Robert E. Price, Jr.

County Attorney for Davie County
County Administrative Building
123 South Main Street
Mocksville, N. C. 27028

Office: 704-634-5513
FAX: 704-634-7408
1-800-546-0390

Called Robert Price 12-29 Explained that Jim would review information next week and respond DM

December 22, 1994

30-03

Mr. Dexter Matthews
NC Department of Environment, Health
and Natural Resources
Div. of Solid Waste Management, Solid Waste Section
P.O. Box 27687
Raleigh, North Carolina 27611-7687

Re: Construction & Demolition Landfill
Davie County, North Carolina

Fac/Perm/Co ID #	Date	Doc ID#
3003	08/02/2011	DIN 14648

Dear Mr. Matthews:

I have been asked by the Davie County Manager and Gerald W. Horton, P.E. to review the status of the permitting for the Construction & Demolition Landfill for Davie County, North Carolina. I understand that permitting has been applied for, that comments have been made, and adjustments have been made based on the comments. It appears to me that every effort has been made to comply with the Section's concerns.

As you know, it is vitally important to the health and welfare of the citizens of Davie County that the Construction & Demolition Landfill be promptly and properly permitted.

Pursuant to the provisions of the North Carolina Administrative Code, upon receipt of a permit application for Construction & Demolition Landfill, the Division is to review the request and either approve or deny the request in writing (North Carolina Administrative Code (15A:13B.0203)). At this point, it is critical to the progress of this project that an application be approved. Alternatively, if the application cannot be approved, it is important that there be a written denial of the permit so that we can analyze the reasons for such denial, making the necessary changes or seek an appeal.

Therefore, the purpose of this letter is to seek final review and issuance of a permit or a written response from the Division denying the application, and stating the reasons therefor. If you have any questions regarding this request, please do not hesitate to contact me.

Sincerely yours,

Robert E. Price, Jr.

REPjr/ac

cc: Kenneth N. Windley, Jr.
Sen. Betsy L. Cochrane
Rep. Julia Howard
Gerald W. Horton, P.E.
Mr. Jim Bateson
Mr. William L. Meyer

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

November 14, 1994

Mr. Gerald Horton
DSAtlantic Corporation
5511 Capital Center Drive, Suite P-100
Raleigh, NC 27606

RE: Application For the Davie County Construction and Demolition Landfill

Dear Mr. Horton,

Bobby Lutfy and I have reviewed the revised permit application materials and your accompanying letter of November 7, 1994. The following comments and questions need to be addressed before the technical review can be completed:

1. As previously discussed on numerous occasions, the area north of Leonard Creek and the area east of the drainage feature on the eastern side of the proposed C&D Landfill can not be included in the facility boundary unless they are included in the hydrogeologic subsurface investigation. If these areas are not characterized, the facility boundaries and buffers must be revised.

2. The 40 foot screen installed in upgradient well MW-5A is not appropriate for monitoring purposes. The Solid Waste Section only approves screen lengths of 15 feet or less. The screened interval includes the sand pack, which in this case bridges both partially weathered rock and several sets of bedrock fractures. This, plus the uncertainty of equilibrium water levels in the well and the likelihood of water table fluctuations in the upper parts of the fractured bedrock zone, make it difficult to assess whether any contaminated groundwater from the top of the saturated zone would be severely diluted by water from the deeper fractures. The information available for the location suggests the need for a 75 foot well with a 15 foot screen. Sand pack should be no more than 2 feet above the screen. Installation and sampling of this well needs to be done before our technical review can be completed.

3. Analyses of groundwater from MW-5A provided by Trigon Engineering in their revised Hydrogeological Investigation do not sufficiently address the possibility of contamination from existing fill. In addition to the possibility mentioned above of dilution due to incorrect well design, the analytical methods applied have inadequate detection limits for beryllium, cadmium, chromium, cobalt, and lead. The new monitoring well requested above in (2) should be sampled and analyzed with regard to lab certification, analytical methods, and PQL's outlined in the attached Sampling and Analysis Requirements.

4. The hydrogeological investigation does not include complete hydraulic parameters for all lithologic units (Table 3). There are no data for fractured bedrock, no volume percent water (except for sandy silt), and no total porosity values. This information needs to be provided. Hydraulic conductivity of the upper bedrock zone is important for assessment of any proposed monitoring plan. This could be addressed by an in situ determination of conductivity on the new monitoring well proposed above in (2).

5. In a revised monitoring plan, the section will require an additional downgradient monitoring well in the area between MW-7 and MW-8. We feel this is important, due to the radial groundwater flow which underlies the proposed footprint.

6. In cross section B-B', lithologic divisions are incomplete, and do not match those in cross section A-A'. The cross section should be revised, with a better interpretation of the relationship of groundwater levels and partially weathered rock.

7. In section 4.1.2 of the proposed monitoring plan, both the proposed method for metals analysis and the laboratory certification level are incorrect. The revised monitoring plan needs to specify laboratory certification, analytical methods, and PQL's outlined in the attached Sampling and Analysis Requirements.

8. The revised monitoring plan needs also to include monitoring well construction information, including proposed screen depths. With reference to the well schematic Trigon Engineering has provided, the concrete collar for wells must extend below ground surface and anchor the outer well casing.

9. In your letter of November 7, you stated that twenty four hour water levels were obtained from some of the piezometers. Please provide copies of this information, and an explanation why the information is incomplete.

10. The aerial photo map needs to be revised to include:

-indication of the quarter mile radius measured from the site's boundaries. The current line was measured from the center of the site.

-land use and zoning.

-location of all homes, industrial buildings, and utilities.

-location of all wells, watercourses, dry runs, and other applicable details regarding the general topography.

-floodplains.

No blueline map with the above information was provided. A blueline map with topographic contours is required.

11. The two-mile radius map is not legible, and does not clearly identify:

-significant groundwater users.

-sources of pollution.

-water intakes.

-airports.

-subdivisions.

If any of these items do not occur in the area depicted, this should be clearly indicated on the margins of the map.

12. Piezometers are wells as defined by 15A NCAC 2C .0102 (29). Piezometers on the site will need to be abandoned according to rule 15A N.....CAC 2C .0113(2)(F). They must be drilled out and backfilled with cement/bentonite grout from the bentonite seal to the ground surface. A statement to this effect must be submitted.

Respectfully,

Jim Bateson,
Hydrogeologist
Solid Waste Section

cc: Mr. David Plott, Public Works Director-Davie County
Dr. Nick Bogen, P.G., Trigon Engineering
Jan McHargue, Solid Waste Section
Bobby Lutfy, Solid Waste Section
Brent Rockett, Solid Waste Section

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

Post-It™ brand fax transmittal memo 7671	# of pages ▸ 2
To NICK BOGAN	From BOBBY LUFFY
Co. TRIGON ENGG. CONS	Co. SOLID WASTE MGMT
Dept.	Phone # 733-0692
Fax # 919 859 1168	Fax # 919 733-4810

May 23, 1994

Mr. Nick Bogan
Trigon Engineering Consultants, Inc.
6003 Chapel Hill Road, Suite 109
Raleigh, N.C. 27607

Re: Authorization To Proceed With Borings and Piezometer Installations Necessary To Perform The Subsurface Investigation For The Site Hydrogeologic Study At The Proposed Construction And Demolition Landfill Site In Davie County

Dear Mr. Bogan,

The Solid Waste Section authorizes Trigon Engineering to proceed with the borings and piezometer installations necessary to perform the subsurface investigation for the Site Hydrogeologic Study at the above referenced site. **However, it should be noted that the boring plan submitted does not appear adequate to fulfill the Solid Waste Management Rules for "a geological and hydrogeological study of the site", 15A NCAC 13B .0504(1)(c).** Please refer to these rules in carrying out the subsurface investigation.

As we discussed in our meeting all areas of the site that are to be included in the permitted area should be characterized. If either the area across Leonard Creek or the area on the more easterly ridgeline are to be included in the permitted facility, then these areas must be investigated. The required buffers for the facility will be based on the approved facility boundaries.

Hydrogeologic characteristics must be investigated for "each major lithologic unit". Saturated hydraulic conductivity, volume percent water, and porosity are required for each lithologic unit.

As previously discussed, ground-water flow must be understood for the site, including an adequate understanding of the ground-water flow regime to prepare a potentiometric map. This will probably require that all borings intersect the water table, even if this makes it necessary to drill into bedrock.

Borings should be located so that some are on ridges, some on slopes, and some at lower elevations. Special attention should be focused on any structural lineaments that may indicate preferential flow paths. Drainage swales may be reflective of more highly fractured areas indicating the possibility of preferential ground-water flow.

It appears that most of the borings in the proposed footprint are along the ridgeline, and most of the other borings are located in the floodplain near the creek. There are no borings proposed on the slopes around the footprint of the proposed cell in the area where monitoring would be required. Also there does not appear to be any borings located in structural lineaments.

Some characterization of the bedrock is also required for the site. So some of the borings into the rock should be cored. Fractured bedrock is one of the lithologic units requiring hydrogeologic characterization.

Tabulation of water table elevations at time of boring, 24 hours, and seven days are required in the rules. Additional stabilized water table measurements are necessary in order to establish the seasonal high water table data.

A sufficient number of borings should be located across the site to provide all the information required in the above referenced rules. The borings must also be of sufficient depth to provide the potentiometric and hydrogeologic data that is required. I hope this letter will clarify the requirements for Construction and Demolition Landfill siting hydrogeologic investigations.

If you have any questions or comments on this letter, please contact me at the Solid Waste Section at (919) 733-0692.

Sincerely,

Bobby Lutfy

Bobby Lutfy
Hydrogeologist
Solid Waste Section

cc: Brent Rockett
Steven Miller

TRIGON
ENGINEERING CONSULTANTS, INC.

