98-01

CONSTRUCTION QUALITY ASSURANCE AND CONTROL DOCUMENTATION

SCANNED 3/9/15

FOR THE WILSON COUNTY LANDFILL MSWLF FINAL COVER PROJECT WILSON, NORTH CAROLINA

VOLUME 2

COUNTY OF WILSON
DEPARTMENT OF WASTE MANAGEMENT
POST OFFICE BOX 1728
WILSON, NORTH CAROLINA 27894

PREPARED BY

AUG 2000
Received
Solid Waste
Section

NORTH CAROLINA PROFESSIONAL SEAL 20100 ENGINEER GARY W. AHLBERG

AUGUST 2000

GARY W. AHLBERG, P.E.

POST OFFICE BOX 58
WILMINGTON, NORTH CAROLINA 28402
910.602.6488

COMPACTED CLAY LINER
CONSTRUCTION QUALITY ASSURANCE
DATA, OBSERVATIONS, AND REPORTS

Note Drawings at end of file

TITAN Atlantic Group
Engineering, Construction & Consulting

July 27, 2000

Mr. Gary W. Ahlberg, P.E.
P.O. Box 58
Wilmington, North Carolina 28402

Subject: Summary Report of Wilson County Landfill Testing
Clay Liner for Areas 1 and 2
Wilson, North Carolina
Titan Job Number: 8077-80

As authorized by your acceptance of our Proposal Number P-8-032-80, dated May 14, 1998, Titan Atlantic Group, Inc. (Titan) has performed testing during the construction of the Clay Liner for Areas 1 and 2 at the Wilson County Landfill. This report summarizes our scope of work and test results.

SCOPE OF WORK

Our scope of work was outlined in Section 02150, Part 3.3, Testing and Observations, in the Specifications for the project. In summary, we were to observe the construction of the test pad and the production liner, perform field density tests (both nuclear and sand cone method) and to obtain samples for laboratory testing. Laboratory tests performed included both remolded and undisturbed permeability tests, standard Proctor compaction tests, liquid and plastic limit tests and grain size, including hydrometer analyses.

OBSERVATIONS

The results of our field and laboratory testing were provided during the progress of the work. In general, we provided laboratory and field testing of the clay liner used for capping the landfill.

Soil classification tests determined the soils used in the project to be of either CH or CL classification, (inorganic clays of moderate to high plasticity. Proctors performed on the soil used for the clay liner varied depending upon clay and sand content. Undisturbed sample permeabilities typically exceed the required conductivity by an order of magnitude. Remolded composite sample permeabilities were typically three orders of magnitude greater than required.

The test pad was constructed and tested prior to the start of the production liner. The test pad was constructed using various compactive efforts in order to determine what would be required on the production liner.

CONCLUSIONS

Permeability testing on the project determined that the liner material met the required minimum conductivity specifications. Permeability samples were obtained at random density test locations, so that a correlation between compaction and permeability could be determined. Based on the test results obtained, it is our opinion that the liner meets project specifications.

The results of our testing for both phases of the liner were provided during the course of the work. If additional copies of the reports are required, please contact us.

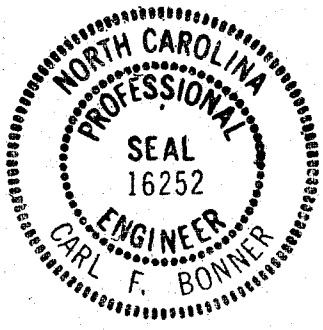
We appreciate the opportunity to work with you on this project. If you have any questions, please contact us at (252) 353-1600.

Sincerely,

TITAN ATLANTIC GROUP, INC.

Carl F Bonner

Carl F. Bonner, P.E.
Greenville Office Manager



Robert H. Neel, Jr., L.G.
Operations Manager

ECOLOGIC

ECOLOGIC ASSOCIATES, P.C.
2007 Yanceyville Street, Ste. 223
Greensboro, NC 27405-5004
910·271·3093 • Fax 910·271·3094
ecologic@compuserve.com

PLEASE NOTE NEW AREA CODE (336)

July 8, 1998

Gary W. Ahlberg, PE
P.O. Box 58
Wilmington, NC 28402

RE: Clay Test Pad for Area 2 Final Cover
Wilson County Landfill
Wilson, North Carolina

Dear Gary:

This report summarizes our observations and conclusions regarding construction of the clay test pad referenced above. As Soils CQA Consultant for the test pad, we directed the field work by Ready Construction Co. ("Ready") and Titan Atlantic Group ("Titan"), and have reviewed Titan's report dated June 17 and interpreted their test results. Recommendations are provided for construction of the compacted clay liner (CCL) portion of the final cover for Area 2B and Area 1 based on the test pad results.

Test Pad Construction and Testing

Work commenced on the morning of Wednesday, May 20. After some grading by Ready to reshape and prepare the subgrade, R. R. Herring and Assocs. surveyed the base grade and set reference stakes to guide test locations and monitor lift and layer thicknesses. Refer to the attached Drawing TP-1 for the test pad plan view. We reviewed the work plan ("Clay Test Pad Work Summary") and specifications (Section 02150) with Ready's superintendent and Titan's field technician. It was agreed to place the clay in four 6-inch compacted lifts (about 8 inches loose) and run the compactor in a looping pattern, turning on the flatter areas at the top and bottom of the slope.

Clay soil was excavated from the Tucker Site using a trackhoe and transported to the test pad site by tandem axle dumps. This resulted in uncontrolled mixing of the shallow tan-brown sandy clay and the deeper gray and red fat clay, including large clumps and clods. The first lift of clay (Lift 1 or "transition lift") was placed by spreading with a large dozer (Komatsu D68E) from the toe of the slope. Compaction then commenced with a tow-behind sheepsfoot roller pulled by a small, low ground pressure dozer (John Deere 550 GLGP).

Printed on recycled paper.

The roller had two 48-inch wide wheels with 7-inch knob-ended feet, each pivoting independently from the yoke. The roller was reported to be full of water for maximum weight.

It became immediately apparent that the compactor was ineffective due to clay clumps binding to and clogging the roller feet and drum. Several of the steel "teeth" that pry soil from between the roller feet, thus cleaning the roller as it goes, were missing. Lift thickness control was also observed to be a problem, with excessive thickness noted at both the toe and the top of the slope. Ready attributed this to deployment of the clay from the toe, and it was agreed that deployment could be from the top of the slope for future lifts. Work was halted and Ready was directed to make repairs to the roller before resuming compaction. Ready said it would be a day or two before the repairs could be made, so work was scheduled to resume on Tuesday, May 26, following the Memorial Day holiday.

Three small test excavations were made in the first lift, and it was noted that clod destruction was generally good, but that "joints" of silty sand were evident between clods. This suggested that segregation of soil types was occurring as a result of the excavation and placement method and that thorough mixing, kneading and clod destruction was not happening during compaction. Ready was asked to use only light dozers to spread the clay and pull the compactor in order to reduce compaction from the dozer tracks and allow the roller to better penetrate the lifts and knead the clay.

On May 26, work resumed with the removal of excess, desiccated clay from the surface, leaving an initial lift of approximately 6 inches. The second lift was deployed using a small dozer (Komatsu D37P) and compacted. The sheepsfoot roller had been repaired and was working properly, pulled by a small dozer (John Deere 550 GTC). Lift 2 was compacted by 5 passes of the roller followed by 2 coverages of the heavy dozer (Komatsu D68E). Following compaction, Titan ran six field density tests (numbers 1 through 3, three each of sand cone and nuclear methods) and obtained two Shelby tube samples and one composite sample for laboratory testing. All test penetrations in compacted lifts were filled with powdered or pellet bentonite. The Shelby tube samples were loose and partially fell apart during removal, revealing poor lift bonding. This was attributed to low moisture, and Ready was asked to wet the soil in place before and during placement of the next lift. Work stopped for the day so that Ready could mobilize a water truck or similar equipment the following morning.

After a morning delay for drying of the haul roads due to rain the previous evening, work resumed on the afternoon of May 27. The surface of Lift 2 was scarified with the sheepsfoot roller prior to placing Lift 3. Lift 3 was compacted by 4 passes of the roller followed by 2 coverages of the heavy dozer. Following compaction, Titan ran six field density tests (numbers 4 through 6, three each of sand cone and nuclear methods) and obtained three Shelby tube samples (numbers 1 through 3) and one composite sample for laboratory testing. Prior to placing Lift 4, Ready attempted to wet the scarified surface of Lift 3, but the pressure sprayer used was ineffective due to insufficient spray volume, and wetting was abandoned. A similar construction sequence was employed for Lift 4, except 6 passes of the roller were made. Titan obtained two Shelby tube samples (numbers 4 and 5) for laboratory testing.

On the following morning (May 28), Titan ran six field density tests (numbers 7 through 9, three each of sand cone and nuclear methods) and obtained one composite sample for laboratory testing. Herring and Assocs. was notified of the test pad completion and asked to survey the final surface for thickness confirmation. Ready was put on notice to spread a protective cover lift after surveying.

The locations of Titan's field testing and sampling and the survey grid and point designations used by Herring and Assocs. are shown on the attached Drawing TP-2.

Results and Conclusions

The test pad was constructed successfully, though concerns remain about the thoroughness of clay clod destruction and lift and layer bonding. In Titan's summary report of field and laboratory testing dated June 17, 1998, they noted that in-place permeabilities (hydraulic conductivities) measured in "undisturbed" Shelby tube samples were roughly one order of magnitude (10 times) less than that required, or averaging about $1x10^{-6}$ cm/sec versus $1x10^{-5}$ cm/sec required. In fact, no permeabilities failed the regulatory criterion. Titan also noted that laboratory remolded permeabilities of the composite samples were roughly three orders of magnitude less than that required, or around $1x10^{-8}$ cm/sec.

We conclude from those findings that processing the clay prior to compaction (reducing clod size substantially and providing more uniform moisture distribution) can reduce the compacted permeability by up to two orders of magnitude compared to compacting the clay "as is" from the borrow pit using the excavation method proposed. Since the inherent permeability of the clay should not be changed by processing, we conclude that the increased permeabilities observed in the field-compacted samples were due to "macropores", or lift interfaces, joints between clods and other preferential flow paths resulting from incomplete molding and kneading of the clay during compaction. In other words, the clay was not compacted into a homogeneous clay layer as desired. Contributing factors to this problem likely included excessive initial clod size resulting in incomplete mixing of soil types and less effective compaction, variable soil moisture, and insufficient water on the clod surfaces to promote clay molding and bonding.

The results of the field density testing are shown graphically on the attached Drawing TP-3. Again, all of the combinations of as-compacted moisture and in-place dry density shown are associated with "successful" permeability results, so a definitive "Acceptable Zone" of moisture-density relationships cannot be drawn. The plot is a moisture-density plot showing reference Standard Proctor curves from previous laboratory compaction tests performed on clay soils from the Tucker site (including Titan's tests). Also shown are three "one-point Proctor" curves extrapolated from check tests performed by Titan on the composite samples from the three upper lifts of the test pad. It is evident from the plot that none of the laboratory compaction curves generated to date adequately represent the composite soil mixture resulting from the excavation method used by the contractor. The plotted results suggest

that the "heavy" clay soils (generally sandy clays) and the "light" clay soils (generally fat clays) combine to produce a "medium" clay soil, as expected. The "one-point Proctor" curves appear to reasonably represent the composite soil.

Of the many variables potentially evaluated during the test pad construction, only a few were actually examined, mostly due to limited equipment and time. Some variables that were not evaluated, i.e., were held constant, include lift thickness, water content (meaning no water was added), initial clod size (meaning no reduction), and compactor type, weight and speed.

Variables that were varied and/or examined include number of passes (compactive effort), slope angle, in-bank (as-compacted) moisture content and compacted dry density. Of those variables, no trends were noted in the outcomes of interest, namely compacted permeability, clod destruction and lift bonding. This is probably more a result of the limited number of data points generated than a lack of real relationships between those factors and the outcomes. Table 1 below shows a comparison of permeability and moisture-density data to number of compactor passes and percent slope. Again, no trends are evident. Certainly, a minimum level of compactive effort is needed to achieve the desired outcomes, and improvements to the construction methods can be made, especially with regard to clod destruction and lift/layer bonding.

TABLE 1

PERMEABILITY/MOISTURE-DENSITY TEST RESULTS

Shelby Tube ID	Location	# Passes	% Slope	Moisture Content (%)	Dry Density (pcf)	Hydraulic Cond. (cm/s)
1	Lift 3	4	30	26.4	92.8	1.3×10^{-6}
2	Lift 3	4	25	28.0	85.2	1.3×10^{-6}
3	Lift 3	4	16	23.0	99.8	1.1×10^{-6}
4	Lift 4	6	33	23.8	97.3	1.1×10^{-6}
5	Lift 4	6	25	22.7	94.1	7.6×10^{-7}

In conclusion, it appears that the required permeability can be readily achieved over the probable ranges of in-bank moisture contents (mostly within 2 percent of optimum moisture), slope angles, and compactive efforts.

Herring and Associates' survey data are shown in Table 2 below, revealing that some portions of the test pad failed to achieve the required 24 inches (2.0 feet) of thickness. This appears to be mostly an issue along the margins of the test pad. The slope angles, expressed as percent slope (45 degrees = 100 percent) are also shown.

TABLE 2

TEST PAD SURVEY RESULTS

Survey Point	Top of Clay El.	Base El.	Depth of Clay (Ft.)	Slope Below (%)
493	152.26	152.24	0.02	7.9
492	150.26	148.52	1.74	25.1
491	144.03	142.95	1.08	25.9
490	137.85	136.02	1.83	31.7
489	130.18	128.85	1.33	26.2
388	125.97	125.78	0.19	
501	155.90	153.88	2.02	10.0
500	155.03	152.70	2.33	15.6
499	151.14	148.88	2.26	21.5
498	145.82	143.29	2.53	28.5
497	138.92	136.76	2.16	33.5
496	130.71	129.06	1.65	26.9
595	125.58	125.01	0.57	
508	155.53	153.14	2.39	16.7
507	155.03	152.64	2.39	16.4
506	150.86	149.04	1.82	24.3
505	144.91	143.54	1.37	25.0
504	138.83	136.5	2.33	34.0
503	130.25	128.33	1.92	27.7
502	125.48	124.36	1.12	

Recommendations

The following sections describe methods and procedures used in construction of the test pad, followed by recommendations for construction of the clay infiltration layer during full scale construction of the final cover over Areas 2B and Area 1 of the Wilson County Landfill.

Soil Excavation & Hauling

Test Pad: Non-clay soil was stripped and stockpiled. Then, the clay soil was excavated by track hoe which penetrated several feet vertically, mixing soils having varying clay and sand content, including light gray plastic ("fat") clay, tan-brown sandy clay and seams of brown silty sand. The excavated soil was loaded into tandem dumps and hauled to the working face.

Recommended for Construction: The same procedure may be used. Large, articulated ATV dumps (e.g., CAT D25) should be considered to increase production and reduce work stoppages due to surface wetness following rains. Other methods, such as self-loading or dozer-assisted scrapers (pans)can also be used.

Site Preparation

Test Pad: Vegetation was stripped, followed by excavation of up to 3 feet of excess intermediate cover soil in an effort to flatten the slope and recover excess soil.

Recommended for Construction: Remove vegetation only. In areas designated by the surveyor, remove excess soil only as needed to bring slopes to a maximum angle of 3:1 (33%). Then, fine grade to produce an even, gradually changing surface, leaving the surface rough by tracking or scarifying to promote mixing with the initial clay lift (layer bonding).

Clay Processing

Test Pad: No processing was done. Initial clod destruction was attempted by tracking the loose lifts with a light dozer prior to compaction, but this was largely ineffective.

Recommended for Construction: Process the clay soil to reduce clods to 6 inches maximum and mix the various soil types thoroughly before spreading. The processing can be done at a staging area or on the working face, but a contingency plan is needed for the latter case in the event that processing causes production delays and processing and stockpiling is needed in advance of placement and compaction. A heavy, tow-behind disc may suffice, though good results have also been achieved using a tow-behind "pulverizer" (tiller). A shredding and screening plant could be considered, but the cost will probably be prohibitive. Clay processing may not be needed if other excavation methods are used that produce smaller clay clods.

Clay Deployment

Test Pad: Deployment was initially done from the bottom of the slope, but it was changed to the top to avoid piling up at the toe. A small, low-ground-pressure (LGP) dozer was used and was dedicated to deployment only. The clay soil was spread in four 8-inch ± loose lifts, then compacted to 6 inches ±, forming a 24-inch ± layer. Lift thickness was monitored by the use of grade stakes.

Recommended for Construction: Deploy from the top of slopes. Spread with a dedicated, LGP dozer as before, but consider using three 10-inch ± loose lifts (compacted to 8 inches ±) to form the 24-inch ± layer in order to increase production. The contractor should be responsible for controlling and monitoring lift thickness and repairing holes left by control and/or monitoring devices.

Compaction

Test Pad: A tow-behind sheepsfoot roller having 7-inch feet was used and was effective after maintenance to repair its self-cleaning mechanism. The roller was reported to be full of water (maximum weight). The roller was pulled upslope, then turned and pulled downslope, forming a looping pattern. The roller was towed by a dedicated LGP dozer. Number of passes varied from 4 to 6 per lift, and the roller was followed by 2 passes of a heavy dozer to compact the surface.

Recommended for Construction: The same equipment may be used in the same configuration and same manner, though a self-propelled compactor with long feet (minimum 5-1/2"), such as a CAT 815, could be proposed for the Project Manager's approval if production can be improved. If equipment with "pad feet" or shorter feet is used, the thickness of the lifts may need to be reduced to assure compaction in the lower portion of the lift.

A minimum of 5 passes of the sheepsfoot roller is recommended followed by dozer tracking. Though a minimum dry density or degree of compaction is not specified for compaction control, so as not to be too restrictive, percent compactions above 95 percent should be anticipated for the moisture range recommended below. Alternatively, the number of passes could be reduced to 3 or 4 followed by 1 or 2 passes of a heavy, smooth drum roller to compact the upper portion of the lift and facilitate clod destruction. Following compaction with other than a sheepsfoot or pad roller, the surface must be scarified to produce a rough surface to promote lift bonding.

Add water or aerate to dry, as determined by the soils' in-bank water content, to achieve a water content during compaction between 2 percent dry of optimum and 3 percent wet of optimum. Water should be sprayed on completed lifts and the processed clay to keep the lift and clod surfaces damp to promote molding and bonding. The addition of water must be done in such a way as to allow even distribution and mixing prior to compaction, and spreading and compaction equipment must be suited to working with the damp clay on slopes. Care should be taken to not soak or excessively wet the clay.

Protection from Desiccation

Test Pad: No protection was provided. The surface of completed lifts was observed to crack after exposure to hot, dry weather.

Recommended for Construction: Cover with soil or spray with water as needed to prevent desiccation cracking. Remove any damaged clay as directed by the Soils QAC. Refer to Section 02290 of the project specifications for Contractor requirements.

Testing

Test Pad: Testing was done in accordance with Section 02150 of the project specifications.

Recommended for Construction: Moisture-density testing, in-place hydraulic conductivity testing, and other testing should be performed as called for in Section 02290 of the project specifications. Because variability was noted in the results of side-by-side compaction tests performed using sand cone (ASTM D1556) and nuclear (ASTM D2922) test methods, sometimes to a significant degree, it is recommended that the sand cone method be used at a greater frequency than that called for in the referenced specification for correlative testing. This should be done at least until more close agreement between methods can be demonstrated. As noted by Titan, the discrepancies may have been caused by the large clod sizes, so processing the clay as recommended may take care of this problem. The liberal use of one-point Proctor tests is also strongly recommended due to the variability of clay soil properties so as to aid the interpretation of test results relative to optimum moisture content and maximum dry density.

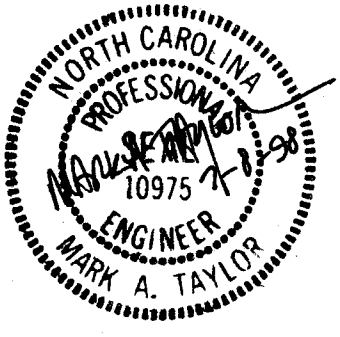
Test Pad Incorporation into Final Cover

Because the test pad was left exposed to hot, dry weather for several days before the protective cover soil was placed, and the total thickness was insufficient in some areas, it is recommended to remove the upper 6 inches or so of clay and replace it, adding clay soil as needed to achieve the specified 24 inches minimum.

Closure

EcoLogic Associates is pleased to have been of service to you and Wilson County for the clay test pad construction. Should you have any questions, need additional information, or need our services during subsequent phases of the project, please don't hesitate to call. We appreciate your confidence in us and your patronage.

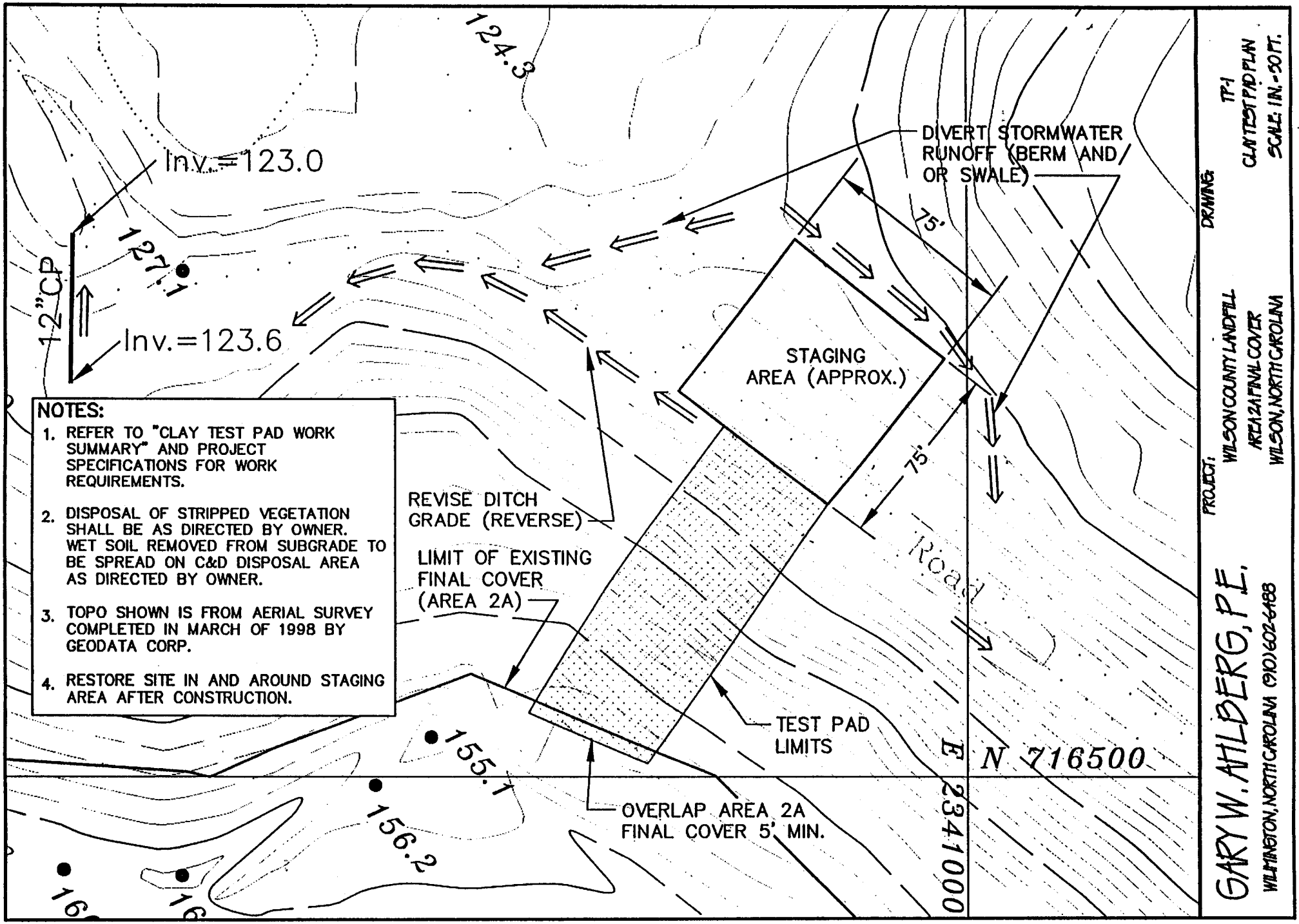
Sincerely,

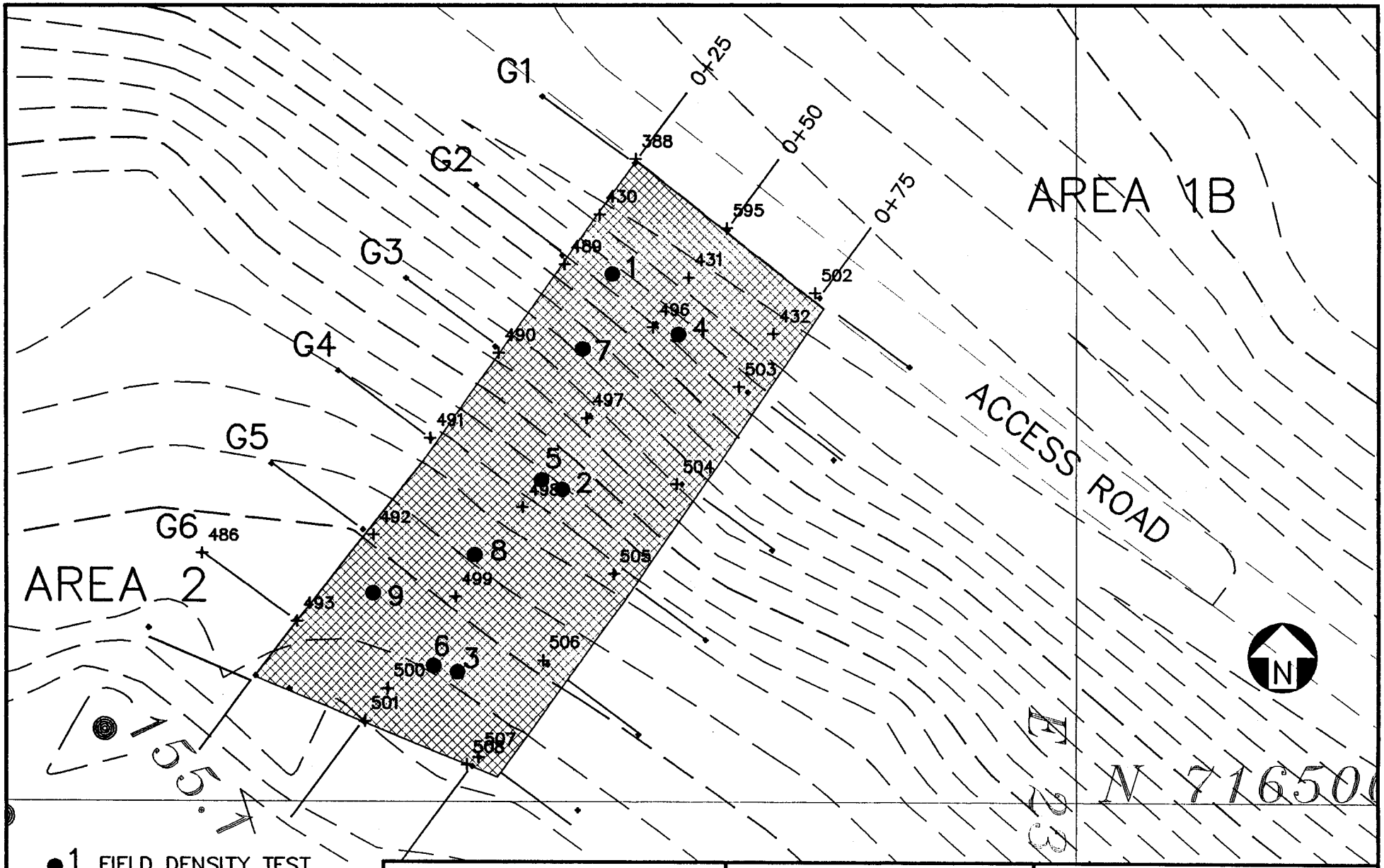


Mark A. Taylor, PE
Senior Consultant

C: Steve Clayton, Wilson County Solid Waste
Carl Bonner, PE, Titan Atlantic Group

Attachments: Drawings TP-1 through TP-3


124.3
Inv.=123.0
12"CP
127.1
Inv.=123.6
DIVERT STORMWATER RUNOFF (BERM AND/ OR SWALE)
75'
STAGING AREA (APPROX.)
75'
REVISE DITCH GRADE (REVERSE)
LIMIT OF EXISTING FINAL COVER (AREA 2A)
Road
TEST PAD LIMITS
155.1
156.2
OVERLAP AREA 2A FINAL COVER 5' MIN.
E 2341000
N 716500
NOTES:
1. REFER TO "CLAY TEST PAD WORK SUMMARY" AND PROJECT SPECIFICATIONS FOR WORK REQUIREMENTS.
2. DISPOSAL OF STRIPPED VEGETATION SHALL BE AS DIRECTED BY OWNER. WET SOIL REMOVED FROM SUBGRADE TO BE SPREAD ON C&D DISPOSAL AREA AS DIRECTED BY OWNER.
3. TOPO SHOWN IS FROM AERIAL SURVEY COMPLETED IN MARCH OF 1998 BY GEODATA CORP.
4. RESTORE SITE IN AND AROUND STAGING AREA AFTER CONSTRUCTION.
DRAWING: TP-1 CLAY TEST PAD PLAN SCALE: 1IN.=50FT.
PROJECT: WILSON COUNTY LANDFILL AREA 2A FINAL COVER WILSON, NORTH CAROLINA
GARY W. AHLBERG, P.E.
WILMINGTON, NORTH CAROLINA (910) 602-6188



● 1 FIELD DENSITY TEST AND SAMPLE LOCATIONS

NOTE: SHADED AREA DEFINES APPROXIMATE LIMITS OF TEST PAD

ECOLOGIC

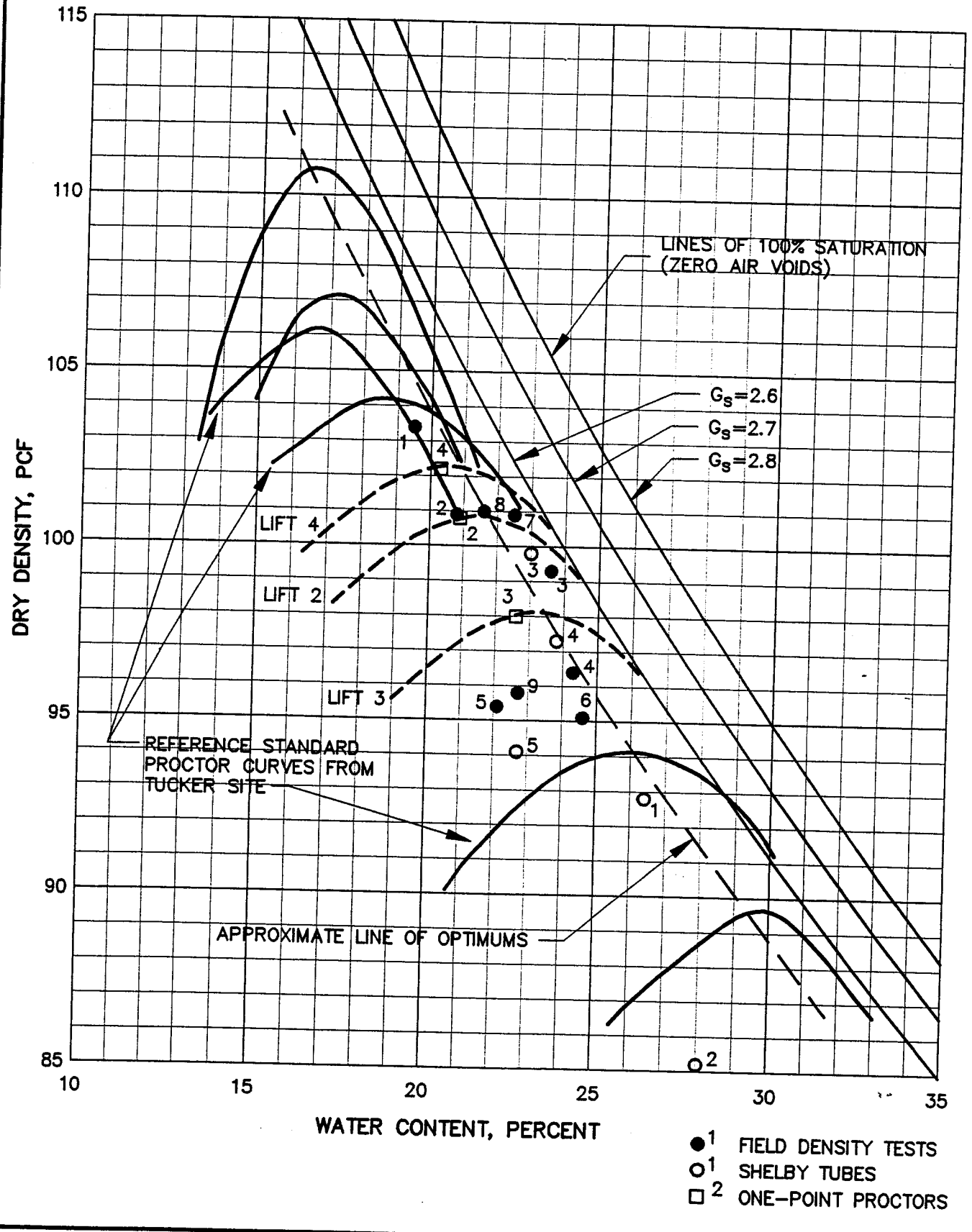
ECOLOGIC ASSOCIATES, P.C.
2007 YANCEYVILLE STREET
SUITE 223
GREENSBORO, NC 27405-5004

AREA 2 CLAY TEST PAD CONSTRUCTION

WILSON COUNTY LANDFILL
WILSON, NC

SURVEY GRID AND TEST LOCATIONS

DATE: 7/07/98	SCALE: 1"=30'
DRN. BY: MH	DWG. NO: TP-2



ECOLOGIC
ECOLOGIC ASSOCIATES, P.C.
2007 YANCEYVILLE STREET
SUITE 223
GREENSBORO, NC 27405-5004

AREA 2 CLAY TEST PAD CONSTRUCTION	MOISTURE-DENSITY RELATIONSHIPS	
WILSON COUNTY LANDFILL WILSON, NC	DATE: 7/07/98	SCALE: NONE
	DRN. BY: MH	DWG. NO: TP-3

TITAN Atlantic Group
Engineering, Construction & Consulting
Greenville, North Carolina

June 17, 1998

Mr. Gary W. Ahlberg, P.E.
P.O. Box 58
Wilmington, North Carolina 28402

Subject: Summary Report of Wilson County Landfill Testing
Area 2 Clay Liner Test Pad
Wilson, North Carolina
Titan Job Number: 8077-80

As authorized by your acceptance of our Proposal Number P-8-032-80, dated May 14, 1998, Titan Atlantic Group, Inc. (Titan) has performed testing during the construction of the Area 2 Test Pad at the Wilson County Landfill. This report summarizes our scope of work and observations and serves as a cover letter of the attached field and laboratory data.

SCOPE OF WORK

Our scope of work was outlined in Section 02150, Part 3.3, Testing and Observations, in the Specifications for the project. In summary, we were to observe the construction of the test pad, perform field tests and to obtain samples for laboratory testing. Field tests performed included field density testing using nuclear and sand cone test methods; field density test locations were backfilled using bentonite clay. In addition, Shelby Tube samples for laboratory permeabilities were also obtained. Samples of the clay liner were obtained to perform standard Proctors, liquid and plastic limit tests, grain size, including hydrometer analyses and permeabilities.

OBSERVATIONS AND RECOMMENDATIONS

The results of our field and laboratory testing are attached with this summary report. In general, the undisturbed sample permeabilities typically exceed the required conductivity by an order of magnitude. Remolded composite sample permeabilities were typically three orders of magnitude greater than required.

Soil classification tests determined the soils used in the test pad to be a CH or inorganic clay of high plasticity. Proctor maximum dry densities and optimum moisture contents varied depending upon clay and sand content.

The test pad was constructed using trackhoes to excavate the soils from the borrow pit; dump trucks were used to transport the soils to the test pad. A sheepsfoot roller was used to compact the various layers of the clay liner. Typically, the pad was installed in 8 inch

loose lifts and compacted to a average thickness of six inches. The amount of passes of the roller was varied during construction and documented. We noted that the soils placed were typically not very well graded and contained numerous chunks of clay that were not broken up before placement. Tracking using a dozer, was employed in an effort to reduce the clod size. These efforts were not very effective. Discing at a staging area would be a more effective means of reducing the clod size.

We understand that the number of passes for the compactor for each lift was varied in an effort to determine requirements for compaction. Lift 2 received 5 passes of the compactor; Lift 3 received 4 passes; Lift 4 obtained 6 passes of the compactor. Based on our test information, a minimum of 5 passes with the roller should be considered adequate for the project. Successive lifts were bonded together by compacting using the sheepsfoot compactor.

The results of our one point Proctor tests indicate that the soils were not adequately mixed and that the Proctors for the project may be high and low ranges for the material in the field, depending on the consistency of the soils mixture.

From our field density testing, we observed a slight variance in the results obtained between the nuclear and sand cone test methods. We believe these differences to be minor and could be the result of inadequate clay clod break up during the placement of the soils for the project. A clay clod at the location of a test could cause the results to vary by the amount observed. We recommend that nuclear test methods be used on the actual construction, with a sand cone back-up for every ten tests.

Based on our observations of the excavation, mixing, hauling and placement of the soil, we recommend that additional soil mixing methods be used on the production liner. We recommend that the clay clods be broken up and mixed with the sandy soils, prior to placement for the liner. Wetting using a water truck or similar approved piece of equipment, will most likely be necessary during the clod destruction and mixing phase of the project, as the mixing operations may reduce the soil moisture to the dry side of optimum.

We appreciate the opportunity to work with you on this project. If you have any questions, please contact us at (252) 353-1600.

Sincerely,

TITAN ATLANTIC GROUP, INC.

Carl F Bonner

Carl F. Bonner, P.E.
Greenville Office Manager

Robert H. Neel, Jr.

Robert H. Neel, Jr., L.G.
Operations Manager

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Gary W. Ahlberg, P.E.
Post Office Box 58
Wilmington, NC 28402

DATE: June 19, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. Ahlberg

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☑ field density reports

☑ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS: Reports dated May 18, 20, 21, 26, 27, 28, and June 11, 1998.

Signed: Bob Neel

Copies to: Mr. Mark Taylor

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and warm

TITAN JOB NO. : 8077-80

DATE: 5/18/98 PERSONNEL: J. Brady

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic Group, Inc. was present to observe and obtain samples for test pits being excavated for borrow material evaluation for the liner for the subject project.

Four samples were obtained for testing. Two samples will be prepared for standard Proctor compaction testing and two samples will be prepared for natural moisture content.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Yell

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and warm

TITAN JOB NO. : 8077-80

DATE: 5/20/98 PERSONNEL: J. Brady

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic Group, Inc. was on site to monitor the placement of the test pad.

Upon discussion with Mr. Mark Taylor, it was decided to obtain a third sample for testing due to the fact that excavation of the borrow area was combining three different types of soil instead of just the two separate ones obtained on May 18, 1998.

A sample was obtained from the test pad itself. One lift of material was placed but due to equipment problems, the contractor decided it was better to wait until May 21, 1998 to place anymore material.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Heel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and warm

TITAN JOB NO. : 8077-80

DATE: 5/21/98 PERSONNEL: J. Brady

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic Group, Inc. was present to observe the placement of the test pad. Due to continued equipment problems, work will not resume until May 26, 1998.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Heel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Clear and warm

TITAN JOB NO. : 8077-80

DATE: 5/26/98 PERSONNEL: J. Brady

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic Group, Inc., was present to observe and test the placement of the test pad.

Hauling of material began at approximately 11:00 am, with material being pushed down slope. This is the first full lift of clay to be placed.

Six field density tests were performed, three by the nuclear method and three by the sand cone method. In addition, one undisturbed sample was obtained. A second attempt was made to push a second tube but no recovery was obtained.

The locations tested were as follows:

- 1) G - 1 + 22'; 0 + 35
- 2) G - 3 + 17'; 0 + 55
- 3) G - 5 + 13'; 0 + 60

The test results obtained are attached.

Upon conclusion, the technician returned to the Greenville, NC office.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Carl Bonner

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 05/26/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3)	Max. Dry Dens.:	104.2	PCF at	18.6	% Opt. Moist.	Method: ASTM D-1556
( )	Max. Dry Dens.:		PCF at		% Opt. Moist.	Method:
( )	Max. Dry Dens.:		PCF at		% Opt. Moist.	Method:
( )	Max. Dry Dens.:		PCF at		% Opt. Moist.	Method:
( )	Max. Dry Dens.:		PCF at		% Opt. Moist.	Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)
1	1.0	G - 1 + 22; 0 + 35	129.4	19.4	108.3	3	104
2	1.0	G - 3 + 17; 0 + 55	121.9	20.8	100.9	3	97
3	1.0	G - 5 + 13; 0 + 60	122.8	23.6	99.3	3	95

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Yeel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 05/26/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.0	G - 1 + 22; 0 + 35	123.6	19.5	103.4	3	99	
2	1.0	G - 3 + 17; 0 + 55	127.3	21.3	104.9	3	101	
3	1.0	G - 5 + 13; 0 + 60	126.5	20.8	104.7	3	101	

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Overcast and warm

TITAN JOB NO. : 8077-80

DATE: 5/27/98 PERSONNEL: J. Brady

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic Group, Inc., was present to observe and test the placement of the test pad.

No production was made until 12:45 P.M. due to lack of equipment and a rebuilding of the haul roads. At 1:00 P.M. placement of clay liner material for the two full clay lifts was began.

Six field density tests were performed; three were performed by the nuclear method and three were performed by the sand cone method. In addition, three undisturbed samples were also obtained. Field density tests and undisturbed samples were obtained from the following areas:

- 4) G - 2 + 0'; 0 + 55
- 5) G - 3 + 18'; 0 +50
- 6) G - 5 + 15'; 0 + 55

Field density test results are attached.

At 4:00 P.M., placement of the third full clay lift was began and was concluded at 6:50 P.M.. Two undisturbed samples of the complete depth of the test pad were obtained from the following areas:

- G - 2 + 20'; 0 + 50
- G - 4 + 15'; 0 + 50

Upon conclusion, the technician returned to the Greenville, NC office.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Carl Bonner

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 05/27/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)
4	0.5	G 2 + 0; 0 + 55	119.9	24.3	96.4	3	93
5	0.5	G 3 + 18; 0 + 50	116.6	22.1	95.4	3	92
6	0.5	G 5 + 15; 0 + 55	117.3	19.3	98.3	3	94

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Keel

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : 05/27/98
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
4	0.5	G 2 + 0; 0 + 55	120.0	26.7	94.7	3	91	
5	0.5	G 3 + 18; 0 + 50	115.8	22.3	94.6	3	91	
6	0.5	G 5 + 15; 0 + 55	118.6	24.6	95.1	3	91	

Method Used: NUCLEAR Fill Placement:

Bob Hall

Remarks:

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Clear and warm

TITAN JOB NO. : 8077-80

DATE: 5/28/98 PERSONNEL: J. Brady

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic Group, Inc. was present to provide testing of the final clay lift for the test pad.

Three field density tests were performed by nuclear methods and three field density test were performed by the sand cone method.

The test locations were as follows:

- 7) G - 2 + 15'; 0 + 40
- 8) G - 4 + 15'; 0 + 48
- 9) G - 5 + 10'; 0 + 35

The test results obtained are attached.

Upon conclusion, the technician returned to the Greenville, NC office.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Carl Borman

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 05/28/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3)	Max. Dry Dens.:	104.2	PCF at	18.6	% Opt. Moist.	Method: ASTM D-1556
( )	Max. Dry Dens.:		PCF at		% Opt. Moist.	Method:
( )	Max. Dry Dens.:		PCF at		% Opt. Moist.	Method:
( )	Max. Dry Dens.:		PCF at		% Opt. Moist.	Method:
( )	Max. Dry Dens.:		PCF at		% Opt. Moist.	Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)
7	Grade	G 2 + 15; 0 + 40	123.7	22.5	100.9	3	97
8	Grade	G 3 + 40; 0 + 48	126.0	24.3	101.3	3	97
9	Grade	G 5 + 10; 0 + 35	117.6	22.7	95.8	3	92

Method Used: SAND CONE Fill Placement:
Remarks:

Boxwell

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : 05/28/98
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
7	Grade	G 2 + 15; 0 + 40	121.7	22.5	98.7	3	95	
8	Grade	G 3 + 40; 0 + 48	122.9	21.6	101.0	3	97	
9	Grade	G 5 + 10; 0 + 35	117.3	25.4	93.5	3	90	

Method Used: NUCLEAR Fill Placement:
Remarks:

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: City of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO. : 8077-80

DATE: 6/11/98 PERSONNEL: J. Brady

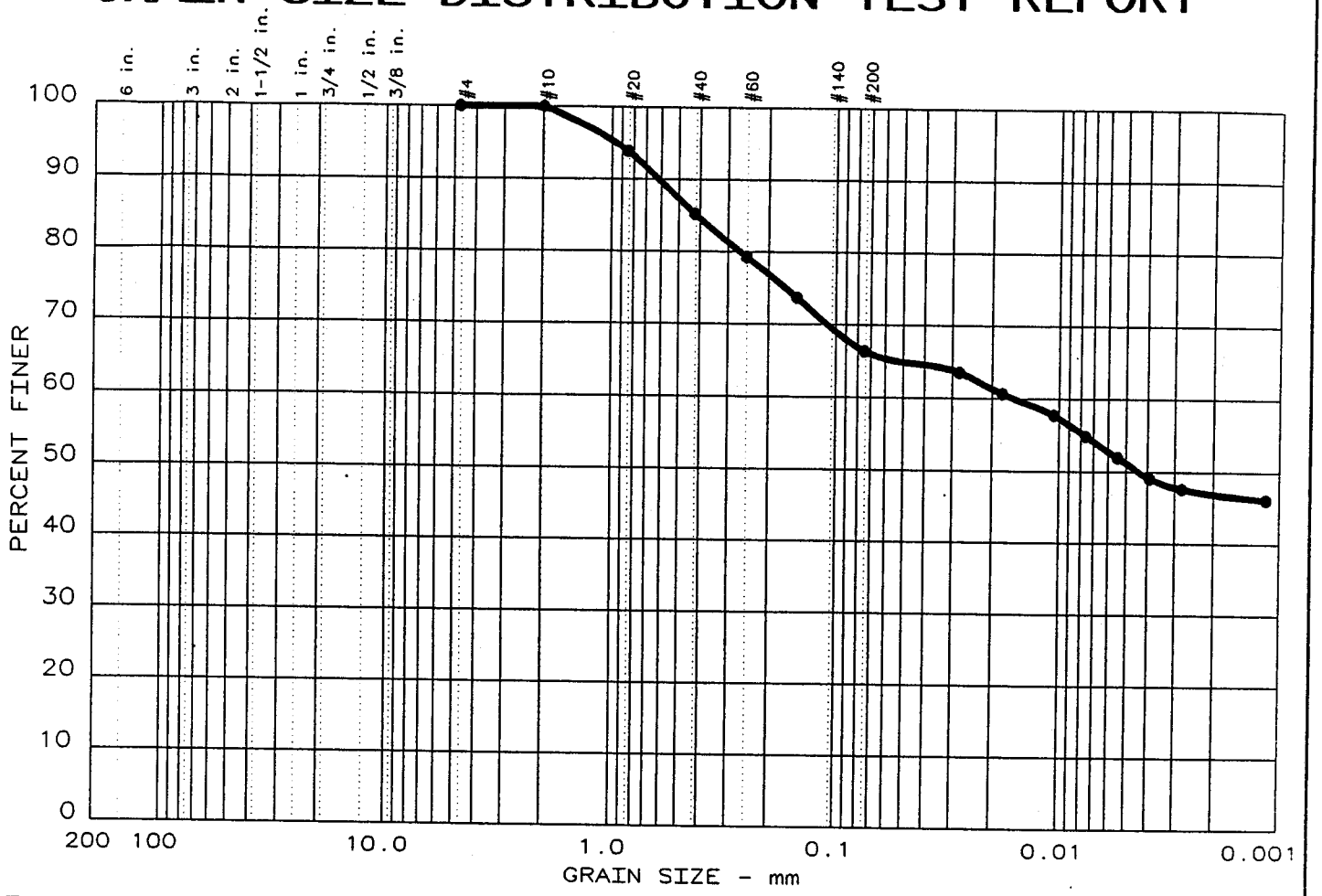
Please find as follows the "one point" Proctor results from composite samples two, three and four:

Sample Number:	Weight wet (pcf):	Percent moisture:	Weight dry (pcf):
2	121.8	20.9	100.8
3	120.1	22.6	98.0
4	122.9	20.3	102.2

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Hall

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	33.6	15.3	51.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	52	34	0.417		0.0044					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: COMPOSITE SAMPLE FROM THE FOURTH LIFT

Date: JUNE 9, 1998

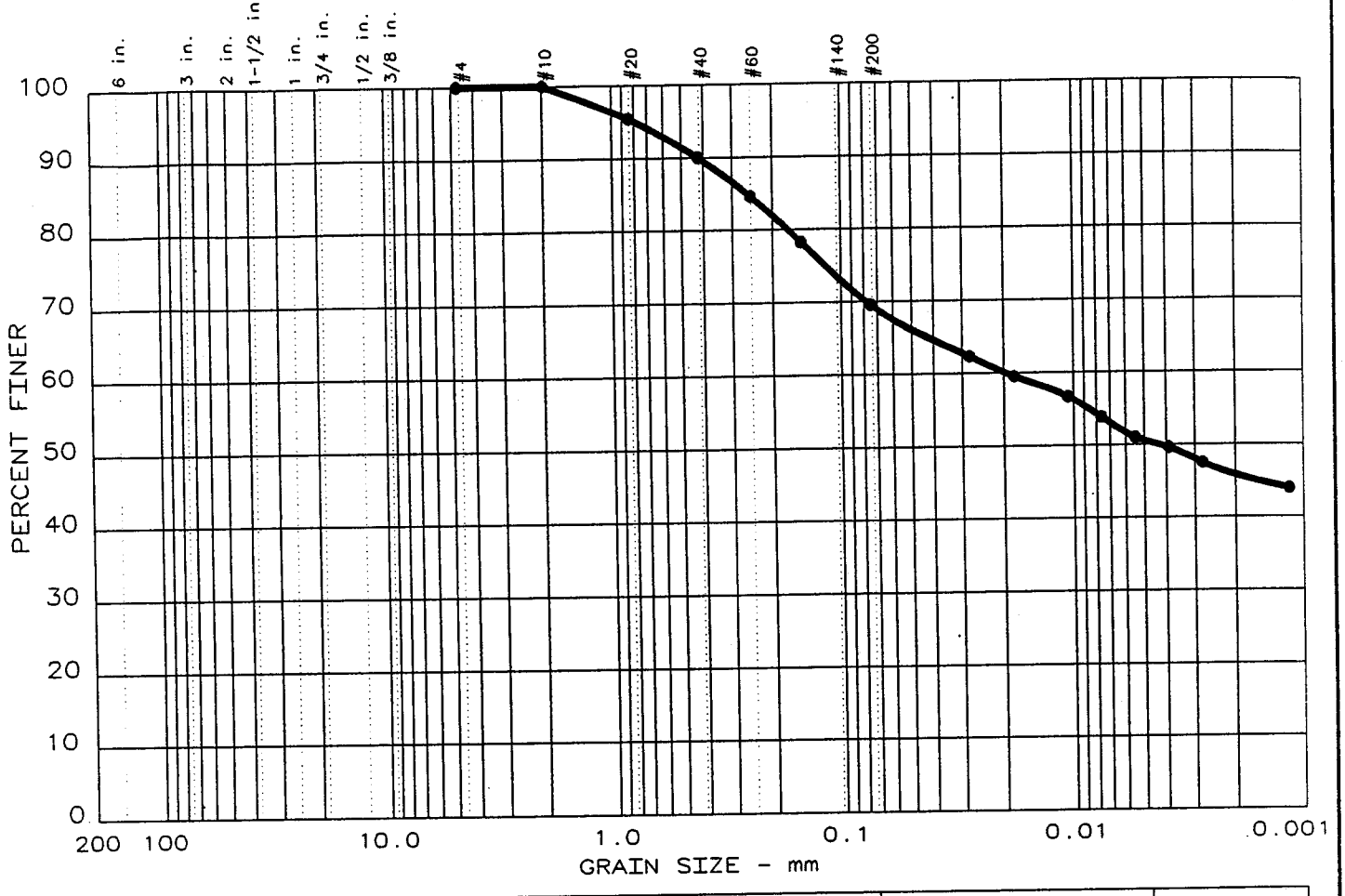
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: 4TH LIFT

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	30.4	19.1	50.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	47	29	0.257		0.0043					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SLIGHTLY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: COMPOSITE SAMPLE FROM THE THIRD LIFT

Date: JUNE 9, 1998

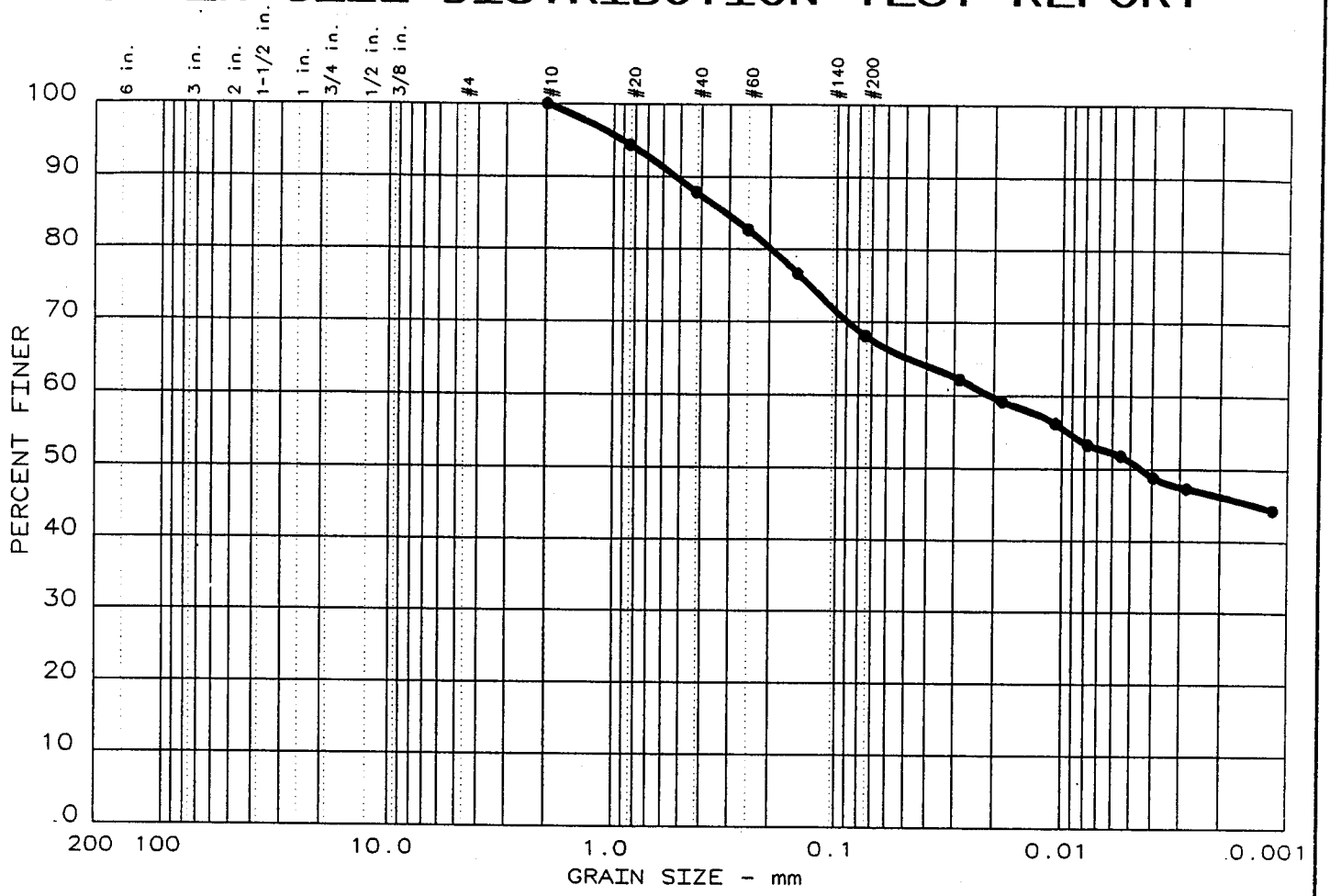
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: 3RD LIFT

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	31.9	17.1	51.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	45	26	0.313		0.0045					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SLIGHTLY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: COMPOSITE SAMPLE FROM THE SECOND LIFT

Date: JUNE 9, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: 2ND LIFT

PERMEABILITY TEST REPORT

TEST DATA:

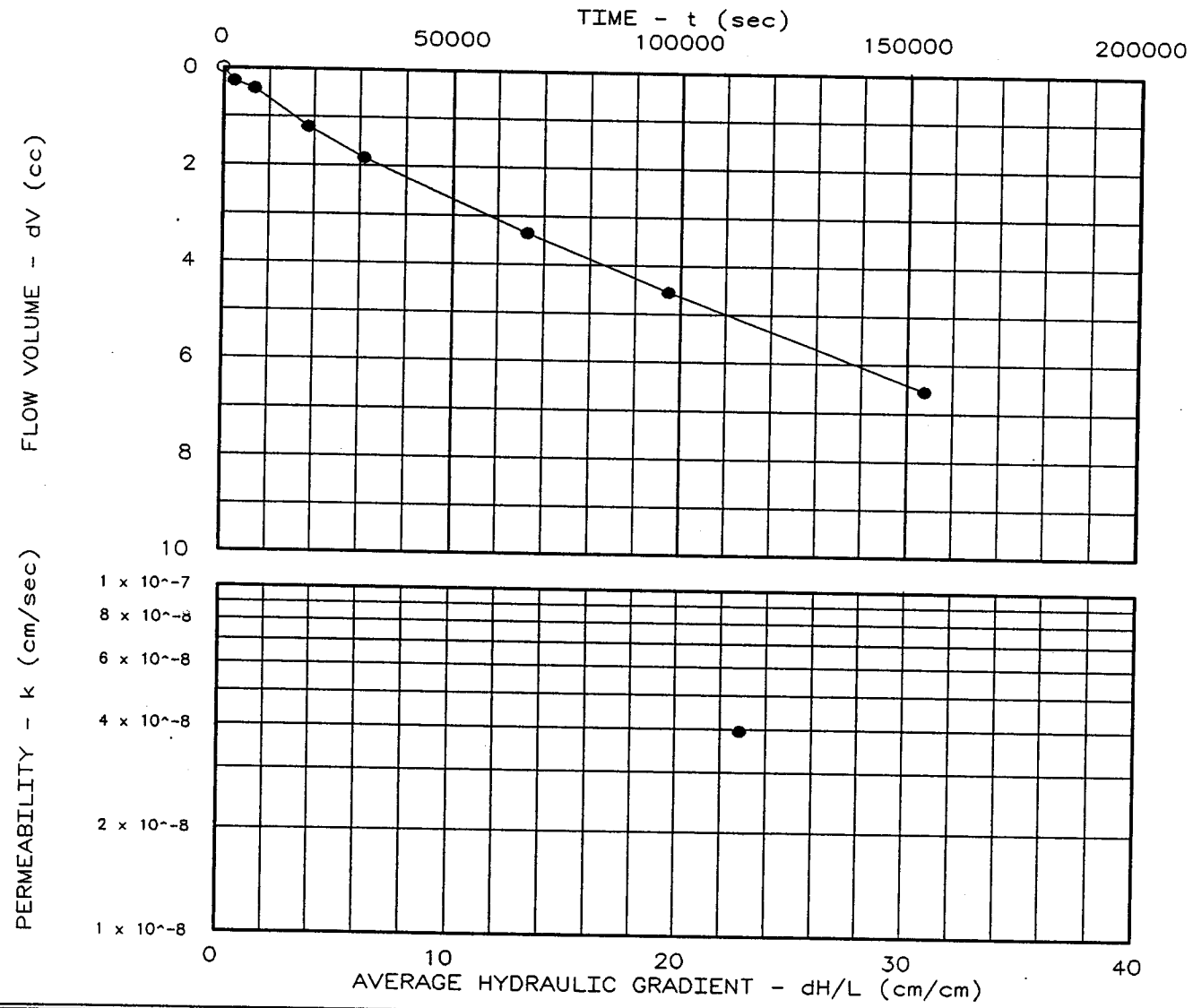
Specimen Height (cm): 10.16
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 92.7
Moisture Before Test (%): 23.7
Moisture After Test (%): 29.8
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 68.0
Test Pressure(psi): 63.0
Back Pressure(psi): 59.7
Diff. Head (psi): 3.3
Flow Rate (cc/sec): 4.17 x 10^-5
Perm. (cm/sec): 3.94 x 10^-8

SAMPLE DATA:

Sample Identification: Lift 4 Composite

Visual Description: Gray, Yellow and Tan Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6 ASTM(D698)
Percent Compaction: 89.0%
Permeameter type: Flexible wall
Sample type: remolded



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 6-9-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.56
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 92.8
Moisture Before Test (%): 26.4
Moisture After Test (%): 20.4

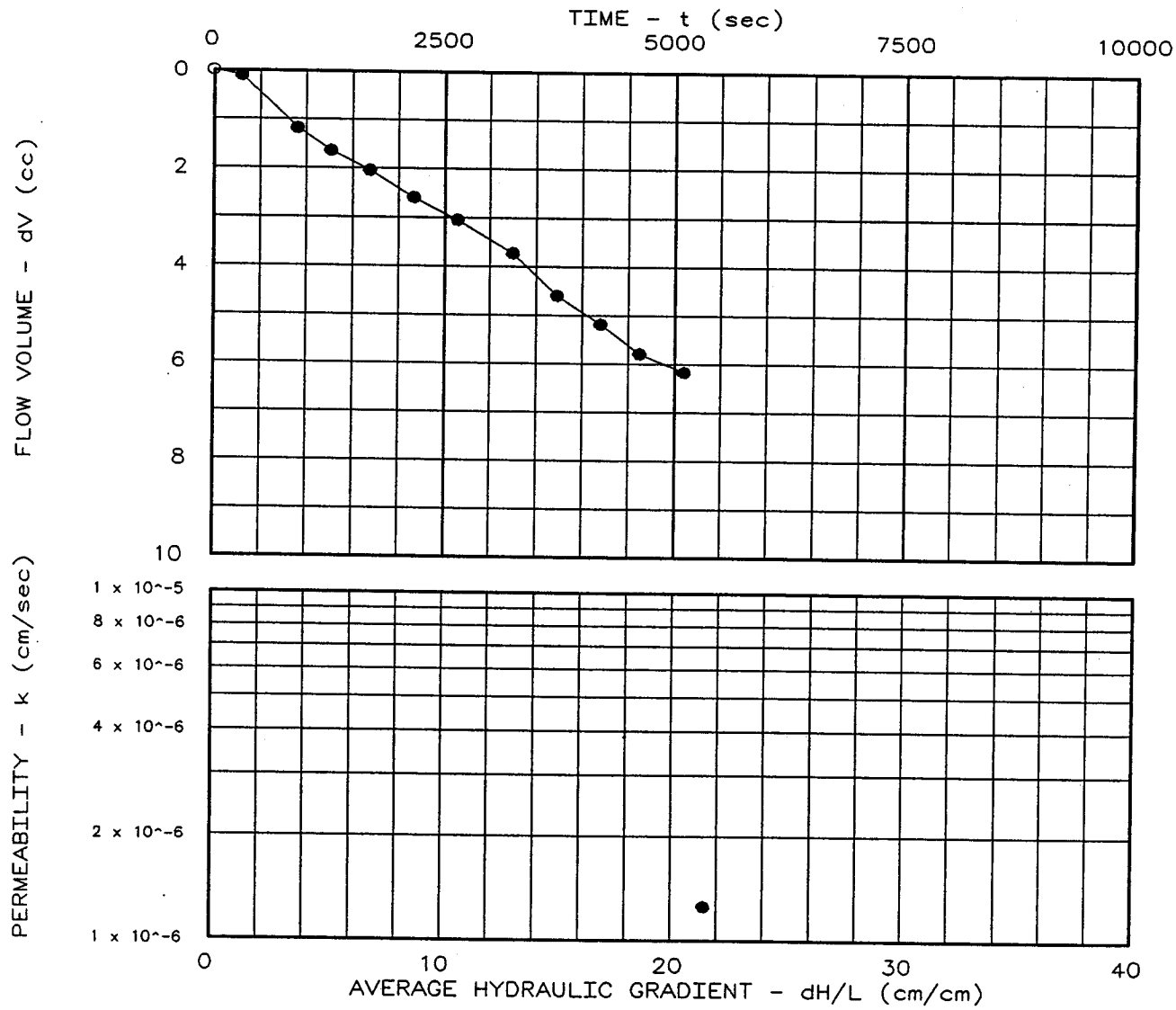
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.8	
Diff. Head (psi):	3.2	
Flow Rate (cc/sec):	1.24 x 10^-3	
Perm. (cm/sec):	1.25 x 10^-6	

SAMPLE DATA:

Sample Identification: Lift 3 Sample #1

Visual Description: Gray, Yellow and Tan Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 89.1%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 6-2-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.11
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 85.2
Moisture Before Test (%): 28.0
Moisture After Test (%): 30.4

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	68.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.8	
Diff. Head (psi):	3.2	
Flow Rate (cc/sec):	1.35 x 10^-3	
Perm. (cm/sec):	1.33 x 10^-6	

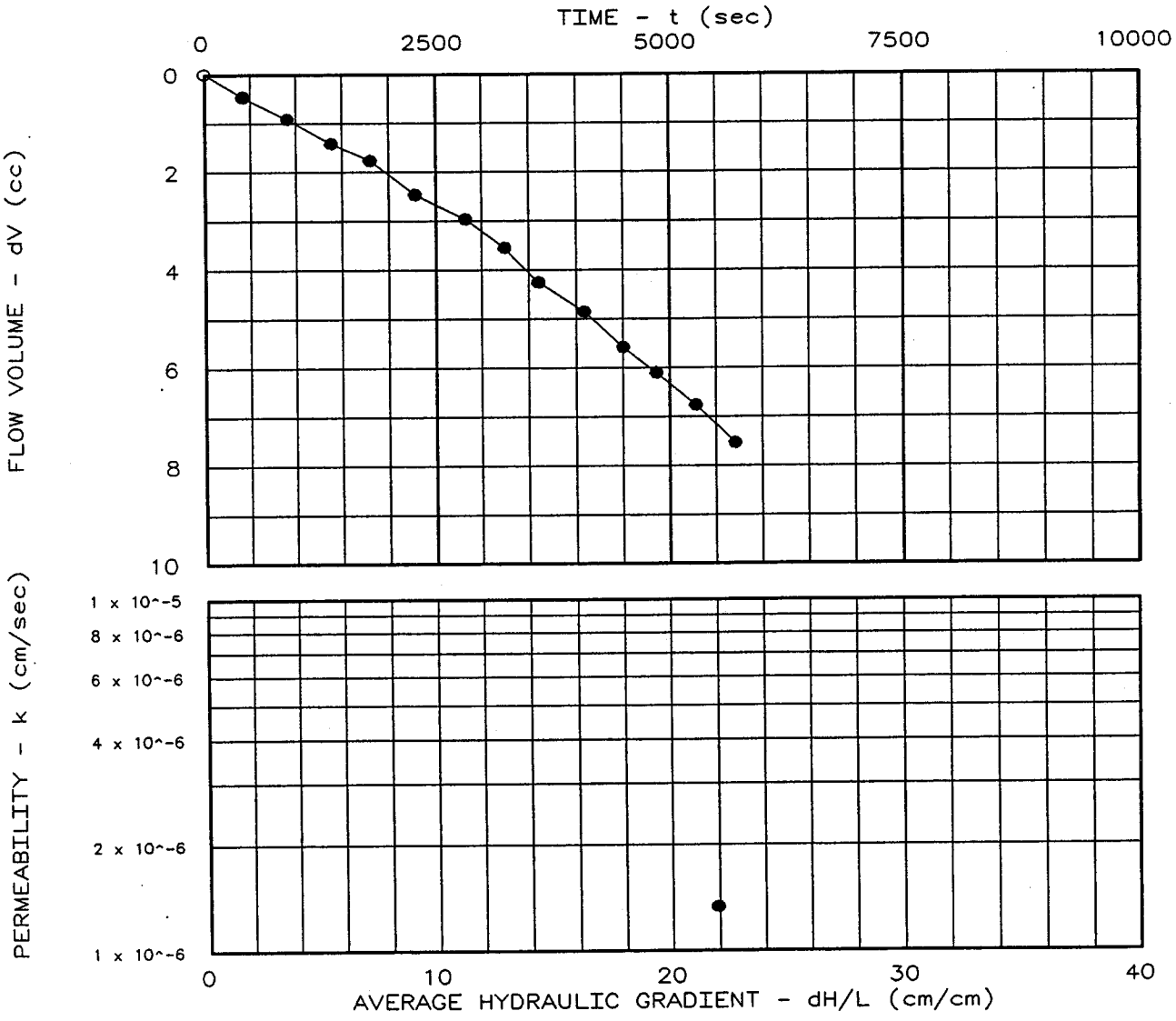
SAMPLE DATA:

Sample Identification: Lift 3 Test Pit 2

Visual Description: Gray, Yellow and Tan Silty Sandy Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 81.7%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 6-2-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.88
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 99.8
Moisture Before Test (%): 23.0
Moisture After Test (%): 27.5

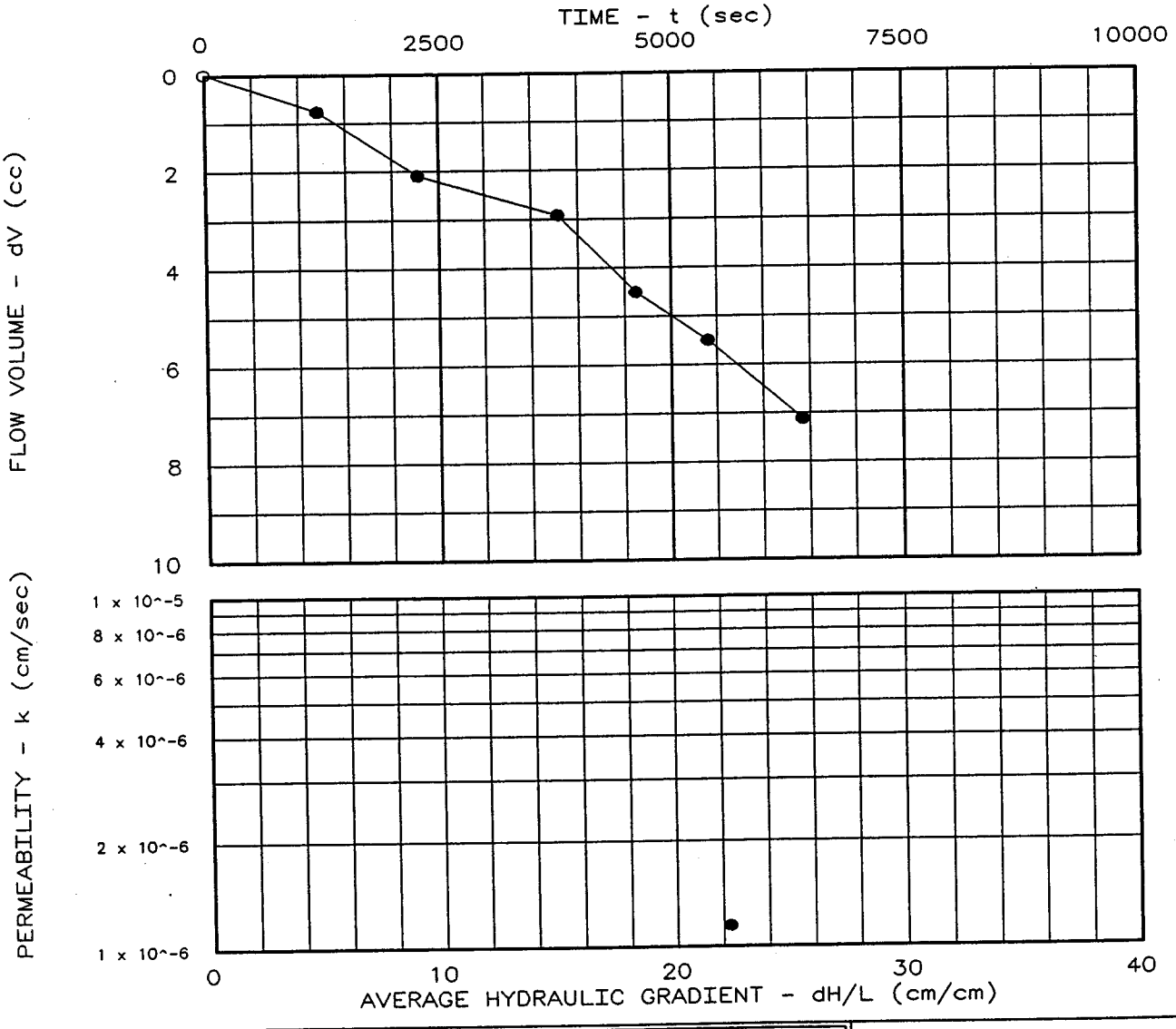
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	68.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	1.18 x 10^-3	
Perm. (cm/sec):	1.15 x 10^-6	

SAMPLE DATA:

Sample Identification: Lift 3 Test #3

Visual Description: Gray, Yellow and Tan Silty, Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 95.8%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 6-2-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.20
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 97.3
Moisture Before Test (%): 23.8
Moisture After Test (%): 29.3

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	68.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	1.11 x 10^-3	
Perm. (cm/sec):	1.13 x 10^-6	

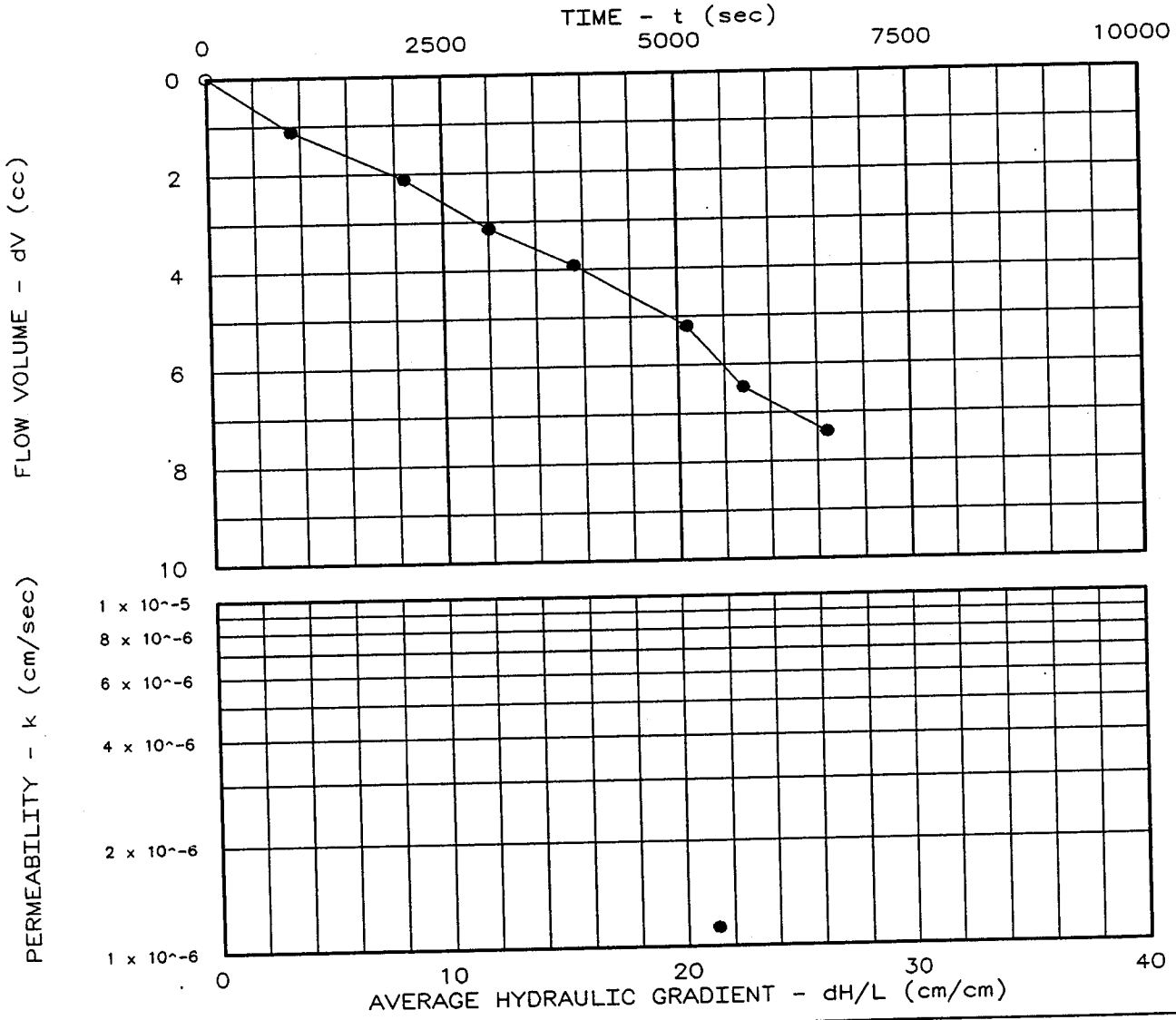
SAMPLE DATA:

Sample Identification: Lift 4 Sample #4

Visual Description: Gray, Yellow and Tan Silty Sandy Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 93.4%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 6-9-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

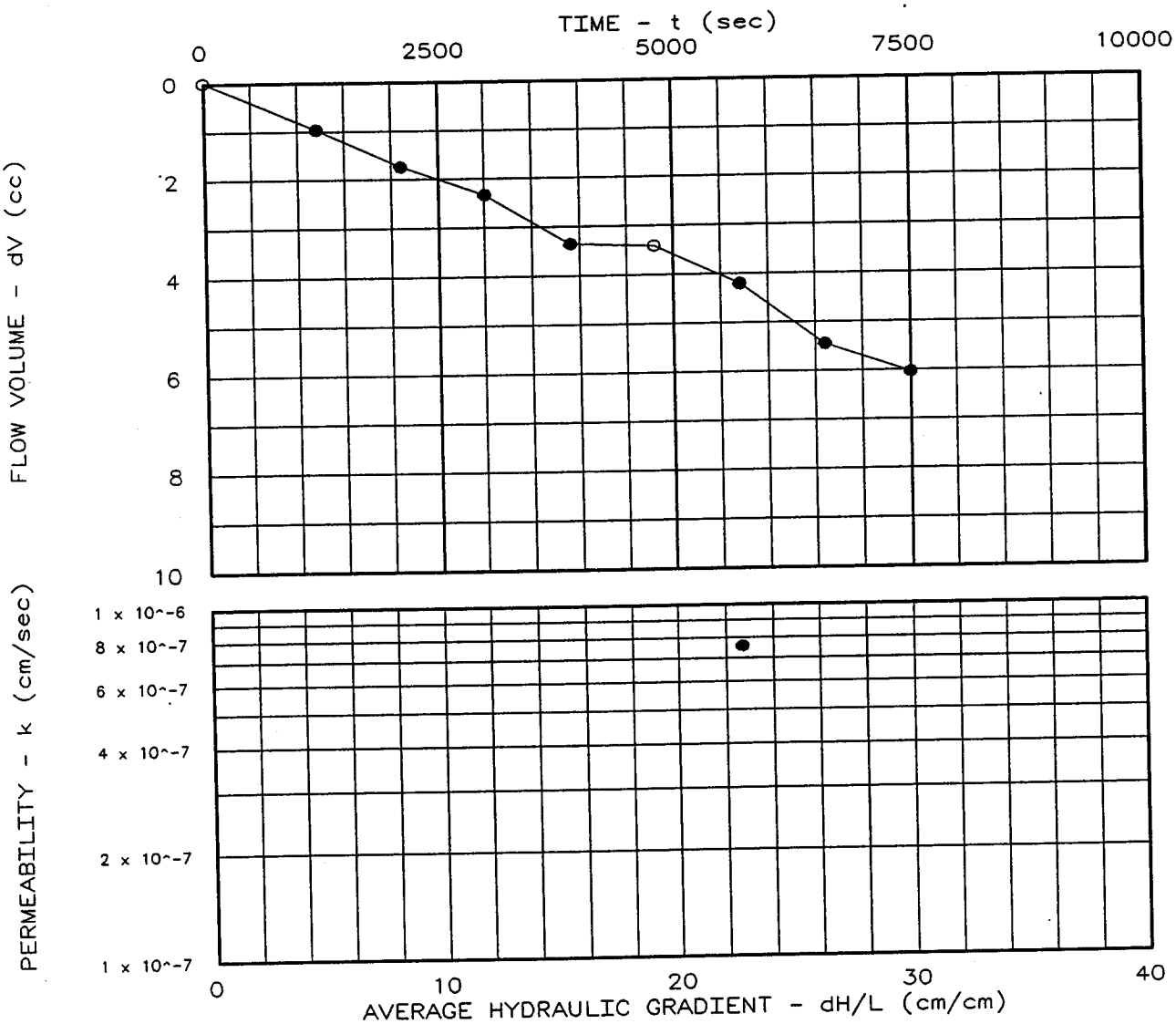
TEST DATA:
Specimen Height (cm): 9.88
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 94.1
Moisture Before Test (%): 22.7
Moisture After Test (%): 28.4

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	68.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.8	
Diff. Head (psi):	3.2	
Flow Rate (cc/sec):	7.96 x 10^-4	
Perm. (cm/sec):	7.58 x 10^-7	

SAMPLE DATA:
Sample Identification: Lift 4 Sample #5

Visual Description: Gray, Yellow and Tan Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 90.3%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 6-9-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.16
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 92.9
Moisture Before Test (%): 23.5
Moisture After Test (%): 29.4

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	68.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.6	
Diff. Head (psi):	3.4	
Flow Rate (cc/sec):	2.69 x 10^-5	
Perm. (cm/sec):	2.46 x 10^-8	

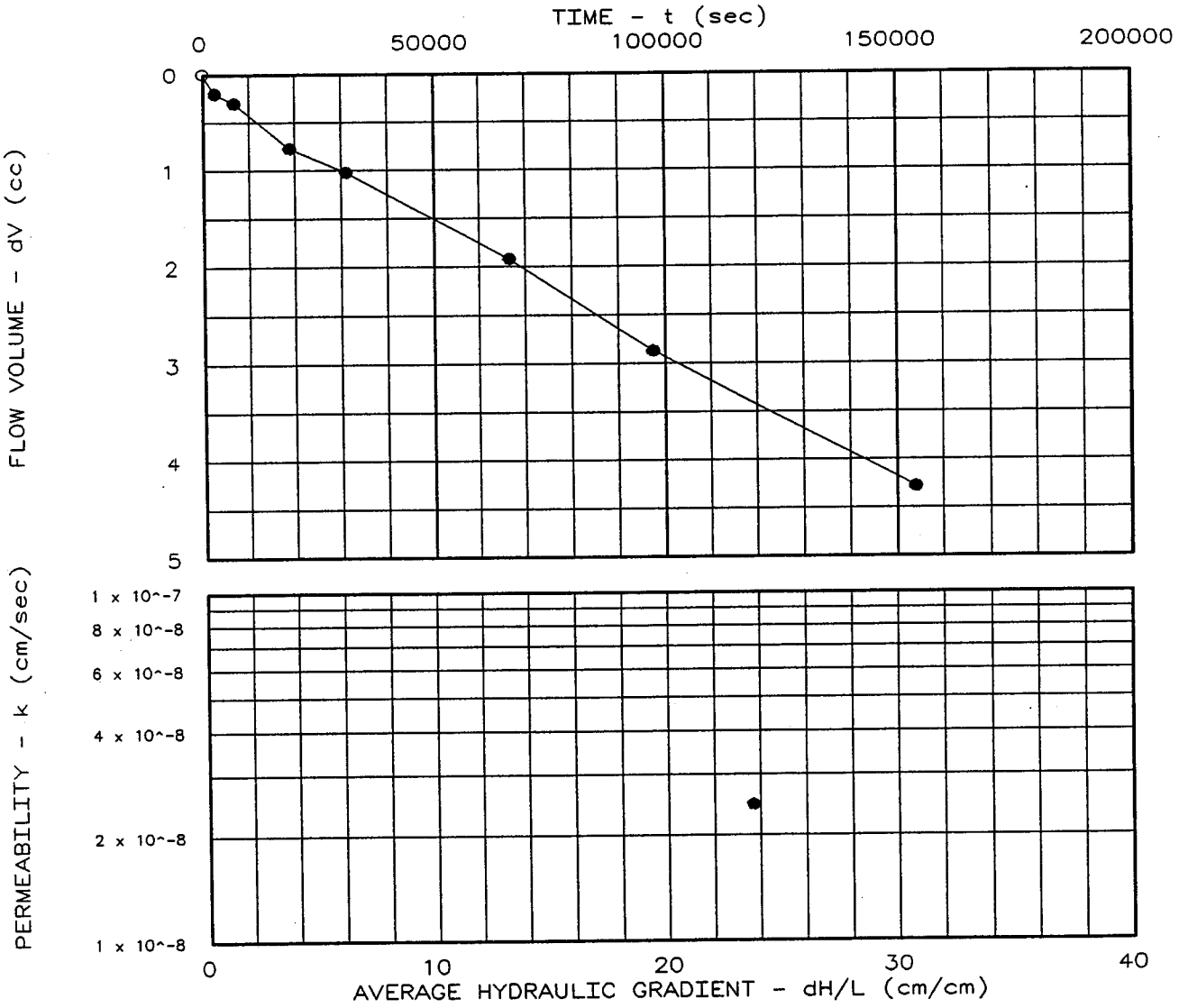
SAMPLE DATA:

Sample Identification: Lift 3 Composite

Visual Description: Gray, Yellow and Tan Silty Sandy Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 89.1%
Permeameter type: Flexible wall
Sample type: remolded



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 6-9-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

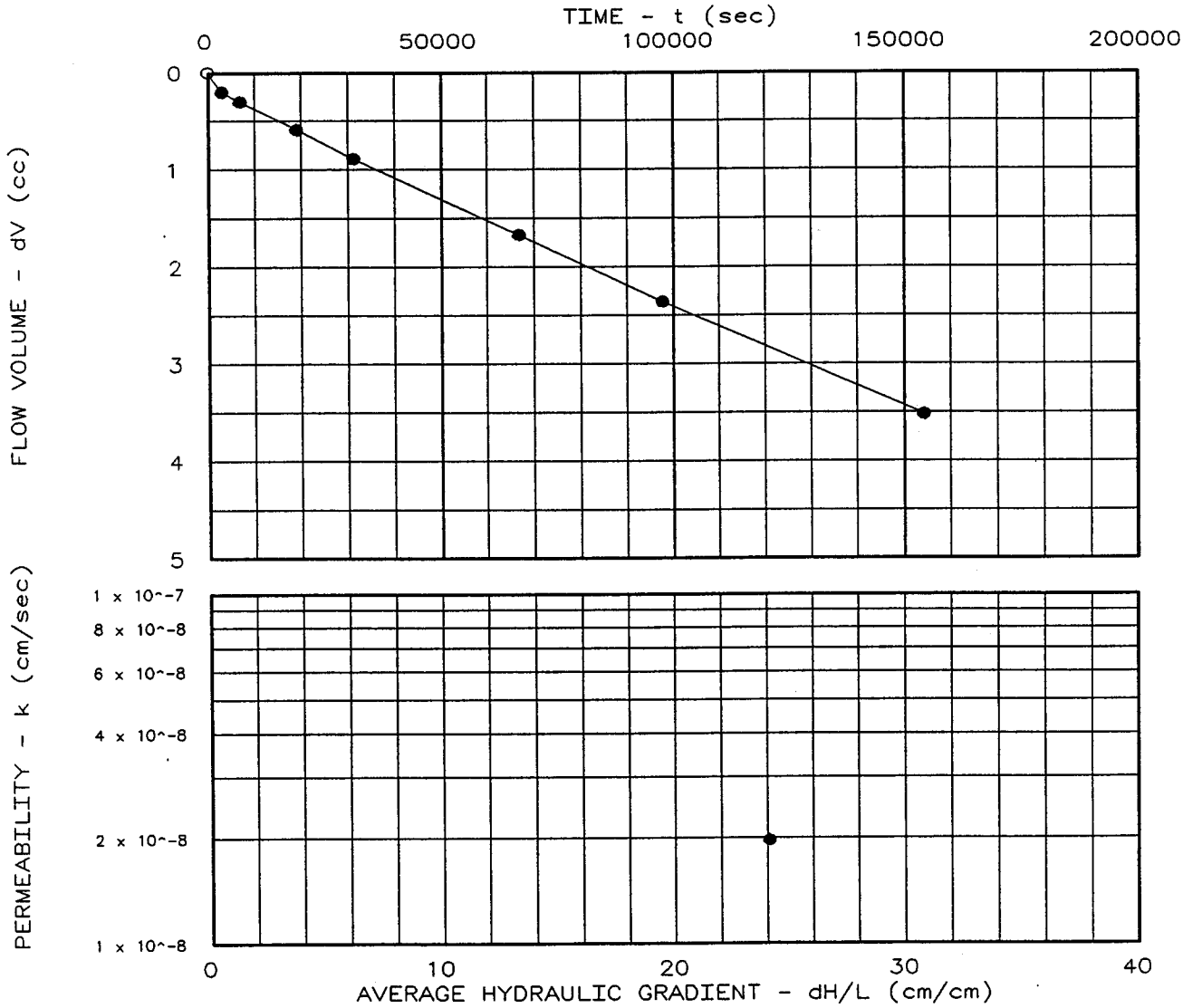
TEST DATA:
Specimen Height (cm): 10.17
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 93.5
Moisture Before Test (%): 23.2
Moisture After Test (%): 28.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	68.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.5	
Diff. Head (psi):	3.5	
Flow Rate (cc/sec):	2.20 x 10^-5	
Perm. (cm/sec):	1.97 x 10^-8	

SAMPLE DATA:
Sample Identification: Lift 2 Composite

Visual Description: Gray, Yellow and Tan Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 89.7%
Permeameter type: Flexible wall
Sample type: remolded



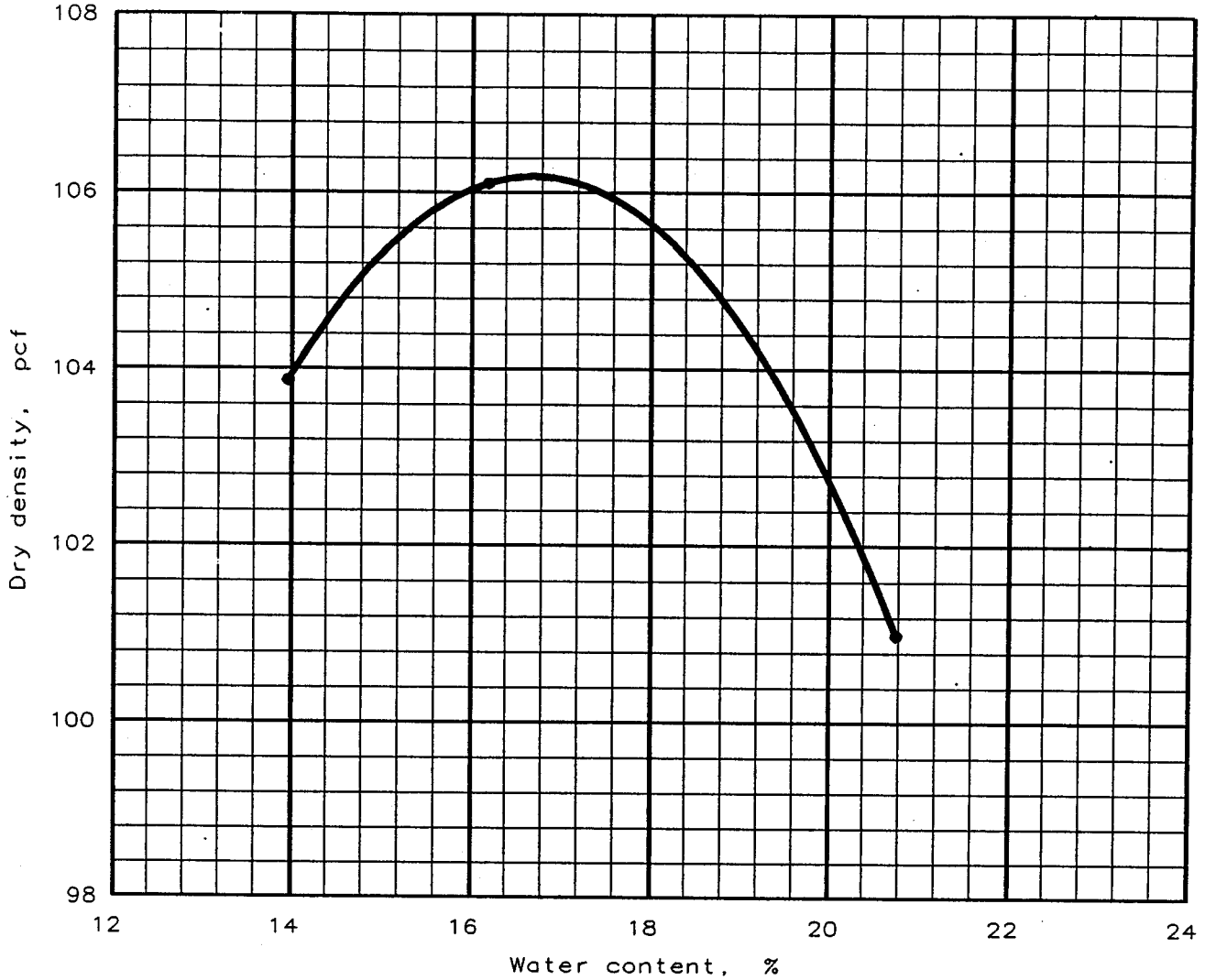
Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 6-9-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

MOISTURE-DENSITY RELATIONSHIP TEST



Test specification: ASTM D 698-91 Procedure A, Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
			29.6 %					

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 106.2 pcf Optimum moisture = 16.7 %	YEL, GRY & RED SILTY SANDY CLAY

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA

Date: MAY 24, 1998

Remarks:
TEST PIT 9 FROM 1.5 TO 2.5 FEET; NMC@ 4'6"-32.1
NMC@ 2'4"-34.4

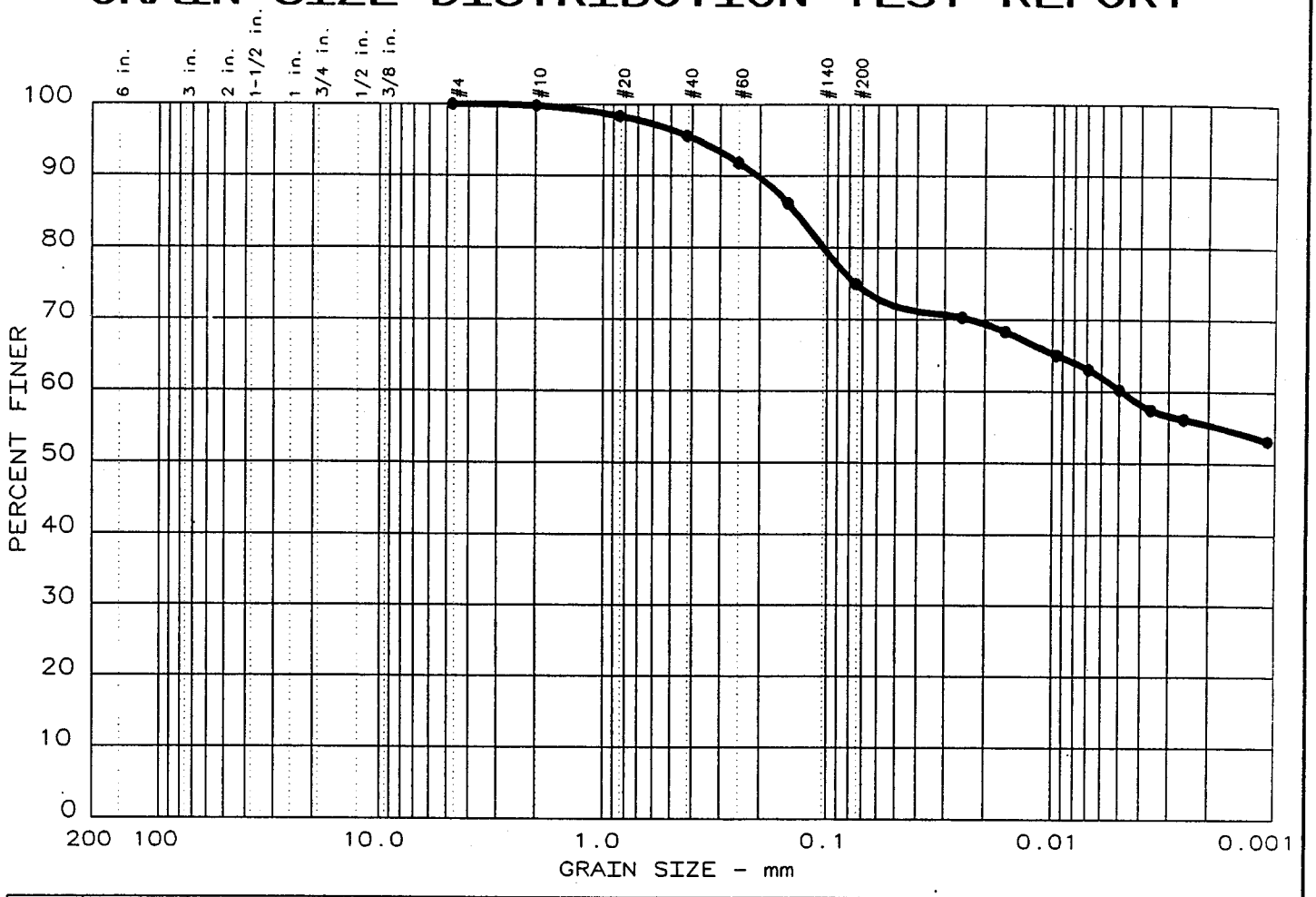
MOISTURE-DENSITY RELATIONSHIP TEST

TITAN ATLANTIC GROUP, INC.

Fig. No. 02

Bob Heel

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	25.0	14.8	60.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	65	44	0.138							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN & GRAY SLI SILTY SLI SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: PROJECT TEST PAD

Date: MAY 29, 1998

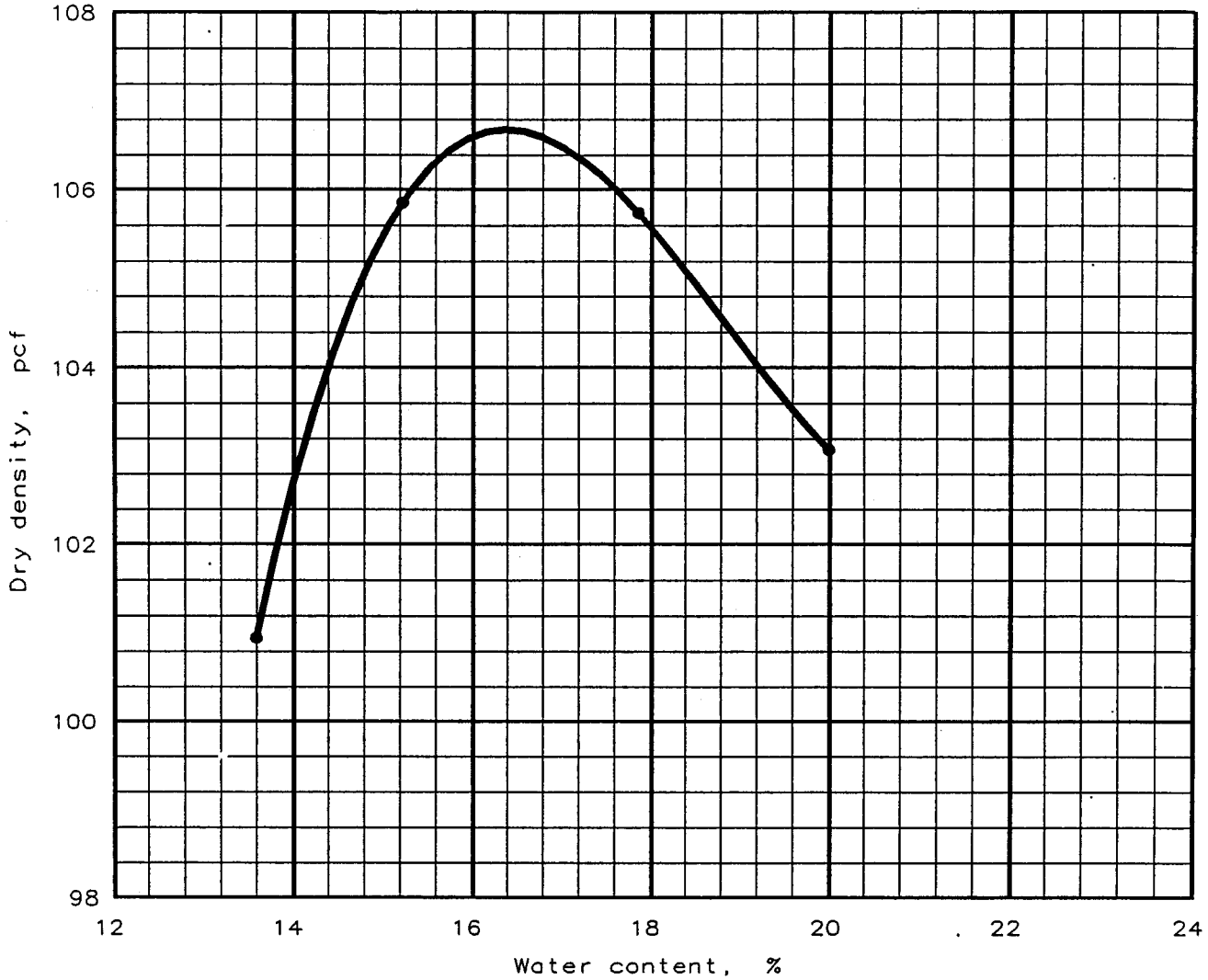
Remarks:
COMPOSITE SAMPLE FROM
FULL DEPTH OF EXCAVATION

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: SAMPLE 1

MOISTURE-DENSITY RELATIONSHIP TEST



Test specification: ASTM D 698-91 Procedure A, Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
			19.1 %					

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 106.7 pcf Optimum moisture = 16.4 %	YEL, GRY & RED SILTY SANDY CLAY

Project No.: 8077-80

Project: WILSON COUNTY LANDFILL

Location: WILSON, NORTH CAROLINA

Date: MAY 24, 1998

Remarks:

TEST PIT 8 FROM 0.5 TO 1.0 FEET

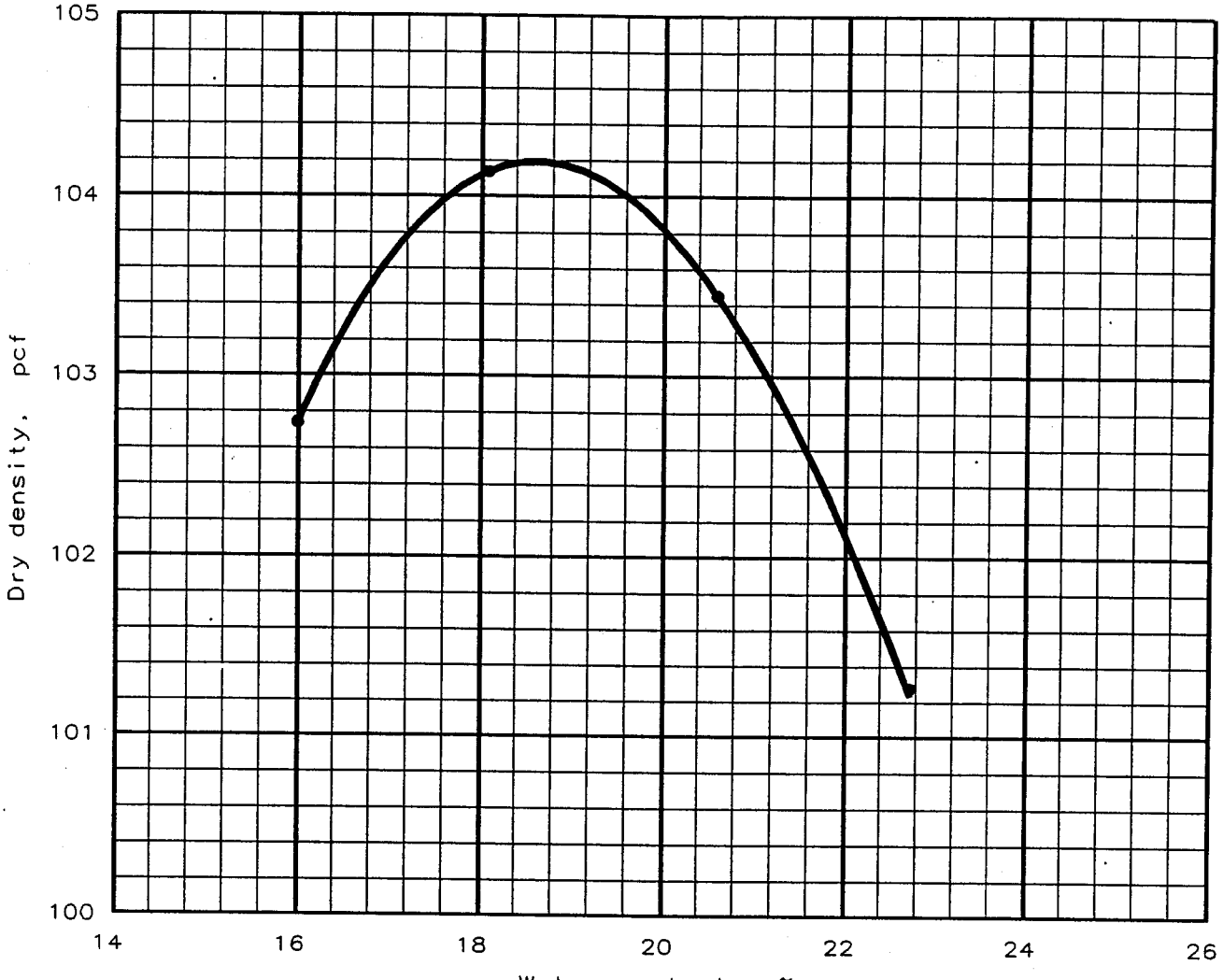
FOOT

MOISTURE-DENSITY RELATIONSHIP TEST

TITAN ATLANTIC GROUP, INC.

