Appendix A

Trail Ridge Landfill - Incremental Closure Phase 4 Units 51-81

MESKEL & ASSOCIATES ENGINEERING

COMPLETE TESTING SUMMARY



Meskel & Associates Engineering

Geotechnical ◤ Environmental ◤ Inspection ◤ Testing

Appendix A
Trail Ridge Landfill - Incremental Closure Phase 4 Units 51-81

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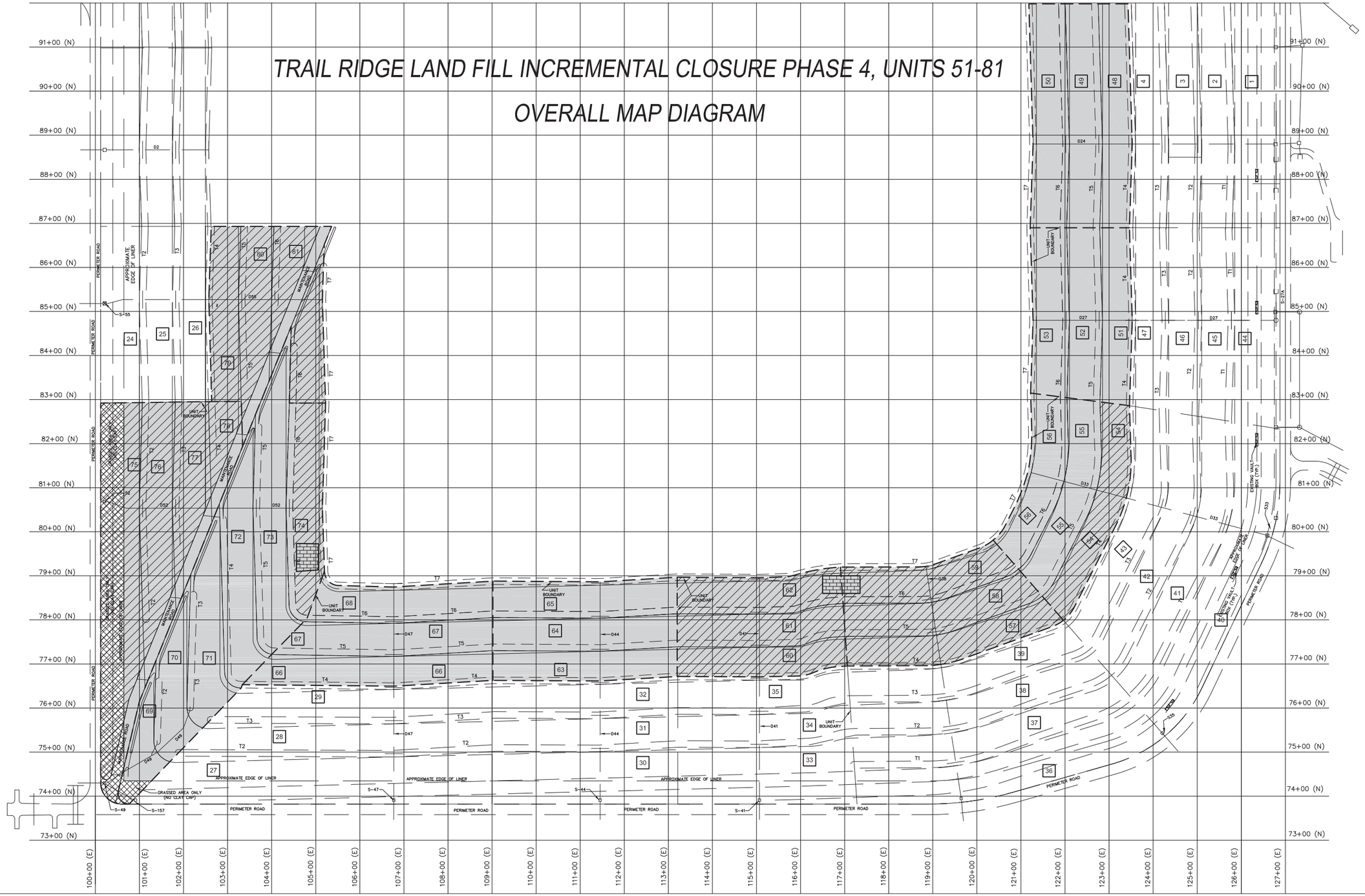
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TRAIL RIDGE LAND FILL INCREMENTAL CLOSURE PHASE 4, UNITS 51-81

OVERALL MAP DIAGRAM



LEGEND:

- Test Strip Areas
- # — Unit
- Slope and Swale Outside Closure (No Testing Performed)
- T — Terrace
- Limits of Closure
- Doubled Testing Frequency (1) 74-81, (2) 54, 57-62 Within Limits of Closure

Phase 4 Units 48, 49, 50, 51, 52, 53, 54, 55, 56 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81

MAE
Meskel & Associates Engineering, PLLC
FL Certificate of Authorization No. 28142
8936 Western Way, Suite 12, Jacksonville, FL 32256

CLIENT:

ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE: OVERALL MAP DIAGRAM

PROJECT NAME: TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

SHEET NO. -

February 2, 2016

Meskel & Associates Engineering
Geotechnical ◤ Environmental ◤ Inspection ◤ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Final Initial Cover Layer Certification
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the monitoring and testing of the initial cover/ clay subgrade layer at the subject site. The initial cover/ clay subgrade layer was tested for:

- Thickness at a minimum frequency of 4 tests per acre per layer at 12"
- Density at a minimum frequency of 2 tests per acre per layer at 90% of the Modified Proctor. As stated in the approved QA/ QC plan section 2.c(3)(a) and in accordance with Rule 62-701.400 (8)(e)1.a. The liner (clay layer) subgrade shall be compacted to the specified density. Density tests shall be conducted at a minimum rate of two tests per acre.
- Field moisture at a minimum frequency of 2 tests per acre per layer

All test results within the tables and the map diagrams meet or exceed the minimum requirements in the plans, specifications and / or the QA/QC plan. Additionally, in accordance with the QA/QC plan, within the first five acres of the first phase (Phase 4 Units 74-81), the testing frequency was doubled. The field and laboratory results with the locations are identified in the tables and the map diagrams.

However, some tests performed failed to meet the minimum requirements. Upon failure, the contractor reworked the areas and additional tests were performed in the same location or within five feet of the original test location.

Based on these results, we consider the initial cover/clay subgrade layer acceptable. The number of passing tests performed meets or exceeds the minimum requirements in the plans, specifications and/or the QA/QC plan.

We appreciate the opportunity to assist England-Thims & Miller, Inc. on this project. If you have any questions concerning this report, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Samuel E. Lansdale
Quality Control Monitor

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

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Phone: (904)519-6990 Fax: (904)519-6992

February 2, 2016

Meskel & Associates Engineering
Geotechnical ◤ Environmental ◤ Inspection ◤ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Initial Cover Shear Strength Testing
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

In accordance with the project QA/QC plans, **MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE)** has completed the laboratory testing of the Intermediate Cover blended soil samples which were imported from the Timber Forest Trails and Trail Ridge on-site borrow pits. Based on visual observation of the Intermediate Cover soils, the soils were observed to be free of brush, weeds and other litter, and free of roots, stumps, stones and other extraneous and/or toxic materials.

Laboratory testing results are attached and include Modified Proctor, percent fines and Triaxial Shear Strength testing.

A calculation was performed to determine the Factor of Safety against internal shearing of the Intermediate Cover soils using the attached Triaxial Shear Strength test results. In addition, a Direct Shear Test was performed using the Intermediate Cover soil sample and the Clay Cover soil. This test included the Intermediate Cover in one half of the shear box and clay soils in the other half, and shearing was forced along the interface of the two soils. Test results were used to determine the Factor of Safety against interface sliding. Direct shear test results and the associated interface sliding calculations are included in this report attached to the Clay Borrow Source Pre-Qualification letter.

Test results indicate Factors of Safety greater than 1.5 for internal shearing of the Intermediate Cover material and Intermediate Cover/Clay Layer interface sliding. Based on the shear test results, and visual observation of the soils, we consider Intermediate Cover material to be suitable for use for the project.

We appreciate the opportunity to assist England-Thims & Miller, Inc. on this phase of your project. If you have any questions concerning this report, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

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ENGINEERING, PLLC

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meskelengineering.com

PROJECT: TRIF Closure Phase 4 PROJECT NO.: 0006-0008

CALC'D BY: [illegible] DATE.: 12/2014 CHK'D BY: _____ DATE: _____ SHEET 1 OF 1

INITIAL COVER SLIDING CALCULATIONS

% Fines = 13% (MODIFIED PROCTOR TEST)

SLOPE CONSTRUCTION
3H : 1V
18.4°

TRIAXIAL TEST RESULTS:

$\gamma_{D\,AVG} = 105$ pcf (Dry Density)

$W_{AVG} = 12.7\%$ (Water Content)

$\gamma_{sat} = (105)(1.127) = 118.3$ pcf

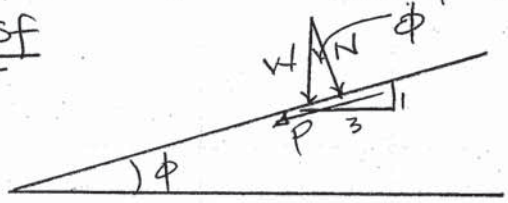
SLIDING AT MID-layer:

Initial Cover: $(0.5\text{ft})(118.3\frac{lb}{ft^3})(0.90)^{(1)} = 53.2$ psf

Clay: $(1\text{ft})(106\text{pcf})^{(2)}(0.80)^{(3)} = 84.81$ psf

Vegetative Cover: $(2\text{ft})(118.3\text{pcf})(0.90)^{(1)} = 212.9$ psf

$W = 53.2 + 84.8 + 212.9 = 351$ psf



DRIVING FORCE, P

$P = W\sin\phi = 351(\sin 18.4°)$

$= 110.8$ psf

RESISTING FORCE, = T_f = Shear Strength from Triaxial Test

$T_f = \sigma_f \tan\phi + C$, $\sigma_f = \frac{\sigma_1 - \sigma_3}{2}$, $\sigma_{1AVG} = 2.41$ ksf

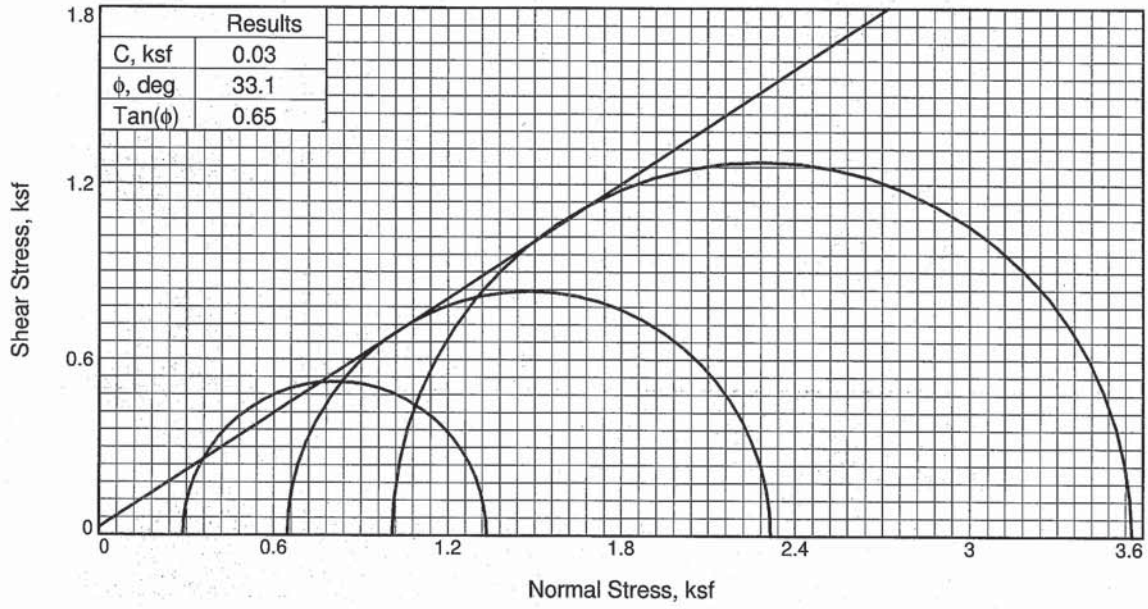
$T_f = 0.9(\tan 33.1) + 0.03$ $\sigma_{3AVG} = 0.65$ ksf

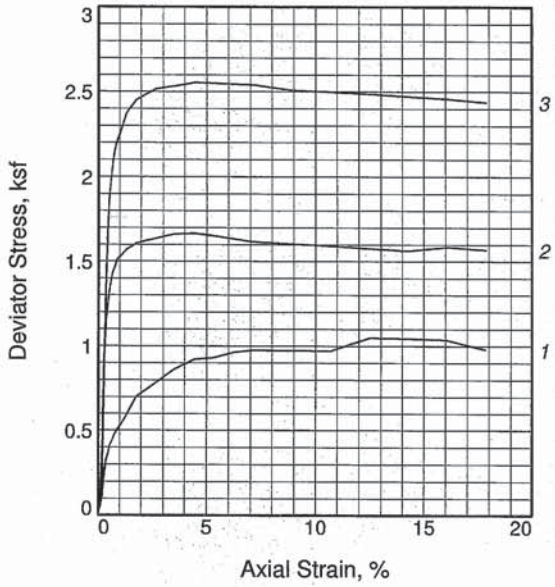
$= 616.7$ psf

NOTES

(1) 90% compaction (MODIFIED PROCTOR)
(2) Avg SAT Density from test strip
(3) 80% compactive effort

$FS = \frac{616.7}{110.8} = 5.6$ OK





Sample No.		1	2	3
Initial	Water Content, %	12.7	12.7	12.7
	Dry Density, pcf	103.7	104.4	104.4
	Saturation, %	57.3	58.5	58.5
	Void Ratio	0.5798	0.5692	0.5689
	Diameter, in.	2.82	2.82	2.82
	Height, in.	5.61	5.61	5.61
At Test	Water Content, %	22.0	21.3	21.1
	Dry Density, pcf	103.9	105.1	105.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5773	0.5592	0.5538
	Diameter, in.	2.82	2.82	2.81
	Height, in.	5.61	5.60	5.59
Strain rate, in./min.		0.03	0.03	0.03
Back Pressure, psi		50.00	50.00	50.00
Cell Pressure, psi		52.00	54.50	57.00
Fail. Stress, ksf		1.05	1.67	2.55
Strain, %		12.5	4.5	4.5
Ult. Stress, ksf				
Strain, %				
σ_1 Failure, ksf		1.34	2.32	3.56
σ_3 Failure, ksf		0.29	0.65	1.01

Type of Test:
Consolidated Drained
Sample Type: UD
Description: Brown Silty Fine SAND

LL= NV **PI=** NP
Specific Gravity= 2.624
Remarks:

Figure _____

Client: Meskel and Associates Engineering

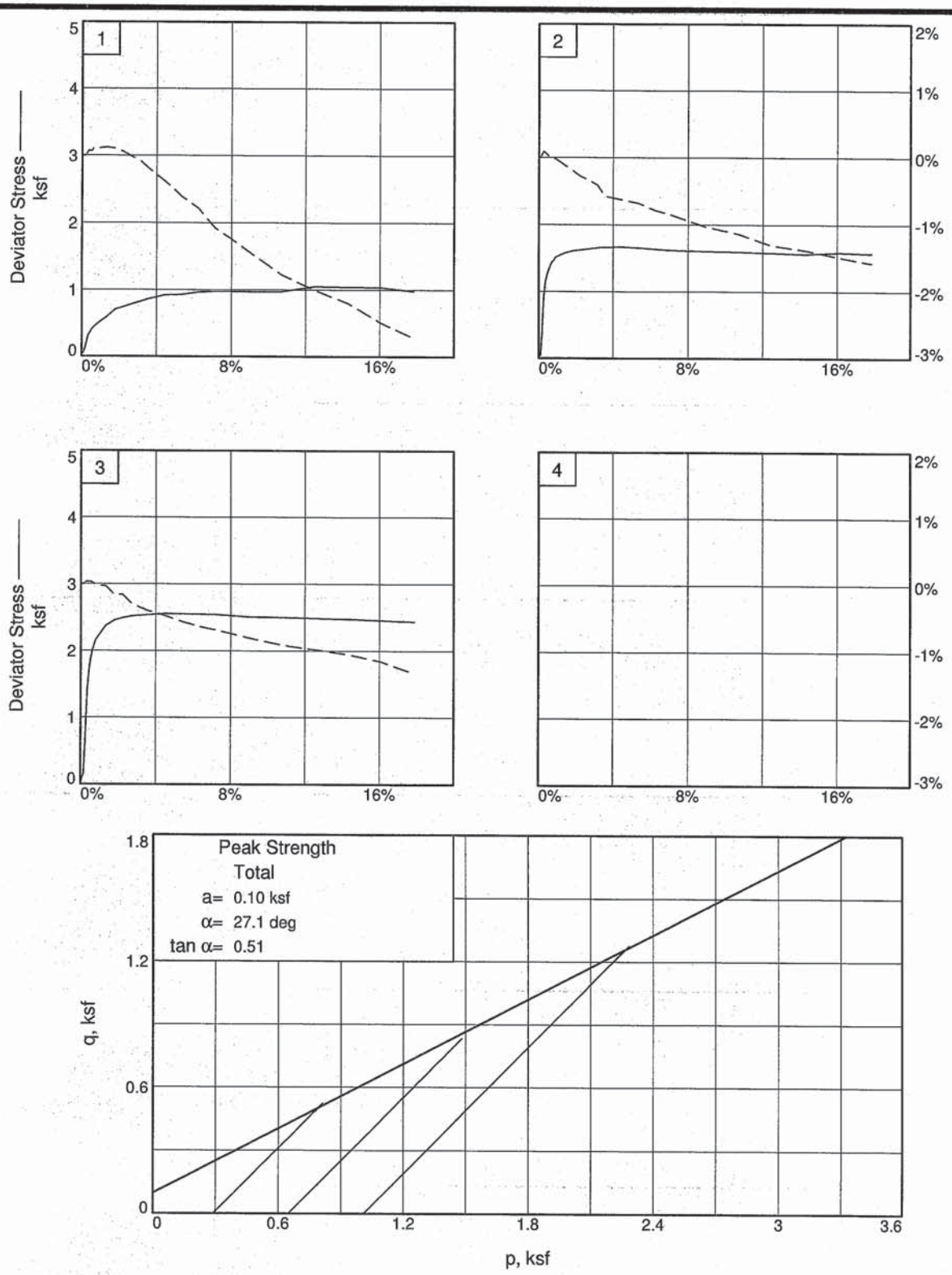
Project: Trailridge Landfill Phase 4

Source of Sample: Timber Forest Trails (Initial Cover and Topsoil)

Proj. No.: 6736135237 **Date Sampled:**

TRIAXIAL SHEAR TEST REPORT
AMEC E&I
Jacksonville, Florida

Tested By: MC **Checked By:** Corey T. Chascin, E.I.



Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4
Source of Sample: Timber Forest Trails (Initial Cover and Topsoil)
Project No.: 6736135237 **Figure** _____

AMEC E&I

Tested By: MC **Checked By:** Corey T. Chascin, E.I.

February 2, 2016

Meskel & Associates Engineering
Geotechnical ⌜ Environmental ⌜ Inspection ⌜ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 St. Augustine Road
Jacksonville, Florida 32258

Reference: Deviation from the QA/QC Plan
Shear Strength Testing – Intermediate and Vegetative Cover Soils
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Services and FDEP Solid Waste Permit Modification
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

The QA/QC specifications for the subject project require that the Intermediate and Vegetative Cover soils be tested for shear strength in the laboratory using the ASTM D-4767 method. This test method is designed to measure the shear strength of cohesive soils under undrained conditions. Because the Intermediate and Vegetative Cover materials are non-cohesive and free-draining sandy soils, it is our opinion that ASTM D-4767 is not an appropriate test method for these materials.

Consolidated-Drained (CD or S-Test) loading procedures are typically used to determine the shear strength parameters of freely draining soils. It is our opinion that the US Army Corps of Engineers (USACE) S-Test method is the correct test method for these types of soils. Pages from the USACE Laboratory Soils Testing Engineer Manual (EM 110-2-1906), which describe procedures for sample preparation and testing, are attached for your review.

Based on the above information, we request that a deviation to the project specifications be granted for shear strength testing of the Intermediate and Vegetative Cover materials, from ASTM D-4767 to the attached USACE S-Test method.

MAE appreciates the opportunity to be of continued service to you on this project. If you have any questions concerning this information, please contact me at (904)519-6990.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC
MAE FL Certificate of Authorization No. 28142

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REPRINT WITH CORRECTED COPIES INCORPORATED,

ENGINEER MANUAL

E M 1110-2-1906

30 November 1970

Change 2 dated 20 August 1986
has been inserted.

ENGINEERING AND DESIGN

LABORATORY SOILS TESTING



HEADQUARTERS, DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS

APPENDIX X:

TRIAXIAL COMPRESSION TESTS

1. PRINCIPLES OF THE TRIAXIAL COMPRESSION TEST. The triaxial compression test is used to measure the shear strength of a soil under controlled drainage conditions. In the basic triaxial test, a cylindrical specimen of soil encased in a rubber membrane is placed in a triaxial compression chamber, subjected to a confining fluid pressure, and then loaded axially to failure. Connections at the ends of the specimen permit controlled drainage of pore water from the specimen. The procedures presented herein apply only to the basic test conducted with limited drainage conditions, and do not include special types or variants of this test. In general, a minimum of three specimens, each under a different confining pressure, are tested to establish the relation between shear strength and normal stress. The test is called "triaxial" because the three principal stresses are known and controlled. Prior to shear, the three principal stresses are equal to the chamber fluid pressure. During shear, the major principal stress, σ_1, is equal to the applied axial stress (P/A) plus the chamber pressure, σ_3 (see Fig. 1). The applied axial stress, $\sigma_1 - \sigma_3$, is termed the "deviator stress." The

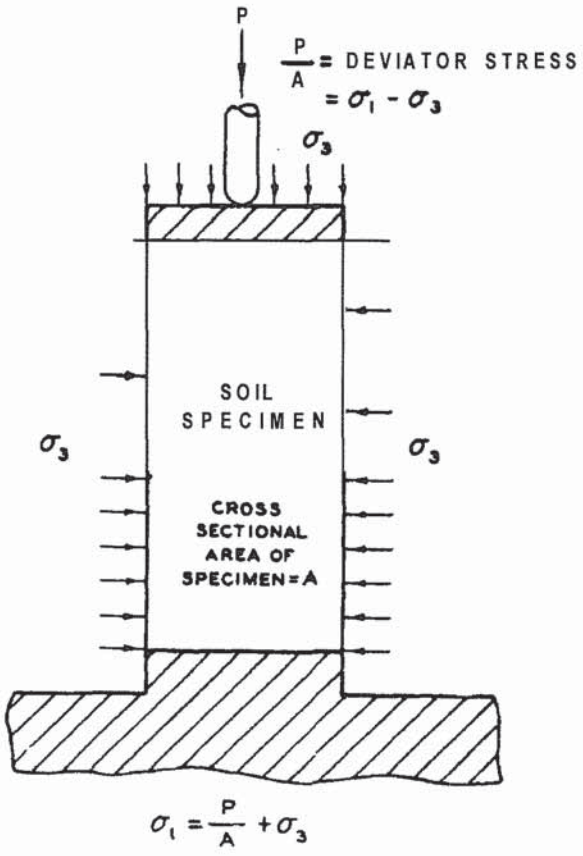


Figure 1. Diagram showing stresses during triaxial compression test

intermediate principal stress, σ_2, and the minor principal stress, σ_3, are identical in the test, and are equal to the confining or chamber pressure hereafter referred to as σ_3.

A soil mass may be considered as a compressible skeleton of solid particles. In saturated soils the void spaces are completely filled with water; in partially saturated soils the void spaces are filled with both water and air. Shear stresses are carried only by the skeleton of solid particles, whereas the normal stress on any plane is carried by both the solid particles and the pore water. In a triaxial test, the shear strength is determined in terms of the total stress (intergranular stress plus pore water pressure), unless (a) complete drainage is provided during the test so that the pore pressure is equal to zero at failure, or (b) measurements of pore pressure are made during the test. When the pore pressure at failure is known, the shear strength can be computed in terms of the stress carried by the soil particles (termed effective or intergranular stress). In recent years, significant advances have been made in the techniques of measuring pore pressures in the triaxial test and in the interpretation of the data obtained; however, difficulties still exist in this respect. Pore pressure measurements during shear are seldom required in routine investigations, as the basic triaxial tests are sufficient to furnish shear strengths for the limiting conditions of drainage. Procedures for measuring pore pressures in the triaxial test during shear are discussed elsewhere† and are beyond the scope of this manual.

2. TYPES OF TESTS. The three types of basic triaxial compression tests are unconsolidated-undrained, consolidated-undrained, and consolidated-drained, subsequently referred to as the Q, R, and S tests, respectively. As these names imply, they are derived from the drainage conditions allowed to prevail during the test. The type of test is selected

† A. W. Bishop and D. J. Henkel, The Measurement of Soil Properties in the Triaxial Test, 2nd ed. (London, Edward Arnold Ltd., 1962).

to closely simulate, or to bracket, the conditions anticipated in the field. In the basic tests, the initial principal stresses are equal; that is, no attempt is made to duplicate stress systems in the field in which the principal stresses are not equal.

a. Q Test. In the Q test the water content of the test specimen is not permitted to change during the application of the confining pressure or during the loading of the specimen to failure by increasing the deviator stress. The Q test is usually applicable only to soils which are not free-draining, that is, to soils having a permeability less than 10 $\times 10^{-4}$ cm per sec.

b. R Test. In the R test, complete consolidation of the test specimen is permitted under the confining pressure. Then, with the water content held constant, the specimen is loaded to failure by increasing the deviator stress. Specimens must as a general rule be completely saturated before application of the deviator stress.

c. S Test. In the S test, complete consolidation of the test specimen is permitted under the confining pressure and during the loading of the specimen to failure by increasing the deviator stress. Consequently, no excess pore pressures exist at the time of failure.

3. APPARATUS. a. Loading Devices. Various devices may be used to apply axial load to the specimen. These devices can be classified as either apparatus in which axial loads are measured outside the triaxial chamber or apparatus in which axial loads are measured inside the triaxial chamber by using a proving ring or frame, an electrical transducer, or a pressure capsule. Any- equipment used should be calibrated to permit determination of loads actually applied to the soil specimen.

Loading devices can be further grouped under controlled-strain or controlled-stress types. In controlled-strain tests, the specimen is strained axially at a predetermined rate; in controlled-stress tests, predetermined increments of load are applied to the specimen at fixed intervals of time. Controlled-strain loading devices, such as commercial

stored in an airtight container for at least 16 hr. The desired density may be produced by either (1) kneading or tamping each layer until the accumulative weight of soil placed in the mold is compacted to a known volume or (2) adjusting the number of layers, the number of tamps per layer, and the force per tamp. For the latter method of control, special constant-force tampers (such as the Harvard miniature compactor for 1.4-in.-diameter specimens† or similar compactors for 2.8-in.-diameter and larger specimens‡) are necessary. After each specimen compacted to finished dimensions has been removed from the mold, proceed in accordance with steps (c) through (e) of paragraph 4a(1).

b. Cohesionless Soils Containing Negligible Amounts of Gravel. Soils which possess little or no cohesion are difficult if not impossible to trim into a specimen. If undisturbed samples of such materials are available in sampling tubes, satisfactory specimens can usually be obtained by freezing the sample to permit cutting out suitable specimens. Samples should be drained before freezing. The frozen specimens are placed in the triaxial chamber, allowed to thaw after application of the chamber pressure, and then tested as desired. Some slight disturbance probably occurs as a result of the freezing, but the natural stratification and structure of the material are retained. In most cases, however, it is permissible to test cohesionless soils in the remolded state by forming the specimen at the desired density or at a series of densities which will permit interpolation to the desired density. Specimens prepared in this

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† A. Casagrande, J. M. Corso, and S. D. Wilson, Report to Waterways Experiment Station on the 1949-1950 Program of Investigation of Effect of Long-Time Loading on the Strength of Clays and Shales at Constant Water Content, Harvard University (Cambridge, Mass., July 1950).

‡ A. Casagrande and R. C. Hirschfeld, Second Progress Report on Investigation of Stress-Deformation and Strength Characteristics of Compacted Clays, Soil Mechanics Series No. 65, Harvard University (Cambridge, Mass., April 1962).

manner should generally be 2.8 in. in diameter or larger, depending on the maximum particle size. The procedure for forming the test specimen shall consist of the following steps:

(1) Oven-dry and weigh an amount of material sufficient to provide somewhat more than the desired volume of specimen.

(2) Place the forming jacket, with the membrane inside, over the specimen base of the triaxial compression device.

(3) Evacuate the air between the membrane and the inside face of the forming jacket.

(4) After mixing the dried material to avoid segregation, place the specimen, by means of a funnel or the special spoon, inside the forming jacket in equal layers. For 2.8-in.-diameter specimens, 10 layers of equal thickness are adequate. Starting with the bottom layer, compact each layer by blows with a tamping hammer, increasing the number of blows per layer linearly with the height of the layer above the bottom layer.† The total number of blows required for a specimen of a given material will depend on the density desired. Considerable experience is usually required to establish the proper procedure for compacting a material to a desired uniform density by this method. A specimen formed properly in the above-specified manner, when confined and axially loaded, will deform symmetrically with respect to its midheight, indicating that a uniform density has been obtained along the height of the specimen.

(5) As an alternate procedure, the entire specimen may be placed in a loose condition by means of a funnel or special spoon. The desired density may then be achieved by vibrating the specimen in the forming jacket to obtain a specimen of predetermined height and corresponding density. A specimen formed properly in this manner, when

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† Liang-Sheng Chen, "An investigation of stress strain and strength characteristics of cohesionless soils by triaxial compression tests," Proceedings, Second International Conference on Soil Mechanics and Foundation Engineering, vol. V (Rotterdam, 1948), pp. 35-43.

confined and axially loaded, will deform symmetrically with respect to its midheight.

(6) Subtract weight of unused material from original weight of the sample to obtain weight of material in the specimen.

(7) After the forming jacket is filled to the desired height, place the specimen cap on the top of the specimen, roll the ends of the, membrane over the specimen cap and base, and fasten the ends with rubber bands or O-rings. Apply a low vacuum to the specimen through the base and remove the forming jacket.

(8) Measure height and diameter as specified in paragraph 4a(1)(e).

c. Soils Containing Gravel. The size of specimens containing appreciable amounts of gravel is governed by the requirements of paragraph4. If the material to be tested is in an undisturbed state, the specimens shall be prepared according to the applicable requirements of paragraphs 4a and 4b, with the size of specimen based on anestimate of the largest particle size. In testing compacted soils, the largest particle size is usuallyknown, and the entire sample should be tested, whenever possible, without removing any of the coarser particles. However, it may be necessaryto remove the particles larger than a certain size to comply with the requirements for specimen size, though such practice will result in lower measured values of the shear strength and should be avoided if possible. Oversize particles should be removed and, if comprising more than 10 percent by weight of the sample, be replaced by anequalpercentage by weight of material retained on the No. 4 sieve and passing the maximum allowable sieve size. The percentage of material finer than the No. 4 sieve thus remains constant (see paragraph 2b of Appendix VI, COMPACTION TESTS). It will generally be necessary to prepare compacted samples of material containing gravel inside a forming jacket placed on the specimen base. If the material is cohesionless, it should be oven-dried and compacted in layers inside the membrane and forming jacket using the procedure in paragraph 4b as a guide. When specimens of very high density are required, the

routine laboratory work. Therefore, S tests of fine-grained impervious materials should normally be performed with direct shear equipment (see Appendix IX DRAINED (S) DIRECT SHEAR TEST). However, if scheduling permits, it may be desirable to perform companion S triaxial tests of impervious soils to compare the results with those from S direct shear tests. If the soil to be tested is relatively impervious and contains gravel which would preclude the use of direct shear equipment, consideration should. be given to using triaxial equipment with pore pressure measurements in order to obtain the drained shear strength parameters within a reasonable length of time. All specimens must be completely saturated before application of the deviator stress in the S test.

a. Apparatus. The apparatus used to perform the R test, as illustrated in Figure 16, will usually be satisfactory for the S test, though the equipment for saturation by back pressure will not be necessary for relatively pervious soils. In general, controlled-strain testing should be used for relatively pervious soils, and controlled-stress testing should be used for relatively impervious soils.

b. Procedure. The procedure for the S test shall consist of the following steps:

(1) For soils requiring saturation by back pressure, proceed as outlined in paragraphs 6b(1) through 6b(6). For pervious soils which can be effectively saturated by seepage, that is, by water percolating through the specimen under a small hydraulic head, omit the back pressure equipment described in paragraph 6a and proceed as follows:

(a) Proceed as outlined in paragraphs 5a(1) through 5a(4), with the exception that specimen bases and caps with porous inserts and drainage connections should be used and the apparatus should include a water supply container and a calibrated burette with a vacuum connection as shown in Figure 16. For specimens of cohesionless soil prepared as described in paragraph 4b, the porous inserts and drainage lines (including the burette) should be dry, and a low vacuum (less than 5 psi) should be

maintained at both the specimen base and cap (with valves D and G closed) to support the specimen while assembling and filling the triaxial chamber.

(b) Keeping valves A and C closed, adjust the pressure regulator for a chamber pressure of about 5 psi and then open valve A to apply this pressure to the chamber.

(c) With valves E and G closed, maintain a low vacuum through the burette to the specimen cap. Then open valve D and elevate the water supply container so that a hydrostatic head of 1 to 2 ft is applied to the base of the specimen.

(d) When the saturation water rises into the burette, disconnect the vacuum from the burette. Permit seepage under the small head to continue until the rate of flow into the burette is constant, and then close valve D.

(2) With valves E and F open (see Fig. 16), lower the piston into contact with the specimen cap and increase the axial load at a relatively slow rate so that a fully drained condition exists at failure with controlled-strain loading or after each increment of load with controlled-stress application. As for the direct shear test, considerable experience and judgment are generally required in determining the proper rate of axial load application (see Appendix IX, DRAINED (S) DIRECT SHEAR TEST). Theoretical formulas are also available† for estimating the time required for failure in S tests. Special precautions may be necessary for tests requiring an axial loading duration in excess of a few hours to insure that the chamber pressure (as well as the back pressure, if used) is maintained constant, that temperature fluctuations are minimized, and that evaporation or aeration of the water in the burette is reduced as much as possible. Placing about 1 cc of oil or dyed kerosene over the water surface in the burette will minimize evaporation.

(3) Record the dial indicator and burette readings at

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† Bishop and Henkel, op. cit., pp. 124-127, 204-206.

increasing intervals of elapsed time under each increment of load. For relatively impervious soils, plot either or both of these readings versus the logarithm of elapsed time, as shown in Figure 5 of Appendix VIII, CONSOLIDATION TEST, to establish when primary consolidation has been essentially completed for each increment of load. Record the final dial indicator and burette readings for each axial load increment on a form similar to Plate X-6 prior to applying the next increment. With controlled-strain loading, periodically observe and record (Plate X-6) the resulting load and the dial indicator and burette readings; sufficient readings should be taken to completely define the shape of the stress-strain curve, Continue the test until an axial strain of 15 percent has been reached; however, when the deviator stress decreases after attaining a maximum value and is continuing to decrease at 15 percent strain, the test shall be continued to 20 percent strain (see Fig. 12).

(4) Upon completion of axial loading, close valves E and F and proceed as outlined in paragraphs 5a(8) through 5a(10), except measure the specimen diameter, as described in paragraph 4a(1)(e), after the compression chamber has been dismantled. While considerable difficulty may be encountered in measuring the diameter of the specimen after the test, such measurements will permit the most reliable computations of the specimen properties at failure.

c. Computations. The computations shall consist of the following steps:

(1) From the observed data, compute and record on the data sheet (Plate X-1) the initial water content, volume of soilds, initial void ratio, initial degree of saturation, and initial dry density using the formulas previously presented.

(2) Compute the cross-sectional area of the specimen, A_c, after completion of consolidation using the formulas presented in paragraph 6c(2).

(3) Using the dimensions of the specimen after consolidation

and the changes in volume as measured with the burette, compute the void ratio and degree of saturation after consolidation using the formulas previously presented.

(4) Compute and record on the data sheet (Plate X-6) the axial strain, the corrected area, and the deviator stress corresponding to the final readings under each increment of load for controlled-stress loading or for convenient intervals of strain for controlled-strain loading using the following formulas:

$$\text{Axial strain, } \varepsilon = \frac{\Delta H}{H_c}$$

$$\text{Area of specimen corrected for strain and volume change, } A'_{corr}, \text{ sq cm} = \frac{A_c}{1 - C\varepsilon}$$

$$\text{Deviator stress, tons per sq ft} = \frac{P}{A'_{corr}} \times 0.465$$

where C = correction for volume change during shear $= \frac{A_f}{A_e}$

A_f = area of specimen after test based on measurements

$$= \frac{\pi D_f^2}{4} = 0.7854\ D_f^2$$

A_e = area of specimen at end of test computed on basis of constant volume

$$= \frac{A_c}{1 - \varepsilon_e}$$

ε_e = axial strain at end of test $= \frac{H_c - H_f}{H_c}$

P = net applied axial load, lb (see paragraph 5b(2))

(5) Record the time to failure on the data sheet (Plate X-6).

(6) Correct the maximum deviator stress, if necessary, for the effect of membrane restraint (see paragraph 5b(4)).

d. Presentation of Results. The results of the S test shall be presented on the report form shown as Plate X-3, as described in paragraph 5c. If volume changes of the specimens during shear were measured, plot the volumetric strain versus axial strain for each specimen below the stress-strain curves.

9. POSSIBLE ERRORS. Following are possible errors that would cause inaccurate determinations of strength and stress -deformation characteristics :

a. Apparatus. (1) Leakage of chamber fluid into specimen. Such leakage might occur through or around the ends of the membrane or through the drainage connections and it would decrease the effective stress in a specimen during undrained shear, Very little leakage is needed to cause a very large change in effective stress, and the longer the period of undrained shear, the greater the amount of leakage. (Leakage will not influence the effective stress during periods of specimen drainage, but it will introduce errors in volume change measurements,)

(2) Leakage of pore water out of specimen. This leakage might occur through fittings or valves and it would increase the effective stress in a specimen during undrained shear.

(3) Permeability of porous inserts too low.

(4) Restraint caused by membrane and filter paper strips.

(5) Piston friction.

b. Preparation of Specimens. (1) Specimen disturbed while trimming. Disturbance of the natural soil structure does not always result in strength measurements which are too low, that is, on the safe side; disturbed specimens will consolidate more under the effective consolidation pressure in R or S tests and the measured strengths will be too high.

(2) Specimen disturbed while enclosing with membrane. The techniques of placing the membrane around the specimen illustrated in Figures 9 and 10 may not be satisfactory for sensitive undisturbed soils since the specimen would tend to be flexed while binding the membrane to the unsupported cap. Alternatively, the specimen can be set upon an inverted cap clamped to a ringstand and the membrane placed over the specimen and bound to the cap; then the specimen and cap can be inverted onto the base and the lower end of the membrane secured.

(3) Specimen dimensions not measured precisely. Dial gages or micrometers are helpful in obtaining precise measurements. When the specimen diameter is measured after being enclosed by the membrane, twice the thickness of the membrane must be subtracted from the measurement. The cross-section area of large specimens may be determined most satisfactorily from circumference measurements.

c. Q Test. (1) Changes in specimen dimensions upon application of chamber pressure. Partially saturated specimens will compress under the chamber pressure so the change in height, ΔH_o, due to the application of chamber height should be recorded. When this change in height is significant, the area of specimen before shear, A_c, should be computed according to the formula:

$$A_c = A_o \frac{H_o - 2\Delta H_o}{H_o}$$

as given in paragraph 6c(2).

(2) Rate of strain too fast.

(3) Water content determination after test not representative. Friction between the soil and the cap and base restrains the radial deformation at the ends of the specimen and this end restraint induces a non-uniform pore pressure distribution which, in turn, causes pore water migration within the specimen. For relatively impervious soils, a

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
INITIAL COVER TEST RESULTS

Compaction Minimum Value: **90.0% of Modified Proctor** **Thickness Minimum: 12.0"**

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
I-001	86+75.00	102+75.00	79	DMT	12+	102.6	90.0	16.8		PASS
I-002	86+25.00	103+00.00	79	DMT	12+	105.4	93.0	17.2		PASS
I-003	86+00.00	103+35.00	80	DMT	12+	103.8	91.0	11.3		PASS
I-004	86+50.00	103+75.00	80	DMT	12+	109.5	97.0	10.6		PASS
I-005	86+25.00	104+10.00	81	DMT	12+	113.9	100.0	11.7		PASS
I-006	86+75.00	104+50.00	81	DMT	12+	108.6	96.0	8.7		PASS
I-007	86+75.00	105+00.00	81	DMT	12+	110.9	98.0	8.9		PASS
I-008	85+75.00	104+50.00	81	DMT	12+	106.0	93.0	11.7		PASS
I-009	85+50.00	103+75.00	80	DMT	12+	111.3	98.0	13.1		PASS
I-010	85+50.00	102+75.00	79	DMT	12+	105.4	93.0	11.7		PASS
I-011	84+75.00	103+75.00	80	DMT	12+	105.2	93.0	8.9		PASS
I-012	85+00.00	105+00.00	74	DMT	12+	107.0	94.0	16.1		PASS
I-013	84+50.00	104+25.00	81	DMT	12+	107.1	94.0	13.4		PASS
I-014	84+25.00	103+00.00	79	DMT	12+	107.7	95.0	13.4		PASS
I-015	83+75.00	103+35.00	80	DMT	12+	108.5	96.0	8.5		PASS
I-016	83+75.00	104+50.00	74	DMT	12+	109.3	96.0	18.7		PASS
I-017	83+25.00	104+75.00	74	DMT	12+	102.7	91.0	13.7		PASS
I-018	83+25.00	103+75.00	80	DMT	12+	112.9	100.0	13.1		PASS
I-019	83+25.00	102+75.00	79	DMT	12+	103.2	91.0	11.4		PASS
I-020	83+00.00	104+25.00	73	DMT	12.0	110.1	97.0	14.3		PASS
I-021	82+75.00	101+75.00	76	DMT	12.0	108.8	96.0	14.0		PASS
I-022	82+75.00	103+00.00	78	DMT	12.0	108.5	96.0	9.6		PASS
I-023	82+50.00	102+25.00	77	DMT	12.0	107.8	95.0	8.9		PASS
I-024	82+50.00	101+00.00	75	DMT	12.0	107.1	94.0	13.9		PASS

Meskel & Associates Engineering

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
INITIAL COVER TEST RESULTS

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Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
I-025	82+25.00	102+70.00	78	DMT	12.0	110.8	98.0	11.3		PASS
I-026	82+00.00	104+75.00	74	DMT	12.0	106.8	94.0	16.2		PASS
I-027	82+00.00	102+25.00	77	DMT	12.0	118.4	104.0	9.1		PASS
I-028	81+75.00	101+50.00	76	DMT	12.0	109.0	96.0	9.4		PASS
I-029	81+50.00	103+00.00	78	DMT	12.0	108.5	96.0	9.9		PASS
I-030	81+25.00	104+00.00	73	DMT	12.0	102.8	91.0	15.6		PASS
I-031	81+25.00	102+00.00	74	DMT	12.0	107.0	94.0	12.7		PASS
I-032	81+25.00	104+75.00	77	DMT	12.0	108.7	98.0	11.1		PASS
I-033	81+25.00	100+75.00	75	DMT	12.0	109.9	100.0	9.5		PASS
I-034	80+75.00	101+05.00	76	DMT	12.0	106.9	96.0	11.6		PASS
I-035	80+75.00	102+50.00	77	DMT	12.0	107.0	94.0	12.7		PASS
I-036	80+75.00	104+75.00	74	DMT	12.0	112.4	94.0	9.3		PASS
I-037	80+25.00	103+25.00	72	DMT	12.0	108.6	91.0	11.8		PASS
I-038	80+25.00	101+50.00	76	DMT	12.0	109.5	91.0	14.3		PASS
I-039	80+00.00	100+75.00	75	DMT	12.0	109.1	91.0	8.8		PASS
I-040	80+00.00	101+85.00	77	DMT	12.0	109.2	91.0	9.1		PASS
I-041	81+00.00	105+00.00	74	DMT	12.0	103.6	91.0	16.8		PASS
I-042	79+75.00	104+25.00	73	DMT	12.0	108.2	90.0	9.8		PASS
I-043	79+50.00	101+25.00	76	DMT	12.0	109.2	91.0	10.7		PASS
I-044	79+50.00	102+00.00	77	DMT	12.0	109.5	91.0	11.1		PASS
I-045	79+50.00	104+75.00	74	DMT	12.0	104.3	92.0	16.8		PASS
I-046	79+25.00	102+50.00	71	DMT	12.0	111.4	93.0	12.8		PASS
I-047	79+00.00	103+50.00	72	DMT	12.0	109.7	91.0	9.0		PASS
I-048	79+00.00	102+00.00	77	DMT	12.0	123.5	103.0	8.0		PASS

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Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
I-049	79+00.00	101+00.00	75	DMT	12.0	111.6	93.0	10.4		PASS
I-050	78+75.00	101+75.00	76	DMT	12.0	112.9	94.0	9.3		PASS
I-051	78+25.00	102+00.00	70	DMT	12.0	116.6	97.0	10.5		PASS
I-052	78+25.00	104+00.00	73	DMT	12.0	108.3	90.0	10.0		PASS
I-053	78+50.00	104+75.00	74	DMT	12.0	109.5	91.0	5.6		PASS
I-054	78+50.00	105+50.00	68	DMT	12.0	108.6	91.0	9.4		PASS
I-055	78+00.00	103+00.00	72	DMT	12.0	111.8	93.0	9.6		PASS
I-056	77+75.00	101+50.00	76	DMT	12.0	119.1	100.0	10.4		PASS
I-057	77+75.00	102+25.00	71	DMT	12.0	108.1	90.0	13.3		PASS
I-058	77+75.00	104+25.00	73	DMT	12.0	112.4	94.0	8.4		PASS
I-059	77+50.00	105+50.00	67	DMT	12.0	114.6	96.0	10.7		PASS
I-060	77+50.00	100+75.00	75	DMT	12.0	110.6	92.0	10.8		PASS
I-061	77+00.00	101+25.00	76	DMT	12.0	117.5	98.0	9.9		PASS
I-062	77+00.00	102+75.00	71	DMT	12.0	111.9	93.0	8.5		PASS
I-063	77+00.00	103+50.00	72	DMT	12.0	109.6	90.0	7.6		PASS
I-064	77+25.00	104+50.00	67	DMT	12.0	114.4	95.0	6.6		PASS
I-065	76+75.00	104+75.00	66	DMT	12.0	121.1	11.0	6.9		PASS
I-066	76+75.00	101+75.00	70	DMT	12.0	111.2	93.0	9.1		PASS
I-067	76+50.00	101+25.00	69	DMT	12.0	110.6	90.0	9.5		PASS
I-068	76+25.00	101+00.00	75	DMT	12.0	117.0	98.0	10.5		PASS
I-069	76+00.00	102+50.00	71	DMT	12.0	114.9	96.0	7.7		PASS
I-070	75+75.00	101+40.00	70	DMT	12.0	115.8	97.0	7.0		PASS
I-071	75+00.00	101+00.00	69	DMT	12.0	115.1	96.0	10.7		PASS
I-072	78+50.00	107+50.00	68	DMT	12.0	105.1	92.0	18.5		PASS

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
INITIAL COVER TEST RESULTS

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Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
I-073	78+75.00	108+75.00	68	DMT	12.0	116.5	102.0	9.3		PASS
I-074	78+50.00	109+50.00	65	DMT	12.0	108.7	90.0	12.5		PASS
I-075	78+25.00	110+75.00	65	DMT	12.0	109.7	91.0	9.0		PASS
I-076	78+00.00	106+00.00	68	DMT	12.0	105.5	92.0	14.5		PASS
I-077	77+75.00	107+50.00	67	DMT	12.0	104.8	92.0	12.0		PASS
I-078	77+75.00	109+75.00	64	DMT	12.0	108.3	90.0	10.0		PASS
I-079	77+50.00	108+75.00	67	DMT	12.0	107.9	94.0	5.3		PASS
I-080	77+25.00	110+75.00	64	DMT	12.0	104.8	92.0	11.6		PASS
I-081	77+00.00	106+25.00	66	DMT	12.0	110.9	97.0	5.6		PASS
I-082	77+00.00	108+25.00	66	DMT	12.0	107.0	94.0	5.8		PASS
I-083	76+75.00	107+50.00	66	DMT	12.0	107.6	94.0	4.7		PASS
I-084	76+75.00	109+50.00	63	DMT	12.0	110.6	90.0	9.5		PASS
I-085	78+75.00	113+00.00	65	DMT	12.0	124.0	94.0	9.8		PASS
I-086	78+75.00	114+25.00	62	DMT	12.0	111.1	92.6	9.1		PASS
I-087	78+50.00	115+25.00	62	DMT	12.0	112.8	94.0	5.9		PASS
I-088	78+50.00	112+25.00	65	DMT	12.0	127.7	94.0	9.8		PASS
I-089	78+00.00	112+00.00	64	DMT	12.0	128.0	98.0	9.3		PASS
I-090	78+00.00	113+75.00	61	DMT	12.0	108.9	90.3	10.8		PASS
I-091	77+75.00	115+50.00	61	DMT	12.0	107.5	90.0	6.5		PASS
I-092	77+50.00	113+00.00	64	DMT	12.0	121.9	94.0	8.0		PASS
I-093	77+25.00	113+75.00	60	DMT	12.0	112.6	93.8	9.4		PASS
I-094	76+75.00	112+75.00	63	DMT	12.0	127.5	96.0	10.4		PASS
I-095	76+75.00	115+50.00	60	DMT	12.0	114.1	95.0	7.1		PASS
I-096	79+00.00	116+25.00	62	DMT	12.0	111.1	93.0	7.7		PASS

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
INITIAL COVER TEST RESULTS

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Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
I-097	78+75.00	117+25.00	59	DMT	12.0	109.2	91.0	6.8		PASS
I-098	79+00.00	118+25.00	59	DMT	12.0	112.9	94.0	7.8		PASS
I-099	78+75.00	119+50.00	59	DMT	12.0	112.9	94.0	7.8		PASS
I-100	78+25.00	119+75.00	58	DMT	12.0	115.2	98.5	9.0		PASS
I-101	78+25.00	118+50.00	58	DMT	12.0	112.2	94.0	11.0		PASS
I-102	78+25.00	116+75.00	61	DMT	12.0	111.4	93.0	14.7		PASS
I-103	77+75.00	117+50.00	58	DMT	12.0	111.5	93.0	9.7		PASS
I-104	77+50.00	118+50.00	57	DMT	12.0	113.1	94.0	10.1		PASS
I-105	77+50.00	120+00.00	57	DMT	12.0	114.5	95.0	9.9		PASS
I-106	77+25.00	116+50.00	60	DMT	12.0	109.7	91.0	7.7		PASS
I-107	77+00.00	117+50.00	57	DMT	12.0	108.2	90.0	7.1		PASS
I-108	79+50.00	120+25.00	59	DMT	12.0	110.0	92.0	13.1		PASS
I-109	78+75.00	120+75.00	58	DMT	12.0	111.1	93.0	12.1		PASS
I-110	80+75.00	121+25.00	56	DMT	12.0	108.1	90.0	13.2		PASS
I-111	81+50.00	121+75.00	56	DMT	12.0	109.2	91.0	15.3		PASS
I-112	82+50.00	121+50.00	56	DMT	12.0	110.3	92.0	12.3		PASS
I-113	82+75.00	122+25.00	55	DMT	12.0	112.2	94.0	10.7		PASS
I-114	81+75.00	122+75.00	55	DMT	12.0	113.8	95.0	11.0		PASS
I-115	80+75.00	122+00.00	55	DMT	12.0	108.0	90.0	12.5		PASS
I-116	79+75.00	121+00.00	56	DMT	12.0	110.6	90.0	9.5		PASS
I-117	79+25.00	121+75.00	55	DMT	12.0	115.9	97.0	9.3		PASS
I-118	78+25.00	121+25.00	57	DMT	12.0	110.5	92.0	7.4		PASS
I-119	78+50.00	122+25.00	54	DMT	12.0	115.8	97.0	8.6		PASS
I-120	80+25.00	122+75.00	54	DMT	12.0	109.5	91.0	12.8		PASS

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
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Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
I-121	81+25.00	123+25.00	54	DMT	12.0	111.3	93.0	10.7		PASS
I-122	82+50.00	123+00.00	54	DMT	12.0	113.1	94.0	11.4		PASS
I-123	83+25.00	125+25.00	51	DMT	12.0	112.2	94.0	15.0		PASS
I-124	83+50.00	121+50.00	53	DMT	12.0	107.4	90.0	15.1		PASS
I-125	84+25.00	121+75.00	53	DMT	12.0	109.5	91.0	12.5		PASS
I-126	85+50.00	121+50.00	53	DMT	12.0	110.2	92.0	10.2		PASS
I-127	86+50.00	122+25.00	52	DMT	12.0	107.0	94.0	10.3		PASS
I-128	85+25.00	122+25.00	52	DMT	12.0	104.4	91.0	14.8		PASS
I-129	83+75.00	122+50.00	52	DMT	12.0	113.2	94.0	10.0		PASS
I-130	84+50.00	123+00.00	51	DMT	12.0	110.6	92.0	14.3		PASS
I-131	85+75.00	123+25.00	51	DMT	12.0	107.0	94.0	10.3		PASS
I-132	87+00.00	121+75.00	50	DMT	12.0	104.9	92.0	12.7		PASS
I-133	88+25.00	121+50.00	50	DMT	12.0	103.9	91.0	14.0		PASS
I-134	90+00.00	121+50.00	50	DMT	12.0	105.4	92.0	7.8		PASS
I-135	91+75.00	121+25.00	50	DMT	12.0	110.8	92.0	8.5		PASS
I-136	91+00.00	122+25.00	49	DMT	12.0	110.1	93.0	11.0		PASS
I-137	90+50.00	122+50.00	49	DMT	12.0	109.4	95.0	7.6		PASS
I-138	89+50.00	122+25.00	49	DMT	12.0	108.4	95.0	7.2		PASS
I-139	87+50.00	122+50.00	49	DMT	12.0	107.9	95.0	11.2		PASS
I-140	87+00.00	123+25.00	48	DMT	12.0	103.5	91.0	12.2		PASS
I-141	88+25.00	123+00.00	48	DMT	12.0	108.7	95.0	11.5		PASS
I-142	89+50.00	123+25.00	48	DMT	12.0	104.1	91.0	4.0		PASS
I-143	91+50.00	123+00.00	48	x	x	x	x	x		X
I-178	84+41.00	104+59.00	74	DMT	12.0	108.2	95.0	6.7	GAS	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
INITIAL COVER TEST RESULTS

Compaction Minimum Value: 90.0% of Modified Proctor **Thickness Minimum:** 12.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
I-179	83+35.00	104+41.00	73	DMT	12.0	104.3	91.0	8.6	GAS	PASS
I-180	83+51.00	103+28.00	79	DMT	12.0	109.2	96.0	11.0	GAS	PASS
I-181	82+70.00	102+11.00	77	DMT	12.0	111.9	98.0	10.6	GAS	PASS
I-182	82+57.00	103+92.00	73	DMT	12.0	111.8	98.0	8.5	GAS	PASS
Subtotal without Downcommers: Tests Required					**121**	**121**	**121**	**121**		
Subtotal without Downcommers: Tests Performed					**147**	**147**	**147**	**147**		
Downcommers										
I-144	85+25.00	103+00.00	79	DMT	12+	101.8	90.0	4.7	D-55	PASS
I-145	85+25.00	103+75.00	80	DMT	12+	105.7	93.0	9.7	D-55	PASS
I-146	85+25.00	104+50.00	81	DMT	12+	109.8	97.0	11.1	D-55	PASS
I-147	85+25.00	104+92.34	74	DMT	12+	103.0	90.0	9.3	D-55	PASS
I-148	80+55.00	101+25.00	76	DMT	12.0	121.2	101.0	12.9	D-52	PASS
I-149	80+55.00	102+00.00	77	DMT	12.0	109.8	91.0	9.5	D-52	PASS
I-150	80+55.00	102+75.00	78	DMT	12.0	111.1	93.0	13.1	D-52	PASS
I-151	80+55.00	103+50.00	72	DMT	12.0	109.5	95.0	14.2	D-52	PASS
I-152	80+55.00	104+25.00	73	DMT	12.0	110.8	92.0	12.1	D-52	PASS
I-153	80+55.00	104+75.00	74	DMT	12.0	107.8	90.0	12.1	D-52	PASS
I-154	75+50.00	102+00.00	70	DMT	12.0	109.1	91.0	8.8	D-49	PASS
I-155	75+00.00	101+50.00	70	DMT	12.0	108.1	90.0	16.7	D-49	PASS
I-156	74+65.30	100+75.00	69	DMT	12.0	112.4	94.0	15.9	D-49	PASS
I-157	78+25.00	106+75.00	68	DMT	12.0	107.5	90.0	15.2	D-47	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
INITIAL COVER TEST RESULTS

Compaction Minimum Value: **90.0% of Modified Proctor** **Thickness Minimum: 12.0"**

Legend: **I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested**

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
I-158	77+50.00	106+75.00	67	DMT	12.0	107.6	90.0	16.9	D-47	PASS
I-159	76+75.00	106+75.00	66	DMT	12.0	108.2	90.0	16.8	D-47	PASS
I-160	78+50.00	111+50.00	65	DMT	12.0	110.0	91.0	13.6	D-44	PASS
I-161	77+75.00	111+50.00	64	DMT	12.0	109.4	91.0	17.7	D-44	PASS
I-162	77+00.00	111+50.00	63	DMT	12.0	109.4	91.0	13.3	D-44	PASS
I-163	78+75.00	115+06.75	62	DMT	12.0	110.6	92.0	10.8	D-41	PASS
I-164	78+00.00	115+06.75	61	DMT	12.0	110.6	90.0	9.5	D-41	PASS
I-165	77+25.00	115+06.75	60	DMT	12.0	105.1	92.0	18.5	D-41	PASS
I-166	78+75.00	118+90.00	59	DMT	12.0	109.8	92.0	14.8	D-38	PASS
I-167	78+00.00	119+00.00	58	DMT	12.0	110.7	92.0	10.8	D-38	PASS
I-168	77+25.00	119+15.00	57	DMT	12.0	108.0	90.0	18.0	D-38	PASS
I-169	81+25.00	121+50.00	56	DMT	12.0	108.3	90.0	14.7	D-33	PASS
I-170	81+10.00	122+25.00	55	DMT	12.0	109.6	91.0	12.3	D-33	PASS
I-171	80+90.00	123+00.00	54	DMT	12.0	107.8	90.0	14.8	D-33	PASS
I-172	84+75.00	121+75.00	53	DMT	12.0	110.4	92.0	12.6	D-27	PASS
I-173	84+75.00	122+50.00	52	DMT	12.0	107.4	90.0	16.8	D-27	PASS
I-174	84+75.00	123+25.00	51	DMT	12.0	107.6	90.0	16.6	D-27	PASS
I-175	88+75.00	121+75.00	50	DMT	12.0	110.8	97.0	9.3	D-24	PASS
I-176	88+75.00	122+50.00	49	DMT	12.0	114.3	100.0	8.0	D-24	PASS
I-177	88+75.00	123+25.00	48	DMT	12.0	102.2	90.0	7.3	D-24	PASS
Downcommers: Test Required					**34**	**34**	**34**	**34**		
Downcommers: Tests Performed					**34**	**34**	**34**	**34**		

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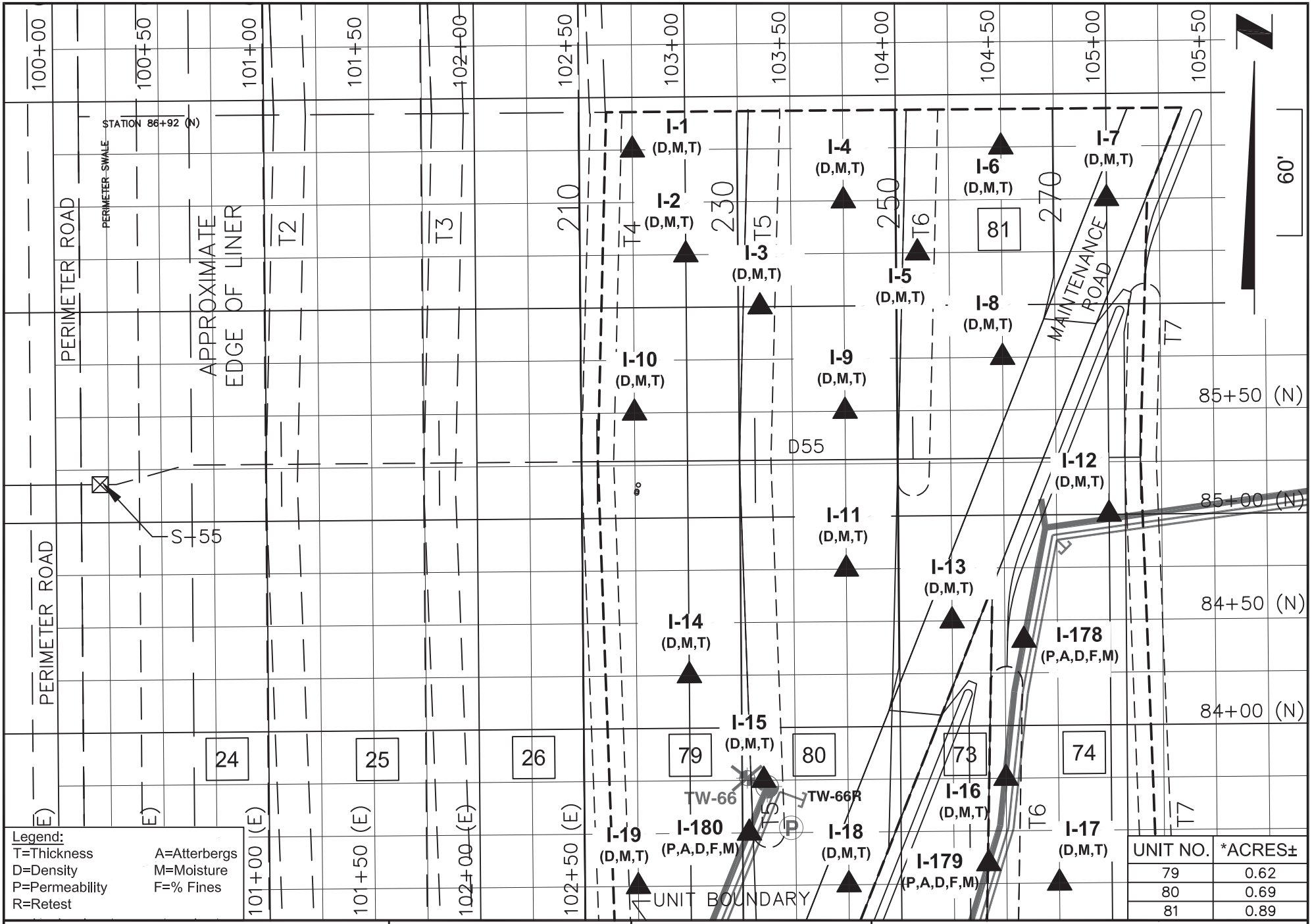
Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
INITIAL COVER TEST RESULTS

Compaction Minimum Value: 90.0% of Modified Proctor **Thickness Minimum:** 12.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Field Moisture Content (%)	Note	Test Result
All Phase 4 Totals = 30.2 Acres										
Total: Tests Required					155	155	155	155		
Total: Tests Performed					181	181	181	181		

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Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
79	0.62
80	0.69
81	0.89

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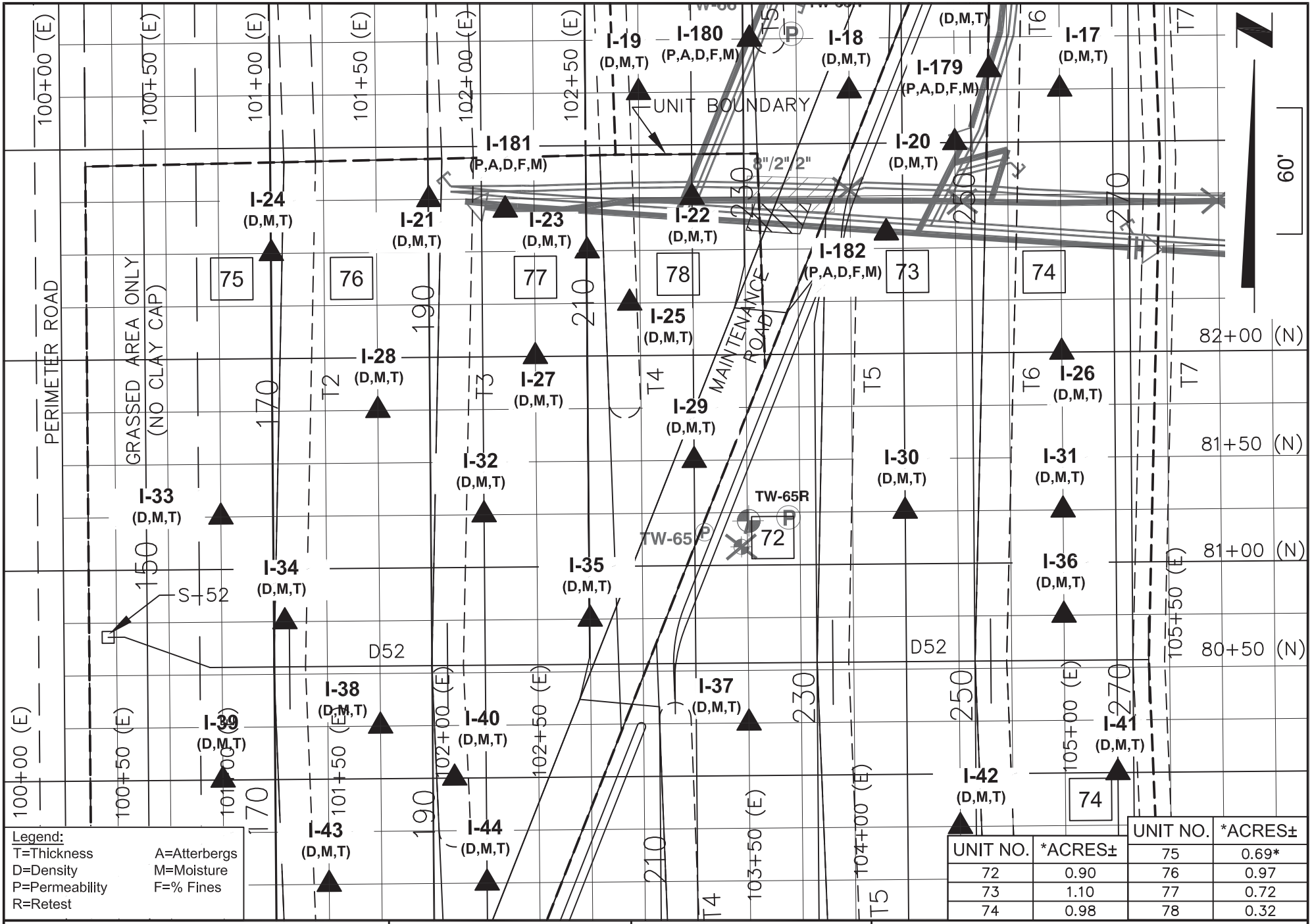
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PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
1 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
72	0.90
73	1.10
74	0.98

UNIT NO.	*ACRES±
75	0.69*
76	0.97
77	0.72
78	0.32

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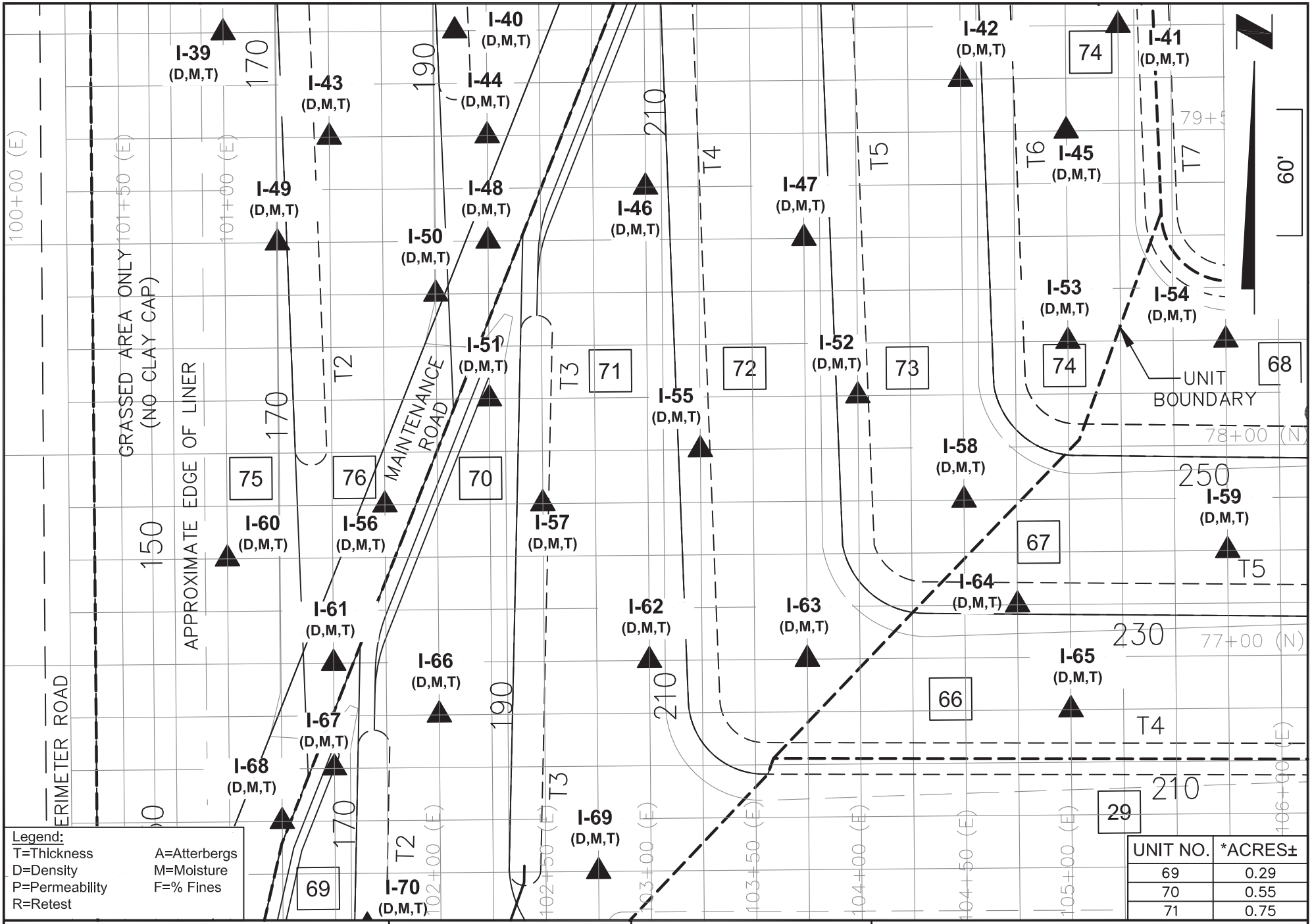
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Jacksonville, Florida
0006-0008

FIGURE NO.
2 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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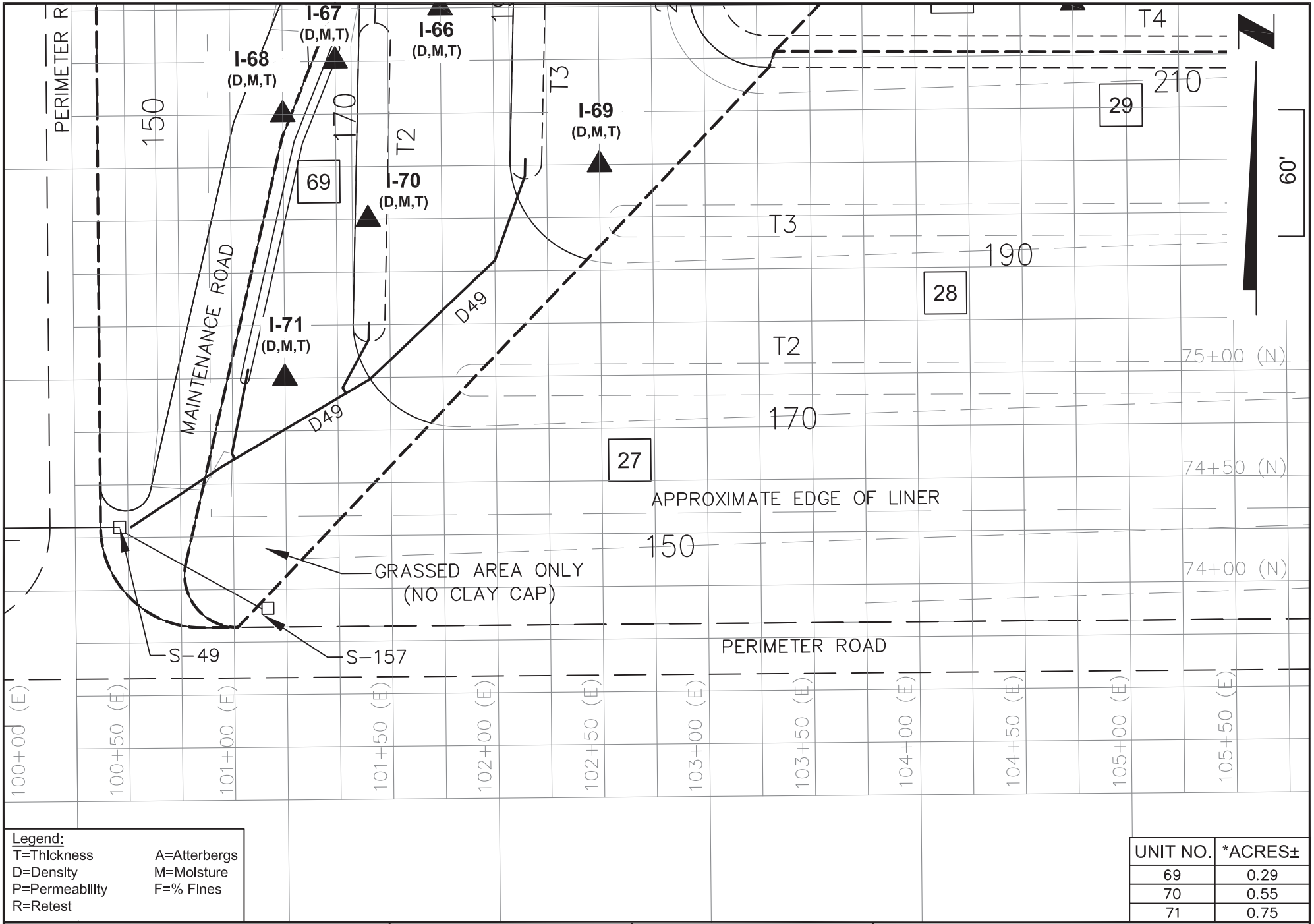
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0006-0008

FIGURE NO.
3 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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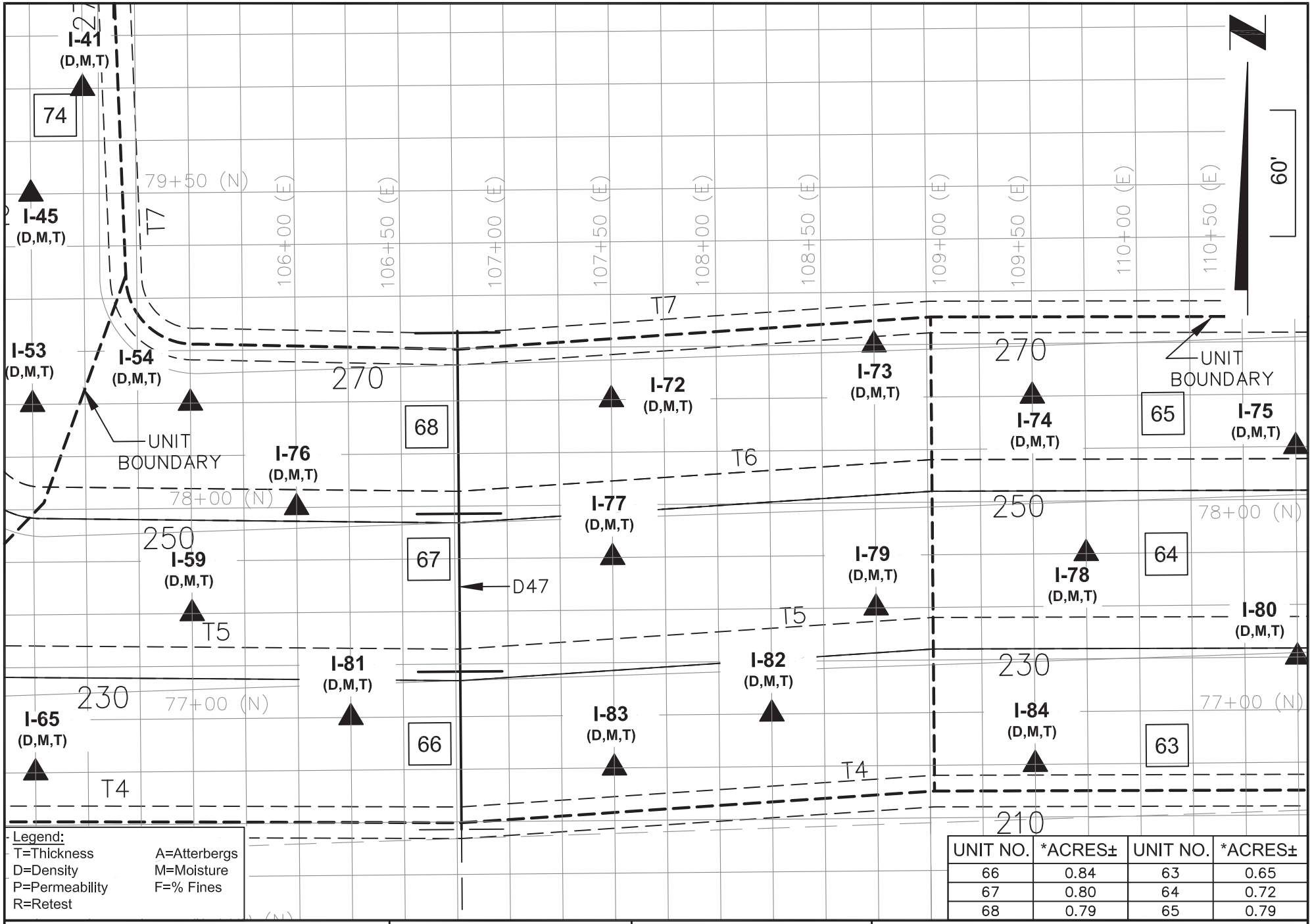
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FIGURE NO.
4 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
66	0.84	63	0.65
67	0.80	64	0.72
68	0.79	65	0.79

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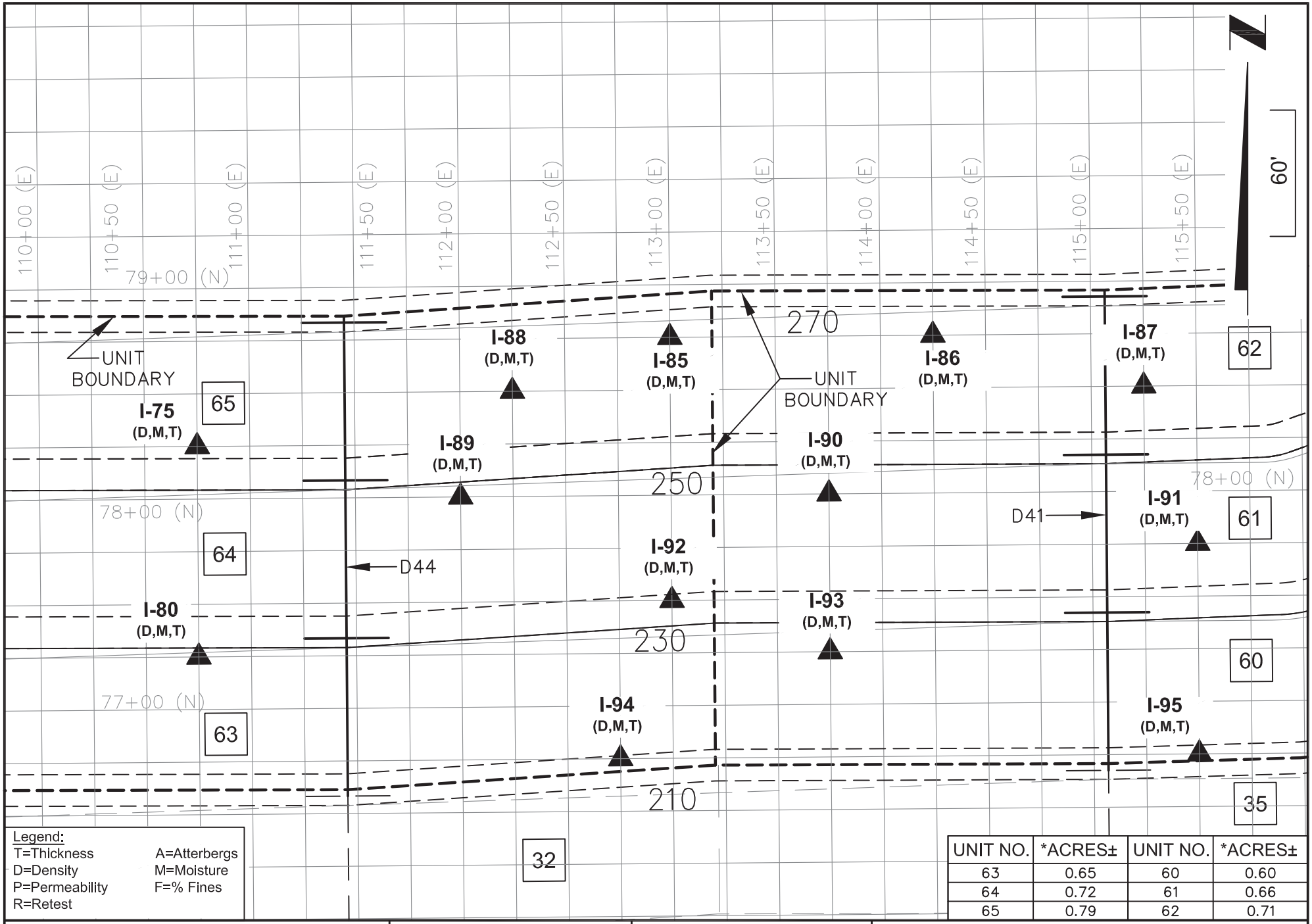
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FIGURE NO.
5 of 10



Legend:
T=Thickness A=Atterbergs
D=Density M=Moisture
P=Permeability F=% Fines
R=Retest

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
63	0.65	60	0.60
64	0.72	61	0.66
65	0.79	62	0.71

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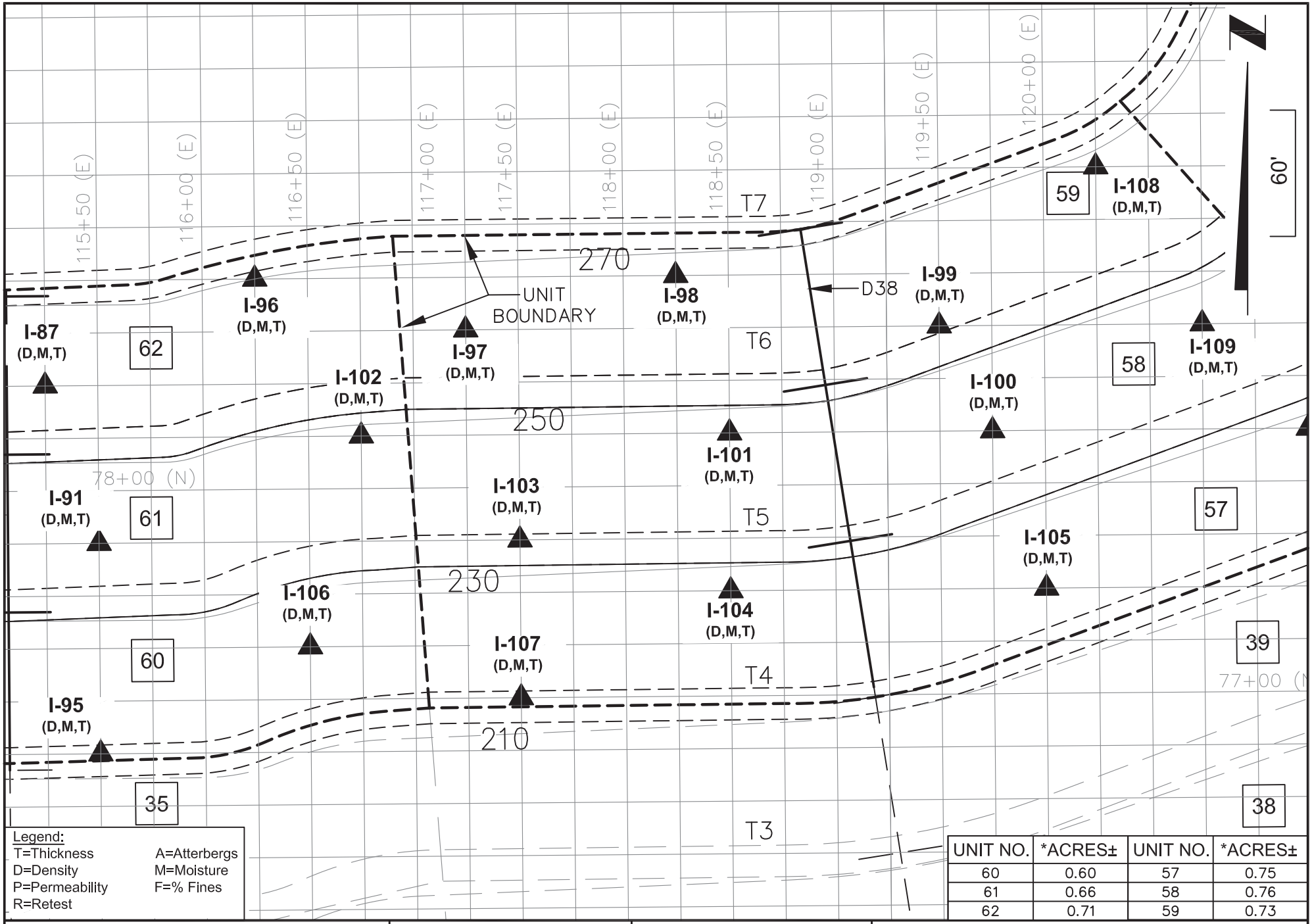
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FIGURE NO.
6 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
60	0.60	57	0.75
61	0.66	58	0.76
62	0.71	59	0.73

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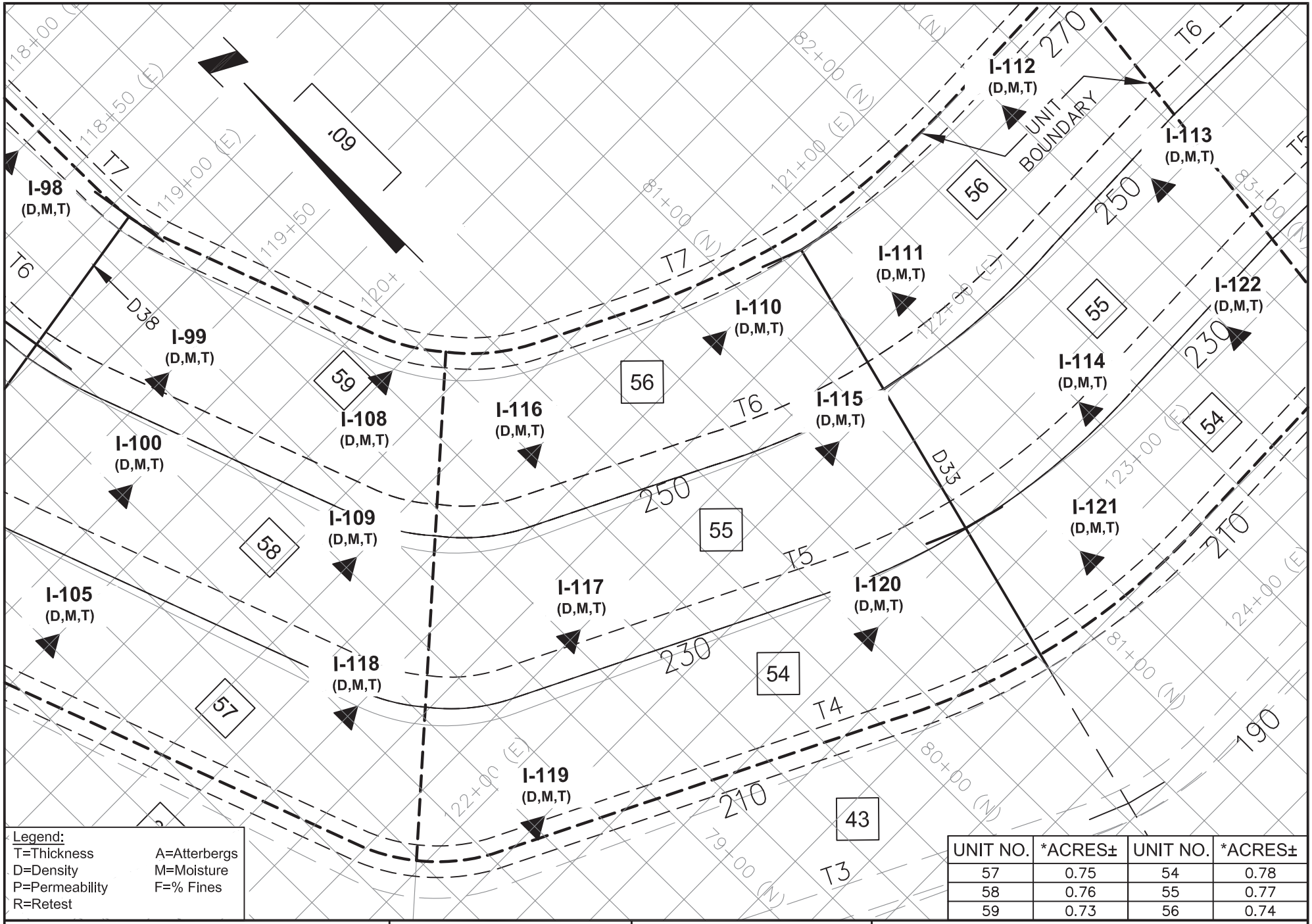
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FIGURE NO.
7 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
57	0.75	54	0.78
58	0.76	55	0.77
59	0.73	56	0.74

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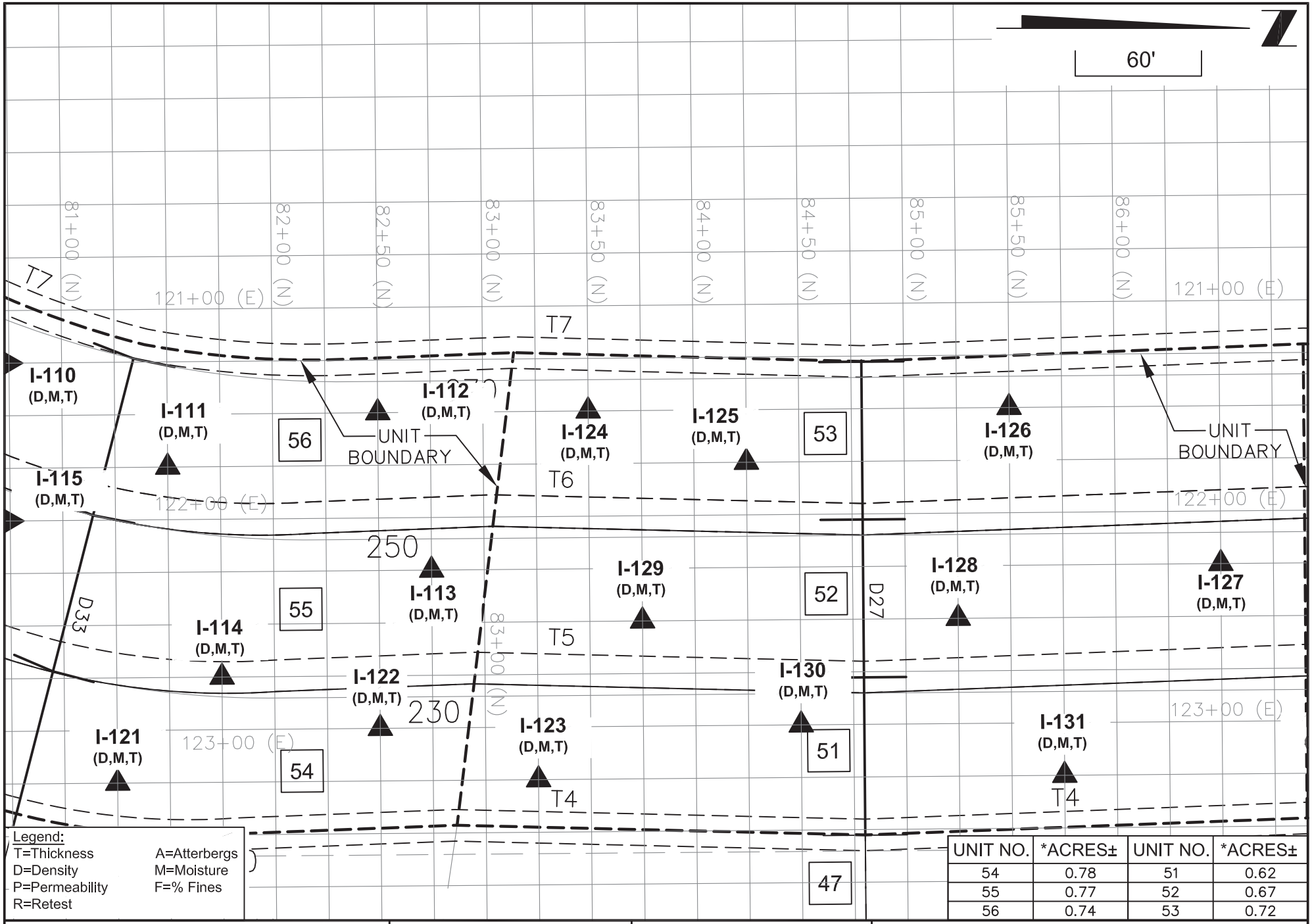
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Jacksonville, Florida

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FIGURE NO.

8 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
54	0.78	51	0.62
55	0.77	52	0.67
56	0.74	53	0.72

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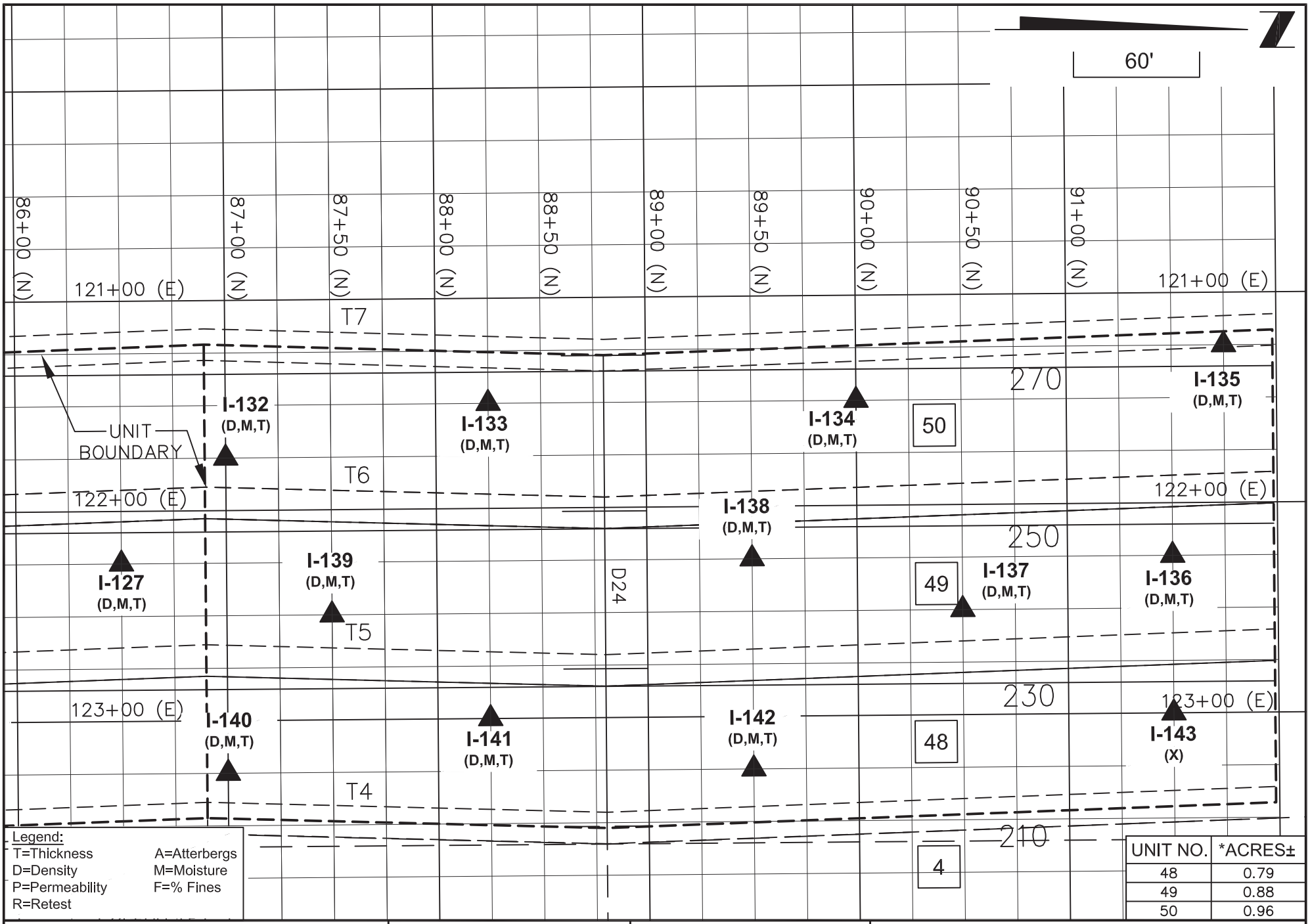
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PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
9 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
48	0.79
49	0.88
50	0.96

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PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
10 of 10

February 2, 2016

Meskel & Associates Engineering
Geotechnical ◤ Environmental ◤ Inspection ◤ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Final Clay Layer Certification
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the monitoring and testing of the clay layer at the subject site. The clay material source was tested and prequalified prior to clay material placement on site. Laboratory testing performed included permeability tests, proctor values, index property testing, and triaxial and direct shear tests for sliding resistance. A clay test strip was constructed and the tests results determined the minimum density required. During prequalification and construction, the clay was constructed and tested in two 6" lifts in accordance with the QA/QC plan for:

- Thickness at a minimum frequency of 4 tests per acre per 6" layer.
- Hydraulic Conductivity at a minimum frequency of 1 test per acre per 6" layer at 6.67E-08cm/sec
- Atterberg Limits at a minimum frequency of 1 test per acre per 6" layer.
- Density at a minimum frequency of 2 tests per acre per 6" layer at 80% of the Standard Proctor.
- Moisture at a minimum frequency of 2 tests per acre per 6" layer.
- Percent Fines passing the No.200 sieve at a minimum frequency of 2 tests per acre per 6" layer.

All test final results included in the following tables and map diagrams meet or exceed the minimum requirements in the plans, specifications and or the QA/QC plan. Additionally, in accordance with the QA/QC plan, the testing frequency for the first five acres of the first phase was doubled.

As construction proceeded, some tests performed failed to meet the minimum requirements. Upon failure, the contractor reworked the area and additional tests were performed five feet in each direction of the original test location to meet requirements, at the 95% confidence level in accordance with the QA/QC Plan. The retest locations are identified with an "R" after the test number.

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Based on these results, we consider the clay layer acceptable. The number of passing tests performed meets or exceeds the minimum requirements in the plans, specifications and / or the QA/QC plan.

We appreciate the opportunity to assist England-Thims & Miller, Inc. on this project. If you have any questions concerning this report, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Samuel E. Lansdale
Quality Control Monitor

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

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Phone: (904)519-6990 Fax: (904)519-6992

August 22, 2013
Revised, February 2, 2016

Meskel & Associates Engineering
Geotechnical ⌜ Environmental ⌜ Inspection ⌜ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Clay Borrow Source Pre-Qualification
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the pre-qualification testing for the clay borrow source for the subject project. Attached are a Site Location Map (Figure 1), Test Pit Location Plan (Figure 2), Generalized Soil Profiles (Figures 3 through 5), Test Pit Logs, completed Pre-Qualification Form, laboratory test results table, and Shear Resistance calculations.

The proposed clay borrow source, designated the Jacob's Pit is located north of County Road 225, approximately 2.5 miles west of US 301 in the town of Lawtey, Bradford County, Florida. As part of the site evaluation, samples were taken of blended clay soils and eight test pits were excavated within the borrow pit area (TP-1 through TP-9). The approximate locations of the test pits are shown on Figure 2. Ground surface elevations and latitude and longitude information shown on the figures and test pit logs, were estimated from an aerial photograph for each test pit location based on a site sketch and grid pattern provided to us. At the time of our field work, the borrow pit area had been cleared and grubbed.

As shown on the attached soil profiles and logs, clayey soils encountered at the test pit locations generally consisted of two strata. The upper soils (Layer 1) consisted mainly of grayish to orangish brown mottled Clayey to Very Clayey Fine Sand (SC). This material was generally encountered between depths of approximately 2 to 5 feet extending to depths of approximately 5 to 14 feet below ground surface (bgs). The clayey fine sands were generally underlain by grayish brown to greenish gray Clay with Sand and Silt to Sandy Clay (CH) (Layer 2) extending to the test pit termination depths at approximately 18 to 22 feet bgs.

It should be noted that both soil layers contained sand seams of varying thicknesses. However at the time of our test pit exploration, the upper 5 to 6 feet of Layer 1 (Clayey to Very Clayey Fine Sand (SC)) was noted to be more sandy and to contain more and thicker sand layers than the deeper Layer 1 and Layer 2 soils.

Multiple samples obtained at the test pit locations were submitted to the laboratory for standard Proctor, index property and permeability testing. Partial test results are shown in the table below; full test results are included in the table attached to this report.

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Jacksonville, Florida 32256
Phone: (904)519-6990 Fax: (904)519-6992

	TP-1 Sample 4	TP-3 Sample 1	TP-6 Sample 1	*Jacobs Mixed Sample #2
Sample Description	Greenish Gray Silty Clay to Clay with Silt (CH)	Grayish Brown Sandy Clay (CH)	Light Grayish Brown Silty Clay (CH)	Blended Sample
Sample Depth, ft. bgs	18 to 19	7 to 8	13.5 to 14.5	---
Maximum Dry Density Standard Proctor, pcf	85	87	75	92
Optimum Moisture Content Standard Proctor, %	33	31	38	27
Plasticity Index	60	54	95	74
Percent Fines, %	75	69	66	57
Coefficient of Permeability, cm/s	6.2E-08	4.0E-8	7.3E-08*	7.6E-09
Percent Compaction Standard Proctor, pcf	77	84	68	79
Moisture Content at Compaction, %	36	37	53	39

*Failing Test

In addition, as required by the project specifications, shear testing was performed for the project including triaxial testing of the Clay Layer and direct shear testing of the interface between the Initial Cover and the Clay Layer, as well as the interface between the Clay Layer and the proposed Vegetative Cover material. The Initial Cover material was sampled from the on-site borrow area and Timber Forest Trails (AKA Lee Smith) Borrow Pit. The Vegetative Cover material was sampled from Timber Forest Trails Pit.

Using the direct shear test results, calculations were performed to evaluate the potential for sliding for both interfaces as well as for internal sliding of the Clay Layer itself. These calculations are attached. Minimum factors of safety (FS) for resistance to shear failures (sliding) of 1.5 are required by the project specifications. Based on the results of the calculations performed, factors of safety for all triaxial and shear testing were determined to be greater than the required 1.5.

Based on the results of the testing performed, it is our opinion that the upper Clayey to Very Clayey Fine Sand (SC) (Layer 1) **soils are not suitable** for use as the Clay Layer material unless blended with the Layer 2 soils, as discussed below.

Based on the results of the laboratory testing and calculations performed, the deeper Clay with Sand and Silt to Sandy Clay (CH) (Layer 2) materials are suitable for use as the Clay Layer material.

Based on the results of the laboratory testing and calculations performed for the Jacob's Mixed Sample #2 (stockpiled and blended) soil sample, if the upper Clayey to Very Clayey Fine Sand (SC) (Layer 1) soils are blended with the deeper Clay with Sand and Silt to Sandy Clay (CH) (Layer 2) soils, the blended material should be suitable for use as the Clay Layer material. The Layer 1 soils

should be mixed with the Layer 2 soils to produce a blended material similar to the tested Jacob's Mixed Sample #2 (stockpiled and blended) soil sample.

As discussed above, at the time of our test pit exploration, the upper 5 to 6 feet of Layer 1 (Clayey to Very Clayey Fine Sand (SC)) was noted to be more sandy and to contain more and thicker sand layers than the deeper Layer 1 and Layer 2 soils. Therefore, we recommend that extreme care be taken when mixing this shallow soil strata with the Layer 2 soils to ensure that the sand seams present in the material are properly mixed or avoided in order to avoid possible low permeability test results during construction.

We appreciate the opportunity to be of continuing service on this phase of your project. If you have any questions concerning this report, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

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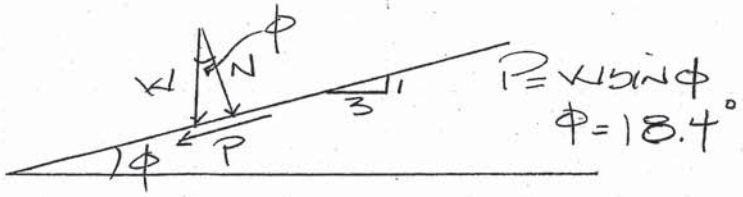
PROJECT: TRLF PROJECT NO.: 0006-0008

CALC'D BY: [illegible] DATE.: 10/2014 CHK'D BY: _____ DATE: _____ SHEET 1 OF 7

Clay Layer Sliding Calculations

Internal Shear

Using Triaxial Shear Test Results (attached)



$\gamma_{D\,Avg} = 77.8\,pcf$

$w_{Avg} = 41.7\%$

$\gamma_{sat} = 77.8(1.417) = \underline{110.2\,pcf}$

Sliding at Mid Layer:

Driving Force ⇒ $P = W \sin\phi$

$W = 0.5'(110.2) + 2Ft$ Vegetative Cover

$= 55.11\,psf + (2')(118.3)(0.90)^{(1)} = \underline{268.1\,psf}$

$P = 268.1 \sin 18.4° = \underline{84.6\,psf}$

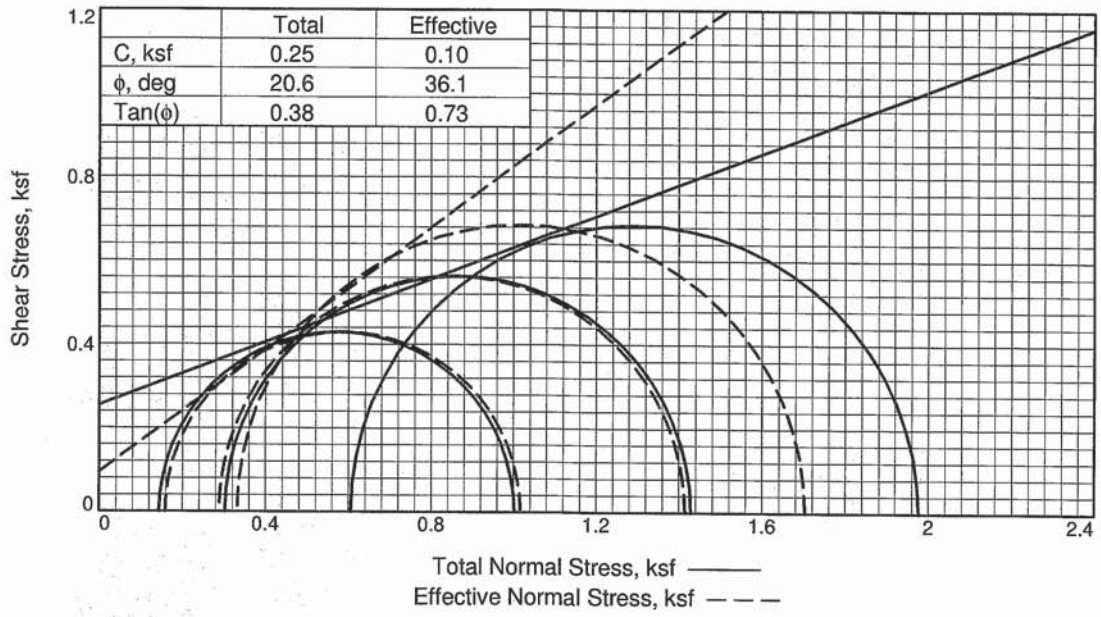
Resisting Force ⇒ $\alpha \cdot C$ = Adhesion + Cohesion

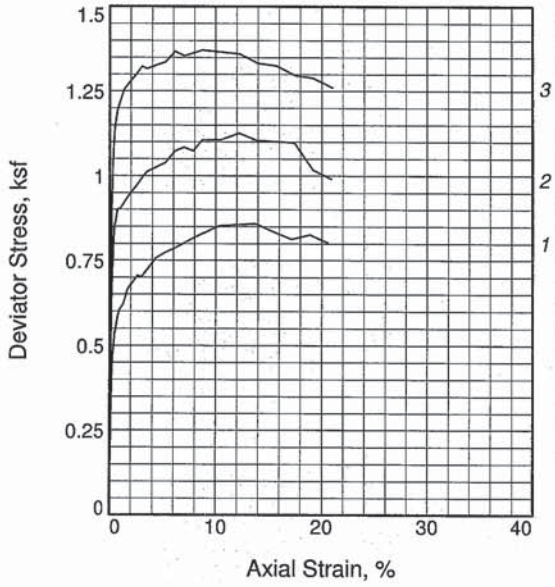
$\alpha = \underline{1}$ clay to clay

$C = \underline{250\,psf}$

$FS = \frac{250}{84.6} = \underline{2.95 > 1.5 \Rightarrow ok}$

Notes
(1) 90% Compaction





Sample No.		1	2	3
Initial	Water Content, %	40.4	42.3	39.9
	Dry Density, pcf	74.8	74.9	76.8
	Saturation, %	90.1	94.6	93.6
	Void Ratio	1.1609	1.1578	1.1030
	Diameter, in.	2.87	2.83	2.86
	Height, in.	5.89	5.82	5.82
At Test	Water Content, %	43.3	42.6	39.1
	Dry Density, pcf	76.2	76.9	80.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1215	1.1014	1.0128
	Diameter, in.	2.85	2.80	2.82
	Height, in.	5.85	5.77	5.73
Strain rate, in./min.		0.01	0.01	0.01
Eff. Cell Pressure, psi		1.00	2.10	4.20
Fail. Stress, ksf		0.86	1.13	1.37
Total Pore Pr., ksf		8.63	8.65	8.91
Strain, %		13.7	12.2	8.8
Ult. Stress, ksf				
Total Pore Pr., ksf				
Strain, %				
$\bar{\sigma}_1$ Failure, ksf		1.02	1.41	1.70
$\bar{\sigma}_3$ Failure, ksf		0.16	0.29	0.33

Type of Test:
CU with Pore Pressures
Sample Type: Remolded
Description: Grayish Brown Very Sandy CLAY

LL= 97 **PL=** 21 **PI=** 76
Specific Gravity= 2.588
Remarks:

Figure _____

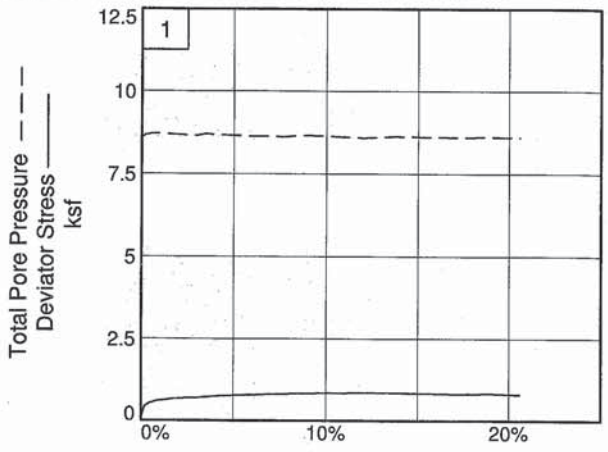
Client: Meskel and Associates Engineering

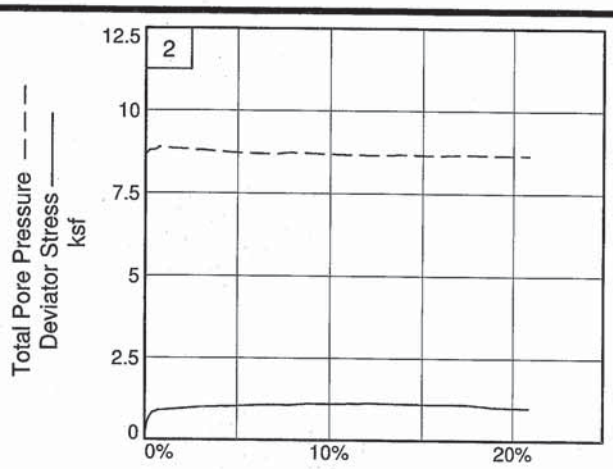
Project: Trailridge Landfill Phase 4

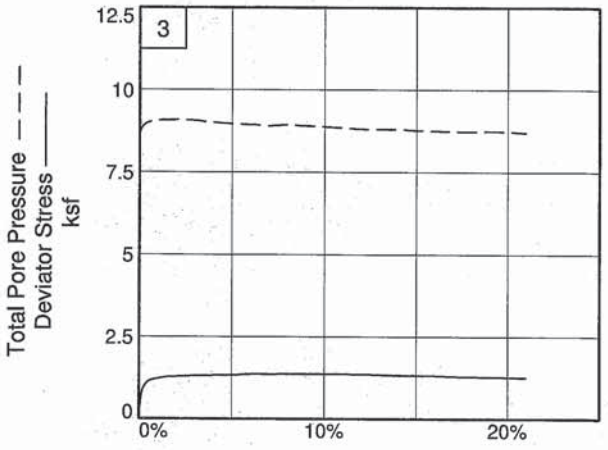
Source of Sample: Jacobs Pit Mixed Sample
Sample Number: 3
Proj. No.: 6736135237 **Date Sampled:** 8/24/13

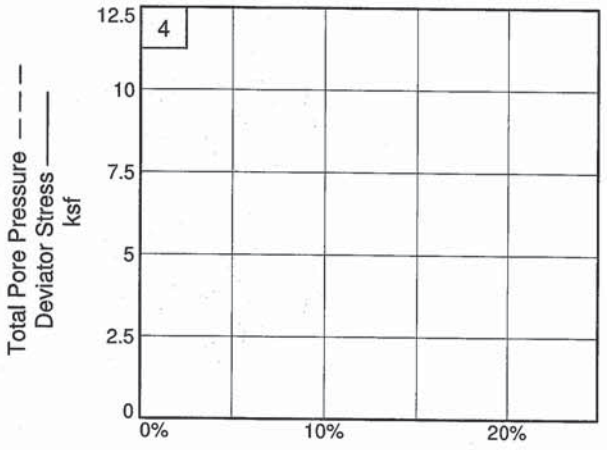
TRIAXIAL SHEAR TEST REPORT
AMEC E&I
Jacksonville, Florida

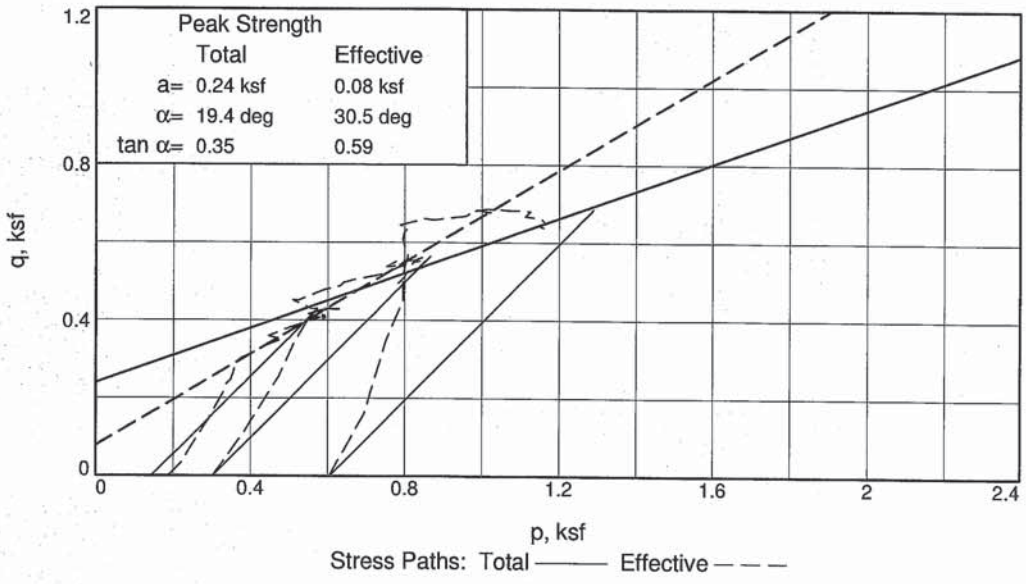
Tested By: F Basnett **Checked By:** Corey T. Chascin, E.I.











Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4
Source of Sample: Jacobs Pit Mixed Sample **Sample Number:** 3
Project No.: 6736135237 **Figure** _____

AMEC E&I

Tested By: F Basnett **Checked By:** Corey T. Chascin, E.I.

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meskelengineering.com

PROJECT: TRLF PROJECT NO.: 0006-0008

CALC'D BY: ADM DATE.: 10/2014 CHK'D BY: _____ DATE: _____ SHEET 4 OF 7

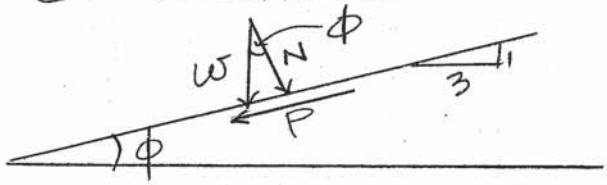
CLAY LAYER SLIDING CALCS (CONT)

INTERFACE SLIDING

VEGETATIVE / CLAY LAYER ⇒ 24" THICKNESS

$W = (2')(118.3 pcf)(0.90)^{(1)}$

$= 212.9$ psf



NORMAL FORCE, $N = W \cos\phi = 212.9(\cos 18.4)$

$= 201.97$ psf

RESISTING FORCE ⇒ FROM ATTACHED PLOT:

@ N = 201.97,

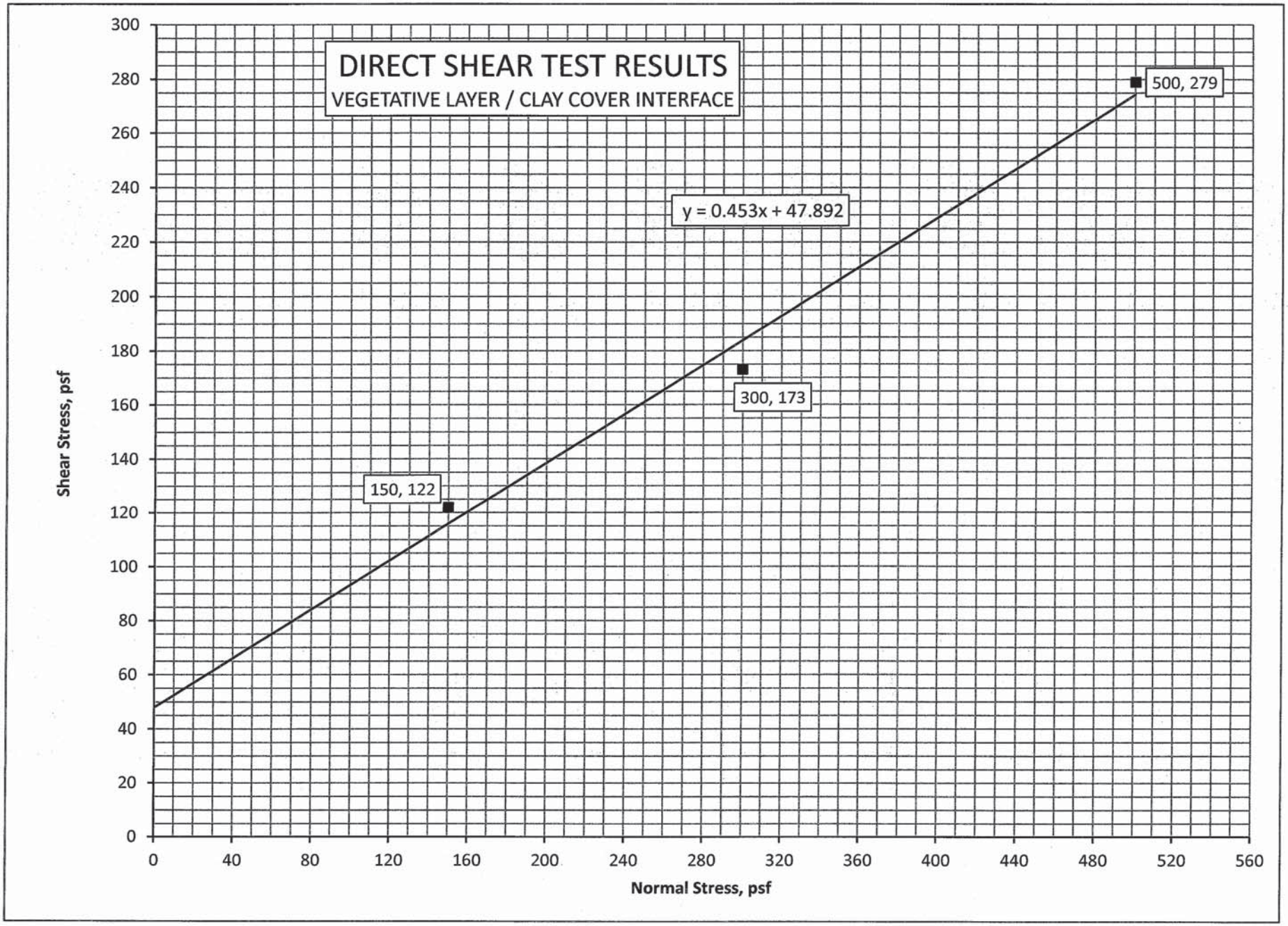
SHEAR STRESS = 0.453(202) + 47.9

= 139.40 psf

DRIVING FORCE ⇒ $P = W \sin\phi$

$= (212.9)\sin 18.4) = 67.20$ psf

$FS = \frac{139.4}{67.2} = 2.07 > 1.5 \Rightarrow$ OK


DIRECT SHEAR TEST RESULTS
VEGETATIVE LAYER / CLAY COVER INTERFACE
y = 0.453x + 47.892
500, 279
300, 173
150, 122
Shear Stress, psf
Normal Stress, psf
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560

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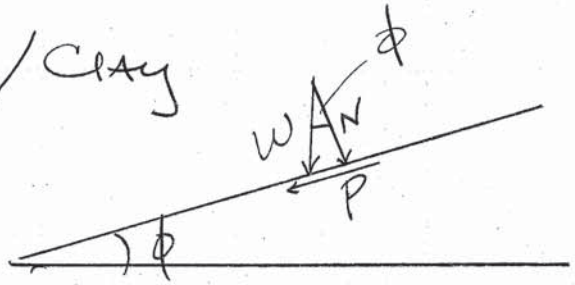
PROJECT: TRLF PROJECT NO.:

CALC'D BY: ADM DATE.: 10/2014 CHK'D BY: DATE: SHEET 6 OF 7

CLAY LAYER SLIDING CALCS (CONT)

INTERFACE SLIDING

INITIAL (INTERMEDIATE) LAYER / CLAY



W ⇒ Veg. Cover ⇒

$(2')(118.3)(0.9)$

$= 212.9 \text{ psf}$

Clay Cover ⇒ $(1 \text{ ft})(110.2)(0.80)$ (2)

$= 88.2 \text{ psf}$

$W = 212.9 + 88.2 = 301.1 \text{ psf}$

Normal Force $= (301.1)\cos 18.4° = 285.7 \text{ psf}$

* Resisting Force ⇒ From Attached Shear Test Results

@ $N = 285.7$,

Shear Stress $= 0.5129(285.7) + 22.5$

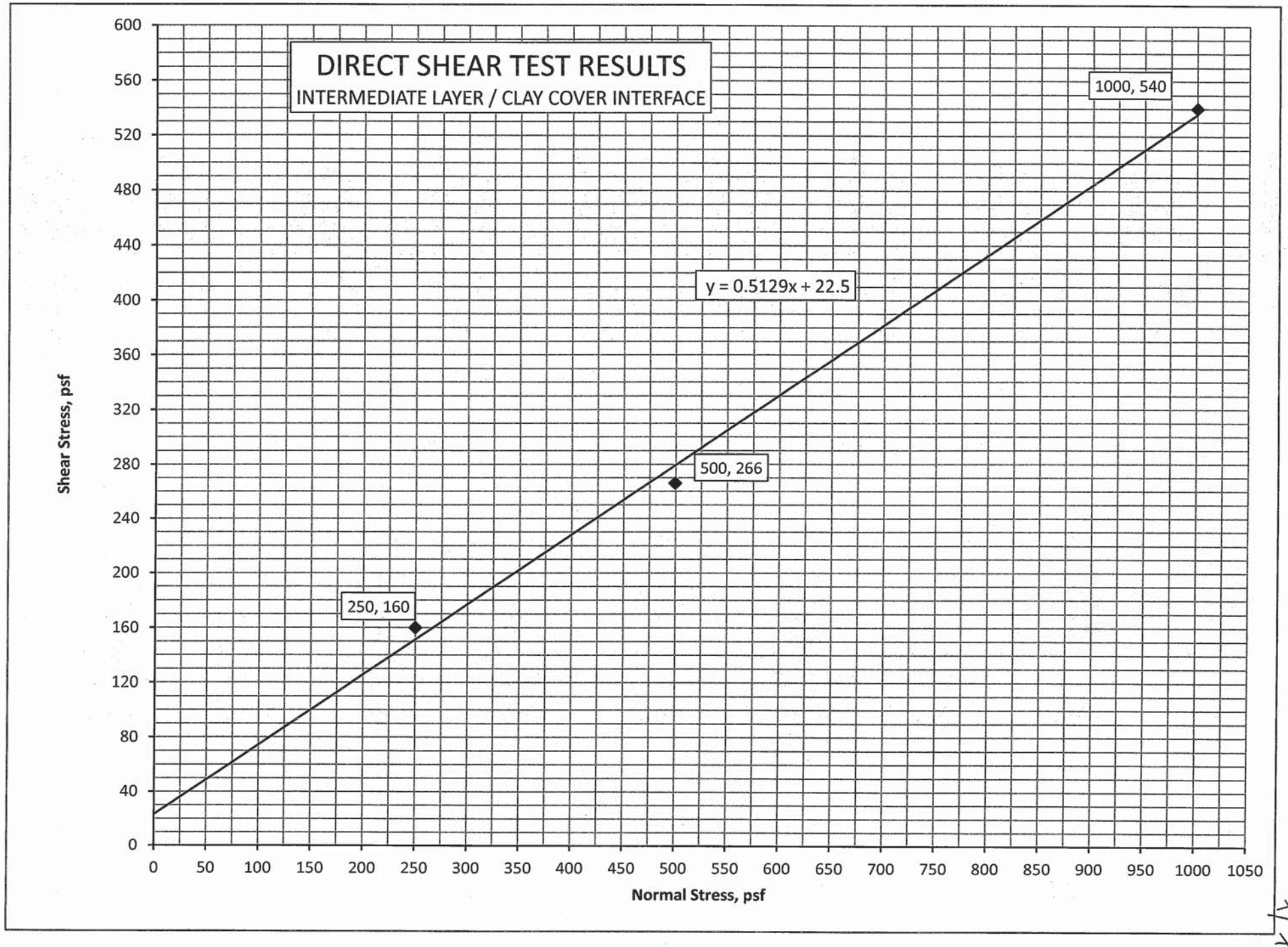
$= 169.0 \text{ psf}$

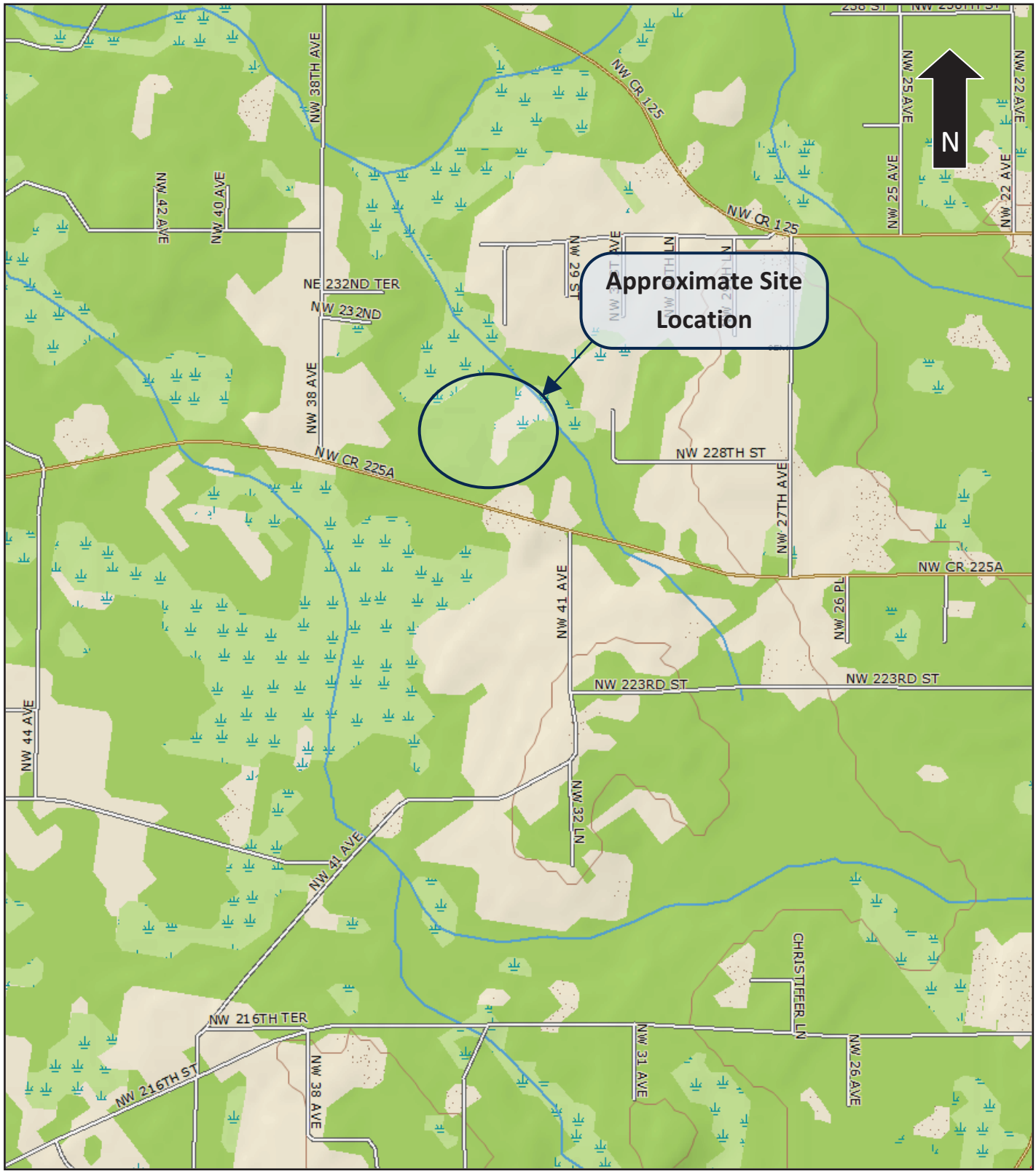
* Driving Force $= 301.1 \sin 18.4° = 95.0 \text{ psf}$

$$FS = \frac{169.0}{95.0} = 1.8 > 1.5 \Rightarrow \text{OK}$$

Notes

(2) 80% compaction


DIRECT SHEAR TEST RESULTS
INTERMEDIATE LAYER / CLAY COVER INTERFACE
y = 0.5129x + 22.5
250, 160
500, 266
1000, 540
Shear Stress, psf
Normal Stress, psf
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
600
0
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
950
1000
1050



Site Location Map

PREPARED BY	PROJECT NAME	
MAE meskelengineering.com	Trail Ridge Landfill Jacksonville, Florida	
	REFERERENCE	SCALE
	Delorme XMap 7.0	NTS
PREPARED FOR	MAE PROJECT NO.	**FIGURE NO.**
England-Thims & Miller, Inc.	0006-0008	1

COJ Trail Ridge Landfill Phase 4

Jacobs Pit
22787 NW 34th Ave.
Lawtey, FL 32058
Parcel # 01301-0-00100



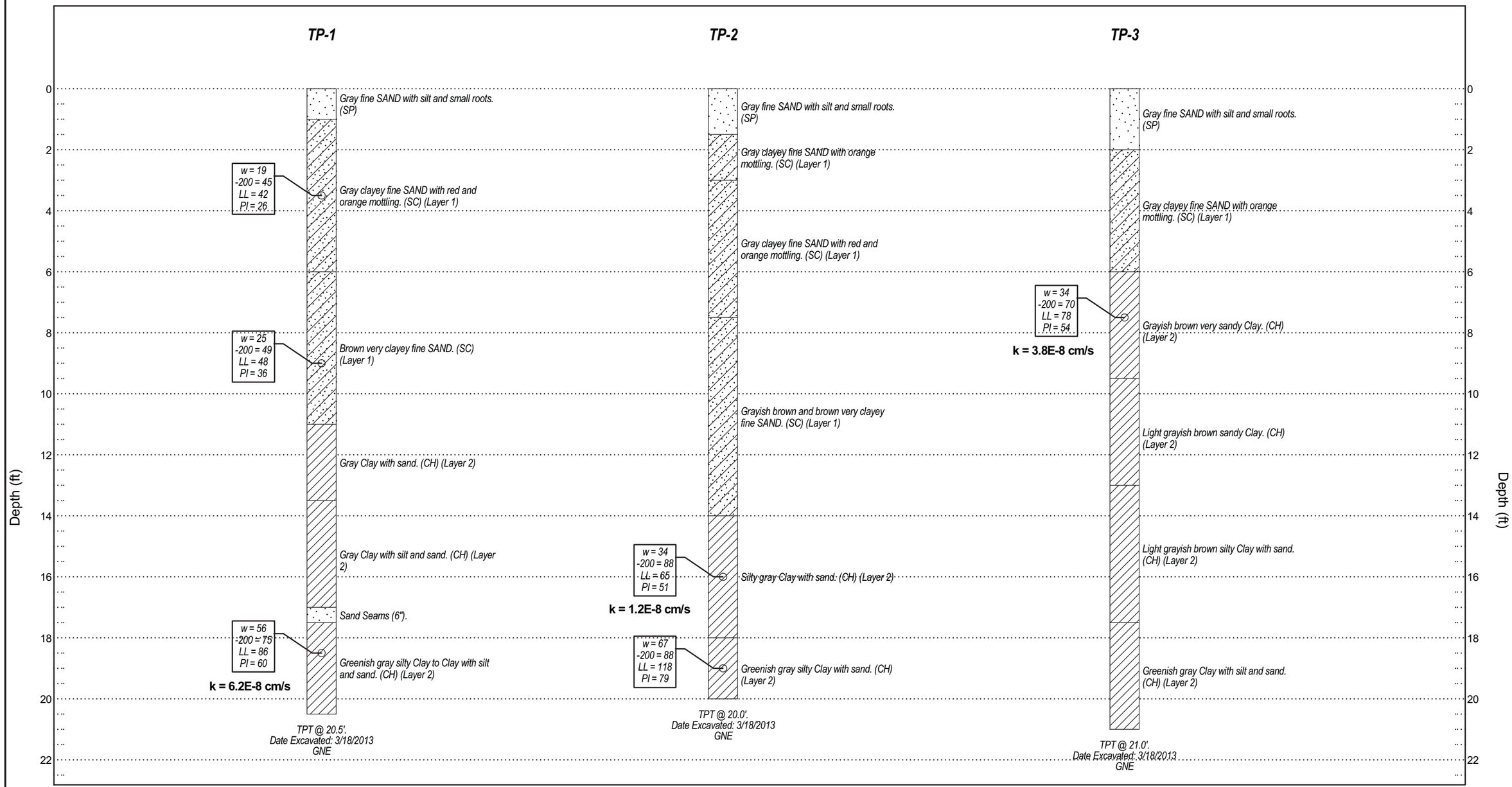
North

LEGEND:

(2) Test Pit Location

Test Pit Location Plan

PREPARED BY	PROJECT NAME	
Meskel & Associates Engineering, PLLC FL Certificate of Authorization No. 28142 8936 Western Way, Suite 12, Jacksonville, FL 32256	COJ Trail Ridge Landfill Phase 4 Jacksonville, Florida	
	REFERENCE	SCALE
		NTS
PREPARED FOR	MAE PROJECT NO.	FIGURE NO.
England-Thims & Miller	0006-0008	2



Legend

Fine Sand (SP)

Clayey Fine Sand (SC) (Layer 1)

Silty to Sandy Clay, Clay with silt and Sand (CH) (Layer 2)

(SP) *Unified Soil Classification System*

TPT *Test Pit Terminated at Depth Below Grade*

k = Permeability test results, cm/s

w *Natural Moisture Content (%)*

-200 *% Passing No. 200 U.S. Standard Sieve*

PI *Plasticity Index (%)*

GNE *Groundwater Not Encountered at time of excavation*

LL *Liquid Limit (%)*

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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FL Certificate of Authorization No. 28142
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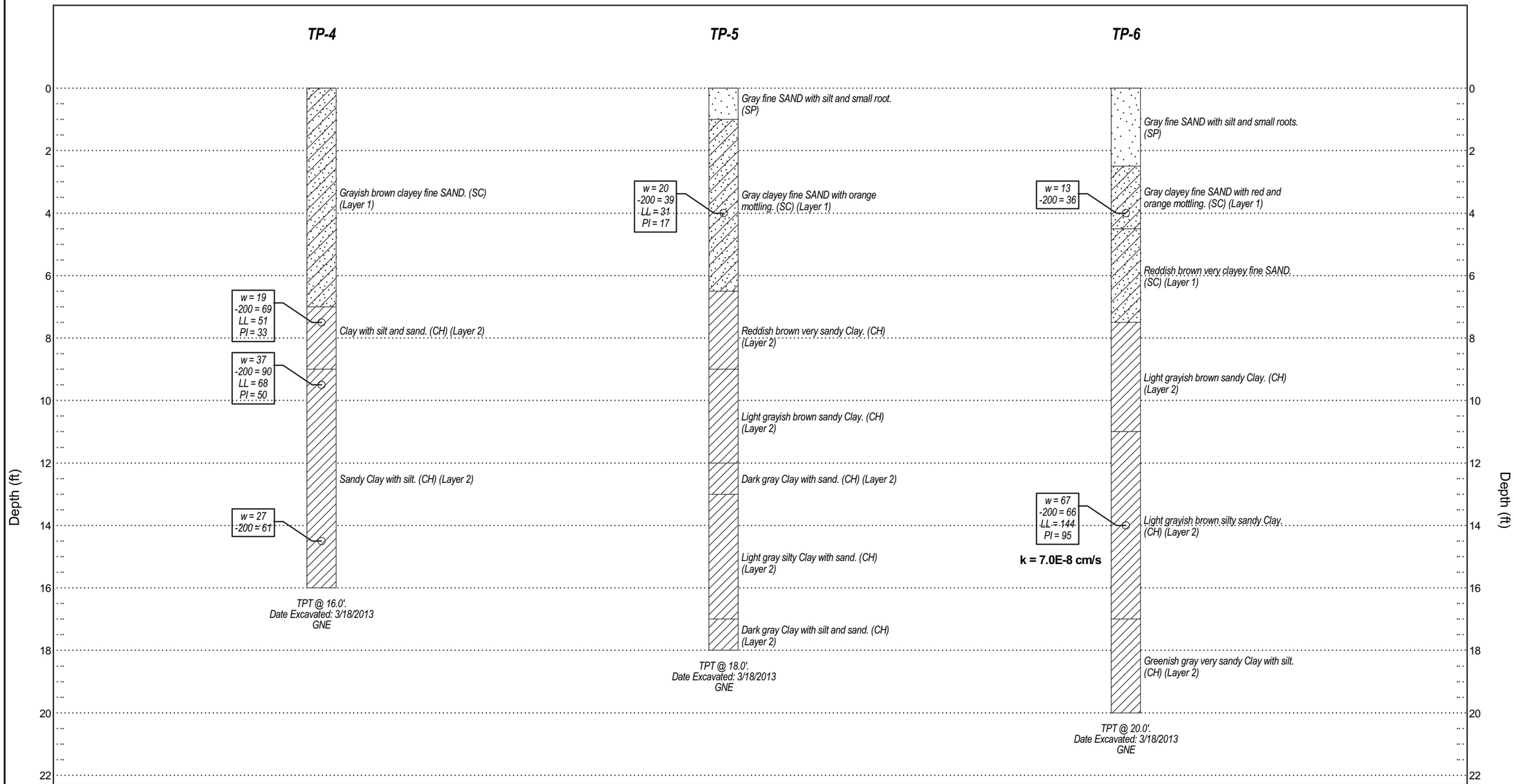
England-Thims & Miller, Inc.

DATE	MAE PROJECT NO.
11/6/2014	0006-0008

SHEET TITLE: *Generalized Soil Profiles*

PROJECT NAME: *Trail Ridge Landfill Phase 4*
Jacksonville, Florida

FIGURE NO. 3



Legend

Fine Sand (SP)

Clayey Fine Sand (SC) (Layer 1)

Silty to Sandy Clay, Clay with silt and Sand (CH) (Layer 2)

(SP) *Unified Soil Classification System*

TPT *Test Pit Terminated at Depth Below Grade*

k = Permeability test results, cm/s

w *Natural Moisture Content (%)*

-200 *% Passing No. 200 U.S. Standard Sieve*

PI *Plasticity Index (%)*

GNE *Groundwater Not Encountered at time of excavation*

LL *Liquid Limit (%)*

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

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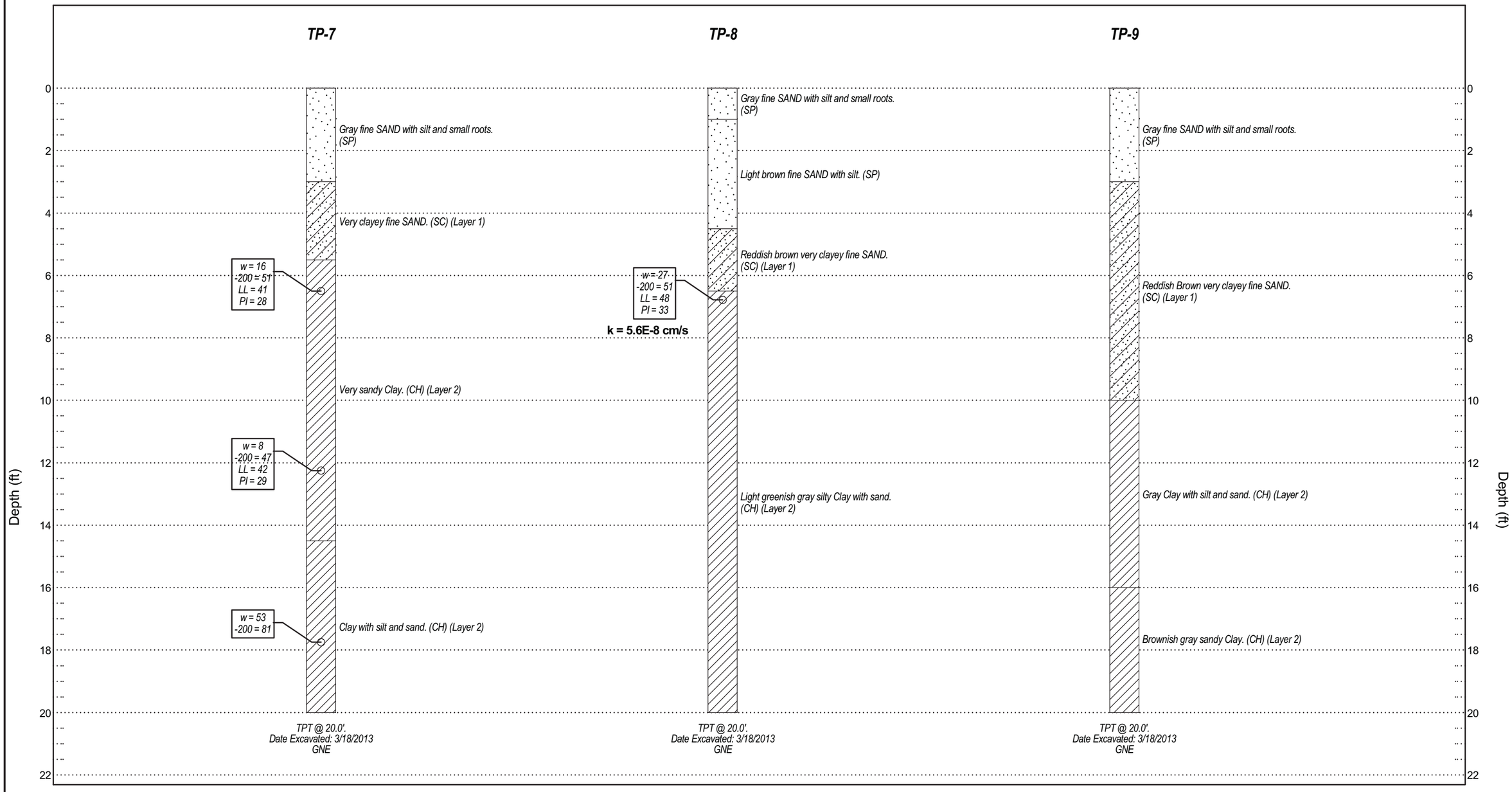
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DATE	MAE PROJECT NO.
11/6/2014	0006-0008

SHEET TITLE: *Generalized Soil Profiles*

PROJECT NAME: *Trail Ridge Landfill Phase 4*
Jacksonville, Florida

FIGURE NO. 4



Legend

Fine Sand (SP)

Clayey Fine Sand (SC) (Layer 1)

Silty to Sandy Clay, Clay with silt and Sand (CH) (Layer 2)

(SP) *Unified Soil Classification System*

TPT *Test Pit Terminated at Depth Below Grade*

k = Permeability test results, cm/s

w *Natural Moisture Content (%)*

-200 *% Passing No. 200 U.S. Standard Sieve*

PI *Plasticity Index (%)*

GNE *Groundwater Not Encountered at time of excavation*

LL *Liquid Limit (%)*

REVISIONS					
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DATE	MAE PROJECT NO.
11/6/2014	0006-0008

SHEET TITLE: *Generalized Soil Profiles*

PROJECT NAME: *Trail Ridge Landfill Phase 4*
Jacksonville, Florida

FIGURE NO. 5

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

CLAY SOURCE: Jacobs Pit
LOCATION*: See Attached Plan

DISTANCE FROM PROJECT SITE: Approximately 16 miles
ESTIMATED PROJECT QUANTITY:
ESTIMATED SOURCE QUANTITY:
NUMBER OF TEST PITS: See Attached Figure 2

*Attach a map showing the location of the clay borrow source and the horizontal and vertical extent of the clay borrow. Also include the location and approximate depth of all test pits.

TEST RESULTS:

A. TEST PIT NO. TP-1

Sample No. 1A

Clay Stratum Description:	Gray Clayey Fine Sand with Red and Orange Mottling
USC Soil Classification:	SC
Depth Below Surface	3 to 4 feet
Percent Fines:	45%
Atterberg Limits:	LL=42, PL=16, PI=26
Moisture Content:	19%
Standard Proctor Test:	NT
Hydraulic Conductivity: @ Percent Standard Proctor, Percent Optimum Moisture	NT

B. TEST PIT NO. TP-1

Sample No. 1

Clay Stratum Description:	Brown Very Clayey Fine Sand
USC Soil Classification:	SC
Depth Below Surface	8.5 to 9.5 feet
Percent Fines:	49%
Atterberg Limits:	LL=48, PL=12, PI=36
Moisture Content:	25%
Standard Proctor Test:	NT
Hydraulic Conductivity: @ Percent Standard Proctor, Percent Optimum Moisture	NT

Approved by Contractor
Approved by QC Monitor
Approved by the QA Engineer

MAE Meskel & Associates ENGINEERING, PLLC
GEOTECHNICAL CONSTRUCTION TESTING & INSPECTION

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

TEST RESULTS:

A. TEST PIT NO. TP-1

Sample No. 4

Clay Stratum Description:	Greenish Gray Silty Clay to Clay with Silt (blocky)
USC Soil Classification:	CH
Depth Below Surface	18 to 19 feet
Percent Fines:	75%
Atterberg Limits:	LL=86, PL=26, PI=60
Moisture Content:	36%
Standard Proctor Test:	Maximum Dry Density = 85 pcf
	Optimum Moisture Content = 33%
Hydraulic Conductivity: @ 77% Standard Proctor, 36% Optimum Moisture	6.1E-08 cm/sec

B. TEST PIT NO. TP-2

Sample No. 1

Clay Stratum Description:	Greenish Gray Silty Clay (crumbly)
USC Soil Classification:	CL
Depth Below Surface	16 to 17
Percent Fines:	88%
Atterberg Limits:	LL=65, PL=14, PI=51
Moisture Content:	34%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ 88% Standard Proctor, 30%Percent Optimum Moisture	1.2E-8 cm/sec

Approved by Contractor _____

Approved by QC Monitor _____

Approved by the QA Engineer _____

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

TEST RESULTS:

A. TEST PIT NO. TP-2

Sample No. 2

Clay Stratum Description:	Greenish Gray Clay (blocky)
USC Soil Classification:	CH
Depth Below Surface	18 to 19 feet
Percent Fines:	88%
Atterberg Limits:	LL=118, PL=39, PI=79
Moisture Content:	67%
Standard Proctor Test:	NT
Hydraulic Conductivity: @ Percent Standard Proctor,	NT

B. TEST PIT NO. TP-3

Sample No. 1:

Clay Stratum Description:	Grayish Brown Sandy Clay
USC Soil Classification:	CH
Depth Below Surface	7 to 8 feet
Percent Fines:	70%
Atterberg Limits:	LL=78, PL=24, PI=54
Moisture Content:	37%
Standard Proctor Test:	Maximum Dry Density = 87 pcf
	Optimum Moisture Content = 31%
Hydraulic Conductivity: @ 84% Standard Proctor, 37% Optimum Moisture	3.8E-08 cm/sec

Approved by Contractor _____

Approved by QC Monitor _____

Approved by the QA Engineer _____

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

TEST RESULTS:

A. TEST PIT NO. TP-4

Sample No. 1:

Clay Stratum Description:	Clay with Silt and Sand
USC Soil Classification:	CH
Depth Below Surface	7 to 8 feet
Percent Fines:	69%
Atterberg Limits:	LL=51, PL=18, PI=33
Moisture Content:	19%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

B. TEST PIT NO. TP-4

Sample No. 2:

Clay Stratum Description:	Sandy Clay with Silt
USC Soil Classification:	CH
Depth Below Surface	9 to 10 feet
Percent Fines:	90%
Atterberg Limits:	LL=68, PL=18, PI=50
Moisture Content:	37%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

Approved by Contractor _____
Approved by QC Monitor _____
Approved by the QA Engineer _____

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

TEST RESULTS:

A. TEST PIT NO. TP-4

Sample No. 3:

Clay Stratum Description:	Sandy Clay with Silt
USC Soil Classification:	CH
Depth Below Surface	14 to 15 feet
Percent Fines:	61%
Atterberg Limits:	NT
Moisture Content:	27%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

B. TEST PIT NO. TP-5

Sample No. 1:

Clay Stratum Description:	Gray Clayey Fine Sand with Orange Mottling
USC Soil Classification:	SC
Depth Below Surface	3 to 4 feet
Percent Fines:	39%
Atterberg Limits:	LL=31, PL=14, PI=17
Moisture Content:	20%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

Approved by Contractor _____
Approved by QC Monitor _____
Approved by the QA Engineer _____

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

TEST RESULTS:

A. TEST PIT NO. TP-6

Sample No. 1:

Clay Stratum Description:	Gray Clayey Fine Sand with Red and Orange Mottling
USC Soil Classification:	SC
Depth Below Surface	3 to 4 feet
Percent Fines:	36%
Atterberg Limits:	NT
Moisture Content:	13%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

B. TEST PIT NO. TP-6

Sample No. 2:

Clay Stratum Description:	Light Grayish Brown Silty Sandy Clay
USC Soil Classification:	CH
Depth Below Surface	13.5 to 14.5
Percent Fines:	66%
Atterberg Limits:	LL=144, PL=49, PI=95
Moisture Content:	67%
Standard Proctor Test:	Maximum Dry Density = 75 pcf
	Optimum Moisture Content = 38%
Hydraulic Conductivity:	
@ 68% Standard Proctor, 53% Optimum Moisture	7.0E-08 cm/sec (FAILING TEST)

Approved by Contractor _____
Approved by QC Monitor _____
Approved by the QA Engineer _____

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

TEST RESULTS:

A. TEST PIT NO. TP-7

Sample No. 1:

Clay Stratum Description:	Very Clayey Fine Sand
USC Soil Classification:	SC
Depth Below Surface	6 to 7 feet
Percent Fines:	51%
Atterberg Limits:	LL=51, PL=13, PI=28
Moisture Content:	16%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

B. TEST PIT NO. TP-7

Sample No. 2:

Clay Stratum Description:	Very Sandy Clay
USC Soil Classification:	CH
Depth Below Surface	12 to 13 feet
Percent Fines:	47%
Atterberg Limits:	LL=42, PL=13, PI=30
Moisture Content:	27%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

Approved by Contractor _____
Approved by QC Monitor _____
Approved by the QA Engineer _____

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

TEST RESULTS:

A. TEST PIT NO. TP-7

Sample No. 3:

Clay Stratum Description:	Clay with Silt and Sand
USC Soil Classification:	CH
Depth Below Surface	17 to 18 feet
Percent Fines:	81%
Atterberg Limits:	NT
Moisture Content:	53%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

B. TEST PIT NO. TP-8

Sample No. 2:

Clay Stratum Description:	Light Greenish Gray Silty Clay with Sand
USC Soil Classification:	CH
Depth Below Surface	7 to 8 feet
Percent Fines:	51%
Atterberg Limits:	LL=48, PL=15, PI=33
Moisture Content:	27%
Standard Proctor Test:	NT
Hydraulic Conductivity:	NT
@ Percent Standard Proctor, Percent Optimum Moisture	

Approved by Contractor _____
Approved by QC Monitor _____
Approved by the QA Engineer _____

TRAIL RIDGE LANDFILL - PHASE 4 CLOSURE
CLAY BORROW SOURCE - "Jacob's Pit"
PRE-QUALIFICATION FORM

TEST RESULTS:

A. JACOB'S PIT MIXED SAMPLE #2 (BLENDED STOCKPILE SAMPLE)

Sample No. 2:

Clay Stratum Description:	Gray Very Sandy Clay with Silt
USC Soil Classification:	CH
Depth Below Surface	NA - STOCKPILE SAMPLE
Percent Fines:	57%
Atterberg Limits:	LL=96, PL=22, PI=74
Moisture Content:	39%
Standard Proctor Test:	Maximum Dry Density = 92 pcf
	Optimum Moisture Content = 27%
Hydraulic Conductivity:	
@ 79% Standard Proctor, 39% Optimum Moisture	7.6E-09 cm/sec

B. TEST PIT NO.

Sample No. :

Clay Stratum Description:	
USC Soil Classification:	
Depth Below Surface	
Percent Fines:	
Atterberg Limits:	
Moisture Content:	
Standard Proctor Test:	
Hydraulic Conductivity:	
@ Percent Standard Proctor, Percent Optimum Moisture	

Approved by Contractor _____
Approved by QC Monitor _____
Approved by the QA Engineer _____

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TEST PIT TP-1

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** **LONGITUDE**

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** **HAMMER TYPE**

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0		Gray fine SAND with silt and small roots.	SP							
	S-1A	Gray clayey fine SAND with red and orange mottling. (Layer 1)	SC		19	45		42	26	
5										
	S-1	Brown very clayey fine SAND. (Layer 1)	SC		25	49		48	36	
10										
	S-2	Gray Clay with sand. (Layer 2)	CH							
15	S-3	Gray Clay with silt and sand. (Layer 2)	CH							
		Sand Seams (6").								
	S-4	Greenish gray silty Clay to Clay with silt and sand. (Layer 2)	CH		56	75		86	60	**k = 6.2E-8 cm/s**
20										

Bottom of test pit at 20.5 feet.

GROUND WATER LEVELS

NOTES k = Permeability test results, cm/s

AT TIME OF DRILLING ---

MAE TEST PIT WITH LAT/LONG - NEW TEMPLATE 7-30-12.GDT - 11/6/14 10:24 - F:\GINT\GINT FILES\PROJECTS\0006-0008\COJ TRAILRIDGE LANDFILL, PHASE 4-NEW.GPJ

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TEST PIT TP-2

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** **LONGITUDE**

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** **HAMMER TYPE**

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0		Gray fine SAND with silt and small roots.	SP							
		Gray clayey fine SAND with orange mottling. (Layer 1)	SC							
5		Gray clayey fine SAND with red and orange mottling. (Layer 1)	SC							
10		Grayish brown and brown very clayey fine SAND. (Layer 1)	SC							
15	S-1	Silty gray Clay with sand. (Layer 2)	CH		34	88		65	51	**k = 1.2E-8 cm/s**
20	S-2	Greenish gray silty Clay with sand. (Layer 2)	CH		67	88		118	79	

Bottom of test pit at 20.0 feet.

GROUND WATER LEVELS

NOTES k = Permeability test results, cm/s

AT TIME OF DRILLING ---

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TEST PIT TP-3

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** _____ **LONGITUDE** _____

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** _____ **HAMMER TYPE** _____

DEPTH (ft)	SAMPLE DEPTH	NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0			Gray fine SAND with silt and small roots.	SP							
5			Gray clayey fine SAND with orange mottling. (Layer 1)	SC							
		S-1	Grayish brown very sandy Clay. (Layer 2)	CH		34	70		78	54	**k = 3.8E-8 cm/s**
10			Light grayish brown sandy Clay. (Layer 2)	CH							
15			Light grayish brown silty Clay with sand. (Layer 2)	CH							
20			Greenish gray Clay with silt and sand. (Layer 2)	CH							

Bottom of test pit at 21.0 feet.

NOTES k = Permeability test results, cm/s

GROUND WATER LEVELS

▽ AT TIME OF DRILLING	▼
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TEST PIT TP-4

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** _____ **LONGITUDE** _____

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** _____ **HAMMER TYPE** _____

DEPTH (ft)	SAMPLE DEPTH	NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0											
5			Grayish brown clayey fine SAND. (Layer 1)	SC							
		S-1	Clay with silt and sand. (Layer 2)	CH		19	69		51	33	
10		S-2	Sandy Clay with silt. (Layer 2)	CH		37	90		68	50	
15		S-3				27	61				

Bottom of test pit at 16.0 feet.

NOTES _____

GROUND WATER LEVELS

▽ AT TIME OF DRILLING	▼
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TEST PIT TP-5

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** _____ **LONGITUDE** _____

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** _____ **HAMMER TYPE** _____

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0		Gray fine SAND with silt and small root.	SP							
5	S-1	Gray clayey fine SAND with orange mottling. (Layer 1)	SC		20	39		31	17	
		Reddish brown very sandy Clay. (Layer 2)	CH							
10		Light grayish brown sandy Clay. (Layer 2)	CH							
		Dark gray Clay with sand. (Layer 2)	CH							
15		Light gray silty Clay with sand. (Layer 2)	CH							
		Dark gray Clay with silt and sand. (Layer 2)	CH							

Bottom of test pit at 18.0 feet.

NOTES _____

GROUND WATER LEVELS

▽ AT TIME OF DRILLING	▼
---	---

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TEST PIT TP-6

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** **LONGITUDE**

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** **HAMMER TYPE**

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0		Gray fine SAND with silt and small roots.	SP							
	S-1	Gray clayey fine SAND with red and orange mottling. (Layer 1)	SC		13	36				
5		Reddish brown very clayey fine SAND. (Layer 1)	SC							
10		Light grayish brown sandy Clay. (Layer 2)	CH							
	S-2	Light grayish brown silty sandy Clay. (Layer 2)	CH		67	66		144	95	**k = 7.0E-8 cm/s**
15		Greenish gray very sandy Clay with silt. (Layer 2)	CH							
20		Bottom of test pit at 20.0 feet.								

GROUND WATER LEVELS

NOTES k = Permeability test results, cm/s

AT TIME OF DRILLING ---

MAE TEST PIT WITH LAT/LONG - NEW TEMPLATE 7-30-12.GDT - 11/6/14 10:24 - F:\GINT\GINT FILES\PROJECTS\0006-0008\COJ TRAILRIDGE LANDFILL, PHASE 4-NEW.GPJ

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TEST PIT TP-7

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** _____ **LONGITUDE** _____

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** _____ **HAMMER TYPE** _____

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0		Gray fine SAND with silt and small roots.	SP							
5		Very clayey fine SAND. (Layer 1)	SC							
	S-1	Very sandy Clay. (Layer 2)	CH		16	51		41	28	
10	S-2				8	47		42	29	
15	S-3	Clay with silt and sand. (Layer 2)	CH		53	81				
20										

Bottom of test pit at 20.0 feet.

NOTES _____

GROUND WATER LEVELS

▽ AT TIME OF DRILLING	▼
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TEST PIT TP-8

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** **LONGITUDE**

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** **HAMMER TYPE**

DEPTH (ft)	SAMPLE DEPTH	NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0			Gray fine SAND with silt and small roots.	SP							
			Light brown fine SAND with silt.	SP							
5			Reddish brown very clayey fine SAND. (Layer 1)	SC							
		S-1	Light greenish gray silty Clay with sand. (Layer 2)	CH		27	51		48	33	**k = 5.6E-8 cm/s**
10											
15											
20											

Bottom of test pit at 20.0 feet.

GROUND WATER LEVELS

NOTES k = Permeability test results, cm/s

▽ AT TIME OF DRILLING	▼
---	---

MAE TEST PIT WITH LAT/LONG - NEW TEMPLATE 7-30-12.GDT - 11/6/14 10:24 - F:\GINT\GINT FILES\PROJECTS\0006-0008\COJ TRAILRIDGE LANDFILL, PHASE 4-NEW.GPJ

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TEST PIT TP-9

PROJECT NO. 0006-0008

PROJECT NAME Trail Ridge Landfill Phase 4

PROJECT LOCATION Jacksonville, Florida **CLIENT** England-Thims & Miller, Inc.

DATE STARTED 3/18/13 **COMPLETED** 3/18/13 **LATITUDE** _____ **LONGITUDE** _____

EXCAVATION CONTRACTOR ERC General Contracting Services, Inc. **EXCAVATION METHOD** Backhoe

LOGGED BY T.Almodovar **CHECKED BY** T.Meskel **GROUND ELEVATION** _____ **HAMMER TYPE** _____

DEPTH (ft)	SAMPLE DEPTH NUMBER	MATERIAL DESCRIPTION	USCS	GRAPHIC LOG	MOISTURE CONTENT (%)	FINES CONTENT (%)	ORGANIC CONTENT (%)	LIQUID LIMIT	PLASTICITY INDEX	REMARKS
0		Gray fine SAND with silt and small roots.	SP							
5	S-1	Reddish Brown very clayey fine SAND. (Layer 1)	SC							
10										
15	S-2	Gray Clay with silt and sand. (Layer 2)	CH							
20	S-3	Brownish gray sandy Clay. (Layer 2)	CH							

Bottom of test pit at 20.0 feet.

GROUND WATER LEVELS

NOTES _____

▽ AT TIME OF DRILLING	▼
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Project: Trail Ridge Landfill Phase 4
Jacobs Borrow Pit

Date: 1/29/2016
MAE Job No.: 0006-0008

Test Pit No.	Sample No.	Approx Sample Depth, ft	Soil Classification	Clay Layer Designation	Perm Test Result cm/s		Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
TP-1	1A	3 to 4	SC	LAYER 1	NT		42	16	26	19	45
	1	8.5 to 9.5			NT		48	12	36	25	49
	4	18 to 19	CH	LAYER 2	6.10E10-8	PASS	86	26	60	56	75
TP-2	1	15.5 to 16.5	CH	LAYER 2	1.20E-08	PASS	65	14	51	34	88
	2	18.5 to 19			NT		118	39	79	67	88
TP-3	1	7 to 8	CH	LAYER 2	3.8E10-8	PASS	78	24	54	34	70
TP-4	1	7 to 8	CH	LAYER 2	NT		51	18	33	19	69
	2	9 to 10	CH		NT		68	18	50	37	90
	3	14 to 15	CH		NT		NT	NT	NT	27	61
TP-5	1	3 to 4	SC	LAYER 1	NT		31	14	17	20	39
TP-6	1	3.5 to 4.5	SC	LAYER 1	NT		NT	NT	NT	13	36
	2	13.5 to 14.5	CH	LAYER 2	7.0E10-8	FAIL*	144	49	95	67	66
TP-7	1	6 to 7	CH	LAYER 2	NT		51	13	28	16	51
	2	12 to 13			NT		42	13	30	8	47
	3	17 to 18			NT		NT	NT	NT	53	81
TP-8	1	7 to 8	CH	LAYER 2	5.6E10-8	PASS	48	15	33	27	51
Jacob's Mixed Sample #2 (Stockpile)	2	---	CH	Layer 2	7.60E-09	PASS	96	22	74	39.0	57.0
TP-9	1	8.5 to 9.5	SC	Layer 1	NT		31	18	13	13	44
	2	15 to 20	CH	Layer 2	NT		73	19	54	53	86

NT = Not Tested

**** Multiple sand layers in sample***

Meskel & Associates Engineering

REPORT OF SOIL PERMEABILITY TESTING

Project: Trailridge Landfill **Project Number:** 6736-11-5123

Client MAE **Date Completed:** April 12, 2013

Sample Number: TP-1 #4 Jacobs Pit RETEST

Sample Information:

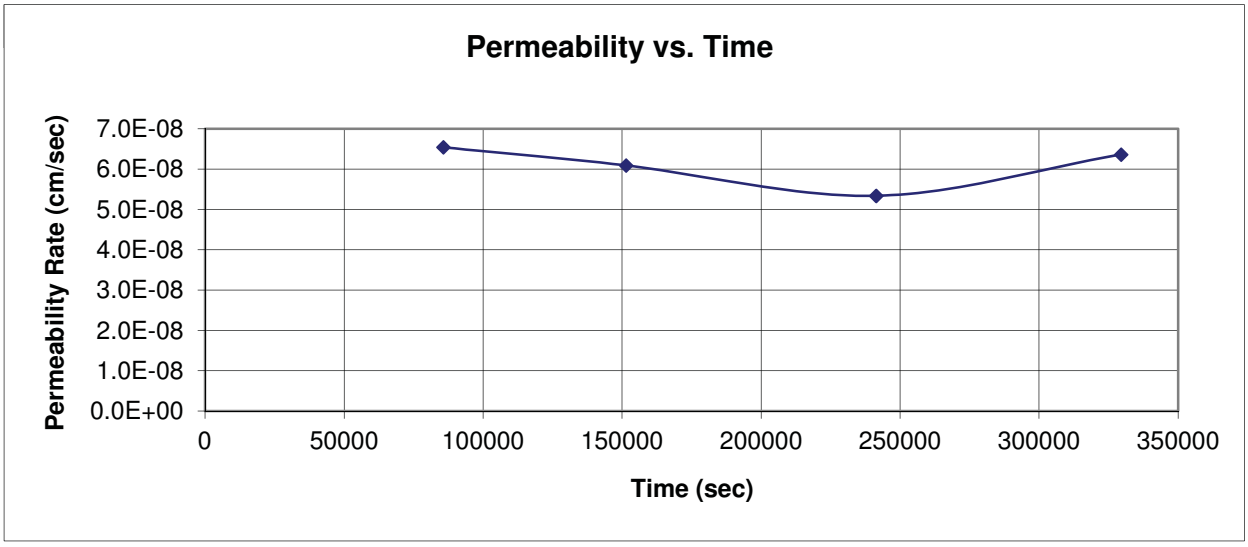
Dia. (in.)	2.86	**Length (in)**	2.99	**Weight (gr)**	529
Wet Density (pcf)	104.6	**Moisture Content (%)**	36.4	**Dry Density (pcf)**	76.7

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	Deaired water
Maximum Hydraulic Gradient:	3.0	**Minimum Hydraulic Gradient**	1.5
Maximum Consolidation Stress (psi)	3.5	**Minimum Consolidation Stress (psi)**	3.5

Permeability Rate

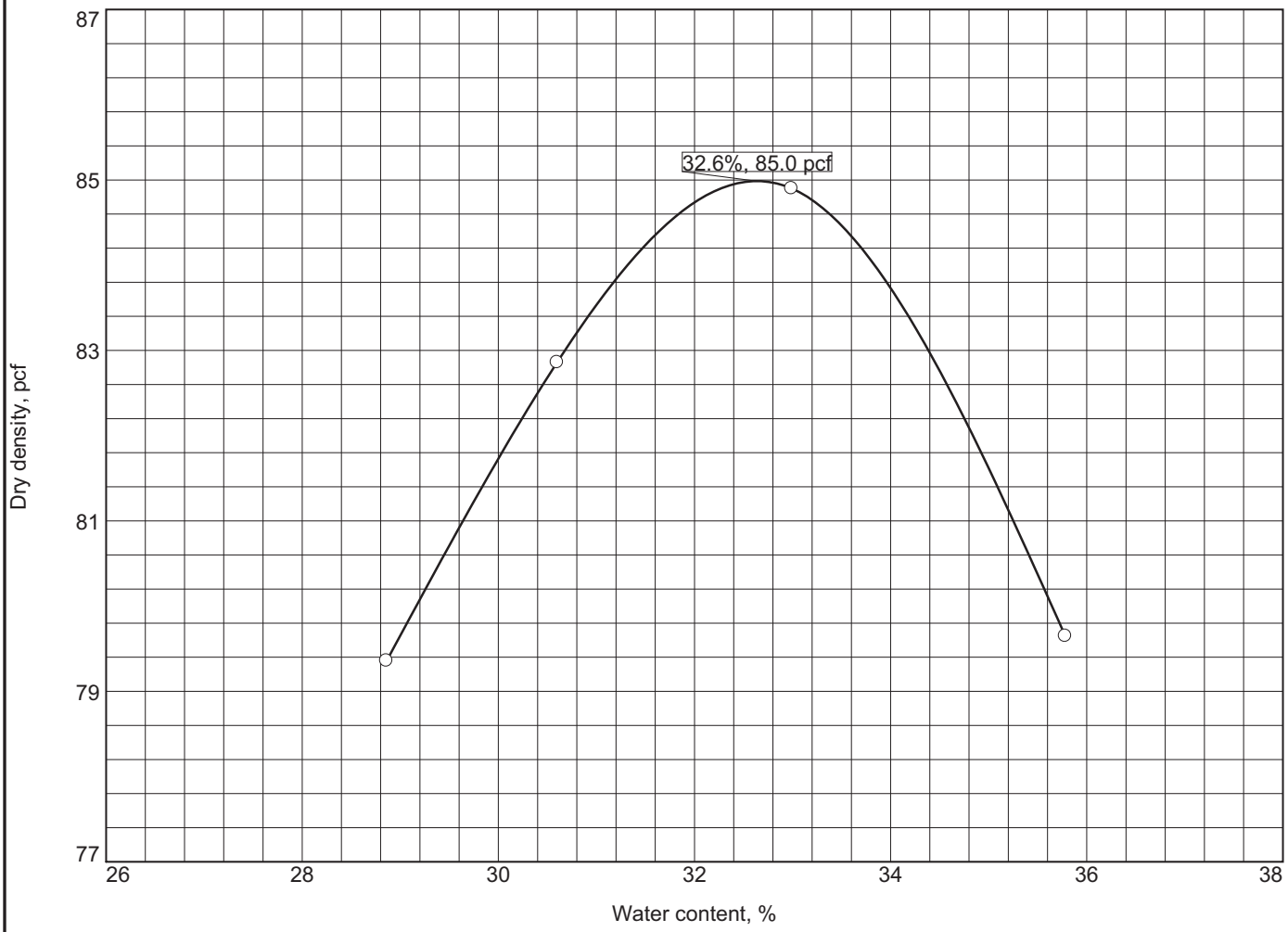
6.1E-08



Reviewed By:

Mike Holm, P.E.

COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
18.0'								

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 85.0 pcf Optimum moisture = 32.6 %	Gray

Project No. 6736135237 **Client:** Meskel
Project: Tailridge Landfill Phase 4

○ **Source of Sample:** TP-1 (Jacobs Pit) **Depth:** 18.0' **Sample Number:** TP-1

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: CM **Checked By:** Daniel L. Eisman, P.E.

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc (ETM) **Date Completed:** April 11, 2013

Sample Number: Jacobs Pit TP #2

Sample Information: Initial / Final

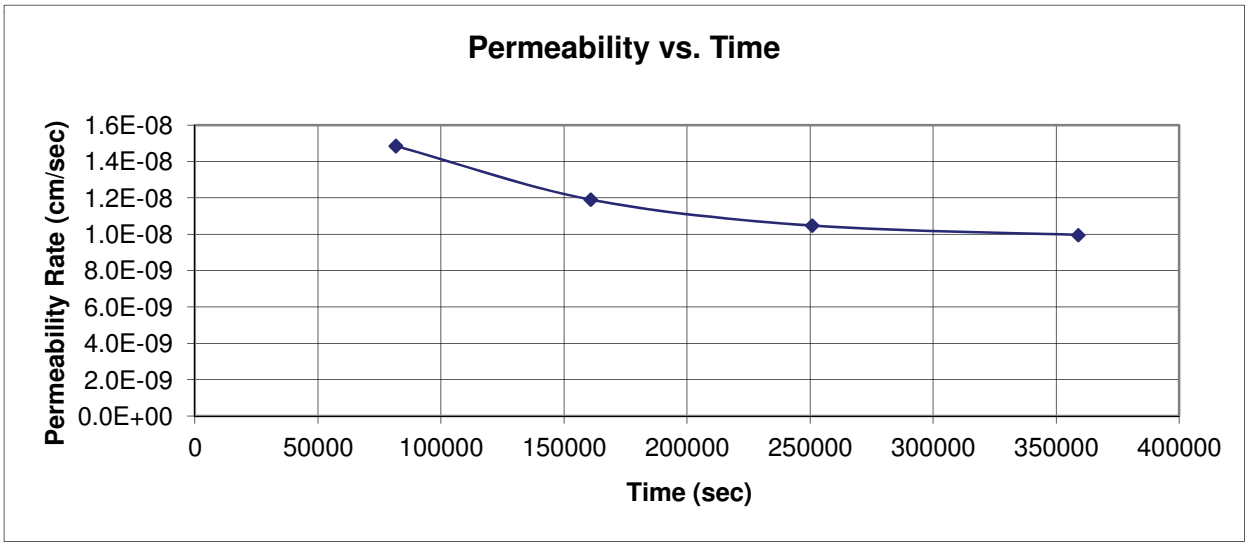
Dia. (in.)	2.86	2.87	**Length (in)**	3.81	3.76	**Weight (gr)**	732.3	746.9
Wet Density (pcf)	114.2		**Moisture Content (%)**	30.0		**Dry Density (pcf)**	87.9	
Final WD (pcf)	116.9		**Final Moisture (%)**	33.5		**Final DD (pcf)**	87.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	16.8	**Minimum Hydraulic Gradient**	8.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.2E-08



Reviewed By:

Daniel Eisman, P.E.

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc (ETM) **Date Completed:** April 10, 2013

Sample Number: Jacobs Pit TP 3 #1 **RETEST**

Sample Information: Initial / Final

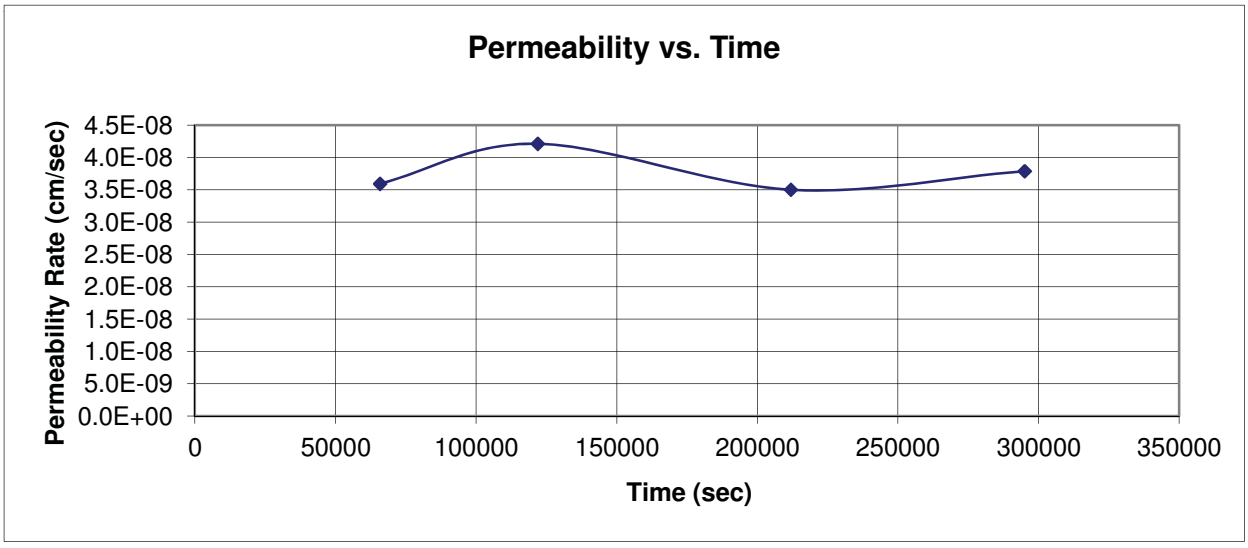
Dia. (in.)	2.87	2.88	**Length (in)**	3.13	3.15	**Weight (gr)**	604	611.2
Wet Density (pcf)	114.0		**Moisture Content (%)**	36.6		**Dry Density (pcf)**	83.5	
Final WD (pcf)	113.5		**Final Moisture (%)**	36.5		**Final DD (pcf)**	83.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	2.8	**Minimum Hydraulic Gradient**	1.4
Maximum Consolidation Stress (psi)	3	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

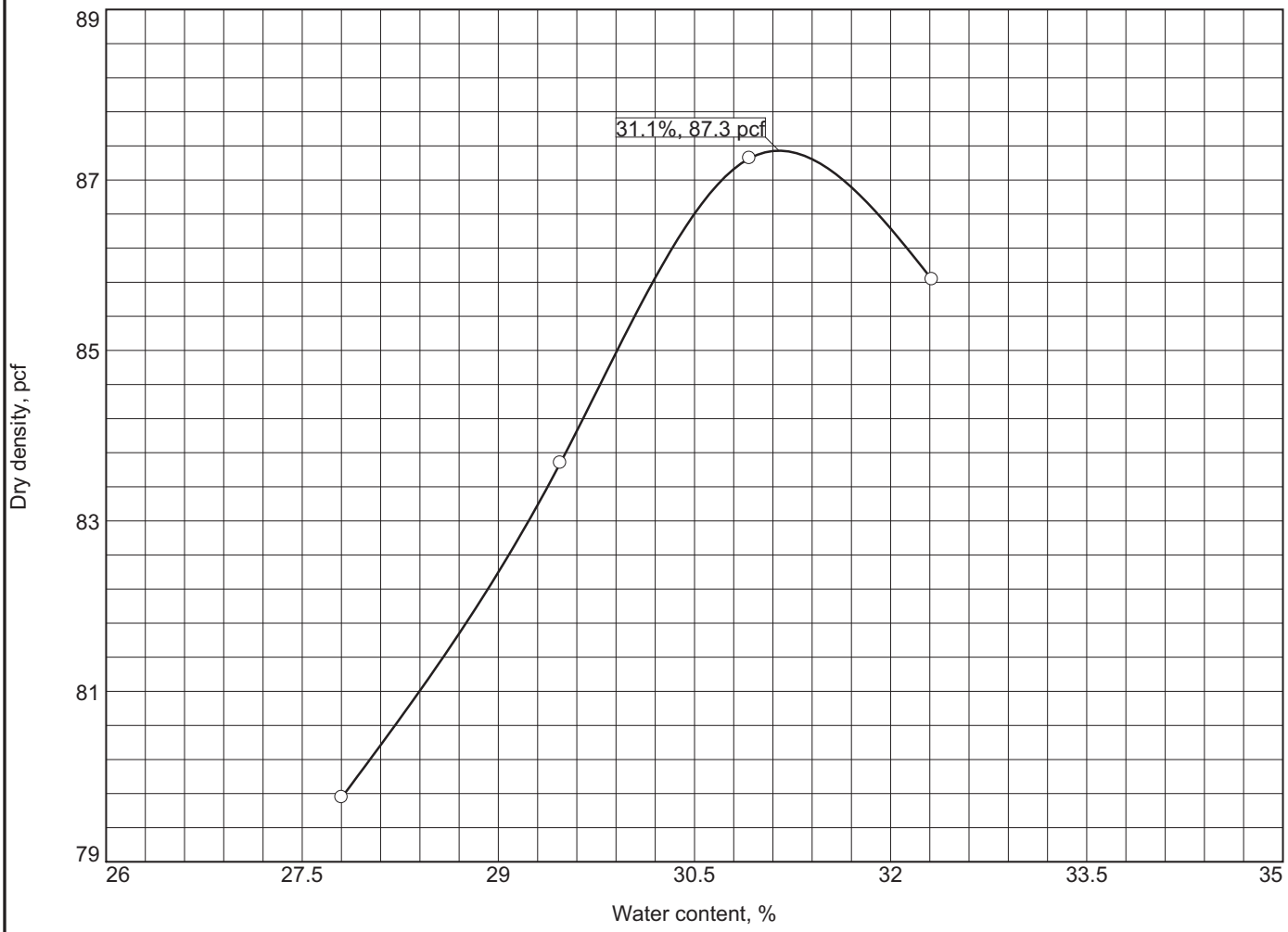
3.8E-08



Reviewed By:

Daniel Eisman, P.E.

COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
6.0'								

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 87.3 pcf Optimum moisture = 31.1 %	light Gray

Project No. 6736135237 **Client:** Meskel
Project: Tailridge Landfill Phase 4

○ **Source of Sample:** TP-3 (Jacobs Pit) **Depth:** 6.0' **Sample Number:** 3

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: CM **Checked By:** Daniel L. Eisman, P.E.