SOLID WASTE SECTION
MAY 2[illegible] 1994

6003 Chapel Hill Road, Suite 109 · Raleigh, NC 27607 · (919) 859-0232 · FAX (919) 859-1168

FAX TRANSMITTAL COVER SHEET

DATE: 5/23

TIME: _____

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: Bobby Lutfy

COMPANY: _____

FAX #: 733-4810

THIS FAX IS SENT BY:

NAME: Nick Bosen

TRIGON FAX #: (919)859-1168

NUMBER OF PAGES (INCLUDING COVER SHEET): 3

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MY TELEPHONE # IS: (919)859-0232

FAX OPERATOR: _____

COMMENTS: Bobby - This is my understanding of the results of our meeting. I thought we also agreed that if groundwater is below 50'

DSA
DESIGN GROUP

May 5, 1994

Mr. Bobby Lutfy
Division of Solid Waste Management
Solid Waste Section
401 Oberlin Road
Raleigh, NC 27611

SUBJECT: BORING PLAN MEETING CONFIRMATION
PROPOSED DAVIE COUNTY C&D LANDFILL
DAVIE COUNTY, NORTH CAROLINA
DSA PROJECT NO. 93070.07

Dear Bobby:

We are writing to confirm the status of a number of issues that were discussed at our April 19 ,1994 meeting and subsequent telephone conversations concerning the proposed Davie County C&D Landfill.

The purpose of the subject meeting was to discuss the proposed boring plan for the C&D landfill. Nick Bogen of Trigon Engineering Consultants presented our plan which consisted of four borings surrounding the proposed waste cell and one boring in the center of the waste cell that would core approximately 10 feet into rock. You expressed that, if the geotechnical information obtained from the five borings was to be used for site suitability and design, you would like to see two additional borings within the proposed waste cell. The two additional borings should be advanced to the top of rock, top of groundwater, or to a maximum depth of 50 feet, whichever is shallowest. These additional borings would aid in the design by providing more groundwater elevation data. You also stated that, if the areas of the property to the far East and far North were to be included in the permitted boundary, you would like to see at least one boring in each of the two areas to tie them into the permitted facility.

During the meeting the possibility of groundwater contamination at the adjacent closed municipal solid waste landfill (MSWLF) was discussed. It is our understanding that Davie County has been directed by the Division of Solid Waste Management (DSWM) to perform an expanded analysis of groundwater, sampled from the closed MSWLF's groundwater monitoring wells, for the next two semiannual sampling events. The expanded analysis (all Subtitle 'D' Appendix I constituents) was directed based on the detection of elevated levels of total organic halides (TOX) in recent sampling events. It is the position of DSWM that, if the existing MSWLF is contaminating the groundwater, the location of the proposed C&D landfill may impede possible future remediation efforts. This may jeopardize the use of the site as the C&D landfill.

Davie County plans to reschedule the next sampling and analysis event, scheduled for June, 1994, to be performed as soon as possible. Davie County has also installed a new groundwater monitoring well between the existing MSWLF and the proposed C&D landfill site and will sample it along with the existing wells.

5511 Capital Center Drive, Suite P-100, Raleigh, NC 27606 919/851-6866 (fax) 919/851-7024
Winston-Salem • Raleigh • Charlotte

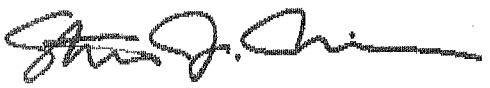
If contamination is detected, the new well will aid in the determination of groundwater flow and contamination migration from the existing MSWLF. If groundwater is found to be contaminated but is determined not to be flowing towards the proposed C&D site, then the feasibility of locating the proposed C&D landfill on the site would still exist. If groundwater is determined not to be contaminated and the C&D landfill is constructed, then the new well will be utilized as the upgradient monitoring well for the new C&D landfill.

Davie County has decided to delay the soil borings mentioned above. Upon favorable groundwater monitoring results the soil borings will be performed to characterize the site.

Prior to performing the borings, you will be provided with a copy of the soil boring plan mentioned above. It is our understanding that upon review and acceptance of the boring plan you will issue an approval to perform the borings. We will also be sending you a copy of the groundwater monitoring well installation records.

If you have any questions or your understanding is different than ours, please advise.

Best regards,



Steven J. Miller, E.I.T.

/sjm

cc: Mr. Kenneth N. Windley, Davie County
Mr. Gerald W. Horton, P.E., DSA Design Group
Mr. Nick Bogen, P.G., Trigon
File

TRIGON
ENGINEERING CONSULTANTS, INC.

6003 Chapel Hill Road, Suite 109 · Raleigh, NC 27607 · (919) 859-0232 · FAX (919) 859-1168

FAX TRANSMITTAL COVER SHEET

DATE: 5/20/1994

TIME: _____

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: Mr Bobby Luttfy

COMPANY: _____

FAX #: _____

THIS FAX IS SENT BY:

NAME: Nick Bogen

TRIGON FAX #: (919)859-1168

NUMBER OF PAGES (INCLUDING COVER SHEET): 5

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AquaChem
ENVIRONMENTAL LABORATORIES, INC.
11176 Downs Road
Pineville, NC 28134
704/588-5076
FAX 704/588-2454

FACSIMILE COVER LETTER

DATE: 5/20/94

TO: Mike Burgess

COMPANY NAME: Trigon

FAX NUMBER: ~~598-1050~~ 919-859-1108

FROM: Donna

NO. OF PAGES TO FOLLOW: _____

FAX Number: (704) 588-2454
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COMMENTS:

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AquaChem
ENVIRONMENTAL LABORATORIES, INC.
11176 Downs Road
Pineville, NC 28134
704/588-5076
FAX 704/588-2454

NC Certification Number: 305
SC Certification Number: 99032

Date of Report: 05/20/94
Date Received : 05/13/94

Approved By: _____
Kenneth R. Richardson
Laboratory Supervisor

Client: Trigon Engineering Consultants, Inc
1920 Starita Road
Charlotte, North Carolina 28206

Contact: Mr. Richard Griffiths

Customer Number: 5003

LABORATORY REPORT

LAB ID: 985K05
SAMPLE ID: GWM-5 (DAVIE COUNTY LANDFILL)

Parameter	Result	Det. Limit	Unit	Method	Analysis Time	Date	Anal.
Antimony	BDL	0.010	ppm	EPA204.2	13:00	05/18/94	KRR
Arsenic	BDL	0.005	ppm	EPA206.2	08:00	05/18/94	KRR
Barium	BDL	0.1	ppm	EPA200.7	10:30	05/18/94	KRR
Beryllium	BDL	0.01	ppm	EPA200.7	08:00	05/19/94	KRR
Cadmium	BDL	0.01	ppm	EPA200.7	07:30	05/17/94	KRR
Chromium	BDL	0.05	ppm	EPA200.7	07:30	05/17/94	KRR
Cobalt	BDL	0.05	ppm	EPA200.7	10:00	05/18/94	KRR
Copper	BDL	0.02	ppm	EPA200.7	07:30	05/17/94	KRR
Lead	BDL	0.05	ppm	EPA200.7	07:30	05/17/94	KRR
Nickel	BDL	0.03	ppm	EPA200.7	07:30	05/17/94	KRR
Selenium	BDL	0.005	ppm	EPA270.2	08:30	05/18/94	KRR
Silver	BDL	0.01	ppm	EPA200.7	07:30	05/17/94	KRR
Thallium	BDL	0.010	ppm	EPA279.2	12:00	05/18/94	KRR
Vanadium	BDL	0.01	ppm	EPA200.7	08:00	05/19/94	KRR
Zinc	BDL	0.01	ppm	EPA200.7	07:30	05/17/94	KRR
Acetone	BDL	10	ppb	EPA 8240	12:50	05/18/94	WHT
Acrylonitrile	BDL	100	ppb	EPA 8240	12:50	05/18/94	WHT
Benzene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Bromochloromethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Bromodichloromethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Bromoform	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Carbon Disulfide	BDL	10	ppb	EPA 8240	12:50	05/18/94	WHT
Carbon Tetrachloride	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT

Trigon Engineering Consultants, Inc
05/20/94
Page 2

LAB ID: 985K05
SAMPLE ID: GWM-5 (DAVIE COUNTY LANDFILL)

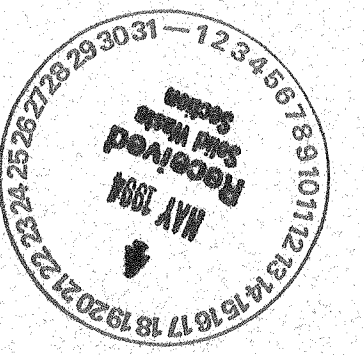
Parameter	Result	Det. Limit	Unit	Analysis Method	Time	Date	Anal.
Chlorobenzene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Chloroethane	BDL	10	ppb	EPA 8240	12:50	05/18/94	WHT
Chloroform	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Dibromochloromethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,2-Dibromo-3-chloropr	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,2-Dibromoethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
o-Dichlorobenzene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
p-Dichlorobenzene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
trans-1,4-Dichloro-2-b	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,1-Dichloroethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,2-Dichloroethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,1-Dichloroethene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
cis-1,2-Dichloroethene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
trans-1,2-Dichloroethe	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,2-Dichloropropane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
cis-1,3-Dichloropropen	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
trans-1,3-Dichloroprop	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Ethylbenzene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
2-Hexanone	BDL	10	ppb	EPA 8240	12:50	05/18/94	WHT
Bromomethane	BDL	10	ppb	EPA 8240	12:50	05/18/94	WHT
Chloromethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Dibromomethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Dichloromethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
2-Butanone	BDL	10	ppb	EPA 8240	12:50	05/18/94	WHT
Iodomethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
4-Methyl-2-pentenone	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Styrene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,1,1,2-Tetrachloroeth	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,1,2,2-Tetrachloroeth	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Tetrachloroethene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Toluene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,1,1-Trichloroethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
1,1,2-Trichloroethane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Trichloroethene	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Trichlorofluoromethane	BDL	10	ppb	EPA 8240	12:50	05/18/94	WHT
1,2,3-Trichloropropane	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Vinyl Acetate	BDL	50	ppb	EPA 8240	12:50	05/18/94	WHT
Vinyl Chloride	BDL	50	ppb	EPA 8240	12:50	05/18/94	WHT
Total Xylenes	BDL	5	ppb	EPA 8240	12:50	05/18/94	WHT
Dibromofluoromethane	78		% Rec	EPA 8240	12:50	05/18/94	WHT