Fig. No. 01

MOISTURE-DENSITY RELATIONSHIP TEST



Test specification: ASTM D 698-91 Procedure A, Standard

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

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 104.2 pcf Optimum moisture = 18.6 %	GRY, YEL & TAN SILTY SANDY CLAY

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA

Date: MAY 24, 1998

Remarks:
COMPOSITE SAMPLE EXCAVATED WITH TRACK EXCAVATOR

MOISTURE-DENSITY RELATIONSHIP TEST

TITAN ATLANTIC GROUP, INC.

Fig. No. 03

Bob Heel

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Gary W. Ahlberg, P.E.
Post Office Box 58
Wilmington, NC 28402

DATE: July 17, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. Ahlberg

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☑ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS: Reports dated July 7, 8, 9 and 10, 1998.

Signed: Bob Neel

Copies to: Mr. Mark Taylor

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Gary Ahlberg

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/07/98 PERSONNEL: M. Stout

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Eight field density tests were performed in clay liner soils installed for the second test pad. The tests were performed on the first and second lifts.

Field density test results were computed to range from 90 to 100 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Heel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 07/07/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	First lift	See attached map	117.6	24.1	94.7	3	91	90
2	First lift	See attached map	118.9	25.9	94.4	3	91	90
3	First lift	See attached map	120.1	23.7	97.0	3	93	90
4	Second lift	See attached map	128.4	26.3	101.6	3	98	90
5	Second lift	See attached map	129.9	24.2	104.5	3	100	90
6	Second lift	See attached map	129.7	27.1	102.0	3	98	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Neel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
7	First lift; test pad two.	See attached drawing 07/07/98	118.4	26.9	93.3	3	90	90
8	Second lift; test pad two	See attached drawing 07/07/98	130.5	25.4	104.0	3	100	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Keel

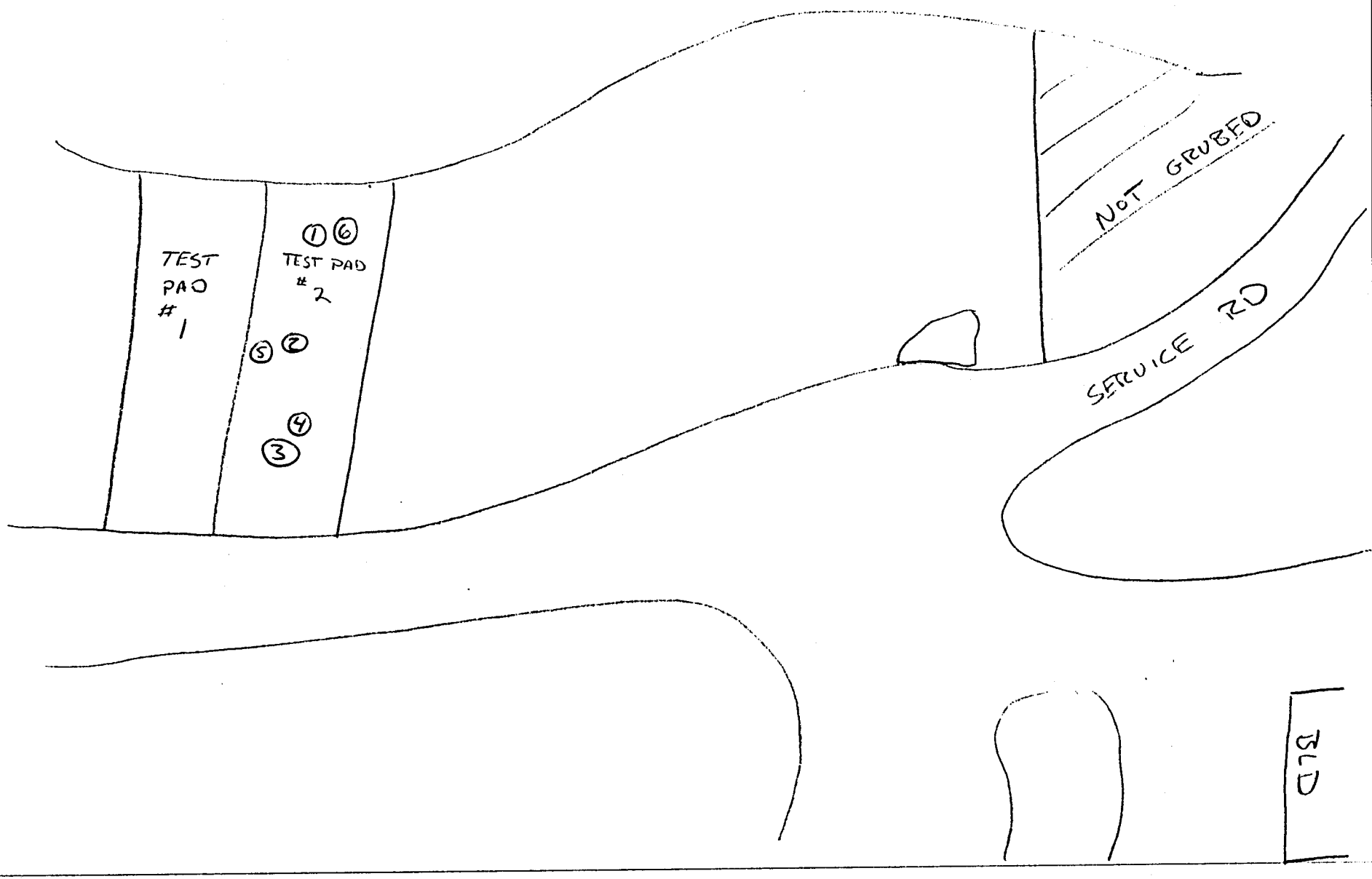
TOP

TEST PAD #2

FIRST LIFT
NUKE TEST

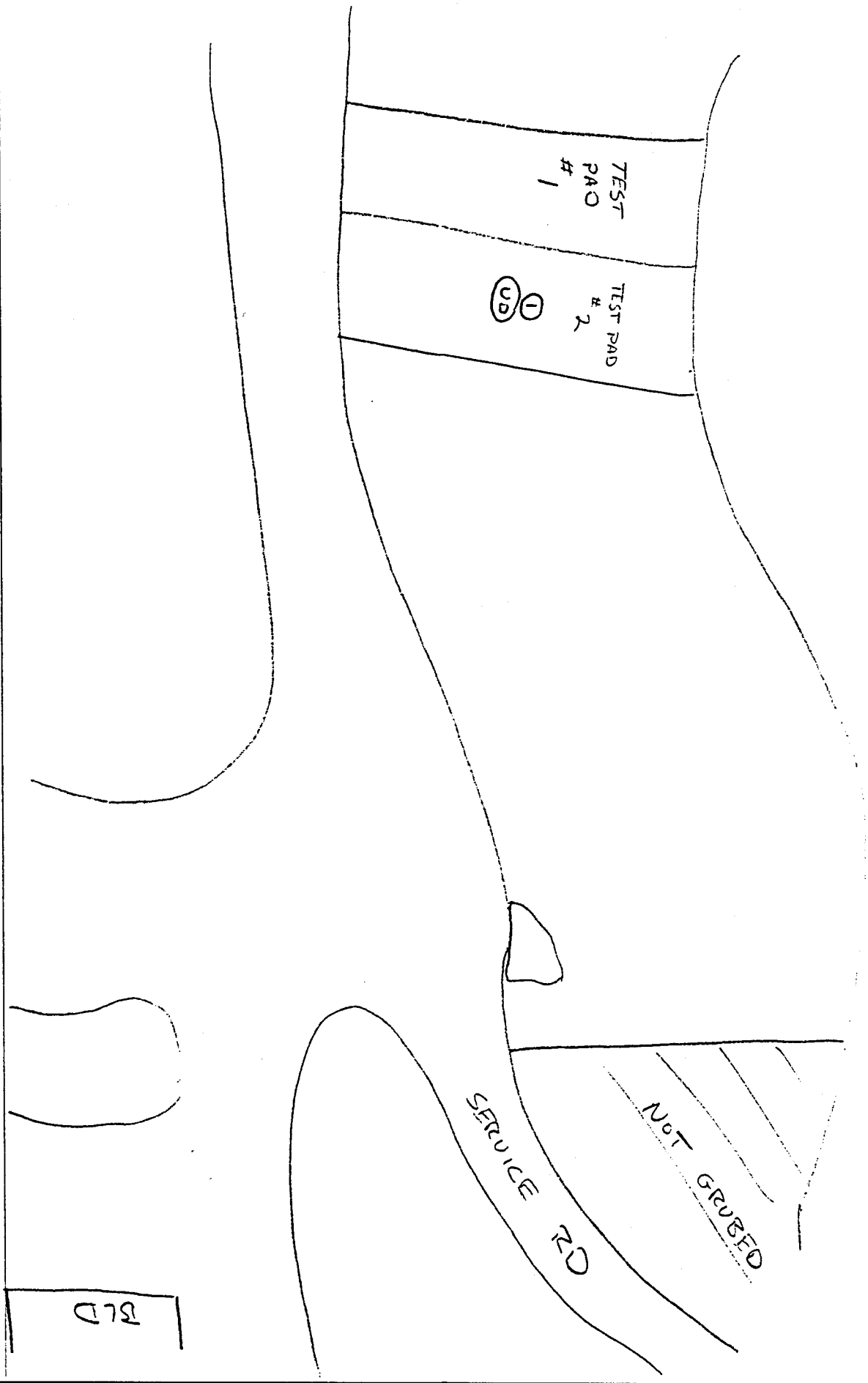
7-7-98

WILSON CO LANDFILL



WILSON CO LANDFILL | 7-7-98 | TEST PAD #2

FIRST LIFT
1 = SAND CONE
UD = UD TUBE



TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Gary Ahlberg

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/08/98 PERSONNEL: M. Stout

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Four field density tests were performed in clay liner soils installed for the second test pad. The tests were performed on the third lift.

Field density test results were computed to range from 93 to 98 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 07/08/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	Third lift	See attached map	121.6	25.2	97.1	3	93	90
2	Third lift	See attached map	122.8	27.3	96.4	3	93	90
3	Third lift	See attached map	125.4	22.9	102.0	3	98	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Heel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
4	Third lift; second test pad	See attached map 07/08/98	122.0	26.3	96.5	3	93	90

Method Used: SAND CONE Fill Placement:
Remarks:

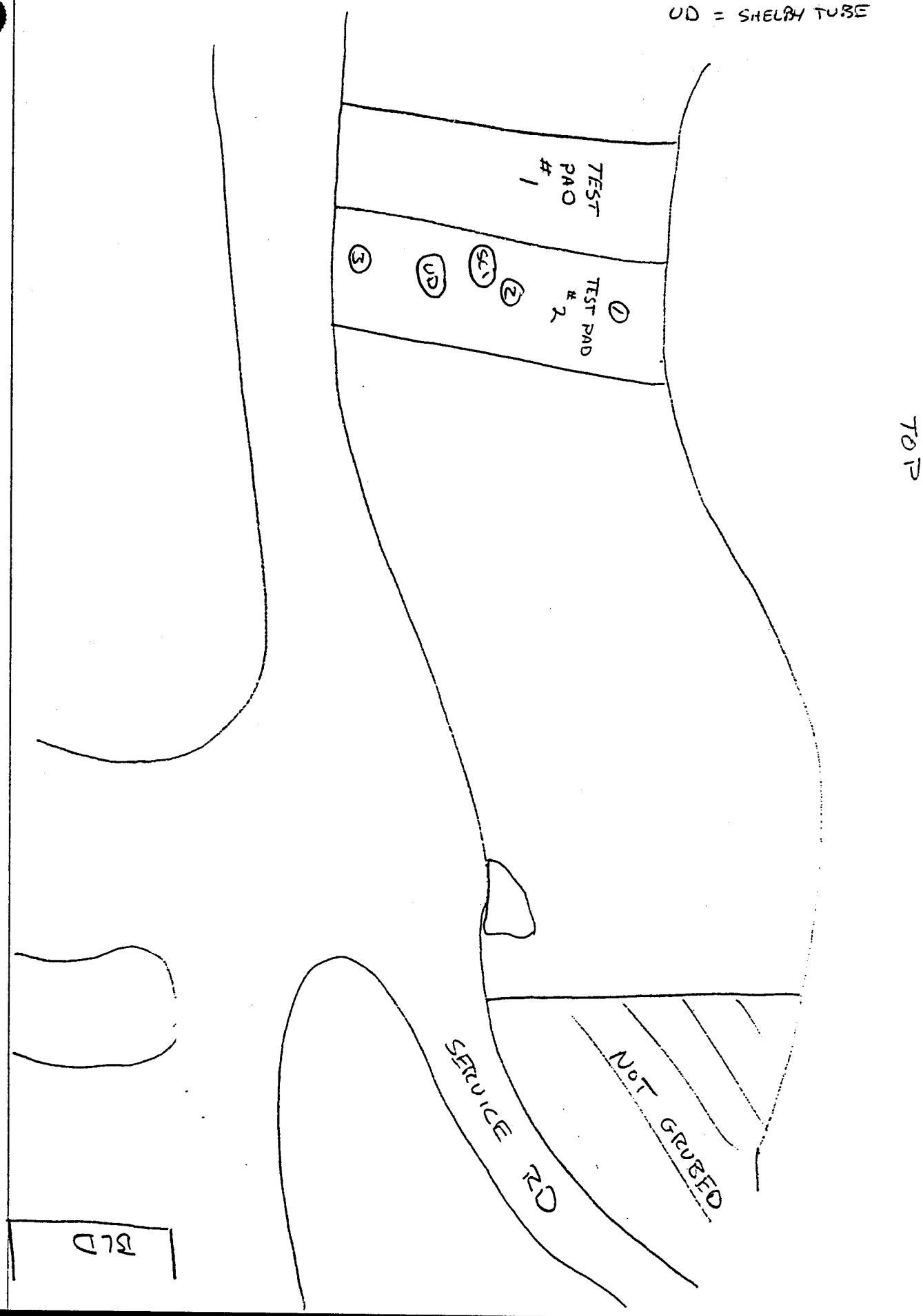
Bob Keel

WILSON CO LANDFILL | 7-8-98 | TEST PAD #2

NUKE TEST

SC 1 = SAND CONE

UD = SHELBY TUBE



TITAN ATLANTIC GROUP

111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Gary Ahlberg

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/09/98 PERSONNEL: M. Stout

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Three field density tests were performed in soils installed for the clay liner. The tests were performed at approximately 1.0 to 1.5 feet below the final subgrade elevation.

Field density test results were computed to range from 90 to 93 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 07/09/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

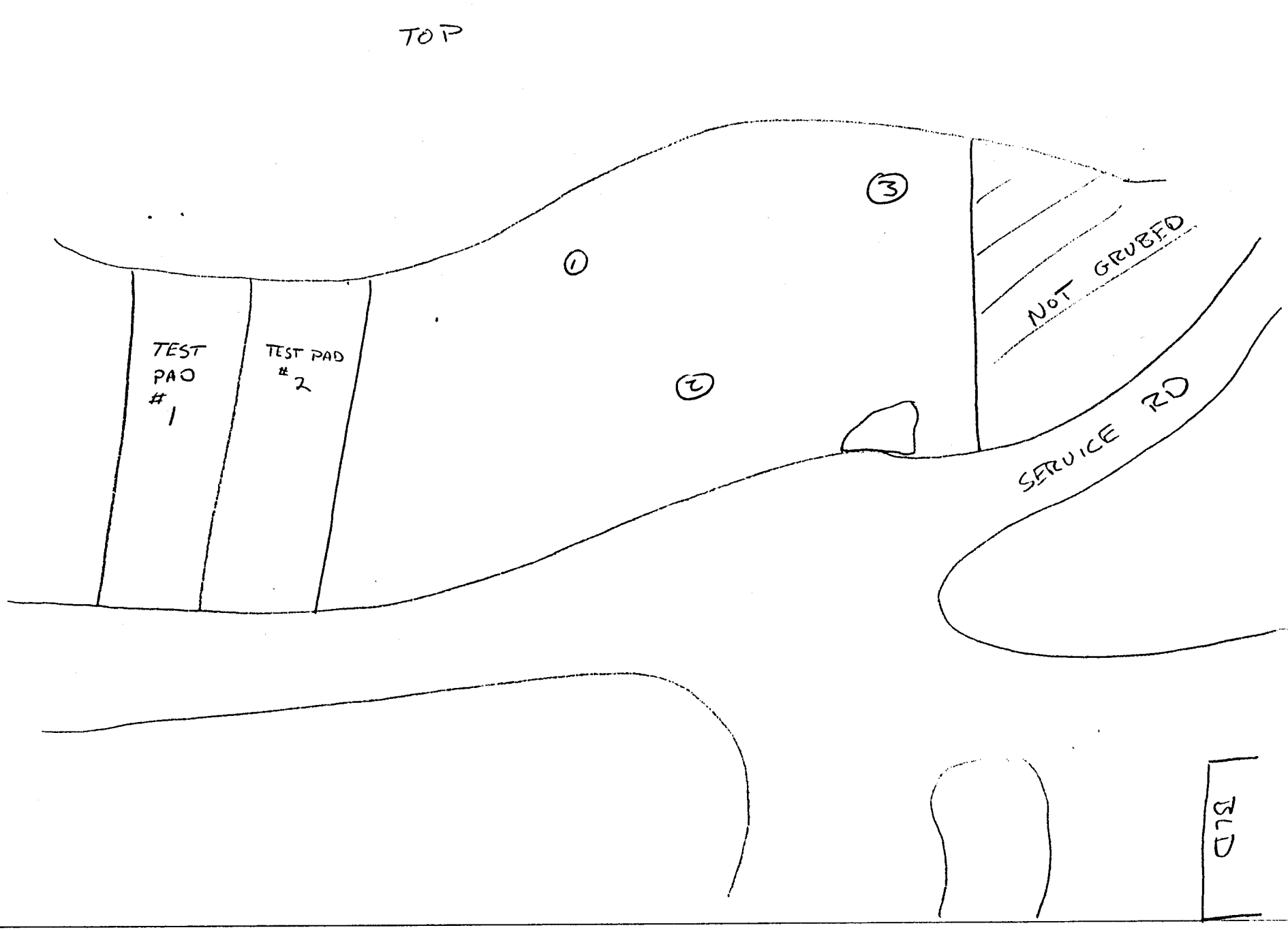
(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	First lift	See attached drawing	121.2	29.6	93.5	3	90	90
2	First lift	See attached drawing	124.9	28.5	97.1	3	93	90
3	First lift	See attached drawing	122.8	30.2	94.3	3	91	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel



WILSON CO LANDFILL 7-9-98

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Gary Ahlberg

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/10/98 PERSONNEL: M. Stout

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Three field density tests were performed in soils installed for the project clay liner. The tests were performed at approximately two feet below the final subgrade elevation.

Field density test results were computed to range from 94 to 97 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 07/10/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

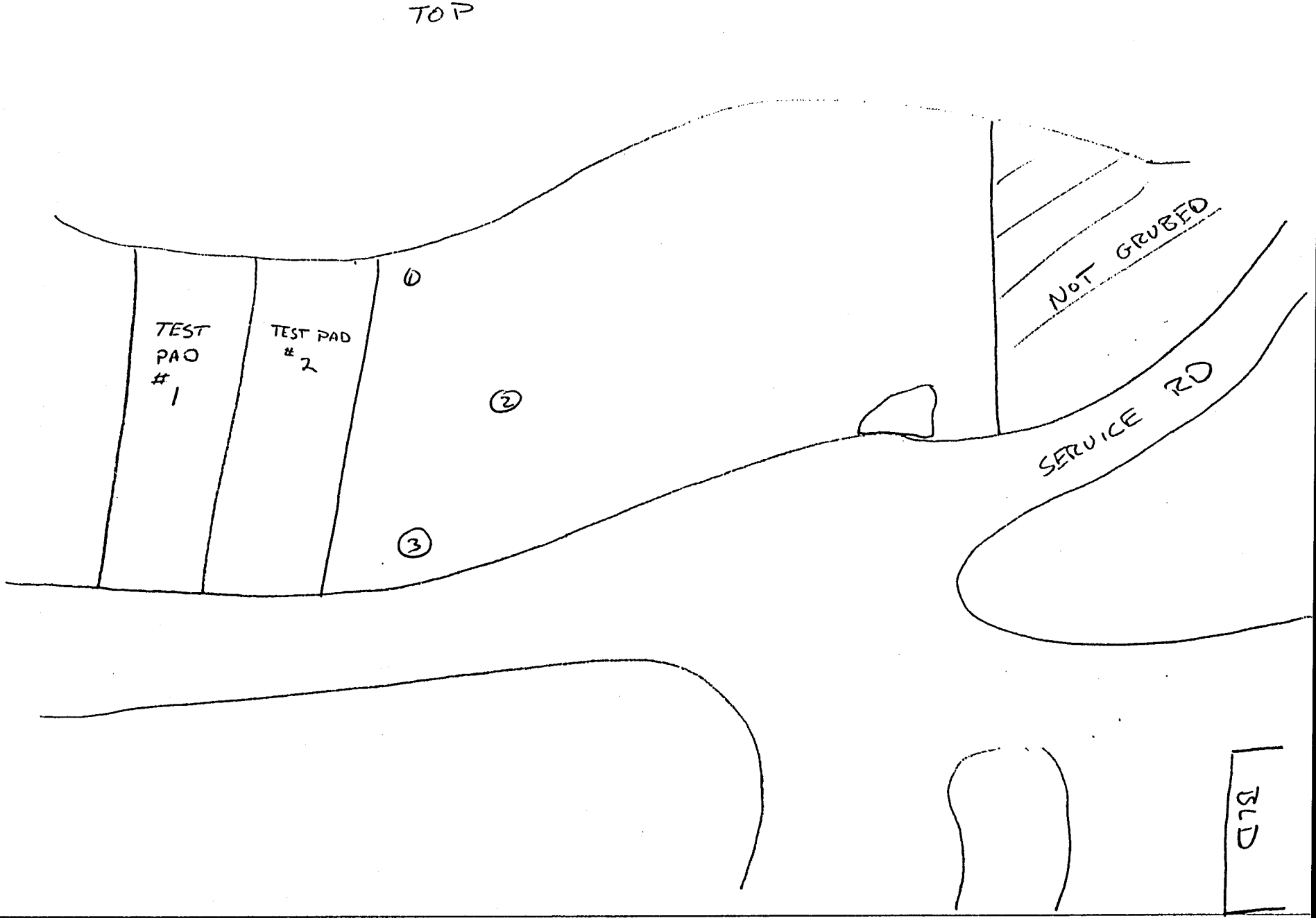
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	First lift	See attached drawing	124.6	26.2	98.7	3	95	90
2	First lift	See attached drawing	126.1	24.2	101.5	3	97	90
3	First lift	See attached drawing	126.9	29.6	97.9	3	94	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

WILSON CO LANDFILL | 7-10-98 | FIRST LIFT



PERMEABILITY TEST REPORT

TEST DATA:

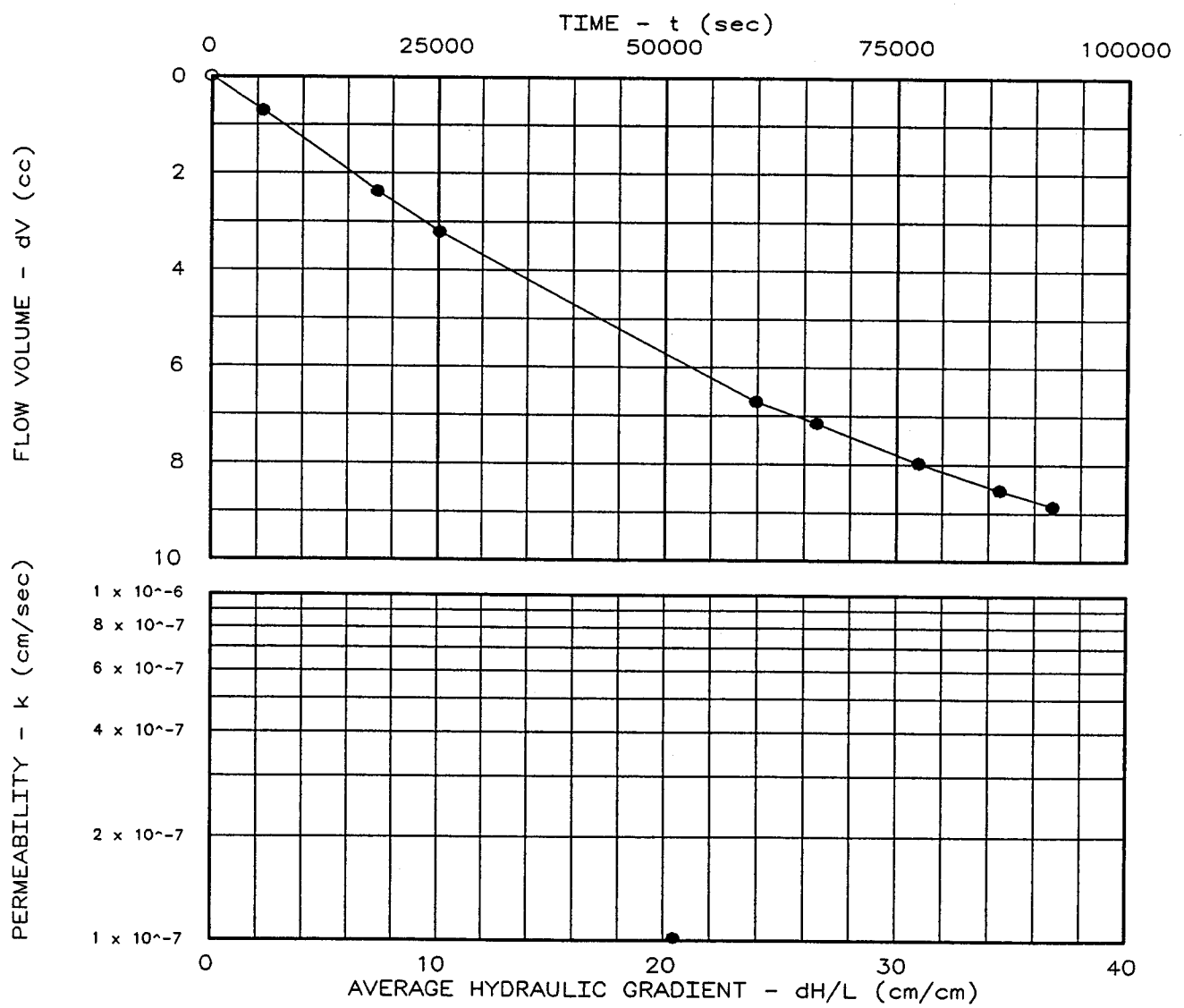
Specimen Height (cm): 9.88
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 94.2
Moisture Before Test (%): 27.2
Moisture After Test (%): 32.2

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	9.42 x 10^-5	
Perm. (cm/sec):	1.02 x 10^-7	

SAMPLE DATA:

Sample Identification: Test Pad Number 2
Lift Number 2
Visual Description: Gray, Yellow and Tan
Silty, Sandy, Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 90.4%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-15-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

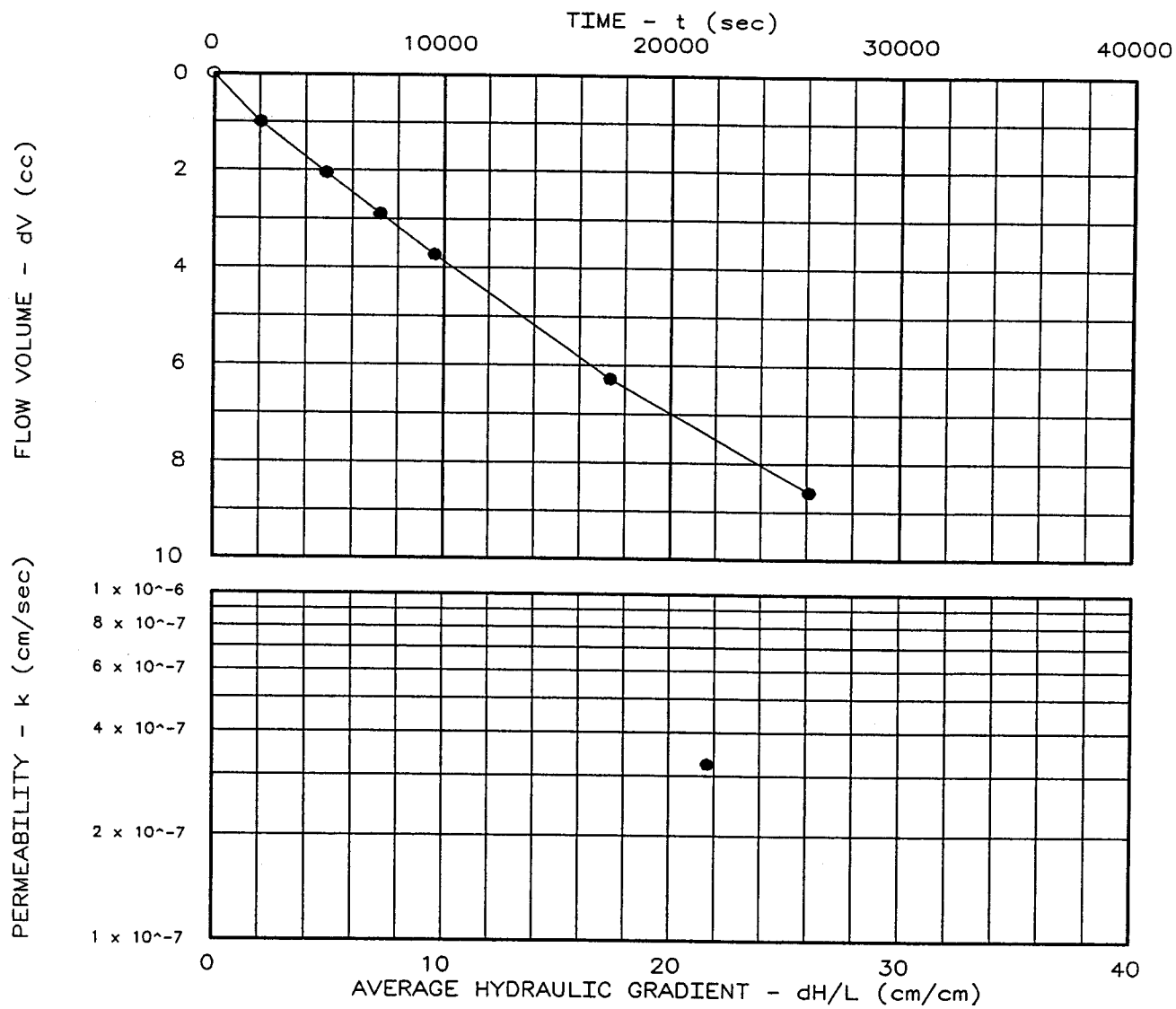
Specimen Height (cm): 9.99
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 89.4
Moisture Before Test (%): 29.5
Moisture After Test (%): 34.0

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	3.17 x 10^-4	
Perm. (cm/sec):	3.24 x 10^-7	

SAMPLE DATA:

Sample Identification: Test Pad Number 2
Lift Number 1
Visual Description: Gray, Yellow and Tan
Silty, Sandy, Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 85.8%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-15-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Gary Ahlberg

PROJECT: Wilson County Landfill

WEATHER: Clear and warm

TITAN JOB NO. : 8077-80

DATE: 7/10/98 PERSONNEL: J. Brady

One point standard Proctor results from lifts one, two and three from test pad two:

Lift number:	Wet Moisture:	Moisture (percent):	Dry Weight (pcf):
1	131.4	26.4	104.0
2	133.1	27.0	104.8
3	130.9	27.0	103.1

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Hall

PERMEABILITY TEST REPORT

TEST DATA:

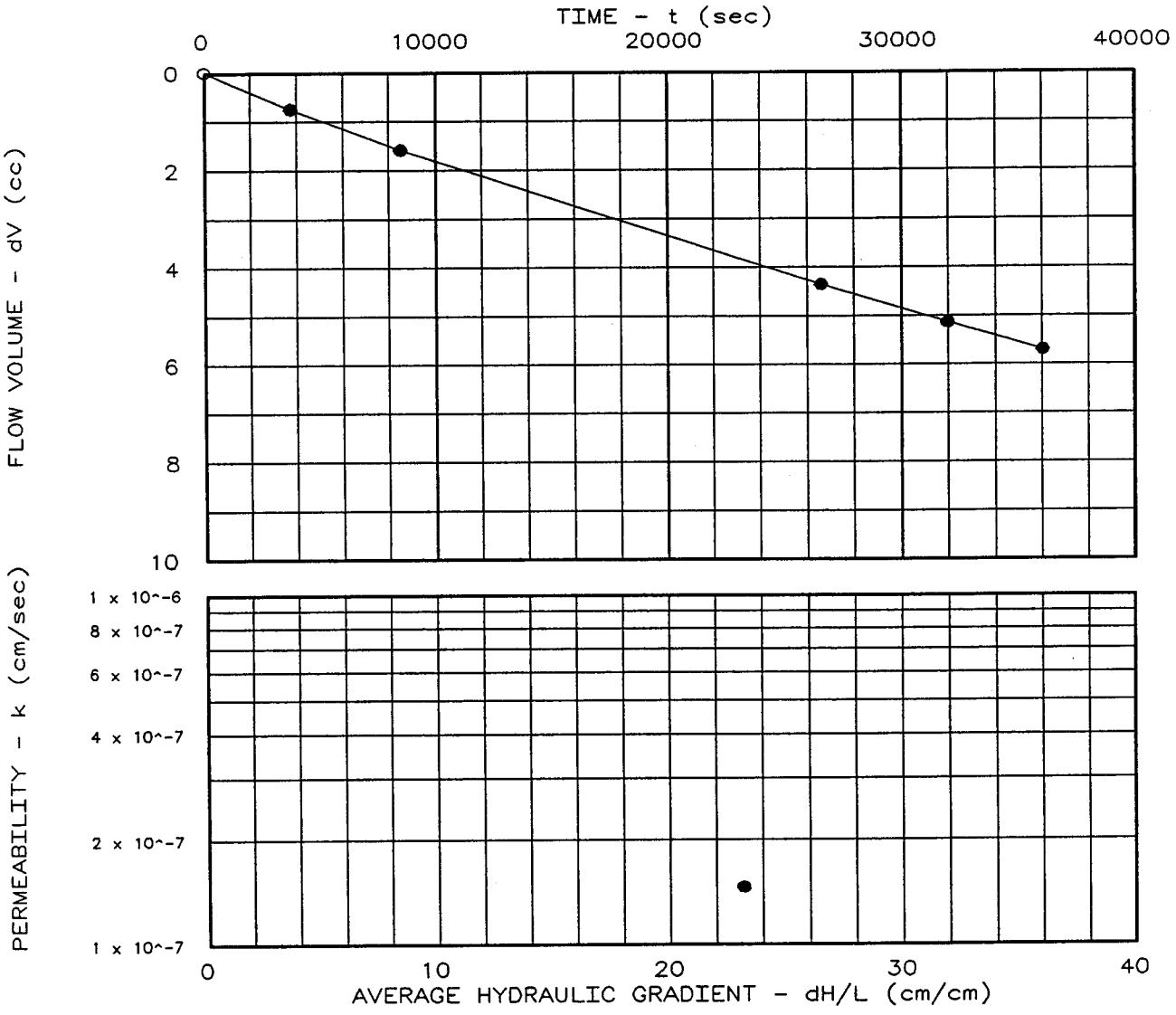
Specimen Height (cm): 9.53
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 91.2
Moisture Before Test (%): 29.0
Moisture After Test (%): 34.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	1.53 x 10^-4	
Perm. (cm/sec):	1.46 x 10^-7	

SAMPLE DATA:

Sample Identification: Test Pad Number 2
Lift Number 3
Visual Description: Gray, Yellow and Tan
Silty, Sandy, Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 87.5%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-16-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: August 21, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☐ laboratory test results ☑ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS: Reports dated July 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 27, 28, 29, August 3, 4, 5, 6 and 7, 1998.

Signed: Bob Vail

Copies to: Mr. Gary W. Ahlberg
Mr. Gary Jones

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/13/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eight field density tests were performed in soils installed as the clay liner for the cap for area 2B. The tests were performed at approximately 1.0 and 0.5 feet below the final subgrade elevation.

Field density test results were computed to range from 93 to 96 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

PROCTOR DATA:

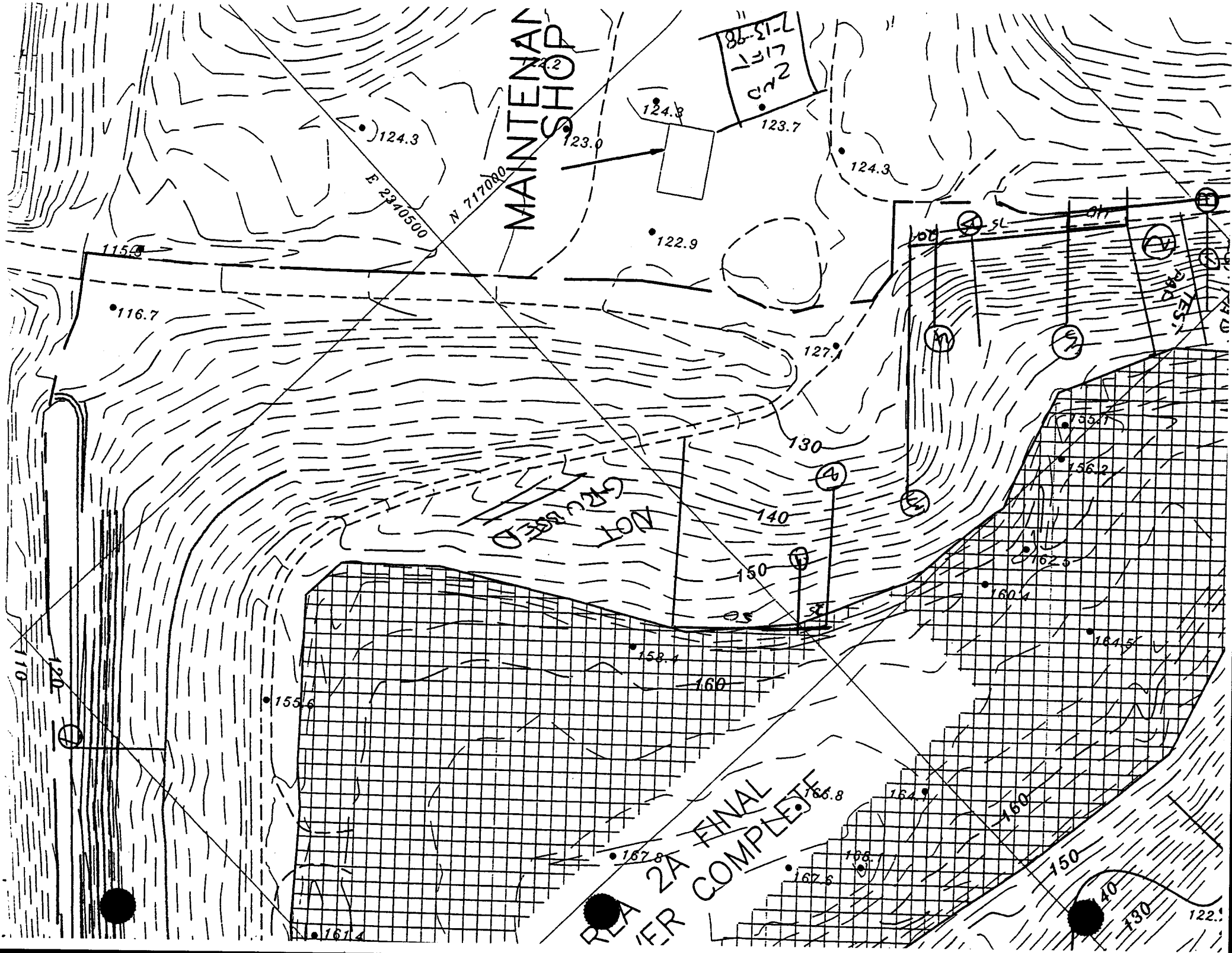
(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

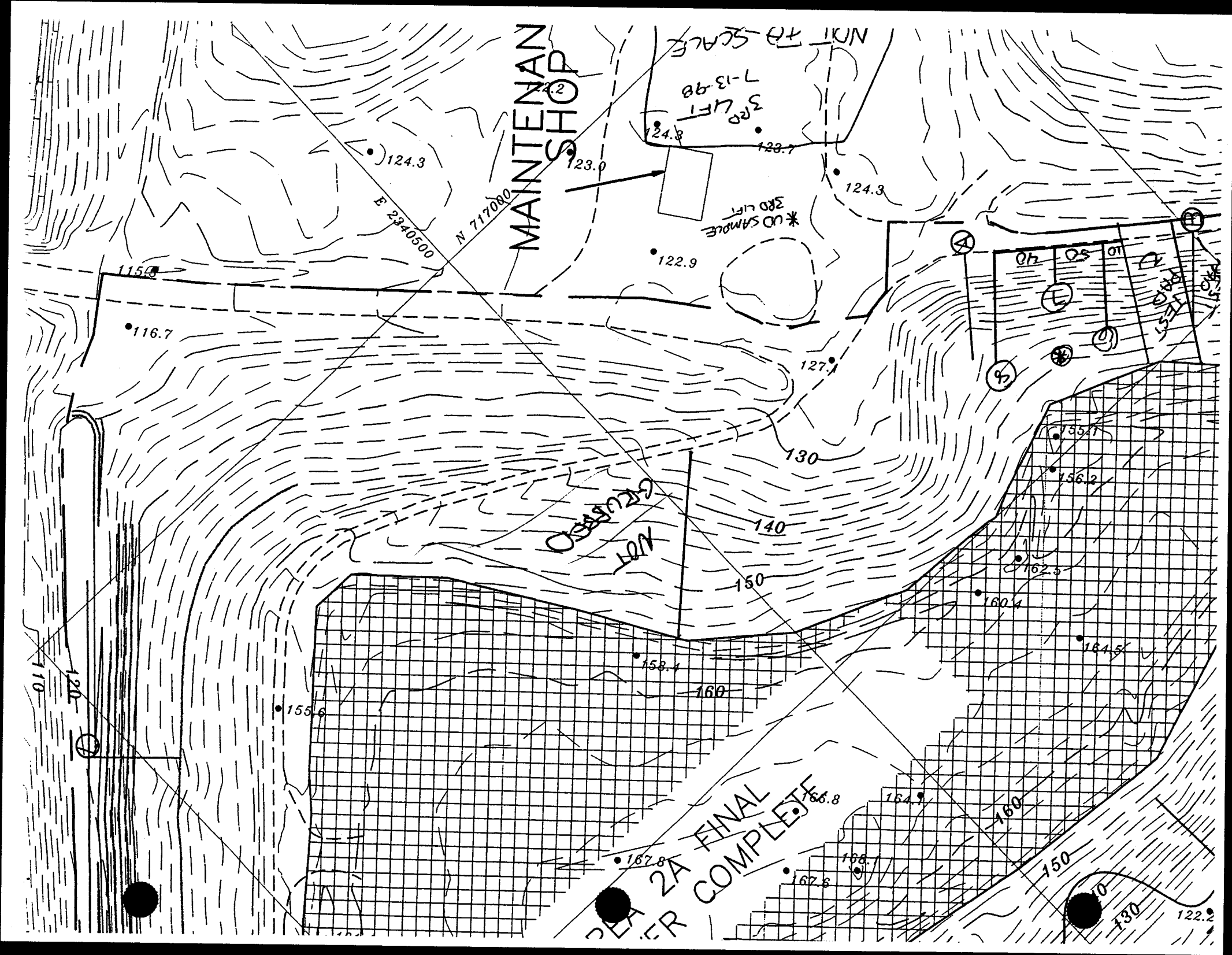
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.0	See attached drawing 07/13/98	125.1	29.1	96.9	3	93	90
2	1.0	See attached drawing 07/13/98	126.2	30.5	96.7	3	93	90
3	1.0	See attached drawing 07/13/98	124.9	27.6	97.8	3	94	90
4	1.0	See attached drawing 07/13/98	125.7	29.4	97.1	3	93	90.
5	1.0	See attached drawing 07/13/98	126.1	30.1	96.9	3	93	90
6	0.5	See attached drawing 07/13/98	127.1	26.5	100.4	3	96	90
7	0.5	See attached drawing 07/13/98	124.2 ~~124.0~~	25.9	98.6 ~~98.4~~	3	95	90
8	0.5	See attached drawing 07/13/98	125.6	27.9	98.2	3	94	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel


MAINTENANCE SHOP
E 2340500
N 717000
124.3
123.0
124.8
123.7
124.3
122.9
115
116.7
127.1
130
140
150
155.1
156.2
162.5
160.4
164.5
158.1
160
155.6
166.8
164.1
160
150
167.8
168.1
167.6
161.4
NOT GRADED
REA 2A FINAL
IER COMPLETE


MAINTENAN
SHOP
NOT TO SCALE
3RD LIFT
7-13-98
124.3
123.0
123.7
124.3
124.3
E 2340500
N 717000
UD SAMPLE
3RD LIFT
122.9
115.5
116.7
127.1
130
140
150
160
155.1
156.2
162.5
160.4
164.5
158.4
155.6
166.8
164.1
167.8
168.1
167.6
122.2
110
120
GRUBBED
NOT
2A FINAL
COMPLETE

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/14/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eight field density tests were performed in soils installed for the clay liner for the cap in area 2B. The tests were performed at approximately 0.5 feet below the final subgrade elevation and at the approximate final subgrade elevation.

Field density test results were computed to range from 91 to 98 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	0.5	See attached drawing 07/14/98	126.9	29.6	97.9	3	94	90
2	0.5	See attached drawing 07/14/98	129.4	26.9	101.9	3	98	90
3	Grade	See attached drawing 07/14/98	127.6	28.3	99.4	3	95	90
4	Grade	See attached drawing 07/14/98	128.1	27.4	100.5	3	96	90
5	Grade	See attached drawing 07/14/98	127.3	25.9	101.1	3	97	90
6	Grade	See attached drawing 07/14/98	128.1	27.2	100.7	3	97	90
7	Grade	See attached drawing 07/14/98	126.8	28.7	98.5	3	95	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Zell

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

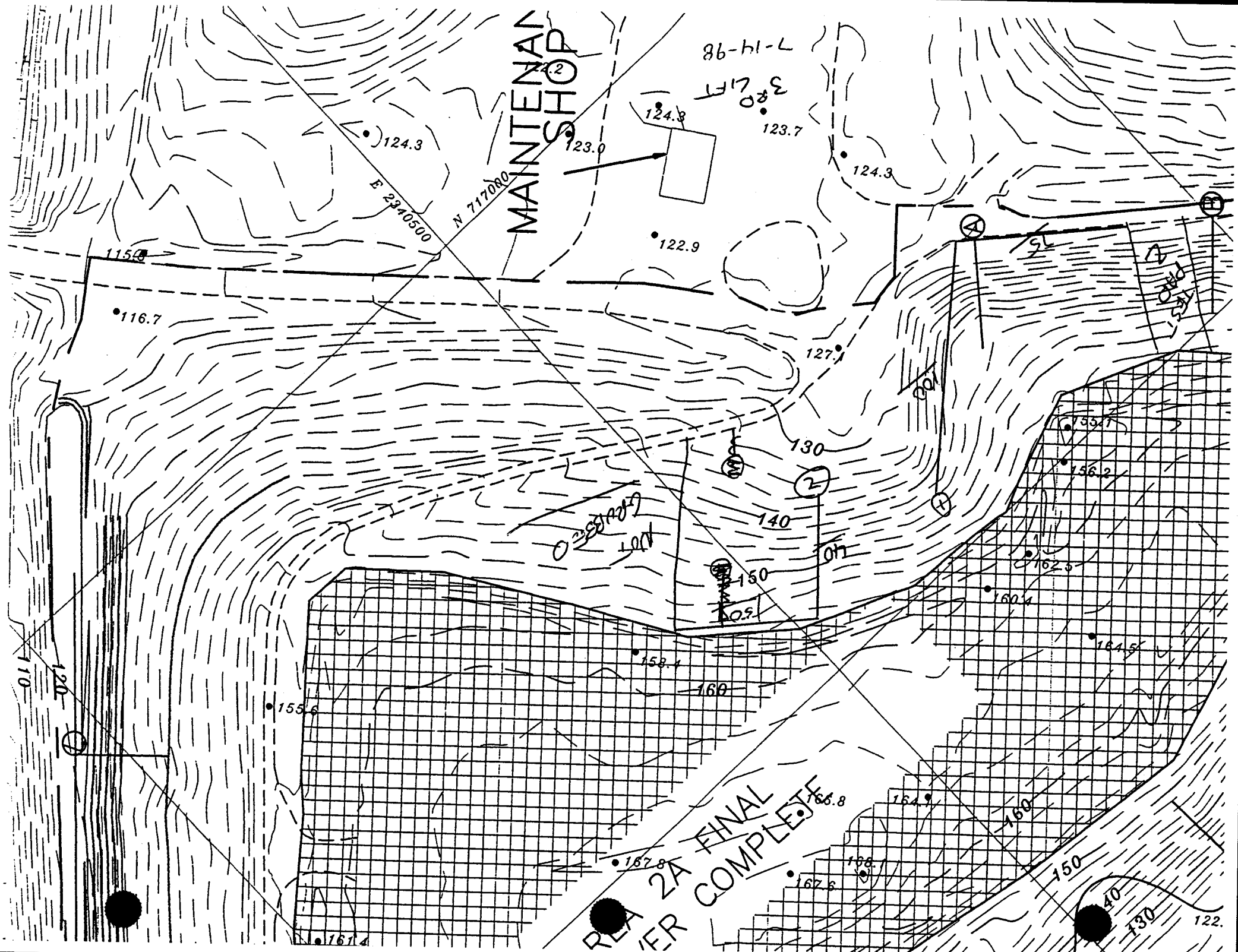
(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

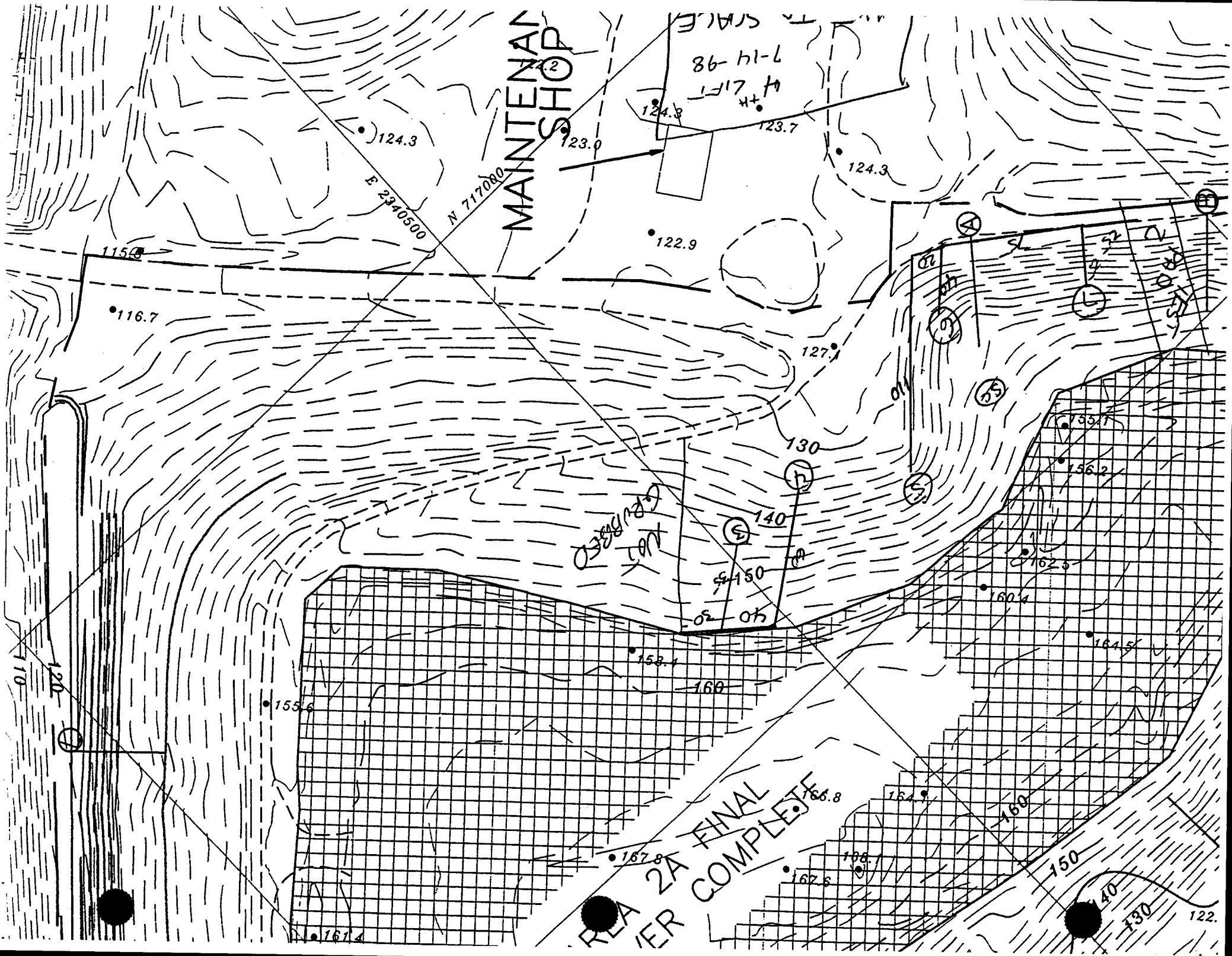
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	3	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	1	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	1	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	1	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	1	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	1	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	1	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	1	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	1	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Zell


MAINTENAN
SHOP
7-14-98
3RD LIFT
124.3
123.0
124.3
123.7
124.3
122.9
E 2340500
N 717000
115.6
116.7
127.1
130
140
150
160
155.1
156.2
162.5
160.4
164.5
158.4
155.6
166.8
164.1
167.8
168.1
167.6
161.4
110
120
40
130
122.
RLA 2A FINAL
VER COMPLETE


MAINTENAN
SHOP
E 2340500
N 717000
124.3
123.0
124.3
123.7
124.3
122.9
116.7
127.1
130
140
150
160
155.1
156.2
162.5
160.4
164.5
158.4
155.6
166.8
164.1
167.8
168.1
167.6
161.4
110
120
FINAL
COMPLETE
122.

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/15/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in soils installed as the clay liner for the cap in area 2B. The tests were performed at approximately 1.5 and 1.0 feet below the final subgrade elevation.

Field density test results were computed to range from 92 to 100 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Zell

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.5	See attached drawing 07/15/98	122.1	25.2	97.5	3	94	90
2	1.5	See attached drawing 07/15/98	124.2	27.6	97.3	3	93	90
3	1.5	See attached drawing 07/15/98	124.8	28.1	97.4	3	94	90
4	1.5	See attached drawing 07/15/98	125.5	25.9	99.6	3	96	90
5	1.5	See attached drawing 07/15/98	122.9	28.8	95.4	3	92	90
6	1.0	See attached drawing 07/15/98	125.9	29.1	97.5	3	94	90
7	1.0	See attached drawing 07/15/98	126.7	27.2	99.6	3	96	90
8	1.0	See attached drawing 07/15/98	128.9	26.3	102.0	3	98	90
9	1.0	See attached drawing 07/15/98	125.2	28.9	97.1	3	93	90
10	1.0	See attached drawing 07/15/98	129.1	27.4	101.3	3	97	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Neel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

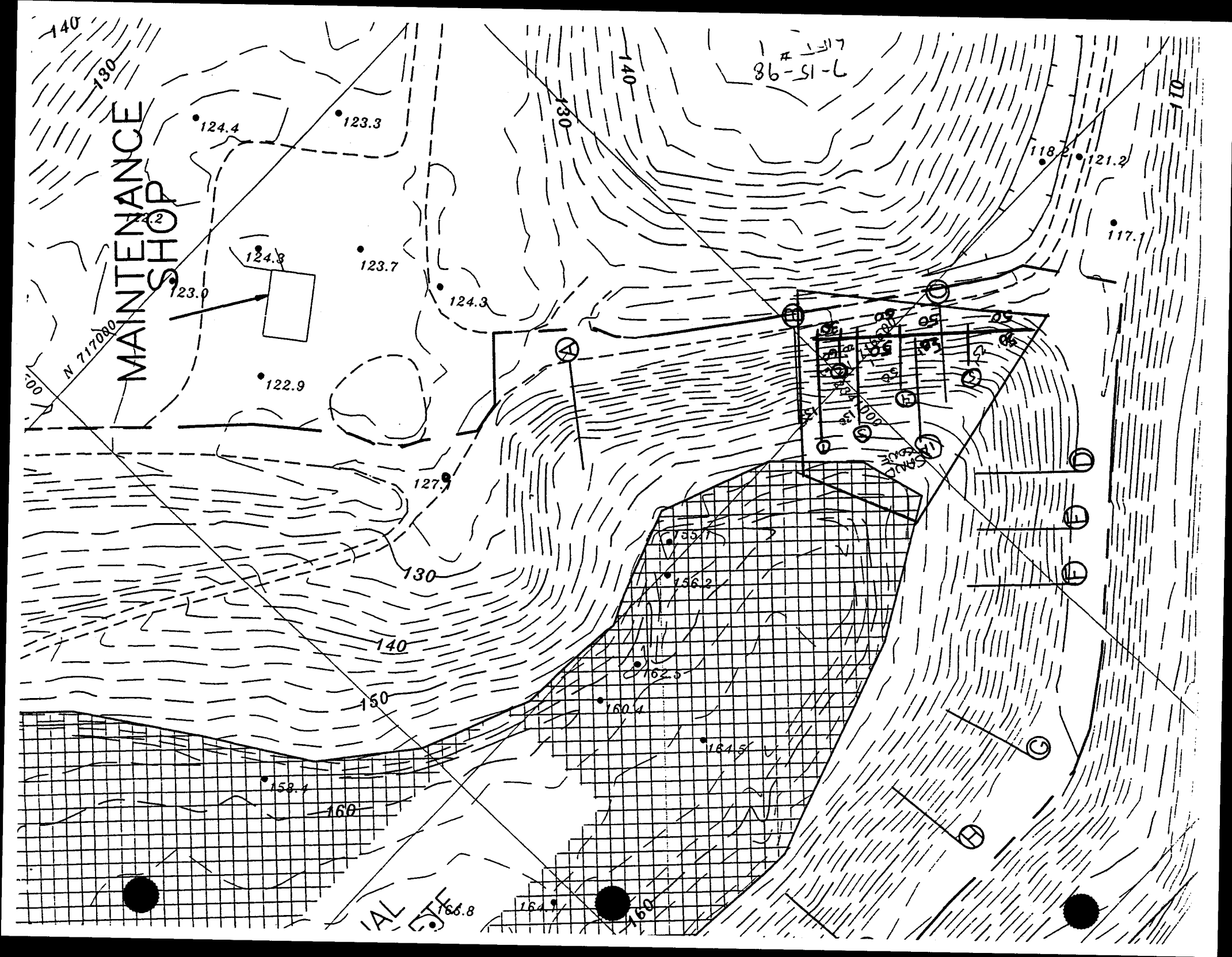
(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

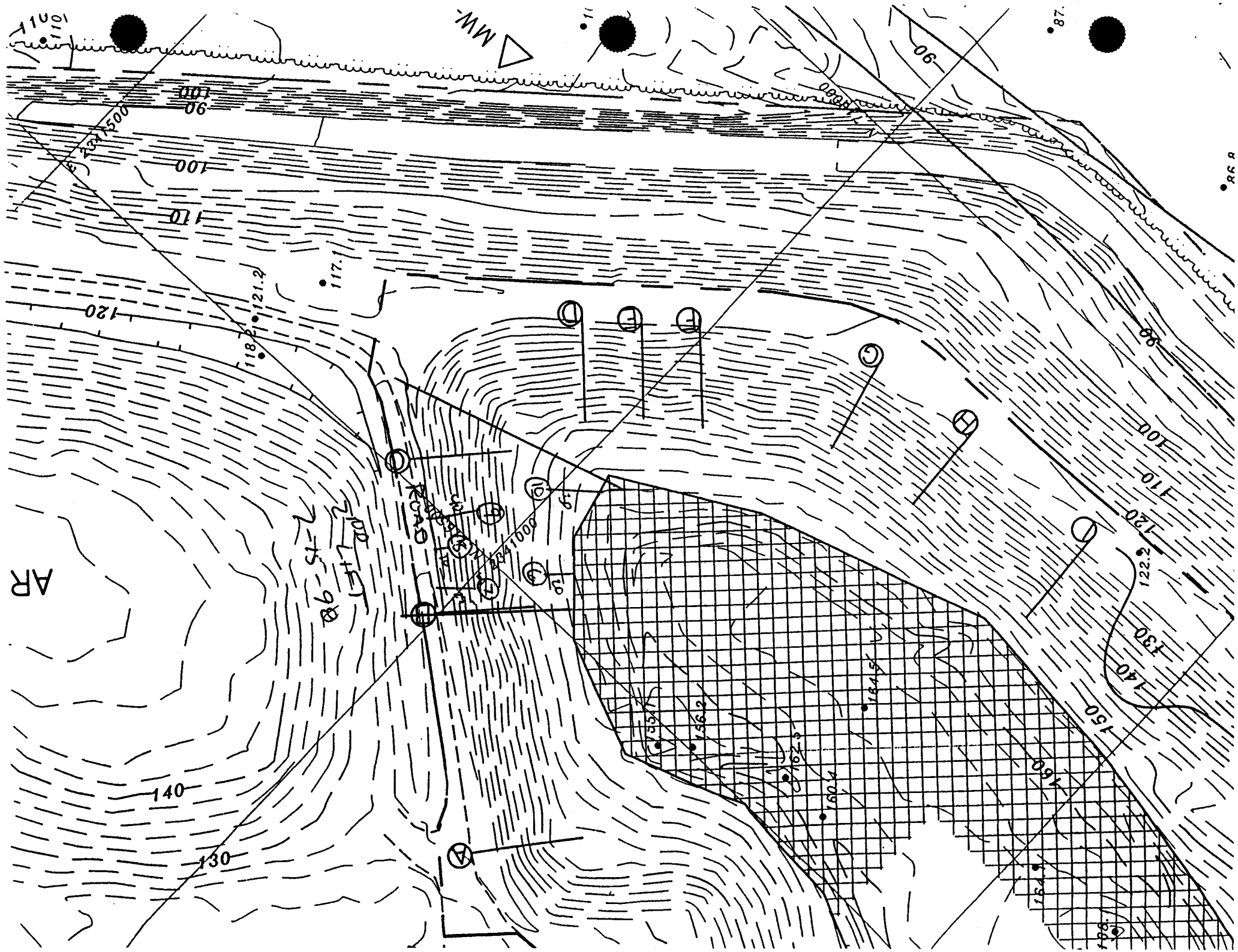
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	3	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	3	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	1	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	1	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	1	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	1	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	1	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	1	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	1	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Neel


MAINTENANCE SHOP
140
130
124.4
123.3
124.2
124.3
123.7
123.0
124.3
122.9
N 7170800
127.9
130
140
150
160
158.4
156.2
162.5
160.4
164.5
166.8
164.1
160
118.2
121.2
117.1
110
7-15-98



MW
AR
ROAD
90
100
110
120
130
140
150
160

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Cloudy and hot with light rain in the afternoon

TITAN JOB NO.: 8077-80

DATE: 07/16/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eight field density tests were performed in soils installed as the clay liner for the cap in area 2B. The tests were performed at approximately 0.5 feet below the final subgrade elevation and at the approximate final subgrade elevation.

Field density test results were computed to range from 91 to 97 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	0.5	See attached drawing 07/16/98	124.1	24.9	99.3	3	95	90
2	0.5	See attached drawing 07/16/98	122.3	25.6	97.3	3	93	90
3	0.5	See attached drawing 07/16/98	125.1	24.1	100.8	3	97	90
4	0.5	See attached drawing 07/16/98	122.9	26.1	97.4	3	94	90
5	0.5	See attached drawing 07/16/98	123.6	25.2	98.7	3	95	90
6	Grade	See attached drawing 07/16/98	124.5	28.9	96.5	3	93	90
7	Grade	See attached drawing 07/16/98	122.8	29.7	94.6	3	91	90
8	Grade	See attached drawing 07/16/98	124.9	29.1	96.7	3	93	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Teel

86.8
87
90
100
110
120
122.2
130
140
150
160
158
154
160S
160.4
162.3
156.2
153.1
MW
3RD LIFT
117.1
118.2
121.2
AR

MW
AR
4TH
90
100
110
120
130
140
150
160
86.8
87
122.2
164.5
160.4
156.2
155.1
117.1
118.2
121.2

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Cloudy and hot with thunderstorms

TITAN JOB NO.: 8077-80

DATE: 07/17/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Four field density tests were performed in soils installed as the clay liner for the cap in area 2B at the approximate final subgrade elevation.

Field density test results were computed to range from 90 to 92 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Hall

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	Grade	See attached drawing 07/17/98	123.2	30.1	94.6	3	91	90
2	Grade	See attached drawing 07/17/98	125.2	29.9	96.3	3	92	90
3	Grade	See attached drawing 07/17/98	122.9	31.2	93.6	3	90	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Zeel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

PROCTOR DATA:

(3x/3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	x3/3	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	x3/3	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	x3/3	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	1	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	1	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	1	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	1	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	1	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	1	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Hall

86.8
87
90
100
110
120
122.2
130
140
150
160
164.1
164.5
160.4
162.5
156.2
155.1
MW
FOURTH
LIFT
7-17-84
117.1
118.2
121.2
90
100
110
120
130
140
AR

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/20/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in soils installed for the clay liner for the cap in area 2B at approximately 1.5 and 1.0 feet below the final subgrade elevation.

Field density test results were computed to range from 91 to 99 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.5	See attached drawing 07/20/98	124.2	26.2	98.4	3	94	90
2	1.5	See attached drawing 07/20/98	122.9	22.3	100.4	3	96	90
3	1.5	See attached drawing 07/20/98	124.1	27.1	97.6	3	94	90
4	1.5	See attached drawing 07/20/98	125.6	25.1	100.3	3	96	90
5	1.5	See attached drawing 07/20/98	124.8	22.9	101.5	3	97	90
6	1.0	See attached drawing 07/20/98	125.7	24.2	101.2	3	97	90
7	1.0	See attached drawing 07/20/98	126.1	25.6	100.3	3	96	90
8	1.0	See attached drawing 07/20/98	122.9	24.3	98.8	3	95	90
9	1.0	See attached drawing 07/20/98	125.5	22.1	102.7	3	99	90
10	1.0	See attached drawing 07/20/98	126.3	23.6	102.1	3	98	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

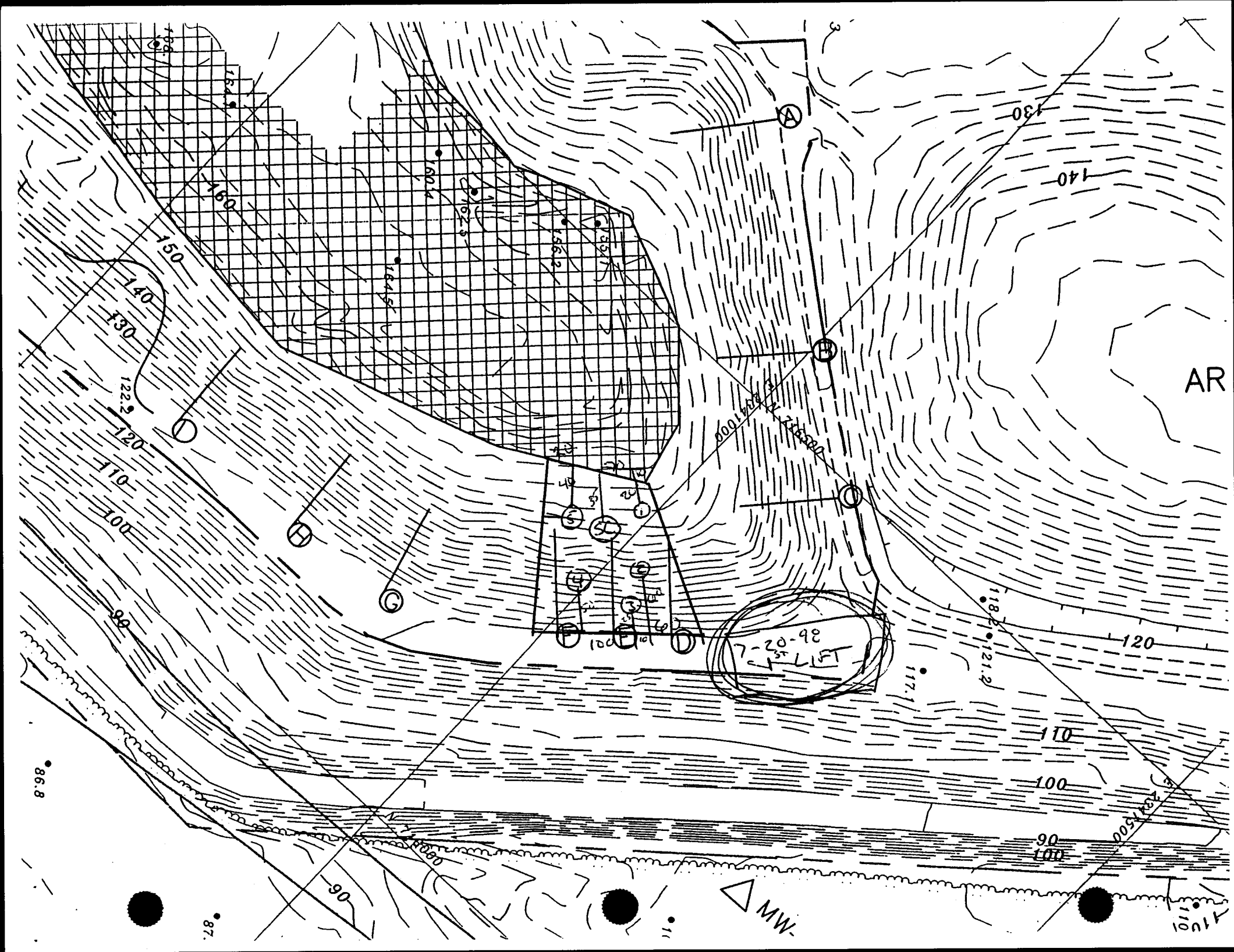
(3 1/2) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	±3/3	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	±3/3	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	±3/3	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	±3/3	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	1	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	1	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	1	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	1	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	1	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Zell



AR
130
140
120
110
100
90
160
150
140
130
120
110
100
90
A
B
C
D
E
F
G
H
7-20-98
1st LIFT
MW

2ND LIFT
7-20-98
AR

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/21/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in soils installed for the clay liner for the cap in area 2B at approximately 0.5 feet below the final subgrade elevation and at the approximate final subgrade elevation.

Field density test results were computed to range from 93 to 98 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Hall

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	0.5	See attached drawing 07/21/98	122.5	25.1	97.9	3	94	90
2	0.5	See attached drawing 07/21/98	125.6	23.1	102.0	3	98	90
3	0.5	See attached drawing 07/21/98	125.1	26.7	98.7	3	95	90
4	0.5	See attached drawing 07/21/98	123.6	26.1	98.0	3	94	90
5	0.5	See attached drawing 07/21/98	124.5	25.4	99.2	3	95	90
6	Grade	See attached drawing 07/21/98	124.1	23.2	100.7	3	97	90
7	Grade	See attached drawing 07/21/98	126.2	24.9	101.0	3	97	90
8	Grade	See attached drawing 07/21/98	123.0	26.8	97.0	3	93	90
9	Grade	See attached drawing 07/21/98	122.9	23.9	99.1	3	95	90
10	Grade	See attached drawing 07/21/98	124.3	24.3	100.0	3	96	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Hall

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

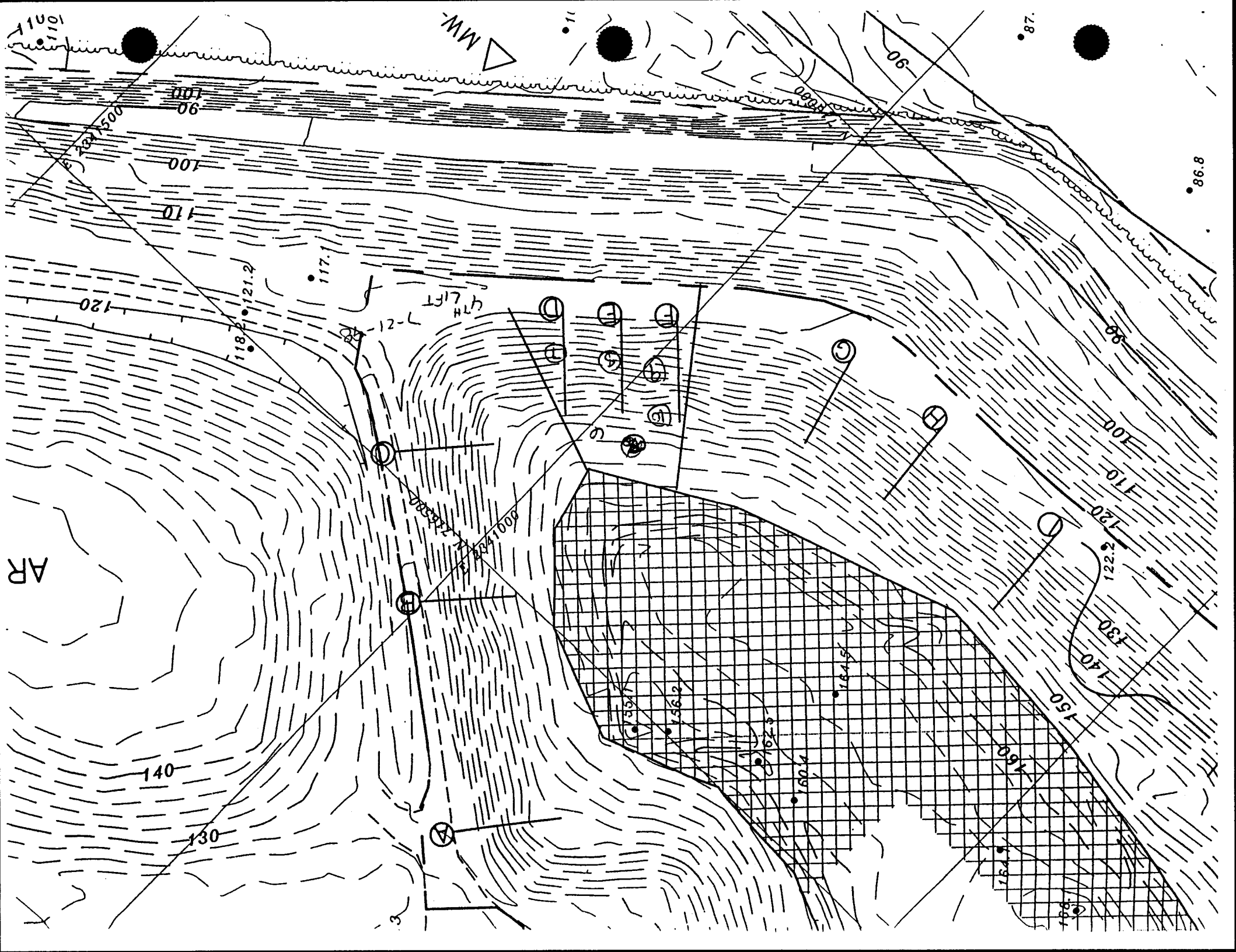
(3 1/2) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

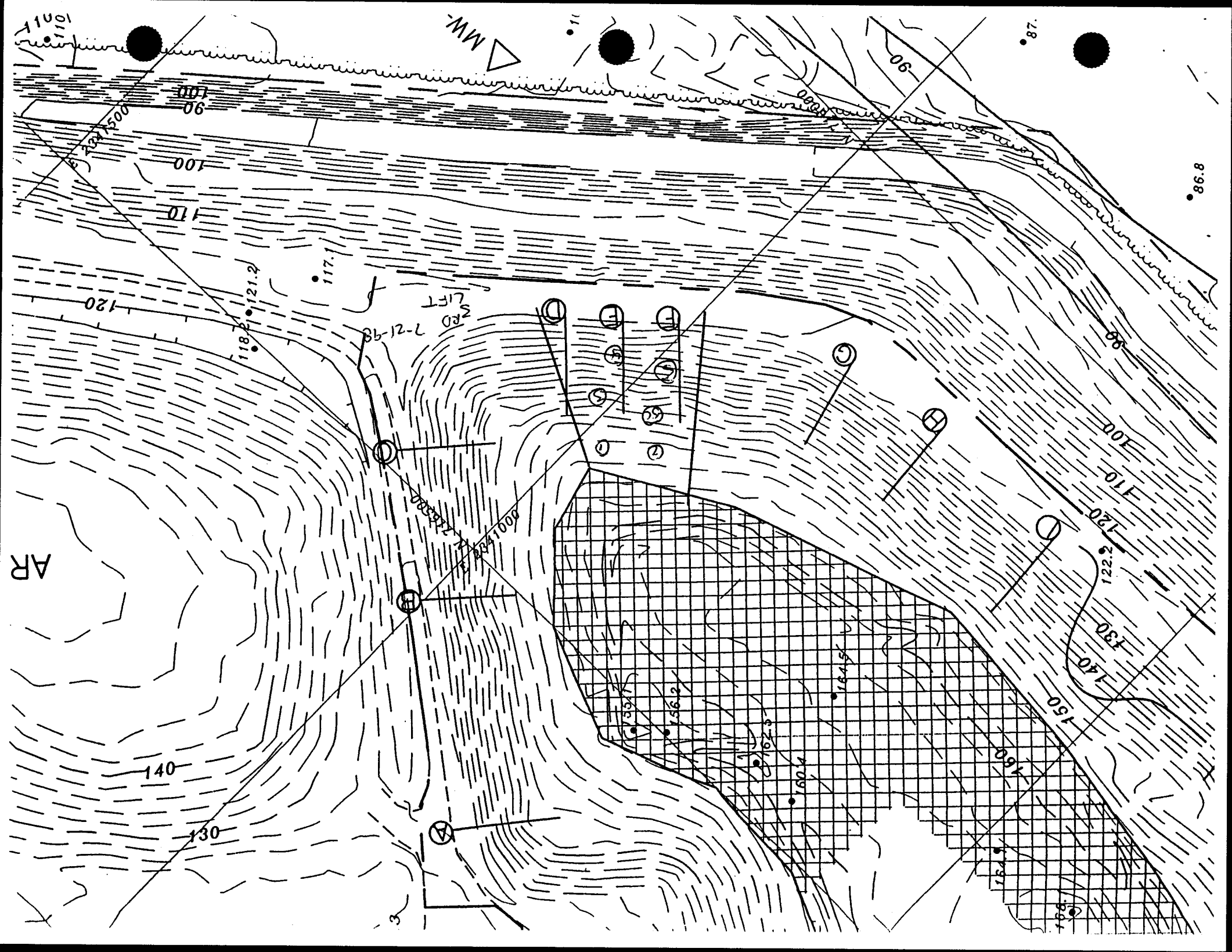
Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	x3/2	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	x3/2	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	x3/2	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	x3/2	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	x3/2	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	1	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	1	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	1	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	1	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Zell



MW
AR
100
90
110
120
130
140
150
160
117.1
121.2
118.2
122.2
86.8
87.


MW-
AR
LIFT
7-21-98
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
360
370
380
390
400
410
420
430
440
450
460
470
480
490
500
510
520
530
540
550
560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
720
730
740
750
760
770
780
790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
950
960
970
980
990
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
3620
3630
3640
3650
3660
3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
3860
3870
3880
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
4080
4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4290
4300
4310
4320
4330
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
4520
4530
4540
4550
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
4750
4760
4770
4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
4970
4980
4990
5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
5190
5200
5210
5220
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
5410
5420
5430
5440
5450
5460
5470
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
5660
5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
5820
5830
5840
5850
5860
5870
5880
5890
5900
5910
5920
5930
5940
5950
5960
5970
5980
5990
6000
6010
6020
6030
6040
6050
6060
6070
6080
6090
6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
6240
6250
6260
6270
6280
6290
6300
6310
6320
6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670
6680
6690
6700
6710
6720
6730
6740
6750
6760
6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
6890
6900
6910
6920
6930
6940
6950
6960
6970
6980
6990
7000
7010
7020
7030
7040
7050
7060
7070
7080
7090
7100
7110
7120
7130
7140
7150
7160
7170
7180
7190
7200
7210
7220
7230
7240
7250
7260
7270
7280
7290
7300
7310
7320
7330
7340
7350
7360
7370
7380
7390
7400
7410
7420
7430
7440
7450
7460
7470
7480
7490
7500
7510
7520
7530
7540
7550
7560
7570
7580
7590
7600
7610
7620
7630
7640
7650
7660
7670
7680
7690
7700
7710
7720
7730
7740
7750
7760
7770
7780
7790
7800
7810
7820
7830
7840
7850
7860
7870
7880
7890
7900
7910
7920
7930
7940
7950
7960
7970
7980
7990
8000
8010
8020
8030
8040
8050
8060
8070
8080
8090
8100
8110
8120
8130
8140
8150
8160
8170
8180
8190
8200
8210
8220
8230
8240
8250
8260
8270
8280
8290
8300
8310
8320
8330
8340
8350
8360
8370
8380
8390
8400
8410
8420
8430
8440
8450
8460
8470
8480
8490
8500
8510
8520
8530
8540
8550
8560
8570
8580
8590
8600
8610
8620
8630
8640
8650
8660
8670
8680
8690
8700
8710
8720
8730
8740
8750
8760
8770
8780
8790
8800
8810
8820
8830
8840
8850
8860
8870
8880
8890
8900
8910
8920
8930
8940
8950
8960
8970
8980
8990
9000
9010
9020
9030
9040
9050
9060
9070
9080
9090
9100
9110
9120
9130
9140
9150
9160
9170
9180
9190
9200
9210
9220
9230
9240
9250
9260
9270
9280
9290
9300
9310
9320
9330
9340
9350
9360
9370
9380
9390
9400
9410
9420
9430
9440
9450
9460
9470
9480
9490
9500
9510
9520
9530
9540
9550
9560
9570
9580
9590
9600
9610
9620
9630
9640
9650
9660
9670
9680
9690
9700
9710
9720
9730
9740
9750
9760
9770
9780
9790
9800
9810
9820
9830
9840
9850
9860
9870
9880
9890
9900
9910
9920
9930
9940
9950
9960
9970
9980
9990
10000

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/22/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in soils installed as the clay liner for the cap in area 2B at approximately 1.5 and 1.0 feet below the final subgrade elevation.

Field density test results were computed to range from 90 to 99 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.5	See attached drawing 07/22/98	122.9	23.1	99.8	3	96	90
2	1.5	See attached drawing 07/22/98	124.5	22.9	101.3	3	97	90
3	1.5	See attached drawing 07/22/98	123.0	25.2	98.2	3	94	90
4	1.5	See attached drawing 07/22/98	124.6	22.5	101.7	3	98	90
5	1.5	See attached drawing 07/22/98	125.9	21.6	103.5	3	99	90
6	1.0	See attached drawing 07/22/98	123.6	25.6	98.4	3	94	90
7	1.0	See attached drawing 07/22/98	124.1	23.9	100.1	3	96	90
8	1.0	See attached drawing 07/22/98	125.0	25.9	99.2	3	95	90
9	1.0	See attached drawing 07/22/98	123.6	26.1	98.0	3	94	90
10	1.0	See attached drawing 07/22/98	122.1	25.0	97.6	3	94	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Heel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

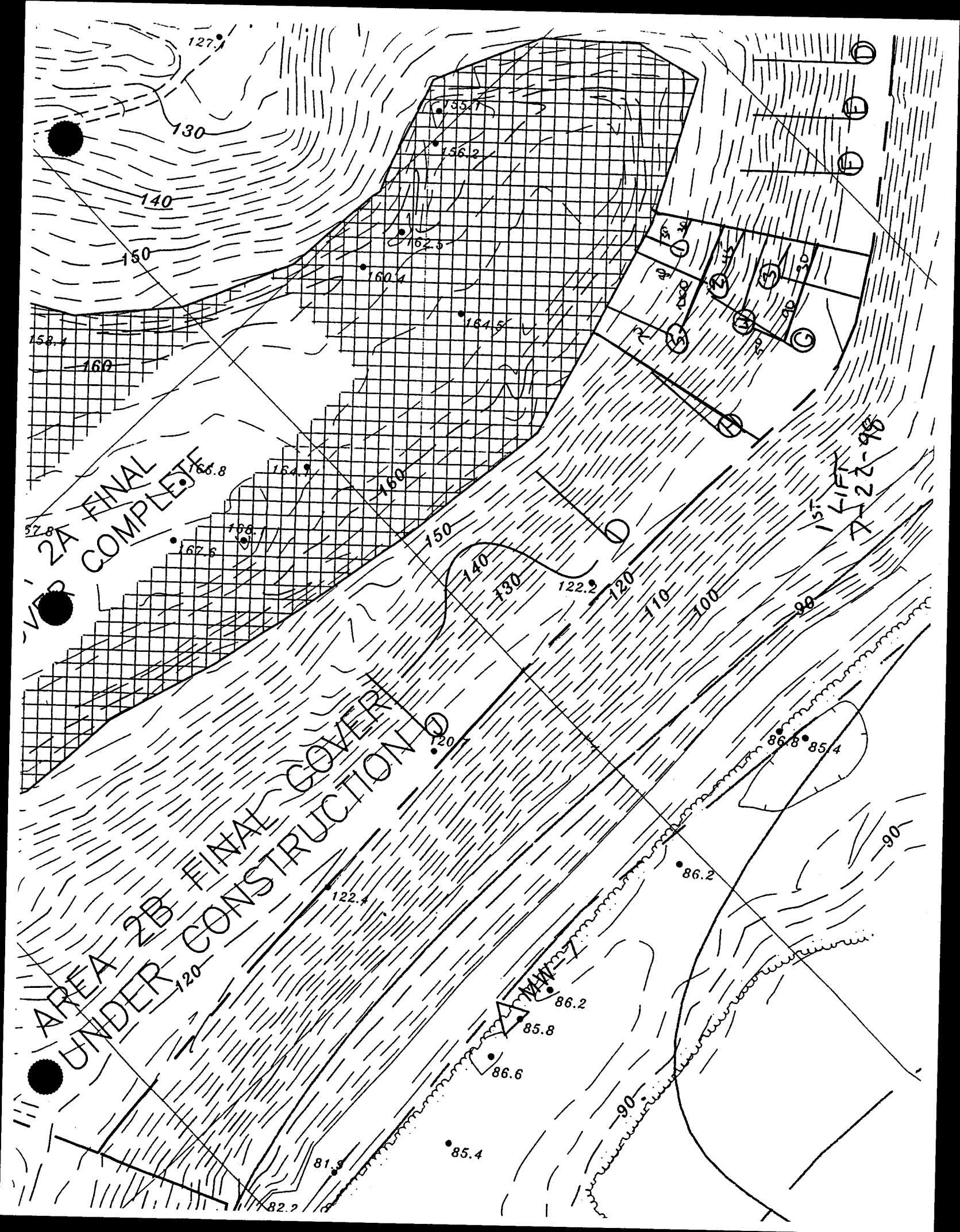
(3~~1~~) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
(~~1~~) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

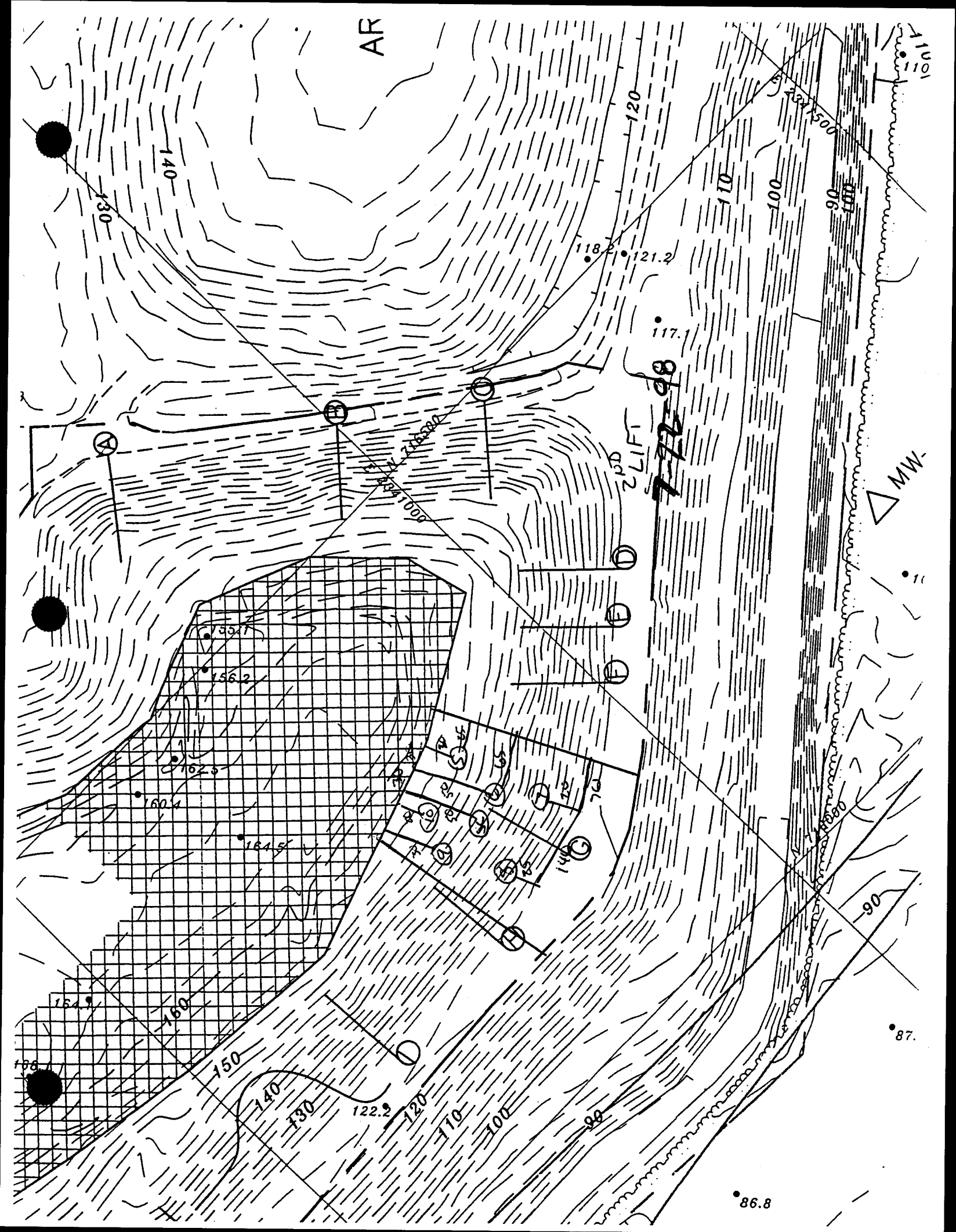
Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	~~+3~~/-	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	~~+3~~/-	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	~~+3~~/-	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	~~+3~~/-	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	~~+3~~/-	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	~~+3~~/-	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	1	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	1	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	1	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Hall



AREA 2B FINAL COVER
UNDER CONSTRUCTION
2A FINAL
COMPLETE
1ST LIFT
A-22-98
MW-7
127.1
130
140
150
160
155.1
156.2
162.5
160.4
164.5
158.4
166.8
164.1
167.6
168.1
122.2
120
110
100
90
120.7
86.8
85.4
86.2
122.4
86.2
85.8
86.6
85.4
81.3
82.2



AR
MW-
2ND LIFT
118.2
121.2
117.1
155.1
156.2
162.5
160.4
164.5
164.1
122.2
86.8
87.
110
100
90
120
130
140
150
160

TITAN ATLANTIC GROUP

111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot with rain during the late afternoon

TITAN JOB NO.: 8077-80

DATE: 07/23/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eight field density tests were performed in soils installed for the clay liner for the cap in area 2B at approximately 0.5 feet below the final subgrade elevation and at the approximate final subgrade elevation.

Field density test results were computed to range from 92 to 96 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	0.5	See attached drawing 07/23/98	124.3	24.9	99.5	3	96	90
2	0.5	See attached drawing 07/23/98	127.1	27.0	100.0	3	96	90
3	0.5	See attached drawing 07/23/98	123.9	29.1	95.9	3	92	90
4	0.5	See attached drawing 07/23/98	123.1	26.7	97.1	3	93	90
5	0.5	See attached drawing 07/23/98	125.1	25.1	100.0	3	96	90
6	Grade	See attached drawing 07/23/98	122.6	28.4	95.4	3	92	90
7	Grade	See attached drawing 07/23/98	123.8	27.7	96.9	3	93	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Zeel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

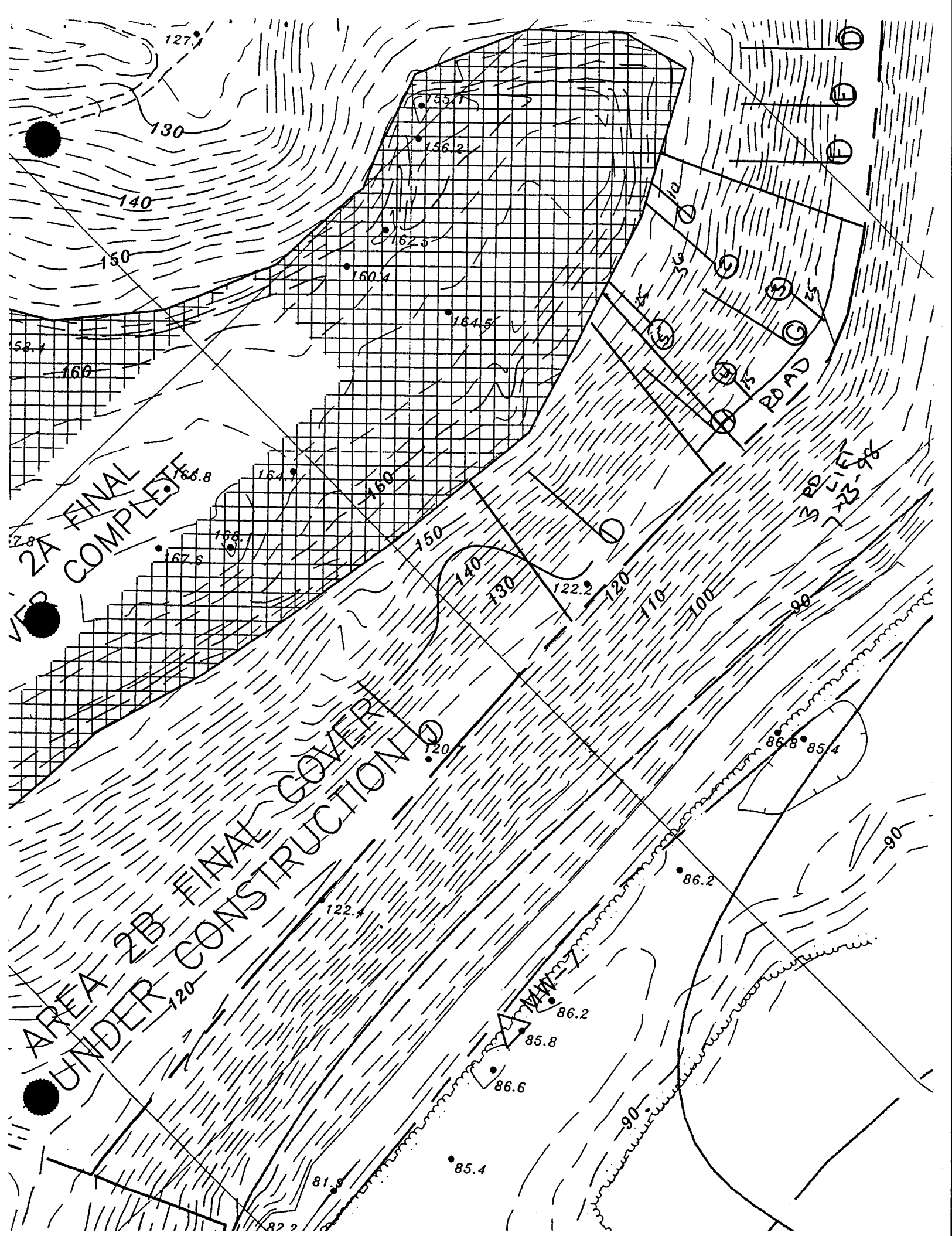
(3/1) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
(1/5) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

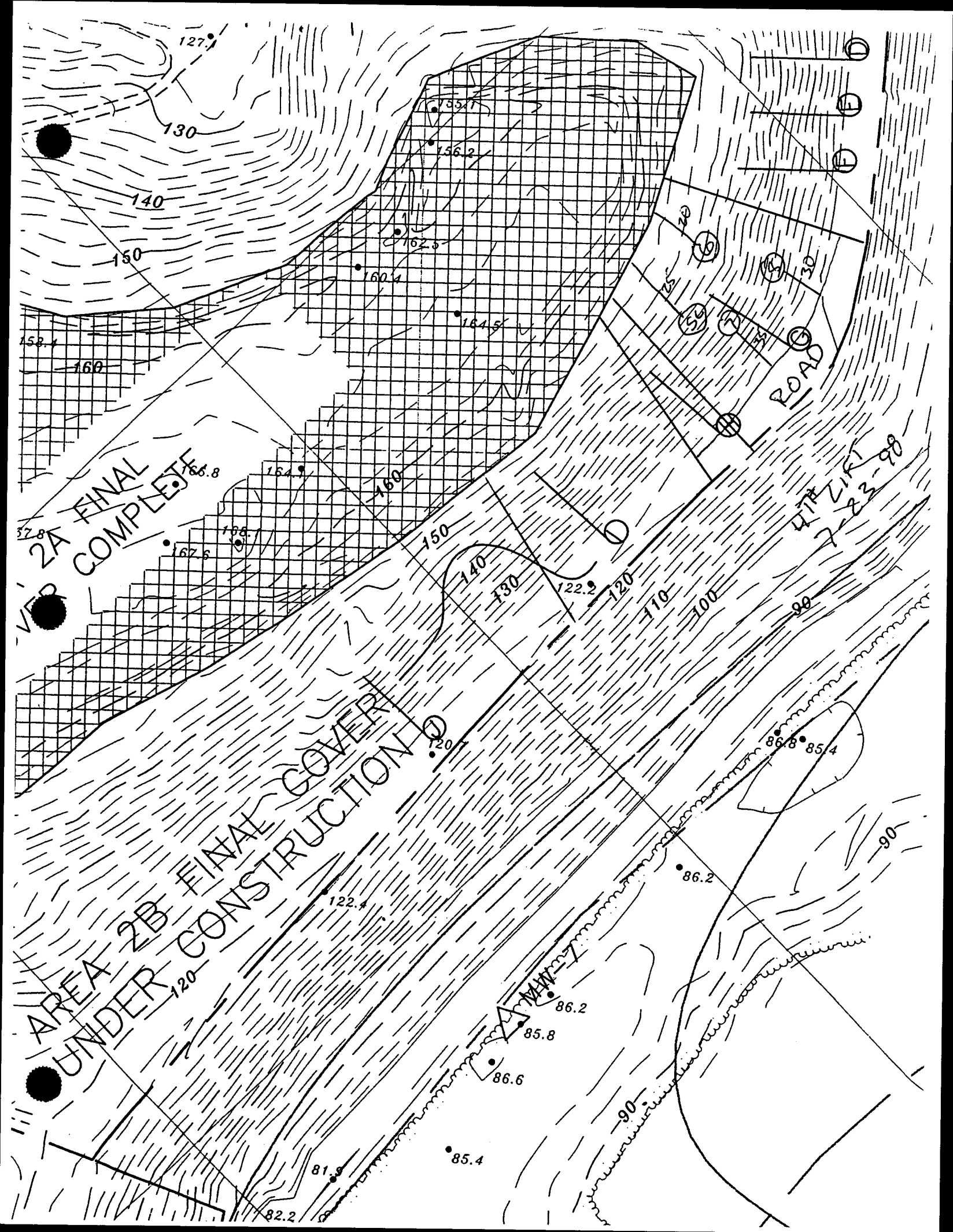
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	±3/5	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	±3/5	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	±3/5	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	±3/5	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	±3/5	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	±3/5	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	±3/5	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	1	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	1	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Keel


2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
ROAD
MW-7
127.1
130
140
150
155.7
156.2
162.5
160.4
164.5
158.4
160
166.8
164.1
162.6
122.2
120
110
100
90
86.8
85.4
86.2
122.4
85.8
86.6
85.4
81.8



AREA 2B FINAL COVER
UNDER CONSTRUCTION
2A FINAL
COMPLETE
ROAD
MW-7
127.1
130
140
150
160
155.1
156.2
162.5
160.4
164.5
158.4
166.8
164.1
168.1
167.6
122.2
120
110
100
90
120.7
86.8
85.4
86.2
122.4
86.2
85.8
86.6
85.4
81.9
82.2

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Cloudy and hot with intermittent rain

TITAN JOB NO.: 8077-80

DATE: 07/24/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eight field density tests were performed in soils installed for the clay liner for the cap in area 2B at approximately 1.5 and 1.0 feet below the final subgrade elevation.

