donnarumma that width is lacking, don't backfill yet. DI-13 reset, Old Castle enlarged (cored) pipe openings. Double 24 inch pipes fit O.K. now. This structure was patched w/ non-shrink grout and collars built today w/ portland cement & jumbo bricks.

Mat today was in BIA

Jimmy Addis

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Field Report

Date	Job No.
Oct. 13, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny / 54-80°
Present at Site	
Marty H.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor stripping / cutting to subgrade South of channel #2, for flat area cut for shaping. Approximately 48 loads (960 cy) of flyash removed and hauled to backside of topsoil stockpile. I proofrolled area w/a loaded Volvo 740 articulate dump truck, area stable, o.k. to fill on. Twelve loads of S1 (240 cy) placed on flat area, not spread yet. Started placing S2 in perimeter access road ditch line, six inches being put down. Got down to near DI-9 today, loads being dumped out ahead in ditch ~375 cy today. Seeding crew completed closure top w/ seed today, SE swale from top of road over to DI-1 - 1.5 acres. Started and completed lime / fertilizer placement on slope above Bench #3 DI-10 around to SE side ~ slope access included. Started scratching in lime & 10-5-10, did not get past SW corner. Install 1631 lf of erosion control matting ~200' W of DI-1 to 533' W off SE top corner. Got one load of PP5-12% erosion control blanket delivered today.

B1A → B1B → B2

On-Site Representative/Company

Jimmy Addis

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Field Report

Date	Job No.
Oct. 14, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure/Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny/58-82°
Present at Site	
Marty H.-Rory W.-Jamie P.-Mark D.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor placing flat area fill type S1 w/ two off-road trucks (730 & 740). Today 1476 cy placed and compacted. I performed four field density test (#'s 440-443) today, all test exceeded 95% compaction. Informed Marty of test results. Observed closure area fill type S2 placement in ditch C3, from D1-9 to JB-1, approximately six inches applied. Moved operation to SE corner and took off to the West, spreading six inches of S2 on outside slope and in ditch C4 - 792 cy hauled today w/ 1 and sometimes 2 trucks. Contractor to finish closure area fill type S2, as they work around. Completed matting on closure top - 464 lf installed today - total on top = 3178 LF. Started 3:1 slope protection matting, this afternoon @ D1-10, deployment moving westward. 72 rolls installed, rolls are 120' x 7.5' = 900 sf ÷ 9 = 100 sy, total of 7200 sy today. Trenches opened at crest & toe, for matting to be buried. Preparing S2 on closure, start at bench #2 West side around to East end of bench #2 w/ lime & fertilizer w/ slope included.

- 5.43 Acres *B2 top & S slope

Jimmy Addis

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Field Report

Date	Job No.
Oct. 15, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny / 62-84°
Present at Site	
Marty H.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend safety meeting 7-7:15. Observe contractor placing closure area fill type S2 on the West side perimeter road ditch and outside slope, finishing both as they move thru. Both T30 off-road trucks hauling (12cy/load). Monitored installation of 3:1 slope matting on NW around to N side of bench #3. 8300 sy put down today. Contractor squared up slope matting w/ grass lined ditch matting on bench #3 ~ 1551 LF today. Confusion on whether to cut anchor trench on bench #3. Got recommendation from KD/CR, to lap slope matting over bench matting, and keep overlap w/ flow direction. Issue arose w/ ~~access~~ slope access road grading, appears rdwy. is to narrow ~ 15 feet from edge to ℄ of ditch C5. Informed KD&CR of this situation, will check in the morning. I recommend to Marty not to cover slope access road w/ ABC, as was scheduled for tomorrow.

Met today BKO & BJA

On-Site Representative/Company

Jimmy Adkins
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Field Report

Date	Job No.
Oct. 16, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny / 59°-81°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan Corp. safety meeting 7-7:15. Observe contractor hauling S1 (588 cy) out of borrow pit this pm to the South perimeter access road. Also hauled S2 (980 cy) to the North closure area ~ water loading area", and channel #7, in Flats. Had contractor drop back and fix laps, gaps and add more staples on South 3:1 erosion control blanket, also stressed importance of this installation to Morgan's foremen. Matting 3:1 and bench #3 being put down today on North side. Bench #3 grass lined ditch = 467 LF, ≈ 8000 SY (80 rolls) of 3:1 installed today. Grass seed put out today, ahead of matting on North slope: bench #3 around to 250' past D1-2 going South ~ 1.44 acres. Contractor used rake and scratched in lime and fertilizer on bench #2 slope East side.

* Mat today B3A ≈ slope to ~~approximately~~ 250'S of D1-2.

Jimmy Addis

On-Site Representative/Company

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Field Report

Date	Job No.
Oct. 17, 2008	13560-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Showers / 65°

Present at Site: Marty ~~Hilty~~ Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor placing S2 (approximately 4 to 6 inches) in channel #7 w/ two offroad trucks (540cy). No matting installed today due to weather conditions. Contractor shut jobsite down at noon, will return on the 20th. Completed field reports for this week.

Jimmy Addin

On-Site Representative/Company

S&ME Personnel

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Field Report

Date	Job No.
Oct. 20, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny / 36°-68°

Present at Site: Marty Hlyton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☑ Other (Explain): Erosion control blanket

Observations/Remarks:

Observed earthwork contractor placing flat area fill type S1, South of channel #8, w/ two 730 off-road trucks, each load assumed @ 12cy, todays total 184 loads x 12cy = 2208 cy. I performed three fdt's (#'s 444-446) in the flat area, all test exceed required compaction of 95%. Informed contractor of test results. Shaping in progress around D1-13 w/a D6 dozer, some of the S1 loads went there. Continue to discover that Morgan lacks subgrade shots, in the flat area: East 1/3 of staging, access rdwy. North of C7, and perimeter road SE to NE corner. Surveyor had trackhoe, pot hole to determine flyash cover. I observed some, not all of these pictures taken. According to Morgan's surveyor, all areas have sufficient cover (+2'). Erosion control blanket 3:1 slope protection, installed on Bench #3 (E side to SE cor.). Dropped down to Bench #2 slope @ D1-7, deploy to the North ~315'. Today's total ~ 3:1 slope = 12700 SY
~ Ditch mat = 1435 LF ~ B3B & B4B & B7

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
Oct. 21, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Ck

Contractor: Morgan Corp.

Weather/Temp: Sunny / 40-69°

Present at Site: Marty Hylton

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Time

Mileage

Observations/Remarks:

Attend Morgan Corp. safety meeting 7-7:15. Monitor flat area fill type S1 placement today, South of channel #8. Performed three fdt's on S1, all test exceed 95% compaction. Informed contractor of test results. Observed installation of 3:1 slope protection (CS-3), and grass-lined ditch (CS-3) on Bench #2 ~ East side moving around NE corner @ D1-3 deploying westward. Contractor seeded 1.0 acre today, just ahead of CS-3 matting deployment area. Had T&M work today in the borrow area, refer to attached sheet. Three pallets (120 rolls) of CS-3 matting delivered today ~ 1170 rolls to date.

Today's totals: S1 flat area = 2052 cy
Grass-lined ditch = 690 lf "B4B"
3:1 slope protection = 13,800 sy
Seeding = 1.0 Acre

Jimmy Addis

On-Site Representative/Company

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Field Report

Date	Job No.
Oct. 22, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Ck

Contractor	Weather/Temp
Morgan Corp.	Sunny / 37-67°

Present at Site: M. Donnarumma / Craig G / Rory W. / Ken D. / Cedric R.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Time	Mileage

Observations/Remarks:

Observed contractor placing S1 fill in the upper flat area, this morning. Installing matting (CS-3) 3:1 & grass lined ditch on North side slope and Bench #2. Set in on progress meeting 10-1:15 today. This afternoon S2 fill was placed on the flat area, South of Channel #3, two inches being put down.

Today's total: Flat Area S1 = 1092 cy
" " S2 = 1272 cy
3:1 slope protection = 15100 sy
Grass lined ditch = 9351 lf "B4A"
Seeding = 1.15 Acres

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
Oct. 23, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny/36-55°

Present at Site: Mark D.-Jamie P.-Rory W.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor moved all construction materials and equipment off existing stageing area, created new stageing area on flats, south of CB. Installing 3:1 mat and grass lined ditch (B4A) on NW side of closure. Seeding from SW corner over to D1-10 ~ slope and ditch below. Matting crew caught up w/ the seeding crew, they went on top and backfilled matting anchor trench. Morgan started East end of larger flat area cut to subgrade for verification. Hauled this material to west side of cut/fill line and spread in a four inch lift. Had 3 hrs. of T&M today in the borrow area w/a D6T dozer.

Today's totals = Flat area S1 = 540 cy
" " S2 = 576 cy
3:1 slope protection = 8700 sy
Grass-lined ditches = 225 lf

On-Site Representative/Company

Jimmy Addis
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Field Report

Date	Job No.
Oct. 24, 2008	13566 07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Cloudy / 47-52°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan Corp. safety meeting 7-7:15. Contractor continued to cut to subgrade on the East end of larger tract of flat area. Have already picked grade up on west end of flat area by 4 inches, stockpiling cut soils now, for use as backfill later. Flat area cut today = 1284 cy. Some 52 placed today in the East end of channel #7, 192 cy total. 3:1 slope protection matting continued today, came around SW corner and deployed down the South slope, and thru channel #4, laid remaining roll in anchor trench, will peel back when soil/cement application takes place. Totals of 3:1 = 13300 (133 rolls of CS-3) and 557LF of grass-lined ditch. Start matting in channel #1 on SW corner, 12 ft. wide, did not backfill anchor trench, wait until soil/cement is completed, stapled on slope side every three ft., and every 1 ft. along end of rolls. Today 224LF of PP-5 installed. Seeded ~1.07 Acres ~ S slope.

On-Site Representative/Company

Jimmy Adkins
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Field Report

Date	Job No.
Oct. 25, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy-Rain/52°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

No earthwork or construction activity today, due to weather conditions. Had 3/4 of an inch of rainfall by 6:30am this morning. Marty cut everyone loose at 9am. Completed paperwork for the week.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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Field Report

Date	Job No.
Oct. 27, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy/38-56°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan Corp. safety meeting 7-7:15. Completed East end of flat area cut for shaping today (828 cy ~ 69 loads), awaiting survey. Contractor spread two inches of S2 on large section of flat area, West of c/f line (816 cy ~ 68 loads). Continued 3:1 slope protection matting on South slope, deploying to the East ~ 45 rolls = ~4500 sy. Moved to bench #1 (B5A) and slope above, put down 300 LF and 6600 sy. Had 320 LF in Ditch C4 also. Seeded 1.0 acres on Bench #1 and slope on North side.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Oct. 28, 2008	13560-07-017
Project/Location	
PHR Ash LF Closure / Belews Ck.	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny / 33-54° Windy
Present at Site	
Marty Hylton	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor's inhouse surveyor tops'd East cut to subgrade in flat area, shots o.k.. 22 inches of S1 and 2 inches of S2 to be applied. A pit approximately 150'x25'x6' was excavated on the East edge of the flat area (inside of the road), for flyash to be countersunk into. Monitored S1 placement on East end of flat area, soils stockpiled from the cut to subgrade were reused, also moved flyash into open pit. Performed 6 field density test today (#'s 450-455), all test exceeded 95% compaction and met moisture criteria. Informed contractor of test results. Contractor uncovered existing storm drain pipes on North side of project, 3 in all ~24 inch, will abandon later. Morgan completed erosion control matting on NW side of closure Bench #2 (B4A ~ 110LF), also filled in gaps on slope down to ditch C1, around to Bench #1 start - B5A - 60LF. A total of 91 rolls put out today = 910 sy. Seeded 1.07 acres on North side - Bench #1 / slope above.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
Oct. 29, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Sunny/33-54°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan safety 7-7:20. Contractor continued spreading flat area cut to subgrade, back across the cut from area. I monitored SI placement on East end of large flat area, three fdt's performed (#'s 456-458), all exceeded 95% compaction, and met moisture criteria. Informed Marty of test results. Two off-road trucks (730's) hauled off the topsoil stockpile, and stacked piles of S2 on East edge of flat area (2136cy). The three existing storm drain outlet pipes on North side of project, were abandoned today, open ends (inlet) were crushed shut, and portland cement poured over. Slope protection and ditch matting in progress, Bench #1 (BSA) on North side, also fillet in slope below Bench #1 on NW side of closure to break. Total mat today ~1852LF/11300 sy. Seeding - North side bench #1 slope below = 1.5 acres.

On-Site Representative/Company

Jimmy Adelie
S&ME Personnel

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Field Report

Date	Job No.
Oct. 30, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Ck.

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Contractor	Weather/Temp
Morgan Corp.	Sunny/29-59°

Present at Site: Marty Hylton

Time	Mileage

Observations/Remarks:

Monitored contractor placing S1 cover soil over the counter sunk flyash on East end of flat area North of channel 3. Also hauled and placed S1, where topsoil had been stockpiled, all topsoil moved and subgrade shots taken ~ o.k.. Topsoil piled on East end of flat area, to be spread later. Three fill's performed today (#s 459-461), all exceeded 95% compaction, and were w/in the moisture criteria. Informed contractor of test results. Some of today's S1 came out of the borrow area. Matting (3:1 & ditch) in progress on Bench #1 - B5A and slope to ditches C1/C2, moved deployment to East side of Bench #1 and worked to the North ~ B5B and slope above. Seed prep. continues to stay ahead of matting. I took two S1 samples (#s 19 & 20) into soils lab.

Today's totals: S1 = 756 cy
S2 = 972 cy
3:1 mat = 13300 sy
Ditches = 422 lf
Seeding = 2.91 Ac.

On-Site Representative/Company

Jimmy Addison
S&ME Personnel

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FIELD REPORTS

NOVEMBER 2008

S&ME
9751 Southern Pine Blvd
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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 3, 2008	13556-07-017

Project/Location: PHR Ash LF Closure/Belews Ck.

Contractor: Morgan Corp.

Weather/Temp: Cloudy/51-59°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☑ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor completed the panel drain in bottom of ditch C5, installed directly on geocomposite, total length was 790.30 LF, at no charge to client. Had to replace a section (10') of 12" pipe at CVT-11. D6 dozer hit on Friday channeling for C5 ditch to alleviate hand excavation. A 4x2x6' apron installed at end of outlet pipe off panel drain. Slope matting continued on East side ~ 75' North of DI-9 to SE corner today (9600 sy), contractor is out of the CS-3 mat, ordered 300 rolls on Friday. Ditch C3 not completely covered, no LF measurement taken. S1 placed and compacted on flat area "topsoil stockpile area" (1548 cy). Two fdt's run today (#'s 462-463) on S1, both passed. Informed contractor of test results. Widened perimeter road on South side, approximately station 44+00 - 48+00 to 12 feet, hauled from borrow area. Start removing rip rap rings from around DI's on closure top, using loader, any damage to matting/grass, needs to be repaired, contractor informed. Seeded 1.80 acres on East side to SE corner today.

Jimmy Addy

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Nov. 4, 2008	13556-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Cloudy-Showers/66°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan's safety meeting 6:30-6:45. Contractor cut about 4 inches off the top of D1-10 box, maybe it will drain now. Smoothed the top of box back out w/ portland cement. Installed matting (CS-3) on South slope below access road, started at bottom (CUT-11 inlet) and worked to the West. Morgan used up their partial rolls. Spread S2 on flat area South of CB ditch. Seeded .64 acres where matting was deployed today. Formed up D1-1 w/ 2x6's for concrete apron. New silt fence put up along South side of perimeter road. I checked existing monitoring wells 2-7, 2-9, 3 and 4, need to do some work around 2-7 for better accessibility. Laid out 2 new wells 1D and 7. Some clearing to do at 1D.

* T&M = borrow area 330 trackhoe & D6T dozer = 1 hour each.

Jimmy Adcock

On-Site Representative/Company

S&ME Personnel

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Field Report

Date	Job No.
Nov. 5, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Contractor	Weather/Temp
Morgan Corp.	PC / 54°-65°

Present at Site
Marty Hylton

Time	Mileage

Observations/Remarks:

Jobsite had 3/10's of an inch of rainfall last evening. Contractor blacked up roads for vehicle access, first thing this morning. Performed erosion control inspection w/ Marty. Completed silt fence install along South side of project (approximately 350 lf), not originally out far enough. Formed for concrete aprons around drop inlets 6 and 10. Removed rip-rap rings from around drop inlets 8 & 9, stockpiled for reuse. T&M in borrow area reclamation 330 trackhoe and D6T ≈ 6 hours each. Morgan quit at 2pm, supervisors had to attend corporate safety meeting, due to Cliffside rollovers.

Jimmy Adkins

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Nov. 6, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Sunny/49-69°

Present at Site: M. Hylton - C. Greeson - J. Bridwell
K. Daly - C. Ruhl
M. Cook

Time

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor smooth drum rolled slope access road prior to deploying woven geotextile. Square foot total on the woven geotextile was 17,189. Contractor started slope access road surfacing w/ ABC stone (469.93 tons) hauled in today. CS-3 erosion control matting being installed on slope below access road. Set in on construction progress meeting 10-12:30. Tour jobsite w/ Mike, Ken & Cedric. 4/2 blend in progress on flat area North of channel 8. Bulk truck brought in to spread lime & fertilizer today. T&M in borrow area today = trackhoe 330 ~7 hours. Went over to plant and sat down w/ Mike & Craig, for Oct. 08 payout.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Field Report

Date	Job No.
Nov. 7, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Sunny / 40-71°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Today, slope access road surfacing was completed, a total of 858.13 tons hauled in w/ 7 trucks. The ABC was sealed off w/a smooth drum roller, no water added yet. Total tonage of ABC = 1328.06. Slope matting continues on the South slope above access road, 5000 sy (50 rolls) put down today, all CS-3 mat. Also channel 8 seeded and matted today w/ CS-3 = 540 lf anchor trench cut on each side. Installed 2 wattles in C9, per plans. Pot holed perimeter access road stations 18+00-32+00 and 35+00-50+00. Encountered flyash at stations 18-19-21 & 23 all at minus 1 foot. Informed Cedric Ruhl of situation, Morgan took subgrade shots at acceptable stations. Morgan request to add 1 foot of SI from station 18+00 to 23+00, and hold centerline of ditches C1 & C2, as is.

Jimmy Adkins

On-Site Representative/Company — **S&ME Personnel**

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S&ME Form FRIF03

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Field Report

Date	Job No.
Nov. 8, 2008	13556-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny/48-69°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor deploying slope protection matting (CS-3) above access road, 24 rolls (2400sy) put down today. Morgan is out of CS-3 matting, should receive more on Monday. Installed 9 wattles in ditch C8, per plans. Added rip-rap to apron A2, complete now. Hand excavated for concrete aprons at drop inlets 8 and 9. Seeding today ~2.45 acres, ditch C7 and road beside. T&M in borrow area today = DOT dozer worked 5 hours. I took in ABC proctor sample for testing.

Jimmy Addison

On-Site Representative/Company

S&ME Personnel

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Field Report

Date	Job No.
Nov. 10, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Sunny / 33°-61°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor started installing the panel drain outlet pipes along ~~slope~~ perimeter access road ditches C5 & C6 3 put in today. Formed apron for D1-12. Started matting (CS-3) in ditch C7, not complete yet. Remaining 3:1 slope protection matting installed above access road ~ 11 rolls (1100 SY), 100% complete on this item. Seeding crew blending the flat area, South of ditch C8, ready for lime / fertilizer and seed. Seeding today existing dam redone w/ seed mix 2 and backside slope from dam to near MW 2-7, .50 acres. Contractor potholed perimeter road for subgrade shots, stations 18+00 to 24+00, every 50 feet, I observed.

Jimmy Addis

On-Site Representative/Company — **S&ME Personnel**

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Field Report

Date	Job No.
Nov. 11, 2008	13560-07-017
Project/Location	
PHR Ash LF Closure/Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny to PC/50's
Present at Site	
Marty Hylton	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed hand excavation for concrete aprons around drop inlets 2, 3 and 4, three feet out on each side and six inches deep. Morgan finished matting (CS-3) in channel 7, only lack fill in around D1-13 ~920 LF. Wattles installed per plan in C7 also, ~18 total. Observed placement of 51 (1 foot) on closure area perimeter road from station 18+00 to 24+00, existing centerline of channels 1 & 2 held as is. A total of 530 cy placed and rolled in w/ sheepsfoot compactor. Concrete poured today in aprons around drop inlets 1, 6, 10 and 12. A total of 9.5 cy poured out, one set of four test cylinders molded and physical properties checked. Morgan used bulk trucks today to spread lime and fertilizer on the flats area South of channel 8. A total of 4.75 acres seeded today.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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Field Report

Date	Job No.
Nov. 12, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy/38-56°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor as they hand excavated down to panel drain outlet adapter, so 4 inch pipe (HDPE corr.) could be installed. Also hand excavating 4'x2'x0.5' rock rip-rap pad, centered at pipe discharge. Morgan's laborers having trouble locating outlet adapters (GPS not exact), some of the pipe adapter ends are mushroomed from SI placement, and some ends are angled up, no positive flow. Recommended that pipes be installed w/ minimum 1% slope, if at all possible, but don't excavate below flow line of ditch. So of the rock rip-rap pads need adjustments, I told Marty we would add these to punch list. Seventeen outlet pipes put in today. Trackhoe used to excavate (lightly) and lift last joint of pipe & flared end on CVT-10, raised approximately 6 inches, level w/ flow line now. Built rip-rap apron #3 and 5'x5'x0.5' pad at CVT-10 outlet. Finished seeding gaps on South flat area, and .59 acres on North side "water loading area". Cleared for MW-1D and dressed up in borrow area w/ 330 trackhoe & D6R dozer = 1 & 3 hrs..

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
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Field Report

Date	Job No.
Nov. 13, 2008	13560-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy-showers-55°

Present at Site
Marty Hylton

Time

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor continued to excavate and install panel drain outlet pipes on the NW corner of closure area this morning, 3 completed. Lime and fertilizer spread on South outside slope of closure perimeter road, approximately station 35+00 - 51+00. Contractor shut down at noon, due to steady rainfall, a half inch had fallen by 2:30.

Jimmy Addis

On-Site Representative/Company

S&ME Personnel

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S&ME F - FR1503

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Field Report

Date	Job No.
Nov. 17, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC/29-50°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed installation of the panel drain outlet pipes on the East side of closure. ~15 total installed today. Encountered one of the adapters that was minus 3'4" down, at the end of Bench 1 on East side, called Cedric Ruhl to inform, will confer w/ Ken Daly. Told contractor to skip over, until decision is made on. Formed for concrete aprons at DI's 2, 3, 7 and 8, these were poured today, approximately 10.5 cu/yds. of mix #198 used, no cylinders made. Some damage to matting done by loader and skid steer loaders, hauling concrete up slope at DI-9 to access 7 & 8, and running across benches to access DI's 2 & 3. Informed contractor repairs would be added to punch list. Seeding today on the outside of perimeter road, approximately station 24+00-35+00 a total of 1.32 acres turned in. Motorgrader delivered to site ~ Cat 140H. I called the Vulcan quarry at Stokesdale, and got their ABC dry weight #'s = 141.1/5.5%.

Jimmy Adkins

On-Site Representative/Company

S&ME Personnel

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S&ME Form FR1F02

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(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 18, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan Corp

Weather/Temp: Sunny-Cold / 46°

Present at Site: Marty Hylton

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed installation of panel drain outlet pipes on the North side of closure, completed, crew moved to the Bench #2 West side. The first 5 adapters uncovered were angled down, contractor tried to excavate around adapter and raise up to get some positive drainage out of. I have concern that these will drain at all, informed contractor. I notified Cedric Ruhl of situation. Matting deployed on steep slope - North side of closure 250 SY installed. Started matting C9 w/ PP-5 did not complete. Excavated for concrete aprons at DI's 9 & 13. Motorgrader worked on perimeter road, also scarified ABC on slope access road, and put 2 loads of water on stone and let soak in. Sealed off ABC w/ smooth drum roller. Excavated w/ 330 trackhoe at intersection of ditches C2/C3 (NOC #12) 1' down on anchor trench side transition to minus 2 feet below design grade elsewhere.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FR1503

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 19, 2008	1356-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Contractor	Weather/Temp
Morgan Corp.	Sunny Cold/45°

Present at Site: Marty Hylton

Time	Mileage

Observations/Remarks:

Contractor continues to install panel drain outlet pipes on Bench #2, completed East side today, and moved around to the North side, 15 installed today. A woven geotextile was laid in the intersection of ditches C2/C3. Four loads (69.36 tons) of Class I rip-rap was placed into the bottom of the two-foot thick rip-rap layer, one foot below design grade in the vicinity of the anchor trench, and two feet below design grade elsewhere. Stripped wood forms from around D1's 2,3,7 & 8. Formed for concrete aprons at D1's 4,9 & 13. Completed matting in ditch C9 (PP-5), a total of 550 LF. Started spreading lime (800 bags) in the borrow area.

On-Site Representative/Company

Jimmy Addison
S&ME Personnel

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9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 20, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure / Belews Creek	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny-Cold / 29-50°
Present at Site	
Marty Hylton - Craig G. Mike C. Ken D. - Cedric R.	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor worked on installing panel drain outlet pipes on bench #2 today, 4 put in today, this completes installation ~~12~~ 71 total. Still have issue with one pipe at East end of bench #1, adapter is at minus 3 feet. Concrete (9 cu/yds.) poured around DI's 4, 9 and 13, this completes the concrete aprons. Set in on ~~[illegible]~~ construction progress meeting. Toured site w/ KD-CR & MC, KD has concerns w/ ditch #7. Grassing crew spreading lime in borrow area. Went over some of the seam sheets.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 21, 2008	1356-07-017
Project/Location	
PHR Ash LF Closure/Belews Ck.	
Contractor	**Weather/Temp**
Morgan Corp.	Sunny Windy 34-40°
Present at Site	
Marty Hylton	
Time	**Mileage**

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan's safety meeting 6:30-6:50. Jobsite covered w/ a half inch of snow, that fell early this morning. The temporary entrance to jobsite was taken out today, the asphalt was hauled offsite, contractor cracked existing road surface, made repairs w/ crack sealer. Both pipes excavated out of entrance, and hauled offsite. Contractor built berm back across, and graded shoulder. Need to seed this area. To windy to do any seeding today. Stabilization equipment delivered today. I went over some of the geomembrane seam logs.

Jimmy Adkins

On-Site Representative/Company — **S&ME Personnel**

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S&ME Form FRIF02

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 22, 2008	1356-07-017

Project/Location
PHR Ash LF Closure/Belews Creek

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Contractor	Weather/Temp
Morgan Corp.	Sunny/28-51°

Present at Site
Mark Donnarumma

Time	Mileage

Observations/Remarks:

Contractor worked on some of the punchlist items today. Backfill and dressed up around drop inlet aprons 1, 2, 6, 7, 8 & 10. Enlarged some of the panel drain outlet pipe rock pads. Completed 3.0 acres of seeding in the borrow area. I measured rip-rap channel in the SE corner of C7, not on plans, Morgan thought it was needed 38ft x 4ft. x 1ft..

Jimmy Addis

On-Site Representative/Company **S&ME Personnel**

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 24, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Cloudy/32-47°

Present at Site: Mark D. - Jamie P. - Joe B. Andrew B w/ S&ME Robert L.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Attend Morgan's safety meeting from 6:30-6:45. Observed contractor as they perform punchlist work. Completed backfill around drop inlet aprons @3, 4, 9 and 13. Complete backfill of ditch C9. Approximately 4 acres seeded and mulched in the borrow area. Soil/cement stabilization of the perimeter access road, begin today. Two loads of cement (tankers) delivered, and put down, from approximately station 51+60 - 41+10 ~ 1050 LF. Contractor made two pulls, to cover the entire 12 ft. of roadway (8' & 4'). I checked the spread rate this (am) = 54 lbs/ft.². also excavated 2 holes sta. 48+00 and 43+00 to check uniformity of mixing ~ both O.K.. Andrew monitored compactive effort w/a nuclear density guage, he also checked compaction on the slope access road ABC. ABC not in compliance w/ specs. Morgan informed to continue compactive effort. Refer to his report for data. Jobsite rained out around 4pm.

On-Site Representative/Company

Jimmy Addia
S&ME Personnel

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S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
11/24/2008	1356-07-017

Project/Location
Pine Hall Ash Landfill Closure

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ■ In-Place Density

Other (Explain)

Contractor	Weather/Temp
Morgan Corp.	Cloudy 40

Present at Site
Andrew Bornemann – S&ME

Time	Mileage
10 Hrs (incl Drive Time)	48

Observations/Remarks:

S&ME representative was on site as requested to perform in-place density tests for the perimeter access road. In-place densities were evaluated using the nuclear density test method (ASTM D 2922).

Density Test Results
Nuclear

Location	Test Elevation	Moisture Content Optimum	Moisture Content In-Place	Compaction Required	Compaction Attained
1) Perimeter access road approx Station 41+00	Subgrade	15.5	17.5	98	100.7
2) Perimeter access road approx Station 42+00	Subgrade	15.5	19.5	98	98.9
3) Perimeter access road approx Station 43+00	Subgrade	15.5	17.2	98	98.9
4) Perimeter access road approx Station 44+00	Subgrade	17.4	21.1	98	100.2
5) Perimeter access road approx Station 45+00	Subgrade	17.4	21.7	98	98.2
6) Perimeter access road approx Station 46+00	Subgrade	17.4	21.1	98	98.5
7) Perimeter access road approx Station 47+00	Subgrade	17.4	21.1	98	100.4
8) Perimeter access road approx Station 48+00	Subgrade	17.4	22.4	98	99.3
9) Perimeter access road approx Station 49+00	Subgrade	17.4	20.6	98	99.8
10) Perimeter access road approx Station 50+00	Subgrade	15.5	20.3	98	98.4
11) Perimeter access road approx Station 51+00	Subgrade	15.5	18.1	98	101.2

On-Site Representative/Company

S&ME Personnel

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 25, 2008	13546-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor: Morgan Corp.

Weather/Temp: Sunny / 32-48°

Present at Site: Mark D. - Robert L. Andrew B. - Phil B.

Time

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor continued punchlist work today, had only 1/10 of an inch rainfall yesterday. Observed seeding around drop inlets 1-4 and 6-8, these areas were matted today also. One load of straw (30 rolls) delivered to site. Soil/Cement stabilization of the perimeter access road continued today, and completed, station 41+10 to 0+00. I checked the spread rate this "pm" = 51 lbs./ft². also excavated 8 holes and visually inspected uniformity of mixing ~ all o.k., start at sta. 38+00 and at sta. 3+00. Contractor stabilized 4110 LF today. Andrew & Phil (2.5 hrs.) monitored compaction effort on the cement and ABC, refer to their reports for data. Morgan started work on bare spots on the closure top.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FRIF03

S&ME
3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
11/25/2008	1356-07-017

Project/Location
Pine Hall Ash Landfill Closure

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ■ In-Place Density

Other (Explain)

Contractor	Weather/Temp
Morgan Corp.	Cloudy 40

Present at Site
Andrew Bornemann – S&ME

Time	Mileage
9.5 Hrs (incl Drive Time)	48

Observations/Remarks:

S&ME representative was on site as requested to perform in-place density tests for the perimeter access road. In-place densities were evaluated using the nuclear density test method (ASTM D 2922).

Density Test Results
Nuclear

Location	Test Elevation	Moisture Content Optimum	Moisture Content In-Place	Compaction Required	Compaction Attained
1) Perimeter access road approx Station 40+00	Subgrade	15.5	17.3	98	98.8
2) Perimeter access road approx Station 39+00	Subgrade	17.4	19.4	98	100.8
3) Perimeter access road approx Station 38+00	Subgrade	17.4	20.0	98	99.1
4) Perimeter access road approx Station 37+00	Subgrade	15.5	20.7	98	97.6
5) Perimeter access road approx Station 36+00	Subgrade	17.4	20.5	98	100.1
6) Perimeter access road approx Station 35+00	Subgrade	17.4	22.0	98	98.2
7) Perimeter access road approx Station 34+00	Subgrade	17.4	24.1	98	97.9
8) Perimeter access road approx Station 33+00	Subgrade	17.4	21.5	98	99.1
9) Perimeter access road approx Station 32+00	Subgrade	17.4	20.3	98	98.1
10) Perimeter access road approx Station 31+00	Subgrade	15.5	18.3	98	99.3
11) Perimeter access road approx Station 30+00	Subgrade	15.5	15.2	98	99.0
12) Perimeter access road approx Station 29+00	Subgrade	17.4	17.9	98	99.9
13) Perimeter access road approx Station 28+00	Subgrade	15.5	16.4	98	98.3
14) Perimeter access road approx Station 27+00	Subgrade	17.4	18.9	98	97.6
15) Perimeter access road approx Station 26+00	Subgrade	15.5	16.5	98	98.5
16) Perimeter access road approx Station 25+00	Subgrade	17.4	17.0	98	99.5
17) Perimeter access road approx Station 24+00	Subgrade	17.4	16.8	98	99.5

Density Test Results (cont)

18) Perimeter access road approx Station 23+00	Subgrade	17.4	20.7	98	101.5
19) Perimeter access road approx Station 22+00	Subgrade	15.5	15.7	98	102.6
20) Perimeter access road approx Station 21+00	Subgrade	17.4	19.4	98	101.1
21) Perimeter access road approx Station 20+00	Subgrade	15.5	18.0	98	99.2
22) Perimeter access road approx Station 19+00	Subgrade	17.4	16.7	98	100.9
23) Perimeter access road approx Station 18+00	Subgrade	17.4	16.4	98	99.0
24) Perimeter access road approx Station 17+00	Subgrade	15.5	18.6	98	98.3
25) Perimeter access road approx Station 16+00	Subgrade	17.4	21.6	98	99.4
26) Perimeter access road approx Station 15+00	Subgrade	15.5	14.3	98	98.7
27) Perimeter access road approx Station 14+00	Subgrade	15.5	14.3	98	98.5
28) Perimeter access road approx Station 13+00	Subgrade	17.4	15.3	98	99.9
29) Perimeter access road approx Station 12+00	Subgrade	17.4	17.7	98	101.2
30) Perimeter access road approx Station 11+00	Subgrade	17.4	20.8	98	98.5
31) Perimeter access road approx Station 10+00	Subgrade	17.4	23.0	98	99.4
32) Perimeter access road approx Station 09+00	Subgrade	17.4	20.7	98	101.2
33) Perimeter access road approx Station 08+00	Subgrade	17.4	19.2	98	99.5
34) Perimeter access road approx Station 07+00	Subgrade	17.4	21.9	98	98.7
35) Perimeter access road approx Station 06+00	Subgrade	17.4	22.4	98	97.7
36) Perimeter access road approx Station 05+00	Subgrade	17.4	22.7	98	98.7
37) Perimeter access road approx Station 04+00	Subgrade	17.4	20.3	98	98.4
38) Perimeter access road approx Station 03+00	Subgrade	15.5	21.1	98	98.1
39) Perimeter access road approx Station 02+00	Subgrade	15.5	18.5	98	98.6
40) Perimeter access road approx Station 01+00	Subgrade	17.4	20.0	98	97.8
41) Perimeter access road approx Station 00+00	Subgrade	17.4	20.0	98	97.8

On-Site Representative/Company

S&ME Personnel

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S&ME

3718 Old Battleground Rd
Greensboro, NC 27410
(336) 288-7180
(336) 288-8980

Field Report

Date	Job No.
11-25-2008	1356-07-017-02

Project/Location
Pinehall Road Ash Landfill Closure

Contractor	Weather/Temp
Morgan Construction	Clear

Present at Site
Phil Banner; S&ME; Greensboro

Time	Mileage
2.5	46

To: Project File
1356-07-017

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ■ In-Place Density

Moisture Density Testing

S&ME performed six (6) moisture density tests by nuclear methods in the "ABC" stone base for the landfill access road between stations 0+00 to 14+25. The density test results are summarized below.

D1 STA 11+75 99.7/5.3
D2 STA 09+75 99.0/6.2
D3 STA 07+75 99.2/5.7
D4 STA 05+75 100.4/5.4
D5 STA 03+75 101.6/5.3
D6 STA 01+75 99.5/5.7

Average Compaction = 99.9%

Attachments

Phillip J. Banner
S&ME Personnel

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Nov. 26, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/ Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny/31-51°

Present at Site: Mark D.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Observed contractor as they continue to work on punchlist. Seed and mat around drop inlets 9, 10, 13 and JB-1. Water truck onsite today, flushed out CVT-5 pipeline, and wet entire perimeter access road to aid curing. Raked and seeded some, not all the bare spots on closure top, did not mulch. Hauling off excess materials (ie; pipe, fabric one full roll of 20 mil). Cleaned up and moved out of apartment.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME Form FRF02

FIELD REPORTS

DECEMBER 2008

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Dec. 1, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	Cloudy/Windy/48°

Present at Site: Mark D. - Jeff H.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Set in on contractor's safety meeting 7-7:20, conducted by Jeff Howell. Contractor is once again w/out a full time safety man onsite. I was informed by Morgan that Mike Cook was aware of. Conduct E&S inspection w/ Mark D., site had 1.25 inches of rainfall over the weekend. Observed standing water in borrow pit, near D1-10, and water backed up in ditch C9 (upper end) ran towards silt fence. Contractor did not attempt to install matting, due to wet muddy conditions. Power reconnected to job trailer. Contractor moving out equipment. I removed equipment from my end of trailer, took into office. Went by Madison Place, dropped off keys to apartment.

Jimmy Addis

On-Site Representative/Company | **S&ME Personnel**

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S&ME Form FRIF02

S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Dec. 2, 2008	13560-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC/31-49°

Present at Site: Jeff H. - Mark D.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor in the process of matting ditch C5 w/ PP-5, when I arrived onsite. Approximately 4 rolls down, I stopped installation, and had contractor harley rake ditch line. Eight full rolls and a partial installed down to apron A3 ~ 1010 LF total. Prior to matting C5, contractor seeded entire ditch I was informed. Contractor harley raked ditch C4, applied lime and feritilizer 10-5-10. Contractor continues to move equipment offsite, should have kept smooth drum roller onsite. I cleaned out my desk and end of trailer today. Got 1 pallet (30 rolls) of CS-3 mat delivered today. Tanker and fuel buggy pits removed, liners taken out, need to dress up area.

On-Site Representative/Company

Jimmy Adkins
S&ME Personnel

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S&ME
9751 Southern Pine Blvd
Charlotte, NC 28273
(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Dec. 3, 2008	13516-07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny / 26°-50°

Present at Site: Mark D. Courtney W. - Justin - Jason

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor cut anchor trench for ditch C5, buried roadside edge of PP-5 matting in trench, walked in backfill which was AB stone w/ skid steer. Installed 18 wattles, starting 25' in from end of ditch, every 50 foot aproximately. Started matting ditch C4, rolled slope matting back into ditch, which was laid back for road stabilization. Added additional matting parallel w/ ditch. Started at CVT-11 inlet, stop for day at CVT-10 outlet ~ 570 LF. Backfilled anchor trench for C4 on road side, left 10ft. exposed for overlap tomorrow. S&ME drillers onsite "pm", set up on MW-1, ready to start tomorrow. Morgan did STA for drillers to sign daily. WSP Sells surveyors onsite "pm" laid out control points. Advised them to sign in & out on Morgan's daily log.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Field Report

Date	Job No.
Dec. 4, 2008	13560-07-017

Project/Location
PHR Ash LF Closure / Belews Ck.

Contractor	Weather/Temp
Morgan Corp.	Sunny / 27-52°

Present at Site
Mark D.

Time

Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor completed erosion control matting in ditch line C4 with CS-3, 845 LF of new mat installed, and buried in four inch deep anchor trench on road side and stapled on closure side. Existing matting on closure slope pulled back across ditch (perpendicular) and laid in anchor trench. Resumed placement of erosion control matting in ditch C1, 760 LF installed today, buried in anchor trench on roadside, stapled closure side. Contractor is out of the PP-5-12oz. mat, reordered this afternoon. Twenty wattles installed in ditch C1 today.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Dec. 5, 2008	13566 07-017

Project/Location: PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny / 26°-47°

Present at Site: Mark D.

Time:

Mileage:

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor backfilled anchor trench for erosion control matting in ditches C4 & C1, tracked top in w/a skid-steer. I pointed out low areas on backfill to Mark, that need topping off w/ soil, and compacted. Filled in and patched w/ CS-3 matting on areas along ditch C4. Backfilled and regraded ditch C6, due to erosion from last rain event, contractor has no compaction equipment onsite, used skid-steer to walk in soil backfill. Advised Mark until vegetation is established in C6, erosion will continue. Contractor seeded ditch C6 from Apron A3 to DI-9. Mucked out ditch C2, will let dry as much possible, before regrading. Harley raked and reshaped ditch C3, seeded this afternoon, [redacted] from Bench 1 "E side" to JB-1. Installed 640LF of CS-3 erosion control matting in ditch C3, buried in anchor trench on roadside, stapled on closure side.

Jimmy, 12-5-08

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
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Charlotte, NC 28273
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Field Report

Date	Job No.
Dec. 6, 2008	13560-07-017

Project/Location
PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC/25-45°

Present at Site
Mark D.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor completed seeding of ditch C6 from apron A3 to DI-9. Installed PP-5-12oz. erosion control matting (685LF) in ditch C6, backfilled anchor trench on roadside, mat secured w/ sod staples on closure side. Regrade/reshape ditches C1/C2 from approximately sta. 28+00 to the scour protection area, also advised Mark that ditch C1 back to sta. 28+00, will need reshaping if not acceptable to engineer on final walkover next Monday. Installed erosion control matting PP-5-12oz. in ditch C1 - 430LF and 120LF of CS-3 in ditch C2. Wattles installed today ~14 in C6 and 8 in C1

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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S&ME
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Charlotte, NC 28273
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(704) 525-3953 fax

Field Report

Date	Job No.
Dec. 8, 2008	1356-07-017

Project/Location
PHR Ash LF Closure / Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC / 28-41°

Present at Site
~~Mark D.~~ Craig G. - Griffin Q.
Mike C.
Ken D. - Cedric R.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Met S&ME drillers onsite @ 8am, had them sign in and a STA for them to sign also. Morgan's crew not onsite today, have gone to another Duke Energy site for safety orientation. Attend final construction meeting and walkover from 10-4pm. Additional items placed on punchlist, will pick up a copy in the morning from Cedric.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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Charlotte, NC 28273
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Field Report

Date	Job No.
Dec. 9, 2008	13560-07-017

Project/Location
PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	PC/35-52°

Present at Site
Mark D.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Contractor installed CS-3 erosion control matting in ditch C2 ~240LF today. Resumed punchlist work, complete items 9, 11, 12, 13, 14, 15 & 16. Items in progress 8, 10 & 20. Drillers completed MW-1D, moved and set up on MW-7.

Jimmy Addison

On-Site Representative/Company | **S&ME Personnel**

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(704) 525-3953 fax

Field Report

Date	Job No.
Dec. 10, 2008	1356-07-017

Project/Location
PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Cloudy/48-56°

Present at Site
Mark D.

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

I went to HD Waterworks this morning and picked up 4 bollards for the drillers to install around MW-7. delivered to jobsite. Contractor continued punchlist work today, items 5, 6, 7, 10 & 20 completed. Site rained out around 3pm.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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(704) 523-4726
(704) 525-3953 fax

Field Report

Date	Job No.
Dec. 12, 2008	1356-07-017

Project/Location: PHR Ash LF Closure/Belews Creek

Contractor	Weather/Temp
Morgan Corp.	Sunny/ 40's

Present at Site:

Time	Mileage

To: File

Services Performed

- ☐ Concrete Testing
- ☐ Cylinder Pickup
- ☐ Asphalt Testing
- ☐ Steel Testing
- ☐ Asphalt Coring
- ☐ Concrete Coring
- ☐ Undercut Evaluation
- ☐ Foundation Evaluation
- ☐ Proofrolling
- ☐ In-Place Density
- ☐ Other (Explain)

Observations/Remarks:

Jobsite saturated from rainfall, the past day and a half. No rain guage onsite anymore, but surrounding areas received 2 to 3 inches. To wet for any construction activity, no one from Morgan Corp. onsite. I walked site, and took pictures of erosion issues. Informed Cedric of site conditions. S&ME drillers ~~[illegible]~~ to mobilize off-site today, they request that I take in rock core and soil samples into Charlotte office. Went over today's photos w/ Cedric.

On-Site Representative/Company

Jimmy Addis
S&ME Personnel

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APPENDIX II

(PROGRESS MEETING MINUTES)

Duke Energy Corporation – Belews Creek Steam Station

Pine Hall Road Ash Landfill Closure – Preconstruction Meeting Minutes

TO: All Attendees

FROM: Ken Daly, Cedric Ruhl
S&ME, Inc.

DATE: February 27, 2008

REFERENCE: Meeting held at 9:00 a.m. on Monday, February 25, 2008
Belews Creek Steam Station Conference Room
S&ME Project No. 1356-07-017

1.01 Attendance

Duke Energy

Mike Cook (MC)
Project Manager

Bill Waggoner (BW)
on-site representative

Chris Hallman (CH)
Environmental Health and Safety

Paulette Bowman (PB)
Buyer

Morgan Corp.

Dick Knight (DK)
Corporate Safety Officer

Earl Whitehurst (EW)
Site Safety Officer

Tommy Elkins (TE)
Equipment Manager

Tommy Harrill (TH)
Estimator

Craig Greeson (CG)
Project Manager

Mark Webb (MW)
Superintendent

Jeff Howell (JH)
Operations Manager

Chris Shurter (CS)
Survey Coordinator

S&ME, Inc.

Ken Daly (KD)
Engineer of Record

Cedric Ruhl (CR)
Project Engineer

Jimmy Addis (JA)
CQA Officer

1.02 Level 1 Safety Assessment and Sign-in (Agenda Items 1,2)

- MC began with Level I safety assessment
- MC passed around sign-in sheet, attendees to include contact information. MC will make contact information available to all attendees.

2.01 Commercial Provisions (Agenda Item 10)

- Commercial provisions discussed by PB
- Personnel sign-in and sign-out sheets to be submitted daily at main office
- Be considerate of neighbors; obey posted speed limits
- Personnel must wear hardhats with personnel name and company name
- Contractors must participate in MICCS program
- MC will be single point of contact for project information
- Site should be kept clean and in order – practice good housekeeping
- Morgan Corp Certificates of Insurance have been received
- Applications for payment shall be mailed to Duke Energy's downtown Charlotte office and routed through Duke Energy's processing system. A second option is to upload the invoices directly to Duke Energy's system. PB will review invoices and route to MC
- A description of on-site services will be required for the final purchase order
- OSSR document outlining required training has been provided to Morgan Corp.
- MC explains this is a unit price project
- MC and TH agree to process progress payments monthly
- MC explains that limited notice to proceed was issued

3.01 Distribution and Review of Contract Documents (Agenda Item 3)

- KD provided hardcopies of technical specifications, CQA plan, and construction drawings (full size and half size). Compact disc of above documents and Erosion and Sediment Control Plan also provided
- Notable bid addenda incorporated into the Issued for Construction documents include:
  - Erosion control blankets on 3H : 1V slopes
  - Sediment basin berm and spillway grading revisions
  - Selection of Cover Alternative 1 (Cover Alternative 2 removed from construction documents)
  - Fill Type S1 – maximum particle size increased to 3 inches
  - Fill Type S2 – will consist of a blend of approx. 1/3 imported material, 2/3 on-site material
- TH suggests that guardrail posts as shown on drawings may puncture liner. Morgan Corp and S&ME to check and collaborate on solution
- Due to differences in estimated fill quantities, the constructed final cover elevations may not match the plans. KD explains this is acceptable provided that 3H : 1V side slopes are constructed and the top deck is graded at a 5% slope
- MW asks about existing monitoring wells. MC explains that monitoring wells have been abandoned, demolished, and removed with the exception of OB-4 and OB-5. These monitoring wells must be protected during construction
- Morgan Corp. will provide rain gauge

- Erosion and sediment control inspections will be performed weekly and after each rainfall event by MW and BW. Inspection form may be filled out electronically, MW and BW to sign off on inspection forms. Photographs may be taken for documentation.
- Unauthorized visitors to site shall be directed to MC. Refer inquiries to MC.
- KD described procedures for Changes to Work, Contract Price, or Contract Time outlined in the specifications as follows:
  - 01100-1.3.C "Any deviations from the Drawings or Techcnical Specifications require the prior written approval of the Engineer and State Solid Waste Section and must be documented by "as-built" revisions to the Drawings and/or Technical Specifications"
  - Minor change – documented change, but no change to contract price or time
  - Major change – documented change to contract price and/or time
  - Review 01200 1.4 for change procedures

4.01 Schedule (Agenda Item 4)

- MC explains that January 29 was official landfill closure date
- TH provided tentative schedule. Detailed, loaded construction schedule to be provided at later date.
- TH anticipates construction lasting until November 2008.
- Existing conditions site survey to begin Monday March 3. Prior to survey, CS will provide survey grid (50' x 50' or tighter) to S&ME for review and comments.
- MW anticipates installing silt fence, then constructing sediment basin modifications and grading "flat area" during the initial stages of construction.
- KD explains that erosion and sediment control plan may be modified slightly to suit field conditions
- Driveway permit will be needed to install a construction entrance off of Pine Hall Road dedicated to landfill closure activities. Duke Energy and Morgan Corp will collaborate.
- MC explains that Duke Energy safety training must be completed by all Contractor's employees once per calendar year. First safety training orientation to be held Monday March 3, 9:00 a.m. Morgan Corp and S&ME to provide expected head count to MC.
- JH explains that per Morgan Corp's safety policy, nobody will be allowed on site without a supervisor (i.e. mechanics)
- MC discussed format for weekly meetings, to be held Wednesday at 10:00 a.m. at Morgan Corp's construction trailer. Topics to include safety, schedule, delivery, submittals, site utilization, conflicts, delays, etc. S&ME to provide draft general meeting agenda to MC for comment.
- JW anticipates working 58 hours/week during grading activities, will not work more than 12 hours/day for safety reasons

5.01 Submittals and Shop Drawings (Agenda Item 5)

- S&ME to collaborate with Morgan Corp to develop submittal schedule and submittal cover sheet
- KD reviewed submittal procedures as outlined in the technical specifications (01300 1.3)
- KD suggested a general submittal response time of 5 business days
- KD reviewed administrative submittals as outlined in the technical specifications (01300 1.7)

6.01 CM Requirements, Procedures, Protocols (Agenda Item 6)

- A geosynthetic pre-construction meeting will be held before installation of geosynthetics. NCDENR to be invited to this meeting.
- KD notes that, per specifications, circumstances which might result in changes to schedule be communicated to Duke Energy immediately
- MW and BW to check quantities for payment on a daily basis
- Duke Energy and Morgan Corp to agree on monthly invoicing schedule at a later date
- Dispute resolution will be in accordance with Duke Energy's contract terms

7.01 CQA\CQC Regulations, Procedures, Protocols (Agenda Item 7)

- Soils index testing scheduled for 1 suite per 10,000 cubic yards of fill. This schedule may change based on field conditions encountered
- KD states that geosynthetics testing laboratory to be TRI Environmental or SGI Laboratories
- Geosynthetic laboratory test samples to be collected at geosynthetics manufacturing facility
- CG to provide soil samples for interface friction testing when equipment is mobilized to site (approximately 3 weeks). CG to coordinate geosynthetic sampling to be conducted at the geosynthetic manufacturing facility for interface friction testing.

8.01 Record Drawings (Agenda Item 8)

- Two benchmarks shall be maintained. MC to look into original benchmarks in the vicinity
- CS questioned what coordinate system to use. S&ME to check drawing coordinates and respond to CS
- CS will conduct site surveying and coordinate with PLS. Entire area within clearing limits will be surveyed using a 50' x 50' grid or tighter (see section 4.01)
- Surveys subject to the grid outlined in Section 4.01 will be conducted at the following times:
  - Existing conditions (survey to begin March 3, 2008)
  - Finished subgrade
  - Final cover conditions (to be conducted before seeding activities)
    - S&ME to provide tolerance criteria
- KD notes that, per specifications, Morgan Corp shall keep a set of drawings on-site containing as-built markups
- Final cover thickness verification will be conducted non-destructively by using the difference between the finished subgrade survey and the final cover conditions survey

9.01 Use of Site (Agenda Item 9)

- MC stated that under no circumstances should construction activities inhibit existing ash hauling activities
- Existing site access also used for ash hauling access road, a separate construction entrance may be constructed (see section 4.01). If entrance is constructed, Morgan Corp is permitted to shut off existing access road for use as a lay-down area, provided it is restored to original conditions following construction. NCDOT standards for signage and construction entrance details shall be adhered to

- MC cautioned about construction activities near the active ash basin due to safety concerns
- Non-potable water for dust control may be obtained from outlet behind Unit 2. Due to proposed construction in the vicinity of Unit 2, MC will check on pumping water from active ash basin.
- Morgan Corp will provide equipment and material deliveries and storage areas by March 5, 2008
- On-site soil stockpile area to be provided in material handling plan (outlined above)
- JH to submit fuel storage plan to Melanie (Duke Energy)
- Morgan Corp will provide waste removal
- Duke Energy and Morgan Corp to coordinate two-way radio frequencies
- Security will be the responsibility of Morgan Corp. Duke Energy does not patrol. JH proposes barrier walls at construction entrance. MC suggests hiring a night watchman.
- Protection of site features shall include the following:
  - Protect Monitoring Wells OB-4 and OB-5
  - Restore existing access road to original conditions following construction activity
  - Protect existing utilities, especially those along Pine Hall Road. MC and BW are not aware of any utilities within main project footprint.

10.01 Other Items (Agenda Item 11)

- Morgan Corp. will maintain bulletin board on site
- NCDENR "Permit to Close" and "Erosion Control Permit" shall be posted on site
- Monitoring wells OB-4 and OB-5 to remain. Morgan Corp. to provide access road to monitoring wells (accessible by 4-wheel-drive vehicle)
- TH has information to support driveway permit application – MC to review
- Morgan Corp. to provide Belews Creek Steam Station with 2-way radio frequency in case of evacuation alarm (see Section 9.01)
- Morgan Corp to provide list of non-mobile equipment which have an internal combustion engine (i.e. pump, generator)

11.01 Environment, Health and Safety (Agenda Item 12)

- Duke Energy hosted safety meeting for Morgan Corp and S&ME's site CQA officer
- Non-essential personnel were dismissed
- S&ME did not take notes of safety meeting, therefore no further information is provided

12.01 Closing (Agenda Item 13)

- Meeting adjourned.

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 03/19/08 / 10:00 am

---

1. **Level I Safety Assessment and Sign-in sheet (SME)**
   1.1. Level 1 Safety Assessment performed by Mike Cook (Duke)
   1.2. Sign-in Sheet attached
2. **Safety and Environmental**
   2.1. Weekly Safety/Environmental Report
      2.1.1. Weekly Safety Report reviewed by Earl Whitehurst (morgan corp)
      2.1.2. Weekly Environmental Report filled out by Mike Cook, Mark Webb (morgan corp) to fill out future reports
   2.2. SOS Cards
      2.2.1. None for the previous week
   2.3. Incident Reporting
      2.3.1. None
   2.4. Revisions to Job Hazard Analysis
      2.4.1. None
   2.5. ESC Plan Inspections
      2.5.1. None
   2.6. Waste materials and Recycling
      2.6.1. N/A
3. **Schedule Update and Progress Report**
   3.1. Updated schedule
      3.1.1. Mark Webb shall provide an updated schedule every week by Tuesday afternoon.
      3.1.2. Ken Daly (S&ME) requested that Craig Greeson (morgan corp) provide the current loaded schedule and the material stockpile plan
   3.2. Proposed Revisions
      3.2.1. None
   3.3. Interface with sub-contractors
      3.3.1. DG&A surveyor (PLS) to be on site mid- to late next week
   3.4. Construction Progress
      3.4.1. Approx. 75% pre-construction survey completed
      3.4.2. Trailer setup in progress
      3.4.3. 660 lf silt fence installed
      3.4.4. 3.2 acres bush-hogged
      3.4.5. 0.9 acres cleared/grubbed
   3.5. Material Delivery
      3.5.1. none
   3.6. Potential changes or delays
      3.6.1. None at this time
   3.7. Recovery Plans
      3.7.1. N/A
   3.8. Two week look ahead

3.8.1. Electricity connection to trailer
3.8.2. Complete clearing and grubbing
3.8.3. Commence burning (permit has been acquired)
3.8.4. Continue silt fence installation on north side of site
3.8.5. Possibly begin hauling/stockpiling topsoil
3.8.6. Possibly begin temporary driveway entrance construction

4. Budget and Payment

4.1. Documentation for payment
4.1.1. Mike Cook and Craig Greeson collaborating on standardized invoice format
4.1.2. April's invoice will cover February's and March's work

4.2. Budget Status
4.2.1. N/A

4.3. Change Orders
4.3.1. Ken Daly discussed change order procedures as outlined in the Specifications (01200-1.4)
4.3.2. Mike Cook approved installation of approx. 400 l.f. of additional silt fence where needed (no change order required)
4.3.3. Mark Webb stated that there are some details in the Erosion Control Plan that are not shown in the Construction Plan (i.e. silt fence outlets). Craig Greeson and Tommy Harrel (morgan corp) will compare these two plans and generate unit rates for any differences found. Silt fence outlet shall be bid in accordance with the standard Charlotte Mecklenburg detail for silt fence outlets.
4.3.4. Mark Webb stated that there are existing pipe drainage features on site. Chris Shurter (morgan corp) will survey the features and provide the information to Tommy Harrel. Tommy Harrel will then estimate the quantity of pipe and the unit rate for existing drainage feature removal.

5. CQA\CQC Regulations, Procedures, Protocols

5.1. Inspections and Testing
5.1.1. Test pits will be dug in the borrow area and existing landfill area to obtain samples for Proctor testing and interface shear testing.
5.1.2. Craig Greeson to provide Ken Daly with liner supplier information

5.2. Quality and Work Standards
5.2.1. N/A

5.3. Deviations
5.3.1. N/A

5.4. Requests For Information
5.4.1. none

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 03/19/08 / 10:00 am

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6. **Submittals**
   6.1. Current submittal status (SME)
      6.1.1. Submittals 1 (silt fence) and 2 (HDPE pipe for temporary construction driveway) received and approved
      6.1.2. Cedric Ruhl (S&ME) to correspond with Mike Cook on any submittals regarding changes in contract time or price
   6.2. Two week submittal schedule (SME)
      6.2.1. Craig Greeson to supply Ken Daly with geosynthetic samples for interface friction testing
7. **Site Use and Facilities**
   7.1. Traffic and Parking
      7.1.1. Fueling station plan accepted by Melanie (Duke Energy); will require a post-construction inspection by Duke personnel prior to use
   7.2. Housekeeping
      7.2.1. N/A
   7.3. Security
      7.3.1. Mike Cook to talk with Duke operations personnel about Duke's need to access Pine Hall Road construction site during the construction process.
8. **Action Register (SME)**
   8.1. Refer to attached action register.
9. **Roundtable**
   9.1. Next construction meeting schedule for Wednesday, April 2, 10:00 am (two weeks)

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday April 2, 2008**.

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 3/19/08

Name (Print)	Signature	Company
Jimmy Addis	Jimmy Addis	S&ME Inc.
Cedric Rubl	Cedric Rubl	S+ME
KEN DALY	[illegible]	S&ME
William J. Waggoner	William J. Waggoner	Allied Tech. Resources
Craig Gunson	[illegible]	Morgan Corp
MARK WEBB	[illegible]	MORGAN CORP
Chris Shuster	[illegible]	Morgan Corp
Earl B Whitehurst	[illegible]	Morgan corp
Mike Cook	Mike Cook	Duke

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	
9					
10					
11					
12					
13					
14					
15					
16					
17					

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 3-18-208
Report for Week Ending: 3-18-208
Report Originator: Earl B. Whitehurst Morgan-Corp Site Safety Manager

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech			Total
Total Work Hours	611	81			692
SOS Cards	0	0			0
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments We continue to ramp up and have equipment delivered, along with employees deploying to jobsite.

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 04/02/08 / 10:00 am

Mike Cook (Duke) called the meeting to order at approx. 10:00 am and requested cell phones/pagers muted. Mike suggested we modify the agenda to begin with a cell phone mute reminder.

1. **Level I Safety Assessment and Sign-in sheet (S&ME)**
   - 1.1. Level 1 Safety Assessment performed initiated by Ken Daly (S&ME) and Mike Cook (Duke); Earl Whitehurst (Morgan Corp) completed the safety assessment noting site and project specific information.
   - 1.2. Sign-in Sheet attached
2. **Safety and Environmental**
   - 2.1. Weekly Safety/Environmental Report
     - 2.1.1. Weekly Safety Report presented by Earl Whitehurst (Morgan Corp).
     - 2.1.2. Weekly Environmental Report changes recommended by Mike Cook with regard to cumulative vs. weekly construction and safety personnel accounting – weekly numbers (not cumulative) are to be provided.
     - 2.1.3. Earl Whitehurst is now authorized to provide Duke Energy and site specific on-site safety orientation for the project at the construction trailer.
   - 2.2. SOS Cards
     - 2.2.1. 5 SOS cards have been completed to date. 3 where reviewed at this meeting.
   - 2.3. Incident Reporting
     - 2.3.1. Weekly Environmental Report distributed/reviewed by Mark Webb (Morgan Corp).
     - 2.3.2. Approx. 50 gallon fuel spill on 3/28/2008. Morgan Corp. submitted and discussed an incident report.
       - 2.3.2.1. Corrective Action: Potentially contaminated soils removed by Morgan Corp. as directed by Duke Energy personnel
       - 2.3.2.2. Preventative Action: Leaky valve plugged and capped by Morgan Corp.
   - 2.4. Revisions to Job Hazard Analysis
     - 2.4.1. None
   - 2.5. E&SC Plan Inspections
     - 2.5.1. Regular E&SC inspection noted on Weekly Environmental Report (Morgan Corp)
     - 2.5.2. Upcoming NCDENR to conduct a Belews Creek Steam Station site visit on Tues 4/8/2008.
   - 2.6. Waste materials and Recycling
     - 2.6.1. N/A
   - 2.7. Bill Waggoner (Duke) noted ash observed at grade in portions of the "flat area"; discussion pursued; Bill Waggoner and Mike Cook to discuss historical activities with Randy Price and Melanie Martin (Duke).
3. **Schedule Update and Progress Report**

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 04/02/08 / 10:00 am

3.1. Updated schedule
- 3.1.1. Craig Greeson (Morgan Corp.) presented a schedule and requested clarification on additional schedule requirements: what is the required frequency and format for schedule updates? Discussion pursued. Expectation is for: 2 week schedule updates; one update to coincide with progress payment application; and the other to be provided in between progress payment application. Format to include: critical path; and percent complete/progress.
- 3.1.2. Mike Cook noted that the percent complete sheet is based on budget estimates and lagged expenditures, does not represent actual construction progress, and accordingly requires collaboration between Craig Greeson and Mark Webb of Morgan Corp. to create an effective percent complete sheet

3.2. Proposed Revisions and Interface with Sub-Contractors
- 3.2.1. The baseline schedule (per contract documents) has note been updated. The next updated schedule will be provided in 2 weeks.
- 3.2.2. According to Mark Webb scrapers will arrive 4/3/2008

3.3. Interface with sub-contractors
- 3.3.1. None

3.4. Construction Progress (presented by Mark Webb and Craig Greeson)
- 3.4.1. Approx. 75% pre-construction survey completed
- 3.4.2. Trailer electric complete
- 3.4.3. Item 10 flat area cut for shaping and Item 11 flat area fill type S1 to start the end of this week and be completed in about 25 days.

3.5. Material Delivery
- 3.5.1. none

3.6. Potential changes or delays
- 3.6.1. Discussion shifted to Roundtable

3.7. Recovery Plans
- 3.7.1. N/A

3.8. Two week look ahead
- 3.8.1. New paved construction entrance
- 3.8.2. Flat area grading to begin
- 3.8.3. Burning ban lifted and will commence
- 3.8.4. Stripping to be completed
- 3.8.5. Closure area cut/fill to begin towards the end of next 2 week period

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4. **Budget and Payment**
   - 4.1. Documentation for payment
     - 4.1.1. Progress payment format has been established. Mike Cook discusses invoicing "timesheet" with rates and sums
     - 4.1.2. Invoicing through 3/31/2008 completed by Mike Cook and Bill Waggoner of Duke Energy
   - 4.2. Budget Status
     - 4.2.1. Discussed and noted that progress payments are approximately 1 month behind the loaded schedule
   - 4.3. Change Orders
     - 4.3.1. Mike Cook discusses change order register. S&ME presents a sample change order register form. The completed change order register will be maintained on the project collaboration web site.
     - 4.3.2. Change order for silt fence outlet verbally authorized by Mike Cook
     - 4.3.3. #57 stone and Class B rip-rap consolidated into single change order and verbally authorized by Mike Cook at $50/ton
     - 4.3.4. Construction access improvement verbally authorized by Mike Cook
     - 4.3.5. Magnitude and cost of existing down drain demolition/removal operation within lined cap area not yet established. For the time being Ken Daly states that existing downdrains within limits of the cover system will be removed and outside the cover system limits will be evaluated.
     - 4.3.6. S&ME to develop a change order form for review/consideration for use.

5. **CQA\CQC Regulations, Procedures, Protocols**
   - 5.1. Inspections and Testing
     - 5.1.1. Soil testing suites (proctor and classification) needed for flat area within 2 weeks
     - 5.1.2. Interface testing in progress
     - 5.1.3. Paved roadway will not require special equipment or testing
     - 5.1.4. Ken Daly (S&ME) requests >24hr notice when field soil testing is required
   - 5.2. Quality and Work Standards
     - 5.2.1. N/A
   - 5.3. Deviations
     - 5.3.1. N/A
   - 5.4. Requests For Information
     - 5.4.1. No outstanding requests for information

6. **Submittals**

6.1. Current submittal status (SME)
   6.1.1. Interface testing in progress
6.2. Two week submittal schedule - Craig Greeson notes the following submittals are pending:
   6.2.1. Boxes (Culverts)
   6.2.2. HDPE pipe info

7. Site Use and Facilities
7.1. Traffic and Parking
   7.1.1. New access road to be constructed
7.2. Housekeeping
   7.2.1. Mike Cook encourages everyone to keep up with housekeeping.
7.3. Security
   7.3.1. Mark Webb notes that a chain and lock have been installed at the current site entrance.

8. Action Register (SME)
8.1. Discussed and updated - refer to attached action register.

9. Roundtable
9.1. Bill Waggoner requested minimization of clearing on side slopes
   9.1.1. Mark Webb concurred but noted efficiency of scrapers will be hindered if clearing zones are overly restricted
9.2. Mark Webb requested confirmation of proposed spillway grading
   9.2.1. Ken Daly discussed spillway proposed spillway grading: design is to raise the spillway top requiring fill on the upstream slope; grading may be revised to minimize filling in water/soft materials within the existing basin; top elevation 762 and spillway elevation 760 must be maintained.
   9.2.2. Discussion followed on applicability of wetland regulations to existing ash basins – generally believed that wetlands are not a concern because the proposed sediment basin/spillway is within an active waste treatment basin.
9.3. Mike Cook requested an account of all non-English speaking personnel
   9.3.1. Mark Webb provided the list to Mike Cook
9.4. Next construction meeting schedule for Wednesday, April 9, 10:00 am (one week)

Weekly construction meeting adjourned by consensus at approximately 1:00pm.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday April 9, 2008**.

Action Register

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 04/02/08 / 10:00 am

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	4/2/2008
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	4/2/2008
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	4/2/2008
9	determine whether downdrain removal is required	M. Cook	S&ME		
10	Price for removal of downdrain structures	morgan corp	morgan corp		
11	Revise schedule every 2 weeks	Duke	Morgan Corp		
12	Baseline survey	S&ME	Morgan Corp		
13	Entrance details	Duke/S&ME	Morgan Corp		
14	CO forms	Morgan/Duke	S&ME		

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 04/02/08

Name (Print)	Signature	Company
KEN DALY	[illegible]	S&ME
MARK WEBB	[illegible]	MORGAN - CORP
CRAIG GLEESON	[illegible]	Morgan - corp
Marty Hylton	Marty Hylton	morgan corp
Earl Whitehead	[illegible]	Morgan corp
Mike Cook	Mike Cook	Duke
Bill Waggoner	William J. Waggoner	Allied Tech. Resources
Jimmy Addis	Jimmy Addis	S&ME
Will Harrison	Will M. Harrison	S + ME

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 4-1-08
Report for Week Ending: 4-1-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of ~~new~~ employees since last meeting 24
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech			Total
Total Work Hours	2456 hrs	248			2704
SOS Cards	5	0			5
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	00			

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☒ Y ☐ N ☐ N/A

Comments On 3/28/08 Diesel Fuel spill occurred. See attached accident/incident report.

4/2/08 MSG

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 4/1
Report for Week Ending: 3/30
Report Originator: MW/BW

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☑ Y ☐ N
2. If yes, has a report been made to site Environmental Coordinator? ☑ Y ☐ N
3. Have there been any new portable engines brought on-site? ☐ Y ☑ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☐ N
5. Have there been any new chemicals brought on-site? ☑ Y ☐ N
6. If yes, have MSDS sheets been filed in field office? ☑ Y ☐ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 3/24

Contractor Inspection Form submitted to Project Manager ☑ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 3/24 Date of Last Rain Event 3/29 & 3/30

Participants MW/BW

Type of Inspection Weekly ☑ Rain Event ☑ BCSS ☐

Discrepancies Found YES MORE BACKING MATERIAL ON SILT FENCE IN BARROW AREA.

Corrective Actions _____

Comments _____

4/2/08 MTG

SPILL REPORTING - OIL TO SOIL, CHEMICAL SPILLS, ASH LINE LEAKS, ETC.

DATE	COMPANY	LOCATION OF SPILL	TIME OF SPILL	TYPE OF SPILL	EST. AMT OF SPILL	CLEAN-UP METHOD	EST VOL OF CLEAN UP MATERIAL	CLEAN-UP COMPLETE?	CLEAN-UP COM-PLETION TIME	PERSON(S) NOTIFIED	DATE/ TIME NOTIFIED
EXAMPLE 01/15/06	Earnhardt	FGD Area - 50 feet South of Retaining Wall - Approximately 30 feet from Lake - Did not make it into Lake	7:30 PM	30W Engine Oil from a broken O-ring on a track-loader	2 Gallons	Used diapers to soak up free oil and shoveled oil soaked dirt	2 - 30 gallon garbage bags with approximately 30 diapers and 7 - 5 gallon buckets of oily dirt		9:00 AM	Marcus Childress notified Dennis Earman who notified Ben Taylor immediately	Immediately
3/28/2008	MORGAN-CORP	NEAR BORROW PIT	Approximately 2:30pm 3-28-08	Type (2) Diesel Fuel	50 Gal	Used diapers to soak up(2) Diesel Fuel and shoveled fuel soaked dirt/ Remove contaminated dirt within 24 hrs	50-60 Gal (total)3 cy	3:45PM-3-28-08	30 min	Earl Whitehurst (SD-MC)Mark Webb(SD-MC) Bill Wagginner(Fer-DE) was notified Melonie Martin (DE-EN) notified Dick Knight (MC-CSD) Jeff Howell(MC)Dean Wolf(MC)	Immediately
	NOTE: SPILL HAS BEEN CONTAINED; 7:40am					Contaminated soil was transported, by MC to waste site in accordance with Duke Energy waste/spill process.					