LAB ID: 985K05
SAMPLE ID: GWM-5 (DAVIE COUNTY LANDFILL)

Parameter	Result	Det. Limit	Unit	Method	Analysis Time	Analysis Date	Anal.
Toluene-d8	86		% Rec	EPA 8240	12:50	05/18/94	WHT
4-Bromofluorobenzene	100		% Rec	EPA 8240	12:50	05/18/94	WHT

DSA
DESIGN GROUP

May 19, 1994 *(Delivered)*



Mr. Bobby Lutfy
Division of Solid Waste Management
Solid Waste Section
401 Oberlin Road
Raleigh, NC 27611

SUBJECT: SOIL BORING PLAN
PROPOSED DAVIE COUNTY C&D LANDFILL
DAVIE COUNTY, NORTH CAROLINA
DSA PROJECT NO. 93070.07

Dear Bobby:

Attached please find the proposed Subsurface Investigation Plan for the above referenced project. We are submitting this plan for your review and written approval to proceed. The boring plan was originally presented at our April 19, 1994 meeting at your office. With your approval, the borings are scheduled to be performed on May 24, 1994.

Nick Bogen of Trigon Engineering Consultants, Inc. (Trigon) will be in contact with you to discuss the issue of possible contamination at the adjacent closed municipal solid waste landfill which was originally discussed at our April 19, 1994 meeting.

If you have any questions or feel you will not be able to approve the plan by the scheduled boring date please call.

Best regards,

Steven J. Miller, E.I.T.

/sjm

Attachments: Two Subsurface Investigation Plans

cc: Mr. Kenneth N. Windley, Davie County
Mr. Gerald W. Horton, P.E., DSA Design Group
Mr. Nick Bogen, P.G., Trigon
File

5511 Capital Center Drive, Suite P-100, Raleigh, NC 27606 919/851-6866 (fax) 919/851-7024
Winston-Salem • Raleigh • Charlotte

SUBSURFACE INVESTIGATION PLAN

FOR SITING AND CONSTRUCTION OF A CONSTRUCTION & DEMOLITION DEBRIS LANDFILL, DAVIE COUNTY, NORTH CAROLINA

Prepared for:

DSAtlantic
5511 Capital Center Drive, Suite P-100
Raleigh, NC 27606

Prepared By:

TRIGON ENGINEERING CONSULTANTS, INC.
6003 Chapel Hill Road, Suite 109
Raleigh, NC 27607

Site 60± acres
footprint <10 acres

May 11, 1994

035-94-019

1.0 INTRODUCTION

The site proposed by Davie County for a new construction and demolition debris landfill is adjacent to the Davie County MSW landfill located about 2.5 miles east of Mocksville, North Carolina (Figure 1). The site lies on the northern end of two prominent north-trending ridges above Leonard Creek. The proposed waste cell will occupy the northern limits of one of these ridges (Figure 2). Elevations in the area proposed for the waste cell range from 725 feet to 750 feet above sea level. Elevations range over the site from about 670 feet to 760 feet above mean sea level.

Thirteen borings were made on the site in 1989 by EMA, Inc. and seven remolded soil samples were analyzed for permeability. Groundwater was encountered only in borings made near the creek; stabilized water levels were not obtained. Soils are described as sandy silt and silty sand ranging in thickness from eight feet to more than 50 feet. Bedrock was encountered locally at depths of eight feet to 38 feet.

There are four groundwater monitoring wells at the MSW landfill to the south of the proposed C & D site. The groundwater table ranges in depth from three feet to 19 feet in that area. A fifth well was installed by Trigon Engineering Consultants on the southern property boundary of the C & D site during May, 1994. Groundwater was not encountered in the overburden but was found in the bedrock at a stabilized depth of 62 feet. The granitic rock lies at 46 feet and contains few fractures. A single water-bearing fracture is probably the only source of water in this well. That fracture was intersected at a depth of 76 feet below ground surface.

2.0 BORING PLAN

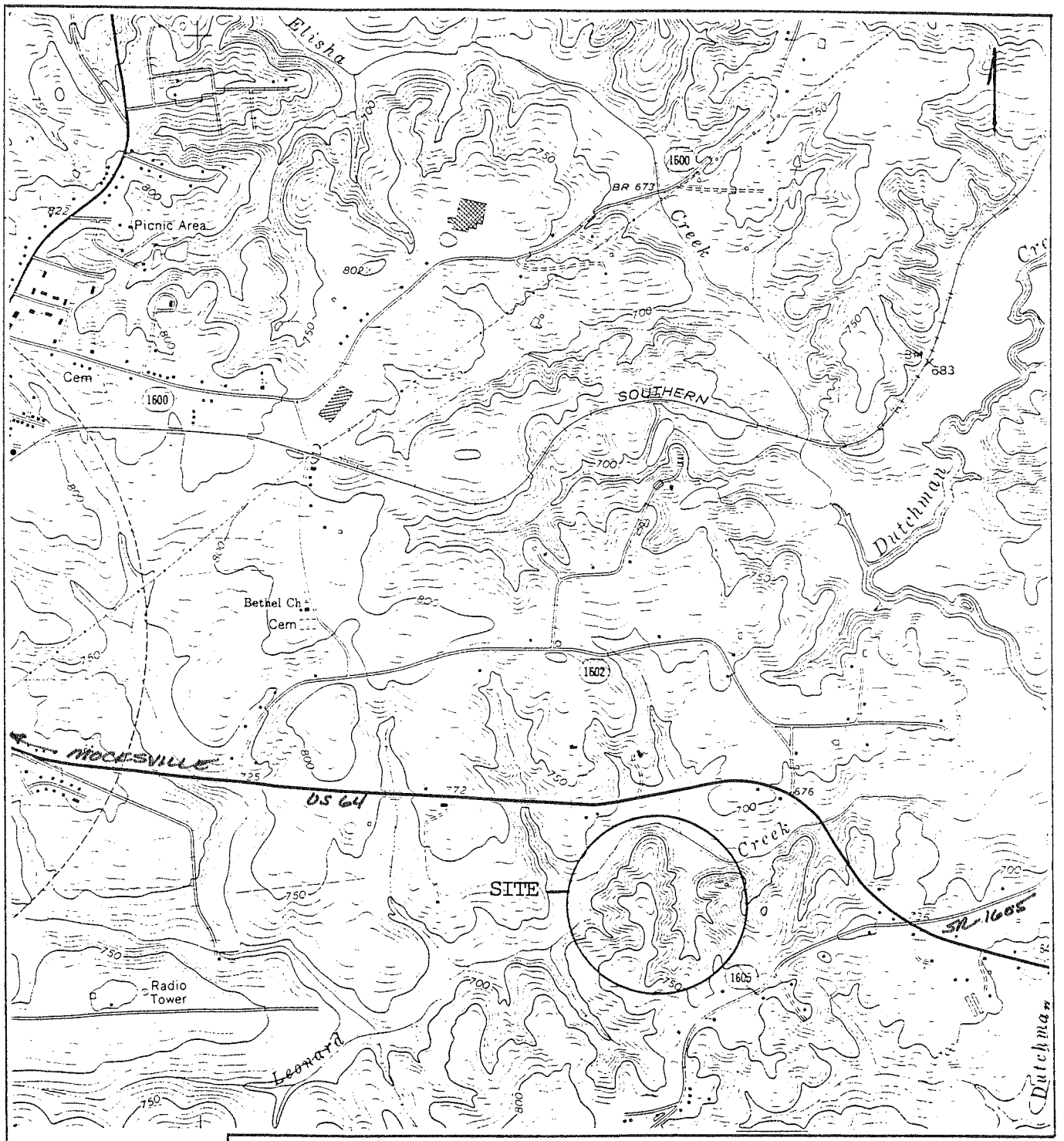
Six borings will be made in and around the proposed waste cell (Figure 2). The three borings located within the cell boundaries will be advanced to a depth of 50 feet or to the top of bedrock, whichever is shallower. It is unlikely that groundwater will be encountered, based on the results from the monitor well discussed above. If groundwater is encountered, however, then a piezometer will be constructed in each water-bearing boring.

Boring	Depth (ft)	Piezometer Depth (ft)
B-14	45	-
B-15	45	-
B-16	50	20
B-17	45	-
B-18	50	10
B-19	50	20

Three borings will be made outside the proposed waste cell limits to depths of 50 feet or the top of bedrock, whichever is shallower (Figure 2). Piezometers will be installed in each. All borings will be logged in the field by a qualified geologist or engineer. Soil samples will be collected from each boring at five-foot intervals in accordance with ASTM Method 1586. Piezometers will be constructed of common PVC pipe with sandpack and bentonite pellets. Where the borehole extends below the piezometer, bentonite hole-plug will be used to seal the lower portion.

Permeability will be monitored in three locations by the falling head method. Stabilized water-table elevations will be measured seven days after completion of the last water-bearing boring.

One soil sample will be collected from each of three borings for gain-size analysis with hydrometer. The samples will be collected at or near the water table from the borings outside the waste cell area and from depths estimated to be two feet to four feet below the base of the cell. One sample from above the base of the cell will be analyzed for moisture-density relationship, remolded permeability and Atterberg limits. One sample from below the water table in B-18 will be analyzed for porosity.



TRIGON
ENGINEERING CONSULTANTS, INC.