Field density test results were computed to range from 89 to 96 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent, ± 2 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Heel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
CLIENT : County of Wilson
DATE : Reflected below
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

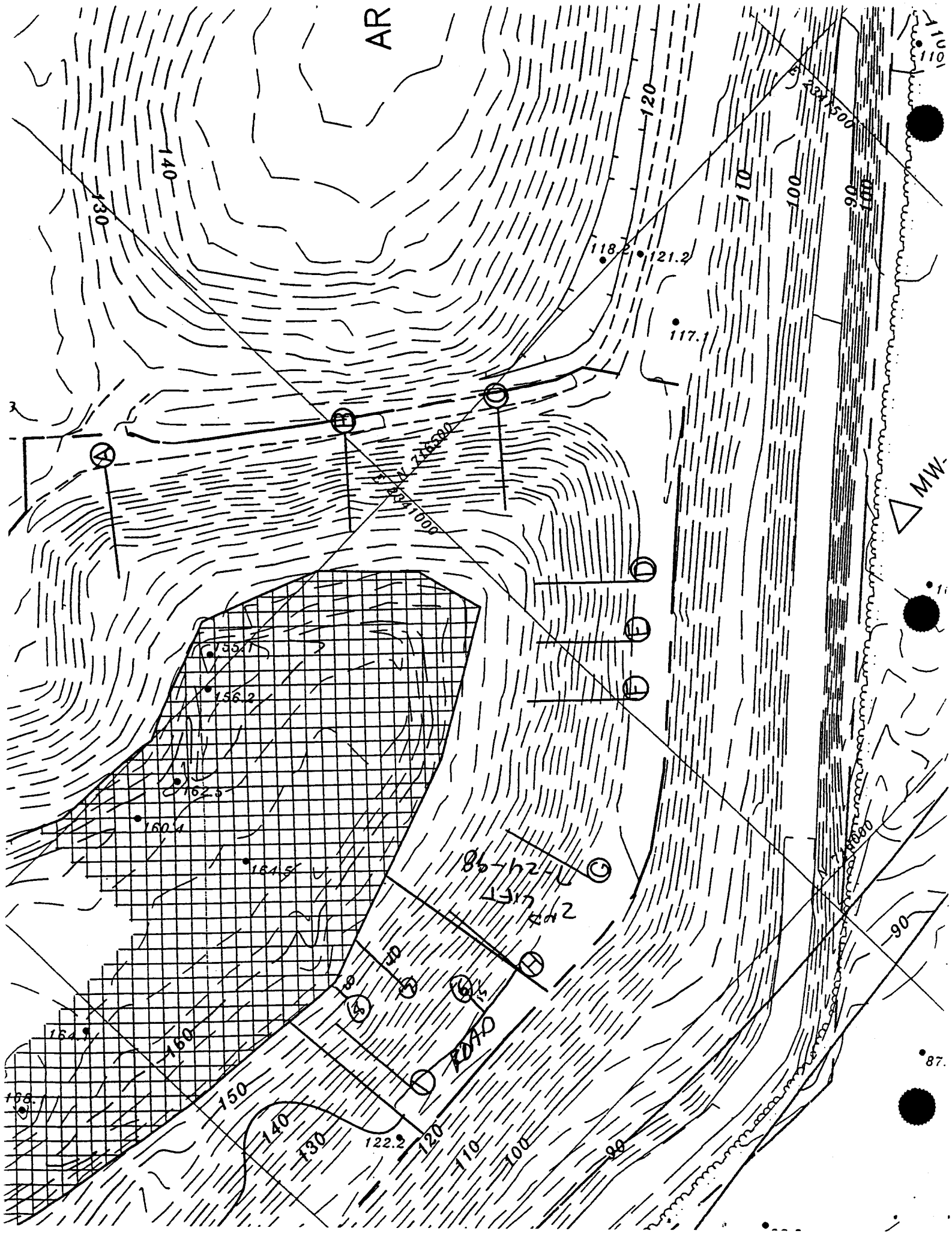
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.5	See attached drawing 07/24/98	123.1	29.6	94.9	3	91	90
2	1.5	See attached drawing 07/24/98	120.5	30.1	92.6	3	89	90
3	1.5	See attached drawing 07/24/98	123.4	27.2	97.0	3	93	90
4	1.5	See attached drawing 07/24/98	125.1	25.9	99.3	3	95	90
5	1.5	See attached drawing 07/24/98	122.1	29.0	94.6	3	91	90
6	1.0	See attached drawing 07/24/98	126.9	26.9	100.0	3	96	90
7	1.0	See attached drawing 07/24/98	124.2	28.4	96.7	3	93	90
8	1.0	See attached drawing 07/24/98	124.9	26.1	99.0	3	95	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Zell

ROAD
MW
AR
90
100
110
120
130
140
150
160


AR
MW-
118.2
121.2
117.1
155.1
156.2
162.5
160.4
164.5
164.1
168.
122.2
87.
ROAD
130
140
150
160
120
110
100
90

TITAN ATLANTIC GROUP

111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/27/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in soils installed for the clay liner for the cap in area 2B at approximately 1.5 and 1.0 feet below the final subgrade elevation.

Field density test results were computed to range from 93 to 99 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.5	See attached drawing 07/27/98	124.8	22.9	101.5	3	97	90
2	1.5	See attached drawing 07/27/98	123.1	23.6	99.5	3	96	90
3	1.5	See attached drawing 07/27/98	120.9	21.8	99.2	3	95	90
4	1.5	See attached drawing 07/27/98	122.6	22.1	100.4	3	96	90
5	1.5	See attached drawing 07/27/98	126.1	24.1	101.6	3	98	90
6	1.0	See attached drawing 07/27/98	123.9	22.0	101.5	3	97	90
7	1.0	See attached drawing 07/27/98	125.0	21.7	102.7	3	99	90
8	1.0	See attached drawing 07/27/98	124.4	22.4	101.6	3	98	90
9	1.0	See attached drawing 07/27/98	123.5	23.1	100.3	3	96	90
10	1.0	See attached drawing 07/27/98	124.9	24.1	100.6	3	97	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

PROCTOR DATA:

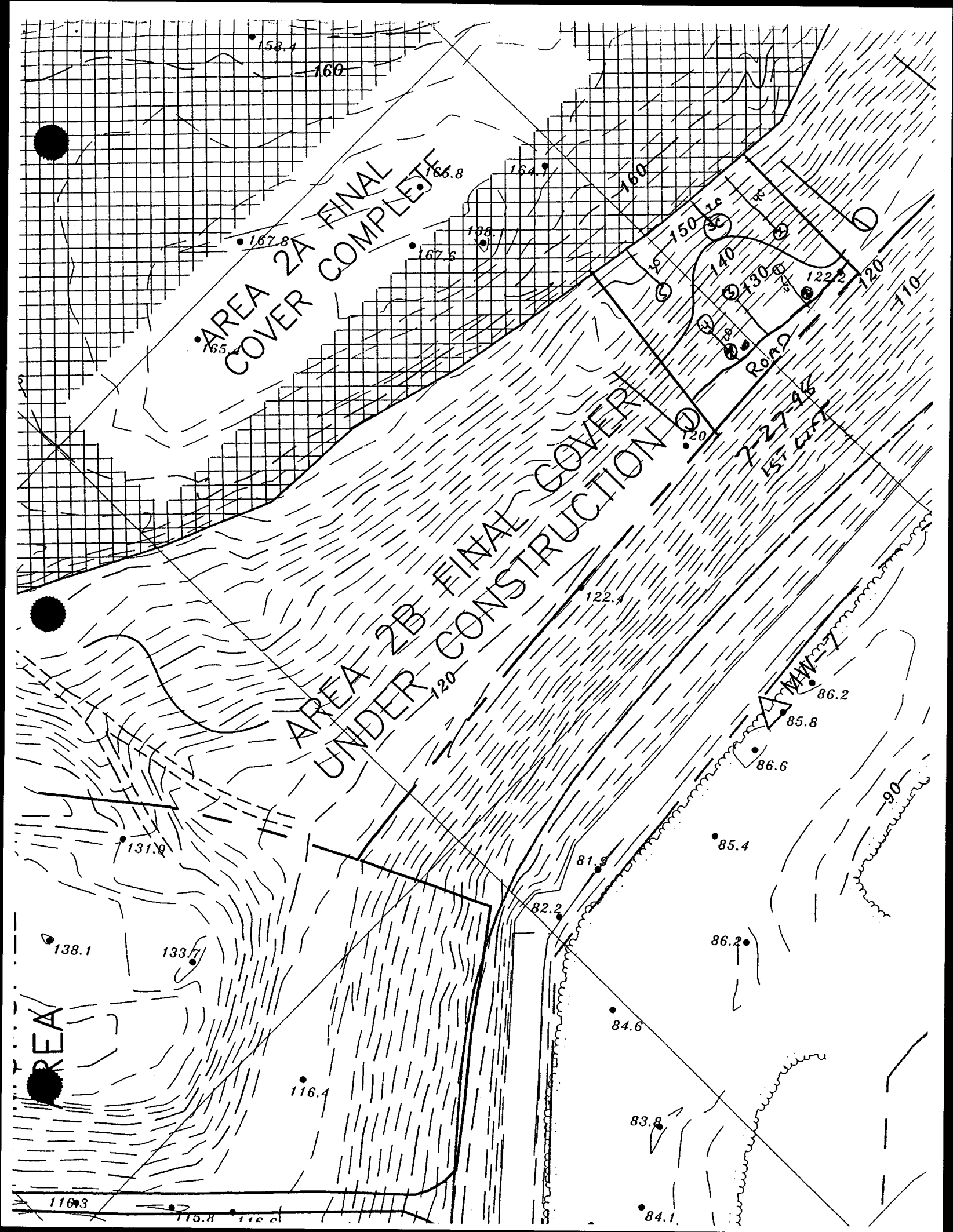
(3X) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
(1X) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

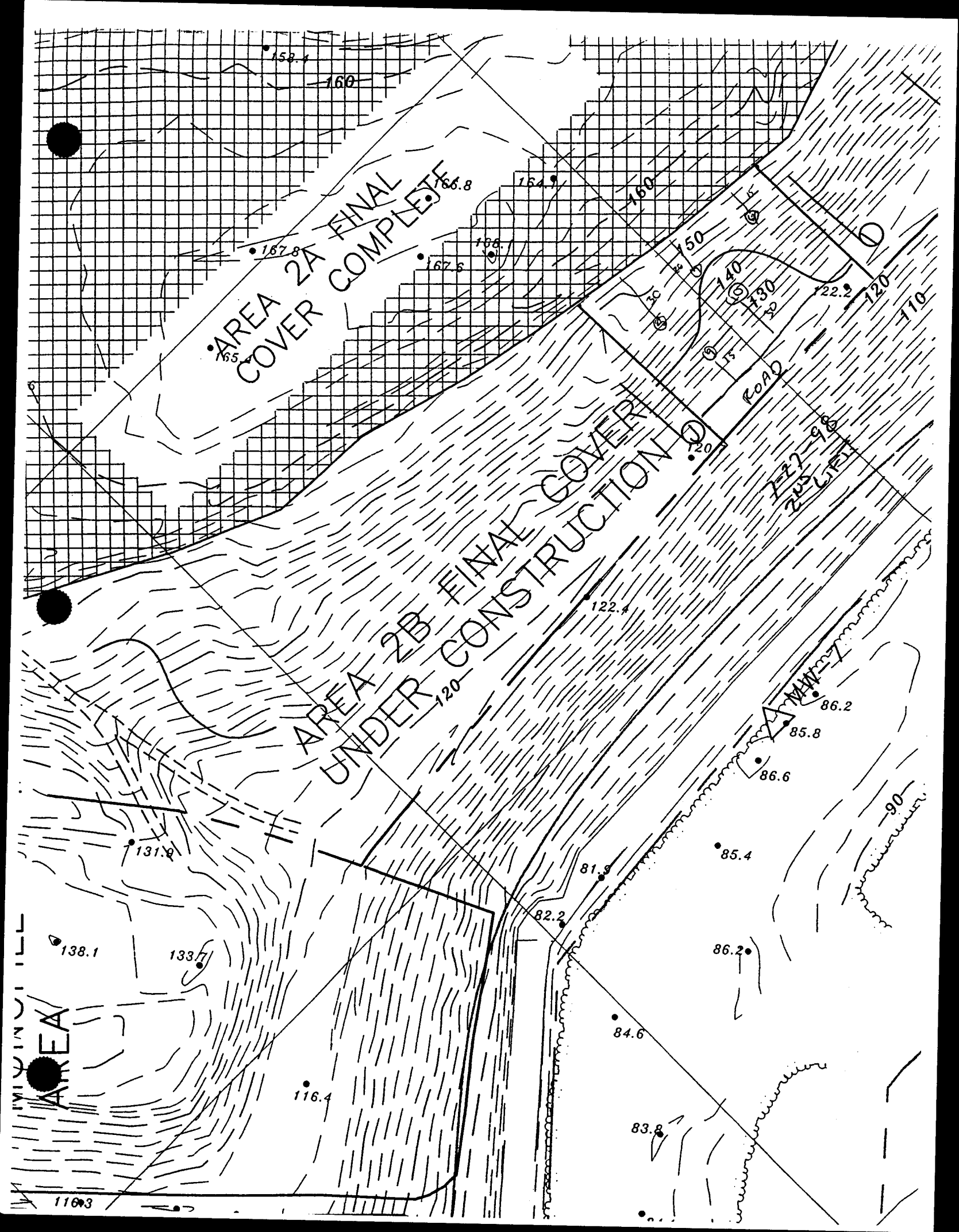
Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	~~1~~ 3/Sm	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	~~1~~ 3/Sm	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	~~1~~ 3/Sm	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	~~1~~ 3/Sm	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	~~1~~ 3/Sm	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	~~1~~ 3/Sm	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	~~1~~ 3/Sm	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	~~1~~ 3/Sm	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	1	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Neel



AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
ROAD
7-27-96
1ST LIFT
MW-7
AREA
158.4
160
166.8
164.1
167.8
167.6
168.1
165.4
150
140
130
122.2
120
110
122.4
86.2
85.8
86.6
90
85.4
81.9
82.2
86.2
131.9
138.1
133.7
84.6
116.4
83.8
116.3
115.8
84.1



AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
ROAD
7-27-98
2nd LIFT
MW-7
AREA
158.4
160
166.8
164.1
167.8
167.6
168.1
165.4
150
140
130
122.2
120
110
122.4
86.2
85.8
86.6
90
85.4
81.9
82.2
86.2
131.9
138.1
133.7
84.6
116.4
83.8
116.3

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/28/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in soils installed for the clay liner for the cap in area 2B at approximately 0.5 feet below the final subgrade elevation and at the approximate final subgrade elevation.

Field density test results were computed to range from 92 to 97 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Neel

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80

DATE : Reflected below

CLIENT : County of Wilson

AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	0.5	See attached drawing 07/28/98	122.1	22.7	99.5	3	96	90
2	0.5	See attached drawing 07/28/98	124.6	23.9	100.5	3	96	90
3	0.5	See attached drawing 07/28/98	123.0	~~96.4~~ 27.6 BM	~~62.6~~ 96.4 BM	3	~~80~~ 93 BM	90
4	0.5	See attached drawing 07/28/98	122.9	28.3	95.7	3	92	90
5	0.5	See attached drawing 07/28/98	122.1	24.2	98.3	3	94	90
6	Grade	See attached drawing 07/28/98	124.7	27.5	97.8	3	94	90
7	Grade	See attached drawing 07/28/98	125.1	25.1	100.0	3	96	90
8	Grade	See attached drawing 07/28/98	123.7	22.8	100.7	3	97	90
9	Grade	See the attached drawing 07/28/98	122.8	25.9	97.5	3	94	90
10	Grade	See attached drawing 07/28/98	124.0	24.6	99.5	3	96	90

Method Used: NUCLEAR Fill Placement:

Remarks:

Bob Yeel

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80

DATE : Reflected below

CLIENT : County of Wilson

AREA:

PROCTOR DATA:

(3x) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556

(1x) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

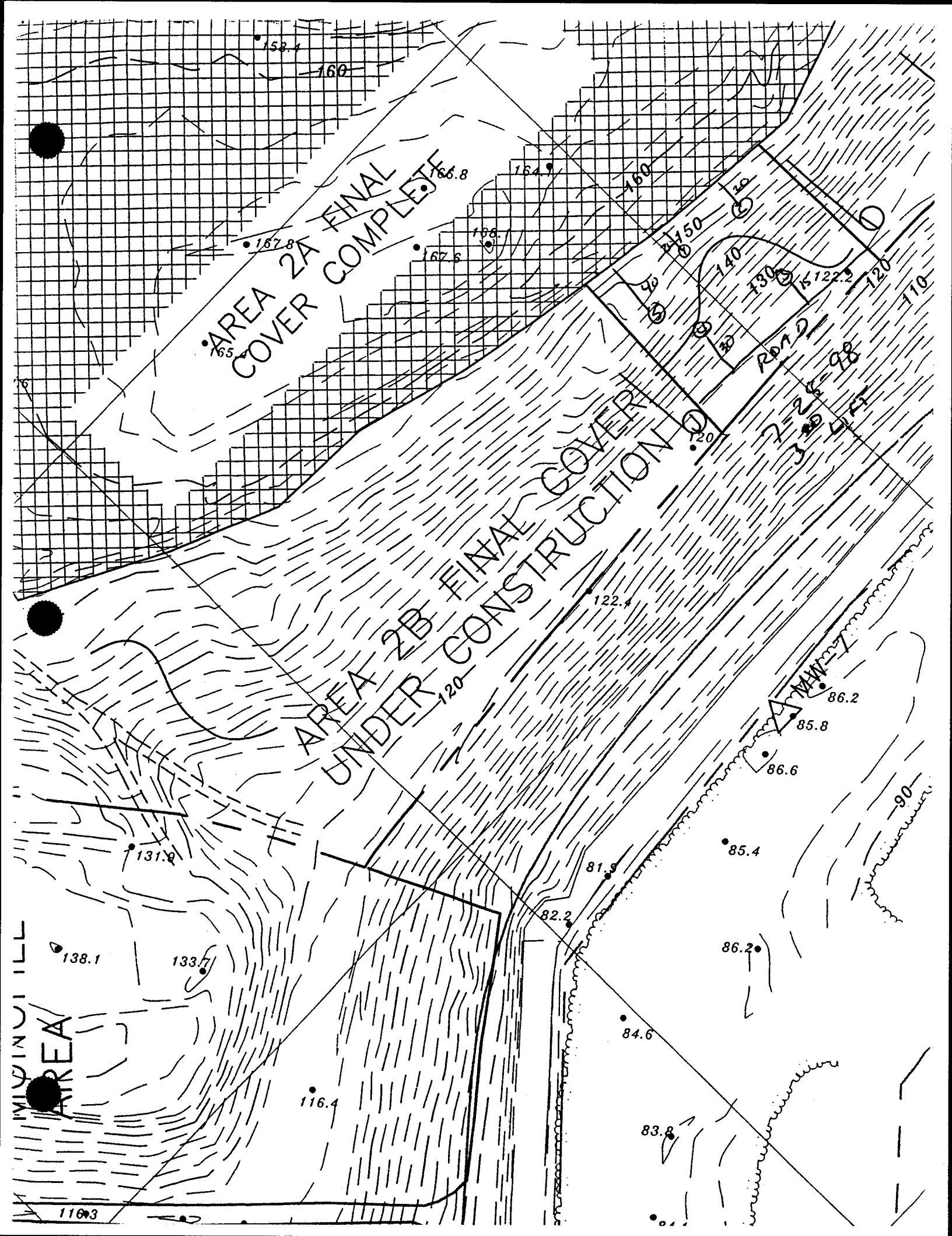
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	x3/5	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	x3/5	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	x3/5	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	x3/5	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	x3/5	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	x3/5	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	x3/5	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	x3/5	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	x3/5	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	1	94	90

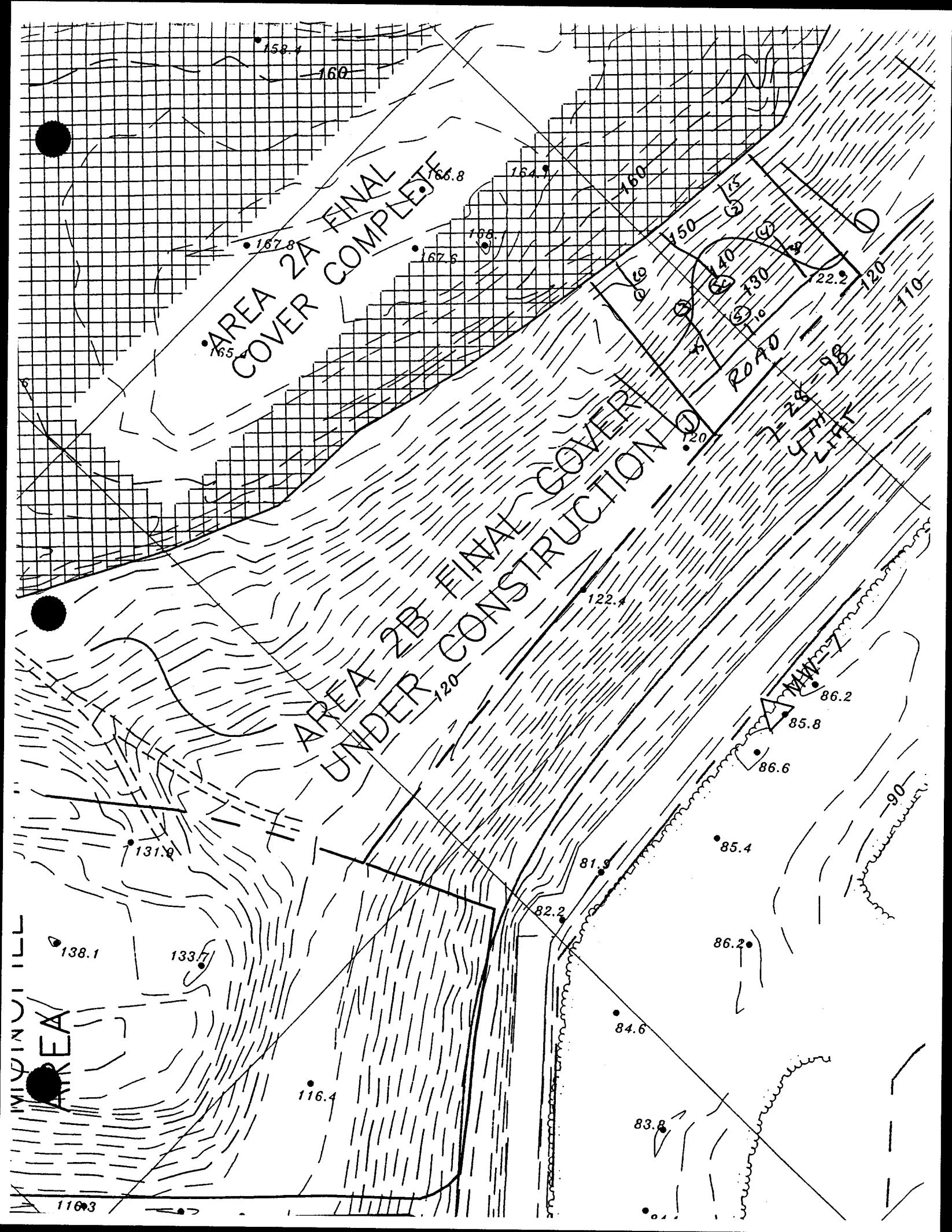
Method Used: SAND CONE Fill Placement:

Remarks:

Bob Heel



AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
ROAD
7-28-98
3RD LIFT
MW-7
AREA
158.4
160
166.8
164.1
167.8
167.6
165.4
150
140
130
122.2
120
110
122.4
86.2
85.8
86.6
90
85.4
81.9
82.2
86.2
131.9
138.1
133.7
84.6
116.4
83.8
116.3



AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
ROAD
7-28-98
4TH LIFT
MW-7
158.4
160
166.8
164.1
167.8
167.6
168.1
165.4
150
140
130
122.2
120
110
122.4
86.2
85.8
86.6
90
85.4
81.9
82.2
86.2
131.9
138.1
133.7
84.6
116.4
83.8
116.3

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 07/29/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Fourteen field density tests were performed in soils installed for the installed for the clay liner for the cap in area 2B at approximately 1.5, 1.0 and 0.5 feet below the final subgrade elevation.

Field density test results were computed to range from 94 to 99 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Yeel

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80

DATE : Reflected below

CLIENT : County of Wilson

AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.5	See attached drawing 07/29/98	125.9	21.9	103.2	3	99	90
2	1.5	See attached drawing 07/29/98	124.6	22.6	101.6	3	98	90
3	1.5	See attached drawing 07/29/98	123.9	21.7	101.8	3	98	90
4	1.5	See attached drawing 07/29/98	124.2	26.4	98.2	3	94	90
5	1.5	See attached drawing 07/29/98	125.1	23.8	101.0	3	97	90
6	1.0	See attached drawing 07/29/98	123.5	24.1	99.5	3	96	90
7	1.0	See attached drawing 07/29/98	124.4	23.6 ~~23.0~~	100.6 ~~101.1~~	3	97	90
8	1.0	See attached drawing 07/29/98	125.7	22.1	102.9	3	99	90
9	1.0	See attached drawing 07/29/98	125.2	23.0	101.7	3	98	90
10	1.0	See attached drawing 07/29/98	124.1	24.9	99.3	3	95	90
11	0.5	See attached drawing 07/29/98	124.1	24.6	99.5	3	96	90
12	0.5	See attached drawing 07/29/98	123.9	23.2 ~~23.0~~	100.6 ~~100.7~~	3	97	90

Method Used: NUCLEAR Fill Placement:

Remarks:

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
13	0.5	See attached drawing 07/29/98	125.1	22.1	102.4	3	98	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Zell

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

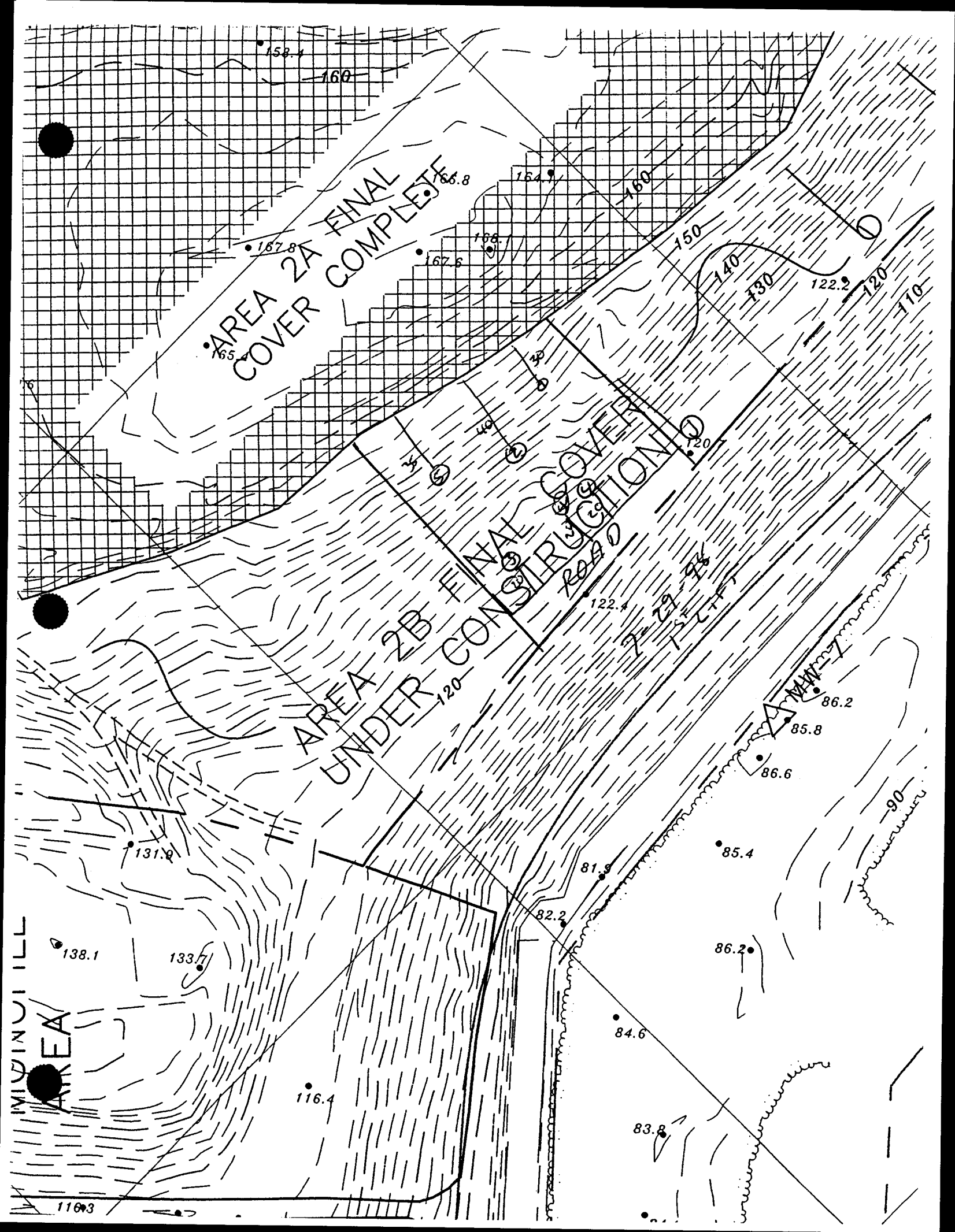
(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

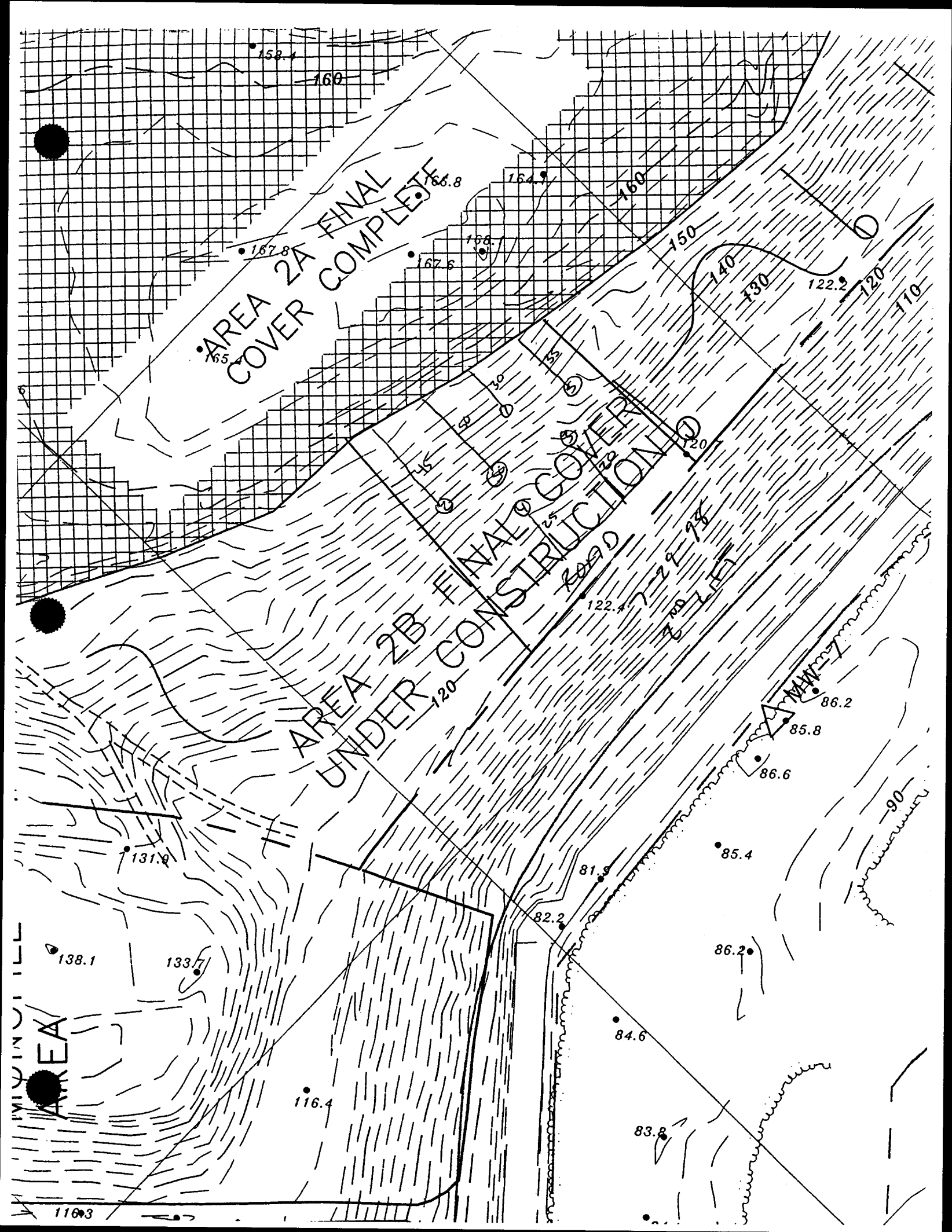
Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
8	Grade	See attached drawing 07/14/98	121.4	27.3	95.3	x3/3	92	90
11	1.5	See attached drawing 07/15/98	132.5	24.9	106.0	x3/3	102	90
4	Grade	See attached drawing 07/17/98	116.6	23.0	94.7	x3/3	91	90
11	1.0	See attached drawing 07/20/98	119.8	26.5	94.7	x3/3	91	90
11	0.5	See attached drawing 07/21/98	124.6	27.1	98.0	x3/3	94	90
11	1.0	See attached drawing 07/22/98	119.9	27.6	93.9	x3/3	90	90
8	Grade	See attached drawing 07/23/98	126.0	25.6	100.3	x3/3	96	90
11	1.5	See attached drawing 07/27/98	120.4	24.4	96.7	x3/3	93	90
11	Grade	See attached drawing 07/28/98	125.3	25.4	99.9	x3/3	96	90
14	1.5	See attached drawing 07/29/98	123.5	25.5	98.4	x3/3	94	90

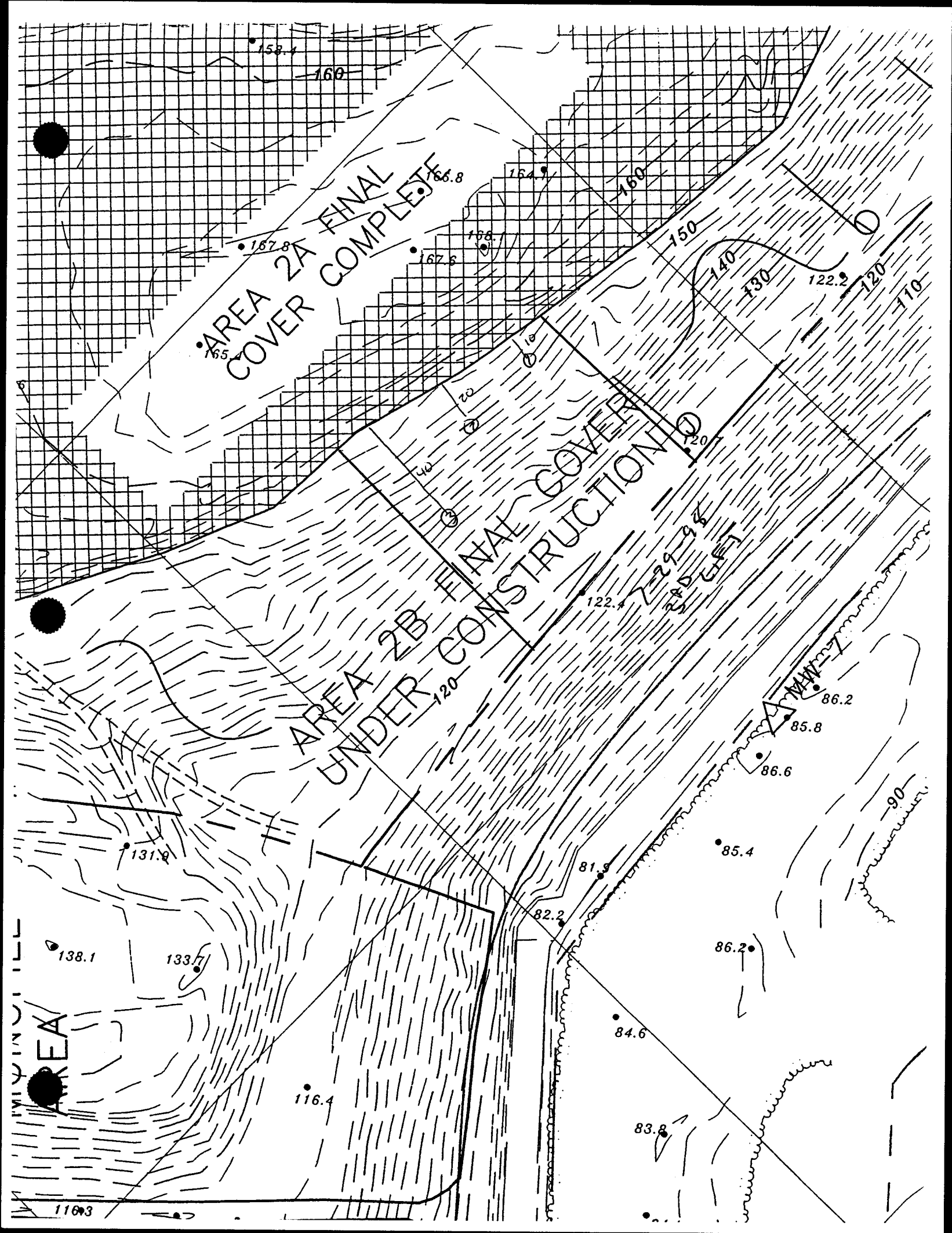
Method Used: SAND CONE Fill Placement:
Remarks:

Bob Heel



AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
ROAD
MW-7
158.4
160
166.8
164.1
167.8
167.6
168.1
165.4
150
140
130
122.2
120
110
122.4
120
86.2
85.8
86.6
90
85.4
131.9
81.9
82.2
86.2
138.1
133.7
84.6
116.4
83.8
116.3


AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
158.4
160
166.8
164.1
167.8
168
167.6
165.4
150
140
130
122.2
120
110
122.4
86.2
85.8
86.6
90
85.4
131.9
82.2
138.1
133.7
86.2
84.6
116.4
83.8
116.3



AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
158.4
160
166.8
164.1
167.8
168.1
167.6
165.4
150
140
130
122.2
120
110
120.7
122.4
7-29-98
SAD GFT
MW-7
86.2
85.8
86.6
90
85.4
81.9
82.2
86.2
84.6
83.8
131.9
138.1
133.7
116.4
116.3
AREA

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 08/03/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in soils installed for the first lift of the clay liner for the cap at approximately 1.5 feet below the final subgrade elevation.

Field density test results were computed to range from 94 to 97 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Neel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80B
DATE : 08/03/98

CLIENT : County of Wilson

AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.5	See attached drawing	120.2	22.1	98.4	3	94	90
2	1.5	See attached drawing	120.9	21.3	99.6	3	96	90
3	1.5	See attached drawing	123.0	23.0	100.0	3	96	90
4	1.5	See attached drawing	122.1	24.1	98.3	3	94	90
5	1.5	See attached drawing	121.2	22.6	98.8	3	95	90
6	1.5	See attached drawing	124.1	22.9	100.9	3	97	90
7	1.5	See attached drawing	120.2	23.1	97.6	3	94	90
8	1.5	See attached drawing	121.6	24.2	97.9	3	94	90
9	1.5	See attached drawing	123.5	24.0	99.5	3	96	90
10	1.5	See attached drawing	120.7	23.7	97.5	3	94	90

Method Used: NUCLEAR Fill Placement:

Remarks:

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
11	1.5	See attached drawing 08/03/98	124.4	24.2	100.1	3	96	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Keel

AREA 2A FINAL
COVER COMPLETE
AREA 2B FINAL COVER
UNDER CONSTRUCTION
1st LIFT
120
6-4-98
MW-7
AREA
158.4
160
166.8
164.1
167.8
167.6
168.1
165.4
150
140
130
122.2
120
110
120
122.4
86.2
85.8
86.6
90
85.4
81.9
82.2
86.2
84.6
83.8
131.9
138.1
133.7
116.4

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 08/04/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Ten field density tests were performed in soils installed for the clay liner for the cap for the second lift at approximately 1.0 feet below the final subgrade elevation.

Field density test results were computed to range from 95 to 98 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Neel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80B
DATE : 08/04/98
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

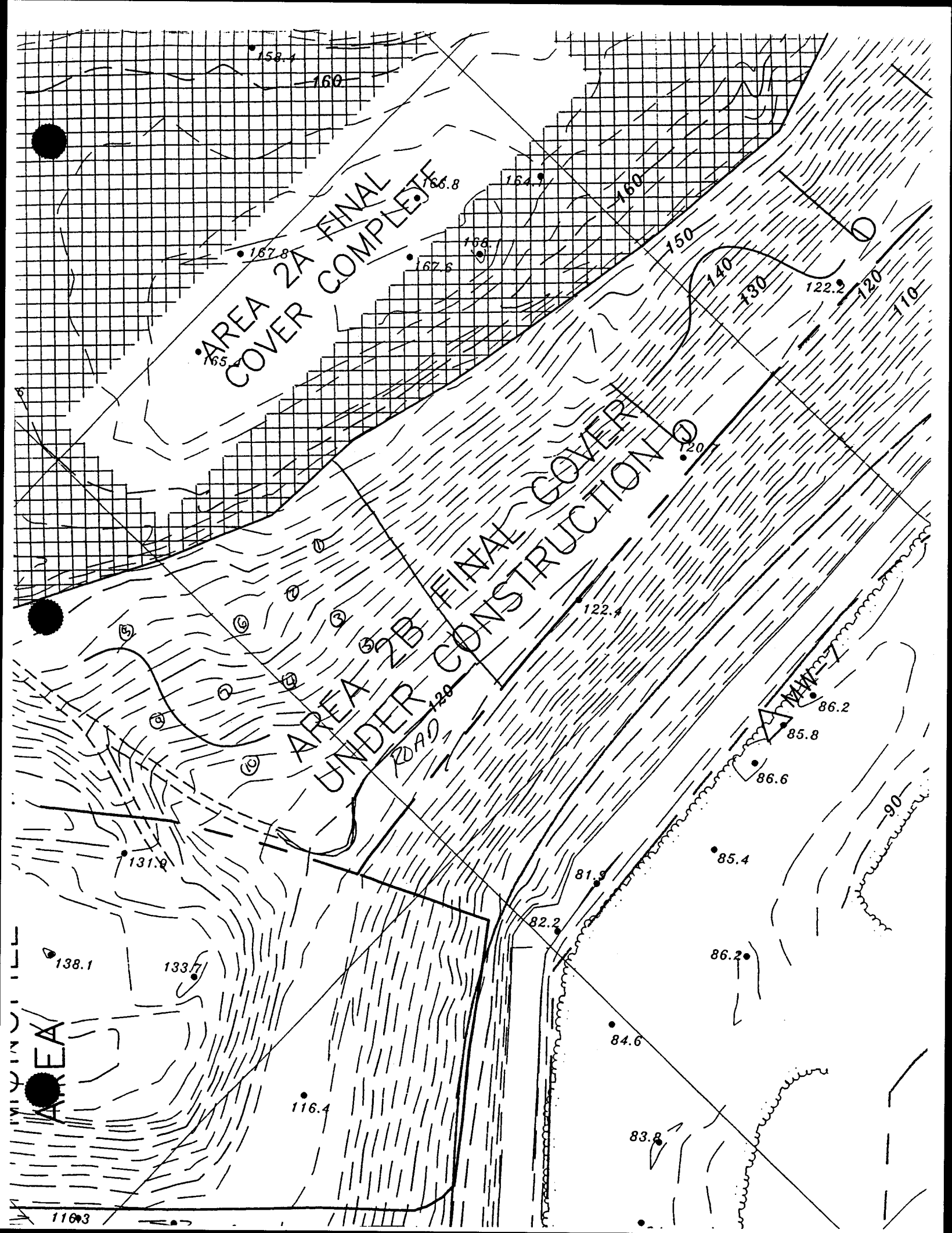
(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.0	See attached drawing	124.5	23.4	100.8	3	97	90
2	1.0	See attached drawing	126.1	24.5	101.2	3	97	90
3	1.0	See attached drawing	125.4	24.0	101.1	3	97	90
4	1.0	See attached drawing	123.9	25.2	98.9	3	95	90
5	1.0	See attached drawing	126.2	24.1	101.6	3	98	90
6	1.0	See attached drawing	125.8	23.2	102.1	3	98	90
7	1.0	See attached drawing	126.5	24.9	101.2	3	97	90
8	1.0	See attached drawing	124.9	22.1	102.2	3	98	90
9	1.0	See attached drawing	125.9	23.9	101.6	3	98	90
10	1.0	See attached drawing	126.0	22.9	102.5	3	98	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Heel


AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
ROAD
MW-7
158.1
160
166.8
164.1
167.8
168.
167.6
165.4
150
140
130
122.2
120
110
120
122.4
120
86.2
85.8
86.6
90
85.4
131.9
81.9
82.2
138.1
133.7
86.2
84.6
116.4
83.8
116.3

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 08/05/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Five field density tests were performed in soils installed for the clay liner for the cap in area 2A. The tests were performed for the third lift at approximately 0.5 feet below the final subgrade elevation.

Field density test results were computed to range from 93 to 95 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80B
DATE : 08/05/98
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

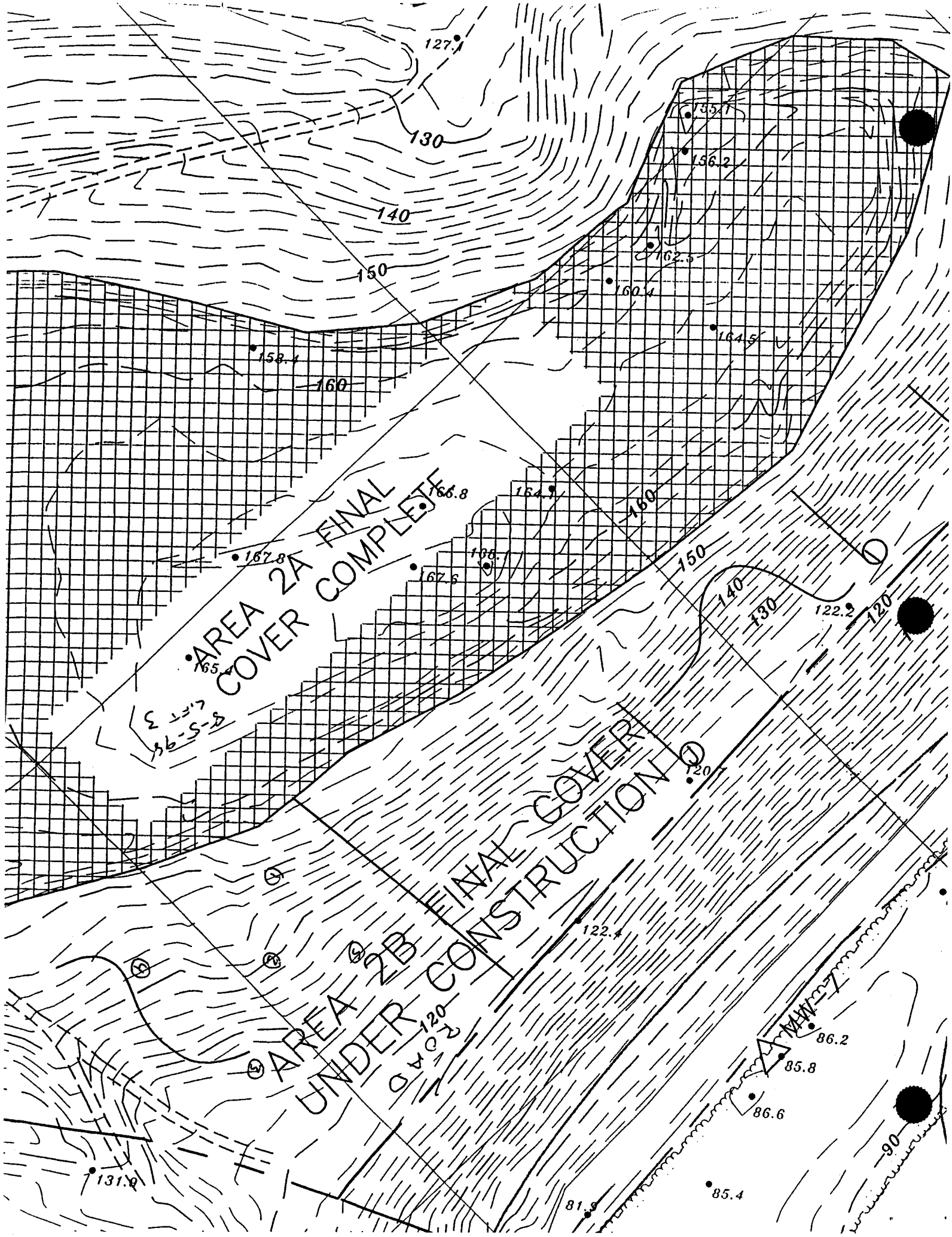
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	0.5	See attached drawing	119.6	21.0	98.8	3	95	90
2	0.5	See attached drawing	118.7	20.7	98.3	3	94	90
3	0.5	See attached drawing	117.9	19.8	98.4	3	94	90
4	0.5	See attached drawing	119.2	22.6	97.2	3	93	90
5	0.5	See attached drawing	120.1	23.1	97.5	3	94	90

Method Used: NUCLEAR Fill Placement:

Remarks:

Bob Hall



AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
ROAD
MW-7
127.1
130
140
150
160
155.1
156.2
162.5
160.4
164.5
158.4
166.8
164.1
167.8
167.6
165.4
122.2
120
120.7
122.4
86.2
85.8
86.6
85.4
81.9
131.9
90

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 08/06/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in soils installed for the clay liner for the cap in area 2A. The tests were performed on the fourth lift at the approximate final subgrade elevation.

Field density test results were computed to range from 91 to 96 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80B
DATE : 08/06/98
AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	Grade	See attached drawing	119.7	21.9	98.1	3	94	90
2	Grade	See attached drawing	120.3	20.6	99.7	3	96	90
3	Grade	See attached drawing	118.9	22.8	96.8	3	93	90
4	Grade	See attached drawing	120.1	23.1	97.5	3	94	90
5	Grade	See attached drawing	121.3	22.1	99.3	3	95	90
6	Grade	See attached drawing	121.2	20.8	100.3	3	96	90
7	Grade	See attached drawing	122.1	22.0	100.0	3	96	90
8	Grade	See attached drawing	119.9	23.2	97.3	3	93	90
9	Grade	See attached drawing	120.6	20.2	100.3	3	96	90
10	Grade	See attached drawing	118.8	21.7	97.6	3	94	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80

DATE : Reflected below

CLIENT : County of Wilson

AREA:

PROCTOR DATA:

(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

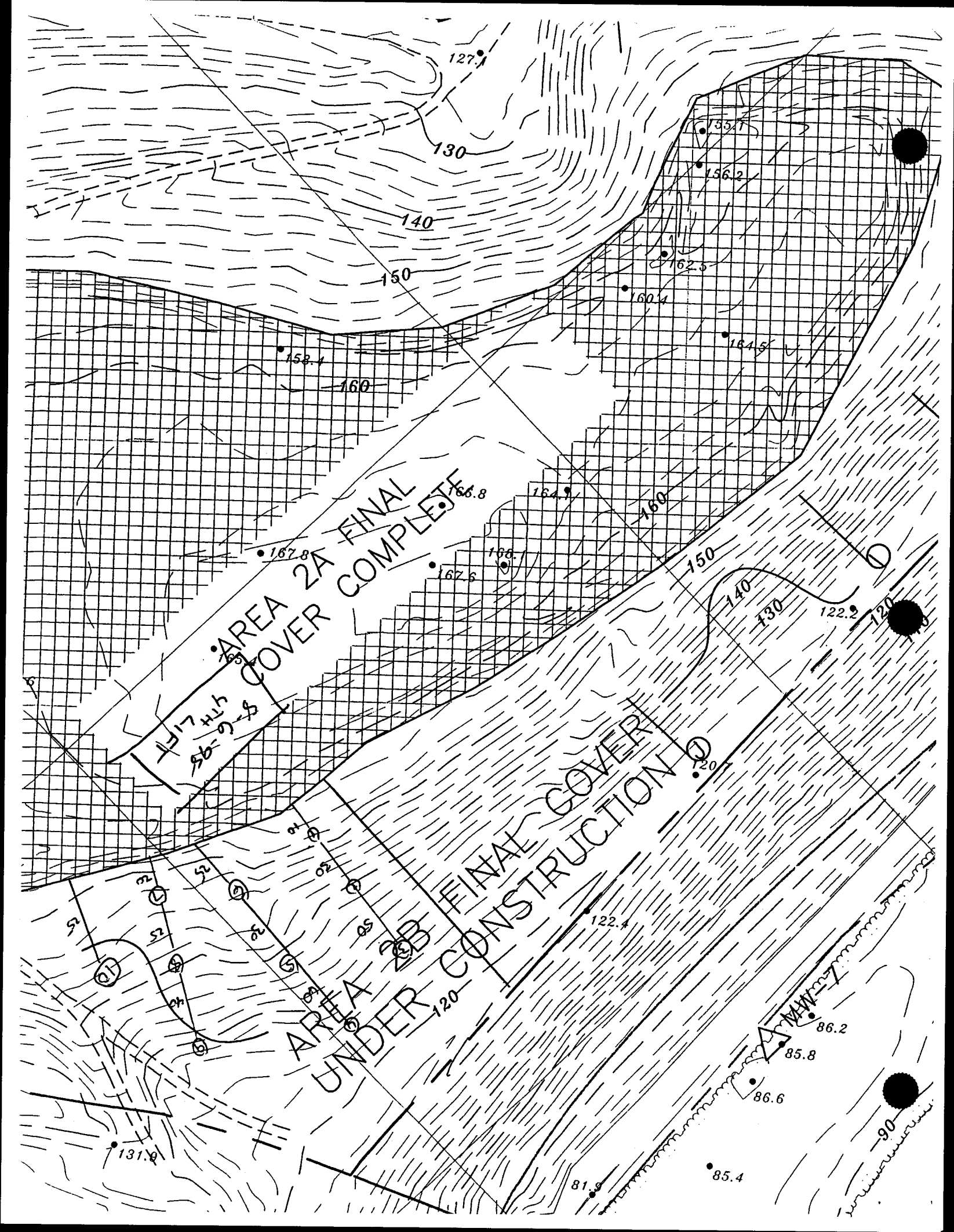
TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
11	Grade	See attached drawing 08/06/98	115.5	22.1	94.5	3	91	90

Method Used: SAND CONE Fill Placement:

Remarks:

Bob Heel


AREA 2A FINAL COVER COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
MW-7
127.1
130
140
150
135.1
156.2
162.5
160.4
164.5
158.4
160
166.8
164.9
167.8
168.1
167.6
122.2
120
122.4
86.2
85.8
86.6
90
85.4
131.9

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 08/07/98 PERSONNEL: M. Stout

As requested by Mr. Andy Davis, representing Ready Construction Company, a representative of Titan Atlantic was present on the project site for field density testing services.

Five field density tests were performed in soils installed for the clay liner for the cap in area 2A. The tests were performed on the first lift at the approximately 1.5 feet below the final subgrade elevation.

Field density test results were computed to range from 93 to 94 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

Mr. Andy Davis was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80B
DATE : 08/07/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

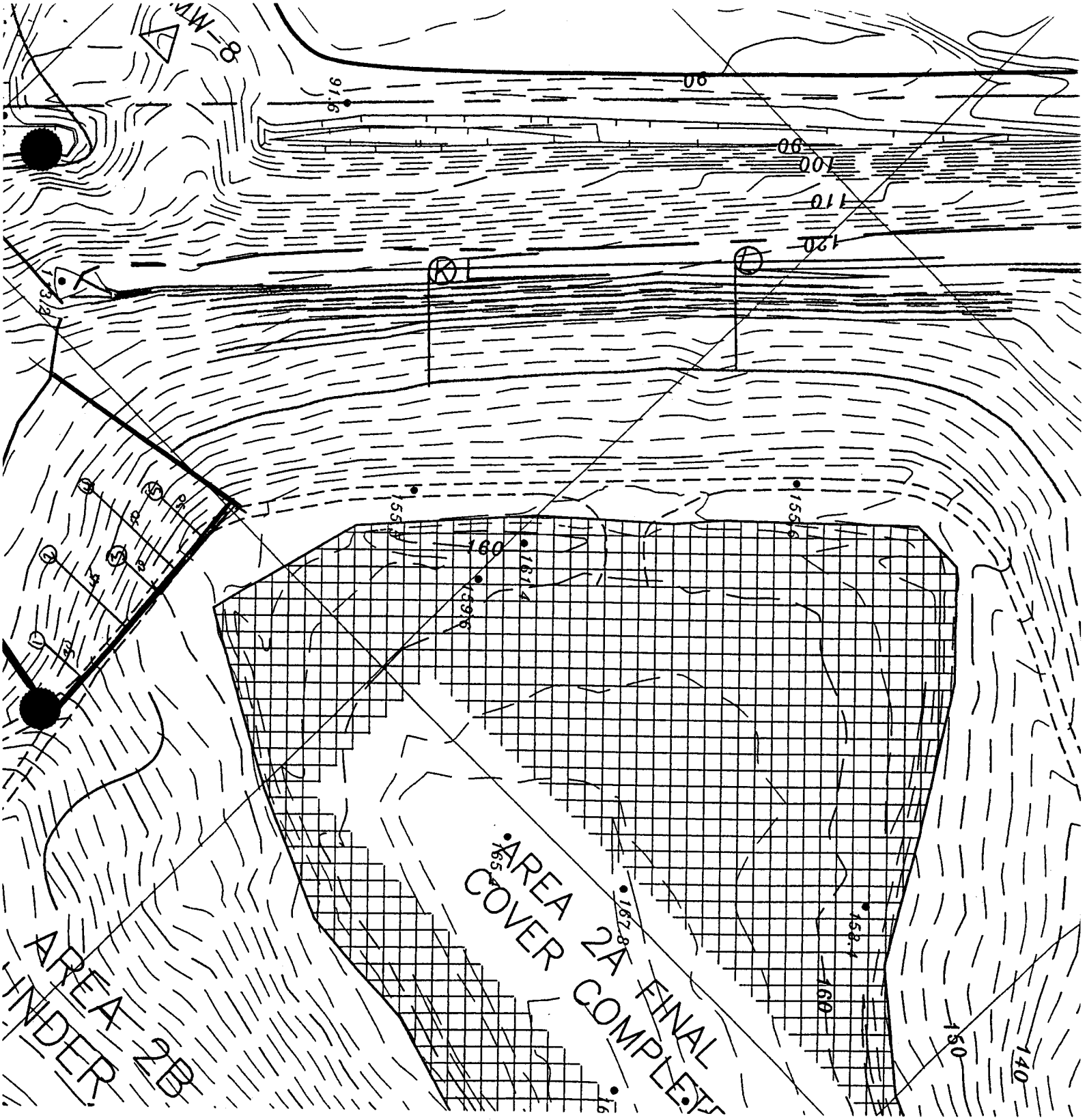
(3) Max. Dry Dens.: 104.2 PCF at 18.6 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	1.5	See attached drawing	121.9	25.4	97.2	3	93	90
2	1.5	See attached drawing	123.2	26.1	97.7	3	94	90
3	1.5	See attached drawing	121.2	24.8	97.1	3	93	90
4	1.5	See attached drawing	122.6	25.9	97.3	3	93	90
5	1.5	See attached drawing	122.0	25.1	97.5	3	94	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Zeel



1ST LIFT
8-7-98

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill

TITAN JOB NO. : 8077-80

Report of One Point Proctor Results

	Wet Weight (pcf)	Percent Moisture	Dry Weight (pcf)
WCL 2A-17	125.3	21.3	103.2
WCL 1A-1 (second lift)	120.8	21.1	99.7

RESPECTFULLY SUBMITTED
TITAN ATLANTIC
Bob Keel
8/19/98

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Gary W. Ahlberg, P.E.
P.O. Box 58
Wilmington, NC 28402

DATE: July 23, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. Gary W. Ahlberg, P.E.

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

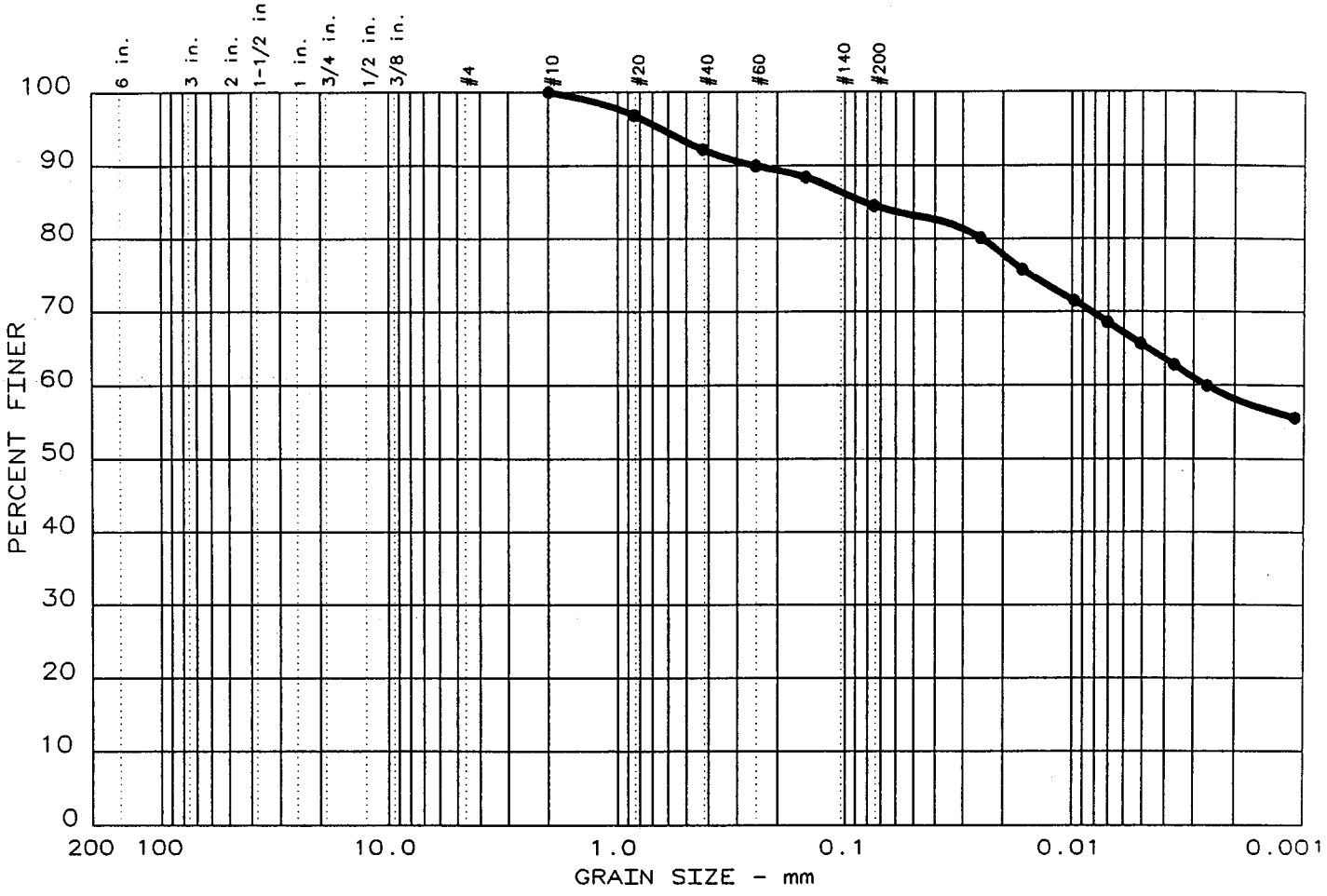
☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Vail

Copies to: Mr. Mark Taylor

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	15.5	19.0	65.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	66	46	0.0822							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SLIGHTLY SANDY SLIGHTLY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location:

Date: JULY 18, 1998

Remarks:
SAMPLE FROM LIFT NUMBER THREE

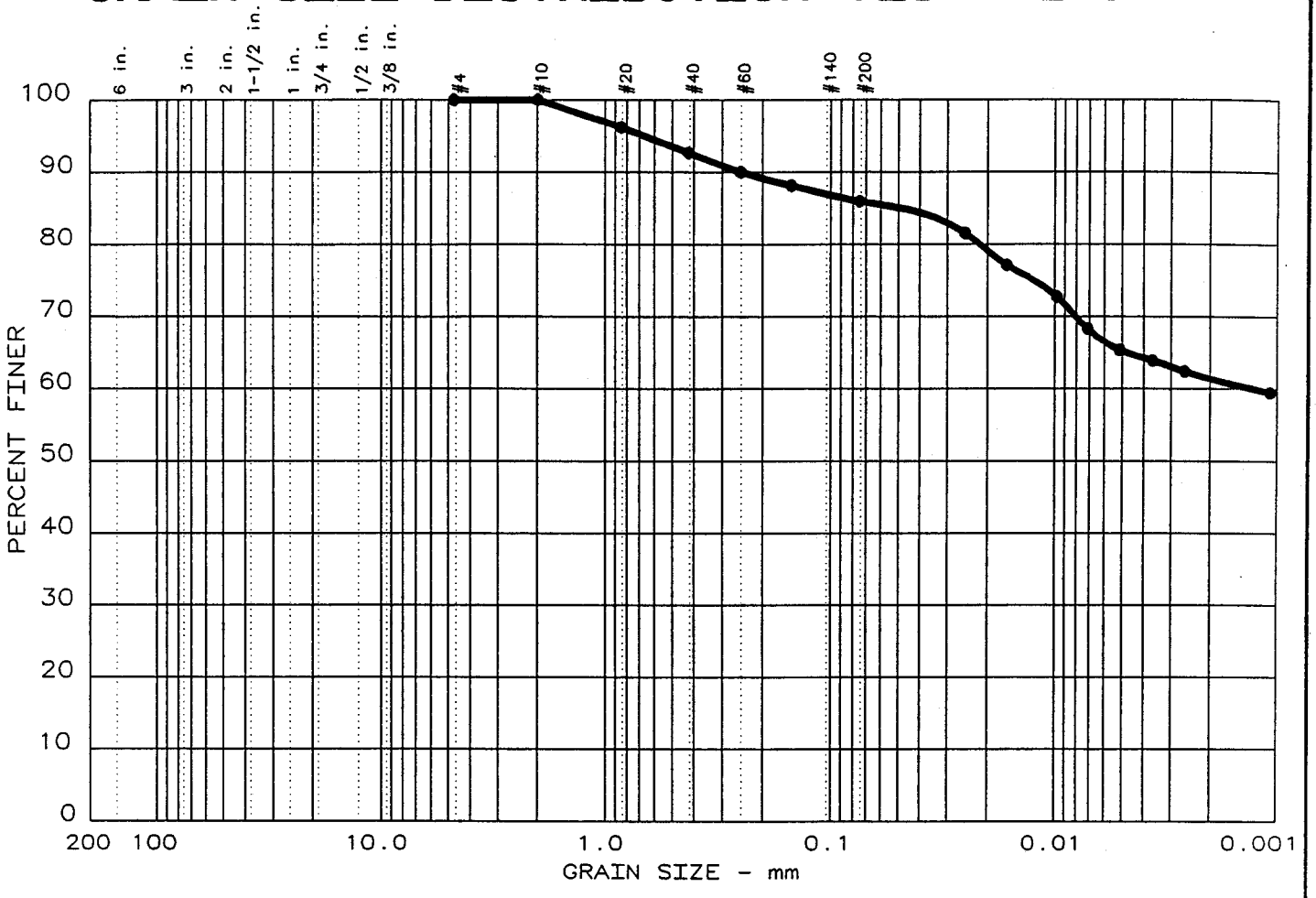
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: 3

Bob Heel

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	14.0	20.8	65.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	57	36								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWM SLIGHTLY SANDY SLIGHTLY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location:

Date: JULY 18, 1998

Remarks:
SAMPLE FROM LIFT NUMBER ONE

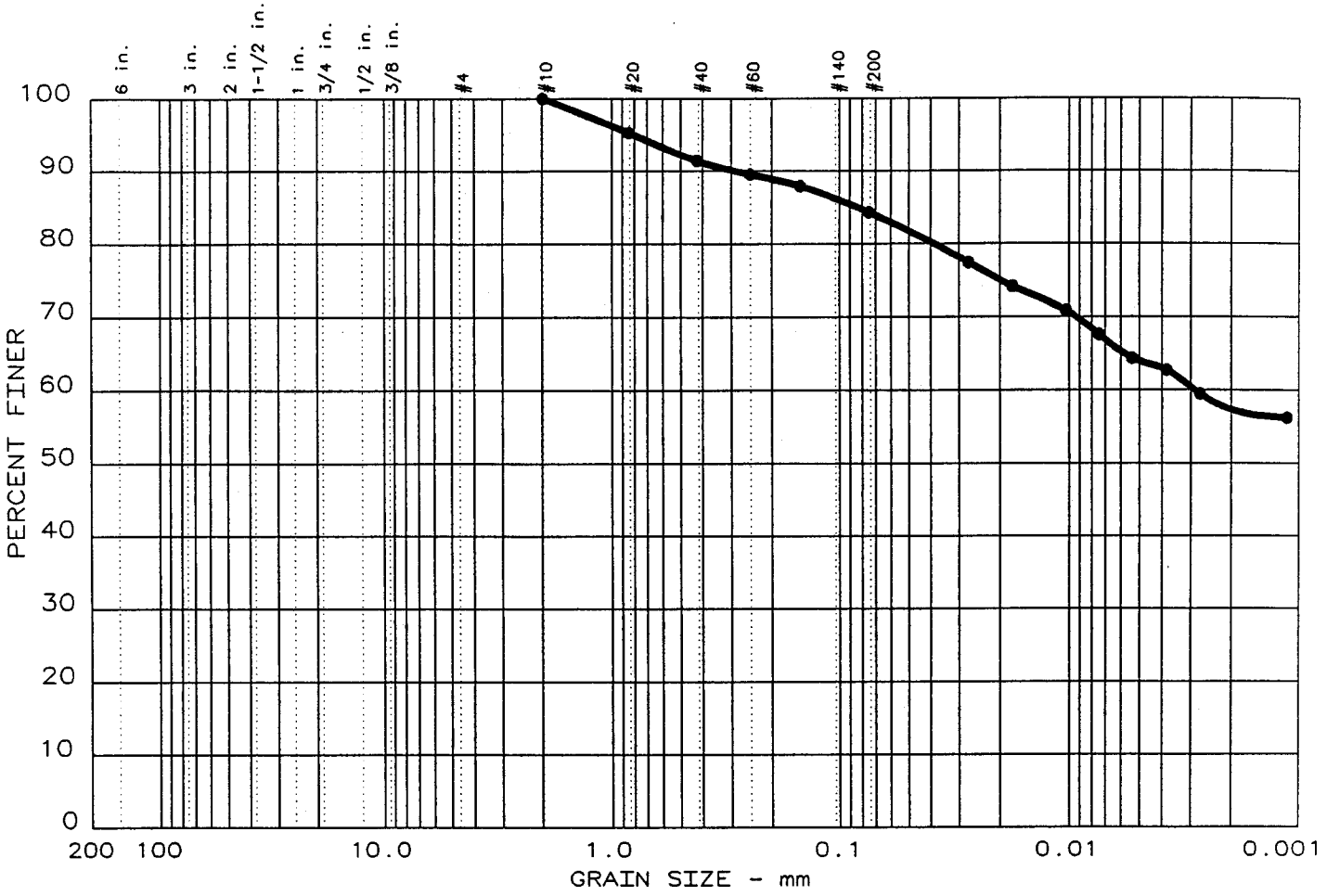
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: 1

Bob Hall

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	15.7	20.3	64.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	59	39	0.0841							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SLIGHTLY SANDY SLIGHTLY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location:

Date: JULY 18, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Remarks:

SAMPLE FROM LIFT NUMBER TWO

Fig. No.: 2

PERMEABILITY TEST REPORT

TEST DATA:

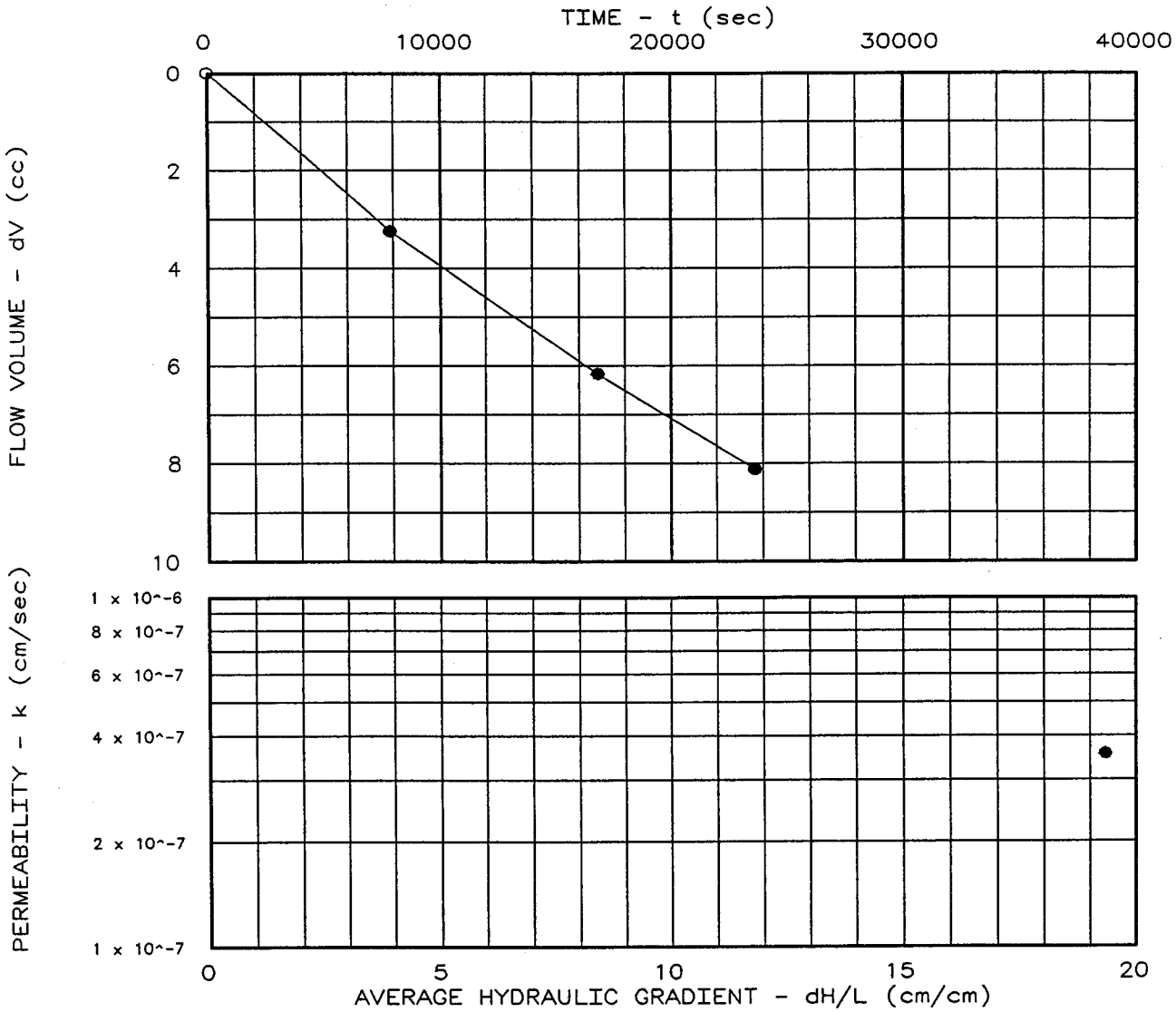
Specimen Height (cm): 10.08
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 93.6
Moisture Before Test (%): 28.2
Moisture After Test (%): 29.2

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.2	
Diff. Head (psi):	2.8	
Flow Rate (cc/sec):	3.10 x 10^-4	
Perm. (cm/sec):	3.55 x 10^-7	

SAMPLE DATA:

Sample Identification: Production Number 1
Lift Number 3
Visual Description: Gray, Yellow and Tan
Silty, Sandy, Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 89.9%
Permeameter type: Flexible wall
Sample type: undisturbed

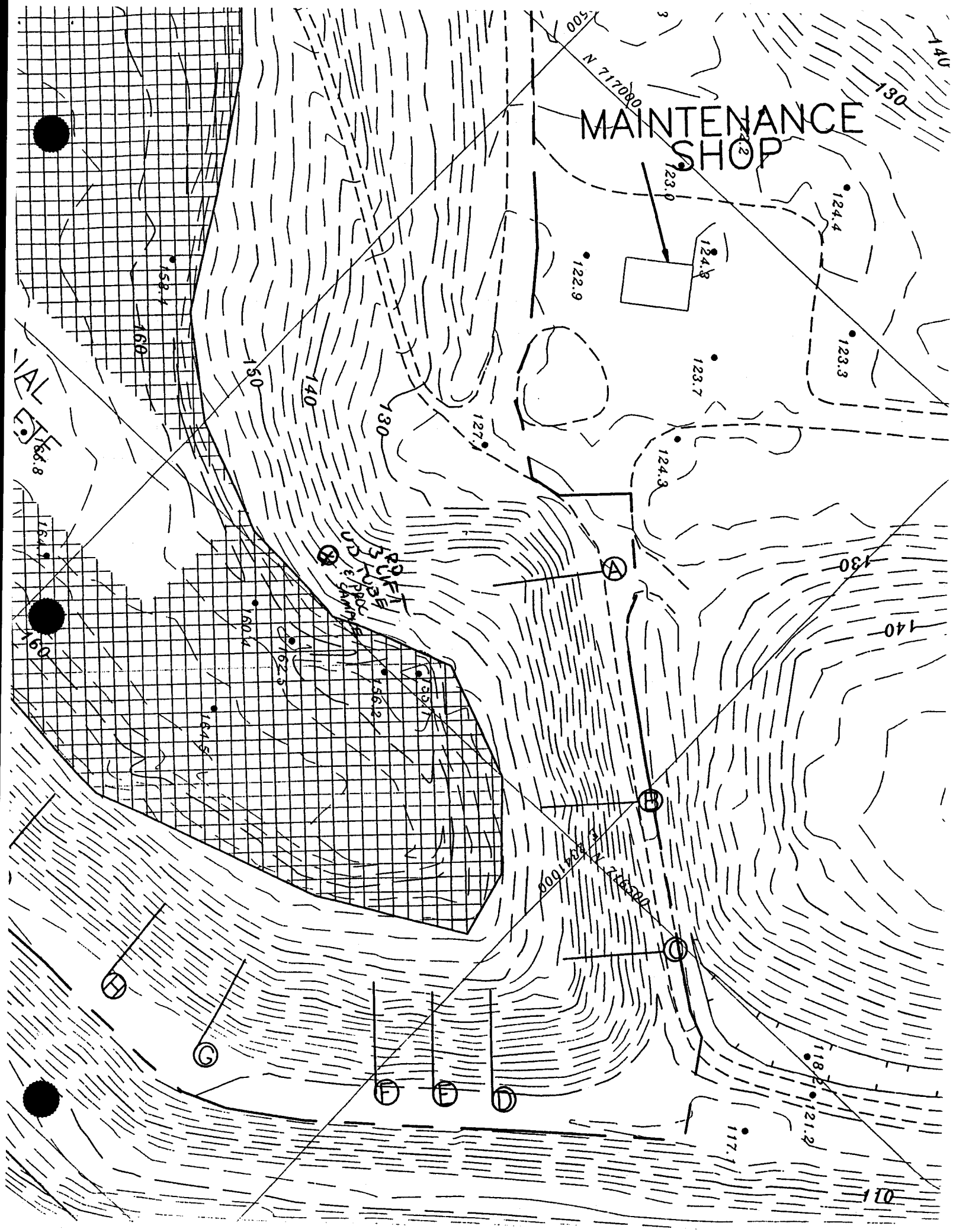


Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-21-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head


MAINTENANCE SHOP
N 717000
N 716500
E 2341000
A
B
C
D
E
F
G
H
110
130
140
150
160
123.0
124.4
124.3
122.9
123.3
123.7
124.3
127.1
158.4
160.4
162.5
156.2
155.1
164.5
118.2
121.2
117.1

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Gary W. Ahlberg, P.E.
P.O. Box 58
Wilmington, NC 28402

DATE: July 27, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. Gary W. Ahlberg, P.E.

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. Mark Taylor
Mr. G. Steven Clayton

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 8.29
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 79.1
Moisture Before Test (%): 38.5
Moisture After Test (%): 41.0

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.3	
Diff. Head (psi):	2.7	
Flow Rate (cc/sec):	7.78 x 10^-4	
Perm. (cm/sec):	7.40 x 10^-7	

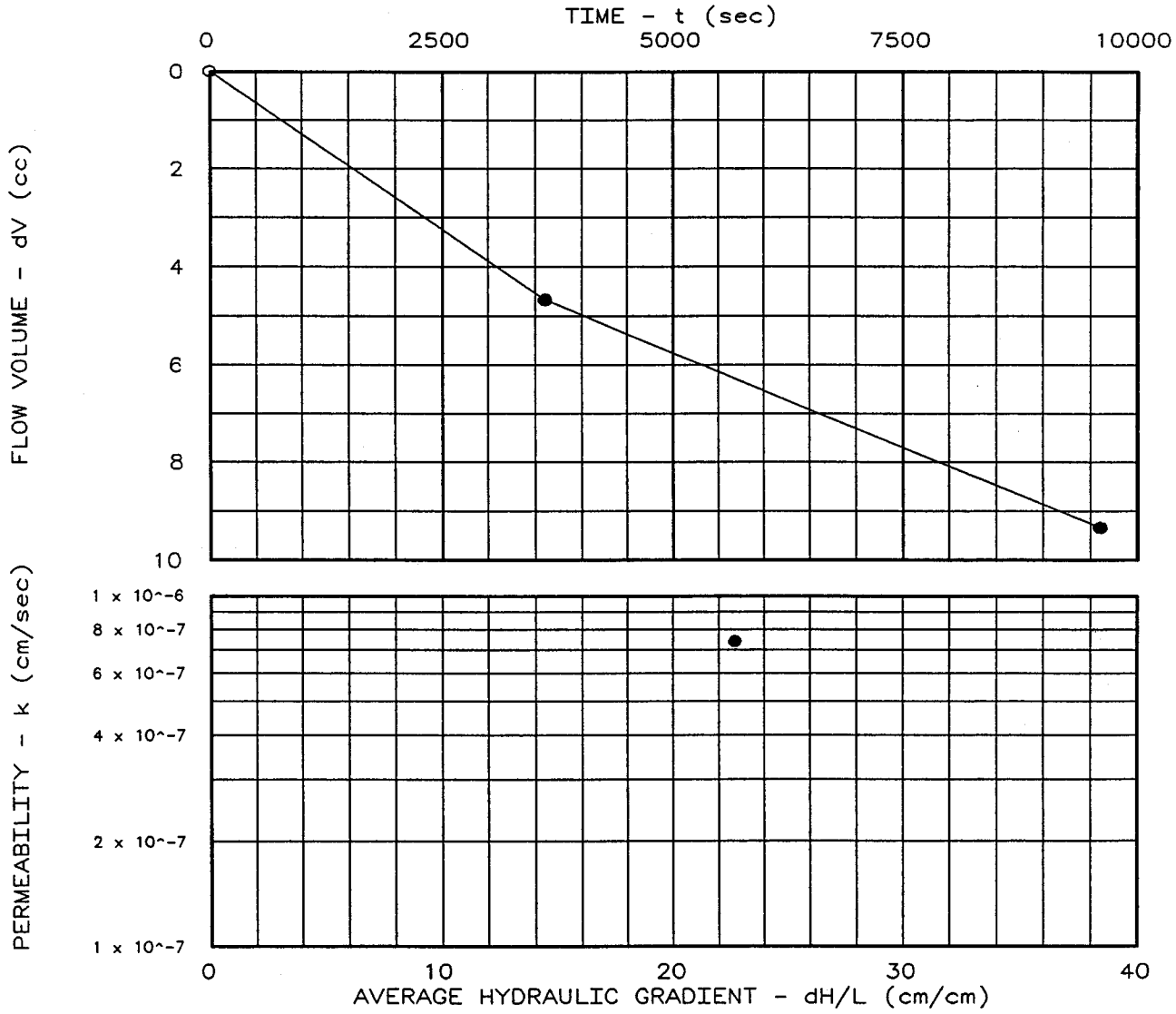
SAMPLE DATA:

Sample Identification: Production Number 4

Visual Description: Gray, Yellow and Tan Silty, Sandy, Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 75.9%
Permeameter type: Flexible wall
Sample type: undisturbed



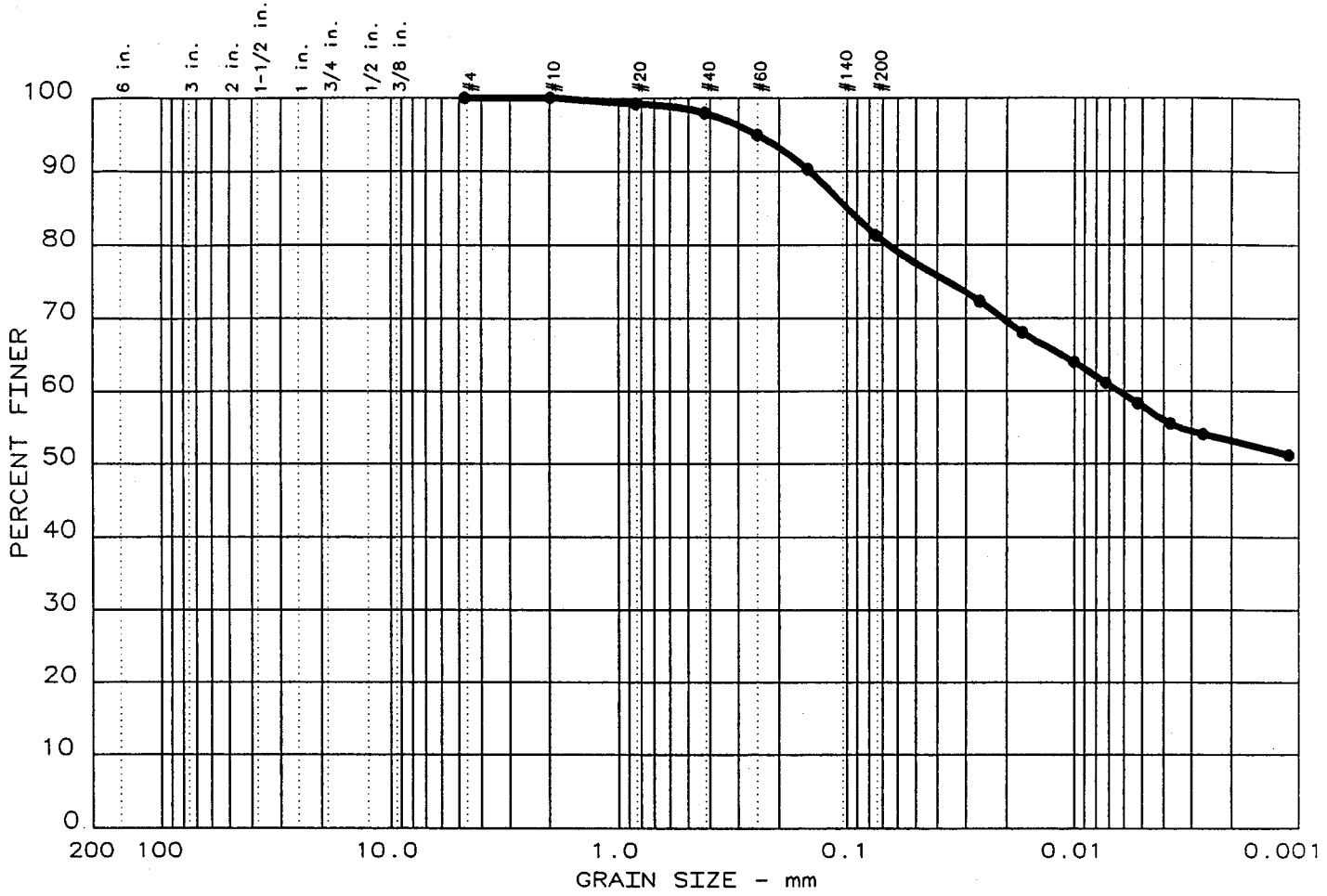
Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-27-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	18.7	23.4	57.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	58	33	0.0989							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: ON SITE BORROW AREA

Date: JULY 25, 1998

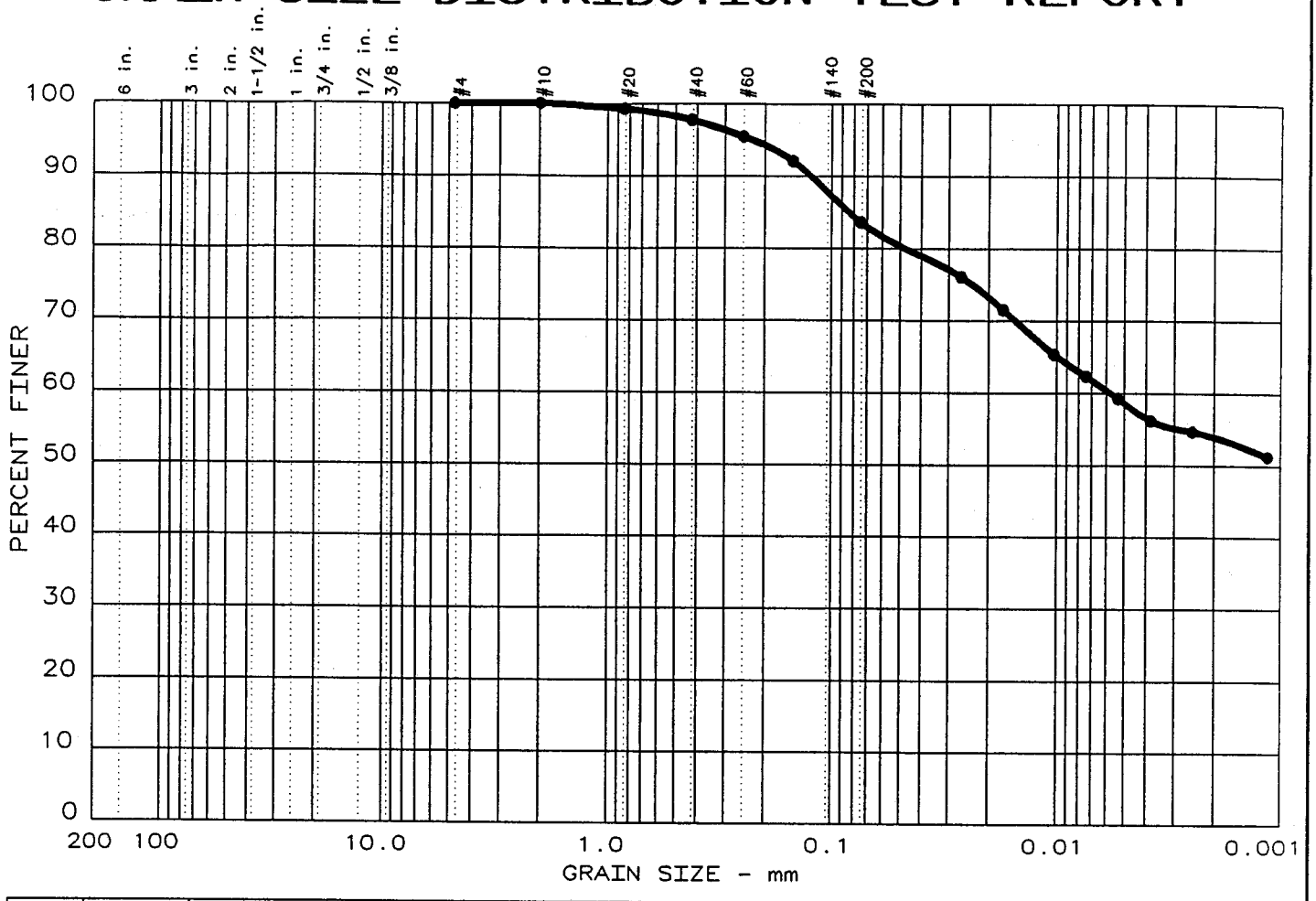
Remarks:
FIRST SAMPLE FROM
PRODUCTION INSTALLATION

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL - 1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	16.4	25.0	58.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	59	38	0.0841							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: ON SITE BORROW AREA

Date: JULY 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

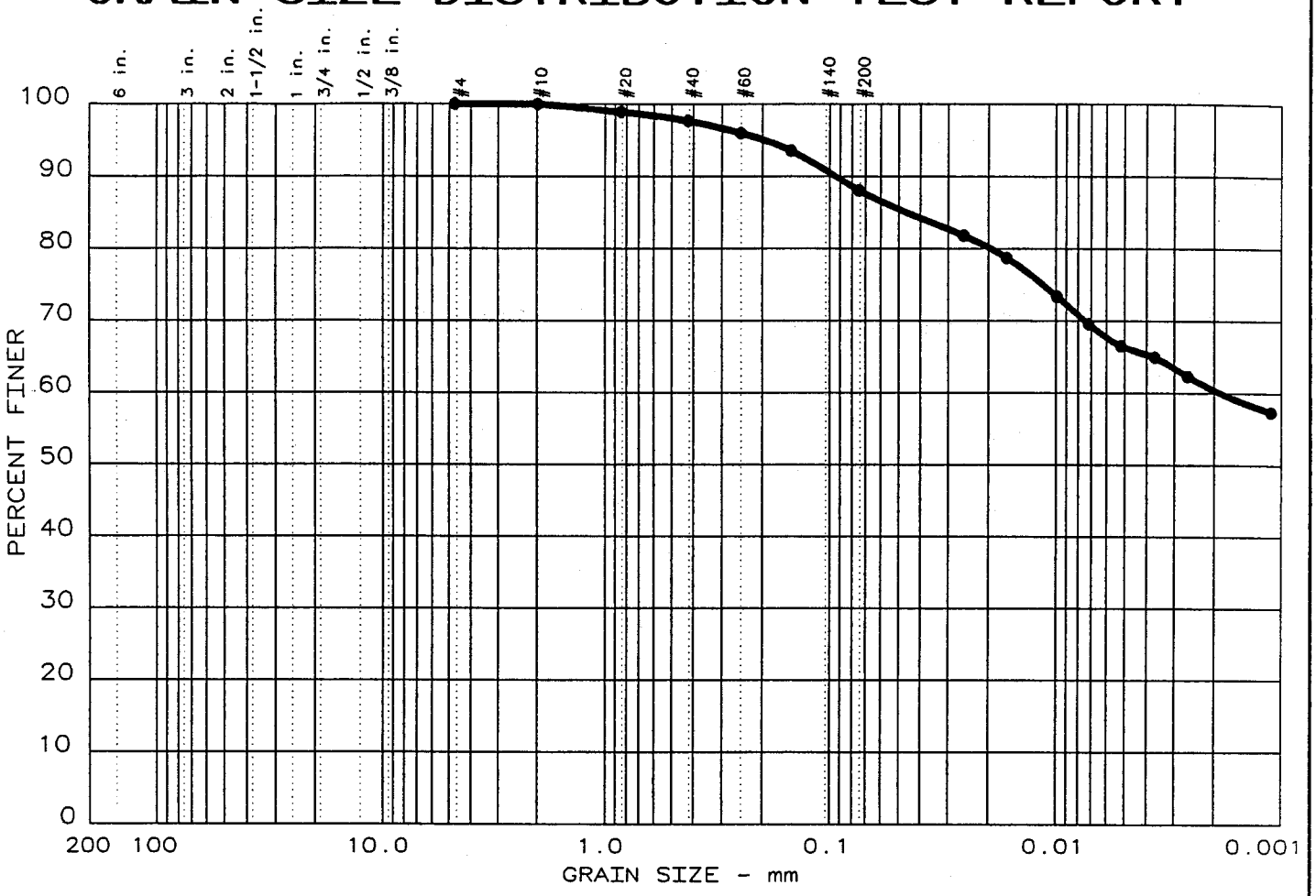
TITAN ATLANTIC GROUP, INC.

Remarks:

SECOND SAMPLE FROM
PRODUCTION INSTALLATION

Fig. No.: WCL - 2

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	11.9	21.8	66.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	68	47								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: ON SITE BORROW AREA

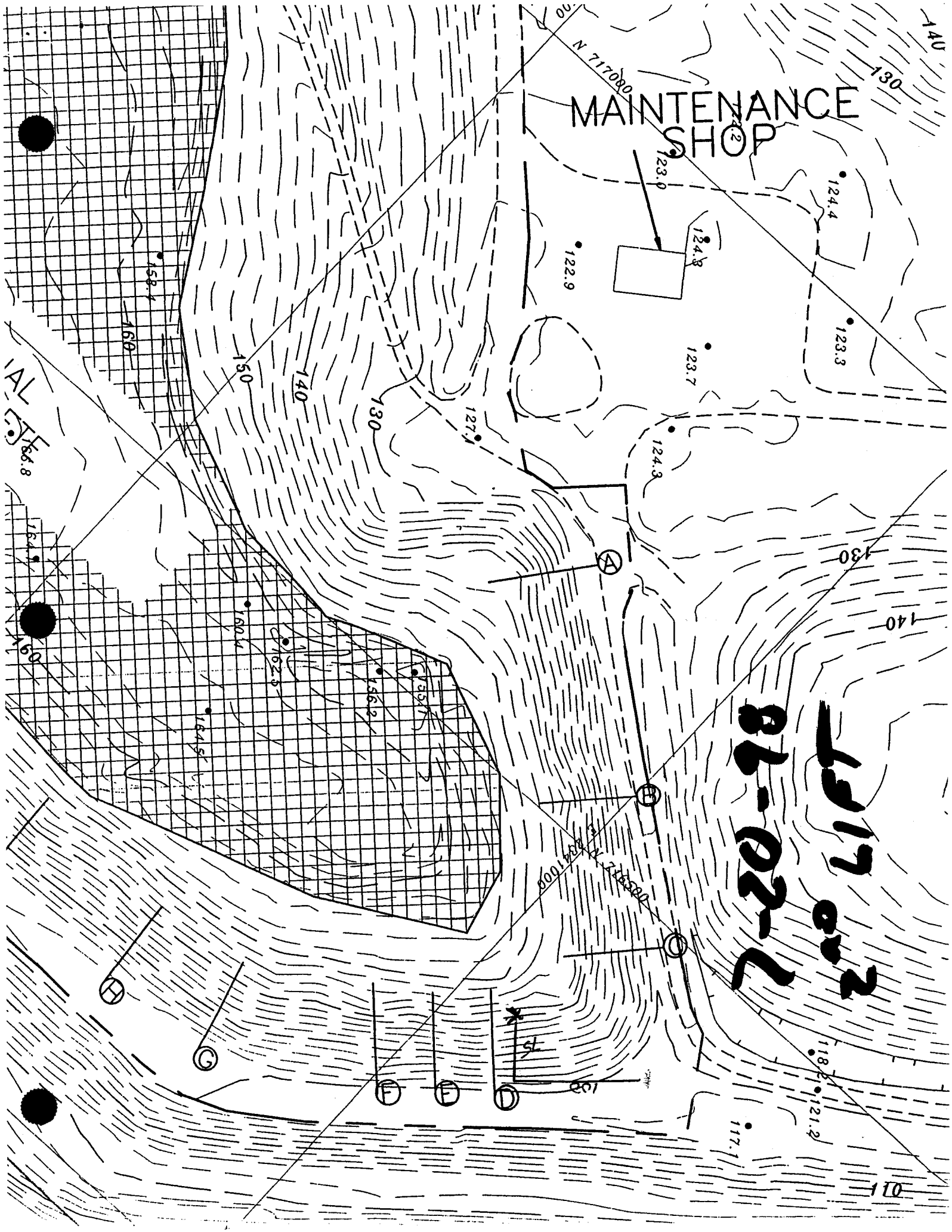
Date: JULY 25, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Remarks:
FOURTH SAMPLE FROM
PRODUCTION INSTALLATION
(SECOND LIFT)

Fig. No.: WCL - 4


MAINTENANCE SHOP
N 717000
N 716500
140
130
150
160
110
123.0
124.4
124.3
122.9
123.3
123.7
127.1
124.3
158.4
160.4
162.5
156.2
155.1
164.5
118.2
121.2
117.1
A
B
C
D
E
F
G
7-20-98
2nd LIFT

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Gary W. Ahlberg, P.E.
P.O. Box 58
Wilmington, NC 28402

DATE: July 28, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. Gary W. Ahlberg, P.E.

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☐ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☑ other one point proctor data

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. G. Steven Clayton

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Gary Ahlberg

PROJECT: Wilson County Landfill

TITAN JOB NO. : 8077-80

One Point Proctor Data

	Percent Moisture	Wet Weight (pcf)	Dry Weight (pcf)
Sample One	26.2	131.26	104.0
Sample Two	28.3	131.8	102.7
Sample Three	25.2	131.6	105.1

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Heel

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.16
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 85.4
Moisture Before Test (%): 34.3
Moisture After Test (%): 35.2

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	5.70 x 10^-4	
Perm. (cm/sec):	6.36 x 10^-7	

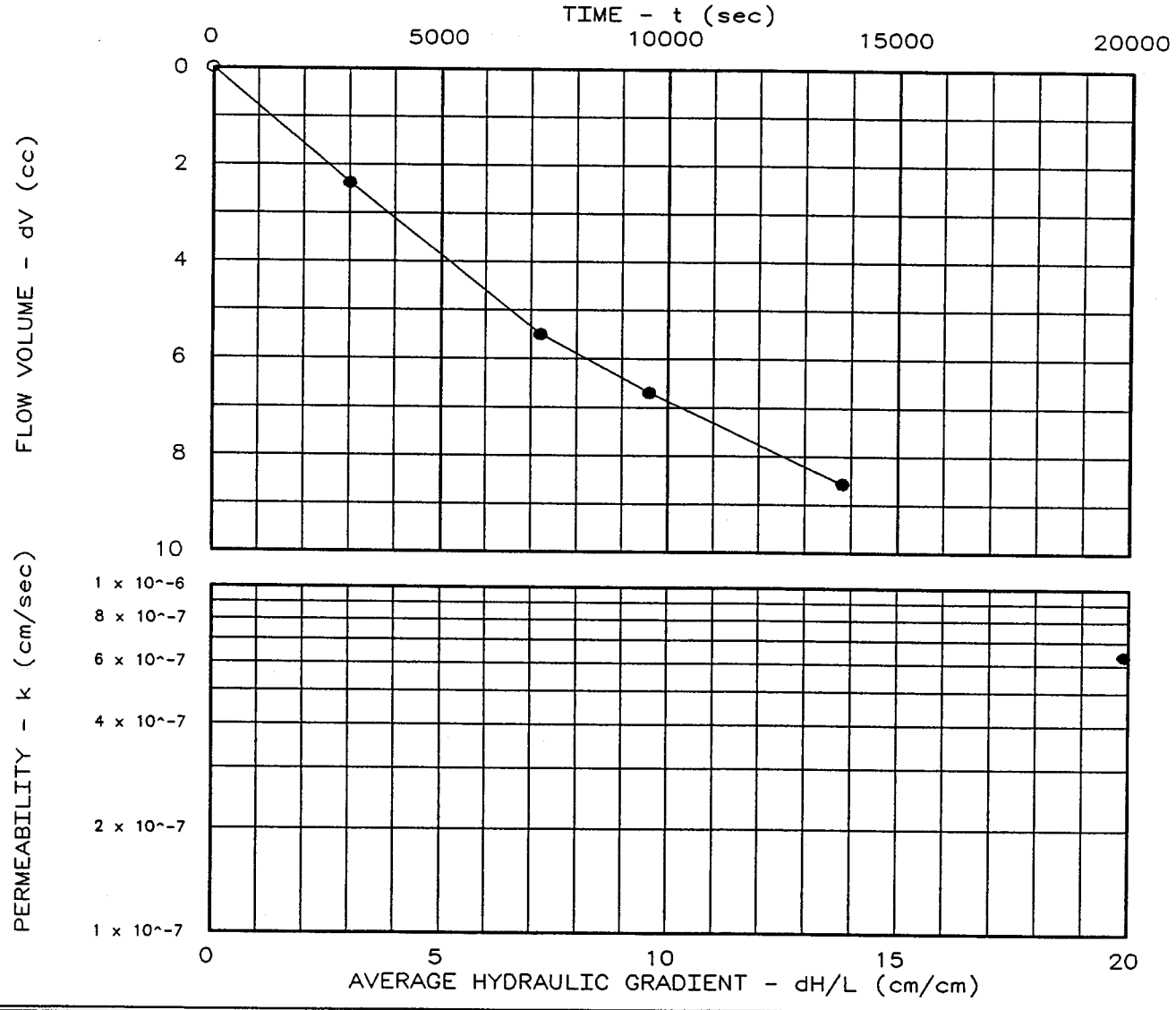
SAMPLE DATA:

Sample Identification: Production Number 2

Visual Description: Gray, Yellow and Tan Silty, Sandy, Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 82.0%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-24-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

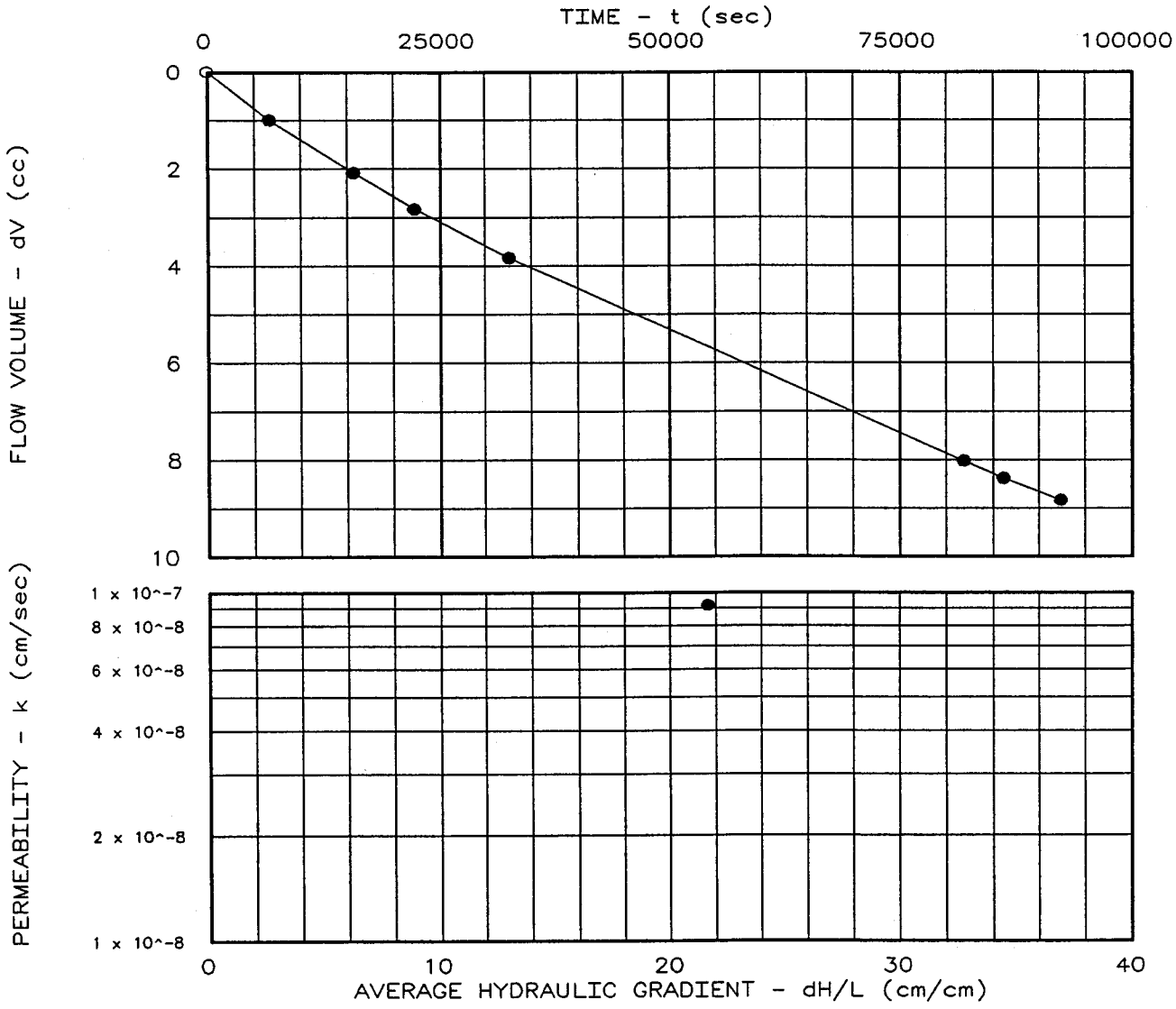
PERMEABILITY TEST REPORT

TEST DATA:
Specimen Height (cm): 9.61
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 86.6
Moisture Before Test (%): 33.3
Moisture After Test (%): 33.6
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 66.0
Test Pressure(psi): 63.0
Back Pressure(psi): 60.0
Diff. Head (psi): 3.0
Flow Rate (cc/sec): 8.94 x 10^-5
Perm. (cm/sec): 9.17 x 10^-8

SAMPLE DATA:
Sample Identification: Production Number 3

Visual Description: Gray, Yellow and Tan Silty, Sandy, Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 83.1%
Permeameter type: Flexible wall
Sample type: undisturbed



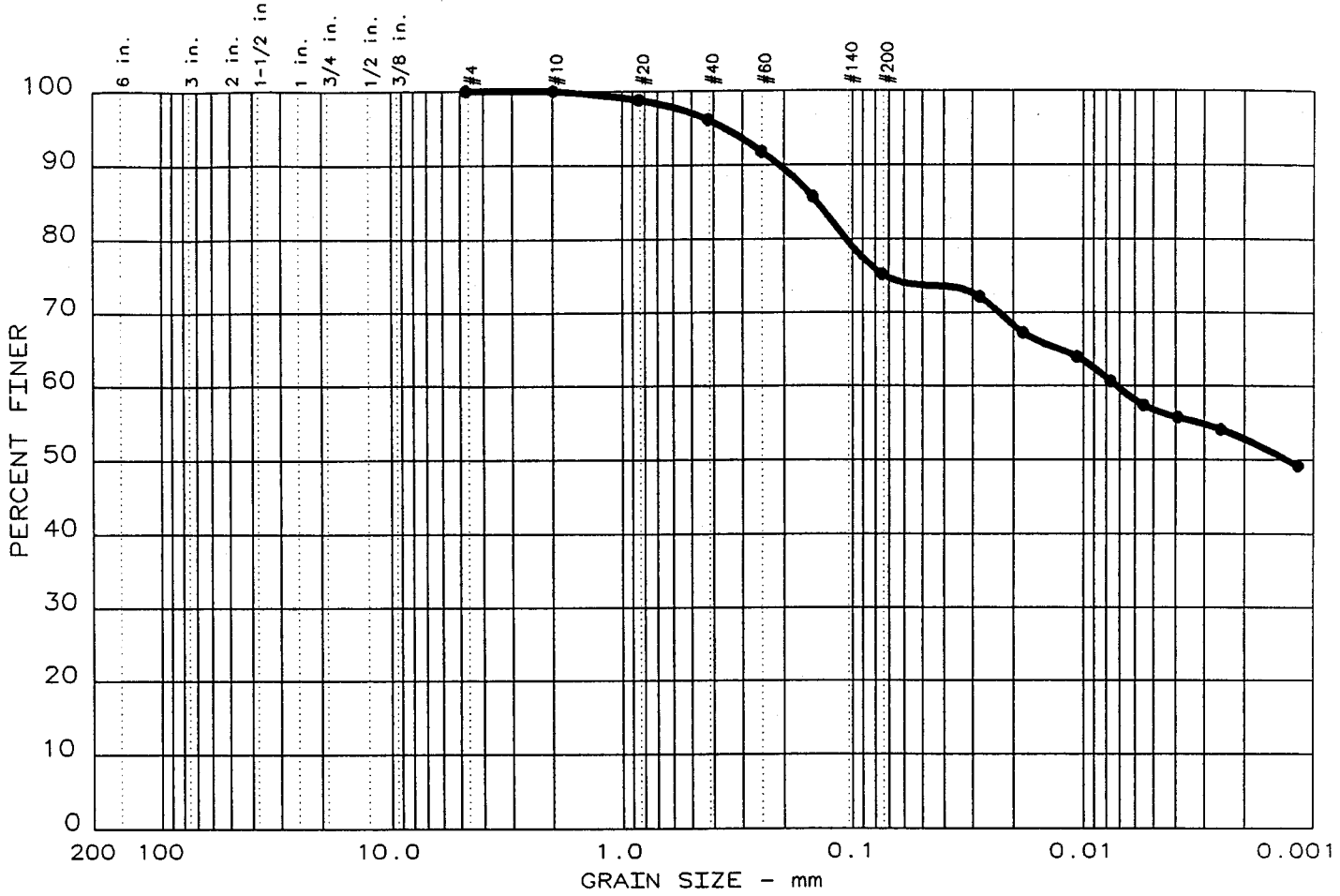
Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-24-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	24.7	18.6	56.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	50	35	0.143		0.0013					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: ON SITE BORROW AREA

Date: JULY 25, 1998

Remarks:
THIRD SAMPLE FROM
PRODUCTION INSTALLATION

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL - 3

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Gary W. Ahlberg, P.E.
P.O. Box 58
Wilmington, NC 28402

DATE: July 30, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. Gary W. Ahlberg, P.E.