NOTE: BE SPECIFIC ON LOCATION OF SPILL. DENOTE DISTANCE TO DRAINS, LAKES, SUMPS, ETC.

4/2/08 MD

ACCIDENT/INCIDENT INVESTIGATION REPORT

REPORT ALL ACCIDENTS/INCIDENTS IMMEDIATELY TO THE PROJECT or FACILITY MANAGER &
THE SAFETY MANAGER - #(864) 433-8800 (office) (864) 809-0045 (cell) #54 (Nextel)

EMPLOYER'S STATEMENT

Check all that apply: **Morgan Corp.**

☐ Accident ☑ Incident ☑ Vehicle/Equipment ☐ Injury ☐ Reporting Only

Company	*City/State*	*Project Name/Number*
Morgan Corp.	Stokesdale, NC	Belews Creek Ash Landfill

Person involved in the Accident/Incident:
(Print Name) N/A Date: 3/28/2008 **Accident/Incident** Time: 6:00PM & 7:00AM AM/PM

Any company equipment or vehicle involved? ☐ *Yes* ☐ *No*
Co. # / VIN#: 160015 Make & Model: DR6 XL Dozer
Damage: N/A

Any POV [*Privately Owned Vehicle*] **involved?** ☐ *Yes* ☐ *No*
POV info: Owner: Ph#:
Make & Model License#/State:
Damage

Description of Accident/Incident *(including nature of injury and equipment/material damage, if any.)*
Between 6:00PM 3/27/2008 and 3/28/2008 6:00AM, 50 gallons of #2 diesel fuel leaked from the DR6 XL dozer, water seperation valve. Spill has been contained and reported to the property authorities at Duke Energy. Melonie Martin the Duke Energy Enviromental represent has come onto the Belews Creek Ash Landfill site to assest to spill. All authorities have been notified of spill. Clean-up of area is in process. Clean-up of site/ contaminated area was completed in accordance with Duke

What caused the Accident/Incident *(Supervisor Statement)*
Open water seperation valve. See attached photos.

Describe the extent of the injury:
N/A

Part(s) of body injured *(head, arm, hand, foot, etc.)*
N/A

Recommended corrective action(s):
All machine operators, will visually check and observe their equipment eachday after shut down of equipment for atleast (5) five minutes. Physically plug drain off all equipment, to ensure no leaks. If needed in future we will remove the plug and

Was lack of safety equipment an issue? ☐ *Yes* ☐ *No*
Explain: No

The above investigation conducted and/or verified by *(must be supervisor or manager)*:
Print Name: Earl B. Whitehurst *Title:* Site Safety Manager
Signature: *Date:* 3/28/2008

morgan corp.

REPORTED BY: EARL WHITEHURST (SITE SAFETY MANAGER)

Continue statement: On March 28, 2008 at the Belews Creek Ash Landfill at approximately 7:40AM Daniel Carrere approached the Site Safety Manager informing him of a fuel spill. The Safety Manager immediately informed the Site Superintendent (Mark Webb) and Duke Site Representative (Bill Waggoner) of the situation. Upon arrival at the area of the fuel spill, this was located at the site equipment staging area located in the eastern portion of the proposed borrow area.The spill was immediately contained using the spill kits provided/ stored on each piece of equipment. All spill procedures was followed in accordance with Duke Energy and Morgan-Corp specification. Within (10) ten minutes of accessing the situation Melanie Martin (Duke Energy Environmental Representative) as well as site engineer (Mike Cook) who was on vacation was notified by Duke Energy Site Representative (Bill Waggoner). Mark Webb Site Superintendent for Morgan-Corp notified Craig Gresson (Morgan-Corp Project Engineer) and Jeff Howell (Morgan-Corp Corporate Projects Supervisor); Earl Whitehurst (Site Safety Manager) notified Dick Knight (Corporate Safety Representative) and Dean Wolf (Division Safety Manager).
Melanie Martin arrived on site to access the fuel spill along with Bill Waggoner, Mark Webb and Earl Whitehurst. After accessing the spill, steps were taken to gather and move the spill to the Duke Energy waste site in accordance with Duke Energy spill procedures. Shortly after the decision was made, Jeff Howell and Dean Wolf also arrived at the Belews Creek Ash Landfill site. Information was provided the both Morgan-Corp Management official. In accordance with Duke Energy and Morgan-Corp spill policies, it was determined that all required procedures were followed and disposal of waste was properly contained and disposed of. As of March 28, 2008 at 6:00PM, this incident was cleared and deemed as Completed/Closed. For further information refer to attached reports and photos.

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 04/09/08 / 10:00 am

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1. **Level I Safety Assessment and Sign-in sheet (S&ME)**
   1.1 Level 1 Safety Assessment initiated by Cedric Ruhl (S&ME) and performed by Mike Cook (Duke); Earl Whitehurst (Morgan Corp) completed the safety assessment noting site and project specific information.
   1.2 Sign-in Sheet completed

2. **Safety and Environmental**
   2.1 Weekly Safety/Environmental Report
      2.1.1 Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). Discussed hydraulic fluid spill until Mike Cook (Duke) noted unless the hydraulic fluid caused immediate safety hazard, it should be presented in weekly environmental report.
   2.2 SOS Cards
      2.2.1 3 SOS cards were reviewed by Earl Whitehurst (Morgan Corp) at this meeting. Included silt fence installation w/o gloves; wheel rim in trafficked area; and, employee on jobsite w/o proper PPE (steel-toed shoes).
   2.3 Incident Reporting
      2.3.1 Weekly Environmental Report distributed/reviewed by Marty Hylton (Morgan Corp).
      2.3.2 Hydraulic fluid spill (approx 3 gal.) on 4/7/2008. Morgan Corp. submitted and discussed an incident report.
         2.3.2.1. Corrective Action: ~300lb of potentially contaminated soils removed by Morgan Corp. as directed by Duke Energy personnel
   2.4 Revisions to Job Hazard Analysis
      2.4.1 Earl Whitehurst (Morgan Corp.) to submit to Mike Cook (Duke) any changes for the upcoming week by 4/11/08, if applicable.
   2.5 E&SC Plan Inspections
      2.5.1 NCDENR inspection completed 4/8/2008.
      2.5.2 Completed E&S forms to be stored on website
   2.6 Waste materials and Recycling
      2.6.1 Dumpster not yet on site, as it is not yet needed
      2.6.2 Removed pipe/drainage feature material disposal

3. **Schedule Update and Progress Report**
   3.1 Updated schedule
      3.1.1 To be presented by Craig Greeson (Morgan Corp) on 4/16/2008
   3.2 Proposed Revisions
      3.2.1 Morgan Corp proposed change to S&ME's temporary E&SC plan
         3.2.1.1. Cedric Ruhl (S&ME) stated that any potential changes will be reviewed on a case-by-case basis.
      3.2.2 Chris Shurter (Morgan Corp) requested correction of bench plan grades
   3.3 Interface with sub-contractors
      3.3.1 None

3.4 Construction Progress
- 3.4.1 Marty Hylton (Morgan Corp) discussed current construction progress including:
  - 3.4.1.1. Burning in progress
  - 3.4.1.2. Stripping in progress

3.5 Material Delivery
- 3.5.1 material for construction entrance

3.6 Potential changes or delays
- 3.6.1 Following test pit uncovering of up to 14' thickness of grey soil material, inquiry made by Mike Cook (Duke) to S&ME regarding origination of extent of ash limit shown in drawings noting the potential for significant changes and delays. Mike Cook (Duke) also requested that S&ME confirm NCDENR awareness of limit of waste extent.
  - 3.6.1.1. Cedric Ruhl (S&ME) will contact previous project managers regarding method of delineation of ash limit and NCDENR confirmation.

3.7 Recovery Plans
- 3.7.1 N/A

3.8 Two week look ahead
- 3.8.1 flat area grading upon approval of grading plan by S&ME and Duke
- 3.8.2 Stripping on top of closure area
- 3.8.3 cut/fill of closure area
- 3.8.4 construction entrance installed by next week, weather permitting
- 3.8.5 Jimmy Addis should be notified prior to fill placement (target date 4/14/08)
- 3.8.6 Demo plan for pipe required to finish grading

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4. **Budget and Payment**
   - 4.1 Documentation for payment
     - 4.1.1 Mike Cook (Duke) noted spreadsheet sent by Craig Greeson (Morgan Corp) not in original format
       - 4.1.1.1. Craig Greeson explained Mike Cook's (Duke) spreadsheet was incorporated, and that the additional spreadsheet accounted for retainage.
     - 4.1.2 Jay Lynch (Morgan Corp) discussed discrepancy between contract and P.O.($500k vs $2mil)
       - 4.1.2.1. Morgan corp has no authorization above $500,000
       - 4.1.2.2. Committed costs already exceed this amount
       - 4.1.2.3. Mike Cook (Duke) will coordinate with Lewis (Duke) and resolve this issue
   - 4.2 Budget Status
   - 4.3 Change Orders
     - 4.3.1 Mike Cook (Duke) to provide Craig Greeson (Morgan Corp) with approved change order form
     - 4.3.2 Change order forms due from Craig Greeson (Morgan Corp) to Mike Cook (Duke)
     - 4.3.3 Mike Cook (Duke) commented that change order form doesn't account for changes in design and requested that S&ME review change in design procedure. The process should include documentation of formal approval and formal change action.

5. **CQA\CQC Regulations, Procedures, Protocols**
   - 5.1 Inspections and Testing
     - 5.1.1 Jimmy Addis (S&ME) should be notified prior to fill placement (target date 4/14/08)
   - 5.2 Quality and Work Standards
     - 5.2.1 N/A
   - 5.3 Deviations
     - 5.3.1 N/A
   - 5.4 Requests For Information
     - 5.4.1 No outstanding requests for information

6. **Submittals**
   - 6.1 Current submittal status (S&ME)
   - 6.2 Two week submittal schedule
     - 6.2.1 Liner and/or other geosynthetic materials
     - 6.2.2 drainage structures
     - 6.2.3 HDPE pipe and fittings

7. **Site Use and Facilities**

7.1 Traffic and Parking
- 7.1.1 Parking area to be constructed near trailer
- 7.1.2 Current Entrance will be closed by swinging gate
- 7.1.3 A road will be cut around fuel storage area to allow for vehicle circling (safety)

7.2 Housekeeping
- 7.2.1 N/A

7.3 Security
- 7.3.1 N/A

8. Action Register (SME)

8.1 Mike Cook (Duke) commented on lack of scheduled and actual completion dates on action register. Completion dates updated.

8.2 New action items added in attached register

9. Roundtable

9.1 **Next meeting will take place 4/16/2008**

Weekly construction meeting adjourned by consensus at approximately 12:20pm.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday April 16, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	4/2/2008
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	4/2/2008
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	4/2/2008
9	determine whether downdrain removal is required	M. Cook	S&ME	4/16/2008	
10	Price for removal of downdrain structures	morgan corp	morgan corp	4/9/2008	4/9/2008
11	Revise schedule every 2 weeks	Duke	Morgan Corp	4/2/2008	4/2/2008
12	Baseline survey	S&ME	Morgan Corp	4/2/2008	4/9/2008
13	Entrance details	Duke/S&ME	Morgan Corp	4/2/2008	4/4/2008
14	CO forms	Morgan/Duke	S&ME	4/9/2008	4/9/2008
15	Find documentation of test pit exploration performed last year	Duke	S&ME	4/10/2008	action item recalled by M. Cook 4/10/08
16	Contact previous S&ME project personnel to gather information about flat area	Duke	S&ME	4/10/2008	4/9/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
17	Revised grading for benches to Chris Shurter	Morgan Corp	S&ME	4/10/2008	4/10/2008
18	Revised grading to S&ME - one week from receipt of bench grading	S&ME	Morgan Corp	4/17/2008	
19	Contractual commitment from Duke to Morgan updated from $500k to $2Million	Morgan Corp	Duke	ASAP	
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 04/09/08

Name (Print)	Signature	Company
Cedric Rull	Cedric Rull	S+ME
William Harrison	William Harrison	S+ME
Jay Lynch	Jay W. Lynch	Morgan Corp.
GRIFFIN QUERY	[illegible]	MORGAN CORP.
Craig Greeson	[illegible]	Morgan Corp
Marty Hylton	Marty Hylton	Morgan Corp
Earl Whitehead	[illegible]	Morgan-Corp
Mike Cook	Mike Cook	Duke
Bill Waggoner	William J. Waggoner	Allied Tech. Resources
Chris Shooter	[illegible]	Morgan-Corp.
Jimmy Addis	Jimmy Addis	S+ME

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 4-08-2008
Report for Week Ending: 4-08-2008
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech			Total
Total Work Hours	443	45			4 888
SOS Cards	3	0			3
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☒ Y ☐ N ☐ N/A

Comments On 4-07-2008 at approximately Arnul Garcia report a possible hydraulic leak DR6 Dozer. Upon arrival only notice a very small amount had leaked. However after repairing an moving the Dozer forward it was discover that approximately (3 gal) had leaked. Approximately 300lbs of dirt was removed and disposed of at the Duke Energy waste site. All personnel who had a need to know was advised and the situation has be resolved. Exact location Fly Ash Landfill (Flat Area) North-924615.87, East-1682674, Elevation= 783.97

Date: 4-7
Report for Week Ending: 4-12
Report Originator: MH

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☑ Y ☐ N
2. If yes, has a report been made to site Environmental Coordinator? ☑ Y ☐ N
3. Have there been any new portable engines brought on-site? ☐ Y ☑ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☐ N
5. Have there been any new chemicals brought on-site? ☐ Y ☑ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☐ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 4-7-08 48-08 DENR

Contractor Inspection Form submitted to Project Manager ☑ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 4-7-08 Date of Last Rain Event 4-5-08

Participants MH/WJW

Type of Inspection Weekly ☑ Rain Event ☑ BCSS ☐

Discrepancies Found yes

Corrective Actions Replaced approx. 30' of Silt Fence & Five Silt Fence outlets. Repaired washes at or near silt fence entire site.

Comments _____

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 04/16/08 / 10:00 am

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1. **Cell Phone Silence**
   1.1 Cell phones silenced
2. **Level I Safety Assessment and Sign-in sheet (S&ME)**
   2.1 Level 1 Safety Assessment initiated by Cedric Ruhl (S&ME) and completed by Earl Whitehurst (Morgan Corp noting site and project specific information.
   2.2 Sign-in Sheet completed
3. **Safety and Environmental**
   3.1 Weekly Safety Report
      3.1.1 Weekly Safety Report presented by Earl Whitehurst (Morgan Corp)
   3.2 Weekly Environmental Report
      3.2.1 Weekly Environmental Report presented by Mark Webb (Morgan Corp)
      3.2.2 Mike Cook (Duke) said that he had posted the NCDENR inspection report from the site visit which occurred on 4/18/08
   3.3 Waste Materials and Recycling
      3.3.1 Mark Webb (Morgan Corp) stated that dumpster will be on site within a week
4. **Schedule Update and Progress Report**
   4.1 Construction Progress
      4.1.1 Mark Webb (Morgan Corp) discussed current construction progress including:
         4.1.1.1. new construction entrance open; closure of old construction entrance; trimming to improve line-of-sight at new entrance; re-orientation of signage to face new entrance; topsoil stripping; topsoil import; burning of debris; erosion control maintenance; clearing on sediment basin berm; root raking in borrow area
   4.2 Updated schedule
      4.2.1 Craig Greeson presented updated schedule including;
         4.2.1.1. 1-1.5 week behind original target completion date
         4.2.1.2. Craig Greeson (Morgan Corp) requested additional comments, if any, on schedule contents/format from Duke and S&ME
         4.2.1.3. Cedric Ruhl (S&ME) stated the schedule appears satisfactory except for the 1 week schedule pushback
         4.2.1.4. Mike Cook (Duke) replied that the scheduled completion date is not a priority issue for Duke compared to budgetary constraints.
         4.2.1.5. Mike Cook (Duke) requested that Craig Greeson (Morgan Corp) provide several hardcopies of the schedule at construction meetings when updated schedules are available (every other week).
   4.3 Interface with sub-contractors
      4.3.1 None
   4.4 Material Delivery

4.4.1 Bill Waggoner (Allied Tech) and Mark Webb (Morgan Corp) commented on topsoil transport:

4.4.1.1. Mark Webb (Morgan Corp) stated completion time of topsoil transport uncertain

4.4.1.2. Bill Waggoner (Allied Tech) stated topsoil borrow pile and stockpile area were surveyed before transport operations commenced, topsoil haul counts in progress, and borrow pile/ stockpile topography will be surveyed after topsoil operation is complete

4.5 Potential changes or delays

4.5.1 Grading Changes

4.5.1.1. Craig Greeson (Morgan Corp) stated that grading issues are delaying construction operations

4.5.1.2. Cedric Ruhl (S&ME) stated that construction plan changes must be approved, verbally/formally, before changes can be implemented

4.5.1.3. Chris Shurter (Morgan Corp) summarized grade changes including a decrease in flat area elevation by 15-inches and 15-ft offset of perimeter road.

4.5.1.4. Cedric Ruhl (S&ME) requested changes in cut/fill volumes and corresponding cost changes

4.5.1.5. Mike Cook (Duke) asked whether these items were priced per unit or lump sum

4.5.1.6. Cedric Ruhl (S&ME) stated that these items were unit priced

4.5.1.7. Craig Greeson (Morgan Corp) estimated that cut/fill volumes are not expected to increase but must check w/ Chris Shurter (Morgan Corp)

4.6 Recovery Plans

4.6.1 Mike Cook (Duke) commented that since some big ticket items are not yet resolved, construction efforts should be reallocated accordingly

4.6.2 Mark Webb and Craig Greeson (Morgan Corp) stated that work effort could be reallocated to closure area but Mark Webb emphasized the importance of resolution of flat area issues. Mike Cook (Duke) requested a discussion of this issue and inquired what information S&ME personnel require to proceed

4.6.2.1. Cedric Ruhl (S&ME) stated that changes in cut/fill quantity and cost are required. Once S&ME approves changes, summary report prepared and sent to NCDENR for approval.

4.6.2.2. Mike Cook (Duke) cautioned that formal state approval could be lengthy process.

4.6.2.3. Cedric Ruhl (S&ME) stated that Chris Hallman (Duke) believes Larry Frost (NCDENR) requested changes submitted to NCDENR for documentation purposes.

4.6.3 Bill Waggoner (Allied Tech) asked if road offset will be a problem

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4.6.3.1. Mike Cook (Duke) believes the state will not have an issue with road movement but will confirm with Chris Hallman (Duke)

4.6.4 Mike Cook (Duke) returns to discussion of grade changes and asks who is involved and what will expedite changes

4.6.4.1. Cedric Ruhl (S&ME) reiterates that cut/fill quantities and cost required

4.6.4.2. Craig Greeson (Morgan Corp) will provide by 4/17/2008

4.6.4.3. Cedric Ruhl (S&ME) will prepare letter to NCDENR and suggests that Mike Cook and Chris Hallman (Duke) could possibly receive verbal authorization to proceed from NCDENR before formal authorization is issued.

4.7 Two week look ahead

4.7.1 flat area grading

4.7.2 closure area grading

4.7.3 sediment basin grading

5. Budget and Payment

5.1 Documentation for payment

5.1.1 Mike Cook (Duke) asked if topsoil is quantified

5.1.1.1. Bill Waggoner (Allied Tech) stated topsoil borrow pile and stockpile area were surveyed before transport operations commenced, topsoil haul counts in progress, and borrow pile/ stockpile topography will be surveyed after topsoil operation is complete

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5.2 Change Orders

5.2.1 Mike Cook (Duke) commented that change order form needs work and should include chronological order of changes with maximum expected material use, unit price, associated maximum costs, note of who requested changes, and expected completion date. Mike Cook (Duke) stated that a sufficiently detailed change order register will help with budget tracking. Pending and potential change orders were reviewed:

5.2.1.1. #57 Stone
5.2.1.2. Class B Rip Rap
5.2.1.3. Silt Fence Outlets
5.2.1.4. Construction Entrance
5.2.1.5. Drainage Removal
5.2.1.6. Excess Stripping
5.2.1.7. Closure Area Grade Change
5.2.1.8. Flat Area Grade Change

5.2.2 Excessive Stripping

5.2.2.1. Mark Webb (Morgan Corp) stated that 45.47 Acres stripped

5.2.2.2. Mike Cook (Duke) stated this is a significant difference from S&ME estimated/Morgan Corp validated 22 Acre amount and asked what stripping operations remain.

5.2.2.2.1. Bill Waggoner (Allied Tech) stated that borrow area stripping is still left unfinished

5.2.2.2.2. Mark Webb (Morgan Corp) stated that 4-5 acres left to strip on closure area side slopes

5.2.2.2.3. Mike Cook (Duke) requested that no more stripping undertaken unless need is thoroughly evaluated-estimated by Craig Greeson (Morgan Corp)-discussed and approved/rejected by Duke.

5.2.3 High Quality Crusher Run

5.2.3.1. Craig Greeson (Morgan Corp) asks whether NCDOT standards are necessary for the access road surfacing material. Craig Greeson (Morgan Corp) proposes applying a crusher run material to save cost

5.2.3.1.1. Cedric Ruhl (S&ME) requests sample of material and grain size distribution

5.2.4 Mike Cook (Duke) states that burning should be almost finished

5.2.4.1. Bill Waggoner (Allied Tech) comments that burn permit will expire on Friday (4/18/2008)

5.2.5 Mike Cook (Duke) will get change order form to Craig Greeson (Morgan Corp)

6. CQA\CQC

6.1 Inspections and Testing
  6.1.1 Jimmy Addis (S&ME) has received proctor test curves for flat area testing
6.2 Quality and Work Standards
  6.2.1 N/A
6.3 Deviations
  6.3.1 Design Changes Form
    6.3.1.1. Cedric Ruhl (S&ME) stated that design change form submitted for Duke review. Mike Cook (Duke) noted that it looked adequate but is ultimately S&ME's responsibility and for S&ME's use only and is required to ensure as-built drawings are accurate for submittal to the state.
  6.3.2 Timesheet Form
    6.3.2.1. Mike Cook (Duke) reminded attendees that signed timesheets (w/ Bill Waggoner (Allied Tech) or Mike Cook (Duke) signature) are required from on-site personnel for audit purposes when submitting invoices.
6.4 Requests For Information
  6.4.1 No outstanding requests for information

7. Submittals
7.1 Current submittal status (S&ME)
  7.1.1 Craig Greeson (Morgan Corp) presented liner/geonet submittals to Cedric Ruhl (S&ME)
  7.1.2 Cedric Ruhl (S&ME) and Craig Greeson (Morgan Corp) discussed possible change order for drop inlet grate requirements.
7.2 Two week submittal schedule
  7.2.1 HDPE pipe

8. Site Use and Facilities
8.1 Traffic and Parking
  8.1.1 New entrance finished
  8.1.2 Flashing lights will be put on "trucks entering highway" signs on main road
  8.1.3 Jimmy Addis (S&ME) suggests that overnight truck delivery area be considered as, in his experience, truck deliveries arriving during the night could end up parked on the side of public road. Mike Cook (Duke) said that this should be considered.
  8.1.4 Mark Webb and Craig Greeson (Morgan Corp) stated that shipments will only be received if delivery appointments made in advance.
8.2 Housekeeping
  8.2.1 N/A
8.3 Security
  8.3.1 N/A

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9. Roundtable

10. Action Register (S&ME)

10.1 Mike Cook (Duke) requested a review of action items, discussion ensued:

10.1.1 Change in cost for revised flat area grading: Morgan Corp to S&ME(4/17/2008)

10.1.2 Change in cut/fill volumes for revised flat area grading: Morgan Corp to S&ME (4/17/2008)

10.1.3 S&ME send engineer's approval letter for proposed revised grade changes in flat area and proposed use of closure area stripping as topsoil in soil cover system to NCDENR: S&ME (4/18/2008)

10.1.4 Mike Cook and Chris Hallman communicate regarding NCDENR approval: Duke (4/18/2008)

10.1.5 Sample and grain size distribution of crusher run material to S&ME: Morgan Corp to S&ME (4/30/2008)

Next meeting will take place 10:00 am 4/23/2008

Weekly construction meeting adjourned by consensus at approximately 11:40pm.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday April 23, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	4/2/2008
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	4/2/2008
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	4/2/2008
9	determine whether downdrain removal is required	M. Cook	S&ME	4/16/2008	
10	Price for removal of downdrain structures	morgan corp	morgan corp	4/9/2008	4/9/2008
11	Revise schedule every 2 weeks	Duke	Morgan Corp	4/2/2008	4/2/2008
12	Baseline survey	S&ME	Morgan Corp	4/2/2008	4/9/2008
13	Entrance details	Duke/S&ME	Morgan Corp	4/2/2008	4/4/2008
14	CO forms	Morgan/Duke	S&ME	4/9/2008	4/9/2008
15	Find documentation of test pit exploration performed last year	Duke	S&ME	4/10/2008	action item recalled by M. Cook 4/10/08
16	Contact previous S&ME project personnel to gather information about flat area	Duke	S&ME	4/10/2008	4/9/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
17	Revised grading for benches to Chris Shurter	Morgan Corp	S&ME	4/10/2008	4/10/2008
18	Revised grading to S&ME - one week from receipt of bench grading	S&ME	Morgan Corp	4/17/2008	
19	Contractual commitment from Duke to Morgan updated from $500k to $2Million	Morgan Corp	Duke	ASAP	
20	Cost change for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/17/2008	
21	Cut/fill volumes for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/17/2008	
22	Send letter to Chris Hallman to forward to NCDENR outlining grading changes in flat area and usage of stripping material from closure area as vegetative cover	Duke/Morgan Corp	S&ME	4/18/2008	
23	Mike Cook to talk to Chris Hallman	morgan corp	Duke	4/18/2008	
24	5 gallon bucket and grain size distribution of crusher run proposed by Morgan Corp to substitute ABC stone for access roads	S&ME	morgan corp	4/30/2008	
25					
26					
27					
28					
29					
30					
31					
32					
33					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 04/16/08

Name (Print)	Signature	Company
William J. Waggoner	William J. Waggoner	Allied Tech. Resource
Jimmy Addis	Jimmy Addis	S&ME
Will Harrison	Will Harrison	S+ME
Cedric Rahl	Cedric Rahl	S+ME
Chris Shurter	[illegible]	Morgan Corp.
EARL Whitehurst	Earl Whitehurst	MORGAN - CORP
GRIFFIN QUERY	[illegible]	MORGAN CORP.
MARK WEBB	[illegible]	MORGAN CORP
Craig Greeson	[illegible]	Morgan Corp
Mike Cook	Mike Cook	Duke

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 4-15-2008
Report for Week Ending: 4-15-2008
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 1
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech			Total
Total Work Hours	383	52			~~453~~ 435
SOS Cards	2	0			2
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments Continue to do on site job specific training (Defensive Driving - Rollover, Traffic Control, General House Keeping Awareness

On site mix card information:(Mike Cook)

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 4-15-08
Report for Week Ending: 4-20-08
Report Originator: MW

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☐ Y ☒ N
2. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
3. Have there been any new portable engines brought on-site? ☐ Y ☒ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
5. Have there been any new chemicals brought on-site? ☐ Y ☒ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☒ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 4-14-08

Contractor Inspection Form submitted to Project Manager ☒ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 4-14-08 Date of Last Rain Event 4-12-08

Participants M Hylton/Bill Waggoner

Type of Inspection Weekly ☐ Rain Event ☒ BCSS ☐

Discrepancies Found One silt fence outlet needed to be built up. Silt fence damaged by machine.

Corrective Actions Reworked sillt fence outlet. Repaired silt fence.

Comments _____

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 04/23/08 / 10:00 am

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1. **Cell Phone Silence**
   1.1 Cell phones silenced

2. **Level I Safety Assessment and Sign-in sheet**
   2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME). Mike Cook (Duke) noted that, due to recent precipitation, the site was muddy and slippery.
   2.2 Sign-in Sheet completed

3. **Safety and Environmental**
   3.1 Weekly Safety Report
      3.1.1 Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). Earl noted that the old site entrance has been closed off with jersey barriers and the new construction entrance has a cable to prohibit unauthorized access. Bill Waggoner (Allied Tech) noted that the lock at the old entrance should be moved to the cable at the new entrance. Mike Cook (Duke) noted that he saw a water truck parked in the road, presenting a safety hazard, Mark Webb (Morgan Corp) said that he would bring this issue to the water truck operator's attention. Ken Daly (S&ME) asked about flashing lights for signage along Pine Hall Road, Earl Whitehurst (Morgan Corp) stated that Tommy Elkins (Morgan Corp) would provide the lights.
   3.2 Weekly Environmental Report
      3.2.1 Weekly Environmental Report presented by Mark Webb (Morgan Corp)
   3.3 Waste Materials and Recycling
      3.3.1 Mark Webb (Morgan Corp) stated that dumpster not yet on site.

4. **Site Use and Facilities**
   4.1 Traffic and Parking
      4.1.1 Discussed in 3.1.1.
   4.2 Housekeeping
      4.2.1 N/A
   4.3 Security
      4.3.1 N/A

5. **Schedule Update and Progress Report**
   5.1 Construction Progress
      5.1.1 Mike Cook (Duke) requested that Mark Webb and Craig Greeson (Morgan Corp) keep a detailed spreadsheet comparing payment percentages with actual percent constructed as a way to foresee disconnects between the estimated bid quantities and quantities needed to perform the work. Mike Cook (Duke) will provide Morgan Corp with a spreadsheet to track this information.
      5.1.2 Mark Webb (Morgan Corp) stated that, since last meeting, there have been 2 working days (chose not to work over the weekend, rained out

Monday and Tuesday). Balancing of the flat area for proofroll purposes was begun.

5.1.3 Ken Daly (S&ME) stated that no verbal approval by Larry Frost (NCDENR) has been issued for proposed design changes yet; Mr. Frost out of office until 4/23/08. [Design changes summarized by S&ME and pdf submitted via email to Chris Hallman (Duke) to forward to Larry Frost (NCDENR). The pdf was sent on Friday, April 18, 2008. Hardcopy mailed to Larry Frost Tuesday, April 22, 2008]. Mike Cook (Duke) stated that he would call Chris Hallman (Duke) to get an update on the approval status of these changes. Mike Cook (Duke) and Ken Daly (S&ME) stated that work in the Flat Area can commence provided that it is compatible with the original design, in case NCDENR rejects the proposed design changes.

5.1.4 Mike Cook (Duke) expressed interest in arranging a meeting between Craig Greeson and Tommy Harril (Morgan Corp), Mike Cook (Duke), and Ken Daly (S&ME) to discuss budget.

5.1.5 Topsoil import being tracked by load count. Morgan Corp confirmed that quantities will be verified by on site and off site surveys. Mike Cook (Duke) stated that additional stripping should diminish the need for imported topsoil. Bill Waggoner (Allied Tech) stated that 31,000 cy of topsoil estimated for Closure Area, 14,000 cy of topsoil estimated for Flat Area; imported topsoil was assumed to be 15,000 cy.

5.1.6 Mike Cook (Duke) requested a list of tasks that have been 100% completed. Mark Webb (Morgan Corp) responded with the following: 100% of proposed silt fence, bushhogging, and silt fence outlets are completed/installed. Mike Cook (Duke) stated that some extra silt fence may be needed for repair purposes, as necessary. 85% complete on clearing and grubbing. 75% complete on stripping. Mark Webb (Morgan Corp) said that he still needed to strip approx. 13.5 acres, and the total area stripped will be less than 60 acres, as reflected on Change Order 5 (stripping not to exceed 60 acres).

5.2 Updated schedule

5.2.1 Craig Greeson (Morgan Corp) asked Ken Daly (S&ME) if it was okay to complete the BMP berm as per plans after liner installation begins. Ken Daly (S&ME) said that BMP berm height must be completed before liner installation commences because subgrade grading per plans will alter existing drainage patterns.

5.2.2 Craig Greeson (Morgan Corp) noted that updated schedule assumed constructing the cut/fill balance in the Flat Area, preparing liner subgrade in the Closure Area, then placing Type S1 fill in the Flat Area. If ash is encountered in the Flat Area, Type S1 fill will be placed over the ash before grading subgrade in the Closure Area.

5.2.3 Craig Greeson (Morgan Corp) stated that target completion date moved back 27 days to Jan 8, 2009 due to excess stripping (20 days, CO 5). Ken

Daly (S&ME) asked how many days weather has prevented construction. Mark Webb (Morgan Corp) said that 3 days were lost due to weather.

5.3 Interface with sub-contractors

5.3.1 None

5.4 Material Delivery

5.4.1 Mike Cook (Duke) asked Craig Greeson (Morgan Corp) what the lead time on liner manufacture is. Craig Greeson (Morgan Corp) stated that he didn't know but would look into it. Craig Greeson (Morgan Corp) awaiting submittal approval for Submittals 8, 9, and 10 before proceeding. Cedric Ruhl (S&ME) stated that submittal review in process, expect to respond by 4-24-08.

5.5 Potential changes or delays

5.5.1 Ken Daly (S&ME) stated that Closure Area elevation change for balanced cut and fill in the Closure Area was addressed in the letter to the state (see 5.1.3).

5.5.2 Bill Waggoner (Allied Tech) asked what the Closure Area's change in top elevation is for a balanced cut/fill. Chris Shurter (Morgan Corp) stated that the top will be lowered 2.25 feet.

5.5.3 Craig Greeson (Morgan Corp) stated that, due to longer haul routes, there would be no cost savings in using crusher run material for access road surfacing.

5.5.4 Ken Daly (S&ME) stated that S&ME and Duke are investigating changes in the access road scope, such as reduced cross-section, to provide cost savings to Duke Energy. Ken Daly (S&ME) presented two options: 1. 10 inches ABC with no woven geotextile, and 2. 4 inches ABC with woven geotextile. Ken Daly (S&ME) stated that access road to top of Closure Area should remain the same width and thickness as shown on the Drawings. Mike Cook (Duke) stated that Duke Energy and S&ME would come to an agreement on access road options before requesting pricing from Morgan Corp.

5.5.5 Ken Daly (S&ME) stated that bottom ash may also be considered for access road surfacing. Mike Cook (Duke) stated that bottom ash is available at $4/ton.

5.5.6 Bill Waggoner (Allied Tech) stated that there is a wet area in the Flat Area that, if undercut, may go over the 500 cy budgeted in the bid sheet. Ken Daly (S&ME) stated that he would review the area after the construction meeting.

5.6 Recovery Plans

5.6.1 N/A

5.7 Two week look ahead

5.7.1 Flat Area cut/fill balance to subgrade elevations

5.7.2 Closure Area grading

5.7.3 complete stripping

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 04/23/08 / 10:00 am

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6. CQA\CQC

6.1 Inspections and Testing

6.1.1 Jimmy Addis (S&ME) stated that proofrolling occurred in portion of the Flat Area, and that 3 existing drainage lines had been removed from the Closure Area.

6.1.2 Cedric Ruhl (S&ME) stated that interface friction testing is in progress, and all outstanding soils laboratory data has been received.

6.2 Quality and Work Standards

6.2.1 N/A

6.3 Deviations

6.3.1 Ken Daly (S&ME) stated that a pre-geosynthetics installation meeting should be scheduled.

6.3.2 Jimmy Addis (S&ME) stated that it was unclear from the liner panel layout submitted by ESI where deployment would begin. Chris Shurter (Morgan Corp) stated that it would probably begin on the southwest corner, where the proposed ditch breaklines are, and follow the water flow east.

6.3.3 Ken Daly (S&ME) reminded Morgan Corp that they need to maintain subgrade for liner placement.

6.4 Requests For Information

6.4.1 Mark Webb (Morgan Corp) stated that there is an existing 30" dia. CMP pipe that is 40 feet deep and 442 feet long [pipe L1 as shown on "Existing Conditions Drawing" prepared by Chris Shurter (Morgan Corp) dated 4/8/08]. Ken Daly (S&ME) recommended excavating the pipe to proposed subgrade plus 10 feet, then plugging the pipe. Chris Shurter (Morgan Corp) will send an RFI on this issue to initiate documentation of this action. Mike Cook (Duke) stated that the abandoned pipe should be documented by recording Northing, Easting, and elevation of the pipe but that the abandoned pipe should not be shown in As-Built Drawings.

7. Payment and Changes

7.1 Documentation for payment

7.1.1 Mike Cook (Duke) stated that invoicing for April was due on Tuesday, 4/29/08.

7.2 Change Orders

7.2.1 Mike Cook (Duke) prepared and posted to the website a revised change order form which includes a space for Morgan Corp signature, signifying approval of any comments on change order made by Mike Cook.

7.2.2 Mike Cook (Duke) stated that he had posted the revised change order register to the website.

7.2.3 Change Orders 1-6 are currently pending approval. Mike Cook (Duke) stated that he had verbally approved Change Orders 1-4 during the construction meeting on 4/2/08.

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 04/23/08 / 10:00 am

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8. Submittals

8.1 Current submittal status

8.1.1 Cedric Ruhl (S&ME) stated that submittals 8, 9, and 10 (LLDPE geomembrane and geonet composite) are currently under review, expects to have response by end of day 4/24/08

8.2 Two week submittal schedule

8.2.1 HDPE pipe and drainage structures.

9. Roundtable

10. Action Register (S&ME)

10.1 Summary of outstanding action items (see Action Item Register for full details):

10.1.1 #18 – Revised grading to S&ME (Closure Area) – 4/28/08

10.1.2 #19 – Contractual commitment from Duke to Morgan – in progress

10.1.3 #20 – Cost change for revised grading in flat area – 4/28/08

10.1.4 #25 – Mike Cook to follow up with Chris Hallman re: NCDENR letter – 4/23/08

10.1.5 #26 – S&ME to visually review proposed undercut area and provide suggestion – 4/28/08

10.1.6 #27 – Provide design change options for access roads – 4/30/08

10.1.7 #28 – Record of Information for 30" CMP pipe abandonment – 4/30/08

Next meeting will take place 10:00 am 4/30/2008

Weekly construction meeting adjourned by consensus at approximately 12:15 pm.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday April 30, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	4/2/2008
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	4/2/2008
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	4/2/2008
9	determine whether downdrain removal is required	M. Cook	S&ME	4/16/2008	
10	Price for removal of downdrain structures	morgan corp	morgan corp	4/9/2008	4/9/2008
11	Revise schedule every 2 weeks	Duke	Morgan Corp	4/2/2008	4/2/2008
12	Baseline survey	S&ME	Morgan Corp	4/2/2008	4/9/2008
13	Entrance details	Duke/S&ME	Morgan Corp	4/2/2008	4/4/2008
14	CO forms	Morgan/Duke	S&ME	4/9/2008	4/9/2008
15	Find documentation of test pit exploration performed last year	Duke	S&ME	4/10/2008	action item recalled by M. Cook 4/10/08
16	Contact previous S&ME project personnel to gather information about flat area	Duke	S&ME	4/10/2008	4/9/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
17	Revised grading for benches to Chris Shurter	Morgan Corp	S&ME	4/10/2008	4/10/2008
18	Revised Closure Area grading to S&ME (Flat Area grading received 4/15/08)	S&ME	Morgan Corp	4/28/2008	
19	Contractual commitment from Duke to Morgan updated from $500k to $2Million	Morgan Corp	Duke	ASAP	
20	Cost change for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/28/2008	
21	Cut/fill volumes for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/17/2008	4/18/2008
22	Send letter to Chris Hallman to forward to NCDENR outlining grading changes in flat area and usage of stripping material from closure area as vegetative cover	Duke/Morgan Corp	S&ME	4/18/2008	4/18/2008
23	Mike Cook to talk to Chris Hallman	morgan corp	Duke	4/18/2008	4/18/2008
24	5 gallon bucket and grain size distribution of crusher run proposed by Morgan Corp to substitute ABC stone for access roads	S&ME	morgan corp	4/30/2008	recalled on 4/23/08 (not cost effective)
25	Mike Cook to talk to Chris Hallman	S&ME	Duke	4/23/2008	
26	S&ME to look at potential undercut area and provide suggestions	morgan corp	S&ME	4/28/2008	
27	Outline design change options for access road	Duke	S&ME/Duke	4/30/2008	
28	Record of Information - 30" CMP abandonment	Morgan Corp	S&ME	4/30/2008	
29					
30					
31					
32					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 04/23/08

Name (Print)	Signature	Company
Cedric Rull	Cedric Rull	SIME
Chris Shuster	[illegible]	Morgan Corp
MARK WEBB	[illegible]	MORGANCORP
Mike Cook	Mike Cook	Dewey
Earl Whitehurst	[illegible]	MORGAN CORP
Craig Greeson	[illegible]	Morgan Corp.
GRIFFIN QUERY	[illegible]	MORGAN CORP
William J. Waggoner	William J. Waggoner	Allied Tech. Resources
Jimmy Addis	Jimmy Addis	S&ME
KENNETH R. DALY	[illegible]	S&ME

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 4-23-2008
Report for Week Ending: 4-22-2008
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☐ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☐ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech			Total
Total Work Hours	628	50			678
SOS Cards	1	0			1
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments Security measure have been taken and completed , in terms of gaining access to the site. At the old entrance, which is heading toward the Duke Energy plan, jersey barriers have been installed. At the new or front entrance, a cable across the entrance has been installed. Locks will be provided to those authorized by Morgan-Corp/ Duke Energy and S &ME personnel.

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 4-21-08
Report for Week Ending: 4-27-08
Report Originator: MW

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☐ Y ☒ N
2. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
3. Have there been any new portable engines brought on-site? ☐ Y ☒ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
5. Have there been any new chemicals brought on-site? ☐ Y ☒ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☒ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 4-21-08

Contractor Inspection Form submitted to Project Manager ☒ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 4-21-08 & 4-22-08 Date of Last Rain Event 4-21-08 & 4-22-08

Participants M WEBB/Bill Waggoner

Type of Inspection Weekly ☐ Rain Event ☒ BCSS ☐

Discrepancies Found None.

Corrective Actions None

Comments _____

morgan corp.

Stormwater Retention Log

	Yes	No	N/A
1. Are all silt fences in compliance and maintained?	x		
2. Are all inlet protection devices installed, maintained, and in compliance?	x		
3. Are all riser basins functioning and in compliance?	x		
4. Has capacity of all sediment ponds been monitored and maintained?			x
5. Are all sediment basins functioning and incompliance?	x		
6. Are all diversion ditches functioning properly?	x		
7. Are all check dams in compliance?	x		
8. Are all slope drains functioning properly?	x		
9. Are all construction entrances functioning and being maintained?	x		
0. Are all areas requiring stabilization being maintained?			x
1. Does all tree protection meet compliance?			x

General Notes:

Supervisors Signature: M. Webb/B. Waggoner Date: 4/21/2008 Project Number: 2400 Inspectors Signature: M.Webb/B.Wagner

STORMWATER DISCHARGE MONITORING
STORMWATER INSPECTIONS FOR GENERAL PERMIT 2008-012 -LAND DISTURBING ACTIVITIES

PROJECT: Belews Creek
MONITORING FOR THE WEEK BEGINNING 4/21/2008

BY THIS SIGNATURE, I CERTIFY THAT THIS REPORT IS ACCURATE AND COMPLETED TO THE BEST OF MY KNOWLEDGE:
M. Webb/Bill Wagner
(SIGNATURE OF PERMITTEE OR DESIGNEE)

RAINFALL:

DATE OF RAIN	AMOUNT (INCHES)	INITAILS
4/21/2008 4/22/08	0.5 & .25	M.W./WJW

EROSION AND SEDIMENT CONTROL FACILITIES INSPECTED: (at least once (twice if on 303(d) listed stream for construction related parameters* per seven calendar days or within 24 Hrs. of a rainfall of 0.5 inches per 24 Hrs.)

Facility Identification	Date of Inspection	Operating Properly (Y/N)	Describe corrective actions taken (may need to attach additional information)
Silt fence	4/21/2008	yes	
Sed basin	4/21/2008	yes	
Silt fence	4/22/2008	yes	
Sed basin	4/22/2008	yes	

OBSERVATIONS OF RUNOFF AT STORMWATER DISCHARGE OUTFALLS: (at least once (twice if on 303(d) listed stream for construction related parameters* per seven calendar days or within 24 Hrs. of a rainfall of 0.5 inches per 24 Hrs.)

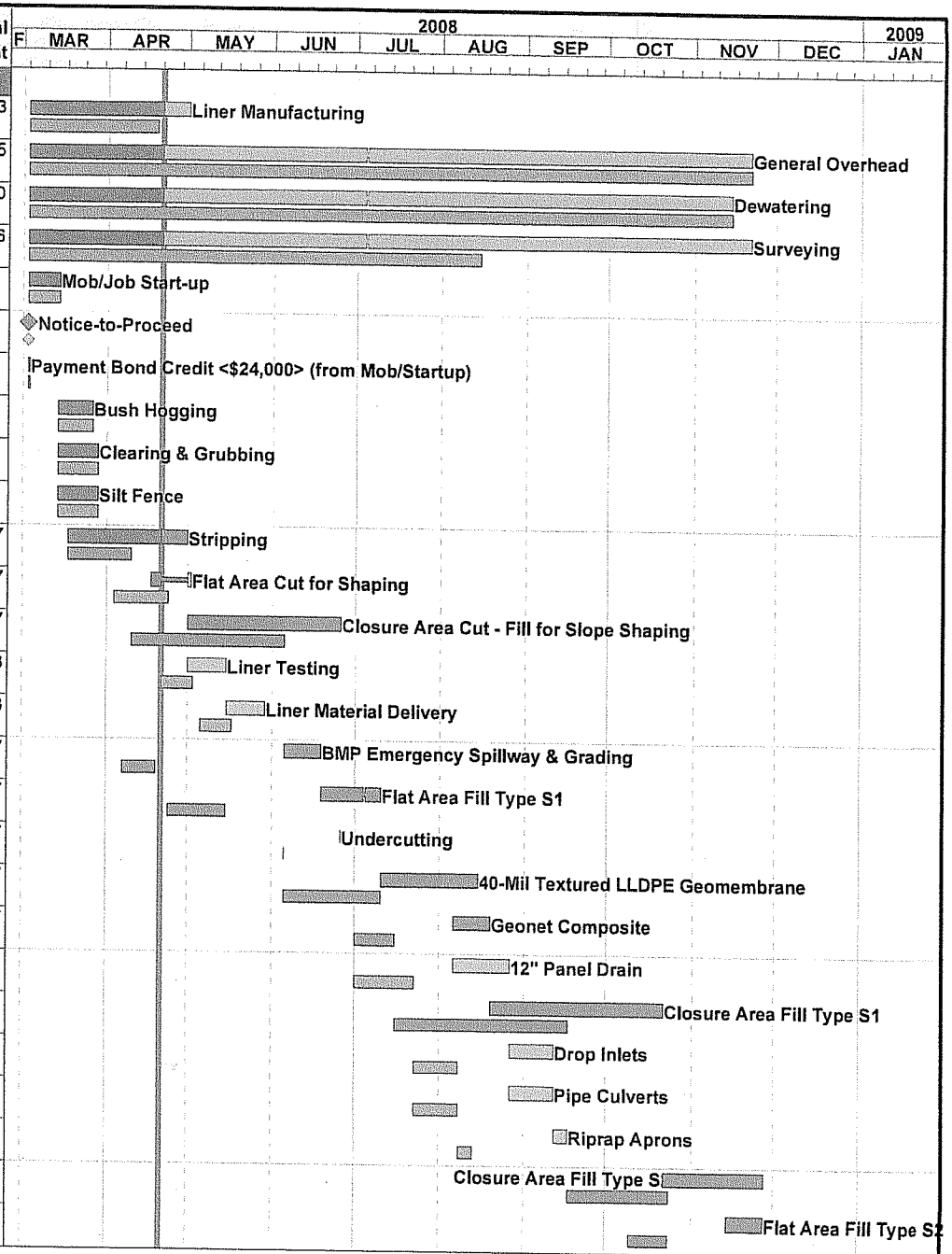
Stormwater discharge Outfall identification	Date	Clarity	Floating Solids	Suspended Solids	Oil Sheen	Other obvious indicators of stormwater pollution (List and cescribe)	Visible Sediment leaving the site (Y/N)	If yes, describe actions taken to prevent future releases (May need to attach additional information)	Describe measures taken to clean up se disturbed limits (May need to attach ad
Silt fence	21-Apr	1	1	1	1		N		
Sed basin	21-Apr	1	1	1	1		N		
Silt fence	22-Apr	1	1	1	1		N		
Sed basin	22-Apr	1	1	1	1		N		

Clarity: Choose the number which best describes the clarity of the discharge where 1 is clear and 10 is very cloudy
Floating Solids: Choose the number which best describes the amount of floating solids in the discharge where 1 is no sllids and 10 the surface is covered in floating solids
Suspended Solids: Choose the number which best descrbes the amount of suspended solids in the discharge where 1 is no solids and 10 is extremely muddy
Oil Sheen: IS there oil sheen in the stormwater discharge? Y or N
*303(d) listed streams for construction related parameters- The latest approved list may be obtained from the divesion of water quality, or from the following wevsite:http://h20.enr.state.nc.us/construction303d

GENERAL NOTES

A slow steady rain, with no excessive run off.

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
35A	Liner Manufacturing	35	8	77	03MAR08A	30APR08	3
0.5	General Overhead	189	154	19	03MAR08A	21NOV08	5
9	Dewatering	184	149	19	03MAR08A	14NOV08	10
1	Surveying	185	154	17	03MAR08A	21NOV08	76
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	28MAR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	8	20	18MAR08A	30APR08	-27
10	Flat Area Cut for Shaping	10	1	90	17APR08A	01MAY08	7
5	Closure Area Cut - Fill for Slope Shaping	40	40	0	01MAY08	25JUN08	-27
35B	Liner Testing	10	10	0	01MAY08	14MAY08	3
35C	Liner Material Delivery	10	10	0	15MAY08	28MAY08	3
29	BMP Emergency Spillway & Grading	10	10	0	05JUN08	18JUN08	-27
11	Flat Area Fill Type S1 (18")	15	15	0	19JUN08*	10JUL08	-27
8	Undercutting	0	0	0	26JUN08	25JUN08	-17
35	40-Mil Textured LLDPE Geomembrane	25	25	0	11JUL08	14AUG08	-27
34	Geonet Composite	10	10	0	06AUG08	19AUG08	-27
32-33	12" Panel Drain	15	15	0	06AUG08	26AUG08	33
6	Closure Area Fill Type S1	45	45	0	20AUG08	21OCT08	-27
20-24	Drop Inlets	12	12	0	27AUG08	11SEP08	33
25-28	Pipe Culverts	12	12	0	27AUG08	11SEP08	33
30	Riprap Aprons	3	3	0	12SEP08	16SEP08	33
7	Closure Area Fill Type S2	27	27	0	22OCT08	27NOV08	-27
12	Flat Area Fill Type S2	10	10	0	14NOV08	27NOV08	-27



Start Date	03MAR08
Finish Date	08JAN09
Data Date	21APR08
Run Date	22APR08 12:19

Early Bar
Target Bar
Progress Bar
Critical Activity

408B

Sheet 1 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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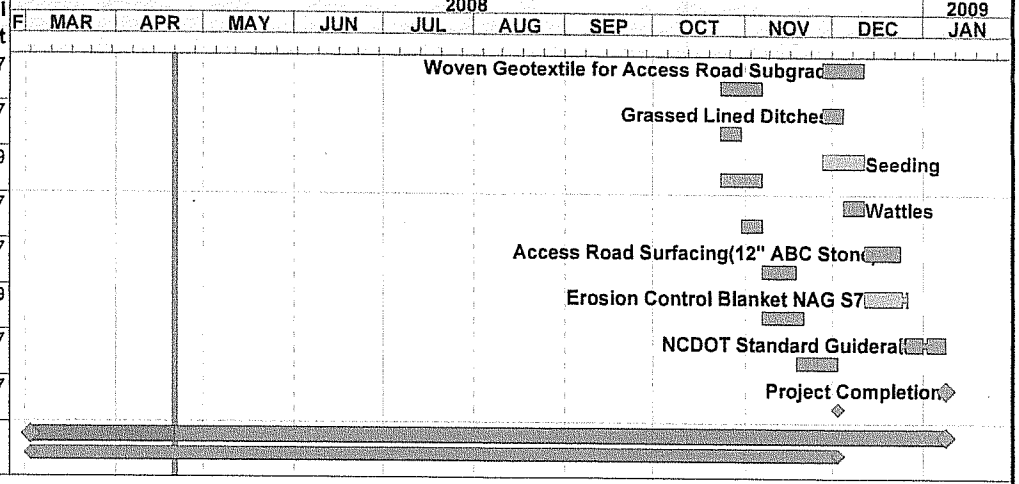
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
13	Woven Geotextile for Access Road Subgrade	10	10	0	28NOV08	11DEC08	-27
17-18	Grassed Lined Ditches	5	5	0	28NOV08	04DEC08	-27
31	Seeding	10	10	0	28NOV08	11DEC08	-19
19	Wattles	5	5	0	05DEC08	11DEC08	-27
14	Access Road Surfacing(12" ABC Stone)	8	8	0	12DEC08	23DEC08	-27
R3-3	Erosion Control Blanket NAG S75	10	10	0	12DEC08	26DEC08	-19
15	NCDOT Standard Guiderail	10	10	0	24DEC08	08JAN09	-27
COMP	Project Completion	0	0	0		08JAN09	-27
Total							



Start Date	03MAR08
Finish Date	08JAN09
Data Date	21APR08
Run Date	22APR08 12:19

Early Bar
Target Bar
Progress Bar
Critical Activity

408B

Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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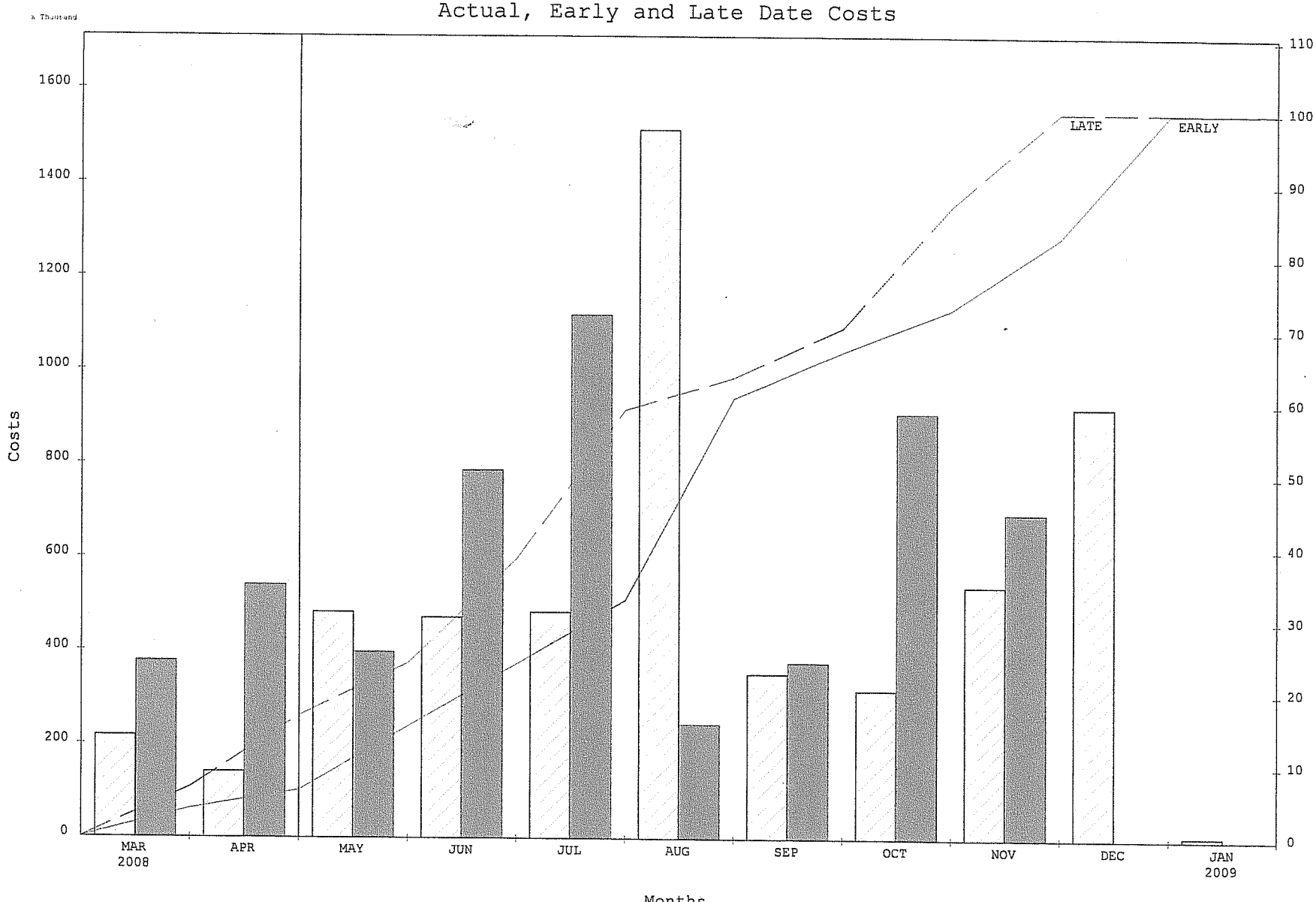
Actual, Early and Late Date Costs



Project Start 3MAR08 Project Finish 30NOV08* Data Date 21APR08 Plot Date 22APR08 (c) Primavera Systems, Inc.	Early dates Late dates	4086 Sheet 1 of 1 Morgan Corp. Pine Hall Road Ash Landfill Closure Cumulative and Monthly Costs	-----Project Schedule----- Date / Revision / Checked / Approved

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 05/07/08 / 10:00 am

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1. **Cell Phone Silence**
   1.1 Cell phones silenced

2. **Level I Safety Assessment and Sign-in sheet**
   2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME) and Earl Whitehurst (Morgan Corp).
   2.2 Sign-in Sheet completed. Mike Cook (Duke) will be late to meeting.

3. **Safety and Environmental**
   3.1 Weekly Safety Report
      3.1.1 Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). Earl noted that the signage along Pine Hall Road had been repositioned and lights were added.
   3.2 Weekly Environmental Report
      3.2.1 Weekly Environmental Report presented by Mark Webb (Morgan Corp)
   3.3 Waste Materials and Recycling
      3.3.1 Mark Webb (Morgan Corp) stated that dumpster is on site.
      3.3.2 Ken Daly (S&ME) asked about recycling on site, Mark Webb (Morgan Corp) confirmed that they are recycling and stated that the recycling bins had been moved because they were attracting bees.

4. **Site Use and Facilities**
   4.1 Traffic and Parking
      4.1.1 N/A
   4.2 Housekeeping
      4.2.1 N/A
   4.3 Security
      4.3.1 Cable and lock moved from old site entrance to new construction entrance (along Pine Hall Road).

5. **Schedule Update and Progress Report**
   5.1 Construction Progress
      5.1.1 Craig Greeson (Morgan Corp) stated that clearing/grubbing and stripping are 100% complete, fill placement S1 and cut/fill for shaping within the Flat Area are at 33% completion, working on cutting in ditch C-7 (N. of Flat Area), BMP spillway grading complete, removal of existing stormwater structures almost complete, topsoil import in progress.
      5.1.2 Bill Waggoner (Allied Tech) asked whether ditch C-7 was considered part of the Flat Area, Craig Greeson (Morgan Corp) stated that ditch C-7 is part of the Flat Area.
      5.1.3 Cedric Ruhl (S&ME) stated that interface friction testing was completed and test results meet specifications; conformance testing on geonet composite was also completed and test results meet specifications.

5.1.4 Ken Daly (S&ME) gave approval to begin manufacture of LLDPE liner.

5.1.5 Bill Waggoner (Allied Tech) asked when LLDPE liner would be shipped, Craig Greeson (Morgan Corp) stated that shipment is scheduled to begin 6-5-08.

5.1.6 10:25 – Mike Cook (Duke Energy) arrived at meeting

5.1.7 Jimmy Addis (S&ME) asked if the entire Closure Area is scheduled to be graded before LLDPE liner placement begins, Craig Greeson (Morgan Corp) said yes. Craig Greeson stated that grading would begin on west side of Closure Area.

5.1.8 Ken Daly (S&ME) asked how many lost days had occurred since last construction meeting (4-23-08), Mark Webb (Morgan Corp) stated that 3 days had been lost due to rain.

5.2 Updated schedule

5.2.1 Craig Greeson (Morgan Corp) stated that LLDPE liner installation now scheduled to begin 6-17-08 (installation scheduled to begin on 7-11-08 on schedule dated 4-22-08).

5.2.2 Ken Daly (S&ME) noted that the project completion date is now scheduled to be 12-30-08 (completion dated scheduled to be 1-8-09 on schedule dated 4-22-08)

5.3 Interface with sub-contractors

5.3.1 None

5.4 Material Delivery

5.4.1 Craig Greeson (Morgan Corp) stated that HDPE pipe and concrete structure delivery may occur within next 2 weeks

5.5 Potential changes or delays

5.5.1 Chris Shurter (Morgan Corp) stated that it was unclear from the plans and details how the S1/S2 cover in the Flat Area ties into the geosynthetic liner system of the Closure Area near the road between the Closure Area and the Flat Area. Discussion ensued regarding the cut/fill balance within the Flat Area. Ken Daly (S&ME) stated that the design intent was that 2 feet of cover would be placed on the Flat Area and on ash encountered outside of the Closure Area. Ken Daly stated that S&ME will update details clarifying the northern and southern limits of soil cover in the Flat Area.

5.5.2 Mark Webb (Morgan Corp) stated that he is currently placing cut material from ditch C-7 (within the Flat Area) on top of the Closure Area and asked what line item this material should be billed as. Ken Daly (S&ME) summarized that the design intent was for a cut/fill balance in the Flat Area, that cut within the Flat Area should be used as fill within the Flat Area, and any material moved to the top of the Closure Area should be billed as Flat Area cut/fill for shaping. Mark Webb (Morgan Corp) asked if he could take the material being excavated from ditch C-7 and place it as part of the road berm on the east side of the Flat Area, Ken Daly (S&ME) approved, but

maintained that the any fill would require a minimum of 2 feet clean soil cover.

5.6 Potential changes or delays

5.6.1 Ken Daly (S&ME) stated that access road changes are being considered. Ken Daly requested cost estimates from Mogan Corp for the following options: 1. 4" ABC with geotextile, 2. 10" ABC with no geotextile. Jay Lynch (Morgan Corp) offered to price a third option; soil cement with a base treatment. Ken Daly (S&ME) asked the maximum thickness of soil cement, Jay Lynch (Morgan Corp) responded 12". Ken Daly (S&ME) stated that, for all options, the road width will be changed from 15 feet to 12 feet. Mike Cook (Duke) stated that the slope access road will retain its original design cross-section (i.e. 15 feet wide, 12" ABC underlain by geotextile). Jay Lynch (Morgan Corp) stated that a summary of cross-sections and a plan view showing proposed cross-section locations would be required to develop a cost estimate.

5.6.2 Jimmy Addis (S&ME) stated that the "wet area" in the Flat Area was undercut (approx. 420 cy) and that, although water was subsequently observed in the same location, it had since dried up. (Note: this is not a change but covered under Bid Line Item No. 8 – Undercutting)

5.7 Recovery Plans

5.7.1 N/A

5.8 Two week look ahead

5.8.1 Craig Greeson (Morgan Corp) stated that the primary focus for the next two weeks would be Closure Area grading, and finishing the BMP berm and ditch C-7.

6. CQA\CQC

6.1 Inspections and Testing
- 6.1.1 Jimmy Addis (S&ME) stated that density tests had been performed on the cut/fill for shaping in the Flat Area, and S1 fill placement in Flat Area. A few densities failed because they were too dry. Proofrolling was also conducted and seemed ok.
- 6.1.2 Ken Daly (S&ME) stated that Manufacturer's Quality Control certificates for geocomposite need to be submitted to S&ME
- 6.1.3 Jimmy Addis (S&ME) asked if the liner installer was allowed to put ash in their sandbags for ballast loading, Ken Daly (S&ME) said no.

6.2 Quality and Work Standards
- 6.2.1 N/A

6.3 Deviations
- 6.3.1 N/A

6.4 Requests For Information
- 6.4.1 Ken Daly (S&ME) stated that Records of Information 3 and 4 have been prepared addressing slope access road cross-slope and 30" CMP (pipe L1) removal, an ROI will be issued approving the grading plans for the Flat Area and Closure Area as prepared by Chris Shurter (Morgan Corp).
- 6.4.2 Ken Daly (S&ME) stated that Jimmy Addis (S&ME) would be on vacation May 15-18, another soils technician would take his place. Mike Cook (Duke) noted that the soils technician would need MICCS chain of custody and site orientation.

7. Payment and Changes

7.1 Documentation for payment

7.2 Change Orders
- 7.2.1 Mike Cook (Duke) stated that he had Change Orders 5 and 6 ready for appropriate signatures, and that he had received Morgan Corp's April application for payment.
- 7.2.2 Craig Greeson (Morgan Corp) stated that there are no other change orders outstanding.

8. Submittals

8.1 Current submittal status
- 8.1.1 Ken Daly (S&ME) stated that submittals 1-10 have been processed, submittals 11 (drop inlet grates) and 12 (HDPE pipe) are under review.

8.2 Two week submittal schedule
- 8.2.1 N/A

9. Roundtable

9.1 Mike Cook (Duke) asked what would be done about the guardrail end sections, Jay Lynch (Morgan Corp) stated that they would be submitted for review.

9.2 Guardrail post installation clearance was questioned. Cedric Ruhl (S&ME) stated that, according to details, there will be 3" of clearance between the guard rail post and the geosynthetic liner system, Jay Lynch (Morgan Corp) stated that 3" is not enough clearance. This issue will be resolved at a later date.

9.3 Ken Daly (S&ME) stated that topsoil must have a 2% minimum organic content. Since soils testing of the on-site stripping and import topsoil showed 2-3% organic content, both materials are allowed for topsoil placement. Craig Greeson (Morgan Corp) agreed to rake out large roots and particles from topsoil.

9.4 Mike Cook (Duke) suggested on-site construction meetings on a two-week cycle (Wednesday at 10:00 am), with telephone conference calls being conducted Wednesdays at 10:00 am on off weeks.