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** April 10, 2013

Sample Number: TP-6 #2 Jacobs Pit RETEST

Sample Information: Initial / Final

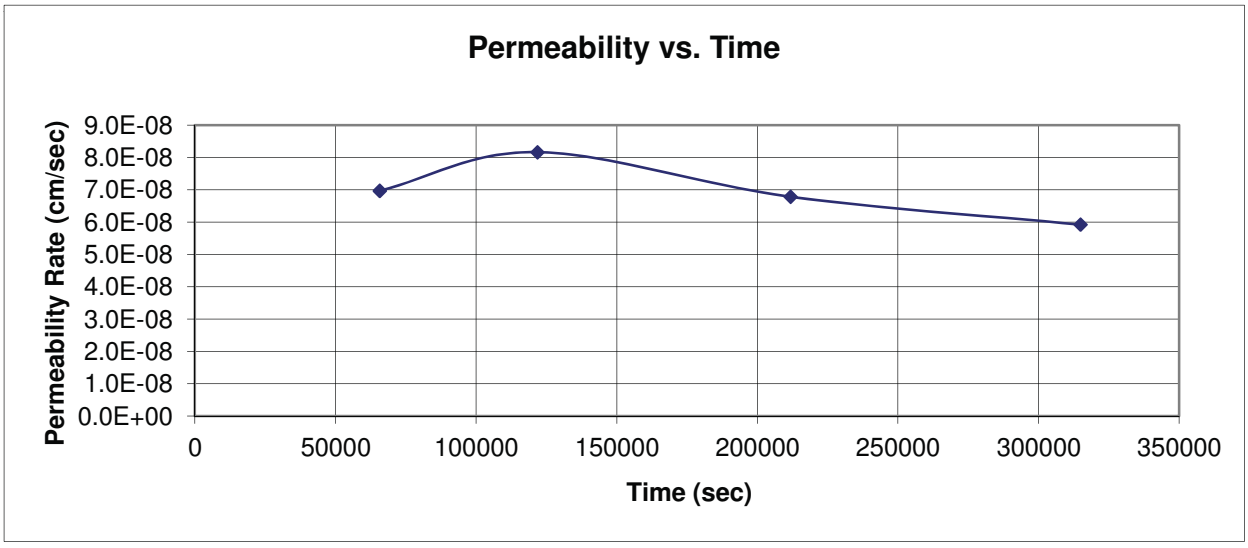
Dia. (in.)	2.86	2.79	**Length (in)**	3.03	3.11	**Weight (gr)**	527	539.6
Wet Density (pcf)	103.0		**Moisture Content (%)**	52.7		**Dry Density (pcf)**	67.5	
Final WD (pcf)	108.0		**Final Moisture (%)**	0.0		**Final DD (pcf)**	108.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	2.9	**Minimum Hydraulic Gradient**	1.4
Maximum Consolidation Stress (psi)	3	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

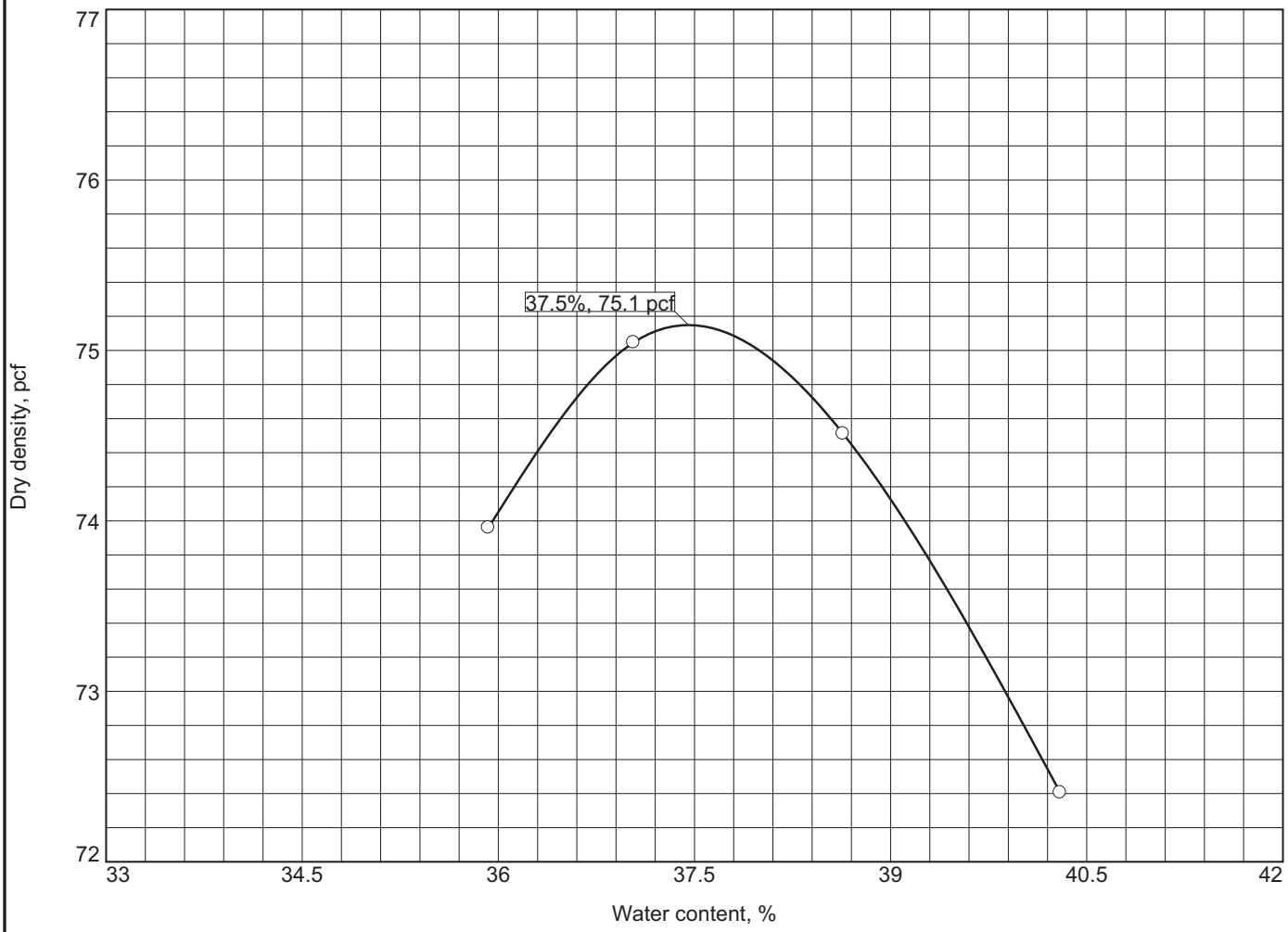
7.0E-08



Reviewed By:

Daniel Eisman, P.E.

COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
11.0								

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 75.1 pcf Optimum moisture = 37.5 %	

Project No. 6736135237 **Client:** Meskel
Project: Tailridge Landfill Phase 4

○ **Source of Sample:** TP-6 (Jacobs Pit) **Depth:** 11.0 **Sample Number:** 1

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: CM **Checked By:** Daniel L. Eisman, P.E.

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client MAE **Date Completed:** April 3, 2013

Sample Number: TP-8#1 Jacobs Pit

Sample Information:

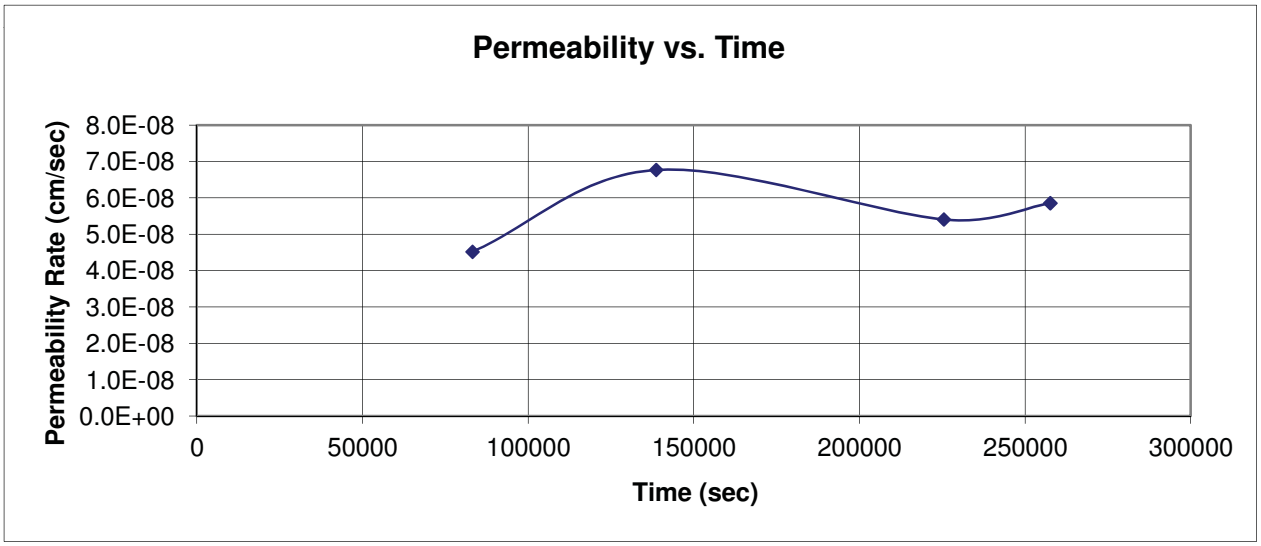
Dia. (in.)	2.88	**Length (in)**	3.77	**Weight (gr)**	754.7
Wet Density (pcf)	117.4	**Moisture Content (%)**	28.9	**Dry Density (pcf)**	91.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	2.3	**Minimum Hydraulic Gradient**	1.2
Maximum Consolidation Stress (psi)	3	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

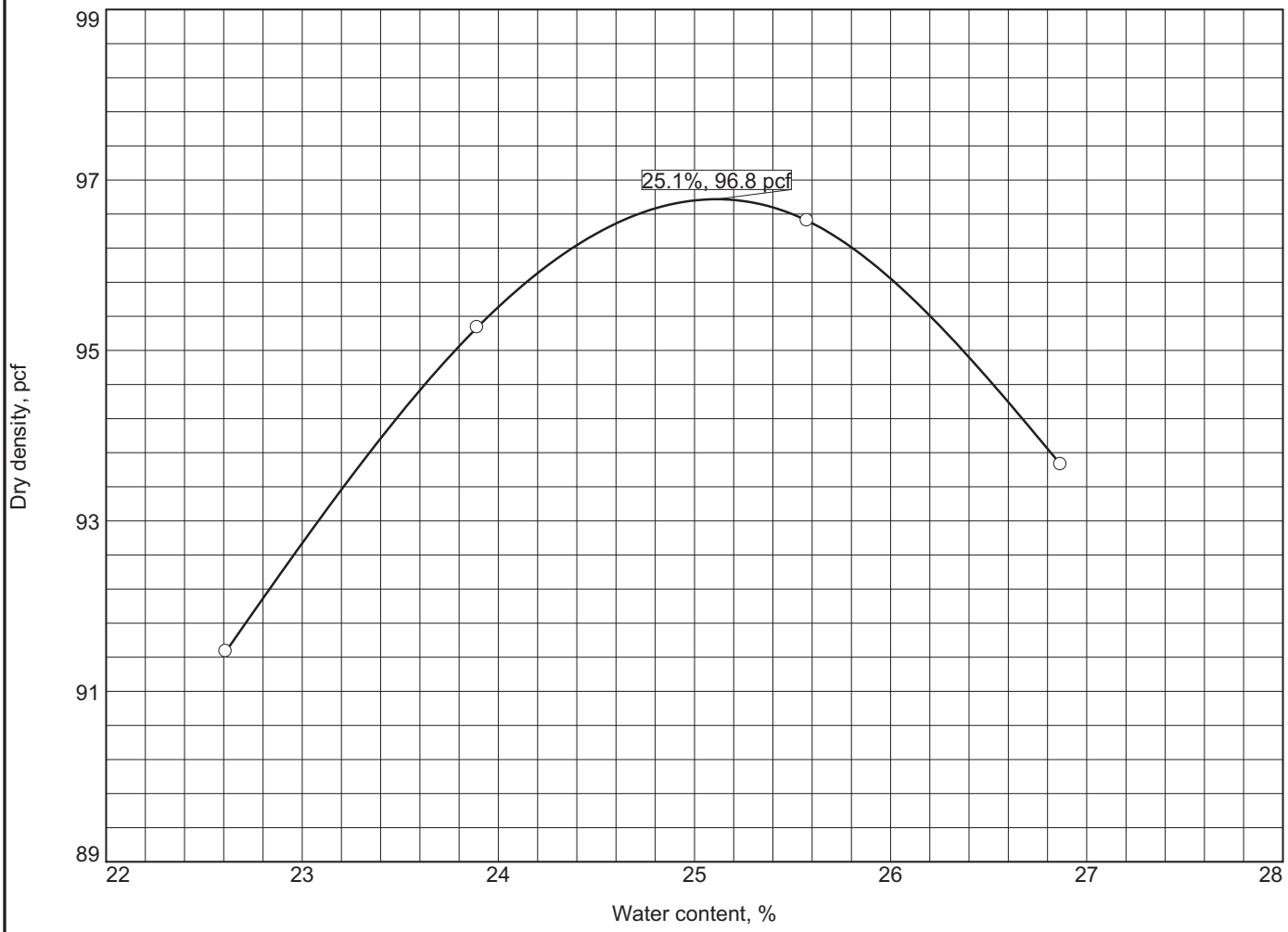
5.6E-08



Reviewed By:

Daniel Eisman, P.E.

COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
4.5'								

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 96.8 pcf Optimum moisture = 25.1 %	

Project No. 6736135237 **Client:** Meskel
Project: Tailridge Landfill Phase 4

○ **Source of Sample:** TP-8 (Jacobs Pit) **Depth:** 4.5' **Sample Number:** 1

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: CM **Checked By:** Daniel L. Eisman, P.E.

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** April 24, 2013

Sample Number: Jacobs Pit Clay Mixed Sample #2

Sample Information: Initial / Final

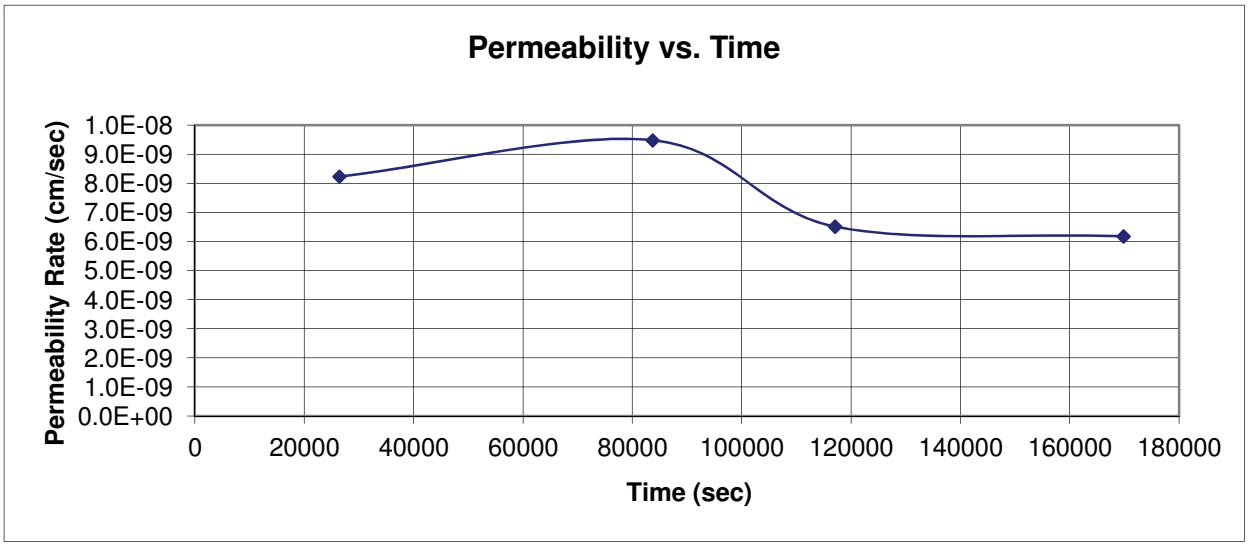
Dia. (in.)	2.88	2.87	**Length (in)**	3.12	3.16	**Weight (gr)**	584.9	600.92
Wet Density (pcf)	109.8		**Moisture Content (%)**	39.4		**Dry Density (pcf)**	78.8	
Final WD (pcf)	112.3		**Final Moisture (%)**	42.0		**Final DD (pcf)**	79.1	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.6	**Minimum Hydraulic Gradient**	10.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

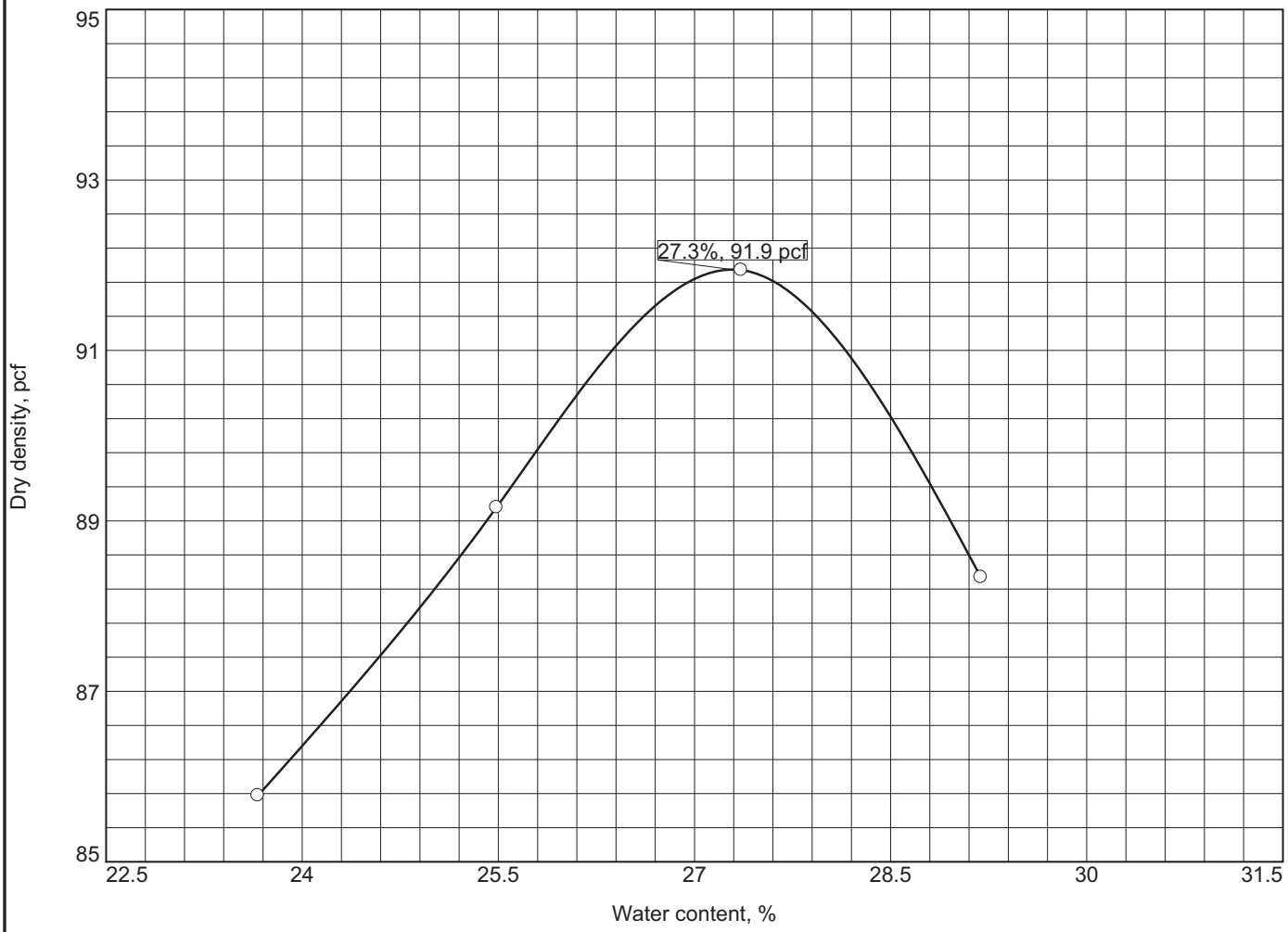
7.6E-09



Reviewed By:

Daniel Eisman, P.E.

COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	CH				96	74		56.8

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 91.9 pcf Optimum moisture = 27.3 %	Gray very sandy CLAY

Project No. 6736135237 **Client:** Meskel
Project: Trailridge Landfill Phase 4

○ **Sample Source:** Jacob's Pit Clay Mixed Sample #2 Rec'd 4-19-13 **Sample No.:** 2

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: CM **Checked By:** Daniel L. Eisman, P.E.

February 2, 2016

Meskel & Associates Engineering
Geotechnical ◤ Environmental ◤ Inspection ◤ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Clay Test Strip Qualification #1
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the monitoring and testing of the clay test strip placement at the subject site. The test strip was constructed on May 13, 2013, at approximately 50' E to W and 60' N to S. Coordinates: (N7972.719, E10506.830), (N7973.315, E10456.240), (N7909.906, E10457.701), (N7913.452, E10505.962), along a 3:1 section of the landfill within the project limits within unit 74 at approximately Terrace 6 near station 79+00N.. The test strip was constructed in 2 lifts (6" minimum). Each lift was checked in the field for thickness and density, and samples were obtained for index property and permeability testing in the lab. The field and laboratory results are shown in the table and test strip form attached.

Based on the results, we consider the test strip construction acceptable and recommend a minimum density requirement for clay placement of 80 percent of the Standard Proctor Maximum Dry Density (ASTM D698).

We appreciate the opportunity to assist England-Thims & Miller, Inc. on this phase of your project. If you have any questions concerning this report, please contact us.

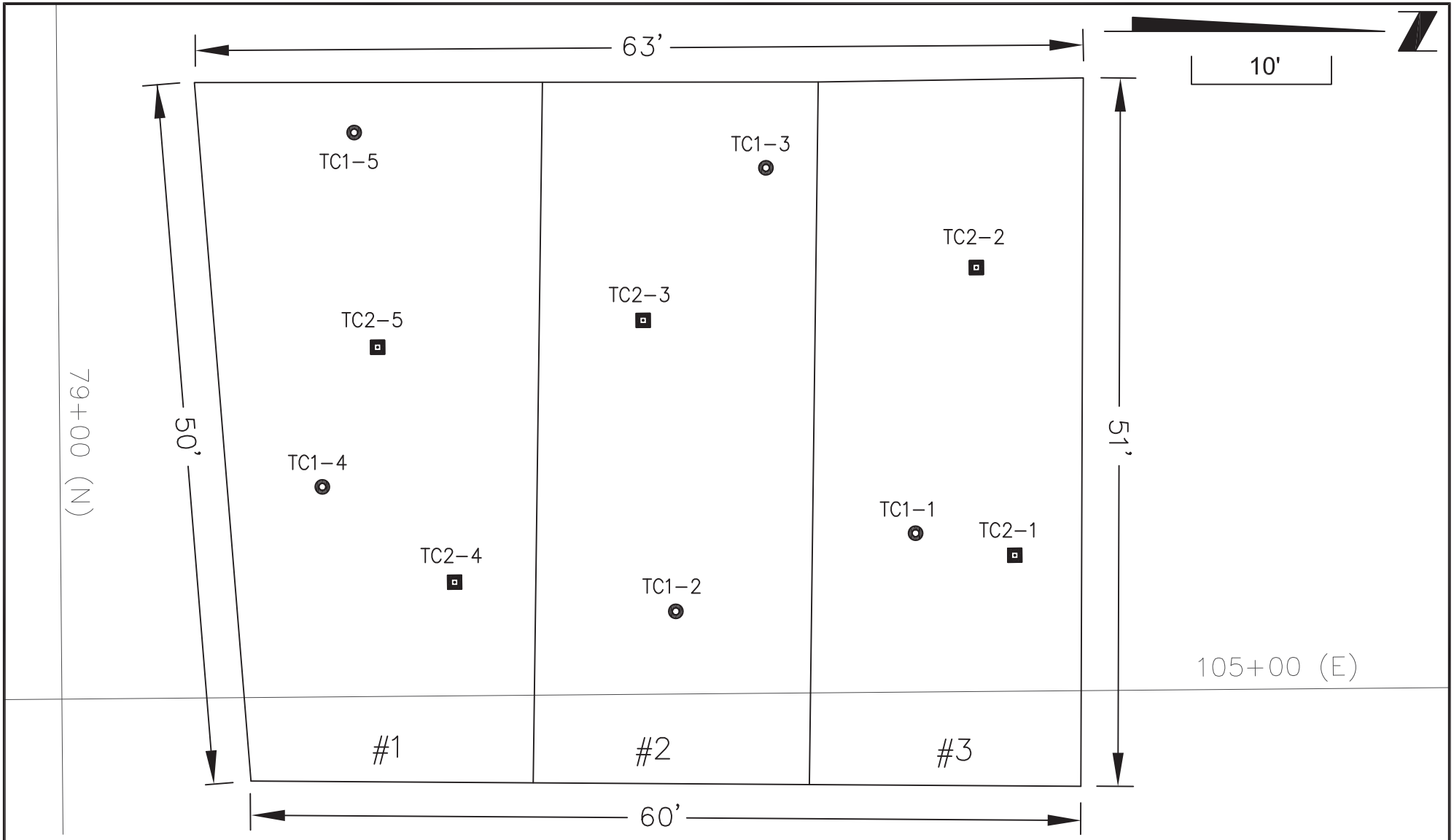
Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Samuel E. Lansdale
Quality Control Monitor

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

8936 Western Way, Suite 12
Jacksonville, Florida 32256
Phone: (904)519-6990 Fax: (904)519-6992



#1:	2 passes with JD–650 Dozer 19,750 lbs operating weight
#2:	2 passes with D–6 Dozer 36,000 lbs operating weight
#3:	2 passes SD–45 pad foot roller, static only 22,730 lbs operating weight 1 pass with Hamm 84" smooth drum roller, static only 22,730 lbs operating weight

Legend:		
5/13/2013	Lift 1–6" Clay	TC1–1 TO TC1–5
5/13/2013	Lift 2–6" Clay	TC2–1 TO TC2–5

MAE
Meskel & Associates Engineering, PLLC
FL Certificate of Authorization No. 28142
8936 Western Way, Suite 12, Jacksonville, FL 32256

CLIENT:

ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
TEST STRIP FOR INITIAL COVER AND CLAY

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
1

Trailridge Landfill Closure

TEST STRIP PERMEABILITY TEST RESULTS

Date: 5/13/2013

Compaction Target Value Sample No.: Jacobs Pit Clay Mixed Sample #2

Maximim Dry Density (pcf): 91.9

Optimum Moisture Content: 27.30%

Spec Minimum Perm Value: 6.67E-08

Location / Limits of Test Strip: Approximately 50' E to W and 60' N to S. Coordinates: (N7972.719, E10506.830), (N7973.315, E10456.240), (N7909.906, E10457.701), (N7913.452, E10505.962), along a 3:1 section of the landfill within the project limits within unit 74 at approximately Terrace 6 near station 79+00N.

Sample No.		Location by Station	Compaction Method	Field Thickness (in)	Field Dry Density (pcf)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Permeability Test Result
LIFT 1	TC1-1	N2142154.050, E326717.445	2 passes with SD-45 pad foot roller, static only 22,730 lbs operating weight	6.0	83.54	91%	34.6	4.9E-09	70	22	48	53.0	PASS
	TC1-2	N2142176.882, E326718.869	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	83.54	91%	34.6	7.6E-09	73	22	51	55.3	PASS
	TC1-3	N2142148.858, E326735.932	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	73.89	80%	36.5	3.1E-09	83	25	58	56.5	PASS
	TC1-4	N2142168.611, E326737.379	2 passes with JD-650 Dozer 19,750 lbs operating weight	6.0	76.83	84%	34.2	6.7E-09	82	24	58	54.6	PASS
	TC1-5	N2142152.105, E326759.150	2 passes with JD-650 Dozer 19,750 lbs operating weight	6.0	74.35	81%	35.0	9.8E-09	74	23	51	53.0	PASS
Lift 2	TC2-1	N2142178.608, E326719.378	2 passes with SD-45 pad foot roller, static only 22,730 lbs operating weight	12.5	82.16	89%	31.3	1.1E-08	77	19	58	54.2	PASS
	TC2-2	N2142159.583, E326717.482	2 passes with SD-45 pad foot roller, static only 22,730 lbs operating weight	12.0	80.60	88%	34.2	1.2E-08	74	20	54	50.0	PASS
	TC2-3	N2142158.678, E326735.532	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	78.94	86%	33.5	8.6E-09	80	24	56	52.1	PASS
	TC2-4	N2142174.522, E326730.666	2 passes with JD-650 Dozer 19,750 lbs operating weight	12.0	78.48	85%	31.4	9.0E-09	77	22	55	53.9	PASS
	TC2-5	N2142173.295, E326751.350	2 passes with JD-650 Dozer 19,750 lbs operating weight	12.0	83.35	91%	32.6	1.3E-08	76	23	53	51.3	PASS

TRAIL RIDGE LANDFILL
TEST STRIP FORM

Test Strip No.: 1 **Date:** 1st Lift: 05/13/13; 2nd Lift: 05/13/13

Location: Approximately 50' E to W and 60' N to S. Coordinates: (N7972.719, E10506.830), (N7973.315, E10456.240), (N7909.906, E10457.701), (N7913.452, E10505.962), along a 3:1 section of the landfill within the project limits within unit 74 at approximately Terrace 6 near station 79+00N.

Size (40' x 60' Minimum): 50' x 60'

Type of Equipment Used: JD-650 Dozer, D-6 Dozer, SD-45 Pad Foot Roller,

Pass/Fail?: PASS

TEST RESULTS:

Lift No.:	1	Lift No:	2
Percent Fines:	53.0% - 56.5%	Percent Fines:	51.3% - 54.2%
Atterberg Limits:	PI 48 to 58	Atterberg Limits:	PI 53 to 58
Moisture Content:	34.2% to 36.5%	Moisture Content:	31.3% to 34.2%

Field Density (%): (at 5 locations)

TC1-1	91
TC1-2	91
TC1-3	80
TC1-4	84
TC1-5	81

Field Density (%): (at 5 locations)

TC2-1	89
TC2-2	88
TC2-3	86
TC2-4	85
TC2-5	91

Thickness (in): (at 5 locations)

TC1-1	6
TC1-2	6
TC1-3	6
TC1-4	6
TC1-5	6

Thickness (in): (at 5 locations)

TC2-1	12.5
TC2-2	12
TC2-3	12
TC2-4	12
TC2-5	12

Hydraulic Conductivity: (at 8 locations)	
TC1-1	4.9E-09
TC1-2	7.6E-09
TC1-3	3.1E-09
TC1-4	6.7E-09
TC1-5	9.8E-09

Hydraulic Conductivity: (at 8 locations)	
TC2-1	1.1E-08
TC2-2	1.2E-08
TC2-3	8.6E-09
TC2-4	9.0E-09
TC2-5	1.3E-08

Attach sampling results as needed.

Approved by Contractor _____

Approved by QC Monitor _____

Approved by QA Engineer _____

February 2, 2016

Meskel & Associates Engineering
Geotechnical ◤ Environmental ◤ Inspection ◤ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Clay Test Strip Qualification #2
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the monitoring and testing of the clay test strip placement at the subject site. The test strip was constructed on October 10, 2014, at approximately 40' E to W and 85' N to S. Coordinates: (N79+00, E116+50), (N79+00, E117+35), (N78+60, E116+50), (N78+60, E117+35), along a 3:1 section of the landfill within the project limits within unit 59 at approximately Terrace 6. The test strip was constructed in 2 lifts (6" minimum). Each lift was checked in the field for thickness and density, and samples were obtained for index property and permeability testing in the lab. The field and laboratory results are shown in the table and test strip form attached.

Based on the results, we consider the test strip construction acceptable and recommend a minimum density requirement for clay placement of 80 percent of the Standard Proctor Maximum Dry Density (ASTM D698).

We appreciate the opportunity to assist England-Thims & Miller, Inc. on this phase of your project. If you have any questions concerning this report, please contact us.

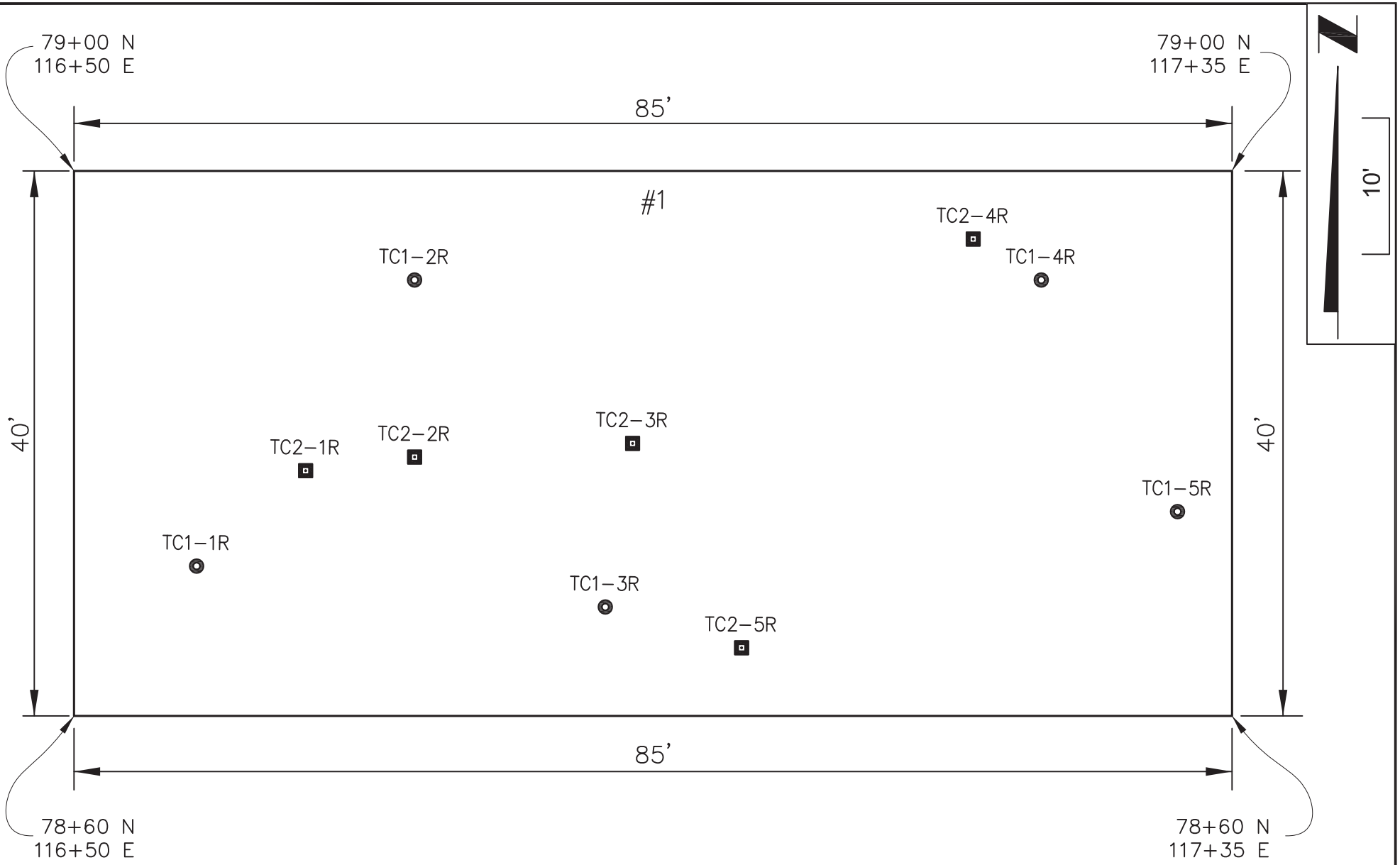
Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Samuel E. Lansdale
Quality Control Monitor

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

8936 Western Way, Suite 12
Jacksonville, Florida 32256
Phone: (904)519-6990 Fax: (904)519-6992



#1:	2 passes with D–6 Dozer 36,000 lbs operating weight

Legend:		
10/10/2014	Lift 1–6" Clay	TC1–1R TO TC1–5R
10/10/2014	Lift 2–6" Clay	TC2–1R TO TC2–5R

MAE
Meskel & Associates Engineering, PLLC
FL Certificate of Authorization No. 28142
8936 Western Way, Suite 12, Jacksonville, FL 32256

CLIENT:

ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
TEST STRIP FOR INITIAL COVER AND CLAY

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida

0006-0008

FIGURE NO.
1

Trailridge Landfill Closure
TEST STRIP # 2 PERMEABILITY TEST RESULTS

Date:
Compaction Target Value Jacobs Pit Clay Mixed Sample #2
Maximim Dry Density (pcf): 91.9
Optimum Moisture Content: 27.30%
Spec Minimum Perm Value: 6.67E-08
Location / Limits of Test Strip: Approximately 85' E to W and 40' N to S. Coordinates: (N79+00, E116+50), (N79+00, E117+35), (N78+60, E116+50), (N78+60, E117+35), along a 3:1 section of the landfill within the project limits within unit 62 at approximately Terrace 6.

Sample No.		Location by Station	Compaction Method	Field Thickness (in)	Field Dry Density (pcf)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Permeability Test Result
LIFT 1	TC1-1R	N78+71, E116+59	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	77.90	92%	36.5	4.9E-09	76	21	55	54.5	PASS
	TC1-2R	N78+92, E116+75	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	75.70	82%	38.1	6.1E-09	74	22	52	47.1	PASS
	TC1-3R	N78+68, E116+89	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	75.20	82%	39.9	7.0E-09	78	22	56	51.4	PASS
	TC1-4R	N78+92, E117+21	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	74.40	81%	40.8	6.7E-09	77	22	55	46.8	PASS
	TC1-5R	N78+75, E117+31	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	75.10	82%	40.8	4.2E-09	78	25	53	56.1	PASS
Lift 2	TC2-1R	N78+78, E116+67	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	75.70	82%	40.3	5.5E-09	78	23	55	53.7	PASS
	TC2-2R	N78+79, E116+75	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	76.00	83%	37.6	6.6E-09	79	19	60	55.0	PASS
	TC2-3R	N78+80, E116+91	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	79.40	86%	40.3	6.6E-09	79	21	58	54.3	PASS
	TC2-4R	N78+95, E117+16	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	78.10	85%	41.8	2.9E-09	81	20	61	56.8	PASS
	TC2-5R	N78+65, E116+99	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	79.20	86%	38.5	4.4E-09	79	22	57	55.4	PASS

TRAIL RIDGE LANDFILL
TEST STRIP FORM

Test Strip No.: 2 **Date:** 1st Lift: 10/10/14; 2nd Lift: 10/10/14

Location: Approximately 40' E to W and 85' N to S. Coordinates: (N79+00, E116+50), (N79+00, E117+35), (N78+60, E116+50), (N78+60, E117+35) along a 3:1 section of the landfill within the project limits within unit 59 at approximately Terrace 6.

Size (40' x 60' Minimum): 50' x 60'

Type of Equipment Used: D-6 Dozer

Pass/Fail?: PASS

TEST RESULTS:

Lift No.:	1	Lift No:	2
Percent Fines:	46.8% - 56.1%	Percent Fines:	53.7% - 56.8%
Atterberg Limits:	PI 52 to 56	Atterberg Limits:	PI 55 to 61
Moisture Content:	36.5% to 40.8%	Moisture Content:	37.6% to 41.8%

Field Density (%): (at 5 locations)

TC1-1	92
TC1-2	82
TC1-3	82
TC1-4	81
TC1-5	82

Field Density (%): (at 5 locations)

TC2-1	82
TC2-2	83
TC2-3	86
TC2-4	85
TC2-5	86

Thickness (in): (at 5 locations)

TC1-1	6
TC1-2	6
TC1-3	6
TC1-4	6
TC1-5	6

Thickness (in): (at 5 locations)

TC2-1	12
TC2-2	12
TC2-3	12
TC2-4	12
TC2-5	12

Hydraulic Conductivity: (at 5 locations)	
TC1-1	4.9E-09
TC1-2	6.1E-09
TC1-3	7.0E-09
TC1-4	6.7E-09
TC1-5	4.2E-09

Hydraulic Conductivity: (at 5 locations)	
TC2-1	5.5E-09
TC2-2	6.6E-08
TC2-3	6.6E-09
TC2-4	2.9E-09
TC2-5	4.4E-09

Attach sampling results as needed.

Approved by Contractor _____

Approved by QC Monitor _____

Approved by QA Engineer _____

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
TEST STRIP # 1 PERMEABILITY TEST RESULTS

Date: 5/13/2013 ERC
Compaction Target Value Jacobs Pit Clay Mixed Sample #2
Maximim Dry Density (pcf): 91.9
Optimum Moisture Content: 27.30%
Spec Minimum Perm Value: 6.67E-08
Location / Limits of Test Strip: Approximately 50' E to W and 60' N to S. Coordinates: (N7972.719, E10506.830), (N7973.315, E10456.240), (N7909.906, E10457.701), (N7913.452, E10505.962), along a 3:1 section of the landfill within the project limits within unit 74 at approximately Terrace 6 near station 79+00N.

Sample No.		Location by Station	Compaction Method	Field Thickness (in)	Field Dry Density (pcf)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Permeability Test Result
LIFT 1	TC1-1	N2142154.050, E326717.445	2 passes with SD-45 pad foot roller, static only 22,730 lbs operating weight	6.0	83.54	91%	34.6	4.9E-09	70	22	48	53.0	PASS
	TC1-2	N2142176.882, E326718.869	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	83.54	91%	34.6	7.6E-09	73	22	51	55.3	PASS
	TC1-3	N2142148.858, E326735.932	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	73.89	80%	36.5	3.1E-09	83	25	58	56.5	PASS
	TC1-4	N2142168.611, E326737.379	2 passes with JD-650 Dozer 19,750 lbs operating weight	6.0	76.83	84%	34.2	6.7E-09	82	24	58	54.6	PASS
	TC1-5	N2142152.105, E326759.150	2 passes with JD-650 Dozer 19,750 lbs operating weight	6.0	74.35	81%	35.0	9.8E-09	74	23	51	53.0	PASS
Lift 2	TC2-1	N2142178.608, E326719.378	2 passes with SD-45 pad foot roller, static only 22,730 lbs operating weight	12.5	82.16	89%	31.3	1.1E-08	77	19	58	54.2	PASS
	TC2-2	N2142159.583, E326717.482	2 passes with SD-45 pad foot roller, static only 22,730 lbs operating weight	12.0	80.60	88%	34.2	1.2E-08	74	20	54	50.0	PASS
	TC2-3	N2142158.678, E326735.532	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	78.94	86%	33.5	8.6E-09	80	24	56	52.1	PASS
	TC2-4	N2142174.522, E326730.666	2 passes with JD-650 Dozer 19,750 lbs operating weight	12.0	78.48	85%	31.4	9.0E-09	77	22	55	53.9	PASS
	TC2-5	N2142173.295, E326751.350	2 passes with JD-650 Dozer 19,750 lbs operating weight	12.0	83.35	91%	32.6	1.3E-08	76	23	53	51.3	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
TEST STRIP # 2 PERMEABILITY TEST RESULTS

Date: 10/10/2014 SEC
Compaction Target Value Jacobs Pit Clay Mixed Sample #2
Maximim Dry Density (pcf): 91.9
Optimum Moisture Content: 27.30%
Spec Minimum Perm Value: 6.67E-08
Location / Limits of Test Strip: Approximately 85' E to W and 40' N to S. Coordinates: (N79+00, E116+50), (N79+00, E117+35), (N78+60, E116+50), (N78+60, E117+35), along a 3:1 section of the landfill within the project limits within unit 62 at approximately Terrace 6.

Sample No.		Location by Station	Compaction Method	Field Thickness (in)	Field Dry Density (pcf)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Permeability Test Result
LIFT 1	TC1-1R	N78+71, E116+59	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	77.90	92%	36.5	4.9E-09	76	21	55	54.5	PASS
	TC1-2R	N78+92, E116+75	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	75.70	82%	38.1	6.1E-09	74	22	52	47.1	PASS
	TC1-3R	N78+68, E116+89	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	75.20	82%	39.9	7.0E-09	78	22	56	51.4	PASS
	TC1-4R	N78+92, E117+21	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	74.40	81%	40.8	6.7E-09	77	22	55	46.8	PASS
	TC1-5R	N78+75, E117+31	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	6.0	75.10	82%	40.8	4.2E-09	78	25	53	56.1	PASS
Lift 2	TC2-1R	N78+78, E116+67	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	75.70	82%	40.3	5.5E-09	78	23	55	53.7	PASS
	TC2-2R	N78+79, E116+75	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	76.00	83%	37.6	6.6E-09	79	19	60	55.0	PASS
	TC2-3R	N78+80, E116+91	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	79.40	86%	40.3	6.6E-09	79	21	58	54.3	PASS
	TC2-4R	N78+95, E117+16	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	78.10	85%	41.8	2.9E-09	81	20	61	56.8	PASS
	TC2-5R	N78+65, E116+99	2 Passes with D-6 Dozer 36,000 lbs operatiing weight	12.0	79.20	86%	38.5	4.4E-09	79	22	57	55.4	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY FIRST LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C1-001	86+50.00	102+75.00	79	PADMFT	6.0	78.2	85.0	37.1	2.40E-09	68.0	24.0	62.0	56.2		PASS
C1-002	86+75.00	103+50.00	80	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-003	86+50.00	104+50.00	81	PADMFT	6.0	81.9	82.0	30.0	1.00E-08	75.0	25.0	50.0	55.3		PASS
C1-004	86+00.00	103+25.00	80	PADMFT	6.0	78.6	86.0	32.0	3.50E-09	85.0	21.0	63.0	55.9		PASS
C1-005R	86+25.00	105+00.00	81	PADMFT	6.0	79.2	86.0	41.0	8.30E-09	82.0	20.0	62.0	56.1		PASS
C1-006	85+50.00	102+75.00	79	ADMFT	6.0	81.3	89.0	29.9	x	74.0	24.0	50.0	56.2		PASS
C1-007	85+75.00	104+00.00	81	ADMFT	6.0	79.3	86.0	33.8	x	70.0	22.0	48.0	56.1		PASS
C1-008	85+50.00	104+50.00	81	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-009	84+75.00	103+25.00	80	DMFT	6.0	85.8	93.0	36.0	x	x	x	x	56.0		PASS
C1-010	84+75.00	104+25.00	81	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-011	85+00.00	105+00.00	74	DMFT	7.0	77.3	84.0	36.0	x	x	x	x	53.9		PASS
C1-012	84+25.00	102+75.00	79	PADMFT	7.0	74.4	81.0	36.0	1.10E-09	65.0	20.0	45.0	56.0		PASS
C1-013	84+25.00	103+75.00	80	DMFT	8.0	77.0	84.0	34.3	x	x	x	x	55.5		PASS
C1-014	84+25.00	104+50.00	74	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-015	83+25.00	102+75.00	79	DMFT	8.0	80.9	88.0	35.6	x	x	x	x	57.4		PASS
C1-016	83+50.00	103+50.00	80	PADMFT	8.0	85.9	93.0	40.1	1.50E-08	70.0	18.0	52.0	56.2		PASS
C1-017	83+25.00	104+25.00	73	T	7.0	x	x	x	x	x	x	x	x		PASS
C1-018	84+00.00	105+00.00	74	T	7.0	x	x	x	x	x	x	x	x		PASS
C1-019	83+25.00	105+00.00	74	T	7.0	x	x	x	x	x	x	x	x		PASS
C1-020	82+75.00	101+25.00	76	DMFT	6.0	83.4	91.0	37.2	x	x	x	x	55.0		PASS
C1-021	82+75.00	104+00.00	73	T	7.0	x	x	x	x	x	x	x	x		PASS
C1-022	82+50.00	102+25.00	77	PADMFT	6.0	82.4	90.0	37.1	6.30E-09	68.0	20.0	48.0	54.7		PASS
C1-023	82+50.00	103+50.00	80	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-024	82+25.00	101+00.00	76	DMFT	6.0	85.7	93.0	35.9	x	x	x	x	56.1		PASS
C1-025	82+00.00	102+00.00	77	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-026R	82+00.00	103+25.00	78	PADMFT	7.0	81.9	89.0	44.6	4.20E-09	82.0	20.0	62.0	55.5		PASS
C1-027	82+00.00	105+00.00	74	PADMFT	7.0	88.5	88.0	33.4	5.30E-09	66.0	20.0	46.0	51.6		PASS
C1-028	81+75.00	102+75.00	78	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-029	81+75.00	104+00.00	73	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-030	81+75.00	104+50.00	74	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-031	81+50.00	102+25.00	77	DMFT	6.0	82.7	90.0	35.8	x	x	x	x	55.2		PASS
C1-032	81+50.00	103+25.00	72	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-033	81+25.00	100+75.00	75	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-034	81+25.00	101+25.00	76	PADMFT	6.0	86.0	94.0	30.5	9.50E-09	73.0	19.0	54.0	49.2		PASS
C1-035R	81+00.00	102+75.00	78	DMT	6.0	76.5	83.0	41.2	x	x	x	x	x		PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY FIRST LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C1-036	81+25.00	104+75.00	74	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-037R	80+75.00	101+50.00	76	DMT	6.0	73.4	80.0	x	x	x	x	x	x		PASS
C1-038	80+75.00	102+25.00	77	DMFT	6.0	84.7	92.0	34.3	x	x	x	x	55.8		PASS
C1-039	81+00.00	104+00.00	73	PADMFT	6.0	82.3	90.0	36.6	2.10E-09	74.0	25.0	49.0	53.6		PASS
C1-040	80+25.00	101+00.00	76	DMFT	6.0	82.8	90.0	34.2	x	x	x	x	57.8		PASS
C1-041	80+25.00	102+00.00	77	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-042	80+25.00	102+50.00	77	DMT	6.0	76.5	83.0	41.2	x	x	x	x	x	Maint. Road	PASS
C1-043	80+00.00	103+25.00	72	DMFT	6.0	81.0	88.0	33.9	x	x	x	x	58.2		PASS
C1-044	79+75.00	101+25.00	76	PADMFT	6.0	73.1	80.0	38.3	6.10E-09	87.0	28.0	59.0	60.5		PASS
C1-045	79+75.00	104+75.00	74	PADMFT	6.0	76.4	83.0	29.4	6.70E-09	73.0	22.0	51.0	54.2		PASS
C1-046	79+50.00	102+00.00	77	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-047	79+25.00	101+00.00	76	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-048	79+00.00	101+50.00	76	T	6.0	x	x	x	x	x	x	x	x	Maint. Road	PASS
C1-049	79+00.00	103+00.00	72	PADMFT	6.0	79.7	87.0	39.5	4.80E-09	71.0	24.0	47.0	57.3		PASS
C1-050	79+00.00	104+00.00	73	DMFT	6.0	73.4	80.0	40.3	x	x	x	x	57.2		PASS
C1-051	79+00.00	105+00.00	74	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-052	78+75.00	100+75.00	75	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-053	78+75.00	102+00.00	77	T	6.0	x	x	x	x	x	x	x	x	Maint. Road	PASS
C1-054	78+50.00	104+50.00	74	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-055	78+50.00	105+50.00	68	ADMFT	6.0	81.0	88.0	34.8	x	69.0	25.0	44.0	53.0		PASS
C1-056	78+25.00	101+25.00	76	DMT	6.0	75.1	82.0	42.8	x	x	x	x	x	Maint. Road	PASS
C1-057	78+00.00	102+25.00	71	DMFT	6.0	78.0	85.0	35.7	x	x	x	x	57.6		PASS
C1-058	78+00.00	103+25.00	72	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-059	77+75.00	103+75.00	73	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-060	77+75.00	105+00.00	67	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-061	77+75.00	102+50.00	71	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-062	77+50.00	101+00.00	75	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-063	77+50.00	101+50.00	76	T	6.0	75.1	82.0	x	x	x	x	x	x		PASS
C1-064	77+25.00	103+25.00	72	PADMFT	6.0	74.6	81.0	41.4	5.00E-09	72.0	22.0	50.0	58.6		PASS
C1-065	77+00.00	101+00.00	75	PADMFT	6.0	77.5	84.0	45.2	4.30E-09	85.0	22.0	63.0	51.5	Maint. Road	PASS
C1-066	77+00.00	101+50.00	70	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-067	77+00.00	104+00.00	66	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-068	76+75.00	102+50.00	71	PADMFT	6.0	75.8	83.0	36.2	4.30E-09	73.0	23.0	50.0	56.6		PASS
C1-069	76+75.00	105+50.00	66	PADMFT	6.0	83.3	90.7	33.3	9.50E-09	73.0	22.0	51.0	57.6		PASS
C1-070	76+50.00	101+50.00	70	T	6.0	x	x	x	x	x	x	x	x		PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY FIRST LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C1-071	76+00.00	102+00.00	70	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-072	75+50.00	105+50.00	70	PADMFT	6.0	82.2	90.0	46.5	6.00E-09	72.0	78.0	20.0	58.6		PASS
C1-073	75+00.00	101+00.00	69	DMFT	6.0	85.1	93.0	30.9	x	x	x	x	54.0		PASS
C1-074	78+75.00	107+50.00	68	PADMFT	6.0	80.9	88.0	38.8	7.20E-09	76.0	23.0	53.0	56.8	Maint. Road	PASS
C1-075	78+50.00	108+25.00	68	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-076	78+75.00	109+75.00	65	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-077	78+25.00	110+75.00	65	PADMFT	6.0	75.3	82.0	40.4	3.40E-09	70.0	22.0	48.0	53.5		PASS
C1-078	77+75.00	108+75.00	67	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-079	77+50.00	106+00.00	67	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-080	77+50.00	107+75.00	67	DMFT	6.0	77.7	85.0	34.8	x	x	x	x	55.1		PASS
C1-081	77+50.00	109+50.00	64	PADMFT	6.0	81.0	88.0	36.1	5.80E-09	65.0	22.0	43.0	54.8		PASS
C1-082	77+00.00	110+00.00	63	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-083	76+75.00	108+50.00	66	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-084	78+75.00	112+25.00	65	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-085	78+75.00	114+50.00	62	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-086	78+25.00	113+00.00	65	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-087	78+25.00	115+75.00	62	PADMFT	6.0	74.1	81.0	43.9	2.70E-09	84.0	32.0	52.0	52.6		PASS
C1-088	78+00.00	114+00.00	61	PADMFT	6.0	75.8	83.0	42.6	5.90E-09	88.0	25.0	63.0	53.1		PASS
C1-089	77+50.00	111+00.00	64	DMFT	6.0	73.5	80.0	43.3	x	x	x	x	51.1		PASS
C1-090	77+50.00	112+75.00	64	DMFT	6.0	76.7	84.0	50.4	x	x	x	x	63.0		PASS
C1-091	77+50.00	114+50.00	61	DMFT	6.0	73.1	80.0	42.7	x	x	x	x	54.9		PASS
C1-092	77+00.00	112+00.00	63	PADMFT	6.0	76.0	83.0	41.7	7.20E-09	89.0	24.0	64.0	56.6		PASS
C1-093	76+75.00	113+50.00	60	PADMFT	6.0	73.8	80.0	39.8	1.30E-08	81.0	19.0	62.0	54.9		PASS
C1-094	79+00.00	116+50.00	62	DMT	6.0	80.9	88.0	x	x	x	x	x	x		PASS
C1-095	78+75.00	117+50.00	59	DMT	6.0	85.0	92.0	x	x	x	x	x	x		PASS
C1-096	78+50.00	118+25.00	59	PADMFT	6.0	76.0	83.0	41.1	5.80E-09	82.0	28.0	54.0	53.3		PASS
C1-097	79+00.00	120+00.00	59	PADMFT	6.0	73.1	80.0	41.5	5.60E-09	64.0	18.0	46.0	53.2		PASS
C1-098	78+75.00	120+75.00	58	PADMFT	6.0	78.7	86.0	39.4	5.40E-09	74.0	21.0	53.0	54.9		PASS
C1-099	78+00.00	116+50.00	61	PADMFT	6.0	75.3	82.0	43.2	2.50E-09	84.0	25.0	59.0	53.2		PASS
C1-100	77+75.00	117+50.00	58	PADMFT	6.0	75.9	83.0	40.2	2.60E-09	90.0	27.0	63.0	52.6		PASS
C1-101	78+00.00	120+00.00	58	DMFT	6.0	77.5	84.0	39.7	x	x	x	x	57.9		PASS
C1-102	78+00.00	121+00.00	57	PADMFT	6.0	81.3	89.0	45.3	1.40E-08	80.0	23.0	57.0	67.5		PASS
C1-103	77+00.00	115+25.00	60	PADMFT	6.0	74.1	81.0	44.9	4.80E-09	80.0	24.0	56.0	57.2		PASS
C1-104	77+00.00	116+75.00	60	DMFT	6.0	80.3	87.0	47.1	x	x	x	x	58.1		PASS
C1-105	77+00.00	118+00.00	57	PADMFT	6.0	76.3	83.0	50.8	4.40E-09	98.0	25.0	73.0	63.2		PASS

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY FIRST LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C1-106	77+25.00	120+00.00	57	DMFT	6.0	82.6	90.0	32.2	x	x	x	x	49.9		PASS
C1-107	79+00.00	122+00.00	54	ADMFT	6.0	76.2	83.0	37.4	x	69.0	22.0	47.0	51.7		PASS
C1-108	80+00.00	121+00.00	56	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-109	80+00.00	122+00.00	55	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-110	80+00.00	123+00.00	54	PADMFT	6.0	77.3	84.0	37.7	5.80E-09	69.0	22.0	47.0	51.7		PASS
C1-111	81+00.00	121+25.00	56	PADMFT	6.0	74.9	82.0	39.5	4.20E-09	70.0	22.0	48.0	54.0		PASS
C1-112	81+25.00	123+25.00	54	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-113	82+00.00	122+00.00	56	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-114	82+00.00	123+00.00	54	PADMFT	6.0	74.5	81.0	40.2	1.90E-09	63.0	22.0	41.0	51.4		PASS
C1-115	82+75.00	121+50.00	56	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-116	82+75.00	122+50.00	55	DMFT	6.0	76.4	83.0	43.3	x	x	x	x	53.4		PASS
C1-117	83+25.00	121+50.00	53	PADMFT	6.0	73.3	80.0	43.2	2.20E-09	78.0	23.0	55.0	53.0		PASS
C1-118	83+50.00	123+25.00	51	DMFT	6.0	82.7	90.0	32.8	x	x	x	x	51.7		PASS
C1-119	83+75.00	122+00.00	53	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-120	84+25.00	122+50.00	52	DMFT	6.0	77.2	84.0	36.1	x	x	x	x	55.9		PASS
C1-121	85+25.00	121+50.00	53	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-122	85+75.00	123+25.00	51	PADMFT	6.0	81.4	89.0	32.3	3.30E-09	71.0	19.0	52.0	48.6		PASS
C1-123	86+00.00	122+00.00	56	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-124	86+50.00	122+50.00	52	PADMFT	6.0	81.9	89.0	30.7	2.10E-09	66.0	17.0	49.0	48.6		PASS
C1-125	86+75.00	121+50.00	53	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-126	87+00.00	123+00.00	48	DMFT	6.0	84.3	92.0	30.8	x	x	x	x	50.8		PASS
C1-127	87+50.00	121+50.00	50	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-128	88+00.00	122+00.00	50	PADMFT	6.0	73.3	80.0	38.6	3.40E-09	75.0	24.0	51.0	54.2		PASS
C1-129	88+00.00	123+00.00	48	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-130	88+25.00	122+50.00	49	DMFT	6.0	75.1	82.0	34.9	x	x	x	x	42.3		PASS
C1-131	89+25.00	121+50.00	50	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-132	90+00.00	122+00.00	50	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-133	90+00.00	123+00.00	48	PADMFT	6.0	76.0	83.0	41.3	2.10E-09	76.0	24.0	52.0	54.9		PASS
C1-134	91+25.00	122+50.00	49	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-143	x	x	x	x	x	x	x	x	x	x	x	x	x		x
C1-144	91+75.00	123+25.00	48	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-203	83+53.00	104+47.00	74	PADMFT	6.0	75.2	85.0	42.2	2.70E-09	71.0	25.0	45.0	56.5	GAS	PASS
C1-204	83+14.00	104+35.00	73	PADMFT	6.0	74.5	81.0	41.1	5.60E-09	75.0	24.0	51.0	57.7	GAS	PASS
C1-205	83+24.00	103+17.00	79	PADMFT	6.0	75.8	82.0	34.9	2.50E-09	75.0	21.0	54.0	52.7	GAS	PASS
C1-206	82+70.00	102+39.00	77	PADMFT	6.0	81.4	89.0	35.6	2.80E-09	70.0	21.0	49.0	52.9	GAS	PASS

Meskel & Associates Engineering

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY FIRST LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C1-207	82+56.00	104+23.00	73	PADMFT	6.0	76.7	83.0	29.1	3.50E-09	76.0	21.0	55.0	53.2	GAS	PASS
C1-208	78+75.00	116+25.00	62	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-209	78+00.00	115+25.00	61	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-210	77+75.00	116+50.00	61	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-211	77+75.00	115+50.00	61	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-212	77+25.00	116+25.00	60	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-213	77+50.00	116+75.00	60	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-214	79+00.00	117+75.00	59	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-215	79+00.00	118+50.00	59	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-216	x	x	x	x	x	x	x	x	x	x	x	x	x		x
C1-217	78+25.00	118+25.00	58	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-218	78+00.00	118+50.00	58	DMFT	6.0	80.3	87.0	41.1	x	x	x	x	53.6		PASS
C1-219	77+25.00	117+25.00	57	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-220	77+50.00	117+75.00	57	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-221	77+50.00	118+50.00	57	DMFT	6.0	74.8	81.0	46.2	x	x	x	x	59.7		PASS
C1-222	78+75.00	119+25.00	59	T	6.0	x	x	x	x	x	x	x			PASS
C1-223	79+00.00	119+50.00	59	DMFT	6.0	74.0	81.0	39.6	x	x	x	x	57.4		PASS
C1-224	x	x	x	x	x	x	x	x	x	x	x	x	x		x
C1-225	78+25.00	119+25.00	58	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-226	78+50.00	120+00.00	58	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-227	77+25.00	119+50.00	57	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-228	77+75.00	119+50.00	57	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-229	79+50.00	120+25.00	59	T	6.0	x	x	x	x	x	x	x	x		PASS
C1-230	80+50.00	122+75.00	54	T	6.0	x	x	x	x	x	x	x	x		PASS
Subtotal without Downcommers: Tests Required					**161**	**80**	**80**	**80**	**40**	**40**	**40**	**40**	**80**		
Subtotal without Downcommers: Tests Performed					**161**	**86**	**86**	**86**	**47**	**51**	**51**	**51**	**80**		
Downcommers															
C1-135	85+25.00	102+75.00	79	PADMFT	6.0	73.5	80.0	38.4	1.30E-08	76.0	23.0	53.0	55.9	D-55	PASS
C1-136	85+25.00	102+95.00	79	T	6.0	x	x	x	x	x	x	x	x	D-55	PASS
C1-137	85+25.00	103+50.00	80	PADMFT	6.0	77.6	85.0	29.6	6.50E-09	73.0	23.0	50.0	57.4	D-55	PASS
C1-138	85+25.00	103+70.00	80	T	6.0	x	x	x	x	x	x	x	x	D-55	PASS
C1-139	85+25.00	104+25.00	81	PADMFT	6.0	76.0	83.0	35.6	6.40E-09	77.0	23.0	53.0	57.1	D-55	PASS

Meskel & Associates Engineering

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY FIRST LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C1-140	85+25.00	104+45.00	81	T	6.0	x	x	x	x	x	x	x	x	D-55	PASS
C1-141	85+25.00	104+93.68	74	T	6.0	x	x	x	x	x	x	x	x	D-55	PASS
C1-142	85+25.00	105+09.43	74	PADMFT	6.0	79.5	87.0	39.8	2.00E-09	64.0	20.0	45.0	55.8	D-55	PASS
C1-145	80+50.00	100+70.68	75	PADMFT	6.0	78.7	86.0	35.2	1.50E-08	74.0	26.0	47.0	58.5	D-52	PASS
C1-146	80+50.00	100+90.69	75	T	6.0	78.8	86.0	x	x	x	x	x	x	D-52	PASS
C1-147	80+50.00	101+25.00	76	PADMFT	6.0	78.8	86.0	32.7	5.80E-09	71.0	23.0	47.0	56.7	D-52	PASS
C1-148	80+50.00	101+45.00	76	T	6.0	x	x	x	x	x	x	x	x	D-52	PASS
C1-149	80+50.00	102+00.00	77	PADMFT	6.0	79.4	86.0	35.8	9.40E-09	69.0	24.0	45.0	57.9	D-52	PASS
C1-150	80+50.00	102+20.00	77	T	6.0	x	x	x	x	x	x	x	x	D-52	PASS
C1-151R	80+50.00	102+95.00	72	PADMFT	6.0	73.8	80.0	4.2E-09	5.80E-09	82.0	20.0	62.0	56.4	D-52	PASS
C1-152	80+50.00	103+25.00	72	T	6.0	x	x	x	x	x	x	x	x	D-52	PASS
C1-153	80+50.00	103+92.68	73	PADMFT	6.0	77.9	85.0	36.2	6.40E-09	66.0	22.0	43.0	55.7	D-52	PASS
C1-154	80+50.00	104+12.68	73	T	6.0	x	x	x	x	x	x	x	x	D-52	PASS
C1-155R	80+50.00	104+83.77	74	PADMFT	6.0	80.5	88.0	47.1	4.20E-09	95.0	17.0	78.0	60.8	D-52	PASS
C1-156R	80+50.00	105+00.00	74	T	6.0	x	x	x	x	x	x	x	x	D-52	PASS
C1-157	75+50.00	102+00.00	70	PADMFT	6.0	74.7	81.0	38.0	9.10E-09	69.0	21.0	49.0	56.5	D-49	PASS
C1-158	75+00.00	101+50.00	70	T	6.0	x	x	x	x	x	x	x	x	D-49	PASS
C1-159	74+75.00	101+00.00	69	PADMFT	6.0	77.0	84.0	42.3	3.90E-09	75.0	24.0	51.0	57.3	D-49	PASS
C1-160	74+64.94	100+82.65	69	T	6.0	x	x	x	x	x	x	x	x	D-49	PASS
C1-161	78+45.00	106+75.00	68	T	6.0	x	x	x	x	x	x	x	x	D-47	PASS
C1-162	78+25.00	106+75.00	68	PADMFT	6.0	75.5	82.3	43.1	9.00E-09	80.0	32.0	50.0	54.9	D-47	PASS
C1-163	77+70.00	106+75.00	67	T	6.0	x	x	x	x	x	x	x	x	D-47	PASS
C1-164	77+50.00	106+75.00	67	PADMFT	6.0	80.3	82.3	37.7	1.40E-08	66.0	29.0	37.0	59.2	D-47	PASS
C1-165	76+95.00	106+75.00	66	T	6.0	x	x	x	x	x	x	x	x	D-47	PASS
C1-166	76+75.00	106+75.00	66	PADMFT	6.0	81.8	89.0	34.5	6.70E-09	72.0	23.0	53.0	57.0	D-47	PASS
C1-167	78+45.00	111+50.00	65	T	6.0	x	x	x	x	x	x	x	x	D-44	PASS
C1-168	78+25.00	111+50.00	65	PADMFT	6.0	73.5	80.0	48.5	7.80E-09	69.0	22.0	47.0	56.6	D-44	PASS
C1-169	77+70.00	111+50.00	64	T	6.0	x	x	x	x	x	x	x	x	D-44	PASS
C1-170	77+50.00	111+50.00	64	PADMFT	6.0	73.4	80.0	42.2	2.40E-09	75.0	23.0	52.0	52.1	D-44	PASS
C1-171	76+95.00	111+50.00	63	T	6.0	x	x	x	x	x	x	x	x	D-44	PASS
C1-172	76+75.00	111+50.00	63	PADMFT	6.0	73.8	80.0	42.5	4.60E-09	75.0	26.0	49.0	52.8	D-44	PASS
C1-173	78+70.00	115+00.00	62	T	6.0	x	x	x	x	x	x	x	x	D-41	PASS
C1-174	78+50.00	115+00.00	62	PADMFT	6.0	80.3	87.0	38.8	3.00E-09	73.0	23.0	50.0	56.2	D-41	PASS
C1-175	77+94.78	115+00.00	61	T	6.0	x	x	x	x	x	x	x	x	D-41	PASS
C1-176	77+75.00	115+00.00	61	PADMFT	6.0	73.5	80.0	43.5	2.70E-09	82.0	21.0	61.0	51.6	D-41	PASS



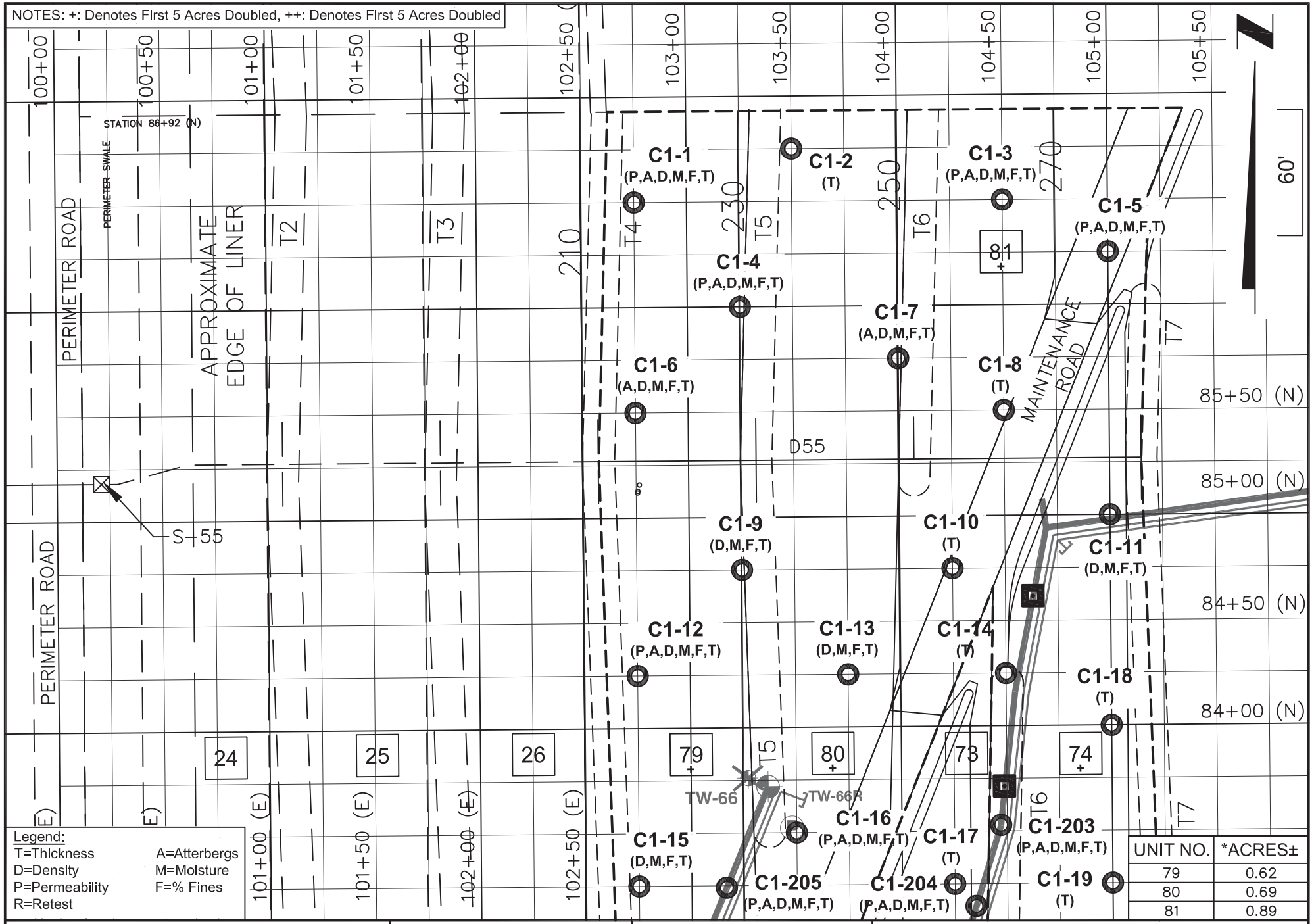
Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY FIRST LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

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Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C1-177	77+20.00	115+00.00	60	T	6.0	x	x	x	x	x	x	x	x	D-41	PASS
C1-178	76+75.00	115+00.00	60	PADMFT	6.0	74.2	81.0	38.0	2.10E-09	84.0	23.0	61.0	54.9	D-41	PASS
C1-179	78+70.00	119+00.00	59	T	6.0	x	x	x	x	x	x	x	x	D-38	PASS
C1-180	78+50.00	119+00.00	59	PADMFT	6.0	74.5	81.0	44.2	2.00E-09	83.0	28.0	55.0	53.6	D-38	PASS
C1-181	77+94.78	119+00.00	58	T	6.0	x	x	x	x	x	x	x	x	D-38	PASS
C1-182	77+75.00	119+00.00	58	PADMFT	6.0	76.8	84.0	44.1	2.30E-09	84.0	33.0	51.0	56.0	D-38	PASS
C1-183	77+20.00	119+00.00	57	T	6.0	x	x	x	x	x	x	x	x	D-38	PASS
C1-184	76+75.00	119+00.00	57	PADMFT	6.0	75.6	82.0	39.8	1.70E-08	85.0	30.0	55.0	52.1	D-38	PASS
C1-185	81+30.20	121+55.69	56	T	6.0	x	x	x	x	x	x	x	x	D-33	PASS
C1-186	81+25.00	121+75.00	56	PADMFT	6.0	75.6	82.0	40.0	2.90E-09	71.0	24.0	47.0	48.4	D-33	PASS
C1-187	81+05.20	122+30.69	55	T	6.0	x	x	x	x	x	x	x	x	D-33	PASS
C1-188	81+00.00	122+50.00	55	PADMFT	6.0	73.9	80.0	35.8	1.60E-08	76.0	28.0	48.0	40.7	D-33	PASS
C1-189	80+80.20	123+05.69	54	T	6.0	x	x	x	x	x	x	x	x	D-33	PASS
C1-190	80+75.00	123+25.00	54	PADMFT	6.0	77.8	85.0	38.2	3.30E-09	68.0	24.0	44.0	51.4	D-33	PASS
C1-191	84+75.00	121+55.00	53	T	6.0	x	x	x	x	x	x	x	x	D-27	PASS
C1-192	84+75.00	121+75.00	53	PADMFT	6.0	74.6	81.0	34.3	6.30E-09	66.0	20.0	46.0	52.9	D-27	PASS
C1-193	84+75.00	122+30.00	52	T	6.0	x	x	x	x	x	x	x	x	D-27	PASS
C1-194	84+75.00	122+50.00	52	PADMFT	6.0	75.7	82.0	33.8	1.10E-08	65.0	22.0	43.0	51.4	D-27	PASS
C1-195	84+75.00	123+05.00	51	T	6.0	x	x	x	x	x	x	x	x	D-27	PASS
C1-196	84+75.00	123+25.00	51	PADMFT	6.0	85.7	93.0	28.3	9.30E-09	74.0	19.0	55.0	49.3	D-27	PASS
C1-197	88+75.00	121+55.00	50	T	6.0	x	x	x	x	x	x	x	x	D-24	PASS
C1-198	88+75.00	121+75.00	50	PADMFT	6.0	75.1	82.0	42.9	3.00E-09	72.0	25.0	47.0	55.7	D-24	PASS
C1-199	88+75.00	122+30.00	49	T	6.0	x	x	x	x	x	x	x	x	D-24	PASS
C1-200	88+75.00	122+50.00	49	PADMFT	6.0	77.9	85.0	43.3	1.90E-09	88.0	27.0	61.0	56.4	D-24	PASS
C1-201	88+75.00	123+05.00	48	T	6.0	x	x	x	x	x	x	x	x	D-24	PASS
C1-202	88+75.00	123+25.00	48	PADMFT	6.0	73.6	80.0	44.6	3.90E-09	75.0	25.0	50.0	55.7	D-24	PASS
Downcommers: Tests Required					**66.0**	**33.0**	**33.0**	**33.0**	**33.0**	**33.0**	**33.0**	**33.0**	**33.0**		
Downcommers: Tests Performed					**66.0**	**34.0**	**34.0**	**34.0**	**33.0**	**33.0**	**33.0**	**33.0**	**33.0**		
All Phase 4 Totals = 30.2 Acres															
Total: Tests Required					**227**	**113**	**113**	**113**	**73**	**73**	**73**	**73**	**113**		
Total: Tests Performed					**227**	**120**	**120**	**120**	**80**	**84**	**84**	**84**	**113**		

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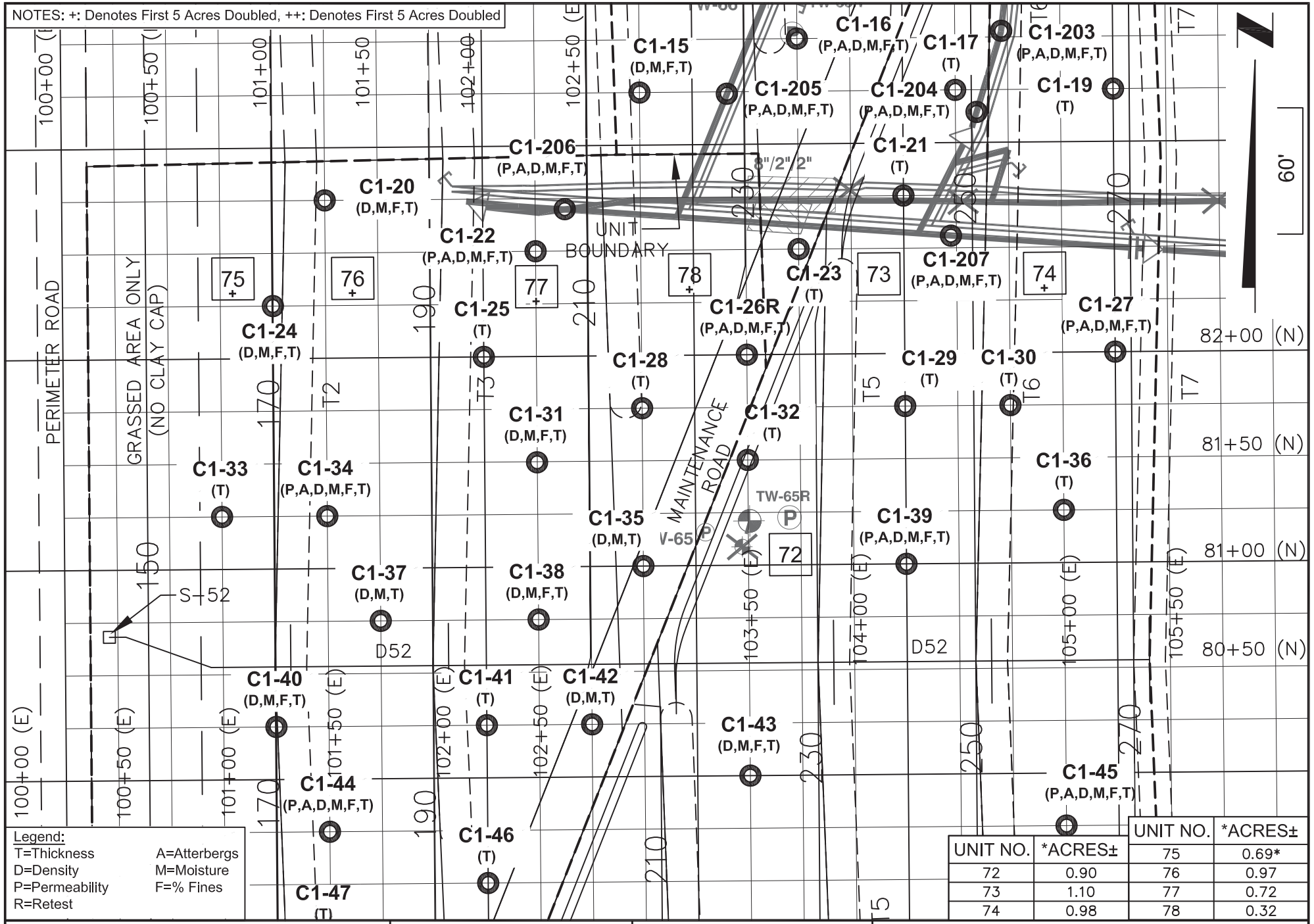
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PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
1 of 10



UNIT NO.	*ACRES±
72	0.90
73	1.10
74	0.98
75	0.69*
76	0.97
77	0.72
78	0.32

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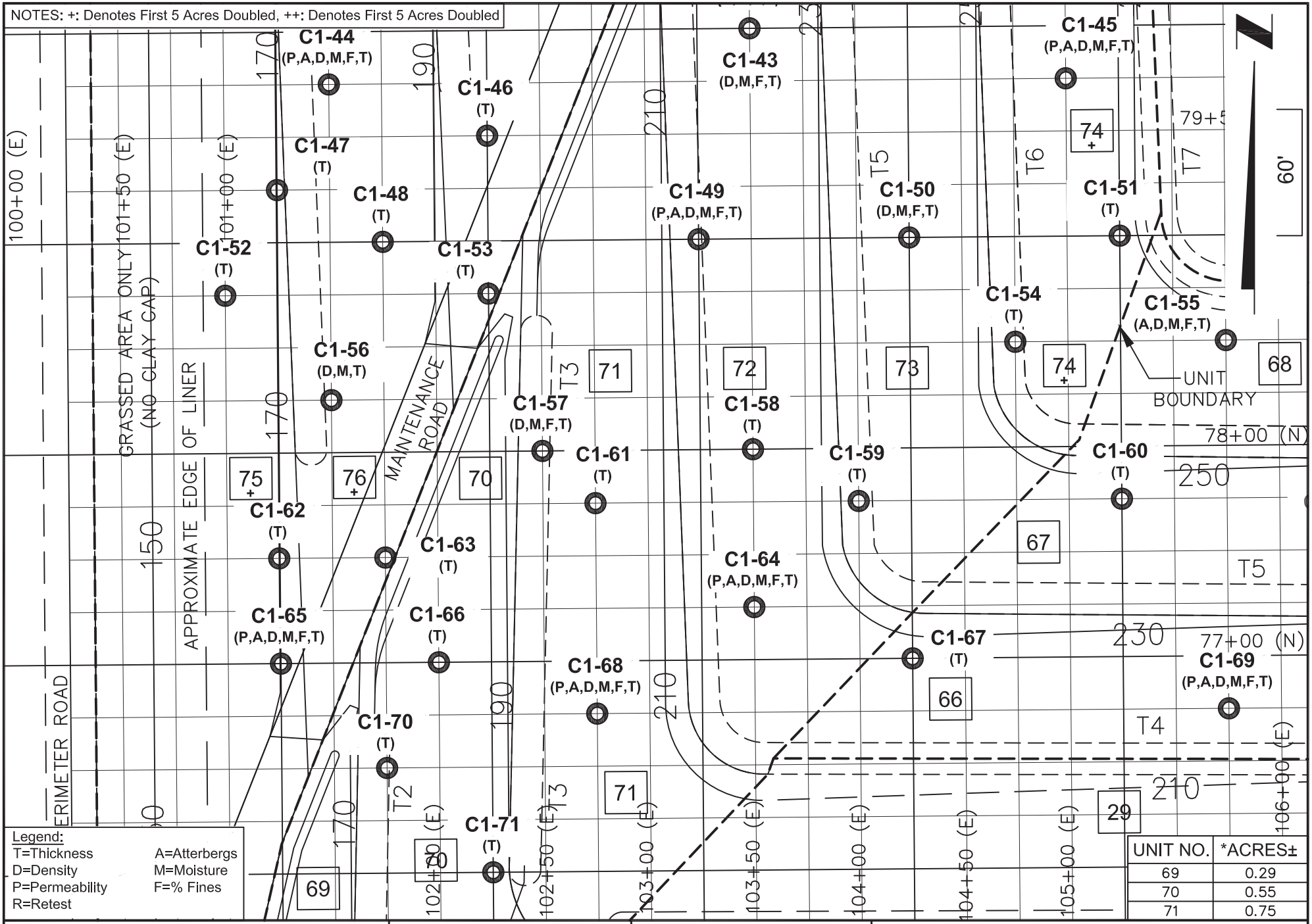
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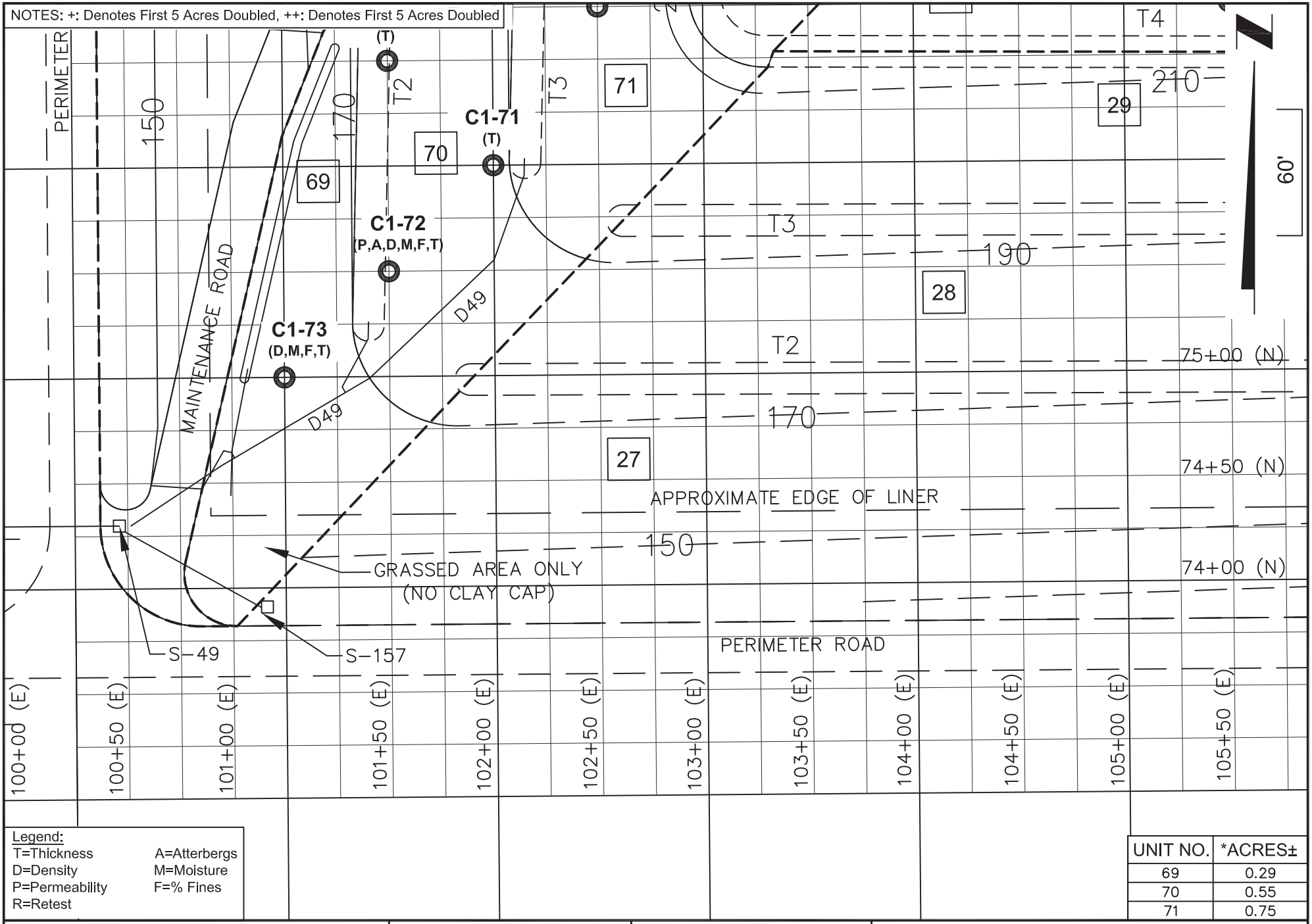
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PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
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FIGURE NO.
3 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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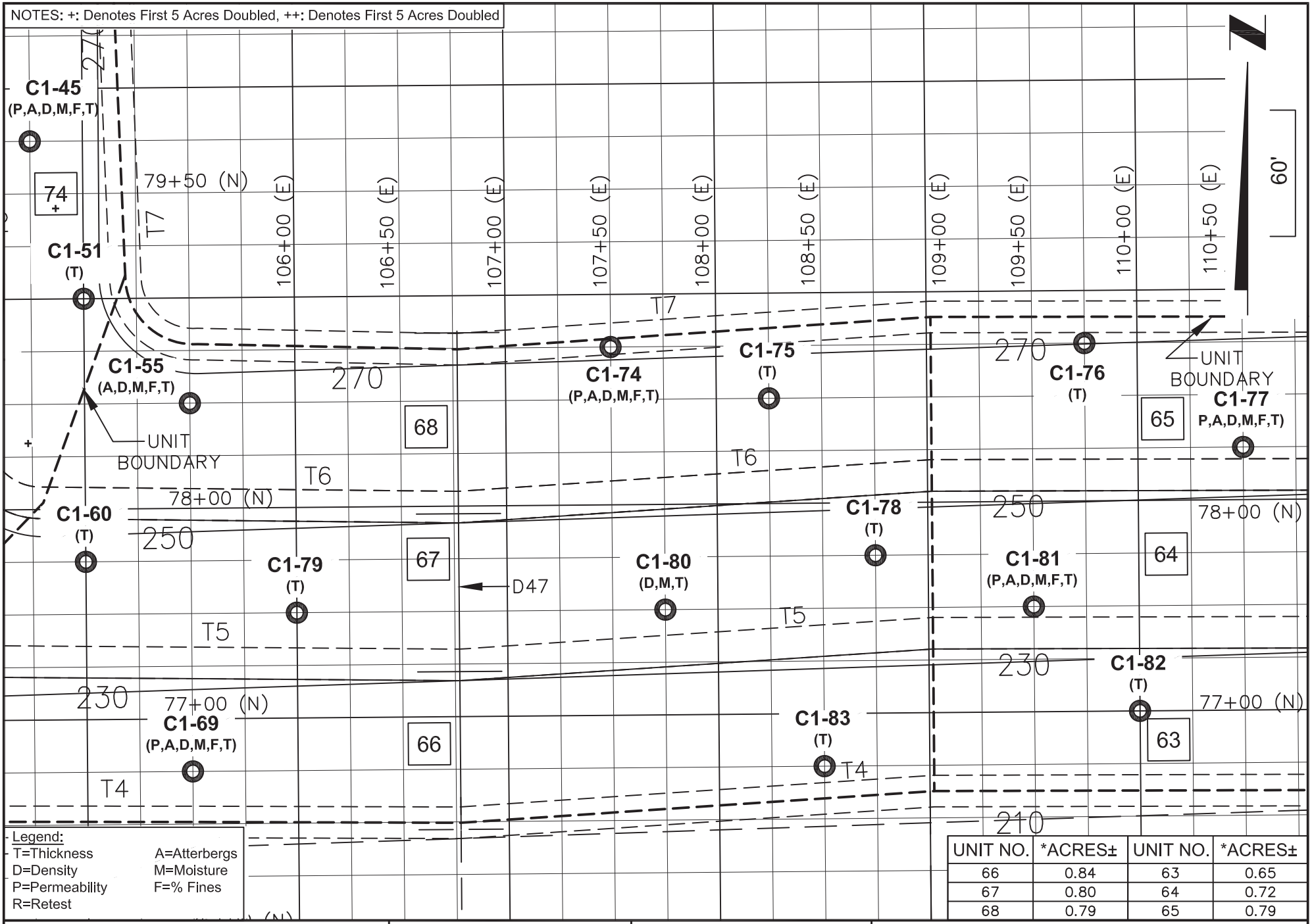
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TRAIL RIDGE LANDFILL PHASE 4
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FIGURE NO.
4 of 10



UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
66	0.84	63	0.65
67	0.80	64	0.72
68	0.79	65	0.79

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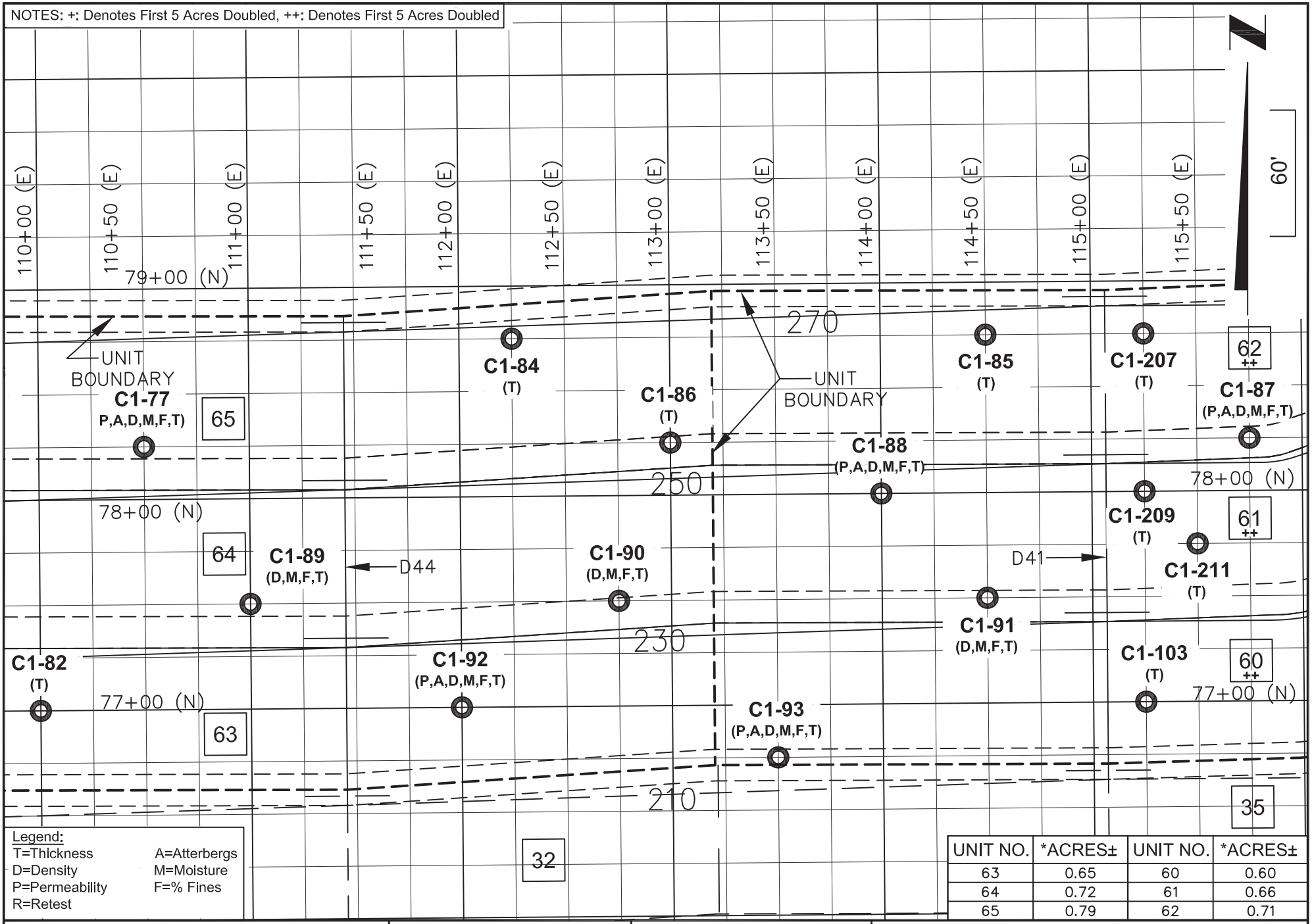
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FIGURE NO.
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Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
63	0.65	60	0.60
64	0.72	61	0.66
65	0.79	62	0.71

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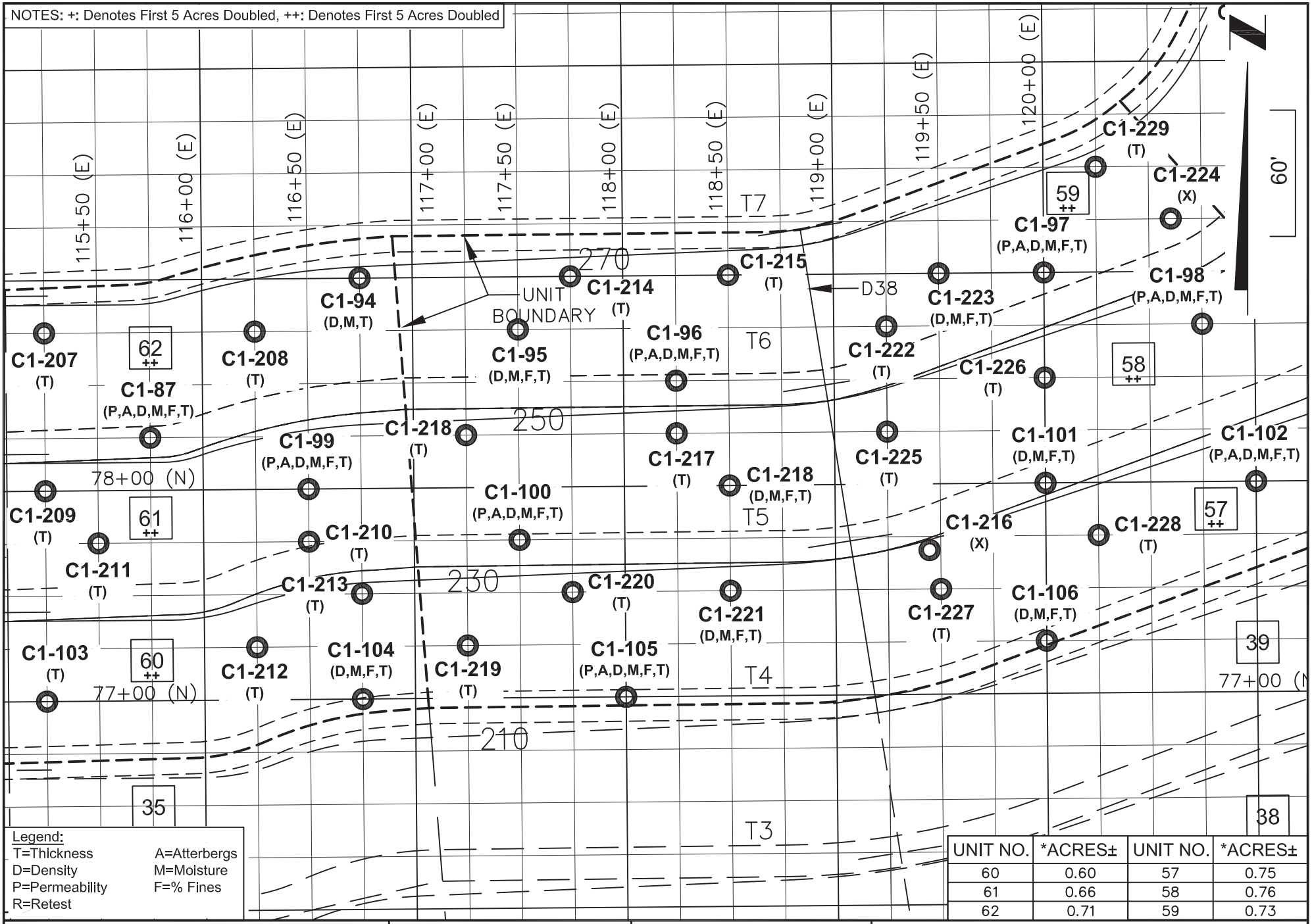
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FIGURE NO.
6 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
60	0.60	57	0.75
61	0.66	58	0.76
62	0.71	59	0.73

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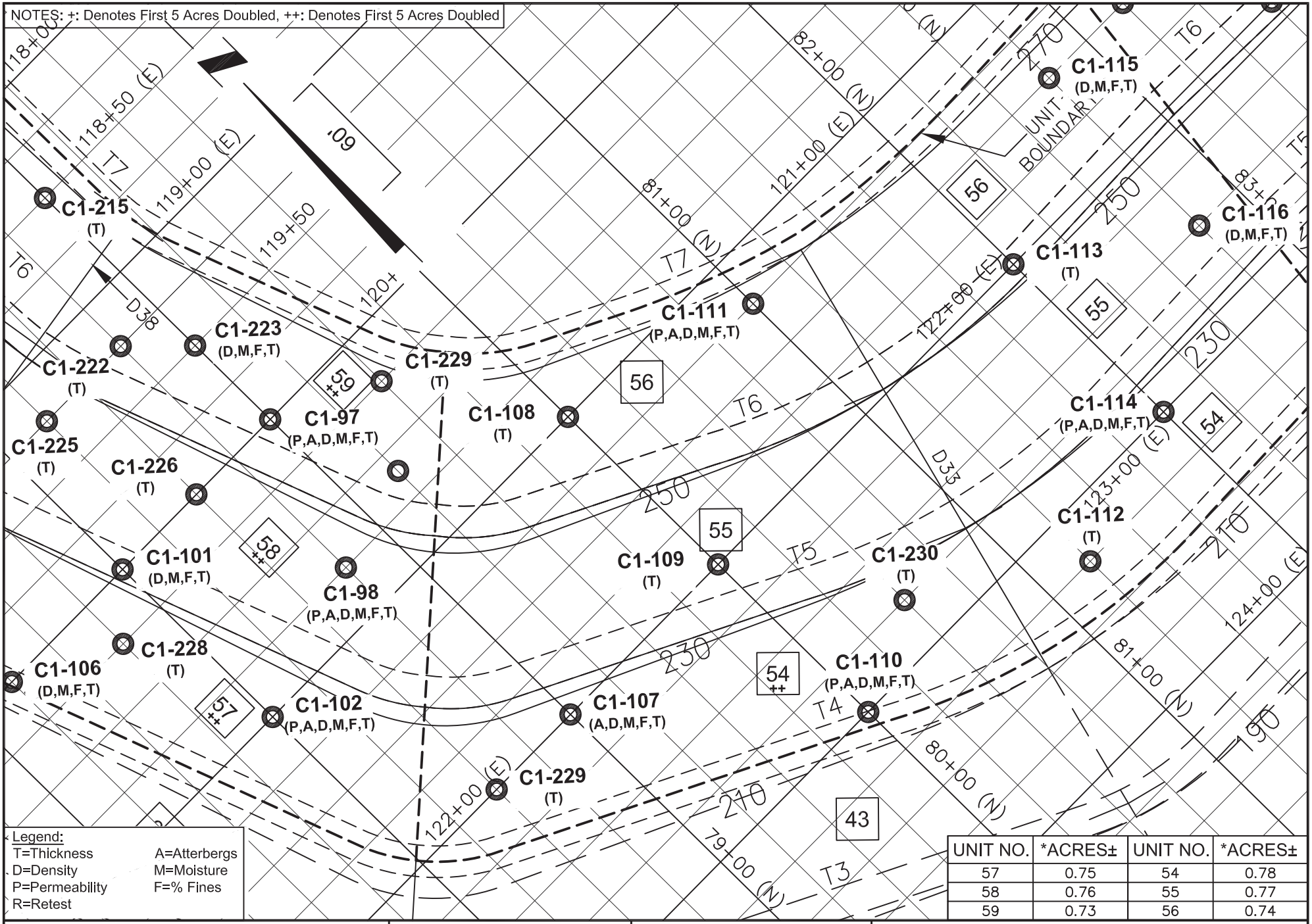
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PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
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FIGURE NO.
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UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
57	0.75	54	0.78
58	0.76	55	0.77
59	0.73	56	0.74

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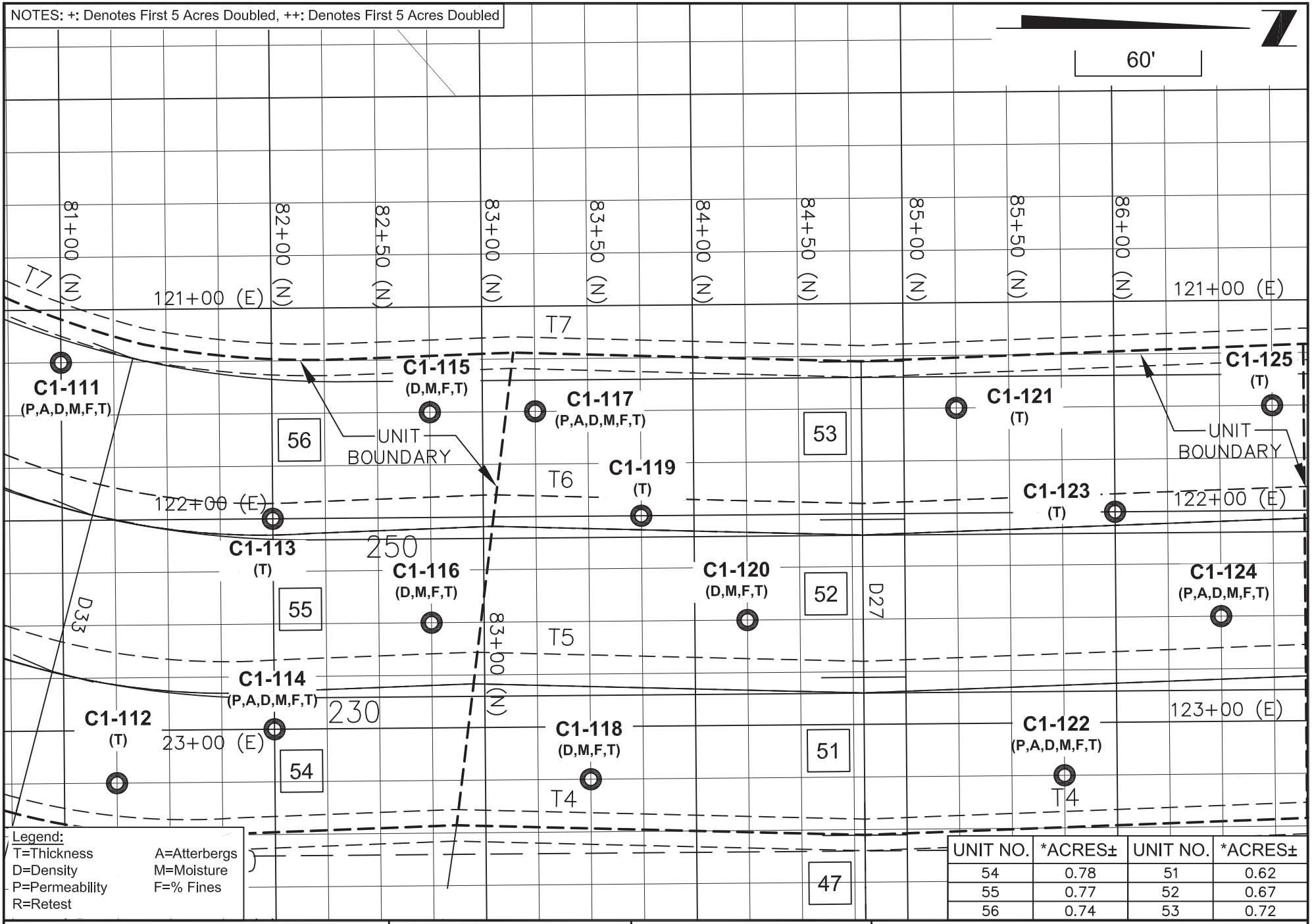
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CLAY THICKNESS/DENSITY TESTING - 1ST LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
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FIGURE NO.
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UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
54	0.78	51	0.62
55	0.77	52	0.67
56	0.74	53	0.72

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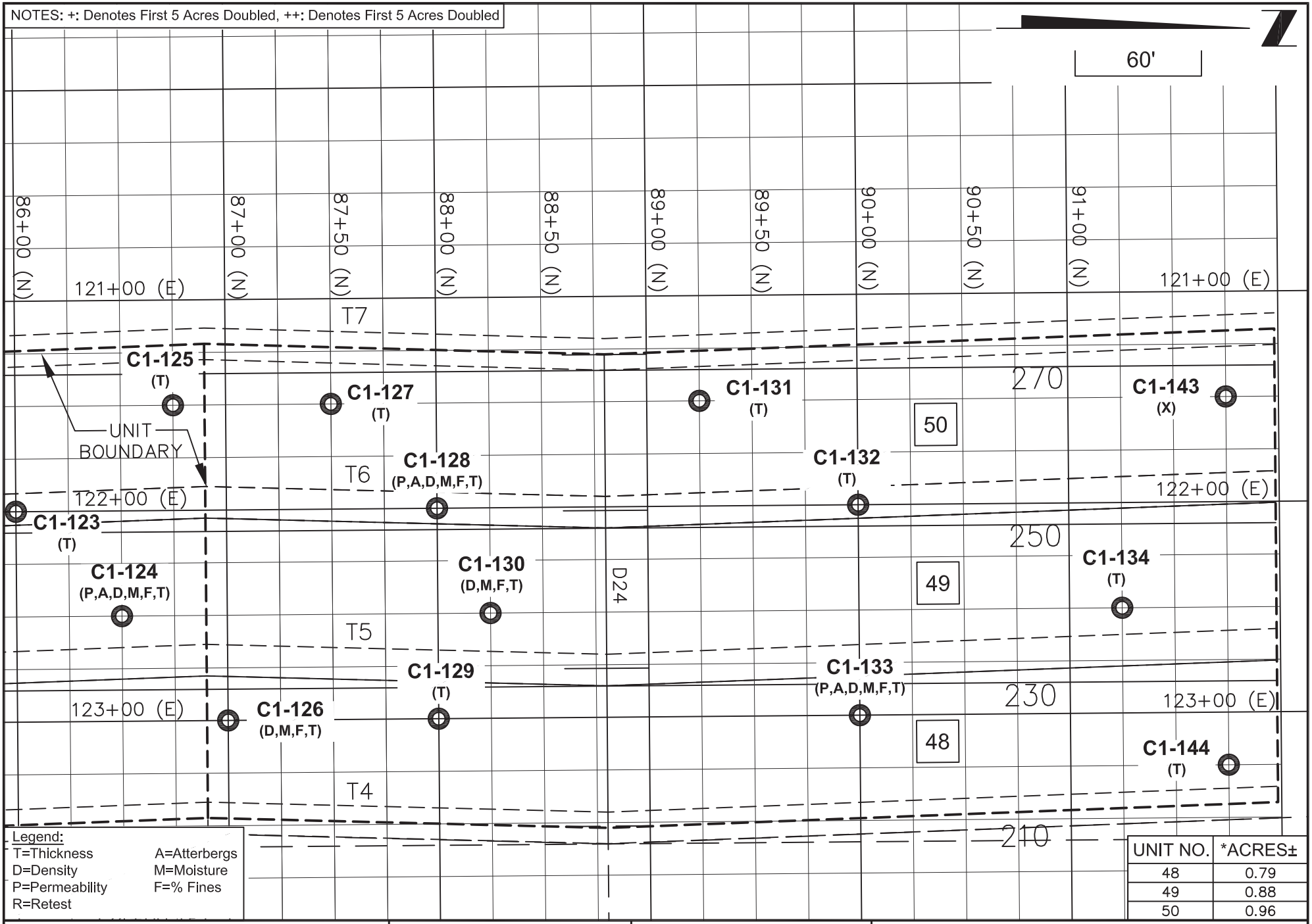
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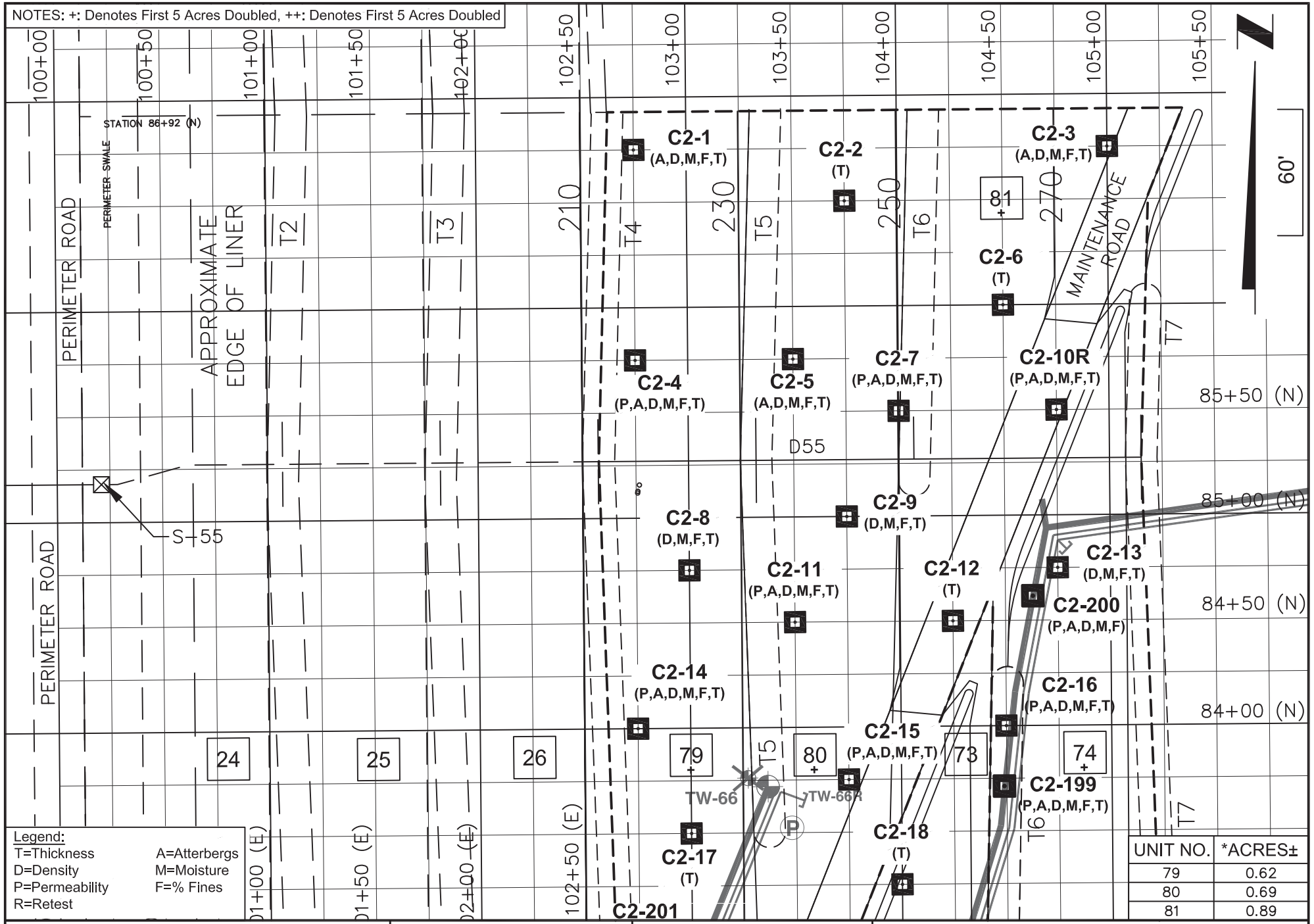
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PROJECT NAME:
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FIGURE NO.
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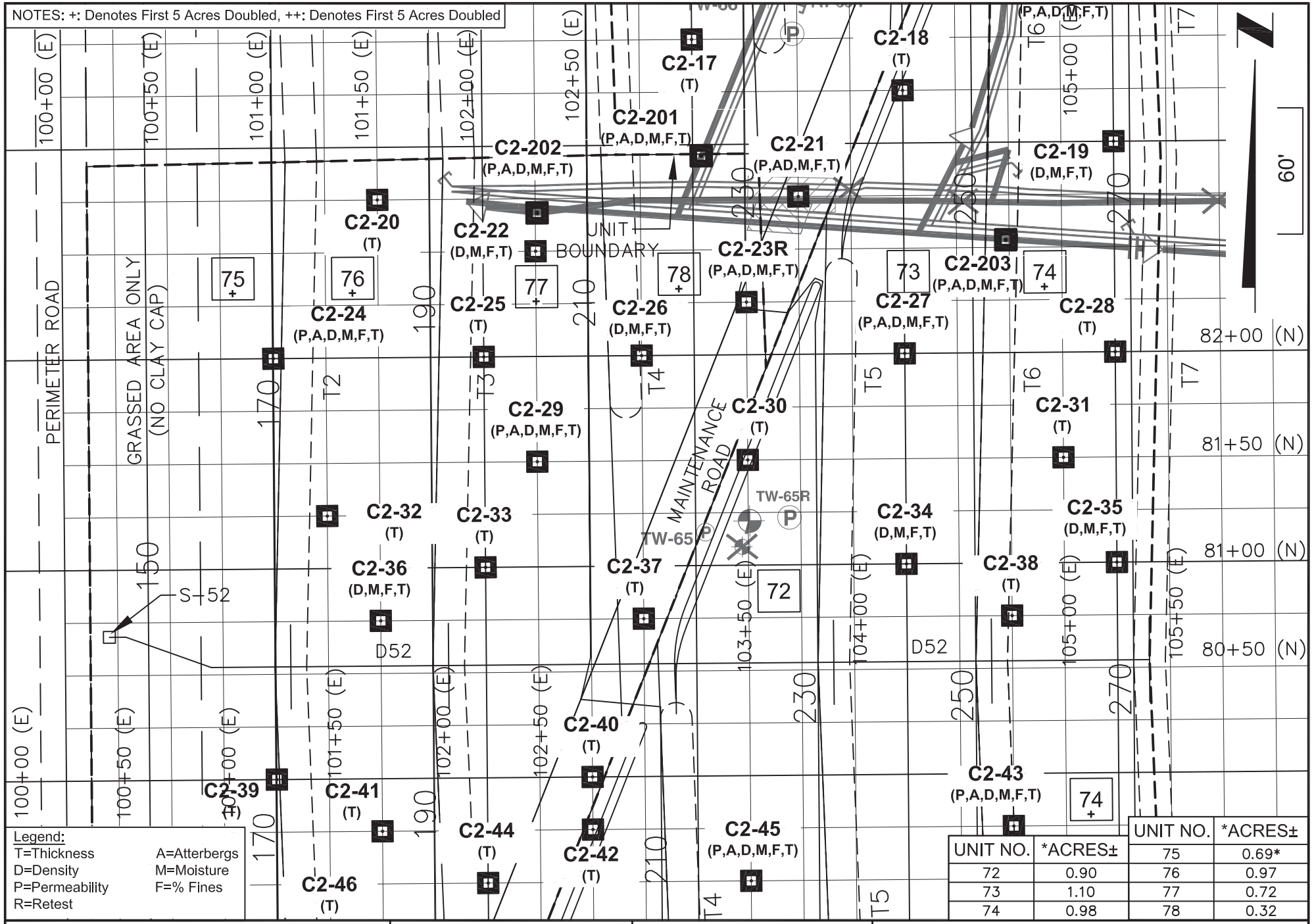
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PROJECT NAME:
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FIGURE NO.
1 of 10



UNIT NO.	*ACRES±
72	0.90
73	1.10
74	0.98

UNIT NO.	*ACRES±
75	0.69*
76	0.97
77	0.72
78	0.32

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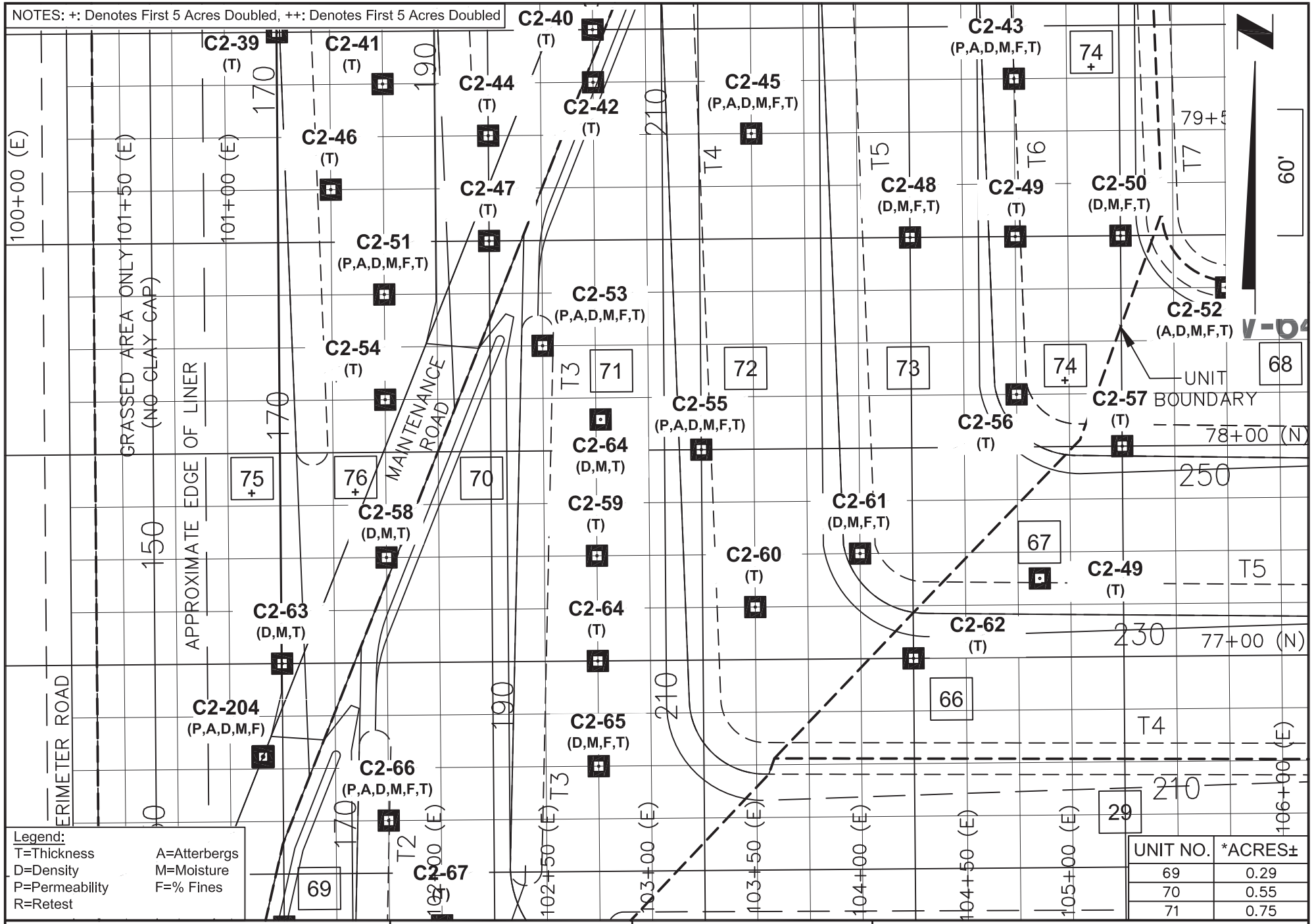
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PROJECT NAME:
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FIGURE NO.
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UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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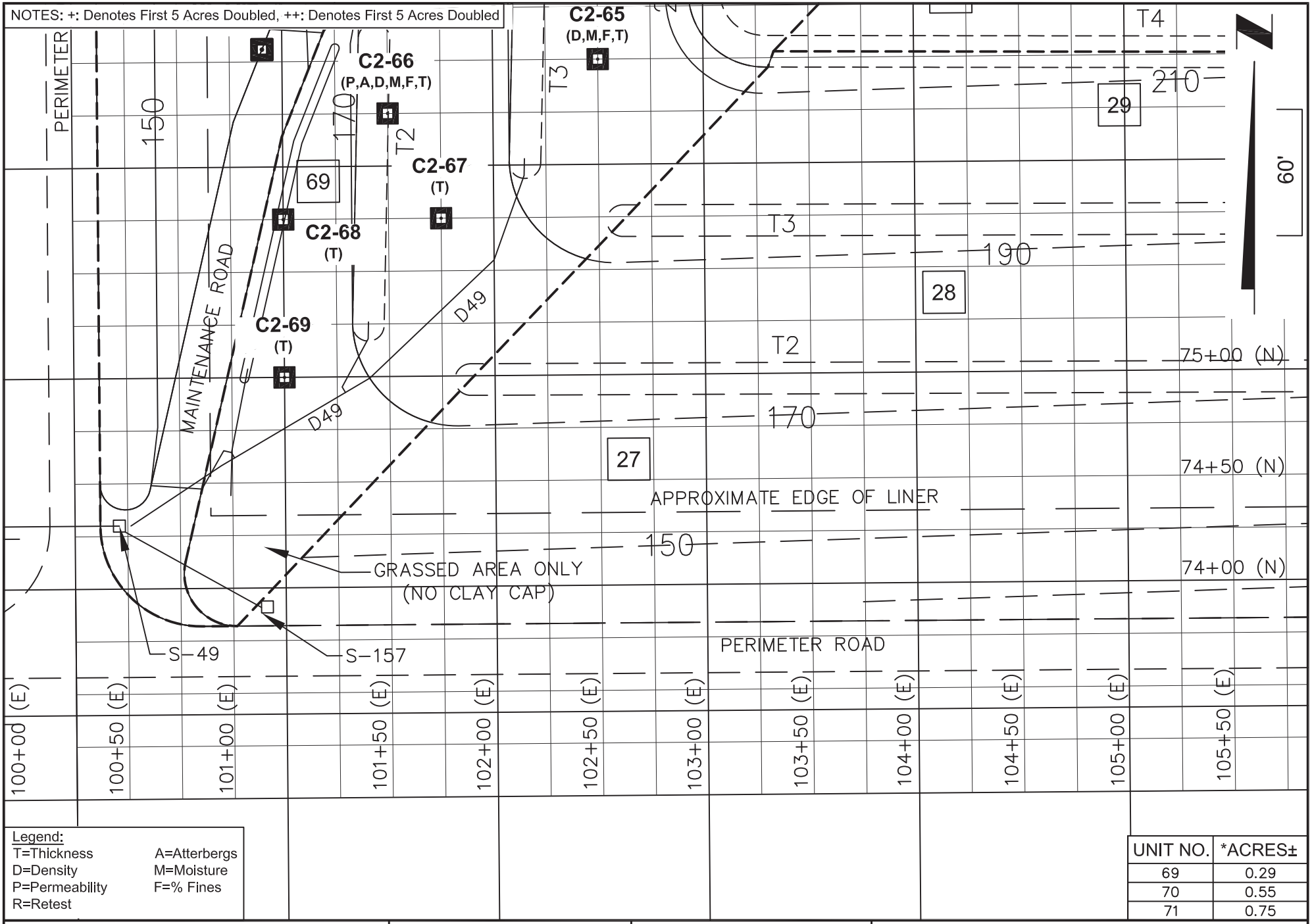
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FIGURE NO.
3 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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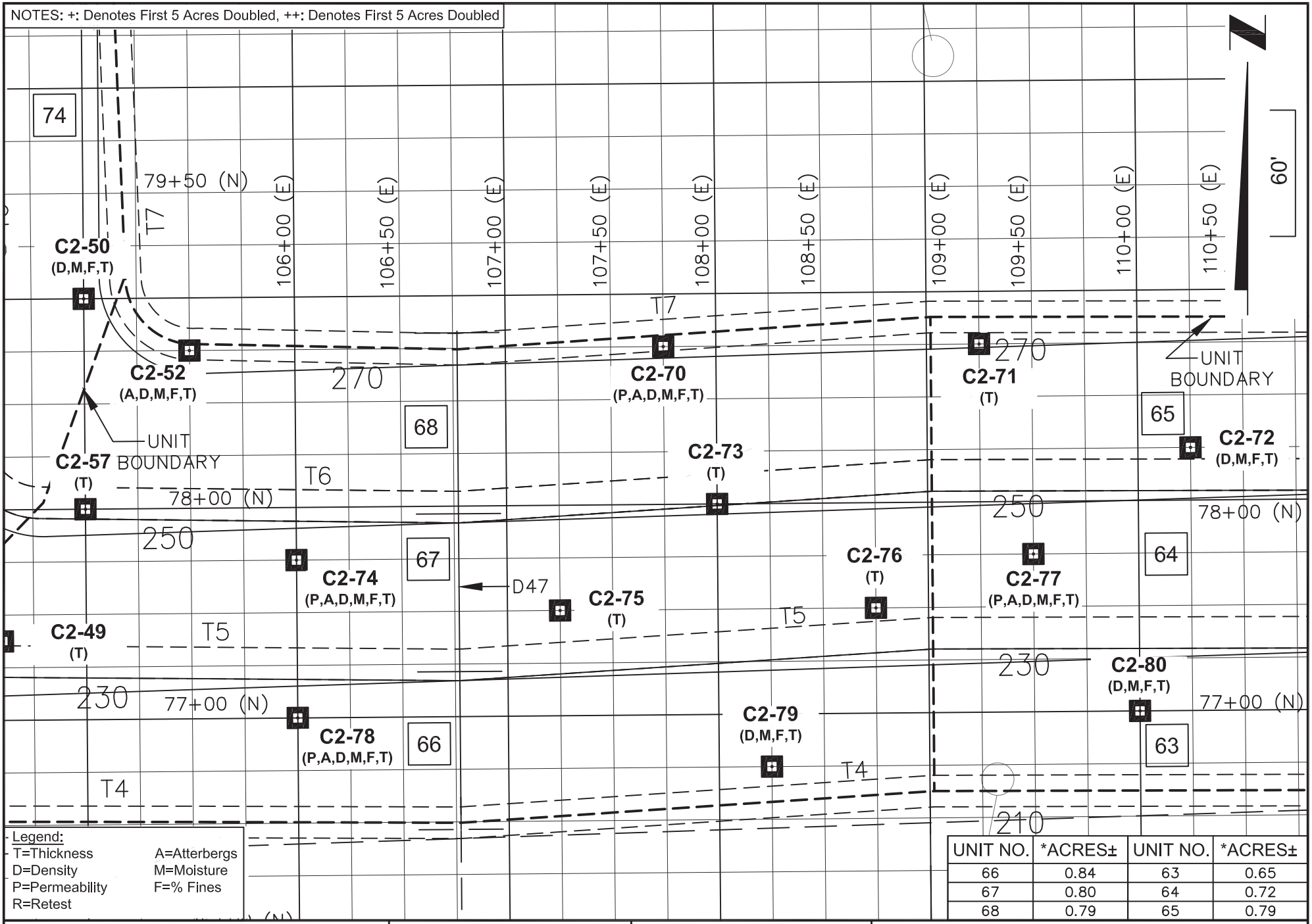
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FIGURE NO.
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UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
66	0.84	63	0.65
67	0.80	64	0.72
68	0.79	65	0.79

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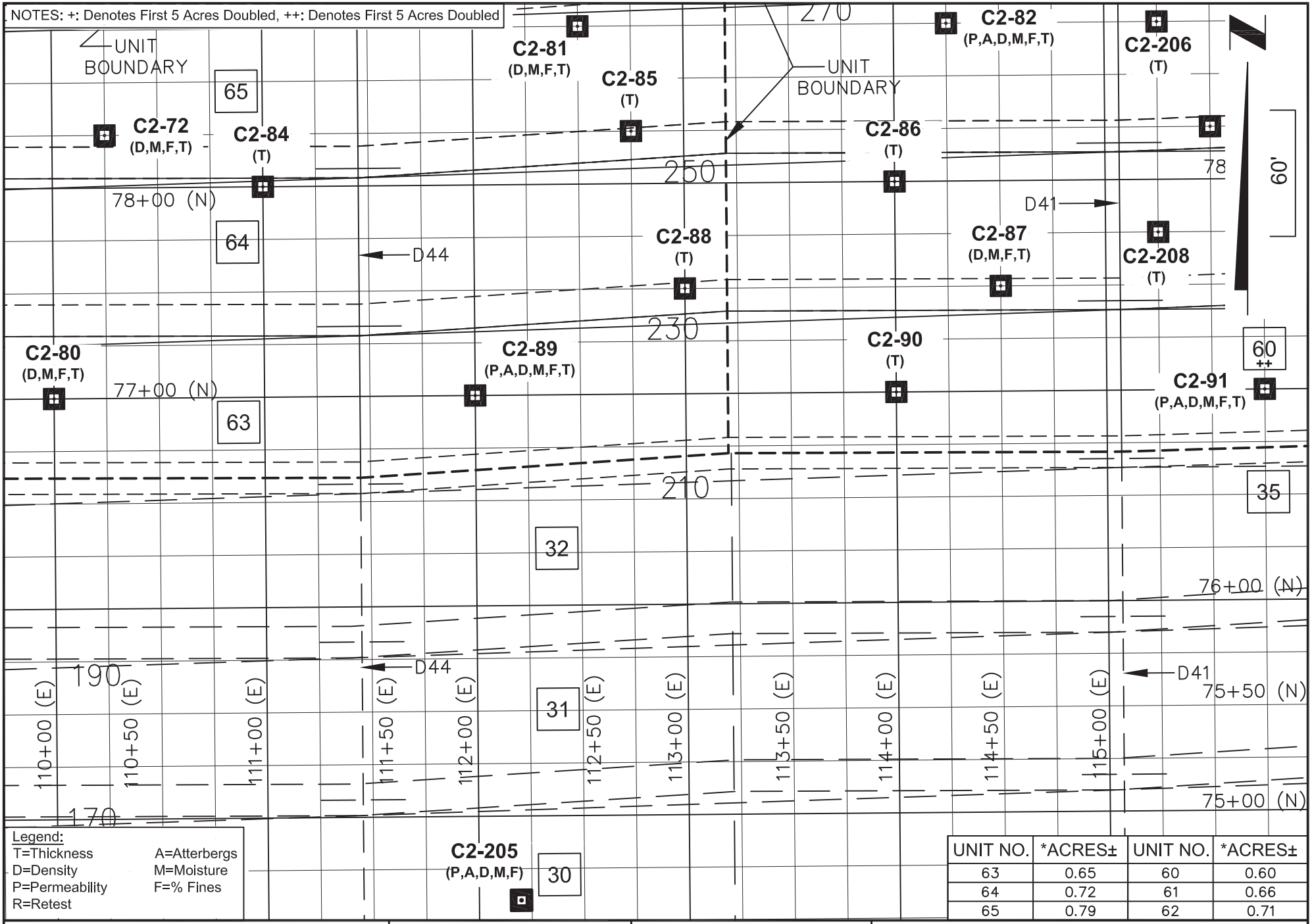
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FIGURE NO.
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Legend:
T=Thickness A=Atterbergs
D=Density M=Moisture
P=Permeability F=% Fines
R=Retest

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
63	0.65	60	0.60
64	0.72	61	0.66
65	0.79	62	0.71

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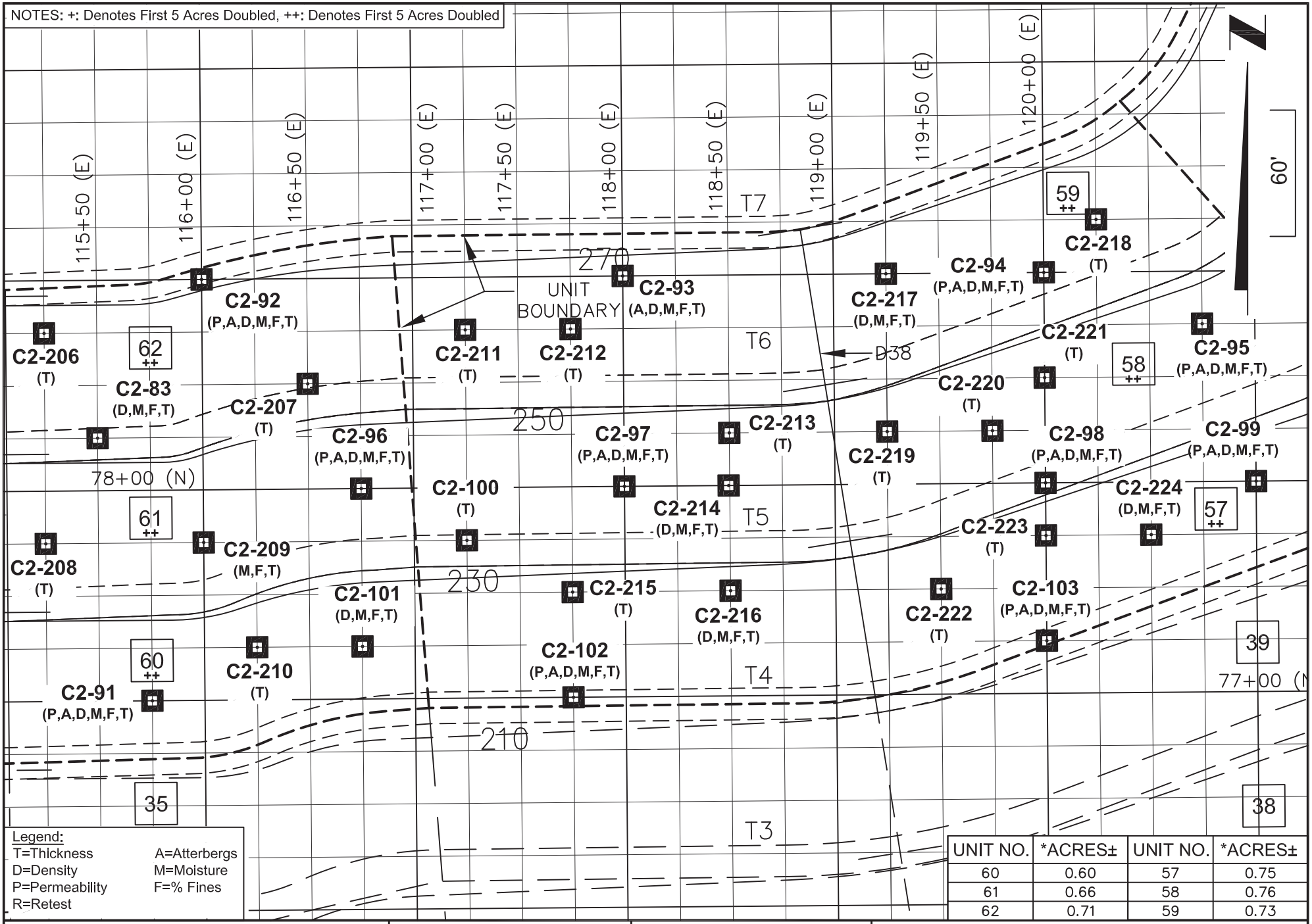
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FIGURE NO.
6 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
60	0.60	57	0.75
61	0.66	58	0.76
62	0.71	59	0.73

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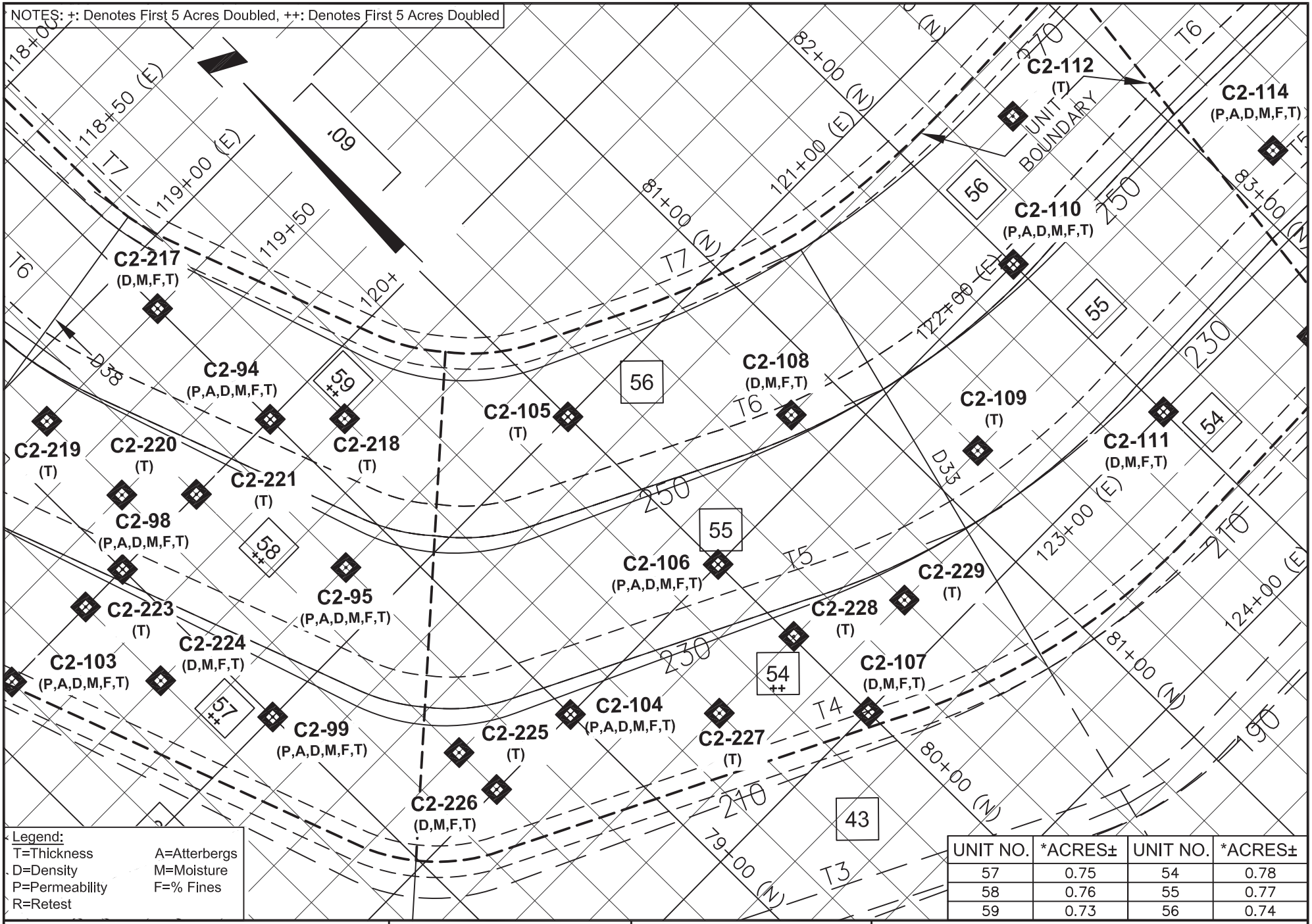
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FIGURE NO.
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UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
57	0.75	54	0.78
58	0.76	55	0.77
59	0.73	56	0.74

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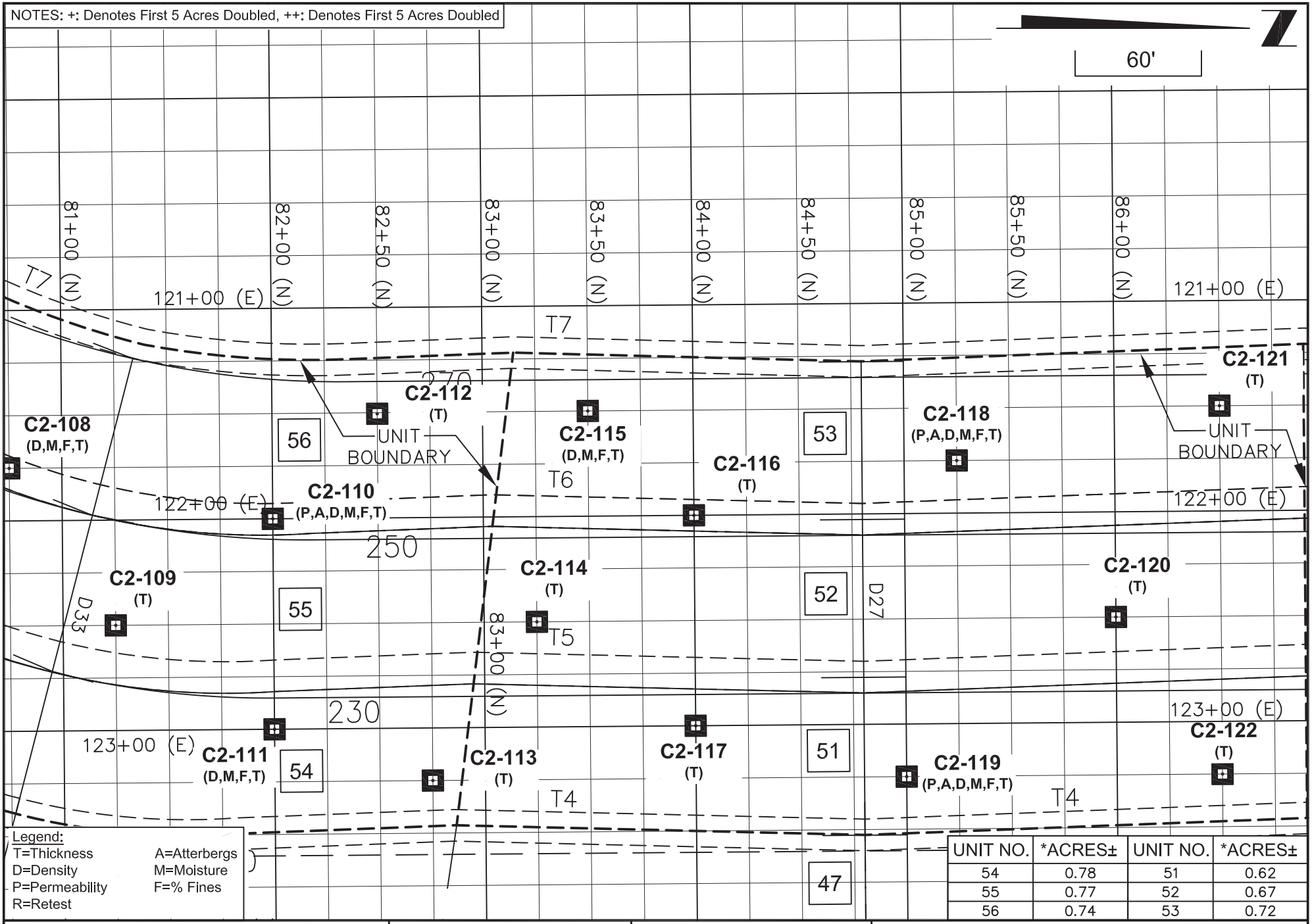
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UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
54	0.78	51	0.62
55	0.77	52	0.67
56	0.74	53	0.72

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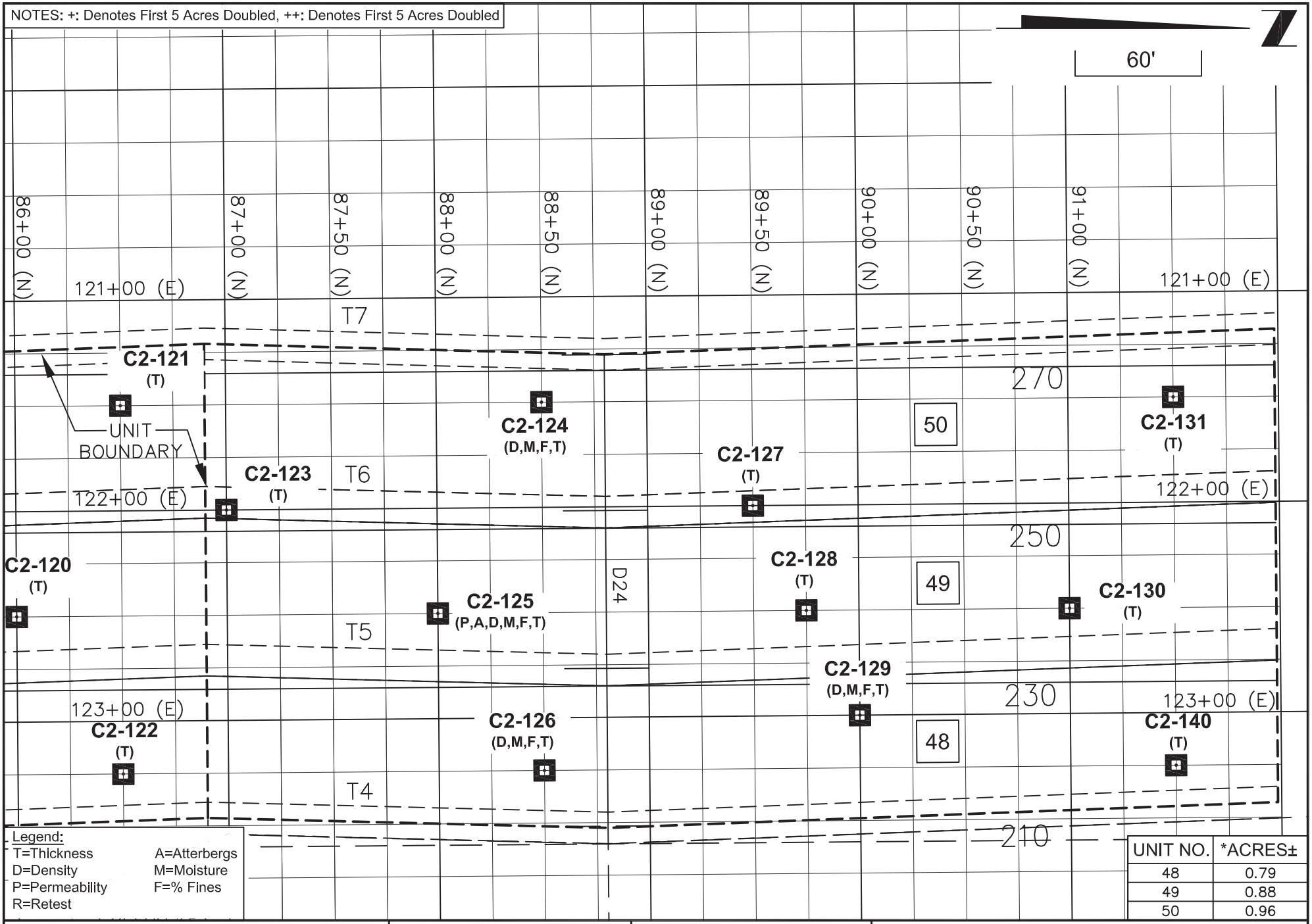
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FIGURE NO.
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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81

CLAY SECOND LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C2-001	86+75.00	103+00.00	79	ADMFT	14.5	83.0	90.0	31.5	x	78.0	22.0	56.0	55.8		PASS
C2-002	86+50.00	103+75.00	80	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-003	86+75.00	105+00.00	81	ADMFT	14.5	80.6	88.0	25.3	x	84.0	24.0	60.0	55.9		PASS
C2-004	85+75.00	102+75.00	79	PADMFT	13.5	86.1	94.0	36.7	7.40E-09	76.0	25.0	52.0	57.7		PASS
C2-005	85+75.00	103+50.00	80	ADMFT	14.0	80.0	87.0	27.6	x	79.0	27.0	52.0	55.6		PASS
C2-006	86+00.00	104+50.00	81	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-007	85+50.00	104+00.00	81	PADMFT	13.0	82.2	89.0	36.0	4.30E-09	85.0	23.0	62.0	54.9		PASS
C2-008	84+75.00	103+00.00	79	DMFT	14.0	87.4	95.0	35.3	x	x	x	x	56.3		PASS
C2-009	85+00.00	103+75.00	80	DMFT	14.0	81.6	89.0	31.6	x	x	x	x	55.7		PASS
C2-010R	85+50.00	104+75.00	81	PADMFT	14.0	79.8	87.0	39.0	6.70E-09	83.0	23.0	60.0	x		PASS
C2-011	84+50.00	103+50.00	80	PADMFT	15.0	83.6	91.0	35.6	1.10E-08	73.0	21.0	52.0	57.4		PASS
C2-012	84+50.00	104+25.00	81	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-013	84+75.00	104+75.00	74	DMFT	16.0	80.1	87.0	35.1	x	x	x	x	55.6		PASS
C2-014	84+00.00	102+75.00	79	PADMFT	14.0	89.9	98.0	29.0	8.30E-09	73.0	21.0	51.0	57.2		PASS
C2-015	83+75.00	103+75.00	80	PADMFT	14.0	90.2	98.0	38.9	1.00E-08	72.0	12.0	60.0	55.7		PASS
C2-016	84+00.00	104+50.00	74	PADMFT	16.0	81.4	89.0	32.4	5.10E-09	69.0	20.0	49.0	55.5		PASS
C2-017	83+50.00	103+00.00	79	T	14.0	x	x	x	x	x	x	x	x		PASS
C2-018	83+25.00	104+00.00	73	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-019	83+00.00	105+00.00	74	DMFT	14.0	80.2	87.0	37.9	x	x	x	x	60.3		PASS
C2-020	82+75.00	101+50.00	76	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-021R	82+75.00	103+50.00	80	PADMFT	13.0	78.3	85.0	46.3	7.20E-09	89.0	22.0	67.0	54.0		PASS
C2-022	82+50.00	102+25.00	77	DMFT	13.0	92.9	101.0	31.1	x	x	x	x	54.4		PASS
C2-023R	82+25.00	103+25.00	78	PADMFT	13.0	75.0	82.0	40.4	7.00E-09	91.0	21.0	70.0	56.3		PASS
C2-024	82+00.00	101+00.00	76	PADMFT	13.0	92.2	100.0	31.1	3.30E-09	70.0	18.0	52.0	54.7		PASS
C2-025	82+00.00	102+00.00	77	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-026	82+00.00	102+75.00	78	DMFT	13.0	78.6	86.0	42.6	x	x	x	x	56.5		PASS
C2-027	82+00.00	104+00.00	73	PADMFT	13.0	80.9	88.0	37.0	2.30E-09	71.0	24.0	47.0	56.5		PASS
C2-028	82+00.00	105+00.00	74	T	16.0	x	x	x	x	x	x	x	x		PASS
C2-029	81+50.00	102+25.00	77	PADMFT	13.0	85.3	93.0	34.1	2.10E-09	68.0	19.0	49.0	58.9		PASS
C2-030	81+50.00	103+25.00	72	T	16.0	x	x	x	x	x	x	x	x		PASS
C2-031	81+50.00	104+75.00	74	T	16.0	x	x	x	x	x	x	x	x		PASS
C2-032	81+25.00	101+25.00	76	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-033	81+00.00	001+02.00	77	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-034	81+00.00	104+00.00	73	DMFT	13.0	80.4	87.0	34.8	x	x	x	x	54.3		PASS

Meskel & Associates Engineering

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81

CLAY SECOND LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C2-035	81+00.00	105+00.00	74	DMFT	15.0	79.9	87.0	33.3	x	x	x	x	55.5		PASS
C2-036	80+75.00	101+50.00	76	DMFT	13.0	85.3	93.0	32.5	x	x	x	x	54.8		PASS
C2-037	80+75.00	102+75.00	78	T	15.0	x	x	x	x	x	x	x	x		PASS
C2-038	80+75.00	104+50.00	74	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-039	80+00.00	101+00.00	76	T	15.0	x	x	x	x	x	x	x	x		PASS
C2-040	80+00.00	102+50.00	77	T	12.0	x	x	x	x	x	x	x	x	Maint. Road	PASS
C2-041	79+75.00	101+50.00	76	T	15.0	x	x	x	x	x	x	x	x		PASS
C2-042	79+75.00	102+50.00	71	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-043	79+75.00	104+50.00	74	PADMFT	12.0	77.8	85.0	39.4	5.40E-09	69.0	23.0	45.0	66.4		PASS
C2-044	79+50.00	102+00.00	77	T	14.0	x	x	x	x	x	x	x	x		PASS
C2-045	79+50.00	103+25.00	72	PADMFT	14.0	76.4	83.0	40.1	8.00E-09	74.0	23.0	51.0	56.7		PASS
C2-046	79+25.00	101+25.00	76	T	14.0	x	x	x	x	x	x	x	x		PASS
C2-047	79+00.00	102+00.00	77	T	12.0	x	x	x	x	x	x	x	x	Maint. Road	PASS
C2-048	79+00.00	104+00.00	73	DMFT	14.0	76.7	83.0	34.4	x	x	x	x	57.3		PASS
C2-049	79+00.00	104+50.00	74	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-050	79+00.00	105+00.00	74	DMFT	12.0	84.4	92.0	36.1	x	x	x	x	52.6		PASS
C2-051	78+75.00	101+50.00	76	PADMFT	15.0	78.4	85.0	41.7	7.20E-09	90.0	26.0	64.0	61.5		PASS
C2-052	78+75.00	105+50.00	68	ADMFT	12.0	88.1	88.0	38.2	x	67.0	23.0	44.0	52.3		PASS
C2-053	78+50.00	102+25.00	71	PADMFT	13.0	82.2	89.0	37.3	3.40E-09	74.0	22.0	53.0	58.6		PASS
C2-054	78+25.00	101+50.00	76	T	12.0	x	x	x	x	x	x	x	x	Maint. Road	PASS
C2-055	78+00.00	103+00.00	72	PADMFT	14.0	75.5	82.0	40.5	6.40E-09	70.0	23.0	47.0	55.0		PASS
C2-056	78+25.00	104+50.00	73	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-057	78+00.00	105+00.00	74	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-058	77+50.00	101+50.00	76	DMT	12.0	73.1	80.0	x	x	x	x	x	x	Maint. Road	PASS
C2-059	77+50.00	102+50.00	71	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-060	77+25.00	103+25.00	72	T	14.0	x	x	x	x	x	x	x	x		PASS
C2-061	77+50.00	103+75.00	73	DMFT	12.0	78.9	91.9	36.9	x	x	x	x	56.9		PASS
C2-062	77+00.00	104+00.00	66	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-063	77+00.00	101+00.00	75	DMT	12.0	74.2	81.0	x	x	x	x	x	x	Maint. Road	PASS
C2-064	77+00.00	102+50.00	71	DMT	14.0	78.9	86.0	x	x	x	x	x	x		PASS
C2-065	76+50.00	102+50.00	71	DMFT	13.0	78.7	86.0	35.8	x	x	x	x	58.0		PASS
C2-066	76+25.00	101+50.00	70	PADMFT	13.0	80.5	88.0	35.5	3.70E-09	70.0	20.0	50.0	56.3		PASS
C2-067	75+75.00	101+75.00	70	T	13.0	x	x	x	x	x	x	x	x		PASS
C2-068	75+75.00	101+00.00	69	T	12.0	x	x	x	x	x	x	x	x		PASS

Meskel & Associates Engineering

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81

CLAY SECOND LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C2-069	75+00.00	101+00.00	69	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-070	78+75.00	107+75.00	68	PADMFT	12.0	83.0	90.0	34.0	6.10E-09	79.0	25.0	54.0	57.0		PASS
C2-071	78+75.00	109+25.00	65	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-072	78+25.00	110+25.00	65	DMFT	12.0	89.1	97.0	36.8	x	x	x	x	66.0		PASS
C2-073	78+00.00	108+00.00	68	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-074	77+75.00	106+00.00	67	PADMFT	18.0	88.6	96.4	34.2	1.50E-08	72.0	23.0	49.0	56.8		PASS
C2-075	77+50.00	107+25.00	67	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-076	77+50.00	108+75.00	67	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-077	77+75.00	109+50.00	64	PADMFT	12.0	86.8	95.0	36.6	7.10E-09	66.0	21.0	45.0	58.0		PASS
C2-078	77+00.00	106+00.00	66	PADMFT	15.0	90.4	98.3	31.7	2.00E-08	72.0	23.0	49.0	57.6		PASS
C2-079	76+75.00	108+25.00	66	DMFT	12.0	76.5	83.0	37.3	x	x	x	x	56.8		PASS
C2-080	77+00.00	110+00.00	63	DMFT	12.0	73.5	80.0	42.5	x	x	x	x	53.0		PASS
C2-081	78+75.00	112+50.00	65	DMFT	12.0	83.6	91.0	43.1	x	x	x	x	55.5		PASS
C2-082	78+75.00	114+25.00	62	PADMFT	12.0	76.7	84.0	41.9	3.40E-09	83.0	24.0	59.0	53.9		PASS
C2-083	78+25.00	115+50.00	62	DMFT	12.0	81.1	88.0	42.0	x	x	x	x	56.0		PASS
C2-084	78+00.00	111+00.00	65	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-085	78+25.00	112+75.00	65	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-086	78+00.00	114+00.00	61	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-087	77+50.00	114+50.00	61	DMFT	12.0	73.8	80.0	43.9	x	x	x	x	54.3		PASS
C2-088	77+50.00	113+00.00	64	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-089	77+00.00	112+00.00	63	PADMFT	12.0	81.2	88.0	36.8	8.00E-09	90.0	24.0	66.0	55.0		PASS
C2-090	77+00.00	114+00.00	60	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-091	77+00.00	115+75.00	60	PADMFT	12.0	81.8	89.0	32.9	3.10E-09	79.0	21.0	58.0	54.6		PASS
C2-092	79+00.00	116+00.00	62	PADMFT	12.0	80.4	88.0	32.9	4.70E-09	79.0	21.0	58.0	54.6		PASS
C2-093	79+00.00	118+00.00	59	ADMFT	12.0	76.7	83.0	37.2	x	89.0	33.0	56.0	49.5		PASS
C2-094	79+00.00	120+00.00	59	PADMFT	12.0	84.5	96.0	34.3	1.20E-08	71.0	24.0	47.0	52.0		PASS
C2-095	78+75.00	120+75.00	58	PADMFT	12.0	82.0	89.0	43.9	2.90E-09	88.0	24.0	64.0	61.2		PASS
C2-096	78+00.00	116+75.00	61	PADMFT	12.0	75.9	82.0	42.6	5.80E-09	84.0	23.0	61.0	53.1		PASS
C2-097	78+00.00	118+00.00	58	PADMFT	12.0	75.1	88.0	39.6	3.60E-09	85.0	25.0	60.0	51.0		PASS
C2-098	78+00.00	120+00.00	58	PADMFT	12.0	80.2	80.2	32.3	5.30E-09	71.0	20.0	51.0	54.5		PASS
C2-099	78+00.00	121+00.00	57	PADMFT	12.0	78.2	85.0	32.3	3.60E-09	84.0	31.0	53.0	53.7		PASS
C2-100	77+75.00	117+25.00	58	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-101	77+25.00	116+75.00	60	DMFT	12.0	78.5	85.0	44.2	x	x	x	x	58.1		PASS
C2-102	77+00.00	117+75.00	57	PADMFT	12.0	85.3	93.0	45.9	3.10E-09	82.0	20.0	62.0	56.9		PASS

Meskel & Associates Engineering

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81

CLAY SECOND LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C2-103	77+25.00	120+00.00	57	PADMFT	12.0	89.6	98.0	27.6	3.10E-09	77.0	19.0	58.0	52.4		PASS
C2-104	79+00.00	122+00.00	54	PADMFT	12.0	79.4	86.0	38.9	7.90E-09	78.0	26.0	52.0	53.5		PASS
C2-105	80+00.00	121+00.00	56	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-106	80+00.00	122+00.00	55	PADMFT	12.0	82.6	90.0	37.0	7.00E-09	70.0	25.0	45.0	49.7		PASS
C2-107	80+00.00	123+00.00	54	DMFT	12.0	80.2	87.0	30.9	x	x	x	x	65.4		PASS
C2-108	80+75.00	121+75.00	56	DMFT	12.0	81.0	88.0	34.3	x	x	x	x	54.4		PASS
C2-109	81+25.00	122+50.00	55	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-110	82+00.00	122+00.00	56	PADMFT	12.0	87.9	88.0	29.5	2.00E-09	64.0	19.0	45.0	61.4		PASS
C2-111	82+00.00	123+00.00	54	DMFT	12.0	85.8	93.0	25.1	x	x	x	x	57.8		PASS
C2-112	82+50.00	121+50.00	56	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-113	82+75.00	123+25.00	54	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-114	83+25.00	122+50.00	52	PADMFT	12.0	84.3	92.0	24.0	2.20E-09	70.0	21.0	49.0	51.7		PASS
C2-115	83+50.00	121+50.00	53	DMFT	12.0	76.8	84.0	39.0	x	x	x	x	68.2		PASS
C2-116	84+00.00	122+00.00	53	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-117	84+00.00	123+00.00	51	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-118	85+25.00	121+75.00	53	PADMFT	12.0	87.2	95.0	27.6	9.00E-09	74.0	22.0	52.0	52.5		PASS
C2-119	85+00.00	123+25.00	51	PADMFT	12.0	79.7	87.0	28.7	3.80E-09	76.0	19.0	57.0	51.4		PASS
C2-120	86+00.00	122+50.00	52	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-121	86+50.00	121+50.00	53	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-122	86+50.00	123+25.00	51	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-123	87+00.00	122+00.00	50	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-124	88+50.00	121+50.00	50	DMFT	12.0	90.2	98.0	34.7	x	x	x	x	53.6		PASS
C2-125	88+00.00	122+50.00	49	PADMFT	12.0	84.8	92.0	32.7	3.30E-09	72.0	24.0	48.0	48.6		PASS
C2-126	88+50.00	123+25.00	48	DMFT	12.0	85.7	93.0	34.5	x	x	x	x	56.8		PASS
C2-127	89+50.00	122+00.00	50	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-128	89+75.00	122+50.00	49	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-129	90+00.00	123+00.00	48	DMFT	12.0	77.4	84.0	35.8	x	x	x	x	54.0		PASS
C2-130	91+00.00	122+50.00	49	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-131	91+50.00	121+50.00	50	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-140	91+50.00	123+25.00	48	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-199	83+71.00	104+49.00	74	PADMFT	12.0	74.5	81.0	41.4	6.10E-09	74.0	23.0	50.0	55.2	GAS	PASS
C2-200	84+62.00	104+63.00	74	PADMFT	12.0	77.0	84.0	42.4	2.20E-09	74.0	23.0	51.0	55.6	GAS	PASS
C2-201	82+95.00	103+04.00	79	PADMFT	12.0	83.9	91.0	33.4	7.90E-09	75.0	24.0	51.0	56.3	GAS	PASS
C2-202	82+68.00	102+26.00	77	PADMFT	12.0	89.2	97.0	39.0	2.80E-09	71.0	23.0	48.0	53.3	GAS	PASS



Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY SECOND LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C2-203	82+54.00	104+49.00	74	PADMFT	12.0	77.2	84.0	36.5	5.40E-09	74.0	24.0	50.0	51.5	GAS	PASS
C2-204	76+57.00	100+80.00	69	PADMF	x	77.6	84.0	41.4	4.30E-09	77.0	22.0	54.0	59.5	Anchor Berm Repair	PASS
C2-205	74+60.00	112+20.00	x	PADMF	12.0	75.8	83.0	41.9	2.30E-09	x	x	x	x	Seep Repair in previous clousure	PASS
C2-206	78+75.00	115+25.00	62	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-207	78+50.00	116+50.00	62	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-208	77+75.00	115+25.00	61	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-209	77+75.00	116+00.00	61	TMF	12.0	x	x	38.2	x	x	x	x	51.5		PASS
C2-210	77+25.00	116+25.00	60	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-211	78+75.00	117+25.00	62	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-212	78+75.00	117+75.00	62	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-213	78+25.00	118+50.00	61	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-214	78+00.00	118+50.00	61	DMFT	12.0	77.4	84.0	39.8	x	x	x	x	47.4		PASS
C2-215	77+50.00	117+75.00	60	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-216	77+50.00	118+50.00	60	DMFT	12.0	79.2	86.0	37.2	x	x	x	x	56.5		PASS
C2-217	79+00.00	120+00.00	59	DMFT	12.0	88.0	96.0	20.7	x	x	x	x	55.0		PASS
C2-218	79+25.00	120+25.00	59	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-219	78+25.00	119+25.00	58	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-220	78+25.00	119+75.00	58	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-221	78+50.00	120+00.00	58	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-222	77+50.00	119+50.00	57	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-223	77+75.00	120+00.00	57	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-224	77+75.00	120+50.00	57	DMFT	12.0	87.6	95.0	28.2	x	x	x	x	x		PASS
C2-225	78+50.00	121+75.00	54	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-226	78+50.00	122+00.00	54	DMFT	12.0	81.9	89.0	33.1	x	x	x	x	51.3		PASS
C2-227	79+50.00	122+50.00	54	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-228	80+00.00	123+00.00	54	T	12.0	x	x	x	x	x	x	x	x		PASS
C2-229	80+00.00	122+75.00	54	T	12.0	x	x	x	x	x	x	x	x		PASS
Subtotal without Downcommers: Tests Required					**161**	**80**	**80**	**80**	**40**	**40**	**40**	**40**	**80**		
Subtotal without Downcommers: Tests Performed					**162**	**88**	**88**	**88**	**48**	**52**	**52**	**52**	**83**		
Downcommers															
C2-132	85+25.00	102+80.69	79	PADMFT	15.0	83.9	91.0	35.2	5.60E-09	75.0	25.0	50.0	56.2	D-55	PASS
C2-133	85+25.00	103+00.00	79	T	18.0	x	x	x	x	x	x	x	x	D-55	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81

CLAY SECOND LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C2-134	85+25.00	103+53.69	80	PADMFT	15.0	83.0	90.0	38.9	5.90E-09	78.0	25.0	54.0	52.6	D-55	PASS
C2-135	85+25.00	103+75.00	80	T	15.0	x	x	x	x	x	x	x	x	D-55	PASS
C2-136	85+25.00	104+30.69	81	PADMFT	17.0	85.1	93.0	36.8	3.60E-09	77.0	24.0	53.0	55.0	D-55	PASS
C2-137	85+25.00	104+50.00	81	T	15.0	x	x	x	x	x	x	x	x	D-55	PASS
C2-138	85+25.00	104+80.69	74	T	16.0	x	x	x	x	x	x	x	x	D-55	PASS
C2-139	85+25.00	105+00.00	74	PADMFT	17.0	83.3	91.0	38.6	2.10E-90	72.0	21.0	50.0	53.2	D-55	PASS
C2-141	80+50.00	100+75.00	75	PADMFT	12.0	81.7	89.0	31.4	6.50E-09	74.0	25.0	49.0	56.8	D-52	PASS
C2-142	80+50.00	100+90.19	75	T	12.0	x	x	x	x	x	x	x	x	D-52	PASS
C2-143	80+50.00	101+35.00	76	PADMFT	12.0	79.1	86.0	31.5	1.20E-08	76.0	25.0	51.0	58.4	D-52	PASS
C2-144	80+50.00	101+50.00	76	T	12.0	x	x	x	x	x	x	x	x	D-52	PASS
C2-145	80+50.00	102+10.00	77	PADMFT	12.0	87.4	95.0	33.4	5.50E-09	72.0	24.0	48.0	56.9	D-52	PASS
C2-146	80+50.00	102+25.00	77	T	12.0	x	x	x	x	x	x	x	x	D-52	PASS
C2-147	80+50.00	103+00.00	72	PADMFT	12.0	79.7	87.0	35.8	1.20E-08	64.0	25.0	39.0	53.8	D-52	PASS
C2-148	80+50.00	103+15.00	72	T	12.0	x	x	x	x	x	x	x	x	D-52	PASS
C2-149	80+50.00	103+80.72	73	PADMFT	12.0	87.5	88.0	33.9	9.40E-09	69.0	22.0	47.0	53.1	D-52	PASS
C2-150	80+50.00	103+95.72	73	T	12.0	x	x	x	x	x	x	x	x	D-52	PASS
C2-151R	80+50.00	104+55.72	74	PADMFT	12.0	79.9	87.0	41.9	5.90E-09	82.0	20.0	62.0	56.4	D-52	PASS
C2-152R	80+50.00	104+70.72	74	T	12.0	x	x	x	x	x	x	x	x	D-52	PASS
C2-153	75+50.00	102+00.00	70	PADMFT	12.0	73.8	80.0	38.9	6.10E-09	74.0	22.0	52.0	53.7	D-49	PASS
C2-154	75+00.00	101+50.00	70	T	12.0	x	x	x	x	x	x	x	x	D-49	PASS
C2-155	74+84.48	101+17.36	69	PADMFT	12.0	75.5	82.0	39.2	3.30E-09	72.0	25.0	47.0	56.9	D-49	PASS
C2-156	74+75.00	101+00.00	69	T	12.0	x	x	x	x	x	x	x	x	D-49	PASS
C2-157	78+50.00	106+75.00	68	PADMFT	15.0	79.8	86.8	40.5	4.50E-09	67.0	26.0	51.0	59.5	D-47	PASS
C2-158	78+31.00	106+75.00	68	T	13.0	x	x	x	x	x	x	x	x	D-47	PASS
C2-159	77+75.00	106+75.00	67	PADMFT	12.0	85.0	92.0	37.4	5.40E-09	69.0	29.0	52.0	60.0	D-47	PASS
C2-160	77+56.00	106+75.00	67	T	12.0	x	x	x	x	x	x	x	x	D-47	PASS
C2-161	77+00.00	106+75.00	66	PADMFT	12.0	84.1	91.5	30.6	1.10E-08	71.0	32.0	38.0	62.3	D-47	PASS
C2-162	76+81.00	106+75.00	66	T	13.0	x	x	x	x	x	x	x	x	D-47	PASS
C2-163	78+50.00	111+50.00	65	PADMFT	12.0	77.7	85.0	41.6	1.40E-08	67.0	26.0	41.0	49.5	D-44	PASS
C2-164	78+31.00	111+50.00	65	T	12.0	x	x	x	x	x	x	x	x	D-44	PASS
C2-165	77+75.00	111+50.00	64	PADMFT	12.0	75.8	83.0	43.6	5.10E-09	76.0	25.0	51.0	52.1	D-44	PASS
C2-166	77+56.00	111+50.00	64	T	12.0	x	x	x	x	x	x	x	x	D-44	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81

CLAY SECOND LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
C2-167	77+00.00	111+50.00	63	PADMFT	12.0	74.8	81.0	44.0	6.00E-09	74.0	23.0	51.0	51.7	D-44	PASS
C2-168	76+81.00	111+50.00	63	T	12.0	x	x	x	x	x	x	x	x	D-44	PASS
C2-169	78+44.00	115+00.00	62	PADMFT	12.0	73.7	80.0	45.2	3.60E-09	55.0	20.0	35.0	54.7	D-41	PASS
C2-170	78+25.00	115+00.00	62	T	12.0	x	x	x	x	x	x	x	x	D-41	PASS
C2-171	77+69.00	115+00.00	61	PADMFT	12.0	75.4	82.0	45.2	3.60E-09	86.0	21.0	65.0	56.1	D-41	PASS
C2-172	77+50.00	115+00.00	61	T	12.0	x	x	x	x	x	x	x	x	D-41	PASS
C2-173	76+94.00	115+00.00	60	PADMFT	12.0	12.0	80.9	88.0	1.90E-09	74.0	21.0	53.0	47.2	D-41	PASS
C2-174	76+75.00	115+00.00	60	T	12.0	x	x	x	x	x	x	x	x	D-41	PASS
C2-175	78+69.00	118+98.50	59	PADMFT	12.0	74.5	81.0	35.9	1.80E-09	90.0	29.0	61.0	51.4	D-38	PASS
C2-176	78+50.00	119+00.00	59	T	12.0	x	x	x	x	x	x	x	x	D-38	PASS
C2-177	77+94.00	118+98.50	58	PADMFT	12.0	73.0	80.0	44.2	3.90E-09	81.0	33.0	48.0	48.1	D-38	PASS
C2-178	77+75.00	119+00.00	58	T	12.0	x	x	x	x	x	x	x	x	D-38	PASS
C2-179	77+19.00	119+23.50	57	PADMFT	12.0	76.1	83.0	40.4	3.10E-09	89.0	35.0	54.0	55.1	D-38	PASS
C2-180	77+00.00	119+25.00	57	T	12.0	x	x	x	x	x	x	x	x	D-38	PASS
C2-181	81+30.96	121+54.23	56	PADMFT	12.0	79.4	86.0	37.8	3.80E-09	76.0	27.0	49.0	52.0	D-33	PASS
C2-182	81+25.00	121+50.00	56	T	12.0	x	x	x	x	x	x	x	x	D-33	PASS
C2-183	81+05.96	122+29.23	55	PADMFT	12.0	77.3	84.0	41.0	3.80E-09	74.0	28.0	46.0	54.4	D-33	PASS
C2-184	81+00.00	122+50.00	55	T	12.0	x	x	x	x	x	x	x	x	D-33	PASS
C2-185	81+00.00	123+00.00	54	PADMFT	12.0	77.6	85.0	36.6	1.60E-08	73.0	24.0	49.0	54.3	D-33	PASS
C2-186	80+80.96	123+04.73	54	T	12.0	x	x	x	x	x	x	x	x	D-33	PASS
C2-187	84+75.00	121+85.00	53	PADMFT	12.0	80.8	88.0	29.9	1.30E-08	72.0	22.0	50.0	53.2	D-27	PASS
C2-188	84+75.00	122+00.00	53	T	12.0	x	x	x	x	x	x	x	x	D-27	PASS
C2-189	84+75.00	122+60.00	52	PADMFT	12.0	81.3	89.0	35.6	6.70E-09	69.0	18.0	51.0	53.4	D-27	PASS
C2-190	84+75.00	122+75.00	52	T	12.0	x	x	x	x	x	x	x	x	D-27	PASS
C2-191	84+75.00	123+35.00	51	PADMFT	12.0	91.5	100.0	31.4	6.00E-09	75.0	22.0	53.0	53.5	D-27	PASS
C2-192	84+75.00	123+50.00	51	T	12.0	x	x	x	x	x	x	x	x	D-27	PASS
C2-193	88+75.00	121+50.00	50	PADMFT	12.0	74.6	80.0	38.8	2.00E-09	65.0	21.0	44.0	57.6	D-24	PASS
C2-194	88+75.00	121+65.00	50	T	12.0	x	x	x	x	x	x	x	x	D-24	PASS
C2-195	88+75.00	122+25.00	49	PADMFT	12.0	73.4	80.0	44.7	3.80E-09	79.0	25.0	54.0	48.1	D-24	PASS
C2-196	88+75.00	122+40.00	49	T	12.0	x	x	x	x	x	x	x	x	D-24	PASS
C2-197	88+75.00	123+00.00	48	PADMFT	12.0	75.1	82.0	46.5	2.60E-09	77.0	26.0	51.0	55.3	D-24	PASS
C2-198	88+75.00	123+15.00	48	T	12.0	x	x	x	x	x	x	x	x	D-24	PASS

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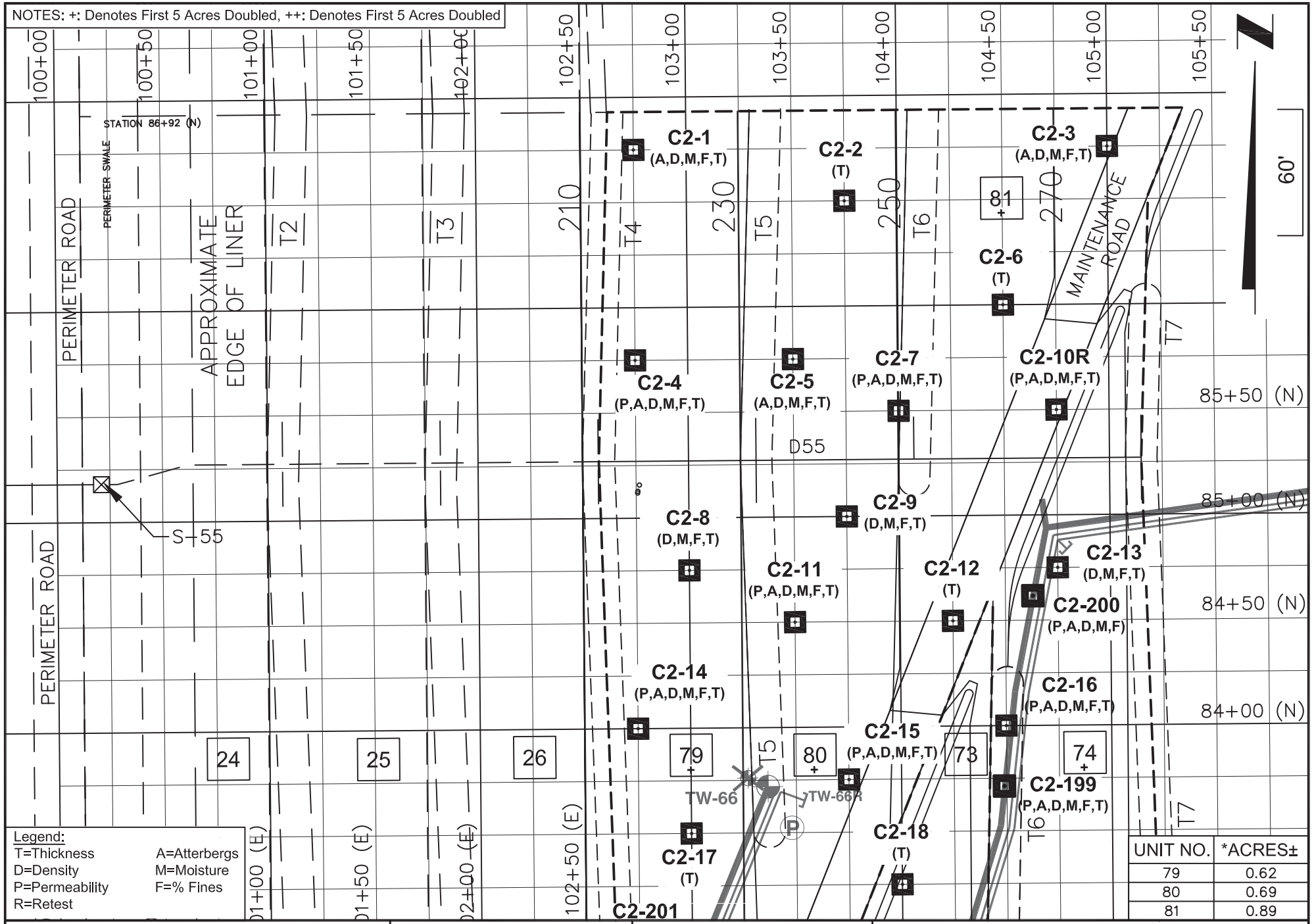
Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
CLAY SECOND LIFT TEST RESULTS

Compaction Minimum Value: 80.0% of Standard Proctor **Permeability Maximum:** 6.67x10-8cm/sec **Thickness Minimum:** 6.0"

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Field Dry Density (PCF)	Percent Compaction (%)	Lab Moisture Content (%)	Coefficient of Permeability (cm/sec)	Liquid Limit	Plastic Limit	Plastic Index	Percent Passing #200 Sieve	Note	Test Result
Downcommers: Tests Required					66	33	33	33	33	33	33	33	33		
Downcommers: Tests Performed					66	33	33	33	33	33	33	33	33		
All Phase 4 Totals = 30.2 Acres															
Total: Tests Required					227.0	113.0	113.0	113.0	73.0	73.0	73.0	73.0	113.0		
Total: Tests Performed					228.0	121.0	121.0	121.0	81.0	85.0	85.0	85.0	116.0		

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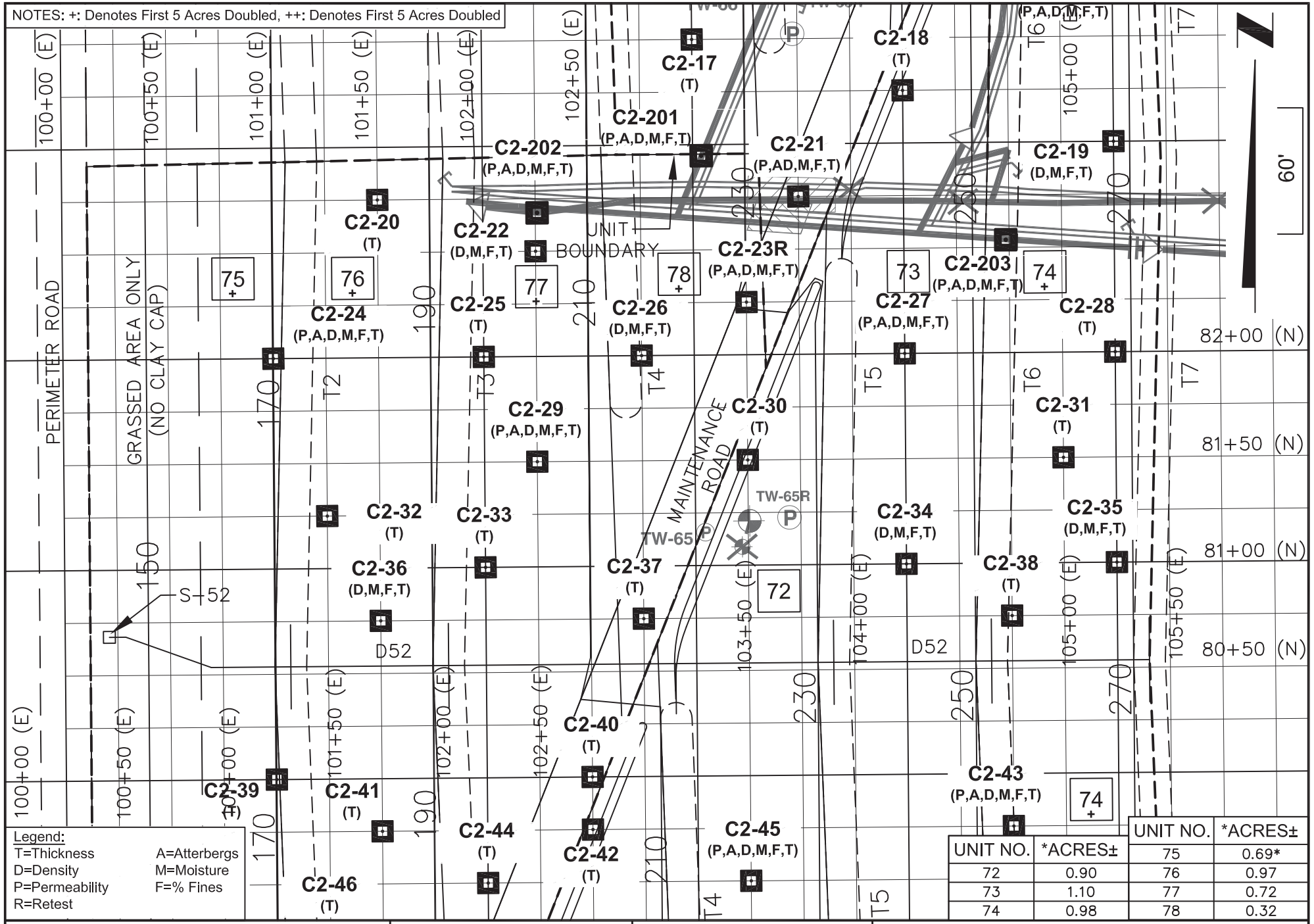
CLIENT:
ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
1 of 10