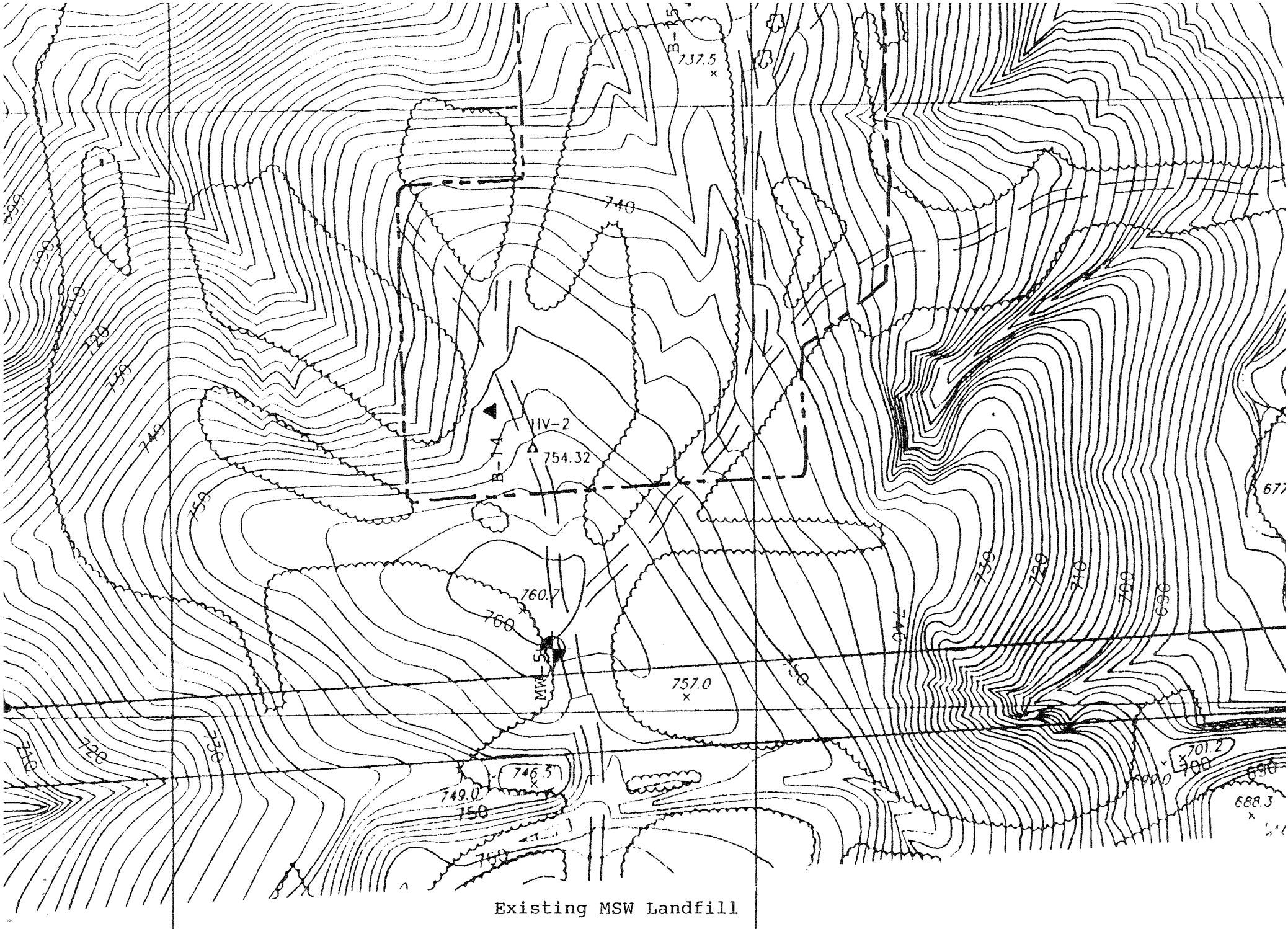
DAVIE COUNTY C&D LANDFILL

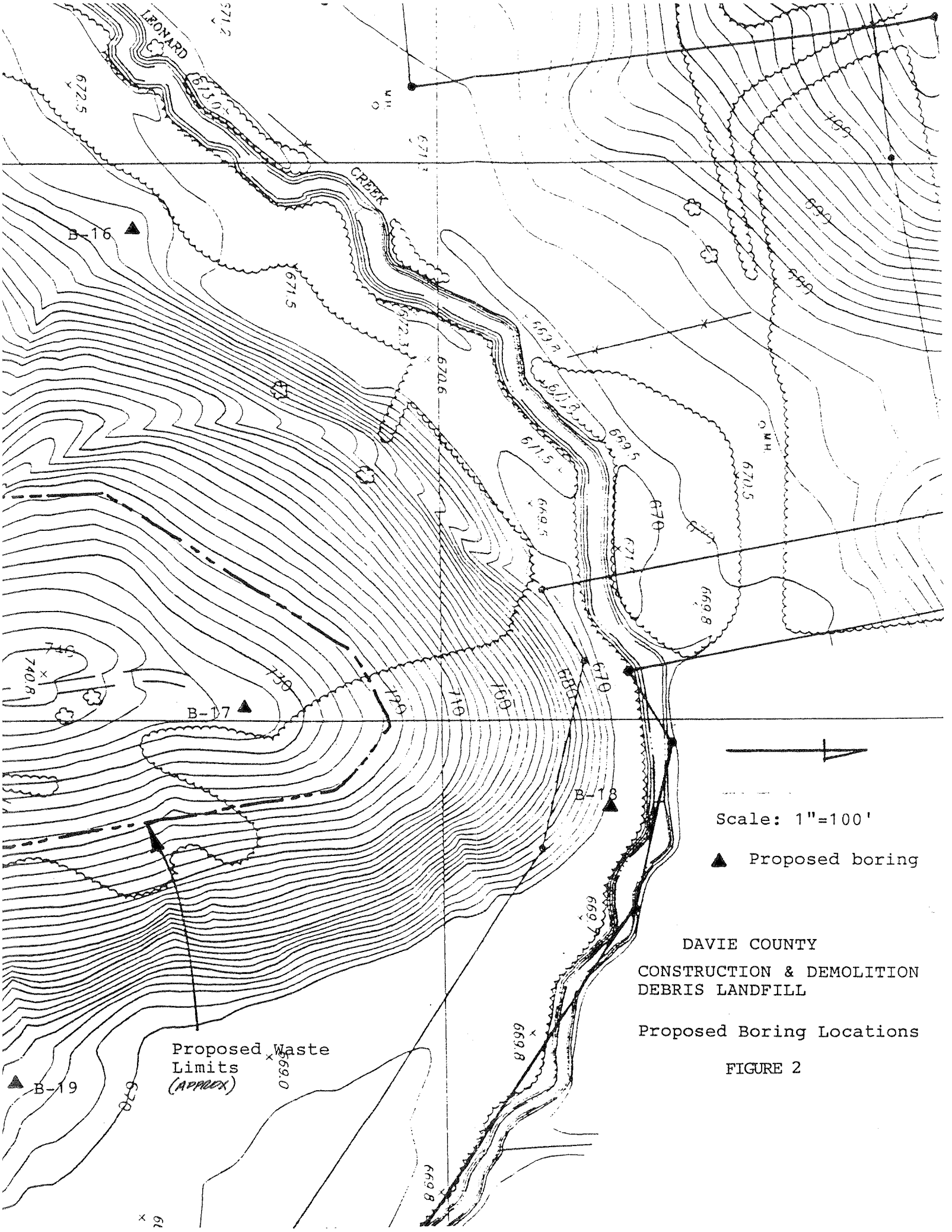
SITE LOCATION

1"=2000'

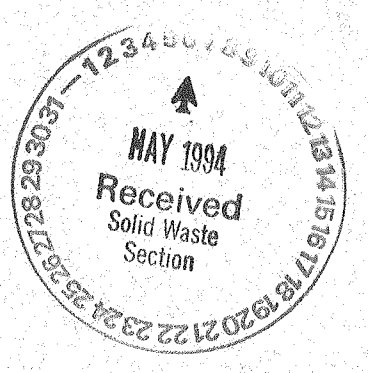
FIGURE 1

source: Mocksville quad.


737.5
740
MW-2
754.32
760.7
760
MW-5
757.0
746.5
749.0
750
701.2
688.3
Existing MSW Landfill
E 1,549,000


LEONARD CREEK
B-16
B-17
B-18
B-19
Proposed Waste Limits (APPROX)
Scale: 1"=100'
▲ Proposed boring
DAVIE COUNTY
CONSTRUCTION & DEMOLITION DEBRIS LANDFILL
Proposed Boring Locations
FIGURE 2

DSA
DESIGN GROUP



May 5, 1994

Mr. Bobby Lutfy
Division of Solid Waste Management
Solid Waste Section
401 Oberlin Road
Raleigh, NC 27611

SUBJECT: BORING PLAN MEETING CONFIRMATION
PROPOSED DAVIE COUNTY C&D LANDFILL
DAVIE COUNTY, NORTH CAROLINA
DSA PROJECT NO. 93070.07

Dear Bobby:

We are writing to confirm the status of a number of issues that were discussed at our April 19 ,1994 meeting and subsequent telephone conversations concerning the proposed Davie County C&D Landfill.

The purpose of the subject meeting was to discuss the proposed boring plan for the C&D landfill. Nick Bogen of Trigon Engineering Consultants presented our plan which consisted of four borings surrounding the proposed waste cell and one boring in the center of the waste cell that would core approximately 10 feet into rock. You expressed that, if the geotechnical information obtained from the five borings was to be used for site suitability and design, you would like to see two additional borings within the proposed waste cell. The two additional borings should be advanced to the top of rock, top of groundwater, or to a maximum depth of 50 feet, whichever is shallowest. These additional borings would aid in the design by providing more groundwater elevation data. You also stated that, if the areas of the property to the far East and far North were to be included in the permitted boundary, you would like to see at least one boring in each of the two areas to tie them into the permitted facility.