10. Action Register (S&ME)

10.1 Summary of outstanding action items (see Action Item Register for full details):

10.1.1 #19 – Contractual commitment from Duke to Morgan – in progress

10.1.2 #27 – S&ME to provide design change options for access roads – 5/09/08

10.1.3 #29 – Morgan Corp to provide cost estimate for access road design change options – 5-16-08

10.1.4 #30 – S&ME to provide clarification of transition from Closure Area cover system to Flat Area cover system – 5-14-08

10.1.5 #31 – Morgan Corp to provide details of guard rail end section – no date set

Next meeting will take place 10:00 am 5/21/2008

Construction meeting adjourned by consensus at approximately 11:40 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday May 21, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	4/2/2008
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	4/2/2008
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	4/2/2008
9	determine whether downdrain removal is required	M. Cook	S&ME	4/16/2008	4/23/2008
10	Price for removal of downdrain structures	morgan corp	morgan corp	4/9/2008	4/9/2008
11	Revise schedule every 2 weeks	Duke	Morgan Corp	4/2/2008	4/2/2008
12	Baseline survey	S&ME	Morgan Corp	4/2/2008	4/9/2008
13	Entrance details	Duke/S&ME	Morgan Corp	4/2/2008	4/4/2008
14	CO forms	Morgan/Duke	S&ME	4/9/2008	4/9/2008
15	Find documentation of test pit exploration performed last year	Duke	S&ME	4/10/2008	action item recalled by M. Cook 4/10/08
16	Contact previous S&ME project personnel to gather information about flat area	Duke	S&ME	4/10/2008	4/9/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
17	Revised grading for benches to Chris Shurter	Morgan Corp	S&ME	4/10/2008	4/10/2008
18	Revised Closure Area grading to S&ME (Flat Area grading received 4/15/08)	S&ME	Morgan Corp	4/28/2008	5/1/2008
19	Contractual commitment from Duke to Morgan updated from $500k to $2Million	Morgan Corp	Duke	ASAP	
20	Cost change for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/28/2008	4/25/2008
21	Cut/fill volumes for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/17/2008	4/18/2008
22	Send letter to Chris Hallman to forward to NCDENR outlining grading changes in flat area and usage of stripping material from closure area as vegetative cover	Duke/Morgan Corp	S&ME	4/18/2008	4/18/2008
23	Mike Cook to talk to Chris Hallman	morgan corp	Duke	4/18/2008	4/18/2008
24	5 gallon bucket and grain size distribution of crusher run proposed by Morgan Corp to substitute ABC stone for access roads	S&ME	morgan corp	4/30/2008	recalled on 4/23/08 (not cost effective)
25	Mike Cook to talk to Chris Hallman	S&ME	Duke	4/23/2008	4/23/2008
26	S&ME to look at potential undercut area and provide suggestions	morgan corp	S&ME	4/28/2008	4/23/2008
27	Outline design change options for access road	Duke	S&ME/Duke	5/9/2008	
28	Record of Information - 30" CMP abandonment	Morgan Corp	S&ME	4/30/2008	5/7/2008
29	Cost estimate for access road design change options (as provided from action item #27)	S&ME	morgan corp	5/16/2008	
30	provide clarification of transition from Closure Area cover system to Flat Area cover system	morgan corp	S&ME	5/14/2008	
31	details of guard rail end section	S&ME	morgan corp		
32					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 05/07/08

Name (Print)	Signature	Company
Cedric Rill	[illegible]	SHME
Jimmy Addis	Jimmy Addis	SHME
William J. Waggoner	William J. Waggoner	Allied Tech. Resources
Jay Lynch	[illegible]	Morgan.
M. Webb	[illegible]	MORGAN CORP
Craig Greeson	[illegible]	Morgan Corp
Earl Whitehead	[illegible]	Morgan Corp
Chris Shuiter	[illegible]	Morgan Corp.
Ken Daly	[illegible]	SHME
Mike Cook	Mike Cook	Duke

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 5-06-2008
Report for Week Ending: 5-06-2008
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 3
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME		Total
Total Work Hours	784	50	61		895
SOS Cards	1	0	0		1
Near Misses	0	0	0		0
First Aid Cases	0	0	0		0
Recordables	0	0	0		0
Lost Workdays	0	0	0		0
Restricted Workdays	0	0	0		0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☒ Y ☐ N ☒ N/A

Comments Have repositioned & added flashing Lights to "Warning Signals"

SOS CARDS: issued for housekeeping (Equipment Cleaning)

CORRECTION

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 5-5-08
Report for Week Ending: 5-11-08
Report Originator: MW & BW

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☐ Y ☒ N
2. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
3. Have there been any new portable engines brought on-site? ☐ Y ☒ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
5. Have there been any new chemicals brought on-site? ☐ Y ☒ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☒ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 5-5-08

Contractor Inspection Form submitted to Project Manager ☒ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 5-5-08 Date of Last Rain Event 4-29-08

Participants M WEBB/Bill Waggoner

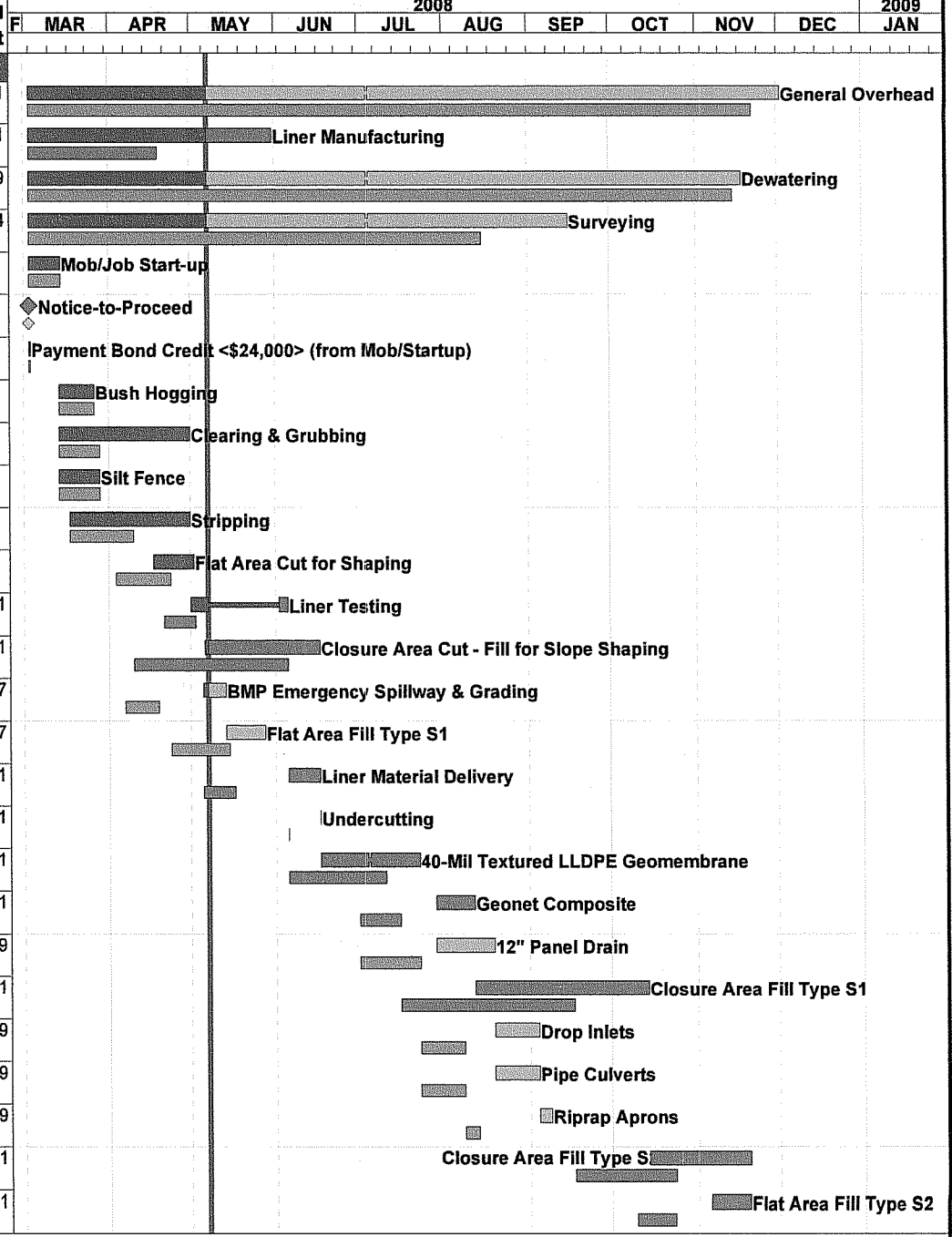
Type of Inspection Weekly ☒ Rain Event ☐ BCSS ☐

Discrepancies Found N/A .

Corrective Actions

Comments _____

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
0.5	General Overhead	189	148	22	03MAR08A	01DEC08	-1
35A	Liner Manufacturing	35	18	50	03MAR08A	30MAY08	-21
9	Dewatering	184	138	25	03MAR08A	17NOV08	9
1	Surveying	185	93	50	03MAR08A	15SEP08	54
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	30APR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	0	100	18MAR08A	30APR08A	
10	Flat Area Cut for Shaping	10	0	100	17APR08A	01MAY08A	
35B	Liner Testing	10	3	75	01MAY08A	04JUN08	-21
5	Closure Area Cut - Fill for Slope Shaping	40	29	28	06MAY08A	16JUN08	-21
29	BMP Emergency Spillway & Grading	10	5	50	05MAY08A	13MAY08	-7
11	Flat Area Fill Type S1	15	10	33	14MAY08	27MAY08	-7
35C	Liner Material Delivery	8	8	0	05JUN08	16JUN08	-21
8	Undercutting	0	0	0	17JUN08	16JUN08	-21
35	40-Mil Textured LLDPE Geomembrane	25	25	0	17JUN08	22JUL08	-21
34	Geonet Composite	10	10	0	29JUL08	11AUG08	-21
32-33	12" Panel Drain	15	15	0	29JUL08	18AUG08	39
6	Closure Area Fill Type S1	45	45	0	12AUG08	13OCT08	-21
20-24	Drop Inlets	12	12	0	19AUG08	03SEP08	39
25-28	Pipe Culverts	12	12	0	19AUG08	03SEP08	39
30	Riprap Aprons	3	3	0	04SEP08	08SEP08	39
7	Closure Area Fill Type S2	27	27	0	14OCT08	19NOV08	-21
12	Flat Area Fill Type S2	10	10	0	06NOV08	19NOV08	-21



Start Date	03MAR08
Finish Date	30DEC08
Data Date	07MAY08
Run Date	06MAY08 14:09

Early Bar
Target Bar
Progress Bar
Critical Activity

408B

Sheet 1 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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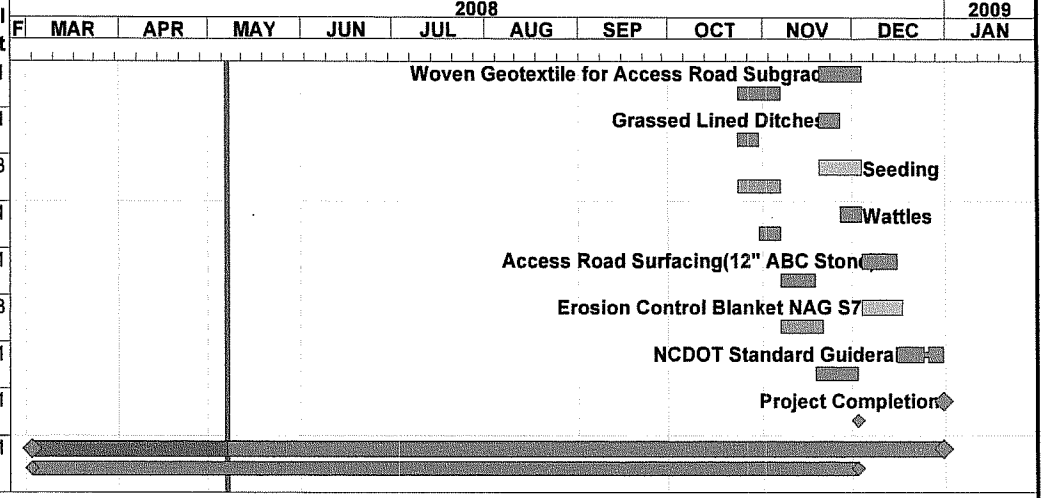
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
13	Woven Geotextile for Access Road Subgrade	10	10	0	20NOV08	03DEC08	-21
17-18	Grassed Lined Ditches	5	5	0	20NOV08	26NOV08	-21
31	Seeding	10	10	0	20NOV08	03DEC08	-13
19	Wattles	5	5	0	27NOV08	03DEC08	-21
14	Access Road Surfacing(12" ABC Stone)	8	8	0	04DEC08	15DEC08	-21
R3-3	Erosion Control Blanket NAG S75	10	10	0	04DEC08	17DEC08	-13
15	NCDOT Standard Guiderail	10	10	0	16DEC08	30DEC08	-21
COMP	Project Completion	0	0	0		30DEC08	-21
Total		215	168	29	03MAR08A	30DEC08	-21



Start Date	03MAR08
Finish Date	30DEC08
Data Date	07MAY08
Run Date	06MAY08 14:09

Early Bar
Target Bar
Progress Bar
Critical Activity

408B

Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 05/21/08 / 10:00 am

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1. **Cell Phone Silence**
   1.1 Cell phones silenced
   1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting's participants had comments.

2. **Level I Safety Assessment and Sign-in sheet**
   2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME) and Earl Whitehurst (Morgan Corp).
   2.2 Sign-in Sheet completed. Mike Cook (Duke) will be late to meeting.

3. **Safety and Environmental**
   3.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). Earl Whitehurst noted that hydraulic fluid had spilled. The spill was reported to Duke Energy and cleaned up. Earl Whitehurst also noted that, by end of day, 10,000 man-hours will have been worked with no accidents.
   3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp). Mark Webb noted the hydraulic spill (see above). Mark Webb also stated that yesterday (5/20/08) 9/10" of rain fell within 30 minutes, 60 mph winds and hail were also experienced.
   3.3 Waste Materials and Recycling: no discussion items

4. **Site Use and Facilities**
   4.1 Traffic and Parking: no discussion items
   4.2 Housekeeping: no discussion items
   4.3 Security: no discussion items

5. **Schedule Update and Progress Report**
   5.1 Construction Progress: Mark Webb (Morgan Corp) stated that channel C7 subgrade is almost complete, the BMP spillway is complete including seeding, the 30" CMP pipe which was abandoned in place (see ROI 04) will be capped when the area is graded to drain away from the pipe, topsoil import is complete. Currently, 4 scrapers are on site and working on top of the Closure Area. Grading on the Closure Area top, west and south slopes begun. Approximately 26,000 cubic yards moved within the Closure Area.
   5.2 Updated schedule
      5.2.1 Craig Greeson (Morgan Corp) will provide an updated schedule in paper format when IT personnel complete updated schedule. Craig Greeson gave the following update verbally: Flat Area cut/fill: 55% complete. Closure Area cut/fill: 10% complete. BMP construction: 100% complete. Flat Area Type S1 cover fill: 36% complete. Undercut: 84% complete.
      5.2.2 Ken Daly (S&ME) asked how many days were lost due to weather, Mark Webb (Morgan Corp) responded that May 18th and half of the day May 20th were lost due to inclement weather.

5.2.3 Ken Daly (S&ME) asked if geosynthetics still scheduled to begin on June 17th, Craig Greeson (Morgan Corp) said yes. Jimmy Addis (S&ME) asked if this date was the Geosynthetics Installer mobilization date or the date that liner installation will begin. Jay Lynch and Craig Greeson (Morgan Corp) stated that this date was the Geosynthetics Installer mobilization date. Jimmy Addis asked if two liner crews would be on site, Craig Greeson said that he didn't know. Ken Daly (S&ME) requested that Craig Greeson set up a geosynthetics preconstruction meeting with the Geosynthetics Installer for Wednesday June 4 or Wednesday June 11. Weekly construction meeting will either precede or follow the geosynthetics preconstruction meeting.

5.3 Interface with sub-contractors: no discussion items

5.4 Material delivery

5.4.1 Craig Greeson (Morgan Corp) stated that stormwater structures and pipe will be delivered within the next two weeks.

5.4.2 Ken Daly (S&ME) asked when geomembrane delivery would begin, Craig Greeson (Morgan Corp) stated that he didn't know.

5.5 Potential changes or delays

5.5.1 Ken Daly (S&ME) discussed ROI 05 which clarified the Closure Area cover / Flat Area cover transition. Copies of ROI 05 were provided to meeting participants.

5.5.2 Ken Daly (S&ME) inquired when access road cost estimates would be provided, Jay Lynch (Morgan Corp) stated they would be provided by Friday, May 23.

5.5.3 Ken Daly (S&ME) stated that Cedric Ruhl (S&ME) is working on grade revisions to reflect acceptance of Chris Shurter's (Morgan Corp) proposed grades for the Flat Area and Closure Area, change the perimeter road width from 15 feet to 12 feet and tie-in to existing grades, and changes to the slope access road (see Notice of Change 2).

5.5.4 Ken Daly (S&ME) stated that the moisture content requirement for ash fill will be relaxed, provided that a maximum dry density greater than 95% can be achieved. Ken Daly stated that the maximum dry density requirement may be relaxed if stability can be proven by proofrolling and testing with a probe rod. Mike Cook (Duke Energy) joined meeting. Discussion ensued.

5.5.5 Mike Cook (Duke Energy) stated that Bill Waggoner (Allied Tech) had been concerned about amount of water being pumped out of the ash basin. Mike Cook stated that he spoke with Duke Energy personnel who stated that water is pumped to the ash basin at a rate of 1200 gpm per unit, therefore he had no concerns about pumping the ash basin down.

5.5.6 Bill Waggoner (Allied Tech) stated that he spoke with Randy Price (Duke Energy), and that Randy Price had stated that the ash in the Closure Area had been placed at 18% moisture content and compacted by trucks driving on top of it.

5.6 Recovery Plans: no discussion items

5.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: maintenance of erosion control devices, Closure Area grading, installation of Drop Inlets 12 and 13.

6. CQA\CQC

6.1 Inspections and Testing

6.1.1 Jimmy Addis (S&ME) stated that cut and fill on the west end of the top side of the Closure Area consists almost entirely of ash. Compaction is being performed with smooth drum rollers instead of a sheepsfoot roller. Some compaction tests were over 100% maximum dry density but did not meet the water content specification. The new Proctor test results are more consistent with in-place density test results.

6.1.2 Bill Waggoner (Allied Tech) stated that while Jimmy Addis was on vacation (May 15-18), Phil Banner (S&ME) was on site and monitored three test fills investigating different compaction methods.

6.1.3 Ken Daly (S&ME) stated that geomembrane conformance testing will begin when geomembrane manufacturing begins. Craig Greeson (Morgan Corp) to notify S&ME when geomembrane manufacturing begins so that conformance testing can be coordinated.

6.2 Quality and Work Standards: no discussion items

6.3 Deviations

6.3.1 Ken Daly (S&ME) summarized that compaction standards for Closure Area subgrade shall be minimum 95% maximum dry density, +/- 5% moisture content. This change shall be recorded in a subsequent Notice of Change.

6.4 Requests For Information

6.4.1 No new requests for information.

7. Payment and Changes

7.1 Documentation for payment: Craig Greeson (Morgan Corp) stated that payment was received from Duke Energy yesterday for two invoices. Mike Cook (Duke Energy) stated that future invoices shall be clearly labeled "Invoice" and shall clearly show the payment amount. Ken Daly (S&ME) asked if this meeting fell between invoice cycles, Craig Greeson said yes.

7.2 Change Orders: Ken Daly (S&ME) stated that Change Orders 5 and 6 were approved at the last meeting (5/7/08) and no change orders are currently pending.

8. Submittals

8.1 Current submittal status: Ken Daly (S&ME) stated that the drop inlet submittal is being reviewed by S&ME.

8.2 Two week submittal schedule: no discussion items

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9. Roundtable

9.1 Bill Waggoner (Allied Tech) stated that extra erosion control measures may be needed between the trailer and ditch C8. Currently only E&S measures are a 50 ton check dam in ditch C8, upstream of a sediment trap, upstream of a double row of silt fence outlets, upstream of the sediment basin. This area is frequently distressed by storm events. Mike Cook (Duke Energy) stated that he would like to move from establishment of erosion control devices to maintenance of erosion control devices. Ken Daly (S&ME) stated that he would observe site conditions after the construction meeting and provide erosion control recommendations.

9.2 Mike Cook (Duke Energy) requested that test pits be excavated in the Borrow Area, at the Contractor's earliest convenience, to evaluate the volume of soil and particle size less than 3". Ken Daly (S&ME) stated that S&ME would prepare a test pit location plan. Jay Lynch (Morgan Corp) stated that screening the soil would take additional time and create a lag in the availability of Fill Type S1 soil, therefore the quantity of soil with particle size less than 3" should be investigated soon.

9.3 Craig Greeson (Morgan Corp) stated that current intentions are to blend 4" of topsoil import/strippings with 2" of Borrow Area soil to produce topsoil for the top of the Flat Area and the top of the Closure Area. Closure Area side slopes will receive 6" of topsoil import/stripping, unblended with fill.

10. Action Register (S&ME)

10.1 Summary of outstanding action items (see Action Item Register for full details):

10.1.1 #19 – Contractual commitment from Duke to Morgan – in progress

10.1.2 #29 – Morgan Corp to provide cost estimate for access road design change options – 5-23-08

10.1.3 #31 – Morgan Corp to provide details of guard rail end section – no date set

10.1.4 #32 – Morgan Corp to coordinate geosynthetics preconstruction meeting – 5-28-08

10.1.5 #33 – S&ME to provide erosion control recommendations – 5-28-08

10.1.6 #34 – S&ME to provide revised grading plan – 5-28-08

10.1.7 #35 – Morgan Corp to conduct test pits in Borrow Area at earliest convenience upon receipt of S&ME's test pit plan.

Next meeting will take place 10:00 am 6/4/2008

Construction meeting adjourned by consensus at approximately 11:35 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday June 4, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	4/2/2008
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	4/2/2008
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	4/2/2008
9	determine whether downdrain removal is required	M. Cook	S&ME	4/16/2008	4/23/2008
10	Price for removal of downdrain structures	morgan corp	morgan corp	4/9/2008	4/9/2008
11	Revise schedule every 2 weeks	Duke	Morgan Corp	4/2/2008	4/2/2008
12	Baseline survey	S&ME	Morgan Corp	4/2/2008	4/9/2008
13	Entrance details	Duke/S&ME	Morgan Corp	4/2/2008	4/4/2008
14	CO forms	Morgan/Duke	S&ME	4/9/2008	4/9/2008
15	Find documentation of test pit exploration performed last year	Duke	S&ME	4/10/2008	action item recalled by M. Cook 4/10/08
16	Contact previous S&ME project personnel to gather information about flat area	Duke	S&ME	4/10/2008	4/9/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
17	Revised grading for benches to Chris Shurter	Morgan Corp	S&ME	4/10/2008	4/10/2008
18	Revised Closure Area grading to S&ME (Flat Area grading received 4/15/08)	S&ME	Morgan Corp	4/28/2008	5/1/2008
19	Contractual commitment from Duke to Morgan updated from $500k to $2Million	Morgan Corp	Duke	ASAP	
20	Cost change for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/28/2008	4/25/2008
21	Cut/fill volumes for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/17/2008	4/18/2008
22	Send letter to Chris Hallman to forward to NCDENR outlining grading changes in flat area and usage of stripping material from closure area as vegetative cover	Duke/Morgan Corp	S&ME	4/18/2008	4/18/2008
23	Mike Cook to talk to Chris Hallman	morgan corp	Duke	4/18/2008	4/18/2008
24	5 gallon bucket and grain size distribution of crusher run proposed by Morgan Corp to substitute ABC stone for access roads	S&ME	morgan corp	4/30/2008	recalled on 4/23/08 (not cost effective)
25	Mike Cook to talk to Chris Hallman	S&ME	Duke	4/23/2008	4/23/2008
26	S&ME to look at potential undercut area and provide suggestions	morgan corp	S&ME	4/28/2008	4/23/2008
27	Outline design change options for access road	Duke	S&ME/Duke	5/9/2008	5/9/2008
28	Record of Information - 30" CMP abandonment	Morgan Corp	S&ME	4/30/2008	5/7/2008
29	Cost estimate for access road design change options (as provided from action item #27)	S&ME	morgan corp	5/23/2008	
30	provide clarification of transition from Closure Area cover system to Flat Area cover system	morgan corp	S&ME	5/14/2008	5/21/2008
31	details of guard rail end section	S&ME	morgan corp		
32	schedule geosynthetics pre-construction meeting	S&ME	morgan corp	5/28/2008	

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
33	provide recommendations for erosion control measures	Duke	S&ME	5/28/2008	
34	revise grading plan	S&ME	S&ME	5/28/2008	
35	conduct test pits in borrow area	S&ME	morgan corp	ASAP	
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Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 05/21/08

Name (Print)	Signature	Company
Cedric Ruhl	Cedric Ruhl	S+ME
William J. Waggoner	William J Waggoner	Allied Tech. Resources
Jay Lynch	Jay D. Lynch	Morgan
GRIFFIN QUERY	Griffin P Query	MORGAN CORP
Craig Greeson	Craig Greeson	Morgan Corp
Earl Whitehurst	Earl Whitehurst	MORGAN-CORP
Ken Daly	Kenneth R. Daly	S&ME
Jimmy Addis	Jimmy Addis	S&ME
MARK WEBB	[illegible]	MORGAN-CORP
Craig Shorter	[illegible]	morgan-corp
Mike Cook	Mike Cook	Duke (10:30)

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 5-20-2008
Report for Week Ending: 5-20-2008
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 2
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME		Total
Total Work Hours	799.5	46	(33)&(34)		912.5
SOS Cards	0	0	0		0
Near Misses	0	0	0		0
First Aid Cases	0	0	0		0
Recordables	0	0	0		0
Lost Workdays	0	0	0		0
Restricted Workdays	0	0	0		0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments Over 9450" Hours worked with no accidents

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 5-20-08
Report for Week Ending: 5-20-08
Report Originator: MW & BW

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☒ Y ☐ N
2. If yes, has a report been made to site Environmental Coordinator? ☒ Y ☐ N
3. Have there been any new portable engines brought on-site? ☐ Y ☒ N
4. If yes, has a report been made to site Environmental Coordinator? ☒ Y ☐ N
5. Have there been any new chemicals brought on-site? ☐ Y ☒ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☒ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 5-20-08

Contractor Inspection Form submitted to Project Manager ☒ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 5 - 20-08 Date of Last Rain Event 5-20-08

Participants M WEBB/Bill Waggoner

Type of Inspection Weekly ☐ Rain Event ☒ BCSS ☐

Discrepancies Found N/A .

Corrective Actions

Comments Site looked good

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 06/04/08 / 10:00 am

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1. **Cell Phone Silence**
   1.1 Cell phones silenced
   1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting's participants had comments.

2. **Level I Safety Assessment and Sign-in sheet**
   2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME) and Earl Whitehurst (Morgan Corp).
   2.2 Sign-in Sheet completed. Mike Cook (Duke) will be late to meeting.

3. **Safety and Environmental**
   3.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). Earl Whitehurst noted that a near miss had occurred when a scraper got too close to the edge of the slope on top of the Closure Area. 12,509 hours have been worked with no incidents. Lights that flash continuously have been placed at the construction signs along Pine Hall Road. Morgan Corp's Material Handling/Storage and Lift Plan for Geo-Composite and Geo-Membrane was disbursed. Bill Waggoner (Allied Tech) advised everyone to check in at the trailer to get an update on construction traffic patterns before driving around the construction area.
   3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp).
   3.3 Waste Materials and Recycling: no discussion items

4. **Site Use and Facilities**
   4.1 Traffic and Parking: no discussion items
   4.2 Housekeeping: no discussion items
   4.3 Security: no discussion items

5. **Schedule Update and Progress Report**
   5.1 Construction Progress:
      5.1.1 Craig Greeson (Morgan Corp) stated that construction activities included cut and fill of the Closure Area and erosion control maintenance. Most of the Closure Area shaping occurred on the top, Closure Area side slope shaping began last week.
      5.1.2 Bill Waggoner (Allied Tech) stated that the downstream end of the 30" CMP culvert (Line 1) had been abandoned since the previous meeting. Mark Webb (Morgan Corp) added that both ends of the abandoned culvert were surveyed by GPS. Ken Daly (S&ME) requested the survey locations of each end of the abandoned culvert.
      5.1.3 Ken Daly (S&ME) asked how many days had been lost to inclement weather. Mark Webb (Morgan Corp) stated that one to two hours had been lost due to poor weather conditions and lightning.
   5.2 Updated schedule: Craig Greeson (Morgan Corp) provided an updated schedule. Craig summarized the schedule changes as follows: BMP 100% complete, Closure Area cut/fill 48%.
   5.3 Interface with sub-contractors: Craig Greeson (Morgan Corp) stated that the Geosynthetic Preconstruction Meeting with ESI will occur today at 1:00 p.m.

5.4 Material delivery: Craig Greeson (Morgan Corp) stated that some stormwater structures and pipe will be delivered within the next two weeks. Craig added that geosynthetic delivery dates had not been set.

5.5 Potential changes or delays:

5.5.1 Ken Daly and Cedric Ruhl (S&ME) discussed Notice of Change 3 which provides updated grading and stormwater structure layout. Copies of NOC 03 were provided to meeting participants.

5.5.2 Jay Lynch (Morgan Corp) stated that road change cost estimates had been emailed. Ken Daly (S&ME) asked how long the lead time was to implement road design changes. Jay Lynch stated that the soil-cement option has some lead time.

5.5.3 Ken Daly (S&ME) discussed Notice of Change 4 which relaxes the moisture content requirement on subgrade fill in the Closure Area from +/- 3% of optimum to +/- 5% of optimum. Copies of NOC 04 were provided to meeting participants.

5.5.4 Ken Daly (S&ME) discussed Notice of Change 5 which revises Closure Area subgrade in the vicinity of the Drop Inlet structures. Copies of NOC 05 were provided to meeting participants.

5.5.5 Ken Daly (S&ME) proposed Notice of Change 6 which would provide an underdrain around the perimeter of the top of the Closure Area. Copies of proposed NOC 06 were provided to meeting participants. Mike Cook (Duke) joined meeting. Ken Daly noted that the detail as provided was inaccurate in that the #57 stone wrap would extend approx. 1-2 feet around the outside of the pipe. Ken Daly suggested tacking the geotextile wrap to the geocomposite. Jay Lynch (Morgan Corp) stated that a complete geotextile wrap would provide an underdrain system independent of the liner system. Cedric Ruhl (S&ME) noted that the underdrain systems would tie in to Drop Inlets 1 and 6. Jay Lynch stated that a leachate type pipe would be required to prevent crushing, and recommended a coupling fitting. Ken Daly (S&ME) suggested that S&ME review and finalize the detail before Morgan Corp develops a cost estimate.

5.5.6 Ken Daly (S&ME) presented proposed erosion control changes, consisting of three soil/stone berms in ditches C7, C8, and near CVT 9 outlet. S&ME and Duke to discuss changes after meeting.

5.5.7 Craig Greeson (Morgan Corp) asked if the Borrow Area test pit information was reviewed. Ken Daly (S&ME) stated that a review has not been completed. Bill Waggoner (Allied Tech) stated that test pits indicate 17-18 feet of good quality fill in the northern "peninsulas", rock in the middle of the Borrow Area, and poor quality fill and organics in the southwestern part of the Borrow Area. Craig Greeson stated that the gradation of the good quality fill was good but that the quantity of silt would make compaction difficult. Ken Daly stated that S&ME would provide a quantity estimate and revised grading plan based on test pit information. Ken Daly asked Mike Cook (Duke) if it was acceptable to leave a knob of rock in the middle of the Borrow Area. Mike Cook stated that he would check with the Belews Creek Steam Station plant manager.

5.6 Recovery Plans: no discussion items

5.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: cut/fill and fine grading in the Closure Area working from west to east, erosion control maintenance, and preparation for material delivery.

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 06/04/08 / 10:00 am

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6. CQA\CQC

6.1 Inspections and Testing:

6.1.1 Jimmy Addis (S&ME) stated that the western 1/3 of the top of the Closure Area may be done within 1 week, and that soil density testing is going well.

6.1.2 Bill Waggoner (Allied Tech) stated that water cannons will be needed to provide water for compaction of the side slopes.

6.1.3 Ken Daly (S&ME) asked what equipment would be used to compact the side slopes. Jay Lynch (Morgan Corp) stated that they plan to use a tracked roller.

6.1.4 Ken Daly (S&ME) stated that recent organics testing on the proposed topsoil material indicated organic contents of between 5-9%. Jay Lynch (Morgan Corp) stated that agricultural testing would be requested to make soil amendment recommendations.

6.2 Quality and Work Standards: no discussion items

6.3 Deviations: no discussion items

6.4 Requests For Information: no discussion items

7. Payment and Changes

7.1 Documentation for payment: Mike Cook (Duke) stated that he would need to work out a small discrepancy with Craig Greeson (Morgan Corp)'s invoice.

7.2 Change Orders: Mike Cook (Duke) received a Change Order from Craig Greeson (Morgan Corp) for on-site burning of organics during clearing.

8. Submittals

8.1 Current submittal status: Ken Daly (S&ME) stated that the drop inlet submittal and geocomposite MQC data are being reviewed by S&ME.

8.2 Two week submittal schedule: Craig Greeson (Morgan Corp) will provide the guard rail end section detail by Friday, June 6. Craig does not know when geomembrane MQC data will be provided.

9. Roundtable

9.1 Bill Waggoner (Allied Tech) stated that the Closure Area subgrade would need to be surveyed on a 50' grid spacing, and questioned how fast geomembrane can be manufactured. Ken Daly (S&ME) stated that geomembrane can be manufactured quickly. Craig Greeson (Morgan Corp) said that yesterday he was informed by Cedric Ruhl (S&ME) that TRI had not been contacted by Agru to coordinate conformance testing. Bill Waggoner recommended finding out which route geosynthetic delivery drivers would take. Mike Cook (Duke) will provide a map to the site and suggested using Goose Point as a holding area for trucks if needed.

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10. Action Register (S&ME)

10.1 Summary of outstanding and new action items (see Action Item Register for full details):

- 10.1.1 #29 – Morgan Corp to provide cost estimate for access road design change options – completed 6-3-08
- 10.1.2 #31 – Morgan Corp to provide details of guard rail end section – 6-6-08.
- 10.1.3 #32 – Morgan Corp to coordinate geosynthetics preconstruction meeting – scheduled for 6-4-08 1:00 p.m.
- 10.1.4 #33 – S&ME to provide erosion control recommendations – discuss with Duke Energy 6-4-08.
- 10.1.5 #34 – S&ME to provide revised grading plan – completed 6-4-08 (Notice of Change 3)
- 10.1.6 #35 – Morgan Corp to conduct test pits in Borrow Area - completed 5-23-08.
- 10.1.7 #36 – S&ME to provide quantity estimates and revised grading for the Borrow Area by 6-11-08.
- 10.1.8 #37 – Allied Tech to provide S&ME with coordinates of 30" stormwater pipe removal by 6-4-08.
- 10.1.9 #38 – Duke to check on allowable post-construction conditions within the Borrow Area.
- 10.1.10 #39 – Duke to provide a map to the closure facility.

Next meeting will take place 10:00 am 6/11/2008

Construction meeting adjourned by consensus at approximately 11:05 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday June 11, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
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3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
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9	determine whether downdrain removal is required	M. Cook	S&ME	4/16/2008	4/23/2008
10	Price for removal of downdrain structures	morgan corp	morgan corp	4/9/2008	4/9/2008
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14	CO forms	Morgan/Duke	S&ME	4/9/2008	4/9/2008
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16	Contact previous S&ME project personnel to gather information about flat area	Duke	S&ME	4/10/2008	4/9/2008

Pine Hall Road Ash Landfill Closure
Action Register

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				Scheduled	Actual
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18	Revised Closure Area grading to S&ME (Flat Area grading received 4/15/08)	S&ME	Morgan Corp	4/28/2008	5/1/2008
19	Contractual commitment from Duke to Morgan updated from $500k to $2Million	Morgan Corp	Duke	ASAP	
20	Cost change for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/28/2008	4/25/2008
21	Cut/fill volumes for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/17/2008	4/18/2008
22	Send letter to Chris Hallman to forward to NCDENR outlining grading changes in flat area and usage of stripping material from closure area as vegetative cover	Duke/Morgan Corp	S&ME	4/18/2008	4/18/2008
23	Mike Cook to talk to Chris Hallman	morgan corp	Duke	4/18/2008	4/18/2008
24	5 gallon bucket and grain size distribution of crusher run proposed by Morgan Corp to substitute ABC stone for access roads	S&ME	morgan corp	4/30/2008	recalled on 4/23/08 (not cost effective)
25	Mike Cook to talk to Chris Hallman	S&ME	Duke	4/23/2008	4/23/2008
26	S&ME to look at potential undercut area and provide suggestions	morgan corp	S&ME	4/28/2008	4/23/2008
27	Outline design change options for access road	Duke	S&ME/Duke	5/9/2008	5/9/2008
28	Record of Information - 30" CMP abandonment	Morgan Corp	S&ME	4/30/2008	5/7/2008
29	Cost estimate for access road design change options (as provided from action item #27)	S&ME	morgan corp	5/23/2008	6/3/2008
30	provide clarification of transition from Closure Area cover system to Flat Area cover system	morgan corp	S&ME	5/14/2008	5/21/2008
31	details of guard rail end section	S&ME	morgan corp	6/6/2008	6/5/2008
32	schedule geosynthetics pre-construction meeting	S&ME	morgan corp	5/28/2008	6/4/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
33	provide recommendations for erosion control measures	Duke	S&ME	5/28/2008	
34	revise grading plan	S&ME	S&ME	5/28/2008	6/4/2008
35	conduct test pits in borrow area	S&ME	morgan corp	ASAP	5/23/2008
36	Borrow Area estimated quantity and grading	Duke	S&ME	6/11/2008	
37	30" storm pipe coordinates	S&ME	Allied Tech	6/4/2008	6/5/2008
38	check on allowable postconstruction conditions within the Borrow Area	S&ME	Duke		
39	provide map to landfill closure facility	S&ME	Duke		
40					
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49					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 06/04/08

Name (Print)	Signature	Company
Cedric Rull	Cedric Rull	S+ME
Donald Johnson	Donald Johnson	Morgan Corp.
JAY Lynch	James D. Lynch	Morgan Corp.
MARK WEBB	[illegible]	MORGAN-CORP
Chris Shorter	[illegible]	morgan-corp
Craig Greene	D. Craig Greene	Morgan Corp
GRIFFIN QUERY	[illegible]	MORGAN CORP.
William J. Waggoner	William J. Waggoner	Allied Tech. Resources
KENNETH R. DALY	Kenneth R. Daly	S&ME
Jimmy Addis	Jimmy Addis	S&ME
EARL Whitehurst	Earl Whitehurst	MORGAN-CORP
Mike Cook	Mike Cook	Duke

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 6-03-08
Report for Week Ending: 6-03-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

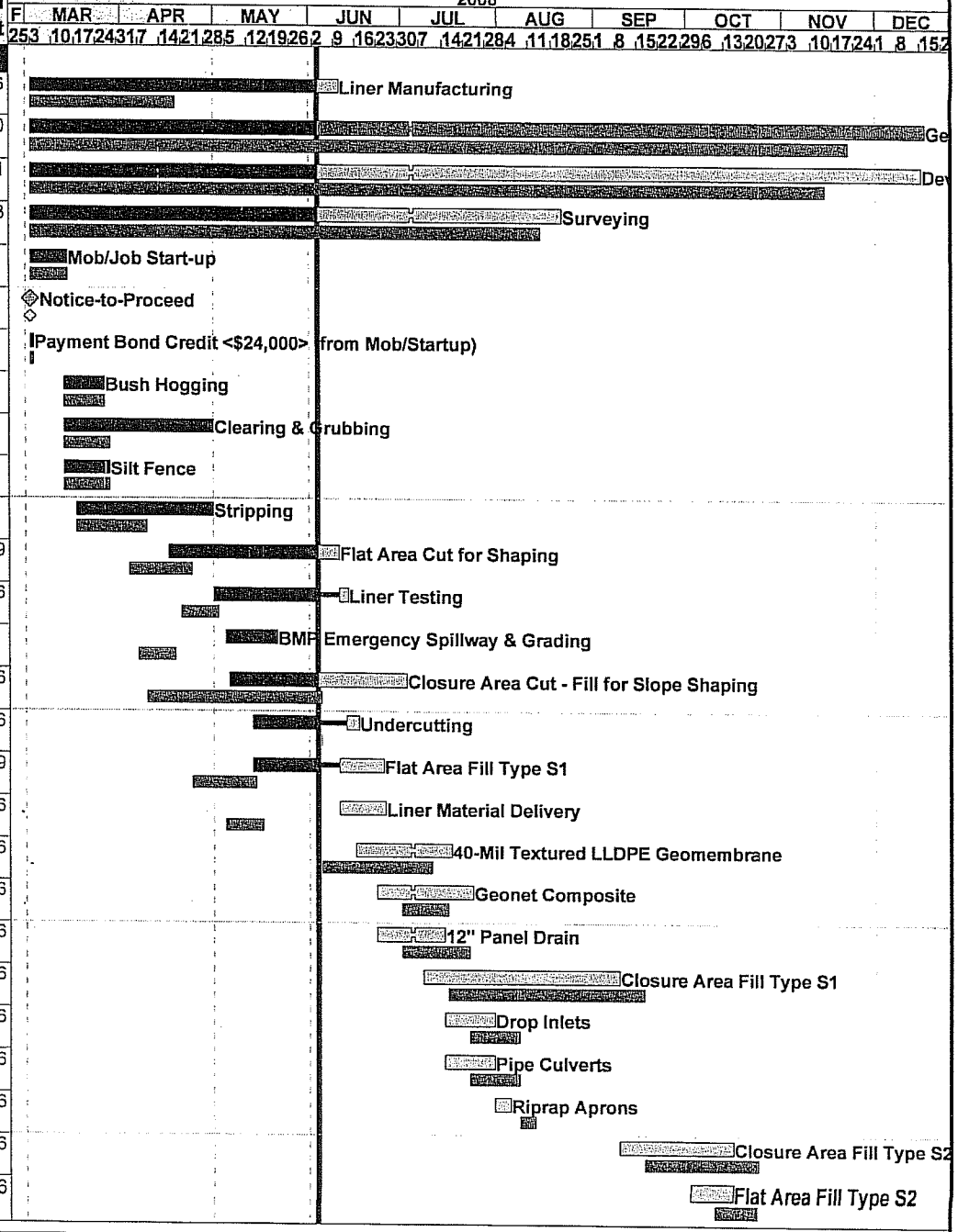
	Morgan	Allied Tech	S& ME	N/A	Total
Total Work Hours	1430.5	59	62	0	1551.5
SOS Cards	0	0			0
Near Misses	1	0			1
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments a) "Continious Flashing Caution Lights" are in place

b) Material Handling/Storage(Lift Plan) completed for the (Liner-Comosite-GeoTextile), has been completed.

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
35A	Liner Manufacturing	35	5	86	03MAR08A	10JUN08	16
0.5	General Overhead	189	139	27	03MAR08A	16DEC08	0
9	Dewatering	184	138	25	03MAR08A	15DEC08	1
1	Surveying	185	56	70	03MAR08A	21AUG08	83
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	30APR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	0	100	18MAR08A	30APR08A	
10	Flat Area Cut for Shaping	10	5	50	17APR08A	10JUN08	19
35B	Liner Testing	10	3	75	01MAY08A	13JUN08	16
29	BMP Emergency Spillway & Grading	10	0	100	05MAY08A	21MAY08A	
5	Closure Area Cut - Fill for Slope Shaping	40	21	48	06MAY08A	02JUL08	16
8	Undercutting	15	2	84	14MAY08A	16JUN08	16
11	Flat Area Fill Type S1	15	10	33	14MAY08A	24JUN08	19
35C	Liner Material Delivery	8	11	0	11JUN08	25JUN08	16
35	40-Mil Textured LLDPE Geomembrane	25	22	12	16JUN08	16JUL08	16
34	Geonet Composite	22	22	0	23JUN08	23JUL08	16
32-33	12" Panel Drain	15	15	0	23JUN08	14JUL08	76
6	Closure Area Fill Type S1	45	45	0	08JUL08	08SEP08	16
20-24	Drop Inlets	12	12	0	15JUL08	30JUL08	76
25-28	Pipe Culverts	12	12	0	15JUL08	30JUL08	76
30	Riprap Aprons	3	3	0	31JUL08	04AUG08	76
7	Closure Area Fill Type S2	27	27	0	09SEP08	15OCT08	16
12	Flat Area Fill Type S2	10	10	0	02OCT08	15OCT08	16



Start Date	03MAR08
Finish Date	16DEC08
Data Date	04JUN08
Run Date	03JUN08 14:17

Early Bar
Target Bar
Progress Bar
Critical Activity

0608

Sheet 1 of 2

Morgan Corp.

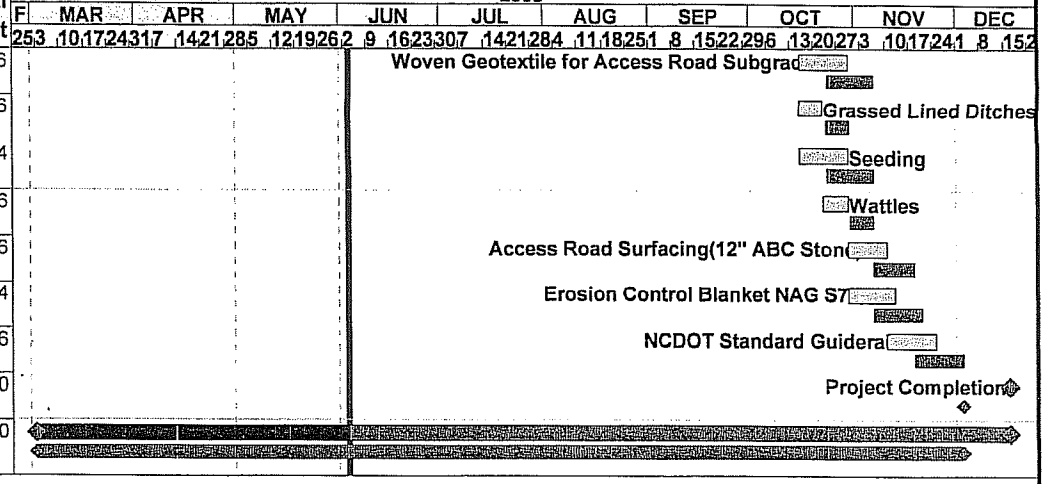
Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
13	Woven Geotextile for Access Road Subgrade	10	10	0	16OCT08	29OCT08	16
17-18	Grassed Lined Ditches	5	5	0	16OCT08	22OCT08	16
31	Seeding	10	10	0	16OCT08	29OCT08	24
19	Wattles	5	5	0	23OCT08	29OCT08	16
14	Access Road Surfacing(12" ABC Stone)	8	8	0	30OCT08	10NOV08	16
R3-3	Erosion Control Blanket NAG S75	10	10	0	30OCT08	12NOV08	24
15	NCDOT Standard Guiderail	10	10	0	11NOV08	24NOV08	16
COMP	Project Completion	0	0	0		16DEC08	0
Total		206	139	36	03MAR08A	16DEC08	0



Start Date	03MAR08
Finish Date	16DEC08
Data Date	04JUN08
Run Date	03JUN08 14:17

Early Bar
Target Bar
Progress Bar
Critical Activity

0608

Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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Pine Hall Road Ash Landfill Closure
Geosynthetic Installation Preconstruction Meeting-Minutes

Meeting Date/Time: 06/04/08 / 1:00p.m.

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1. **Cell Phone Silence**

2. **Level I Safety Assessment and Sign-in sheet**
   2.1. Level 1 Safety Assessment conducted by Earl Whitehurst (Morgan Corp). Mike Cook (Duke) explains what a Level 1 Safety Assessment is. Everybody introduces themselves.
   2.2. Sign-in Sheet completed.

3. **Safety**
   3.1. Earl Whitehurst (Morgan Corp) stated that he had provided ESI with a list of required documents including MICCS cards, Safety Task Analysis (STA), etc. Earl also provided ESI with useful phone numbers to facilitate acquiring MICCS cards. Earl explained SOS cards.
   3.2. Mike Cook (Duke) stated that ESI would have to follow Duke's spill clean-up and recycling/trash guidelines. ESI will have to provide a list of fossil-fueled equipment to Duke.

4. **Schedule**
   4.1. Ron Powell (ESI) stated that ESI plans to mobilize Thursday June 12 and begin installation on Monday, June 16, 2008.
   4.2. Ken Daly (S&ME) asked when geosynthetics would be delivered, Ron Powell (ESI) did not know. Craig Greeson (Morgan Corp) will speak with Agru tomorrow morning (6/5/08).
   4.3. Ken Daly (S&ME) asked what Ron Powell's (ESI) title was, and if he would be on site full time. Ron's title is "Site Superintendent" and he will be on site full time.
   4.4. Ken Daly (S&ME) stated that outstanding submittals include Superintendent's resume, and geomembrane conformance and MQC data, which should be provided before shipping.
   4.5. Ron Powell (ESI) states that he plans to mobilize as follows:
      4.5.1. June 12: mobilize and begin MICCS testing
      4.5.2. June 13: finish MICCS testing and begin making sandbags
      4.5.3. June 14/15: make sandbags
      4.5.4. June 16: begin geosynthetics installation
         4.5.4.1. Earl Whitehurst (Morgan Corp) suggested that Ron set up an account with Primecare in Kernersville to facilitate testing required for MICCS cards.
   4.6. Ron Powell (ESI) states that his crew will consist of 14-16 people.

Pine Hall Road Ash Landfill Closure
Geosynthetic Installation Preconstruction Meeting-Minutes

Meeting Date/Time: 06/04/08 / 1:00p.m.

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5. Specification and CQA Plan Overview

5.1. Ken Daly (S&ME) summarized specification requirements for geocomposite and geomembrane.

6. Roundtable

6.1. Mike Cook (Duke) asked whether Morgan Corp and ESI would have joint daily safety meetings, ESI and Morgan Corp must coordinate construction activities.

6.2. Bill Waggoner (Allied Tech) asked what ESI's work schedule would be, Ron Powell (ESI) responded 6 10-hour days.

6.3. Ken Daly (S&ME) requested that horizontal seams on slopes be minimized. If a horizontal seam on a slope is necessary, space it on the bottom 1/3 of the slope. Do not place horizontal seams adjacent to each other.

6.4. Mike Cook (Duke) asked the length of geomembrane on each roll, Ron Powell (ESI) responded 520 feet.

6.5. Ken Daly (S&ME) asked if ESI will use a temporary anchor trench. Ron Powell (ESI) stated that a temporary anchor trench will be located at the top of the slope in the Closure Area and ballasted by backfill.

6.6. Ron Powell (ESI) stated that welding downhill is necessary to prevent burnouts, but may require shingling against the direction of water flow in some areas.

6.7. Chris Shurter (Morgan Corp) stated that Morgan will survey panels, destructive test locations, and repairs.

6.8. Ron Powell (ESI) stated that the length of geocomposite on each roll is 200 feet.

6.9. Ron Powell (ESI) estimates geosynthetics installation to take six weeks.

6.10. Jimmy Addis (S&ME) stated that liner storage poles on site need to have nails and other sharp extrusions removed before coming into contact with liner material.

Geosynthetic Installation Preconstruction Meeting adjourned by consensus at approximately 2:05 pm.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing.

Pine Hall Road Ash Landfill Closure
Geosynthetic Installation Preconstruction Meeting
Sign-in sheet for 06/04/08

Name (Print)	Signature	Company
William J. Waggoner	William J Waggoner	Allied Tech. Resources
GRIFFIN QUERY	[illegible]	MORGAN CORP.
Jimmy Addis	Jimmy Addis	S&ME
Mike Cook	Mike Cook	Duke
Frank Whitehurst	[illegible]	MORGAN-CORP
Cedric Rubl	Cedric Rubl	S+ME
Ron Powell	[illegible]	ESI
MARK WEBB	[illegible]	MORGAN-CORP
Chris Shurter	[illegible]	morgan-corp
Craig Greeson	[illegible]	Morgan-Corp
Ken Daly	[illegible]	S&ME

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 06/11/08 / 10:00 am

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1. **Cell Phone Silence**
   1.1 Cell phones silenced
   1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting's participants had comments.

2. **Level I Safety Assessment and Sign-in sheet**
   2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME) and Earl Whitehurst (Morgan Corp).
   2.2 Sign-in Sheet completed.

3. **Safety and Environmental**
   3.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). In response to questions by Mike Cook (Duke Energy), Earl Whitehurst stated that the number of employees on site is currently 29, symptoms of heat stress are discussed during morning safety meetings, two small tents will be brought on site to provide shade, and to date there have been no first aid cases and one near-miss.
   3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp).
   3.3 Waste Materials and Recycling: In response to question by Ken Daly (S&ME), Mark Webb (Morgan Corp) stated that there is a dumpster on site which may be used by the Geosynthetics Installer.

4. **Site Use and Facilities**
   4.1 Traffic and Parking: no discussion items
   4.2 Housekeeping: no discussion items
   4.3 Security: no discussion items

5. **Schedule Update and Progress Report**
   5.1 Construction Progress:
      5.1.1 Craig Greeson (Morgan Corp) stated that construction activities included cut and fill and fine grading of the Closure Area, erosion control maintenance, and dust control. Subgrade survey is being conducted. Soil was taken from the Borrow Area to stabilize the perimeter access road. In response to question by Ken Daly (S&ME), Craig Greeson stated that rocky material was taken from the Borrow Area to provide soil to stabilize a portion of the perimeter access road. In response to question by Ken Daly, Craig Greeson stated that no weather delays occurred during the previous week.
   5.2 Updated schedule: Craig Greeson (Morgan Corp) stated that Closure Area cut/fill is 75% complete.
   5.3 Interface with sub-contractors: Craig Greeson (Morgan Corp) stated that ESI personnel would begin moving to the area starting 6/12/08 to begin safety training and obtain MICCS card chain of custody. In response to question by Cedric Ruhl (S&ME), Craig Greeson stated that geomembrane deployment is now scheduled to begin Wednesday (6/18/08) instead of Monday (6/16/08), and that liner would be shipped only after the Engineer's approval of MQC and conformance test results.
   5.4 Material delivery: Craig Greeson (Morgan Corp) stated that geomembrane would be delivered after approval of MQC and conformance test data.

5.5 Potential changes or delays:

5.5.1 Craig Greeson (Morgan Corp) stated that there is a shortage of approximately 23,000 cubic yards of soil for the cut/fill balance of the Closure Area. Chris Shurter (Morgan Corp) stated that the deficit could be made up by lowering the top of the Closure Area by one foot. Discussion of alternatives and summary of design considerations (1. do not place ash outside landfill footprint; 2. keep design slopes; and 3: retain design cover). Ken Daly (S&ME) recommended that half of the top of the Closure Area be lowered by two feet, with a 5H:1V transition between the lowered section and the unlowered section. Morgan Corporation to provide a revised grading plan showing proposed grade changes for Engineer's approval. Craig Greeson also stated that some additional fill may be required to construct the perimeter access road.

5.5.2 Ken Daly (S&ME) summarized Notice of Change 3 and 6 that were presented at the last construction meeting. None of today's meeting participants had questions about Notice of Change 3. Craig Greeson (Morgan Corp) stated that the price per linear foot of the underdrain would be $19.75 (assuming 2900 lf, total cost would be $57,275). In response to question from Mike Cook (Duke Energy), Ken Daly stated that this estimate was based on the final underdrain design.

5.5.3 Mike Cook (Duke Energy) stated that the soil-cement was chosen from the perimeter access road design change options (unsurfaced perimeter access road around Flat Area, 1 foot soil-cement surfacing perimeter access road around Closure Area, 12" ABC underlain by geotextile for access road to top of Closure Area).

5.5.4 Mike Cook (Duke Energy) summarized pending change orders as follows: CO#8 – Soil cement access road (credit); CO#9 – Underdrain; CO#10 – Drop inlet changes, Craig Greeson (Morgan Corp) to provide estimate. Mike Cook put a hold on any erosion control modifications, and noted that grading may change in the Borrow Area to avoid rocky portions.

5.6 Recovery Plans: Mike Cook (Duke Energy) noted that Craig Greeson (Morgan Corp) will need to provide proposed revised grading of the Closure Area to balance cut and fill.

5.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: cut/fill and fine grading in the Closure Area, geomembrane and geocomposite installation, possibly some stormwater structure installation. In response to a question from Bill Waggoner (Allied Tech), Craig Greeson stated that the date for geocomposite delivery is undetermined.

6. CQA\CQC

6.1 Inspections and Testing:

6.1.1 Jimmy Addis (S&ME) stated that the Closure Area top is at design grade, Morgan Corp is concentrating on the northeast corner of the Closure Area, compaction of 95-98% is being achieved on the side slopes. Roots will need to be removed in some cut areas before geomembrane placement. Bill Waggoner (Allied Tech) added that side slopes are being compacted by a skid steer with a vibratory roller attachment.

6.2 Quality and Work Standards: no discussion items

6.3 Deviations: no discussion items
6.4 Requests For Information: no discussion items

7. Payment and Changes

7.1 Documentation for payment: Mike Cook (Duke Energy) stated that he approved Morgan Corp's paperwork yesterday, and added that he still cannot access the collaborative website.

7.2 Change Orders: Mike Cook (Duke Energy) summarized potential outstanding change orders as follows: CO#7 Burning of cleared material (credit): submitted but not yet approved. CO#8 Soil cement road design option (credit): Craig Greeson (Morgan Corp) to provide change order by Monday (6/16/08), S&ME to prepare a Notice of Change documenting road cross-section revisions. CO#9 Underdrain: Craig Greeson to submit change order by Monday (6/16/08). CO#10 Drop Inlet Changes: Craig Greeson to submit change order by next Friday (6/20/08).

8. Submittals

8.1 Current submittal status: Ken Daly (S&ME) stated that the drop inlet submittal and geocomposite MQC data have been reviewed by S&ME. Ken Daly also noted that S&ME received Submittal 14, guard rail end section on 6/9/08. Mike Cook (Duke Energy) requested that Craig Greeson (Morgan Corp) consult with someone familiar with NCDOT standards to propose a guard rail system that would minimize risk to the underlying geosynthetic liner system.

8.2 Two week submittal schedule: not discussed.

9. Roundtable

9.1 Cedric Ruhl (S&ME) presented a proposed revised grading plan for the Borrow Area. Cedric Ruhl estimated that 109,000 cubic yards of in-place S-1 material will need to be excavated from the Borrow Area, and proposed revised grading plan would provide 110,000 cubic yards of gross material, not accounting for shrinkage.

10. Action Register (S&ME)

10.1 Summary of outstanding and new action items (see Action Item Register for full details):

10.1.1 #33 – erosion control modifications: tabled by Mike Cook (Duke Energy).
10.1.2 #40 – Morgan Corp to provide revised Closure Area grading to balance cut/fill by 6/12/08.
10.1.3 #41 – S&ME to provide a Notice of Change documenting revised perimeter road cross-sections by 6/18/08.
10.1.4 #42 – Morgan Corp to provide Change Order #8 (soil/cement access road surfacing, credit) by 6/16/08.
10.1.5 #43 – Morgan Corp to provide Change Order #9 (underdrain) by 6/16/08.
10.1.6 #44 – Morgan Corp to provide Change Order #10 (drop inlets) by 6/20/08.
10.1.7 #45 – Morgan Corp to provide guardrail design options.

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 06/11/08 / 10:00 am

Next meeting will take place 10:00 am 6/18/2008

Construction meeting adjourned by consensus at approximately 11:30 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday June 18, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	4/2/2008
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	4/2/2008
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	4/2/2008
9	determine whether downdrain removal is required	M. Cook	S&ME	4/16/2008	4/23/2008
10	Price for removal of downdrain structures	morgan corp	morgan corp	4/9/2008	4/9/2008
11	Revise schedule every 2 weeks	Duke	Morgan Corp	4/2/2008	4/2/2008
12	Baseline survey	S&ME	Morgan Corp	4/2/2008	4/9/2008
13	Entrance details	Duke/S&ME	Morgan Corp	4/2/2008	4/4/2008
14	CO forms	Morgan/Duke	S&ME	4/9/2008	4/9/2008
15	Find documentation of test pit exploration performed last year	Duke	S&ME	4/10/2008	action item recalled by M. Cook 4/10/08
16	Contact previous S&ME project personnel to gather information about flat area	Duke	S&ME	4/10/2008	4/9/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
17	Revised grading for benches to Chris Shurter	Morgan Corp	S&ME	4/10/2008	4/10/2008
18	Revised Closure Area grading to S&ME (Flat Area grading received 4/15/08)	S&ME	Morgan Corp	4/28/2008	5/1/2008
19	Contractual commitment from Duke to Morgan updated from $500k to $2Million	Morgan Corp	Duke	ASAP	
20	Cost change for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/28/2008	4/25/2008
21	Cut/fill volumes for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/17/2008	4/18/2008
22	Send letter to Chris Hallman to forward to NCDENR outlining grading changes in flat area and usage of stripping material from closure area as vegetative cover	Duke/Morgan Corp	S&ME	4/18/2008	4/18/2008
23	Mike Cook to talk to Chris Hallman	morgan corp	Duke	4/18/2008	4/18/2008
24	5 gallon bucket and grain size distribution of crusher run proposed by Morgan Corp to substitute ABC stone for access roads	S&ME	morgan corp	4/30/2008	recalled on 4/23/08 (not cost effective)
25	Mike Cook to talk to Chris Hallman	S&ME	Duke	4/23/2008	4/23/2008
26	S&ME to look at potential undercut area and provide suggestions	morgan corp	S&ME	4/28/2008	4/23/2008
27	Outline design change options for access road	Duke	S&ME/Duke	5/9/2008	5/9/2008
28	Record of Information - 30" CMP abandonment	Morgan Corp	S&ME	4/30/2008	5/7/2008
29	Cost estimate for access road design change options (as provided from action item #27)	S&ME	morgan corp	5/23/2008	6/3/2008
30	provide clarification of transition from Closure Area cover system to Flat Area cover system	morgan corp	S&ME	5/14/2008	5/21/2008
31	details of guard rail end section	S&ME	morgan corp	6/6/2008	6/5/2008
32	schedule geosynthetics pre-construction meeting	S&ME	morgan corp	5/28/2008	6/4/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
33	provide recommendations for erosion control measures	Duke	S&ME	5/28/2008	
34	revise grading plan	S&ME	S&ME	5/28/2008	6/4/2008
35	conduct test pits in borrow area	S&ME	morgan corp	ASAP	5/23/2008
36	Borrow Area estimated quantity and grading	Duke	S&ME	6/11/2008	6/11/2008
37	30" storm pipe coordinates	S&ME	Allied Tech	6/4/2008	6/5/2008
38	check on allowable postconstruction conditions within the Borrow Area	S&ME	Duke	6/11/2008	6/11/2008
39	provide map to landfill closure facility	S&ME	Duke	6/11/2008	6/11/2008
40	revised Closure Area grading to balance cut/fill	S&ME	morgan corp	6/12/2008	
41	Notice of Change documenting revised perimeter access road X-sections	Duke	S&ME	6/18/2008	
42	submit Change Order #8 (soil/cement access road surfacing; credit)	Duke	morgan corp	6/16/2008	
43	submit Change Order #9 (underdrain)	Duke	morgan corp	6/16/2008	
44	submit Change Order #10 (drop inlet design changes)	Duke	morgan corp	6/20/2008	
45	check guardrail design options	Duke	morgan corp		
46					
47					
48					
49					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 06/11/08

Name (Print)	Signature	Company
Cedric Rulli	Cedric Rulli	S+ME
Earl B. Whitehurst	Earl Whitehurst	M/C
Jimmy Addis	Jimmy Addis	S+ME
William J. Waggoner	William J. Waggoner	Allied Tech. Resources
Ken Daly	Kenneth R. Daly	S&ME
Griffin Query	Griffin Query	Morgan Corp.
Craig Gleeson	Craig Gleeson	Morgan Corp
Chris Shurter	Chris Shurter	Morgan Corp.
Mark Webb	Mark Webb	Morgan Corp
Mike Cook	Mike Cook	Duke

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 6-10-08
Report for Week Ending: 6-10-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 3
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME		Total
Total Work Hours	1508.0 hrs	62	75		1645.0
SOS Cards	2	0			2
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments As of 6-11-08 approximately (14,851.0) hours have been worked on this site with "NO ACCIDENTS"

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 06/18/08 / 10:00 am

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1. Cell Phone Silence

1.1 Cell phones silenced

1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting's participants had comments.

2. Level I Safety Assessment and Sign-in sheet

2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME) and Earl Whitehurst (Morgan Corp).

2.2 Sign-in Sheet completed.

3. CQA\CQC

Ken Daly (S&ME) proposes discussing CQA\CQC matters to allow those involved in CQA\CQC activities to leave the meeting early.

3.1 Inspections and Testing:

3.1.1 Jimmy Addis (S&ME) stated that the Closure Area is approximately 80% graded, and two more technicians from S&ME are on site assisting with geosynthetics and subgrade CQA.

3.1.2 Mark Webb (Morgan Corp) stated that, to date, 3,665,000 gallons of water have been sprayed on the Closure Area.

3.1.3 Jimmy Addis (S&ME) stated that there is a wet area along the base of the north side of the Closure Area underlain by silty clay, with cracks in the subgrade forming around the wet area. Ken Daly (S&ME) to observe the area and provide recommendations after the construction meeting.

3.1.4 Ken Daly (S&ME) stated that Manufacturer's Quality Control Data and laboratory conformance test data have been reviewed and approved for 80 rolls of LLDPE geosynthetics, leaving 51 rolls pending (131 total rolls). In response to question by Jimmy Addis (S&ME), Ron Powell (ESI) stated that he is unsure when geocomposite will be delivered to site. In response to question by Ron Powell, Ken Daly stated that MQC and laboratory conformance test data have been reviewed and approved for geocomposite.

3.2 Quality and Work Standards: no discussion items

3.3 Deviations: Jimmy Addis (S&ME) noted that the anchor trench has not been constructed yet. Ron Powell (ESI) explains that the toe-of-slope anchor trench will not be constructed yet because it will interfere with installation. Ron Powell (ESI) explains that the top anchor trench will be a vee-trench and they intend to install it after geomembrane deployment. Ken Daly (S&ME) comments that ESI is installing geomembrane at their own-risk without an anchor trench.

3.4 Ron Powell (ESI) noted that geomembrane and geocomposite completion dates are dependent upon material delivery, currently only geosynthetics material on site is 14 rolls of geomembrane. In response to question by Ken Daly, Ron Powell noted that the 14 rolls of geomembrane could be installed by tomorrow afternoon (6/19/08).

3.5 In response to Bill Waggoner (Allied) question, Ron Powell (ESI) states that ESI will work thorugh Saturday this week.

3.6 Ron Powell (ESI) and Jimmy Addis (S&ME) left the meeting at this time.

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 06/18/08 / 10:00 am

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4. Safety and Environmental

4.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). Earl Whitehurst noted that a diesel spill occurred in the refueling area but the spill was contained by the spill containment unit and cleaned up. The cause was a pump gasket malfunction. Morgan replaced the pump. In response to questions by Mike Cook (Duke Energy), Earl Whitehurst and Mark Webb (Morgan Corp) stated that the spill containment unit is sized to contain an amount larger than the amount of diesel fuel stored.

4.1.1 Jeff Howell (Morgan Corp) stated that he wants to be the contact person for MICCS cards procurement for ESI personnel.

4.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp).

4.3 Waste Materials and Recycling: Bill Waggoner (Allied Tech) stated that the dumpster on site will be moved to the top of the Closure Area for liner installation.

5. Site Use and Facilities

5.1 Traffic and Parking: no discussion items

5.2 Housekeeping: no discussion items

5.3 Security: Jeff Howell (Morgan Corp) stated that the construction area is visible from Pine Hall Road, therefore equipment should be locked up and out of sight.

6. Schedule Update and Progress Report

6.1 Construction Progress: Mark Webb (Morgan Corp) stated that during the past week cut on the top of the Closure Area (approx. 20,178 cy by load count) and fill along the north, east, and south slopes of the Closure Area occurred.

6.2 Updated schedule: Craig Greeson (Morgan Corp) provided attendees with an updated schedule and stated that Closure Area grading is 83% complete. Ken Daly (S&ME) noted that the completion date is currently 12-16-08. In response to question by Ken Daly, Craig Greeson stated that geosynthetic completion dates will be delayed by approximately one week, and a revised schedule will be provided before the next meeting.

6.3 Interface with sub-contractors: Ken Daly (S&ME) noted that ESI has mobilized to the site.

6.4 Material delivery: see CQA\CQC (Section 3.1.2 above).

6.5 Potential changes or delays:

6.5.1 Ken Daly (S&ME) noted that the grade changes at the top of the Closure Area will be documented by as-built drawings.

6.5.2 Bill Waggoner (Allied Tech) noted that the wet area along the base of the north edge of the Closure Area could cause a change.

6.6 Recovery Plans: no discussion items

6.7 Two week look ahead:

6.7.1 Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: complete fine grading of Closure Area, geosynthetics installation, underdrain installation, storm drainage system installation, and protective cover placement.

6.7.2 In response to question by Mike Cook (Duke), Ken Daly (S&ME) stated that the minimum lift thickness for Fill Type S1 placement over geosynthetics will be 12

inches, provided the compaction requirements can be met conclusively. Ken Daly noted that cover soil should be graded upslope.

6.7.3 In response to question by Mike Cook, Cedric Ruhl (S&ME) stated that laboratory data for test pit samples from the Borrow Area are pending. In response to questions by Mike Cook, Mark Webb (Morgan Corp) stated that screening equipment would take two weeks to mobilize.

7. Payment and Changes

7.1 Documentation for payment: Mike Cook (Duke Energy) noted that the most recent invoice from Morgan Corp is pending.

7.2 Change Orders: Mike Cook (Duke Energy) noted that Change Order 10 for Drop Inlet changes from Notice of Change 3 is due Friday, 6/20/08. Mike Cook noted that Change Order 8, credit for road surfacing options, puts the project back on budget.

8. Submittals

8.1 Current submittal status: Ken Daly (S&ME) stated that geomembrane submittals are being processed by S&ME. In response to question by Ken Daly, Craig Greeson (Morgan Corp) stated that he would provide guardrail options in two weeks. Cedric Ruhl (S&ME) noted that a revised submittal for drop inlets is required to address changes involved in Notice of Change 3.

8.2 Two week submittal schedule: not discussed.

9. Roundtable

9.1 Bill Waggoner (Allied Tech) noted that a project milestone had been reached with geosynthetics installation starting today (6/18/08). He also noted that he and ESI were pleased with the quality of the slopes within the Closure Area.

10. Action Register (S&ME)

10.1 Summary of outstanding and new action items (see Action Item Register for full details):

10.1.1 #40 – revised Closure Area grading to balance cut/fill – provided 6-18-08.

10.1.2 #41 - Notice of Change documenting revised perimeter road cross-sections - provided 6/13/08.

10.1.3 #42 - Change Order #8 (soil/cement access road surfacing, credit) - provided 6/12/08.

10.1.4 #43 – Change Order #9 (underdrain) - provided 6/12/08.

10.1.5 #44 – Morgan Corp to provide Change Order #10 (drop inlets) by 6/20/08.

10.1.6 #45 – Morgan Corp to provide guardrail design options.

10.1.7 #46 – S&ME to provide clarification of fill Type S1 thickness over geosynthetics by 6/20/08.