UNIT NO.	*ACRES±
72	0.90
73	1.10
74	0.98

UNIT NO.	*ACRES±
75	0.69*
76	0.97
77	0.72
78	0.32

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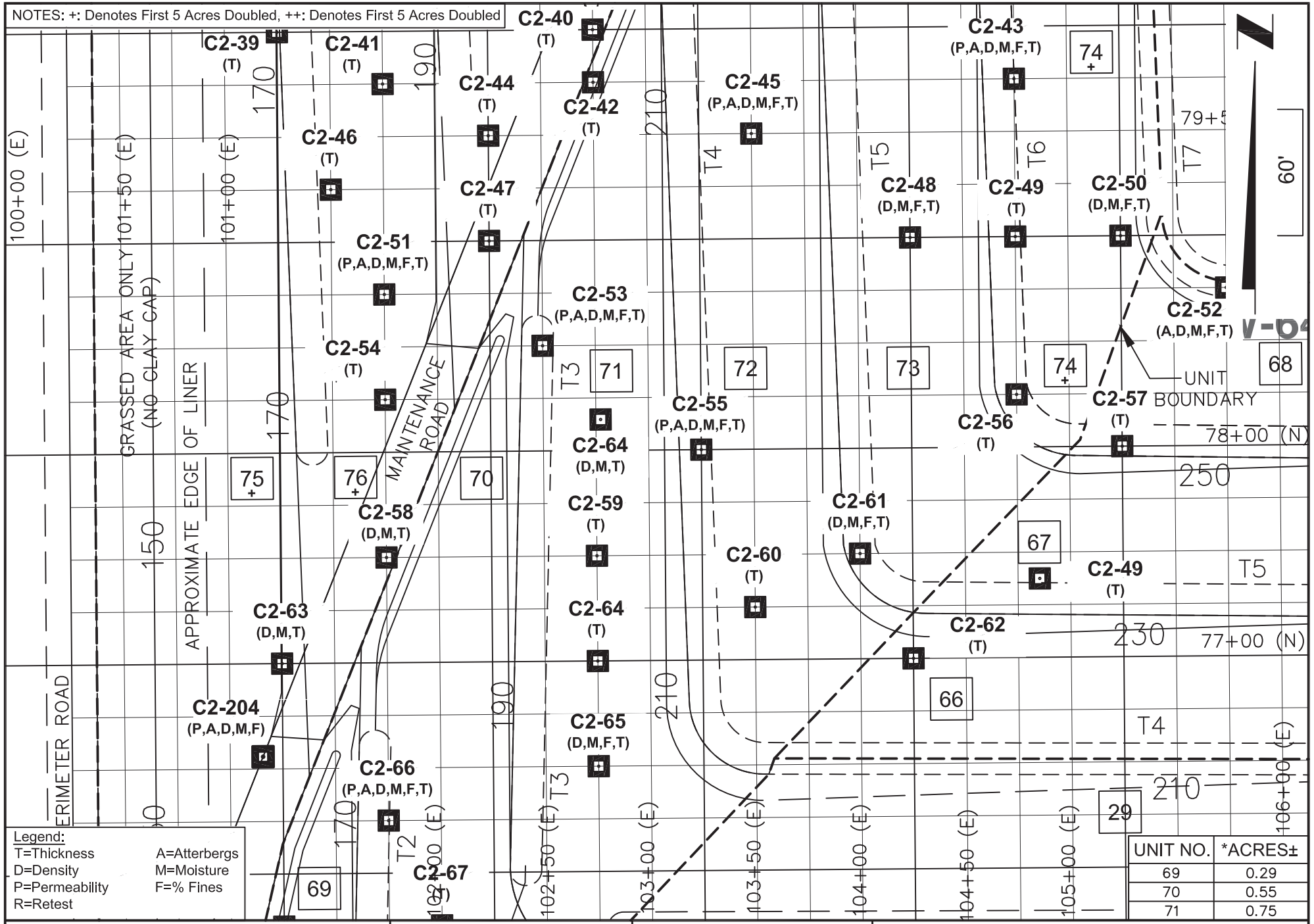
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Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
2 of 10



UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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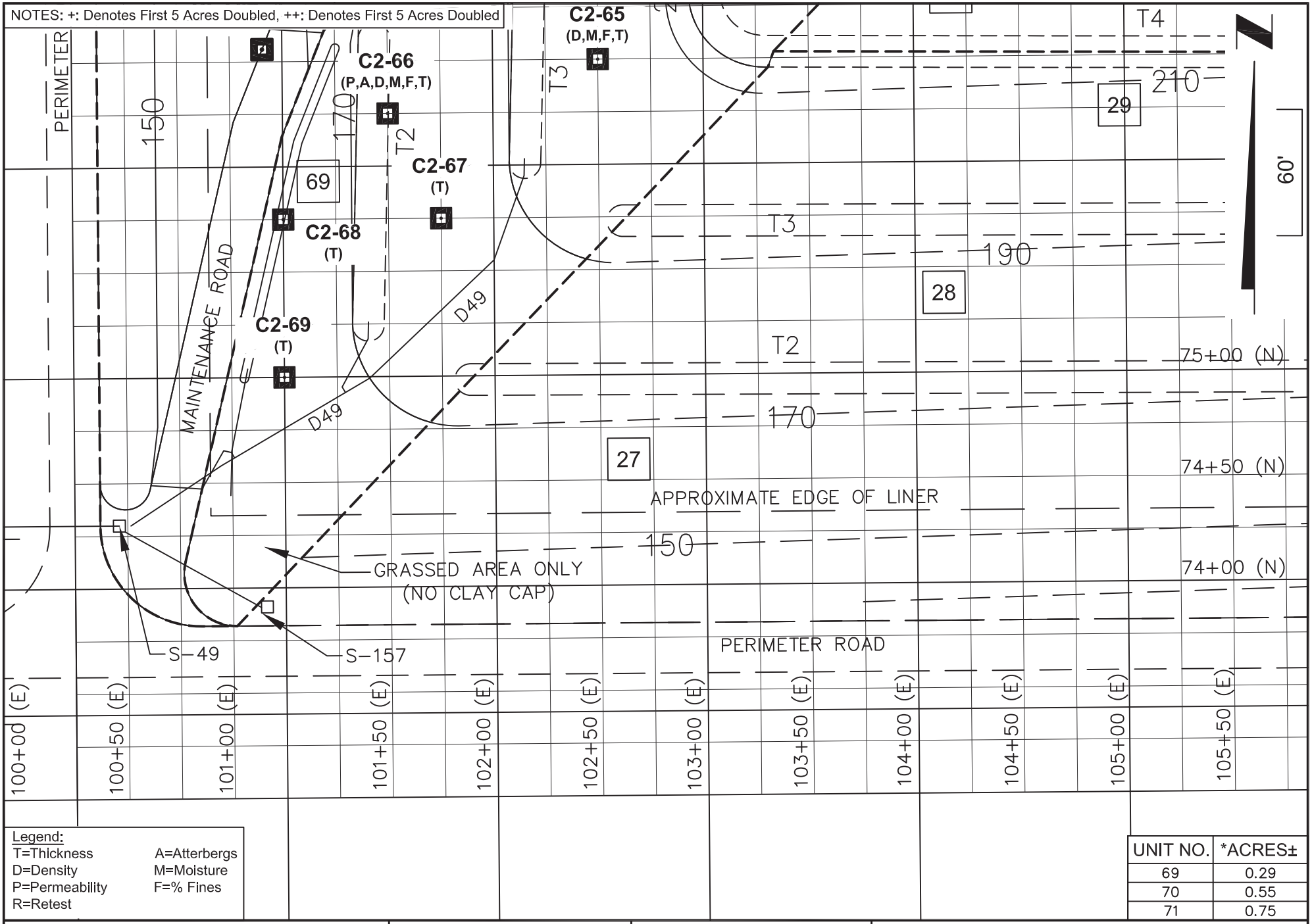
CLIENT:
ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
3 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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8936 Western Way, Suite 12, Jacksonville, FL 32256

CLIENT:

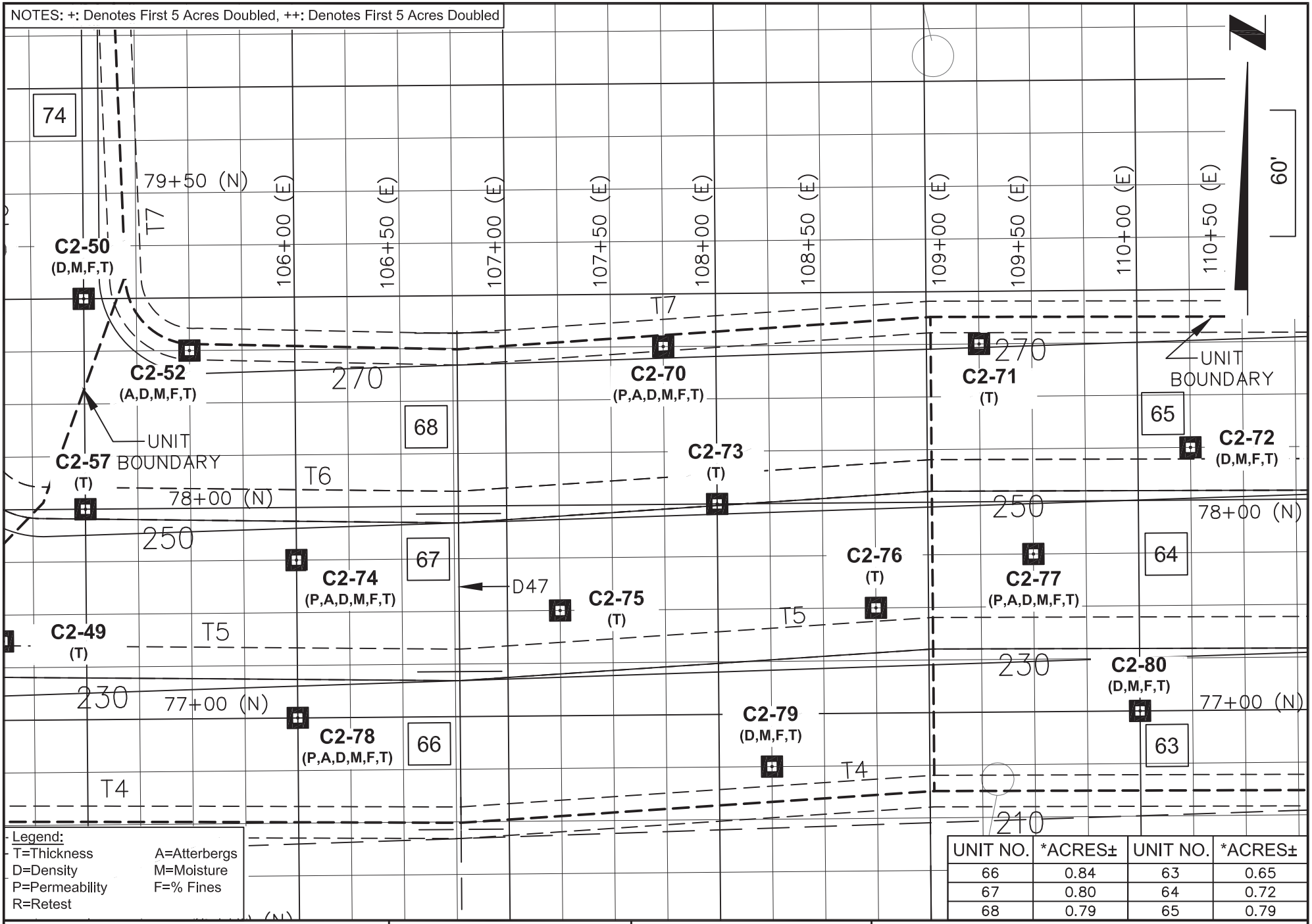
ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
4 of 10



UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
66	0.84	63	0.65
67	0.80	64	0.72
68	0.79	65	0.79

MAE
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FL Certificate of Authorization No. 28142
8936 Western Way, Suite 12, Jacksonville, FL 32256

CLIENT:

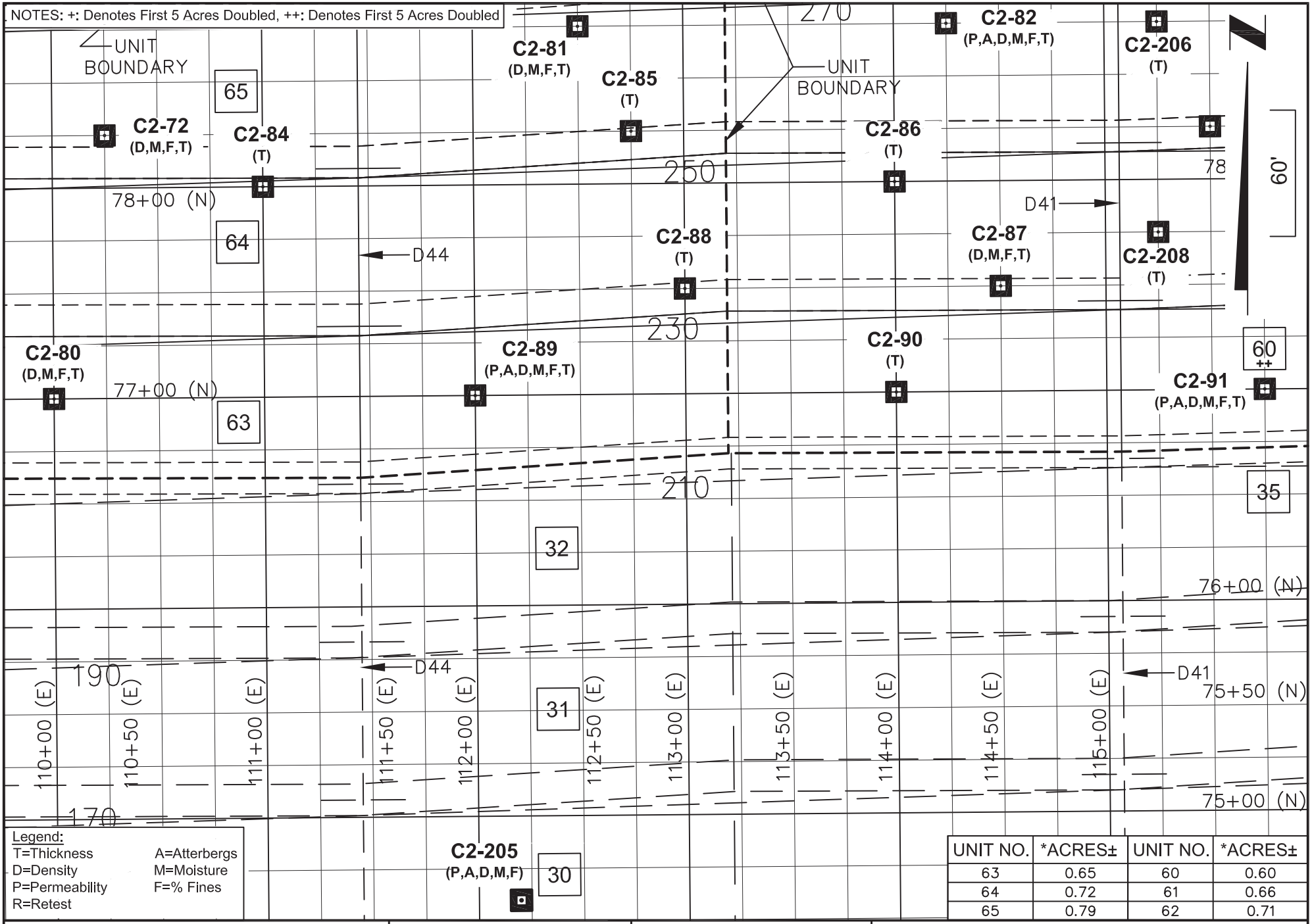
ETM
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ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
5 of 10



Legend:
T=Thickness A=Atterbergs
D=Density M=Moisture
P=Permeability F=% Fines
R=Retest

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
63	0.65	60	0.60
64	0.72	61	0.66
65	0.79	62	0.71

MAE
Meskel & Associates Engineering, PLLC
FL Certificate of Authorization No. 28142
8936 Western Way, Suite 12, Jacksonville, FL 32256 32256

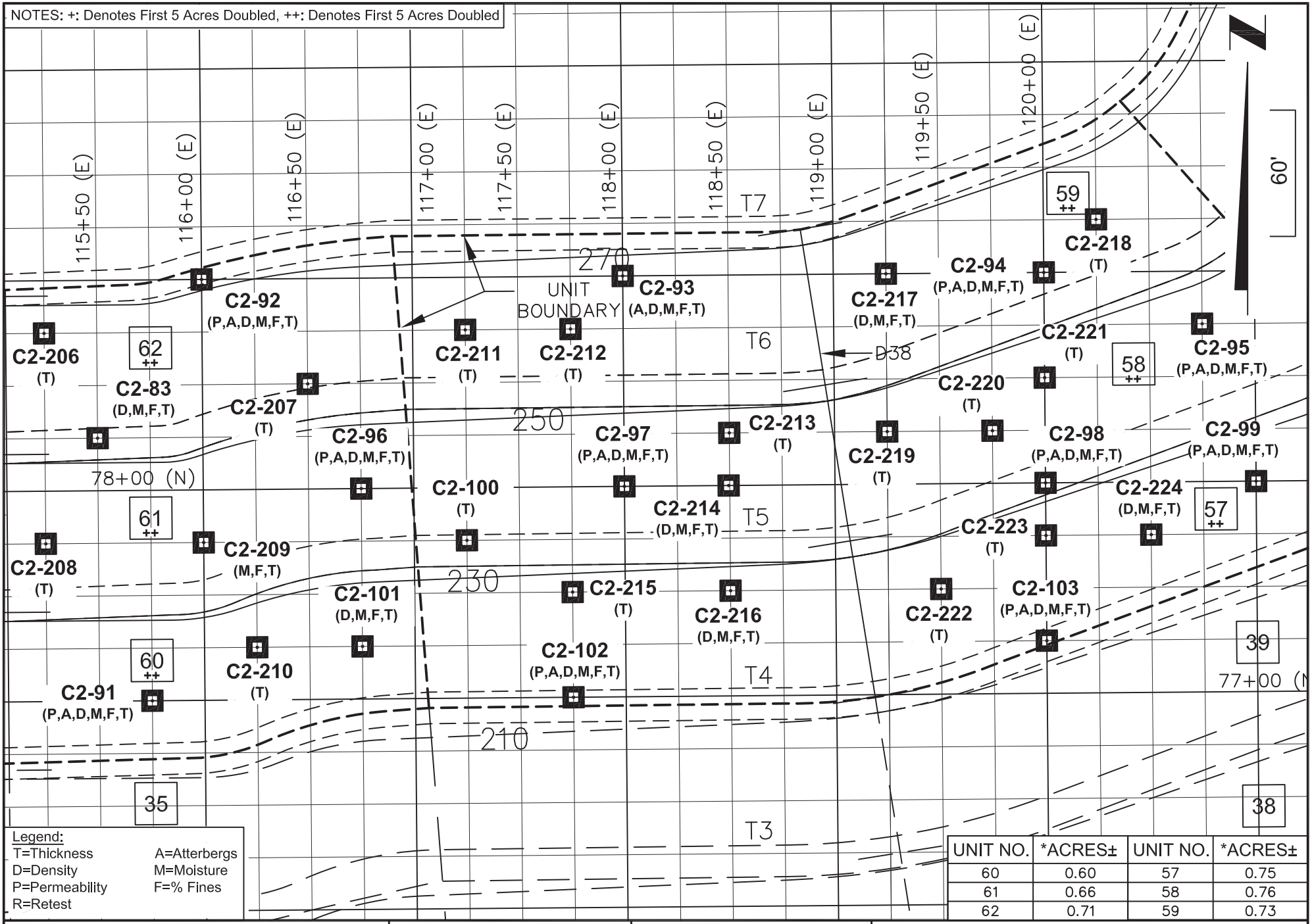
CLIENT:
ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
6 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
60	0.60	57	0.75
61	0.66	58	0.76
62	0.71	59	0.73

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8936 Western Way, Suite 12, Jacksonville, FL 32256

CLIENT:

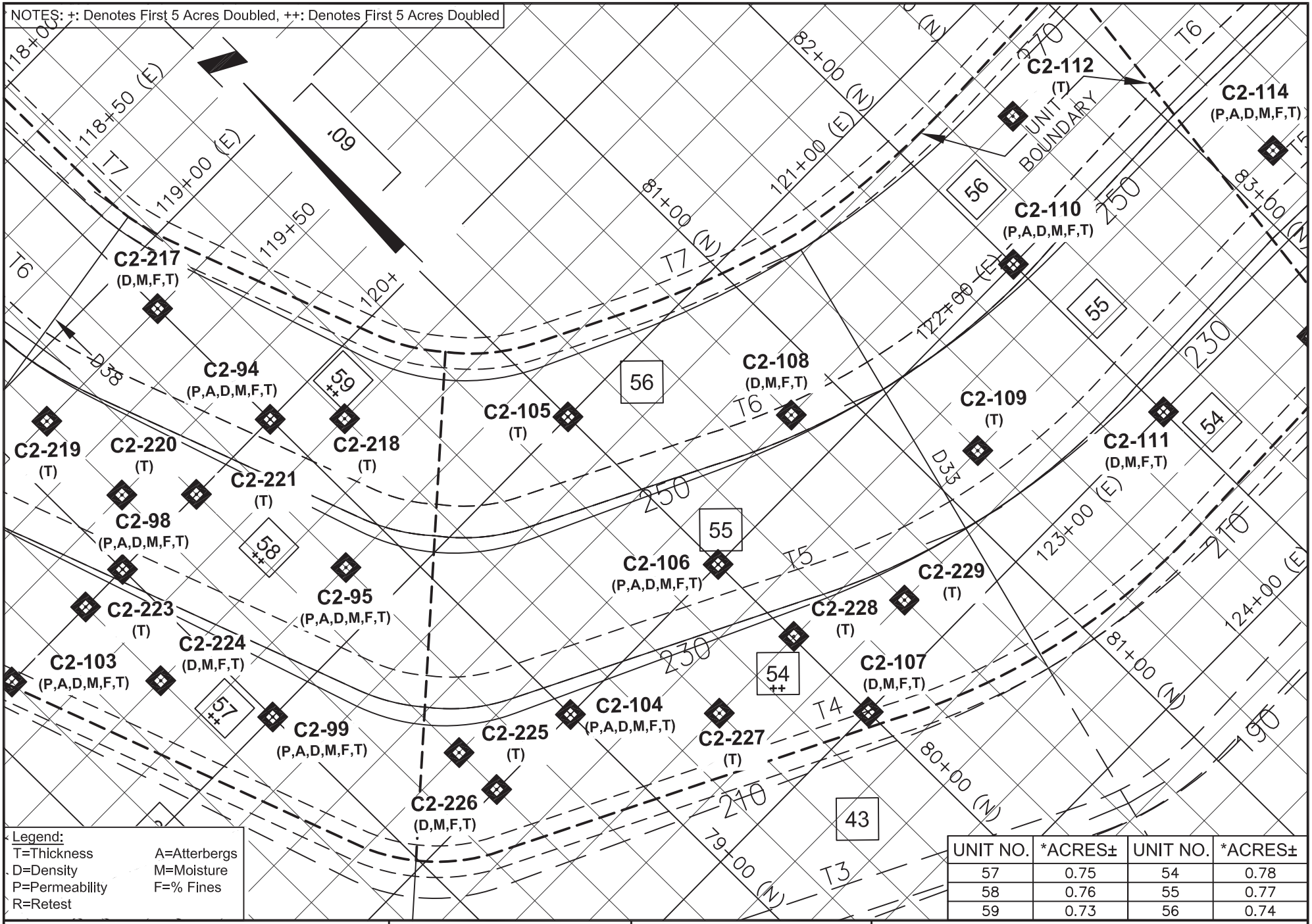
ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
7 of 10



UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
57	0.75	54	0.78
58	0.76	55	0.77
59	0.73	56	0.74

MAE
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FL Certificate of Authorization No. 28142
8936 Western Way, Suite 12, Jacksonville, FL 32256

CLIENT:

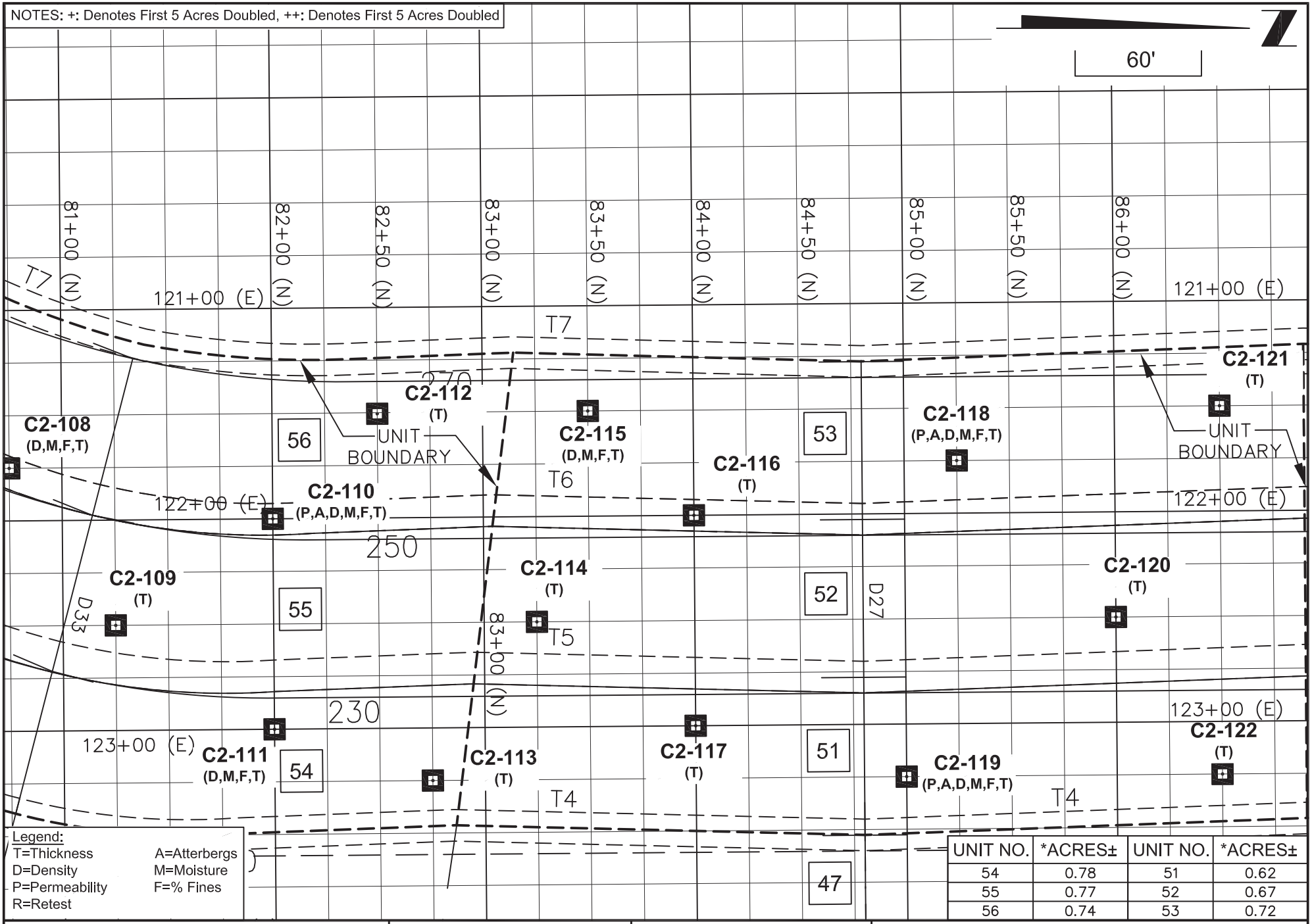
ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
8 of 10



UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
54	0.78	51	0.62
55	0.77	52	0.67
56	0.74	53	0.72

MAE
Meskel & Associates Engineering, PLLC
FL Certificate of Authorization No. 28142
8936 Western Way, Suite 12, Jacksonville, FL 32256

CLIENT:

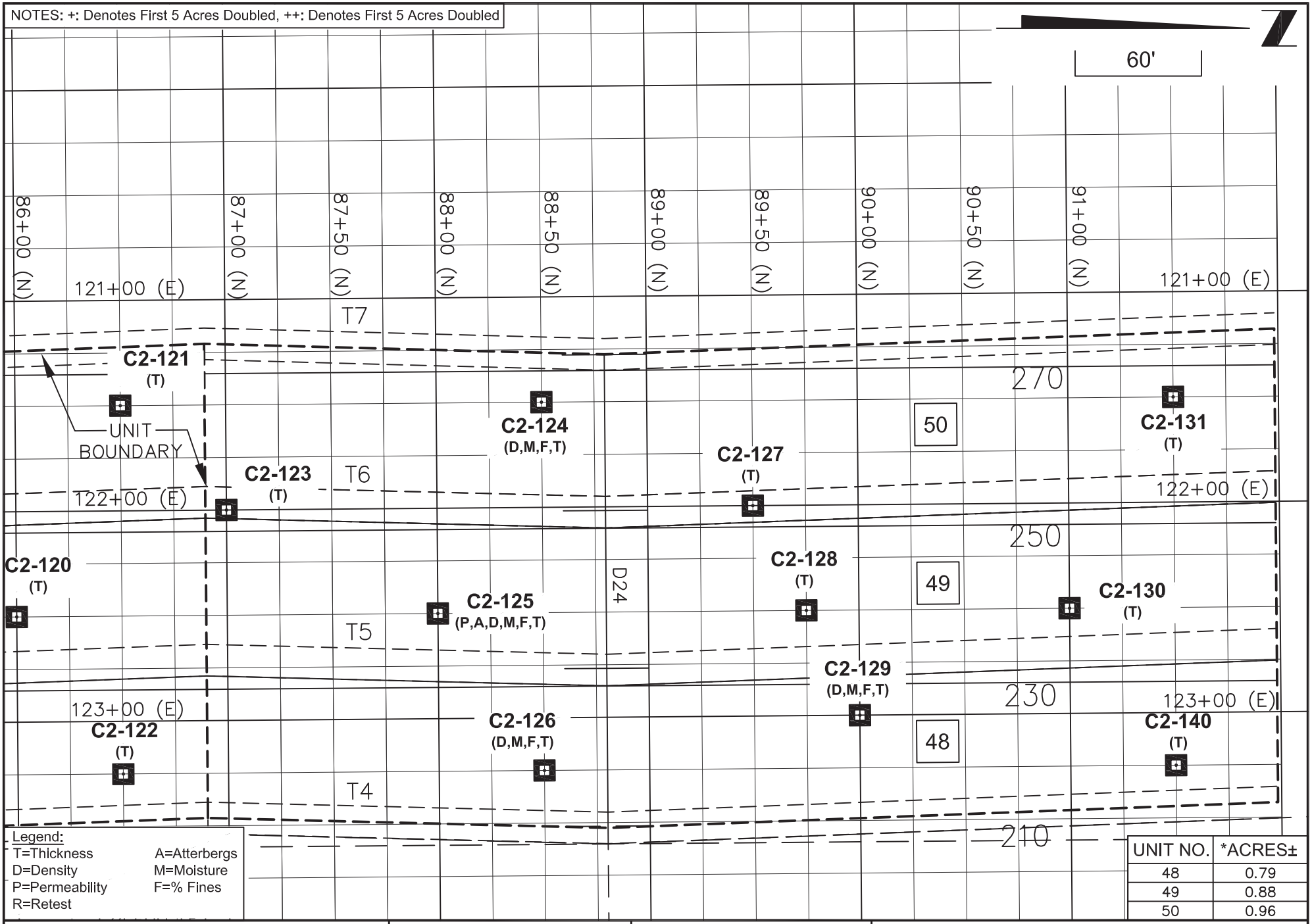
ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
9 of 10



MAE
Meskel & Associates Engineering, PLLC
FL Certificate of Authorization No. 28142
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CLIENT:
ETM
VISION - EXPERIENCE - RESULTS
ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
CLAY THICKNESS/DENSITY TESTING - 2ND LIFT

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
10 of 10

February 2, 2016

Meskel & Associates Engineering
Geotechnical ▸ Environmental ▸ Inspection ▸ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Final Underdrain Sand Certification
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the monitoring and testing of the underdrain sand at the subject site. The sand material borrow source was tested and requalified prior to the sand material placement on site. The prequalification letters along with test results are included. During prequalification and construction the underdrain sand ws tested in accordance with the QZ/QC plan for:

- Uniformity Coefficient of 1.5 at a minimum frequency of 1 test per 500CY
- Effective Grain Size of 0.2mm to 0.5mm at a minimum frequency of 1 test per 500CY
- Hydraulic Conductivity at a minimum frequency of 1 test per 500CY at 1.0E-03cm/s

All test results within the tables and the map diagrams meet or exceed the minimum requirements in the plans, specifications and / or the QA/QC plan. The field and laboratory results with the locations are identified in the tables and the map diagrams.

Based on these results, we consider the underdrain sand acceptable. The number of passing tests performed meets or exceeds the minimum requirements in the plans, specifications and/or the QA/QC plan.

We appreciate the opportunity to assist England-Thims & Miller, Inc. on this project. If you have any questions concerning this report, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Samuel E. Lansdale
Quality Control Monitor

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

8936 Western Way, Suite 12
Jacksonville, Florida 32256
Phone: (904)519-6990 Fax: (904)519-6992

February 2, 2016

Meskel & Associates Engineering
Geotechnical ◤ Environmental ◤ Inspection ◤ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Underdrain Sand Borrow Source Pre-Qualification
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the pre-qualification testing for the potential underdrain sand borrow source for the subject project. Attached are a site location map (Figure 1), and laboratory test results for modified Proctor, permeability, grain distribution and grain uniformity testing.

The proposed underdrain sand source, designated the Sybonney Aggregates Stokes Road Pit, is located north of US-90 and west of US 301 in the town of St. George, Charlton County, Georgia. The approximate site location is shown on Figure 1. As part of the site evaluation, sand was sampled from a stockpile on-site (UD-3). The material looked clean and refined white. One sample was submitted to AMEC for laboratory permeability, grain size and modified Proctor testing.

Based on the test results, it is our opinion that the underdrain sand collected from the Sybonney Aggregates Stokes Road Pit meets the minimum project specifications, and is suitable for use.

We appreciate the opportunity to be of continuing service on this phase of your project. If you have any questions concerning this report, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Samuel E. Lansdale
Quality Control Monitor

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

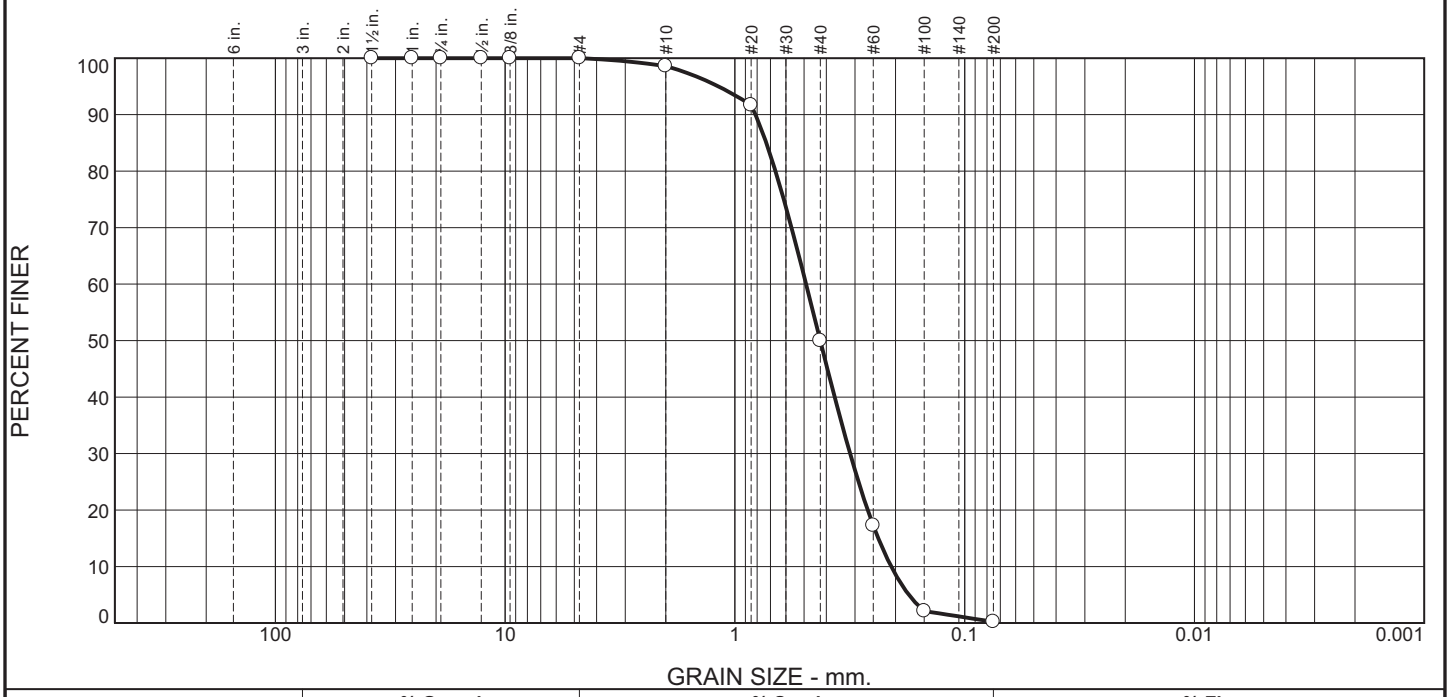
8936 Western Way, Suite 12
Jacksonville, Florida 32256
Phone: (904)519-6990 Fax: (904)519-6992



Site Location Map

PREPARED BY	PROJECT NAME	
MAE meskelengineering.com	**Trail Ridge Landfill Jacksonville, Florida**	
	REFERERENCE	SCALE
	Delorme XMap 7.0	NTS
PREPARED FOR	MAE PROJECT NO.	**FIGURE NO.**
England-Thims & Miller, Inc.	0006-0008	1

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.4	48.6	49.8	0.2	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	98.6		
#20	91.7		
#40	50.0		
#60	17.3		
#100	2.1		
#200	0.2		

* (no specification provided)

Material Description

Light Gray Fine to Medium SAND

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP AASHTO (M 145)=

Coefficients

D_{90}= 0.8137 D_{85}= 0.7300 D_{60}= 0.4900
D_{50}= 0.4252 D_{30}= 0.3153 D_{15}= 0.2378
D_{10}= 0.2089 C_u= 2.35 C_c= 0.97

Remarks

Date Received: 4/8/13 **Date Tested:** 4/8/13

Tested By: CM

Checked By: Daniel L. Eisman, P.E.

Title: Project Engineer

Source of Sample: Siboney Underdrain Prequalification **Date Sampled:** 4/8/13

Sample Number: 2

AMEC E&I

Jacksonville, Florida

Client: Meskel

Project: Tailridge Landfill Phase 4

Project No: 6736135237 **Figure**

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP						0.0	0.2

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 106.3 pcf Optimum moisture = 13.0 %	Light Gray Fine to Medium SAND

Project No. 6736135237 **Client:** Meskel
Project: Tailridge Landfill Phase 4

○ **Source of Sample:** Siboney Underdrain Prequalification **Sample Number:** 2

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: CM **Checked By:** Daniel L. Eisman, P.E.

REPORT OF SOIL PERMEABILITY TESTING

Project:	TRLF Pase No. 4	**Project Number:**	6736-13-5237
Client	Meskel	**Date Completed:**	April 12, 2013
Sample Number:	2	**Depth:**	NA

The sample was remolded to 100% Modified Effort of 106.3 at a Optimum Moisture of 13.0%. The compacted sample was tested for permeability and the results are outlined below.

Sample Information:

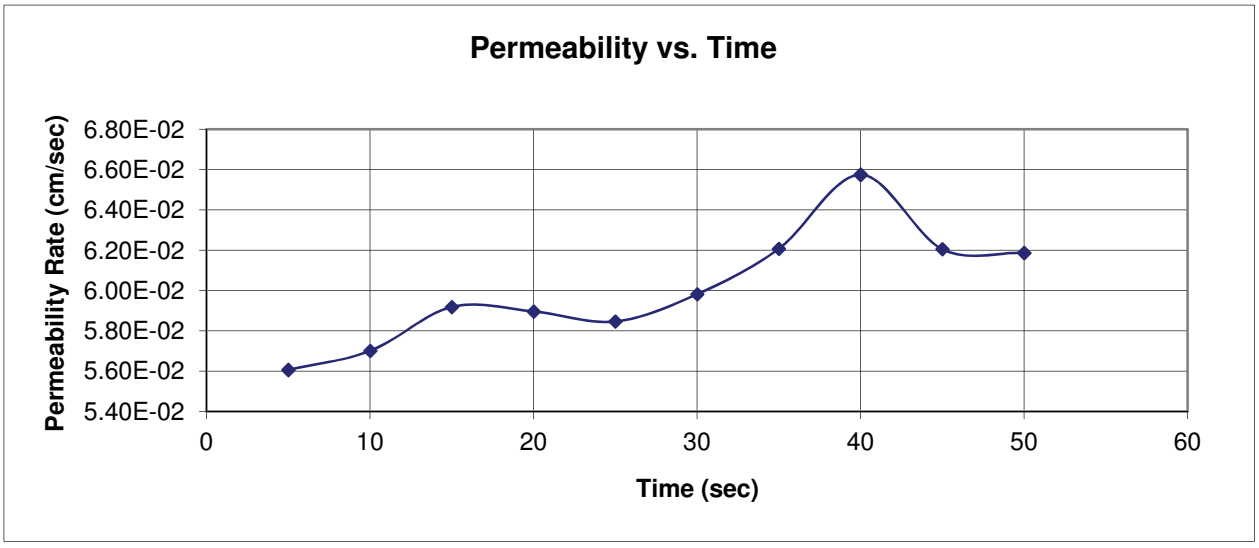
Dia. (in.)	2.97	**Length (in)**	5.73	**Weight (gr)**	1247.4
Wet Density (pcf)	119.8	**Moisture Content (%)**	12.8	**Dry Density (pcf)**	106.2

Test Parameters

Test Method Used:	ASTM D-2434	**Permeant Fluid:**	Tap water

Permeability Rate

6.01E-02



Reviewed By:

Daniel L. Eisman, P.E.

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
UNDERDRAIN SAND TEST RESULTS

Uniformity Coefficient Minimum: 1.5 **Effective Grain Size:** 0.2mm to 0.5mm

Permeability Minimum: 1.0x10-3cm/sec **Frequency:** Once per 500CY

Legend: I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Tests	Uniformity Coefficient	Effective Grain Size	Coefficient of Permeability (cm/sec)	Test Result
All Phase 4 Totals							
Prequalification underdrain sample #2	Sybonney Aggregates		PEU	2.35	0.209	6.01E-02	PASS
Production Sample #1	TRLF on site		PEU	2.35	0.209	2.95E-02	PASS
Production Sample #2	TRLF on site		PEU	2.01	0.155	6.01E-02	PASS
Production Sample #3	TRLF on site		PEU	2.01	0.155	2.31E-02	PASS
Production Sample #4	TRLF on site		PEU	2.52	0.165	3.94E-02	PASS
Production Sample #5	TRLF on site		PEU	2.14	0.163	4.62E-02	PASS
All Phase 4 Tests Required				**3**	**3**	**3**	
All Phase 4 Tests Performed				**5**	**5**	**5**	

* Approximate Length of sand 10,882' x Approximate width of sand 4' x Approximate depth of sand 1' = Approximately 1,613CY

Meskel & Associates Engineering

February 2, 2016

Meskel & Associates Engineering
Geotechnical ◤ Environmental ◤ Inspection ◤ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Final Vegetative Cover Layer Certification
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the monitoring and testing of the vegetative cover layer at the subject site. The vegetative cover layer was tested for:

- Thickness at a minimum frequency of 4 tests per acre per layer at 24"

All test results as shown in the tables and the map diagrams meets or exceeds the minimum requirements in the plans, specifications and/or the QA/QC plan. Additionally, in accordance with the QA/QC plan the first five acres of the first phase (units 74, 75, 76, 77, 78, 79, 81), the testing frequency was doubled. The field and laboratory results with the locations are identified in the tables and the map diagrams.

No additional tests were performed and there were no failures.

Based on these results, we consider the vegetative cover layer acceptable and reasonably free of brush, weeds and other litter, relatively free of roots, stumps, stones and other extraneous material or toxic matter that is harmful to plants in accordance with the QA/QC Plan. The number of passing tests performed meets or exceeds the minimum requirements in the plans, specifications and / or the QA/QC plan.

We appreciate the opportunity to assist England-Thims & Miller, Inc. on this project. If you have any questions concerning this report, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Samuel E. Lansdale
Quality Control Monitor

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

8936 Western Way, Suite 12
Jacksonville, Florida 32256
Phone: (904)519-6990 Fax: (904)519-6992

December 16, 2014
Revised, February 2, 2016

Meskel & Associates Engineering
Geotechnical ⌜ Environmental ⌜ Inspection ⌜ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14774 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Vegetative Cover Borrow Source Pre-Qualification
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Jacksonville, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed the laboratory testing of the initial and vegetative cover soils for use at the Trail Ridge Landfill (TRLF) Phase 4 closure. Testing was performed in general accordance with the requirements of the TRLF Phase 4 QA/QC Plans and Specifications for landfill closure. The borrow source, known as The Timber Forest Trails Borrow Pit, is located in Duval County, Florida. The approximate site location is shown on the following Figure 1.

MAE personnel observed test pits being performed at the site on February 27, 2014. The approximate test pit locations are shown on Figure 2. Samples were recovered from the test pits at this time, processed and returned to the laboratory for testing in general accordance with the current TRLF QA/QC plans. Test results are included for the required Proctor, organic content, pH, and Triaxial and Direct Shear Strength testing.

To perform the required Direct Shear Strength testing, the stock-piled clay cover soils, which are being used for the TRLF Closure Phase 4, were sampled and used. Shear test results were used to estimate the Factors of Safety against sliding along the interface of these cover materials with the landfill cover clay liner, and to estimate internal material sliding potential. The results of the calculations and testing indicate that Factors of Safety for interface and internal shearing are equal to or greater than 1.5, as required by the current project QA/QC plans.

Based on the shear tests and calculations, organic content and pH testing results, and the current TRLF Plans and Specifications for Landfill Closure, we consider the sampled and tested soils obtained from the Timber Forest Trails Borrow Pit to be suitable for use as initial and vegetative cover material for the project.

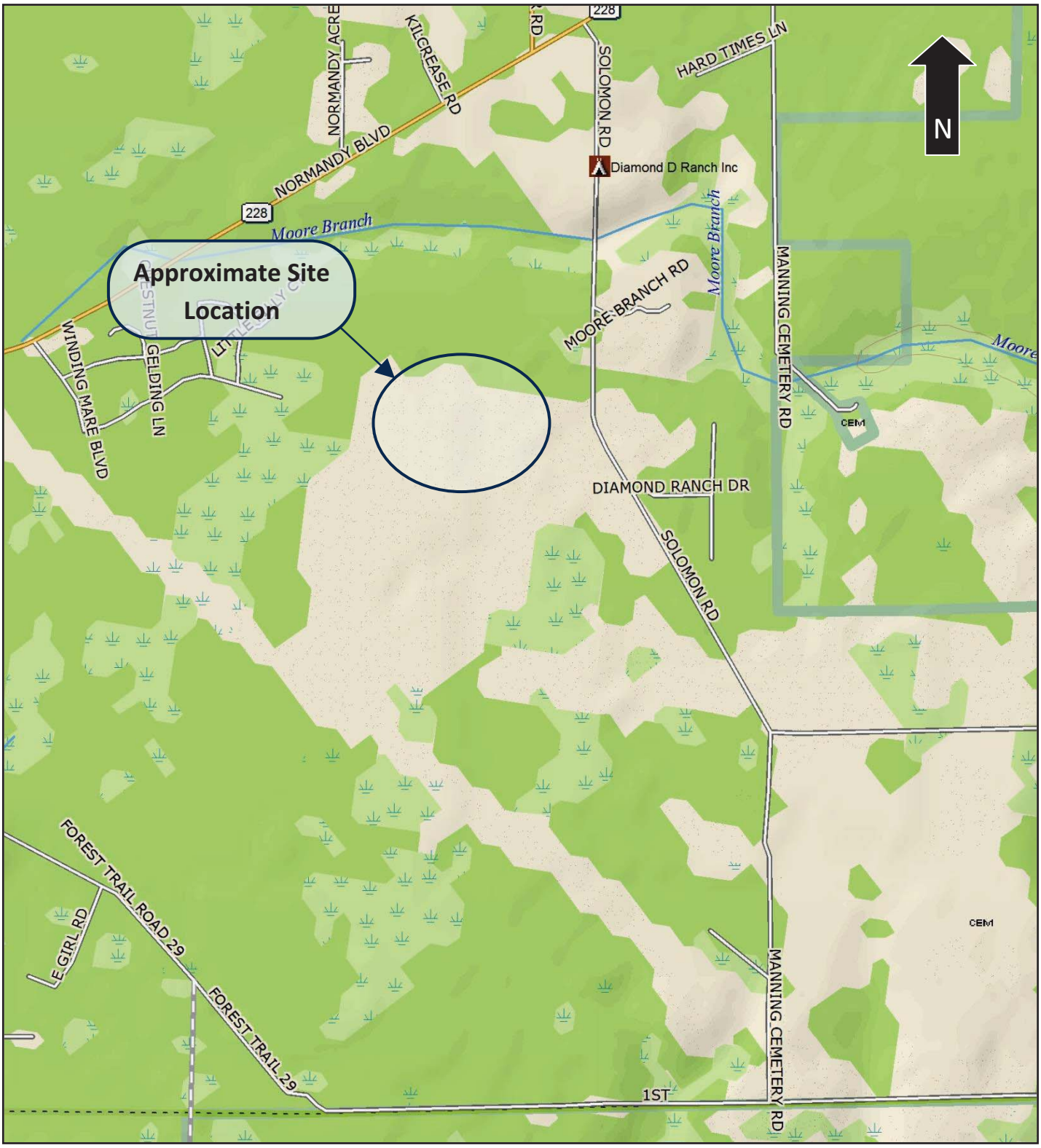
We appreciate the opportunity to assist you with this work. If you have any questions concerning this report, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Antoinette (Tina) D. Meskel, P.E.
Quality Assurance Engineer
Licensed, Florida No. 56999

8936 Western Way, Suite 12
Jacksonville, Florida 32256
Phone: (904)519-6990 Fax: (904)519-6992



Site Location Map

PREPARED BY	PROJECT NAME	
MAE meskelengineering.com	**Timber Forest Trails Borrow Pit – R. Lee Smith** **6170 Solomon Road, Jacksonville, Florida 32234** **Parcel ID: 0023980000**	
	REFERERENCE	SCALE
	Delorme XMap 7.0	NTS
PREPARED FOR	MAE PROJECT NO.	**FIGURE NO.**
England-Thims & Miller, Inc.	0006-0008	1



LEGEND

Approximate Location of Test Pit

Note: Representative sample taken from test pits locations to a depth of 6' deep.

Field Exploration Plan

PREPARED BY	PROJECT NAME	
MAE meskelengineering.com	**Timber Forest Trails Borrow Pit – R. Lee Smith 6170 Solomon Road, Jacksonville, Florida 32234 Parcel ID: 0023980000**	
	REFERERENCE	SCALE
	Google Earth	NTS
PREPARED FOR	MAE PROJECT NO.	**FIGURE NO.**
England-Thims & Miller, Inc.	0006-0008	2

amec

REPORT OF ORGANIC CONTENT

Project: TRLF Phase 4 Project Number: 6736-13-5237

Client: Meskel Date: 2/28/2014

Location: Timber Forrest Trail (Initial & Topsoil Borrow Pit)

Sample Number	pH	Can Weight	Dry Weight	After Burn Weight	Percent Organic
1	**7.4**	117.24	160.39	158.96	**3.3%**
1 - retest	**7.0**	115.30	152.65	151.72	**2.5%**

Scale: BP3100

Performed By

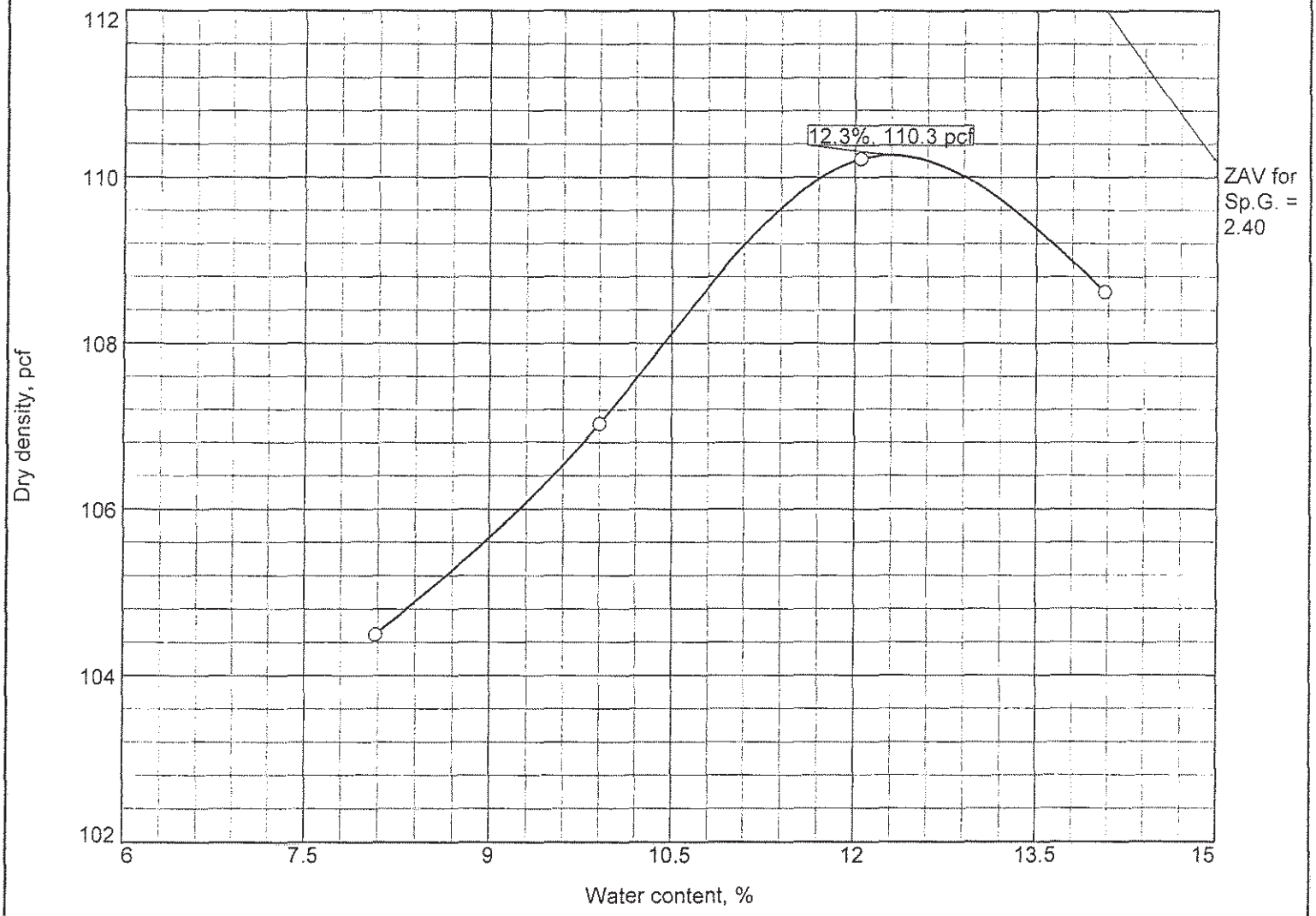
CMJr.

Reviewed By

Corey Chas 3.3.14

Corey T. Chascin, E.I.

COMPACTION TEST REPORT



Test specification: ASTM D 1557-00 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SM	A-2-4(0)			NV	NP	0.0	13.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 110.3 pcf Optimum moisture = 12.3 %	Dark Brown Slightly Clayey Fine SAND

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

○ **Source:** Timber Forest Trails (Initial Cover & Topsoil) **Sample No.:** 1

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: AC **Checked By:** Corey T. Chascin, E.I. Corey Chascin 3.6.14

MAE
Meskel & Associates
ENGINEERING, PLLC

8936 Western Way, Suite 12
Jacksonville, Florida 32256

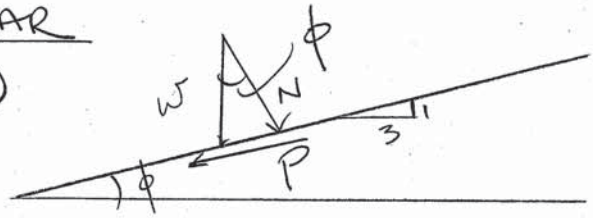
office 904.519.6990 fax 904.519.6992
toll free 1.877.MAE.GEOTEC
meskelengineering.com

PROJECT: TRLF PHASE 4 PROJECT NO.: _____

CALC'D BY: AHM DATE.: 10/2014 CHK'D BY: _____ DATE: _____ SHEET 1 OF 3

VEGETATIVE COVER INTERNAL SHEAR

TRIAXIAL TEST RESULTS (ATTACHED)



$\gamma_{DAVG} = 105$ pcf

$w_{AVG} = 12.7\%$

$\gamma_{SAT} = 105(1.127) = 118.3$ pcf

$\phi = 18.4°$

$P = W \sin\phi$

SLIDING AT MID-LAYER → 24" THICKNESS

$W = (1\text{ ft})(118.3)(0.90)^{(1)} = 106.5$ psf

DRIVING FORCE = $P = 106.5(\sin 18.4) = 33.6$ psf

RESISTING FORCE = T_f from TRIAXIAL TEST

$T_f = \sigma_f \tan\phi + C$, $\sigma_f = \frac{\sigma_1 - \sigma_3}{2}$

$\sigma_1 = 1.34$ ksf

$\sigma_3 = 0.29$ ksf

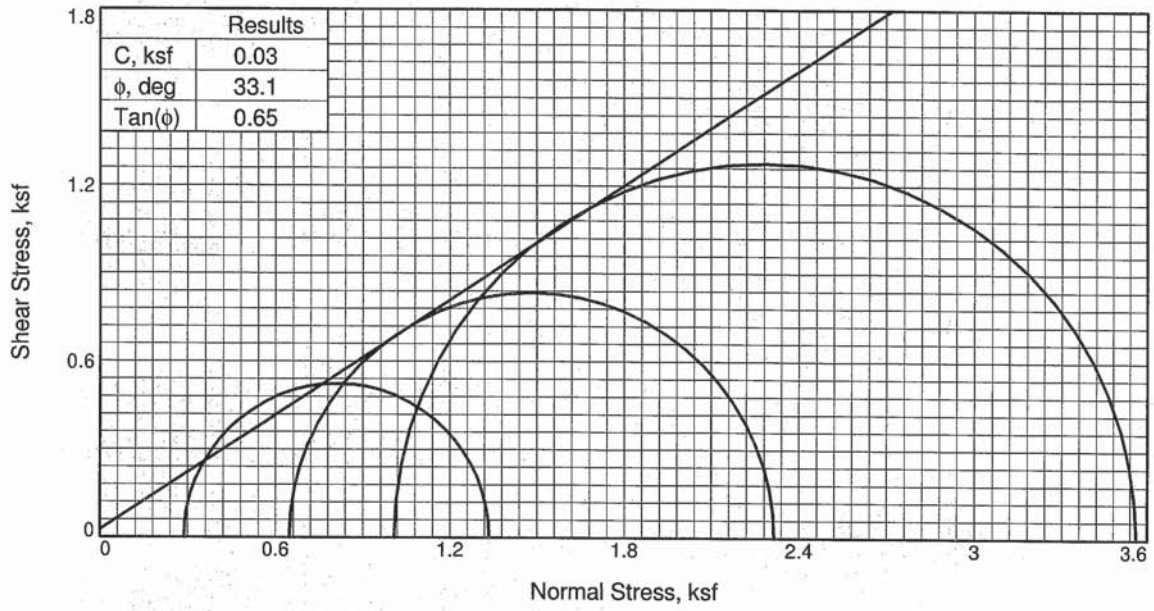
$T_f = (1.05)\tan 33.1° + 0.03$

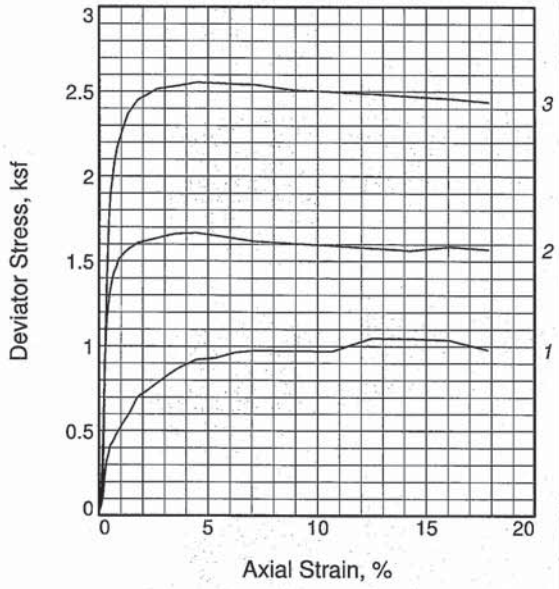
$= 0.71$ ksf $= 714$ psf

$FS = \frac{714\text{ psf}}{33.6\text{ psf}} = 21.3 > 1.5 \Rightarrow$ OK

NOTES

(1) 90% Compaction





Sample No.		1	2	3
Initial	Water Content, %	12.7	12.7	12.7
	Dry Density, pcf	103.7	104.4	104.4
	Saturation, %	57.3	58.5	58.5
	Void Ratio	0.5798	0.5692	0.5689
	Diameter, in.	2.82	2.82	2.82
	Height, in.	5.61	5.61	5.61
At Test	Water Content, %	22.0	21.3	21.1
	Dry Density, pcf	103.9	105.1	105.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5773	0.5592	0.5538
	Diameter, in.	2.82	2.82	2.81
	Height, in.	5.61	5.60	5.59
Strain rate, in./min.		0.03	0.03	0.03
Back Pressure, psi		50.00	50.00	50.00
Cell Pressure, psi		52.00	54.50	57.00
Fail. Stress, ksf		1.05	1.67	2.55
Strain, %		12.5	4.5	4.5
Ult. Stress, ksf				
Strain, %				
σ_1 Failure, ksf		1.34	2.32	3.56
σ_3 Failure, ksf		0.29	0.65	1.01

Type of Test:
Consolidated Drained
Sample Type: UD
Description: Brown Silty Fine SAND

LL= NV **PI=** NP
Specific Gravity= 2.624
Remarks:

Figure _____

Client: Meskel and Associates Engineering

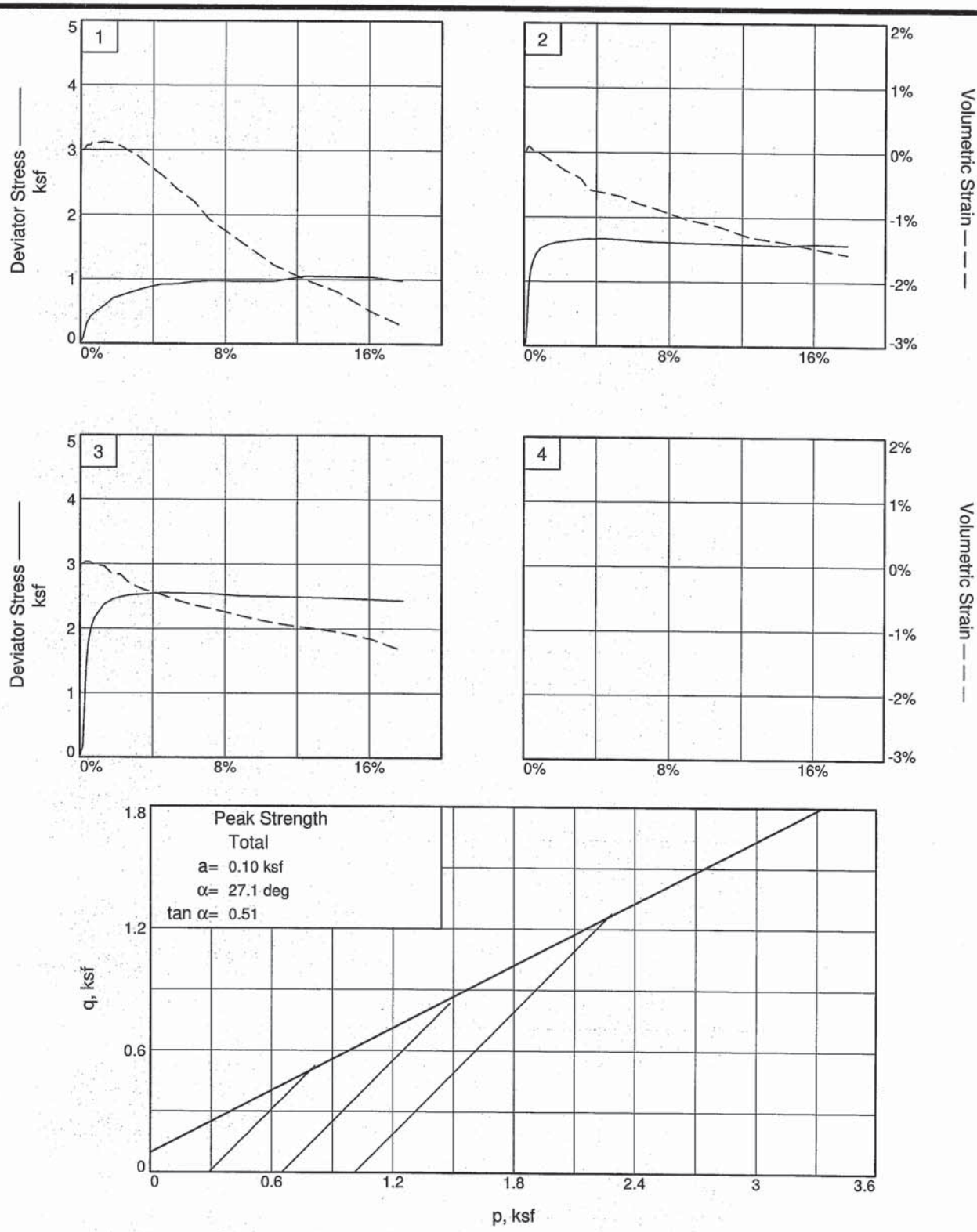
Project: Trailridge Landfill Phase 4

Source of Sample: Timber Forest Trails (Initial Cover and Topsoil)

Proj. No.: 6736135237 **Date Sampled:**

TRIAXIAL SHEAR TEST REPORT
AMEC E&I
Jacksonville, Florida

Tested By: MC **Checked By:** Corey T. Chascin, E.I.



Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4
Source of Sample: Timber Forest Trails (Initial Cover and Topsoil)
Project No.: 6736135237 **Figure** _____

AMEC E&I

Tested By: MC **Checked By:** Corey T. Chascin, E.I.

Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
VEGETATIVE COVER TEST RESULTS

Thickness Minimum: **24.0"**

Legend: **I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested**

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Test Result
V-001	86+75.00	103+50.00	80	T	24" or Greater	PASS
V-002	86+75.00	104+50.00	81	T	24" or Greater	PASS
V-003	86+25.00	104+25.00	81	T	24" or Greater	PASS
V-004	86+00.00	103+00.00	79	T	24" or Greater	PASS
V-005	85+75.00	103+75.00	80	T	24" or Greater	PASS
V-006	85+75.00	104+50.00	81	T	24" or Greater	PASS
V-007	86+00.00	105+00.00	81	T	24" or Greater	PASS
V-008	85+00.00	103+00.00	79	T	24" or Greater	PASS
V-009	85+00.00	104+00.00	73	T	24" or Greater	PASS
V-010	85+50.00	105+00.00	74	T	24" or Greater	PASS
V-011	84+75.00	103+50.00	80	T	24" or Greater	PASS
V-012	84+50.00	104+50.00	74	T	24" or Greater	PASS
V-013	84+00.00	103+00.00	79	T	24" or Greater	PASS
V-014	84+00.00	105+00.00	74	T	24" or Greater	PASS
V-015	83+75.00	103+50.00	80	T	24" or Greater	PASS
V-016	83+50.00	104+50.00	74	T	24" or Greater	PASS
V-017	83+25.00	102+75.00	79	T	24" or Greater	PASS
V-018	83+25.00	104+00.00	73	T	24" or Greater	PASS
V-019	83+00.00	105+00.00	74	T	24" or Greater	PASS
V-020	82+75.00	101+25.00	76	T	24" or Greater	PASS
V-021	82+50.00	102+25.00	77	T	24" or Greater	PASS
V-022	82+25.00	102+75.00	78	T	24" or Greater	PASS
V-023	82+50.00	104+50.00	74	T	24" or Greater	PASS
V-024	82+25.00	101+50.00	76	T	24" or Greater	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
VEGETATIVE COVER TEST RESULTS

Thickness Minimum: **24.0"**

Legend: **I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested**

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Test Result
V-025	82+00.00	100+75.00	75	T	24" or Greater	PASS
V-026	82+00.00	102+00.00	77	T	24" or Greater	PASS
V-027	82+00.00	103+00.00	78	T	24" or Greater	PASS
V-028	82+00.00	104+00.00	73	T	24" or Greater	PASS
V-029	82+00.00	105+00.00	74	T	24" or Greater	PASS
V-030	81+75.00	104+75.00	74	T	24" or Greater	PASS
V-031	81+50.00	101+50.00	76	T	24" or Greater	PASS
V-032	81+00.00	102+00.00	77	T	24" or Greater	PASS
V-033	81+25.00	102+75.00	78	T	24" or Greater	PASS
V-034	81+00.00	101+00.00	75	T	24" or Greater	PASS
V-035	81+00.00	102+00.00	77	T	24" or Greater	PASS
V-036	81+00.00	104+00.00	73	T	24" or Greater	PASS
V-037	81+25.00	104+50.00	74	T	24" or Greater	PASS
V-038	81+00.00	105+00.00	74	T	24" or Greater	PASS
V-039	80+75.00	104+75.00	74	T	24" or Greater	PASS
V-040	80+75.00	103+25.00	72	T	24" or Greater	PASS
V-041	80+50.00	101+50.00	76	T	24" or Greater	PASS
V-042	80+50.00	102+25.00	77	T	24" or Greater	PASS
V-043	80+00.00	101+00.00	75	T	24" or Greater	PASS
V-044	80+00.00	102+00.00	77	T	24" or Greater	PASS
V-045	80+00.00	103+00.00	72	T	24" or Greater	PASS
V-046	80+00.00	104+00.00	73	T	24" or Greater	PASS
V-047	79+75.00	104+75.00	74	T	24" or Greater	PASS
V-048	79+25.00	101+50.00	76	T	24" or Greater	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
VEGETATIVE COVER TEST RESULTS

Thickness Minimum: **24.0"**

Legend: **I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested**

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Test Result
V-049	79+25.00	102+50.00	71	T	24" or Greater	PASS
V-050	79+00.00	101+00.00	75	T	24" or Greater	PASS
V-051	79+00.00	103+00.00	72	T	24" or Greater	PASS
V-052	79+00.00	104+00.00	73	T	24" or Greater	PASS
V-053	79+00.00	105+00.00	74	T	24" or Greater	PASS
V-054	78+50.00	101+25.00	76	T	24" or Greater	PASS
V-055	78+25.00	102+50.00	71	T	24" or Greater	PASS
V-056	78+00.00	101+00.00	75	T	24" or Greater	PASS
V-057	78+00.00	104+00.00	73	T	24" or Greater	PASS
V-058	78+00.00	105+00.00	68	T	24" or Greater	PASS
V-059	77+75.00	103+25.00	72	T	24" or Greater	PASS
V-060	77+50.00	101+25.00	76	T	24" or Greater	PASS
V-061	77+00.00	101+00.00	75	T	24" or Greater	PASS
V-062	77+00.00	102+00.00	70	T	24" or Greater	PASS
V-063	77+00.00	103+00.00	72	T	24" or Greater	PASS
V-064	77+00.00	104+00.00	66	T	24" or Greater	PASS
V-065	76+75.00	105+00.00	66	T	24" or Greater	PASS
V-066	76+25.00	102+50.00	71	T	24" or Greater	PASS
V-067	75+75.00	101+25.00	69	T	24" or Greater	PASS
V-068	75+75.00	101+75.00	70	T	24" or Greater	PASS
V-069	75+00.00	101+00.00	69	T	24" or Greater	PASS
V-070	78+50.00	106+00.00	68	T	24" or Greater	PASS
V-071	78+25.00	107+25.00	68	T	24" or Greater	PASS
V-072	78+75.00	108+50.00	68	T	24" or Greater	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
VEGETATIVE COVER TEST RESULTS

Thickness Minimum: **24.0"**

Legend: **I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested**

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Test Result
V-073	78+50.00	109+75.00	65	T	24" or Greater	PASS
V-074	77+75.00	106+75.00	67	T	24" or Greater	PASS
V-075	77+75.00	108+50.00	67	T	24" or Greater	PASS
V-076	77+50.00	110+25.00	64	T	24" or Greater	PASS
V-077	76+00.00	106+75.00	66	T	24" or Greater	PASS
V-078	77+00.00	108+00.00	66	T	24" or Greater	PASS
V-079	77+00.00	109+50.00	63	T	24" or Greater	PASS
V-080	78+50.00	111+50.00	65	T	24" or Greater	PASS
V-081	78+75.00	113+00.00	65	T	24" or Greater	PASS
V-082	78+75.00	115+00.00	62	T	24" or Greater	PASS
V-083	78+00.00	111+00.00	64	T	24" or Greater	PASS
V-084	77+75.00	112+25.00	64	T	24" or Greater	PASS
V-085	78+00.00	114+00.00	61	T	24" or Greater	PASS
V-086	77+00.00	111+00.00	63	T	24" or Greater	PASS
V-087	77+00.00	113+00.00	63	T	24" or Greater	PASS
V-088	77+00.00	114+00.00	60	T	24" or Greater	PASS
V-089	77+00.00	115+00.00	60	T	24" or Greater	PASS
V-090	78+00.00	116+00.00	61	T	24" or Greater	PASS
V-091	77+00.00	116+00.00	60	T	24" or Greater	PASS
V-092	78+75.00	116+50.00	62	T	24" or Greater	PASS
V-093	79+00.00	118+00.00	59	T	24" or Greater	PASS
V-094	79+00.00	120+25.00	59	T	24" or Greater	PASS
V-095	78+50.00	117+50.00	59	T	24" or Greater	PASS
V-096	78+00.00	118+00.00	58	T	24" or Greater	PASS

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Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
VEGETATIVE COVER TEST RESULTS

Thickness Minimum: **24.0"**

Legend: **I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested**

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Test Result
V-097	78+00.00	119+00.00	58	T	24" or Greater	PASS
V-098	78+25.00	120+25.00	58	T	24" or Greater	PASS
V-099	77+50.00	116+00.00	60	T	24" or Greater	PASS
V-100	77+25.00	118+25.00	57	T	24" or Greater	PASS
V-101	77+50.00	120+00.00	57	T	24" or Greater	PASS
V-102	78+00.00	121+00.00	57	T	24" or Greater	PASS
V-103	80+00.00	121+00.00	103	T	24" or Greater	PASS
V-104	79+00.00	122+00.00	54	T	24" or Greater	PASS
V-105	80+75.00	121+25.00	56	T	24" or Greater	PASS
V-106	80+00.00	122+00.00	55	T	24" or Greater	PASS
V-107	81+00.00	122+00.00	55	T	24" or Greater	PASS
V-108	81+00.00	123+00.00	54	T	24" or Greater	PASS
V-109	82+00.00	122+00.00	56	T	24" or Greater	PASS
V-110	82+00.00	123+00.00	54	T	24" or Greater	PASS
V-111	82+75.00	121+50.00	56	T	24" or Greater	PASS
V-112	82+75.00	122+75.00	55	T	24" or Greater	PASS
V-113	83+50.00	122+50.00	52	T	24" or Greater	PASS
V-114	84+00.00	122+00.00	53	T	24" or Greater	PASS
V-115	84+00.00	123+00.00	51	T	24" or Greater	PASS
V-116	84+75.00	123+00.00	51	T	24" or Greater	PASS
V-117	85+00.00	122+00.00	53	T	24" or Greater	PASS
V-118	86+00.00	122+25.00	52	T	24" or Greater	PASS
V-119	86+50.00	121+50.00	53	T	24" or Greater	PASS
V-120	86+50.00	123+25.00	51	T	24" or Greater	PASS

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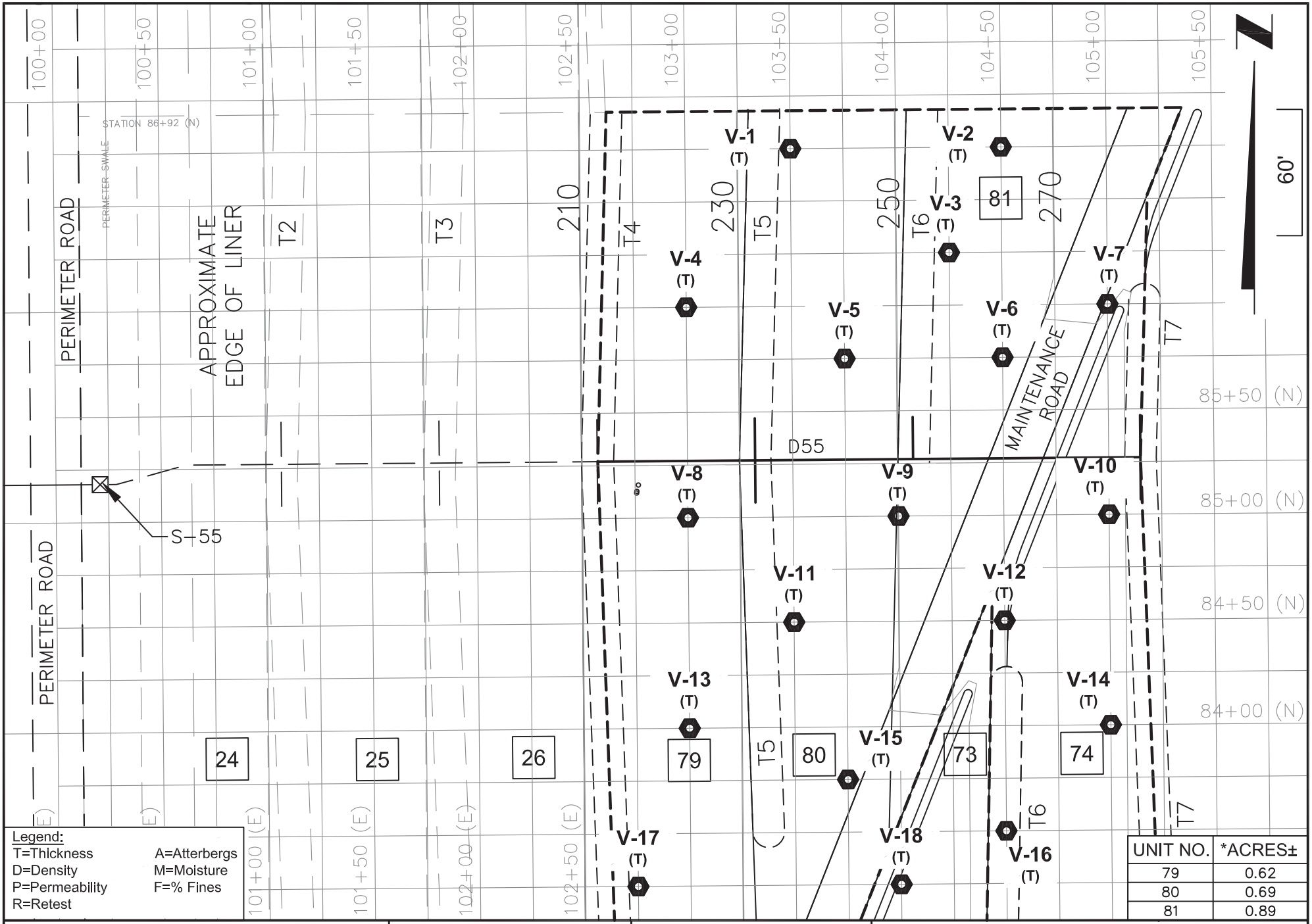
Trail Ridge Landfill - Incremental Closure Phase 4 units 51-81
VEGETATIVE COVER TEST RESULTS

Thickness Minimum: **24.0"**

Legend: **I=Initial Cover, C1=Clay First Lift, C2=Clay Second Lift, V=Vegatative Cover, P=Permability, A=Atterbergs, D=Density, M=Moisture, F=%Fines, T=Thickness, E=Effective Grain Size, U=Uniformity Coefficent, R=Retest, X=Not Tested**

Sample Number	NORTHING (Local Grid)	EASTING (Local Grid)	Unit Location	Tests	Field Thickness (in)	Test Result
V-121	87+25.00	122+50.00	49	T	24" or Greater	PASS
V-122	88+00.00	122+00.00	50	T	24" or Greater	PASS
V-123	88+00.00	123+00.00	48	T	24" or Greater	PASS
V-124	88+75.00	121+75.00	50	T	24" or Greater	PASS
V-125	89+25.00	122+50.00	49	T	24" or Greater	PASS
V-126	90+00.00	122+00.00	50	T	24" or Greater	PASS
V-127	90+00.00	123+00.00	48	T	24" or Greater	PASS
V-128	91+00.00	122+00.00	50	T	24" or Greater	PASS
V-129	91+00.00	123+00.00	48	T	24" or Greater	PASS
V-130	91+50.00	121+50.00	50	T	24" or Greater	PASS
V-131	91+50.00	122+50.00	49	T	24" or Greater	PASS
All Phase 4 Totals = 30.20 Acres						
Total: Tests Required					**121**	
Total: Tests Performed					**131**	

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Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
79	0.62
80	0.69
81	0.89

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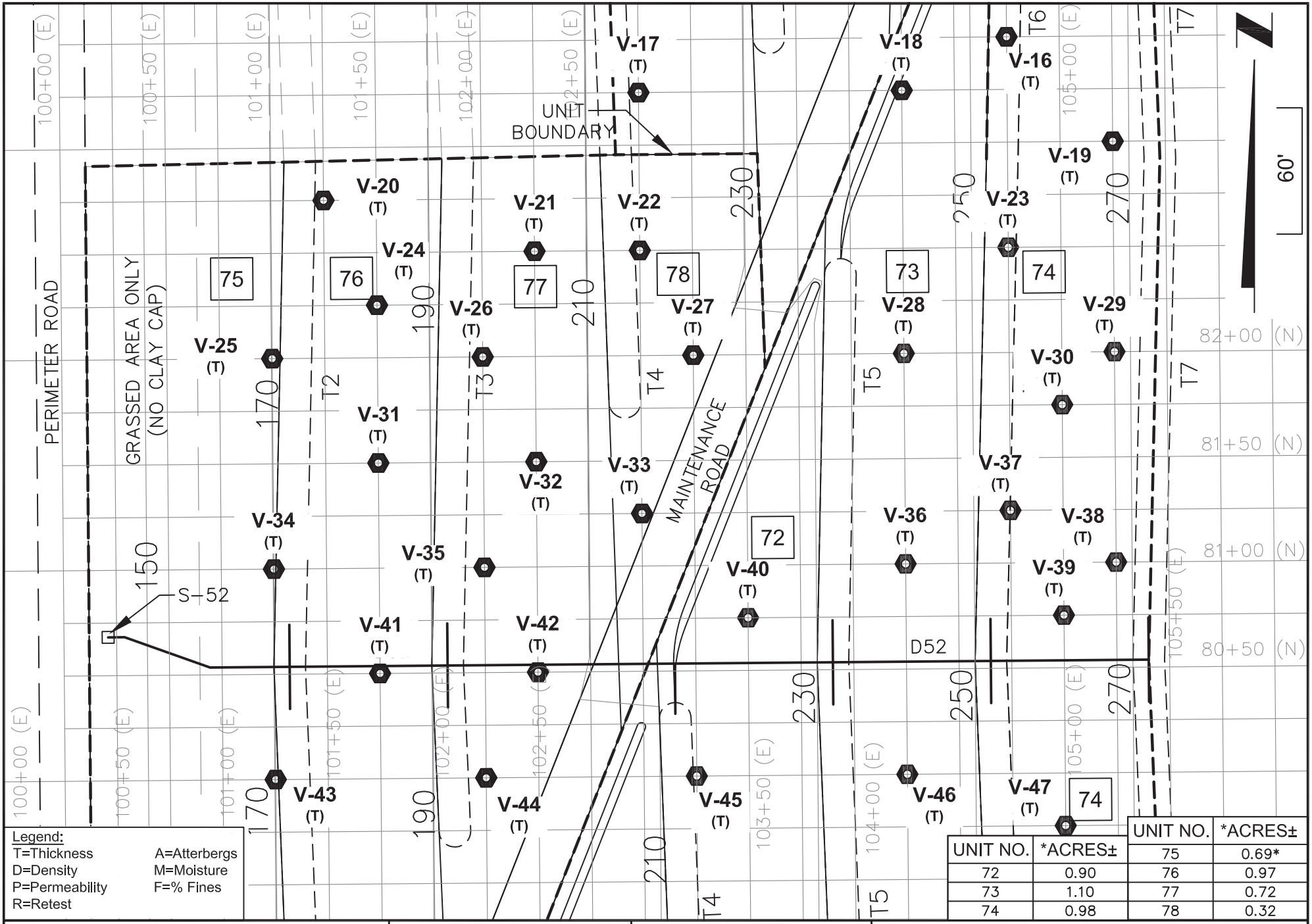
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Jacksonville
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SHEET TITLE:
VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
1 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
72	0.90
73	1.10
74	0.98

UNIT NO.	*ACRES±
75	0.69*
76	0.97
77	0.72
78	0.32

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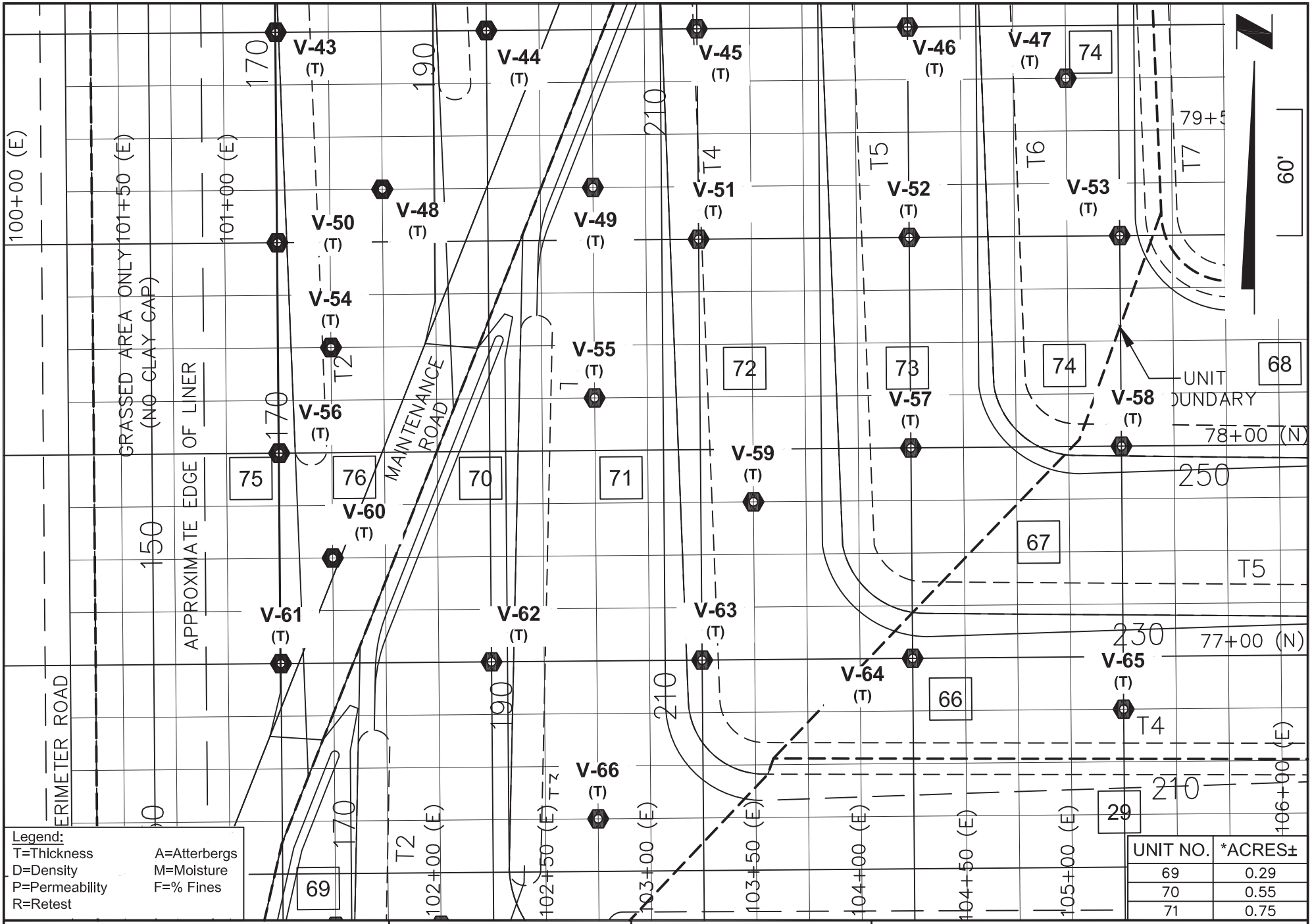
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SHEET TITLE:
VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
2 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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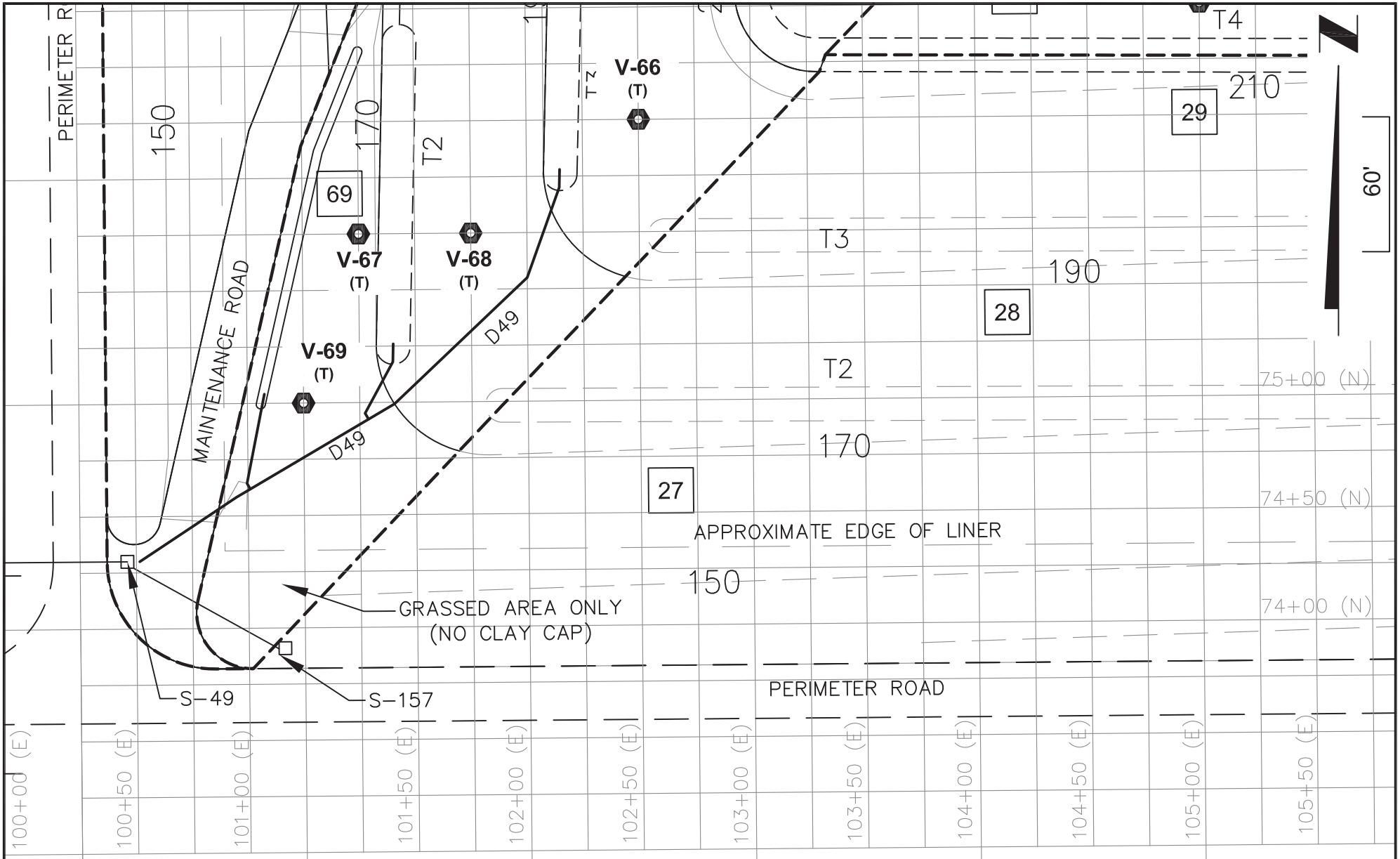
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VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
3 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
69	0.29
70	0.55
71	0.75

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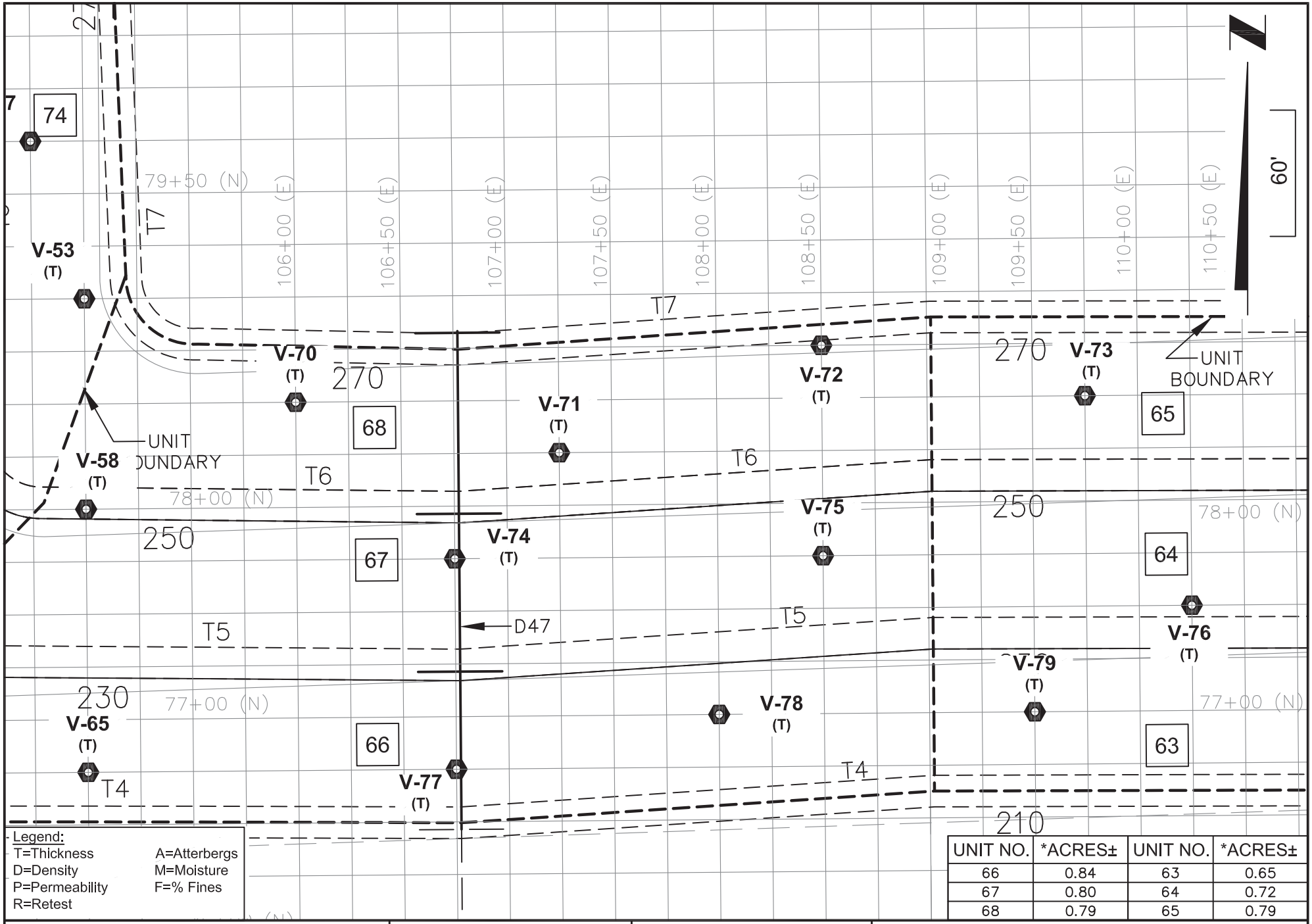
PROJECT NAME:

TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida

0006-0008

FIGURE NO.

4 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
66	0.84	63	0.65
67	0.80	64	0.72
68	0.79	65	0.79

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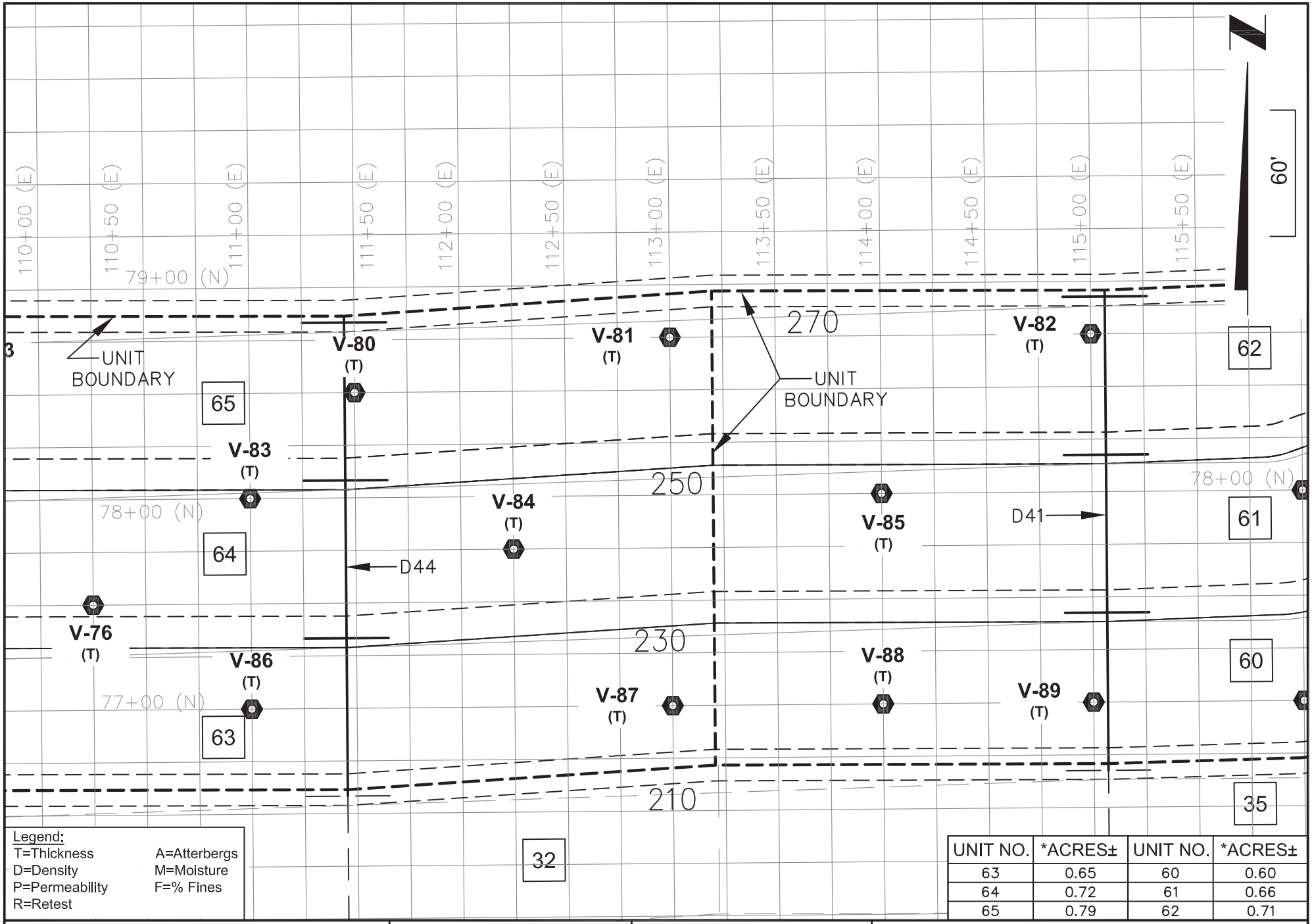
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SHEET TITLE:
VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
5 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
63	0.65	60	0.60
64	0.72	61	0.66
65	0.79	62	0.71

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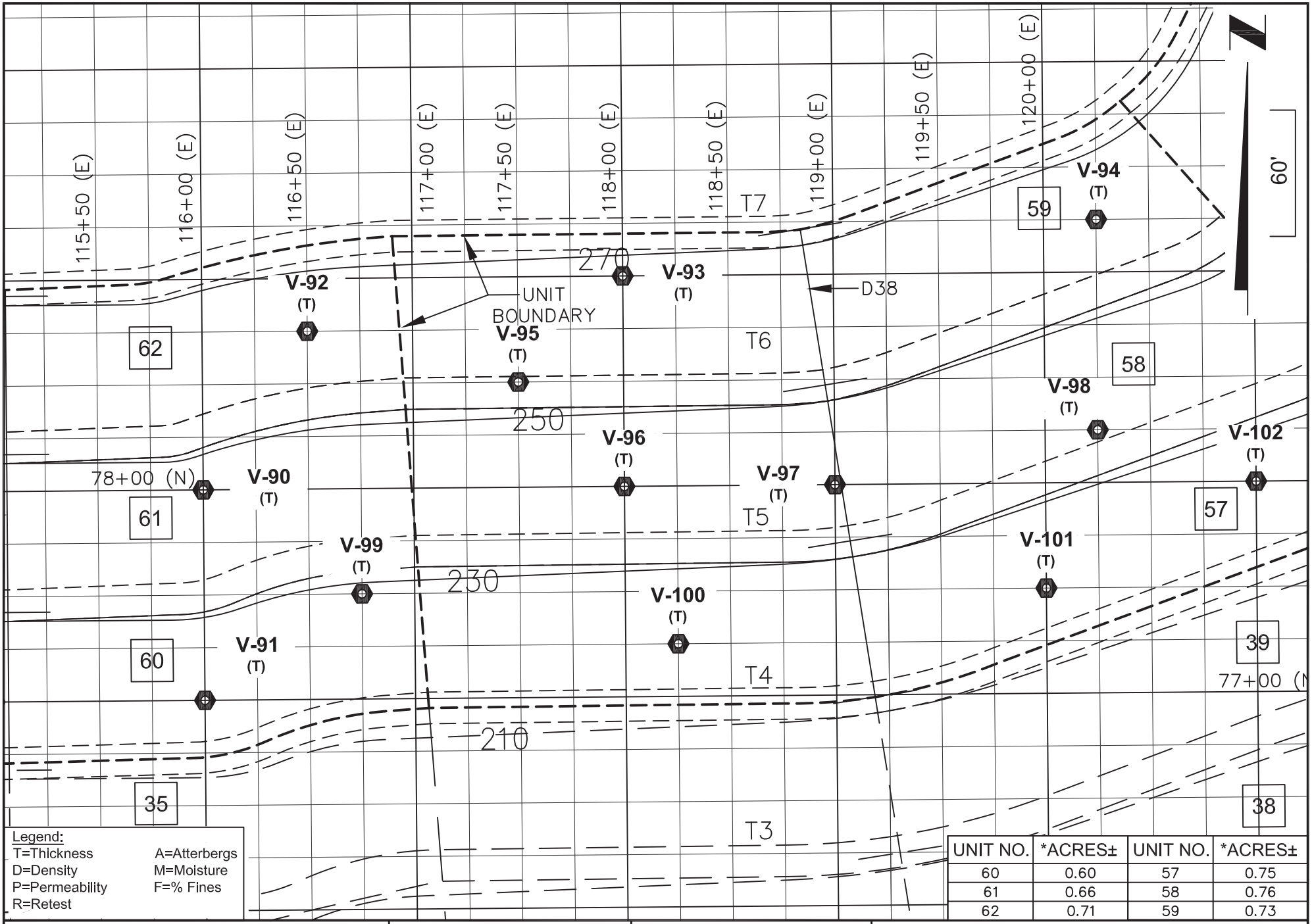
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SHEET TITLE:
VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
6 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
60	0.60	57	0.75
61	0.66	58	0.76
62	0.71	59	0.73

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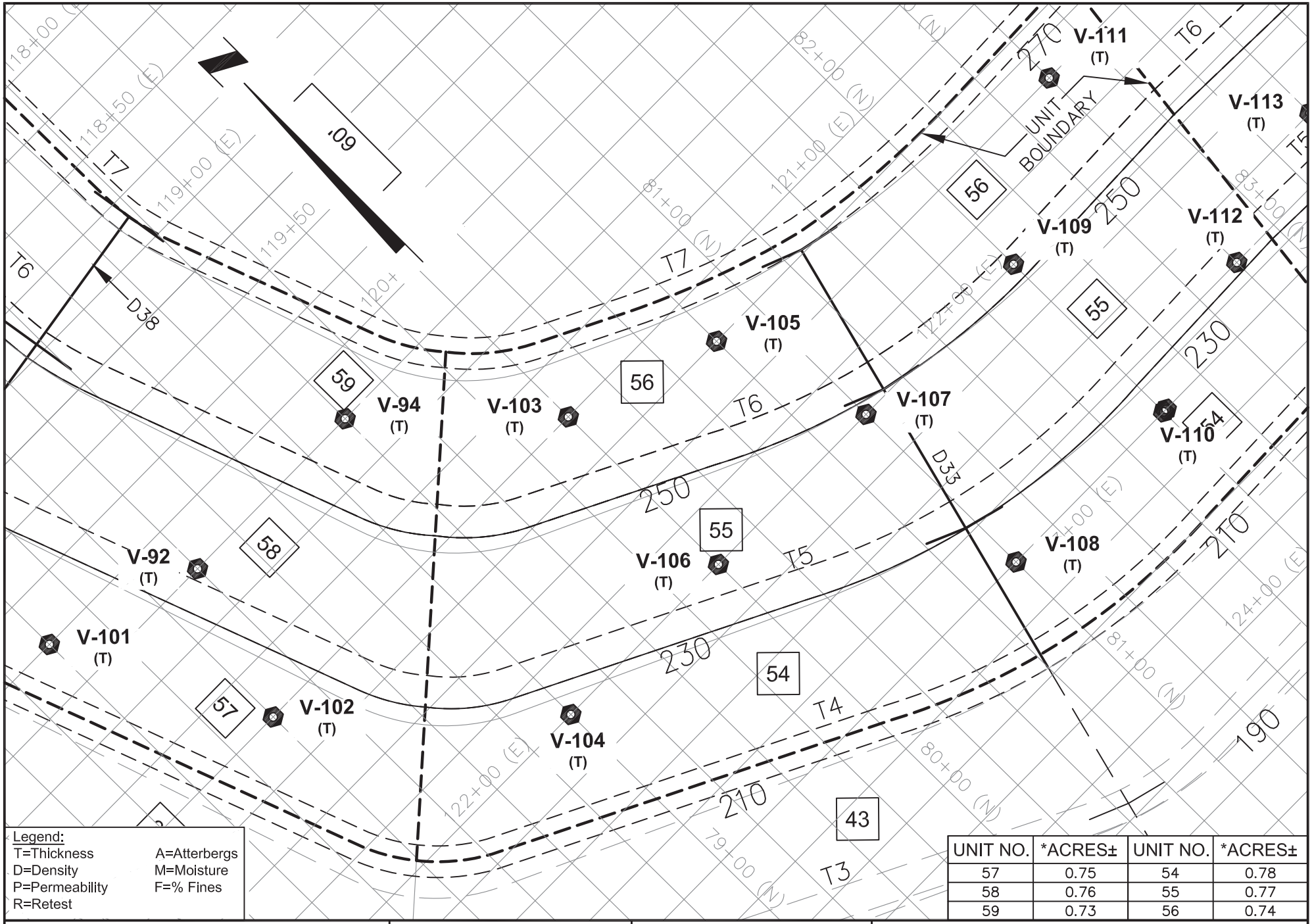
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ENGLAND - THIMS & MILLER, INC.

Jacksonville
Where Florida Begins.

SHEET TITLE:
VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
7 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
57	0.75	54	0.78
58	0.76	55	0.77
59	0.73	56	0.74

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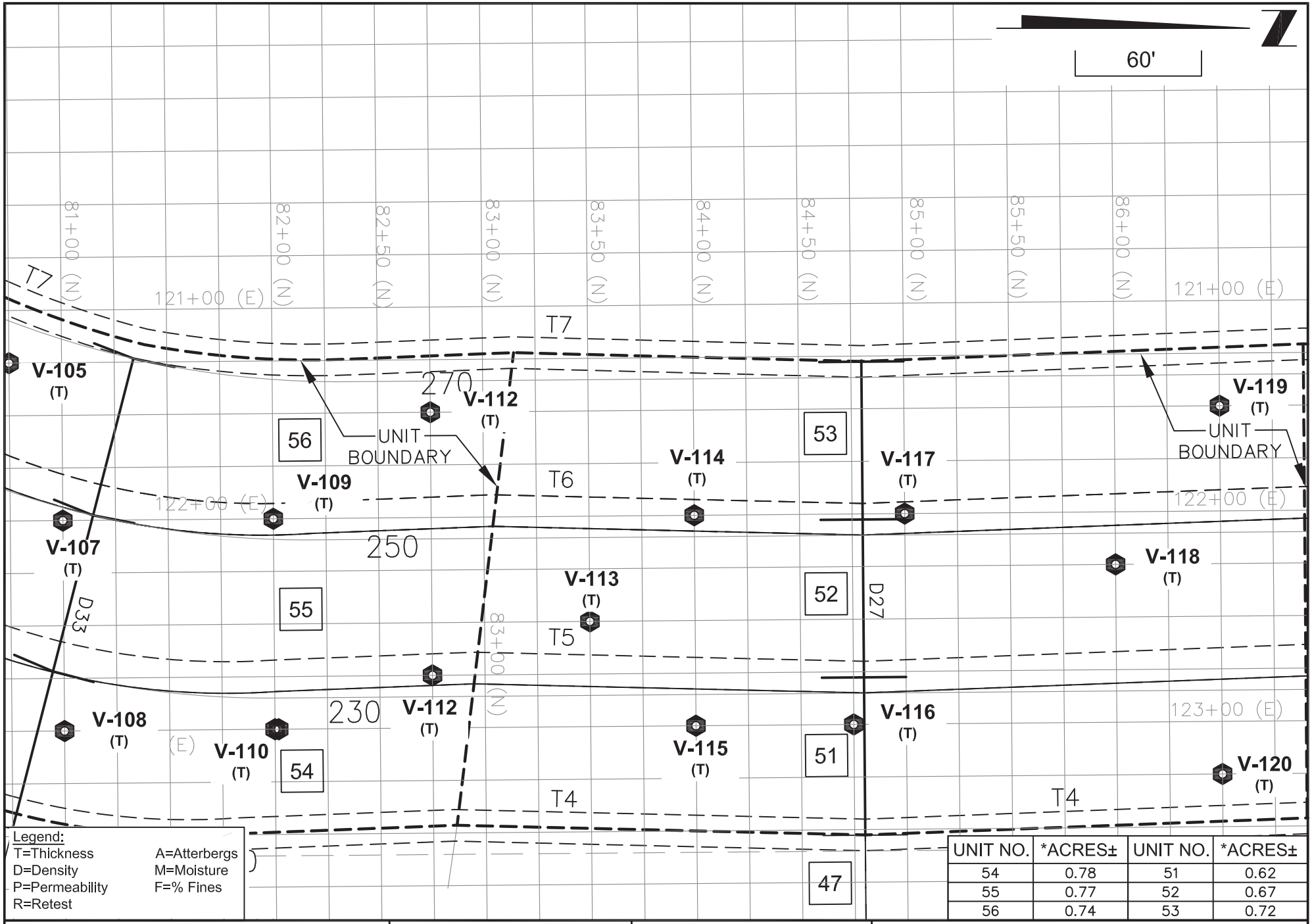
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SHEET TITLE:
VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
8 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±	UNIT NO.	*ACRES±
54	0.78	51	0.62
55	0.77	52	0.67
56	0.74	53	0.72

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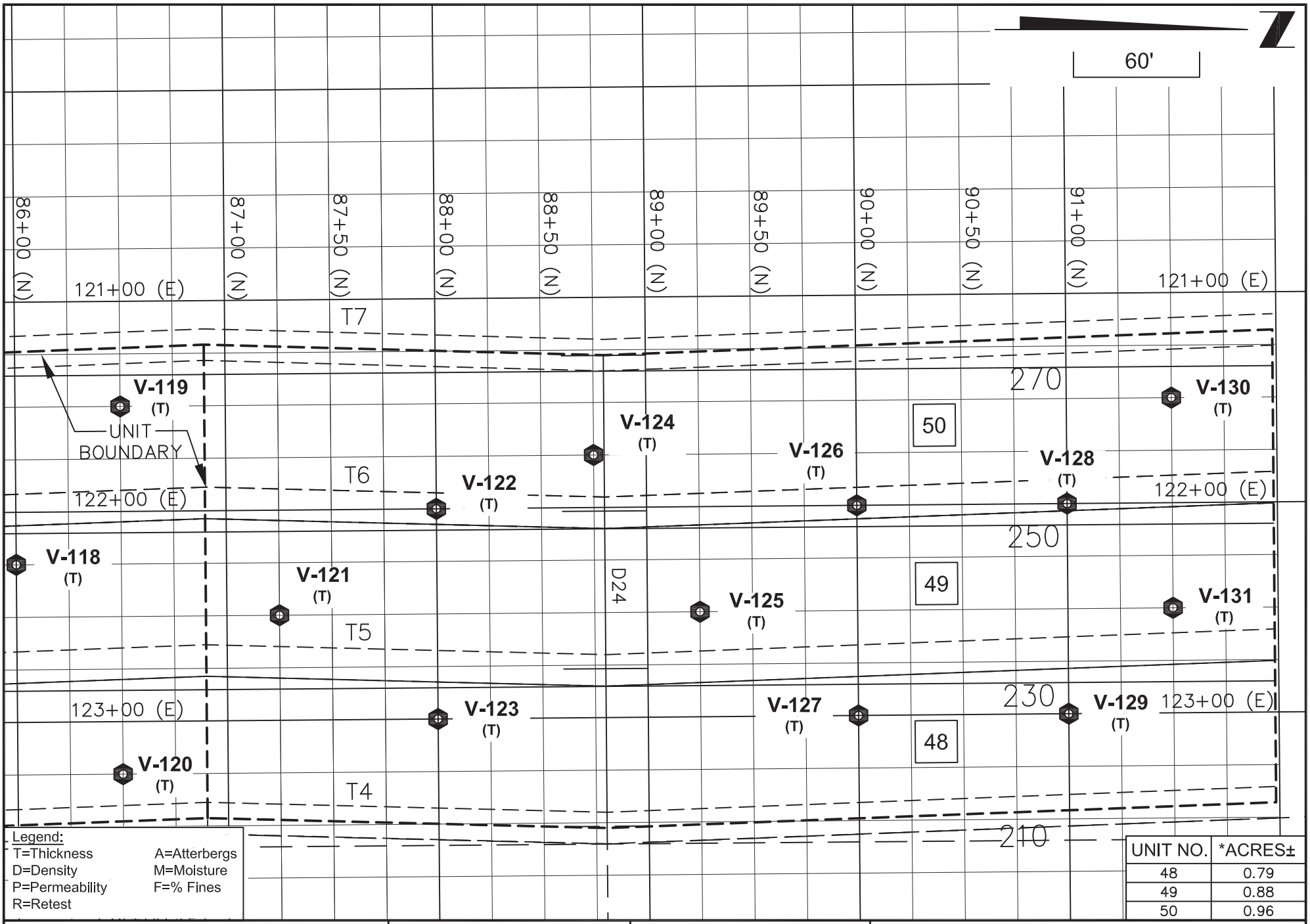
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Jacksonville
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SHEET TITLE:
VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
9 of 10



Legend:

T=Thickness	A=Atterbergs
D=Density	M=Moisture
P=Permeability	F=% Fines
R=Retest	

UNIT NO.	*ACRES±
48	0.79
49	0.88
50	0.96

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CLIENT:

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SHEET TITLE:
VEGETATIVE COVER THICKNESS TESTING

PROJECT NAME:
TRAIL RIDGE LANDFILL PHASE 4
Jacksonville, Florida
0006-0008

FIGURE NO.
10 of 10

February 2, 2016

Meskel & Associates Engineering
Geotechnical ⌜ Environmental ⌜ Inspection ⌜ Testing

Mr. Scott Lockwood, P.E.
England-Thims & Miller, Inc.
14775 Old St. Augustine Road
Jacksonville, Florida 32258

Subject: Report of Construction Materials Testing
Trail Ridge Landfill – Incremental Closure Phase 4 Units 51-81
Duval County, Florida
MAE Project No. 0006-0008

Dear Mr. Lockwood:

MESKEL & ASSOCIATES ENGINEERING, PLLC (MAE) has completed material testing services for the Trail Ridge Landfill Incremental Closure Phase 4 Units 51-81 project. This letter describes the services provided by MAE.

Soil Quality Assurance / Quality Control (QA/QC) Plan

MAE's scope of involvement with this project consisted of sampling and testing to verify substantial compliance with the material standards. Sampling and testing of materials was performed in general accordance with the QA/QC Plan in the project specifications. Material testing was conducted in general accordance with the ASTM standard references shown below.

Location of Tests Performed	Tests Performed
Test Strip #1: TC1-1 to TC1-5 and TC2-1 to TC2-5	ASTM D2922(1) and Thickness(3)
Test Strip #2: TC1-1R to TC1-5R and TC2-1R to TC2-5R	ASTM D2922(1) and Thickness(3)
I-001 to I-182	ASTM D2922(1) ASTM D3017(2), and Thickness(3)
C1-001 to C1-230	ASTM D2922(1) and Thickness(3)
C2-001 to C2-229	ASTM D2922(1) and Thickness(3)
V-001 to V-131	Thickness(3)

(1) ASTM D2922: Test Methods for Density of Soil and Soil Aggregate in place by Nuclear Methods (Shallow Depth)
(2) ASTM D3017: Test Methods for Moisture Content of Soil and Soil Aggregate in place by Nuclear Methods
(3) Thickness Depth Checks

Attached are all tests performed in accordance with the specifications and the QA/QC Plan for the Trail Ridge Landfill Incremental Closure Phase 4 Units 51-81 project.

We appreciate this opportunity to be of service as your consultant on this project. If you have any questions, or if we may be of any further service, please contact us.

Sincerely,
MESKEL & ASSOCIATES ENGINEERING, PLLC

COPY

Samuel E. Lansdale
Quality Control Monitor

Antoinette (Tina) D. Meskel, P.E.
Principal Engineer
Licensed, Florida No. 56999

8936 Western Way, Suite 12
Jacksonville, Florida 32256
Phone: (904)519-6990 Fax: (904)519-6992

Meskel & Associates
ENGINEERING, PLLC
GEOTECHNICAL & ENVIRONMENTAL ENGINEERING
CONSTRUCTION MATERIALS TESTING & INSPECTION

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	Refer to plan		
Material:	Soil (Initial Cover)	Course:	Initial Cover
Date Tested:	04/16/2013	Spec. Requirements:	90%

Report #:	001
Project #:	0006-0008
Gauge #:	22369
Tech.:	Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-1	12”	12”+	2	102.6	90	16.8	P
	I-2	12”	12”+	2	105.4	93	17.2	P
	I-3	12”	12”+	2	103.8	91	11.3	P
	I-4	12”	12”+	2	109.5	97	10.6	P
	I-5	12”	12”+	2	113.9	100	11.7	P
	I-6	12”	12”+	2	108.6	96	8.7	P
	I-7	12”	12”+	2	110.9	98	8.9	P
	I-8	12”	12”+	2	106.0	93	11.7	P
	I-9	12”	12”+	2	111.3	98	13.1	P
	I-10	12”	12”+	2	105.4	93	11.7	P
	I-11	12”	12”+	2	105.2	93	8.9	P
	I-12	12”	12”+	2	107.0	94	16.1	P
	I-13	12”	12”+	2	107.1	94	13.4	P
	I-14	12”	12”+	2	107.7	95	13.4	P
	I-15	12”	12”+	2	108.5	96	8.5	P
	I-16	12”	12”+	2	109.3	96	18.7	P
	I-17	12”	12”+	2	102.7	91	13.7	P
	I-18	12”	12”+	2	112.9	100	13.1	P
	I-19	12”	12”+	2	103.2	91	11.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Initial Cover Sample #2	113.5 pcf	13%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course:
Date Tested: 05/01/2013 Spec. Requirements: 90%

Report #: 002
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-45	12"	12+		104.3	92	16.8	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Waste Management Borrow Pit	114.2 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Soil (Clay 1st Lift) Course:
Date Tested: 06/04/2013 Spec. Requirements: 80%

Report #: 003
Project #: 0006-0008
Gauge #: 22369
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-1, Units 79-81	6”	6”		78.2	85	39.1	P
	C1-3, Units 79-81	6”	6”		81.9	82	32.7	P
	C1-4, Units 79-81	6”	6”		78.6	86	38.6	P
	C1-6, Units 79-81	6”	6”		81.3	89	33.7	P
	C1-7, Units 79-81	6”	6”		79.3	86	37.2	P
	C1-2	6”	6”					P
	C1-5	6”	6”					P
	C1-8	6”	6”					P
	C2-1, Units 79-81	6”	14.5”	2	83.0	90	31.1	P
	C2-3, Units 79-81	6”	14.5”	2	80.6	88	34.9	P
	C2-4, Units 79-81	6”	13.5”	2	86.1	94	33.5	P
	C2-5, Units 79-81	6”	14”	2	80.0	87	34.9	P
	C2-7, Units 79-81	6”	13”	2	82.2	89	32.5	P
	C2-2		12”					
	C2-6		13”					
	C2-8		13”					
	C2-10		14”					

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Jacobs Pit Clay Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course:
Date Tested: 06/05/2013 Spec. Requirements: 90%

Report #: 004
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-20	12"	12+		110.1	97	14.3	P
	I-35	12"	12+		107.0	94	12.7	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
		114.2 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Soil (Initial Cover) Course: 1st Lift
Date Tested: 06/17/2013 Spec. Requirements: 90%

Report #: 005
Project #: 0006-0008
Gauge #: 22369
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-144 Initial Cover, D-55	12"	12"+	2	101.8	90	4.7	P
	I-145 Initial Cover, D-55	12"	12"+	2	105.7	93	9.7	P
	I-146 Initial Cover, D-55	12"	12"+	2	109.8	97	11.1	P
	I-147 Initial Cover, D-55	12"	12"+	2	103.0	90	9.3	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Initial Cover Proctor #2	113.5 pcf	13%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 06/26/2013
Spec. Requirements: 80%

Report #: 006
Project #: 0006-0008
Gauge #: 22369
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	CI-135 Under D-55	6”	6”	2	73.5	80	33.6	P
	CI-137 Under D-55	6”	6”	2	77.6	85	39.9	P
	CI-139 Under D-55	6”	6”	2	76.0	83	26.9	P
	CI-142 Under D-55	6”	6”	2	79.5	87	38.2	P
	CI-134		12”					P
	CI-136		6”					P
	CI-138		6”					P
	CI-140		6”					P
	CI-141		6”					P
	C2-132 Under D-55	6”	15”	2	83.9	91	33.6	P
	C2-134 Under D-55	6”	15”	2	83.0	90	29.6	P
	C2-136 Under D-55	6”	17”	2	85.1	93	28.8	P
	C2-139 Under D-55	6”	17”	2	83.3	91	34.0	P
	C2-133		18”					
	C2-135		15”					
	C2-137		15”					
	C2-138		16”					

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: Terrace 6
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 07/12/2013
Spec. Requirements: 80%

Report #: 007
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-10		12"					
	C1-14		12"					
	C1-23		12"					
	C1-11 Terrace 6	6"	7"	2	77.3	84	37.8	P
	C1-27 Terrace 6	6"	7"	2	88.5	88	37.1	P
	C2-13 Terrace 6	6"	16"	2	80.1	87	36.5	P
	C2-16 Terrace 6	6"	16"	2	81.4	89	37.1	P
	C2-19 Terrace 6	6"	14"	2	80.2	87	36.1	P
	C2-35 Terrace 6	6"	15"	2	79.9	87	34.7	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 07/19/2013
Spec. Requirements: 80%

Report #: 008
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-9 Terrace 5, Unit 80	6"	6"	2	85.8	93	34.2	P
	C1-12 Terrace 4, Unit 79	6"	7"	2	74.4	81	43.9	P
	C1-13 Terrace 5, Unit 80	6"	8"	2	77.0	84	38.6	P
	C1-15 Terrace 4, Unit 79	6"	8"	2	80.9	88	35.1	P
	C1-16 Terrace 5, Unit 80	6"	8"	2	85.9	93	29.6	P
	C1-17 Terrace 6, Unit 81		7"					P
	C1-18 Terrace 6, Unit 81		7"					P
	C1-19 Terrace 6, Unit 81		7"					P
	C1-21 Terrace 5, Unit 73		7"					P
	C1-26, Maintenance Road	6"	7"	2	78.7	86	41.1	P
	C2-8 Terrace 4, Unit 79	6"	14+"	2	87.4	95	29.2	P
	C2-9 Terrace 4, Unit 80	6"	14+"	2	81.6	89	34.1	P
	C2-11 Terrace 5, Unit 80	6"	15+"	2	83.6	91	32.5	P
	C2-12 Maintenance Road		13+"					P
	C2-14 Terrace 4, Unit 79	6"	14+"	2	89.9	98	28.6	P
	C2-15 Terrace 5, Unit 80	6"	14+"	2	90.2	98	28.7	P
	C2-17 Terrace 4, Unit 79		14+"					P
	C2-18 Terrace 5, Unit 80		13+"					P
	C2-21 Maintenance Road	6"	13+"	2	93.9	102	28.0	P
	C2-23 Maintenance Road	6"	13+"	2	96.4	105	27.3	P
	C2-28 Terrace 6, Unit 74		16+"					P
	C2-31 Terrace 6, Unit 74		16+"					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 2nd Lift
Date Tested: 07/26/2013
Spec. Requirements: 80%

Report #: 009
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-36		14”					
	C2-39		15”					
	C1-20 Terrace 2, Unit 76	6”	14”	2	83.4	91	29.1	P
	C1-22 Terrace 3, Unit 77	6”	14”	2	82.4	90	35.3	P
	C1-24 Terrace 2, Unit 76	6”	13”	2	85.7	93	30.8	P
	C1-25 Terrace 3, Unit 77		12”					P
	C1-28 Terrace 4, Unit 78		18”					P
	C1-30 Terrace 6, Unit 74		16”					P
	C1-31 Terrace 3, Unit 77	6”	14”	2	82.7	90	32.2	P
	C1-32 Maintenance Road		14”					P
	C1-33 Between Terrace 2 & Anchor Berm		13”					P
	C1-34 Terrace 2, Unit 76	6”	14”	2	86.0	94	30.2	P
	C1-35 Maintenance Road		16”					P
	C1-37 Terrace 2, Unit 76		14”					P
	C1-38 Terrace 3, Unit 77	6”	14”	2	84.7	92	29.5	P
	C2-20 Terrace 2, Unit 76		13”					P
	C2-22 Terrace 3, Unit 77	6”	13”	2	92.9	101	27.7	P
	C2-24 Terrace 2, Unit 76	6”	13”	2	92.2	100	27.6	P
	C2-25 Terrace 3, Unit 77		13”					P
	C2-26 Terrace 4, Unit 78	6”	13”	2	78.6	86	37.8	P
	C2-29 Terrace 3, Unit 77	6”	13”	2	85.3	93	32.3	P
	C2-30 Terrace 4, Unit 72		16”					P
	C2-32 Terrace 2, Unit 76		13”					P
	C2-33 Terrace 3, Unit 77		13”					P
	C2-36 Terrace 2, Unit 76	6”	13”	2	85.3	93	32.1	P
	C2-37 Terrace 4, Unit 72		15”					P
	C2-38 Terrace 6, Unit 74		13”					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

Meskel & Associates
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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Soil (Initial Cover) Course: 1st Lift
Date Tested: 07/31/2013 Spec. Requirements: 90%

Report #: 010
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	Initial Cover Under D-52, I-148	12"	12"	3	121.2	101	12.9	P
	Initial Cover Under D-52, I-148A	12"	12"	3	114.5	95	13.6	P
	Initial Cover Under D-52, I-149	12"	12"	3	109.8	91	9.5	P
	Initial Cover Under D-52, I-149A	12"	12"	3	114.0	95	11.3	P
	Initial Cover Under D-52, I-150	12"	12"	3	111.1	93	13.1	P
	Initial Cover Under D-52, I-151	12"	12"	3	109.5	95	14.2	P
	Initial Cover Under D-52, I-152	12"	12"	3	110.8	92	12.1	P
	Initial Cover Under D-52, I-153	12"	12"	3	107.8	90	12.1	P
	I-36	12"	12"	3	112.4	94	9.3	P
	I-37	12"	12"	3	108.6	91	11.8	P
	I-38	12"	12"	3	109.5	91	14.3	P
	I-39	12"	12"	3	109.1	91	8.8	P
	I-40	12"	12"	3	109.2	91	9.1	P
	I-42	12"	12"	3	108.2	90	9.8	P
	I-43	12"	12"	3	109.2	91	10.7	P
	I-44	12"	12"	3	109.5	91	11.1	P
	I-46	12"	12"	3	111.4	93	12.8	P
	I-47	12"	12"	3	109.7	91	9.0	P
	I-48 (Maintenance Road)	12"	12"	3	123.5	103	8.0	P
	I-49	12"	12"	3	111.6	93	10.4	P
	I-50	12"	12"	3	112.9	94	9.3	P
	I-51	12"	12"	3	116.6	97	10.5	P
	I-52	12"	12"	3	108.3	90	10.0	P
	I-53	12"	12"	3	109.5	91	5.6	P
	I-54	12"	12"	3	108.6	91	9.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover Sample #3	120.0 pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 08/02/2013
Spec. Requirements: 80%

Report #: 011
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-29 Terrace 5, Unit 80		13”					P
	C1-39 Terrace 5, Unit 80	6”	13”	2	82.3	90	30.9	P
	C2-27 Terrace 5, Unit 80	6”	13”	2	80.9	88	35.7	P
	C2-34 Terrace 5, Unit 80	6”	13”	2	80.4	87	35.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: D-52
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 08/06/2013 – 08/07/2013
Spec. Requirements: 80%

Report #: 012
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-145, D-52	6”	12”	2	78.7	86	39.2	P
	C1-146, D-52	6”	12”	2	78.8	86	37.2	P
	C1-147, D-52	6”	12”	2	78.8	86	37.2	P
	C1-148, D-52		12”					P
	C1-149, D-52	6”	12”	2	79.4	86	38.2	P
	C1-150, D-52		12”					P
	C1-151, D-52	6”	12”	2	77.5	84	40.5	P
	C1-152, D-52		12”					P
	C1-153, D-52	6”	12”	2	77.9	85	38.0	P
	C1-154, D-52		12”					P
	C1-155, D-52	6”	12”	2	80.5	88	35.9	P
	C1-156, D-52		12”					P
	C2-141, D-52	6”	12”	2	81.7	89	34.5	P
	C2-142, D-52		12”					P
	C2-143, D-52	6”	12”	2	79.1	86	30.7	P
	C2-144, D-52		12”					P
	C2-145, D-52	6”	12”	2	87.4	95	27.6	P
	C2-146, D-52		12”					P
	C2-147, D-52	6”	12”	2	79.7	87	35.7	P
	C2-148, D-52		12”					P
	C2-149, D-52	6”	12”	2	87.5	88	36.0	P
	C2-150, D-52		12”					P
	C2-151, D-52	6”	12”	2	79.9	87	36.8	P
	C2-152, D-52		12”					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Soil (Initial Cover) Course: 1st Lift
Date Tested: 08/16/2013 Spec. Requirements: 90%

Report #: 013
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-55	12"	12"	3	111.8	93	9.6	P
	I-56	12"	12"	3	119.1	100	10.4	P
	I-57	12"	12"	3	108.1	90	13.3	P
	I-58	12"	12"	3	112.4	94	8.4	P
	I-60	12"	12"	3	110.6	92	10.8	P
	I-61	12"	12"	3	117.5	98	9.9	P
	I-62	12"	12"	3	111.9	93	8.5	P
	I-63	12"	12"	3	109.6	90	7.6	P
	I-66	12"	12"	3	111.2	93	9.1	P
	I-67	12"	12"	3	110.6	90	9.5	P
	I-68	12"	12"	3	117.0	98	10.5	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover Sample #3	120.0 pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st & 2nd Lifts
Date Tested: 09/12/2013
Spec. Requirements: 80%

Report #: 014
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-35R	6”	12”	2	76.5	83	41.2	R
	C1-40	6”	12”	2	82.8	90	36.8	P
	C1-41	6”	14”	2				P
	C1-42	6”	15”	2	76.5	83	41.2	P
	C1-44	6”	15”	2	73.1	80	41.3	P
	C1-46	6”	15”	2				P
	C2-41	6”	15”	2				P
	C2-44	6”	14”	2				P
	C2-51	6”	15”	2	78.4	85	36.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st & 2nd Lifts
Date Tested: 10/01/2013
Spec. Requirements: 80%

Report #: 015
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-52		15”					
	C2-46		14”					
	C2-61	6”	12”	2	78.9	86	37.5	
	C1-45	6”	6”	2	76.4	83	39.8	P
	C1-49	6”	6”	2	79.7	87	40.8	P
	C1-50	6”	6”	2	73.4	80	44.7	P
	C1-51		6”					P
	C1-58		6”					P
	C1-59		6”					P
	C1-64	6”	6”	2	74.6	81	44.5	P
	C2-43	6”	12”	2	77.8	85	39.2	P
	C2-45	6”	14”	2	76.4	83	41.7	P
	C2-48	6”	14”	2	76.7	83	38.9	P
	C2-49		12”					P
	C2-50	6”	12”	2	84.4	92	28.6	P
	C2-56		12”					P
	C2-60		14”					P
	C2-64	6”	14”	2	78.9	86	37.5	P
	C2-55	6”	14”	2	75.5	82	40.8	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st & 2nd Lifts
Date Tested: 10/04/2013
Spec. Requirements: 80%

Report #: 016
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-43	6”	13”	2	81.0	88	38.3	P
	C1-57	6”	13”	2	78.0	85	42.3	P
	C1-61		13”					P
	C1-68	6”	13”	2	75.8	83	43.0	P
	C2-42		13”					P
	C2-53	6”	13”	2	82.2	89	36.5	P
	C2-59		13”					P
	C2-64		13”					P
	C2-65	6”	13”	2	78.7	86	40.2	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: Unit 70 T2
Material: Clay
Course: 1st & 2nd Lifts
Date Tested: 10/07/2013
Spec. Requirements: 80%

Report #: 017
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C2-66, Unit 70 T2	6”	13”	2	80.5	88	35.7	P
	C2-67, Unit 70 T2		13”					P
	C1-63, Unit 70 T2		6”					P
	C1-66, Unit 70 T2		6”					P
	C1-70, Unit 70 T2		6”					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay & Soil (Initial Cover) Course: 1st & 2nd Lifts
Date Tested: 10/10/2013 Spec. Requirements: 80% Clay / 90% Initial Cover

Report #: 018
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-206, Gas – Unit 70 T2	6”	6”	2	81.4	89	37.1	P
	C2-202, Gas – Unit 70 T2	6”	12”	2	89.2	97	35.6	P
	I-181, Gas	12”	12”	4	111.9	98	10.6	P
	I-180, Gas	12”	12”	4	109.2	96	11.0	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%
4	Topsoil Sample #4	114.2 pcf	9%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course:
Date Tested: 10/15/2013 Spec. Requirements: 90%

Report #: 019
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-59	12"	12+		114.6	96	10.7	P
	I-64	12"	12+		114.4	95	6.6	P
	I-65	12"	12+		121.1	101	6.9	P
	I-69	12"	12+		114.9	96	7.7	P
	I-70	12"	12+		115.8	97	7.0	P
	I-71	12"	12+		115.1	96	10.7	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Spencer's Pit	120.2 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: Gas Expansion
Material: Initial Cover & Clay Course: Clay 1st & 2nd Lifts
Date Tested: 10/18/2013 Spec. Requirements: 80% Clay / 90% Initial Cover

Report #: 020
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-181, 28' South of TW 66R (Gas)	12"	12"	4	111.9	98	10.6	P
	I-180, 8' South of Access Riser (Gas)	12"	12"	4	109.2	96	11.0	P
	I-182, 25' East of Maintenance Rd (Gas)	12"	12"	4	111.8	98	8.5	P
	I-179, 27' North of W10 (Gas)	12"	12"	4	104.3	91	8.6	P
	I-178, 127' North of W10 (Gas)	12"	12"	4	108.2	95	6.7	P
	C1-55, T6 – Unit 68	6"	6"	2	81.0	88	35.6	P
	C1-60, T5 – Unit 67		6"					P
	C1-67, T4 – Unit 66		6"					P
	C2-52, T6 – Unit 68	6"	12"	2	88.1	88	37.0	P
	C2-57, T5 – Unit 67		12"					P
	C2-62, T4 – Unit 66		12"					
	C1-206, 12' East of EW47 (Gas)	6"	6"	2	81.4	89	37.1	P
	C2-202, 11' East of Access Riser (Gas)	6"	12"	2	89.2	97	35.6	P
	C1-205, 18' West of Trench Drain T4 (Gas)	6"	6"	2	75.8	82	41.9	P
	C2-201, 14' West of Trench Drain T4 (Gas)	6"	12"	2	83.9	91	35.0	P
	C1-207, 15' East of Maintenance Rd (Gas)	6"	6"	2	76.7	83	41.7	P
	C2-203, 20' East of Maintenance Rd (Gas)	6"	12"	2	77.2	84	41.1	P
	C1-204, 12' North of W10 (Gas)	6"	6"	2	74.5	81	40.9	P
	C2-200, 15' North of W10 (Gas)	6"	12"	2	77.0	84	39.9	P
	C1-203, 125' North of W10 (Gas)	6"	6"	2	78.2	85	37.4	P
	C2-199, 130' North of W10 (Gas)	6"	12"	2	74.5	81	40.1	P
	C2-54		12"					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%
4	Topsoil Sample #4	114.2 pcf	9%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover & Clay Course: Clay 1st & 2nd Lifts
Date Tested: 10/19/2013 Spec. Requirements: 80% Clay / 90% Initial Cover

Report #: 021
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-156, D-49	6"	12"	3	112.4	94	15.9	P
	I-155, D-49	6"	12"	3	108.1	90	16.7	P
	I-154, D-49	6"	12"	3	109.1	91	8.8	P
	C1-157	6"	6"	2	74.7	81	41.5	P
	C1-159	6"	6"	2	77.0	84	39.0	P
	C1-158		6"					P
	C1-160		6"					P
	C2-153	6"	12"	2	73.8	80	45.0	P
	C2-154		12"					P
	C2-155	6"	12"	2	75.5	82	41.3	P
	C2-156		12"					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%
3	Initial Cover Sample #3	120.0 pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 2nd Lift
Date Tested: 10/29/2013
Spec. Requirements: 80%

Report #: 022
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C2-204 Anchor Berm Clay (N7515.60, E10076.90)	6"	N/A	2	77.6	84	40.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: Units 66, 67, and 68
Material: Soil (Initial Cover) Course: Initial Cover
Date Tested: 10/30/2013 Spec. Requirements: 90%

Report #: 023
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-72	12”	12”		105.1	92	18.5	P
	I-73	12”	12”		116.5	102	9.3	P
	I-76	12”	12”		105.5	92	14.5	P
	I-77	12”	12”		104.8	92	12.0	P
	I-79	12”	12”		107.9	94	5.3	P
	I-81	12”	12”		110.9	97	5.6	P
	I-82	12”	12”		107.0	94	5.8	P
	I-83	12”	12”		107.6	94	4.7	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
??	Spencer Pit	114.2 pcf	??%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 11/05/2013
Spec. Requirements: 80%

Report #: 024
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-72	6”	12”	2	82.2	90	34.5	P
	C1-73	6”	12”	2	85.1	93	29.4	P
	C1-71		12”					P
	C2-68		12”					P
	C2-69		12”					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacobs Clay Pit Mixed Sample #2	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-47		
Material:	Soil (Initial Cover)	Course:	Initial Cover
Date Tested:	11/15/2013	Spec. Requirements:	90%

Report #:	025
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-157	12"	12"+		107.5	90	15.2	P
	I-158	12"	12"+		107.6	90	16.9	P
	I-159	12"	12"+		108.2	90	16.8	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Spencer's Pit	120.2 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	Units 63, 64, and 65		
Material:	Soil (Initial Cover)	Course:	12"
Date Tested:	11/20/2013	Spec. Requirements:	90%

Report #:	026
Project #:	0006-0008
Gauge #:	17405
Tech.:	Paul R. Young

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-74	12"	12"+	3	108.7	90	12.5	P
	I-75	12"	12"+	3	109.7	91	9.0	P
	I-78	12"	12"+	3	108.3	90	10.0	P
	I-80	12"	12"+	3	104.8	92	11.6	P
	I-84	12"	12"+	3	110.6	90	9.5	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover Sample #3	120.0 pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 11/22/2013
Spec. Requirements: 80%

Report #: 027
Project #: 0006-0008
Gauge #: 17405
Tech.: Paul R. Young

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C2-74	6”	18”		88.6	96.4	29.9	P
	C2-78	6”	15”		90.4	98.3	30.2	P
	C1-69	6”	17"		83.3	90.7	34.1	P
	C1-79		18”					P
	C2-161	6”	12”		84.1	91.5	36.0	P
	C2-162		13”					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Jacobs Clay Pit Mixed Sample #3	91.9 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 6”
Date Tested: 11/23/2013
Spec. Requirements: 80%

Report #: 028
Project #: 0006-0008
Gauge #: 17405
Tech.: Sam E. Lansdale

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-166	6”	13”		81.8	89.0	35.5	P
	C1-165		13”					P
	C1-164	6”	12”		80.3	82.3	39.0	P
	C1-163		12”					P
	C1-162	6”	13”		75.5	82.3	41.4	P
	C1-161		13”					P
	C2-160		12”					P
	C2-159	6”	12”		85.0	92.5	33.9	P
	C2-158		13”					P
	C2-157	6”	15”		79.8	86.8	38.0	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Jacobs Clay Pit Mixed Sample #3	91.9 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 11/23/2013
Spec. Requirements: 80%

Report #: 029
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-74	6”	12”		80.9	88	36.4	P
	C1-75		12”					P
	C1-76		12”					P
	C1-78		12”					P
	C1-80	6”	12”		77.7	85	39.8	P
	C1-83		12”					P
	C2-70	6”	12”		83.0	90	35.0	P
	C2-71		12”					P
	C2-73		12”					P
	C2-75		12”					P
	C2-76		12”					P
	C2-79	6”	12”		76.5	83	37.8	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Jacobs Pit	91.9 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-44		
Material:	Initial Cover	Course:	
Date Tested:	12/10/2013	Spec. Requirements:	90%

Report #:	030
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-160, D-44	12"	12"		110.0	91	13.6	P
	I-161, D-44	12"	12"		109.4	91	17.7	P
	I-162, D-44	12"	12"		109.4	91	13.3	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Spencer's Pit	120.0 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	Initial Cover		
Material:	Initial Cover	Course:	
Date Tested:	12/10/2013	Spec. Requirements:	90%

Report #:	031
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-85	12”	12”		124.0	94	9.8	P
	I-88	12”	12”		127.7	94	9.8	P
	I-89	12”	12”		128.0	98	9.3	P
	I-92	12”	12”		121.9	94	8.0	P
	I-94	12”	12”		127.5	96	10.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Spencer’s Pit	120.0 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-44		
Material:	Clay	Course:	1st and 2nd Lifts
Date Tested:	12/20/2013	Spec. Requirements:	80%

Report #:	032
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-167, D-44		12”					P
	C1-168, D-44	6”	12”		73.5	80	43.7	P
	C1-169, D-44		12”					P
	C1-170, D-44	6”	12”		73.4	80	43.7	P
	C1-171, D-44		12”					P
	C1-172, D-44	6”	12”		73.8	80	42.1	P
	C2-163, D-44	6”	12”		77.7	85	35.4	P
	C2-164, D-44		12”					P
	C2-165, D-44	6”	12”		75.8	83	39.1	P
	C2-166, D-44		12”					P
	C2-167, D-44	6”	12”		74.8	81	41.3	P
	C2-168, D-44		12”					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Jacob’s Pit	91.9 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 12/21/2013
Spec. Requirements: 80%

Report #: 033
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-76		12"					P
	C1-77	6"	12"		75.3	82	42.5	P
	C1-81	6"	12"		81.0	88	36.5	P
	C1-82		12"					P
	C1-89	6"	12"		73.5	80	42.5	P
	C2-72	6"	12"		89.1	97	26.2	P
	C2-77	6"	12"		86.8	95	25.7	P
	C2-80	6"	12"		73.5	80	42.7	P
	C2-84		12"					P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Jacob's Pit	91.9 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: Units 60, 61, and 62 Profile 11-10
Material: Initial Cover Course:
Date Tested: 12/28/2013 Spec. Requirements: 90%

Report #: 034
Project #: 0006-0008
Gauge #: 17405
Tech.: Paul R. Young

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-86	12"	12"		111.1	92.6	9.1	P
	I-90	12"	12"		108.9	90.9	10.8	P
	I-93	12"	12"		112.6	93.8	9.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Spencer's Pit	120.0 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 12/31/2013
Spec. Requirements: 80%

Report #: 035
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-84		12"					P
	C1-86		12"					P
	C1-90	6"	12"		76.7	84	41.2	P
	C1-92	6"	12"		76.0	83	41.1	P
	C2-81	6"	12"		83.6	91	31.0	P
	C2-85		12"					P
	C2-88		12"					P
	C2-89	6"	12"		81.2	88	33.2	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Jacob's Pit	91.9 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 01/09/2014
Spec. Requirements: 80%

Report #: 036
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Elev/ Depth/ Lift	Lift Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-85		12"					P
	C1-88	6"	12"		75.8	83	42.0	P
	C1-91	6"	12"		73.1	80	42.6	P
	C2-82	6"	12"		76.7	84	39.7	P
	C2-86		12"					P
	C2-87	6"	12"		73.8	80	42.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
	Jacob's Pit	91.9 pcf	

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-52		
Material:	Clay 1st & 2nd Lift Retest	Course:	1st and 2nd Lifts
Date Tested:	09/25/2014	Spec. Requirements:	80%

Report #:	037
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	D-52 (C1-155R) Clay Retest 1st Lift	6”	6”	2	76.3	83	40.8	P
	D-52 (C1-151R) Clay Retest 2nd Lift	6”	6”	2	73.8	80	45.6	P
	C1-156R		6”	2				P
	C2-152R		12”	2				P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: Pipe Crossing
Material: Soil Course:
Date Tested: 10/01/2014 Spec. Requirements:

Report #: 038
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	Pipe Crossing	1	6"	4	113.4	99	5.2	P
	Pipe Crossing	1	6"	4	111.6	98	8.3	P
	Pipe Crossing	2	6"	4	109.8	96	9.9	P
	Pipe Crossing	2	6"	4	115.5	96	8.7	P
	Pipe Crossing	3	6"	4	110.1	96	7.9	P
	Pipe Crossing	4	6"	4	112.4	98	7.4	P
	Pipe Crossing	5	12"	4	111.8	98	6.3	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
4	Topsoil #4 – Very Dark Gray Fine Sand	114.2 pcf	9.0%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Test Strip Initial Cover Course:
Date Tested: 10/07/2014 Spec. Requirements: 90%

Report #: 039
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	IC-1: 116+65E, 78+85N	1	12"	3	108.3	90	9.7	P
	IC-2: 117+75E, 78+75N	1	12"	3	110.8	92	8.5	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover #3 – Dark Brown Slightly Silty Fine Sand	120.0% pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: Test Strip
Material: Clay Course:
Date Tested: 10/10/2014 Spec. Requirements: 80%

Report #: 040
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	TC-1-1R: 116+59E, 78+71N	C1	6"	2	77.9	85	42.0	P
	TC-1-2R: 116+75E, 78+92N	C1	6"	2	75.7	82	45.2	P
	TC-1-3R: 116+89E, 78+68N	C1	6"	2	75.2	82	43.8	P
	TC-1-4R: 117+21E, 78+92N	C1	6"	2	74.4	81	43.5	P
	TC-1-5R: 117+31E, 78+75N	C1	6"	2	75.1	82	43.4	P
	TC-2-1R: 116+67E, 78+78N	C2	12"	2	75.7	82	43.2	P
	TC-2-2R: 116+75E, 78+92N	C2	12"	2	76.0	83	42.7	P
	TC-2-3R: 116+89E, 78+68N	C2	12"	2	79.4	86	40.1	P
	TC-2-4R: 116+21E, 78+92N	C2	12"	2	78.1	85	40.5	P
	TC-2-5R: 117+31E, 78+75N	C2	12"	2	79.2	86	40.6	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob's Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	Maintenance Road		
Material:	Clay	Course:	1st and 2nd Lifts
Date Tested:	10/16/2014	Spec. Requirements:	80%

Report #:	041
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-5R	C1	6"	2	79.2	86	39.2	P
	C2-10R	C2	6"	2	79.8	87	41.5	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob's Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	Maintenance Road		
Material:	Clay	Course:	1st and 2nd Lifts
Date Tested:	10/20/2014	Spec. Requirements:	80%

Report #:	042
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-26R	C1	6"	2	81.9	89	34.2	P
	C2-21R	C2	6"	2	78.3	85	38.4	P
	C2-23R	C2	6"	2	75.0	82	40.0	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob's Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	Maintenance Road		
Material:	Clay	Course:	1st and 2nd Lifts
Date Tested:	10/23/2014	Spec. Requirements:	80%

Report #:	043
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-35R	6”	6”	2	76.5	83	41.2	P
	C2-37R	6”	6”	2	73.4	80	44.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	Maintenance Road		
Material:	Clay	Course:	1st and 2nd Lifts
Date Tested:	10/31/2014	Spec. Requirements:	80%

Report #:	044
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-63	6”	6”	2	75.1	82	42.8	P
	C2-58	6”	12”	2	73.1	80	45.4	P
	C1-53		12”	2				P
	C1-56	6”	12”	2	75.1	82	42.8	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:			
Material:	Clay	Course:	1st and 2nd Lifts
Date Tested:	11/07/2014	Spec. Requirements:	80%

Report #:	045
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-65	6”	12”	2	77.5	84	41.3	P
	C2-63	6”	12”	2	74.2	81	44.3	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Soil – Initial Cover Course:
Date Tested: 11/10/2014 Spec. Requirements: 90%

Report #: 046
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-87	12"	12"	3	112.8	94	5.9	P
	I-91	12"	12"	3	107.5	90	6.5	P
	I-95	12"	12"	3	114.1	95	7.1	P
	I-96	12"	12"	3	111.1	93	7.7	P
	I-97	12"	12"	3	109.2	91	6.8	P
	I-98	12"	12"	3	112.9	94	7.8	P
	I-101	12"	12"	3	112.2	94	11.0	P
	I-102	12"	12"	3	111.4	93	14.7	P
	I-103	12"	12"	3	111.5	93	9.7	P
	I-104	12"	12"	3	113.1	94	10.1	P
	I-106	12"	12"	3	109.7	91	7.7	P
	I-107	12"	12"	3	108.2	90	7.1	P
	I-163	12"	12"	3	110.6	92	10.8	P
	I-164	12"	12"	3	110.6	90	9.5	P
	I-165	12"	12"	3	105.1	92	18.5	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover #3 – Dark Brown Slightly Silty Fine Sand	120.0% pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st and 2nd Lifts
Date Tested: 12/16/2014; 12/17/2014
Spec. Requirements: 80%

Report #: 047
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-174	6”	12”	2	80.3	87	40.4	P
	C1-176	6”	12”	2	73.5	80	46.4	P
	C1-177		12”	2				P
	C1-178	6”	12”	2	74.2	81	31.6	P
	C2-169	6”	12”	2	73.7	80	43.7	P
	C2-171	6”	12”	2	75.4	82	30.5	P
	C2-172		12”	2				P
	C2-173	6”	12”	2	80.9	88	28.7	P
	C2-174	6”	12”	2				

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	Pipe Crossing S-105 Perimeter Road		
Material:	Soil	Course:	
Date Tested:	12/29/2014	Spec. Requirements:	95%

Report #:	048
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	Pipe Crossing S-105	6”	6”	2	113.8	100	6.4	P
	Pipe Crossing S-105	6”	6”	2	113.2	99	6.8	P
	Pipe Crossing S-105	6”	6”	2	111.3	97	11.2	P
	Pipe Crossing S-105	6”	6”	2	112.8	99	6.7	P
	Pipe Crossing S-105	6”	6”	2	114.3	100	6.4	P
	Pipe Crossing S-105	6”	6”	2	112.7	99	6.6	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Initial Cover Sample #2 – Brown Silty Fine Sand	113.5 pcf	13.0%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-38, 15" RCP (S-103 to S-102)		
Material:	Backfill Dirt	Course:	Pipe Backfill
Date Tested:	12/30/2014	Spec. Requirements:	95%

Report #:	049
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	South Lane 1st 12"	12"	N/A	3	117.4	97.8	7.9	P
	North Lane 1st 12"	12"	N/A	3	114.3	95.2	9.2	P
	South Lane 2nd 12"	12"	N/A	3	115.5	96.3	9.5	P
	North Lane 2nd 12"	12"	N/A	3	115.6	96.3	10.1	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover #3 – Dark Brown Slightly Silty Fine Sand	120.0% pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-38 15" RCP (S-103 to S-102)		
Material:	Limerock	Course:	Pipe Backfill
Date Tested:	12/30/2014	Spec. Requirements:	98%

Report #:	050
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	South Lane 1st 8"	8"	LR	1	115.6	98.8	13.2	P
	North Lane 1st 8"	8"	LR	1	114.2	97.6	14.0	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
1	Limerock	116.0 pcf	12.2%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-55, 15" RCP (S-113 to S-112)		
Material:	Backfill Dirt	Course:	Pipe Backfill
Date Tested:	12/30/2014	Spec. Requirements:	95%

Report #:	051
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	West Lane 1st Lift	12"	N/A	3	115.2	98.5	9.0	P
	East Lane 1st Lift	12"	N/A	3	112.9	96.5	9.5	P
	West Lane 2nd Lift	12"	N/A	3	114.6	95.5	7.2	P
	East Lane 2nd Lift	12"	N/A	3	115.8	96.5	7.9	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover #3 – Dark Brown Slightly Silty Fine Sand	120.0% pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-55		
Material:	Limerock	Course:	Pipe Backfill
Date Tested:	12/31/2014	Spec. Requirements:	98%

Report #:	052
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	West Lane 1st 8"	8"	LR	1	114.9	98.2	11.1	P
	East Lane 1st 8"	8"	LR	1	114.4	97.8	12.9	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
1	Limerock	116.0 pcf	12.2%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course:
Date Tested: 01/07/2015 Spec. Requirements: 90%

Report #: 053
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-099	12+	12+	3	115.2	98.5	9.0	P
	I-100	12+	12+	3	115.2	98.5	9.0	P
	I-105	12”	12+	3	114.5	95	9.9	P
	I-108	12”	12+	3	110.0	92	13.1	P
	I-109	12”	12+	3	111.1	93	12.1	P
	I-110	12”	12+	3	108.1	90	13.2	P
	I-115	12”	12+	3	108.0	90	12.5	P
	I-116	12”	12+	3	110.6	90	9.5	P
	I-117	12”	12+	3	115.9	97	9.3	P
	I-118	12”	12+	3	110.5	92	7.4	P
	I-119	12”	12+	3	115.8	97	8.6	P
	I-120	12”	12+	3	109.5	91	12.8	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover #3 – Dark Brown Slightly Silty Fine Sand	120.0% pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Down Comer – 38 Initial Cover Course:
Date Tested: 01/08/2015 Spec. Requirements: 90%

Report #: 054
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-166	12"	12+	3	109.8	92	14.8	P
	I-167	12"	12+	3	110.7	92	10.8	P
	I-168	12"	12+	3	108.0	90	18.0	P
								P
								P
								P
								P
								P
								P
								P
								P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover #3 – Dark Brown Slightly Silty Fine Sand	120.0% pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st Lift
Date Tested: 01/22/2015
Spec. Requirements: 80%

Report #: 055
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-87	6”	12”	2	74.1	81	44.7	P
	C1-93	6”	12”	2	73.8	80	45.9	P
	C1-94	6”	12”	2	80.9	88	38.5	P
	C1-95	6”	12”	2	85.0	92	32.4	P
	C1-96	6”	12”	2	76.0	83	43.0	P
	C1-99	6”	12”	2	75.3	82	45.2	P
	C1-100	6”	12”	2	75.9	83	42.7	P
	C1-103		12”	2				P
	C1-208		12”	2				P
	C1-210		12”	2				P
	C1-211		12”	2				P
	C1-212		12”	2				P
	C1-213		12”	2				P
	C1-214		12”	2				P
	C1-215		12”	2				P
	C1-217		12”	2				P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 2nd Lift
Date Tested: 01/22/2015
Spec. Requirements: 80%

Report #: 056
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C2-83	6”	12”	2	81.1	88	37.1	P
	C2-90		12”	2				P
	C2-91		12”	2				P
	C2-92	6”	12”	2	80.4	88	37.4	P
	C2-93	6”	12”	2	76.7	83	39.1	P
	C2-96	6”	12”	2	75.9	82	44.7	P
	C2-97	6”	12”	2	75.1	88	37.4	P
	C2-98	6”	12”	2	80.2	80	34.2	P
	C2-100		12”	2				P
	C2-211		12”	2				P
	C2-212		12”	2				P
	C2-213		12”	2				P
	C2-214	6”	12”	2	77.4	84	40.2	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-38		
Material:	Clay	Course:	1st and 2nd Lifts
Date Tested:	01/30/2015	Spec. Requirements:	80%

Report #:	057
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-179		12”	2				P
	C1-180	6”	12”	2	74.5	81	46.4	P
	C1-181		12”	2				P
	C1-182	6”	12”	2	76.8	84	37.2	P
	C1-183		12”	2				P
	C1-184	6”	12”	2	75.6	82	48.3	P
	C2-175	6”	12”	2	74.5	81	46.4	P
	C2-176		12”	2				P
	C2-177	6”	12”	2	73.0	80	47.1	P
	C2-178		12”	2				P
	C2-179	6”	12”	2	76.1	83	43.3	P
	C2-180		12”	2				P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st Lift
Date Tested: 02/11/2015
Spec. Requirements: 80%

Report #: 058
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-91	6”	12”	2				P
	C1-98	6”	12”	2	78.7	86	40.5	P
	C1-101	6”	12”	2	77.5	84	39.3	P
	C1-102	6”	12”	2	81.3	89	37.2	P
	C1-103	6”	12”	2	74.1	81	42.2	P
	C1-104	6”	12”	2	80.3	87	37.7	P
	C1-105	6”	12”	2	76.3	83	42.9	P
	C1-106	6”	12”	2	82.6	90	36.7	P
	C1-211		12”					P
	C1-212	6”	12”	2				P
	C1-213	6”	12”	2				P
	C1-219	6”	12”	2				P
	C1-220	6”	12”	2				P
	C1-221	6”	12”	2	74.8	81	45.1	P
	C1-225	6”	12”	2				P
	C1-226	6”	12”	2				P
	C1-227	6”	12”	2				P
	C1-228	6”	12”	2				P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 2nd Lift
Date Tested: 02/11/2015
Spec. Requirements: 80%

Report #: 059
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C2-91	6”	12”	2	81.8	89	35.4	P
	C2-95	6”	12”	2	82.0	89	35.8	P
	C2-98	6”	12”	2				P
	C2-99	6”	12”	2	78.2	85	39.5	P
	C2-101	6”	12”	2	78.5	85	33.1	P
	C2-102	6”	12”	2	85.3	93	29.2	P
	C2-103	6”	12”	2	89.6	98	26.9	P
	C2-210	6”	12”	2				P
	C2-215	6”	12”	2				P
	C2-216	6”	12”	2	79.2	86	32.4	P
	C2-219	6”	12”	2				P
	C2-220	6”	12”	2				P
	C2-221	6”	12”	2				P
	C2-222	6”	12”	2				P
	C2-223	6”	12”	2				P
	C2-224	6”	12”	2	87.6	95	31.2	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-33		
Material:	Initial Cover	Course:	
Date Tested:	02/12/2015	Spec. Requirements:	90%

Report #:	060
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-169	12"	12+	3	108.3	90	14.7	P
	I-170	12"	12+	3	109.6	91	12.3	P
	I-171	12"	12+	3	107.8	90	14.8	P
	C1-218	12"	12+	3	80.3	87	40.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Trail Ridge Pit – Initial Cover #3 – Dark brown slightly silty fine SAND	120.0 pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-33		
Material:	Initial Cover	Course:	
Date Tested:	02/12/2015	Spec. Requirements:	90%

Report #:	061
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-111	12"	12+	3	109.2	91	15.3	P
	I-112	12"	12+	3	110.3	92	12.3	P
	I-113	12"	12+	3	112.2	94	10.7	P
	I-114	12"	12+	3	113.8	95	11.0	P
	I-121	12"	12+	3	111.3	93	10.7	P
	I-122	12"	12+	3	113.1	94	11.4	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Trail Ridge Pit – Initial Cover #3 – Dark brown slightly silty fine SAND	120.0 pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project:	COJ Trail Ridge Landfill Closure, Phase 4		
Client:	England-Thims & Miller, Inc.		
Reported To:			
Location:	D-33		
Material:	Clay	Course:	1st and 2nd Lifts
Date Tested:	02/20/2015	Spec. Requirements:	80%

Report #:	062
Project #:	0006-0008
Gauge #:	17405
Tech.:	Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-185		12”	2				P
	C1-186	6”	12”	2	75.6	82	43.6	P
	C1-187		12”	2				P
	C1-188	6”	12”	2	73.9	80	45.9	P
	C1-189		12”	2				P
	C1-190	6”	12”	2	77.8	85	41.6	P
	C2-181	6”	12”	2	79.4	86	38.0	P
	C2-182		12”	2				P
	C2-183	6”	12”	2	77.3	84	38.4	P
	C2-184		12”	2				P
	C2-185	6”	12”	2	77.6	85	37.8	P
	C2-186		12”	2				P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st Lift
Date Tested: 02/20/2015
Spec. Requirements: 80%

Report #: 063
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-97	6”	12”	2	73.1	80	43.5	P
	C1-107	6”	12”	2	76.2	83	41.1	P
	C1-108		12”	2				P
	C1-109		12”	2				P
	C1-110	6”	12”	2	77.3	84	41.0	P
	C1-111	6”	12”	2	74.9	82	44.0	P
	C1-222		12”	2				P
	C1-223	6”	12”	2	74.0	81	43.5	P
	C1-228		12”	2				P
	C1-229		12”	2				P
	C1-230		12”	2				P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 2nd Lift
Date Tested: 02/20/2015
Spec. Requirements: 80%

Report #: 064
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C2-94	6”	12”	2	84.5	96	31.5	P
	C2-104	6”	12”	2	79.4	86	35.7	P
	C2-105		12”	2				P
	C2-106	6”	12”	2	82.6	90	35.1	P
	C2-107	6”	12”	2	80.2	87	37.4	P
	C2-108	6”	12”	2	81.0	88	36.9	P
	C2-217	6”	12”	2	88.0	96	24.9	P
	C2-218		12”	2				P
	C2-225		12”	2				P
	C2-226	6”	12”	2	81.9	89	35.5	P
	C2-227		12”	2				P
	C2-228		12”					
	C2-229		12”					

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course:
Date Tested: 03/03/2015 Spec. Requirements: 90%

Report #: 065
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-124	12"	12+	3	107.4	90	15.1	P
	I-125	12"	12+	3	109.5	91	12.5	P
	I-129	12"	12+	3	111.4	93	11.6	P
	I-123	12"	12+	3	112.2	94	15.0	P
	I-130	12"	12+	3	110.6	92	14.3	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Trail Ridge Pit – Initial Cover #3 – Dark brown slightly silty fine SAND	120.0 pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location: D-27
Material: Initial Cover Course:
Date Tested: 03/10/2015 Spec. Requirements: 90%

Report #: 066
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-172	12"	12+	3	110.4	92	12.6	P
	I-173	12"	12+	3	107.4	90	16.8	P
	I-174	12"	12+	3	107.6	90	16.6	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Trail Ridge Pit – Initial Cover #3 – Dark brown slightly silty fine SAND	120.0 pcf	9.6%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st Lift
Date Tested: 03/13/2015
Spec. Requirements: 80%

Report #: 067
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-112	6”	12”	2				P
	C1-113	6”	12”	2				P
	C1-114	6”	12”	2	74.5	81	44.3	P
	C1-115	6”	12”	2				P
	C1-116	6”	12”	2	76.4	83	41.6	P
	C1-117	6”	12”	2	73.3	80	44.6	P
	C1-118	6”	12”	2	82.7	90	36.8	P
	C1-119	6”	12”	2				P
	C1-120	6”	12”	2	77.2	84	40.9	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 2nd Lift
Date Tested: 03/13/2015
Spec. Requirements: 80%

Report #: 068
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C2-109	6”	12”	2				P
	C2-110	6”	12”	2	87.9	88	35.4	P
	C2-111	6”	12”	2	85.8	93	28.4	P
	C2-112	6”	12”	2				P
	C2-113	6”	12”	2				P
	C2-114	6”	12”	2	84.3	92	28.4	P
	C2-115	6”	12”	2	76.8	84	41.5	P
	C2-116	6”	12”	2				P
	C2-117	6”	12”	2				P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

Meskel & Associates
ENGINEERING, PLLC
GEOTECHNICAL & ENVIRONMENTAL ENGINEERING
CONSTRUCTION MATERIALS TESTING & INSPECTION

8936 Western Way, Suite 12
Jacksonville, FL 32256
Office: (904) 519-6990
Fax: (904) 519-6992
meskelengineering.com

Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st & 2nd Lifts
Date Tested: 03/13/2015
Spec. Requirements: 91.9%

Report #: 069
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-191		12"	2				P
	C1-192	6"	12"	2	74.6	81	45.1	P
	C1-193		12"	2				P
	C1-194	6"	12"	2	75.7	82	41.2	P
	C1-195		12"	2				P
	C1-196	6"	12"	2	85.7	93	28.5	P
	C2-187	6"	12"	2	80.8	88	32.0	P
	C2-188		12"	2				P
	C2-189	6"	12"	2	81.3	89	31.4	P
	C2-190		12"	2				P
	C2-191	6"	12"	2	91.5	100	25.0	P
	C2-192		12"	2				P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob's Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course:
Date Tested: 05/04/2015 Spec. Requirements: 90%

Report #: 070
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth/ Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-126	12"	12"	3	110.2	92	10.2	P
	I-127	12"	12"	4	107.0	94	10.3	P
	I-128	12"	12"	4	104.4	91	14.8	P
	I-129	12"	12"	3	113.2	94	10.0	P
	I-131	12"	12"	4	107.0	94	10.3	P
	I-135	12"	12"	4	110.8	92	8.5	P
	I-136	12"	12"	4	110.1	93	11.0	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
3	Initial Cover #3	120.0% pcf	9.6%
4	Trail Ridge Pit	114.2 pcf	9.0%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course: Very Dark Gray Fine Sand
Date Tested: 05/05/2015 Spec. Requirements: 91.9%

Report #: 071
Project #: 0006-0008
Gauge #: 17405
Tech.: Thomas N. Traver

Test No.	Test Location	Depth/ Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-132	12’	12’	4	104.9	92	12.7	P
	I-133	12’	12’	4	103.9	91	14.0	P
	I-139	12’	12’	4	107.9	95	11.2	P
	I-141	12’	12’	4	108.7	95	11.5	P
	I-140	12’	12’	4	103.5	91	12.2	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
4	Trail Ridge Pit	114.2 pcf	9.0%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st & 2nd Lifts
Date Tested: 05/07/2015
Spec. Requirements: 80%

Report #: 072
Project #: 0006-0008
Gauge #: 17405
Tech.: Thomas N. Traver

Test No.	Test Location	Depth/ Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C2-118	6”	6”	2	87.2	95	26.7	P
	C2-119	6”	6”	2	79.7	87	23.3	P
	C2-205	6”	6”	2	75.8	83	41.9	P
	C1-124	6”	6”	2	81.9	89	30.0	P
	C1-122	6”	6”	2	81.4	89	31.1	P
	C1-126	6”	6”	2	84.3	92	25.1	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course: Very Dark Gray Fine Sand
Date Tested: 05/07/2015 Spec. Requirements: 90%

Report #: 073
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth/ Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-175	12’	12’	4	110.8	97	9.3	P
	I-176	12’	12’	4	114.3	100	8.0	P
	I-177	12’	12’	4	102.2	90	7.3	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
4	Trail Ridge Pit	114.2 pcf	9.0%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Initial Cover Course: Very Dark Gray Fine Sand
Date Tested: 05/13/2015 Spec. Requirements: 90%

Report #: 074
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	I-134	12’	12’	4	105.4	92	7.8	P
	I-137	12’	12’	4	109.4	95	7.6	P
	I-138	12’	12’	4	108.4	95	7.2	P
	I-142	12’	12’	4	104.1	91	4.0	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
4	Trail Ridge Pit	114.2 pcf	9.0%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st & 2nd Lifts
Date Tested: 05/22/2015
Spec. Requirements: 80%

Report #: 075
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth/ Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-128	6”	12”	2	73.3	80	41.9	P
	C1-130	6”	12”	2	75.1	82	42.6	P
	C1-133	6”	12”	2	76.0	83	43.3	P
	C2-124	6”	12”	2	90.2	98	25.4	P
	C2-125	6”	12”	2	84.8	92	23.3	P
	C2-126	6”	12”	2	85.7	93	23.3	P
	C2-129	6”	12”	2	77.4	84	34.6	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

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Report of In-Place Soil Density Tests
ASTM D6398

Project: COJ Trail Ridge Landfill Closure, Phase 4
Client: England-Thims & Miller, Inc.
Reported To:
Location:
Material: Clay
Course: 1st & 2nd Lifts
Date Tested: 05/22/2015
Spec. Requirements: 80%

Report #: 076
Project #: 0006-0008
Gauge #: 17405
Tech.: Rickey L. Astin

Test No.	Test Location	Depth/ Lift	Thickness	MDR No.	Dry Density	% of Max Density	Moist %	Pass/ Fail/ Retest
	C1-198	6”	12”	2	75.1	82	46.5	P
	C1-200	6”	12”	2	77.9	85	43.1	P
	C1-202	6”	12”	2	73.6	80	43.2	P
	C2-193	6”	12”	2	74.9	82	43.1	P
	C2-195	6”	12”	2	73.4	80	42.6	P
	C2-197	6”	12”	2	75.1	82	41.2	P

Proctor Information:

MDR No.	Description	Max Dry Density	Opt. Moisture
2	Jacob’s Pit Clay Mixed Sample #2 – Gray very sandy Clay	91.9 pcf	27.3%

P = Test Meets Specification Requirements **F = Test Fails to Meet Specifications Requirements** **R = Retest**

January 11, 2016

Ms. Tina Meskel, P.E.
President & Principal Engineer
Meskel & Associates Engineering
8936 Western Way, Suite 12
Jacksonville, FL 32256

Subject: Materials Testing
Trail Ridge Landfill Phase 4
Duval County, Florida
Amec Foster Wheeler Project Number 6736-13-5237

Dear Ms. Meskel:

Amec Foster Wheeler Environment & Infrastructure, Inc. (AFW) has completed material testing services for the Trail Ridge Landfill Phase 4. Our services were provided in accordance with the MAE Subconsultant Agreement signed by Michael J. Holm, P.E. on March 8, 2013. This letter describes the services provided by AFW.

Soil Quality Assurance Quality Control (QA/QC) Plan

AFW's scope of involvement with this project consisted of sampling and testing to verify substantial compliance with the material standards. Sampling and testing of materials was performed in general accordance with the QA/QC plan in the project specifications. Material testing was conducted in general accordance with the ASTM standard references shown below.

Test Procedure:	Standard Test Methods For:	Common Name:
ASTM D-698	Laboratory Compaction Characteristics of Soil Using Standard Effort	Standard Proctor
ASTM D-1140	Amount of Material in Soil Finer Than the No. 200	Percent Fines
ASTM D-1557	Laboratory Compaction Characteristics of Soil Using Modified Effort	Modified Proctor
ASTM D-2216	Laboratory Determination of Water (Moisture) Content of Soil by Mass	Moisture Content
ASTM D-2434	Permeability of Granular Soils (Constant Head)	Perm (sand)
ASTM D-3080	Direct Shear Test of Soils Under Consolidated Drained Conditions	Direct Shear
ASTM D-4318	Liquid Limit, Plastic Limit and Plasticity Index of Soils	Atterberg Limits
ASTM D-4767	Consolidated Undrained Triaxial Compression Test for Cohesive Soils	Triaxial Test
USCOE S-Test	Consolidated Drained Triaxial Test for Non-Cohesive Soils	Triaxial Test
ASTM D-5084	Measurement of Hydraulic Conductivity of Saturated Porous Materials	Perm (clay)

ASTM:	Common Name:	Tests Performed
D-698	Standard Proctor	Jacobs Pit Clay Mixed Sample 1-2
D-1140	Percent Fines	C1-001 to C1-230; C2-001 to C2-229
D-1557	Modified Proctor	IC-1 to IC-7; Topsoil #1-4
D-2216	Moisture Content	Prequalification 1-2; Production 1-5
D-2434	Permeability (sand)	Prequalification 1-2; Production 1-5
D-3080	Direct Shear	Clay to Clay #1, Clay to Initial #1, Clay to Topsoil #1; C1-001 to C1-230; C2-001 to C2-229
D-4318	Atterberg Limits	C1-001 to C1-230; C2-001 to C2-229
D-4767	Triaxial Test	Jacobs Pit #3, #4, #5
USCOE S-Test	Triaxial Test	Jacobs Pit #3, #4, #5
D-5084	Permeability (clay)	C1-001 to C1-230; C2-001 to C2-229

* pH and organic content was tested during borrow pit prequalification

Attached are all tests performed for this project that were performed in accordance with the specifications and the QA/QC plan for the Trail Ridge Landfill Closure Design Phase 4.

We appreciate the opportunity to be of service as your consultant on this project and look forward to working together in the future. If we may be of further assistance, please contact us.

Sincerely,

Amec Foster Wheeler Environment & Infrastructure, Inc.
Florida Board Of Professional Engineers Certificate of Authorization No. 5392

MICHAEL J. HOLM LICENSE No. 63829 ★ 1-11-16 STATE OF FLORIDA PROFESSIONAL ENGINEER

Michael J. Holm, P.E.
Project Manager
Florida License No. 63829

Corey T. Chascin 1/11/16

Corey T. Chascin, E.I
Staff Engineer

Distribution: Meskel & Associates, Ms. Tina Meskel, P.E. (1)
File (1)

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	September 25, 2014
Sample Number:	C1-151R	**Date Completed:**	October 1, 2014

Sample Information:

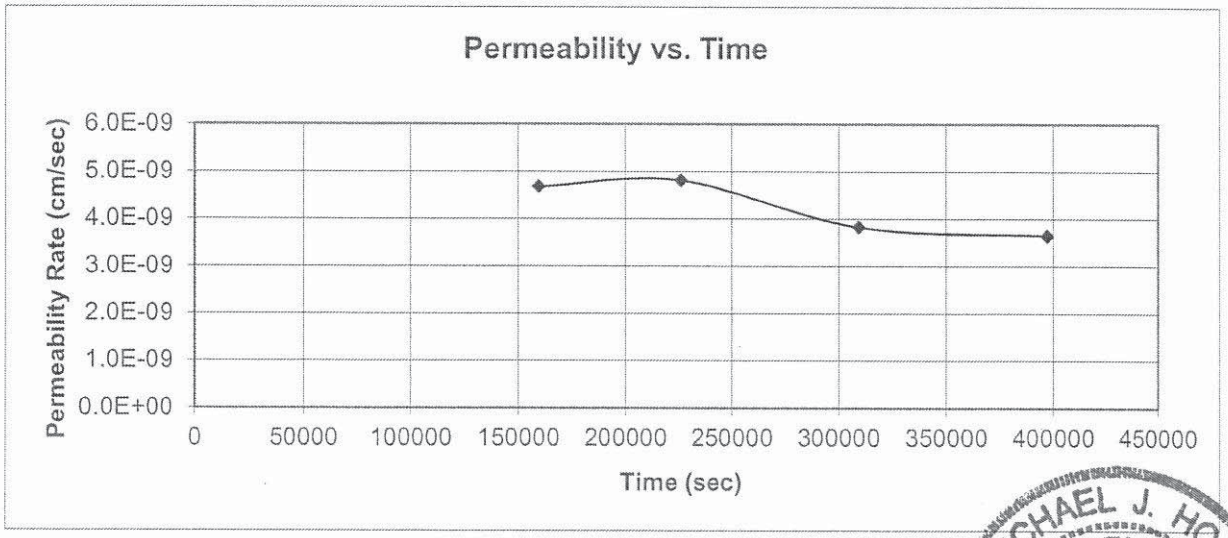
Dia. (in.)	2.82	0.00	**Length (in)**	2.97	0.00	**Weight (gr)**	505.3	0
Wet Density (pcf)	103.7		**Moisture Content (%)**	47.1		**Dry Density (pcf)**	70.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.6	**Minimum Hydraulic Gradient**	10.8
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

4.2E-09

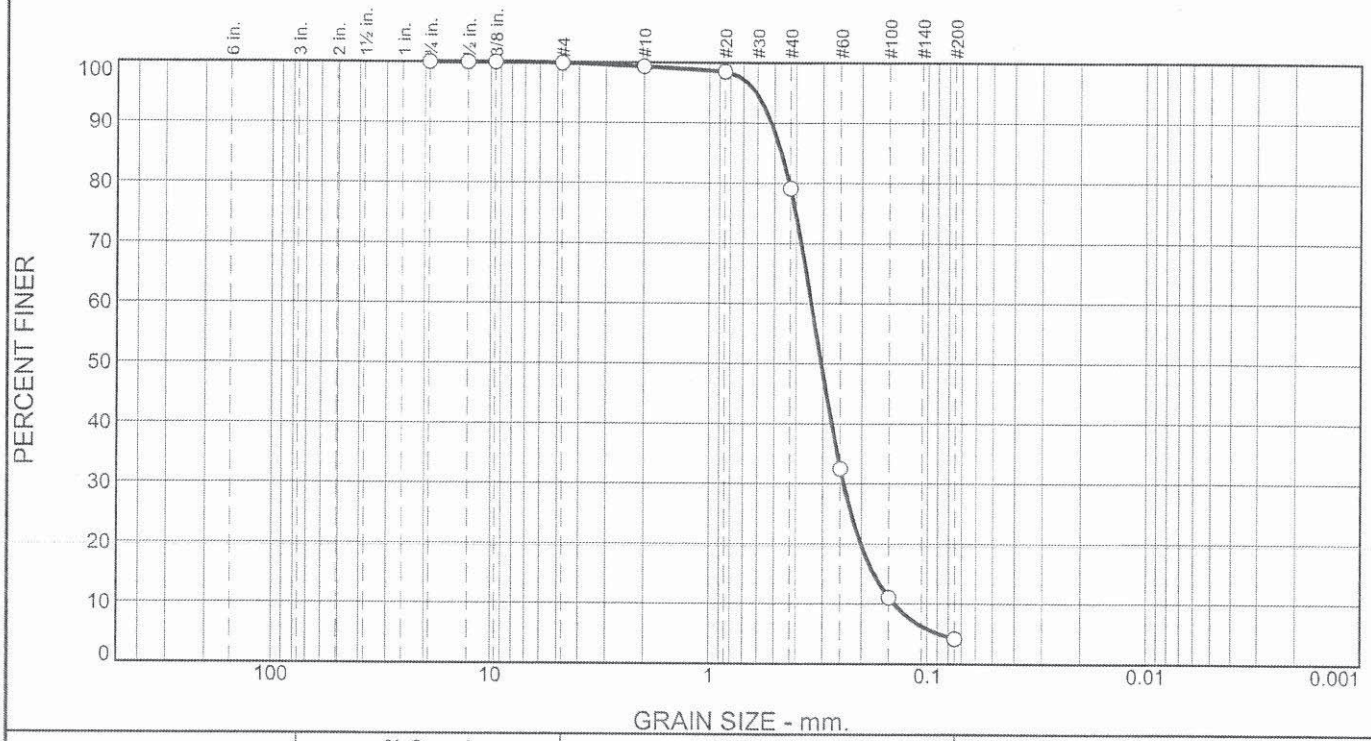


Reviewed By:

Michael J. Holm, P.E.

MICHAEL J. HOLM LICENSE No. 63829 1-11-16 STATE OF FLORIDA PROFESSIONAL ENGINEER

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.5	20.2	74.9	4.2	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	99.8		
#10	99.3		
#20	98.5		
#40	79.1		
#60	32.5		
#100	11.0		
#200	4.2		

* (no specification provided)

Material Description

Dark Gray Slightly Silty Fine SAND w/ trace silt and organics

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-3

Coefficients

D_{90}= 0.5185 D_{85}= 0.4666 D_{60}= 0.3398
D_{50}= 0.3059 D_{30}= 0.2413 D_{15}= 0.1759
D_{10}= 0.1420 C_u= 2.39 C_c= 1.21

Remarks

Organic (LOI) - 3.5%
pH- 6.5

Date Received: 3/26/13 **Date Tested:** 3/28/13

Tested By: CM

Checked By: Michael J. Holm, P.E.