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

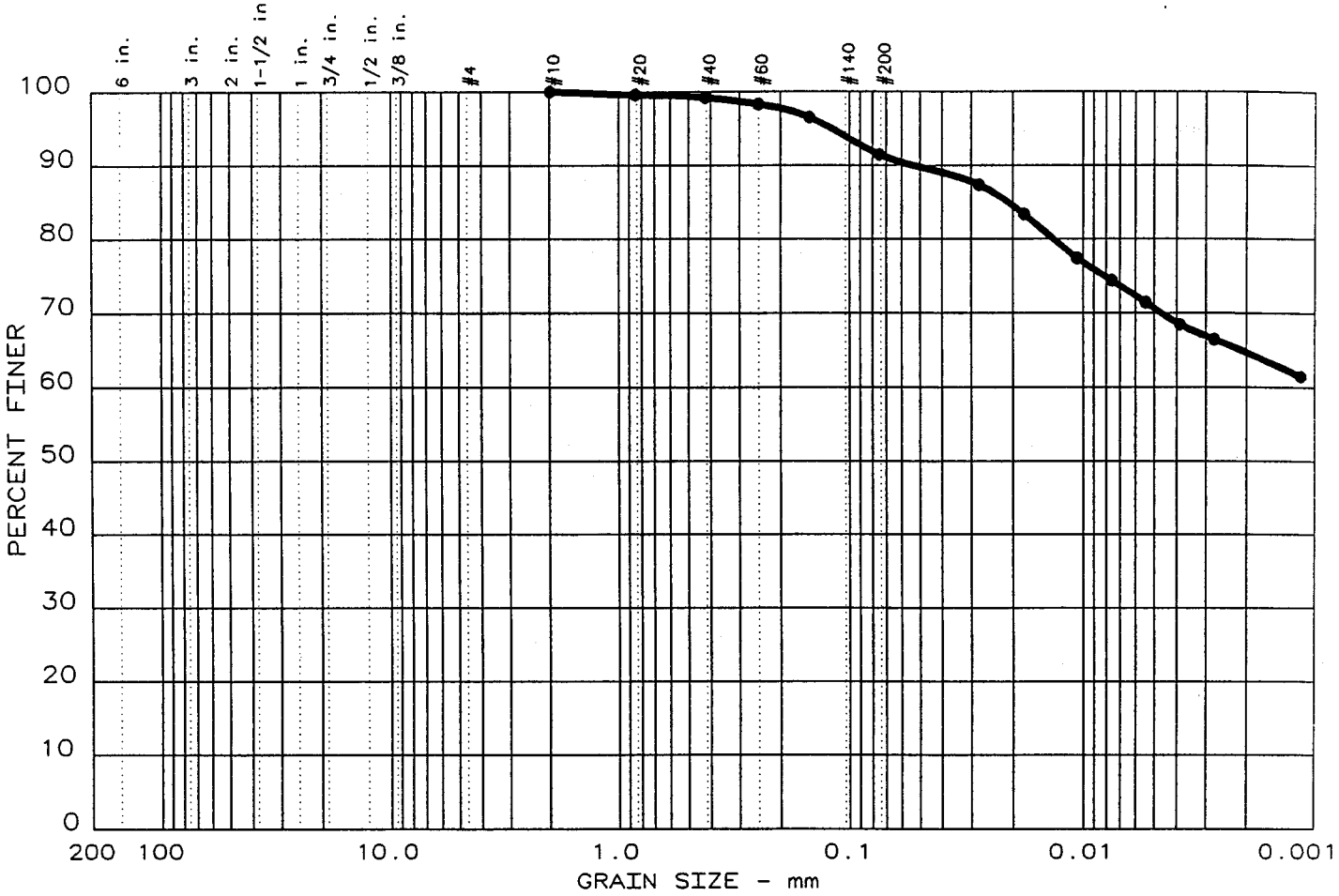
☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. G. Steven Clayton

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	8.5	20.9	70.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	67	45								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN V SLI SANDY SLI SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: WCL 2A-5

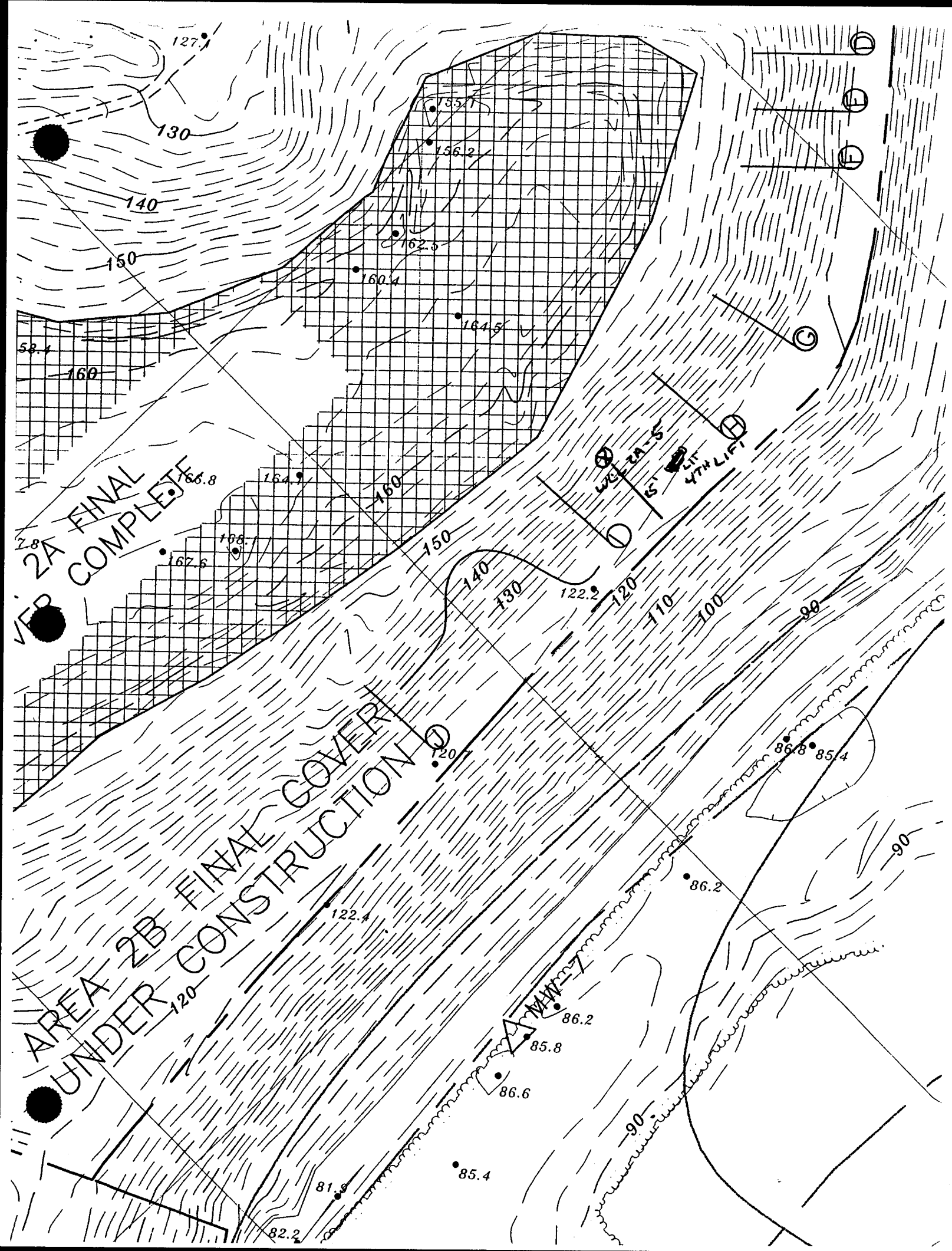
Date: JULY 29, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

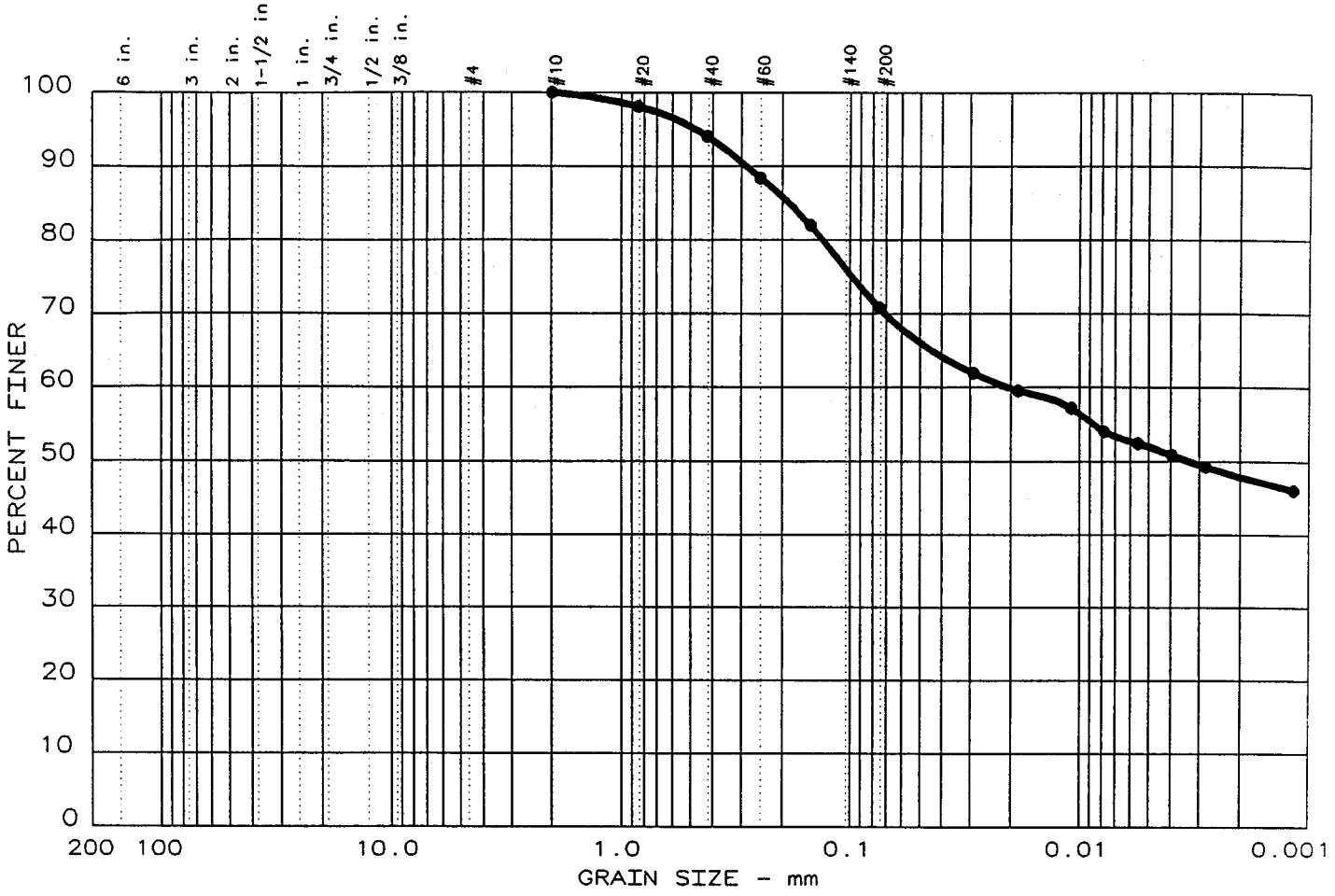
TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 2A-5



AREA 2B FINAL COVER
UNDER CONSTRUCTION
2A FINAL
COMPLETE
MW-7
WC-2A-5
4TH LIFT
127.1
130
140
150
160
155.1
156.2
162.5
160.4
164.5
58.4
166.8
164.1
168.1
167.6
122.2
120
110
100
90
120.7
86.8
85.4
86.2
122.4
86.2
85.8
86.6
85.4
81.9
82.2

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	29.2	18.9	51.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	55	32	0.186		0.0033					

MATERIAL DESCRIPTION	USCS	AASHTO
● ORANGE BROWN SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: WCL 2A-6

Date: JULY 29, 1998

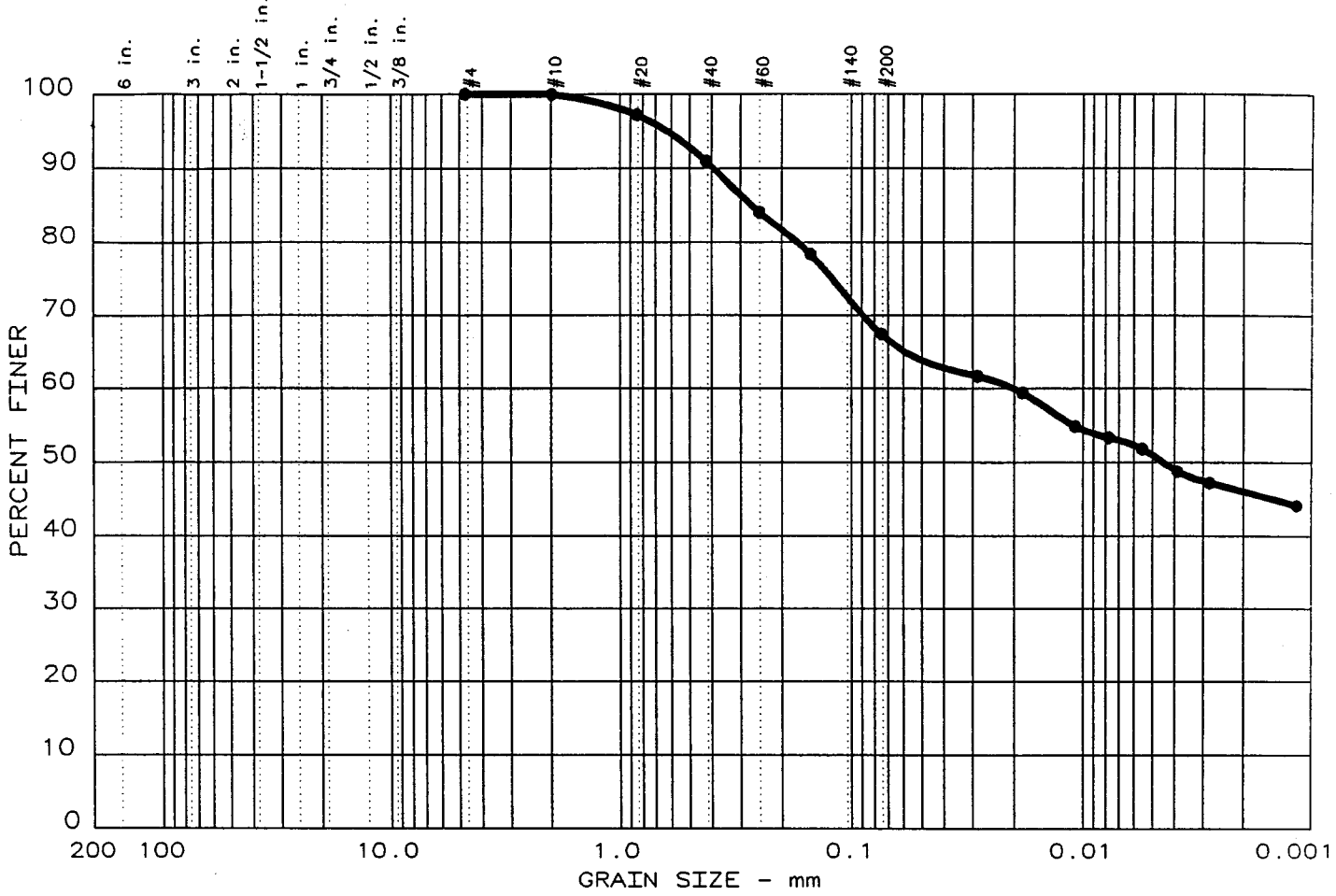
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 2A-6

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	32.5	16.6	50.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	57	35	0.266		0.0045					

MATERIAL DESCRIPTION	USCS	AASHTO
● ORANGE BROWN SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: WCL 2A-7

Date: JULY 29, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 2A-7

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.01
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 84.5
Moisture Before Test (%): 34.2
Moisture After Test (%): 37.9

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	3.89 x 10^-4	
Perm. (cm/sec):	3.98 x 10^-7	

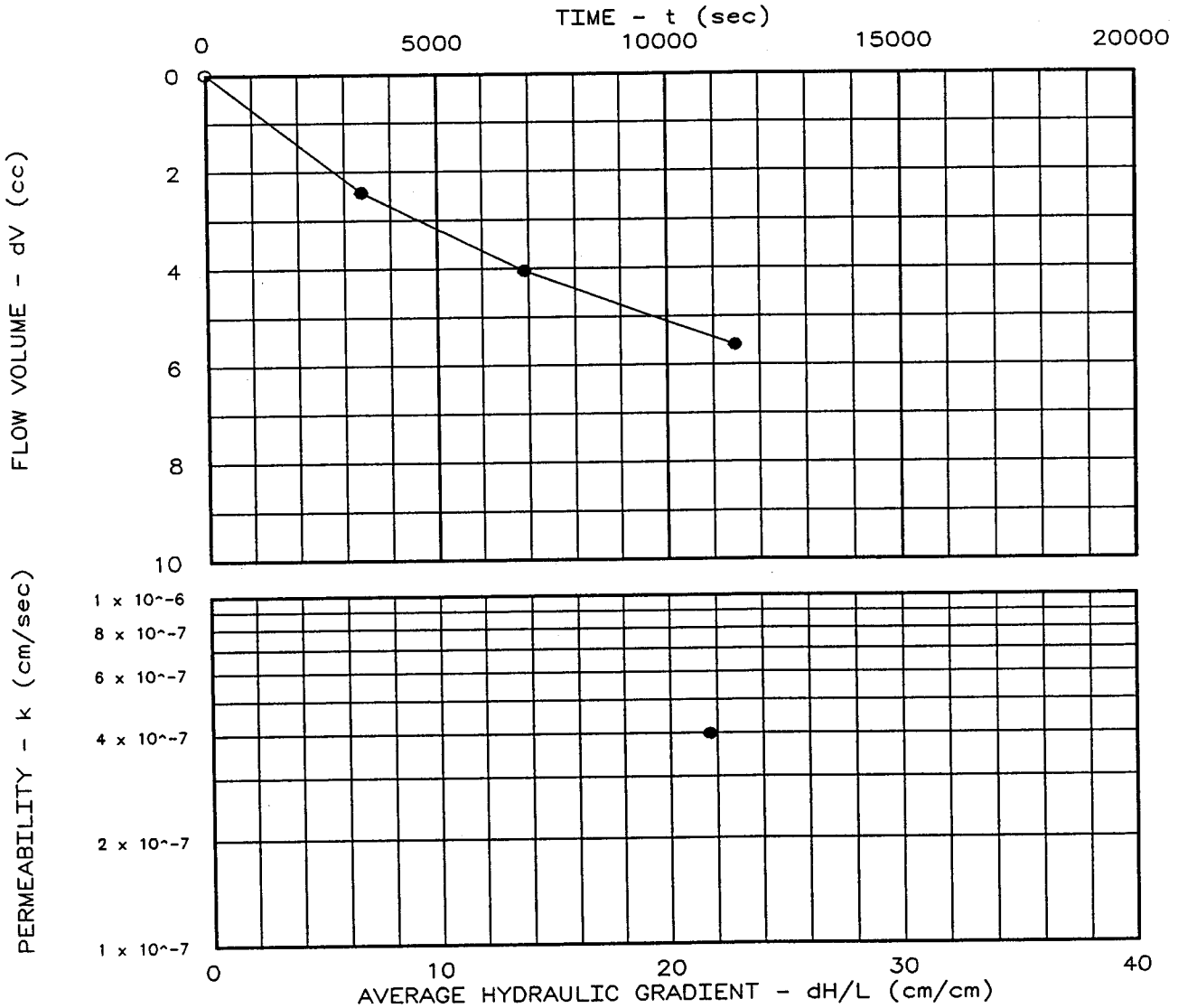
SAMPLE DATA:

Sample Identification: WCL 2A - 5

Visual Description: Gray, Yellow and Tan Silty, Sandy, Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 81.1%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-30-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

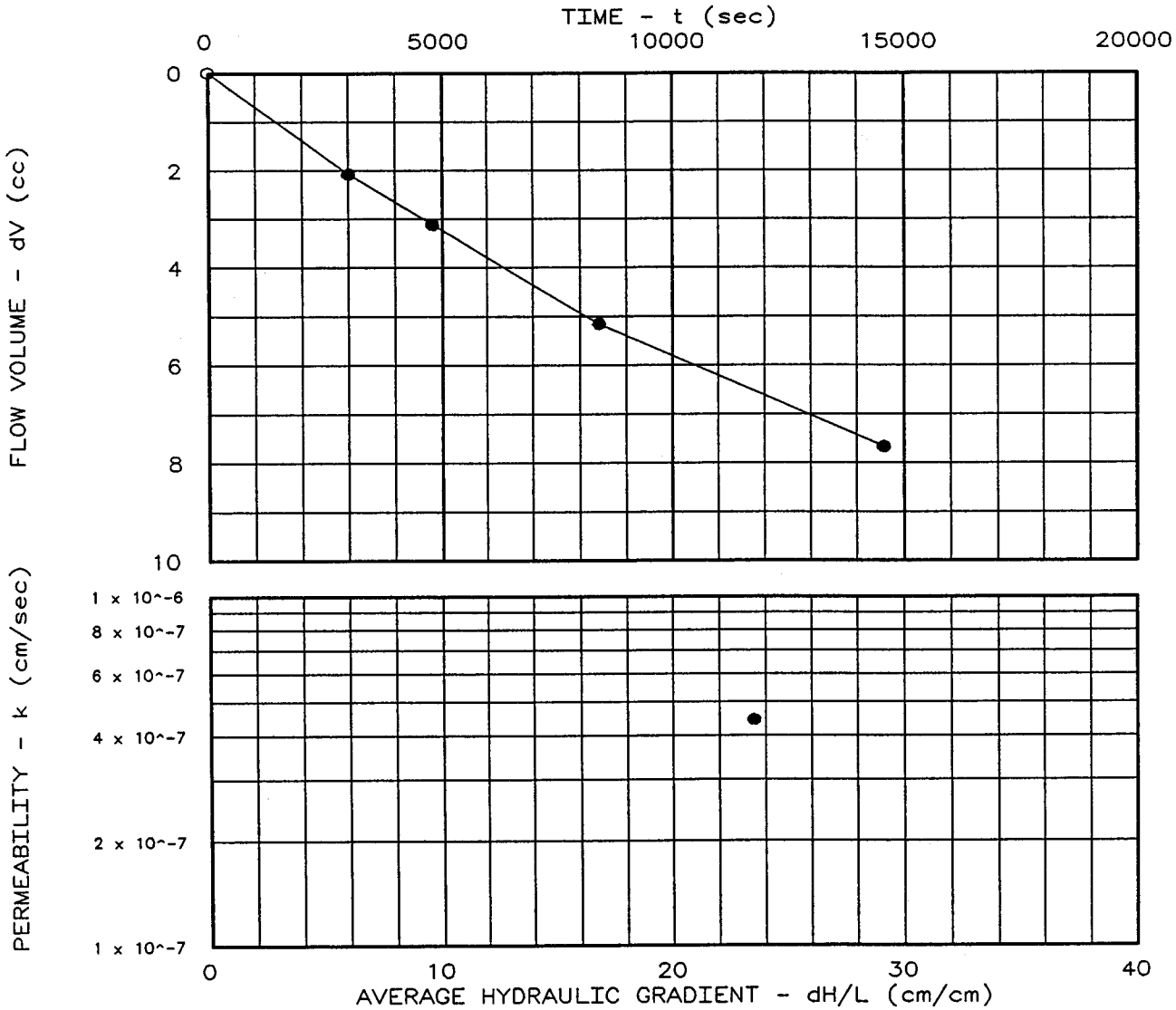
Specimen Height (cm): 9.14
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 94.8
Moisture Before Test (%): 27.9
Moisture After Test (%): 28.8
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 66.0
Test Pressure(psi): 63.0
Back Pressure(psi): 59.9
Diff. Head (psi): 3.1
Flow Rate (cc/sec): 4.81 x 10^-4
Perm. (cm/sec): 4.44 x 10^-7

SAMPLE DATA:

Sample Identification: WCL 2A - 6

Visual Description: Gray, Yellow and Tan Silty, Sandy, Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 91.0%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-30-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.88
Specimen Diameter (cm): 7.21
Dry Unit Weight (pcf): 99.0
Moisture Before Test (%): 23.9
Moisture After Test (%): 24.7

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.8	
Diff. Head (psi):	3.2	
Flow Rate (cc/sec):	1.50 x 10^-3	
Perm. (cm/sec):	1.49 x 10^-6	

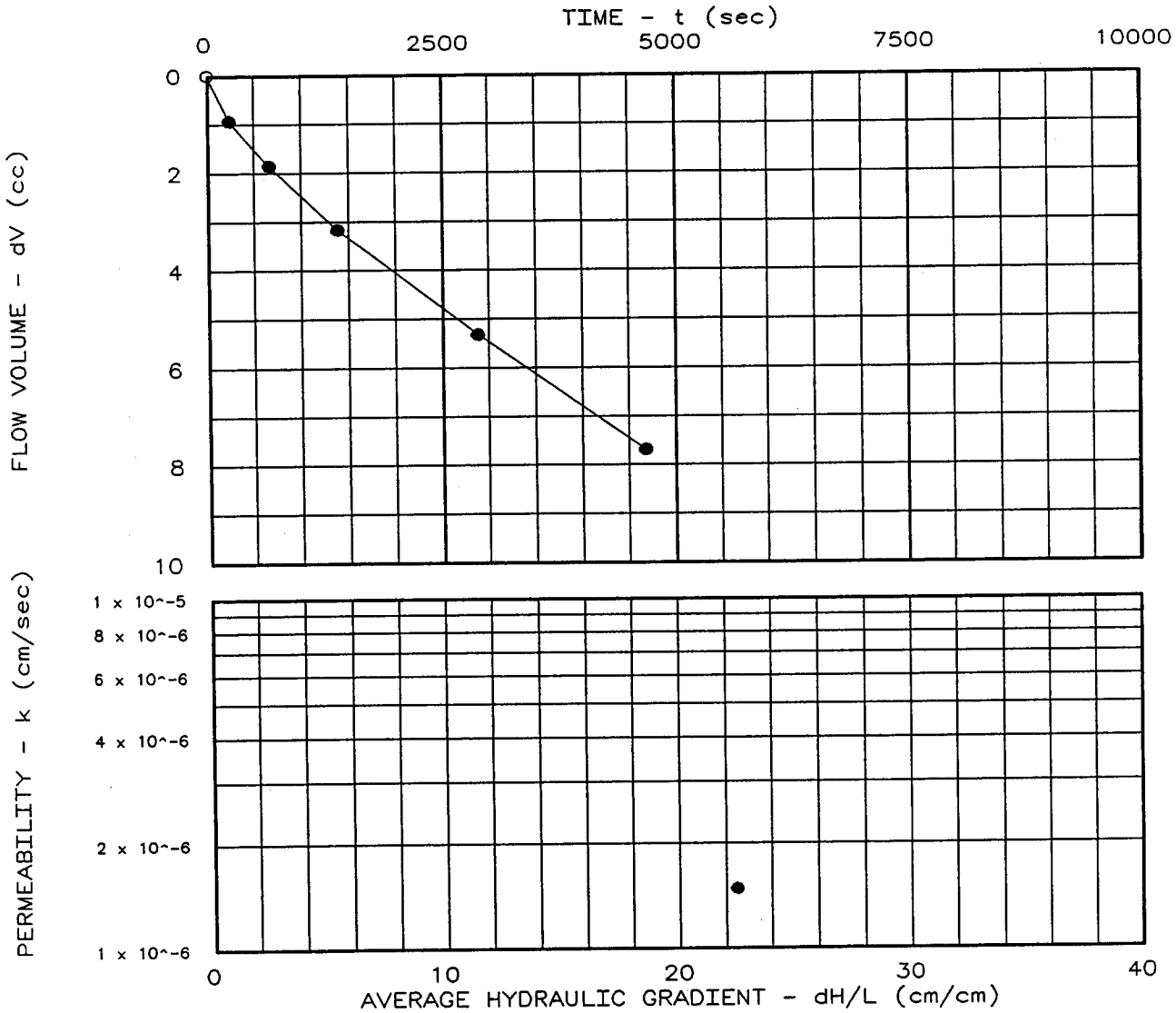
SAMPLE DATA:

Sample Identification: WCL 2A - 7

Visual Description: Gray, Yellow and Tan Silty, Sandy, Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 95.0%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 7-30-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.80
Specimen Diameter (cm): 7.12
Dry Unit Weight (pcf): 91.1
Moisture Before Test (%): 26.8
Moisture After Test (%): 32.5

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	1.88 x 10^-2	
Perm. (cm/sec):	2.29 x 10^-5	

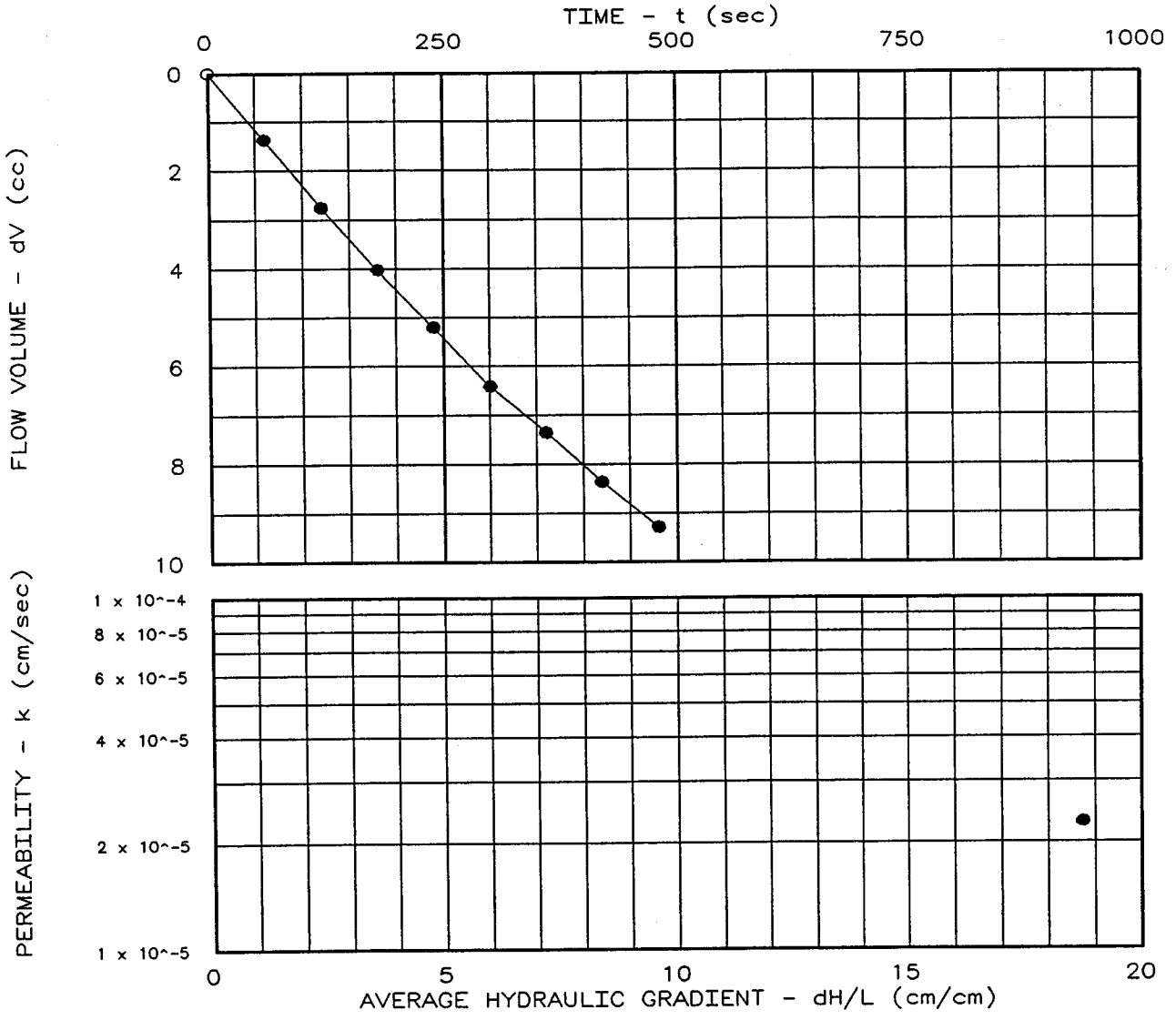
SAMPLE DATA:

Sample Identification: WCL 2A #12

Visual Description: Gray, Yellow and Tan Silty, Sandy Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 87.5%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-7-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.80
Specimen Diameter (cm): 7.12
Dry Unit Weight (pcf): 75.1
Moisture Before Test (%): 32.0
Moisture After Test (%): 43.0

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	66.0
Test Pressure(psi):	63.0	63.0
Back Pressure(psi):	60.2	60.2
Diff. Head (psi):	2.8	2.8
Flow Rate (cc/sec):	6.87 x 10^-2	6.36 x 10^-2
Perm. (cm/sec):	7.91 x 10^-5	7.33 x 10^-5

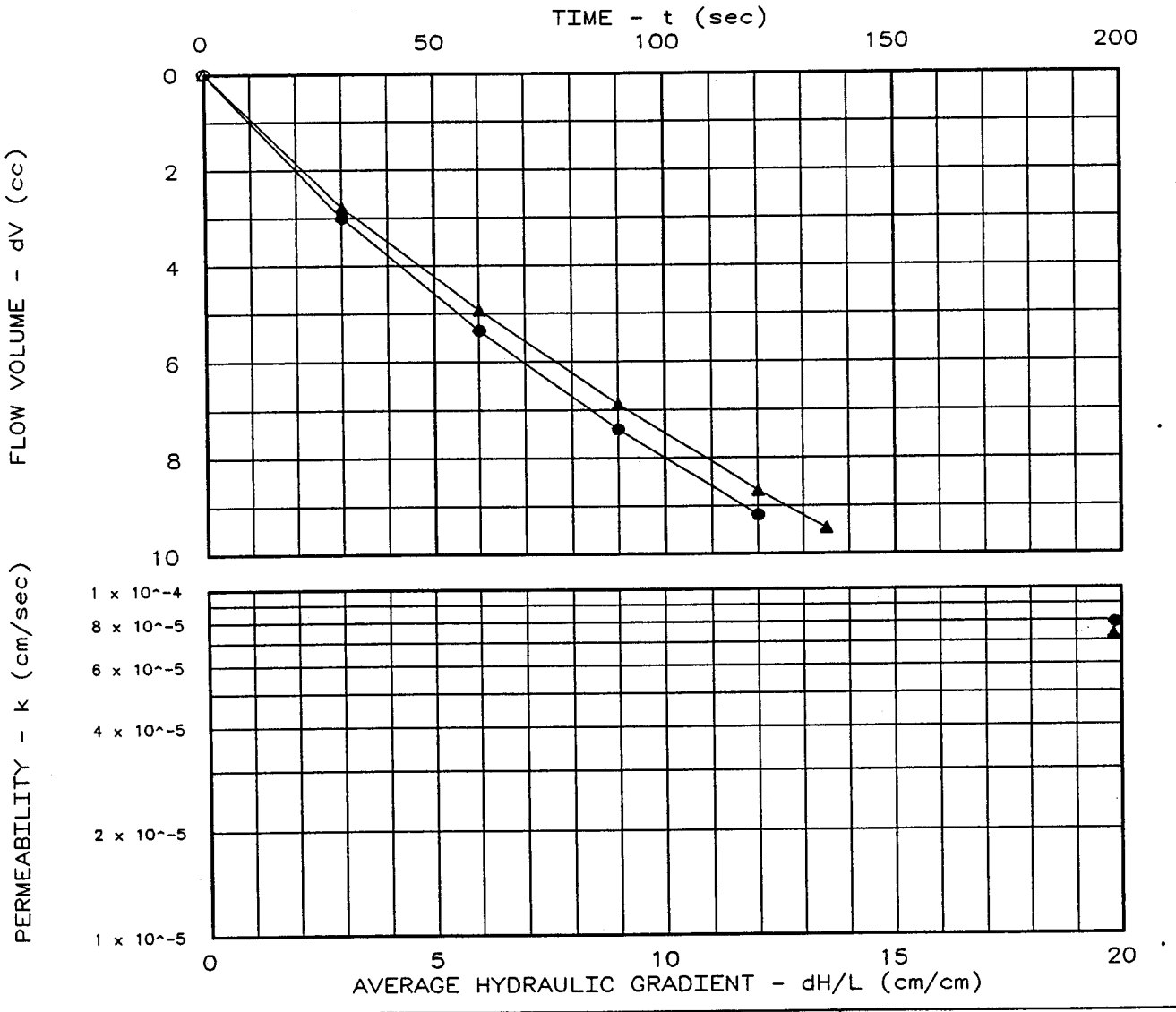
SAMPLE DATA:

Sample Identification: WCL 2A - #12 RETEST

Visual Description: Gray, Yellow and Tan Silty Sandy Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 72.1%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-17-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

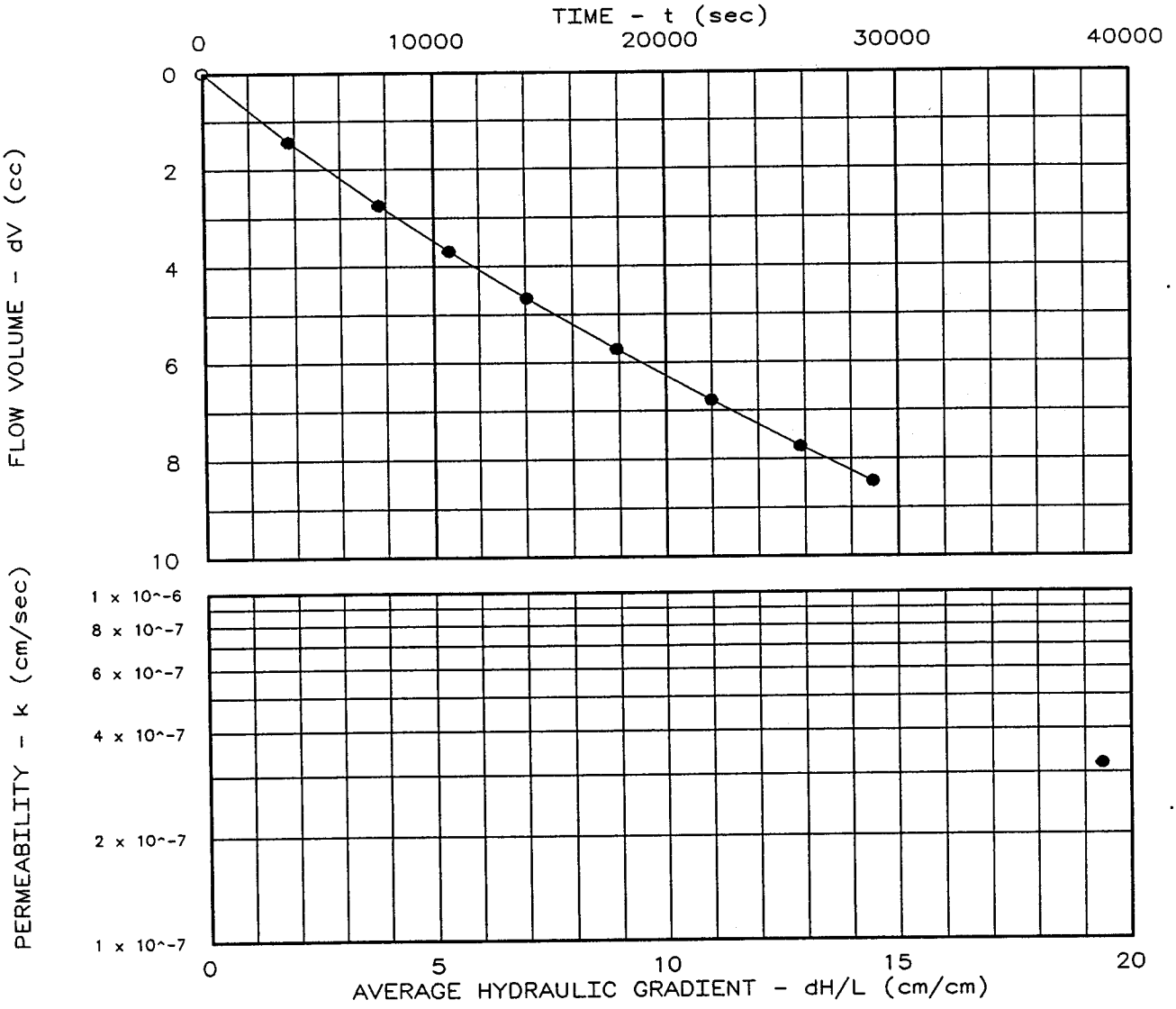
Specimen Height (cm): 10.53
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 91.0
Moisture Before Test (%): 28.5
Moisture After Test (%): 32.7
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 66.0
Test Pressure(psi): 63.0
Back Pressure(psi): 60.1
Diff. Head (psi): 2.9
Flow Rate (cc/sec): 2.77 x 10^-4
Perm. (cm/sec): 3.18 x 10^-7

SAMPLE DATA:

Sample Identification: WCL 2A # 13

Visual Description: Gray Yellow and Tan Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 87.4%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-12-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

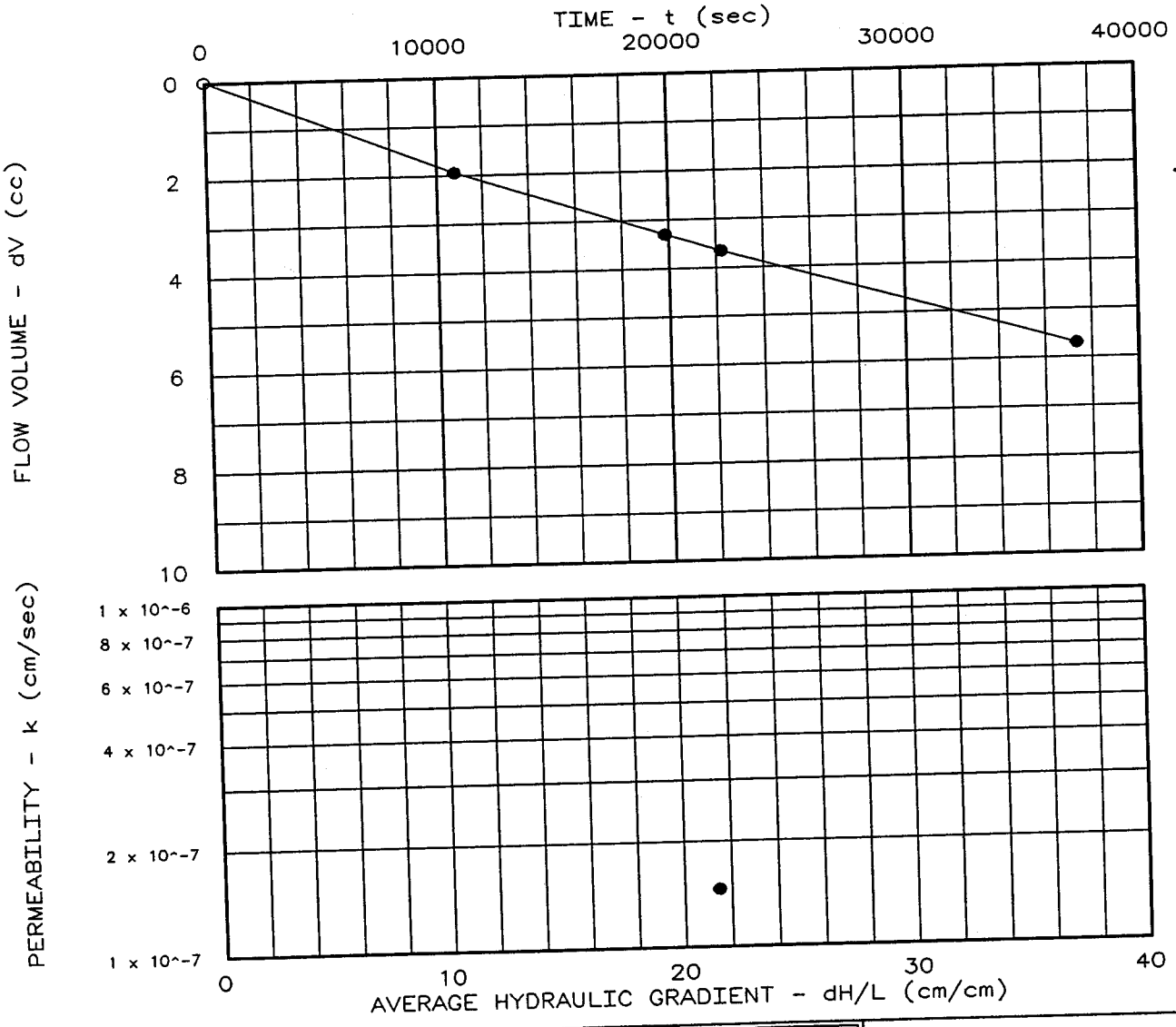
TEST DATA:
Specimen Height (cm): 10.29
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 91.0
Moisture Before Test (%): 30.0
Moisture After Test (%): 31.2

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	1.41 x 10^-4	
Perm. (cm/sec):	1.46 x 10^-7	

SAMPLE DATA:
Sample Identification: WCL 2A - #14

Visual Description: Gray, Yellow and Tan Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 87.4%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-17-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant Head

PERMEABILITY TEST REPORT

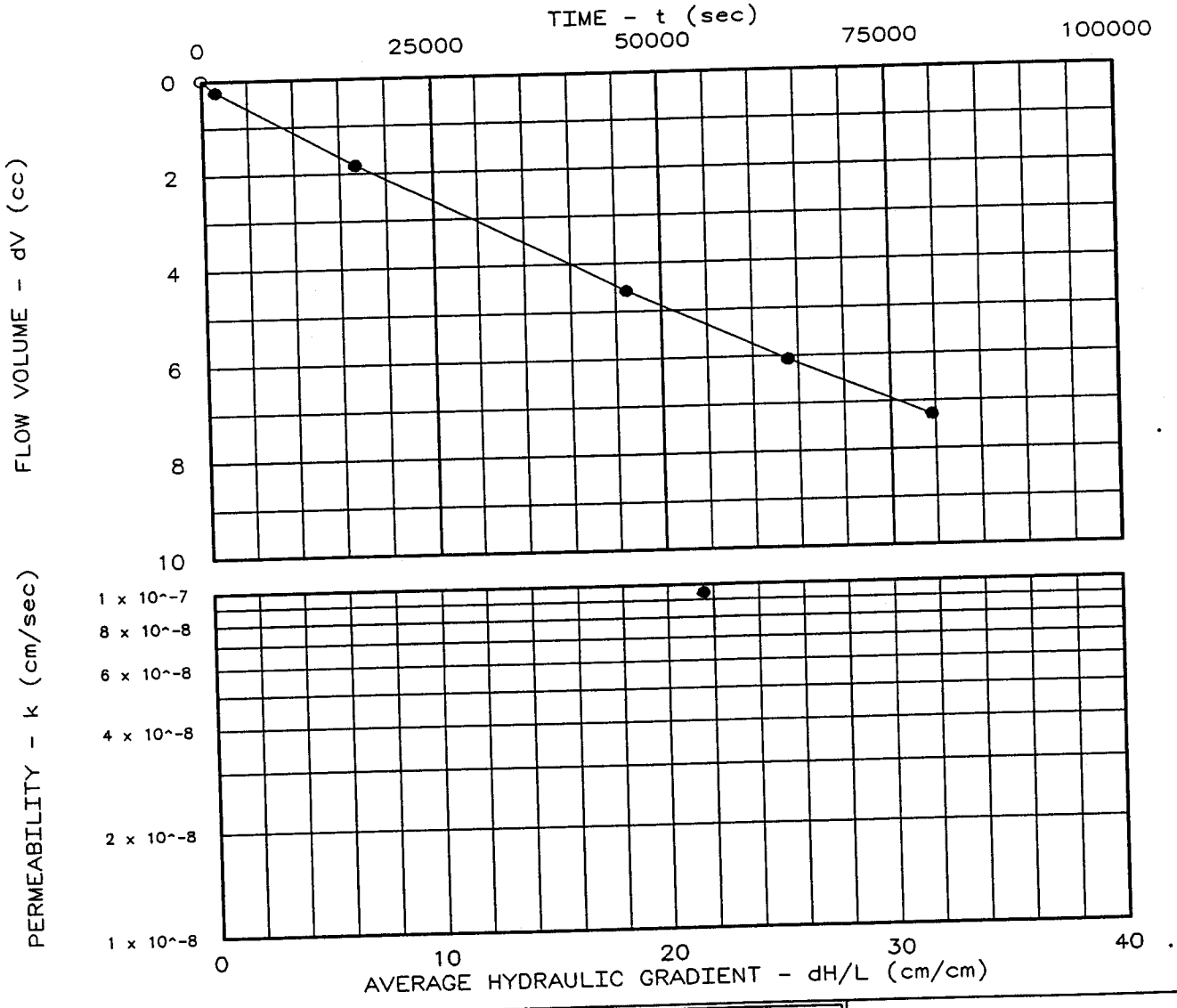
TEST DATA:
Specimen Height (cm): 10.20
Specimen Diameter (cm): 7.17
Dry Unit Weight (pcf): 101.5
Moisture Before Test (%): 21.8
Moisture After Test (%): 26.7

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	9.02 x 10^-5	
Perm. (cm/sec):	9.42 x 10^-8	

SAMPLE DATA:
Sample Identification: WCL 2A - #15

Visual Description: Gray, Yellow and Tan Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 97.4%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-17-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

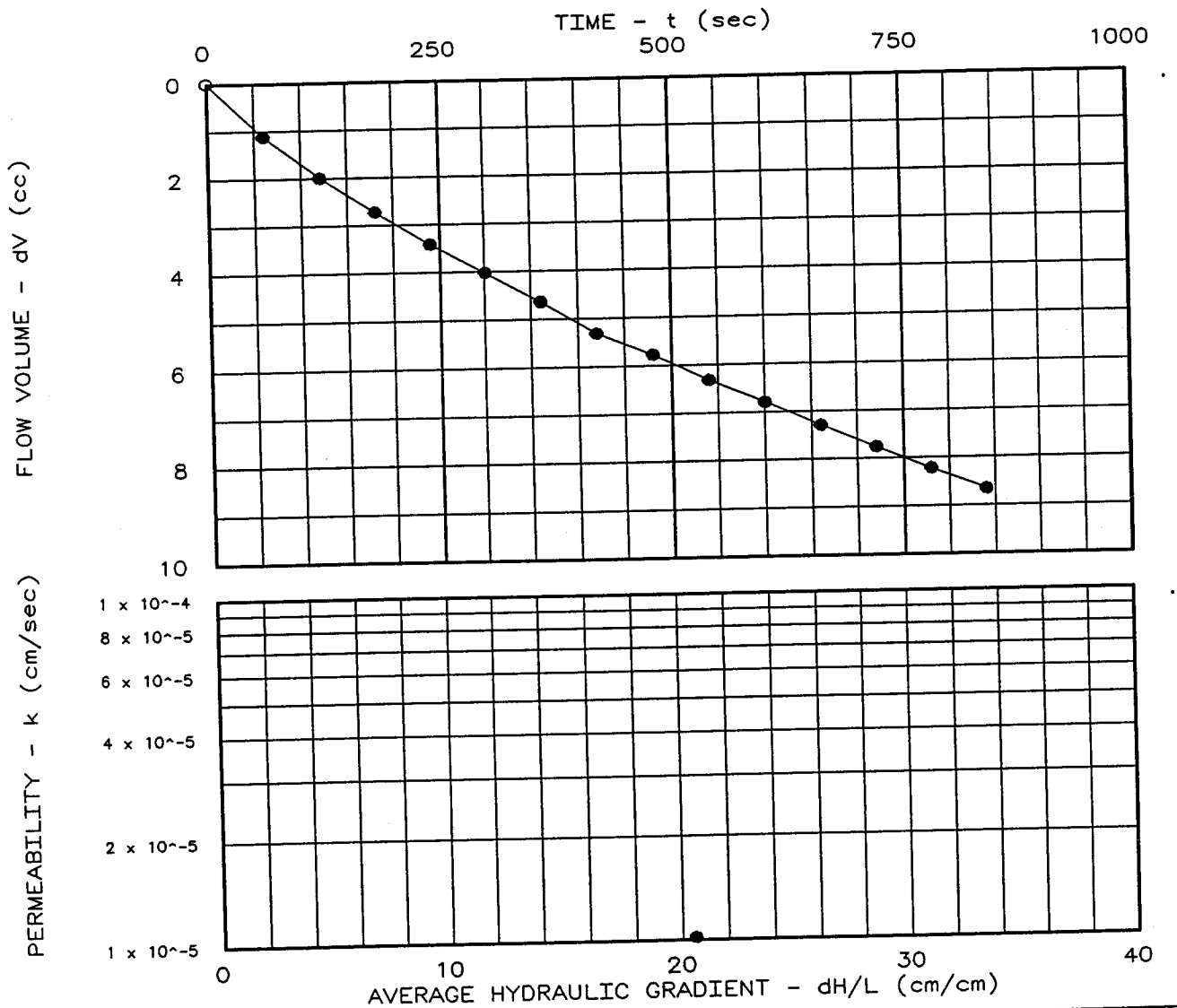
TEST DATA:
Specimen Height (cm): 10.03
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 91.5
Moisture Before Test (%): 24.4
Moisture After Test (%): 30.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	9.46 x 10^-3	
Perm. (cm/sec):	1.02 x 10^-5	

SAMPLE DATA:
Sample Identification: WCL 2A # 16

Visual Description: Gray Red Yellow Brown Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 87.8%
Permeameter type: Flexible wall
Sample type: undisturbed

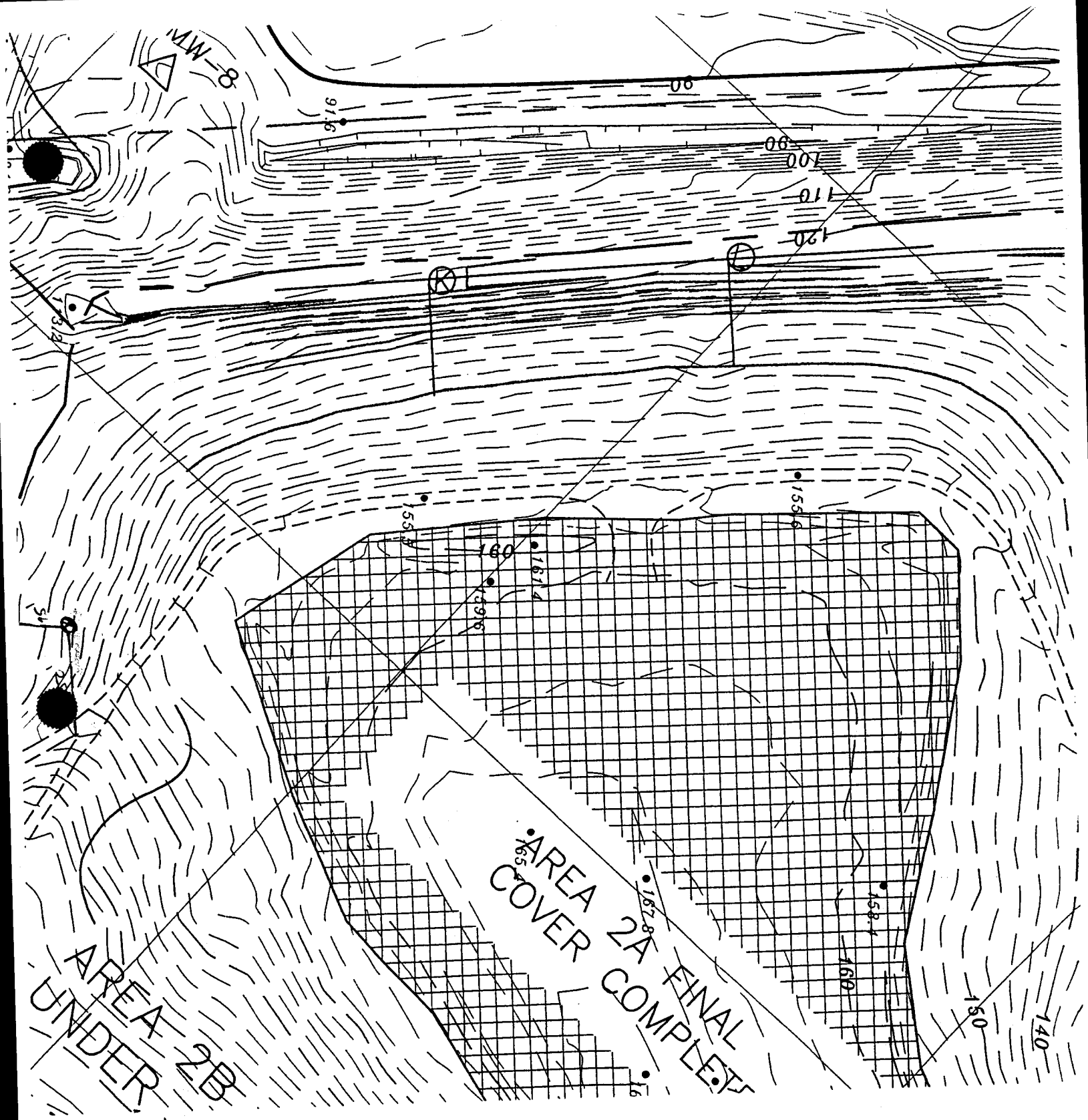


Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-19-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head



CL-2A-~~15~~ 16
14 AUG 95
2ND LIFT

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.46
Specimen Diameter (cm): 7.20
Dry Unit Weight (pcf): 90.7
Moisture Before Test (%): 22.9
Moisture After Test (%): 20.6

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	66.0
Test Pressure(psi):	63.0	63.0
Back Pressure(psi):	60.2	60.2
Diff. Head (psi):	2.8	2.8
Flow Rate (cc/sec):	8.92 x 10^-2	8.92 x 10^-2
Perm. (cm/sec):	9.61 x 10^-5	9.64 x 10^-5

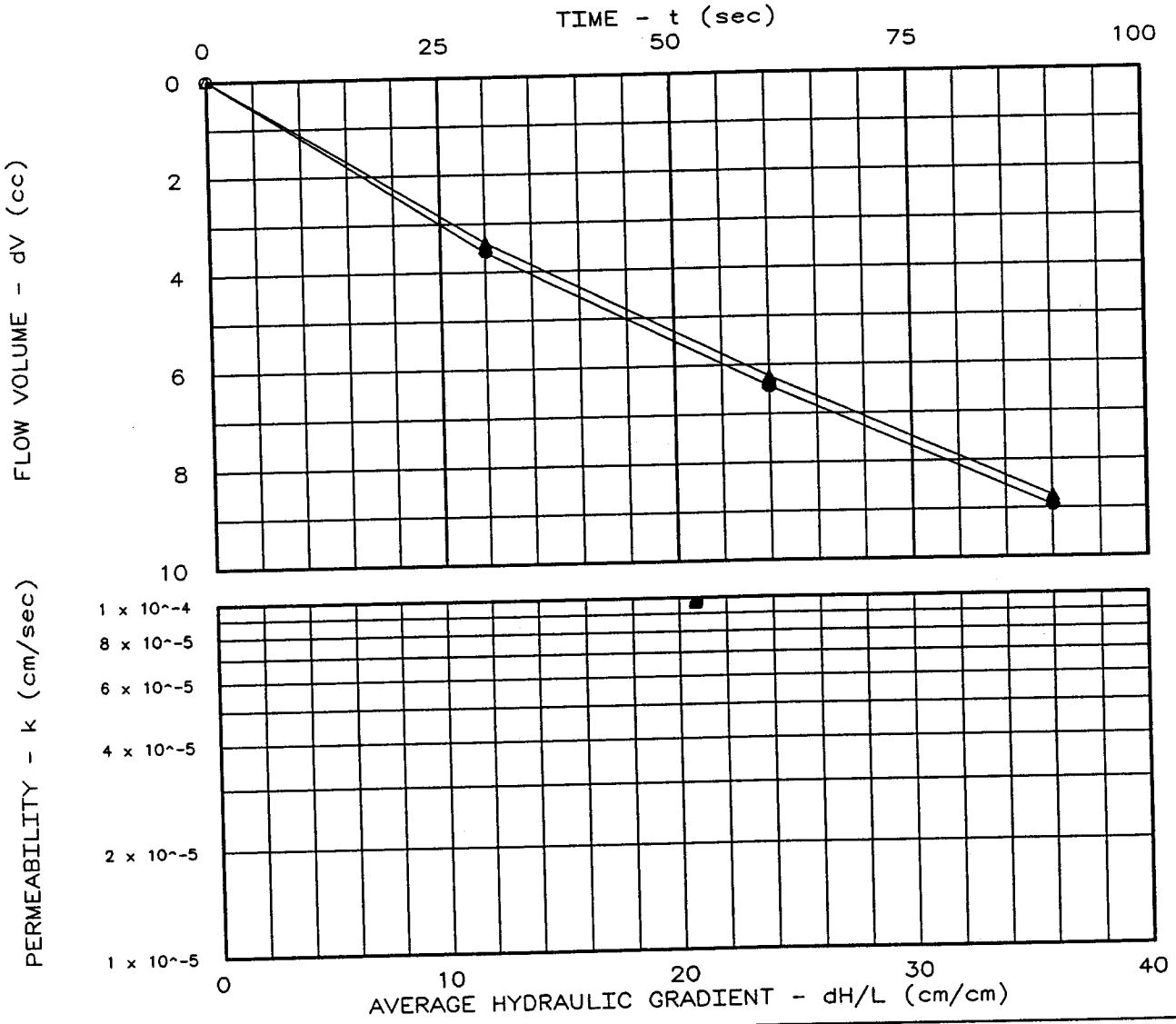
SAMPLE DATA:

Sample Identification: WCL 2A # 17 .

Visual Description: Gray Red Yellow Brown Silty Sandy Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 87.1%
Permeameter type: Flexible wall
Sample type: undisturbed

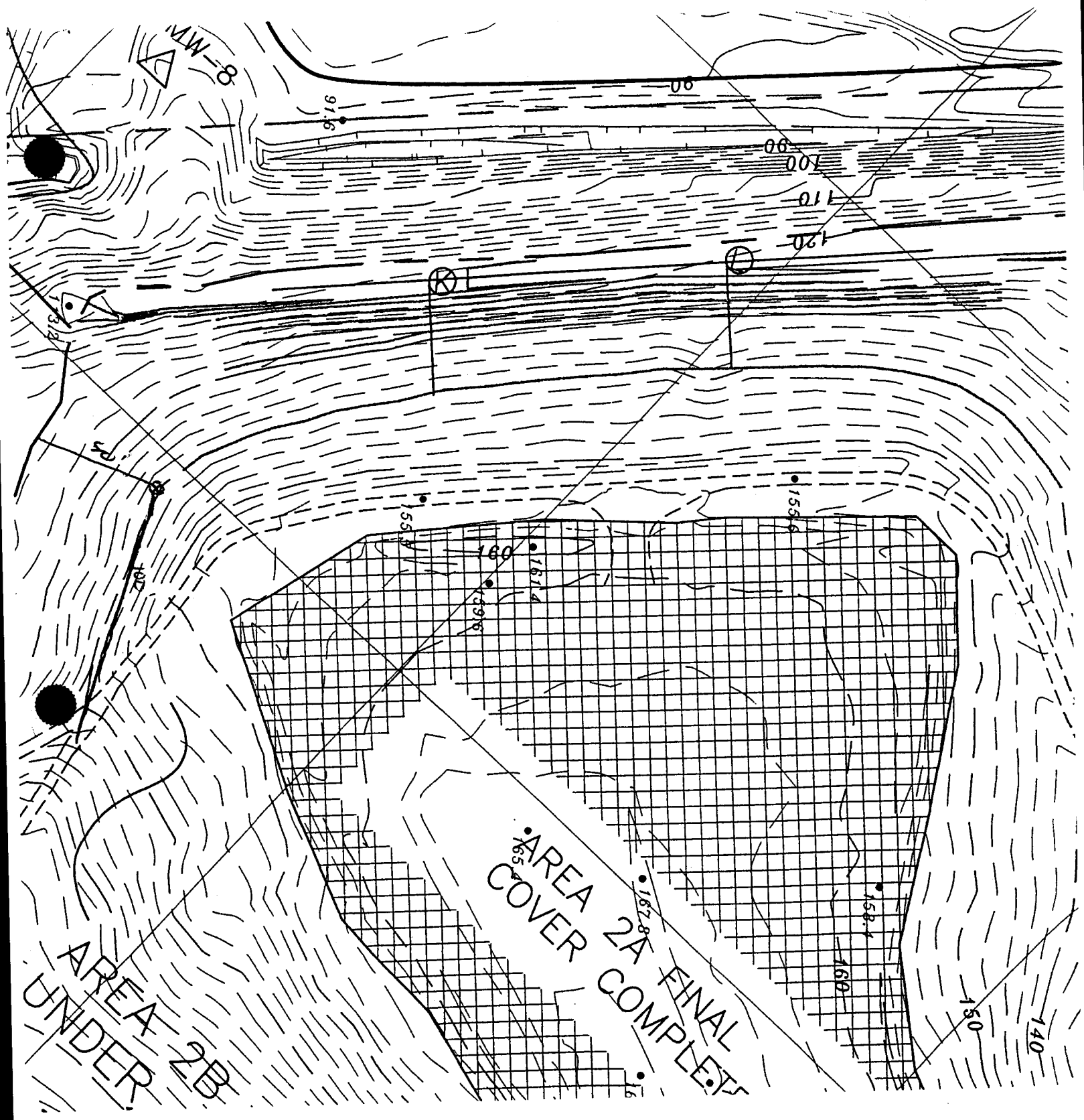


Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-19-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head



WCL 2A #617
14 AUG 98
4TH LIFT

PERMEABILITY TEST REPORT

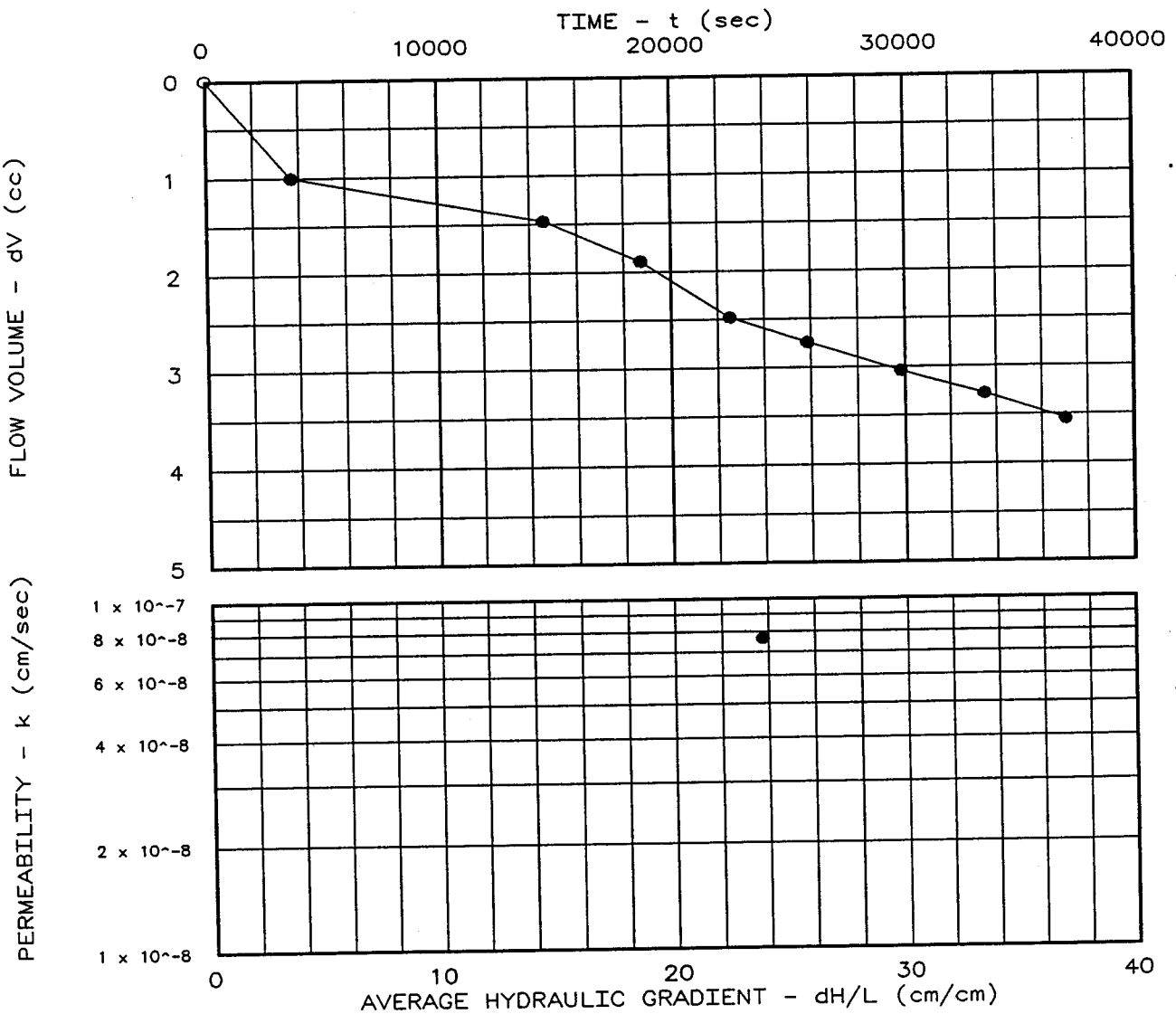
TEST DATA:
Specimen Height (cm): 9.86
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 100.3
Moisture Before Test (%): 20.2
Moisture After Test (%): 29.0

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.7	
Diff. Head (psi):	3.3	
Flow Rate (cc/sec):	8.21 x 10^-5	
Perm. (cm/sec):	7.66 x 10^-8	

SAMPLE DATA:
Sample Identification: WCL 2A # 18

Visual Description: Gray Red Yellow Brown Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 96.3%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-19-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

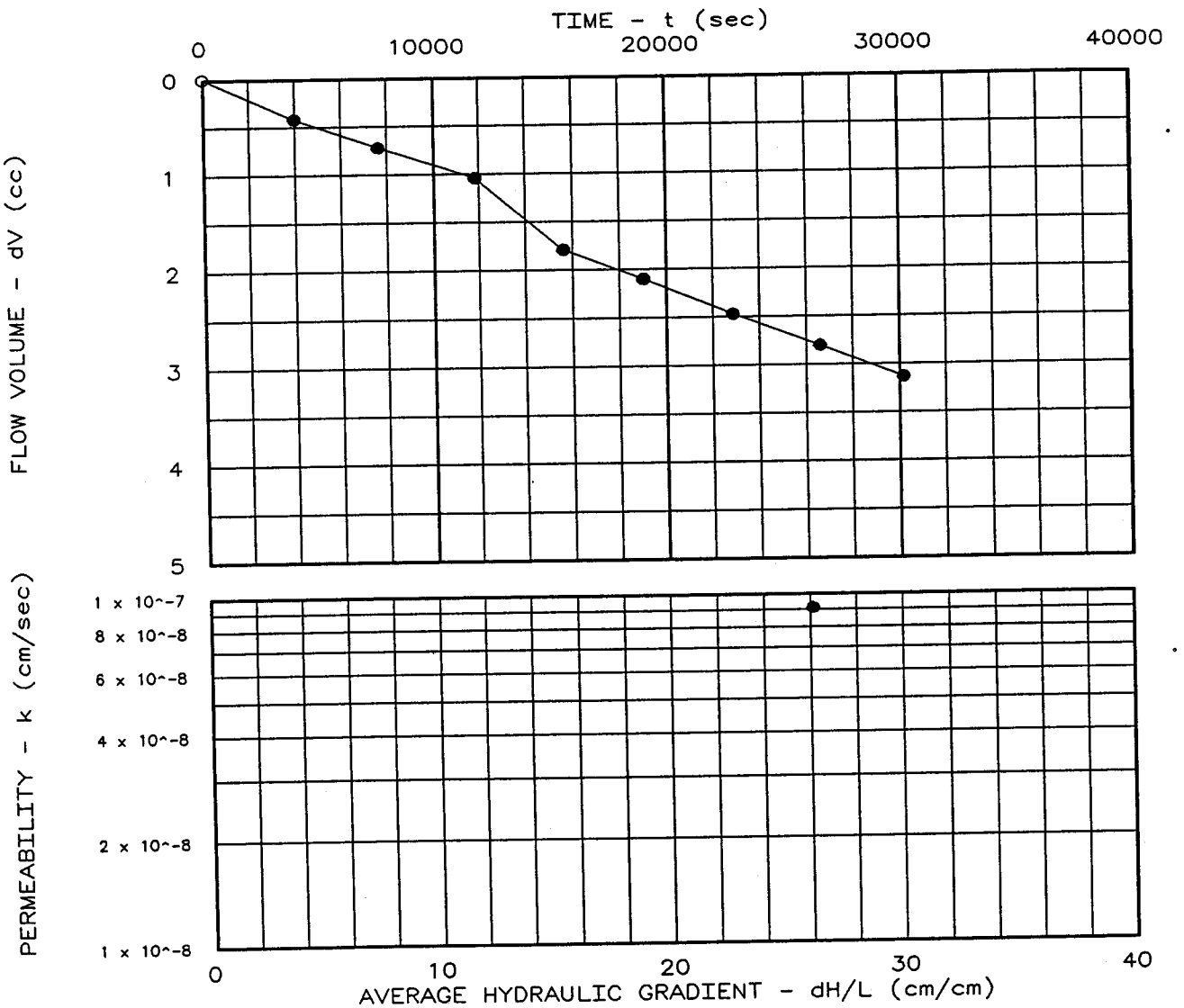
TEST DATA:
Specimen Height (cm): 9.23
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 95.6
Moisture Before Test (%): 27.5
Moisture After Test (%): 28.3

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.6	
Diff. Head (psi):	3.4	
Flow Rate (cc/sec):	1.08 x 10^-4	
Perm. (cm/sec):	9.10 x 10^-8	

SAMPLE DATA:
Sample Identification: WCL 2A # 19

Visual Description: Gray Red Yellow Brown Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 91.7%
Permeameter type: Flexible wall
Sample type: undisturbed

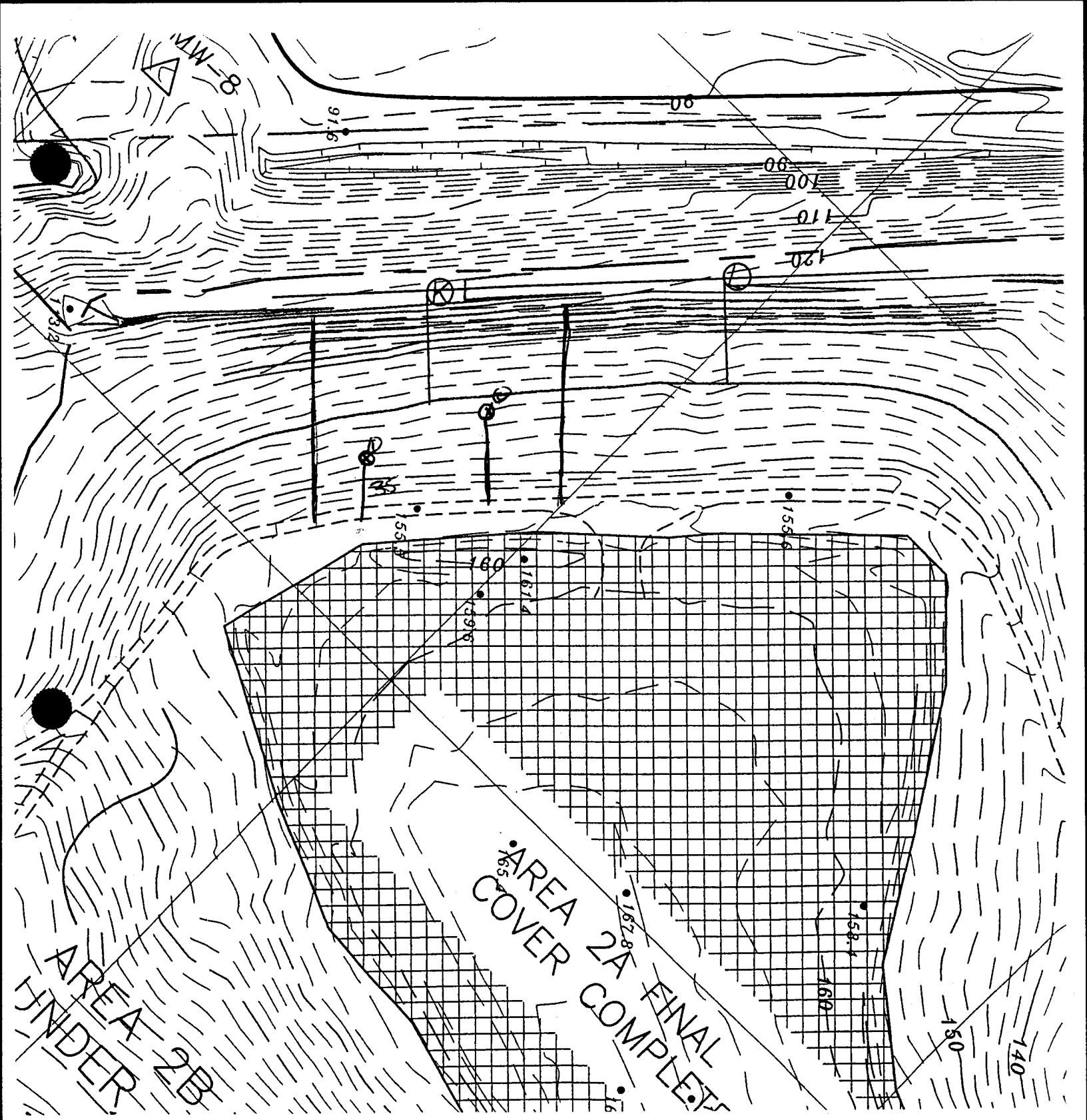


Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-19-98

PERMEABILITY TEST REPORT

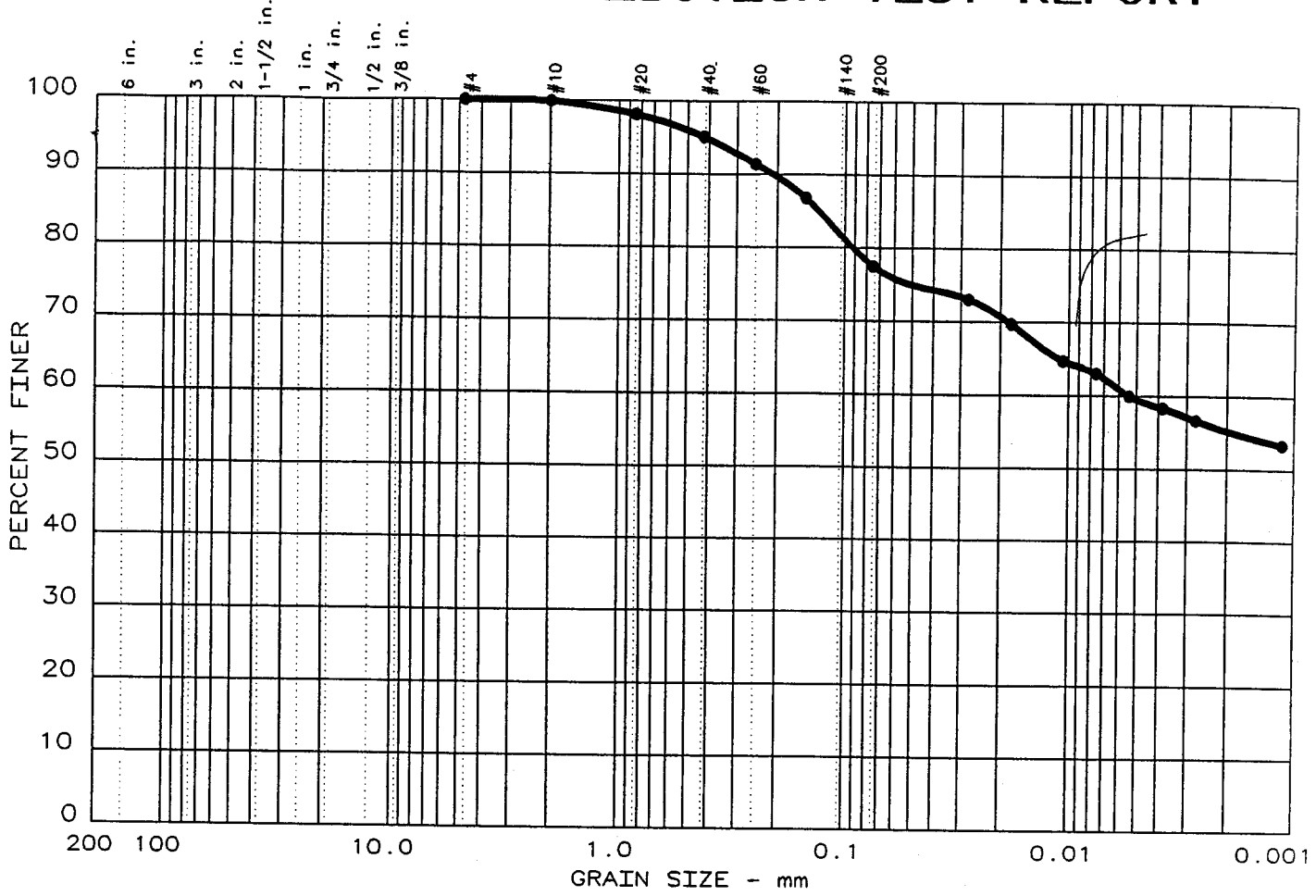
TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head



WCL 2A #718
14 AUG 98
2ND LIFT ①
4TH LIFT ② ⟶ WCL 2A #819

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	22.5	18.0	59.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	54	33	0.130							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: SAMPLE WCL 2A-8

Date: AUGUST 8, 1998

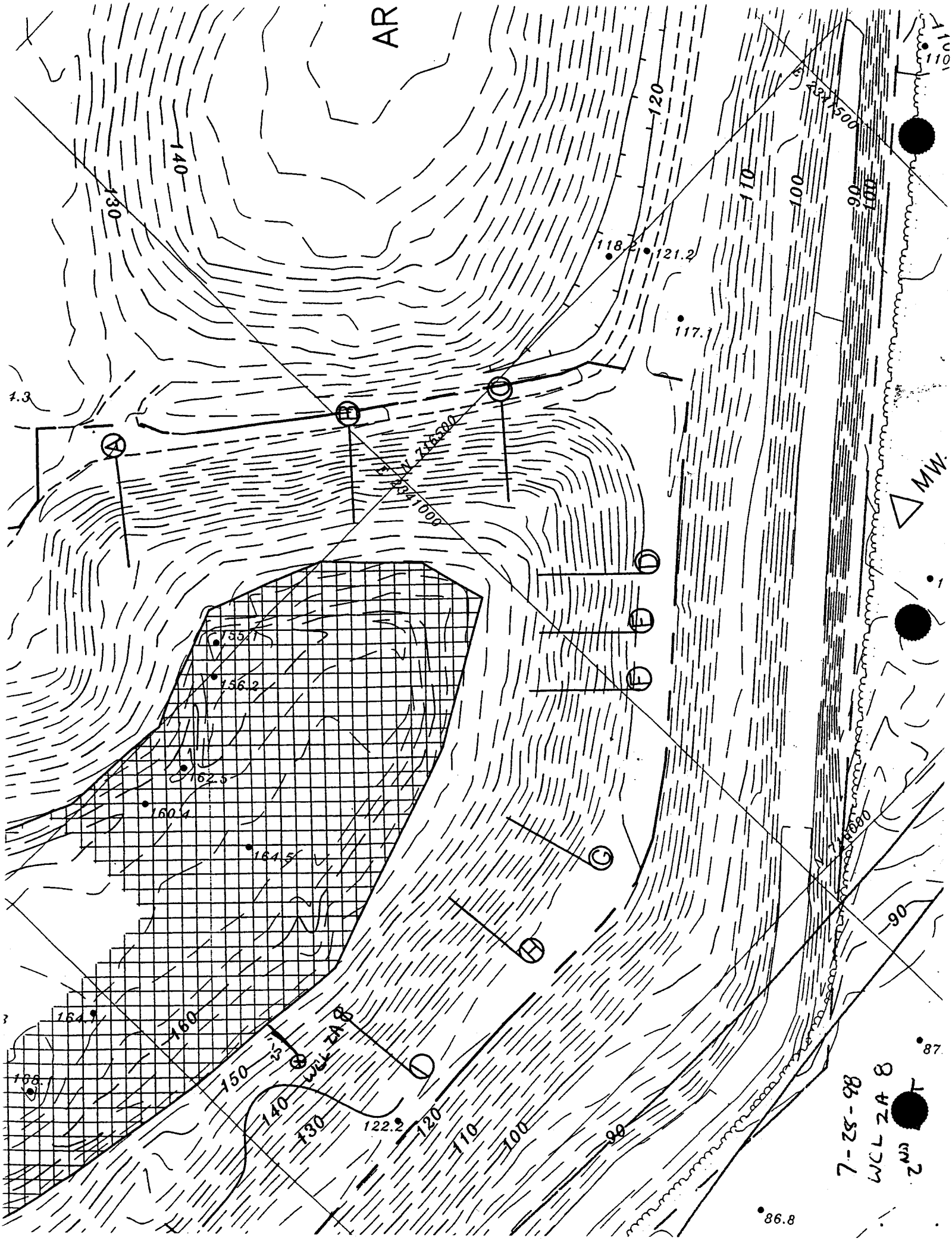
Remarks:

SAMPLE FROM SECOND LIFT

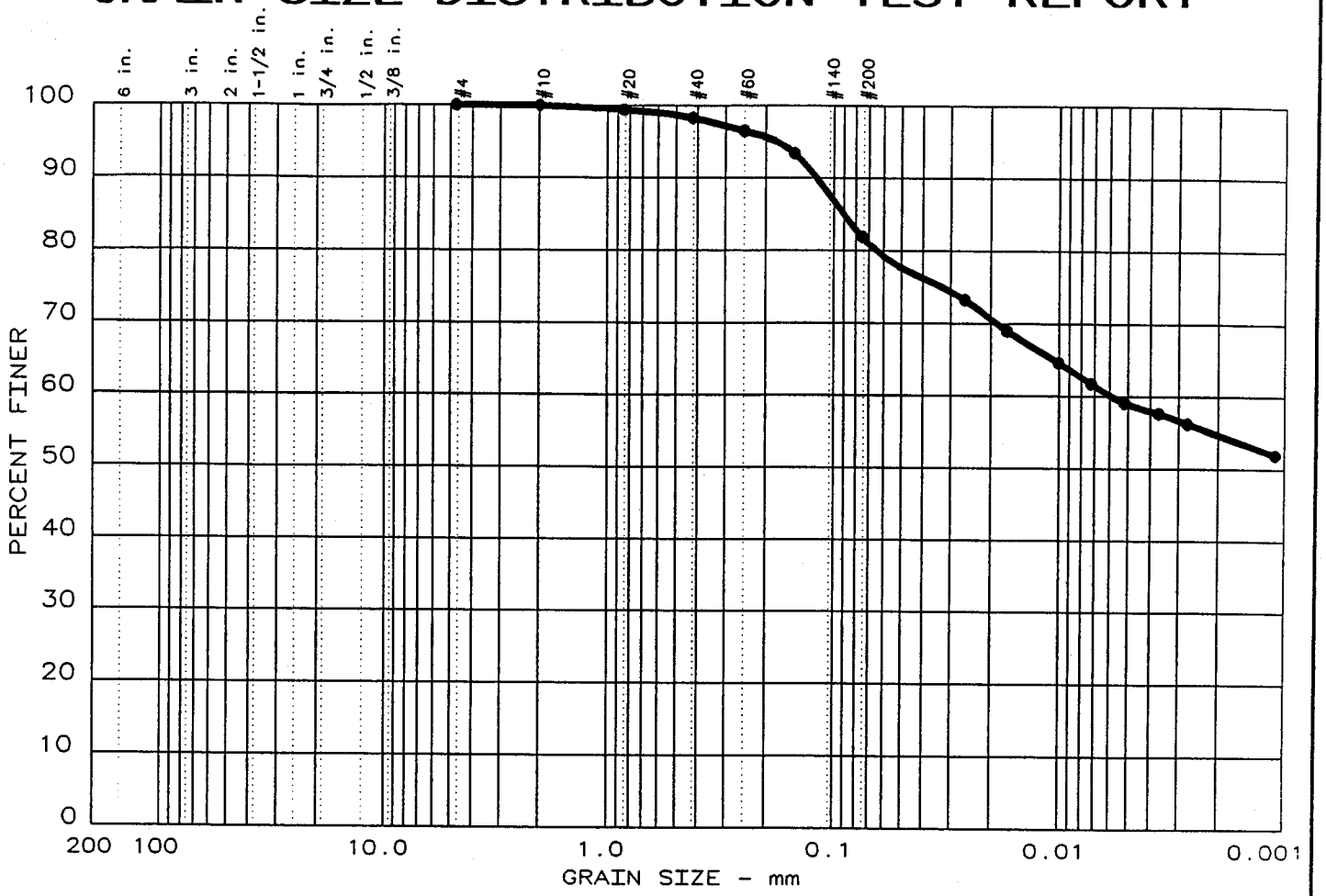
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 2A-8


AR
MW.
118.2
121.2
117.1
155.1
156.2
162.5
160.4
164.5
164.1
168.1
122.2
86.8
87
WCL 2A 8
7-28-98
WCL 2A 8
2ND
130
140
120
110
100
90
150
160
E 2341500
N 716500
E 2341000
N 716000

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	18.1	23.0	58.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	54	32	0.0902							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: SAMPLE WCL 2A-10

Date: AUGUST 8, 1998

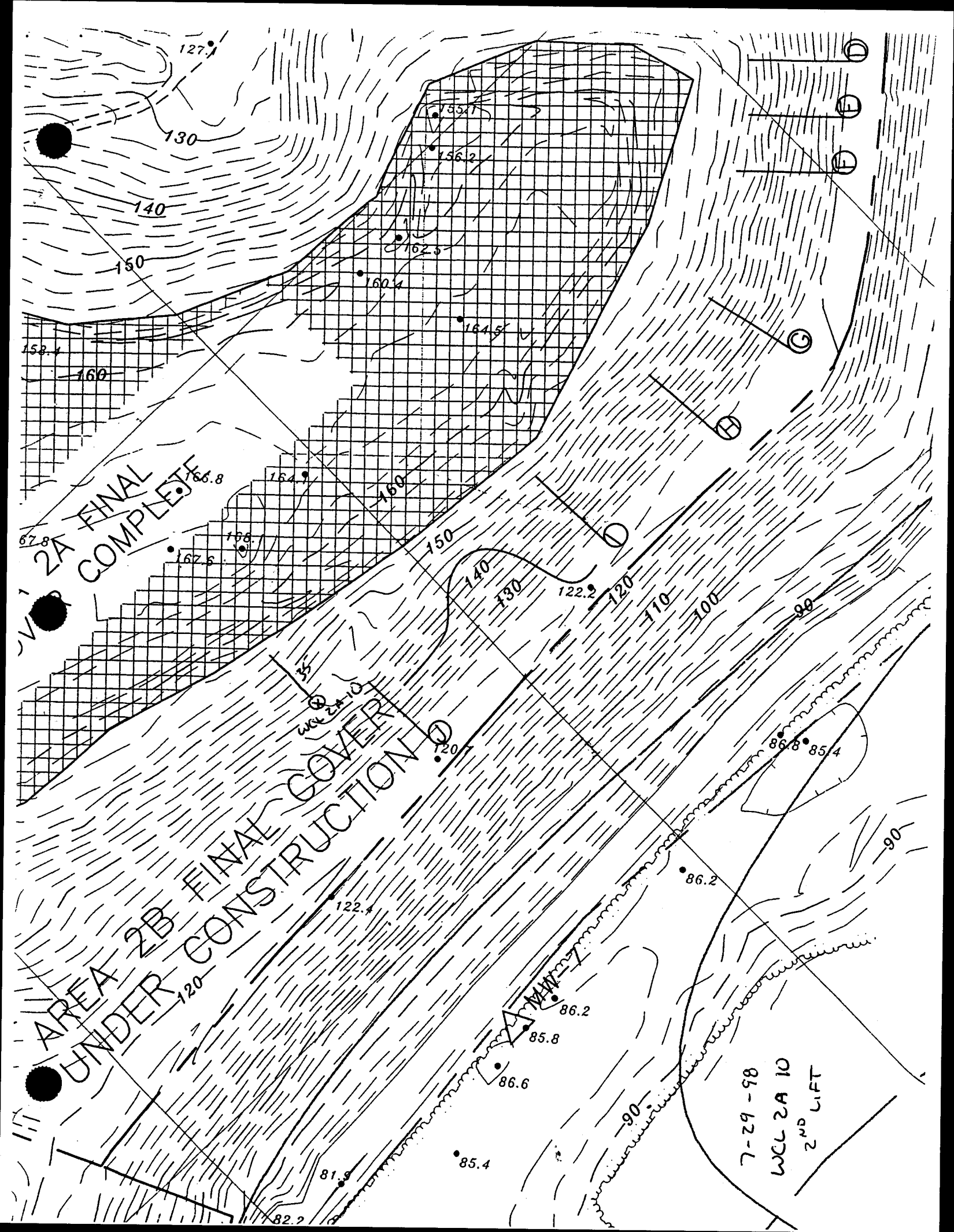
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

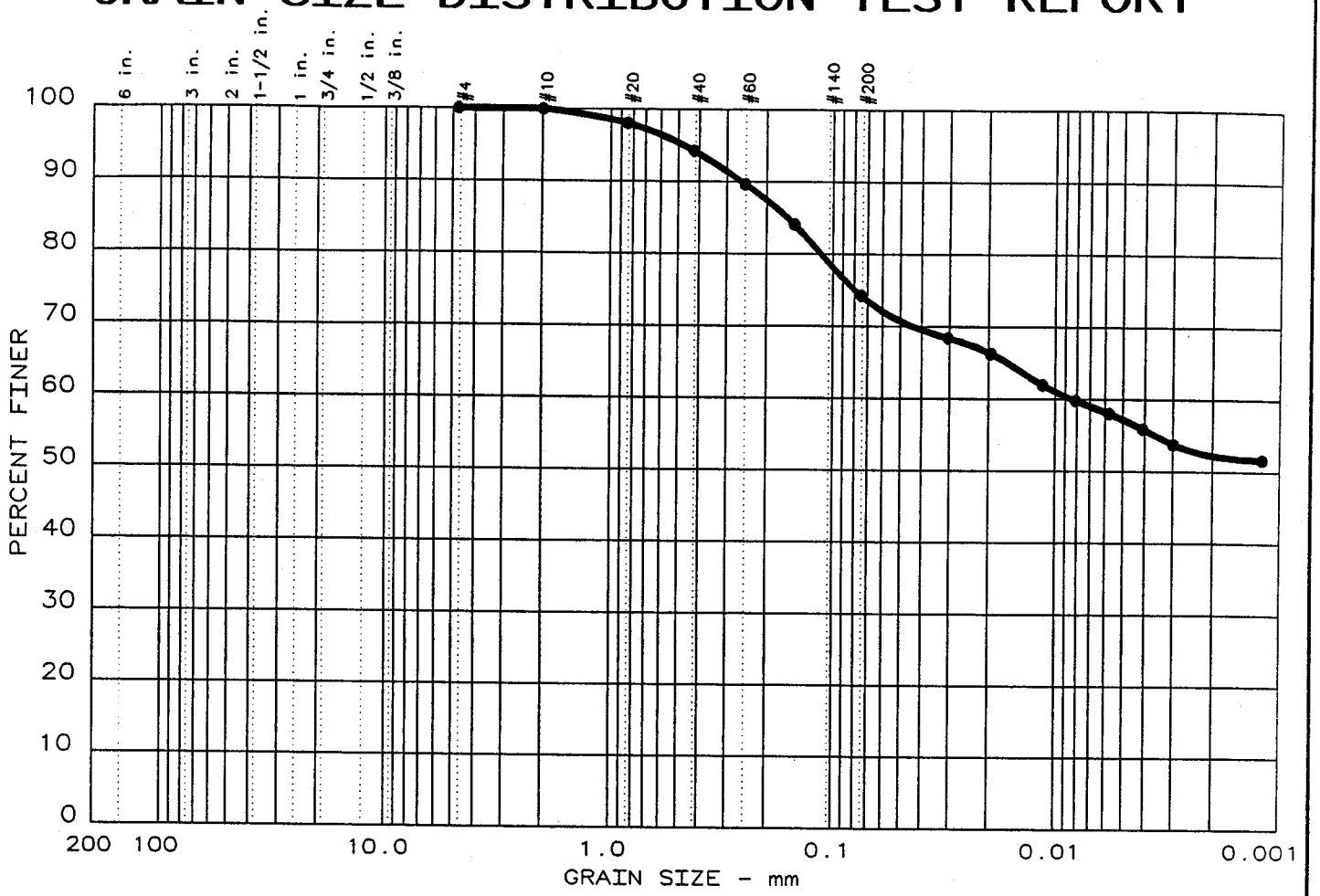
Remarks:

Second Lift/Sa

Fig. No.: WCL 2A-10


2A FINAL COMPLETE
AREA 2B FINAL COVER UNDER CONSTRUCTION
MW-7
WCL 2A-10
7-29-98
WCL 2A 10
2ND LIFT
127.1
130
140
150
160
155.1
156.2
162.3
160.4
164.5
158.4
166.8
164.1
167.6
168.
122.2
120
110
100
90
86.8
85.4
86.2
122.4
85.8
86.6
85.4
81.9
82.2

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	25.7	17.1	57.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	51	29	0.160							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: SAMPLE WCL 2A-9