Next meeting will take place 10:00 am 7/2/2008

Construction meeting adjourned by consensus at approximately 11:00 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday July 2, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
1	complete project collaboration website	M. Cook	S&ME	3/26/2008	3/26/2008
2	Compare E&S details in E&S plan with E&S details in construction plan, provide unit rates for differences	M. Cook	morgan corp	3/28/2008	4/2/2008
3	submittal register	K. Daly	S&ME	3/21/2008	3/21/2008
4	geosynthetics materials provider and type	K. Daly	morgan corp	3/24/2008	3/20/2008
5	survey downdrains, quantify and develop unit rate for removal	M. Cook	morgan corp	3/28/2008	Divided into 9 and 10
6	Duke Operation's need for construction entrance access	M. Cook	Duke	3/19/2008	4/2/2008
7	unit rate for silt fence outlets in accordance with Charlotte Mecklenburg standard detail for silt fence outlets	K. Daly	morgan corp	3/28/2008	4/2/2008
8	construction entrance notification and bond	M. Cook	morgan corp	3/28/2008	4/2/2008
9	determine whether downdrain removal is required	M. Cook	S&ME	4/16/2008	4/23/2008
10	Price for removal of downdrain structures	morgan corp	morgan corp	4/9/2008	4/9/2008
11	Revise schedule every 2 weeks	Duke	Morgan Corp	4/2/2008	4/2/2008
12	Baseline survey	S&ME	Morgan Corp	4/2/2008	4/9/2008
13	Entrance details	Duke/S&ME	Morgan Corp	4/2/2008	4/4/2008
14	CO forms	Morgan/Duke	S&ME	4/9/2008	4/9/2008
15	Find documentation of test pit exploration performed last year	Duke	S&ME	4/10/2008	action item recalled by M. Cook 4/10/08
16	Contact previous S&ME project personnel to gather information about flat area	Duke	S&ME	4/10/2008	4/9/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
17	Revised grading for benches to Chris Shurter	Morgan Corp	S&ME	4/10/2008	4/10/2008
18	Revised Closure Area grading to S&ME (Flat Area grading received 4/15/08)	S&ME	Morgan Corp	4/28/2008	5/1/2008
19	Contractual commitment from Duke to Morgan updated from $500k to $2Million	Morgan Corp	Duke	ASAP	
20	Cost change for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/28/2008	4/25/2008
21	Cut/fill volumes for revised grading in flat area as proposed by Chris Shurter	S&ME	morgan corp	4/17/2008	4/18/2008
22	Send letter to Chris Hallman to forward to NCDENR outlining grading changes in flat area and usage of stripping material from closure area as vegetative cover	Duke/Morgan Corp	S&ME	4/18/2008	4/18/2008
23	Mike Cook to talk to Chris Hallman	morgan corp	Duke	4/18/2008	4/18/2008
24	5 gallon bucket and grain size distribution of crusher run proposed by Morgan Corp to substitute ABC stone for access roads	S&ME	morgan corp	4/30/2008	recalled on 4/23/08 (not cost effective)
25	Mike Cook to talk to Chris Hallman	S&ME	Duke	4/23/2008	4/23/2008
26	S&ME to look at potential undercut area and provide suggestions	morgan corp	S&ME	4/28/2008	4/23/2008
27	Outline design change options for access road	Duke	S&ME/Duke	5/9/2008	5/9/2008
28	Record of Information - 30" CMP abandonment	Morgan Corp	S&ME	4/30/2008	5/7/2008
29	Cost estimate for access road design change options (as provided from action item #27)	S&ME	morgan corp	5/23/2008	6/3/2008
30	provide clarification of transition from Closure Area cover system to Flat Area cover system	morgan corp	S&ME	5/14/2008	5/21/2008
31	details of guard rail end section	S&ME	morgan corp	6/6/2008	6/5/2008
32	schedule geosynthetics pre-construction meeting	S&ME	morgan corp	5/28/2008	6/4/2008

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
33	provide recommendations for erosion control measures	Duke	S&ME	5/28/2008	tabled by Mike Cook (6/11/08)
34	revise grading plan	S&ME	S&ME	5/28/2008	6/4/2008
35	conduct test pits in borrow area	S&ME	morgan corp	ASAP	5/23/2008
36	Borrow Area estimated quantity and grading	Duke	S&ME	6/11/2008	6/11/2008
37	30" storm pipe coordinates	S&ME	Allied Tech	6/4/2008	6/5/2008
38	check on allowable postconstruction conditions within the Borrow Area	S&ME	Duke	6/11/2008	6/11/2008
39	provide map to landfill closure facility	S&ME	Duke	6/11/2008	6/11/2008
40	revised Closure Area grading to balance cut/fill	S&ME	morgan corp	6/12/2008	6/18/2008
41	Notice of Change documenting revised perimeter access road X-sections	Duke	S&ME	6/18/2008	6/13/2008
42	submit Change Order #8 (soil/cement access road surfacing; credit)	Duke	morgan corp	6/16/2008	6/12/2008
43	submit Change Order #9 (underdrain)	Duke	morgan corp	6/16/2008	6/12/2008
44	submit Change Order #10 (drop inlet design changes)	Duke	morgan corp	6/20/2008	
45	check guardrail design options	Duke	morgan corp		
46	clarifiy S1 fill thickness over geosynthetics	morgan corp	S&ME	6/20/2008	
47					
48					
49					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 06/18/08

Name (Print)	Signature	Company
Cedric Ruhl		S'ME
Earl Whitehurst		M/C
William J. Waggoner	William J. Waggoner	Allied Tech. Resources
Jimmy Addis	Jimmy Addis	S'ME
MARK WEBB		MORGAN
GRIFFIN QUERY		MORGAN CORP
Craig Greeson		Morgan Corp
JEFF Howell		MORGAN Corp
Ron Powell		ESI
Ken Daly		S&ME
Mike Cook	Mike Cook	Duke

SPILL REPORTING - OIL TO SOIL, CHEMICAL SPILLS, ASH LINE LEAKS, ETC.

DATE	COMPANY	LOCATION OF SPILL	TIME OF SPILL	TYPE OF SPILL	EST. AMT OF SPILL	CLEAN-UP METHOD	EST VOL OF CLEAN UP MATERIAL	CLEAN-UP COMPLETE?	CLEAN-UP COM-PLETION TIME	PERSON(S) NOTIFIED	DATE/ TIME NOTIFIED
*EXAMPLE 01/18/06	Earnhardt	FGD Area - 50 feet South of Retaining Wall - Approximately 80 feet from Lake - Did not make it into Lake	7:30 PM	30W Engine Oil from a broken O-ring on a track-loader	2 Gallons	Used diapers to soak up free oil and shoveled oil soaked dirt	2 - 30 gallon garbage bags with approximately 30 diapers and 7 - 5 gallon buckets of oily dirt		9:00 AM	Marcus Childress notified Dennis Earman who notified Ben Taylor immediately	Immediately
3/28/2008	MORGAN-COR	NEAR BORROW PIT	6pm&6am 3/27/08 & 3/28/08	Type (2) Diesel Fuel	50 Gal	Used diapers to soak up#2 Diesel Fuel and shoveled fuel soaked dirt/ Remove contaminated dirt within 24 hrs	50-60 Gal (total)3 cy	3:45PM-3-28-	30 min	Earl Whitehurst (SD-MC)Mark Webb(SS-MC) Bill Waggoner(Rep-DE) who notified Melonie Martin (DE-ER) notified Dick Knight (MC-CSD) Jeff Howell(MC)Dean	Immediately
	NOTE: SPILL HAS BEEN CONTAINED; 7:40am					Contaminated soil was transported, by MC to waste site in accordance with Duke Energy waste/spill process.					
4/7/2008	MORGAN-CORP	PINE HALL RD FLY ASH LANDFILL CLOSURE FLAT AREA(N 924615.87)(E 1682674.22)(ELV= 783.97)	9:00AM	HYDRAULIC FLUID	3 GAL	Used diapers to soak up#2 Diesel Fuel and shoveled fuel soaked dirt/ Remove contaminated dirt within 24 hrs	300 LBS SOIL	YES	1:00PM	MELONIE MARTIN SITE ENVIROMENTAL	1:00PM
5/13/2008	MORGAN-CORP	PINE HALL RD FLY ASH LANDFILL CLOSURE FLAT AREA(N 923423.O ELEV (890.4):E1682535.4	12:15pm	HYDRAULIC FLUID (627 Scraper)	2Gal	Diapers and Loose absorbent. Placed in Plastic Bags	300Lbs Soil & Absorbents Material	YES	12:30PM	MELONIE MARTIN SITE ENVIROMENTAL	12:15pm 5-14-08
6/13/2008	MORGAN-CORP	PINE HALL RD FLY ASH LANDFILL , Spill occurred in controlled orea, North 923467.08 East 1683361.70 Elev 855.05	8:25AM	DIESEL FUEL	20-25 Gal (Approx)	SPILL CONTAINED IN CONTROLLED AREA BY BURM. GASKET FROM GAS GENERATOR FAILED, CAUSING LEAK OVER NIGHT. FROM FUEL TANKER	CRYSTAL CLEAN OUT OF CHARLOTTE TO CLEAN UP CONTAINED SPILL	Yes	5:25PM	MELONIE MARTIN SITE ENVIROMENTAL	Immediately

NOTE: BE SPECIFIC ON LOCATION OF SPILL. DENOTE DISTANCE TO DRAINS, LAKES, SUMPS, ETC.

KD

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 6-17-08
Report for Week Ending: 6-17-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 16
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

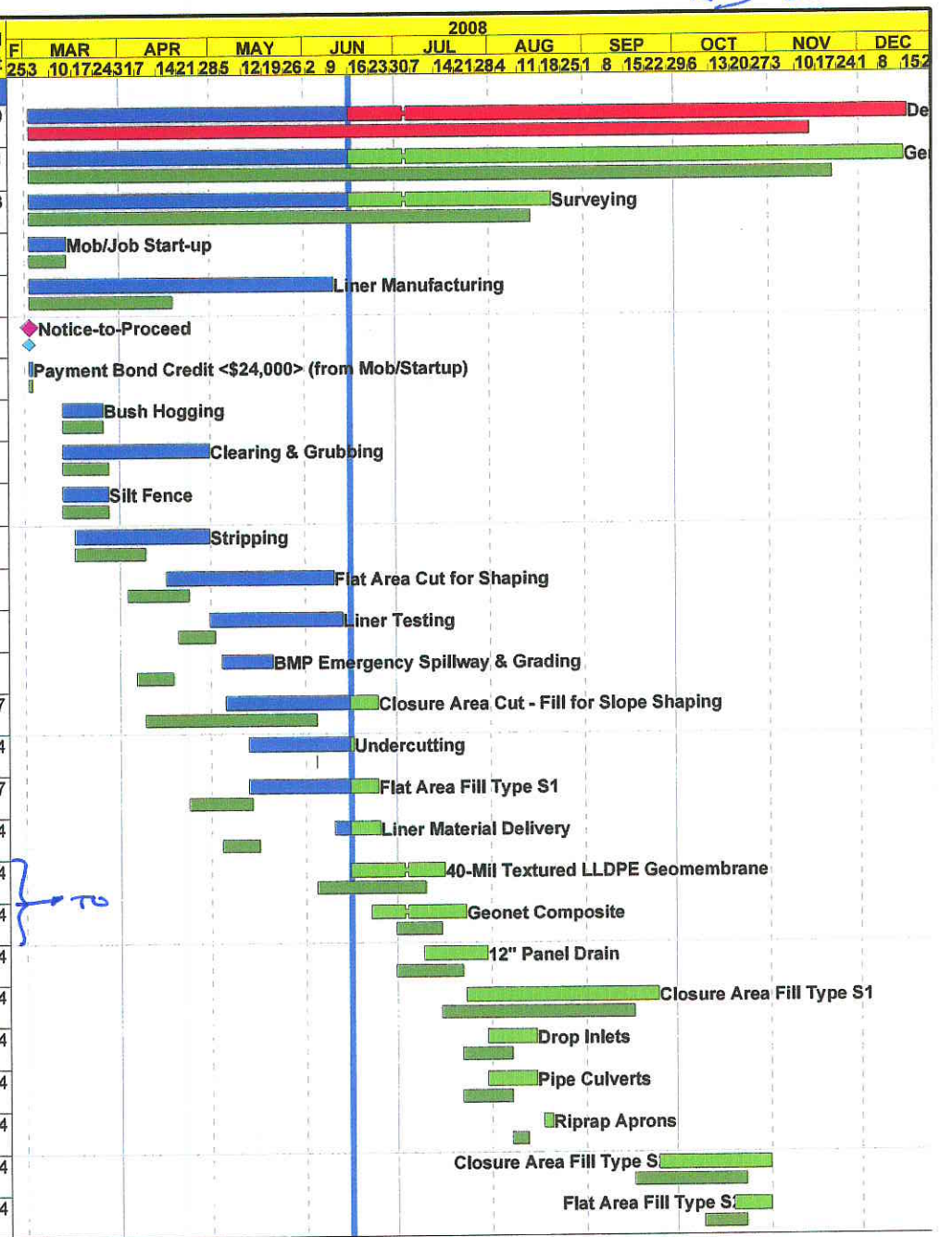
	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	1585 hrs	52	75	150	1862
SOS Cards	0	0			0
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments On June 13, 2008 Diesel spill occurred in contained area/ fuel tanker area. All official were notified, spill was in a control area. See spill report.

KD 6.18.08

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
9	Dewatering	184	131	29	03MAR08A	16DEC08	0
0.5	General Overhead	189	130	31	03MAR08A	15DEC08	1
1	Surveying	185	48	74	03MAR08A	21AUG08	83
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
35A	Liner Manufacturing	35	0	100	03MAR08A	10JUN08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	30APR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	0	100	18MAR08A	30APR08A	
10	Flat Area Cut for Shaping	10	0	100	17APR08A	10JUN08A	
35B	Liner Testing	10	0	100	01MAY08A	13JUN08A	
29	BMP Emergency Spillway & Grading	10	0	100	05MAY08A	21MAY08A	
5	Closure Area Cut - Fill for Slope Shaping	40	7	83	06MAY08A	24JUN08	7
8	Undercutting	15	1	93	14MAY08A	16JUN08	4
11	Flat Area Fill Type S1	15	7	53	14MAY08A	24JUN08	7
35C	Liner Material Delivery	8	8	0	11JUN08A	25JUN08	4
35	40-Mil Textured LLDPE Geomembrane	25	22	12	16JUN08	16JUL08	4
34	Geonet Composite	22	22	0	23JUN08	23JUL08	4
32-33	12" Panel Drain	15	15	0	10JUL08	30JUL08	64
6	Closure Area Fill Type S1	45	45	0	24JUL08	24SEP08	4
20-24	Drop Inlets	12	12	0	31JUL08	15AUG08	64
25-28	Pipe Culverts	12	12	0	31JUL08	15AUG08	64
30	Riprap Aprons	3	3	0	18AUG08	20AUG08	64
7	Closure Area Fill Type S2	27	27	0	25SEP08	31OCT08	4
12	Flat Area Fill Type S2	10	10	0	20OCT08	31OCT08	4



Start Date	03MAR08
Finish Date	16DEC08
Data Date	16JUN08
Run Date	17JUN08 10:03

Early Bar
Target Bar
Progress Bar
Critical Activity

608B

Sheet 1 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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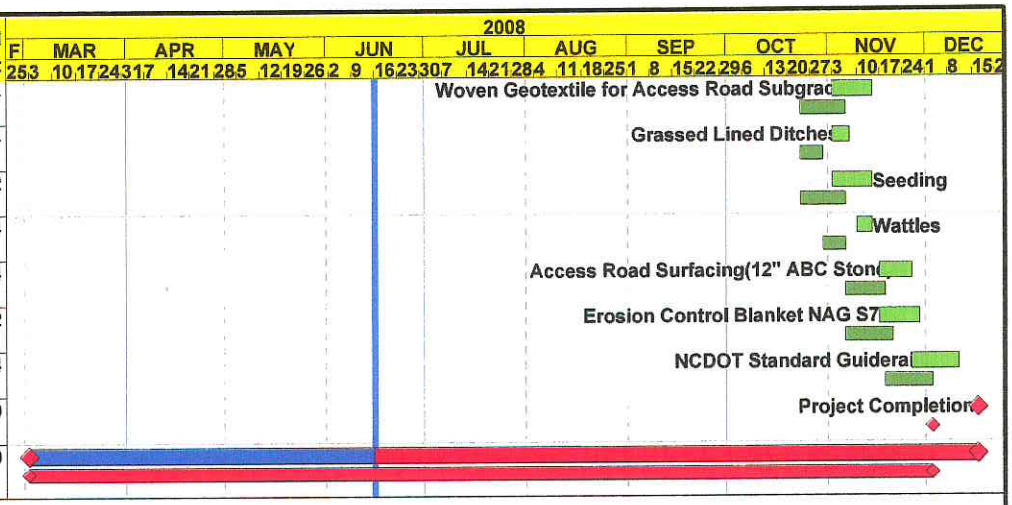
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
13	Woven Geotextile for Access Road Subgrade	10	10	0	03NOV08	14NOV08	4
17-18	Grassed Lined Ditches	5	5	0	03NOV08	07NOV08	4
31	Seeding	10	10	0	03NOV08	14NOV08	12
19	Wattles	5	5	0	10NOV08	14NOV08	4
14	Access Road Surfacing(12" ABC Stone)	8	8	0	17NOV08	26NOV08	4
R3-3	Erosion Control Blanket NAG S75	10	10	0	17NOV08	28NOV08	12
15	NCDOT Standard Guiderail	10	10	0	27NOV08	10DEC08	4
COMP	Project Completion	0	0	0		16DEC08	0
Total		206	131	42	03MAR08A	16DEC08	0



Start Date	03MAR08
Finish Date	16DEC08
Data Date	16JUN08
Run Date	17JUN08 10:03

Early Bar
Target Bar
Progress Bar
Critical Activity

608B

Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 07/9/08 / 10:00 am

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1. **Cell Phone Silence**
   1.1 Cell phones silenced
   1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting participants had comments.

2. **Level I Safety Assessment and Sign-in sheet**
   2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME).
   2.2 Sign-in Sheet completed.

3. **Safety and Environmental**
   3.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp).
   3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp).
   3.3 Waste Materials and Recycling: no discussion items

4. **CQA\CQC**
   4.1 Inspections and Testing:
      4.1.1 Jimmy Addis (S&ME) noted that geosynthetics deployment began on 6-18-08. To date, 106 destructive tests have been laid out and 95 of these have been tested; with passing results. All geomembrane has been delivered to site. 184 panels have been deployed, geocomposite installation is underway today. ESI brought in a second liner crew last week which boosted geosynthetics installation; one day 243,000 square feet of geomembrane was deployed.
      4.1.2 Ron Powell (ESI) noted that to date 1.1 million square feet of geomembrane has been deployed, 131 rolls of geomembrane have been delivered, and 486 of 660 rolls of geocomposite have been delivered. Ron Powell stated that geomembrane deployment would resume tomorrow unless it rains today, and that the second liner crew would probably not be back on this site.
      4.1.3 Bill Waggoner (Allied Tech) noted that one roll of geomembrane was damaged upon delivery. Discussion ensued and it was generally agreed the damaged portions would likely be repaired or discarded and the remainder salvaged.
      4.1.4 Ken Daly (S&ME) noted that all MQC and conformance test data has been received for geomembrane and geocomposite. Test results for these products met specifications and the results will be documented by S&ME. In response to question by Ken Daly, Ron Powell (ESI) and Mark Webb (Morgan Corp) stated that they will not be working on Sunday.

4.1.5 In response to questions by Ken Daly (S&ME), Jimmy Addis (S&ME) stated that Closure Area cut/fill is almost complete; and approximately 5 acres of S1 cover soil has been placed. Jimmy noted that cover soil placement began on the south side of the Closure Area and that two density tests met specification for compaction but failed specification for moisture content. Ken Daly recommended getting density test samples at a depth of 5-6 inches below S2 subgrade. Mark Webb (Morgan Corp) stated that the S1 cover soil is being compacted by a smooth drum vibratory roller (CAT CS563), and that Caterpillar cannot give an accurate ground pressure rating due to the vibratory nature of the roller. However, Mark Webb reported that the manufacturer's representative stated it was adequate to use with 10 inches of soil cover over synthetics.

4.1.6 Kristin Juvelier (S&ME) noted that large clay clods are being encountered during the S1 cover soil placement, some clods larger than 2 feet in diameter. Mark Webb (Morgan Corp) stated that these clods either get broken up during placement or roll down to the toe of slope. In response to a statement by Bill Waggoner (Allied Tech), Mark Webb agreed to remove them with a trackhoe. Discussion ensues and the group concludes to observe S1 fill placement and clod size after the meeting.

4.1.7 place the large clay clods on top of the soil cover and remove them with a trackhoe.

4.2 Quality and Work Standards: Craig Greeson (Morgan Corp) stated that caps will be installed at the open ends of the underdrain pipes on top of the Closure Area.

4.3 Deviations: no discussion items.

4.4 Requests for Information: no discussion items. Ron Powell (ESI), Earl Whitehurst (Morgan Corp), and Kristin Juvelier (S&ME) left the meeting at this time.

5. Site Use and Facilities

5.1 Traffic and Parking: no discussion items

5.2 Housekeeping: no discussion items

5.3 Security: no discussion items

6. Schedule Update and Progress Report

6.1 Construction Progress: Craig Greeson (Morgan Corp) stated that during the past three weeks the following construction activities were under way: anchor trench, panel drain, geosynthetics, S1 cover soil placement, Closure Area cut/fill.

6.2 Updated schedule: Craig Greeson (Morgan Corp) provided attendees with an updated schedule and stated that Closure Area grading is 95% complete, geomembrane delivery is 100% complete, geocomposite delivery is 68% complete, Closure Area S1 fill is 10% complete, and panel drain is 11% complete.

6.3 Interface with sub-contractors: Ken Daly (S&ME) noted that ESI is currently performing work on site.

6.4 Material delivery: Craig Greeson (Morgan Corp) stated that storm structures and geocomposite will be delivered to the site. Mike Cook (Duke Energy) joined the meeting.

6.5 Potential changes or delays: In response to question by Ken Daly (S&ME), Craig Greeson (Morgan Corp) stated that the area on the north face of the Closure Area which had exhibited seepage was undercut and backfilled.

6.6 Recovery Plans: no discussion items
6.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: geosynthetics installation, anchor trench, panel drain, underdrain, S1 fill placement.

7. Payment and Changes

7.1 Documentation for payment: Mike Cook (Duke Energy) noted that documentation for payment was submitted last week.
7.2 Change Orders: Mike Cook (Duke Energy) noted that he had received Change Order 10 for Drop Inlet changes from Notice of Change 3.

8. Submittals

8.1 Current submittal status: Cedric Ruhl (S&ME) stated that he had received a revised drop inlet submittal from Craig Greeson (Morgan Corp). Cedric Ruhl noted that, for Drop Inlets 1 and 6, the tie-in with the underdrain system is shown at the wrong elevation. Cedric Ruhl requested that Craig Greeson revise and re-submit these two drop inlet shop drawings.
8.2 Two week submittal schedule: Craig Greeson (Morgan Corp) stated that guardrail information would be submitted within the next two weeks. Mike Cook (Duke Energy) stated that the guardrail may be eliminated from the project, and no more research should be done on the guardrail until further notice.

9. Roundtable: no discussion items

10. Action Register (S&ME)

10.1 Summary of outstanding and new action items (see Action Item Register for full details):
10.1.1 #44 – Morgan Corp to provide Change Order #10 (drop inlets) – provided 7-8-08.
10.1.2 #45 – Morgan Corp to provide guardrail design options – suspended by Mike Cook (Duke Energy).
10.1.3 #46 – S&ME to provide clarification of fill Type S1 thickness over geosynthetics – provided 6-18-08.
10.1.4 #47 – Duke Energy to determine the need for a guardrail – 7-14-08.
10.1.5 #48 – Morgan Corp to resubmit drop inlet submittal – 7-11-08.

Next meeting will take place 10:00 am 7/23/2008

Construction meeting adjourned by consensus at approximately 11:00 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday July 23, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-39 Have Been Resolved and Archived (7/16/08)					
40	revised Closure Area grading to balance cut/fill	S&ME	morgan corp	6/12/2008	6/18/2008
41	Notice of Change documenting revised perimeter access road X-sections	Duke	S&ME	6/18/2008	6/13/2008
42	submit Change Order #8 (soil/cement access road surfacing; credit)	Duke	morgan corp	6/16/2008	6/12/2008
43	submit Change Order #9 (underdrain)	Duke	morgan corp	6/16/2008	6/12/2008
44	submit Change Order #10 (drop inlet design changes)	Duke	morgan corp	6/20/2008	7/8/2008
45	check guardrail design options	Duke	morgan corp		tabled by Mike Cook (7/9/08)
46	clarifiy S1 fill thickness over geosynthetics	morgan corp	S&ME	6/20/2008	6/18/2008
47	determine need for guardrail	S&ME	Duke	7/14/2008	
48	resubmit drop inlet submittal	S&ME	morgan corp	7/11/2008	
49					
50					
51					
52					
53					
54					
55					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 07/9/08

Name (Print)	Signature	Company
Cedric Ruhl	Cedric Ruhl	S&ME
KRISTIN JUKELIER	Kristin Jukelier	S&ME
Earl B. Whitehurst	Earl B. Whitehurst	M/C
Jimmy Addis	Jimmy Addis	S&ME
Craig Greeson	Craig Greeson	Morgan Corp
William J. Waggoner	William J. Waggoner	Allied Tech. Resources
GRIFFIN QUERY	[illegible]	MORGAN CORP
MARK WEBB	[illegible]	MORGAN CORP
Ron Powell	Ron Powell	ESF
KEN DALY	Kenneth T. Daly	S&ME
Mike Cook	Mike Cook	Duke

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 7-8-08
Report for Week Ending: 7-8-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. **Has Job Hazard Analysis (JHA) been reviewed?** ☒ Y ☐ N
2. **Is the JHA consistent with work plan for coming week?** ☒ Y ☐ N
3. **If revised, has JHA been presented to all employees** ☒ Y ☐ N
4. **Number of new employees since last meeting 16**
5. **Have new employees been oriented?** ☒ Y ☐ N
6. **Have new employees provided MICCS card or proper chain of custody letter?** ☒ Y ☐ N

7. **Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.**

	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	1380	67	169.5	980	2,596.5
SOS Cards	0	0			0
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

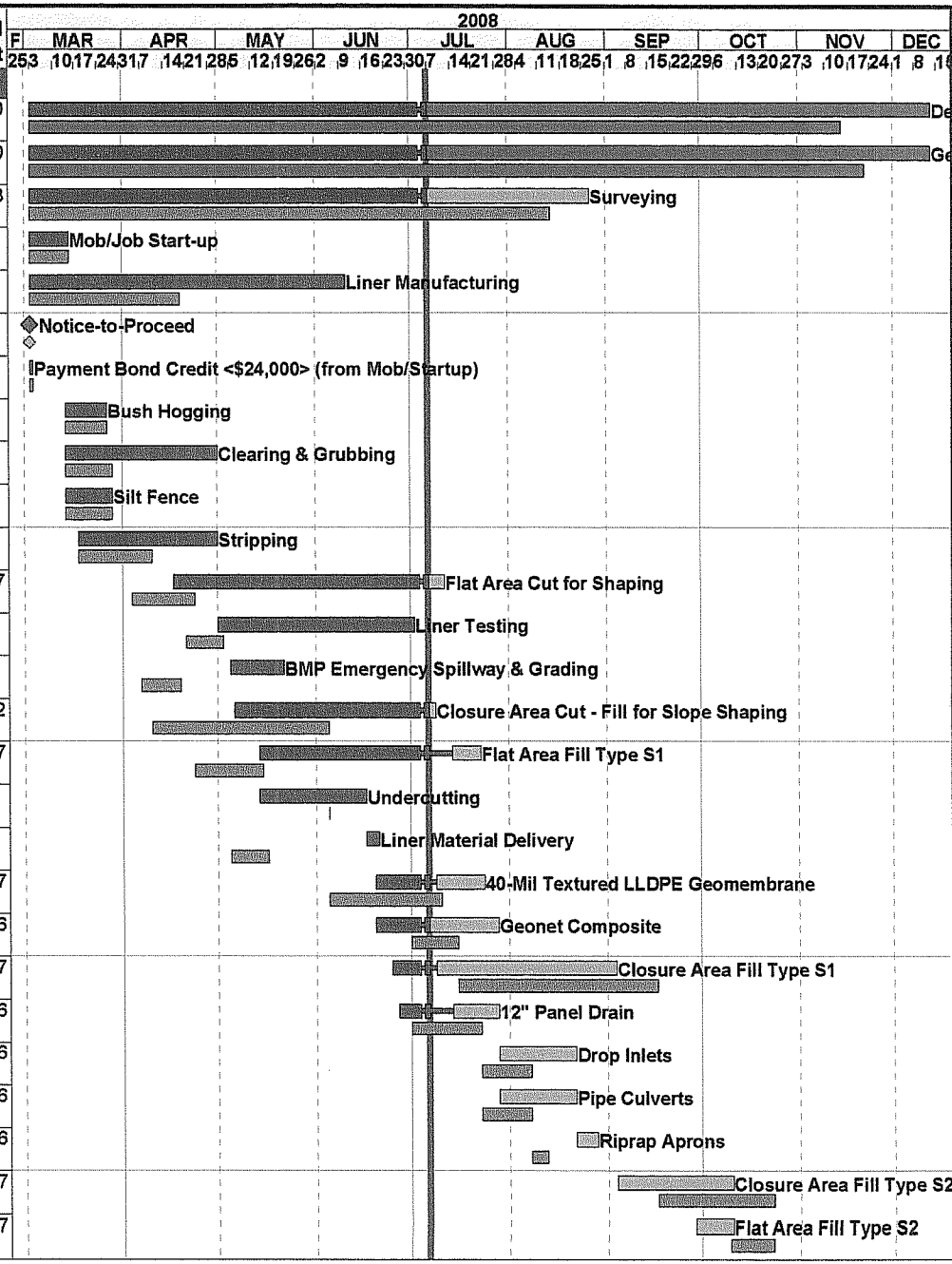
8. **Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above?** ☐ Y ☐ N ☒ N/A

Comments **Due to Holiday, the above numbers are based on week ending 6-29-08.**

As of 7-08-08 approximately (21,589.9 hrs) on site with no accidents, first aid, recordables, lost workdays or restricted workdays.

Also (11) of the (16) new employees, who are employees of ESI, has been deployed or sent to another job site as of 7-3-08

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
9	Dewatering	184	115	38	03MAR08A	12DEC08	0
0.5	General Overhead	189	115	39	03MAR08A	12DEC08	0
1	Surveying	185	37	80	03MAR08A	26AUG08	78
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
35A	Liner Manufacturing	35	0	100	03MAR08A	10JUN08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	30APR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	0	100	18MAR08A	30APR08A	
10	Flat Area Cut for Shaping	10	5	50	17APR08A	11JUL08	17
35B	Liner Testing	10	0	100	01MAY08A	01JUL08A	
29	BMP Emergency Spillway & Grading	10	0	100	05MAY08A	21MAY08A	
5	Closure Area Cut - Fill for Slope Shaping	40	2	95	06MAY08A	08JUL08	22
11	Flat Area Fill Type S1	15	7	53	14MAY08A	22JUL08	17
8	Undercutting	15	0	100	14MAY08A	16JUN08A	
35C	Liner Material Delivery	8	0	100	17JUN08A	20JUN08A	
35	40-Mil Textured LLDPE Geomembrane	34	11	68	20JUN08A	23JUL08	17
34	Geonet Composite	22	16	27	20JUN08A	28JUL08	56
6	Closure Area Fill Type S1	45	41	10	25JUN08A	03SEP08	17
32-33	12" Panel Drain	15	11	27	27JUN08A	28JUL08	56
20-24	Drop Inlets	18	18	0	29JUL08	21AUG08	56
25-28	Pipe Culverts	18	18	0	29JUL08	21AUG08	56
30	Riprap Aprons	5	5	0	22AUG08	28AUG08	56
7	Closure Area Fill Type S2	27	27	0	04SEP08	10OCT08	17
12	Flat Area Fill Type S2	10	10	0	29SEP08	10OCT08	17



Start Date	03MAR08
Finish Date	12DEC08
Data Date	07JUL08
Run Date	07JUL08 10:40

Early Bar
Target Bar
Progress Bar
Critical Activity

0708

Sheet 1 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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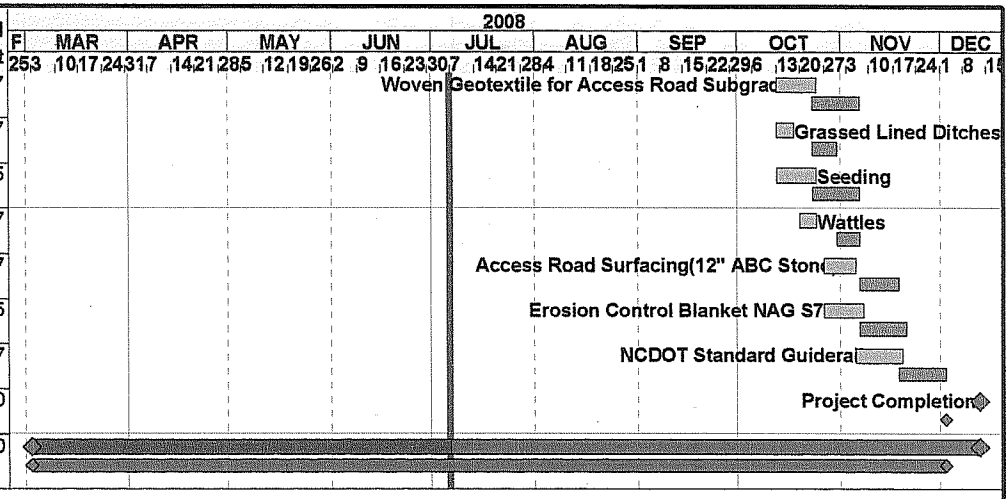
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
13	Woven Geotextile for Access Road Subgrade	10	10	0	13OCT08	24OCT08	17
17-18	Grassed Lined Ditches	5	5	0	13OCT08	17OCT08	17
31	Seeding	10	10	0	13OCT08	24OCT08	25
19	Wattles	5	5	0	20OCT08	24OCT08	17
14	Access Road Surfacing(12" ABC Stone)	8	8	0	27OCT08	05NOV08	17
R3-3	Erosion Control Blanket NAG S75	10	10	0	27OCT08	07NOV08	25
15	NCDOT Standard Guiderail	10	10	0	06NOV08	19NOV08	17
COMP	Project Completion	0	0	0		12DEC08	0
Total		204	115	50	03MAR08A	12DEC08	0



Start Date	03MAR08
Finish Date	12DEC08
Data Date	07JUL08
Run Date	07JUL08 10:40

Early Bar
Target Bar
Progress Bar
Critical Activity

0708 Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting - Minutes

Meeting Date/Time: 07/23/08 / 10:00 am

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1. **Cell Phone Silence**
   1.1 Cell phones silenced
   1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting participants had comments.

2. **Level I Safety Assessment and Sign-in sheet**
   2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME). Earl Whitehurst (Morgan Corp.) stated that a fire extinguisher had been installed on Allied Tech's / S&ME's side of the construction trailer. Mike Cook (Duke Energy) requested that Earl provide a running total of hours worked broken down by company (Morgan Corp, S&ME, ESI, Allied Tech).
   2.2 Sign-in Sheet completed.

3. **Safety and Environmental**
   3.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp).
   3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp).
   3.3 Waste Materials and Recycling: no discussion items

4. **CQA\CQC**
   4.1 Inspections and Testing:
      4.1.1 Jimmy Addis (S&ME) noted that, to date, 1.5 million s.f. of geomembrane had been deployed over 16 days of deployment. 116 destructive tests have been performed with results meeting specifications. Ron Powell (ESI) noted that yesterday 136,000 s.f. of geomembrane was deployed on top of the Closure Area. In response to question by Mike Cook (Duke), Ron stated that geomembrane deployment is currently approx. 85-90% complete. Jimmy Addis (S&ME) noted that panel drain installation has almost caught up to geocomposite installation. Ken Daly (S&ME) noted that, according to last meeting's minutes, a damaged roll of geomembrane was delivered to the site. Ron stated that the damage was only two layers thick; the roll was deployed and the damages were patched. Ron added that he anticipates completing geosynthetics installation and demobilizing from the site by Monday, August 4. Ron noted that geocomposite delivery would soon resume, including 147 rolls from the original order, and 30 additional rolls (80,000 s.f.) which will be needed to complete deployment. Ron also noted that five additional rolls of geomembrane (70,000 s.f., two lots) were ordered; Agru has coordinated conformance testing with TRI. Cedric Ruhl (S&ME) added that he had received an email yesterday from TRI confirming geomembrane conformance test sampling scheduled for today. Ken asked Cedric to coordinate conformance testing with TRI for the additional rolls of geocomposite produced by Skaps.

4.1.2 Jimmy Addis (S&ME) stated that S1 cover soil placement has advanced to the northeast slope of the Closure Area. During S1 fill placement on Closure Area side slopes, Morgan Corp is constructing 4' thick soil ramps up the slope approx. every 75'. Bill Waggoner (Allied Tech) noted that, to date, approx. 40,800 cy of S1 soil has been placed based on load count. In response to questions by Ken Daly (S&ME), Jimmy noted that S1 cover soil particle size seems more uniform as Borrow Area excavation progresses; moisture contents have been within +/-3% of optimum; and density test samples were taken 4-5" below grade.

4.1.3 Jimmy also noted that Morgan Corp. decided not to test the effects of a fully loaded water wagon on a representative geosynthetic/soil cover system. Instead, Morgan Corp. is using hoses to wet the Closure Area slopes during compaction. Mark Webb (Morgan Corp) stated that, according to his calculations, a fully loaded water wagon (33,650 lbs. unloaded, 75,300 lbs loaded, tire pressure of 32 psi, 2 axles) imparts less pressure on the ground than a fully loaded off-road truck (3 axles, 97 pcf for soil). Mark also stated that with his proposed grading sequence the off-road trucks and water wagons would not run on less than 4' of soil cover. Discussion ensued. S&ME to provide a final answer on the usage of water wagons. Jay Lynch (Morgan Corp) noted that a smaller water truck is available (2500 gal. capacity).

4.1.4 After discussion of inspections and testing, Earl Whitehurst (Morgan Corp) and Ron Powell (ESI) left the construction meeting.

4.2 Quality and Work Standards: no discussion items

4.3 Deviations: Ken Daly (S&ME) and Cedric Ruhl (S&ME) noted that, for the anchor trench only, density requirements were decreased from 95% to 90% and the testing frequency was decreased from 1 test / 50 l.f. to 1 test / 100 l.f. Bill Waggoner (Allied Tech) added that recent anchor trench densities were above 95%. Mark Webb (Morgan Corp) noted that the anchor trench layout across the slope access road was straightened, as previously discussed with Cedric, to provide a smooth anchor trench line.

4.4 Requests for Information: Cedric Ruhl (S&ME) noted that a Record of Information had been created documenting that the panel drain outlet pipe riprap pads shall be constructed of NCDOT Class A stone.

5. Site Use and Facilities

5.1 Traffic and Parking: no discussion items

5.2 Housekeeping: no discussion items

5.3 Security: no discussion items

6. Schedule Update and Progress Report

6.1 Construction Progress: Craig Greeson (Morgan Corp) stated that during the past two weeks the following construction activities were under way: Closure Area S1 cover placement (36% complete); geomembrane deployment (74% as of last week); geocomposite deployment (50% as of last week); panel drain installation (93% complete); and subdrain installation (approx. 60-70% complete).

6.2 Updated schedule: Craig Greeson (Morgan Corp) provided attendees with an updated schedule. In response to question by Ken Daly (S&ME), Jay Lynch (Morgan Corp)

noted that, although the completion date on the schedule is near the end of December 2008, the actual completion date will be near the end of November / beginning of December. Craig stated that Morgan Corp's schedule for the foreseeable future will be Monday – Thursday 10 hours/day, Friday 8 hours, off Saturday and Sunday. In response to question by Cedric Ruhl (S&ME), Jay stated that, barring schedule disruptions, this work schedule would be maintained after completion of geosynthetics installation.

6.3 Interface with sub-contractors: Ken Daly (S&ME) noted that ESI is currently performing work on site.

6.4 Material delivery: see 4.1.1. above. Additionally, Craig Greeson (Morgan Corp) noted that the rest of the drop inlets are scheduled for delivery to the site this week.

6.5 Potential changes or delays: It was generally agreed that Borrow Area quantity estimates should be discussed at this time. Ken Daly (S&ME) noted that Morgan Corp. had provided an itemized estimate of soil quantities needed from the Borrow Area. S&ME's quantity estimates for each item was consistent with Morgan Corp's quantity estimates. Mike Cook (Duke Energy) stated that S&ME should proceed with an Erosion and Sediment Control Plan addendum for Borrow Area expansion as a contingency plan. In the meantime, Borrow Area excavation should be closely monitored to evaluate the need for expansion and associated clearing activities. Ken noted that an Erosion and Sediment Control Plan addendum has been initiated by S&ME and should be ready for submittal to NCDENR by the end of the week. Any Borrow Area expansion would generally be north of the existing Borrow Area, towards the ash basin. Mike noted that the ash basin full pond elevation is 760'. Jay Lynch (Morgan Corp) stated that, to maintain the current schedule, permit approval would be needed by the 2nd or 3rd week in August. S&ME to discuss with NCDENR anticipated permit modification review time. Bill Waggoner (Allied Tech) asked if it was acceptable to excavate vertically and backfill to a slope with unselect material. Jay responded that such an approach would require a safety review. Craig Greeson (Morgan Corp) stated that such an approach was not acceptable for safety reasons. Ken stated that test pits in the Borrow Area and proposed expansion were scheduled for Friday, S&ME will collect soil samples for laboratory testing. Test pits should be excavated in the proposed Borrow Area expansion, as well as in the area of Test Pit 10 (previously excavated); now that this area is below existing grade a deeper test pit can be excavated. Ken and Bill summarized: an Erosion and Sediment Control Plan Modification will be needed by mid-August to prevent interference with Morgan Corp's schedule; the modification will include proposed Borrow Area expansion of approx. 5 acres and documentation of a temporary culvert draining from ditch C2 to an existing CMP outlet discharging to the ash basin.

6.6 Recovery Plans: no discussion items

6.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: geosynthetics installation, anchor trench, panel drain, underdrain, S1 fill placement, drop inlets, and stormwater pipe. In response to question by Bill Waggoner (Allied Tech), Jay Lynch (Morgan Corp) stated that S2 cover soil placement will begin after all of the S1 cover soil has been placed so that the S2 can be seeded as soon after placement as possible (currently scheduled for September).

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7. Payment and Changes

7.1 Documentation for payment: Mike Cook (Duke Energy) noted that Duke Energy has not provided Morgan Corp with a final contract. Jay Lynch (Morgan Corp) added that he is working with Duke Energy to provide an acceptable contract. Bill Waggoner (Allied Tech) requested that next progress payment review be scheduled for 8/1/08.

7.2 Change Orders: Mike Cook (Duke Energy) noted that he has reviewed and signed Change Order 10 (credit for drop inlet and stormwater pipe design changes).

8. Submittals

8.1 Current submittal status: Ken Daly (S&ME) noted that a submittal for erosion control devices (wattles, matting) was received and is under review. Craig Greeson (Morgan Corp) provided Cedric Ruhl (S&ME) with a revised submittal for drop inlets 1 and 6. In response to question by Ken, Jay Lynch (Morgan Corp) stated that nutrient tests have not been conducted on the proposed S2 topsoil. S&ME to provide Morgan Corp with contact information for a soils testing laboratory.

8.2 Two week submittal schedule: Craig Greeson (Morgan Corp) stated that no submittals are anticipated.

9. Roundtable:

9.1 Mike Cook (Duke Energy) noted that Duke Energy requires 1-week notice for any proposed aerial photography. Jay Lynch (Morgan Corp) stated that aerial photography is tentatively scheduled for next week. Jay to provide Duke with 1-week notice of aerial photography.

10. Action Register (S&ME)

10.1 Summary of outstanding and new action items (see Action Item Register for full details):

10.1.1 #47 – Duke Energy to determine the need for a guardrail – Mike Cook (Duke Energy) stated that, unless told otherwise, assume no need for a guardrail.

10.1.2 #48 – Morgan Corp to resubmit drop inlet submittal – submitted 7/23/08.

10.1.3 #49 – S&ME to provide Morgan Corp with soil laboratory contact information – 7/25/08.

10.1.4 #50 – S&ME to estimate Erosion and Sediment Control Plan Permit Modification reviewing time – 7/25/08.

10.1.5 #51 – S&ME to provide final answer on usage of water wagon over geosynthetics and soil cover – 7/25/08.

Next meeting will take place 10:00 am 8/1/2008

Construction meeting adjourned by consensus at approximately 11:00 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Friday August 1, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-39 Have Been Resolved and Archived (7/16/08)					
40	revised Closure Area grading to balance cut/fill	S&ME	morgan corp	6/12/2008	6/18/2008
41	Notice of Change documenting revised perimeter access road X-sections	Duke	S&ME	6/18/2008	6/13/2008
42	submit Change Order #8 (soil/cement access road surfacing; credit)	Duke	morgan corp	6/16/2008	6/12/2008
43	submit Change Order #9 (underdrain)	Duke	morgan corp	6/16/2008	6/12/2008
44	submit Change Order #10 (drop inlet design changes)	Duke	morgan corp	6/20/2008	7/8/2008
45	check guardrail design options	Duke	morgan corp		tabled by Mike Cook (7/9/08)
46	clarifiy S1 fill thickness over geosynthetics	morgan corp	S&ME	6/20/2008	6/18/2008
47	determine need for guardrail	S&ME	Duke	7/14/2008	7/23/2008
48	resubmit drop inlet submittal	S&ME	morgan corp	7/11/2008	7/23/2008
49	provide soil laboratory contact information	morgan corp	S&ME	7/25/2008	
50	estimate E&SC Modification permit review time	morgan corp	S&ME	7/25/2008	
51	provide final answer on usage of water wagons over geosynthetics/cover soil	morgan corp	S&ME	7/25/2008	
52					
53					
54					
55					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 07/23/08

Name (Print)	Signature	Company
Cedric Ruhl	Cedric Ruhl	S+ME
Bill Waggoner	William J. Waggoner	Allied Tech. Resources
Mike Cook	Mike Cook	Duke
Craig Greeson	[illegible]	Morgan Corp
Jay Lynch	[illegible]	Morgan Corp.
GRIFFIN QUERY	[illegible]	MORGAN CORP
MARK Webb	[illegible]	MORGAN CORP
RON Powell	[illegible]	ESI
KEN DALY	[illegible]	[illegible]
Jimmy Addis	[illegible]	S+ME Inc.
EARL Whitehurst	[illegible]	MORGAN - CORP.
Chris Shorter	[illegible]	morgan-corp

7/28/08

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 7-22-08
Report for Week Ending: 7-22-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

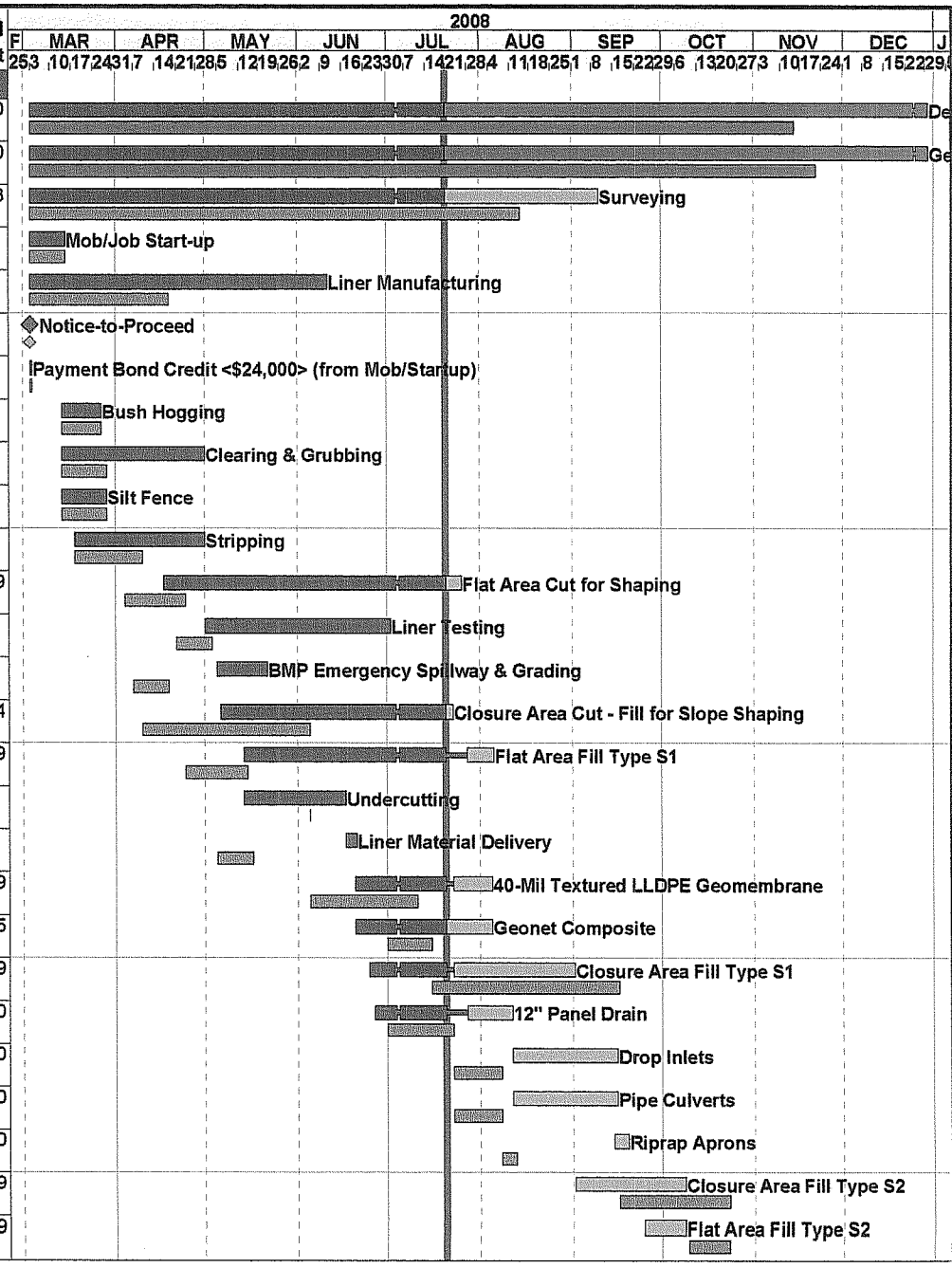
7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	1060	55	163.25	825	2103.25
SOS Cards	0	0			0
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments As of 7-22-09 (23,693.15 hrs) with no accidents/ OSHA recordables

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
9	Dewatering	184	115	38	03MAR08A	29DEC08	0
0.5	General Overhead	189	115	39	03MAR08A	29DEC08	0
1	Surveying	185	37	80	03MAR08A	09SEP08	78
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
35A	Liner Manufacturing	35	0	100	03MAR08A	10JUN08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	30APR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	0	100	18MAR08A	30APR08A	
10	Flat Area Cut for Shaping	10	5	50	17APR08A	25JUL08	29
35B	Liner Testing	10	0	100	01MAY08A	01JUL08A	
29	BMP Emergency Spillway & Grading	10	0	100	05MAY08A	21MAY08A	
5	Closure Area Cut - Fill for Slope Shaping	40	2	95	06MAY08A	22JUL08	34
11	Flat Area Fill Type S1	15	7	53	14MAY08A	05AUG08	29
8	Undercutting	15	0	100	14MAY08A	16JUN08A	
35C	Liner Material Delivery	8	0	100	17JUN08A	20JUN08A	
35	40-Mil Textured LLDPE Geomembrane	34	9	74	20JUN08A	04AUG08	29
34	Geonet Composite	22	11	50	20JUN08A	04AUG08	55
6	Closure Area Fill Type S1	45	29	36	25JUN08A	01SEP08	29
32-33	12" Panel Drain	15	11	93	27JUN08A	11AUG08	50
20-24	Drop Inlets	25	25	0	12AUG08	15SEP08	50
25-28	Pipe Culverts	25	25	0	12AUG08	15SEP08	50
30	Riprap Aprons	5	5	0	15SEP08	19SEP08	50
7	Closure Area Fill Type S2	27	27	0	02SEP08	08OCT08	29
12	Flat Area Fill Type S2	10	10	0	25SEP08	08OCT08	29



Start Date	03MAR08
Finish Date	29DEC08
Data Date	21JUL08
Run Date	21JUL08 16:22

Early Bar
Target Bar
Progress Bar
Critical Activity

708B

Sheet 1 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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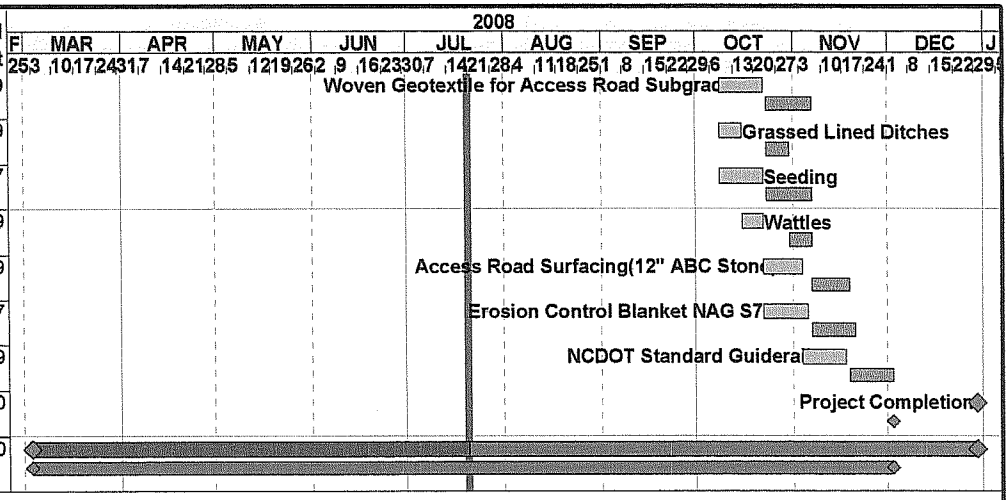
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
13	Woven Geotextile for Access Road Subgrade	10	10	0	09OCT08	22OCT08	29
17-18	Grassed Lined Ditches	5	5	0	09OCT08	15OCT08	29
31	Seeding	10	10	0	09OCT08	22OCT08	37
19	Wattles	5	5	0	16OCT08	22OCT08	29
14	Access Road Surfacing(12" ABC Stone)	8	8	0	23OCT08	03NOV08	29
R3-3	Erosion Control Blanket NAG S75	10	10	0	23OCT08	05NOV08	37
15	NCDOT Standard Guiderail	10	10	0	04NOV08	17NOV08	29
COMP	Project Completion	0	0	0		29DEC08	0
Total		214	115	51	03MAR08A	29DEC08	0



Start Date	03MAR08
Finish Date	29DEC08
Data Date	21JUL08
Run Date	21JUL08 16:22

Early Bar
Target Bar
Progress Bar
Critical Activity

708B

Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 08/01/08 / 10:00 am

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1. Cell Phone Silence

1.1 Cell phones silenced

2. Level I Safety Assessment and Sign-in sheet

2.1 Level 1 Safety Assessment conducted by Cedric Ruhl (S&ME).

2.2 Sign-in Sheet completed.

3. Safety and Environmental

3.1 Weekly Safety Report: Weekly Safety Report presented by D. Wolf (Morgan Corp).

3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp). Mark noted that approximately one gallon of hydraulic fluid had been spilled. Morgan Corp wasted about 75 pounds of contaminated soil and filed a report with Duke Energy.

3.3 Waste Materials and Recycling: Mark Webb (Morgan Corp) stated that the dumpster had been moved off of the top of the Closure Area due to geosynthetic installation in the area. Bill Waggoner (Allied Tech) stated that Morgan Corp has obtained a permit to remove and dispose of pipe demolition.

4. CQA\CQC

4.1 Inspections and Testing:

4.1.1 Jimmy Addis (S&ME) noted that, to date, 1.7 million s.f. of geomembrane had been deployed over 20 days of deployment. Geomembrane installation should be completed by the end of the day. 164 destructive tests have been performed with one failing test (failure by 100% peel). The seam which contained the failing test was capped for approximately 130 feet. Jimmy predicts that ESI will demobilize from the site by the middle of next week.

4.1.2 Jimmy Addis (S&ME) noted that S1 cover placement is now on the east side of the Closure Area. Some field density tests have failed because of low moisture content. Mark Webb (Morgan Corp) added that 64,000 cy of S1 cover soil has been placed to date. Bill Waggoner (Allied Tech) added that the western "peninsula" within the Borrow Area was opened yesterday, and the excavated material seemed to be of good quality. Mark Webb added that the anchor trench is being backfilled with the most select material available.

4.2 Quality and Work Standards: no discussion items

4.3 Deviations: no discussion items

4.4 Requests for Information: no discussion items

5. Site Use and Facilities

5.1 Traffic and Parking: Mark Webb (Morgan Corp) stated that driving through the Borrow Area could be dangerous due to holes dug during excavation operations.

5.2 Housekeeping: no discussion items

5.3 Security: no discussion items

6. Schedule Update and Progress Report

6.1 Construction Progress: Craig Greeson (Morgan Corp) stated that during the past two weeks the following construction activities were under way: Closure Area S1 cover placement; geomembrane deployment; geocomposite deployment; panel drain

installation; subdrain installation; and anchor trench. In response to question by Mike Cook (Duke Energy), Craig estimated project completion in mid- to late November. Craig will update the project completion date when he provides the schedule at the next construction meeting.

6.2 Updated schedule: to be provided at next meeting

6.3 Interface with sub-contractors: Cedric Ruhl (S&ME) noted that ESI is currently performing work on site.

6.4 Material delivery: Mark Webb (Morgan Corp) stated that one partial load of geocomposite is outstanding for geosynthetics delivery. In response to question by Mike Cook (Duke Energy), Craig Greeson (Morgan Corp) stated that geomembrane installation will be 100% complete by the end of the day, and geocomposite installation is 75-80% complete. In response to questions by Craig, Cedric Ruhl (S&ME) stated that the Erosion and Sediment Control addendum for Borrow Area expansion will take about 15 business days for NCDENR to review; and that Ken Daly (S&ME) would be on site later in the afternoon to address questions about Borrow Area soil quality. Mike Cook (Duke Energy) stated that Mark needs to provide adequate notification before exhausting the Borrow Area to provide time to discuss Borrow Area expansion strategy, if necessary.

6.5 Potential changes or delays: no discussion items

6.6 Recovery Plans: no discussion items

6.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: storm system, S1 cover soil placement, and possibly S2 topsoil placement.

7. Payment and Changes

7.1 Documentation for payment: In response to question by Mike Cook (Duke Energy), Craig Greeson (Morgan Corp) said that he had not compared his monthly invoice payment quantities with Bill Waggoner (Allied Tech). Craig noted that Bill and Mark Webb (Morgan Corp) had compared and agreed on quantities for the month.

7.2 Change Orders: Mike Cook (Duke Energy) noted that Change Order 10 (credit for drop inlet and stormwater pipe design changes) has been signed and approved by himself, Ken Daly (S&ME) and Craig Greeson (Morgan Corp).

8. Submittals

8.1 Current submittal status: no discussion items

8.2 Two week submittal schedule: In response to question by Craig Greeson (Morgan Corp), Cedric Ruhl (S&ME) stated that it is currently unclear what design and testing method would be applied to the soil/cement road surfacing. S&ME and Morgan will collaborate on proper installation, testing, and submittal documentation of soil/cement road surfacing.

9. Roundtable:

9.1 Mark Webb (Morgan Corp) gave Mike Cook (Duke Energy) several SOS cards for his review.

9.2 Bill Waggoner (Allied Tech) stated that there are currently holes and gullies in the Borrow Area where quality S1 cover soil material has been excavated between nearly vertical rock and weathered rock veins. Bill suggested taping off the Borrow Area as a

safety precaution, and questioned whether the Borrow Area would be re-shaped following excavation activities. Craig Greeson (Morgan Corp) stated that he would need to check the bid to see if it addresses Borrow Area shaping. Mark Webb (Morgan Corp) estimated S1 cover soil completion at 65-70%, and noted that the western peninsula in the Borrow Area is still mainly unexcavated.

9.3 Mike Cook (Duke Energy) announced that today is Bill Waggoner's (Allied Tech) last day on this job site. Bill has accepted a position on a different job site. Cedric Ruhl (S&ME) and Jimmy Addis (S&ME) will assume Bill's duties, at least temporarily, including tracking installation quantities daily and coordinating monthly invoice quantities between Morgan Corp and Duke Energy.

9.4 Mark Webb (Morgan Corp) stated that a flyover was conducted over the site yesterday, and that some good aerial pictures were taken.

9.5 In response to question by Cedric Ruhl (S&ME), Craig Greeson (Morgan Corp) stated that he and Jay Lynch (Morgan Corp) are reviewing a contract for this project submitted to them by Lewis Withers (Duke Energy).

10. Action Register (S&ME)

10.1 Summary of outstanding and new action items (see Action Item Register for full details):

10.1.1 #49 – S&ME to provide Morgan Corp with soil laboratory contact information – provided 7/25/08.

10.1.2 #50 – S&ME to estimate Erosion and Sediment Control Plan Permit Modification reviewing time – provided 7/25/08.

10.1.3 #51 – S&ME to provide final answer on usage of water wagon over geosynthetics and soil cover – provided 7/25/08.

10.1.4 #52 – S&ME and Morgan Corp to collaborate on soil/cement application, testing, and submittal documentation standards – no date set.

Next meeting will take place 10:00 am 8/18/2008

Construction meeting adjourned by consensus at approximately 11:00 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Monday August 18, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-39 Have Been Resolved and Archived (7/16/08)					
40	revised Closure Area grading to balance cut/fill	S&ME	morgan corp	6/12/2008	6/18/2008
41	Notice of Change documenting revised perimeter access road X-sections	Duke	S&ME	6/18/2008	6/13/2008
42	submit Change Order #8 (soil/cement access road surfacing; credit)	Duke	morgan corp	6/16/2008	6/12/2008
43	submit Change Order #9 (underdrain)	Duke	morgan corp	6/16/2008	6/12/2008
44	submit Change Order #10 (drop inlet design changes)	Duke	morgan corp	6/20/2008	7/8/2008
45	check guardrail design options	Duke	morgan corp		tabled by Mike Cook (7/9/08)
46	clarifiy S1 fill thickness over geosynthetics	morgan corp	S&ME	6/20/2008	6/18/2008
47	determine need for guardrail	S&ME	Duke	7/14/2008	7/23/2008
48	resubmit drop inlet submittal	S&ME	morgan corp	7/11/2008	7/23/2008
49	provide soil laboratory contact information	morgan corp	S&ME	7/25/2008	7/25/2008
50	estimate E&SC Modification permit review time	morgan corp	S&ME	7/25/2008	7/25/2008
51	provide final answer on usage of water wagons over geosynthetics/cover soil	morgan corp	S&ME	7/25/2008	7/25/2008
52	develop application, testing, and submittal documentation standards for soil/cement road surfacing	morgan corp	morgan corp / S&ME		
53					
54					
55					
56					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 08/1/08

Name (Print)	Signature	Company
Cedric Ruhl	Cedric Ruhl	S+ME
William J. Waggoner	William J. Waggoner	Allied Tech. Resources
Jimmy Addis	Jimmy Addis	S+ME Inc.
Craig Greeson	[illegible]	Morgan Corp
GRIFFIN QUERY	[illegible]	MORGAN CORP
MARK Webb	[illegible]	MORGAN CORP
D Wolf	[illegible]	Morgan Corp
Mike Cook	Mike Cook	Duke

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 8-1-08
Report for Week Ending: 8-3-08
Report Originator: MW & BW

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☒ Y ☐ N
2. If yes, has a report been made to site Environmental Coordinator? ☒ Y ☒ N
3. Have there been any new portable engines brought on-site? ☐ Y ☒ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
5. Have there been any new chemicals brought on-site? ☐ Y ☒ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☒ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 8-1-08

Contractor Inspection Form submitted to Project Manager ☒ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 8-1-08 Date of Last Rain Event 7-31-08

Participants M WEBB/Bill Waggoner

Type of Inspection Weekly ☐ Rain Event ☒ BCSS ☐

Discrepancies Found Need to clean up around temp drain under access rd and both check dams on C8 ditch.

Corrective Actions Dip out sed basins in front of checks

Comments Total of .75 rain over night slow rain no hard run off.

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 08/18/08 / 10:00 am

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1. Cell Phone Silence

1.1 Cell phones silenced

1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting participants had comments.

2. Level I Safety Assessment and Sign-in sheet

2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME) and Mark Webb (Morgan Corp).

2.2 Sign-in Sheet completed.

3. Safety and Environmental – discussed after item 7.1.1.

3.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). Earl noted that approximately 1 gallon of hydraulic fluid had spilled. The spill was cleaned up and reported to Duke Energy. Craig Greeson (Morgan Corp) stated that he is providing Duke Energy with the number of hours worked on a monthly basis.

3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp). Mark noted that a new generator was brought on site for a concrete coring machine, Melanie Martin (Duke Energy) was notified. Mark also stated that approximately 4/10" of rain had fallen on August 13.

3.3 Waste Materials and Recycling: no discussion items

4. CQA\CQC

4.1 Inspections and Testing:

4.1.1 Jimmy Addis (S&ME) noted that geosynthetics is 100% complete and ESI has de-mobilized from the site. Jimmy stated 1 out of 168 geomembrane destructive tests failed, and that there are numerous repairs around the anchor trench because the anchor trench was constructed after deployment. ESI was on site for approximately 40 working days, with deployment occurring on 20 days. Jimmy also stated that, upon completion of geosynthetics installation, a Work Completion Notice was signed by Jimmy and Craig Greeson (Morgan Corp). One full roll and several partial rolls of geombrane were left on site, Craig stated that he would call Kevin Simms (ESI) about removing it from the site.

4.1.2 Jimmy Addis (S&ME) noted that S1 cover placement is occurring on top of the Closure Area. A one-way road approximately 4 feet thick was constructed around the top of the Closure Area to facilitate compaction and moisture conditioning without damaging the underlying geosynthetics. Jimmy also said that Drop Inlets 1-4, 6-9, and Junction Box 1 were installed with connecting culvert installation currently taking place.

4.2 Quality and Work Standards: no discussion items

4.3 Deviations: no discussion items

4.4 Requests for Information: no discussion items

5. Site Use and Facilities

5.1 Traffic and Parking: no discussion items

5.2 Housekeeping: no discussion items

5.3 Security: no discussion items

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 08/18/08 / 10:00 am

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6. Schedule Update and Progress Report

6.1 Construction Progress: Craig Greeson (Morgan Corp) stated that since the last meeting the following construction activities occurred: geomembrane and geocomposite installation 100% complete; panel drain and subdrain 100% complete; Closure Area S1 cover placement; drop inlet installation; and culvert installation.

6.2 Updated schedule: Provided by Craig Greeson (Morgan Corp). Craig noted that the new estimated project completion date is November 4, 2008.

6.3 Interface with sub-contractors: no discussion items (ESI de-mobilized from site)

6.4 Material delivery: Ken Daly (S&ME) stated that MQC data for additional rolls of geocomposite needs to be provided. Jimmy Addis (S&ME) stated that the additional five rolls of geocomposite were installed on the west side of the top of the Closure Area and surveyed by Morgan Corp.

6.5 Potential changes or delays: no discussion items

6.6 Recovery Plans: no discussion items

6.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: storm system, S1 cover soil placement, and possibly S2 topsoil placement.

7. Payment and Changes

7.1 Documentation for payment:

7.1.1 In response to question by Ken Daly (S&ME), Craig Greeson (Morgan Corp) stated that the next progress payment is due on September 10; Morgan Corp and S&ME will compare and review installed quantities for the month of August on September 2. In response to question by Mike Cook (Duke Energy), Craig said that he does not know if Morgan's contract with Duke Energy has been finalized.

7.1.2 Earl Whitehurst (Morgan Corp) joined the meeting and presented the safety report (item 3).

7.1.3 Discussion of Closure Area cut/fill volumes began. Cedric Ruhl (S&ME) stated that Morgan Corp had provided S&ME with an as-built drawing of Closure Area geosynthetics subgrade and estimated quantities of cut and fill. Cedric stated that he had performed a quantities check as summarized below:

	S&ME Estimated Quantity (cy)	Morgan Corp Estimated Quantity (cy)
Closure Area cut	203,432	208,366
Closure Area fill	157,290	159,972

Chris Shurter (Morgan Corp) stated that the Closure Area geosynthetics subgrade as-built provided to S&ME did not include some earthwork which occurred after the as-built survey began. Chris estimated the unaccounted quantity at 950 cubic yards. Morgan Corp will provide S&ME with a final as-built drawing of the subgrade for a final quantity comparison. Ken Daly (S&ME) and Cedric stated that the Closure Area subgrade payment is based on quantity filled, not quantity cut.

7.1.4 Discussion of Closure Area and Flat Area limits began. Meeting participants agreed that the Closure Area limits are defined as the anchor trench and the Flat Area limits are defined as the east side of the interior access road east to the tie-in with existing grade. Any remaining grading falls under a 3rd "miscellaneous" category. Chris Shurter (Morgan Corp) will prepare a color-coded drawing showing Closure Area and Flat Area boundaries.

7.1.5 In response to question by Mike Cook (Duke Energy), Chris Shurter (Morgan Corp) stated that he had provided a geomembrane as-built drawing to S&ME for geosynthetics quantities confirmation. Mike stated that Morgan may submit an interim invoice for geosynthetics.

7.2 Change Orders: no discussion items

8. Submittals

8.1 Current submittal status: Craig Greeson (Morgan Corp) stated that he had received an email from Cedric Ruhl (S&ME) outlining outstanding submittal items. Craig and Cedric are still collaborating on soil/cement submittal requirements. In response to question by Ken Daly (S&ME), Craig said that the soil/cement road construction will begin in October.

8.2 Two week submittal schedule: In response to question by Ken Daly (S&ME), Craig Greeson (Morgan Corp) stated that topsoil testing had been performed and provided results to S&ME.

9. Roundtable:

9.1 In response to question by Ken Daly (S&ME), Craig Greeson (Morgan Corp) stated that Borrow Area excavation is going well. Mark Webb (Morgan Corp) said that, when encountered, unselect material is being moved aside until select material is encountered. It was agreed that meeting participants would observe the Borrow Area after the meeting.

9.2 Jimmy Addis (S&ME) stated that Morgan Corp has Portland cement Type I-II and sand with the intention of creating a grout for patching the culvert to drop inlet connection. Mike Cook (Duke Energy) asked about using an additive to provide non-shrink properties. Craig Greeson (Morgan Corp) stated that a pre-mixed grout mix will be used for patching, and the cement and sand would be mixed to create a collar around the pipe as shown in the Drawings. Jimmy will obtain cylinder samples of the collar material for compression testing.

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 08/18/08 / 10:00 am

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10. Action Register (S&ME)

10.1 Summary of outstanding and new action items (see Action Item Register for full details):

10.1.1 #52 – S&ME and Morgan Corp to collaborate on soil/cement application, testing, and submittal documentation standards – pending.

10.1.2 #53 – Morgan Corp to provide a diagram outlining Closure Area and Flat Area limits.

Next meeting will take place 10:00 am 9/2/2008

Construction meeting adjourned by consensus at approximately 11:45 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Tuesday September 2, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-39 Have Been Resolved and Archived (7/16/08)					
40	revised Closure Area grading to balance cut/fill	S&ME	morgan corp	6/12/2008	6/18/2008
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44	submit Change Order #10 (drop inlet design changes)	Duke	morgan corp	6/20/2008	7/8/2008
45	check guardrail design options	Duke	morgan corp		tabled by Mike Cook (7/9/08)
46	clarifiy S1 fill thickness over geosynthetics	morgan corp	S&ME	6/20/2008	6/18/2008
47	determine need for guardrail	S&ME	Duke	7/14/2008	7/23/2008
48	resubmit drop inlet submittal	S&ME	morgan corp	7/11/2008	7/23/2008
49	provide soil laboratory contact information	morgan corp	S&ME	7/25/2008	7/25/2008
50	estimate E&SC Modification permit review time	morgan corp	S&ME	7/25/2008	7/25/2008
51	provide final answer on usage of water wagons over geosynthetics/cover soil	morgan corp	S&ME	7/25/2008	7/25/2008
52	develop application, testing, and submittal documentation standards for soil/cement road surfacing	morgan corp	morgan corp / S&ME		
53	diagram outlining Closure Area and Flat Area limits	Duke	mogan corp		8/26/2008
54					
55					
56					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 08/18/08

Name (Print)	Signature	Company
Cedric Rubl	Cedric Rubl	S+ME
Ken Daly	[illegible]	S+ME.
Chris Shuster	[illegible]	Morgan Corp.
GRIFFIN QUERY	[illegible]	MORGAN CORP.
Mike Cook	Mike Cook	[illegible]
MARK WEBB	[illegible]	MORGAN
Craig Gleason	[illegible]	Morgan Corp
Jimmy Addis	Jimmy Addis	S&ME Inc.