Title: Sr. Project Engineer

MICHAEL J. HOLM LICENSE No. 63829 STATE OF FLORIDA PROFESSIONAL ENGINEER 1-11-16

Source of Sample: Top Soil Prequalification **Date Sampled:** 3/26/13
Sample Number: 2

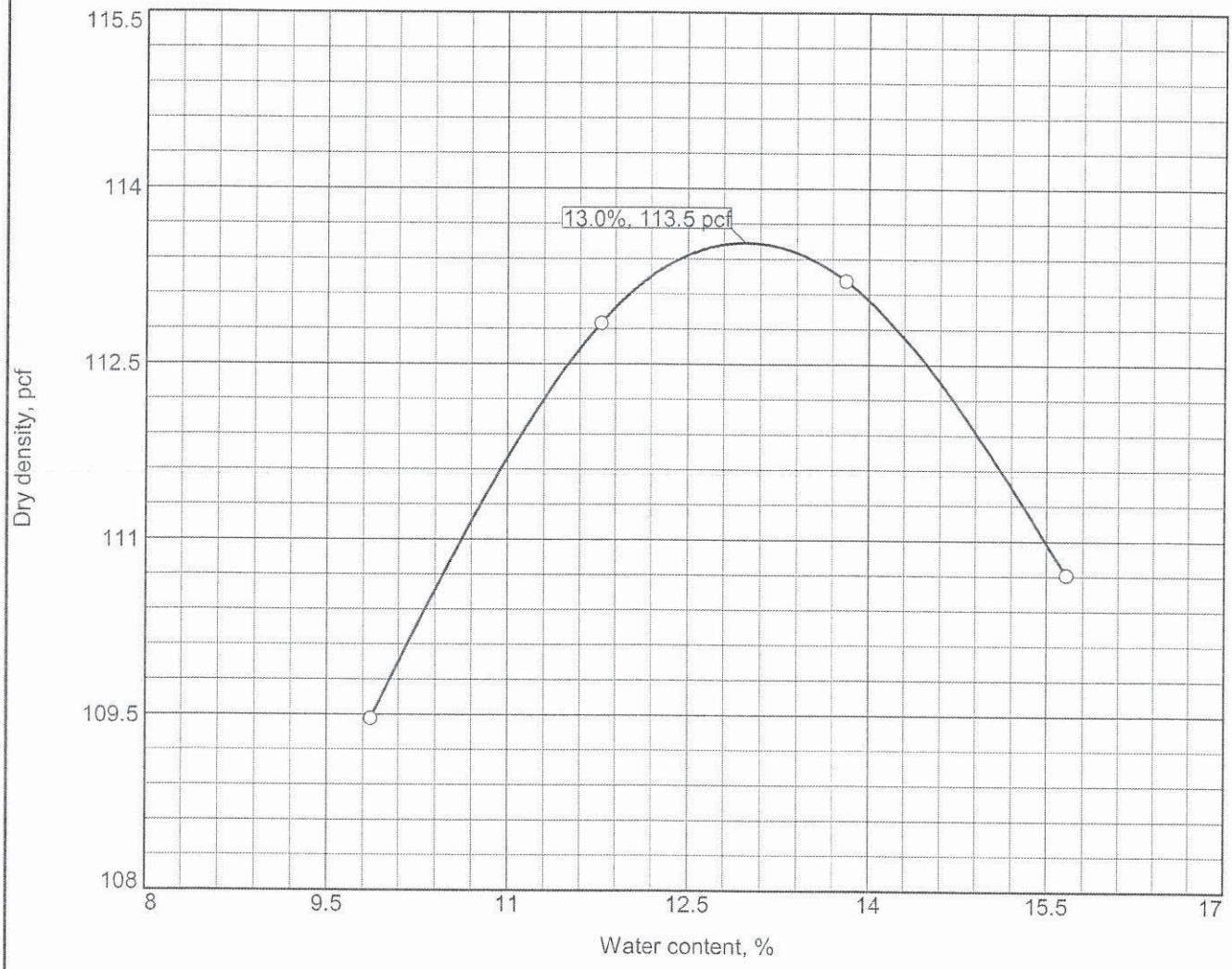
AMEC E&I

Jacksonville, Florida

Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

COMPACTION TEST REPORT



Test specification: ASTM D 698-07 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SM	A-2-4(0)			NV	NP	0.1	18.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 113.5 pcf Optimum moisture = 13.0 %	Brown Silty Fine SAND

Project No. 6736135237 **Client:** Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

○ **Source of Sample:** Initial Cover Prequalification **Sample Number:** 2

AMEC E&I

Jacksonville, Florida

Remarks:

MICHAEL J. HOLM LICENSE No. 63829 STATE OF FLORIDA PROFESSIONAL ENGINEER

Figure

Tested By: CM **Checked By:** Michael J. Holm, P.E.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** May 22, 2013

Sample Number: TC2-4

Sample Information: Initial / Final

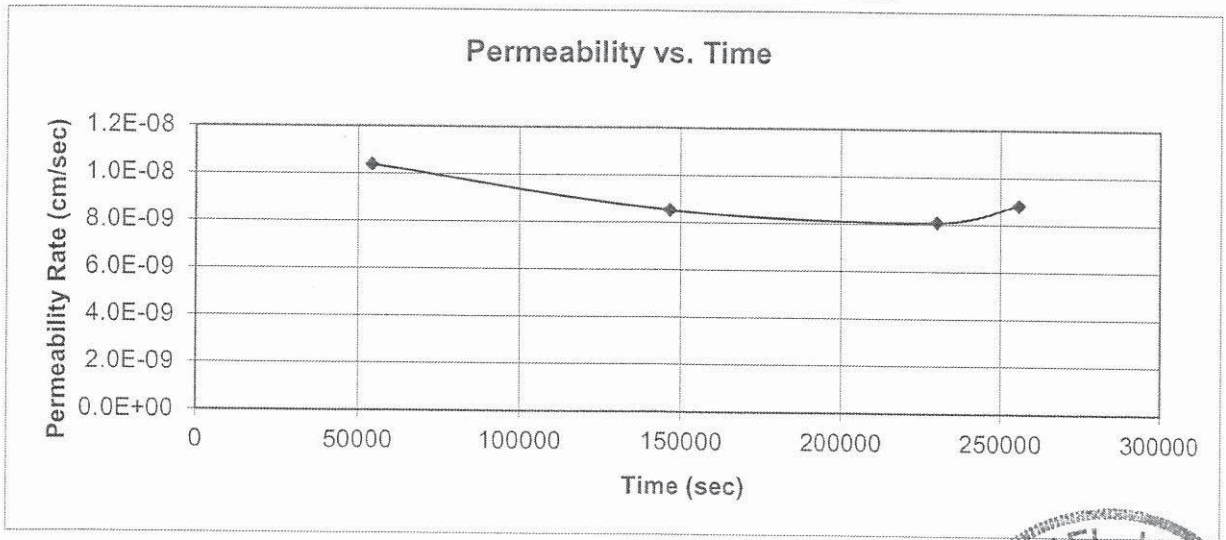
Dia. (in.)	2.85	2.88	**Length (in)**	3.16	3.00	**Weight (gr)**	595.3	578.2
Wet Density (pcf)	112.9		**Moisture Content (%)**	32.6		**Dry Density (pcf)**	85.1	
Final WD (pcf)	113.2		**Final Moisture (%)**	37.0		**Final DD (pcf)**	82.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.3	**Minimum Hydraulic Gradient**	10.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

9.0E-09



Reviewed By:

Michael J. Holm, P.E.

MICHAEL J. HOLM LICENSE No. 68829 1-11-16 STATE OF FLORIDA PROFESSIONAL ENGINEER

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** January 6, 2014

Sample Number: C2-77

Sample Information: Initial / Final

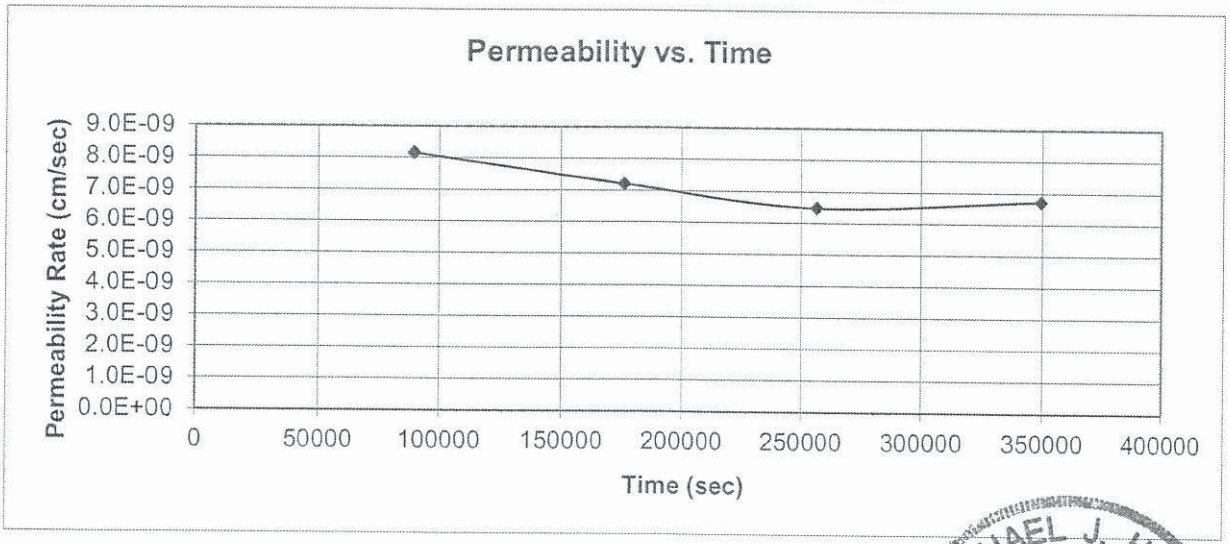
Dia. (in.)	2.82	2.82	**Length (in)**	2.90	2.87	**Weight (gr)**	536.9	550.98
Wet Density (pcf)	113.1		**Moisture Content (%)**	36.6		**Dry Density (pcf)**	82.8	
Final WD (pcf)	117.2		**Final Moisture (%)**	36.7		**Final DD (pcf)**	85.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.2	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.1E-09

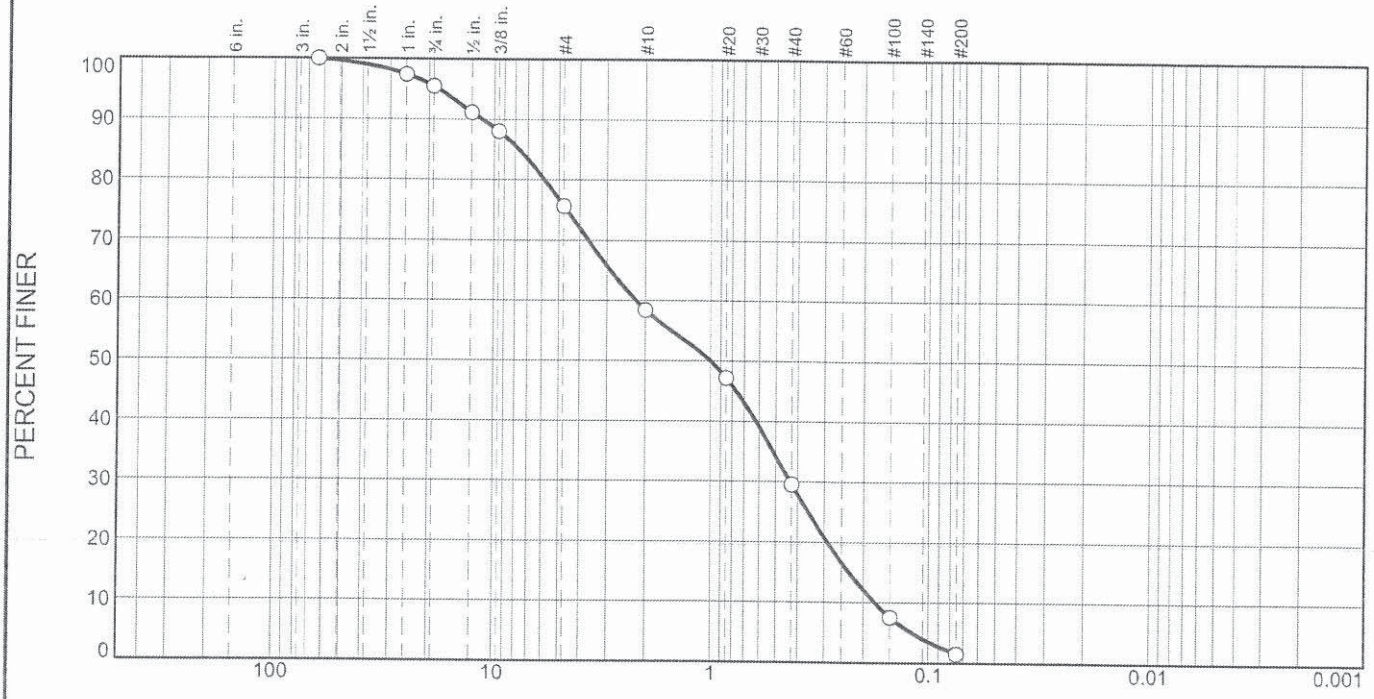


Reviewed By:

Michael J. Holm, P.E.

MICHAEL J. HOLM LICENSE No. 63829 1-6-16 STATE OF FLORIDA PROFESSIONAL ENGINEER

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	4.6	19.8	17.2	28.8	28.1	1.5	

Test Results (D-6312 & NA)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2.5	100.0		
1	97.4		
3/4	95.4		
1/2	91.1		
3/8	88.1		
#4	75.6		
#10	58.4		
#20	47.2		
#40	29.6		
#100	7.6		
#200	1.5		

* (no specification provided)

Material Description

Yardwaste with Some Brown Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-1-b

Coefficients

D_{90}= 11.3782 D_{85}= 7.7090 D_{60}= 2.2195
D_{50}= 1.0046 D_{30}= 0.4316 D_{15}= 0.2322
D_{10}= 0.1767 C_u= 12.56 C_c= 0.47

Remarks

Percent Organic Tests: 16.1% and 30.1%

Date Received: 1-17-14 **Date Tested:** 1-24-14

Tested By: MC

Checked By: Michael J. Holm, P.E.

Title: Sr. Project Engineer

MICHAEL J. HOLM LICENSE No. 63829 STATE OF FLORIDA PROFESSIONAL ENGINEER

Location: Stockpile Mulch **Date Sampled:** 1-17-14

Sample Number: 1

AMEC E&I

Jacksonville, Florida

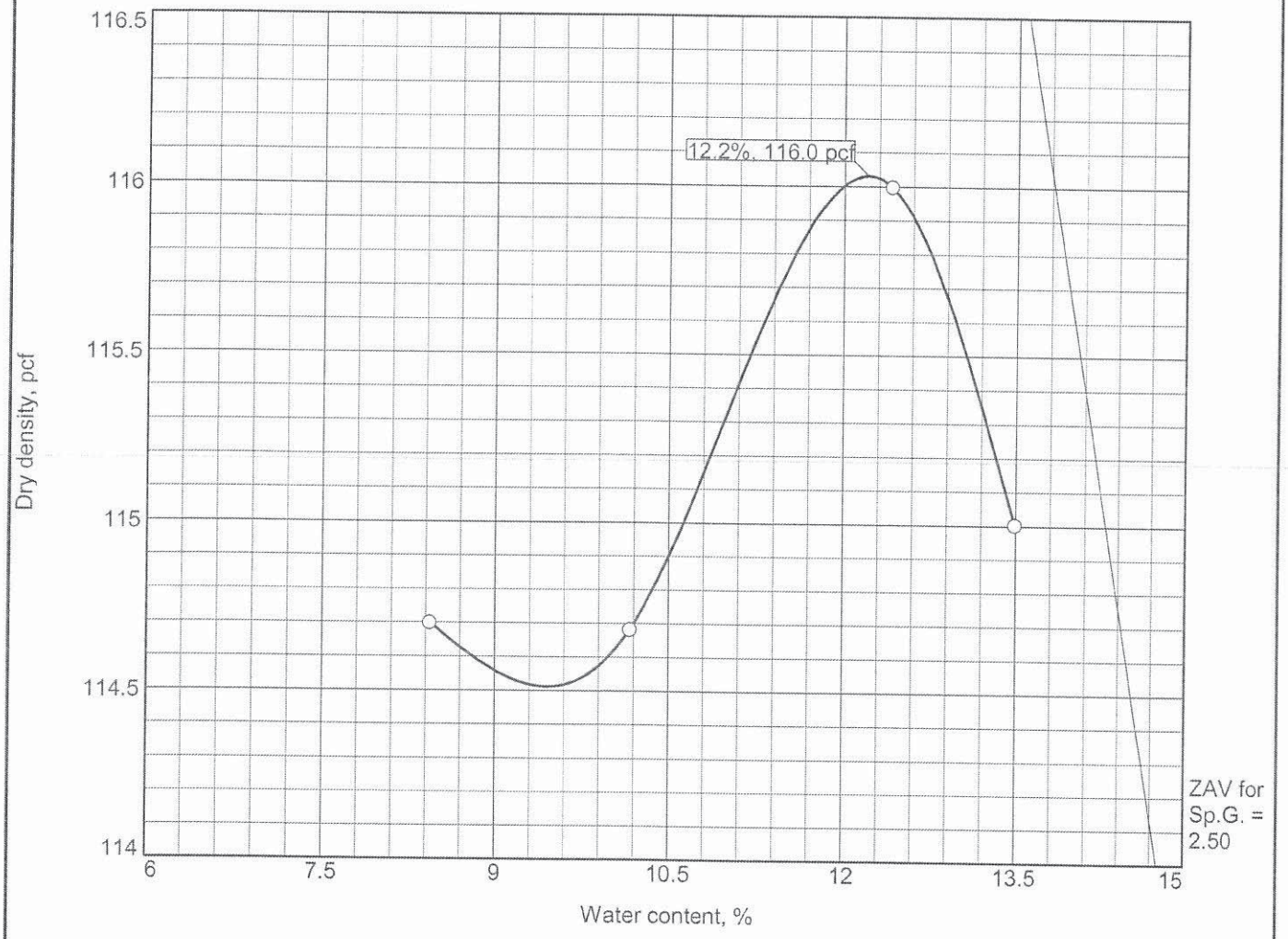
Client: Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Project No: 6736135237

Figure

COMPACTION TEST REPORT



Test specification: AASHTO T 180 Method D Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
							16.3	15.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 116.0 pcf Optimum moisture = 12.2 %	Limerock

Project No. 6736135237 **Client:** Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

○ **Location:** Limerock **Sample Number:** 1

AMEC E&I

Jacksonville, Florida

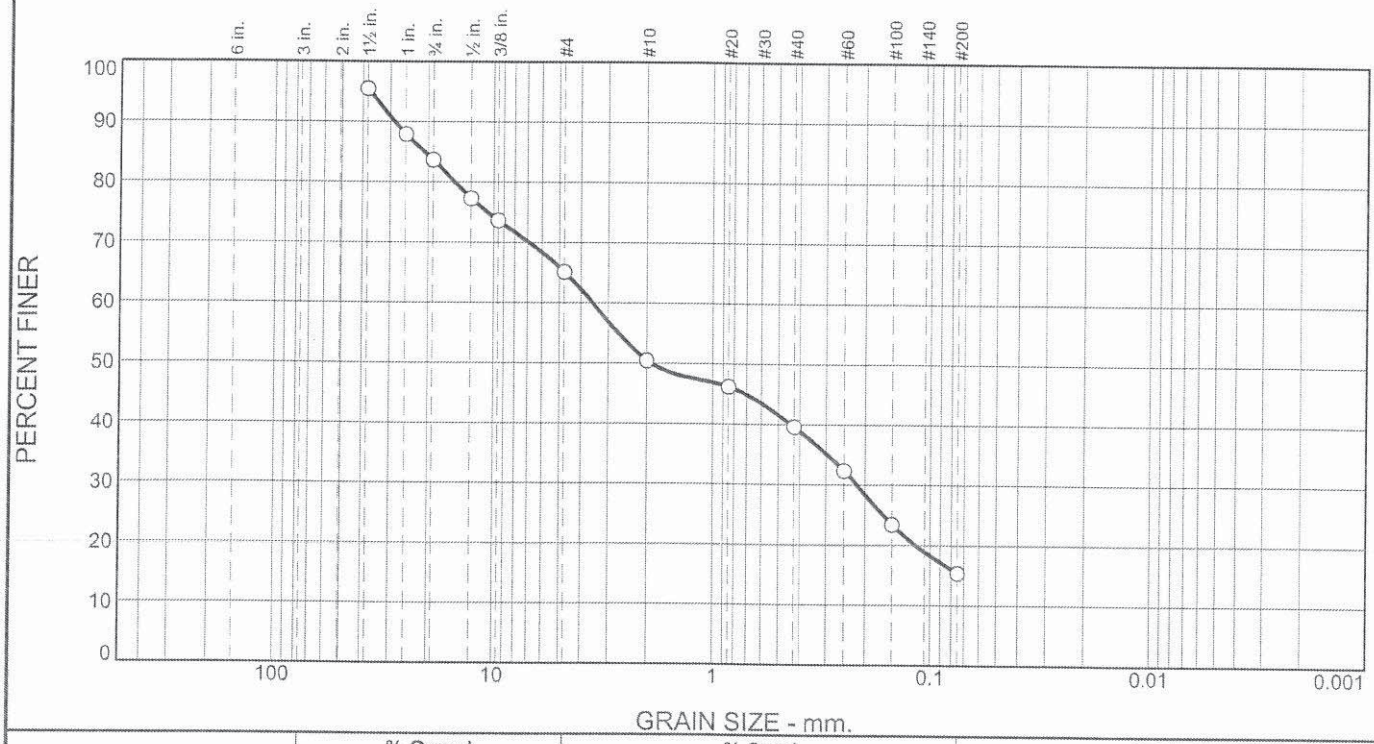
Remarks:

MICHAEL J. HOLM LICENSE No. 63829 STATE OF FLORIDA PROFESSIONAL ENGINEER

Figure

Tested By: D. Newman **Checked By:** Michael J. Holm, P.E.

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
		18.6	14.6	10.9	24.2	15.4	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5"	95.4		
1.0"	88.0		
3/4"	83.7		
1/2"	77.3		
3/8"	73.6		
#4	65.1		
#10	50.5		
#20	46.2		
#40	39.6		
#60	32.3		
#100	23.4		
#200	15.4		

* (no specification provided)

Material Description

Limerock

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 28.6411 D_{85}= 20.8543 D_{60}= 3.5616
D_{50}= 1.9142 D_{30}= 0.2183 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 10/2/14 **Date Tested:** 10/3/14

Tested By: A. Coleman; D. Newman

Checked By: Michael J. Holm, P.E.

Title: Sr. Project Engineer

MICHAEL J. HOLM LICENSE No. 63829 STATE OF FLORIDA PROFESSIONAL ENGINEER 11-6

Location: Limerock
Sample Number: 1

Date Sampled: 10/1/14

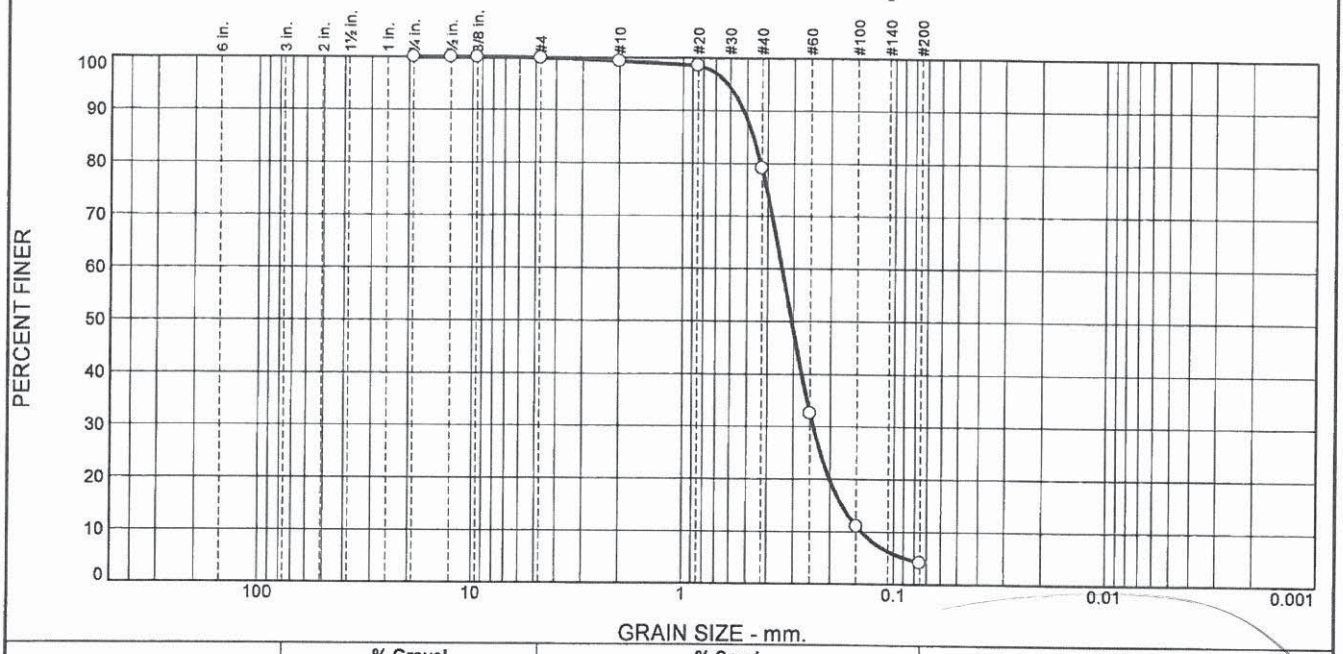
AMEC E&I

Jacksonville, Florida

Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.2	0.5	20.2	74.9	4.2	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	99.8		
#10	99.3		
#20	98.5		
#40	79.1		
#60	32.5		
#100	11.0		
#200	4.2		

* (no specification provided)

Material Description

Dark Gray Slightly Silty Fine SAND w/ trace silt and organics

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-3

Coefficients

D_{90}= 0.5185 D_{85}= 0.4666 D_{60}= 0.3398
D_{50}= 0.3059 D_{30}= 0.2413 D_{15}= 0.1759
D_{10}= 0.1420 C_u= 2.39 C_c= 1.21

Remarks

Organic (LOI) - 3.5%
pH- 6.5

Date Received: 3/26/13 **Date Tested:** 3/28/13

Tested By: CM

Checked By: Daniel L. Eisman, P.E.

Title: Project Engineer

Source of Sample: Top Soil Prequalification Sample #2 **Date Sampled:** 3/26/13

AMEC E&I

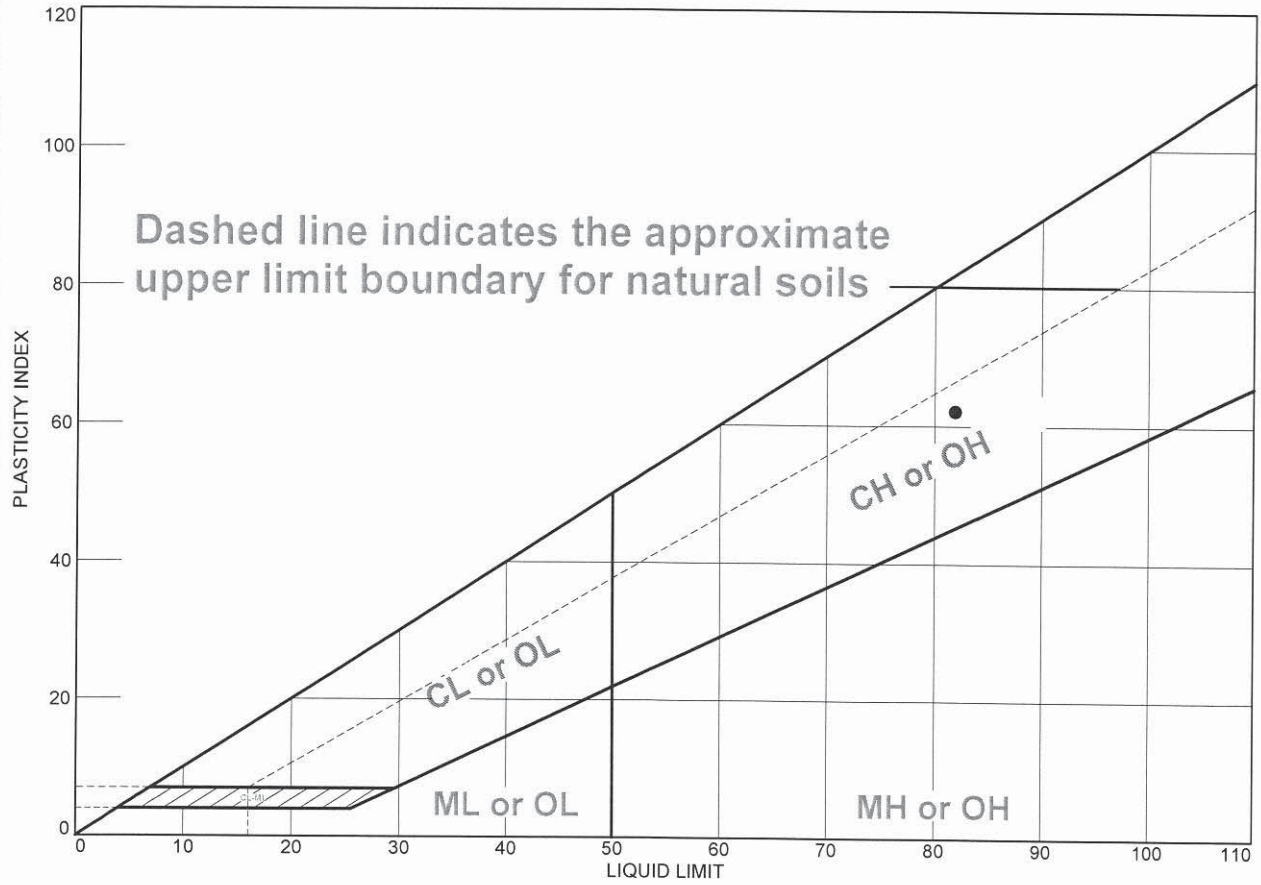
Jacksonville, Florida

Client: Meskel

Project: Tailridge Landfill Phase 4

Project No: 6736135237 **Figure**

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Sandy CLAY	82	20	62		56.4	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

●**Location:** D-52 **Sample Number:** C2-151R

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

Client: MAE

Date Received: 8/7/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	151	64	25	39	34.8	53.9
C-1	153	66	22	43	36.2	55.7
C-1	155	68	25	43	33.7	54.9
C-2	147	64	25	39	35.8	53.8
C-2	149	69	22	47	33.9	53.1
C-2	151	71	24	47	33.5	54.4
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I.

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	January 23, 2015
Sample Number:	C2-92	**Date Completed:**	January 29, 2015

Sample Information:

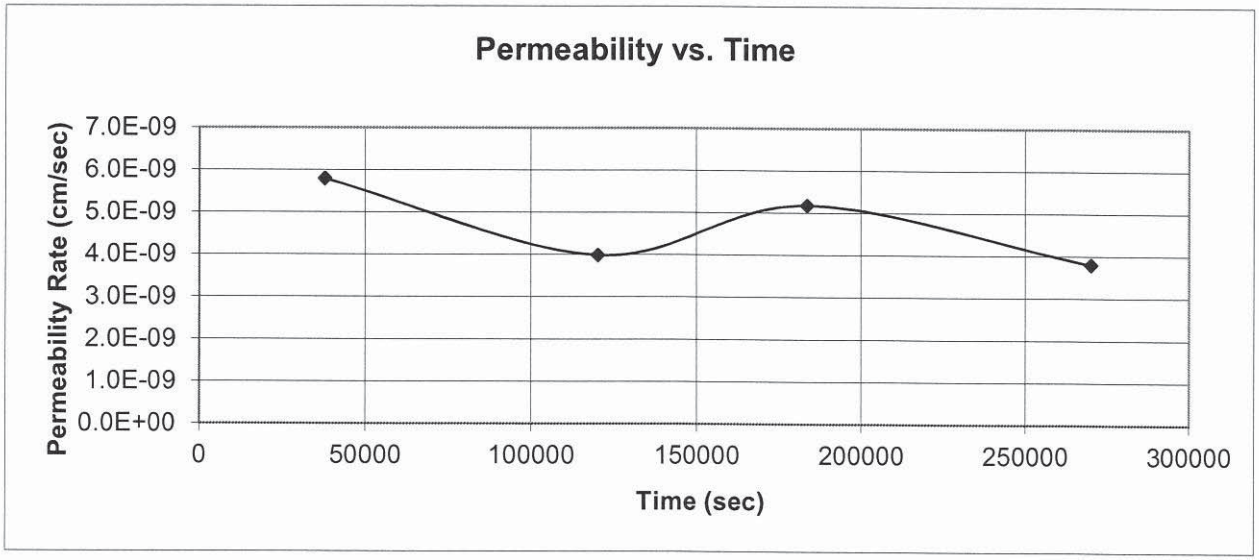
Dia. (in.)	2.74	**Length (in)**	2.88	**Weight (gr)**	500.6
Wet Density (pcf)	112.3	**Moisture Content (%)**	37.2	**Dry Density (pcf)**	81.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	11.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

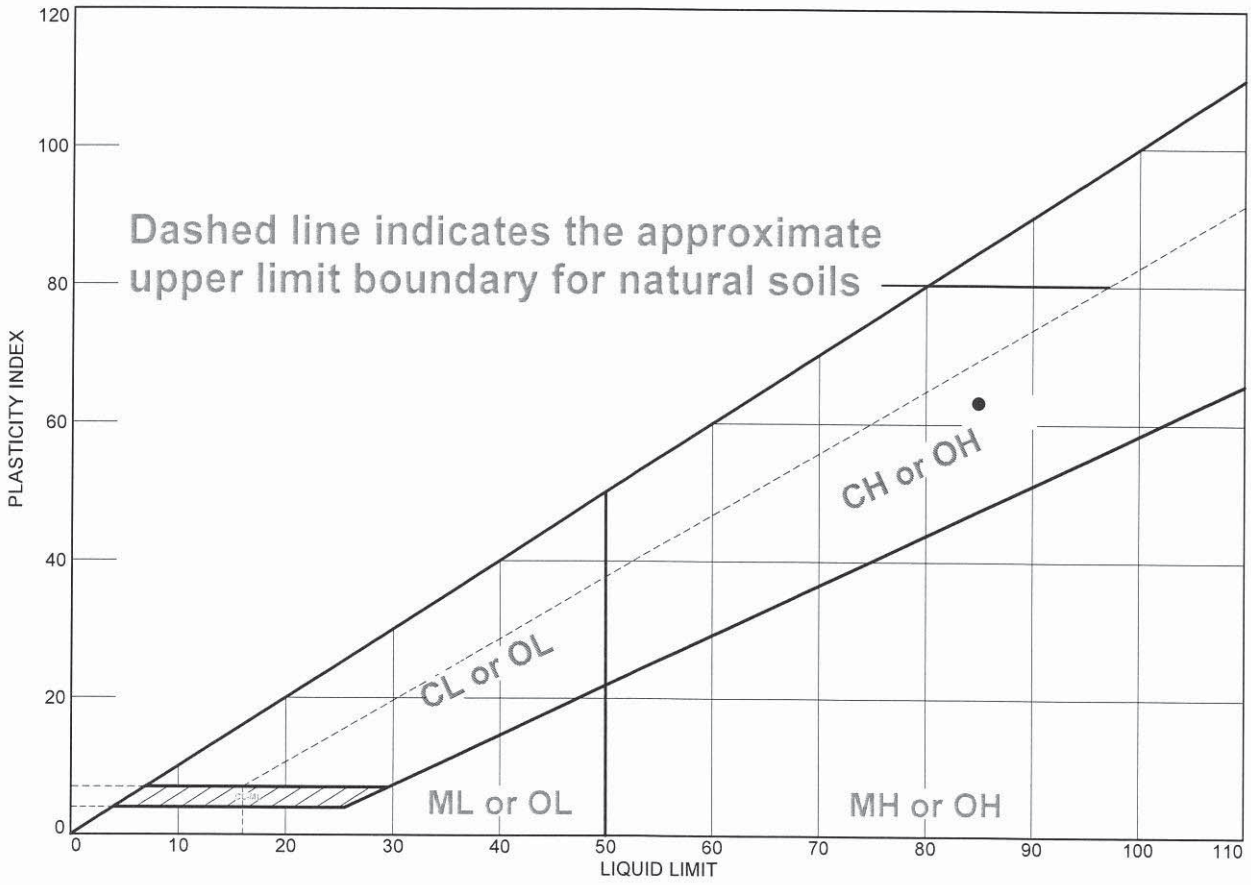
4.7E-09



Reviewed By:

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	85	22	63		51.5	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

●**Location:** C1-65 **Sample Number:** C1-65

Remarks:

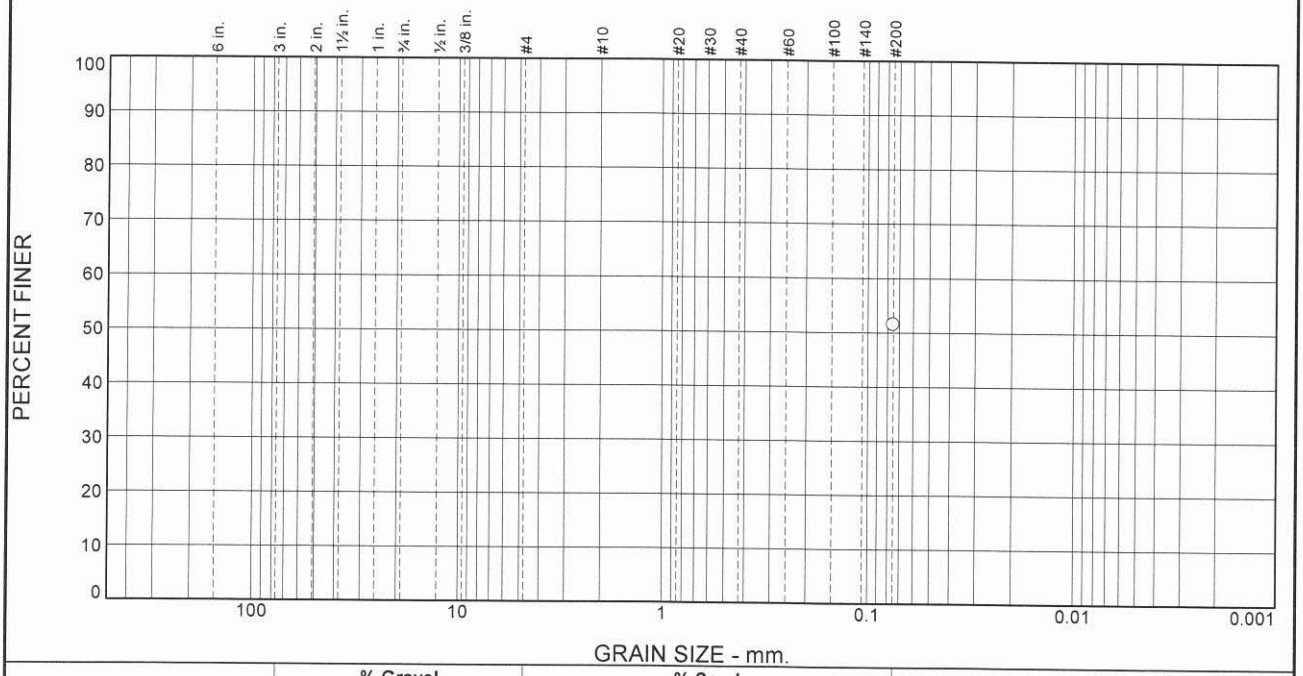
AMEC E&I

Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
						51.5	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#200	51.5		

* (no specification provided)

Material Description

Brown Very Sandy CLAY

Atterberg Limits (ASTM D 4318)

PL= 22 LL= 85 PI= 63

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: **Date Tested:** 11-13-14

Tested By: C. Martin

Checked By:

Title:

Location: C1-65
Sample Number: C1-65

Date Sampled:

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Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237

Figure

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C1-65

Project Number: 6736-13-5237

Date Received: November 7, 2014

Date Completed: November 13, 2014

Sample Information:

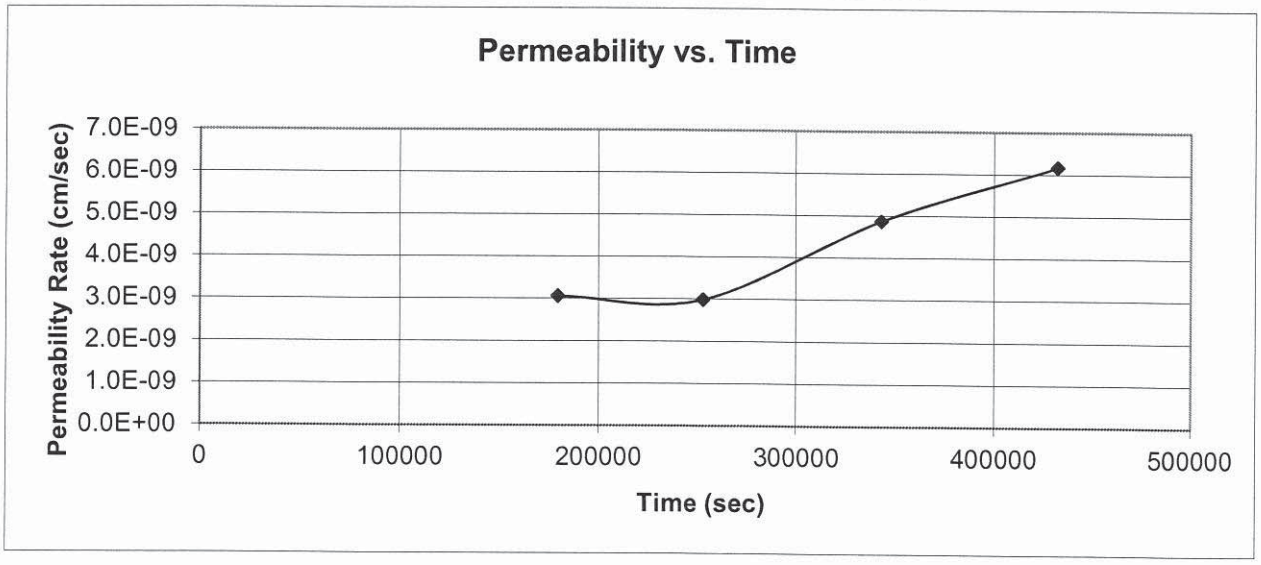
Dia. (in.)	2.81	**Length (in)**	3.03	**Weight (gr)**	515.1
Wet Density (pcf)	105.0	**Moisture Content (%)**	45.2	**Dry Density (pcf)**	72.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.2	**Minimum Hydraulic Gradient**	10.6
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

4.3E-09



Reviewed By:

Corey T. Chascin, E.I.

amec

REPORT OF ORGANIC, MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: January 23, 2015
Date Reported: February 5, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C1-87	na	na	84.0	32.0	52	43.9%	52.6%
C1-99	na	na	NT	NT	NT	43.2%	53.2%
C1-100	na	na	NT	NT	NT	40.2%	52.6%
C1-96	na	na	82.0	28.0	54	41.1%	53.3%
C1-99	na	na	84.0	25.0	59	42.0%	53.2%
C1-100	na	na	90.0	27.0	63	40.2%	52.6%
C1-218	na	na	NT	NT	NT	41.1%	53.6%
C2-83	na	na	NT	NT	NT	42.0%	56.0%
C2-92	na	na	89.0	33.0	56	37.2%	49.5%
C2-93	na	na	NT	NT	NT	38.4%	54.1%
C2-96	na	na	84.0	23.0	61	42.6%	53.1%
C2-97	na	na	85.0	25.0	60	39.6%	51.0%
C2-209	na	na	NT	NT	NT	38.2%	51.5%
C2-214	na	na	NT	NT	NT	39.8%	47.4%

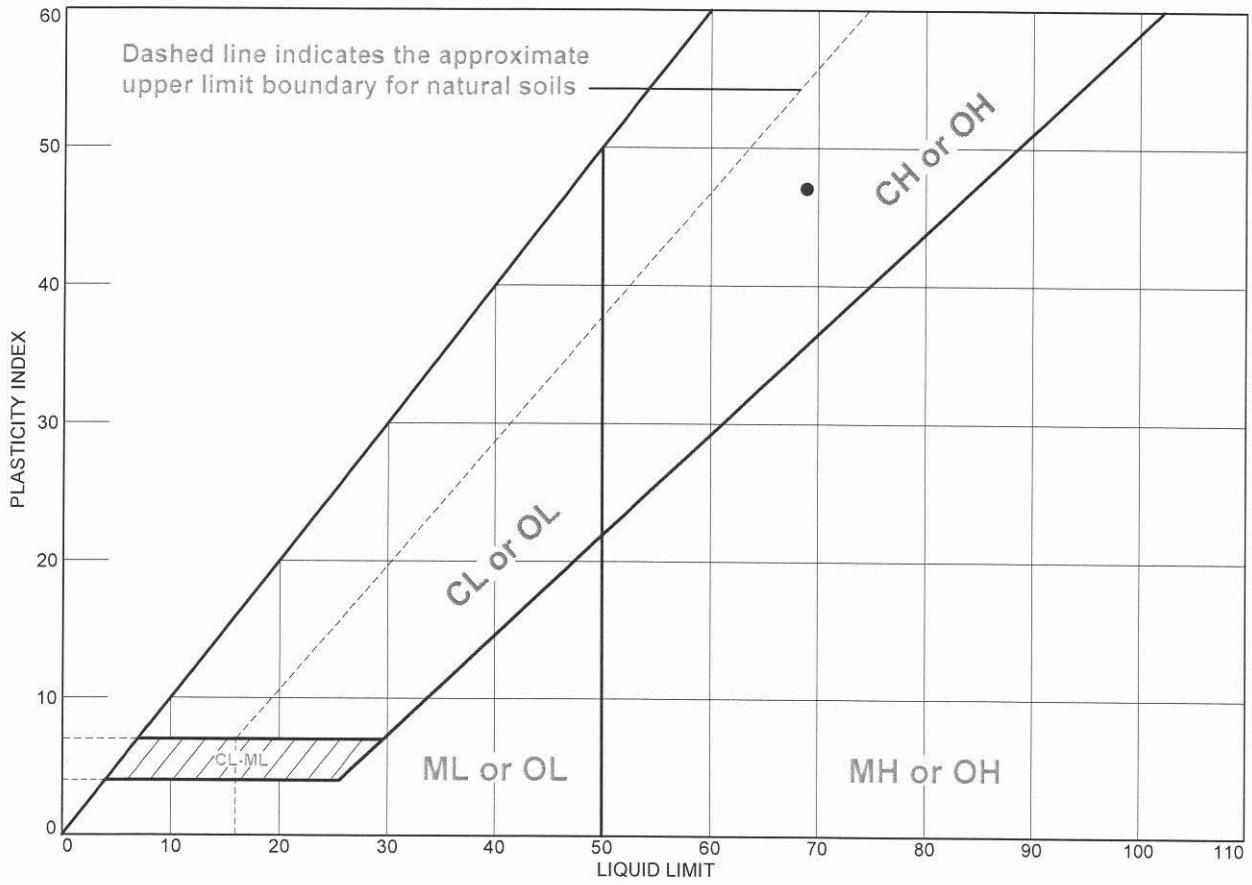
ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

_____

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●		69	22	47			

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

●**Source of Sample:** Perms 2-23-15 **Sample Number:** C1-110

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: AC **Checked By:** Corey Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: TRLF Pase No. 4 **Project Number:** 6736-13-5237

Client Meskel **Date Completed:** December 8, 2014

Sample Number: Underdrain Production No. 4 **Depth:** NA

The sample was remolded to 100% Modified Effort of 108.0 at a Optimum Moisture of 14.0%. The compacted sample was tested for permeability (D2434) and the results are outlined below.

Sample Information:

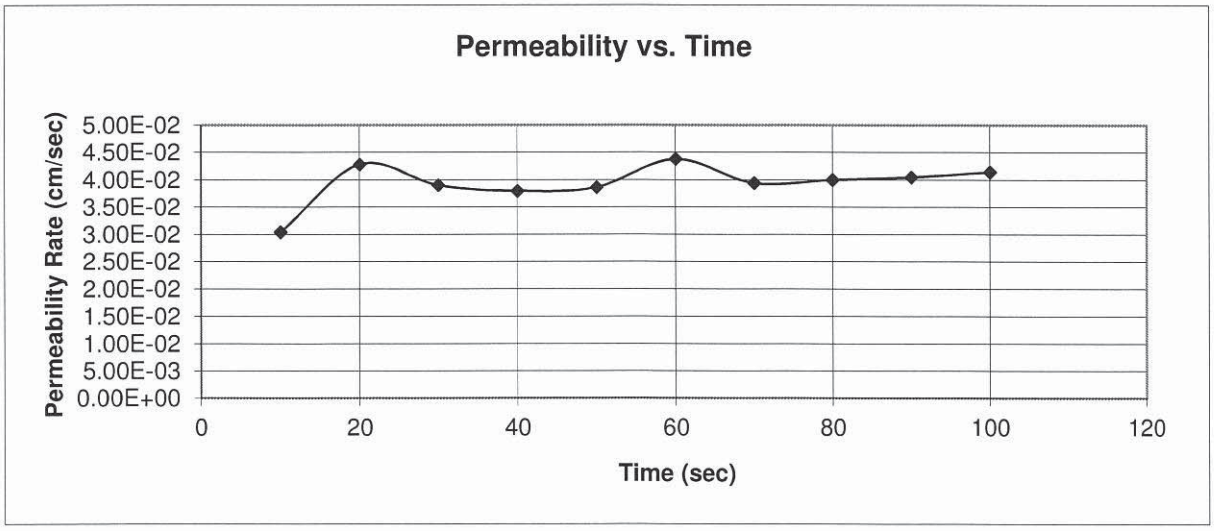
Dia. (in.)	2.99	**Length (in)**	5.64	**Weight (gr)**	1208.5
Wet Density (pcf)	116.2	**Moisture Content (%)**	7.9	**Dry Density (pcf)**	107.7

Test Parameters

Test Method Used:	ASTM D-2434	**Permeant Fluid:**	Tap water

Permeability Rate

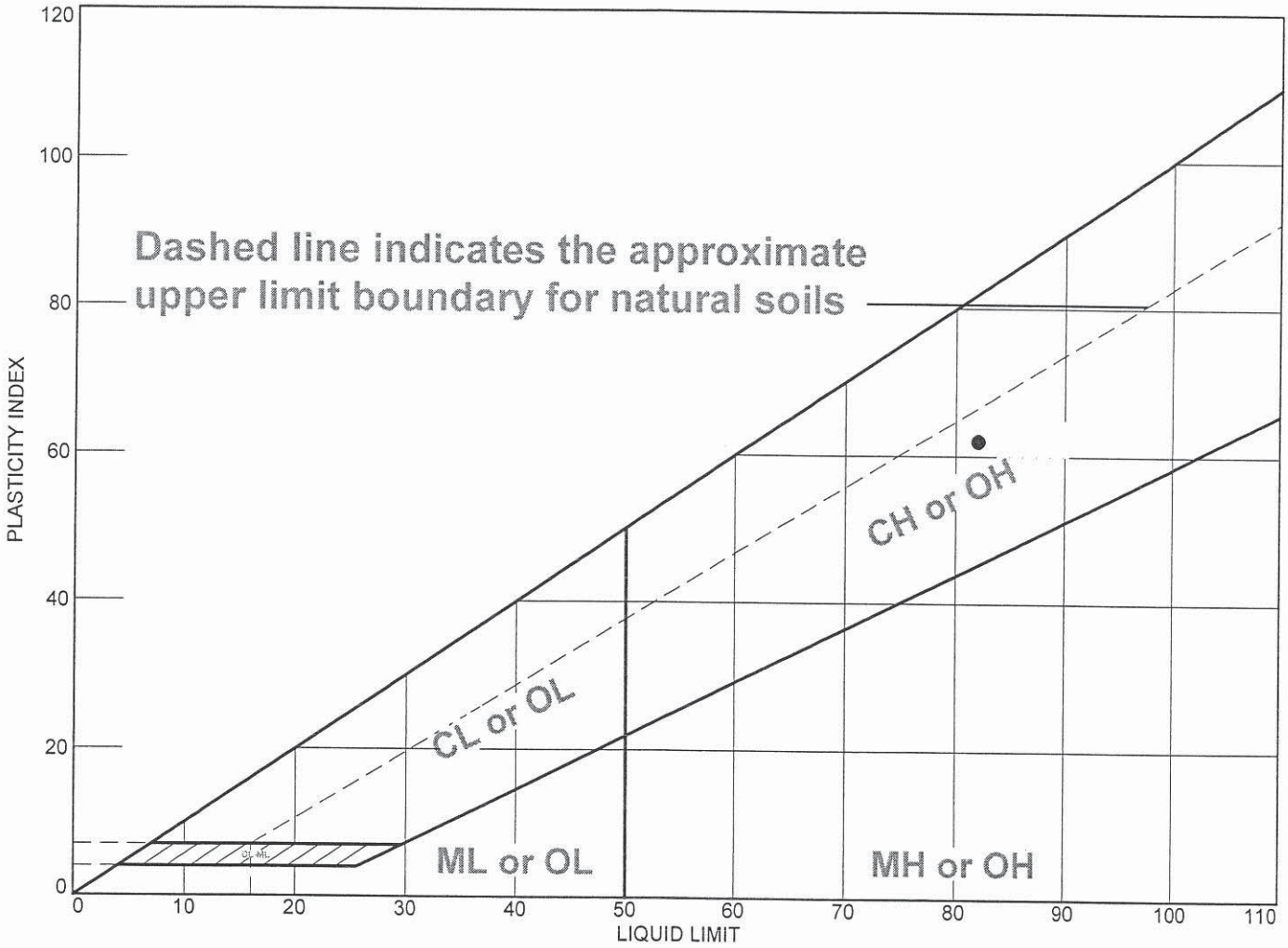
3.94E-02



Reviewed By:

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Sandy CLAY	82	20	62		56.4	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

● **Location:** D-52 **Sample Number:** C2-151R

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.3.14

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	September 25, 2014
Sample Number:	C2-151R	**Date Completed:**	October 1, 2014
Location:	D-52		

Sample Information:

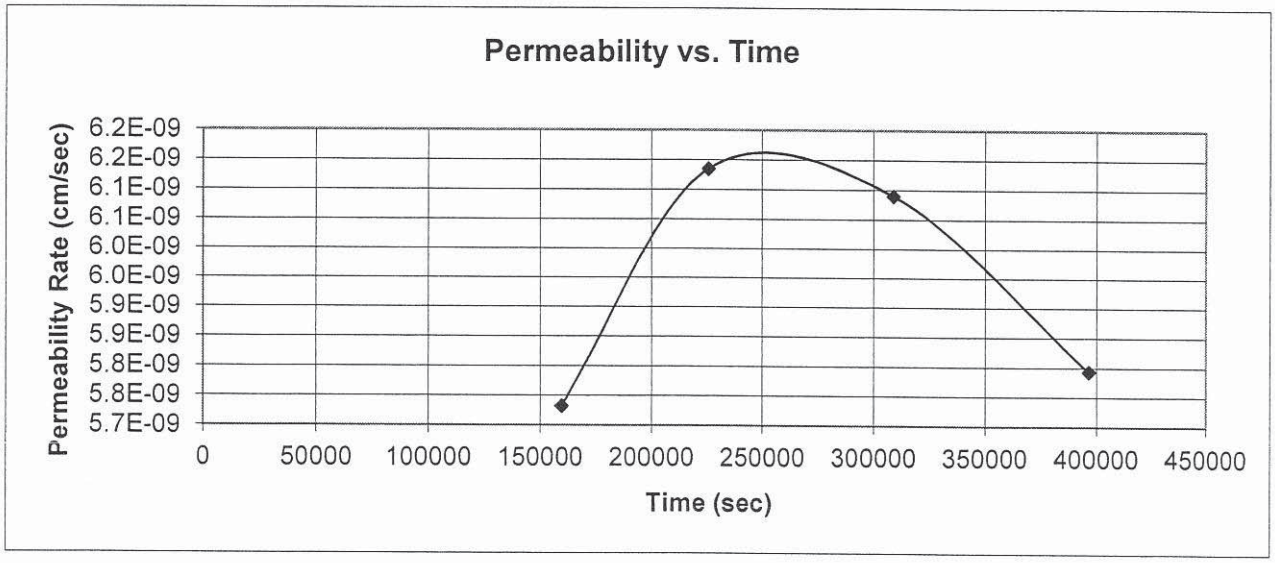
Dia. (in.)	2.86	0.00	**Length (in)**	2.91	0.00	**Weight (gr)**	525.6	0
Wet Density (pcf)	106.9		**Moisture Content (%)**	41.9		**Dry Density (pcf)**	75.3	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.0	**Minimum Hydraulic Gradient**	10.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.9E-09



Reviewed By:

Corey T. Chascin 10.3.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Date Received: September 25, 2014

Sample Number: C1-155R

Date Completed: October 1, 2014

Location: D-52

Sample Information:

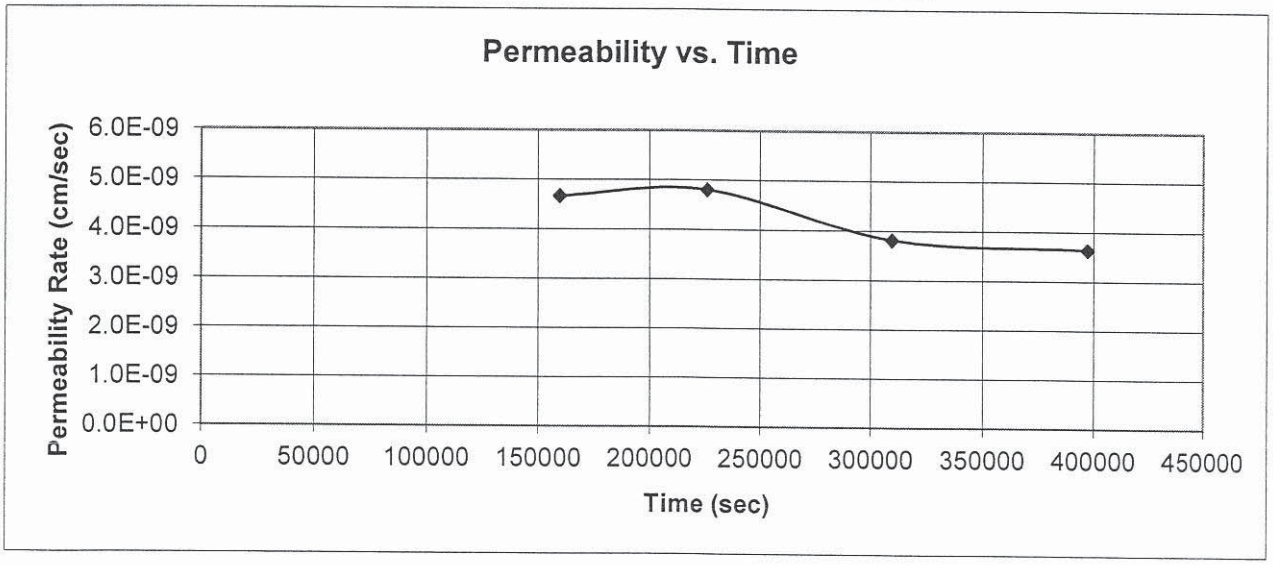
Dia. (in.)	2.82	0.00	**Length (in)**	2.97	0.00	**Weight (gr)**	505.3	0
Wet Density (pcf)	103.7		**Moisture Content (%)**	47.1		**Dry Density (pcf)**	70.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.6	**Minimum Hydraulic Gradient**	10.8
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

4.2E-09

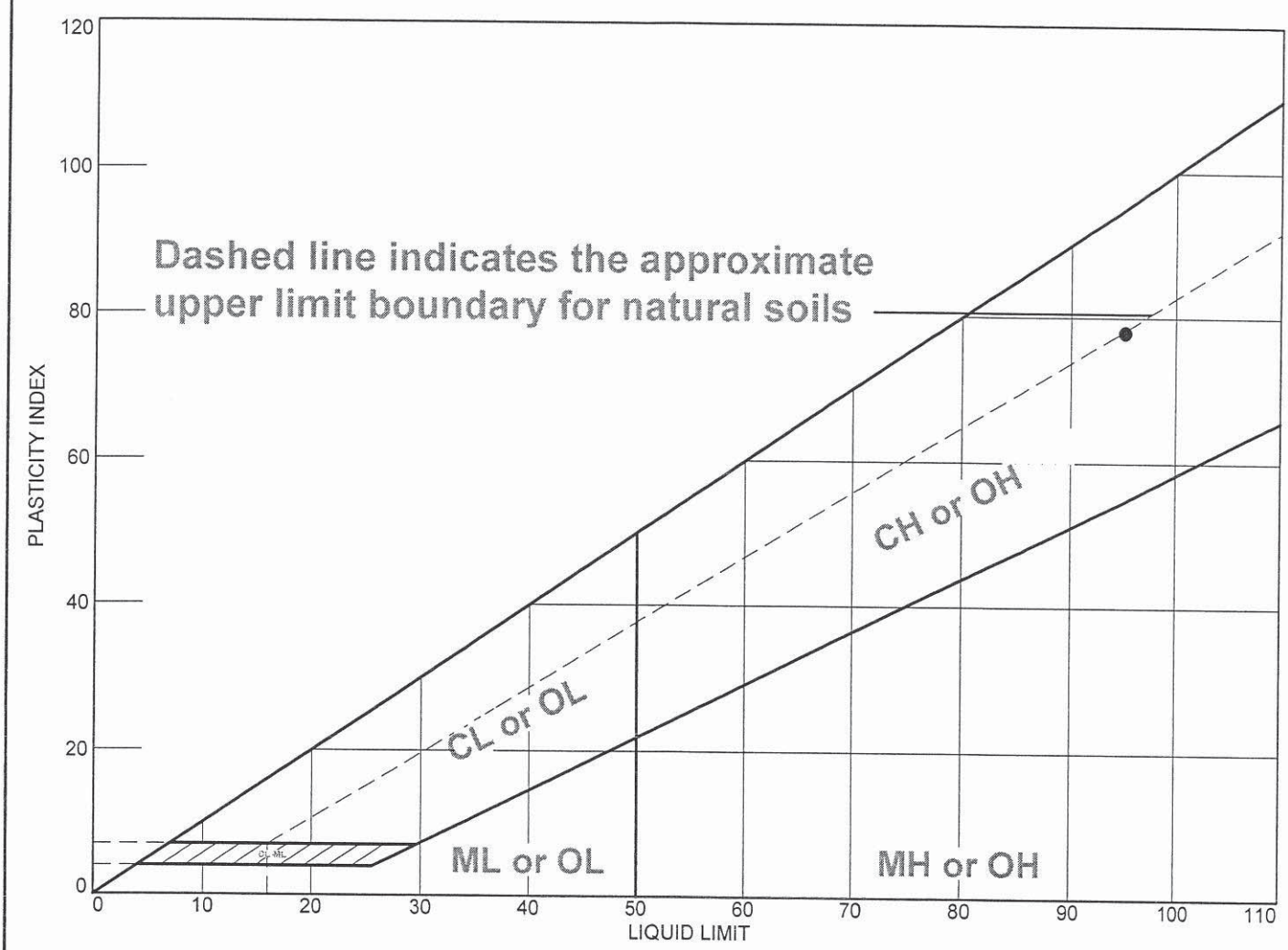


Reviewed By:

Corey T. Chascin 10.3.14

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray Sandy CLAY	95	17	78		60.8	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

● **Location:** D-52 **Sample Number:** C1-155R

Remarks:

AMEC E&I

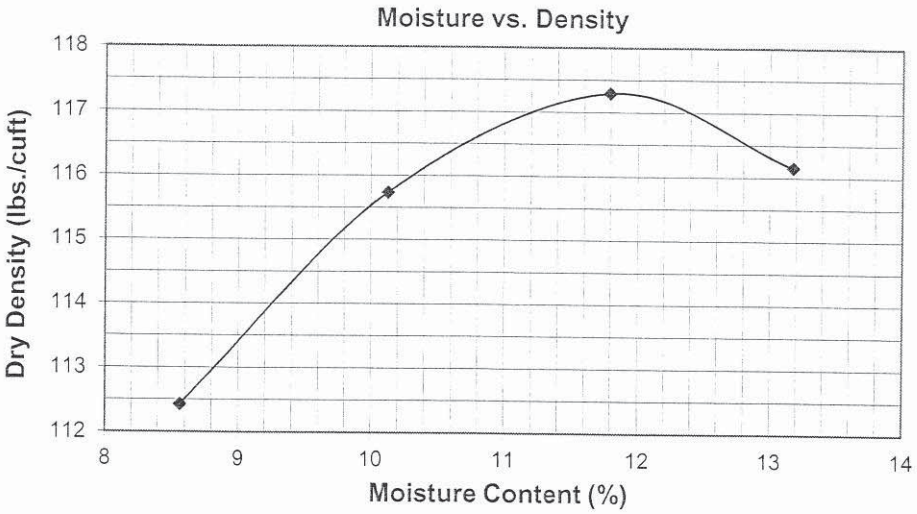
Jacksonville, Florida

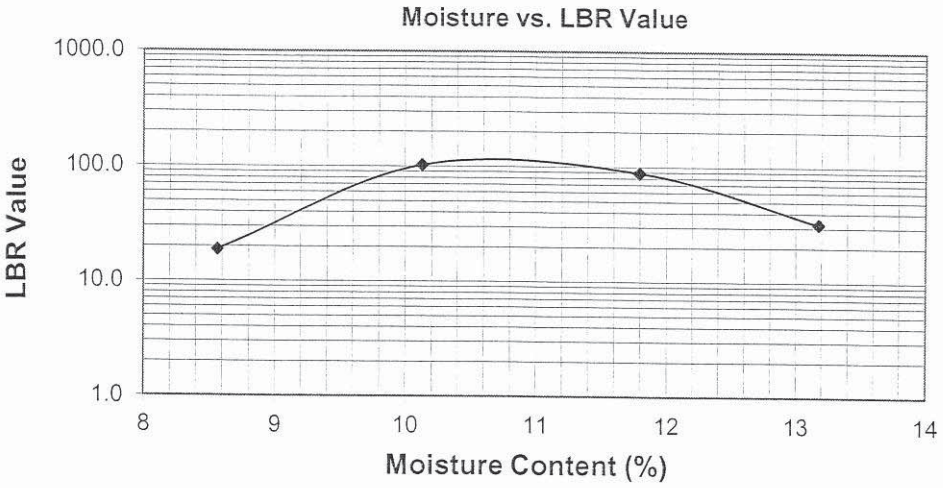
Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

Corey Chascin 10.3.14

LIMEROCK BEARING RATIO TEST RESULTS





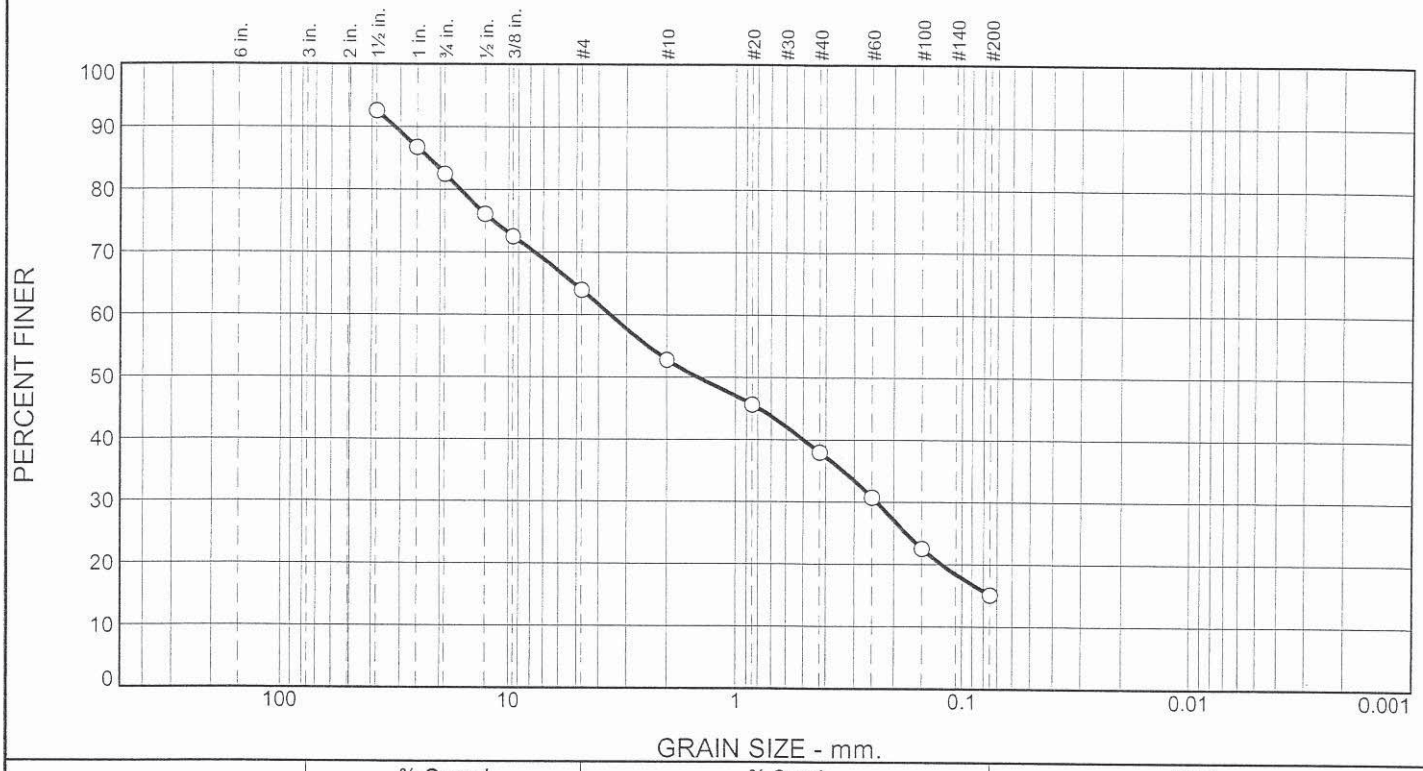
Material Description: Limerock

Test Results	
Optimum Moisture (%):	12
Maximum Dry Density (pcf):	117
Maximum LBR Value:	107
Liquid Limit:	NP
Plastic Limit:	NP

PROJECT NAME:	TRLF Phase 4	PROJECT NO.:	6736-13-5237
CLIENT:	Meskel & Associates Engineering	DATE TESTED:	10/2/2014
SAMPLE No.:	LBR 1	TEST METHOD:	FM5-515
LOCATION:	Stockpile	PERFORMED BY:	AC

Reviewed By: Corey Chase 10.9.14

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
		18.6	11.1	14.8	22.9	15.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5"	92.6		
1.0"	86.7		
3/4"	82.5		
1/2"	76.1		
3/8"	72.5		
#4	63.9		
#10	52.8		
#20	45.6		
#40	38.0		
#60	30.7		
#100	22.5		
#200	15.1		

* (no specification provided)

Material Description

Limerock

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= AASHTO (M 145)=

Coefficients

D_{90}= 31.8855 D_{85}= 22.5069 D_{60}= 3.5601
D_{50}= 1.4711 D_{30}= 0.2387 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 10/2/14 Date Tested: 10/8/14

Tested By: D. Newman

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: 1
Sample Number: LBR 1

Date Sampled: 10/2/14

AMEC E&I

Jacksonville, Florida

Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237 Figure

Corey Chasco 10.9.14

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	C2-23R	**Date Completed:**	October 26, 2014
Location:	NA		

Sample Information:

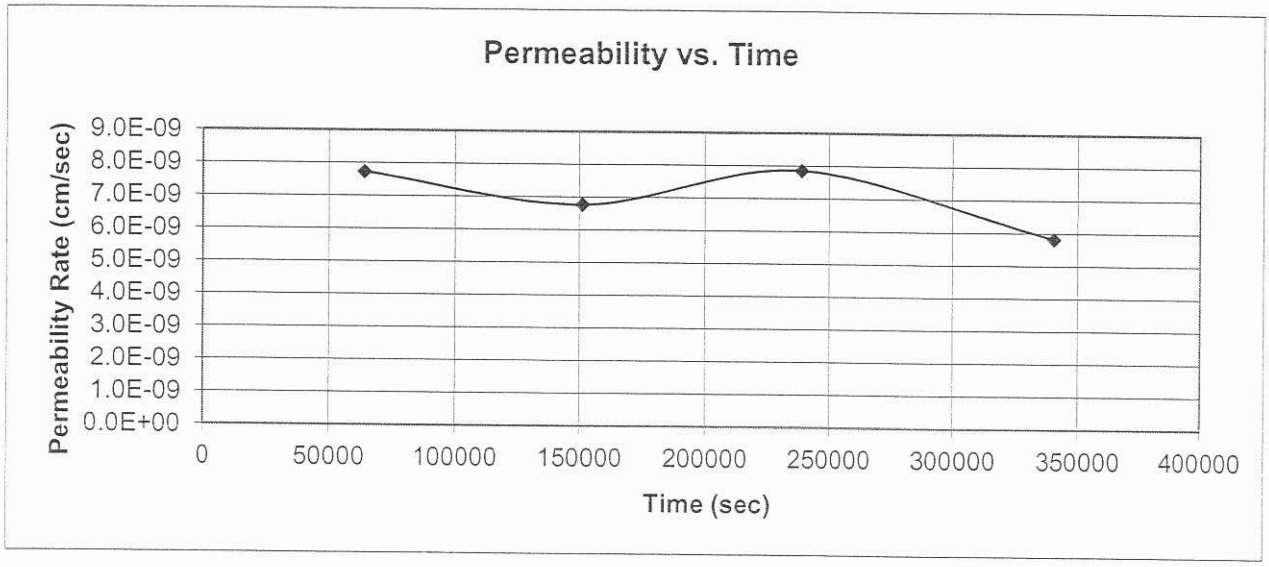
Dia. (in.)	2.85	**Length (in)**	2.80	**Weight (gr)**	499.14
Wet Density (pcf)	106.8	**Moisture Content (%)**	40.4	**Dry Density (pcf)**	76.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.9	**Minimum Hydraulic Gradient**	11.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

7.0E-09



Reviewed By:

Corey C Chascin 11.2.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	C2-21R	**Date Completed:**	October 26, 2014
Location:	NA		

Sample Information:

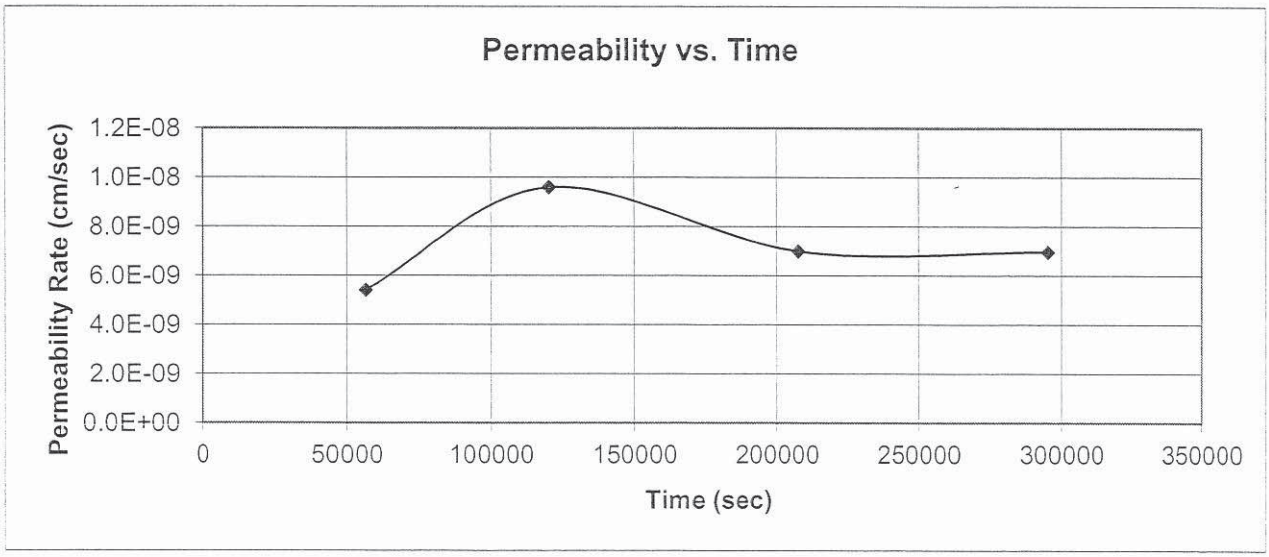
Dia. (in.)	2.84	**Length (in)**	2.88	**Weight (gr)**	511.3
Wet Density (pcf)	106.9	**Moisture Content (%)**	46.3	**Dry Density (pcf)**	73.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	11.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

7.2E-09



Reviewed By:

Corey T. Chascin 11.3.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	C2-10R	**Date Completed:**	October 26, 2014
Location:	NA		

Sample Information:

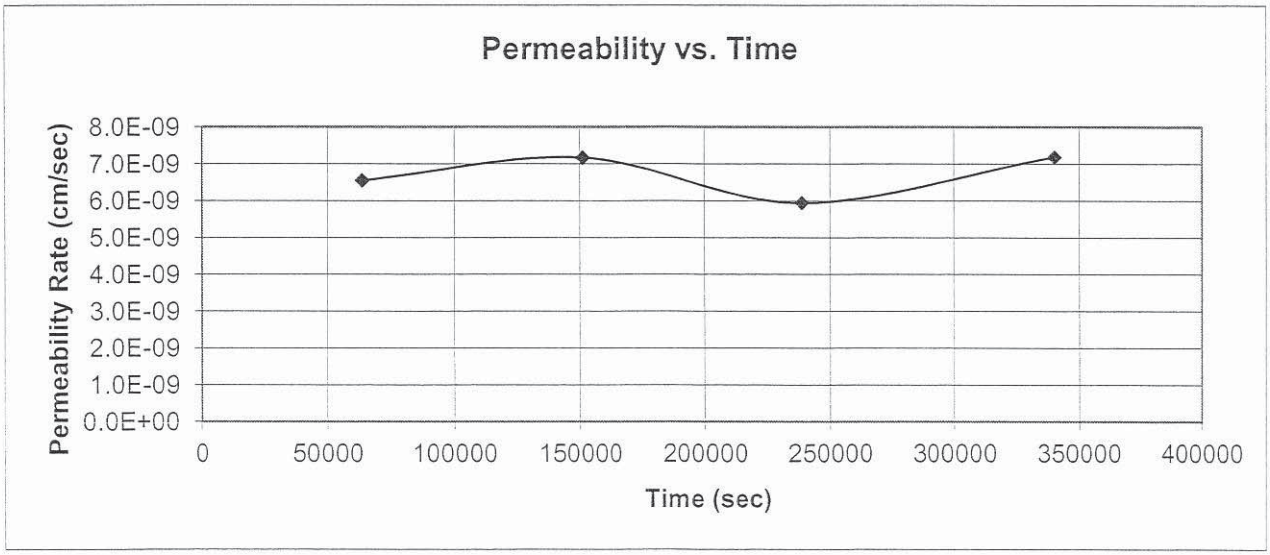
Dia. (in.)	2.83	**Length (in)**	2.93	**Weight (gr)**	536.6
Wet Density (pcf)	110.5	**Moisture Content (%)**	39.0	**Dry Density (pcf)**	79.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.9	**Minimum Hydraulic Gradient**	10.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

6.7E-09



Reviewed By:

Corey Chascin 11.3.14

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	C1-26R	**Date Completed:**	October 26, 2014
Location:	NA		

Sample Information:

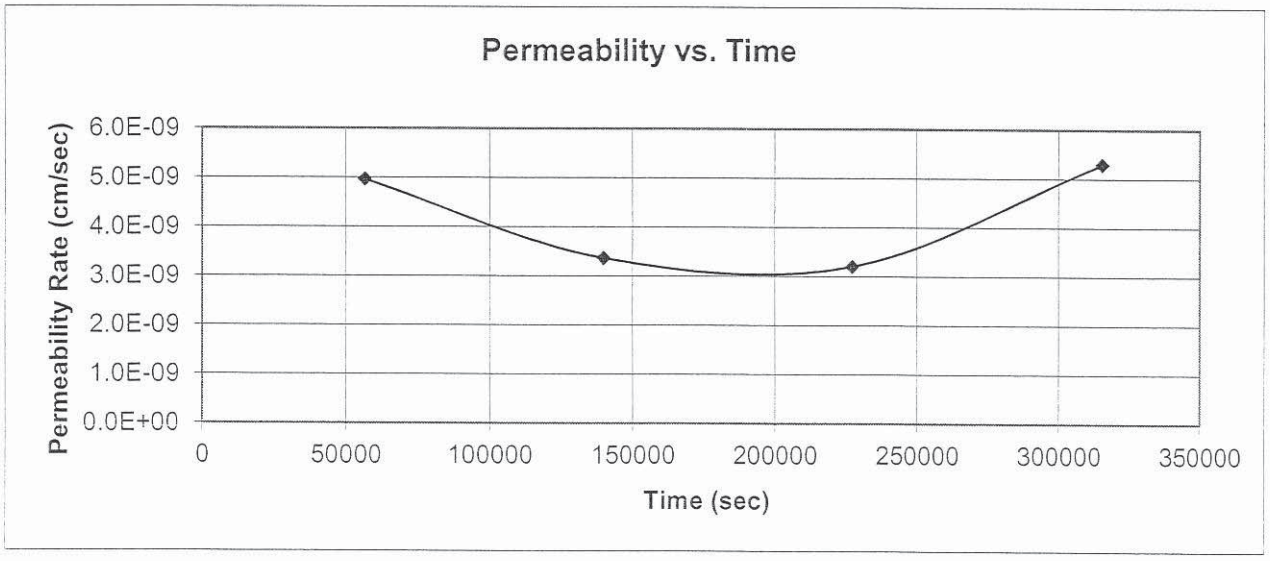
Dia. (in.)	2.86	**Length (in)**	2.68	**Weight (gr)**	478.67
Wet Density (pcf)	106.1	**Moisture Content (%)**	44.6	**Dry Density (pcf)**	73.4

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.0	**Minimum Hydraulic Gradient**	12.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

4.2E-09



Reviewed By:

Corey T. Chascin 11.2.14

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	C1-5R	**Date Completed:**	October 26, 2014
Location:	NA		

Sample Information:

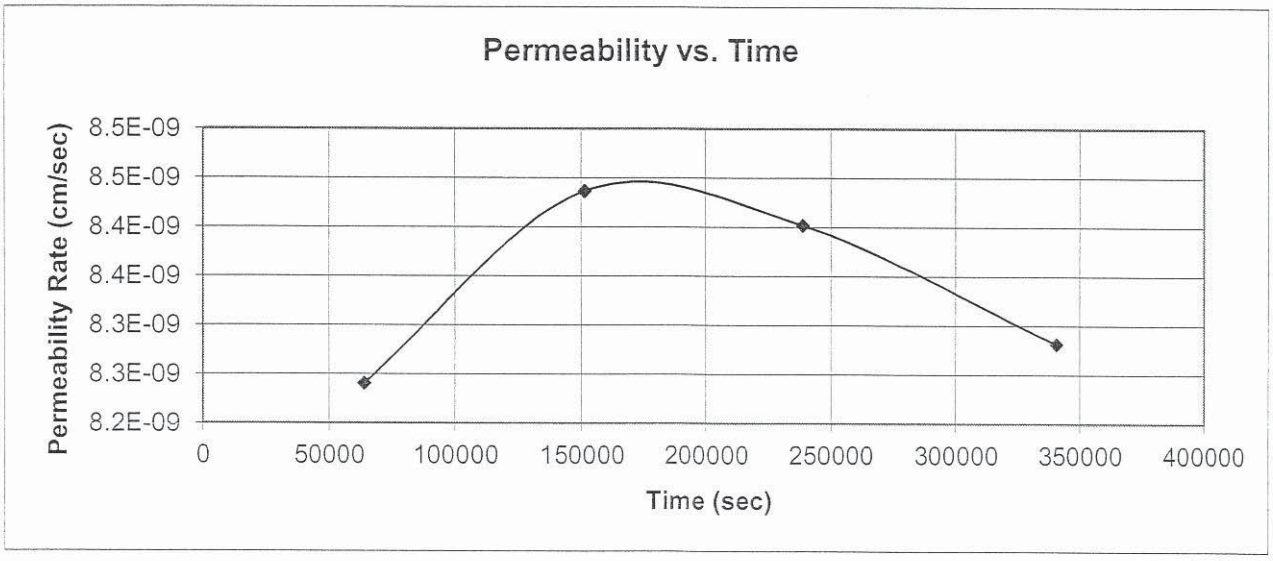
Dia. (in.)	2.83	**Length (in)**	2.95	**Weight (gr)**	526.3
Wet Density (pcf)	107.8	**Moisture Content (%)**	41.0	**Dry Density (pcf)**	76.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.7	**Minimum Hydraulic Gradient**	10.8
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

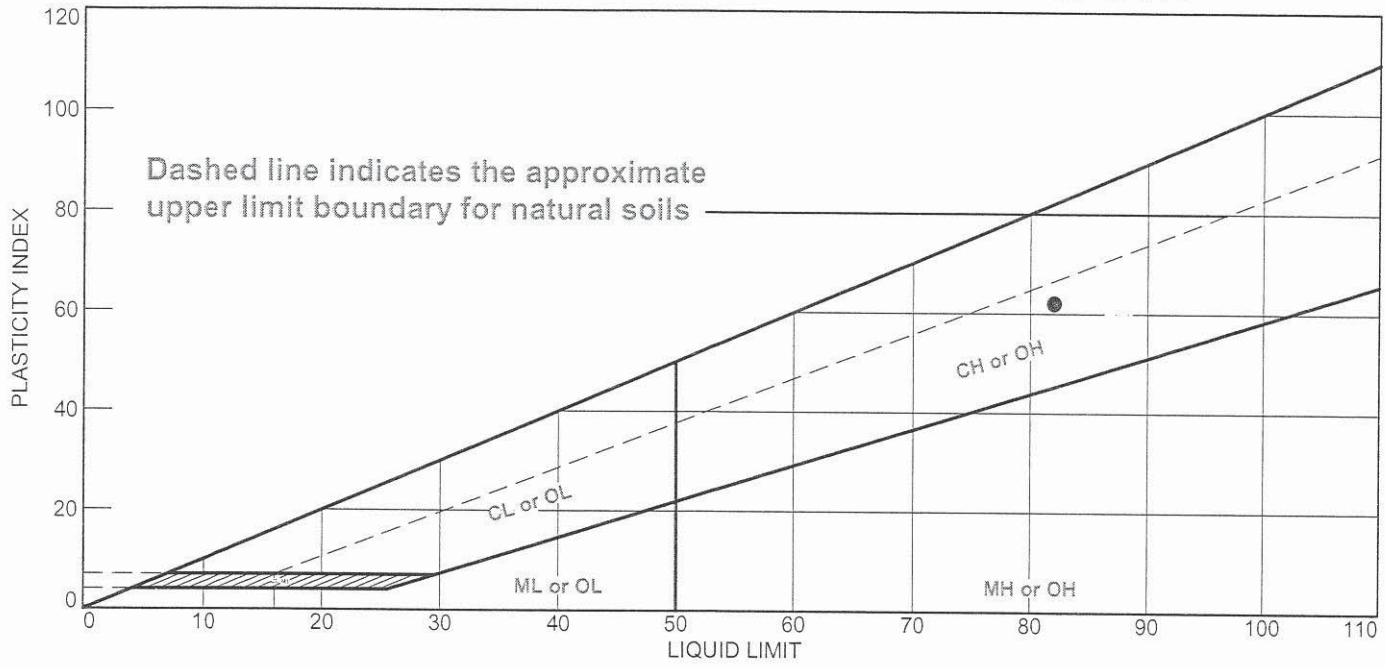
8.3E-09

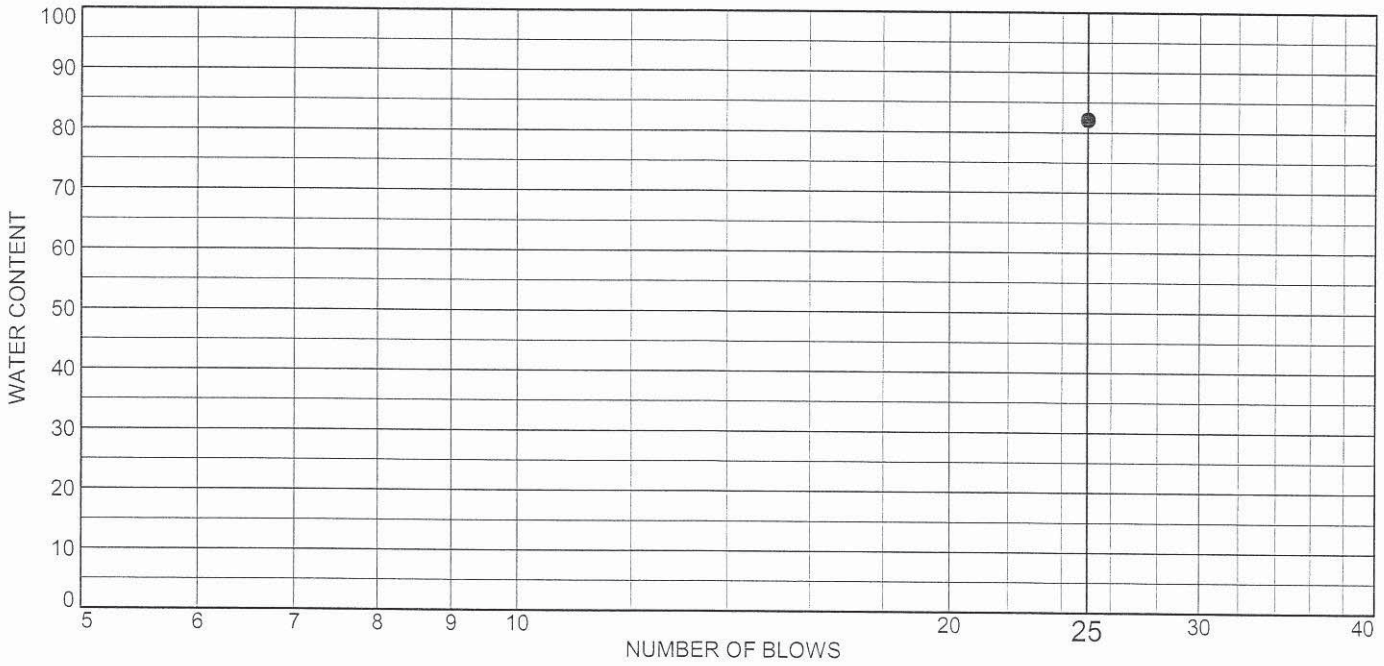


Reviewed By:

Corey T. Chascin, E.I. 11.3.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	82	20	62			

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C1-26R
Sample Number: C1-26R

Remarks:

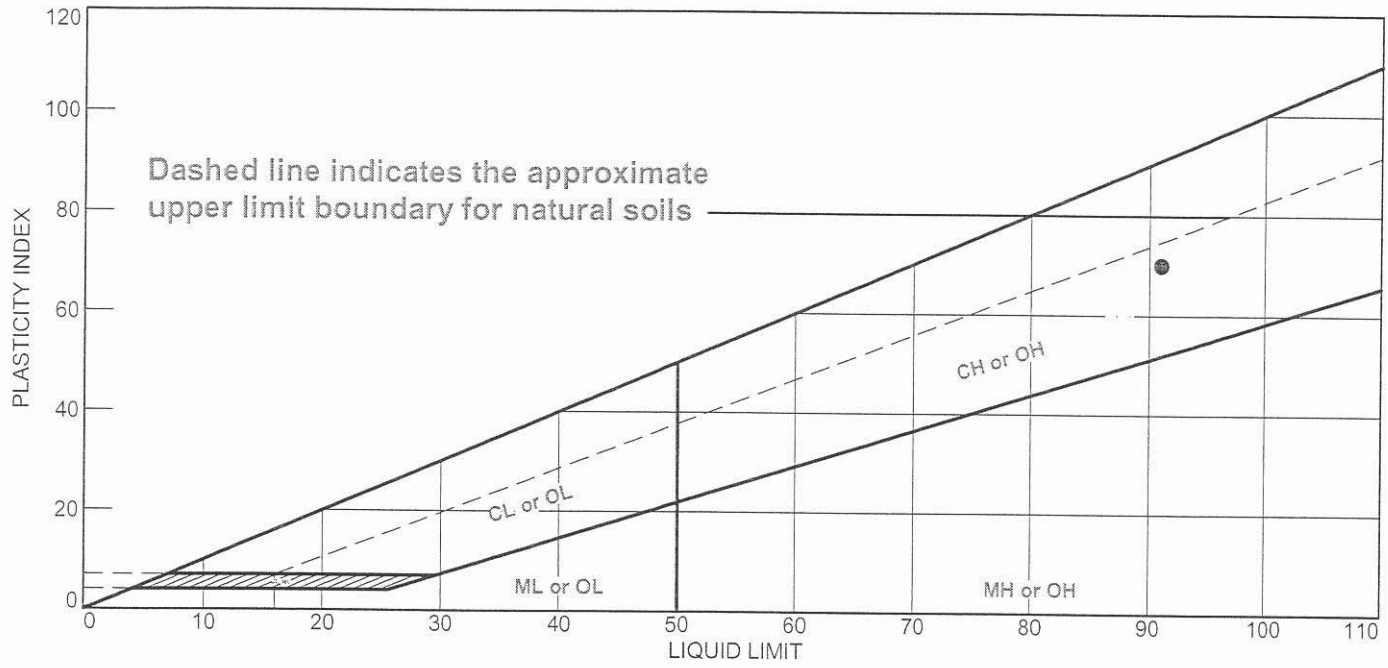
AMEC E&I

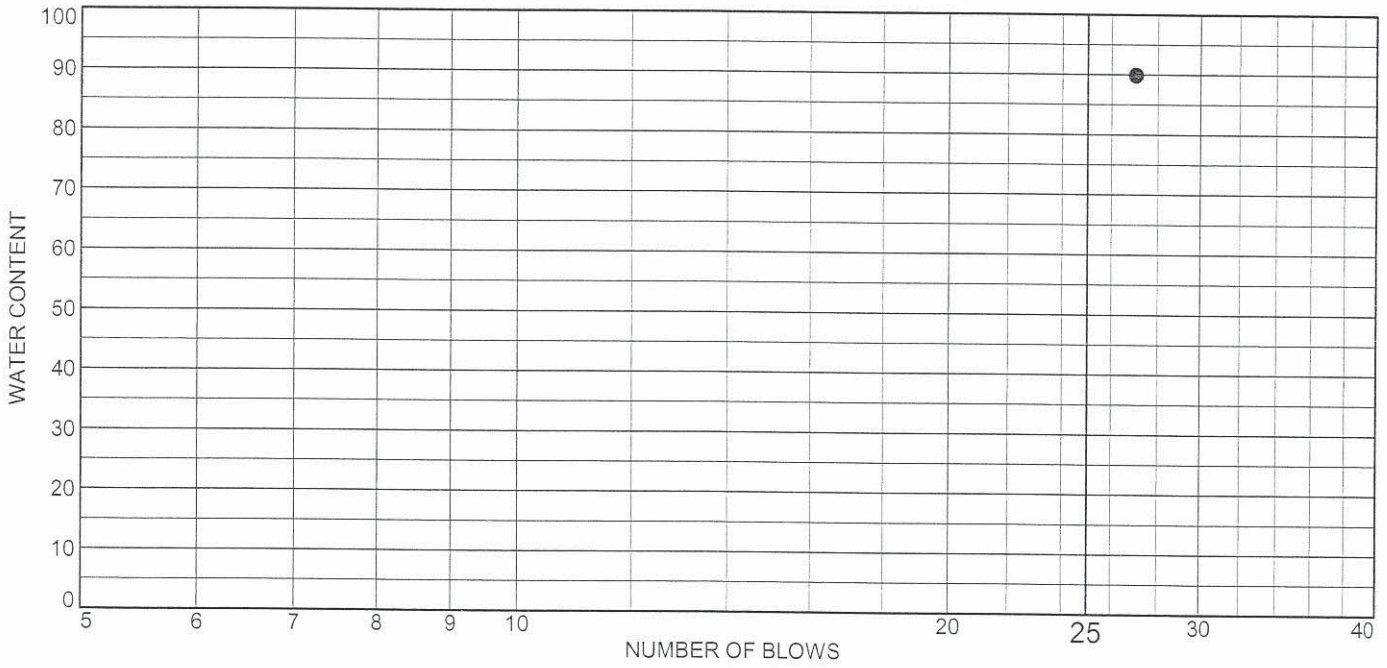
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 11.2.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	91	21	70			

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C2-23R
Sample Number: C2-23R

Remarks:

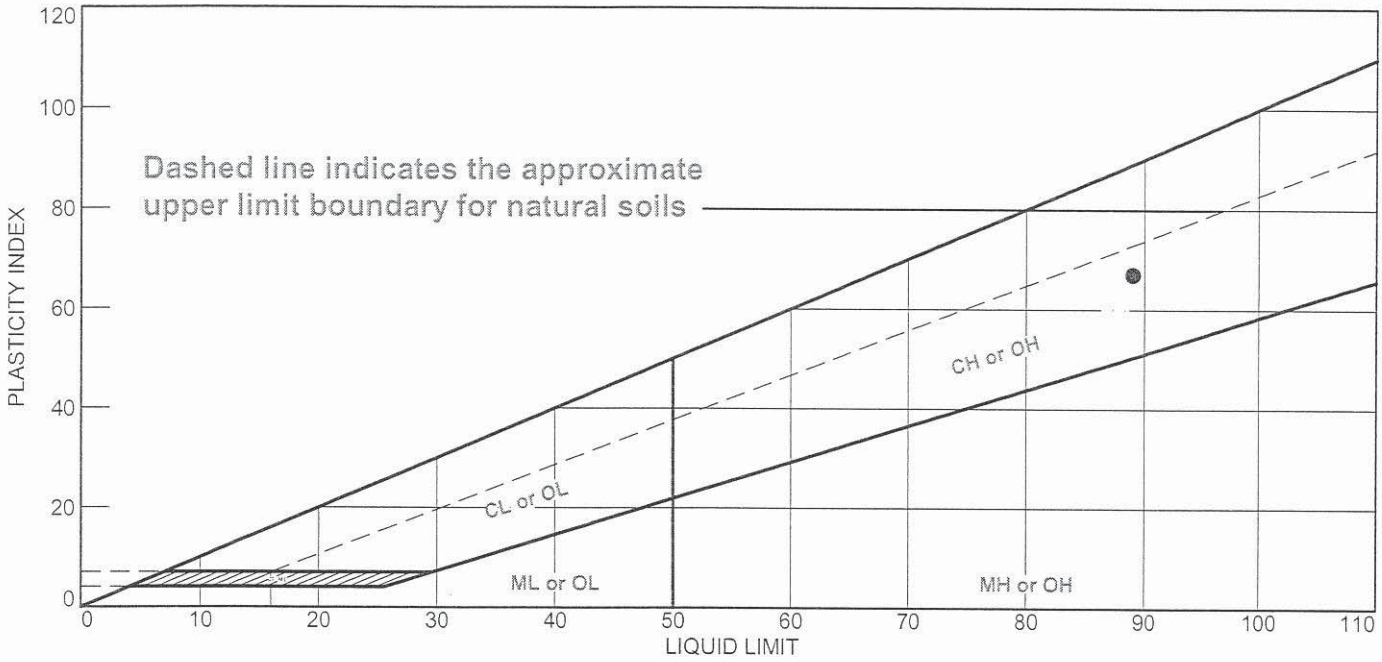
AMEC E&I

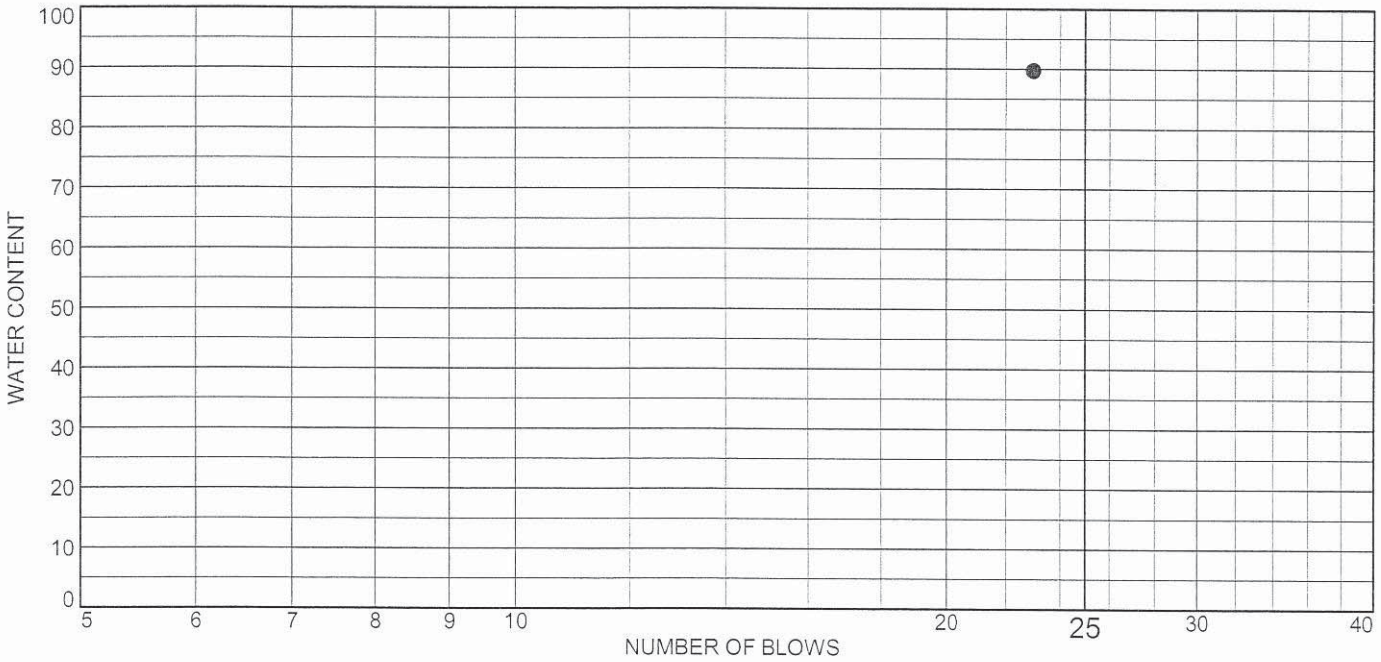
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 11.2.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	89	22	67			

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C2-21R
Sample Number: C2-21R

Remarks:

AMEC E&I

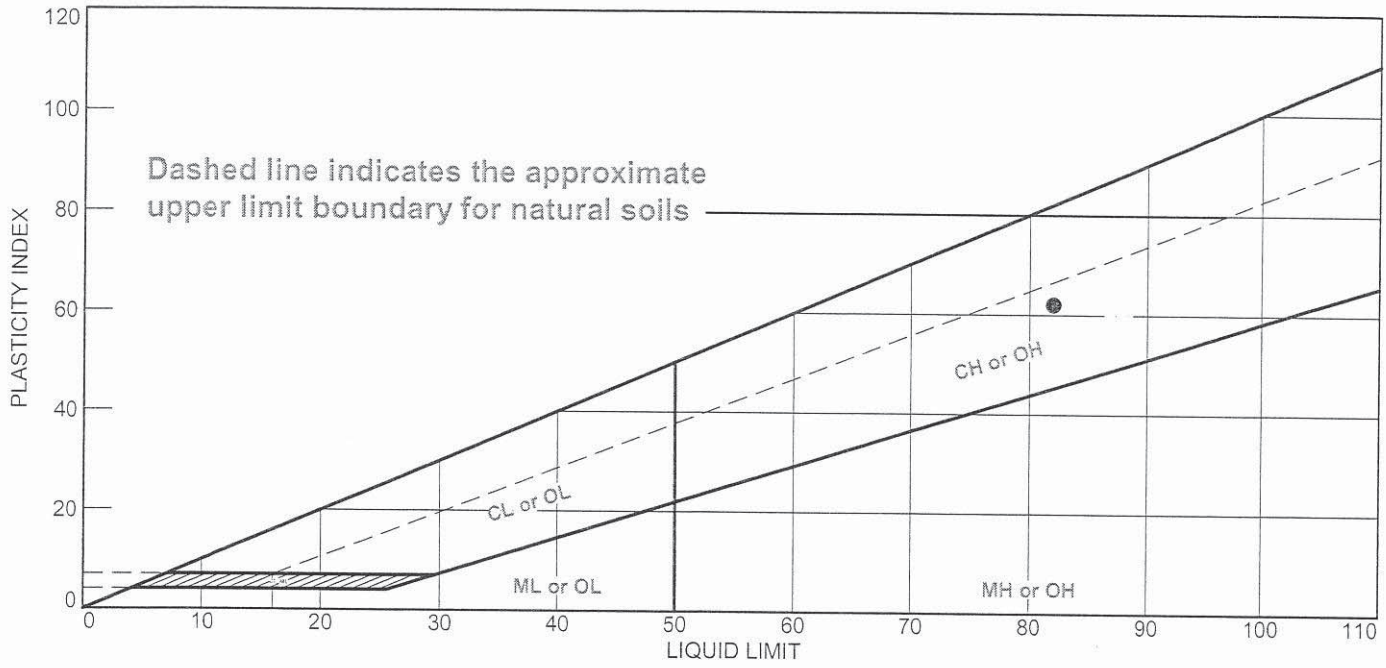
Jacksonville, Florida

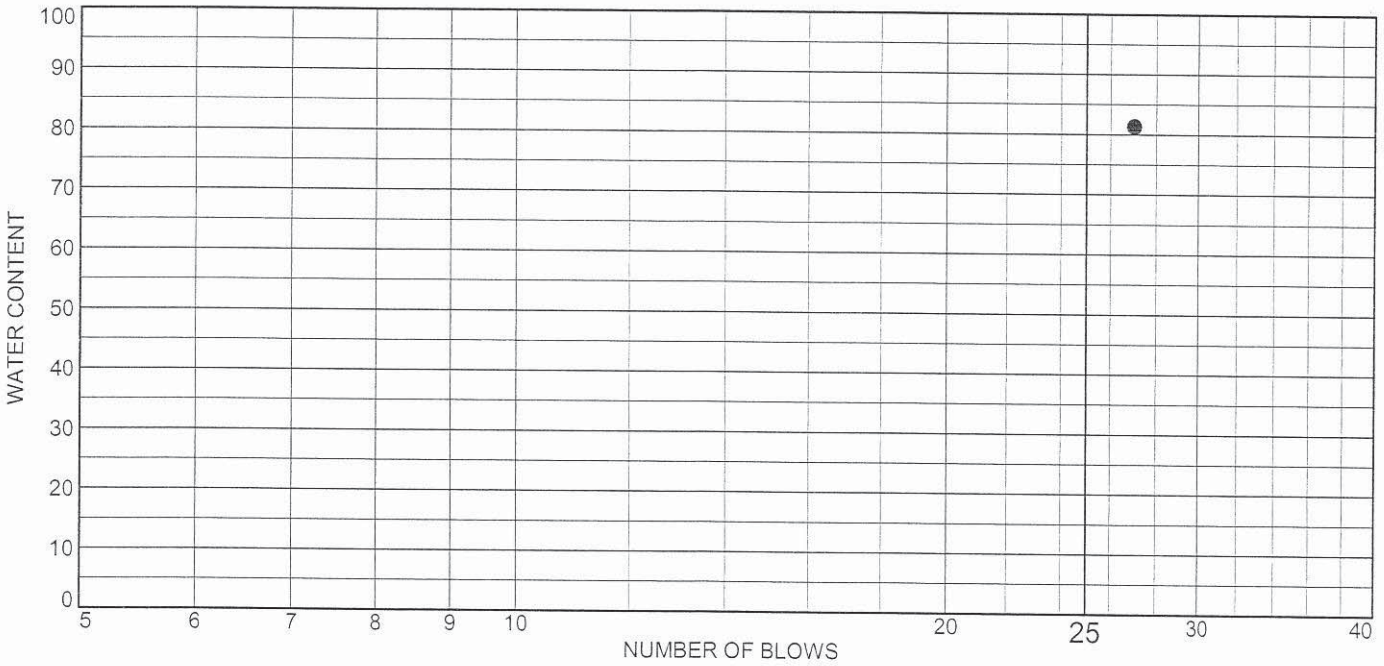
Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

Corey Chascin 11.2.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	82	20	62			

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C1-5R
Sample Number: C1-5R

Remarks:

AMEC E&I

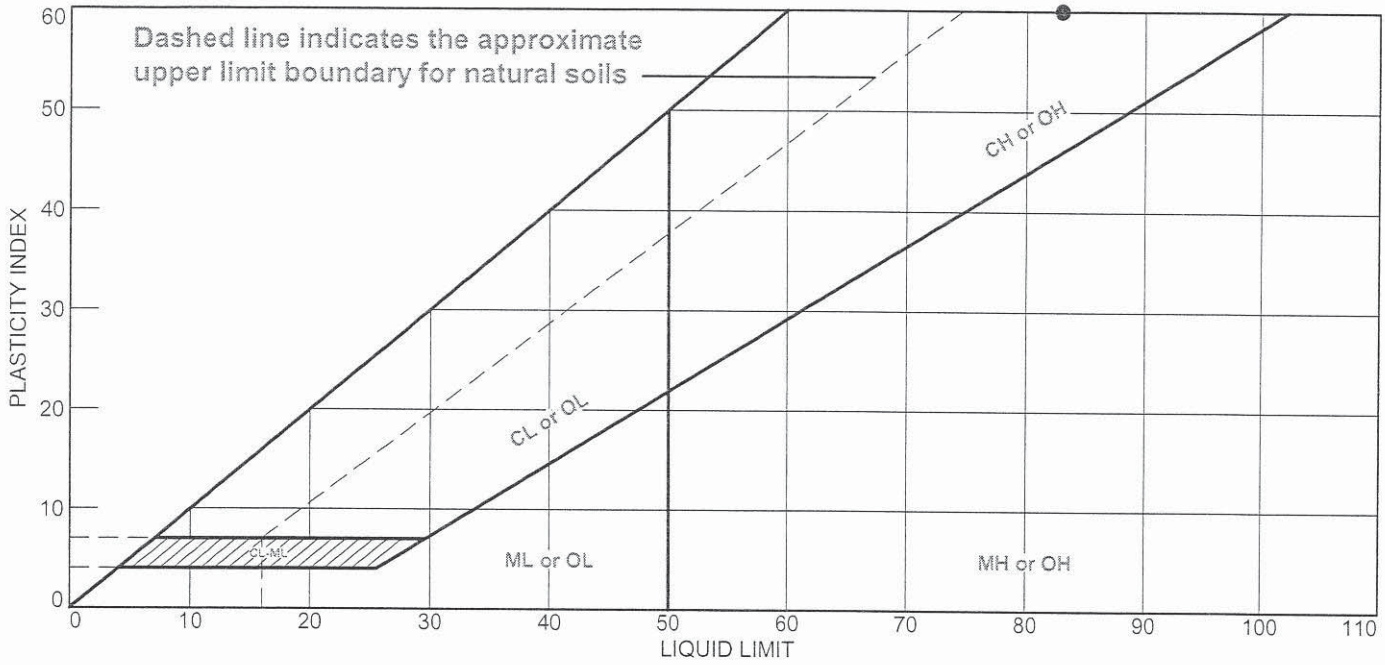
Jacksonville, Florida

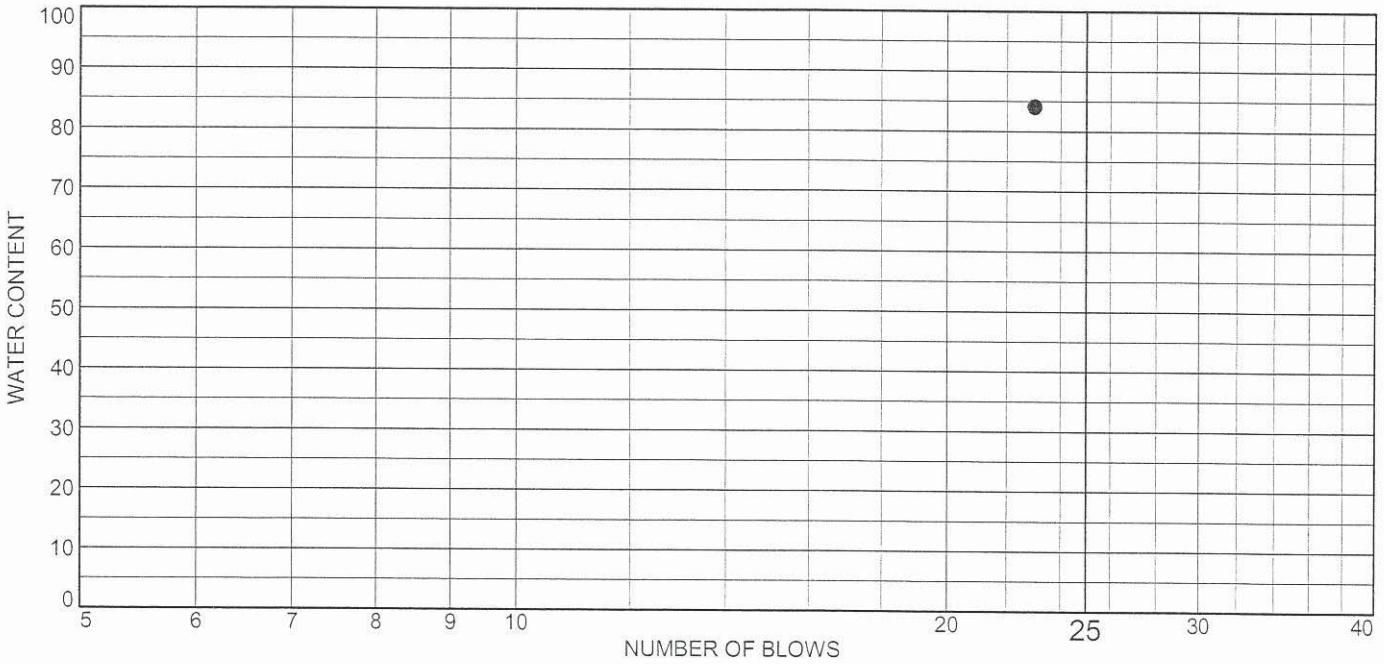
Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

Corey Chascin
11.2.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	83	23	60			

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C2-10R
Sample Number: C2-10R

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

Corey Chascin
11.2.14

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-1-1R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

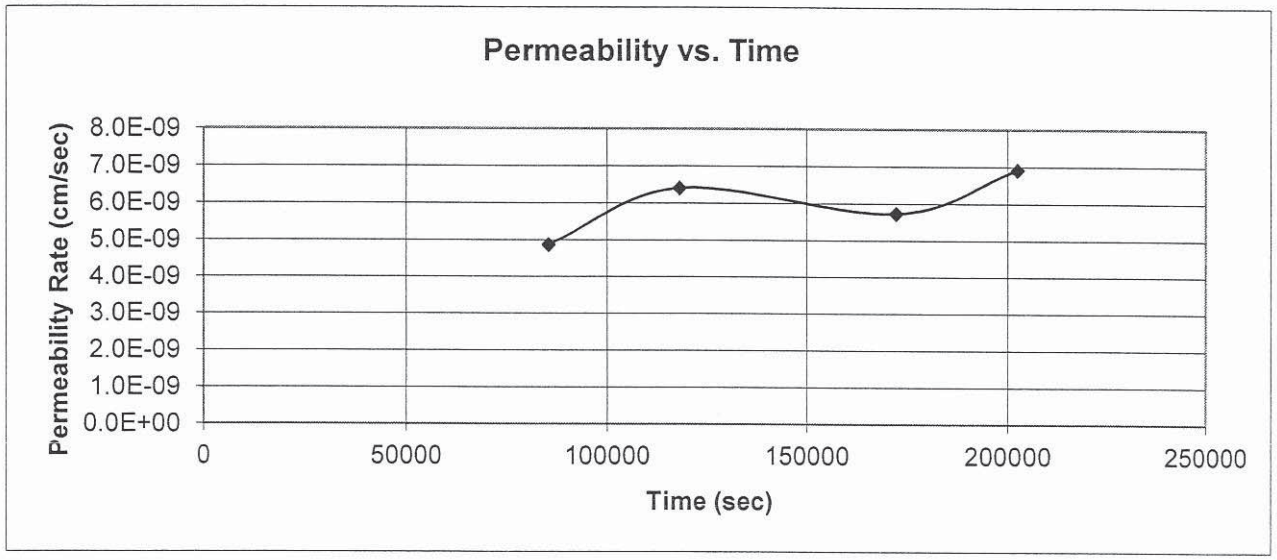
Dia. (in.)	2.83	**Length (in)**	2.92	**Weight (gr)**	545.3
Wet Density (pcf)	112.9	**Moisture Content (%)**	36.5	**Dry Density (pcf)**	82.7

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.0	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

6.0E-09



Reviewed By:

Corey T. Chascin 10.22.14

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-1-2R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

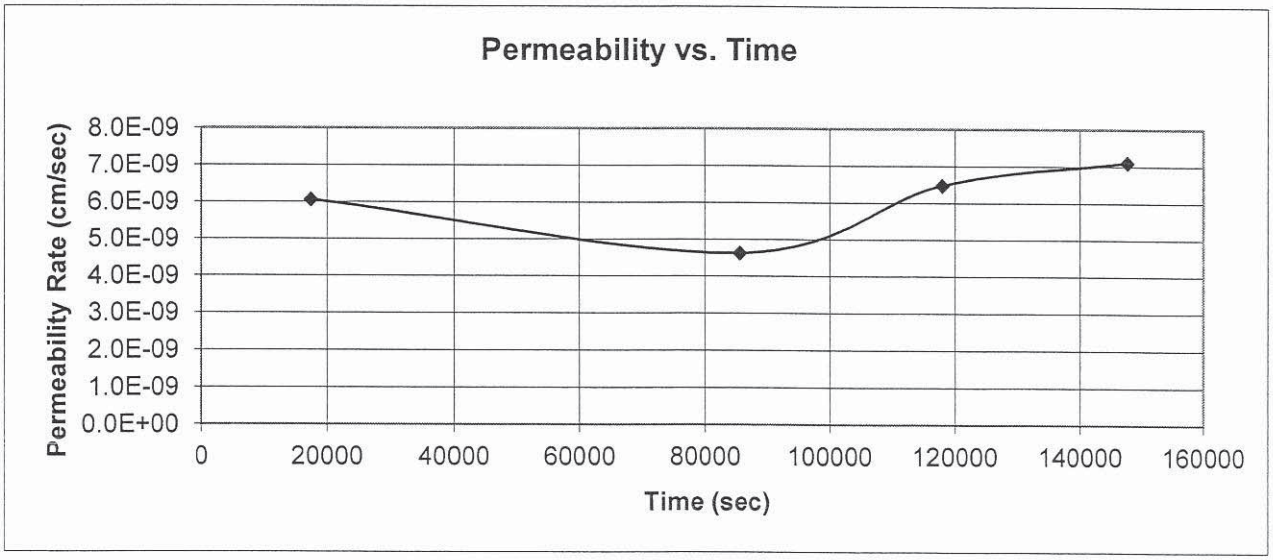
Dia. (in.)	2.82	**Length (in)**	2.93	**Weight (gr)**	533.1
Wet Density (pcf)	111.2	**Moisture Content (%)**	38.1	**Dry Density (pcf)**	80.6

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.0	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

6.1E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-1-3R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

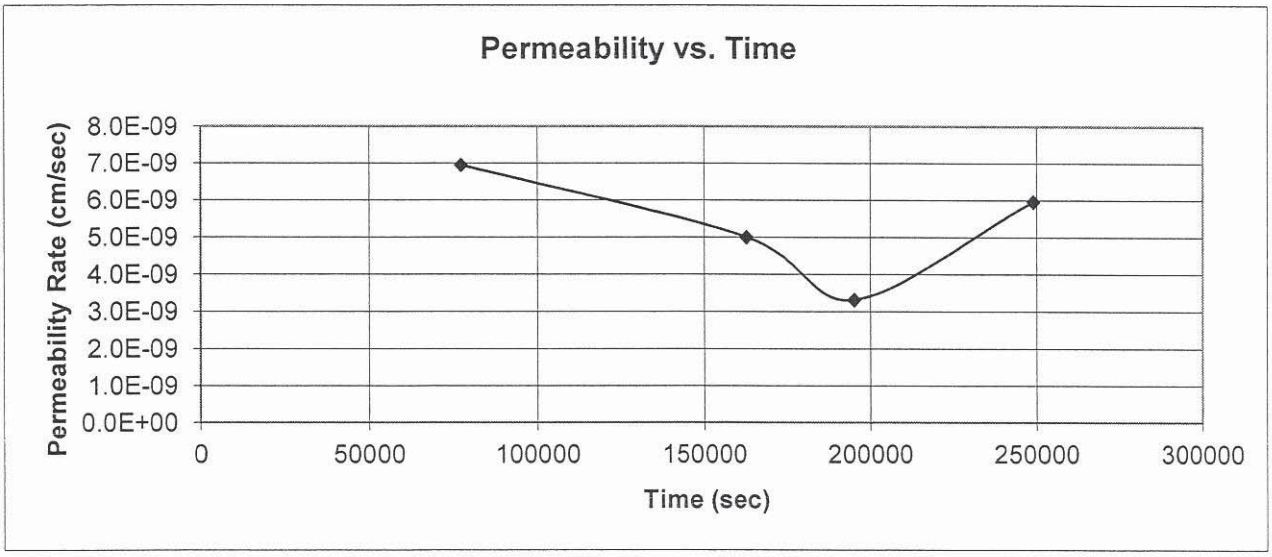
Dia. (in.)	2.80	**Length (in)**	2.94	**Weight (gr)**	504.8
Wet Density (pcf)	106.4	**Moisture Content (%)**	39.9	**Dry Density (pcf)**	76.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.8	**Minimum Hydraulic Gradient**	10.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.3E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-1-4R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

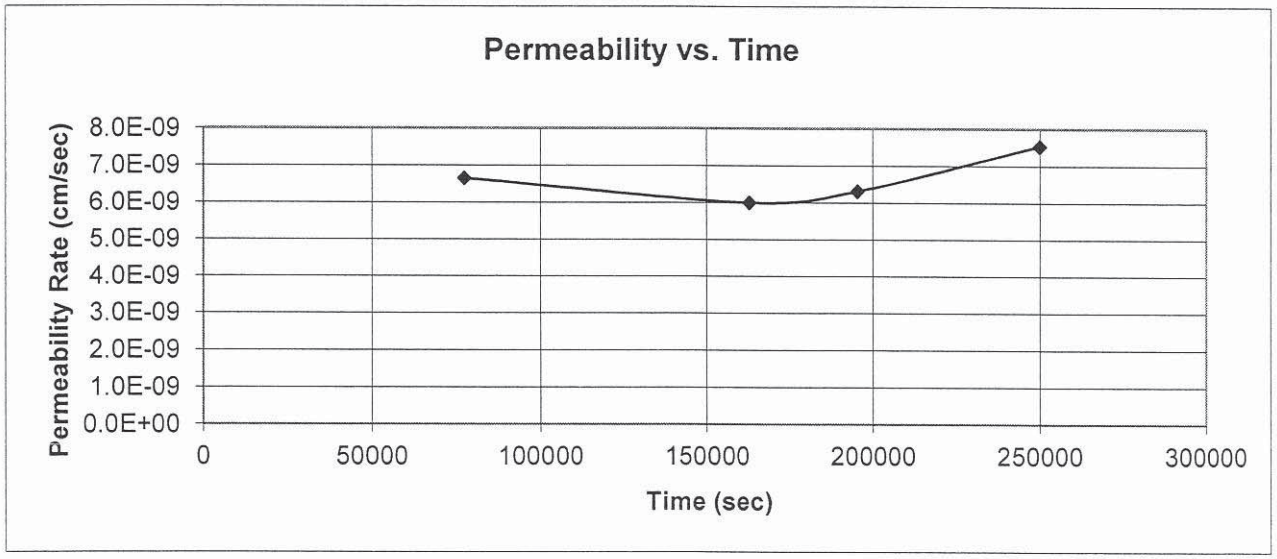
Dia. (in.)	2.84	**Length (in)**	2.91	**Weight (gr)**	519.8
Wet Density (pcf)	107.1	**Moisture Content (%)**	40.8	**Dry Density (pcf)**	76.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.1	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

6.6E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-1-5R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

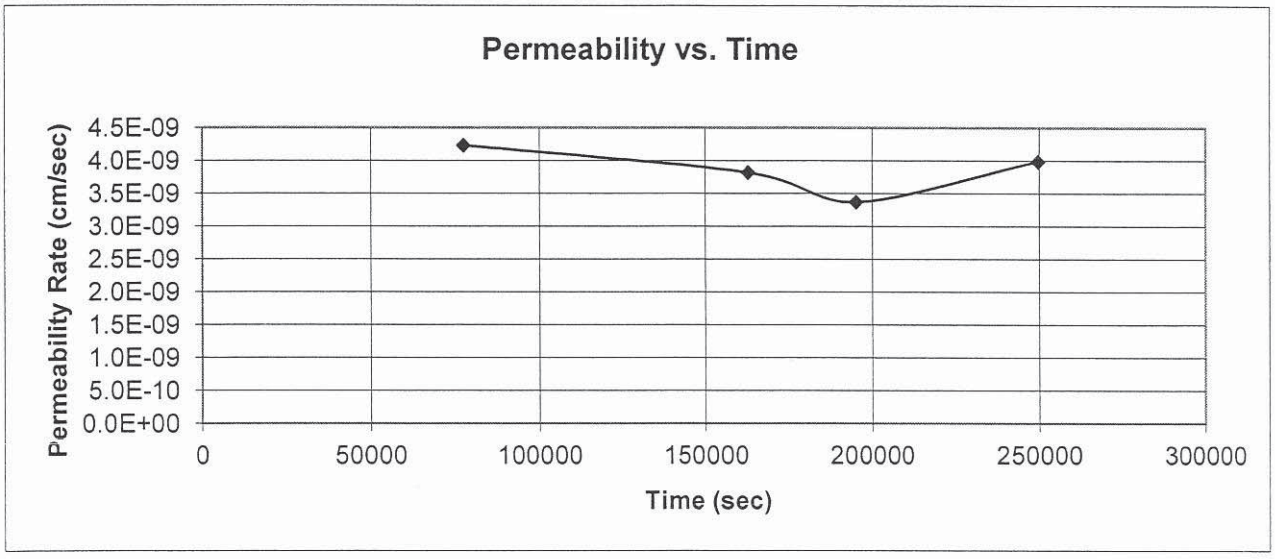
Dia. (in.)	2.75	**Length (in)**	2.89	**Weight (gr)**	492.96
Wet Density (pcf)	109.5	**Moisture Content (%)**	40.8	**Dry Density (pcf)**	77.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.9E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-2-1R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

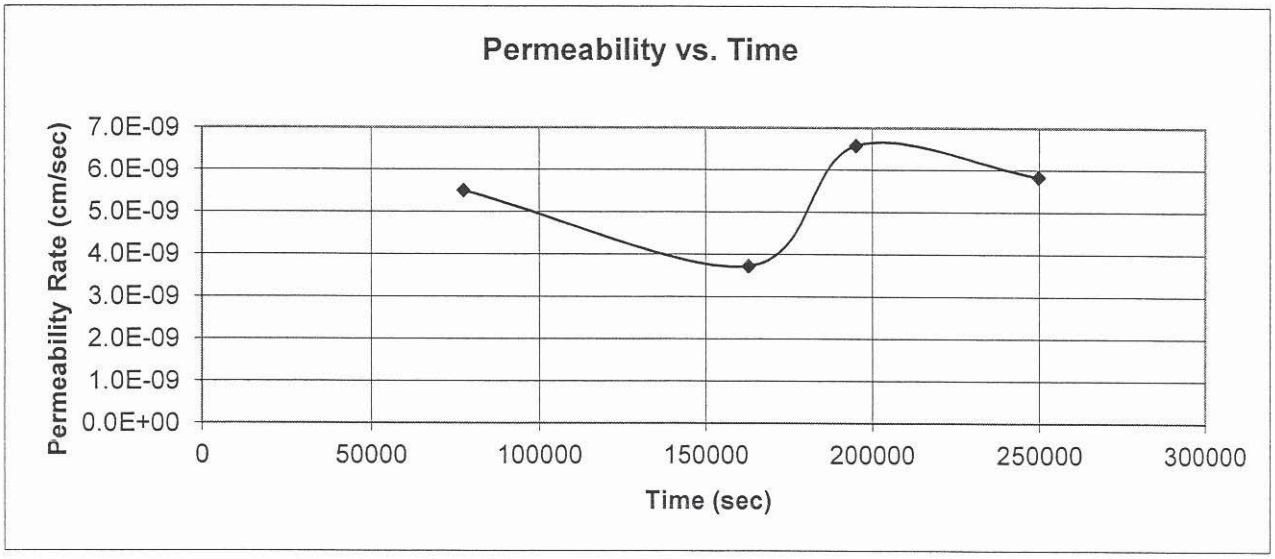
Dia. (in.)	2.78	**Length (in)**	2.88	**Weight (gr)**	496.71
Wet Density (pcf)	108.3	**Moisture Content (%)**	40.3	**Dry Density (pcf)**	77.2

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.4E-09



Reviewed By:

Corey Chascin 10.22.14

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-2-2R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

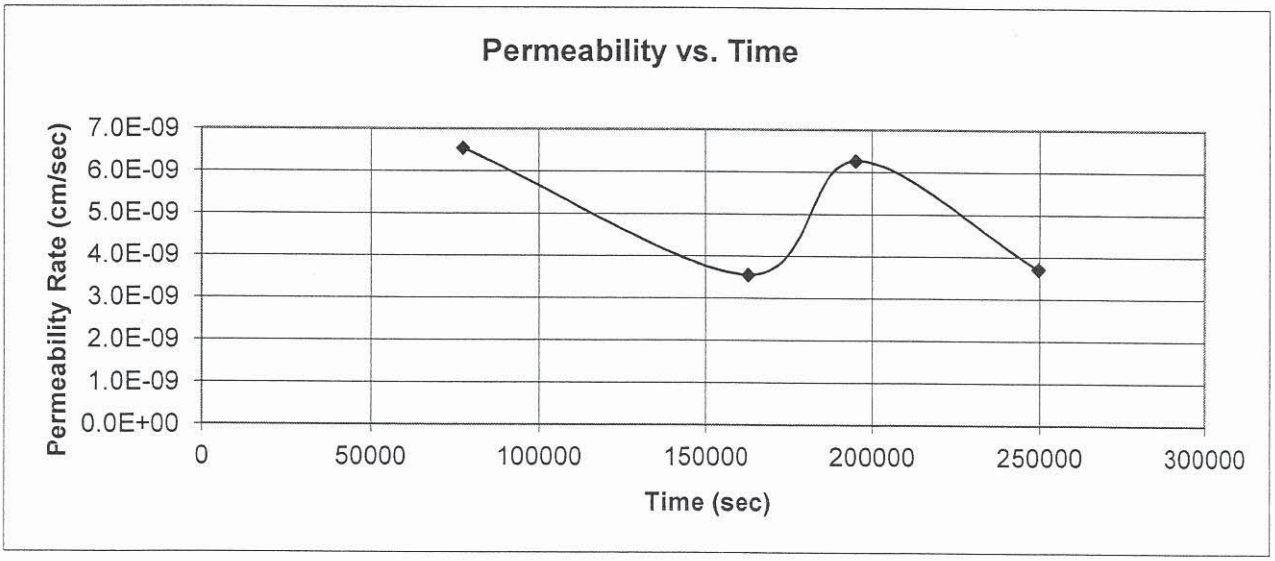
Dia. (in.)	2.85	**Length (in)**	2.88	**Weight (gr)**	524.7
Wet Density (pcf)	108.5	**Moisture Content (%)**	37.6	**Dry Density (pcf)**	78.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.0E-09



Reviewed By:

Corey Chascin 10.22.14

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-2-3R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

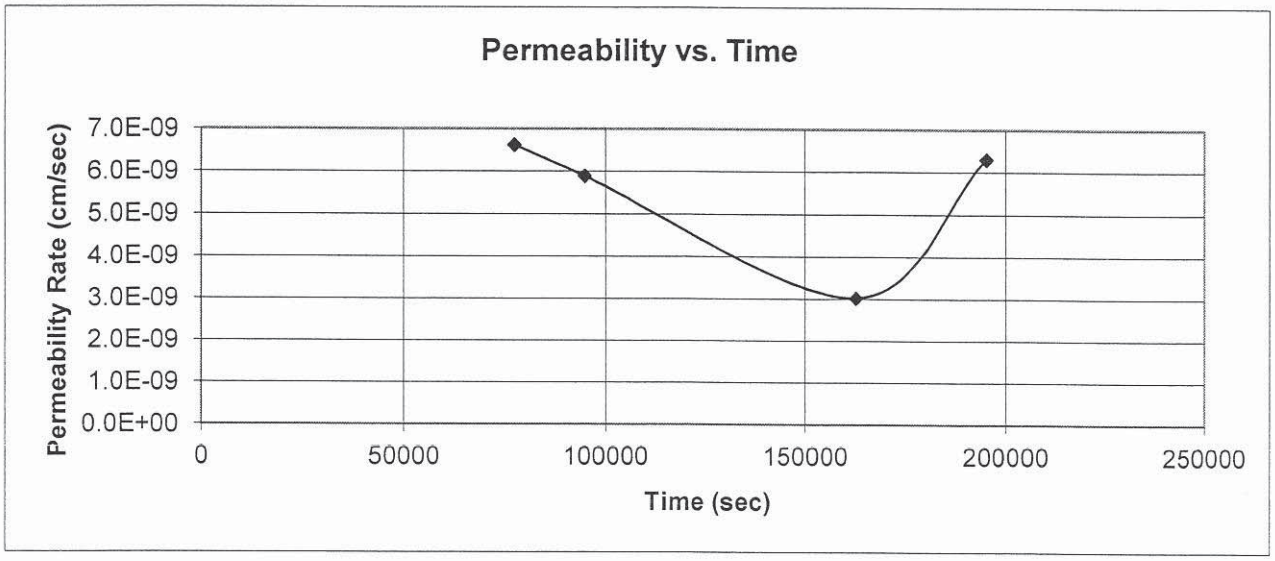
Dia. (in.)	2.84	**Length (in)**	2.90	**Weight (gr)**	510
Wet Density (pcf)	105.6	**Moisture Content (%)**	40.3	**Dry Density (pcf)**	75.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.1	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.5E-09



Reviewed By:

Corey T. Chascin 10.22.14

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-2-4R	**Date Completed:**	October 22, 2014
Location:	NA		

Sample Information:

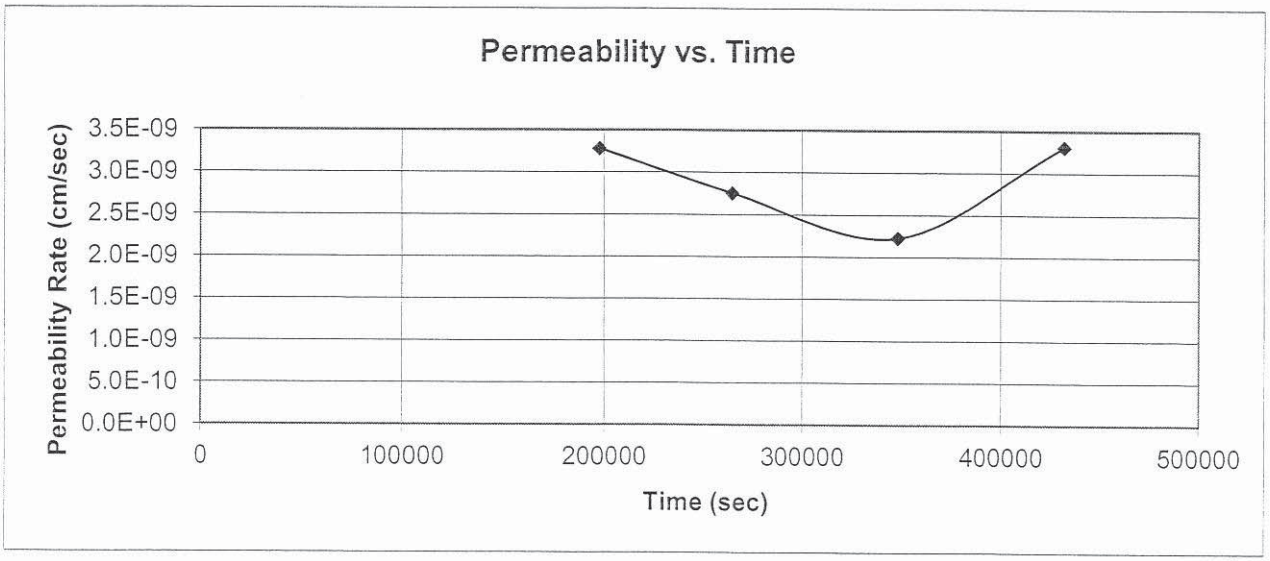
Dia. (in.)	2.94	**Length (in)**	2.81	**Weight (gr)**	519.8
Wet Density (pcf)	103.4	**Moisture Content (%)**	41.8	**Dry Density (pcf)**	73.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.8	**Minimum Hydraulic Gradient**	11.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

2.9E-09

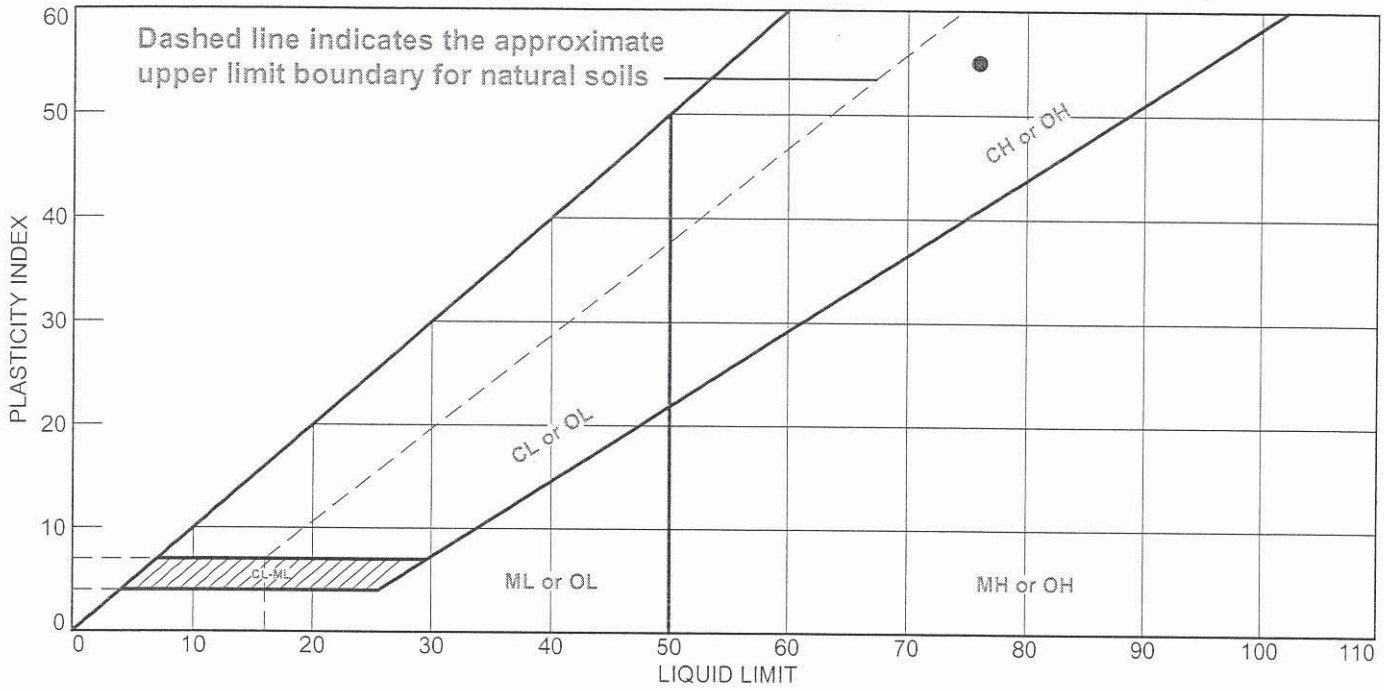


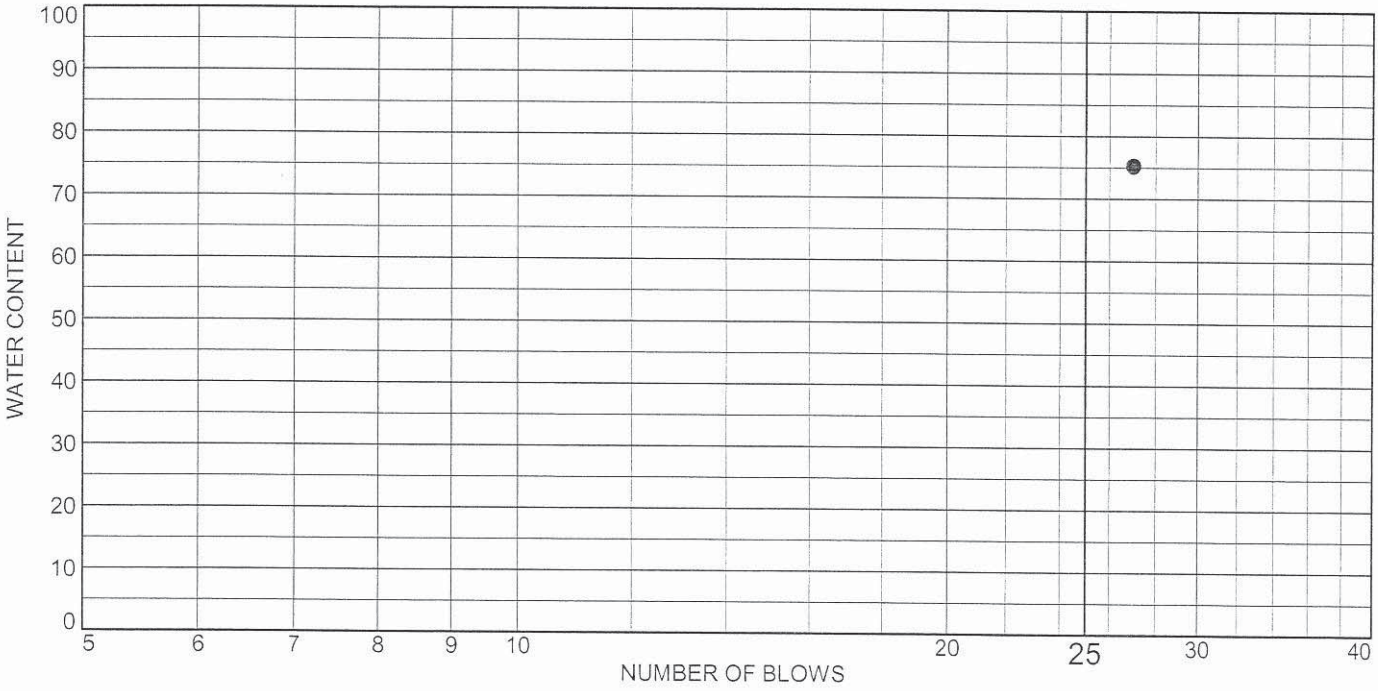
Reviewed By:

Corey T. Chascin 10.29.14

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	76	21	55		54.5	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-1R
Sample Number: TC-1-1R

Remarks:

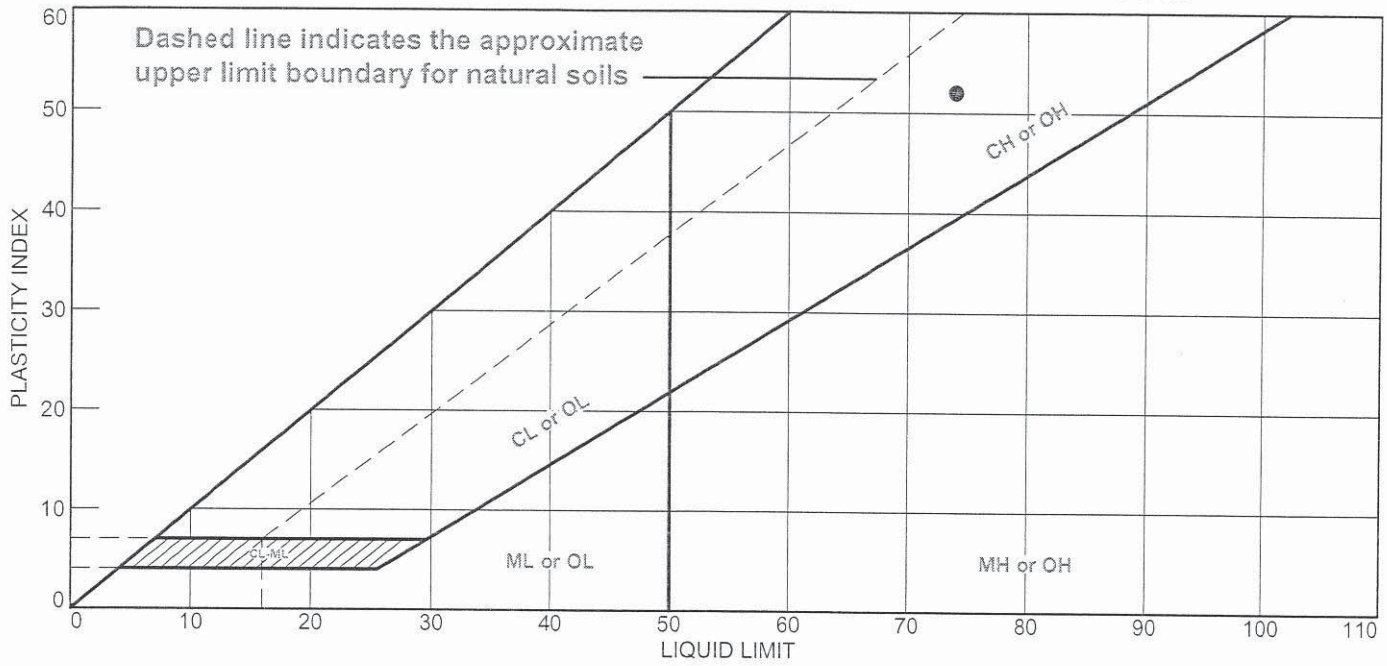
AMEC E&I

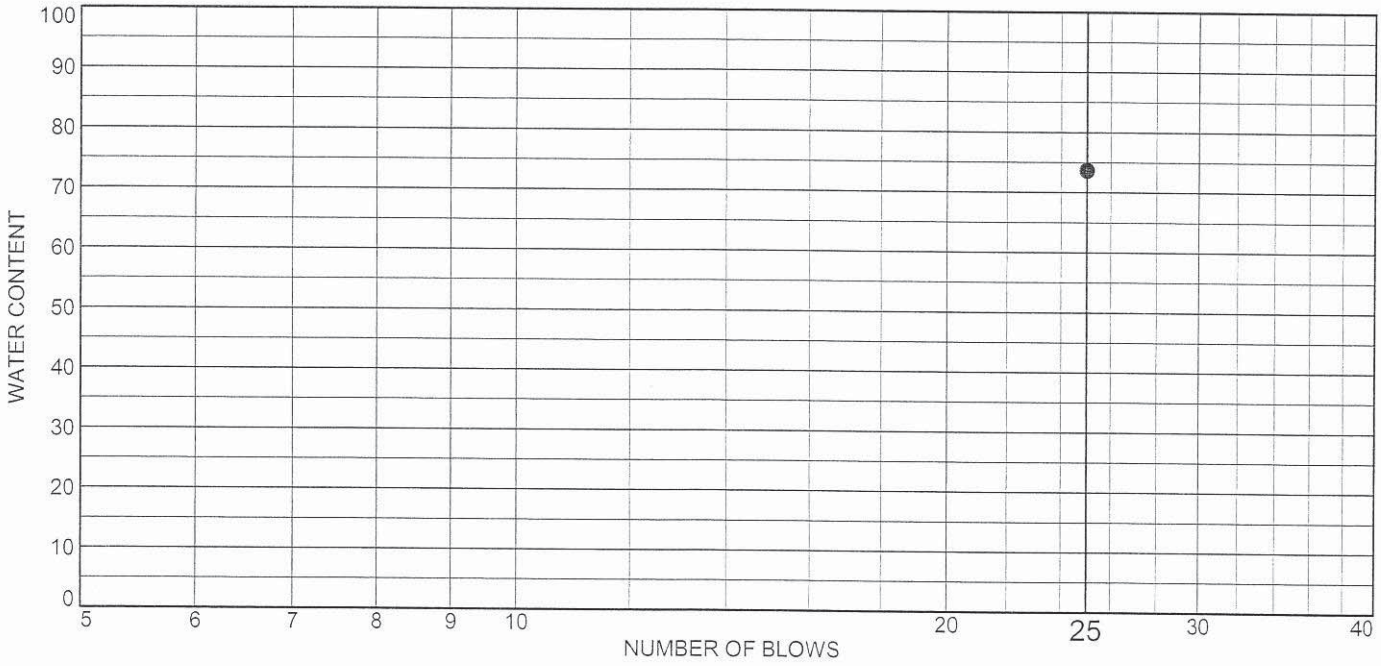
Jacksonville, Florida

Figure

Corey Chase 10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Clayey SAND	74	22	52		47.1	SC

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-2R
Sample Number: TC-1-2R

Remarks:

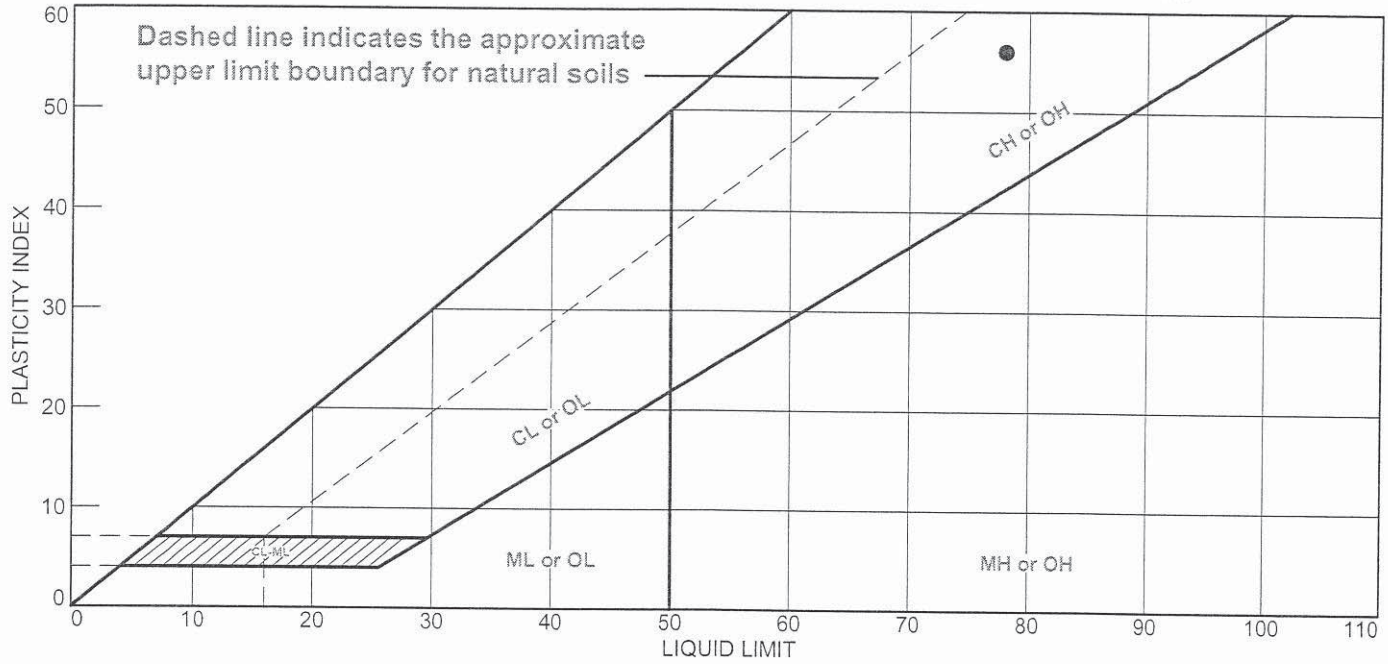
AMEC E&I

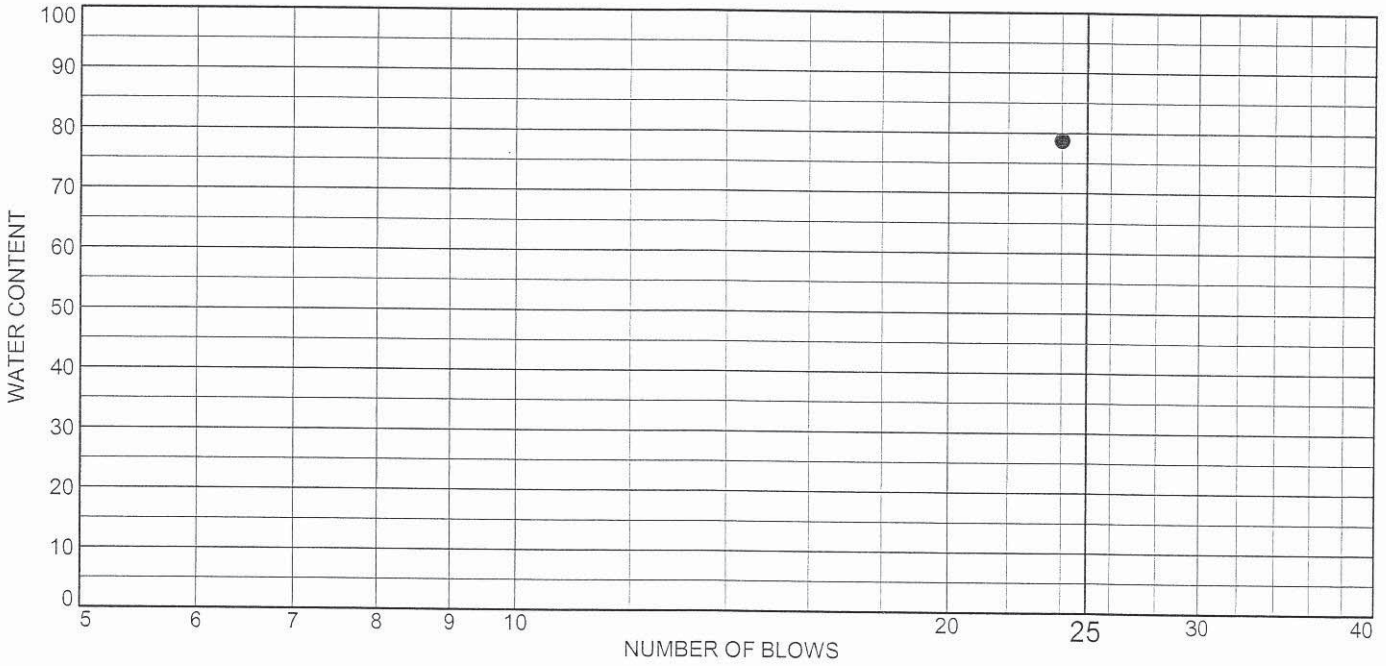
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	78	22	56		51.4	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-3R
Sample Number: TC-1-3R

Remarks:

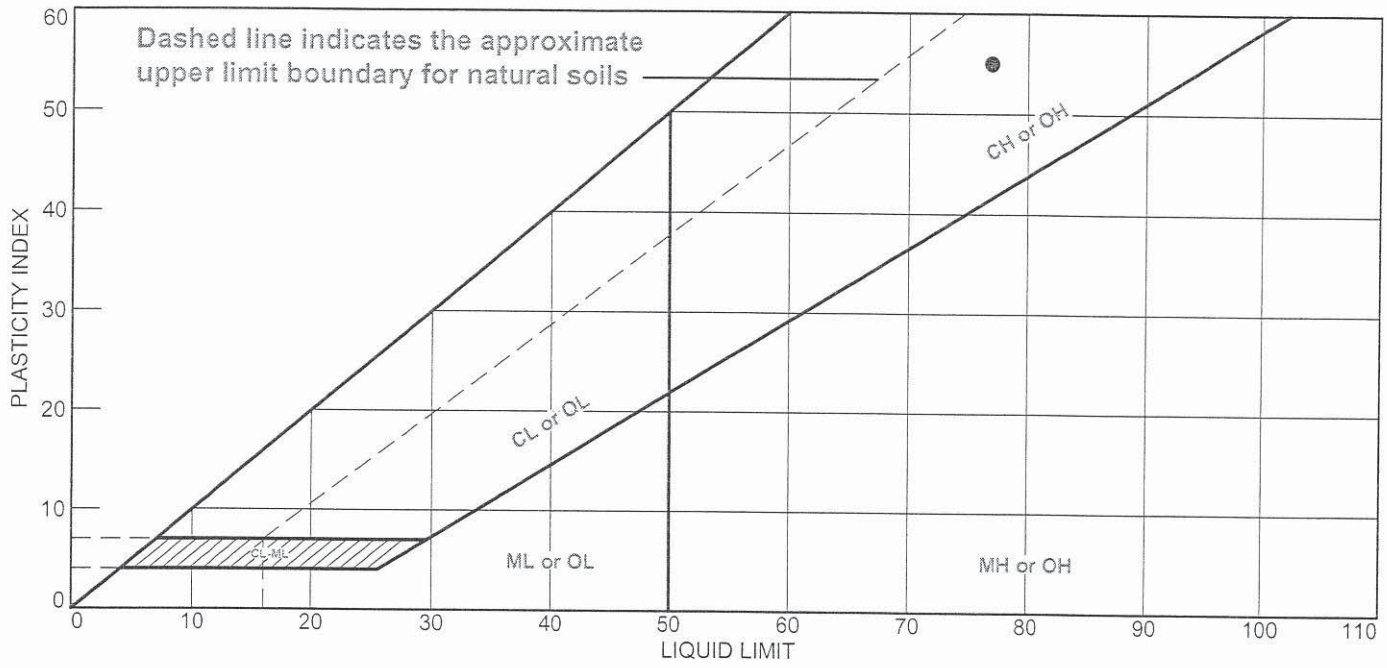
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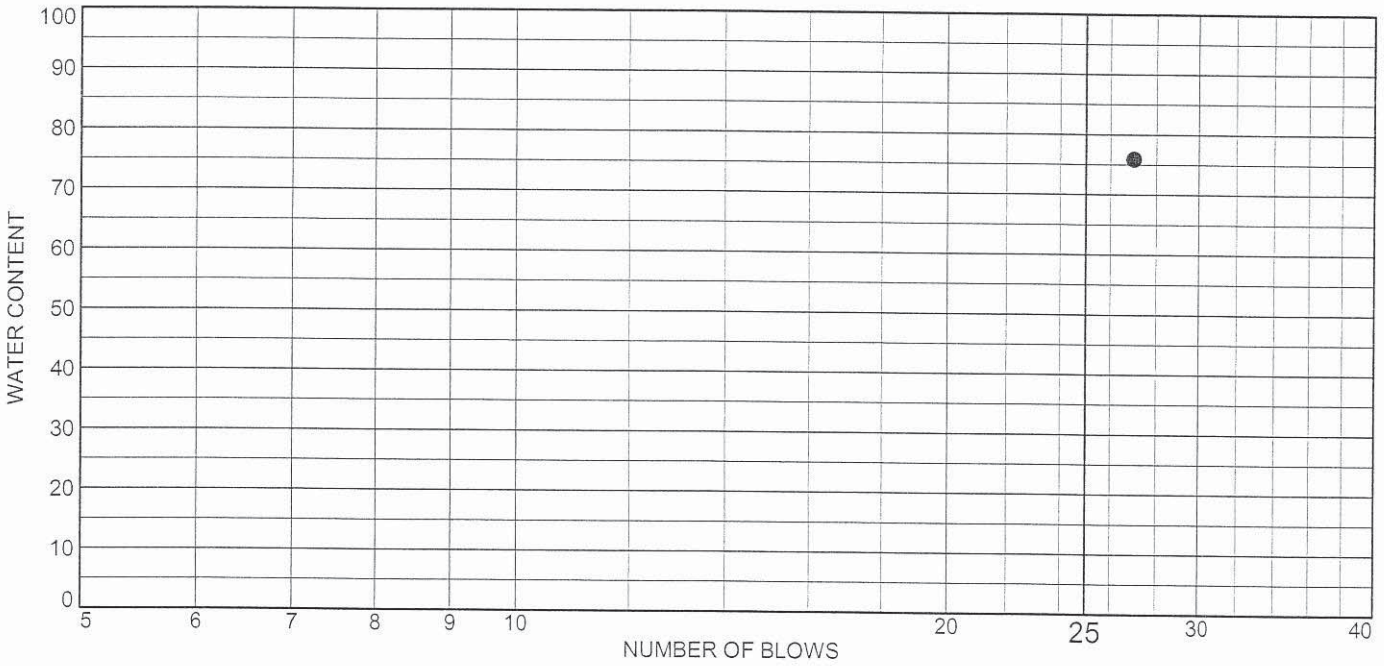
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Clayey SAND	77	22	55		46.8	SC

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-4R
Sample Number: TC-1-4R

Remarks:

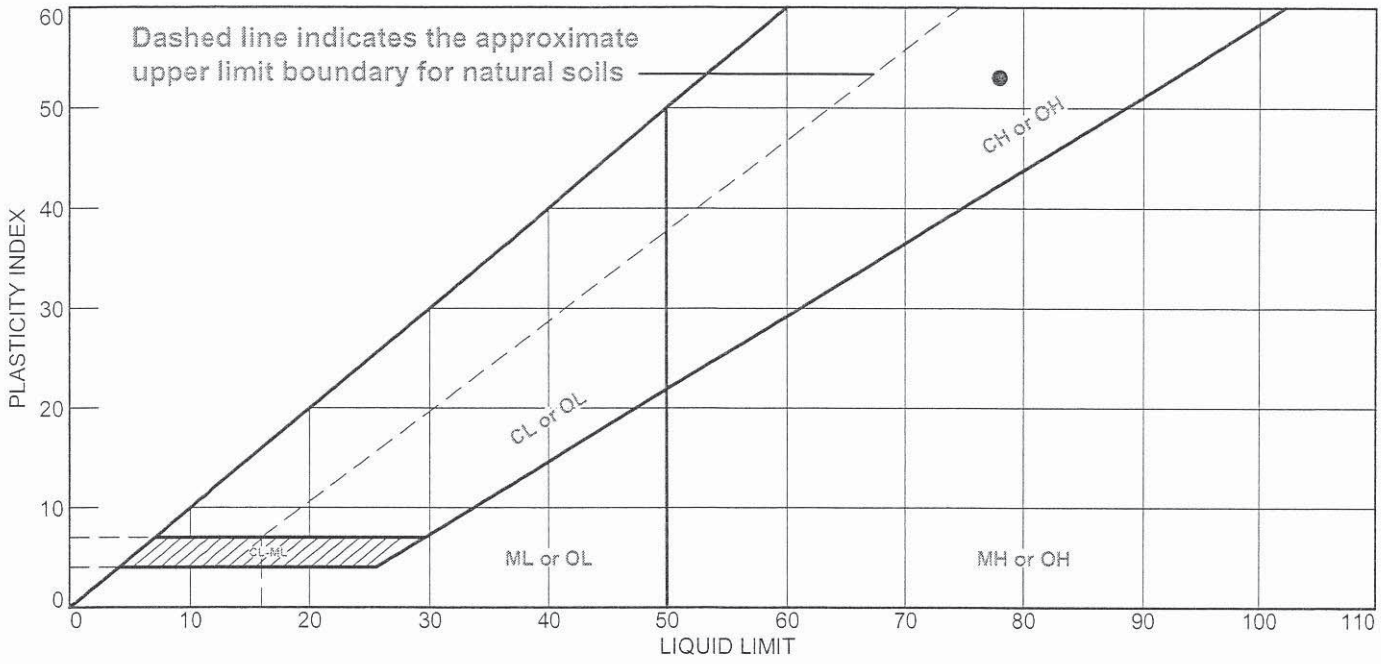
AMEC E&I

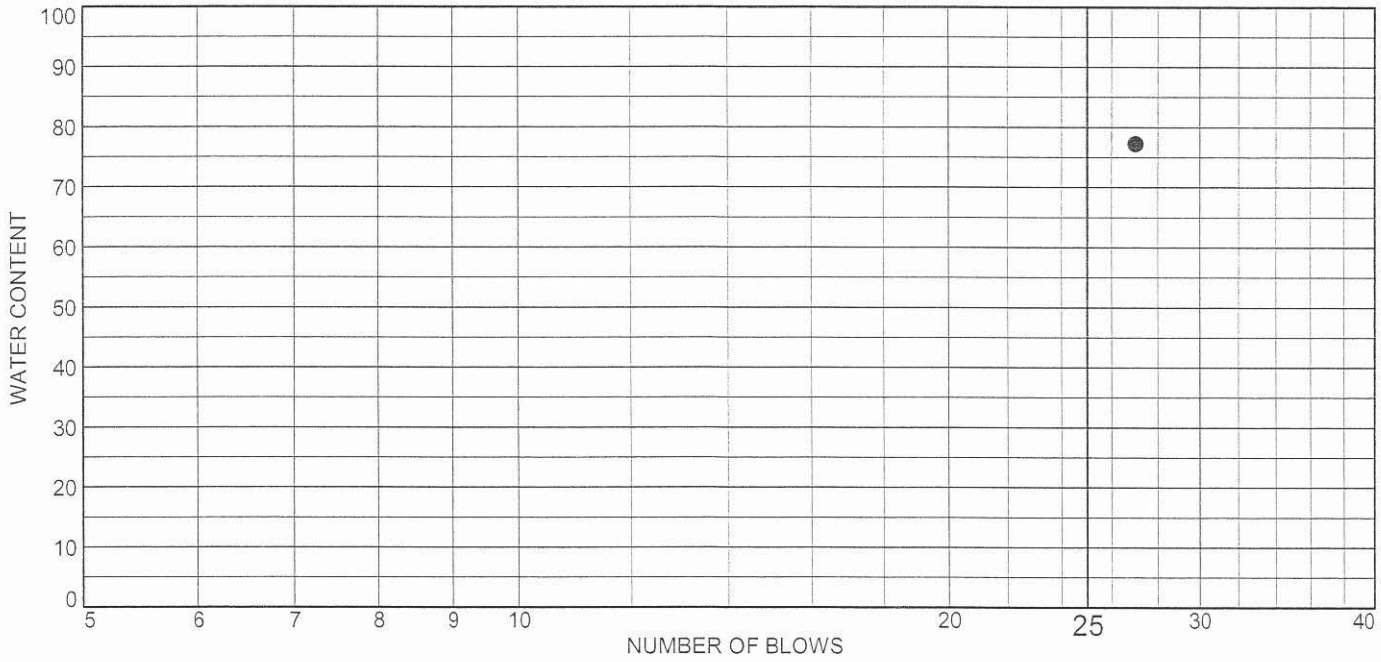
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	78	25	53		56.1	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-5R
Sample Number: TC-1-5R

AMEC E&I

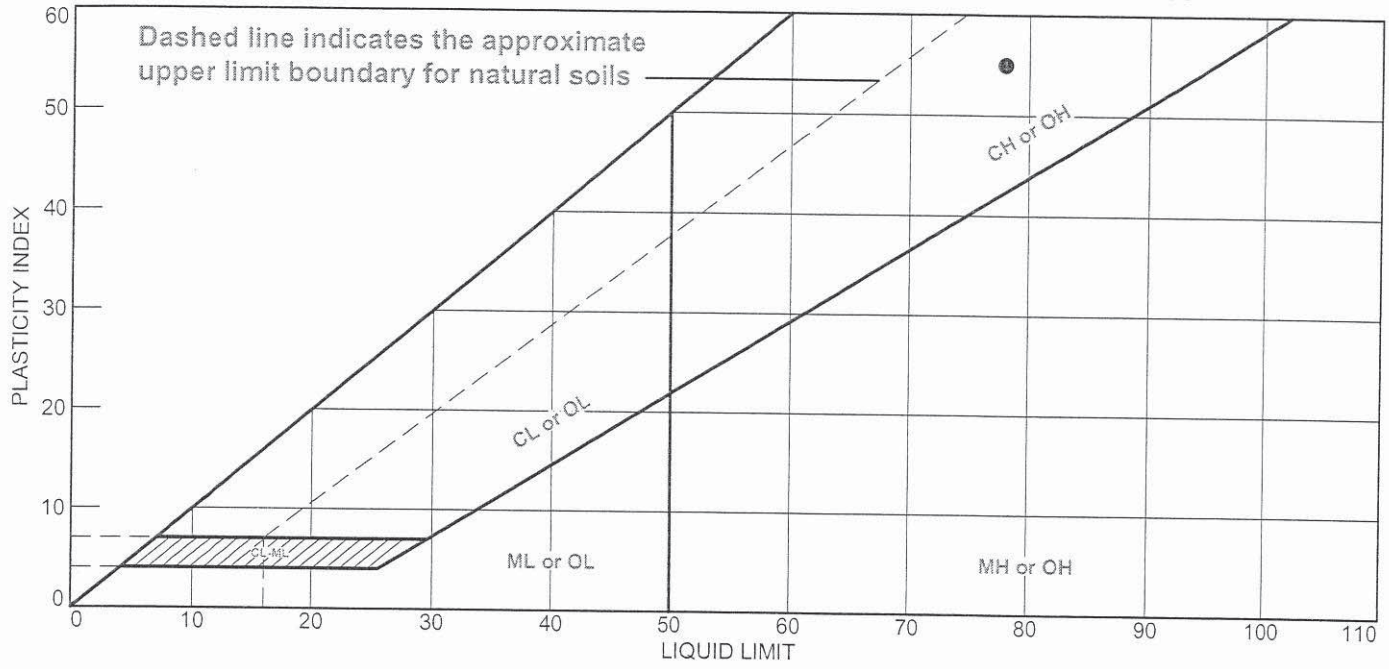
Jacksonville, Florida

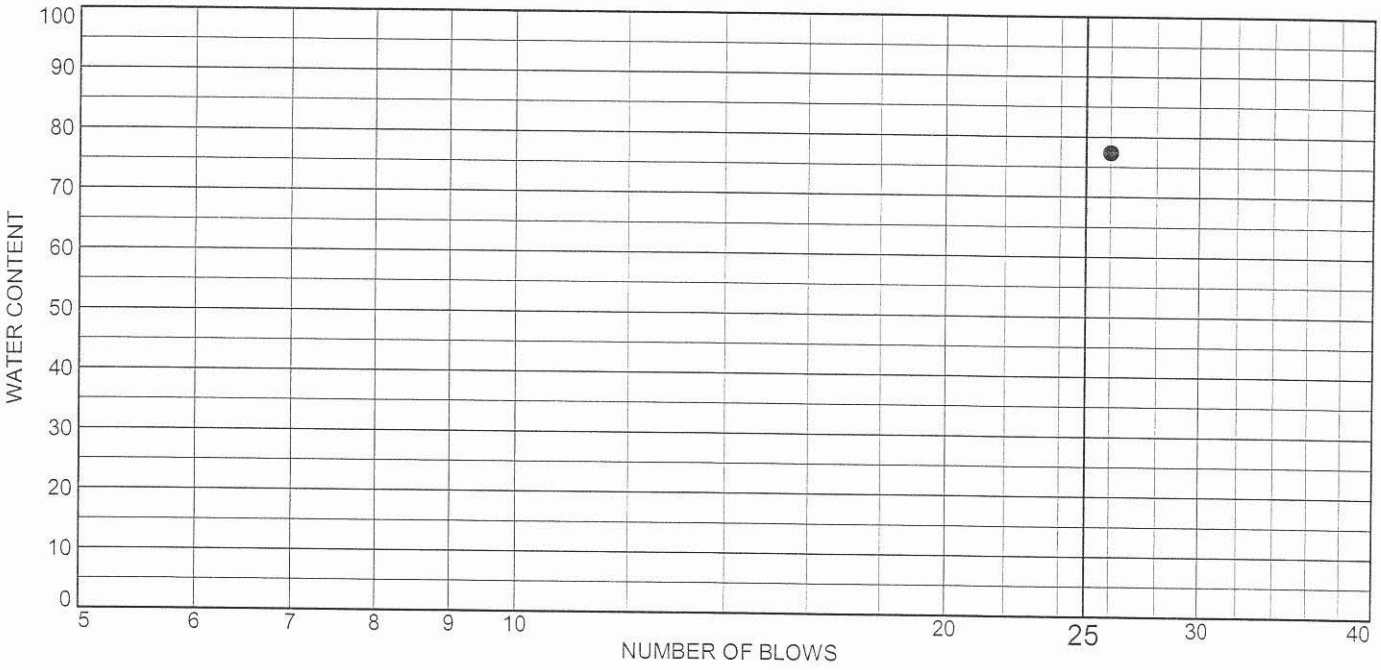
Remarks:

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	78	23	55		53.7	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-1R
Sample Number: TC-2-1R

Remarks:

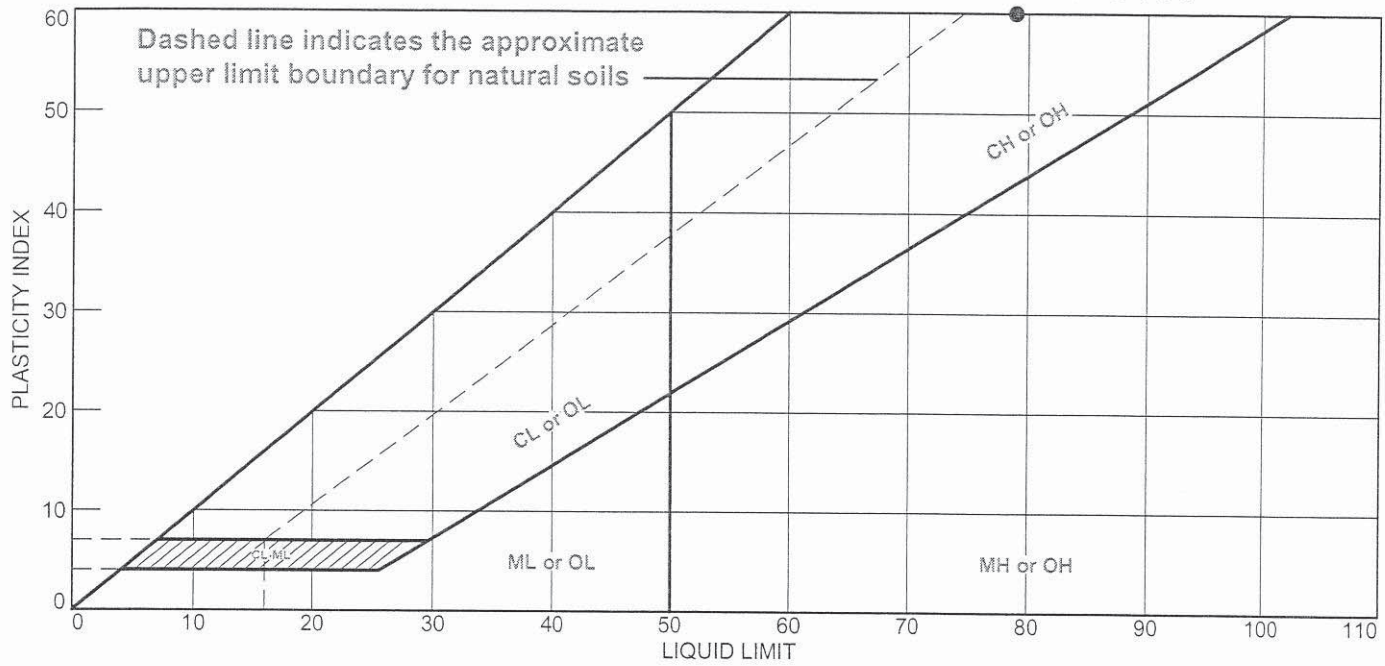
AMEC E&I

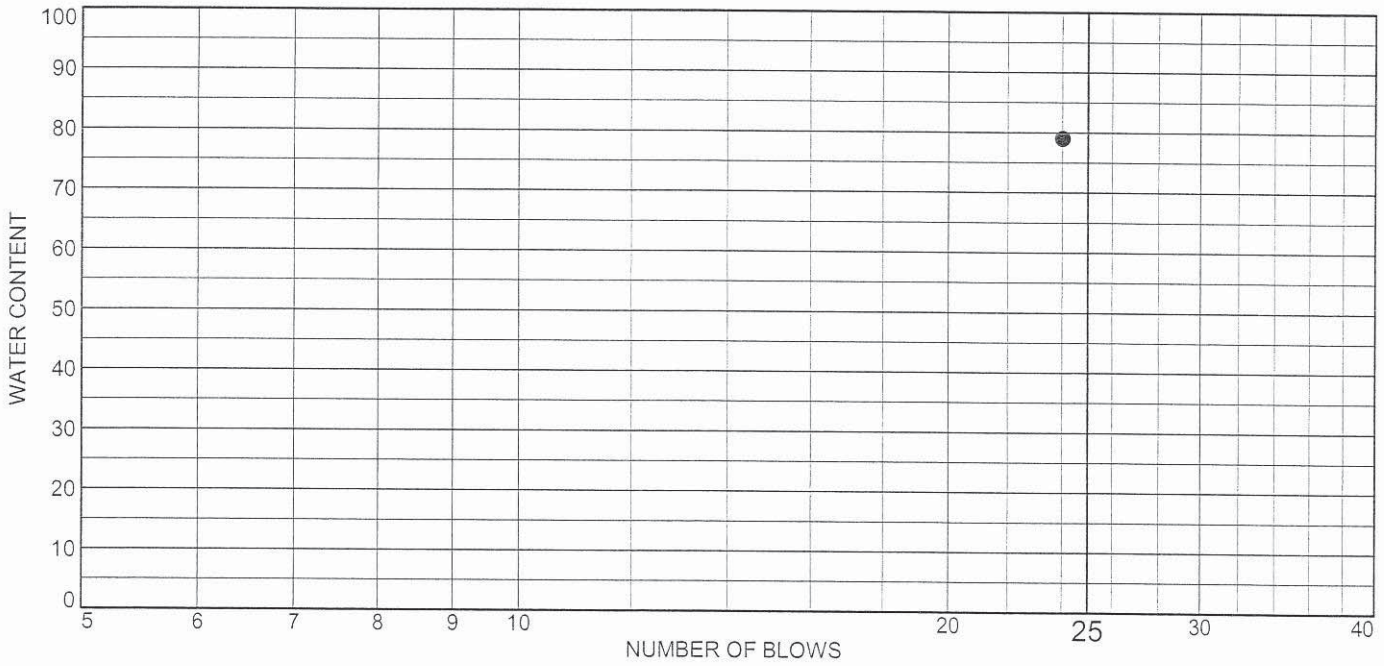
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	79	19	60		55.0	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-2R
Sample Number: TC-2-2R

AMEC E&I

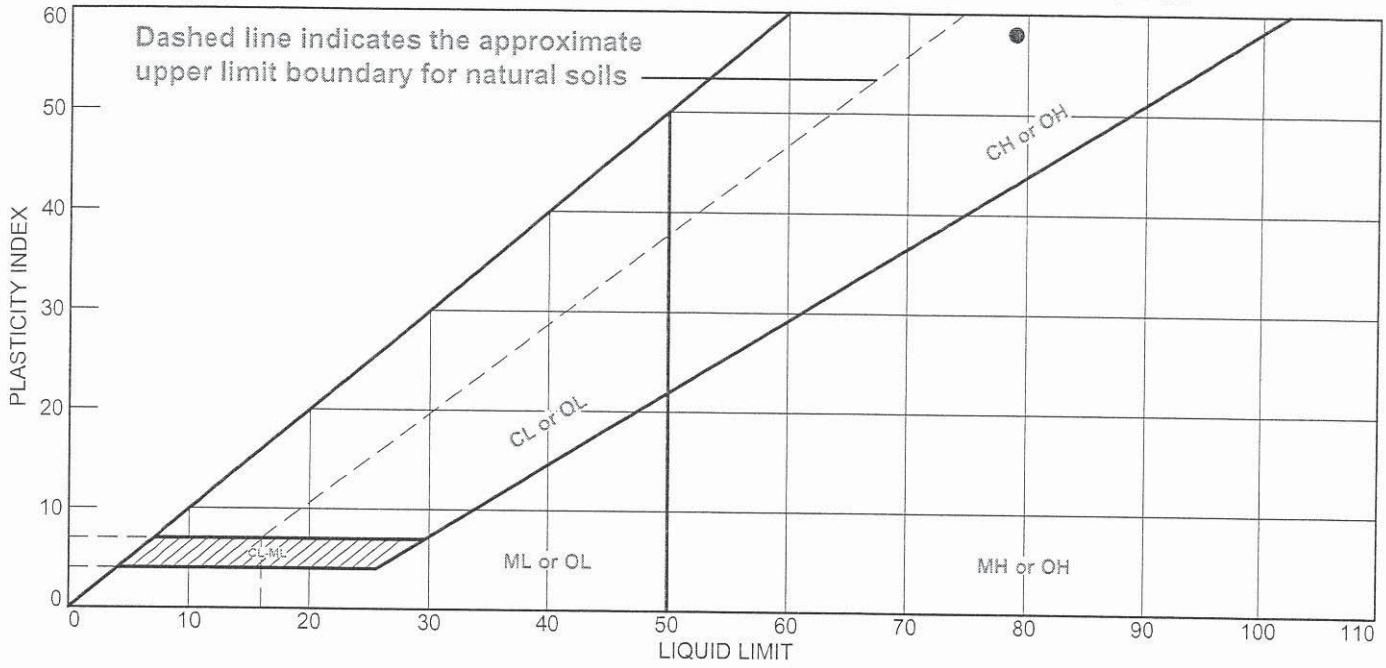
Jacksonville, Florida

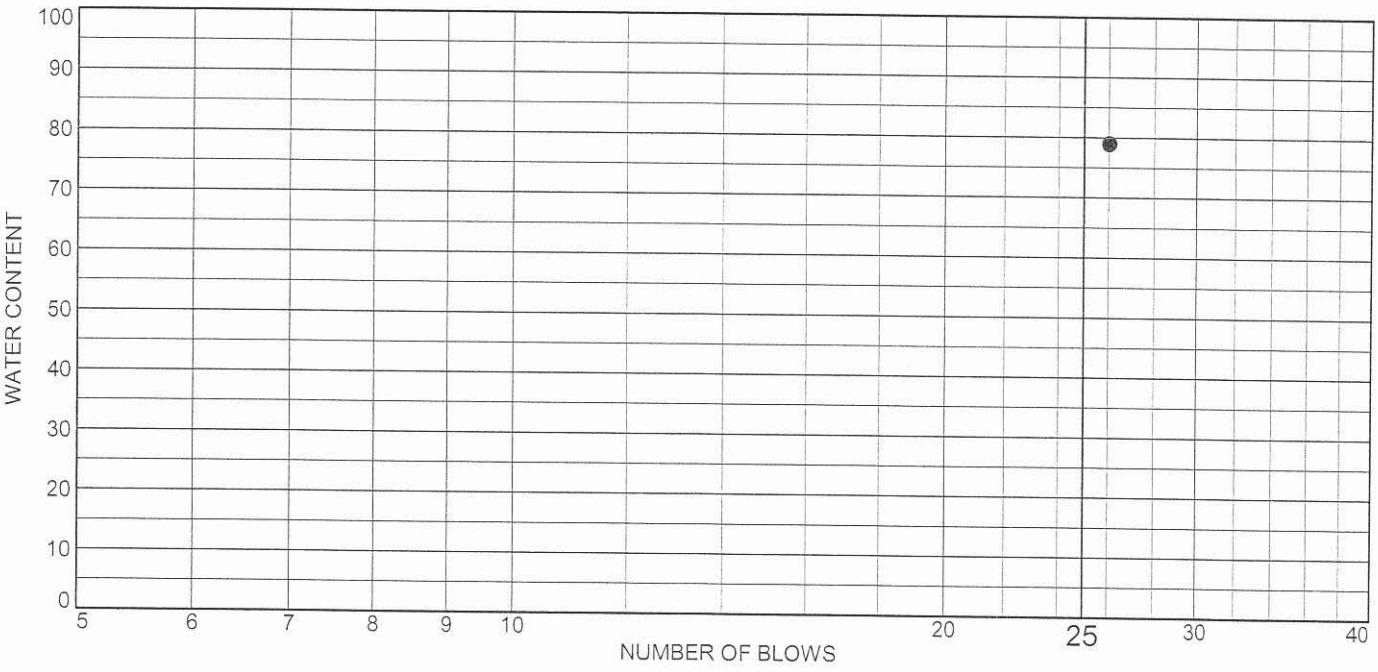
Remarks:

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	79	21	58		54.3	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-3R
Sample Number: TC-2-3R

Remarks:

