Final Certification Report

Construction Quality Assurance Services

Cell 2G Construction
Soil Component Construction
Charlotte Motor Speedway Landfill V
Cabarrus County, North Carolina

Prepared For:

ALLIED WASTE

Prepared by:

of NORTH CAROLINA, PLLC

July 2008

Table of Contents

Page

SECTION 1 - INTRODUCTION

1.1 Project Description 1-1
1.2 Scope of Services 1-1
1.3 CQA Project Personnel 1-2

SECTION 2 - CONSTRUCTION OVERVIEW

2.1 Project Participants 2-1
2.2 Prepared Subgrade and Structural Fill Construction 2-1
2.3 Compacted Soil Liner Construction 2-1

SECTION 3 - CQA DURING PREPARED SUBGRADE AND STRUCTURAL FILL CONSTRUCTION

3.1 Project Specifications 3-1
3.2 Laboratory Testing 3-1
3.3 Field Density Testing 3-1

SECTION 4 - CQA DURING COMPACTED SOIL LINER CONSTRUCTION

4.1 Project Specifications 4-1
4.2 Preconstruction Testing 4-1
4.3 Testing During Construction 4-1

SECTION 5 - RECORD SURVEY

SECTION 6 - CERTIFICATION

List of Figures

Figure 1 – Grade Verification Survey of CMS Cell 2G

List of Appendices

Appendix A – Project Modification
Appendix B – Listing of CQA Personnel
Appendix C – Resident Managers Daily Field Summary Reports
Appendix D – Structural Fill Laboratory Test Results
Appendix E – Structural Fill Field Density Test Results
Appendix F – Preconstruction Testing
Section F-1 – Laboratory Test Pad Bulk Sample Test Results
Section F-2 – Laboratory Test Pad Shelby Tube Test Results
Section F-3 – Test Pad Field Density Test Results
Appendix G – Construction Testing
Section G-1 – Laboratory Bulk Sample Test Results
Section G-2 – Laboratory Shelby Tube Test Results
Section G-3 – Field Density Test Results

SECTION 1
Introduction

SECTION 1
Introduction

1.1 Project Description

Allied Waste currently owns and operates the Charlotte Motor Speedway Landfill V located in Cabarrus County, North Carolina. This report documents construction quality assurance (CQA) monitoring and testing services performed during the construction of the soil components (prepared subgrade, structural fill and compacted soil liner) for Cell 2G. Cell 2G is a solid waste disposal cell encompassing approximately 13 acres of composite lined area. The geosynthetics and protective cover elements of the construction will be covered under a separate certification report upon completion of Cell 2G.

The soil composite lining system for Cell 2G includes, from bottom to top:

- A prepared subgrade;
- A 1.5-foot thick recompacted soil liner with a maximum coefficient of permeability of $1x10^{-5}$ cm/sec.

1.2 Scope of Services

ACC of North Carolina, PLLC (ACC) was retained by Allied Waste to provide Construction Quality Assurance (CQA) monitoring and testing services during construction of the prepared subgrade, structural fill and 1.5-foot thick, low permeability compacted soil liner.

The CQA services provided during construction of Cell 2G were performed in accordance with the following project documents:

- Drawing Numbers 1 to 12 inclusive, entitled "Charlotte Motor Speedway Landfill – Cell 2G Construction," prepared by Brown & Caldwell, Inc. and dated March 2008 (referenced to in this report as the Construction Drawings).

- "Permit Modification Application Construction Quality Assurance Plan, BFI – Charlotte Motor Speedway Landfill V Lateral Expansion – Cells 2F, 2G &2H" prepared by Almes & Associates, Inc. dated May 2004 (referenced to in this report as the CQA Plan).

Over the course of this project, one modification letter was received concerning the approval to blast rock in Cell 2G. A copy of this approval letter is included in Appendix A.

For the purposes of clarity, the above documents and approval letter have been collectively referred to throughout the text of this report as the "Project Specifications."

This report describes the technical approach taken by ACC to provide CQA services during the construction of the soil components of Cell 2G. Also included with this report are the results of field testing, field observations and laboratory test results. Finally, the report contains a certification statement, which confirms that the soil components of Cell 2G were constructed in accordance with the approved design and operation plans, construction quality assurance plan, project specifications and the facility's solid waste permit.

1.3 CQA Project Personnel

The ACC on-site CQA team consisted of one full-time Resident Manager who was on-site during the Cell 2G construction. The resident manager was assisted by a second soil monitor as needed during the fast pasted portions of the soil liner installation.

The ACC CQA personnel coordinated their activities on a day-to-day basis with the ACC Project Engineer. Overall supervision of ACC's services was provided by the certifying engineer, a Registered Professional Engineer (State of North Carolina) from ACC. A listing of ACC project personnel, along with their initials, used on field and summary documentation, is included in Appendix B.

Copies of the Resident Manager's daily field summary reports are included in Appendix C.

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SECTION 2

Construction Overview

SECTION 2
Construction Overview

2.1 Project Participants

The principal project participants during the construction of the soil components of the Cell 2G construction at the Charlotte Motor Speedway Landfill V consisted of:

- Allied Waste, as owner and operator of the Charlotte Motor Speedway Landfill V facility;
- Brown & Caldwell, Inc. (B&C), as the design engineer during construction of Cell 2G;
- ACC of North Carolina, PLLC (ACC), as the CQA Consultant during construction of Cell 2G;
- Timely Engineering Soil Tests, LLC (TEST), as the geotechnical laboratory for the testing of the soils components of this project;
- Earnhardt Grading, Inc. (EGI), as general contractor for the construction;
- F. Donald Lawrence & Associates, Inc. (FDLA), as the Registered Professional Land Surveyor (North Carolina).

2.2 Prepared Subgrade and Structural Fill Construction

Construction of the prepared subgrade and structural fill components of Cell 2G started on April 7, 2008, and were completed on May 15, 2008. EGI hauled structural fill materials obtained from an approved borrow source into the Cell 2G waste disposal cell. The soil was placed, where required, in accordance with the Project Specifications.

The ACC Resident Manager was on-site during placement of structural fill materials. Elevations of the completed prepared subgrade and structural fill construction were obtained and reviewed by FDLA's Registered Professional Land Surveyor to verify compliance with the construction drawings. A copy of the record drawing showing the completion of the structural fill material, titled "Grade Verification Survey of CMS Cell 2G" was provided to ACC by FDLA and is presented as Figure 1.

2.3 Compacted Soil Liner Construction

Construction of compacted soil liner material started on May 19, 2008, and was completed on June 6, 2008. Approximately 32,000 cubic yards of compacted soil liner material was placed on the floor and

side slopes of Cell 2G. EGI carried out routine maintenance of the compacted soil liner material until it was covered by the geosynthetic materials.

A record drawing showing the final grade elevations of the compacted soil liner, entitled "Grade Verification Survey of CMS Cell 2G" was provided to ACC by FDLA and is presented as Figure 1.

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SECTION 3

CQA During Prepared Subgrade and Structural Fill Construction

SECTION 3
CQA During Prepared Subgrade and Structural Fill Construction

3.1 Project Specifications

In general, the Project Specifications require that: i) subgrade be proof-rolled prior to any fill placement of soils materials; ii) structural fill material will be used to establish elevations for the containment system after proof-rolling of the exposed surface is performed; iii) the structural fill material will be tested to determine the moisture/density relationship through laboratory testing and to evaluate the degree of compaction through field density testing; and iv) the structural fill material is to be placed in 6-inch thick compacted lifts and compacted to a minimum of 95 percent of the Standard Proctor (ASTM D698) maximum dry density.

The Project Specifications provided specific frequencies and acceptance criteria for both field and laboratory testing of the structural fill material.

3.2 Laboratory Testing

During the structural fill construction, representative samples of that material were obtained from the proposed borrow sources for detailed laboratory testing. A total of fourteen (14) samples were obtained. The samples were labeled SF-1 through SF-14. The laboratory testing program was comprised of standard Proctor moisture/density relationship ASTM D698 and particle size analysis ASTM D422. The laboratory testing met the required frequency and the results of this testing are presented in Appendix D.

3.3 Field Density Testing

Field density testing of the structural fill was performed by the ACC Resident Manager using the nuclear density gauge (ASTM D2922) and met a frequency of one test per 10,000 square feet per lift of placed material. In accordance with the project specifications, the drive cylinder method (ASTM D2937) was used periodically to verify the performance of the nuclear gauge.

In the event that a density test failed to meet the Project Specifications, remedial work was undertaken within the area represented by the failed test. The remedial work typically consisted of a bulldozer tracking up the soil material, allowing time for drying, and then using a compactor recompacting the material. After the remedial work was complete, the area was retested. This procedure was repeated until a passing result was achieved.

A total of 347 initial field density tests were performed during the placement of the structural fill material. Of the original 347 field density tests, only two test areas failed the original testing. Both of these areas were reworked, retested and passing retests were obtained that met the project

specifications for compaction in each of these areas. The results of the density testing of the structural fill material are summarized in Appendix E. The tests are identified with the prefix SF.

SECTION 4

CQA During Compacted Soil Liner Construction

SECTION 4

CQA During Compacted Soil Liner Construction

4.1 Project Specifications

In general, the Project Specifications for the compacted soil liner material for Cell 2G require that: i) a minimum 1.5-foot thick compacted soil liner lift be placed with a maximum coefficient of permeability of 1.0×10^{-5} cm/sec; ii) preconstruction laboratory testing be performed to establish an acceptable range of moisture/density values which will result in achieving the required permeability (the acceptable range was subsequently determined to have a degree of compaction equal to or greater than 96 percent of the maximum dry density at or above two percent wet of the optimum moisture content); iii) loose lift thickness shall not exceed 8 inches to yield a final minimum 6-inch compacted thickness; and, iv) a maximum particle size dimension of 3/4 inch be allowed for the upper 6 inches of liner base.

The Project Specifications provided frequencies and acceptance criteria for both field and laboratory testing of the liner base.

4.2 Preconstruction Testing

A test pad was constructed using the compacted soil liner material in order to confirm the proposed borrow source would meet the project requirements for the compacted soil liner material. The test pad was constructed in the footprint of Cell 2G.

As required by the project specifications, bulk laboratory test samples, Shelby tube samples and in-place density testing were all performed on the test pad. The detailed laboratory testing data for the bulk samples and for the Shelby tube samples; as well as the field density test data for the test pad are presented in Appendix F, Sections F-1, F-2 and F-3, respectfully.

4.3 Testing During Construction

As required by the project specifications, bulk laboratory test samples, Shelby tube samples and in-place field density testing were all performed on the placed compacted soil liner within the limits of Cell 2G. As a result, ACC obtained a total of 11 bulk laboratory samples and 42 Shelby tube samples for laboratory testing. All of the samples met the project specifications. The results of the laboratory tests performed during construction are presented in Appendix G, Sections G-1 and G-2.

Field density testing of the compacted soil liner was performed by the ACC Resident Manager using the nuclear density gauge (ASTM D2922) and met a frequency of one test per 10,000 square feet per lift of placed material. In accordance with the Project Specifications, the drive cylinder method (ASTM D2937) was used to verify the performance of the nuclear gauge.

In the event that a density test failed to meet the Project Specifications, remedial work was undertaken within the area represented by the failed test. The remedial work typically consisted of a bulldozer tracking up the liner base material, allowed time for drying, and then a compactor recompacting the material. After the remedial work was complete, the area was retested. This procedure was repeated until a passing result was achieved.

A total of 187 initial field density tests were performed during the placement of the compacted soil liner material. All of these field density tests met the project specifications for compaction. The results of the field density testing, denoted with the prefix CL, are summarized in Appendix G, Section G-3.

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SECTION 5

Record Survey

SECTION 5
Record Survey

A record ("as-built") survey was conducted during Cell 2G construction by a Registered Professional Land Surveyor (North Carolina) from F. Donald Lawrence & Associates, Inc. to certify that the thickness, lines, grades and survey tolerances for the structural fill and compacted soil liner layers met the Project Specifications. This survey was conducted using a system of field stakes that represented critical points in defining the shape of Cell 2G. As mentioned previously, the survey drawing was provided to ACC by FDLA and is included in this report as Figure 1.

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SECTION 6
Certification

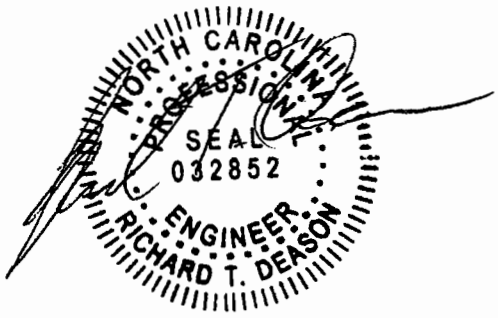
SECTION 6
Certification

ACC of North Carolina, PLLC was retained by BFI Waste Systems of North Carolina, Inc., a subsidiary of Allied Waste Industries, Inc. to provide CQA services during the construction of the soil components for Cell 2G at the Charlotte Motor Speedway Landfill V located in Cabarrus County, North Carolina. Services rendered consisted of construction quality assurance monitoring and testing during construction of the prepared subgrade, structural fill and 1.5-foot thick, low permeability compacted soil liner. The ACC Registered Professional Engineer (North Carolina) performed an on-site visit and reviewed the data during construction.

Based on the results of the CQA activities performed by ACC and described in this report, I certify that the prepared subgrade, structural fill and 1.5-foot thick, low permeability compacted soil liner in Cell 2G of the Charlotte Motor Speedway Landfill V facility was constructed in compliance with the approved design and operation plans, construction quality assurance plan, project specifications and the facility's solid waste permit.

ACC of North Carolina, LLC

R. Scott Callaway
Project Engineer



Richard T. Deason, P.E.
Certifying Engineer

RSC/RTD:ods

Figures

Grid line
xxx.xx Clay Grade (typical)
xxx.xx Sub grade (typical)

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

NORTH CAROLINA PROFESSIONAL SEAL L-1280 LAND SURVEYOR F. DONALD LAWRENCE 7/15/08

FDL & assoc

Topographic Survey of the Top of Clay
CMS Cell 2-G
Cabarrus County, Concord N.C.
Orig. scale 1"=40' Date: 7/15/08
Surveyed by: Lawrence Associates, P.A.
106 W. Jefferson St. P.O. Box 1014
Monroe, North Carolina 28112 (704) 289-1013

Drawn By: MCM
REVISIONS

Job No. 0135 Drawing file 2GVerified_clay contours.dwg Drawing no.08/100

PT#	EL	PT#	EL	DIFFERENCE
660.00	586.00	1660.00	588.11	2.11
1328	595.66	2328	597.21	1.56
1329	595.83	2329	597.39	1.56
1330	596.68	2330	598.27	1.59
1331	597.41	2331	599.04	1.63
1332	598.27	2332	599.89	1.62
1333	599.36	2333	601.05	1.69
1336	600.47	2336	602.02	1.55
1337	601.49	2337	603.00	1.52
1338	602.55	2338	604.06	1.50
1339	603.56	2339	605.08	1.52
1340	604.59	2340	606.20	1.61
1341	605.62	2341	607.28	1.66
1342	606.65	2342	608.25	1.60
1343	607.70	2343	609.39	1.68
1344	608.37	2344	609.91	1.55
1345	608.23	2345	609.83	1.61
1346	607.06	2346	608.76	1.69
1347	606.02	2347	607.59	1.56
1348	605.11	2348	606.77	1.66
1349	604.29	2349	605.83	1.55
1350	603.38	2350	605.01	1.62
1351	602.52	2351	604.03	1.51
1352	601.40	2352	602.97	1.58
1353	600.07	2353	601.64	1.58
1354	597.28	2354	598.86	1.58
1355	594.80	2355	596.35	1.56
1356	592.26	2356	593.97	1.70
1357	590.68	2357	592.29	1.61
1358	590.88	2358	592.39	1.51
1359	589.88	2359	591.56	1.68
1360	589.86	2360	591.51	1.66
1361	592.47	2361	594.00	1.53
1362	594.81	2362	596.38	1.57
1363	597.17	2363	598.80	1.63
1364	599.12	2364	600.75	1.63
1365	600.63	2365	602.30	1.67
1366	602.00	2366	603.52	1.52
1367	602.90	2367	604.53	1.63
1368	603.81	2368	605.40	1.59
1369	604.66	2369	606.35	1.69
1370	605.50	2370	607.12	1.63
1371	606.51	2371	608.11	1.60
1372	607.25	2372	608.86	1.61
1373	606.18	2373	607.71	1.53
1374	605.12	2374	606.76	1.64
1375	604.11	2375	605.66	1.55
1376	603.18	2376	604.76	1.57

PT#	EL	PT#	EL	
1640	599.03	2640	600.79	1.76
1641	599.62	2641	601.30	1.68
1647	600.25	2647	601.78	1.53
1648	600.80	2648	602.33	1.53
1649	601.05	2649	602.76	1.71
1651	602.80	2651	604.40	1.60
1652	592.02	2652	593.79	1.77
1654	604.07	2654	605.62	1.56
1655	586.00	2655	588.22	2.22
1656	605.87	2656	607.38	1.51
1657	604.83	2657	606.34	1.51
1658	605.33	2658	606.94	1.62
1659	599.93	2659	601.44	1.51
1806	596.60	2806	598.12	1.52
1809	598.89	2809	600.58	1.69
1811	595.96	2811	597.95	1.99
1812	599.54	2812	601.20	1.66
1813	600.82	2813	602.61	1.79
1814	602.10	2814	603.71	1.62
1815	602.96	2815	604.74	1.78
1816	604.26	2816	605.84	1.57
1817	605.29	2817	606.81	1.52
1818	606.08	2818	607.60	1.52
1819	607.03	2819	608.57	1.54
1820	607.99	2820	609.52	1.52
1821	608.92	2821	610.44	1.52
1822	609.64	2822	611.22	1.58
1823	609.59	2823	611.20	1.61
1824	608.65	2824	610.30	1.65
1825	607.95	2825	609.51	1.56
1826	606.99	2826	608.60	1.61
1827	606.05	2827	607.56	1.51
1828	605.06	2828	606.60	1.54
1829	603.86	2829	605.41	1.55
1830	602.87	2830	604.39	1.52
1831	601.85	2831	603.39	1.53
1832	600.83	2832	602.34	1.52
1833	599.47	2833	601.14	1.67
1834	598.37	2834	599.87	1.50
1835	597.44	2835	598.96	1.52
1836	596.29	2836	597.81	1.51
2000	583.99	5000	585.55	1.56
2001	583.97	5001	585.51	1.54
2002	583.97	5002	585.87	1.90
2003	583.96	5003	585.54	1.58
2004	583.99	5004	585.51	1.52
11005.00	588.00	21005.00	589.54	1.54
11006.00	588.02	21006.00	589.55	1.53

PT#	EL	PT#	EL	
11006.00	588.02	21006.00	589.55	1.53
11007.00	588.03	21007.00	589.54	1.50
11008.00	588.01	21008.00	589.56	1.55
16198	608.92	26198	610.50	1.58

ACC of NORTH CAROLINA, PLLC

APPENDIX A
Project Modification

NCDENR

William G. Ross Jr., Secretary

May 1, 2008

Mr. Mike Gurley, Environmental Manager
Allied Waste Industries

Re: Authorization Approval for:
Blasting Plan, Cell 2G - Rock Delineation and Blasting Plan - proposed April 14, 2008
& Installation of Subdrain - proposed April 16, 2008
Charlotte Motor Speedway (CMS) MSW Landfill V
Cabarrus County, North Carolina
Permit No. 13-04
Doc Tracking No: 4411

Dear Mr. Gurley:

Mr. David Garrett, P.G., P.E., on behalf of Allied Waste Industries, submitted an initial Rock Delineation / Blasting Plan and initial Subdrain Plan on April 14, 2008 and April 16, 2008 respectively, pertaining to the subgrade and construction of cell 2G at the CMS – MSW landfill V.

The initial Rock Delineation / Blasting plan (dated April 14, 2008) pertains to removal of some rock areas that were discovered during the grading of the site. The rock outliers ("pinnacles") are located two (2) feet above the approved base liner subgrade elevations.

On April 23, 2008 David Garrett submitted an updated map further delineating the rock pinnacle areas to be removed. After reviewing the updated rock delineation map, and blasting procedures proposed in the initial Blasting Plan (April 14, 2008), the Solid Waste Section has no objections to proceed further with the blasting plan (protocol) and the submittal of results after blasting is accomplished.

The initial Subdrain Plan submitted on April 16, 2008, by David Garrett pertains to installing a subdrain near the southwest edge of Cell 2G. The proposed subdrain's function is to drain a small area of perched water (approximately 5 feet wide by 8 feet long). As noted in the letter, *"water had not previously been seen in this area and this is not a stream bed"*. The plan also states: *"The drain will be approximately 230 to 240 feet in length and will discharge at an existing sediment basin. If the flow persists (not expected) after construction, the drain outlet can be added to the ground water monitoring program"*.

On April 22, 2008 Mr. John Murray of the Solid Waste Section had further discussions with Mr. Garrett after receiving subsequent information pertaining to the subdrain. In conclusion, Mr. Murray has no objections to the installation of the subdrain.

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Telephone 919-508-8400 \ *Fax* 919-733-4810 \ *Internet* http://wastenotnc.org
An Equal Opportunity / Affirmative Action Employer – Printed on Dual Purpose Paper

The Rock Blasting Plan and Subdrain plan will be included with the list of the approved documents in the permit to operate. Please include the report documenting the approved activity in the final CQA report as well as submitting the blasting report within 30 days of the activity.

Please note that further modifications to the construction of Cell 2G may require a permit modification fee.

The Division appreciates your efforts and cooperation in this matter. If you have any questions or would like to schedule a meeting to discuss this matter further, please contact me at (919) 508- 8495 or Brian Wootton at (919) 508-8524.

Sincerely,

Edward F. Mussler III, P.E.
cn=Edward F. Mussler III, P.E., c=US, o=Division of Waste Management, ou=Solid Waste Section, email=ed.mussler@ncmail.net
2008.05.01 11:42:30 -04'00'

Edward F. Mussler, III
Permitting Branch Supervisor
Solid Waste Section

cc: David Garrett, P.G., P.E.
Brian Wootton, Solid Waste Section
John Murray, Solid Waste Section
Teresa Bradford, Solid Waste Section

of NORTH CAROLINA, PLLC

APPENDIX B
Listing of CQA Personnel

JUNE 2008

LISTING OF ACC
SITE CQA PERSONNEL

ACC PERSONNEL	ACC POSITION TITLE	PERSONNEL INITIALS
RICHARD T. DEASON	CERTIFYING ENGINEER	RTD
R. SCOTT CALLAWAY	PROJECT MANAGER	RSC
TIM J. SCHREIBER	ASSISTANT PROJECT MANAGER	TJS
LARRY E. FREEMAN	RESIDENT SITE MONITOR	LEF
BEN L. MCFRY	RESIDENT SITE MONITOR	BLM

ATLANTIC COAST CONSULTING, INC.

ACC of NORTH CAROLINA, PLLC

APPENDIX C

Resident Manager's Daily Summary Reports

Daily Monitoring Summary

Date: Apr. 7, 2008 S (M) T W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 51 @ AM High: 66 @ PM
Cloud Cover: Cloudy Precipitation: —— Wind: 5-10

ACC Personnel On-Site: Tim Schreiber

Summary of Construction Progress: Earnhardt Const. commenced placement of structural fill. Using soil from the cut locations in the cell. Thus exposed a couple of rock faces, that will have to be taken care of prior to clay placement.

Equipment Used - CAT 330 Trackhoe
- 2 CAT D6 Dozers
- 4 CAT Offroad trucks
- CAT 815 Sheepsfoot
- Komatsu 300 trackhoe.

ACC Activities and Test Results:

- Observed the activities noted above.
- Did not run any density tests today.

Note I was on site on Monday 3-31-08 Rained out.
Tuesday 4-1-08 Rained out
Wednesday 4-2-08 Collected bucket samples of both structural fill and clay liner soils. Hand delivered samples to the soils lab
Friday 4-4-08 Attended Pre-Con meeting

Daily Monitoring Summary

Date: Apr. 7, 2008 S (M) T W T F S

Summary of Surveyor's Activities:

Summary of Problems and Resolutions:
The exposed rock in the 'cut' area of the cell will be decided on by the engineer (Brown and Caldwell) on what needs to be done.

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by:
ACC Site Resident Manager

Daily Monitoring Summary

Date: Apr. 8, 2008 S M (T) W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 52 @ Am High: 65 @ Pm
Cloud Cover: Cloudy Precipitation: — Wind: 5-10

ACC Personnel On-Site: Tim Schreiber

Summary of Construction Progress: Earnhardt Const. continued to 'cut' and fill' with in the cell limits. Excavating from cut areas in the Western half of the cell. Placing the excavated soil in areas in the Eastern Half of the cell. Placing partial lifts of 2 & 3. They also removed unsuitable soils from the Western end of the cell.

Equipment Used
- CAT 330 & Komatsu 300 Hoes
- 4 CAT Offroad trucks
- 2 CAT D6 Dozers
- CAT 815 Compactor.
- CAT 16 Motorgrader.

ACC Activities and Test Results:

- Observed the activities noted above.
- Ran 24 densities/moisture tests on lifts 1 & 2 ..... All passing.....

Daily Monitoring Summary

Date: Apr. 8, 2008 S M (T) W T F S

Summary of Surveyor's Activities: The surveyors were on site shooting areas inside the cell limits and the access road outside.

Summary of Problems and Resolutions:

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by:
ACC Site Resident Manager

Daily Monitoring Summary

Date: Apr. 9, 2008 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 43 @ AM High: 75 @ PM
Cloud Cover: Mostly Sunny Precipitation: — Wind: 0-5

ACC Personnel On-Site: Tim Schreiber, Ben McFry

Summary of Construction Progress: Earnhardt Construction continued to excavate in cut areas and place that soil in fill areas. They placed more of lifts 1 and 2 in the Eastern half. The cut area is located primarily in the Western half of the cell. They began to stockpile clay just south of the cell. Also continued to excavate and haul off unsuitable soils.

Equipment Used - CAT 330, Komatsu 300 Hoes
- 5 CAT Offroad trucks
- 2 CAT D6 and 1 CAT D7 Dozers
- CAT 815 Sheepsfoot Compactor

ACC Activities and Test Results:

- Observed the activities noted above.
- Ran 12 nuclear density / moisture tests on the structure fill. 1 test failed, the failed area was reworked and tested with passing results.

Daily Monitoring Summary

Date: Apr. 9, 2008 S M T (W) T F S

Summary of Surveyor's Activities:

Summary of Problems and Resolutions:

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by:

ACC Site Resident Manager

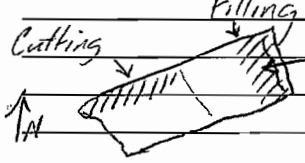
Daily Monitoring Summary

Date: Apr. 10, 2008 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 52 @ AM High: 78 @ PM
Cloud Cover: Sunny Precipitation: — Wind: 0-5

ACC Personnel On-Site: Tim Schreiber, Ben McFry

Summary of Construction Progress: Earnhardt Grading continued with the following activies:
- The 'cut' and 'fill' process inside the cell limits. Cutting from the Western half of the cell and filling in the Eastern half.
- Excavation and removal of unsuitable soils with in the cell limits
- Stocking the clay soil, just south of the cell.



Equipment Used - CAT 330, Komatsu 300, CAT 345 Trackhoes
- 5 CAT Offroad trucks
- 2 CAT D6 & 1 CAT D7 Dozers
- CAT 815 Compactor.

ACC Activities and Test Results:
- Observed the activities noted above
- Ran a total of 13 nuclear density / moisture tests All passing.

Daily Monitoring Summary

Date: Apr. 10, 2008 S M T W (T) F S

Summary of Surveyor's Activities:

Summary of Problems and Resolutions:

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by:

ACC Site Resident Manager

Daily Monitoring Summary

Date: April 11, 2008 S M T W T (F) S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 57 @ AM High: 79 @ PM
Cloud Cover: Mostly Sunny Precipitation: _____ Wind: 5-10 MPH South

ACC Personnel On-Site: Ben McFay & Tim Schreiber

Summary of Construction Progress: The Earnhart grading crew are working on structural fill. They also are cutting to grade towards the North west Existing Liner. They're continuing to fill Lift 1 structural towards the East and removing unsuitables. They also are stockpiling clay materials just south of the cell limits. They Finished Lift 1 towards the East part of cell. They motorgraded the east half and sealed it off.

ACC Activities and Test Results: Tim and I monitored the construction progress noted above. We Took 6 Nuclear Density test on a low spot just south/center of the cell. It was 2 test per Lift / 3 Lifts. We also got 5 Bag Samples for Lab test on structural Fill.

Daily Monitoring Summary

Date: 4-11-08 S M T W T (F) S

Summary of Surveyor's Activities: There was one man from the Surveyors out marking location of the pyzimeters that are not visable.

Summary of Problems and Resolutions: NONE

Summary of Meetings and Discussions Held: NONE

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

Date: April 14, 2008 S (M) T W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 33 @ AM High: 54 @ PM
Cloud Cover: mostly cloudy. Precipitation: _____ Wind: S-10 N

ACC Personnel On-Site: Ben McKay

Summary of Construction Progress: The Earnhart Grading crew worked on stockpiling clay. They ran 5 740 cat Trucks and had a D6 Dozer piling, and A cat 330 Trackhoe loading. They also used a motorgrader to smooth out the cell. They had A Komatsu 300 trackhoe outside the cell to the south cleaning out unsuitables.

ACC Activities and Test Results: I monitored the construction progress noted above. There were no test done today because the crew did not fill in the cell. I walked the site to see if they need any silt fence, Everything looked ok.

Daily Monitoring Summary

Date: 4/14/08 S (M) T W T F S

Summary of Surveyor's Activities: The Earnhart Grading used their gps equipment and staked perimeter on the east edge of road.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: I spoke with Wilson (superintendent for Earnhart Grading) About his plans for today, he said they would stock pile clay most of the day. And he didn't know about this afternoon

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

Date: April 15, 2008 S M (T) W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 32 @ 7am High: 62 @ 3pm
Cloud Cover: Mostly sunny. Precipitation: None Wind: 5-10 mph NE

ACC Personnel On-Site: Ben McKay

Summary of Construction Progress: The Earnhart Grading crew spent the day hauling and stockpiling clay. They're also striping top soil to get to the clay in the borrow pit. They're having to strip to get to some structural fill material.

Equipment Used:

3-D6 Dozers
6-740 CAT trucks
1-345 CAT trackhoe
1-330 CAT trackhoe
1-300 Kamatsu trackhoe

They also worked on the new access road to the top of the existing cell.

ACC Activities and Test Results: I monitored the construction activities noted above. There were No test done in the cell today. I did get some bag samples of the clay they are hauling to stockpile to check the moisture, and its consistant with the other clays.

Daily Monitoring Summary

Date: 4-15-08 S M (T) W T F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

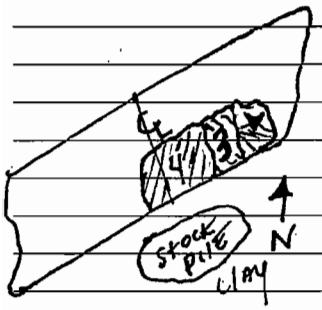
Daily Monitoring Summary

Date: April 16, 2008 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 32 @ AM High: 68 @ pm
Cloud Cover: Clear Precipitation: None Wind: 5-10 mph N

ACC Personnel On-Site: Ben McKay

Summary of Construction Progress: The Earnhardt Grading crew are continuing to stock pile clay material. They are also working on structural fill. They started at the est. center east to west and worked Lift 4 towards the east. They ran it out until Lift 3 stoped and kep going working on Lift 3.



Equipment being used

Clay	Structural
1- CAT 330 trackhoe	1- CAT 345 trackhoe
3- 740 CAT trucks	4- Cat 740 trucks
1- CAT D6 Dozer	1- D6 cat Dozer (GPS)
Misc equipment used	1- CAT 815 Compactor
Cat Motograder	1- Hydroforce CAT water truck
Kawasaki 300 trackhoe	

ACC Activities and Test Results: I monitored the construction progress noted above. I also was able to test Lift 4 structural. I got 8 Nuclear density test/moisture. The 8 test were good. Also got 1 drive cylinder on Lift 4 that was good.

Daily Monitoring Summary

Date: 4-16-08 S M T (W) T F S

Summary of Surveyor's Activities: 2 surveyors came today to check some grade for Earnhardt grading.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

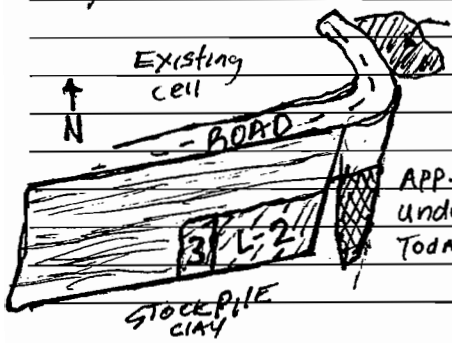
Daily Monitoring Summary

Date: April 17, 2008 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 43 @ AM High: 79 @ PM
Cloud Cover: CLEAR Precipitation: NONE Wind: 5-10 MPH West

ACC Personnel On-Site: BEN McFAY

Summary of Construction Progress: The Earnhardt Grading Crew are working where they left off yesterday. They working on structural fill and stock piling clay. They finished Lift 2 to the East Edge, south half. They moved a Komatsu 300 trackhoe to the East of Cell A around 1200 hours. They are undercutting and removing unsuitables where the new gravel road will go. They hauled the unsuitables to East of existing Road North of the new cell. They had a load count of 73 coming from the unsuitables.



Equipment USED:
4- D6 Dozers 9- 740 CAT Trucks
2- 330 CAT Trackhoes
1- 345 CAT " "
1- 300 Komatsu " "
1- 815 CAT compactor
1- 5500 HydroForce Watertruck

ACC Activities and Test Results: I monitored the construction progress Noted Above. I was able to get 11 Nuclear density/moisture test, and one Drive cylinder on Structural Fill. All test came out good. Also I checked the undercut. We Proof rolled area with 740 CAT truck Loaded and it did not give. I Checked the stock pile clay Material and It looks good.

Daily Monitoring Summary

Date: 4-17-08 S M T W (T) F S

Summary of Surveyor's Activities: NONE

Summary of Problems and Resolutions: NONE

Summary of Meetings and Discussions Held: NONE

Summary of Health and Safety Issues: NONE

Submitted by: _____
ACC Site Resident Manager

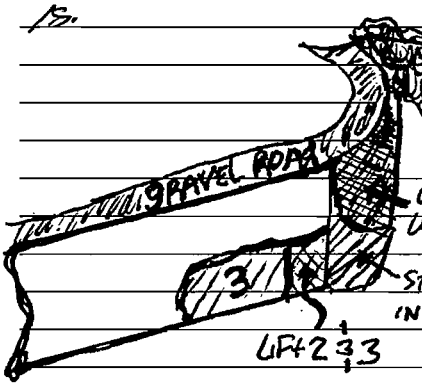
Daily Monitoring Summary

Date: April 18, 2008 S M T W T (F) S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 53 @ AM High: 81 @ PM
Cloud Cover: Mostly Sunny Precipitation: _____ Wind: 5-10- southwest

ACC Personnel On-Site: Ben McKay

Summary of Construction Progress: The Earnhardt Grading crew picked up progress where they left yesterday. They've stock pilling clay, spreading structural fill, and undercutting unsuitables. They're still hauling the unsuitables North East of cell. They also put Lift one structural down and compacted where the undercut is.



Equipment used
4-CAT D6 Dozers
2-CAT 330 Trackhoes
1-CAT 345 " "
1-Komatsu 300 " "
1-815 compactor
1-5500 Hydroforce W/Aker truck
1-CAT Motorgrader
9-CAT 740 trucks

ACC Activities and Test Results: I Monitored the construction activities Noted Above This morning I got 3 Nuclear Density/moisture Test to complete this run of Lift 2. The test were good. I also got A Drive cylinder on Lift 2 Structural that was good. After they finished L-3, I got 8 nuclear Density/moisture test. All test passed. I also tested the fill at the under cut. They were also good. There were 4 Nuclear Density/moisture test outside of the cell Lift one undercut.

Daily Monitoring Summary

Date: 4-18-08 S M T W T (F) S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: I spoke with Wilson (superintendent) about his plans tomorrow, he said he should be done with the undercutting today. He would continue with structural fill and stock piling clays. He would also put in the French Drain outside of the cell on the west berm.

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

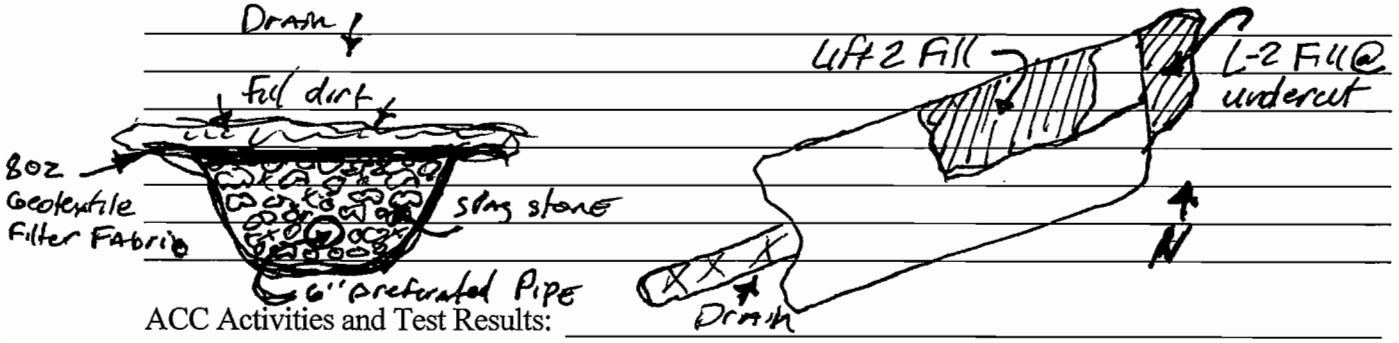
Daily Monitoring Summary

Date: April 19, 2008 S M T W T F (S)

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 53 @ Am High: 74 @ pm
Cloud Cover: Mostly Cloudy Precipitation: Light shower 0.06" Wind: South 5-10 mph

ACC Personnel On-Site: Ben McFay.

Summary of Construction Progress: The Earthcraft Grading Crew are working on Structural fill and stock piling clay. They are filling East to west on the North SIDE of cell. They also installed a French Drain Ditch on the west Berm outside of cell. They hauled Materials for fill and stock Pile from the Borrow pit. They used A Motor grader to smooth the cell.



ACC Activities and Test Results:

I monitored the construction activity noted above. I was monitoring the installation of the Drain @ west Berm. I checked the materials and took pictures of process. The Job was perform good. I also tested the fill area completed. I got 7 Nuclear Density/moisture test and one drive cylinder. The test were good.

Daily Monitoring Summary

Date: 4-19-2008 S M T W T F (S)

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

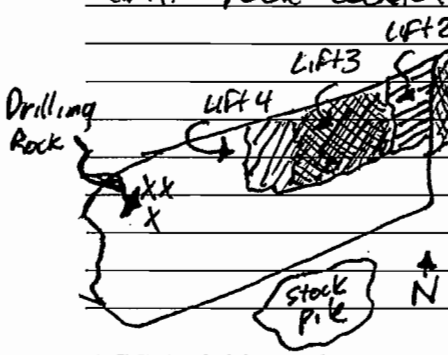
Daily Monitoring Summary

Date: April 21, 2008 S (M) T W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 54 @ AM High: 69 @ PM
Cloud Cover: overcast Precipitation: _____ Wind: 5-10 mph North

ACC Personnel On-Site: Ben McKay

Summary of Construction Progress: The Earthardt Grading Crew continues to stock pile clay material and process structural fill. They completed About 1.5 Acres to finish LIFT 2 in the North East corner, They Also completed Lift 3 Along the North going East. Approximatly 2.5 Acres. They SMOOTH out the fill with their motorgrader. Then they started on Lift 4. There is A drilling crew here to drill rock located in the cell limits.



Equipment Used
3- D6 Dozers
1- Komatsu 300 TrackHoe
1- 345 CAT TrackHoe
2- 330 CAT " "
9- CAT 8740 Trucks
1- CAT Motograder
1- CAT 815 compactor
1- CAT 5500 water truck

ACC Activities and Test Results: I monitored the progress Noted Above. I Also was Able to get 15 Nuclear density/moisture test. they were All good. Also I took A Drive Cylinder test. it was good Also.

Daily Monitoring Summary

Date: 4-21-08 S (M) T W T F S

Summary of Surveyor's Activities: There was one guy with the survey crew. He was working with the Drilling crew checking depth in the rock.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: Ben McDo
ACC Site Resident Manager

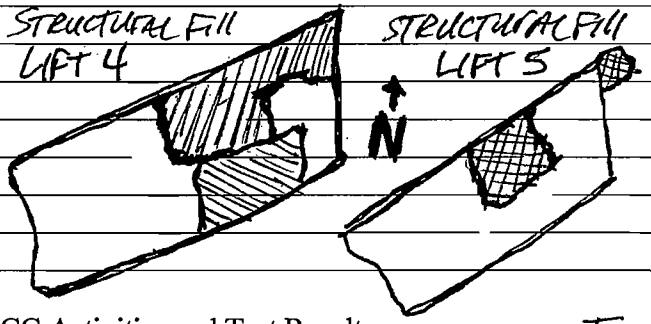
Daily Monitoring Summary

Date: April 22, 2008 S M (T) W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 54 @ AM High: 68 @ PM
Cloud Cover: Cloudy Precipitation: 0.03" Light Drizzle Wind: 10-15 NE

ACC Personnel On-Site: Ben McFarland

Summary of Construction Progress: The Earnhardt Grading crew continued to stock pile clay material and run Structural Fill. The Drilling crew is here again today drilling NO rock located within the cell limits. Earnhardt is also shaping the area East of the new gravel road up. There using a motorgrader to smooth the cell as they go. They also put another D6 Dozer spreading Structural Fill around 1100.



Equipment Used:
1 - Motorgrader CAT
4 - D6 Dozers
9 - CAT 740 Trucks
2 - CAT 330 Trackhoes
1 - Komatsu 300 II
1 - CAT 815 Compactor
1 - CAT 5500 Water Truck

ACC Activities and Test Results: I monitored the construction progress noted above. I also was able to get 14 Nukes Density / moisture test on Lifts 4 and 5. Also got 1 Drive cylinder. All test passed.

Daily Monitoring Summary

Date: 4-22-08 S M (T) W T F S

Summary of Surveyor's Activities: There is one Surveyor here working with the Drilling Crew giving Depth checks.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

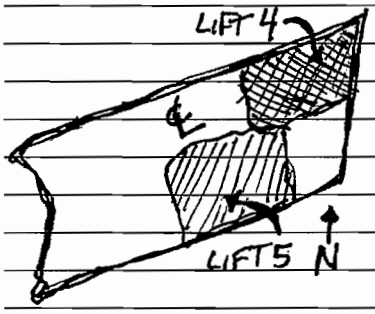
Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

Date: April 23, 2008 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 54 @ AM High: 75 @ PM
Cloud Cover: AM mostly cloudy PM Precipitation: None Wind: 5-10 mph NE
ACC Personnel On-Site: Ben McFry

Summary of Construction Progress: The Earnhardt Grading crew started this morning where they left off yesterday. They're working on Lift 4 structural fill. The Drilling crew is here again today Drilling the rock roots in the cell limits. The crew finished Lift 4, and approximately 2 acres of Lift 5.



Equipment Used.
3 - CAT D6 Dozers
3 - CAT Trackhoes (330, 345)
9 - CAT 740 trucks
1 - CAT 815 compactor
1 - CAT Motorgrader
1 - CAT 5500 Water truck

ACC Activities and Test Results: I monitored the construction activity Noted above. I was able to get 21 Nuclear Density/moisture Test, and 1 Drive cylinder. All test passed. I also got 1 bucket of clay material, And 5 Bags of structural fill for laboratory test.

Daily Monitoring Summary

Date: 4-23-08 S M T (W) T F S

Summary of Surveyor's Activities: There is one surveyor here working with the Drilling crew checking DEPTH. He also SET SOME grade stakes in center of the cell.

Summary of Problems and Resolutions: NONE

Summary of Meetings and Discussions Held: NONE

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

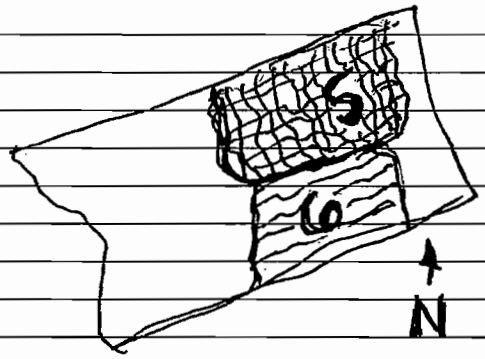
Daily Monitoring Summary

Date: April 24, 2008 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 55 @ AM High: 79 @ PM
Cloud Cover: Mostly Sunny Precipitation: None Wind: 5-10 mph E

ACC Personnel On-Site: Ben McKay

Summary of Construction Progress: The Earnhardt Grading Crew continues with Lift-5 Structural fill. The Drilling Crew is also here again Drilling the rock located with in the Cell. Earnhardt was able to finish L-5 and got Approximatly 2 acres of L-6 complete.



Equipment Used
3-CAT D6 DOZERS
9 CAT 740 TRUCKS
2 CAT 330 TRACKHOES
1 CAT 345 " "
1 CAT 815 COMPACTOR
1 CAT MOTORGRADER
1 CAT 5560 WATERTRUCK

ACC Activities and Test Results: I Monitored the construction progress Noted Above. I was able to get 30 Nuclear density/moisture test and 1 Drive cylinder. Everything looks good

Daily Monitoring Summary

Date: 4-24-08 S M T W (T) F S

Summary of Surveyor's Activities: There was one surveyor on site working with the Drilling crew checking depths. He also staked out the outside toe of slop on the East & West Berms.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

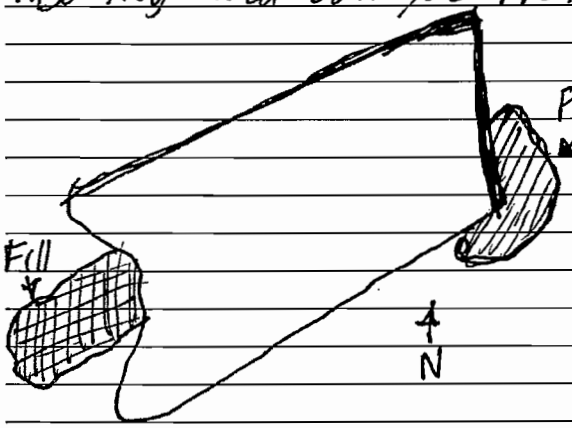
Daily Monitoring Summary

Date: April 25, 2008 S M T W T (F) S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 58 @ am High: 90 @ pm
Cloud Cover: Mostly sunny Precipitation: None Wind: SW 5-10mph

ACC Personnel On-Site: Ben McFrey

Summary of Construction Progress: The Earnhardt Grading crew continued to work on structural fill. They filled some outside of cell where the new access road will be located. Also they filled over pvc French drain at west/center cell.



Equipment used.

3 D6 CAT Dozers
3 CAT 330/345 Trackhoes
9 CAT 740 trucks.
1 CAT 815 compactor
1 CAT MOTORGRADER
1 CAT 5500 Water truck.

ACC Activities and Test Results: I monitored the construction Activity noted above. I also was able to get 18 Nuclear Density/moisture test, and one Drive Cylinder. The test were good.

Daily Monitoring Summary

Date: 4-25-08 S M T W T F S

Summary of Surveyor's Activities: There was one surveyor getting grade shots around the rock area.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

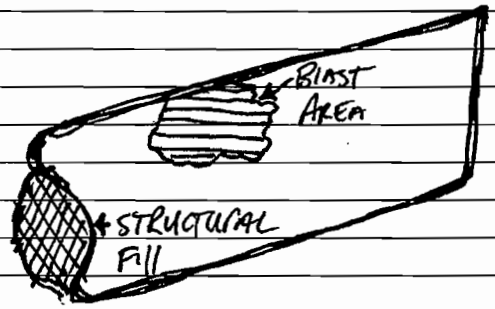
Daily Monitoring Summary

Date: April 30, 2008 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 37 @ AM High: 68 @ PM
Cloud Cover: CLEAR Precipitation: NONE Wind: 5-10 MPH N

ACC Personnel On-Site: BEN McFRY 1.4 inches over weekend. No work monday or tuesday.

Summary of Construction Progress: The Earnhardt Grading crew completed 3 cuts Along the west Berm, structural fill. They did not work much in the cell due to the Heavy rains over the weekend left the grounds soft and wet. The Drilling crew had around 12 men working. They Blasted the rock at 300pm.



Earnhardt Equipment used
3 - Dic dozers
4 - 740 CAT trucks
1 - Komatsu 300 trackhoe
1 - CAT 330 TRACKOE
1 - CAT 815 compactor
1 - CAT MOTORGRADER.

ACC Activities and Test Results: I monitored the construction progress noted above.

I was able to get 13 Nuclear Density / moisture test and one Drive cylinder. All the test were good.

Daily Monitoring Summary

Date: 4-30-08 S M T (W) T F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: Ben Mello

ACC Site Resident Manager

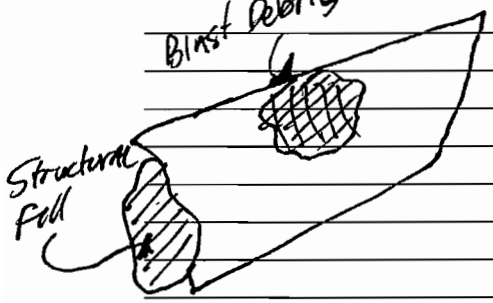
Daily Monitoring Summary

Date: MAY 1, 2008 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 48 @ AM High: 78 @ PM
Cloud Cover: Mostly Sunny Precipitation: None Wind: 10-15 MPH SE

ACC Personnel On-Site: Ben McKey

Summary of Construction Progress: The Earnhardt Grading CREW worked on structural fill today. They completed 3 lifts along the west Berm as well as Removing the Blast Debris and filling in the Holes. They hauled the Rock Debris to NE of cell.



Equipment USED.
6- CAT 740 Trucks
1- Komatsu 300 Track Hoe
2- CAT 330 " "
1- 815 CAT compactor
1- 5550 Water truck
4- CAT D6 Dozers
1- CAT motor grader

ACC Activities and Test Results: I Monitored the construction progress Noted Above.

I also was able to get 14 Nuclear Density/Moisture test and 1 Grout cylinder. All test passed except 1 Area. Earnhardt reworked the Area and I tested again And it passed. Test Failed Due to Lack of compaction.

Daily Monitoring Summary

Date: 5/1-08 S M T W (T) F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

Date: May 2, 2008 S M T W T (F) S

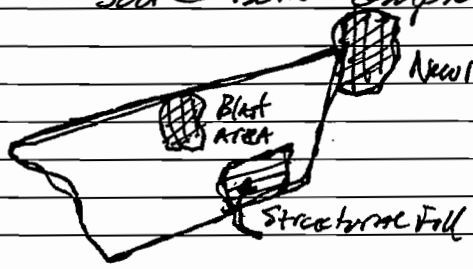
Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 53 @ AM High: 81 @ PM
Cloud Cover: Mostly Sunny Precipitation: None Wind: 10-15 SW

ACC Personnel On-Site: Ben McFry

Summary of Construction Progress: The Earnhardt Grading crew worked on structural fill.

The Drilling crew came and worked today. They shot the Rock in the cell as planed.

Earnhardt got approximately 6 acres of fill along the South Berm completed. They also Filled some in the New Road.



Equipment used:
4 CAT D6 Dozers
3 - Trackhoes
1 - 815 compactor
9 - CAT 740 Trucks
1 motor grader.

ACC Activities and Test Results: I monitored the construction progress noted Above.

I was able to get 14 Nuclear Density / moisture test and one Sand cylinder test. All test were good.