During the meeting the possibility of groundwater contamination at the adjacent closed municipal solid waste landfill (MSWLF) was discussed. It is our understanding that Davie County has been directed by the Division of Solid Waste Management (DSWM) to perform an expanded analysis of groundwater, sampled from the closed MSWLF's groundwater monitoring wells, for the next two semiannual sampling events. The expanded analysis (all Subtitle 'D' Appendix I constituents) was directed based on the detection of elevated levels of total organic halides (TOX) in recent sampling events. It is the position of DSWM that, if the existing MSWLF is contaminating the groundwater, the location of the proposed C&D landfill may impede possible future remediation efforts. This may jeopardize the use of the site as the C&D landfill.

Davie County plans to reschedule the next sampling and analysis event, scheduled for June, 1994, to be performed as soon as possible. Davie County has also installed a new groundwater monitoring well between the existing MSWLF and the proposed C&D landfill site and will sample it along with the existing wells.

5511 Capital Center Drive, Suite P-100, Raleigh, NC 27606 919/851-6866 (fax) 919/851-7024
Winston-Salem • Raleigh • Charlotte

If contamination is detected, the new well will aid in the determination of groundwater flow and contamination migration from the existing MSWLF. If groundwater is found to be contaminated but is determined not to be flowing towards the proposed C&D site, then the feasibility of locating the proposed C&D landfill on the site would still exist. If groundwater is determined not to be contaminated and the C&D landfill is constructed, then the new well will be utilized as the upgradient monitoring well for the new C&D landfill.

Davie County has decided to delay the soil borings mentioned above. Upon favorable groundwater monitoring results the soil borings will be performed to characterize the site.

Prior to performing the borings, you will be provided with a copy of the soil boring plan mentioned above. It is our understanding that upon review and acceptance of the boring plan you will issue an approval to perform the borings. We will also be sending you a copy of the groundwater monitoring well installation records.

If you have any questions or your understanding is different than ours, please advise.

Best regards,

Steven J. Miller, E.I.T.

/sjm

cc: Mr. Kenneth N. Windley, Davie County
Mr. Gerald W. Horton, P.E., DSA Design Group
Mr. Nick Bogen, P.G., Trigon
File

DSA DESIGN GROUP

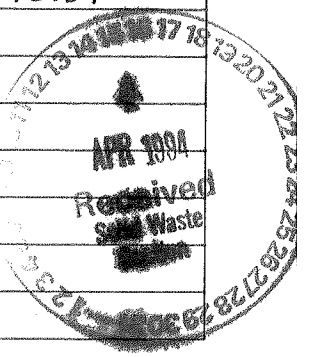
LETTER OF TRANSMITTAL

5511 Capital Center Drive • Suite P-100
Raleigh, NC 27606
(919) 851-6866 • FAX (919) 851-7024

DATE	JOB. NO.
4-14-94	93070.07

ATTENTION: BOBBY LUTFY

RE: PROP. DAVIE CO. C&D LANDFILL



TO SOLID WASTE SECTION
401 OBERLIN ROAD
RALEIGH, NC 27611

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	4-14-94	C1.1	PROPOSED BORING PLAN
1	10-8-93	C1.1	OVERALL SITE PLAN OF DAVIE CO. L.F.
1	OCT., 89		EXIST. BORING DATA (14 PGS.)

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ As requested ☐ Reviewed submittal(s)
☒ For your use ☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19 ____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS BOBBY - WE LOOK FORWARD TO OUR MEETING ON TUESDAY, APRIL 19, 1994 AT 1:30 PM AT YOUR OFFICE.

IF YOU HAVE ANY QUESTIONS, PLEASE CALL.

STEVE MILLER
851-6866

COPY TO FILE

SIGNED: Steven J. Miller

B-4

E.M.A. INC. Consulting Engineers

MEMBER A.S.C.E. - OVER 30 YEARS OF PROFESSIONAL ENGINEERING SERVICES
CIVIL, STRUCTURAL, GEOTECHNICAL ENGINEERING • MATERIALS TESTING SERVICES
401 GLENWOOD AVE. • P.O. BOX 12447 • RALEIGH, NC 27605
919/828-0801

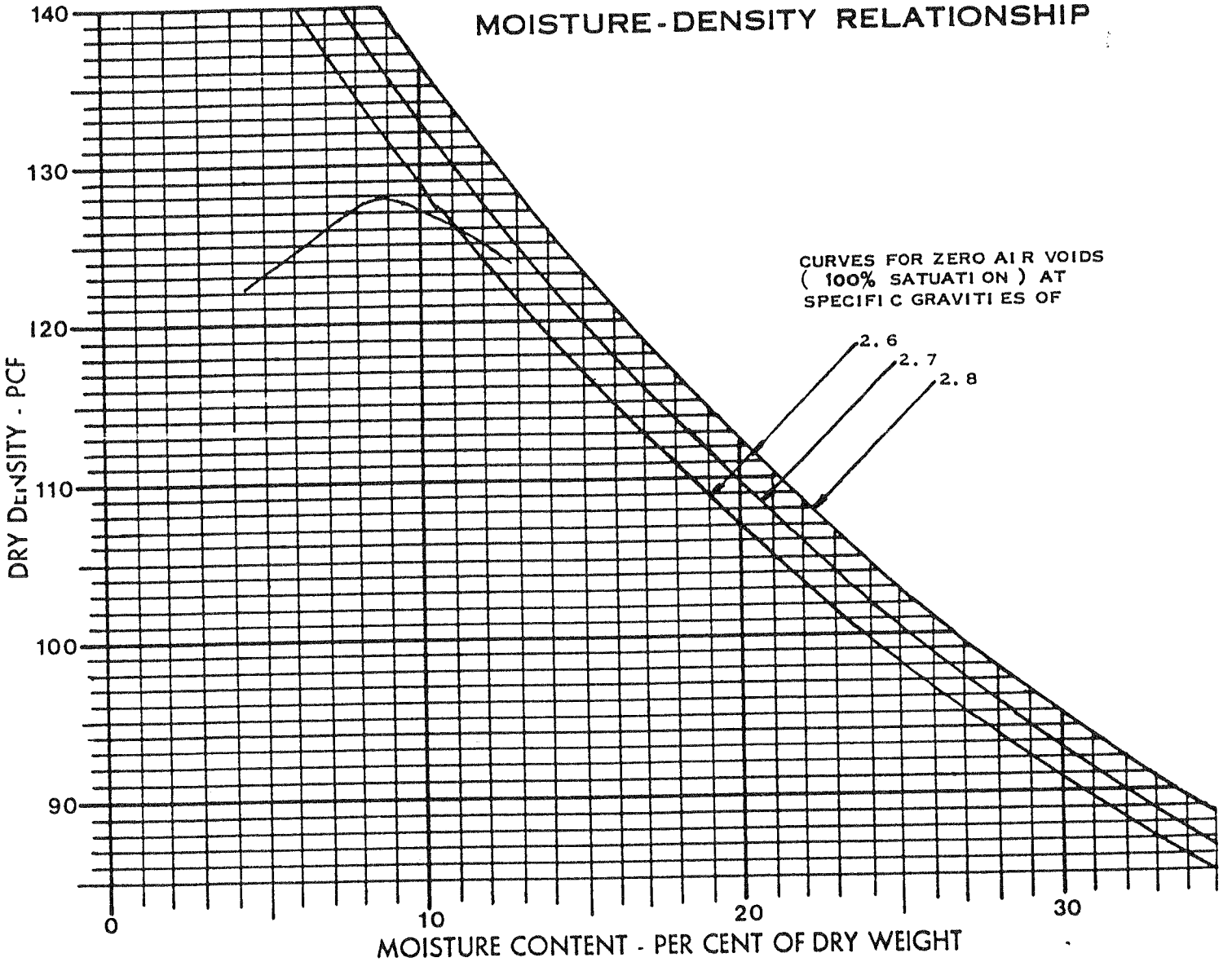
client: Municipal Engineering

project: Davie County Landfill

date: 10-16-89

job number: 89134.05

MOISTURE-DENSITY RELATIONSHIP



MOISTURE DENSITY RELATION	METHOD OF TEST	MAX DRY DENSITY PCF	OPTIMUM MOISTURE CONT. %	SOIL DESCRIPTION
3	ASTM D 698 Method A	128.0	9.0	Brown sandy silt w/clay P-4

SUBMITTED BY: Tracy Thomas

B-9

E.M.A. INC. Consulting Engineers

MEMBER A.S.C.E. - OVER 30 YEARS OF PROFESSIONAL ENGINEERING SERVICES
CIVIL, STRUCTURAL, GEOTECHNICAL ENGINEERING • MATERIALS TESTING SERVICES
401 GLENWOOD AVE. • P.O. BOX 12447 • RALEIGH, NC 27605
919/828-0801