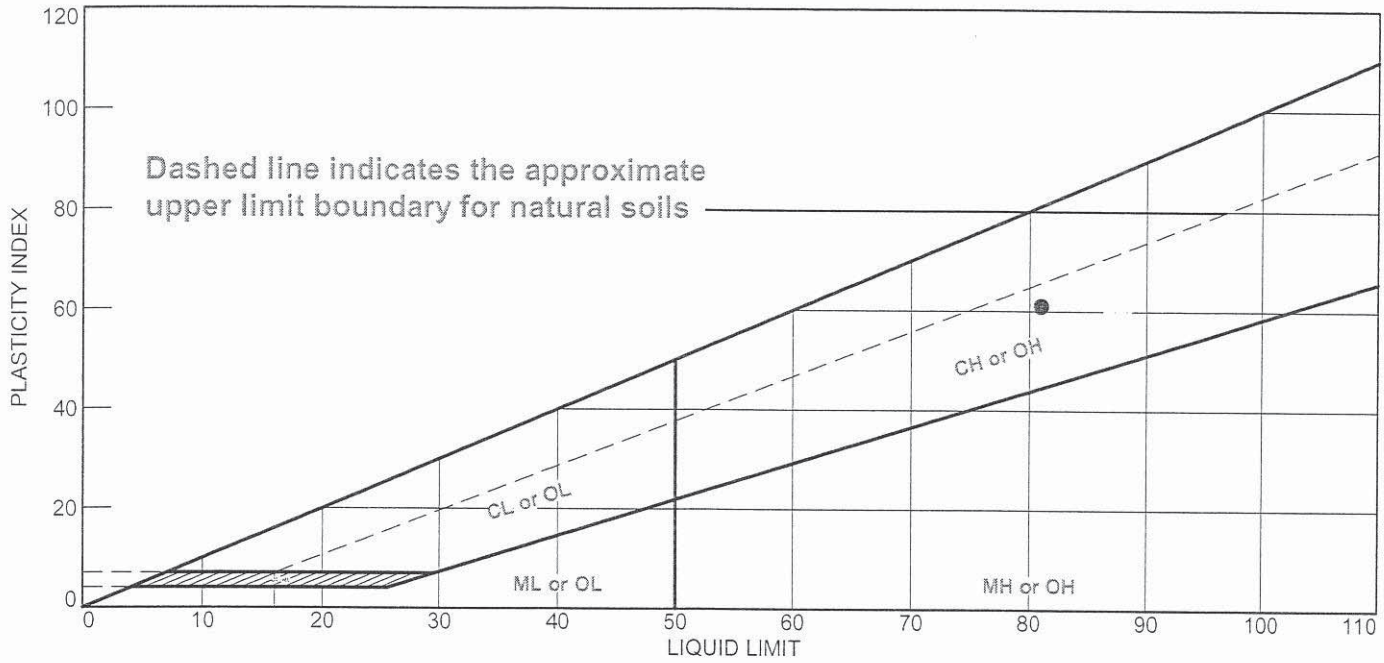
AMEC E&I

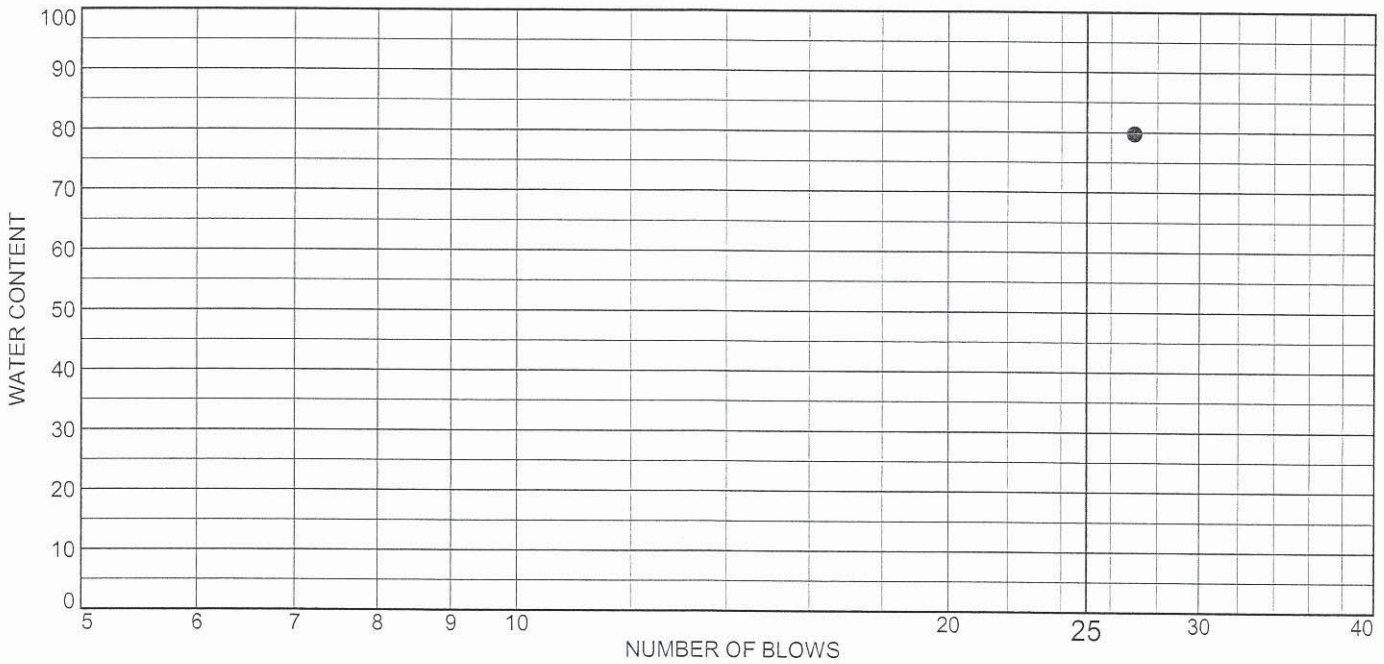
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	81	20	61		56.8	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-4R
Sample Number: TC-2-4R

Remarks:

AMEC E&I

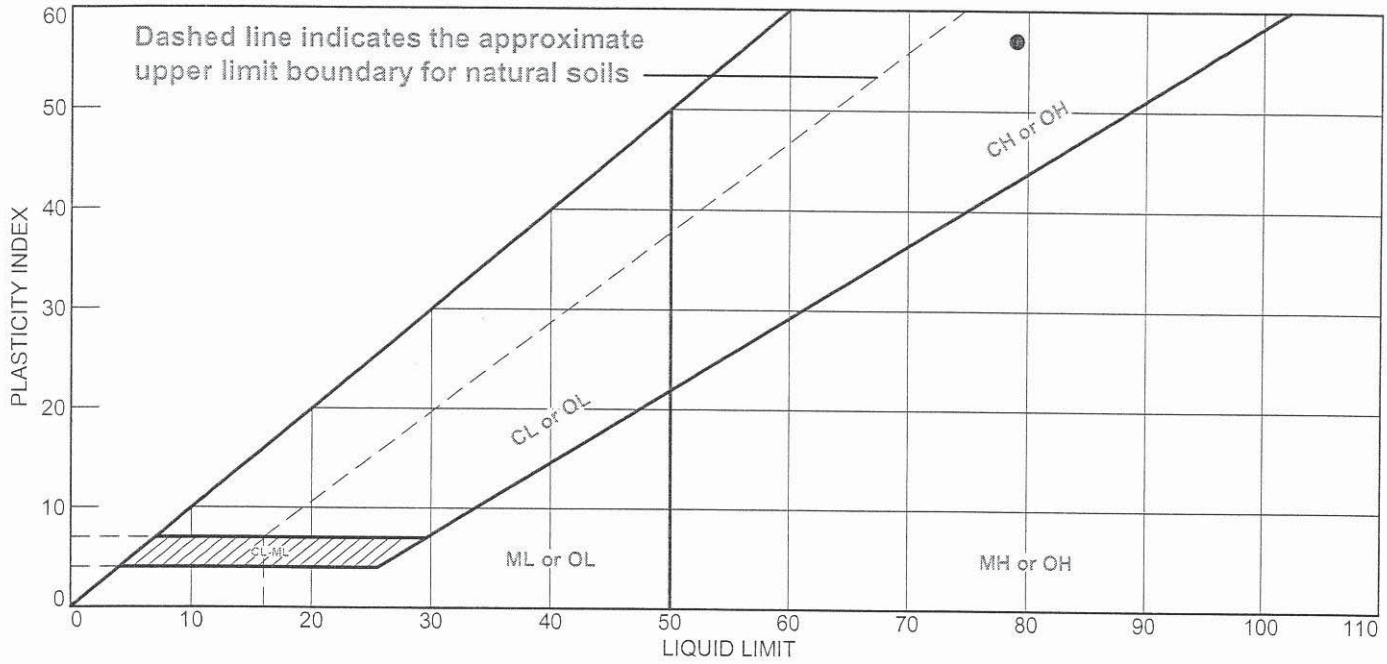
Jacksonville, Florida

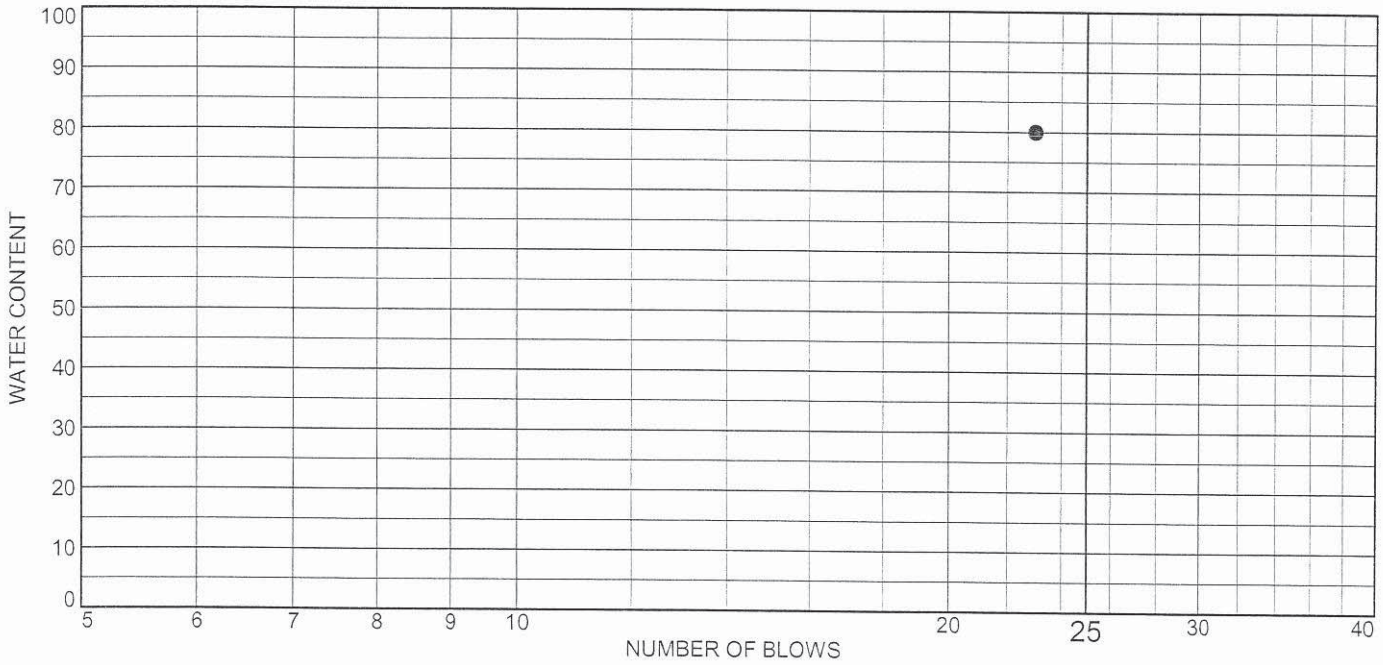
Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

Corey Chascin
10.29.14

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	79	22	57		55.4	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-5R
Sample Number: TC-2-5R

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.29.14

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge
Project Number: 6736-13-5237
Client Meskel & Assc
Date Received: December 18, 2014
Sample Number: C2-173
Date Completed: December 24, 2014

Sample Information:

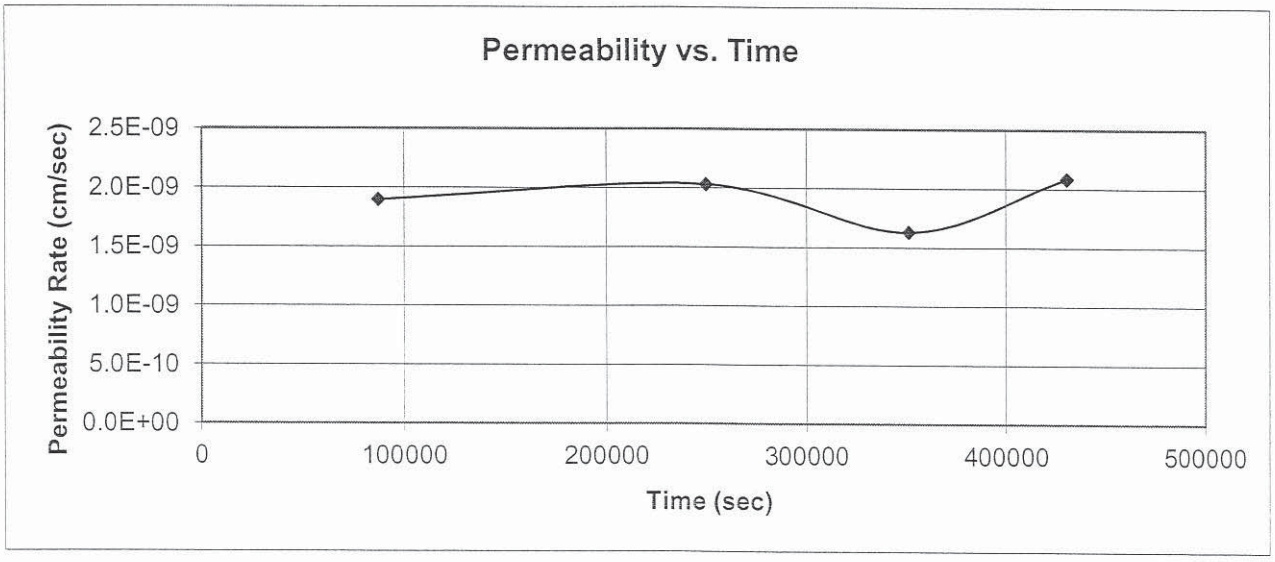
Dia. (in.)	2.83	**Length (in)**	2.32	**Weight (gr)**	438.21
Wet Density (pcf)	114.1	**Moisture Content (%)**	32.2	**Dry Density (pcf)**	86.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	27.7	**Minimum Hydraulic Gradient**	13.8
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

1.9E-09

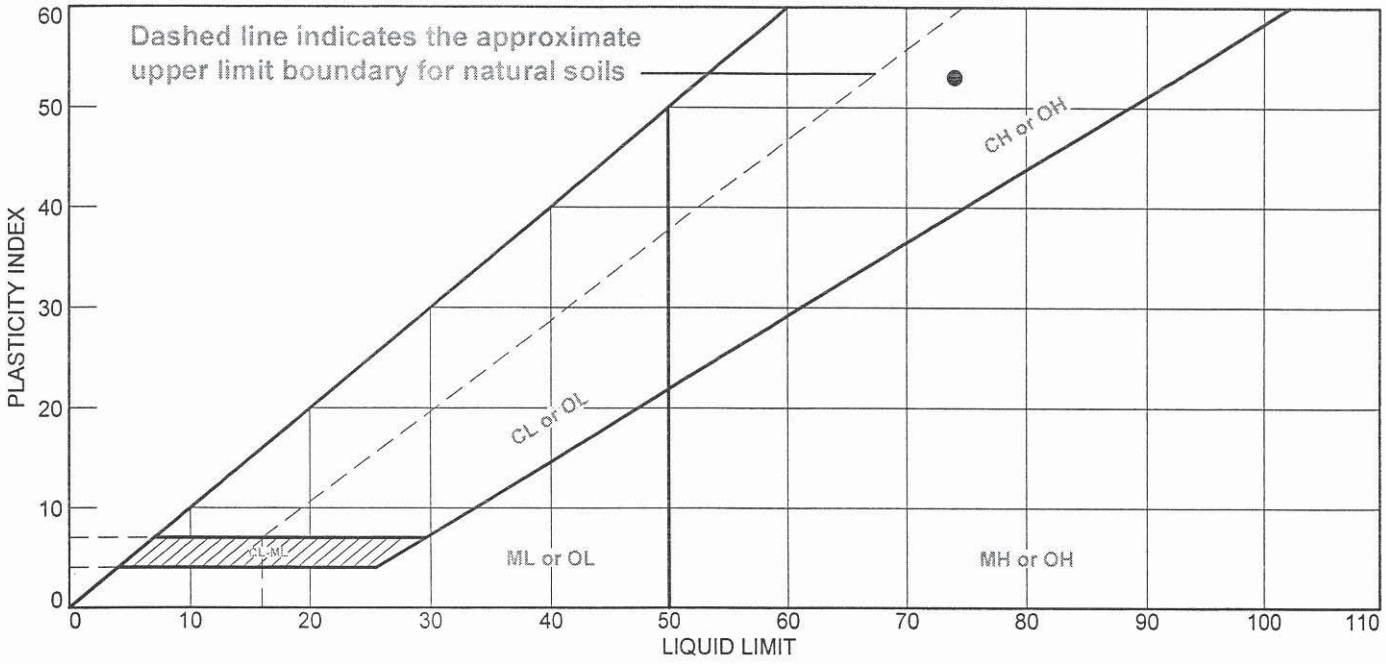


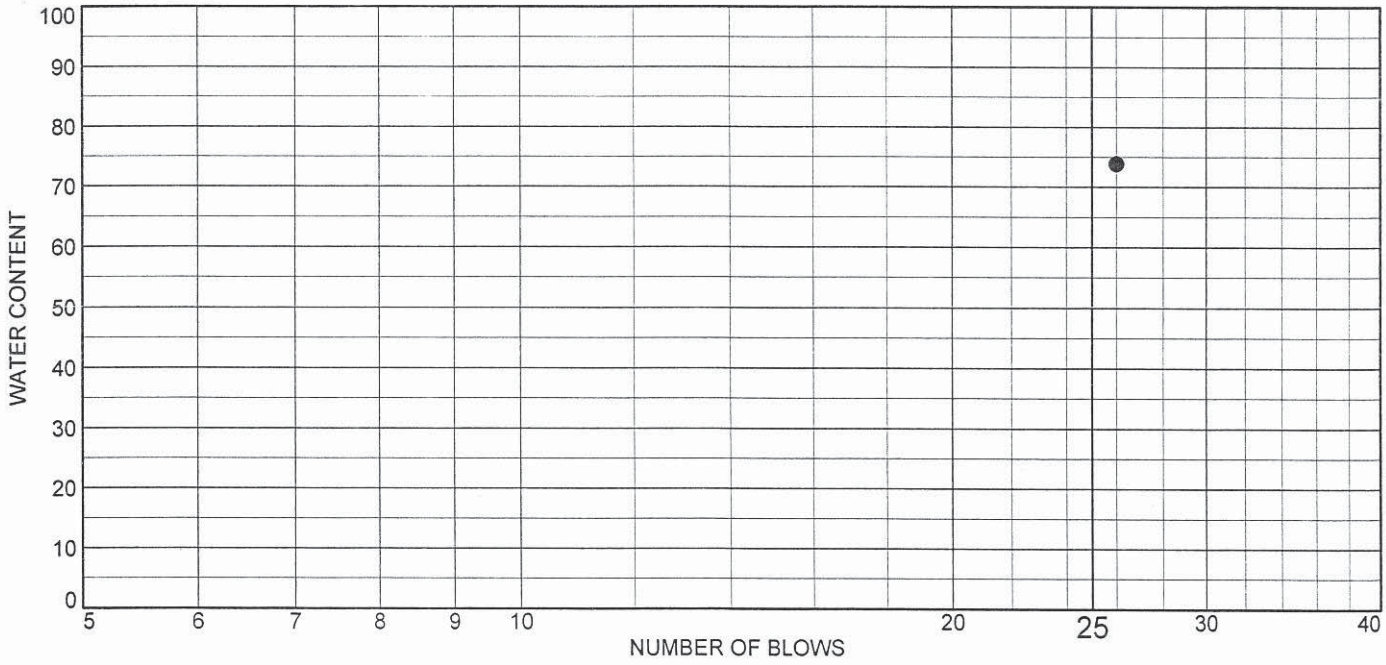
Reviewed By:

Corey Chascin 2.17.15

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Clayey SAND	74	21	53		47.2	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C2-173
Sample Number: C2-173

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: C. Martin **Checked By:** Corey T. Chascin, E.I. Corey Chascin 1.7.15

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	December 18, 2014
Sample Number:	C1-178	**Date Completed:**	December 24, 2014

Sample Information:

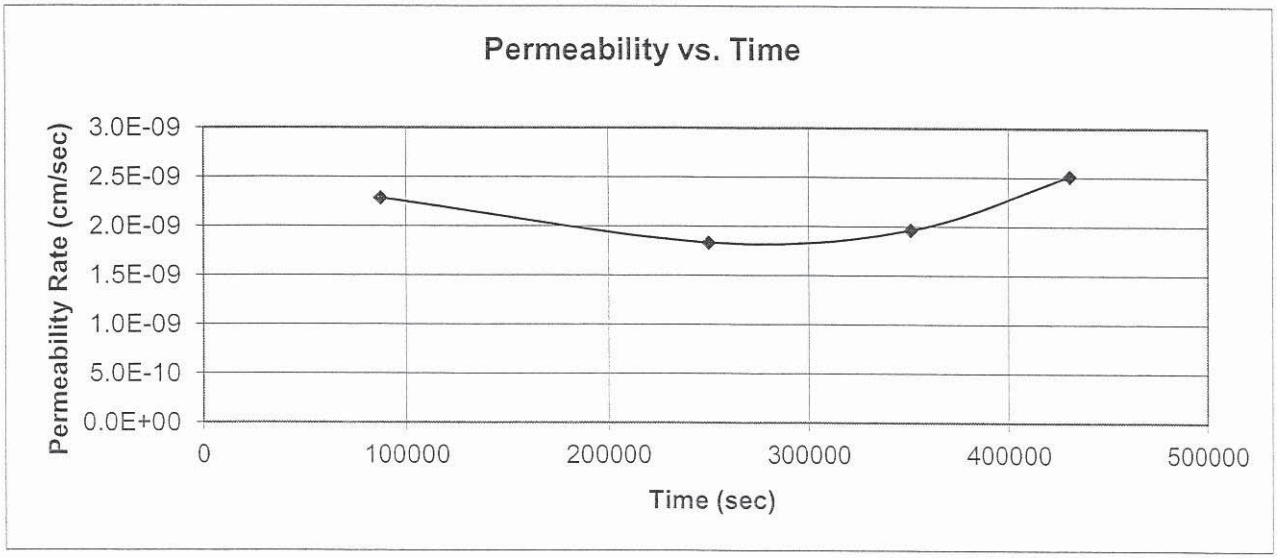
Dia. (in.)	2.83	**Length (in)**	2.80	**Weight (gr)**	475.12
Wet Density (pcf)	102.6	**Moisture Content (%)**	41.9	**Dry Density (pcf)**	72.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.0	**Minimum Hydraulic Gradient**	11.5
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

2.1E-09

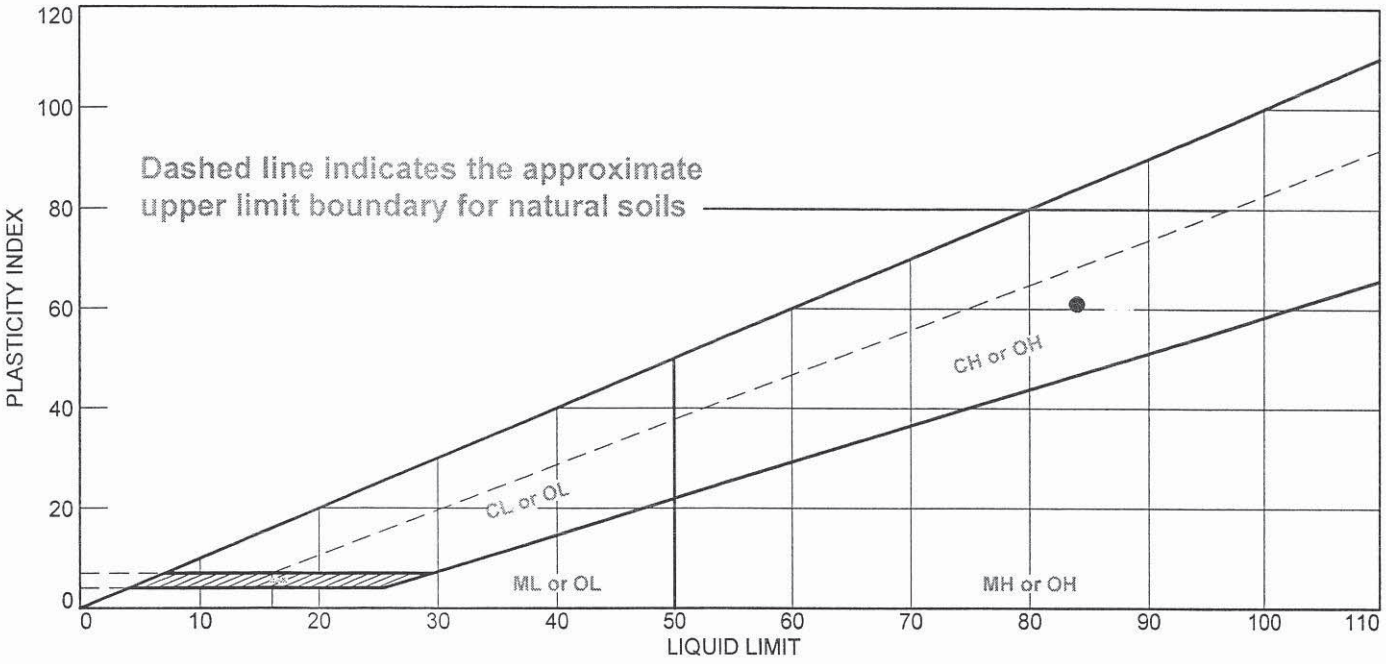


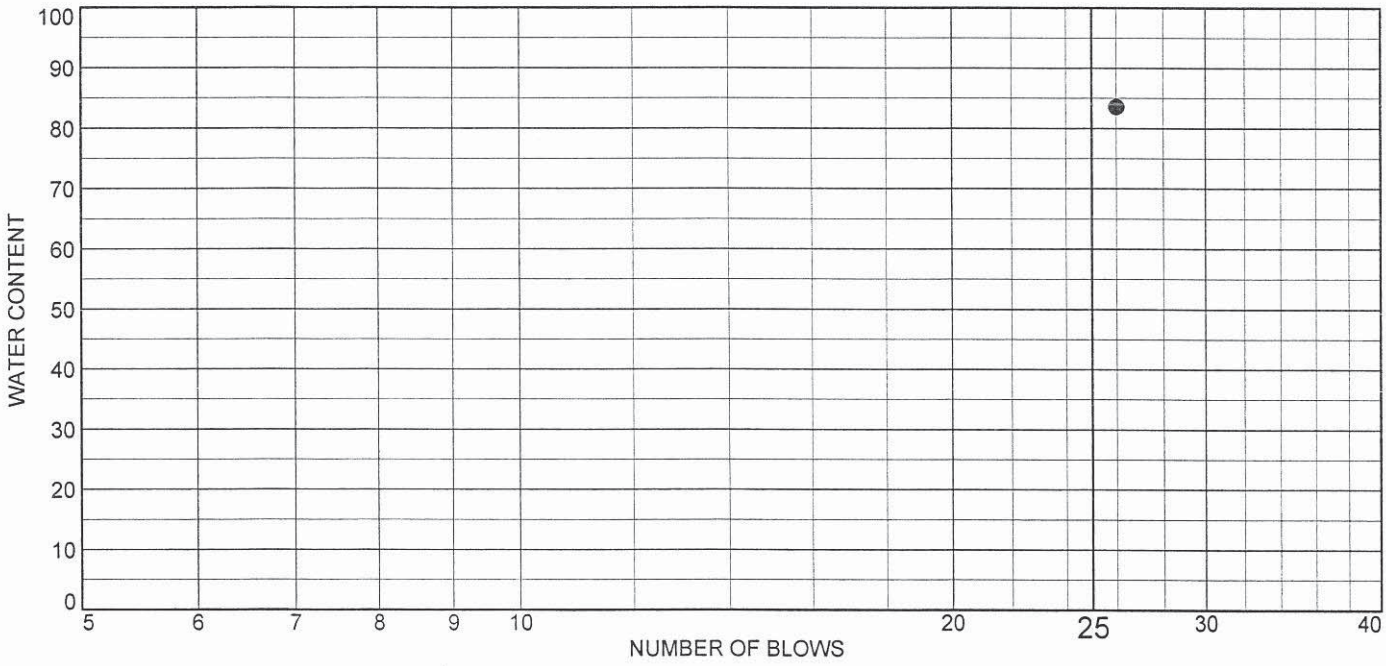
Reviewed By:

Corey Chascin 2.17.15

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Sandy CLAY	84	23	61		54.9	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C1-178
Sample Number: C1-178

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: C. Martin **Checked By:** Corey T. Chascin, E.I. Corey Chascin 1.7.15

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	December 18, 2014
Sample Number:	C2-171	**Date Completed:**	December 24, 2014

Sample Information:

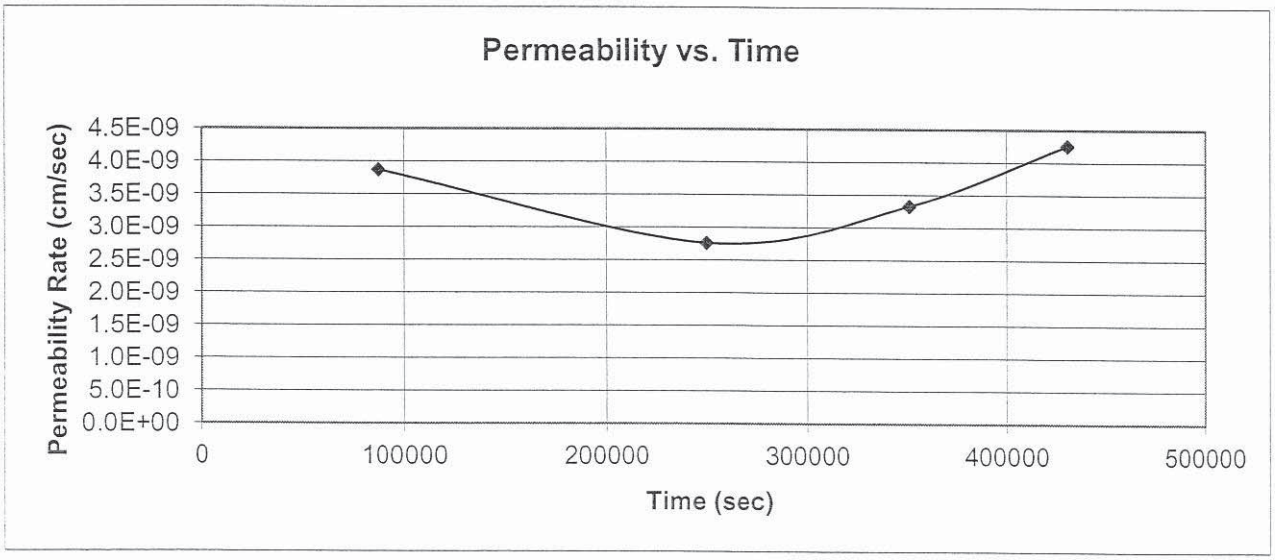
Dia. (in.)	2.82	**Length (in)**	3.12	**Weight (gr)**	546.2
Wet Density (pcf)	107.1	**Moisture Content (%)**	45.2	**Dry Density (pcf)**	73.7

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.6	**Minimum Hydraulic Gradient**	10.3
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.6E-09

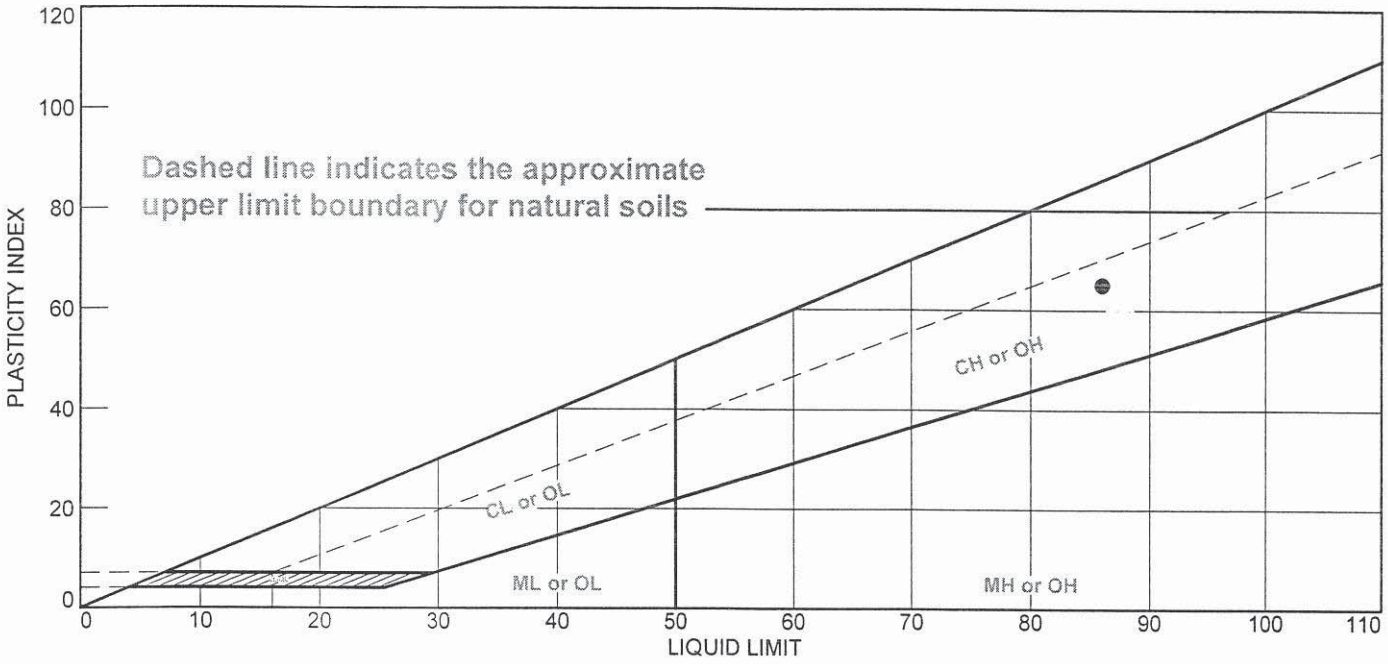


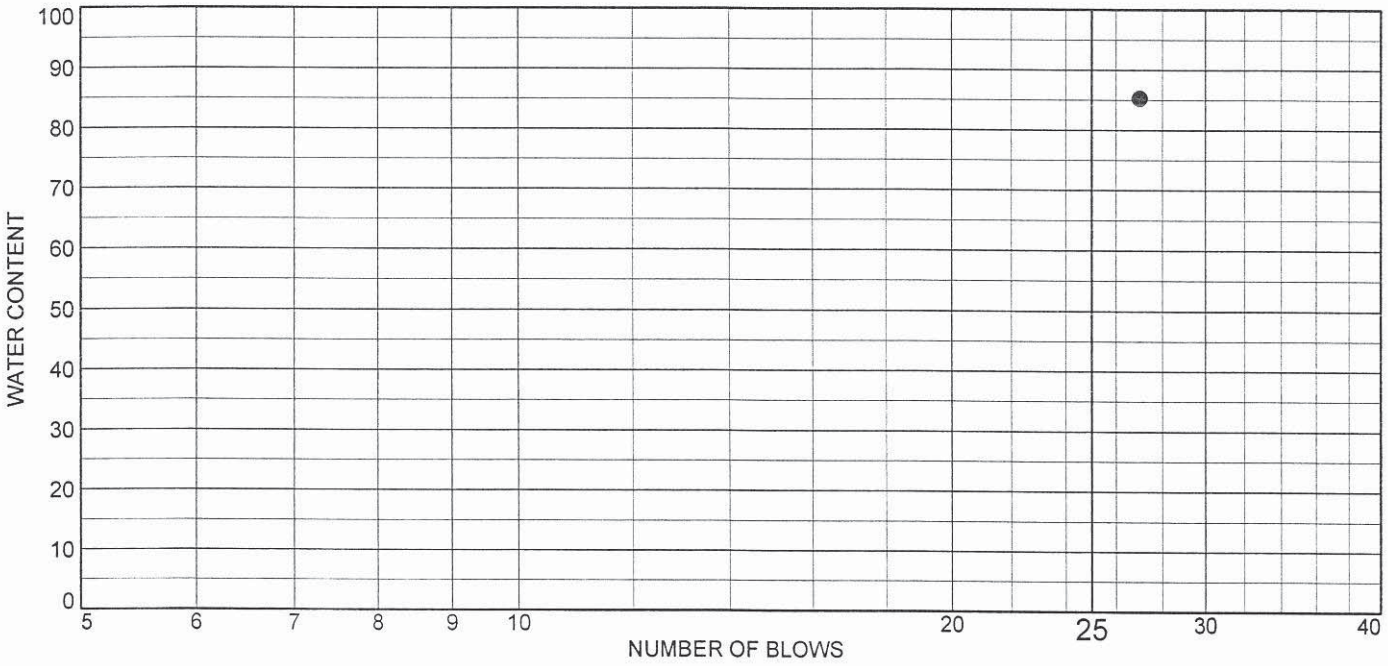
Reviewed By:

Corey Chascin 2.17.15

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Sandy CLAY	86	21	65		56.1	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C2-171
Sample Number: C2-171

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: C. Martin **Checked By:** Corey T. Chascin, E.I. Corey Chascin 1.7.15

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	December 18, 2014
Sample Number:	C2-169	**Date Completed:**	December 24, 2014

Sample Information:

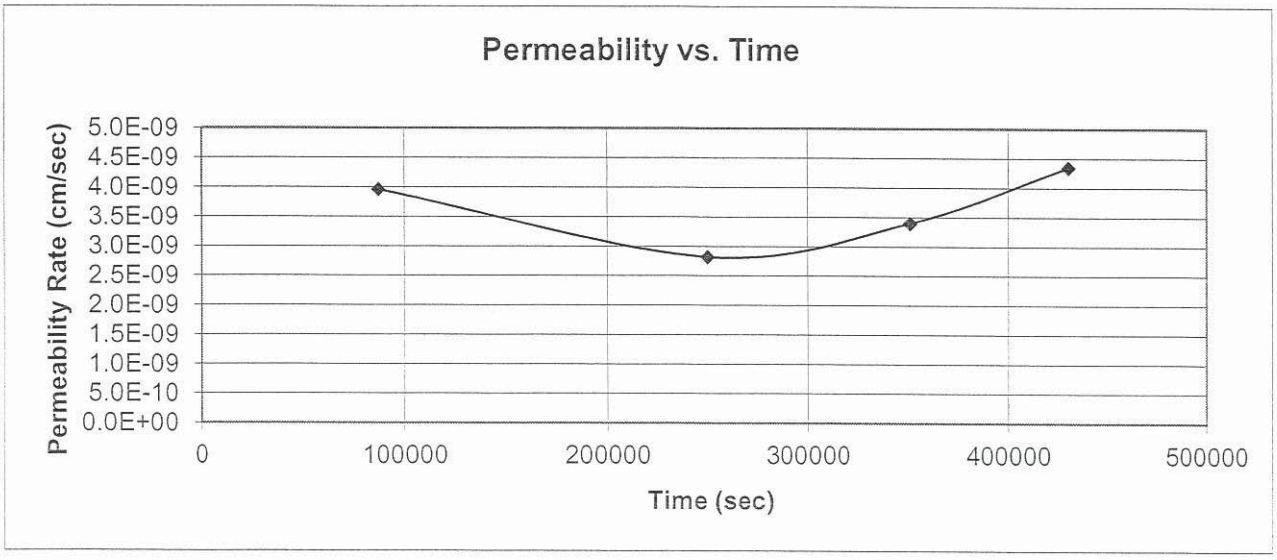
Dia. (in.)	2.82	**Length (in)**	3.20	**Weight (gr)**	554.9
Wet Density (pcf)	105.5	**Moisture Content (%)**	45.2	**Dry Density (pcf)**	72.7

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.1	**Minimum Hydraulic Gradient**	10.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.6E-09

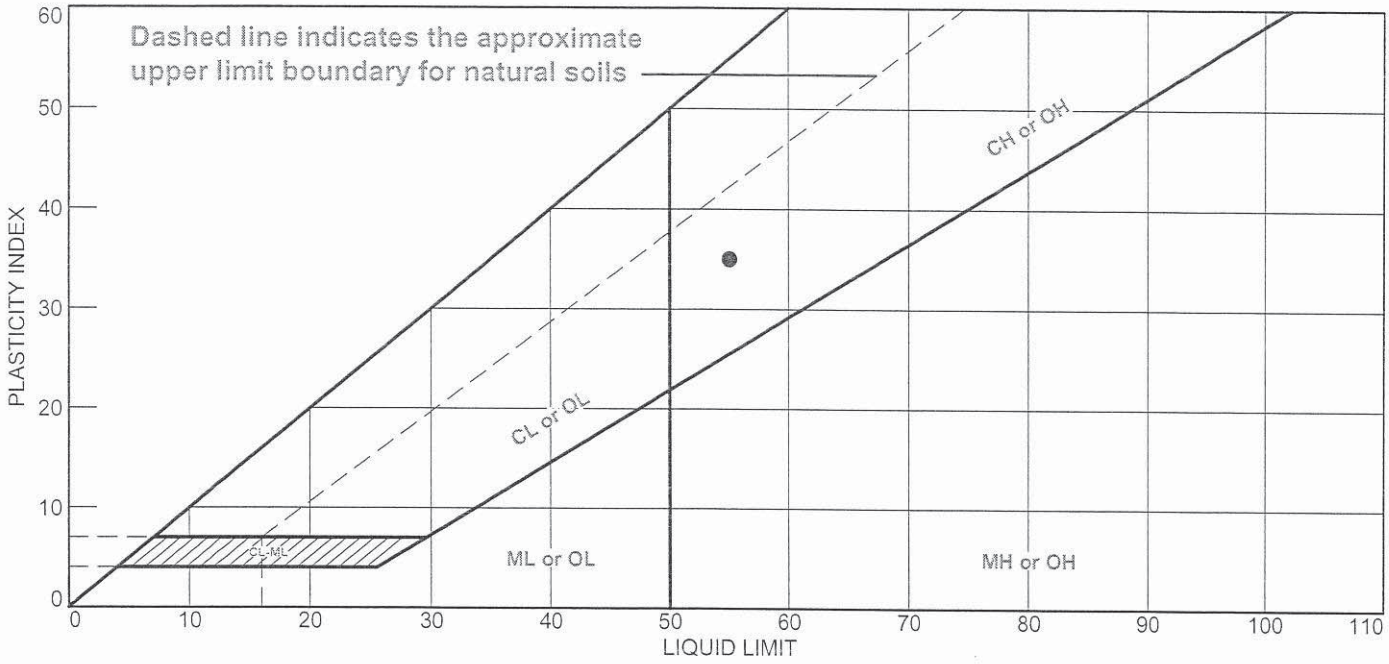


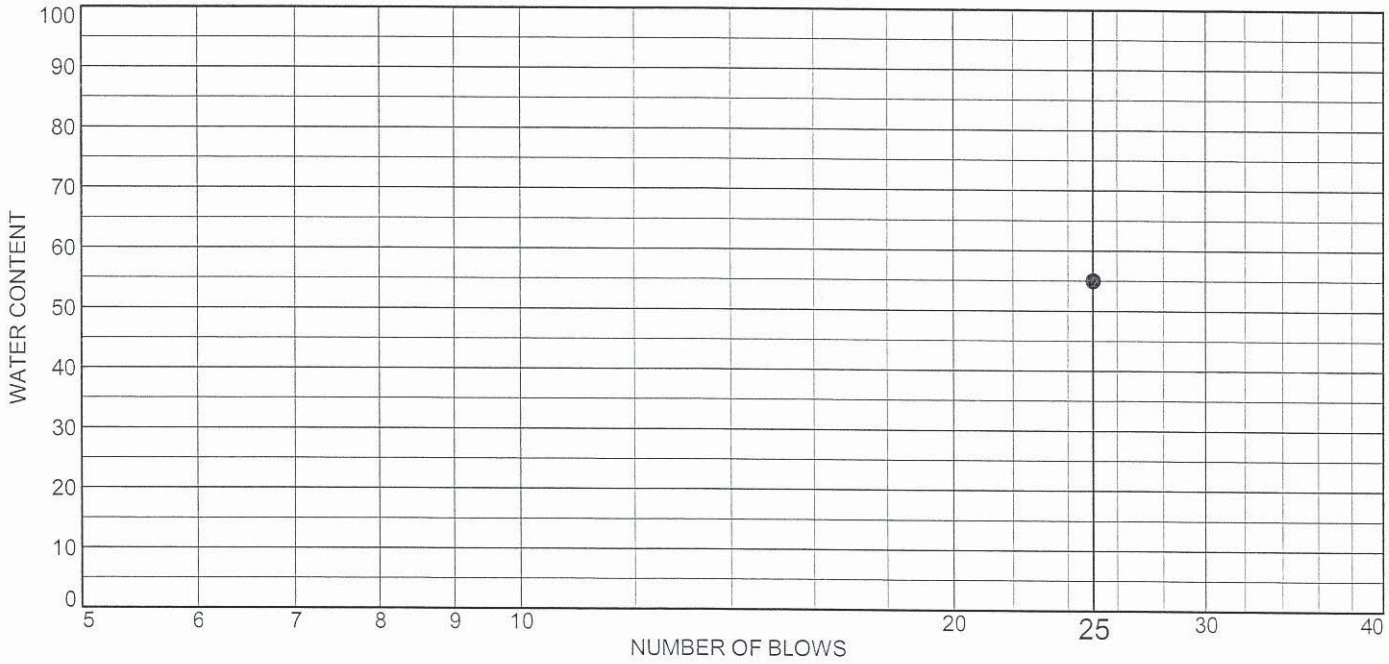
Reviewed By:

Corey Chascin 2.17.15

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Sandy CLAY	55	20	35		54.7	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C2-169
Sample Number: C2-169

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: C. Martin **Checked By:** Corey T. Chascin, E.I. Corey Chascin 2.17.15

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	December 18, 2014
Sample Number:	C1-174	**Date Completed:**	December 24, 2014

Sample Information:

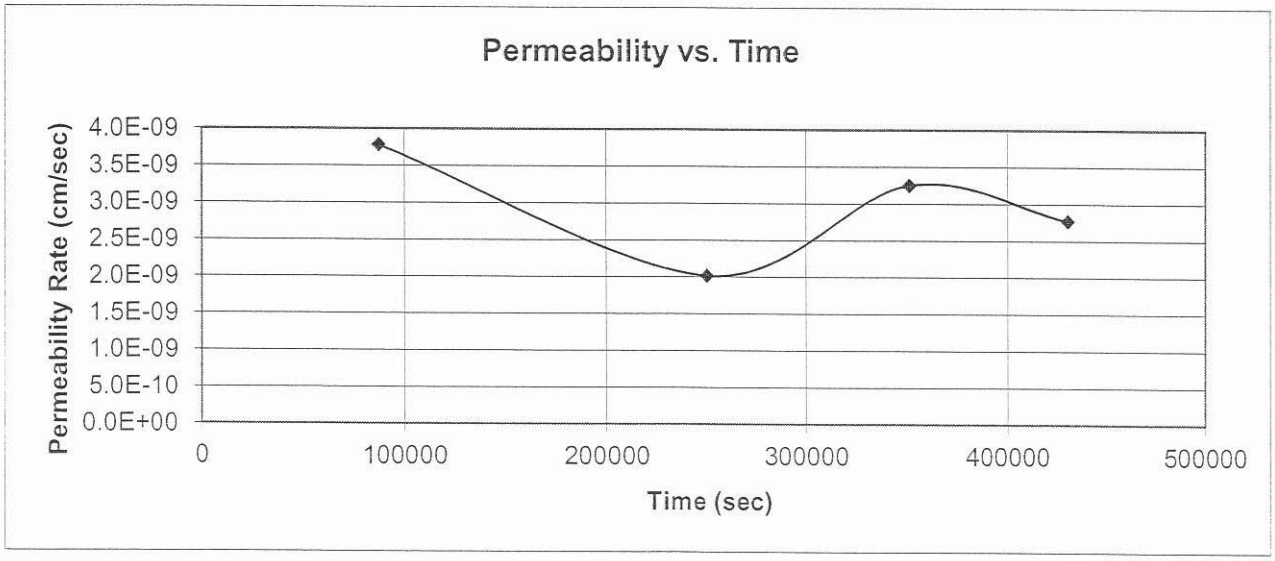
Dia. (in.)	2.84	**Length (in)**	3.09	**Weight (gr)**	556.9
Wet Density (pcf)	108.5	**Moisture Content (%)**	38.8	**Dry Density (pcf)**	78.2

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.8	**Minimum Hydraulic Gradient**	10.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.0E-09

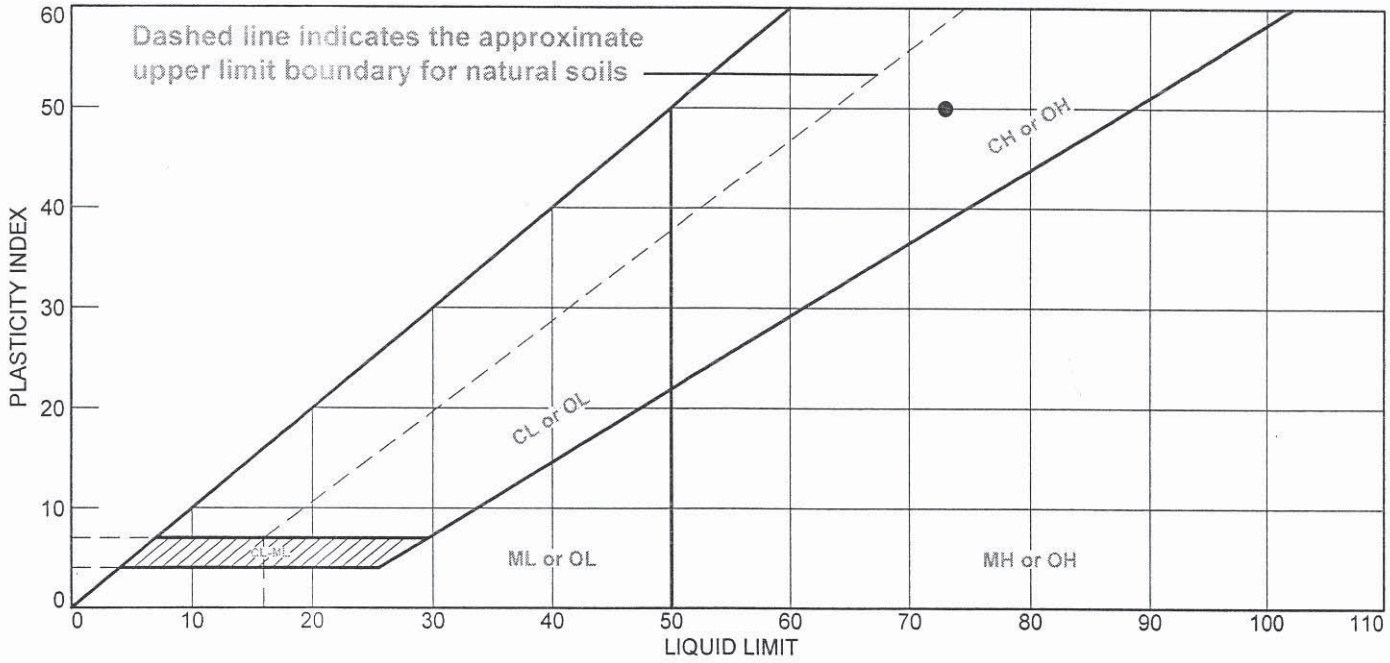


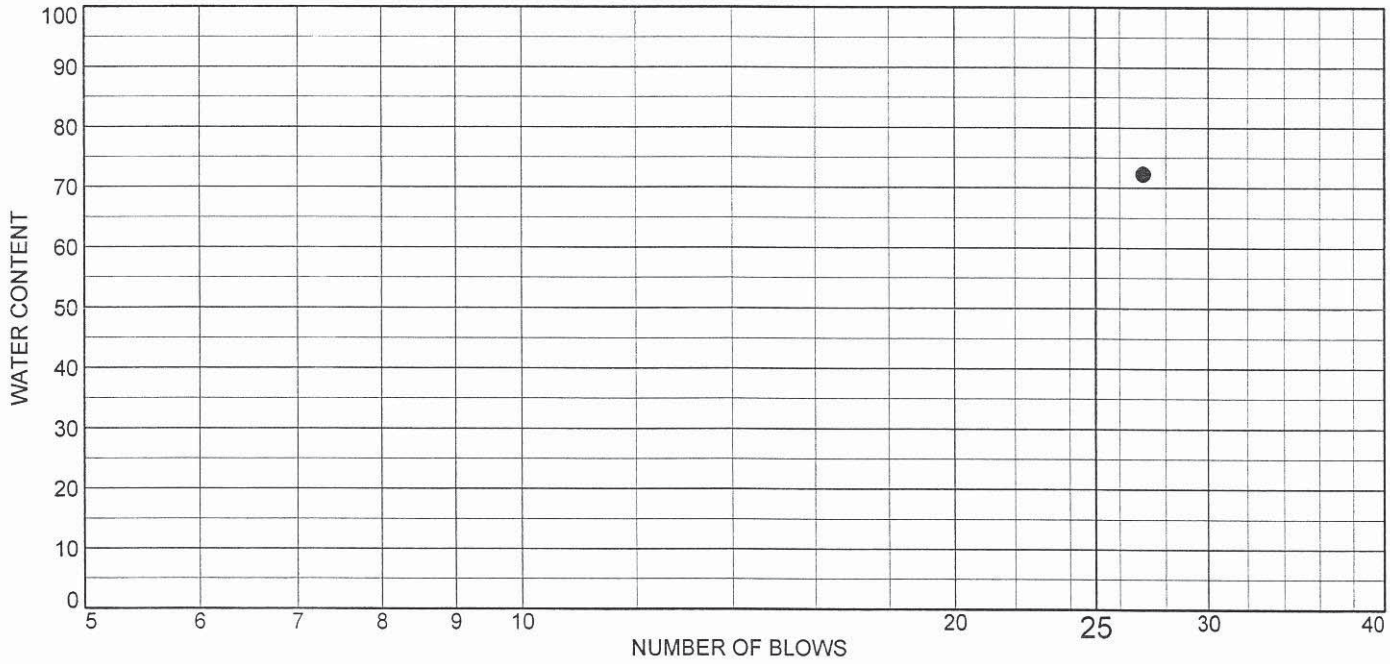
Reviewed By:

Corey Chascin 2.17.15

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Sandy CLAY	73	23	50		56.2	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C1-174
Sample Number: C1-174

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: C. Martin **Checked By:** Corey T. Chascin, E.I. Corey Chascin 1.7.15

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	December 18, 2014
Sample Number:	C1-176	**Date Completed:**	December 24, 2014

Sample Information:

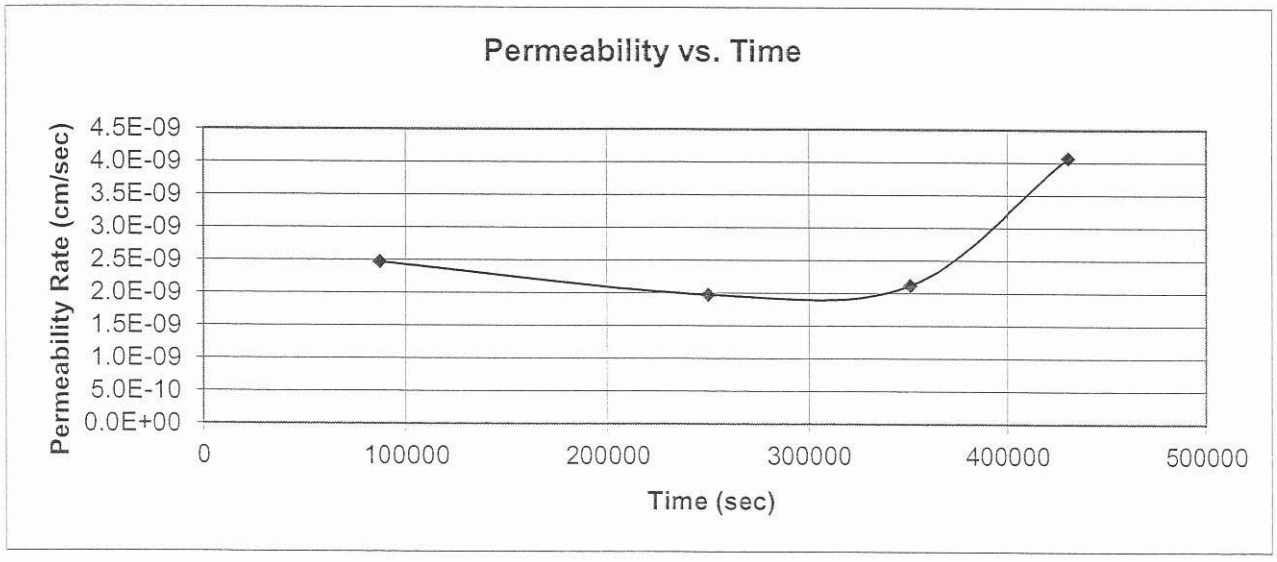
Dia. (in.)	2.87	**Length (in)**	3.09	**Weight (gr)**	585.4
Wet Density (pcf)	111.7	**Moisture Content (%)**	43.5	**Dry Density (pcf)**	77.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.8	**Minimum Hydraulic Gradient**	10.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

2.7E-09

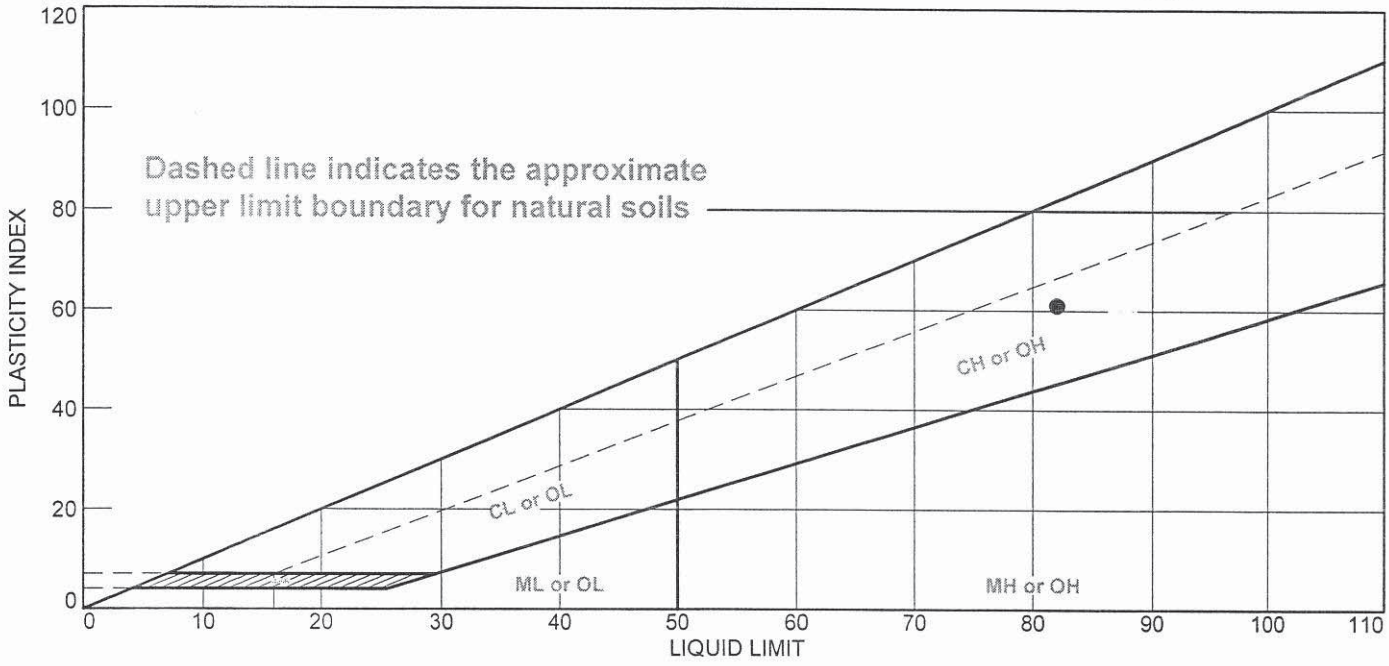


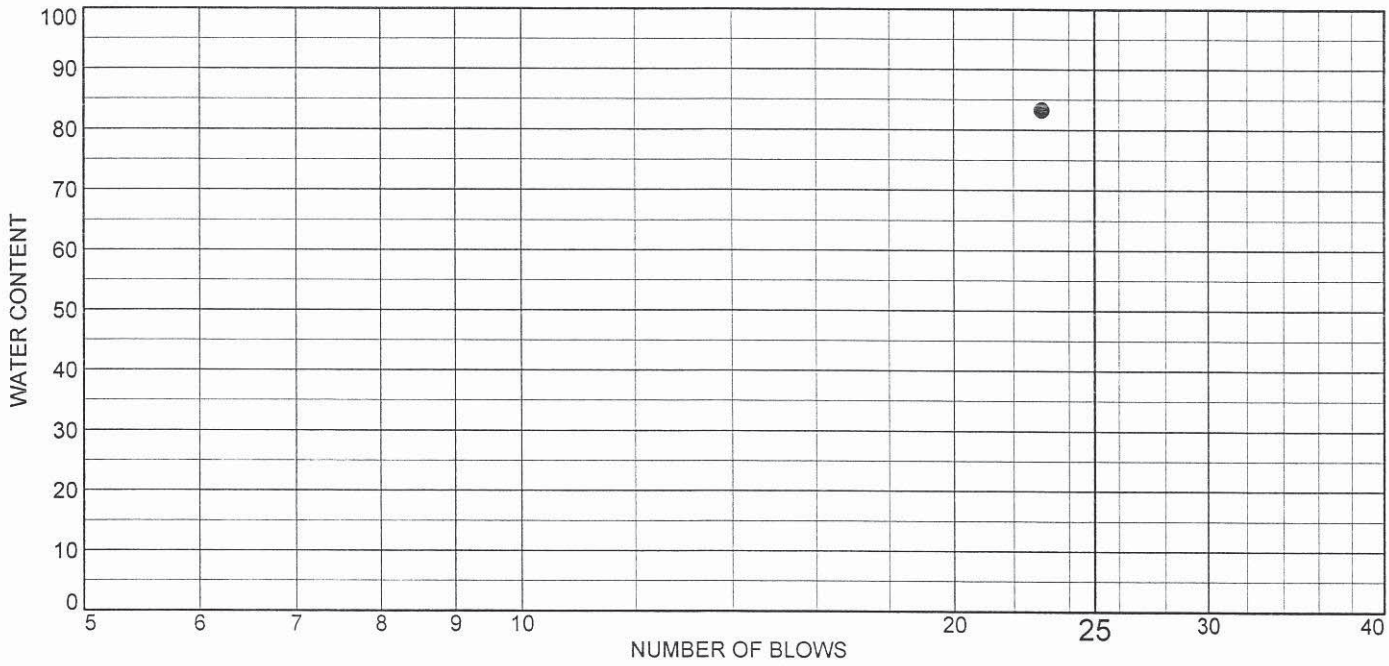
Reviewed By:

Corey Chascin 2.17.15

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Sandy CLAY	82	21	61		51.6	

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: C1-176
Sample Number: C1-176

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: C. Martin **Checked By:** Corey T. Chascin, E.I. Corey Chascin 1.7.15

REPORT OF SOIL PERMEABILITY TESTING

Project:	TRLF Phase No. 4	**Project Number:**	6736-13-5237
Client:	Meskel	**Date Completed:**	December 8, 2014
Sample Number:	Underdrain Production No. 4	**Depth:**	NA

The sample was remolded to 100% Modified Effort of 108.0 pcf at a Optimum Moisture of 14.0%. The compacted sample was tested for permeability (D2434) and the results are outlined below.

Sample Information:

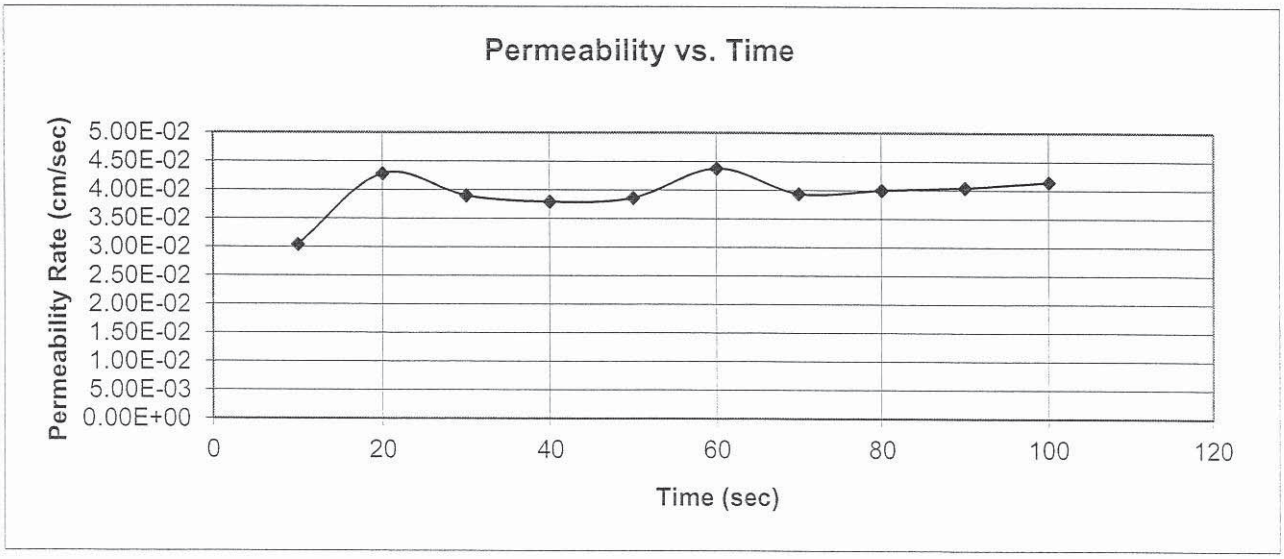
Dia. (in.)	2.99	**Length (in)**	5.64	**Weight (gr)**	1208.5
Wet Density (pcf)	116.2	**Moisture Content (%)**	7.9	**Dry Density (pcf)**	107.7

Test Parameters

Test Method Used:	ASTM D-2434	**Permeant Fluid:**	Tap water

Permeability Rate

3.94E-02

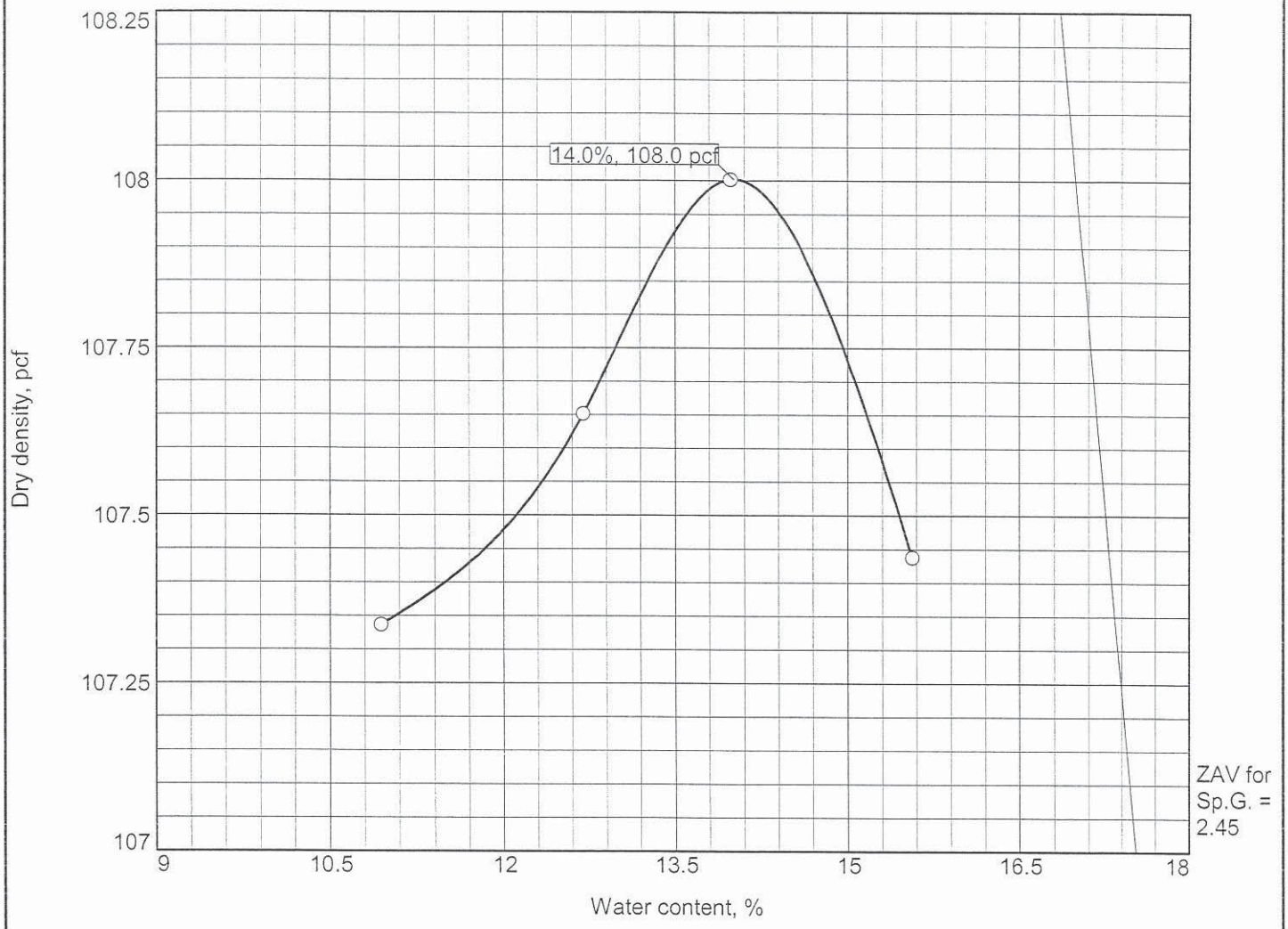


Reviewed By:

Corey Chascin 2.17.15

Corey T. Chascin, E.I.

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP						0.0	0.5

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 108.0 pcf Optimum moisture = 14.0 %	Brown Fine SAND

Project No. 6736135237 **Client:** Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

○ **Source of Sample:** Underdrain Sand Production **Sample Number:** 4

AMEC E&I

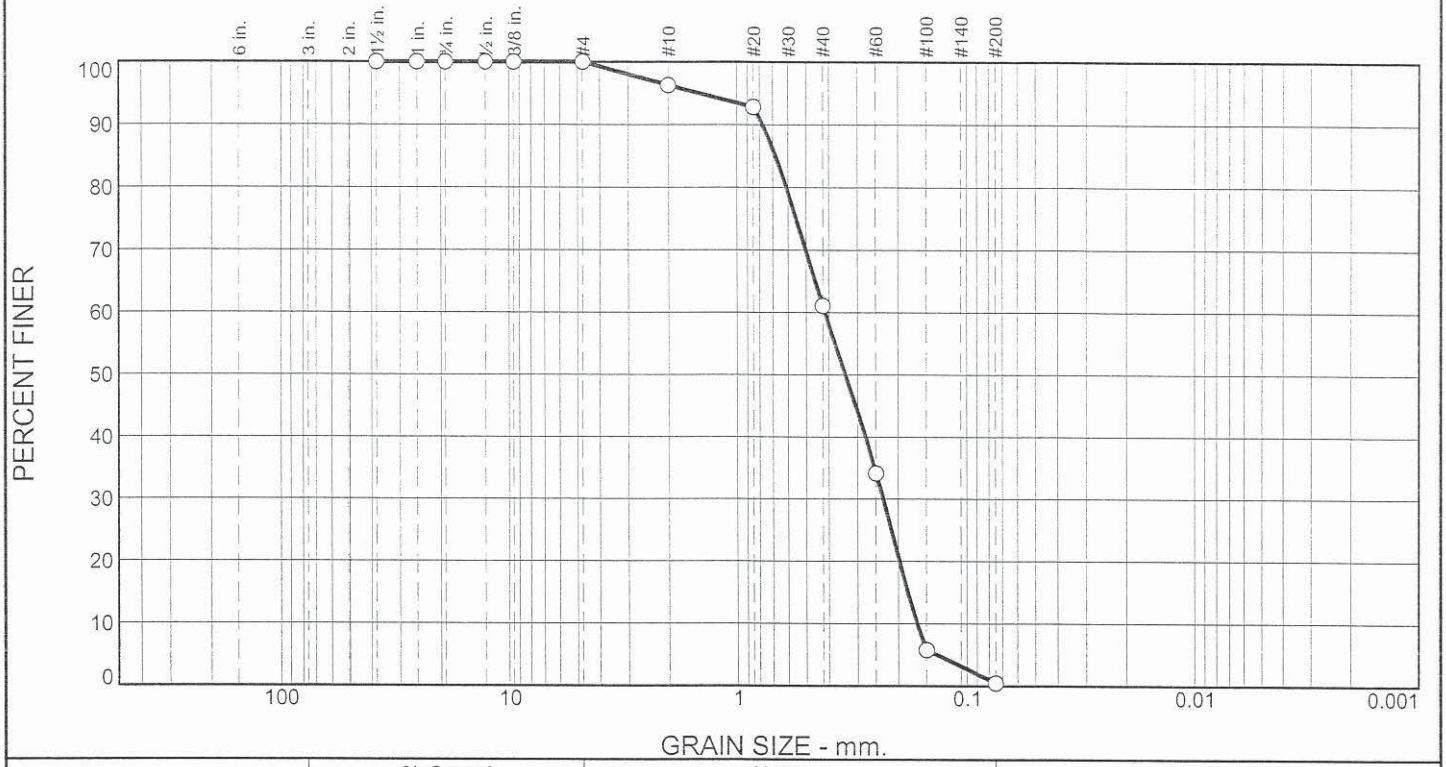
Jacksonville, Florida

Remarks:

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin 2.17.15

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.7	35.2	60.6	0.5	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	96.3		
#20	92.8		
#40	61.1		
#60	34.2		
#100	5.8		
#200	0.5		

* (no specification provided)

Material Description

Brown Fine SAND

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP AASHTO (M 145)=

Coefficients

D_{90}= 0.7757 D_{85}= 0.6833 D_{60}= 0.4159
D_{50}= 0.3390 D_{30}= 0.2330 D_{15}= 0.1816
D_{10}= 0.1652 C_u= 2.52 C_c= 0.79

Remarks

Date Received: 11/17/14 **Date Tested:** 11/18/14

Tested By: D. Newman

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Underdrain Sand Production **Date Sampled:** 11/18/14

Sample Number: 4

AMEC E&I

Jacksonville, Florida

Client: Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

Corey Chascin 2.17.15

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	TRLF Phase No. 4	**Project Number:**	6736-13-5237
Client:	Meskel	**Date Completed:**	January 5, 2015
Sample Number:	Underdrain Production No. 5	**Depth:**	NA

The sample was remolded to 100% Modified Effort of 107.5 pcf at an Optimum Moisture of 9.9%. The compacted sample was tested for permeability (D2434) and the results are outlined below.

Sample Information

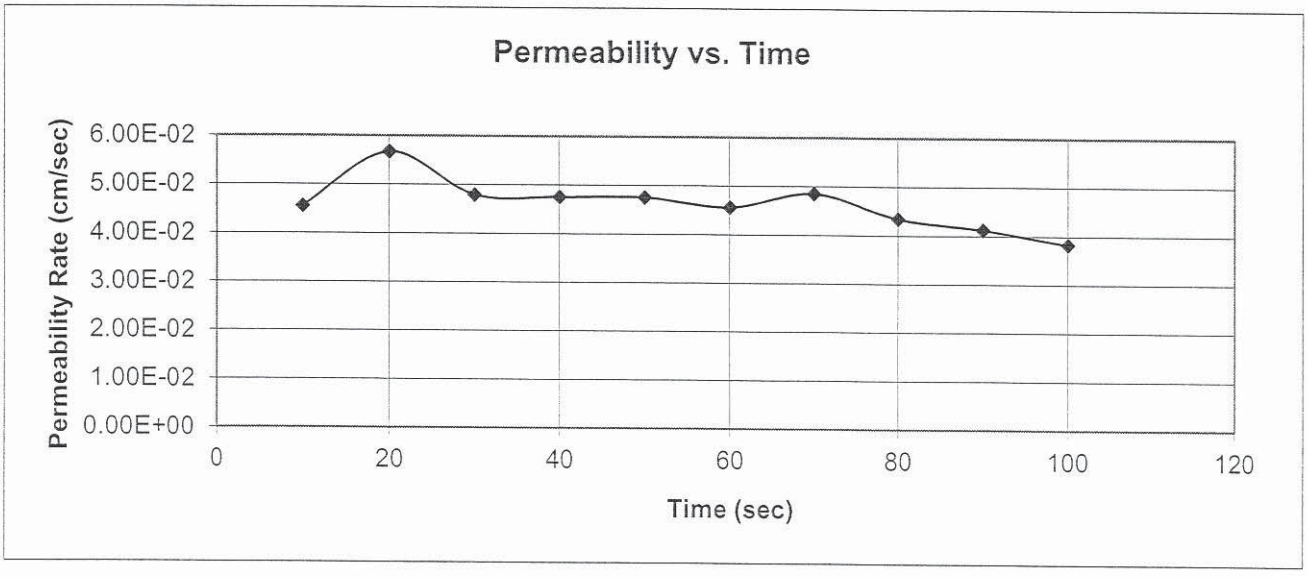
Dia. (in.)	2.99	**Length (in)**	5.02	**Weight (gr)**	1091.6
Wet Density (pcf)	118.0	**Moisture Content (%)**	9.7	**Dry Density (pcf)**	107.6

Test Parameters

Test Method Used:	ASTM D-2434	**Permeant Fluid:**	Tap water

Permeability Rate

4.62E-02



Reviewed By:

Corey Chascin 2.17.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: February 11, 2015
Date Reported: February 27, 2015
Date Assigned: February 11, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C2-91	na	na	79	21	58	32.9%	54.6%
C2-101	na	na	-	-	-	44.2%	58.1%
C2-102	na	na	82	20	62	45.9%	56.9%
C2-216	na	na	-	-	-	37.2%	56.5%
C2-103	na	na	77	19	58	27.6%	52.4%
C2-99	0	0.0	84	31	53	32.3%	53.7%
C2-95	0	0.0	76	24	52	43.9%	61.2%
C1-93	0	0.0	81	19	62	39.8%	54.9%
C1-221	0	0.0	-	-	-	46.2%	59.7%
C1-106	0	0.0	-	-	-	32.2%	49.9%
C1-102	0	0.0	80	23	57	45.3%	67.5%
C1-101	na	na	-	-	-	39.7%	57.9%
C1-98	na	na	74	21	53	39.4%	54.9%
C1-104	na	na	-	-	-	47.1%	58.1%
C1-103	na	na	80	24	56	44.9%	57.2%
C1-105	na	na	98	25	73	50.8%	63.2%

ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

Corey Chascin. E.I.

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237

Date Tested: 2/11/15

Tested By: CM
Reviewed By:

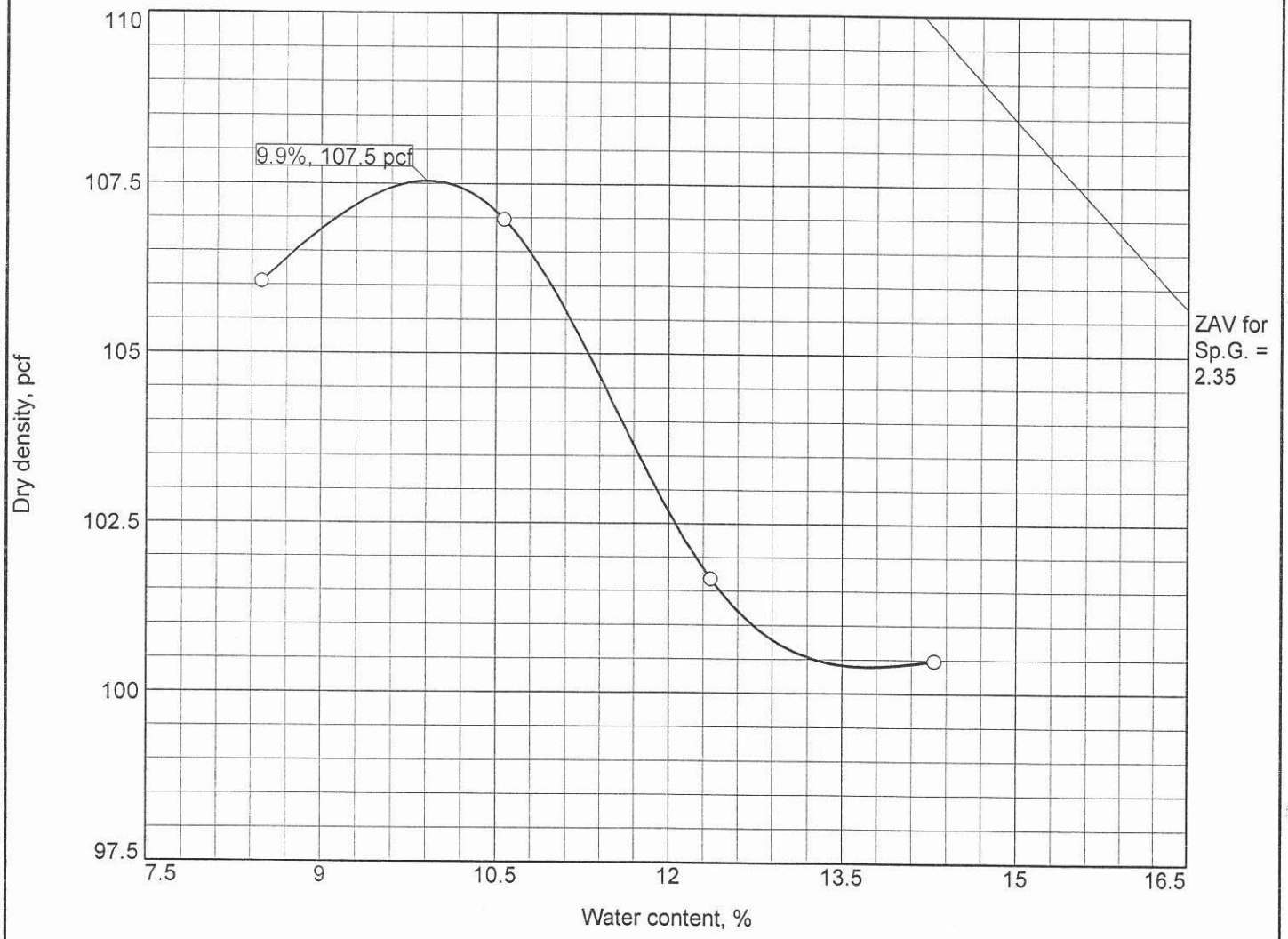
foster wheeler

Assignment Date: 2/11/2015

			Loss on Ignition				Percent Passing #200					
Boring	Sample No.	Depth (ft)	Can Weight (g)	Dry Weight (g)	After Burn Weight (g)	% Loss	Can Weight (g)	Wet Weight (g)	Dry Weight (g)	After Wash Weight (g)	% Moisture	% -200
C2-91	na	na	na	na	na	#VALUE!	51.36	239.89	193.20	115.82	32.9%	54.6%
C2-101	na	na	na	na	na		50.41	173.86	136.00	86.27	44.2%	58.1%
C2-102	na	na	na	na	na		50.60	193.11	148.30	92.73	45.9%	56.9%
C2-216	na	na	na	na	na		54.39	209.54	167.50	103.60	37.2%	56.5%
C2-103	na	na	na	na	na		54.99	213.00	178.80	113.97	27.6%	52.4%
C2-99	na	na	na	na	na	#VALUE!	54.95	153.53	129.44	89.45	32.3%	53.7%
C2-95	na	na	na	na	na	#VALUE!	50.43	161.66	127.74	80.46	43.9%	61.2%
C1-93	na	na	na	na	na		50.18	188.31	149.00	94.71	39.8%	54.9%
C1-221	na	na	na	na	na		51.01	185.68	143.10	88.12	46.2%	59.7%
C1-106	na	na	na	na	na		50.36	192.69	158.00	104.26	32.2%	49.9%
C1-102	na	na	na	na	na		49.81	183.87	142.10	79.76	45.3%	67.5%
C1-101	na	na	na	na	na	#VALUE!	52.04	168.20	135.20	87.01	39.7%	57.9%
C1-98	na	na	na	na	na	#VALUE!	55.46	181.15	145.60	96.15	39.4%	54.9%
C1-104	na	na	na	na	na		49.72	169.61	131.20	83.88	47.1%	58.1%
C1-103	na	na	na	na	na		50.30	201.56	154.70	94.96	44.9%	57.2%
C1-105	na	na	na	na	na	#VALUE!	50.74	171.13	130.60	80.11	50.8%	63.2%

Scale: BP3100

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP	A-3			NV	NP	0.0	0.8

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 107.5 pcf Optimum moisture = 9.9 %	Light Gray Fine SAND

Project No. 6736135237 **Client:** Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

○ **Source of Sample:** Underdrain Sand Production **Sample Number:** 5

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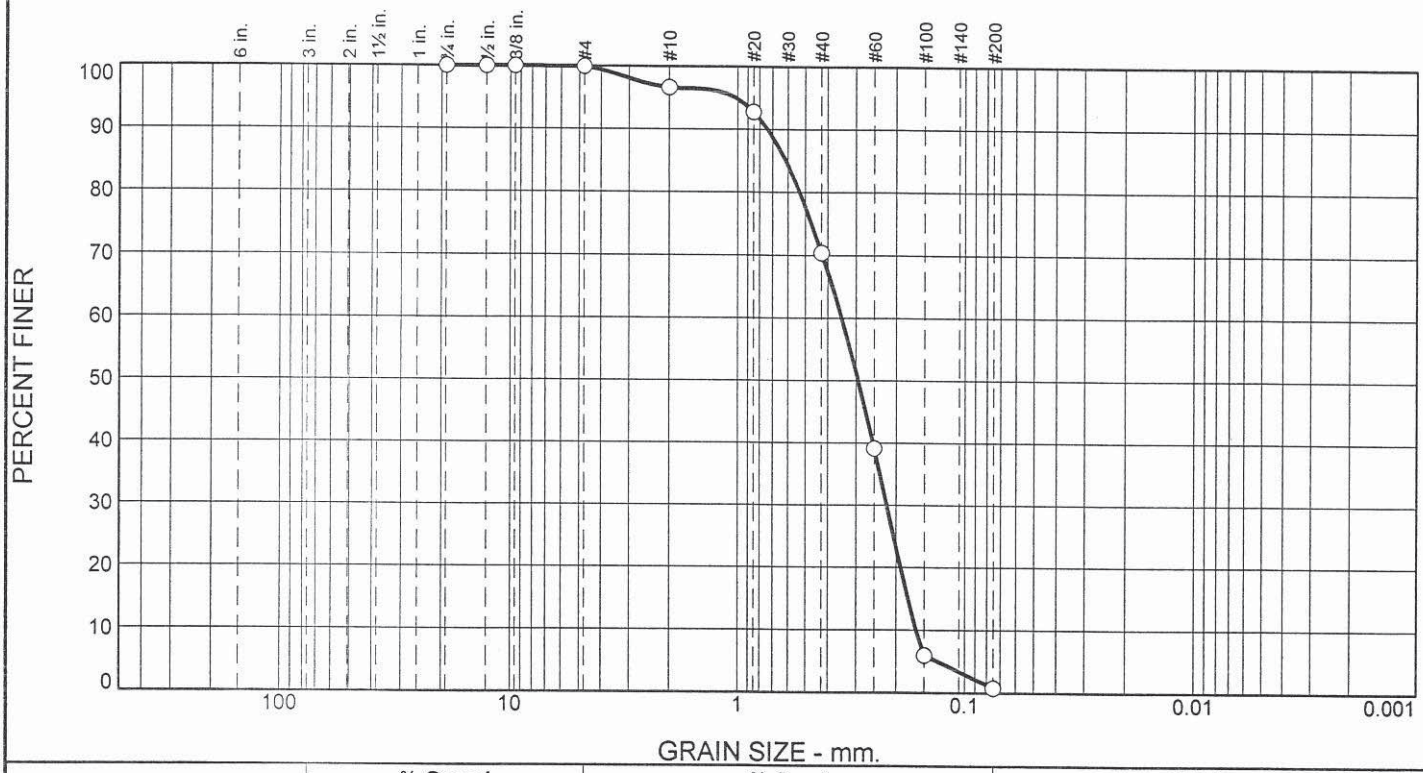
Remarks:

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I. Corey Chascin

1.7.15

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.4	26.2	69.6	0.8	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4"	100.0		
1/2"	100.0		
3/8"	100.0		
#4	100.0		
#10	96.6		
#20	92.8		
#40	70.4		
#60	39.1		
#100	6.0		
#200	0.8		

* (no specification provided)

Material Description

Light Gray Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-3

Coefficients

D_{90}= 0.7378 D_{85}= 0.6139 D_{60}= 0.3478
D_{50}= 0.2943 D_{30}= 0.2204 D_{15}= 0.1774
D_{10}= 0.1629 C_u= 2.14 C_c= 0.86

Remarks

Date Received: 12/16/14 **Date Tested:** 12/19/14

Tested By: C. Martin

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Underdrain Sand Production **Date Sampled:** 12/16/14

Sample Number: 5

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Jacksonville, Florida

Client: Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

Corey Chascin 1.7.15

amec foster wheeler

REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: February 23, 2015
Date Reported: March 10, 2015
Date Assigned: February 23, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C2-94	NA	NA	71	24	47	34.3%	52.0%
C2-104	NA	NA	78	26	52	38.9%	53.5%
C2-106	NA	NA	70	25	45	37.0%	49.7%
C2-107	NA	NA	NT	NT	NT	30.9%	65.4%
C2-108	NA	NA	NT	NT	NT	34.3%	54.4%
C2-217	NA	NA	NT	NT	NT	20.7%	55.0%
C2-226	NA	NA	NT	NT	NT	33.1%	51.3%
C1-186	NA	NA	71	24	47	40.0%	48.4%
C1-188	NA	NA	76	28	48	35.8%	40.7%
C1-190	NA	NA	68	24	44	38.2%	51.4%
C2-181	NA	NA	76	27	49	37.8%	52.0%
C2-183	NA	NA	74	28	46	41.0%	54.4%
C2-185	NA	NA	73	24	49	36.6%	54.3%
C1-97	NA	NA	64	18	46	41.5%	53.2%
C1-107	NA	NA	69	22	47	37.4%	51.7%
C1-110	NA	NA	NT	NT	NT	37.7%	51.7%
C1-111	NA	NA	70	22	48	39.5%	54.0%
C1-223	NA	NA	NT	NT	NT	39.6%	57.4%

ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

3.10.15

Corey Chascin. E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-94	**Date Completed:**	March 2, 2015

Sample Information:

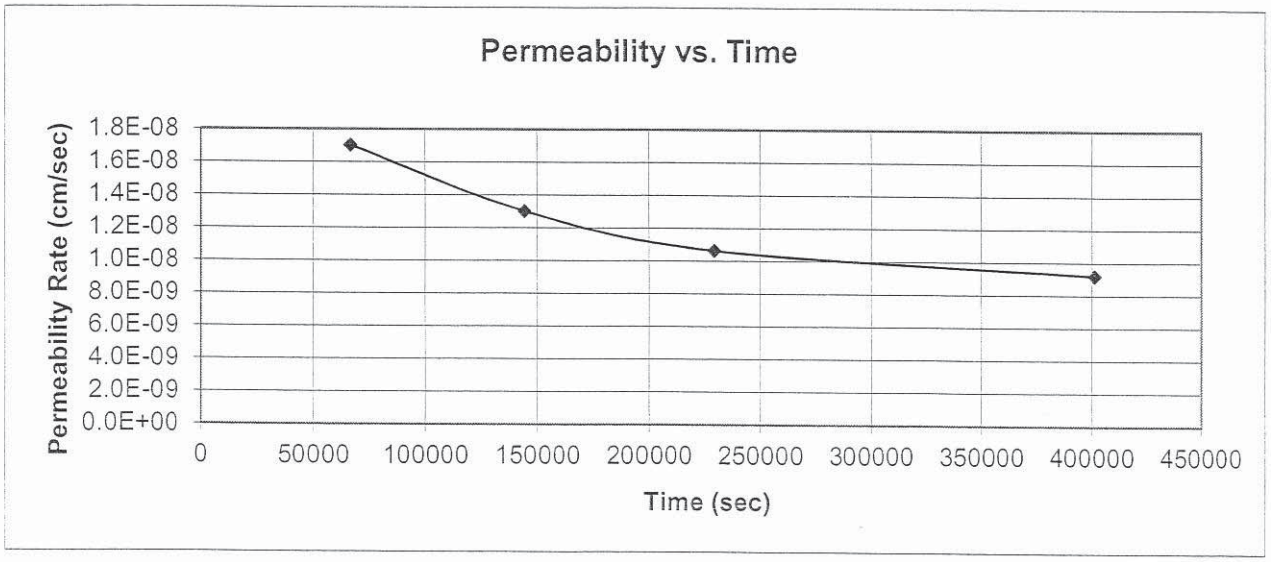
Dia. (in.)	2.83	**Length (in)**	3.16	**Weight (gr)**	583.9
Wet Density (pcf)	112.5	**Moisture Content (%)**	34.3	**Dry Density (pcf)**	83.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.3	**Minimum Hydraulic Gradient**	18.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.2E-08



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-104	**Date Completed:**	March 2, 2015

Sample Information:

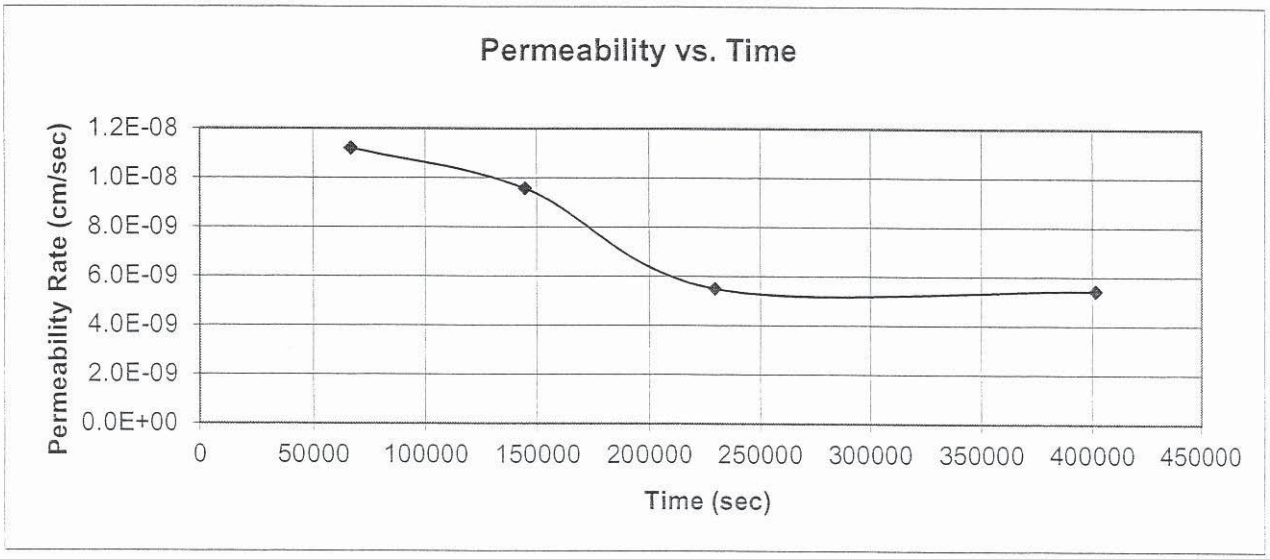
Dia. (in.)	2.85	**Length (in)**	2.66	**Weight (gr)**	482.36
Wet Density (pcf)	108.5	**Moisture Content (%)**	38.9	**Dry Density (pcf)**	78.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.1	**Minimum Hydraulic Gradient**	22.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

7.9E-09



Reviewed By:

Corey T. Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-106	**Date Completed:**	March 2, 2015

Sample Information:

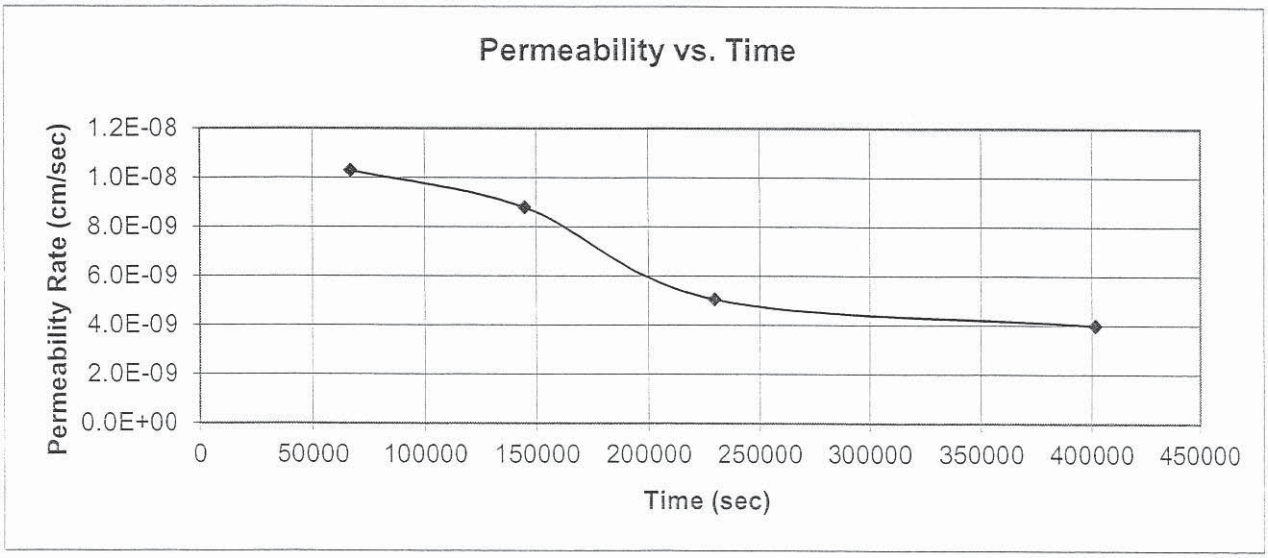
Dia. (in.)	2.80	**Length (in)**	2.35	**Weight (gr)**	409.5
Wet Density (pcf)	108.4	**Moisture Content (%)**	36.9	**Dry Density (pcf)**	79.2

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	27.3	**Minimum Hydraulic Gradient**	25.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

7.0E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C1-105

Project Number: 6736-13-5237

Date Received: February 11, 2015

Date Completed: February 27, 2015

Sample Information:

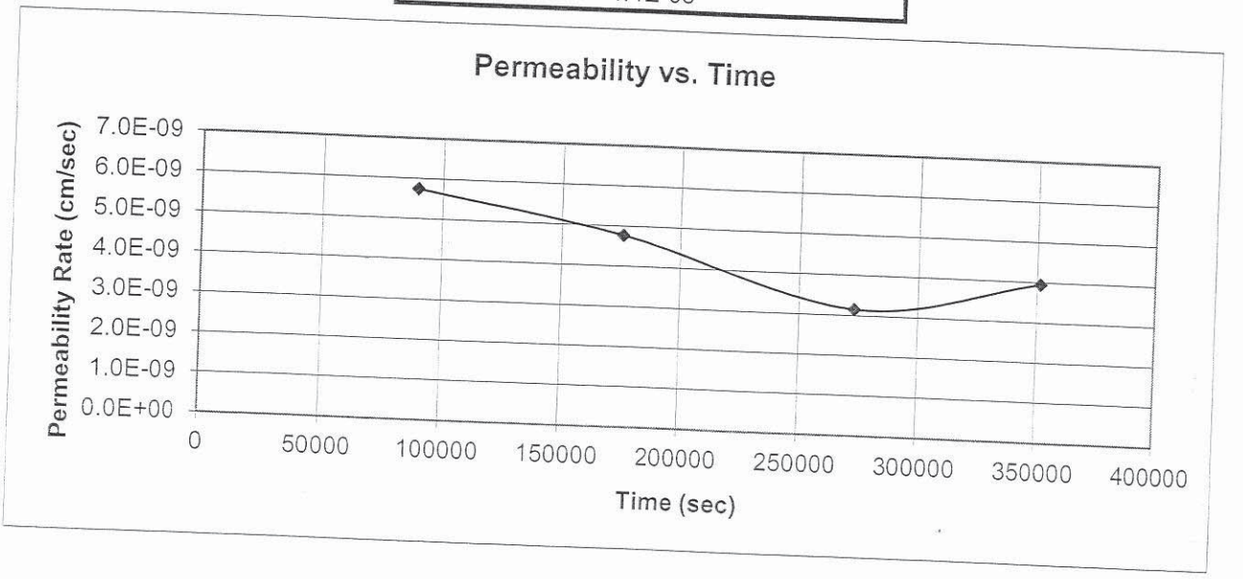
Dia. (in.)	2.86	**Length (in)**	2.93	**Weight (gr)**	517.9
Wet Density (pcf)	105.1	**Moisture Content (%)**	51.0	**Dry Density (pcf)**	69.6

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.9	**Minimum Hydraulic Gradient**	20.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

4.4E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C1-186

Project Number: 6736-13-5237

Date Received: February 11, 2015

Date Completed: March 2, 2015

Sample Information:

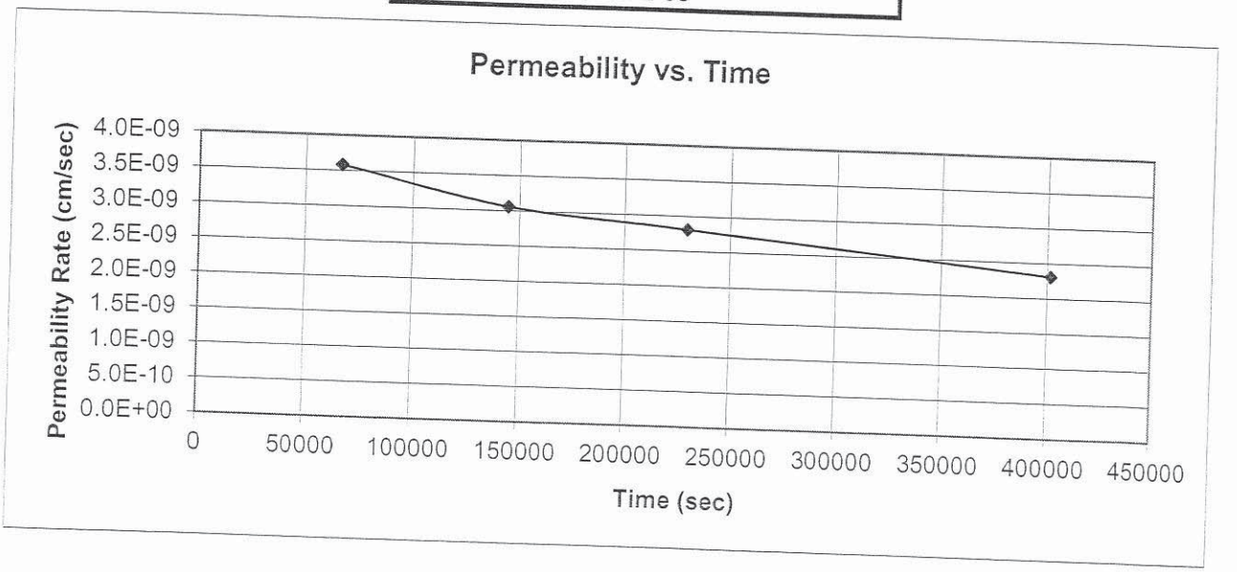
Dia. (in.)	2.85	Length (in)	2.27	Weight (gr)	413.9
Wet Density (pcf)	108.9	Moisture Content (%)	40.0	Dry Density (pcf)	77.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	28.4	Minimum Hydraulic Gradient	26.4
Maximum Consolidation Stress (psi)	7	Minimum Consolidation Stress (psi)	7

Permeability Rate

2.9E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C1-188

Project Number: 6736-13-5237

Date Received: February 11, 2015

Date Completed: March 2, 2015

Sample Information:

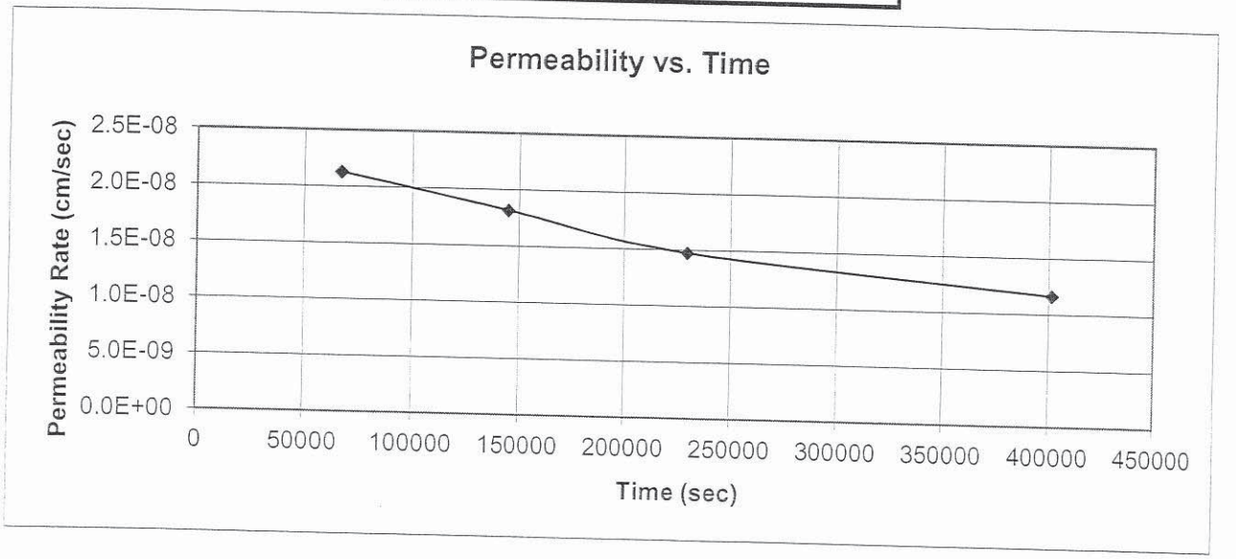
Dia. (in.)	2.83	Length (in)	2.34	Weight (gr)	420.59
Wet Density (pcf)	108.6	Moisture Content (%)	35.8	Dry Density (pcf)	79.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	27.2	Minimum Hydraulic Gradient	25.3
Maximum Consolidation Stress (psi)	7	Minimum Consolidation Stress (psi)	7

Permeability Rate

1.6E-08



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C1-190	**Date Completed:**	March 2, 2015

Sample Information:

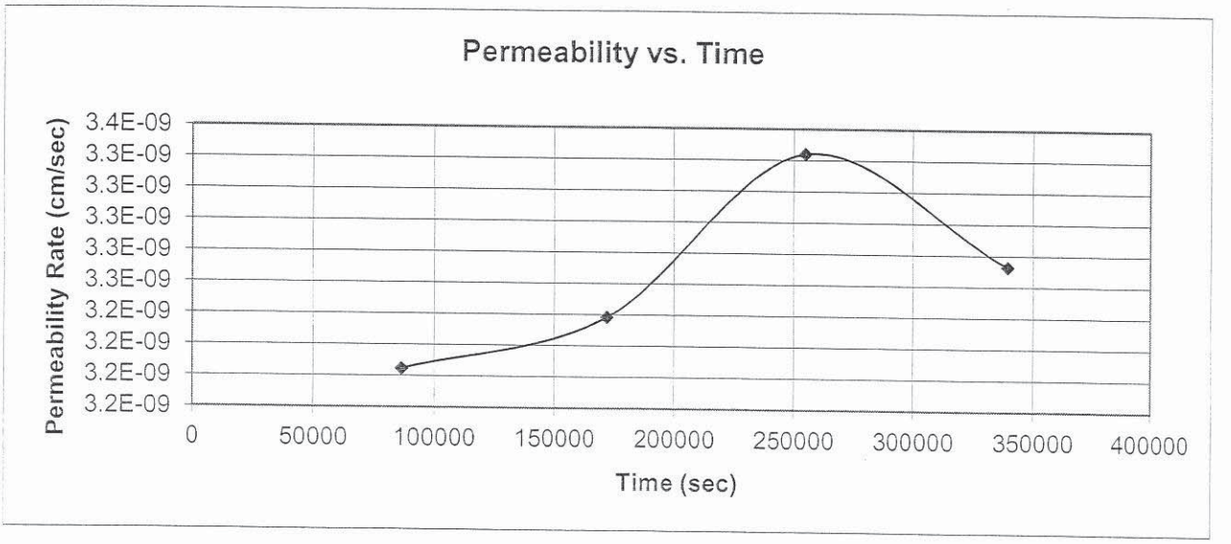
Dia. (in.)	2.81	**Length (in)**	2.55	**Weight (gr)**	461.43
Wet Density (pcf)	111.8	**Moisture Content (%)**	38.2	**Dry Density (pcf)**	80.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.3	**Minimum Hydraulic Gradient**	23.5
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.3E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client:	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-181	**Date Completed:**	March 2, 2015

Sample Information:

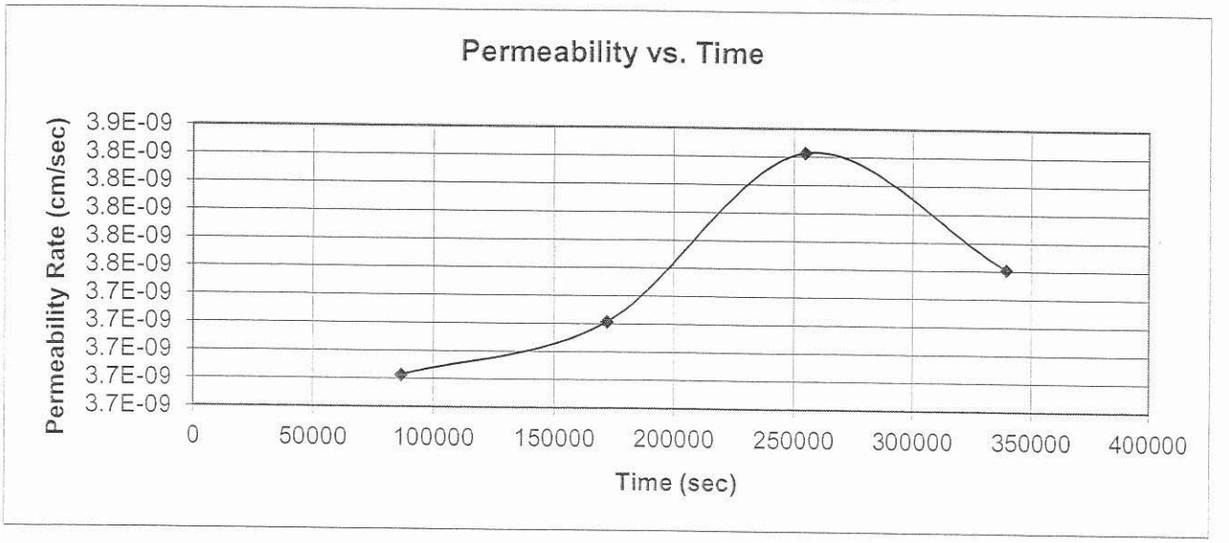
Dia. (in.)	2.81	**Length (in)**	2.94	**Weight (gr)**	524.2
Wet Density (pcf)	109.7	**Moisture Content (%)**	37.8	**Dry Density (pcf)**	79.6

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.9	**Minimum Hydraulic Gradient**	20.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.8E-09



Reviewed By:

Corey T. Chascin 3.10.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-183	**Date Completed:**	March 2, 2015

Sample Information:

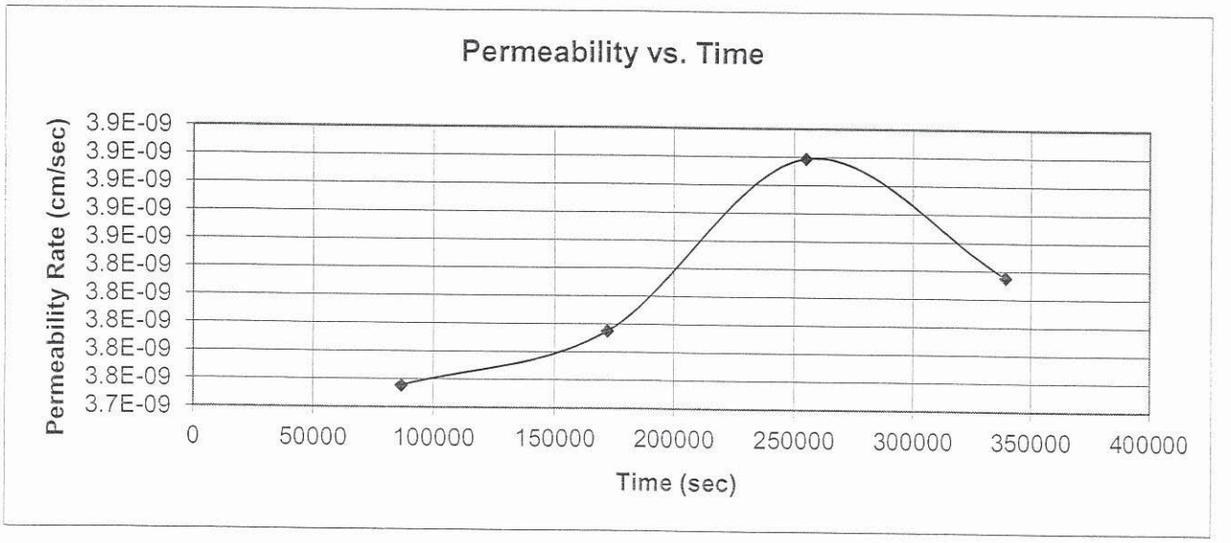
Dia. (in.)	2.76	**Length (in)**	2.89	**Weight (gr)**	493.89
Wet Density (pcf)	108.9	**Moisture Content (%)**	41.0	**Dry Density (pcf)**	77.2

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	20.7
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.8E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-185	**Date Completed:**	March 9, 2015

Sample Information:

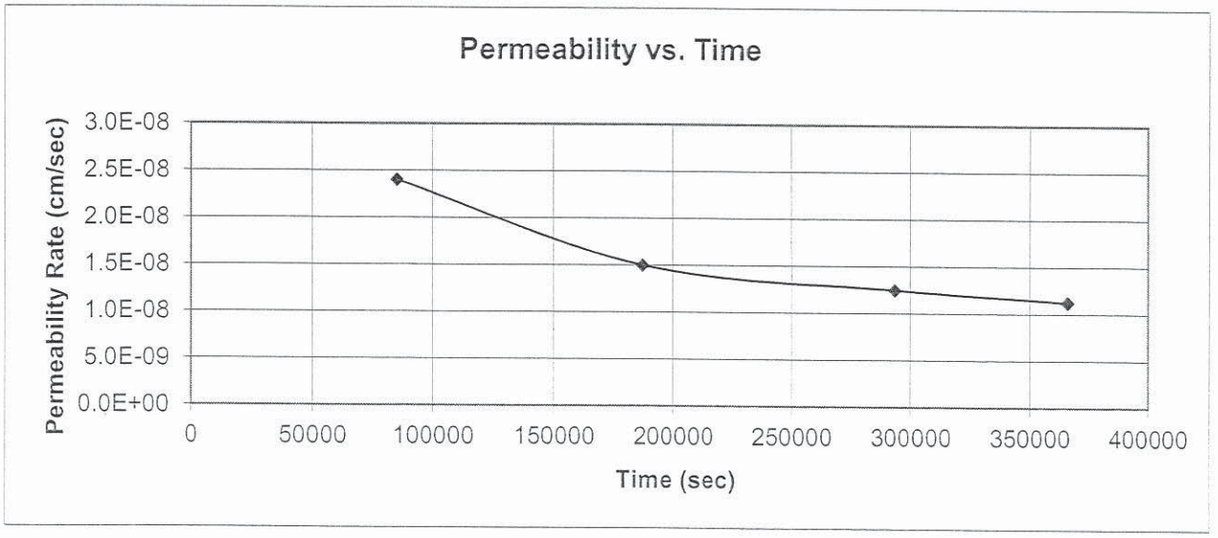
Dia. (in.)	2.85	**Length (in)**	2.90	**Weight (gr)**	513
Wet Density (pcf)	106.1	**Moisture Content (%)**	36.6	**Dry Density (pcf)**	77.6

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.0	**Minimum Hydraulic Gradient**	20.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.6E-08



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C1-97

Project Number: 6736-13-5237

Date Received: February 11, 2015

Date Completed: March 9, 2015

Sample Information:

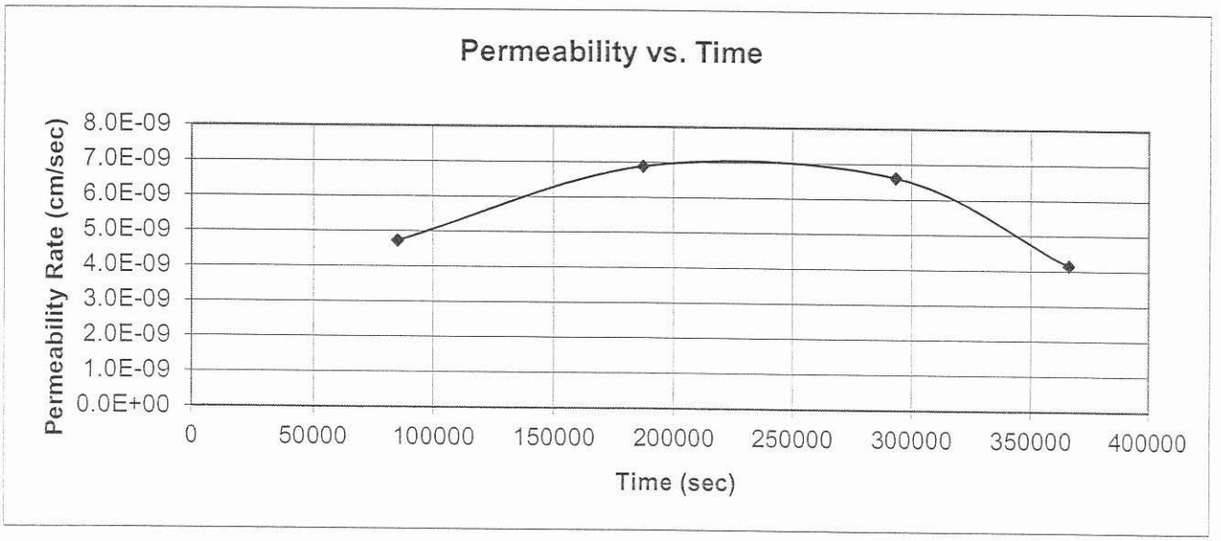
Dia. (in.)	2.85	**Length (in)**	2.85	**Weight (gr)**	503.2
Wet Density (pcf)	105.7	**Moisture Content (%)**	41.5	**Dry Density (pcf)**	74.7

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.6	**Minimum Hydraulic Gradient**	21.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

5.6E-09



Reviewed By:

Corey T. Chascin 3.10.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C1-110

Project Number: 6736-13-5237

Date Received: February 11, 2015

Date Completed: March 9, 2015

Sample Information:

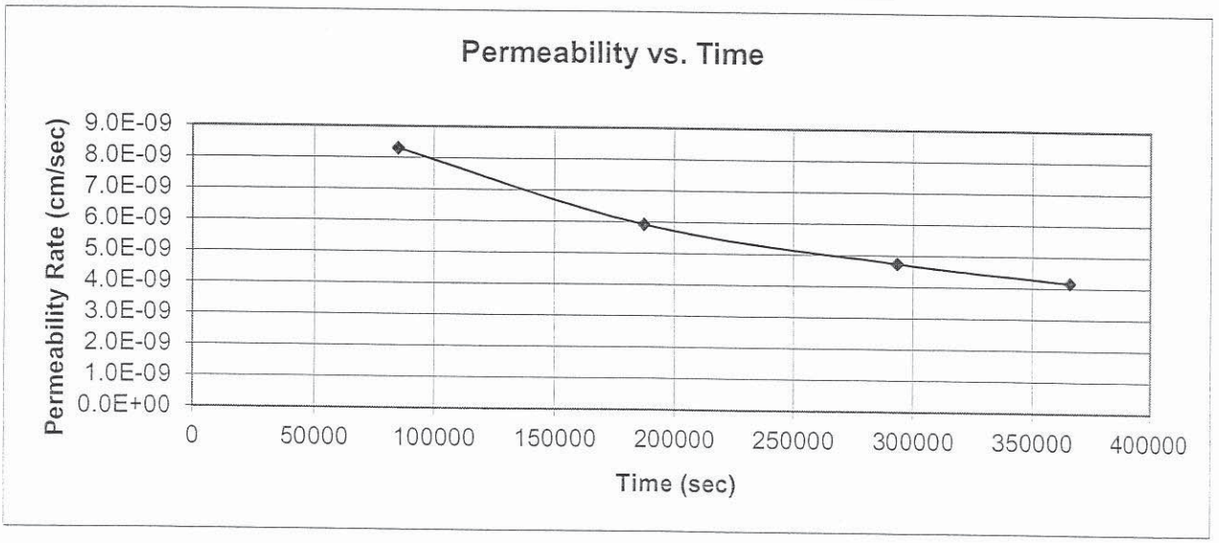
Dia. (in.)	2.83	**Length (in)**	2.83	**Weight (gr)**	505.9
Wet Density (pcf)	107.8	**Moisture Content (%)**	37.7	**Dry Density (pcf)**	78.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.6	**Minimum Hydraulic Gradient**	21.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

5.8E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client:	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C1-111	**Date Completed:**	March 9, 2015

Sample Information

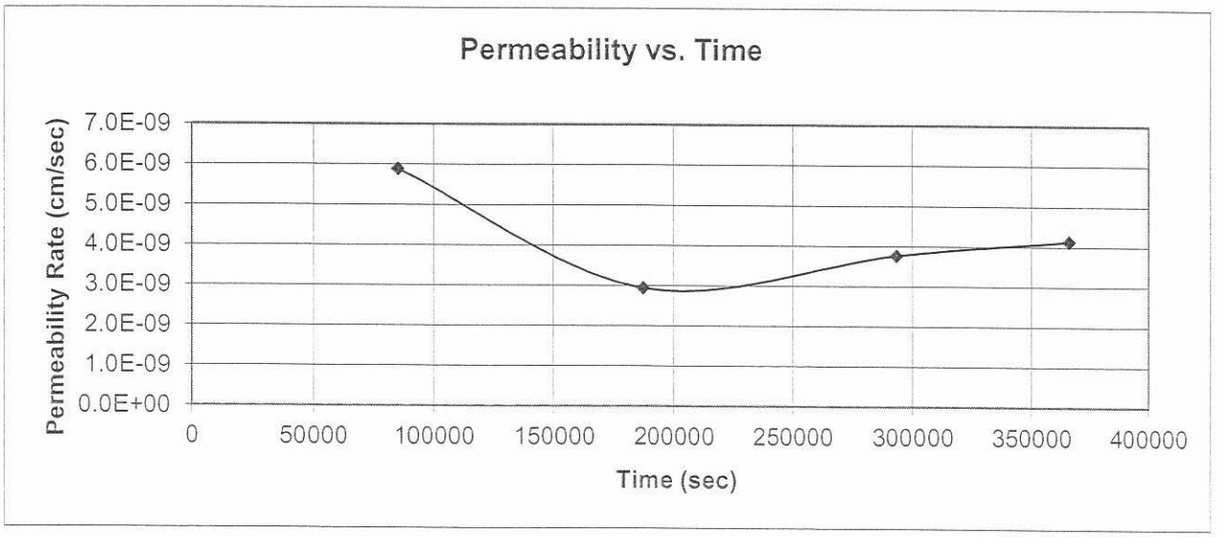
Dia. (in.)	2.84	**Length (in)**	2.83	**Weight (gr)**	511.8
Wet Density (pcf)	108.5	**Moisture Content (%)**	39.3	**Dry Density (pcf)**	77.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.7	**Minimum Hydraulic Gradient**	21.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

4.2E-09

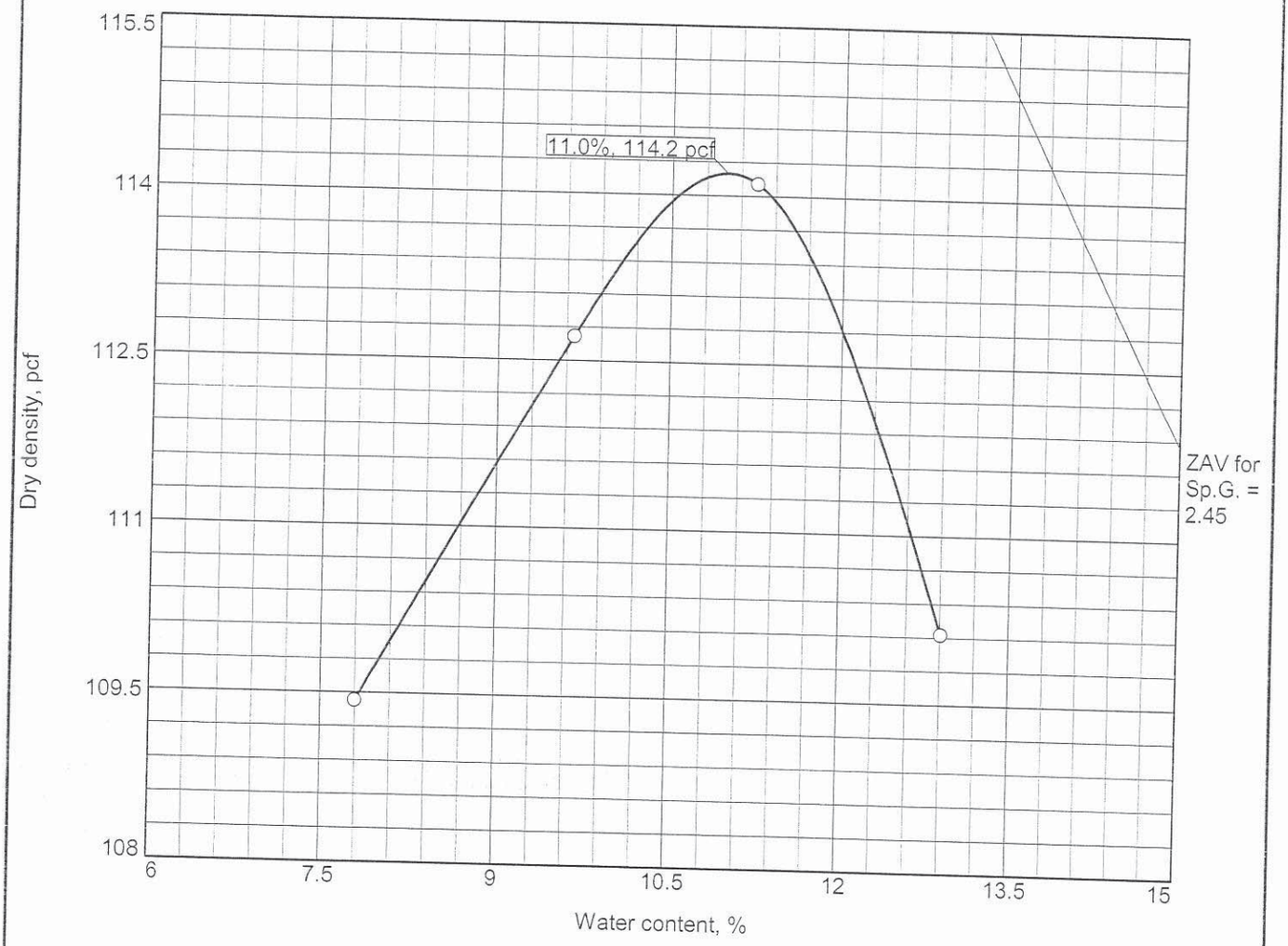


Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

COMPACTION TEST REPORT



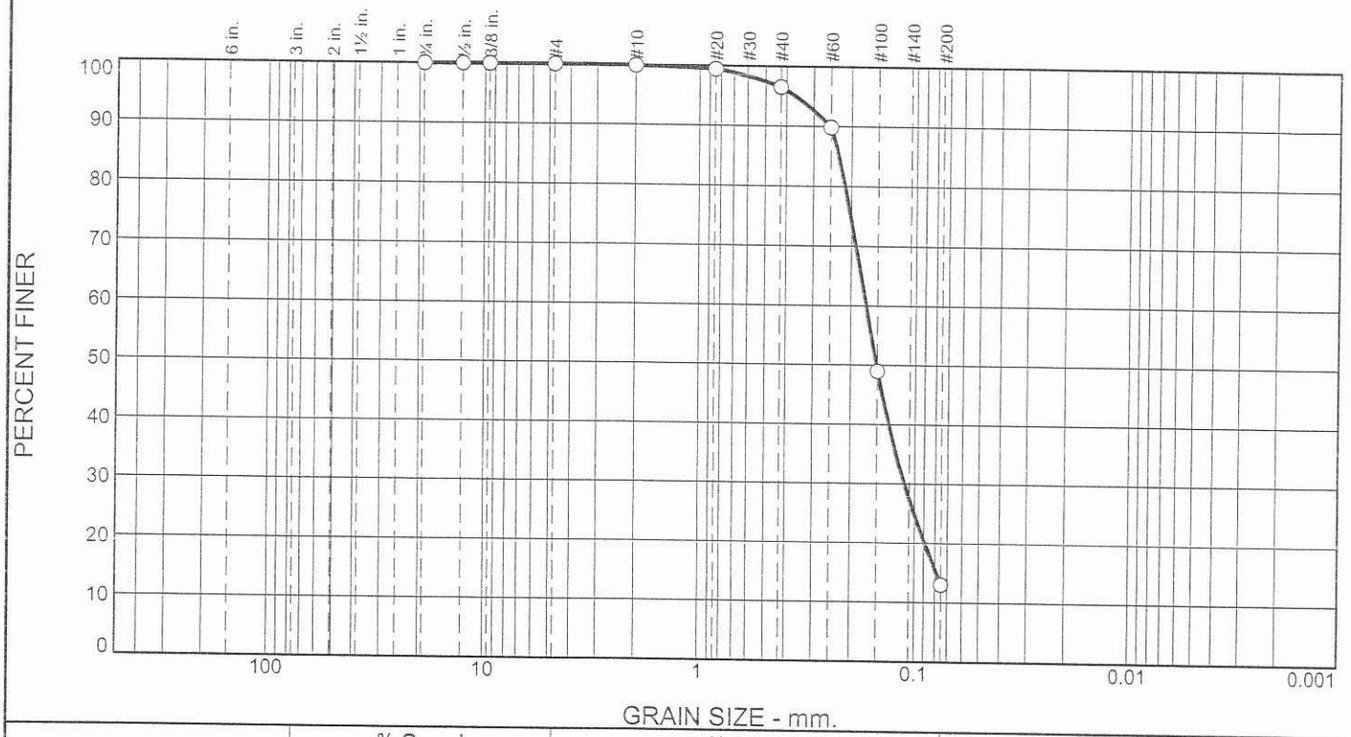
Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SM	A-2-4(0)			NP	NP	0.0	13.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 114.2 pcf Optimum moisture = 11.0 %	Dark Brown Silty Fine SAND
Project No. 6736135237 **Client:** Meskel and Associates Engineering **Project:** Trailridge Landfill Phase 4 ○ **Source of Sample:** Top Soil **Sample Number:** 6 AMEC E&I Jacksonville, Florida	**Remarks:** Figure

Tested By: AC **Checked By:** Corey Chascin, E.I. Corey Chascin 7/18/15

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	3.3	83.0	13.6	

Test Results (D-6913 & D-1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	99.9		
#20	99.4		
#40	96.5		
#60	89.9		
#100	49.0		
#200	13.0		

* (no specification provided)

Material Description

Dark Brown Silty Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NP PI= NP

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D_{90}= 0.2508 D_{85}= 0.2299 D_{60}= 0.1701
D_{50}= 0.1512 D_{30}= 0.1106 D_{15}= 0.0778
D_{10}= C_u= C_c=

Remarks

Date Received: 6-19-15 Date Tested: 6-30-15

Tested By: AC

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Top Soil
Sample Number: 6

Date Sampled: 6-19-15

AMEC E&I

Jacksonville, Florida

Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237 Figure

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REPORT OF ORGANIC CONTENT

Project: TRLF Ph. 4

Project Number: 6736-13-5237

Client: MAE

Date: 7/2/2015

Sample Number	Location	pH	Can Weight (g)	Dry Weight (g)	After Burn Weight (g)	Percent Organic
1 -1	T-4 Topsoil Wedge Area	**6.04**	115.22	153.81	153.20	**1.6%**
1 -2	T-4 Topsoil Wedge Area	**6.04**	107.39	153.18	152.50	**1.5%**
1 -3	T-4 Topsoil Wedge Area	**6.04**	114.49	153.62	153.10	**1.3%**
		Average	112.37	153.54	152.93	**1.5%**

Reviewed By

Corey Chascin 7/10/15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 8, 2015
Sample Number:	C1-124	**Date Completed:**	May 15, 2015
		Date Revised:	June 10, 2015

Sample Information:

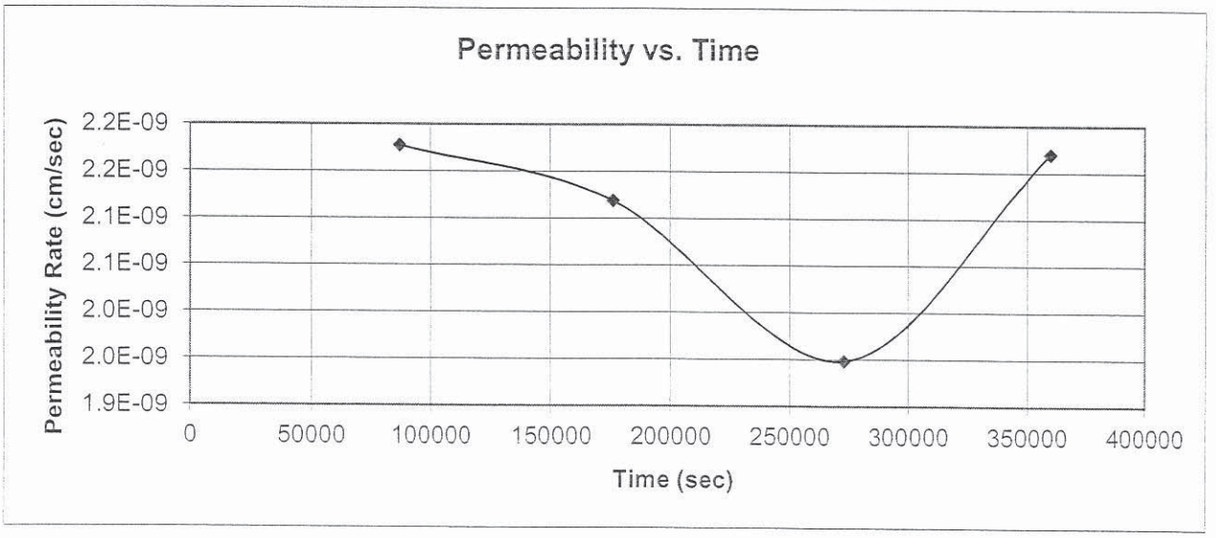
Dia. (in.)	2.83	**Length (in)**	2.66	**Weight (gr)**	494.4
Wet Density (pcf)	112.4	**Moisture Content (%)**	30.7	**Dry Density (pcf)**	86.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.2	**Minimum Hydraulic Gradient**	12.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

2.1E-09



Reviewed By:

Corey Chascin 6/16/15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 8, 2015
Sample Number:	C2-118	**Date Completed:**	May 15, 2015
		Date Revised:	June 10, 2015

Sample Information:

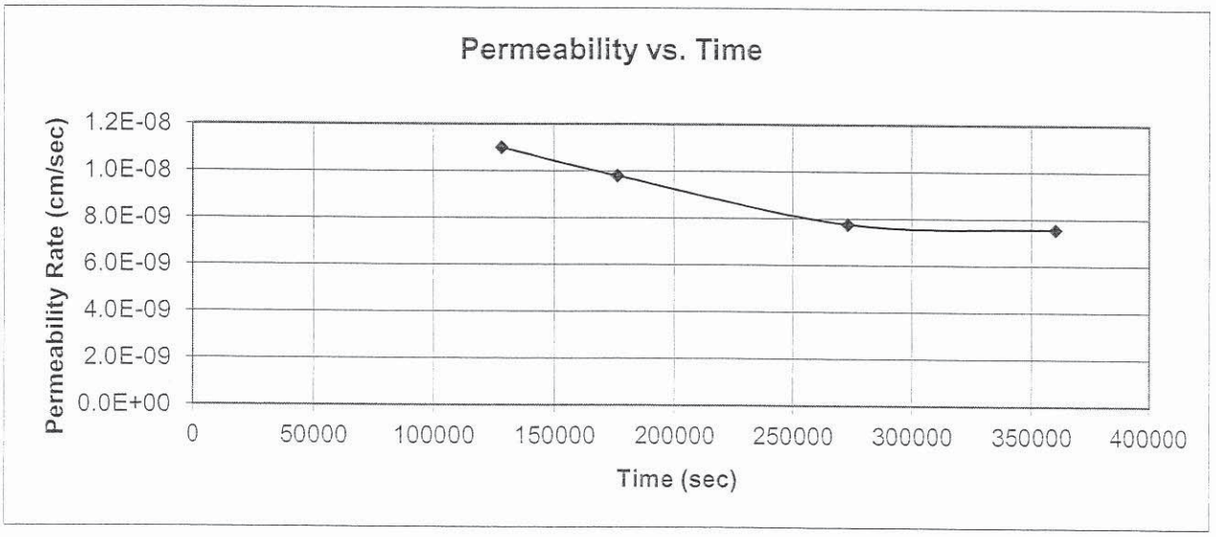
Dia. (in.)	2.84	**Length (in)**	2.66	**Weight (gr)**	524.1
Wet Density (pcf)	118.1	**Moisture Content (%)**	27.6	**Dry Density (pcf)**	92.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.0	**Minimum Hydraulic Gradient**	11.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

9.0E-09



Reviewed By:

Corey Chascin 6/16/15

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 8, 2015
Sample Number:	C2-119	**Date Completed:**	May 15, 2015
		Date Revised:	June 10, 2015

Sample Information:

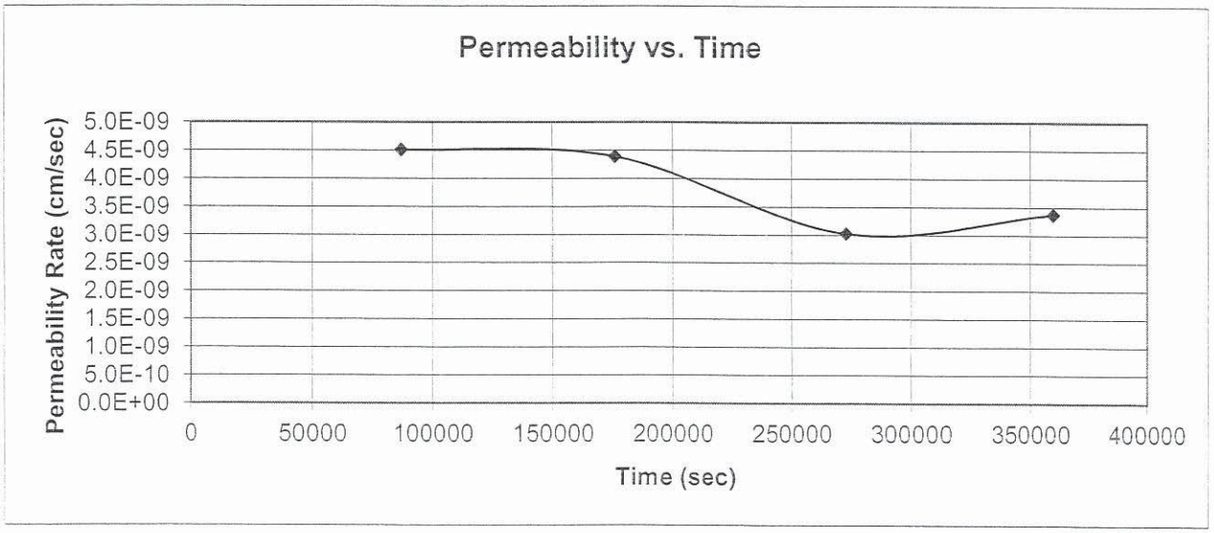
Dia. (in.)	2.83	**Length (in)**	2.75	**Weight (gr)**	526.2
Wet Density (pcf)	115.5	**Moisture Content (%)**	28.7	**Dry Density (pcf)**	89.7

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.3	**Minimum Hydraulic Gradient**	11.6
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.8E-09



Reviewed By:

Corey Chascin 6/10/15

Corey T. Chascin, E.I.

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REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: May 15, 2015
Date Reported: May 20, 2015
Date Assigned: May 8, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C1-122	NA	NA	71	19	52	32.3%	48.6%
C1-124	NA	NA	66	17	49	30.7%	48.6%
C1-126	NA	NA	NT	NT	NT	30.8%	50.8%
C2-118	NA	NA	74	22	52	27.6%	52.5%
C2-119	NA	NA	76	19	57	28.7%	51.4%

ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

Corey T. Chascin 5/22/15

Corey T. Chascin, E.I.

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REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: May 22, 2015
Date Reported: June 9, 2015
Date Assigned: May 22, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C1-198			72	25	47	42.9%	55.7%
C1-200			88	27	61	43.3%	56.4%
C1-202			75	25	50	44.6%	55.7%
C2-193			65	21	44	38.8%	57.6%
C2-195			79	25	54	44.7%	48.1%
C2-197			77	26	51	46.5%	55.3%
C1-128			75	24	51	38.6%	54.2%
C1-130			NT	NT	NT	34.9%	42.3%
C1-133			76	24	52	41.3%	54.9%
C2-124			NT	NT	NT	34.7%	53.6%
C2-125			72	24	48	32.7%	48.6%
C2-126			NT	NT	NT	34.5%	56.8%
C2-129			NT	NT	NT	35.8%	54.0%

ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

Corey T. Ohascin 6/9/15

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C1-198	**Date Completed:**	May 30, 2015

Sample Information:

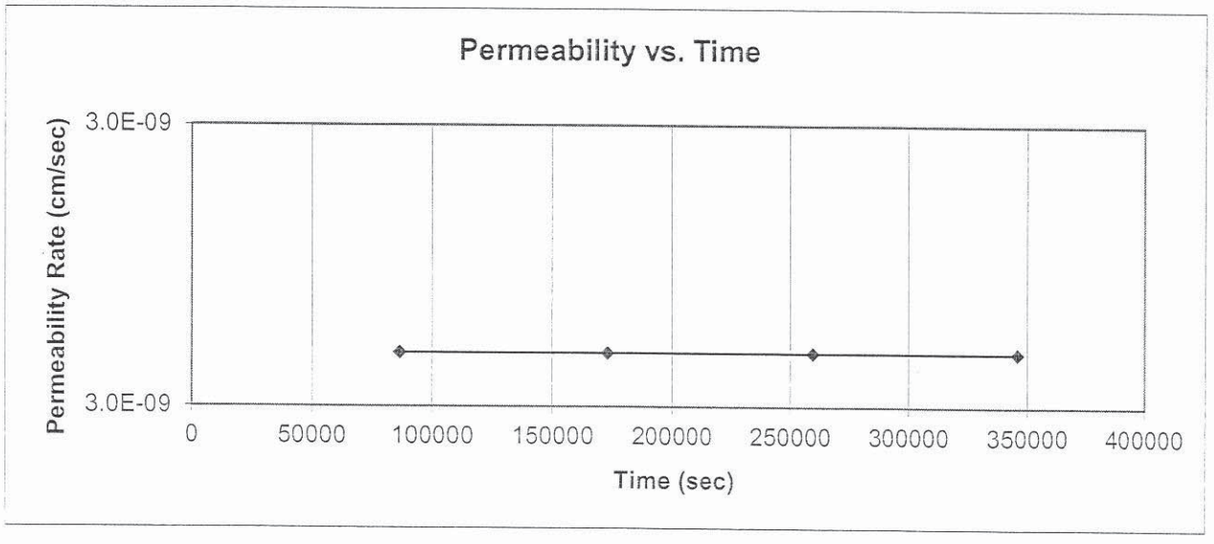
Dia. (in.)	2.81	**Length (in)**	2.43	**Weight (gr)**	397.36
Wet Density (pcf)	100.5	**Moisture Content (%)**	42.9	**Dry Density (pcf)**	70.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	26.5	**Minimum Hydraulic Gradient**	13.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.0E-09



Reviewed By:

Corey T Chascin 6/6/15

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C1-200	**Date Completed:**	May 30, 2015

Sample Information:

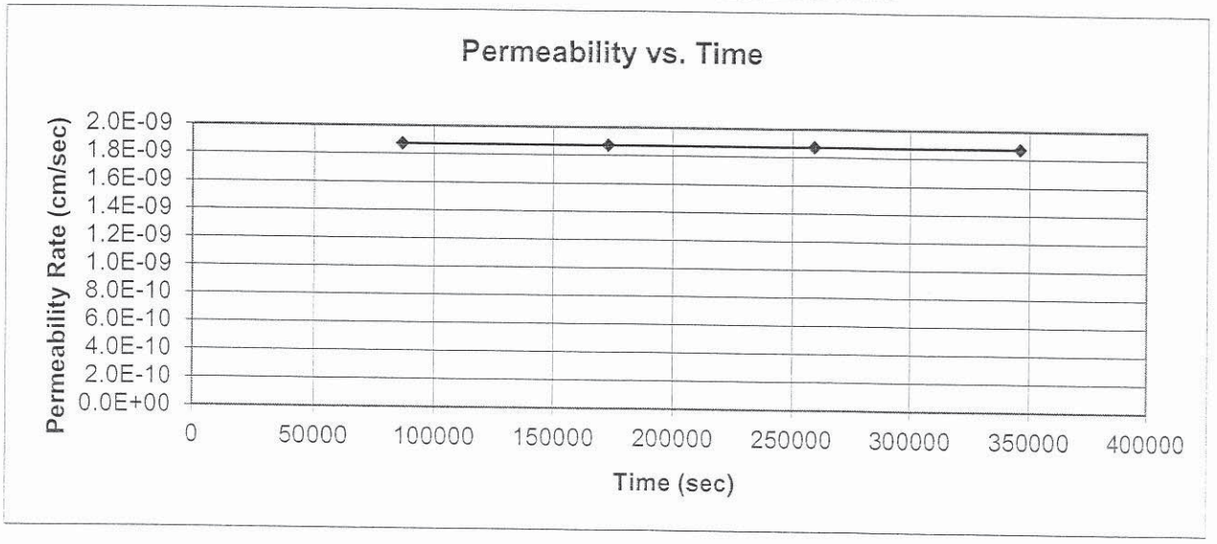
Dia. (in.)	2.82	**Length (in)**	2.25	**Weight (gr)**	380.01
Wet Density (pcf)	103.2	**Moisture Content (%)**	43.3	**Dry Density (pcf)**	72.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.6	**Minimum Hydraulic Gradient**	14.3
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

1.9E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C1-202	**Date Completed:**	May 30, 2015

Sample Information:

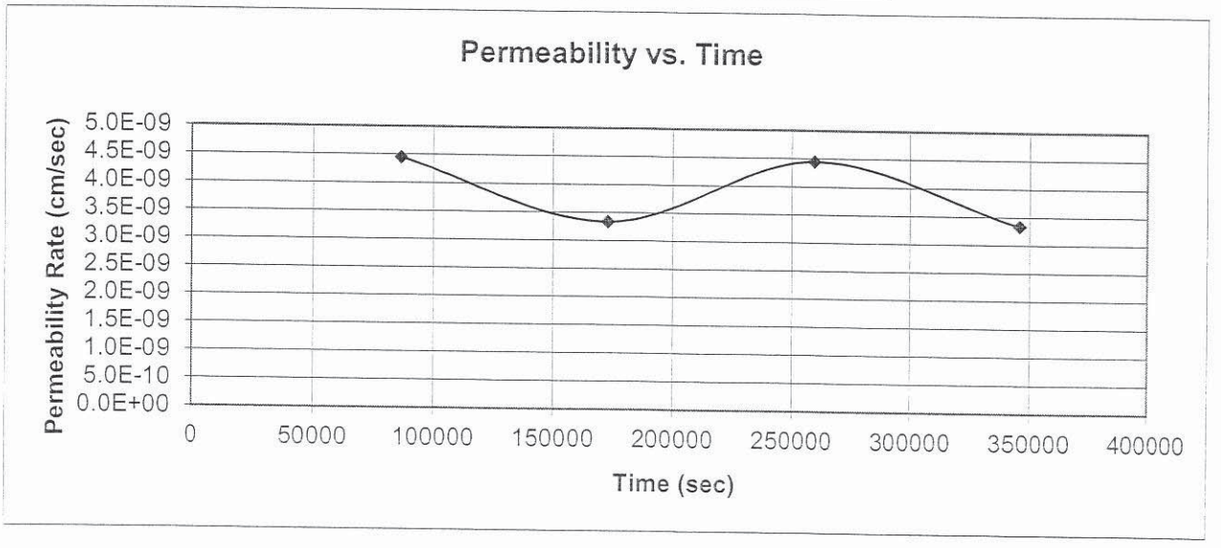
Dia. (in.)	2.74	**Length (in)**	2.53	**Weight (gr)**	394.89
Wet Density (pcf)	100.9	**Moisture Content (%)**	44.6	**Dry Density (pcf)**	69.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.4	**Minimum Hydraulic Gradient**	12.7
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.9E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C2-193	**Date Completed:**	May 30, 2015

Sample Information:

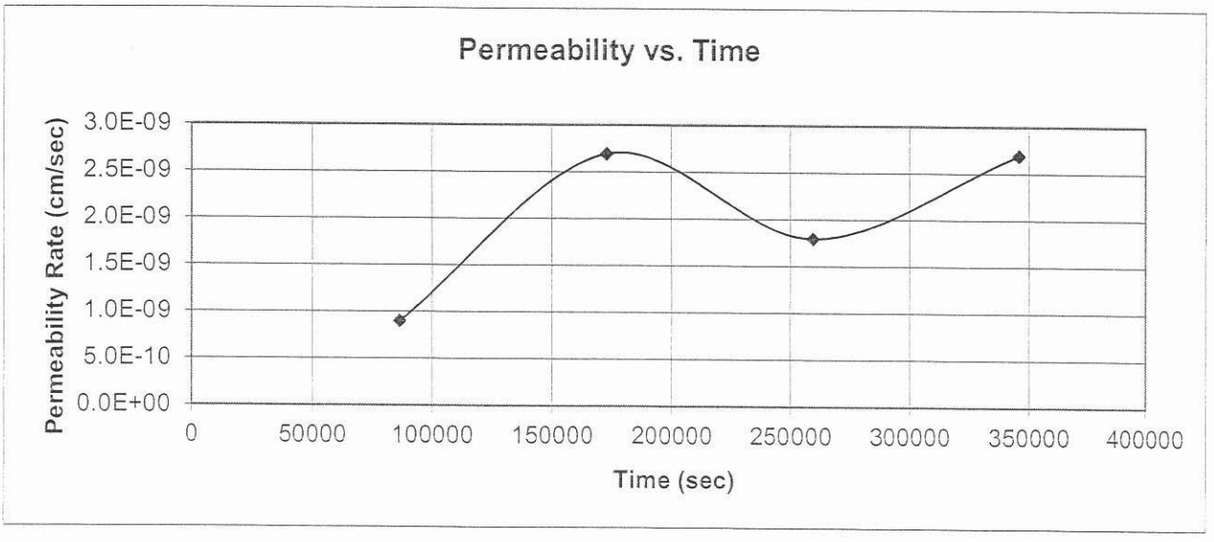
Dia. (in.)	2.80	**Length (in)**	2.13	**Weight (gr)**	369.17
Wet Density (pcf)	107.2	**Moisture Content (%)**	38.8	**Dry Density (pcf)**	77.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	30.2	**Minimum Hydraulic Gradient**	15.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

2.0E-09



Reviewed By:

Corey Chascin 6/6/15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C2-195	**Date Completed:**	May 30, 2015

Sample Information:

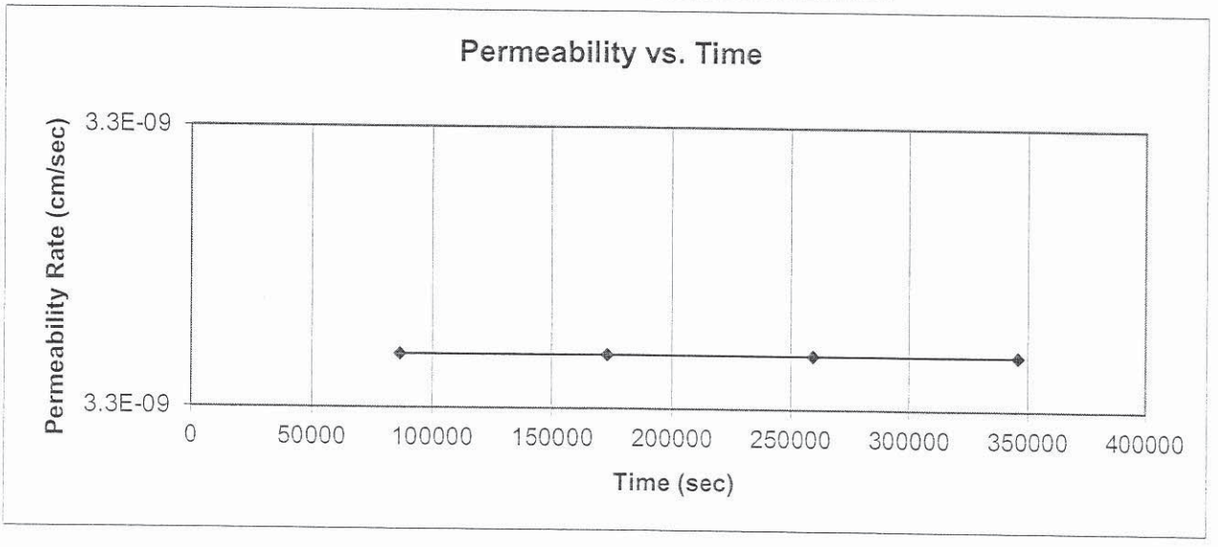
Dia. (in.)	2.82	**Length (in)**	2.62	**Weight (gr)**	450.99
Wet Density (pcf)	104.9	**Moisture Content (%)**	44.7	**Dry Density (pcf)**	72.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.5	**Minimum Hydraulic Gradient**	12.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.3E-09



Reviewed By:

Corey Chascin 6/10/15

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C2-197	**Date Completed:**	May 30, 2015

Sample Information:

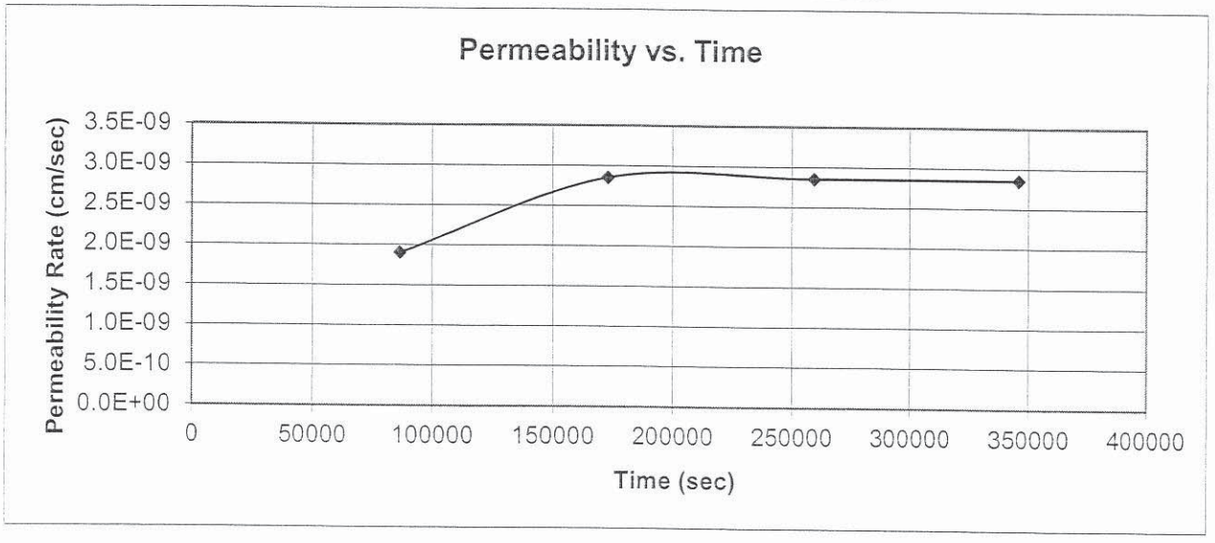
Dia. (in.)	2.79	**Length (in)**	2.25	**Weight (gr)**	378.34
Wet Density (pcf)	104.8	**Moisture Content (%)**	46.5	**Dry Density (pcf)**	71.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.6	**Minimum Hydraulic Gradient**	14.3
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

2.6E-09



Reviewed By:

Corey T. Chascin 6/6/15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C1-128	**Date Completed:**	May 30, 2015

Sample Information:

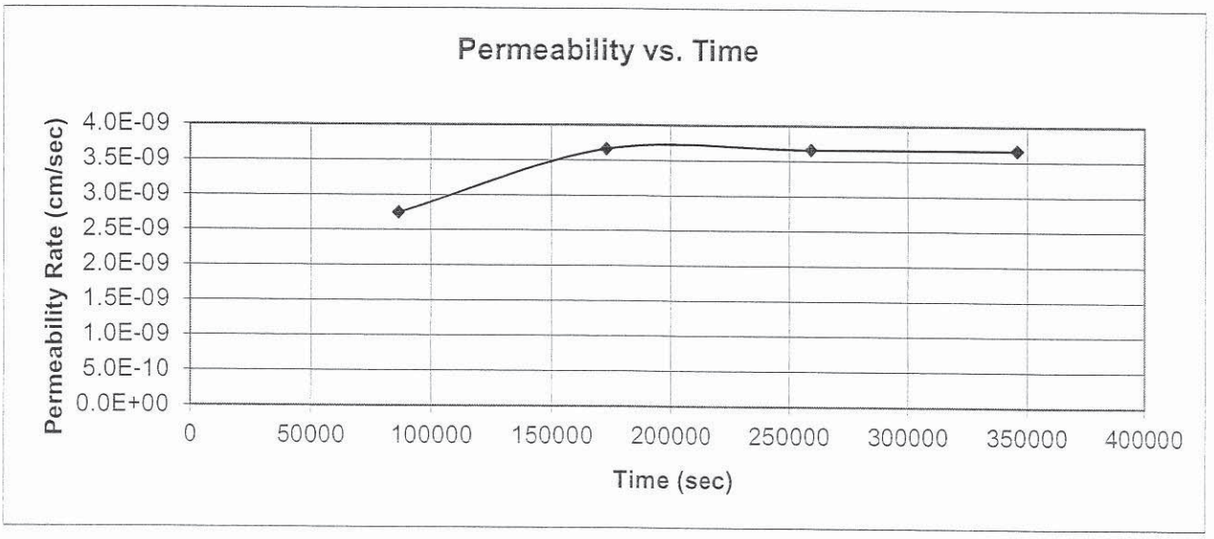
Dia. (in.)	2.83	**Length (in)**	2.22	**Weight (gr)**	404.9
Wet Density (pcf)	110.1	**Moisture Content (%)**	38.6	**Dry Density (pcf)**	79.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.9	**Minimum Hydraulic Gradient**	14.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.4E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C1-133	**Date Completed:**	May 30, 2015

Sample Information:

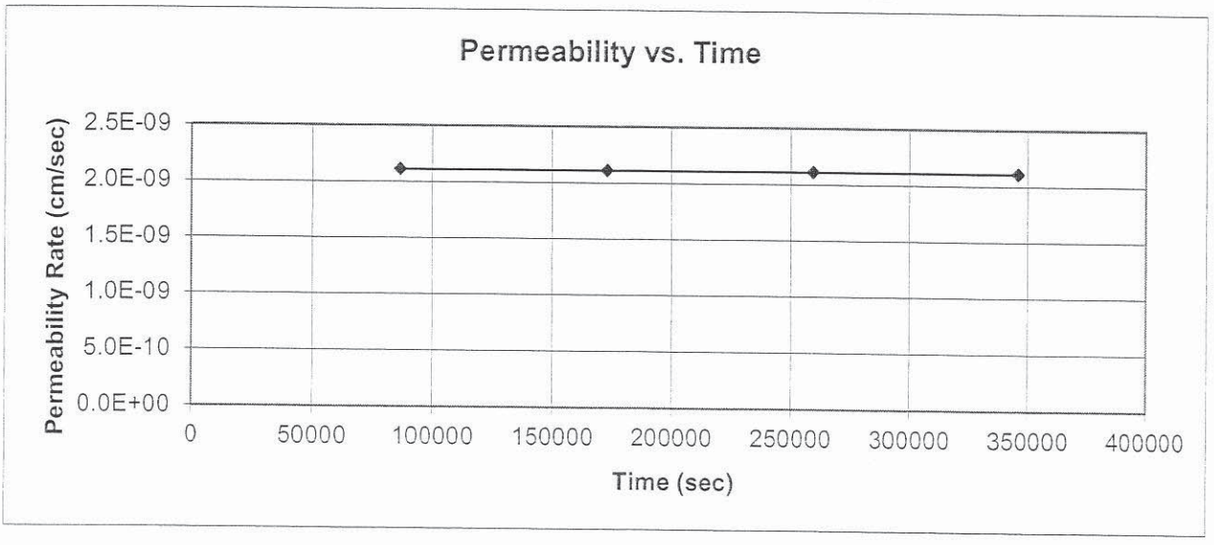
Dia. (in.)	2.83	**Length (in)**	2.55	**Weight (gr)**	455.35
Wet Density (pcf)	108.5	**Moisture Content (%)**	41.3	**Dry Density (pcf)**	76.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.2	**Minimum Hydraulic Gradient**	12.6
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

2.1E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 22, 2015
Sample Number:	C2-125	**Date Completed:**	May 30, 2015

Sample Information:

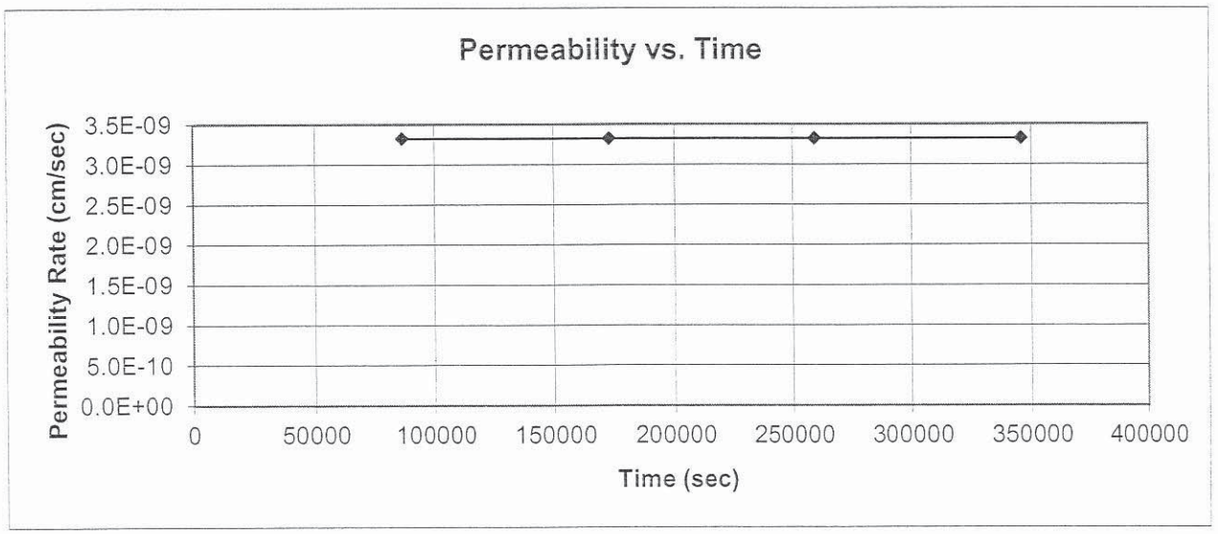
Dia. (in.)	2.83	**Length (in)**	2.69	**Weight (gr)**	481.54
Wet Density (pcf)	108.1	**Moisture Content (%)**	32.7	**Dry Density (pcf)**	81.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.9	**Minimum Hydraulic Gradient**	11.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.3E-09



Reviewed By:

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REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: May 15, 2015
Date Reported: May 20, 2015
Date Assigned: May 8, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C1-122	NA	NA	71	19	52	32.3%	48.6%
C1-124	NA	NA	66	17	49	30.7%	48.6%
C1-126	NA	NA	NT	NT	NT	30.8%	50.8%
C2-118	NA	NA	74	22	52	27.6%	52.5%
C2-119	NA	NA	76	19	57	28.7%	51.4%

ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

Corey C Chascin 5/22/15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	May 8, 2015
Sample Number:	C1-122	**Date Completed:**	May 15, 2015
		Date Revised:	June 10, 2015

Sample Information:

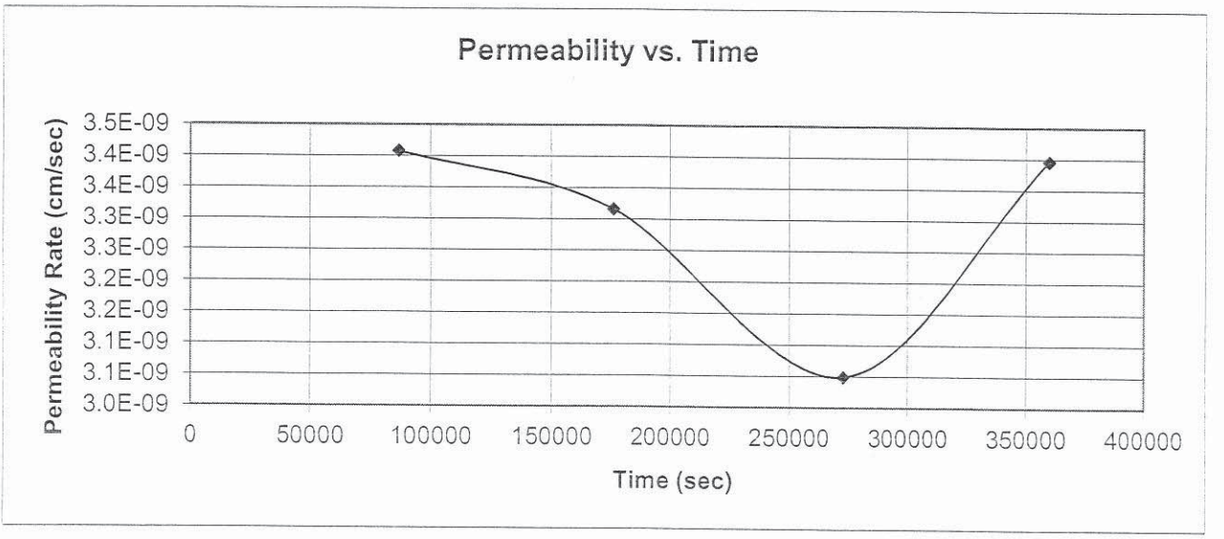
Dia. (in.)	2.82	**Length (in)**	2.75	**Weight (gr)**	505.2
Wet Density (pcf)	112.3	**Moisture Content (%)**	32.3	**Dry Density (pcf)**	84.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.4	**Minimum Hydraulic Gradient**	11.7
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.3E-09



Reviewed By:

Corey Chascin 6/16/15

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Report of Organic Loss Determination by Ignition & pH of Soil

Project Name:	TRLF Phase 4	**Project No.:**	6736-13-5237
Client:	Meskel and Associates	**Date Tested:**	April 29, 2015
		Date Reported:	May 1, 2015

As requested, Amec Foster Wheeler Environment & Infrastructure, Inc. has tested soil samples delivered to our Jacksonville laboratory on April 28, 2015. The samples were tested for total organic content (ASTM D-2974) and pH of soil (ASTM D-4972). The results are outlined below.

Sample No.	Location	Organic Content (percent)	pH
1	Terrace 2 Profile 37	**4.8%**	**5.91**
1	Terrace 3 Profile 37	**6.5%**	**5.96**
2	Terrace 2 Profile 9	**4.6%**	**5.94**
2	Terrace 3 Profile 9	**3.1%**	**5.02**

Note: Topsoil Phase 3

Respectfully Submitted

Corey Chascin 5/1/15

Corey T. Chascin, E.I.

amec foster wheeler

Report of Organic Loss Determination by Ignition & pH of Soil

Project Name:	TRLF Phase 4	**Project No.:**	6736-13-5237
Client:	Meskel and Associates	**Date Tested:**	April 29, 2015
		Date Reported:	May 1, 2015

As requested, Amec Foster Wheeler Environment & Infrastructure, Inc. has tested soil samples delivered to our Jacksonville laboratory on April 28, 2015. The samples were tested for total organic content (ASTM D-2974) and pH of soil (ASTM D-4972). The results are outlined below.