Daily Monitoring Summary

Date: May 2, 2008 S M T W T (F) S

Summary of Surveyor's Activities: Earthwork equipt with GPS staked out toe of slope w/ grade on East edge of cell

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: [signature]
ACC Site Resident Manager

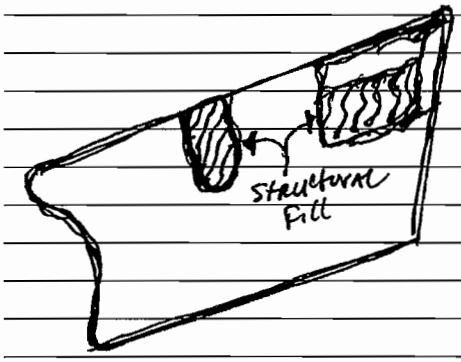
Daily Monitoring Summary

Date: May 5, 2008 S M T W T F (S)

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 59 @ AM High: 79 @ PM
Cloud Cover: partly cloudy. Precipitation: 50% chance (NO rain while on site) Wind: SW 5-10mph

ACC Personnel On-Site: Ben Mabry.

Summary of Construction Progress: Earnhardt Grading continues to work on structural fill. They're filling some at the blast area and also on the east side of cell.



Equipment Used.

3 D6 CAT Dozers
9 CAT 740 TRUCKS
1 815 CAT COMPACTOR
1 CAT MOTOR GRADER
2 CAT 330 TRACKHOES
1 CAT WATER TRUCK.

ACC Activities and Test Results: I Monitored the construction Activity noted above. I also was able to get 6 Nuclear Density/moisture test and 1 Sand cylinder.

All test Passed.

Daily Monitoring Summary

Date: 5-3-08 S M T W T F (S)

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

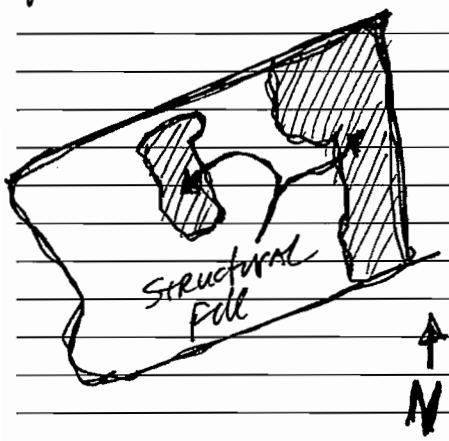
Daily Monitoring Summary

Date: May 5, 2008 S (M) T W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 54 @ AM High: 79 @ PM
Cloud Cover: Mostly Sunny Precipitation: None Wind: NE 5-10 mph

ACC Personnel On-Site: Ben McFey

Summary of Construction Progress: Earthmart Grading continues with Structural Fill and Removing Blast Debris. They Filled some of the Holes from the Blast Area. They also filled at the East side of cell.



Equipment used
4 D6 CAT Dozers
3- CAT Trackhoes 330
2- CAT 815 Compactors
9- CAT 740 Trucks
1- CAT motorgrader
1- CAT Water truck.

ACC Activities and Test Results: I Monitored the construction progress Noted Above.

I was able to get 33 Nuclear Density/moisture test and 1 Proctor cylinder test. All test - Good.

Daily Monitoring Summary

Date: 5-5-08 S (M) T W T F S

Summary of Surveyor's Activities: NONE

Summary of Problems and Resolutions: NONE

Summary of Meetings and Discussions Held: NONE

Summary of Health and Safety Issues: NONE

Submitted by: _____
ACC Site Resident Manager

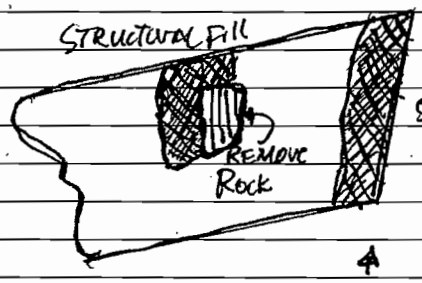
Daily Monitoring Summary

Date: MAY 6, 2008 S M (T) W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 59 @ AM High: 80 @ PM
Cloud Cover: Mostly sunny Precipitation: NONE Wind: SE 5-10MPH

ACC Personnel On-Site: BEN McFRY

Summary of Construction Progress: The Earnhardt Grading Crew continues to work on structural Fill and removing the Rock Debris from the Blast AREA. Theyre constructing the Burm on the EAST SIDE of cell



Equipment Used
4- CAT D6 DOZERS
9- CAT 740 TRUCKS
3- CAT 330 TRACK HOES
2- CAT 815 COMPACTORS
1- CAT MOTOR GRADER
1- CAT 5500 WATER TRUCK

ACC Activities and Test Results:

I monitored the construction progress Noted above.

I ALSO WAS ABLE TO get 22 Nuclear Density/moisture test And ONE Drive Cylinder test.

All test Passed.

Daily Monitoring Summary

Date: 5-6-08 S M (T) W T F S

Summary of Surveyor's Activities: NONE

Summary of Problems and Resolutions: NONE

Summary of Meetings and Discussions Held: NONE

Summary of Health and Safety Issues: NONE

Submitted by: _____
ACC Site Resident Manager

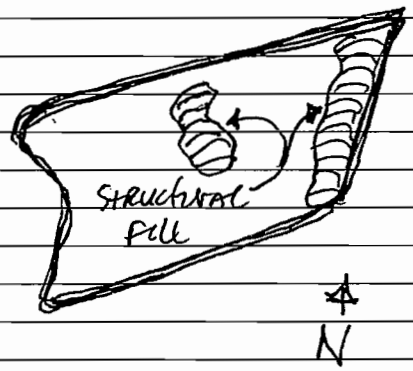
Daily Monitoring Summary

Date: May 7, 2008 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 59 @ AM High: 83 @ PM
Cloud Cover: Mostly Sunny Precipitation: None Wind: 5-15 SE

ACC Personnel On-Site: Ben McKay

Summary of Construction Progress: Earnhardt Grading continues to work on structural fill. They completed the removal of Blast Debris.
They're filling on the East Berm and the Blast area.



Equipment used
4 CAT D6 DOZERS
3 CAT 330 TRACKHOES
2 CAT 815 COMPACTORS
9 - CAT 740 TRUCKS
1 - CAT WATERTRUCK
1 - CAT MOTORGRADER.

ACC Activities and Test Results: I monitored the Progress Noted above.
I also was able to get 16 Nuclear Density/moisture test and 1 Ocore cylinder test.
All test Passed.

Daily Monitoring Summary

Date: 5-7-0 S M T (W) T F S

Summary of Surveyor's Activities: Two Surveyors came out and DID 50' grade stakes.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: [signature]
ACC Site Resident Manager

Daily Monitoring Summary

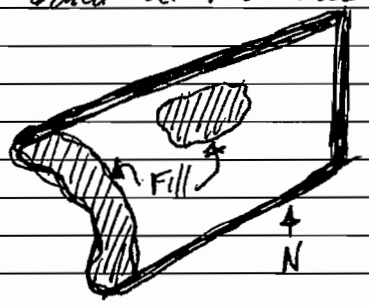
Date: MAY 8, 2008 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 59 @ AM High: 79 @ PM
Cloud Cover: OVERCAST Precipitation: LIGHT AM SHOWER Wind: SE 5 TO 10 MPH

ACC Personnel On-Site: BEN McFALL

Summary of Construction Progress: THE EARNHARDT GRADING CREW CONTINUE TO WORK ON STRUCTURAL FILL. THEY ALSO WORKED ON FINAL GRADING.

THEY COMPLETED THE FILL IN THE CELL FLOOR AND SIKED AT THE WEST BERM.



EQUIPMENT USED
1 CAT 623 PAN LOADER
3 CAT DOZERS 1 CAT WATER TRUCK
3 CAT 330 TRACKHOES
2 CAT MOTORGRADERS
8 CAT 740 TRUCKS
2 CAT 815 COMPACTORS
1 CAT SMOOTH DRUM

ACC Activities and Test Results: I MONITORED THE CONSTRUCTION ACTIVITY NOTED ABOVE.

I ALSO WAS ABLE TO GET 26 NUCLEAR DENSITY/MOISTURE TEST AND 1 PROVE CYLINDER TEST.

ALL TEST PASSED.

Daily Monitoring Summary

Date: 5.8.08 S M T W (T) F S

Summary of Surveyor's Activities: Two surveyors came to finish. five 50' grade stakes.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

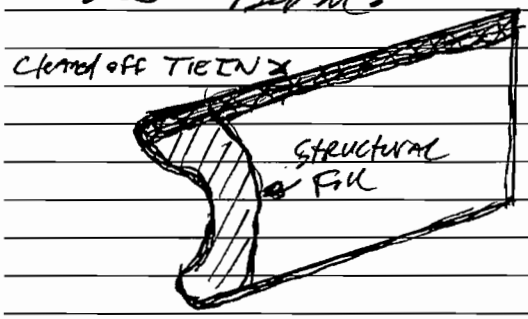
Date: MAY 13, 2008 S M (T) W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 49 @ Avg High: 78 @ PM
Cloud Cover: Mostly Sunny Precipitation: None Wind: SW 5-10mpk

ACC Personnel On-Site: BEN McFRY 7 tenths Sunday 4 tenths on FRIDAY

Summary of Construction Progress: Ernenhardt Grading Did Some Final grading and Structural Fill Today. They Also cleaned off Existing liner from cell 2F at the Tie in.

The structural fill was Performed at the west Berm.



Equipment used.
4-CAT 740 trucks
2-CAT 330 TrackHoes
1-Volvo TrackHoe
2-CAT Motorgrader
1-CAT 533 Smooth Drum
1-CAT 815 Compactor.
2-CAT Dia Dozers

ACC Activities and Test Results: I monitored the construction activities Niled Above.

I was able to get 15 Nuclear Density/moisture Test and 1 Proctor cylinder on structural Fill. All test Passed.

I Also took A Bucket sample of protective cover for Laboratory test.

Daily Monitoring Summary

Date: 5-13-08 S M (T) W T F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

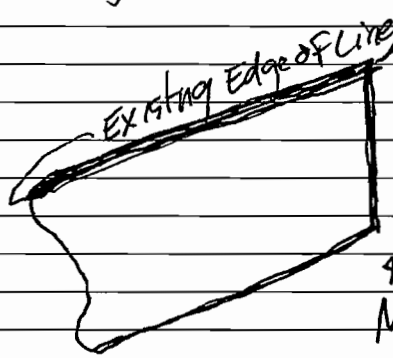
Daily Monitoring Summary

Date: May 14, 2008 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 58 @ AM High: 79 @ PM
Cloud Cover: Cloudy Precipitation: None Wind: 10-15 mphS

ACC Personnel On-Site: Ben McFey

Summary of Construction Progress: Earnhardt Grading continues to final grade and clean of edge of existing liner at the end.



Equipment Used.
2-CAT MOTORGRADERS
1-CAT 623 PAN LOADER
2-CAT D6 DOZERS
1-VOLVO TRACKHOE
2-CAT 330 TRACKHOES
1-CAT 533 SMOOTH DRUM
4-CAT 740 TRUCKS.

ACC Activities and Test Results: I monitored the construction progress noted above.

No Test were made.

Daily Monitoring Summary

Date: 5-14-08 S M T (W) T F S

Summary of Surveyor's Activities: NONE

Summary of Problems and Resolutions: NONE

Summary of Meetings and Discussions Held: NONE

Summary of Health and Safety Issues: NONE

Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

Date: May 15, 2008 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 54 @ AM High: 79 @ PM
Cloud Cover: Mostly Sunny Precipitation: .3" Late Afternoon Wind: 5-10 mph SW

ACC Personnel On-Site: Ben McKay

Summary of Construction Progress: Earnhardt Grading finished final grading the structural fill subgrade.

Equipment USED.

3- CAT D6 Dozers
2- CAT 330 TRACKHOES
3- CAT 740 TRUCKS
2- CAT MOTORGRADERS
1- CAT 623 PAN LOADER
1- CAT 533 SMOOTH DRUM

going to start clay 1st thing Monday 5-19.

ACC Activities and Test Results: I monitored the activities Noted above.

No Test were Needed today.

Daily Monitoring Summary

Date: 5-15-2008 S M T W (T) F S

Summary of Surveyor's Activities: 2 surveyors came today to certify grid points in the cell.

They certified 90% of the cell except along the the End.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

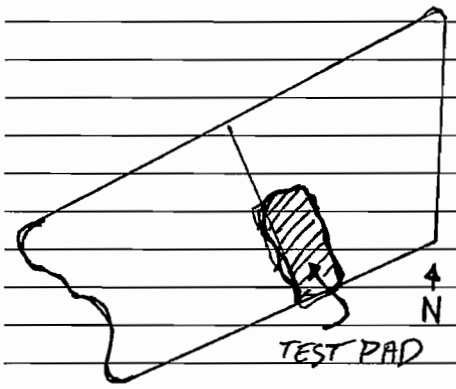
Date: May 19, 2008 S (M) T W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 58 @ AM High: 80 @ PM
Cloud Cover: Clear Precipitation: None Wind: 10-15 mph W

ACC Personnel On-Site: Ben McFry, Larry Freeman, Tim Schriber

Summary of Construction Progress: The Earnhardt Grading crew worked on Lift-1 clay. They got approximatly ✓ Acres processed today.

They also completed 3 Lifts on the Test pad.
Part of the crew worked on striping Topsoil in the Borrow Pit.



Equipment used.
4- CAT D6 Dozers
3- CAT 330 Trackhoes
2-CAT 815 compactors
7-CAT 740 Trucks
1- CAT Motorgrader
1- Hydroforce 5500 Water truck
1- 533 Smooth Drum
1- Komatsu 300 Trackhoe

ACC Activities and Test Results: We Monitured the Construction Progress Noted Above.

We also were able to get 11 Nuclear Density/moisture test on Lift-1. Also we got 2 Shelby Tubes on Lift-1 for Labatory test. All test passed.

For the test pad area we were able to get.

6 - Nuclear Density/moisture test
1 - Drive cylinder
2 - Shelby Tubes (Lab Test)
2 - Bucket Samples (Lab Test)

Daily Monitoring Summary

Date: May 19, 2008 S (M) T W T F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

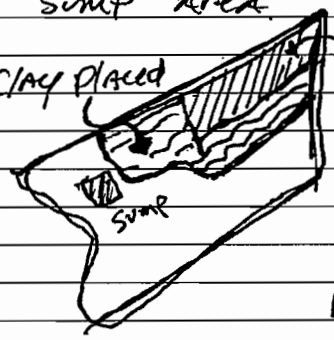
Date: May 20, 2008 S M (T) W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 56 @ AM High: 81 @ PM
Cloud Cover: Mostly cloudy Precipitation: Late Afternoon T-storm Showers / HAIL Wind: 10-20 mph SW

ACC Personnel On-Site: BEN McFRY, LARRY FREEMAN, Tim Schreiber

Summary of Construction Progress: Earnhardt Grading continues with Lift ONE CLAY. They also finished Lift 3 in the test PAD. They were able to get approximately 3.5 Acres placed and 2 ACRES processed.

They also Dug out the West SUMP AREA.



Equipment Used.

7- CAT 740 trucks
4- CAT D6 Dozers
2- CAT 815 Compactors
3- CAT TRACKHOES 2@330 1@345
1- CAT 533 Smooth Drum
1- CAT MOTORGRADER
1- Volvo TRACKHOE

ACC Activities and Test Results: We monitored the construction progress noted Above.

Test 3 Samples

8- Nuclear Density / Moisture TEST
1- Drive cylinder test
2- SHELBY TUBE SAMPLES (LAB TEST)
1- Bucket Sample (Lab test)

Daily Monitoring Summary

Date: 5-20-08 S M (T) W T F S

Summary of Surveyor's Activities: Two Surveyors came to complete certification of the subgrade. They also staked out the west sump area.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

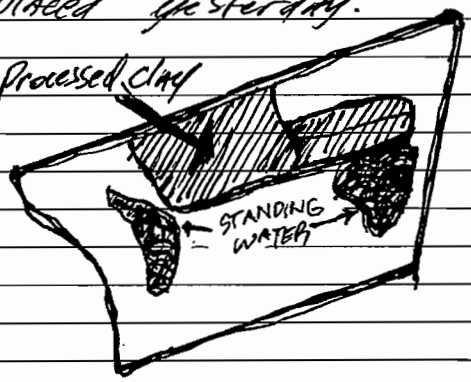
Submitted by: Ben McDaniel
ACC Site Resident Manager

Daily Monitoring Summary

Date: May 21, 2008 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 56 @ AM High: 77 @ PM
Cloud Cover: Partly Cloudy Precipitation: None today 1.5" yesterday Wind: 10-15 MPH W
ACC Personnel On-Site: Ben McFey, Larry Freeman

Summary of Construction Progress: Eaenhordt Grading Did Not Haul any dirt today. Only About half the crew worked. Because of the rain they had 3 pumps pumping Both Sump Areas They were Scraping / cleaning the roadways.
They did get to Finish processing the clay that was placed yesterday.



Equipment used.
3- 4" gas water pumps
1- Motorgrader CAT
1- 330 track hoe CAT
1- 815 compactor CAT
1- 533 CAT Smoothdrum

ACC Activities and Test Results: We Monitored the Activities noted Above. We check the construction limits to make Sure there were no major erosion problems. We didn't See any problems.
We Also were able to test the area processed. We got 20 Nuclear Density/Moisture Test and 1 Drive Cylinder test on the clay.
All test passed.
We Also got 6 Shelby tubes for LAB. test.

Daily Monitoring Summary

Date: May 21, 2008 S M T (W) T F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

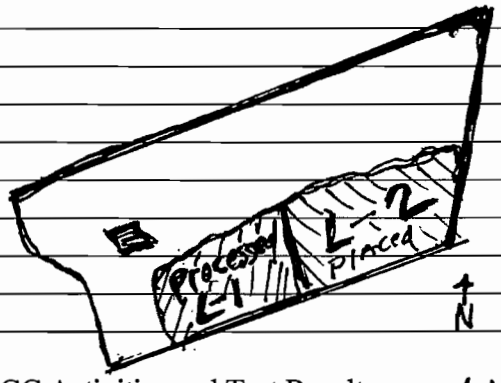
Daily Monitoring Summary

Date: MAY 22, 2008 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 57 @ AM High: 81 @ PM
Cloud Cover: Mostly SUNNY Precipitation: NONE Wind: 5-10 mph NW

ACC Personnel On-Site: BEN McFRY / LARRY FREEMAN.

Summary of Construction Progress: THE EARNHARDT GRADING CREW CONTINUES WITH LIFT 1 CLAY. THEY ARE HAULING FROM BOTH THE STOCK PILE AND THE BORROW PIT. THEY PLACED SOME OF L-2. THEY ALSO ARE CLEANING OUT UNSUITABLE SILL FROM THE SUMP AREA AND CONTINUE TO PUMP WATER. THEY COMPLETED GRADING THE WEST SUMP.



Equipment Used.
2- CAT 330 TRACKHOES
4-D6 CAT DOZERS
6-CAT 740 TRUCKS
1- VOLVO TRACKHOE
2-CAT 815 COMPACTORS
1-CAT 533 SMOOTH DRUM
2- GAS POWER WATER PUMPS
1-5500 WATER truck
1-CAT MOTOR GRADER
1-CAT 345 TRACKHOE

ACC Activities and Test Results: WE MONITORE THE CONSTRUCTION PROGRESS NOTED ABOVE.

WE WERE ABLE TO GET 10 NUCLEAR/DENSITY/MOISTURE TEST ON LIFT 1 PROCESSED CLAY, AND 1 DRIVE CYLINDER.

ALL TEST PASSED

WE SENT OFF 3 SHELBY TUBED & 4 GALLON BAGS OF CLAY TO THE LABORATORY FOR LAB TEST.

Daily Monitoring Summary

Date: May 22, 2008 S M T W (T) F S

Summary of Surveyor's Activities: Earnhardt Grading used their GPS Equipment to check grades at the sump area. Two surveyors also came out to stake out and certify the sump subgrade.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: Ben M

ACC Site Resident Manager

Daily Monitoring Summary

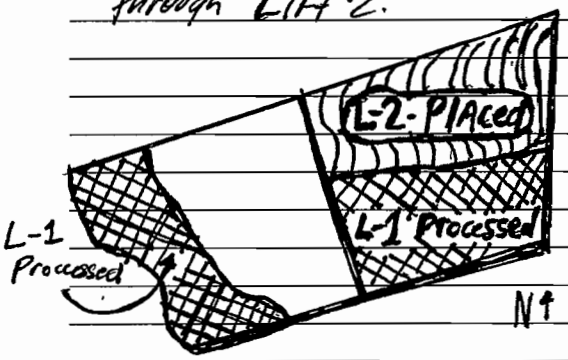
Date: MAY 23, 2008 S M T W T (F) S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 59 @ AM High: 82 @ PM
Cloud Cover: Mostly Cloudy Precipitation: Light rain (No Accumulation) Wind: 5-10 MPH NE

ACC Personnel On-Site: BEN McFey / LARRY FREEMAN

Summary of Construction Progress: THE EARNHARDT GRADING CREW CONTINUES WITH PLACING AND PROCESSING CLAY.

THEY GOT APPROXIMATELY 6 ACRES PROCESSED AND 5 ACRES PLACED. THEY COMPLETED L-1 CLAY AND ABOUT 1/4 THROUGH LIFT 2.



Equipment Used
4-CAT D6 DOZERS
6-CAT 740 TRUCKS
3-CAT 330 TRACKHOES
2-CAT 815 COMPACTORS
1-CAT 533 SMOOTH DRUM
1-5500 HYDROFORCE TRUCK

ACC Activities and Test Results: WE MONITORED THE CONSTRUCTION PROGRESS NOTED ABOVE.

WE WERE ABLE TO GET 28 NUCLEAR DENSITY/MOISTURE TEST, 1 DRIVE CYLINDER ON LIFTS 1 & 2,

ALL TEST PASSED.

ALSO WE TOOK 5 SHELBY TUBES FOR LAB TEST.

Daily Monitoring Summary

Date: May 23, 2008 S M T W T (F) S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: [signature]
ACC Site Resident Manager

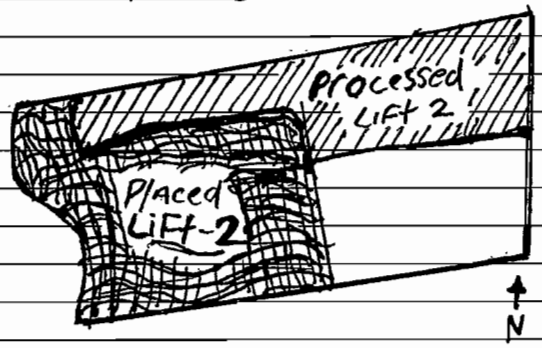
Daily Monitoring Summary

Date: May 26, 2008 S (M) T W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 60 @ AM High: 84 @ PM
Cloud Cover: Mostly Sunny Precipitation: None Wind: 5-10 mph SW

ACC Personnel On-Site: Ben McFry / Larry Freeman.

Summary of Construction Progress: The Earnhardt Grading Crew Continues to place and process Clay.
They were able to process approximately 3 acres of Lift 2 and place 6 acres approximately. That complete Lift-2 placement. They also cut back the rain flap on 2F and cleaned where the liner the in edge is.



Equipment used
4- CAT D6 Dozers
6- CAT 740 trucks
2- CAT 815 compactors
1- CAT 533 smooth Drum
1- 5500 Hydroforce Waterfruck
2- CAT 330 track Hoes
1- Volvo trackHoe
1- CAT Front end Loader
1- CAT Motorgrader

ACC Activities and Test Results: We monitored the construction progress Noted above.
We were able toget 15 Nuclear Density/ Moisture test. One Drive cylinder.
All test Passed.
Also we got 4 SHELBY TUBES And 1 Gallon Bags of clay - For LABATORY TEST.

Daily Monitoring Summary

Date: May 26, 2008 S (M) T W T F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: Ben McPhee
ACC Site Resident Manager

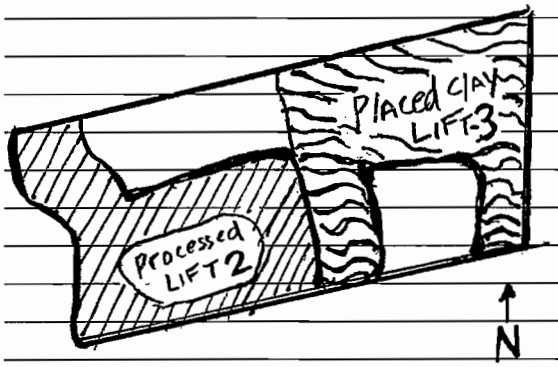
Daily Monitoring Summary

Date: May 27, 2008 S M (T) W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 63 @ AM High: 84 @ PM
Cloud Cover: AM mostly Sunny PM Precipitation: _____ Wind: 5-15 mph SW

ACC Personnel On-Site: BEN MCERY / LARRY FREEMAN

Summary of Construction Progress: The Earnhardt Grading crew picked up where they left off yesterday. They're placing Lift 3 Clay and processing as they go. They were able to process the rest of Lift 2, which was approximately 4.5 Acres. They were able to place approximately 5 Acres of Lift 3.



Equipment USED.
4-CAT D6 Dozers
2-CAT 330 TRACKHOES 1-VOLVO TRACKHOE
2-CAT MOTORGRADERS
2-CAT 815 COMPACTORS
1-CAT 533 Smooth DRUM
1-5500 HydroForce Water truck
7-CAT 740 TRUCKS
1-CAT Front End Loader

ACC Activities and Test Results: We monitored the construction activity Noted Above.
We were able to get 32 Nuclear Density/moisture test and 1 Drive cylinder.
All test Passed.
We Also get 2-gallon Bags samples And 7-Shelby tubes For Laboratory test.

Daily Monitoring Summary

Date: May 27, 2008 S M (T) W T F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: Ben McKay

ACC Site Resident Manager

Daily Monitoring Summary

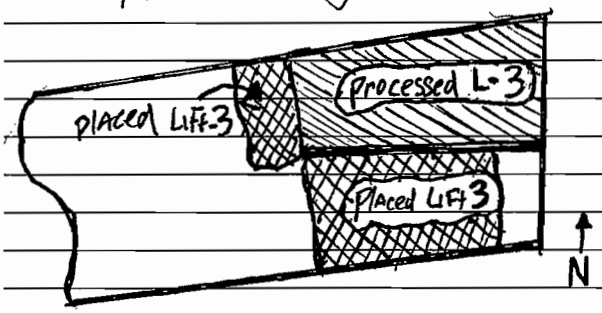
Date: MAY 28, 2008 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 59 @ AM High: 78 @ PM
Cloud Cover: OVERCAST Precipitation: LIGHT RAIN Wind: 5-10 MPH NE

ACC Personnel On-Site: BEN McFRY / LARRY FREEMAN

STARTED TO RAIN HARDER @ 12:45 HAD TO STOP WORK.

Summary of Construction Progress: The EARNHARDT GRADING CREW WORKED ON PLACING - AND PROCESSING LIFT 3 CLAY. THEY COMPLETED PLACING LIFT 3 AT THE SOUTH EAST QUATER AND STARTED THE NORTH WEST QUARTER. THEY PLACED APPROXIMATLY 3.5 ACRES TODAY. THEY COMPLETED PROCESSING THE NORTH EAST QUARTER WHICH IS APPROXIMATLY 4 ACRES.



EQUIPMENT USED
- 3-D6 CAT DOZERS
2-CAT 330 TRACKHOES
2-CAT 815 COMPACTORS
1-CAT 533 SMOOTH DRUM
3-CAT 740 TRUCKS
1-CAT MOTORGRADER
1-CAT FRONTEND LOADER.

ACC Activities and Test Results: WE MONITORED THE CONSTRUCTION PROGRESS NOTED ABOVE.

WE WERE ABLE TO GET 20 NUCLEAR DENSITY/MOISTURE TEST AND 1 PEIVE CYLINDER ON LIFT-3.

ALL TEST PASSED.

WE ALSO GOT 4-SHELBY TUBES FOR LAB. TEST.

Daily Monitoring Summary

Date: May 28, 2008 S M T (W) T F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: The Rain was too much around 1pm. We Had to Stop working.

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

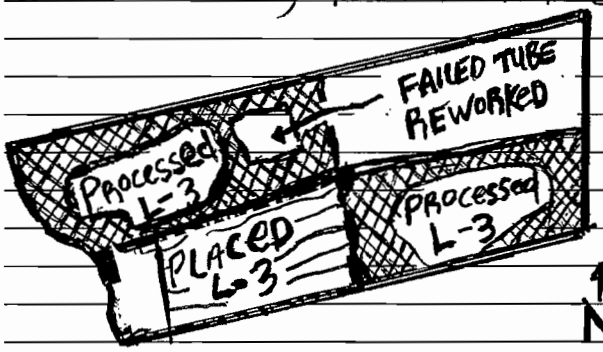
Submitted by: Ben McKay.
ACC Site Resident Manager

Daily Monitoring Summary

Date: May 29, 2008 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 58 @ AM High: 73 @ PM
Cloud Cover: Mostly Cloudy Precipitation: 20% chance Wind: 5-10 mph E
RAINED 7/10 yesterday
ACC Personnel On-Site: Ben McFay / Carey Freeman

Summary of Construction Progress: The Earnhardt Grading Crew continues with Lift-3 Clay. They had to pump water at both ends of the cell at the sump AREAS. They were able to place approximatly 5 acres. They also processed approximatly 5 acres. They also reworked an area where 1 shelby tube failed Lab test for permeability.



Equipment Used
4-CAT D6 DOZERS
6-CAT 740 TRUCKS
2-CAT 330 TRACKHOES
1-CAT SMooth Drum
2-CAT 815 COMPACTORS
1-5500 HYDROFORCE WATER TRUCK
2-CAT MOTORGRADERS

ACC Activities and Test Results: We monitored the construction Activity noted Above.

This morning we took 2 Bags of clay in L-3 that was placed Before it rain yesterday, to do some Moisture test. We were worried the Material would be too wet, but its Not bad. It should dry out quick.

We were Able to get 30 Nuclear density/moisture test, And 1 Drive cylinder. All test passed

We Also got 8 SHELBY TUBES on L-3 and 1 Retest Shelby Tube on L-2 for Lab Test.

Daily Monitoring Summary

Date: May 29, 2008 S M T W (T) F S

Summary of Surveyor's Activities: None

Summary of Problems and Resolutions: Rained 1 Tenths yesterday. EQ had to pump some water out of the cell. Also had to rework an area for a failed tube ST-22.

None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: [signature]

ACC Site Resident Manager

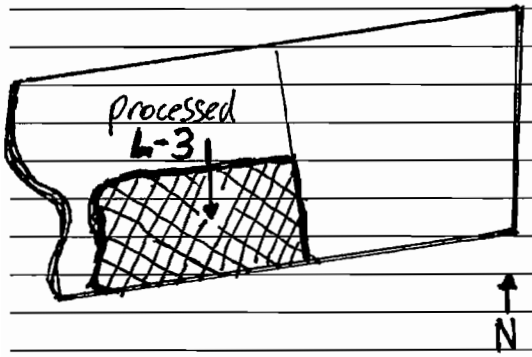
Daily Monitoring Summary

Date: May 30, 2008 S M T W T (F) S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 65 @ Am High: 84 @ PM
Cloud Cover: Mostly Sunny Precipitation: None Wind: 5-10 mph SE

ACC Personnel On-Site: Ben McFay / Larry Freeman

Summary of Construction Progress: Earnhardt Grading Crew continues with Lift-3 Clay. They didn't haul any clay today. They just processed what was already placed. They completed processing everything on the floor of the cell and began to final grade.



Equipment used:

2-CAT D6 Dozers
2-CAT Motor Graders
1-CAT 815 compactor
1-5500 Hydroforce Watertruck
1-533 CAT Smooth Drum.

ACC Activities and Test Results: We Monitore The construction Progress Noted Above.

We were able to get 10 Nuclear Density/Moisture test to finish up the floor on Lift-3. We also got 1 Drive Cylinder.

All Test Passed.

We got 2 Shelby TUBES for Labatory Test.

Daily Monitoring Summary

Date: May 30, 2008 S M T W T (F) S

Summary of Surveyor's Activities: Two Surveyors came today to check & stake grades on Clamp.

Summary of Problems and Resolutions: None

Summary of Meetings and Discussions Held: None

Summary of Health and Safety Issues: None

Submitted by: _____
ACC Site Resident Manager

Daily Monitoring Summary

Date: 6/2/08 S (M) T W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 63 @ AM High: 85 @ PM
Cloud Cover: P. Cloudy Precipitation: Ø Wind: Ø→5

ACC Personnel On-Site: LARRY FREEMAN

Summary of Construction Progress: FINE GRADING BEGAN ON THE CELL FLOOR. THE LAST OF CLAY LIFT 3 WAS PLACED IN THE SOUTHWEST CORNER. THE CLAY WAS PROCESSED BUT NOT COMPACTED WITH THE SMOOTH DRUM. CLAY PLACEMENT WAS STARTED ON THE ROAD ON TOP OF THE WEST BERM. THE CLAY IS PLACED IN COMPACTED LIFTS.

ACC Activities and Test Results: MONITORED THE ABOVE ACTIVITIES. NO TESTING WAS PERFORMED ON LIFT 3 OF CLAY. SPOT CHECKS WERE TAKEN ON THE WEST BERM ROAD TO ASSURE 95% COMPACTION. THE CHECKS WERE NOT RECORDED.

Daily Monitoring Summary

Date: 6/2/08 S (M) T W T F S

Summary of Surveyor's Activities: SURVEYORS ARE ON SITE PLACING GRADE STAKES FOR FINE GRADING OF CLAY.

Summary of Problems and Resolutions:

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by: Larry Freeman
ACC Site Resident Manager

Daily Monitoring Summary

Date: 6/3/08 S M (T) W T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 70° @ AM High: 86° @ PM
Cloud Cover: P. CLOUDY Precipitation: Ø Wind: Ø → 10

ACC Personnel On-Site: LARRY FREEMAN

Summary of Construction Progress: THE SOUTHWEST CORNER OF CLAY LIFT 3 IS ROLLED WITH THE SMOOTH DRUM. GRADING OF THE CLAY SURFACE CONTINUES. CLAY PLACEMENT IN COMPACTED LIFTS IS COMPLETED ON TOP OF THE WEST BERM.

ACC Activities and Test Results: MONITORED THE ABOVE ACTIVITIES. PASSING DENSITY TESTS CL-185, 186 & 187 COMPLETED THE DENSITY TESTS IN CELL 2G. STONE SAMPLE G-2 WAS OBTAINED FROM THE MARTIN MARIETTA QUARRY AND SENT TO THE LAB FOR TESTING. SPOT CHECKS WERE MADE ON THE WEST BERM TO ASSURE 95% COMPACTION IS MAINTAINED.

Daily Monitoring Summary

Date: 6/3/08 S M (T) W T F S

Summary of Surveyor's Activities: SURVEYORS ARE ON SITE CHECKING CLAY GRADES AND PLACING GRADE STAKES.

Summary of Problems and Resolutions:

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by: Amy Freeman
ACC Site Resident Manager

Daily Monitoring Summary

Date: 6/4/08 S M T (W) T F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 71° @ AM High: 94° @ PM
Cloud Cover: CLEAR Precipitation: Ø Wind: Ø→10

ACC Personnel On-Site: LARRY FREEMAN

Summary of Construction Progress: FINE GRADING OF THE CLAY IS COMPLETED. A SMOOTH DRUM ROLLED THE SURFACE AFTER BEING GRADED WITH 2 CAT MOTOR GRADERS.
- SCRAP GEOCOMPOSITE IS PLACED OVER THE TIE-IN TO PROTECT IT FROM SILT IN THE EVENT OF RAIN.

ACC Activities and Test Results: MONITORED THE ABOVE ACTIVITIES

Daily Monitoring Summary

Date: 6/4/08 S M T (W) T F S

Summary of Surveyor's Activities:

Summary of Problems and Resolutions:

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by: Larry Freeman
ACC Site Resident Manager

Daily Monitoring Summary

Date: 6/5/08 S M T W (T) F S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 72° @ AM High: 97° @ PM
Cloud Cover: CLEAR Precipitation: Ø Wind: Ø→10

ACC Personnel On-Site: LARRY FREEMAN

Summary of Construction Progress: THERE IS NO CELL ACTIVITY OTHER THAN MAINTAINING THE CLAY SURFACE.

ACC Activities and Test Results: OBSERVED THE ABOVE ACTIVITIES

Daily Monitoring Summary

Date: 6/5/08 S M T W (T) F S

Summary of Surveyor's Activities: SURVEYORS WERE ON SITE THIS MORNING TO CERTIFY THE WEST HALF OF CELL 2G.

Summary of Problems and Resolutions:

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by: Amy Freeman
ACC Site Resident Manager

Daily Monitoring Summary

Date: 6/6/08 S M T W T (F) S

Project Number: A011.102
Project Title: CMS Landfill V Cell 2G
Location: Charlotte, North Carolina
Weather: Temperature: Low: 72° @ AM High: 97° @ PM
Cloud Cover: CLEAR Precipitation: Ø Wind: Ø -> 10

ACC Personnel On-Site: LARRY FREEMAN

Summary of Construction Progress: 3 TRUCKLOADS OF AGRU 60-MIL MICROSPIKE GEOMEMBRANE ARRIVED ON SITE WITH 13 ROLLS ON EACH TRUCK FOR A TOTAL OF 39 ROLLS AT APPROXIMATELY 367,341 SQUARE FEET.
- CELL FLOOR IS MAINTAINED WITH THE WATER TRUCK.

- EARNHARDT IS OFF SITE UNTIL MONDAY MORNING.
- THE WATER TRUCK WILL CONTINUE TO RUN.

ACC Activities and Test Results: MONITORED THE ABOVE ACTIVITIES AND INVENTORIED THE GEOSYNTHETICS.
- OFF SITE UNTIL MONDAY MORNING

Daily Monitoring Summary

Date: 6/6/08 S M T W T (F) S

Summary of Surveyor's Activities:

Summary of Problems and Resolutions:

Summary of Meetings and Discussions Held:

Summary of Health and Safety Issues:

Submitted by: Amy Freeman
ACC Site Resident Manager

ACC of NORTH CAROLINA, PLLC

APPENDIX D

Structural Fill Laboratory Test Results

TIMELY ENGINEERING SOIL TESTS, LLC
374 Forge Street Tucker, GA 30084
Phone: 770-938-8233 Fax: 770-923-8973
Cell: 678-612-6534
Web: www.test-llc.com

Summary of Soil Testing (SF-Samples)

Project Number: 801

Project Name: CMS Landfill

T.E.S.T. Sample Number	Client Sample Number	USCS	Moisture Content (%)	Grain Size Distribution			Atterberg Limits			Proctor		Hydraulic Conductivity		
				%Finer 6" Sieve	% Finer #200 Sieve	% Finer 0.005mm	L.L. %	P.L. %	P.I. %	Opt. M.C. %	Max.Dry. Density pcf	Initial M.C. %	Init.Dry Density pcf	Hydraulic Conduct. cm/sec
4853	SF-1	-	-	100	36.0	-	-	-	-	20.6	101.7	-	-	-
4854	SF-2	-	-	100	72.3	-	-	-	-	28.2	87.7	-	-	-
4855	SF-3	-	-	100	30.6	-	-	-	-	20.2	98.2	-	-	-
4856	SF-4	-	-	100	33.6	-	-	-	-	15.6	113.1	-	-	-
4975	SF-5	-	-	100	25.5	-	-	-	-	-	-	-	-	-
4976	SF-6	-	-	100	30.8	-	-	-	-	-	-	-	-	-
4977	SF-7	-	-	100	28.4	-	-	-	-	-	-	-	-	-
4978	SF-8	-	-	100	21.3	-	-	-	-	-	-	-	-	-
4979	SF-9	-	-	100	20.5	-	-	-	-	-	-	-	-	-
5012	SF-10	-	-	100	61.2	-	-	-	-	-	-	-	-	-
5013	SF-11	-	-	100	62.9	-	-	-	-	-	-	-	-	-
5014	SF-12	-	-	100	34.8	-	-	-	-	-	-	-	-	-
5015	SF-13	-	-	100	56.9	-	-	-	-	-	-	-	-	-
5016	SF-14	-	-	100	61.3	-	-	-	-	-	-	-	-	-

TIMELY ENGINEERING SOIL TESTS, LLC

1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	04/03/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4853/SF-1	Depth/Elev.	-
Location	Cut	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	452.20
Mass of Dry Sample & Tare, g	398.10
Mass of Tare, g	96.00
Moisture Content, %	17.91

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	150.90
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	127.98

REMARKS

100% of total material (22000g) is passing 6" Sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	81.9
Percent of sample retained on No. 200 sieve, %	63.99
Percent of material finer than No. 200 sieve, %	**36.01**

DESCRIPTION	NA
LL	
PL	
PI	
USCS (ASTM D2487; D2488)	NA
NOTE: Method used for test:	B
Length of Soaking Period:	Overnight
Sieve No. 200 ID #	38/86
Sieve Shaker ID #	54/130

TIMELY ENGINEERING SOIL TESTS, LLC

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Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	04/03/08
Checked By	CB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4853/SF-1	Depth/Elev.	-
Location	Cut	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	22000.0	18629.0
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	176.1	176.1
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

MOISTURE CONTENT

	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	921.0	176.1
Mass of Dry Sample & Tare, g	804.7	176.1
Mass of Tare, g	162.0	0.0
Moisture Content, %	18.1	0.0

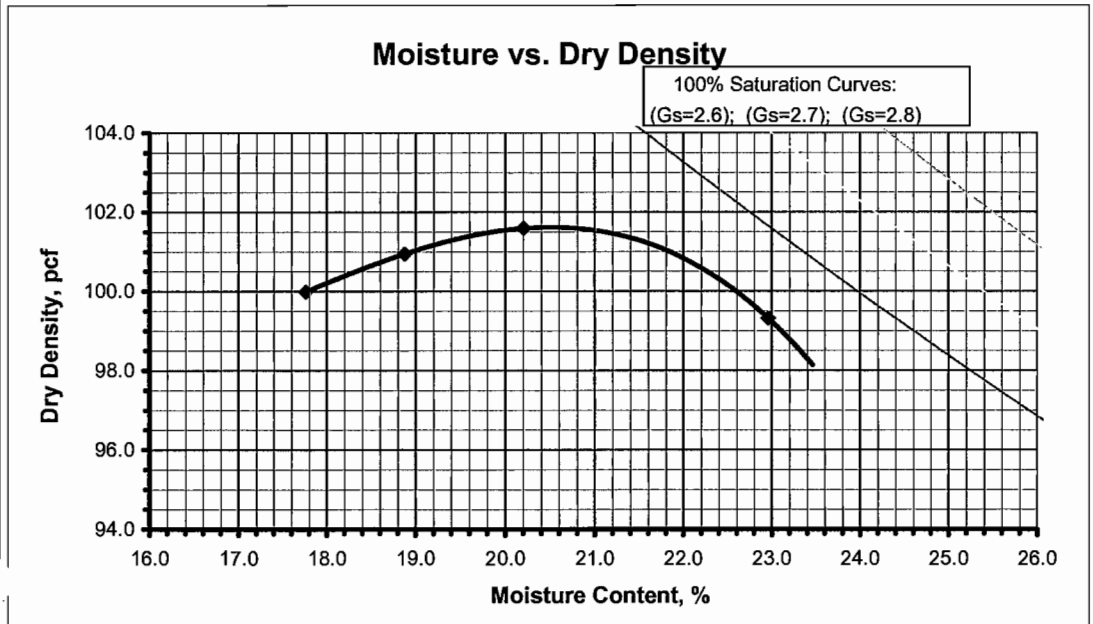
Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.9
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.9

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5760.0	5726.0	5792.0	5792.0	
Mass of Wet Sample & Tare, g	505.5	504.0	503.5	508.5	
Mass of Dry Sample & Tare, g	440.4	441.7	437.1	432.5	
Mass of Tare, g	95.5	91.0	108.5	101.5	
Moisture Content, %	18.9	17.8	20.2	23.0	
Wet Density, pcf	120.0	117.7	122.1	122.1	
Dry Density, pcf	100.9	100.0	101.6	99.3	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	101.7
Optimum Moisture Content, %	20.6

TIMELY ENGINEERING SOIL TESTS, LLC
1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	04/24/08
Checked By	LB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4854/SF-2	Depth/Elev.	-
Location	Sed Pond (2)	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-µm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	477.60
Mass of Dry Sample & Tare, g	394.90
Mass of Tare, g	93.70
Moisture Content, %	27.46

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.20
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	274.76

REMARKS

100% of total 1246.7 g is passing 6" sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	76.1
Percent of sample retained on No. 200 sieve, %	27.70
Percent of material finer than No. 200 sieve, %	**72.30**

DESCRIPTION	NA	LL	
		PL	
		PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

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Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	04/03/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4854/SF-2	Depth/Elev.	-
Location	Sed Pond (2)	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	17900.0	14659.0
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	0.0	0.0
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

MOISTURE CONTENT

	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	764.0	
Mass of Dry Sample & Tare, g	655.0	
Mass of Tare, g	162.0	
Moisture Content, %	22.1	

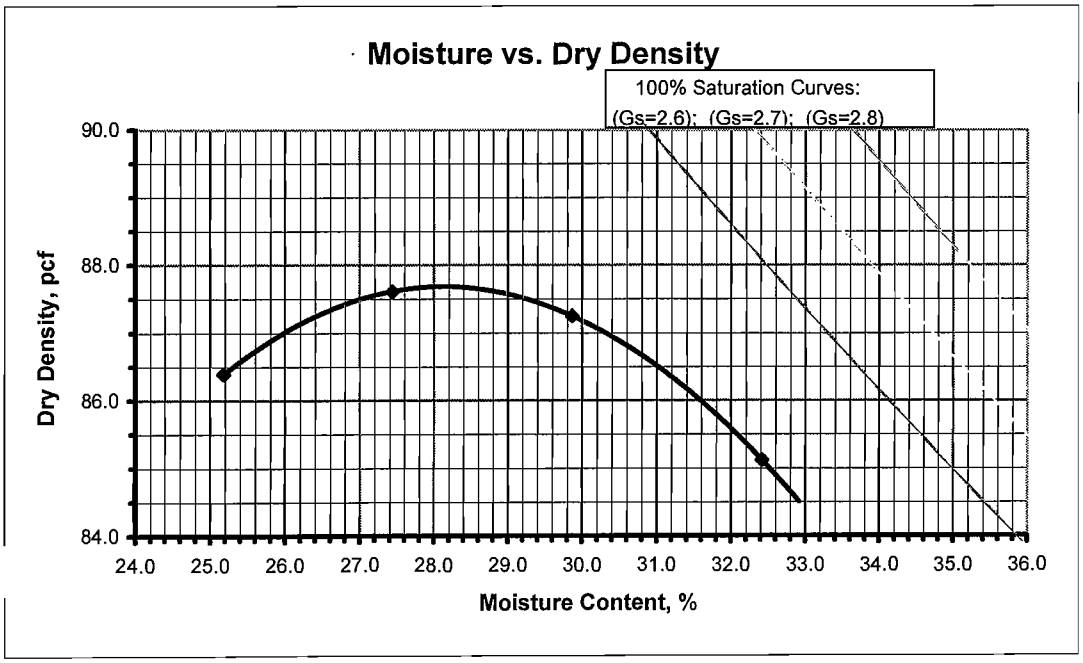
Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.0
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.0

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5581.0	5634.0	5659.0	5650.0	
Mass of Wet Sample & Tare, g	512.0	514.0	516.0	512.0	
Mass of Dry Sample & Tare, g	426.5	425.4	423.2	412.6	
Mass of Tare, g	87.0	102.5	112.5	106.0	
Moisture Content, %	25.2	27.4	29.9	32.4	
Wet Density, pcf	108.1	111.7	113.3	112.7	
Dry Density, pcf	86.4	87.6	87.2	85.1	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤ 20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	87.7
Optimum Moisture Content, %	28.2

TIMELY
ENGINEERING
SOIL
TESTS, LLC

1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	04/24/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4855/SF-3	Depth/Elev.	-
Location	Sed Pond (6)	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	466.50
Mass of Dry Sample & Tare, g	406.80
Mass of Tare, g	83.60
Moisture Content, %	18.47

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.70
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	296.02

REMARKS

100% of total 1178.4 g is passing 6" sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	205.4
Percent of sample retained on No. 200 sieve, %	69.39
Percent of material finer than No. 200 sieve, %	**30.61**

DESCRIPTION	NA	LL	
		PL	
		PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

TIMELY ENGINEERING SOIL TESTS, LLC

1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
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AASHTO R18

Tested By	RI
Date	04/03/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4855/SF-3	Depth/Elev.	-
Location	Sed Pond (6)	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	20150.0	17414.6
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	2025.7	2025.7
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

MOISTURE CONTENT

	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	829.0	2025.7
Mass of Dry Sample & Tare, g	739.2	2025.7
Mass of Tare, g	167.5	0.0
Moisture Content, %	15.7	0.0

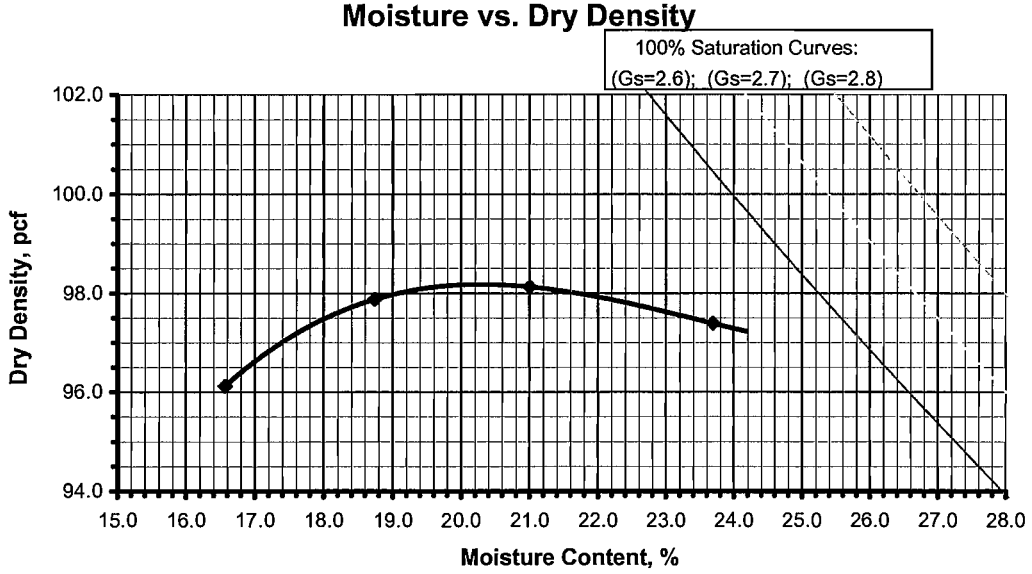
Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	11.6
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	11.6

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5640.0	5703.0	5741.0	5767.0	
Mass of Wet Sample & Tare, g	535.0	536.0	534.0	639.0	
Mass of Dry Sample & Tare, g	471.1	467.1	457.1	537.2	
Mass of Tare, g	85.5	99.5	91.0	107.5	
Moisture Content, %	16.6	18.7	21.0	23.7	
Wet Density, pcf	112.0	116.2	118.7	120.5	
Dry Density, pcf	96.1	97.9	98.1	97.4	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	98.2
Optimum Moisture Content, %	20.2

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AASHTO R18

Tested By	RI
Date	04/24/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4856/SF-4	Depth/Elev.	-
Location	Sed Pond (9)	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-µm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	501.00
Mass of Dry Sample & Tare, g	427.30
Mass of Tare, g	89.60
Moisture Content, %	21.82

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.00
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	287.30

REMARKS

100% of total 1628.1 g is passing 6" sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	190.8
Percent of sample retained on No. 200 sieve, %	66.41
Percent of material finer than No. 200 sieve, %	**33.59**

DESCRIPTION	NA	LL	
		PL	
		PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	RI
Date	04/03/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4856/SF-4	Depth/Elev.	-
Location	Sed Pond (9)	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	20850.0	17917.8
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	0.0	0.0
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

MOISTURE CONTENT

	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	837.0	
Mass of Dry Sample & Tare, g	741.3	
Mass of Tare, g	156.5	
Moisture Content, %	16.4	

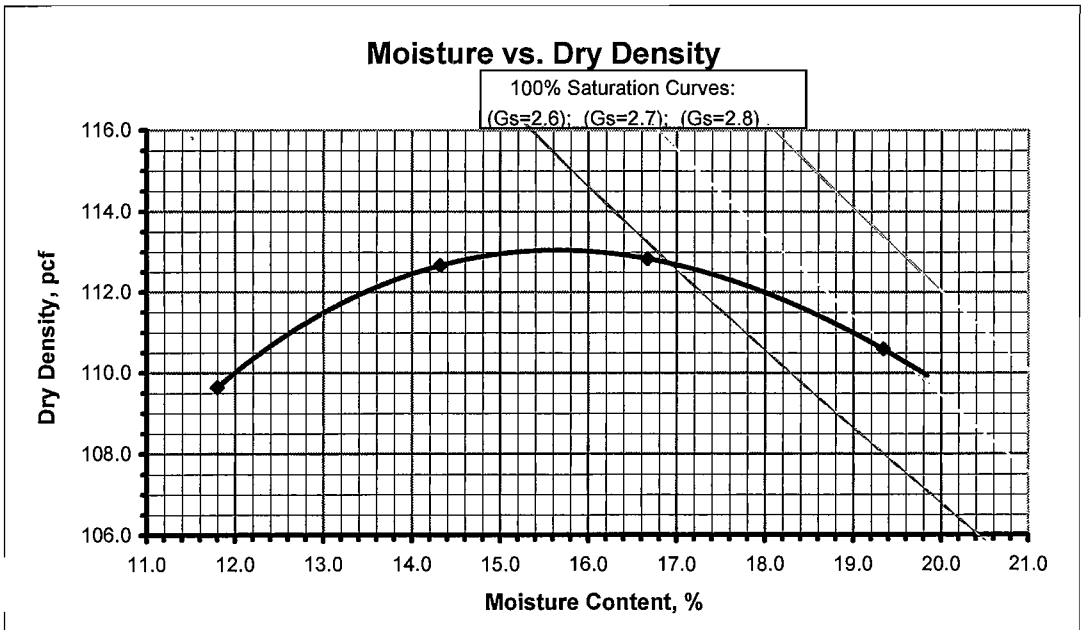
Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.0
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.0

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5799.0	5893.0	5936.0	5941.0	
Mass of Wet Sample & Tare, g	997.5	529.0	551.5	554.0	
Mass of Dry Sample & Tare, g	948.0	474.7	487.2	481.8	
Mass of Tare, g	528.5	95.5	101.5	108.5	
Moisture Content, %	11.8	14.3	16.7	19.3	
Wet Density, pcf	122.6	128.8	131.6	132.0	
Dry Density, pcf	109.6	112.7	112.8	110.6	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤ 20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	113.1
Optimum Moisture Content, %	15.6

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AASHTO R18

Tested By	RI
Date	04/23/08
Checked By	LS

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	4975/SF-5	Depth/Elev.	-
Location	-	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-µm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	649.40
Mass of Dry Sample & Tare, g	577.50
Mass of Tare, g	100.40
Moisture Content, %	15.07

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.50
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	304.60

REMARKS

100% of total material (4900.8 g) is passing 6" Sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	227
Percent of sample retained on No. 200 sieve, %	74.52
Percent of material finer than No. 200 sieve, %	**25.48**

DESCRIPTION: NA

LL	
PL	
PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test: B
Length of Soaking Period: Overnight

Sieve No. 200 ID #	38/86
Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	RI
Date	04/23/08
Checked By	LB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	4976/SF-6	Depth/Elev.	-
Location	-	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-µm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	630.10
Mass of Dry Sample & Tare, g	569.80
Mass of Tare, g	90.70
Moisture Content, %	12.59

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.00
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	310.87

REMARKS

100% of total material (5029.6 g) is passing 6" Sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	215.2
Percent of sample retained on No. 200 sieve, %	69.22
Percent of material finer than No. 200 sieve, %	**30.78**

DESCRIPTION	NA	LL	
		PL	
		PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	RI
Date	04/23/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	4977/SF-7	Depth/Elev.	-
Location	-	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-µm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	626.20
Mass of Dry Sample & Tare, g	556.80
Mass of Tare, g	102.50
Moisture Content, %	15.28

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.30
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	303.88

REMARKS

100% of total material (5108.2 g) is passing 6" Sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	217.7
Percent of sample retained on No. 200 sieve, %	71.64
Percent of material finer than No. 200 sieve, %	**28.36**

DESCRIPTION: NA

LL	
PL	
PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	RI
Date	04/23/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	4978/SF-8	Depth/Elev.	-
Location	-	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	637.90
Mass of Dry Sample & Tare, g	570.70
Mass of Tare, g	94.80
Moisture Content, %	14.12

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.60
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	307.22

REMARKS

100% of total material (4888.4 g) is passing 6" Sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	241.7
Percent of sample retained on No. 200 sieve, %	78.67
Percent of material finer than No. 200 sieve, %	**21.33**

DESCRIPTION: NA

LL	
PL	
PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	RI
Date	04/23/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	4979/SF-9	Depth/Elev.	-
Location	-	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	572.90
Mass of Dry Sample & Tare, g	510.60
Mass of Tare, g	86.80
Moisture Content, %	14.70

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.00
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	305.14

REMARKS

100% of total material (4874.2 g) is passing 6" Sieve

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	242.6
Percent of sample retained on No. 200 sieve, %	79.50
Percent of material finer than No. 200 sieve, %	**20.50**

DESCRIPTION	NA
LL	
PL	
PI	
USCS (ASTM D2487; D2488)	NA
NOTE: Method used for test:	B
Length of Soaking Period:	Overnight
Sieve No. 200 ID #	38/86
Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	EB
Date	04/29/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5012/SF-10	Depth/Elev.	-
Location	Placed fill	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-µm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	611.80
Mass of Dry Sample & Tare, g	572.80
Mass of Tare, g	308.20
Moisture Content, %	14.74

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	356.70
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	310.88

REMARKS

100% of total amount of 3376 g is passing 6" sieve.