Date: AUGUST 8, 1998

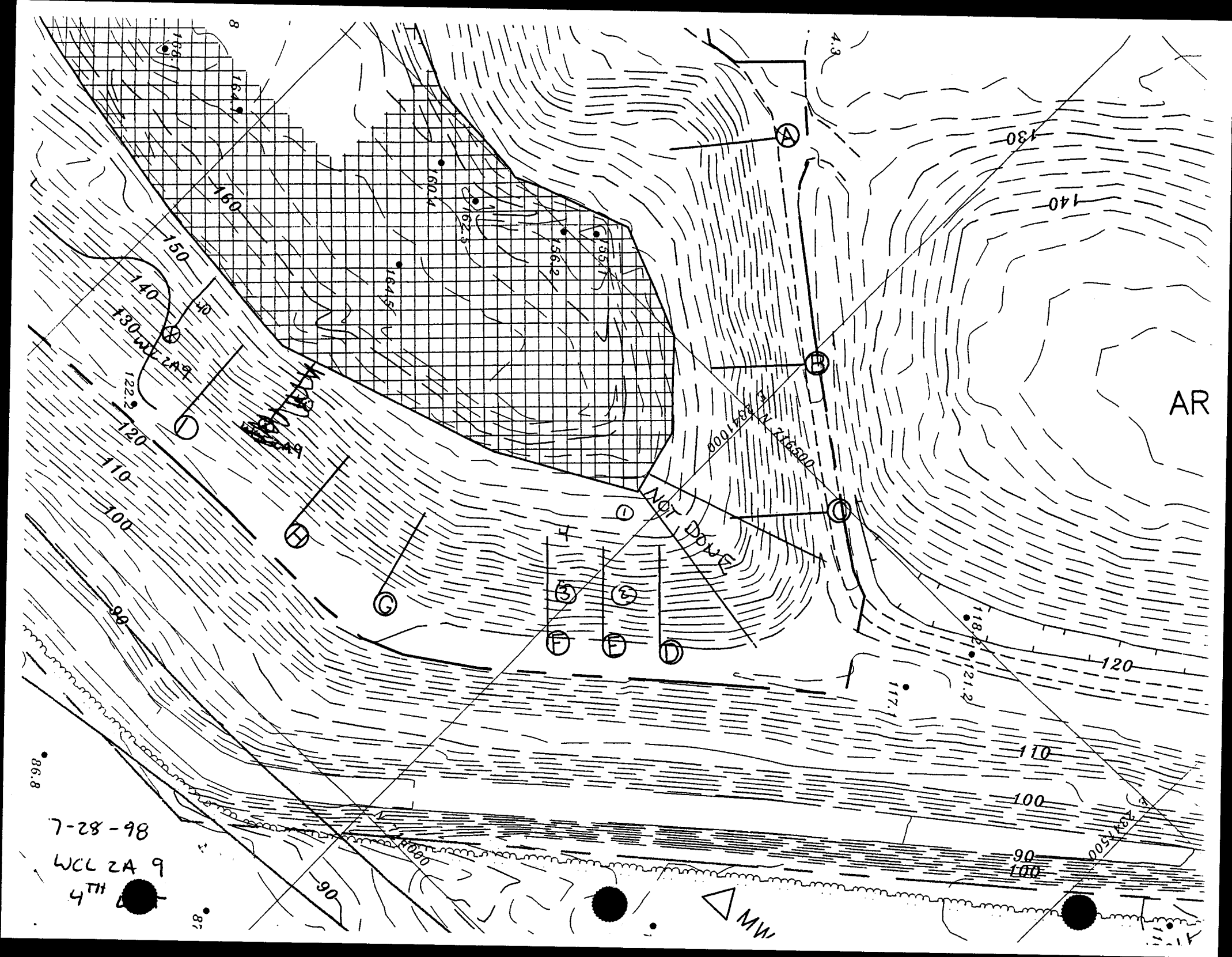
Remarks:

SAMPLE FROM FOURTH LIFT

GRAIN SIZE DISTRIBUTION TEST REPORT

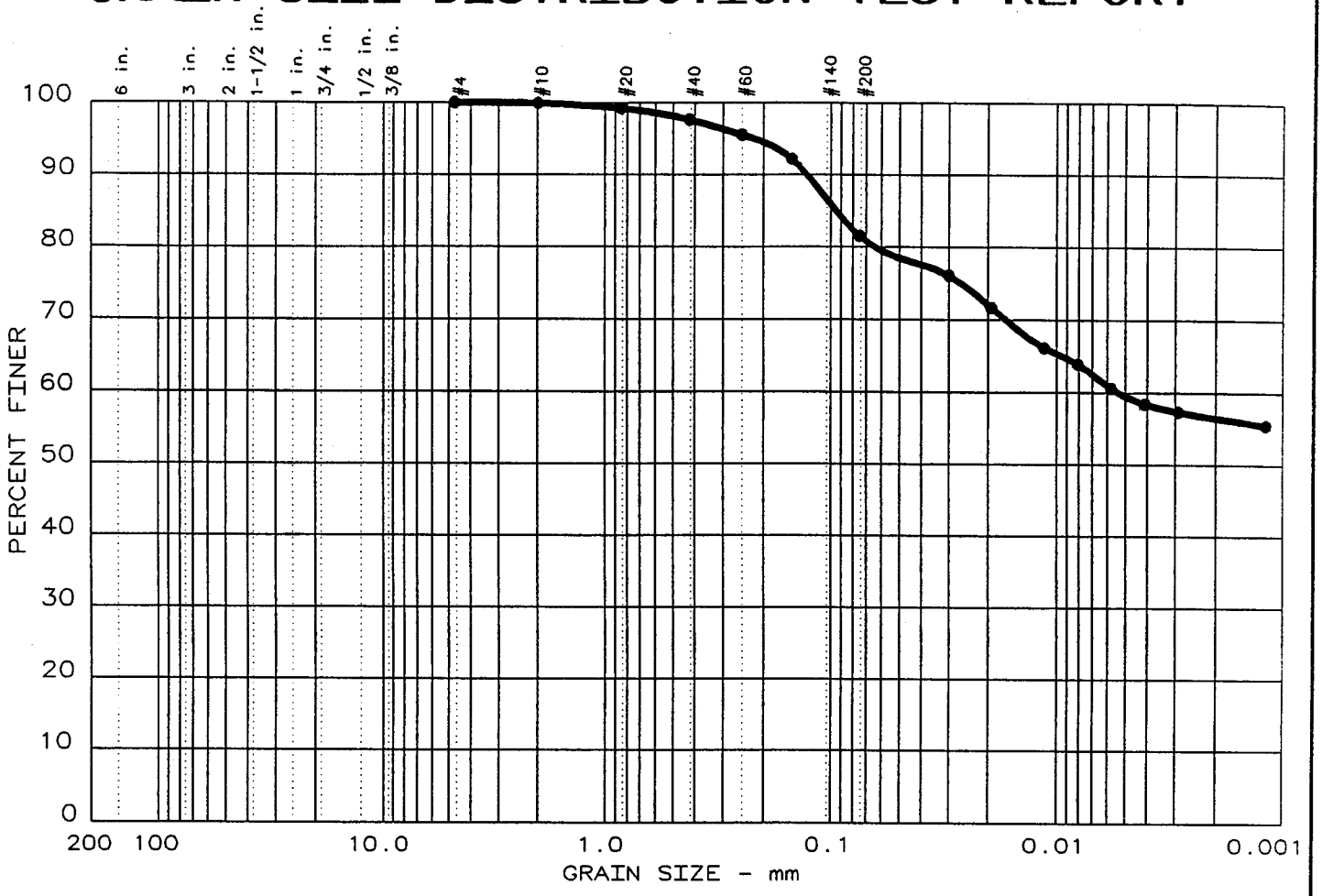
TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 2A-9



AR
NOT DONE
WCL 2A9
MW
7-28-98
WCL 2A 9
4TH

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	18.5	22.0	59.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	56	34	0.0944							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SLIGHTLY SANDY SLIGHTLY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: SAMPLE WCL-2A-11

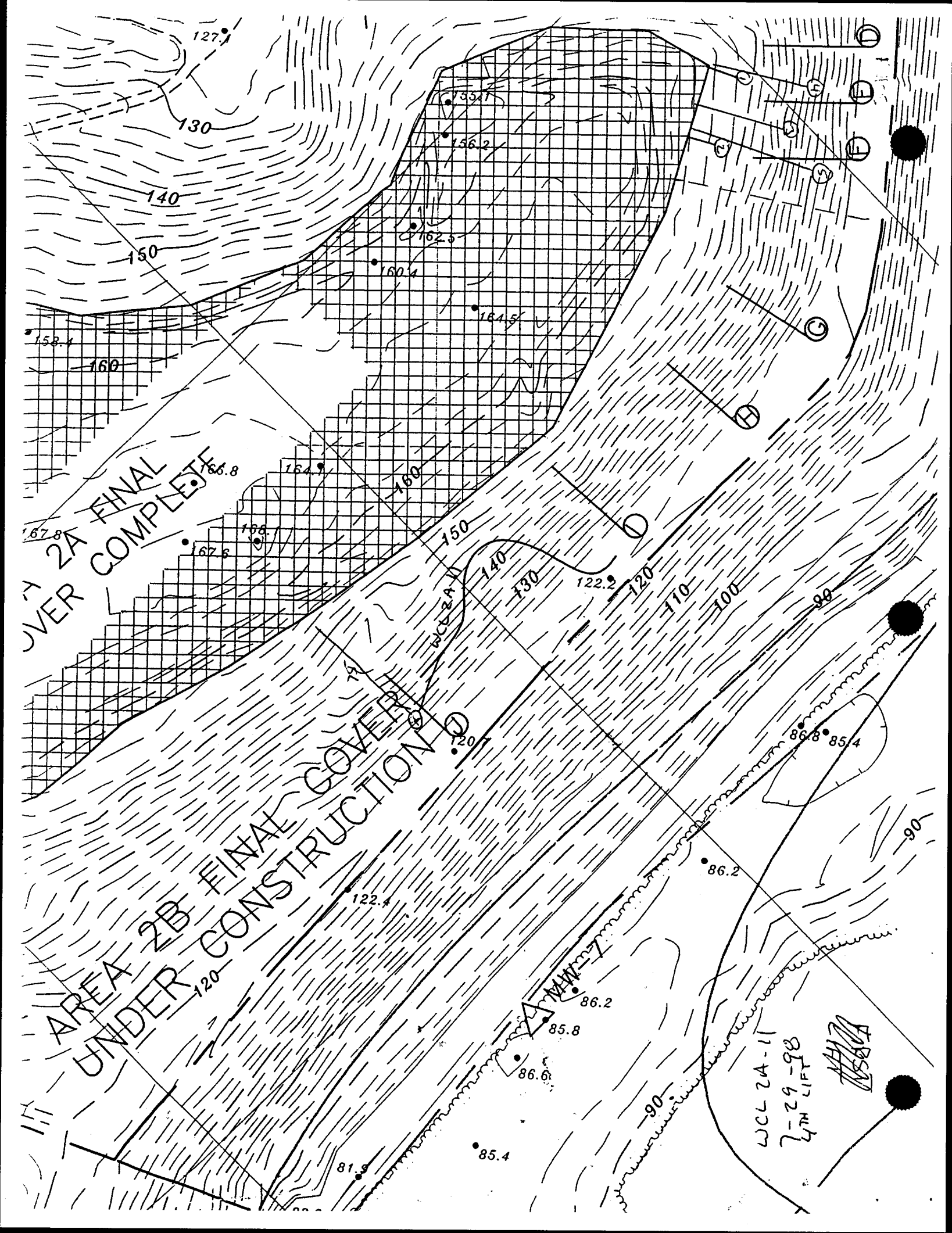
Date: AUGUST 1, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

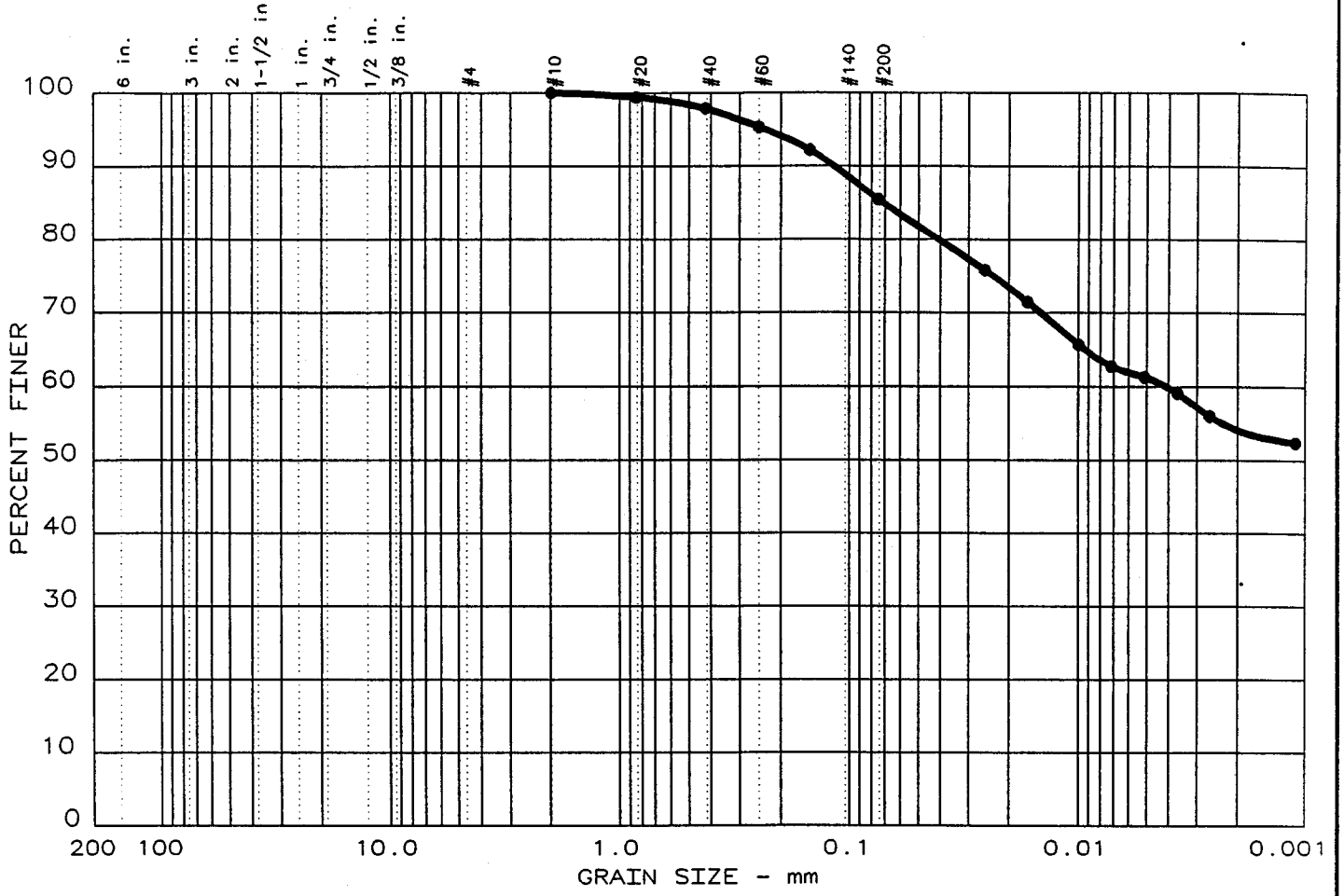
Remarks:
SAMPLE FROM FOURTH LIFT
FROM CAP LINER MATERIAL;
OBTAINED ON JULY 29, '98

Fig. No.: WCL 2A-11



AREA 2B FINAL COVER
UNDER CONSTRUCTION
2A FINAL
COVER COMPLETE
WCL 2A-11
7-29-98
4TH LIFT
MW-7
127.1
130
140
150
160
155.1
156.2
162.5
160.4
164.5
158.4
166.8
164.1
167.8
168.1
167.6
122.2
120
110
100
90
120.7
86.8
85.4
86.2
122.4
86.2
85.8
86.6
85.4
81.9

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	0.0	14.6	24.2	61.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	63	38								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 13, LIFT 4

Date: AUGUST 15, 1998

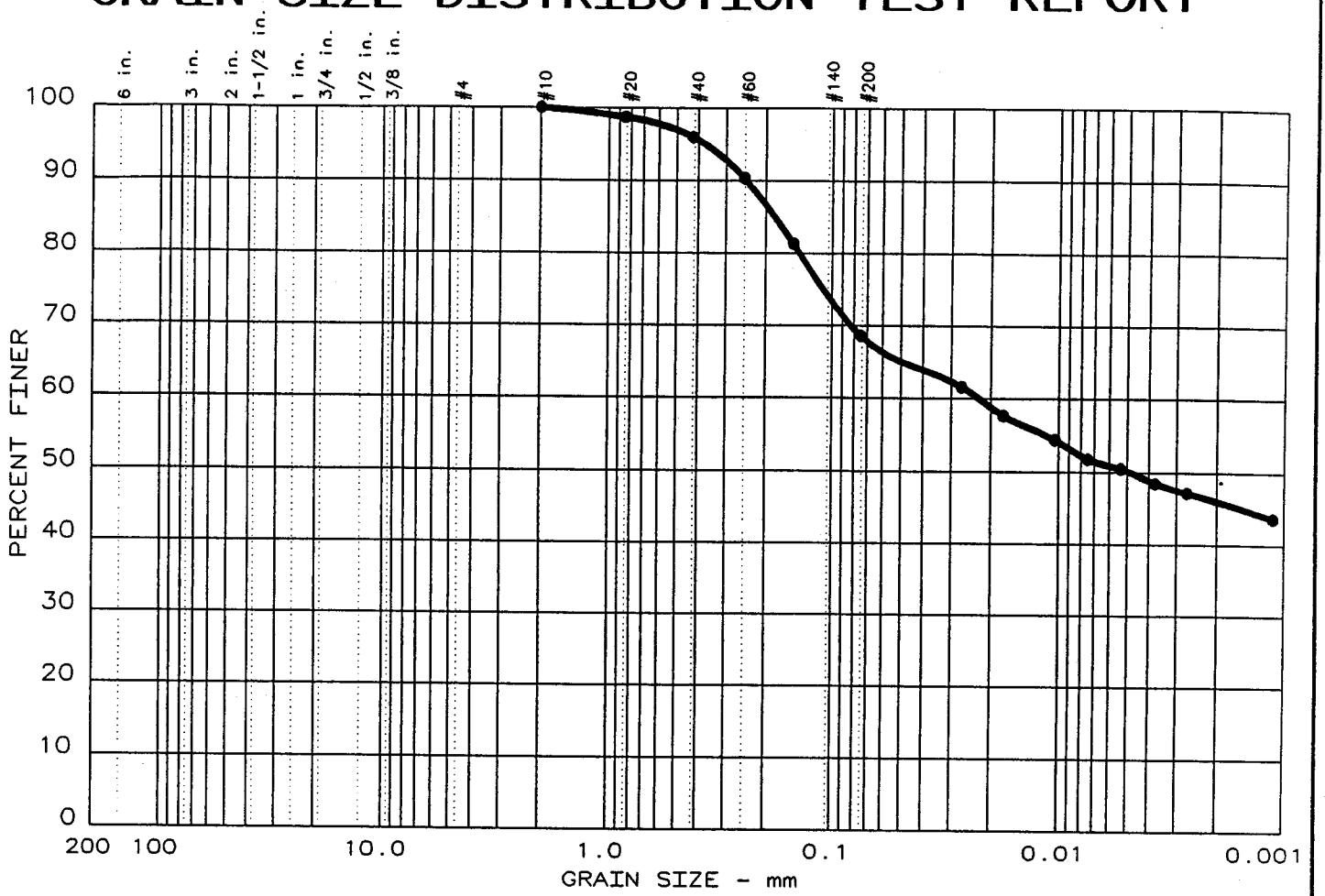
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-2A-13

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.0	31.4	18.5	50.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	53	32	0.180		0.0047					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 14

Date: AUGUST 15, 1998

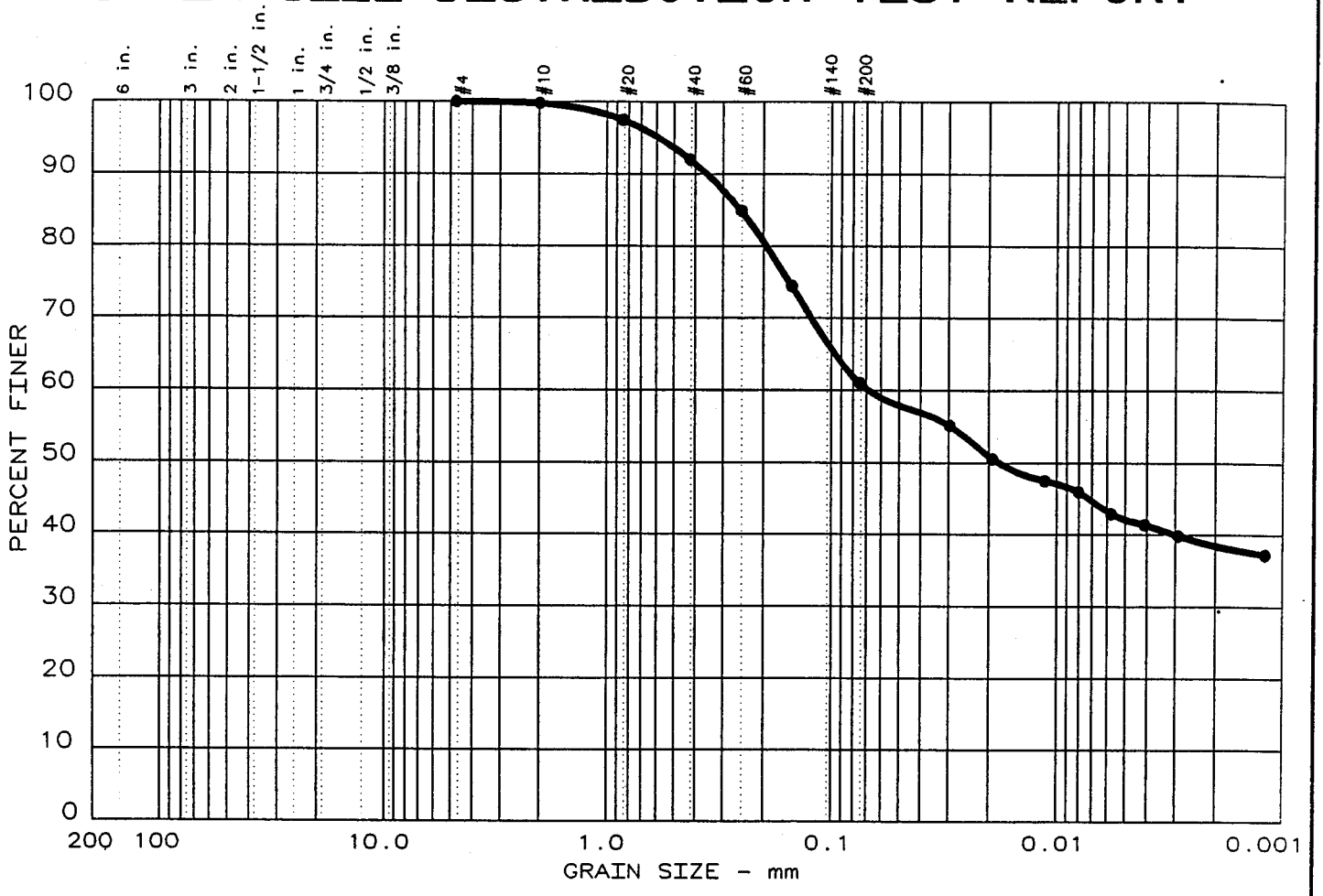
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-2A-14

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.0	38.9	19.1	42.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	51	33	0.251		0.0180					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 15

Date: AUGUST 15, 1998

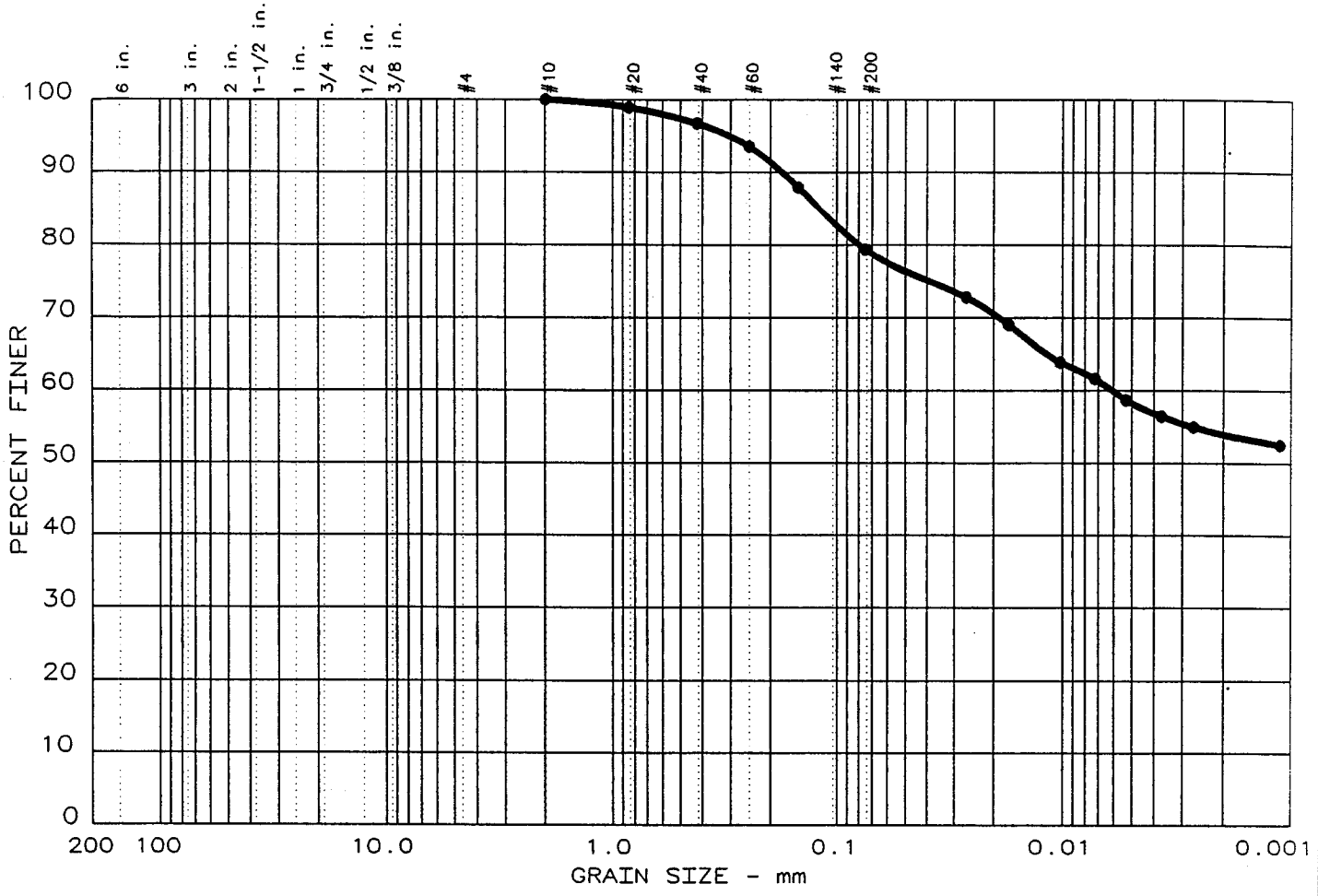
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Remarks:

Fig. No.: WCL-2A-15

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.0	20.6	21.2	58.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	61	36	0.119							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 16, SECOND LIFT

Date: AUGUST 19, 1998

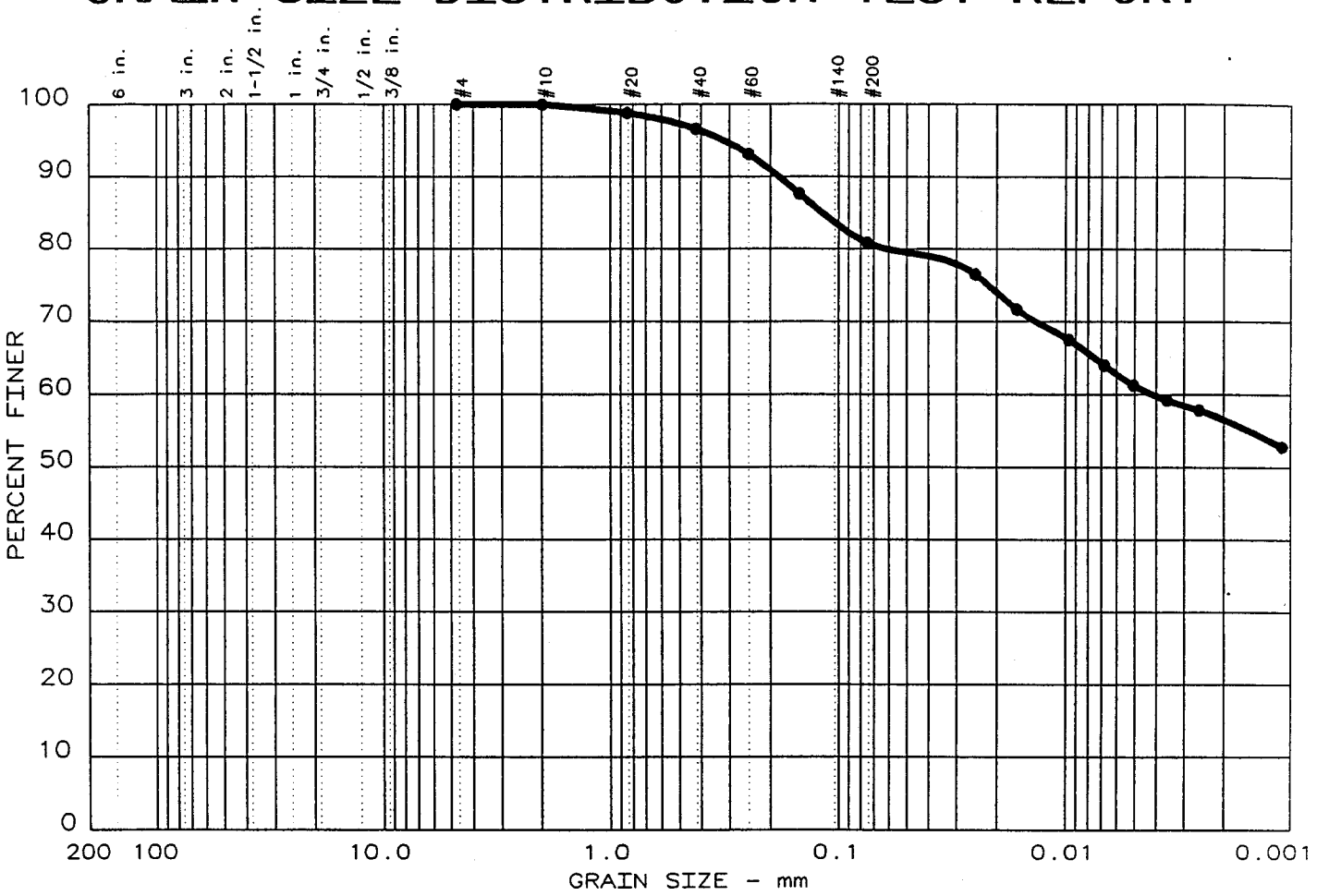
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 2A-16

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.0	19.1	19.7	61.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	60	33	0.119							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 17, FOURTH LIFT

Date: AUGUST 19, 1998

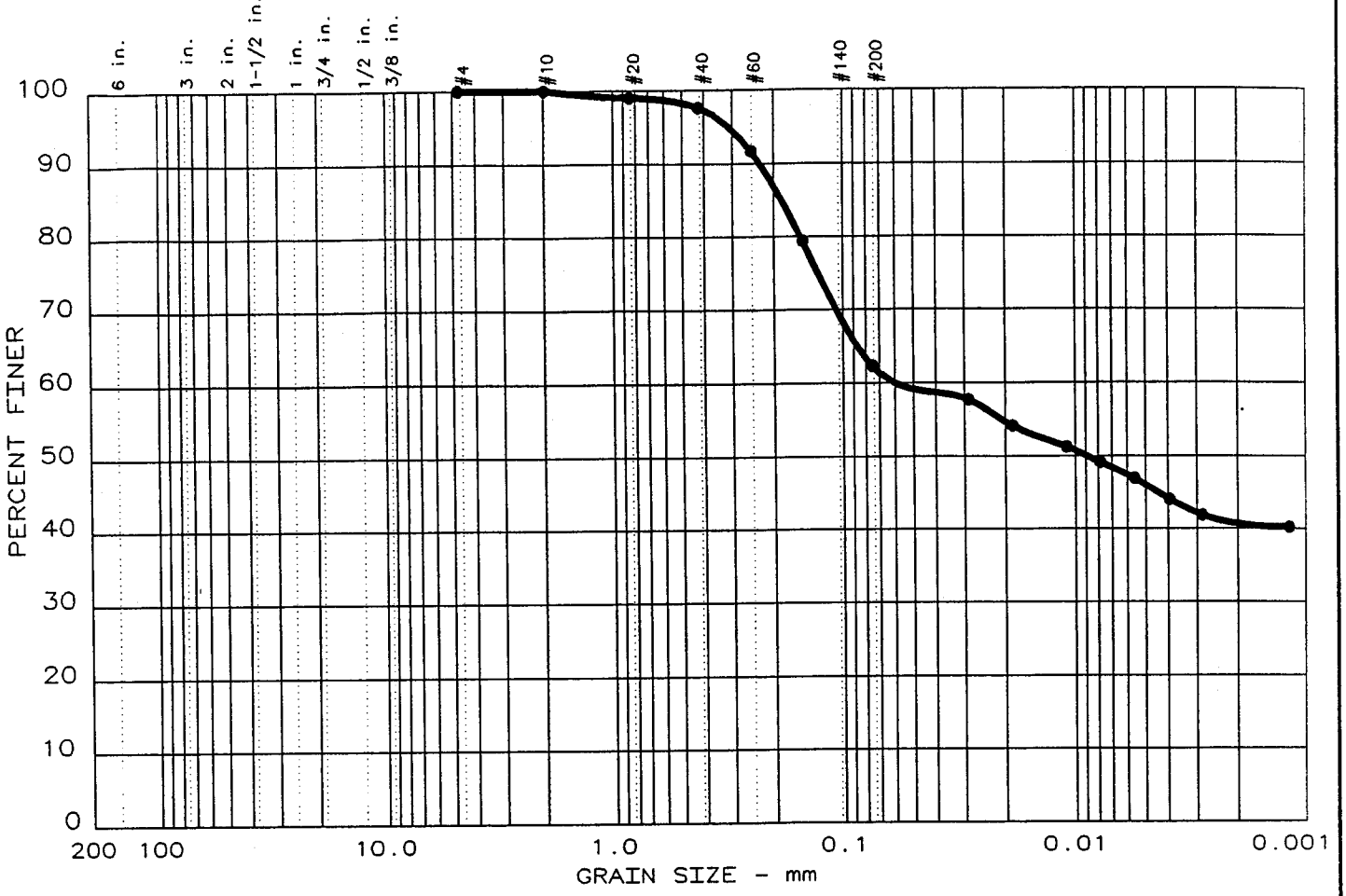
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 2A-17

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	0.0	37.6	16.4	46.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	52	33	0.184		0.0089					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 18, SECOND LIFT

Date: AUGUST 19, 1998

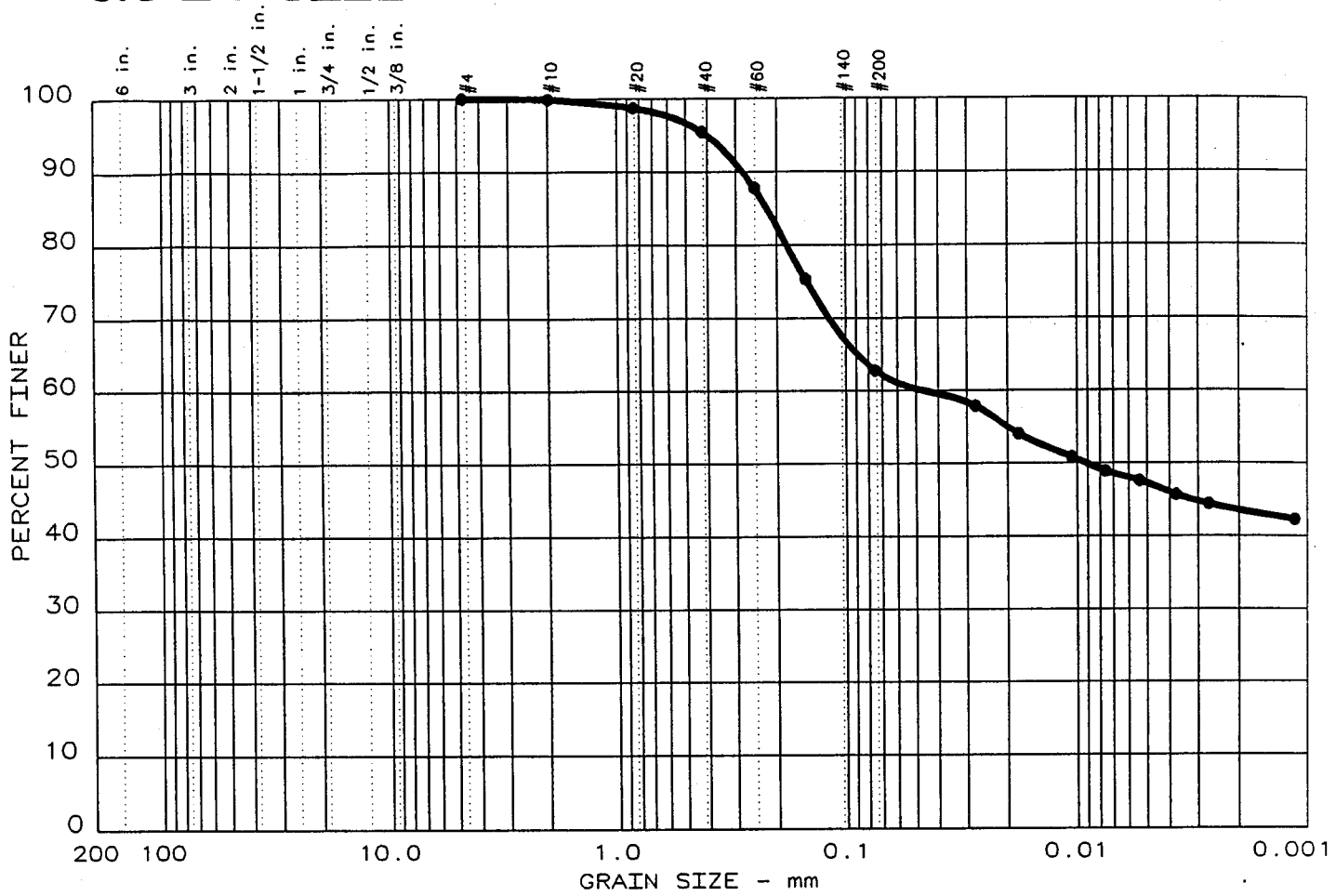
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Remarks:

Fig. No.: WCL 2A-18

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	0.0	37.2	15.6	47.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	53	31	0.219		0.0092					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 19, FOURTH LIFT

Date: AUGUST 19, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 2A-19

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.38
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 93.8
Moisture Before Test (%): 29.5
Moisture After Test (%): 30.4

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.8	
Diff. Head (psi):	3.2	
Flow Rate (cc/sec):	5.24 x 10^-5	
Perm. (cm/sec):	5.32 x 10^-8	

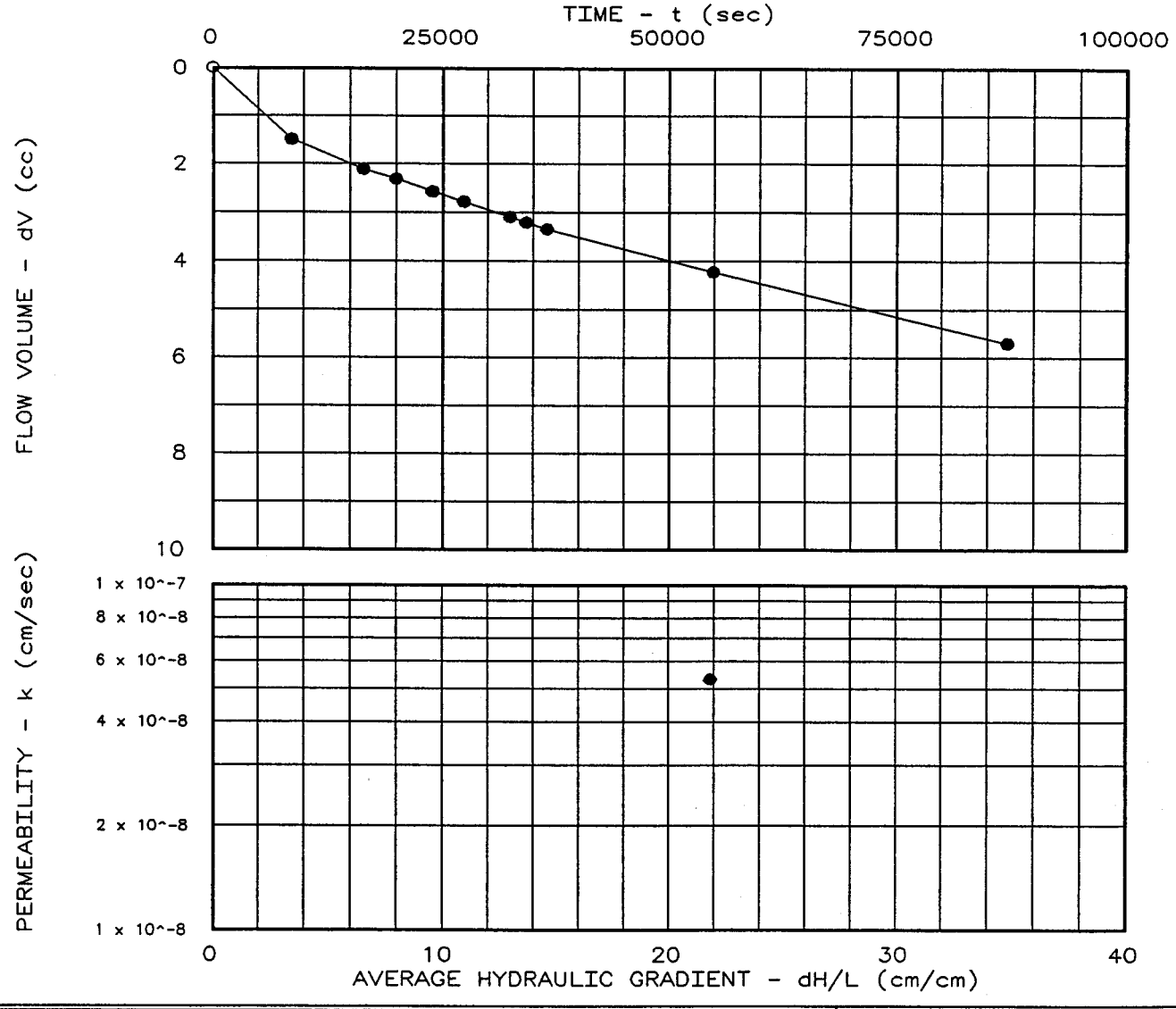
SAMPLE DATA:

Sample Identification: WCL 2A #8

Visual Description: Gray, Yellow and Tan Silty, Sandy Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 90.0%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-7-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.17
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 91.6
Moisture Before Test (%): 27.0
Moisture After Test (%): 32.7

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	6.02 x 10^-4	
Perm. (cm/sec):	5.91 x 10^-7	

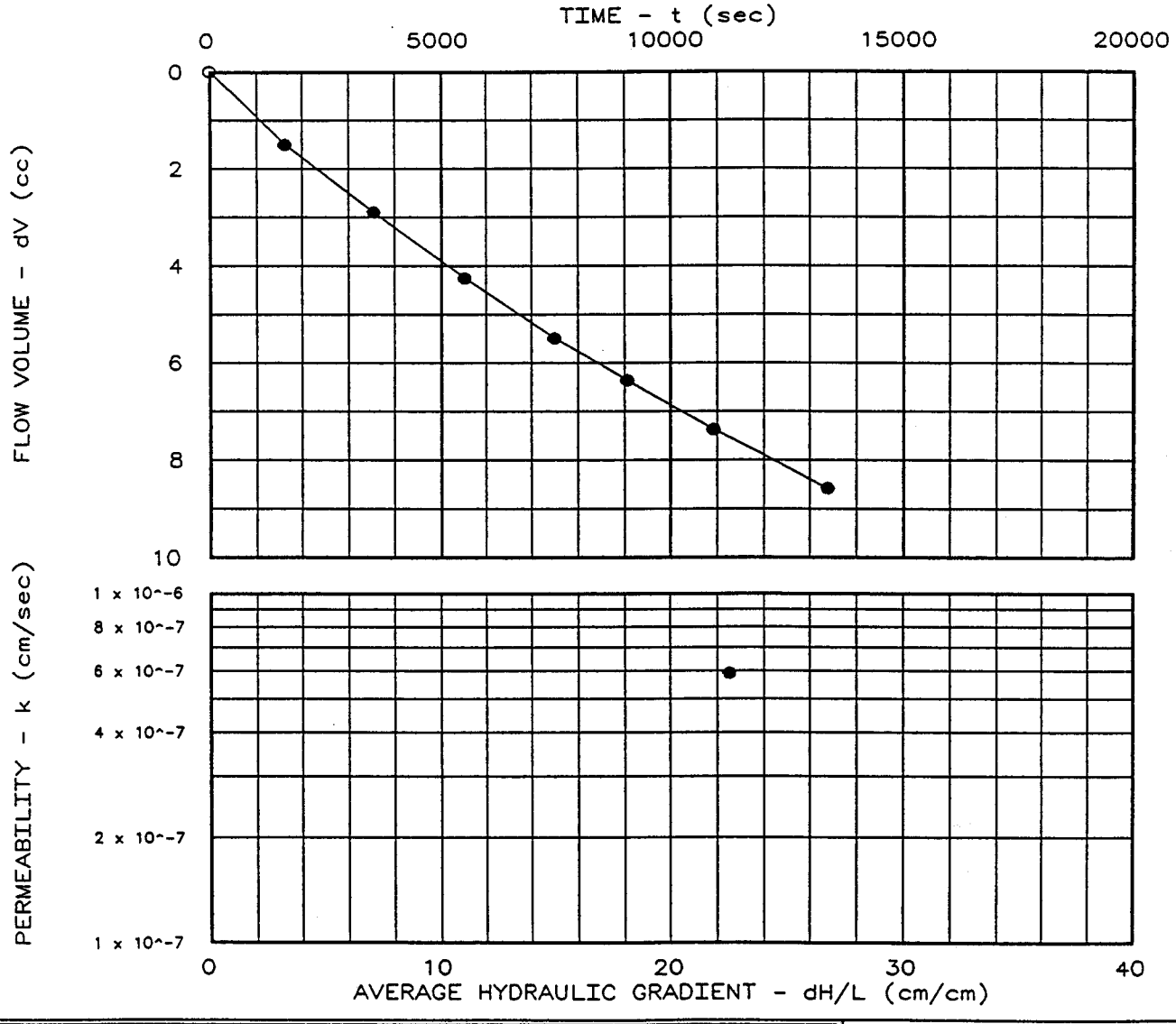
SAMPLE DATA:

Sample Identification: WCL 2A - 9

Visual Description: Gray, Yellow and Tan
Silty, Sandy, Clay

Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 87.9%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 8-3-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

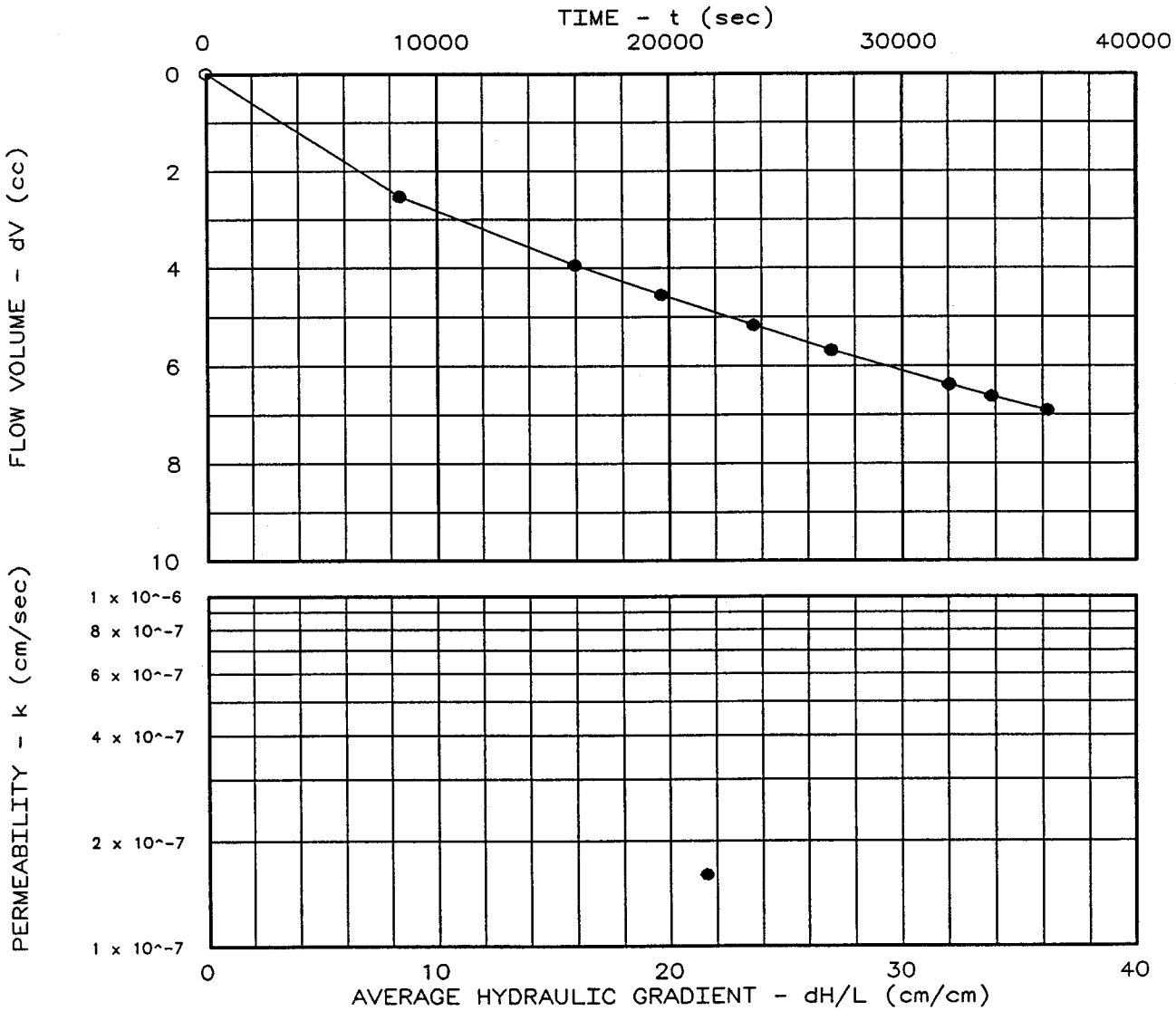
PERMEABILITY TEST REPORT

TEST DATA:
Specimen Height (cm): 9.50
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 85.4
Moisture Before Test (%): 35.4
Moisture After Test (%): 37.6
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 66.0
Test Pressure(psi): 63.0
Back Pressure(psi): 60.1
Diff. Head (psi): 2.9
Flow Rate (cc/sec): 1.56 x 10^-4
Perm. (cm/sec): 1.60 x 10^-7

SAMPLE DATA:
Sample Identification: WCL 2A #10

Visual Description: Gray, Yellow and Tan Silty, Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 81.9%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-7-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

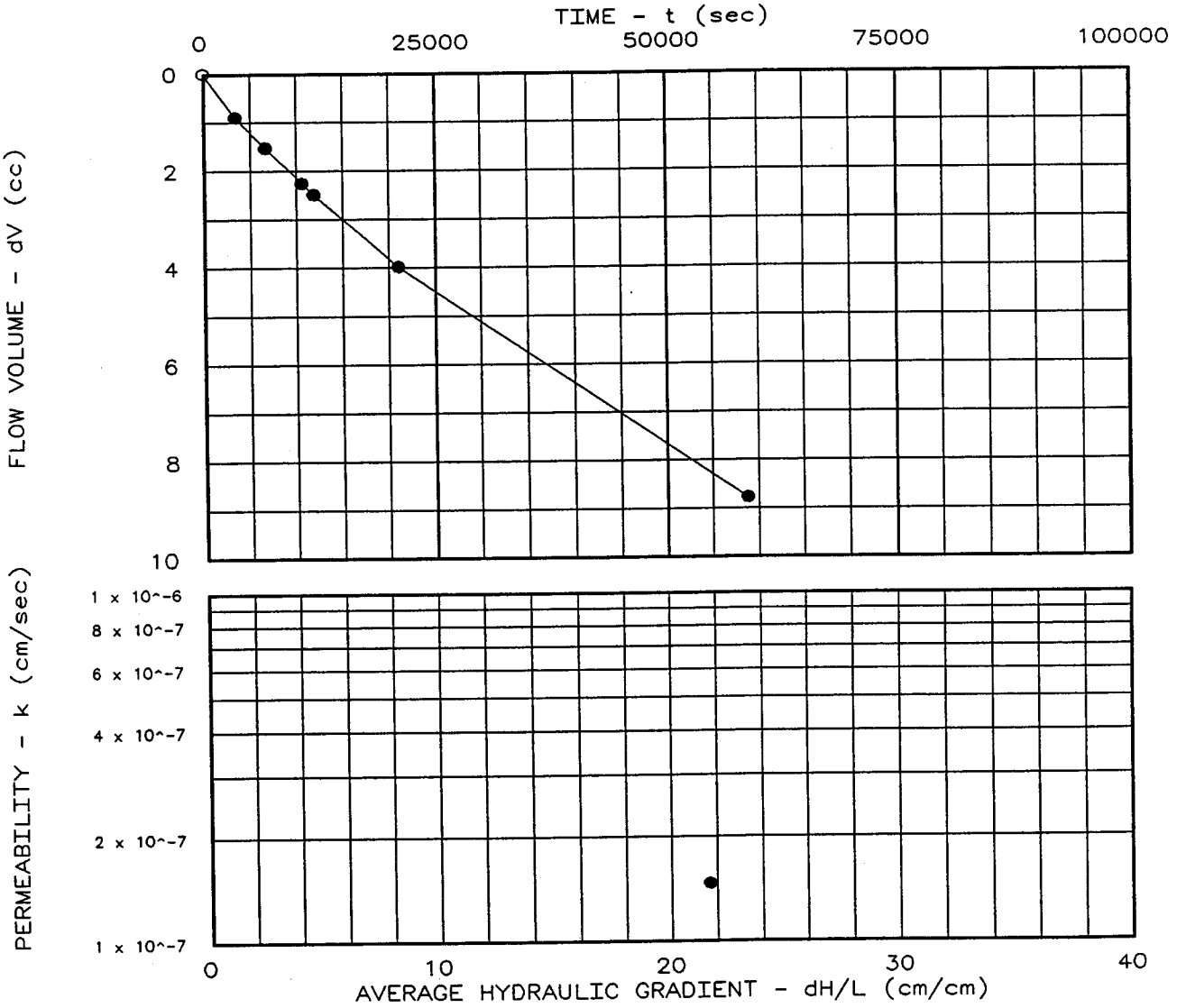
Specimen Height (cm): 10.44
Specimen Diameter (cm): 7.13
Dry Unit Weight (pcf): 83.5
Moisture Before Test (%): 36.0
Moisture After Test (%): 39.2

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.8	
Diff. Head (psi):	3.2	
Flow Rate (cc/sec):	1.39 x 10^-4	
Perm. (cm/sec):	1.47 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 2A #11
4th Lift
Visual Description: Gray, Yellow and Tan
Silty, Sandy Clay
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 80.1%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-7-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: August 28, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

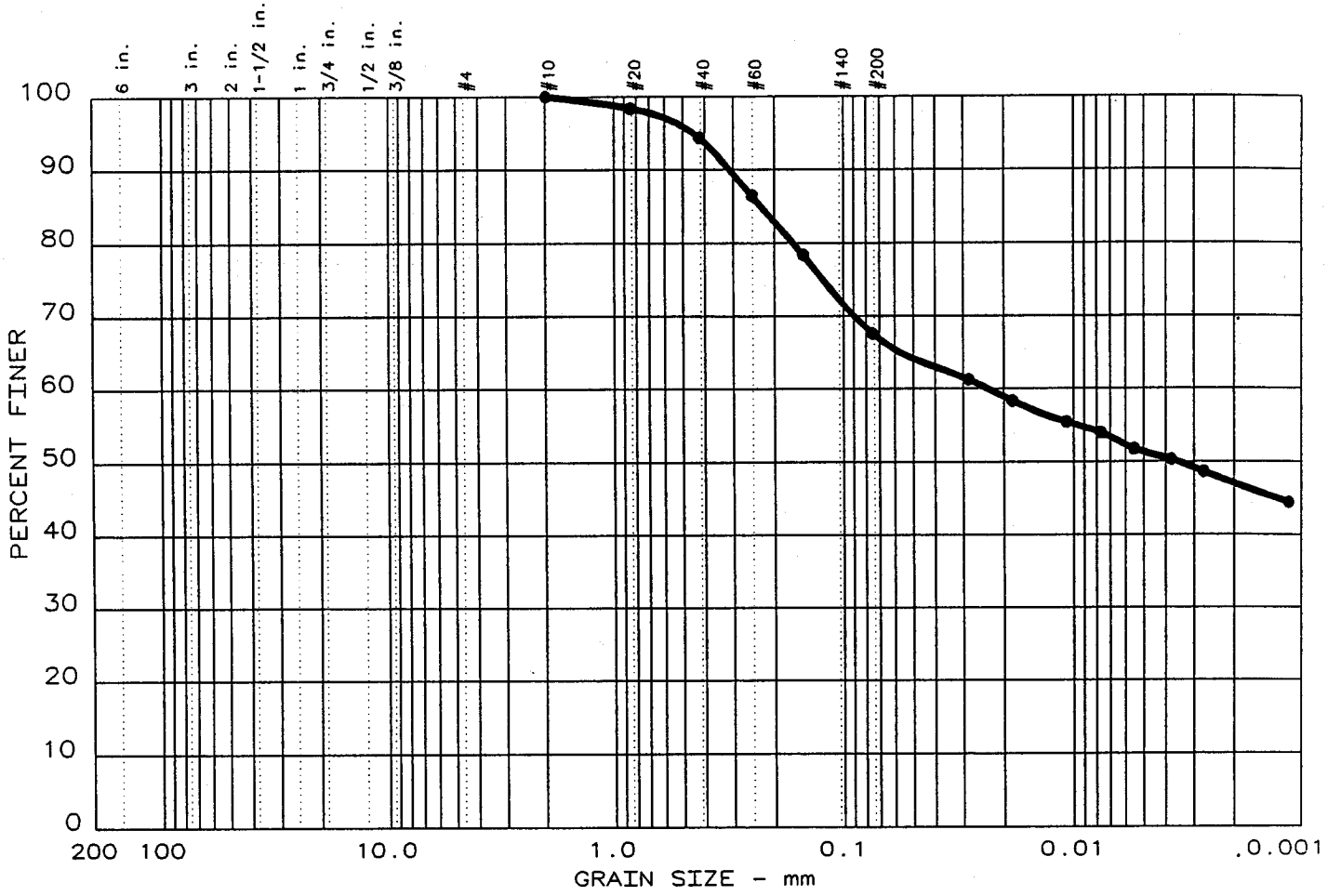
☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Gary Jones

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	15	0.0	0.0	32.4	16.3	51.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	55	36	0.226		0.0035					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; RETEST OF SAMPLE 17

Date: AUGUST 22, 1998

Remarks:

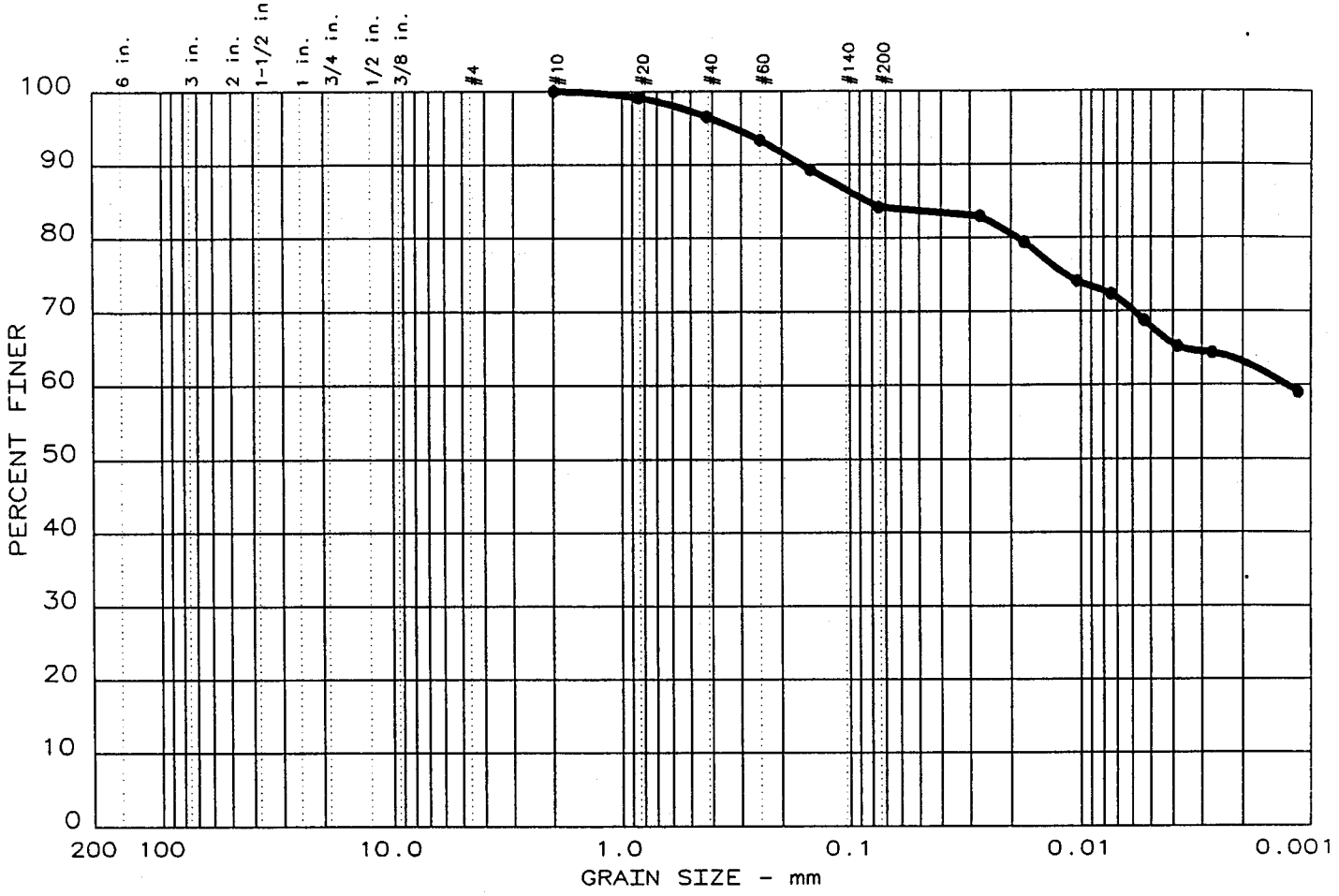
SAMPLE RETEST OF 17

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL2A-17R

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	15.8	16.3	67.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	62	42	0.0832							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLI SILTY SLI SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: WCL-2A; RETEST # 1; FIFTH LIFT

Date: AUGUST 28, 1998

Remarks:

SAMPLED 8/19/98

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-2A

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 2, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

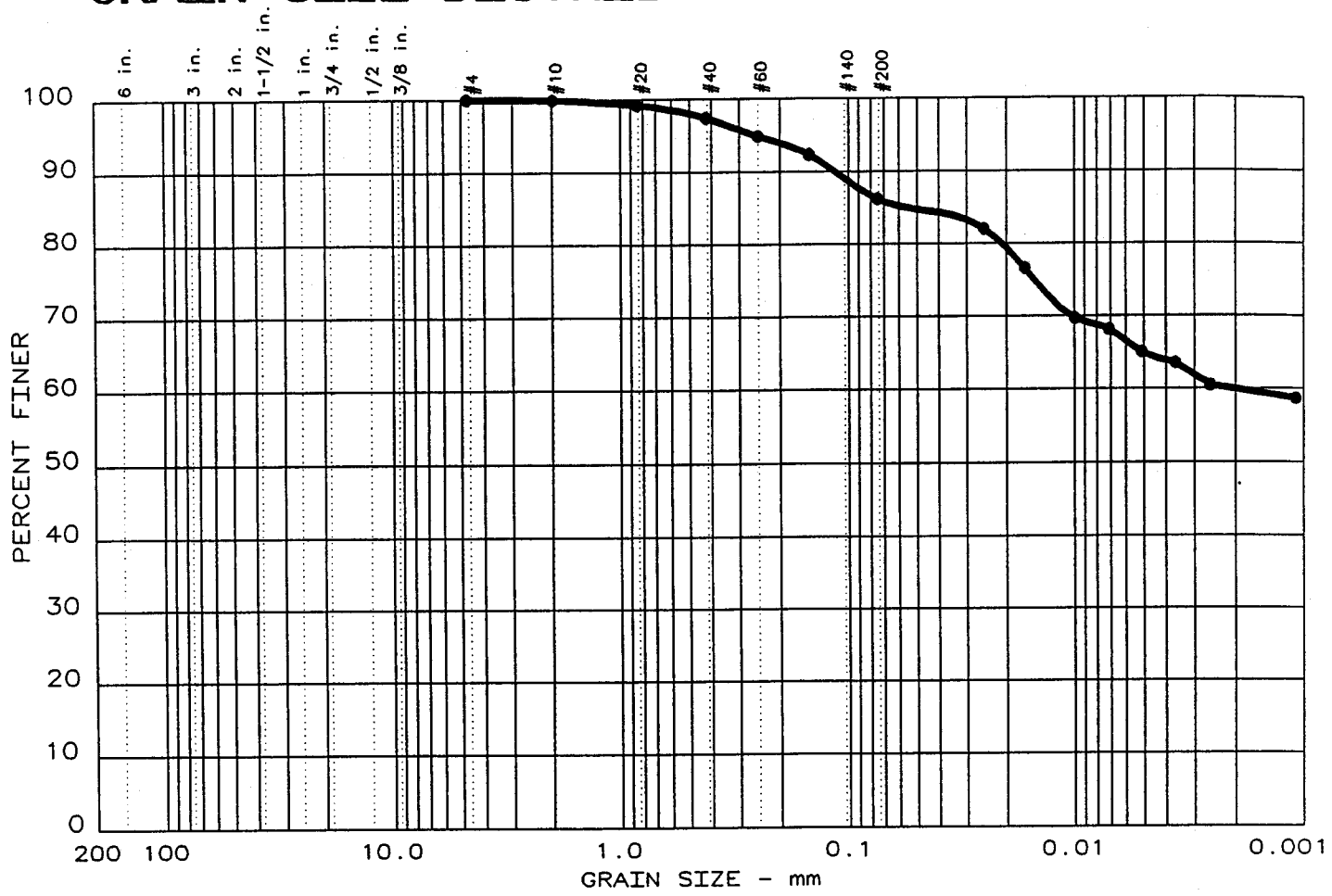
☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Gary Jones

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	0.0	13.8	21.3	64.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	56	31								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLI SANDY SLI SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 20

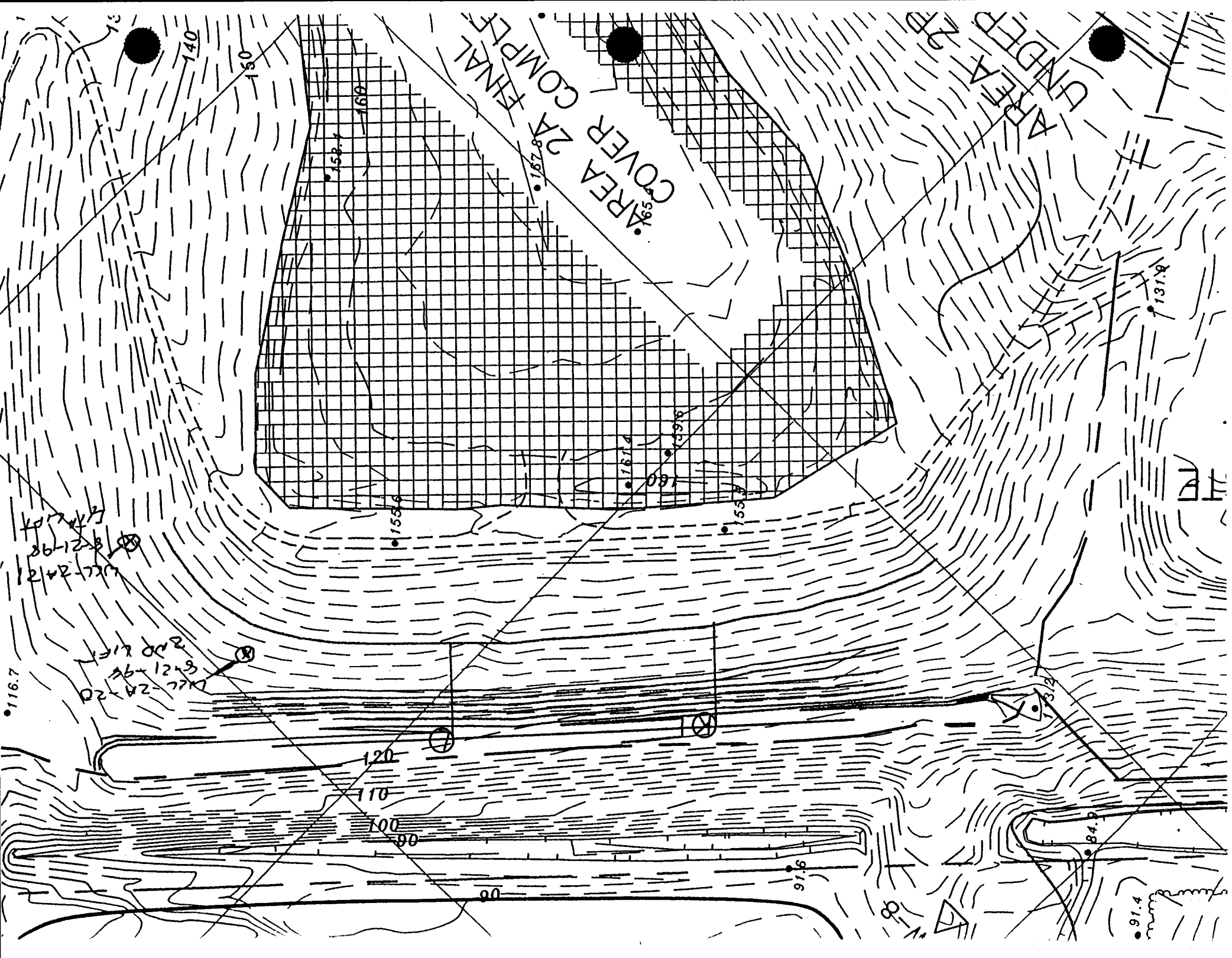
Date: AUGUST 31, 1998

Remarks:

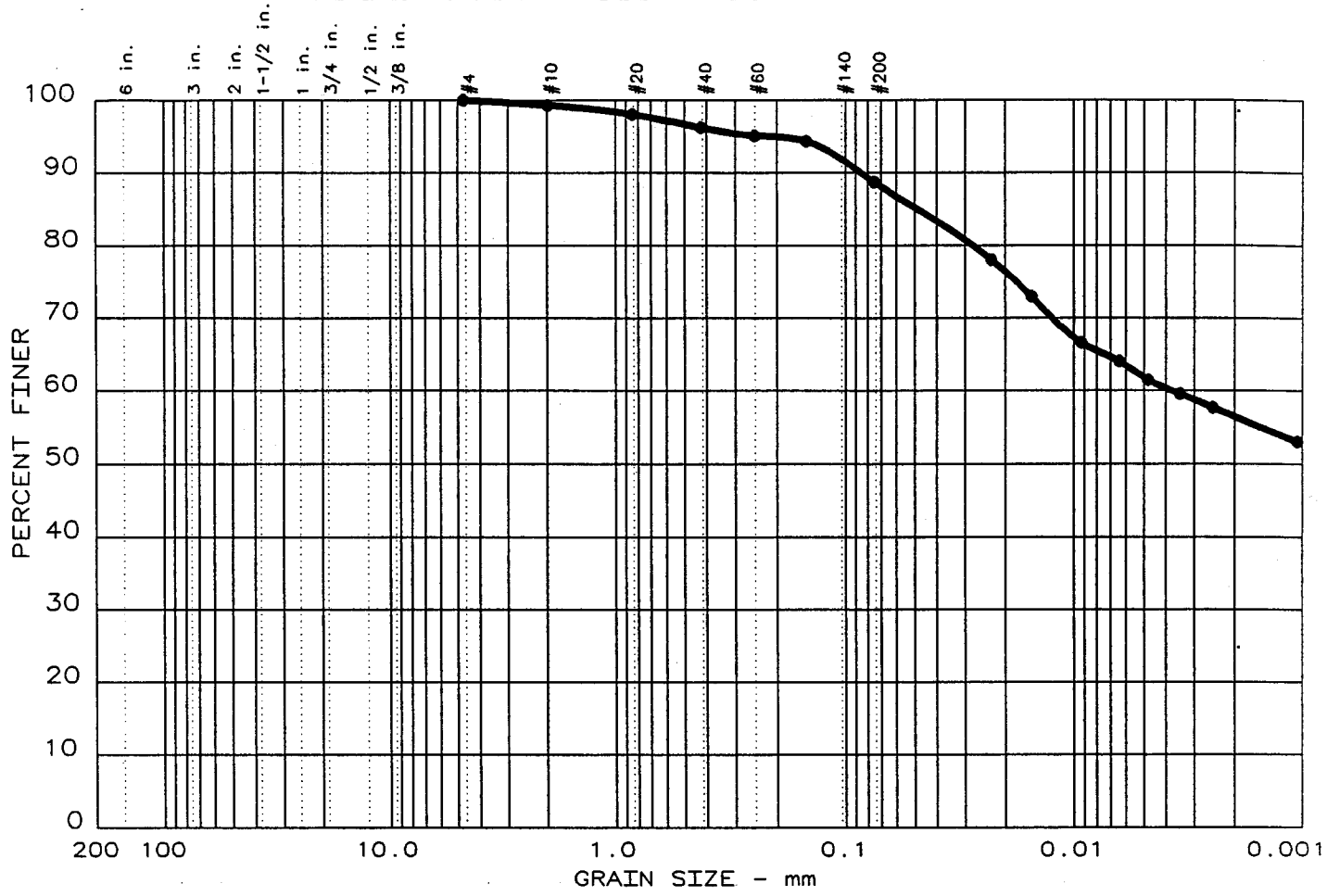
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-2A-20


AREA 2A FINAL
COVER COMPLE
AREA 2B
UNDER
140
150
160
158.1
167.8
165.4
131.8
159.6
161.4
160
155.6
155.3
116.7
120
110
100
90
90
91.6
84.9
91.4

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	0.0	11.3	26.9	61.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	58	34								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 21

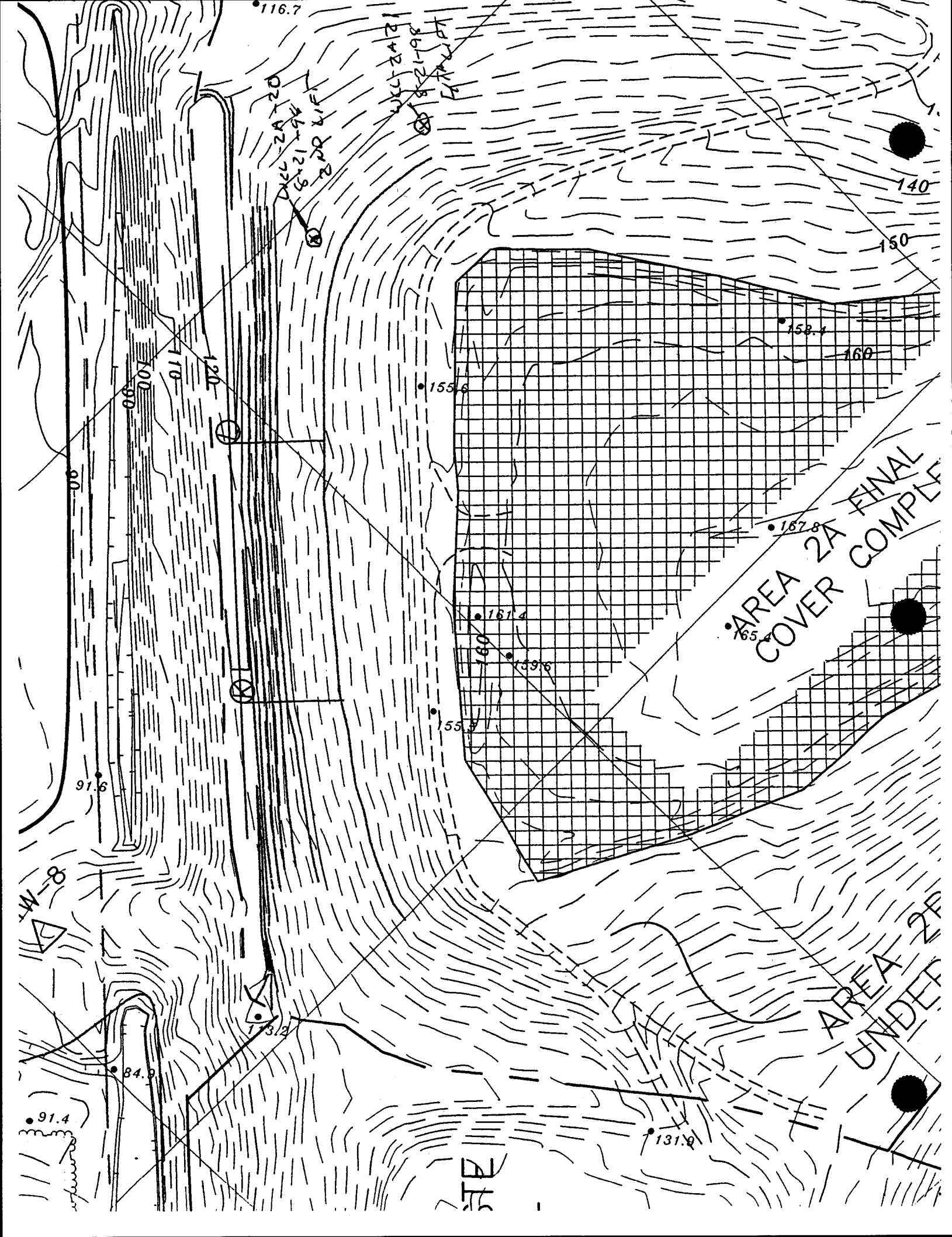
Date: AUGUST 31, 1998

Remarks:

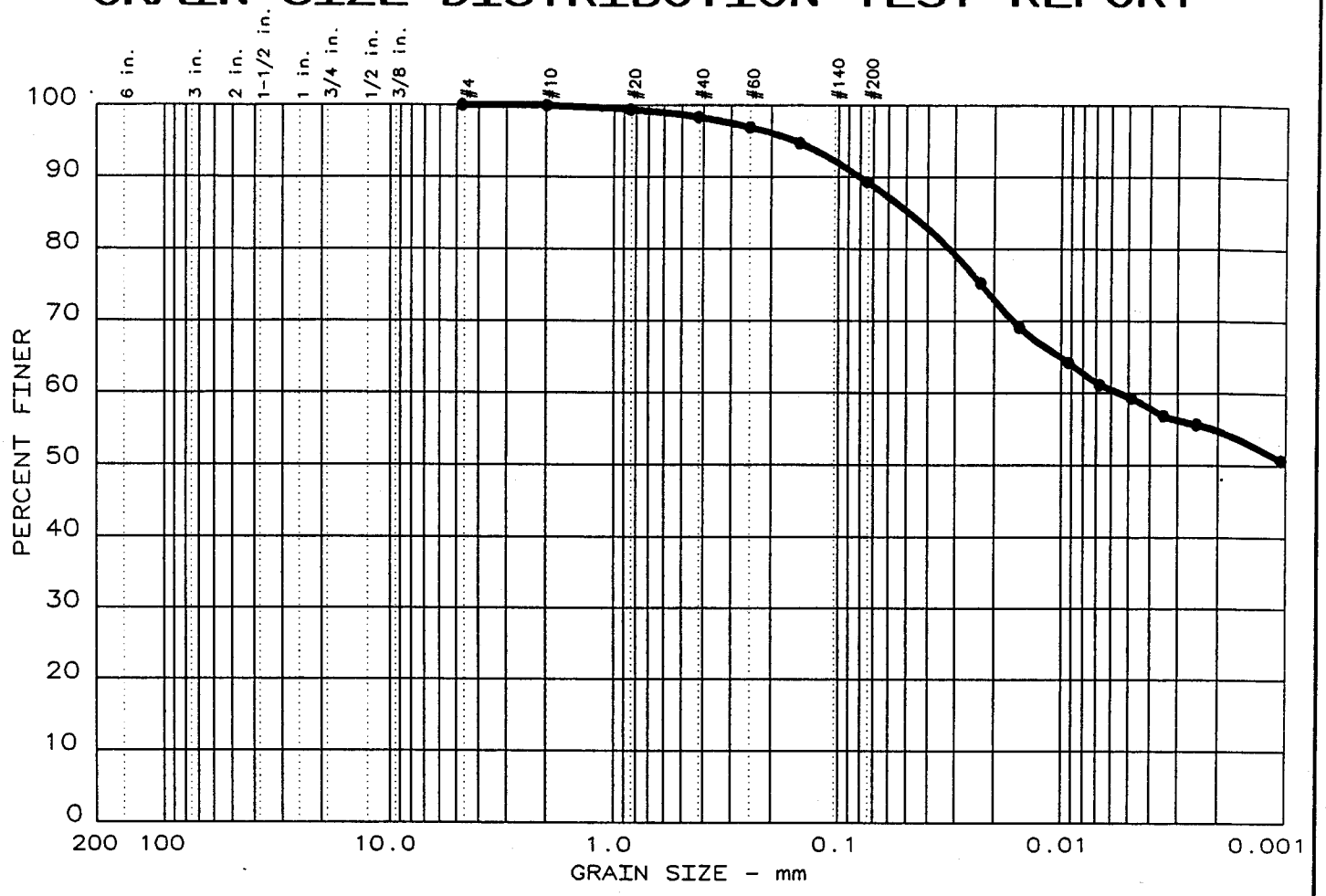
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-2A-21


116.7
140
150
158.4
160
155.6
167.8
AREA 2A FINAL
COVER COMPLE
161.4
165.4
159.6
155.3
91.6
W-8
131.2
84.9
91.4
131.9
AREA 2F
UNDEF

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	0.0	10.7	29.8	59.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	60	35								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 22

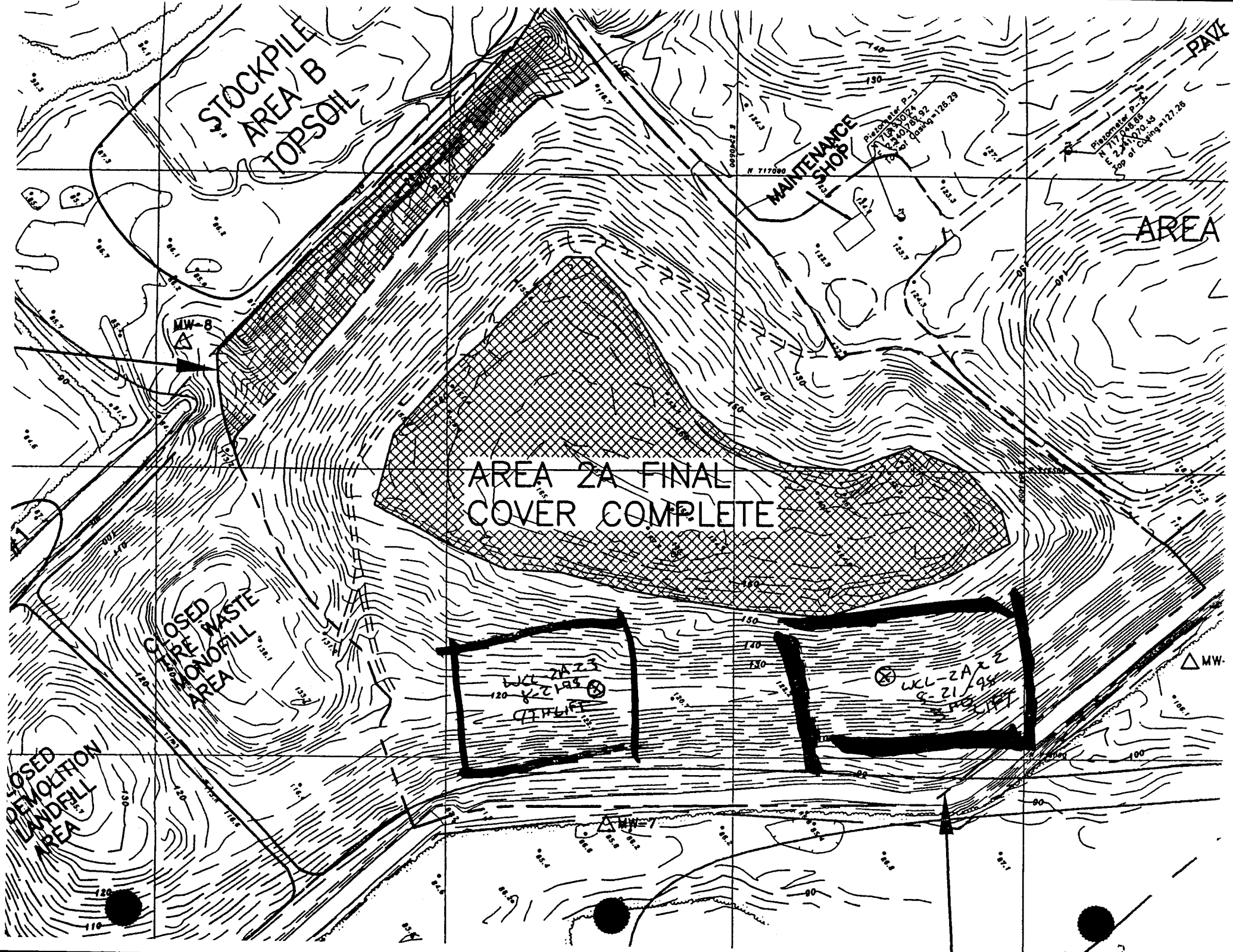
Date: AUGUST 31, 1998

Remarks:

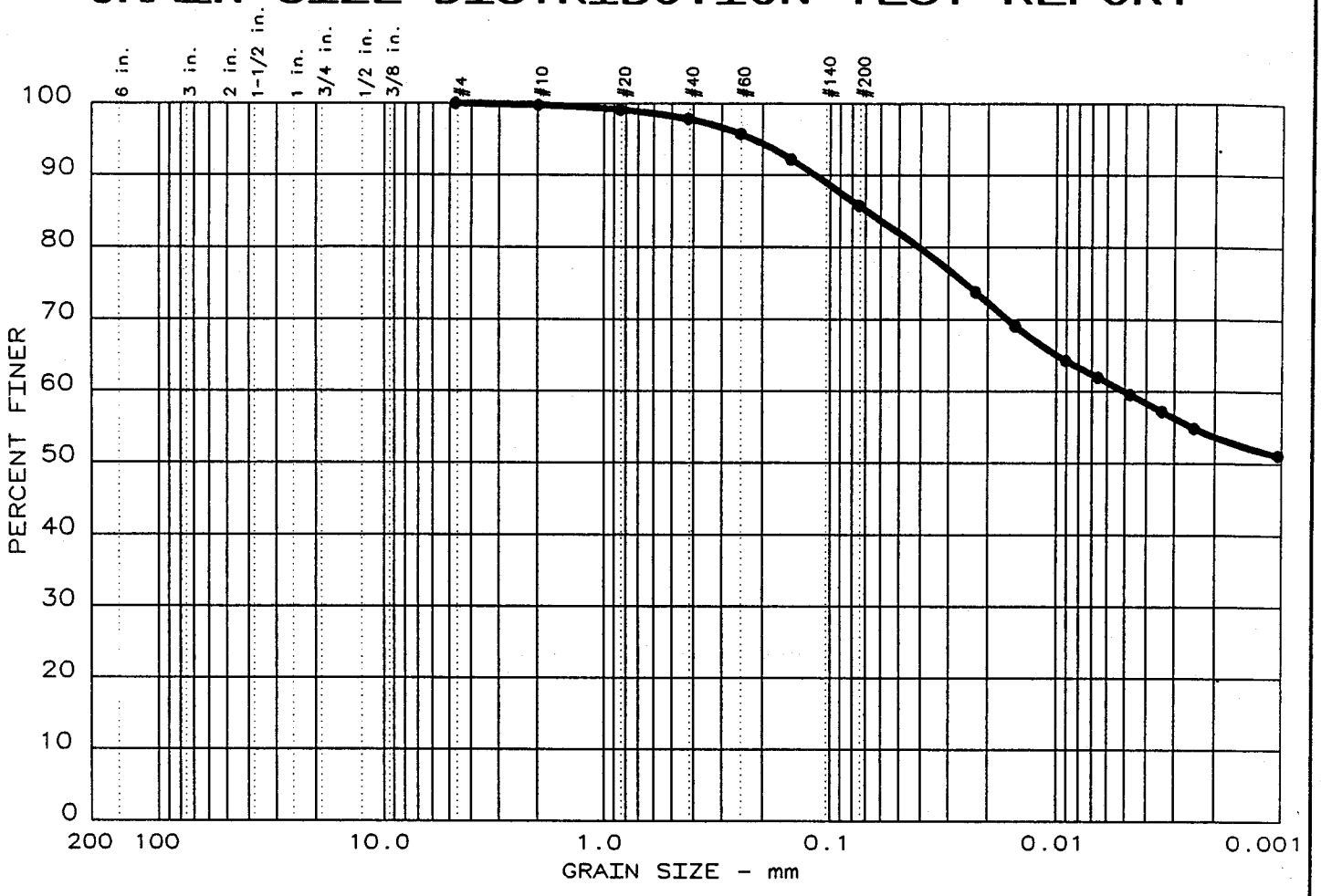
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-2A-22


STOCKPILE AREA B TOPSOIL
MAINTENANCE SHOP
AREA
AREA 2A FINAL COVER COMPLETE
CLOSED TIRE WASTE MONOFILL AREA
CLOSED DEMOLITION LANDFILL AREA
MW-8
MW-7
MW-
N 717000

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	0.0	14.2	25.8	60.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	57	34								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 2A; SAMPLE 23

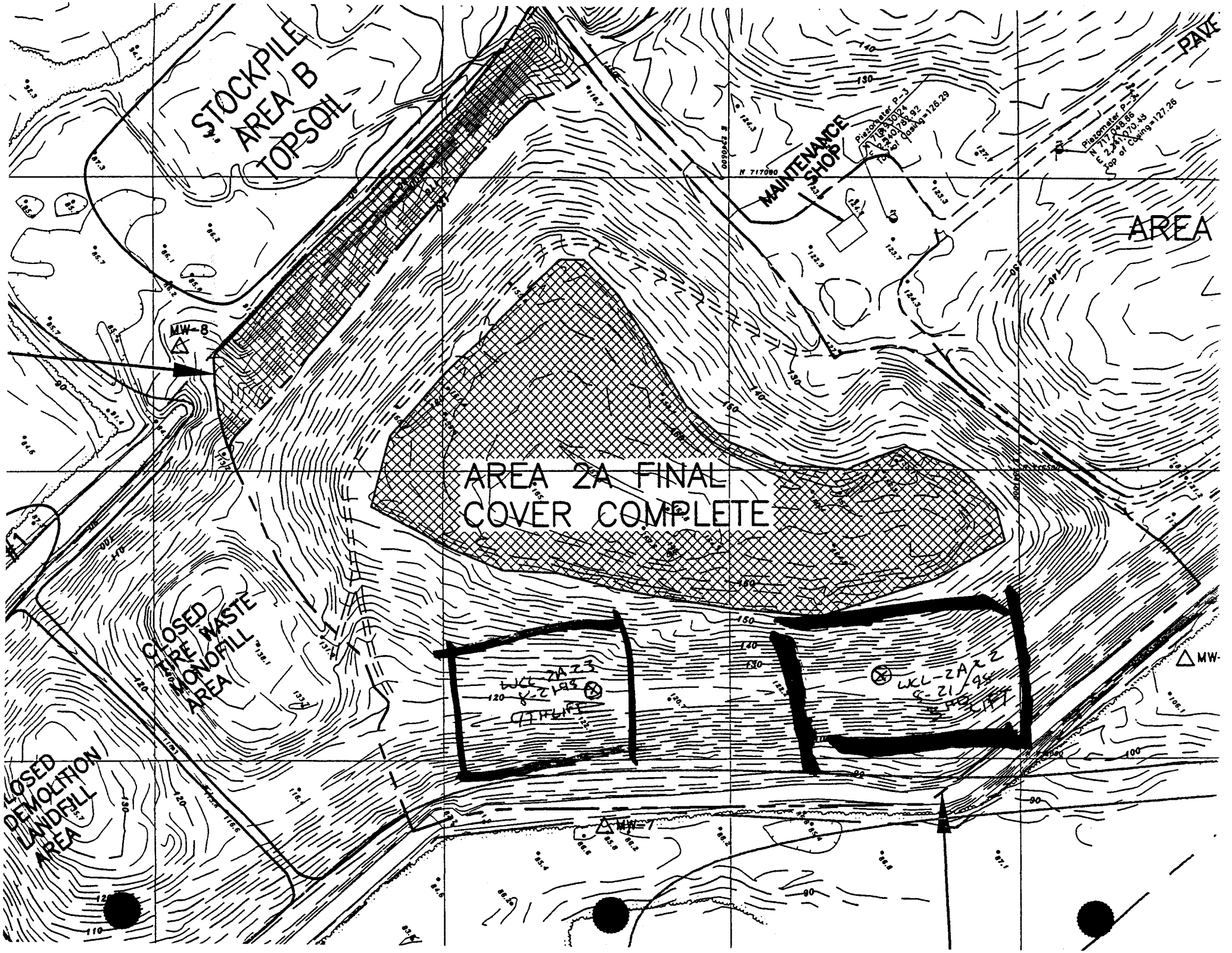
Date: AUGUST 31, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-2A-23


STOCKPILE AREA B TOPSOIL
MAINTENANCE SHOP
PAVE
AREA
MW-8
AREA 2A FINAL COVER COMPLETE
CLOSED TIRE WASTE MONOFILL AREA
CLOSED DEMOLITION LANDFILL AREA
MW-7
MW-

PERMEABILITY TEST REPORT

TEST DATA:

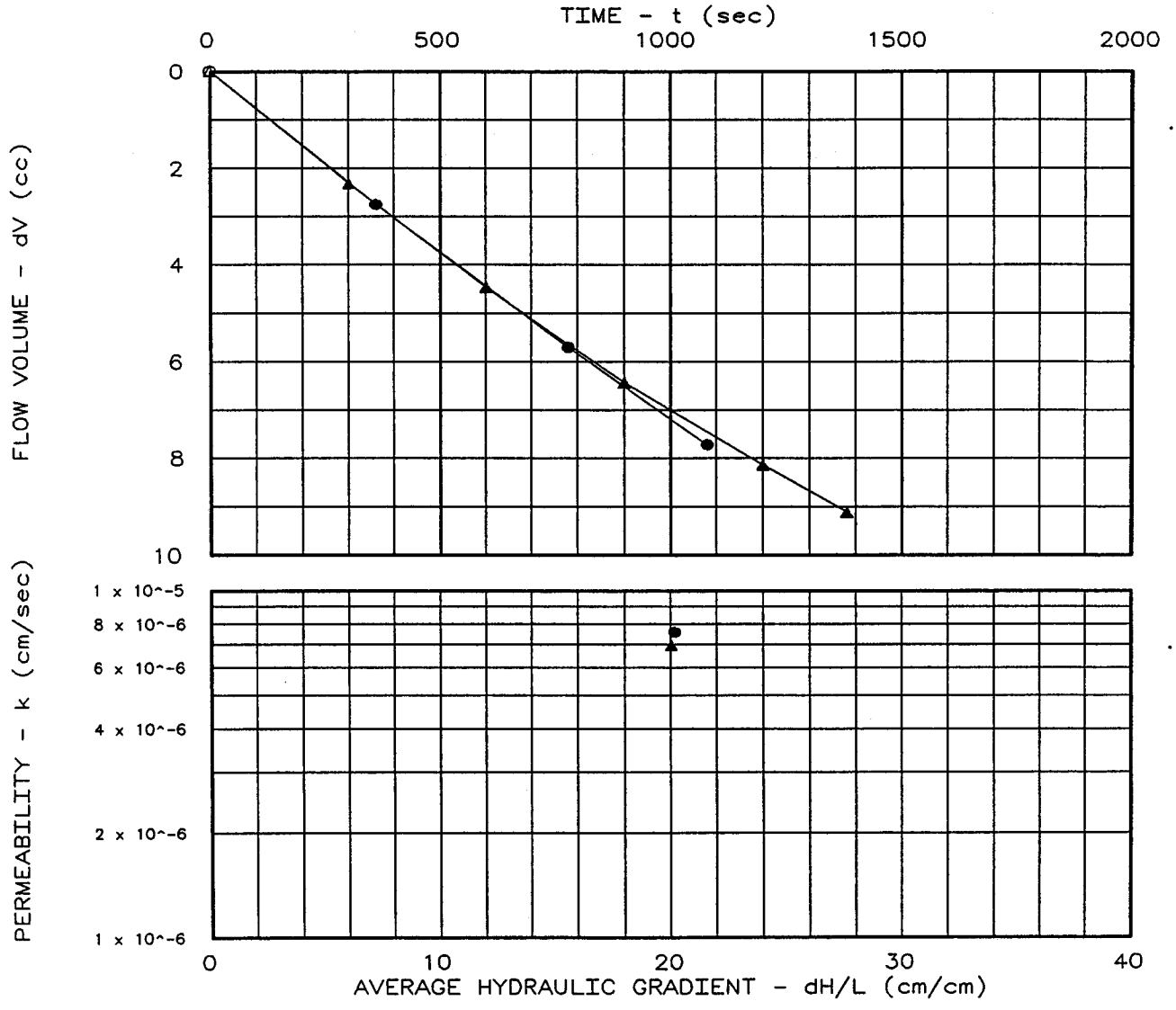
Specimen Height (cm): 10.37
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 93.5
Moisture Before Test (%): 25.0
Moisture After Test (%): 31.7

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	66.0
Test Pressure(psi):	63.0	63.0
Back Pressure(psi):	60.0	60.0
Diff. Head (psi):	3.0	3.0
Flow Rate (cc/sec):	6.91 x 10^-3	6.28 x 10^-3
Perm. (cm/sec):	7.60 x 10^-6	6.96 x 10^-6

SAMPLE DATA:

Sample Identification: WCL 2A SECOND RETEST OF SAMPLE #12 - FIFTH LIFT
Visual Description: GRAY, YELLOW AND TAN SILTY SANDY CLAY
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 89.7%
Permeameter type: FLEXIBLE WALL
Sample type: UNDISTURBED



Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA
Date: 8-30-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

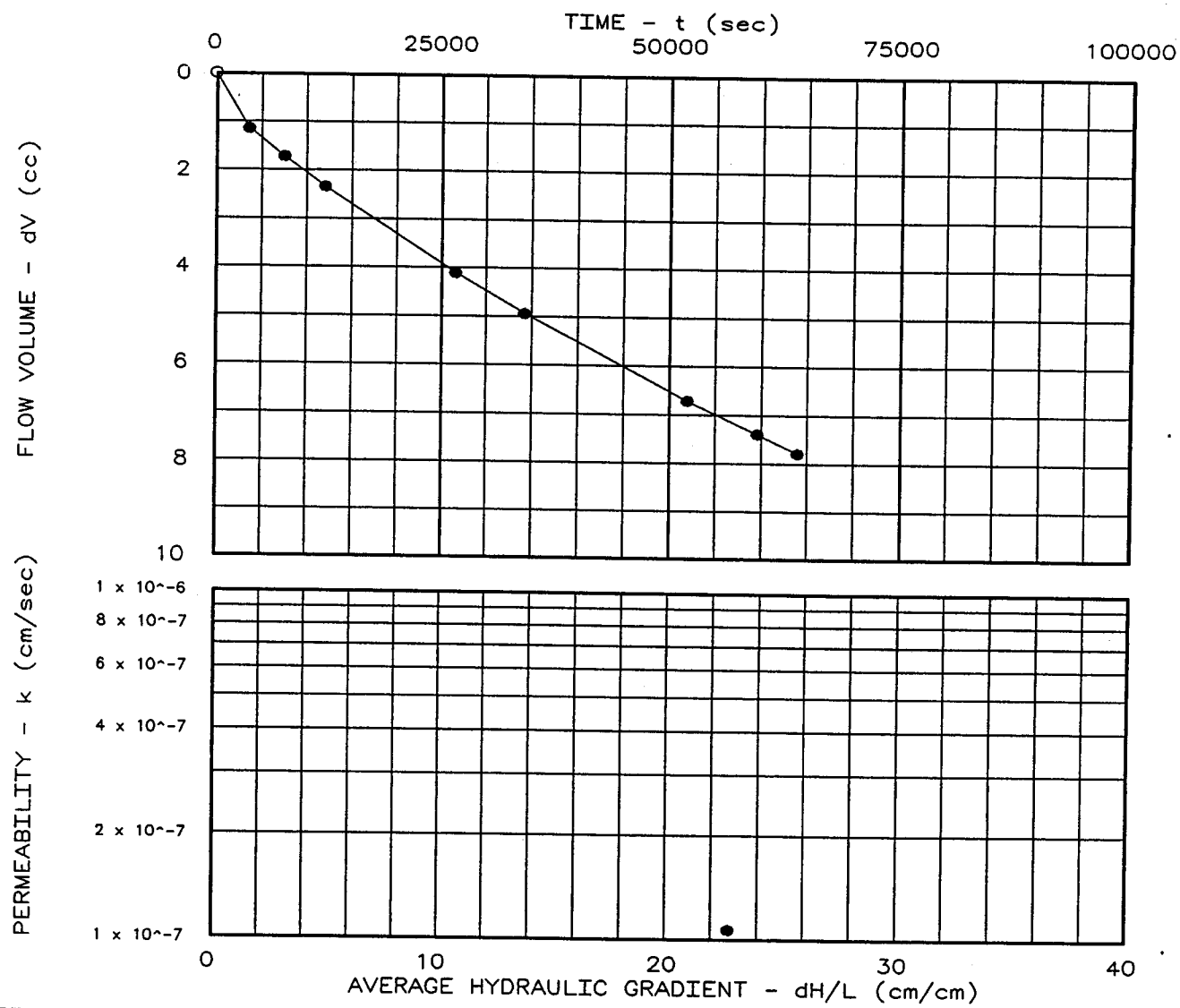
Specimen Height (cm): 9.27
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 96.5
Moisture Before Test (%): 21.5
Moisture After Test (%): 35.5

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	1.09 x 10^-4	
Perm. (cm/sec):	1.07 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 2A RETEST # 17 FOURTH LIFT
Visual Description: GRAY, YELLOW AND TAN SILTY SANDY CLAY
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6 ASTM(D698)
Percent Compaction: 92.6%
Permeameter type: FLEXIBLE WALL
Sample type: UNDISTURBED



Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA
Date: 8-30-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

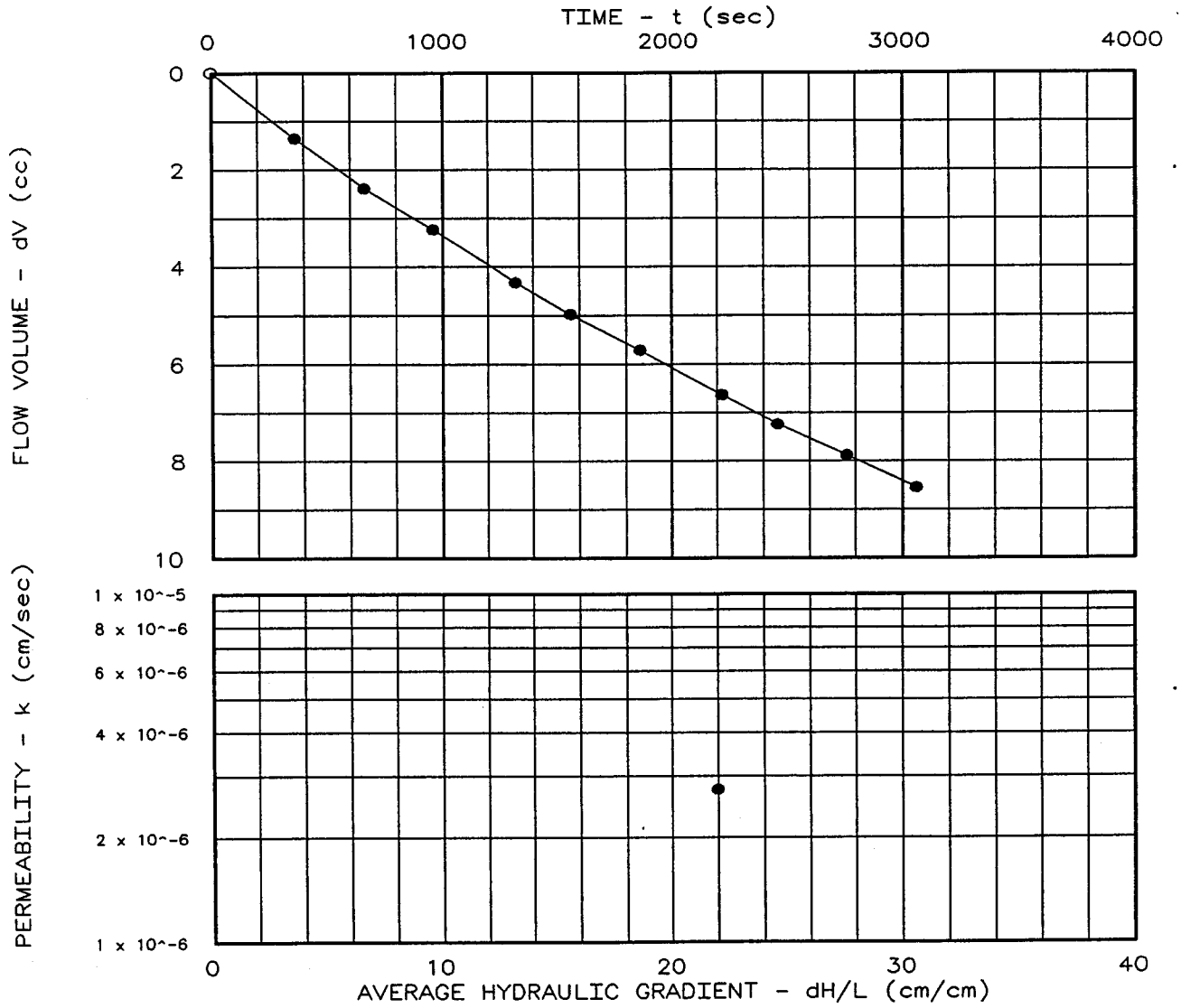
Specimen Height (cm): 9.52
Specimen Diameter (cm): 7.13
Dry Unit Weight (pcf): 89.3
Moisture Before Test (%): 26.3
Moisture After Test (%): 37.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	2.65 x 10^-3	
Perm. (cm/sec):	2.75 x 10^-6	

SAMPLE DATA:

Sample Identification: WCL 2A # 20
SECOND LIFT
Visual Description: GRAY, YELLOW AND TAN
SILTY SANDY CLAY
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 85.7%
Permeameter type: FLEXIBLE WALL
Sample type: UNDISTURBED



Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA
Date: 8-30-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

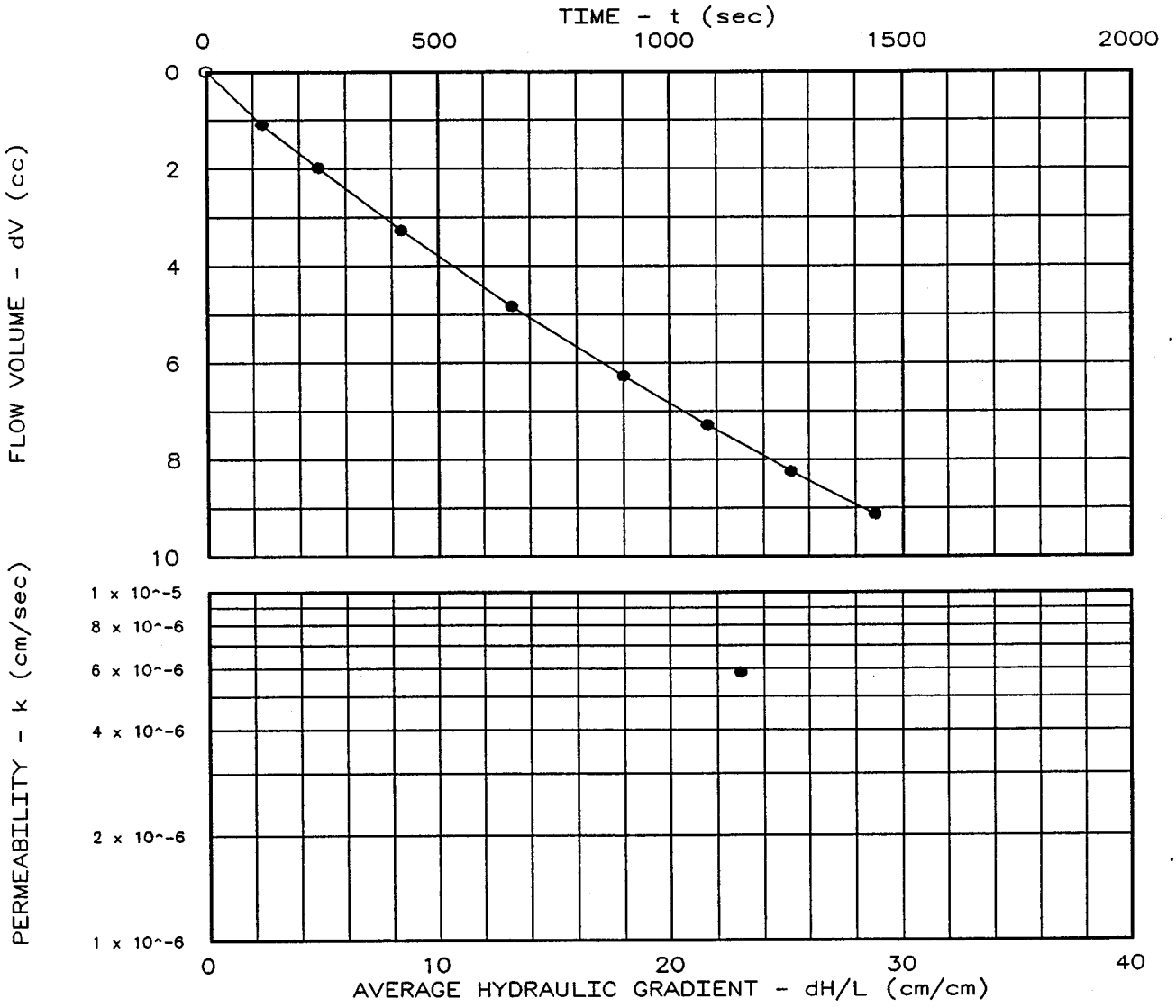
Specimen Height (cm): 9.14
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 76.2
Moisture Before Test (%): 36.1
Moisture After Test (%): 40.3

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	6.10 x 10^-3	
Perm. (cm/sec):	5.85 x 10^-6	

SAMPLE DATA:

Sample Identification: WCL 2A # 21
FOURTH LIFT
Visual Description: GRAY, YELLOW AND TAN
SILTY SANDY CLAY
Remarks:

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 73.1%
Permeameter type: FLEXIBLE WALL
Sample type: UNDISTURBED



Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA
Date: 8-30-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 11, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Gary Jones

PERMEABILITY TEST REPORT

TEST DATA:

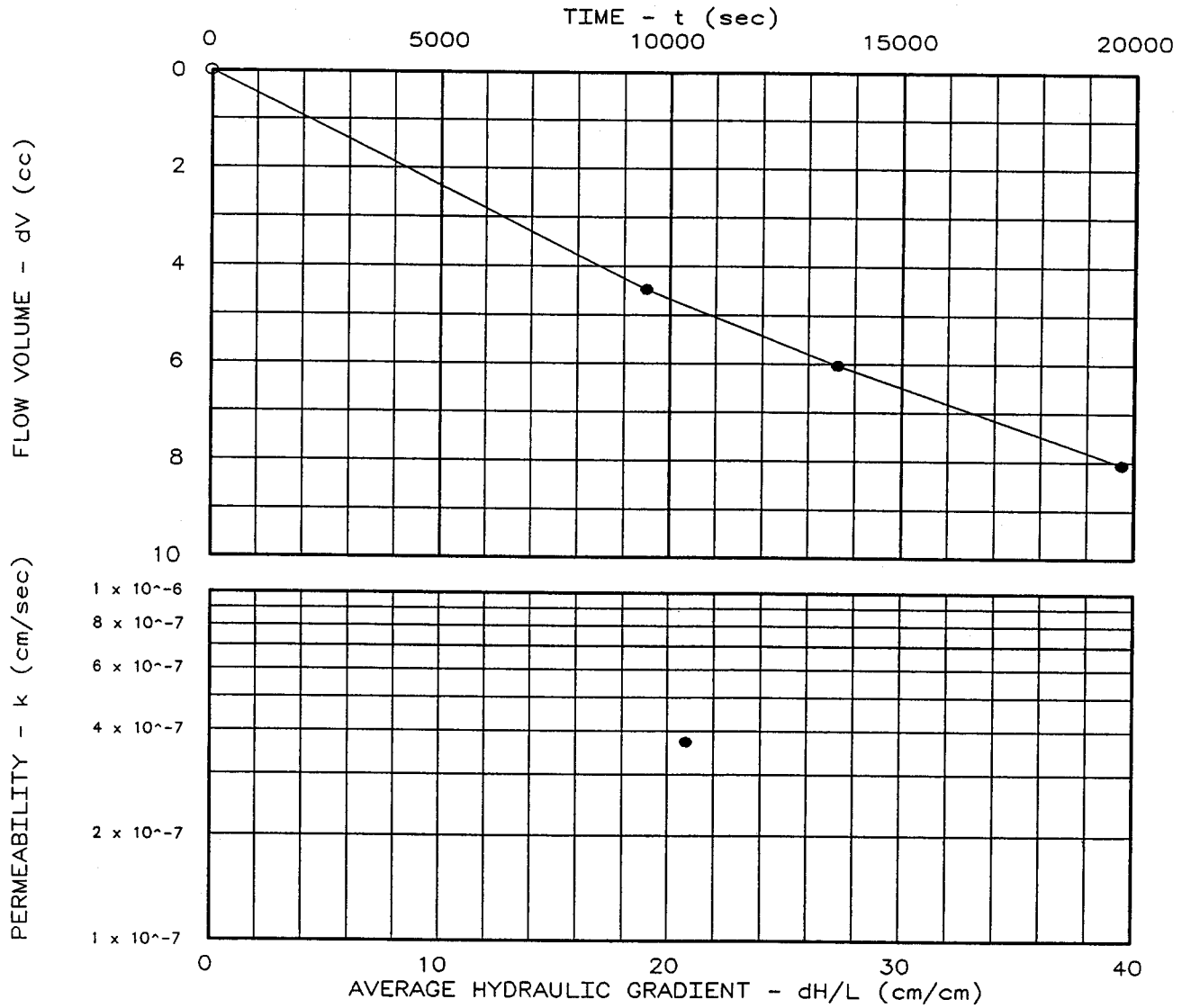
Specimen Height (cm): 9.99
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 83.4
Moisture Before Test (%): 34.7
Moisture After Test (%): 37.5

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	3.49 x 10^-4	
Perm. (cm/sec):	3.71 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 2A #22 Road
Sampled 8-21-98
Visual Description: Gray, Yellow and Tan
Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 80.1%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-10-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

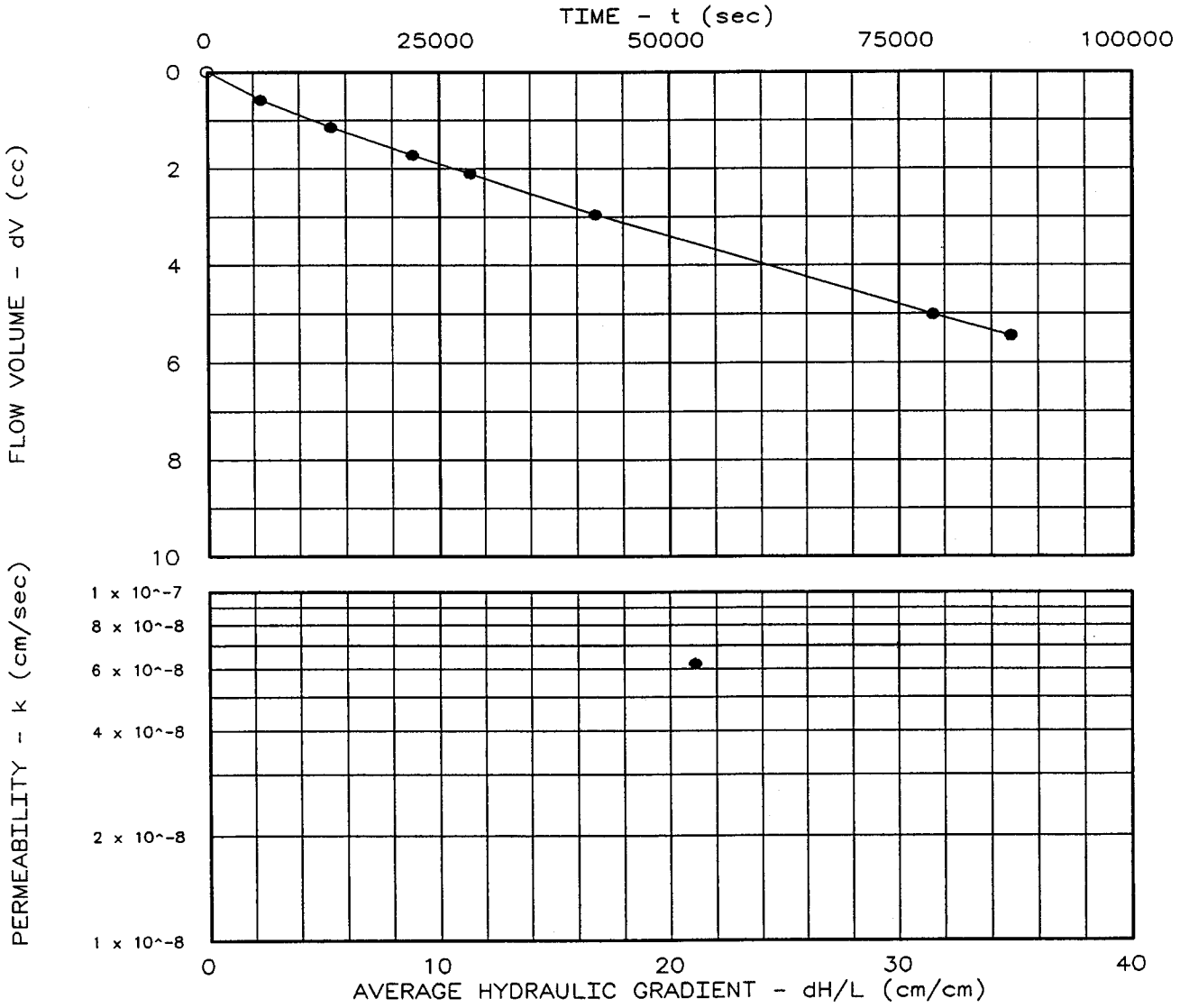
Specimen Height (cm): 10.22
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 85.7
Moisture Before Test (%): 33.3
Moisture After Test (%): 36.9

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	5.92 x 10^-5	
Perm. (cm/sec):	6.21 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL 2A #23 Road
Sampled 8-21-98
Visual Description: Gray, Yellow and Tan
Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 104.2
Optimum Moisture Content (%): 18.6
ASTM(D698)
Percent Compaction: 82.3%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-10-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 16, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☐ laboratory test results ☐ field density reports

☑ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS: Reports dated September 8, 10 and 11, 1998.