Sample No.	Location	Organic Content (percent)	pH
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2	Terrace 2 Profile 9	**4.6%**	**5.94**
2	Terrace 3 Profile 9	**3.1%**	**5.02**

Note: Topsoil Phase 3

Respectfully Submitted

Corey Chascin 5/1/15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: March 16, 2015
Date Reported: March 26, 2015
Date Assigned: March 16, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C1-192	NA	NA	66	20	46	34.3%	52.9%
C1-194	NA	NA	65	22	43	33.8%	51.4%
C1-196	NA	NA	74	19	55	28.3%	49.3%
C2-187	NA	NA	72	22	50	29.9%	53.2%
C2-189	NA	NA	69	18	51	35.6%	53.4%
C2-191	NA	NA	75	22	53	31.4%	53.5%

ASTM D-2974, D-1140, D-2410 *NT- Not Tested

Reviewed By

Corey Chascin 4/8/15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 16, 2015
Sample Number:	C1-192	**Date Completed:**	March 23, 2015

Sample Information:

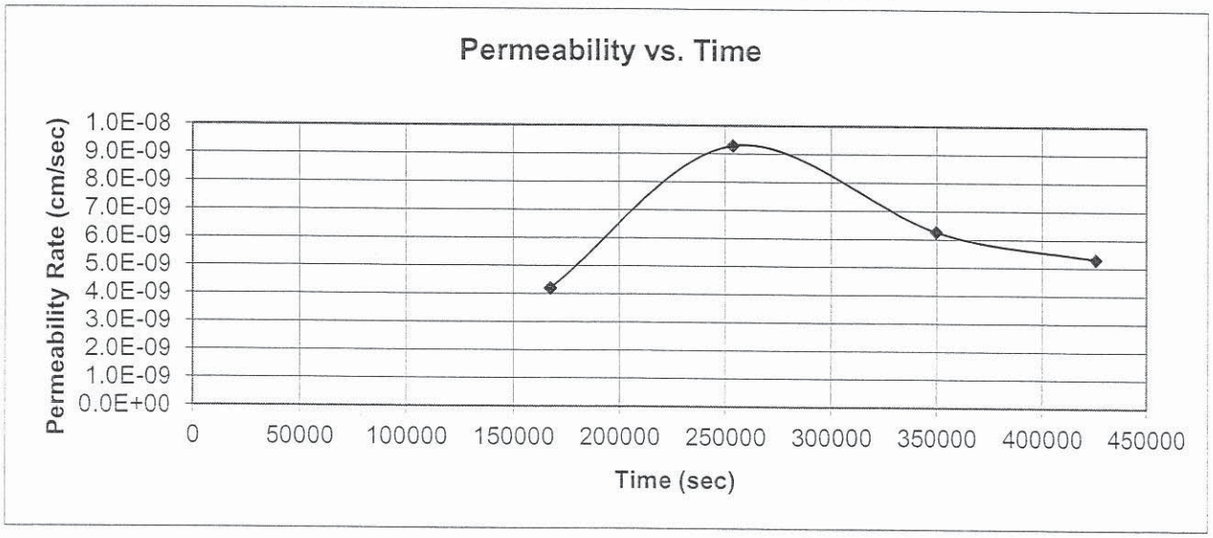
Dia. (in.)	2.80	**Length (in)**	2.76	**Weight (gr)**	501.5
Wet Density (pcf)	112.4	**Moisture Content (%)**	34.3	**Dry Density (pcf)**	83.7

Test Parameters:

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.3	**Minimum Hydraulic Gradient**	21.6
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

6.3E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 16, 2015
Sample Number:	C1-194	**Date Completed:**	March 23, 2015

Sample Information:

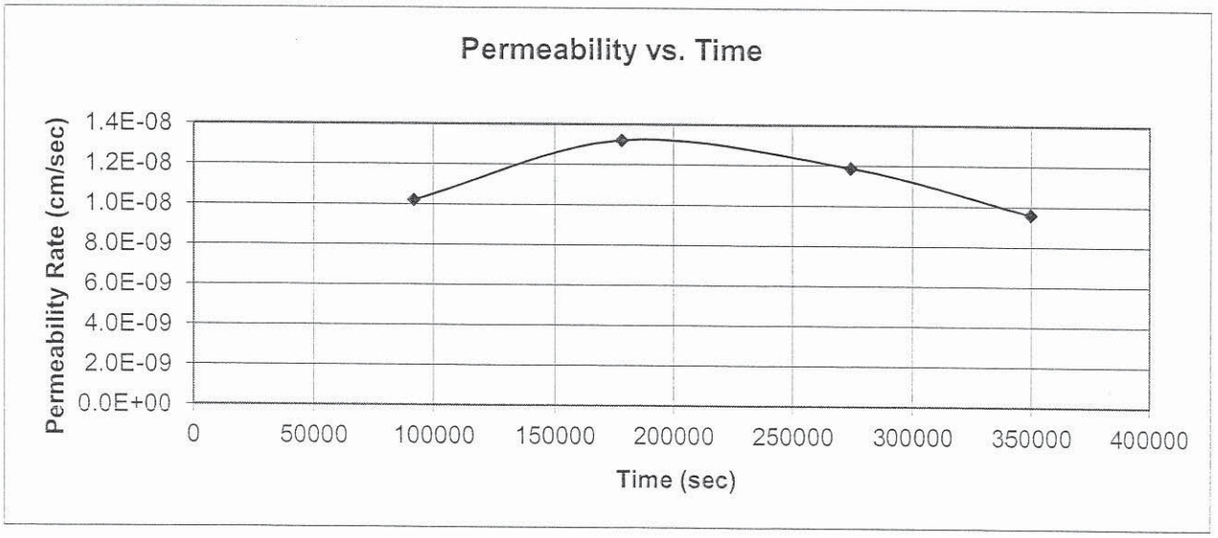
Dia. (in.)	2.80	**Length (in)**	2.86	**Weight (gr)**	519.8
Wet Density (pcf)	112.2	**Moisture Content (%)**	33.8	**Dry Density (pcf)**	83.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.4	**Minimum Hydraulic Gradient**	20.8
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.1E-08



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 16, 2015
Sample Number:	C1-196	**Date Completed:**	March 23, 2015

Sample Information:

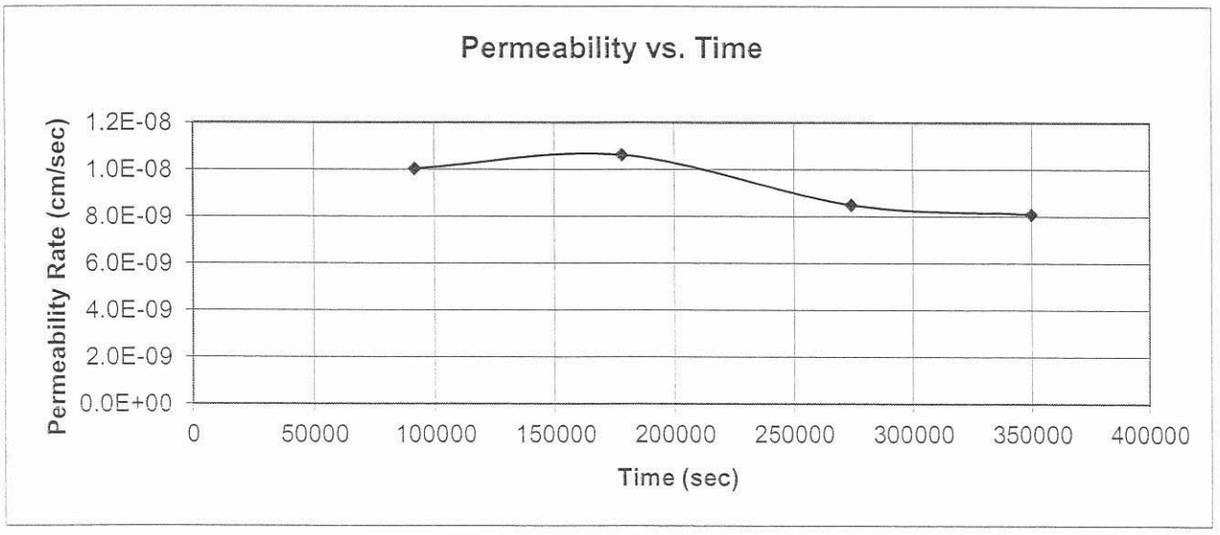
Dia. (in.)	2.82	**Length (in)**	2.84	**Weight (gr)**	512.3
Wet Density (pcf)	110.3	**Moisture Content (%)**	28.3	**Dry Density (pcf)**	86.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.6	**Minimum Hydraulic Gradient**	21.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

9.3E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 16, 2015
Sample Number:	C2-187	**Date Completed:**	March 24, 2015

Sample Information:

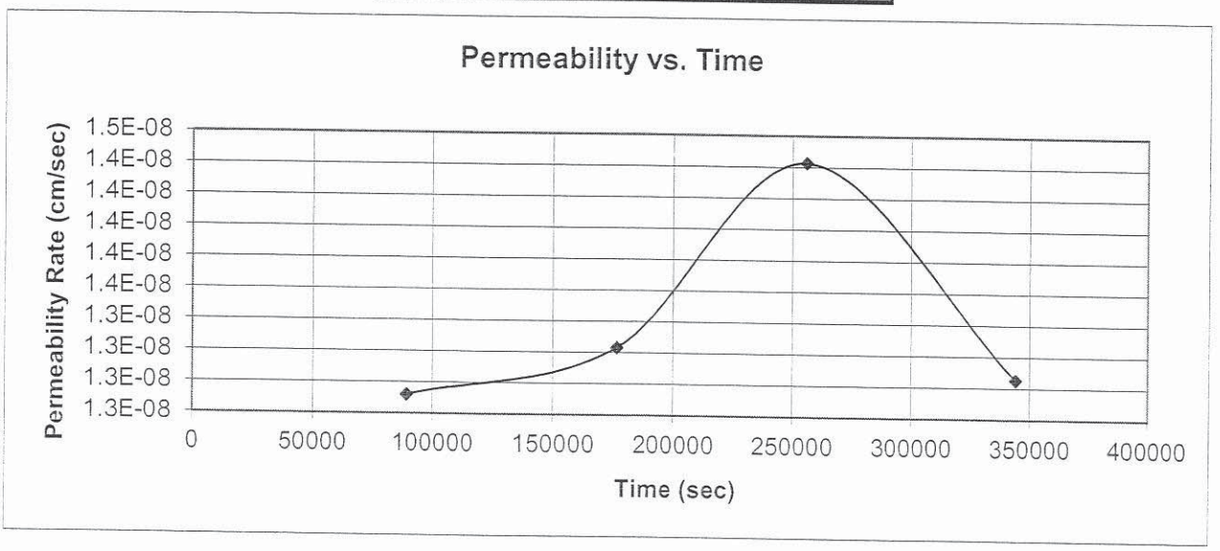
Dia. (in.)	2.84	**Length (in)**	3.24	**Weight (gr)**	573.1
Wet Density (pcf)	106.7	**Moisture Content (%)**	29.9	**Dry Density (pcf)**	82.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	19.7	**Minimum Hydraulic Gradient**	18.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.3E-08



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 16, 2015
Sample Number:	C2-189	**Date Completed:**	March 24, 2015

Sample Information:

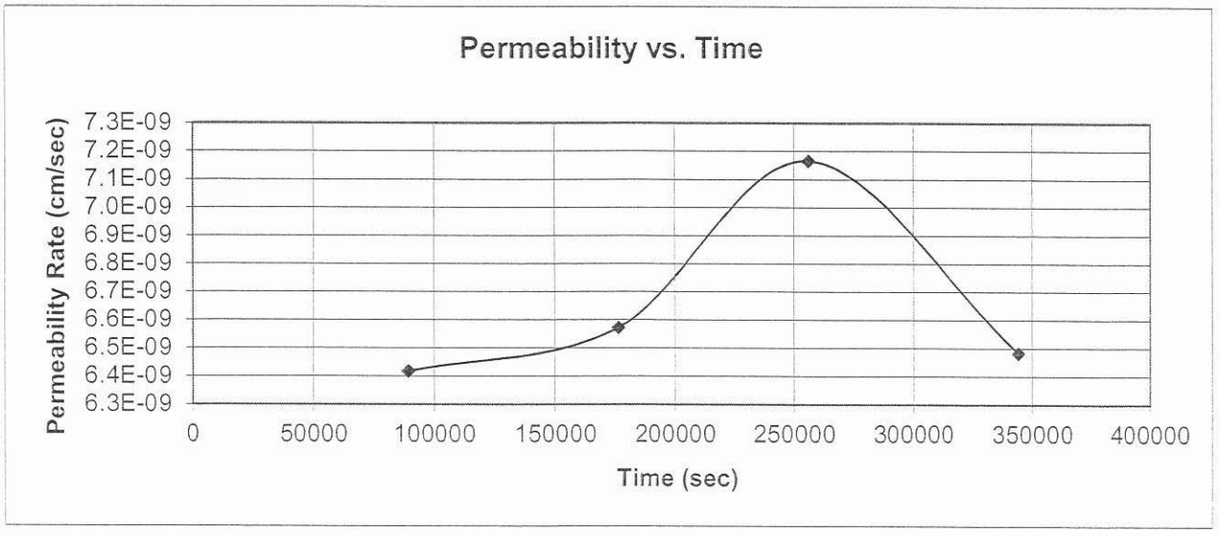
Dia. (in.)	2.75	**Length (in)**	3.02	**Weight (gr)**	526.2
Wet Density (pcf)	112.2	**Moisture Content (%)**	35.6	**Dry Density (pcf)**	82.7

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.3	**Minimum Hydraulic Gradient**	19.8
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

6.7E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 16, 2015
Sample Number:	C2-191	**Date Completed:**	March 24, 2015

Sample Information:

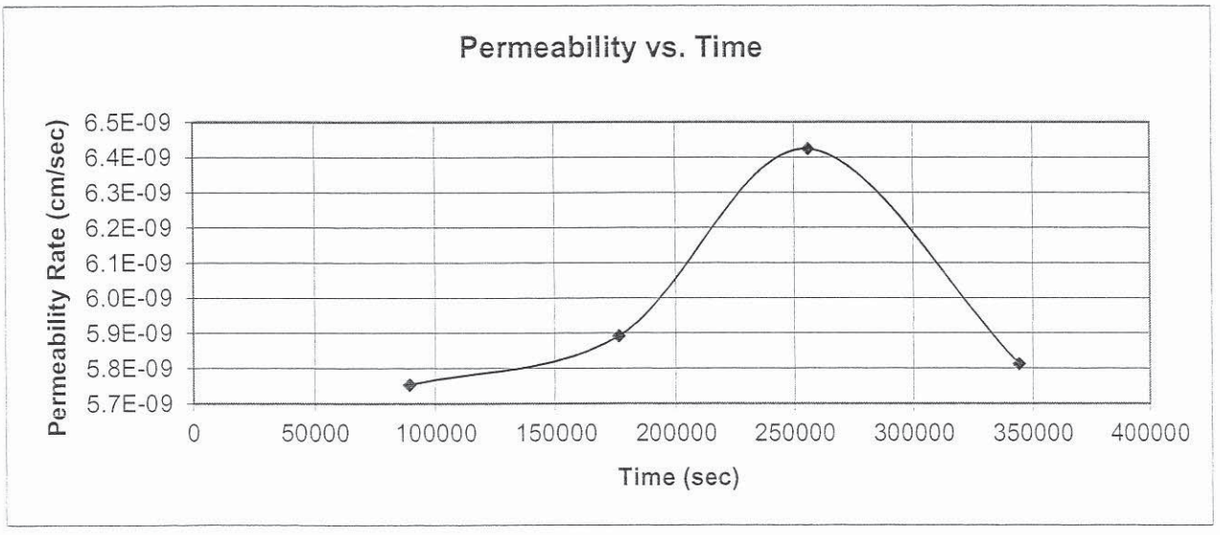
Dia. (in.)	2.83	**Length (in)**	2.88	**Weight (gr)**	538.4
Wet Density (pcf)	113.3	**Moisture Content (%)**	31.4	**Dry Density (pcf)**	86.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	20.8
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

6.0E-09



Reviewed By:

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REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: March 13, 2015
Date Reported: March 26, 2015
Date Assigned: March 13, 2016

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C1-114	NA	NA	63	22	41	40.2%	51.4%
C1-116	NA	NA	NT	NT	NT	43.3%	53.4%
C1-117	NA	NA	78	23	55	43.2%	53.0%
C1-118	NA	NA	NT	NT	NT	32.8%	51.7%
C1-120	NA	NA	NT	NT	NT	36.1%	55.9%
C2-110	NA	NA	64	19	45	29.5%	61.4%
C2-111	NA	NA	NT	NT	NT	25.1%	57.8%
C2-114	NA	NA	70	21	49	24.0%	51.7%
C2-115	NA	NA	NT	NT	NT	39.0%	68.2%

ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

Corey Chastain 4/8/15

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 13, 2015
Sample Number:	C1-114	**Date Completed:**	March 20, 2015

Sample Information:

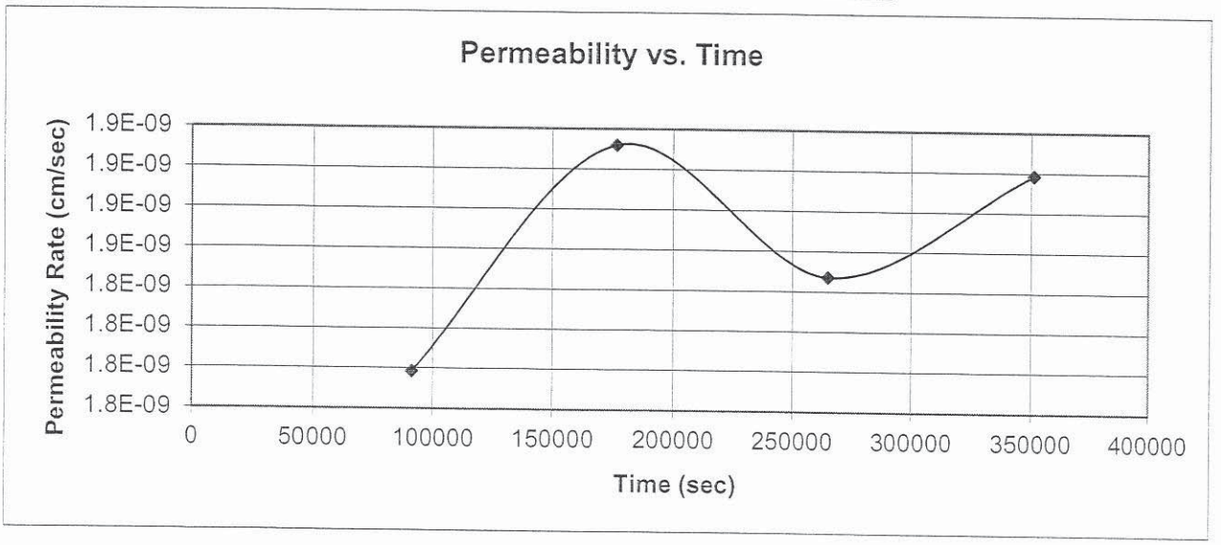
Dia. (in.)	2.82	**Length (in)**	2.28	**Weight (gr)**	393.2
Wet Density (pcf)	105.1	**Moisture Content (%)**	40.2	**Dry Density (pcf)**	75.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.2	**Minimum Hydraulic Gradient**	26.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.9E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 13, 2015
Sample Number:	C1-117	**Date Completed:**	March 20, 2015

Sample Information:

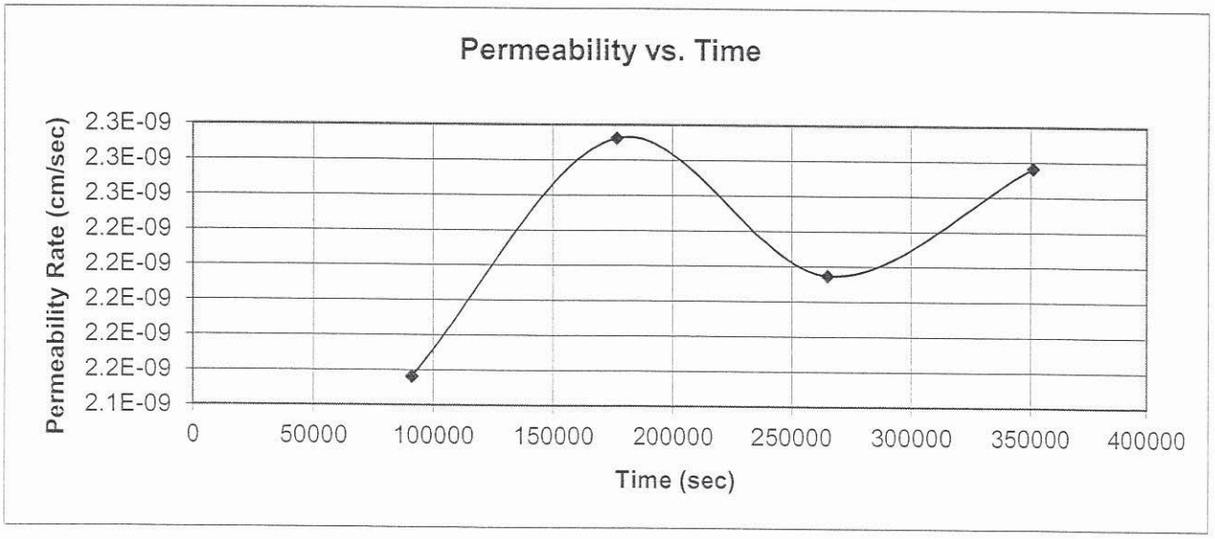
Dia. (in.)	2.85	**Length (in)**	2.78	**Weight (gr)**	500.5
Wet Density (pcf)	107.9	**Moisture Content (%)**	43.2	**Dry Density (pcf)**	75.4

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.1	**Minimum Hydraulic Gradient**	21.5
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

2.2E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 13, 2015
Sample Number:	C2-110	**Date Completed:**	March 20, 2015

Sample Information:

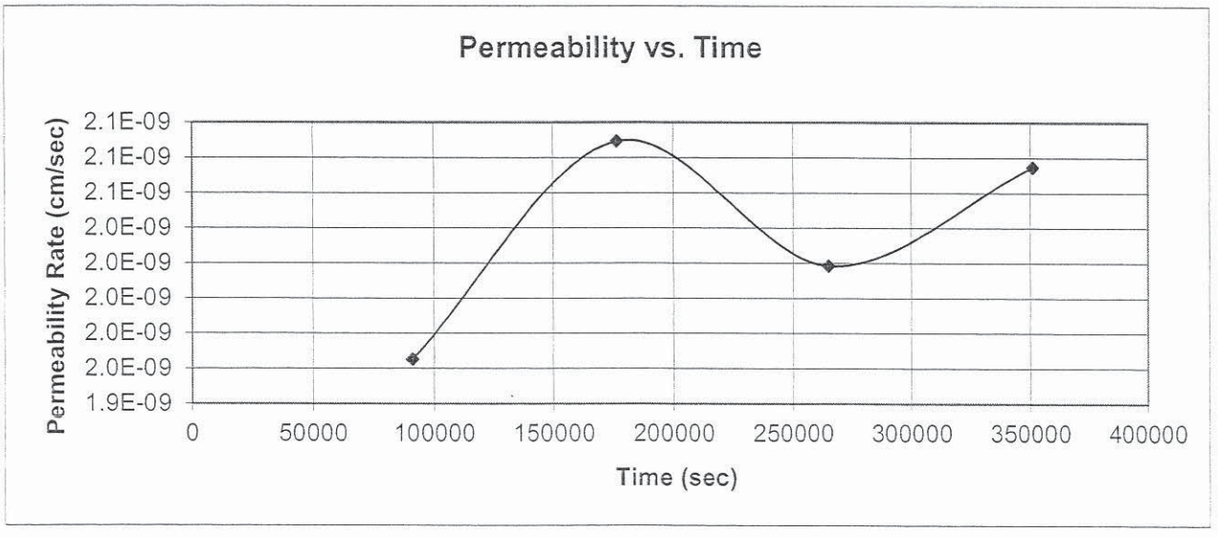
Dia. (in.)	2.83	**Length (in)**	2.50	**Weight (gr)**	453.49
Wet Density (pcf)	109.9	**Moisture Content (%)**	29.5	**Dry Density (pcf)**	84.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.7	**Minimum Hydraulic Gradient**	23.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

2.0E-09



Reviewed By:

Corey Chascin 4/8/15

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	March 13, 2015
Sample Number:	C2-114	**Date Completed:**	March 20, 2015

Sample Information:

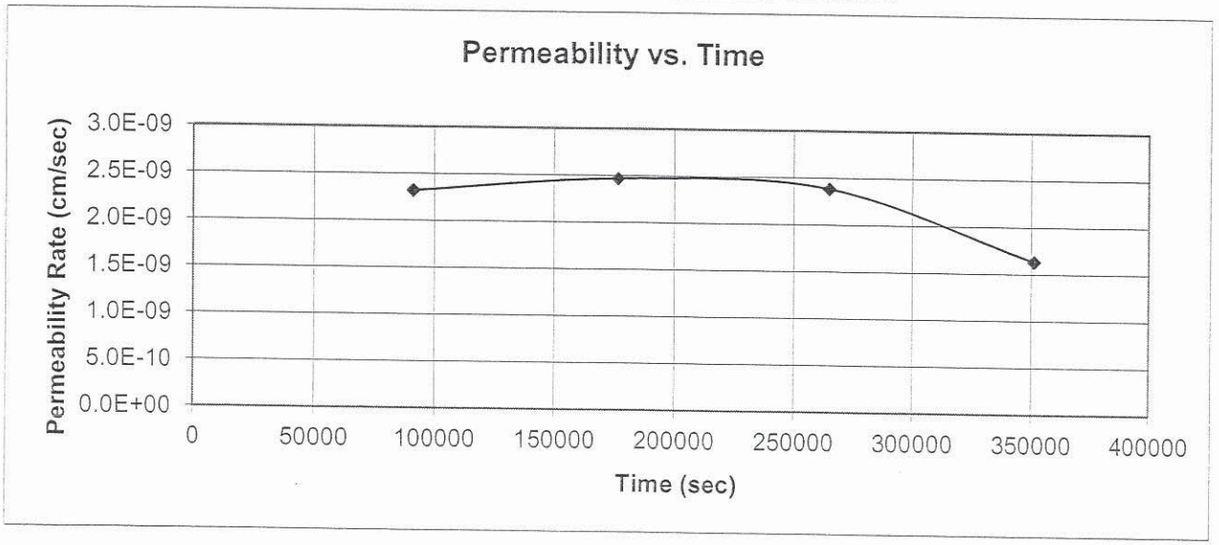
Dia. (in.)	2.86	**Length (in)**	2.01	**Weight (gr)**	361.85
Wet Density (pcf)	106.8	**Moisture Content (%)**	24.0	**Dry Density (pcf)**	86.2

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	31.9	**Minimum Hydraulic Gradient**	29.7
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

2.2E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C2-98

Project Number: 6736-13-5237

Date Received: February 11, 2015

Date Completed: March 16, 2015

Sample Information:

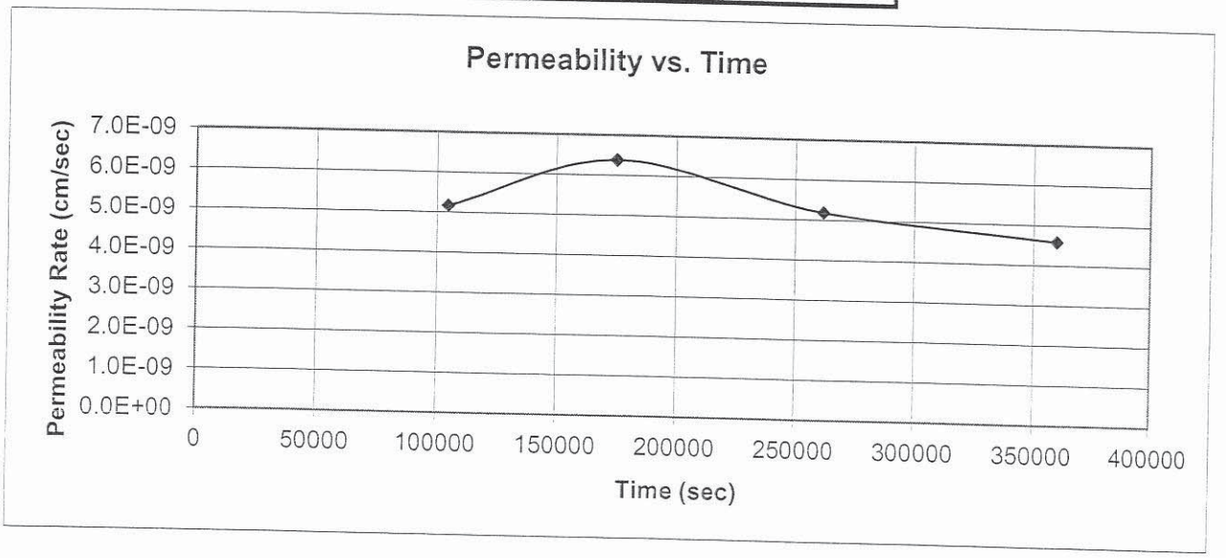
Dia. (in.)	2.84	**Length (in)**	2.54	**Weight (gr)**	483.65
Wet Density (pcf)	114.7	**Moisture Content (%)**	32.3	**Dry Density (pcf)**	86.7

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.3	**Minimum Hydraulic Gradient**	23.5
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

5.3E-09



Reviewed By:

Corey Chascin 3.27.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: March 10, 2015
Date Reported: March 16, 2015
Date Assigned: March 10, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C2-98	NA	NA	71	20	51	32.3%	54.5%

ASTM D-2974, D-1140, D-2410

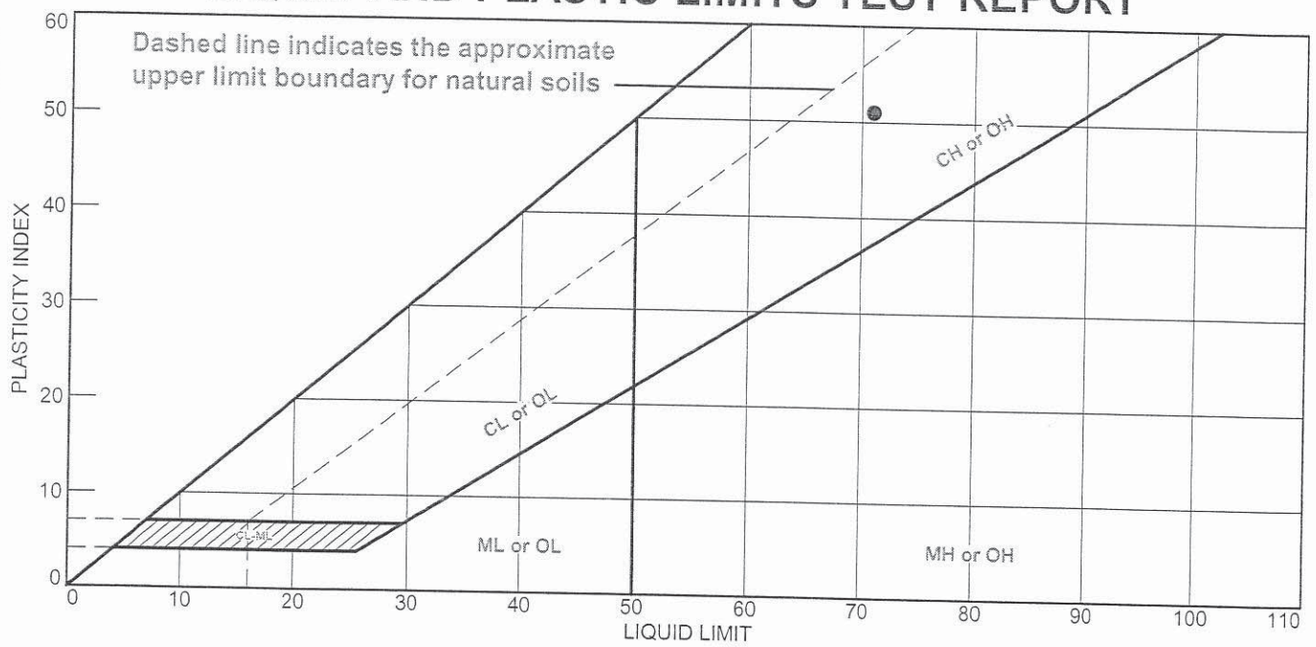
*NT- Not Tested

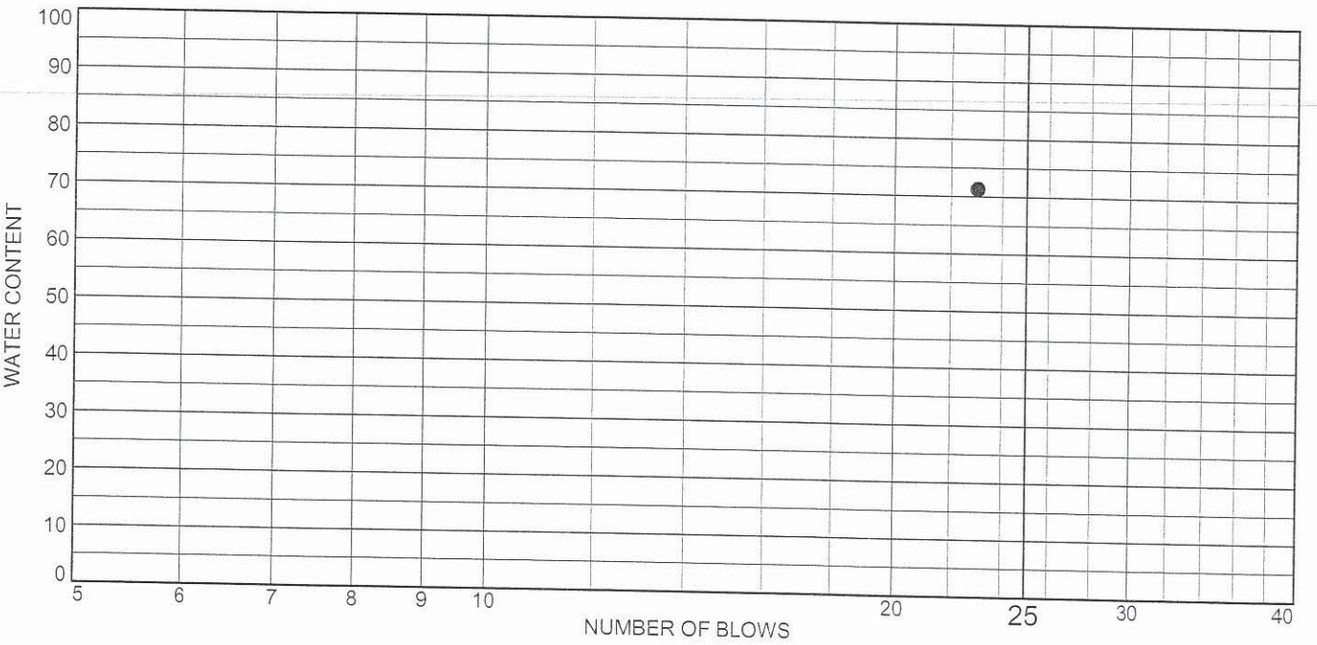
Reviewed By

Corey Chasdin 3.27.15

Corey Chasdin. E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●		71	20	51			

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Source of Sample: Perms 3-10-15
Sample Number: C2-98

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: AC **Checked By:** Corey Chascin, E.I. Corey Chascin 3.27.15

SET ID: 200904785

AMEC Foster Wheeler Environment and Infrastructure, Inc.
6256 Greenland Road, Jacksonville, FL 32258

amec foster wheeler

Concrete Field and Lab Test Data

CLIENT: Meskel & Associates
PROJECT: Trailridge Landfill Phase 4
MIX ID: 2500
MIX DESC:

DATE: 2/5/2015
JOB NO: 6736-13-5237
REPORT NO: C004
SPECIFIED STRENGTH: 2,500 PSI

FIELD INFORMATION

DATE SAMPLED: 1/8/2015 **BY:** CLIENT
TIME BATCHED: **TIME SAMPLED:**
BATCH PLANT:
TRUCK: **DATE RECV'D:**
TICKET:

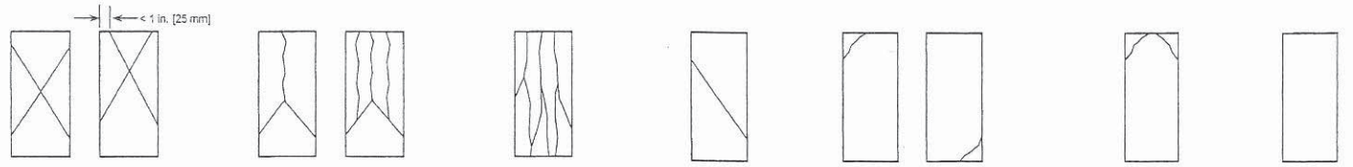
FIELD TESTS

	(ACTUAL)	(SPECIFIED)	
SLUMP, INCHES:		LO: #	HI: #
AIR CONTENT, %:		LO: #	HI: #
UNIT WEIGHT, PCF:		LO: #	HI: #
AIR TEMP, °F:		LO: #	HI: #
MIX TEMP, °F:		LO: #	HI: #

COMPRESSION TEST RESULTS

CYLINDER NO.	DIAMETER (IN.)	AREA (SQ. IN.)	TEST DATE	TEST AGE (DAYS)	MAX. LOAD (LBS.)	COMP. STRENGTH (PSI)	FRACTURE TYPE
1	4.00	12.6	1/15/2015	7	40,000	3,170	5
2	3.98	12.4	1/22/2015	14	65,250	5,260	5
3	3.99	12.5	2/5/2015	28	67,000	5,360	5
4			2/5/2015	28			

UNLESS OTHERWISE INDICATED, TESTS WERE PERFORMED IN GENERAL ACCORDANCE WITH THE FOLLOWING ASTM TEST METHODS C31, C39, C138, C143, C172, C173 or C231, C1064, C617 or C1231; SLUMP MEASURED TO ONE-QUARTER INCH; AIR CONTENT MEASURED TO ONE-TENTH PERCENT; # UNLESS OTHERWISE NOTED, INDICATES NO REQUIREMENT OR NOT SPECIFIED, AVAILABLE, AND/OR PROVIDED; * DENOTES CURED IN FIELD; <<< DENOTES LOW COMPRESSIVE STRENGTH; FRACTURE TYPE IS INDICATED BY NUMBER CORRESPONDING TO FRACTURE PATTERN SHOWN IN ASTM C39 AND SKETCHES BELOW:



Type 1 Type 2 Type 3 Type 4 Type 5 Type 6 Type 7

POUR LOCATION:
Concrete ditch pavement repairs and slots: D-47, D-44, D-41, D-38, D-55

DISTRIBUTION:
Sam Lansdale, Meskel & Associates (1)

REMARKS:
Set #1

RESPECTFULLY SUBMITTED

Michael J. Holm
FL Professional Engineer

MICHAEL J. HOLM LICENSE No. 63829 STATE OF FLORIDA PROFESSIONAL ENGINEER

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	January 30, 2015
Sample Number:	C1 184	**Date Completed:**	February 10, 2015
Location:			

Sample Information:

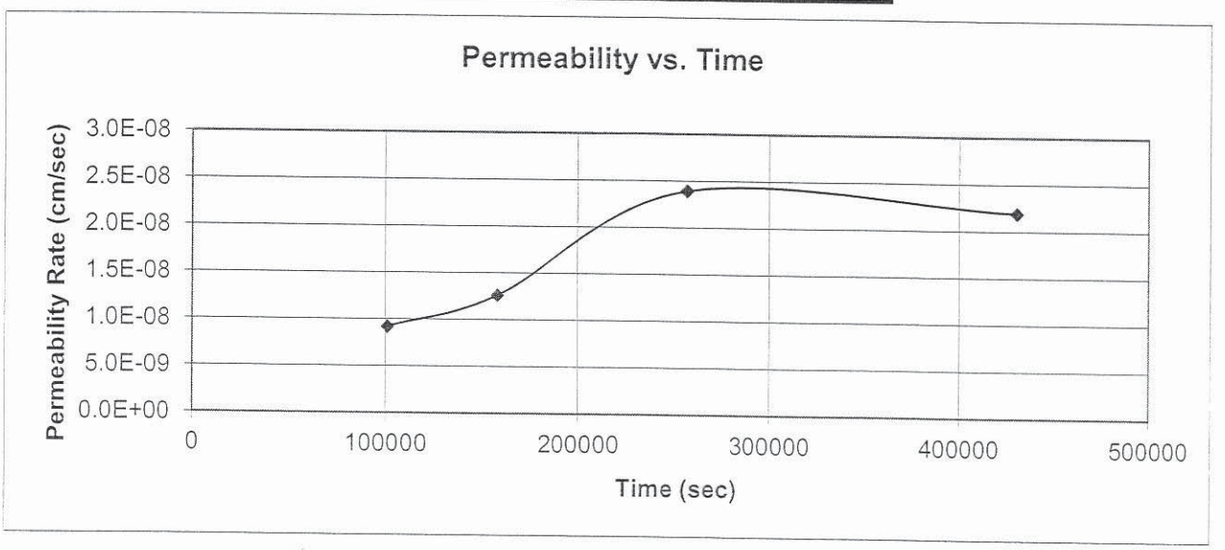
Dia. (in.)	2.78	**Length (in)**	2.78	**Weight (gr)**	465.19
Wet Density (pcf)	105.0	**Moisture Content (%)**	42.1	**Dry Density (pcf)**	73.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.0	**Minimum Hydraulic Gradient**	21.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.7E-08



Reviewed By:

Corey Chascin 3.5.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	January 30, 2015
Sample Number:	C1 180	**Date Completed:**	February 10, 2015
Location:			

Sample Information:

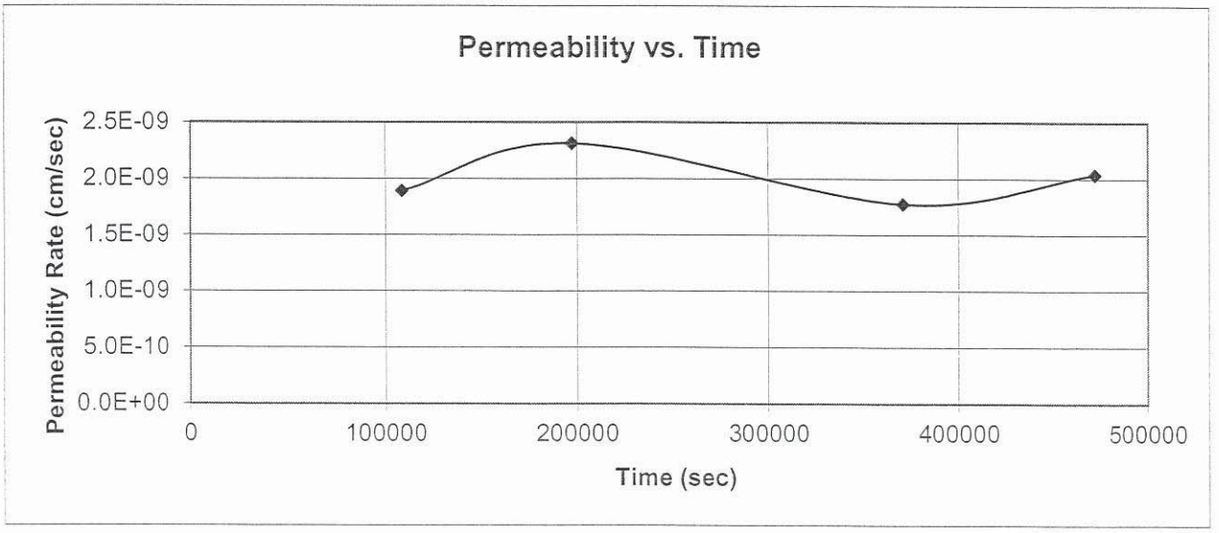
Dia. (in.)	2.81	**Length (in)**	2.85	**Weight (gr)**	477.66
Wet Density (pcf)	102.6	**Moisture Content (%)**	44.9	**Dry Density (pcf)**	70.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.6	**Minimum Hydraulic Gradient**	21.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

2.0E-09



Reviewed By:

Corey Chascin 3.5.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	January 30, 2015
Sample Number:	C2 177	**Date Completed:**	February 10, 2015
Location:			

Sample Information:

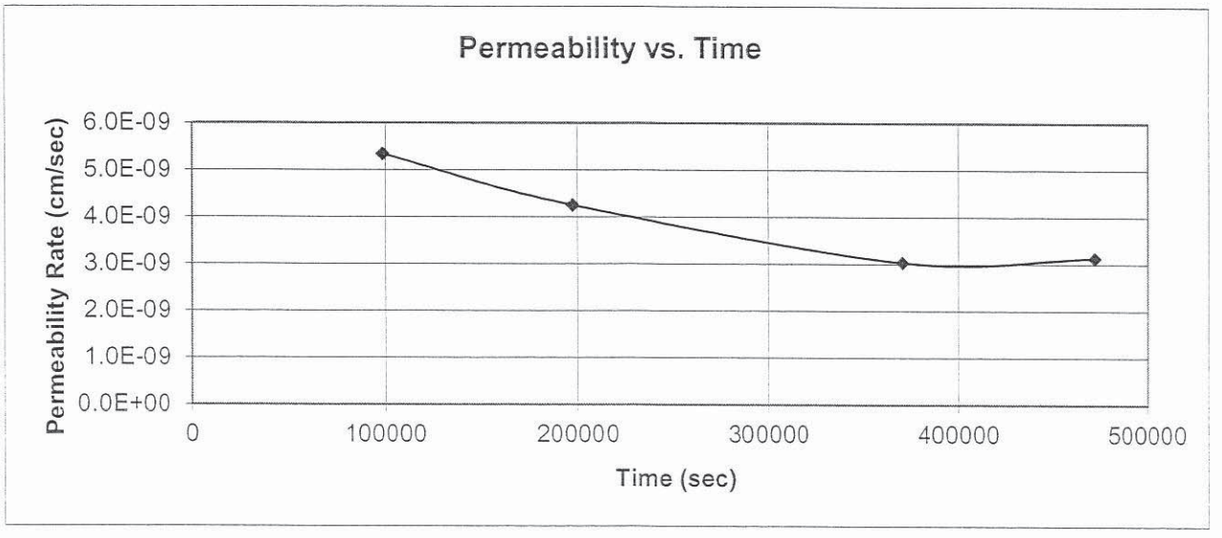
Dia. (in.)	2.79	**Length (in)**	2.86	**Weight (gr)**	491.2
Wet Density (pcf)	107.2	**Moisture Content (%)**	44.6	**Dry Density (pcf)**	74.2

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.4	**Minimum Hydraulic Gradient**	20.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.9E-09



Reviewed By:

Corey Chascin 3.5.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C2 175

Location:

Project Number: 6736-13-5237

Date Received: January 30, 2015

Date Completed: February 10, 2015

Sample Information:

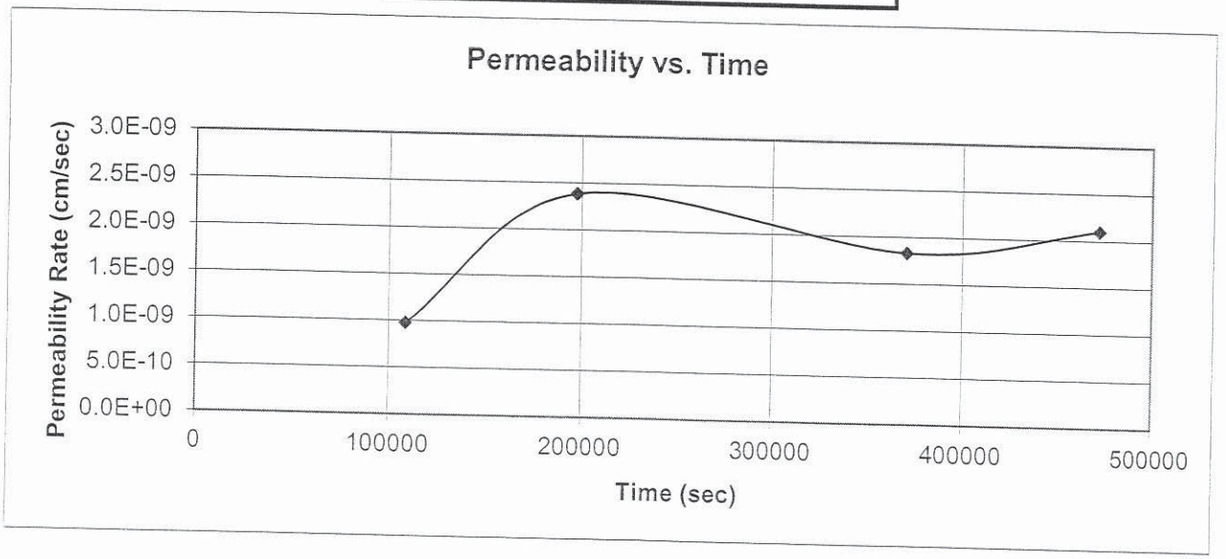
Dia. (in.)	2.74	**Length (in)**	2.78	**Weight (gr)**	473.39
Wet Density (pcf)	110.0	**Moisture Content (%)**	36.8	**Dry Density (pcf)**	80.4

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.1	**Minimum Hydraulic Gradient**	21.5
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.8E-09



Reviewed By:

Corey Chascin 3.5.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	January 30, 2015
Sample Number:	C2 179	**Date Completed:**	February 10, 2015
Location:			

Sample Information:

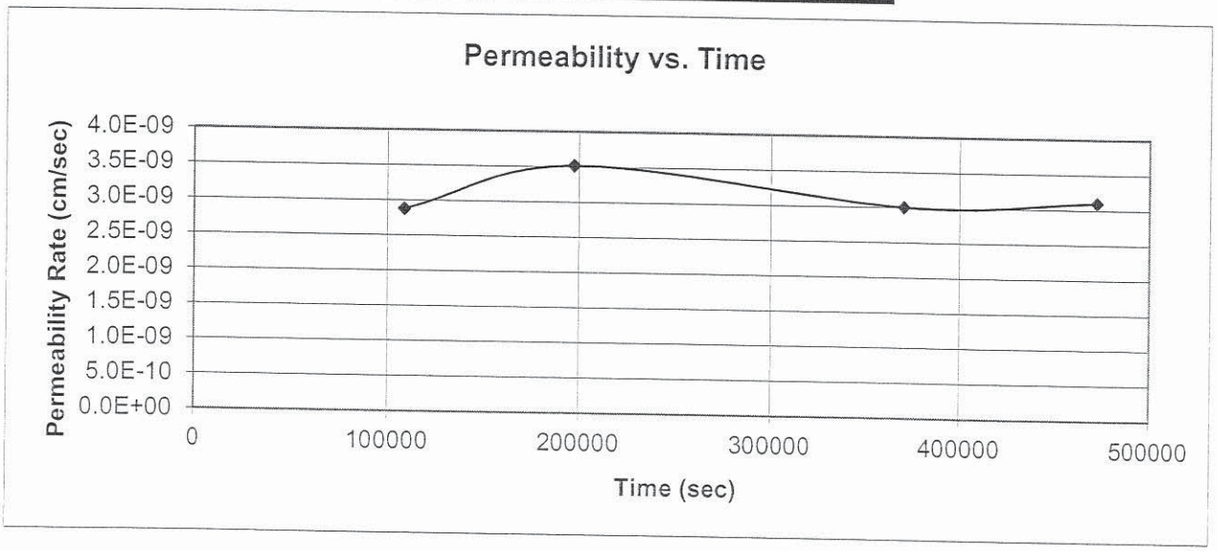
Dia. (in.)	2.74	**Length (in)**	2.75	**Weight (gr)**	457.9
Wet Density (pcf)	107.4	**Moisture Content (%)**	42.6	**Dry Density (pcf)**	75.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.4	**Minimum Hydraulic Gradient**	21.8
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.1E-09



Reviewed By:

Corey Chascin 3.5.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	January 30, 2015
Sample Number:	C1 182	**Date Completed:**	February 10, 2015
Location:			

Sample Information:

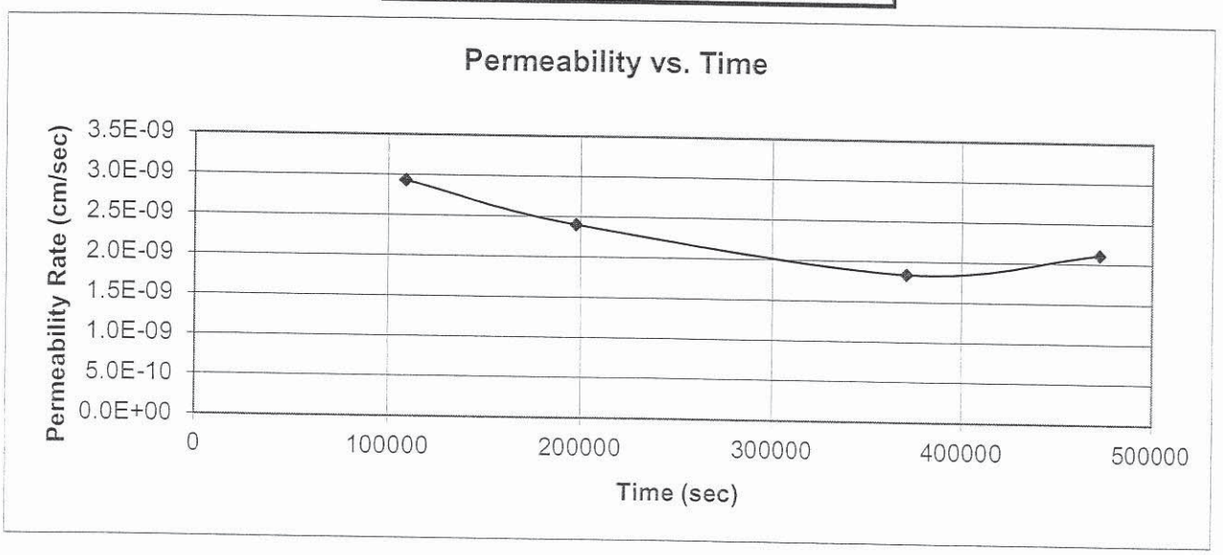
Dia. (in.)	2.78	**Length (in)**	2.89	**Weight (gr)**	483.85
Wet Density (pcf)	104.8	**Moisture Content (%)**	46.5	**Dry Density (pcf)**	71.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	20.7
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

2.3E-09



Reviewed By:

Corey T. Chascin 3.5.15

Corey T. Chascin, E.I.

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REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: February 1, 2015
Date Reported: February 11, 2015
Date Assigned: January 30, 2015

			Atterberg				
Boring No	Sample No	Depth (ft)	LL	PL	Plastic Index	Percent Moisture	Percent Passing # 200
C1-180	na	na	83	28	55	44.2%	53.6%
C1-182	na	na	84	33	51	44.1%	56.0%
C1-184	na	na	85	30	55	39.8%	52.1%
C2-175	na	na	90	29	61	35.9%	51.4%
C2-177	na	na	81	33	48	44.2%	48.1%
C2-179	na	na	89	35	54	40.4%	55.1%

ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

Corey Chascin 2.25.15

Corey Chascin. E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C1-93	**Date Completed:**	February 20, 2015

Sample Information:

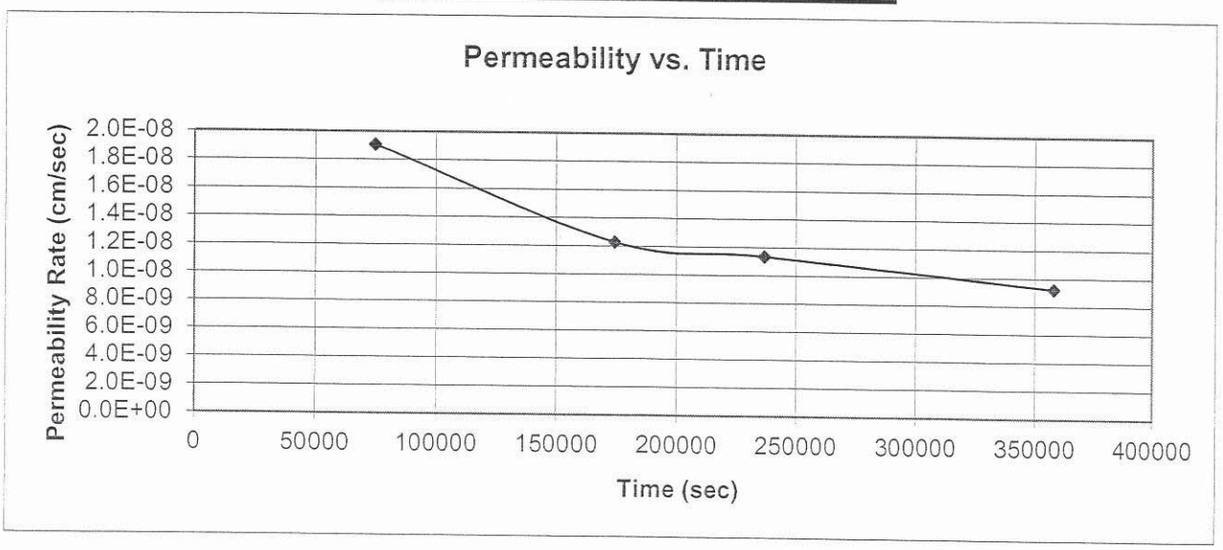
Dia. (in.)	2.85	**Length (in)**	2.88	**Weight (gr)**	545.2
Wet Density (pcf)	113.3	**Moisture Content (%)**	39.8	**Dry Density (pcf)**	81.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.2	**Minimum Hydraulic Gradient**	20.6
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.3E-08



Reviewed By:

Corey Chascin 3.10.14

Corey T. Chascin, E.I.

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REPORT OF MOISTURE CONTENT AND PERCENT PASSING # 200 SIEVE

Project: TRLF Phase 4

Client: Meskel

Project Number: 6736-13-5237
Date Tested: February 11, 2015
Date Reported: February 27, 2015
Date Assigned: February 11, 2015

Boring No	Sample No	Depth (ft)	Atterberg			Percent Moisture	Percent Passing # 200
			LL	PL	Plastic Index		
C2-91	NA	NA	79	21	58	32.9%	54.6%
C2-101	NA	NA	NT	NT	NT	44.2%	58.1%
C2-102	NA	NA	82	20	62	45.9%	56.9%
C2-216	NA	NA	NT	NT	NT	37.2%	56.5%
C2-103	NA	NA	77	19	58	27.6%	52.4%
C2-99	NA	NA	84	31	53	32.3%	53.7%
C2-95	NA	NA	88	24	64	43.9%	61.2%
C1-93	NA	NA	81	19	62	39.8%	54.9%
C1-221	NA	NA	NT	NT	NT	46.2%	59.7%
C1-106	NA	NA	NT	NT	NT	32.2%	49.9%
C1-102	NA	NA	80	23	57	45.3%	67.5%
C1-101	NA	NA	NT	NT	NT	39.7%	57.9%
C1-98	NA	NA	74	21	53	39.4%	54.9%
C1-104	NA	NA	NT	NT	NT	47.1%	58.1%
C1-103	NA	NA	80	24	56	44.9%	57.2%
C1-105	NA	NA	98	25	73	50.8%	63.2%

ASTM D-2974, D-1140, D-2410

*NT- Not Tested

Reviewed By

Corey Chascin 3.10.15

Corey Chascin. E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C1-102	**Date Completed:**	February 20, 2015

Sample Information:

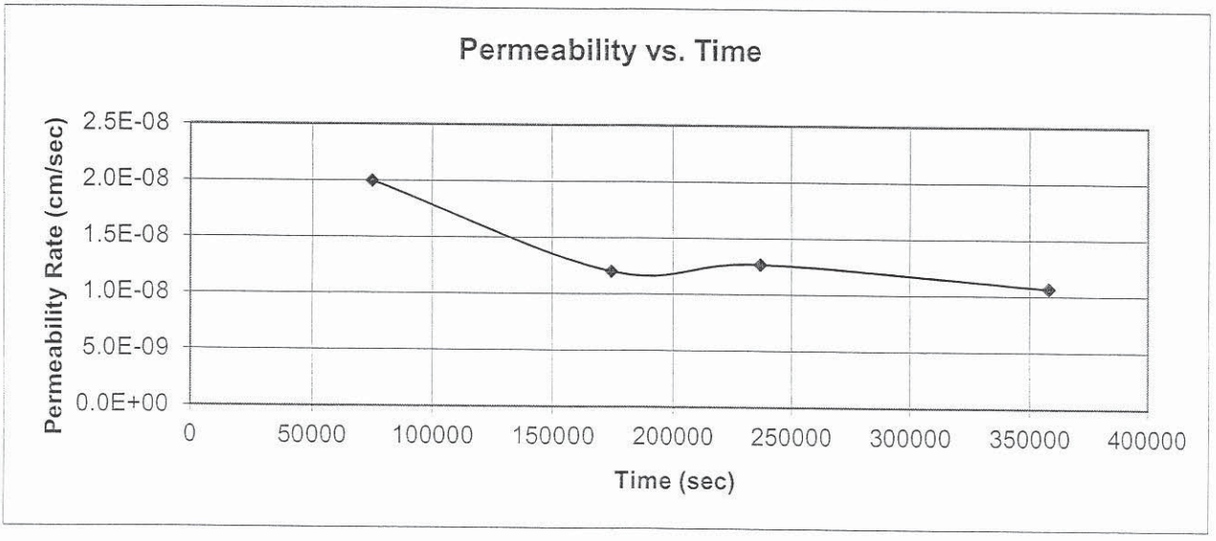
Dia. (in.)	2.83	**Length (in)**	2.79	**Weight (gr)**	517.8
Wet Density (pcf)	112.7	**Moisture Content (%)**	45.3	**Dry Density (pcf)**	77.6

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.9	**Minimum Hydraulic Gradient**	21.3
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

1.4E-08



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C1-98	**Date Completed:**	February 20, 2015

Sample Information:

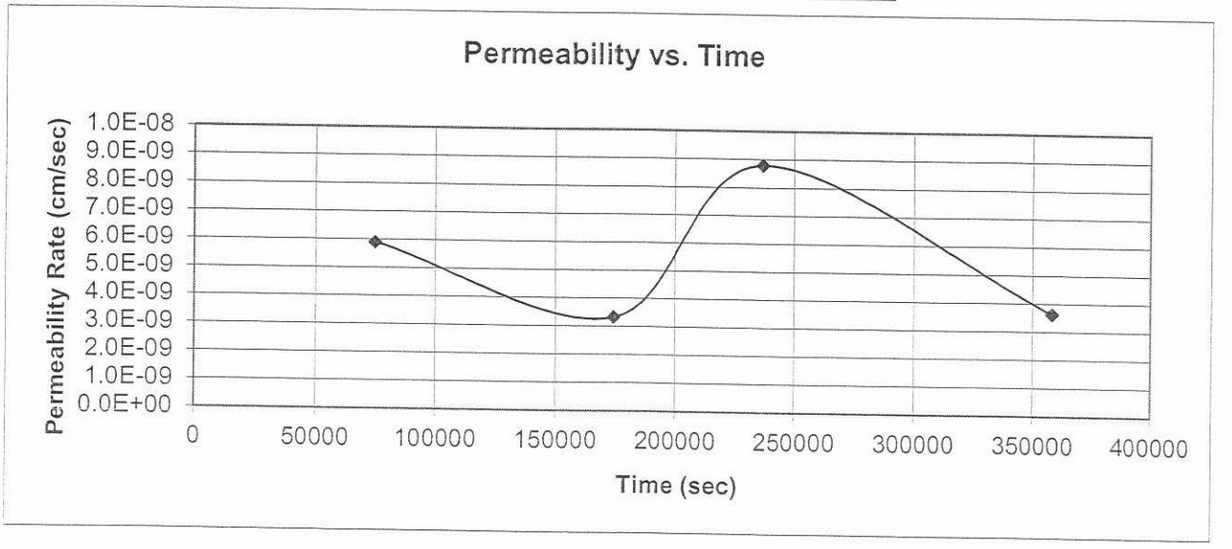
Dia. (in.)	2.84	**Length (in)**	3.12	**Weight (gr)**	576.9
Wet Density (pcf)	111.0	**Moisture Content (%)**	39.4	**Dry Density (pcf)**	79.6

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.6	**Minimum Hydraulic Gradient**	19.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

5.4E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	January 30, 2015
Sample Number:	C1-103	**Date Completed:**	February 20, 2015

Sample Information:

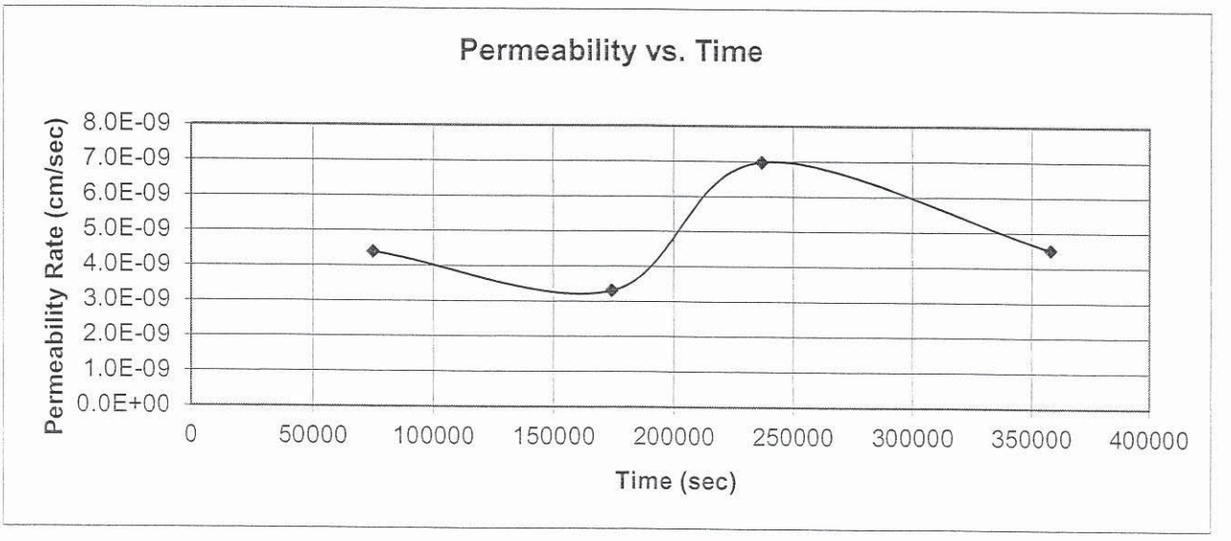
Dia. (in.)	2.85	**Length (in)**	3.12	**Weight (gr)**	554.1
Wet Density (pcf)	106.0	**Moisture Content (%)**	44.9	**Dry Density (pcf)**	73.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.6	**Minimum Hydraulic Gradient**	19.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

4.8E-09



Reviewed By:

Corey T. Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client:	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-91	**Date Completed:**	February 24, 2015

Sample Information

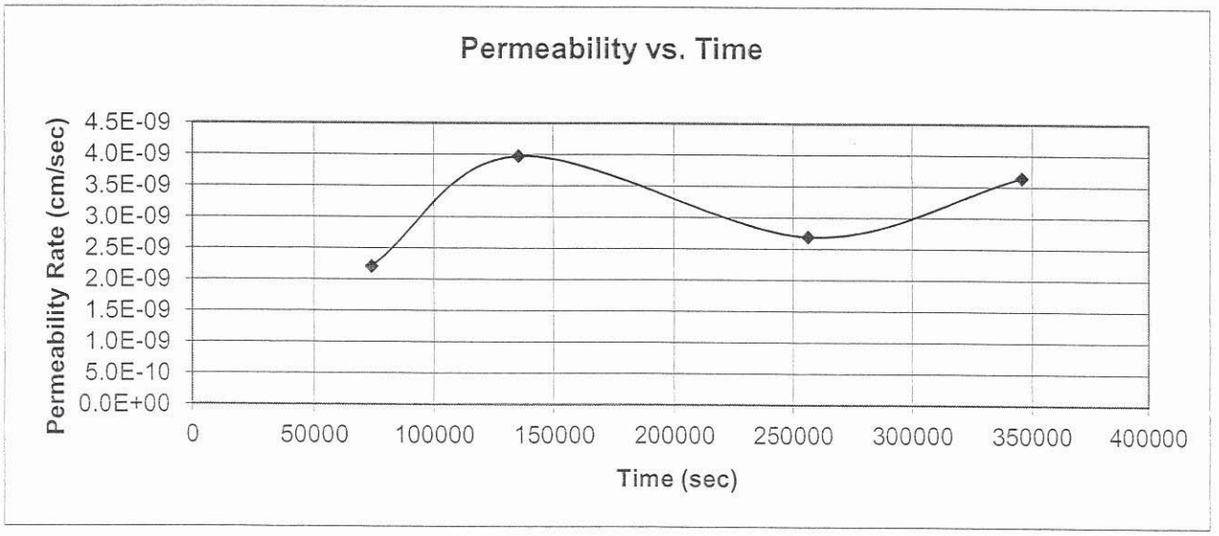
Dia. (in.)	2.82	**Length (in)**	2.27	**Weight (gr)**	417.3
Wet Density (pcf)	112.1	**Moisture Content (%)**	32.9	**Dry Density (pcf)**	84.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.3	**Minimum Hydraulic Gradient**	26.3
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.1E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-102	**Date Completed:**	February 20, 2015

Sample Information:

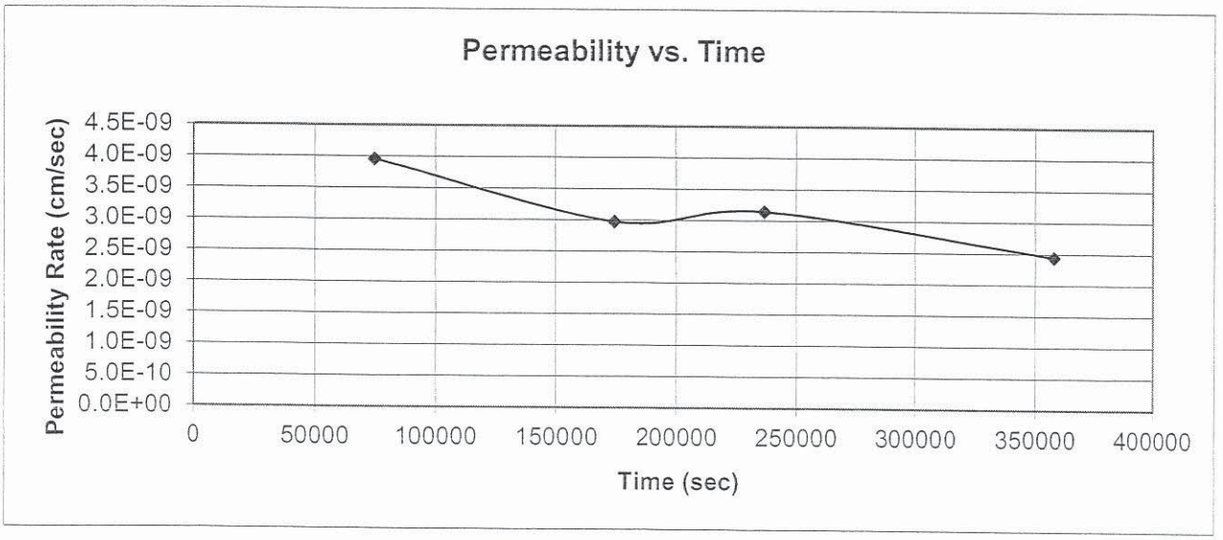
Dia. (in.)	2.84	**Length (in)**	2.78	**Weight (gr)**	521.2
Wet Density (pcf)	112.9	**Moisture Content (%)**	45.9	**Dry Density (pcf)**	77.4

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.1	**Minimum Hydraulic Gradient**	21.5
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.1E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-103	**Date Completed:**	February 20, 2015

Sample Information:

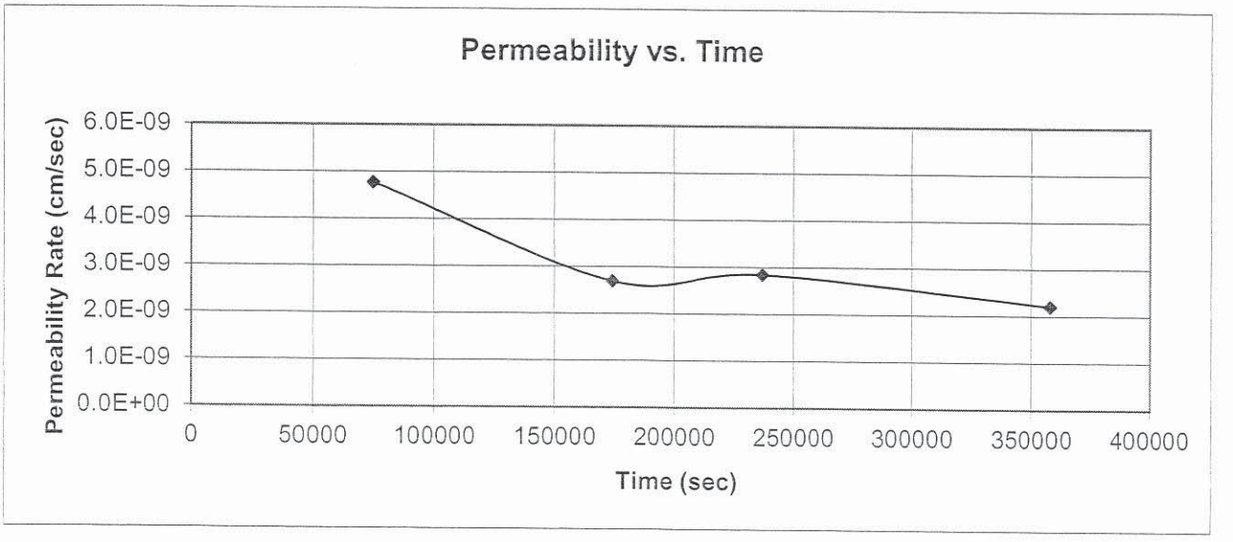
Dia. (in.)	2.76	**Length (in)**	2.37	**Weight (gr)**	410.9
Wet Density (pcf)	110.9	**Moisture Content (%)**	27.6	**Dry Density (pcf)**	86.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	27.1	**Minimum Hydraulic Gradient**	25.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.1E-09



Reviewed By:

Corey T. Chascin 3.9.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-99	**Date Completed:**	February 27, 2015

Sample Information:

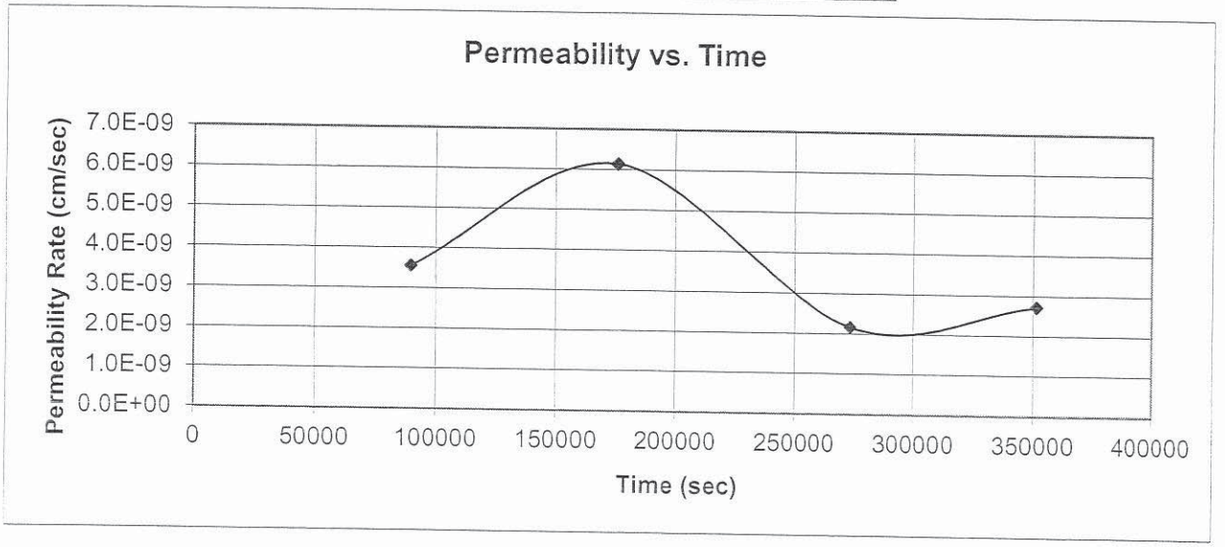
Dia. (in.)	2.80	**Length (in)**	2.91	**Weight (gr)**	505.5
Wet Density (pcf)	107.3	**Moisture Content (%)**	32.3	**Dry Density (pcf)**	81.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.1	**Minimum Hydraulic Gradient**	20.5
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

3.6E-09



Reviewed By:

Corey Chascin 3.10.15

Corey T. Chascin, E.I.

amec foster wheeler

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	February 11, 2015
Sample Number:	C2-95	**Date Completed:**	February 27, 2015

Sample Information:

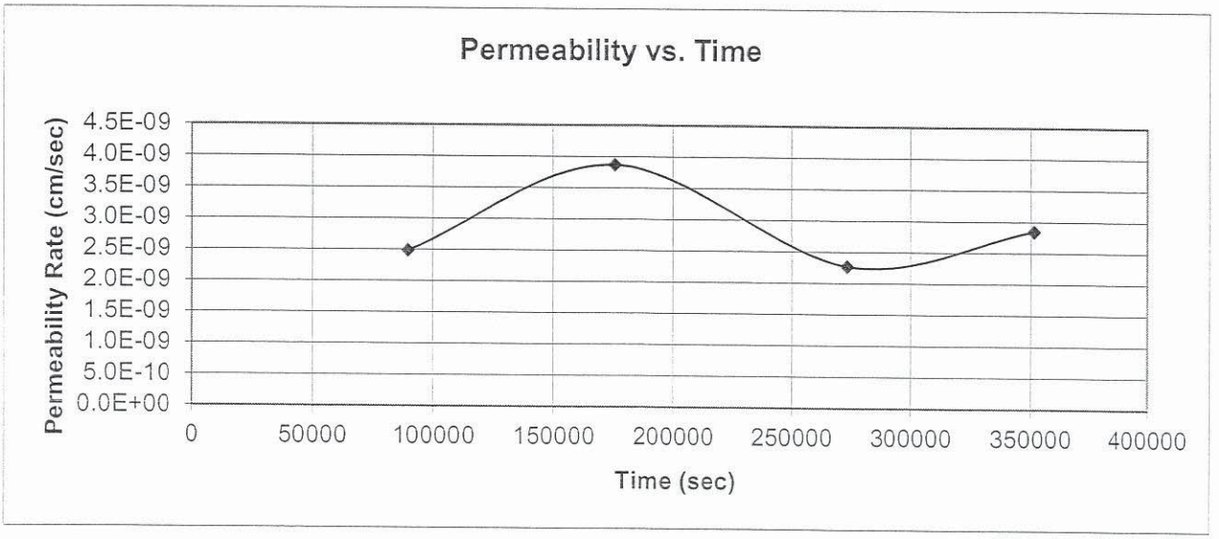
Dia. (in.)	2.83	**Length (in)**	3.12	**Weight (gr)**	566
Wet Density (pcf)	110.0	**Moisture Content (%)**	43.9	**Dry Density (pcf)**	76.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.7	**Minimum Hydraulic Gradient**	19.2
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	7

Permeability Rate

2.9E-09



Reviewed By:

Corey T. Chascin 3.10.15

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	November 25, 2013
Sample Number:	C1-162	**Date Completed:**	December 6, 2013

Sample Information: Initial / Final

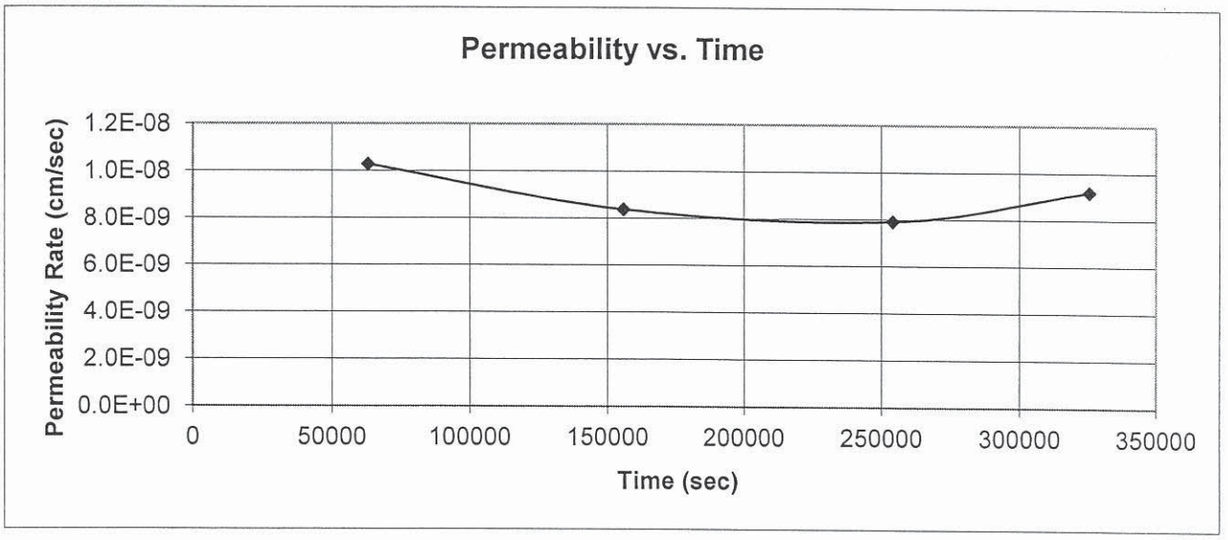
Dia. (in.)	2.62	2.67	**Length (in)**	3.12	3.11	**Weight (gr)**	489.04	493.3
Wet Density (pcf)	110.7		**Moisture Content (%)**	43.1		**Dry Density (pcf)**	77.3	
Final WD (pcf)	108.2		**Final Moisture (%)**	45.9		**Final DD (pcf)**	74.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.6	**Minimum Hydraulic Gradient**	10.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

9.0E-09



Reviewed By:

Corey T. Chascin, E.I. 12.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	November 25, 2013
Sample Number:	C2-157	**Date Completed:**	December 6, 2013

Sample Information: Initial / Final

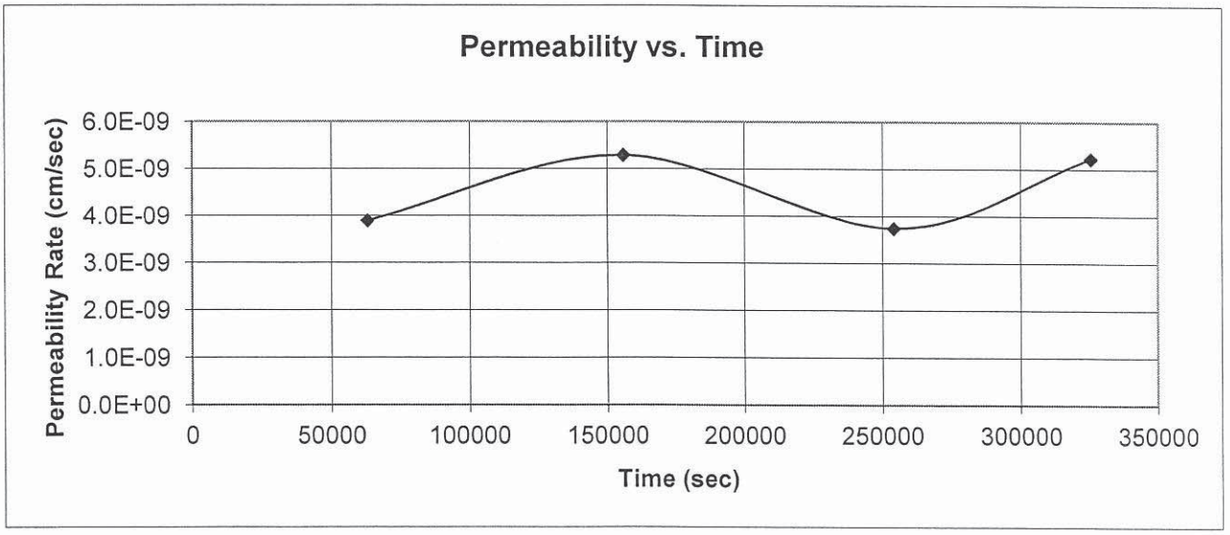
Dia. (in.)	2.82	2.83	**Length (in)**	3.41	3.41	**Weight (gr)**	626.1	630.5
Wet Density (pcf)	112.3		**Moisture Content (%)**	40.5		**Dry Density (pcf)**	80.0	
Final WD (pcf)	112.2		**Final Moisture (%)**	40.8		**Final DD (pcf)**	79.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	18.9	**Minimum Hydraulic Gradient**	9.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

4.5E-09



Reviewed By:

Corey Chas 12.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	November 25, 2013
Sample Number:	C2-159	**Date Completed:**	December 6, 2013

Sample Information: Initial / Final

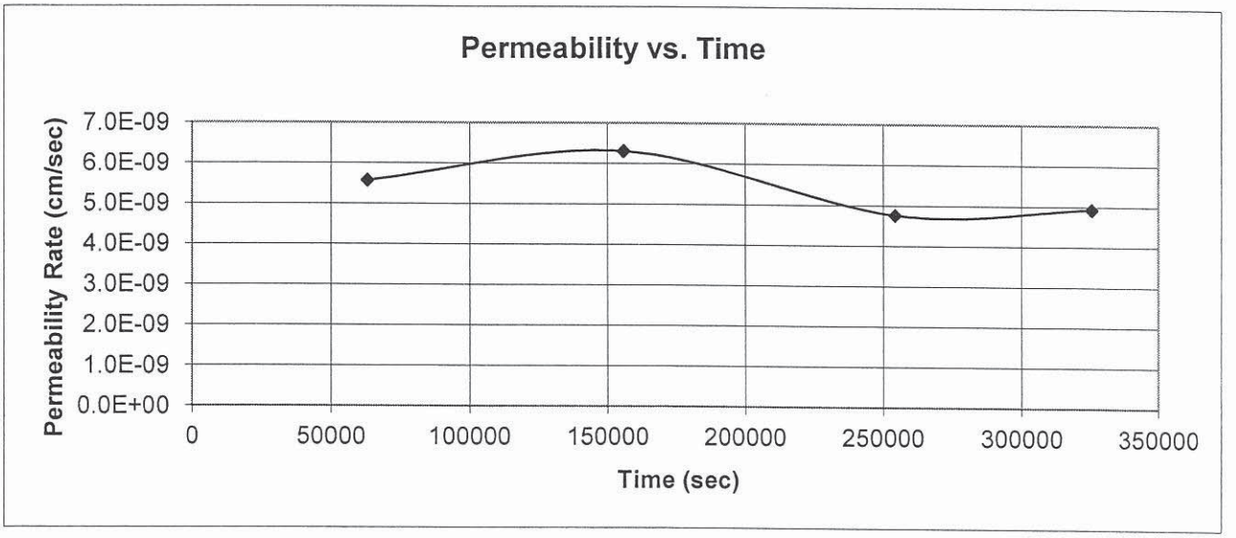
Dia. (in.)	2.79	2.82	**Length (in)**	3.20	3.17	**Weight (gr)**	581.1	586.7
Wet Density (pcf)	113.1		**Moisture Content (%)**	37.4		**Dry Density (pcf)**	82.3	
Final WD (pcf)	112.7		**Final Moisture (%)**	38.7		**Final DD (pcf)**	81.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.1	**Minimum Hydraulic Gradient**	10.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.4E-09



Reviewed By:

Corey T. Chascin, E.I. 12.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	November 25, 2013
Sample Number:	C1-166	**Date Completed:**	December 6, 2013

Sample Information: Initial / Final

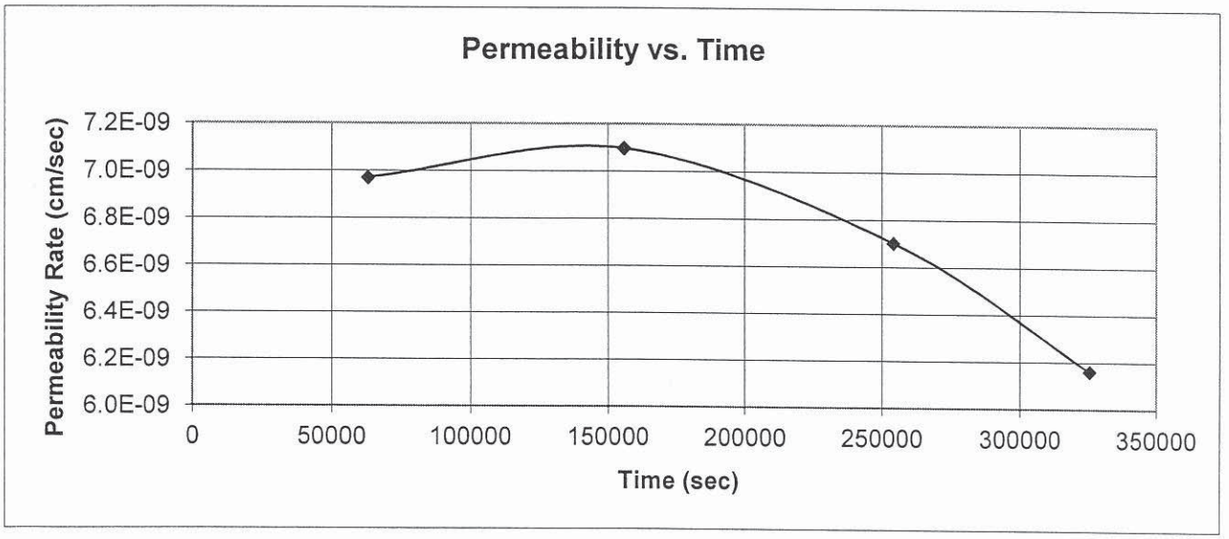
Dia. (in.)	2.79	2.81	**Length (in)**	2.99	3.02	**Weight (gr)**	540.9	559.2
Wet Density (pcf)	113.3		**Moisture Content (%)**	34.5		**Dry Density (pcf)**	84.2	
Final WD (pcf)	113.6		**Final Moisture (%)**	36.6		**Final DD (pcf)**	83.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.5	**Minimum Hydraulic Gradient**	10.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.7E-09



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: November 25, 2013

Sample Number: C2-74

Date Completed: December 1, 2013

Sample Information: Initial / Final

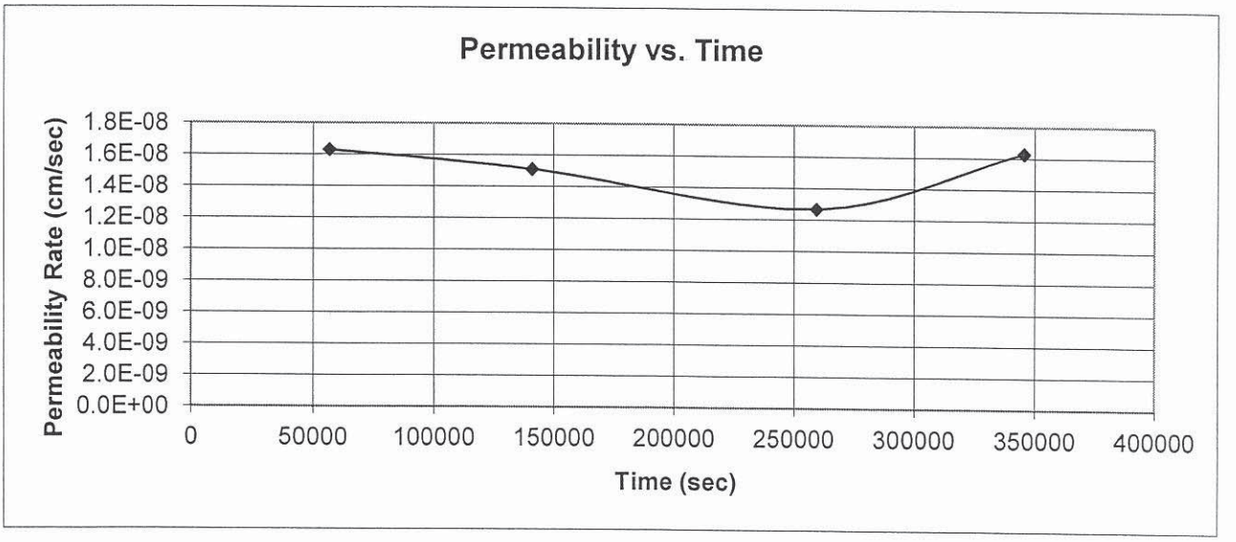
Dia. (in.)	2.84	2.80	**Length (in)**	3.27	3.26	**Weight (gr)**	611.3	624.8
Wet Density (pcf)	112.7		**Moisture Content (%)**		34.2	**Dry Density (pcf)**		84.0
Final WD (pcf)	118.3		**Final Moisture (%)**		32.8	**Final DD (pcf)**		89.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	19.6	**Minimum Hydraulic Gradient**	9.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.5E-08



Reviewed By:

Corey Chascin 12.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	November 25, 2013
Sample Number:	C2-78	**Date Completed:**	December 1, 2013

Sample Information: Initial / Final

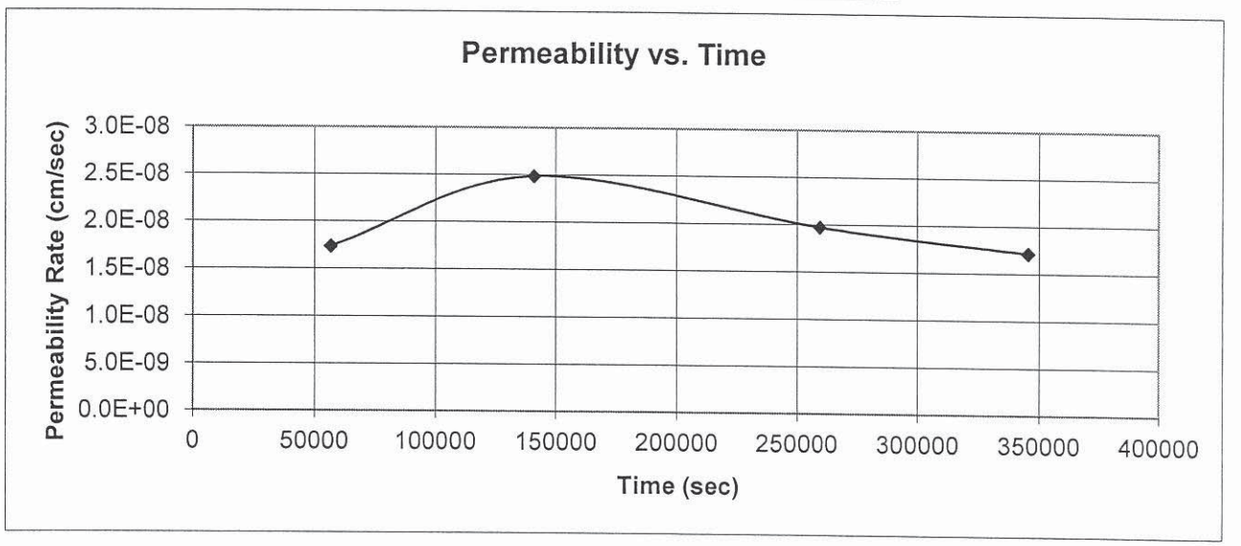
Dia. (in.)	2.81	2.83	**Length (in)**	3.40	3.40	**Weight (gr)**	634.1	640.9
Wet Density (pcf)	114.7		**Moisture Content (%)**		31.7	**Dry Density (pcf)**		87.1
Final WD (pcf)	114.4		**Final Moisture (%)**		36.3	**Final DD (pcf)**		83.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	18.8	**Minimum Hydraulic Gradient**	9.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.0E-08



Reviewed By:

Corey T. Chascin, E.I. 12.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	November 25, 2013
Sample Number:	C2-161	**Date Completed:**	December 1, 2013

Sample Information: Initial / Final

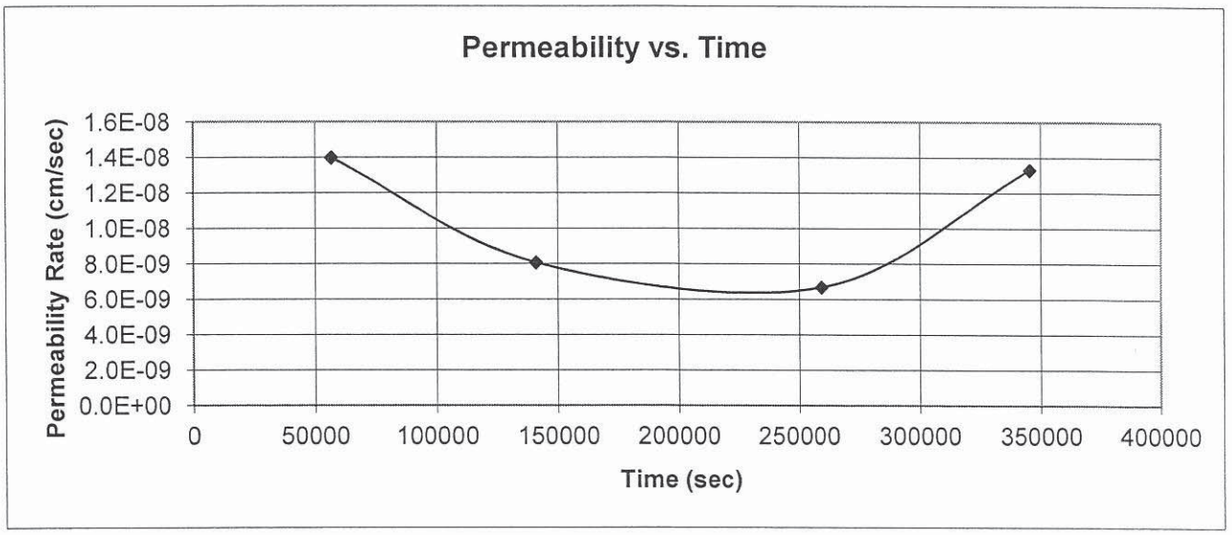
Dia. (in.)	2.83	2.82	**Length (in)**	3.18	3.21	**Weight (gr)**	590.4	597.3
Wet Density (pcf)	112.4		**Moisture Content (%)**	30.6		**Dry Density (pcf)**	86.1	
Final WD (pcf)	114.0		**Final Moisture (%)**	39.3		**Final DD (pcf)**	81.8	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.2	**Minimum Hydraulic Gradient**	10.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.1E-08



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: November 25, 2013

Sample Number: C1-164

Date Completed: December 1, 2013

Sample Information: Initial / Final

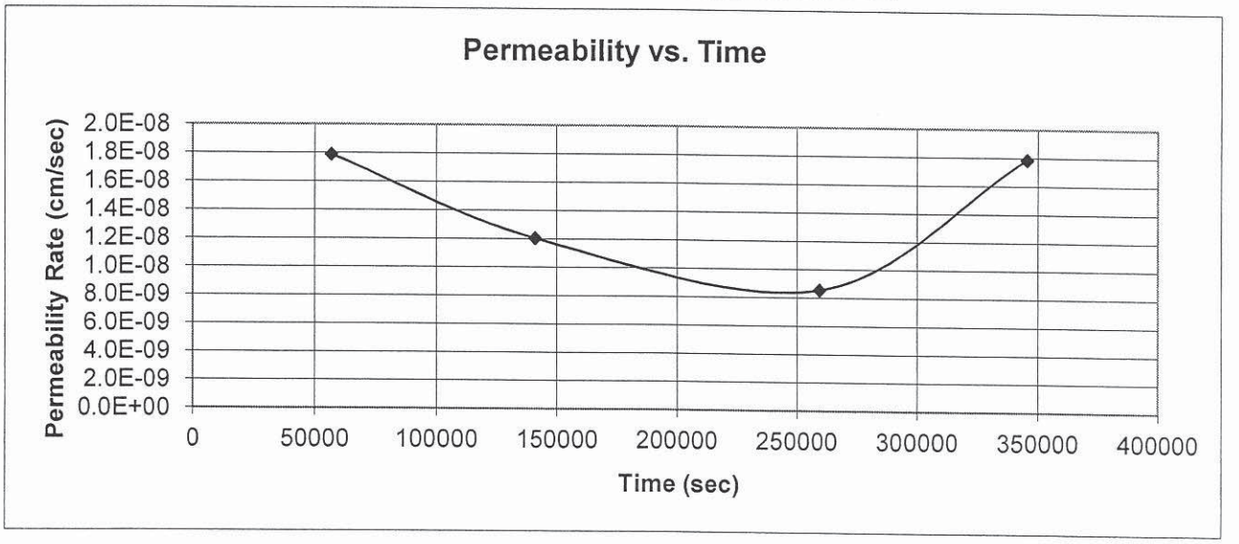
Dia. (in.)	2.81	2.80	**Length (in)**	3.51	3.50	**Weight (gr)**	645.7	649.9
Wet Density (pcf)	113.0		**Moisture Content (%)**		37.7	**Dry Density (pcf)**		82.1
Final WD (pcf)	115.2		**Final Moisture (%)**		36.6	**Final DD (pcf)**		84.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	18.3	**Minimum Hydraulic Gradient**	9.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.4E-08



Reviewed By:

Corey T. Chascin, E.I. 12.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	November 25, 2013
Sample Number:	C1-69	**Date Completed:**	December 1, 2013

Sample Information: Initial / Final

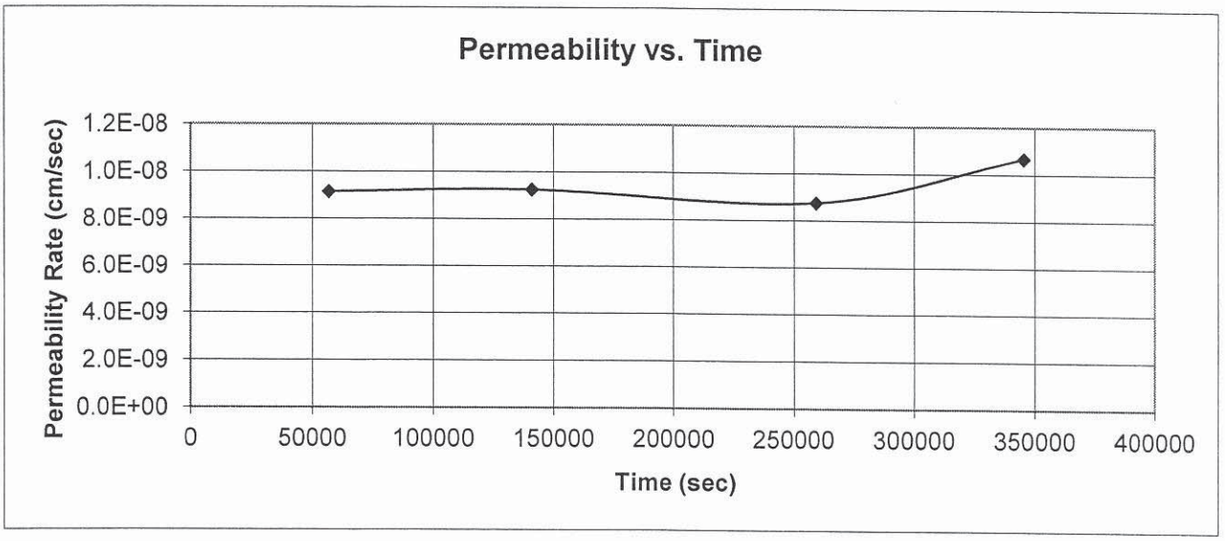
Dia. (in.)	2.83	2.82	**Length (in)**	3.65	3.67	**Weight (gr)**	688.9	702.33
Wet Density (pcf)	114.1		**Moisture Content (%)**	33.3		**Dry Density (pcf)**	85.6	
Final WD (pcf)	117.0		**Final Moisture (%)**	36.8		**Final DD (pcf)**	85.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	17.6	**Minimum Hydraulic Gradient**	8.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

9.5E-09



Reviewed By:

Corey Chascin 12.20.13

Corey T. Chascin, E.I.

amec

Client: MAE

Date Received: 7/19/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	9	NT	NT	NT	36.0	56.0
C-1	12	65	20	45	36.0	56.0
C-1	13	NT	NT	NT	34.3	55.5
C-1	15	NT	NT	NT	35.6	57.4
C-1	16	70	18	52	40.1	56.2
C-1	26	69	19	51	34.3	55.5
C-2	8	NT	NT	NT	35.3	56.3
C-2	9	NT	NT	NT	31.6	55.7
C-2	11	73	21	52	35.6	57.4
C-2	14	73	21	51	29.0	57.2
C-2	15	72	12	60	38.9	55.7
C-2	21	NT	NT	NT	28.3	54.0
C-2	23	72	20	53	35.3	56.3
					ASTM D-2216	ASTM D-1140

NT=Not Tested

Reviewed By:

Corey T. Chescin, E.I.

12.5.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 29, 2013

Sample Number: C-2 #204

Date Completed: November 6, 2013

Location: Anchor Berm (N7515.60,E10076.90)

Sample Information: Initial / Final

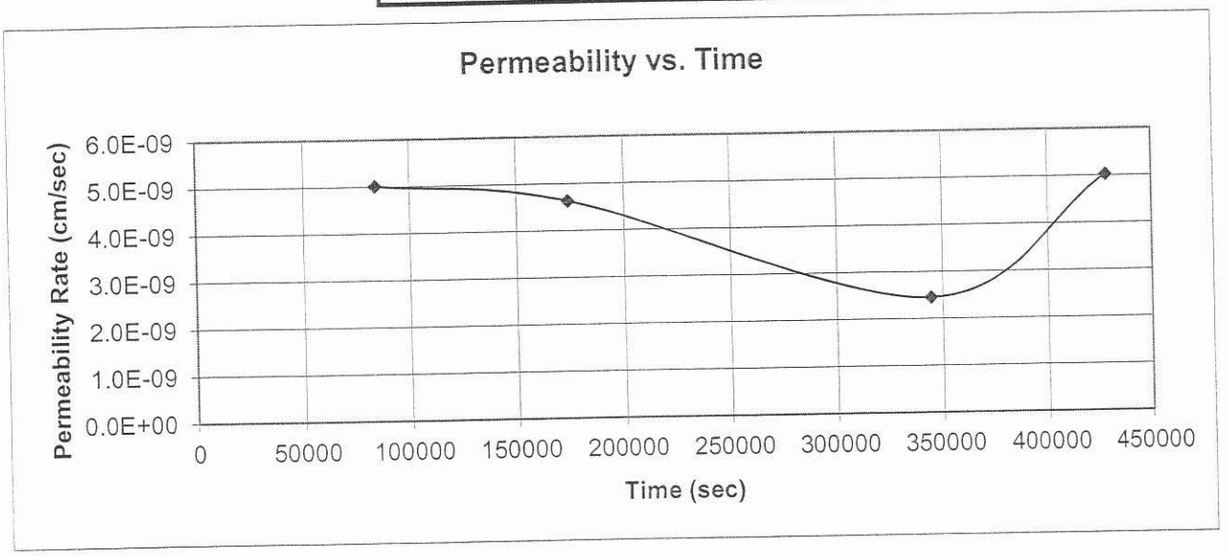
Dia. (in.)	2.78	2.78	Length (in)	2.24	2.25	Weight (gr)	386.2	391.4
Wet Density (pcf)	107.9		Moisture Content (%)	41.4		Dry Density (pcf)	76.3	
Final WD (pcf)	109.0		Final Moisture (%)	44.5		Final DD (pcf)	75.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	28.6	Minimum Hydraulic Gradient	14.3
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

4.3E-09



Reviewed By:

Corey T. Chascin, E.I.

11.12.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	October 24, 2013
Sample Number:	C-2 #153	**Date Completed:**	November 4, 2013
Location:	D-47		

Sample Information: Initial / Final

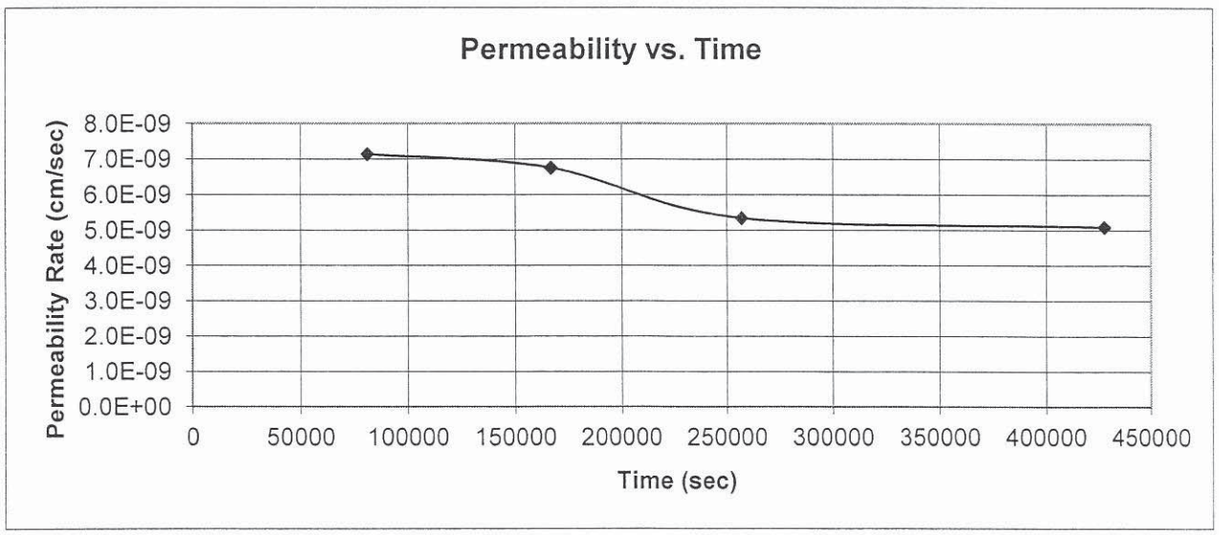
Dia. (in.)	2.84	2.83	**Length (in)**	2.69	2.74	**Weight (gr)**	486.58	492.5
Wet Density (pcf)	108.9		**Moisture Content (%)**	38.9		**Dry Density (pcf)**	78.4	
Final WD (pcf)	109.0		**Final Moisture (%)**	41.0		**Final DD (pcf)**	77.3	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.8	**Minimum Hydraulic Gradient**	11.9
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.1E-09



Reviewed By:

Corey T. Chascin, E.I. 11.12.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	October 24, 2013
Sample Number:	C-2 #155	**Date Completed:**	November 4, 2013
Location:	D-47		

Sample Information: Initial / Final

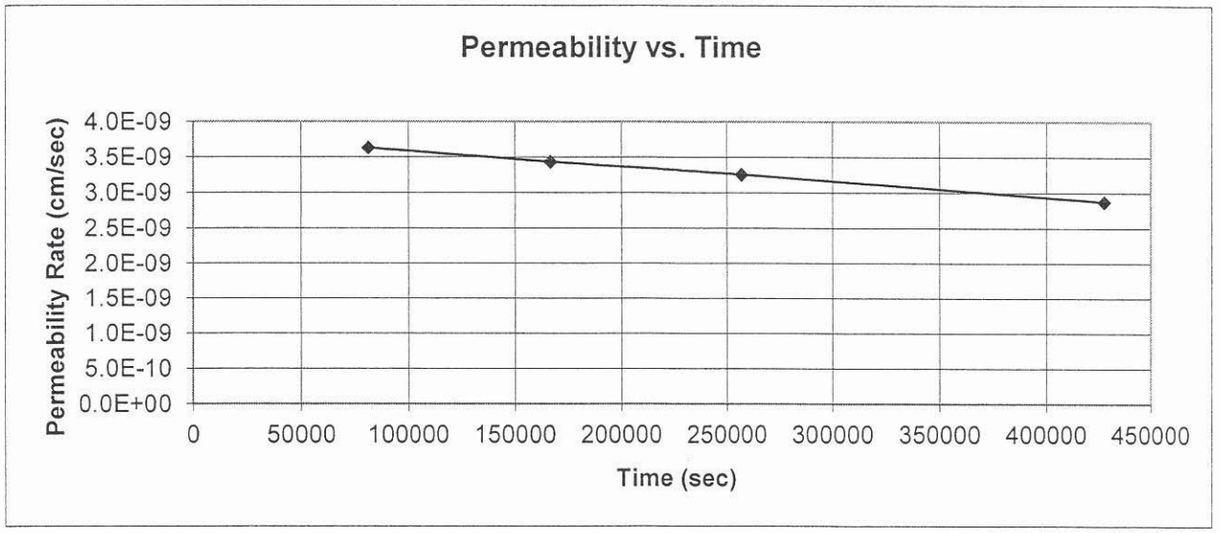
Dia. (in.)	2.83	2.78	**Length (in)**	2.72	2.67	**Weight (gr)**	480.14	484.2
Wet Density (pcf)	106.8		**Moisture Content (%)**	39.2		**Dry Density (pcf)**	76.8	
Final WD (pcf)	113.9		**Final Moisture (%)**	41.5		**Final DD (pcf)**	80.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.6	**Minimum Hydraulic Gradient**	11.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.3E-09



Reviewed By:

Corey T. Chascin, E.I. 11.12.13

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Client: MAE

Project: Trail Ridge Landfill

Date Received: 10/24 & 10/29, 2013

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C2	153	74	22	52	38.9	53.7
C2	155	72	25	47	39.2	56.9
C2	204	77	22	54	41.4	59.5
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I.

11.12.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	October 18, 2013
Sample Number:	C-1 #157	**Date Completed:**	November 4, 2013
Location:	D-49 1st Lift		

Sample Information: Initial / Final

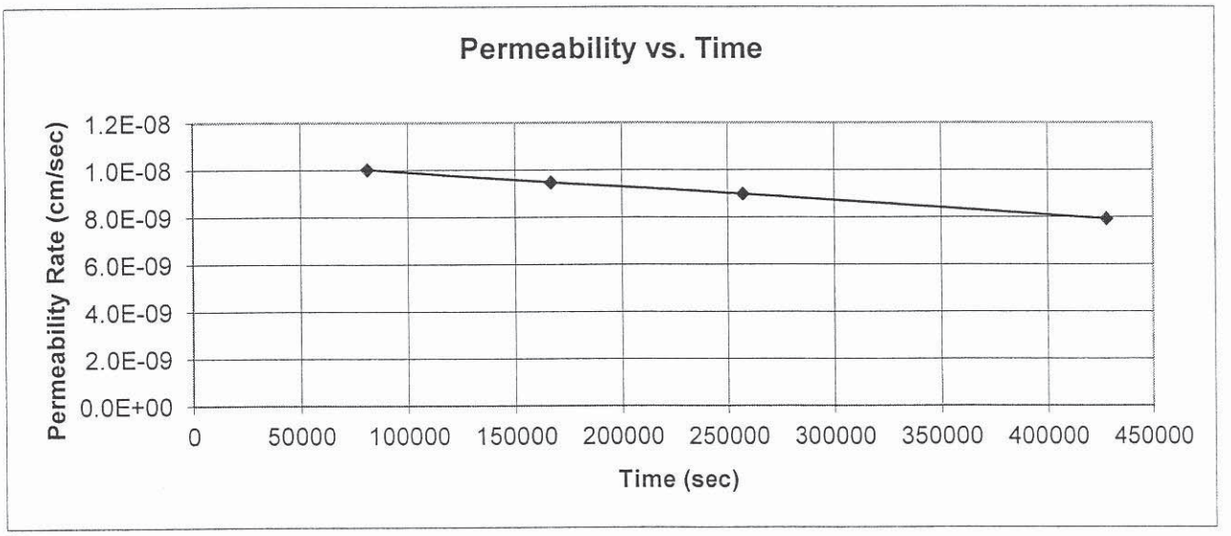
Dia. (in.)	2.79	2.78	**Length (in)**	2.44	2.43	**Weight (gr)**	431.65	437.08
Wet Density (pcf)	110.4		**Moisture Content (%)**	38.0		**Dry Density (pcf)**	80.0	
Final WD (pcf)	113.2		**Final Moisture (%)**	41.2		**Final DD (pcf)**	80.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	26.3	**Minimum Hydraulic Gradient**	13.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

9.1E-09



Reviewed By:

Corey T. Chascin, E.I.

11.12.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	October 18, 2013
Sample Number:	C-1 #159	**Date Completed:**	November 4, 2013
Location:	D-49 1st Lift		

Sample Information: Initial / Final

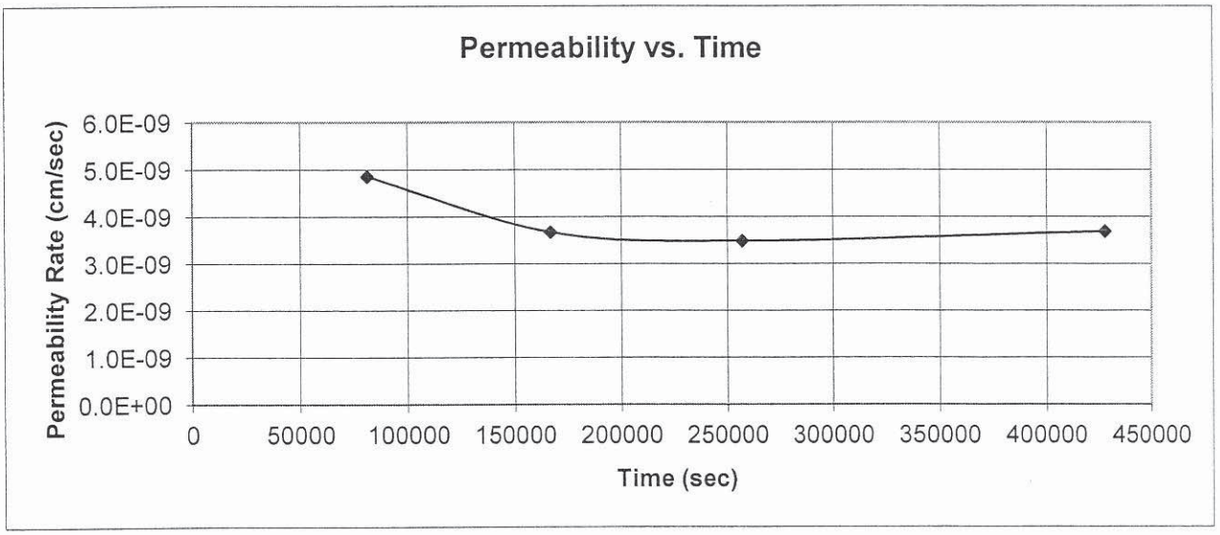
Dia. (in.)	2.81	2.79	**Length (in)**	2.15	2.08	**Weight (gr)**	367.82	371.39
Wet Density (pcf)	105.3		**Moisture Content (%)**	42.3		**Dry Density (pcf)**	74.0	
Final WD (pcf)	111.3		**Final Moisture (%)**	46.0		**Final DD (pcf)**	76.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	29.9	**Minimum Hydraulic Gradient**	14.9
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.9E-09



Reviewed By:

Corey T. Chascin, E.I. 11.12.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	October 18, 2013
Sample Number:	C-1 #203	**Date Completed:**	October 29, 2013
Location:	Gas Expansion		

Sample Information: Initial / Final

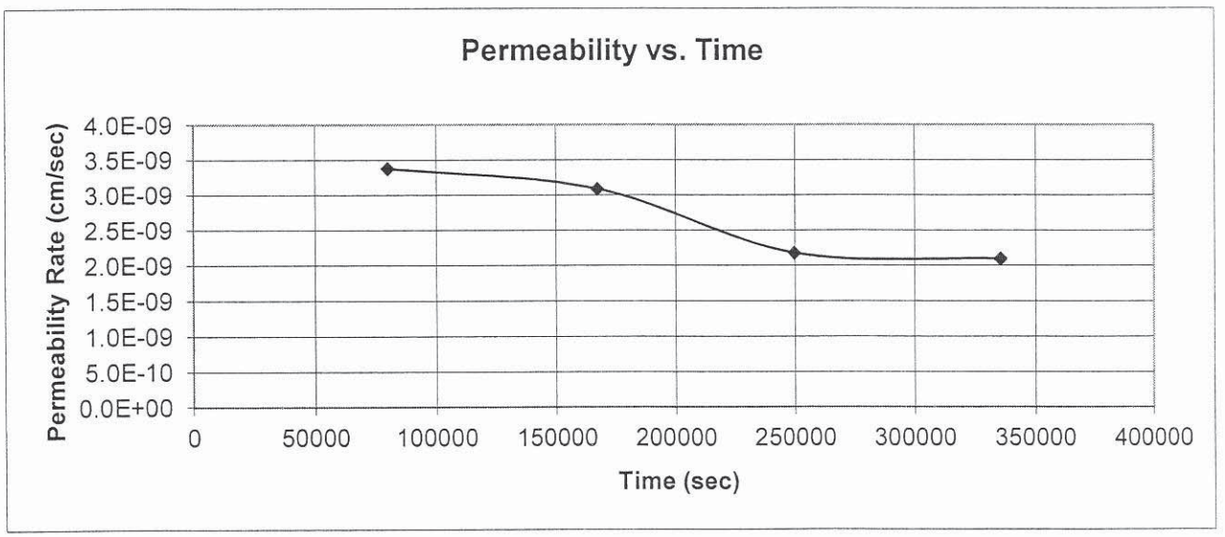
Dia. (in.)	2.75	2.75	**Length (in)**	2.36	2.29	**Weight (gr)**	386.2	389.8
Wet Density (pcf)	104.9		**Moisture Content (%)**	42.2		**Dry Density (pcf)**	73.8	
Final WD (pcf)	109.4		**Final Moisture (%)**	41.0		**Final DD (pcf)**	77.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	27.3	**Minimum Hydraulic Gradient**	13.6
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.7E-09



Reviewed By:

Corey T. Chascin, E.I. 11.12.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 18, 2013

Sample Number: C-1 #204

Location: Gas Expansion

Date Completed: October 29, 2013

Sample Information: Initial / Final

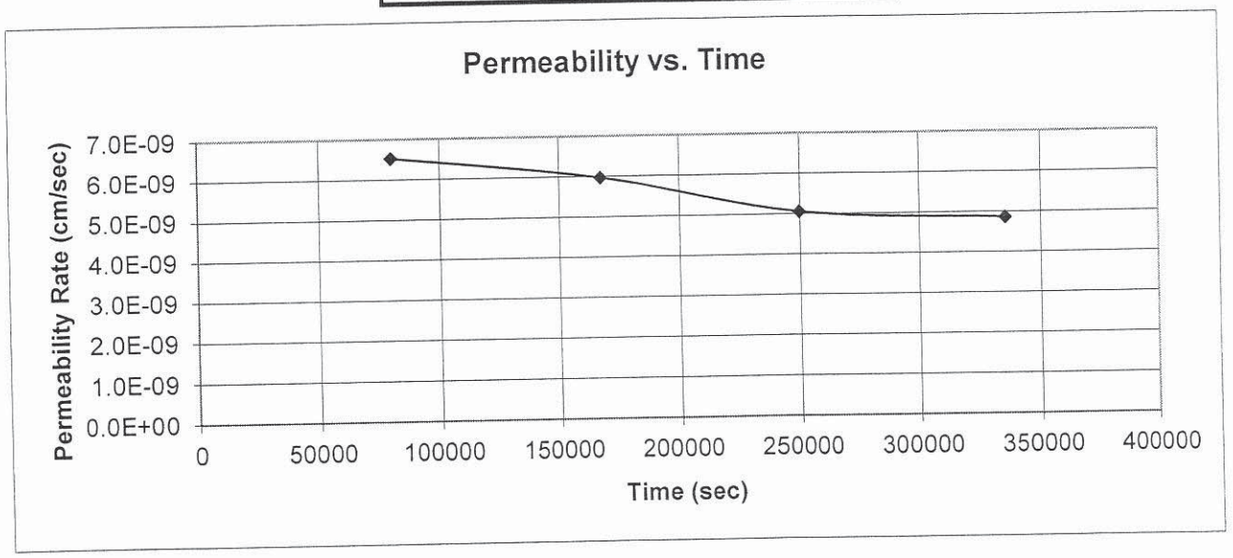
Dia. (in.)	2.83	2.81	**Length (in)**	2.89	2.83	**Weight (gr)**	510.7	514.03
Wet Density (pcf)	107.0		**Moisture Content (%)**		41.1	**Dry Density (pcf)**	75.8
Final WD (pcf)	111.6		**Final Moisture (%)**		41.2	**Final DD (pcf)**	79.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.2	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.6E-09



Reviewed By:

Corey T. Chascin, E.I. 11.12.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 18, 2013

Sample Number: C-2 #199

Location: Gas Expansion

Date Completed: October 29, 2013

Sample Information: Initial / Final

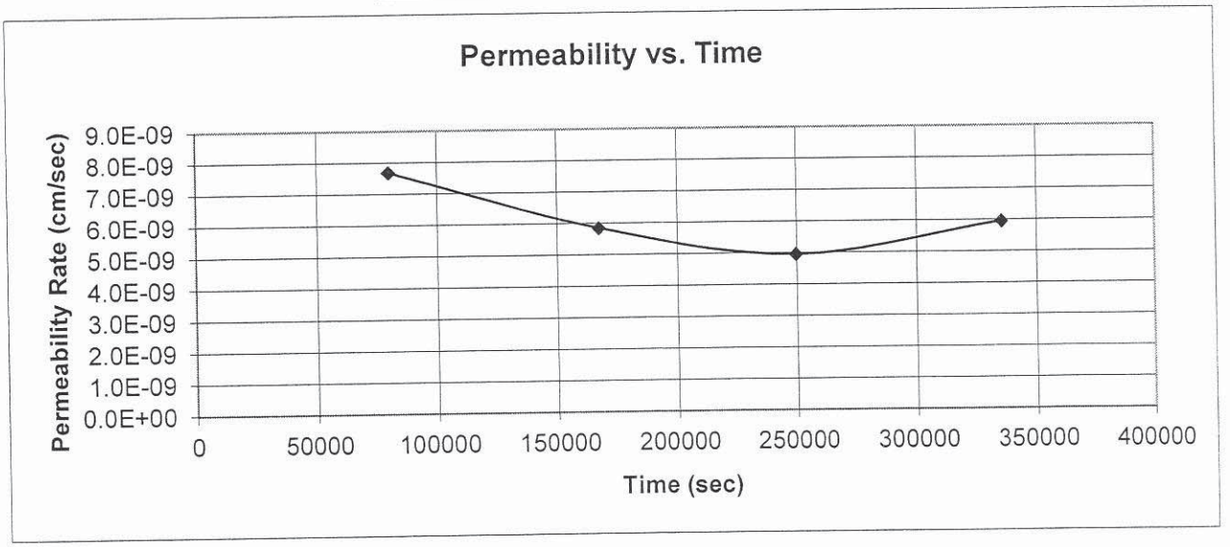
Dia. (in.)	2.80	2.80	**Length (in)**	2.78	2.76	**Weight (gr)**	486.7	490.5
Wet Density (pcf)	107.9		**Moisture Content (%)**	41.4		**Dry Density (pcf)**	76.3
Final WD (pcf)	109.5		**Final Moisture (%)**	39.5		**Final DD (pcf)**	78.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.1	**Minimum Hydraulic Gradient**	11.5
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.1E-09



Reviewed By:

Corey T. Chascin, E.I.

11.12.13

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	October 18, 2013
Sample Number:	C-2 #200	**Date Completed:**	October 29, 2013
Location:	Gas Expansion		

Sample Information: Initial / Final

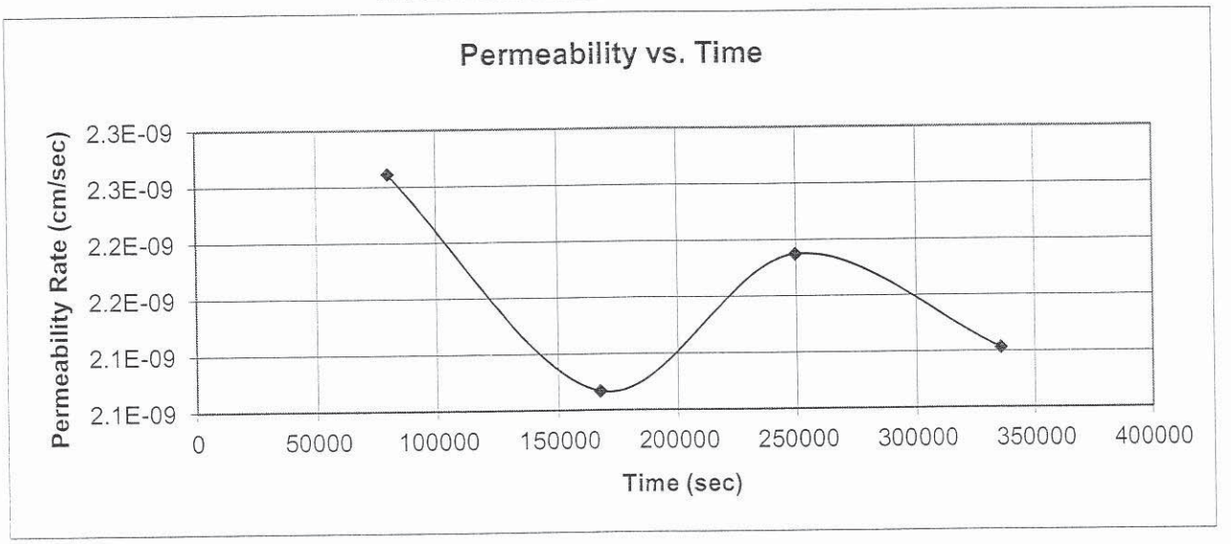
Dia. (in.)	2.81	2.83	**Length (in)**	2.47	2.45	**Weight (gr)**	435.7	441.9
Wet Density (pcf)	107.9		**Moisture Content (%)**	42.4		**Dry Density (pcf)**	75.8	
Final WD (pcf)	109.3		**Final Moisture (%)**	40.5		**Final DD (pcf)**	77.8	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	26.0	**Minimum Hydraulic Gradient**	13.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.2E-09



Reviewed By:

Corey T. Chascin, E.I. 11.12.13

Client: MAE

Date Received: 10/18/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C1	55	69	25	44	34.8	53.0
C2	52	67	23	44	38.2	52.3
C1	204	75	24	51	41.1	57.7
C2	200	74	23	51	42.4	55.6
C1	203	71	25	45	42.2	56.5
C2	199	74	23	50	41.4	55.2
C1	157	69	21	49	38.0	56.5
C1	159	75	24	51	42.3	57.3
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I. 11.12.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	November 5, 2013
Sample Number:	C-1 #72	**Date Completed:**	November 12, 2013

Sample Information: Initial / Final

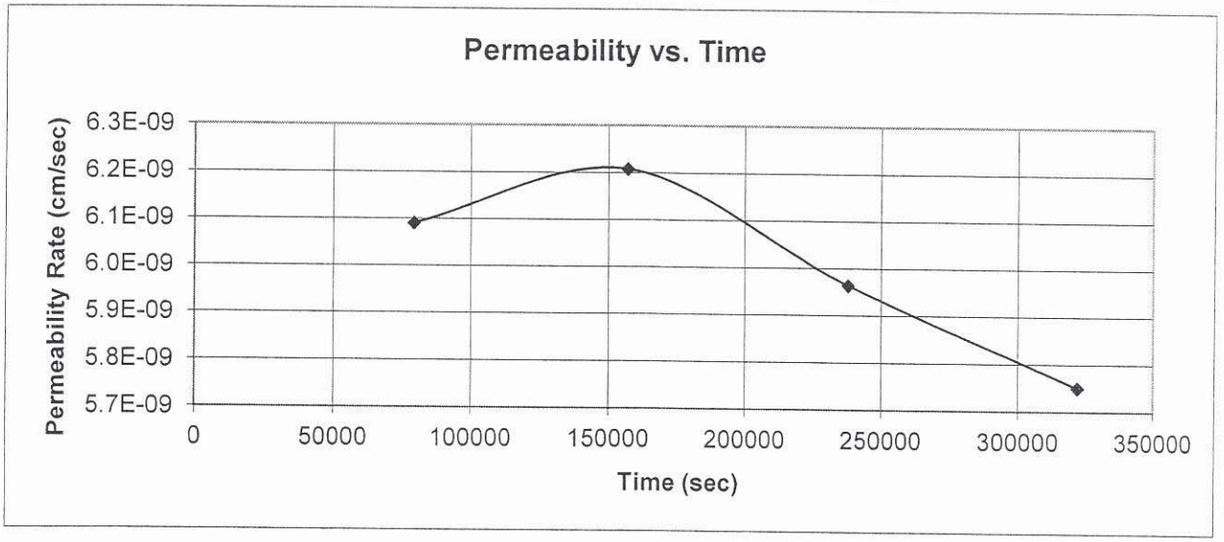
Dia. (in.)	2.82	2.84	**Length (in)**	2.21	2.20	**Weight (gr)**	387.7	394.86
Wet Density (pcf)	107.0		**Moisture Content (%)**	46.5		**Dry Density (pcf)**	73.0	
Final WD (pcf)	108.3		**Final Moisture (%)**	44.2		**Final DD (pcf)**	75.1	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	29.0	**Minimum Hydraulic Gradient**	14.5
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.0E-09



Reviewed By:

Corey Chascin 11.14.13

Corey T. Chascin, E.I.

Client: MAE

Date Received: 11/5/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	72	78	20	58	46.5	58.6
C-1	73	NT	NT	NT	30.9	54.0
					ASTM D-2216	ASTM D-1140

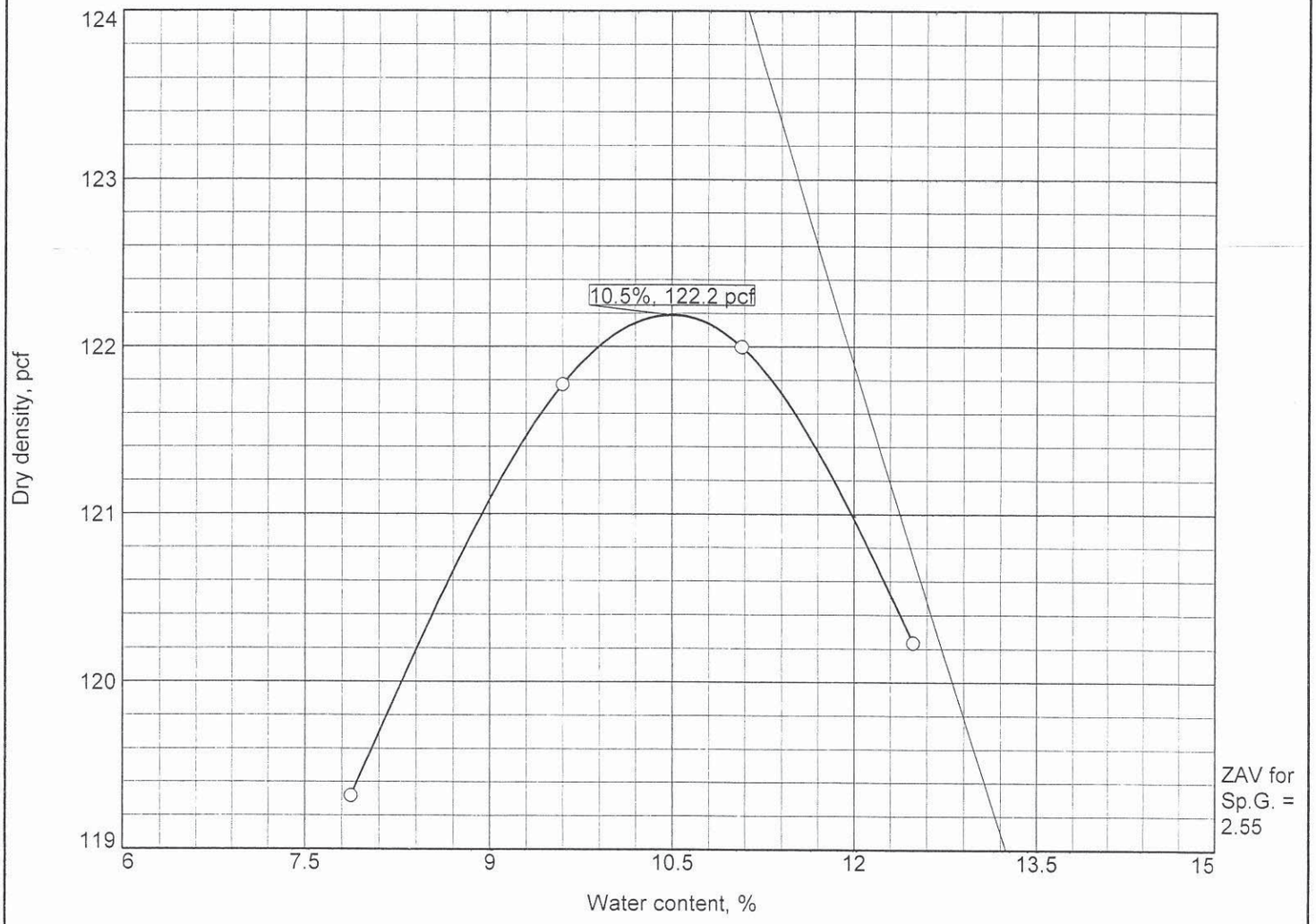
NT= Not Requested / Not Tested

Reviewed By:

Corey Chascin 11.14.14

Corey T. Chascin, E.I.

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SM	A-2-4(0)	15.5		19	3	0.0	22.1

TEST RESULTS

Maximum dry density = 122.2 pcf

Optimum moisture = 10.5 %

MATERIAL DESCRIPTION

Light Brown Silty Fine SAND

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

○ **Source of Sample:** Initial Cover **Sample Number:** 7

Remarks:

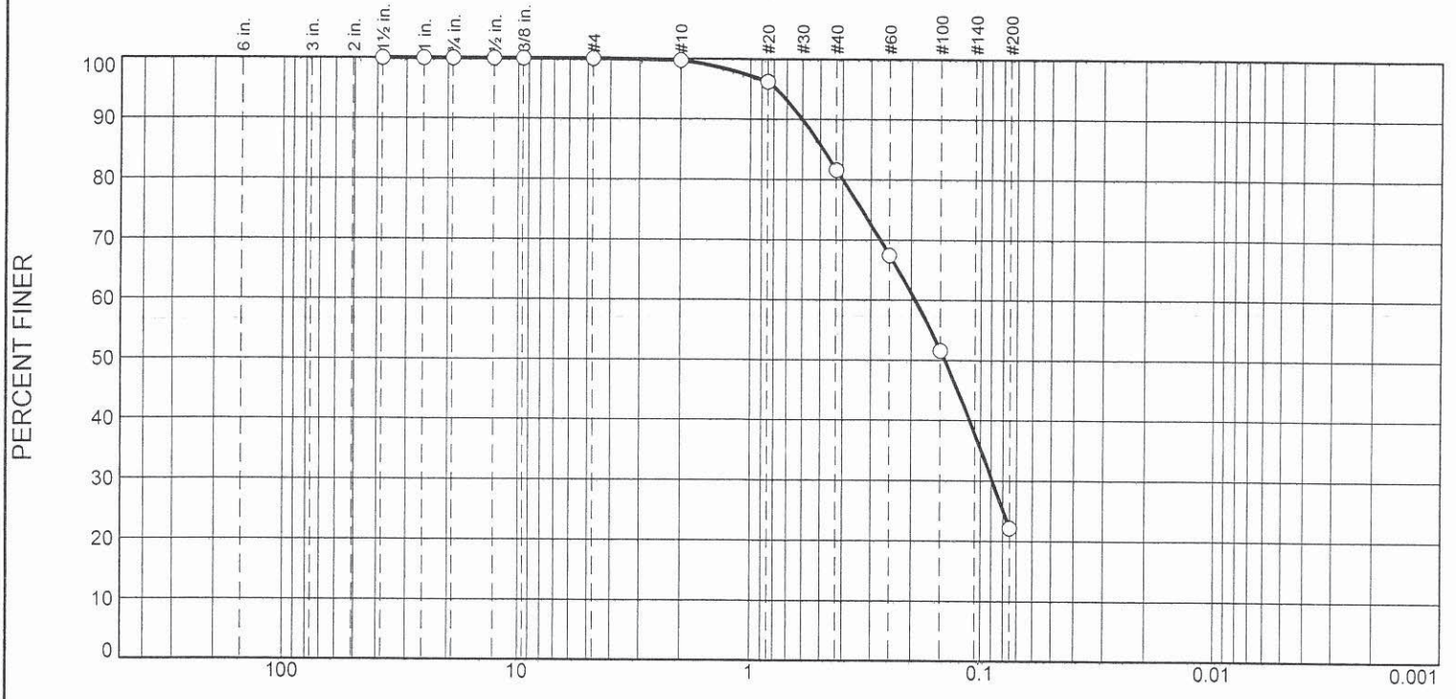
AMEC E&I

Jacksonville, Florida

Figure

Tested By: CM **Checked By:** Corey T. Chascin, E.I. Corey Chascin 11.6.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	18.1	59.5	22.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	99.7		
#20	96.3		
#40	81.6		
#60	67.5		
#100	51.6		
#200	22.1		

* (no specification provided)

Material Description

Light Brown Silty Fine SAND

Atterberg Limits (ASTM D 4318)

PL= 16 LL= 19 PI= 3

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D_{90}= 0.6005 D_{85}= 0.4860 D_{60}= 0.1934
D_{50}= 0.1437 D_{30}= 0.0892 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 11/5/13 **Date Tested:** 11/6/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Initial Cover **Date Sampled:** 11/5/13

Sample Number: 7

AMEC E&I

Jacksonville, Florida

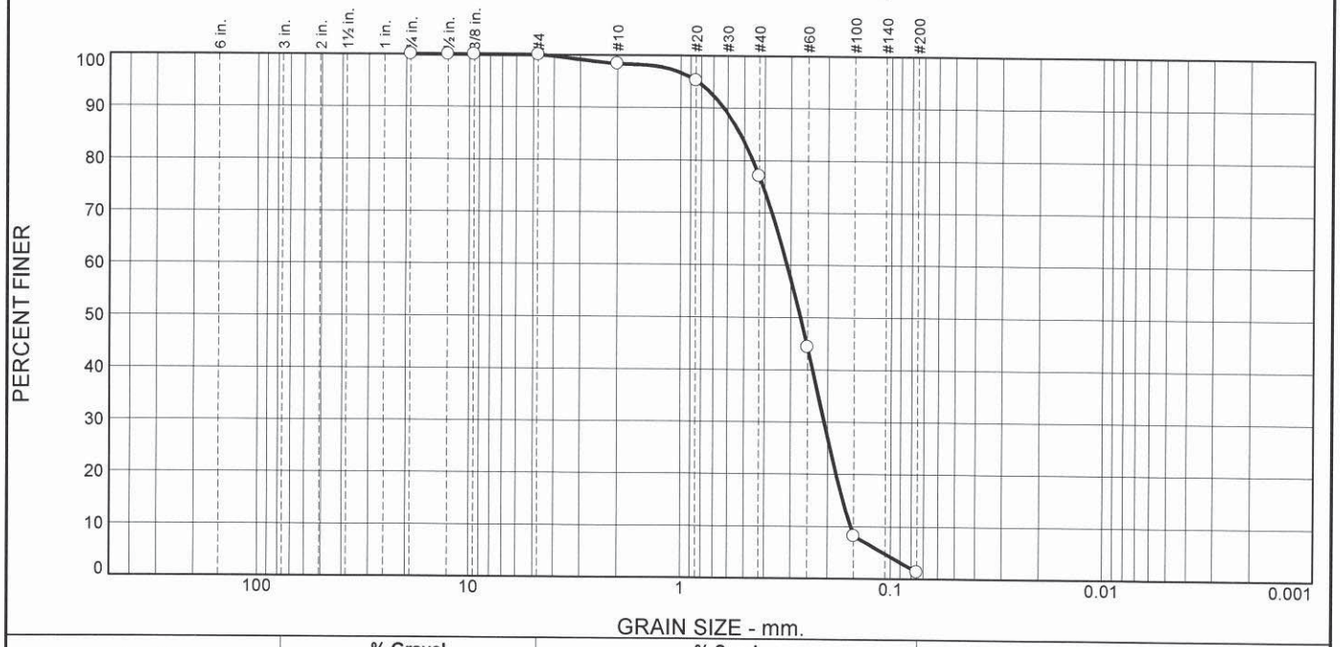
Client: Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

Corey Chascin 11.6.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.6	21.3	75.7	1.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	98.4		
#20	95.2		
#40	77.1		
#60	44.3		
#100	8.2		
#200	1.4		

* (no specification provided)

Material Description

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP AASHTO (M 145)=

Coefficients

D_{90}= 0.6247 D_{85}= 0.5217 D_{60}= 0.3121
D_{50}= 0.2698 D_{30}= 0.2082 D_{15}= 0.1693
D_{10}= 0.1555 C_u= 2.01 C_c= 0.89

Remarks

Date Received: **Date Tested:** 11/18/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Underdrain Sand Production **Date Sampled:**
Sample Number: 2

AMEC E&I

Jacksonville, Florida

Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: TRLF Pase No. 4 **Project Number:** 6736-13-5237

Client Meskel **Date Completed:** April 23, 2013

Sample Number: Underdrain Production No. 1 **Depth:** NA

The sample was remolded to 100% Modified Effort of 106.3 at a Optimum Moisture of 13.0%. The compacted sample was tested for permeability and the results are outlined below.

Sample Information:

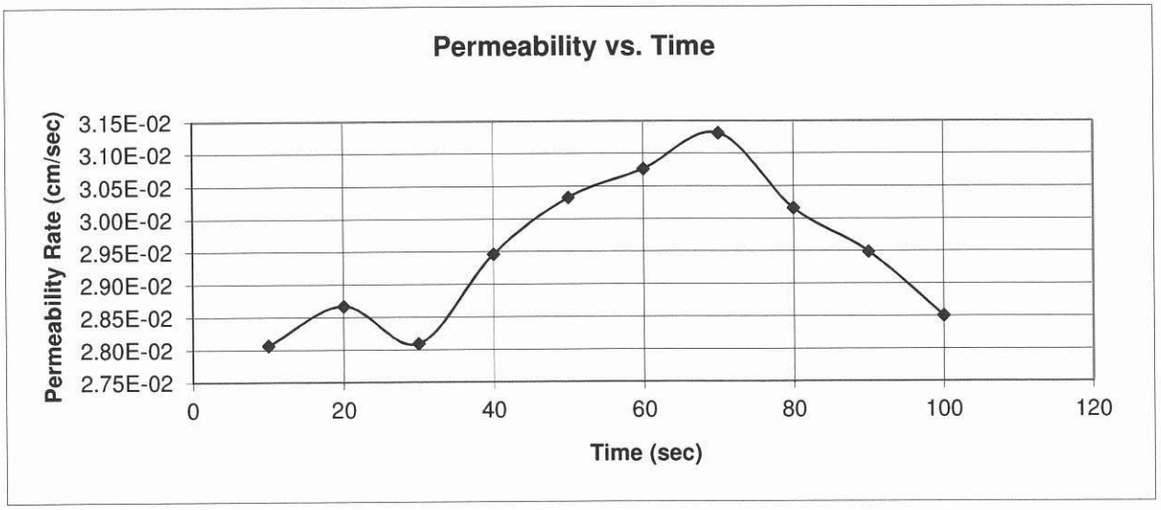
Dia. (in.)	2.97	**Length (in)**	5.06	**Weight (gr)**	1101.5
Wet Density (pcf)	119.8	**Moisture Content (%)**	12.9	**Dry Density (pcf)**	106.1

Test Parameters

Test Method Used:	ASTM D-2434	**Permeant Fluid:**	Tap water

Permeability Rate

2.95E-02



Reviewed By:

Daniel L. Eisman, P.E.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	TRLF Pase No. 4	**Project Number:**	6736-13-5237
Client	Meskel	**Date Completed:**	April 12, 2013
Sample Number:	2	**Depth:**	NA

The sample was remolded to 100% Modified Effort of 106.3 at a Optimum Moisture of 13.0%. The compacted sample was tested for permeability and the results are outlined below.

Sample Information:

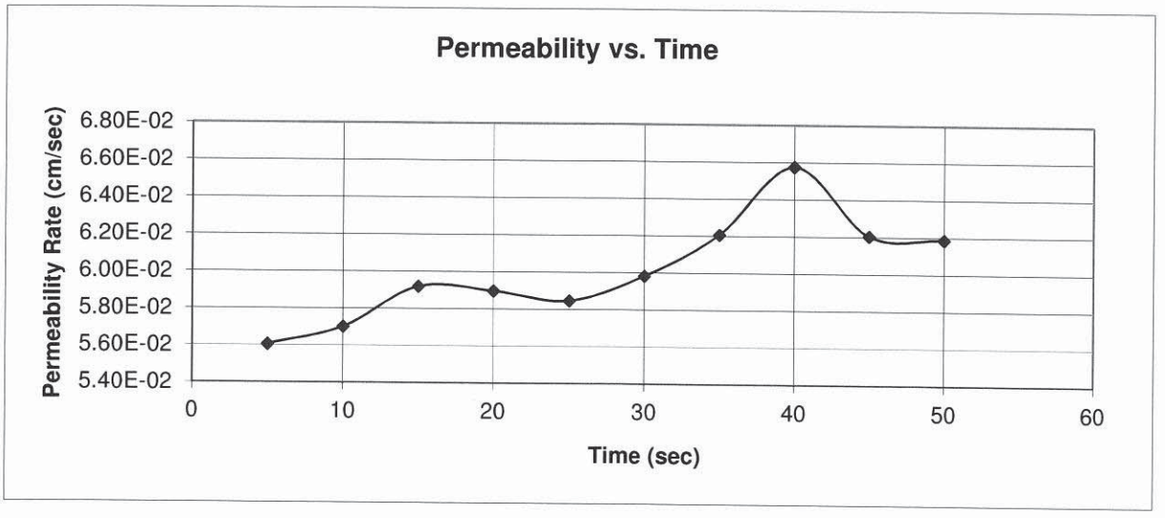
Dia. (in.)	2.97	**Length (in)**	5.73	**Weight (gr)**	1247.4
Wet Density (pcf)	119.8	**Moisture Content (%)**	12.8	**Dry Density (pcf)**	106.2

Test Parameters

Test Method Used:	ASTM D-2434	**Permeant Fluid:**	Tap water

Permeability Rate

6.01E-02



Reviewed By:

Daniel L. Eisman, P.E.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	October 1, 2013
Sample Number:	C-1 #45	**Date Completed:**	October 8, 2013

Sample Information: Initial / Final

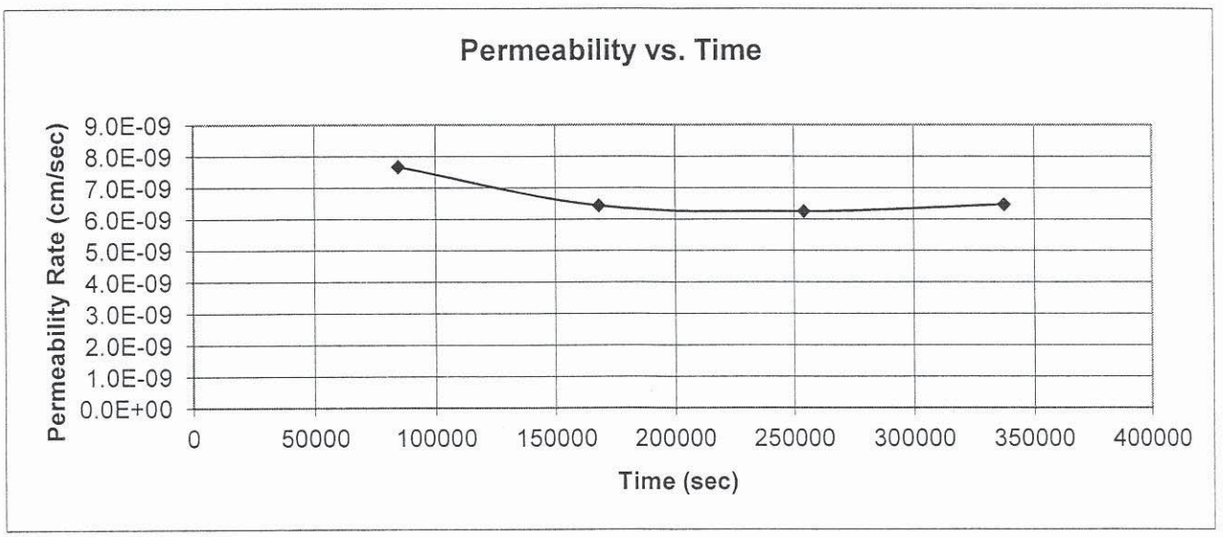
Dia. (in.)	2.82	2.86	**Length (in)**	2.98	3.01	**Weight (gr)**	525.8	554.9
Wet Density (pcf)	107.7		**Moisture Content (%)**	29.4		**Dry Density (pcf)**	83.2	
Final WD (pcf)	109.3		**Final Moisture (%)**	40.3		**Final DD (pcf)**	77.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.6	**Minimum Hydraulic Gradient**	10.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.7E-09



Reviewed By:

Corey T. Chascin, E.I. 10.17.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 1, 2013

Sample Number: C-1 #49

Date Completed: October 8, 2013

Sample Information: Initial / Final

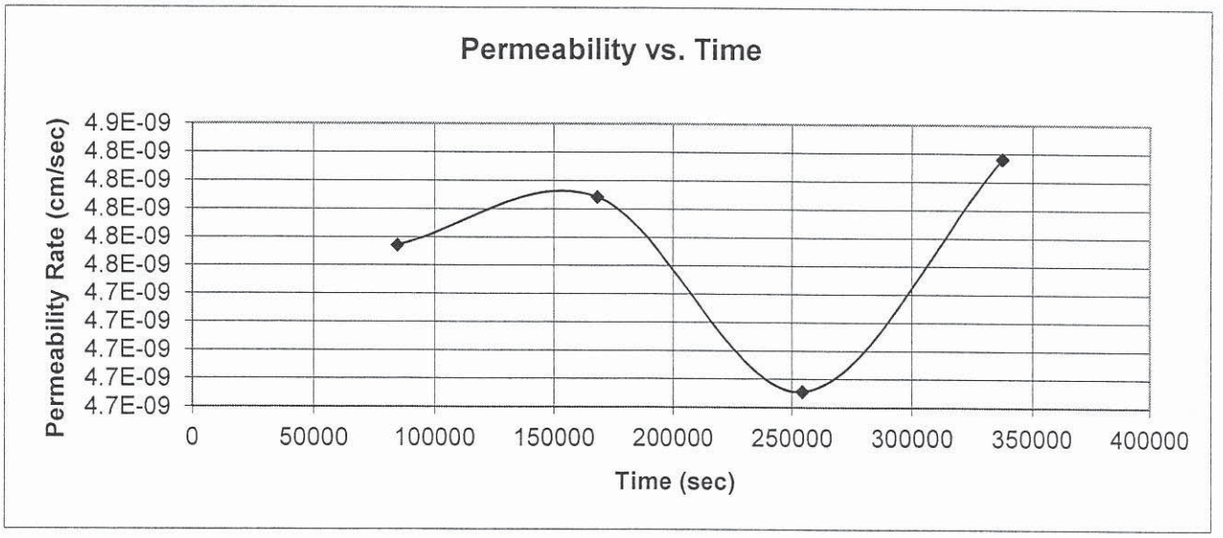
Dia. (in.)	2.79	2.78	**Length (in)**	2.71	2.67	**Weight (gr)**	463.2	466.1
Wet Density (pcf)	106.3		**Moisture Content (%)**	39.5		**Dry Density (pcf)**	76.2	
Final WD (pcf)	109.5		**Final Moisture (%)**	41.0		**Final DD (pcf)**	77.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.7	**Minimum Hydraulic Gradient**	11.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

4.8E-09



Reviewed By:

Corey T. Chascin, E.I.

10.17.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 1, 2013

Sample Number: C-1 #64

Date Completed: October 8, 2013

Sample Information: Initial / Final

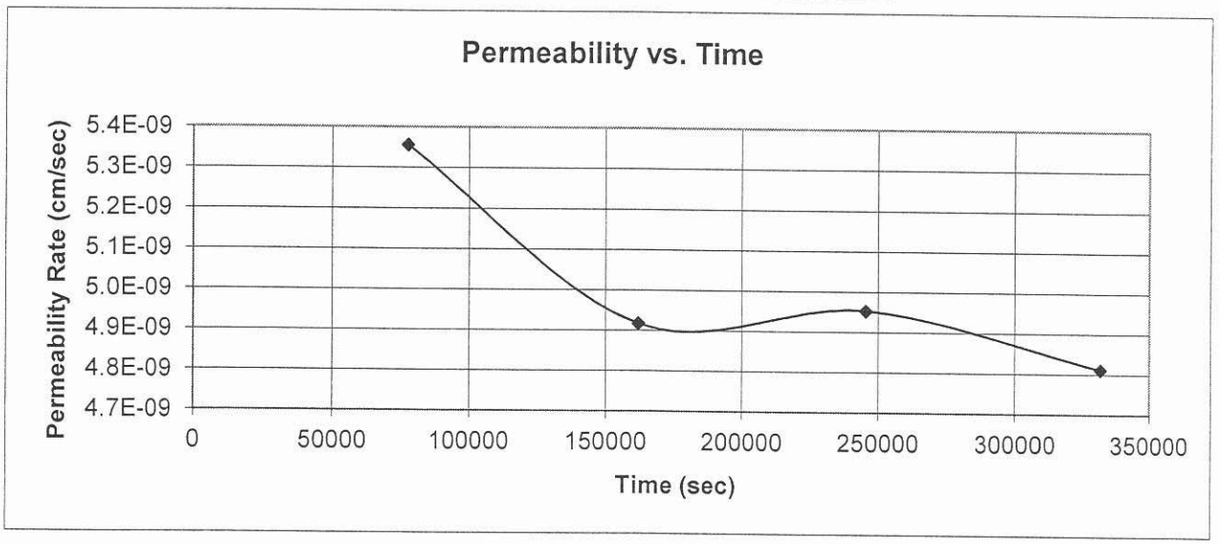
Dia. (in.)	2.84	2.83	**Length (in)**	2.31	2.29	**Weight (gr)**	408.4	410.4
Wet Density (pcf)	106.2		**Moisture Content (%)**	41.4		**Dry Density (pcf)**	75.1	
Final WD (pcf)	108.5		**Final Moisture (%)**	41.9		**Final DD (pcf)**	76.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	27.7	**Minimum Hydraulic Gradient**	13.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.0E-09



Reviewed By:

Corey T. Chascin, E.I. 10.17.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 1, 2013

Sample Number: C-2 #43

Date Completed: October 7, 2013

Sample Information: Initial / Final

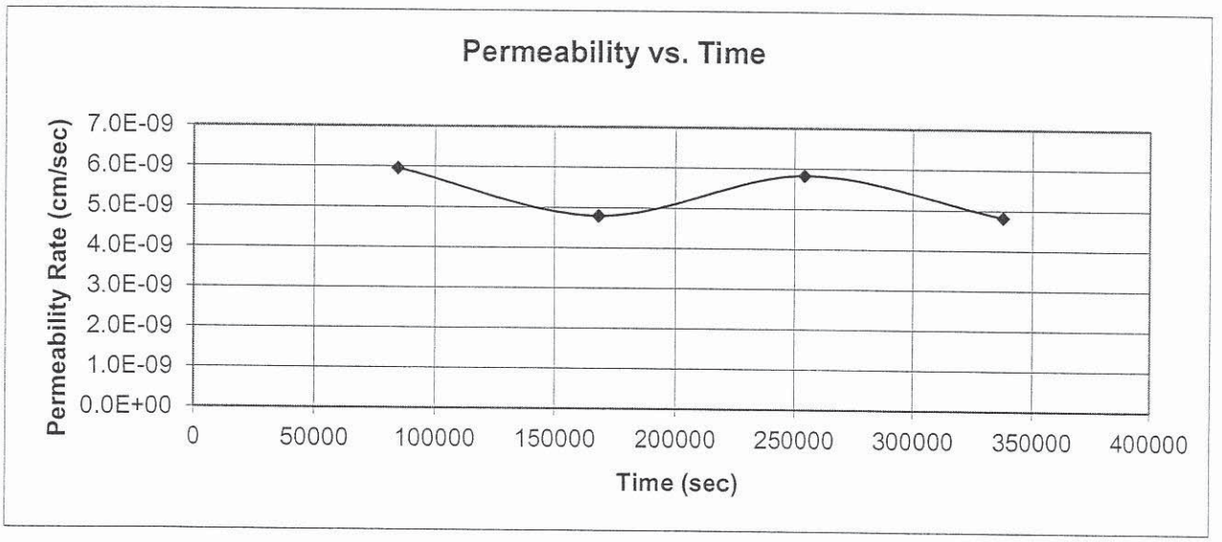
Dia. (in.)	2.84	2.84	**Length (in)**	2.81	2.76	**Weight (gr)**	507.4	510.7
Wet Density (pcf)	108.2		**Moisture Content (%)**	39.4		**Dry Density (pcf)**	77.6	
Final WD (pcf)	110.8		**Final Moisture (%)**	40.6		**Final DD (pcf)**	78.8	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.8	**Minimum Hydraulic Gradient**	11.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.4E-09



Reviewed By:

Corey T. Chascin, E.I.

10.17.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 1, 2013

Sample Number: C-2 #45

Date Completed: October 7, 2013

Sample Information: Initial / Final

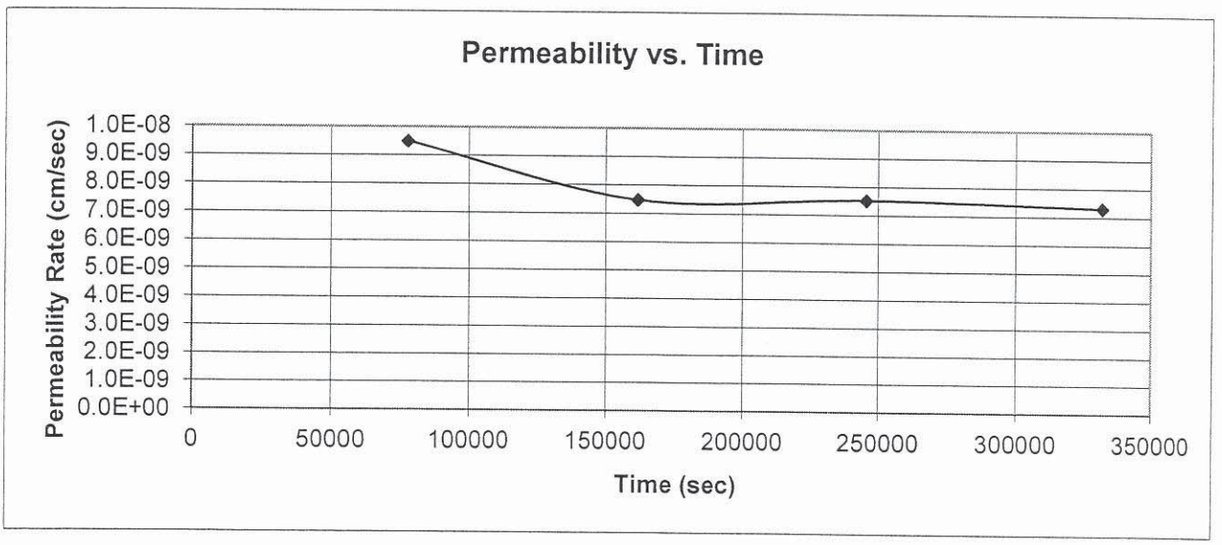
Dia. (in.)	2.81	2.82	**Length (in)**	2.87	2.83	**Weight (gr)**	501.1	503
Wet Density (pcf)	107.4		**Moisture Content (%)**	40.1		**Dry Density (pcf)**	76.7	
Final WD (pcf)	108.7		**Final Moisture (%)**	41.7		**Final DD (pcf)**	76.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.4	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

8.0E-09



Reviewed By:

Corey T. Chascin, E.I.

10.17.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 1, 2013

Sample Number: C-2 #55

Date Completed: October 7, 2013

Sample Information: Initial / Final

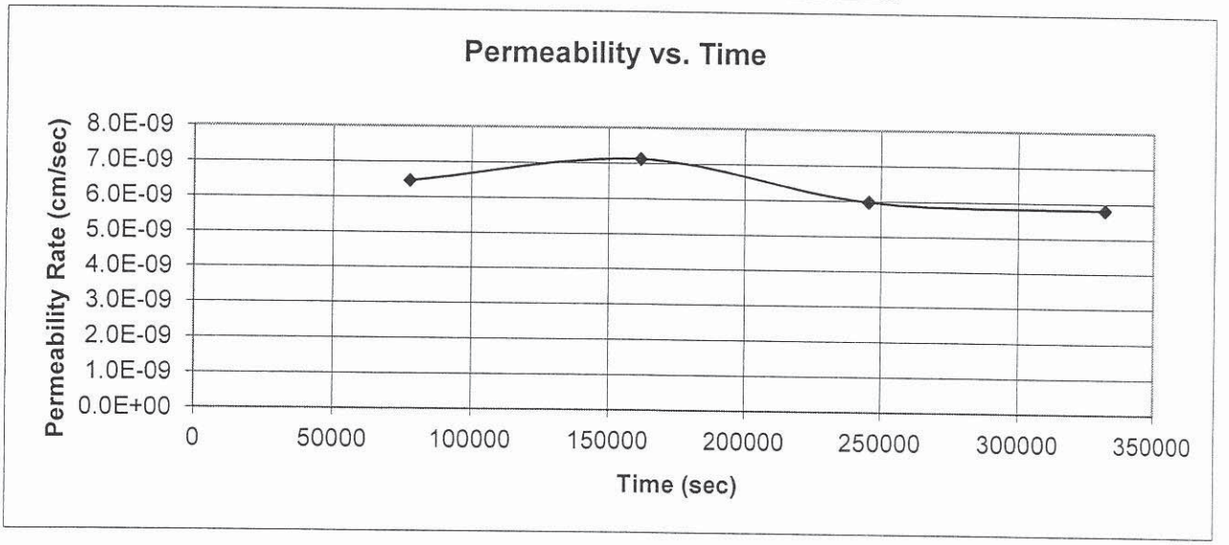
Dia. (in.)	2.81	2.82	**Length (in)**	2.73	2.64	**Weight (gr)**	466.4	468.7
Wet Density (pcf)	105.2		**Moisture Content (%)**	40.5		**Dry Density (pcf)**	74.9	
Final WD (pcf)	108.2		**Final Moisture (%)**	42.9		**Final DD (pcf)**	75.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.5	**Minimum Hydraulic Gradient**	11.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.4E-09



Reviewed By:

Corey T. Chascin, E.I. 10.17.13

amec

Client: MAE

Project: Trail Ridge Landfill

Date Received: 10/1/2013

Job No.: 6736-13-5237

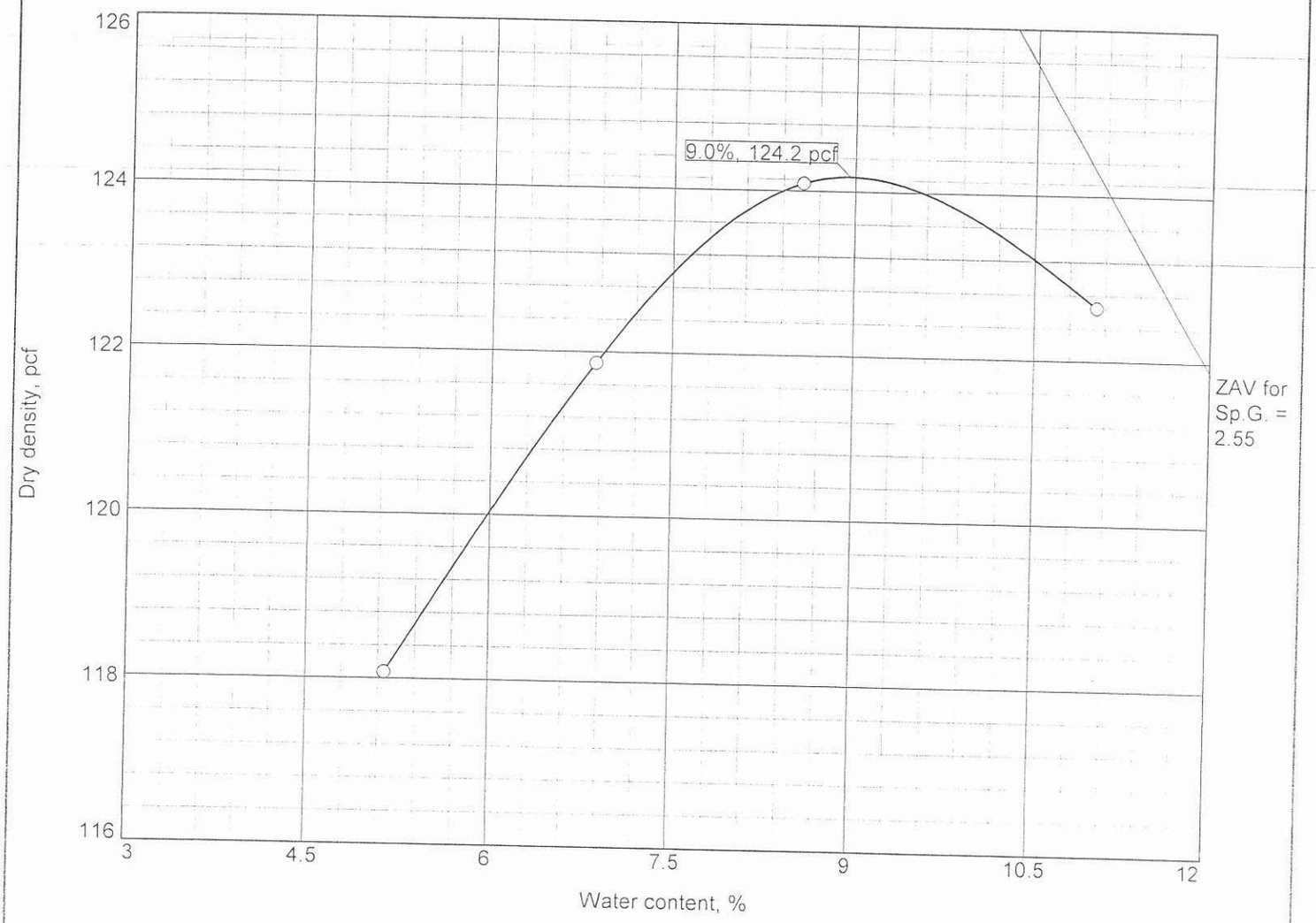
Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C1	45	73	22	51	29.4	54.2
C1	49	71	24	47	39.5	57.3
C1	50	NT	NT	NT	40.3	57.2
C1	64	72	22	50	41.4	58.6
C2	43	69	23	45	39.4	66.4
C2	45	74	23	51	40.1	56.7
C2	48	NT	NT	NT	34.4	57.3
C2	50	NT	NT	NT	36.1	52.6
C2	55	70	23	47	40.5	55.0
C2	61	NT	NT	NT	36.9	56.9
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I. 10.17.13

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

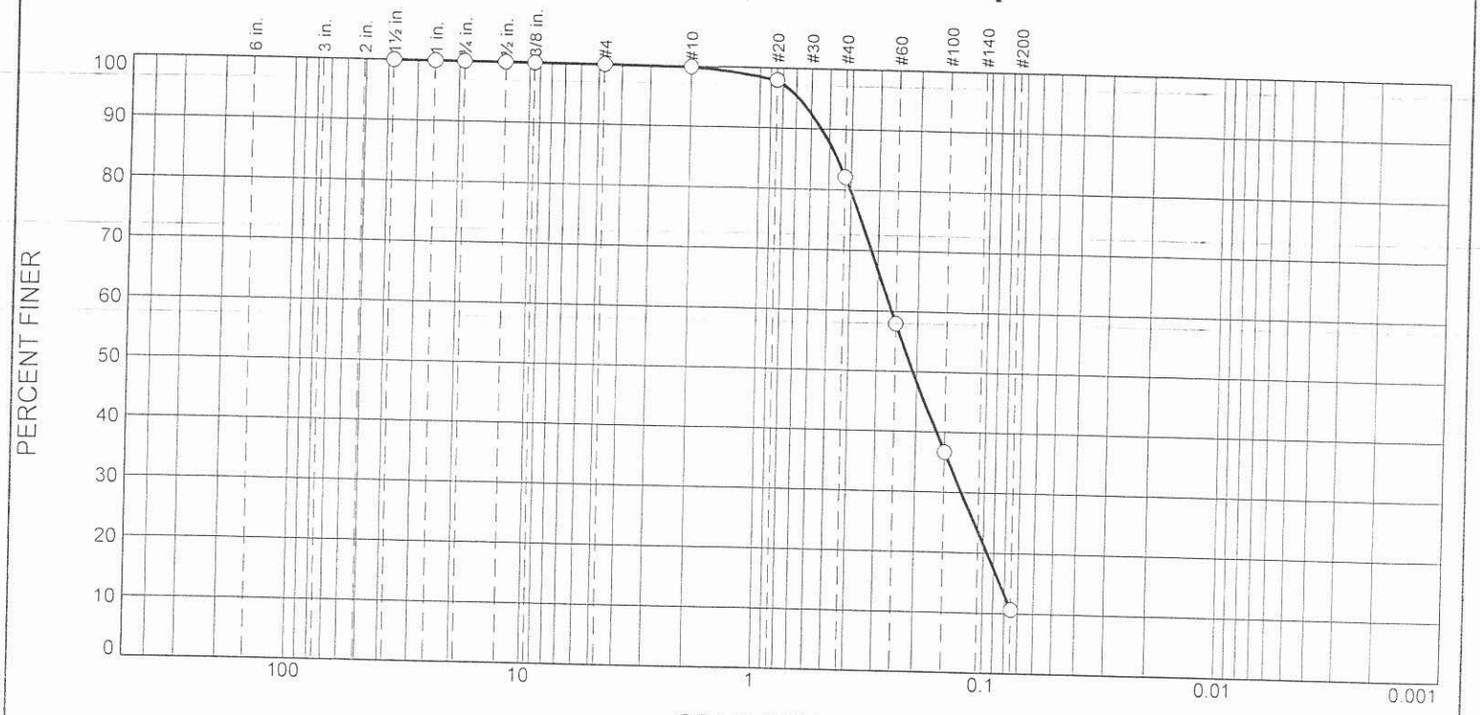
Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP-SM	A-2-4(0)			NV	NP	0.0	10.7

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 124.2 pcf Optimum moisture = 9.0 %	Brown Slightly Silty Fine SAND
Project No. 6736135237 **Client:** Meskel and Associates Engineering **Project:** Trailridge Landfill Phase 4 ○ **Source of Sample:** Initial Cover **Sample Number:** 5 AMEC E&I Jacksonville, Florida	**Remarks:**

Figure

Tested By: CM **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.17.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	17.7	71.5	10.7	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	99.9		
#20	98.0		
#40	82.2		
#60	57.9		
#100	36.7		
#200	10.7		

* (no specification provided)

Material Description

Brown Slightly Silty Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)= A-2-4(0)

Coefficients

D_{90}= 0.5415 D_{85}= 0.4594 D_{60}= 0.2614
D_{50}= 0.2089 D_{30}= 0.1260 D_{15}= 0.0843
D_{10}= C_u= C_c=

Remarks

Date Received: Date Tested: 10/10/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Initial Cover
Sample Number: 5

Date Sampled:

AMEC E&I

Jacksonville, Florida

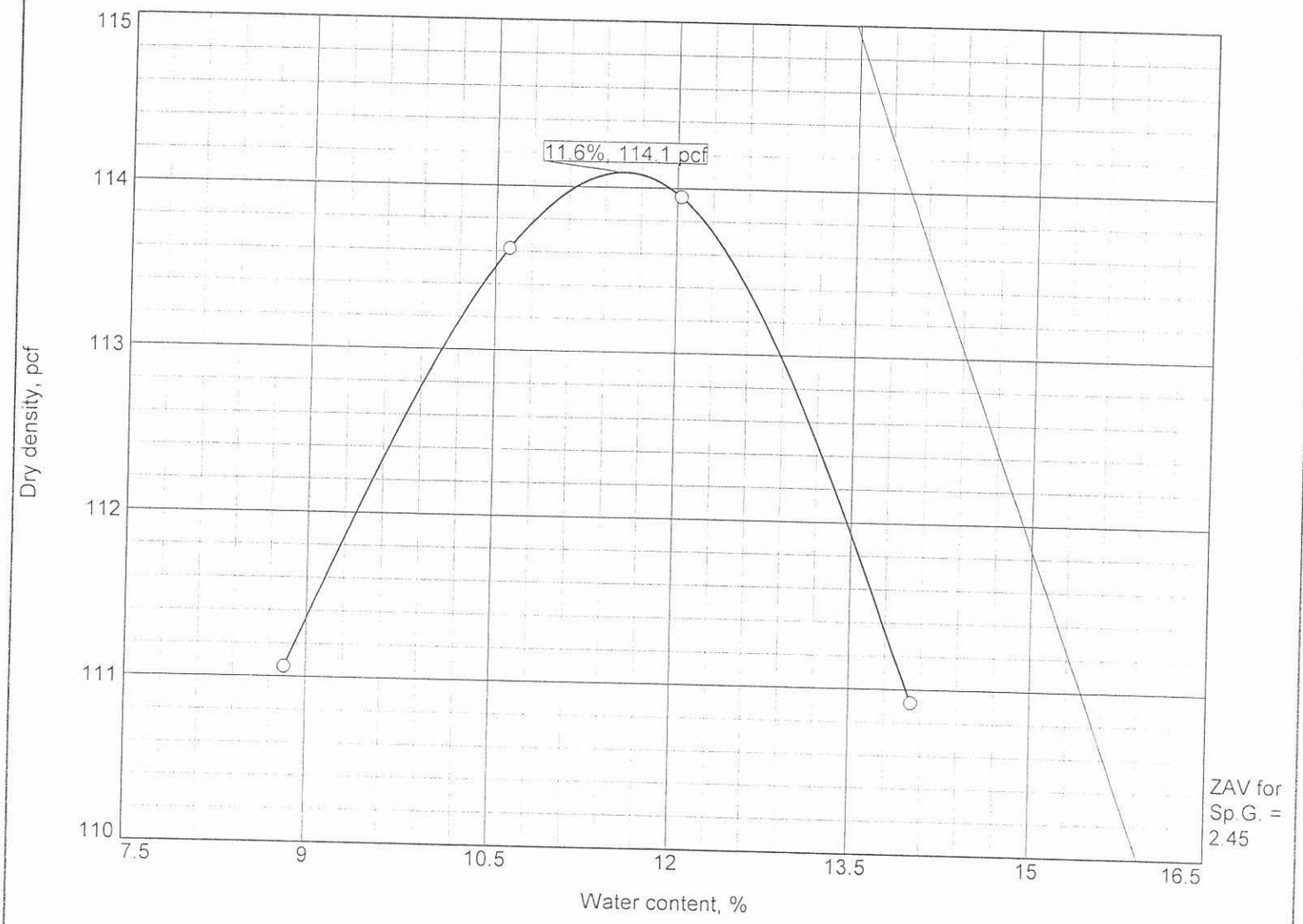
Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237

Figure

Corey Chascin 10.16.13

COMPACTION TEST REPORT



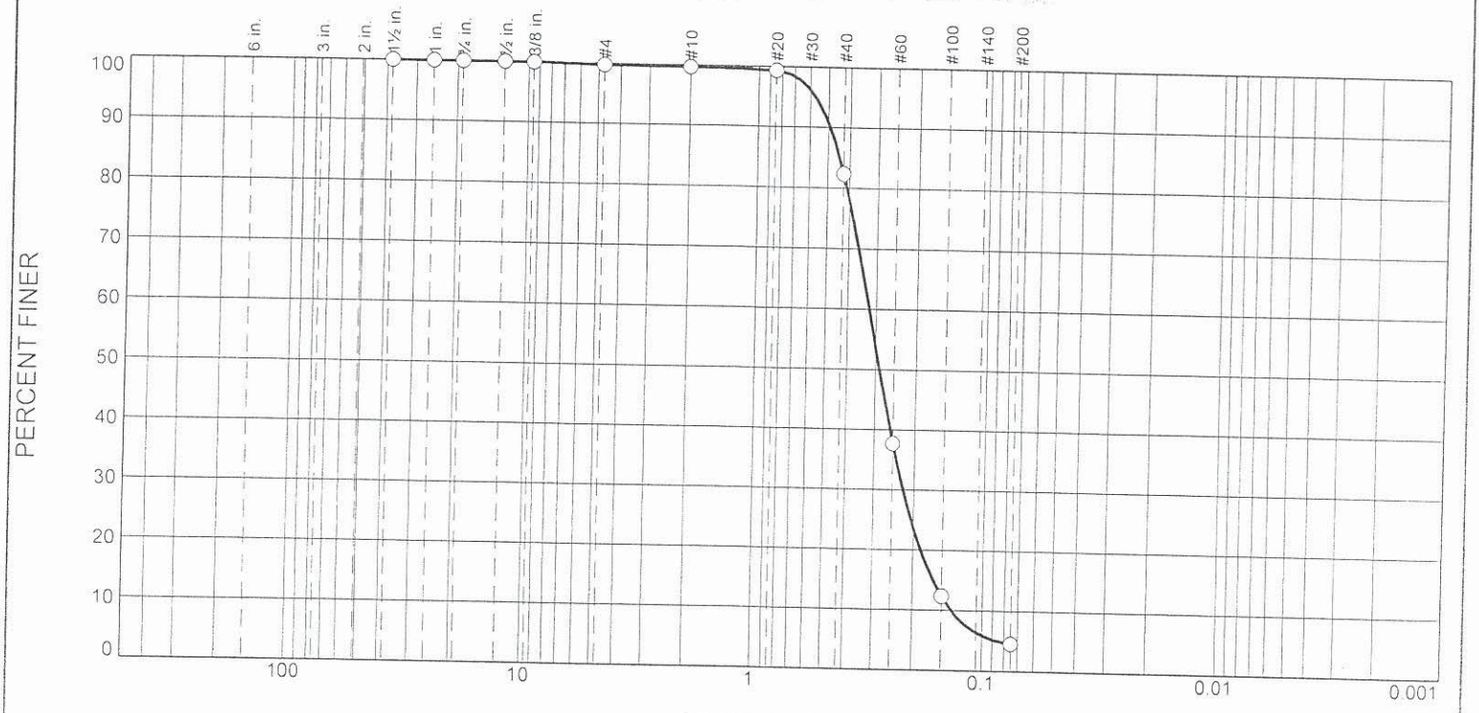
Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP	A-3			NV	NP	0.3	4.6

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 114.1 pcf Optimum moisture = 11.6 %	Very Dark Gray Fine SAND
Project No. 6736135237 **Client:** Meskel and Associates Engineering **Project:** Trailridge Landfill Phase 4 ○ **Source of Sample:** Top Soil **Sample Number:** 5 AMEC E&I Jacksonville, Florida	**Remarks:** Figure

Tested By: CM **Checked By:** Corey T. Chascin, E.I. Corey Chascin 10.17.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.3	0.0	17.4	77.7	4.6	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	99.7		
#10	99.7		
#20	99.3		
#40	82.3		
#60	37.7		
#100	12.3		
#200	4.6		

* (no specification provided)

Material Description

Very Dark Gray Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-3

Coefficients

D_{90}= 0.4902 D_{85}= 0.4438 D_{60}= 0.3230
D_{50}= 0.2892 D_{30}= 0.2240 D_{15}= 0.1638
D_{10}= 0.1362 C_u= 2.37 C_c= 1.14

Remarks

Date Received: Date Tested: 10/10/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Top Soil
Sample Number: 5

Date Sampled:

AMEC E&I

Jacksonville, Florida

Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237

Figure

Corey Chas 10.16.13

amec

Client: MAE

Date Received: 10/4 & 10/7, 2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C1	43	NT	NT	NT	33.9	58.2
C1	57	NT	NT	NT	35.7	57.6
C1	68	73	23	50	36.2	56.6
C2	53	74	22	53	37.3	58.6
C2	65	NT	NT	NT	35.8	58.0
C2	66	70	20	50	35.5	56.3
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey Chason 10.21.13

Corey T. Chason, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 10, 2013

Sample Number: C-1 #206
Location: Clay 1st Gas

Date Completed: October 24, 2013

Sample Information: Initial / Final

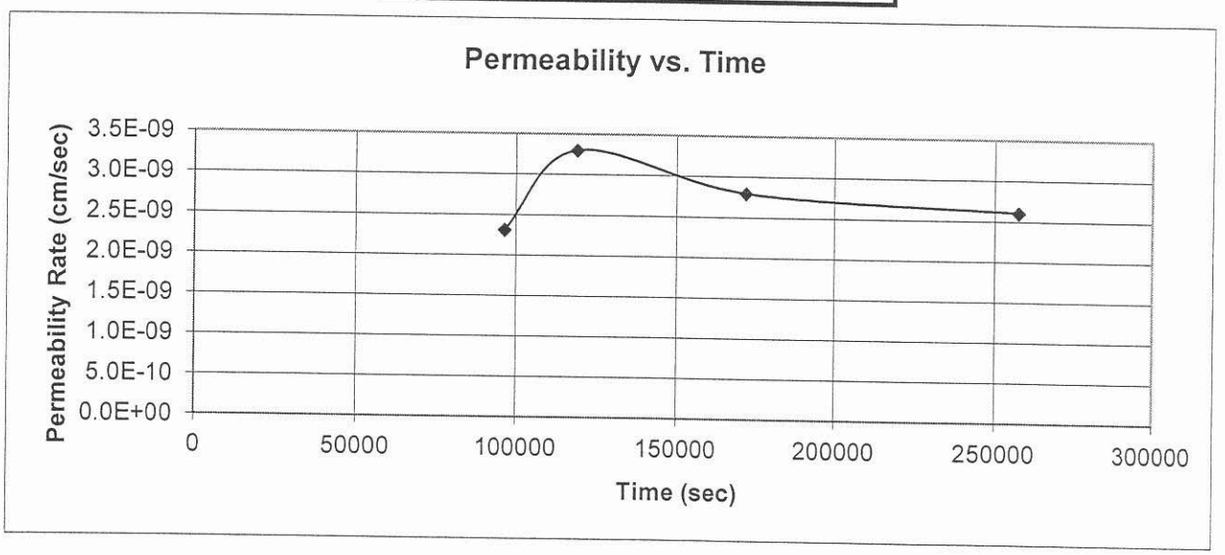
Dia. (in.)	2.79	2.80	**Length (in)**	2.00	1.98	**Weight (gr)**	359.4	364.84
Wet Density (pcf)	112.0		**Moisture Content (%)**	35.6		**Dry Density (pcf)**	82.6	
Final WD (pcf)	114.2		**Final Moisture (%)**	35.6		**Final DD (pcf)**	84.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	32.1	**Minimum Hydraulic Gradient**	16.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.8E-09



Reviewed By:

Corey T. Chascin, E.I.

10.29.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 10, 2013

Sample Number: C-2 #202

Location: Clay 2nd Gas

Date Completed: October 24, 2013

Sample Information: Initial / Final

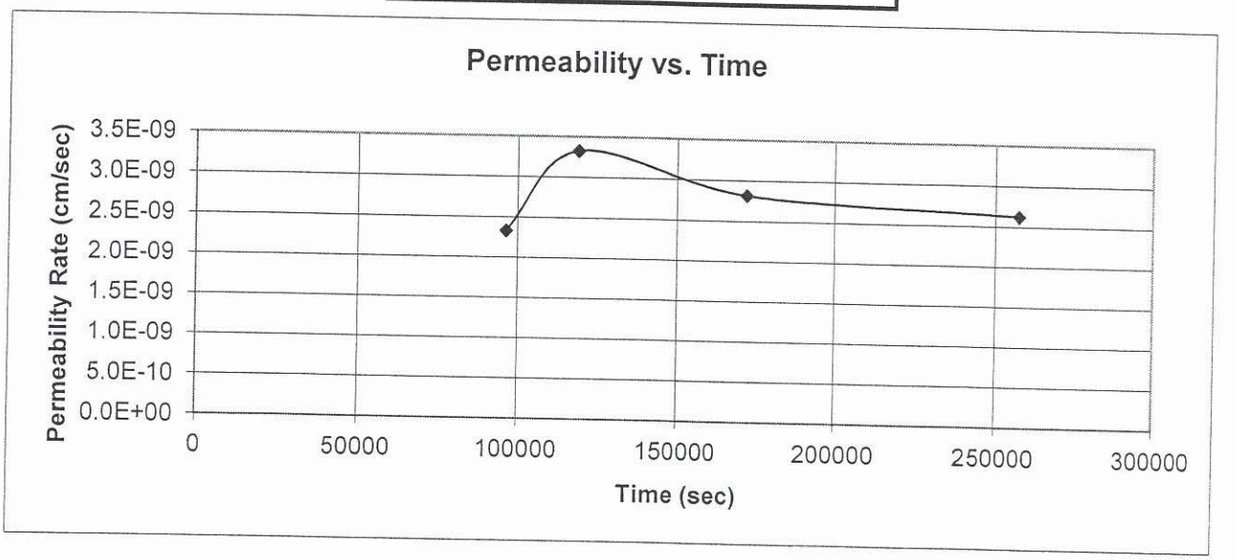
Dia. (in.)	2.85	2.87	**Length (in)**	2.11	2.11	**Weight (gr)**	391.8	397.6
Wet Density (pcf)	111.1		**Moisture Content (%)**	39.0		**Dry Density (pcf)**	79.9	
Final WD (pcf)	111.3		**Final Moisture (%)**	38.7		**Final DD (pcf)**	80.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	30.5	**Minimum Hydraulic Gradient**	15.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.8E-09



Reviewed By:

Corey T. Chascin, E.I.

10.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 10, 2013

Sample Number: C-1 #205

Location: Clay 1st Gas

Date Completed: October 24, 2013

Sample Information: Initial / Final

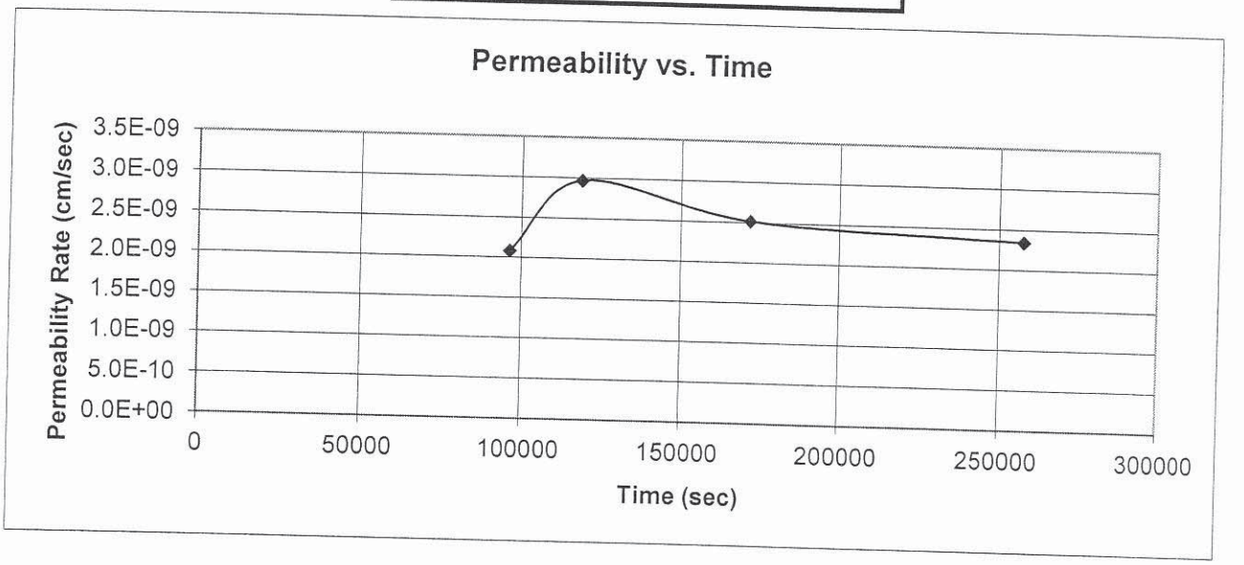
Dia. (in.)	2.80	2.82	Length (in)	1.82	1.80	Weight (gr)	329.6	333.68
Wet Density (pcf)	111.9		Moisture Content (%)	34.9		Dry Density (pcf)	83.0	
Final WD (pcf)	112.8		Final Moisture (%)	38.0		Final DD (pcf)	81.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	35.3	Minimum Hydraulic Gradient	17.6
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

2.5E-09



Reviewed By:

Corey T. Chascin, E.I.

10.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 10, 2013

Sample Number: C-2 #201

Location: Clay 2nd Gas

Date Completed: October 24, 2013

Sample Information: Initial / Final

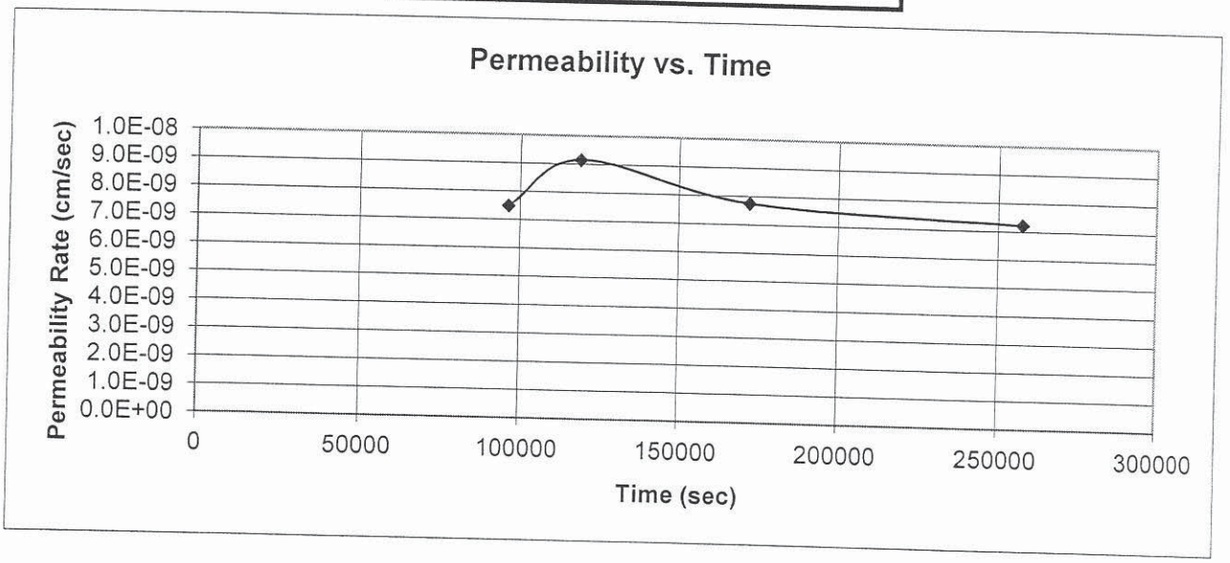
Dia. (in.)	2.71	2.74	**Length (in)**	2.62	2.60	**Weight (gr)**	443.9	450.74
Wet Density (pcf)	111.6		**Moisture Content (%)**	33.4		**Dry Density (pcf)**	83.7
Final WD (pcf)	112.3		**Final Moisture (%)**	33.7		**Final DD (pcf)**	84.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.4	**Minimum Hydraulic Gradient**	12.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.9E-09



Reviewed By:

Corey T. Chascin, E.I.

10.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 17, 2013

Sample Number: C-1 #207
Location: Gas Expansion

Date Completed: October 24, 2013

Sample Information: Initial / Final

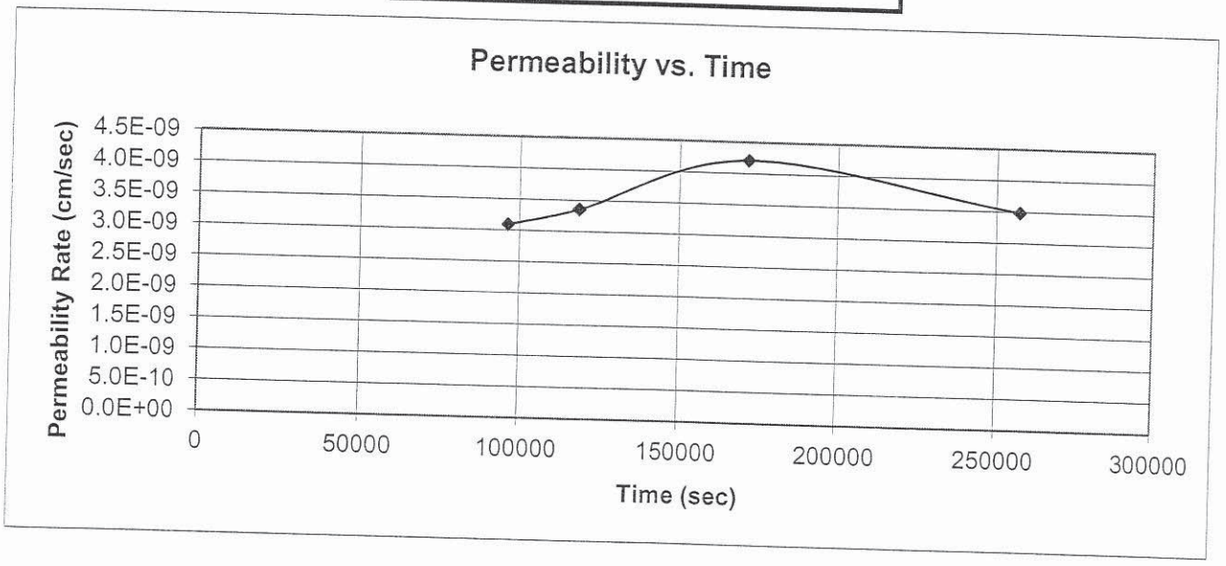
Dia. (in.)	2.81	2.81	Length (in)	2.05	2.06	Weight (gr)	377.3	383.07
Wet Density (pcf)	113.0		Moisture Content (%)	29.1		Dry Density (pcf)	87.5	
Final WD (pcf)	113.8		Final Moisture (%)	33.8		Final DD (pcf)	85.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	31.4	Minimum Hydraulic Gradient	15.7
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

3.5E-09



Reviewed By:

Corey T. Chascin, E.I. 10.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Project Number: 6736-13-5237

Dated Received: October 17, 2013

Sample Number: C-2 #203
Location: Gas Expansion

Date Completed: October 24, 2013

Sample Information: Initial / Final

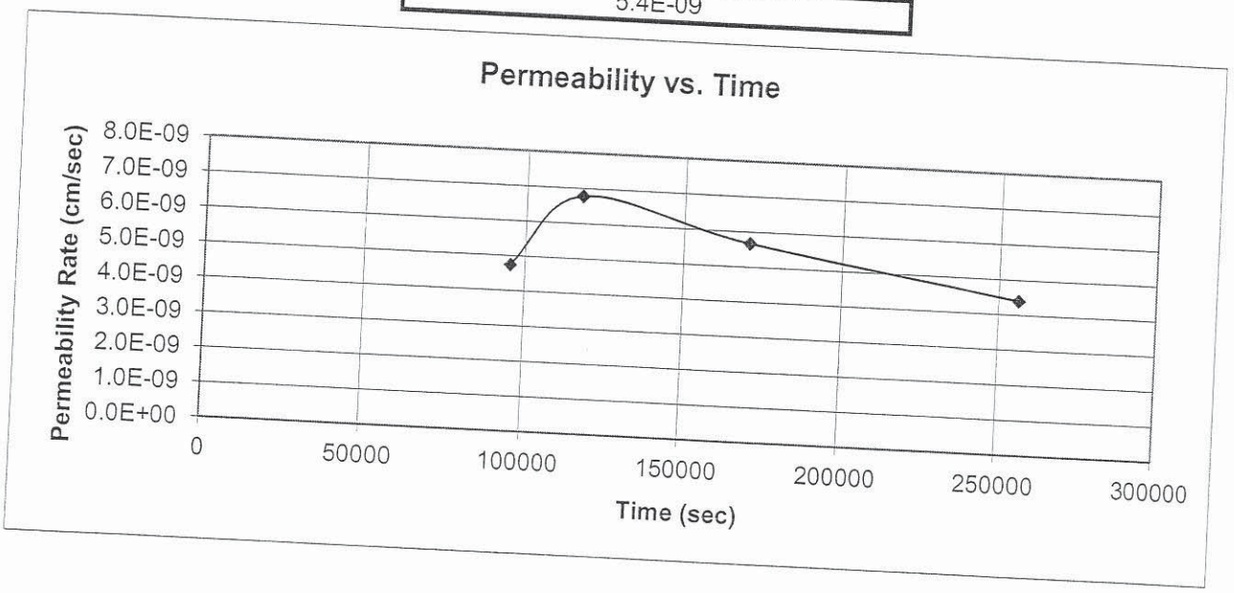
Dia. (in.)	2.82	2.82	Length (in)	2.08	2.01	Weight (gr)	364.1	364.44
Wet Density (pcf)	106.6		Moisture Content (%)	36.5		Dry Density (pcf)	78.1
Final WD (pcf)	110.6		Final Moisture (%)	37.8		Final DD (pcf)	80.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	30.9	Minimum Hydraulic Gradient	15.4
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

5.4E-09



Reviewed By:

Corey T. Chascin, E.I.