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	120.6
Percent of sample retained on No. 200 sieve, %	38.79
Percent of material finer than No. 200 sieve, %	**61.21**

DESCRIPTION: NA

LL	
PL	
PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	EB
Date	04/29/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5013/SF-11	Depth/Elev.	-
Location	Placed fill	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	622.50
Mass of Dry Sample & Tare, g	577.70
Mass of Tare, g	308.40
Moisture Content, %	16.64

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	353.60
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	303.17

REMARKS

100% of total amount of 3555 g is passing 6" sieve.

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	112.6
Percent of sample retained on No. 200 sieve, %	37.14
Percent of material finer than No. 200 sieve, %	**62.86**

DESCRIPTION: NA

LL	
PL	
PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

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Tested By	EB
Date	04/29/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5014/SF-12	Depth/Elev.	-
Location	Placed fill	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	653.10
Mass of Dry Sample & Tare, g	611.70
Mass of Tare, g	167.50
Moisture Content, %	9.32

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	350.30
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	320.44

REMARKS

100% of total amount of 3582 g is passing 6" sieve.

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	208.8
Percent of sample retained on No. 200 sieve, %	65.16
Percent of material finer than No. 200 sieve, %	**34.84**

DESCRIPTION: NA

LL	
PL	
PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B
Length of Soaking Period:	Overnight
Sieve No. 200 ID #	38/86
Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	EB
Date	04/29/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5015/SF-13	Depth/Elev.	-
Location	Placed fill	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	648.60
Mass of Dry Sample & Tare, g	605.50
Mass of Tare, g	305.70
Moisture Content, %	14.38

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	356.90
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	312.04

REMARKS

100% of total amount of 3564 g is passing 6" sieve.

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	134.5
Percent of sample retained on No. 200 sieve, %	43.10
Percent of material finer than No. 200 sieve, %	**56.90**

DESCRIPTION	NA	LL	
		PL	
		PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

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AASHTO R18

Tested By	EB
Date	04/29/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5016/SF-14	Depth/Elev.	-
Location	Placed fill	Add. Info	-

ASTM D 1140; Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve

NATURAL MOISTURE CONTENT

Mass of Wet Sample & Tare, g	600.40
Mass of Dry Sample & Tare, g	536.00
Mass of Tare, g	158.60
Moisture Content, %	17.06

HYGROSCOPIC MOISTURE CONTENT

Mass of Wet Sample & Tare, g	
Mass of Dry Sample & Tare, g	
Mass of Tare, g	
Moisture Content, %	

SAMPLE DATA

Total mass of wet sample used for sieve analysis & tare, g	349.10
Mass of Tare, g	0.00
Total mass of dry sample used for sieve analysis, g	298.21

REMARKS

100% of total amount of 3256 g is passing 6" sieve.

SIEVE ANALYSIS

Mass of Tare, g	0
Mass of sample and tare retained on No. 200 sieve, g	115.3
Percent of sample retained on No. 200 sieve, %	38.66
Percent of material finer than No. 200 sieve, %	**61.34**

DESCRIPTION: NA

LL	
PL	
PI	

USCS (ASTM D2487; D2488): NA

NOTE: Method used for test:	B	Sieve No. 200 ID #	38/86
Length of Soaking Period:	Overnight	Sieve Shaker ID #	54/130

ACC of NORTH CAROLINA, PLLC

APPENDIX E

Structural Fill Field Test Results

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: TS

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: ~~TS~~

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-1	4-8-08	N 4770	1	N	109.8	12.1	SF-4	113.1	15.6	97.1	-3.5	P	
		E 5360											
SF-2		N 4660			110.9	12.0				98.0	-3.6	P	
		E 5430											
SF-3		N 4550			94.1	23.1	SF-3	98.2	20.2	95.8	+2.9	P	
		E 5510											
SF-4		N 4470			93.8	20.2				95.4	0	P	
		E 5560											
SF-5		N 4560			111.8	17.0	SF-4	113.1	16.6	98.8	+1.4	P	
		E 5620											
SF-6		N 4670			110.6	16.4				97.8	+.8	P	
		E 5550											
SF-7		N 4760			110.3	13.0				97.5	-2.4	P	
		E 5490											
SF-8		N 4840			94.5	21.8	SF-3	98.2	20.2	96.2	+1.6	P	
		E 5450											
SF-9		N 4880			109.9	14.5	SF-4	113.1	15.6	97.1	-1.1	P	
		E 5540											
SF-10		N 4790			100.7	19.2	SF-1	101.7	20.6	99.1	-1.4	P	
		E 5590											
SF-11		N 4670			101.4	17.5				99.7	-3.1	P	
		E 5680											
SF-12		N 4580			101.1	18.1				99.4	-2.5	P	
		E 5750											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: TS

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [illegible]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION		LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-13	4-2-08	N	4660	1	N	99.5	21.3	SF-1	101.7	20.6	97.8	+.7	P	
		E	5790											
SF-14		N	4750			100.9	19.1				99.2	-1.5	P	
		E	5730											
SF-15		N	4870			96.7	17.5	SF-3	98.2	20.2	98.3	-2.7	P	
		E	5670											
SF-16		N	4940			100.2	19.4	SF-1	101.7	20.6	98.6	-1.2	P	
		E	5630											
SF-17		N	4690	2		100.0	22.3				98.3	+1.7	P	
		E	5230											
SF-18		N	4590			99.5	22.0				97.8	+1.4	P	
		E	5290											
SF-19		N	4490			99.8	22.4				98.1	+1.8	P	
		E	5310											
SF-20		N	4400			99.8	23.1				98.1	+2.5	P	
		E	5360											
SF-21		N	4470			100.8	19.6				99.2	-1.0	P	
		E	5420											
SF-22		N	4560			98.4	21.0				96.8	+.4	P	
		E	5380											
SF-23		N	4630			95.8	19.9	SF-3	98.2	20.2	97.6	-.3	P	
		E	5340											
SF-24		N	4750			96.1	20.3				97.9	+.1	P	
		E	5290											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [illegible]

DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-25	4-9-08	N 584790	L-2	N	100.4	19.8	SF-1	101.7	20.6	98.7	-0.8	P	
		E 1505390											
SF-26		N 4680			97.0	20.6				95.4	0.0	P	
		E 5430											
SF-27		N 4590			98.7	18.8				97.0	-1.8	P	DC
		E 5470											
SF-28		N 4490			101.5	19.7				99.8	-0.9	P	
		E 5510											
SF-29		N 4300	L-3		95.5	21.2				93.9	+0.6	(F)	See Retest SF-29R1
		E 5180											
SF-29R1		N 4300			97.9	21.4				96.3	+0.8	P	Retest for SF-29
		E 5180											
SF-30		N 4360			96.6	21.8				95.0	+1.2	P	
		E 5270											
SF-31		N 4400			98.8	21.9				97.1	+1.3	P	
		E 5350											
SF-32		N 4470			100.4	19.6				98.7	-1.0	P	
		E 5340											
SF-33		N 4550			107.8	14.1	SF-4	113.1	15.6	95.3	-1.5	P	
		E 5300											
SF-34		N 4650			100.0	21.8	SF-1	101.7	20.6	98.3	+1.2	P	
		E 5270											
SF-35		N 4750			100.3	19.1				98.6	-1.5	P	
		E 5250											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-36	4-10-08	N 584480	L-3	N	98.2	20.3	SF-1	101.7	20.6	96.6	-0.3	P	
		E 1505450											
SF-37		N 584580			98.4	22.1				96.8	+1.5	P	
		E 1505370											
SF-38		N 584680			100.7	20.6				99.0	0.0	P	
		E 1505350											
SF-39		N 584790			112.5	11.2	SF-4	113.1	15.6	99.5	-4.4	P	
		E 1505350											
SF-40		N 584750			97.2	24.1	SF-3	98.2	20.2	99.0	+3.9	P	
		E 1505450											
SF-41		N 584680			100.2	20.5	SF-1	101.7	20.6	98.5	-0.1	P	
		E 1505480											
SF-42		N 584580			101.0	18.9				99.3	-1.7	P	D.C.
		E 1505460											
SF-43		N 584630	L-1		112.5	12.7	SF-4	113.1	15.6	99.5	-3.1	P	
		E 1505830											
SF-44		N 584760			108.4	16.1				95.8	-0.5	P	
		E 1505820											
SF-45		N 584850			100.8	18.1	SF-1	101.7	20.6	99.1	-2.5	P	
		E 1505810											
SF-46		N 584850			100.2	18.5				98.5	-2.1	P	
		E 1505750											
SF-47		N 584940			109.4	15.9	SF-4	113.1	15.6	96.7	+0.3	P	
		E 1505780											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF.48	4-10-08	N 58500	L-1	N	108.4	15.7	SF-4	113.1	15.6	95.8	+0.1	P	
		E 1505770											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-49	4-11-08	N 584270	L-1	N	96.9	23.6	SF-1	101.7	20.6	95.3	+3.0	P	
		E 1505240											
SF-50		N 584310			99.1	18.0				97.4	-2.6	P	
		E 1505310											
SF-51		N 584280	L-2		97.4	18.3				95.8	-2.3	P	D.C.
		E 1505250											
SF-52		N 584310			95.1	21.8	SF-3	98.2	20.2	96.8	+1.6	P	
		E 1505310											
SF-53		N 584290	L-3		99.5	20.9	SF-1	101.7	20.6	97.8	+0.3	P	
		E 1505270											
SF-54		N 584330			99.7	22.1				98.0	+1.5	P	
		E 1505370											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102
PROJECT TITLE: CMS Landfill V Cell 2G
PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM
REVIEWED BY: [signature]
DATE REVIEWED: 5/16/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-55	4-16-08	N 584490	L-4	N	83.8	27.1	SF-2	87.7	28.2	95.5	-1.1	P	DC
		E 1505220											
SF-56		N 584360			87.0	30.4				99.2	+2.2	P	
		E 1505220											
SF-57		N 584370			85.3	30.2				97.3	+2.0	P	
		E 1505340											
SF-58		N 584450			86.9	30.9				99.1	+2.7	P	
		E 1505370											
SF-59		N 584430			85.0	25.1				96.9	-3.1	P	
		E 1505450											
SF-60		N 584540			85.1	28.2				97.0	0.0	P	
		E 1505440											
SF-61		N 584530			86.2	31.9				98.3	+3.7	P	
		E 1505370											
SF-62		N 584630			85.7	29.3				97.7	+1.1	P	
		E 1505450											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102
PROJECT TITLE: CMS Landfill V Cell 2G
PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM
REVIEWED BY: [signature]
DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-63	4-17-08	N 584560	L-2	N	87.4	27.3	SF-2	87.7	28.2	99.7	-0.9	P	DC
		E 1505580											
SF-64		N 584650			86.5	29.8				98.6	+1.6	P	
		E 1505530											
SF-65		N 584460	L-3		86.6	28.5				98.7	+0.3	P	
		E 1505510											
SF-66		N 584540			86.3	27.7				98.4	-0.5	P	
		E 1505560											
SF-67		N 584650			85.9	28.8				97.9	+0.6	P	
		E 1505520											
SF-68		N 584550	L-2		86.8	30.7				99.0	+2.5	P	
		E 1505660											
SF-69		N 584670			85.5	31.3				97.5	+3.1	P	
		E 1505670											
SF-70		N 584730			87.3	27.2				99.5	-1.0	P	
		E 1505670											
SF-71		N 584740			87.0	31.8				99.2	+3.6	P	
		E 1505740											
SF-72		N 584650			86.9	29.6				99.1	+1.4	P	
		E 1505730											
SF-73		N 584590			86.7	30.5				98.9	+2.3	P	
		E 1505760											
		N											
		E											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/6/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-74	4-18-08	N 584660	L-2	N	86.8	31.4	SF-2	87.7	28.2	99.0	+3.2	P	
		E 1505850											
SF-75		N 584770			84.1	32.4				95.9	+4.2	P	D.C.
		E 1505840											
SF-76		N 584830			83.9	32.0				95.7	+3.8	P	
		E 1505840											
SF-77		N 584570	L-3		83.7	25.2				95.4	-3.0	P	
		E 1505650											
SF-78		N 584650			83.5	26.7				95.2	-1.5	P	
		E 1505610											
SF-79		N 584720			83.8	32.6				95.6	+4.4	P	
		E 1505660											
SF-80		N 584590			84.3	32.1				96.1	+3.9	P	
		E 1505730											
SF-81		N 584670			83.8	28.5				95.6	+0.3	P	
		E 1505770											
SF-82		N 584740			86.8	30.6				99.0	+2.4	P.	
		E 1505740											
SF-83		N 584770			85.8	30.9				97.8	+2.7	P	
		E 1505740											
SF-84		N 584650			84.2	28.8				96.0	+0.6	P	
		E 1505840											
SF 85		N 584760	L-1		86.0	30.2				98.1	+2.0	P	
		E 1505920											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-86	4-18-08	N 584840	L-1	N	84.8	29.3	SF-2	87.7	28.2	96.7	+1.1	P	
		E 1505900											
SF-87		N 584920			85.1	29.9				97.0	+1.7	P	
		E 1505880											
SF-88		N 585000			83.6	30.6				95.3	+2.4	P	
	↓	E 1505860	↓	↓			↓	↓	↓				
		N											
		E											
		N											
		E											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-89	4-9-08	N 585030	L-2	N	87.2	31.7	SF-2	87.7	28.2	99.4	+3.5	P	
		E 1505840											
SF-90		N 584970			85.0	29.6				96.9	+1.4	P	
		E 1505850											
SF-91		N 584770			84.8	32.1				96.7	+3.9	P	
		E 1505470											
SF-92		N 584820			83.6	32.3				95.3	+4.1	P	
		E 1505490											
SF-93		N 584870			84.2	27.7				96.0	-0.5	P	
		E 1505560											
SF-94		N 584770			85.6	27.1				97.6	-1.1	P	D.C.
		E 1505580											
SF-95		N 584870			86.8	29.8				99.0	+1.6	P	
		E 1505660											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-96	4-21-08	N 584920	L-2	N	87.1	31.9	SF-2	87.7	28.2	99.3	+3.7	P	
		E 1505670											
SF-97		N 584940			86.5	26.3				98.6	-1.9	P	
		E 1505770					↓	↓	↓				
SF-98		N 584860			95.0	15.5	SF-3	98.2	20.2	96.7	-4.7	P	D.C.
		E 1505760	↓										
SF-99		N 585030	L-3		86.4	26.8	SF-2	87.7	28.2	98.5	-1.4	P	
		E 1505840											
SF-100		N 584950			86.0	32.6				98.1	+4.4	P	
		E 1505850											
SF-101		N 584820			84.7	25.9				96.6	-2.3	P	
		E 1505470											
SF-102		N 584840			85.1	27.3				97.0	-0.9	P	
		E 1505550											
SF-103		N 584770			87.5	26.7				99.8	-1.5	P	
		E 1505540											
SF-104		N 584830			86.7	26.7				98.9	-1.5	P	
		E 1505660											
SF-105		N 584920			85.9	31.5				97.9	+3.3	P	
		E 1505670											
SF-106		N 584960			87.3	25.8				99.5	-2.4	P	
		E 1505760											
SF-107		N 584870			85.5	27.7				97.5	-0.5	P	
	↓	E 1505770	↓	↓			↓	↓	↓				

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [illegible]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-108	4-21-08	N 584870	L-3	N	81.0	31.1	SF-2	81.7	28.2	99.2	+2.9	P	
		E 1505830											
SF-109		N 585030	L-4		86.9	31.7				99.1	+3.5	P	
		E 1505840											
SF-110		N 584970			83.8	29.3				95.6	+1.1	P	
		E 1505860											
		N											
		E											
		N											
		E											
		N											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-111	4-22-08	N 584870	L-4	N	99.4	24.9	SF-1	101.7	20.6	97.7	+4.3	P	
		E 1505450											
SF-112		N 584900			85.4	32.5	SF-2	87.7	28.2	97.4	+4.3	P	P.C.
		E 1505540											
SF-113		N 584940			85.0	32.3				96.9	+4.1	P	
		E 1505640											
SF-114		N 585020			84.1	28.6				95.9	+0.4	P	
		E 1505780											
SF-115		N 585050	L-5		86.6	28.0				98.7	-0.2	P	
		E 1505840											
SF-116		N 584670	L-4		83.9	30.8				95.1	+2.6	P	
		E 1505580											
SF-117		N 584680			87.3	29.8				99.5	+1.6	P	
		E 1505640											
SF-118		N 584570			84.1	29.8				95.9	+1.6	P	
		E 1505660											
SF-119		N 584540			83.9	29.2				95.7	+1.0	P	
		E 1505570											
SF-120		N 584480			85.6	28.7				97.6	+0.5	P	
		E 150550											
SF-121		N 584970	L-5		84.8	30.2				96.7	+2.0	P	
		E 1505850											
SF-122		N 584570	L-4		83.4	30.7				95.1	+2.5	P	
		E 1505270											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [illegible]

DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-123	4-22-08	N 584650	L-4	N	85.9	25.7	SF-2	87.7	28.2	98.0	-2.5	P	
		E 1505250											
SF-124		N 584740			98.4	18.9	SF-1	101.7	20.6	96.8	-1.7	P	
		E 1505220											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/11/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-125	4-23-08	N 584660	L-4	N	83.5	31.3	SF-2	87.7	28.2	95.2	+3.1	P	
		E 1505860											
SF-126		N 584770			85.6	30.2				97.6	+2.0	P	
		E 1505840											
SF-127		N 584770			86.0	28.7				98.1	+0.5	P	
		E 1505760											
SF-128		N 584670			85.9	31.6				97.9	+3.4	P	D.C
		E 1505780											
SF-129		N 584580			86.4	32.2				98.5	+4.0	P	
		E 1505740											
SF-130		N 584660			87.4	30.3				99.7	+2.1	P	
		E 1505370											
SF-131		N 584770			86.5	32.0				98.6	+3.8	P	
		E 1505350											
SF-132		N 584740			83.9	27.1				95.7	-1.1	P	
		E 1505430	↓										
SF-133		N 584250	L-5		84.1	26.3				95.9	-1.9	P	
		E 1505110											
SF-134		N 584360			87.1	32.0				99.3	+3.8	P	
		E 1505120											
SF-135		N 584450			86.6	29.2				98.7	+1.0	P	
		E 1505230											
SF-136		N 584370			83.5	26.9				95.2	-1.3	P	
	↓	E 1505270	↓	↓			↓	↓	↓				

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102
PROJECT TITLE: CMS Landfill V Cell 2G
PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM
REVIEWED BY: [illegible]
DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-137	4-23-08	N 584370	L-5	N	85.8	29.9	SF-2	87.7	28.2	97.8	+1.7	P	
		E 1505320											
SF-138		N 584730			86.8	25.7				99.0	-2.5	P	
		E 1505530											
SF-139		N 584730			84.1	27.1				95.9	-1.1	P	
		E 1505650											
SF-140		N 584870			87.2	29.2				99.4	+1.0	P	
		E 1505660											
SF-141		N 584840			86.4	29.4				98.5	+1.2	P	
		E 1505740											
SF-142		N 584440			85.5	32.0				97.5	+3.8	P	
		E 1505330											
SF-143		N 584550			87.3	31.8				99.5	+3.6	P	
		E 1505290											
SF-144		N 584570			86.8	31.1				99.0	+2.9	P	
		E 1505360											
SF-145		N 584450			86.0	28.9				98.1	+0.7	P	
	↓	E 1505450	↓	↓			↓	↓	↓				
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		N											
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		N											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: ~~BT~~

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-146	4-24-08	N 584870	L-4	N	83.4	30.9	SF-2	87.7	28.2	95.1	+2.7	P	
		E 1505830											
SF-147		N 584950			83.4	30.3				95.1	+2.1	P	P.C.
		E 1505770	↓										
SF-148		N 584820	L-5		86.7	28.9				98.9	+0.7	P	
		E 1505450											
SF-149		N 584870			86.1	29.2				98.2	+1.0	P	
		E 1505550					↓	↓	↓				
SF-150		N 584930			101.1	22.7	SF-1	101.7	20.6	99.4	+2.1	P	
		E 1505620											
SF-151		N 584990			83.7	27.0	SF-2	87.7	28.2	95.4	-1.2	P	
		E 1505710											
SF-152		N 584590			87.5	25.7				99.8	-2.5	P	
		E 1505450											
SF-153		N 584480			84.4	29.1				96.2	-0.9	P	
		E 1505530											
SF-154		N 584540			83.9	31.5				95.7	+3.3	P	
		E 1505530											
SF-155		N 584560			83.3	28.8				95.0	+0.6	P	
		E 1505660											
SF-156		N 584640			84.7	32.0				96.6	+3.8	P	
		E 1505650											
SF-157		N 584630			83.7	25.4				95.4	-2.8	P	
	↓	E 1505590	↓	↓			↓	↓	↓				

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [illegible]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-158	4-24-08	N 584710	L-5	N	87.4	26.9	SF-2	87.7	28.2	99.7	-1.3	P	
		E 1505650											
SF-159		N 584680			85.0	30.9				96.9	+2.7	P	
		E 1505760											
SF-160		N 584570			87.4	31.0				99.7	+2.8	P	
		E 1505730											
SF-161		N 584650			86.5	31.8				98.6	+3.6	P	
		E 1505850											
SF-162		N 584780			86.1	28.0				98.2	-0.2	P	
		E 1505820											
SF-163		N 584760			87.5	29.9				99.8	+1.7	P	
		E 1505740											
SF-164		N 584820			87.3	28.3				99.5	+0.1	P	
		E 1505850					↓	↓	↓				
SF-165		N 584770			96.9	21.2	SF-1	101.7	20.6	95.3	+0.6	P	
		E 1505330											
SF-166		N 584660			87.4	27.6	SF-2	87.7	28.2	99.7	-0.6	P	
		E 1505370											
SF-167		N 584680			87.1	30.6				99.3	+2.4	P	
		E 1505460											
SF-168		N 584740			87.3	31.7				99.5	+3.5	P	
		E 1505470	↓										
SF-169		N 584380	L-6		86.8	30.0				99.0	+1.8	P	
	↓	E 1505200		↓			↓	↓	↓				

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-170	4-24-08	N 584430	L-6	N	85.1	31.9	SF-2	87.7	28.2	97.0	+3.7	P	
		E 1505280											
SF-171		N 584510			85.9	29.0				97.9	+0.8	P	
		E 1505240											
SF-172		N 584540			86.6	30.2				98.7	+2.0	P	
		E 1505350											
SF-173		N 584460			85.9	28.4				97.9	+0.2	P	
		E 1505360											
SF-174		N 584420			86.7	31.9				98.9	+3.7	P	
		E 1505450											
SF-175		N 584560			87.6	29.6				99.9	+1.4	P	
		E 1505430											
		N											
		E											
		N											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 5/11/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-176	4-25-08	N 584640	L-6	N	86.9	30.8	SF-2	87.7	28.2	99.1	+2.6	P	
		E 1505460											
SF-177		N 584650			84.4	26.5				96.2	-1.7	P	P.C.
		E 1505550											
SF-178		N 584650			86.3	27.4				98.4	-0.8	P	
		E 1505560											
SF-179		N 584470			85.1	29.5				97.0	+1.3	P	
		E 1505550											
SF-180		N 584190	L-1		83.4	25.1				95.1	-3.1	P	
		E 1504610											
SF-181		N 584240			87.0	31.2				99.2	+3.0	P	
		E 1504700											
SF-182		N 584140	L-2		85.9	31.0				97.9	+2.8	P	
		E 1504610											
SF-183		N 584220			86.4	29.2				98.5	+1.0	P	
		E 1504660											
SF-184		N 584230			86.8	27.9				99.0	-0.3	P	
		E 1504720											
SF-185		N 584150	L-3		93.7	22.9	SF-3	98.2	20.2	95.4	+2.7	P	
		E 1504610											
SF-186		N 584230			87.5	25.8	SF-2	87.7	28.2	99.8	-2.4	P	
		E 1504650											
SF-187		N 584250			85.4	28.8				97.4	+0.6	P	
		E 1504740											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: ~~LB~~

DATE REVIEWED: 5/1/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-188	4-25-08	N 584170	L-4	N	96.3	19.6	SF-3	98.2	20.2	98.1	-0.6	P	
		E 1504640											
SF-189		N 584190			95.0	22.1				96.7	+1.9	P	
		E 1504710											
SF-190		N 584230			94.5	21.7				96.2	+1.5	P	
		E 1504750					↓	↓	↓				
SF-191		N 584170	L-5		84.0	31.1	SF-2	87.7	28.2	95.8	+2.9	P	
		E 1504640											
SF-192		N 584200			85.4	30.7				97.4	+2.5	P	
		E 1504700											
SF-193		N 584270			85.1	29.8				97.0	+1.6	P	
	↓	E 1504720	↓	↓			↓	↓	↓				
		N											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: A

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-194	4-30-08	N 582430	L-6	N	94.0	22.8	SF-3	98.2	20.2	95.7	+0.7	P	D.C.
		E 1504570											
SF-195		N 584170			85.8	25.1	SF-2	87.7	28.2	97.8	-0.9	P	
		E 1504580											
SF-196		N 584190			84.4	27.3	SF-2	87.7	28.2	96.2	-3.1	P	
		E 1504630											
SF-197		N 584270			93.7	20.9	SF-1	98.2	20.2	95.4	+2.6	P	
		E 1504680	↓				↓	↓	↓				
SF-198		N 584150	L-7		93.9	21.1	↓	↓	↓	95.6	+0.9	P	
		E 1504720											
SF-199		N 584230			87.3	24.3	SF-2	87.7	28.2	99.5	-3.9	P	
		E 1504730											
SF-200		N 584230			86.6	26.3				98.7	-1.9	P	
		E 1504630											
SF-201		N 584160			85.7	29.4				97.7	+1.2	P	
		E 1504650	↓										
SF-202		N 584160	L-8		96.0	27.9				98.1	-0.3	P	
		E 1504710											
SF-203		N 584240			87.1	26.2				99.3	-2.0	P	
		E 1504760					↓	↓	↓				
SF-204		N 584230			95.1	20.6	SF-3	98.2	20.2	96.8	+0.4	P	
		E 1504640											
SF-205		N 584180			94.5	21.7				96.2	+1.5	P	
	↓	E 1504680	↓	↓			↓	↓	↓				

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-206	4-30-08	N 584240	L-8	N	93.9	19.7	SF-3	98.2	20.2	95.6	-0.5	P	
		E 1504570											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G REVIEWED BY: [signature] 5/20/08

PROJECT LOCATION: Charlotte, North Carolina DATE REVIEWED:

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-207	5-1-08	N 584160	L-9	N	99.2	18.8	SF-1	101.7	20.6	97.6	-1.8	P	
		E 1504740											
SF-208		N 584230			94.0	16.8	SF-3	98.2	20.2	95.7	-3.4	P	D.C.
		E 1504730											
SF-209		N 584180			89.3	18.1				90.9	-2.1	(F)	Not Enough Comp.
		E 1504650											
SFR-209		N 584180			93.5	18.2				95.2	-2.0	P	RETEST
		E 1504670											
SF-210		N 584270			94.2	17.8				95.9	-2.4	P	
		E 1504650											
SF-211		N 584260			94.5	18.3				96.2	-1.9	P	
		E 1504580											
SF-212		N 584480	L-1		109.3	10.9	SF-4	113.1	15.6	96.6	-4.7	P	
		E 1504930											
SF-213		N 584430	L-2		108.3	11.2				95.8	-4.4	P	
		E 1504920											
SF-214		N 584440	L-3		108.2	13.6				95.7	-2.0	P	
		E 1504940											
SF-215		N 584270	L-10		96.4	17.9	SF-3	98.2	20.2	98.2	-2.3	P	
		E 1504630											
SF-216		N 584230			95.8	18.3				97.6	-1.9	P	
		E 1504740											
SF-217		N 584190			94.9	17.1				96.6	-3.1	P	
		E 1504660											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-218	5-1-08	N 584130	L-10	N	94.3	18.8	SF3	98.2	20.2	96.0	-1.4	P	
	↓	E 1504720											
SF-219		N 584450	L-4		109.4	12.0	SF-4	113.1	15.6	96.7	-3.6	P	
		E 1504970											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-220	5-2-08	N 584280	L-11		98.1	13.8	SF-3	98.2	20.2	99.9	-1.8	P	
		E 1504560											
SF-221		N 584260			98.3	14.2				100.1	-1.9	P	
		E 1504640											
SF-222		N 584250			97.6	13.4				99.4	-2.2	P	
		E 1504740											
SF-223		N 584180			97.3	14.7				99.1	-0.9	P	
		E 1504680											
SF-224		N 584170			96.7	15.0				98.5	-0.6	P	
		E 1504740											
SF-225		N 584280	L-7		108.6	13.8	SF-4	113.1	15.6	96.0	-1.8	P	
		E 1505170											
SF-226		N 584350			94.2	19.1	SF-3	98.2	20.2	95.9	-1.1	P	
		E 1505250											
SF-227		N 584430			85.9	28.7	SF-2	87.7	28.2	97.9	+0.5	P	DC
		E 1505240											
SF-228		N 584450			86.3	26.4				98.4	-1.8	P	
		E 1505370											
SF-229		N 584380			84.2	25.1				96.0	-3.1	P	
		E 1505360											
SF-230		N 584460			87.4	29.8				99.7	+1.6	P	
		E 1505470											
SF-231		N 584480			96.6	22.9	SF-3	98.2	20.2	98.4	+2.7	P	
		E 1505520											

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PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

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DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-232	5-2-08	N 584520	L-7	N	95.9	21.7	SF-3	98.2	20.2	97.7	+1.5	P	
	↓	E 1505510	↓	↓									
SF-233		N 584510			87.0	27.7	SF-2	87.7	28.2	99.2	-0.5	P	
	↓	E 1505410	↓	↓									
		N											
		E											
		N											
		E											
		N											
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PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-234	5-3-08	N 584640	L-1	N	97.4	21.1	SF-3	98.2	20.2	99.2	+0.9	P	
		E 1505080											
SF-235		N 584570			97.9	18.3				99.7	-1.9	P	
		E 1505130											
SF-236		N 584490			98.1	17.3				99.9	-2.9	P	DC
		E 1505170											
SF-237		N 584490	L-2		97.7	20.1				99.5	-0.1	P	
		E 1505140											
SF-238		N 584550			94.6	21.4				96.3	+1.2	P	
		E 1505160											
SF-239		N 584610			97.2	19.4				99.0	-0.8	P	
		E 1505080											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [illegible]

DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-240	5-5-08	N 584540	L-6	N	99.7	18.1	SF-1	101.7	20.6	980	-2.5	P	P.C.
		E 1505640											
SF-241		N 584580			88.1	28.6	SF-2	87.7	28.2	100.4	+0.4	P	
		E 1505740											
SF-242		N 584640			96.4	23.2	SF-3	98.2	20.2	98.2	+3.0	P	
		E 1505850											
SF-243		N 584720			93.9	22.6				95.6	+2.4	P	
		E 1505820											
SF-244		N 584680			97.3	22.9				99.1	+2.7	P	
		E 1505760											
SF-245		N 584670			87.8	29.9	SF-2	87.7	28.2	100.1	+1.7	P	
		E 1505680											
SF-246		N 584610	L-7		87.0	28.7				99.2	+0.5	P	
		E 1505580											
SF-247		N 584650			86.7	27.2				98.9	-1.0	P	
		E 1505660											
SF-248		N 584690			86.0	28.9				98.1	+0.7	P	
		E 1505720											
SF-249		N 584730			85.4	27.5				97.4	-0.7	P	
		E 1505820											
SF-250		N 584650			99.3	21.4	SF-1	101.7	20.6	97.6	+0.8	P	
		E 1505840											
SF-251		N 584590			100.1	21.7				98.4	+1.1	P	
		E 1505760											

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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature] 5/20/08

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED:

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-252	5.5-08	N 584560	L-7	N	96.9	29.3	SF-2	97.7	28.2	99.1	+1.1	P	
		E 1505650											
SF-253		N 584770	L-6		97.9	17.3	SF-3	98.2	20.2	99.7	-2.9	P	
		E 1505550											
SF-254		N 584780			97.3	19.9				99.1	-0.3	P	
		E 1505670											
SF-255		N 584740			96.8	21.3				98.6	+1.1	P	
		E 1505730											
SF-256		N 584810			97.0	20.9				98.8	+0.7	P	
		E 1505830											
SF-257		N 584860			95.7	18.8				97.5	-1.4	P	
		E 1505760											
SF-258		N 584850			95.5	21.8				97.3	+1.6	P	
		E 1505670											
SF-259		N 584920			97.2	22.2				99.0	+2.0	P	
		E 1505780	↓				↓	↓	↓				
SF-260		N 584580	L-8		97.7	19.0	SF-1	101.7	20.6	96.1	-1.6	P	
		E 1505680											
SF-261		N 584580			98.1	19.7				96.5	-0.9	P	
		E 1505740											
SF-262		N 584690			99.3	21.9				97.6	+1.3	P	
		E 1505770											
SF-263		N 584660			100.7	20.9				99.0	+0.3	P	
	↓	E 1505840	↓	↓			↓	↓	↓				

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SUMMARY SHEET
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PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-264	5-5-08	N 584760	L-7	N	97.6	22.4	SF-3	98.2	20.2	99.4	+2.2	P	
		E 1505560											
SF-265		N 584790			97.7	20.9				99.5	+0.7	P	
		E 1505650											
SF-266		N 584730			109.5	18.4	SF-4	113.1	15.6	96.8	+2.8	P	
		E 1505770											
SF-267		N 584810			110.1	12.9				97.3	-2.7	P	
		E 1505840											
SF-268		N 584820			109.0	14.3				96.4	-1.3	P	
		E 1505770											
SF-269		N 584810			110.2	13.7				97.4	-1.9	P	
		E 1505680	↓										
SF-270		N 585000	L-8		108.7	15.2				96.1	-0.4	P	
		E 1505800											
SF-271		N 584920			95.6	17.0	SF-3	98.2	20.2	97.4	-3.2	P	
		E 1505810											
SF-272		N 584840			99.8	16.2	SF-1	101.7	20.6	98.1	-4.4	P	
		E 1505830											
SF-273		N 584780			99.2	19.7				97.5	-0.9	P	
	↓	E 1505830	↓	↓			↓	↓	↓				
		N											
		E											
		N											
		E											

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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: bm

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [illegible]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-274	5-6-08	N 585000	L-9	N	98.5	17.9	SF-1	101.7	20.6	96.8	-2.7	P	P.C.
		E 1505890											
SF-275		N 584900			109.8	13.0	SF-4	113.1	15.6	97.1	-2.6	P	
		E 1505800											
SF-276		N 584830			96.3	17.6	SF-3	98.2	20.2	98.1	-2.6	P	
		E 1505840											
SF-277		N 584770			96.9	19.7				98.7	-0.5	P	
		E 1505840	↓				↓	↓	↓				
SF-278		N 584980	L-10		99.9	19.1	SF-1	101.7	20.6	98.2	-1.5	P	
		E 1505780											
SF-279		N 584930			99.3	18.3				97.8	-2.3	P	
		E 1505820											
SF-280		N 584850			98.2	20.1				96.6	-0.5	P	
		E 1505810											
SF-281		N 584800			100.5	17.9				98.8	-2.7	P	
		E 1505850	↓				↓	↓	↓				
SF-282		N 584580	L-1		108.1	12.9	SF-4	113.1	15.6	95.6	-2.7	P	
		E 1505220											
SF-283		N 584630			109.0	12.3				96.4	-3.3	P	
		E 1505210											
SF-284		N 584660			110.6	13.3				97.8	-2.3	P	
		E 1505180	↓										
SF-285		N 584610	L-3		112.2	15.8				99.2	+0.2	P	
	↓	E 1505080		↓			↓	↓	↓				

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SUMMARY SHEET
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PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-286	5-6-08	N 584550	L-3	N	109.8	13.7	SF-4	113.1	15.6	97.1	-1.9	P	
		E 1505120											
SF-287		N 584480			111.7	14.9				98.8	-0.7	P	
		E 1505150											
SF-288		N 585000	L-11		98.0	16.0	SF-3	98.2	20.2	99.8	-4.2	P	
		E 1505800											
SF-289		N 584940			107.8	16.7	SF-4	113.1	15.6	95.3	+1.1	P	
		E 1505810											
SF-290		N 584850			110.8	12.9				98.0	-2.7	P	
		E 1505830											
SF-291		N 584710			97.5	24.2	SF-3	98.2	20.2	99.3	+4.0	P	
		E 1505870											
SF-292		N 584650			97.1	23.2				98.9	+3.0	P	
		E 1505860											
SF-293		N 584630	L-12		107.6	14.1	SF-4	113.1	15.6	95.1	-1.5	P	
		E 1505160											
SF-294		N 584600			110.5	16.9				97.7	+1.3	P	
		E 1505220											
SF-295		N 584520			108.9	15.1				96.3	-0.5	P	
		E 1505250											
		N											
		E											
		N											
		E											

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SUMMARY SHEET
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PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [illegible]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-296	5-7-08	N 584980	L-12	N	96.2	23.4	SF-3	98.2	20.2	98.0	+3.2	P	P.C.
		E 1505790											
SF-297		N 584880			94.6	22.4				96.3	+2.2	P	
		E 1505830											
SF-298		N 584770			93.9	21.8				95.6	+1.6	P	
		E 1505840											
SF-299		N 584700			96.7	19.9				98.5	-0.3	P	
		E 1505860	↓				↓	↓	↓				
SF-300		N 584660	L-4		101.7	18.5	SF-1	101.7	20.6	100.0	-2.1	P	
		E 1505060											
SF-301		N 584580			107.6	14.3	SF-4	113.1	15.6	95.2	-1.3	P	
		E 1505110											
SF-302		N 584500			107.9	14.0				95.4	-1.6	P	
		E 1505130	↓										
SF-303		N 584520	L-3		108.0	14.3				95.5	-1.3	P	
		E 1505210											
SF-304		N 584600			109.3	17.7				96.6	+2.1	P	
		E 1505200					↓	↓	↓				
SF-305		N 584670			98.0	23.6	SF-3	98.2	20.2	99.8	+3.4	P	
		E 1505150	↓										
SF-306		N 584900	L-13		93.4	20.4				95.1	+0.2	P	
		E 1505830					↓	↓	↓				
SF-307		N 585000			87.5	30.3	SF-2	87.7	28.2	99.8	+2.1	P	
	↓	E 1509800	↓	↓									

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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-308	5-7-08	N 584500	L-1	N	107.5	18.2	SF4	113.1	15.6	95.0	+2.6	P	
		E 1505200											
SF-309		N 584600			99.1	17.1	SF-1	101.7	20.6	97.4	-3.5	P	
		E 1505300											
SF-310		N 584600	L-2		109.0	13.1	SF4	113.1	15.6	96.4	-2.5	P	
		E 1505270											
SF-311		N 584530			108.2	15.3				95.7	-0.3	P	
		E 1505260											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-312	5-8-08	N 584240	L-8	N	87.8	31.6	SF-2	87.7	28.2	100.1	+3.4	P	
		E 1504840											
SF-313		N 584320			87.1	28.1				99.3	-0.1	P	
		E 1504780											
SF-314		N 584340			85.9	29.3				97.9	+1.1	P	DC
		E 1504660											
SF-315		N 584460	L-9		95.2	24.1	SF-3	98.2	20.2	96.9	+3.9	P	
		E 1504970											
SF-316		N 584530			87.5	28.3	SF-2	87.7	28.2	99.8	+0.1	P	
		E 1505040											
SF-317		N 584570			85.5	30.9				97.5	+2.7	P	
		E 1505150											
SF-318		N 584670			84.7	29.9				96.6	+1.7	P	
		E 1505150											
SF-319		N 584640			86.3	28.4				98.4	+0.2	P	
		E 1505060											
SF-320		N 584550			85.7	29.3				97.7	+1.1	P	
		E 1504950											
SF-321		N 584450			87.0	30.5				99.2	+2.3	P	
		E 1505050											
SF-322		N 584470			86.1	27.2				98.2	-1.0	P	
		E 150150											
SF-323		N 584170			86.4	29.8				98.5	+1.6	P	
		E 1504860											

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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102
PROJECT TITLE: CMS Landfill V Cell 2G
PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM
REVIEWED BY: [illegible]
DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-324	5-8-08	N 584220	L-9	N	84.7	31.0	SF-2	87.7	28.2	96.6	+2.8	P	
		E 1504850											
SF-325		N 584330			84.1	30.2				95.9	+2.0	P	
		E 1504710											
SF-326		N 584340			86.5	30.4				98.6	-2.0	P	
		E 1504650											
SF-327		N 584400			97.9	18.2	SF-3	98.2	20.2	99.7	+2.2	P	
		E 1504560											
SF-328		N 584170	L-10		84.3	31.8	SF-2	87.7	28.2	96.1	+3.6	P	
		E 1504870											
SF-329		N 584240			84.9	27.9				96.8	-0.3	P	
		E 1504840											
SF-330		N 584300			86.6	31.1				98.7	+2.9	P	
		E 1504770											
SF-331		N 584340			85.0	28.0				96.9	-0.2	P	
		E 1504680											
SF-332		N 584400			87.1	29.6				99.3	+1.4	P	
		E 1504690											
		N											
		E											
		N											
		E											
		N											
		E											

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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-333	5-13-08	N 584190	L-11	N	96.3	24.2	SF-3	98.2	20.2	98.1	+4.1	P	
		E 1504870											
SF-334		N 584250			95.1	23.7				96.8	+3.5	P	
		E 1504840											
SF-335		N 584320			97.4	21.9				99.2	+1.7	P	DC
		E 1504750											
SF-336		N 584340			95.8	23.0				97.6	+2.8	P	
		E 1504650											
SF-337		N 584410			96.3	20.4				98.1	+0.2	P	
		E 1504580	↓				↓	↓	↓				
SF-338		N 584190	L-12		110.7	14.3	SF-4	113.1	15.6	97.9	-1.3	P	
		E 1504890											
SF-339		N 584270			109.9	15.1	SF-3	98.2	20.2	97.2	-0.5	P	
		E 1504820											
SF-340		N 584310			96.6	20.9				98.4	+0.7	P	
		E 1504750											
SF-341		N 584330			95.0	22.8				96.7	+2.6	P	
		E 1504650											
SF-342		N 584400			95.9	21.7				97.7	+1.5	P	
		E 1504600	↓										
SF-343		N 584180	L-13		93.7	22.9				95.4	+2.7	P	
		E 1504840					↓	↓	↓				
SF-344		N 584240			113.0	13.8	SF-4	113.1	15.6	99.9	-1.8	P	
	↓	E 1504850	↓	↓									

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IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [illegible]

DATE REVIEWED: 5/20/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
SF-345	5-13-08	N 584300	L-13	N	109.3	16.8	SF-4	113.1	15.6	96.6	+1.2	P	
	↓	E 1504800	↓	↓			↓	↓	↓				
SF-346		N 584350			110.1	17.2				97.3	+1.6	P	
		E 1504700											
SF-347		N 584370			111.7	16.6				98.8	+1.0	P	
	↓	E 1504640	↓	↓			↓	↓	↓				
		N											
		E											
		N											
		E											
		N											
		E											
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ACC of NORTH CAROLINA, PLLC

APPENDIX F
Preconstruction Testing

ACC of NORTH CAROLINA, PLLC

SECTION F-1

Laboratory Test Pad Bulk Sample Test Results

TIMELY ENGINEERING SOIL TESTS, LLC
74 Forge Street Tucker, GA 30084
Phone: 770-938-8233 Fax: 770-923-8973
Cell: 678-612-6534
Web: www.test-llc.com

Summary of Soil Testing (TPC-samples)

Project Number: 801

Project Name: CMS Landfill

T.E.S.T. Sample Number	Client Sample Number	USCS	Moisture Content (%)	Grain Size Distribution			Atterberg Limits			Proctor		Hydraulic Conductivity		
				%Finer #4 Sieve	% Finer #200 Sieve	% Finer 0.005mm	L.L. %	P.L. %	P.I. %	Opt. M.C. %	Max.Dry. Density pcf	Initial M.C. %	Init.Dry Density pcf	Hydraulic Conduct. cm/sec
5150	TPC-1	-	-	100.0	77.1	59.0	61	34	27	27.0	93.0	29.6	89.3	8.8E-06
5151	TPC-2	-	-	100.0	72.0	56.6	55	28	27	26.0	94.3	-	-	-
5178	TPC-2	-	-	-	-	-	-	-	-	29.2	91.1	31.3	88.0	8.4E-06
5152	TPC-3	-	-	100.0	75.2	59.7	64	35	29	30.6	90.1	32.1	87.4	4.2E-07

TIMELY
ENGINEERING
SOIL
TESTS, LLC

1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

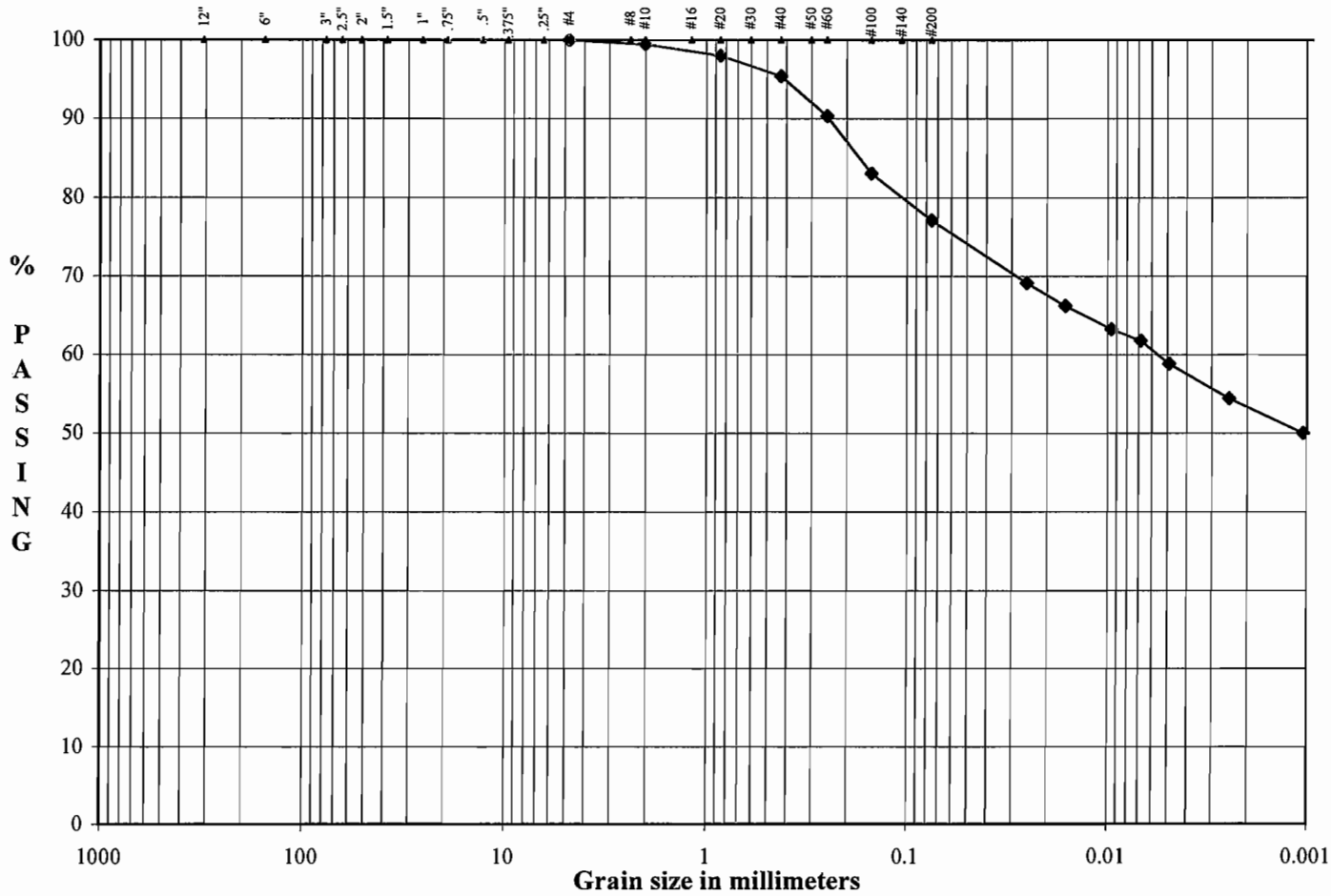
Tested By	RI
Date	05/22/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5150/TPC-1	Depth/Elev.	-
Location	Test Pad 1	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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Fax: 770-923-8973
Web: www.test-llc.com