Signed: M. Hall

Copies to: Mr. Gary W. Ahlberg
Mr. Gary Jones

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Overcast and warm with rain in the afternoon

TITAN JOB NO. : 8077-80

DATE: 09/08/98 PERSONNEL: M. Stout

S. T. Wooten Construction Company and Ready Construction Company started to clean up after the weekend rains. With the onset of afternoon heavy rain, work was suspended for the remainder of the day.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Sunny and warm

TITAN JOB NO. : 8077-80

DATE: 09/10/98 PERSONNEL: M. Stout

Ready Construction Company hauled top soil all day.

S. T. Wooten Construction Company placed clay but had equipment problems and was unable to till or compact the first lift installed in Area 1A.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Heel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Sunny and warm

TITAN JOB NO. : 8077-80

DATE: 09/11/98 PERSONNEL: M. Stout

Ready Construction Company placed top soil all day (no testing needed).

S. T. Wooten Construction Company started to haul clay in the morning and then worked on the GCL.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Neel

TITAN Atlantic Group
Engineering, Construction & Consulting
Greenville, North Carolina

August 17, 1998

Mr. Gary W. Ahlberg, P.E.
P.O. Box 58
Wilmington, North Carolina 28402

Subject: Report of Borrow Pit Evaluation and Test Pad Construction Observations
Wilson County Landfill - Area 1A
Wilson, North Carolina
Titan Job No.: 8077-80

Dear Mr. Ahlberg:

As requested, Titan Atlantic Group Inc. (Titan) has performed Borrow Pit Soils Evaluation and monitored and tested the Test Pad for Area 1A of the Wilson County Landfill. This report summarizes the results of our laboratory testing on soils obtained from the borrow pit, our observations of the construction of the test pad, the results of field and laboratory testing and presents our recommendations for test pad construction.

BORROW PIT SOILS EVALUATION

Representatives of S.T. Wooten Construction Company excavated test pits in the area of the proposed borrow pit on July 28, 1998. From the excavations, we identified and obtained two soil samples and transported them to our laboratory for Standard Proctor, Hydrometer, Liquid and Plastic Limits and Permeability testing. The results of our laboratory testing are attached with this report.

Our testing indicated that the first sample, labeled "composite sample", conformed to the USCS (Unified Soils Classification System) classification of CH and the AASHTO (American Association of State Highway and Transportation Officials) classification A-7-6. This material had a remolded permeability of 1.22×10^{-6} at approximately 94 percent compaction, at 1.6 percent above the optimum moisture content.

The second sample, labeled "fat clay", was also classified as a CH (USCS) and A-7-6 (AASHTO). This material had a remolded permeability of 2.45×10^{-6} at approximately 100 percent compaction, at 1.9 percent above the optimum moisture content. Both of these materials are suitable for the cap for the landfill.

TEST PAD CONSTRUCTION

The test pad was constructed on August 4-6, 1998, by S.T. Wooten Construction Company. Typically, the fill material was hauled from the borrow area in dump trucks, dumped and spread using a Caterpillar D6 bulldozer. The material was cut and disked using two passes of a disk pulled behind a tractor and then compacted using a Caterpillar 815B roller with 7 inch "sheepsfoot" cleats.

The first lift of the material was compacted with 5 passes of the overlapping roller. After the completion of the first lift, field density testing, consisting of 3 sand cone tests and 3 nuclear gage tests, were performed. Field density test results were computed to range from 90 to 97 percent of the maximum dry density, as determined by ASTM D-698 (Standard Proctor). In addition, an undisturbed sample and bag sample of the material were collected for laboratory testing.

Field density test results ranged from 90 to 97 percent of the maximum dry density, based on the standard Proctor test results. The results of the laboratory testing found the material to be classified as a CL (USCS) or A-7-6 (AASHTO). The permeability of the undisturbed sample was determined to be 2.96×10^{-6}.

The second lift was placed using similar methods to lift number 1. After 5 passes with the roller, six field density tests (three sand cone tests and three nuclear tests) were performed. Test results ranged from 88 to 93 percent of the maximum dry density based on the standard Proctor test results. Three bag samples and one undisturbed sample were obtained from the second lift after 5 passes of the roller. The results of the laboratory sampling found all three samples to be classified as CH (USCS) and A-7-6 (AASHTO). The permeability of the undisturbed sample was determined to be 1.64×10^{-6}.

The second lift was compacted with 3 additional passes of the roller, for a total of 8 passes, and then retested. Field density test results, using the nuclear gage, were computed to range from 94 to 95 percent of the maximum dry density. An undisturbed sample obtained from this lift after the additional compaction was determined to have a permeability of 1.39×10^{-7}.

The third lift was placed using methods similar to the other lifts. After 5 passes with the roller, field density test results were computed to range from 88 to 98 percent of the maximum dry density. A bag sample obtained from this lift was classified as a CH (USCS) and A-7-6 (AASHTO). The permeability of the undisturbed sample was determined to be 5.24×10^{-7}.

This third lift was then recompacted with a Ingersoll Rand roller with 3 inch "sheepsfoot" cleats. Testing was not performed on the pad after the additional compaction.

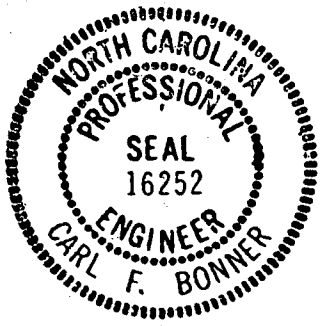
RECOMMENDATIONS

Based on the test results obtained, the methods used in the test pad appear to be adequate for the required permeability of the cap. We recommend that the materials and methods used in the test pad be used on the production liner. We recommend that the material be delivered and spread using methods used in the test pad. The material should then be disked using two passes of the disk. We then recommend five overlapping passes with the deep cleat sheepsfoot roller. The smaller cleat roller should be used on the third lift after five passes with the deep cleat roller. Based on our test pad results, this method should provide a clay liner that meets project specifications.

We appreciate the opportunity to work with you on this project. If you have any questions, please contact us at (252) 353-1600.

Sincerely,

TITAN ATLANTIC GROUP, INC.



Carl F Bonner

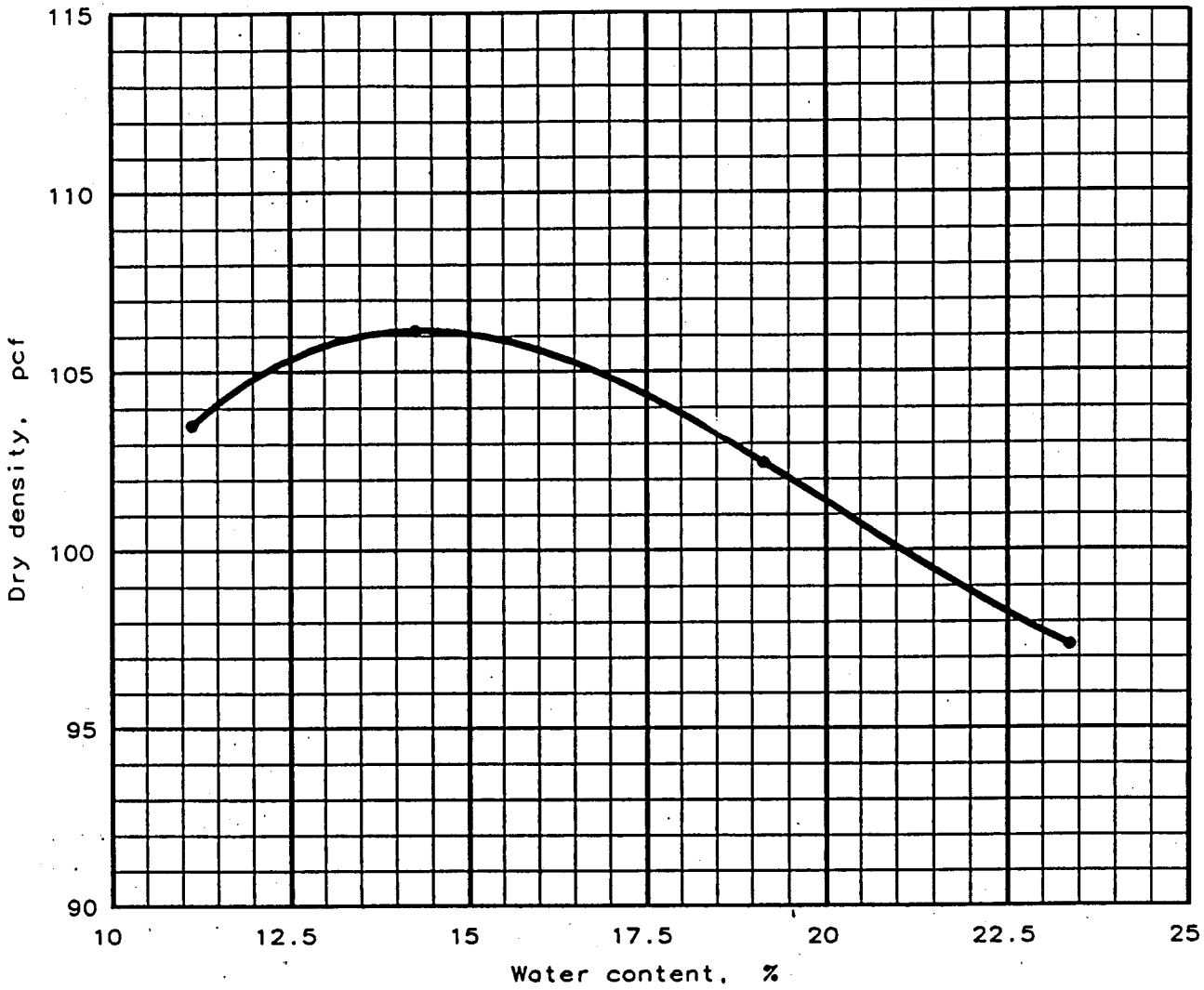
Carl F. Bonner, P.E.
Greenville Office Manager

Robert H. Neel

Robert H. Neel, Jr. L.G.
Operations Manager

BORROW PIT LABORATORY
SOIL TEST RESULTS

MOISTURE-DENSITY RELATIONSHIP TEST



Test specification: ASTM D 698-91 Procedure A, Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	CH	A-7-6	20.3 %		52	33	0.0 %	

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 106.2 pcf Optimum moisture = 14.3 %	YELLOW BROWN & GRAY SILTY SANDY CLAY

Project No.: 8427-80
Project: WILSON COUNTY LANDFILL
Location: TEST PAD CONSTRUCTION FOR S. T. WOOTEN
"COMPOSITE" SAMPLE FROM BORROW AREA
Date: JULY 30, 1998

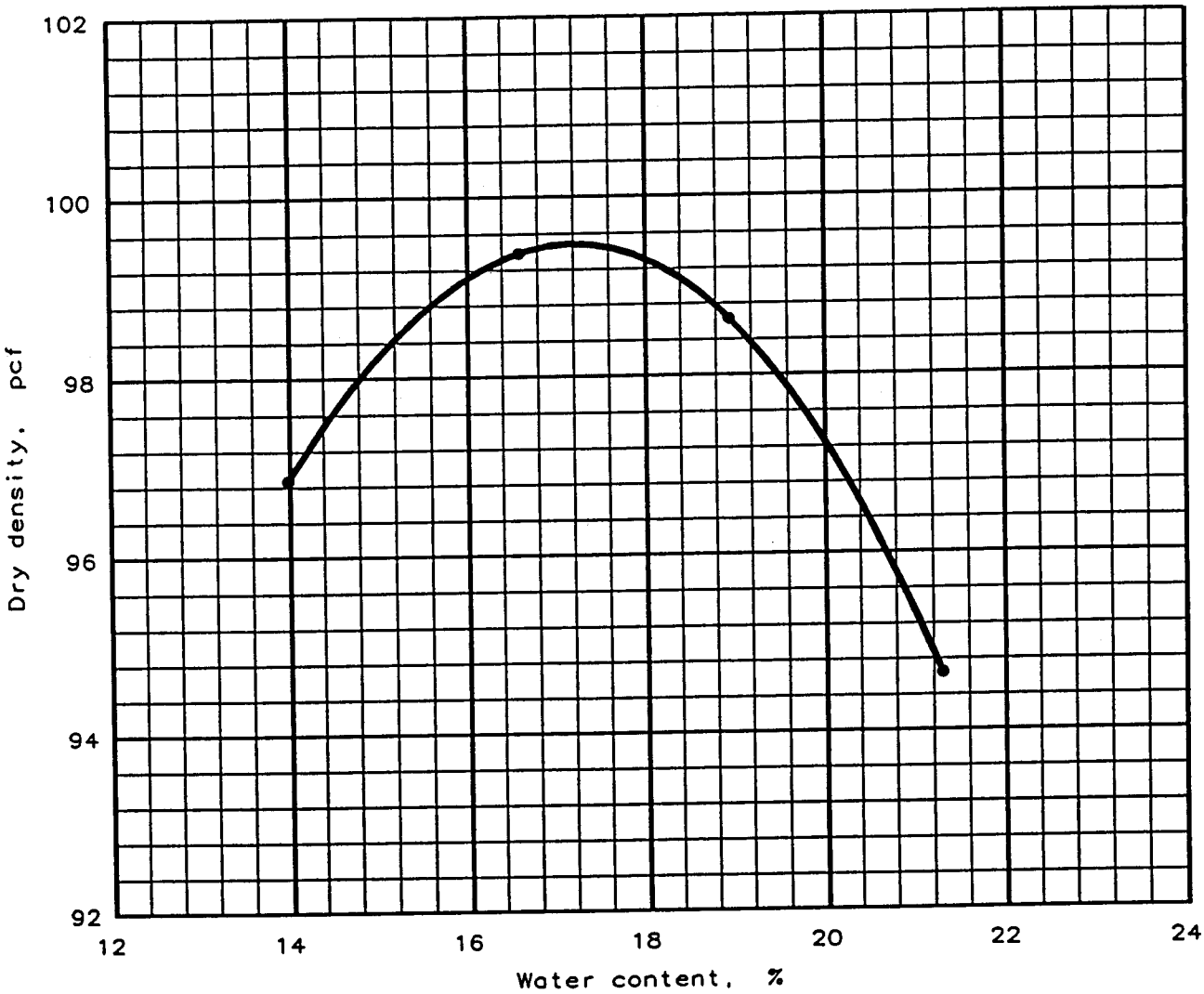
Remarks:
PROPOSED CAP FOR LAND-
FILL CLOSURE

MOISTURE-DENSITY RELATIONSHIP TEST

TITAN ATLANTIC GROUP, INC.

Fig. No. ST-1

MOISTURE-DENSITY RELATIONSHIP TEST



Test specification: ASTM D 698-91 Procedure A, Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	CH	A-7-6	20.8 %		63	37		

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 99.5 pcf Optimum moisture = 17.2 %	GRAY SLIGHTLY SANDY SILTY CLAY

Project No.: 8427-80
Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA

Date: AUGUST 12, 1998

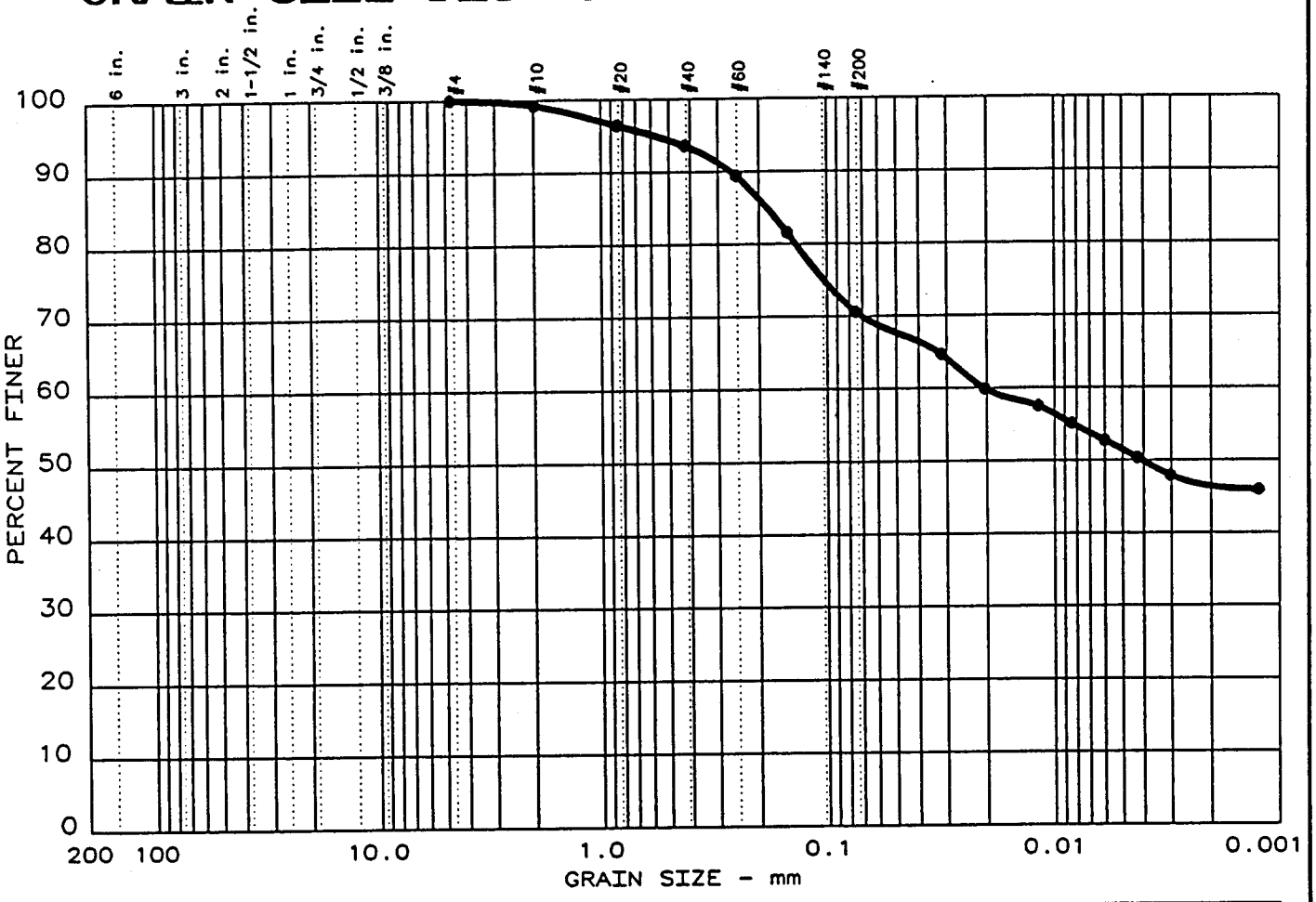
Remarks:
"FAT CLAY" SAMPLE FROM TEST PAD CONSTRUCTION

MOISTURE-DENSITY RELATIONSHIP TEST

TITAN ATLANTIC GROUP, INC.

Fig. No. FC-1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	29.4	19.2	51.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	52	33	0.182		0.0041					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN & GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8427-80
Project: WILSON COUNTY LANDFILL; S. T. WOOTEN CO.
● Location: ON SITE BORROW PIT

Date: AUGUST 1, 1998

Remarks:
COMPOSITE SAMPLE FOR USE IN THE TEST PAD

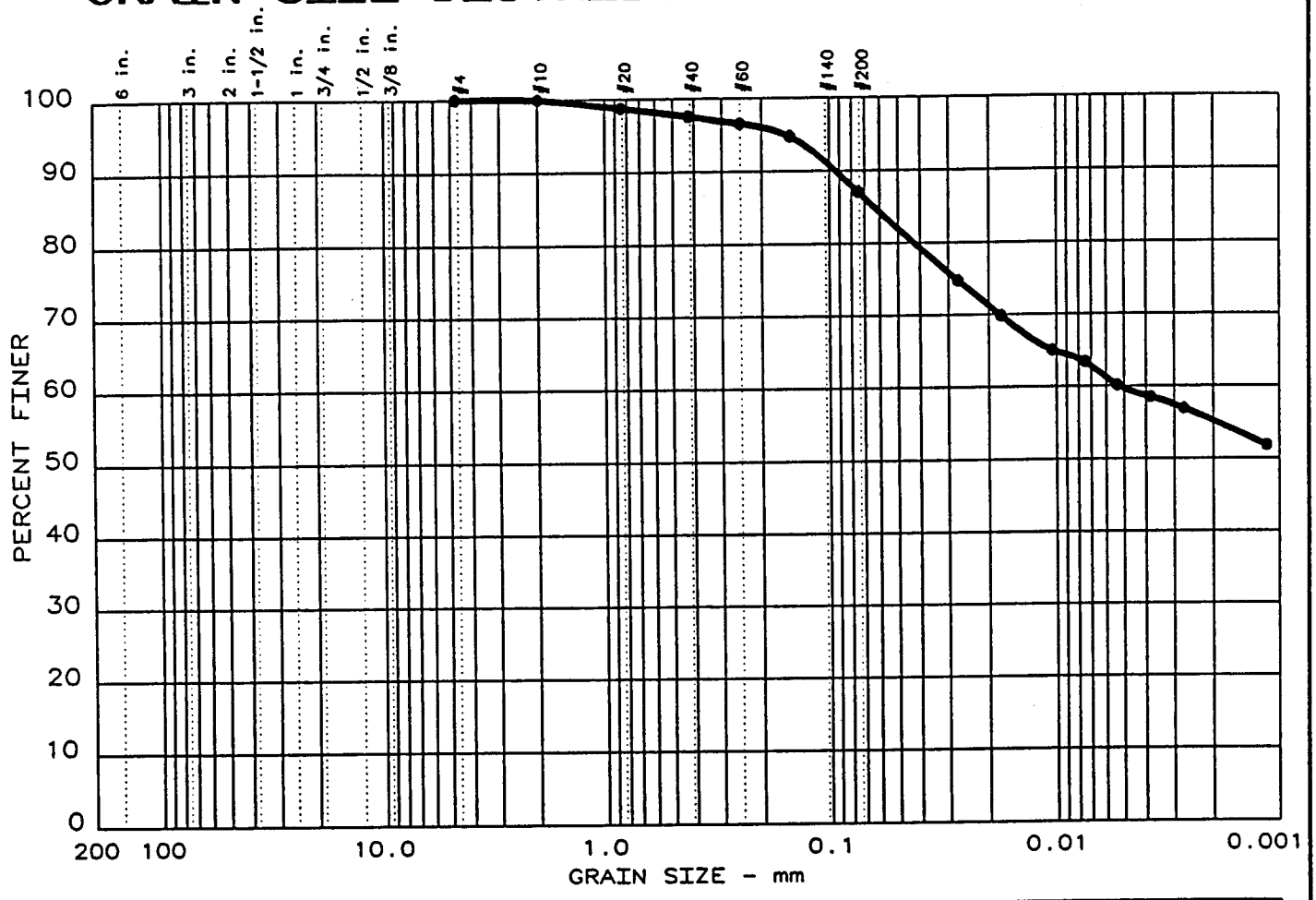
NATURAL MOISTURE: 20.3%

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: STWTP-1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	12.9	27.4	59.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	63	37								

MATERIAL DESCRIPTION	USCS	AASHTO
● GRAY SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8427-80
Project: TEST PAD- S. T. WOOTEN CONST. CO. CLIENT
● Location: "FAT CLAY" SAMPLE

Date: AUGUST 9, 1998

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Remarks:

NATURAL MOISTURE: 20.8%

Fig. No.: STW-FC-1

PERMEABILITY TEST REPORT

TEST DATA:

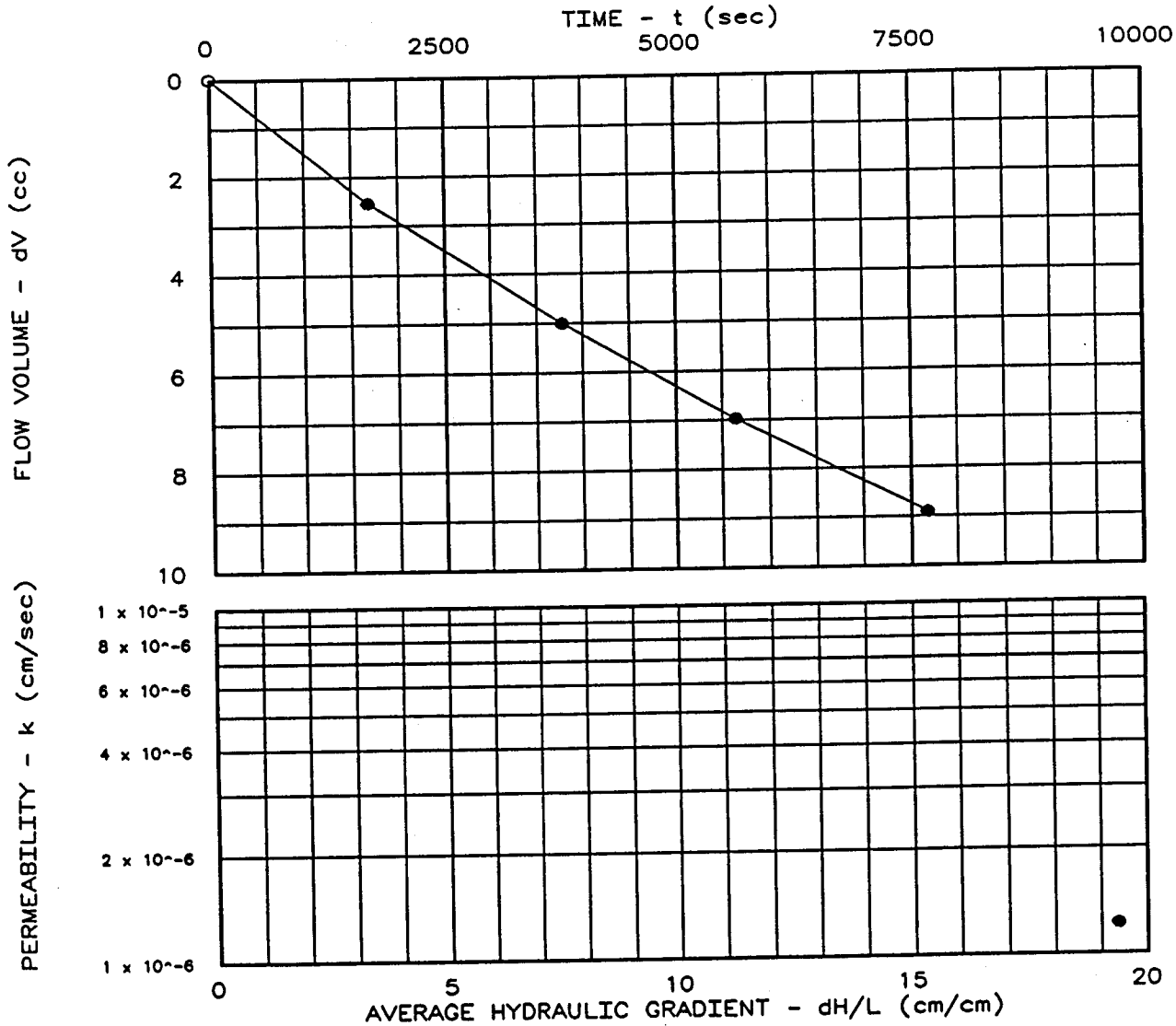
Specimen Height (cm): 10.16
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 100.1
Moisture Before Test (%): 15.9
Moisture After Test (%): 23.9

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.2	
Diff. Head (psi):	2.8	
Flow Rate (cc/sec):	1.06 x 10^-3	
Perm. (cm/sec):	1.22 x 10^-6	

SAMPLE DATA:

Sample Identification: Composite Borrow Sample
Visual Description: Yellow Brown & Gray Silty, Sandy, Clay
Remarks:

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 94.2%
Permeameter type: Flexible wall
Sample type: remolded



Project: Wilson County Landfill - S.T. Wooten
Location: Wilson, North Carolina
Date: 8-3-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8427-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.26
Specimen Diameter (cm): 7.12
Dry Unit Weight (pcf): 99.1
Moisture Before Test (%): 18.5
Moisture After Test (%): 30.2

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	68.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.2	
Diff. Head (psi):	2.8	
Flow Rate (cc/sec):	2.07 x 10^-3	
Perm. (cm/sec):	2.45 x 10^-6	

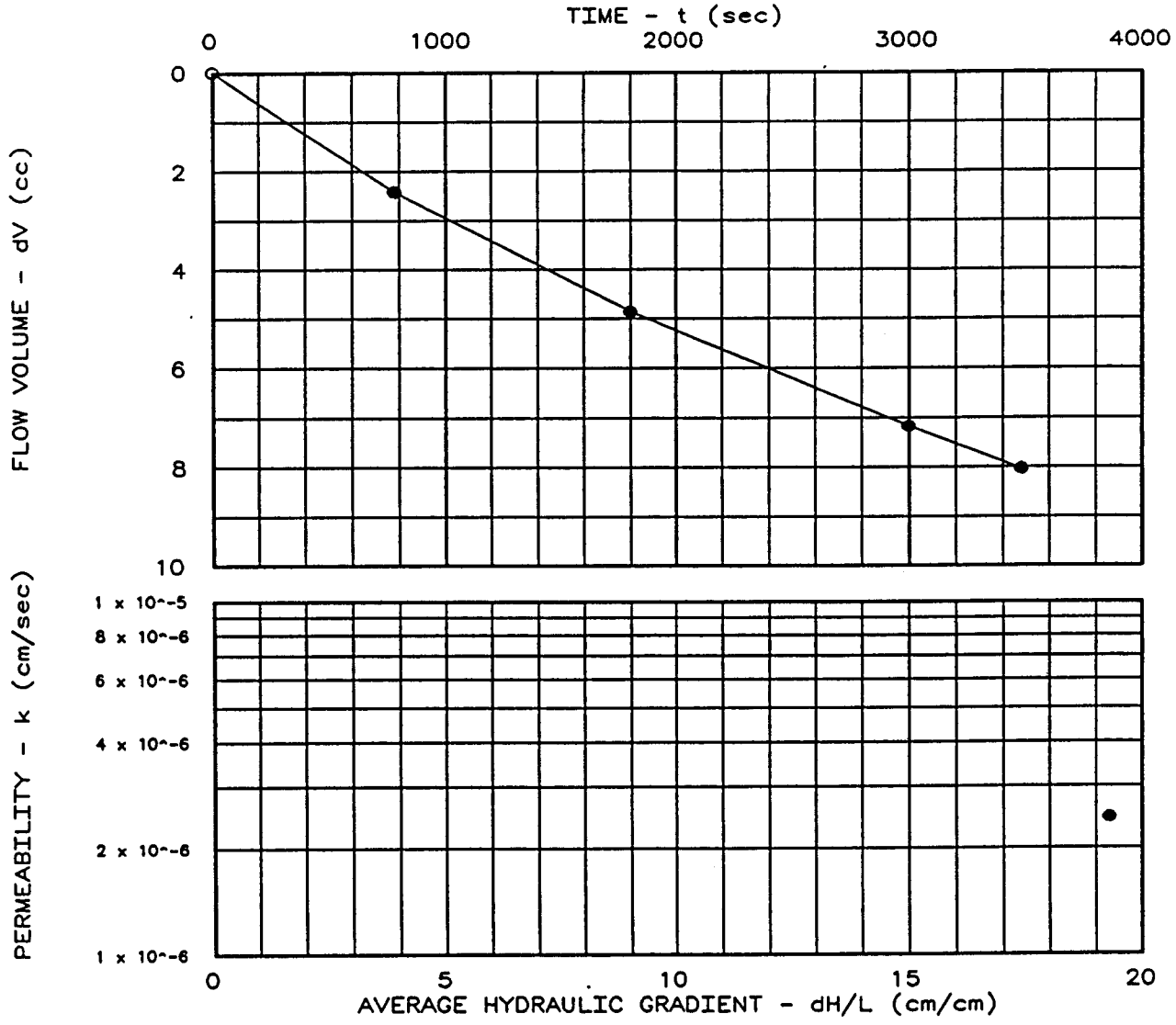
SAMPLE DATA:

Sample Identification: "Fat Clay" Sample

Visual Description: Yellow Tan Silty Clay

Remarks:

Maximum Dry Density (pcf): 99.4
Optimum Moisture Content (%): 16.6
ASTM(D698)
Percent Compaction: 99.7%
Permeometer type: Flexible wall
Sample type: remolded



Project: Wilson County Landfill - S.T. Wooten
Location: Wilson County, North Carolina
Date: 8-7-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8427-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

TEST PAD LABORATORY
SOIL TEST RESULTS

MOISTURE-DENSITY RELATIONSHIP TEST

Test specification: ASTM D 698-91 Procedure A, Standard

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

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 103.2 pcf Optimum moisture = 19.1 %	YELLOW BROWN & GRAY SILTY SANDY CLAY

Project No.: 8427-80
Project: S. T. WOOTEN TEST PAD; SAMPLE TWO
Location: WILSON COUNTY LANDFILL

Date: AUGUST 8, 1998

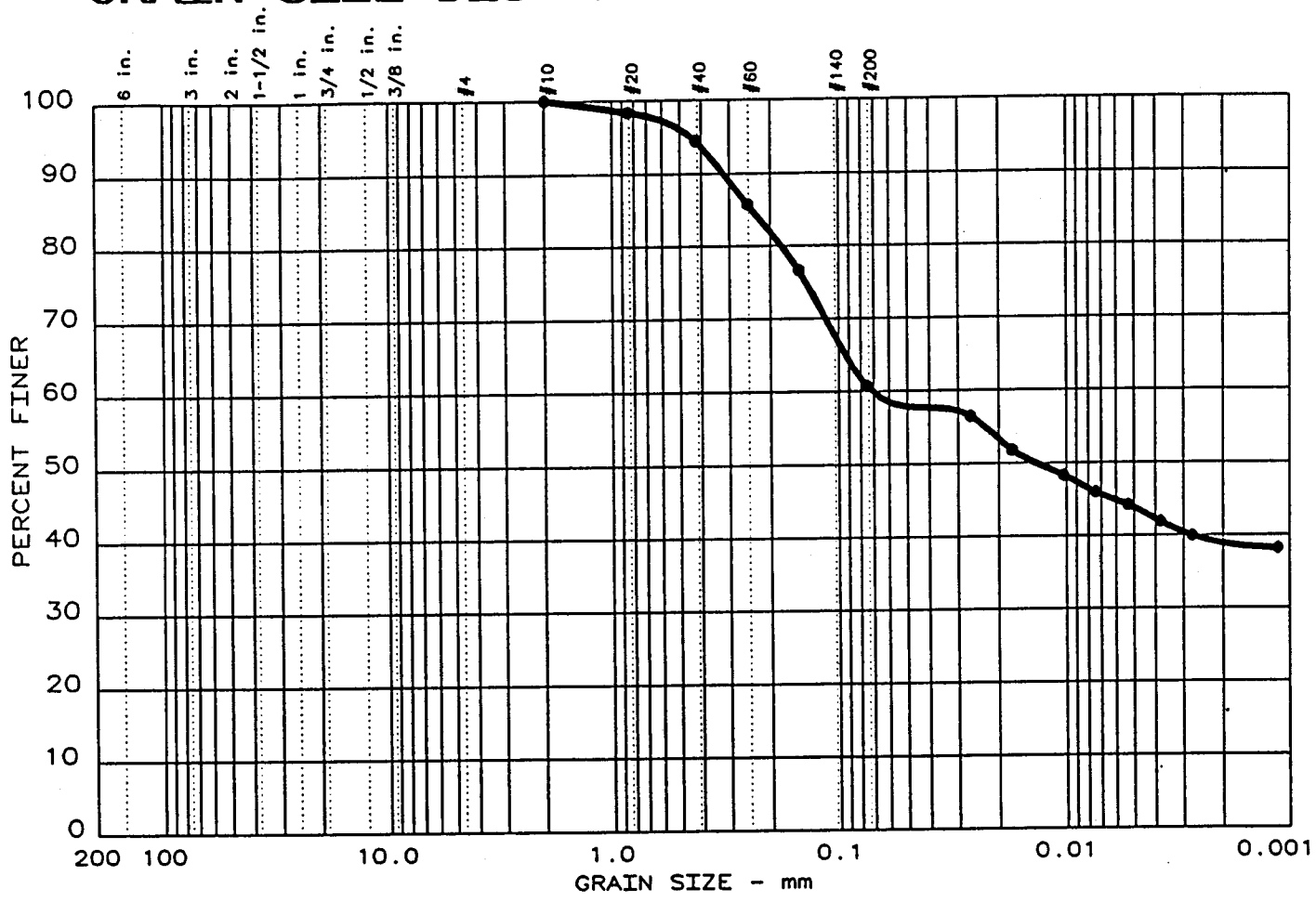
Remarks:
SAMPLE FROM TEST PAD

MOISTURE-DENSITY RELATIONSHIP TEST

TITAN ATLANTIC GROUP, INC.

Fig. No. 02

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	39.2	17.0	43.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	43	21	0.237		0.0138					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN & GRAY SLIGHTLY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; AREA 1A
● Location: TEST PAD; SAMPLE ONE; FIRST LIFT

Date: AUGUST 12, 1998

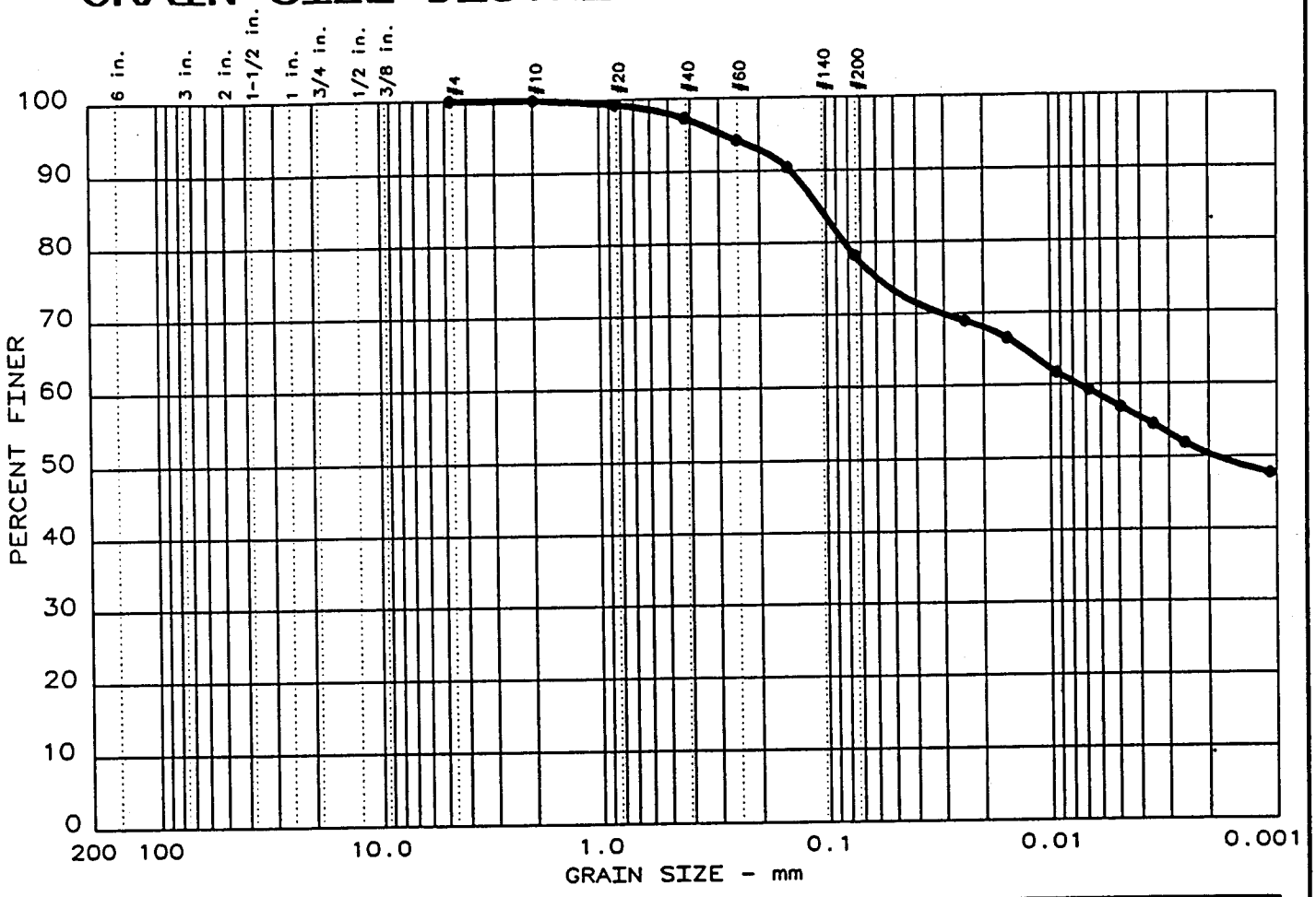
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Remarks:

Fig. No.: SAMPLE 1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	21.7	21.2	57.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	55	34	0.107		0.0019					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN & GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL: AREA 1A
● Location: TEST PAD: SECOND LIFT: SAMPLE ONE

Date: AUGUST 12, 1998

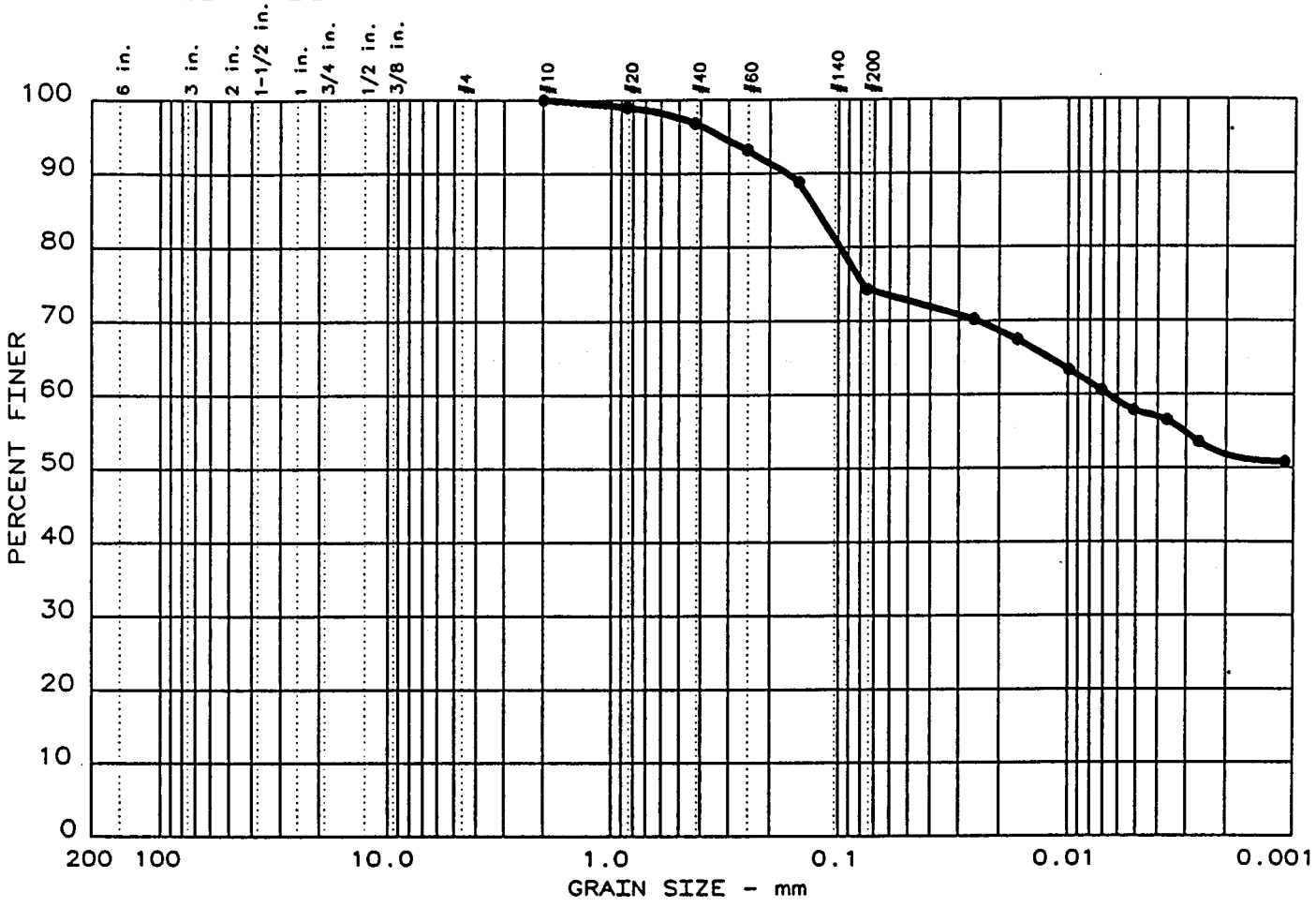
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: SAMPLE 1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	25.7	16.5	57.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	54	30	0.124							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN & GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; AREA 1A
● Location: TEST PAD; SAMPLE TWO; SECOND LIFT

Date: AUGUST 12, 1998

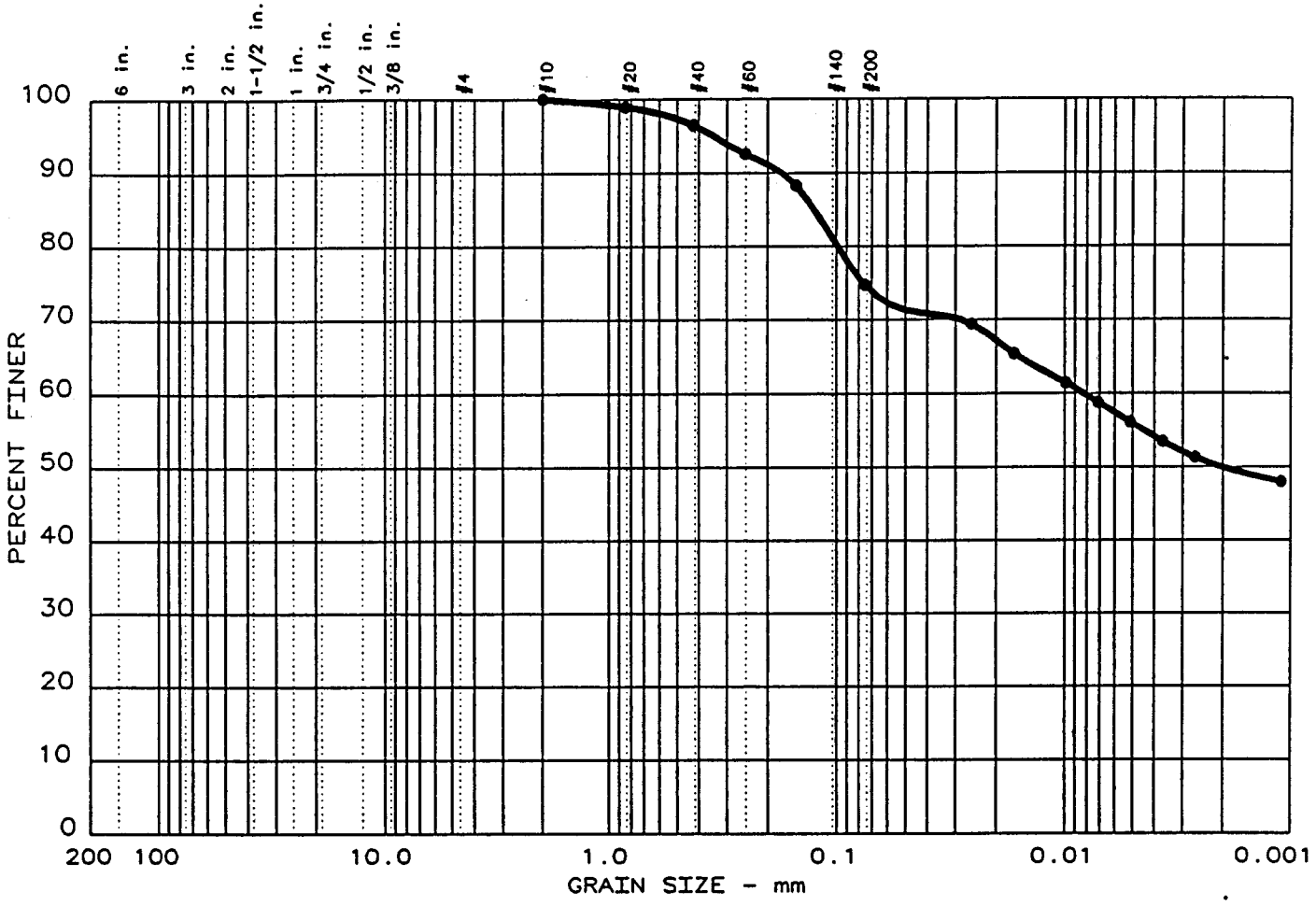
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: SAMPLE 2

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	25.2	18.8	56.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	55	28	0.124		0.0020					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN & GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; AREA 1A
● Location: TEST PAD; SECOND LIFT; SAMPLE THREE

Date: AUGUST 12, 1998

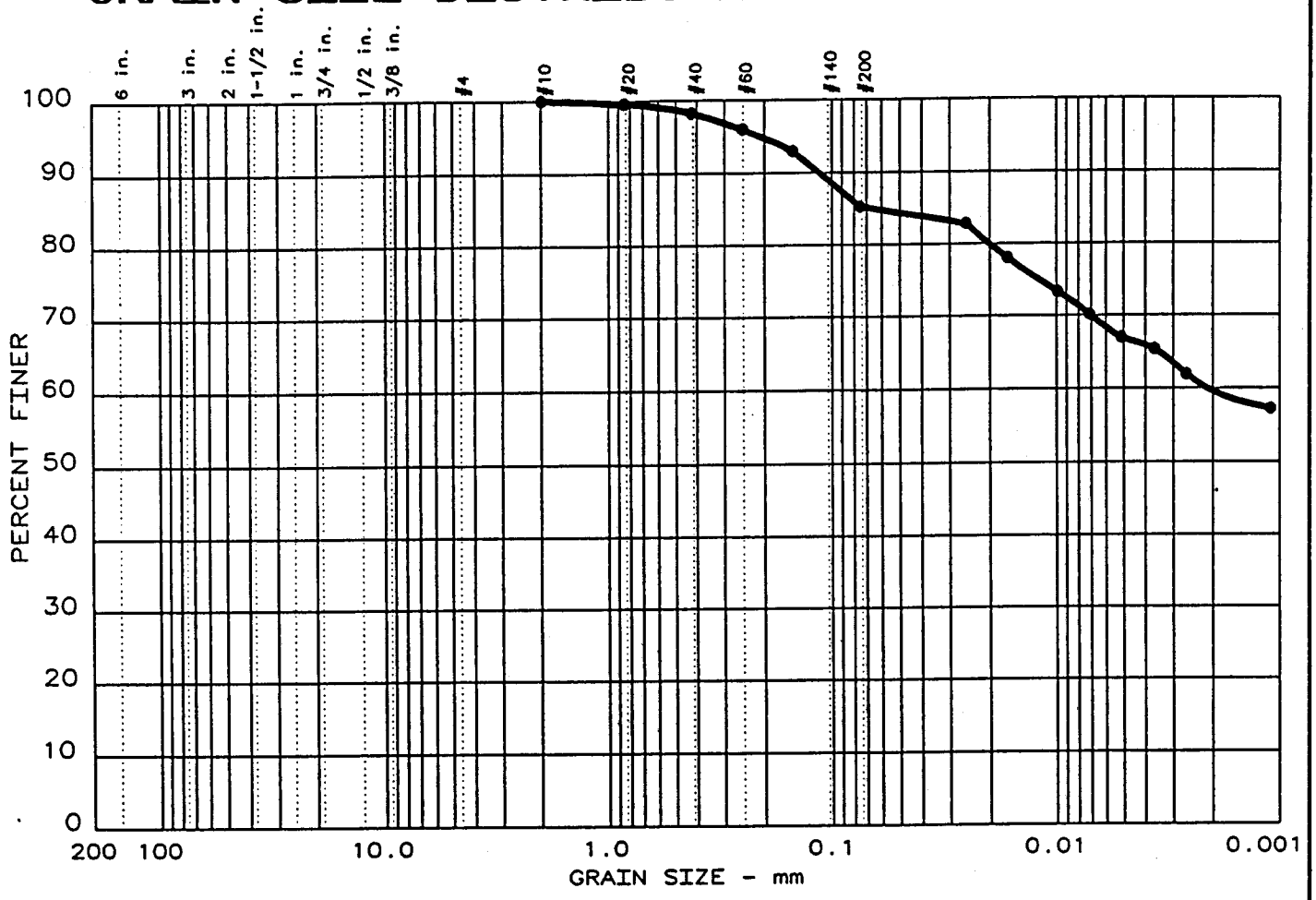
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Remarks:

Fig. No.: SAMPLE 3

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	14.7	18.4	66.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	59	35								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN & GRAY SLI SANDY SLI SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; AREA 1A
● Location: TEST PAD; THIRD LIFT

Date: AUGUST 12, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: SAMPLE 1

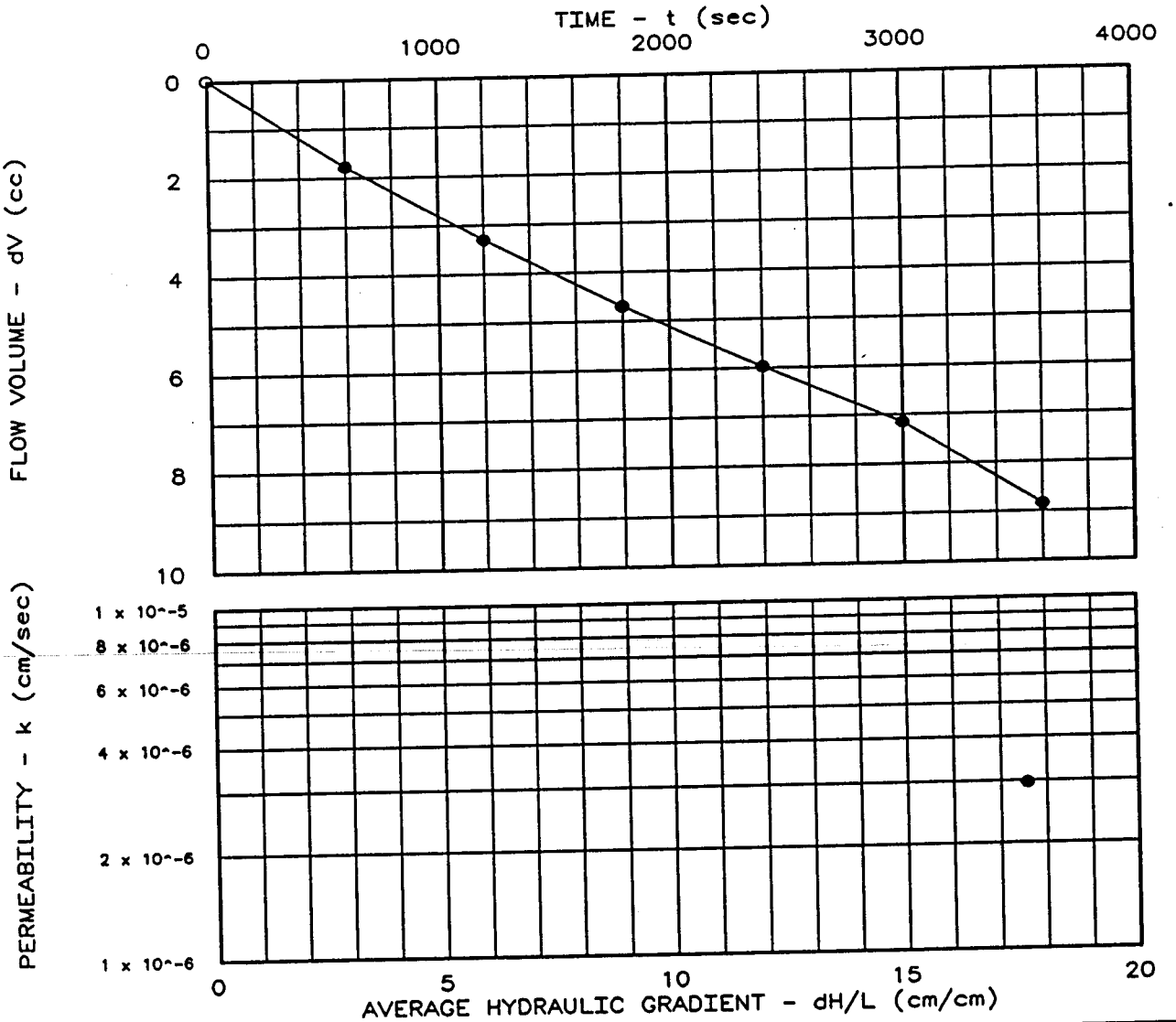
PERMEABILITY TEST REPORT

TEST DATA:
Specimen Height (cm): 11.39
Specimen Diameter (cm): 7.15
Dry Unit Weight (pcf): 96.7
Moisture Before Test (%): 27.0
Moisture After Test (%): 26.1

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.2	
Diff. Head (psi):	2.8	
Flow Rate (cc/sec):	2.30 x 10^-3	
Perm. (cm/sec):	2.96 x 10^-6	

SAMPLE DATA:
Sample Identification: WCL 1A Test Pad # 1
First Lift
Visual Description: Yellow Brown and Gray
Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 91.1%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-10-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077A-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

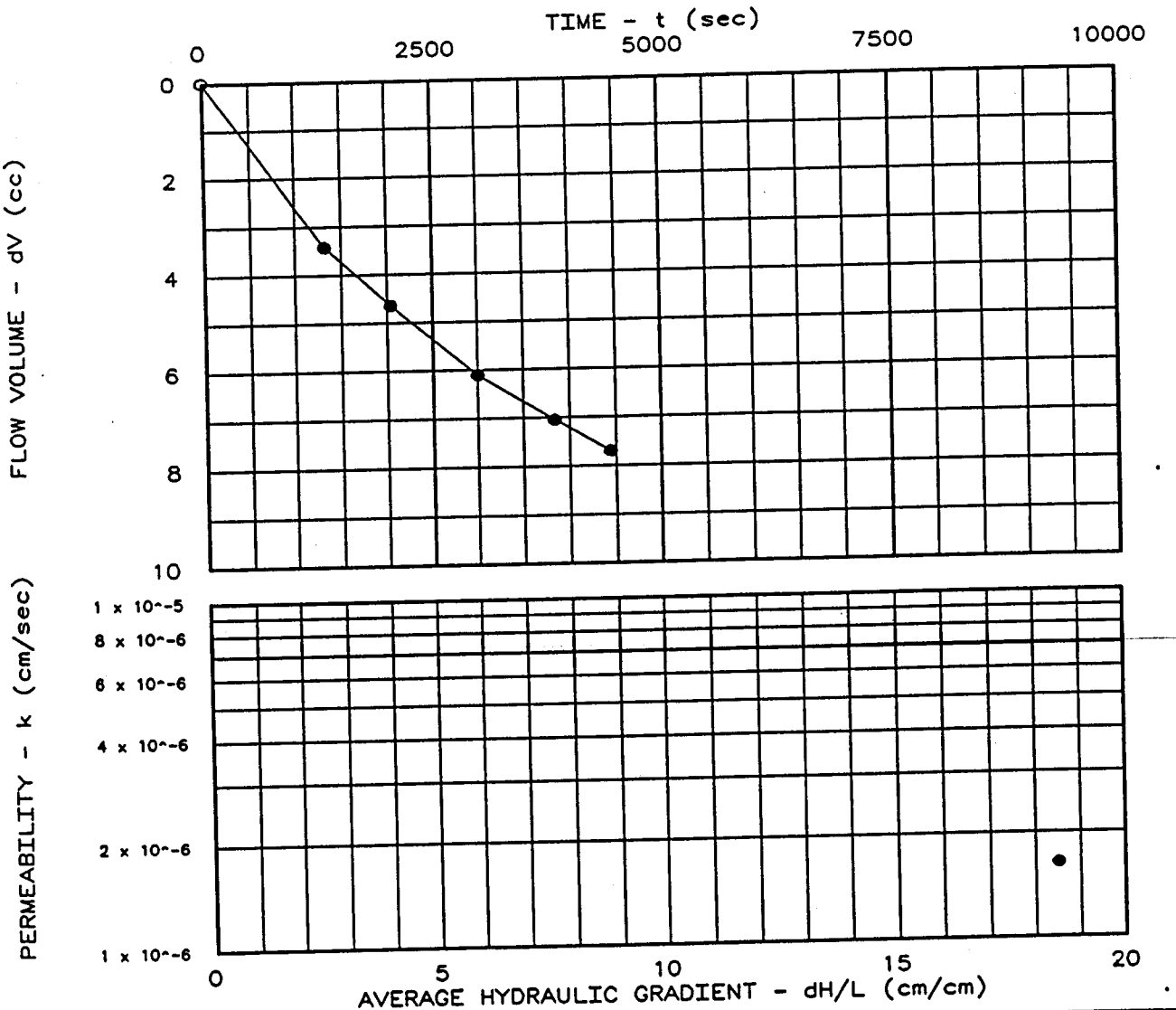
Specimen Height (cm): 9.93
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 93.3
Moisture Before Test (%): 27.5
Moisture After Test (%): 27.7

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.4	
Diff. Head (psi):	2.6	
Flow Rate (cc/sec):	1.37 x 10^-3	
Perm. (cm/sec):	1.64 x 10^-6	

SAMPLE DATA:

Sample Identification: WCL 1A Test Pad # 2
Second Lift Five Roller Passes
Visual Description: Yellow Brown and Gray
Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 87.8%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-10-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077A-80
File No.:
Lab No.:
Tested by: jon b
Checked by: cfb
Test: CH - Constant head

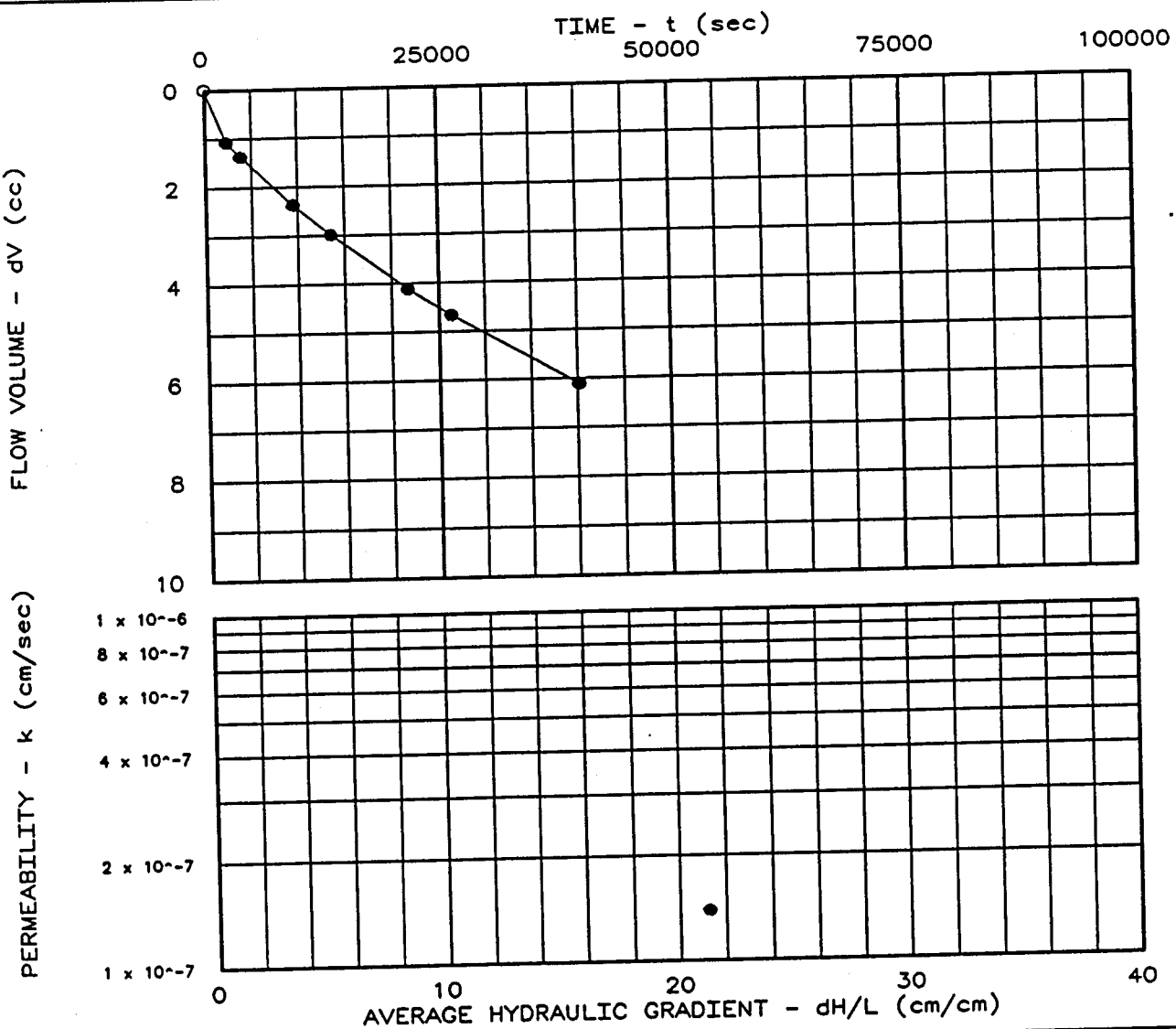
PERMEABILITY TEST REPORT

TEST DATA:
Specimen Height (cm): 10.35
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 89.2
Moisture Before Test (%): 29.5
Moisture After Test (%): 29.3

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	1.34 x 10^-4	
Perm. (cm/sec):	1.39 x 10^-7	

SAMPLE DATA:
Sample Identification: WCL 1A Test Pad # 3
Second Lift Eight Roller Passes
Visual Description: Yellow Brown and Gray
Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 84.0%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-12-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80A
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

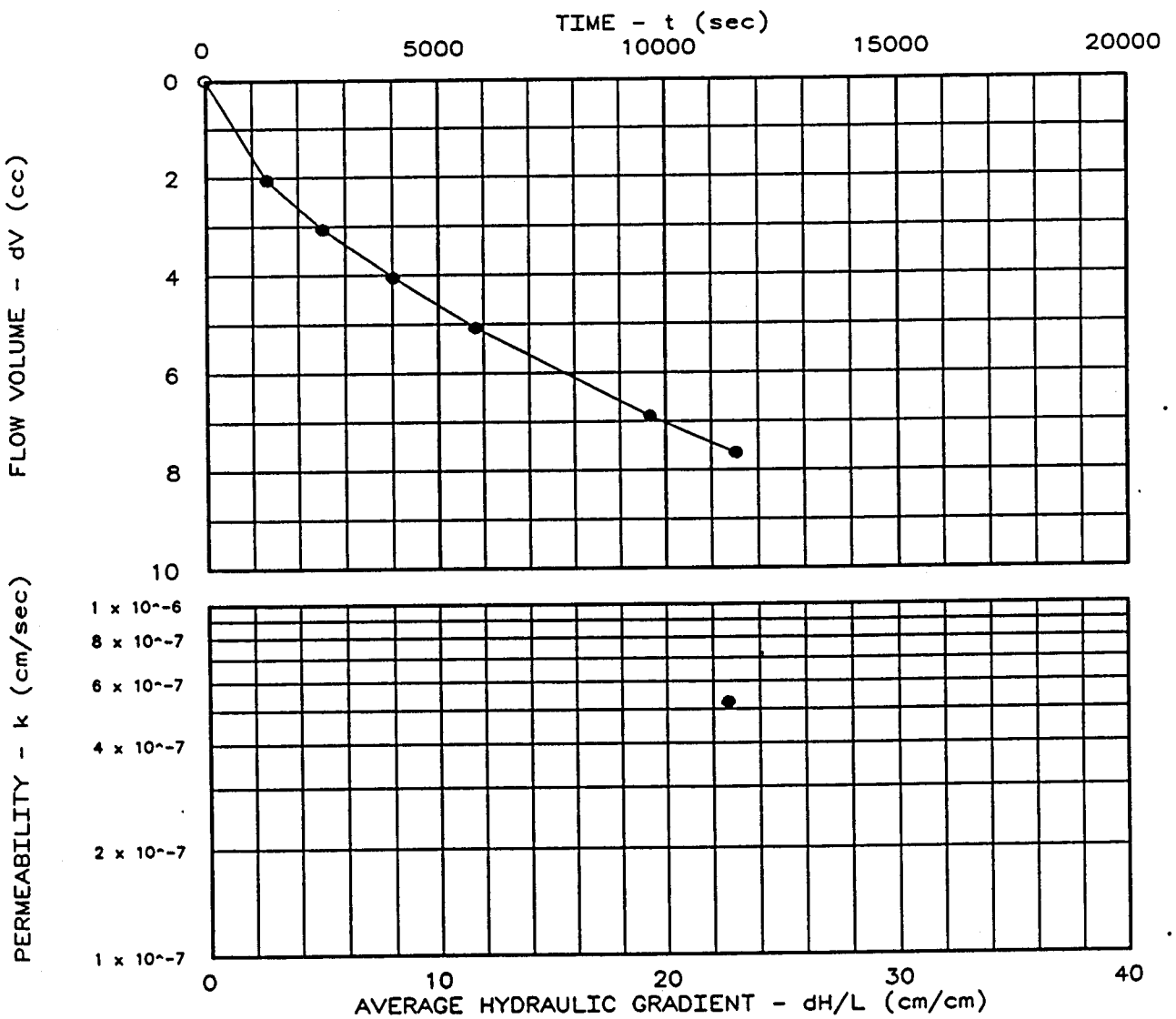
Specimen Height (cm): 9.01
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 93.5
Moisture Before Test (%): 28.8
Moisture After Test (%): 29.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	5.36 x 10^-4	
Perm. (cm/sec):	5.24 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1A # 4 Test Pad Third Lift
Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks:

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 88.0%
Permeameter type: Flexible wall
Sample type: undisturbed



Project: Wilson County Landfill
Location: Wilson County, North Carolina
Date: 8-12-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: cfb
Test: CH - Constant head

FIELD TESTING DAILY REPORTS

TITAN ATLANTIC GROUP

111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill; Test Pad; Area 1A

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80

DATE: 08/04/98 PERSONNEL: M. Stout

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Six field density tests, three sand cone and three using nuclear methods were performed in soils installed for the test pad in area 1A. The tests were performed in the first lift that was compacted with five passes of a sheepsfoot roller.

Field density test results were computed to range from 90 to 97 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

In addition, an undisturbed sample, #1, and a bulk sample were obtained for laboratory testing.

Mr. Gary Ahlberg was informed of the test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Carl Bomar

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill; Test Pad PROJECT NO.: 8427-80
DATE : 08/04/98
CLIENT : S. T. Wooten Construction Company AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 106.2 PCF at 14.3 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	first lift	See attached drawing	124.4	20.4	103.3	1	97	90
2	first lift	See attached drawing	115.9	21.2	95.6	1	90	90
3	first lift	See attached drawing	119.8	23.9	96.6	1	91	90

Method Used: SAND CONE Fill Placement:
Remarks:

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill; Test Pad PROJECT NO.: 8427-80
DATE : 08/04/98
CLIENT : S. T. Wooten Construction Company AREA:

PROCTOR DATA:

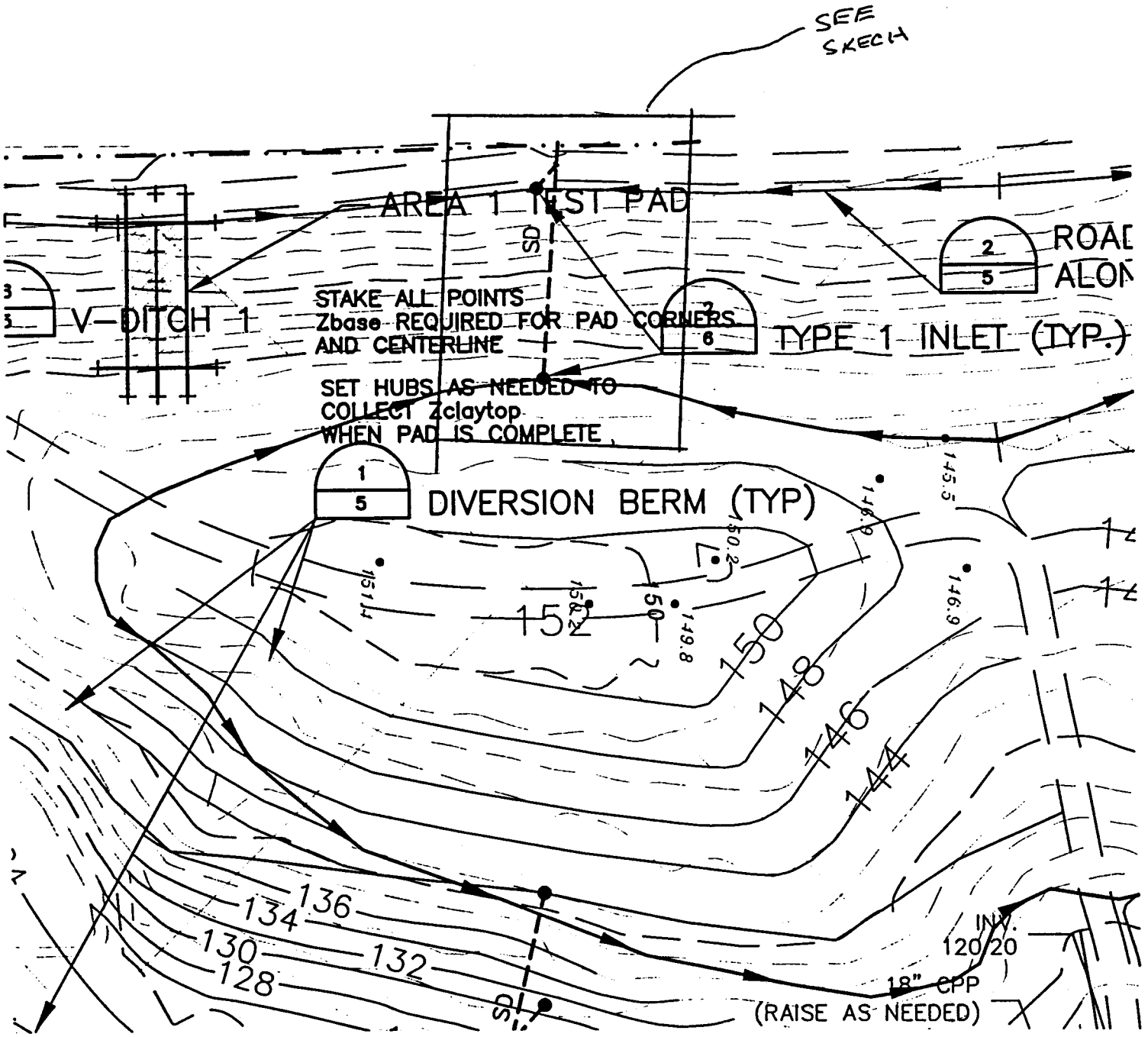
(1) Max. Dry Dens.: 106.2 PCF at 14.3 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
4	first lift	See attached drawing	119.6	21.6	98.3	1	93	90
5	first lift	See attached drawing	121.2	20.8	100.3	1	94	90
6	first lift	See attached drawing	124.1	21.9	101.8	1	96	90

Method Used: NUCLEAR Fill Placement:
Remarks:

& AREA 1A CONTROLLED FILL
SCALE: 1" = 100'



TITAN ATLANTIC GROUP

111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill; Test Pad; Area 1A

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80A

DATE: 08/05/98 PERSONNEL: M. Stout / G. Waller

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Nine field density tests, six nuclear and three sand cones, were performed in soils installed as clay liner for the test pad on the second lift. The first three nuclear tests and the three sand cone tests were performed in the second lift after 5 passes with the sheepsfoot roller. The pad was then compacted with three additional passes of the roller and retested using nuclear methods.

Field density test results were computed to range from 89 to 95 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90percent).

In addition, three bulk samples of the second lift soils were obtained for laboratory classification testing. Two undisturbed samples were also obtained. Sample #2 was obtained after five passes of the roller and sample #3 after eight passes.

Mr. Gary Ahlberg was informed of our test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Carl Bomer

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80A
DATE : 08/05/98
CLIENT : S. T. Wooten Construction Company
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 106.2 PCF at 14.3 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	second lift	See attached drawing; five passes	120.2	21.9	98.6	1	93	90
2	second lift	See attached drawing; five passes	120.6	23.8	97.4	1	92	90
3	second lift	See attached drawing five passes	121.5	24.1	97.9	1	92	90
4	second lift	See attached drawing; eight passes	124.0	22.6	101.1	1	95	90
5	second lift	See attached drawing; eight passes	122.9	23.0	99.9	1	94	90
6	second lift	See attached drawing; eight passes	123.6	24.4	99.3	1	94	90

Method Used: NUCLEAR Fill Placement:
Remarks:

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80A
DATE : Reflected below
CLIENT : S. T. Wooten Construction Company
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 106.2 PCF at 14.3 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

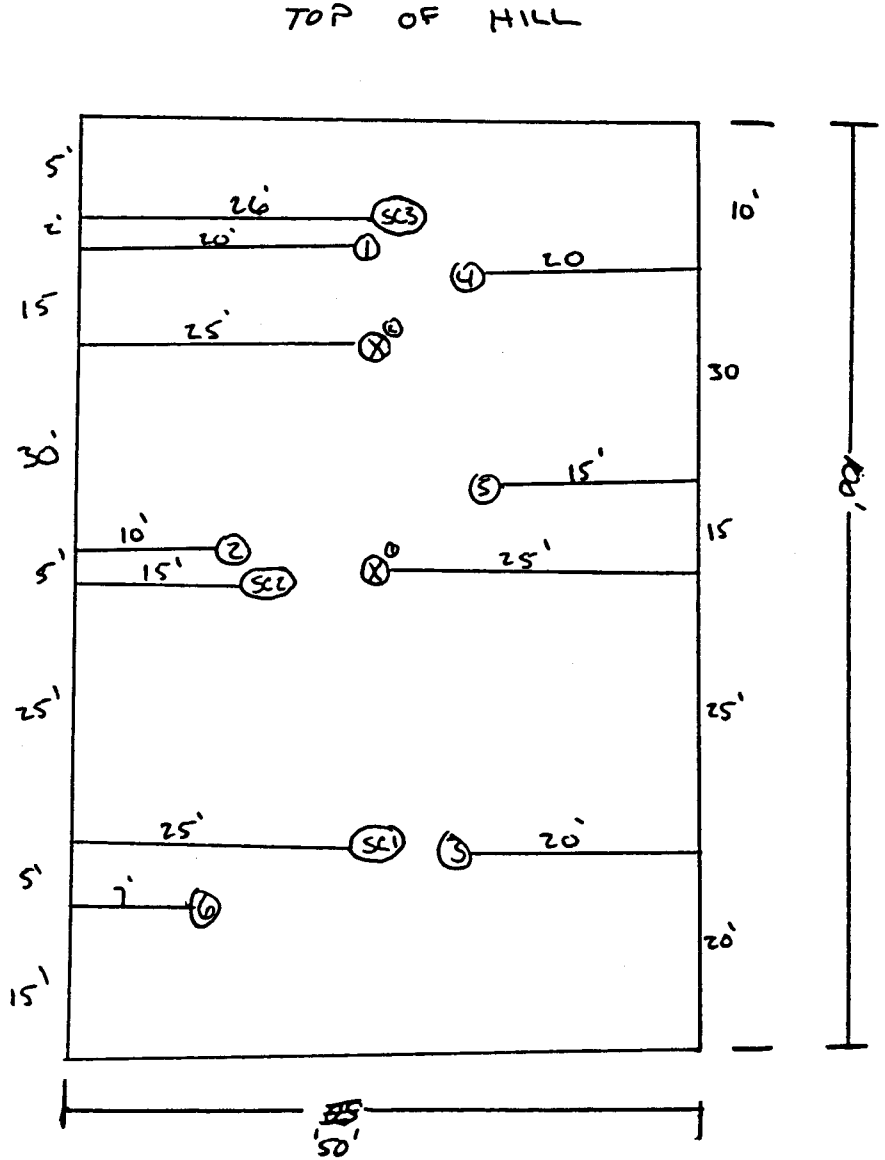
Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	second lift	See attached drawing five passes 08/05/98	119.9	25.0	95.9	1	90	90
2	second lift	See attached drawing five passes 08/05/98	114.9	22.1	94.1	1	89	90
3	second lift	See attached drawing five passes 08/05/98	114.6	22.4	93.6	1	88	90

Method Used: SAND CONE Fill Placement:
Remarks:

TEST PAD 1A
ST. WOOSTEN
2ND LIFT

⊗⁰ = UD TUBE TAKEN AFTER 5 PASSES W/ ROLLER

⊗⁸ = UD TUBE TAKEN AFTER 8 PASSES W/ ROLLER



TITAN ATLANTIC GROUP

111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: County of Wilson

PROJECT: Wilson County Landfill; Test pad; Area 1A

WEATHER: Sunny and hot

TITAN JOB NO.: 8077-80A

DATE: 08/06/98 PERSONNEL: M. Stout

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Six field density tests, three nuclear and three sand cones, were performed in soils installed as clay liner for the test pad on the third lift. The soils were compacted using five passes of a deep cleated sheepsfoot compactor. After the soils were tested, a smaller roller with shallower cleats was used to finish the lift.

Density test results were computed to range from 89 to 98 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

In addition, a bulk sample of the soils used on the lift and an undisturbed sample, #4, were obtained for laboratory testing.

Mr. Gary Ahlberg was informed of our test results.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Carl Bonner

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80A
DATE : 08/06/98
CLIENT : S. T. Wooten Construction Company
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 106.2 PCF at 14.3 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	third lift	test pad with 7" cleet roller; 5 passes	118.2	26.1	93.7	1	88	90
2	third lift	Test pad with 7" cleet roller; 5 passes	119.6	25.2	95.5	1	90	90
3	third lift	Test pad with 7" cleet roller; 5 passes	120.5	24.3	96.9	1	91	90

Method Used: NUCLEAR Fill Placement:
Remarks:

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80A
DATE : 08/06/98
CLIENT : S. T. Wooten Construction Company
AREA:

PROCTOR DATA:

(2) Max. Dry Dens.: 99.5 PCF at 20.3 % Opt. Moist. Method: ASTM D-1556
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

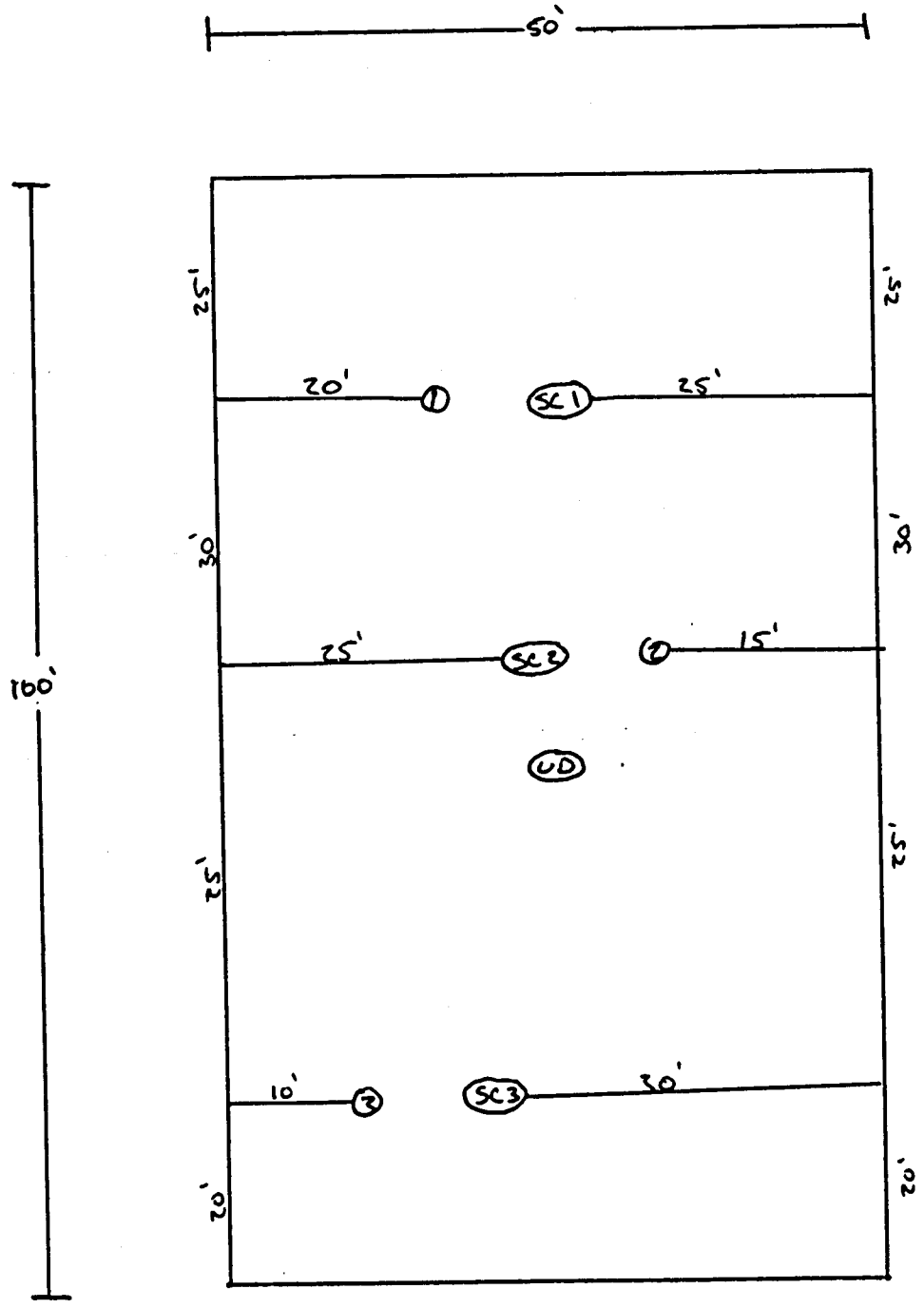
Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	third lift	See attached drawing	121.9	25.2	97.3	2	98	90
2	third lift	See attached drawing	118.5	24.9	94.8	2	95	90
3	third lift	See attached drawing	108.7	22.4	88.8	2	89	90

Method Used: SAND CONE Fill Placement:
Remarks:

3RD LIFT
TEST PAD

8-6-98

TOP



* NOTE NOT TO SCALE

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: August 28, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

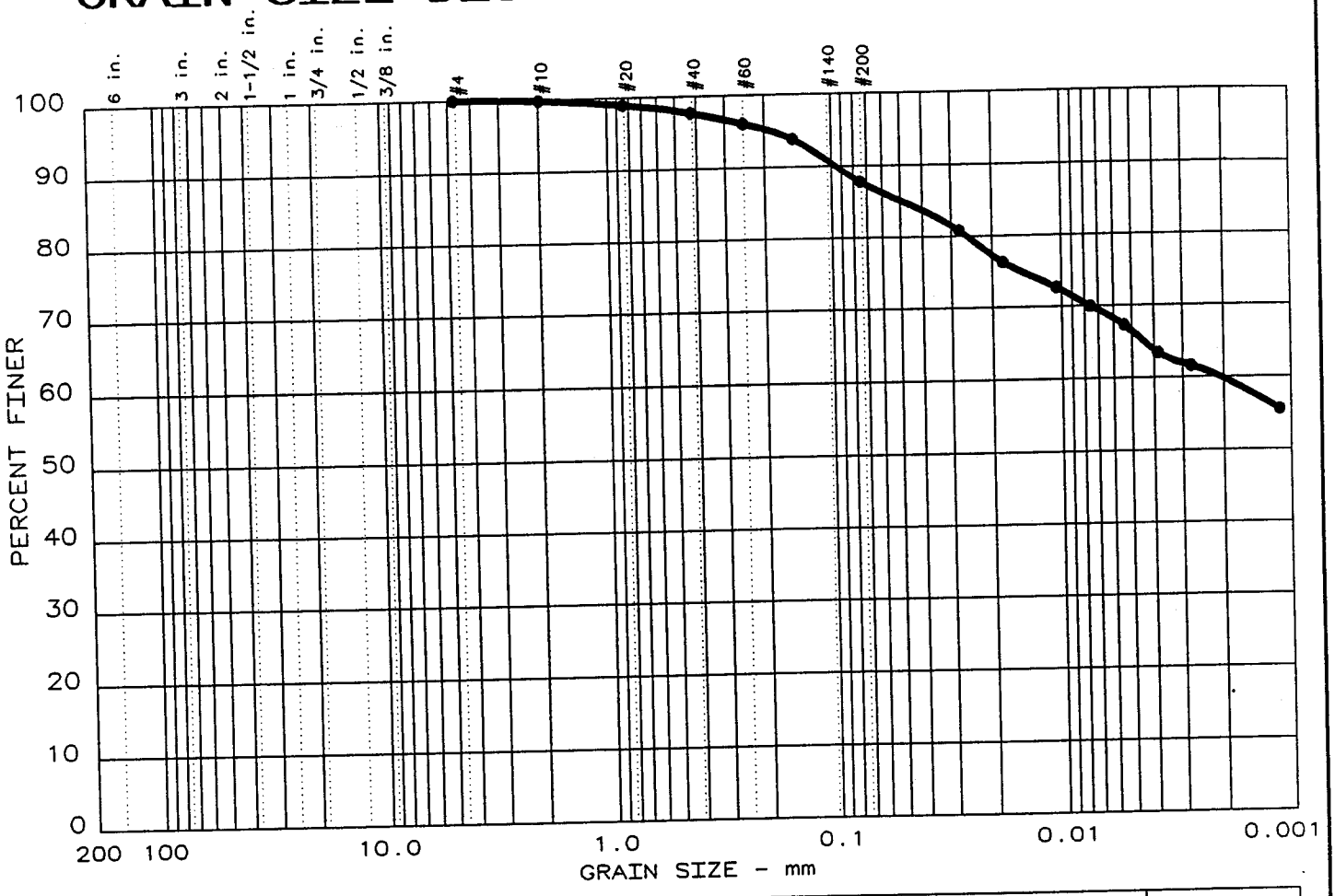
☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	14	0.0	0.0	12.2	21.4	66.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	67	40								

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 1, SECOND LIFT

Date: AUGUST 22, 1998

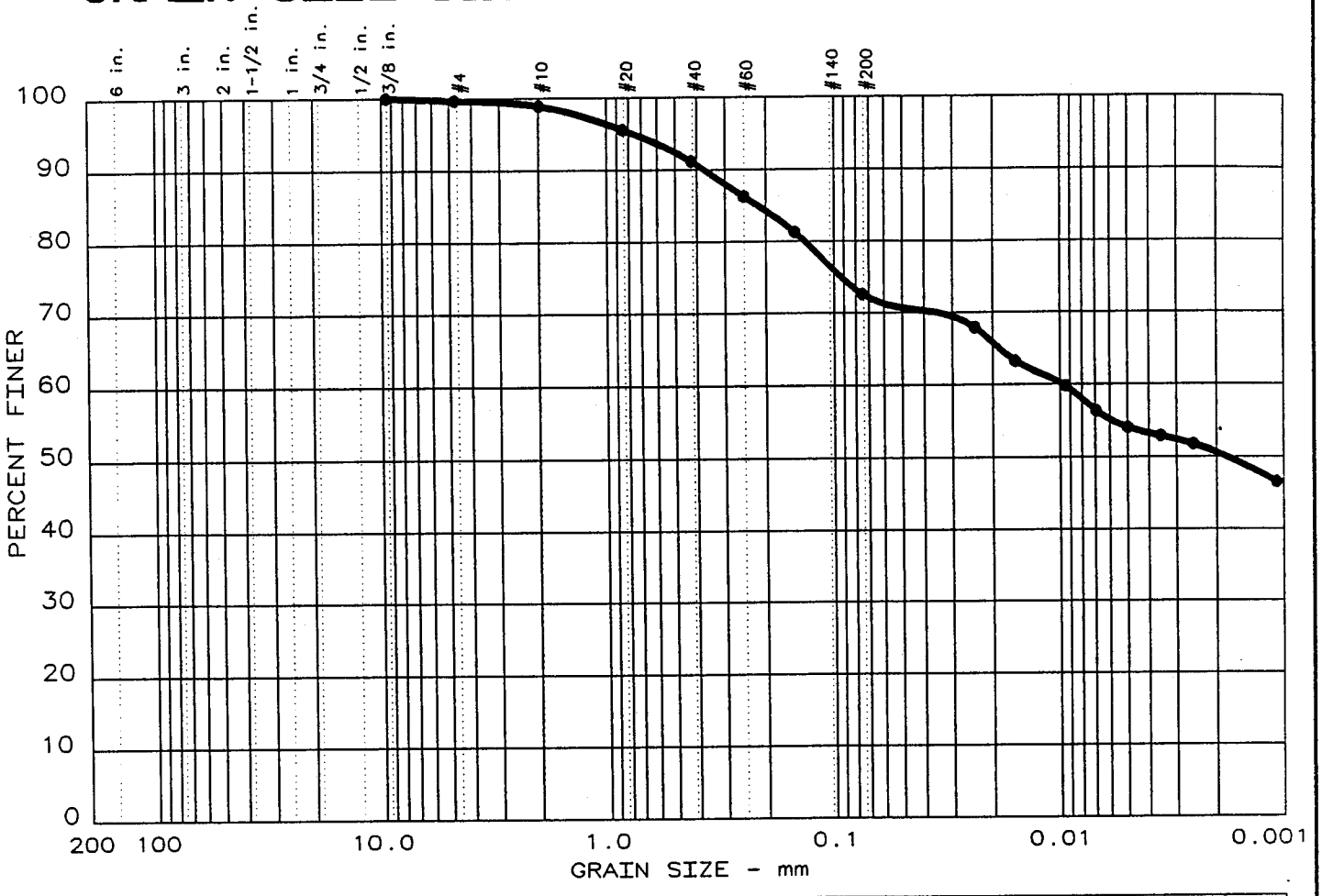
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 1A-1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.4	27.0	18.5	54.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	57	35	0.216		0.0018					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: WCL-1A-3; FIRST LIFT

Date: AUGUST 28, 1998

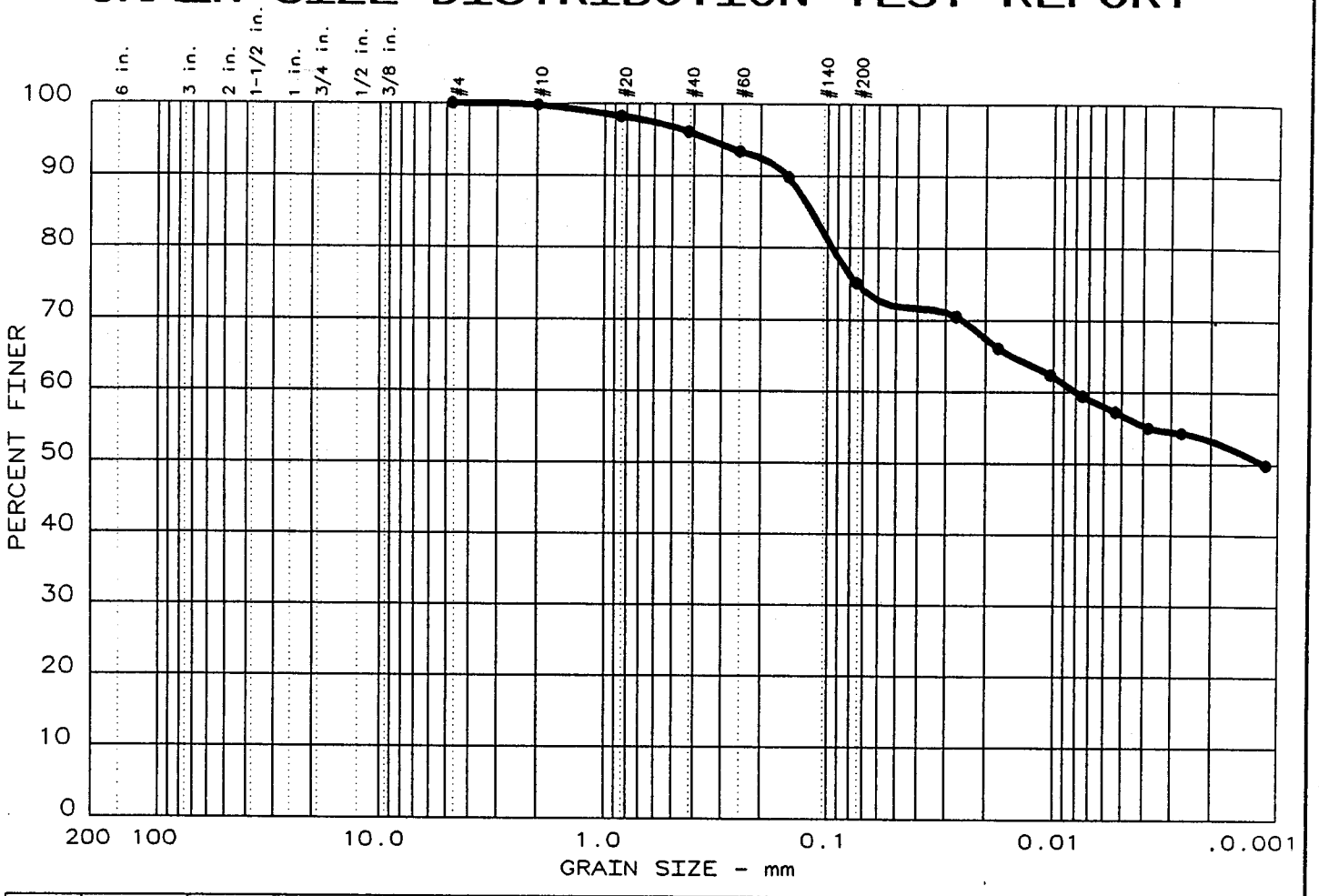
Remarks:
SAMPLED 8/19/98

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-3

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	24.8	18.4	56.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	56	31	0.117		0.0011					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLI SILTY SLI SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: WCL-1A-4; FIRST LIFT

Date: AUGUST 28, 1998

Remarks:
SAMPLED 8/19/98

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-4

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 23, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☑ field density reports

☑ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS: Reports dated August 25, 26, September 2, 3 and 4, 1998.