10.29.13

amec

Client: MAE

Project: Trail Ridge Landfill

Date Received: 10/10 & 10/17, 2013

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C1	205	75	21	54	34.9	52.7
C1	206	70	21	49	35.6	52.9
C2	201	75	24	51	33.4	56.3
C2	202	71	23	48	39.0	53.3
C1	207	76	21	55	29.1	53.2
C2	203	74	24	50	36.5	51.5
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I.

10.25.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 7, 2013

Sample Number: C-2 #66

Date Completed: October 14, 2013

Sample Information: Initial / Final

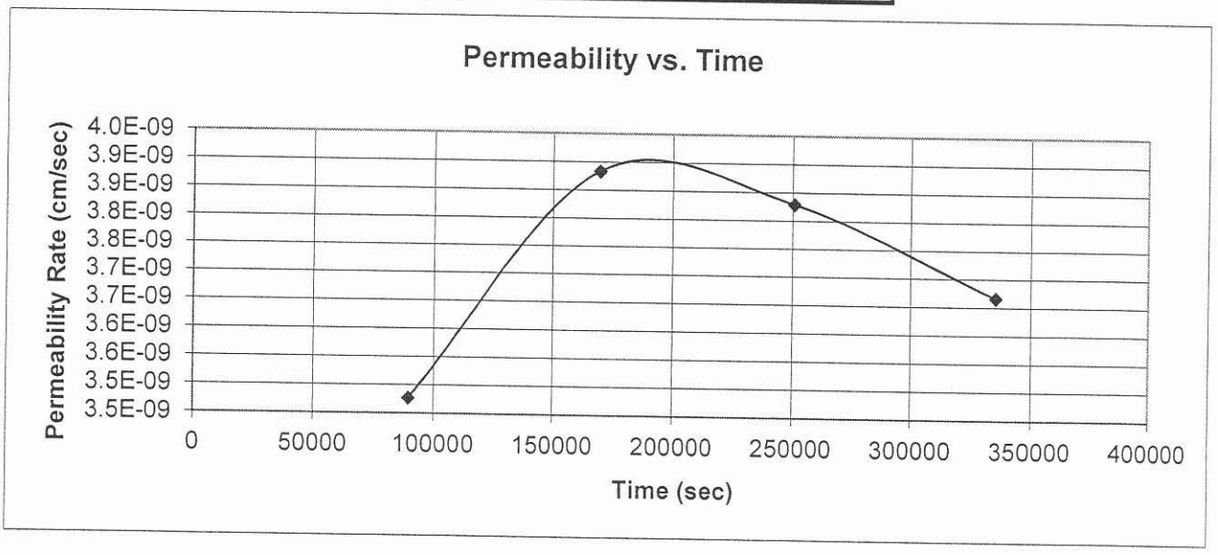
Dia. (in.)	2.86	2.86	**Length (in)**	2.21	2.21	**Weight (gr)**	420.5	429.4
Wet Density (pcf)	112.5		**Moisture Content (%)**	35.5		**Dry Density (pcf)**	83.0	
Final WD (pcf)	115.0		**Final Moisture (%)**	35.8		**Final DD (pcf)**	84.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	29.1	**Minimum Hydraulic Gradient**	14.5
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.7E-09



Reviewed By:

Corey T. Chascin, E.I.

10.22.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: C-2 #53

Project Number: 6736-13-5237

Dated Received: October 4, 2013

Date Completed: October 14, 2013

Sample Information: Initial / Final

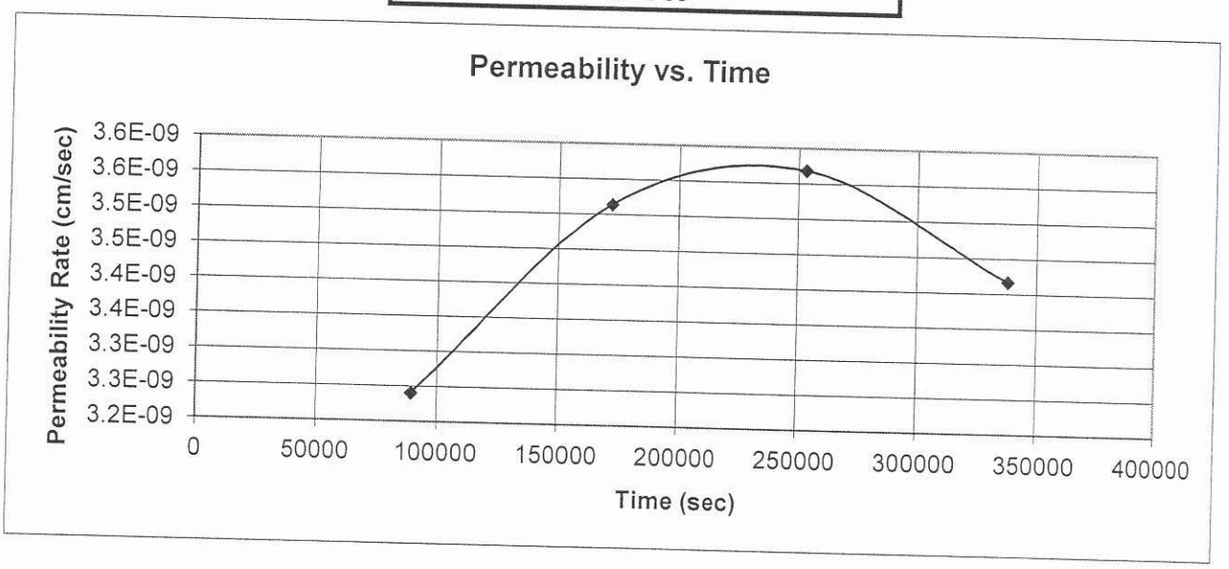
Dia. (in.)	2.82	2.83	Length (in)	2.67	2.67	Weight (gr)	483.1	489.87
Wet Density (pcf)	110.3		Moisture Content (%)	37.3		Dry Density (pcf)	80.3	
Final WD (pcf)	111.3		Final Moisture (%)	39.2		Final DD (pcf)	80.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	24.1	Minimum Hydraulic Gradient	12.0
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

3.4E-09



Reviewed By:

Corey T. Chascin, E.I.

10.22.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: October 4, 2013

Sample Number: C-1 #68

Date Completed: October 14, 2013

Sample Information: Initial / Final

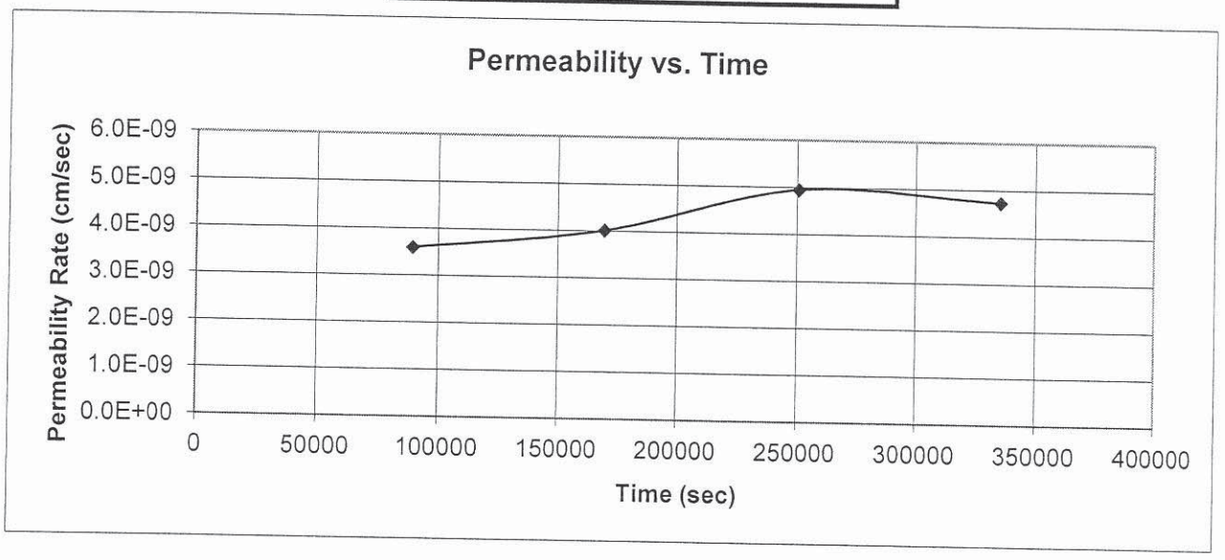
Dia. (in.)	2.83	2.82	**Length (in)**	2.23	2.23	**Weight (gr)**	400.6	407.54
Wet Density (pcf)	109.0		**Moisture Content (%)**		36.2	**Dry Density (pcf)**	80.0
Final WD (pcf)	111.5		**Final Moisture (%)**		39.3	**Final DD (pcf)**	80.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.8	**Minimum Hydraulic Gradient**	14.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

4.3E-09



Reviewed By:

Corey Chascin 10.22.13

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	September 12, 2013
Sample Number:	C-1 #44	**Date Completed:**	September 18, 2013
Location:	T-2		

Sample Information: Initial / Final

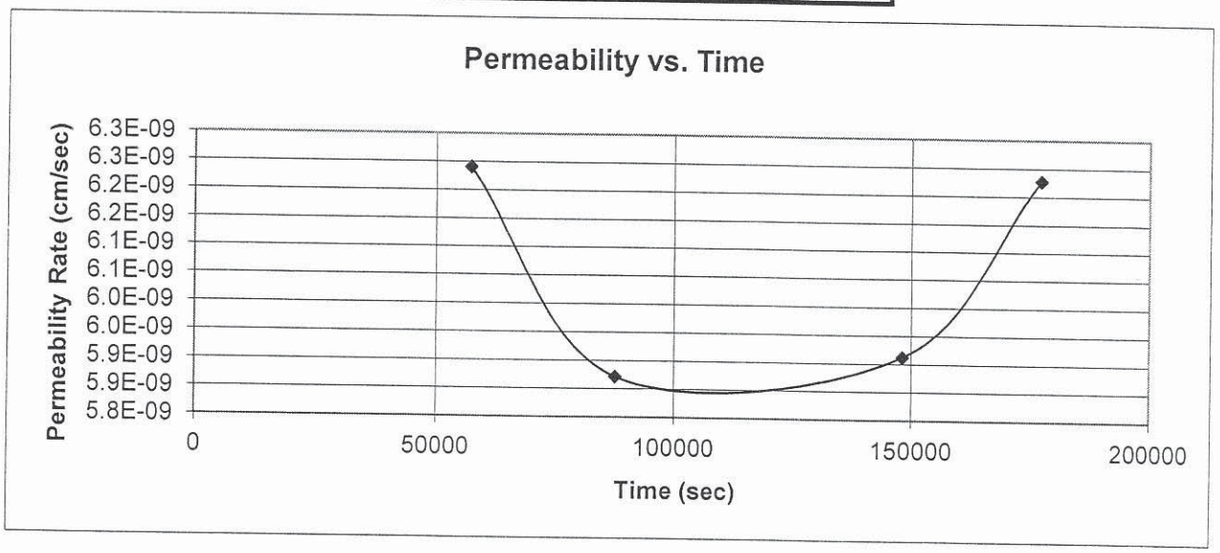
Dia. (in.)	2.79	2.81	**Length (in)**	2.41	2.41	**Weight (gr)**	415.1	423.17
Wet Density (pcf)	107.5		**Moisture Content (%)**		38.3	**Dry Density (pcf)**		77.7
Final WD (pcf)	108.0		**Final Moisture (%)**		43.3	**Final DD (pcf)**		75.4

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	26.7	**Minimum Hydraulic Gradient**	13.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.1E-09



Reviewed By:

Corey Chascin 9.25.13

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	September 12, 2013
Sample Number:	C-2 #51	**Date Completed:**	September 18, 2013
Location:	T-2		

Sample Information: Initial / Final

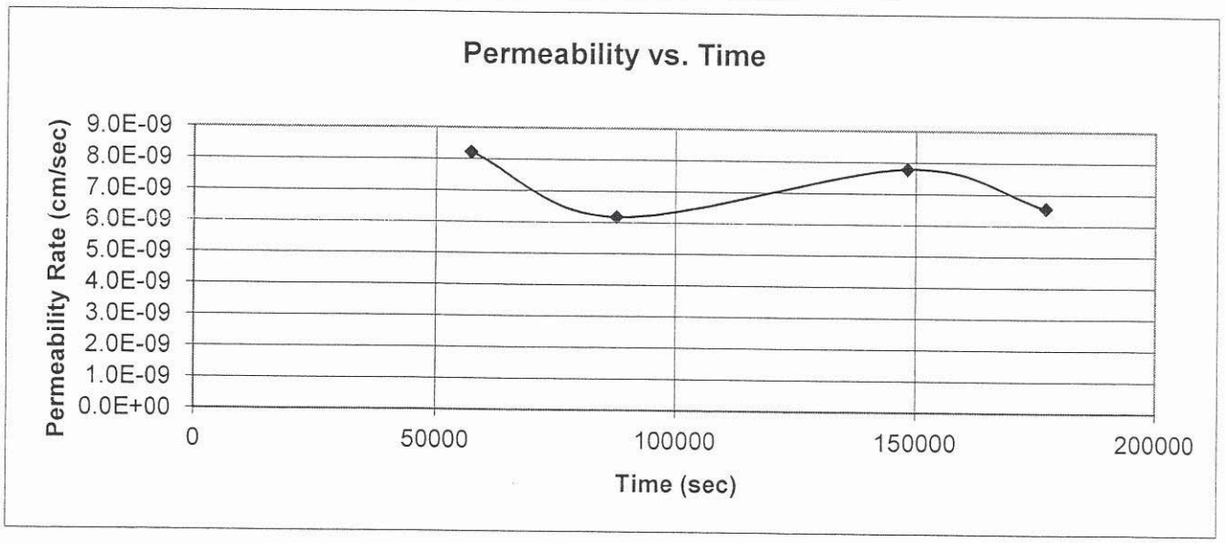
Dia. (in.)	2.85	2.84	**Length (in)**	2.65	2.68	**Weight (gr)**	480.8	509.6
Wet Density (pcf)	108.8		**Moisture Content (%)**		41.7	**Dry Density (pcf)**		76.7
Final WD (pcf)	114.5		**Final Moisture (%)**		36.3	**Final DD (pcf)**		84.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.3	**Minimum Hydraulic Gradient**	12.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.2E-09



Reviewed By:

Corey Chascin 9.25.13

Corey T. Chascin, E.I.

amec

Client: MAE

Date Received: 9/12/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

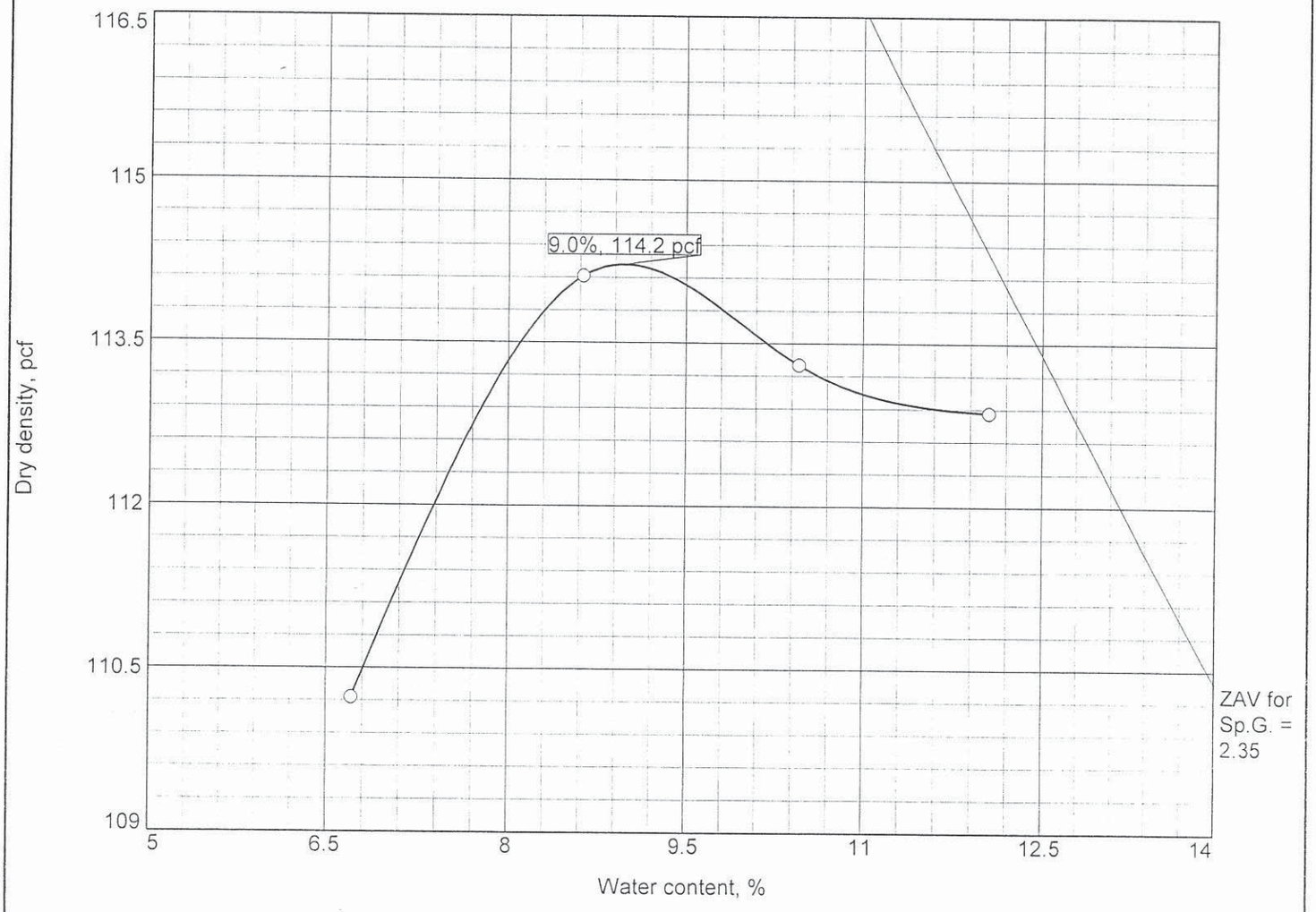
Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	40	NT	NT	NT	34.2	57.8
C-1	44	87	28	59	38.3	60.5
C-2	51	90	26	64	41.7	61.5

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I. 9.25.13

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP	A-3			NV	NP	0.0	4.2

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 114.2 pcf Optimum moisture = 9.0 %	Very Dark Gray Fine SAND

Project No. 6736135237 **Client:** Meskel
Project: Trailridge Landfill Phase 4

○ **Location:** Spencer Pit- Top Soil **Sample Number:** 4

AMEC E&I

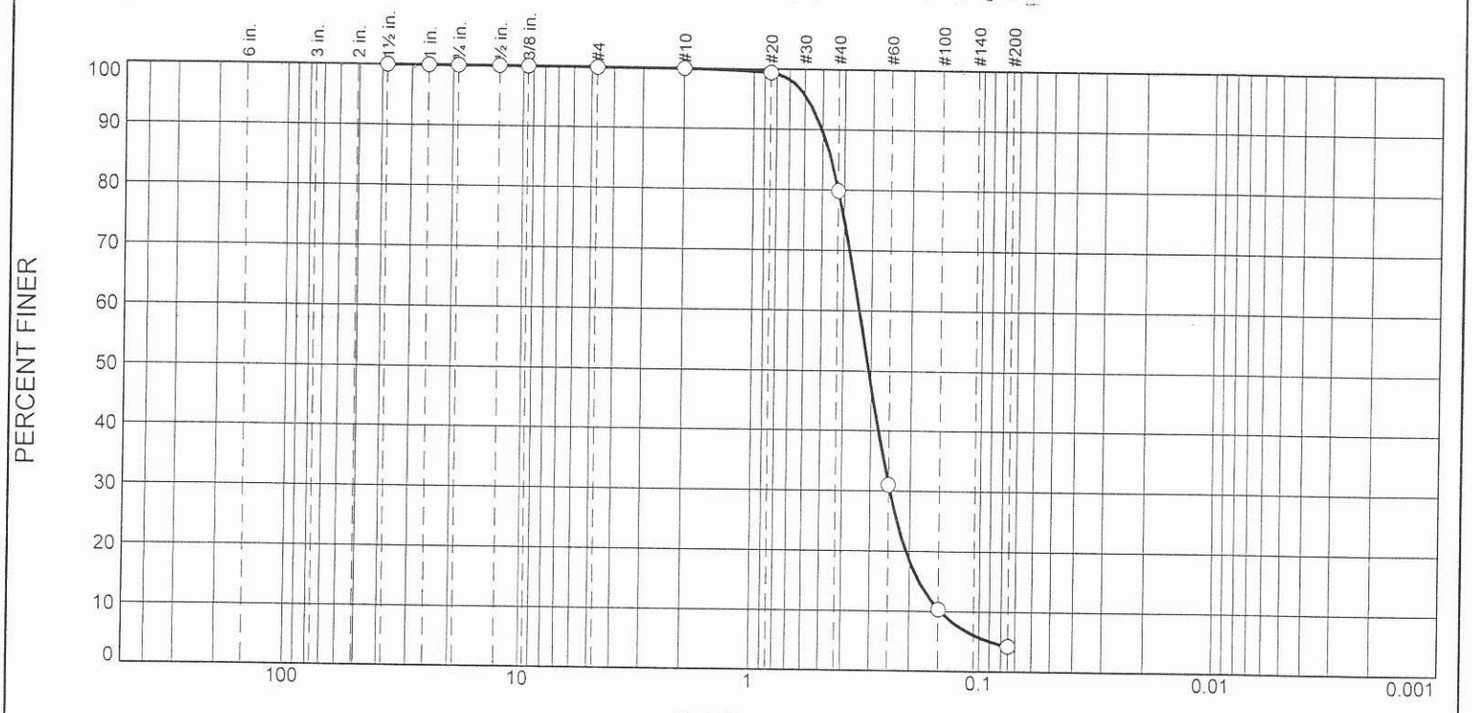
Jacksonville, Florida

Remarks:

Figure

Tested By: CM **Checked By:** Corey T. Chascin, E.I. Corey Chas 9.13.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	20.1	75.6	4.2	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	99.9		
#20	99.4		
#40	79.8		
#60	31.0		
#100	10.3		
#200	4.2		

* (no specification provided)

Material Description

Very Dark Gray Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-3

Coefficients

D_{90}= 0.5051 D_{85}= 0.4590 D_{60}= 0.3408
D_{50}= 0.3085 D_{30}= 0.2467 D_{15}= 0.1829
D_{10}= 0.1472 C_u= 2.32 C_c= 1.21

Remarks

pH- 6.1
Organic Content- 3.1%

Date Received: 8/29/13 **Date Tested:** 9/13/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Location: Spencer Pit- Top Soil
Sample Number: 4

Date Sampled: 8/29/13

AMEC E&I

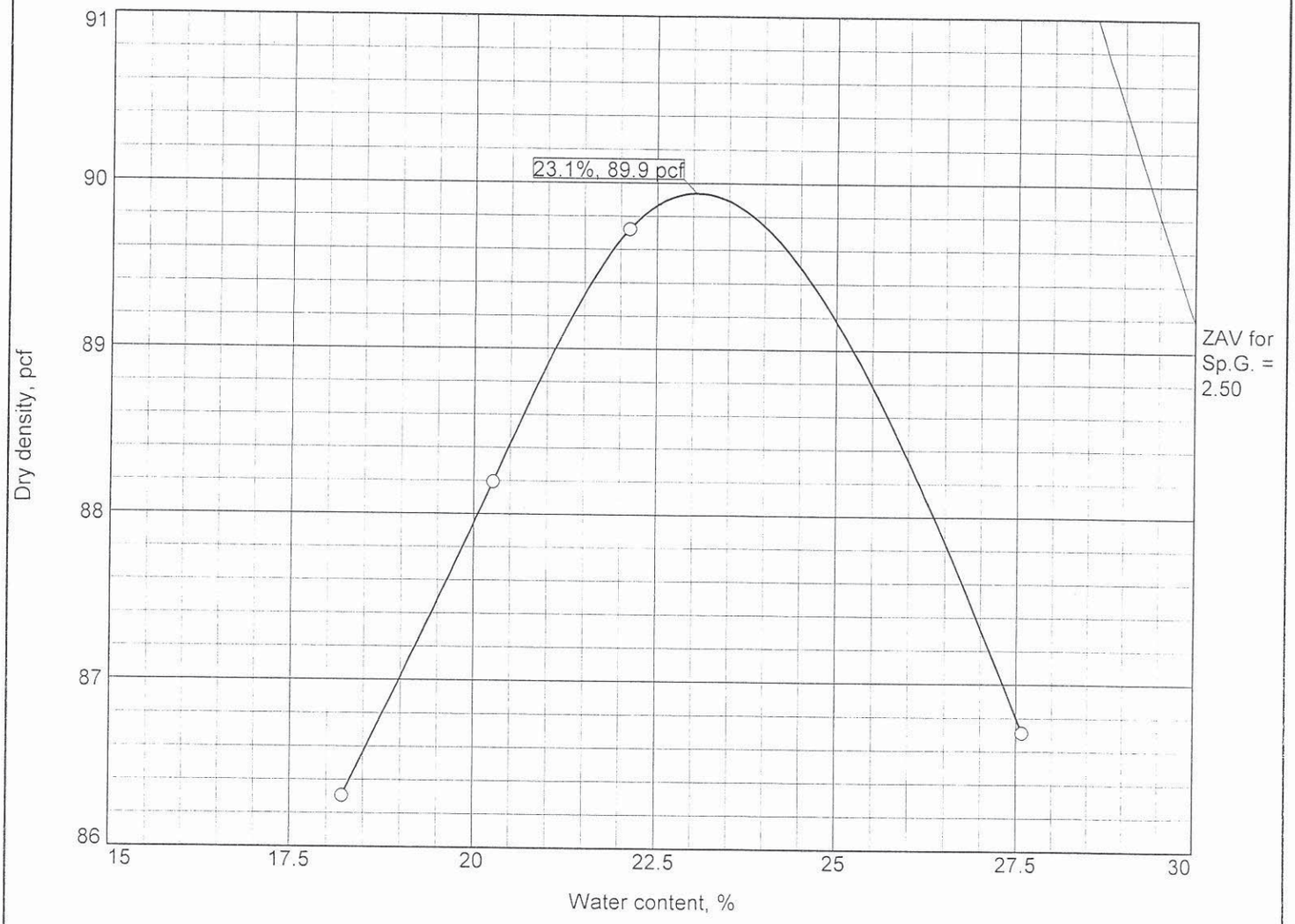
Jacksonville, Florida

Client: Meskel
Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

Corey Chascin 9.16.13

COMPACTION TEST REPORT



Test specification: ASTM D 698-00a Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	CH	A-7-6(42)			97	76	0.0	60.3

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 89.9 pcf Optimum moisture = 23.1 %	Grayish Brown Very Sandy CLAY

Project No. 6736135237 Client: Meskel
Project: Trailridge Landfill Phase 4

○ Source of Sample: Jacobs Pit Mixed Sample Sample Number: 3

AMEC E&I

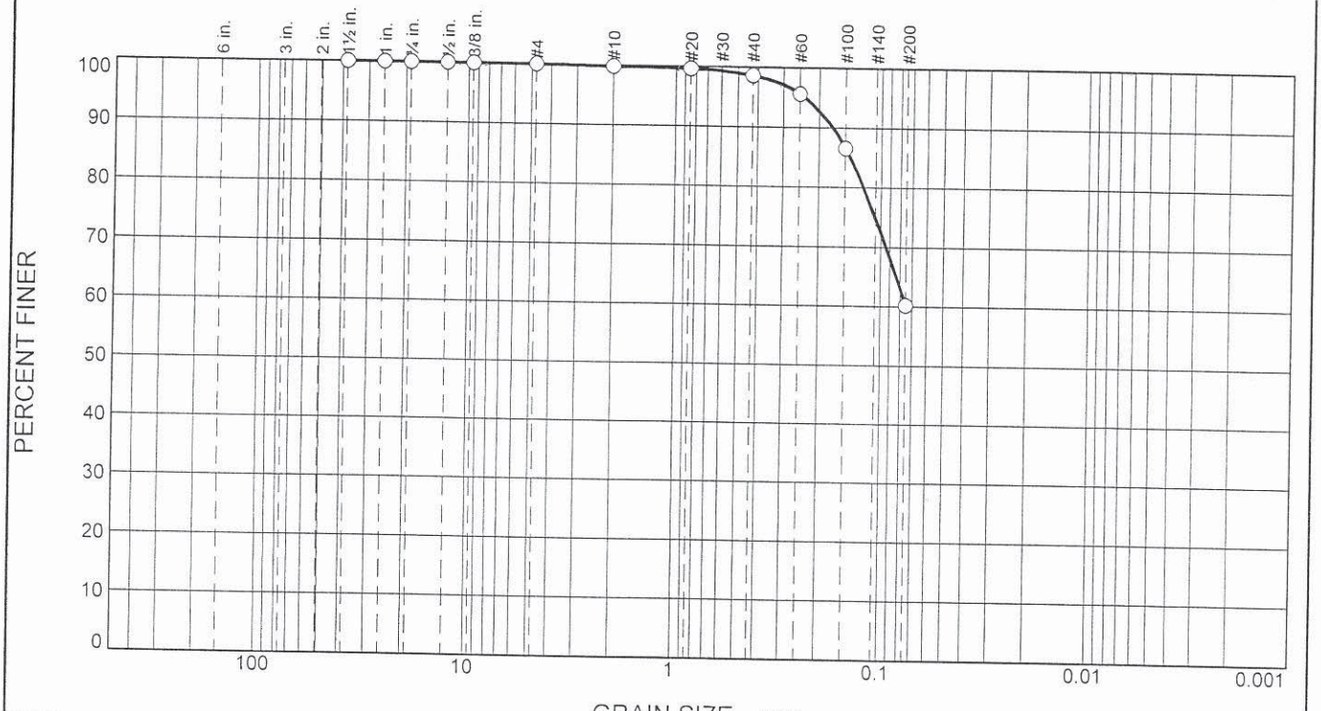
Jacksonville, Florida

Remarks:

Figure

Tested By: CM Checked By: Corey T. Chascin, E.I. Corey Chas 9.12.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.2	1.2	38.3	60.3	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	99.8		
#20	99.6		
#40	98.6		
#60	95.6		
#100	86.6		
#200	60.3		

* (no specification provided)

Material Description

Grayish Brown Very Sandy CLAY

Atterberg Limits (ASTM D 4318)

PL= 21 LL= 97 PI= 76

Classification

USCS (D 2487)= CH AASHTO (M 145)= A-7-6(42)

Coefficients

D_{90}= 0.1728 D_{85}= 0.1420 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 8/24/13 **Date Tested:** 9/4/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Jacobs Pit Mixed Sample **Date Sampled:** 8/24/13

Sample Number: 3

AMEC E&I

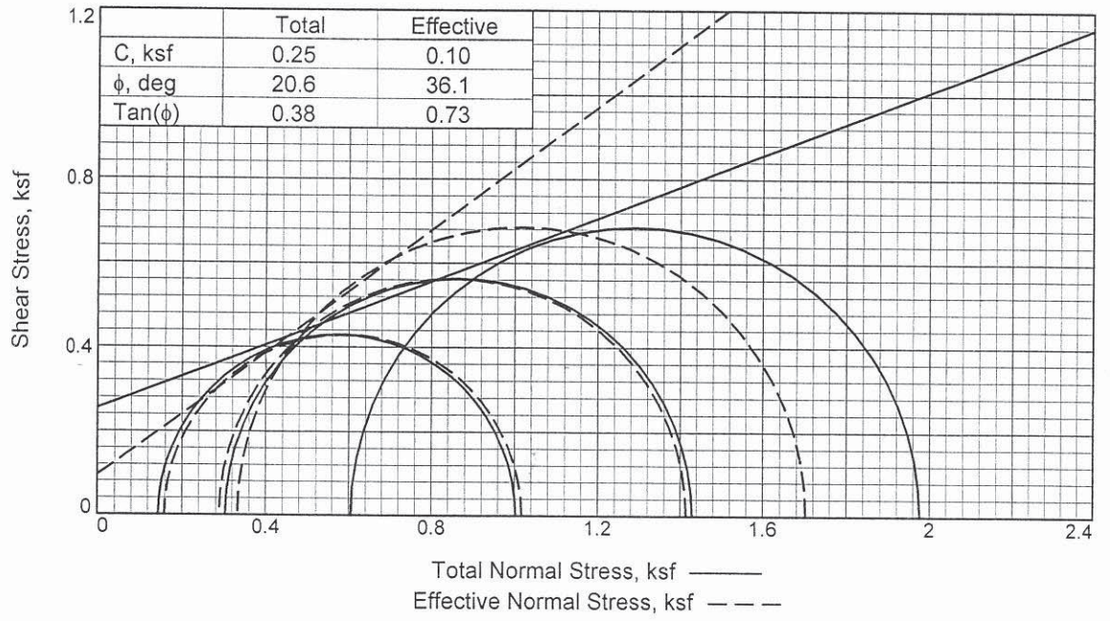
Jacksonville, Florida

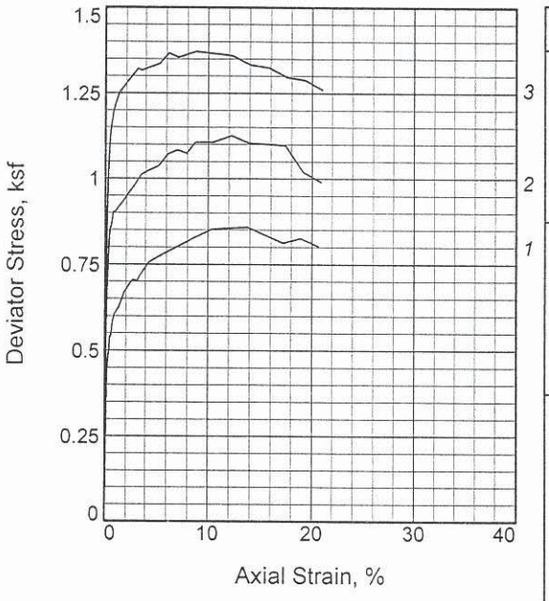
Client: Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

Corey Chascin 9.16.13





Sample No.		1	2	3
Initial	Water Content, %	40.4	42.3	39.9
	Dry Density, pcf	74.8	74.9	76.8
	Saturation, %	90.1	94.6	93.6
	Void Ratio	1.1609	1.1578	1.1030
	Diameter, in.	2.87	2.83	2.86
	Height, in.	5.89	5.82	5.82
At Test	Water Content, %	43.3	42.6	39.1
	Dry Density, pcf	76.2	76.9	80.3
	Saturation, %	100.0	100.0	100.0
	Void Ratio	1.1215	1.1014	1.0128
	Diameter, in.	2.85	2.80	2.82
	Height, in.	5.85	5.77	5.73
Strain rate, in./min.		0.01	0.01	0.01
Eff. Cell Pressure, psi		1.00	2.10	4.20
Fail. Stress, ksf		0.86	1.13	1.37
Total Pore Pr., ksf		8.63	8.65	8.91
Strain, %		13.7	12.2	8.8
Ult. Stress, ksf				
Total Pore Pr., ksf				
Strain, %				
$\bar{\sigma}_1$ Failure, ksf		1.02	1.41	1.70
$\bar{\sigma}_3$ Failure, ksf		0.16	0.29	0.33

Type of Test:
CU with Pore Pressures
Sample Type: Remolded
Description: Grayish Brown Very Sandy CLAY

LL= 97 **PL=** 21 **PI=** 76
Specific Gravity= 2.588
Remarks:

Client: Meskel and Associates Engineering

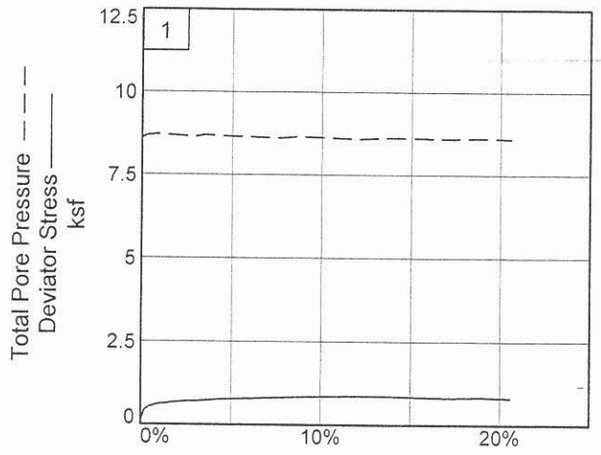
Project: Trailridge Landfill Phase 4

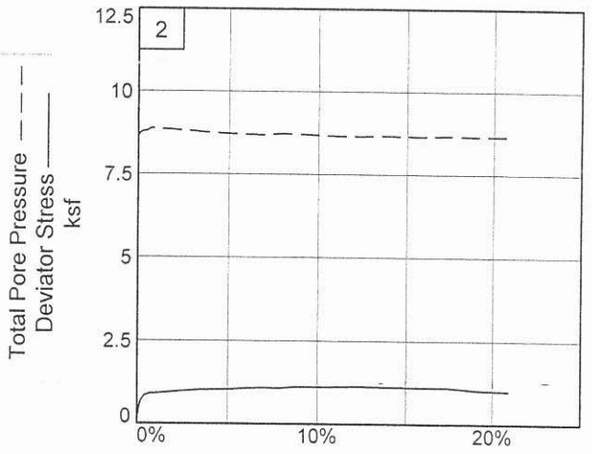
Source of Sample: Jacobs Pit Mixed Sample
Sample Number: 3
Proj. No.: 6736135237 **Date Sampled:** 8/24/13

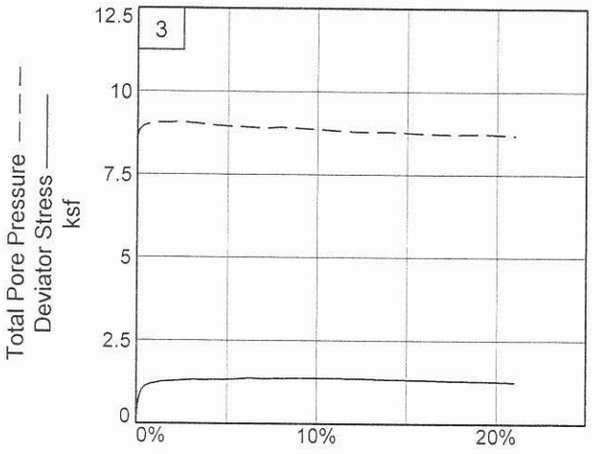
TRIAXIAL SHEAR TEST REPORT
AMEC E&I
Jacksonville, Florida

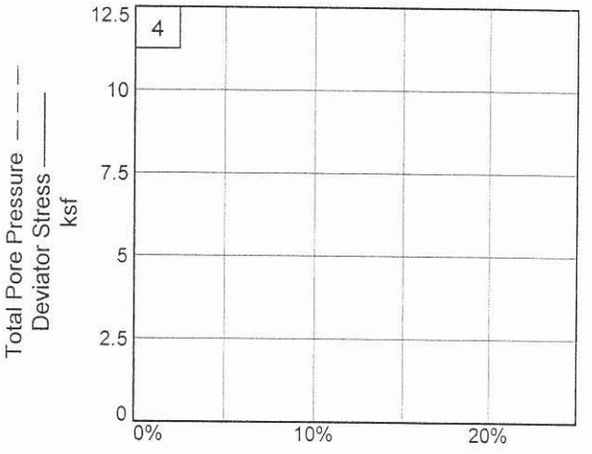
Tested By: F Basnett **Checked By:** Corey T. Chascin, E.I.

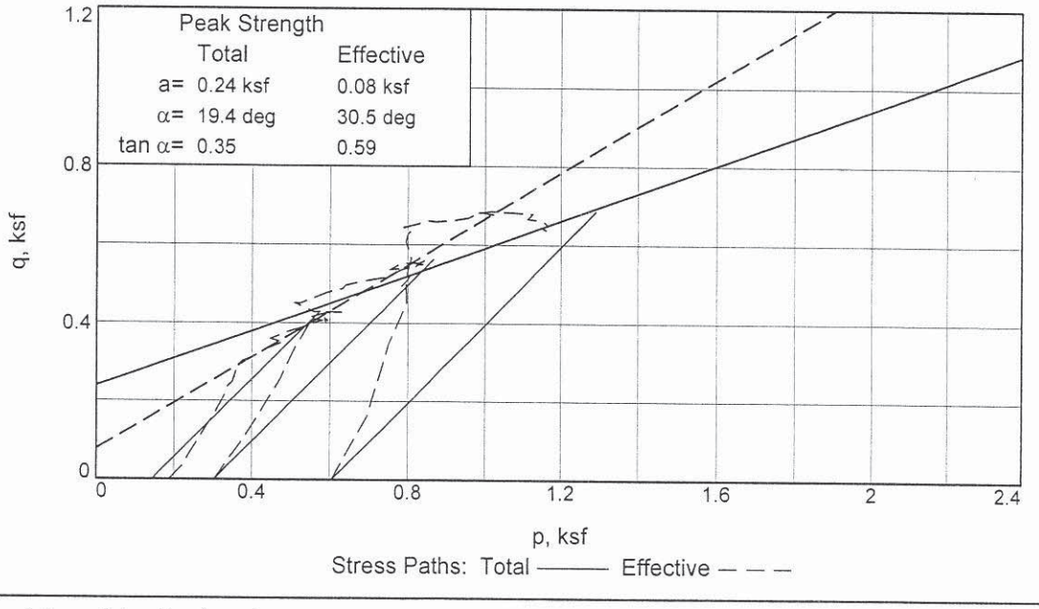
Corey Chascin 9.16.13











Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4
Source of Sample: Jacobs Pit Mixed Sample **Sample Number:** 3
Project No.: 6736135237

AMEC E&I

Tested By: F Basnett **Checked By:** Corey T. Chascin, E.I.

CTC

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REPORT OF SOIL PERMEABILITY TESTING

Project: TRLF Pase No. 4 **Project Number:** 6736-13-5237

Client Meskel **Date Completed:** April 12, 2013

Sample Number: 2 **Depth:** NA

The sample was remolded to 100% Modified Effort of 106.3 at a Optimum Moisture of 13.0%. The compacted sample was tested for permeability and the results are outlined below.

Sample Information:

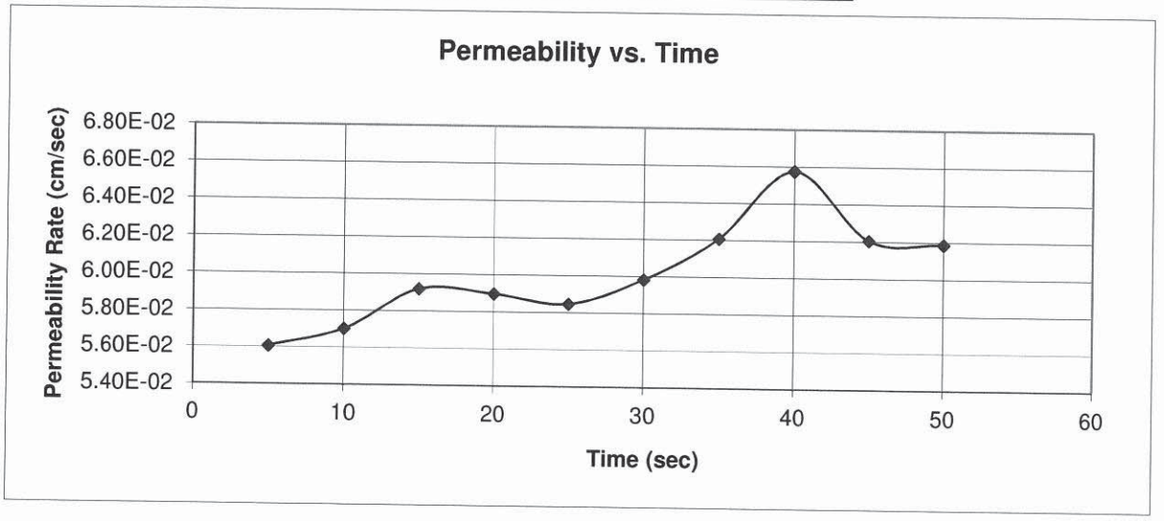
Dia. (in.)	2.97	**Length (in)**	5.73	**Weight (gr)**	1247.4
Wet Density (pcf)	119.8	**Moisture Content (%)**	12.8	**Dry Density (pcf)**	106.2

Test Parameters

Test Method Used:	ASTM D-2434	**Permeant Fluid:**	Tap water

Permeability Rate

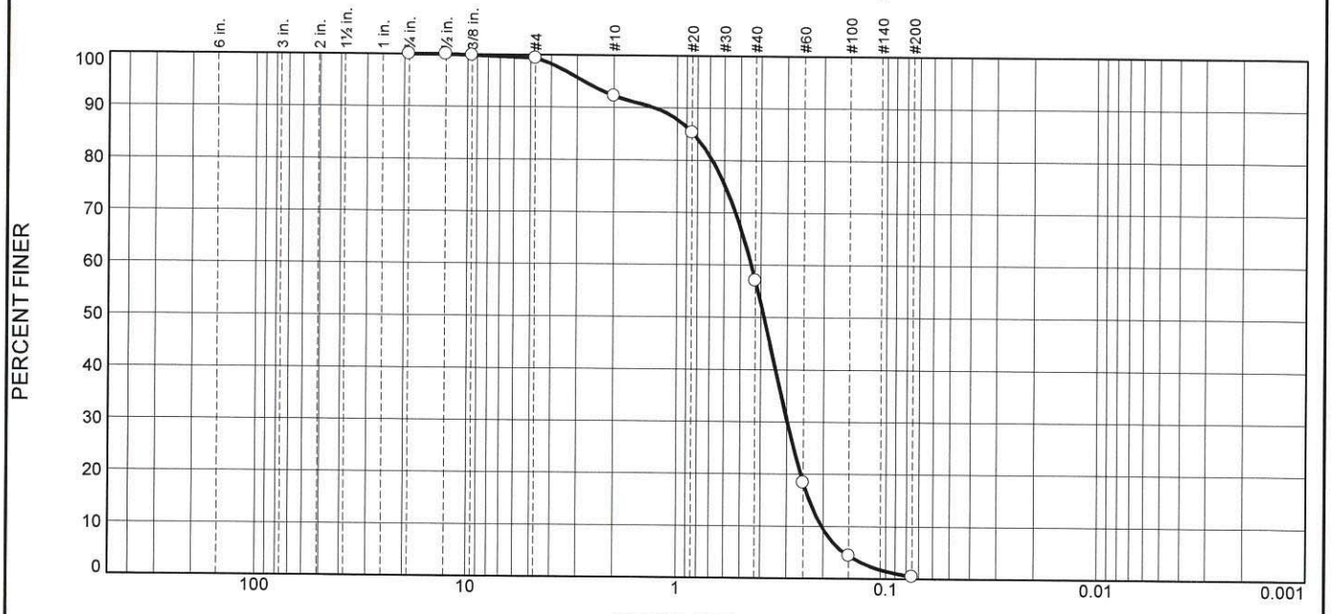
6.01E-02



Reviewed By:

Daniel L. Eisman, P.E.

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.7	7.1	35.1	56.7	0.4	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4	100.0		
1/2	100.0		
3/8	99.8		
#4	99.3		
#10	92.2		
#20	85.3		
#40	57.1		
#60	18.4		
#100	4.4		
#200	0.4		

* (no specification provided)

Material Description

Light Gray Fine to Medium SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-3

Coefficients

D_{90}= 1.2854 D_{85}= 0.8365 D_{60}= 0.4440
D_{50}= 0.3856 D_{30}= 0.2982 D_{15}= 0.2336
D_{10}= 0.2041 C_u= 2.18 C_c= 0.98

0.2mm to 0.5 goal **Remarks**

Date Received: **Date Tested:** 4/22/13

Tested By: CM

Checked By: Daniel L. Eisman, P.E.

Title: Project Engineer

Source of Sample: Underdrain Sand Production **Date Sampled:**

Sample Number: 1

AMEC E&I

Jacksonville, Florida

Client: Meskel

Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** January 0, 1900

Sample Number: Jacobs Pit Clay Mixed Sample #2

Sample Information: Initial / Final

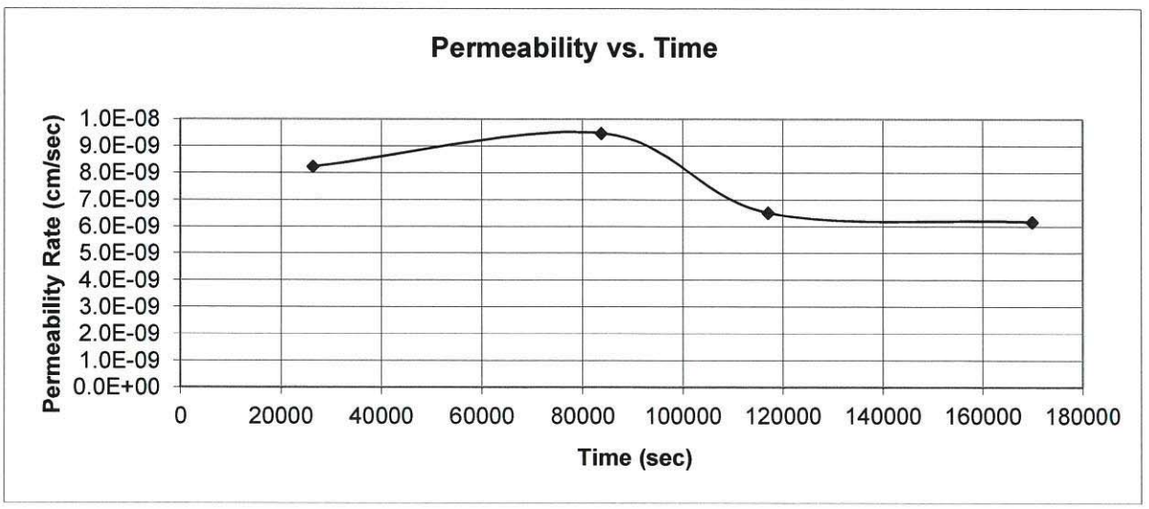
Dia. (in.)	2.88	#DIV/0!	**Length (in)**	3.12	#DIV/0!	**Weight (gr)**	584.9	0
Wet Density (pcf)	109.8		**Moisture Content (%)**	39.4		**Dry Density (pcf)**	78.8	
Final WD (pcf)	#DIV/0!		**Final Moisture (%)**	#DIV/0!		**Final DD (pcf)**	#DIV/0!	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.6	**Minimum Hydraulic Gradient**	10.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.6E-09



56.8 Fines

39.4% moisture

LL 96

PL 22

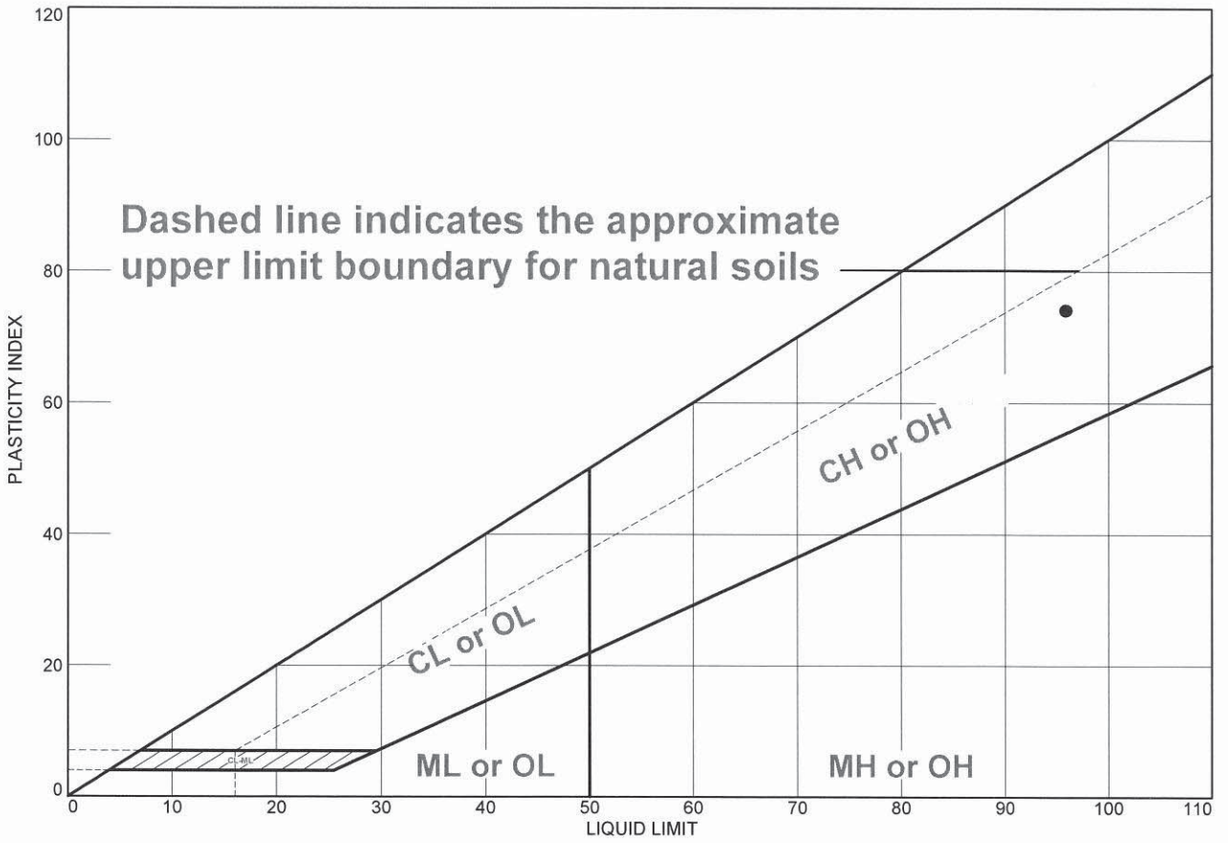
PI 74

Reviewed By:

Draft

Daniel Eisman, P.E.

LIQUID AND PLASTIC LIMITS TEST REPORT



	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Gray very sandy CLAY	96	22	74		56.8	CH

Project No. 6736135237 **Client:** Meskel

Project: Trailridge Landfill Phase 4

●**Source:** Jacob's Pit Clay Mixed Sample #2 Rec'd 4-19-13 **Sample No.:** 2

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: FB

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	September 6, 2013
Sample Number:	Jacob's Pit Mixed Sample #3	**Date Completed:**	September 11, 2013

Sample Information

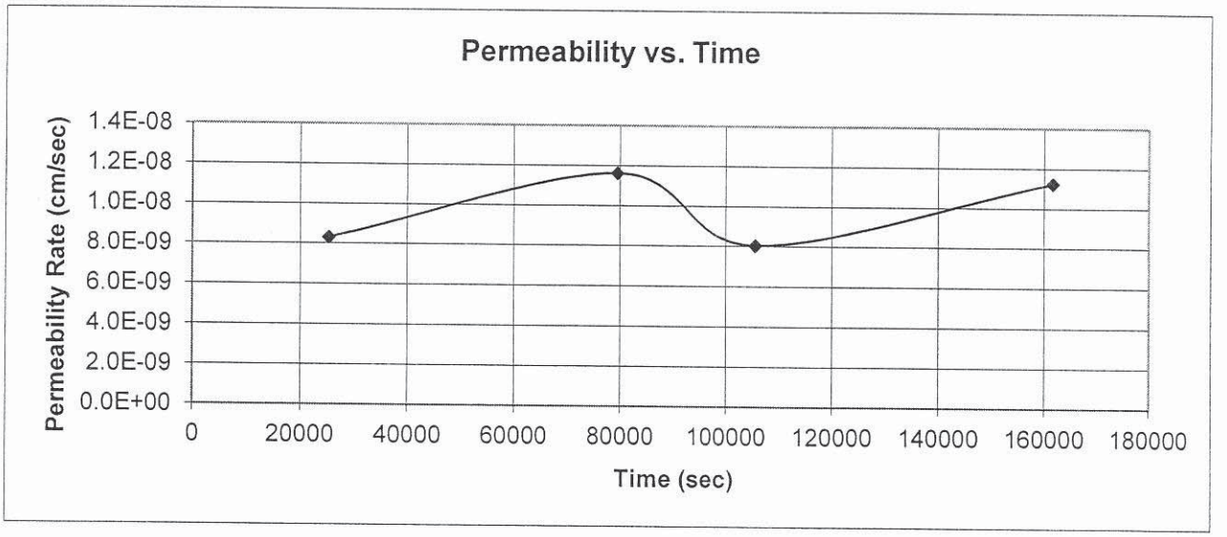
Dia. (in.)	2.83	**Length (in)**	5.82	**Weight (gr)**	1023.4
Wet Density (pcf)	106.6	**Moisture Content (%)**	42.3	**Dry Density (pcf)**	74.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	11.1	**Minimum Hydraulic Gradient**	5.5
Maximum Consolidation Stress (psi)	4.1	**Minimum Consolidation Stress (psi)**	2.1

Permeability Rate

9.8E-09



Reviewed By:

Corey C Chascin 9.16.13

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 7, 2013
Sample Number:	C-2-151	**Date Completed:**	August 21, 2013
Location:	D-52		

Sample Information: Initial / Final

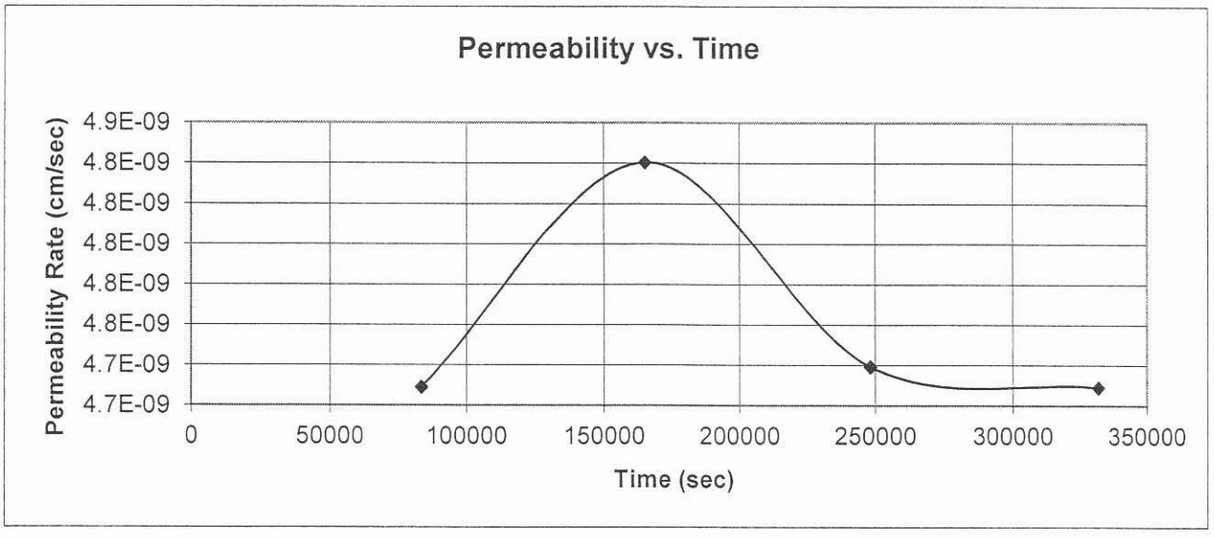
Dia. (in.)	2.84	2.84	**Length (in)**	3.68	3.66	**Weight (gr)**	692.6	700.1
Wet Density (pcf)	113.2		**Moisture Content (%)**	34.5		**Dry Density (pcf)**	84.1	
Final WD (pcf)	114.7		**Final Moisture (%)**	35.8		**Final DD (pcf)**	84.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	17.5	**Minimum Hydraulic Gradient**	8.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

4.8E-09



Reviewed By:

Corey T. Chascin 8.27.13

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 7, 2013
Sample Number:	C-1-155	**Date Completed:**	August 21, 2013
Location:	D-52		

Sample Information: Initial / Final

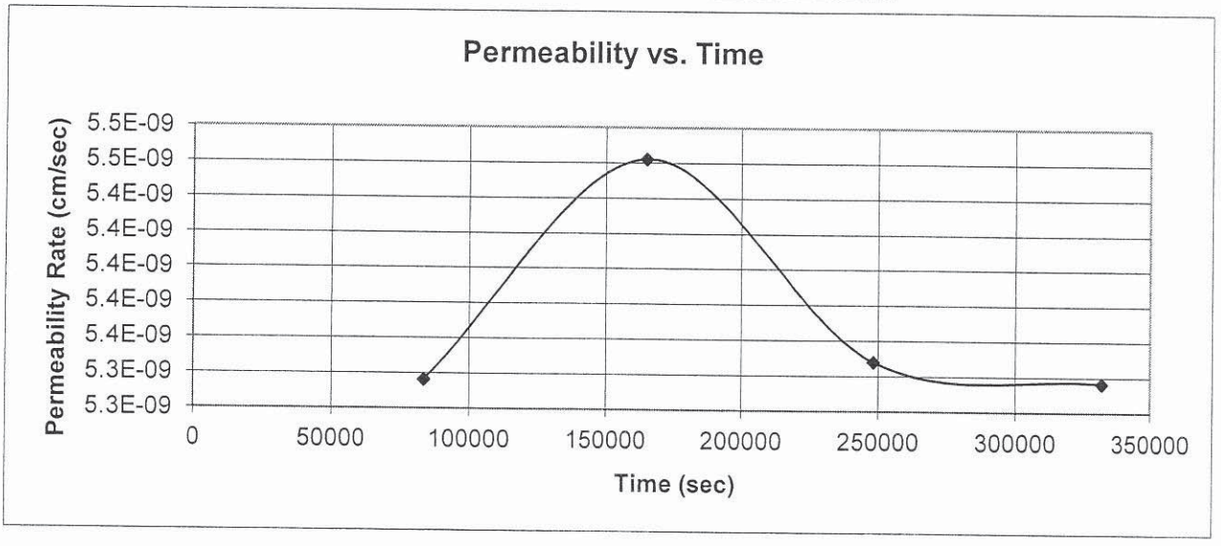
Dia. (in.)	2.83	2.83	**Length (in)**	4.13	4.24	**Weight (gr)**	777.4	782.8
Wet Density (pcf)	113.7		**Moisture Content (%)**	32.8		**Dry Density (pcf)**	85.6	
Final WD (pcf)	112.1		**Final Moisture (%)**	34.4		**Final DD (pcf)**	83.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	15.6	**Minimum Hydraulic Gradient**	7.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.4E-09



Reviewed By:

Corey T. Ghascin, E.I. 8.26.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 7, 2013
Sample Number:	C-2-149	**Date Completed:**	August 21, 2013
Location:	D-52		

Sample Information: Initial / Final

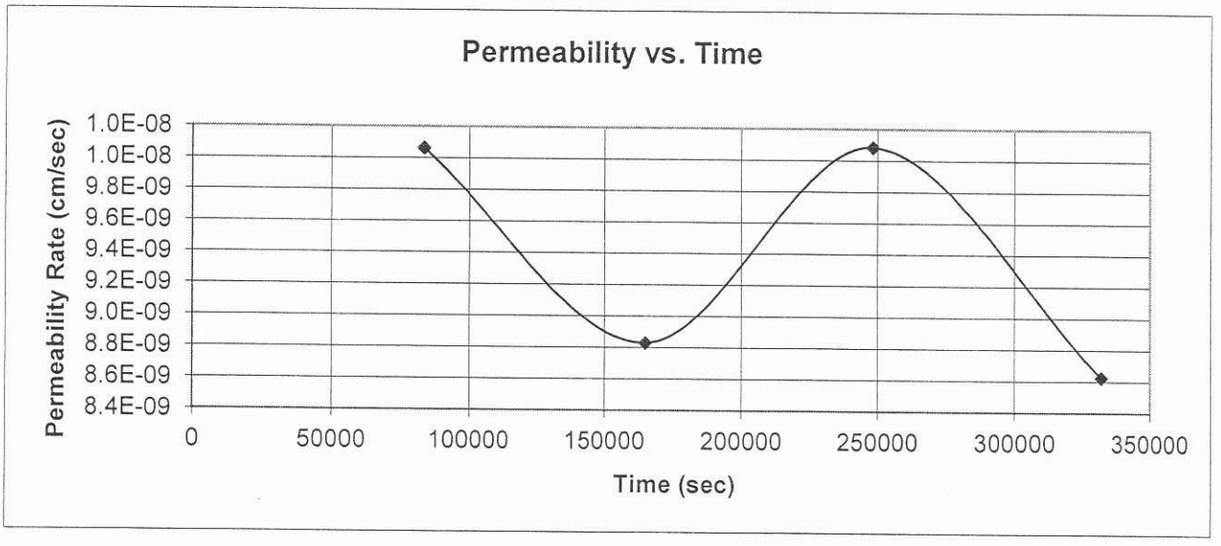
Dia. (in.)	2.81	2.82	**Length (in)**	3.28	3.27	**Weight (gr)**	605.9	614.8
Wet Density (pcf)	113.5		**Moisture Content (%)**	33.6		**Dry Density (pcf)**	84.9	
Final WD (pcf)	114.5		**Final Moisture (%)**	35.3		**Final DD (pcf)**	84.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	19.6	**Minimum Hydraulic Gradient**	9.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

9.4E-09



Reviewed By:

Corey T. Chascin, E.I.

8.26.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 7, 2013
Sample Number:	C-2-147	**Date Completed:**	August 21, 2013
Location:	D-52		

Sample Information: Initial / Final

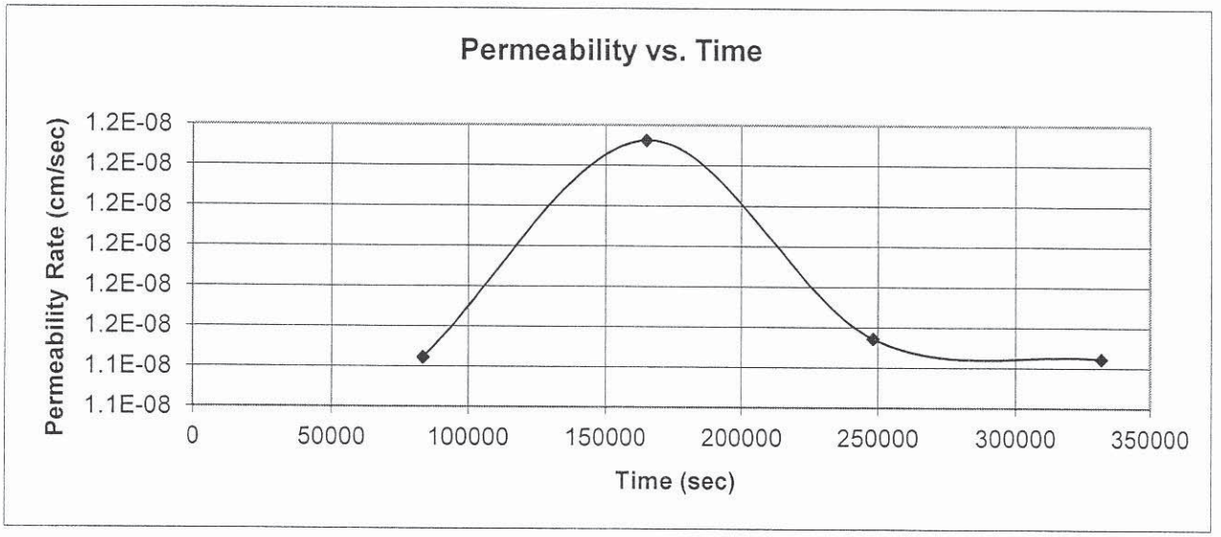
Dia. (in.)	2.83	2.82	**Length (in)**	3.80	3.78	**Weight (gr)**	702.5	716.7
Wet Density (pcf)	111.9		**Moisture Content (%)**	30.4		**Dry Density (pcf)**	85.8	
Final WD (pcf)	115.9		**Final Moisture (%)**	34.9		**Final DD (pcf)**	85.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	16.9	**Minimum Hydraulic Gradient**	8.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.2E-08

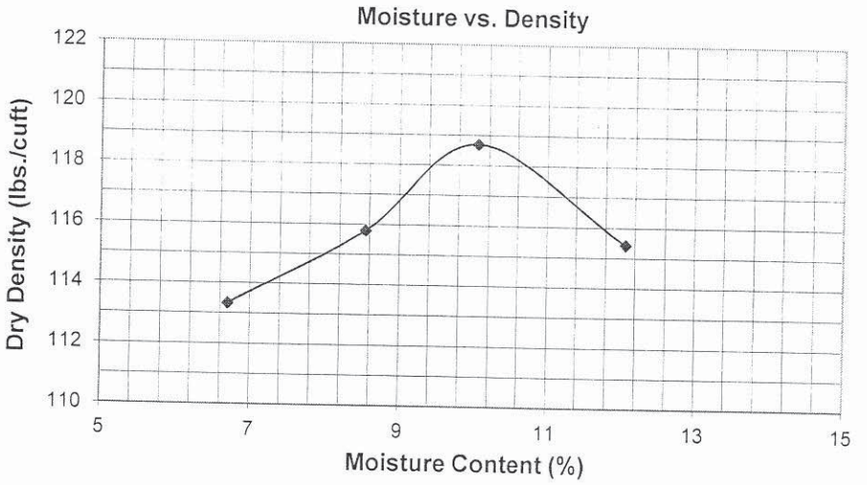


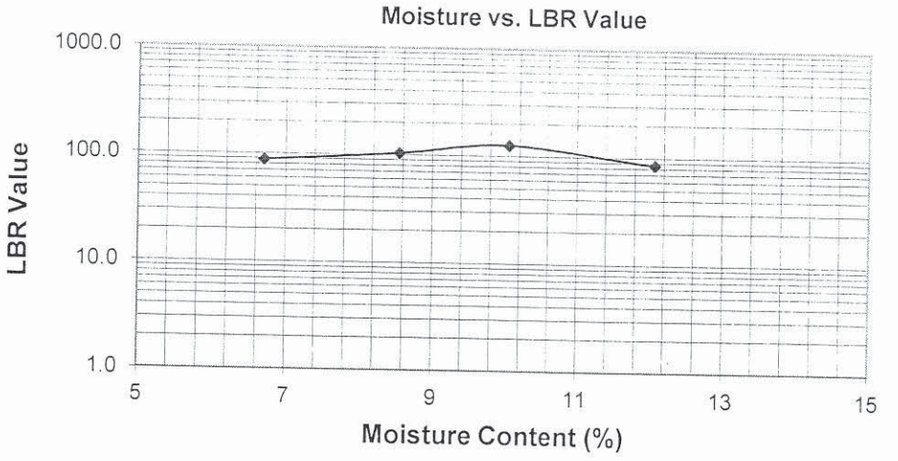
Reviewed By:

Corey Chascin 8.26.13

Corey T. Chascin, E.I.

LIMEROCK BEARING RATIO TEST RESULTS





Material Description: Crushed Concrete

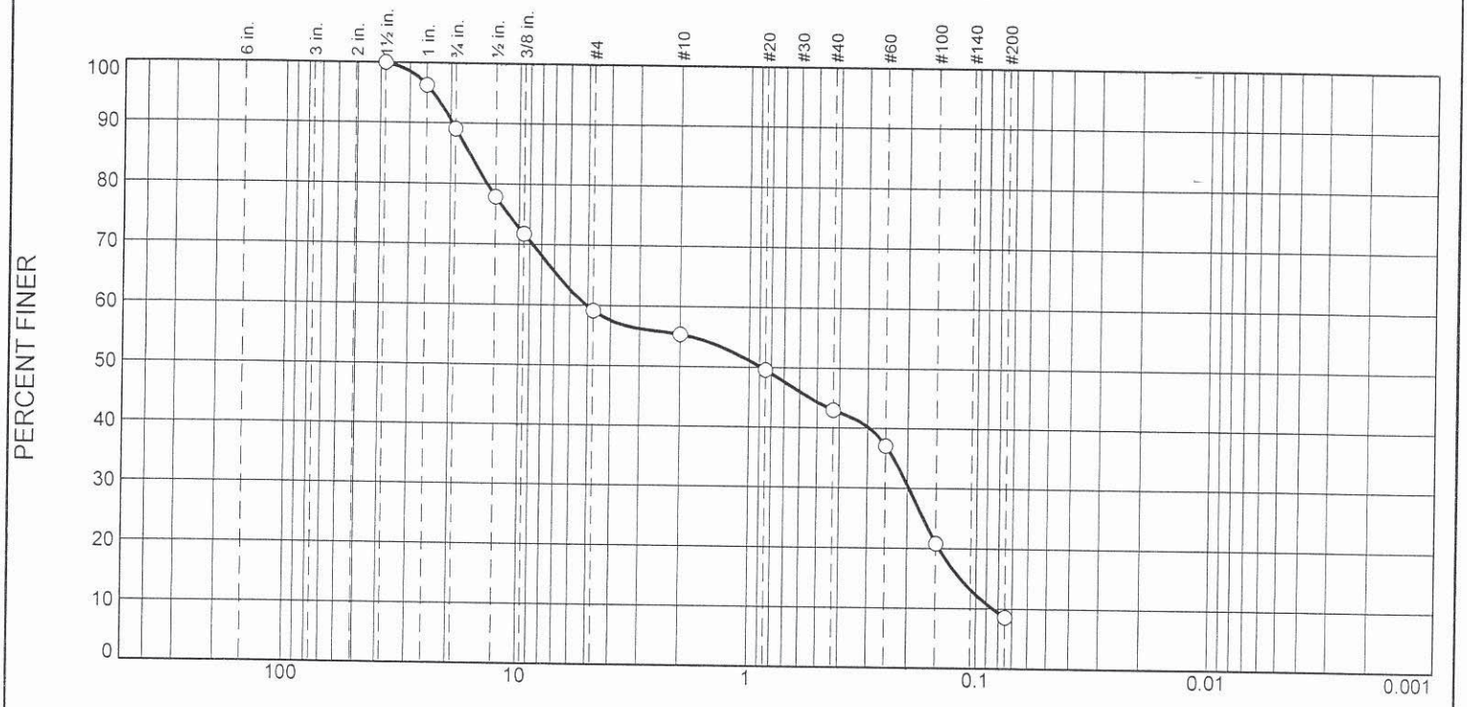
Test Results	
Optimum Moisture (%):	10
Maximum Dry Density (pcf):	119
Maximum LBR Value:	127
Liquid Limit:	NP
Plastic Limit:	NP

PROJECT NAME:	Trailridge Landfill Ph. 4	PROJECT NO.:	6736-13-5237
CLIENT:	Meskel	DATE TESTED:	8/15/2013
SAMPLE No.:	LBR No. 2	TEST METHOD:	FM-515
LOCATION:	Crushcrete Field #1	PERFORMED BY:	CM

PERFORMING TECHNICIAN TIN #: M63511677-000

Reviewed By: Corey C Chas
Corey T. Chascin, E.I.
8.19.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.9	30.0	3.8	12.3	34.4	8.6	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	96.3		
3/4	89.1		
1/2	77.9		
3/8	71.7		
#4	59.1		
#10	55.3		
#20	49.6		
#40	43.0		
#60	37.0		
#100	20.8		
#200	8.6		

* (no specification provided)

Material Description

Crushed Concrete Base

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)= A-1-b

Coefficients

D_{90}= 19.6890 D_{85}= 16.5607 D_{60}= 5.0866
D_{50}= 0.8877 D_{30}= 0.1976 D_{15}= 0.1178
D_{10}= 0.0847 C_u= 60.08 C_c= 0.09

Remarks

Date Received: 8/9/13 **Date Tested:** 8/15/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Location: Crushcrete Field #1
Sample Number: 2

Date Sampled: 8/9/13

AMEC E&I

Jacksonville, Florida

Client: Meskel
Project: Trailridge Landfill Phase 4

Project No: 6736135237

Figure

Corey C Chas 8.19.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 2, 2013
Sample Number:	C-1-39	**Date Completed:**	August 9, 2013

Sample Information: Initial / Final

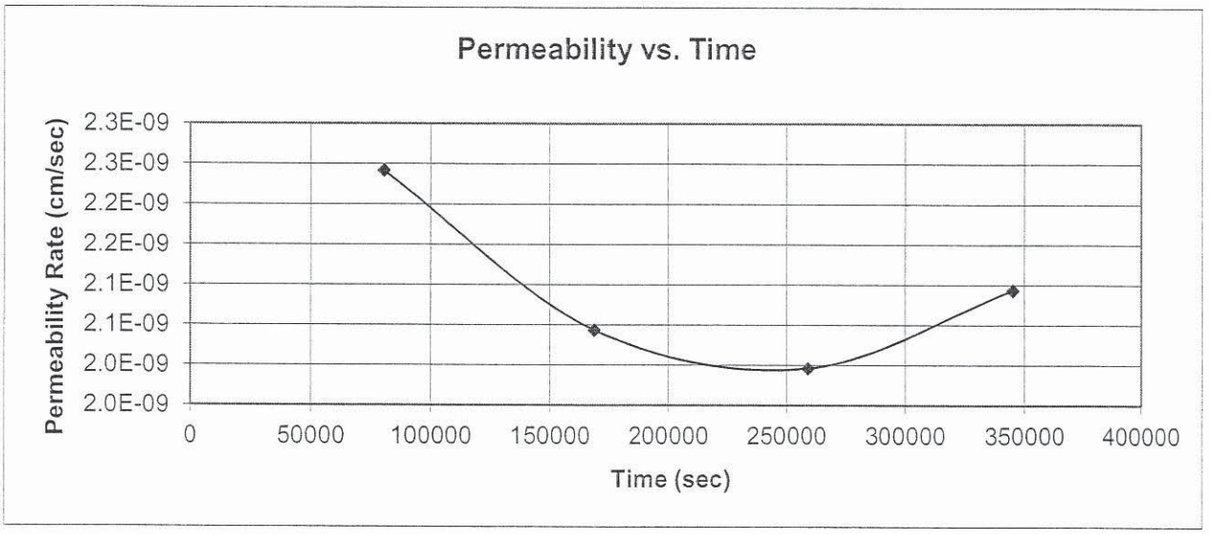
Dia. (in.)	2.82	2.83	**Length (in)**	2.49	2.46	**Weight (gr)**	454.2	461.4
Wet Density (pcf)	111.3		**Moisture Content (%)**	36.6		**Dry Density (pcf)**	81.5	
Final WD (pcf)	113.5		**Final Moisture (%)**	37.6		**Final DD (pcf)**	82.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.9	**Minimum Hydraulic Gradient**	12.9
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.1E-09



Reviewed By:

Corey Chascin 8.14.13

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 2, 2013
Sample Number:	C-2-27	**Date Completed:**	August 9, 2013

Sample Information: Initial / Final

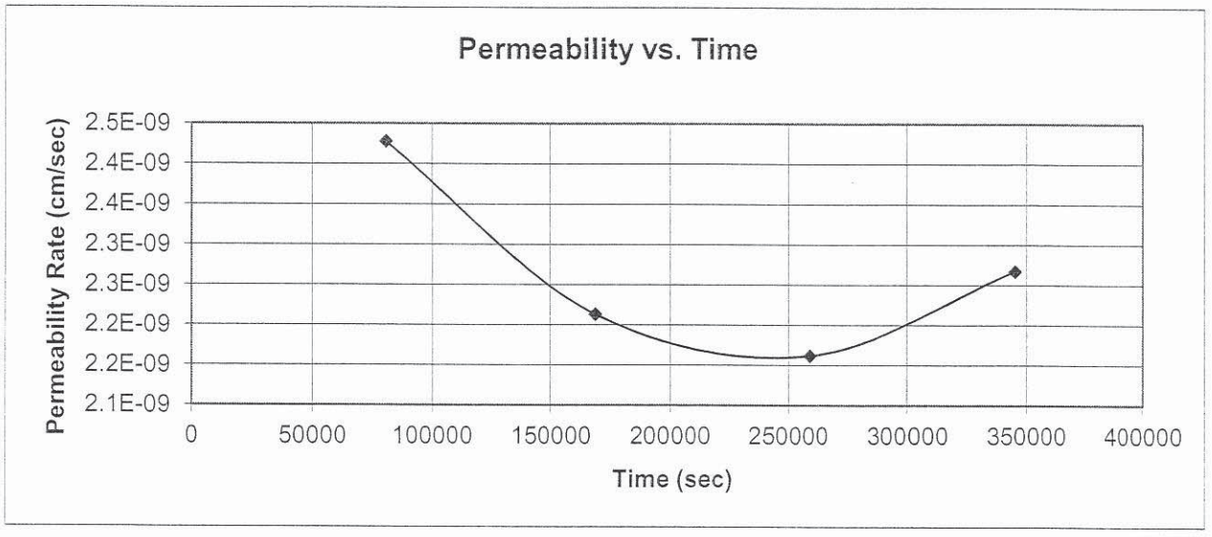
Dia. (in.)	2.86	2.85	**Length (in)**	2.77	2.78	**Weight (gr)**	517.8	525
Wet Density (pcf)	110.6		**Moisture Content (%)**	37.0		**Dry Density (pcf)**	80.7	
Final WD (pcf)	112.8		**Final Moisture (%)**	37.8		**Final DD (pcf)**	81.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.2	**Minimum Hydraulic Gradient**	11.6
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.3E-09



Reviewed By:

Corey T. Chascin 8.14.13

Corey T. Chascin, E.I.

amec

Client: MAE

Project: Trail Ridge Landfill

Date Received: 8/2/2013

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	39	74	25	49	36.6	53.6
C-2	27	71	24	47	37.0	56.5
C-2	34	nt	nt	nt	34.8	54.3
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey Chascin 8.14.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: August 6, 2013

Sample Number: C-1-145

Date Completed: August 15, 2013

Sample Information: Initial / Final

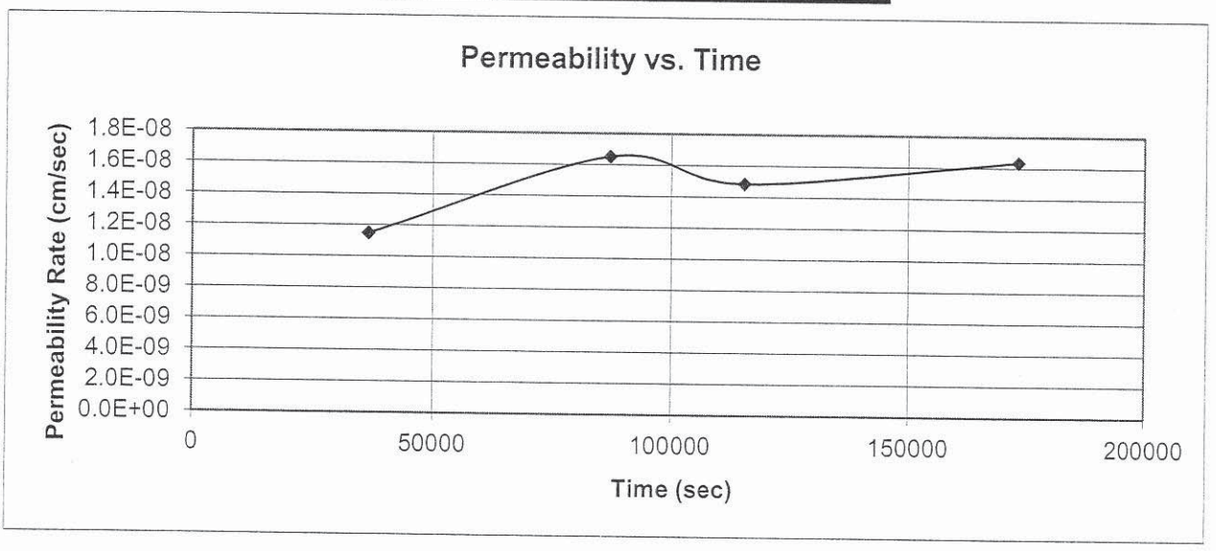
Dia. (in.)	2.77	2.78	Length (in)	2.78	2.78	Weight (gr)	496.4	507.47
Wet Density (pcf)	113.3		Moisture Content (%)	35.2		Dry Density (pcf)	83.8	
Final WD (pcf)	114.5		Final Moisture (%)	36.8		Final DD (pcf)	83.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	23.1	Minimum Hydraulic Gradient	11.5
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

1.5E-08



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 6, 2013
Sample Number:	C-1-147	**Date Completed:**	August 15, 2013

Sample Information: Initial / Final

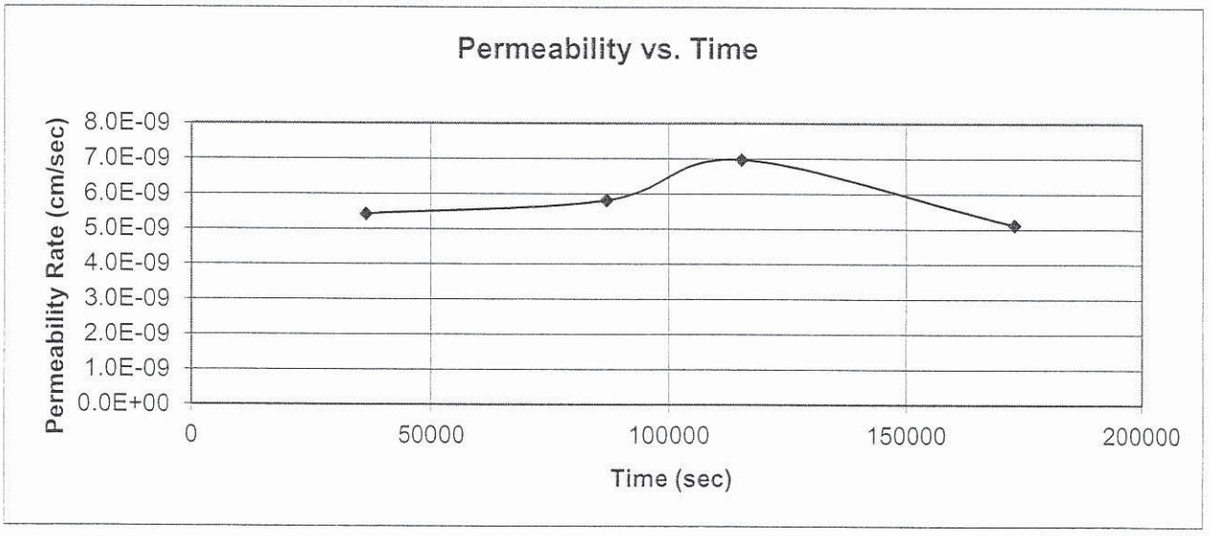
Dia. (in.)	2.84	2.83	Length (in)	2.74	2.73	Weight (gr)	514.9	523.2
Wet Density (pcf)	113.2		Moisture Content (%)	32.7		Dry Density (pcf)	85.3	
Final WD (pcf)	116.1		Final Moisture (%)	34.9		Final DD (pcf)	86.1	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.5	**Minimum Hydraulic Gradient**	11.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.8E-09



Reviewed By:

Corey T. Chascin 8.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 6, 2013
Sample Number:	C-1-149	**Date Completed:**	August 15, 2013

Sample Information: Initial / Final

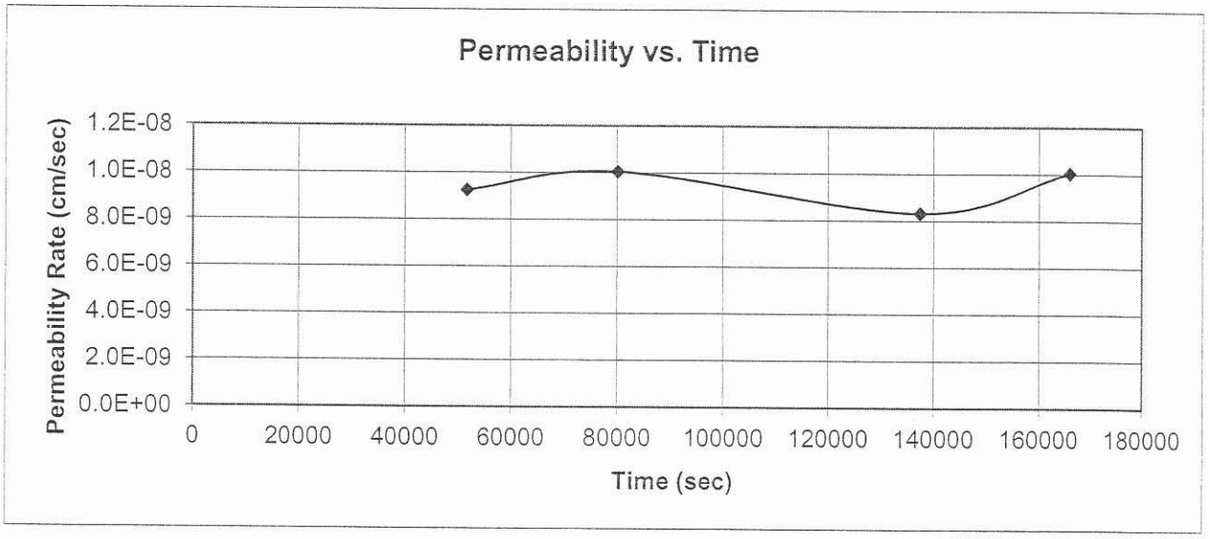
Dia. (in.)	2.84	2.88	**Length (in)**	2.67	2.70	**Weight (gr)**	494.5	502.6
Wet Density (pcf)	111.1		**Moisture Content (%)**	35.8		**Dry Density (pcf)**	81.8	
Final WD (pcf)	109.4		**Final Moisture (%)**	40.4		**Final DD (pcf)**	77.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.1	**Minimum Hydraulic Gradient**	12.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

9.4E-09



Reviewed By:

Corey Chascin 8.19.13

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: August 6, 2013

Sample Number: C-2-141

Date Completed: August 15, 2013

Sample Information: Initial / Final

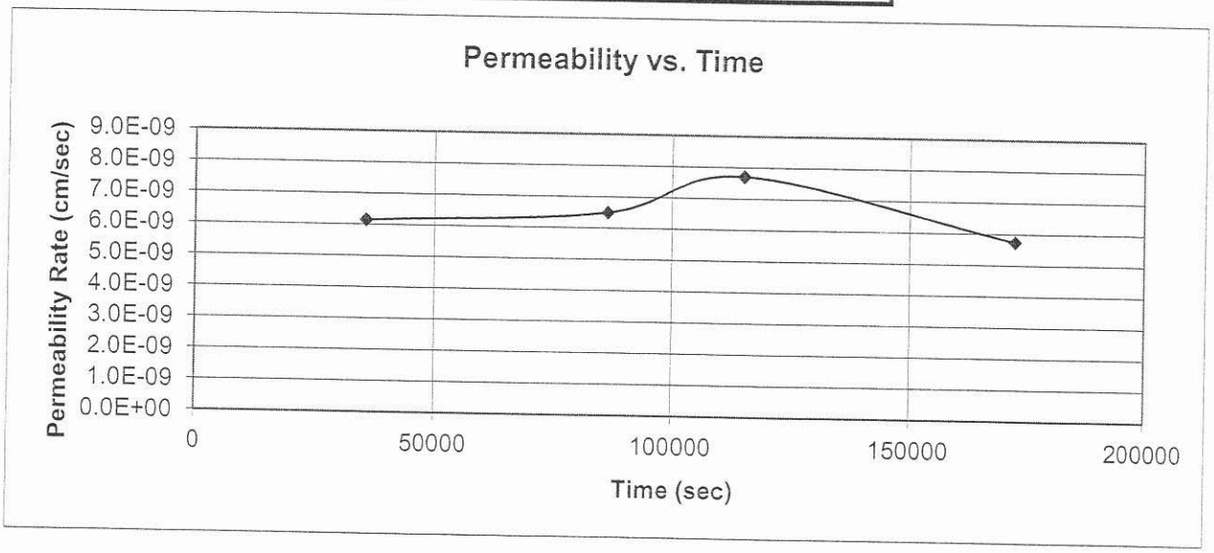
Dia. (in.)	2.83	2.84	Length (in)	3.05	3.07	Weight (gr)	570.6	577.4
Wet Density (pcf)	113.3		Moisture Content (%)	31.4		Dry Density (pcf)	86.2	
Final WD (pcf)	113.4		Final Moisture (%)	37.0		Final DD (pcf)	82.8	

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	21.1	Minimum Hydraulic Gradient	10.5
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

6.5E-09



Reviewed By:

Corey T. Chascin, E.I. 8.19.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 6, 2013
Sample Number:	C-2-143	**Date Completed:**	August 15, 2013

Sample Information: Initial / Final

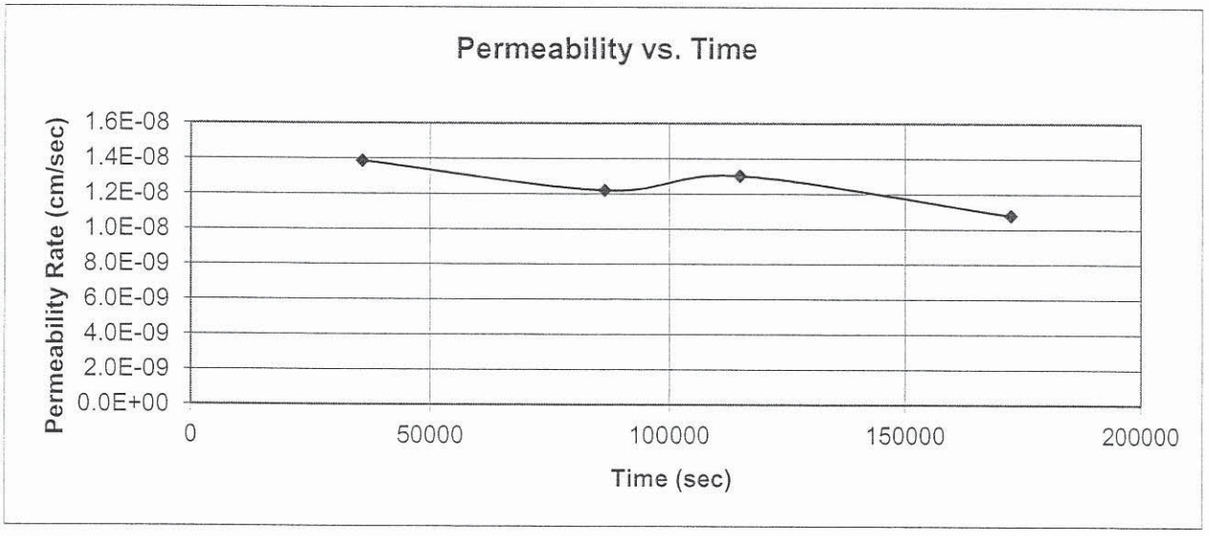
Dia. (in.)	2.86	2.85	**Length (in)**	3.50	3.52	**Weight (gr)**	654.1	670.8
Wet Density (pcf)	110.9		**Moisture Content (%)**	31.5		**Dry Density (pcf)**	84.3
Final WD (pcf)	113.6		**Final Moisture (%)**	35.5		**Final DD (pcf)**	83.8

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	18.3	**Minimum Hydraulic Gradient**	9.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.2E-08



Reviewed By:

Corey T. Chascin, E.I. 8.19.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	August 6, 2013
Sample Number:	C-2-145	**Date Completed:**	August 15, 2013

Sample Information: Initial / Final

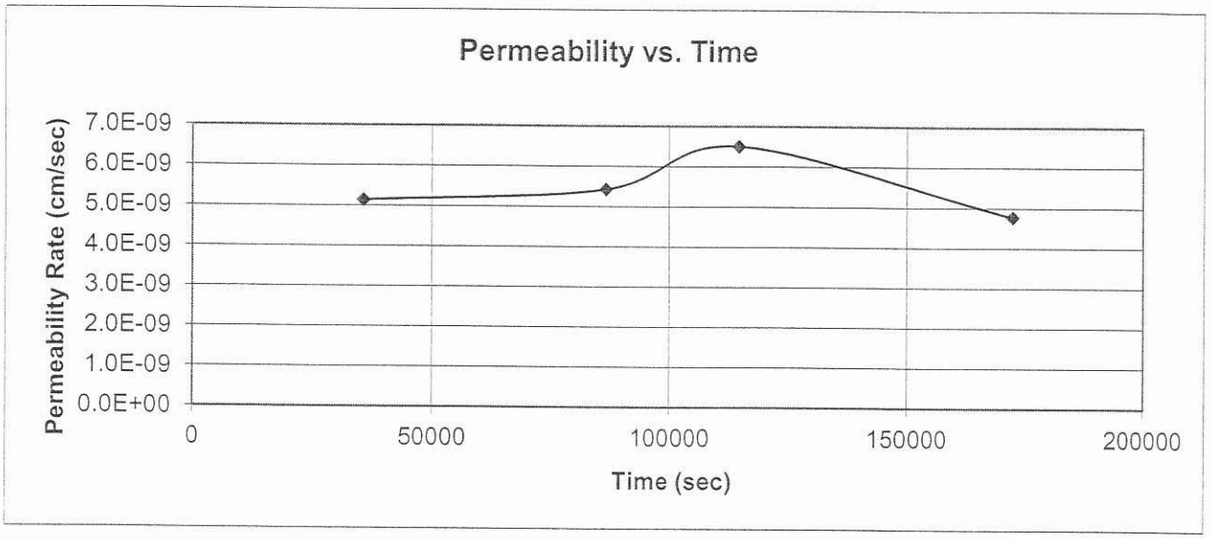
Dia. (in.)	2.88	2.86	**Length (in)**	2.64	2.66	**Weight (gr)**	507.3	514.8
Wet Density (pcf)	112.1		**Moisture Content (%)**	33.4		**Dry Density (pcf)**	84.1
Final WD (pcf)	114.7		**Final Moisture (%)**	35.5		**Final DD (pcf)**	84.6

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.4	**Minimum Hydraulic Gradient**	12.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.5E-09



Reviewed By:

Corey T. Chascin 8.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: August 7, 2013

Sample Number: C-1-151
Location: D-52

Date Completed: August 15, 2013

Sample Information: Initial / Final

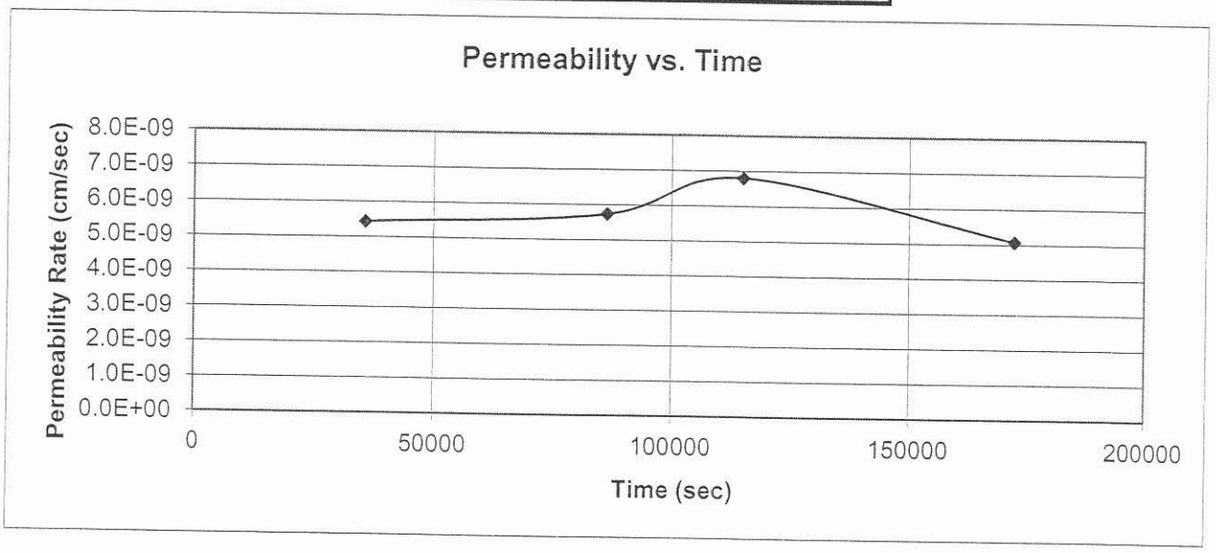
Dia. (in.)	2.86	2.84	Length (in)	2.74	2.75	Weight (gr)	506.4	514.9
Wet Density (pcf)	109.8		Moisture Content (%)		33.8	Dry Density (pcf)		82.1
Final WD (pcf)	112.3		Final Moisture (%)		36.5	Final DD (pcf)		82.3

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	23.5	Minimum Hydraulic Gradient	11.7
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

5.8E-09



Reviewed By:

Corey Chascin 8.19.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: August 7, 2013

Sample Number: C-1-153
Location: D-52

Date Completed: August 15, 2013

Sample Information: Initial / Final

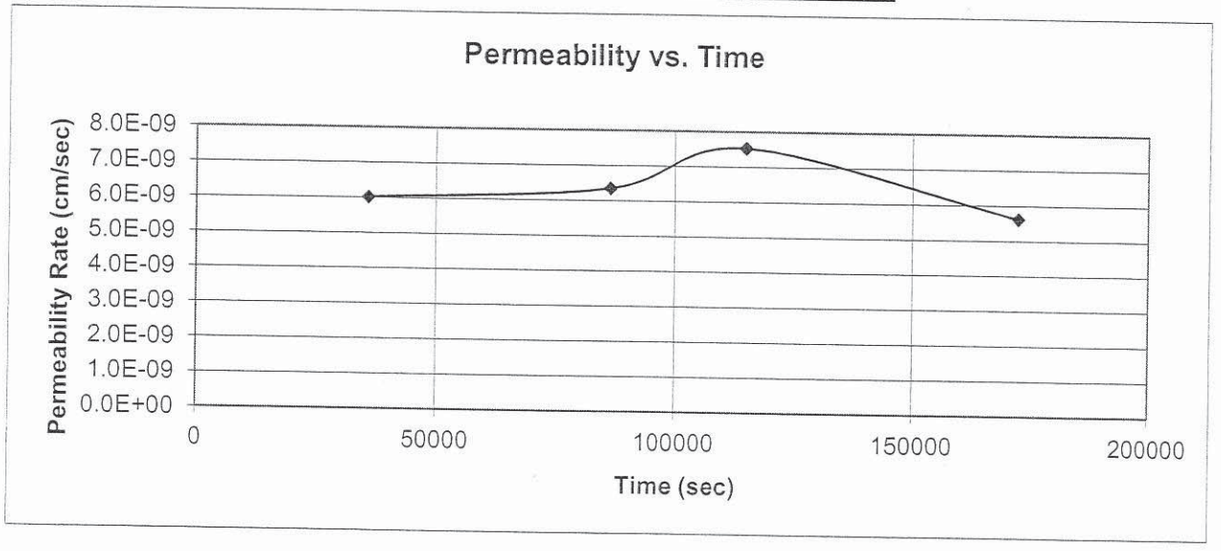
Dia. (in.)	2.83	2.83	Length (in)	2.98	2.93	Weight (gr)	544.6	550.8
Wet Density (pcf)	110.7		Moisture Content (%)		37.0	Dry Density (pcf)		80.8
Final WD (pcf)	113.5		Final Moisture (%)		37.6	Final DD (pcf)		82.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	21.6	Minimum Hydraulic Gradient	10.8
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

6.4E-09



Reviewed By:

Corey T. Chascin, E.I. 8.19.13

amec

Client: MAE

Date Received: 8/6/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Lift Number	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	145	74	26	47	35.2	58.5
C-1	147	71	23	47	32.7	56.7
C-1	149	69	24	45	35.8	57.9
C-2	141	74	25	49	31.4	56.8
C-2	143	76	25	51	31.5	58.4
C-2	145	72	24	48	33.4	56.9
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I. 8.21.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: July 26, 2013

Sample Number: C-2-29

Date Completed: August 2, 2013

Sample Information: Initial / Final

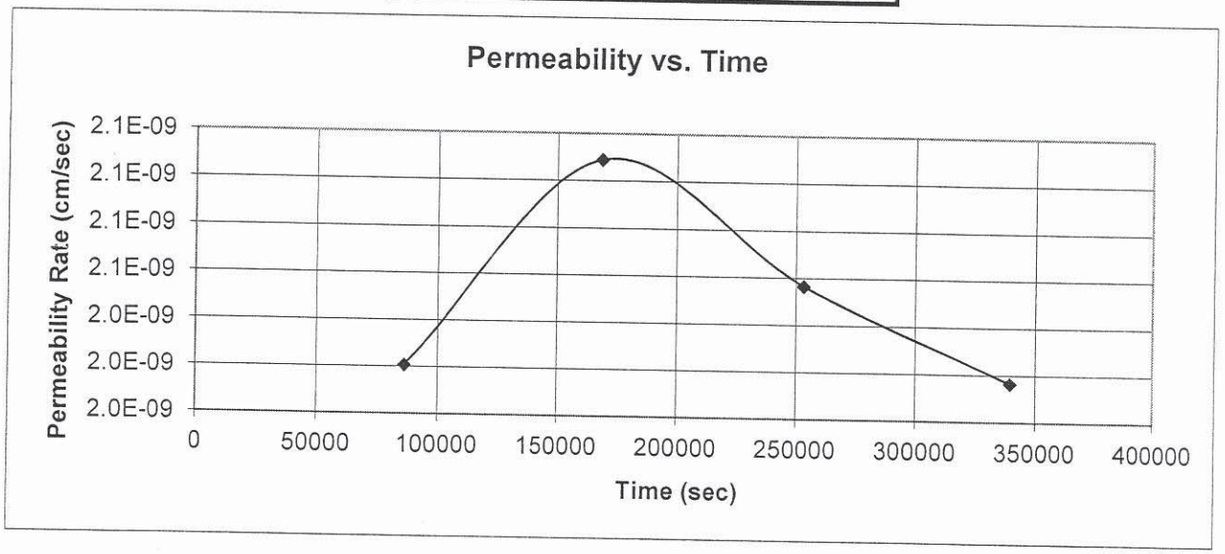
Dia. (in.)	2.84	2.85	**Length (in)**	2.42	2.40	**Weight (gr)**	452.7	459.5
Wet Density (pcf)	112.7		**Moisture Content (%)**	34.1		**Dry Density (pcf)**	84.0	
Final WD (pcf)	114.7		**Final Moisture (%)**	35.3		**Final DD (pcf)**	84.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	26.5	**Minimum Hydraulic Gradient**	13.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.1E-09



Reviewed By:

Corey T. Chascin 8.7.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	July 26, 2013
Sample Number:	C-1-22	**Date Completed:**	August 2, 2013

Sample Information: Initial / Final

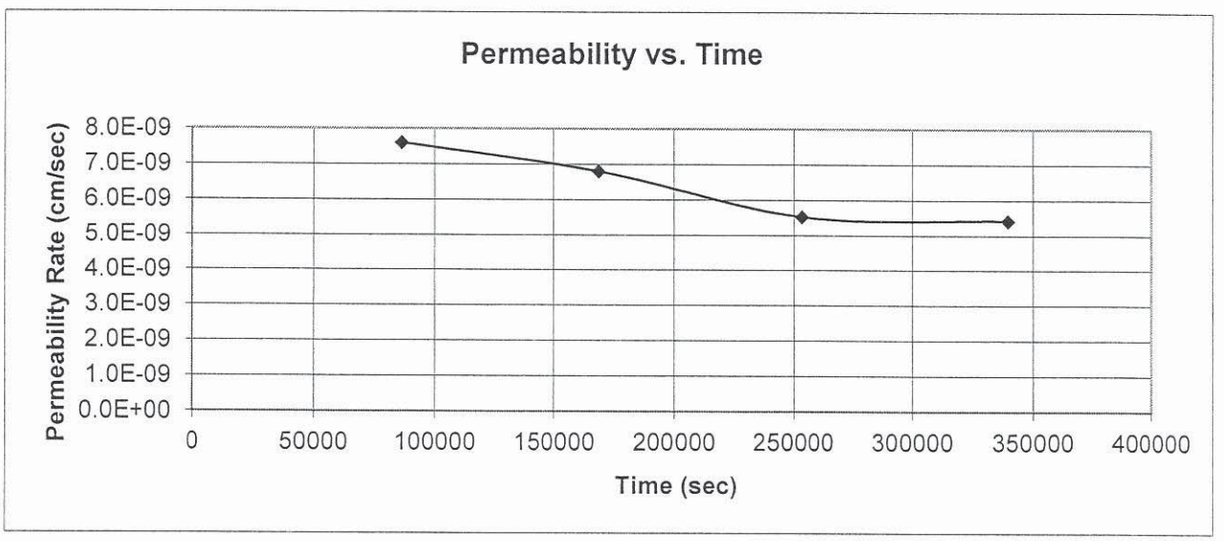
Dia. (in.)	2.82	2.84	**Length (in)**	2.57	2.53	**Weight (gr)**	456.1	467.4
Wet Density (pcf)	108.4		**Moisture Content (%)**	37.1		**Dry Density (pcf)**	79.1	
Final WD (pcf)	111.2		**Final Moisture (%)**	40.0		**Final DD (pcf)**	79.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.9	**Minimum Hydraulic Gradient**	12.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.3E-09



Reviewed By:

Corey T. Chascin, E.I. 8.7.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dte Received:**	July 26, 2013
Sample Number:	C-1-34	**Date Completed:**	August 2, 2013

Sample Information: Initial / Final

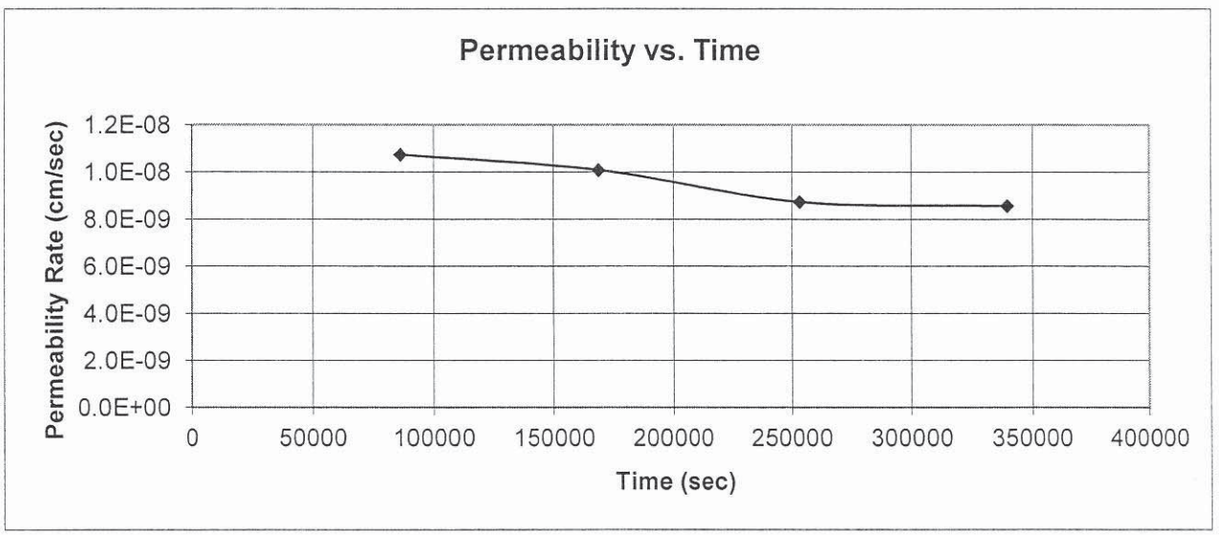
Dia. (in.)	2.85	2.85	**Length (in)**	2.60	2.61	**Weight (gr)**	482.3	501.7
Wet Density (pcf)	110.7		**Moisture Content (%)**	30.5		**Dry Density (pcf)**	84.8	
Final WD (pcf)	114.4		**Final Moisture (%)**	32.7		**Final DD (pcf)**	86.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.6	**Minimum Hydraulic Gradient**	12.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

9.5E-09



Reviewed By:

Corey Chascin 8.7.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge
Project Number: 6736-13-5237
Client Meskel & Assc
Dated Received: July 26, 2013
Sample Number: C-2-24
Date Completed: August 2, 2013

Sample Information: Initial / Final

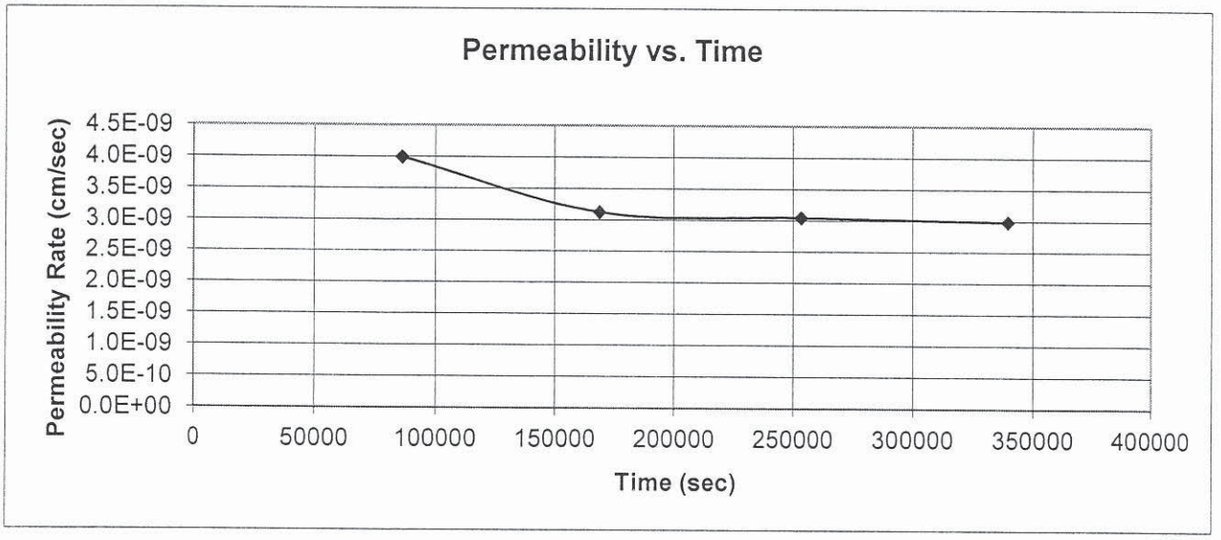
Dia. (in.)	2.85	2.84	Length (in)	2.42	2.41	Weight (gr)	450.8	458.5
Wet Density (pcf)	111.6		Moisture Content (%)	31.1		Dry Density (pcf)	85.1	
Final WD (pcf)	114.1		Final Moisture (%)	37.4		Final DD (pcf)	83.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	26.6	Minimum Hydraulic Gradient	13.3
Maximum Consolidation Stress (psi)	5	Minimum Consolidation Stress (psi)	3

Permeability Rate

3.3E-09



Reviewed By:

Corey Chascin 8.7.13

Corey T. Chascin, E.I.

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Client: MAE

Date Received: 7/26/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	20	NT	NT	NT	37.2	55.0
C-1	22	68	20	48	37.1	54.7
C-1	24	NT	NT	NT	35.9	56.1
C-1	31	NT	NT	NT	35.8	55.2
C-1	34	73	19	54	30.5	49.2
C-1	38	NT	NT	NT	34.3	55.8
C-2	22	NT	NT	NT	31.1	54.4
C-2	24	70	18	52	31.1	54.7
C-2	26	NT	NT	NT	42.6	56.5
C-2	29	68	19	49	34.1	58.9
C-2	36	NT	NT	NT	32.5	54.8
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I.

7.31.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** June 11, 2013

Sample Number: C1-1

Sample Information: Initial / Final

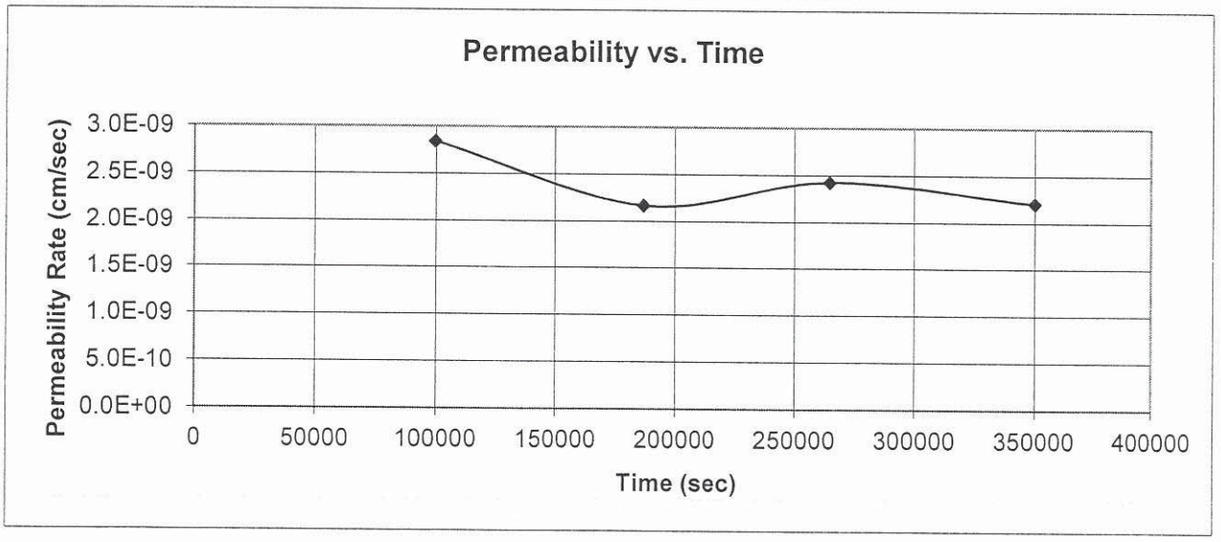
Dia. (in.)	2.81	2.83	**Length (in)**	2.59	2.62	**Weight (gr)**	478	485.07
Wet Density (pcf)	113.0		**Moisture Content (%)**	37.1		**Dry Density (pcf)**	82.4	
Final WD (pcf)	111.7		**Final Moisture (%)**	37.6		**Final DD (pcf)**	81.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.8	**Minimum Hydraulic Gradient**	12.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.4E-09



Reviewed By:

Corey T. Chascin, E.I. 6.18.13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** June 10, 2013

Sample Number: C1-3

Sample Information: Initial / Final

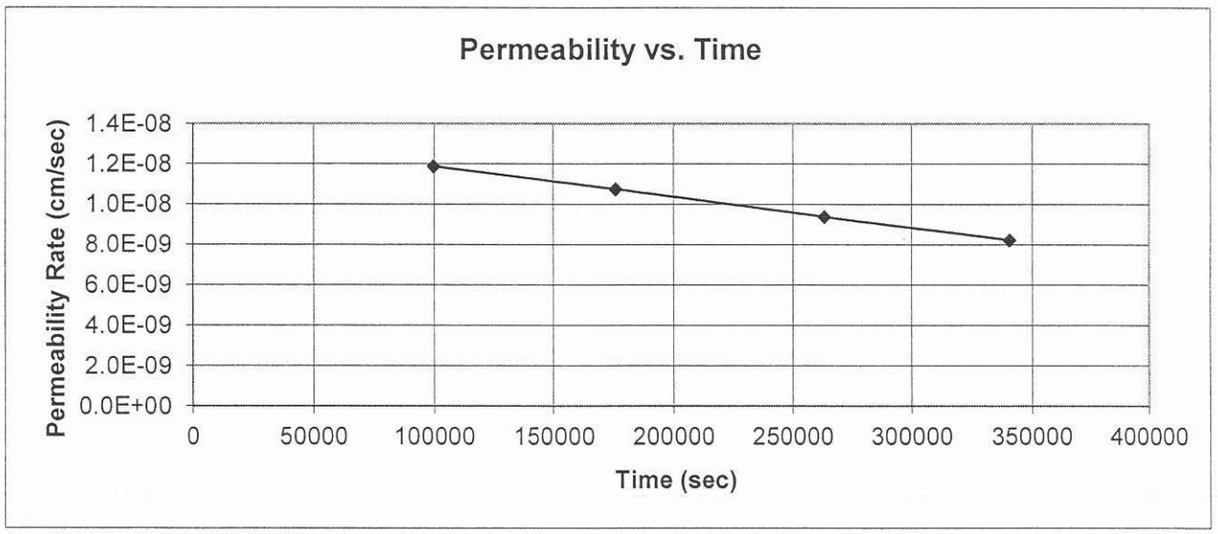
Dia. (in.)	2.85	2.85	**Length (in)**	2.55	2.58	**Weight (gr)**	476.7	493.01
Wet Density (pcf)	111.8		**Moisture Content (%)**	30.0		**Dry Density (pcf)**	86.0	
Final WD (pcf)	113.8		**Final Moisture (%)**	34.8		**Final DD (pcf)**	84.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.0	**Minimum Hydraulic Gradient**	12.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.0E-08



Reviewed By:

Corey T. Chascin, E.I. 6.18.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Completed:**	June 11, 2013
Sample Number:	C1-4		

Sample Information: Initial / Final

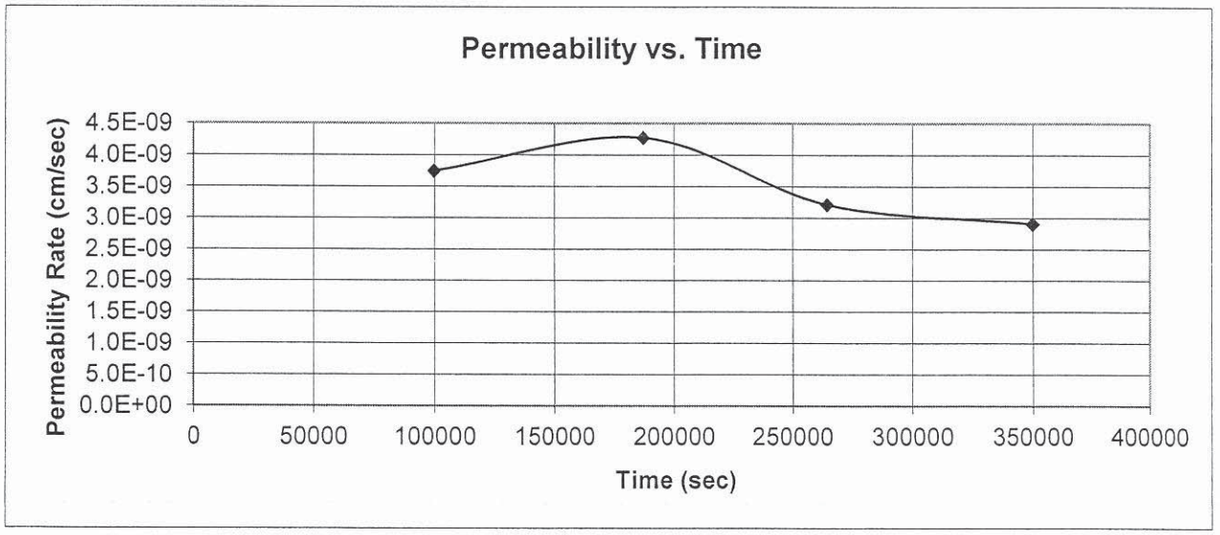
Dia. (in.)	2.85	2.86	**Length (in)**	1.75	1.82	**Weight (gr)**	330.8	338.03
Wet Density (pcf)	113.2		**Moisture Content (%)**	32.0		**Dry Density (pcf)**	85.8	
Final WD (pcf)	110.1		**Final Moisture (%)**	39.8		**Final DD (pcf)**	78.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	36.7	**Minimum Hydraulic Gradient**	18.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.5E-09



Reviewed By:

Corey T. Chascin, E.I. 6.18.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** June 10, 2013

Sample Number: C2-4

Sample Information: Initial / Final

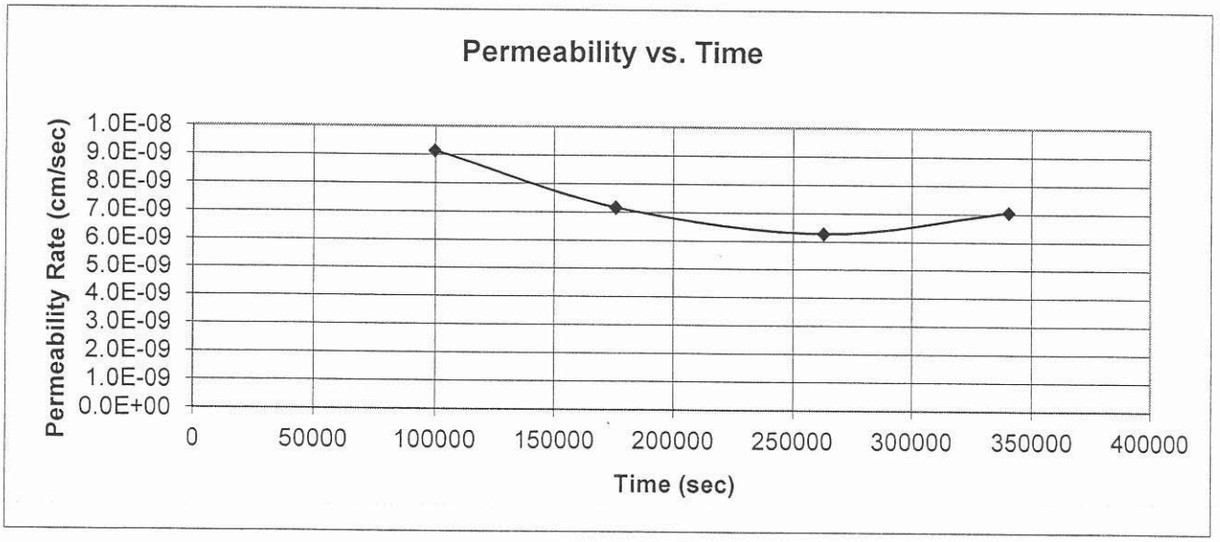
Dia. (in.)	2.80	2.86	**Length (in)**	2.48	2.50	**Weight (gr)**	457.1	466.35
Wet Density (pcf)	113.5		**Moisture Content (%)**	36.7		**Dry Density (pcf)**	83.0	
Final WD (pcf)	110.6		**Final Moisture (%)**	35.2		**Final DD (pcf)**	81.8	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.8	**Minimum Hydraulic Gradient**	12.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.4E-09



Reviewed By:

Corey T. Chascin, E.I. 6.18.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** June 10, 2013

Sample Number: C2-7

Sample Information: Initial / Final

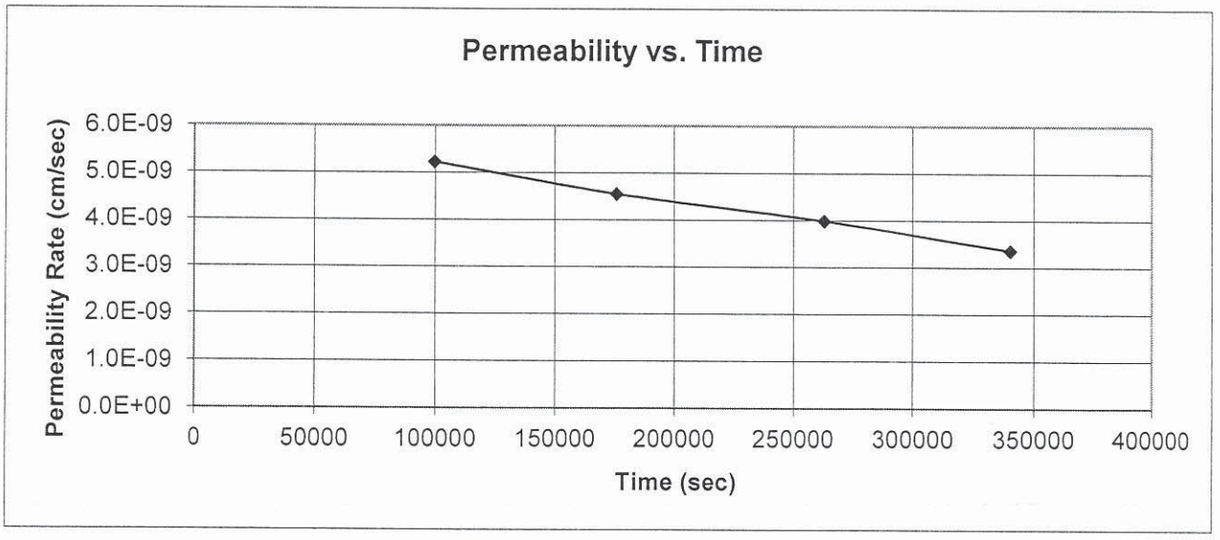
Dia. (in.)	2.85	2.85	**Length (in)**	2.44	2.45	**Weight (gr)**	454.4	460.5
Wet Density (pcf)	111.1		**Moisture Content (%)**	36.0		**Dry Density (pcf)**	81.7	
Final WD (pcf)	112.1		**Final Moisture (%)**	38.9		**Final DD (pcf)**	80.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	26.3	**Minimum Hydraulic Gradient**	13.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

4.3E-09



Reviewed By:

Corey T. Chascin, E.I. 6.18.13

amec

Client: MAE

Date Received: 6/4/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	1	86	24	62	37.1	56.2
C-1	3	75	25	50	30.0	55.3
C-1	4	85	21	63	32.0	55.9
C-1	6	74	24	50	29.9	56.2
C-1	7	70	22	48	33.8	56.1
C-2	1	78	22	56	31.5	55.8
C-2	3	84	24	60	25.3	55.9
C-2	4	76	25	52	36.7	57.7
C-2	5	79	27	52	27.6	55.6
C-2	7	85	23	62	36.0	54.9

NT= Not Requested / Not Tested

ASTM D-2216 ASTM D-1140

Reviewed By:

Corey T. Chascin, E.I. 6.18.13

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Completed:**	May 19, 2013

Sample Number: TC1-1

Sample Information: Initial / Final

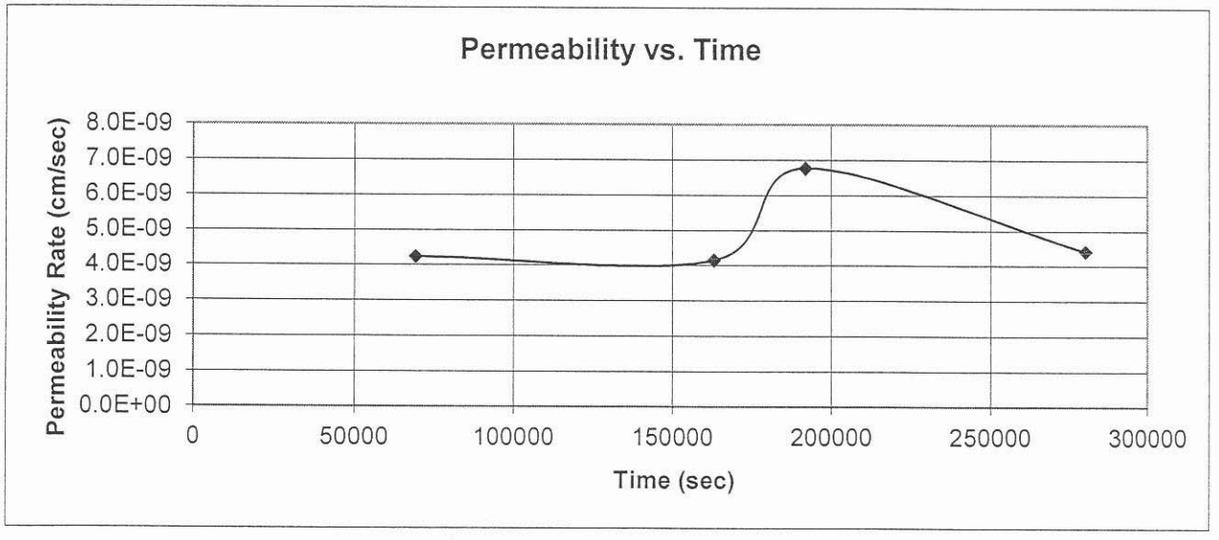
Dia. (in.)	2.84	2.81	**Length (in)**	2.73	2.72	**Weight (gr)**	509.2	515.8
Wet Density (pcf)	112.4		**Moisture Content (%)**	34.6		**Dry Density (pcf)**	83.5	
Final WD (pcf)	116.2		**Final Moisture (%)**	37.4		**Final DD (pcf)**	84.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.6	**Minimum Hydraulic Gradient**	11.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

4.9E-09



Reviewed By:

5/24/13

Daniel Elsman, P.E.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** May 19, 2013

Sample Number: TC1-2

Sample Information: Initial / Final

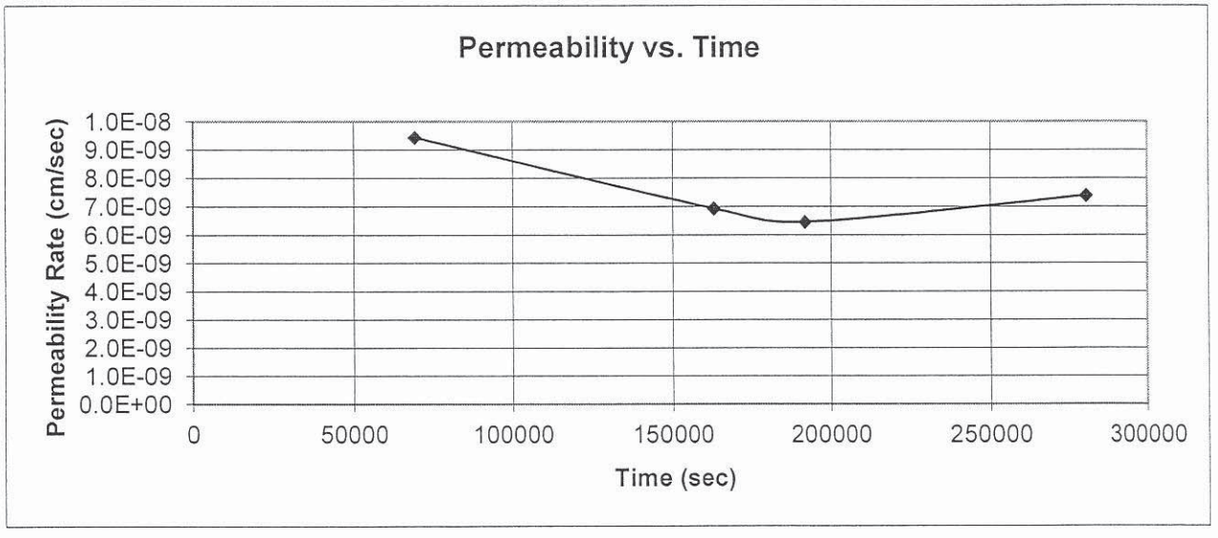
Dia. (in.)	2.85	2.82	**Length (in)**	2.61	2.60	**Weight (gr)**	491.5	500.9
Wet Density (pcf)	112.8		**Moisture Content (%)**	34.6		**Dry Density (pcf)**	83.9	
Final WD (pcf)	117.7		**Final Moisture (%)**	37.8		**Final DD (pcf)**	85.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.6	**Minimum Hydraulic Gradient**	12.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.6E-09



Reviewed By:

5/24/13

Daniel Eisman, P.E.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** May 19, 2013

Sample Number: TC1-3

Sample Information: Initial / Final

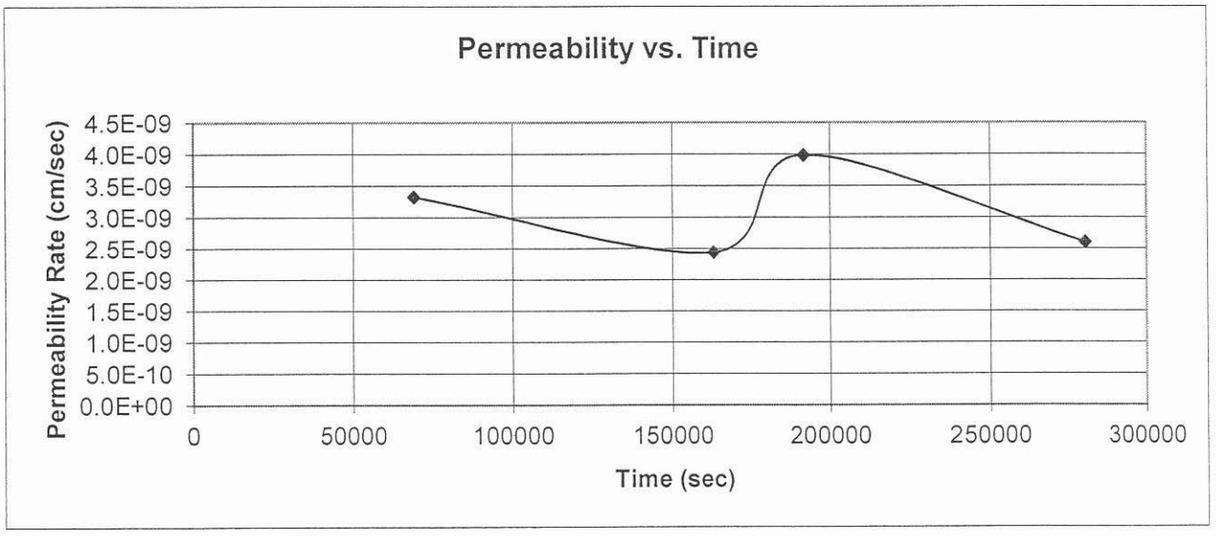
Dia. (in.)	2.88	2.83	**Length (in)**	2.20	2.26	**Weight (gr)**	414.1	412.61
Wet Density (pcf)	110.0		**Moisture Content (%)**	36.5		**Dry Density (pcf)**	80.6	
Final WD (pcf)	110.9		**Final Moisture (%)**	41.4		**Final DD (pcf)**	78.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	29.2	**Minimum Hydraulic Gradient**	14.6
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.1E-09



Reviewed By:

5/24/13

Daniel Eisman, P.E.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** May 22, 2013

Sample Number: TC1-4

Sample Information: Initial / Final

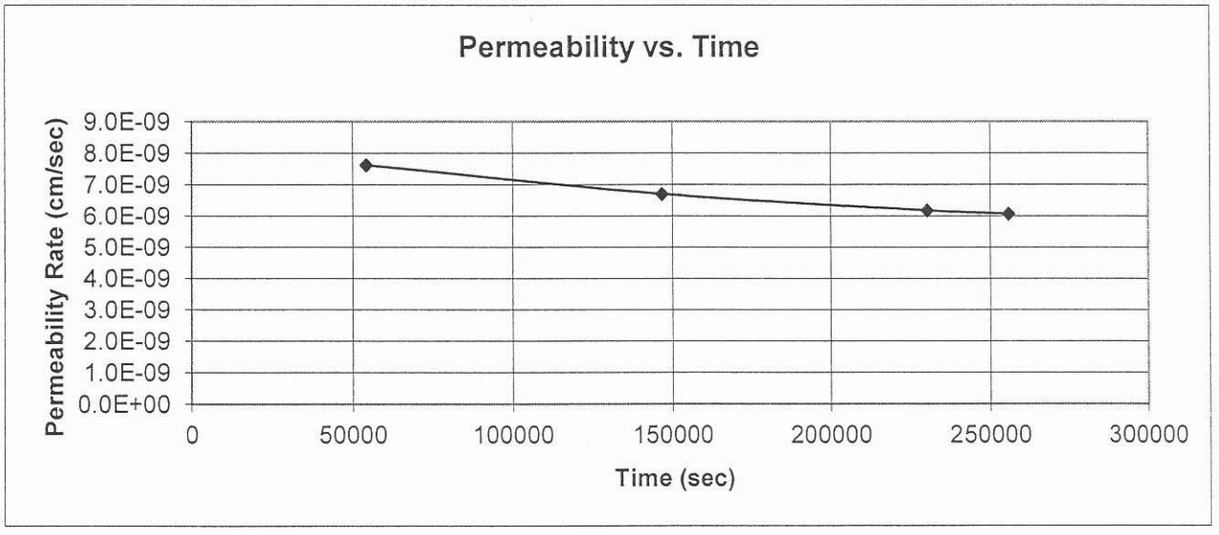
Dia. (in.)	2.83	2.81	**Length (in)**	2.87	2.84	**Weight (gr)**	522.1	528.36
Wet Density (pcf)	110.3		**Moisture Content (%)**	34.2		**Dry Density (pcf)**	82.2	
Final WD (pcf)	113.9		**Final Moisture (%)**	38.3		**Final DD (pcf)**	82.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.4	**Minimum Hydraulic Gradient**	11.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.7E-09



Reviewed By:

5/27/13

Daniel Eisman, P.E.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** May 22, 2013

Sample Number: TC1-5

Sample Information: Initial / Final

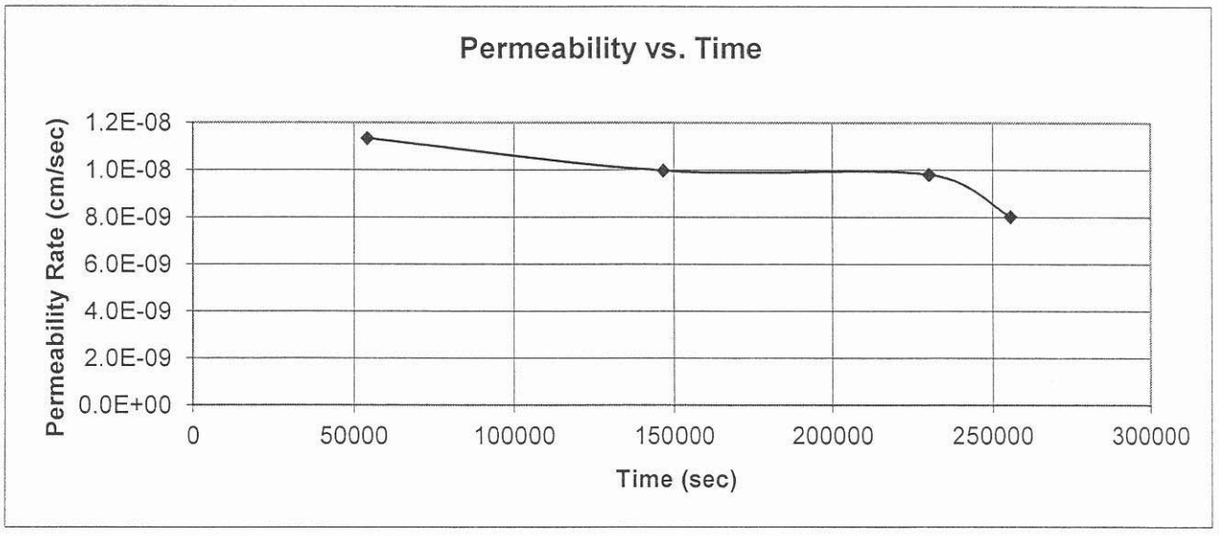
Dia. (in.)	2.85	2.85	**Length (in)**	2.89	2.89	**Weight (gr)**	545.1	554.9
Wet Density (pcf)	112.4		**Moisture Content (%)**	35.0		**Dry Density (pcf)**	83.3	
Final WD (pcf)	114.9		**Final Moisture (%)**	36.2		**Final DD (pcf)**	84.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.2	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

9.8E-09



Reviewed By:

5/24/13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** May 19, 2013

Sample Number: TC2-1

Sample Information: Initial / Final

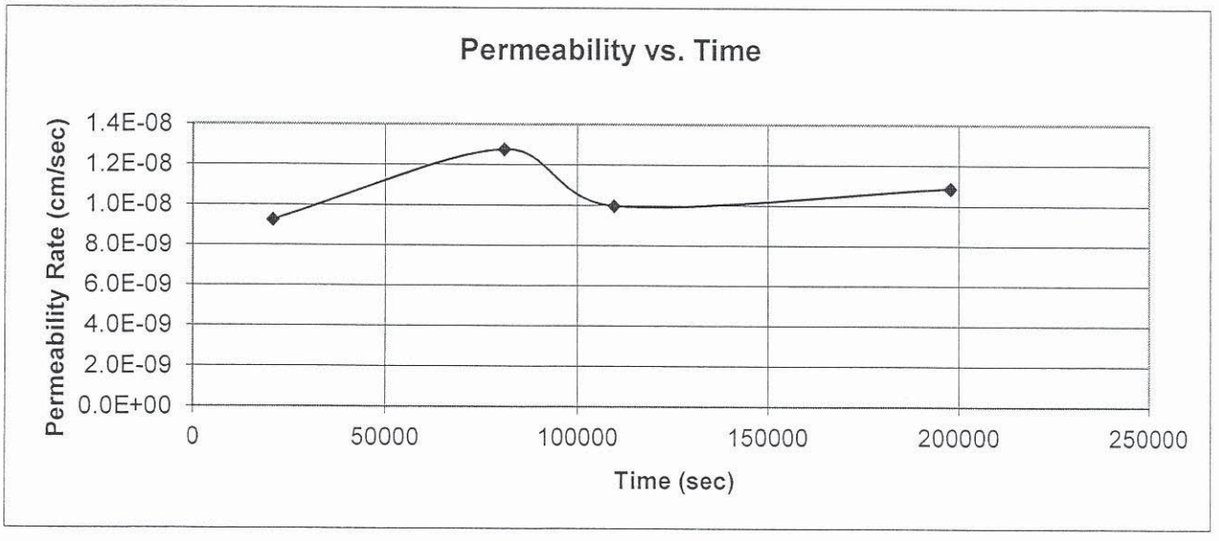
Dia. (in.)	2.86	2.79	**Length (in)**	2.71	2.71	**Weight (gr)**	506	506
Wet Density (pcf)	111.1		**Moisture Content (%)**	31.3		**Dry Density (pcf)**	84.6	
Final WD (pcf)	116.3		**Final Moisture (%)**	35.9		**Final DD (pcf)**	85.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.8	**Minimum Hydraulic Gradient**	11.9
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.1E-08



Reviewed By:

5/24/13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** January 0, 1900

Sample Number: TC2-2

Sample Information: Initial / Final

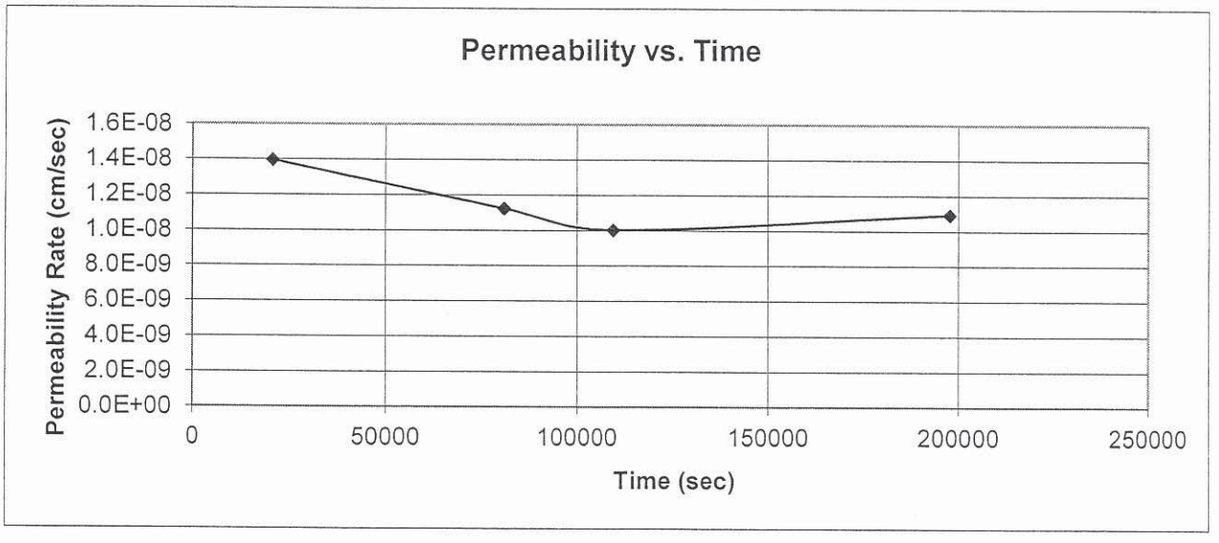
Dia. (in.)	2.83	2.81	**Length (in)**	2.68	2.63	**Weight (gr)**	493.4	502.4
Wet Density (pcf)	111.2		**Moisture Content (%)**	34.2		**Dry Density (pcf)**	82.9	
Final WD (pcf)	117.8		**Final Moisture (%)**	38.2		**Final DD (pcf)**	85.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.0	**Minimum Hydraulic Gradient**	12.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.2E-08



Reviewed By:

Daniel Eisman, P.E. 5/24/13

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** May 22, 2013

Sample Number: TC2-3

Sample Information: Initial / Final

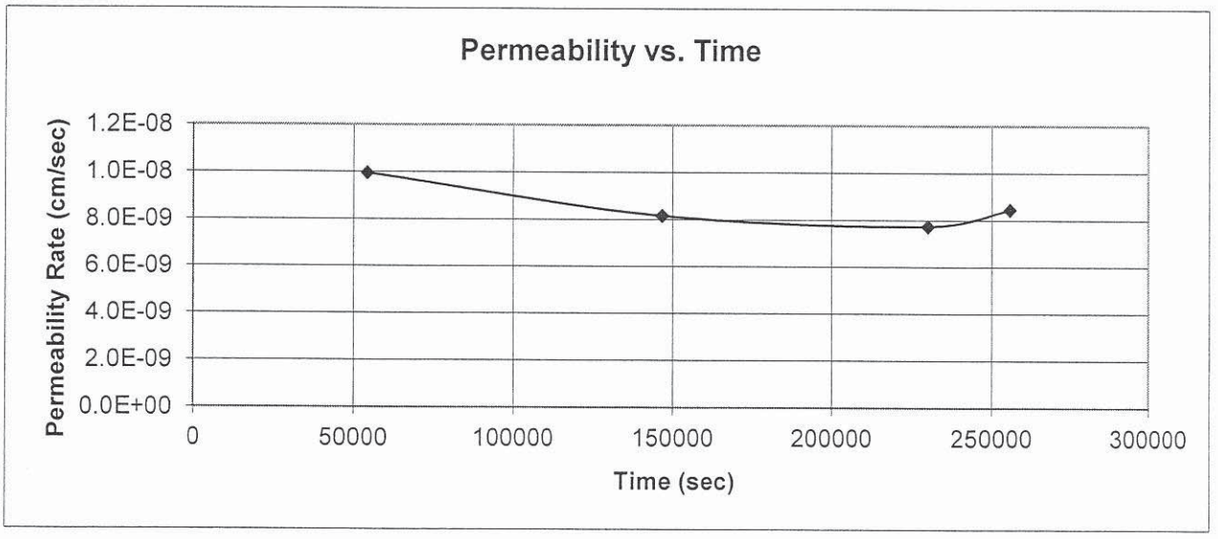
Dia. (in.)	2.85	2.84	**Length (in)**	3.04	3.05	**Weight (gr)**	569.6	580.3
Wet Density (pcf)	111.6		**Moisture Content (%)**	33.5		**Dry Density (pcf)**	83.7	
Final WD (pcf)	114.2		**Final Moisture (%)**	36.0		**Final DD (pcf)**	84.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.1	**Minimum Hydraulic Gradient**	10.5
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

8.6E-09



Reviewed By:

5/24/13

Daniel Eisman, P.E.

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REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Date Completed:** May 22, 2013

Sample Number: TC2-5

Sample Information: Initial / Final

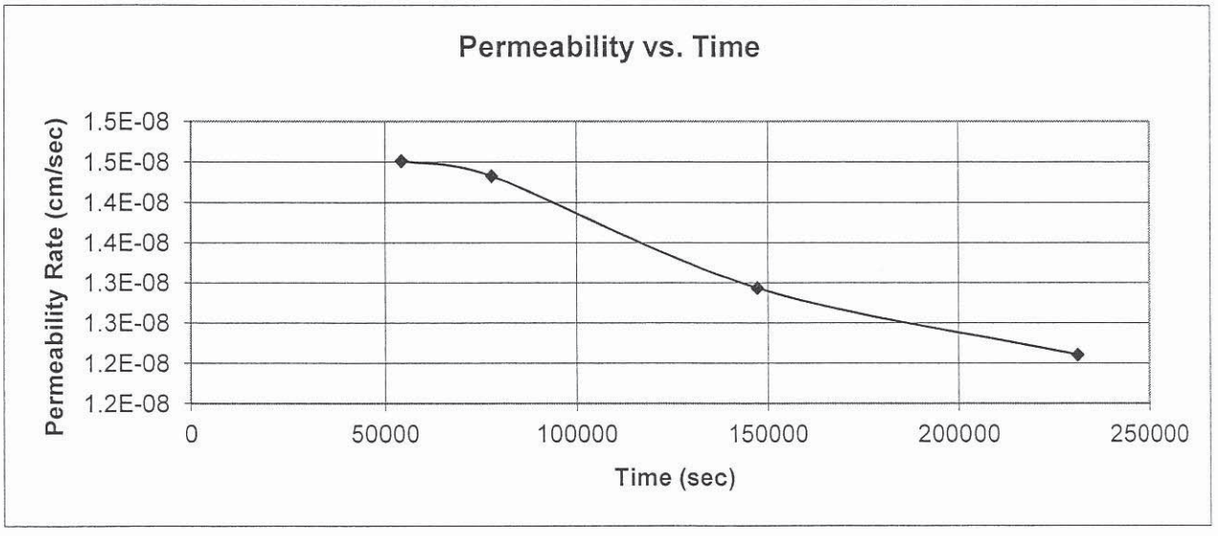
Dia. (in.)	2.85	2.85	**Length (in)**	3.16	3.15	**Weight (gr)**	595.3	602.4
Wet Density (pcf)	112.8		**Moisture Content (%)**	32.6		**Dry Density (pcf)**	85.0	
Final WD (pcf)	114.4		**Final Moisture (%)**	35.2		**Final DD (pcf)**	84.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.3	**Minimum Hydraulic Gradient**	10.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.3E-08



Reviewed By:

5/29/13

Daniel Eisman, P.E.

amec

Client: MAE

Date Received: 7/19/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	12	65	20	45	36.0	56.0
C-1	16	70	18	52	40.1	56.2
C-1	26	69	19	51	34.3	55.5
C-2	11	73	21	52	35.6	57.4
C-2	14	73	21	51	29.0	57.2
C-2	15	72	12	60	38.9	55.7
C-2	23	72	20	53	35.3	56.3
					ASTM D-2216	ASTM D-1140

Reviewed By:

Corey T. Chascin, E.I.

7.29.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	July 19, 2013
Sample Number:	C-1-12	**Date Completed:**	July 27, 2013
Location:	Unit 79-Terr 4		

Sample Information: Initial / Final

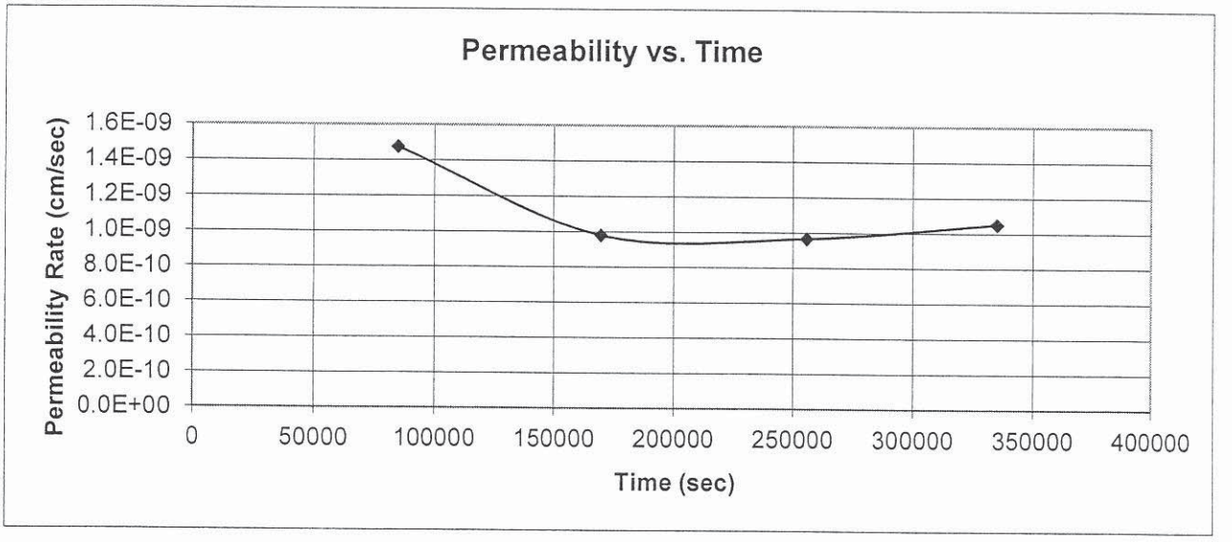
Dia. (in.)	2.79	2.84	**Length (in)**	2.24	2.22	**Weight (gr)**	385.5	385.25
Wet Density (pcf)	107.7		**Moisture Content (%)**	40.1		**Dry Density (pcf)**	76.8	
Final WD (pcf)	104.6		**Final Moisture (%)**	40.9		**Final DD (pcf)**	74.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.7	**Minimum Hydraulic Gradient**	14.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.1E-09



Reviewed By:

Corey T. Chascin 7.29.13

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	July 19, 2013
Sample Number:	C-1-16	**Date Completed:**	July 27, 2013
Location:	Unit 80 Terr 5		

Sample Information: Initial / Final

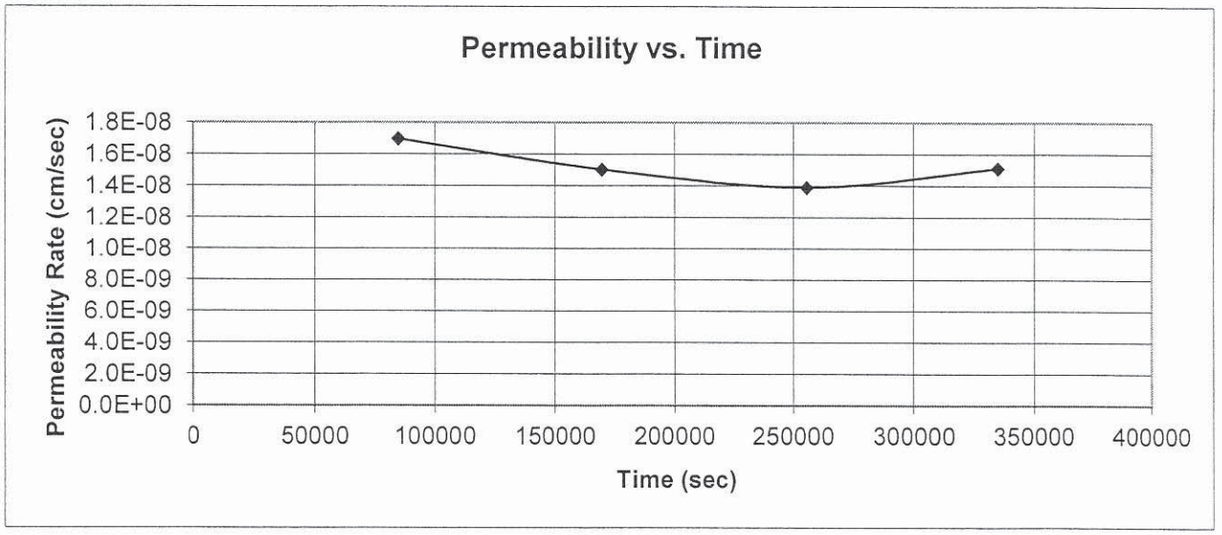
Dia. (in.)	2.85	2.89	**Length (in)**	2.25	2.32	**Weight (gr)**	425	443.82
Wet Density (pcf)	112.5		**Moisture Content (%)**	29.0		**Dry Density (pcf)**	87.2	
Final WD (pcf)	111.5		**Final Moisture (%)**	37.8		**Final DD (pcf)**	80.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.3	**Minimum Hydraulic Gradient**	14.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.5E-08



Reviewed By:

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	July 19, 2013
Sample Number:	C-1-26	**Date Completed:**	July 27, 2013
Location:	Maint. Rd.		

Sample Information: Initial / Final

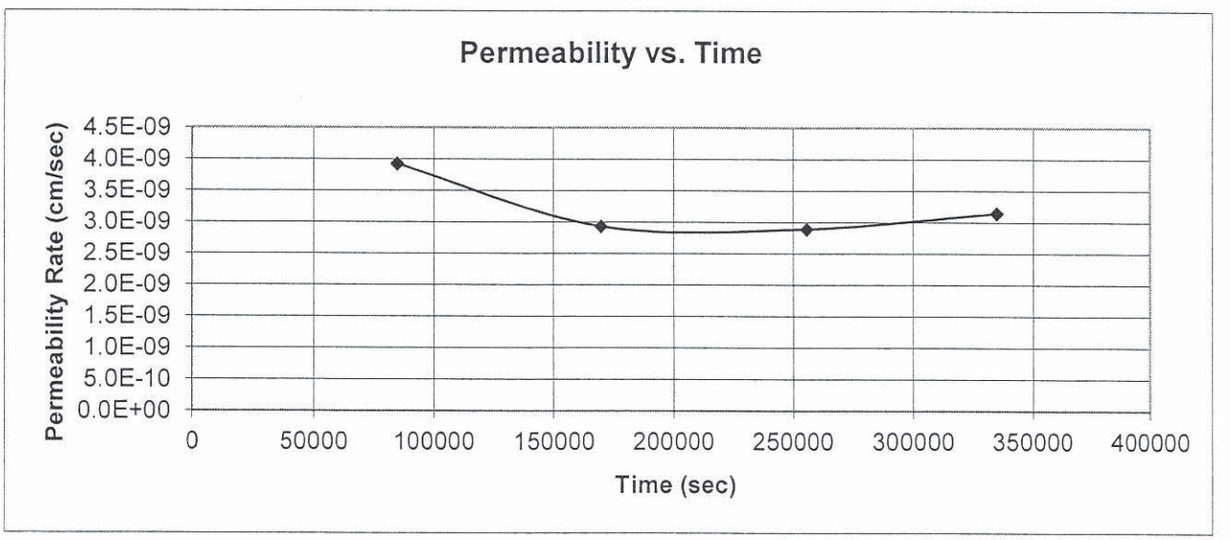
Dia. (in.)	2.84	2.85	**Length (in)**	2.32	2.32	**Weight (gr)**	416.1	418.53
Wet Density (pcf)	108.1		**Moisture Content (%)**	38.9		**Dry Density (pcf)**	77.8	
Final WD (pcf)	107.8		**Final Moisture (%)**	40.2		**Final DD (pcf)**	76.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	27.7	**Minimum Hydraulic Gradient**	13.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.2E-09



Reviewed By:

Corey Chascin 7.29.13

Corey T. Chascin, E.I.

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	July 19, 2013
Sample Number:	C-2-11	**Date Completed:**	July 27, 2013
Location:	Unit 80 Terr 5		

Sample Information: Initial / Final

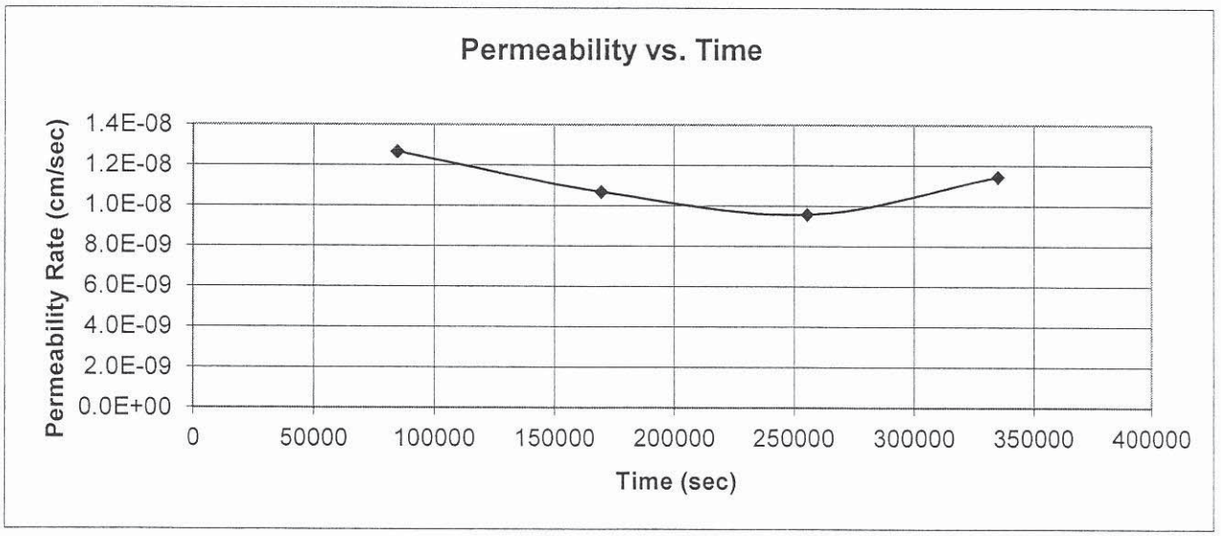
Dia. (in.)	2.82	2.84	**Length (in)**	2.28	2.33	**Weight (gr)**	433.4	446.7
Wet Density (pcf)	115.9		**Moisture Content (%)**	29.7		**Dry Density (pcf)**	89.3	
Final WD (pcf)	115.7		**Final Moisture (%)**	33.2		**Final DD (pcf)**	86.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.1	**Minimum Hydraulic Gradient**	13.9
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.1E-08



Reviewed By:

Corey T. Chascin, E.I. 7.29.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	July 19, 2013
Sample Number:	C-2-14	**Date Completed:**	July 27, 2013
Location:	Unit 79 Terr 4		

Sample Information: Initial / Final

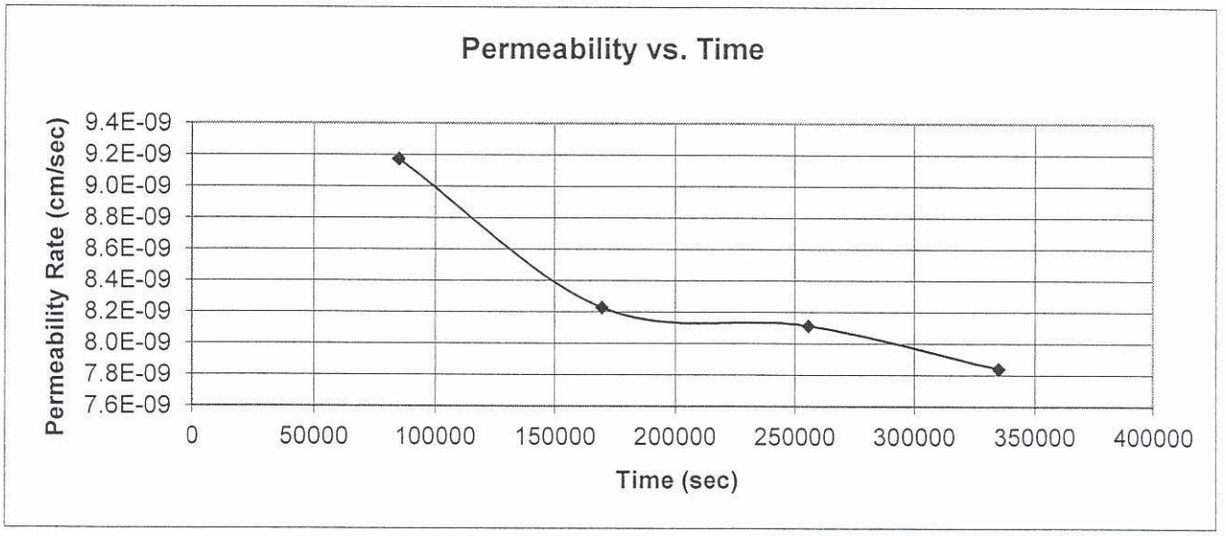
Dia. (in.)	2.85	2.86	**Length (in)**	2.18	2.24	**Weight (gr)**	409.2	422.73
Wet Density (pcf)	112.7		**Moisture Content (%)**		30.0	**Dry Density (pcf)**		86.7
Final WD (pcf)	112.3		**Final Moisture (%)**		35.3	**Final DD (pcf)**		83.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	29.4	**Minimum Hydraulic Gradient**	14.6
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

8.3E-09



Reviewed By:

Corey T. Chascin, E.I. 7.29.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	July 19, 2013
Sample Number:	C-2-15	**Date Completed:**	July 27, 2013
Location:	Unit 80 Terr 5		

Sample Information: Initial / Final

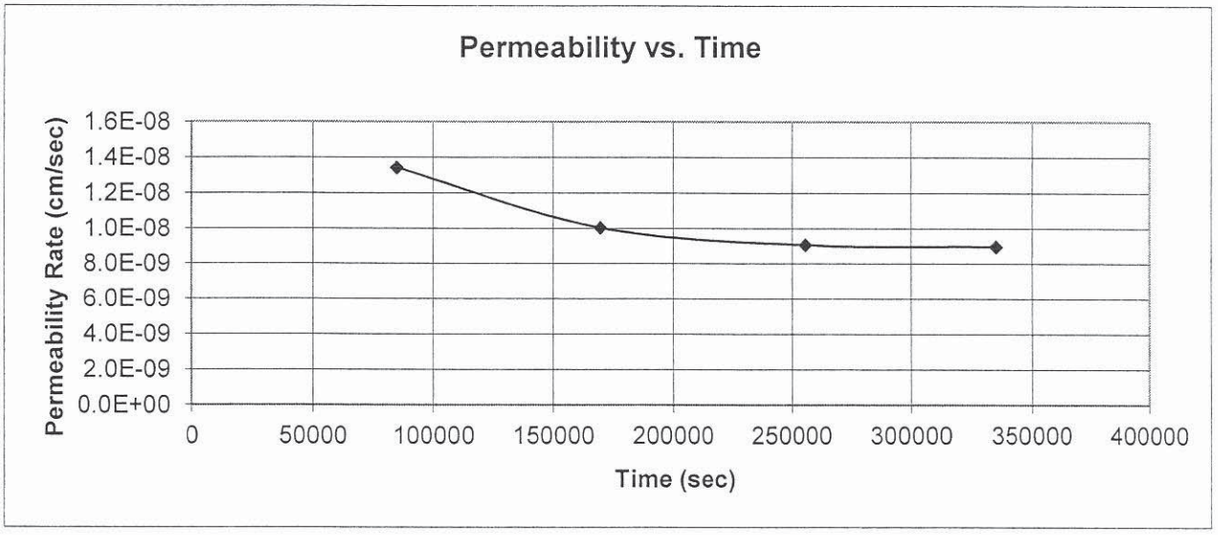
Dia. (in.)	2.85	2.90	**Length (in)**	2.00	2.02	**Weight (gr)**	381.6	401.21
Wet Density (pcf)	113.9		**Moisture Content (%)**	26.1		**Dry Density (pcf)**	90.3	
Final WD (pcf)	114.7		**Final Moisture (%)**	32.4		**Final DD (pcf)**	86.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	31.9	**Minimum Hydraulic Gradient**	15.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.0E-08



Reviewed By:

Corey T. Chascin, E.I. 7.29.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	July 19, 2013
Sample Number:	C-2-23	**Date Completed:**	July 27, 2013
Location:	Maint. Rd.		

Sample Information: Initial / Final

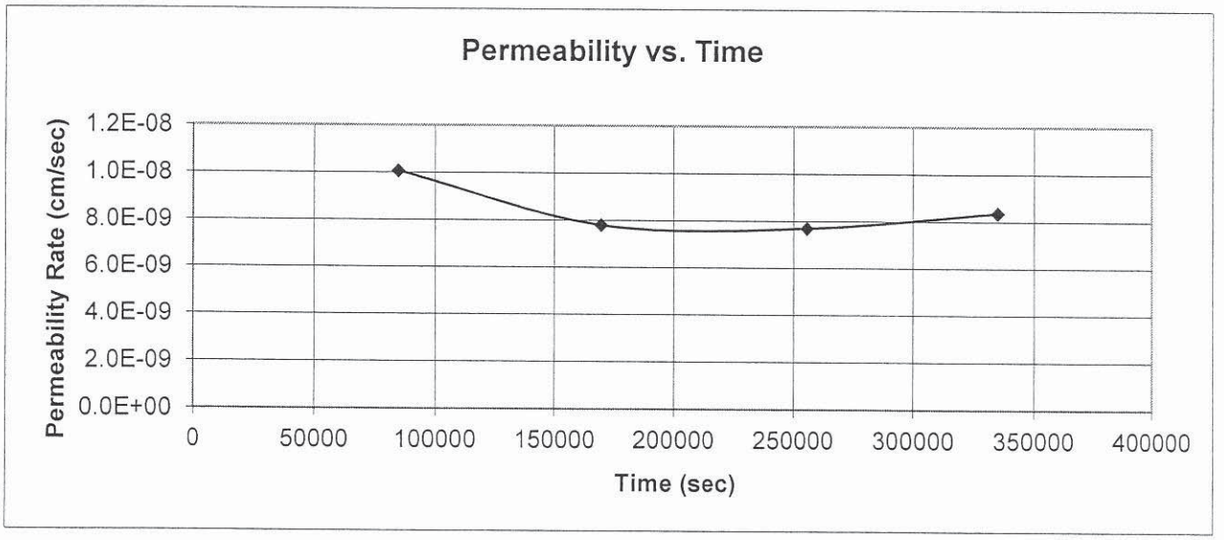
Dia. (in.)	2.83	2.87	**Length (in)**	2.63	2.65	**Weight (gr)**	502.6	513.12
Wet Density (pcf)	116.0		**Moisture Content (%)**	23.2		**Dry Density (pcf)**	94.1	
Final WD (pcf)	114.1		**Final Moisture (%)**	31.7		**Final DD (pcf)**	86.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.4	**Minimum Hydraulic Gradient**	12.1
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

8.5E-09



Reviewed By:

Corey T. Chascin, E.I. 7.29.13

amec

Client: MAE **Date Received:** 6/26/2013

Project: Trail Ridge Landfill **Job No.:** 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
Location: D-55						
C-1	135	76	23	53	38.4	55.9
C-1	137	73	23	50	29.6	57.4
C-1	139	77	23	53	35.6	57.1
C-2	132	75	25	50	35.2	56.2
C-2	134	78	25	54	38.9	52.6
C-2	136	77	24	53	36.8	55.0
		NT= Not Requested / Not Tested			ASTM D-2216	ASTM D-1140

Reviewed By:

Corey T. Chascin, E.I.

7.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	6/26/2013
Sample Number:	C1-135	**Date Completed:**	July 2, 2013
Location:	D-55		

Sample Information: Initial / Final

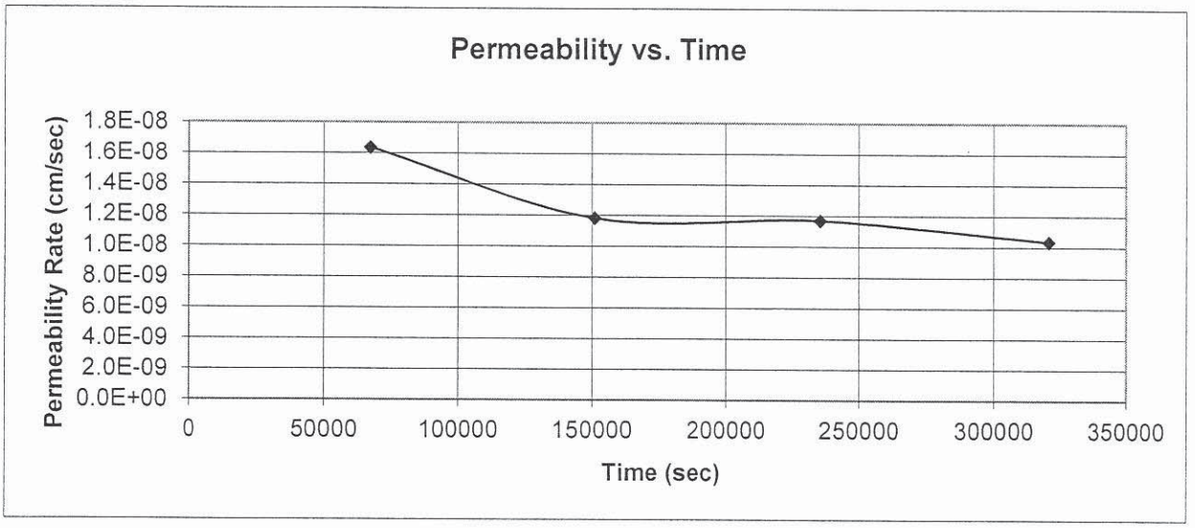
Dia. (in.)	2.83	2.84	**Length (in)**	3.06	3.06	**Weight (gr)**	546.6	555.6
Wet Density (pcf)	108.3		**Moisture Content (%)**		38.4	**Dry Density (pcf)**		78.2
Final WD (pcf)	109.0		**Final Moisture (%)**		32.1	**Final DD (pcf)**		82.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.0	**Minimum Hydraulic Gradient**	10.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.3E-08



Reviewed By:

Corey T. Chascin, E.I.

7.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	6/26/2013
Sample Number:	C1-137	**Date Completed:**	July 2, 2013
Location:	D-55		

Sample Information: Initial / Final

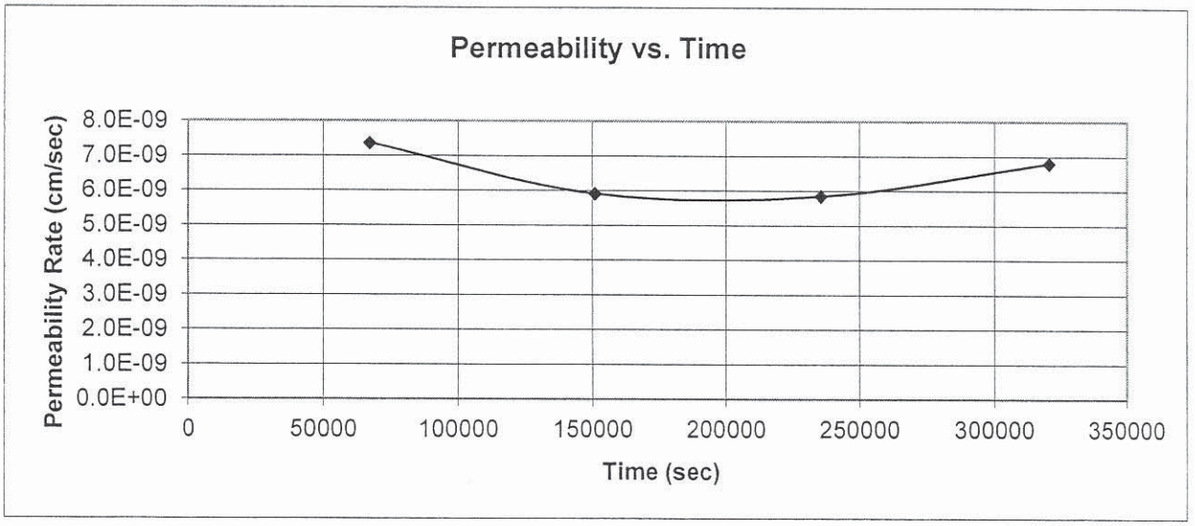
Dia. (in.)	2.84	2.84	**Length (in)**	2.30	2.28	**Weight (gr)**	423.8	431.7
Wet Density (pcf)	110.7		**Moisture Content (%)**	29.6		**Dry Density (pcf)**	85.4	
Final WD (pcf)	113.4		**Final Moisture (%)**	34.2		**Final DD (pcf)**	84.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	27.8	**Minimum Hydraulic Gradient**	13.9
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.5E-09



Reviewed By:

Corey T. Chascin, E.I. 7.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	6/26/2013
Sample Number:	C1-139	**Date Completed:**	July 2, 2013
Location:	D-55		

Sample Information: Initial / Final

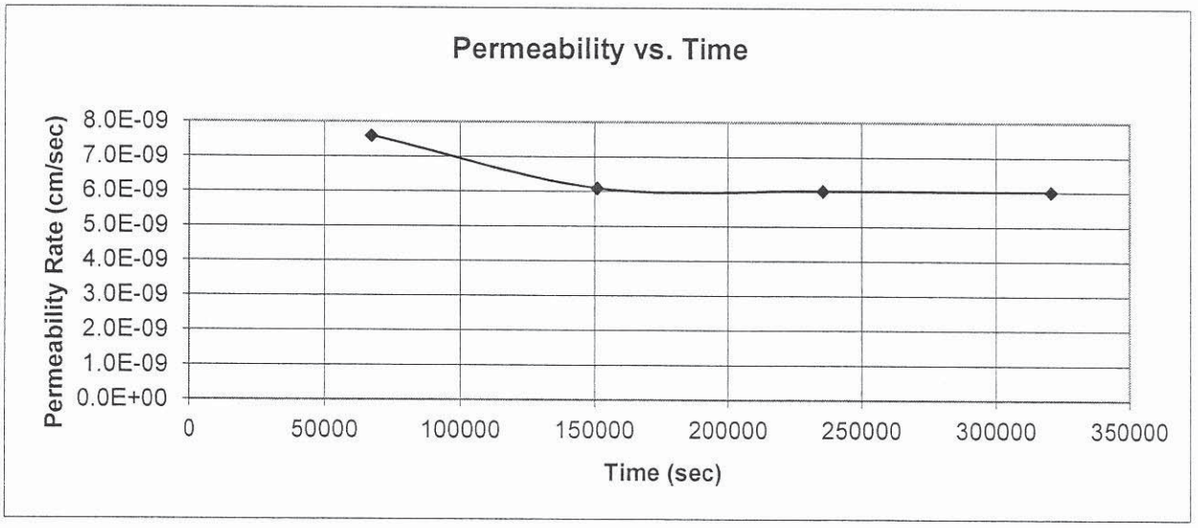
Dia. (in.)	2.82	2.82	**Length (in)**	2.35	2.37	**Weight (gr)**	412	419.9
Wet Density (pcf)	106.7		**Moisture Content (%)**	35.6		**Dry Density (pcf)**	78.7	
Final WD (pcf)	108.2		**Final Moisture (%)**	40.3		**Final DD (pcf)**	77.1	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	27.3	**Minimum Hydraulic Gradient**	13.6
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.4E-09



Reviewed By:

Corey T. Chascin, E.I.