Tested By	RI
Date	05/23/08
Checked By	LB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5150/TPC-1	Depth/Elev.	-
Location	Test Pad 1	Add. Info	-

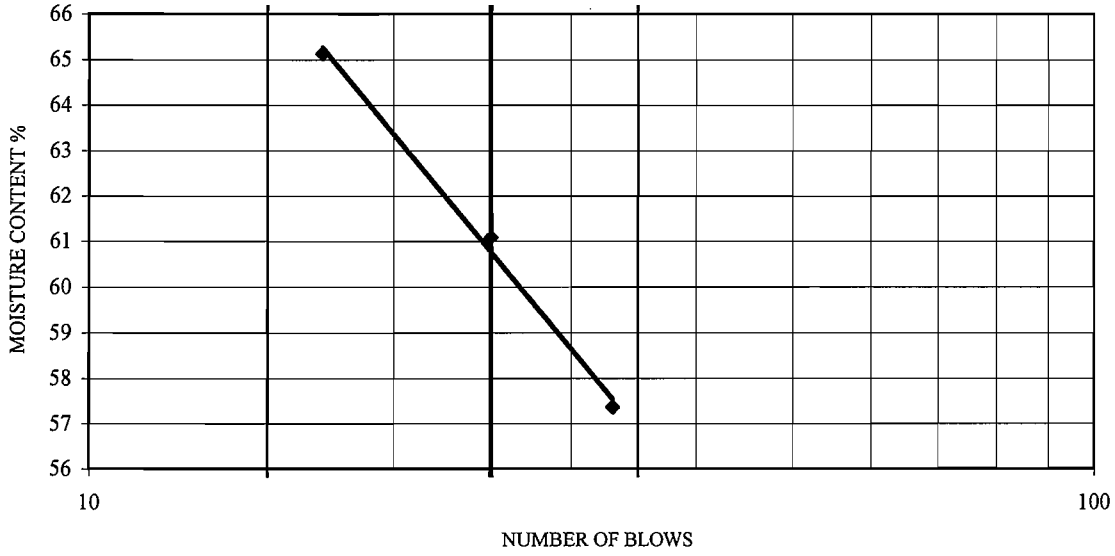
ASTM D 4318/AASHTO T 88, T 89

Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	33	25	17
Mass of Wet Sample & Tare, g	34.36	36.55	35.00
Mass of Dry Sample & Tare, g	30.89	32.56	31.04
Mass of Tare, g	24.84	26.04	24.96
Moisture Content, %	57.36	61.09	65.13

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	32.04	34.28
Mass of Dry Sample & Tare, g	29.85	31.59
Mass of Tare, g	23.33	23.60
Moisture Content, %	33.59	33.67

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	703.00
Mass of Dry Sample & Tare, g	575.00
Mass of Tare, g	158.50
Moisture Content, %	30.73

LIQUID LIMIT (LL)	61
PLASTIC LIMIT (PL)	34
PLASTICITY INDEX (PI)	27
LIQUIDITY INDEX (LI)	-0.12

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

Tested By	RI
Date	05/20/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5150/TPC-1	Depth/Elev.	-
Location	Test Pad 1	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	17500.0	13386.1
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	16.6	16.6
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

MOISTURE CONTENT

	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	703.0	16.6
Mass of Dry Sample & Tare, g	575.0	16.6
Mass of Tare, g	158.5	0.0
Moisture Content, %	30.7	0.0

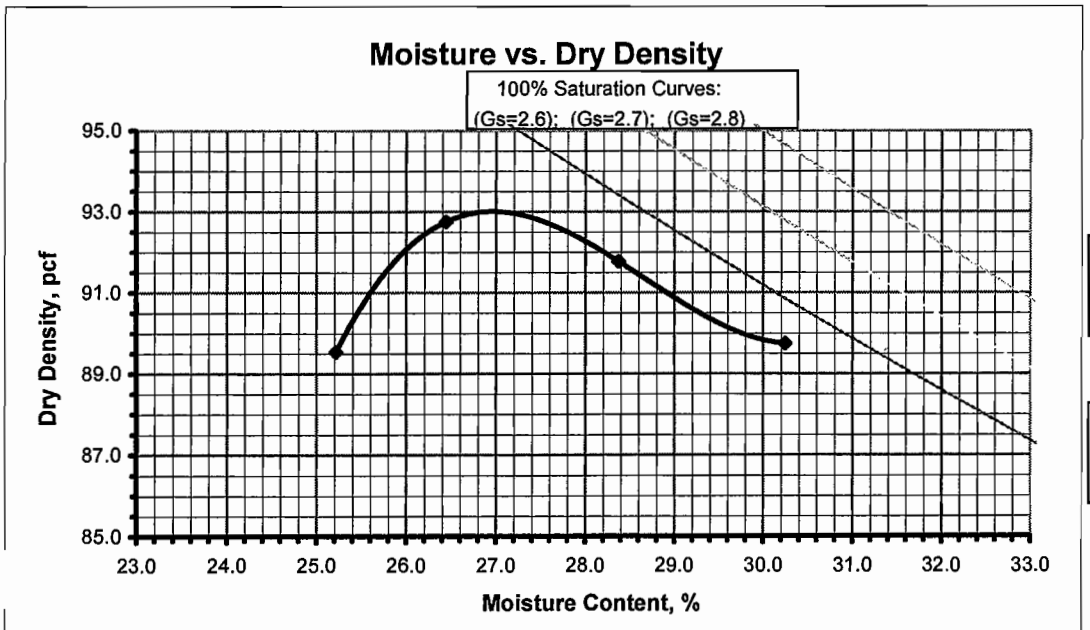
Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.1
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.1

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5641.0	5719.0	5727.0	5713.0	
Mass of Wet Sample & Tare, g	538.5	516.0	523.0	516.0	
Mass of Dry Sample & Tare, g	451.7	429.0	427.4	418.0	
Mass of Tare, g	107.5	100.0	90.5	94.0	
Moisture Content, %	25.2	26.4	28.4	30.2	
Wet Density, pcf	112.1	117.3	117.8	116.9	
Dry Density, pcf	89.5	92.8	91.8	89.7	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤ 20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	93.0
Optimum Moisture Content, %	27.0

TIMELY ENGINEERING SOIL TESTS, LLC

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Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/26/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5150/TPC-1	Depth/Elev.	-
Location	Test Pad 1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.572	in	6.53	cm
Diameter	2.850	in	7.24	cm
Area	6.38	in^2	41.16	cm^2
Volume	268.88	cm^3	0.0095	ft^3
Mass	498.60	g	1.10	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	89.3	pcf		

Moisture Content

Mass of wet sample & tare	219.40	g
Mass of dry sample & tare	192.50	g
Mass of tare	101.70	g
% Moisture	29.6	

Test Data

Speed	6	
Board Number	1	
Cell Number	4	
Flow Pump Number	1A	
Flow Pump Rate	3.58E-03	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	54.87	cm
Min Head	54.87	cm
Maximum Gradient	8.26	
Minimum Gradient	8.26	

Final Data (After Test)

Average Height of Sample			2.616	in	6.64	cm
Average Diameter of Sample			2.902	in	7.37	cm
Area	6.61	in^2	42.67	cm^2		
Volume	283.55	cm^3	0.0100	ft^3		
Mass	518.40	g	1.14	lb		

Dry Density	84.3	pcf
Vol. of Voids	141.74	cm^3
Vol. of Solids	141.81	cm^3
Void Ratio	1.00	
Saturation	95.6	%

Moisture Content

Mass of wet sample & tare	617.90	g
Mass of dry sample & tare	482.40	g
Mass of tare	99.60	g
% Moisture	35.4	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/26/08	16	0	-	0.78	54.87	8.26	26.3	-	-	-	
05/26/08	16	5	300	0.78	54.87	8.26	26.3	1.02E-05	0.864	8.78E-06	
05/26/08	16	10	300	0.78	54.87	8.26	26.3	1.02E-05	0.864	8.78E-06	
05/26/08	16	15	300	0.78	54.87	8.26	26.3	1.02E-05	0.864	8.78E-06	*
05/26/08	16	20	300	0.78	54.87	8.26	26.3	1.02E-05	0.864	8.78E-06	*
05/26/08	16	25	300	0.78	54.87	8.26	26.3	1.02E-05	0.864	8.78E-06	*
05/26/08	16	30	300	0.78	54.87	8.26	26.3	1.02E-05	0.864	8.78E-06	*

Reported Average Hydraulic Conductivity* 8.8E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS: Material passed #4 sieve used for testing. Material was remolded to 96% of maximum dry density (standard proctor) at 2.6% above optimum moisture content.

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	64
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

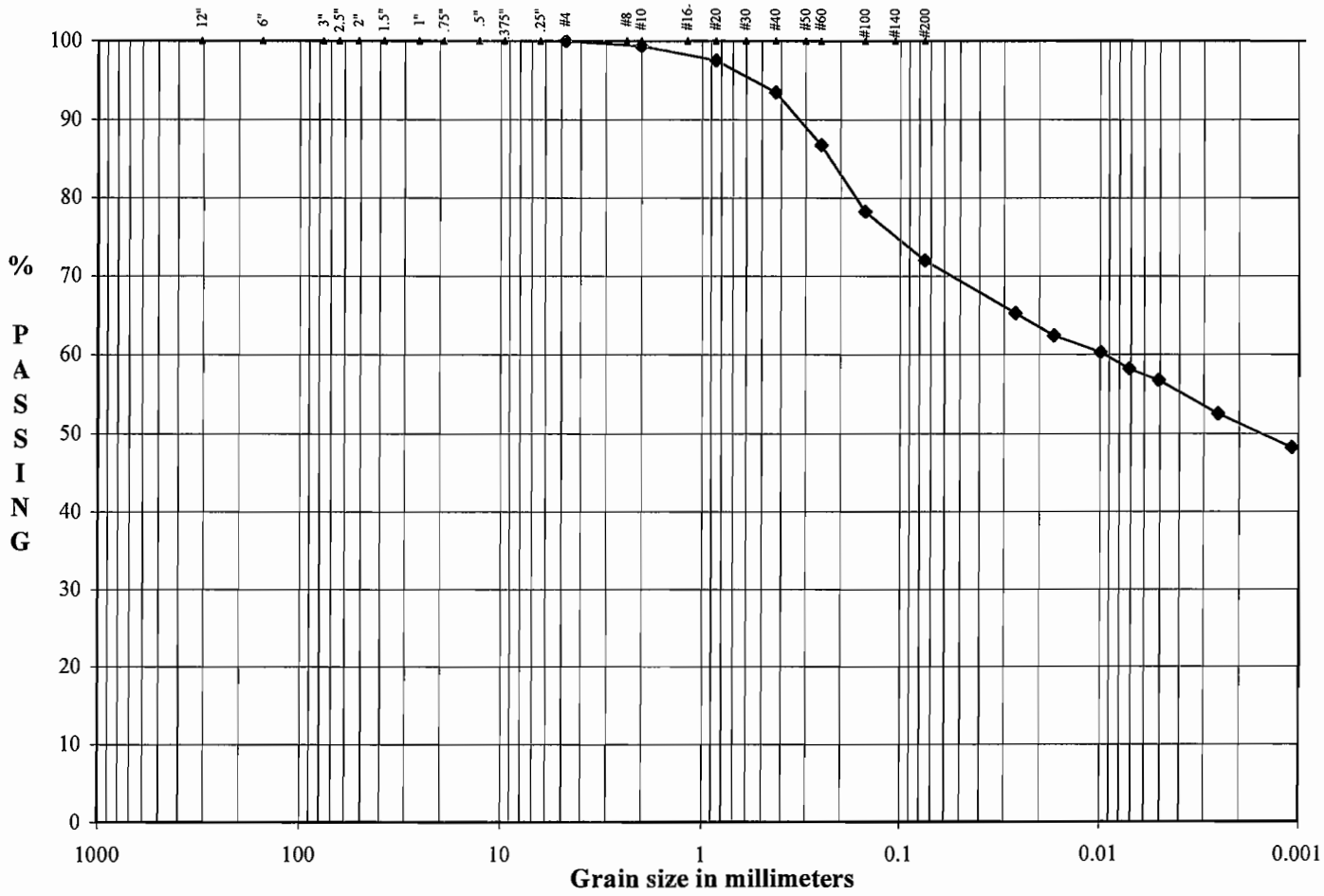
Tested By	RI
Date	05/22/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5151/TPC-2	Depth/Elev.	-
Location	Test Pad 2	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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AASHTO R18

Tested By	RI
Date	05/23/08
Checked By	

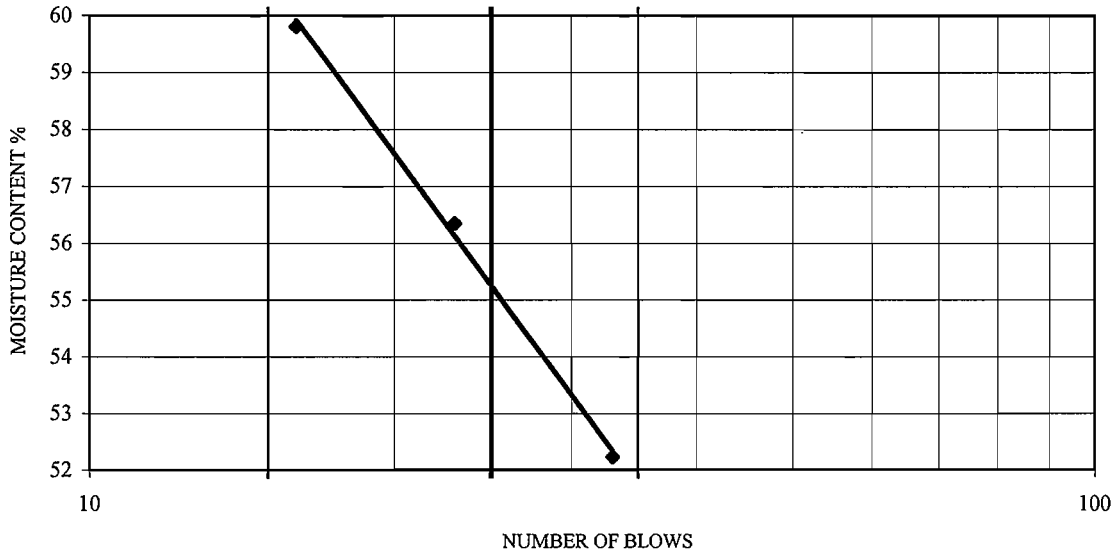
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5151/TPC-2	Depth/Elev.	-
Location	Test Pad 2	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	33	23	16
Mass of Wet Sample & Tare, g	34.82	34.96	34.64
Mass of Dry Sample & Tare, g	31.42	31.54	30.89
Mass of Tare, g	24.91	25.47	24.62
Moisture Content, %	52.23	56.34	59.81

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	28.94	26.42
Mass of Dry Sample & Tare, g	26.78	24.15
Mass of Tare, g	19.19	16.17
Moisture Content, %	28.46	28.45

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	931.0
Mass of Dry Sample & Tare, g	760.9
Mass of Tare, g	156.0
Moisture Content, %	28.12

LIQUID LIMIT (LL)	55
PLASTIC LIMIT (PL)	28
PLASTICITY INDEX (PI)	27
LIQUIDITY INDEX (LI)	0.00

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5178/TPC-2	Depth/Elev.	-
Location	Lift-2	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	18100.0	13832.9
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	24.5	24.5
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

MOISTURE CONTENT

	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	956.0	24.5
Mass of Dry Sample & Tare, g	767.4	24.5
Mass of Tare, g	156.0	0.0
Moisture Content, %	30.8	0.0

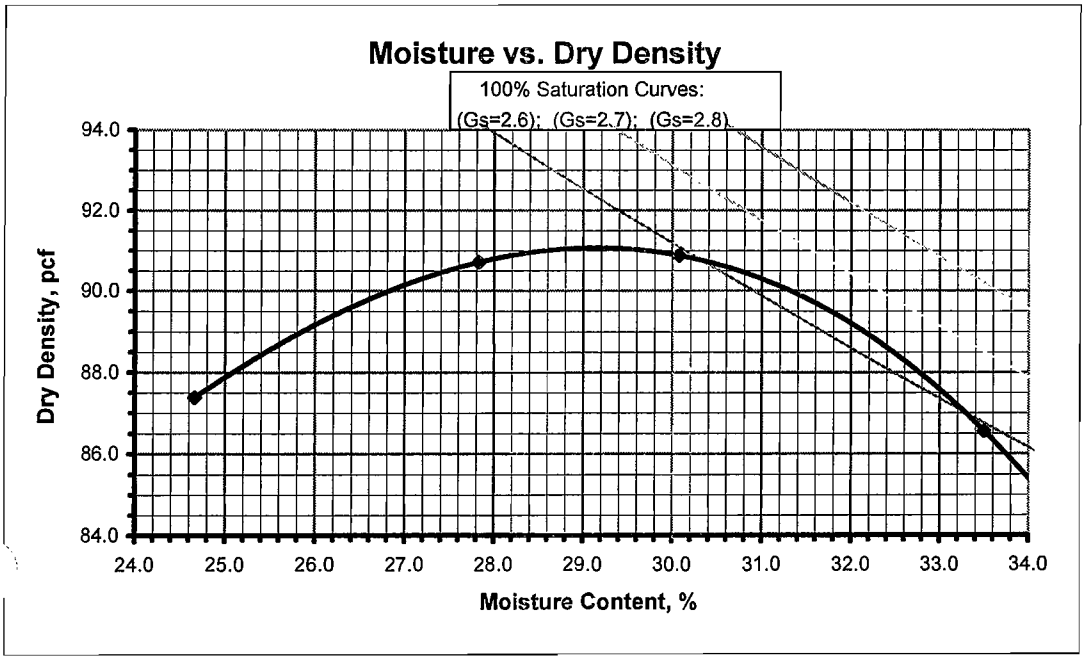
Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.2
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.2

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5593.0	5699.0	5733.0	5693.0	
Mass of Wet Sample & Tare, g	777.0	765.5	760.0	774.5	
Mass of Dry Sample & Tare, g	684.2	665.9	654.8	655.3	
Mass of Tare, g	308.0	308.0	305.0	299.5	
Moisture Content, %	24.7	27.8	30.1	33.5	
Wet Density, pcf	108.9	116.0	118.2	115.6	
Dry Density, pcf	87.4	90.7	90.9	86.6	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	91.1
Optimum Moisture Content, %	29.2

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Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5178/TPC-2	Depth/Elev.	-
Location	Lift-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.566	in	6.52	cm
Diameter	2.850	in	7.24	cm
Area	6.38	in^2	41.16	cm^2
Volume	268.25	cm^3	0.0095	ft^3
Mass	496.62	g	1.09	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	88.0	pcf		

Moisture Content

Mass of wet sample & tare	432.84	g
Mass of dry sample & tare	367.65	g
Mass of tare	159.15	g
% Moisture	31.3	

Test Data

Speed	7	
Board Number	3	
Cell Number	9	
Flow Pump Number	1A	
Flow Pump Rate	1.79E-03	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	29.54	cm
Min Head	29.54	cm
Maximum Gradient	4.47	
Minimum Gradient	4.47	

Final Data (After Test)

Average Height of Sample			2.603	in	6.61 cm
Average Diameter of Sample			2.908	in	7.39 cm
Area	6.64	in^2	42.85	cm^2	
Volume	283.30	cm^3	0.0100	ft^3	
Mass	514.60	g	1.13	lb	

Dry Density	83.4	pcf
Vol. of Voids	143.13	cm^3
Vol. of Solids	140.17	cm^3
Void Ratio	1.02	
Saturation	95.1	%

Moisture Content

Mass of wet sample & tare	604.20	g
Mass of dry sample & tare	468.12	g
Mass of tare	89.80	g
% Moisture	36.0	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	12	30	-	0.42	29.54	4.47	24.5	-	-	-	
05/30/08	12	35	300	0.42	29.54	4.47	24.5	9.36E-06	0.899	8.42E-06	
05/30/08	12	40	300	0.42	29.54	4.47	24.5	9.36E-06	0.899	8.42E-06	
05/30/08	12	45	300	0.42	29.54	4.47	24.5	9.36E-06	0.899	8.42E-06	*
05/30/08	12	50	300	0.42	29.54	4.47	24.5	9.36E-06	0.899	8.42E-06	*
05/30/08	12	55	300	0.42	29.54	4.47	24.5	9.36E-06	0.899	8.42E-06	*
05/30/08	13	0	300	0.42	29.54	4.47	24.5	9.36E-06	0.899	8.42E-06	*

Reported Average Hydraulic Conductivity* 8.4E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS: Material passed #4 sieve used for testing. Material was remolded to 96.6% of maximum dry density (standard proctor) at 2.1% above optimum moisture content.

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	29
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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AASHTO R18

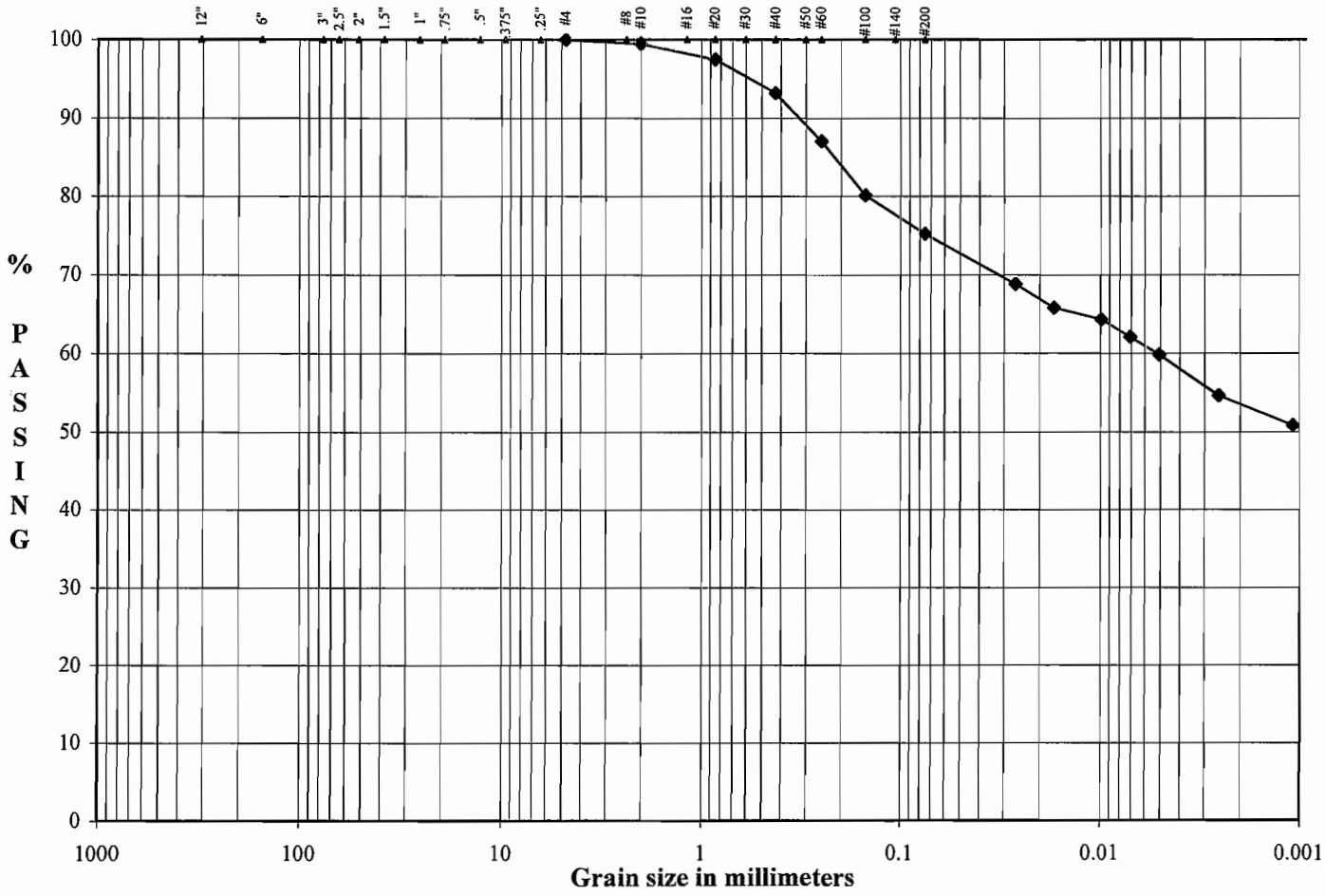
Tested By	RI
Date	05/22/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5152/TPC-3	Depth/Elev.	-
Location	Test Pad 3	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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AASHTO R18

Tested By	RI
Date	05/23/08
Checked By	

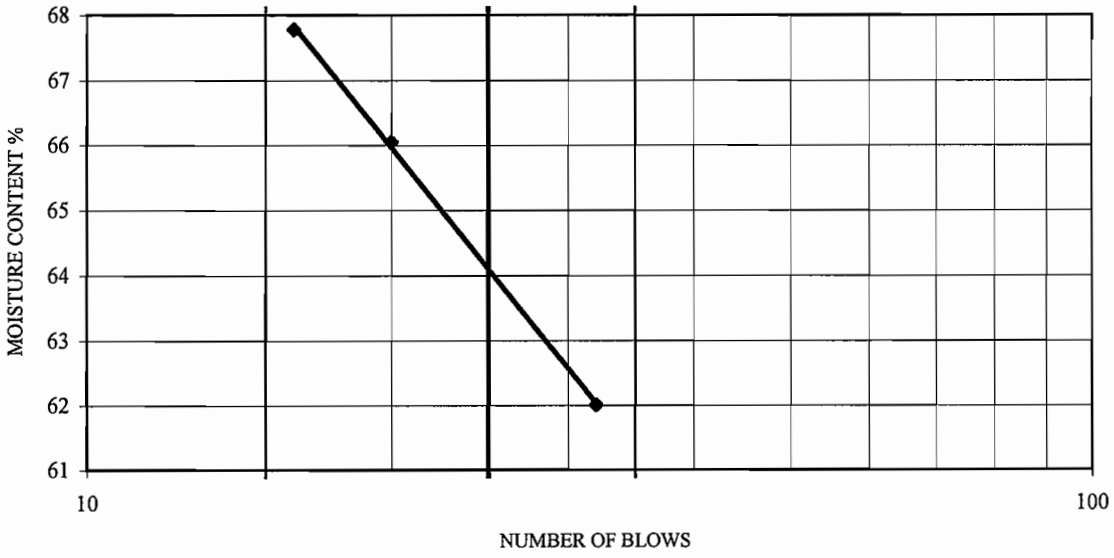
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5152/TPC-3	Depth/Elev.	-
Location	Test Pad 3	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	32	20	16
Mass of Wet Sample & Tare, g	35.27	34.78	37.52
Mass of Dry Sample & Tare, g	31.50	30.85	33.27
Mass of Tare, g	25.42	24.90	27.00
Moisture Content, %	62.01	66.05	67.78

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	27.61	32.96
Mass of Dry Sample & Tare, g	25.35	30.44
Mass of Tare, g	18.89	23.24
Moisture Content, %	34.98	35.00

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	974.50
Mass of Dry Sample & Tare, g	781.00
Mass of Tare, g	172.00
Moisture Content, %	31.77

LIQUID LIMIT (LL)	64
PLASTIC LIMIT (PL)	35
PLASTICITY INDEX (PI)	29
LIQUIDITY INDEX (LI)	-0.11

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

Tested By	RI
Date	05/20/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5152/TPC-3	Depth/Elev.	-
Location	Test Pad 3	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	22600.0	17150.7
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	53.4	53.4
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

MOISTURE CONTENT

	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	974.5	53.4
Mass of Dry Sample & Tare, g	781.0	53.4
Mass of Tare, g	172.0	0.0
Moisture Content, %	31.8	0.0

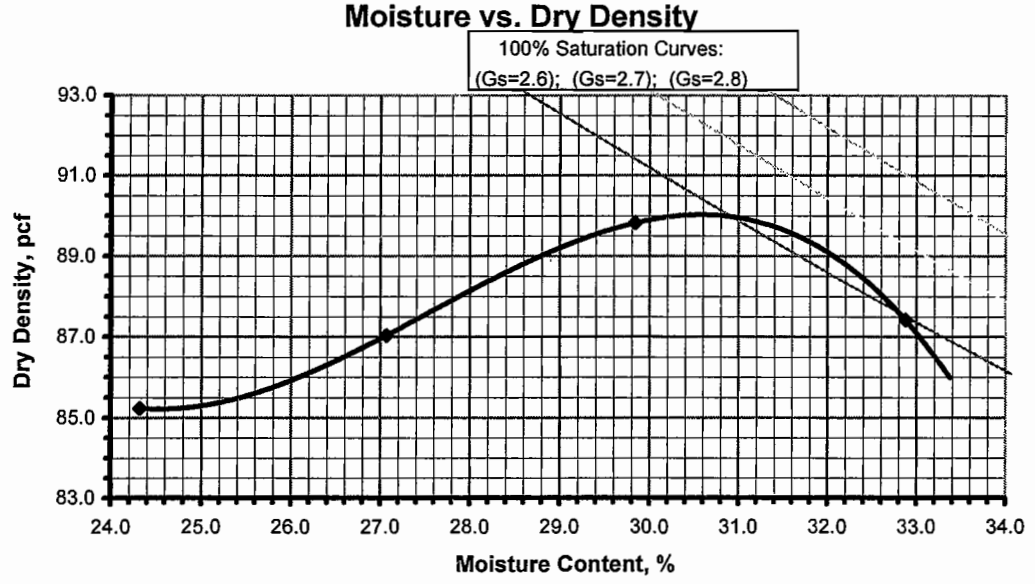
Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.3
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.3

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5548.0	5618.0	5709.0	5702.0	
Mass of Wet Sample & Tare, g	512.5	510.5	520.0	511.5	
Mass of Dry Sample & Tare, g	432.0	422.1	424.4	410.3	
Mass of Tare, g	101.0	95.5	104.0	102.5	
Moisture Content, %	24.3	27.1	29.8	32.9	
Wet Density, pcf	106.0	110.6	116.6	116.2	
Dry Density, pcf	85.2	87.0	89.8	87.4	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤ 20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	90.1
Optimum Moisture Content, %	30.6

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AASHTO R18

Tested By	RI
Date	05/23/08
Checked By	LS

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5152/TPC-3	Depth/Elev.	-
Location	Test Pad 3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.557	in	6.49	cm
Diameter	2.850	in	7.24	cm
Area	6.38	in^2	41.16	cm^2
Volume	267.31	cm^3	0.0094	ft^3
Mass	494.60	g	1.09	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	87.4	pcf		

Moisture Content

Mass of wet sample & tare	371.27	g
Mass of dry sample & tare	303.87	g
Mass of tare	94.03	g
% Moisture	32.1	

Test Data

Speed	9	
Board Number	7	
Cell Number	2	
Flow Pump Number	2A	
Flow Pump Rate	4.48E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	142.79	cm
Min Head	141.38	cm
Maximum Gradient	21.64	
Minimum Gradient	21.43	

Final Data (After Test)

Average Height of Sample			2.598	in	6.60 cm
Average Diameter of Sample			2.882	in	7.32 cm
Area	6.52	in^2	42.09	cm^2	
Volume	277.73	cm^3	0.0098	ft^3	
Mass	509.90	g	1.12	lb	

Dry Density	83.9	pcf
Vol. of Voids	139.37	cm^3
Vol. of Solids	138.36	cm^3
Void Ratio	1.01	
Saturation	97.8	%

Moisture Content

Mass of wet sample & tare	604.20	g
Mass of dry sample & tare	467.90	g
Mass of tare	94.40	g
% Moisture	36.5	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/23/08	15	0	-	2.01	141.38	21.43	27.3	-	-	-	
05/23/08	15	5	300	2.01	141.38	21.43	27.3	4.97E-07	0.845	4.20E-07	
05/23/08	15	10	300	2.02	142.09	21.53	27.3	4.96E-07	0.845	4.19E-07	
05/23/08	15	15	300	2.02	142.09	21.53	27.3	4.94E-07	0.845	4.18E-07	*
05/23/08	15	20	300	2.03	142.79	21.64	27.3	4.93E-07	0.845	4.16E-07	*
05/23/08	15	25	300	2.02	142.09	21.53	27.3	4.93E-07	0.845	4.16E-07	*
05/23/08	15	30	300	2.03	142.79	21.64	27.3	4.93E-07	0.845	4.16E-07	*

Reported Average Hydraulic Conductivity* 4.2E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS: Material passed #4 sieve used for testing. Material was remolded to 97% of maximum dry density (standard proctor) at 1.5% above optimum moisture content.

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

ACC of NORTH CAROLINA, PLLC

SECTION F-2

Laboratory Test Pad Shelby Tube Test Results

TIMELY ENGINEERING SOIL TESTS, LLC
374 Forge Street Tucker, GA 30084
Phone: 770-938-8233 Fax: 770-923-8973
Cell: 678-612-6534
Web: www.test-llc.com

Summary of Soil Testing (TPST-Samples)

Project Number: 801

Project Name: CMS Landfill

T.E.S.T. Sample Number	Client Sample Number	USCS	Moisture Content (%)	Grain Size Distribution			Atterberg Limits			Proctor		Hydraulic Conductivity		
				%Finer #4 Sieve	% Finer #200 Sieve	% Finer 0.005mm	L.L. %	P.L. %	P.I. %	Opt. M.C. %	Max.Dry. Density pcf	Initial M.C. %	Init.Dry Density pcf	Hydraulic Conduct. cm/sec
5142	TPST-1	-	-	-	-	-	-	-	-	-	-	30.6	91.8	2.3E-07
5143	TPST-2	-	-	-	-	-	-	-	-	-	-	28.1	95.8	1.9E-07
5153	TPST-3	-	-	-	-	-	-	-	-	-	-	33.4	86.3	1.5E-07

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Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/20/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5142/TPST-1	Depth/Elev.	-
Location	Test Pad-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.903	in	7.37	cm
Diameter	2.851	in	7.24	cm
Area	6.38	in^2	41.19	cm^2
Volume	303.69	cm^3	0.0107	ft^3
Mass	583.50	g	1.29	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	91.8	pcf		

Moisture Content

Mass of wet sample & tare	583.50	g
Mass of dry sample & tare	446.90	g
Mass of tare	0.00	g
% Moisture	30.6	

Test Data

Speed	11	
Board Number	7	
Cell Number	9	
Flow Pump Number	2A	
Flow Pump Rate	1.12E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	75.26	cm
Min Head	73.86	cm
Maximum Gradient	10.19	
Minimum Gradient	10.00	

Final Data (After Test)

Average Height of Sample			2.907	in	7.38 cm
Average Diameter of Sample			2.856	in	7.25 cm
Area	6.41	in^2	41.33	cm^2	
Volume	305.18	cm^3	0.0108	ft^3	
Mass	588.60	g	1.30	lb	

Dry Density	91.4	pcf
Vol. of Voids	139.66	cm^3
Vol. of Solids	165.52	cm^3
Void Ratio	0.84	
Saturation	101.5	%

Moisture Content

Mass of wet sample & tare	690.60	g
Mass of dry sample & tare	548.90	g
Mass of tare	102.00	g
% Moisture	31.7	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/20/08	14	10	-	1.05	73.86	10.00	26.0	-	-	-	
05/20/08	14	15	300	1.05	73.86	10.00	26.0	2.71E-07	0.869	2.36E-07	
05/20/08	14	20	300	1.06	74.56	10.10	26.0	2.70E-07	0.869	2.34E-07	
05/20/08	14	25	300	1.06	74.56	10.10	26.0	2.68E-07	0.869	2.33E-07	*
05/20/08	14	30	300	1.07	75.26	10.19	26.0	2.67E-07	0.869	2.32E-07	*
05/20/08	14	35	300	1.07	75.26	10.19	26.0	2.66E-07	0.869	2.31E-07	*
05/20/08	14	40	300	1.07	75.26	10.19	26.0	2.66E-07	0.869	2.31E-07	*

Reported Average Hydraulic Conductivity* 2.3E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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1874 Forge Street Tucker, GA 30[illegible]
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/20/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5143/TPST-2	Depth/Elev.	-
Location	Test Pad-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.915	in	7.40	cm	
Diameter	2.855	in	7.25	cm	
Area	6.40	in^2	41.30	cm^2	
Volume	305.80	cm^3	0.0108	ft^3	
Mass	601.20	g	1.33	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	95.8	pcf			

Moisture Content

Mass of wet sample & tare	601.20	g
Mass of dry sample & tare	469.40	g
Mass of tare	0.00	g
% Moisture	28.1	

Test Data

Speed	10	
Board Number	7	
Cell Number	4	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	180.07	cm
Min Head	178.66	cm
Maximum Gradient	24.20	
Minimum Gradient	24.02	

Final Data (After Test)

Average Height of Sample			2.929	in	7.44 cm
Average Diameter of Sample			2.864	in	7.27 cm
Area	6.44	in^2	41.56	cm^2	
Volume	309.21	cm^3	0.0109	ft^3	
Mass	605.80	g	1.34	lb	

Dry Density	94.7	pcf
Vol. of Voids	135.36	cm^3
Vol. of Solids	173.85	cm^3
Void Ratio	0.78	
Saturation	100.8	%

Moisture Content

Mass of wet sample & tare	713.10	g
Mass of dry sample & tare	576.70	g
Mass of tare	107.30	g
% Moisture	29.1	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/20/08	15	0	-	2.54	178.66	24.02	26.0	-	-	-	
05/20/08	15	5	300	2.54	178.66	24.02	26.0	2.24E-07	0.869	1.95E-07	
05/20/08	15	10	300	2.55	179.37	24.11	26.0	2.24E-07	0.869	1.95E-07	
05/20/08	15	15	300	2.55	179.37	24.11	26.0	2.24E-07	0.869	1.94E-07	*
05/20/08	15	20	300	2.56	180.07	24.20	26.0	2.23E-07	0.869	1.94E-07	*
05/20/08	15	25	300	2.56	180.07	24.20	26.0	2.23E-07	0.869	1.94E-07	*
05/20/08	15	30	300	2.56	180.07	24.20	26.0	2.23E-07	0.869	1.94E-07	*

Reported Average Hydraulic Conductivity* 1.9E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

TIMELY ENGINEERING SOIL TESTS, LLC

1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/21/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5153/TPST-3	Depth/Elev.	-
Location	Test Pad 3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.803	in	7.12	cm
Diameter	2.824	in	7.17	cm
Area	6.26	in^2	40.41	cm^2
Volume	287.70	cm^3	0.0102	ft^3
Mass	530.80	g	1.17	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	86.3	pcf		

Moisture Content

Mass of wet sample & tare	530.80	g
Mass of dry sample & tare	398.00	g
Mass of tare	0.00	g
% Moisture	33.4	

Test Data

Speed	10	
Board Number	5	
Cell Number	1	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	226.49	cm
Min Head	225.09	cm
Maximum Gradient	31.73	
Minimum Gradient	31.54	

Final Data (After Test)

Average Height of Sample			2.810	in	7.14	cm
Average Diameter of Sample			2.831	in	7.19	cm
Area	6.29	in^2	40.61	cm^2		
Volume	289.85	cm^3	0.0102	ft^3		
Mass	534.10	g	1.18	lb		

Dry Density	85.7	pcf
Vol. of Voids	142.39	cm^3
Vol. of Solids	147.46	cm^3
Void Ratio	0.97	
Saturation	95.5	%

Moisture Content

Mass of wet sample & tare	619.30	g
Mass of dry sample & tare	483.40	g
Mass of tare	85.40	g
% Moisture	34.1	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/21/08	18	20	-	3.20	225.09	31.54	25.2	-	-	-	
05/21/08	18	25	300	3.20	225.09	31.54	25.2	1.75E-07	0.885	1.55E-07	
05/21/08	18	30	300	3.21	225.79	31.63	25.2	1.75E-07	0.885	1.55E-07	
05/21/08	18	35	300	3.21	225.79	31.63	25.2	1.74E-07	0.885	1.54E-07	*
05/21/08	18	40	300	3.22	226.49	31.73	25.2	1.74E-07	0.885	1.54E-07	*
05/21/08	18	45	300	3.21	225.79	31.63	25.2	1.74E-07	0.885	1.54E-07	*
05/21/08	18	50	300	3.22	226.49	31.73	25.2	1.74E-07	0.885	1.54E-07	*

Reported Average Hydraulic Conductivity* 1.5E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

ACC of NORTH CAROLINA, PLLC

SECTION F-3

Test Pad Field Density Test Results

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 5/30/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
TPC-1	5-19-08	N 584390	L-1	N	88.8	34.2	CL-4	90.1	29.1	98.6	+5.1	P	
		E 1505380											
TPC-2		N 584430			93.5	30.8	CL-2	93.4	28.5	100.1	+2.3	P	
		E 1505360											
TPC-3		N 584470			92.1	32.0				98.6	+3.5	P	
		E 1505340											
TPC-4		N 584390	L-2		92.1	31.3				98.8	+2.8	P	
		E 1505360											
TPC-5		N 584450			91.8	30.8				98.3	+2.3	P	
		E 1505360											
TPC-6		N 584490			92.3	31.1				98.8	+2.6	P	
		E 1505330											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 5/30/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
TPC-7	5-2008	N 584390	L-3	N	85.6	35.1	CL-1	85.9	32.4	99.7	+2.7	P	
		E 1505390											
TPC-8		N 584450			87.8	34.0	CL-3	88.3	30.0	99.4	+4.0	P	ST-3
		E 1505350											
TPC-9		N 584500			88.0	33.1				99.7	+3.1	P	
		E 1505330											
		N											
		E											
		N											
		E											
		N											
		E											
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		N											
		E											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ACC of NORTH CAROLINA, PLLC

APPENDIX G
Construction Testing

ACC of NORTH CAROLINA, PLLC

SECTION G-1

Laboratory Bulk Sample Test Results

TIMELY ENGINEERING SOIL TESTS, LLC
874 Forge Street Tucker, GA 30084
Phone: 770-938-8233 Fax: 770-923-8973
Cell: 678-612-6534
Web: www.test-llc.com

Summary of Soil Testing (C-Samples)

Project Number: 801

Project Name: CMS Landfill

T.E.S.T. Sample Number	Client Sample Number	USCS	Moisture Content (%)	Grain Size Distribution			Atterberg Limits			Proctor		Hydraulic Conductivity		
				%Finer #4 Sieve	% Finer #200 Sieve	% Finer 0.005mm	L.L. %	P.L. %	P.I. %	Opt. M.C. %	Max.Dry. Density pcf	Initial M.C. %	Init.Dry Density pcf	Hydraulic Conduct. cm/sec
4857	C-1	-	-	100.0	86.9	51.8	67	42	25	32.4	85.9	34.3	82.4	7.4E-06
4858	C-2	-	-	100.0	71.0	58.0	58	32	26	28.5	93.4	30.4	90.1	1.4E-06
4859	C-3	-	-	100.0	80.7	39.1	60	30	30	30.0	88.3	32.1	84.3	7.9E-06
5017	C-4	-	-	100.0	79.0	58.7	65	35	30	29.1	90.1	31.7	87.3	4.8E-06
5163	C-5	-	-	99.8	75.7	58.3	64	30	34	-	-	-	-	-
5164	C-6	-	-	99.9	76.8	56.6	69	32	37	-	-	-	-	-
5165	C-7	-	-	100.0	81.9	53.4	57	33	24	-	-	-	-	-
5166	C-8	-	-	100.0	88.1	52.1	61	36	25	-	-	-	-	-
5183	C-9	-	-	99.9	71.5	52.0	61	33	28	-	-	-	-	-
5187	C-10	-	-	99.5	69.7	54.1	65	31	34	-	-	-	-	-
5188	C-11	-	-	100.0	84.7	61.9	66	41	25	-	-	-	-	-

TIMELY ENGINEERING SOIL TESTS, LLC
1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

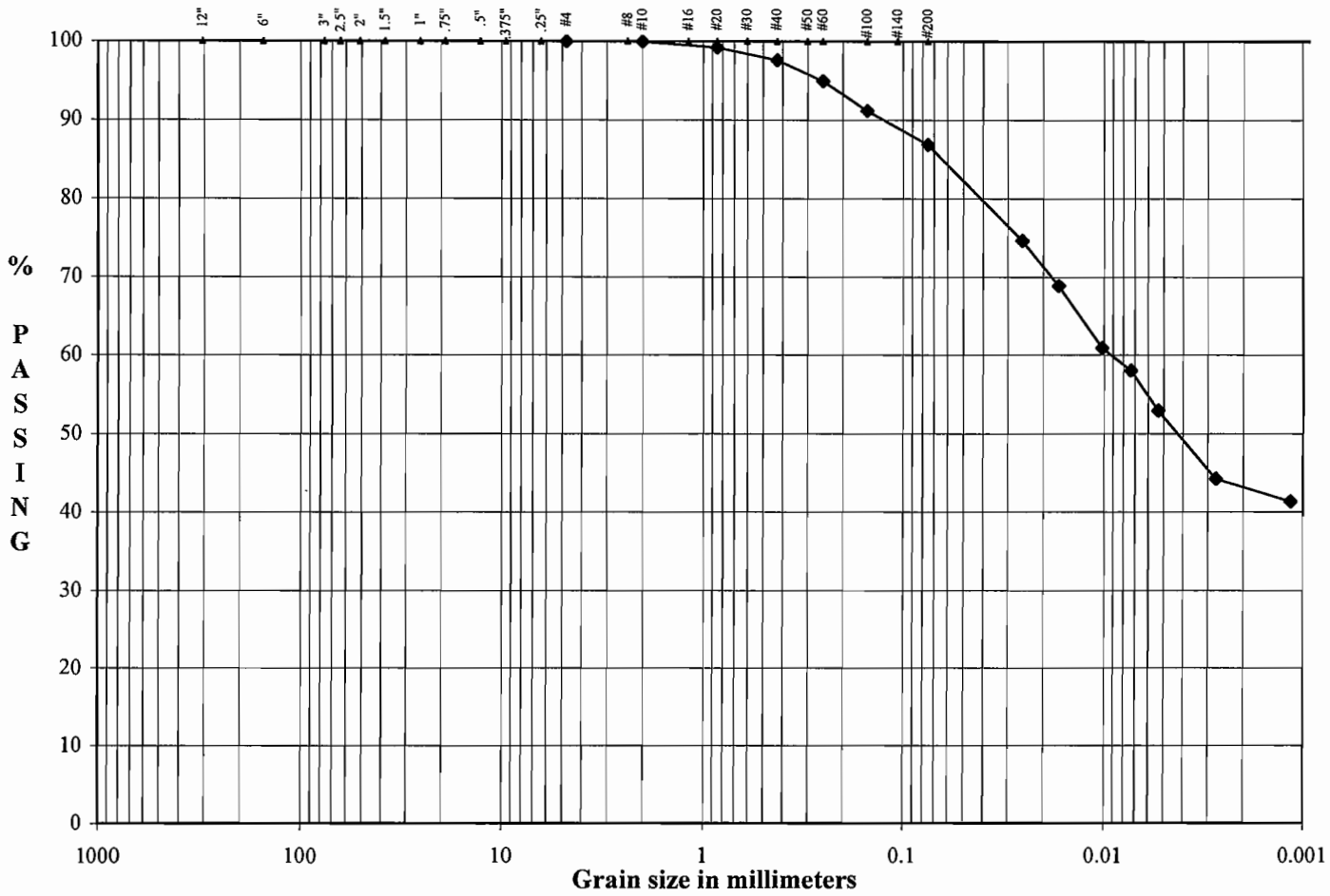
Tested By	RI
Date	04/07/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4857/C-1	Depth/Elev.	-
Location	Sed Pond (2)	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

TIMELY ENGINEERING SOIL TESTS, LLC
1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	NK
Date	04/12/08
Checked By	LB

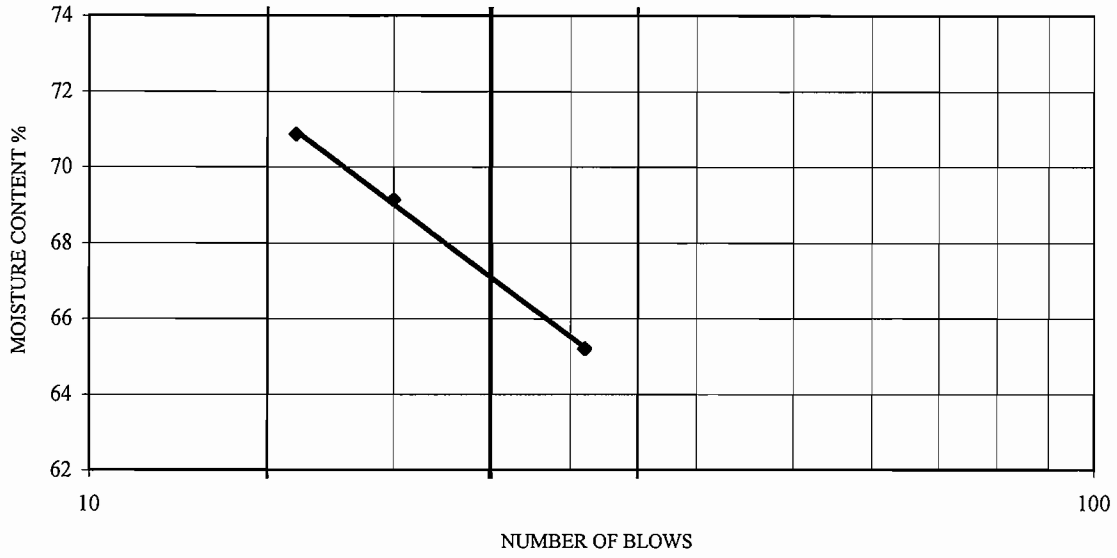
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4857/C-1	Depth/Elev.	-
Location	Sed Pond (2)	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	31	20	16
Mass of Wet Sample & Tare, g	34.25	37.22	38.49
Mass of Dry Sample & Tare, g	29.51	31.98	32.41
Mass of Tare, g	22.24	24.40	23.83
Moisture Content, %	65.20	69.13	70.86

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	30.37	28.92
Mass of Dry Sample & Tare, g	27.47	25.96
Mass of Tare, g	20.60	18.90
Moisture Content, %	42.21	41.93

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	335.90
Mass of Dry Sample & Tare, g	273.30
Mass of Tare, g	90.80
Moisture Content, %	34.30

LIQUID LIMIT (LL)	67
PLASTIC LIMIT (PL)	42
PLASTICITY INDEX (PI)	25
LIQUIDITY INDEX (LI)	-0.31

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

TIMELY ENGINEERING SOIL TESTS, LLC
1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	KI
Date	04/04/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4857/C-1	Depth/Elev.	-
Location	Sed Pond (2)	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	20500.0	15219.0
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	0.0	0.0
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.0
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.0

MOISTURE CONTENT

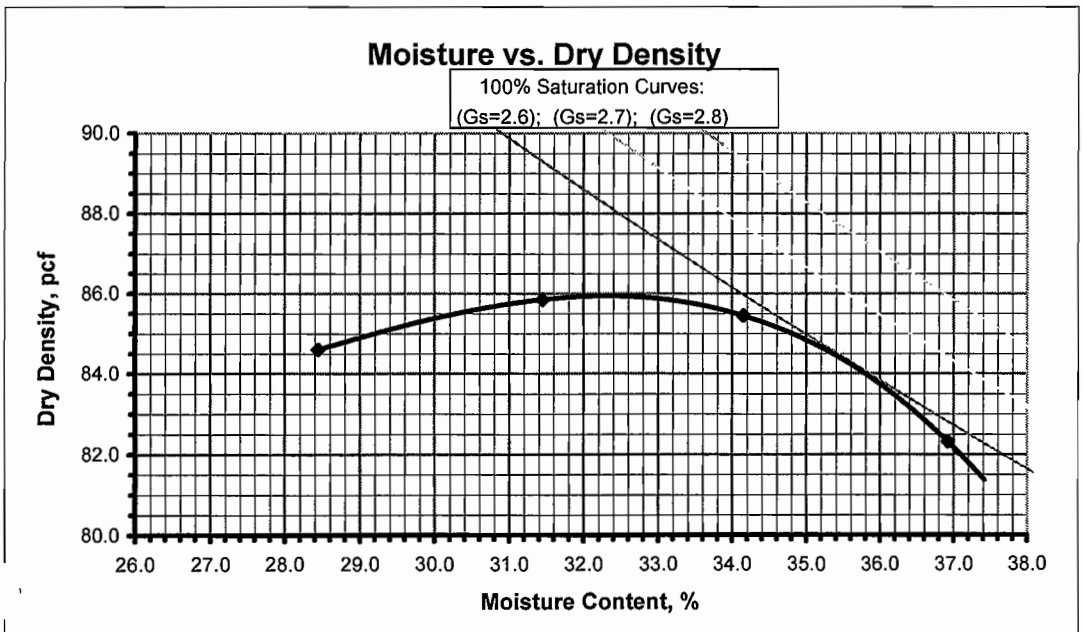
	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	604.5	
Mass of Dry Sample & Tare, g	470.8	
Mass of Tare, g	85.5	
Moisture Content, %	34.7	

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5589.0	5652.0	5679.0	5650.0	
Mass of Wet Sample & Tare, g	520.5	503.5	515.5	496.0	
Mass of Dry Sample & Tare, g	427.7	409.0	410.1	388.0	
Mass of Tare, g	101.5	108.5	101.5	95.5	
Moisture Content, %	28.4	31.4	34.2	36.9	
Wet Density, pcf	108.7	112.8	114.6	112.7	
Dry Density, pcf	84.6	85.8	85.4	82.3	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤ 20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	85.9
Optimum Moisture Content, %	32.4

TIMELY ENGINEERING SOIL TESTS, LLC
1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

Tested By	RI
Date	04/08/08
Checked By	LS

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4857/C-1	Depth/Elev.	-
Location	Sed Pond (2)	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.577	in	6.55	cm	
Diameter	2.850	in	7.24	cm	
Area	6.38	in^2	41.16	cm^2	
Volume	269.40	cm^3	0.0095	ft^3	
Mass	477.60	g	1.05	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	82.4	pcf			

Moisture Content

Mass of wet sample & tare	335.90	g
Mass of dry sample & tare	273.30	g
Mass of tare	90.80	g
% Moisture	34.3	

Test Data

Speed	7	
Board Number	3	
Cell Number	5	
Flow Pump Number	1A	
Flow Pump Rate	1.79E-03	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	37.28	cm
Min Head	37.28	cm
Maximum Gradient	5.60	
Minimum Gradient	5.60	

Final Data (After Test)

Average Height of Sample			2.621	in	6.66	cm	
Average Diameter of Sample			2.912	in	7.40	cm	
Area	6.66	in^2	42.97	cm^2			
Volume	286.05	cm^3	0.0101	ft^3			
Mass	503.00	g	1.11	lb			

Dry Density	77.4	pcf
Vol. of Voids	154.57	cm^3
Vol. of Solids	131.48	cm^3
Void Ratio	1.18	
Saturation	95.8	%

Moisture Content

Mass of wet sample & tare	592.50	g
Mass of dry sample & tare	444.50	g
Mass of tare	89.50	g
% Moisture	41.7	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
04/08/08	8	10	-	0.53	37.28	5.60	20.4	-	-	-	
04/08/08	8	15	300	0.53	37.28	5.60	20.4	7.45E-06	0.991	7.38E-06	
04/08/08	8	20	300	0.53	37.28	5.60	20.4	7.45E-06	0.991	7.38E-06	
04/08/08	8	25	300	0.53	37.28	5.60	20.4	7.45E-06	0.991	7.38E-06	*
04/08/08	8	30	300	0.53	37.28	5.60	20.4	7.45E-06	0.991	7.38E-06	*
04/08/08	8	35	300	0.53	37.28	5.60	20.4	7.45E-06	0.991	7.38E-06	*
04/08/08	8	40	300	0.53	37.28	5.60	20.4	7.45E-06	0.991	7.38E-06	*

Reported Average Hydraulic Conductivity* 7.4E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS: Material passed #4 sieve used for testing. Material was remolded to 95.9% of maximum dry density (standard proctor) at 1.9% above optimum moisture content.