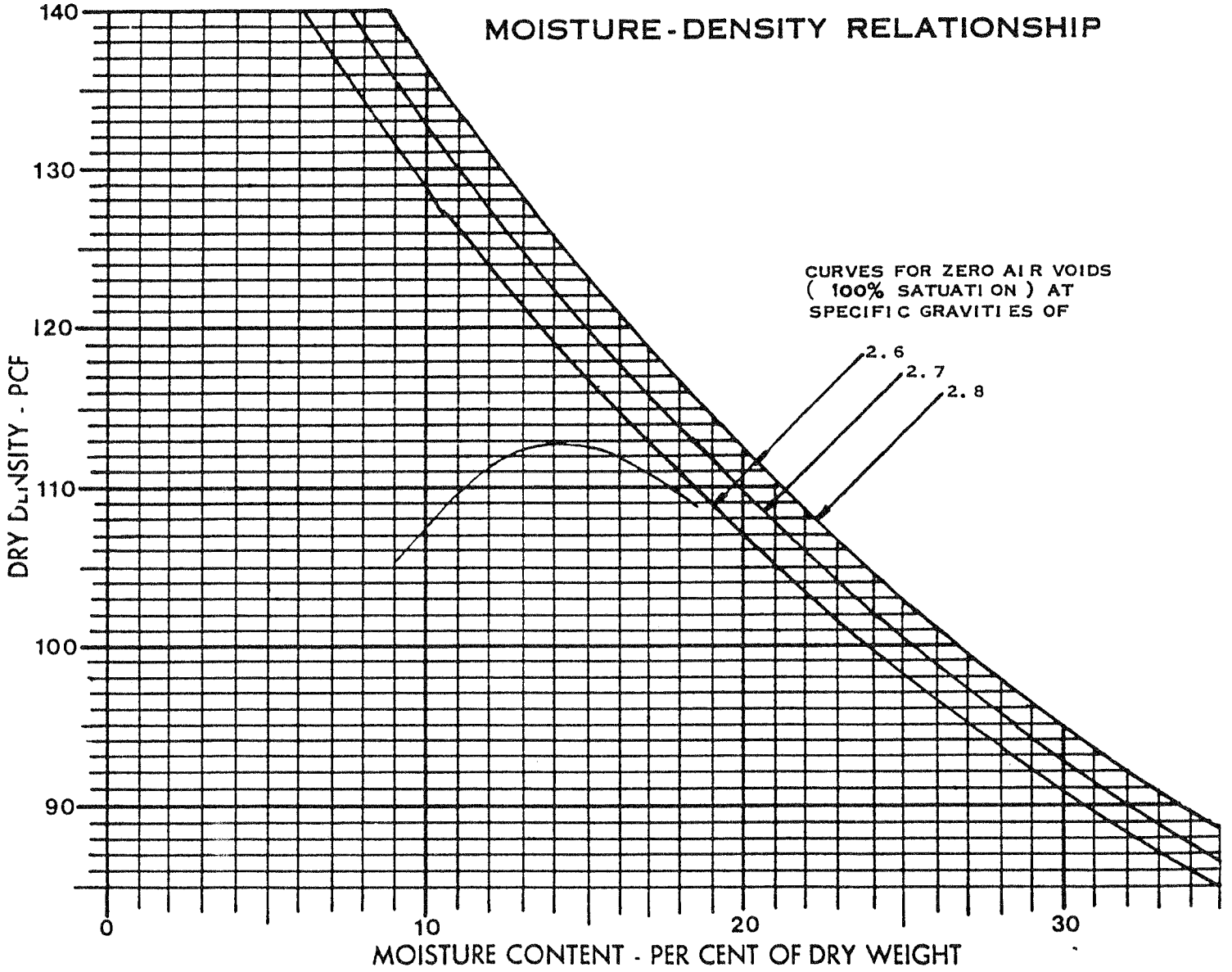
client: Municipal Engineering

project: Davie County Landfill

date: 10-23-89

job number: 89134.05

MOISTURE-DENSITY RELATIONSHIP



MOISTURE DENSITY RELATION	METHOD OF TEST	MAX DRY DENSITY PCF	OPTIMUM MOISTURE CONT. %	SOIL DESCRIPTION
4	ASTM D 698 Method A	113.0	14.0	Tan silty clay w/sand P-9

SUBMITTED BY: Tracy Thomas

B-13

E.M.A. INC. Consulting Engineers

MEMBER A.S.C.E. - OVER 30 YEARS OF PROFESSIONAL ENGINEERING SERVICES
CIVIL, STRUCTURAL, GEOTECHNICAL ENGINEERING • MATERIALS TESTING SERVICES
401 GLENWOOD AVE. • P.O. BOX 12447 • RALEIGH, NC 27605
919/828-0801

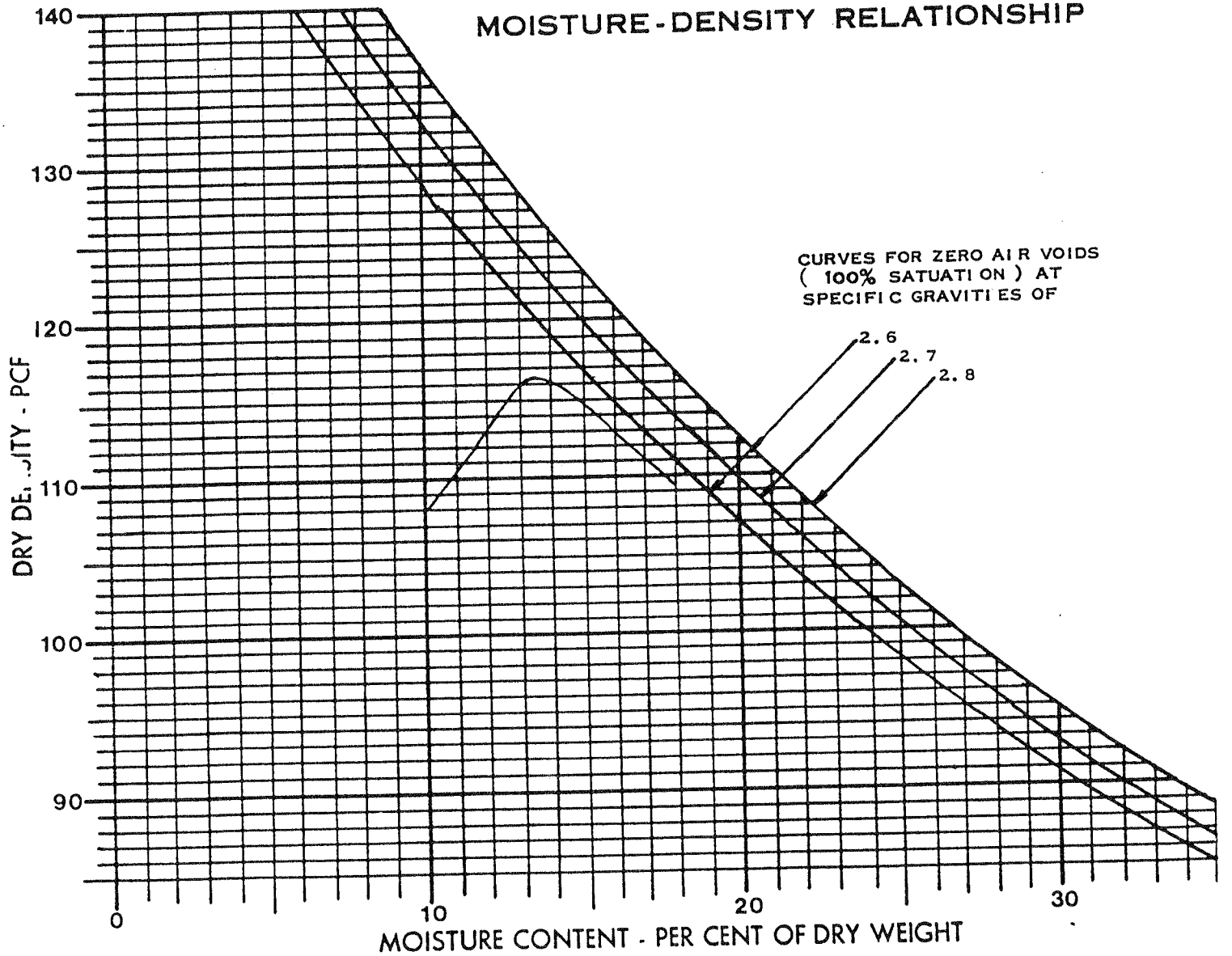
client: Municipal Engineering

project: Davie County Landfill

date: 10-23-89

job number: 89134.05

MOISTURE-DENSITY RELATIONSHIP



MOISTURE DENSITY RELATION	METHOD OF TEST	MAX DRY DENSITY PCF	OPTIMUM MOISTURE CONT. %	SOIL DESCRIPTION
5	ASTM D 698 Method A	116.5	13.5	Tan silty clay P-13

SUBMITTED BY: Tracy Thomas

LOG OF BORING NO. P-4

PROJECT: _____ JOB NO.: _____

TYPE: _____ LOCATION: DAVIE CO. [illegible]

DEPTH (FT)	SAMPLE NUMBER	SAMPLER TYPE	RECOVERED / ADVANCED	DESCRIPTION OF MATERIAL (SURF. EL:)	SAND OR GRAVEL (VERY LOOSE, LOOSE, MED DENSE, DENSE, VERY DENSE) / SILT OR CLAY (SOFT, FIRM, STIFF, VERY STIFF, HARD)	MOISTURE (SATURATED, WET, MOIST, DAMP)	BLOWS PER 6"	UNIT DRY WEIGHT (PCF)	WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PENETROMETER (Q_p TSF)	UNCONFINED COMPRESSION (COHESION, TSF)	REMARKS
				SI-FI-DED-SP										
5														
10														
15														
20														
25														
30														
				ROCK AT 35.5'										
				AUGER REFUSAL ON ROCK AT 37.5'										

COMPLETION DEPTH: 37.5' DEPTH TO WATER IN BORING: _____

DATE: 10-6-89

TESTS ASSIGNED BY: DATE:

TESTED BY: DATE:

DRILLED BY:

LOGGED BY:

EMA INC.
Consulting Engineers

PLATE

LOG OF BORING NO. 5 (B-5)

PROJECT: [illegible] JOB NO.: [illegible]

TYPE: FA LOCATION: Mockville, NC

DATE:

TESTS ASSIGNED BY:

DATE: 10-11-89

TESTED BY:

DRILLED BY: MARK BARWICK

LOGGED BY: [illegible]

DEPTH (FT)	SAMPLE NUMBER	SAMPLER TYPE: RECOVERED / ADVANCED	DESCRIPTION OF MATERIAL — SURF. EL:	SAND OR GRAVEL: FAIRLY LOOSE / LOOSE / MED DENSE / DENSE / VERY DENSE	SILT OR CLAY: SOFT / FIRM / STIFF / VERY STIFF / HARD	MOISTURE: SATURATED / WET / MOIST / DAMP	BLOWS PER 6"	UNIT DRY WEIGHT (PCF)	WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PENETROMETER (Q_p TSF)	UNCONFINED COMPRESSION (COHESION, TSF)	REMARKS
			SANDY CLAY											
5			SILTY SAND											
10			ROCK @ 10' AUGUR REFUSAL 10.5'											