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and hot

TITAN JOB NO.: 8077-80

DATE: 08/25/98 PERSONNEL: D. Mullins

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Four field density tests were performed in Area 1A on the first lift of the clay cap.

Field density test results were computed to range from 91 to 96 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : 08/25/98

CLIENT : County of Wilson

AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	first lift	WCL - 1A - 6	118.7	24.4	95.4	1	96	90
2	first lift	WCL - 1A - 6	119.9	27.6	93.9	1	94	90
3	first lift	WCL - 1A - 7	115.5	26.8	91.0	1	92	90
4	first lift	WCL - 1A - 7	116.6	29.3	90.1	1	91	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Hall

TITAN ATLANTIC GROUP

111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Cloudy with afternoon rain

TITAN JOB NO.: 8077-80

DATE: 08/26/98 PERSONNEL: D. Mullins

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in Area 1A on the first and second lifts of the clay cap.

Field density test results were computed to range from 90 to 98 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : 08/26/98
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	first lift	WCL - 1A - 8	120.4	26.9	94.8	1	95	90
2	first lift	WCL - 1A - 8	117.0	29.6	90.2	1	91	90
3	first lift	WCL - 1A - 8	113.6	26.0	90.1	1	91	90
4	first lift	WCL - 1A - 8	121.9	24.5	97.9	1	98	90
5	first lift	WCL - 1A - 8	114.7	28.1	89.5	1	90	90
6	second lift	WCL - 1A - 9	118.7	27.9	92.8	1	93	90
7	second lift	WCL - 1A - 9	117.7	27.8	92.0	1	93	90
8	second lift	WCL - 1A - 9	115.6	27.4	90.7	1	91	90
9	second lift	WCL - 1A - 9	114.1	27.7	89.3	1	90	90
10	second lift	WCL - 1A - 9	116.1	27.7	90.9	1	91	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : Reflected below
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
11	second lift	WCL - 1A - 9	121.7	26.9	95.9	1	96	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Hall

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and hot

TITAN JOB NO.: 8077-80

DATE: 09/02/98 PERSONNEL: D. Mullins

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in Area 1A on the third lift of the clay liner.

Field density test results were computed to range from 91 to 100 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

In addition, two undisturbed samples were obtained to sample the soils for permeability testing.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Yell

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

CLIENT : County of Wilson

PROJECT NO.: 8077-80
DATE : 09/02/98
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	second lift	WCL - 1A - 10	118.1	23.5	95.6	1	96	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 09/02/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
2		WCL - 1A - 10	118.9	22.9	96.7	1	97	90
3		WCL - 1A - 10	115.9	22.5	94.6	1	95	90
4		WCL - 1A - 10	116.0	28.0	90.6	1	91	90
5		WCL - 1A - 10	117.7	26.0	93.4	1	94	90
6		WCL - 1A - 10	123.5	21.9	101.3	1	102	90
7		WCL - 1A - 1[illegible]	114.3	26.3	90.4	1	91	90
8		WCL - 1A - 1[illegible]	115.6	24.3	93.0	1	94	90
9		WCL - 1A - 1[illegible]	114.8	25.9	91.1	1	92	90
10		WCL - 1A - 1[illegible]	118.0	26.6	93.2	1	94	90
11		WCL - 1A - 1[illegible]	116.6	26.8	91.9	1	92	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Partly cloudy and warm

TITAN JOB NO. : 8077-80

DATE: 09/03/98 PERSONNEL: M. Stout

S. T. Wooten Construction Company worked on placing the GCL on top of Area 1A and also placed clay on the two foot overlap between the GCL and the slope. No tests were needed on this date.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Partly cloudy and warm

TITAN JOB NO. : 8077-80

DATE: 09/04/98 PERSONNEL: M. Stout

S. T. Wooten Construction Company and Ready Construction Company both moved non-clay materials and subsequently, no tests were needed on this date.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC
Bob Heel

PERMEABILITY TEST REPORT

TEST DATA:

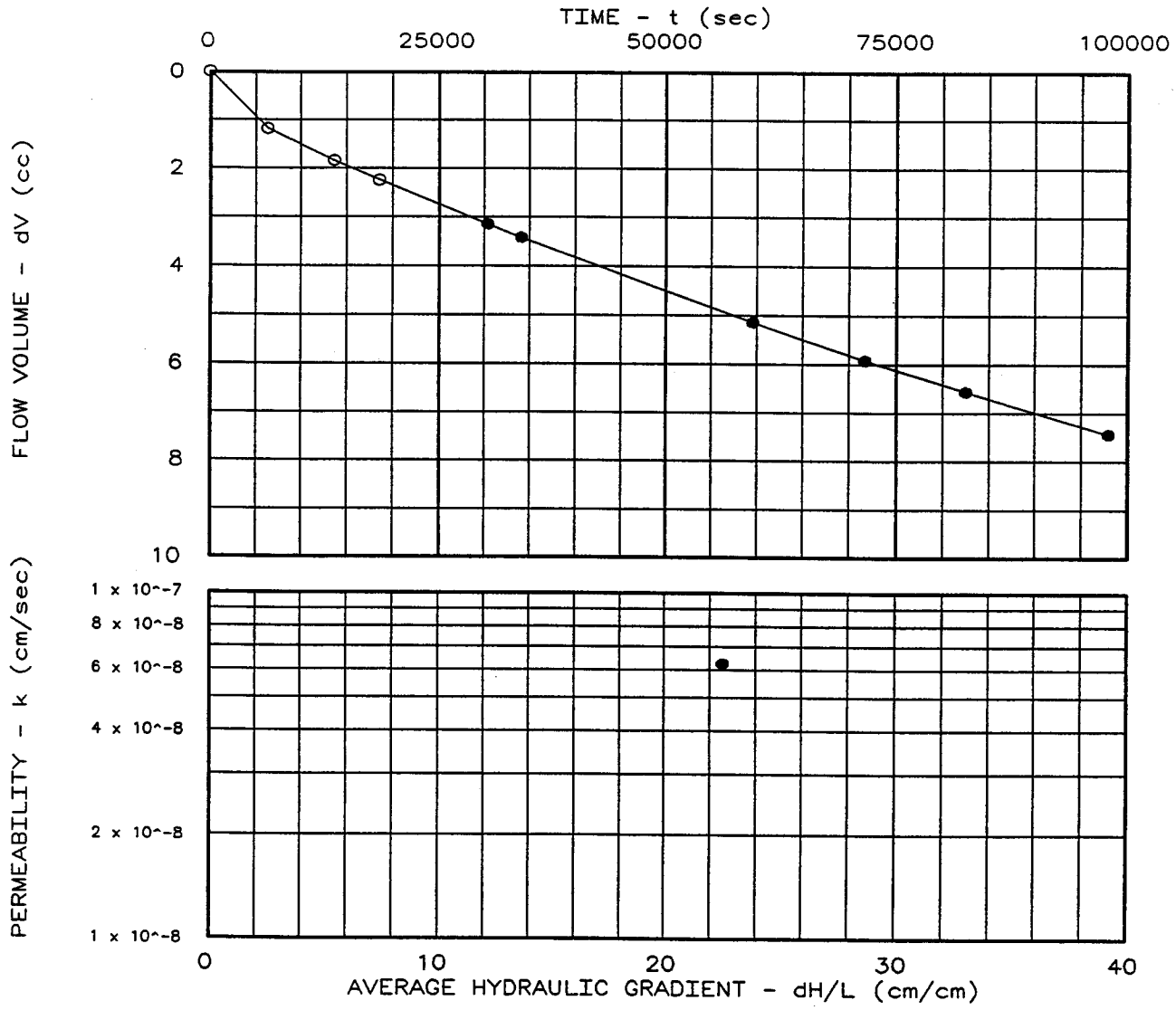
Specimen Height (cm): 9.28
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 88.7
Moisture Before Test (%): 30.7
Moisture After Test (%): 35.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	63.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	6.40 x 10^-5	
Perm. (cm/sec):	6.25 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL 1A #10 2nd Lift Sampled 9-2-98
Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3 ASTM(D698)
Percent Compaction: 83.5%
Permeameter type: Flexible Wall
Sample type: Undisturbed



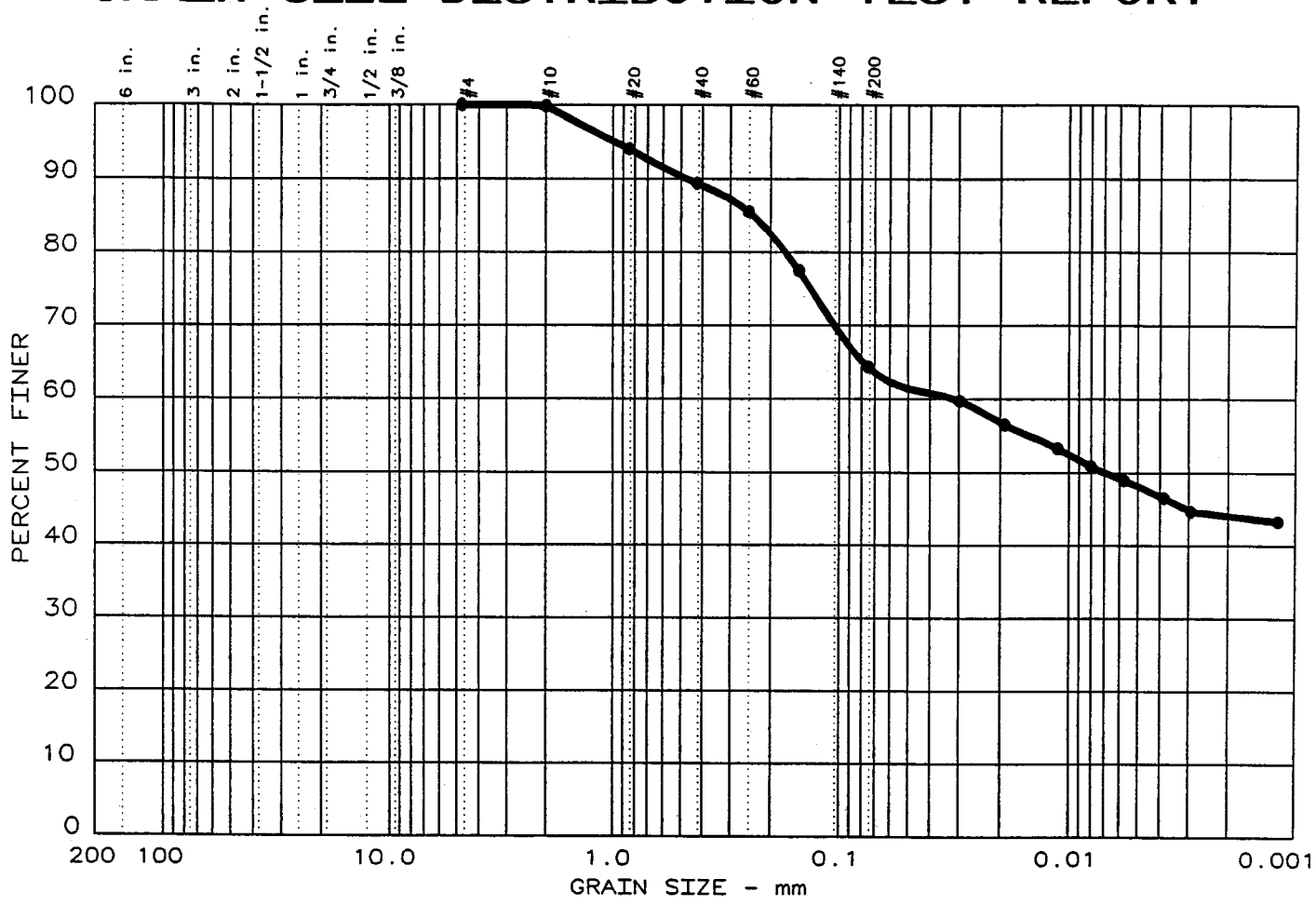
Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-20-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	0.0	35.6	16.3	48.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	55	36	0.237		0.0069					

	MATERIAL DESCRIPTION	USCS	AASHTO
●	YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 12

Date: SEPTEMBER 22, 1998

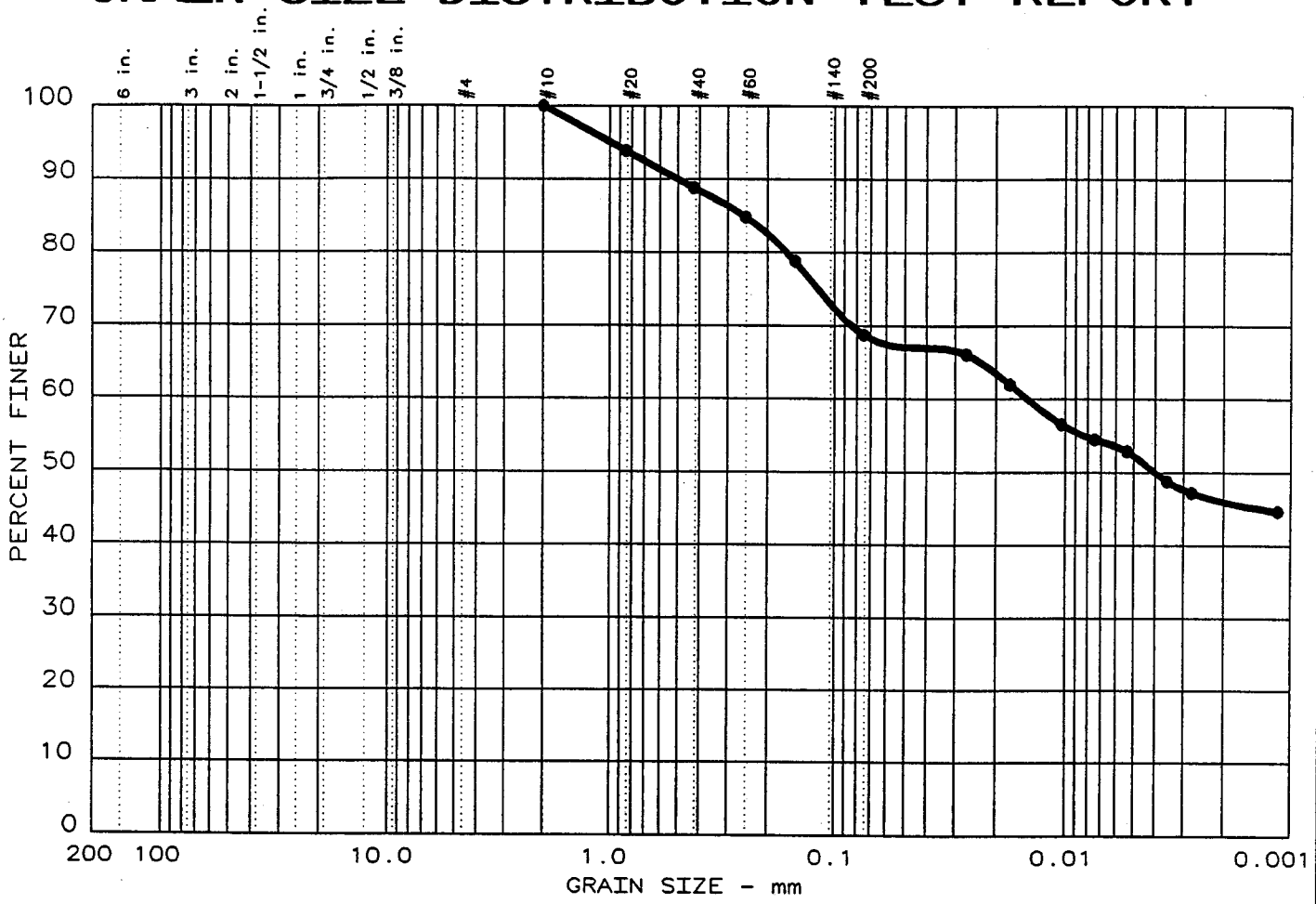
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-12

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.0	31.2	16.5	52.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	54	31	0.254		0.0040					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 13

Date: SEPTEMBER 22, 1998

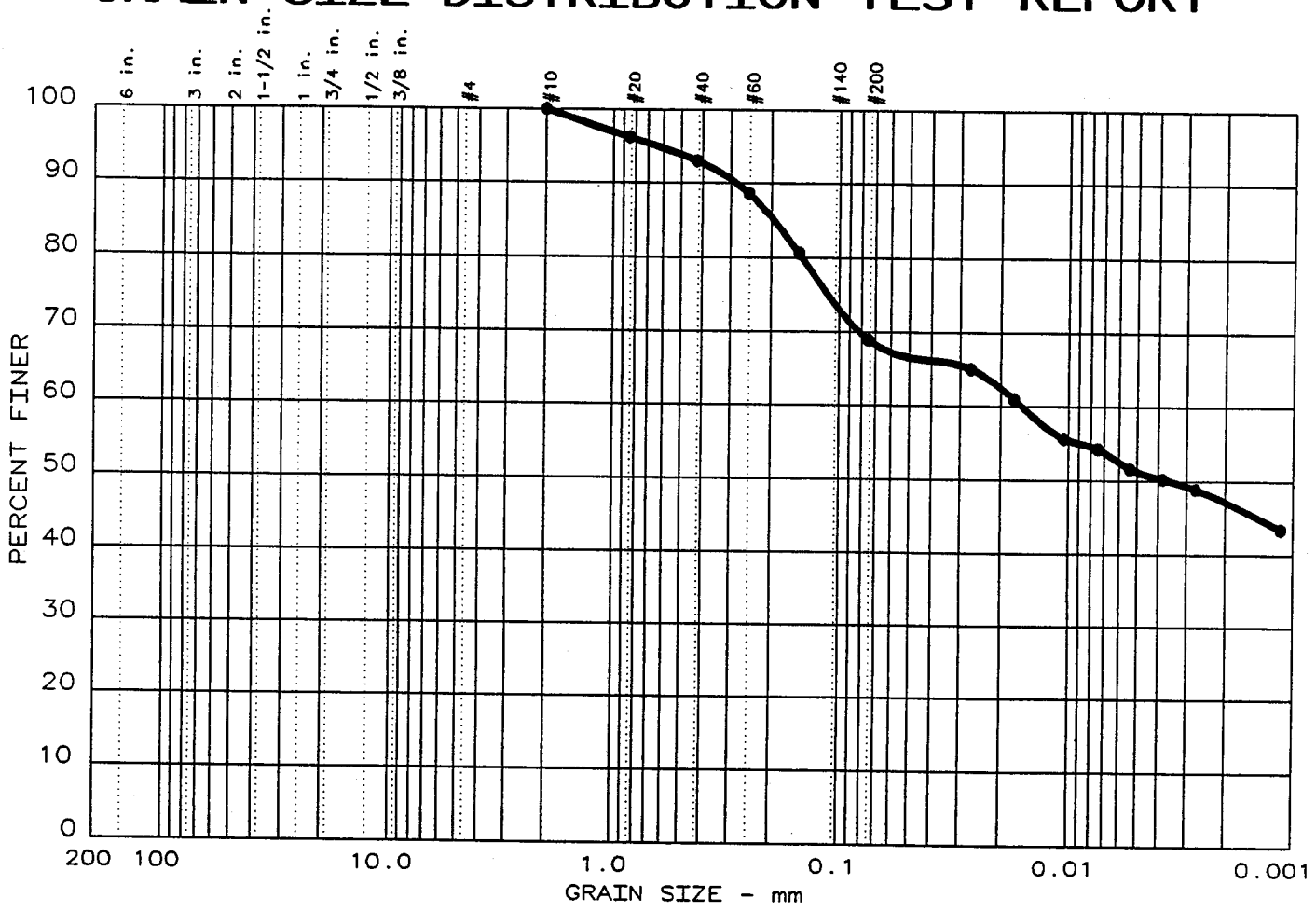
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-13

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	31.1	17.8	51.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	57	37	0.193		0.0035					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 14

Date: SEPTEMBER 22, 1998

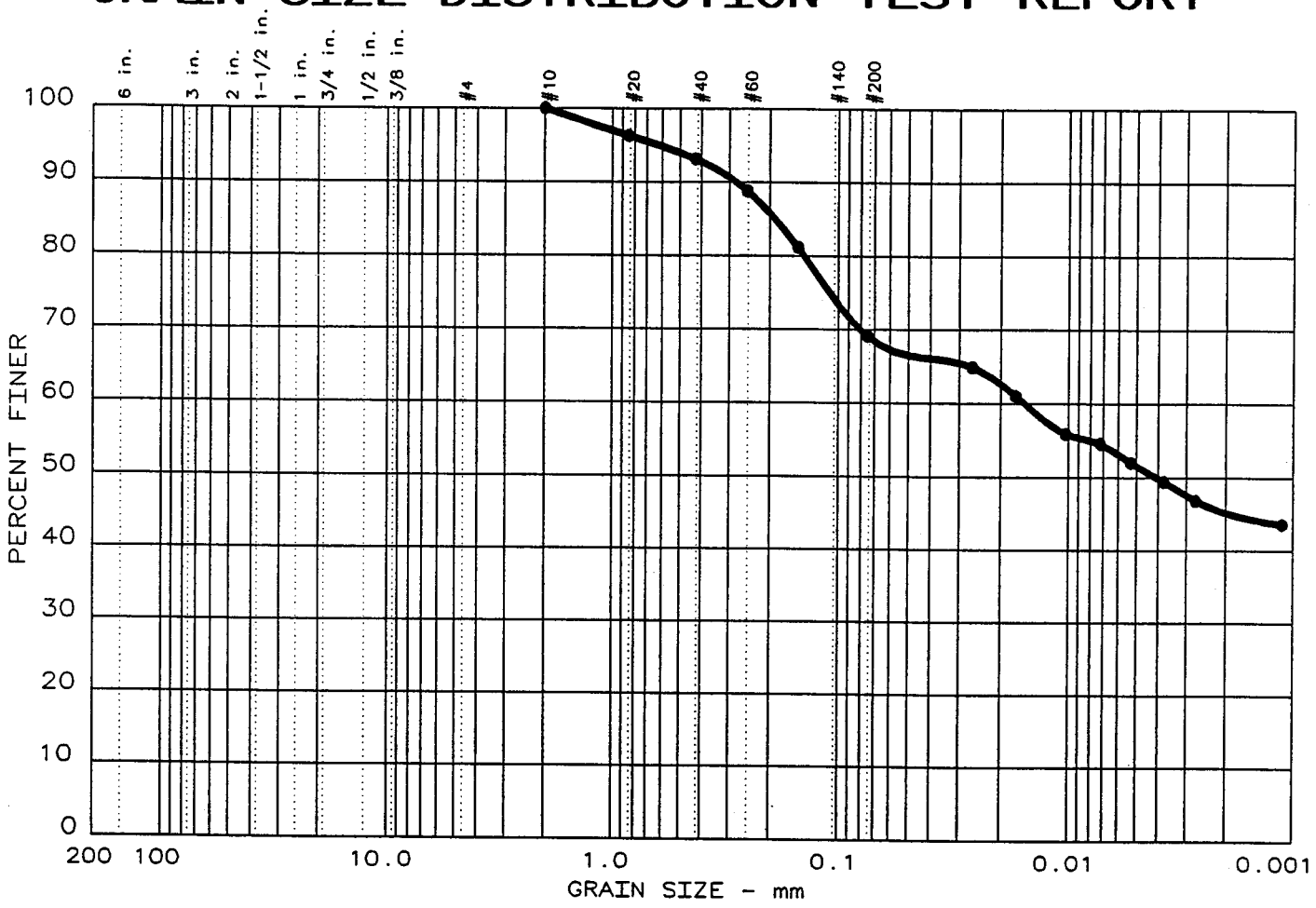
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-14

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	30.9	17.6	51.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	50	28	0.186		0.0041					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 15

Date: SEPTEMBER 22, 1998

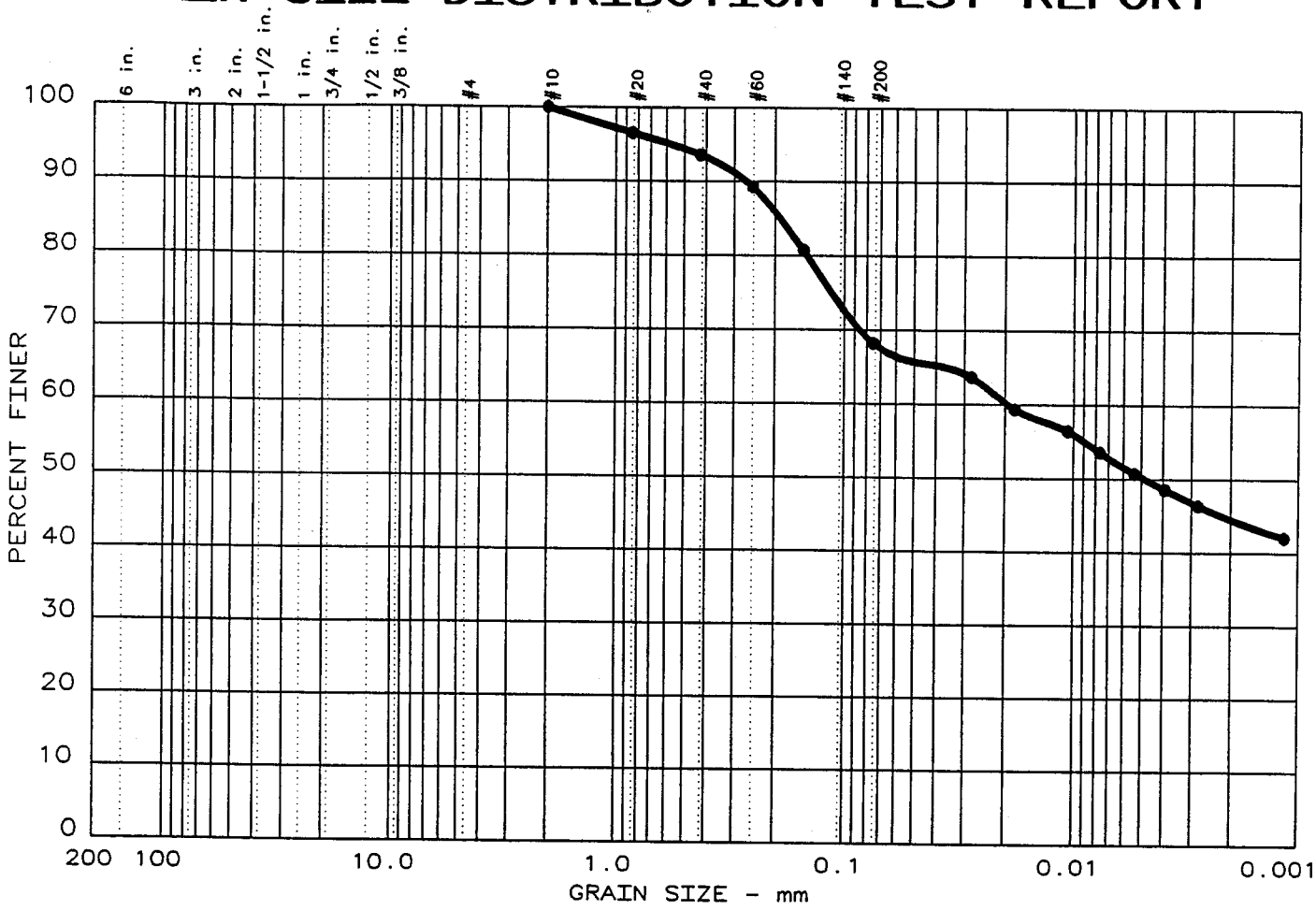
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-15

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	31.8	18.0	50.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	52	31	0.186		0.0047					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 16

Date: SEPTEMBER 22, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-16

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 2, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

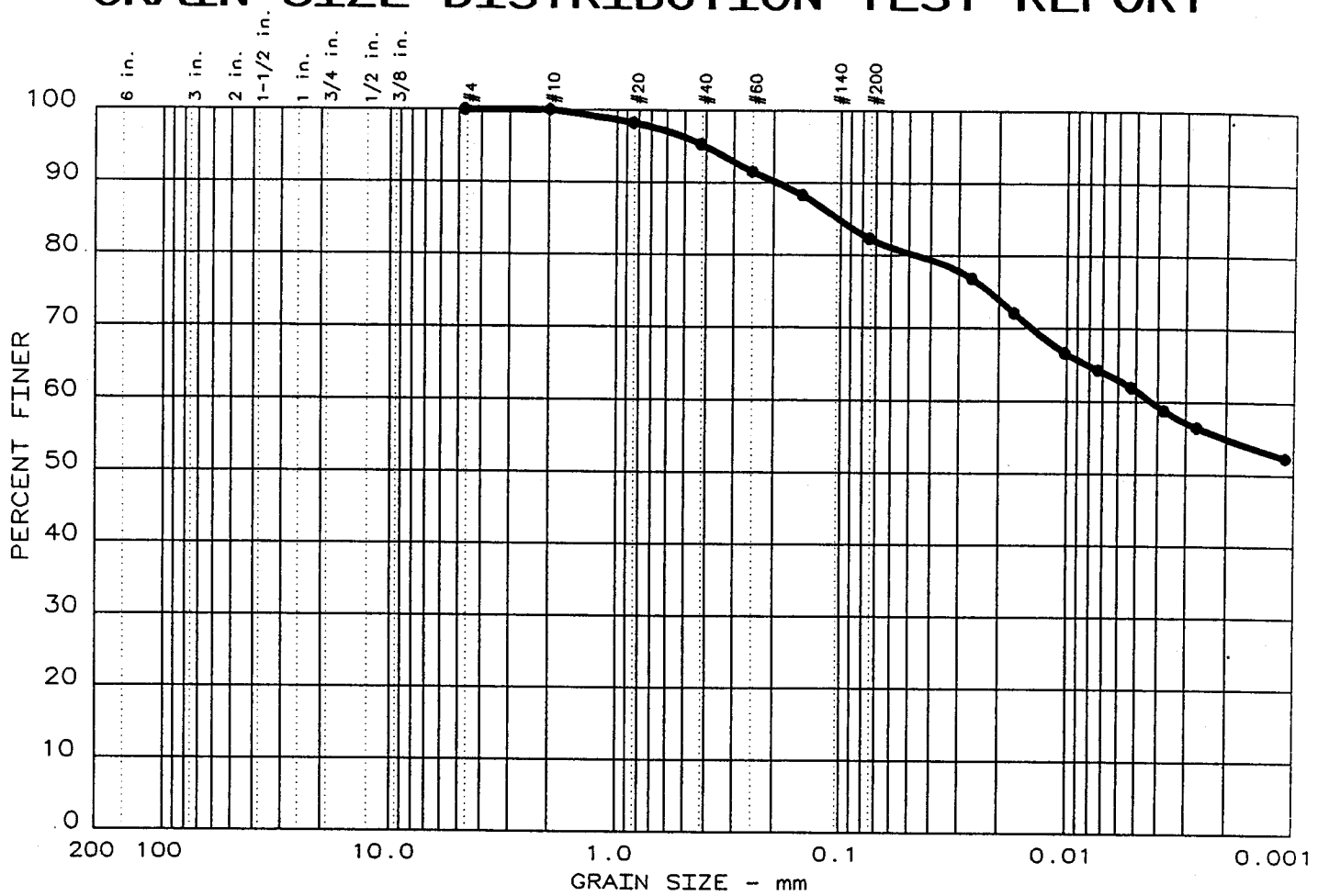
☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	0.0	17.7	20.8	61.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	61	32	0.102							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLI SANDY SLI SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 9

Date: AUGUST 31, 1998

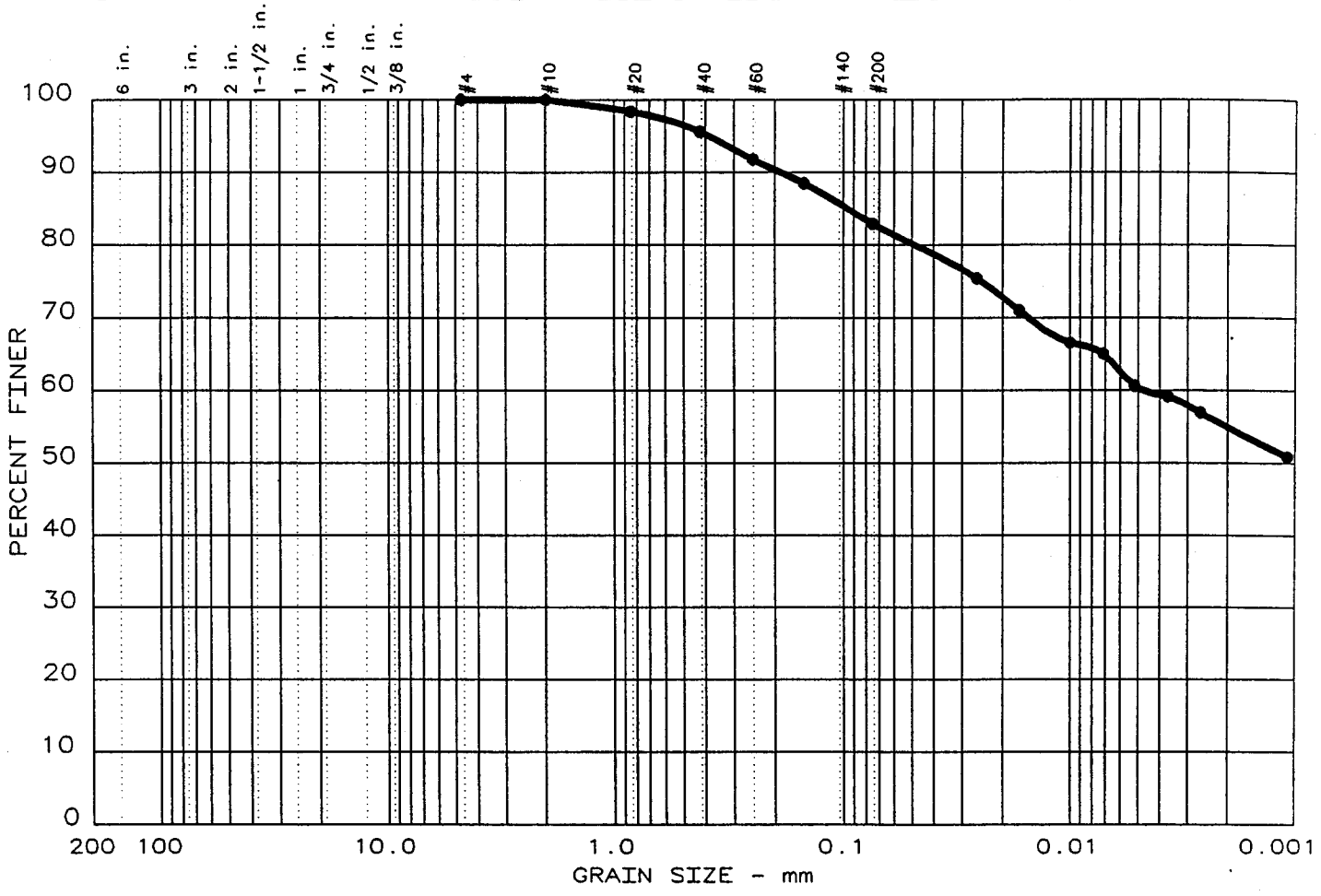
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-9

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.0	17.1	22.6	60.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	60	33	0.0966							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLI SANDY SLI SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 8

Date: AUGUST 31, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-8

PERMEABILITY TEST REPORT

TEST DATA:

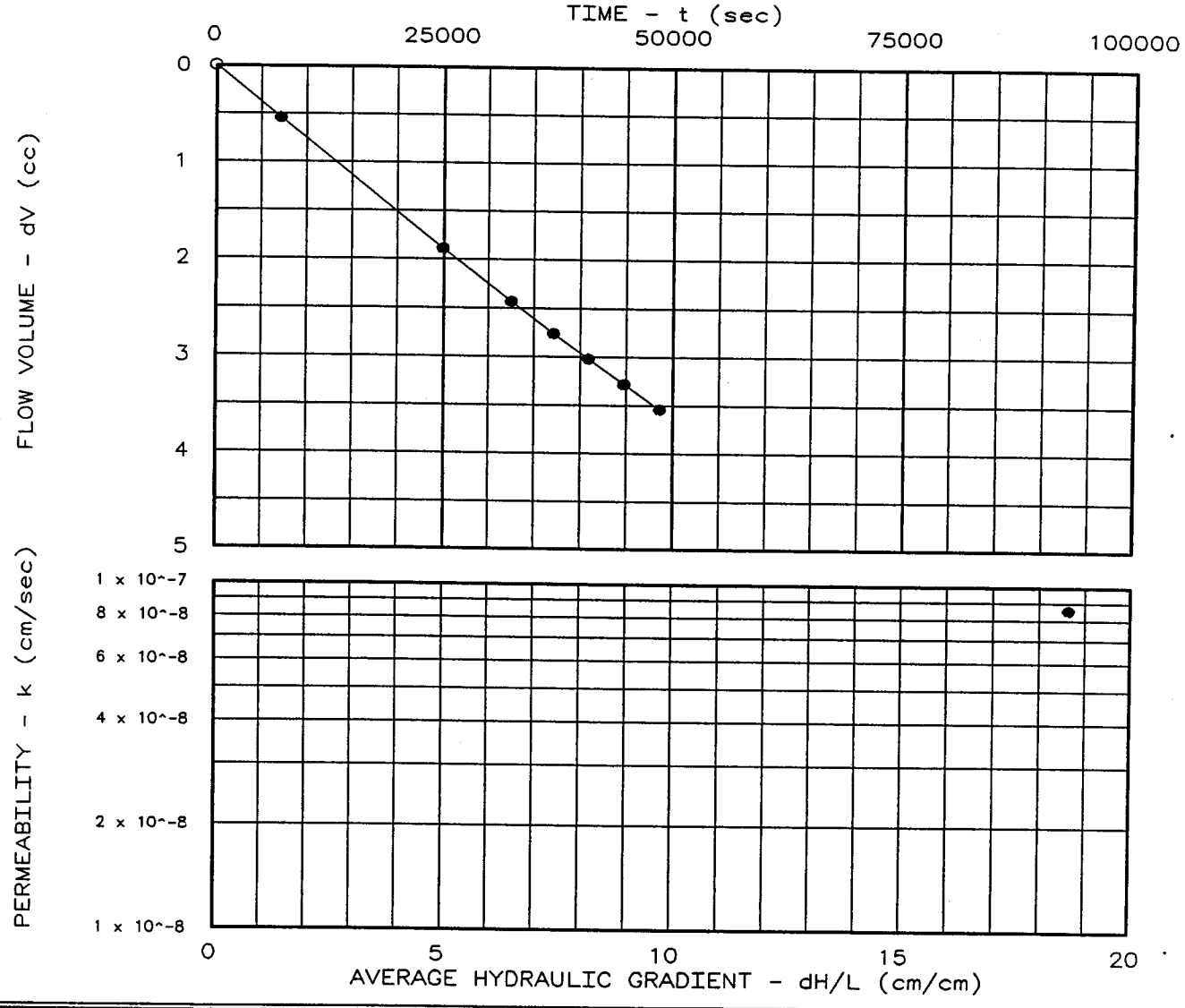
Specimen Height (cm): 9.72
Specimen Diameter (cm): 7.26
Dry Unit Weight (pcf): 93.4
Moisture Before Test (%): 25.7
Moisture After Test (%): 25.7

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	62.5	
Back Pressure(psi):	59.9	
Diff. Head (psi):	2.6	
Flow Rate (cc/sec):	7.24 x 10^-5	
Perm. (cm/sec):	8.55 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL 1A # 1
SECOND LIFT
Visual Description: GRAY, YELLOW AND TAN
SILTY SANDY CLAY
Remarks:

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 87.9%
Permeameter type: FLEXIBLE WALL
Sample type: UNDISTURBED



Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA
Date: 8-30-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 11, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

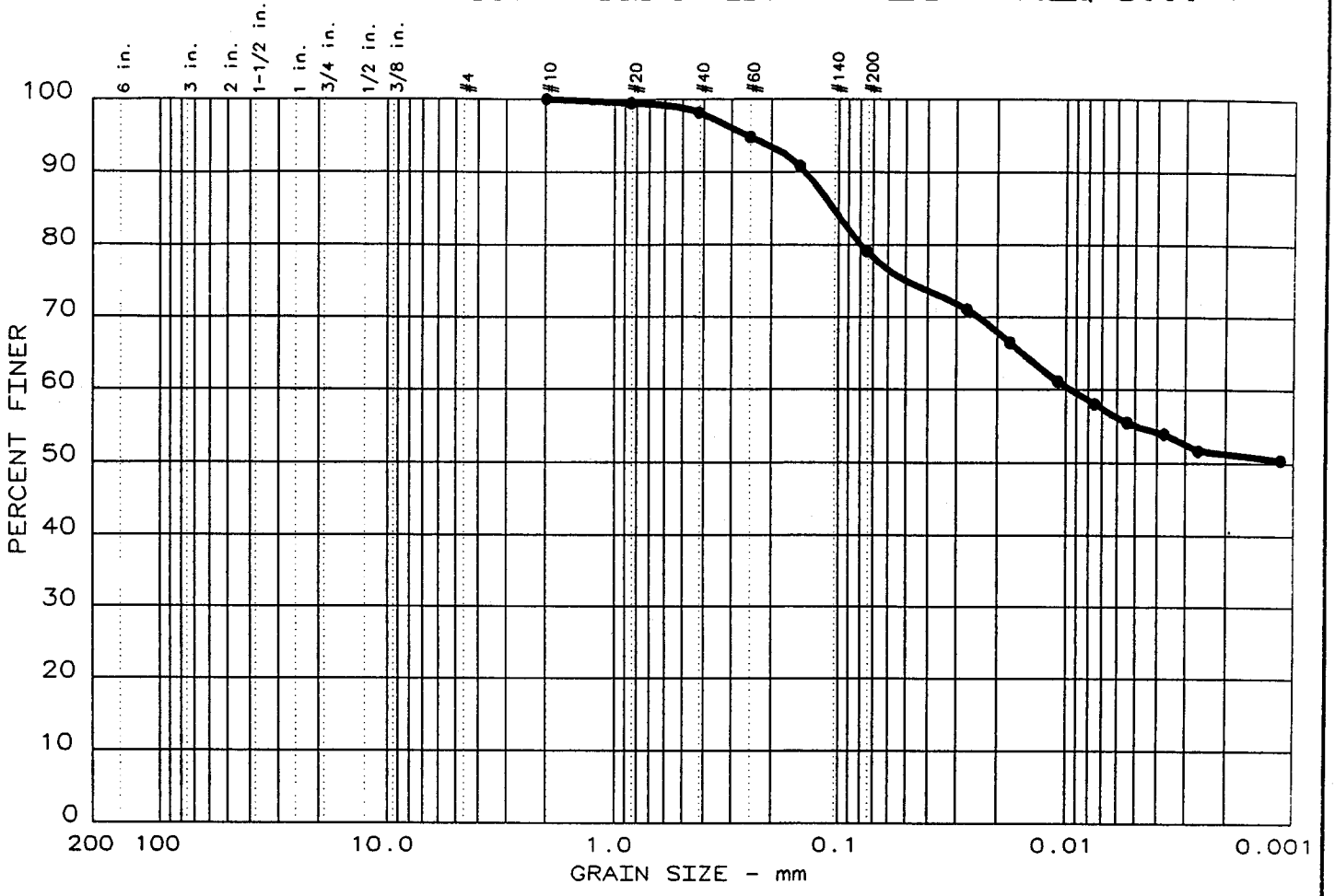
☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Abel

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.0	20.9	24.1	55.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	54	27	0.105							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE TWO, THIRD LIFT

Date: SEPTEMBER 4, 1998

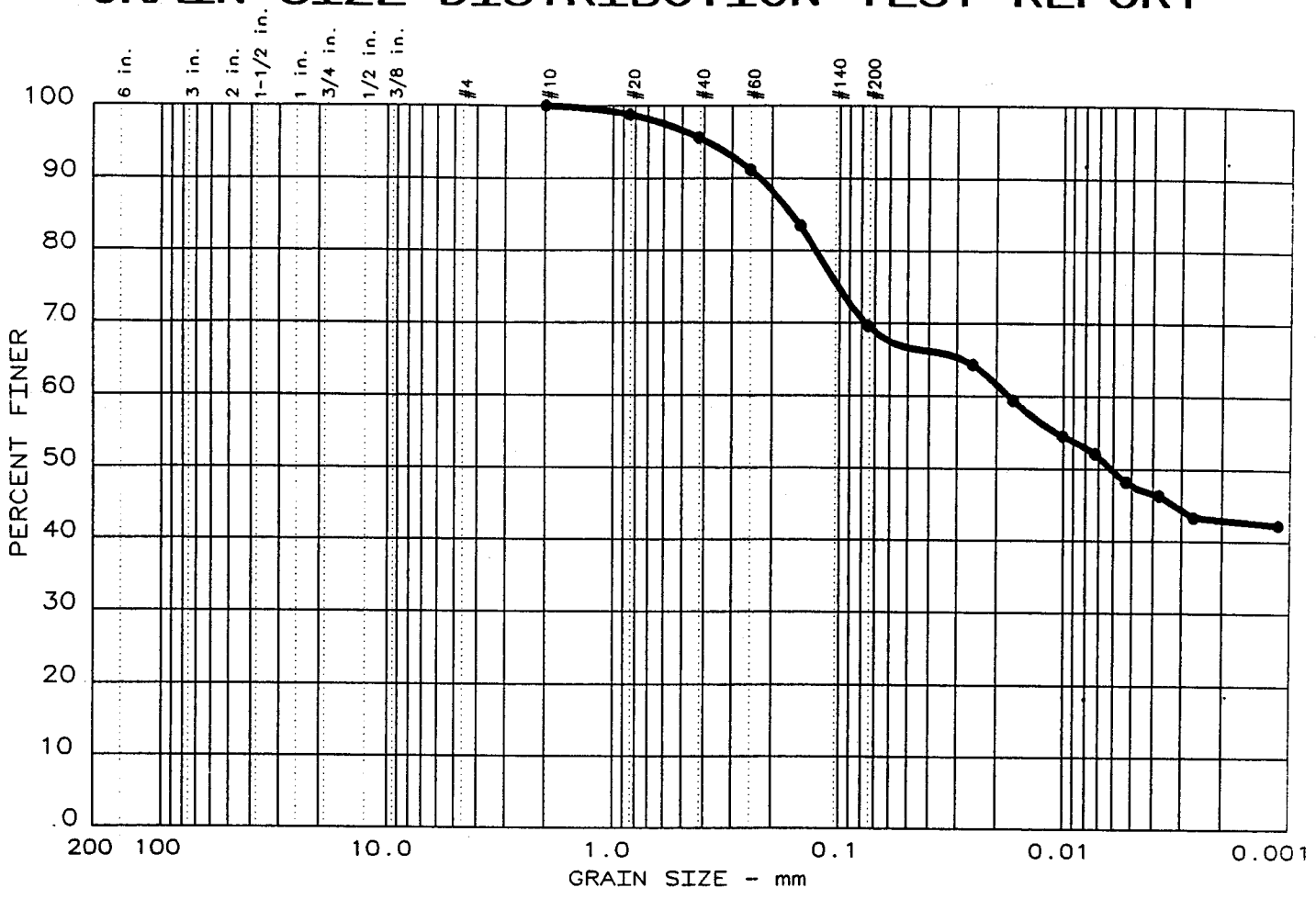
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 1A-2

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.0	30.4	21.9	47.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	29	0.162		0.0062					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE FIVE

Date: SEPTEMBER 4, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL 1A-5

PERMEABILITY TEST REPORT

TEST DATA:

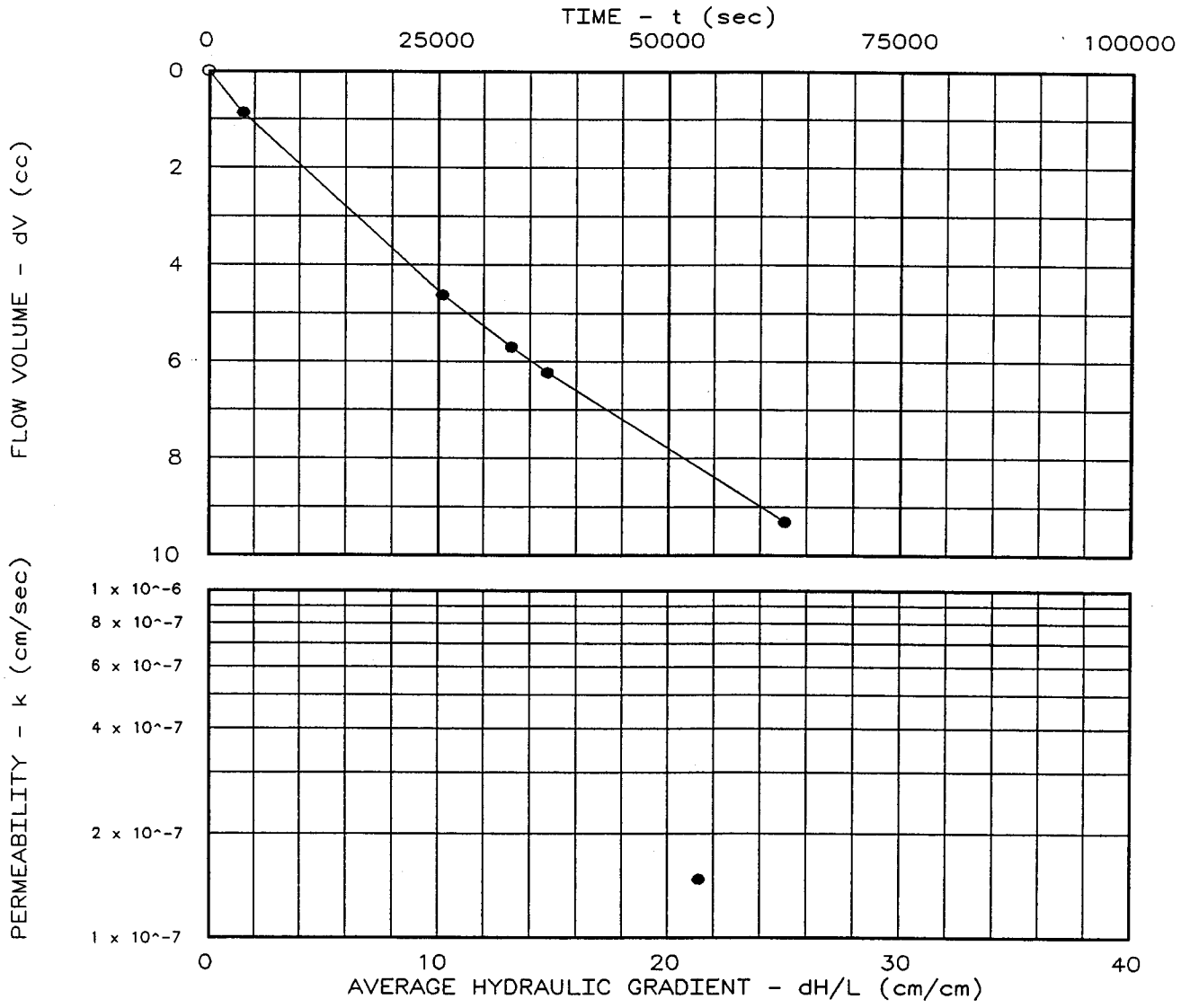
Specimen Height (cm): 9.81
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 98.0
Moisture Before Test (%): 25.3
Moisture After Test (%): 28.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	1.43 x 10^-4	
Perm. (cm/sec):	1.48 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1A #2 3rd Lift
Sampled 8-21-98
Visual Description: Yellow Brown and Gray
Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 92.3%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-10-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

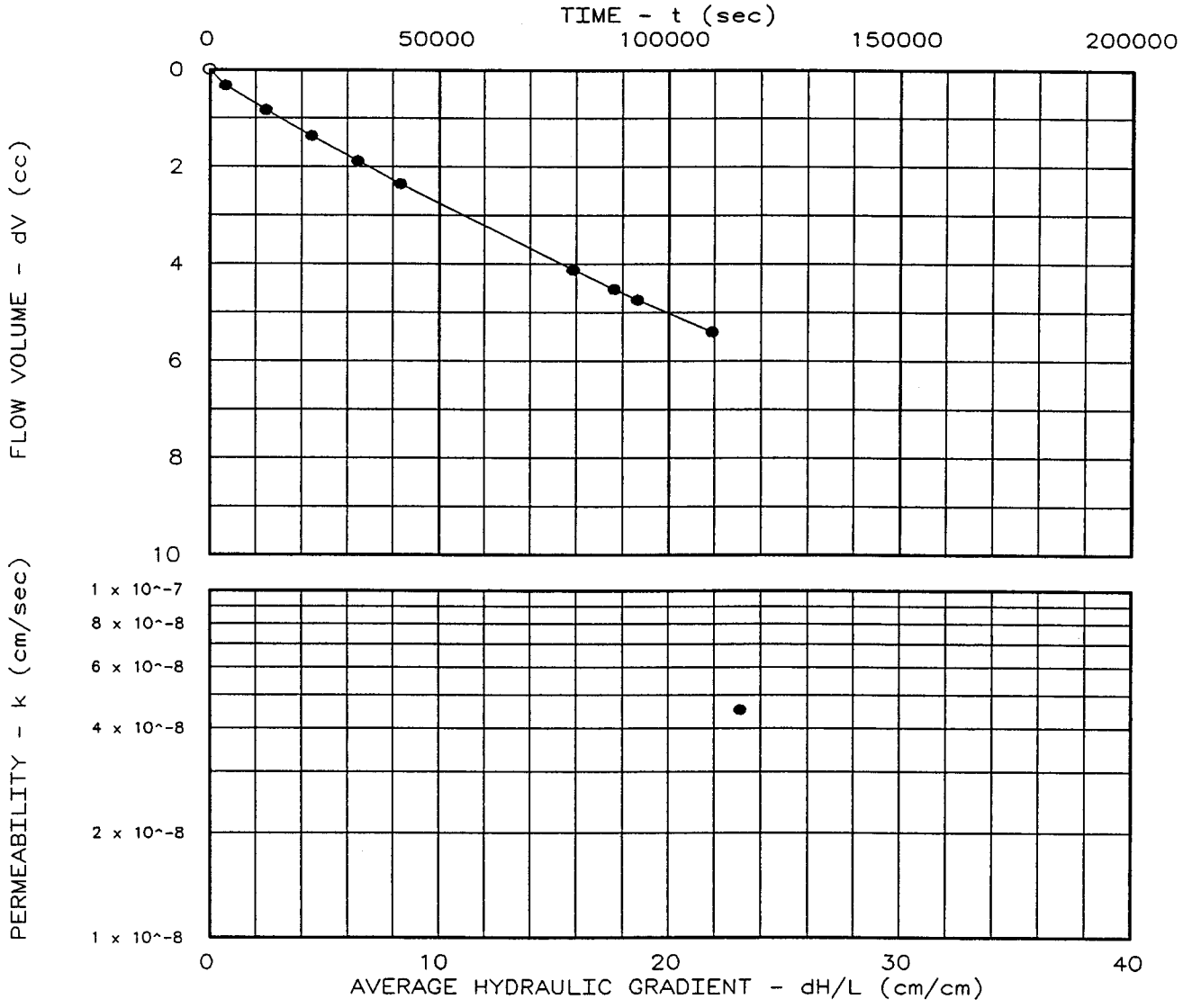
Specimen Height (cm): 9.31
Specimen Diameter (cm): 7.27
Dry Unit Weight (pcf): 85.5
Moisture Before Test (%): 38.1
Moisture After Test (%): 30.6

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	4.78 x 10^-5	
Perm. (cm/sec):	4.53 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL 1A #3 1st Lift
Sampled 8-21-98
Visual Description: Yellow Brown and Gray
Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 80.5%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-10-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

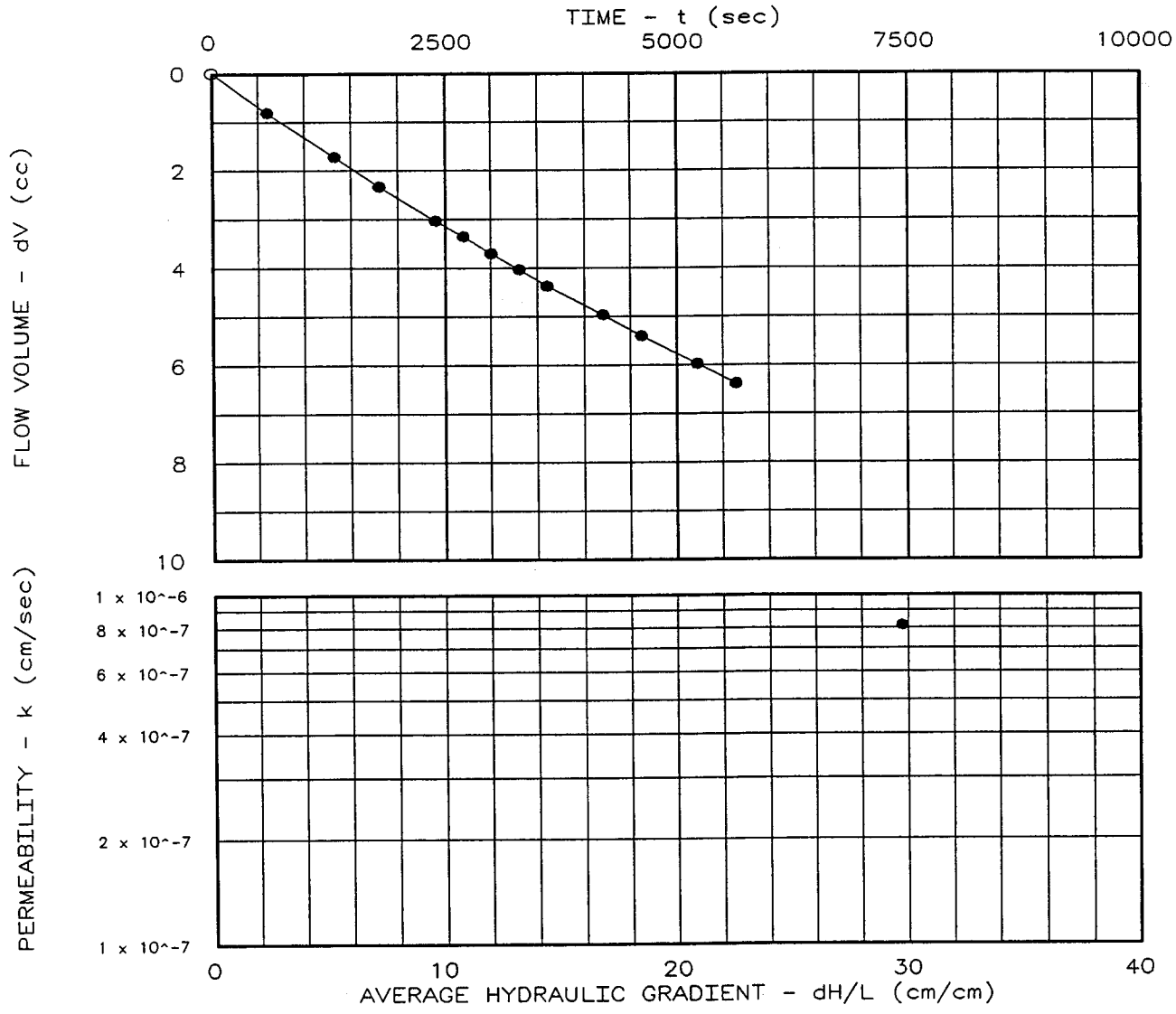
Specimen Height (cm): 7.05
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 85.3
Moisture Before Test (%): 28.7
Moisture After Test (%): 33.0

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	1.10 x 10^-3	
Perm. (cm/sec):	8.14 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1A #4 1st Lift
Sampled 8-21-98
Visual Description: Yellow Brown and Gray
Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 80.4%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-10-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 16, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☑ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS: Reports dated August 24, 31, September 1, 8, 9, 10 and 11, 1998.

Signed: M. Hyde

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and hot

TITAN JOB NO. : 8077-80

DATE: 08/24/98 PERSONNEL: D. Mullins

S. T. Wooten Construction Company placed overburden material (non-clay) over the GCL along the northernmost point of the GCL in area 1A.

In the afternoon some clay cap material was placed along the northeast slope of Area 1A. The clay was spread, but not tilled or compacted by days end.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Zell

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and hot

TITAN JOB NO. : 8077-80

DATE: 08/31/98 PERSONNEL: D. Mullins

S. T. Wooten Construction Company hauled non-clay overburden to Area 1A and placed it over the GCL on the southeast slope.

No clay material was placed on this date.

Although the overburden material was quite clayey, the contractor elected to use it over the GCL.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Sunny and warm with afternoon rain

TITAN JOB NO. : 8077-80

DATE: 09/01/98 PERSONNEL: D. Mullins

S. T. Wooten Construction Company continued to place GCL along the southeast slopes of Area 1A. Non-clay material was used to cover the GCL.

In the afternoon, work shifted to clay material being placed as the third lift of the cap along the northeast slope and extending toward the northernmost point of Area 1A.

Rains begin at approximately 4:00 PM. Most of the days work was compacted prior to the rain. Density testing will be performed on September 2, 1998.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Overcast and warm with rain in the afternoon

TITAN JOB NO. : 8077-80

DATE: 09/08/98 PERSONNEL: M. Stout

S. T. Wooten Construction Company and Ready Construction Company started to clean up after the weekend rains. With the onset of afternoon heavy rain, work was suspended for the remainder of the day.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Heel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Sunny and warm

TITAN JOB NO. : 8077-80

DATE: 09/09/98 PERSONNEL: M. Stout

S. T. Wooten Construction Company hauled clay but was unable to compact due to the high moisture content of the material. No tests were performed because compaction was not complete.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC
Bob Keel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Sunny and warm

TITAN JOB NO. : 8077-80

DATE: 09/10/98 PERSONNEL: M. Stout

Ready Construction Company hauled top soil all day.

S. T. Wooten Construction Company placed clay but had equipment problems and was unable to till or compact the first lift installed in Area 1A.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Heel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Sunny and warm

TITAN JOB NO. : 8077-80

DATE: 09/11/98 PERSONNEL: M. Stout

Ready Construction Company placed top soil all day (no testing needed).

S. T. Wooten Construction Company started to haul clay in the morning and then worked on the GCL.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Neel

PERMEABILITY TEST REPORT

TEST DATA:

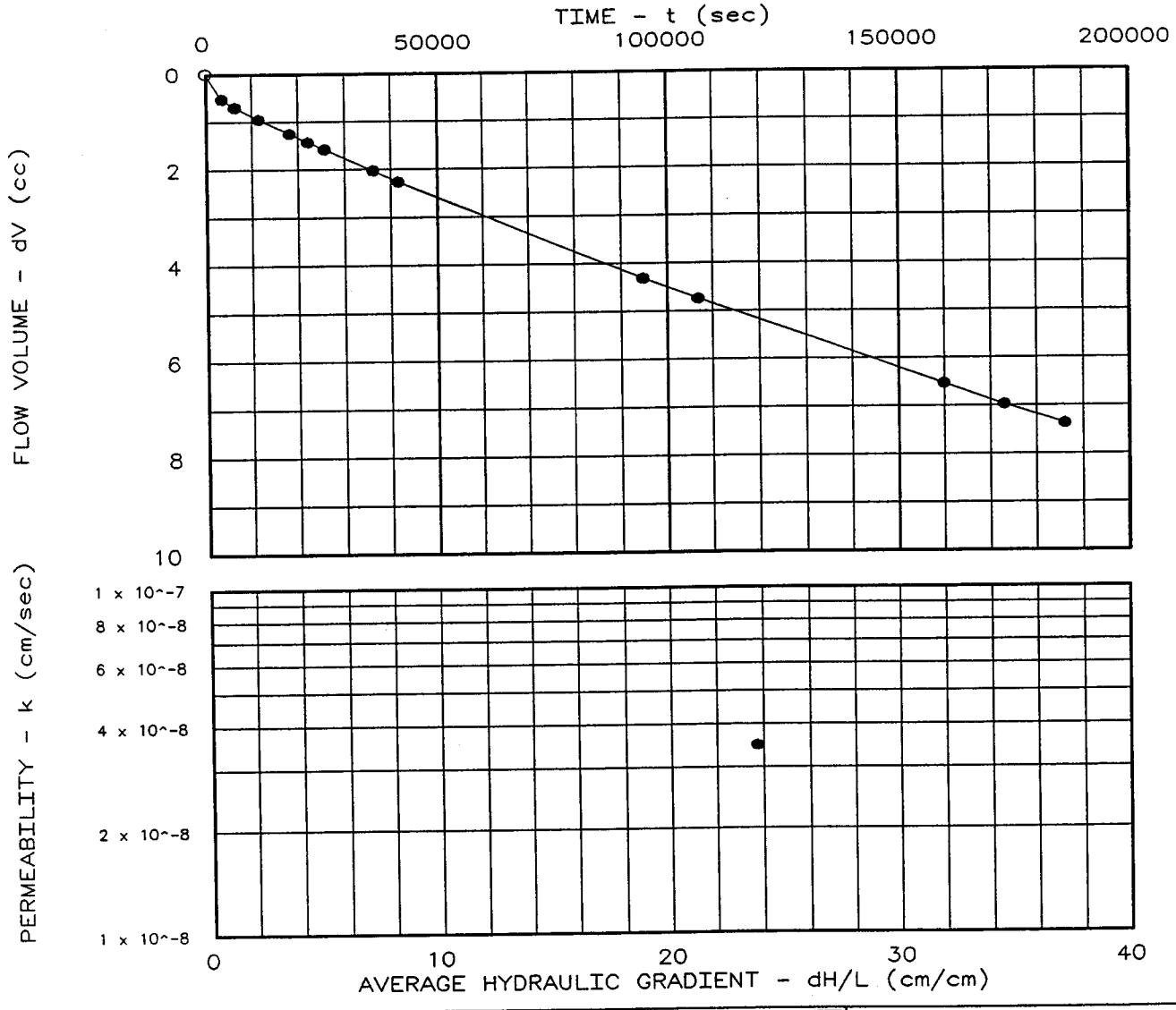
Specimen Height (cm): 9.03
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 106.5
Moisture Before Test (%): 20.8
Moisture After Test (%): 21.6

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	3.73 x 10^-5	
Perm. (cm/sec):	3.47 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL 1A #5 First Lift Sampled 8-21-98
Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 100.3%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-13-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

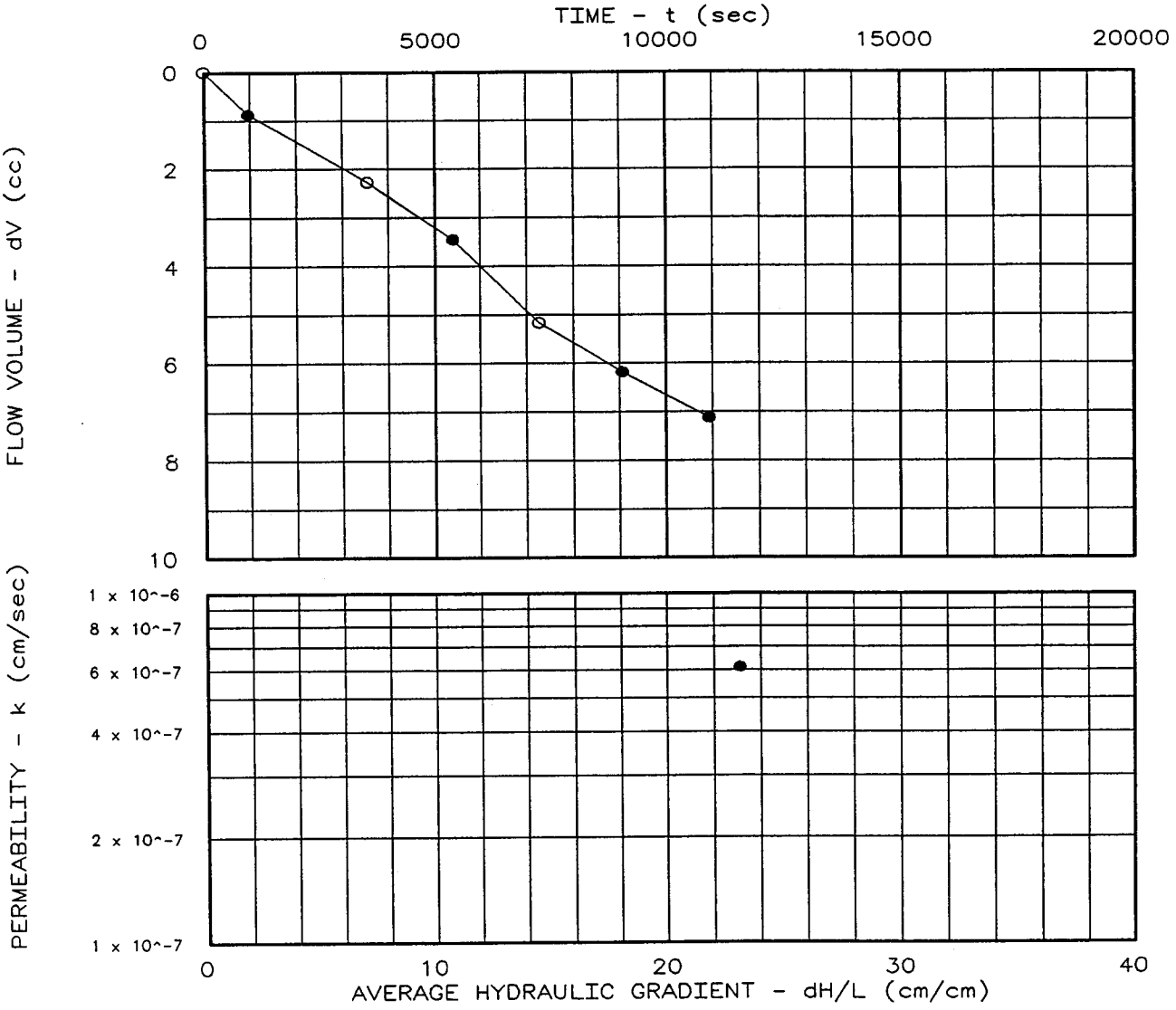
Specimen Height (cm): 9.15
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 89.5
Moisture Before Test (%): 27.5
Moisture After Test (%): 32.7

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	6.41 x 10^-4	
Perm. (cm/sec):	6.12 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1A #7 First Lift Sampled 8-25-98
Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3 ASTM(D698)
Percent Compaction: 84.3%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-13-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 8.40
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 83.6
Moisture Before Test (%): 36.8
Moisture After Test (%): 38.9

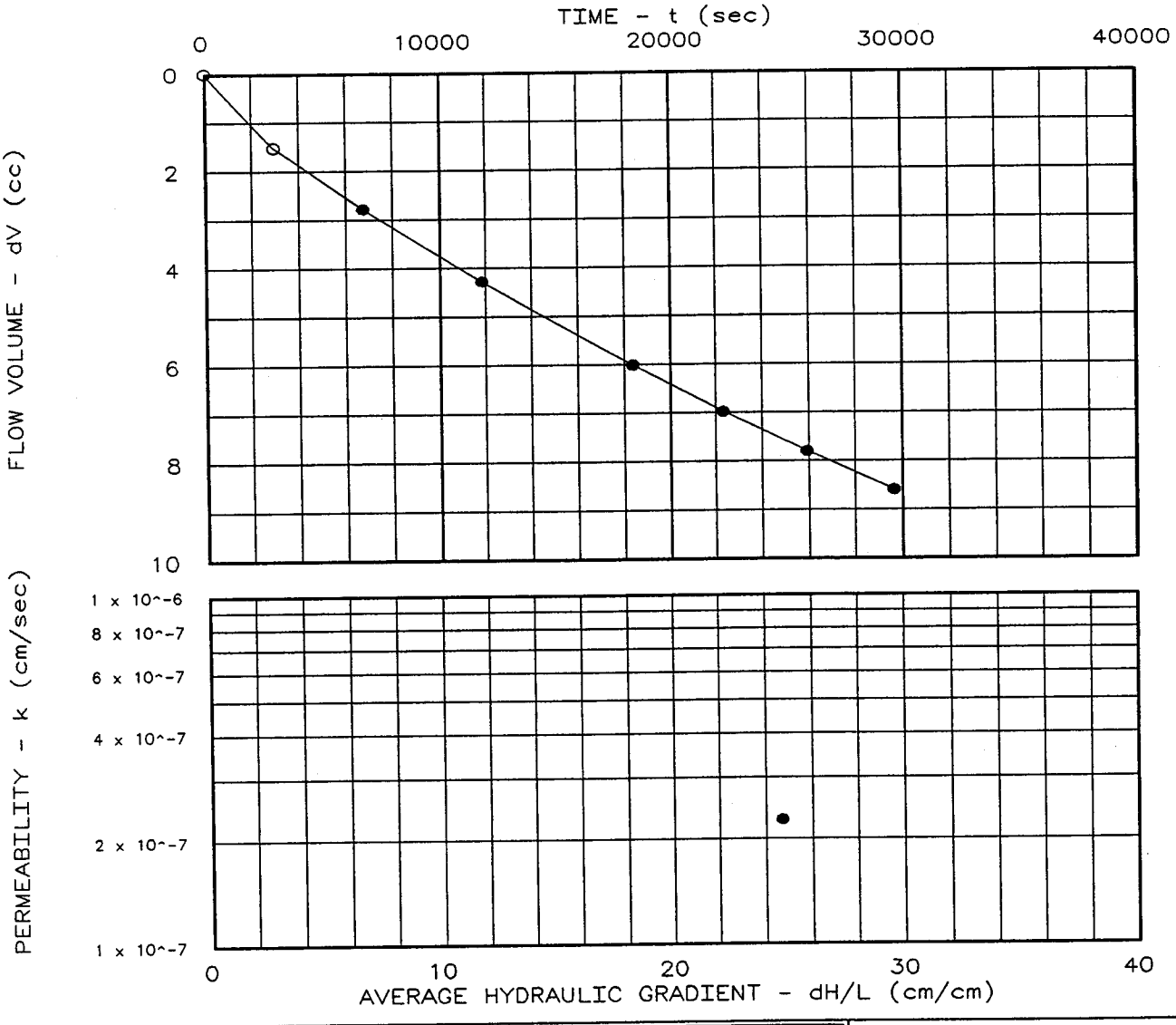
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	2.54 x 10^-4	
Perm. (cm/sec):	2.27 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1A #6 First Lift

Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 78.7%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-13-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

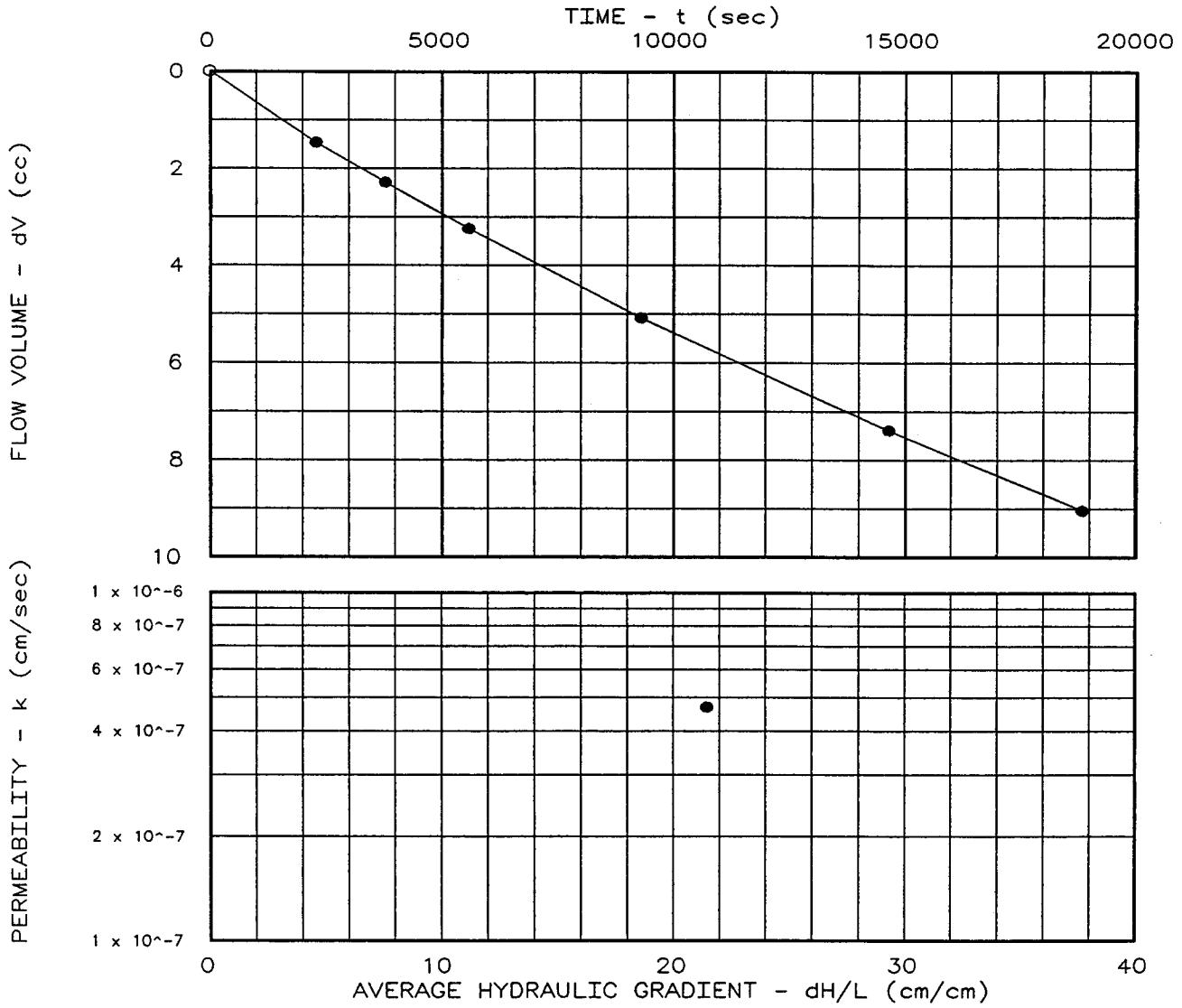
Specimen Height (cm): 9.85
Specimen Diameter (cm): 7.27
Dry Unit Weight (pcf): 87.9
Moisture Before Test (%): 28.3
Moisture After Test (%): 34.9

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	4.58 x 10^-4	
Perm. (cm/sec):	4.68 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1A #8 First Lift
Sampled 8-26-98
Visual Description: Yellow Brown and Gray
Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 82.8%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-17-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

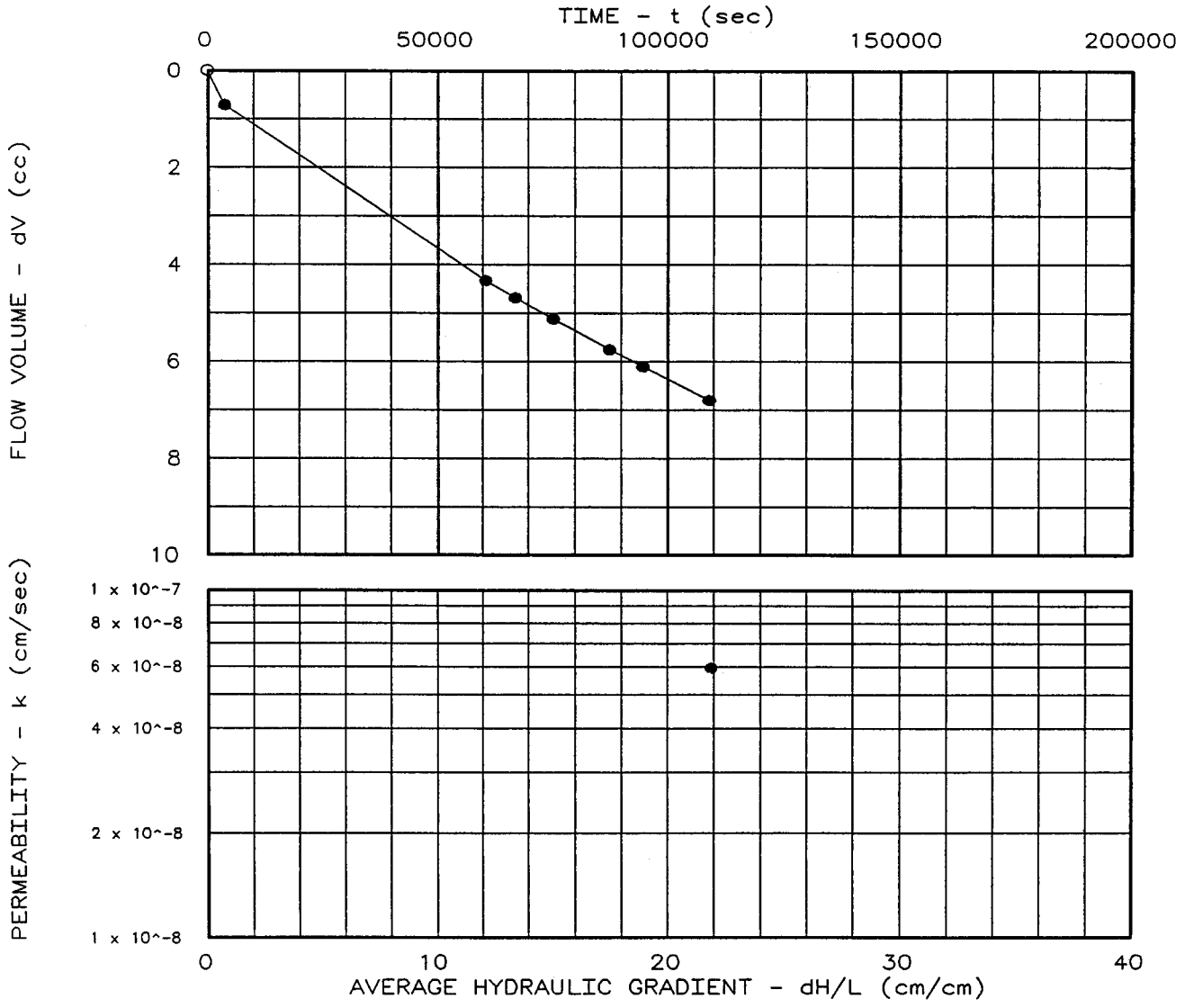
Specimen Height (cm): 9.62
Specimen Diameter (cm): 7.19
Dry Unit Weight (pcf): 84.7
Moisture Before Test (%): 34.8
Moisture After Test (%): 38.2

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	5.82 x 10^-5	
Perm. (cm/sec):	5.96 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL 1A #9 2nd Lift
Sampled 8-26-98
Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 79.8%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-17-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

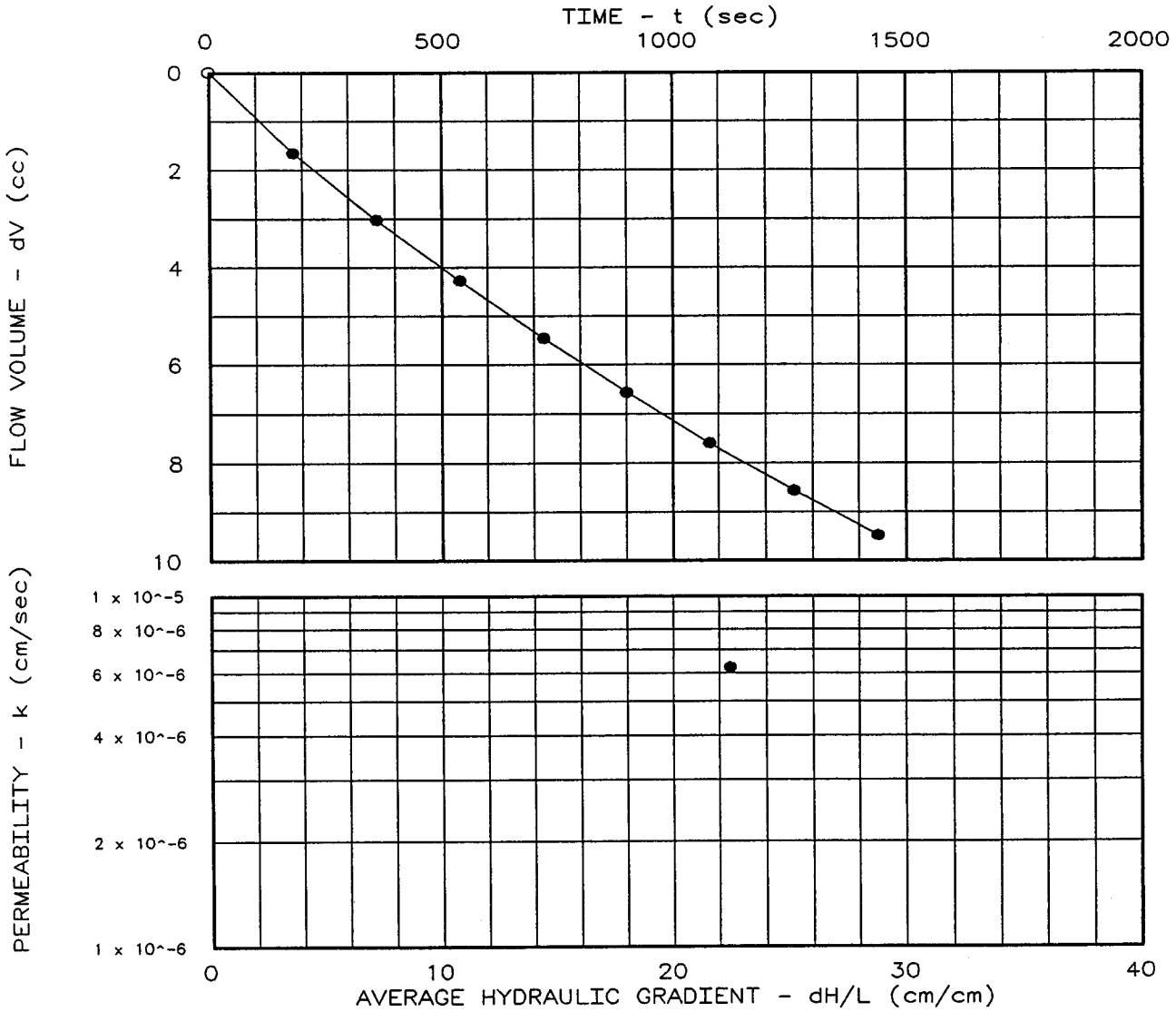
Specimen Height (cm): 9.28
Specimen Diameter (cm): 7.15
Dry Unit Weight (pcf): 95.8
Moisture Before Test (%): 23.5
Moisture After Test (%): 30.7

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	6.19 x 10^-3	
Perm. (cm/sec):	6.24 x 10^-6	

SAMPLE DATA:

Sample Identification: WCL 1A #11 2nd Lift
Sampled 9-2-98
Visual Description: Yellow Brown and Gray
Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 90.2%
Permeameter type: Flexible Wall
Sample type: Undisturbed



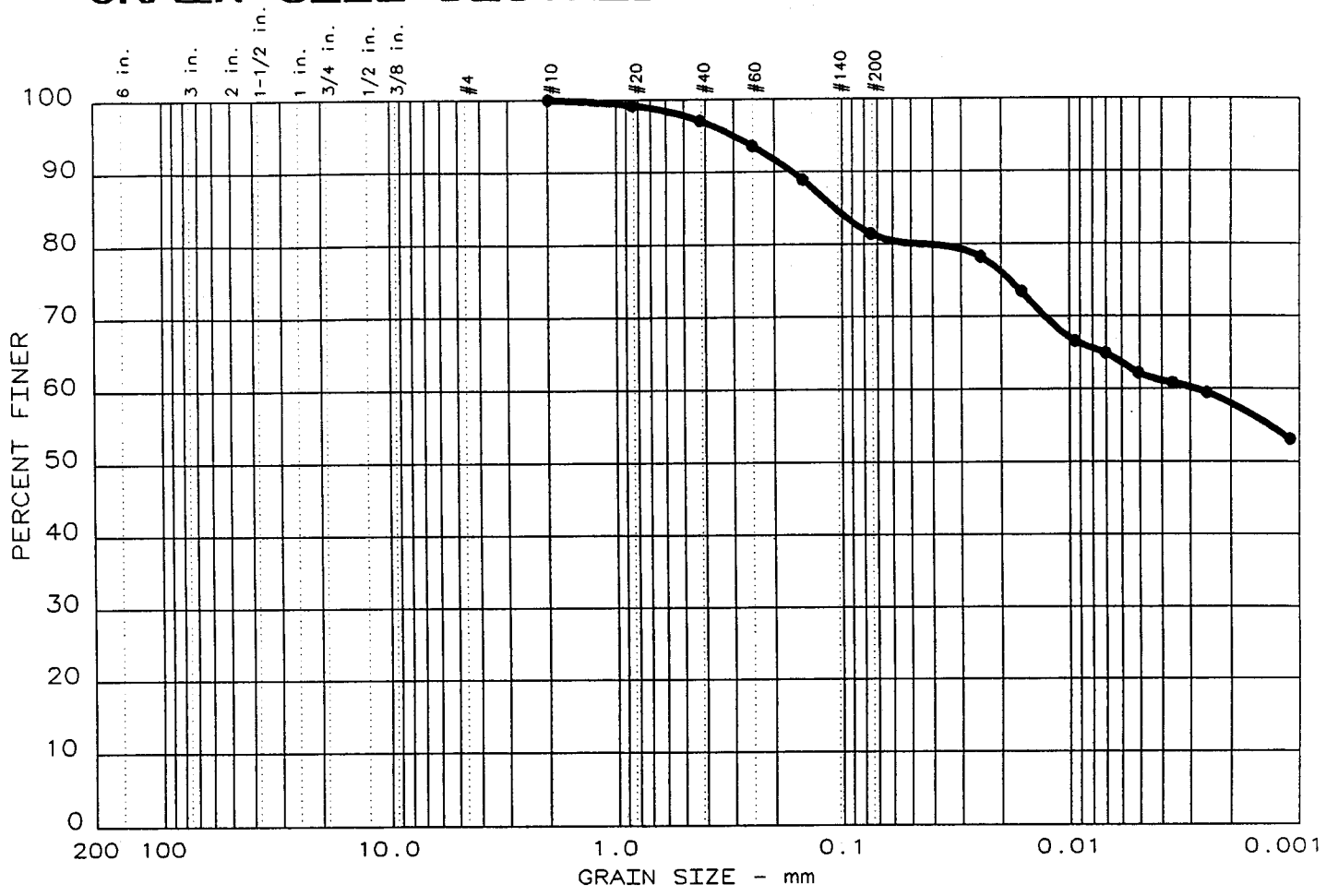
Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-17-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	0.0	18.6	19.3	62.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	66	40	0.107							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SLIGHTLY SANDY SLIGHTLY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A, SAMPLE 8 , FIRST LIFT

Date: SEPTEMBER 12, 1998

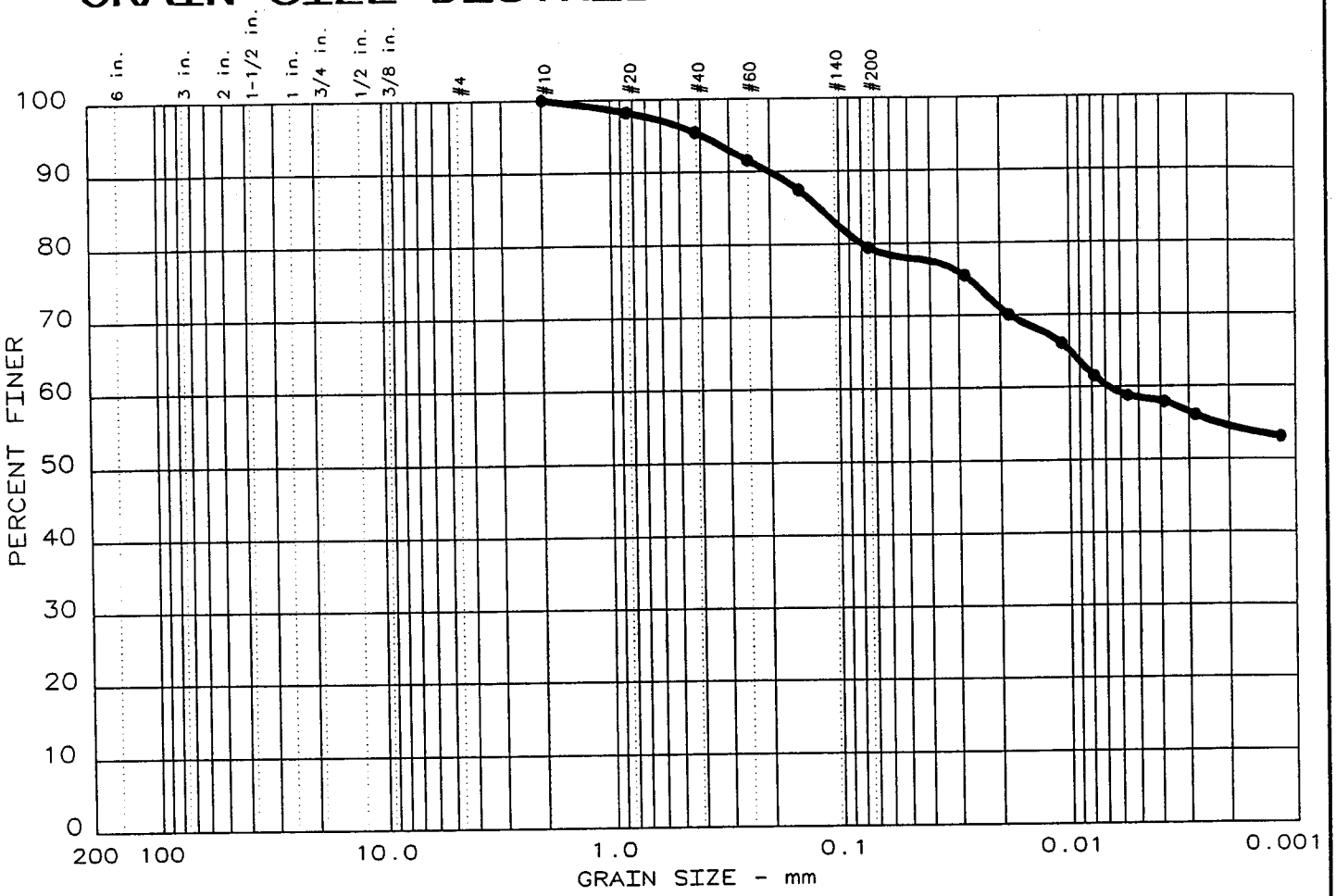
GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Remarks:

Fig. No.: WCL-1A-8

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	0.0	20.5	21.0	58.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	61	33	0.122							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A, SAMPLE 9, SECOND LIFT

Date: SEPTEMBER 12, 1998

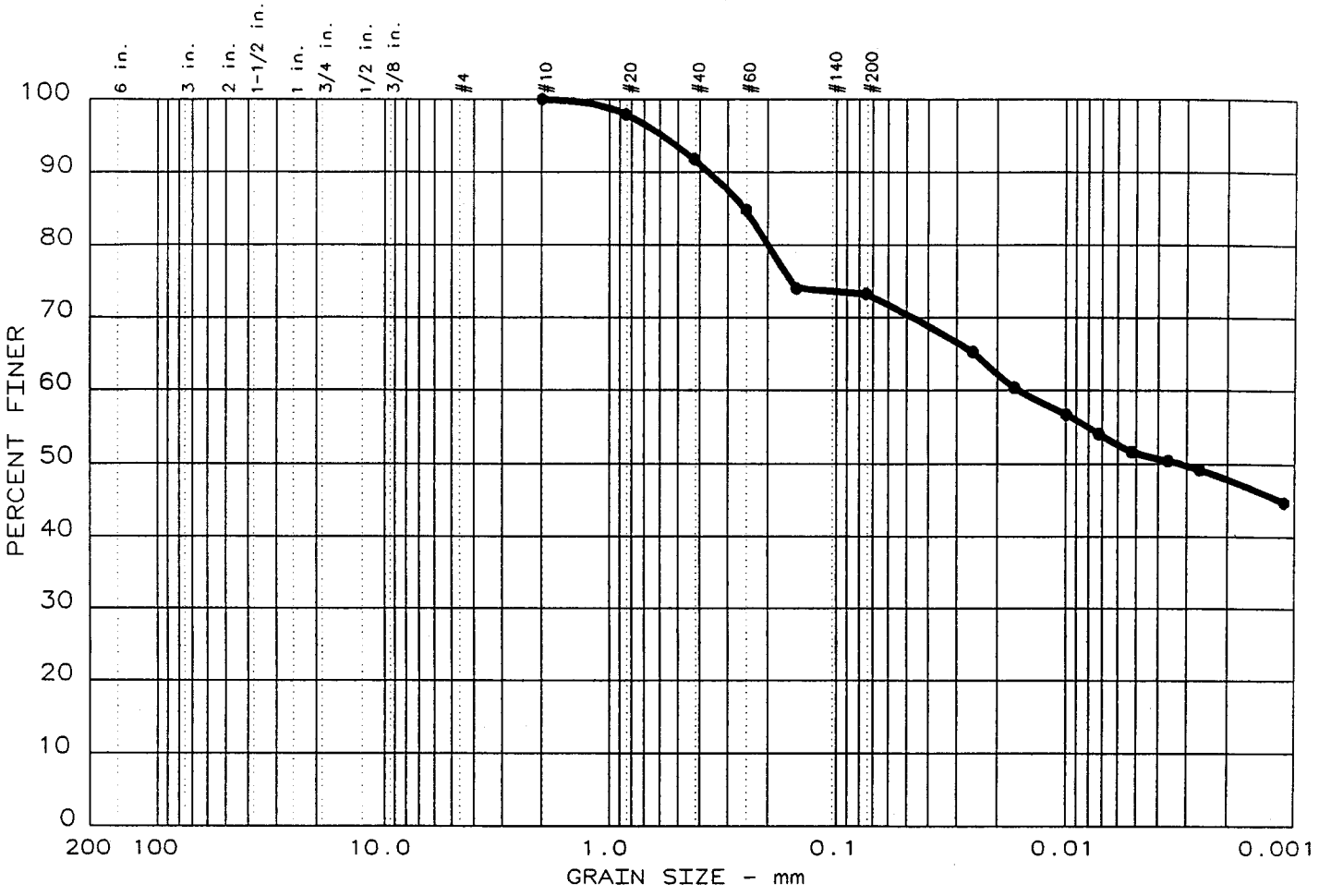
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-9

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	0.0	26.7	21.9	51.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	69	41	0.251		0.0032					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A, SAMPLE 10, SECOND LIFT

Date: SEPTEMBER 10, 1998

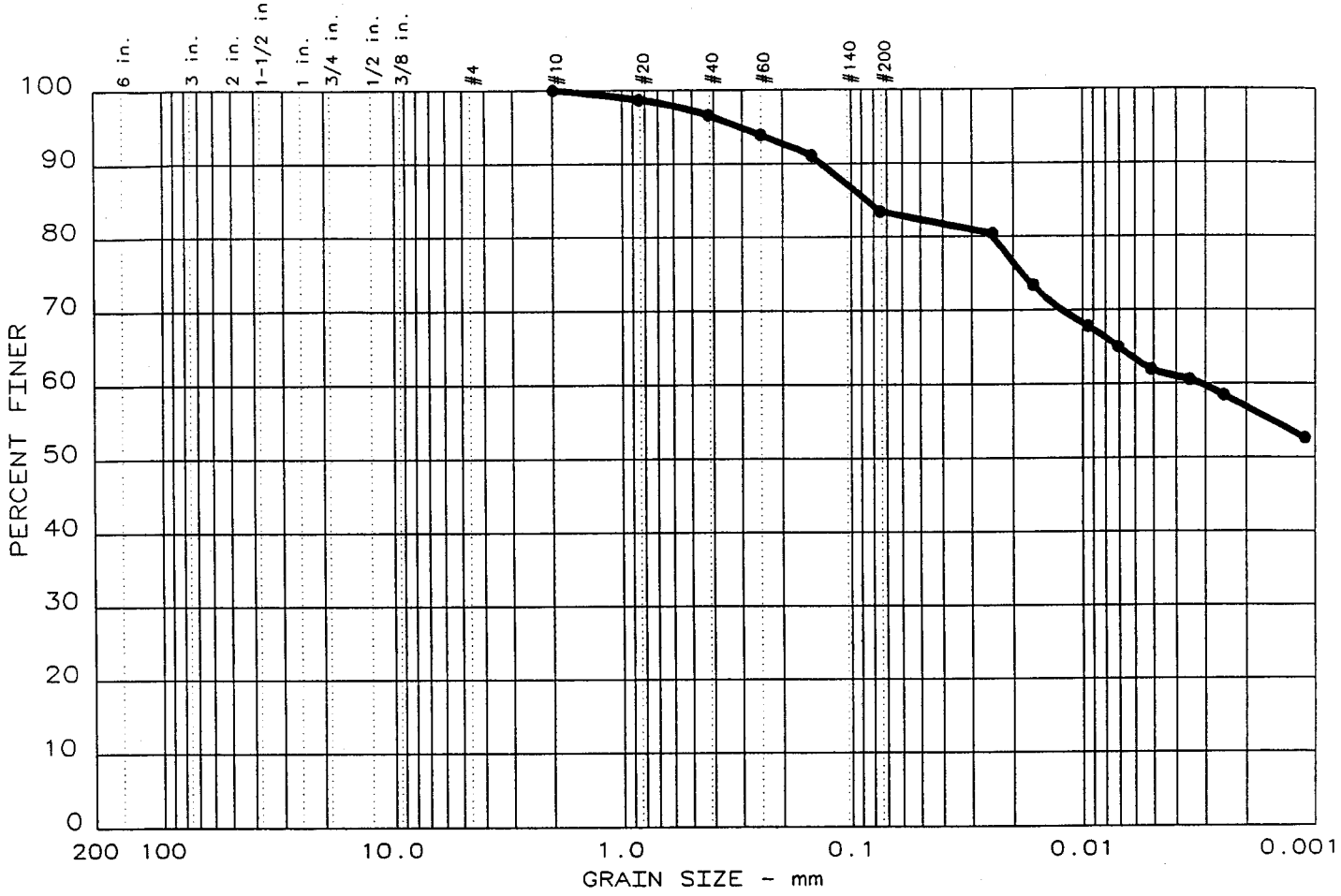
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-10

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	0.0	16.6	21.6	61.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	69	44	0.0861							

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLI SANDY SLI SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A, SAMPLE 11, SECOND LIFT

Date: SEPTEMBER 10, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-11

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 23, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☑ field density reports

☑ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS: Reports dated August 25, 26, September 2, 3 and 4, 1998.