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	29
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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TESTS, LLC

1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
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Web: www.test-llc.com

AASHTO R18

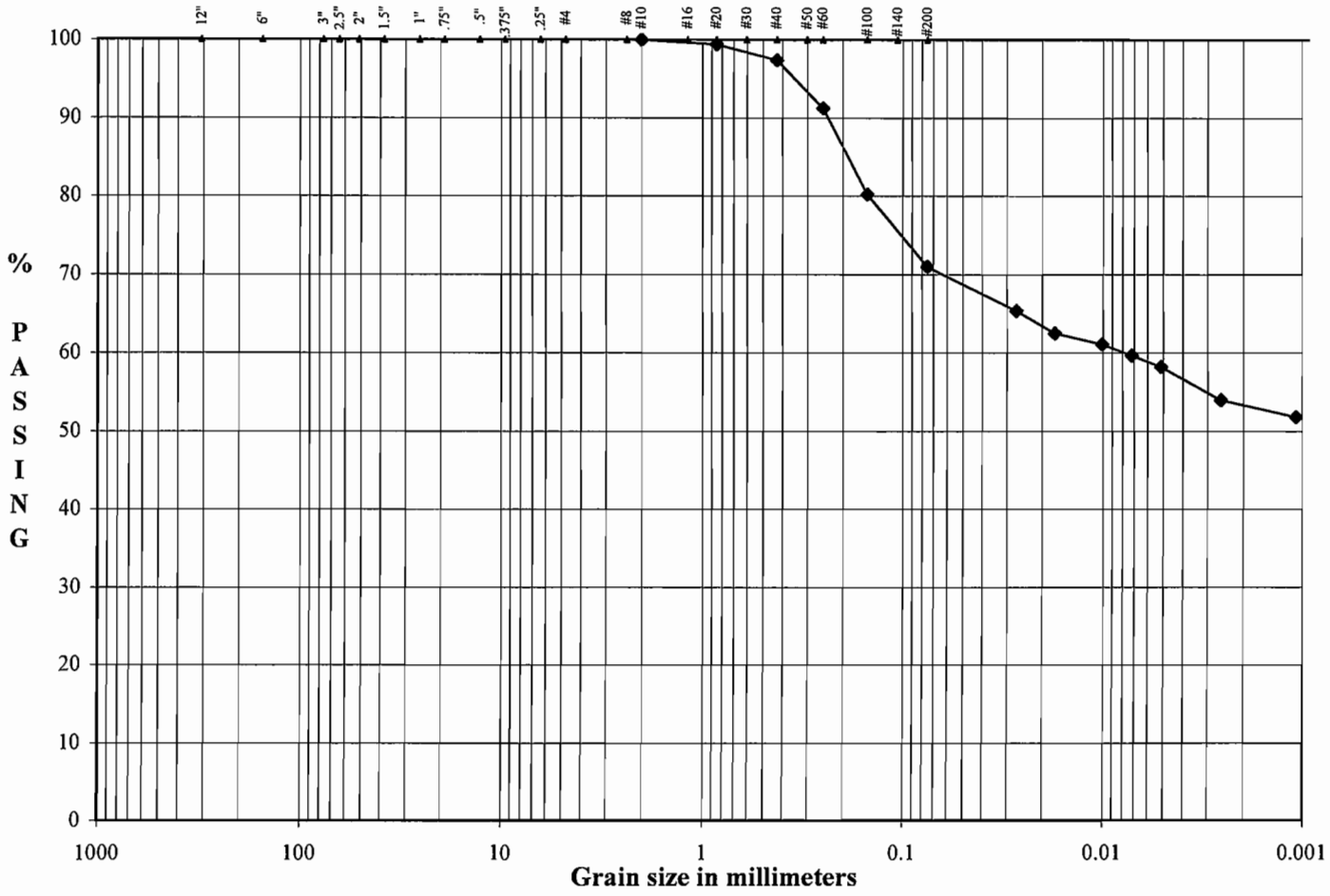
Tested By	RI
Date	04/07/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4858/C-2	Depth/Elev.	-
Location	Sed Pond (7)	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	NK
Date	04/12/08
Checked By	

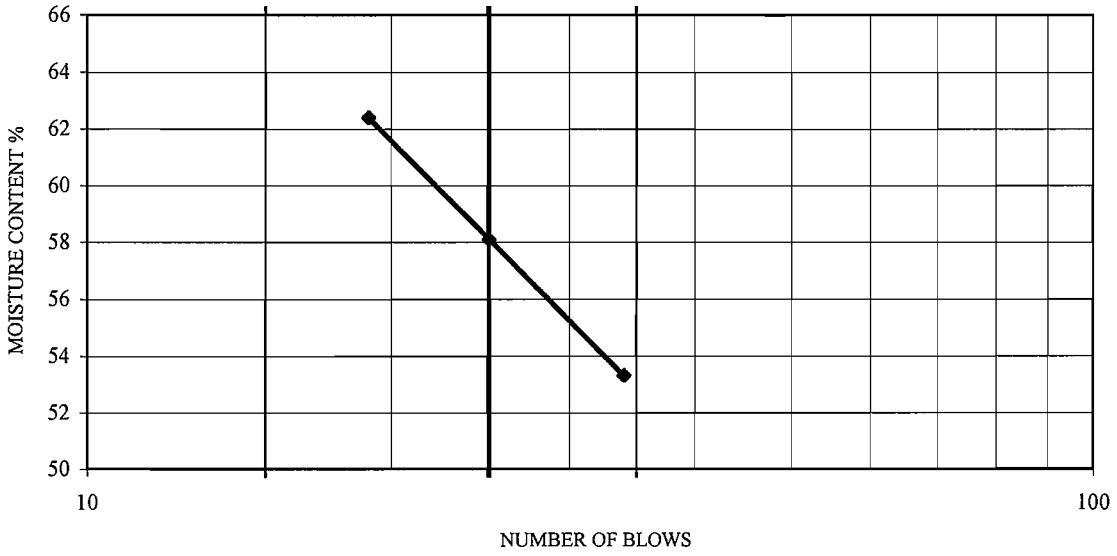
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4858/C-2	Depth/Elev.	-
Location	Sed Pond (7)	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	34	25	19
Mass of Wet Sample & Tare, g	39.10	41.22	37.99
Mass of Dry Sample & Tare, g	33.72	35.22	32.53
Mass of Tare, g	23.63	24.89	23.78
Moisture Content, %	53.32	58.08	62.40

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	30.30	33.43
Mass of Dry Sample & Tare, g	27.83	30.86
Mass of Tare, g	20.17	22.89
Moisture Content, %	32.25	32.25

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	410.20
Mass of Dry Sample & Tare, g	336.70
Mass of Tare, g	95.00
Moisture Content, %	30.41

LIQUID LIMIT (LL)	58
PLASTIC LIMIT (PL)	32
PLASTICITY INDEX (PI)	26
LIQUIDITY INDEX (LI)	-0.06

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

Tested By	KI
Date	04/04/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4858/C-2	Depth/Elev.	-
Location	Sed Pond (7)	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	18700.0	14539.9
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	0.0	0.0
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.0
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.0

MOISTURE CONTENT

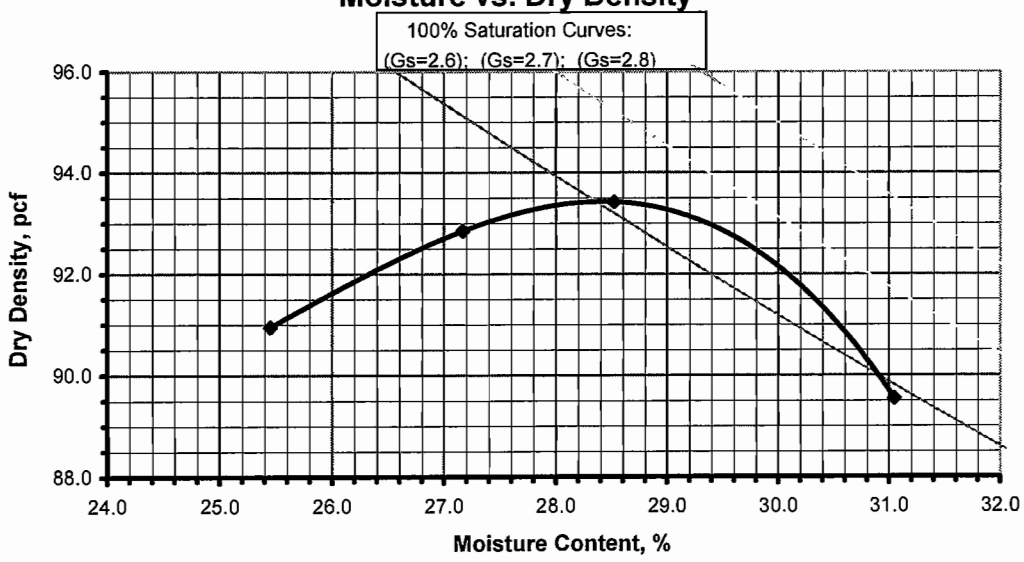
	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	890.5	
Mass of Dry Sample & Tare, g	727.1	
Mass of Tare, g	156.0	
Moisture Content, %	28.6	

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5671.0	5731.0	5761.0	5720.0	
ass of Wet Sample & Tare, g	510.5	981.0	511.5	466.0	
Mass of Dry Sample & Tare, g	425.8	885.5	420.4	378.1	
Mass of Tare, g	93.0	534.0	101.0	95.0	
Moisture Content, %	25.5	27.2	28.5	31.0	
Wet Density, pcf	114.1	118.1	120.1	117.3	
Dry Density, pcf	91.0	92.8	93.4	89.5	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	93.4
Optimum Moisture Content, %	28.5

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AASHTO R18

Tested By	RI
Date	04/08/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4858/C-2	Depth/Elev.	-
Location	Sed Pond (7)	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.564	in	6.51	cm
Diameter	2.850	in	7.24	cm
Area	6.38	in^2	41.16	cm^2
Volume	268.04	cm^3	0.0095	ft^3
Mass	504.70	g	1.11	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	90.1	pcf		

Moisture Content

Mass of wet sample & tare	410.20	g
Mass of dry sample & tare	336.70	g
Mass of tare	95.00	g
% Moisture	30.4	

Test Data

Speed	7	
Board Number	4	
Cell Number	15	
Flow Pump Number	1B	
Flow Pump Rate	1.79E-03	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	201.88	cm
Min Head	200.47	cm
Maximum Gradient	30.69	
Minimum Gradient	30.47	

Final Data (After Test)

Average Height of Sample			2.590	in	6.58	cm
Average Diameter of Sample			2.892	in	7.35	cm
Area	6.57	in^2	42.38	cm^2		
Volume	278.80	cm^3	0.0098	ft^3		
Mass	515.70	g	1.14	lb		

Dry Density	86.6	pcf
Vol. of Voids	135.56	cm^3
Vol. of Solids	143.24	cm^3
Void Ratio	0.95	
Saturation	95.1	%

Moisture Content

Mass of wet sample & tare	617.00	g
Mass of dry sample & tare	488.10	g
Mass of tare	101.50	g
% Moisture	33.3	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
04/08/08	8	10	-	2.85	200.47	30.47	20.4	-	-	-	
04/08/08	8	15	300	2.86	201.17	30.58	20.4	1.39E-06	0.991	1.37E-06	
04/08/08	8	20	300	2.85	200.47	30.47	20.4	1.39E-06	0.991	1.37E-06	
04/08/08	8	25	300	2.86	201.17	30.58	20.4	1.39E-06	0.991	1.37E-06	*
04/08/08	8	30	300	2.87	201.88	30.69	20.4	1.38E-06	0.991	1.37E-06	*
04/08/08	8	35	300	2.86	201.17	30.58	20.4	1.38E-06	0.991	1.37E-06	*
04/08/08	8	40	300	2.87	201.88	30.69	20.4	1.38E-06	0.991	1.37E-06	*

Reported Average Hydraulic Conductivity* 1.4E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS: Material passed #4 sieve used for testing. Material was remolded to 96.5% of maximum dry density (standard proctor) at 1.9% above optimum moisture content.

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	70/68
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	29
Syringe ID #	141			Pore Pressure Transducer ID #	26/27

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AASHTO R18

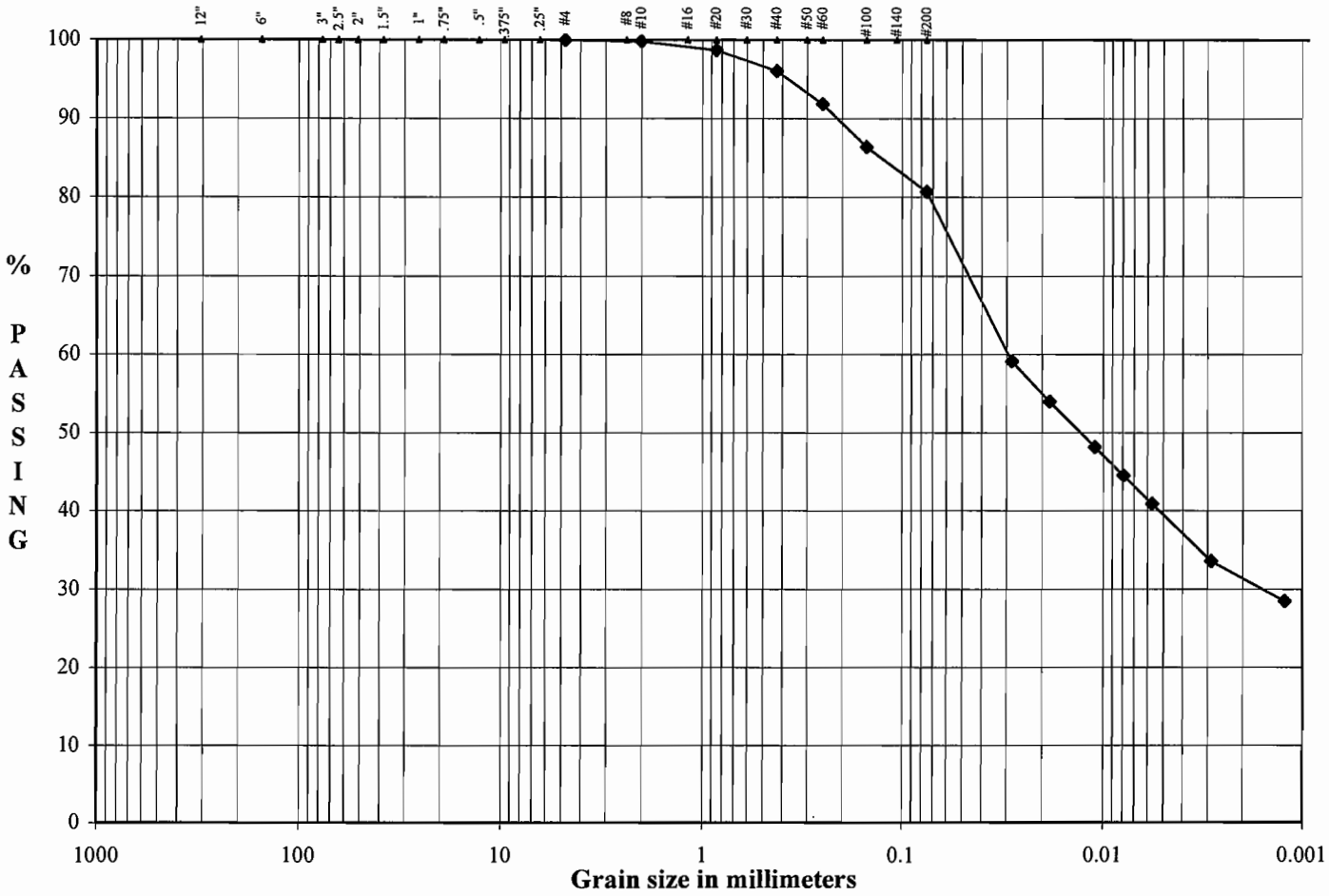
Tested By	RI
Date	04/07/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4859/C-3	Depth/Elev.	-
Location	Sed Pond (9)	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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AASHTO R18

Tested By	NK
Date	04/09/08
Checked By	

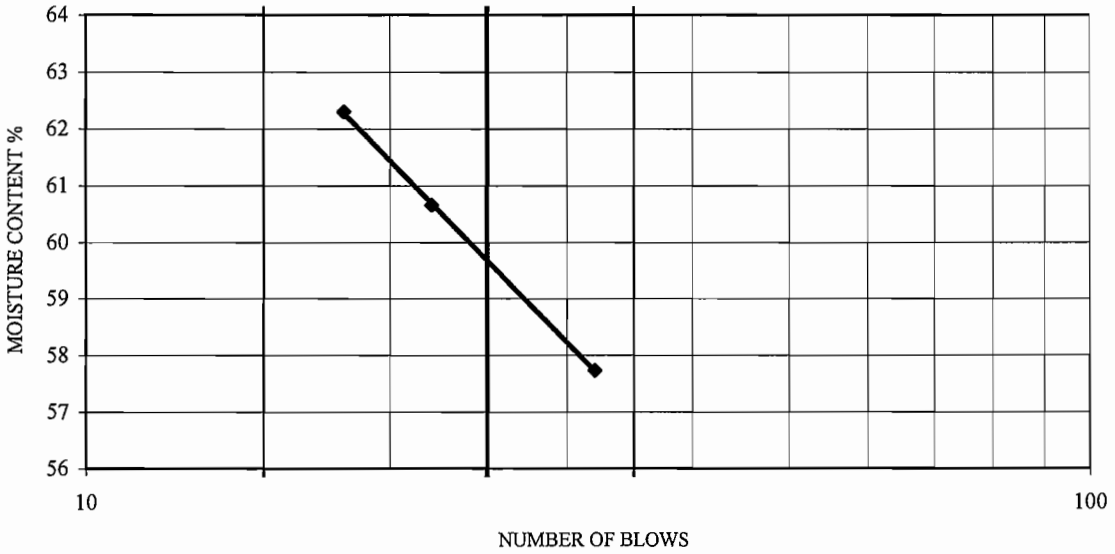
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4859/C-3	Depth/Elev.	-
Location	Sed Pond (9)	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	32	22	18
Mass of Wet Sample & Tare, g	40.23	43.84	40.16
Mass of Dry Sample & Tare, g	34.63	36.61	34.26
Mass of Tare, g	24.93	24.69	24.79
Moisture Content, %	57.73	60.65	62.30

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	30.58	32.60
Mass of Dry Sample & Tare, g	28.29	30.31
Mass of Tare, g	20.76	22.78
Moisture Content, %	30.41	30.41

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	412.80
Mass of Dry Sample & Tare, g	337.40
Mass of Tare, g	102.50
Moisture Content, %	32.10

LIQUID LIMIT (LL)	60
PLASTIC LIMIT (PL)	30
PLASTICITY INDEX (PI)	30
LIQUIDITY INDEX (LI)	0.07

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

Tested By	KI
Date	04/04/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4859/C-3	Depth/Elev.	-
Location	Sed Pond (9)	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	20000.0	14404.3
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	0.0	0.0
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.0
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.0

MOISTURE CONTENT

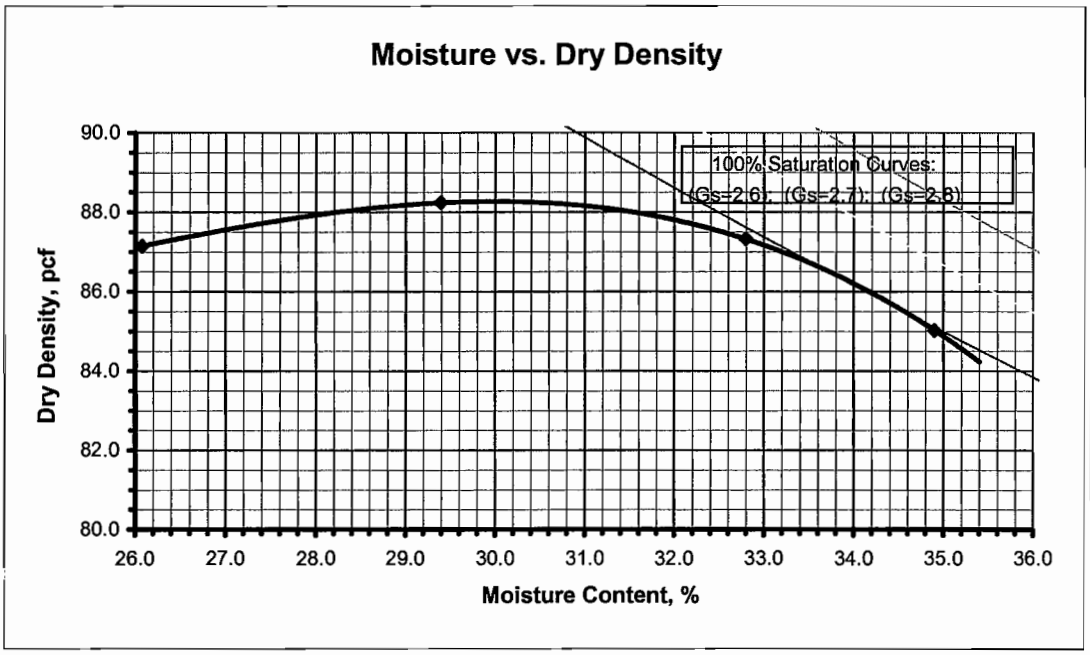
	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	906.5	
Mass of Dry Sample & Tare, g	697.5	
Mass of Tare, g	159.5	
Moisture Content, %	38.8	

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5607.0	5672.0	5699.0	5680.0	
lass of Wet Sample & Tare, g	639.0	962.0	463.0	896.5	
Mass of Dry Sample & Tare, g	554.0	865.0	371.5	781.5	
Mass of Tare, g	228.0	535.0	92.5	452.0	
Moisture Content, %	26.1	29.4	32.8	34.9	
Wet Density, pcf	109.9	114.2	116.0	114.7	
Dry Density, pcf	87.1	88.2	87.3	85.0	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤ 20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	88.3
Optimum Moisture Content, %	30.0

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Web: www.test-llc.com

AASHTO R18

Tested By	KI
Date	04/08/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	4859/C-3	Depth/Elev.	-
Location	Sed Pond (9)	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.584	in	6.56	cm
Diameter	2.850	in	7.24	cm
Area	6.38	in^2	41.16	cm^2
Volume	270.13	cm^3	0.0095	ft^3
Mass	482.30	g	1.06	lb
Specific Gravity	2.650	(Assumed)		
Dry Density	84.3	pcf		

Moisture Content

Mass of wet sample & tare	412.80	g
Mass of dry sample & tare	337.40	g
Mass of tare	102.50	g
% Moisture	32.1	

Test Data

Speed	7	
Board Number	3	
Cell Number	1	
Flow Pump Number	1A	
Flow Pump Rate	1.79E-03	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	33.76	cm
Min Head	33.76	cm
Maximum Gradient	5.04	
Minimum Gradient	5.04	

Final Data (After Test)

Average Height of Sample			2.638	in	6.70 cm
Average Diameter of Sample			2.921	in	7.42 cm
Area	6.70	in^2	43.23	cm^2	
Volume	289.69	cm^3	0.0102	ft^3	
Mass	514.30	g	1.13	lb	

Dry Density	80.2	pcf
Vol. of Voids	149.16	cm^3
Vol. of Solids	140.53	cm^3
Void Ratio	1.06	
Saturation	95.1	%

Moisture Content

Mass of wet sample & tare	608.30	g
Mass of dry sample & tare	466.40	g
Mass of tare	94.00	g
% Moisture	38.1	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
04/08/08	19	0	-	0.48	33.76	5.04	21.5	-	-	-	
04/08/08	19	5	300	0.48	33.76	5.04	21.5	8.23E-06	0.965	7.94E-06	
04/08/08	19	10	300	0.48	33.76	5.04	21.5	8.23E-06	0.965	7.94E-06	
04/08/08	19	15	300	0.48	33.76	5.04	21.5	8.23E-06	0.965	7.94E-06	*
04/08/08	19	20	300	0.48	33.76	5.04	21.5	8.23E-06	0.965	7.94E-06	*
04/08/08	19	25	300	0.48	33.76	5.04	21.5	8.23E-06	0.965	7.94E-06	*
04/08/08	19	30	300	0.48	33.76	5.04	21.5	8.23E-06	0.965	7.94E-06	*

Reported Average Hydraulic Conductivity* 7.9E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS: Material passed #4 sieve used for testing. Material was remolded to 95.6% of maximum dry density (standard proctor) at 2.1% above optimum moisture content.

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	29
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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Web: www.test-llc.com

AASHTO R18

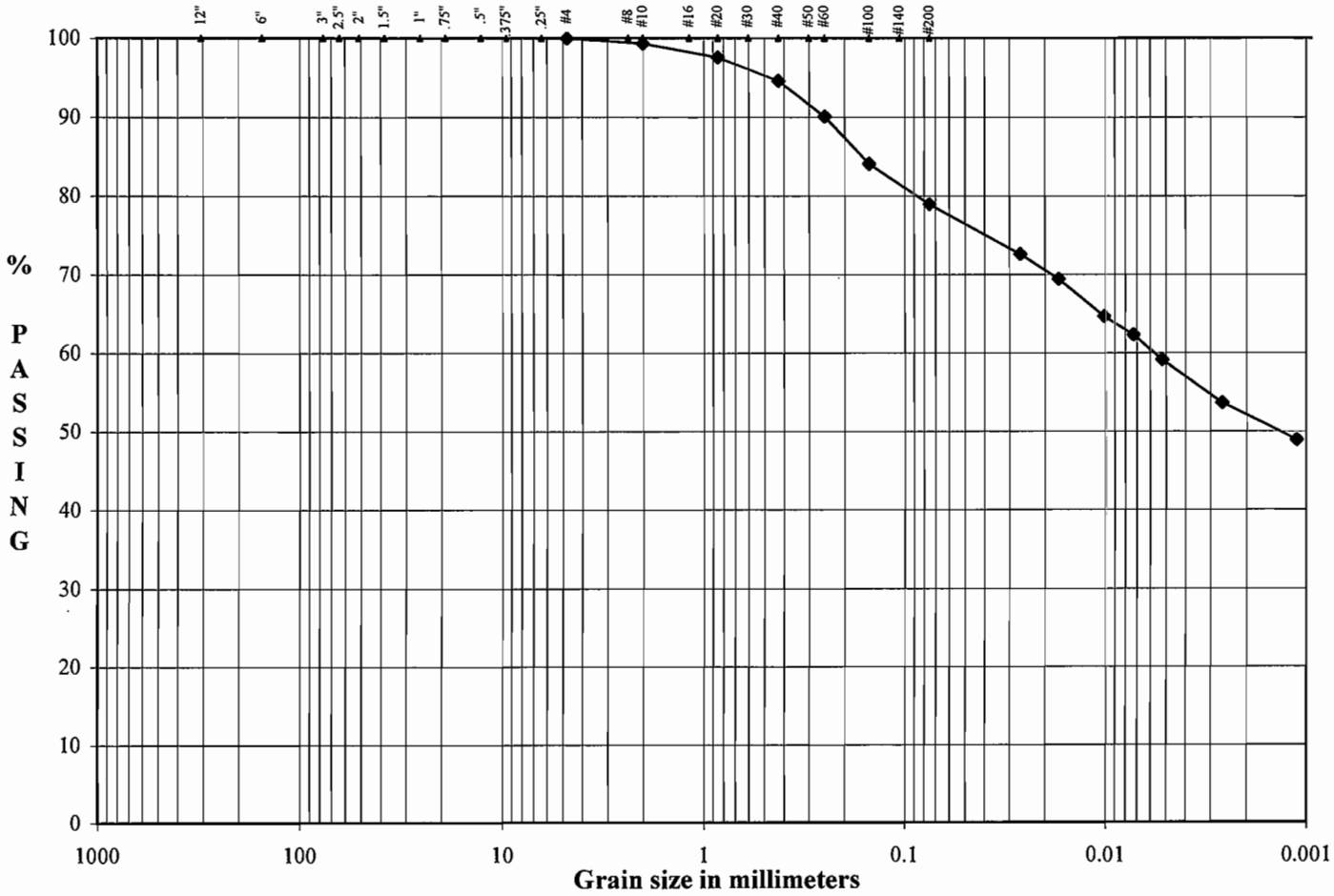
Tested By	RI
Date	04/28/08
Checked By	LB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5017/C-4	Depth/Elev.	-
Location	Stockpile	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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AASHTO R18

Tested By	NK
Date	04/30/08
Checked By	VB

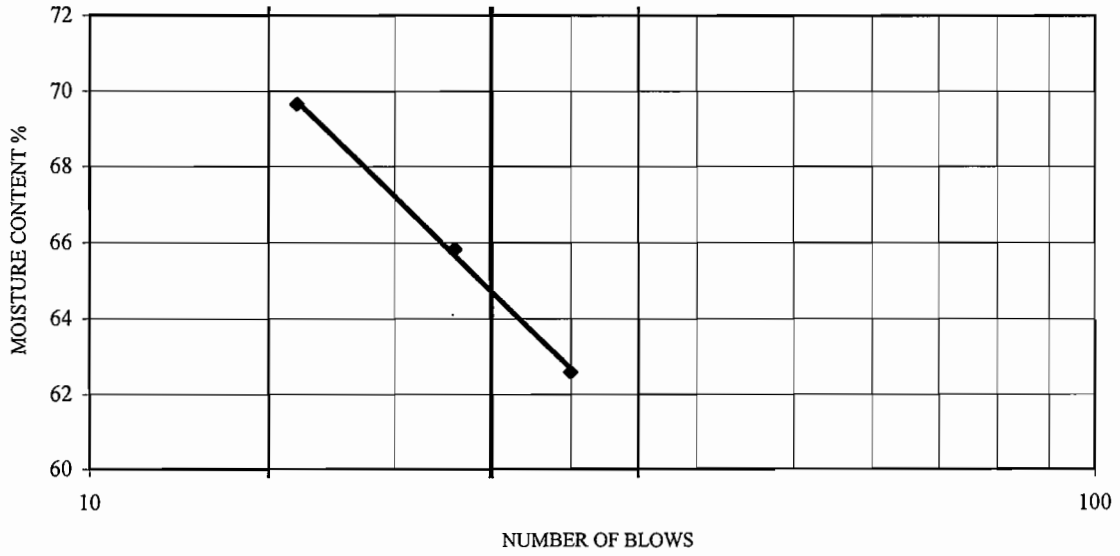
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5017/C-4	Depth/Elev.	-
Location	Stockpile	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	30	23	16
Mass of Wet Sample & Tare, g	42.50	39.89	41.88
Mass of Dry Sample & Tare, g	35.71	33.40	35.34
Mass of Tare, g	24.86	23.54	25.95
Moisture Content, %	62.58	65.82	69.65

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	29.70	30.92
Mass of Dry Sample & Tare, g	27.02	28.39
Mass of Tare, g	19.29	21.07
Moisture Content, %	34.67	34.56

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	402.00
Mass of Dry Sample & Tare, g	328.20
Mass of Tare, g	95.60
Moisture Content, %	31.73

LIQUID LIMIT (LL)	65
PLASTIC LIMIT (PL)	35
PLASTICITY INDEX (PI)	30
LIQUIDITY INDEX (LI)	-0.11

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

TIMELY ENGINEERING SOIL TESTS, LLC
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Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	04/27/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5017/C-4	Depth/Elev.	-
Location	Stockpile	Add. Info	-

ASTM D 698
Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600kN-m/m^3))

DETERMINATION OF TEST PROCEDURE

	wet	dry
Mass of Soil before sieving, g	22000.0	17396.3
Mass of Mat. Retained on No. 4 sieve, g	0.0	0.0
Mass of Mat. Retained on 3/8" sieve, g	0.0	0.0
Mass of Mat. Retained on 3/4" sieve, g	0.0	0.0

MOISTURE CONTENT

	Coarse + Fine Fraction	Coarse Fraction
Mass of Wet Sample & Tare, g	988.0	
Mass of Dry Sample & Tare, g	814.0	
Mass of Tare, g	156.5	
Moisture Content, %	26.5	

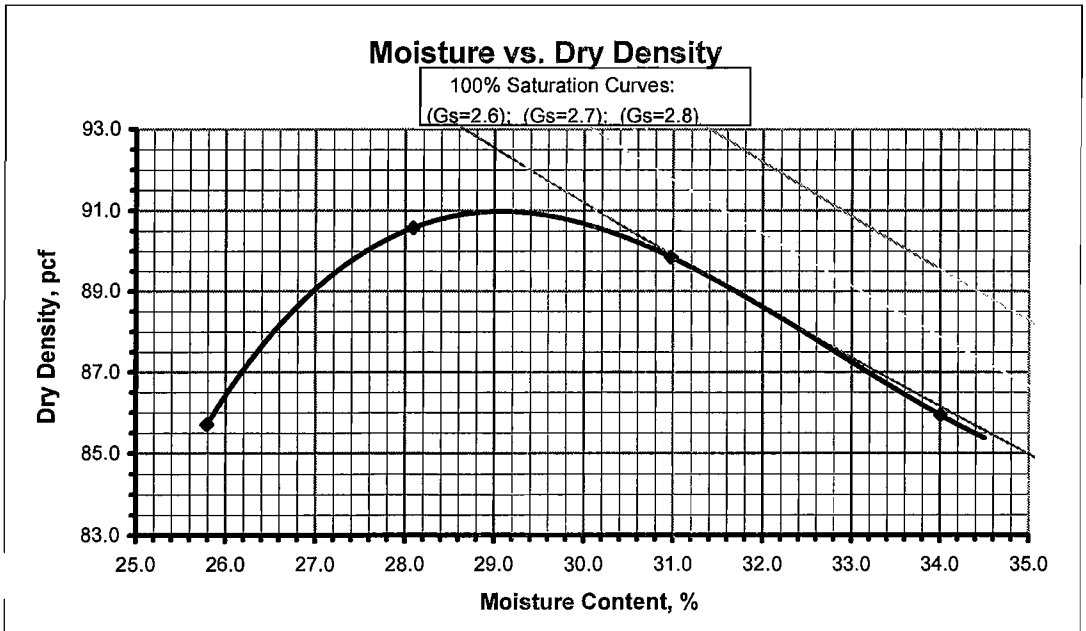
Material Retained on No. 4 Sieve, %	0.0
Material Retained on 3/8" Sieve, %	0.0
Material Retained on 3/4" Sieve, %	0.0
Total, % (oversized)	0.0

Procedure: B

TEST DATA

Points	1	2	3	4	5
Mass of Mold and Soil, g	5576.0	5700.0	5725.0	5687.0	
ass of Wet Sample & Tare, g	532.5	500.0	500.5	485.0	
Mass of Dry Sample & Tare, g	443.0	412.5	404.0	384.0	
Mass of Tare, g	96.0	101.0	92.5	87.0	
Moisture Content, %	25.8	28.1	31.0	34.0	
Wet Density, pcf	107.8	116.0	117.7	115.2	
Dry Density, pcf	85.7	90.6	89.8	85.9	

Mold ID Number	18
Mass of Mold, g	3947.5
Volume of Mold, ft^3	0.0333
Hammer ID Number	20
Number of Blows per layer	25
Number of Layers	3



Method A: Material retained on No. 4 ≤ 20%

Method B: Material retained on No. 4 > 20% and material retained on 3/8" ≤ 20%

Method C: Material retained on 3/8" > 20% and material retained on 3/4" < 30%

REMARKS

DESCRIPTION

NA

USCS (ASTM D2487; D2488)

NA

Maximum Dry Density, pcf	91.0
Optimum Moisture Content, %	29.1

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AASHTO R18

Tested By	KI
Date	04/30/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bulk
Sample ID	5017/C-4	Depth/Elev.	-
Location	Stockpile	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.561	in	6.50	cm
Diameter	2.850	in	7.24	cm
Area	6.38	in^2	41.16	cm^2
Volume	267.73	cm^3	0.0095	ft^3
Mass	493.54	g	1.09	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	87.3	pcf		

Moisture Content

Mass of wet sample & tare	402.00	g
Mass of dry sample & tare	328.20	g
Mass of tare	95.60	g
% Moisture	31.7	

Test Data

Speed	8	
Board Number	9	
Cell Number	5	
Flow Pump Number	2B	
Flow Pump Rate	8.96E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	95.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	15.0	psi
Max Head	28.84	cm
Min Head	28.14	cm
Maximum Gradient	4.35	
Minimum Gradient	4.24	

Final Data (After Test)

Average Height of Sample			2.612	in	6.63 cm
Average Diameter of Sample			2.901	in	7.37 cm
Area	6.61	in^2	42.64	cm^2	
Volume	282.92	cm^3	0.0100	ft^3	
Mass	516.50	g	1.14	lb	

Dry Density	83.3	pcf
Vol. of Voids	142.96	cm^3
Vol. of Solids	139.95	cm^3
Void Ratio	1.02	
Saturation	97.0	%

Moisture Content

Mass of wet sample & tare	617.60	g
Mass of dry sample & tare	479.00	g
Mass of tare	101.20	g
% Moisture	36.7	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
04/30/08	11	45	-	0.41	28.84	4.35	21.1	-	-	-	
04/30/08	11	50	300	0.40	28.14	4.24	21.1	4.89E-06	0.974	4.77E-06	
04/30/08	11	55	300	0.41	28.84	4.35	21.1	4.89E-06	0.974	4.77E-06	
04/30/08	12	0	300	0.40	28.14	4.24	21.1	4.89E-06	0.974	4.77E-06	*
04/30/08	12	5	300	0.40	28.14	4.24	21.1	4.95E-06	0.974	4.83E-06	*
04/30/08	12	10	300	0.40	28.14	4.24	21.1	4.95E-06	0.974	4.83E-06	*
04/30/08	12	15	300	0.40	28.14	4.24	21.1	4.95E-06	0.974	4.83E-06	*

Reported Average Hydraulic Conductivity* 4.8E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS: Material passed #4 sieve used for testing. Material was remolded to 96% of maximum dry density (standard proctor) at 2.6% above optimum moisture content.

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

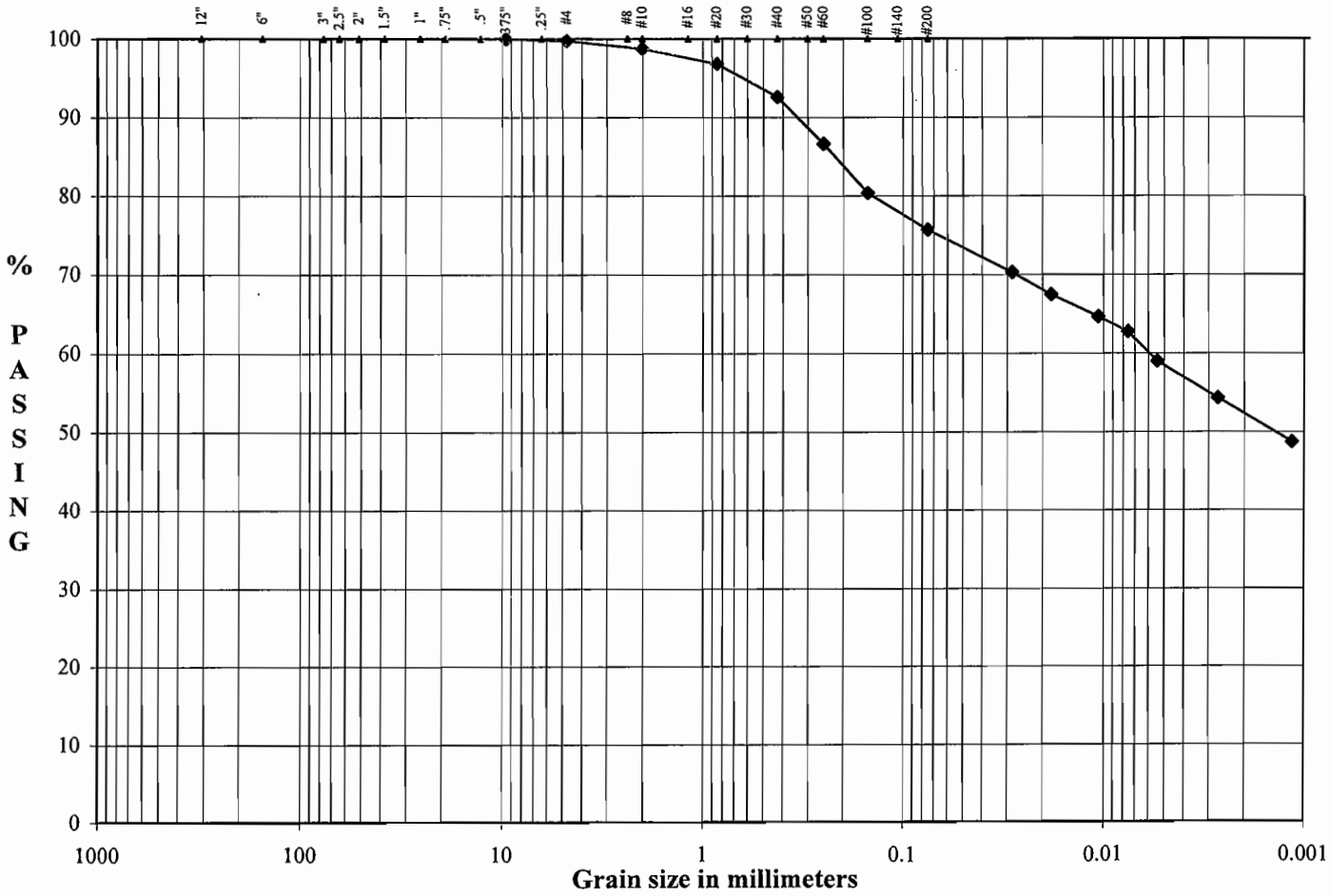
Tested By	KI
Date	05/23/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5163/C-5	Depth/Elev.	-
Location	Place L-1	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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AASHTO R18

Tested By	RI
Date	05/26/08
Checked By	

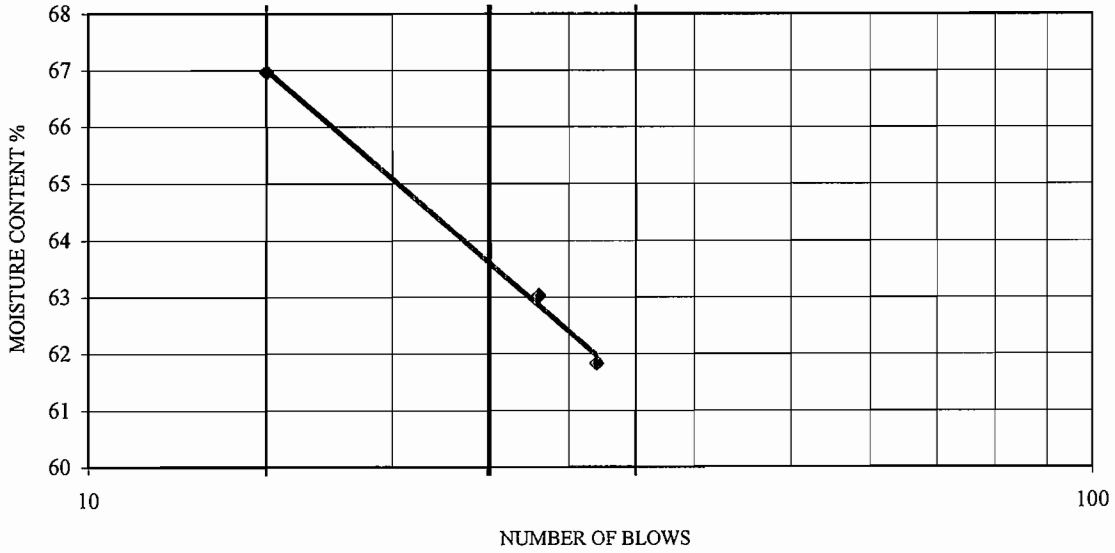
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5163/C-5	Depth/Elev.	-
Location	Place L-1	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	32	28	15
Mass of Wet Sample & Tare, g	35.85	35.59	32.21
Mass of Dry Sample & Tare, g	31.63	31.67	28.50
Mass of Tare, g	24.81	25.45	22.96
Moisture Content, %	61.83	63.02	66.97

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	31.50	28.68
Mass of Dry Sample & Tare, g	29.23	26.26
Mass of Tare, g	21.78	18.33
Moisture Content, %	30.47	30.52

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	394.68
Mass of Dry Sample & Tare, g	327.33
Mass of Tare, g	90.67
Moisture Content, %	28.46

LIQUID LIMIT (LL)	64
PLASTIC LIMIT (PL)	30
PLASTICITY INDEX (PI)	34
LIQUIDITY INDEX (LI)	-0.05

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

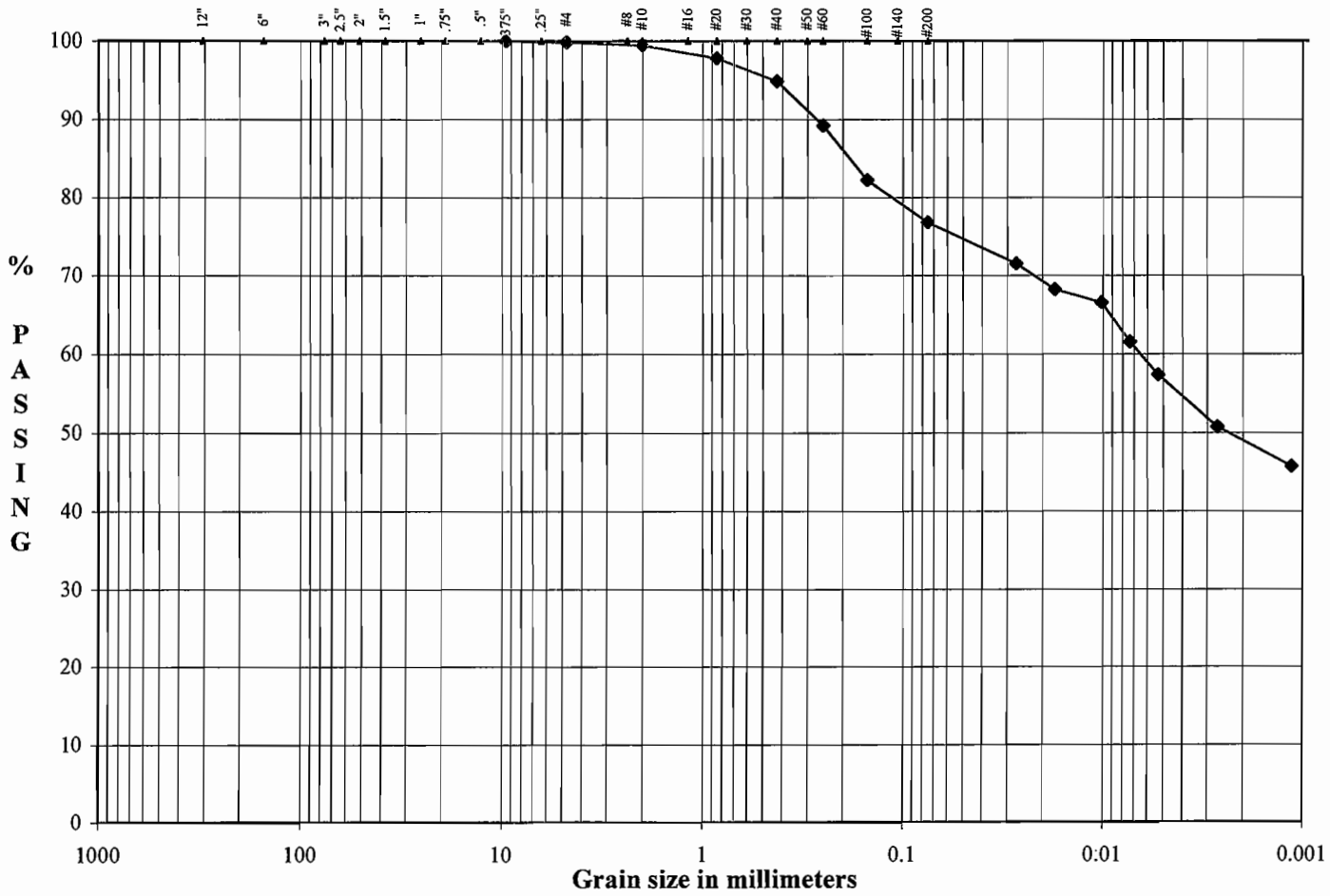
Tested By	KI
Date	05/23/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5164/C-6	Depth/Elev.	-
Location	Place L-1	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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AASHTO R18