COMPLETION DEPTH: 10.5 DEPTH TO WATER IN BORING: NO WATER

DATE: 10-11-89

EMA INC.
Consulting Engineers

PLATE

B-5A

LOG OF BORING NO. 5-A

PROJECT: Davie Co LANDFILL (P-5A) JOB NO.: 9-84-25

TYPE: EA LOCATION: Mocksville, NC

DEPTH (FT)	SAMPLE NUMBER	SAMPLER TYPE: RECOVERED / ADVANCED	DESCRIPTION OF MATERIAL — SURF. EL:	SAND OR GRAVEL: VERY LOOSE, LOOSE, MED DENSE, DENSE, VERY DENSE — SILT OR CLAY: SOFT, FIRM, STIFF, VERY STIFF, HARD — MOISTURE: SATURATED, WET, MOIST, DAMP	BLOWS PER 6"	UNIT DRY WEIGHT (PCF)	WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PENETROMETER (Q_p TSF)	UNCONFINED COMPRESSION (COHESION, TSF)	REMARKS
			FRAGMENTS AND SOIL									
			ROCK @ 8'									
			AUGER REFUSAL @ 8.1'									

COMPLETION DEPTH: 8.1' DEPTH TO WATER IN BORING: NO WATER

DATE: 10-11-84

DRILLED BY: MARK BARWICK

LOGGED BY: JOE JENKINS

DATE: 10-11-84 TESTS ASSIGNED BY: DATE:

TESTED BY:

EMA INC.
Consulting Engineers

PLATE

B-6

LOG OF BORING NO. P.6

PROJECT: Davie Co JOB NO.: 89134.05

TYPE: FA LOCATION: Mockville, NC

DEPTH (FT)	SAMPLE NUMBER	SAMPLER TYPE	RECOVERED / ADVANCED	DESCRIPTION OF MATERIAL (SURF. EL:)	SAND OR GRAVEL (VERY LOOSE, LOOSE, MED DENSE, DENSE, VERY DENSE) / SILT OR CLAY (SOFT, FIRM, STIFF, VERY STIFF, HARD)	MOISTURE (SATURATED, WET, MOIST, DAMP)	BLOWS PER 6"	UNIT DRY WEIGHT (PCF)	WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PENETROMETER (Q_P TSF)	UNCONFINED COMPRESSION (COHESION, TSF)	REMARKS
2.5				silty sand										
				" "										
5														
10														
15														
20														
				" "										
25				Gray Sandy Gravel										
				Tan Gravely sand										
30														
				" " " 33.5										
				[illegible] 33.5 Auger Refs										
				Bulk sample										

COMPLETION DEPTH: 33.5 DEPTH TO WATER IN BORING: no WATER

DATE: 10-11-89

DRILLED BY: MARK BARWICK DATE: 10-11-89 TESTS ASSIGNED BY: DATE:

LOGGED BY: [illegible] TESTED BY:

EMA INC.
Consulting Engineers

PLATE

B-1

LOG OF BORING NO. P-7 (P-7)

PROJECT: [illegible] JOB NO.: [illegible]

TYPE: [illegible] LOCATION: Mockville, NC

DEPTH (FT)	SAMPLE NUMBER	SAMPLER TYPE	RECOVERED / ADVANCED	DESCRIPTION OF MATERIAL (SURF. EL:)	SAND OR GRAVEL (VERY LOOSE, LOOSE, MED DENSE, DENSE, VERY DENSE) / SILT OR CLAY (SOFT, FIRM, STIFF, VERY STIFF, HARD)	MOISTURE (SATURATED, WET, MOIST, DAMP)	BLOWS PER 6"	UNIT DRY WEIGHT (PCF)	WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PENETROMETER (Q_p TSF)	UNCONFINED COMPRESSION (COHESION, TSF)	REMARKS
				Si Sa										
				Fine Sa Si										
				CL SA SI										
				CL SI SA										
				SI SA										
				HARD ROCK AUGER REFUSAL @ 30.5'										

COMPLETION DEPTH: 30.5 DEPTH TO WATER IN BORING: NO WATER

DATE: 10-12-89

DRILLED BY: Mark Barwick DATE: 10-12-89 TESTS ASSIGNED BY:

LOGGED BY: Joe Jenkins TESTED BY:

EMA INC.
Consulting Engineers

PLATE

B-8

EZRA MEIR ASSOCIATES, INC.

CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

BORING LOG

LOCATION: Davie Co. Landfill

SURFACE ELEVATION: _____ FIXED DATUM: _____

BORING TYPE: 4" Solid Auger DRILL B-53

SAMPLER: FA JOB NO. # 89134.05 DATE: 10-12-89

HAMMER: _____ DROP BORING NO. # P-8 SHEET: _____

REMARKS: _____ FOREMAN: Mark Barnhart

DEPTHS FROM	DEPTHS TO	CLASSIFICATION	LOST WATER	SAMPLE NO.	SAMPLE DEPTH	BLOWS PER FOOT
0	5	Si-SA-W/Gravel				
5	12	SA-Si				
12	18	Si-SA				
18	34	Gravely Fine SA Hard Drlg				
		Auger Refusal 34'				
		34' Total Depth				

GROUNDWATER: I.A.D. _____ 24HRS. _____ 7 DAYS _____

B-9

EZRA MEIR ASSOCIATES, INC.

CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

BORING LOG

LOCATION: DAVIE Co [illegible]

SURFACE ELEVATION: _____ FIXED DATUM: _____

BORING TYPE: 4" Solid Auger DRILL B-53

SAMPLER: FA JOB NO. #[illegible] DATE: 10-12-89

HAMMER: _____ DROP BORING NO. # P-9 SHEET: _____

REMARKS: P-9 FOREMAN: Mark Sprwick

DEPTHS FROM	DEPTHS TO	CLASSIFICATION	LOST WATER	SAMPLE NO.	SAMPLE DEPTH	BLOWS PER FOOT
0	3	SI-SA-CL				
3	13	SA - SI				
13	21	FINE SA (WHITE)				
21	42	SA - SI				
42	49	ROCK				
49	50'	SI-SA WITH GRAVEL				
		BULK SAMPLE 0-13 P-9				
		50' TOTAL DEPTH				

GROUNDWATER: I.A.D. NOT WATER 24HRS. _____ 7 DAYS _____

B-10

EZRA MEIR ASSOCIATES, INC.

CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

BORING LOG

LOCATION: DARE Co [illegible]

SURFACE ELEVATION: _____ FIXED DATUM: _____

BORING TYPE: 4" Solid Augers DRILL B-53

SAMPLER: FA JOB NO. #[illegible] DATE: 10-12-84

HAMMER: _____ DROP BORING NO. # P-10 SHEET: _____

REMARKS: P-10 FOREMAN: Mark Barwick

DEPTHS FROM	DEPTHS TO	CLASSIFICATION	LOST WATER	SAMPLE NO.	SAMPLE DEPTH	BLOWS PER FOOT
0	7	Si FINE SA CL				
7	12	SA-Si				
12	50	Si-SA				
		50' TOTAL Depth				
		CAVE in 30'				

GROUNDWATER: I.A.D. No water 24HRS. _____ 7 DAYS _____

B-11

EZRA MEIR ASSOCIATES, INC.

CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

BORING LOG

LOCATION: WAKE CO LANDFILL

SURFACE ELEVATION: _____ FIXED DATUM: _____

BORING TYPE: 4" Solid Augers DRILL B-53

SAMPLER: FA JOB NO. # 89132.05 DATE: 10-12-89

HAMMER: _____ DROP BORING NO. # P-11 SHEET: _____

REMARKS: P-11 FOREMAN: MARK BARWICK

DEPTHS FROM	DEPTHS TO	CLASSIFICATION	LOST WATER	SAMPLE NO.	SAMPLE DEPTH	BLOWS PER FOOT
0	3	SI - CL				
3	7	CL - SI				
7	23	FINE SA - SI				
23	50'	GRAVEL SI SA				
		50' TOTAL DEPTH				

GROUNDWATER: I.A.D. NO WATER 24HRS. _____ 7 DAYS _____

B-12

EZRA MEIR ASSOCIATES, INC.

CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

BORING LOG

LOCATION: DAVICO LANDFILL

SURFACE ELEVATION: _____ FIXED DATUM: _____

BORING TYPE: 4" SOLID AUGERS DRILL B53

SAMPLER: FA JOB NO. # 84134.05 DATE: 10-13-89

HAMMER: _____ DROP BORING NO. # 12 SHEET: _____

REMARKS: _____ FOREMAN: MARK BANWICK

DEPTHS FROM	DEPTHS TO	CLASSIFICATION	LOST WATER	SAMPLE NO.	SAMPLE DEPTH	BLOWS PER FOOT
0	6	CL GRAVELLY SI				
6	24	FINE SA SI				
24	26	GRAVELLY SA				
26	28	HARD ROCK				
28	30	GRAVELLY SA				
30	35	WHITE GRAVELLY SI				
		BULK SAMPLE TAKEN				
		6'-26'				
		P-12				
		TOTAL DEPTH 35'				

GROUNDWATER: I.A.D. NO WATER 24HRS. _____ 7 DAYS _____

B-13

EZRA MEIR ASSOCIATES, INC.