8/18/08 KM

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 8-12-08
Report for Week Ending: 8-12-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	1259	0****	44	336****	1639
SOS Cards	0	0			0
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

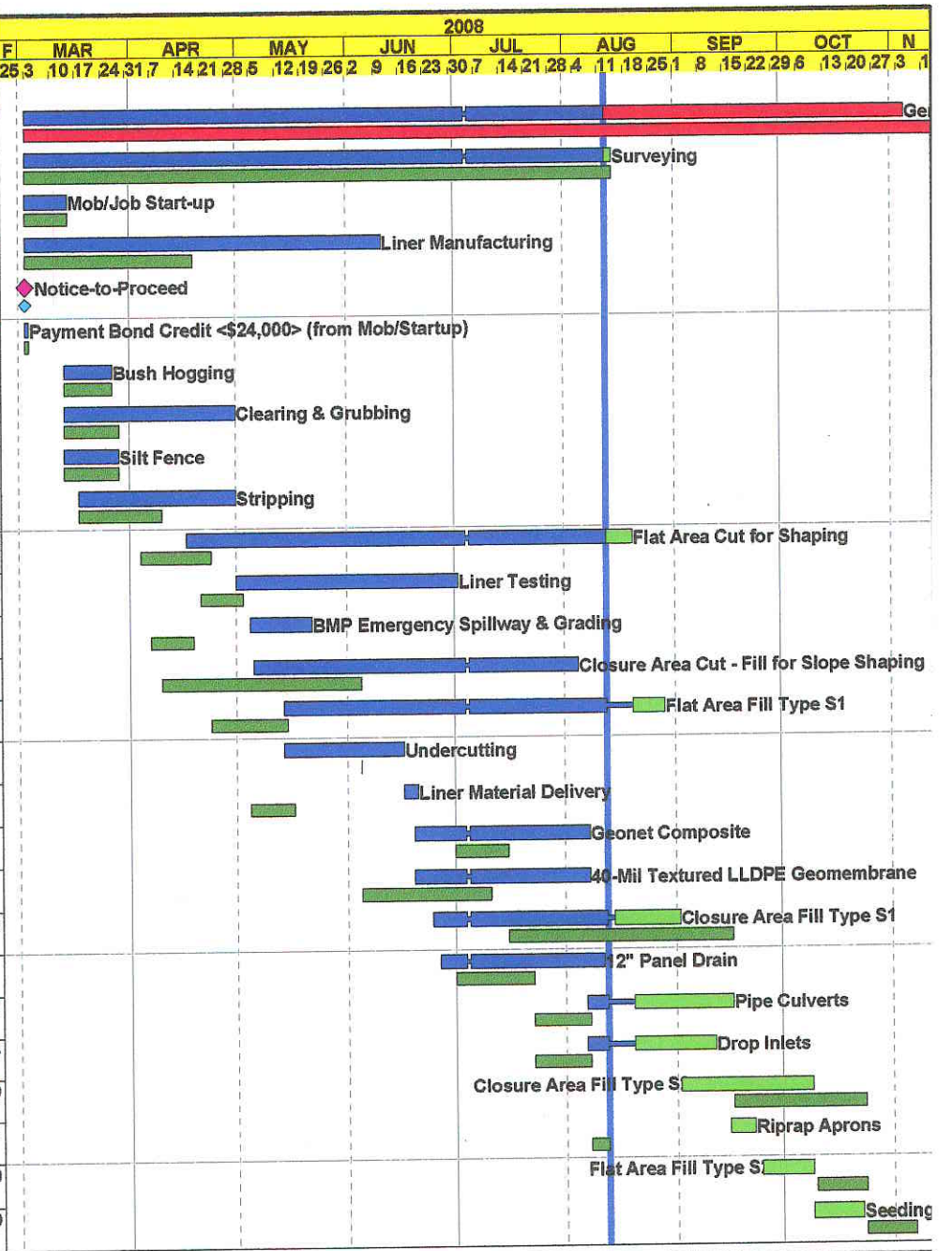
8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments As of 8-12-08(30,865.5) with no accidents/ OSHA recordables

Allied Tech: No Longer on site "0"
ESI: No Longer on site "0"

Morgan-Corp "only" (22,095.0)

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
0.5	General Overhead	189	60	68	03MAR08A	04NOV08	0
1	Surveying	185	2	99	03MAR08A	14AUG08	58
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
35A	Liner Manufacturing	35	0	100	03MAR08A	10JUN08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	30APR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	0	100	18MAR08A	30APR08A	
10	Flat Area Cut for Shaping	10	5	50	17APR08A	19AUG08	9
35B	Liner Testing	10	0	100	01MAY08A	01JUL08A	
29	BMP Emergency Spillway & Grading	10	0	100	05MAY08A	21MAY08A	
5	Closure Area Cut - Fill for Slope Shaping	40	0	100	06MAY08A	04AUG08A	
11	Flat Area Fill Type S1	15	7	53	14MAY08A	28AUG08	9
8	Undercutting	15	0	100	14MAY08A	16JUN08A	
35C	Liner Material Delivery	8	0	100	17JUN08A	20JUN08A	
34	Geonet Composite	22	0	100	20JUN08A	07AUG08A	
35	40-Mil Textured LLDPE Geomembrane	34	0	100	20JUN08A	07AUG08A	
6	Closure Area Fill Type S1	45	12	74	25JUN08A	01SEP08	9
32-33	12" Panel Drain	15	0	100	27JUN08A	11AUG08A	
25-28	Pipe Culverts	25	20	20	07AUG08A	16SEP08	21
20-24	Drop Inlets	25	17	31	07AUG08A	11SEP08	24
7	Closure Area Fill Type S2	27	27	0	02SEP08	08OCT08	9
30	Riprap Aprons	5	5	0	16SEP08	22SEP08	21
12	Flat Area Fill Type S2	10	10	0	25SEP08	08OCT08	9
31	Seeding	10	10	0	09OCT08	22OCT08	9



Start Date 03MAR08
Finish Date 04NOV08
Data Date 13AUG08
Run Date 15AUG08 12:43

Early Bar
Target Bar
Progress Bar
Critical Activity

0808

Sheet 1 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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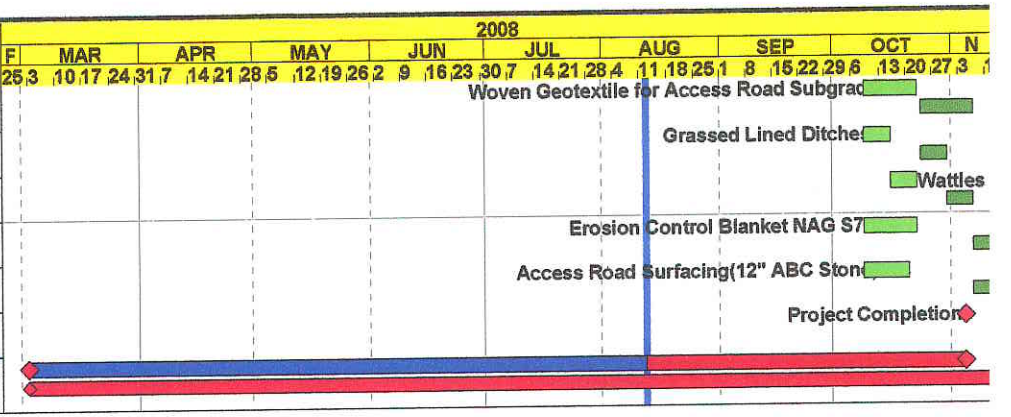
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
13	Woven Geotextile for Access Road Subgrade	10	10	0	09OCT08	22OCT08	9
17-18	Grassed Lined Ditches	5	5	0	09OCT08	15OCT08	9
19	Wattles	5	5	0	16OCT08	22OCT08	9
R3-3	Erosion Control Blanket NAG S75	10	10	0	09OCT08	22OCT08	9
14	Access Road Surfacing(12" ABC Stone)	8	8	0	09OCT08	20OCT08	11
COMP	Project Completion	0	0	0		04NOV08	0
Total		176	60	74	03MAR08A	04NOV08	0



Start Date	03MAR08
Finish Date	04NOV08
Data Date	13AUG08
Run Date	15AUG08 12:43

Early Bar
Target Bar
Progress Bar
Critical Activity

0808

Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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A&L Analytical Laboratories, Inc.

2790 Whitten Rd. Memphis, TN 38133 (901) 213-2400 Fax (901) 213-2440

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SOIL ANALYSIS

Client :	Grower :	Report No: 08-220-0626
Morgan Corporation		Cust No: 04182
11700 Reams Rd		Date Printed: 08/08/2008
Charlotte NC 28269		Page : 1 of 2
	Date Received : 08/07/2008	

Lab Number : 16165 **Field Id :** **Sample Id :** 1

Test	Results	SOIL TEST RATINGS (Very Low / Low / Medium / Optimum / Very High)
Soil pH	4.7	
Buffer pH	7.64	
Phosphorus (P)	78 LB/ACRE	
Potassium (K)	188 LB/ACRE	
Calcium (Ca)	662 LB/ACRE	
Magnesium (Mg)	198 LB/ACRE	
Sulfur (S)		
Boron (B)		
Copper (Cu)		
Iron (Fe)		
Manganese (Mn)		
Zinc (Zn)		
Sodium (Na)		
Soluble Salts		
Organic Matter	1.3 % ENR 70	
Nitrate Nitrogen		

Calculated Cation Exchange Capacity

5.6 meq/100g

Calculated Cation Saturation

%K	4.3
%Ca	29.6
%Mg	14.7
%H	51.4

K : Mg Ratio

0.29

SOIL FERTILITY GUIDELINES

Crop : COOL GRASS/LEGUME PASTURE **Yield Goal :** 3 TONS **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
4500	2.25	40-60	30	110	0						

Crop : **Rec Units:**

Comments :

COOL GRASS/LEGUME PASTURE

Limestone application is targeted to bring soil pH to 6.5.

- For establishment of alfalfa, clover, or grass-legume mixtures, apply up to 30 lbs N/Acre at seeding.
- Top production and stand life of forages will normally be obtained when soil test levels of P and K are in the high range
- Nitrogen not needed on grass-legume mixtures with a good legume stand.
- If the grass-legume stand contains less than 25 percent legume, topdress with N rates used for a straight grass stand.
- Apply 1.5 to 2.0 lbs of boron/acre/year on grass-legume mixtures.
- For renovation of a grass stand with a legume, lime the soil to raise the soil pH to 6.4.
- In renovation do not apply nitrogen or the grass will reduce that stand of the legume.
- For renovation, apply inoculant to the legume seed and molybdenum seed treatment or a molybdenum soil application.
- For soils low in sulfur, apply 20-40 lbs of sulfur as a sulfate in the spring with the nitrogen.

Patent Pending 1999

A&L Analytical Laboratories, Inc.

2790 Whitten Rd. Memphis, TN 38133 (901) 213-2400 Fax (901) 213-2440

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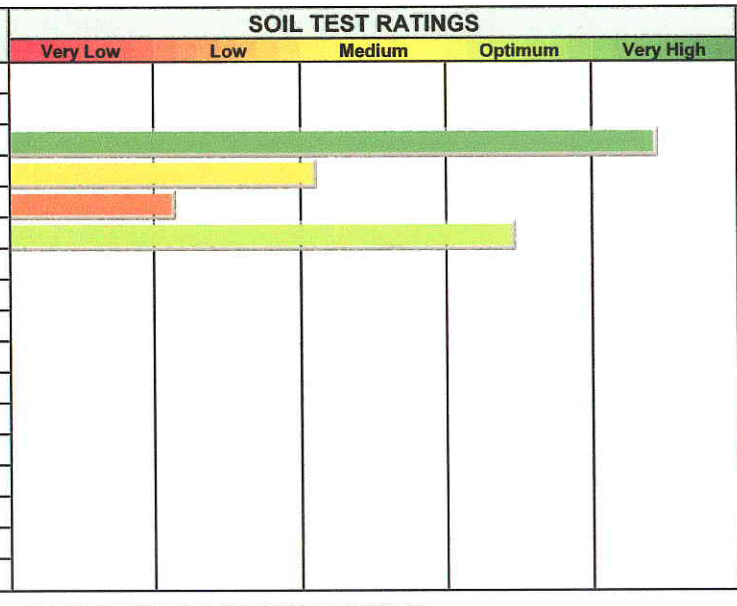
SOIL ANALYSIS

Client : Morgan Corporation 11700 Reams Rd Charlotte NC 28269	Grower : Date Received : 08/07/2008	Report No: 08-220-0626 Cust No: 04182 Date Printed: 08/08/2008 Page : 2 of 2

Lab Number : 16166 **Field Id :** **Sample Id :** 2

Test	Results
Soil pH	5.0
Buffer pH	7.70
Phosphorus (P)	156 LB/ACRE
Potassium (K)	144 LB/ACRE
Calcium (Ca)	624 LB/ACRE
Magnesium (Mg)	180 LB/ACRE
Sulfur (S)	
Boron (B)	
Copper (Cu)	
Iron (Fe)	
Manganese (Mn)	
Zinc (Zn)	
Sodium (Na)	
Soluble Salts	
Organic Matter	1.1 % ENR 66
Nitrate Nitrogen	



Calculated Cation Exchange Capacity: 4.9 meq/100g

Calculated Cation Saturation

%K	3.8
%Ca	31.8
%Mg	15.3
%H	49.0

K : Mg Ratio: 0.25

SOIL FERTILITY GUIDELINES

Crop : COOL GRASS/LEGUME PASTURE **Yield Goal :** 3 TONS **Rec Units:** LB/ACRE

(lbs) LIME	(tons)	N	P_2O_5	K_2O	Mg	S	B	Cu	Mn	Zn	Fe
3500	1.75	40-60	30	125	0						

Crop : **Rec Units:**

Comments :

COOL GRASS/LEGUME PASTURE

Limestone application is targeted to bring soil pH to 6.5.

- For establishment of alfalfa, clover, or grass-legume mixtures, apply up to 30 lbs N/Acre at seeding.
- Top production and stand life of forages will normally be obtained when soil test levels of P and K are in the high range
- Nitrogen not needed on grass-legume mixtures with a good legume stand.
- If the grass-legume stand contains less than 25 percent legume, topdress with N rates used for a straight grass stand.
- Apply 1.5 to 2.0 lbs of boron/acre/year on grass-legume mixtures.
- For renovation of a grass stand with a legume, lime the soil to raise the soil pH to 6.4.
- In renovation do not apply nitrogen or the grass will reduce that stand of the legume.
- For renovation, apply inoculant to the legume seed and molybdenum seed treatment or a molybdenum soil application.
- For soils low in sulfur, apply 20-40 lbs of sulfur as a sulfate in the spring with the nitrogen.

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 09/05/08 / 10:00 am

---

1. **Cell Phone Silence**
   1.1 Cell phones silenced
   1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting participants had comments.

2. **Level I Safety Assessment and Sign-in sheet**
   2.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME).
   2.2 Sign-in Sheet completed.

3. **Safety and Environmental**
   3.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp).
   3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp). Mark noted that 5" of rain fell last week, and requested more riprap for erosion and sediment control device maintenance. Ken Daly (S&ME) will observe erosion and sediment control devices after the meeting to assess the need for more riprap. After the meeting areas reviewed and it was decided to continue with maintenance only, removing accumulated sediment with no new riprap placement.
   3.3 Waste Materials and Recycling: no discussion items

4. **CQA\CQC**
   4.1 Inspections and Testing:
      4.1.1 Jimmy Addis (S&ME) noted the following: S1 soil cover is continuing on the Closure Area. Field density testing is going well, some tests fail the moisture content required in the specifications. The drop inlets installed to date have been patched with nonshrink grout around the pipe penetrations; concrete collars have been constructed except on Drop Inlet 7. The seven-day compressive strength of the concrete being used for the collar is 6,700 psi as demonstrated from a compressive strength test. The collars be allowed to cure for at least 48 hours before backfilling with soil and compacting. In preparation for potential rain this weekend, Morgan Corp will place soil in the drop inlet excavations to prevent ponding water and erosion around the drop inlets.
   4.2 Quality and Work Standards: In response to questions be Ken Daly (S&ME) and Mike Cook (Duke Energy), Craig Greeson (Morgan Corp) stated that a tear in the LLDPE geomembrane near Junction Box 1 was patched by extrusion welding a temporary patch. The temporary patch was surveyed; ESI will mobilize to site in approximately 2 weeks to place a permanent repair. In response to question by Ken, Craig stated that ESI has not removed one roll of LLDPE geomembrane still on site.
   4.3 Deviations: no discussion items
   4.4 Requests for Information: no discussion items

5. **Site Use and Facilities**
   5.1 Traffic and Parking: no discussion items
   5.2 Housekeeping: no discussion items
   5.3 Security: no discussion items

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 09/05/08 / 10:00 am

---

6. Schedule Update and Progress Report

6.1 Construction Progress: Craig Greeson (Morgan Corp) stated that since the last meeting the following construction activities occurred: Closure Area S1 cover placement and culvert installation. Craig stated that S1 cover placement is 80% complete, culvert installation is 60% complete, and drop inlet installation is 70% complete. In response to question by Ken Daly (S&ME), Mark Webb (Morgan Corp) stated that 2 days had been lost last week due to rain.

6.2 Updated schedule: Provided by Craig Greeson (Morgan Corp). Mike Cook (Duke Energy) noted that the new project completion date is October 31, 2008. Mike stated that Morgan Corp may remove the temporary construction entrance and reopen the original site access road based upon schedule and construction activities.

6.3 Interface with sub-contractors: no discussion items

6.4 Material delivery: Ken Daly (S&ME) stated that MQC data for additional rolls of geocomposite has been provided. S&ME will provide an official approval upon final review.

6.5 Potential changes or delays:

6.5.1 Craig Greeson (Morgan Corp) stated that two vanes of good soil have been found in the knob in the middle of the Borrow Area.

6.5.2 Cedric Ruhl (S&ME) stated that S&ME is working on an alternative to the seeding mix due to the unavailability of Kobe Lespedeza. Mike Cook (Duke Energy) requested low-lying vegetation with minimal upkeep required. Craig suggested Bermuda Grass, but added that it may be expensive. Discussion ensued. S&ME to review and provide an alternative seed mix.

6.6 Recovery Plans: no discussion items

6.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: storm system, S1 cover soil placement, and possibly installation of Drop Inlet 13.

7. Payment and Changes – discussed after Item 9.

7.1 Documentation for payment:

7.1.1 Craig Greeson (Morgan Corp) stated that Closure Area Fill Type S1 is lump sum, and suggests 80% completion for August's monthly invoice.

7.1.2 Discussion ensued about Drop Inlet payment. A total of four drop inlets will be paid for in August's invoice.

7.1.3 Mike Cook (Duke Energy) and Craig Greeson (Morgan Corp) agreed that 1,652,102 s.f (2-D) of geosynthetics have been installed. Mike and Craig will meet after the meeting to agree upon a payment quantity for the month of August.

7.2 Change Orders: Craig Greeson (Morgan Corp) and Mike Cook (Duke Energy) will collaborate on a Change Order for perimeter road earthwork.

8. Submittals

8.1 Current submittal status: Ken Daly (S&ME) noted that some outstanding submittals are being reviewed, and that the precast concrete certification submittal will probably need to be revised.
8.2 Two week submittal schedule: Craig Greeson (Morgan Corp) stated that the concrete mix to be used for the aprons around the drop inlets may be submitted.

9. Roundtable:
9.1 Mike Cook (Duke Energy) stated that Chris Hallman (Duke Energy) would like to install pumps in the monitoring wells on site, at a time that would not interfere with Morgan Corp's construction activities. Craig Greeson (Morgan Corp) stated that Chris should coordinate with Mark Webb (Morgan Corp).
9.2 Mark Webb (Morgan Corp) stated that he is keeping track of Time and Materials for Borrow Area cleanup.

10. Action Register (S&ME)
10.1 Summary of outstanding and new action items (see Action Item Register for full details):
10.1.1 #52 – S&ME and Morgan Corp to collaborate on soil/cement application, testing, and submittal documentation standards – pending.
10.1.2 #53 – Morgan Corp to provide a diagram outlining Closure Area and Flat Area limits – completed 8/26/08.
10.1.3 #54 – S&ME to provide seed mix recommendation.
10.1.4 #55 – S&ME to provide recommendation on importing more riprap.

Next meeting will take place 10:00 am 9/17/2008

Construction meeting adjourned by consensus at approximately 12:00 am.

Any discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME, Inc. in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday September 17, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-49 Have Been Resolved and Archived (9/8/08)					
50	estimate E&SC Modification permit review time	morgan corp	S&ME	7/25/2008	7/25/2008
51	provide final answer on usage of water wagons over geosynthetics/cover soil	morgan corp	S&ME	7/25/2008	7/25/2008
52	develop application, testing, and submittal documentation standards for soil/cement road surfacing	morgan corp	morgan corp / S&ME		
53	diagram outlining Closure Area and Flat Area limits	Duke	mogan corp		8/26/2008
54	provide seed mix recommendation	Duke	S&ME		
55	provide recommendation on importing more riprap	morgan corp	S&ME		9/5/2008
56					
57					
58					
59					
60					
61					
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63					
64					
65					
66					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 09/5/08

Name (Print)	Signature	Company
Cedric Ruhl		S+ME
Craig Greeson		Morgan Corp
MARK WEBB		MORGAN CORP
Paul Whitehurst		MORGAN CORP
Mike Cook		Duke
KEN DALY		S&ME
Chris Shuster		morgan corp.
Jimmy Addis		S+ME Inc

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 9-3-08
Report for Week Ending: 9-3-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

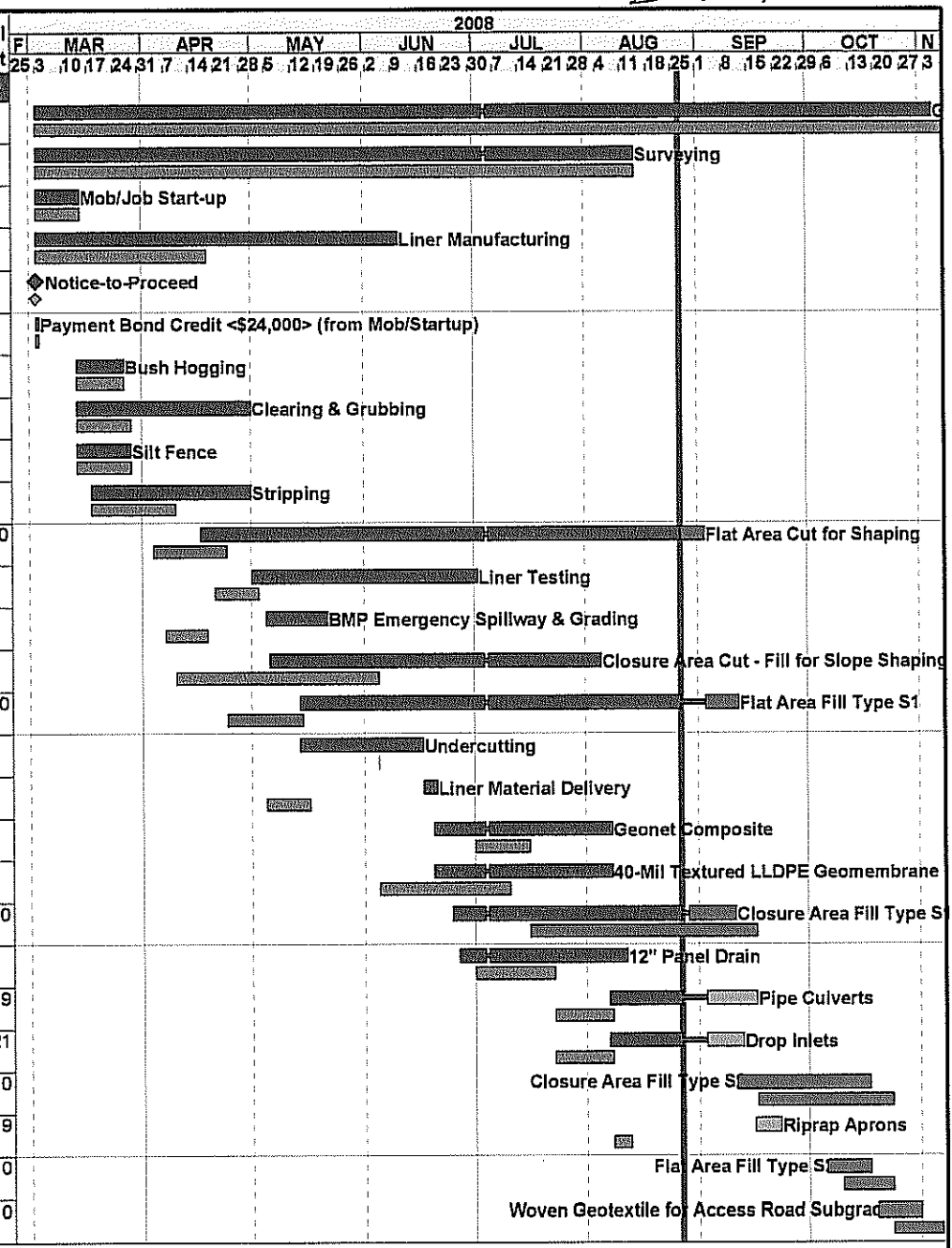
	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	689	0	31	0	720
SOS Cards	0	0			0
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments As of 9-3-08 (32,639.4) with no accidents/ OSHA recordables

KJ 9/5/08

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
0.5	General Overhead	189	0	100	03MAR08A	04NOV08A	
1	Surveying	185	0	100	03MAR08A	14AUG08A	
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
35A	Liner Manufacturing	35	0	100	03MAR08A	10JUN08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	30APR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	0	100	18MAR08A	30APR08A	
10	Flat Area Cut for Shaping	10	5	50	17APR08A	02SEP08	0
35B	Liner Testing	10	0	100	01MAY08A	01JUL08A	
29	BMP Emergency Spillway & Grading	10	0	100	05MAY08A	21MAY08A	
5	Closure Area Cut - Fill for Slope Shaping	40	0	100	06MAY08A	04AUG08A	
11	Flat Area Fill Type S1	15	7	53	14MAY08A	11SEP08	0
8	Undercutting	15	0	100	14MAY08A	16JUN08A	
35C	Liner Material Delivery	8	0	100	17JUN08A	20JUN08A	
34	Geonet Composite	22	0	100	20JUN08A	07AUG08A	
35	40-Mil Textured LLDPE Geomembrane	34	0	100	20JUN08A	07AUG08A	
6	Closure Area Fill Type S1 80%	45	9	80	25JUN08A	10SEP08	0
32-33	12" Panel Drain	15	0	100	27JUN08A	11AUG08A	
25-28	Pipe Culverts 60%	25	10	60	07AUG08A	16SEP08	19
20-24	Drop Inlets 70%	25	8	70	07AUG08A	12SEP08	21
7	Closure Area Fill Type S2	27	27	0	11SEP08	17OCT08	0
30	Riprap Aprons	5	5	0	16SEP08	22SEP08	19
12	Flat Area Fill Type S2	10	10	0	06OCT08	17OCT08	0
13	Woven Geotextile for Access Road Subgrade	10	10	0	20OCT08	31OCT08	0



Start Date	03MAR08
Finish Date	31OCT08
Data Date	27AUG08
Run Date	29AUG08 13:14

Early Bar
Target Bar
Progress Bar
Critical Activity

808B

Sheet 1 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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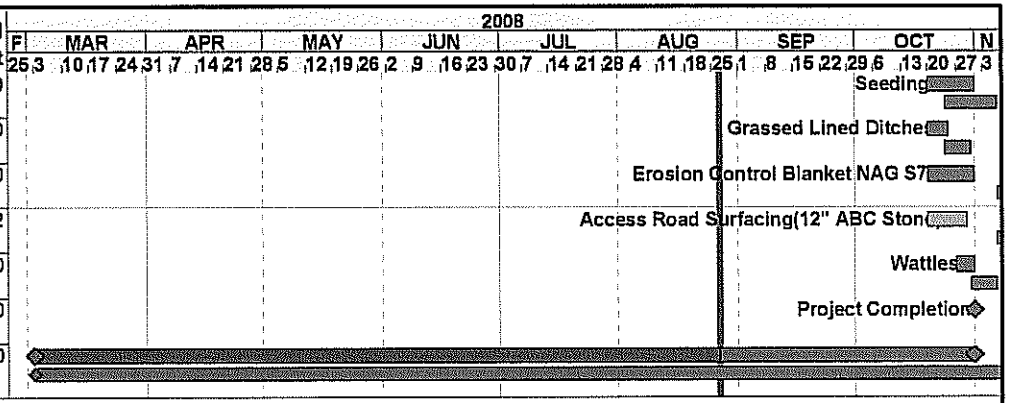
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
31	Seeding	10	10	0	20OCT08	31OCT08	0
17-18	Grassed Lined Ditches	5	5	0	20OCT08	24OCT08	0
R3-3	Erosion Control Blanket NAG S75	10	10	0	20OCT08	31OCT08	0
14	Access Road Surfacing(12" ABC Stone)	8	8	0	20OCT08	29OCT08	2
19	Wattles	5	5	0	27OCT08	31OCT08	0
COMP	Project Completion	0	0	0		31OCT08	0
Total		174	48	84	03MAR08A	31OCT08	0



Start Date	03MAR08
Finish Date	31OCT08
Data Date	27AUG08
Run Date	29AUG08 13:14

Early Bar
Target Bar
Progress Bar
Critical Activity

808B

Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

© Primavera Systems, Inc.

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 09/17/08 / 10:00 am

---

1. Cell Phone Silence

1.1 Cell phones silenced

1.2 Ken Daly (S&ME) asked if there were any comments on the previous meeting's minutes, none of today's meeting participants had comments.

2. Level I Safety Assessment and Sign-in sheet

2.1 Level 1 Safety Assessment conducted by Earl Whitehurst (Morgan Corp).

2.2 Sign-in Sheet completed.

3. Safety and Environmental

3.1 Weekly Safety Report: Weekly Safety Report presented by Earl Whitehurst (Morgan Corp). Mike Cook (Duke Energy) complemented Morgan Corp for project's safety record to date, but warned against becoming complacent. Jeff Howell (Morgan Corp) and Earl stated that complacency is addressed during daily safety meetings.

3.2 Weekly Environmental Report: Weekly Environmental Report presented by Mark Webb (Morgan Corp). Mark noted that 1 ¾" ran fell yesterday (9/16/08), erosion and sediment control inspection and maintenance will be occurring today.

3.3 Waste Materials and Recycling: no discussion items

4. CQA\CQC

4.1 Inspections and Testing:

4.1.1 Jimmy Addis (S&ME) noted the following: S1 soil cover placement and testing on the Closure Area is nearing completion with some fine-grading operations still outstanding. Drop inlets 1-4, 6-10, and junction box 1 have been installed, almost all pipes connected to drop inlets have been grouted and collars installed. Time and materials borrow area grading continues.

4.1.2 In response to question by Mike Cook (Duke Energy), Mark Webb (Morgan Corp) stated that borrow area grading is approximately 80% complete. In response to question by Ken Daly (S&ME), Mike stated that time and materials expenses for borrow area grading is currently less than expected. Mike asked Craig Greeson (Morgan Corp) to develop a change order for borrow area grading operations.

4.1.3 In response to questions by Mike Cook (Duke Energy), Jimmy Addis (S&ME) stated that all drop inlets have been installed except for drop inlets 12 and 13. Mark Webb (Morgan Corp) added that outstanding storm culvert placement includes the following sections: DI-9 to FES-2, J.B. 5 to ditch C-7, and completion of culvert 10. Mark also stated that storm culvert quantities are now being measured in accordance with standard operating procedures.

4.1.4 In response to question by Ken Daly (S&ME) Jimmy Addis (S&ME) stated that some S2 cover soil (topsoil) excavated from the borrow area has been placed on the closure area, but that the on-site and import topsoil stockpile has not been disturbed. Jimmy predicted that S2 cover soil placement will begin by Friday.

4.2 Quality and Work Standards: no discussion items

4.3 Deviations: no discussion items

4.4 Requests for Information:

4.4.1 In response to question by Mike Cook (Duke Energy), Ken Daly (S&ME) stated that concrete pads around the drop inlets shall be constructed in accordance with the specifications; 6" thick with a 28-day compressive strength of 4,000 psi.

4.4.2 In response to question by Ken Daly (S&ME) Craig Greeson (Morgan Corp) stated that temporary erosion control measures are requested to prevent siltation in the installed drop inlets. Craig proposes installing rock-ring inlet protection and check dams as soon as possible. Mike Cook (Duke Energy) requests that the cost for temporary erosion control measures include materials, installation, maintenance, and removal. Discussion ensued. Mike agreed to pay for 40-50 tons of riprap as needed under existing change order 2. Craig confirmed that this would include maintenance and removal.

5. Site Use and Facilities

5.1 Traffic and Parking: no discussion items

5.2 Housekeeping: no discussion items

5.3 Security: no discussion items

6. Schedule Update and Progress Report

6.1 Construction Progress: Craig Greeson (Morgan Corp) stated that since the last meeting the following construction activities occurred: Closure area S1 cover placement (95% complete), drop inlet installation (75% complete), borrow area grading. In response to questions by Ken Daly (S&ME), Mark Webb (Morgan Corp) stated that, since the last construction meeting, 4 days have been lost due to inclement weather. Craig Greeson stated that for now there appears to be a sufficient quantity of borrow soil available within the existing borrow area limits.

6.2 Updated schedule:

6.2.1 Provided by Craig Greeson (Morgan Corp). Craig noted that the estimated project completion date has been pushed back to November 8, 2008.

6.2.2 Mike Cook (Duke Energy) noted that according to the schedule, seeding will begin October 29, 2008. Craig Greeson (Morgan Corp) stated that seeding is planned to begin on September 29, 2008. Ken Daly (S&ME) provided meeting participants with three alternative seed mix options generated by S&ME (Kobe lespedeza seed as specified on the Drawings is unavailable, see meeting minutes from 9-5-08, Section 6.5). Ken stated that these seed mixes were developed specifically to establish vegetation well, control erosion, and decrease maintenance needs. Ken recommended a minimum mowing rate of once per year to control trees and woody vegetation. In response to question by Mike, Craig stated that Morgan Corp would not subcontract seeding operations. Mike requested that the project specifications be merged with the new seed mix option. Jeff Howell (Morgan Corp) will coordinate the seed mix revision process between Morgan Corp, S&ME, and Pennington Seed.

6.3 Interface with sub-contractors: Craig Greeson (Morgan Corp) stated that ESI will be on site within the next two weeks to place a final geomembrane patch over the temporary patch near junction box 1.

6.4 Material delivery: Craig Greeson (Morgan Corp) stated that erosion control matting will be delivered to site. Jeff Howell (Morgan Corp) stated that a lifting and storage plan must be created for the erosion control matting.
6.5 Potential changes or delays: no discussion items
6.6 Recovery Plans: no discussion items
6.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: S1 cover soil placement, storm system inside the closure area, S2 cover soil placement, and seeding.

7. Payment and Changes

7.1 Documentation for payment: no discussion items
7.2 Change Orders: Mike Cook (Duke Energy) outlined three change orders that need to be generated as follows: Mike will draft change order 11 – grading outside of the flat area and closure area, including cut/fill and S1/S2 cover soil placement. Craig Greeson (Morgan Corp) will draft change order 12 – time and materials for borrow area grading and change order 13 – seeding revisions.

8. Submittals

8.1 Current submittal status: Ken Daly (S&ME) noted that the precast concrete certification submittal was rejected, and the geocomposite manufacturer's quality control data is pending.
8.2 Two week submittal schedule: Craig Greeson (Morgan Corp) stated that seed mix will be submitted. Cedric Ruhl (S&ME) requested that submittal requirements for soil/cement access road surfacing include a construction process narrative to include proposed mix design and curing method.

9. Roundtable:

9.1 Mike Cook (Duke Energy) stated that he requested Chris Hallman (Duke Energy) to coordinate installation of pumps in monitoring wells with Mark Webb (Morgan Corp).

10. Action Register (S&ME)

10.1 Summary of outstanding and new action items (see Action Item Register for full details):
10.1.1 #52 – S&ME and Morgan Corp to collaborate on soil/cement application, testing, and submittal documentation standards – pending.
10.1.2 #54 – S&ME to provide seed mix recommendation – completed 9/17/08.
10.1.3 #56 – S&ME to provide Morgan Corp with contact information to discuss seed mix – today.
10.1.4 #57 – S&ME to develop a Design Change Notice summarizing seeding design changes – 9/22/08.
10.1.5 #58 – Duke to draft change order 11, grading outside of the borrow area and closure area – 9/19/08.
10.1.6 #59 – Morgan Corp to draft change order 12, t&m for borrow area grading.
10.1.7 #60 – Morgan Corp to draft change order 13, seeding revisions.
10.1.8 #61 – Morgan Corp to provide schedule consisting of active construction activities.

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 09/17/08 / 10:00 am

Next meeting will take place 10:00 am 10/1/2008

Construction meeting adjourned by consensus at approximately 11:35 am.

Discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday October 1, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-49 Have Been Resolved and Archived (9/8/08)					
50	estimate E&SC Modification permit review time	morgan corp	S&ME	7/25/2008	7/25/2008
51	provide final answer on usage of water wagons over geosynthetics/cover soil	morgan corp	S&ME	7/25/2008	7/25/2008
52	develop application, testing, and submittal documentation standards for soil/cement road surfacing	morgan corp	morgan corp / S&ME		
53	diagram outlining Closure Area and Flat Area limits	Duke	mogan corp		8/26/2008
54	provide seed mix recommendation	Duke	S&ME		9/17/2008
55	provide recommendation on importing more riprap	morgan corp	S&ME		9/5/2008
56	provide contact information to discuss seed mix options	morgan corp	S&ME	9/17/2008	
57	provide Design Change Notice summarizing seeding design changes	morgan corp	S&ME	9/22/2008	
58	draft Change Order 11, grading outside of Borrow Area and Flat Area, including cut/fill, and placement of S1 and S2 cover soil	S&ME	Duke	9/19/2008	
59	draft Change Order 12, T&M for Borrow Area grading	S&ME	morgan corp	9/19/2008	
60	draft Change Order 13, seeding revisions	Duke	morgan corp		
61	provide schedule consisting of only active construction activities	Duke	morgan corp		
62					
63					
64					
65					
66					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 09/17/08

Name (Print)	Signature	Company
Mike Cook	Mike Cook	Duke
Earl Whitehurst	Earl Whitehurst	Morgan Corp.
MARK WEBB	[illegible]	MORGAN
Craig Gleeson	[illegible]	Morgan Corp
GRIFFIN QUERY	[illegible]	MORGAN CORP.
Jimmy Addis	Jimmy Addis	S&ME Inc.
Cedric Rull	Cedric Rull	S+ME
KEN DALY	[illegible]	S+ME
JEFF HOWELL	[illegible]	MORGAN

9/17/08

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 9-17-08
Report for Week Ending: 9-17-08
Report Originator: Earl Whitehurst

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

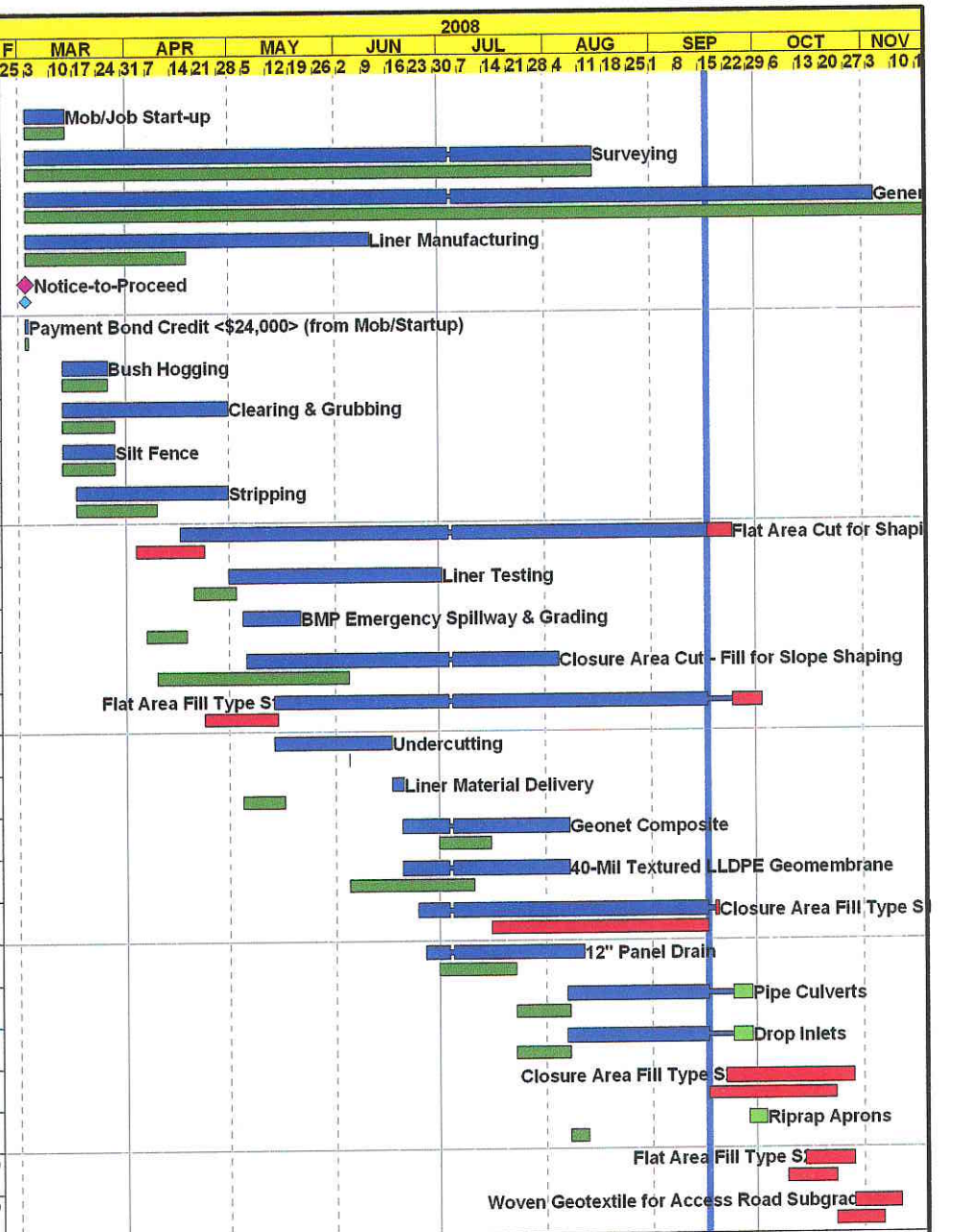
	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	628	0	40	0	668
SOS Cards	0	0			0
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments As of 9-~~3~~-08 (34,623.4) with no accidents/ OSHA recordables
17 KED

9/17/08

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
0	Mob/Job Start-up	9	0	100	03MAR08A	14MAR08A	
1	Surveying	185	0	100	03MAR08A	14AUG08A	
0.5	General Overhead	189	0	100	03MAR08A	04NOV08A	
35A	Liner Manufacturing	35	0	100	03MAR08A	10JUN08A	
NTP	Notice-to-Proceed	0	0	100	03MAR08A		
R3-1	Payment Bond Credit <$24,000> (from Mob/Startup)	1	0	100	03MAR08A	03MAR08A	
2	Bush Hogging	2	0	100	14MAR08A	26MAR08A	
3	Clearing & Grubbing	10	0	100	14MAR08A	30APR08A	
16	Silt Fence	5	0	100	14MAR08A	28MAR08A	
4	Stripping	10	0	100	18MAR08A	30APR08A	
10	Flat Area Cut for Shaping	10	5	50	17APR08A	23SEP08	0
35B	Liner Testing	10	0	100	01MAY08A	01JUL08A	
29	BMP Emergency Spillway & Grading	10	0	100	05MAY08A	21MAY08A	
5	Closure Area Cut - Fill for Slope Shaping	40	0	100	06MAY08A	04AUG08A	
11	Flat Area Fill Type S1	15	7	53	14MAY08A	02OCT08	0
8	Undercutting	15	0	100	14MAY08A	16JUN08A	
35C	Liner Material Delivery	8	0	100	17JUN08A	20JUN08A	
34	Geonet Composite	22	0	100	20JUN08A	07AUG08A	
35	40-Mil Textured LLDPE Geomembrane	34	0	100	20JUN08A	07AUG08A	
6	Closure Area Fill Type S1 95%	45	1	95	25JUN08A	19SEP08	0
32-33	12" Panel Drain	15	0	100	27JUN08A	11AUG08A	
25-28	Pipe Culverts	25	4	60	07AUG08A	29SEP08	17
20-24	Drop Inlets 75%	25	4	75	07AUG08A	29SEP08	17
7	Closure Area Fill Type S2	27	27	0	22SEP08	28OCT08	0
30	Riprap Aprons	5	5	0	29SEP08	03OCT08	17
12	Flat Area Fill Type S2	10	10	0	15OCT08	28OCT08	0
13	Woven Geotextile for Access Road Subgrade	10	10	0	29OCT08	11NOV08	0



Start Date	03MAR08
Finish Date	11NOV08
Data Date	17SEP08
Run Date	16SEP08 10:10

Early Bar
Target Bar
Progress Bar
Critical Activity

0908

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Sheet 1 of 2

Date	Revision	Checked	Approved

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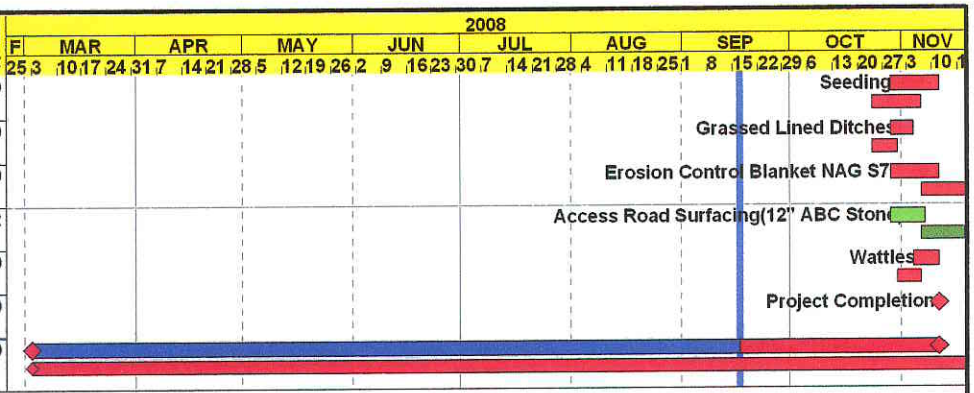
Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
31	Seeding	10	10	0	29OCT08	11NOV08	0
17-18	Grassed Lined Ditches	5	5	0	29OCT08	04NOV08	0
R3-3	Erosion Control Blanket NAG S75	10	10	0	29OCT08	11NOV08	0
14	Access Road Surfacing(12" ABC Stone)	8	8	0	29OCT08	07NOV08	2
19	Wattles	5	5	0	05NOV08	11NOV08	0
COMP	Project Completion	0	0	0		11NOV08	0
Total		181	40	86	03MAR08A	11NOV08	0



SEPT 29th

Start Date	03MAR08
Finish Date	11NOV08
Data Date	17SEP08
Run Date	16SEP08 10:10

Early Bar
Target Bar
Progress Bar
Critical Activity

0908

Sheet 2 of 2

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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CUSTOM SEED MIX DEVELOPMENT

Location Mecklenburg County, NC

Completion Date May 2008

S&ME developed a custom native seed mix for use on utility easements. The purpose of the native seed mix is to provide low-maintenance soil stabilization while coordinating with the County's effort to promote native vegetation in riparian areas. S&ME's services included long-term evaluation of the custom seed mix and revision recommendations. These services were provided during and immediately following installation of an eight-mile sewer line project.

Seed mix monitoring included observations of germination and development in a variety of habitats (wet and dry, sunny and dry, wet and shady, sunny and shady, etc.) to determine if adequate coverage was being achieved, to determine which plants in the seed mix do best overall, and to determine if changes were necessary to achieve adequate coverage. During the course of the four-year project, the seed mix and seeding rates were refined to improve coverage across the range of habitats. S&ME participated in the one-year warranty field review with the client and the seed mix was observed to be meeting the objectives by providing soil stabilization and reduced maintenance needs.

COMMON NAME	SCIENTIFIC NAME	PERCENTAGE OF MIX
Black-eyed Susan	*Rudbeckia hirta*	25
Deertongue 'Tioga'	*Dichanthelium clandestinum*	5
Korean lespedeza	*Lespedeza stipulacea* (*Kummerowia stipulacea*)	15
Partridge pea	*Chamaecrista fasciculata*	20
Pennsylvania smartweed	*Polygonum pennsylvanicum*	10
Plains coreopsis	*Coreopsis tinctoria*	15
River oats	*Chasmanthium latifolium*	5
Switch grass	*Panicum virgatum*	5

*Apply seed mix at a rate of 40 pounds per acre. Overseed with 20 pounds per acre of annual rye *and* 10 pounds per acre of foxtail millet.

PHOTOS OF SEED MIX SPECIES

Partridge pea (*Chamaecrista fasciculata*)

Korean lespedeza (*Lespedeza stipulacea*)

Partridge pea (*Chamaecrista fasciculata*)

Plains coreopsis (*Coreopsis tinctoria*)

Black-eye Susan (*Rudbeckia hirta*)

Benefits

- Seed mix is largely comprised of native species (some non-native temporary placeholder species are included for short-term soil stabilization)
- Aesthetically pleasing
- Beneficial to wildlife
- Can be seeded at lower rates than standard erosion control seed mix
- Maximum height of approximately two feet
- Low maintenance – no mowing required
- Establishes quickly

Considerations

- May be more expensive on a per pound basis than standard erosion control seeding
- Can't be purchased locally; must be ordered, but can typically be delivered within one week

STANDARD EROSION CONTROL SEED MIX

COMMON NAME	SCIENTIFIC NAME	PERCENTAGE OF MIX
Crown vetch	*Coronilla varia*	25
Kentucky 31 tall fescue	*Festuca arundinacea*	40
Red top	*Agrostis alba*	35

*Apply seed mix at a rate of 60 pounds per acre. Overseed with 40 pounds per acre of annual rye *and* 30 pounds per acre of foxtail millet.

Benefits

- Inexpensive
- Seed is readily available on short notice
- Establishes quickly

Considerations

- May require annual mowing
- Low diversity of mix may require re-seeding within warranty period to establish good stand
- Maximum height of approximately four feet – may require annual mowing
- Must seed at higher rate for adequate stabilization

NATIVE GRASS EROSION CONTROL SEED MIX

COMMON NAME	SCIENTIFIC NAME	PERCENTAGE OF MIX
Deertongue	*Dichanthelium clandestinum*	20
Indian grass	*Sorghastrum nutans*	15
Little bluestem	*Schizachyrium scoparium*	15
Purpletop	*Tridens flavus*	15
Switch grass	*Panicum virgatum*	35

*Apply seed mix at a rate of 40 pounds per acre. Overseed with 60 pounds per acre of annual rye *and* 30 pounds per acre of foxtail millet.

Benefits

- Seed mix is largely comprised of native species (some non-native temporary placeholder species are included for short-term soil stabilization)
- Beneficial to wildlife
- Can be seeded at lower rates than standard erosion control seed mix
- Develops long-term prairie-type habitat

Considerations

- May be more expensive on a per pound basis than standard erosion control seeding
- Can't be purchased locally; must be ordered, but can typically be delivered within one week
- Maximum height of approximately four feet – may require annual mowing
- Permanent seeding takes one year to germinate and begin establishing, so must seed temporary overseeding at higher rate for short-term stabilization

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 10/7/08 / 1:00 pm

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1. **Cell Phone Silence**
   1.1 Cell phones silenced

2. **Discussion of Previous Meeting Minutes**
   2.1 No participants had comments on the previous meeting's minutes.

3. **Level I Safety Assessment and Sign-in sheet**
   3.1 Level 1 Safety Assessment conducted by Rory Williamson (Morgan Corp). Rory is Morgan Corp's new on-site safety professional, replacing Earl Whitehurst.
   3.2 Sign-in Sheet completed.

4. **Safety and Environmental**
   4.1 Weekly Safety Report: Weekly Safety Report presented by Rory Williamson (Morgan Corp).
   4.2 Weekly Environmental Report:
      4.2.1 Weekly Environmental Report presented by Mark Webb (Morgan Corp). Mark noted that new chemicals (lime and fertilizer) have been brought on site, MSDS sheets for these chemicals have been placed in the appropriate file. In response to question by Mark, Mike Cook (Duke Energy) stated that Melanie Martin (Duke Energy) did not need to be notified about the presence of these chemicals on site. In response to question by Mike, Mark stated that the lime and fertilizer are being protected from the elements by the following measures: lime and fertilizer are in bags, stored off of the ground on pallets, and the pallets wrapped in sheet plastic.
      4.2.2 Mark Webb (Morgan Corp) stated that 2.65 inches of rain fell between September 26 and September 28, a post-rainfall event erosion control inspection was performed. In response to question by Mike Cook (Duke Energy), Mark stated that the sediment basin dike has thick vegetation and does not exhibit signs of erosion.
   4.3 Waste Materials and Recycling: no discussion items

5. **CQA\CQC**
   5.1 Inspections and Testing:
      5.1.1 Jimmy Addis (S&ME) noted the following: S2 topsoil placement on the Closure Area is approximately 95% complete; in the Flat Area some S2 topsoil has been stockpiled but not spread; installation of Culvert 5 connecting ditches C2 and C7; the grassing crew is on site; the topsoil on top of the Closure Area has been blended and partially raked; seed will be delivered tomorrow.
      5.1.2 Mike Cook (Duke Energy) noticed that the schedule shows grassing operations beginning on October 29 and ending on November 11. Craig Greeson (Morgan Corp) stated that the completion date for seeding will be held to November 11 as shown on the schedule.
   5.2 Quality and Work Standards: no discussion items
   5.3 Deviations: no discussion items
   5.4 Requests for Information: no discussion items

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 10/7/08 / 1:00 pm

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6. Site Use and Facilities

6.1 Traffic and Parking: no discussion items
6.2 Housekeeping: no discussion items
6.3 Security: no discussion items

7. Schedule Update and Progress Report

7.1 Construction Progress: Craig Greeson (Morgan Corp) stated that since the last meeting the following construction activities occurred: Closure area S2 topsoil placement (95% complete in Closure Area), drop inlet/culvert installation (95% complete), perimeter road shaping.
7.2 Updated schedule: Provided by Craig Greeson (Morgan Corp). Craig stated that he would provide an updated schedule later this week to reflect actual seeding dates.
7.3 Interface with sub-contractors: Jimmy Addis (S&ME) stated that Drop Inlet 13 is still at Oldcastle, the outlet pipe penetrations are being re-cored to a larger diameter.
7.4 Material delivery: Drop Inlet 13 will be re-delivered. Mark Webb (Morgan Corp) stated that lime, fertilizer, mulch and matting are on site, seed should be delivered tomorrow. Seed will be delivered in bags and will be pre-mixed.
7.5 Potential changes or delays: no discussion items
7.6 Recovery Plans: no discussion items
7.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: S2 cover soil placement, perimeter road shaping, panel drain outlet pipes and aprons, storm drain and drop inlets, seeding, and cut and fill in the Flat Area.

8. Payment and Changes

8.1 Documentation for payment:
8.1.1 Mike Cook (Duke Energy) inquired about the status of Change Order 12, time and materials for Borrow Area grading. Mark Webb (Morgan Corp) stated that the majority of Borrow Area grading is completed. Mike noted that he had changed the payment type for this change order to payment on unit basis. Change Order 12 was then signed by the appropriate persons as a not to exceed amount.
8.1.2 Mike Cook (Duke Energy) stated that the payment application for the month of September needs final approval pending insertion of Change Order 12 into the application. Payment for this change order will be based on actual documented hours worked.
8.2 Change Orders:
8.2.1 Change Order 12 – time and materials for Borrow Area grading was signed today.
8.2.2 Change Order 13 – seeding was dismissed by consensus due to Morgan's provision of an alternative seed mix at no increase in price.

8.2.3 Change Order 11 – grading outside of the Flat Area and Closure Area was discussed at length. Craig Greeson (Morgan Corp) agreed to provide updated estimates of cut/fill, soil cover S1, and topsoil S2 to be placed in the area outside of the Flat Area and Closure Area (a.k.a. perimeter road, additional infrastructure). Mike Cook (Duke Energy) noted that S&ME will need to approve final quantities for payment of cut/fill, S1, and S2 placement. Mike also noted that the change order will include cut/fill, S1, and S2 quantities, and specifications are still in effect for work done in this area.

9. Submittals

9.1 Current submittal status: Cedric Ruhl (S&ME) reviewed the following submittals under review: precast concrete Manufacturer's Certificate, geocomposite Manufacturer's Quality Control testing, cast-in-place concrete product data; and substitute for DS-75 matting.

9.2 Two week submittal schedule: Craig Greeson (Morgan Corp) stated that seed mix and soil/cement construction narrative and mix design will be submitted.

10. Roundtable:

10.1 Craig Greeson (Morgan Corp) stated that no soil/cement laboratory or field testing will be performed by Morgan Corp. Cedric Ruhl (S&ME) stated that he will look into finding a laboratory testing facility.

10.2 Cedric Ruhl (S&ME) stated that a request for product substitution had been submitted by Morgan Corp this morning before the meeting. Morgan requests substituting Western Excelsior CS-3 matting for Western Excelsior SR-1 matting. Cedric stated that Morgan can install the proposed matting at the Contractor's own risk until formal review of the matting substitution submittal.

11. Action Register (S&ME)

11.1 Summary of outstanding and new action items (see Action Item Register for full details):

11.1.1 #52 – S&ME and Morgan Corp to collaborate on soil/cement application, testing, and submittal documentation standards – see action register items 63 and 64.

11.1.2 #57 – S&ME to develop a Design Change Notice summarizing seeding design changes – upon receipt of seeding submittal from Morgan Corp.

11.1.3 #58 – Duke Energy to draft change order 11, grading outside of the borrow area and closure area – in progress.

11.1.4 #59 – Morgan Corp to draft change order 12, T&M for borrow area grading – completed and signed 10/7/08.

11.1.5 #60 – Morgan Corp to draft change order 13, seeding revisions – tabled by Mike Cook (Duke Energy) 10/7/08.

11.1.6 #61 – Morgan Corp to provide schedule consisting of active construction activities – completed 10/9/08.

11.1.7 #62 – Morgan Corp to prepare lift plan for erosion control matting – tabled (actual size/weight of matting rolls less than previously expected).

11.1.8 #63 – Morgan Corp to provide soil/cement submittal consisting of construction narrative and mix design – 10/21/08.

11.1.9 #64 – S&ME to develop laboratory testing requirements for soil/cement – 10/17/08.
11.1.10 #65 – Morgan Corp to develop warranty criteria for seeding – 10/21/08.
11.1.11 #66 – Morgan Corp to provide a revised schedule – 10/10/08.
11.1.12 #67 – Morgan Corp to provide an update on estimated quantities for cut/fill, S1 cover soil and S2 topsoil for the perimeter road (outside of the Flat Area and Closure Area) – 10/10/08.

Next meeting will take place 10:00 am 10/22/2008

Construction meeting adjourned by consensus at approximately 2:35 pm.

Discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday October 22, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-56 Have Been Resolved and Archived (10/15/08)					
57	provide Design Change Notice summarizing seeding design changes	morgan corp	S&ME	9/22/2008	
58	draft Change Order 11, grading outside of Borrow Area and Flat Area, including cut/fill, and placement of S1 and S2 cover soil	S&ME	Duke	9/19/2008	
59	draft Change Order 12, T&M for Borrow Area grading	S&ME	morgan corp	9/19/2008	10/7/2008
60	draft Change Order 13, seeding revisions	Duke	morgan corp		tabled by Mike Cook (10/7/08)
61	provide schedule consisting of only active construction activities	Duke	morgan corp		10/9/2008
62	prepare lift plan for erosion control matting	morgan corp	morgan corp		tabled (10/7/08)
63	provide soil/cement submittal (construction narrative, equipment used, and proposed design)	S&ME	morgan corp	10/21/2008	
64	develop laboratory testing requirements for soil/cement	morgan corp	S&ME	10/17/2008	
65	develop proposed warranty criteria for seeding	Duke	morgan corp	10/21/2008	
66	provide a revised schedule	Duke	morgan corp	10/10/2008	
67	provide an update on quantity estimate for cut/fill, S1 cover soil and S2 topsoil for the perimeter road	Duke	morgan corp	10/10/2008	
68					
69					
70					
71					
72					
73					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for ~~10/06/08~~ 10/7/08

Name (Print)	Signature	Company
Cedric Rull	Cedric Rull	S&ME
Jimmy Addis	Jimmy Addis	S&ME
Chris Shorter	[illegible]	Morgan Corp.
Mike Cook	Mike Cook	Duke
GRIFFIN QUERY	[illegible]	MORGAN CORP
MARK WEBB	~~MORGAN~~ [illegible]	MORGAN
Craig Gleeson	D Cy Green	Morgan-Corp

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 10-7-2008
Report for Week Ending: 10-6-08
Report Originator: Rory Williamson

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 4
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

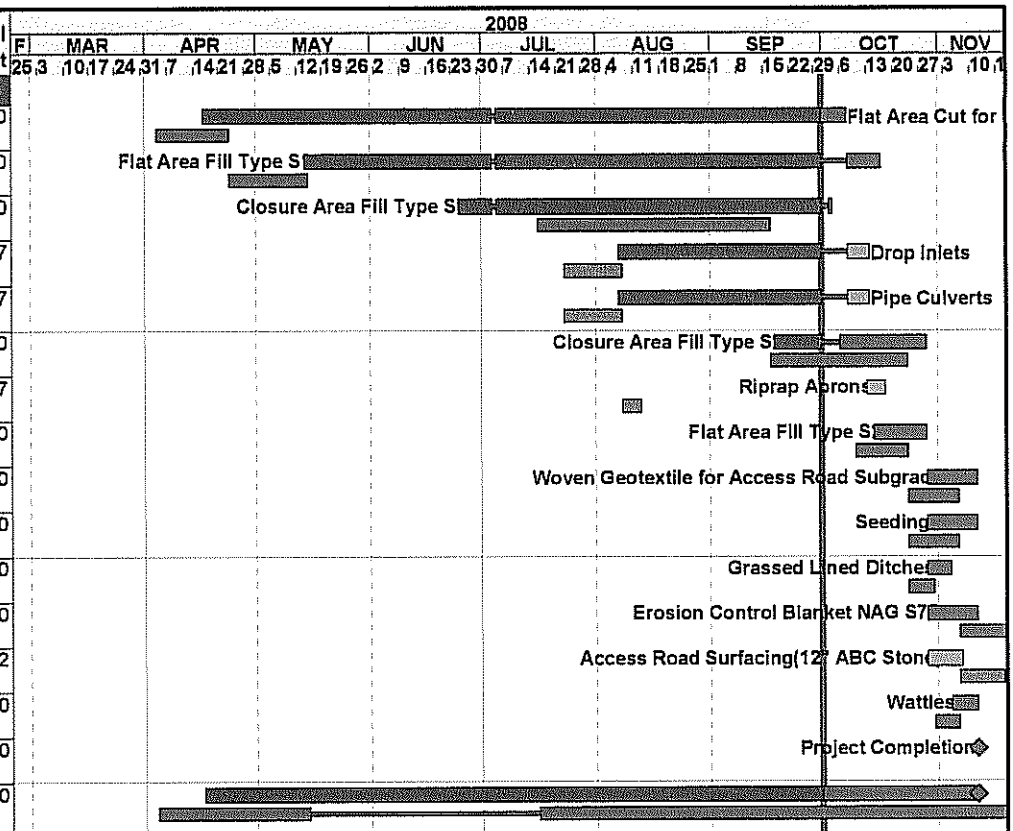
7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	1429.5	0	58	0	1487.5
SOS Cards	0	0			0
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments As of 10-6-08 ( ) with no accidents/ OSHA recordables

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
10	Flat Area Cut for Shaping	10	5	50	17APR08A	07OCT08	0
11	Flat Area Fill Type S1	15	7	53	14MAY08A	16OCT08	0
6	Closure Area Fill Type S1	45	1	95	25JUN08A	03OCT08	0
20-24	Drop Inlets	25	4	84	07AUG08A	13OCT08	7
25-28	Pipe Culverts	25	4	84	07AUG08A	13OCT08	7
7	Closure Area Fill Type S2	27	17	37	18SEP08A	28OCT08	0
30	Riprap Aprons	5	5	0	13OCT08	17OCT08	7
12	Flat Area Fill Type S2	10	10	0	15OCT08	28OCT08	0
13	Woven Geotextile for Access Road Subgrade	10	10	0	29OCT08	11NOV08	0
31	Seeding	10	10	0	29OCT08	11NOV08	0
17-18	Grassed Lined Ditches	5	5	0	29OCT08	04NOV08	0
R3-3	Erosion Control Blanket NAG S75	10	10	0	29OCT08	11NOV08	0
14	Access Road Surfacing(12" ABC Stone)	8	8	0	29OCT08	07NOV08	2
19	Wattles	5	5	0	05NOV08	11NOV08	0
COMP	Project Completion	0	0	0		11NOV08	0
Total		148	30	52	17APR08A	11NOV08	0



Start Date	03MAR08
Finish Date	11NOV08
Data Date	01OCT08
Run Date	29SEP08 16:26

Early Bar
Target Bar
Progress Bar
Critical Activity

1008

Sheet 1 of 1

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 10/22/08 / 10:00 am

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1. **Cell Phone Silence -** Cell phones silenced

2. **Discussion of Previous Meeting Minutes -** No participants had comments on the previous meeting's minutes.

3. **Level I Safety Assessment and Sign-in sheet**
   3.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME) and Rory Williamson (Morgan Corp).
   3.2 Sign-in Sheet completed.

4. **Safety and Environmental**
   4.1 Weekly Safety Report presented by Rory Williamson (Morgan Corp) (copy attached).
   4.2 Weekly Environmental Report presented by Rory Williamson (Morgan Corp) (copy attached). Rory noted that ½ the previous Friday and the previous Saturday had been missed work days due to rain.
   4.3 Waste Materials and Recycling: no discussion items

5. **CQA\CQC**
   5.1 Inspections and Testing:
      5.1.1 Jimmy Addis (S&ME) noted the following: S1 and S2 topsoil placement completed in Closure Area perimeter ditch and access road side slopes; grading is occurring in the Flat Area south of ditch C8; field density testing in the Flat Area is meeting specifications; grassing and matting is taking place in the Closure Area; and the apron area for some drop inlets have been excavated.
      5.1.2 Discussion ensued about the status of the Flat Area subgrade. Ken Daly (S&ME) summarized by stating the following: portions of the Flat Area which were excavated to subgrade and backfilled with S1 cover soil but weren't surveyed can be verified by potholing and taking measurements. Portions of the Flat Area which were not excavated to subgrade must be excavated to subgrade, surveyed, and backfilled with S1 cover soil.
      5.1.3 Jimmy Addis (S&ME) mentioned that approximately 960 cubic yards of ash from Flat Area cut has been stockpiled near the existing S2 topsoil stockpile on the east side of the Flat Area south of ditch C8. Ken Daly (S&ME) summarized options as follows: overexcavate a portion of the Flat Area, place the ash, and backfill with S1 and S2 cover soils; or spread the ash and cover with S1 and S2 soils which will raise the final grade.
      5.1.4 At 10:35, Mike Cook (Duke Energy) joined the construction meeting. Mike was briefed on the meeting's discussion so far.
   5.2 Quality and Work Standards: no discussion items
   5.3 Deviations: no discussion items
   5.4 Requests for Information: Cedric Ruhl (S&ME) summarized Record of Information 8: Slope Access Road Cross-section. The slope access road shall be 18 feet wide with an outer edge of road shoulder of 1 foot, an ABC wearing course 15 feet wide, and a 2 foot wide ditch at the inner edge of the road.

6. **Site Use and Facilities**

6.1 Traffic and Parking: no discussion items
6.2 Housekeeping: no discussion items
6.3 Security: no discussion items

7. Schedule Update and Progress Report

7.1 Construction Progress: Craig Greeson (Morgan Corp) stated that since the last meeting the following construction activities occurred: Closure area S2 topsoil placement (100%), perimeter road grading and S2 placement (100%), Flat Area cut/fill (90%), Flat Area S1 cover soil placement (73%), Flat Area S2 topsoil placement (10%), seeding and matting (20% each), stormwater structures (100%).

7.2 Updated schedule of outstanding construction items provided by Craig Greeson (Morgan Corp) (copy attached). Cedric Ruhl (S&ME) requested that soil/cement road construction be included on subsequent schedules.

7.3 Interface with sub-contractors: no discussion items

7.4 Material delivery: Craig Greeson (Morgan Corp) stated that delivery of seed, matting, and slope access road underdrain is expected.

7.5 Potential changes or delays:

7.5.1 A lengthy discussion occurred concerning the subgrade in the Flat Area. It was understood that the northeast portion of the Flat Area (approx. 1.7 acres) was cut to finished grade less 2" topsoil thickness, at the direction of Bill Waggoner, because ash was not observed at the surface in this location. It was agreed that the entire Flat Area would be cut to subgrade (finish grade minus two feet) and backfilled with S1 cover soil and S2 topsoil.

7.5.2 A discussion occurred concerning the Closure Area geosynthetics subgrade along the slope access road. It was recognized that the subgrade in this area was graded to drain towards ditch C5, concentrating flow within the geocomposite drainage layer (GCDL), and that an underdrain would need to be installed to convey water within the GCDL. Craig Greeson (Morgan Corp) requested that panel drain material be considered for the underdrain design. Ken Daly (S&ME) stated that an underdrain Notice of Change would be provided by 10/23/08.

7.6 Recovery Plans: no discussion items

7.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: seeding; matting; Flat Area cut/fill, S1 cover soil, and S2 topsoil placement; completion of slope access road. In response to questions by Cedric Ruhl (S&ME) and Mike Cook (Duke Energy), Craig stated that the soil/cement road would not be constructed within the next two weeks; soil/cement construction is expected to take 2-3 days.

8. Payment and Changes

8.1 Documentation for payment: Mike Cook (Duke Energy) noted that panel drain outlet pad stone for additional panel drain outlets shall be paid under the unit rate for panel drain outlets, not the change order for additional stone.