Tested By	KI
Date	05/27/08
Checked By	

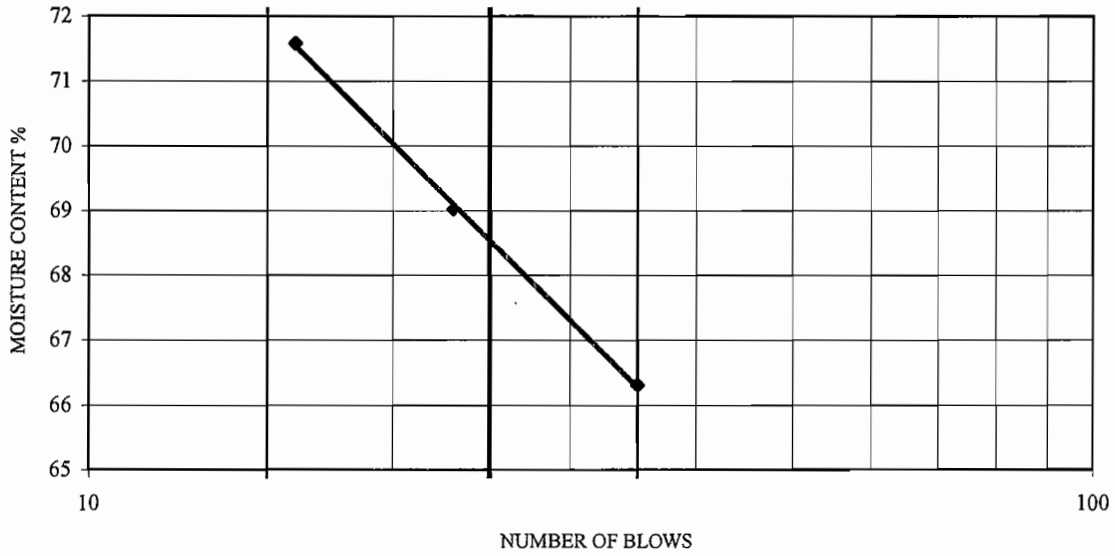
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5164/C-6	Depth/Elev.	-
Location	Place L-1	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	35	23	16
Mass of Wet Sample & Tare, g	35.94	35.55	39.92
Mass of Dry Sample & Tare, g	30.77	31.16	33.85
Mass of Tare, g	22.97	24.80	25.37
Moisture Content, %	66.31	69.03	71.58

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	32.19	30.18
Mass of Dry Sample & Tare, g	29.79	27.76
Mass of Tare, g	22.28	20.16
Moisture Content, %	31.96	31.84

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	516.70
Mass of Dry Sample & Tare, g	418.59
Mass of Tare, g	95.70
Moisture Content, %	30.38

LIQUID LIMIT (LL)	69
PLASTIC LIMIT (PL)	32
PLASTICITY INDEX (PI)	37
LIQUIDITY INDEX (LI)	-0.04

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

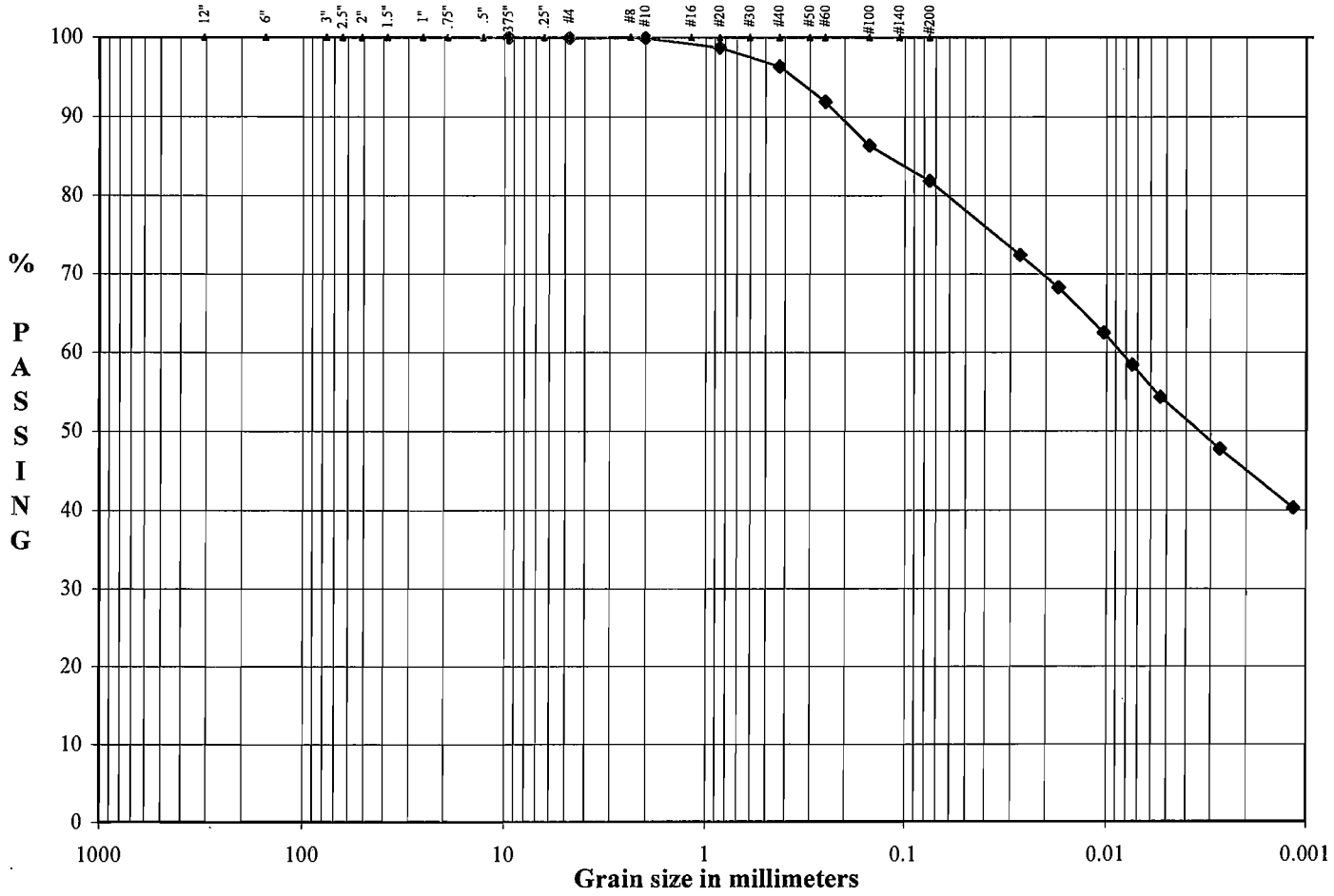
Tested By	KI
Date	05/23/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5165/C-7	Depth/Elev.	-
Location	Place L-1	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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AASHTO R18

Tested By	RI
Date	05/26/08
Checked By	VB

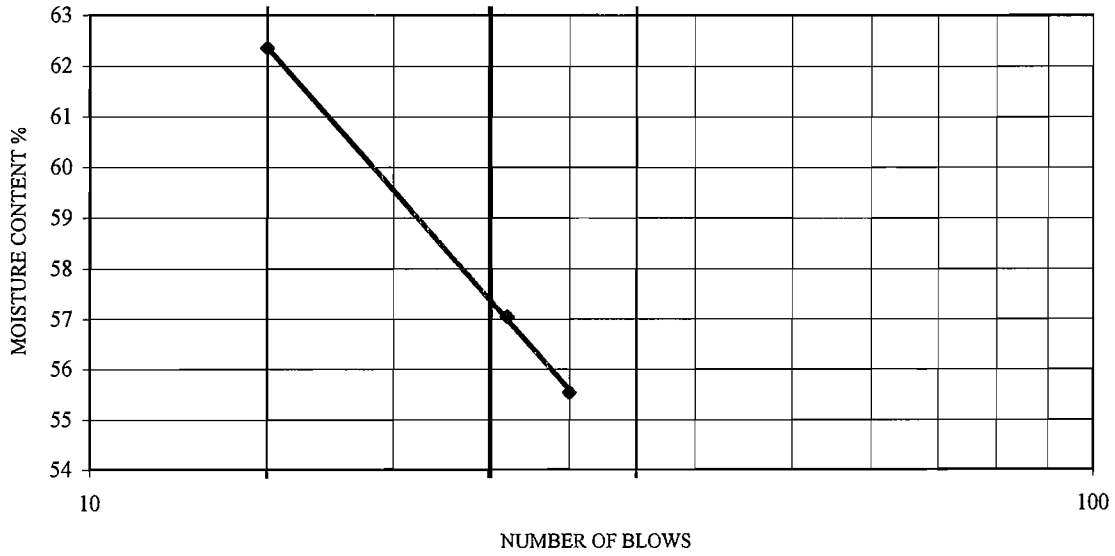
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5165/C-7	Depth/Elev.	-
Location	Place L-1	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	30	26	15
Mass of Wet Sample & Tare, g	33.64	34.49	34.20
Mass of Dry Sample & Tare, g	30.18	31.09	30.44
Mass of Tare, g	23.95	25.13	24.41
Moisture Content, %	55.54	57.05	62.35

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	29.78	30.86
Mass of Dry Sample & Tare, g	27.34	28.42
Mass of Tare, g	19.86	20.89
Moisture Content, %	32.62	32.40

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	393.38
Mass of Dry Sample & Tare, g	319.75
Mass of Tare, g	95.11
Moisture Content, %	32.78

LIQUID LIMIT (LL)	57
PLASTIC LIMIT (PL)	33
PLASTICITY INDEX (PI)	24
LIQUIDITY INDEX (LI)	-0.01

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

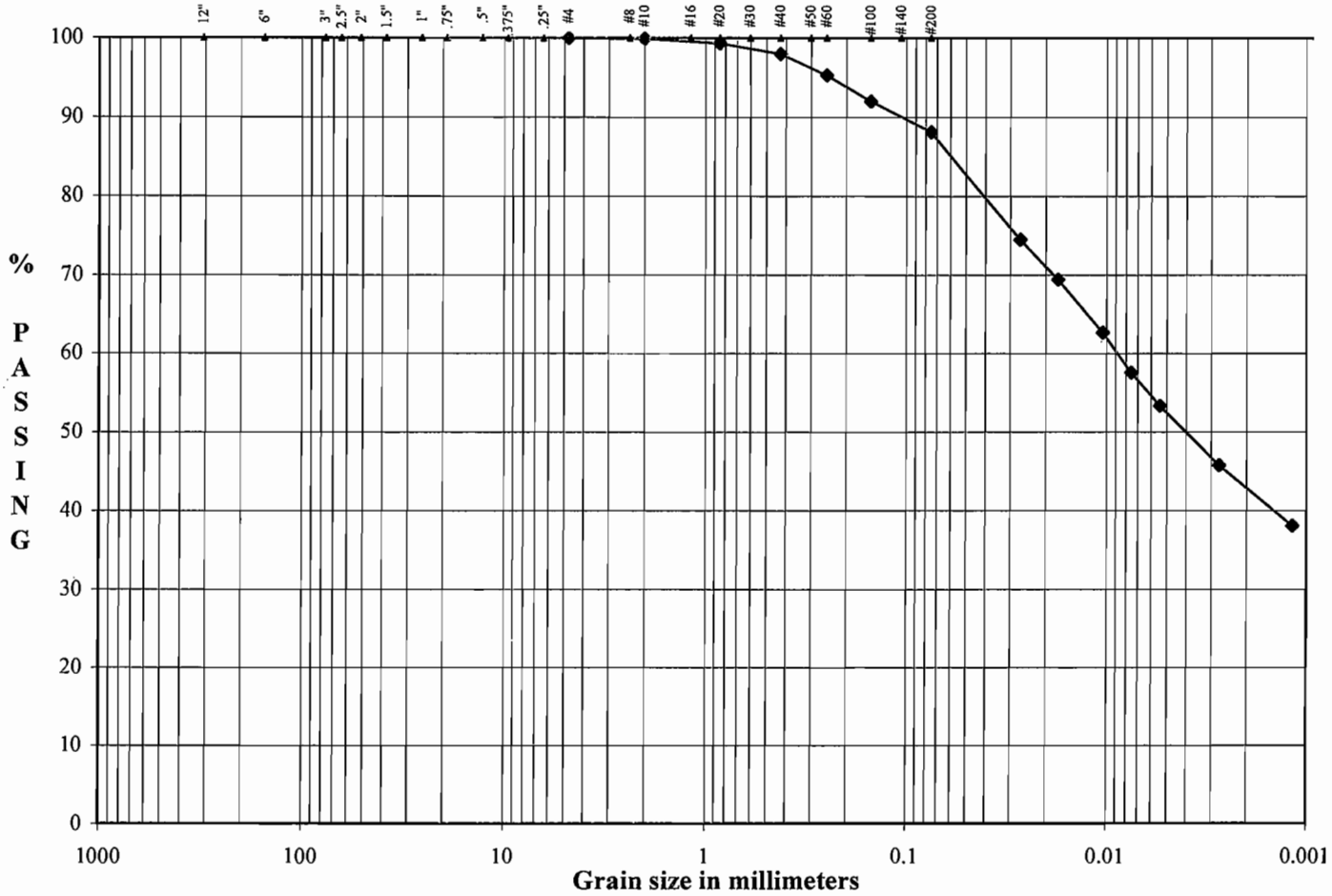
Tested By	KI
Date	05/23/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5166/C-8	Depth/Elev.	-
Location	Place L-2	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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Tested By	RI
Date	05/26/08
Checked By	

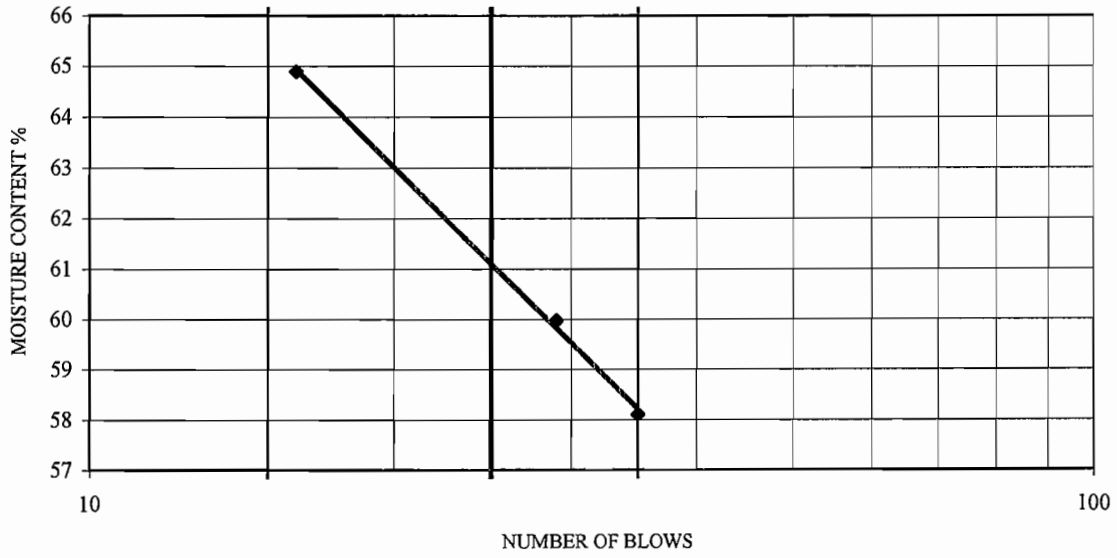
Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5166/C-8	Depth/Elev.	-
Location	Place L-2	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	35	29	16
Mass of Wet Sample & Tare, g	35.01	38.47	37.66
Mass of Dry Sample & Tare, g	31.28	34.90	33.63
Mass of Tare, g	24.86	28.96	27.42
Moisture Content, %	58.10	59.97	64.90

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	28.96	30.62
Mass of Dry Sample & Tare, g	26.41	27.99
Mass of Tare, g	19.30	20.66
Moisture Content, %	35.86	35.88

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	463.31
Mass of Dry Sample & Tare, g	373.71
Mass of Tare, g	101.88
Moisture Content, %	32.96

LIQUID LIMIT (LL)	61
PLASTIC LIMIT (PL)	36
PLASTICITY INDEX (PI)	25
LIQUIDITY INDEX (LI)	-0.12

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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Web: www.test-llc.com

AASHTO R18

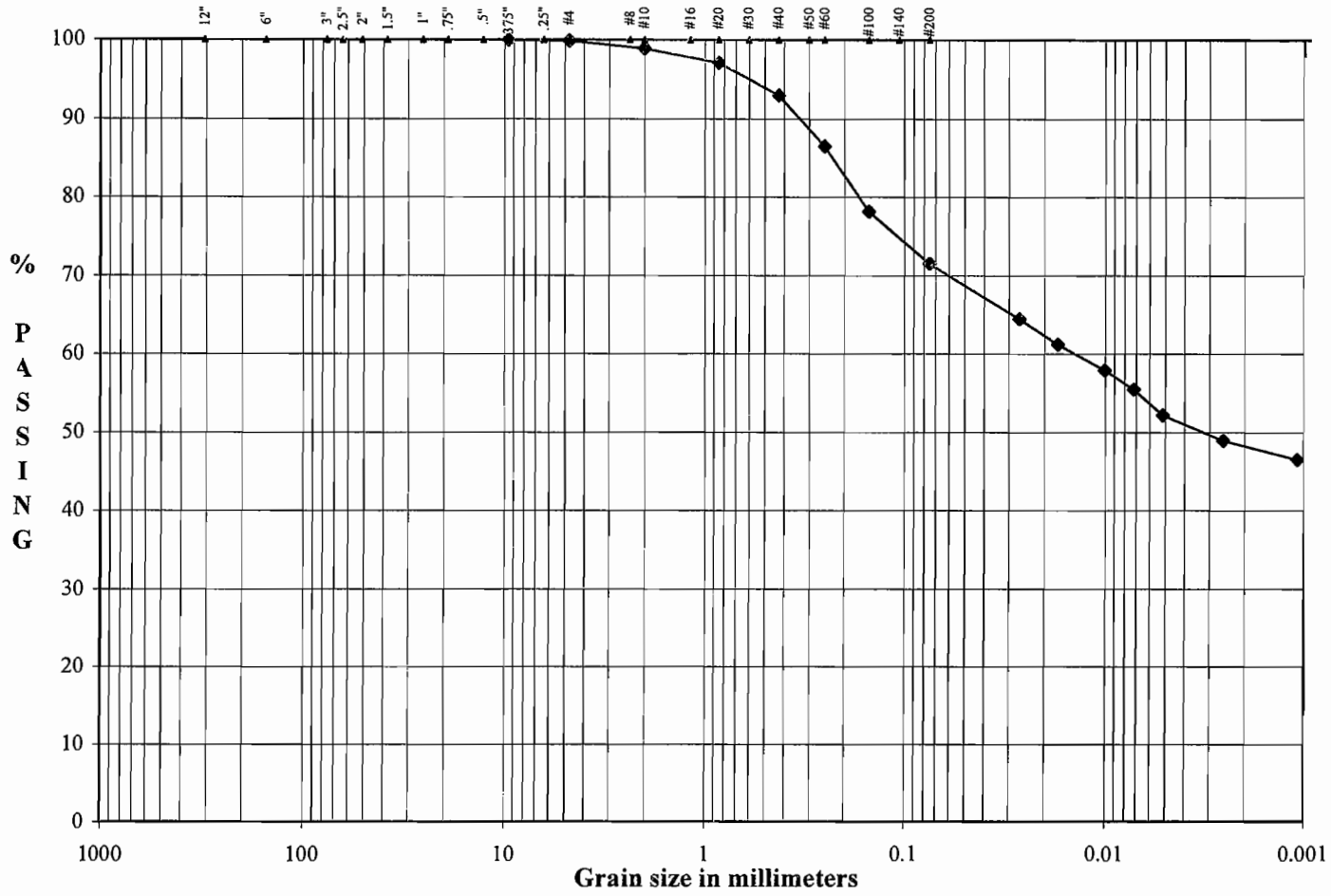
Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5183/C-9	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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AASHTO R18

Tested By	RI
Date	05/29/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5183/C-9	Depth/Elev.	-
Location	L-3	Add. Info	-

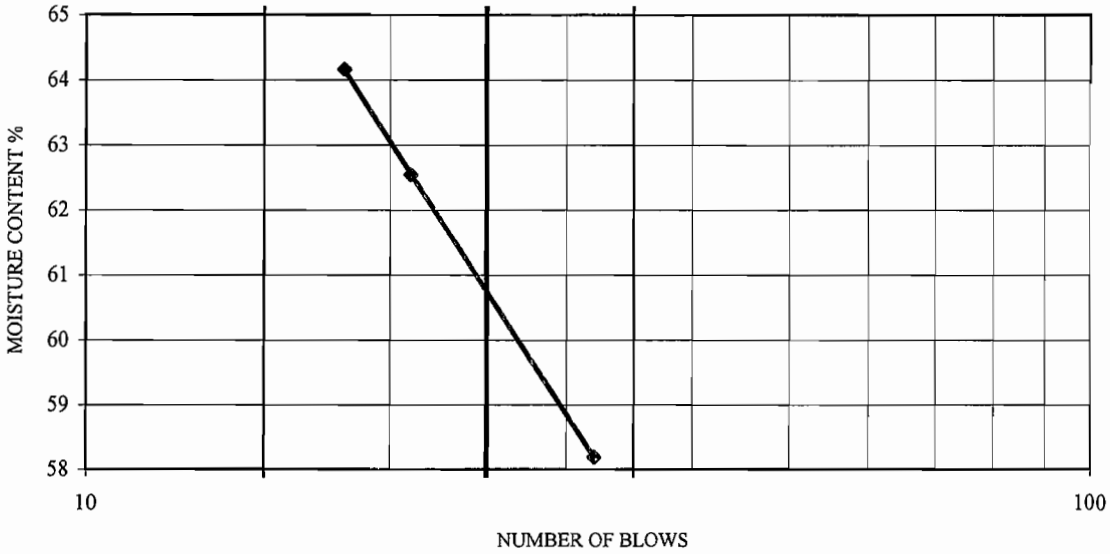
ASTM D 4318/AASHTO T 88, T 89

Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	32	21	18
Mass of Wet Sample & Tare, g	38.75	34.56	34.44
Mass of Dry Sample & Tare, g	35.02	30.82	30.68
Mass of Tare, g	28.61	24.84	24.82
Moisture Content, %	58.19	62.54	64.16

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	32.20	29.35
Mass of Dry Sample & Tare, g	29.90	27.24
Mass of Tare, g	22.90	20.76
Moisture Content, %	32.87	32.56

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	662.80
Mass of Dry Sample & Tare, g	583.90
Mass of Tare, g	305.80
Moisture Content, %	28.37

LIQUID LIMIT (LL)	61
PLASTIC LIMIT (PL)	33
PLASTICITY INDEX (PI)	28
LIQUIDITY INDEX (LI)	-0.17

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

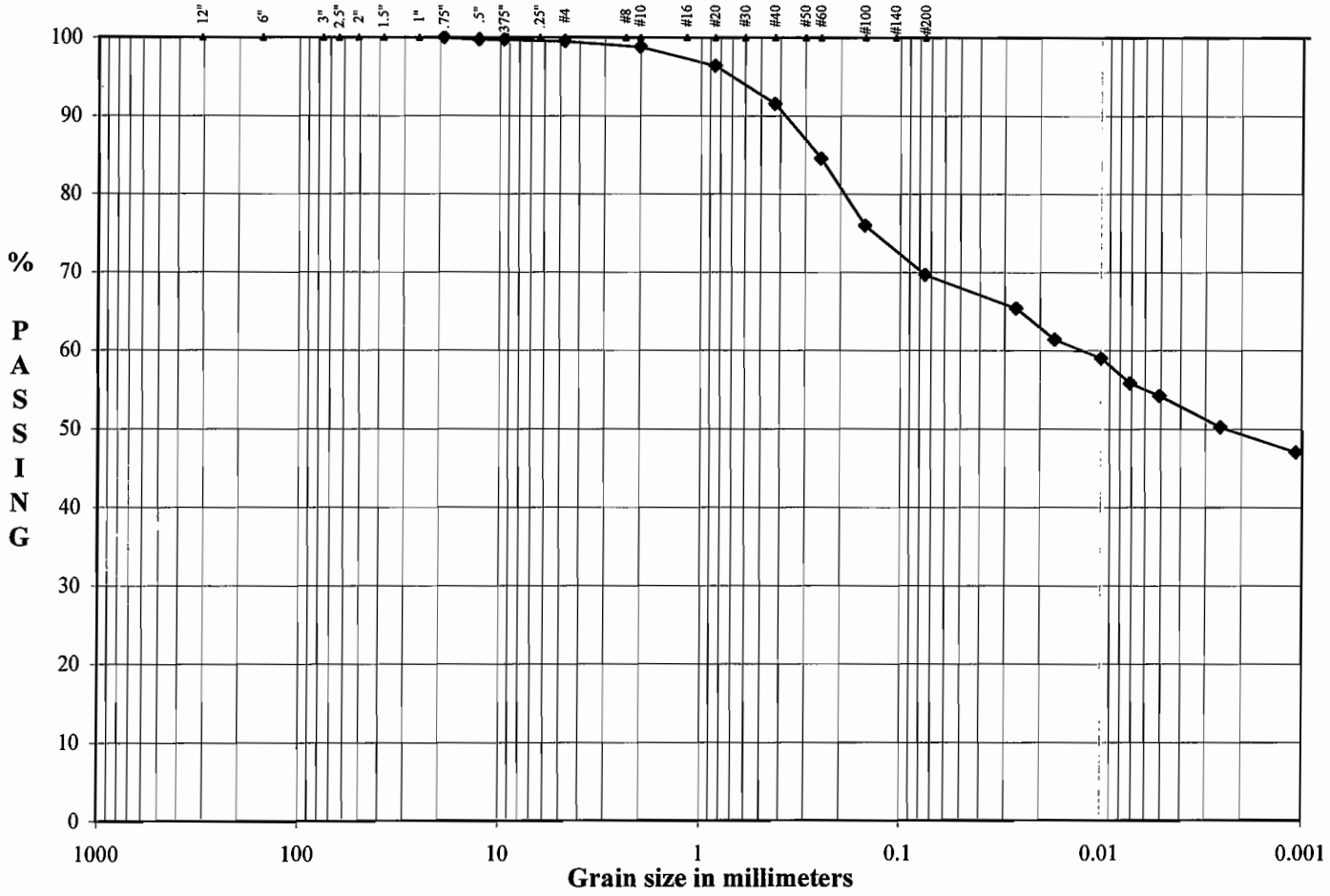
Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5187/C-10	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

DESCRIPTION: NA

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

JSCS (ASTM D2487; D2488): NA

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1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/29/08
Checked By	

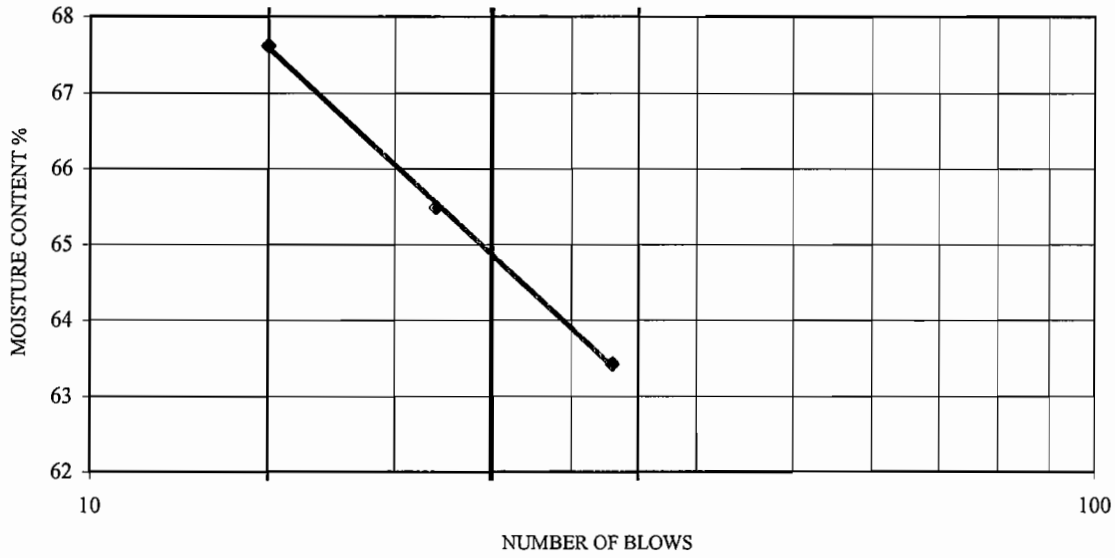
Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5187/C-10	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 4318/AASHTO T 88, T 89
Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	33	22	15
Mass of Wet Sample & Tare, g	34.01	34.95	38.58
Mass of Dry Sample & Tare, g	30.56	31.08	34.57
Mass of Tare, g	25.12	25.17	28.64
Moisture Content, %	63.42	65.48	67.62

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	30.19	28.58
Mass of Dry Sample & Tare, g	27.88	26.64
Mass of Tare, g	20.58	20.42
Moisture Content, %	31.64	31.19

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	666.70
Mass of Dry Sample & Tare, g	585.00
Mass of Tare, g	301.10
Moisture Content, %	28.78

LIQUID LIMIT (LL)	65
PLASTIC LIMIT (PL)	31
PLASTICITY INDEX (PI)	34
LIQUIDITY INDEX (LI)	-0.07

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

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AASHTO R18

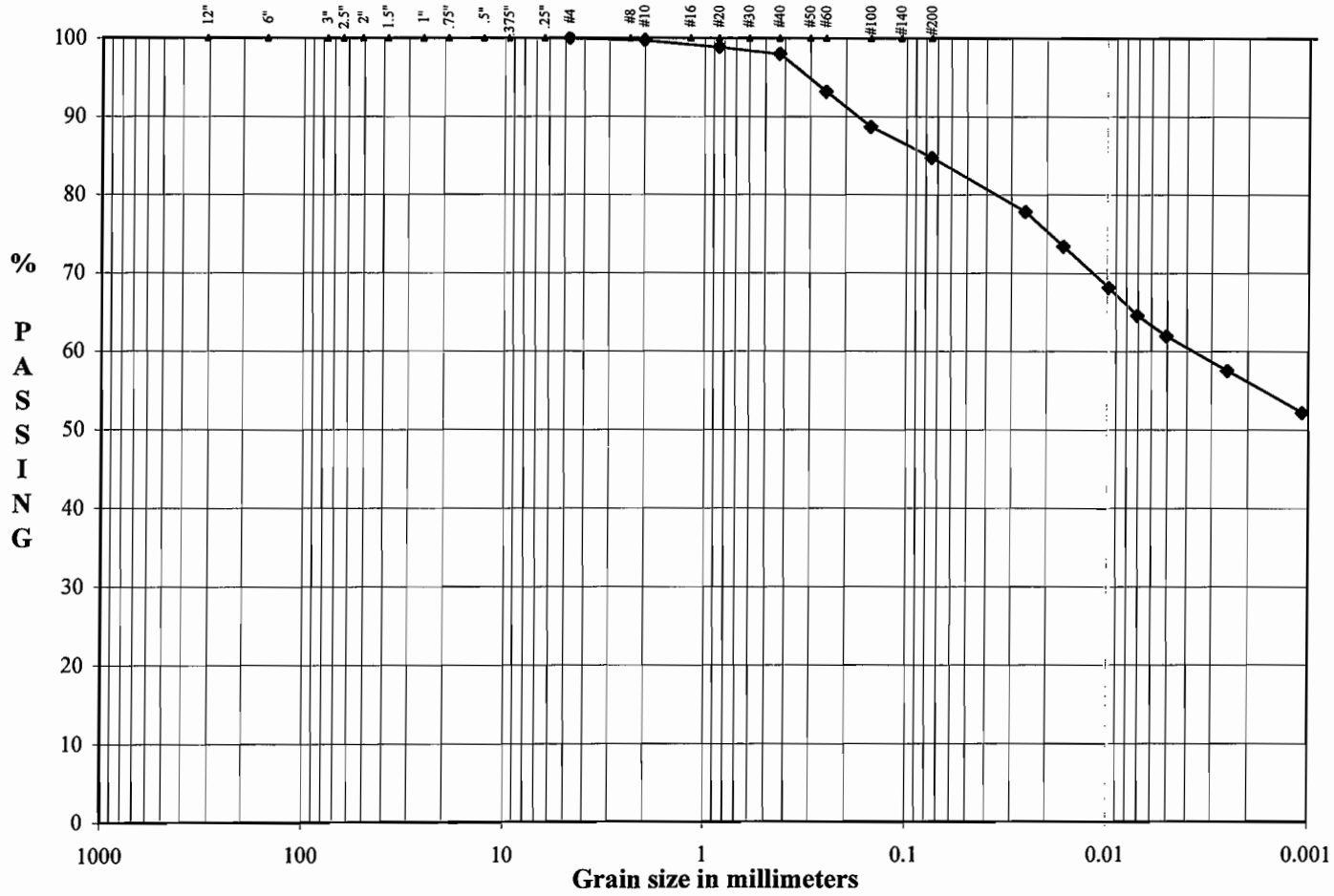
Tested By	RI
Date	05/28/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5188/C-11	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 422/AASHTO T 88

Standard Test Method for Particle-Size Analysis of Soils (with Hydrometer Analysis)

Particle-Size Analysis



Boulders	Cobbles	Gravel: Coarse	Gravel: Fine	Sand: Coarse	Sand: Medium	Sand: Fine	Fines: Silt or Clay

D_{10}	NA	mm
D_{30}	NA	mm
D_{60}	NA	mm
Cu	NA	
Cc	NA	

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

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TESTS, LLC

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Phone: 770-938-8233
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AASHTO P18

Tested By	RI
Date	05/29/08
Checked By	LS

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	Bag
Sample ID	5188/C-11	Depth/Elev.	-
Location	L-3	Add. Info	-

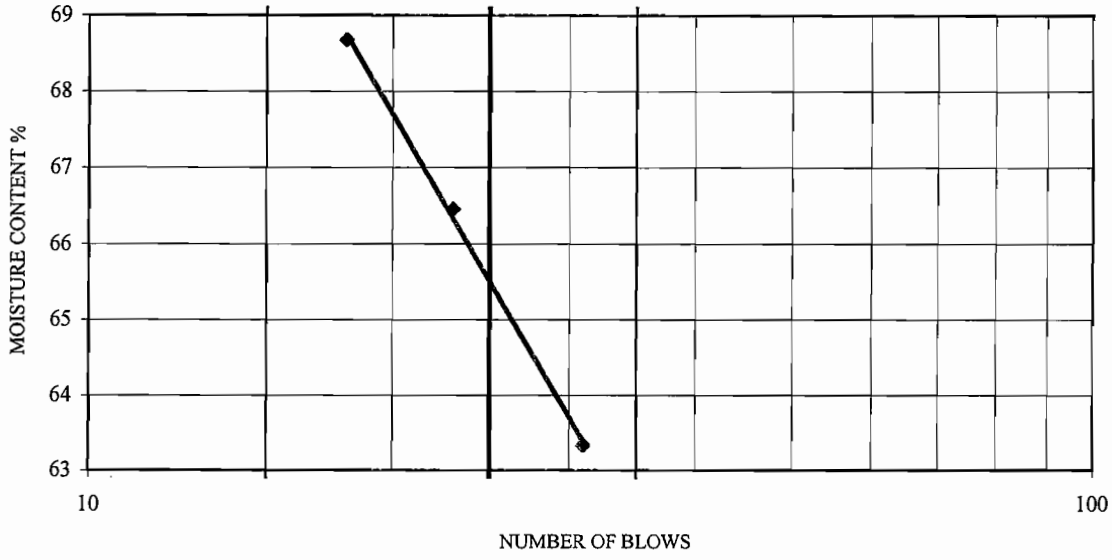
ASTM D 4318/AASHTO T 88, T 89

Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)

LIQUID LIMIT

Number of Blows	31	23	18
Mass of Wet Sample & Tare, g	35.89	33.89	34.36
Mass of Dry Sample & Tare, g	32.28	29.75	30.37
Mass of Tare, g	26.58	23.52	24.56
Moisture Content, %	63.33	66.45	68.67

Oven ID #	12/13/14/15
Balance ID #	2
Liquid Limit Device ID #	56



PLASTIC LIMIT

Mass of Wet Sample & Tare, g	29.19	31.69
Mass of Dry Sample & Tare, g	26.43	29.10
Mass of Tare, g	19.72	22.77
Moisture Content, %	41.13	40.92

PREPARATION PROCEDURE: DRY

NOTE: MATERIAL PASSING NO. 40 SIEVE WAS USED FOR TEST

NATURAL MOISTURE

Mass of Wet Sample & Tare, g	650.70
Mass of Dry Sample & Tare, g	554.60
Mass of Tare, g	302.30
Moisture Content, %	38.09

LIQUID LIMIT (LL)	66
PLASTIC LIMIT (PL)	41
PLASTICITY INDEX (PI)	25
LIQUIDITY INDEX (LI)	-0.12

DESCRIPTION: NA

USCS (ASTM D2487; D2488): NA

AASHTO (M 145): NA

of NORTH CAROLINA, PLLC

SECTION G-2

Laboratory Shelby Tube Test Results

TIMELY ENGINEERING SOIL TESTS, LLC
874 Forge Street Tucker, GA 30084
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Cell: 678-612-6534
Web: www.test-llc.com

Summary of Soil Testing (ST-Samples)

Project Number: 801

Project Name: CMS Landfill

T.E.S.T. Sample Number	Client Sample Number	USCS	Moisture Content (%)	Grain Size Distribution			Atterberg Limits			Proctor		Hydraulic Conductivity		
				%Finer #4 Sieve	% Finer #200 Sieve	% Finer 0.005mm	L.L. %	P.L. %	P.I. %	Opt. M.C. %	Max.Dry. Density pcf	Initial M.C. %	Init.Dry Density pcf	Hydraulic Conduct. cm/sec
5144	ST-1	-	-	-	-	-	-	-	-	-	-	32.5	90.3	2.0E-07
5145	ST-2	-	-	-	-	-	-	-	-	-	-	30.3	92.6	1.7E-07
5154	ST-3	-	-	-	-	-	-	-	-	-	-	27.5	95.9	1.4E-07
5157	ST-4	-	-	-	-	-	-	-	-	-	-	28.3	94.4	2.3E-07
5158	ST-5	-	-	-	-	-	-	-	-	-	-	32.8	89.0	5.7E-07
5159	ST-6	-	-	-	-	-	-	-	-	-	-	29.5	93.0	2.4E-07
5160	ST-7	-	-	-	-	-	-	-	-	-	-	34.8	86.4	1.3E-06
5161	ST-8	-	-	-	-	-	-	-	-	-	-	33.1	88.6	2.7E-07
5162	ST-9	-	-	-	-	-	-	-	-	-	-	35.9	85.7	2.4E-07
5167	ST-10	-	-	-	-	-	-	-	-	-	-	33.3	88.5	2.1E-07
5168	ST-11	-	-	-	-	-	-	-	-	-	-	30.6	91.7	1.9E-07
5169	ST-12	-	-	-	-	-	-	-	-	-	-	36.3	81.2	7.4E-06
5173	ST-13	-	-	-	-	-	-	-	-	-	-	32.7	88.3	3.1E-07
5174	ST-14	-	-	-	-	-	-	-	-	-	-	31.2	86.7	9.6E-06
5175	ST-15	-	-	-	-	-	-	-	-	-	-	31.2	90.7	1.9E-07
5176	ST-16	-	-	-	-	-	-	-	-	-	-	23.5	103.2	4.0E-07
5177	ST-17	-	-	-	-	-	-	-	-	-	-	34.6	86.1	4.0E-07
5179	ST-18	-	-	-	-	-	-	-	-	-	-	30.5	92.1	2.2E-07
5180	ST-19	-	-	-	-	-	-	-	-	-	-	27.3	96.3	2.9E-07
5181	ST-20	-	-	-	-	-	-	-	-	-	-	30.5	92.1	2.4E-07
5182	ST-21	-	-	-	-	-	-	-	-	-	-	27.9	94.5	2.4E-07
5203	ST-22	-	-	-	-	-	-	-	-	-	-	28.1	95.8	2.0E-07
5185	ST-23	-	-	-	-	-	-	-	-	-	-	29.1	92.8	1.7E-07
5186	ST-24	-	-	-	-	-	-	-	-	-	-	29.7	91.6	2.7E-07
5189	ST-25	-	-	-	-	-	-	-	-	-	-	31.1	91.0	2.2E-07
5190	ST-26	-	-	-	-	-	-	-	-	-	-	31.9	89.8	3.3E-07
5191	ST-27	-	-	-	-	-	-	-	-	-	-	31.2	85.8	3.7E-06
5192	ST-28	-	-	-	-	-	-	-	-	-	-	29.2	91.6	4.7E-07
5196	ST-29	-	-	-	-	-	-	-	-	-	-	35.8	85.1	2.1E-07

TIMELY ENGINEERING SOIL TESTS, LLC
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Web: www.test-llc.com

Summary of Soil Testing (ST-Samples)

Project Number: 801

Project Name: CMS Landfill

T.E.S.T. Sample Number	Client Sample Number	USCS	Moisture Content (%)	Grain Size Distribution			Atterberg Limits			Proctor		Hydraulic Conductivity		
				%Finer #4 Sieve	% Finer #200 Sieve	% Finer 0.005mm	L.L. %	P.L. %	P.I. %	Opt. M.C. %	Max.Dry. Density pcf	Initial M.C. %	Init.Dry Density pcf	Hydraulic Conduct. cm/sec
5197	ST-30	-	-	-	-	-	-	-	-	-	-	31.9	91.3	1.7E-07
5198	ST-31	-	-	-	-	-	-	-	-	-	-	33.1	84.9	5.9E-07
5199	ST-32	-	-	-	-	-	-	-	-	-	-	31.0	90.7	3.8E-07
5200	ST-33	-	-	-	-	-	-	-	-	-	-	34.6	86.7	1.8E-07
5201	ST-34	-	-	-	-	-	-	-	-	-	-	36.2	84.5	2.6E-07
5202	ST-35	-	-	-	-	-	-	-	-	-	-	37.8	83.9	2.3E-07
5204	ST-36	-	-	-	-	-	-	-	-	-	-	34.9	85.5	1.8E-07
5205	ST-37	-	-	-	-	-	-	-	-	-	-	32.3	89.3	1.8E-07
5206	ST-38	-	-	-	-	-	-	-	-	-	-	31.1	90.8	2.1E-07
5207	ST-39	-	-	-	-	-	-	-	-	-	-	32.4	88.0	2.0E-07
5208	ST-40	-	-	-	-	-	-	-	-	-	-	29.7	92.0	1.7E-07
5213	ST-41	-	-	-	-	-	-	-	-	-	-	30.9	91.8	2.8E-07
5214	ST-42	-	-	-	-	-	-	-	-	-	-	34.3	87.9	1.6E-07

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Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/20/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5144/ST-1	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.917	in	7.41	cm
Diameter	2.852	in	7.24	cm
Area	6.39	in^2	41.22	cm^2
Volume	305.37	cm^3	0.0108	ft^3
Mass	585.60	g	1.29	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	90.3	pcf		

Moisture Content

Mass of wet sample & tare	585.60	g
Mass of dry sample & tare	441.80	g
Mass of tare	0.00	g
% Moisture	32.5	

Test Data

Speed	11	
Board Number	8	
Cell Number	17	
Flow Pump Number	2B	
Flow Pump Rate	1.12E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	89.33	cm
Min Head	87.93	cm
Maximum Gradient	12.04	
Minimum Gradient	11.85	

Final Data (After Test)

Average Height of Sample			2.921	in	7.42 cm
Average Diameter of Sample			2.856	in	7.25 cm
Area	6.41	in^2	41.33	cm^2	
Volume	306.65	cm^3	0.0108	ft^3	
Mass	589.20	g	1.30	lb	

Dry Density	89.9	pcf
Vol. of Voids	142.99	cm^3
Vol. of Solids	163.66	cm^3
Void Ratio	0.87	
Saturation	103.0	%

Moisture Content

Mass of wet sample & tare	678.70	g
Mass of dry sample & tare	531.40	g
Mass of tare	89.60	g
% Moisture	33.3	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/20/08	14	10	-	1.25	87.93	11.85	26.0	-	-	-	
05/20/08	14	15	300	1.25	87.93	11.85	26.0	2.29E-07	0.869	1.99E-07	
05/20/08	14	20	300	1.26	88.63	11.95	26.0	2.28E-07	0.869	1.98E-07	
05/20/08	14	25	300	1.26	88.63	11.95	26.0	2.27E-07	0.869	1.97E-07	*
05/20/08	14	30	300	1.27	89.33	12.04	26.0	2.26E-07	0.869	1.96E-07	*
05/20/08	14	35	300	1.27	89.33	12.04	26.0	2.25E-07	0.869	1.96E-07	*
05/20/08	14	40	300	1.27	89.33	12.04	26.0	2.25E-07	0.869	1.96E-07	*

Reported Average Hydraulic Conductivity* 2.0E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/20/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5145/ST-2	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.920	in	7.42	cm	
Diameter	2.849	in	7.24	cm	
Area	6.37	in^2	41.13	cm^2	
Volume	305.04	cm^3	0.0108	ft^3	
Mass	589.80	g	1.30	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	92.6	pcf			

Moisture Content

Mass of wet sample & tare	589.80	g
Mass of dry sample & tare	452.60	g
Mass of tare	0.00	g
% Moisture	30.3	

Test Data

Speed	10	
Board Number	8	
Cell Number	1	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	208.91	cm
Min Head	207.50	cm
Maximum Gradient	28.08	
Minimum Gradient	27.89	

Final Data (After Test)

Average Height of Sample		2.929	in	7.44	cm		
Average Diameter of Sample		2.870	in	7.29	cm		
Area	6.47	in^2	41.74	cm^2			
Volume	310.51	cm^3	0.0110	ft^3	Dry Density	91.0	pcf
Mass	595.40	g	1.31	lb	Vol. of Voids	142.88	cm^3
					Vol. of Solids	167.63	cm^3
					Void Ratio	0.85	
					Saturation	99.9	%

Moisture Content

Mass of wet sample & tare	689.70	g
Mass of dry sample & tare	546.90	g
Mass of tare	94.30	g
% Moisture	31.6	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/20/08	15	0	-	2.95	207.50	27.89	26.0	-	-	-	
05/20/08	15	5	300	2.95	207.50	27.89	26.0	1.92E-07	0.869	1.67E-07	
05/20/08	15	10	300	2.96	208.21	27.99	26.0	1.92E-07	0.869	1.67E-07	
05/20/08	15	15	300	2.96	208.21	27.99	26.0	1.92E-07	0.869	1.67E-07	*
05/20/08	15	20	300	2.97	208.91	28.08	26.0	1.91E-07	0.869	1.66E-07	*
05/20/08	15	25	300	2.96	208.21	27.99	26.0	1.91E-07	0.869	1.66E-07	*
05/20/08	15	30	300	2.97	208.91	28.08	26.0	1.91E-07	0.869	1.66E-07	*

Reported Average Hydraulic Conductivity* 1.7E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	05/21/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5154/ST-3	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.575	in	6.54	cm
Diameter	2.833	in	7.20	cm
Area	6.30	in^2	40.67	cm^2
Volume	265.99	cm^3	0.0094	ft^3
Mass	521.10	g	1.15	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	95.9	pcf		

Moisture Content

Mass of wet sample & tare	521.10	g
Mass of dry sample & tare	408.60	g
Mass of tare	0.00	g
% Moisture	27.5	

Test Data

Speed	10	
Board Number	6	
Cell Number	4	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	222.98	cm
Min Head	221.57	cm
Maximum Gradient	33.96	
Minimum Gradient	33.75	

Final Data (After Test)

Average Height of Sample		2.585	in	6.57	cm
Average Diameter of Sample		2.851	in	7.24	cm
Area	6.38 in^2	41.19	cm^2		
Volume	270.42 cm^3	0.0095	ft^3		
Mass	526.80 g	1.16	lb		

Dry Density	94.3	pcf
Vol. of Voids	119.06	cm^3
Vol. of Solids	151.36	cm^3
Void Ratio	0.79	
Saturation	99.2	%

Moisture Content

Mass of wet sample & tare	617.70	g
Mass of dry sample & tare	499.60	g
Mass of tare	91.00	g
% Moisture	28.9	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/21/08	19	0	-	3.15	221.57	33.75	25.2	-	-	-	
05/21/08	19	5	300	3.15	221.57	33.75	25.2	1.61E-07	0.885	1.43E-07	
05/21/08	19	10	300	3.16	222.27	33.85	25.2	1.61E-07	0.885	1.42E-07	
05/21/08	19	15	300	3.16	222.27	33.85	25.2	1.61E-07	0.885	1.42E-07	*
05/21/08	19	20	300	3.17	222.98	33.96	25.2	1.60E-07	0.885	1.42E-07	*
05/21/08	19	25	300	3.16	222.27	33.85	25.2	1.60E-07	0.885	1.42E-07	*
05/21/08	19	30	300	3.17	222.98	33.96	25.2	1.60E-07	0.885	1.42E-07	*

Reported Average Hydraulic Conductivity* 1.4E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/22/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5157/ST-4	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.917	in	7.41	cm	
Diameter	2.856	in	7.25	cm	
Area	6.41	in^2	41.33	cm^2	
Volume	306.23	cm^3	0.0108	ft^3	
Mass	594.30	g	1.31	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	94.4	pcf			

Moisture Content

Mass of wet sample & tare	594.30	g
Mass of dry sample & tare	463.30	g
Mass of tare	0.00	g
% Moisture	28.3	

Test Data

Speed	10	
Board Number	7	
Cell Number	1	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	156.15	cm
Min Head	154.75	cm
Maximum Gradient	21.01	
Minimum Gradient	20.82	

Final Data (After Test)

Average Height of Sample			2.926	in	7.43 cm
Average Diameter of Sample			2.871	in	7.29 cm
Area	6.47	in^2	41.77	cm^2	
Volume	310.41	cm^3	0.0110	ft^3	
Mass	605.00	g	1.33	lb	

Dry Density	92.8	pcf
Vol. of Voids	139.44	cm^3
Vol. of Solids	170.97	cm^3
Void Ratio	0.82	
Saturation	102.8	%

Moisture Content

Mass of wet sample & tare	708.90	g
Mass of dry sample & tare	565.00	g
Mass of tare	101.70	g
% Moisture	31.1	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/22/08	15	0	-	2.20	154.75	20.82	24.2	-	-	-	
05/22/08	15	5	300	2.21	155.45	20.92	24.2	2.57E-07	0.906	2.33E-07	
05/22/08	15	10	300	2.20	154.75	20.82	24.2	2.57E-07	0.906	2.33E-07	
05/22/08	15	15	300	2.21	155.45	20.92	24.2	2.57E-07	0.906	2.33E-07	*
05/22/08	15	20	300	2.22	156.15	21.01	24.2	2.56E-07	0.906	2.32E-07	*
05/22/08	15	25	300	2.21	155.45	20.92	24.2	2.56E-07	0.906	2.32E-07	*
05/22/08	15	30	300	2.22	156.15	21.01	24.2	2.56E-07	0.906	2.32E-07	*

Reported Average Hydraulic Conductivity* 2.3E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/22/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5158/ST-5	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.927	in	7.43	cm	
Diameter	2.863	in	7.27	cm	
Area	6.44	in^2	41.53	cm^2	
Volume	308.78	cm^3	0.0109	ft^3	
Mass	584.50	g	1.29	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	89.0	pcf			

Moisture Content

Mass of wet sample & tare	584.50	g
Mass of dry sample & tare	440.20	g
Mass of tare	0.00	g
% Moisture	32.8	

Test Data

Speed	9	
Board Number	7	
Cell Number	17	
Flow Pump Number	2A	
Flow Pump Rate	4.48E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	128.02	cm
Min Head	126.61	cm
Maximum Gradient	17.19	
Minimum Gradient	17.00	