CONSULTING ENGINEERS
RALEIGH, NORTH CAROLINA

BORING LOG

LOCATION: DAVIE Co LANDFILL

SURFACE ELEVATION: _____ FIXED DATUM: _____

BORING TYPE: _____ DRILL B-53

SAMPLER: FA JOB NO. # 201741.05 DATE: 10-13-84

HAMMER: _____ DROP BORING NO. # 13 SHEET: _____

REMARKS: _____ FOREMAN: MARK BACWICK

DEPTHS FROM	DEPTHS TO	CLASSIFICATION	LOST WATER	SAMPLE NO.	SAMPLE DEPTH	BLOWS PER FOOT
0	15	CLAY GRAVELLY SI				
15	23	SA-CL. SI				
23	40	SI-CL				
40	50	SA-CL				
		BULK SAMPLE				
		23'-40'				
		TOTAL DEPTH 50				

GROUNDWATER: I.A.D. 45 24HRS. _____ 7 DAYS _____

DAVIE COUNTY

DEPTH, FT.	DESCRIPTION	Elev. =	Blow Count	● PENETRATION - BLOWS PER FT. (5 10 20 30 40 60 80 100)
0.0				
0.7	Topsoil			
	Very Stiff Orange Slightly Fine Sandy SILT		6 9 11	
			4 4 5	
12.0	Stiff Brown and Orange Slightly Micaceous Fine Sandy SILT		4 4 6	
			4 5 8	
			6 8 10	
29.5	Partially Weathered Rock(PWR) as Tan Slightly Silty Coarse to Fine SAND		5 7 50/4	
32.0	PWR as Grey Micaceous Silty Coarse to Fine SAND		50/5	
			50/3	

MAY 1994
Received
Solid Waste
Section

Continued Next Page

TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN, I.D. SAMPLER 1 FT.

- UNDISTURBED SAMPLE
- 50% ROCK CORE RECOVERY
- ◄ LOSS OF DRILLING WATER
- WATER TABLE-24 HR.
- WATER TABLE-1 HR.
- CAVE-IN DEPTH

BORING NO. MW-5

DATE DRILLED 04/27/94

JOB NO. 035-94-022

PAGE 1 of 2

TRIGON

DEPTH, FT.	DESCRIPTION	Elev. =	Blow Count	● PENETRATION - BLOWS PER FT. 5 10 20 30 40 60 80 100
40.0	(continued)			
43.9	Boring Terminated at 43.9 Feet, Boring Continued at 10.0 Foot Offset(MW-5A)		50/4	

TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN, I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50% ROCK CORE RECOVERY

◄ LOSS OF DRILLING WATER

WATER TABLE-24 HR.

WATER TABLE-1 HR.

CAVE-IN DEPTH

BORING NO. MW-5

DATE DRILLED 04/27/94

JOB NO. 035-94-022

PAGE 2 of 2

TRIGON

DEPTH, FT.	DESCRIPTION	Elev. =	Blow Count	● PENETRATION - BLOWS PER FT. 5 10 20 30 40 60 80 100
0.0	Probed to 43.5 Feet			

Continued Next Page

TEST BORING RECORD

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CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN, I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE	WATER TABLE-24 HR.
50% ROCK CORE RECOVERY	WATER TABLE-1 HR.
◄ LOSS OF DRILLING WATER	CAVE-IN DEPTH

BORING NO. MW-5A

DATE DRILLED 05/02/94

JOB NO. 035-94-022

PAGE 1 of 3

TRIGON

DEPTH, FT.	DESCRIPTION (continued)	Elev. =	Blow Count	● PENETRATION - BLOWS PER FT. 5 10 20 30 40 60 80 100
40.0	Probed to 43.5 Feet and Started Wash Drilling			
46.0	Wash Drill Refusal at 46.1 Feet Biotite Gneiss, Slightly Weathered	RC 100 RQD 66	105	
51.1	Biotite Gneiss	RC 100 RQD 83		
	Horizontal Fracture at 56.9 Feet Encountered Soft Seam 57.1' to 57.2'	REC 96 RQD 96		
	Fracture Along Foliation, Angle of 55-60 Degrees at 63.0 Feet	REC 98 RQD 88		
		RC 103 RQ 100		
	100% Water Loss at 71.1 Feet, Fracture with Angle of 50 Degrees Fracture with Angle of 40 Degrees at 73.4 Feet	RC 100 RQD 92		
		RC 100 RQ 100		

Continued Next Page

TEST BORING RECORD

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UNDISTURBED SAMPLE — WATER TABLE-24 HR.

50% ROCK CORE RECOVERY — WATER TABLE-1 HR.

◄ LOSS OF DRILLING WATER — CAVE-IN DEPTH

BORING NO. MW-5A

DATE DRILLED 05/02/94

JOB NO. 035-94-022

PAGE 2 of 3

TRIGON

DEPTH, FT.	DESCRIPTION	Elev. =	Blow Count	● PENETRATION - BLOWS PER FT. 5 10 20 30 40 60 80 100
80.0	(continued)			
		RC 100 RQD 88		
86.1	Coring Terminated at 86.1 Feet			

TEST BORING RECORD

BORING AND SAMPLING MEETS ASTM D-1586

CORE DRILLING MEETS ASTM D-2113

PENETRATION IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN, I.D. SAMPLER 1 FT.

UNDISTURBED SAMPLE

50% ROCK CORE RECOVERY

◄ LOSS OF DRILLING WATER

WATER TABLE-24 HR.

WATER TABLE-1 HR.

CAVE-IN DEPTH

BORING NO. MW-5A

DATE DRILLED 05/02/94

JOB NO. 035-94-022

PAGE 3 of 3

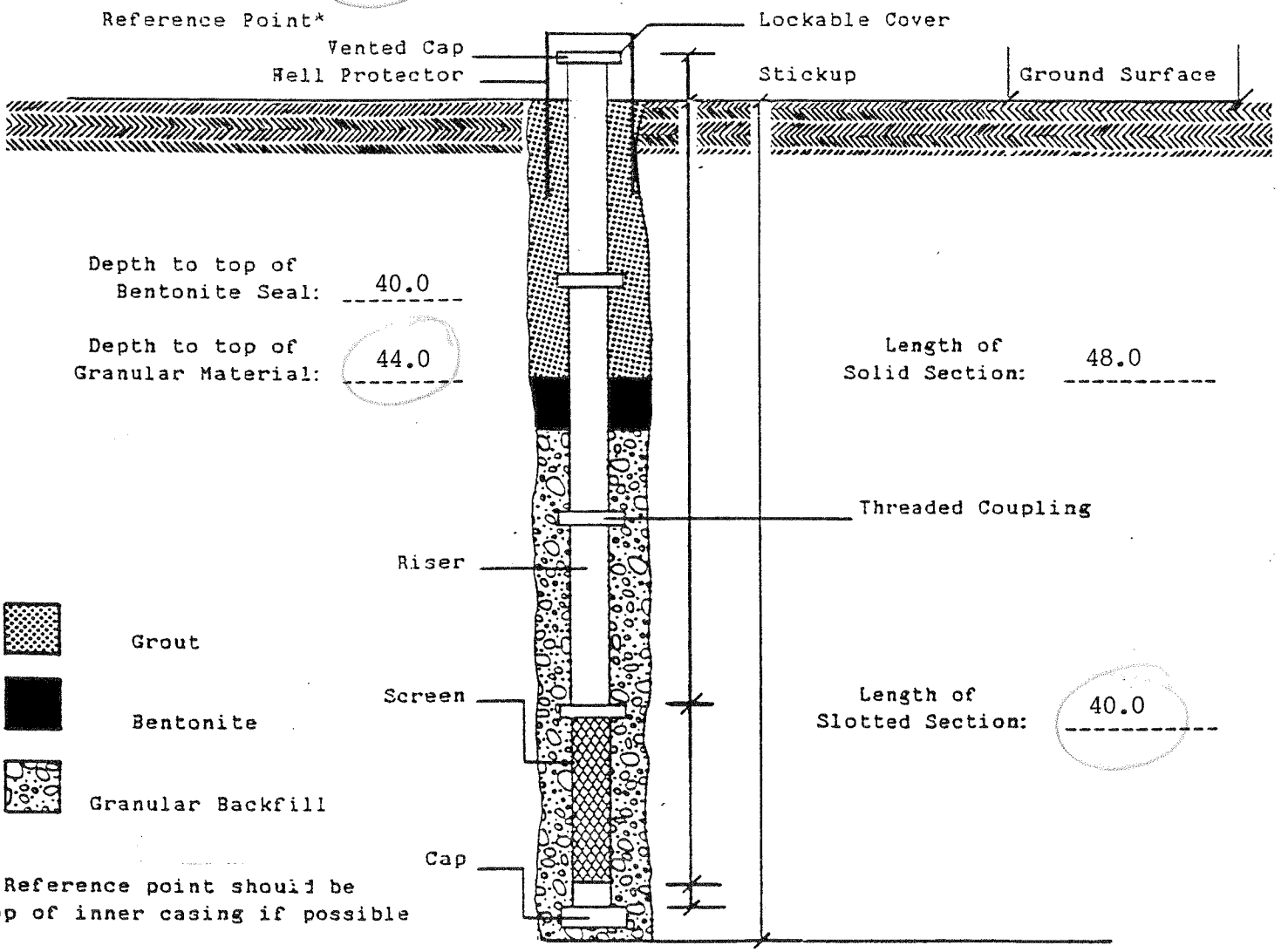
TRIGON

ENGINEERING CONSULTANTS, INC. Greensboro, N.C.

Date: 5-23-94
Job Number: 035-94-022
Project Name: Davie County Landfill
Location: Davie County North Carolina

Ground Surface Elevation: --
Well Number: MW-5A
Total Depth of Well: 86.0
Date Installed: 5-5-94
Granular Backfill Material: fine filter sand
Slot Size: 0.01"
Screen Material: PVC
Screen Diameter: 2"
Riser Material: PVC
Riser Diameter: 2"
Drilling Technique: Wash Drill & Coring
Driller: Steve Williams
Borehole Diameter: 3 7/8"
Lock Data: Master
Key Code/Combination: 3247

Stabilized Water Level: 62.0 feet below ground surface. Measured on: 5-7-94
Depth to top of bedrock: 46.1 feet



* Reference point should be top of inner casing if possible