8.2 Change Orders: Mike Cook (Duke Energy) requested that Change Order 8 be revised to reflect a unit price for soil/cement construction, rather than a lump sum credit for the design change. Mike also requested that Change Order 10 be revised to reflect a price increase for the increase in drop inlet size rather than a credit for elimination of a drop inlet and pipe alterations. The revised change order should be itemized by drop inlet size. Mike also stated that he had drafted Change Order 11 for additional infrastructure grading and would distribute this change order this afternoon.

9. Submittals

9.1 Current submittal status: Cedric Ruhl (S&ME) stated that the cast in place concrete submittal was rejected; a revised submittal has not yet been received. The seeding submittal will be approved with comments.

9.2 Two week submittal schedule: Soil/cement submittal and cement sample will be provided.

10. Roundtable:

10.1 Mike Cook (Duke Energy) stated that Rory Williamson (Morgan Corp), the current on-site safety coordinator, will be going to a different project. A new on-site safety coordinator will be present on-site beginning Friday 10-24-08.

10.2 Mike Cook (Duke Energy) stated that all invoices for work to be completed this year must be received by Duke Energy by December 15.

10.3 Mike Cook (Duke Energy) stated that given current construction activities it is a good time to complete the monitoring well modifications.

10.4 Ken Daly (S&ME) stated that proposed soil/cement laboratory testing consists of Proctor tests and 7-day compressive strength tests; and field testing will consist of in-place density testing using a nuclear gage, checks on cement spread, and uniformity/depth of mixing.

10.5 Ken Daly (S&ME) stated that potholing of the Closure Area perimeter road to delineate S1 materials from cut/fill materials should occur soon to avoid interference with soil/cement road construction.

10.6 Ken Daly (S&ME) stated that he would review the C2/C3 ditch convergence at the northeast corner of the Closure Area to explore the need for erosion control and scour prevention.

10.7 Jimmy Addis (S&ME) noted that 9” wattles were delivered to the site. Ken Daly (S&ME) stated that, in accordance with construction drawings, 12” wattles will need to be installed.

11. Action Register (S&ME)

11.1 Summary of outstanding and new action items (see Action Item Register for full details):

11.1.1 #57 – S&ME to develop a Design Change Notice summarizing seeding design changes – completed 10/21/08.

11.1.2 #58 – Duke Energy to draft change order 11, grading outside of the borrow area and closure area – in progress.

11.1.3 #63 – Morgan Corp to provide soil/cement submittal consisting of construction narrative and mix design – in progress.

11.1.4 #64 – S&ME to develop laboratory testing requirements for soil/cement – completed 10/17/08.
11.1.5 #65 – Morgan Corp to draft warranty criteria for seeding – in progress.
11.1.6 #68 – S&ME to provide Notice of Change describing slope access road underdrain requirements – to be completed 10/23/08.
11.1.7 #69 – Morgan Corp to revise Change Order 8 – soil/cement to reflect a unit price payment basis.
11.1.8 #70 – Morgan Corp to revise Change Order 10 – stormwater structure revisions to reflect an increase in price for larger drop inlets rather than a credit for deletion of a drop inlet and pipe length alterations.
11.1.9 #71 – S&ME to review the need for erosion and scour control at the C2/C3 ditch convergence.
11.1.10 #72 S&ME to coordinate monitoring well completion.

Next meeting will take place at 10:00 am 11/6/2008

Construction meeting adjourned by consensus at approximately 1:10 pm.

Discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday November 6, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-56 Have Been Resolved and Archived (10/15/08)					
57	provide Design Change Notice summarizing seeding design changes	morgan corp	S&ME	9/22/2008	10/21/2008
58	draft Change Order 11, grading outside of Borrow Area and Flat Area, including cut/fill, and placement of S1 and S2 cover soil	S&ME	Duke	9/19/2008	
59	draft Change Order 12, T&M for Borrow Area grading	S&ME	morgan corp	9/19/2008	10/7/2008
60	draft Change Order 13, seeding revisions	Duke	morgan corp		tabled by Mike Cook (10/7/08)
61	provide schedule consisting of only active construction activities	Duke	morgan corp		10/9/2008
62	prepare lift plan for erosion control matting	morgan corp	morgan corp		tabled (10/7/08)
63	provide soil/cement submittal (construction narrative, equipment used, and proposed design)	S&ME	morgan corp	10/21/2008	
64	develop laboratory testing requirements for soil/cement	morgan corp	S&ME	10/17/2008	10/17/2008
65	develop proposed warranty criteria for seeding	Duke	morgan corp	10/21/2008	
66	provide a revised schedule	Duke	morgan corp	10/10/2008	10/9/2008
67	provide an update on quantity estimate for cut/fill, S1 cover soil and S2 topsoil for the perimeter road	Duke	morgan corp	10/10/2008	10/9/2008
68	Notice of Change describing slope access road underdrain requirements	morgan corp	S&ME	10/23/2008	10/23/2008
69	revise Change Order 8 - soil/cement to reflect a unit price payment basis	Duke	morgan corp		
70	revise Change Order 10 - stormwater structure revisions to reflect increase in price for larger drop inlets	Duke	morgan corp		
71	review need for erosion/scour control at C2/C3 ditch convergence	morgan corp	S&ME		
72	coordinate monitoring well completion	Duke	S&ME		
73					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 10/22/08

Name (Print)	Signature	Company
Cedric Rubl	Cedric Rubl	S+ME
Craig Greeson	[illegible]	Morgan-Corp
Rory Williamson	[illegible]	Morgan-Corp
Ken Daly	[illegible]	S+ME
Jimmy Addis	Jimmy Addis	S+ME Inc.
Mike Cook	Mike Cook	Duke

KSD

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 10-22-08
Report for Week Ending: 10-19-08
Report Originator: Rory Williamson

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	2628.5	0	123	0	2751.5
SOS Cards	3	0			3
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments AS of 10-19-2008 41,991.6 manhours have been worked with NO ACCIDENTS/OSHA RECORDABLES.

KJO

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 10-22-08
Report for Week Ending: 10-22-08
Report Originator: MH & JA

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☐ Y ☒ N
2. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
3. Have there been any new portable engines brought on-site? ☐ Y ☒ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
5. Have there been any new chemicals brought on-site? ☐ Y ☒ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☒ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 10-20-08

Contractor Inspection Form submitted to Project Manager ☒ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 10-20-08 Date of Last Rain Event 10-20-08

Participants M Hylton/J Addis

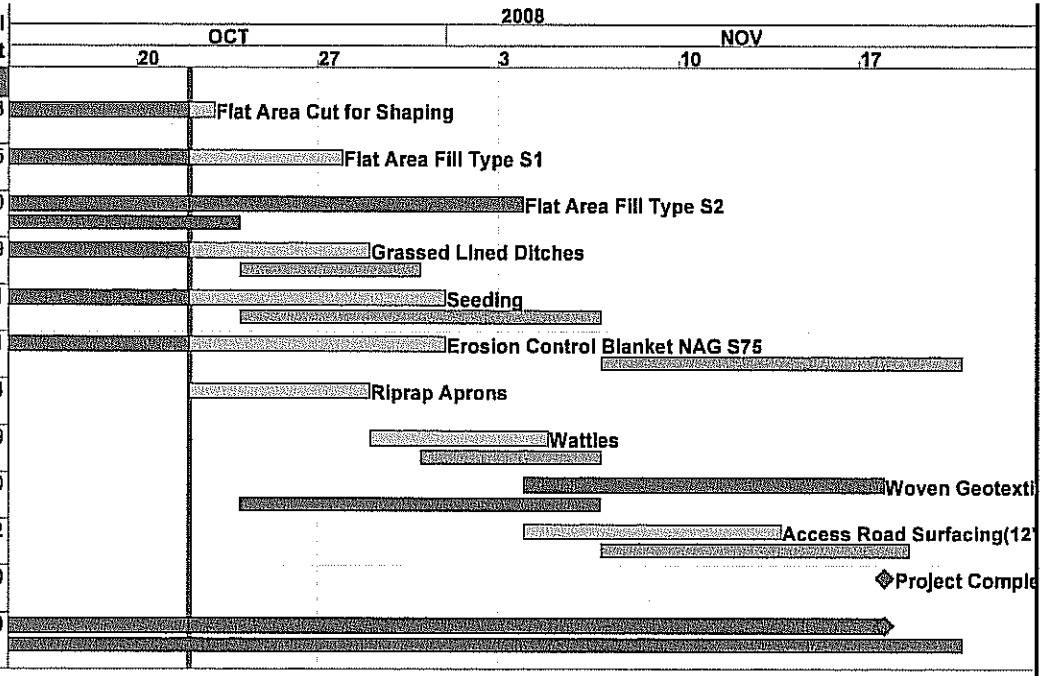
Type of Inspection Weekly ☒ Rain Event ☐ BCSS ☐

Discrepancies Found None

Corrective Actions None

Comments Light soaking rain 10/17/08 amount .6 in.

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float
Pine Hall Road Ash Landfill Closure							
10	Flat Area Cut for Shaping	10	1	90	17APR08A	22OCT08	18
11	Flat Area Fill Type S1	15	4	73	14MAY08A	27OCT08	15
12	Flat Area Fill Type S2	10	9	10	08OCT08A	03NOV08	0
17-18	Grassed Lined Ditches	5	5	0	08OCT08A	28OCT08	9
31	Seeding	10	8	20	08OCT08A	31OCT08	11
R3-3	Erosion Control Blanket NAG S75	10	8	20	08OCT08A	31OCT08	11
30	Riprap Aprons	5	5	0	22OCT08	28OCT08	14
19	Wattles	5	5	0	29OCT08	04NOV08	9
13	Woven Geotextile for Access Road Subgrade	10	10	0	04NOV08	17NOV08	0
14	Access Road Surfacing(12" ABC Stone)	8	8	0	04NOV08	13NOV08	2
COMP	Project Completion	0	0	0		17NOV08	0
Total		152	19	28	17APR08A	17NOV08	0



Start Date	03MAR08
Finish Date	17NOV08
Data Date	22OCT08
Run Date	21OCT08 14:25

Early Bar
Target Bar
Progress Bar
Critical Activity

108C

Sheet 1A of 1B

Morgan Corp.

Pine Hall Road Ash Landfill Closure

Classic Schedule Layout

Date	Revision	Checked	Approved

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Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 11/6/08 / 10:00 am

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1. **Cell Phone Silence -** Cell phones silenced

2. **Discussion of Previous Meeting Minutes -** No participants had comments on the previous meeting's minutes.

3. **Level I Safety Assessment and Sign-in sheet**
   3.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME). Joe Bridwell (Morgan Corp) introduced as new on-site safety contact for Morgan Corp.
   3.2 Sign-in Sheet completed.

4. **Safety and Environmental**
   4.1 Weekly Safety Report presented by Joe Bridwell (Morgan Corp) (copy attached).
   4.2 Weekly Environmental Report presented by Marty Hylton (Morgan Corp) (copy attached). Marty noted that approximately 350 feet of silt fence had been installed as a result of perimeter access road grading operations. Mike Cook (Duke Energy) inquired about Notice of Change 12 – Erosion Control for Ditch C2 and C3 convergence. Discussion ensued. S&ME will review hydraulics of Ditch C2, C3, and Culvert CVT5, and revise Notice of Change 12.
   4.3 Waste Materials and Recycling: In response to question by Mike Cook (Duke Energy), Craig Greeson (Morgan Corp) and Marty Hylton (Morgan Corp) stated that the fueling area will be dismantled in approximately two weeks.

5. **CQA\CQC**
   5.1 Inspections and Testing:
      5.1.1 Jimmy Addis (S&ME) noted the following: S1 and S2 cover soil placement is complete on the Flat Area, approximately 960 cubic yards of flyash was buried below subgrade elevation in the northeast corner of the Flat Area, matting and grassing of the Closure Area is almost complete, the topsoil blending is now occurring in the Flat Area, density testing within the Flat Area has been completed with passing results, slope access road stone placement is beginning today, and formwork is being erected around the drop inlets for concrete placement.
      5.1.2 In response to question by Jimmy Addis (S&ME), Ken Daly (S&ME) stated that S&ME will observe slopes outside the Closure Area and provide recommendations for matting, if any.
      5.1.3 In response to question by Ken Daly (S&ME), Marty Hylton (Morgan Corp) and Jimmy Addis (S&ME) confirmed that the northeast corner of the Flat Area was cut to subgrade and subgrade survey shots were taken. Flat Area subgrade survey data has been collected.
      5.1.4 In response to question by Cedric Ruhl (S&ME), Craig Greeson (Morgan Corp) stated that Closure Area as-built drawings have not been completed.
      5.1.5 In response to question by Ken Daly (S&ME), Jimmy Addis (S&ME) stated that the slope access road underdrain (Notice of Change 11) has been completed using 790 feet of panel drain.
      5.1.6 In response to question by Ken Daly (S&ME), Marty Hylton (Morgan Corp) stated that concrete for the drop inlet pads will be transported to the top of the Closure Area with a loader and/or skid steer. Any damage to the matting will be repaired.

5.2 Quality and Work Standards: Ken Daly (S&ME) stated that there are some bare spots in the vegetation on the top of the Closure Area. Marty Hylton (Morgan Corp) said that the bare areas will be spot-seeded. Craig Greeson (Morgan Corp) said to wait one week for observation purposes before re-seeding.
5.3 Deviations: Jimmy Addis (S&ME) stated that the invert of drop inlet 10 was lowered 3-4 inches, and the 1-foot riser section on drop inlet 12 was removed to provide drainage into the drop inlets.
5.4 Requests for Information: no discussion items.

6. Site Use and Facilities
6.1 Traffic and Parking: no discussion items
6.2 Housekeeping: no discussion items
6.3 Security: no discussion items

7. Schedule Update and Progress Report
7.1 Construction Progress: Craig Greeson (Morgan Corp) stated that since the last meeting the following construction activities occurred: slope access road stone (25%); slope access road geotextile (100%); slope access road underdrain (100%); Flat Area cut/fill, S1, and S2 (100%); Borrow Area reclamation (ongoing); seeding (70%); grass-lined ditches (70%); matting (80%); riprap aprons (10%); pipe outlet demolition (100%). In response to question by Mike Cook (Duke Energy), Craig stated that grassing and matting of the Closure Area is 95% complete.
7.2 Updated schedule of outstanding construction items discussed by Craig Greeson (Morgan Corp). A schedule was not provided. Craig will supply an updated schedule with a line item for soil/cement stabilization later. Craig estimated that all construction items except for soil/cement stabilization will be completed within two weeks.
7.3 Interface with sub-contractors: Jimmy Addis (S&ME) stated that he called Kevin Simms (ESI) to notify him that one roll of LLDPE geomembrane is still on-site. Craig Greeson (Morgan Corp) stated that if the roll of geomembrane is not removed by the end of the project, Morgan Corp will remove the roll.
7.4 Material delivery: Craig Greeson (Morgan Corp) stated that delivery of seed, matting, and slope access road stone surfacing material will occur.
7.5 Potential changes or delays: Mike Cook (Duke Energy) identified the erosion control around the convergence of ditches C2 and C3 as a potential change.
7.6 Recovery Plans: no discussion items
7.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: seeding, matting, drop inlet concrete aprons, riprap aprons, Borrow Area stabilization, and panel drain outlets.

8. Payment and Changes
8.1 Documentation for payment: Mike Cook (Duke Energy) stated that the progress payment for the month of October will be completed after the meeting.
8.2 Change Orders:
8.2.1 Mike Cook (Duke Energy) presented Change Order 11 – grading for additional infrastructure. The Change Order was signed by the appropriate people. Mike noted that the Change Order shall be paid out at a unit rate for cut/fill, S1, and S2.

8.2.2 It was agreed that Change Order 10 - stormwater structure design changes will be canceled because these items were paid on a unit price basis.

8.2.3 Mike Cook (Duke Energy) stated that he will review revised Change Order 8 - soil/cement payment on a unit price basis. This is a revision from the original change order, which was payable as a lump sum credit to Duke Energy based on estimated bid quantities and unit costs.

8.2.4 In response to question by Mike Cook (Duke Energy), Craig Greeson (Morgan Corp) stated that the additional silt fence installed will not be a change order because the silt fence was not originally installed at the clearing limit and thus did not provide enough room to construct the perimeter access road.

9. Submittals

9.1 Current submittal status: Ken Daly (S&ME) stated that the cast-in-place concrete submittal had been approved. Outstanding submittals include information on soil supplements (lime/fertilizer) and as-built drawings.

9.2 Two week submittal schedule: Cedric Ruhl (S&ME) stated that an acceptable seeding warranty is needed. Discussion ensued. It was agreed that warranty criteria will include a time limit on the Contractor's liability. S&ME will propose warranty criteria.

10. Roundtable:

10.1 Mike Cook (Duke Energy) stated that S&ME is to provide a long-term monitoring and maintenance plan for this site.

10.2 In response to question by Mike Cook (Duke Energy), Marty Hylton (Morgan Corp) stated that an unofficial punchlist has been generated. S&ME will create a formal punchlist register.

10.3 Marty Hylton (Morgan Corp) stated that he would like to place leftover rock material from temporary erosion control devices at points in the Borrow Area where disturbed areas drain into undisturbed drainage features. It was identified that the Borrow Area drains to the sediment basin. Morgan Corp was given permission by Mike Cook (Duke Energy) and Ken Daly (S&ME) to waste the rock by spreading the rock along the ground at the Borrow Area drainage points.

10.4 Cedric Ruhl (S&ME) identified that the construction of two monitoring wells and the extension of two monitoring wells is being coordinated. Jimmy Addis (S&ME) stated that he had staked approximate locations of the monitoring wells. Discussion ensued. It was agreed that clearing will be performed to provide access to proposed monitoring well MW-1D off of the southeast corner of the Closure Area. Clearing debris may be left where it lies. Clearing operations will be paid on a time and materials basis under the Borrow Area reclamation change order. Monitoring well installation will be scheduled so as not to interfere with soil/cement access road installation.

10.5 Mike Cook (Duke Energy) stated that a gate should be installed at the entrance to the closure facility. Mike will review gate preferences with the Belews Creek Steam Station equipment owner.

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 11/6/08 / 10:00 am

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11. Action Register (S&ME)

11.1 Summary of outstanding and new action items (see Action Item Register for full details):

- 11.1.1 #58 – Duke Energy to draft change order 11, grading outside of the borrow area and closure area – completed 11/6/08.
- 11.1.2 #63 – Morgan Corp to provide soil/cement submittal consisting of construction narrative and mix design – completed 10/29/08.
- 11.1.3 #65 – develop warranty criteria for seeding – outstanding.
- 11.1.4 #69 – Morgan Corp to revise Change Order 8 for soil/cement stabilization to reflect payment on a unit price basis – completed 10/28/08.
- 11.1.5 #70 – Morgan Corp to revise Change Order 10 for stormwater structure changes – completed 11/6/08 (Change Order eliminated).
- 11.1.6 #71 – S&ME to review the need for scour/erosion protection at the ditch C2/C3 convergence – completed 10/28/08.
- 11.1.7 #72 – S&ME to coordinate monitoring well installation – outstanding.
- 11.1.8 #73 – S&ME to revise Notice of Change 12 for ditch C2/C3 erosion/scour protection – outstanding.
- 11.1.9 #74 – S&ME to review hydraulic design of ditch C2, C3, and Culvert CVT 5 – outstanding.
- 11.1.10 #75 – S&ME to provide recommendations on matting outside of the Closure Area – outstanding.
- 11.1.11 #76 – Morgan Corp to provide a revised schedule – outstanding.
- 11.1.12 #77 – S&ME to draft a punchlist register – outstanding.

Next meeting will take place at 10:00 am 11/21/2008

Construction meeting adjourned by consensus at approximately 12:25 pm.

Discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Friday November 21, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-64 Have Been Resolved and Archived (10/15/08)					
65	develop proposed warranty criteria for seeding	Duke	morgan corp	10/21/2008	
66	provide a revised schedule	Duke	morgan corp	10/10/2008	10/9/2008
67	provide an update on quantity estimate for cut/fill, S1 cover soil and S2 topsoil for the perimeter road	Duke	morgan corp	10/10/2008	10/9/2008
68	Notice of Change describing slope access road underdrain requirements	morgan corp	S&ME	10/23/2008	10/23/2008
69	revise Change Order 8 - soil/cement to reflect a unit price payment basis	Duke	morgan corp		10/28/2008
70	revise Change Order 10 - stormwater structure revisions to reflect increase in price for larger drop inlets	Duke	morgan corp		11/6/2008
71	review need for erosion/scour control at C2/C3 ditch convergence	morgan corp	S&ME		10/28/2008
72	coordinate monitoring well completion	Duke	S&ME		
73	revise Notice of Change 12 - Ditch C2/C3 erosion control	morgan corp	S&ME		
74	review hydraulic design of ditch C2, C3, and Culvert CVT 5	Duke	S&ME		
75	provide recommendations on matting outside of the Closure Area	Duke	S&ME		
76	provide a revised schedule	S&ME	morgan corp		
77	draft a punchlist register	Duke	S&ME		
78					
79					
80					
81					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 11/06/08

Name (Print)	Signature	Company
Mike Cook	Mike Cook	Duke
Marty Hylton	Marty Hylton	Morgan Corp
Ken Daly	Kenneth P. Daly	S&ME
Craig Greeson	[illegible]	Morgan Corp
Joe Bridwell	[illegible]	Morgan Corp.
Jimmy Addis	Jimmy Addis	S&ME Inc.
Cedric Rohl	Cedric Rohl	S&ME

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 11-06-08
Report for Week Ending: 11-02-08
Report Originator: Joe Bridwell

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 0
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	1393	0	50	0	1443
SOS Cards	3	0			3
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments AS of 11-05-2008 45,055.6 manhours have been worked with NO ACCIDENTS/OSHA RECORDABLES.

KRD

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 11-5-08
Report for Week Ending: 11-5-08
Report Originator: MH & JA

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☒ Y ☐ N
2. If yes, has a report been made to site Environmental Coordinator? ☒ Y ☐ N
3. Have there been any new portable engines brought on-site? ☐ Y ☒ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
5. Have there been any new chemicals brought on-site? ☐ Y ☒ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☒ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 11-5-08

Contractor Inspection Form submitted to Project Manager ☒ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 11-5-08 Date of Last Rain Event 11-4-08

Participants M Hylton/J Addis

Type of Inspection Weekly ☒ Rain Event ☐ BCSS ☐

Discrepancies Found None

Corrective Actions None

Comments .3 inch of light rain. Installed approximately 350 ft. of silt fence along Pine Hall Road.

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 11/20/08 / 10:00 am

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1. **Cell Phone Silence -** Cell phones silenced

2. **Discussion of Previous Meeting Minutes -** No participants had comments on the previous meeting's minutes.

3. **Level I Safety Assessment and Sign-in sheet**
   3.1 Level 1 Safety Assessment conducted by Ken Daly (S&ME).
   3.2 Sign-in Sheet completed.

4. **Safety and Environmental**
   4.1 Weekly Safety Report presented by Joe Bridwell (Morgan Corp) (copy attached). Joe stated that on-site safety training would begin at 7:00 a.m. on Monday November 24 for new employees on-site.
   4.2 Weekly Environmental Report presented by Marty Hylton (Morgan Corp) (copy attached). In response to question by Ken Daly (S&ME), Mike Cook (Duke Energy) stated that he would show Morgan Corp where to fill the water trucks for soil/cement construction.
   4.3 Waste Materials and Recycling: no discussion items.

5. **CQA\CQC**
   5.1 Inspections and Testing:
      5.1.1 Jimmy Addis (S&ME) noted the following: ruts on slopes have been repaired, 68 panel drain pipe outlets have been installed, all riprap aprons have been installed, all but 3 concrete drop inlet aprons have been installed, Channels C7, C8, and C9 have been completed, Notice of Change 12 (C2/C3 erosion/scour protection) has been installed, some lime and fertilizer has been placed in the Borrow Area, seeding of the Borrow Area will begin tomorrow.
      5.1.2 Cedric Ruhl (S&ME) noted that a 7-day compressive strength on concrete for drop inlet aprons was approximately 3,200 psi, consistent with specifications.
      5.1.3 In response to question by Ken Daly (S&ME), Craig Greeson (Morgan Corp) stated that the vegetation bare spots on top of the Closure Area will be scratched up and reseeded. Ken Daly and Mike Cook (Duke Energy) requested that Jimmy Addis (S&ME) and Marty Hylton (Morgan Corp) identify approximate bare spot locations on a map.
   5.2 Quality and Work Standards: no discussion items.
   5.3 Deviations:
      5.3.1 Jimmy Addis (S&ME) stated that one panel drain outlet pipe will not be able to drain as intended because the panel drain outlet invert is below the channel flow-line. Ken Daly (S&ME) stated that he would look at the panel drain outlets after the meeting. In response to question by Jimmy, Ken requested that Morgan Corp identify fabricated screen options to prevent wildlife from entering the panel drain outlet pipes.
      5.3.2 Jimmy Addis (S&ME) stated that a riprap-lined ditch underlain by geotextile is being installed at the southeast groin of the terminal end of ditch C7, to be reviewed in the field after the meeting.

5.4 Requests for Information:

5.4.1 Cedric Ruhl (S&ME) summarized Record of Information 9 for matting outside of the Closure Area. Jimmy Addis (S&ME) stated that this work has been completed.

5.4.2 Craig Greeson (Morgan Corp) asked if Duke Energy had a requested gate style. Discussion ensued. It was suggested that the gate be installed at a narrow section of the access road. The gate should be six feet tall and consist of a swing gate of two eight-foot chain link sections.

6. Site Use and Facilities

6.1 Traffic and Parking: Joe Bridwell (Morgan Corp) stated that the existing construction entrance along Pine Hall Road will be removed tomorrow. After today, the site should be accessed from the original access location. Joe also noted that the access road is currently being used as a parking area for Morgan Corp employees. Joe stated that he would designate permissible parking locations by using marking paint. Craig Greeson (Morgan Corp) stated that the Morgan Corp sign at the existing construction entrance should be moved to the new access point. In response to question by Cedric Ruhl (S&ME), Mike Cook (Duke Energy) stated that he would notify ash subcontractors who currently use an adjacent access road and inform them of impending construction traffic.

6.2 Housekeeping: no discussion items

6.3 Security: no discussion items

7. Schedule Update and Progress Report

7.1 Construction Progress: Craig Greeson (Morgan Corp) stated that since the last meeting the following construction activities occurred: panel drain outlets will be completed today; seeding/matting except for perimeter access road, slope access road, and Borrow Area; drop inlet aprons will be completed today; the Borrow Area is graded, seeding will be completed on Saturday; slope access road has been completed.

7.2 Updated schedule: In response to question by Mike Cook (Duke Energy), Craig Greeson (Morgan Corp) stated that the estimated completion date is December 3, 2008. In response to question by Jimmy Addis (S&ME), Craig stated that Marty Hylton (Morgan Corp) will not return to the site after his vacation (11/24 – 11/29).

7.3 Interface with sub-contractors: no discussion items.

7.4 Material delivery: Marty Hylton (Morgan Corp) stated that delivery of cement and wattles will occur.

7.5 Potential changes or delays: no discussion items.

7.6 Recovery Plans: no discussion items

7.7 Two week look ahead: Craig Greeson (Morgan Corp) stated that for the next two weeks the following would be taking place: soil/cement stabilization, punchlist, de-mobilization.

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 11/20/08 / 10:00 am

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8. Payment and Changes

8.1 Documentation for payment: In response to question by Ken Daly (S&ME), Mike Cook (Duke Energy) stated that Morgan Corp's October invoice has been submitted. Mike stated that end of year invoices will need to be submitted no later than December 19, 2008; but that Duke prefers receiving invoices earlier. Mike asked Cedric Ruhl (S&ME) to provide Morgan Corp with a list of record drawings to be generated by Morgan Corp.

8.2 Change Orders:

8.2.1 Mike Cook (Duke Energy) presented Change Order 8.1 – revised change order for soil/cement stabilization, to be paid on a unit price basis.

8.2.2 In response to question by Jimmy Addis (S&ME), Mike Cook (Duke Energy) stated that clearing to proposed monitoring well MW-1D will be paid under the change order for time and materials for Borrow Area grading.

8.2.3 Mike Cook (Duke Energy) requested that Morgan Corp develop a single change order encompassing gate installation, channel C2/C3 erosion/scour control, and the riprap-lined ditch underlain by geotextile at the southeast groin of the terminal end of ditch C7.

9. Submittals

9.1 Current submittal status: Ken Daly (S&ME) stated that the submittal for soil supplements (lime and fertilizer) is still outstanding. In response to question by Ken, Craig Greeson (Morgan Corp) stated that the proposed seeding warranty is still being reviewed.

9.2 Two week submittal schedule: no discussion items.

10. Roundtable:

10.1 Ken Daly (S&ME) stated that long-term site maintenance is discussed in the Closure/Post-Closure Plan.

10.2 In response to question by Mike Cook (Duke Energy), Ken Daly (S&ME) stated that S&ME will be responsible for repairing ruts and localized re-seeding as a result of monitoring well installation.

10.3 Ken Daly (S&ME) briefly reviewed outstanding punchlist items.

11. Action Register (S&ME)

11.1 Summary of outstanding and new action items (see Action Item Register for full details):

11.1.1 #65 – develop warranty criteria for seeding – completed 11/13/08. Morgan Corp to review and provide comments.

11.1.2 #72 – S&ME to coordinate monitoring well installation – outstanding.

11.1.3 #73 – S&ME to revise Notice of Change 12 for ditch C2/C3 erosion/scour protection – completed 11/14/08.

11.1.4 #74 – S&ME to review hydraulic design of ditch C2, C3, and Culvert CVT 5 – completed 11/14/08.

11.1.5 #75 – S&ME to provide recommendations on matting outside of the Closure Area – completed 11/11/08.

11.1.6 #76 – Morgan Corp to provide a revised schedule – completed 11/11/08.

11.1.7 #77 – S&ME to draft a punchlist register – completed 11/17/08.

11.1.8 #78 – S&ME to review riprap ditch at groin of Channel C7 – completed 11/20/08.

11.1.9 #79 – Morgan Corp to review panel drain outlet cover options.
11.1.10 #80 – Morgan Corp to develop a change order for gate, C2/C3 erosion/scour protection, and riprap ditch at groin of C7.
11.1.11 #81 – Duke Energy to notify ash hauling contractor of change in construction traffic patterns.
11.1.12 #82 – S&ME to provide a list of requested record drawings to Morgan Corp.
11.1.13 #83 – Morgan Corp to review proposed seed warranty and provide comments.
11.1.14 #84 – Jimmy Addis (S&ME) and Marty Hylton (Morgan Corp) to create sketch of bare spots where grass is not growing.

Next meeting will take place at 10:00 am 12/3/2008

Construction meeting adjourned by consensus at approximately 11:40 am.

Discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME in writing or at the next Construction Meeting scheduled for **10:00 a.m. on Wednesday December 3, 2008**.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-72 Have Been Resolved and Archived (11/25/08)					
72	coordinate monitoring well completion	Duke	S&ME		
73	revise Notice of Change 12 - Ditch C2/C3 erosion control	morgan corp	S&ME		11/14/2008
74	review hydraulic design of ditch C2, C3, and Culvert CVT 5	Duke	S&ME		11/14/2008
75	provide recommendations on matting outside of the Closure Area	Duke	S&ME		11/11/2008
76	provide a revised schedule	S&ME	morgan corp		11/11/2008
77	draft a punchlist register	Duke	S&ME		11/17/2008
78	review riprap ditch at C7 groin	Duke	S&ME		11/20/2008
79	review panel drain outlet cover options	Duke	morgan corp		
80	develop a change order for gate, C2/C3 erosion/scour protection, and riprap ditch at groin of C7	Duke	morgan corp		
81	notify ash hauling contractor of change in construction traffic patterns	S&ME	Duke		
82	provide a list of requested record drawings	Duke	S&ME		11/25/2008
83	review proposed seed warranty and provide comments	S&ME	morgan corp		
84	Jimmy Addis (S&ME) and Marty Hylton (Morgan Corp) to create sketch of bare spots where grass is not growing	Duke	S&ME / morgan corp		
85					
86					
87					
88					

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 11/20/08

Name (Print)	Signature	Company
Mike Cook	Mike Cook	Duke
Marty Hylton	Marty Hylton	Morgan-Corp
GRIFFIN QUERY	[illegible]	MORGAN CORP
KEN DALY	[illegible]	S&ME
Cedric Rull	Cedric Rull	SME
Jimmy Addis	Jimmy Addis	S&ME
JOE BRIDWELL	[illegible]	MORGAN-CORP
Craig Greeson	[illegible]	Morgan-Corp

Pine Hall Road Ash Landfill Closure
Weekly Safety Report

Date: 11-20-08
Report for Week Ending: 11-16-08
Report Originator: Joe Bridwell

Prepare report for presentation during each weekly status meeting. Provide details of safety issues as follows and discuss details in comments section as necessary:

1. Has Job Hazard Analysis (JHA) been reviewed? ☒ Y ☐ N
2. Is the JHA consistent with work plan for coming week? ☒ Y ☐ N
3. If revised, has JHA been presented to all employees ☒ Y ☐ N
4. Number of new employees since last meeting 1
5. Have new employees been oriented? ☒ Y ☐ N
6. Have new employees provided MICCS card or proper chain of custody letter? ☒ Y ☐ N

7. Provide documentation of weekly safety statistics since last meeting using the table below. Provide separate statistics for general contractor as well as all sub-contractors and totals.

	Morgan	Allied Tech	S &ME	ESI	Total
Total Work Hours	723	0	50	0	773
SOS Cards	3	0			3
Near Misses	0	0			0
First Aid Cases	0	0			0
Recordables	0	0			0
Lost Workdays	0	0			0
Restricted Workdays	0	0			0

8. Have Incident Investigation Reports (IIR) been submitted for applicable events as noted above? ☐ Y ☐ N ☒ N/A

Comments AS of 11-19-2008 46,953 manhours have been worked with NO ACCIDENTS/OSHA RECORDABLES.

Pine Hall Road Ash Landfill Closure
Weekly Environmental Report

Date: 11-19-08
Report for Week Ending: 11-19-08
Report Originator: MH & JA

Prepare report for presentation during each weekly status meeting. Provide details of environmental issues as follows and discuss details in comments section as necessary:

1. Have there been any spills of fuel or other hazardous materials? ☐ Y ☒ N
2. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
3. Have there been any new portable engines brought on-site? ☐ Y ☒ N
4. If yes, has a report been made to site Environmental Coordinator? ☐ Y ☒ N
5. Have there been any new chemicals brought on-site? ☐ Y ☒ N
6. If yes, have MSDS sheets been filed in field office? ☐ Y ☒ N

Provide details of required inspections as follows:

I. Erosion and Sedimentation Control (ESC) Inspection

Date of Inspection 11-17-08

Contractor Inspection Form submitted to Project Manager ☒ Y ☐ N

II. Fueling Area Inspection

Date of Inspection 11-17-08 Date of Last Rain Event 11-14-08

Participants M Hylton/J Addis

Type of Inspection Weekly ☒ Rain Event ☐ BCSS ☐

Discrepancies Found None

Corrective Actions Drained 2 areas on north side of closure area where some slight ponding occurred.

Comments Rain started Thursday afternoon and stopped Friday night total accumilation 1.5 Inches.

Pine Hall Road Ash Landfill Closure
Punchlist Register

Item	Description	Completion Date	
		Scheduled	Actual
1	Steep slopes at NW silt fence outlet & DI-13 PENDING REVIEW TODAY BY SGW.		11/20/08
2	~~DI-10~~ CVT-10 needs raised at flared end		11/12/08
3	DI-12 box to high - removed riser (1')		11/5/08
4	Check grade w/ Chris Shurter at DI-13		✓
5	Widen perimeter access road to 12'0" min. PHR side		✓
6	Complete borrow area grading for drainage		✓
7	Rip-Rap aprons at outlets		TODAY ✓
8	Pot-hole perimeter access road for 2ft. cover & SG shots		✓
9	Remove temporary rip-rap from around drop inlets		✓
10	Concrete aprons schedule		11/20/08
11	Erosion control by JB-1 ~ scour		✓
12	Erosion control matting at drop inlets 1-4, 6-9, 10, 12 & 13	AFTER CONC POUR NEXT WEEK	0
13	Bare spots on closure	NEXT WEEK	0
14	Manhole ring & cover for JB-1		✓
15	Mulch coverage, closure & flat & borrow areas	12/1	0
16	Panel drain outlets rip-rap pads		11/20/08
17	Erosion control matting repairs, caused during concrete placement (Benches 2 & 3)		0
18	Ditches around closure (areas eroded) regrade	AFTER SOIL/CLAY	0

Pine Hall Road Ash Landfill Closure
Punchlist Register

Item	Description	Completion Date	
		Scheduled	Actual
19	Drainage West of DI-10 "ponding"		0
20	Pump out tanker & fuel buggy pits, remove liners, backfill & seed		0
21	Seed all disturbed areas (SLOPES, FUEL AREA MISC. AREAS)		0
22	Remove temporary entrance / BERM RESTORED, SEED	11/29/08 ~~11/12/08~~	0
23	Clean up all trash from entire site and around job trailer	CONTINUOUS	0
24	Fix matting in C7		11/19/08
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			

Pine Hall Road Ash Landfill Closure
Construction Meeting - Minutes

Meeting Date/Time: 12/8/08 / 10:50 am

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1. **Cell Phone Silence -** Cell phones silenced

2. **Discussion of Previous Meeting Minutes -** No participants had comments on the previous meeting's minutes.

3. **Level I Safety Assessment and Sign-in sheet**
   3.1 Level 1 Safety Assessment conducted by Mike Cook (Duke Energy).
   3.2 Sign-in Sheet completed.

4. **Safety and Environmental**
   4.1 Weekly Safety Reporting discontinued for project.
   4.2 Weekly Environmental Reporting discontinued for project. Mike Cook (Duke Energy) noted that the fuel containment area has been removed. Ken Daly (S&ME) requested that Jimmy Addis (S&ME) discuss spill reporting with the drillers who are on site for monitoring well installation.
   4.3 Waste Materials and Recycling: no discussion items.

5. **CQA\CQC**
   5.1 Inspections and Testing:
      5.1.1 Jimmy Addis (S&ME) noted the following: soil/cement stabilization completed; seeding, matting, and wattles are being installed; the job trailer and fuel containment area have been removed; approximately 400-500 feet of channel matting needs to be installed; the existing informal punchlist is approximately 90% complete, outstanding punchlist items consist mainly of localized erosion issues. Jimmy also noted that a portion of the Borrow Area will need to be stabilized and erosion occurring on the south side of the top of the Closure Area at a grade change will need to be repaired.
      5.1.2 In response to the question by Mike Cook (Duke Energy), Jimmy Addis (S&ME) noted that panel drain outlet covers have been received but may be difficult to install.
      5.1.3 In response to question by Jimmy Addis (S&ME), Craig Greeson (Morgan Corp) stated that the gate at the site access road is scheduled to be installed by Wednesday 12/11/08. Mike Cook (Duke Energy) added that the gate location has been flagged.
   5.2 Quality and Work Standards: no discussion items.
   5.3 Deviations: no discussion items
   5.4 Requests for Information: no discussion items

6. **Site Use and Facilities**
   6.1 Traffic and Parking: no discussion items
   6.2 Housekeeping: no discussion items
   6.3 Security: Mike Cook (Duke Energy) stated that gate lock arrangements will be discussed after the gate is installed.

7. **Schedule Update and Progress Report**
   7.1 Construction Progress: Craig Greeson (Morgan Corp) stated that currently punchlist items are being addressed. Craig requested a formal punchlist, to be composed following site observations after the meeting.
   7.2 Updated schedule: no discussion items
   7.3 Interface with sub-contractors: Craig Greeson (Morgan Corp) stated that the gate subcontractor will be on site between today and Wednesday.

7.4 Material delivery: Craig Greeson (Morgan Corp) stated that he believes all necessary materials to finish the project are on site.
7.5 Potential changes or delays: no discussion items.
7.6 Recovery Plans: no discussion items
7.7 Two week look ahead: no discussion items.

8. Payment and Changes

8.1 Documentation for payment

8.1.1 Craig Greeson (Morgan Corp) requested that 3H:1V slope matting within the Closure Area be calculated as total project matting minus design ditch matting (length x width). This method was agreed to by S&ME.

8.1.2 A progress tracking sheet listing outstanding payout items was provided by Mike Cook (Duke Energy) and reviewed.

8.1.3 In response to question by Ken Daly (S&ME), Craig Greeson (Morgan Corp) stated that Morgan Corp proposes providing a $50,000 maintenance bond for vegetation establishment. Craig further stated that the bond amount would revert to Duke Energy if Morgan Corp fails to establish vegetation in accordance with the warranty.

8.1.4 Mike Cook (Duke Energy) stated that he must receive final project invoices by December 12, 2008 to process payments for this year. If final project invoices cannot be provided by December 12th, an estimate of outstanding invoice items must be provided so that Mike can begin the accrual process.

8.1.5 Ken Daly (S&ME) requested that Morgan Corp provide comments on the proposed seed warranty so that the warranty can be finalized.

8.2 Change Orders: no discussion items

9. Submittals

9.1 Current submittal status: no discussion items
9.2 Two week submittal schedule: no discussion items.

10. Roundtable: no discussion items

11. Action Register (S&ME)

11.1 Summary of new action items (see Action Item Register for full details):

11.1.1 #85 – S&ME and Morgan Corp to provide Mike with a final invoice or estimate of final costs by 12/11/08.

11.1.2 #86 – S&ME to discuss Certificate of Substantial Completion with Lewis Withers.

11.1.3 #87 – S&ME to draft a formal punchlist.

11.1.4 #88 – Morgan Corp to provide S&ME with drawings to complete the Certification Report and for quantity check purposes.

Construction meeting adjourned by consensus at approximately 12:50 am.

Discrepancies between these minutes and the notes maintained by the attendees should be brought to the attention of S&ME in writing. No further construction meetings are scheduled.

Pine Hall Road Ash Landfill Closure
Action Register

Item	Description	Requested By	Responsible	Completion Date	
				Scheduled	Actual
Action Register Items 1-72 Have Been Resolved and Archived (11/25/08)					
72	coordinate monitoring well completion	Duke	S&ME		
73	revise Notice of Change 12 - Ditch C2/C3 erosion control	morgan corp	S&ME		11/14/2008
74	review hydraulic design of ditch C2, C3, and Culvert CVT 5	Duke	S&ME		11/14/2008
75	provide recommendations on matting outside of the Closure Area	Duke	S&ME		11/11/2008
76	provide a revised schedule	S&ME	morgan corp		11/11/2008
77	draft a punchlist register	Duke	S&ME		11/17/2008
78	review riprap ditch at C7 groin	Duke	S&ME		11/20/2008
79	review panel drain outlet cover options	Duke	morgan corp		12/4/2008
80	develop a change order for gate, C2/C3 erosion/scour protection, and riprap ditch at groin of C7	Duke	morgan corp		
81	notify ash hauling contractor of change in construction traffic patterns	S&ME	Duke		
82	provide a list of requested record drawings	Duke	S&ME		11/25/2008
83	review proposed seed warranty and provide comments	S&ME	morgan corp		
84	Jimmy Addis (S&ME) and Marty Hylton (Morgan Corp) to create sketch of bare spots where grass is not growing	Duke	S&ME / morgan corp		
85	S&ME and Morgan Corp to provide Mike with a final invoice or estimate of final costs by 12/11/08	Duke	S&ME / morgan corp	12/11/2008	
86	S&ME to discuss Certificate of Substantial Completion with Lewis Withers	Duke	S&ME		
87	S&ME to draft a formal punchlist	morgan corp	S&ME		12/8/2008
88	Morgan Corp to provide S&ME with drawings to complete the Certification Report and for quantity check purposes	S&ME	morgan corp		

Pine Hall Road Ash Landfill Closure
Weekly Construction Meeting
Sign-in sheet for 12/08/08

Name (Print)	Signature	Company
Cedric Rull	Cedric Rull	S+ME
Jimmy Addis	Jimmy Addis	S+ME
KEN DALY	Kenneth R. Daly	S+ME
Mike Cook	Mike Cook	Duke
Craig Greeson	[illegible]	Morgan-Corp
GRIFFIN QUERY	[illegible]	MORGAN CORP.

APPENDIX III

(NOTICE OF CHANGE)

S&ME

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date:** 4/22/08	**Job No.:** 1356-07-017
DESCRIPTION:	Revised Bench Grading	Duke Energy – Pine Hall Road	
		Ash Landfill Closure	
NOTICE OF CHANGE NO.	1		
CHANGE ORDER NOS:			

Description of design change:

The bench grading within the Closure Area has been revised to reflect the dimensions shown in Detail 12 Sheet D2.

Reason for design change:

In an email dated 4/4/08, Chris Shurter (Morgan Corp) notified Cedric Ruhl (S&ME) that the bench grading as shown on the plan view sheets did not match the dimensions as shown in the details. Chris Shurter requested proposed bench grading revisions.

Effective date of design change:

Revised bench grades were sent to Chris Shurter on 4/10/08 via email. This marks the effective date of design change.

Financial and schedule considerations:

None anticipated.

Attachment:

Drawing C2

4/22/08		4.22.08	
Engineer of Record	**Date**	**Prepared By**	**Date**
Name		Name	

Copies to:

- ☒ Bill Waggoner, Allied Technical Services
- ☒ Craig Greeson, Morgan Corp
- ☒ S&ME File No. 1356-07-017-03-03
- ☒ Mike Cook, Duke Energy
- ☒ Collaborative Website
- ☒ Chris Shurter, Morgan Corp

BELEWS CREEK STEAM STATION
ASH BASIN
NPDES PERMIT • NC0024406
(APPROX. POND 750.8')

BUILD UP EXISTING SEDIMENT BASIN TO EL 762'
INSTALL EMERGENCY SPILLWAY AT EL 760'

TIE-IN TO EXISTING ROAD
MAINTAIN MINIMUM 15-FT WIDE

EXISTING SEDIMENT BASIN TO BE USED AS PRIMARY BMP (SEE DETAIL 1, DWG D1)

MATCH AND EXTEND EXISTING SLOPE

PROPOSED 2-FT DEEP CHANNEL

FLAT AREA

TIE-IN TO EXISTING SLOPE

PROPOSED 2-FT DEEP CHANNEL

PROPOSED 1-FT DEEP CHANNEL

PROPOSED CONSTRUCTION LIMITS

PROPOSED BORROW AREA LIMITS

PROPOSED BORROW AREA

COVER MATERIAL BORROW AREA (APPROXIMATE 150,000 CYD)

APPROXIMATE EXISTING ASH LIMITS

DITCH LOW POINT EL 776'

MIDDLETON LOOP RD.

BENCH 1

BENCH 2

BENCH 3

CLOSURE AREA

EXISTING HAUL ROAD

PINE HALL RD.

PROPERTY BOUNDARY

PROPOSED ACCESS ROAD

PROPOSED 1-FT DEEP CHANNEL

SEE DETAIL 19 GUARDRAIL D2

PROPOSED LINER LIMITS

TIE-IN TO EXISTING 3:1 SLOPE

DITCH HIGH POINT EL=862.0'

MW-1 MW-2 MW-3 MW-4 MW-5 MW-6 MW2-1 MW2-2 MW2-3 MW2-4 MW2-5 MW2-6 MW2-7 MW2-8 MW2-9 MW2-10 MW2-11 MW2-12 MW2-13 MW2-14 MW2-15 MW2-16 MW2-17 MW2-18 MW2-19 OB-1 OB-2 OB-5 OB-6 OB-7 OB-8

N 925000
N 924500
N 924000
N 923500
N 923000

E 1681500
E 1682000
E 1682500
E 1683000
E 1683500

LEGEND

- EXISTING GRADE CONTOUR
- LIMIT OF 11/06 FIELD SURVEY
- APPROXIMATE EXISTING ASH LIMITS
- MW2-5 EXISTING WELL LOCATION
- PROPOSED GRADE CONTOUR
- PROPOSED CLOSURE SYSTEM LIMITS
- CL PROPOSED CONSTRUCTION LIMITS
- PROPOSED BORROW AREA LIMITS
- PROPOSED ACCESS ROAD (SEE DETAILS 14 AND 16, DWG D2)
- PROPOSED GUARD RAIL
- CROSS SECTION (SEE DWG C4)

NOTES:
1. CONTOUR GRADES AND ELEVATIONS DEPICTED CORRESPOND TO TOP OF CLOSURE SYSTEM.

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

REFERENCE:
TOPOGRAPHIC MAP FROM AERIAL PHOTOGRAPHY PERFORMED APRIL 03, 2003 BY EARTHDATA INTERNATIONAL AND ADJUSTED WITHIN THE LIMIT OF FIELD SURVEY PERFORMED NOVEMBER 2006 BY STANTEC INC.

ISSUED FOR CONSTRUCTION

Duke Energy ©

S&ME
WWW.SMEINC.COM

NORTH CAROLINA PROFESSIONAL SEAL 022471 ENGINEER CHRISTOPHER T. FOUNTAIN

NO.	DATE	DESCRIPTION	BY
2	4-22-08	REVISED BENCH GRADING	KRD
1	2-21-08	ISSUED FOR CONSTRUCTION	KRD

FINAL GRADING PLAN
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE ENERGY - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY: CTF
DESIGNED BY: CS	APPROVED BY:
PROJECT NUMBER 1411-06-108	
SCALE: 1" = 100'	DATE: 6-21-07
DRAWING: C2	OF: 6

DRAWING PATH: N:\DEC\DUKE ENERGY\07-07 FINAL\6 ISS CONSTRUCTION\ISSUE OF CHANGE 1 - REVISED CE.DWG

S&ME

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date: 5/02/08**	**Job No.: 1356-07-017**
DESCRIPTION:	Slope Access	Duke Energy – Pine Hall Road	
	Road Grade	Ash Landfill Closure	
NOTICE OF CHANGE NO.	2		
CHANGE ORDER NOS:			

This Notice of Change was prepared to supplement Record of Information 3.

Description of design changes:

Revised slope access road grading (Detail 16, Sheet D2). Access road cross slope will be from centerline of ditch to outside edge of road (9.72%).

Reason for design change:

To reconcile Detail 16, Sheet D2 with grading shown in Sheet C2 and to provide drainage for the slope access road.

Effective date of design change:

Immediately.

Financial and schedule considerations:

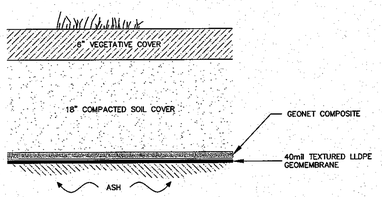
None anticipated.

Attachment:

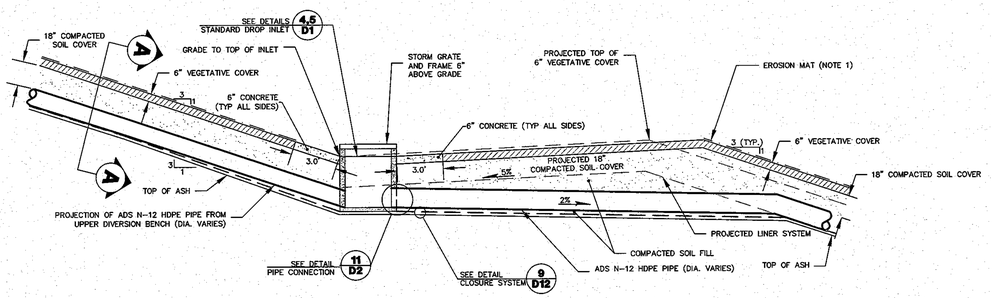
Drawing D2.

5/2/08		5·2·08	
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

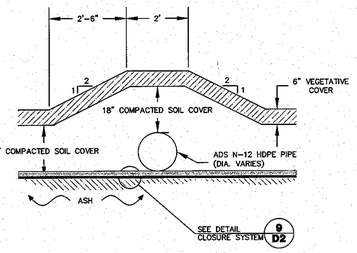
Copies to:
- ☒ Bill Waggoner, Allied Technical Services
- ☒ Craig Greeson, Morgan Corp
- ☒ S&ME File No. 1356-07-017-03-03
- ☒ Mike Cook, Duke Energy
- ☒ Collaborative Website
- ☒ Chris Shurter, Morgan Corp



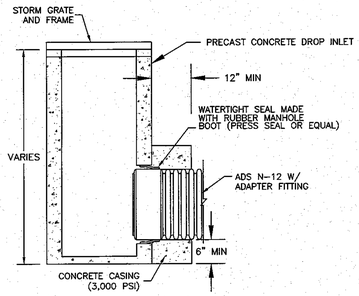
9 / D2 CLOSURE SYSTEM DETAIL
SCALE: 1"=1'



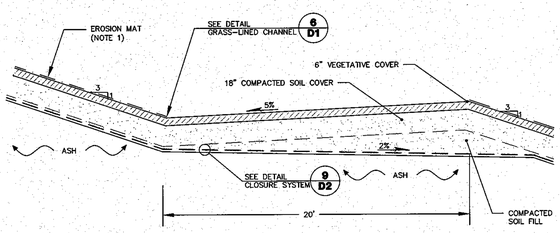
10 / C3 TYPICAL DROP INLET DETAIL
SCALE: 1"=4'



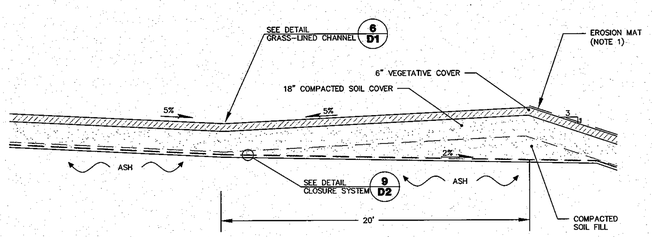
PIPE COVER SECTION A-A
SCALE: 1"=2'



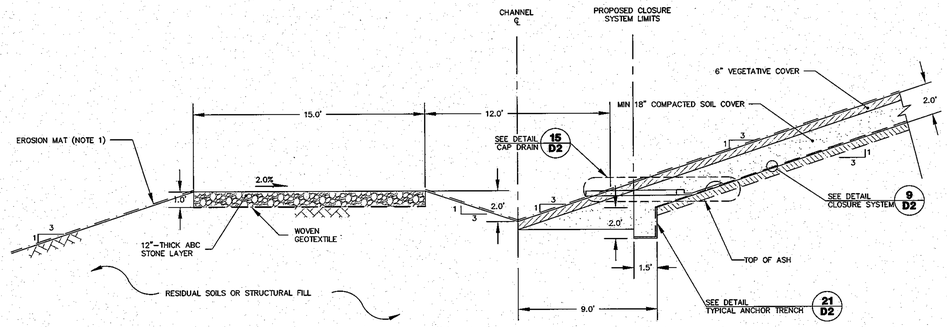
11 / D1 / D2 PIPE CONNECTION DETAIL
SCALE: NTS



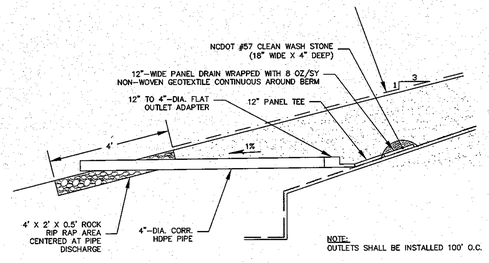
12 / C4 TYPICAL DIVERSION BENCH DETAIL
SCALE: 1"=4'



13 / C4 TYPICAL TOP OF SLOPE DIVERSION BERM DETAIL
SCALE: 1"=4'

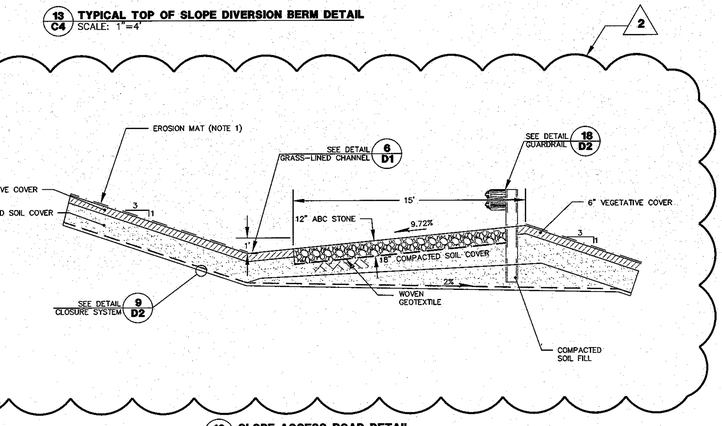


14 / C2 / C4 TYPICAL PERIMETER ACCESS ROAD DETAIL
SCALE: 1"=4'

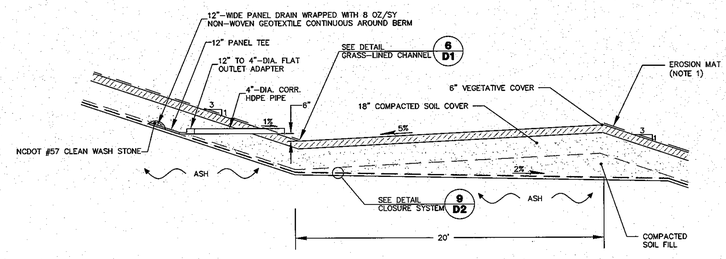


NOTE:
OUTLETS SHALL BE INSTALLED 100' O.C.

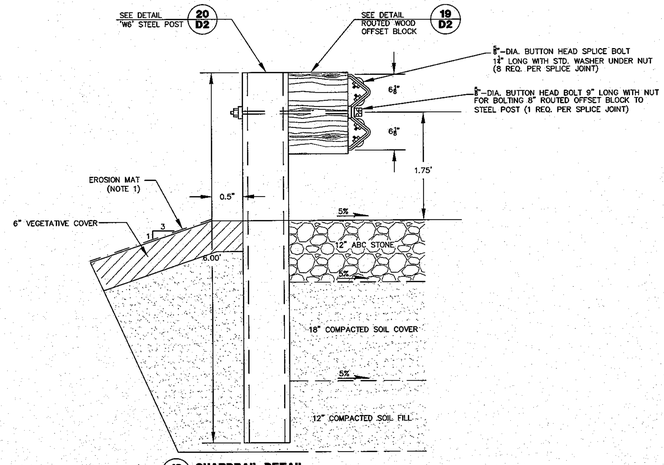
15 / D2 TYPICAL CAP DRAIN DETAIL
SCALE: 1"=2'



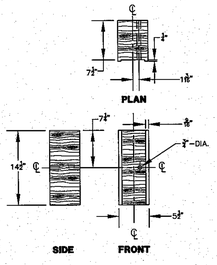
16 / D2 SLOPE ACCESS ROAD DETAIL
SCALE: 1"=4'



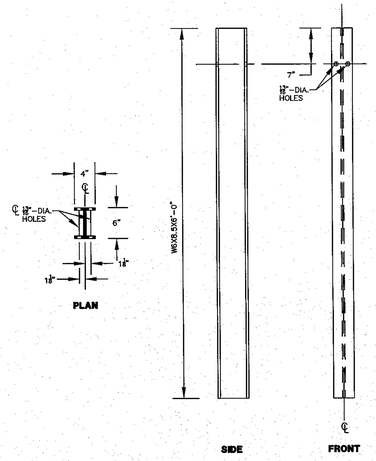
17 / D2 TYPICAL SLOPE DRAIN DETAIL (BENCH 2 ONLY)
SCALE: 1"=4'



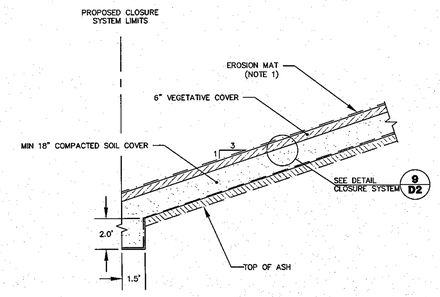
18 / D2 GUARDRAIL DETAIL
NTS



19 / D2 ROUTED WOOD OFFSET BLOCK DETAIL
NTS



20 / D2 "W6" STEEL POST DETAIL
NTS



21 / D2 TYPICAL ANCHOR TRENCH
SCALE: 1"=4'

NOTE:

1. EROSION MAT SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 02924-4, 3.6 SEED PROTECTION. EROSION MAT SHALL BE USED ON SLOPES WHERE GRADE IS 3 HORIZONTAL TO 1 VERTICAL. ROLL FABRIC ONTO SLOPES WITHOUT STRETCHING OR PULLING.

ISSUED FOR CONSTRUCTION

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NO.	DATE	DESCRIPTION	BY
2	5-2-08	REVISED DETAIL 18 (NOTICE OF CHANGE 2)	WRD
1	2-21-08	ISSUED FOR CONSTRUCTION	WRD

CLOSURE DETAILS
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE POWER - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY: CTF
DESIGNED BY: CS	APPROVED BY:
PROJECT NUMBER: 1411-06-108	
SCALE: AS SHOWN	DATE: 6-21-07
DRAWING: D2	OF: 6

DRAWING PATH: C:\DOCUMENTS AND SETTINGS\WRDAVIS\DESKTOP\C-D1 Forms B2 CD Dwg\Notice of Change 2\NOC 2 - Revised Road Grading.dwg

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date: 6/2/08**	**Job No.: 1356-07-017**
DESCRIPTION:	Grading Plan and	Duke Energy – Pine Hall Road	
	Stormwater Structures	Ash Landfill Closure	
NOTICE OF CHANGE NO.	3		
CHANGE ORDER NOS:			

Description of design changes:

This Notice of Change summarizes current proposed grading changes accepted by S&ME including the following (see attached Drawing C3):

- Usage of Pre-Construction Conditions Survey for existing grade (generated by Morgan Corp, dated 4/3/08);
- Flat Area grading for cut/fill balance (generated by Morgan Corp, dated 4/15/08);
- Closure Area grading for cut/fill balance (generated by Morgan Corp, dated 5/1/08);
- Bench grading (generated by S&ME, dated 4/22/08, Notice of Change 1);
- Slope access road grading for Channel C5 (described by S&ME, dated 5/2/02, Notice of Change 2); and
- Revised perimeter access road widths from 15 feet to 12 feet, excluding slope access road.

This Notice of Change also summarizes revisions to the proposed stormwater structures, including the following (see attached Drawing D2):

- Removal of Drop Inlets 5 and 11;
- Addition of Junction Box JB-1;
- Culvert 4: Length changed from 130' to 110', Downstream Invert changed from 773' to 777';
- Culvert 5: Size changed from 2-36" to 2-24", Length changed from 200' to 38', Downstream Invert changed from 774' to 775.5';
- Addition of Culvert 5A; and
- Culvert 11: Upstream Invert changed from 843' to 844', Downstream Invert changed from 841' to 842'.

Reason for design change:

To summarize proposed grade changes to date, to document S&ME's acceptance of cut/fill balance grading in the Closure Area and Flat Area, and to provide a better drainage system.

Effective date of design change:

Immediately.

Financial and schedule considerations:

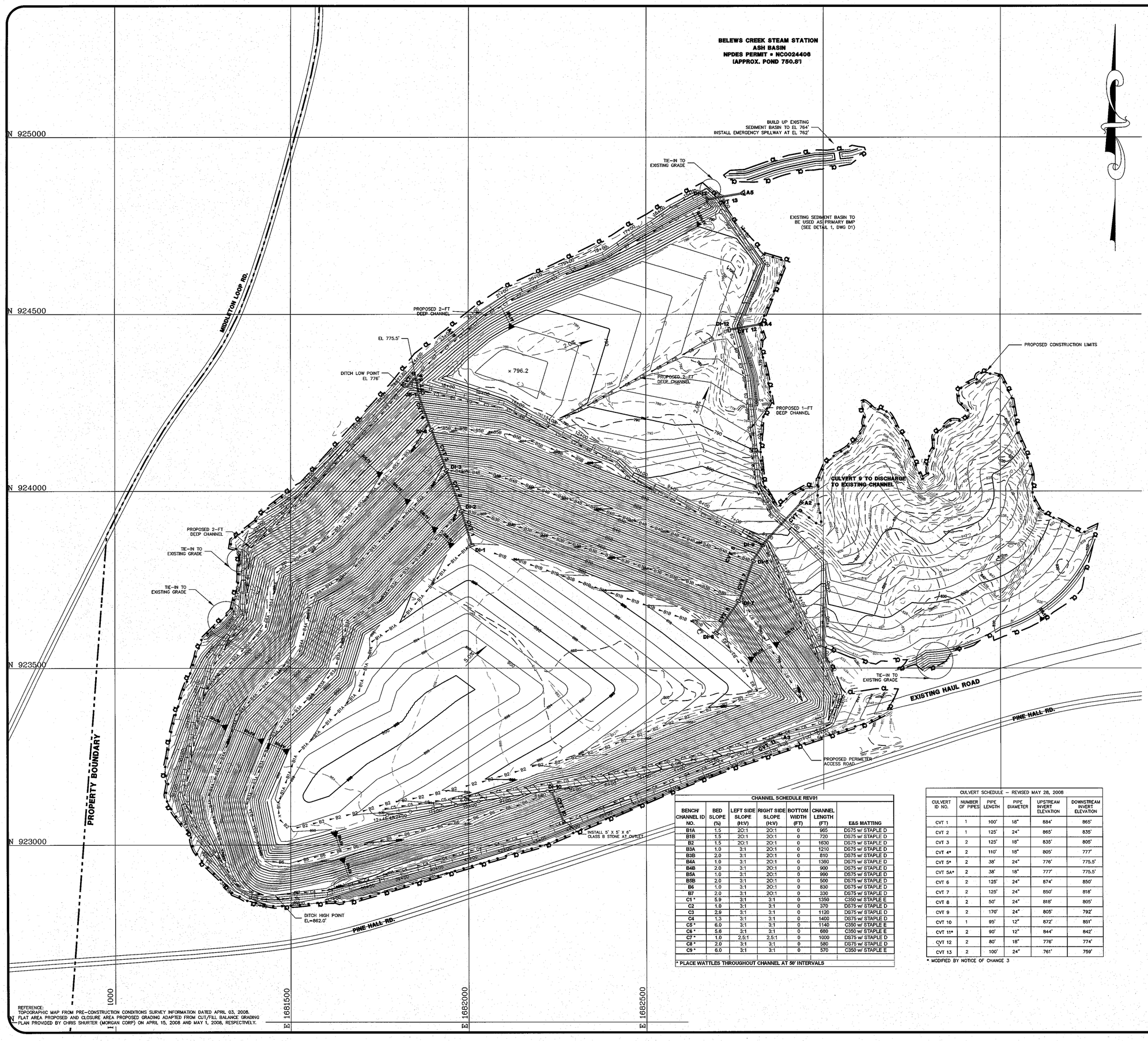
Morgan Corp to provide information on cost differences.

Attachment:

Drawing C3, Drawing D1.

6/2/08		6·3·08	
Engineer of Record	**Date**	**Prepared By**	**Date**
Name		Name	

Copies to:	☒ Bill Waggoner, Allied Technical Services	☒ Mike Cook, Duke Energy
	☒ Craig Greeson, Morgan Corp	☒ Collaborative Website
	☒ S&ME File No. 1356-07-017-03-03	☒ Chris Shurter, Morgan Corp



REFERENCE:
TOPOGRAPHIC MAP FROM PRE-CONSTRUCTION CONDITIONS SURVEY INFORMATION DATED APRIL 03, 2008.
FLAT AREA PROPOSED AND CLOSURE AREA PROPOSED GRADING ADAPTED FROM CUT/FILL BALANCE GRADING PLAN PROVIDED BY CHRIS SHURTER (MORGAN CORP) ON APRIL 15, 2008 AND MAY 1, 2008, RESPECTIVELY.

EROSION AND SEDIMENT CONTROL NARRATIVE

THE EROSION AND SEDIMENT CONTROL MEASURES FOR THIS DEVELOPMENT INVOLVE THE PLACEMENT OF A VARIETY OF EROSION AND SEDIMENT CONTROL DEVICES AT STRATEGIC LOCATIONS THROUGHOUT THE DEVELOPMENT. THESE DEVICES INCLUDE:

1. SEDIMENT BASIN CONSTRUCTION
2. GRASS-LINED CHANNELS
3. GRAVEL HAUL ROADS
4. STORM INLET PROTECTION
5. OUTLET PROTECTION – RIPRAP
6. SILT FENCING

MOST OF THESE DEVICES ARE TO BE INSTALLED PRIOR TO CLEARING AND GRADING. ALL DEVICES ARE TO REMAIN IN GOOD WORKING CONDITION UNTIL THE INSPECTOR APPROVES THEIR REMOVAL.

PROJECT DESCRIPTION

THE AREA IS AN EXISTING ASH LANDFILL TO RECEIVE AN ENGINEERED COVER SYSTEM. THE PROPOSED DISTURBED AREA FOR THIS PROJECT IS APPROXIMATELY 70 ACRES.

EXISTING SITE CONDITIONS

THE SITE IS COMPRISED MAINLY OF GRASSLANDS ALONG THE TOPOGRAPHIC HIGHS AND WOODLANDS ALONG THE TOPOGRAPHIC LOWS AND DRAINAGE FEATURES. THE EXISTING ASH LANDFILL IS COMPRISED OF MAINLY BARE SOIL, EXPOSED ASH, AND A MODERATELY VEGETATED SOIL COVER.

SCHEDULE

CLOSURE OF THE ASH LANDFILL IS SCHEDULED TO BEGIN EARLY TO MID DECEMBER 2007.

STANDARDS

ALL EROSION AND SEDIMENT CONTROLS SHALL BE IN ACCORDANCE WITH THE NORTH CAROLINA SEDIMENTATION POLLUTION CONTROL ACT OF 1973 AND NCAC TITLE 15, CHAPTER 4. CONSTRUCTION DETAILS AND SPECIFICATIONS WITHIN THIS PLAN WERE DERIVED FROM THE EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL DATED SEPTEMBER 1, 1988, PREPARED BY THE NORTH CAROLINA SEDIMENTATION CONTROL COMMISSION, NCDENR AND NCAES.

MAINTENANCE

1. ALL PLANTED AREAS SHALL BE INSPECTED WEEKLY AND AFTER RAINFALL EVENTS OF 0.5" OR GREATER, AND ANY DAMAGE CORRECTED BY THE END OF THE DAY.
2. SEDIMENT CONTROL MEASURES SHALL BE REMOVED ONLY AFTER THE INSPECTOR'S APPROVAL AND ANY REMAINING DISTURBED AREAS SHALL BE STABILIZED IMMEDIATELY.
3. ALL SEEDED AREAS SHALL BE FERTILIZED, RESEEDED AS NECESSARY AND MULCHED, ACCORDING TO THE SEEDING PLAN TO MAINTAIN A VIGOROUS, DENSE VEGETATION COVER.
4. THE PROPOSED SEDIMENT BASIN SHALL BE CLEANED OUT WHEN THE LEVEL OF SEDIMENT REACHES APPROXIMATELY ONE HALF THE BASIN VOLUME.