Final Data (After Test)

Average Height of Sample			2.932	in	7.45	cm	
Average Diameter of Sample			2.872	in	7.29	cm	
Area	6.48	in^2	41.80	cm^2			
Volume	311.26	cm^3	0.0110	ft^3			
Mass	591.80	g	1.30	lb			

Dry Density	88.3	pcf
Vol. of Voids	148.20	cm^3
Vol. of Solids	163.06	cm^3
Void Ratio	0.91	
Saturation	102.2	%

Moisture Content

Mass of wet sample & tare	690.50	g
Mass of dry sample & tare	539.00	g
Mass of tare	98.80	g
% Moisture	34.4	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/22/08	15	40	-	1.80	126.61	17.00	24.2	-	-	-	
05/22/08	15	45	300	1.81	127.32	17.10	24.2	6.29E-07	0.906	5.69E-07	
05/22/08	15	50	300	1.82	128.02	17.19	24.2	6.25E-07	0.906	5.66E-07	
05/22/08	15	55	300	1.80	126.61	17.00	24.2	6.27E-07	0.906	5.68E-07	*
05/22/08	16	0	300	1.82	128.02	17.19	24.2	6.27E-07	0.906	5.68E-07	*
05/22/08	16	5	300	1.80	126.61	17.00	24.2	6.27E-07	0.906	5.68E-07	*
05/22/08	16	10	300	1.81	127.32	17.10	24.2	6.29E-07	0.906	5.69E-07	*

Reported Average Hydraulic Conductivity* 5.7E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/22/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5159/ST-6	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.909	in	7.39	cm
Diameter	2.854	in	7.25	cm
Area	6.40	in^2	41.27	cm^2
Volume	304.96	cm^3	0.0108	ft^3
Mass	588.10	g	1.30	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	93.0	pcf		

Moisture Content

Mass of wet sample & tare	588.10	g
Mass of dry sample & tare	454.30	g
Mass of tare	0.00	g
% Moisture	29.5	

Test Data

Speed	10	
Board Number	8	
Cell Number	4	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	149.12	cm
Min Head	147.71	cm
Maximum Gradient	20.09	
Minimum Gradient	19.90	

Final Data (After Test)

Average Height of Sample			2.922	in	7.42 cm
Average Diameter of Sample			2.863	in	7.27 cm
Area	6.44	in^2	41.53	cm^2	
Volume	308.26	cm^3	0.0109	ft^3	
Mass	592.60	g	1.31	lb	

Dry Density	92.0	pcf
Vol. of Voids	139.97	cm^3
Vol. of Solids	168.29	cm^3
Void Ratio	0.83	
Saturation	98.8	%

Moisture Content

Mass of wet sample & tare	685.70	g
Mass of dry sample & tare	547.50	g
Mass of tare	93.20	g
% Moisture	30.4	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/22/08	15	0	-	2.10	147.71	19.90	24.2	-	-	-	
05/22/08	15	5	300	2.10	147.71	19.90	24.2	2.71E-07	0.906	2.45E-07	
05/22/08	15	10	300	2.11	148.42	20.00	24.2	2.70E-07	0.906	2.45E-07	
05/22/08	15	15	300	2.11	148.42	20.00	24.2	2.70E-07	0.906	2.44E-07	*
05/22/08	15	20	300	2.12	149.12	20.09	24.2	2.69E-07	0.906	2.44E-07	*
05/22/08	15	25	300	2.11	148.42	20.00	24.2	2.69E-07	0.906	2.44E-07	*
05/22/08	15	30	300	2.12	149.12	20.09	24.2	2.69E-07	0.906	2.44E-07	*

Reported Average Hydraulic Conductivity* 2.4E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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Tested By	RI
Date	05/22/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5160/ST-7	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.907	in	7.38	cm
Diameter	2.859	in	7.26	cm
Area	6.42	in^2	41.42	cm^2
Volume	305.82	cm^3	0.0108	ft^3
Mass	570.80	g	1.26	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	86.4	pcf		

Moisture Content

Mass of wet sample & tare	570.80	g
Mass of dry sample & tare	423.40	g
Mass of tare	0.00	g
% Moisture	34.8	

Test Data

Speed	9	
Board Number	8	
Cell Number	9	
Flow Pump Number	2B	
Flow Pump Rate	4.48E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	57.68	cm
Min Head	56.27	cm
Maximum Gradient	7.82	
Minimum Gradient	7.63	

Final Data (After Test)

Average Height of Sample		2.905	in	7.38	cm
Average Diameter of Sample		2.862	in	7.27	cm
Area	6.43 in^2	41.50	cm^2		
Volume	306.25 cm^3	0.0108	ft^3		
Mass	572.20 g	1.26	lb		

Dry Density	86.3	pcf
Vol. of Voids	149.44	cm^3
Vol. of Solids	156.81	cm^3
Void Ratio	0.95	
Saturation	99.6	%

Moisture Content

Mass of wet sample & tare	667.60	g
Mass of dry sample & tare	518.80	g
Mass of tare	95.40	g
% Moisture	35.1	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/22/08	15	40	-	0.80	56.27	7.63	24.2	-	-	-	
05/22/08	15	45	300	0.80	56.27	7.63	24.2	1.42E-06	0.906	1.28E-06	
05/22/08	15	50	300	0.80	56.27	7.63	24.2	1.42E-06	0.906	1.28E-06	
05/22/08	15	55	300	0.81	56.98	7.72	24.2	1.41E-06	0.906	1.27E-06	*
05/22/08	16	0	300	0.81	56.98	7.72	24.2	1.40E-06	0.906	1.27E-06	*
05/22/08	16	5	300	0.82	57.68	7.82	24.2	1.39E-06	0.906	1.26E-06	*
05/22/08	16	10	300	0.82	57.68	7.82	24.2	1.38E-06	0.906	1.25E-06	*

Reported Average Hydraulic Conductivity* 1.3E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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Tested By	RI
Date	05/22/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5161/ST-8	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.903	in	7.37	cm	
Diameter	2.860	in	7.26	cm	
Area	6.42	in^2	41.45	cm^2	
Volume	305.61	cm^3	0.0108	ft^3	
Mass	577.70	g	1.27	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	88.6	pcf			

Moisture Content

Mass of wet sample & tare	577.70	g
Mass of dry sample & tare	434.00	g
Mass of tare	0.00	g
% Moisture	33.1	

Test Data

Speed	10	
Board Number	5	
Cell Number	5	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	135.05	cm
Min Head	133.65	cm
Maximum Gradient	18.32	
Minimum Gradient	18.12	

Final Data (After Test)

Average Height of Sample			2.903	in	7.37	cm	
Average Diameter of Sample			2.867	in	7.28	cm	
Area	6.46	in^2	41.65	cm^2			
Volume	307.11	cm^3	0.0108	ft^3			
Mass	579.00	g	1.28	lb			

Dry Density	88.2	pcf
Vol. of Voids	146.34	cm^3
Vol. of Solids	160.77	cm^3
Void Ratio	0.91	
Saturation	99.0	%

Moisture Content

Mass of wet sample & tare	668.20	g
Mass of dry sample & tare	523.30	g
Mass of tare	89.30	g
% Moisture	33.4	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/22/08	16	20	-	1.90	133.65	18.12	24.2	-	-	-	
05/22/08	16	25	300	1.91	134.35	18.22	24.2	2.96E-07	0.906	2.68E-07	
05/22/08	16	30	300	1.90	133.65	18.12	24.2	2.96E-07	0.906	2.68E-07	
05/22/08	16	35	300	1.91	134.35	18.22	24.2	2.96E-07	0.906	2.68E-07	*
05/22/08	16	40	300	1.92	135.05	18.32	24.2	2.94E-07	0.906	2.67E-07	*
05/22/08	16	45	300	1.91	134.35	18.22	24.2	2.94E-07	0.906	2.67E-07	*
05/22/08	16	50	300	1.92	135.05	18.32	24.2	2.94E-07	0.906	2.67E-07	*

Reported Average Hydraulic Conductivity* 2.7E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	245			Pore Pressure Transducer ID #	28

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Tested By	RI
Date	05/22/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5162/ST-9	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.903	in	7.37	cm
Diameter	2.846	in	7.23	cm
Area	6.36	in^2	41.04	cm^2
Volume	302.63	cm^3	0.0107	ft^3
Mass	564.60	g	1.24	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	85.7	pcf		

Moisture Content

Mass of wet sample & tare	564.60	g
Mass of dry sample & tare	415.60	g
Mass of tare	0.00	g
% Moisture	35.9	

Test Data

Speed	10	
Board Number	6	
Cell Number	7	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	150.53	cm
Min Head	149.12	cm
Maximum Gradient	20.33	
Minimum Gradient	20.14	

Final Data (After Test)

Average Height of Sample			2.915	in	7.40 cm
Average Diameter of Sample			2.850	in	7.24 cm
Area	6.38	in^2	41.16	cm^2	
Volume	304.73	cm^3	0.0108	ft^3	
Mass	569.30	g	1.26	lb	

Dry Density	85.1	pcf
Vol. of Voids	150.75	cm^3
Vol. of Solids	153.98	cm^3
Void Ratio	0.98	
Saturation	101.9	%

Moisture Content

Mass of wet sample & tare	661.80	g
Mass of dry sample & tare	508.30	g
Mass of tare	92.70	g
% Moisture	36.9	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/22/08	16	20	-	2.12	149.12	20.14	24.2	-	-	-	
05/22/08	16	25	300	2.12	149.12	20.14	24.2	2.70E-07	0.906	2.45E-07	
05/22/08	16	30	300	2.13	149.82	20.24	24.2	2.70E-07	0.906	2.44E-07	
05/22/08	16	35	300	2.13	149.82	20.24	24.2	2.69E-07	0.906	2.44E-07	*
05/22/08	16	40	300	2.14	150.53	20.33	24.2	2.68E-07	0.906	2.43E-07	*
05/22/08	16	45	300	2.13	149.82	20.24	24.2	2.68E-07	0.906	2.43E-07	*
05/22/08	16	50	300	2.14	150.53	20.33	24.2	2.68E-07	0.906	2.43E-07	*

Reported Average Hydraulic Conductivity* 2.4E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

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Tested By	RI
Date	05/23/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5167/ST-10	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.625	in	6.67	cm
Diameter	2.859	in	7.26	cm
Area	6.42	in^2	41.42	cm^2
Volume	276.15	cm^3	0.0098	ft^3
Mass	521.70	g	1.15	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	88.5	pcf		

Moisture Content

Mass of wet sample & tare	521.70	g
Mass of dry sample & tare	391.50	g
Mass of tare	0.00	g
% Moisture	33.3	

Test Data

Speed	10	
Board Number	5	
Cell Number	4	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	145.60	cm
Min Head	144.20	cm
Maximum Gradient	21.64	
Minimum Gradient	21.43	

Final Data (After Test)

Average Height of Sample			2.649	in	6.73 cm
Average Diameter of Sample			2.873	in	7.30 cm
Area	6.48	in^2	41.82	cm^2	
Volume	281.41	cm^3	0.0099	ft^3	
Mass	527.00	g	1.16	lb	

Dry Density	86.9	pcf
Vol. of Voids	136.33	cm^3
Vol. of Solids	145.08	cm^3
Void Ratio	0.94	
Saturation	99.2	%

Moisture Content

Mass of wet sample & tare	629.60	g
Mass of dry sample & tare	494.40	g
Mass of tare	102.90	g
% Moisture	34.5	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/23/08	15	40	-	2.05	144.20	21.43	27.3	-	-	-	
05/23/08	15	45	300	2.06	144.90	21.54	27.3	2.49E-07	0.845	2.11E-07	
05/23/08	15	50	300	2.05	144.20	21.43	27.3	2.49E-07	0.845	2.11E-07	
05/23/08	15	55	300	2.06	144.90	21.54	27.3	2.49E-07	0.845	2.11E-07	*
05/23/08	16	0	300	2.07	145.60	21.64	27.3	2.48E-07	0.845	2.10E-07	*
05/23/08	16	5	300	2.05	144.20	21.43	27.3	2.49E-07	0.845	2.10E-07	*
05/23/08	16	10	300	2.06	144.90	21.54	27.3	2.49E-07	0.845	2.11E-07	*

Reported Average Hydraulic Conductivity* 2.1E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/23/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5168/ST-11	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.825	in	7.18	cm
Diameter	2.863	in	7.27	cm
Area	6.44	in^2	41.53	cm^2
Volume	298.02	cm^3	0.0105	ft^3
Mass	572.10	g	1.26	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	91.7	pcf		

Moisture Content

Mass of wet sample & tare	572.10	g
Mass of dry sample & tare	438.00	g
Mass of tare	0.00	g
% Moisture	30.6	

Test Data

Speed	10	
Board Number	6	
Cell Number	7	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	176.55	cm
Min Head	175.85	cm
Maximum Gradient	24.33	
Minimum Gradient	24.23	

Final Data (After Test)

Average Height of Sample			2.857	in	7.26	cm
Average Diameter of Sample			2.874	in	7.30	cm
Area	6.49	in^2	41.85	cm^2		
Volume	303.72	cm^3	0.0107	ft^3		
Mass	580.10	g	1.28	lb		

Dry Density	90.0	pcf
Vol. of Voids	141.44	cm^3
Vol. of Solids	162.28	cm^3
Void Ratio	0.87	
Saturation	100.4	%

Moisture Content

Mass of wet sample & tare	680.30	g
Mass of dry sample & tare	538.40	g
Mass of tare	100.40	g
% Moisture	32.4	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/23/08	15	40	-	2.50	175.85	24.23	27.3	-	-	-	
05/23/08	15	45	300	2.51	176.55	24.33	27.3	2.20E-07	0.845	1.86E-07	
05/23/08	15	50	300	2.51	176.55	24.33	27.3	2.20E-07	0.845	1.86E-07	
05/23/08	15	55	300	2.50	175.85	24.23	27.3	2.20E-07	0.845	1.86E-07	*
05/23/08	16	0	300	2.50	175.85	24.23	27.3	2.21E-07	0.845	1.87E-07	*
05/23/08	16	5	300	2.51	176.55	24.33	27.3	2.20E-07	0.845	1.86E-07	*
05/23/08	16	10	300	2.50	175.85	24.23	27.3	2.20E-07	0.845	1.86E-07	*

Reported Average Hydraulic Conductivity* 1.9E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/23/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5169/ST-12	Depth/Elev.	-
Location	Lift-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.369	in	6.02	cm	
Diameter	2.835	in	7.20	cm	
Area	6.31	in^2	40.73	cm^2	
Volume	245.05	cm^3	0.0087	ft^3	
Mass	434.90	g	0.96	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	81.2	pcf			

Moisture Content

Mass of wet sample & tare	434.90	g
Mass of dry sample & tare	319.00	g
Mass of tare	0.00	g
% Moisture	36.3	

Test Data

Speed	7	
Board Number	1	
Cell Number	15	
Flow Pump Number	1A	
Flow Pump Rate	1.79E-03	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	29.54	cm
Min Head	29.54	cm
Maximum Gradient	4.87	
Minimum Gradient	4.87	

Final Data (After Test)

Average Height of Sample			2.386	in	6.06	cm	
Average Diameter of Sample			2.888	in	7.34	cm	
Area	6.55	in^2	42.26	cm^2			
Volume	256.13	cm^3	0.0090	ft^3			
Mass	450.70	g	0.99	lb			

Dry Density	77.7	pcf
Vol. of Voids	137.98	cm^3
Vol. of Solids	118.15	cm^3
Void Ratio	1.17	
Saturation	95.4	%

Moisture Content

Mass of wet sample & tare	759.30	g
Mass of dry sample & tare	627.60	g
Mass of tare	308.60	g
% Moisture	41.3	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/23/08	16	30	-	0.42	29.54	4.87	26.7	-	-	-	
05/23/08	16	35	300	0.42	29.54	4.87	26.7	8.70E-06	0.856	7.44E-06	
05/23/08	16	40	300	0.42	29.54	4.87	26.7	8.70E-06	0.856	7.44E-06	
05/23/08	16	45	300	0.42	29.54	4.87	26.7	8.70E-06	0.856	7.44E-06	*
05/23/08	16	50	300	0.42	29.54	4.87	26.7	8.70E-06	0.856	7.44E-06	*
05/23/08	16	55	300	0.42	29.54	4.87	26.7	8.70E-06	0.856	7.44E-06	*
05/23/08	17	0	300	0.42	29.54	4.87	26.7	8.70E-06	0.856	7.44E-06	*

Reported Average Hydraulic Conductivity* 7.4E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	64
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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AASHTO R18

Tested By	RI
Date	05/26/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5173/ST-13	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.893	in	7.35	cm
Diameter	2.852	in	7.24	cm
Area	6.39	in^2	41.22	cm^2
Volume	302.86	cm^3	0.0107	ft^3
Mass	568.50	g	1.25	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	88.3	pcf		

Moisture Content

Mass of wet sample & tare	568.50	g
Mass of dry sample & tare	428.50	g
Mass of tare	0.00	g
% Moisture	32.7	

Test Data

Speed	10	
Board Number	7	
Cell Number	15	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	110.43	cm
Min Head	109.03	cm
Maximum Gradient	14.96	
Minimum Gradient	14.77	

Final Data (After Test)

Average Height of Sample			2.907	in	7.38	cm
Average Diameter of Sample			2.868	in	7.28	cm
Area	6.46	in^2	41.68	cm^2		
Volume	307.75	cm^3	0.0109	ft^3		
Mass	577.30	g	1.27	lb		

Dry Density	86.9	pcf
Vol. of Voids	149.04	cm^3
Vol. of Solids	158.70	cm^3
Void Ratio	0.94	
Saturation	99.8	%

Moisture Content

Mass of wet sample & tare	661.00	g
Mass of dry sample & tare	512.20	g
Mass of tare	83.70	g
% Moisture	34.7	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/26/08	14	40	-	1.55	109.03	14.77	26.7	-	-	-	
05/26/08	14	45	300	1.55	109.03	14.77	26.7	3.64E-07	0.856	3.12E-07	
05/26/08	14	50	300	1.55	109.03	14.77	26.7	3.64E-07	0.856	3.12E-07	
05/26/08	14	55	300	1.56	109.73	14.86	26.7	3.63E-07	0.856	3.11E-07	*
05/26/08	15	0	300	1.56	109.73	14.86	26.7	3.62E-07	0.856	3.10E-07	*
05/26/08	15	5	300	1.57	110.43	14.96	26.7	3.60E-07	0.856	3.09E-07	*
05/26/08	15	10	300	1.57	110.43	14.96	26.7	3.59E-07	0.856	3.08E-07	*

Reported Average Hydraulic Conductivity* 3.1E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/26/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5174/ST-14	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.914	in	7.40	cm
Diameter	2.848	in	7.23	cm
Area	6.37	in^2	41.10	cm^2
Volume	304.20	cm^3	0.0107	ft^3
Mass	554.60	g	1.22	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	86.7	pcf		

Moisture Content

Mass of wet sample & tare	554.60	g
Mass of dry sample & tare	422.70	g
Mass of tare	0.00	g
% Moisture	31.2	

Test Data

Speed	7	
Board Number	7	
Cell Number	1	
Flow Pump Number	2A	
Flow Pump Rate	1.79E-03	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	28.14	cm
Min Head	28.14	cm
Maximum Gradient	3.79	
Minimum Gradient	3.79	

Final Data (After Test)

Average Height of Sample			2.922	in	7.42	cm
Average Diameter of Sample			2.878	in	7.31	cm
Area	6.51	in^2	41.97	cm^2		
Volume	311.50	cm^3	0.0110	ft^3		
Mass	573.90	g	1.27	lb		

Dry Density	84.7	pcf
Vol. of Voids	154.91	cm^3
Vol. of Solids	156.58	cm^3
Void Ratio	0.99	
Saturation	97.6	%

Moisture Content

Mass of wet sample & tare	675.00	g
Mass of dry sample & tare	523.90	g
Mass of tare	101.20	g
% Moisture	35.7	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/26/08	15	20	-	0.40	28.14	3.79	26.7	-	-	-	
05/26/08	15	25	300	0.40	28.14	3.79	26.7	1.13E-05	0.856	9.64E-06	
05/26/08	15	30	300	0.40	28.14	3.79	26.7	1.13E-05	0.856	9.64E-06	
05/26/08	15	35	300	0.40	28.14	3.79	26.7	1.13E-05	0.856	9.64E-06	*
05/26/08	15	40	300	0.40	28.14	3.79	26.7	1.13E-05	0.856	9.64E-06	*
05/26/08	15	45	300	0.40	28.14	3.79	26.7	1.13E-05	0.856	9.64E-06	*
05/26/08	15	50	300	0.40	28.14	3.79	26.7	1.13E-05	0.856	9.64E-06	*

Reported Average Hydraulic Conductivity* 9.6E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/26/08
Checked By	VB

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5175/ST-15	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.919	in	7.41	cm
Diameter	2.854	in	7.25	cm
Area	6.40	in^2	41.27	cm^2
Volume	306.01	cm^3	0.0108	ft^3
Mass	583.10	g	1.29	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	90.7	pcf		

Moisture Content

Mass of wet sample & tare	583.10	g
Mass of dry sample & tare	444.60	g
Mass of tare	0.00	g
% Moisture	31.2	

Test Data

Speed	10	
Board Number	8	
Cell Number	7	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	182.18	cm
Min Head	180.77	cm
Maximum Gradient	24.48	
Minimum Gradient	24.29	

Final Data (After Test)

Average Height of Sample			2.930	in	7.44 cm
Average Diameter of Sample			2.860	in	7.26 cm
Area	6.42	in^2	41.45	cm^2	
Volume	308.45	cm^3	0.0109	ft^3	
Mass	587.80	g	1.30	lb	

Dry Density	90.0	pcf
Vol. of Voids	143.73	cm^3
Vol. of Solids	164.72	cm^3
Void Ratio	0.87	
Saturation	99.5	%

Moisture Content

Mass of wet sample & tare	678.60	g
Mass of dry sample & tare	535.60	g
Mass of tare	91.00	g
% Moisture	32.2	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/26/08	14	40	-	2.57	180.77	24.29	26.7	-	-	-	
05/26/08	14	45	300	2.57	180.77	24.29	26.7	2.22E-07	0.856	1.90E-07	
05/26/08	14	50	300	2.58	181.48	24.38	26.7	2.22E-07	0.856	1.90E-07	
05/26/08	14	55	300	2.58	181.48	24.38	26.7	2.22E-07	0.856	1.90E-07	*
05/26/08	15	0	300	2.59	182.18	24.48	26.7	2.21E-07	0.856	1.89E-07	*
05/26/08	15	5	300	2.59	182.18	24.48	26.7	2.21E-07	0.856	1.89E-07	*
05/26/08	15	10	300	2.59	182.18	24.48	26.7	2.21E-07	0.856	1.89E-07	*

Reported Average Hydraulic Conductivity* 1.9E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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Tested By	RI
Date	05/26/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5176/ST-16	Depth/Elev.	-
Location	L-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.914	in	7.40	cm
Diameter	2.843	in	7.22	cm
Area	6.35	in^2	40.96	cm^2
Volume	303.13	cm^3	0.0107	ft^3
Mass	618.70	g	1.36	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	103.2	pcf		

Moisture Content

Mass of wet sample & tare	618.70	g
Mass of dry sample & tare	501.10	g
Mass of tare	0.00	g
% Moisture	23.5	

Test Data

Speed	10	
Board Number	5	
Cell Number	2	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	85.81	cm
Min Head	84.41	cm
Maximum Gradient	11.57	
Minimum Gradient	11.38	

Final Data (After Test)

Average Height of Sample			2.920	in	7.42 cm
Average Diameter of Sample			2.865	in	7.28 cm
Area	6.45	in^2	41.59	cm^2	
Volume	308.48	cm^3	0.0109	ft^3	
Mass	623.70	g	1.38	lb	

Dry Density	101.4	pcf
Vol. of Voids	122.85	cm^3
Vol. of Solids	185.62	cm^3
Void Ratio	0.66	
Saturation	99.7	%

Moisture Content

Mass of wet sample & tare	726.10	g
Mass of dry sample & tare	603.60	g
Mass of tare	102.50	g
% Moisture	24.4	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/26/08	16	10	-	1.20	84.41	11.38	26.7	-	-	-	
05/26/08	16	15	300	1.20	84.41	11.38	26.7	4.73E-07	0.856	4.05E-07	
05/26/08	16	20	300	1.21	85.11	11.48	26.7	4.71E-07	0.856	4.03E-07	
05/26/08	16	25	300	1.21	85.11	11.48	26.7	4.69E-07	0.856	4.02E-07	*
05/26/08	16	30	300	1.22	85.81	11.57	26.7	4.67E-07	0.856	4.00E-07	*
05/26/08	16	35	300	1.22	85.81	11.57	26.7	4.65E-07	0.856	3.98E-07	*
05/26/08	16	40	300	1.22	85.81	11.57	26.7	4.65E-07	0.856	3.98E-07	*

Reported Average Hydraulic Conductivity* 4.0E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/26/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-02
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5177/ST-17	Depth/Elev.	-
Location	L-1	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.882	in	7.32	cm
Diameter	2.848	in	7.23	cm
Area	6.37	in^2	41.10	cm^2
Volume	300.86	cm^3	0.0106	ft^3
Mass	558.40	g	1.23	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	86.1	pcf		

Moisture Content

Mass of wet sample & tare	558.40	g
Mass of dry sample & tare	415.00	g
Mass of tare	0.00	g
% Moisture	34.6	

Test Data

Speed	10	
Board Number	6	
Cell Number	6	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	85.11	cm
Min Head	84.41	cm
Maximum Gradient	11.58	
Minimum Gradient	11.49	

Final Data (After Test)

Average Height of Sample			2.893	in	7.35	cm
Average Diameter of Sample			2.864	in	7.27	cm
Area	6.44	in^2	41.56	cm^2		
Volume	305.41	cm^3	0.0108	ft^3		
Mass	568.20	g	1.25	lb		

Dry Density	84.8	pcf
Vol. of Voids	151.65	cm^3
Vol. of Solids	153.76	cm^3
Void Ratio	0.99	
Saturation	100.9	%

Moisture Content

Mass of wet sample & tare	669.90	g
Mass of dry sample & tare	516.90	g
Mass of tare	101.90	g
% Moisture	36.9	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/26/08	16	10	-	1.20	84.41	11.49	26.7	-	-	-	
05/26/08	16	15	300	1.20	84.41	11.49	26.7	4.69E-07	0.856	4.02E-07	
05/26/08	16	20	300	1.20	84.41	11.49	26.7	4.69E-07	0.856	4.02E-07	
05/26/08	16	25	300	1.20	84.41	11.49	26.7	4.69E-07	0.856	4.02E-07	*
05/26/08	16	30	300	1.20	84.41	11.49	26.7	4.69E-07	0.856	4.02E-07	*
05/26/08	16	35	300	1.21	85.11	11.58	26.7	4.67E-07	0.856	4.00E-07	*
05/26/08	16	40	300	1.21	85.11	11.58	26.7	4.65E-07	0.856	3.98E-07	*

Reported Average Hydraulic Conductivity* 4.0E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5179/ST-18	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.907	in	7.38	cm
Diameter	2.859	in	7.26	cm
Area	6.42	in^2	41.42	cm^2
Volume	305.82	cm^3	0.0108	ft^3
Mass	588.80	g	1.30	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	92.1	pcf		

Moisture Content

Mass of wet sample & tare	588.80	g
Mass of dry sample & tare	451.20	g
Mass of tare	0.00	g
% Moisture	30.5	

Test Data

Speed	10	
Board Number	7	
Cell Number	1	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	163.19	cm
Min Head	161.78	cm
Maximum Gradient	22.06	
Minimum Gradient	21.87	

Final Data (After Test)

Average Height of Sample			2.913	in	7.40 cm
Average Diameter of Sample			2.864	in	7.27 cm
Area	6.44	in^2	41.56	cm^2	
Volume	307.52	cm^3	0.0109	ft^3	
Mass	593.00	g	1.31	lb	

Dry Density	91.6	pcf
Vol. of Voids	140.36	cm^3
Vol. of Solids	167.17	cm^3
Void Ratio	0.84	
Saturation	100.9	%

Moisture Content

Mass of wet sample & tare	678.30	g
Mass of dry sample & tare	536.70	g
Mass of tare	85.50	g
% Moisture	31.4	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	16	40	-	2.30	161.78	21.87	25.5	-	-	-	
05/28/08	16	45	300	2.30	161.78	21.87	25.5	2.46E-07	0.879	2.17E-07	
05/28/08	16	50	300	2.30	161.78	21.87	25.5	2.46E-07	0.879	2.17E-07	
05/28/08	16	55	300	2.31	162.49	21.96	25.5	2.46E-07	0.879	2.16E-07	*
05/28/08	17	0	300	2.31	162.49	21.96	25.5	2.45E-07	0.879	2.16E-07	*
05/28/08	17	5	300	2.32	163.19	22.06	25.5	2.45E-07	0.879	2.15E-07	*
05/28/08	17	10	300	2.32	163.19	22.06	25.5	2.44E-07	0.879	2.15E-07	*

Reported Average Hydraulic Conductivity* 2.2E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5180/ST-19	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.909	in	7.39	cm	
Diameter	2.860	in	7.26	cm	
Area	6.42	in^2	41.45	cm^2	
Volume	306.24	cm^3	0.0108	ft^3	
Mass	601.60	g	1.33	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	96.3	pcf			

Moisture Content

Mass of wet sample & tare	601.60	g
Mass of dry sample & tare	472.40	g
Mass of tare	0.00	g
% Moisture	27.3	

Test Data

Speed	10	
Board Number	7	
Cell Number	2	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	120.98	cm
Min Head	119.58	cm
Maximum Gradient	16.34	
Minimum Gradient	16.15	

Final Data (After Test)

Average Height of Sample			2.915	in	7.40	cm	
Average Diameter of Sample			2.863	in	7.27	cm	
Area	6.44	in^2	41.53	cm^2			
Volume	307.52	cm^3	0.0109	ft^3			
Mass	605.70	g	1.34	lb			

Dry Density	95.9	pcf
Vol. of Voids	132.53	cm^3
Vol. of Solids	174.99	cm^3
Void Ratio	0.76	
Saturation	100.5	%

Moisture Content

Mass of wet sample & tare	694.90	g
Mass of dry sample & tare	561.70	g
Mass of tare	89.30	g
% Moisture	28.2	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	17	20	-	1.70	119.58	16.15	25.5	-	-	-	
05/28/08	17	25	300	1.70	119.58	16.15	25.5	3.34E-07	0.879	2.94E-07	
05/28/08	17	30	300	1.71	120.28	16.25	25.5	3.33E-07	0.879	2.93E-07	
05/28/08	17	35	300	1.71	120.28	16.25	25.5	3.32E-07	0.879	2.92E-07	*
05/28/08	17	40	300	1.72	120.98	16.34	25.5	3.31E-07	0.879	2.91E-07	*
05/28/08	17	45	300	1.71	120.28	16.25	25.5	3.31E-07	0.879	2.91E-07	*
05/28/08	17	50	300	1.72	120.98	16.34	25.5	3.31E-07	0.879	2.91E-07	*

Reported Average Hydraulic Conductivity* 2.9E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5181/ST-20	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.903	in	7.37	cm
Diameter	2.859	in	7.26	cm
Area	6.42	in^2	41.42	cm^2
Volume	305.40	cm^3	0.0108	ft^3
Mass	588.00	g	1.30	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	92.1	pcf		

Moisture Content

Mass of wet sample & tare	588.00	g
Mass of dry sample & tare	450.60	g
Mass of tare	0.00	g
% Moisture	30.5	

Test Data

Speed	10	
Board Number	8	
Cell Number	4	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	149.12	cm
Min Head	147.71	cm
Maximum Gradient	20.17	
Minimum Gradient	19.98	

Final Data (After Test)

Average Height of Sample			2.911	in	7.39 cm
Average Diameter of Sample			2.863	in	7.27 cm
Area	6.44	in^2	41.53	cm^2	
Volume	307.10	cm^3	0.0108	ft^3	
Mass	591.50	g	1.30	lb	

Dry Density	91.6	pcf
Vol. of Voids	140.15	cm^3
Vol. of Solids	166.95	cm^3
Void Ratio	0.84	
Saturation	100.4	%

Moisture Content

Mass of wet sample & tare	675.10	g
Mass of dry sample & tare	534.40	g
Mass of tare	83.80	g
% Moisture	31.2	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	16	40	-	2.10	147.71	19.98	25.5	-	-	-	
05/28/08	16	45	300	2.10	147.71	19.98	25.5	2.70E-07	0.879	2.37E-07	
05/28/08	16	50	300	2.11	148.42	20.07	25.5	2.69E-07	0.879	2.37E-07	
05/28/08	16	55	300	2.11	148.42	20.07	25.5	2.69E-07	0.879	2.36E-07	*
05/28/08	17	0	300	2.12	149.12	20.17	25.5	2.68E-07	0.879	2.36E-07	*
05/28/08	17	5	300	2.12	149.12	20.17	25.5	2.67E-07	0.879	2.35E-07	*
05/28/08	17	10	300	2.12	149.12	20.17	25.5	2.67E-07	0.879	2.35E-07	*

Reported Average Hydraulic Conductivity* 2.4E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5182/ST-21	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.903	in	7.37	cm
Diameter	2.859	in	7.26	cm
Area	6.42	in^2	41.42	cm^2
Volume	305.40	cm^3	0.0108	ft^3
Mass	591.11	g	1.30	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	94.5	pcf		

Moisture Content

Mass of wet sample & tare	591.11	g
Mass of dry sample & tare	462.30	g
Mass of tare	0.00	g
% Moisture	27.9	

Test Data

Speed	10	
Board Number	8	
Cell Number	5	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	149.12	cm
Min Head	147.71	cm
Maximum Gradient	20.02	
Minimum Gradient	19.83	

Final Data (After Test)

Average Height of Sample			2.933	in	7.45 cm
Average Diameter of Sample			2.867	in	7.28 cm
Area	6.46	in^2	41.65	cm^2	
Volume	310.28	cm^3	0.0110	ft^3	
Mass	601.30	g	1.33	lb	

Dry Density	93.0	pcf
Vol. of Voids	139.06	cm^3
Vol. of Solids	171.22	cm^3
Void Ratio	0.81	
Saturation	100.0	%

Moisture Content

Mass of wet sample & tare	691.50	g
Mass of dry sample & tare	552.50	g
Mass of tare	90.20	g
% Moisture	30.1	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	17	20	-	2.10	147.71	19.83	25.5	-	-	-	
05/28/08	17	25	300	2.10	147.71	19.83	25.5	2.71E-07	0.879	2.38E-07	
05/28/08	17	30	300	2.11	148.42	19.92	25.5	2.71E-07	0.879	2.38E-07	
05/28/08	17	35	300	2.11	148.42	19.92	25.5	2.70E-07	0.879	2.37E-07	*
05/28/08	17	40	300	2.12	149.12	20.02	25.5	2.69E-07	0.879	2.37E-07	*
05/28/08	17	45	300	2.11	148.42	19.92	25.5	2.69E-07	0.879	2.37E-07	*
05/28/08	17	50	300	2.12	149.12	20.02	25.5	2.69E-07	0.879	2.37E-07	*

Reported Average Hydraulic Conductivity* 2.4E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	LS

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5203/ST-22	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.888	in	7.34	cm
Diameter	2.850	in	7.24	cm
Area	6.38	in^2	41.16	cm^2
Volume	301.91	cm^3	0.0107	ft^3
Mass	593.60	g	1.31	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	95.8	pcf		

Moisture Content

Mass of wet sample & tare	593.60	g
Mass of dry sample & tare	463.30	g
Mass of tare	0.00	g
% Moisture	28.1	

Test Data

Speed	10	
Board Number	1	
Cell Number	19	
Flow Pump Number	1A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	177.26	cm
Min Head	175.85	cm
Maximum Gradient	24.28	
Minimum Gradient	24.09	

Final Data (After Test)

Average Height of Sample		2.874	in	7.30	cm
Average Diameter of Sample		2.846	in	7.23	cm
Area	6.36 in^2	41.05	cm^2		
Volume	299.67 cm^3	0.0106	ft^3		
Mass	591.40 g	1.30	lb		

Dry Density	96.5	pcf
Vol. of Voids	128.05	cm^3
Vol. of Solids	171.62	cm^3
Void Ratio	0.75	
Saturation	100.0	%

Moisture Content

Mass of wet sample & tare	686.40	g
Mass of dry sample & tare	558.40	g
Mass of tare	95.10	g
% Moisture	27.6	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	16	0	-	2.50	175.85	24.09	24.6	-	-	-	
05/30/08	16	5	300	2.51	176.55	24.19	24.6	2.26E-07	0.897	2.03E-07	
05/30/08	16	10	300	2.50	175.85	24.09	24.6	2.26E-07	0.897	2.03E-07	
05/30/08	16	15	300	2.51	176.55	24.19	24.6	2.26E-07	0.897	2.03E-07	*
05/30/08	16	20	300	2.52	177.26	24.28	24.6	2.25E-07	0.897	2.02E-07	*
05/30/08	16	25	300	2.51	176.55	24.19	24.6	2.25E-07	0.897	2.02E-07	*
05/30/08	16	30	300	2.52	177.26	24.28	24.6	2.25E-07	0.897	2.02E-07	*

Reported Average Hydraulic Conductivity* 2.0E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	64
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5185/ST-23	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.903	in	7.37	cm
Diameter	2.858	in	7.26	cm
Area	6.42	in^2	41.39	cm^2
Volume	305.18	cm^3	0.0108	ft^3
Mass	585.50	g	1.29	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	92.8	pcf		

Moisture Content

Mass of wet sample & tare	585.50	g
Mass of dry sample & tare	453.70	g
Mass of tare	0.00	g
% Moisture	29.1	

Test Data

Speed	10	
Board Number	6	
Cell Number	7	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	205.39	cm
Min Head	203.99	cm
Maximum Gradient	27.69	
Minimum Gradient	27.50	

Final Data (After Test)

Average Height of Sample			2.920	in	7.42	cm
Average Diameter of Sample			2.880	in	7.32	cm
Area	6.51	in^2	42.03	cm^2		
Volume	311.72	cm^3	0.0110	ft^3		
Mass	594.80	g	1.31	lb		

Dry Density	90.8	pcf
Vol. of Voids	143.65	cm^3
Vol. of Solids	168.07	cm^3
Void Ratio	0.85	
Saturation	98.2	%

Moisture Content

Mass of wet sample & tare	689.80	g
Mass of dry sample & tare	548.80	g
Mass of tare	95.10	g
% Moisture	31.1	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	18	0	-	2.90	203.99	27.50	25.5	-	-	-	
05/28/08	18	5	300	2.90	203.99	27.50	25.5	1.94E-07	0.879	1.70E-07	
05/28/08	18	10	300	2.91	204.69	27.60	25.5	1.93E-07	0.879	1.70E-07	
05/28/08	18	15	300	2.91	204.69	27.60	25.5	1.93E-07	0.879	1.70E-07	*
05/28/08	18	20	300	2.92	205.39	27.69	25.5	1.93E-07	0.879	1.70E-07	*
05/28/08	18	25	300	2.91	204.69	27.60	25.5	1.93E-07	0.879	1.70E-07	*
05/28/08	18	30	300	2.92	205.39	27.69	25.5	1.93E-07	0.879	1.70E-07	*
					Reported Average Hydraulic Conductivity*					1.7E-07	cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5186/ST-24	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.906	in	7.38	cm
Diameter	2.864	in	7.27	cm
Area	6.44	in^2	41.56	cm^2
Volume	306.78	cm^3	0.0108	ft^3
Mass	584.50	g	1.29	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	91.6	pcf		

Moisture Content

Mass of wet sample & tare	584.50	g
Mass of dry sample & tare	450.50	g
Mass of tare	0.00	g
% Moisture	29.7	

Test Data

Speed	10	
Board Number	9	
Cell Number	9	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	128.02	cm
Min Head	126.61	cm
Maximum Gradient	17.29	
Minimum Gradient	17.10	

Final Data (After Test)

Average Height of Sample			2.915	in	7.40 cm
Average Diameter of Sample			2.872	in	7.29 cm
Area	6.48	in^2	41.80	cm^2	
Volume	309.46	cm^3	0.0109	ft^3	
Mass	588.80	g	1.30	lb	

Dry Density	90.8	pcf
Vol. of Voids	142.63	cm^3
Vol. of Solids	166.82	cm^3
Void Ratio	0.85	
Saturation	97.0	%

Moisture Content

Mass of wet sample & tare	688.50	g
Mass of dry sample & tare	550.10	g
Mass of tare	99.60	g
% Moisture	30.7	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	16	0	-	1.80	126.61	17.10	25.5	-	-	-	
05/28/08	16	5	300	1.80	126.61	17.10	25.5	3.13E-07	0.879	2.76E-07	
05/28/08	16	10	300	1.81	127.32	17.20	25.5	3.13E-07	0.879	2.75E-07	
05/28/08	16	15	300	1.81	127.32	17.20	25.5	3.12E-07	0.879	2.74E-07	*
05/28/08	16	20	300	1.82	128.02	17.29	25.5	3.11E-07	0.879	2.73E-07	*
05/28/08	16	25	300	1.82	128.02	17.29	25.5	3.10E-07	0.879	2.73E-07	*
05/28/08	16	30	300	1.82	128.02	17.29	25.5	3.10E-07	0.879	2.73E-07	*

Reported Average Hydraulic Conductivity* 2.7E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	LB

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5189/ST-25	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.911	in	7.39	cm
Diameter	2.858	in	7.26	cm
Area	6.42	in^2	41.39	cm^2
Volume	306.03	cm^3	0.0108	ft^3
Mass	585.00	g	1.29	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	91.0	pcf		

Moisture Content

Mass of wet sample & tare	585.00	g
Mass of dry sample & tare	446.20	g
Mass of tare	0.00	g
% Moisture	31.1	

Test Data

Speed	10	
Board Number	1	
Cell Number	18	
Flow Pump Number	1A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	156.15	cm
Min Head	154.75	cm
Maximum Gradient	21.07	
Minimum Gradient	20.88	

Final Data (After Test)

Average Height of Sample			2.918	in	7.41 cm
Average Diameter of Sample			2.865	in	7.28 cm
Area	6.45	in^2	41.59	cm^2	
Volume	308.27	cm^3	0.0109	ft^3	
Mass	588.60	g	1.30	lb	

Dry Density	90.3	pcf
Vol. of Voids	143.01	cm^3
Vol. of Solids	165.26	cm^3
Void Ratio	0.87	
Saturation	99.6	%

Moisture Content

Mass of wet sample & tare	679.50	g
Mass of dry sample & tare	537.10	g
Mass of tare	90.90	g
% Moisture	31.9	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	17	30	-	2.20	154.75	20.88	25.7	-	-	-	
05/28/08	17	35	300	2.20	154.75	20.88	25.7	2.58E-07	0.875	2.26E-07	
05/28/08	17	40	300	2.20	154.75	20.88	25.7	2.58E-07	0.875	2.26E-07	
05/28/08	17	45	300	2.21	155.45	20.97	25.7	2.57E-07	0.875	2.25E-07	*
05/28/08	17	50	300	2.21	155.45	20.97	25.7	2.57E-07	0.875	2.25E-07	*
05/28/08	17	55	300	2.22	156.15	21.07	25.7	2.56E-07	0.875	2.24E-07	*
05/28/08	18	0	300	2.22	156.15	21.07	25.7	2.56E-07	0.875	2.24E-07	*

Reported Average Hydraulic Conductivity* 2.2E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	64
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5190/ST-26	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.912	in	7.40	cm
Diameter	2.859	in	7.26	cm
Area	6.42	in^2	41.42	cm^2
Volume	306.34	cm^3	0.0108	ft^3
Mass	581.40	g	1.28	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	89.8	pcf		

Moisture Content

Mass of wet sample & tare	581.40	g
Mass of dry sample & tare	440.90	g
Mass of tare	0.00	g
% Moisture	31.9	

Test Data

Speed	10	
Board Number	2	
Cell Number	6	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	106.92	cm
Min Head	105.51	cm
Maximum Gradient	14.37	
Minimum Gradient	14.18	

Final Data (After Test)

Average Height of Sample		2.929	in	7.44	cm
Average Diameter of Sample		2.861	in	7.27	cm
Area	6.43 in^2	41.48	cm^2		
Volume	308.56 cm^3	0.0109	ft^3		
Mass	586.70 g	1.29	lb		

Dry Density	89.2	pcf
Vol. of Voids	145.24	cm^3
Vol. of Solids	163.32	cm^3
Void Ratio	0.89	
Saturation	100.3	%

Moisture Content

Mass of wet sample & tare	688.30	g
Mass of dry sample & tare	542.60	g
Mass of tare	101.70	g
% Moisture	33.0	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	18	40	-	1.50	105.51	14.18	25.5	-	-	-	
05/28/08	18	45	300	1.50	105.51	14.18	25.5	3.81E-07	0.879	3.35E-07	
05/28/08	18	50	300	1.51	106.21	14.28	25.5	3.80E-07	0.879	3.34E-07	
05/28/08	18	55	300	1.51	106.21	14.28	25.5	3.78E-07	0.879	3.33E-07	*
05/28/08	19	0	300	1.52	106.92	14.37	25.5	3.77E-07	0.879	3.32E-07	*
05/28/08	19	5	300	1.51	106.21	14.28	25.5	3.77E-07	0.879	3.32E-07	*
05/28/08	19	10	300	1.52	106.92	14.37	25.5	3.77E-07	0.879	3.32E-07	*
								Reported Average Hydraulic Conductivity*		3.3E-07	cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	64
Syringe ID #	246			Pore Pressure Transducer ID #	26/27

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	VS

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5191/ST-27	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.898	in	7.36	cm
Diameter	2.822	in	7.17	cm
Area	6.25	in^2	40.35	cm^2
Volume	297.03	cm^3	0.0105	ft^3
Mass	535.80	g	1.18	lb
Specific Gravity	2.650	(Assumed)		
Dry Density	85.8	pcf		

Moisture Content

Mass of wet sample & tare	535.80	g
Mass of dry sample & tare	408.30	g
Mass of tare	0.00	g
% Moisture	31.2	

Test Data

Speed	8	
Board Number	3	
Cell Number	19	
Flow Pump Number	1A	
Flow Pump Rate	8.96E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	37.98	cm
Min Head	37.98	cm
Maximum Gradient	5.14	
Minimum Gradient	5.14	

Final Data (After Test)

Average Height of Sample		2.912	in	7.40	cm
Average Diameter of Sample		2.841	in	7.22	cm
Area	6.34	in^2	40.90	cm^2	
Volume	302.50	cm^3	0.0107	ft^3	
Mass	551.70	g	1.22	ib	

Dry Density	84.2	pcf
Vol. of Voids	148.42	cm^3
Vol. of Solids	154.08	cm^3
Void Ratio	0.96	
Saturation	96.6	%

Moisture Content

Mass of wet sample & tare	654.20	g
Mass of dry sample & tare	510.80	g
Mass of tare	102.50	g
% Moisture	35.1	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	18	10	-	0.54	37.98	5.14	25.7	-	-	-	
05/28/08	18	15	300	0.54	37.98	5.14	25.7	4.27E-06	0.875	3.73E-06	
05/28/08	18	20	300	0.54	37.98	5.14	25.7	4.27E-06	0.875	3.73E-06	
05/28/08	18	25	300	0.54	37.98	5.14	25.7	4.27E-06	0.875	3.73E-06	*
05/28/08	18	30	300	0.54	37.98	5.14	25.7	4.27E-06	0.875	3.73E-06	*
05/28/08	18	35	300	0.54	37.98	5.14	25.7	4.27E-06	0.875	3.73E-06	*
05/28/08	18	40	300	0.54	37.98	5.14	25.7	4.27E-06	0.875	3.73E-06	*

Reported Average Hydraulic Conductivity* 3.7E-06 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	29
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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AASHTO R18

Tested By	RI
Date	05/28/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5192/ST-28	Depth/Elev.	-
Location	L-2	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.907	in	7.38	cm
Diameter	2.857	in	7.26	cm
Area	6.41	in^2	41.36	cm^2
Volume	305.39	cm^3	0.0108	ft^3
Mass	579.20	g	1.28	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	91.6	pcf		

Moisture Content

Mass of wet sample & tare	579.20	g
Mass of dry sample & tare	448.20	g
Mass of tare	0.00	g
% Moisture	29.2	

Test Data

Speed	9	
Board Number	4	
Cell Number	15	
Flow Pump Number	1B	
Flow Pump Rate	4.48E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	149.12	cm
Min Head	147.71	cm
Maximum Gradient	20.08	
Minimum Gradient	19.89	

Final Data (After Test)

Average Height of Sample			2.924	in	7.43 cm
Average Diameter of Sample			2.863	in	7.27 cm
Area	6.44	in^2	41.53	cm^2	
Volume	308.47	cm^3	0.0109	ft^3	
Mass	590.90	g	1.30	lb	

Dry Density	90.7	pcf
Vol. of Voids	142.47	cm^3
Vol. of Solids	166.00	cm^3
Void Ratio	0.86	
Saturation	100.2	%

Moisture Content

Mass of wet sample & tare	680.10	g
Mass of dry sample & tare	537.40	g
Mass of tare	89.20	g
% Moisture	31.8	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/28/08	19	10	-	2.10	147.71	19.89	25.7	-	-	-	
05/28/08	19	15	300	2.10	147.71	19.89	25.7	5.42E-07	0.875	4.75E-07	
05/28/08	19	20	300	2.11	148.42	19.98	25.7	5.41E-07	0.875	4.74E-07	
05/28/08	19	25	300	2.11	148.42	19.98	25.7	5.40E-07	0.875	4.72E-07	*
05/28/08	19	30	300	2.12	149.12	20.08	25.7	5.38E-07	0.875	4.71E-07	*
05/28/08	19	35	300	2.12	149.12	20.08	25.7	5.37E-07	0.875	4.70E-07	*
05/28/08	19	40	300	2.12	149.12	20.08	25.7	5.37E-07	0.875	4.70E-07	*

Reported Average Hydraulic Conductivity* 4.7E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	70/68
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	29
Syringe ID #	141			Pore Pressure Transducer ID #	26/27

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Web: www.test-llc.com

Tested By	RI
Date	05/30/08
Checked By	GB

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5196/ST-29	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	3.001	in	7.62	cm
Diameter	2.853	in	7.25	cm
Area	6.39	in^2	41.24	cm^2
Volume	314.38	cm^3	0.0111	ft^3
Mass	582.10	g	1.28	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	85.1	pcf		

Moisture Content

Mass of wet sample & tare	582.10	g
Mass of dry sample & tare	428.50	g
Mass of tare	0.00	g
% Moisture	35.8	

Test Data

Speed	10	
Board Number	7	
Cell Number	1	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	177.26	cm
Min Head	175.85	cm
Maximum Gradient	23.10	
Minimum Gradient	22.92	

Final Data (After Test)

Average Height of Sample		3.021	in	7.67	cm
Average Diameter of Sample		2.868	in	7.28	cm
Area	6.46 in^2	41.68	cm^2		
Volume	319.82 cm^3	0.0113	ft^3		
Mass	590.40 g	1.30	lb		

Dry Density	83.6	pcf
Vol. of Voids	161.06	cm^3
Vol. of Solids	158.76	cm^3
Void Ratio	1.01	
Saturation	100.4	%

Moisture Content

Mass of wet sample & tare	690.60	g
Mass of dry sample & tare	528.90	g
Mass of tare	100.40	g
% Moisture	37.7	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	13	40	-	2.50	175.85	22.92	24.8	-	-	-	
05/30/08	13	45	300	2.51	176.55	23.01	24.8	2.34E-07	0.893	2.09E-07	
05/30/08	13	50	300	2.50	175.85	22.92	24.8	2.34E-07	0.893	2.09E-07	
05/30/08	13	55	300	2.51	176.55	23.01	24.8	2.34E-07	0.893	2.09E-07	*
05/30/08	14	0	300	2.52	177.26	23.10	24.8	2.33E-07	0.893	2.08E-07	*
05/30/08	14	5	300	2.51	176.55	23.01	24.8	2.33E-07	0.893	2.08E-07	*
05/30/08	14	10	300	2.52	177.26	23.10	24.8	2.33E-07	0.893	2.08E-07	*

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Reported Average Hydraulic Conductivity* 2.1E-07 cm/sec