7.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	6/26/2013
Sample Number:	C2-132	**Date Completed:**	July 2, 2013
Location:	D-55		

Sample Information: Initial / Final

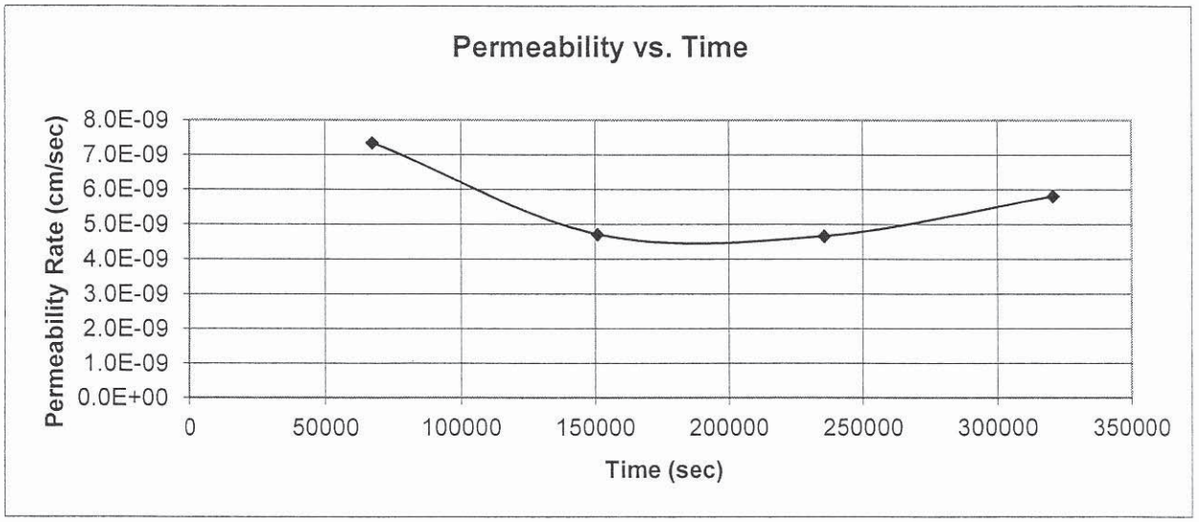
Dia. (in.)	2.82	2.81	**Length (in)**	2.71	2.67	**Weight (gr)**	483.7	489.1
Wet Density (pcf)	109.1		**Moisture Content (%)**	35.2		**Dry Density (pcf)**	80.6	
Final WD (pcf)	112.3		**Final Moisture (%)**	34.6		**Final DD (pcf)**	83.4	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.7	**Minimum Hydraulic Gradient**	11.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.6E-09



Reviewed By:

Corey T. Chascin, E.I.

7.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	June 26, 2013
Sample Number:	C2-134	**Date Completed:**	July 2, 2013
Location:	D-55		

Sample Information: Initial / Final

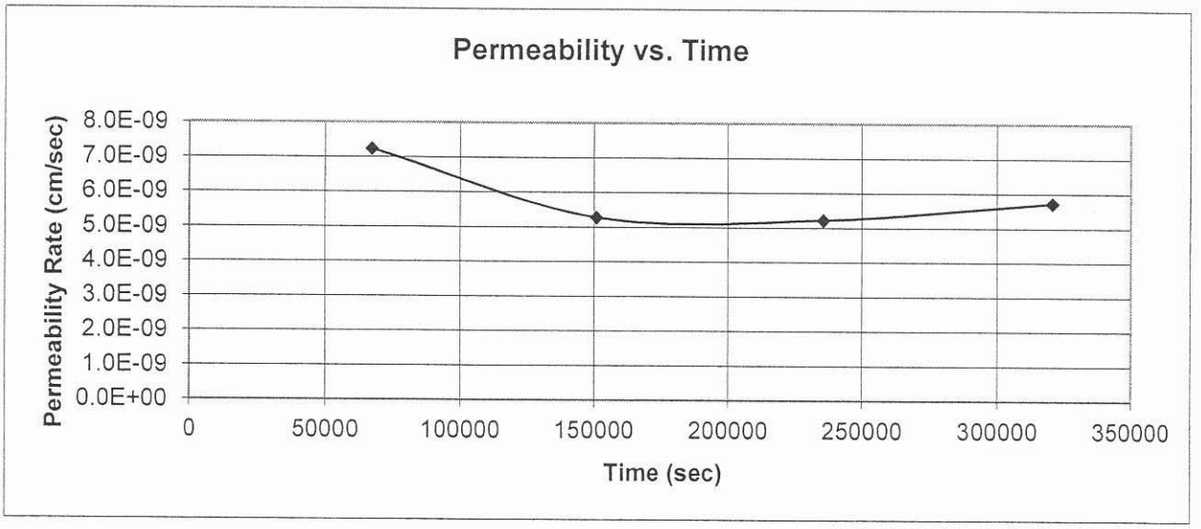
Dia. (in.)	2.84	2.84	**Length (in)**	2.47	2.41	**Weight (gr)**	447.8	454.3
Wet Density (pcf)	109.4		**Moisture Content (%)**		38.9	**Dry Density (pcf)**		78.8
Final WD (pcf)	112.8		**Final Moisture (%)**		34.3	**Final DD (pcf)**		83.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	26.0	**Minimum Hydraulic Gradient**	13.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.9E-09



Reviewed By:

Corey T. Chascin, E.I.

7.29.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	June 26, 2013
Sample Number:	C2-136	**Date Completed:**	July 2, 2013
Location:	D-55		

Sample Information: Initial / Final

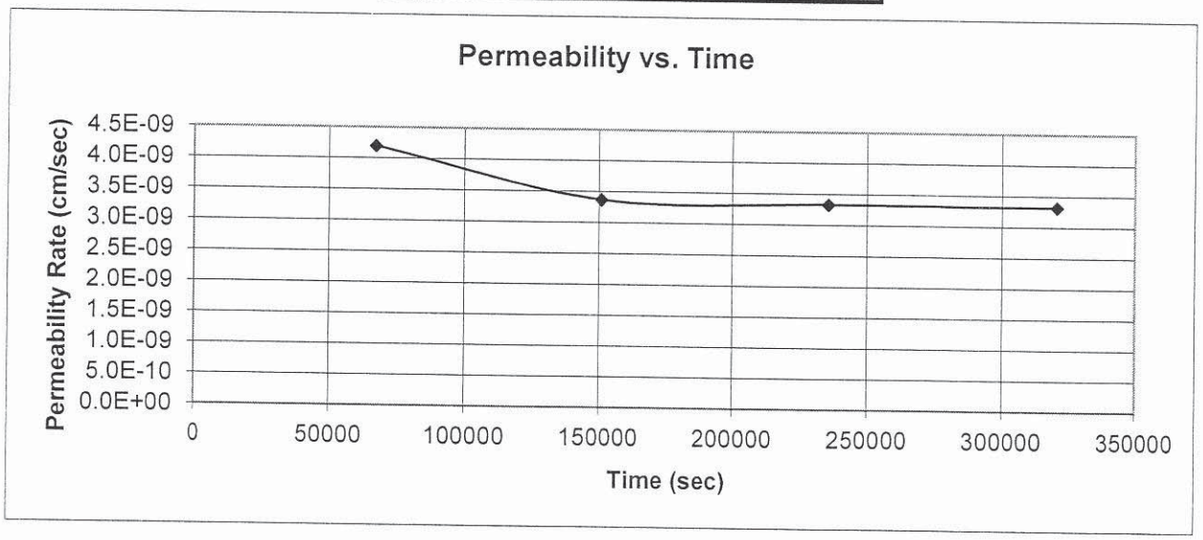
Dia. (in.)	2.82	2.82	**Length (in)**	2.59	2.58	**Weight (gr)**	468.4	474.44
Wet Density (pcf)	110.8		**Moisture Content (%)**	36.7		**Dry Density (pcf)**	81.0	
Final WD (pcf)	112.2		**Final Moisture (%)**	35.3		**Final DD (pcf)**	82.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.9	**Minimum Hydraulic Gradient**	12.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.6E-09



Reviewed By:

Corey T. Chascin, E.I.

7.29.13

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Client: MAE

Project: Trail Ridge Landfill

Date Received: 6/28/2013

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
Location: D-55						
C-1	142	64	20	45	39.8	55.8
C-2	139	72	21	50	38.6	53.2
					ASTM D-2216	ASTM D-1140

Reviewed By:

Corey T. Chaffin, E.I. 7.25.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	6/28/2013
Sample Number:	C2-139	**Date Completed:**	July 12, 2013
Location:	D-55		

Sample Information: Initial / Final

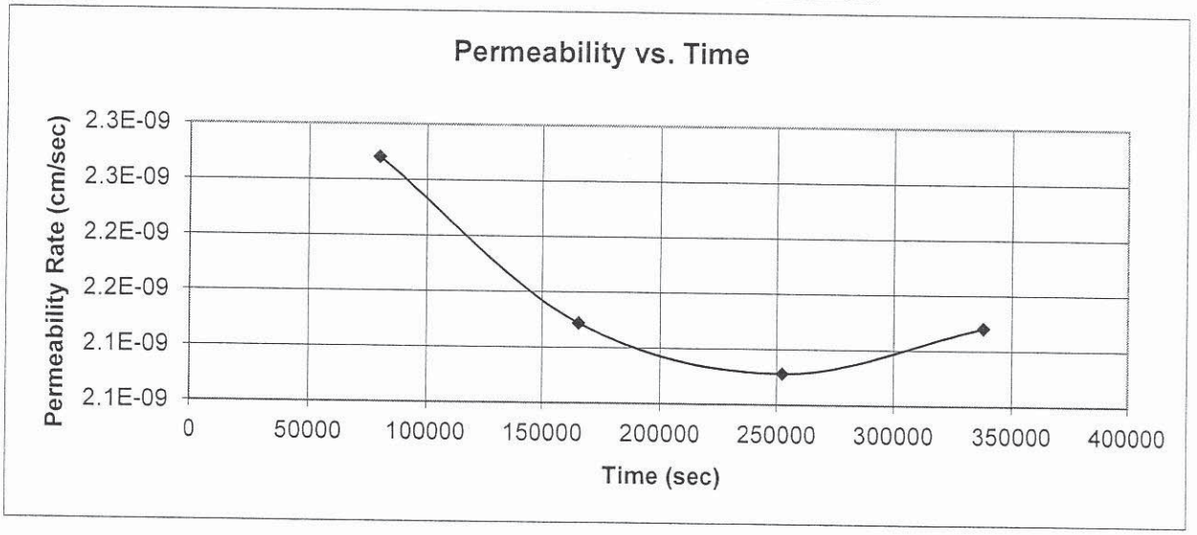
Dia. (in.)	2.84	2.86	**Length (in)**	2.53	2.56	**Weight (gr)**	482.9	488.5
Wet Density (pcf)	114.7		**Moisture Content (%)**	38.6		**Dry Density (pcf)**	82.8	
Final WD (pcf)	113.2		**Final Moisture (%)**	37.9		**Final DD (pcf)**	82.1	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	25.4	**Minimum Hydraulic Gradient**	12.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.1E-09



Reviewed By:

Corey T. Chascin, E.I.

7.25.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	June 28, 2013
Sample Number:	C1-142	**Date Completed:**	July 12, 2013
Location:	D-55		

Sample Information: Initial / Final

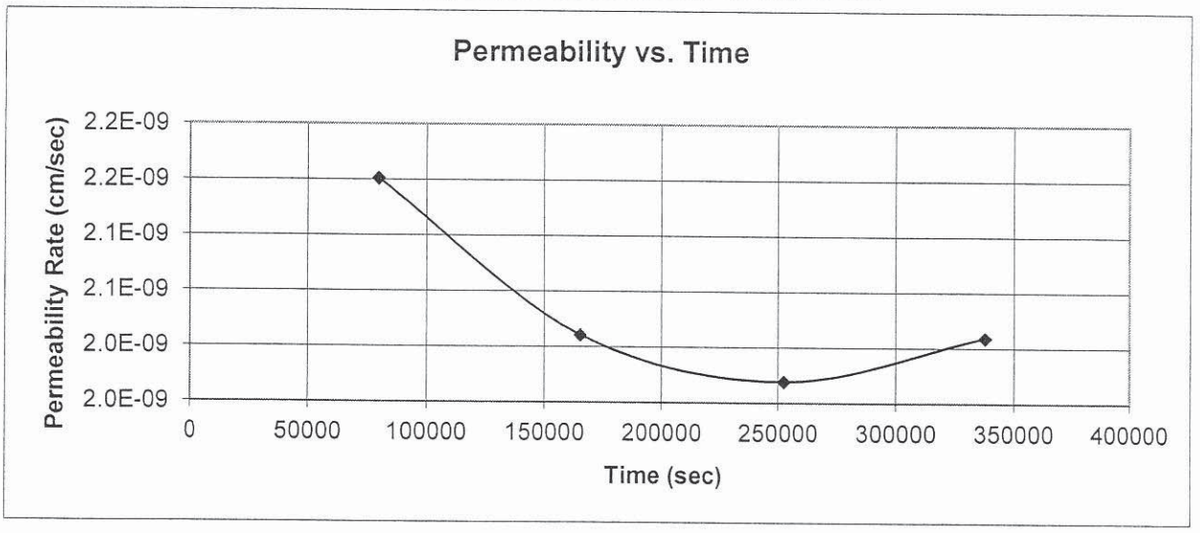
Dia. (in.)	2.86	2.90	**Length (in)**	2.43	2.46	**Weight (gr)**	470.22	481.01
Wet Density (pcf)	114.9		**Moisture Content (%)**	39.8		**Dry Density (pcf)**	82.2	
Final WD (pcf)	112.9		**Final Moisture (%)**	37.3		**Final DD (pcf)**	82.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	26.5	**Minimum Hydraulic Gradient**	13.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.0E-09



Reviewed By:

Corey T. Chascin, E.I.

7.25.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Completed:**	July 20, 2013
Sample Number:	C-2-16	**Location:**	T-6 Unit 74

Sample Information: Initial / Final

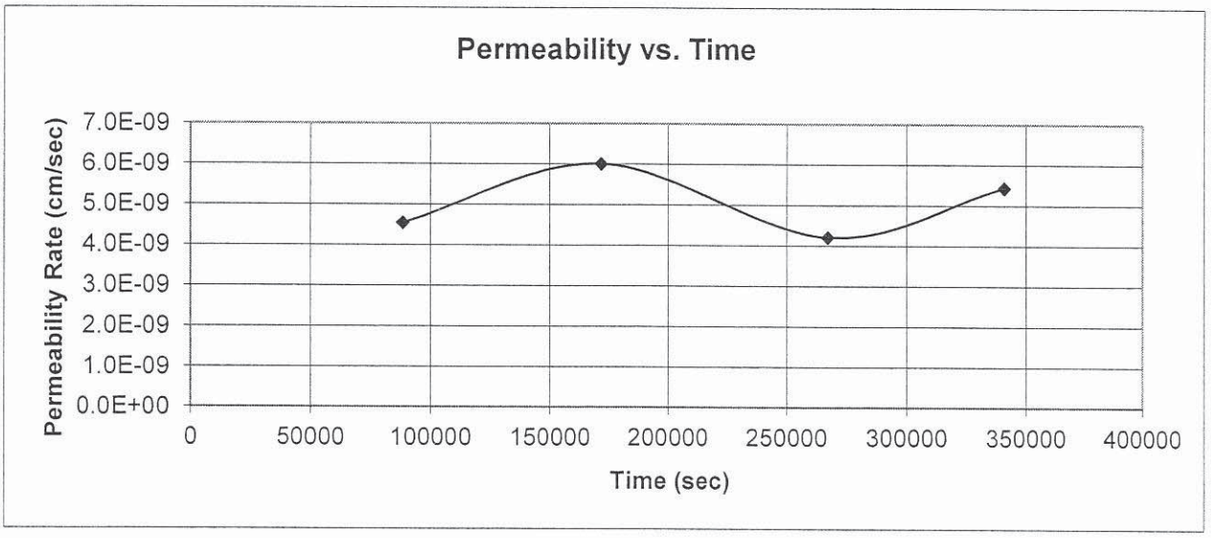
Dia. (in.)	2.86	2.88	**Length (in)**	2.85	2.89	**Weight (gr)**	544.7	552.7
Wet Density (pcf)	113.1		**Moisture Content (%)**	32.4		**Dry Density (pcf)**	85.5	
Final WD (pcf)	112.0		**Final Moisture (%)**	38.4		**Final DD (pcf)**	80.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.6	**Minimum Hydraulic Gradient**	11.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.1E-09



Reviewed By:

Corey T. Chascin, E.I. 7.25.13

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Completed:**	July 20, 2013
Sample Number:	C-1-27	**Location:**	T-6 Unit 74

Sample Information: Initial / Final

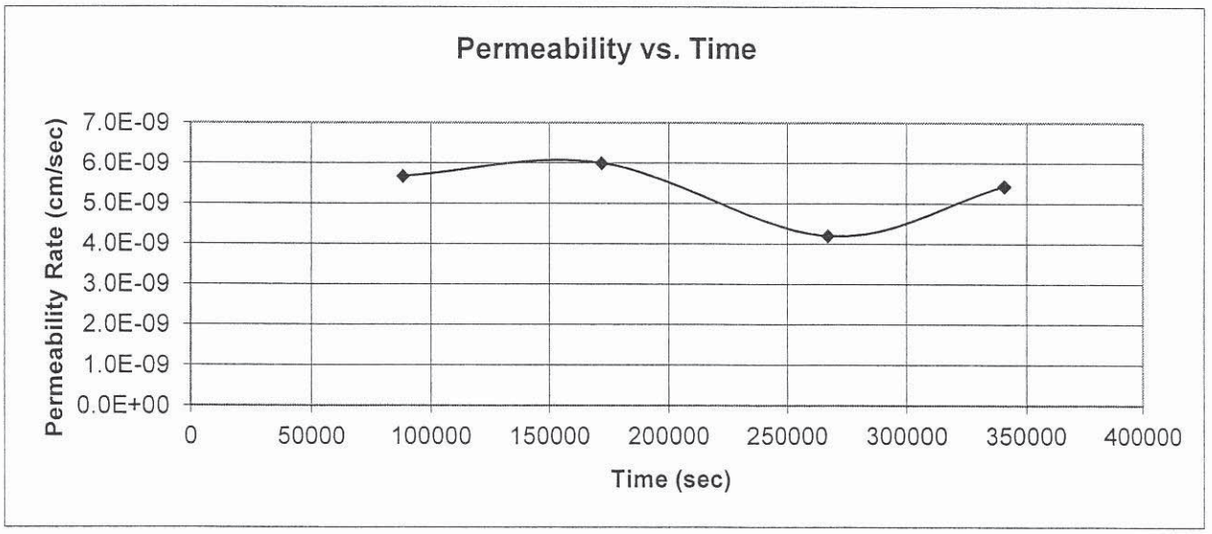
Dia. (in.)	2.84	2.85	**Length (in)**	2.80	2.82	**Weight (gr)**	528.6	537.56
Wet Density (pcf)	113.6		**Moisture Content (%)**	33.4		**Dry Density (pcf)**	85.1	
Final WD (pcf)	114.3		**Final Moisture (%)**	35.8		**Final DD (pcf)**	84.1	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.9	**Minimum Hydraulic Gradient**	11.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

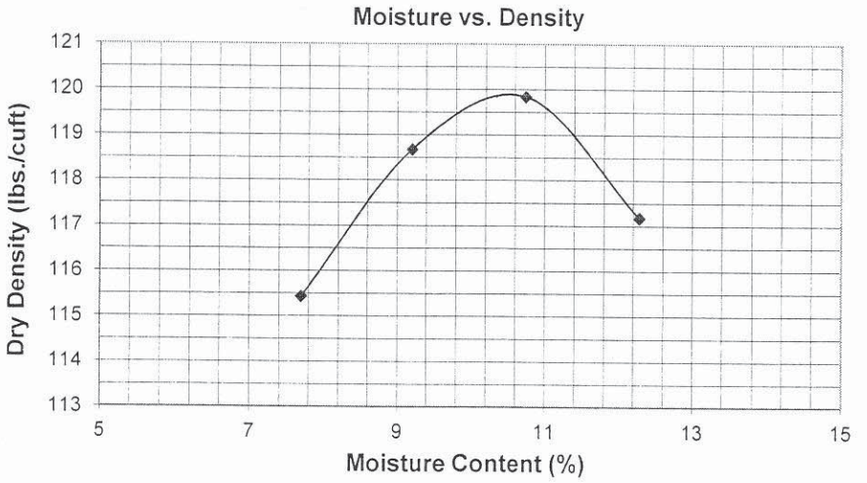
5.3E-09

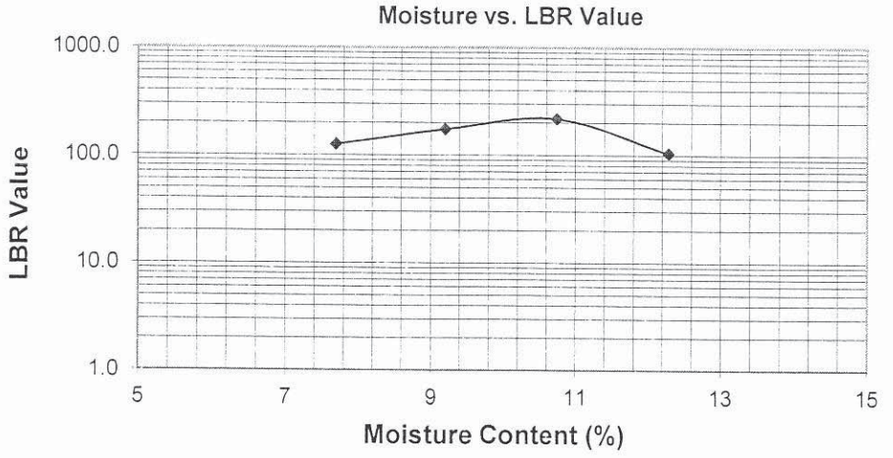


Reviewed By:

Corey T. Chascin, E.I. 7.24.13

LIMEROCK BEARING RATIO TEST RESULTS





Material Description: Crushed Concrete

Test Results	
Optimum Moisture (%):	11
Maximum Dry Density (pcf):	120
Maximum LBR Value:	219
Liquid Limit:	NP
Plastic Limit:	NP

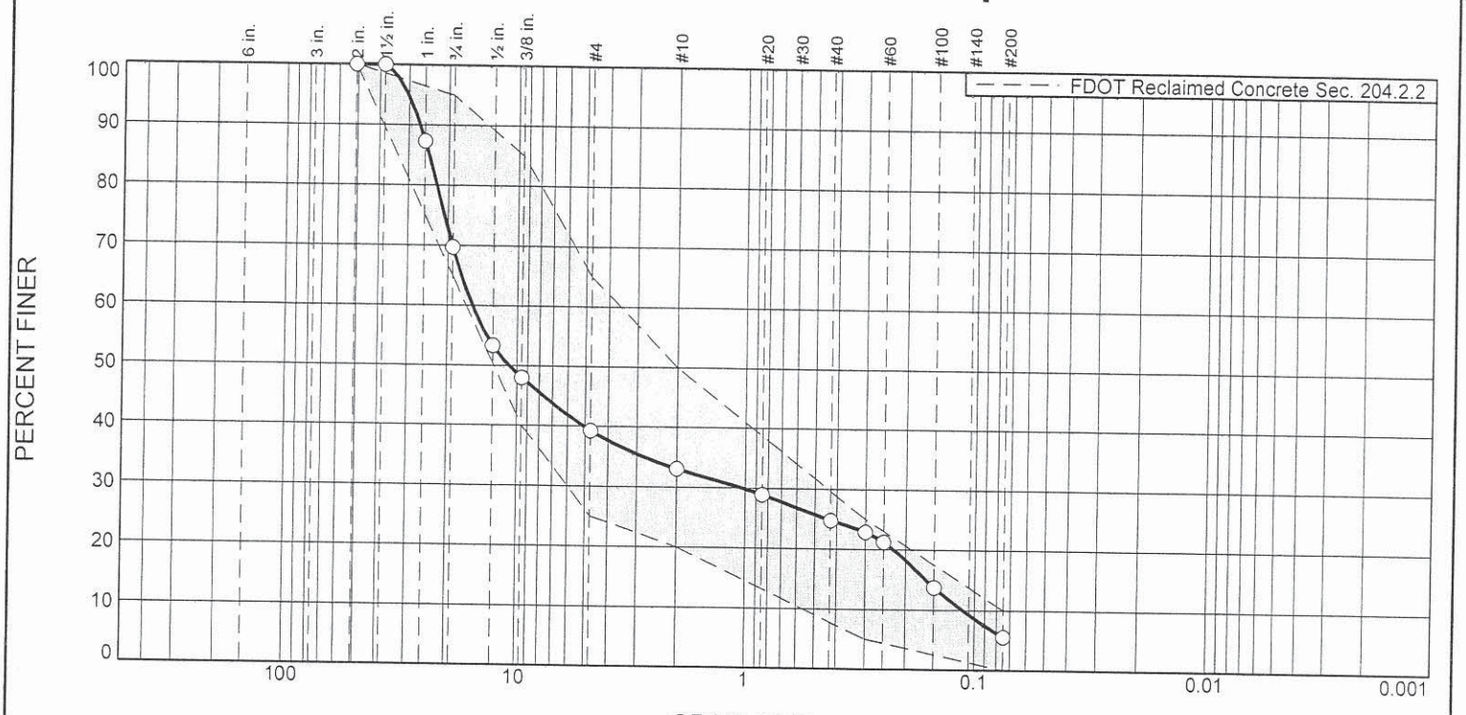
PROJECT NAME:	Trailridge Landfill Ph. 4	PROJECT NO.:	6736-13-5237
CLIENT:	Meskel	DATE TESTED:	7/22/2013
SAMPLE No.:	LBR No. 1	TEST METHOD:	FM-515
LOCATION:	0	PERFORMED BY:	CM

PERFORMING TECHNICIAN TIN #: M63511677-000

Reviewed By: Corey T. Chascin, E.I.

7.22.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	30.3	30.4	6.3	8.2	19.3	5.5	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2.0	100.0	100.0	
1.5	100.0		
1.0	87.3		
3/4	69.7	65.0 - 95.0	
1/2	53.3		
3/8	48.0	40.0 - 85.0	
#4	39.3	25.0 - 65.0	
#10	33.0	20.0 - 50.0	
#20	28.9		
#40	24.8		
#50	22.8	5.0 - 25.0	
#60	21.2		
#100	13.7		
#200	5.5	0.0 - 10.0	

* FDOT Reclaimed Concrete Sec. 204.2.2

Material Description

Crushed Concrete Base

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= GP-GM AASHTO (M 145)= A-1-a

Coefficients

D_{90}= 26.7787 D_{85}= 24.3872 D_{60}= 15.6055
D_{50}= 10.8118 D_{30}= 1.0428 D_{15}= 0.1634
D_{10}= 0.1134 C_u= 137.62 C_c= 0.61

Remarks

Date Received: 7/17/13 Date Tested: 7/18/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Location: Base- Impendence Recycle
Sample Number: 1

Date Sampled: 7/17/13

AMEC E&I

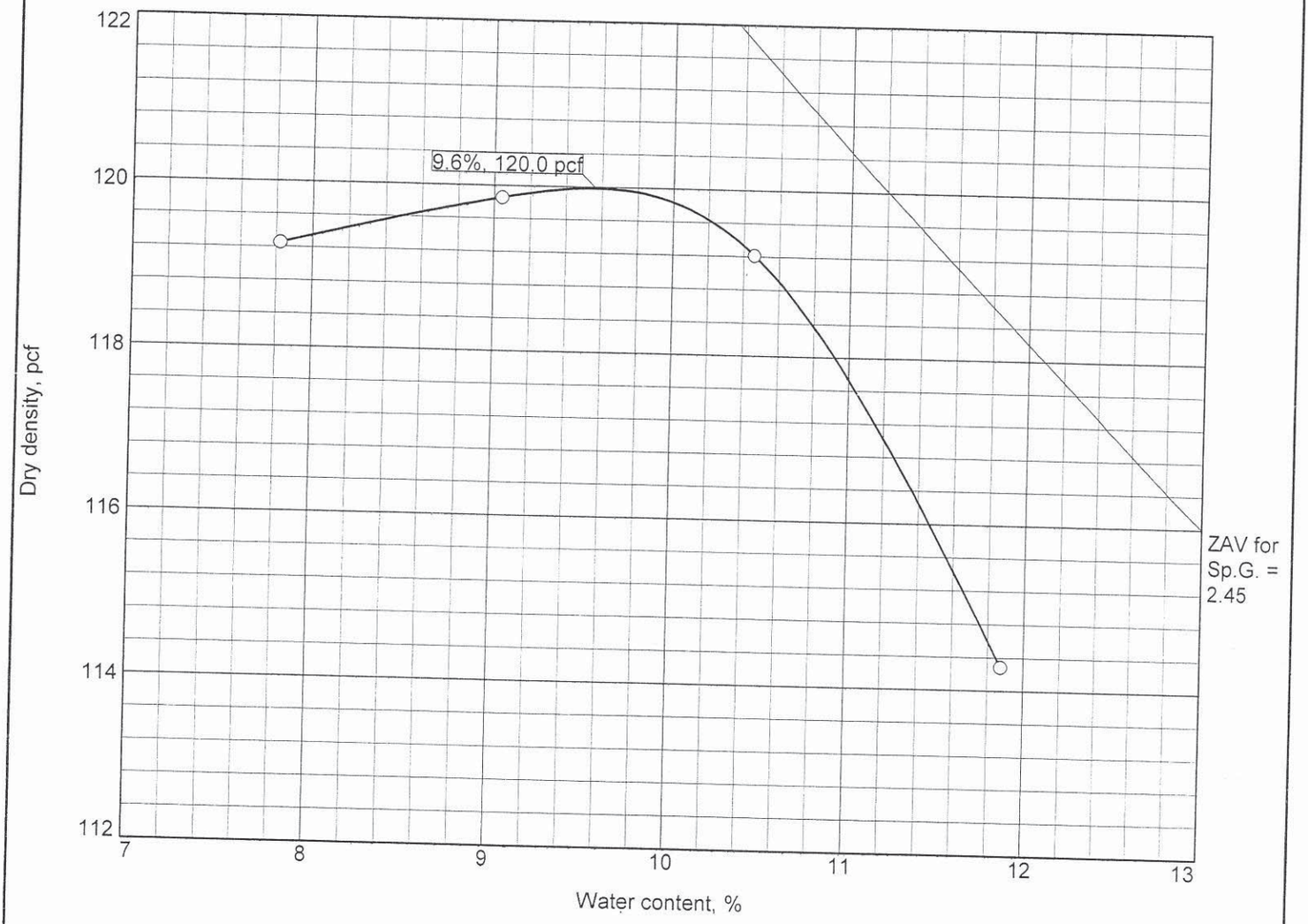
Jacksonville, Florida

Client: Meskel
Project: Trailridge Landfill Phase 4
Project No: 6736135237

Figure

Corey T. Chascin 7.22.13

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SP-SM	A-3			NV	NP	0.1	7.9

TEST RESULTS

Maximum dry density = 120.0 pcf

Optimum moisture = 9.6 %

MATERIAL DESCRIPTION

Dark Brown Slightly Silty Fine SAND

Project No. 6736135237 **Client:** Meskel

Project: Trailridge Landfill Phase 4

○ **Source of Sample:** Initial Cover **Sample Number:** 3

Remarks:

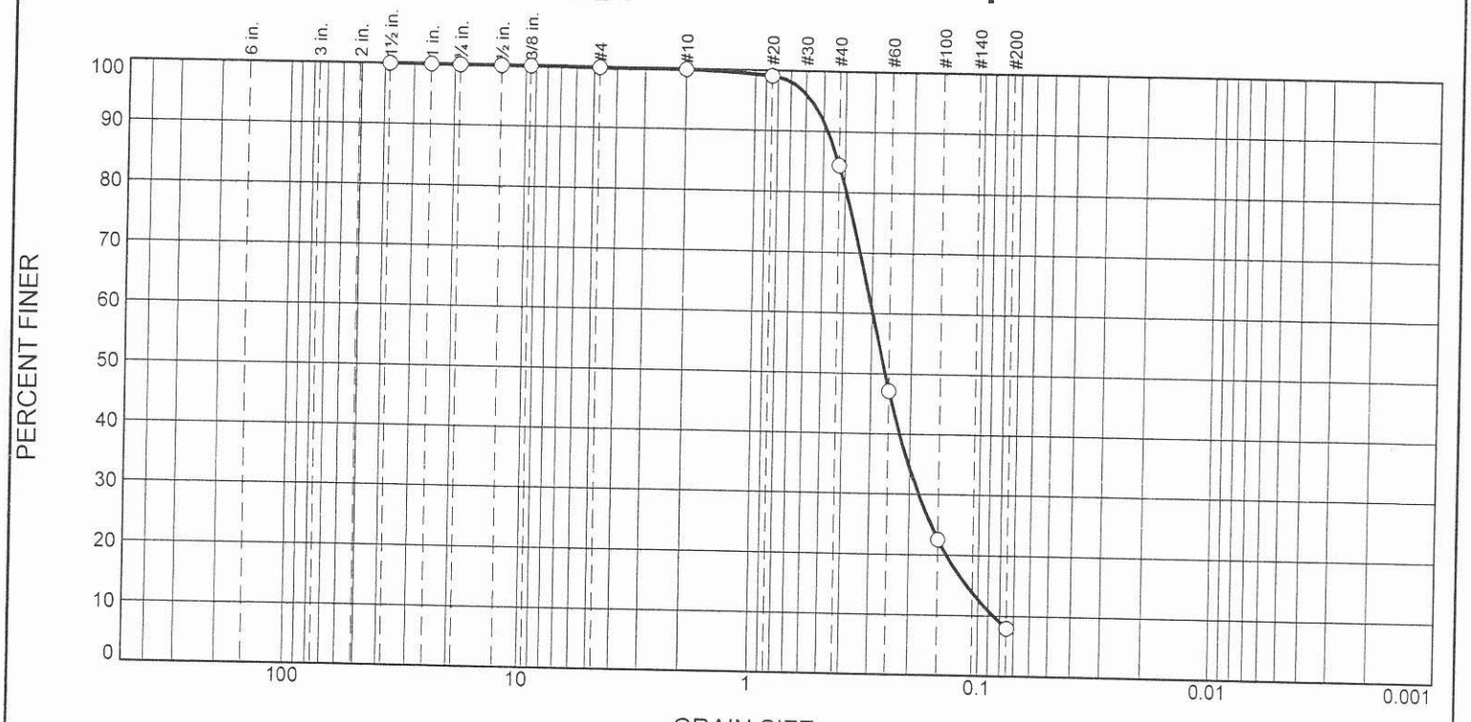
AMEC E&I

Jacksonville, Florida

Figure

Tested By: CM **Checked By:** Mark A. Coleman

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.0	15.5	76.5	7.9	

Test Results (D 422 & D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	99.9		
#10	99.9		
#20	99.1		
#40	84.4		
#60	47.1		
#100	22.5		
#200	7.9		

* (no specification provided)

Material Description

Dark Brown Slightly Silty Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP-SM AASHTO (M 145)= A-3

Coefficients

D_{90}= 0.4797 D_{85}= 0.4295 D_{60}= 0.2986
D_{50}= 0.2608 D_{30}= 0.1829 D_{15}= 0.1127
D_{10}= 0.0857 C_u= 3.49 C_c= 1.31

Remarks

Date Received: 7/2/13 Date Tested: 7/5/13

Tested By: CM

Checked By: Mark A. Coleman

Title:

Source of Sample: Initial Cover

Sample Number: 3

Date Sampled: 7/2/13

AMEC E&I

Jacksonville, Florida

Client: Meskel

Project: Trailridge Landfill Phase 4

Project No: 6736135237

Figure

amec

Client: MAE

Date Received: 7/12/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
Location: D-55						
C-1	11	NT	NT	NT	36.0	53.9
C-1	27	66	20	46	33.4	51.6
C-2	13	NT	NT	NT	35.1	55.6
C-2	16	69	20	49	32.4	55.5
C-2	19	NT	NT	NT	37.9	60.3
C-2	35	NT	NT	NT	33.3	55.5
		NT= Not Requested / Not Tested			ASTM D-2216	ASTM D-1140

Reviewed By:

Corey T. Chascin, E.I.

7.24.13

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-1-1R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

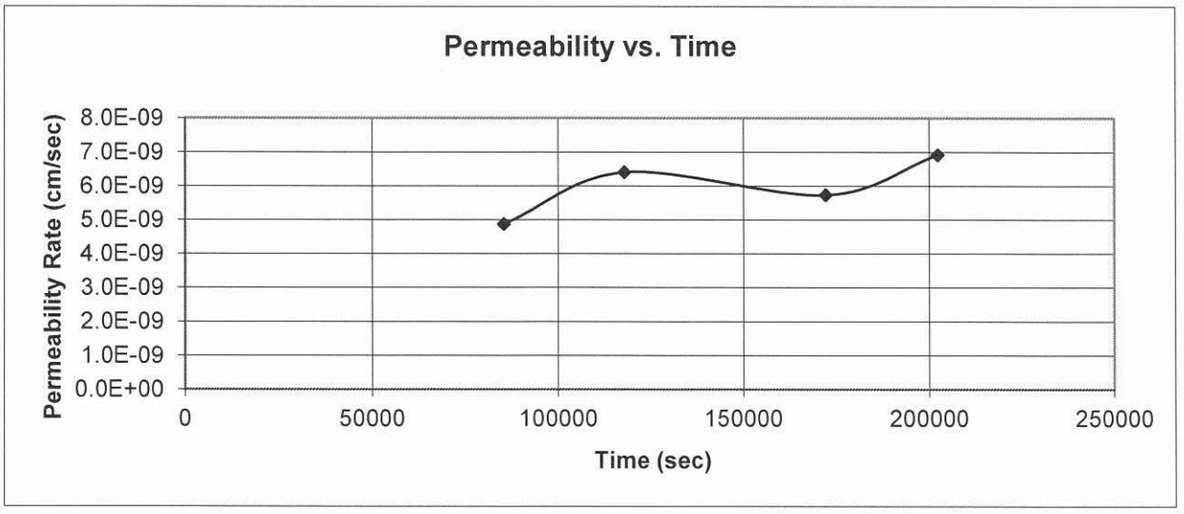
Dia. (in.)	2.83	0.00	**Length (in)**	2.92	0.00	**Weight (gr)**	545.3	0
Wet Density (pcf)	112.9		**Moisture Content (%)**	36.5		**Dry Density (pcf)**	82.7	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.0	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

6.0E-09



Reviewed By:

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: TC-1-2R

Location: NA

Project Number: 6736-13-5237

Date Received: October 10, 2014

Date Completed: October 17, 2014

Sample Information:

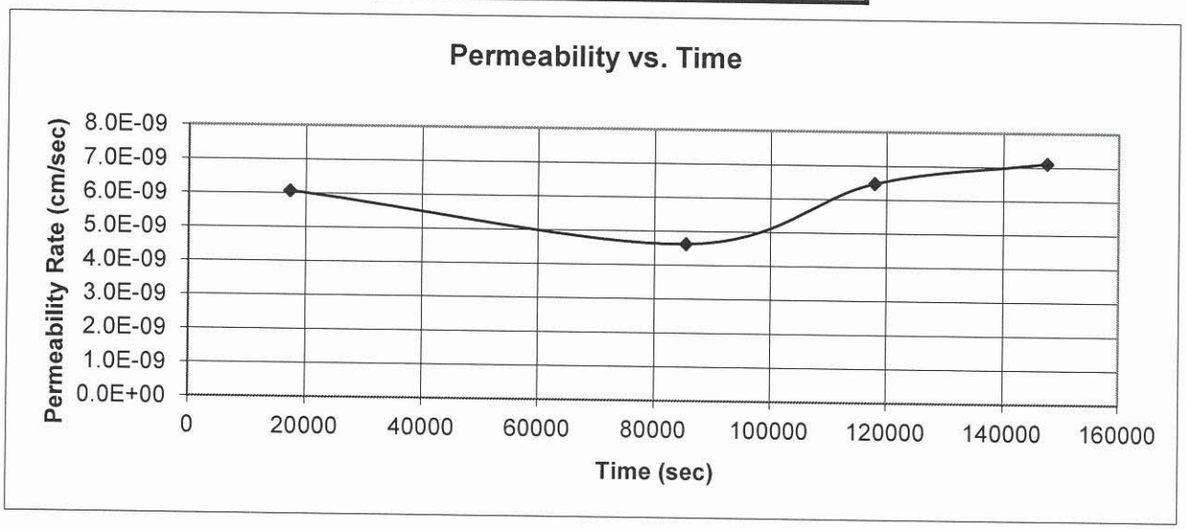
Dia. (in.)	2.82	0.00	**Length (in)**	2.93	0.00	**Weight (gr)**	533.1	0
Wet Density (pcf)	111.2		**Moisture Content (%)**	38.1		**Dry Density (pcf)**	80.6	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.0	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

6.1E-09



Reviewed By:

Corey T. Chascin, E.I.

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: TC-1-3R

Location: NA

Project Number: 6736-13-5237

Date Received: October 10, 2014

Date Completed: October 17, 2014

Sample Information:

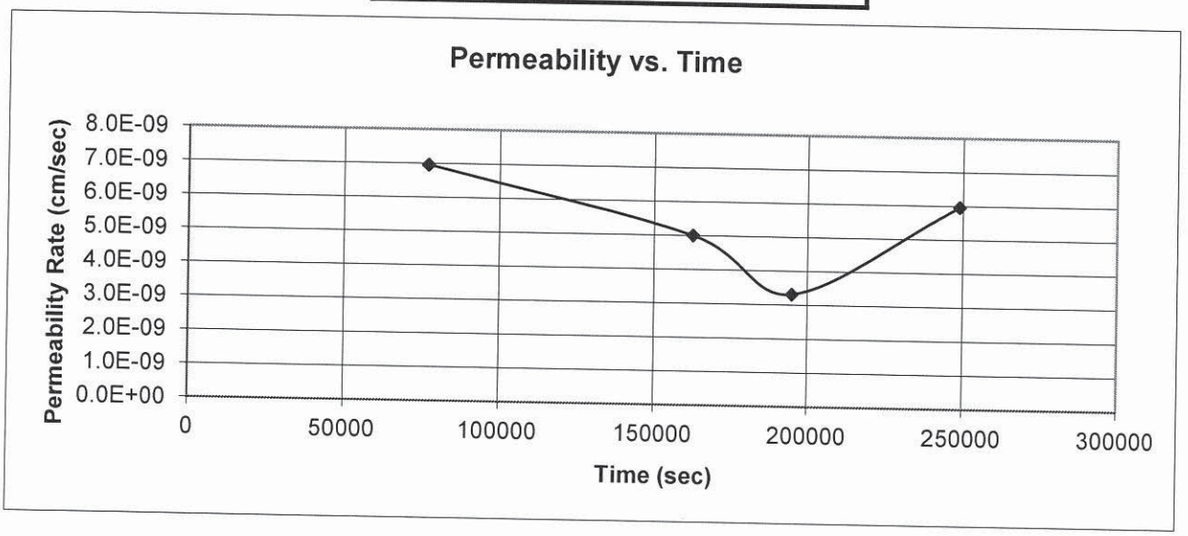
Dia. (in.)	2.80	0.00	**Length (in)**	2.94	0.00	**Weight (gr)**	504.8	0
Wet Density (pcf)	106.4		**Moisture Content (%)**		39.9	**Dry Density (pcf)**		76.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.8	**Minimum Hydraulic Gradient**	10.9
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.3E-09



Reviewed By:

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: TC-1-4R

Location: NA

Project Number: 6736-13-5237

Date Received: October 10, 2014

Date Completed: October 17, 2014

Sample Information:

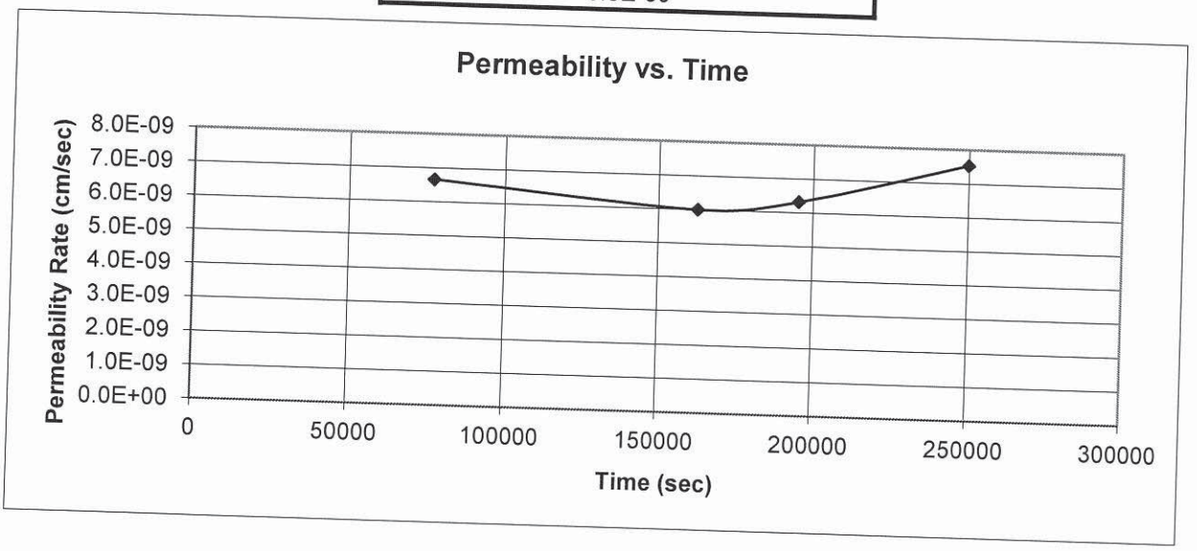
Dia. (in.)	2.84	0.00	**Length (in)**	2.91	0.00	**Weight (gr)**	519.8	0
Wet Density (pcf)	107.1		**Moisture Content (%)**		40.8	**Dry Density (pcf)**		76.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.1	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

6.6E-09



Reviewed By:

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: TC-1-5R

Location: NA

Project Number: 6736-13-5237

Date Received: October 10, 2014

Date Completed: October 17, 2014

Sample Information:

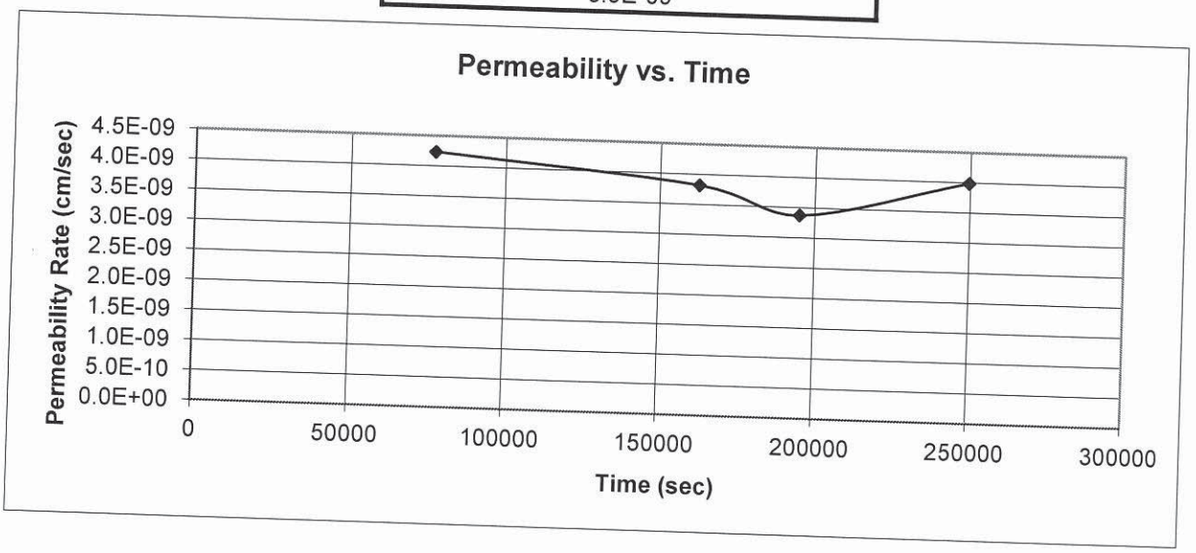
Dia. (in.)	2.75	0.00	**Length (in)**	2.89	0.00	**Weight (gr)**	492.96	0
Wet Density (pcf)	109.5		**Moisture Content (%)**	40.8		**Dry Density (pcf)**	77.8	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

3.9E-09



Reviewed By:

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: TC-2-1R

Location: NA

Project Number: 6736-13-5237

Date Received: October 10, 2014

Date Completed: October 17, 2014

Sample Information:

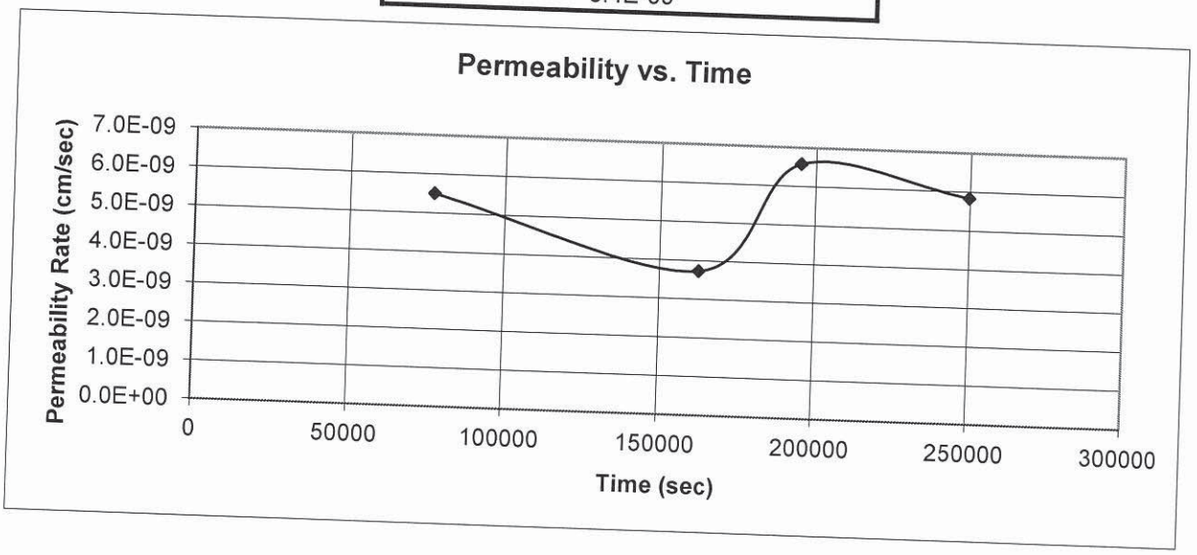
Dia. (in.)	2.78	0.00	**Length (in)**	2.88	0.00	**Weight (gr)**	496.71	0
Wet Density (pcf)	108.3		**Moisture Content (%)**		40.3	**Dry Density (pcf)**		77.2

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.4E-09



Reviewed By:

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Client Meskel & Assc

Sample Number: TC-2-2R

Location: NA

Project Number: 6736-13-5237

Date Received: October 10, 2014

Date Completed: October 17, 2014

Sample Information:

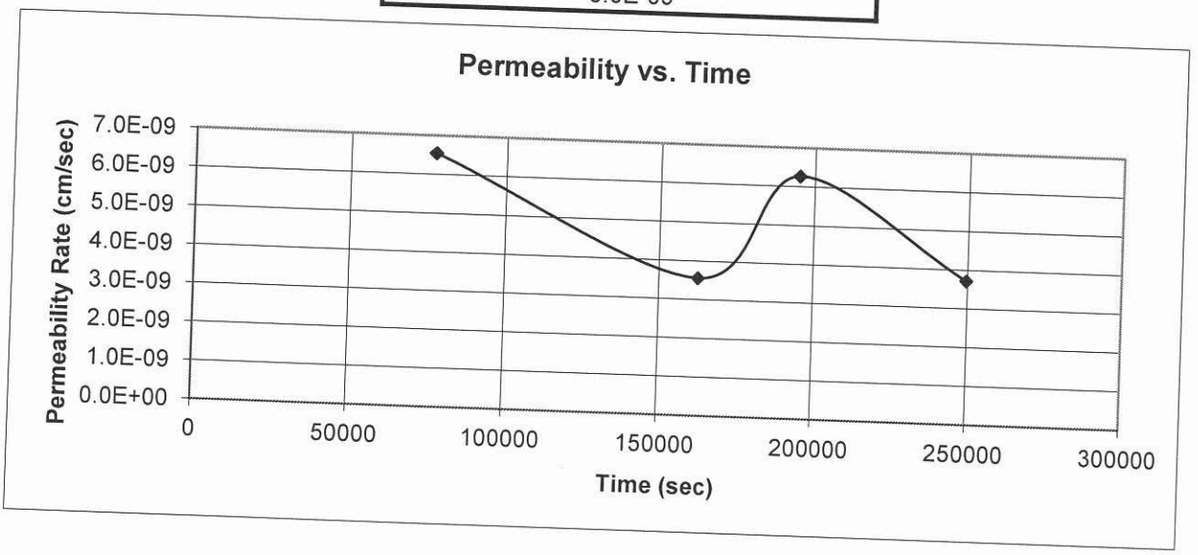
Dia. (in.)	2.85	0.00	**Length (in)**	2.88	0.00	**Weight (gr)**	524.7	0
Wet Density (pcf)	108.5		**Moisture Content (%)**		37.6	**Dry Density (pcf)**		78.9

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.3	**Minimum Hydraulic Gradient**	11.1
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.0E-09



Reviewed By:

Corey T. Chascin, E.I.

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-2-3R	**Date Completed:**	October 17, 2014
Location:	NA		

Sample Information:

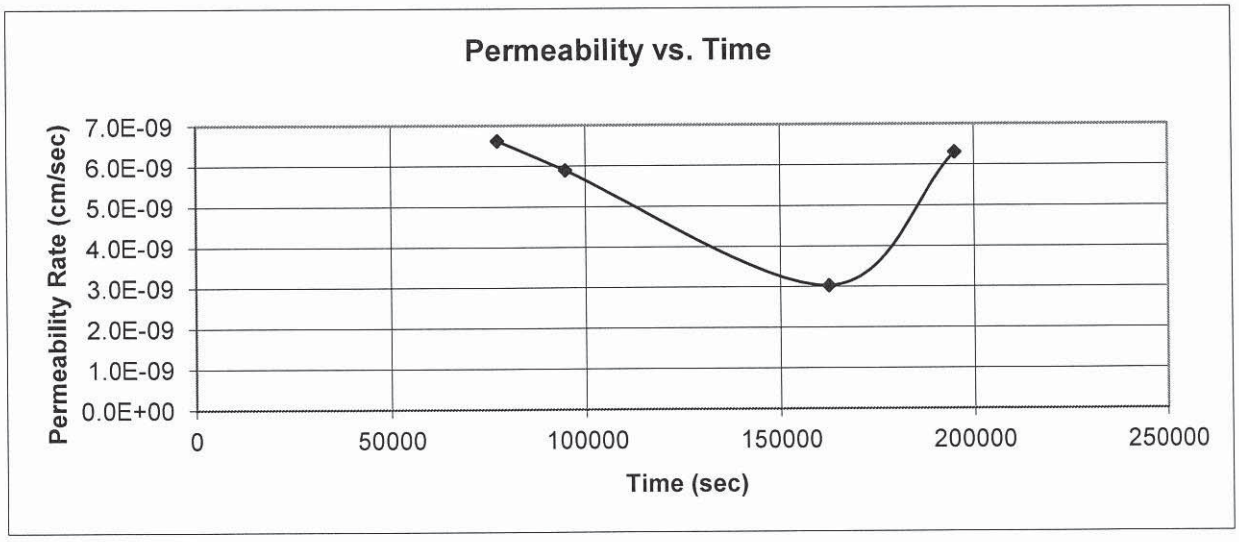
Dia. (in.)	2.84	0.00	**Length (in)**	2.90	0.00	**Weight (gr)**	510	0
Wet Density (pcf)	105.6		**Moisture Content (%)**	40.3		**Dry Density (pcf)**	75.3	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.1	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

5.5E-09



Reviewed By:

Corey T. Chascin, E.I.

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-2-4R	**Date Completed:**	October 22, 2014
Location:	NA		

Sample Information:

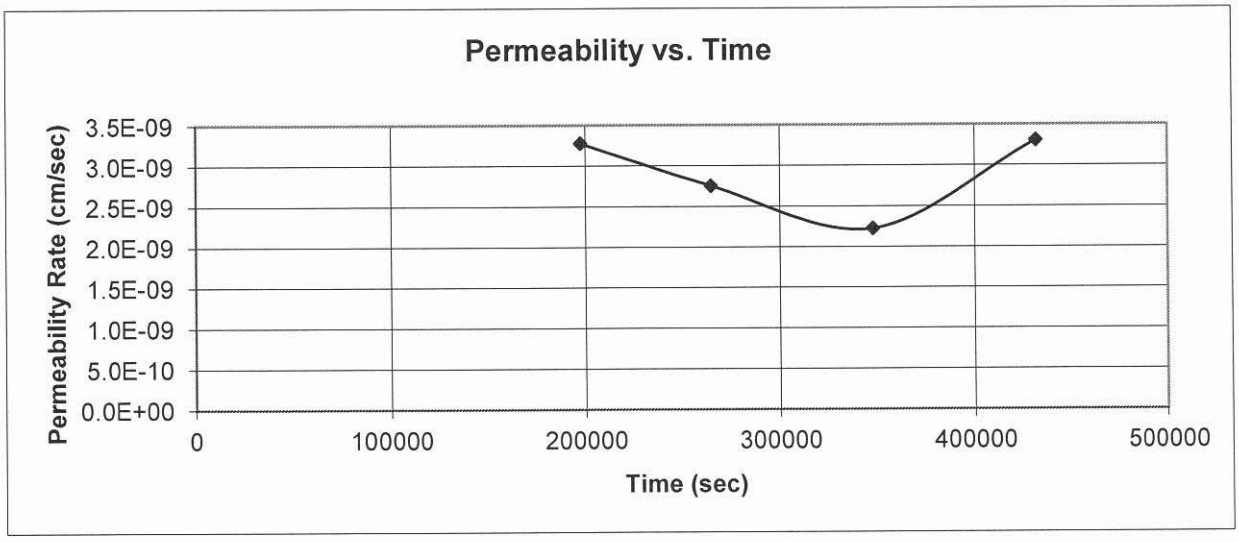
Dia. (in.)	2.94	0.00	**Length (in)**	2.81	0.00	**Weight (gr)**	519.8	0
Wet Density (pcf)	103.4		**Moisture Content (%)**	41.8		**Dry Density (pcf)**	73.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.8	**Minimum Hydraulic Gradient**	11.4
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

2.9E-09



Reviewed By:

Corey T. Chascin, E.I.

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Date Received:**	October 10, 2014
Sample Number:	TC-2-5R	**Date Completed:**	October 22, 2014
Location:	NA		

Sample Information:

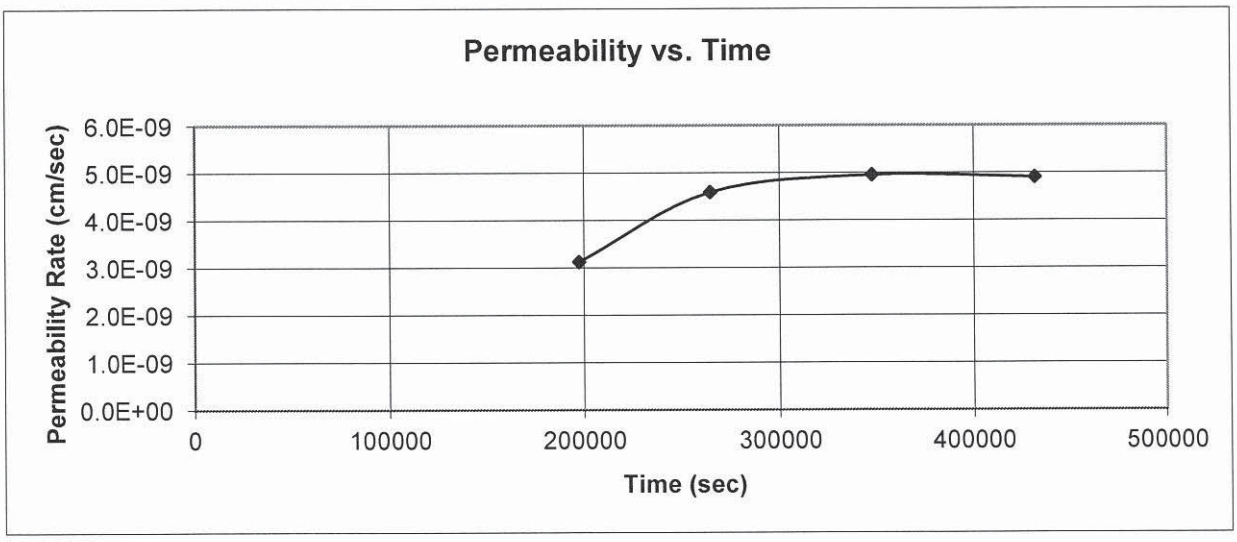
Dia. (in.)	2.84	0.00	**Length (in)**	2.90	0.00	**Weight (gr)**	528.1	0
Wet Density (pcf)	109.7		**Moisture Content (%)**	38.5		**Dry Density (pcf)**	79.2	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.1	**Minimum Hydraulic Gradient**	11.0
Maximum Consolidation Stress (psi)	7	**Minimum Consolidation Stress (psi)**	5

Permeability Rate

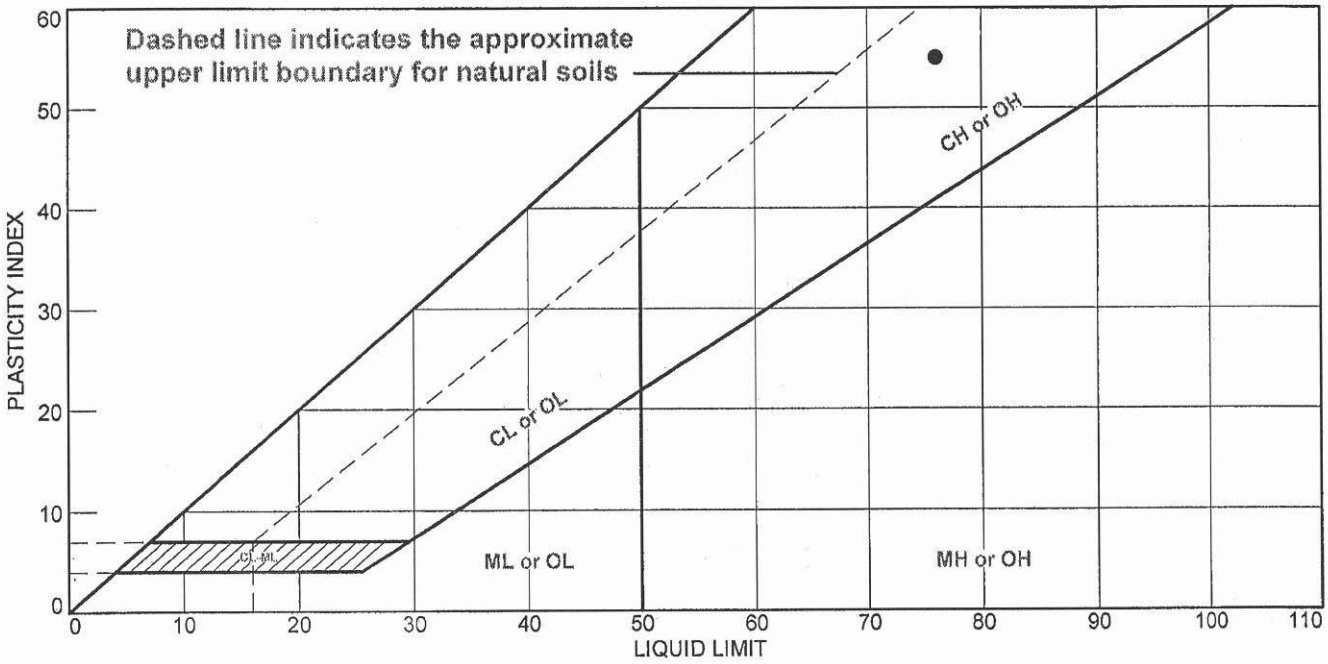
4.4E-09

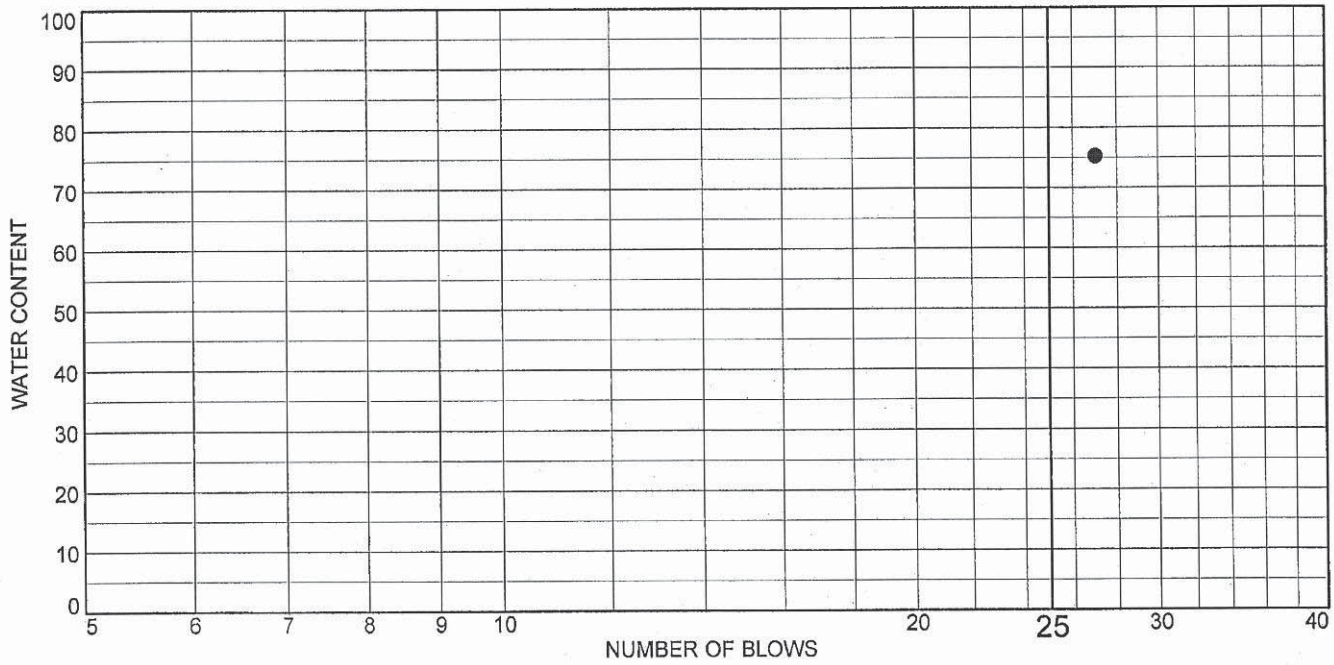


Reviewed By:

Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	76	21	55		54.5	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-1R
Sample Number: TC-1-1R

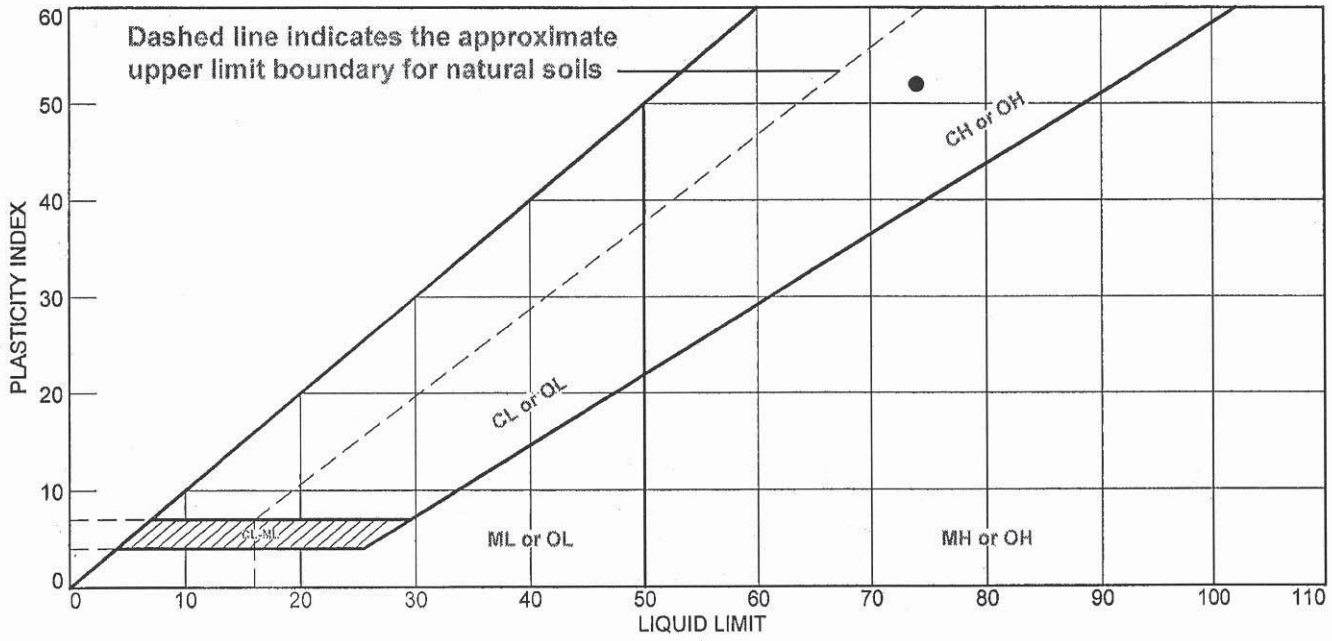
Remarks:

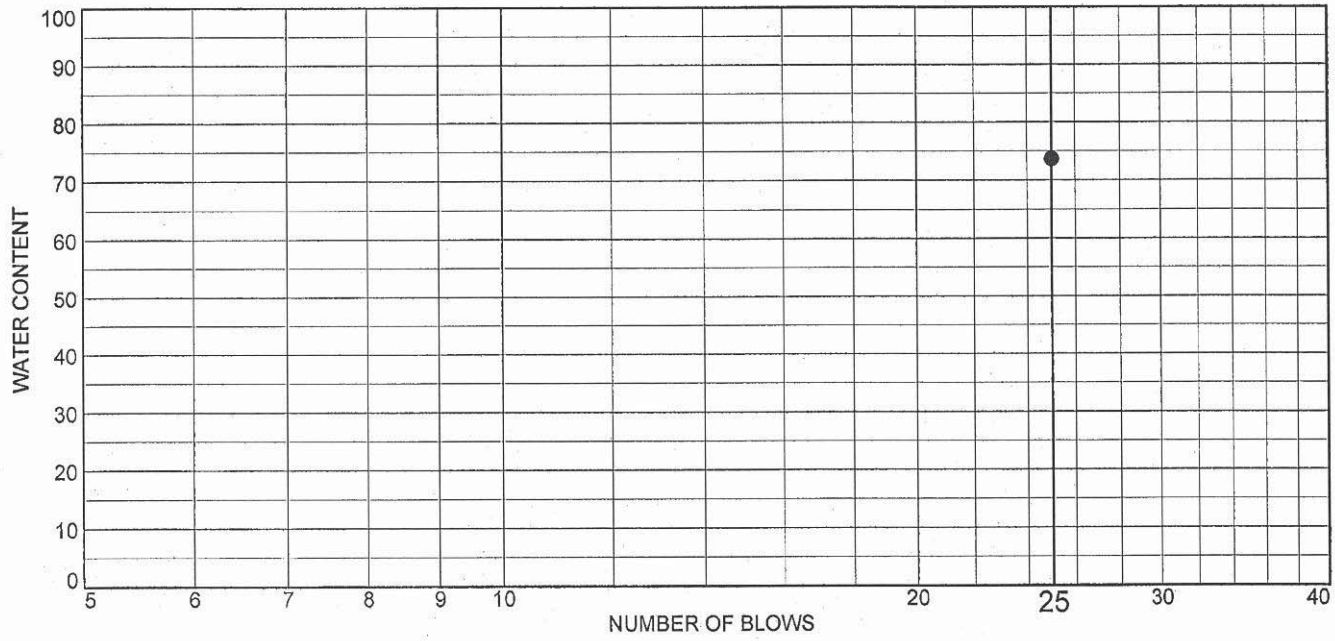
AMEC E&I

Jacksonville, Florida

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Clayey SAND	74	22	52		47.1	SC

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-2R
Sample Number: TC-1-2R

Remarks:

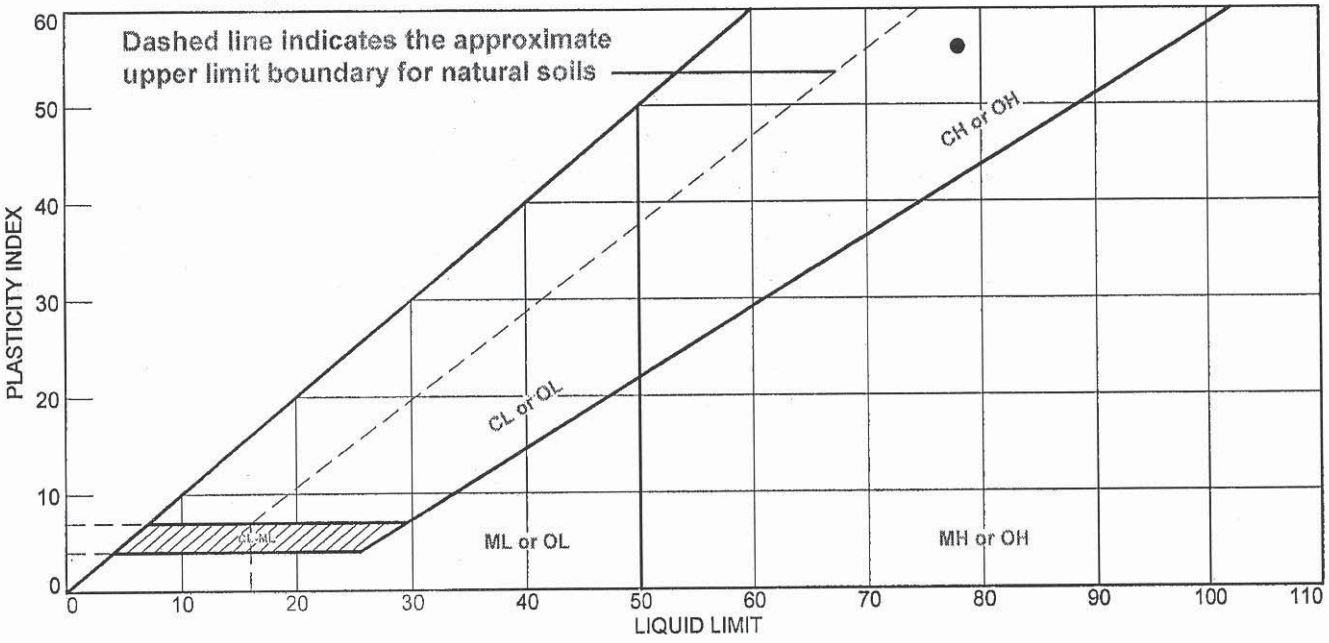
AMEC E&I

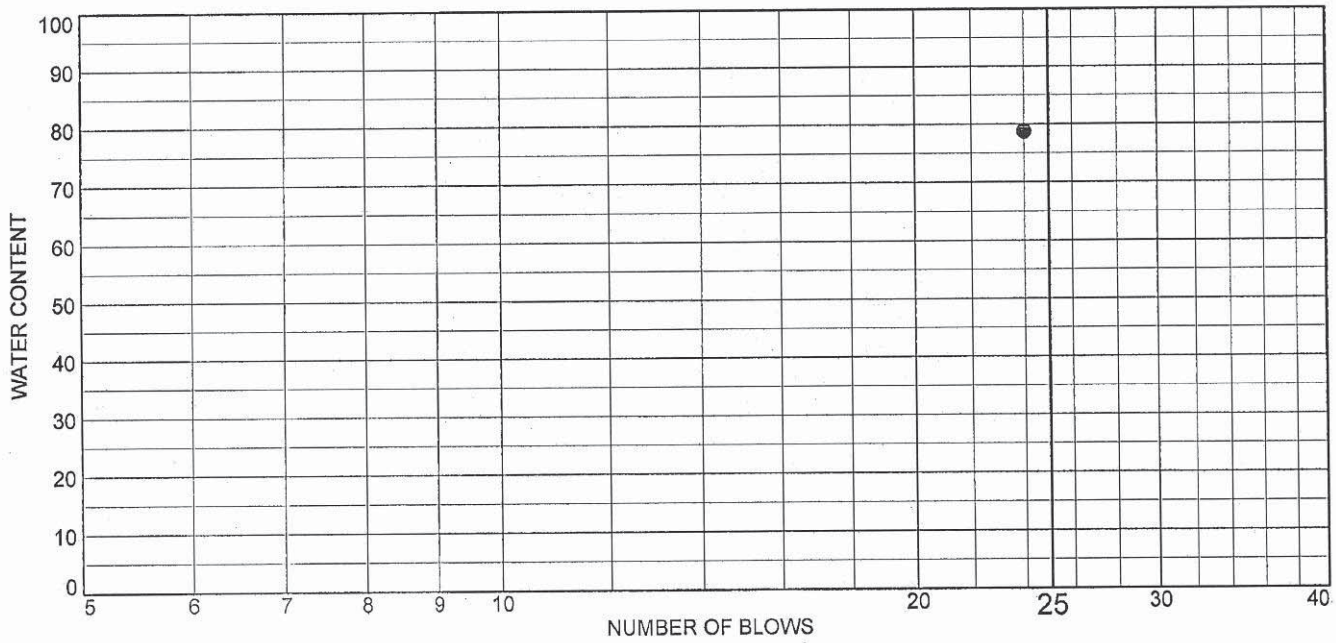
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	78	22	56		51.4	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-3R
Sample Number: TC-1-3R

Remarks:

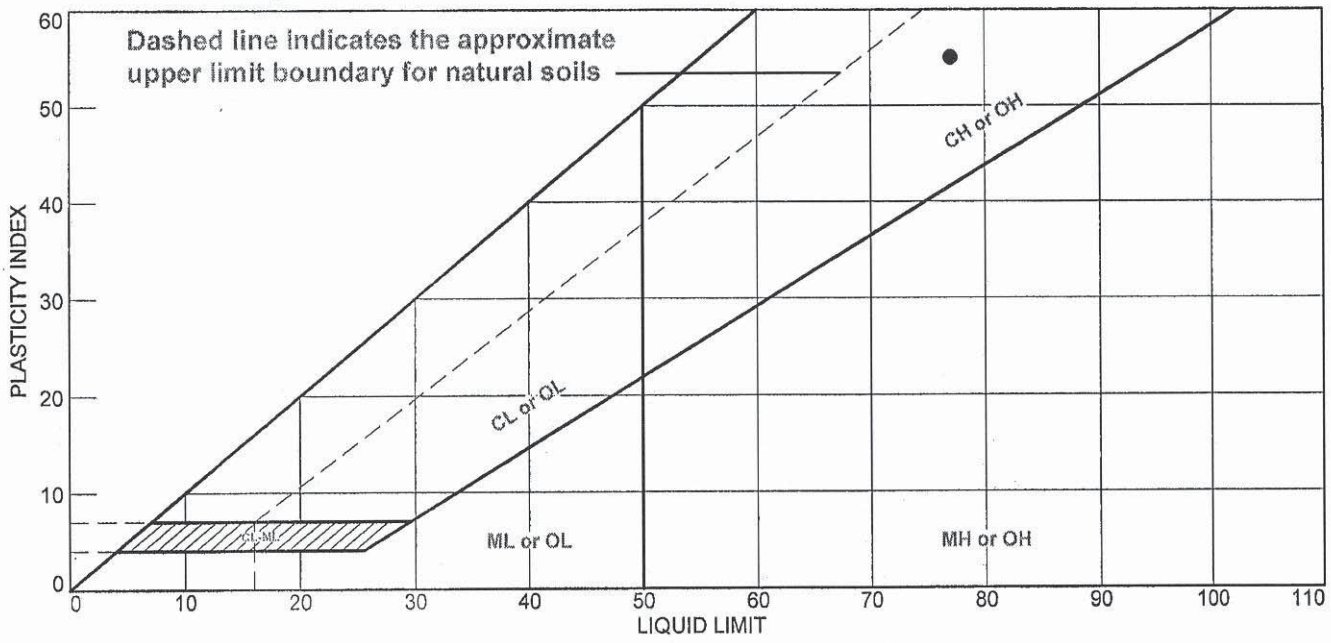
AMEC E&I

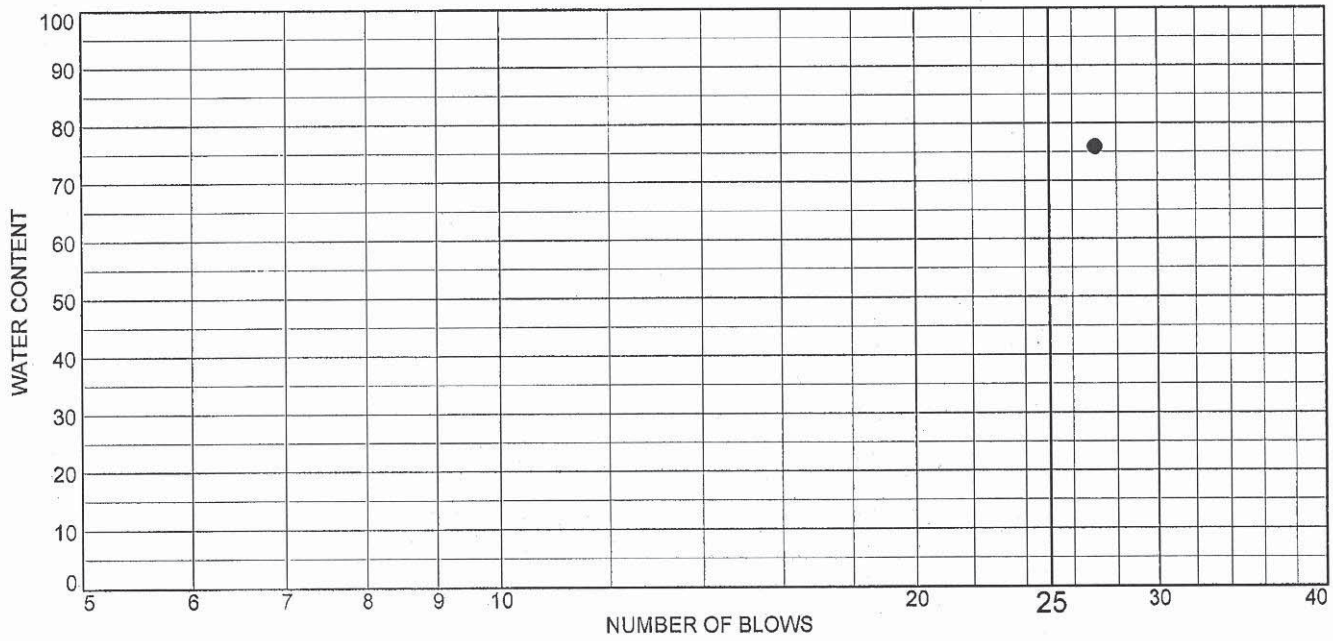
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
⊖	Brown Very Clayey SAND	77	22	55		46.8	SC

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-4R
Sample Number: TC-1-4R

Remarks:

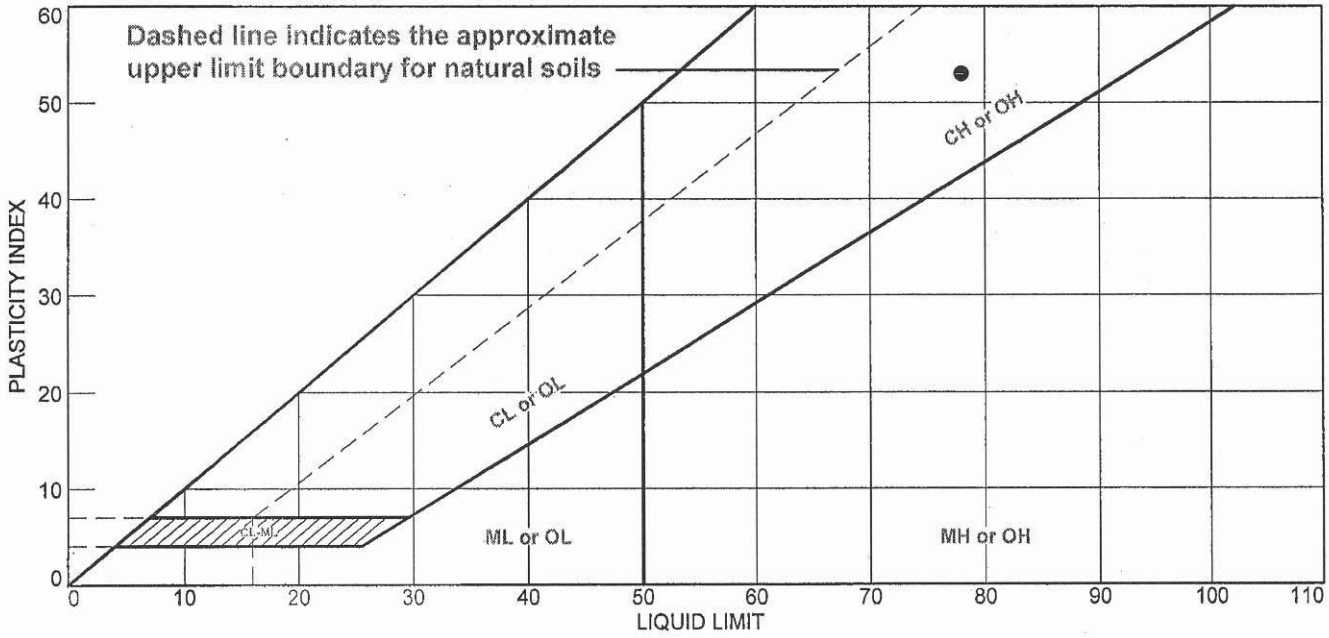
AMEC E&I

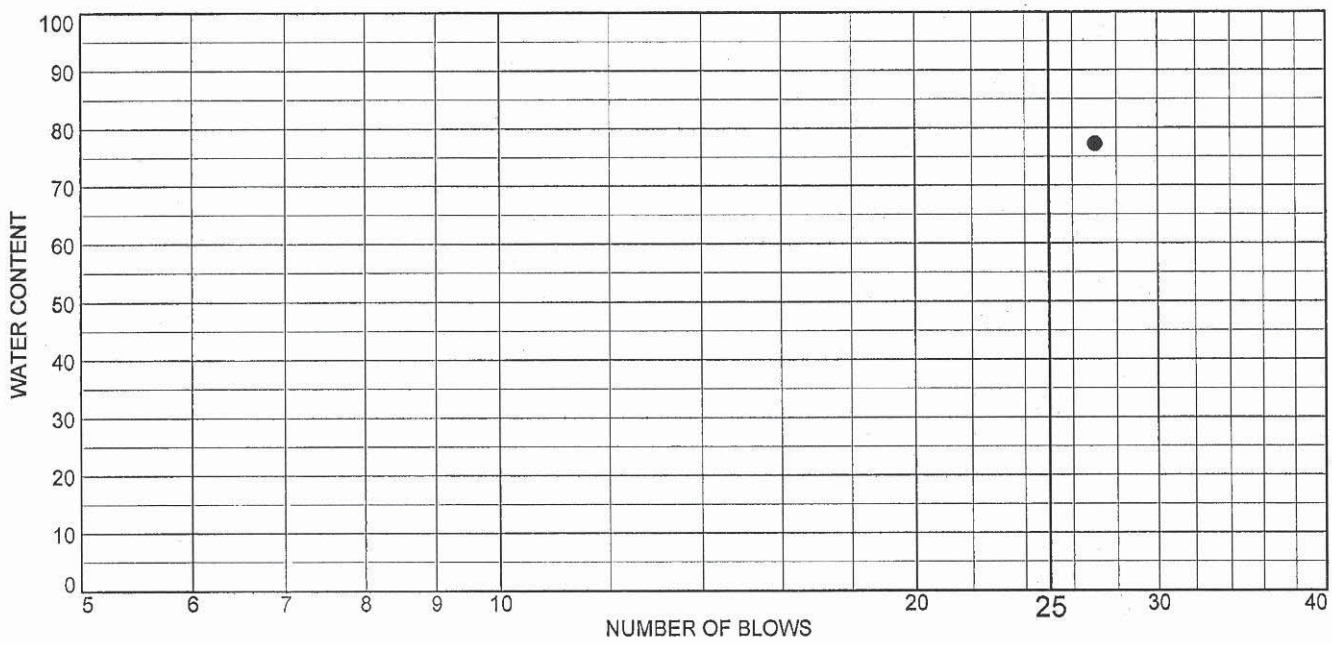
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	78	25	53		56.1	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-1-5R
Sample Number: TC-1-5R

Remarks:

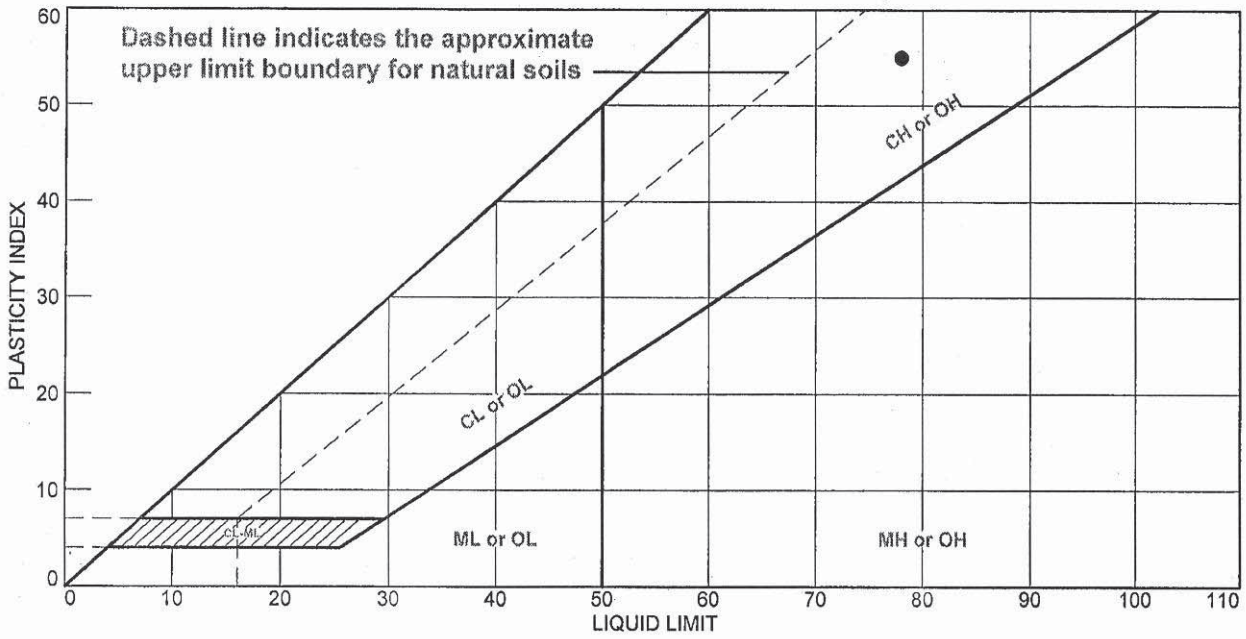
AMEC E&I

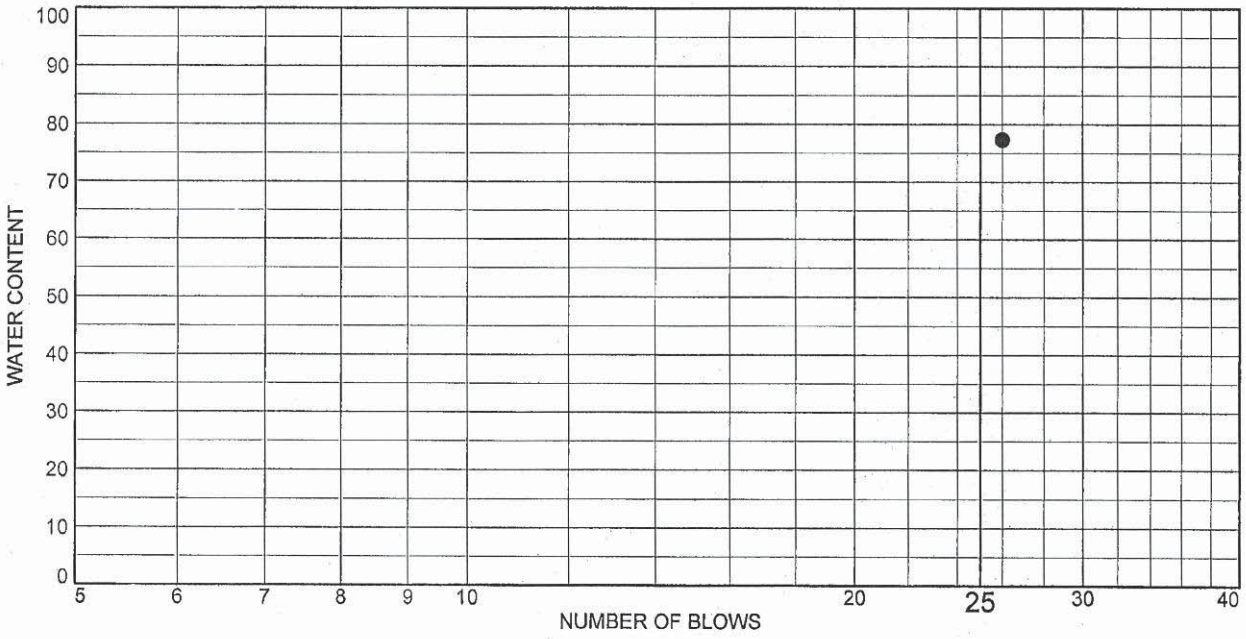
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	78	23	55		53.7	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-1R
Sample Number: TC-2-1R

AMEC E&I

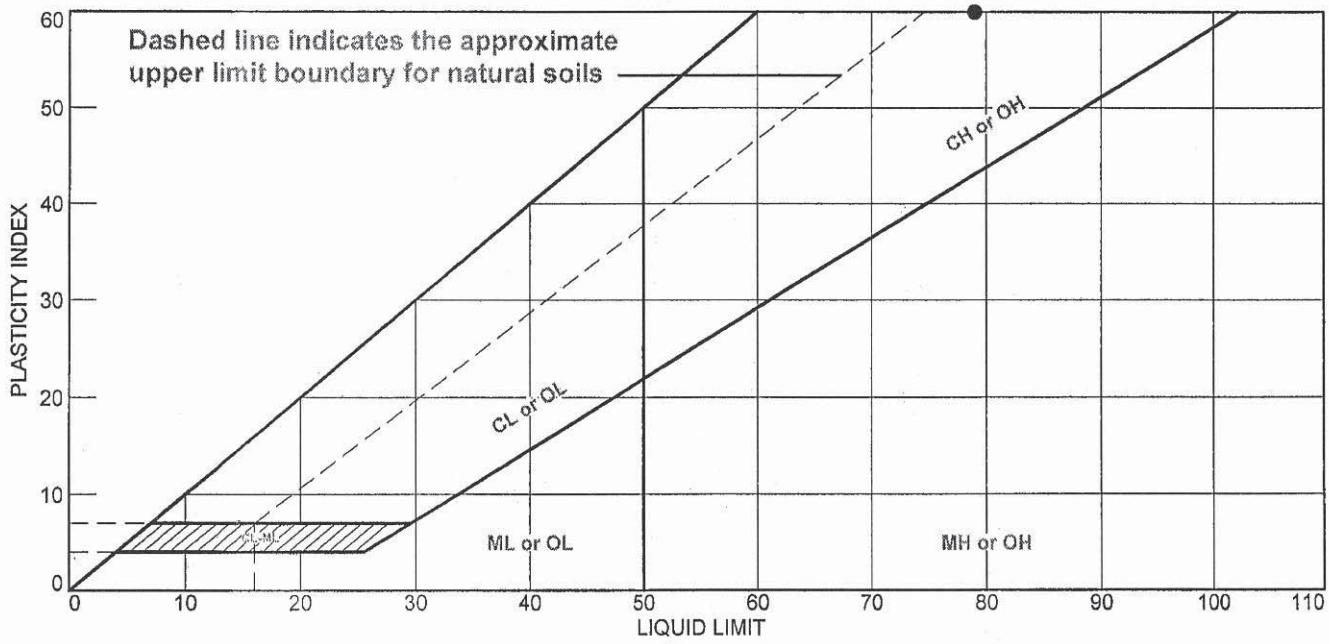
Jacksonville, Florida

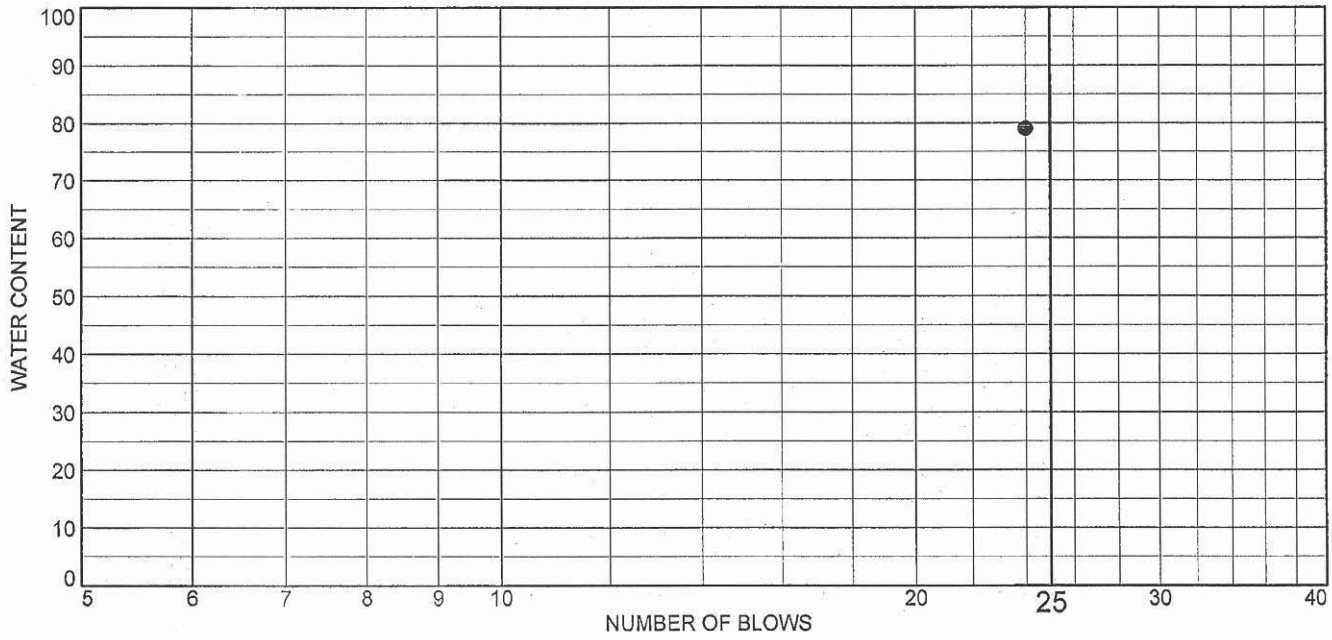
Remarks:

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	79	19	60		55.0	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-2R
Sample Number: TC-2-2R

Remarks:

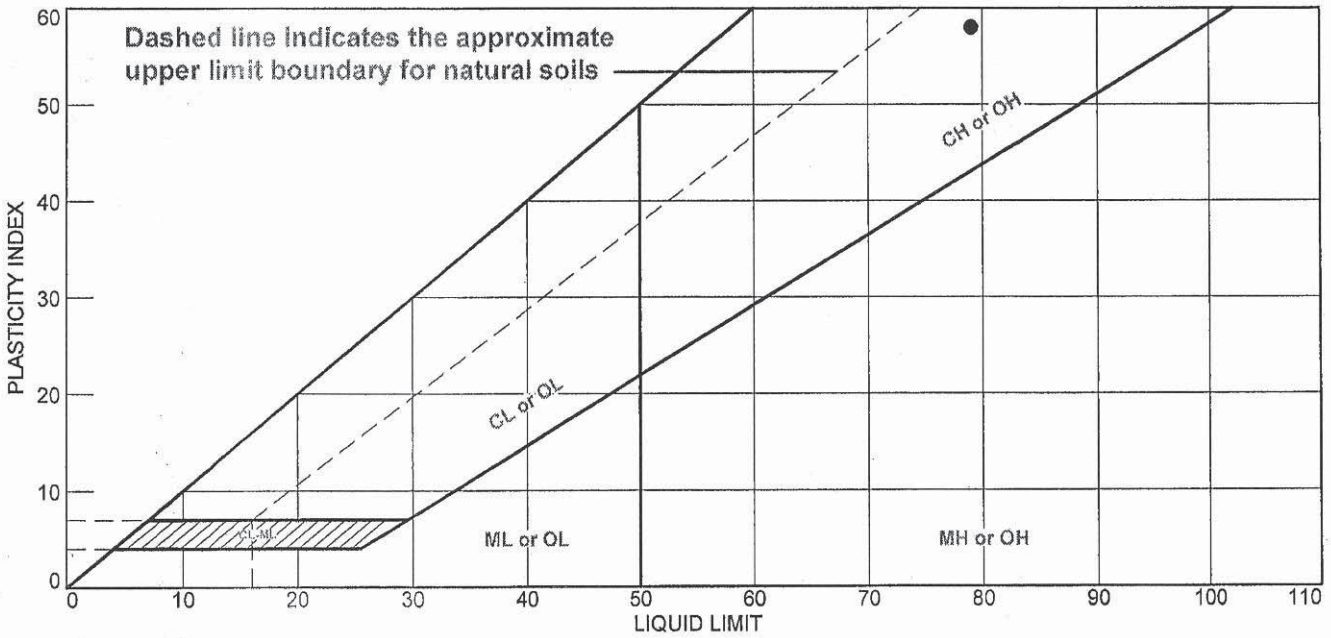
AMEC E&I

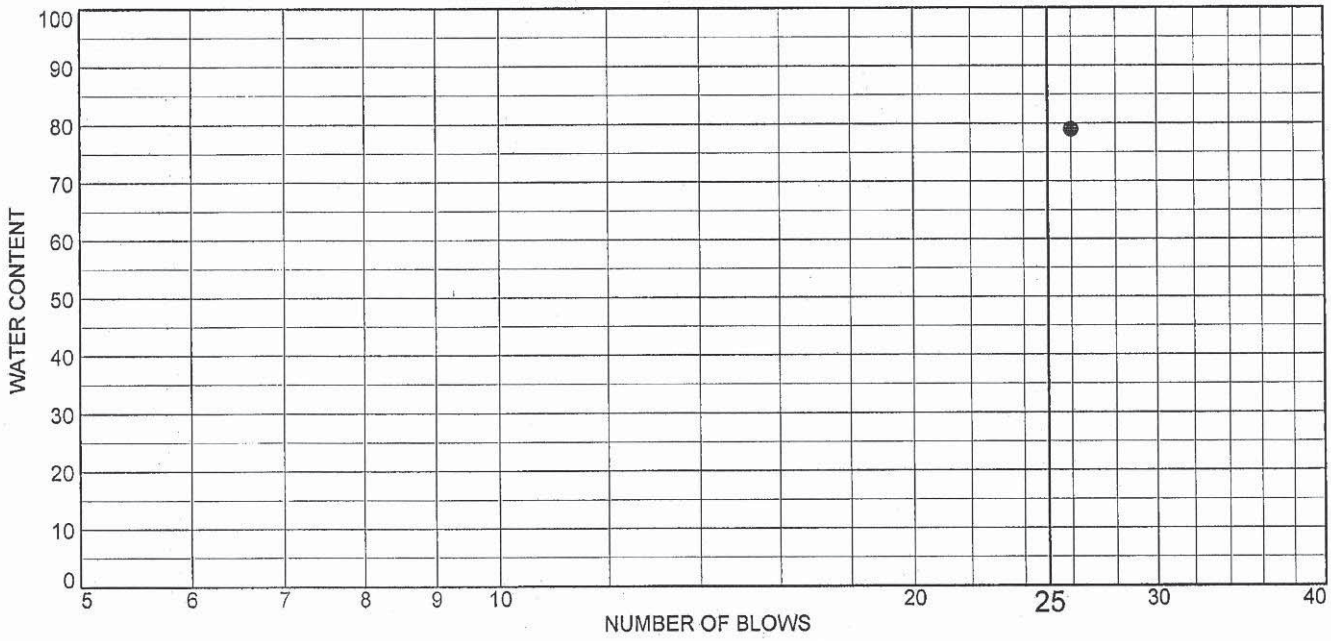
Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	79	21	58		54.3	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-3R
Sample Number: TC-2-3R

AMEC E&I

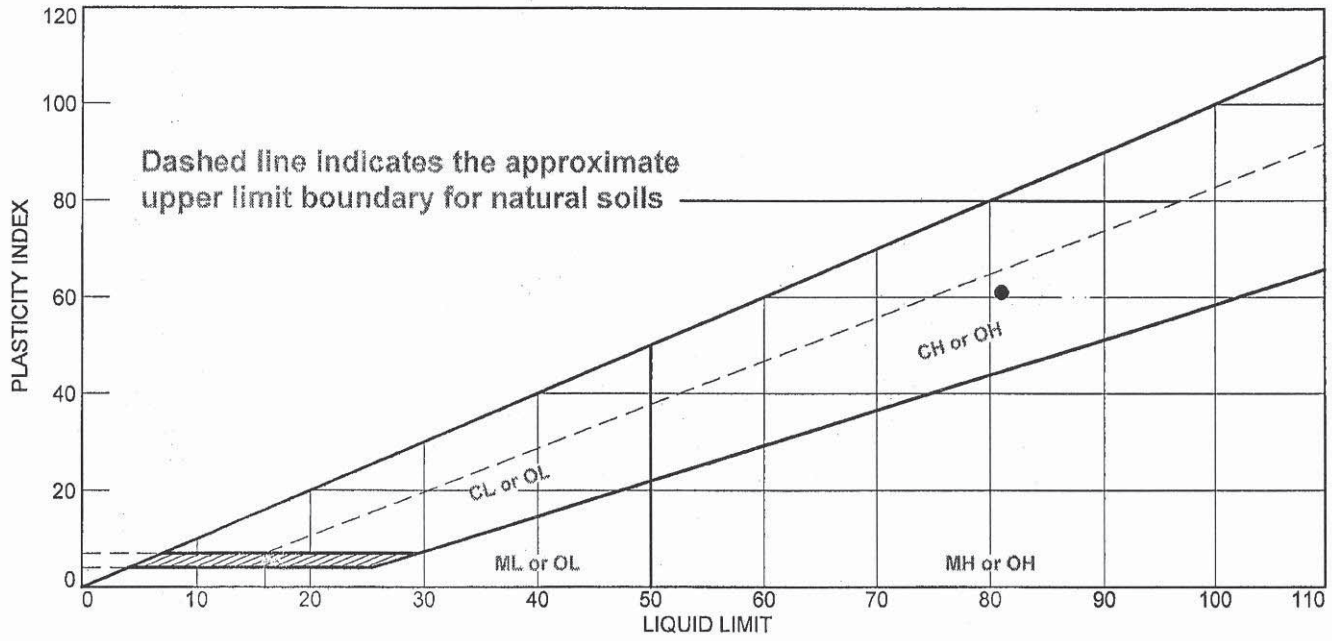
Jacksonville, Florida

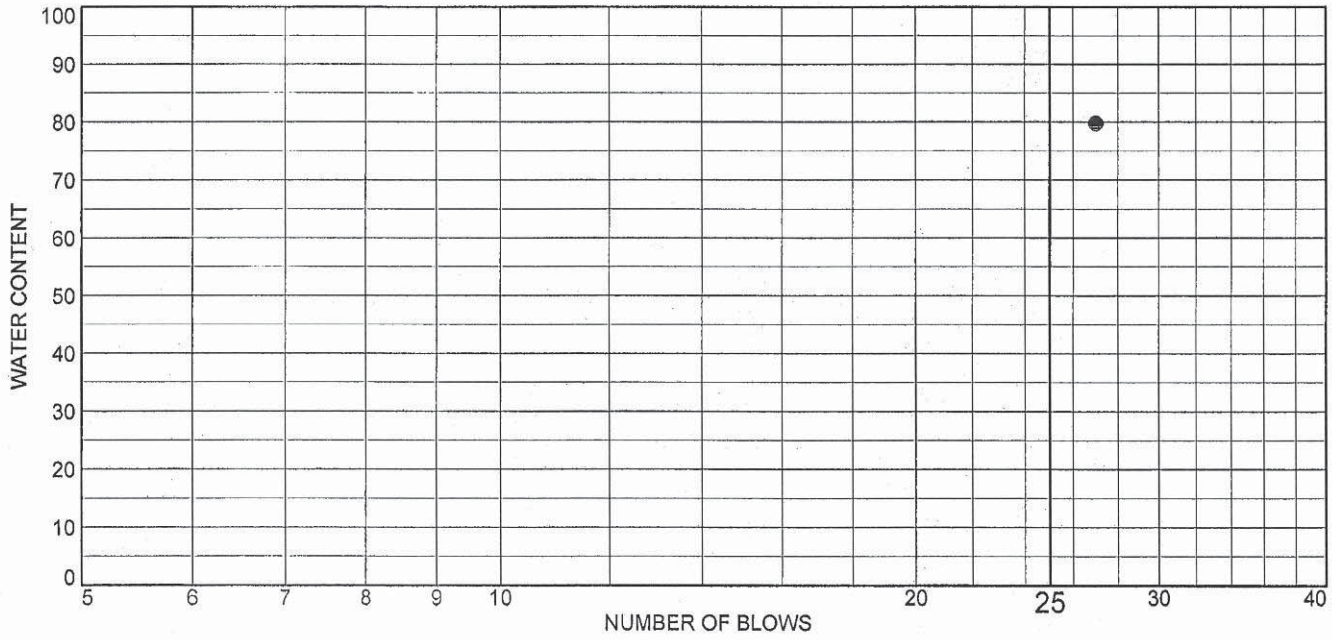
Remarks:

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	81	20	61		56.8	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-4R
Sample Number: TC-2-4R

AMEC E&I

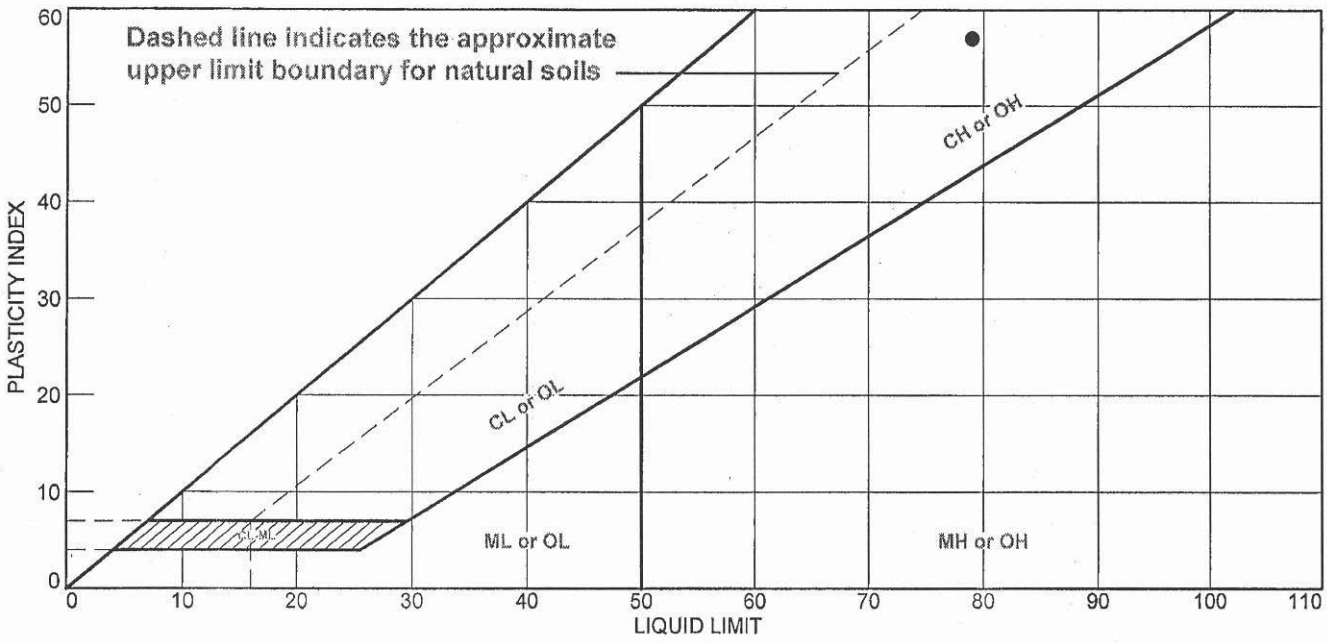
Jacksonville, Florida

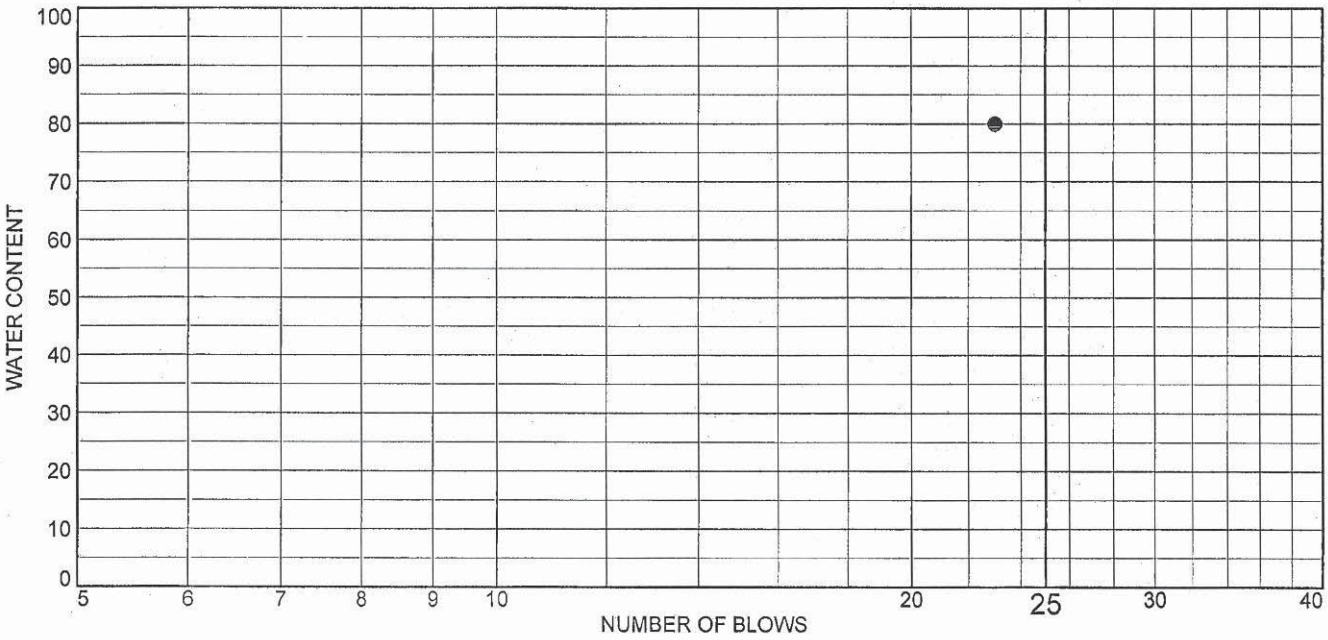
Remarks:

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Brown Very Sandy CLAY	79	22	57		55.4	CH

Project No. 6736135237 **Client:** Meskel and Associates Engineering

Project: Trailridge Landfill Phase 4

Location: TC-2-5R
Sample Number: TC-2-5R

Remarks:

AMEC E&I

Jacksonville, Florida

Figure

Tested By: A. Coleman **Checked By:** Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	Project Number:	6736-13-5237
Client	Meskel & Assc	Date Received:	April 28, 2014
Sample Number:	C2-205	Date Completed:	May 14, 2014
Location:	112+20 E / 74+60 N		

Sample Information:

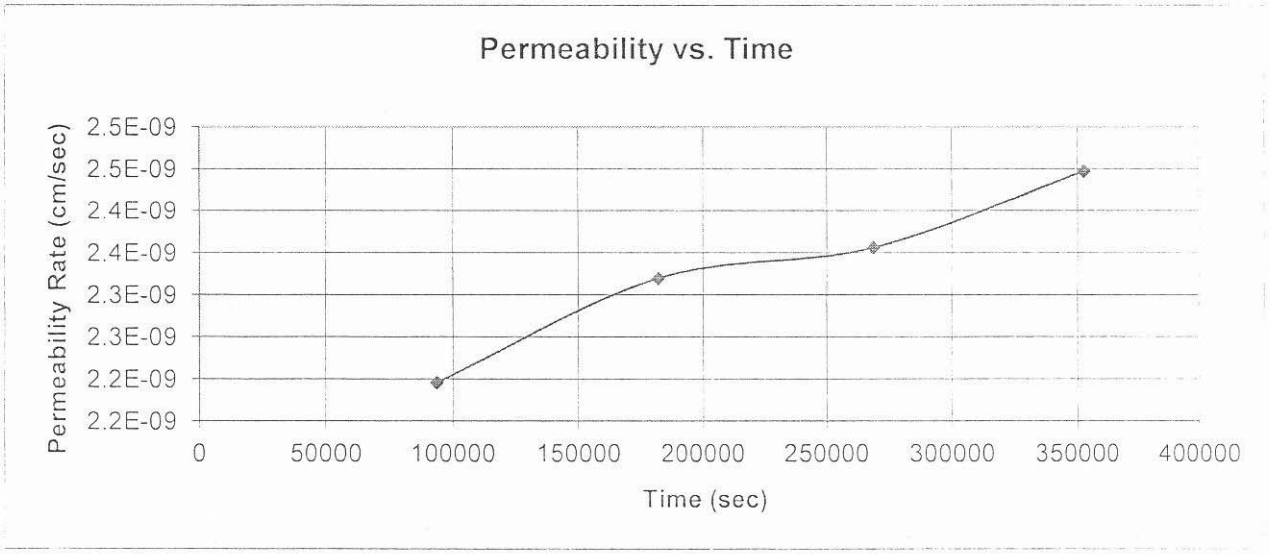
Dia. (in.)	2.81	0.00	Length (in)	2.85	0.00	Weight (gr)	495.8	0
Wet Density (pcf)	106.9		Moisture Content (%)	43.4		Dry Density (pcf)	74.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	Permeant Fluid:	De-aired water
Maximum Hydraulic Gradient:	22.6	Minimum Hydraulic Gradient	11.3
Maximum Consolidation Stress (psi)	7	Minimum Consolidation Stress (psi)	5

Permeability Rate

2.3E-09



Reviewed By:

Corey Chascin 5.21.14

Corey T. Chascin, E.I.

amec

Client: MAE

Date Received: 12/2/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	74	76	23	53	38.8	56.8
C-2	70	79	25	54	34.0	57.0
C-1	80	NT	NT	NT	34.8	55.1
C-2	79	NT	NT	NT	37.3	56.8
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey Chascin 12.20.13

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge
Project Number: 6736-13-5237

Client Meskel & Assc
Dated Received: January 11, 2014

Sample Number: C-2 82
Date Completed: January 20, 2014

Sample Information: Initial / Final

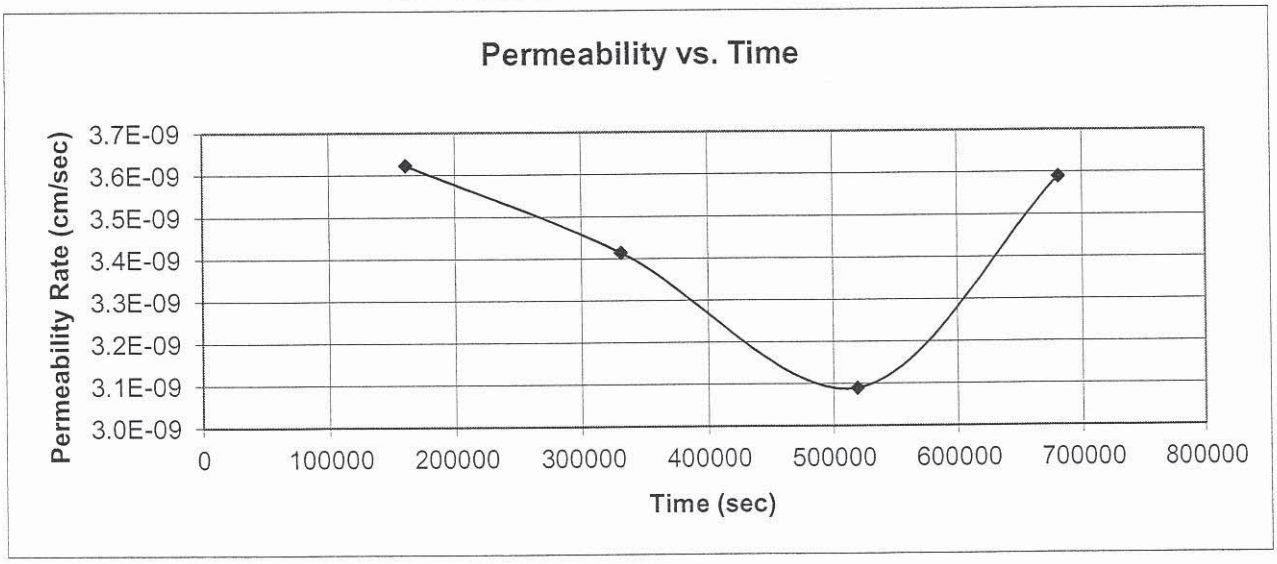
Dia. (in.)	2.83	2.83	**Length (in)**	5.43	5.57	**Weight (gr)**	1003.4	1006.45
Wet Density (pcf)	112.1		**Moisture Content (%)**	43.9		**Dry Density (pcf)**	77.9	
Final WD (pcf)	109.9		**Final Moisture (%)**	42.6		**Final DD (pcf)**	77.1	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	11.8	**Minimum Hydraulic Gradient**	5.9
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.4E-09



Reviewed By:

Corey Chascin 1.22.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge | **Project Number:** 6736-13-5237

Client Meskel & Assc | **Dated Received:** December 31, 2013

Sample Number: C-2 89 | **Date Completed:** January 10, 2014

Sample Information: Initial / Final

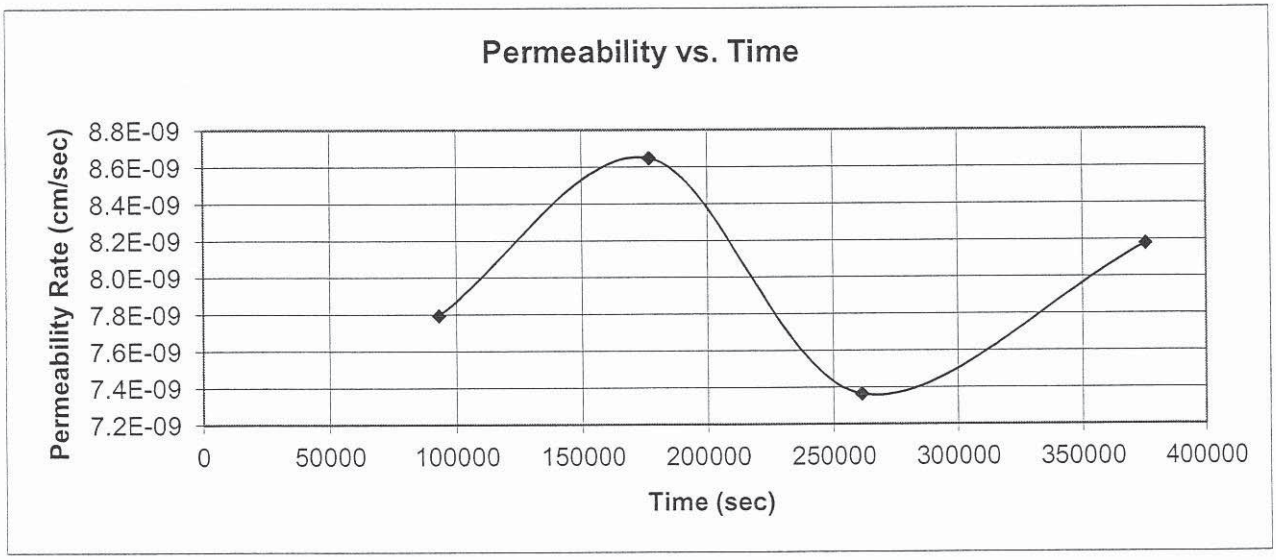
Dia. (in.)	2.84	2.87	**Length (in)**	2.92	2.65	**Weight (gr)**	525.1	491.99
Wet Density (pcf)	108.2		**Moisture Content (%)**	36.8		**Dry Density (pcf)**	79.1	
Final WD (pcf)	109.7		**Final Moisture (%)**	42.6		**Final DD (pcf)**	77.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.9	**Minimum Hydraulic Gradient**	10.9
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

8.0E-09



Reviewed By:

Corey Chascin 1.22.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge
Project Number: 6736-13-5237
Client Meskel & Assc
Dated Received: December 31, 2013
Sample Number: C-1 92
Date Completed: January 13, 2014

Sample Information: Initial / Final

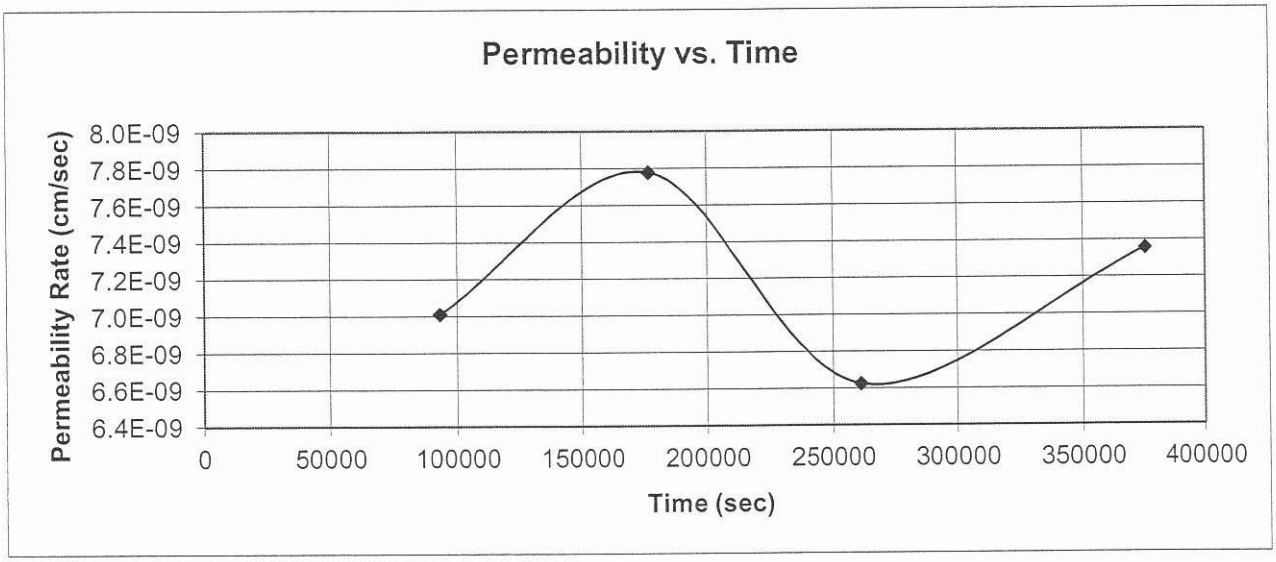
Dia. (in.)	2.86	2.84	**Length (in)**	2.67	2.88	**Weight (gr)**	484.3	536.43
Wet Density (pcf)	107.6		**Moisture Content (%)**		41.7	**Dry Density (pcf)**		75.9
Final WD (pcf)	112.2		**Final Moisture (%)**		38.3	**Final DD (pcf)**		81.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	24.0	**Minimum Hydraulic Gradient**	12.0
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.2E-09



Reviewed By:

Corey Chascin 1.22.14

Corey T. Chascin, E.I.

amec

Client: MAE

Date Received: 12/31/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	90	NT	NT	NT	50.4	63.0
C-1	92	89	24	64	41.7	56.6
C-2	81	NT	NT	NT	43.1	55.5
C-2	89	90	24	66	36.8	55.0
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey Chascin 1.22.14

Corey T. Chascin, E.I.

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge
Project Number: 6736-13-5237

Client Meskel & Assc
Dated Received: January 11, 2014

Sample Number: C-1 88
Date Completed: January 20, 2014

Sample Information: Initial / Final

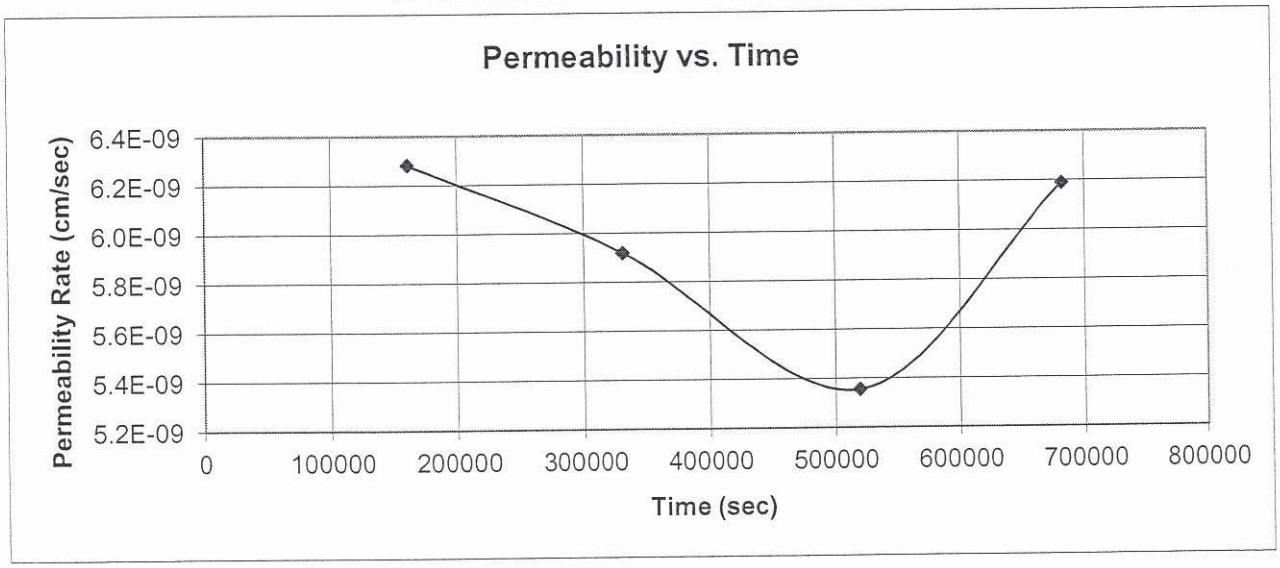
Dia. (in.)	2.81	2.78	**Length (in)**	5.60	5.55	**Weight (gr)**	990.8	996.1
Wet Density (pcf)	108.4		**Moisture Content (%)**		42.3	**Dry Density (pcf)**		76.2
Final WD (pcf)	112.4		**Final Moisture (%)**		42.3	**Final DD (pcf)**		79.0

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	11.5	**Minimum Hydraulic Gradient**	5.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.9E-09



Reviewed By:

Corey Chascin 1.22.14

Corey T. Chascin, E.I.

amec

Client: MAE

Date Received: 1/9/2014

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	88	88	25	63	42.6	53.1
C-1	91	NT	NT	NT	42.7	54.9
C-2	82	83	24	59	41.9	53.9
C-2	87	NT	NT	NT	43.9	54.3
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chaffin 1.22.14

Corey T. Chaffin, E.I.

REPORT OF SOIL PERMEABILITY TESTING

Project:	TRLF Pase No. 4	**Project Number:**	6736-13-5237
Client	Meskel	**Date Completed:**	January 20, 2014
Sample Number:	Underdrain Production No. 3	**Depth:**	NA

The sample was remolded to 100% Modified Effort of 106.3 at a Optimum Moisture of 13.0%. The compacted sample was tested for permeability and the results are outlined below.

Sample Information:

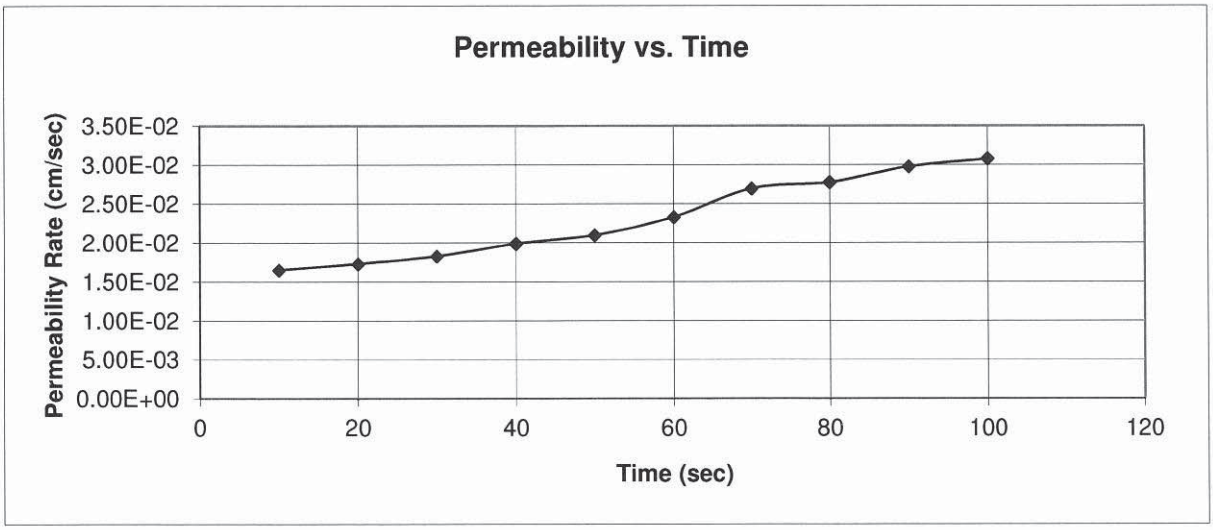
Dia. (in.)	2.97	**Length (in)**	5.06	**Weight (gr)**	1110.4
Wet Density (pcf)	120.7	**Moisture Content (%)**	13.1	**Dry Density (pcf)**	106.8

Test Parameters

Test Method Used:	ASTM D-2434	**Permeant Fluid:**	Tap water

Permeability Rate

2.31E-02



Reviewed By:

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge | **Project Number:** 6736-13-5237

Client Meskel & Assc | **Dated Received:** December 23, 2013

Sample Number: C-1 81 | **Date Completed:** December 30, 2013

Sample Information: Initial / Final

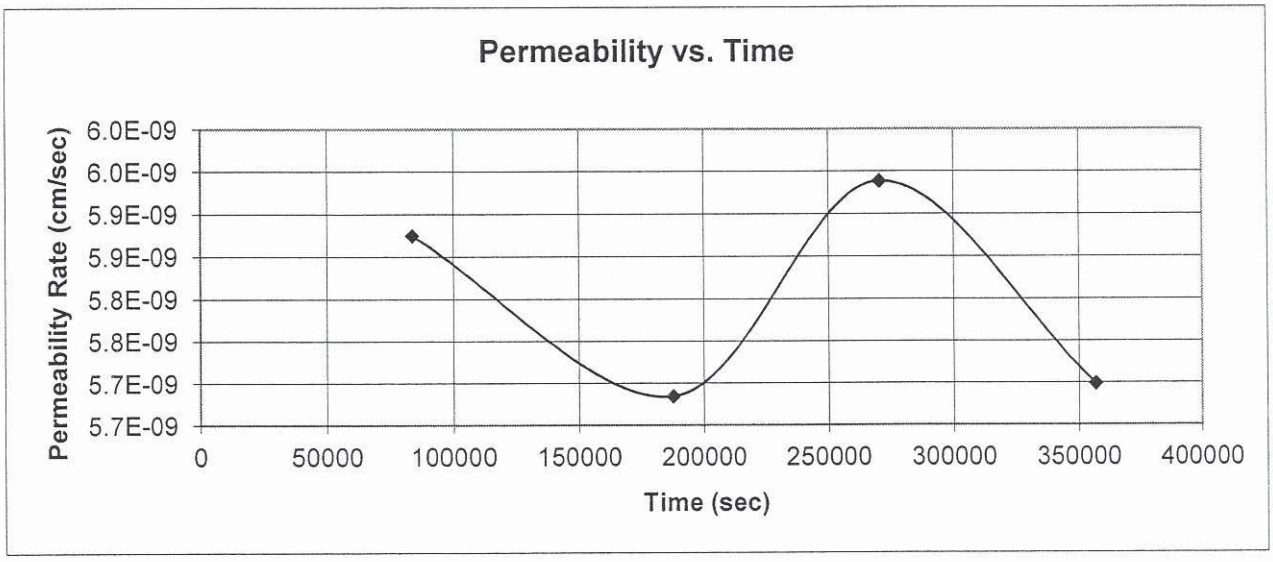
Dia. (in.)	2.80	2.81	**Length (in)**	2.70	2.72	**Weight (gr)**	485.82	492.7
Wet Density (pcf)	111.1		**Moisture Content (%)**	36.1		**Dry Density (pcf)**	81.6	
Final WD (pcf)	111.2		**Final Moisture (%)**	35.7		**Final DD (pcf)**	82.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	23.7	**Minimum Hydraulic Gradient**	11.8
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.8E-09



Reviewed By:

Corey Chascin 1.2.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge | **Project Number:** 6736-13-5237

Client Meskel & Assc | **Dated Received:** December 23, 2013

Sample Number: C-1 77 | **Date Completed:** December 30, 2013

Sample Information: Initial / Final

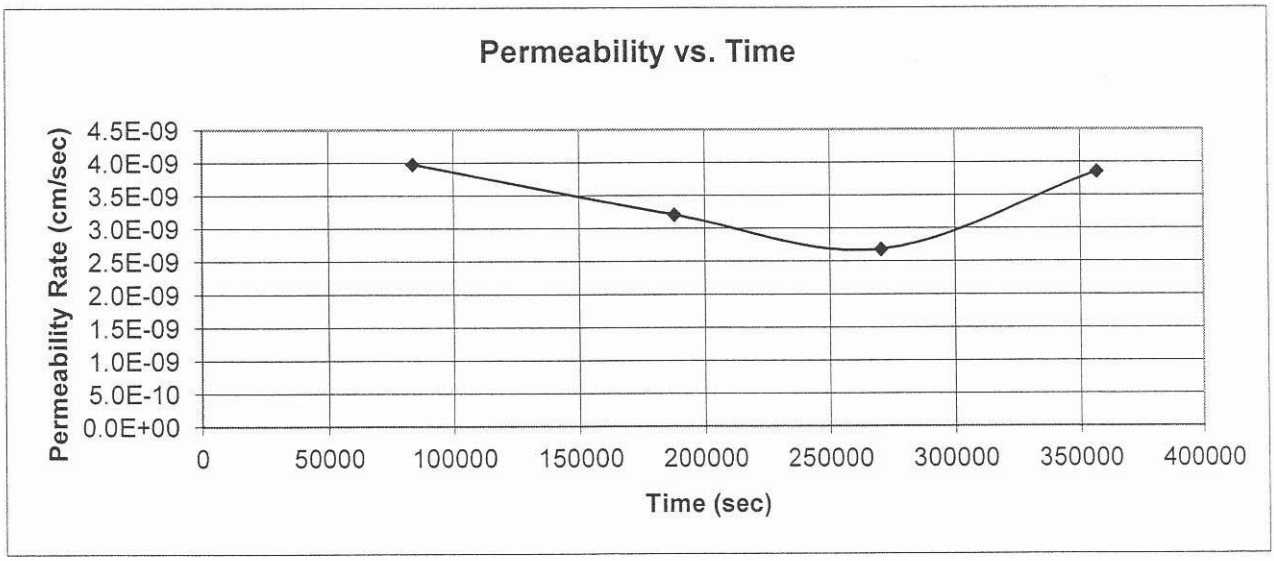
Dia. (in.)	2.84	2.81	**Length (in)**	3.14	3.16	**Weight (gr)**	572.6	575.1
Wet Density (pcf)	109.5		**Moisture Content (%)**	40.4		**Dry Density (pcf)**	78.0	
Final WD (pcf)	111.8		**Final Moisture (%)**	31.1		**Final DD (pcf)**	85.3	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.5	**Minimum Hydraulic Gradient**	10.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

3.4E-09



Reviewed By:

Corey T. Chascin 1.2.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge

Project Number: 6736-13-5237

Client Meskel & Assc

Dated Received: December 23, 2013

Sample Number: C-2 165

Date Completed: December 30, 2013

Sample Information: Initial / Final

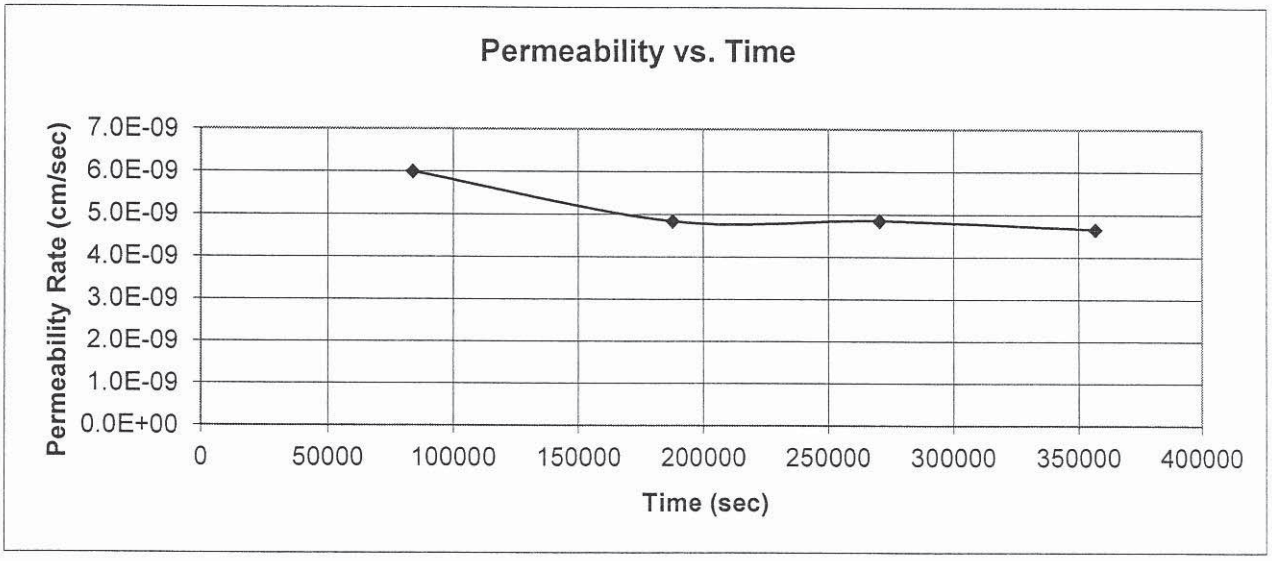
Dia. (in.)	2.84	2.83	**Length (in)**	2.84	2.84	**Weight (gr)**	508	514.5
Wet Density (pcf)	107.9		**Moisture Content (%)**	43.6		**Dry Density (pcf)**	75.1	
Final WD (pcf)	109.5		**Final Moisture (%)**	35.3		**Final DD (pcf)**	80.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.6	**Minimum Hydraulic Gradient**	11.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

5.1E-09



Reviewed By:

Corey Chascin 1.2.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Dated Received:** December 23, 2013

Sample Number: C-2 163 **Date Completed:** December 29, 2013

Sample Information: Initial / Final

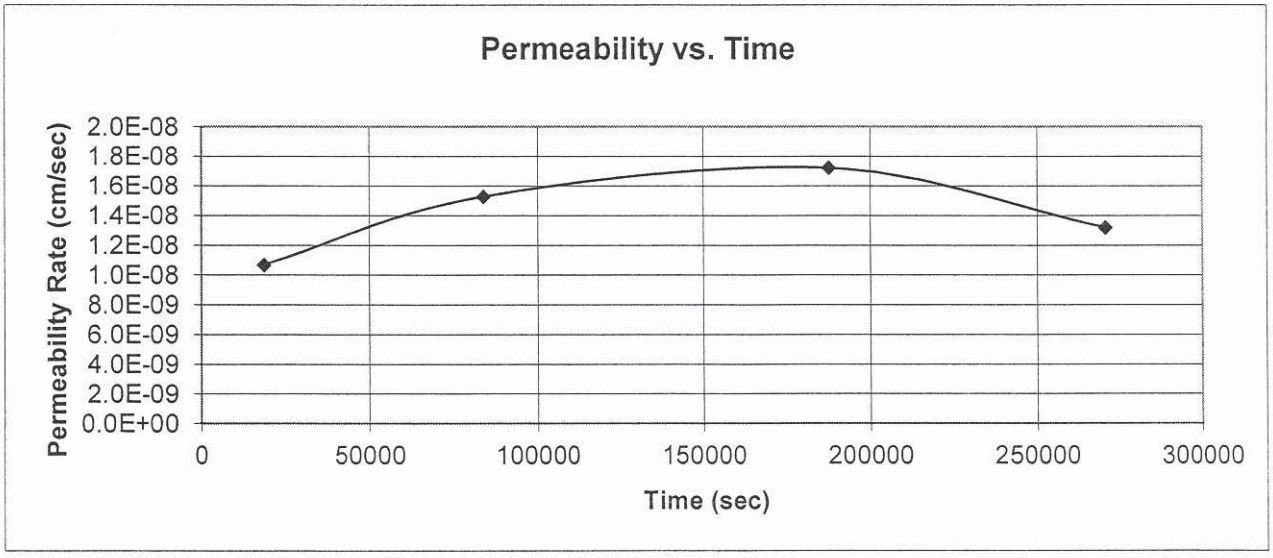
Dia. (in.)	2.86	2.87	**Length (in)**	2.86	2.87	**Weight (gr)**	525.8	531
Wet Density (pcf)	109.1		**Moisture Content (%)**		41.6	**Dry Density (pcf)**		77.0
Final WD (pcf)	108.7		**Final Moisture (%)**		34.1	**Final DD (pcf)**		81.1

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.5	**Minimum Hydraulic Gradient**	11.3
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

1.4E-08



Reviewed By:

Corey T. Chascin 1.2.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Dated Received:** December 23, 2013

Sample Number: C-1 172 **Date Completed:** December 30, 2013

Sample Information: Initial / Final

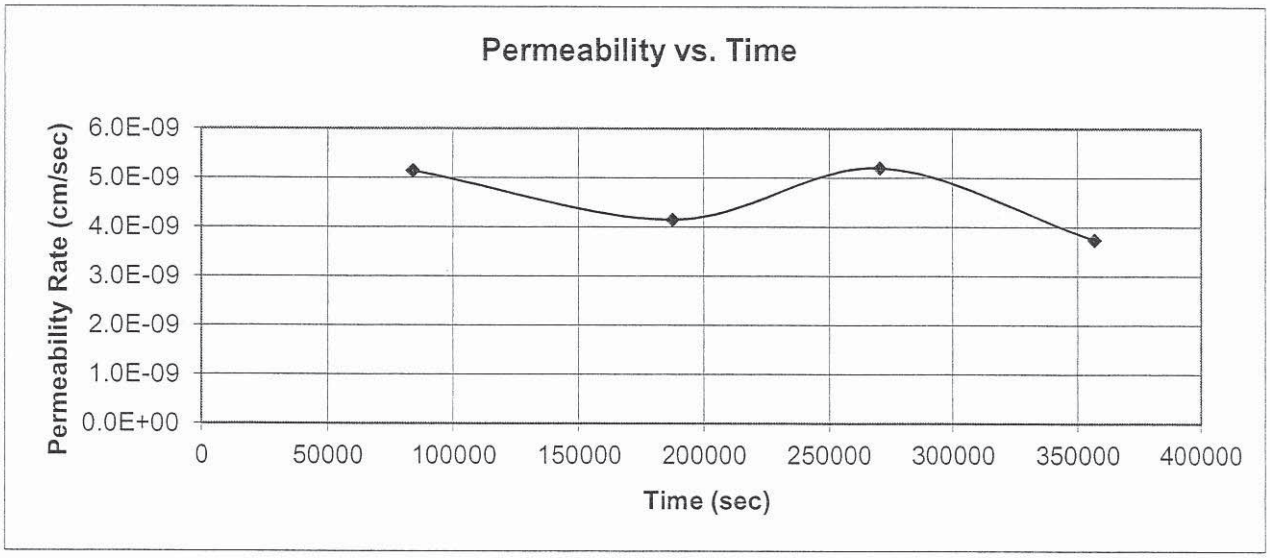
Dia. (in.)	2.82	2.80	**Length (in)**	3.00	2.97	**Weight (gr)**	519.1	521.9
Wet Density (pcf)	105.5		**Moisture Content (%)**	42.5		**Dry Density (pcf)**	74.0	
Final WD (pcf)	108.4		**Final Moisture (%)**	40.0		**Final DD (pcf)**	77.5	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.4	**Minimum Hydraulic Gradient**	10.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

4.6E-09



Reviewed By:

Corey Chascin 1.3.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge | **Project Number:** 6736-13-5237

Client Meskel & Assc | **Dated Received:** December 23, 2013

Sample Number: C-1 170 | **Date Completed:** December 30, 2013

Sample Information: Initial / Final

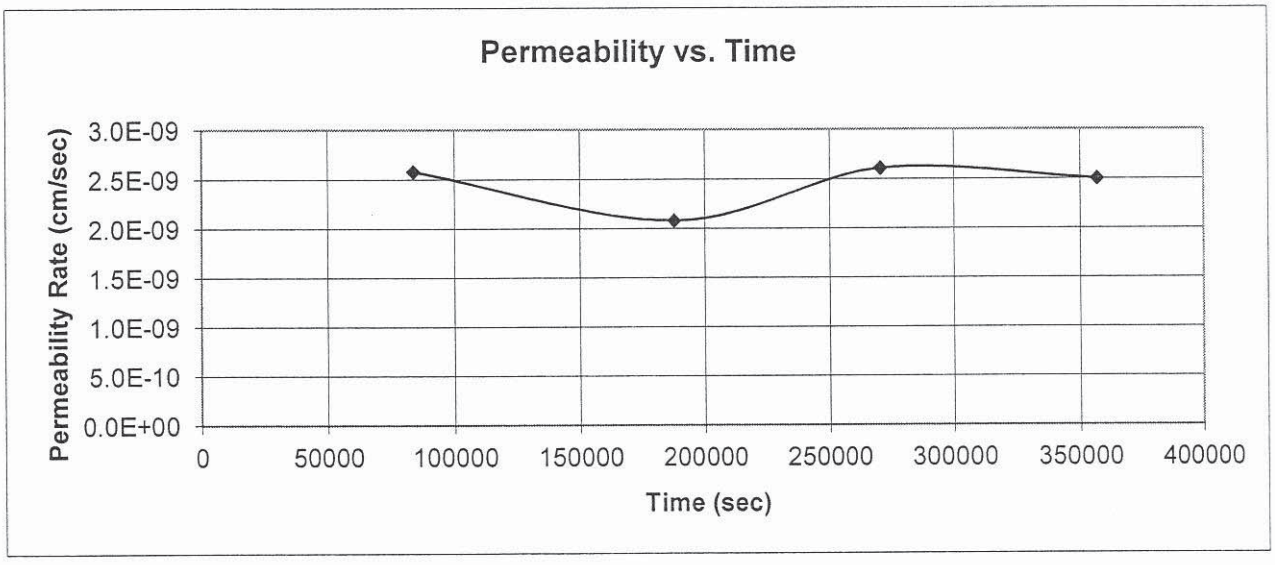
Dia. (in.)	2.84	2.81	**Length (in)**	3.05	3.00	**Weight (gr)**	533.3	537.6
Wet Density (pcf)	105.5		**Moisture Content (%)**	42.2		**Dry Density (pcf)**	74.2	
Final WD (pcf)	110.3		**Final Moisture (%)**	40.0		**Final DD (pcf)**	78.8	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.1	**Minimum Hydraulic Gradient**	10.5
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

2.4E-09



Reviewed By:

Corey Chascin 1.2.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	December 23, 2013
Sample Number:	C-1 168	**Date Completed:**	December 30, 2013

Sample Information: Initial / Final

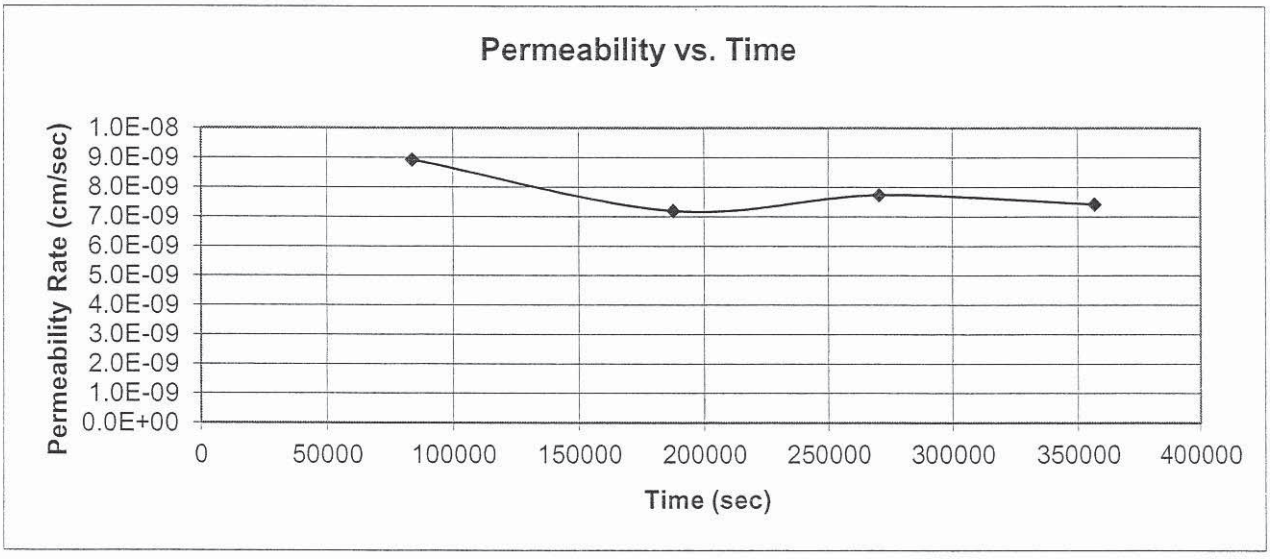
Dia. (in.)	2.82	2.83	**Length (in)**	2.98	3.02	**Weight (gr)**	522.1	528.9
Wet Density (pcf)	106.9		**Moisture Content (%)**	48.5		**Dry Density (pcf)**	72.0	
Final WD (pcf)	106.1		**Final Moisture (%)**	45.3		**Final DD (pcf)**	73.0	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	21.5	**Minimum Hydraulic Gradient**	10.7
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.8E-09



Reviewed By:

Corey Chascin 1.2.14

Corey T. Chascin, E.I.

amec

REPORT OF SOIL PERMEABILITY TESTING

Project: Trail Ridge **Project Number:** 6736-13-5237

Client Meskel & Assc **Dated Received:** December 23, 2013

Sample Number: C-2 167 **Date Completed:** December 30, 2013

Sample Information: Initial / Final

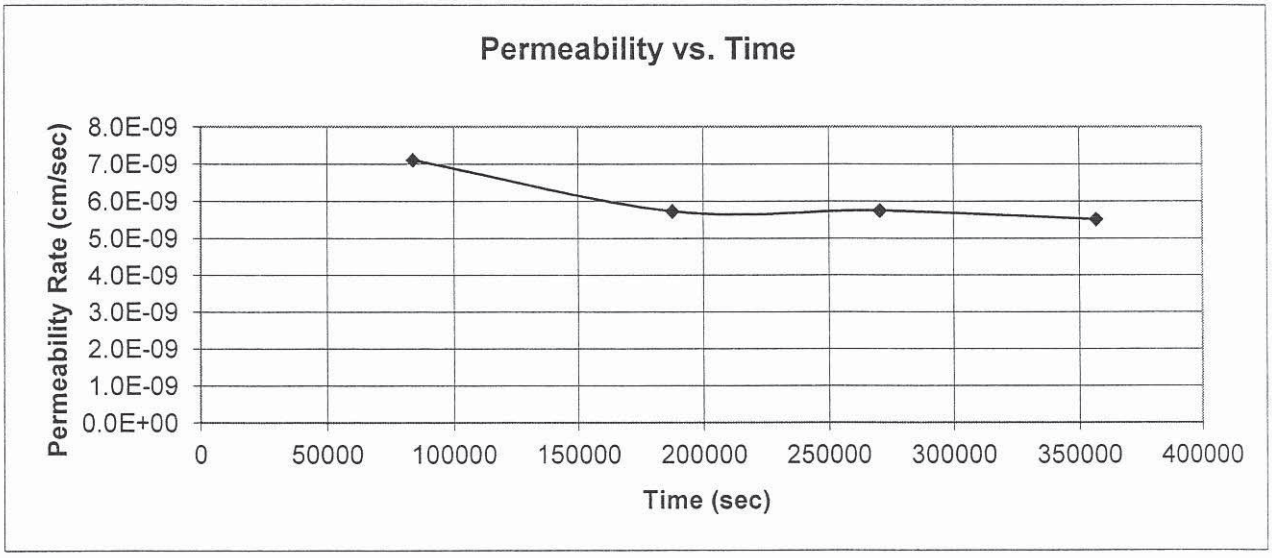
Dia. (in.)	2.74	2.83	**Length (in)**	3.13	3.14	**Weight (gr)**	551.6	560.8
Wet Density (pcf)	114.4		**Moisture Content (%)**	44.0		**Dry Density (pcf)**	79.4	
Final WD (pcf)	108.1		**Final Moisture (%)**	35.3		**Final DD (pcf)**	79.9	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	20.5	**Minimum Hydraulic Gradient**	10.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.0E-09



Reviewed By:

Corey Chascin 1.3.14

Corey T. Chascin, E.I.

amec

Client: MAE

Date Received: 12-20 &12-21-2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	77	70	22	48	40.4	53.5
C-1	81	65	22	43	36.1	54.8
C-2	77	66	21	45	36.6	58.0
C-1	89	NT	NT	NT	43.3	51.1
C-2	72	NT	NT	NT	36.8	66.0
C-2	80	NT	NT	NT	42.5	53.0
C-1	168	69	22	47	48.5	56.6
C-1	170	75	23	52	42.2	52.1
C-1	172	75	26	49	42.5	52.8
C-2	163	67	26	41	41.6	49.5
C-2	165	76	25	51	43.6	52.1
C-2	167	74	23	51	44.0	51.7
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey Chascin 1.3.14

Corey T. Chascin, E.I.

Client: MAE

Date Received: 11/25/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	69	73	22	51	33.3	57.6
C-2	74	72	23	49	34.2	56.8
C-2	78	72	23	49	31.7	57.6
C-2	161	71	32	38	30.6	62.3
C-1	164	66	29	37	37.7	59.2
C-1	162	80	32	50	43.1	54.9
C-2	157	67	26	51	40.5	59.5
C-2	159	69	29	52	37.4	60.0
C-1	166	72	23	53	34.5	57.0
					ASTM D-2216	ASTM D-1140

NT= Not Requested / Not Tested

Reviewed By:

Corey T. Chascin, E.I. 12.20.13

amec

Client: MAE

Date Received: 7/19/2013

Project: Trail Ridge Landfill

Job No.: 6736-13-5237

Boring No.	Sample No.	Liquid Limit	Plastic Limit	Plasticity Index	Lab Moisture Content (%) (as received)	Percent Passing No. 200 Sieve
C-1	9	NT	NT	NT	36.0	56.0
C-1	12	65	20	45	36.0	56.0
C-1	13	NT	NT	NT	34.3	55.5
C-1	15	NT	NT	NT	35.6	57.4
C-1	16	70	18	52	40.1	56.2
C-1	26	69	19	51	34.3	55.5
C-2	8	NT	NT	NT	35.3	56.3
C-2	9	NT	NT	NT	31.6	55.7
C-2	11	73	21	52	35.6	57.4
C-2	14	73	21	51	29.0	57.2
C-2	15	72	12	60	38.9	55.7
C-2	21	NT	NT	NT	28.3	54.0
C-2	23	72	20	53	35.3	56.3
					ASTM D-2216	ASTM D-1140

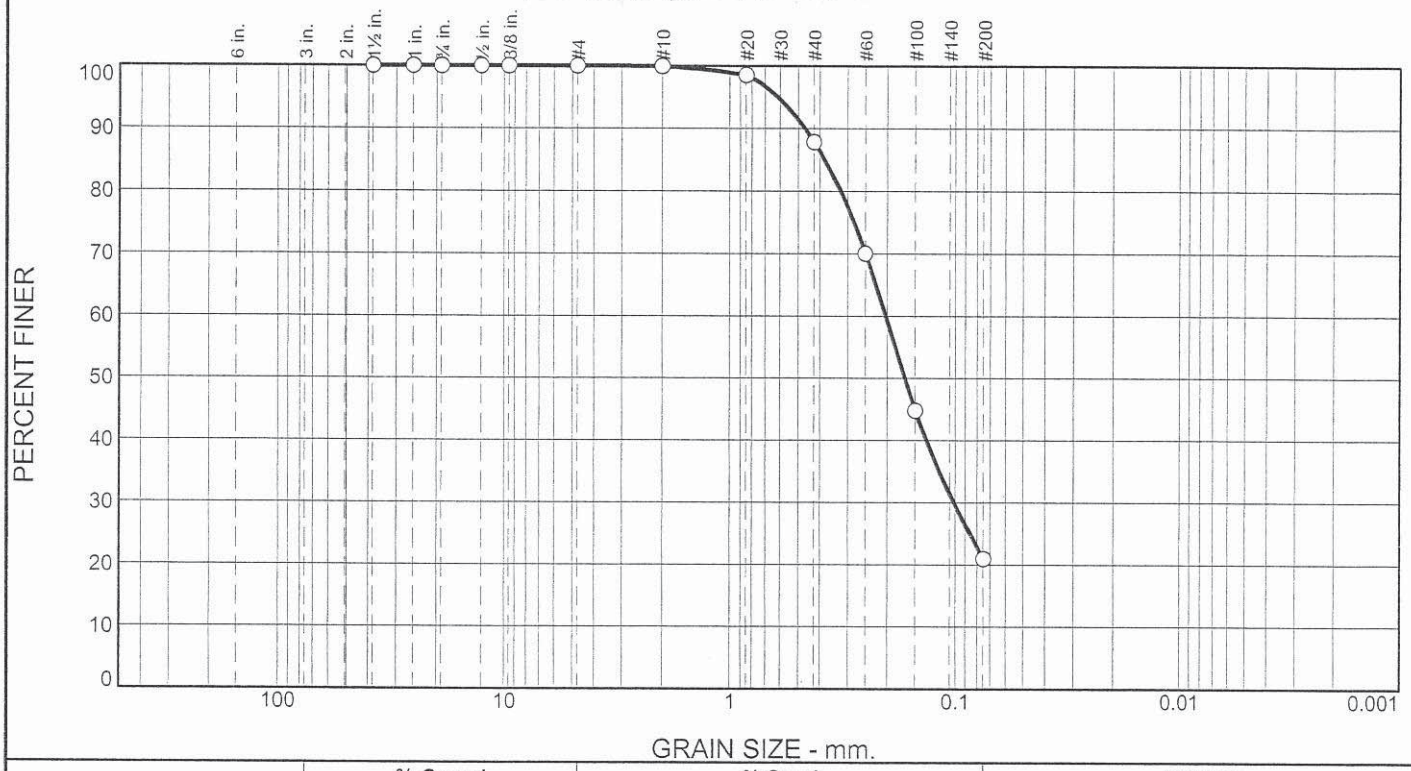
NT=Not Tested

Reviewed By:

Corey T. Chascin, E.I.

12.5.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	12.1	66.8	21.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	100.0		
#10	99.9		
#20	98.6		
#40	87.8		
#60	70.0		
#100	44.8		
#200	21.0		

* (no specification provided)

Material Description

Brown Silty Medium to Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D_{90}= 0.4671 D_{85}= 0.3809 D_{60}= 0.2034
D_{50}= 0.1672 D_{30}= 0.1014 D_{15}=
D_{10}= C_u= C_c=

Remarks

Date Received: 9/29/13 **Date Tested:** 10/3/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Initial Cover
Sample Number: 4

Date Sampled: 9-30-11

AMEC E&I

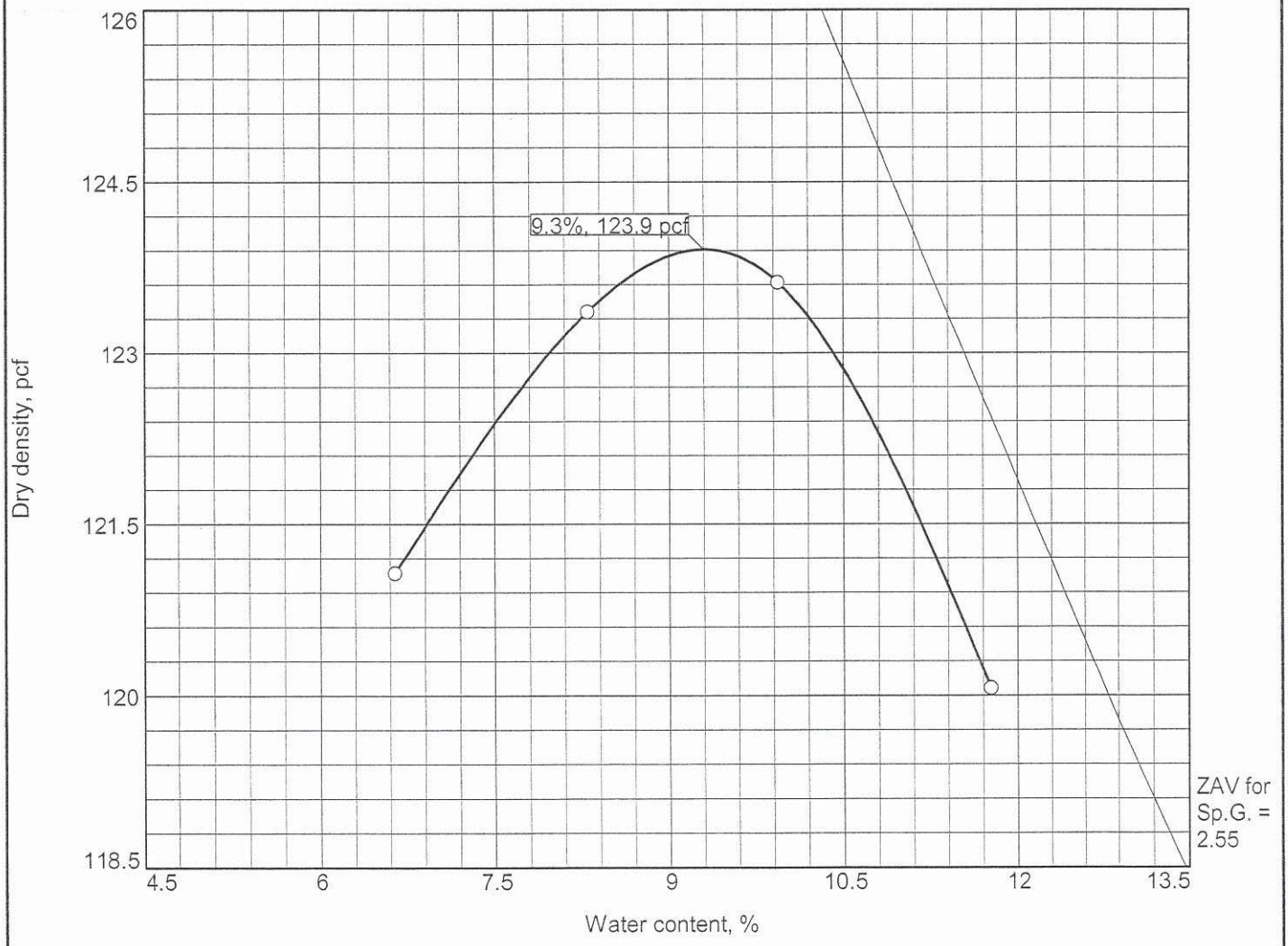
Jacksonville, Florida

Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237 **Figure**

Corey Chascin 11.22.13

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SM	A-2-4(0)			NV	NP	0.0	21.0

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 123.9 pcf Optimum moisture = 9.3 %	Brown Silty Medium to Fine SAND

Project No. 6736135237 **Client:** Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

○ **Source of Sample:** Initial Cover **Sample Number:** 4

AMEC E&I

Jacksonville, Florida

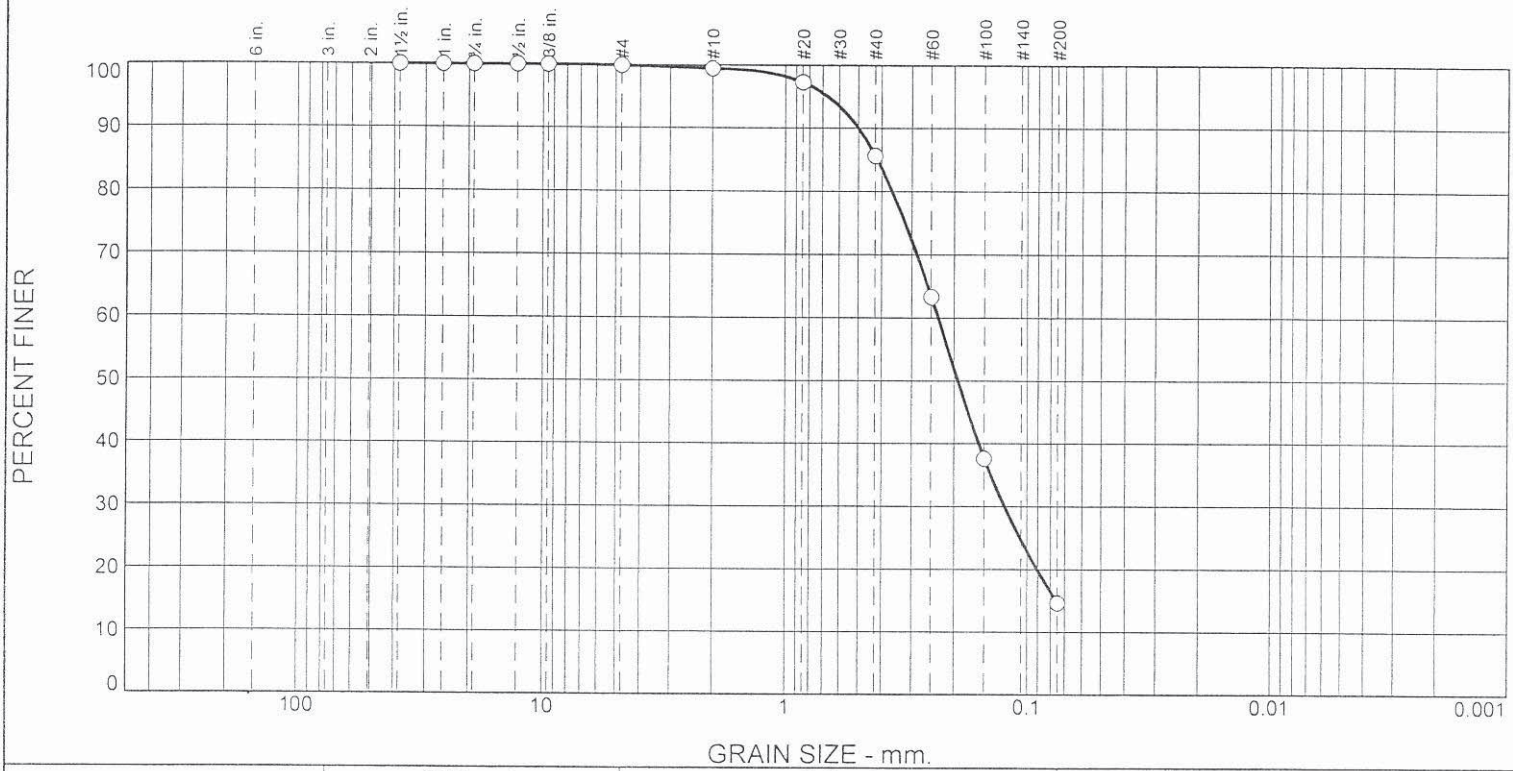
Remarks:

Figure

Tested By: CM **Checked By:** Corey T. Chascin, E.I.

Corey Chascin
11.22.13

Grain Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.5	13.7	71.1	14.6	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1.5	100.0		
1.0	100.0		
3/4	100.0		
1/2	100.0		
3/8	100.0		
#4	99.9		
#10	99.4		
#20	97.3		
#40	85.7		
#60	63.3		
#100	37.6		
#200	14.6		

* (no specification provided)

Material Description

Brown Slightly Silty Slightly Clayey Fine SAND

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-2-4(0)

Coefficients

D_{90}= 0.4998 D_{85}= 0.4162 D_{60}= 0.2344
D_{50}= 0.1935 D_{30}= 0.1240 D_{15}= 0.0760
D_{10}= C_u= C_c=

Remarks

Date Received: 10/15/13 Date Tested: 10/17/13

Tested By: CM

Checked By: Corey T. Chascin, E.I.

Title: Staff Engineer

Source of Sample: Initial Cover
Sample Number: 6

Date Sampled: 10/10/13

AMEC E&I

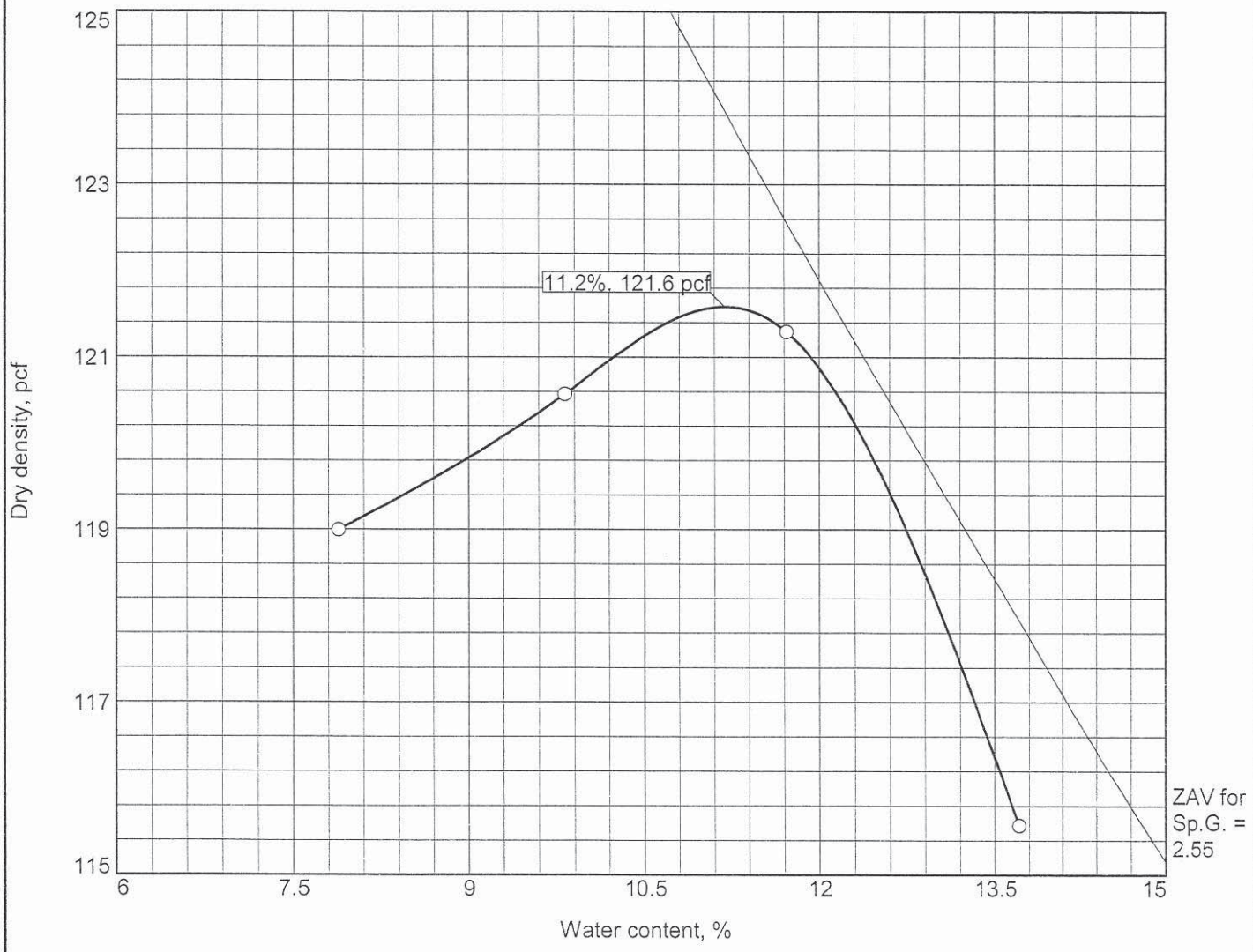
Jacksonville, Florida

Client: Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

Project No: 6736135237 Figure

Corey Chas 10.22.13

COMPACTION TEST REPORT



Test specification: ASTM D 1557-07 Method A Modified

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > #4	% < No.200
	USCS	AASHTO						
	SM	A-2-4(0)	3.3		NV	NP	0.1	14.6

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 121.6 pcf Optimum moisture = 11.2 %	Brown Slightly Silty Slightly Clayey Fine SAND

Project No. 6736135237 **Client:** Meskel and Associates Engineering
Project: Trailridge Landfill Phase 4

○ **Source of Sample:** Initial Cover **Sample Number:** 6

AMEC E&I

Jacksonville, Florida

Remarks:

Figure

Tested By: CM **Checked By:** Corey T. Chascin, E.I. Corey Chascin 11.22.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	December 2, 2013
Sample Number:	C2-70	**Date Completed:**	December 16, 2013

Sample Information: Initial / Final

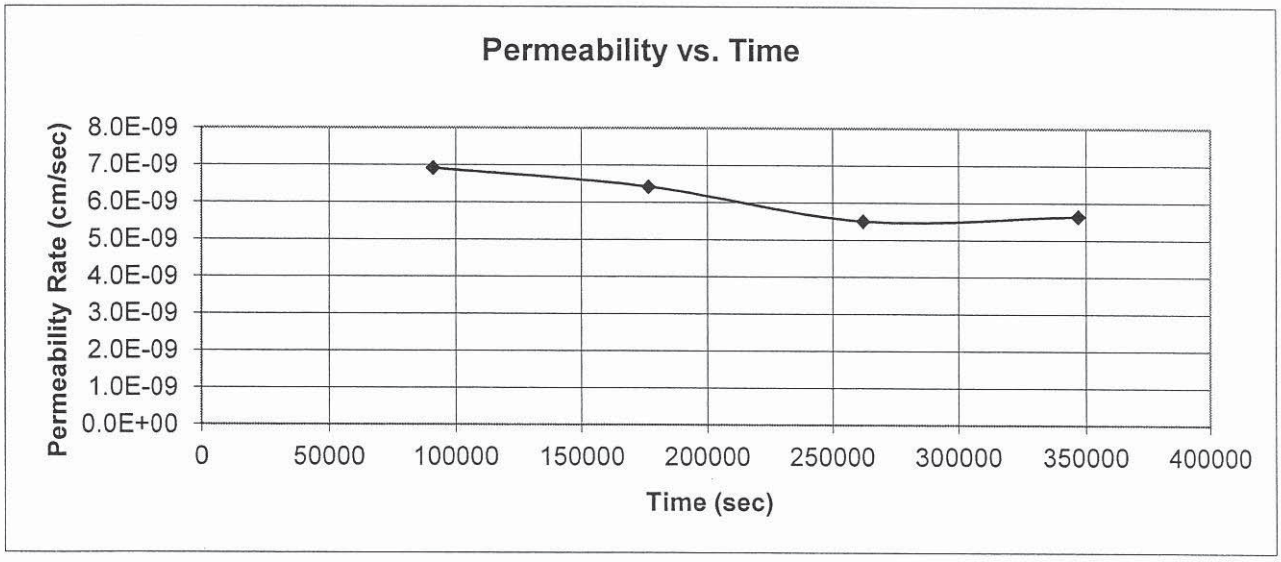
Dia. (in.)	2.85	2.87	**Length (in)**	2.24	2.31	**Weight (gr)**	427.1	436.6
Wet Density (pcf)	113.7		**Moisture Content (%)**		34.0	**Dry Density (pcf)**		84.8
Final WD (pcf)	111.6		**Final Moisture (%)**		35.2	**Final DD (pcf)**		82.5

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	28.6	**Minimum Hydraulic Gradient**	14.2
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

6.1E-09



Reviewed By:

Corey T. Chascin, E.I. 12.20.13

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REPORT OF SOIL PERMEABILITY TESTING

Project:	Trail Ridge	**Project Number:**	6736-13-5237
Client	Meskel & Assc	**Dated Received:**	December 2, 2013
Sample Number:	C1-74	**Date Completed:**	December 16, 2013

Sample Information: Initial / Final

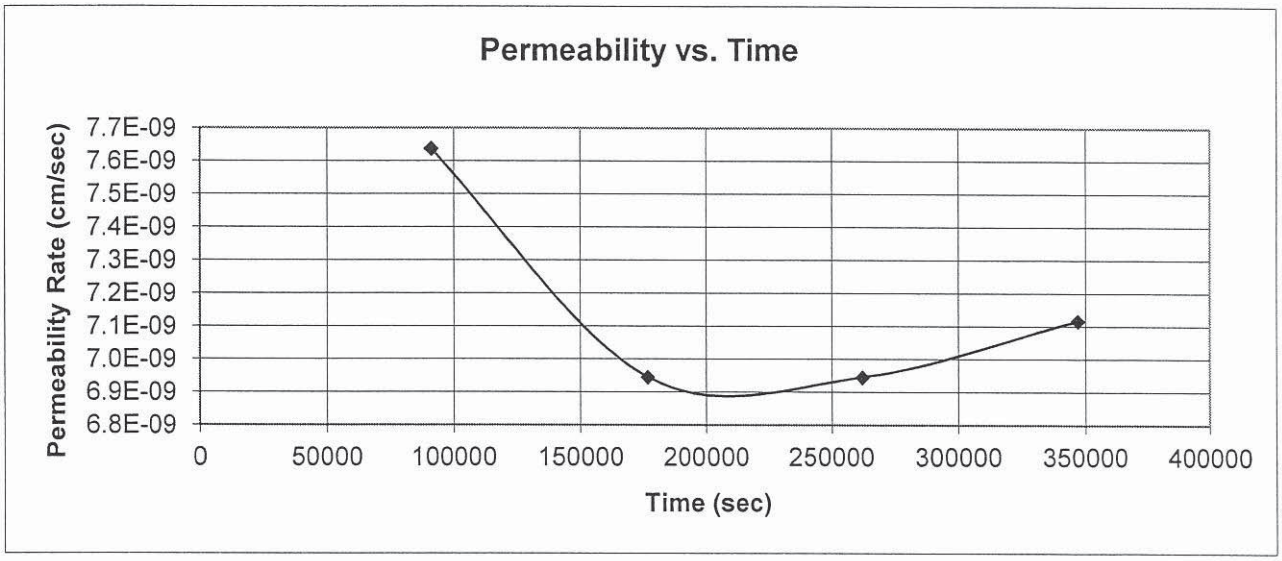
Dia. (in.)	2.84	2.85	**Length (in)**	2.80	2.81	**Weight (gr)**	517.2	527.35
Wet Density (pcf)	111.4		**Moisture Content (%)**	38.8		**Dry Density (pcf)**	80.2	
Final WD (pcf)	112.1		**Final Moisture (%)**	37.8		**Final DD (pcf)**	81.3	

Test Parameters

Test Method Used:	ASTM D-5084, method A	**Permeant Fluid:**	De-aired water
Maximum Hydraulic Gradient:	22.9	**Minimum Hydraulic Gradient**	11.4
Maximum Consolidation Stress (psi)	5	**Minimum Consolidation Stress (psi)**	3

Permeability Rate

7.2E-09



Reviewed By:

Corey T. Chascin, E.I. 12.20.13