CONSTRUCTION SEQUENCE

1. OBTAIN PLAN APPROVAL AND PERMITS PRIOR TO BEGINNING WORK.
2. HOLD PRE-CONSTRUCTION MEETING.
3. FLAG CONSTRUCTION LIMITS.
4. CLEAR AND GRUB AREAS FOR INSTALLATION OF PERIMETER SEDIMENT CONTROL DEVICES. INSTALL SILT FENCING AND CONSTRUCT DIVERSION CHANNELS.
5. CLEAR AND PREPARE EXISTING SUBGRADE FOR ASH OR SOIL PLACEMENT BY REMOVING VEGETATION AND GRUBBING ROOTS. IF CLEARED BRUSH AND GRASS ARE TO BE BURNED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING REQUIRED BURNING PERMITS.
6. BEGIN CONSTRUCTION.
7. STABILIZE ALL REMAINING DENUDED AREAS WITH SEED AND MULCH UPON FINAL GRADING ACCORDING TO SEEDING SPECIFICATIONS ON DWG D1.
8. FINALIZE CONSTRUCTION.
9. PROVIDE LANDSCAPING AND PERMANENT VEGETATION ACCORDING TO SEEDING SPECIFICATIONS ON DWG D1.
10. ALL EROSION CONTROL DEVICES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT DURING CONSTRUCTION.

GENERAL NOTES

1. THIS SHEET IS FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY.
2. THE OWNER'S CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROLS PROPOSED HEREIN.
3. THE OWNER'S CONTRACTOR IS RESPONSIBLE FOR NOTIFYING UTILITY COMPANIES TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION.
4. CHECK DAMS (SEE DETAIL 2, DWG D1) AND/OR WATTLES (DETAIL 8, DWG D1) SHALL BE PROVIDED IN CHANNELS 1, 5, 6, 7, 8, AND 9.
5. OUTLET PROTECTION APRONS (SEE DETAIL 7, DWG D1) SHALL BE PROVIDED AT CULVERT DISCHARGE LOCATIONS.

LEGEND

- EXISTING GRADE CONTOUR
- PROPOSED GRADE CONTOUR
- CL — PROPOSED CONSTRUCTION LIMITS
- C1 ► C1 ► C1 — PROPOSED GRASS-LINED BENCH/CHANNEL (SEE DETAIL 6, DWG D1)
- PROPOSED ACCESS ROAD (SEE DETAILS 14 AND 16, DWG D2)
- DI-1 — DROP INLET (SEE DETAILS 4 AND 5, DWG D1 AND DETAIL 10, DWG D2)
- CVT — STORMWATER PIPE (SEE NOTE 2)
- SILT FENCE (SEE DETAIL 3, DWG D1)
- A1 — RIPRAP APRON (SEE DETAIL 7, DWG D1)

NOTES:
1. CONTOUR GRADES AND ELEVATIONS DEPICTED CORRESPOND TO TOP OF CLOSURE SYSTEM.
2. ALL HDPE PIPE SHALL BE ADS N-12 OR ENGINEER-APPROVED EQUIVALENT.

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

CHANNEL SCHEDULE REV01

BENCH/ CHANNEL ID NO.	BED SLOPE (%)	LEFT SIDE SLOPE (H:V)	RIGHT SIDE SLOPE (H:V)	BOTTOM WIDTH (FT)	CHANNEL LENGTH (FT)	E&S MATTING
B1A	1.5	2O:1	2O:1	0	965	D575 w/ STAPLE D
B1B	1.5	2O:1	2O:1	0	720	D575 w/ STAPLE D
B2	1.5	2O:1	2O:1	0	1630	D575 w/ STAPLE D
B3A	1.0	3:1	2O:1	0	1210	D575 w/ STAPLE D
B3B	2.0	3:1	2O:1	0	810	D575 w/ STAPLE D
B4A	1.0	3:1	2O:1	0	1360	D575 w/ STAPLE D
B4B	2.0	3:1	2O:1	0	900	D575 w/ STAPLE D
B5A	1.0	3:1	2O:1	0	990	D575 w/ STAPLE D
B5B	2.0	3:1	2O:1	0	500	D575 w/ STAPLE D
B6	1.0	3:1	2O:1	0	830	D575 w/ STAPLE D
B7	2.0	3:1	2O:1	0	330	D575 w/ STAPLE D
C1 *	5.9	3:1	3:1	0	1350	C350 w/ STAPLE E
C2	1.0	3:1	3:1	0	370	D575 w/ STAPLE D
C3	2.9	3:1	3:1	0	1120	D575 w/ STAPLE D
C4	1.3	3:1	3:1	0	1400	D575 w/ STAPLE D
C5 *	6.0	3:1	3:1	0	1140	C350 w/ STAPLE E
C6 *	5.6	3:1	3:1	0	680	C350 w/ STAPLE E
C7 *	1.0	2.5:1	2.5:1	0	1000	D575 w/ STAPLE D
C8 *	2.0	3:1	3:1	0	580	D575 w/ STAPLE D
C9 *	6.0	3:1	3:1	0	570	C350 w/ STAPLE E

* PLACE WATTLES THROUGHOUT CHANNEL AT 50' INTERVALS

CULVERT SCHEDULE – REVISED MAY 28, 2008

CULVERT ID NO.	NUMBER OF PIPES	PIPE LENGTH	PIPE DIAMETER	UPSTREAM INVERT ELEVATION	DOWNSTREAM INVERT ELEVATION
CVT 1	1	100'	18"	884'	865'
CVT 2	1	125'	24"	865'	835'
CVT 3	2	125'	18"	835'	805'
CVT 4*	2	110'	18"	805'	777'
CVT 5*	2	38'	24"	776'	775.5'
CVT 5A*	2	38'	18"	777'	775.5'
CVT 6	2	125'	24"	874'	850'
CVT 7	2	125'	24"	850'	818'
CVT 8	2	50'	24"	818'	805'
CVT 9	2	170'	24"	805'	792'
CVT 10	1	95'	12"	872'	851'
CVT 11*	2	90'	12"	844'	842'
CVT 12	2	80'	18"	776'	774'
CVT 13	2	100'	24"	761'	759'

* MODIFIED BY NOTICE OF CHANGE 3

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ISSUED FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY
2	6-2-08	REVISED GRADING AND STORMWATER STRUCTURES (NOTICE OF CHANGE 3)	KRD
1	2-21-08	ISSUED FOR CONSTRUCTION	KRD

STORMWATER/EROSION AND SEDIMENT CONTROL PLAN
PINEHALL ROAD ASH LANDFILL CLOSURE

DUKE ENERGY - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY: CTF
DESIGNED BY: CFS	APPROVED BY: KTO
PROJECT NUMBER: 1411-06-108	
SCALE: 1" = 100'	DATE: 6-21-07
DRAWING: C3	OF: 6

DRAWING PATH: Q:\DGI\DUKE ENERGY\PINEHALL RD CLOSURE\PRELIMINARY\C3 - GRADING AND STORMWATER.DWG

GENERAL SEEDING SPECIFICATIONS

DEFINITION: Controlling runoff and erosion on disturbed areas by establishing perennial vegetative cover with seed.

PURPOSE: To reduce erosion and decrease sediment yield from disturbed areas, and to permanently stabilize such areas in a manner that is economical, adapts to site conditions, and allows selection of the most appropriate plant materials.

SPECIFICATIONS: SEEDBED REQUIREMENTS
Establishment of vegetation should not be attempted on sites that are unsuitable due to inappropriate soil texture (NC Erosion and Sediment Control Planning and Design Manual, 1988), poor drainage, concentrated overland flow, or steepness of slope until measures have been taken to correct these problems.

To maintain a good stand of vegetation, the soil must meet certain minimum requirements as a growth medium. The existing soil should have these criteria:

- Enough fine-grained (silt and clay) material to maintain adequate moisture and nutrient supply (available water capacity of at least .05 inches water to 1 inch of soil).
- Sufficient pore space to permit root penetration.
- Sufficient depth of soil to provide an adequate root zone. The depth to rock or impermeable layers such as hardpans should be 12 inches or more, except on slopes steeper than 2:1 where the addition of soil is not feasible.
- A favorable pH range for plant growth, usually 6.0 – 6.5.
- Free from large roots, branches, stones, large clods of earth, or trash of any kind. Clods and stones may be left on slopes steeper than 3:1 if they are to be hydroseeded.

If any of the above criteria are not met – i.e., if existing soil is too coarse, dense, shallow or acidic to foster vegetation – special amendments are required. The soil conditioners described below may be beneficial or, preferably, topsoil may be applied.

SEEDBED PREPARATION
Install necessary mechanical erosion and sedimentation control practices before seeding, and complete grading according to the approved plan.

Lime and fertilizer needs should be determined by soil tests. Soil testing is performed free of charge by the North Carolina Department of Agriculture soil testing laboratory. Directions, sample cartons, and information sheets are available through county Agricultural Extension offices or from NCDA. Because the NCDA soil testing lab requires 1-6 weeks for sample turn-around, sampling must be planned well in advance of final grading. Testing is also done by commercial laboratories.

When soil tests are not available, follow rates suggested in the seeding specifications shown at right. Application rates usually fall into the following ranges:

- Ground agricultural limestone:
  Light-textured, sandy soils: 1 to 1-1/2 tons/acre
  Heavy-textured, clayey soils: 2-3 tons/acre
- Fertilizer:
  Grasses: 800-1200 lb/acre of 10-10-10 (or the equivalent)
  Grass-legume mixtures: 800-1200 lb/acre of 5-10-10 (or the equivalent)

Apply lime and fertilizer evenly and incorporate into the top 4-6 inches of soil by disking or other suitable means. Operate machinery on the contour. When using a hydroseeder, apply lime and fertilizer to a rough, loose surface.

Roughen surfaces prior to seeding.

Complete seedbed preparation by breaking up large clods and raking into a smooth, uniform surface (slopes less than 3:1). Fill in or level depressions that can collect water. Broadcast seed into a freshly loosened seedbed that has not been sealed by rainfall.

SEEDING
Seeding dates given in the seeding mixture specifications are designated as "best" or "possible". Seedings properly carried out within the "best" dates have a high probability of success. It is also possible to have satisfactory establishment when seeding outside these dates. However, as you deviate from them, the probability of failure increases rapidly. Seeding on the last date shown under "possible" may reduce changes of success by 30-50%. Always take this into account in scheduling land-disturbing activities.

Use certified seed for permanent seeding whenever possible. Certified seed is inspected by the North Carolina Crop Improvement Association. It meets published North Carolina Standards and should bear an official "Certified Seed" label.

Labeling of non-certified seed is also required by law. Labels contain important information on seed purity, germination, and presence of wood seeds. Seeds must meet State standards for content of noxious weeds. Do no accept seed containing "prohibited" noxious weed seed.

Inoculate legume seed with the Rhizobium bacteria appropriate to the species of legume.

Apply seed uniformly with a cyclone seeder, drop-type spreader, drill, cultipacker seeder, or hydroseeder on a firm, friable seedbed.

When using a drill or cultipacker seeder, plant small grains no more than 1 inch deep, grasses and legumes no more than 1/2 inch. Equipment should be calibrated in the field for the desired seeding rate.

When using broadcast-seeding methods, subdivide the area into workable sections and determine the amount of seed needed for each section. Apply one-half the seed while moving back and forth across the area, making a uniform pattern: then apply the second half in the same way, but moving at right angles to the first pass.

Mulch all plantings immediately after seeding.

HYDROSEEDING
Surface roughening is particularly important when hydroseeding, as a roughened slope will provide some natural coverage for lime, fertilizer, and seed. The surface should not be compacted or smooth. Fine seedbed preparation is not necessary for hydroseeding operations: large clods, stones, and irregularities provide cavities in which seeds can lodge.

Rate of wood fiber (cellulose) application should be at least 2,000 lb/acre.

Apply legume inoculants at four time the recommended rate when adding inoculant to a hydroseeder slurry.

If a machinery breakdown of 1/2 to 2 hours occurs, add 50% more seed to the tank, based on the proportion of the slurry remaining. This should compensate for damage to seed. Beyond 2 hours, a full rate of new seed may be necessary.

Lime is not normally applied with a hydraulic seeder because it is abrasive. It can be blown onto steep slopes in dry form.

MAINTENANCE:
Generally, a stand of vegetation cannot be determined to be fully established until soil cover has been maintained for one full year from planting, inspect seeded areas for failure and make necessary repairs and reseedings within the same season, if possible.

Reseeding--If a stand has inadequate cover, re-evaluate choice of plant materials and quantities of lime and fertilizer. Re-establish the stand after seedbed preparation or over-seed the stand. Consider seeding temporary, annual species if the time of year is not appropriate for permanent seeding.

If vegetation fails to grow, soil must be tested to determine if acidity or nutrient imbalance is responsible.

Fertilization--On the typical disturbed site, full establishment usually requires refertilization in the second growing season. Fine turf requires annual maintenance fertilization. Use soil tests if possible or follow the guidelines given for the specific seeding mixture.

TEMPORARY SEEDING SPECIFICATIONS

Seeding mixture (fall)

Species*	Rate (lb/acre)
Rye (grain)	120

Seeding Mixture (late winter early spring)

Species*	Rate (lb/acre)
Rye (grain)	120
Annual Lespedeza	50

Omit Annual Lespedeza when duration of temporary cover is not to extend beyond July.

Seeding mixture (summer)

Species*	Rate (lb/acre)
German Millet	40

Seeding dates (Piedmont)
Fall: Aug. 15 – Dec. 30
Late winter (early spring): Jan. 1 – May 1
Summer: May 1 – Aug. 15

Soil amendments
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

Mulch
Apply 4,000 lb/acre straw. Anchor mulch by tacking with asphalt, roving or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring. tool.

Maintenance
Refertilize if growth is not fully adequate. Reseed, Refertilize and mulch immediately following erosion or other damage.
*REF: 6.10 A,B and C, NC Erosion and Sediment Control Planning and Design Manual, 1988

PERMANENT SEEDING SPECIFICATIONS

Seeding mixture

Species*	Rate (lb/acre)
Tall fescue	80
Kobe lespedeza	40

Nurse plants
Between May 1 and Aug. 15, add 10 lb/acre German millet or 15 lb/acre Sudangrass. Prior to May 1 or after Aug. 15, add 40 lb/acre rye (grain).

Seeding dates

	Best	Possible
Fall:	Aug. 25 – Sept. 15	Aug. 20 – Oct. 25
Late winter:	Feb. 15 – Mar. 21	Feb. 1 – Apr. 15

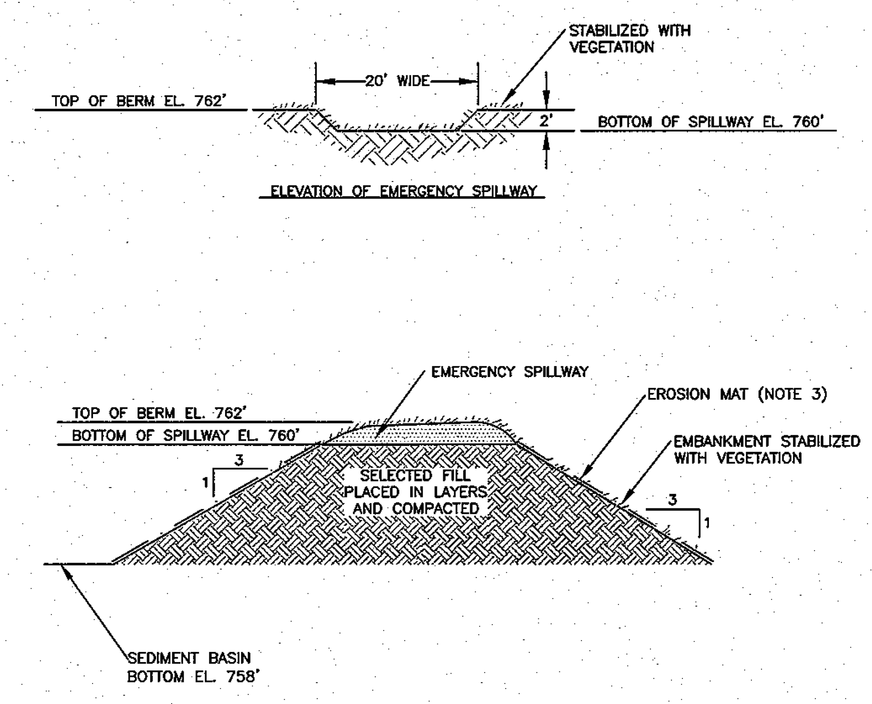
Fall is best for tall fescue and late winter for lespedezas. Overseeding of Kobe lespedeza over fall-seeded tall fescue is very effective.

Soil amendments
Apply lime and fertilizer according to soil tests, or apply 4,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10-10-10 fertilizer.

Mulch
Apply 4,000-5,000 lb/acre grain straw or equivalent cover of another suitable mulching material. Anchor mulch by tacking with asphalt, roving, or netting. Netting is the preferred anchoring method on steep slopes.

Maintenance
Refertilize in the second year unless growth is fully adequate. May be mowed one or twice a year, but mowing is not necessary. Reseed, fertilize, and mulch damaged areas immediately.

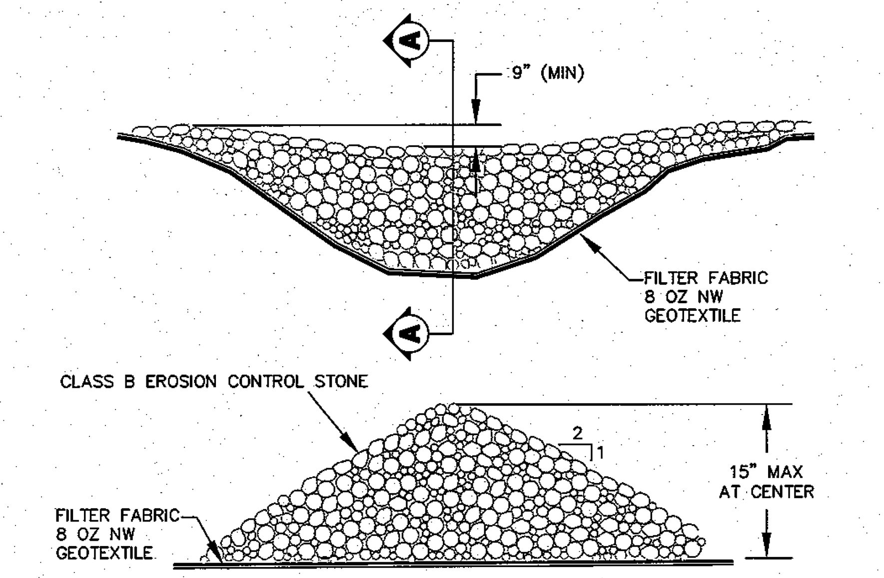
*REF: 6.11L NC Erosion and Sediment Control Planning and Design Manual, 1988



NOTES:

1. THE EXISTING SEDIMENT BASIN STORAGE VOLUME IS ADEQUATE TO MAINTAIN A 5-INCH FREEBOARD FOR A 25-YEAR STORM EVENT WITH NO OUTLET STRUCTURES. AN EMERGENCY SPILLWAY SHALL BE INSTALLED AT ELEVATION 760' FOR SEVERE STORM EVENTS.
2. SEDIMENT BASIN SHALL BE INSPECTED AFTER PERIODS OF SIGNIFICANT RUNOFF. REMOVE SEDIMENT AND RESTORE THE BASIN TO ITS ORIGINAL DIMENSIONS WHEN SEDIMENT ACCUMULATES TO ONE-HALF THE DESIGN DEPTH.
3. EROSION MAT SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 02924-4, 3.6 SEED PROTECTION. EROSION MAT SHALL BE USED ON SLOPES WHERE GRADE IS 3 HORIZONTAL TO 1 VERTICAL. ROLL FABRIC ONTO SLOPES WITHOUT STRETCHING OR PULLING.

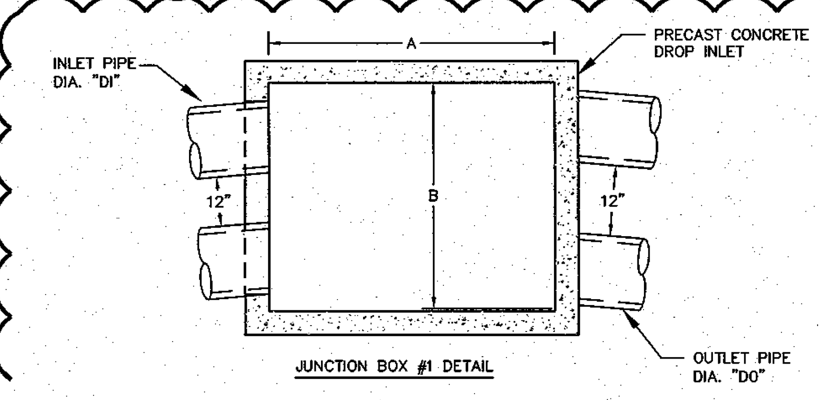
1 / C2 / C3 SEDIMENT BASIN EMERGENCY SPILLWAY DETAIL
NTS



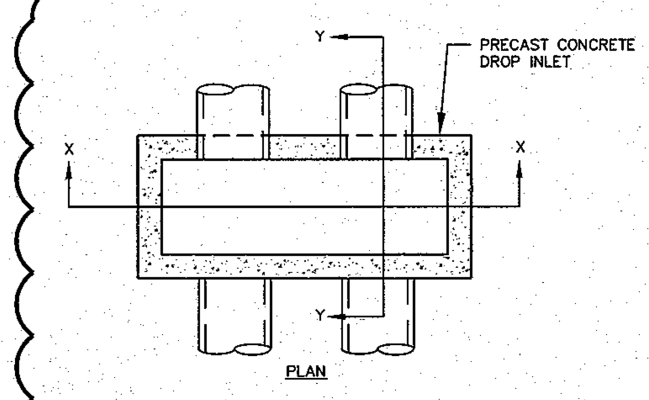
NOTES:

1. STONE SHOULD BE PLACED OVER THE CHANNEL BANKS TO KEEP WATER FROM CUTTING AROUND THE DAM.
2. CHECK DAMS AND/OR WATTLES TO BE PROVIDED IN CHANNELS,ACCORDING TO THE CHANNEL SCHEDULE INDICATED ON DRAWING C3.
3. SPACING IS TO BE 50 FEET BETWEEN SUBSEQUENT CHECK DAMS.

2 / C3 CHECK DAM DETAIL
NTS



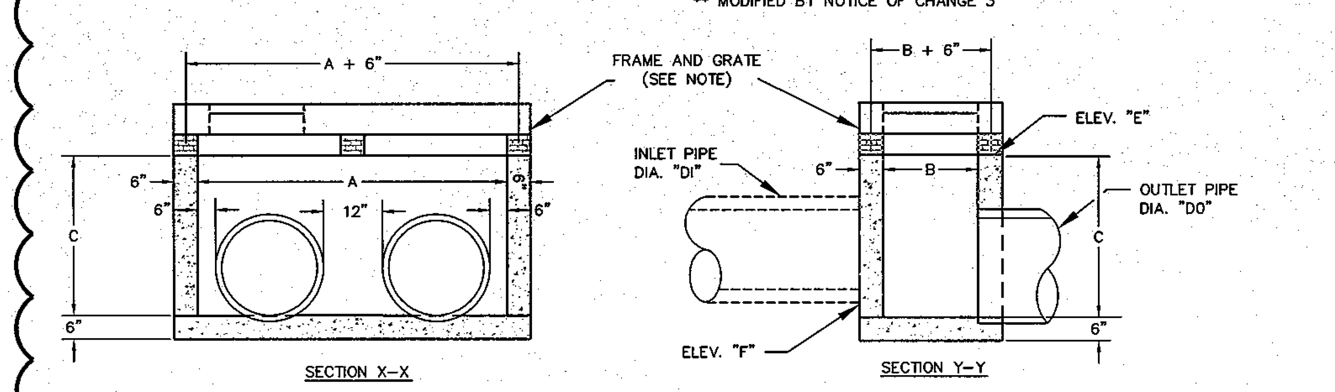
3



DOUBLE PIPE DROP INLET SCHEDULE							
DROP INLET NO.	DIMENSIONS SPAN A	WIDTH B	DEPTH C	INLET PIPE DIAMETER DI	OUTLET PIPE DIAMETER DO	ELEVATIONS TOP E	INVERT F
3	6'	3'	3'	1-24"	2-18"	838.0'	835.0'
4	5'	3'	3'	2-18"	2-18"	808.0'	805.0'
~~5*~~	~~8'~~	~~5'~~	~~5'~~	~~2-18"~~	~~2-36"~~	~~778.0'~~	~~773.0'~~
6	6'	3'	3'	N/A	2-24"	877.0'	874.0'
7	6'	3'	3'	2-24"	2-24"	853.0'	850.0'
8	6'	3'	3'	2-24"	2-24"	821.0'	818.0'
9	6'	6'	5'	2-24"	2-24"	810.0'	805.0'
~~11~~	~~4'~~	~~6'~~	~~5'~~	~~N/A~~	~~2-12"~~	~~845.0'~~	~~843.0'~~
12	6'	5'	4'	N/A	2-18"	780.0'	776.0'
13	6'	6'	5'	N/A	2-24"	766.0'	761.0'
JB-1**	6'	6'	5'	2-18"	2-18"	782.0'	777.0'

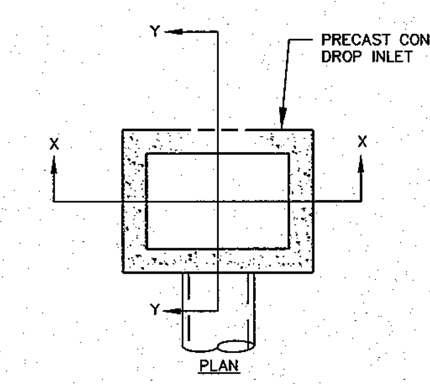
* THE INLET PIPE AT DROP INLET NO. 5 SHALL BE PERPENDICULAR TO THE DROP INLET WIDTH AND THE OUTLET PIPE SHALL BE PERPENDICULAR TO THE DROP INLET SPAN (SEE DROP INLET NO. 5 DETAIL ABOVE)

** MODIFIED BY NOTICE OF CHANGE 3



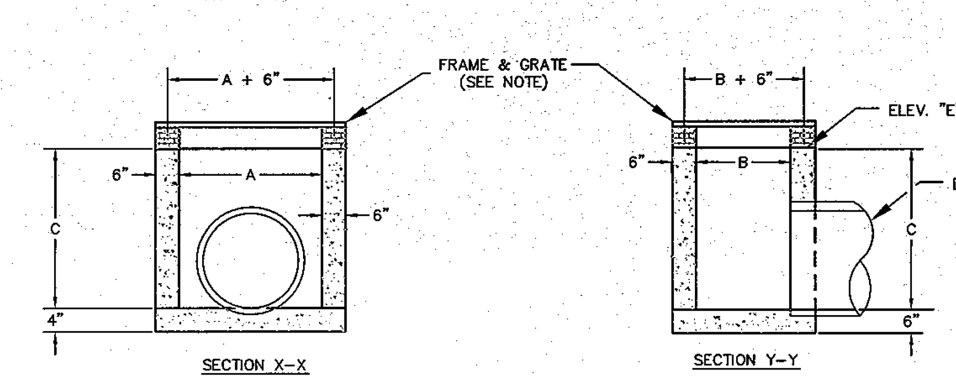
NOTE:
STORM GRATE SHALL CONSIST OF A CONCRETE LID ELEVATED TO PROVIDE 6 INCHES (MIN.) CLEAR SPACE ABOVE DROP INLET.

4 / C3 / D2 DOUBLE PIPE DROP INLET DETAIL
NTS



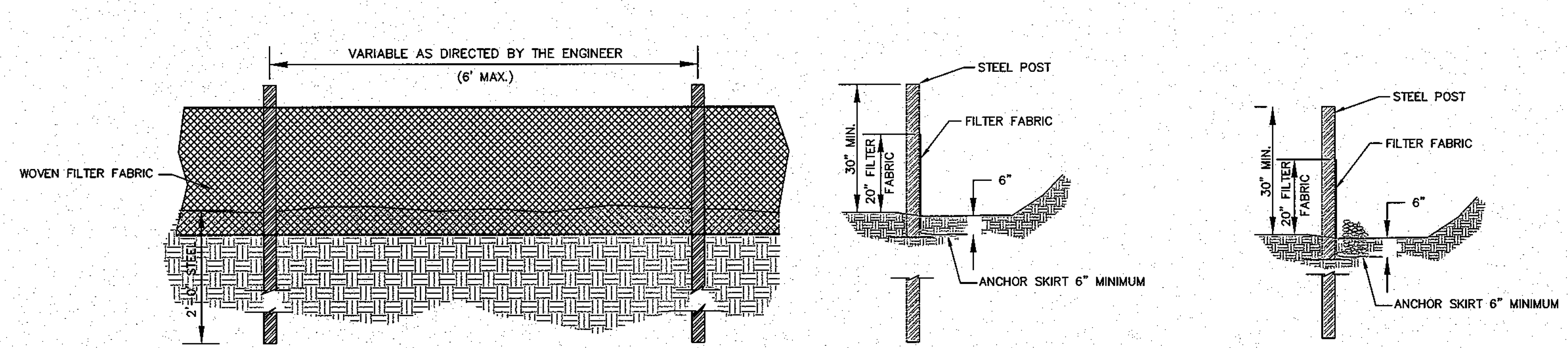
SINGLE PIPE DROP INLET SCHEDULE					
DROP INLET NO.	DIMENSIONS SPAN A	WIDTH B	DEPTH C	PIPE DIAMETER D	ELEVATION E
1	5'	3'	3'	1-18"	887.0'
2*	5'	3'	3'	1-24"	868.0'
10	5'	3'	3'	1-12"	875.0'

* DROP INLET 2 SHALL HAVE AN 18" INLET PIPE, INV EL. 865.0'



NOTE:
STORM GRATE SHALL CONSIST OF A CONCRETE LID ELEVATED TO PROVIDE 6 INCHES (MIN.) CLEAR SPACE ABOVE DROP INLET.

5 / C3 / D2 SINGLE PIPE DROP INLET DETAIL
NTS



GENERAL NOTES

1. FILTER FABRIC FENCE SHALL BE A MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
2. WOVEN FILTER FABRIC BE USED WHERE SILT FENCE IS TO REMAIN FOR A PERIOD OF MORE THAN 30 DAYS.
3. STEEL POSTS SHALL BE 5'-0" IN HEIGHT AND BE OF THE SELF-FASTENER ANGLE STEEL TYPE.
4. WASHED STONE SHALL BE USED TO BURY SKIRT WHEN SILT FENCE IS USED ADJACENT TO A CHANNEL, CREEK OR POND.LOCATIONS TO BE DELINEATED IN THE FIELD DURING CONSTRUCTION.
5. TURN SILT FENCE UP SLOPE AT ENDS.
6. WHEN FABRIC IS USED WITH WIRE MESH 8' CENTERED POSTS MAY BE USE.

MAINTENANCE NOTES

1. FILTER BARRIERS SHALL BE INSPECTED BY THE FINANCIALLY RESPONSIBLE PARTY OR HIS AGENT IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS NEEDED SHALL BE MADE IMMEDIATELY.
2. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT OR SILT FENCE SHOULD BE REPLACED. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROX. HALF THE HEIGHT OF THE BARRIER. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS REMOVED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

3 / C3 SILT FENCE DETAIL
NTS

DEFINITION

A CHANNEL WITH VEGETATIVE LINING CONSTRUCTED TO DESIGN CROSS SECTION AND GRADE FOR CONVEYANCE OF RUNOFF.

PURPOSE

TO CONVEY AND DISPOSE OF CONCENTRATED SURFACE RUNOFF WITHOUT DAMAGE FROM EROSION, DEPOSITION, OR FLOODING.

CONSTRUCTION SPECIFICATIONS

1. REMOVE ALL TREES, BRUSH, STUMPS, AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA AND DISPOSE OF PROPERLY.
2. PLACE FILL TO CONSTRUCT THE CHANNEL AND SHAPE IT TO DIMENSIONS SHOWN ON THE PLANS PLUS A 0.2-FT OVERCUT AROUND THE CHANNEL PERIMETER TO ALLOW FOR BULKING DURING SEEDBED PREPARATIONS AND SOD BUILDUP.
3. REMOVE AND PROPERLY DISPOSE OF ALL EXCESS SOIL SO THAT SURFACE WATER MAY ENTER THE CHANNEL FREELY.
4. THE PROCEDURE USED TO ESTABLISH GRASS IN THE CHANNEL WILL DEPEND UPON THE SEVERITY OF THE CONDITIONS AND SELECTION OF SPECIES. PROTECT THE CHANNEL WITH MULCH OR A TEMPORARY LINER SUFFICIENT TO WITHSTAND ANTICIPATED VELOCITIES DURING THE ESTABLISHMENT PERIOD (SEE SEEDING SPECIFICATIONS).
5. APPLY LIME, FERTILIZER AND SEED BEFORE LAYING THE NET (WITHOUT MULCH) OR MAT (WITH MULCH OR SYNTHETIC). IF OPEN-WEAVE NETTING IS USED, LIME MAY BE INCORPORATED BEFORE INSTALLING THE NET AND THE FERTILIZER AND SEED CAN BE SPRAYED ON AFTERWARD, OTHERWISE APPLY SEED AND FERTILIZER BEFORE INSTALLATION.
6. START LAYING THE NET OR MAT FROM THE TOP OF THE CHANNEL OR SLOPE AND UNROLL IT DOWN THE GRADE. ALLOW NETTING TO LAY LOOSELY ON THE SOIL BUT WITHOUT WRINKLES – DO NOT STRETCH.
7. TO SECURE THE NET, BURY THE UPSLOPE END IN A SLOT OR TRENCH NO LESS THAN 6 INCHES DEEP, COVER WITH SOIL, AND TAMP FIRMLY. STAPLE THE NET EVERY 12 INCHES ACROSS THE TOP END AND EVERY 3 FT AROUND THE EDGES AND BOTTOM. WHERE 2 STRIPS OF NET ARE LAID SIDE BY SIDE, THE ADJACENT EDGES SHOULD BE OVERLAPPED 3 INCHES AND STAPLED TOGETHER. EACH STRIP OF NETTING OR MATTING SHOULD ALSO BE STAPLED DOWN THE CENTER OR EVERY 3 FT IF THE STRIP IS NOT WIDER THAN 8 FEET. DO NOT STRETCH THE NET/MAT WHEN APPLYING STAPLES.
8. STAPLES SHOULD BE THE "U"-SHAPED TYPE AND 4" TO 6" LONG (DEPENDING ON SOIL CONDITIONS).
9. TO JOIN ENDS OF TWO STRIPS OF NETTING, CUT A TRENCH TO ANCHOR THE END OF THE DOWN GRADIENT NET. OVERLAP THE END OF THE PREVIOUS ROLL 18 INCHES AND STAPLE EVERY 12 INCHES JUST BELOW THE ANCHOR SLOT.
10. TO JOIN ENDS OF TWO STRIPS OF MATTING, OVERLAP THE UPGRADIENT STRIP OVER THE DOWNGRADIENT ONE AT LEAST 4 INCHES. STAPLE THE OVERLAP AT THE ENDS AND EVERY 12 INCHES ALONG THE CENTER OF THE OVERLAP.

MAINTENANCE

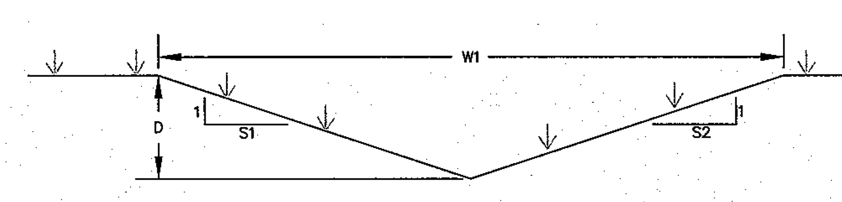
DURING THE ESTABLISHMENT PERIOD, CHECK GRASS-LINED CHANNELS AFTER EVERY RAINFALL. AFTER GRASS IS ESTABLISHED, PERIODICALLY CHECK THE CHANNEL; CHECK IT AFTER EVERY HEAVY RAINFALL EVENT. IMMEDIATELY MAKE REPAIRS. IT IS PARTICULARLY IMPORTANT TO CHECK THE CHANNEL OUTLET AND ALL ROAD CROSSINGS FOR BANK STABILITY AND EVIDENCE OF PIPING OR SCOUR HOLES.

REMOVE ALL SIGNIFICANT SEDIMENT ACCUMULATIONS TO MAINTAIN THE DESIGN CARRYING CAPACITY. KEEP THE GRASS IN A HEALTHY, VIGOROUS CONDITION AT ALL TIMES, SINCE IT IS THE PRIMARY EROSION PROTECTION FOR THE CHANNEL (SEE SEEDING SPECIFICATIONS).

INSPECT ALL MULCHES PERIODICALLY, AND AFTER RAINSTORMS TO CHECK FOR RILL EROSION, DISLOCATION, OR FAILURE. WHERE EROSION IS OBSERVED, APPLY ADDITIONAL MULCH. IF WASHOUT OCCURS, REPAIR THE SLOPE GRADE, RESEED, AND REINSTALL MULCH. CONTINUE INSPECTIONS UNTIL VEGETATION IS FIRMLY ESTABLISHED.

GENERAL NOTES

1. CHANNELS ARE TO BE LINED WITH NORTH AMERICAN GREEN MATTING OR APPROVED EQUIVALENT.
2. NETTING AND MATTING PRODUCTS SHOULD BE INSTALLED ACCORDING TO MANUFACTURER'S GUIDELINES. IF THE MANUFACTURER DOES NOT PROVIDE GUIDELINES, THE ABOVE GUIDELINES FOR NETTING AND MATTING MAY BE USED.



GRASS – LINED DITCH TYPE	E&S MATTING	W1 (ft)	D (ft)	S1 (ft/ft)	S2 (ft/ft)
B1	DS75	40	1	20	20
B2	DS75	40	1	20	20
B3	DS75	23	1	3	20
B4	DS75	23	1	3	20
B5	DS75	23	1	3	20
B6	DS75	23	1	3	20
B7	DS75	23	1	3	20
C1	C350	12	2	3	3
C2	DS75	12	2	3	3
C3	DS75	12	2	3	3
C4	DS75	12	2	3	3
C5	C350	6	1	3	3
C6	C350	12	2	3	3
C7	DS75	VARIES	VARIES	2.5	2.5
C8	DS75	12	2	3	3
C9	C350	6	1	3	3

6 / C3 GRASS-LINED CHANNEL DETAIL
NTS

DEFINITION

A STRUCTURE DESIGNED TO CONTROL EROSION AT THE INLET OR OUTLET OF A CHANNEL OR CONDUIT.

PURPOSE

TO PREVENT EROSION AT THE OUTLET OF A CHANNEL OR CONDUIT BY REDUCING THE VELOCITY OF FLOW AND DISSIPATING THE ENERGY.

CONSTRUCTION SPECIFICATIONS

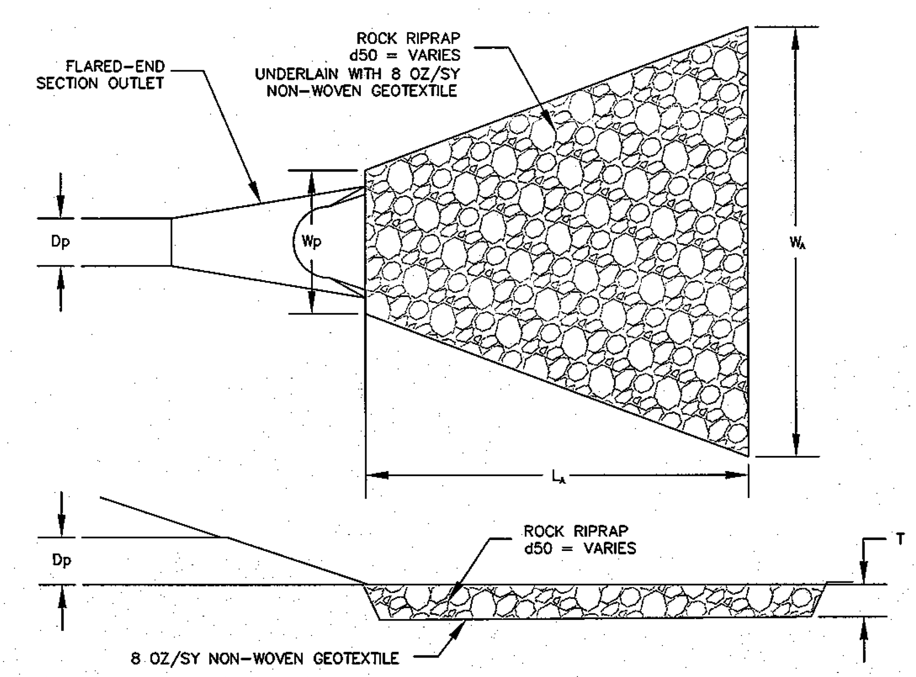
1. ENSURE THAT THE SUBGRADE FOR THE FILTER AND RIPRAP FOLLOWS THE REQUIRED LINES AND GRADES SHOWN IN THE PLAN. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING DISTURBED MATERIAL. LOW AREAS IN THE SUBGRADE ON UNDISTURBED SOIL MAY ALSO BE FILLED BY INCREASING THE RIPRAP THICKNESS.
2. THE RIPRAP AND GRAVEL FILTER MUST CONFORM TO THE SPECIFIED GRADING LIMITS SHOWN ON THE PLANS.
3. FILTER CLOTH, WHEN USED, MUST MEET DESIGN REQUIREMENTS AND BE PROPERLY PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION. REPAIR ANY DAMAGE BY REMOVING THE RIPRAP AND PLACING ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA. ALL CONNECTING JOINTS SHOULD OVERLAP A MINIMUM OF 1 FT. IF THE DAMAGE IS EXTENSIVE, REPLACE THE ENTIRE FILTER CLOTH.
4. RIPRAP MAY BE PLACED BY EQUIPMENT, BUT TAKE CARE TO AVOID DAMAGING THE FILTER.
5. THE MINIMUM THICKNESS OF THE RIPRAP SHOULD BE 1.5 TIMES THE MAXIMUM STONE DIAMETER.
6. RIPRAP MAY BE FIELD STONE OR ROUGH QUARRY STONE. IT SHOULD BE HARD, ANGULAR, HIGHLY WEATHER-RESISTANT AND WELL GRADED.
7. CONSTRUCT THE APRON ON ZERO GRADE WITH NO OVERFALL AT THE END. MAKE THE TOP OF THE RIPRAP AT THE DOWNSTREAM END LEVEL WITH THE RECEIVING AREA OR SLIGHTLY BELOW IT.
8. ENSURE THAT THE APRON IS PROPERLY ALIGNED WITH THE RECEIVING STEAM AND PREFERABLY STRAIGHT THROUGHOUT ITS LENGTH. IF A CURVE IS NEEDED TO FIT SITE CONDITIONS, PLACE IN THE UPPER SECTION OF THE APRON.
9. IMMEDIATELY AFTER CONSTRUCTION, STABILIZE ALL DISTURBED AREAS WITH VEGETATION.

MAINTENANCE

INSPECT RIPRAP OUTLET STRUCTURES AFTER HEAVY RAINS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

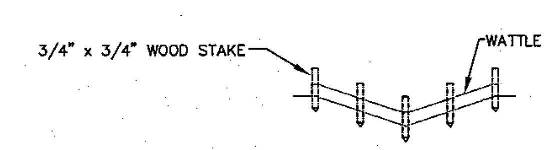
REFERENCE

N.C. EROSION AND SEDIMENTATION CONTROL PLANNING AND DESIGN MANUAL, 1988.

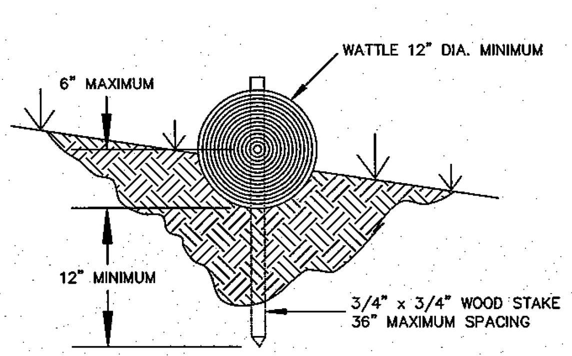


SUMMARY OF PROTECTION APRONS								
APRON ID	DISCHARGE PIPE LOCATION	D_P (FT)	L_A (FT)	W_P (FT)	W_A (FT)	T (IN)	D_{50} (IN)	$D_{MAX.}$ (IN)
A1	CHANNEL 7	2-3	20	9	23	16	7	11
A2	EXISTING CHANNEL	2-2	11	6	13	12	5	8
A3	CHANNEL 6	2-1	10	3	11	9	4	6
A4	SEDIMENT BASIN INLET	2-1.5	10	4.5	11.5	12	5	8
A5	SEDIMENT BASIN INLET	2-2	12	6	14	11	5	8

7 / C3 ROCK RIPRAP APRON DETAIL
NTS



NOTE: FOR 12' WIDE CHANNELS SPACE WOODEN STAKES 3' O.C.



NOTE:

1. SPACING IS TO BE 50 FEET BETWEEN SUBSEQUENT WATTLES AS SHOWN.
2. WATTLES TO BE PROVIDED IN CHANNELS ACCORDING TO THE CHANNEL SCHEDULE INDICATED ON DRAWING C3.

8 / C3 WATTLE DETAIL
NTS

ISSUED FOR CONSTRUCTION

Duke Energy ©

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032153 KENNETH R. DALY

NO.	DATE	DESCRIPTION	BY
2	6-2-08	REVISED GRADING AND STORMWATER STRUCTURES (NOTICE OF CHANGE 3)	KRD
1	2-21-08	ISSUED FOR CONSTRUCTION	KRD

STORMWATER/EROSION AND SEDIMENT CONTROL DETAILS
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE ENERGY - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY: CTF
DESIGNED BY: CFS	APPROVED BY: KRD
PROJECT NUMBER 1411-06-108	
SCALE: AS SHOWN	DATE: 6-21-07
DRAWING: D1	OF: 6

DRAWING PATH: Q:\1356\DUKE ENERGY\07-017 Pinehall Rd CQA\dwg\Notice of Change 3\NOC 3 - Grading and Stormwater Details.dwg

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date:** 6/2/08	**Job No.:** 1356-07-017
DESCRIPTION:	Optimum Moisture	Duke Energy – Pine Hall Road	
	Content Tolerance - Ash	Ash Landfill Closure	
NOTICE OF CHANGE NO.	4		
CHANGE ORDER NOS:			

Description of design changes:

Specification Section 02320-3.7.A.1.b: the optimum moisture content tolerance for ash fill changed from +/- 3% to +/- 5%.

Reason for design change:

Contractor having difficulty achieving moisture content within original tolerances during compaction.

Effective date of design change:

Immediately.

Financial and schedule considerations:

None anticipated.

Attachment:

None.

6/2/08		6.3.08	
Engineer of Record	**Date**	**Prepared By**	**Date**
Name		Name	

Copies to:
- ☒ Bill Waggoner, Allied Technical Services
- ☒ Craig Greeson, Morgan Corp
- ☒ S&ME File No. 1356-07-017-03-03
- ☒ Mike Cook, Duke Energy
- ☒ Collaborative Website
- ☒

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date:** 6/2/08	**Job No.:** 1356-07-017
DESCRIPTION:	Drop Inlet Area Grading	Duke Energy – Pine Hall Road	
		Ash Landfill Closure	
NOTICE OF CHANGE NO.	5		
CHANGE ORDER NOS:			

Description of design changes:

The subgrade grading around the drop inlet locations will be lowered (with respect to adjacent subgrade) to allow the inlet invert to match ditch flow line deviations.

Reason for design change:

To provide better drainage into the drop inlets both along the benches and through the stormwater piping system.

Effective date of design change:

Immediately.

Financial and schedule considerations:

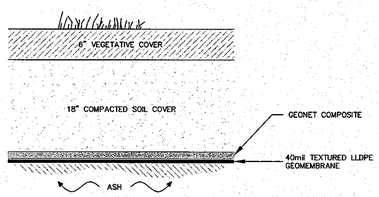
None anticipated.

Attachment:

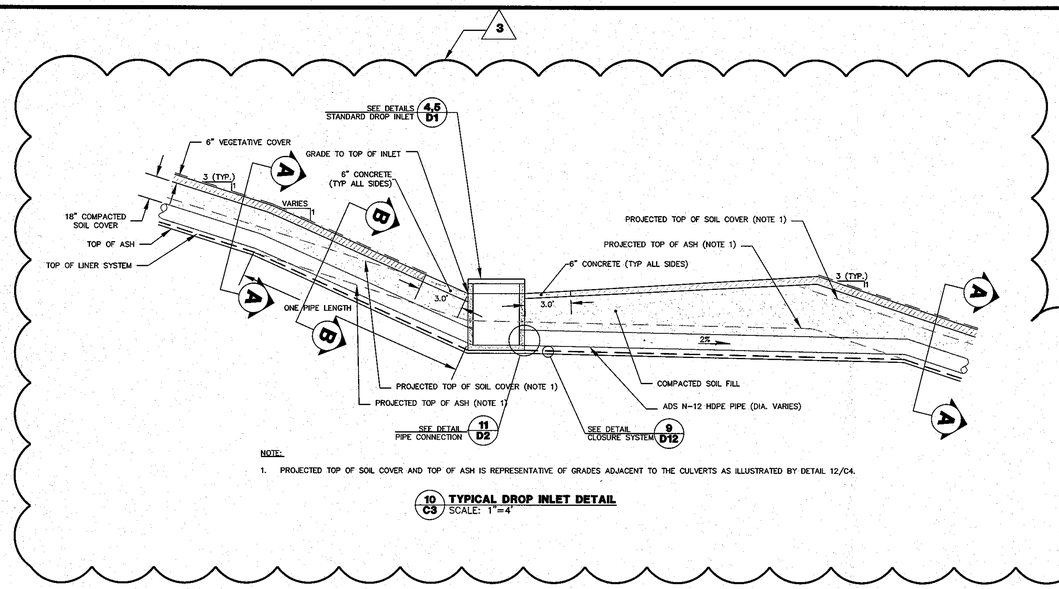
Drawing D2.

6/2/08		6·3·08	
Engineer of Record	**Date**	**Prepared By**	**Date**
Name		Name	

Copies to:
- ☒ Bill Waggoner, Allied Technical Services
- ☒ Craig Greeson, Morgan Corp
- ☒ S&ME File No. 1356-07-017-03-03
- ☒ Mike Cook, Duke Energy
- ☒ Collaborative Website
- ☒

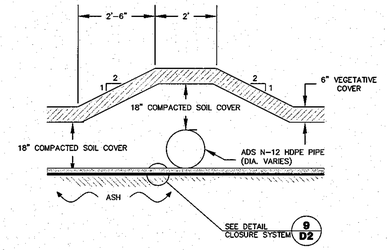


9 / D2 CLOSURE SYSTEM DETAIL
SCALE: 1"=1'

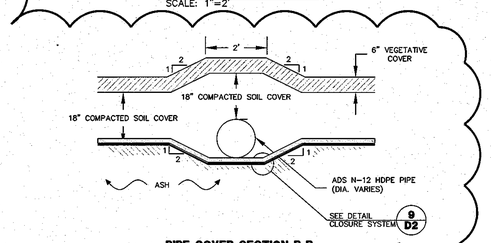


NOTE:
1. PROJECTED TOP OF SOIL COVER AND TOP OF ASH IS REPRESENTATIVE OF GRADES ADJACENT TO THE CULVERTS AS ILLUSTRATED BY DETAIL 12/C4.

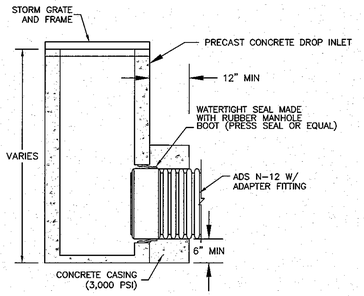
10 / C3 TYPICAL DROP INLET DETAIL
SCALE: 1"=4'



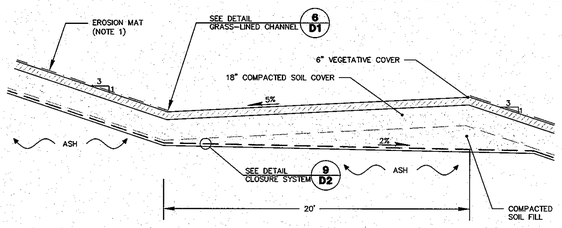
PIPE COVER SECTION A-A
SCALE: 1"=2'



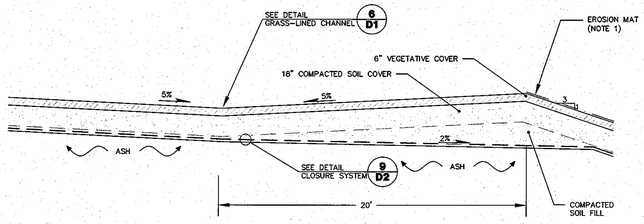
PIPE COVER SECTION B-B
SCALE: 1"=2'



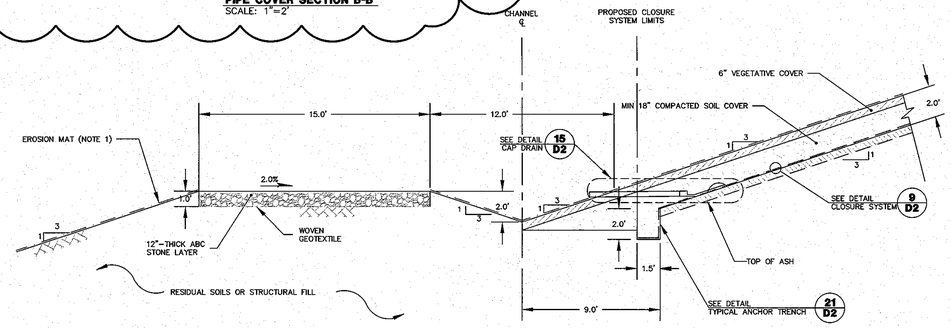
11 / D1 / D2 PIPE CONNECTION DETAIL
SCALE: NTS



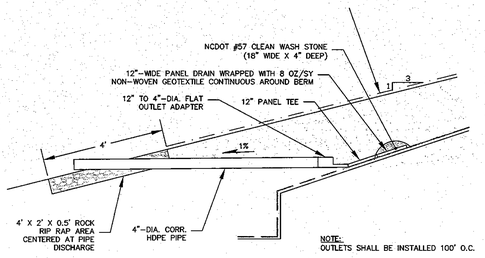
12 / C4 TYPICAL DIVERSION BENCH DETAIL
SCALE: 1"=4'



13 / C4 TYPICAL TOP OF SLOPE DIVERSION BERM DETAIL
SCALE: 1"=4'

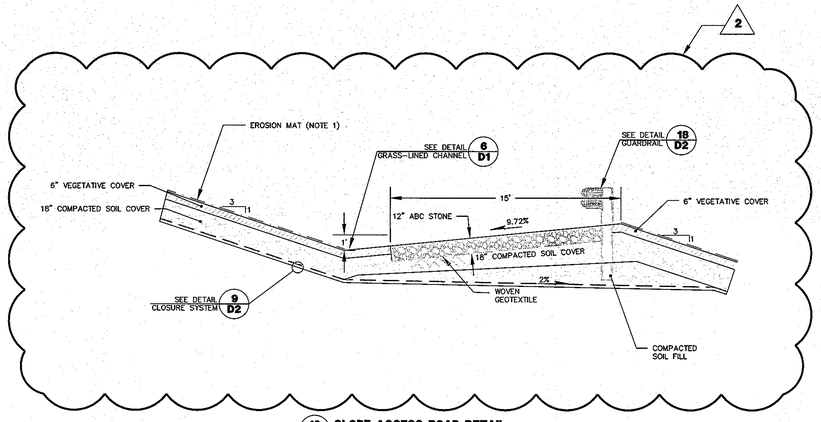


14 / C2 / C4 TYPICAL PERIMETER ACCESS ROAD DETAIL
SCALE: 1"=4'

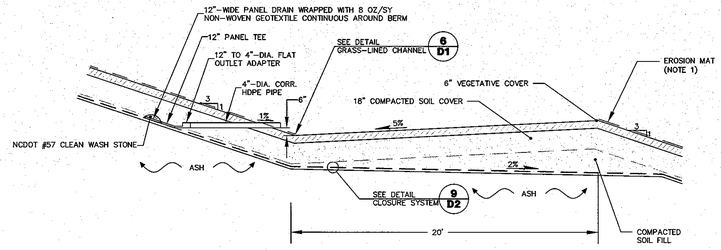


NOTE:
OUTLETS SHALL BE INSTALLED 100' O.C.

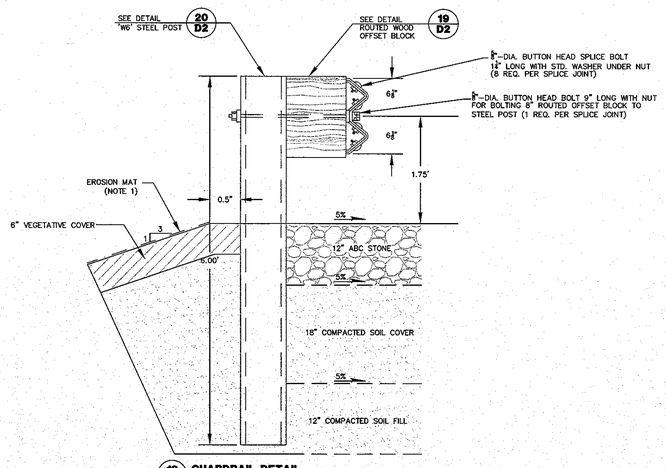
15 / D2 TYPICAL CAP DRAIN DETAIL
SCALE: 1"=2'



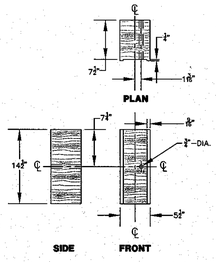
16 / D2 SLOPE ACCESS ROAD DETAIL
SCALE: 1"=4'



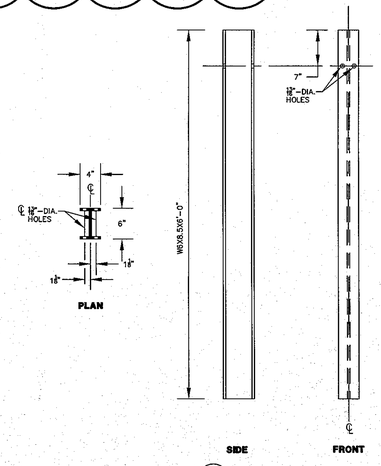
17 / D2 TYPICAL SLOPE DRAIN DETAIL (BENCH 2 ONLY)
SCALE: 1"=4'



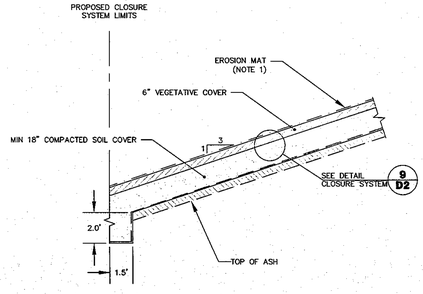
18 / D2 GUARDRAIL DETAIL
NTS



19 / D2 ROUTED WOOD OFFSET BLOCK DETAIL
NTS



20 / D2 "W6" STEEL POST DETAIL
NTS



21 / D2 TYPICAL ANCHOR TRENCH
SCALE: 1"=4'

NOTE:
1. EROSION MAT SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 02924-4, 3.6 SEED PROTECTION. EROSION MAT SHALL BE USED ON SLOPES WHERE GRADE IS 3 HORIZONTAL TO 1 VERTICAL. ROLL FABRIC ONTO SLOPES WITHOUT STRETCHING OR PULLING.

ISSUED FOR CONSTRUCTION

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NO.	DATE	DESCRIPTION	BY
3	6-2-08	DROP INLET AREA GRADING (NOTICE OF CHANGE 5)	KRD
2	5-2-08	REVISED DETAIL 16 (NOTICE OF CHANGE 2)	KRD
1	2-21-08	ISSUED FOR CONSTRUCTION	KRD

CLOSURE DETAILS
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE POWER - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY: CTF
DESIGNED BY: CS	APPROVED BY: KRD
PROJECT NUMBER: 1411-06-108	
SCALE: AS SHOWN	DATE: 6-21-07
DRAWING: D2	OF: 6

DRAWING PATH: \\SMEINC\DFS\CHARLOTTE\DATA\Projects\Duke Energy\14106 - Drop Inlet Area Grading.dwg

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date:** 6/25/08	**Job No.:** 1356-07-017
DESCRIPTION:	Underdrain	Duke Energy – Pine Hall Road	
		Ash Landfill Closure	
NOTICE OF CHANGE NO.	6		
CHANGE ORDER NOS:	9		

Description of design changes:

Install an underdrain underneath the ditch centerline at the top of the slope within the Closure Area.

Reason for design change:

To provide improved cover drainage and slope stability.

Effective date of design change:

Immediately.

Financial and schedule considerations:

Contractor to prepare estimate.

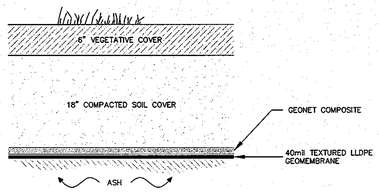
Attachment:

Drawings C3, D2.

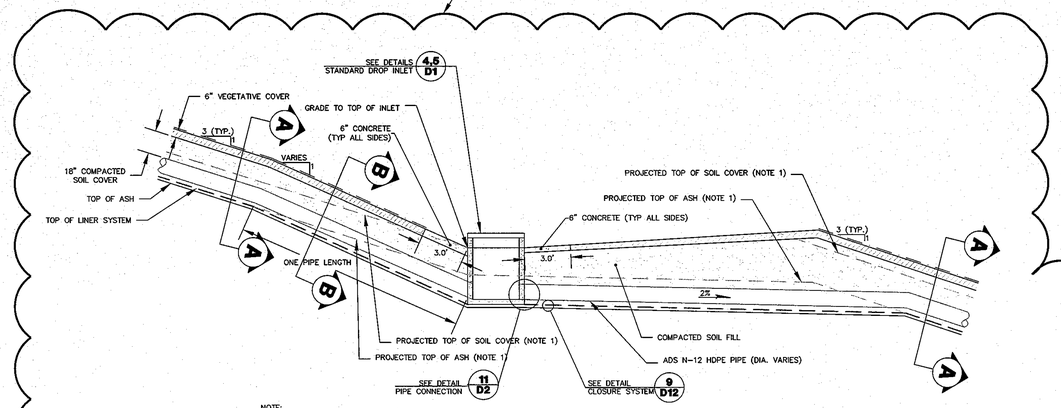
6/25/08		6.25.08	
Engineer of Record	**Date**	**Prepared By**	**Date**
Name		Name	

Copies to:

- ☒ Bill Waggoner, Allied Technical Services
- ☒ Craig Greeson, Morgan Corp
- ☒ S&ME File No. 1356-07-017-03-03
- ☒ Mike Cook, Duke Energy
- ☒ Collaborative Website
- ☐

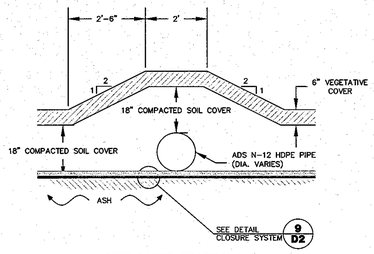


9 / D2 CLOSURE SYSTEM DETAIL
SCALE: 1"=1'

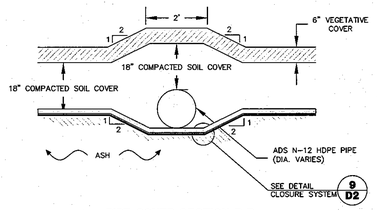


NOTE:
1. PROJECTED TOP OF SOIL COVER AND TOP OF ASH IS REPRESENTATIVE OF GRADES ADJACENT TO THE CULVERTS AS ILLUSTRATED BY DETAIL 12/C4.

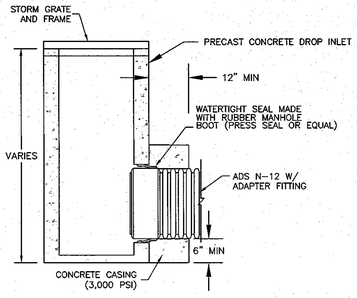
10 / C3 TYPICAL DROP INLET DETAIL
SCALE: 1"=4'



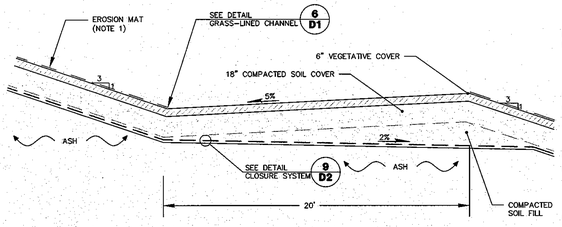
PIPE COVER SECTION A-A
SCALE: 1"=2'



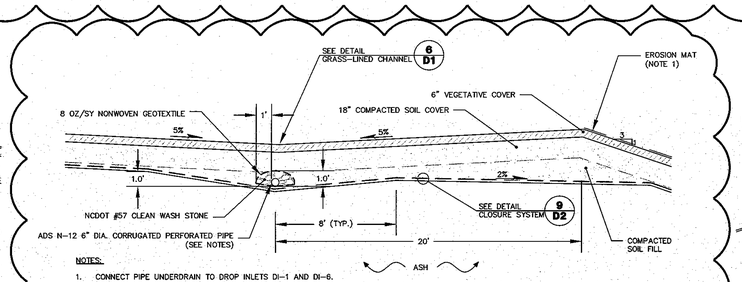
PIPE COVER SECTION B-B
SCALE: 1"=2'



11 / D1 / D2 PIPE CONNECTION DETAIL
SCALE: NTS

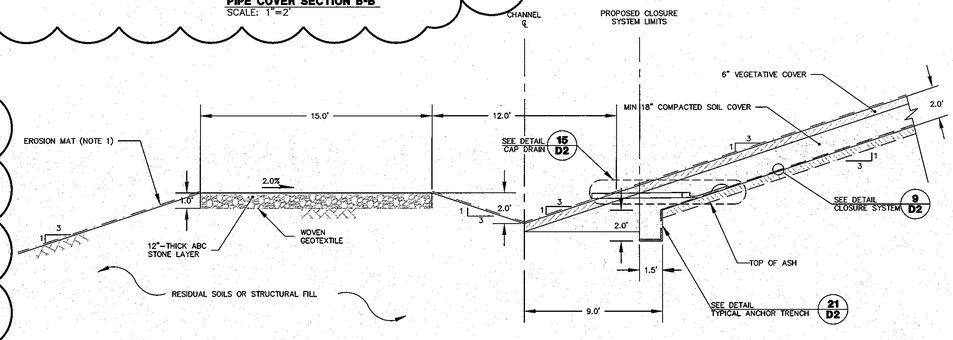


12 / C4 TYPICAL DIVERSION BENCH DETAIL
SCALE: 1"=4'

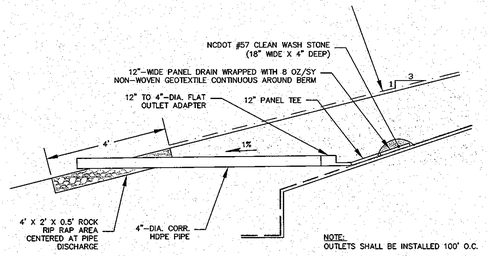


NOTES:
1. CONNECT PIPE UNDERDRAIN TO DROP INLETS DI-1 AND DI-6.

13 / C4 TYPICAL TOP OF SLOPE DIVERSION BERM DETAIL
SCALE: 1"=4'

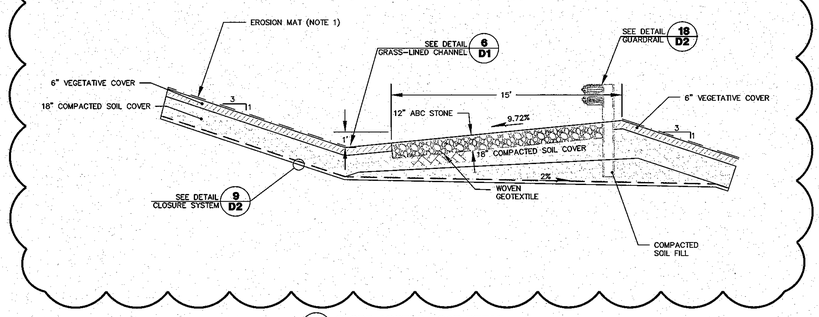


14 / C2 / C4 TYPICAL PERIMETER ACCESS ROAD DETAIL
SCALE: 1"=4'

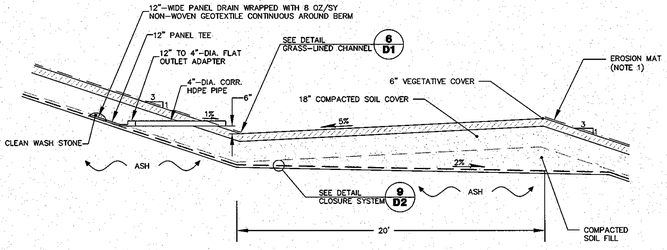


NOTE:
OUTLETS SHALL BE INSTALLED 100' O.C.