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5197/ST-30	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.881	in	7.32	cm
Diameter	2.860	in	7.26	cm
Area	6.42	in^2	41.45	cm^2
Volume	303.30	cm^3	0.0107	ft^3
Mass	585.30	g	1.29	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	91.3	pcf		

Moisture Content

Mass of wet sample & tare	585.30	g
Mass of dry sample & tare	443.70	g
Mass of tare	0.00	g
% Moisture	31.9	

Test Data

Speed	10	
Board Number	7	
Cell Number	5	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	205.39	cm
Min Head	203.99	cm
Maximum Gradient	27.98	
Minimum Gradient	27.79	

Final Data (After Test)

Average Height of Sample			2.890	in	7.34	cm
Average Diameter of Sample			2.874	in	7.30	cm
Area	6.49	in^2	41.85	cm^2		
Volume	307.23	cm^3	0.0108	ft^3		
Mass	590.10	g	1.30	lb		

Dry Density	90.1	pcf
Vol. of Voids	142.87	cm^3
Vol. of Solids	164.36	cm^3
Void Ratio	0.87	
Saturation	102.4	%

Moisture Content

Mass of wet sample & tare	680.80	g
Mass of dry sample & tare	534.50	g
Mass of tare	90.80	g
% Moisture	33.0	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	14	20	-	2.90	203.99	27.79	24.8	-	-	-	
05/30/08	14	25	300	2.90	203.99	27.79	24.8	1.93E-07	0.893	1.72E-07	
05/30/08	14	30	300	2.90	203.99	27.79	24.8	1.93E-07	0.893	1.72E-07	
05/30/08	14	35	300	2.91	204.69	27.88	24.8	1.92E-07	0.893	1.72E-07	*
05/30/08	14	40	300	2.91	204.69	27.88	24.8	1.92E-07	0.893	1.71E-07	*
05/30/08	14	45	300	2.92	205.39	27.98	24.8	1.92E-07	0.893	1.71E-07	*
05/30/08	14	50	300	2.92	205.39	27.98	24.8	1.91E-07	0.893	1.71E-07	*

Reported Average Hydraulic Conductivity* 1.7E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5198/ST-31	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.722	in	6.91	cm
Diameter	2.854	in	7.25	cm
Area	6.40	in^2	41.27	cm^2
Volume	285.36	cm^3	0.0101	ft^3
Mass	516.90	g	1.14	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	84.9	pcf		

Moisture Content

Mass of wet sample & tare	516.90	g
Mass of dry sample & tare	388.30	g
Mass of tare	0.00	g
% Moisture	33.1	

Test Data

Speed	10	
Board Number	8	
Cell Number	18	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	56.27	cm
Min Head	56.27	cm
Maximum Gradient	8.10	
Minimum Gradient	8.10	

Final Data (After Test)

Average Height of Sample			2.736	in	6.95 cm
Average Diameter of Sample			2.872	in	7.29 cm
Area	6.48	in^2	41.80	cm^2	
Volume	290.45	cm^3	0.0103	ft^3	
Mass	536.90	g	1.18	lb	

Dry Density	83.4	pcf
Vol. of Voids	146.61	cm^3
Vol. of Solids	143.84	cm^3
Void Ratio	1.02	
Saturation	101.3	%

Moisture Content

Mass of wet sample & tare	637.20	g
Mass of dry sample & tare	488.70	g
Mass of tare	100.40	g
% Moisture	38.2	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	13	40	-	0.80	56.27	8.10	24.8	-	-	-	
05/30/08	13	45	300	0.80	56.27	8.10	24.8	6.62E-07	0.893	5.91E-07	
05/30/08	13	50	300	0.80	56.27	8.10	24.8	6.62E-07	0.893	5.91E-07	
05/30/08	13	55	300	0.80	56.27	8.10	24.8	6.62E-07	0.893	5.91E-07	*
05/30/08	14	0	300	0.80	56.27	8.10	24.8	6.62E-07	0.893	5.91E-07	*
05/30/08	14	5	300	0.80	56.27	8.10	24.8	6.62E-07	0.893	5.91E-07	*
05/30/08	14	10	300	0.80	56.27	8.10	24.8	6.62E-07	0.893	5.91E-07	*

Reported Average Hydraulic Conductivity* 5.9E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5199/ST-32	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.871	in	7.29	cm	
Diameter	2.858	in	7.26	cm	
Area	6.42	in^2	41.39	cm^2	
Volume	301.82	cm^3	0.0107	ft^3	
Mass	575.10	g	1.27	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	90.7	pcf			

Moisture Content

Mass of wet sample & tare	575.10	g
Mass of dry sample & tare	438.90	g
Mass of tare	0.00	g
% Moisture	31.0	

Test Data

Speed	10	
Board Number	8	
Cell Number	4	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	92.85	cm
Min Head	91.44	cm
Maximum Gradient	12.69	
Minimum Gradient	12.50	

Final Data (After Test)

Average Height of Sample			2.880	in	7.32 cm
Average Diameter of Sample			2.877	in	7.31 cm
Area	6.50	in^2	41.94	cm^2	
Volume	306.81	cm^3	0.0108	ft^3	
Mass	586.10	g	1.29	lb	

Dry Density	89.3	pcf
Vol. of Voids	144.22	cm^3
Vol. of Solids	162.58	cm^3
Void Ratio	0.89	
Saturation	102.0	%

Moisture Content

Mass of wet sample & tare	684.80	g
Mass of dry sample & tare	537.70	g
Mass of tare	98.80	g
% Moisture	33.5	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	14	20	-	1.30	91.44	12.50	24.8	-	-	-	
05/30/08	14	25	300	1.30	91.44	12.50	24.8	4.27E-07	0.893	3.82E-07	
05/30/08	14	30	300	1.30	91.44	12.50	24.8	4.27E-07	0.893	3.82E-07	
05/30/08	14	35	300	1.31	92.15	12.60	24.8	4.26E-07	0.893	3.80E-07	*
05/30/08	14	40	300	1.31	92.15	12.60	24.8	4.24E-07	0.893	3.79E-07	*
05/30/08	14	45	300	1.32	92.85	12.69	24.8	4.22E-07	0.893	3.77E-07	*
05/30/08	14	50	300	1.32	92.85	12.69	24.8	4.21E-07	0.893	3.76E-07	*

Reported Average Hydraulic Conductivity* 3.8E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5200/ST-33	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.825	in	7.18	cm
Diameter	2.844	in	7.22	cm
Area	6.35	in^2	40.98	cm^2
Volume	294.08	cm^3	0.0104	ft^3
Mass	549.70	g	1.21	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	86.7	pcf		

Moisture Content

Mass of wet sample & tare	549.70	g
Mass of dry sample & tare	408.40	g
Mass of tare	0.00	g
% Moisture	34.6	

Test Data

Speed	10	
Board Number	5	
Cell Number	17	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	191.32	cm
Min Head	189.92	cm
Maximum Gradient	26.60	
Minimum Gradient	26.40	

Final Data (After Test)

Average Height of Sample			2.832	in	7.19	cm
Average Diameter of Sample			2.853	in	7.25	cm
Area	6.39	in^2	41.24	cm^2		
Volume	296.68	cm^3	0.0105	ft^3		
Mass	554.20	g	1.22	lb		

Dry Density	85.9	pcf
Vol. of Voids	145.39	cm^3
Vol. of Solids	151.29	cm^3
Void Ratio	0.96	
Saturation	100.2	%

Moisture Content

Mass of wet sample & tare	655.90	g
Mass of dry sample & tare	510.20	g
Mass of tare	101.80	g
% Moisture	35.7	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	16	0	-	2.70	189.92	26.40	25.4	-	-	-	
05/30/08	16	5	300	2.70	189.92	26.40	25.4	2.06E-07	0.881	1.81E-07	
05/30/08	16	10	300	2.71	190.62	26.50	25.4	2.05E-07	0.881	1.81E-07	
05/30/08	16	15	300	2.71	190.62	26.50	25.4	2.05E-07	0.881	1.81E-07	*
05/30/08	16	20	300	2.72	191.32	26.60	25.4	2.05E-07	0.881	1.80E-07	*
05/30/08	16	25	300	2.71	190.62	26.50	25.4	2.05E-07	0.881	1.80E-07	*
05/30/08	16	30	300	2.72	191.32	26.60	25.4	2.05E-07	0.881	1.80E-07	*

Reported Average Hydraulic Conductivity* 1.8E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5201/ST-34	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.642	in	6.71	cm	
Diameter	2.834	in	7.20	cm	
Area	6.31	in^2	40.70	cm^2	
Volume	273.10	cm^3	0.0096	ft^3	
Mass	503.60	g	1.11	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	84.5	pcf			

Moisture Content

Mass of wet sample & tare	503.60	g
Mass of dry sample & tare	369.80	g
Mass of tare	0.00	g
% Moisture	36.2	

Test Data

Speed	10	
Board Number	6	
Cell Number	7	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	124.50	cm
Min Head	123.10	cm
Maximum Gradient	18.41	
Minimum Gradient	18.21	

Final Data (After Test)

Average Height of Sample			2.662	in	6.76 cm
Average Diameter of Sample			2.846	in	7.23 cm
Area	6.36	in^2	41.04	cm^2	
Volume	277.50	cm^3	0.0098	ft^3	
Mass	509.00	g	1.12	lb	

Dry Density	83.2	pcf
Vol. of Voids	140.51	cm^3
Vol. of Solids	136.99	cm^3
Void Ratio	1.03	
Saturation	99.0	%

Moisture Content

Mass of wet sample & tare	599.50	g
Mass of dry sample & tare	460.40	g
Mass of tare	90.60	g
% Moisture	37.6	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	16	0	-	1.75	123.10	18.21	25.4	-	-	-	
05/30/08	16	5	300	1.75	123.10	18.21	25.4	3.00E-07	0.881	2.64E-07	
05/30/08	16	10	300	1.76	123.80	18.31	25.4	2.99E-07	0.881	2.63E-07	
05/30/08	16	15	300	1.76	123.80	18.31	25.4	2.98E-07	0.881	2.63E-07	*
05/30/08	16	20	300	1.77	124.50	18.41	25.4	2.97E-07	0.881	2.62E-07	*
05/30/08	16	25	300	1.77	124.50	18.41	25.4	2.96E-07	0.881	2.61E-07	*
05/30/08	16	30	300	1.77	124.50	18.41	25.4	2.96E-07	0.881	2.61E-07	*

Reported Average Hydraulic Conductivity* 2.6E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5202/ST-35	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.902	in	7.37	cm	
Diameter	2.853	in	7.25	cm	
Area	6.39	in^2	41.24	cm^2	
Volume	304.01	cm^3	0.0107	ft^3	
Mass	563.40	g	1.24	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	83.9	pcf			

Moisture Content

Mass of wet sample & tare	563.40	g
Mass of dry sample & tare	408.80	g
Mass of tare	0.00	g
% Moisture	37.8	

Test Data

Speed	10	
Board Number	9	
Cell Number	2	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	156.15	cm
Min Head	154.75	cm
Maximum Gradient	21.16	
Minimum Gradient	20.97	

Final Data (After Test)

Average Height of Sample			2.906	in	7.38 cm
Average Diameter of Sample			2.862	in	7.27 cm
Area	6.43	in^2	41.50	cm^2	
Volume	306.36	cm^3	0.0108	ft^3	
Mass	566.00	g	1.25	lb	

Dry Density	83.3	pcf
Vol. of Voids	154.92	cm^3
Vol. of Solids	151.43	cm^3
Void Ratio	1.02	
Saturation	101.4	%

Moisture Content

Mass of wet sample & tare	661.60	g
Mass of dry sample & tare	504.50	g
Mass of tare	95.70	g
% Moisture	38.4	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	16	40	-	2.20	154.75	20.97	25.4	-	-	-	
05/30/08	16	45	300	2.21	155.45	21.06	25.4	2.57E-07	0.881	2.26E-07	
05/30/08	16	50	300	2.20	154.75	20.97	25.4	2.57E-07	0.881	2.26E-07	
05/30/08	16	55	300	2.21	155.45	21.06	25.4	2.57E-07	0.881	2.26E-07	*
05/30/08	17	0	300	2.22	156.15	21.16	25.4	2.56E-07	0.881	2.25E-07	*
05/30/08	17	5	300	2.21	155.45	21.06	25.4	2.56E-07	0.881	2.25E-07	*
05/30/08	17	10	300	2.22	156.15	21.16	25.4	2.56E-07	0.881	2.25E-07	*

Reported Average Hydraulic Conductivity* 2.3E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	245			Pore Pressure Transducer ID #	28

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5204/ST-36	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.904	in	7.38	cm
Diameter	2.845	in	7.23	cm
Area	6.36	in^2	41.01	cm^2
Volume	302.52	cm^3	0.0107	ft^3
Mass	559.40	g	1.23	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	85.5	pcf		

Moisture Content

Mass of wet sample & tare	559.40	g
Mass of dry sample & tare	414.60	g
Mass of tare	0.00	g
% Moisture	34.9	

Test Data

Speed	10	
Board Number	2	
Cell Number	5	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	205.39	cm
Min Head	203.99	cm
Maximum Gradient	27.76	
Minimum Gradient	27.57	

Final Data (After Test)

Average Height of Sample			2.913	in	7.40 cm
Average Diameter of Sample			2.858	in	7.26 cm
Area	6.42	in^2	41.39	cm^2	
Volume	306.24	cm^3	0.0108	ft^3	
Mass	566.40	g	1.25	lb	

Dry Density	84.5	pcf
Vol. of Voids	152.65	cm^3
Vol. of Solids	153.58	cm^3
Void Ratio	0.99	
Saturation	99.4	%

Moisture Content

Mass of wet sample & tare	659.20	g
Mass of dry sample & tare	507.50	g
Mass of tare	92.90	g
% Moisture	36.6	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	16	0	-	2.90	203.99	27.57	24.6	-	-	-	
05/30/08	16	5	300	2.90	203.99	27.57	24.6	1.96E-07	0.897	1.76E-07	
05/30/08	16	10	300	2.91	204.69	27.66	24.6	1.96E-07	0.897	1.76E-07	
05/30/08	16	15	300	2.91	204.69	27.66	24.6	1.96E-07	0.897	1.76E-07	*
05/30/08	16	20	300	2.92	205.39	27.76	24.6	1.95E-07	0.897	1.75E-07	*
05/30/08	16	25	300	2.92	205.39	27.76	24.6	1.95E-07	0.897	1.75E-07	*
05/30/08	16	30	300	2.92	205.39	27.76	24.6	1.95E-07	0.897	1.75E-07	*

Reported Average Hydraulic Conductivity* 1.8E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	64
Syringe ID #	246			Pore Pressure Transducer ID #	26/27

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5205/ST-37	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.803	in	7.12	cm	
Diameter	2.837	in	7.21	cm	
Area	6.32	in^2	40.78	cm^2	
Volume	290.36	cm^3	0.0103	ft^3	
Mass	550.00	g	1.21	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	89.3	pcf			

Moisture Content

Mass of wet sample & tare	550.00	g
Mass of dry sample & tare	415.60	g
Mass of tare	0.00	g
% Moisture	32.3	

Test Data

Speed	10	
Board Number	3	
Cell Number	9	
Flow Pump Number	1A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	194.84	cm
Min Head	193.44	cm
Maximum Gradient	27.11	
Minimum Gradient	26.91	

Final Data (After Test)

Average Height of Sample			2.830	in	7.19	cm	
Average Diameter of Sample			2.863	in	7.27	cm	
Area	6.44	in^2	41.53	cm^2			
Volume	298.55	cm^3	0.0105	ft^3			
Mass	558.40	g	1.23	lb			

Dry Density	86.9	pcf
Vol. of Voids	144.60	cm^3
Vol. of Solids	153.95	cm^3
Void Ratio	0.94	
Saturation	98.7	%

Moisture Content

Mass of wet sample & tare	657.90	g
Mass of dry sample & tare	515.20	g
Mass of tare	99.60	g
% Moisture	34.3	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	16	40	-	2.75	193.44	26.91	24.6	-	-	-	
05/30/08	16	45	300	2.75	193.44	26.91	24.6	2.00E-07	0.897	1.80E-07	
05/30/08	16	50	300	2.76	194.14	27.01	24.6	2.00E-07	0.897	1.80E-07	
05/30/08	16	55	300	2.76	194.14	27.01	24.6	2.00E-07	0.897	1.79E-07	*
05/30/08	17	0	300	2.77	194.84	27.11	24.6	1.99E-07	0.897	1.79E-07	*
05/30/08	17	5	300	2.77	194.84	27.11	24.6	1.99E-07	0.897	1.79E-07	*
05/30/08	17	10	300	2.77	194.84	27.11	24.6	1.99E-07	0.897	1.79E-07	*

Reported Average Hydraulic Conductivity* 1.8E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	24/25
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	29
Syringe ID #	140			Pore Pressure Transducer ID #	26/27

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AASHTO R18

Tested By	RI
Date	05/30/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5206/ST-38	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	3.043	in	7.73	cm
Diameter	2.855	in	7.25	cm
Area	6.40	in^2	41.30	cm^2
Volume	319.23	cm^3	0.0113	ft^3
Mass	608.70	g	1.34	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	90.8	pcf		

Moisture Content

Mass of wet sample & tare	608.70	g
Mass of dry sample & tare	464.40	g
Mass of tare	0.00	g
% Moisture	31.1	

Test Data

Speed	10	
Board Number	4	
Cell Number	6	
Flow Pump Number	1B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	177.26	cm
Min Head	175.85	cm
Maximum Gradient	22.89	
Minimum Gradient	22.71	

Final Data (After Test)

Average Height of Sample			3.049	in	7.74 cm
Average Diameter of Sample			2.864	in	7.27 cm
Area	6.44	in^2	41.56	cm^2	
Volume	321.88	cm^3	0.0114	ft^3	
Mass	615.50	g	1.36	lb	

Dry Density	90.0	pcf
Vol. of Voids	149.88	cm^3
Vol. of Solids	172.00	cm^3
Void Ratio	0.87	
Saturation	100.8	%

Moisture Content

Mass of wet sample & tare	716.60	g
Mass of dry sample & tare	565.50	g
Mass of tare	101.10	g
% Moisture	32.5	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	16	40	-	2.50	175.85	22.71	24.6	-	-	-	
05/30/08	16	45	300	2.50	175.85	22.71	24.6	2.37E-07	0.897	2.13E-07	
05/30/08	16	50	300	2.51	176.55	22.80	24.6	2.37E-07	0.897	2.13E-07	
05/30/08	16	55	300	2.51	176.55	22.80	24.6	2.36E-07	0.897	2.12E-07	*
05/30/08	17	0	300	2.52	177.26	22.89	24.6	2.36E-07	0.897	2.12E-07	*
05/30/08	17	5	300	2.52	177.26	22.89	24.6	2.35E-07	0.897	2.11E-07	*
05/30/08	17	10	300	2.52	177.26	22.89	24.6	2.35E-07	0.897	2.11E-07	*

Reported Average Hydraulic Conductivity* 2.1E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	22	Balance ID #	1/6/7	Differential Pressure Transducer ID #	70/68
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	29
Syringe ID #	141			Pore Pressure Transducer ID #	26/27

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Tested By	RI
Date	05/30/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5207/ST-39	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.489	in	6.32	cm
Diameter	2.844	in	7.22	cm
Area	6.35	in^2	40.98	cm^2
Volume	259.10	cm^3	0.0092	ft^3
Mass	483.80	g	1.07	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	88.0	pcf		

Moisture Content

Mass of wet sample & tare	483.80	g
Mass of dry sample & tare	365.40	g
Mass of tare	0.00	g
% Moisture	32.4	

Test Data

Speed	10	
Board Number	7	
Cell Number	4	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	150.53	cm
Min Head	149.12	cm
Maximum Gradient	23.74	
Minimum Gradient	23.52	

Final Data (After Test)

Average Height of Sample		2.496	in	6.34	cm
Average Diameter of Sample		2.860	in	7.26	cm
Area	6.42 in^2	41.45	cm^2		
Volume	262.76 cm^3	0.0093	ft^3		
Mass	493.00 g	1.09	lb		

Dry Density	86.8	pcf
Vol. of Voids	127.43	cm^3
Vol. of Solids	135.33	cm^3
Void Ratio	0.94	
Saturation	100.1	%

Moisture Content

Mass of wet sample & tare	593.90	g
Mass of dry sample & tare	466.30	g
Mass of tare	100.90	g
% Moisture	34.9	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	18	30	-	2.12	149.12	23.52	26.0	-	-	-	
05/30/08	18	35	300	2.12	149.12	23.52	26.0	2.30E-07	0.869	2.00E-07	
05/30/08	18	40	300	2.13	149.82	23.63	26.0	2.29E-07	0.869	1.99E-07	
05/30/08	18	45	300	2.13	149.82	23.63	26.0	2.29E-07	0.869	1.99E-07	*
05/30/08	18	50	300	2.14	150.53	23.74	26.0	2.28E-07	0.869	1.98E-07	*
05/30/08	18	55	300	2.14	150.53	23.74	26.0	2.28E-07	0.869	1.98E-07	*
05/30/08	19	0	300	2.14	150.53	23.74	26.0	2.28E-07	0.869	1.98E-07	*

Reported Average Hydraulic Conductivity* 2.0E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	245			Pore Pressure Transducer ID #	28

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Tested By	RI
Date	05/30/08
Checked By	

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5208/ST-40	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.866	in	7.28	cm
Diameter	2.852	in	7.24	cm
Area	6.39	in^2	41.22	cm^2
Volume	300.03	cm^3	0.0106	ft^3
Mass	573.70	g	1.26	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	92.0	pcf		

Moisture Content

Mass of wet sample & tare	573.70	g
Mass of dry sample & tare	442.20	g
Mass of tare	0.00	g
% Moisture	29.7	

Test Data

Speed	10	
Board Number	8	
Cell Number	5	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	201.88	cm
Min Head	200.47	cm
Maximum Gradient	27.65	
Minimum Gradient	27.46	

Final Data (After Test)

Average Height of Sample		2.874	in	7.30	cm
Average Diameter of Sample		2.864	in	7.27	cm
Area	6.44 in^2	41.56	cm^2		
Volume	303.41 cm^3	0.0107	ft^3		
Mass	581.50 g	1.28	lb		

Dry Density	91.0	pcf
Vol. of Voids	139.60	cm^3
Vol. of Solids	163.81	cm^3
Void Ratio	0.85	
Saturation	99.7	%

Moisture Content

Mass of wet sample & tare	676.50	g
Mass of dry sample & tare	537.30	g
Mass of tare	95.10	g
% Moisture	31.5	

TIME FUNCTION			Δt	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
05/30/08	18	30	-	2.85	200.47	27.46	26.0	-	-	-	
05/30/08	18	35	300	2.85	200.47	27.46	26.0	1.96E-07	0.869	1.71E-07	
05/30/08	18	40	300	2.86	201.17	27.56	26.0	1.96E-07	0.869	1.70E-07	
05/30/08	18	45	300	2.86	201.17	27.56	26.0	1.96E-07	0.869	1.70E-07	*
05/30/08	18	50	300	2.87	201.88	27.65	26.0	1.95E-07	0.869	1.70E-07	*
05/30/08	18	55	300	2.87	201.88	27.65	26.0	1.95E-07	0.869	1.69E-07	*
05/30/08	19	0	300	2.87	201.88	27.65	26.0	1.95E-07	0.869	1.69E-07	*

Reported Average Hydraulic Conductivity* 1.7E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	215
Syringe ID #	246			Pore Pressure Transducer ID #	28

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Tested By	RI
Date	06/02/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5213/ST-41	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.912	in	7.40	cm
Diameter	2.856	in	7.25	cm
Area	6.41	in^2	41.33	cm^2
Volume	305.70	cm^3	0.0108	ft^3
Mass	588.80	g	1.30	lb
Specific Gravity	2.700	(Assumed)		
Dry Density	91.8	pcf		

Moisture Content

Mass of wet sample & tare	588.80	g
Mass of dry sample & tare	449.80	g
Mass of tare	0.00	g
% Moisture	30.9	

Test Data

Speed	10	
Board Number	5	
Cell Number	9	
Flow Pump Number	2A	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.96	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	117.47	cm
Min Head	116.06	cm
Maximum Gradient	15.80	
Minimum Gradient	15.61	

Final Data (After Test)

Average Height of Sample			2.927	in
			7.43	cm
Average Diameter of Sample			2.881	in
			7.32	cm
Area	6.52	in^2	42.06	cm^2
Volume	312.68	cm^3	0.0110	ft^3
Mass	597.20	g	1.32	lb

Dry Density	89.8	pcf
Vol. of Voids	146.09	cm^3
Vol. of Solids	166.59	cm^3
Void Ratio	0.88	
Saturation	100.9	%

Moisture Content

Mass of wet sample & tare	682.50	g
Mass of dry sample & tare	535.10	g
Mass of tare	85.30	g
% Moisture	32.8	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
06/02/08	14	0	-	1.65	116.06	15.61	28.2	-	-	-	
06/02/08	14	5	300	1.65	116.06	15.61	28.2	3.41E-07	0.828	2.82E-07	
06/02/08	14	10	300	1.66	116.76	15.71	28.2	3.40E-07	0.828	2.82E-07	
06/02/08	14	15	300	1.66	116.76	15.71	28.2	3.39E-07	0.828	2.81E-07	*
06/02/08	14	20	300	1.67	117.47	15.80	28.2	3.38E-07	0.828	2.80E-07	*
06/02/08	14	25	300	1.67	117.47	15.80	28.2	3.37E-07	0.828	2.79E-07	*
06/02/08	14	30	300	1.67	117.47	15.80	28.2	3.37E-07	0.828	2.79E-07	*

Reported Average Hydraulic Conductivity* 2.8E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	262
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	245			Pore Pressure Transducer ID #	28

TIMELY ENGINEERING SOIL TESTS, LLC
1874 Forge Street Tucker, GA 30084
Phone: 770-938-8233
Fax: 770-923-8973
Web: www.test-llc.com

AASHTO R18

Tested By	RI
Date	06/02/08
Checked By	[illegible]

Client Pr. #	-	Lab. PR. #	801-03
Pr. Name	CMS L.F.	S. Type	UD
Sample ID	5214/ST-42	Depth/Elev.	-
Location	L-3	Add. Info	-

ASTM D 5084; Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter (Method D, Constant Rate of Flow)

Initial Sample Data (Before Test)

Height	2.925	in	7.43	cm	
Diameter	2.857	in	7.26	cm	
Area	6.41	in^2	41.36	cm^2	
Volume	307.28	cm^3	0.0109	ft^3	
Mass	581.60	g	1.28	lb	
Specific Gravity	2.700	(Assumed)			
Dry Density	87.9	pcf			

Moisture Content

Mass of wet sample & tare	581.60	g
Mass of dry sample & tare	433.10	g
Mass of tare	0.00	g
% Moisture	34.3	

Test Data

Speed	10	
Board Number	6	
Cell Number	5	
Flow Pump Number	2B	
Flow Pump Rate	2.24E-04	cm^3/sec
B - Value	0.95	
Cell Pressure	90.0	psi
Back Pressure	80.0	psi
Confining (Effective) Pressure	10.0	psi
Max Head	208.91	cm
Min Head	207.50	cm
Maximum Gradient	28.05	
Minimum Gradient	27.86	

Final Data (After Test)

Average Height of Sample			2.932	in	7.45	cm	
Average Diameter of Sample			2.861	in	7.27	cm	
Area	6.43	in^2	41.48	cm^2			
Volume	308.88	cm^3	0.0109	ft^3			
Mass	583.20	g	1.29	lb			

Dry Density	87.5	pcf
Vol. of Voids	148.42	cm^3
Vol. of Solids	160.46	cm^3
Void Ratio	0.92	
Saturation	101.0	%

Moisture Content

Mass of wet sample & tare	690.40	g
Mass of dry sample & tare	540.50	g
Mass of tare	107.40	g
% Moisture	34.6	

TIME FUNCTION			Δ t	READING	Head	Gradient	Temp.	PERMEABILITY (cm/sec)			
DATE	HOUR	MIN	(sec)	(psi)	(cm)		T_x(°C)	@ T_x	R_T	@ 20 °C	
06/02/08	14	0	-	2.95	207.50	27.86	28.2	-	-	-	
06/02/08	14	5	300	2.95	207.50	27.86	28.2	1.94E-07	0.828	1.60E-07	
06/02/08	14	10	300	2.96	208.21	27.96	28.2	1.94E-07	0.828	1.60E-07	
06/02/08	14	15	300	2.96	208.21	27.96	28.2	1.93E-07	0.828	1.60E-07	*
06/02/08	14	20	300	2.97	208.91	28.05	28.2	1.93E-07	0.828	1.60E-07	*
06/02/08	14	25	300	2.96	208.21	27.96	28.2	1.93E-07	0.828	1.60E-07	*
06/02/08	14	30	300	2.97	208.91	28.05	28.2	1.93E-07	0.828	1.60E-07	*

Reported Average Hydraulic Conductivity* 1.6E-07 cm/sec

Note: Deaired Water Used for Permeability Test.

DESCRIPTION: NA

USCS (ASTM D2487;2488): NA

REMARKS:

Flow pump ID #	244	Balance ID #	1/6/7	Differential Pressure Transducer ID #	263
Thermometer ID #	63	Oven ID #	14/15	Board Pressure Transducer ID #	216
Syringe ID #	246			Pore Pressure Transducer ID #	28

ACC of NORTH CAROLINA, PLLC

SECTION G-3

Field Density Test Results

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [illegible]

DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-1	5-19-08	N 584930	L-1	N	90.8	31.3	CL-2	93.4	28.5	97.2	+2.8	P	
	↓	E 1505310	↓	↓			↓	↓	↓				
CL-2		N 584610			93.3	31.8				99.9	+3.3	P	
		E 1505470											
CL-3		N 584650			91.4	31.2				97.9	+2.7	P	
		E 1505510											
CL-4		N 584680			93.1	30.9				99.7	+2.4	P	
		E 1505640											
CL-5		N 584710			91.9	30.6				98.5	+2.1	P	
		E 1505760											
CL-6		N 584560			90.7	32.9				97.1	+4.4	P	
		E 1505430											
CL-7		N 584550			91.6	31.6				98.1	+3.1	P	
		E 1505550											
CL-8		N 584570			92.6	30.6				99.1	+2.1	P	
		E 1505640											
CL-9		N 584580			92.1	31.0				98.6	+2.5	P	
		E 1505730											
CL-10		N 584640			89.9	32.2				96.2	+3.7	P	
		E 1505770											
CL-11		N 584650			91.5	31.3				98.0	+2.8	P	
	↓	E 1505840	↓	↓			↓	↓	↓				
		N											
		E											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [illegible]

DATE REVIEWED: 6/6/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-12	5.20.08	N 584430	L-1	N	93.0	30.7	CL-2	93.4	28.5	99.6	+2.2	P	
		E 1505440											
CL-13		N 584460			93.0	30.6				99.6	+2.1	P	
		E 1505390											
CL-14		N 584470			90.9	30.7				97.3	+2.2	P	ST-3
		E 1505530											
CL-15		N 584740			91.0	31.7				97.4	+3.2	P	
		E 1505230											
CL-16		N 584780			89.7	32.6				96.0	+4.1	P	ST-4
		E 1505350											
CL-17		N 584850			89.8	30.9				96.1	+2.4	P	
		E 1505450											
CL-18		N 584870			91.4	31.9				97.9	+3.4	P	ST-5
		E 1505560											
CL-19		N 584910			91.7	32.4				98.2	+3.9	P	
		E 1505590											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [illegible]

DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-20	5-21-08	N 584920	L-1	N	87.9	33.2	CL-3	88.3	30.0	99.6	+3.2	P	
		E 1505650											
CL-21		N 584980			93.2	31.4	CL-2	93.4	28.5	99.7	+2.9	P	
		E 1505740											
CL-22		N 584890			91.4	31.8				97.9	+3.3	P	ST-6
		E 1505750											
CL-23		N 584850			91.4	32.2				97.9	+3.7	P	
		E 1505650											
CL-24		N 584750			91.6	31.3				98.1	+2.8	P	
		E 1505650											
CL-25		N 584740			85.6	34.9	CL-1	85.9	32.4	99.7	+2.5	P	
		E 1505570											
CL-26		N 584750			87.8	33.4	CL-3	88.3	30.0	99.4	+3.4	P	
		E 1505450											
CL-27		N 584650			87.9	32.3				99.6	+2.3	P	
		E 1505350											
CL-28		N 584640			83.8	36.8	CL-1	85.9	32.4	97.6	+4.4	P	D.C.
		E 1505260											
CL-29		N 584670			90.6	30.8	CL-2	93.4	28.5	97.0	+2.3	P	ST-7
		E 1505170											
CL-30		N 584580			90.4	31.9				96.8	+3.4	P	
		E 1505220											
CL-31		N 584550			84.1	34.8	CL-1	85.9	32.4	97.9	+2.4	P	
		E 1505150											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102
PROJECT TITLE: CMS Landfill V Cell 2G
PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM
REVIEWED BY: [signature]
DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-32	5-21-08	N 584550	L-1	N	83.5	35.8	CL-1	85.9	32.4	97.2	+3.4	P	ST-8
		E 1505070											
CL-33		N 584630			87.1	33.4	CL-3	88.3	30.0	98.6	+3.4	P	
		E 1505030											
CL-34		N 584610			87.4	32.5				99.0	+2.5	P	
		E 1504980											
CL-35		N 584540			88.0	34.1				99.7	+4.1	P	ST-9
		E 1504860											
CL-36		N 584530			82.5	34.6	CL-1	85.9	32.4	96.0	+2.2	P	
		E 1504780											
CL-37		N 584450			88.0	32.8	CL-3	88.3	30.0	99.7	+2.8	P	
		E 1504880											
CL-38		N 584470			86.8	32.1				98.3	+2.1	P	
		E 1504960											
CL-39		N 584570			86.5	32.9				98.0	+2.9	P	
		E 1504970											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina DATE REVIEWED: 6/6/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-40	5/22/08	N 584470	L-1	N	85.3	36.5	CL-1	85.9	32.4	99.3	+4.1	P	
		E 1505250											
CL-41		N 584480			92.3	31.1	CL-2	93.4	28.5	98.8	+2.6	P	
		E 1505170											
CL-42		N 584450			85.3	36.2	CL-1	85.9	32.4	99.3	+3.8	P	
		E 1505070											
CL-43		N 584820			90.6	30.5	CL-2	93.4	28.5	97.0	+2.0	P	
		E 1505820											
CL-44		N 584750			90.2	30.9	"	"	"	96.6	+2.4	P	
		E 1505850											
CL-45		N 585000			85.2	32.1	CL-3	88.3	30.0	96.5	+2.1	P	
		E 1505800											
CL-46		N 584380			91.0	31.2	CL-2	93.4	28.5	97.4	+2.7	P	
		E 1505240											
CL-47		N 584340			90.5	31.7	"	"	"	96.9	+3.2	P	
		E 1505120											
CL-48		N 584350			83.9	36.6	CL-1	85.9	32.4	97.7	+4.2	P	
		E 1505050											
CL-49		N 584330			84.9	35.0	"	"	"	98.8	+2.6	P	
		E 1504940											
		N											
		E											
		N											
		E											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-50	5-23-08	N 584390	L-1	N	92.5	31.6	CL-2	93.4	28.5	99.0	+3.1	P	D.C.
		E 1505330											
CL-51		N 584270			87.9	34.1	CL-3	88.3	30.0	99.6	+4.1	P	
		E 1505150											
CL-52		N 584250			92.5	32.5	CL-2	93.4	28.5	99.0	+4.0	P	
		E 1505050											
CL-53		N 584440	L-2		91.4	31.4				97.9	+2.9	P	ST-13
		E 1505440											
CL-54		N 584540			93.3	30.6				99.9	+2.1	P	
		E 1505430											
CL-55		N 584530			90.1	31.7				96.5	+3.2	P	
		E 1505380											
CL-56		N 584640			93.2	30.7				99.8	+2.2	P	
		E 1505470											
CL-57		N 584590			90.4	31.7				96.8	+3.2	P	
		E 1505550											
CL-58		N 584660			91.1	30.8				97.5	+2.3	P	ST-14
		E 1505560											
CL-59		N 584670			89.8	30.7				96.1	+2.2	P	
		E 1505680											
CL-60		N 584740			90.0	31.8				96.4	+3.3	P	
		E 1505770											
CL-61		N 584780			88.1	34.1	CL-3	88.3	30.0	99.8	+4.1	P	
		E 1505840											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102
PROJECT TITLE: CMS Landfill V Cell 2G
PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM
REVIEWED BY: [signature]
DATE REVIEWED: 6/6/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-62	5-23-08	N 584670	L-2	N	90.4	32.3	CL-2	93.4	28.5	96.8	+3.8	P	ST-15
		E 1505870											
CL-63		N 584670			92.9	31.7				99.4	+3.2	P	
		E 1505770											
CL-64		N 584580			90.8	31.0				97.2	+2.5	P	
		E 1505750											
CL-65		N 584570			87.8	33.8	CL-3	88.3	30.0	99.5	+3.8	P	
		E 1505640											
CL-66		N 584480			92.2	31.4	CL-2	93.4	28.5	98.8	+2.9	P	
		E 1505560											
CL-67		N 584270	L-1		89.9	31.1				96.2	+2.6	P	
		E 1504960											
CL-68		N 584180			91.0	31.8				97.4	+3.3	P	
		E 1504960											
CL-69		N 584150			86.4	34.1	CL-3	88.3	30.0	97.9	+4.1	P	
		E 1504870											
CL-70		N 584240			93.1	31.5	CL-2	93.4	28.5	99.7	+3.0	P	ST-16
		E 1504830											
CL-71		N 584330			93.0	30.7				99.6	+2.2	P	
		E 1504840											
CL-72		N 584340			86.4	32.5	CL-3	88.3	30.0	97.8	+2.5	P	
		E 1504740											
CL-73		N 584430			87.5	32.7				99.1	+2.7	P	ST-17
		E 1504730											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-74	5-23-08	N 584350	L-1	N	91.2	31.8	CL-2	93.4	28.5	97.6	+3.3	P	
		E 1504650											
CL-75		N 584410			87.6	34.2	CL-3	88.3	30.0	99.2	+4.2	P	
		E 1504580											
CL-76		N 584450			93.2	31.2	CL-2	93.4	28.5	99.8	+2.7	P	
		E 1504660											
CL-77		N 584290			85.7	33.1	CL-3	88.3	30.0	97.1	+3.1	P	
	↓	E 1504250	↓	↓									
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-78	5-26-08	N 584860	L-2	N	84.4	35.2	CL-1	85.9	32.4	98.2	+2.8	P	
		E 1505830											
CL-79		N 585000			88.2	32.8	CL-3	88.3	30.0	99.9	+2.8	P	
		E 1505800											
CL-80		N 584950			93.0	30.7	CL-2	93.4	28.5	99.6	+2.2	P	
		E 1505750											
CL-81		N 584870			91.3	31.1				97.8	+2.6	P	ST-18 D.C.
		E 1505720											
CL-82		N 584770			92.5	30.6				99.0	+2.1	P	
		E 1505630											
CL-83		N 584850			90.3	31.5				96.7	+3.0	P	ST-19
		E 1505610											
CL-84		N 584920			92.8	31.2				99.4	+2.7	P	
		E 1505650											
CL-85		N 584820			93.2	31.0				99.8	+2.5	P	
		E 1505540											
CL-86		N 584730			90.0	31.3				96.4	+2.8	P	
		E 1505550											
CL-87		N 584740			88.1	32.8	CL-3	88.3	30.0	99.8	+2.8	P	
		E 1505460											
CL-88		N 584820			91.0	30.9	CL-2	93.4	28.5	97.4	+2.4	P	ST-20
		E 1505450											
CL-89		N 584760			90.6	32.0				97.0	+3.5	P	
		E 1505310											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-90	5-26-08	N 584610	L-2	N	88.1	32.1	CL-3	88.3	30.0	99.8	+2.1	P	ST-21
		E 1505320											
CL-91		N 584640			91.2	31.4	CL-2	93.4	28.5	97.6	+2.9	P	
		E 1505240											
CL-92		N 584750			90.7	30.7				97.1	+2.2	P	
		E 1505220											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
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		E											
		N											
		E											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-93	5/27/08	N 584670	L-2	N	85.5	36.4	CL-1	85.9	32.4	99.5	+4.0	P	DC
		E 1505070											
CL-94		N 584620			92.4	31.0	CL-2	93.4	28.5	99.0	+2.5	P	
		E 1504960											
CL-95		N 584530			93.1	31.4				99.7	+2.9	P	
		E 1504830											
CL-96		N 584470			90.3	31.8				96.7	+3.3	P	ST-24
		E 1504890											
CL-97		N 584430			90.0	31.6				96.4	+3.1	P	
		E 1504770											
CL-98		N 584420			88.2	32.8	CL-3	88.3	30.0	99.9	+2.8	P	
		E 1504660											
CL-99		N 584420			88.1	34.1				99.8	+4.1	P	
		E 1504580											
CL-100		N 584540			88.0	32.4				99.7	+2.4	P	
		E 1504970											
CL-101		N 584580			89.8	32.1	CL-2	93.4	28.5	96.1	+3.6	P	ST-23
		E 1505050											
CL-102		N 584660			95.1	36.1	CL-1	85.9	32.4	99.1	+3.7	P	ST-22
		E 1505150											
CL-103		N 584360			89.8	32.4	CL-2	93.4	28.5	96.1	+3.9	P	ST-25
		E 1504620											
CL-104		N 584310			85.6	35.7	CL-1	85.9	32.4	99.7	+3.3	P	
		E 1504740											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [illegible]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-105	5/29/08	N 584270	L-2	N	87.9	33.6	CL-3	88.3	30.0	99.4	+3.6	P	
		E 1504770											
CL-106		N 584230			85.7	35.1	CL-1	85.9	32.4	99.8	+2.7	P	
		E 1504850											
CL-107		N 584180			90.8	32.1	CL-2	93.4	28.5	97.2	+3.6	P	
		E 1504880											
CL-108		N 584330			87.6	32.7	CL-3	88.3	30.0	99.2	+2.7	P	
		E 1504860											
CL-109		N 584420			92.5	31.6	CL-2	93.4	28.5	99.0	+3.1	P	
		E 1504970											
CL-110		N 584570			90.9	31.3				97.4	+2.8	P	
		E 1505150											
CL-111		N 584560			90.1	31.1				96.5	+2.6	P	
		E 1505240											
CL-112		N 584470			87.0	33.6	CL-3	88.3	30.0	98.5	+3.6	P	ST-26
		E 1505230											
CL-113		N 584410			90.3	32.5	CL-2	93.4	28.5	96.7	+4.0	P	
		E 1505310											
CL-114		N 584430			91.2	30.6				97.6	+2.1	P	
		E 1505140											
CL-115		N 584460			92.6	31.8				99.1	+3.3	P	
		E 1505010											
CL-116		N 584370			83.4	36.5	CL-1	85.9	32.4	97.1	+4.1	P	ST-27
		E 1504960											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102
PROJECT TITLE: CMS Landfill V Cell 2G
PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM
REVIEWED BY: [signature]
DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-117	5-27-08	N 584230	L-2	N	90.2	32.2	CL-2	93.4	28.5	96.6	+3.7	P	
		E 1504960											
CL-118		N 584170			90.4	30.9				96.8	+2.4	P	
		E 1504980											
CL-119		N 584290			92.0	31.7				98.5	+3.2	P	ST-28
		E 1505070											
CL-120		N 584280			91.8	31.1				98.3	+2.6	P	
		E 1505170											
CL-121		N 584350			91.1	30.8				97.5	+2.3	P	
		E 1505030											
CL-122		N 584380			92.8	31.7				99.4	+3.2	P	
		E 1505150											
CL-123		N 584330			91.0	32.0				97.4	+3.5	P	
		E 1505240											
CL-124		N 584360			92.5	31.6				99.0	+3.1	P	
		E 1505320											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

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SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [signature]

DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-125	5-28-08	N 584670	L-3	N	90.0	32.1	CL-2	93.4	28.5	96.4	+3.6	P	D.C.
		E 1505270											
CL-126		N 584660			84.9	36.3	CL-1	85.9	32.4	98.8	+3.9	P	
		E 1505320											
CL-127		N 584650			88.1	34.0	CL-3	88.3	30.0	97.8	+4.0	P	
		E 1505470											
CL-128		N 584740			87.8	33.6				99.4	+3.6	P	ST-29
		E 1505480											
CL-129		N 584750			90.2	32.4	CL-2	93.4	28.5	96.6	+3.9	P	
		E 1505330											
CL-130		N 584750			91.4	32.1				97.9	+3.6	P	ST-30
		E 1505240											
CL-131		N 584720			91.8	31.9				98.3	+3.4	P	
		E 1505140											
CL-132		N 584840			89.9	32.1				96.3	+3.6	P	
		E 1505430											
CL-133		N 584860			92.3	30.7				98.8	+3.2	P	
		E 1505590											
CL-134		N 584770			91.1	31.4				97.5	+2.9	P	
		E 1505520											
CL-135		N 584770			90.7	32.4				97.1	+3.9	P	ST-32
		E 1505640											
CL-136		N 584830			86.5	32.7	CL-3	88.3	30.0	98.0	+2.7	P	
		E 1505660											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: BM

REVIEWED BY: [illegible]

DATE REVIEWED: 6/16/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-137	5-28-08	N 584960	L-3	N	85.3	33.1	CL-3	88.3	30.0	96.6	+3.1	P	ST-31
		E 1505650											
CL-138		N 584920			85.1	36.1	CL-1	85.9	32.4	99.1	+3.7	P	
		E 1505570											
CL-139		N 584950			83.4	37.0				97.1	+4.6	P	
		E 1505720											
CL-140		N 584870			84.7	36.5				98.6	+4.1	P	
		E 1505730											
CL-141		N 584790			91.5	32.8	CL-2	93.4	28.5	98.0	+4.3	P	
		E 1505770											
CL-142		N 584830			90.8	31.6				97.2	+3.1	P	
		E 1505830											
CL-143		N 584920			86.3	33.2	CL-3	88.3	30.0	97.7	+3.2	P	
		E 1505820											
CL-144		N 585030			87.5	33.8				99.1	+3.8	P	
		E 1505780											
		N											
		E											
		N											
		E											
		N											
		E											
		N											
		E											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-145	5-29-08	N 584430	C-3	N	84.2	36.7	CL-1	85.9	32.4	98.0	+4.3	P	
		E 1505440											
CL-146		N 584490			88.1	33.5	CL-3	88.3	30.0	99.8	+3.5	P	
		E 1505520											
CL-147		N 584570			87.9	34.0				99.6	+4.0	P	ST-33
		E 1505660											
CL-148		N 584590			85.1	35.2	CL-1	85.9	32.4	99.1	+2.8	P	
		E 1505710											
CL-149		N 584660			85.8	35.6				99.9	+3.2	P	ST-34
		E 1505810											
CL-150		N 584740			83.5	36.6				97.2	+4.2	P	
		E 1505850											
CL-151		N 584670			88.1	34.3	CL-3	88.3	30.0	99.8	+4.3	P	
		E 1505770											
CL-152		N 584640			86.2	32.4				97.6	+2.4	P	
		E 1505620											
CL-153		N 584630			86.6	33.1				98.1	+3.1	P	
		E 1505560											
CL-154		N 584580			85.1	34.8	CL-1	85.9	32.4	99.1	+2.4	P	
		E 1505530											
CL-155		N 584550			86.1	33.9	CL-3	88.3	30.0	97.5	+3.9	P	ST-35
		E 1505480											
CL-156		N 584550			87.5	33.4				99.1	+3.4	P	
		E 1505380											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [illegible]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-157	5-29-08	N 584550 E 1505270	L-3	N	87.4	34.2	CL-3	88.0	30.0	99.0	+4.2	P	ST-36
CL-158		N 584470 E 1505140			88.0	34.1				99.7	+4.1	P	
CL-159		N 584460 E 1505070			90.6	30.6	CL-2	93.4	28.5	97.0	+2.1	P	ST-37
CL-160		N 584430 E 1504980			87.6	33.4	CL-3	88.3	30.0	99.2	+3.4	P	
CL-161		N 584560 E 1504880			90.2	31.7	CL-2	93.4	28.5	96.6	+3.2	P	ST-38
CL-162		N 584540 E 1504970			90.3	31.4				96.7	+2.9	P	
CL-163		N 584530 E 1505080			89.8	30.8				96.1	+2.3	P	
CL-164		N 584590 E 1505170			87.0	32.6	CL-3	88.3	30.0	98.5	+2.6	P	
CL-165		N 584650 E 1505170			85.5	35.8	CL-1	85.9	32.4	99.5	+3.4	P	
CL-166		N 584650 E 1505090			90.9	31.7	CL-2	93.4	28.5	97.3	+3.2	P	ST-39
CL-167		N 584540 E 1504780			92.1	31.2				98.6	+2.7	P	
CL-168		N 584410 E 1504670			93.0	30.8				99.6	+2.3	P	ST-40

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 — COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G — REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina — DATE REVIEWED: 6/6/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-169	5-29-08	N 584400	L-3	N	88.1	33.9	CL-3	88.3	30.0	99.8	+3.9	P	
		E 1504570											
CL-170		N 584330			90.5	32.3	CL-2	93.4	28.5	96.9	+3.8	P	
		E 1504650											
CL-171		N 584320			90.2	30.5				96.6	+2.0	P	
		E 1504740											
CL-172		N 584440			92.5	32.0				99.0	+3.5	P	
		E 1504780											
CL-173		N 584440			93.1	30.6				99.7	+2.1	P	
		E 1504870											
CL-174		N 584390			90.7	32.2				97.1	+3.7	P	
	↓	E 1504850	↓	↓			↓	↓	↓				
		N											
		E											
		N											
		E											
		N											
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		N											
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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102 COMPLETED BY: BM

PROJECT TITLE: CMS Landfill V Cell 2G REVIEWED BY: [signature]

PROJECT LOCATION: Charlotte, North Carolina DATE REVIEWED: 6/16/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-175	5-30-08	N 584450	L-3	N	91.3	31.9	CL-2	93.4	28.5	97.7	+3.4	P	
		E 1505240											
CL-176		N 584360			92.4	31.5				98.9	+3.0	P	ST-41
		E 1505220											
CL-177		N 584370			88.2	34.2	CL-3	88.3	30.0	99.9	+4.2	P	D.C.
		E 1505330											
CL-178		N 584330			93.4	31.7	CL-2	93.4	28.5	100.0	+3.2	P	
		E 1505150											
CL-179		N 584280			93.0	32.1				99.6	+3.6	P	
		E 1505140											
CL-180		N 584270			91.7	31.1				98.2	+2.6	P	
		E 1505060											
CL-181		N 584190			88.0	33.8	CL-3	88.3	30.0	99.7	+3.8	P	
		E 1504970											
CL-182		N 584250			89.8	32.5	CL-2	93.4	28.5	96.2	+4.0	P	ST-42
		E 1504910											
CL-183		N 584360			91.7	31.6				98.2	+3.1	P	
		E 1504980											
CL-184		N 584370			92.5	32.0				99.0	+3.5	P	
		E 1505080											
		N											
		E											
		N											
		E											

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ATLANTIC COAST CONSULTING, INC

SUMMARY SHEET
IN - SITU DENSITY TEST RESULTS

PROJECT NUMBER: A011.102

PROJECT TITLE: CMS Landfill V Cell 2G

PROJECT LOCATION: Charlotte, North Carolina

COMPLETED BY: LF

REVIEWED BY: [signature]

DATE REVIEWED: 6/10/08

TEST NUMBER	TEST DATE	APPROX. LOCATION	LIFT OR ELEVATION	TEST METHOD	IN-SITU DRY DENSITY (pcf)	IN-SITU MOISTURE CONTENT (%)	REFERENCE CURVE NUMBER	REFERENCE MAX. DRY DENSITY (pcf)	REFERENCE OPTIMUM MOISTURE (%)	PERCENT COMPACTION	DIFFERENCE FROM OPT. MOISTURE (%)	PASS/ FAIL	REMARKS
CL-185	6/3/08	N 584275	L-3	N	91.1	32.0	CL-2	93.4	28.5	97.5	+3.5	P	
		E 1504860											
CL-186		N 584280			91.2	33.8				97.6	+5.3	P	
		E 1504770											
CL-187		N 584170			91.4	31.1				97.9	+2.6	P	
		E 1504860											
		N											
		E											
		N											
		E											
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		N											
		E											
		N											
		E											

N = NUCLEAR DENSITY GAUGE DC = DRIVE CYLINDER S = SAND CONE

ATLANTIC COAST CONSULTING, INC