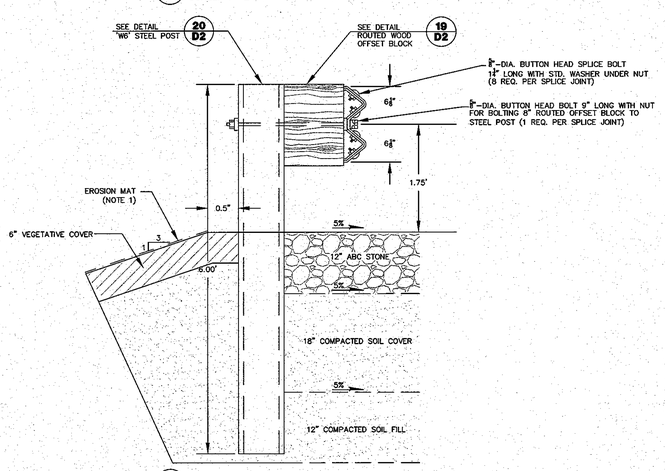
15 / D2 TYPICAL CAP DRAIN DETAIL
SCALE: 1"=2'



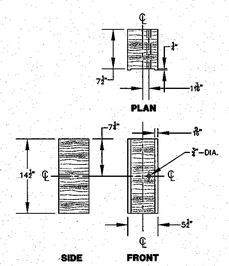
16 / D2 SLOPE ACCESS ROAD DETAIL
SCALE: 1"=4'



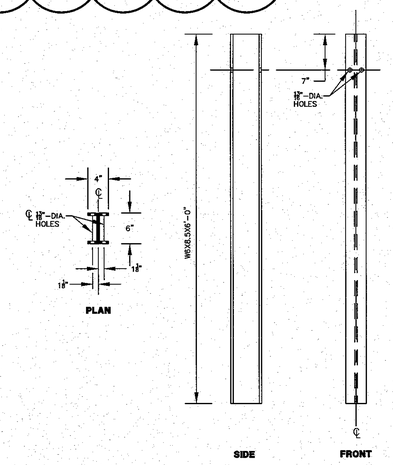
17 / D2 TYPICAL SLOPE DRAIN DETAIL (BENCH 2 ONLY)
SCALE: 1"=4'



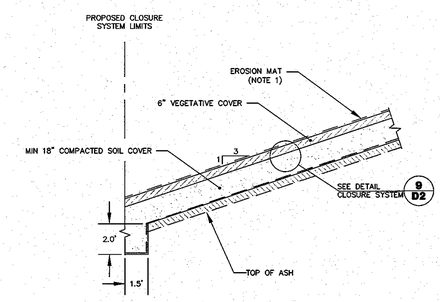
18 / D2 GUARDRAIL DETAIL
NTS



19 / D2 ROUTED WOOD OFFSET BLOCK DETAIL
NTS



20 / D2 "W6" STEEL POST DETAIL
NTS



21 / D2 TYPICAL ANCHOR TRENCH
SCALE: 1"=4'

NOTE:
1. EROSION MAT SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 02924-4, 3.6 SEED PROTECTION. EROSION MAT SHALL BE USED ON SLOPES WHERE GRADE IS 3 HORIZONTAL TO 1 VERTICAL. ROLL FABRIC ONTO SLOPES WITHOUT STRETCHING OR PULLING.

ISSUED FOR CONSTRUCTION

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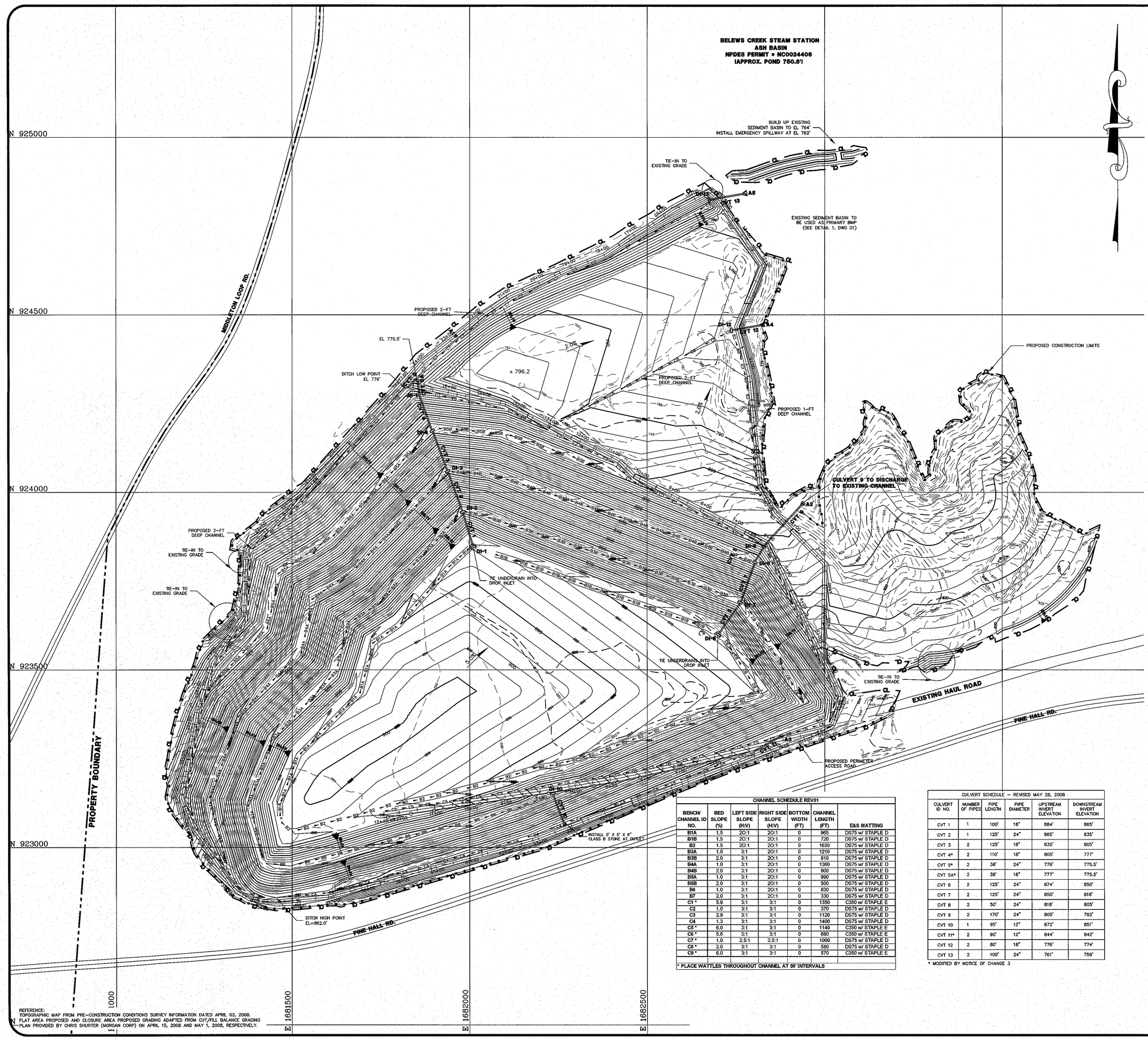
NO.	DATE	DESCRIPTION	BY
4	6-25-08	UNDERDRAIN (NOTICE OF CHANGE 6)	KRD
3	6-2-08	PROVIDED ALL (NOTICE OF CHANGE 5)	KRD
2	5-2-08	ISSUED DETAILS (NOTICE OF CHANGE 2)	KRD
1	2-21-08	ISSUED FOR CONSTRUCTION	KRD

CLOSURE DETAILS
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE POWER - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY: CTF
DESIGNED BY: CS	APPROVED BY: KRA
PROJECT NUMBER: 1411-06-108	
SCALE: AS SHOWN	DATE: 6-21-07
DRAWING: D2	OF: 6

DRAWING PATH: C:\TEMP\DUKE ENERGY\07-017 Friendly BE KRA\eng\Notice of Change 6\DOC 6 - underdrain details.dwg



REFERENCE:
TOPOGRAPHIC MAP FROM PRE-CONSTRUCTION CONDITIONS SURVEY INFORMATION DATED APRIL 03, 2008.
FLAT AREA PROPOSED AND CLOSURE AREA PROPOSED GRADING ADAPTED FROM CUT/FILL BALANCE GRADING PLAN PROVIDED BY CHRIS SHURTER (MORGAN CORP) ON APRIL 15, 2008 AND MAY 1, 2008, RESPECTIVELY.

EROSION AND SEDIMENT CONTROL NARRATIVE

THE EROSION AND SEDIMENT CONTROL MEASURES FOR THIS DEVELOPMENT INVOLVE THE PLACEMENT OF A VARIETY OF EROSION AND SEDIMENT CONTROL DEVICES AT STRATEGIC LOCATIONS THROUGHOUT THE DEVELOPMENT. THESE DEVICES INCLUDE:

1. SEDIMENT BASIN CONSTRUCTION
2. GRASS-LINED CHANNELS
3. GRAVEL HAUL ROADS
4. STORM INLET PROTECTION
5. OUTLET PROTECTION – RIPRAP
6. SILT FENCING

MOST OF THESE DEVICES ARE TO BE INSTALLED PRIOR TO CLEARING AND GRADING. ALL DEVICES ARE TO REMAIN IN GOOD WORKING CONDITION UNTIL THE INSPECTOR APPROVES THEIR REMOVAL.

PROJECT DESCRIPTION

THE AREA IS AN EXISTING ASH LANDFILL TO RECEIVE AN ENGINEERED COVER SYSTEM. THE PROPOSED DISTURBED AREA FOR THIS PROJECT IS APPROXIMATELY 70 ACRES.

EXISTING SITE CONDITIONS

THE SITE IS COMPRISED MAINLY OF GRASSLANDS ALONG THE TOPOGRAPHIC HIGHS AND WOODLANDS ALONG THE TOPOGRAPHIC LOWS AND DRAINAGE FEATURES. THE EXISTING ASH LANDFILL IS COMPRISED OF MAINLY BARE SOIL, EXPOSED ASH, AND A MODERATELY VEGETATED SOIL COVER.

SCHEDULE

CLOSURE OF THE ASH LANDFILL IS SCHEDULED TO BEGIN EARLY TO MID DECEMBER 2007.

STANDARDS

ALL EROSION AND SEDIMENT CONTROLS SHALL BE IN ACCORDANCE WITH THE NORTH CAROLINA SEDIMENTATION POLLUTION CONTROL ACT OF 1973 AND NCAC TITLE 15, CHAPTER 4. CONSTRUCTION DETAILS AND SPECIFICATIONS WITHIN THIS PLAN WERE DERIVED FROM THE EROSION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL DATED SEPTEMBER 1, 1988, PREPARED BY THE NORTH CAROLINA SEDIMENTATION CONTROL COMMISSION, NCDENR AND NCAES.

MAINTENANCE

1. ALL PLANTED AREAS SHALL BE INSPECTED WEEKLY AND AFTER RAINFALL EVENTS OF 0.5" OR GREATER, AND ANY DAMAGE CORRECTED BY THE END OF THE DAY.
2. SEDIMENT CONTROL MEASURES SHALL BE REMOVED ONLY AFTER THE INSPECTOR'S APPROVAL AND ANY REMAINING DISTURBED AREAS SHALL BE STABILIZED IMMEDIATELY.
3. ALL SEEDED AREAS SHALL BE FERTILIZED, RESEEDED AS NECESSARY AND MULCHED, ACCORDING TO THE SEEDING PLAN TO MAINTAIN A VIGOROUS, DENSE VEGETATION COVER.
4. THE PROPOSED SEDIMENT BASIN SHALL BE CLEANED OUT WHEN THE LEVEL OF SEDIMENT REACHES APPROXIMATELY ONE HALF THE BASIN VOLUME.

CONSTRUCTION SEQUENCE

1. OBTAIN PLAN APPROVAL AND PERMITS PRIOR TO BEGINNING WORK.
2. HOLD PRE-CONSTRUCTION MEETING.
3. FLAG CONSTRUCTION LIMITS.
4. CLEAR AND GRUB AREAS FOR INSTALLATION OF PERIMETER SEDIMENT CONTROL DEVICES. INSTALL SILT FENCING AND CONSTRUCT DIVERSION CHANNELS.
5. CLEAR AND PREPARE EXISTING SUBGRADE FOR ASH OR SOIL PLACEMENT BY REMOVING VEGETATION AND GRUBBING ROOTS. IF CLEARED BRUSH AND GRASS ARE TO BE BURNED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING REQUIRED BURNING PERMITS.
6. BEGIN CONSTRUCTION.
7. STABILIZE ALL REMAINING DENUDED AREAS WITH SEED AND MULCH UPON FINAL GRADING ACCORDING TO SEEDING SPECIFICATIONS ON DWG D1.
8. FINALIZE CONSTRUCTION.
9. PROVIDE LANDSCAPING AND PERMANENT VEGETATION ACCORDING TO SEEDING SPECIFICATIONS ON DWG D1.
10. ALL EROSION CONTROL DEVICES SHALL BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT DURING CONSTRUCTION.

GENERAL NOTES

1. THIS SHEET IS FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY.
2. THE OWNER'S CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROLS PROPOSED HEREIN.
3. THE OWNER'S CONTRACTOR IS RESPONSIBLE FOR NOTIFYING UTILITY COMPANIES TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION.
4. CHECK DAMS (SEE DETAIL 2, DWG D1) AND/OR WATTLES (DETAIL 8, DWG D1) SHALL BE PROVIDED IN CHANNELS 1, 5, 6, 7, 8, AND 9.
5. OUTLET PROTECTION APRONS (SEE DETAIL 7, DWG D1) SHALL BE PROVIDED AT CULVERT DISCHARGE LOCATIONS.

LEGEND

- EXISTING GRADE CONTOUR
- PROPOSED GRADE CONTOUR
- CL — PROPOSED CONSTRUCTION LIMITS
- C1 — PROPOSED GRASS-LINED BENCH/CHANNEL (SEE DETAIL 6, DWG D1)
- C1 — PROPOSED GRASS-LINED BENCH/CHANNEL WITH UNDERDRAIN (SEE DETAIL 13, DWG D2)
- PROPOSED ACCESS ROAD (SEE DETAILS 14 AND 16, DWG D2)
- DI-1 — DROP INLET (SEE DETAILS 4 AND 5, DWG D1 AND DETAIL 10, DWG D2)
- CVT — STORMWATER PIPE (SEE NOTE 2)
- SILT FENCE (SEE DETAIL 3, DWG D1)
- A1 — RIPRAP APRON (SEE DETAIL 7, DWG D1)

NOTES:
1. CONTOUR GRADES AND ELEVATIONS DEPICTED CORRESPOND TO TOP OF CLOSURE SYSTEM.
2. ALL HDPE PIPE SHALL BE ADS N-12 OR ENGINEER-APPROVED EQUIVALENT.

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

CHANNEL SCHEDULE REV01

BENCH/ CHANNEL ID NO.	BED SLOPE (%)	LEFT SIDE SLOPE (H:V)	RIGHT SIDE SLOPE (H:V)	BOTTOM WIDTH (FT)	CHANNEL LENGTH (FT)	E&S MATTING
B1A	1.5	2O:1	2O:1	0	965	D575 w/ STAPLE D
B1B	1.5	2O:1	2O:1	0	720	D575 w/ STAPLE D
B2	1.5	2O:1	2O:1	0	1630	D575 w/ STAPLE D
B3A	1.0	3:1	2O:1	0	1210	D575 w/ STAPLE D
B3B	2.0	3:1	2O:1	0	810	D575 w/ STAPLE D
B4A	1.0	3:1	2O:1	0	1360	D575 w/ STAPLE D
B4B	2.0	3:1	2O:1	0	900	D575 w/ STAPLE D
B5A	1.0	3:1	2O:1	0	990	D575 w/ STAPLE D
B5B	2.0	3:1	2O:1	0	500	D575 w/ STAPLE D
B6	1.0	3:1	2O:1	0	830	D575 w/ STAPLE D
B7	2.0	3:1	2O:1	0	330	D575 w/ STAPLE D
C1 *	5.9	3:1	3:1	0	1350	C350 w/ STAPLE E
C2	1.0	3:1	3:1	0	370	D575 w/ STAPLE D
C3	2.9	3:1	3:1	0	1120	D575 w/ STAPLE D
C4	1.3	3:1	3:1	0	1400	D575 w/ STAPLE D
C5 *	6.0	3:1	3:1	0	1140	C350 w/ STAPLE E
C6 *	5.6	3:1	3:1	0	680	C350 w/ STAPLE E
C7 *	1.0	2.5:1	2.5:1	0	1000	D575 w/ STAPLE D
C8 *	2.0	3:1	3:1	0	580	D575 w/ STAPLE D
C9 *	6.0	3:1	3:1	0	570	C350 w/ STAPLE E

* PLACE WATTLES THROUGHOUT CHANNEL AT 50' INTERVALS

CULVERT SCHEDULE – REVISED MAY 28, 2008

CULVERT ID NO.	NUMBER OF PIPES	PIPE LENGTH	PIPE DIAMETER	UPSTREAM INVERT ELEVATION	DOWNSTREAM INVERT ELEVATION
CVT 1	1	100'	18"	884'	865'
CVT 2	1	125'	24"	865'	835'
CVT 3	2	125'	18"	835'	805'
CVT 4*	2	110'	18"	805'	777'
CVT 5*	2	38'	24"	776'	775.5'
CVT 5A*	2	38'	18"	777'	775.5'
CVT 6	2	125'	24"	874'	850'
CVT 7	2	125'	24"	850'	818'
CVT 8	2	50'	24"	818'	805'
CVT 9	2	170'	24"	805'	792'
CVT 10	1	95'	12"	872'	851'
CVT 11*	2	90'	12"	844'	842'
CVT 12	2	80'	18"	776'	774'
CVT 13	2	100'	24"	761'	759'

* MODIFIED BY NOTICE OF CHANGE 3

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ISSUED FOR CONSTRUCTION

NO.	DATE	DESCRIPTION	BY
3	6-25-08	UNDERDRAIN (NOTICE OF CHANGE 6)	KRD
2	6-2-08	REVISED GRADING AND STORMWATER STRUCTURES	KRD
1	2-21-08	ISSUED FOR CONSTRUCTION	KRD

STORMWATER/EROSION AND SEDIMENT CONTROL PLAN
PINEHALL ROAD ASH LANDFILL CLOSURE

DUKE ENERGY - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY: CTF
DESIGNED BY: CFS	APPROVED BY:
PROJECT NUMBER: 1411-06-108	
SCALE: 1" = 100'	DATE: 6-21-07
DRAWING: C3	OF: 6

DRAWING PATH: G:\1206\DUKE ENERGY\07-217 PINEHALL RD CDA\PRONOTICE OF CHANGE 6\NOC 6 - UNDERDRAIN.DWG

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date: 6/13/08**	**Job No.: 1356-07-017**
DESCRIPTION:	Road Design Sections	Duke Energy – Pine Hall Road	
		Ash Landfill Closure	
NOTICE OF CHANGE NO.	7		
CHANGE ORDER NOS:	8		

Description of design changes:

Access road surfacing will consist of the following:

1. Flat Area perimeter access road: At least 12" compacted soil cover (unsurfaced) (station 0+00 to 24+77.60 as shown on Notice of Change 3). In areas of cut, the road subgrade shall be 12" below final grade and backfilled with compacted soil. If ash waste is encountered, soil cover shall be at least 24" of Fill Type S1 soil in general accordance with Record of Information 3.
2. Closure Area perimeter access road: 12" compacted soil cover, 12" soil-cement surface (station 0+00 to 51+53.88 as shown on Notice of Change 3).
3. Closure Area slope access road: 12" compacted soil cover, 12" ABC stone underlain by 8 oz/sy geotextile (original design) (station 0+00 to 12+45.48 as shown on Notice of Change 3).

Reason for design change:

Cost savings to Duke Energy.

Effective date of design change:

Immediately.

Financial and schedule considerations:

$206,348.01 credit to Duke Energy (Change Order No. 8).

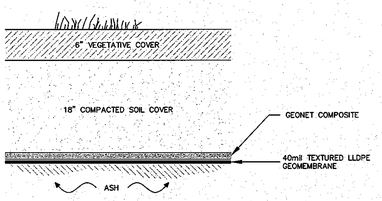
Attachment:

Drawing D2.

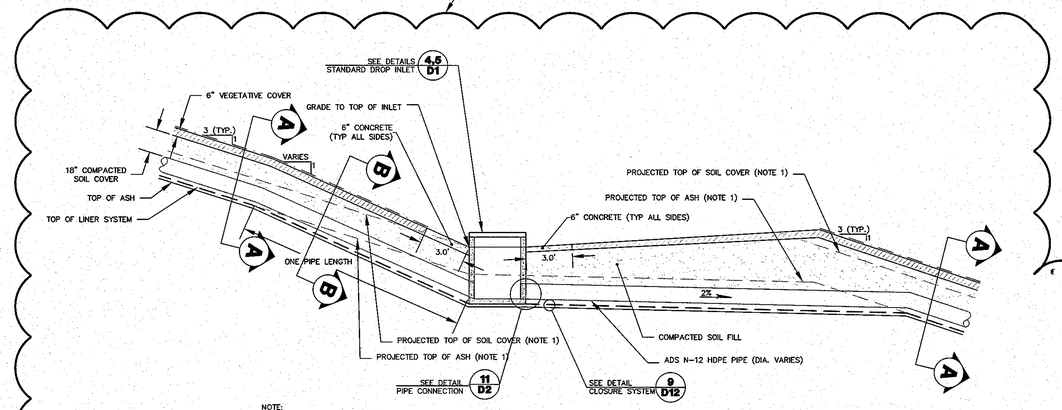
6/13/08		6·13·08	
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

Copies to:

- ☒ Bill Waggoner, Allied Technical Services
- ☒ Craig Greeson, Morgan Corp
- ☒ S&ME File No. 1356-07-017-03-01
- ☒ Mike Cook, Duke Energy
- ☒ Collaborative Website
- ☐

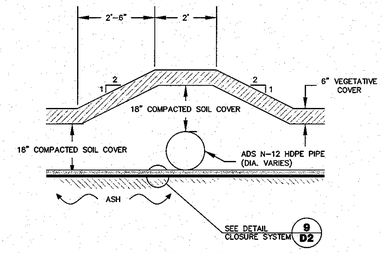


9/D2 CLOSURE SYSTEM DETAIL
SCALE: 1"=1'

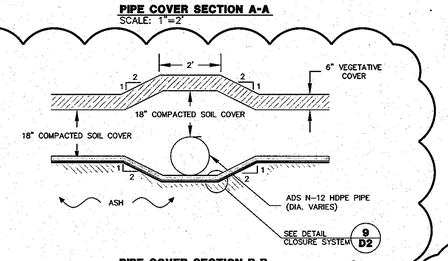


NOTE:
1. PROJECTED TOP OF SOIL COVER AND TOP OF ASH IS REPRESENTATIVE OF GRADES ADJACENT TO THE CULVERTS AS ILLUSTRATED BY DETAIL 12/C4.

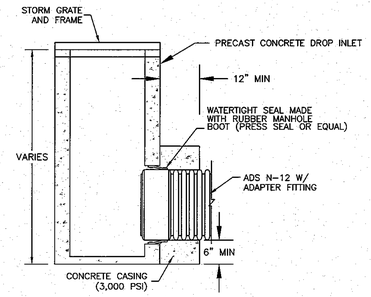
10/C3 TYPICAL DROP INLET DETAIL
SCALE: 1"=4'



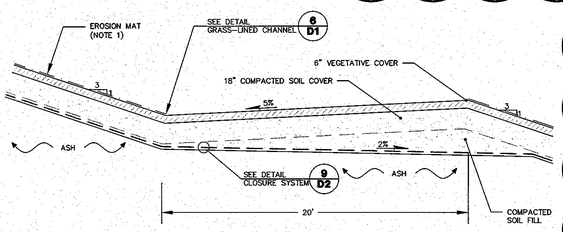
PIPE COVER SECTION A-A
SCALE: 1"=2'



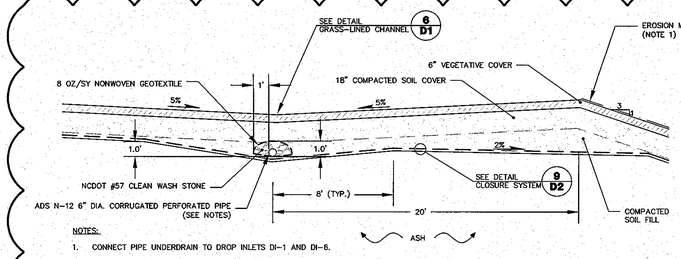
PIPE COVER SECTION B-B
SCALE: 1"=2'



11/D1/D2 PIPE CONNECTION DETAIL
SCALE: NTS

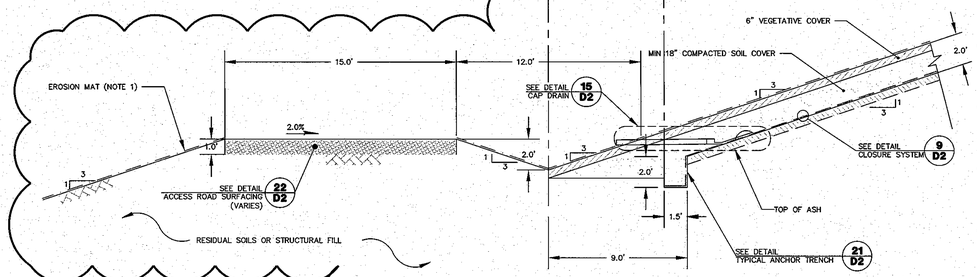


12/C4 TYPICAL DIVERSION BENCH DETAIL
SCALE: 1"=4'

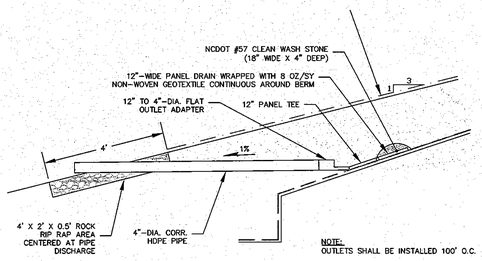


NOTES:
1. CONNECT PIPE UNDERDRAIN TO DROP INLETS DI-1 AND DI-8.

13/C4 TYPICAL TOP OF SLOPE DIVERSION BERM DETAIL
SCALE: 1"=4'

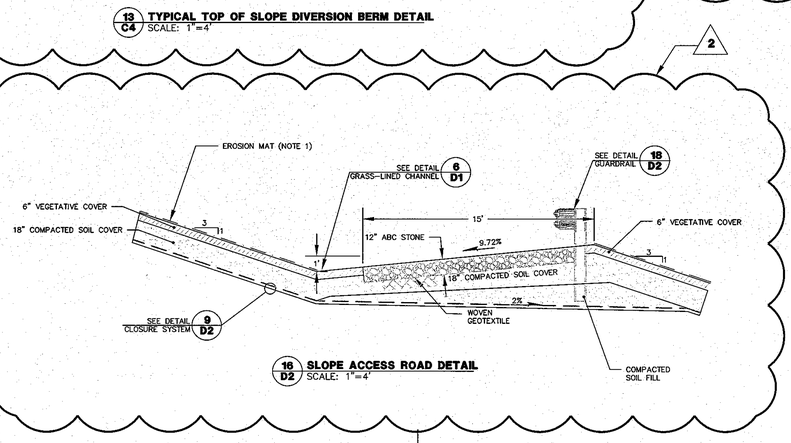


14/C2/C4 TYPICAL PERIMETER ACCESS ROAD DETAIL
SCALE: 1"=4'

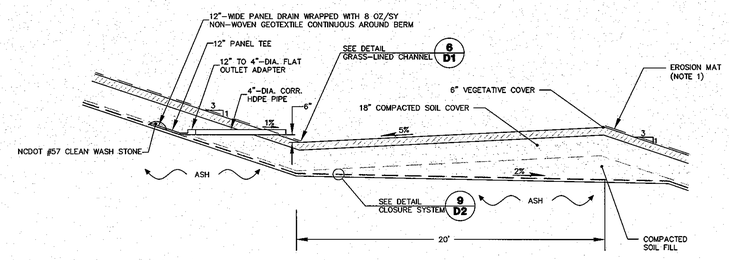


NOTE:
OUTLETS SHALL BE INSTALLED 100' O.C.

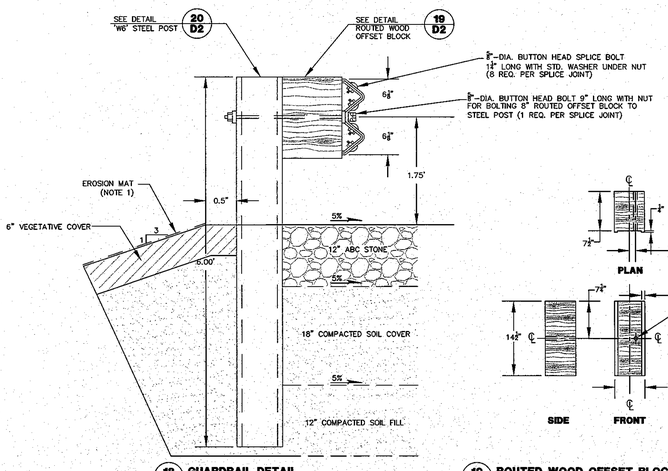
15/D2 TYPICAL CAP DRAIN DETAIL
SCALE: 1"=2'



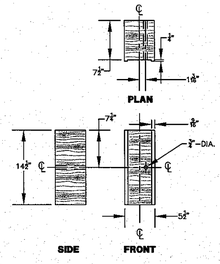
16/D2 SLOPE ACCESS ROAD DETAIL
SCALE: 1"=4'



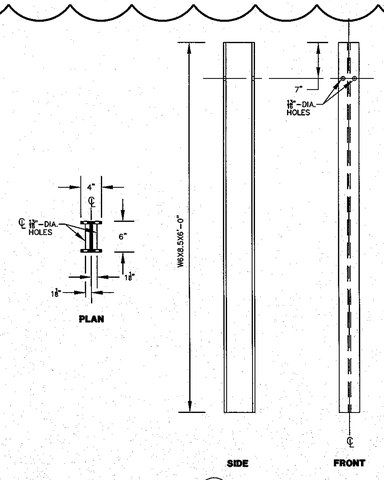
17/D2 TYPICAL SLOPE DRAIN DETAIL (BENCH 2 ONLY)
SCALE: 1"=4'



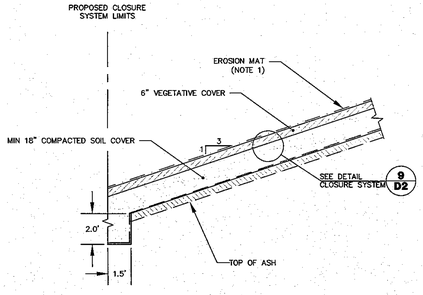
18/D2 GUARDRAIL DETAIL
NTS



19/D2 ROUTED WOOD OFFSET BLOCK DETAIL
NTS

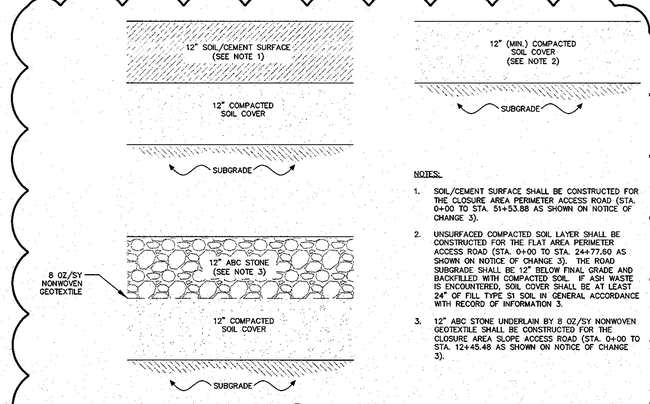


20/D2 "W6" STEEL POST DETAIL
NTS



NOTE:
1. EROSION MAT SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH SPECIFICATION SECTION 02924-4, 3.6 SEED PROTECTION. EROSION MAT SHALL BE USED ON SLOPES WHERE GRADE IS 3 HORIZONTAL TO 1 VERTICAL. ROLL FABRIC ONTO SLOPES WITHOUT STRETCHING OR PULLING.

21/D2 TYPICAL ANCHOR TRENCH
SCALE: 1"=4'



NOTES:
1. SOIL/CEMENT SURFACE SHALL BE CONSTRUCTED FOR THE CLOSURE AREA PERIMETER ACCESS ROAD (STA. 0+00 TO STA. 51+53.88 AS SHOWN ON NOTICE OF CHANGE 3).
2. UNSURFACED COMPACTED SOIL LAYER SHALL BE CONSTRUCTED FOR THE FLAT AREA PERIMETER ACCESS ROAD (STA. 0+00 TO STA. 24+77.60 AS SHOWN ON NOTICE OF CHANGE 3). THE ROAD SUBGRADE SHALL BE 12" BELOW FINAL GRADE AND BACKFILLED WITH COMPACTED SOIL. IF ASH WASTE IS ENCOUNTERED, SOIL COVER SHALL BE AT LEAST 24" OF FILL TYPE S1 SOIL IN GENERAL ACCORDANCE WITH RECORD OF INFORMATION 3.
3. 12" ABC STONE UNDERLAIN BY 8 OZ/SY NONWOVEN GEOTEXTILE SHALL BE CONSTRUCTED FOR THE CLOSURE AREA SLOPE ACCESS ROAD (STA. 0+00 TO STA. 12+45.48 AS SHOWN ON NOTICE OF CHANGE 3).

22/D2 ACCESS ROAD SURFACING
SCALE: 1"=1'

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NO.	DATE	DESCRIPTION	BY
5	6-11-08	ROAD DESIGN SECTIONS (NOTICE OF CHANGE 7)	KRD
4	6-3-08	DROP INLET DETAILS (NOTICE OF CHANGE 5)	KRD
3	6-2-08	DROP INLET AREA GRADING (NOTE 2, OF CHANGE 3)	KRD
2	5-2-08	REVISED DETAIL 18 (NOTICE OF CHANGE 2)	KRD
1	2-21-08	ISSUED FOR CONSTRUCTION	KRD

CLOSURE DETAILS
PINE HALL ROAD ASH LANDFILL CLOSURE

DUKE POWER - BELEWS CREEK STEAM STATION
BELEWS CREEK, NORTH CAROLINA

DRAWN BY: CLD	CHECKED BY: CTF
DESIGNED BY: CS	APPROVED BY: KRD
PROJECT NUMBER: 1411-06-108	
SCALE: AS SHOWN	DATE: 6-21-07
DRAWING: D2	OF: 6

DRAWING PATH: K:\USR\DUKE ENERGY\DP-BEP Planning\R8 CDA\dwg\Notice of Change 7\NOC 7 - Rose P-D8D8D8.dwg

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date: 6/18/08**	**Job No.: 1356-07-017**
DESCRIPTION:	Fill Type S1 Lift Thickness	Duke Energy – Pine Hall Road	
	Over Geosynthetics	Ash Landfill Closure	
NOTICE OF CHANGE NO.	8		
CHANGE ORDER NOS:			

Description of design changes:

The Backfill – Structural Technical Specification (02320-3.7.A.1.c) reads "The first lift for Fill Type S1 over geotextile or geomembrane materials will be placed in loose lift thickness of 12 inches." This section shall be revised to read "The first lift for Fill Type S1 over geotextile or geomembrane materials will be placed in **minimum** loose lift thickness of 12 inches, **provided compaction requirements can be achieved conclusively**."

Reason for design change:

Protection of underlying geosynthetics.

Effective date of design change:

Immediately.

Financial and schedule considerations:

None anticipated.

Attachment:

None.

Kenneth R. Daly	6/18/08		6.18.08
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

Copies to:
- ☒ Bill Waggoner, Allied Technical Services
- ☒ Craig Greeson, Morgan Corp
- ☒ S&ME File No. 1356-07-017-03-01
- ☒ Mike Cook, Duke Energy
- ☒ Collaborative Website
- ☐

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date:** 7/22/08	**Job No.:** 1356-07-017
DESCRIPTION:	Anchor Trench Density	Duke Energy – Pine Hall Road	
	And Testing Frequency	Ash Landfill Closure	
NOTICE OF CHANGE NO.	9		
CHANGE ORDER NOS:			

Description of design changes:

Technical Specification Section 02324-3.7.E states that field density tests for trench backfill shall be one test per 50 linear feet. The new field density testing frequency shall be one test per 100 linear feet of trench.

Technical Specification Section 02324-3.9.B.1 states that anchor trench backfill material shall be compacted to a minimum 95% dry density. The new compaction specification for anchor trench backfill shall be 90% maximum dry density.

Reason for design change:

Contractor having difficulty getting anchor trench backfill to meet specified density requirements and 90% is believed to be adequate for the application.

Effective date of design change:

Immediately.

Financial and schedule considerations:

None anticipated.

Attachment:

None.

7/22/08		7·22·08	
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

Copies to:
- ☒ Bill Waggoner, Allied Technical Services
- ☒ Craig Greeson, Morgan Corp
- ☒ S&ME File No. 1356-07-017-03-01
- ☒ Mike Cook, Duke Energy
- ☒ Collaborative Website
- ☐

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date:** 9/24/08	**Job No.:** 1356-07-017
DESCRIPTION:	Seeding and	Duke Energy – Pine Hall Road	
	Soil Supplements	Ash Landfill Closure	
NOTICE OF CHANGE NO.	10		
CHANGE ORDER NOS:			

Description of design changes:

Drawing D1 specifies permanent seeding as follows: Tall fescue (80 lb/ac) and Kobe lespedeza (40 lb/ac). **A revised seed mixture and application rate is attached.** Additionally, recommended soil supplements are as follows: **1,000 lb/ac 10-5-10; 4,000 lb/ac lime.**

Reason for design change:

Kobe lespedeza seed is unavailable.

Effective date of design change:

Immediately.

Financial and schedule considerations:

To be determined by Contractor with the approval of Owner and Engineer.

Attachment:

"Custom Seed Mix" document containing revised seed mixture and application rate.

9/24/08		9.24.08	
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

Copies to:

- ☒ Mike Cook, Duke Energy
- ☒ Craig Greeson, Morgan Corp
- ☐
- ☒ S&ME File No. 1356-07-017-03-01
- ☒ Collaborative Website
- ☐

CUSTOM SEED MIX

Location Mecklenburg County, NC

Completion Date May 2008

S&ME developed a custom native seed mix for use on utility easements. The purpose of the native seed mix is to provide low-maintenance soil stabilization while coordinating with the County's effort to promote native vegetation in riparian areas. S&ME's services included long-term evaluation of the custom seed mix and revision recommendations. These services were provided during and immediately following installation of an eight-mile sewer line project.

Seed mix monitoring included observations of germination and development in a variety of habitats (wet and dry, sunny and dry, wet and shady, sunny and shady, etc.) to determine if adequate coverage was being achieved, to determine which plants in the seed mix do best overall, and to determine if changes were necessary to achieve adequate coverage. During the course of the four-year project, the seed mix and seeding rates were refined to improve coverage across the range of habitats. S&ME participated in the one-year warranty field review with the client and the seed mix was observed to be meeting the objectives by providing soil stabilization and reduced maintenance needs.

COMMON NAME	SCIENTIFIC NAME	PERCENTAGE OF MIX
Black-eyed Susan	*Rudbeckia hirta*	25
Deertongue 'Tioga'	*Dichanthelium clandestinum*	5
Korean lespedeza	*Lespedeza stipulacea* (*Kummerowia stipulacea*)	15
Partridge pea	*Chamaecrista fasciculata*	20
Pennsylvania smartweed	*Polygonum pennsylvanicum*	10
Plains coreopsis	*Coreopsis tinctoria*	15
River oats	*Chasmanthium latifolium*	5
Switch grass	*Panicum virgatum*	5

*Apply seed mix at a rate of 40 pounds per acre. Overseed with 20 pounds per acre of annual rye *and* 10 pounds per acre of foxtail millet.

PHOTOS OF SEED MIX SPECIES

Partridge pea (*Chamaecrista fasciculata*)

Korean lespedeza (*Lespedeza stipulacea*)

Partridge pea (*Chamaecrista fasciculata*)

Plains coreopsis (*Coreopsis tinctoria*)

Black-eye Susan (*Rudbeckia hirta*)

Benefits

- Seed mix is largely comprised of native species (some non-native temporary placeholder species are included for short-term soil stabilization)
- Aesthetically pleasing
- Beneficial to wildlife
- Can be seeded at lower rates than standard erosion control seed mix
- Maximum height of approximately two feet
- Low maintenance – no mowing required
- Establishes quickly

Considerations

- May be more expensive on a per pound basis than standard erosion control seeding
- Can't be purchased locally; must be ordered, but can typically be delivered within one week

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date: 10/21/08**	**Job No.: 1356-07-017**
DESCRIPTION:	Seeding and	Duke Energy – Pine Hall Road	
	Soil Supplements	Ash Landfill Closure	
NOTICE OF CHANGE NO.	10A		
CHANGE ORDER NOS:			

Description of design changes:

This Notice of Change supersedes Notice of Change 10 – Seeding and Soil Supplements.

Drawing D1 specifies permanent seeding as follows: Tall fescue (80 lb/ac) and Kobe lespedeza (40 lb/ac). Notice of Change 10 proposed a native seed mix, which was subsequently discovered to be too costly. A revised seed mix to be provided at no increase in project cost is described below:

40 lb/ac Annual ryegrass (31%)
30 lb/ac Foxtail millet (23%)
31 lb/ac Tall fescue (24%)
21 lb/ac Red top (16%)
8 lb/ac Durana clover (6%)

Additionally, recommended soil supplements are as follows: 1,000 lb/ac 10-5-10; 4,000 lb/ac lime.

Reason for design change:

Kobe lespedeza seed is unavailable. The seed mixture described in Notice of Change 10 was considered too costly.

Effective date of design change:

Immediately.

Financial and schedule considerations:

None anticipated.

Attachment:

None.

10/23/08		10.23.08	
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

Copies to:	☒ Mike Cook, Duke Energy	☒ S&ME File No. 1356-07-017-03-01
	☒ Craig Greeson, Morgan Corp	☒ Collaborative Website
	☐	☐

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date:** 10/23/08	**Job No.:** 1356-07-017
DESCRIPTION:	Slope Access Road	Duke Energy – Pine Hall Road	
	Underdrain	Ash Landfill Closure	
NOTICE OF CHANGE NO.	11		
CHANGE ORDER NOS:			

Description of design changes:

An underdrain system (approx. 790 feet) shall be installed underneath ditch C5 along the slope access road. The underdrain shall be installed in intimate contact with the geocomposite drainage layer. The underdrain may consist of two options as follows:

1. panel drain (no #57 stone needed), outlet pipe, and stone pad, in general accordance with Detail 15 on Sheet D2.
2. 4" diameter corrugated perforated HDPE pipe, #57 stone (4 inches on top and sides of pipe), and geotextile wrap outletting to a solid 4" HDPE pipe and stone pad. The pipe outlet shall be installed in general accordance with Detail 15 on Sheet D2.

Reason for design change:

The slope access road geosynthetics subgrade was graded such that infiltration will be concentrated in the geocomposite drainage layer instead of conveying infiltration down the slope.

Effective date of design change:

Immediately.

Financial and schedule considerations:

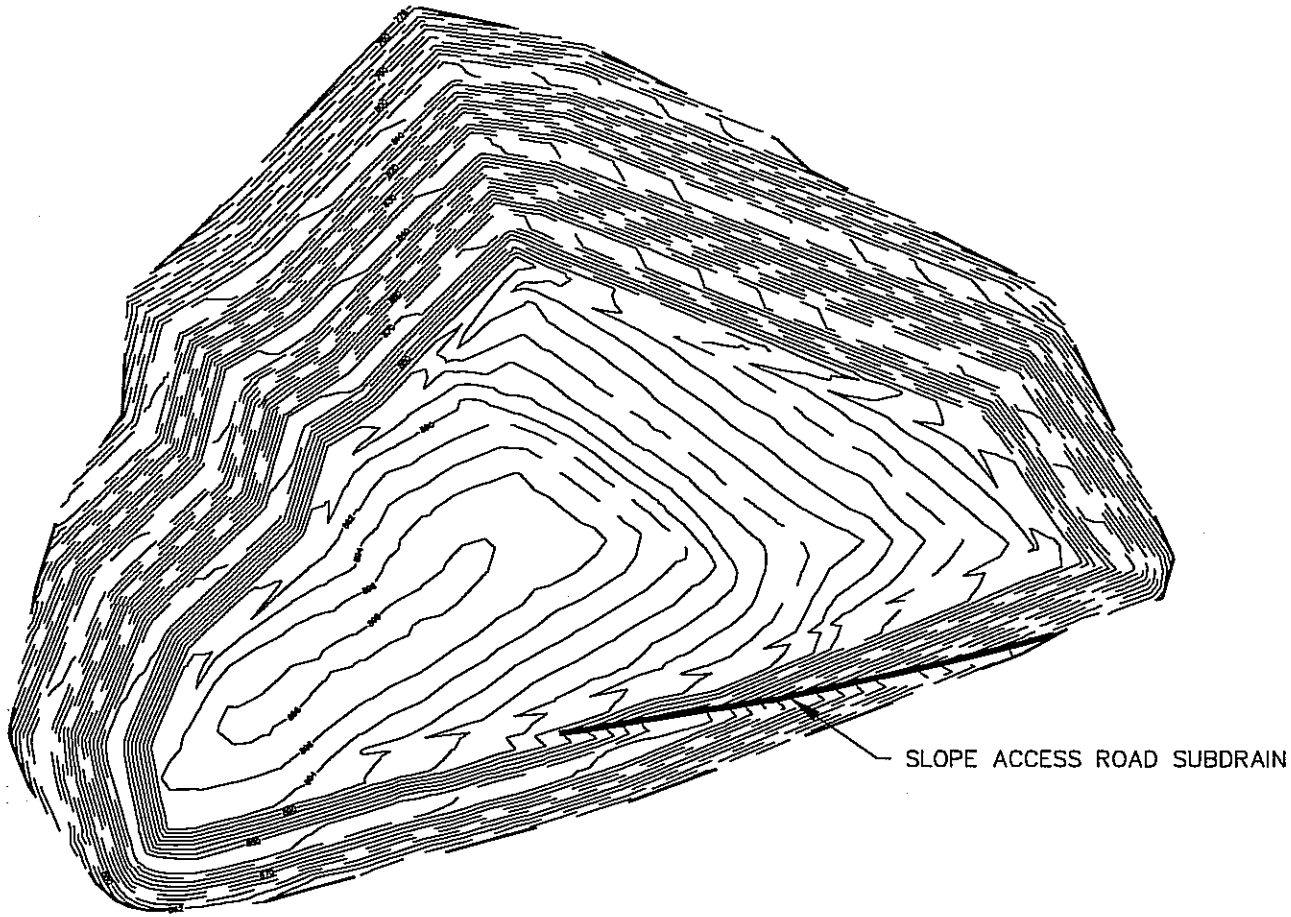
None anticipated.

Attachment:

Figure 1.

Kenneth R. Daly	10/23/08	Chris Rudd	10.23.08
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

Copies to:	☒ Mike Cook, Duke Energy	☒ S&ME File No. 1356-07-017-03-01
	☒ Craig Greeson, Morgan Corp	☒ Collaborative Website
	☐	☐



GRAPHIC SCALE

300 0 150 300 600

(IN FEET)

LEGEND

PROPOSED SLOPE ACCESS ROAD SUBDRAIN

AS-BUILT GRADE CONTOUR

AS-BUILT ANCHOR TRENCH

REFERENCE: "PINE HALL ROAD ASH LANDFILL CLOSURE – SUBGRADE CLOSURE ASBUILT." JULY 31, 2008. SEALED BY JOHN M. STORY, P.L.S.

SCALE: 1" = 300'	DATE: 10/23/08	S&ME WWW.SMEINC.COM	**SLOPE ACCESS ROAD SUBDRAIN - NOC 11** PINE HALL ROAD ASH LANDFILL CLOSURE BELEWS CREEK, NORTH CAROLINA	FIGURE NO. 1
PROJECT NO. 1356-07-017	DRAWN BY: CHR			
	CHECKED BY:			

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date: 11/14/08**	**Job No.: 1356-07-017**
DESCRIPTION:	Ditch C2 and C3	Duke Energy – Pine Hall Road	
	Erosion Control	Ash Landfill Closure	
NOTICE OF CHANGE NO.	12		
CHANGE ORDER NOS:			

Description of design changes:

Ditch C2 (on the northwestern side of the Closure Area) and Ditch C3 (on the northeastern side of the Closure Area) converge at an obtuse angle before discharging to Ditch C7 via Culvert CVT 5. The possibility of erosion and/or scour has been identified in this area.

Erosion/scour protection will consist of a 24-inch thick layer of Class 1 riprap (d_{min} = 5", d_{50} = 10", d_{max} = 17") underlain by 8oz/sy geotextile (either woven or nonwoven), and installed in the area shown on the attached Figure. The bottom of the two-foot thick riprap layer shall be one foot below design grade in the vicinity of the anchor trench, and two feet below design grade elsewhere.

Reason for design change:

To provide erosion/scour protection at the Ditch C2/C3 convergence.

Effective date of design change:

Immediately.

Financial and schedule considerations:

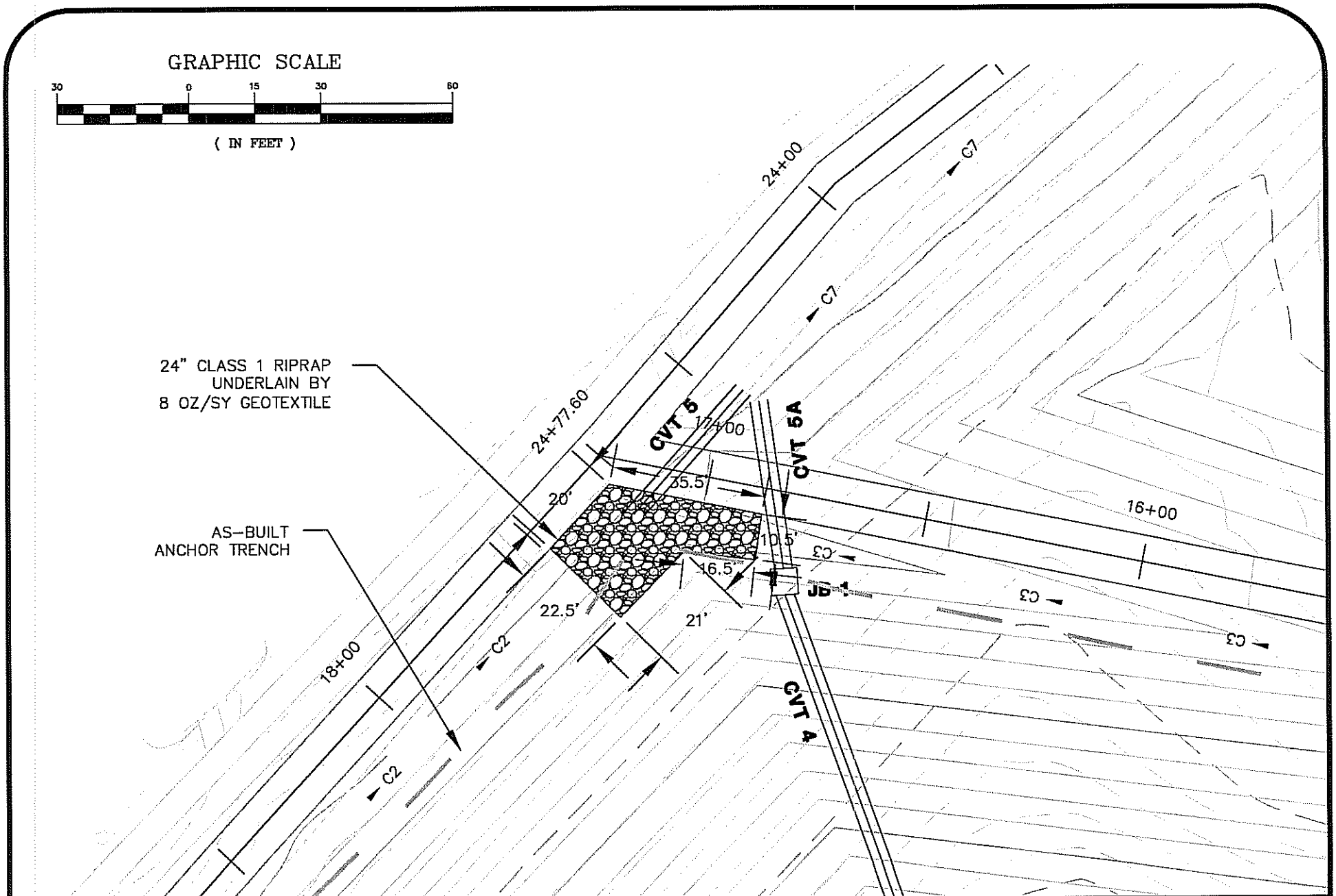
To be determined.

Attachment:

Figure 1.

11/14/08		11·17·08	
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

Copies to:	☒ Mike Cook, Duke Energy	☒ S&ME File No. 1356-07-017-03-01
	☒ Craig Greeson, Morgan Corp	☒ Collaborative Website
	☐	☐



SCALE: 1" = 30'	DATE: 11/14/08	S&ME WWW.SMEINC.COM	**DITCH C2 AND C3 EROSION CONTROL - NOC 12** PINE HALL ROAD ASH LANDFILL CLOSURE BELEWS CREEK, NORTH CAROLINA	FIGURE NO. 1
PROJECT NO. 1356-07-017	DRAWN BY: CHR			
	CHECKED BY:			

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date: 12/10/08**	**Job No.: 1356-07-017**
DESCRIPTION:	Slope Drains	Duke Energy – Pine Hall Road	
		Ash Landfill Closure	
NOTICE OF CHANGE NO.	13		
CHANGE ORDER NOS:			

Description of design changes:

Provide two slope drains between the Borrow Area and the Closure Area on the south side of the site.

Reason for design change:

To prevent erosion.

Effective date of design change:

Immediately.

Financial and schedule considerations:

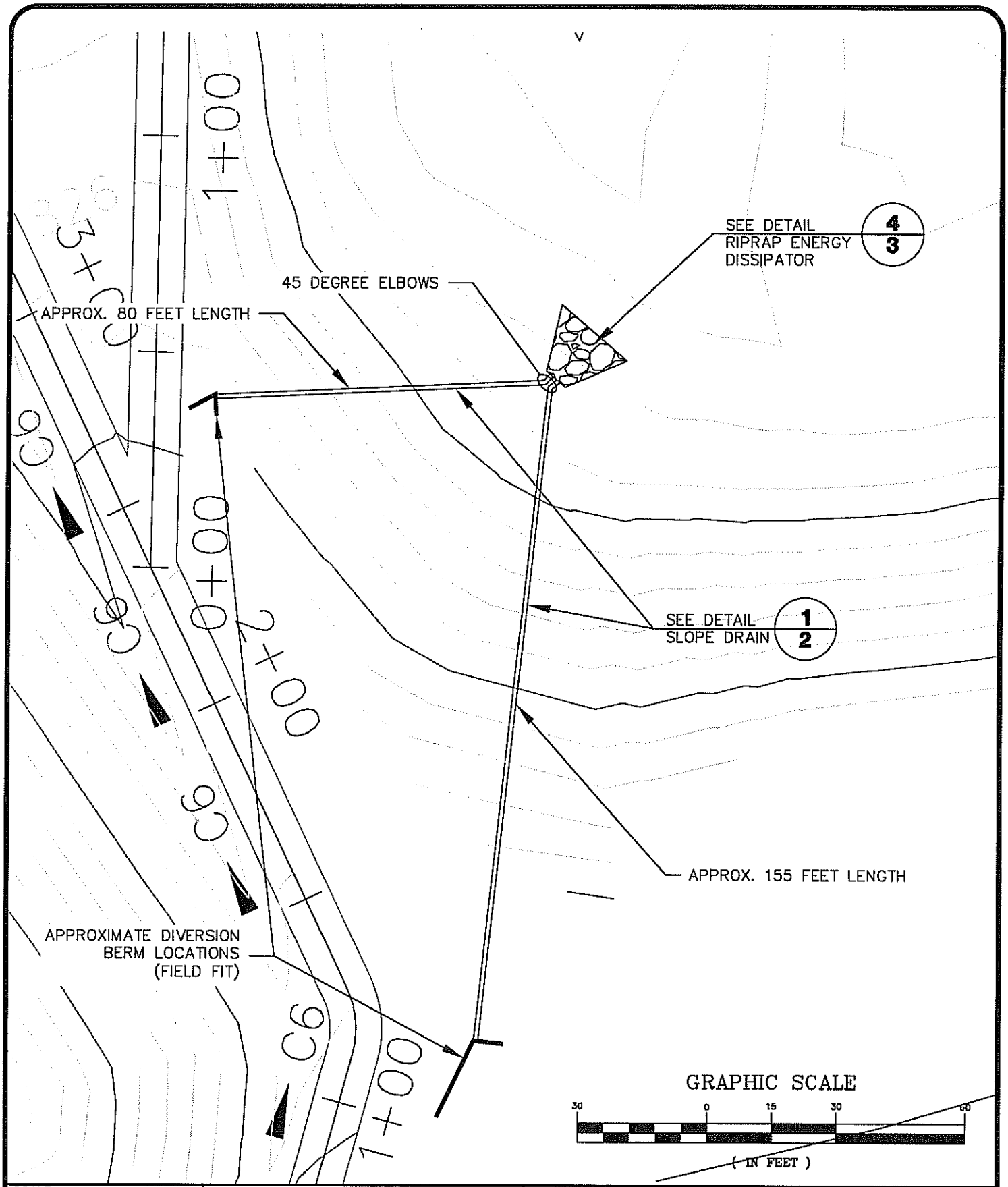
To be determined.

Attachment:

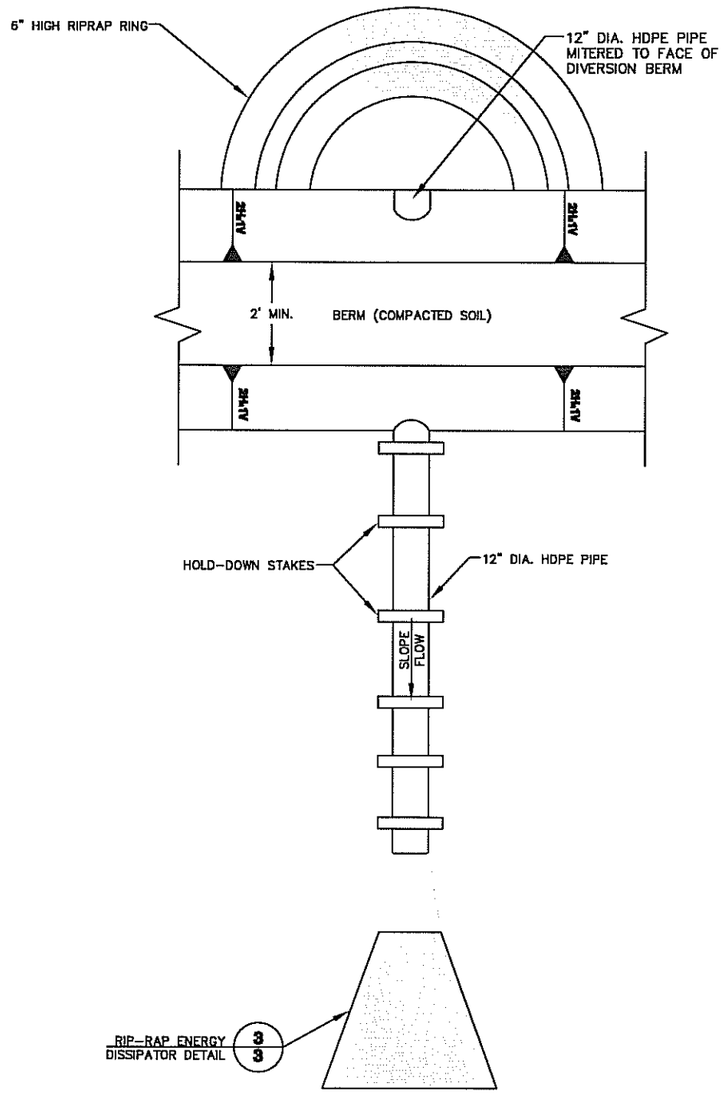
Figures 1, 2, and 3.

12/10/08		12-10-08	
Engineer of Record Name	**Date**	**Prepared By** Name	**Date**

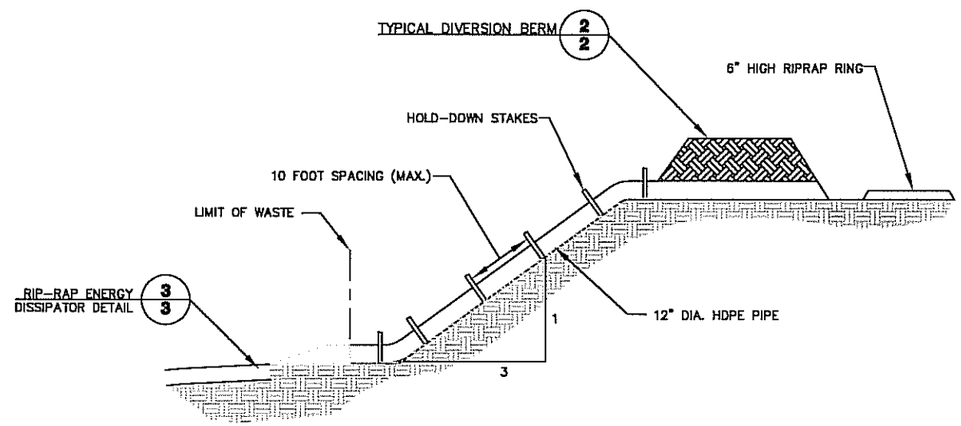
Copies to:	☒ Mike Cook, Duke Energy	☒ S&ME File No. 1356-07-017-03-01
	☒ Craig Greeson, Morgan Corp	☒ Collaborative Website
	☐	☐

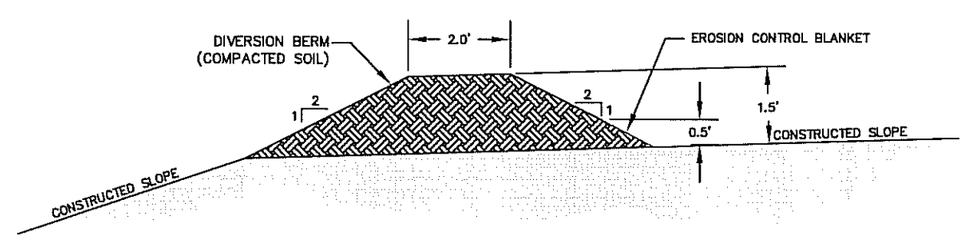


SCALE: 1" = 30'	S&ME WWW.SMEINC.COM	**NOTICE OF CHANGE 13 SLOPE DRAIN LOCATIONS** PINE HALL ROAD ASH LANDFILL CLOSURE BELEWS CREEK, NORTH CAROLINA	FIGURE NO. 1
DATE: 12/10/08			
DRAWN BY: CHR			
PROJECT NO: 1356-07-017			



1/2 SLOPE DRAIN DETAIL
NTS





2/2 TYPICAL DIVERSION BERM DETAIL
NTS

DATE: 12/10/08
DRAWN BY: CHR
CHECKED BY:
SCALE:
PROJECT NO. 1356-07-017

S&ME

NOTICE OF CHANGE 13
SLOPE DRAIN DETAILS

PINE HALL ROAD ASH LANDFILL CLOSURE
BELEWS CREEK, NORTH CAROLINA

FIGURE NO.
2

DEFINITION:

A STRUCTURE DESIGNED TO CONTROL EROSION AT THE INLET OR OUTLET OF A CHANNEL OR CONDUIT.

PURPOSE:

TO PREVENT EROSION AT THE OUTLET OF A CHANNEL OR CONDUIT BY REDUCING THE VELOCITY OF FLOW AND DISSIPATING THE ENERGY.

CONSTRUCTION SPECIFICATIONS:

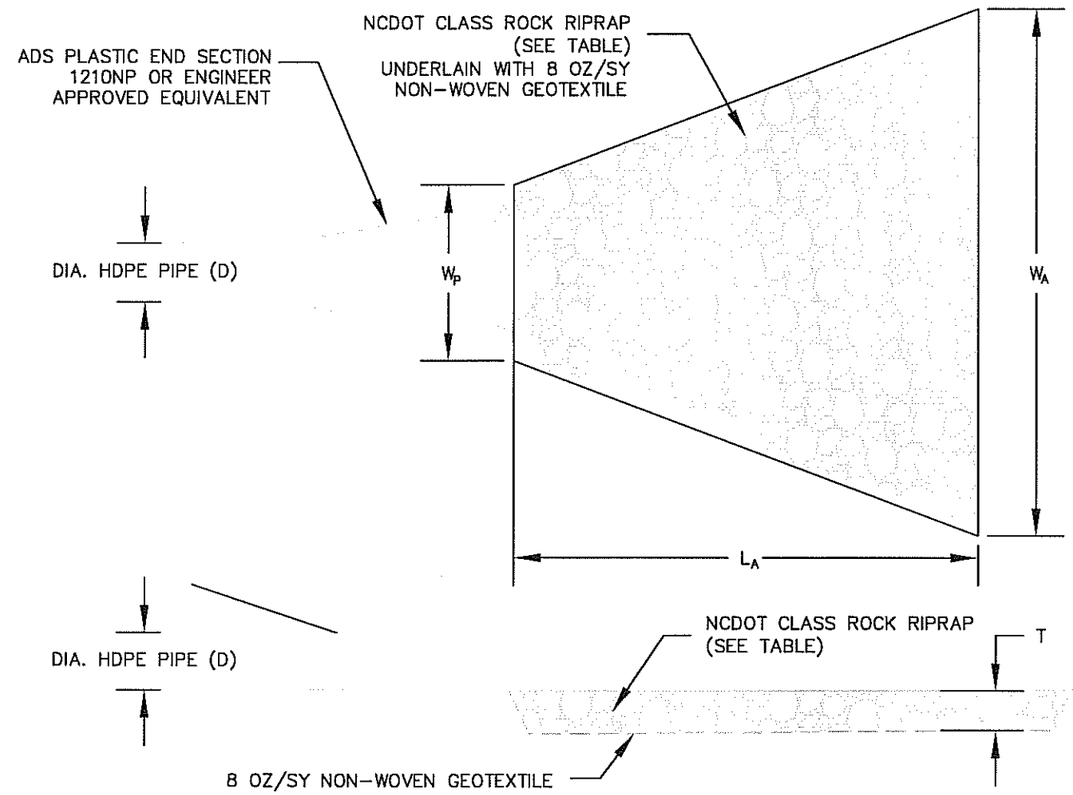
1. ENSURE THAT THE SUBGRADE FOR THE FILTER AND RIPRAP FOLLOWS THE REQUIRED LINES AND GRADES SHOWN IN THE PLAN. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO THE DENSITY OF THE SURROUNDING DISTURBED MATERIAL. LOW AREAS IN THE SUBGRADE ON UNDISTURBED SOIL MAY ALSO BE FILLED BY INCREASING THE RIPRAP THICKNESS.
2. THE RIPRAP AND GRAVEL FILTER MUST CONFORM TO THE SPECIFIED GRADING LIMITS SHOWN ON THE PLANS.
3. FILTER CLOTH, WHEN USED, MUST MEET DESIGN REQUIREMENTS AND BE PROPERLY PROTECTED FROM PUNCHING OR TEARING DURING INSTALLATION. REPAIR ANY DAMAGE BY REMOVING THE RIPRAP AND PLACING ANOTHER PIECE OF FILTER CLOTH OVER THE DAMAGED AREA. ALL CONNECTING JOINTS SHOULD OVERLAP SO THE TOP LAYER IS ABOVE THE DOWNSTREAM LAYER A MINIMUM OF 1 FT. IF THE DAMAGE IS EXTENSIVE, REPLACE THE ENTIRE FILTER CLOTH.
4. RIPRAP MAY BE PLACED BY EQUIPMENT, BUT TAKE CARE TO AVOID DAMAGING THE FILTER.
5. THE MINIMUM THICKNESS OF THE RIPRAP SHOULD BE 1.5 TIMES THE MAXIMUM STONE DIAMETER.
6. RIPRAP MAY BE FIELD STONE OR ROUGH QUARRY STONE. IT SHOULD BE HARD, ANGULAR, HIGHLY WEATHER-RESISTANT AND WELL GRADED.
7. CONSTRUCT THE APRON ON ZERO GRADE WITH NO OVERFILL AT THE END. MAKE THE TOP OF THE RIPRAP AT THE DOWNSTREAM END LEVEL WITH THE RECEIVING AREA OR SLIGHTLY BELOW IT.
8. ENSURE THAT THE APRON IS PROPERLY ALIGNED WITH THE RECEIVING STEAM AND PREFERABLY STRAIGHT THROUGHOUT ITS LENGTH. IF A CURVE IS NEEDED TO FIT SITE CONDITIONS, PLACE IN THE UPPER SECTION OF THE APRON.
9. IMMEDIATELY AFTER CONSTRUCTION, STABILIZE ALL DISTURBED AREAS WITH VEGETATION.

MAINTENANCE:

INSPECT RIPRAP OUTLET STRUCTURES WEEKLY AND AFTER SIGNIFICANT (½ INCH OR GREATER) RAINFALL EVENTS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE, OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

REFERENCE:

6.41.5 NC EROSION AND SEDIMENTATION CONTROL PLANNING AND DESIGN MANUAL, 2006



ALL RIPRAP SHALL BE NCDOT CLASSES OR ENGINEER APPROVED.

SUMMARY OF PROTECTION APRONS

DISCHARGE PIPE LOCATION	D (FT)	L_A (FT)	W_P (FT)	W_A (FT)	T (IN)	D_{50} (IN)	$D_{MAX.}$ (IN)	NCDOT CLASS
A6	1	14	6	20	18	8	12	B

3/3 **RIP-RAP ENERGY DISSIPATOR DETAIL**
NTS

DATE: 12/10/08
DRAWN BY: CHR
CHECKED BY:
SCALE:
PROJECT NO. 1356-07-017

S&ME
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NOTICE OF CHANGE 13
SLOPE DRAIN DETAILS
PINE HALL ROAD ASH LANDFILL CLOSURE
BELEWS CREEK, NORTH CAROLINA

FIGURE NO.
3

NOTICE OF CHANGE

OWNER:	Duke Energy	**Date: 12/30/08**	**Job No.: 1356-07-017**
DESCRIPTION:	Soil Test Frequency	Duke Energy – Pine Hall Road	
		Ash Landfill Closure	
NOTICE OF CHANGE NO.	14		
CHANGE ORDER NOS:			

Description of design changes:

As-built subgrade conditions indicate that 211,375 cy of subgrade material was placed as fill. The project specifications require performing the following tests at a frequency of one suite of tests per 10,000 cy:

- Grain Size with Hydrometer (ASTM D422)
- Standard Proctor (ASTM D698)
- Water (Moisture) Content (ASTM D2216)
- Atterburg Limits (ASTM D4318)

The frequency of soil testing for subgrade material was reduced to approximately one suite of tests per 21,000 cy due to visual observation of consistency of materials (fly ash).

Reason for design change:

Further testing is likely to be redundant.

Effective date of design change:

Immediately.

Financial and schedule considerations:

none.

Attachment:

none.

12/30/08		12.30.08	
Engineer of Record	**Date**	**Prepared By**	**Date**
Kenneth R. Daly, P.E.		Cedric Ruhl, E.I.	

Copies to:

- ☒ Mike Cook, Duke Energy
- ☒ Craig Greeson, Morgan Corp
- ☐
- ☒ S&ME File No. 1356-07-017-03-01
- ☒ Collaborative Website
- ☐