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

TITAN ATLANTIC GROUP

111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and hot

TITAN JOB NO.: 8077-80

DATE: 08/25/98 PERSONNEL: D. Mullins

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Four field density tests were performed in Area 1A on the first lift of the clay cap.

Field density test results were computed to range from 91 to 96 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : 08/25/98
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	first lift	WCL - 1A - 6	118.7	24.4	95.4	1	96	90
2	first lift	WCL - 1A - 6	119.9	27.6	93.9	1	94	90
3	first lift	WCL - 1A - 7	115.5	26.8	91.0	1	92	90
4	first lift	WCL - 1A - 7	116.6	29.3	90.1	1	91	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Keel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Cloudy with afternoon rain

TITAN JOB NO.: 8077-80

DATE: 08/26/98 PERSONNEL: D. Mullins

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in Area 1A on the first and second lifts of the clay cap.

Field density test results were computed to range from 90 to 98 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

RESPECTFULLY SUBMITTED
TITAN ATLANTIC
Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 08/26/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	first lift	WCL - 1A - 8	120.4	26.9	94.8	1	95	90
2	first lift	WCL - 1A - 8	117.0	29.6	90.2	1	91	90
3	first lift	WCL - 1A - 8	113.6	26.0	90.1	1	91	90
4	first lift	WCL - 1A - 8	121.9	24.5	97.9	1	98	90
5	first lift	WCL - 1A - 8	114.7	28.1	89.5	1	90	90
6	second lift	WCL - 1A - 9	118.7	27.9	92.8	1	93	90
7	second lift	WCL - 1A - 9	117.7	27.8	92.0	1	93	90
8	second lift	WCL - 1A - 9	115.6	27.4	90.7	1	91	90
9	second lift	WCL - 1A - 9	114.1	27.7	89.3	1	90	90
10	second lift	WCL - 1A - 9	116.1	27.7	90.9	1	91	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : Reflected below
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
11	second lift	WCL - 1A - 9	121.7	26.9	95.9	1	96	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Heel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919)353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Clear and hot

TITAN JOB NO.: 8077-80

DATE: 09/02/98 PERSONNEL: D. Mullins

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic was present on the project site for field density testing services.

Eleven field density tests were performed in Area 1A on the third lift of the clay liner.

Field density test results were computed to range from 91 to 100 percent of the maximum dry density, as determined by ASTM D-698 (minimum required compaction: 90 percent).

In addition, two undisturbed samples were obtained to sample the soils for permeability testing.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Yell

TITAN
Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill
PROJECT NO.: 8077-80
DATE : 09/02/98
CLIENT : County of Wilson
AREA:

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
1	second lift	WCL - 1A - 10	118.1	23.5	95.6	1	96	90

Method Used: SAND CONE Fill Placement:
Remarks:

Bob Kell

TITAN

Atlantic Group

FIELD COMPACTION TEST DATA

PROJECT: Wilson County Landfill

PROJECT NO.: 8077-80
DATE : 09/02/98
AREA:

CLIENT : County of Wilson

PROCTOR DATA:

(1) Max. Dry Dens.: 99.5 PCF at 17.2 % Opt. Moist. Method: ASTM D-698
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:
( ) Max. Dry Dens.: PCF at % Opt. Moist. Method:

TEST DATA:

Test No.	Depth or Elevation	Location/Date	Wet Density PCF	Moist. Cont. (%)	Dry Density PCF	Proctor Curve No.	Degree Comp. (%)	Rqd. Comp. (%)
2		WCL - 1A - 10	118.9	22.9	96.7	1	97	90
3		WCL - 1A - 10	115.9	22.5	94.6	1	95	90
4		WCL - 1A - 10	116.0	28.0	90.6	1	91	90
5		WCL - 1A - 10	117.7	26.0	93.4	1	94	90
6		WCL - 1A - 10	123.5	21.9	101.3	1	102	90
7		WCL - 1A - 1[illegible]	114.3	26.3	90.4	1	91	90
8		WCL - 1A - 1[illegible]	115.6	24.3	93.0	1	94	90
9		WCL - 1A - 1[illegible]	114.8	25.9	91.1	1	92	90
10		WCL - 1A - 1[illegible]	118.0	26.6	93.2	1	94	90
11		WCL - 1A - 1[illegible]	116.6	26.8	91.9	1	92	90

Method Used: NUCLEAR Fill Placement:
Remarks:

Bob Keel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Partly cloudy and warm

TITAN JOB NO. : 8077-80

DATE: 09/03/98 PERSONNEL: M. Stout

S. T. Wooten Construction Company worked on placing the GCL on top of Area 1A and also placed clay on the two foot overlap between the GCL and the slope. No tests were needed on this date.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (919) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Partly cloudy and warm

TITAN JOB NO. : 8077-80

DATE: 09/04/98 PERSONNEL: M. Stout

S. T. Wooten Construction Company and Ready Construction Company both moved non-clay materials and subsequently, no tests were needed on this date.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC
Bob Keel

PERMEABILITY TEST REPORT

TEST DATA:

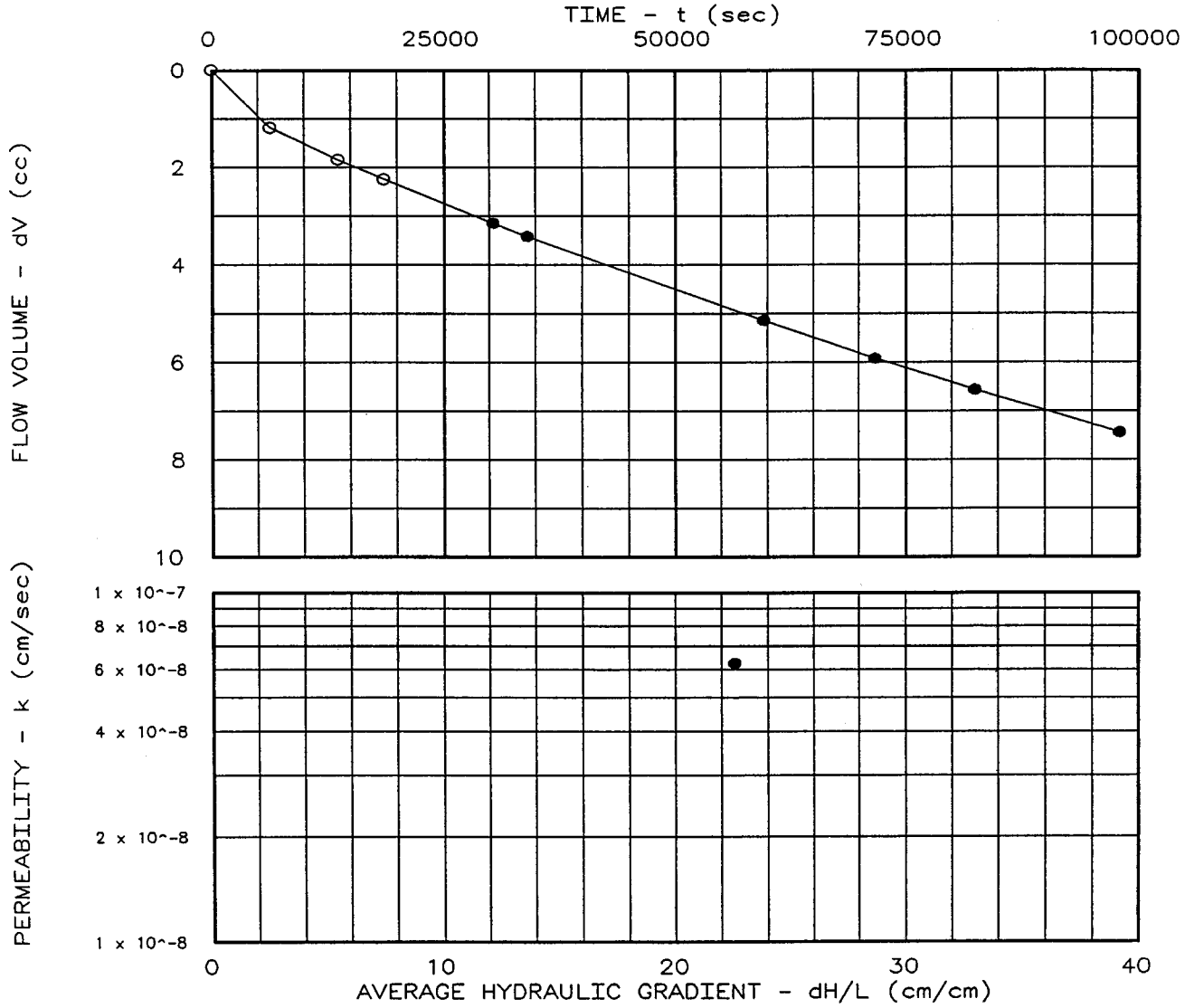
Specimen Height (cm): 9.28
Specimen Diameter (cm): 7.25
Dry Unit Weight (pcf): 88.7
Moisture Before Test (%): 30.7
Moisture After Test (%): 35.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	63.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	6.40 x 10^-5	
Perm. (cm/sec):	6.25 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL 1A #10 2nd Lift Sampled 9-2-98
Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3 ASTM(D698)
Percent Compaction: 83.5%
Permeameter type: Flexible Wall
Sample type: Undisturbed



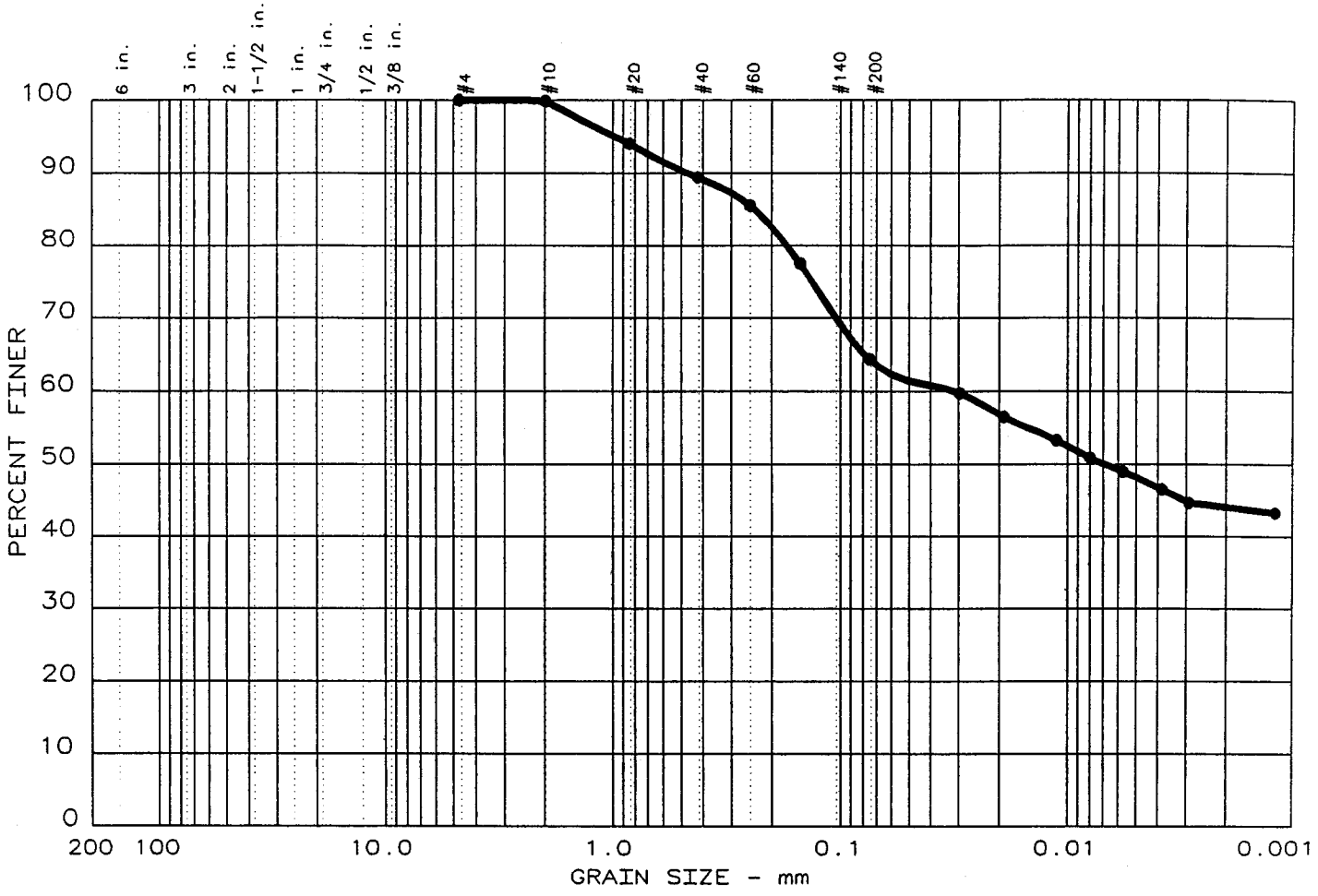
Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-20-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	0.0	35.6	16.3	48.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	55	36	0.237		0.0069					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 12

Date: SEPTEMBER 22, 1998

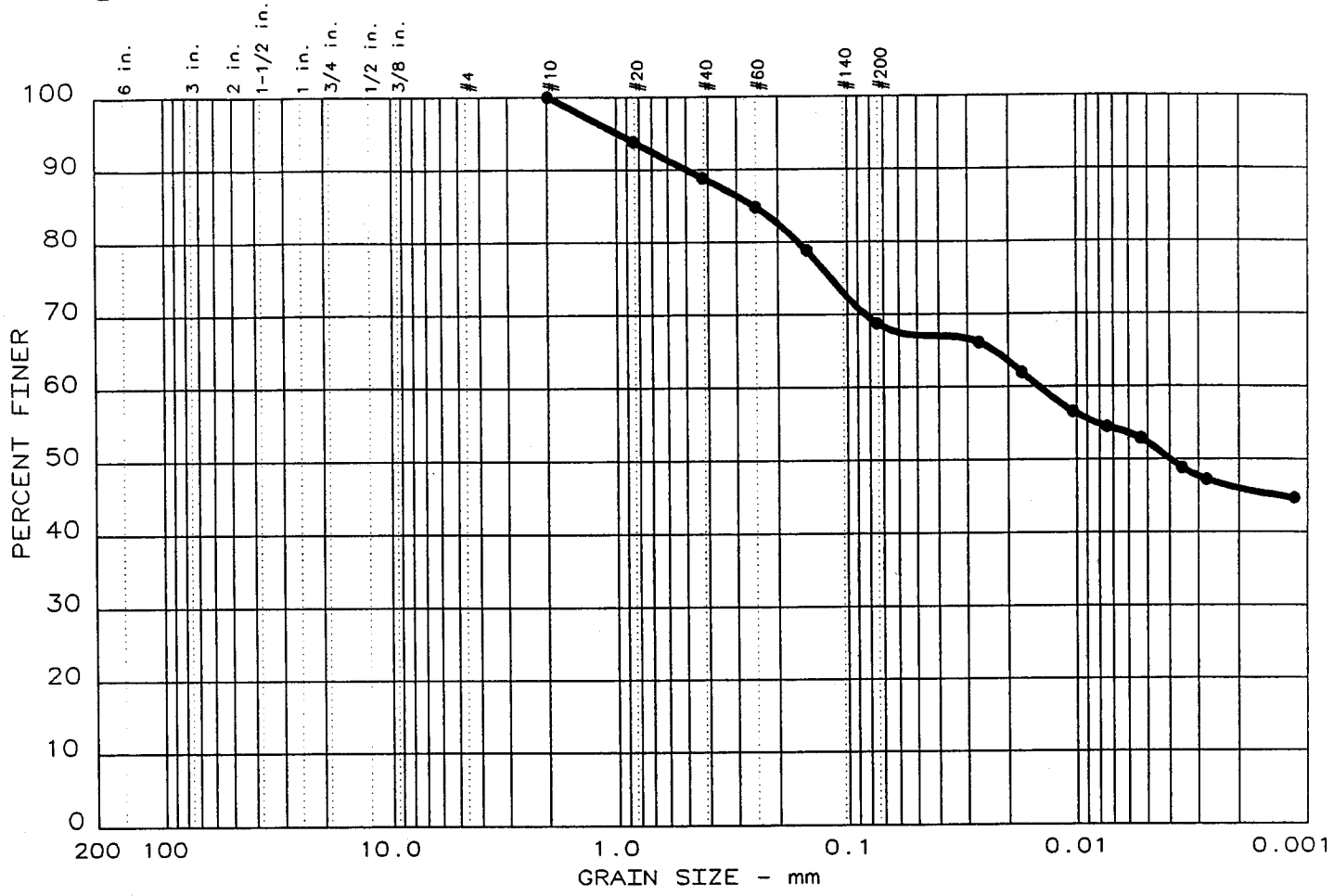
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-12

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.0	31.2	16.5	52.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	54	31	0.254		0.0040					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 13

Date: SEPTEMBER 22, 1998

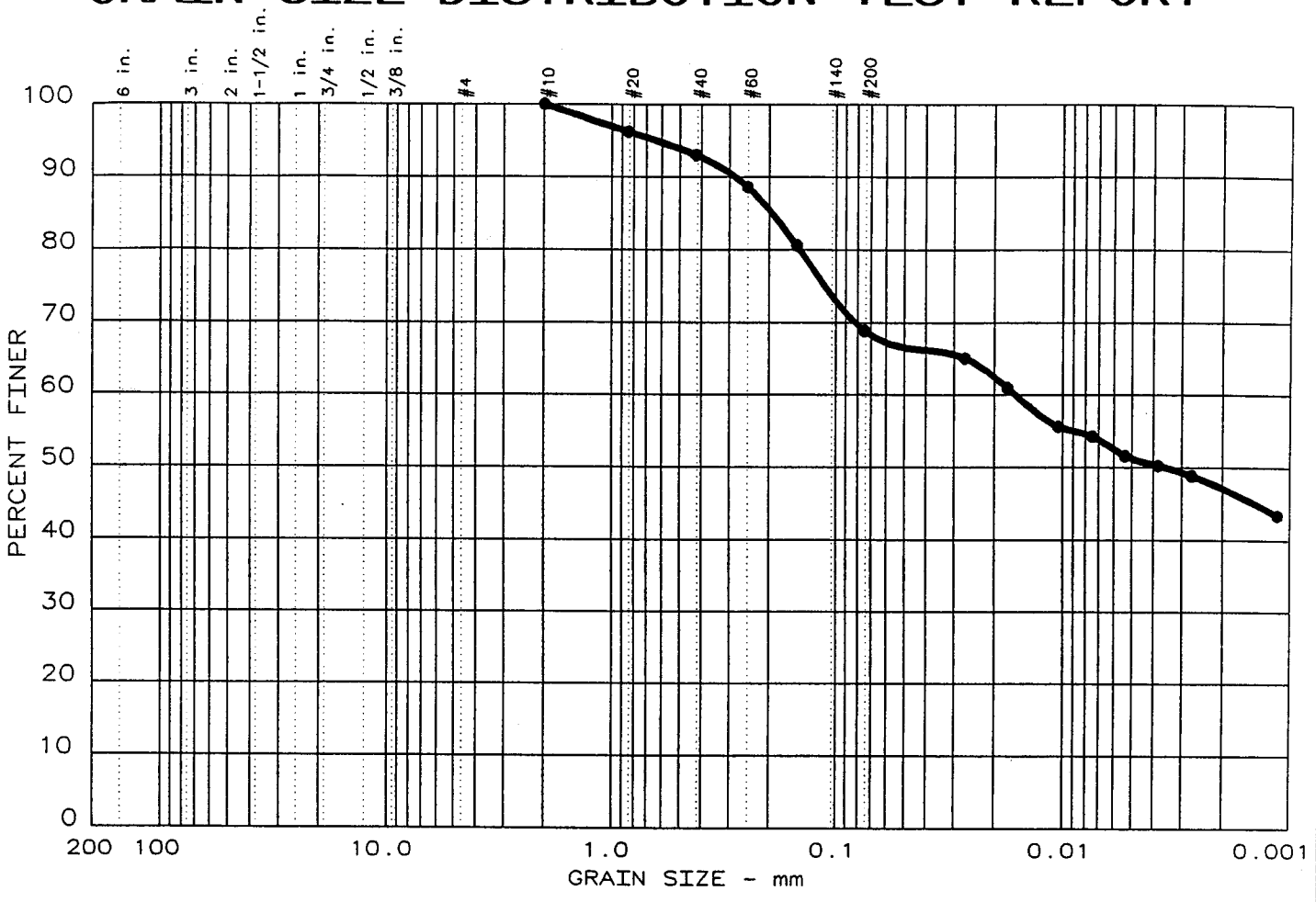
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-13

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	31.1	17.8	51.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	57	37	0.193		0.0035					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 14

Date: SEPTEMBER 22, 1998

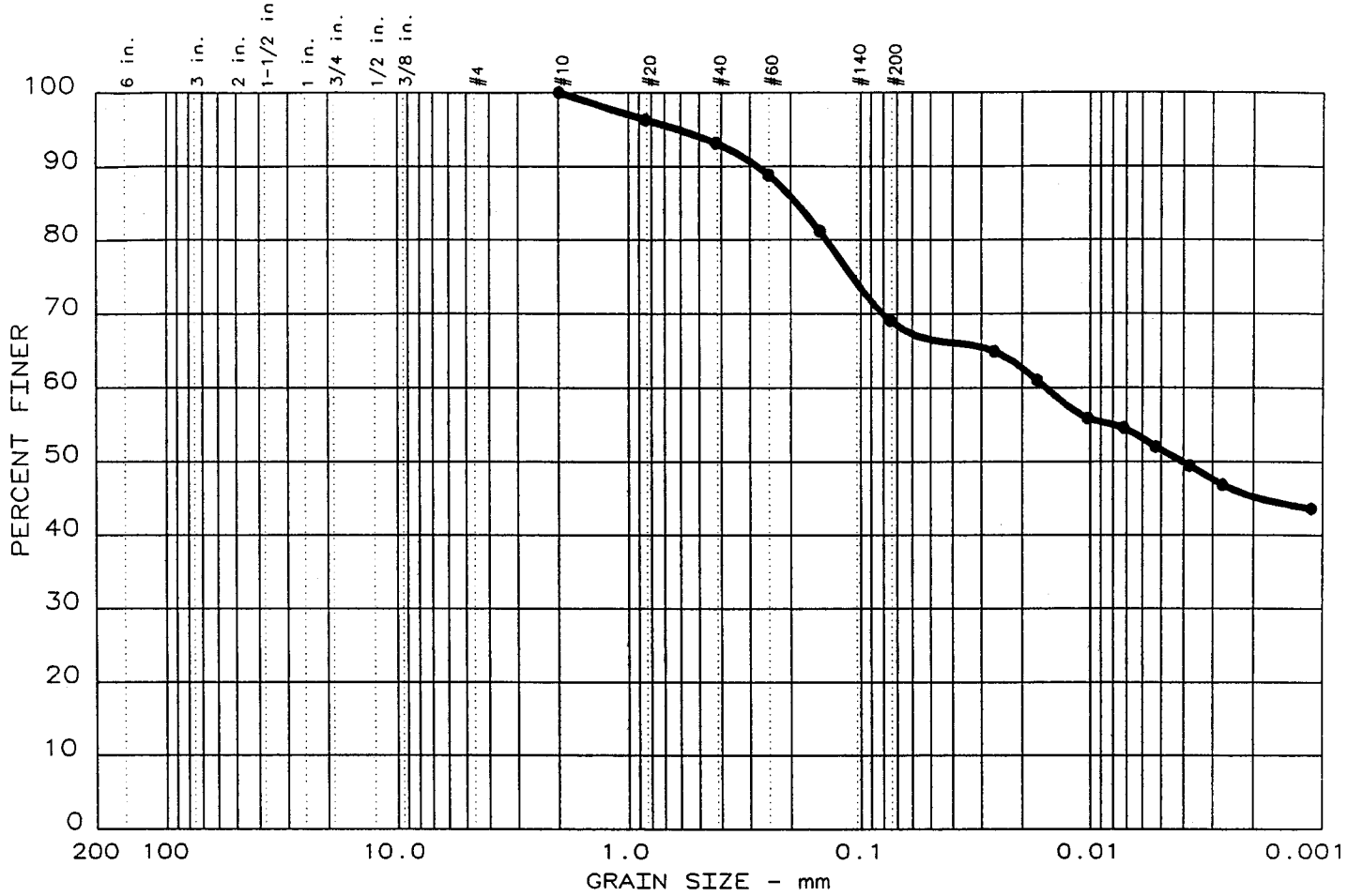
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-14

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	30.9	17.6	51.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	50	28	0.186		0.0041					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 15

Date: SEPTEMBER 22, 1998

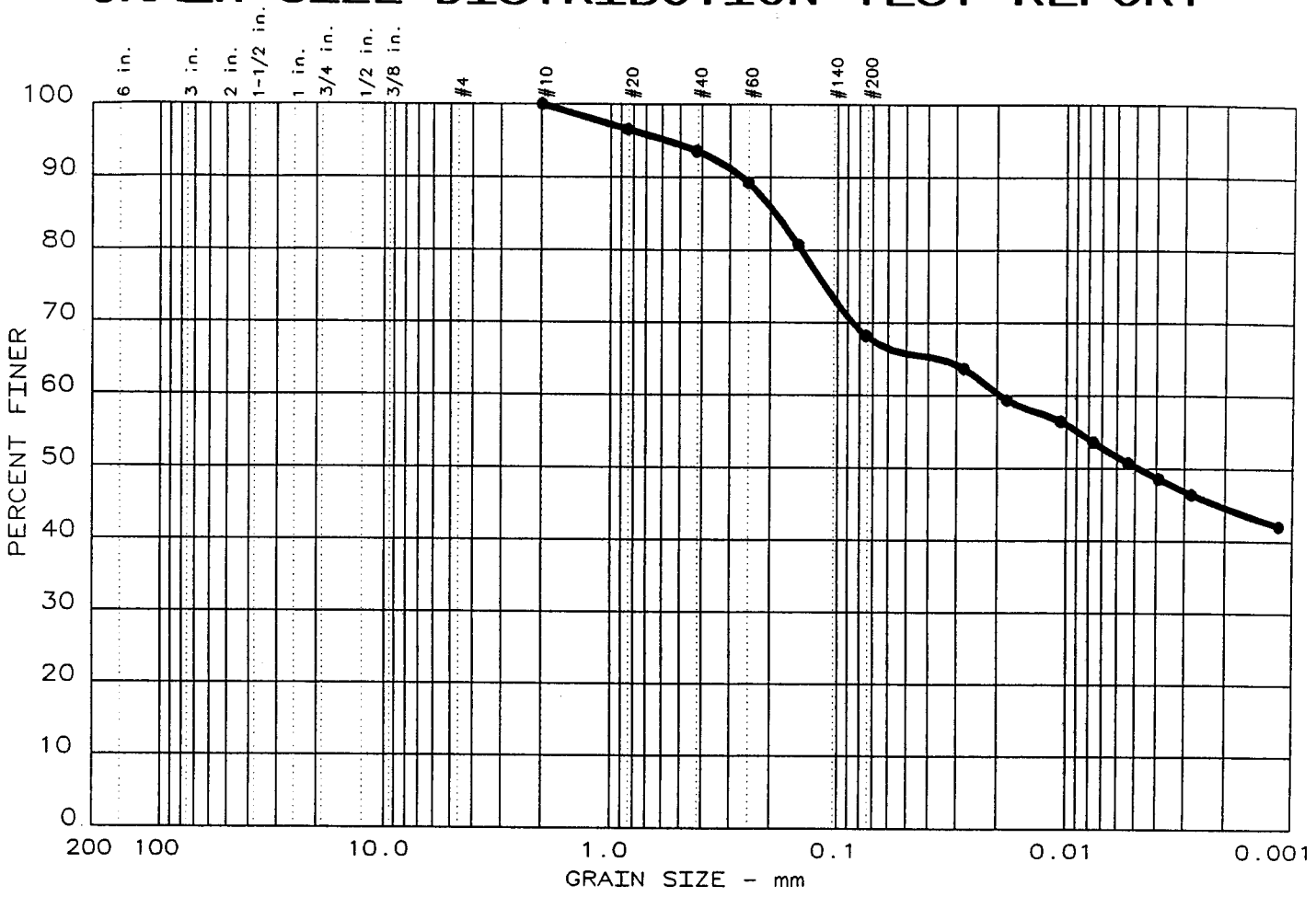
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-15

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	31.8	18.0	50.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	52	31	0.186		0.0047					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLIGHTLY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL CLOSURE
● Location: AREA 1A; SAMPLE 16

Date: SEPTEMBER 22, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-16

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: September 30, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

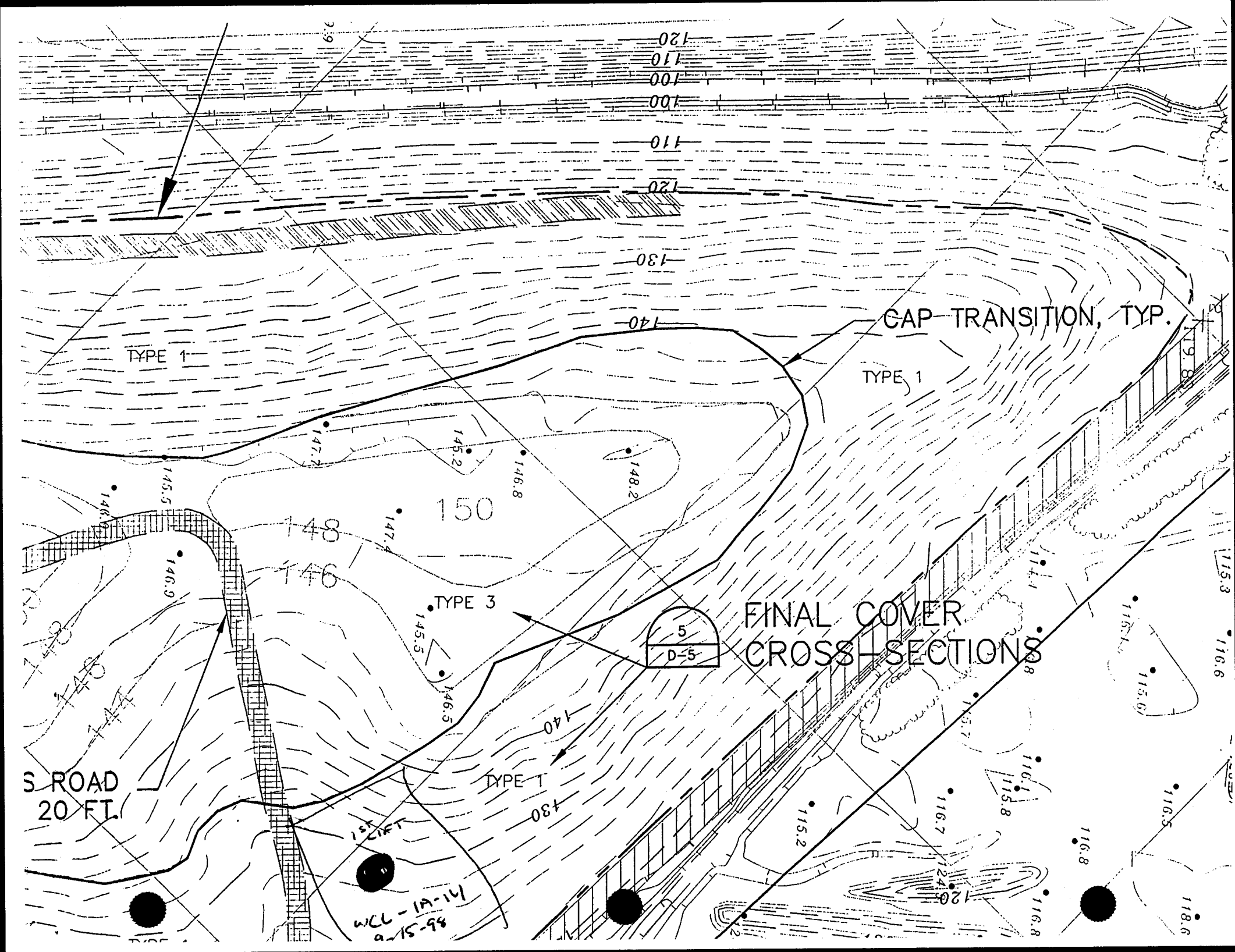
These are transmitted as checked below:

☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

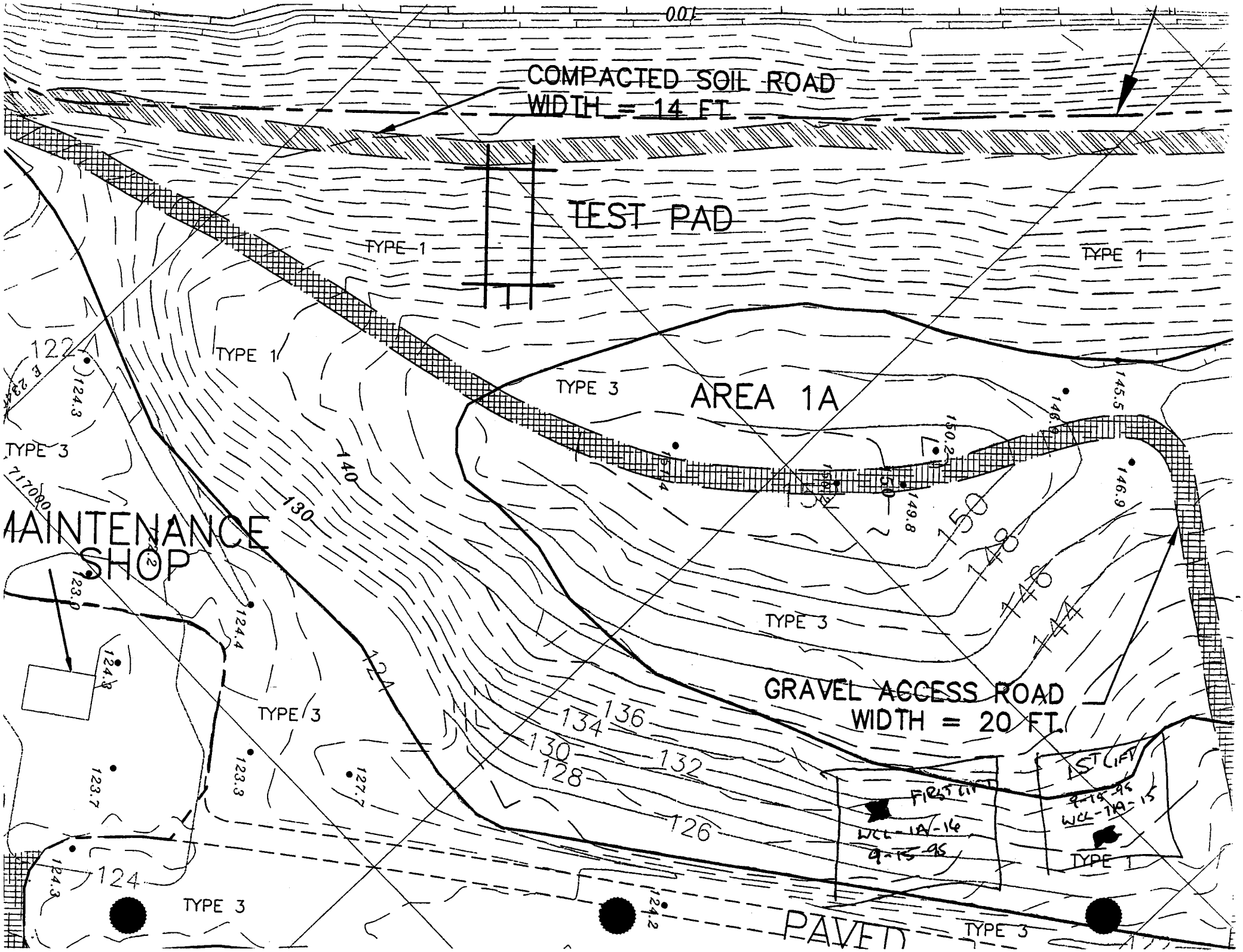
REMARKS:

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens



CAP TRANSITION, TYP.
TYPE 1
TYPE 1
TYPE 3
TYPE 1
FINAL COVER
CROSS-SECTIONS
5
D-5
S ROAD
20 FT.
150
148
146
144
140
130
120
110
100
1ST LIFT
WCL-1A-14
9-15-98



COMPACTED SOIL ROAD
WIDTH = 14 FT
TEST PAD
TYPE 1
TYPE 1
TYPE 1
TYPE 3
AREA 1A
TYPE 3
MAINTENANCE
SHOP
TYPE 3
TYPE 3
GRAVEL ACCESS ROAD
WIDTH = 20 FT.
TYPE 3
TYPE 3
TYPE 1
PAVED
122
124
124
124.3
124.4
123.0
123.7
123.3
127.7
124.3
124.2
145.5
146.9
149.8
150.2
150
148
146
144
136
134
132
130
128
126
140
130
FIRST LIFT
WCL-1A-16
9-15-95
1ST LIFT
9-15-95
WCL-1A-15

PERMEABILITY TEST REPORT

TEST DATA:

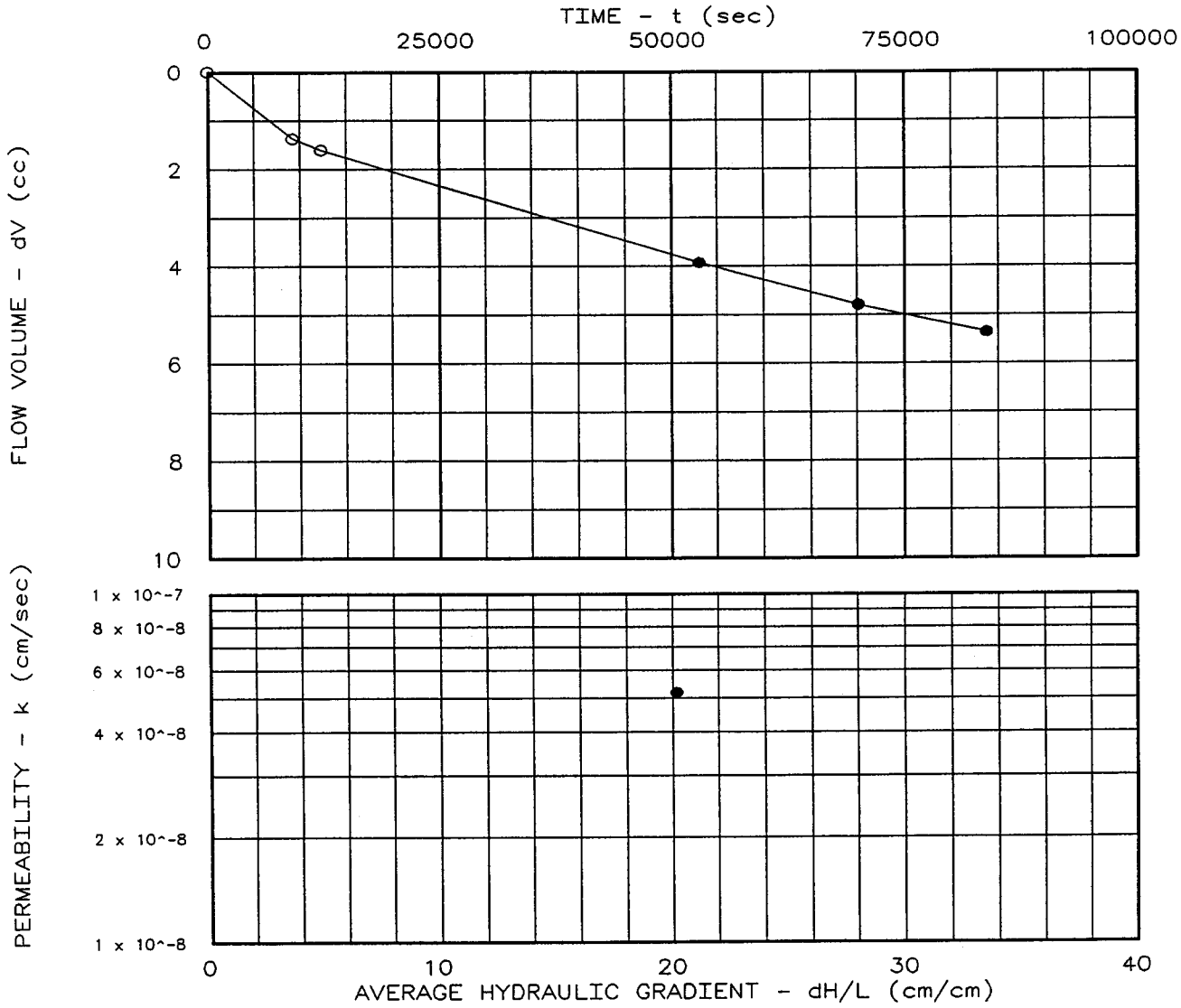
Specimen Height (cm): 10.25
Specimen Diameter (cm): 7.20
Dry Unit Weight (pcf): 94.1
Moisture Before Test (%): 23.6
Moisture After Test (%): 36.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	65.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	4.67 x 10^-5	
Perm. (cm/sec):	5.18 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL -1A #12
First Lift Sampled 9-14-98
Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 88.6%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-26-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.53
Specimen Diameter (cm): 7.14
Dry Unit Weight (pcf): 107.5
Moisture Before Test (%): 20.7
Moisture After Test (%): 20.7

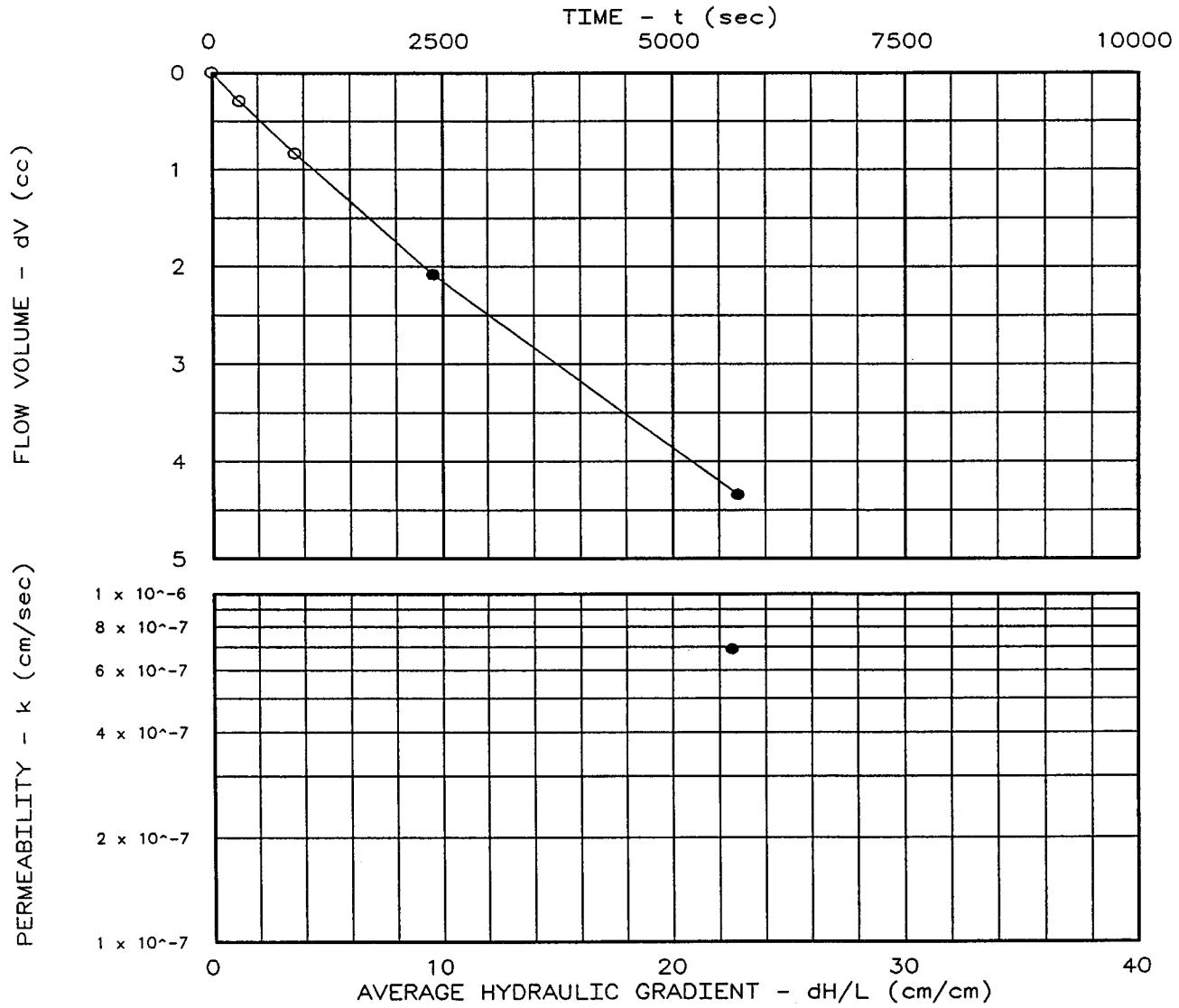
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	6.85 x 10^-4	
Perm. (cm/sec):	6.91 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL -1A #13; Retest

Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 101.2%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-27-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.74
Specimen Diameter (cm): 7.20
Dry Unit Weight (pcf): 95.5
Moisture Before Test (%): 25.2
Moisture After Test (%): 31.7

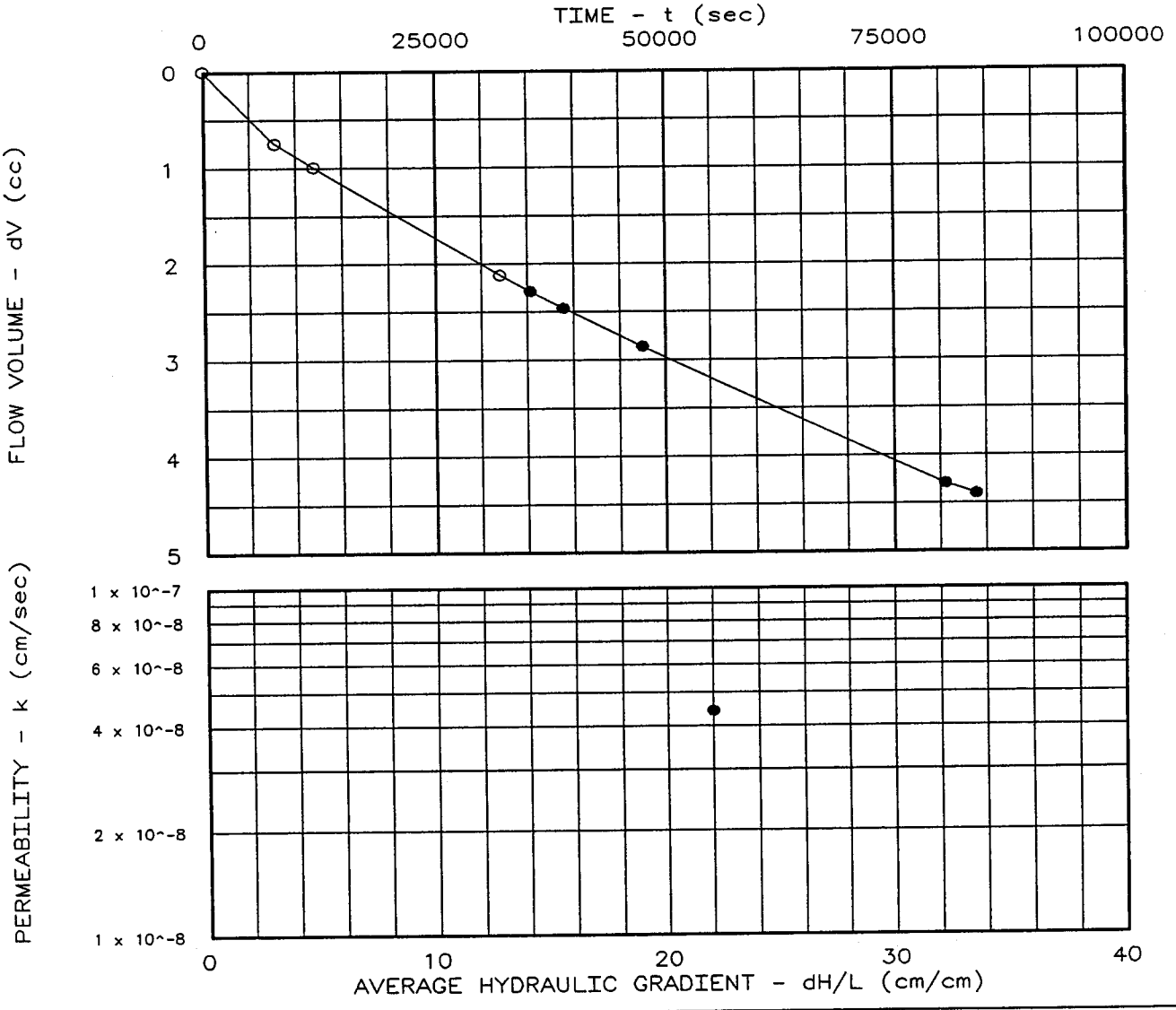
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	4.35 x 10^-5	
Perm. (cm/sec):	4.41 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL -1A #14

Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 89.9%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-27-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.51
Specimen Diameter (cm): 7.20
Dry Unit Weight (pcf): 90.4
Moisture Before Test (%): 29.3
Moisture After Test (%): 36.7

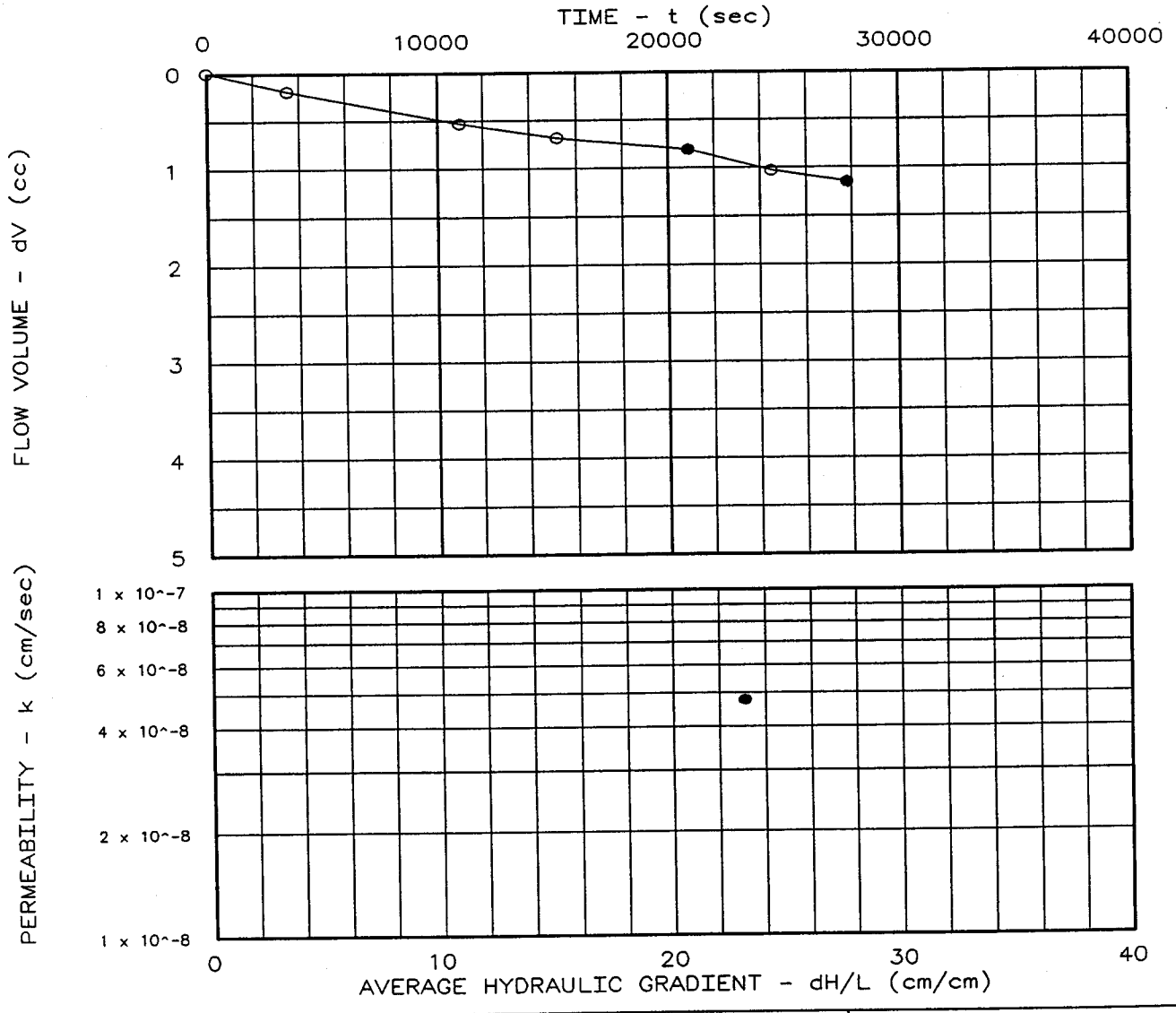
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	4.93 x 10^-5	
Perm. (cm/sec):	4.77 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL -1A #15

Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 85.2%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-27-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.21
Specimen Diameter (cm): 7.14
Dry Unit Weight (pcf): 87.8
Moisture Before Test (%): 36.4
Moisture After Test (%): 33.8

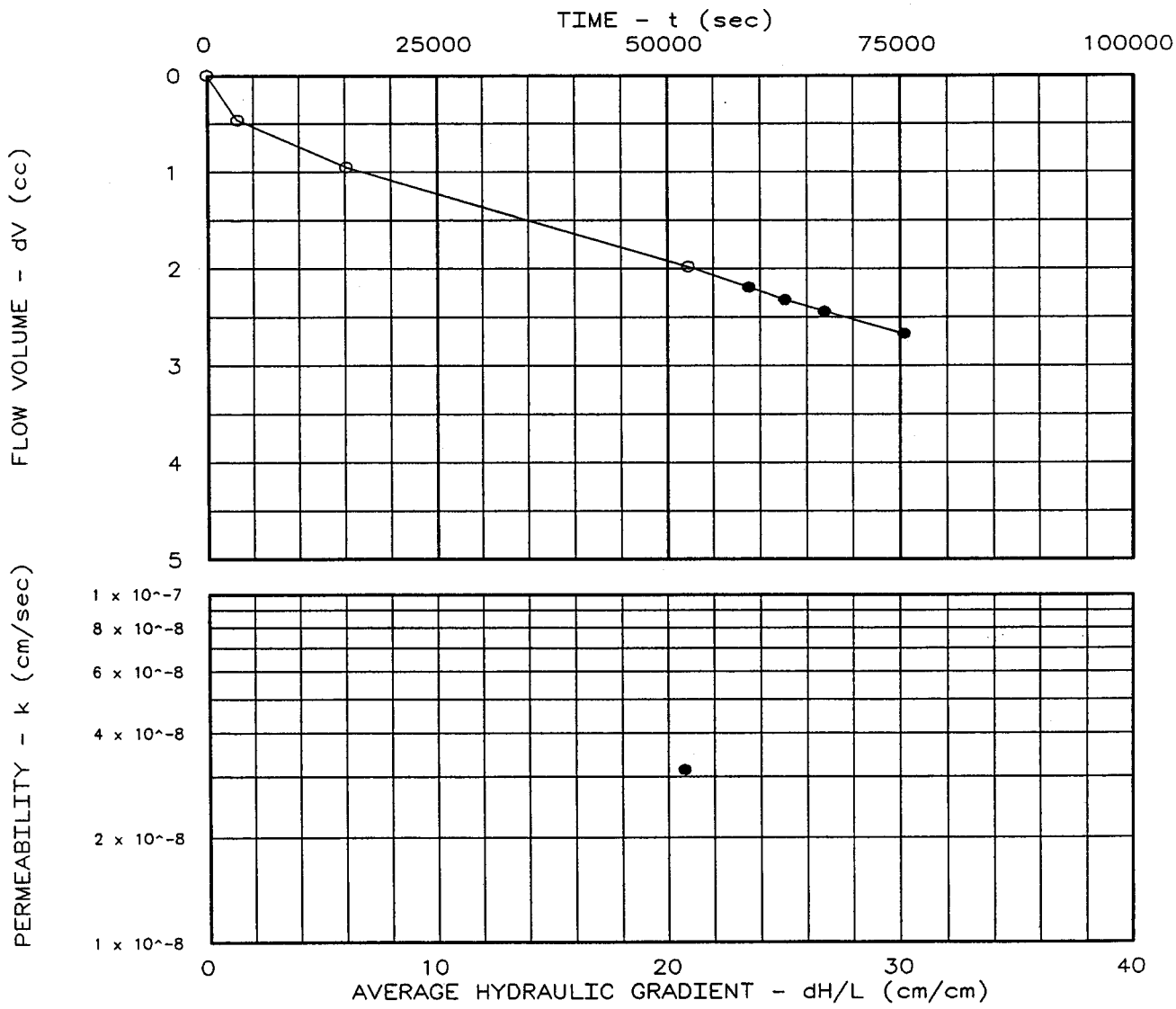
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	2.86 x 10^-5	
Perm. (cm/sec):	3.14 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL -1A #16

Visual Description: Yellow Brown and Gray Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 82.7%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 9-27-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: CFB
Checked by: CFB
Test: CH - Constant head

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: October 5, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☒ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☒ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

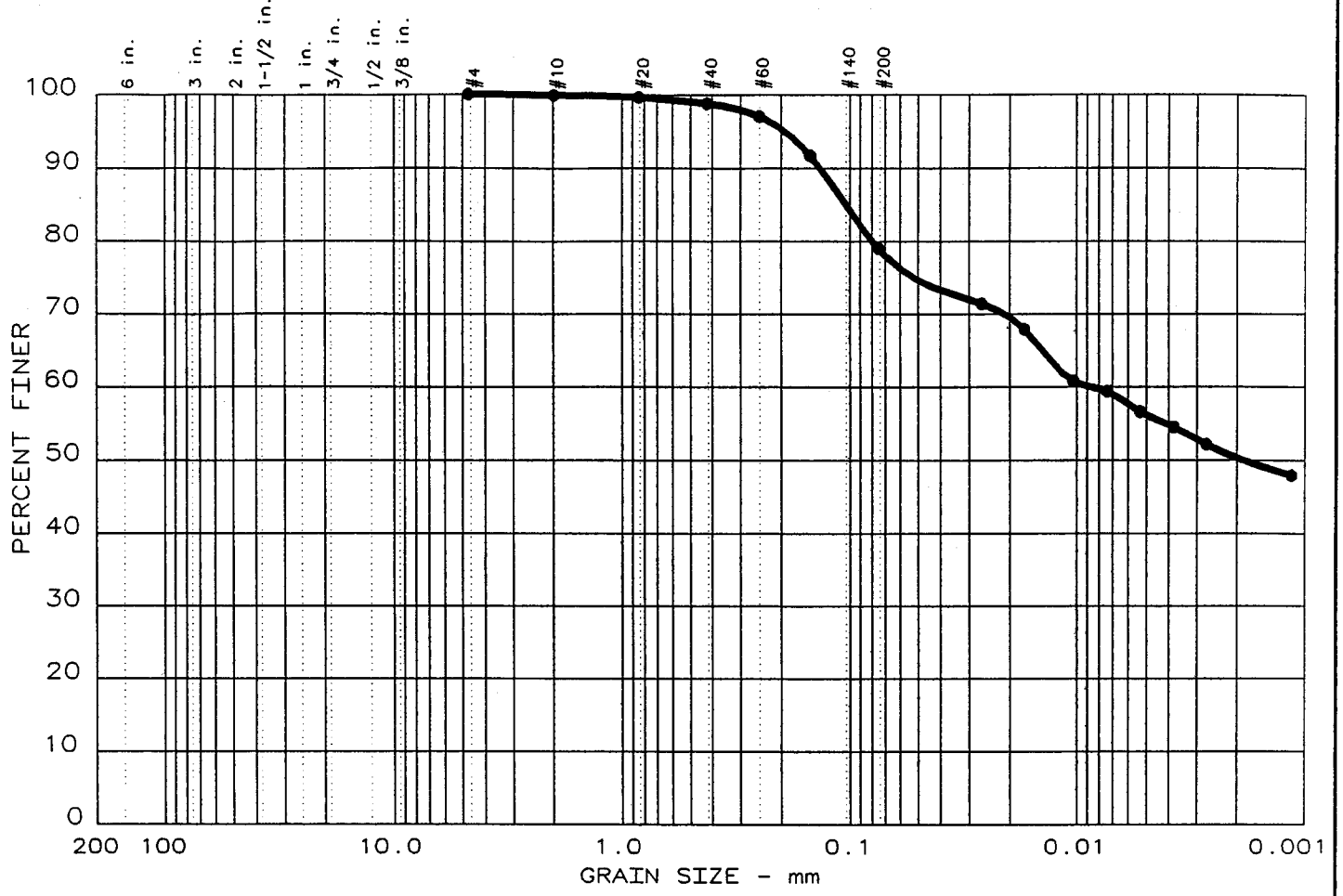
☒ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Melissa Hightower

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	0.0	20.9	23.0	56.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	51	32	0.104		0.0019					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SANDY SILTY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 17

Date: OCTOBER 4, 1998

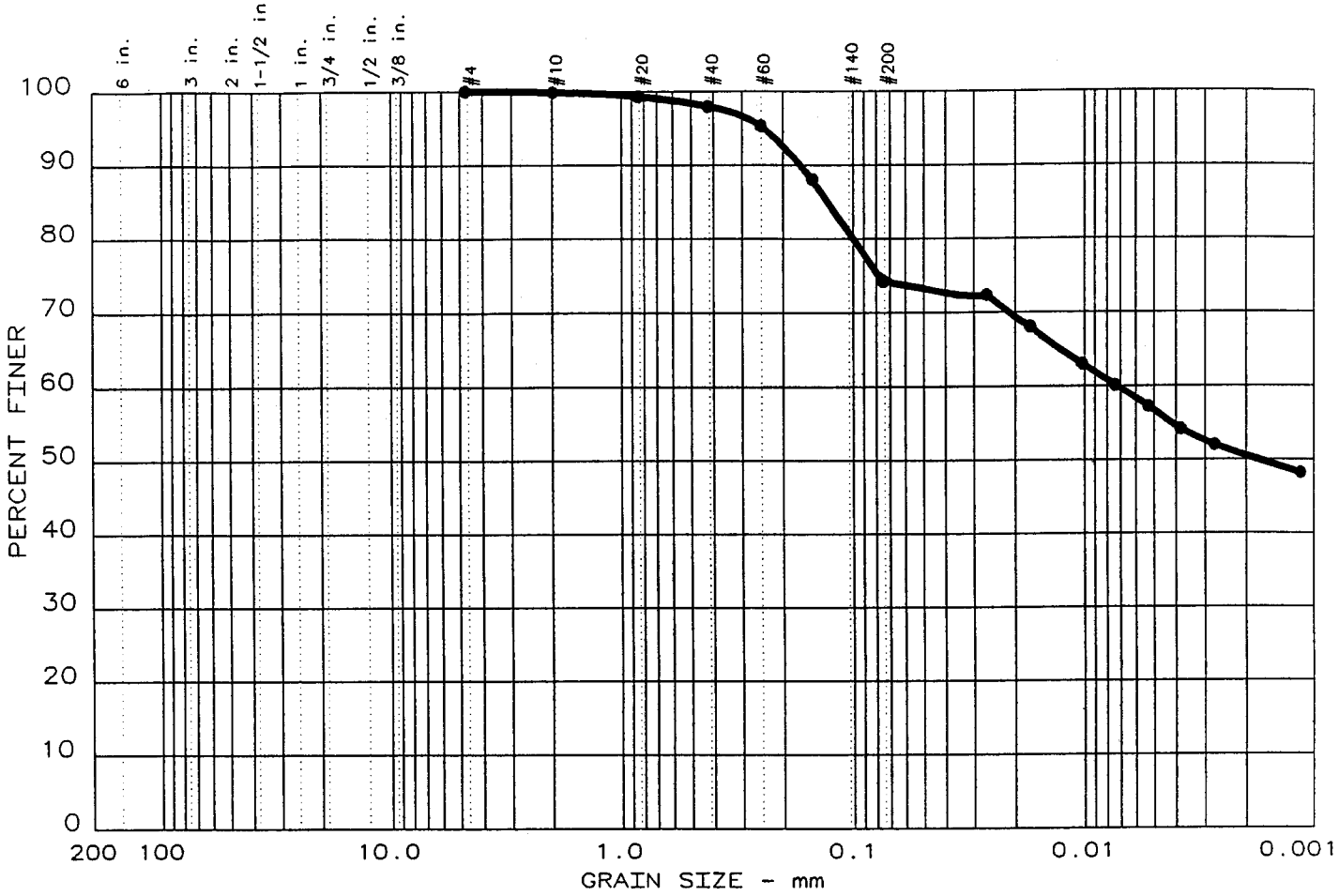
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-17

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	6	0.0	0.0	25.7	17.6	56.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	51	32	0.127		0.0017					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 18

Date: OCTOBER 4, 1998

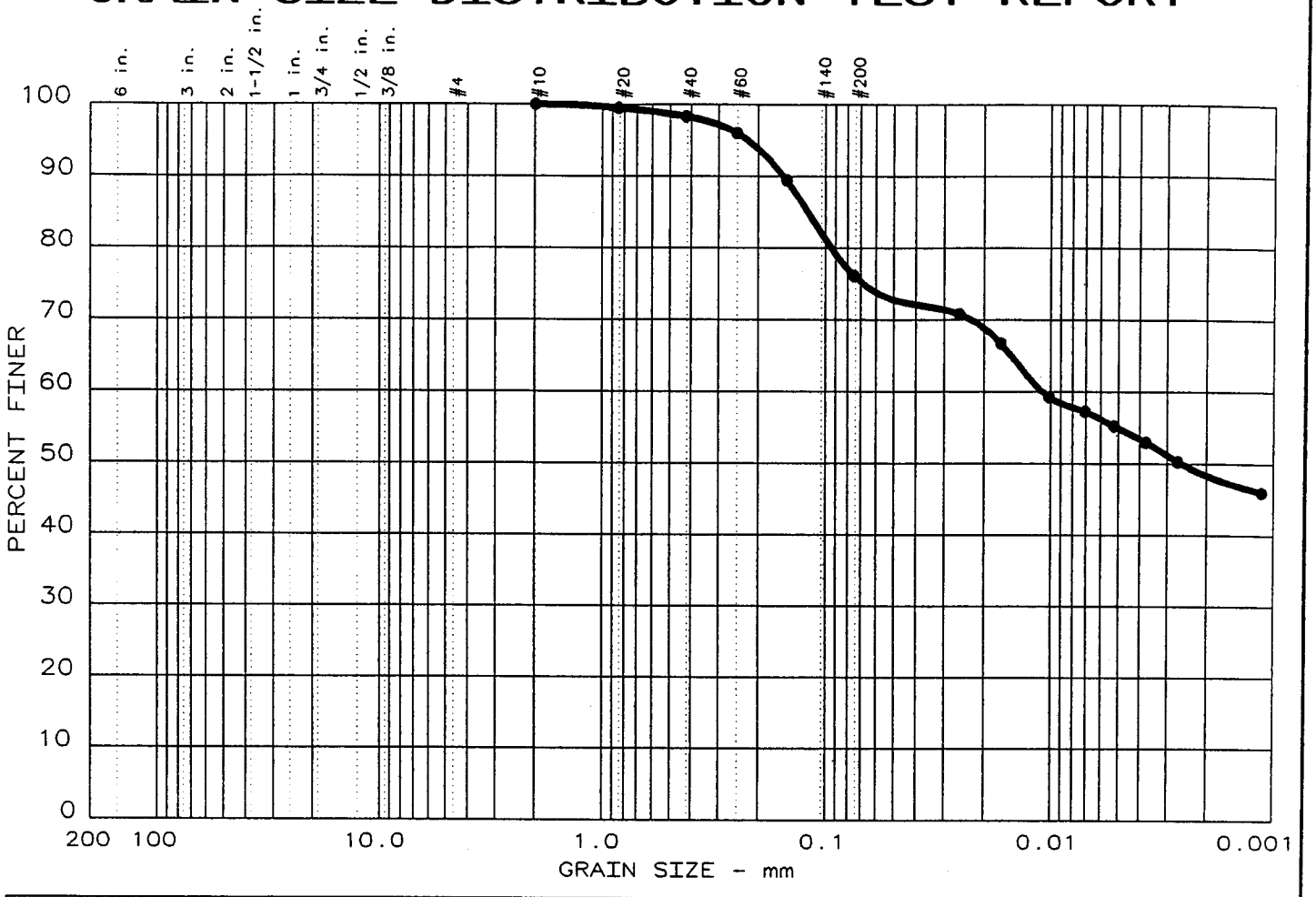
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-18

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	7	0.0	0.0	23.9	21.2	54.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	50	30	0.119		0.0026					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 20

Date: OCTOBER 4, 1998

Remarks:

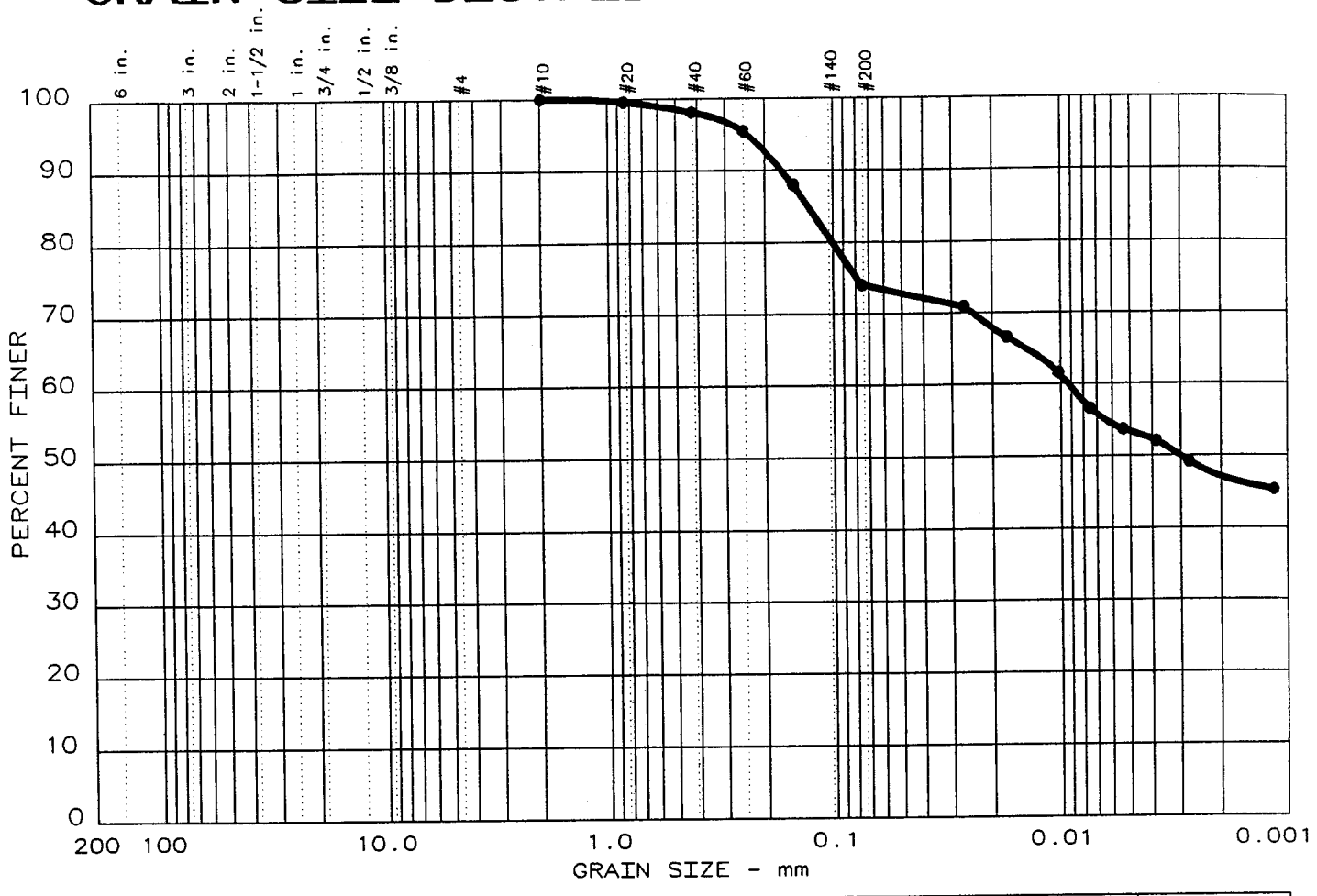
THERE IS NO SAMPLE 19

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-20

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	8	0.0	0.0	25.9	20.8	53.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	51	31	0.129		0.0031					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 21

Date: OCTOBER 4, 1998

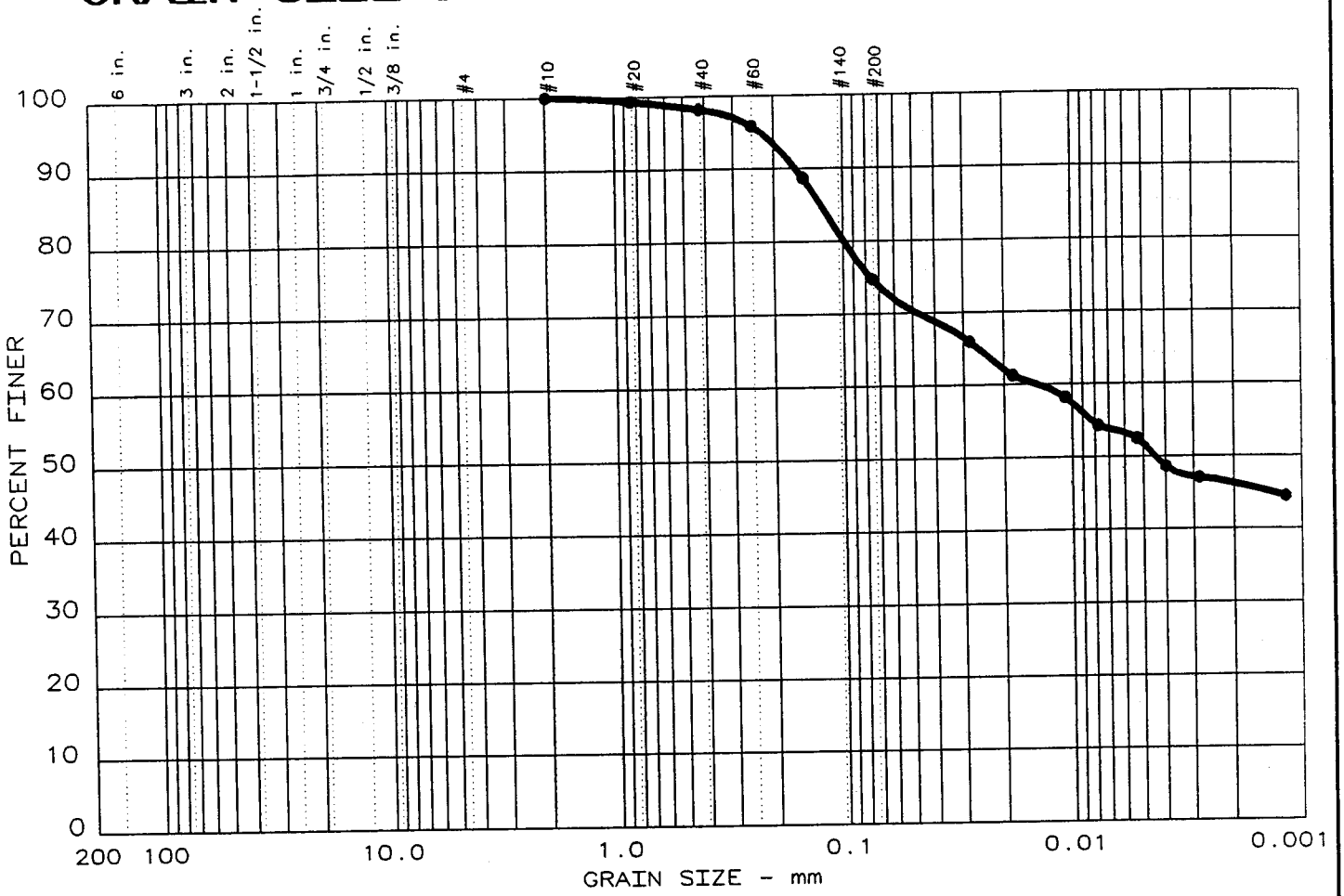
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-21

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	9	0.0	0.0	25.2	23.0	51.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	50	29	0.124		0.0044					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 22

Date: OCTOBER 4, 1998

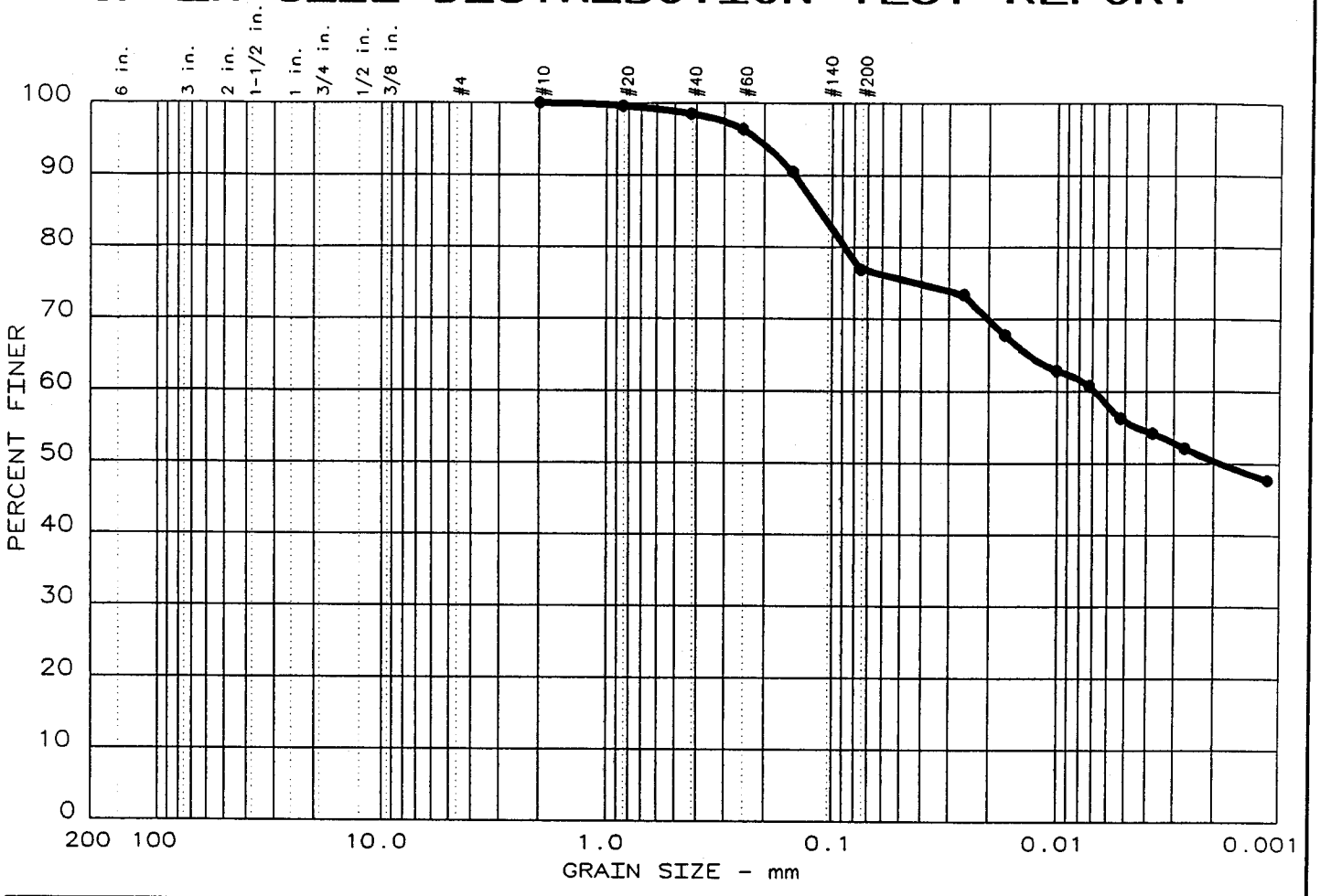
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-22

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	10	0.0	0.0	23.1	21.0	55.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	50	29	0.112		0.0019					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 23

Date: OCTOBER 4, 1998

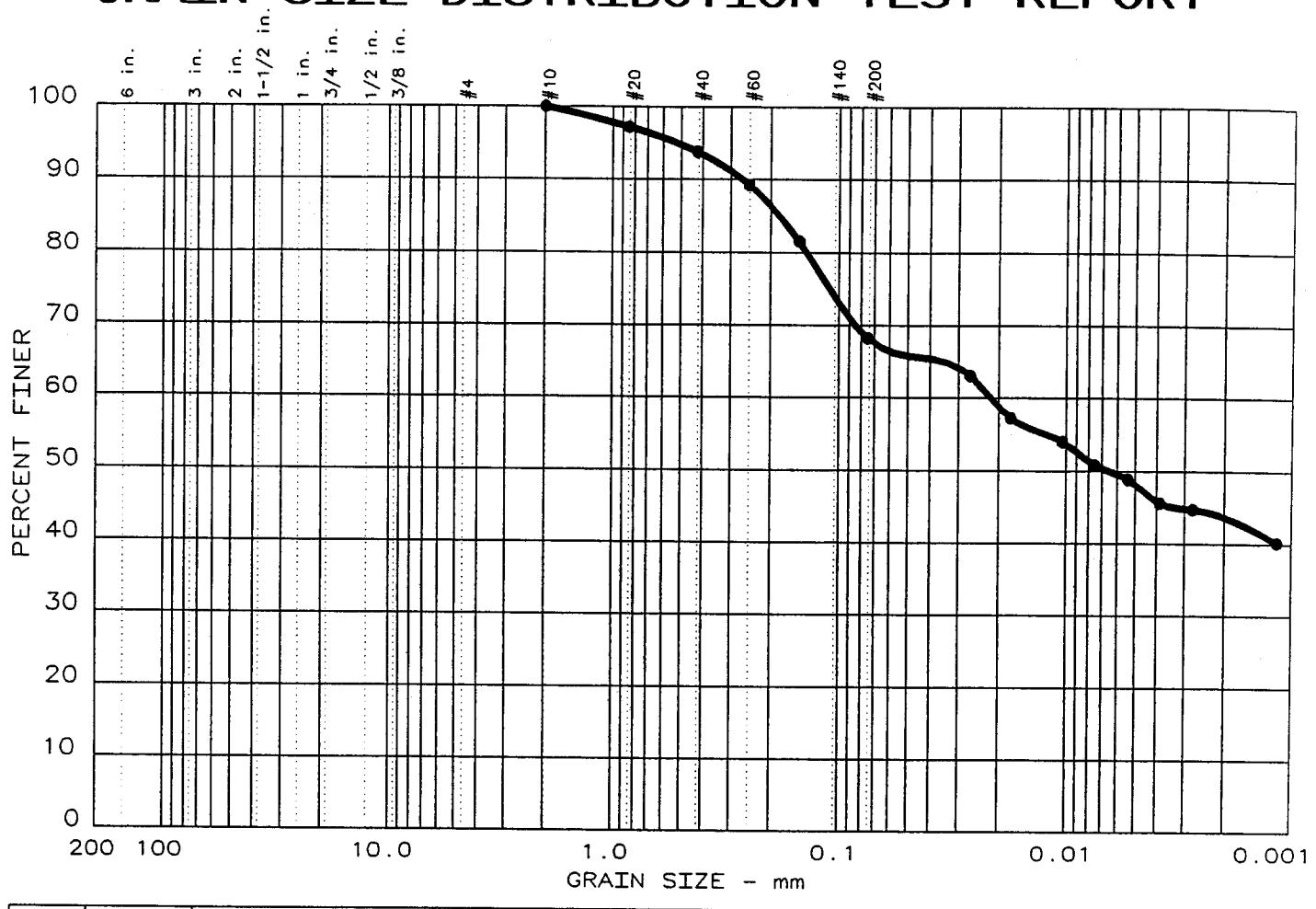
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-23

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	11	0.0	0.0	31.7	20.2	48.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	48	28	0.182		0.0065					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 24

Date: OCTOBER 4, 1998

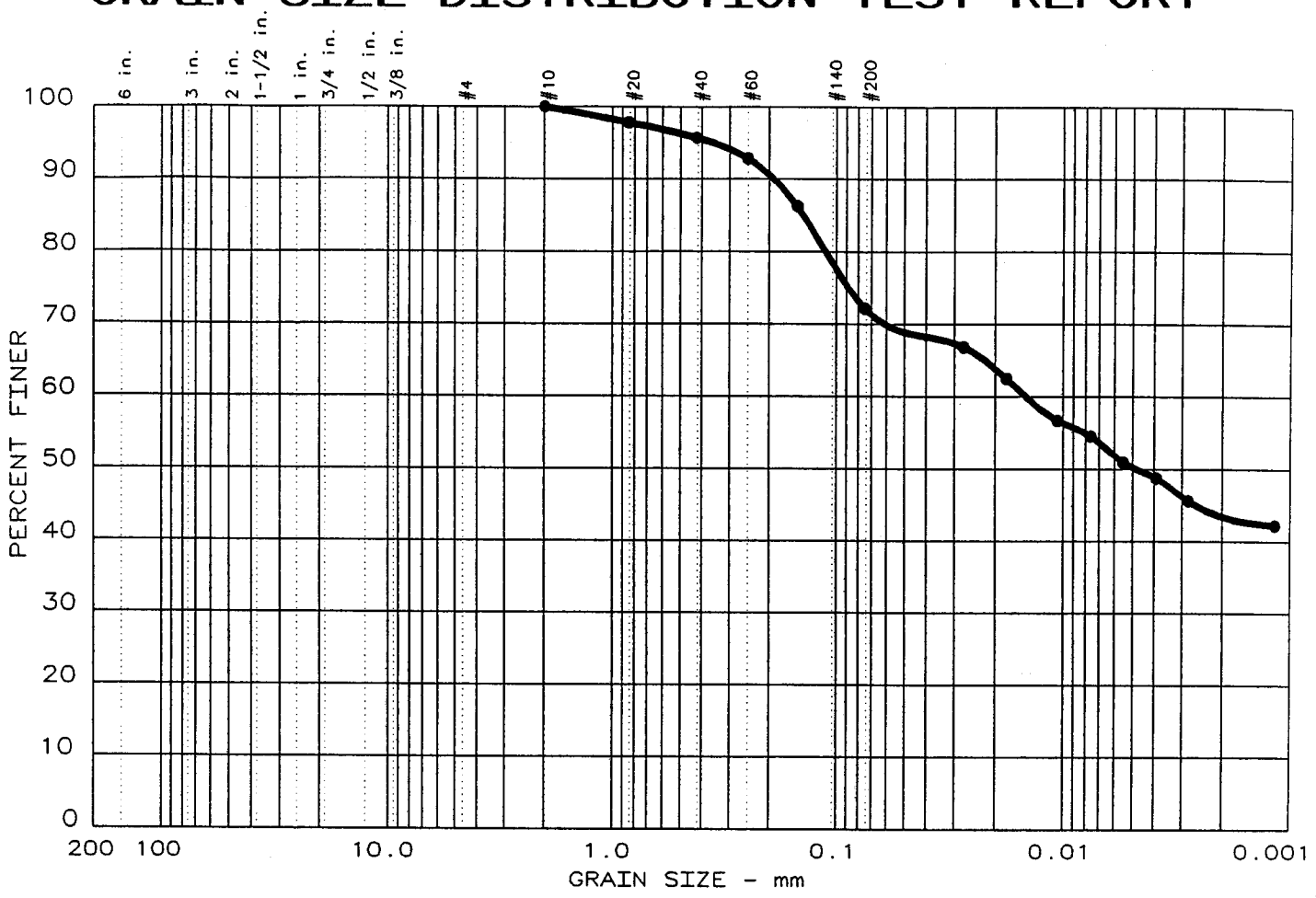
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-24

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	12	0.0	0.0	27.8	22.0	50.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	51	33	0.140		0.0048					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CH	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 25

Date: OCTOBER 4, 1998

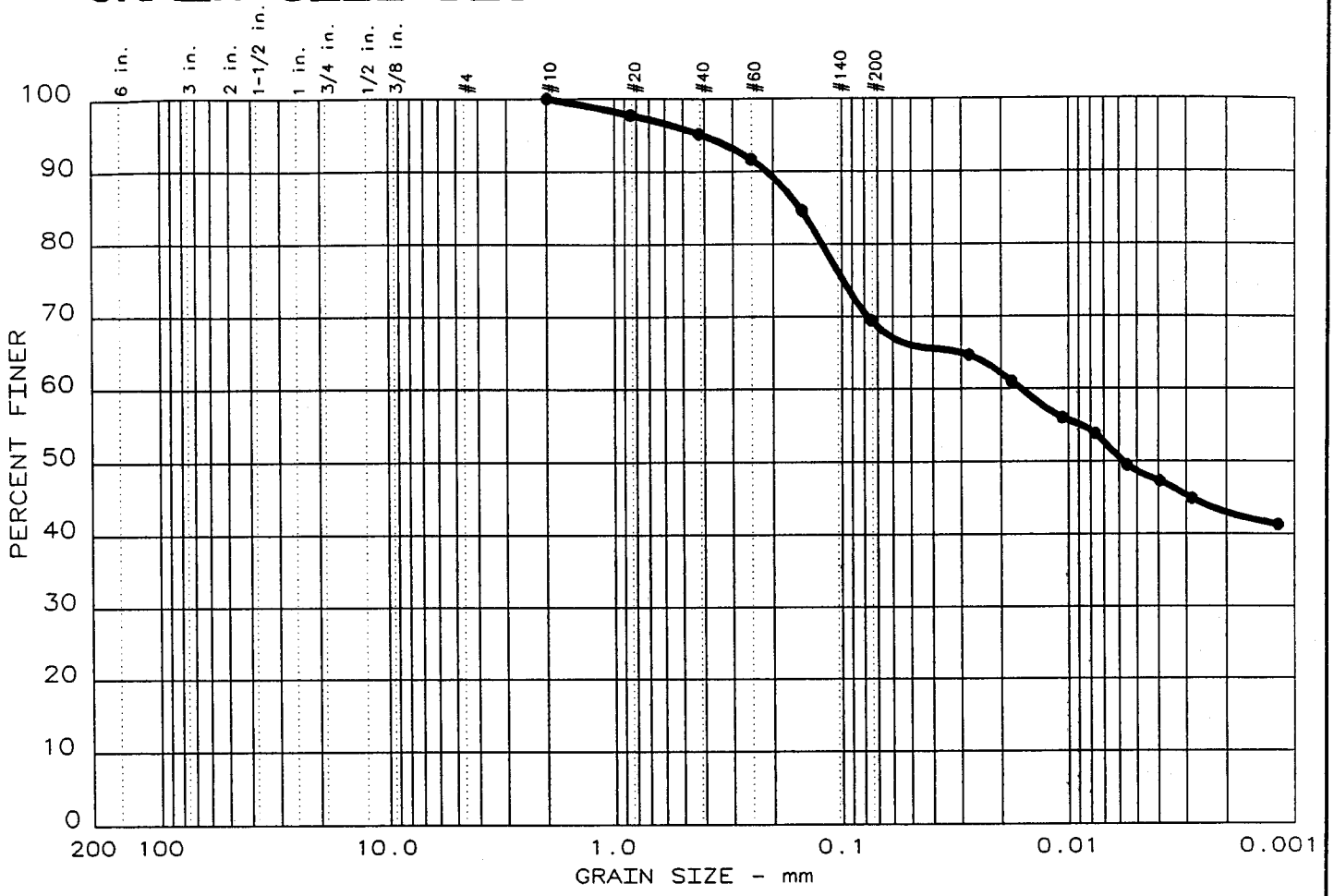
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-25

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	13	0.0	0.0	30.5	20.9	48.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	49	29	0.153		0.0058					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
● Location: AREA 1A; SAMPLE 26

Date: OCTOBER 4, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1A-26

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: October 9, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☒ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☒ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

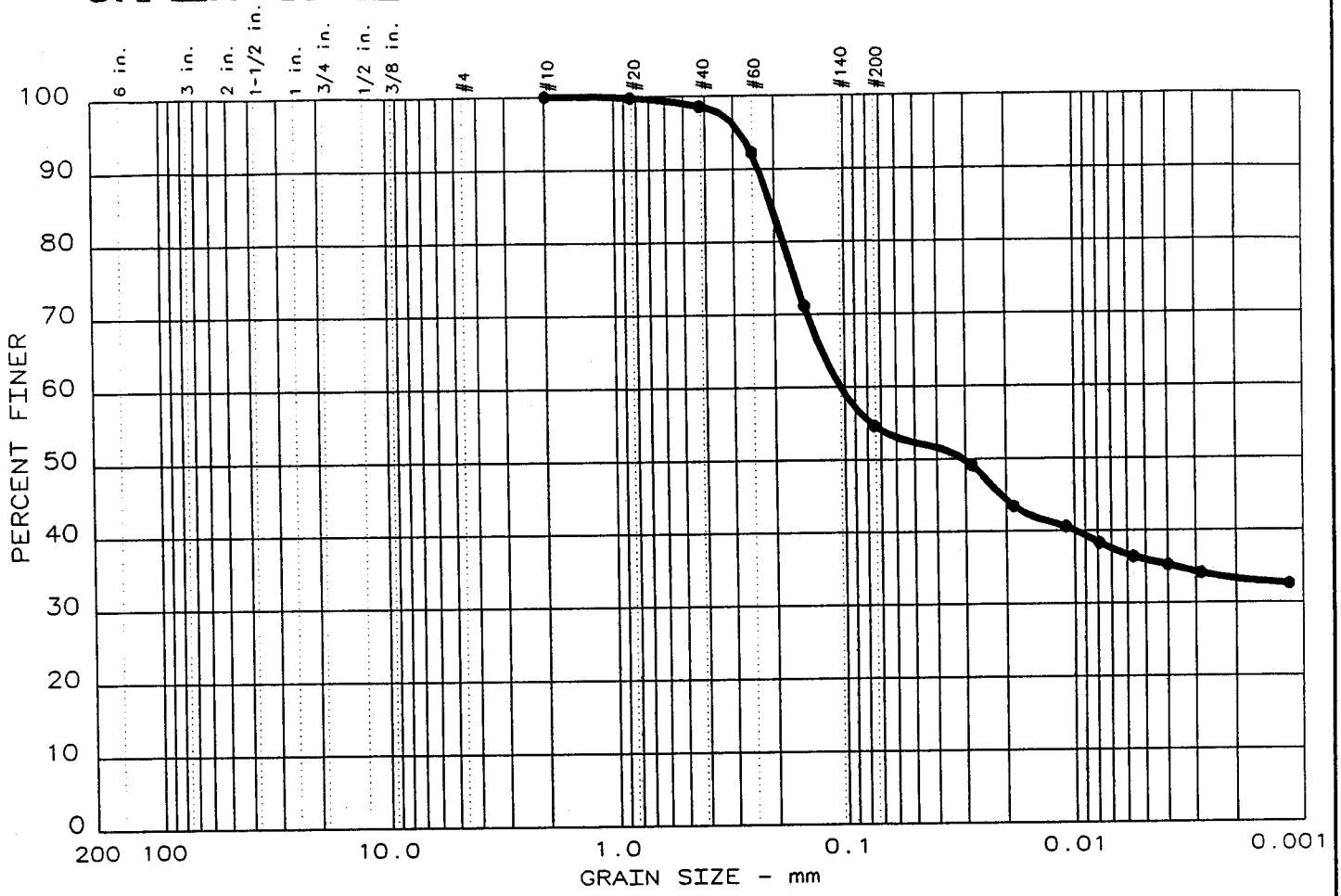
☒ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	0.0	45.3	18.8	35.9

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	40	23	0.206	0.104	0.0308					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY CLAYEY FINE SAND	CL	A-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 4

Date: OCTOBER 7, 1998

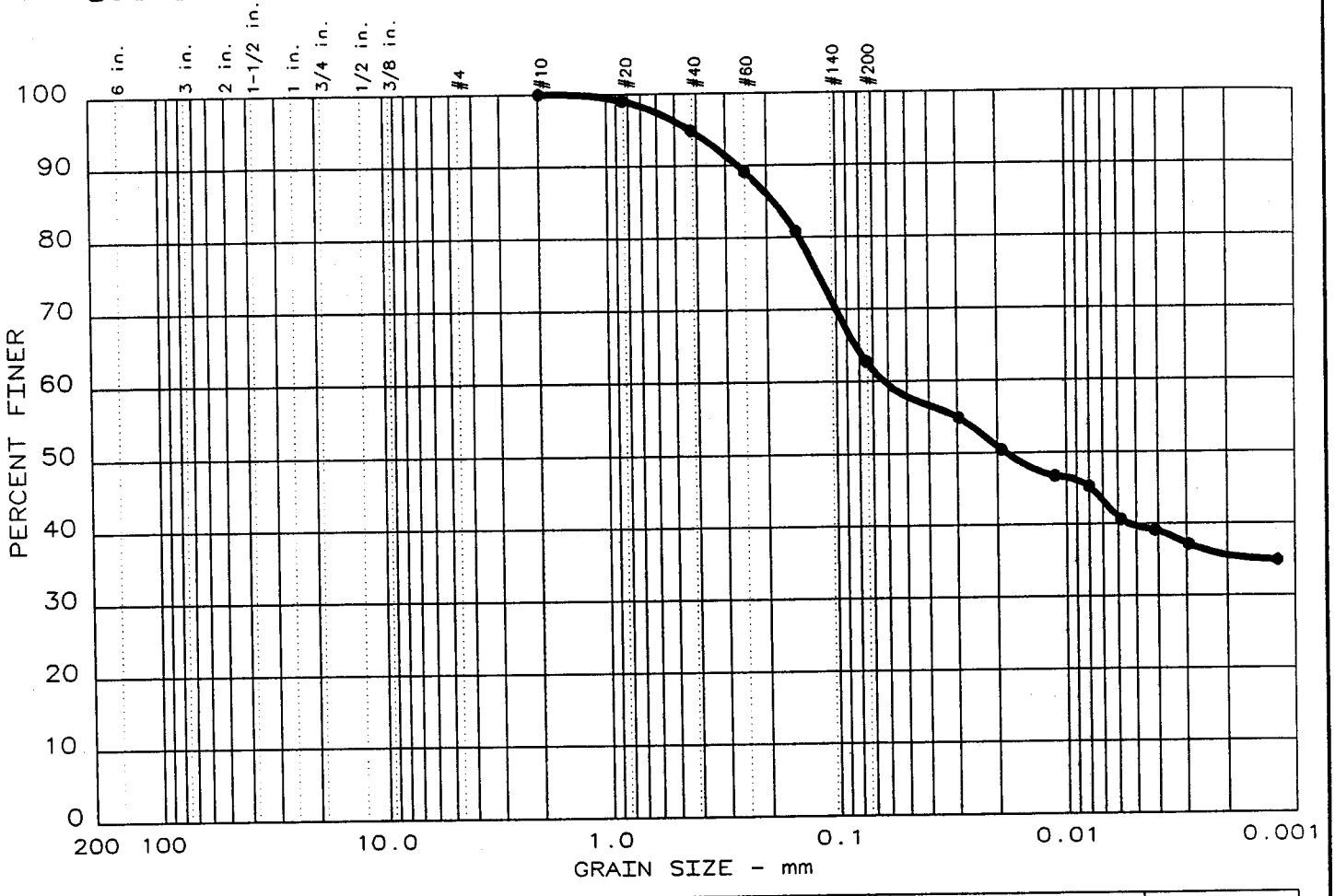
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-4

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	0.0	37.2	23.2	39.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	34	19	0.184		0.0184					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY FINE SANDY CLAY	CL	A-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 3

Date: OCTOBER 7, 1998

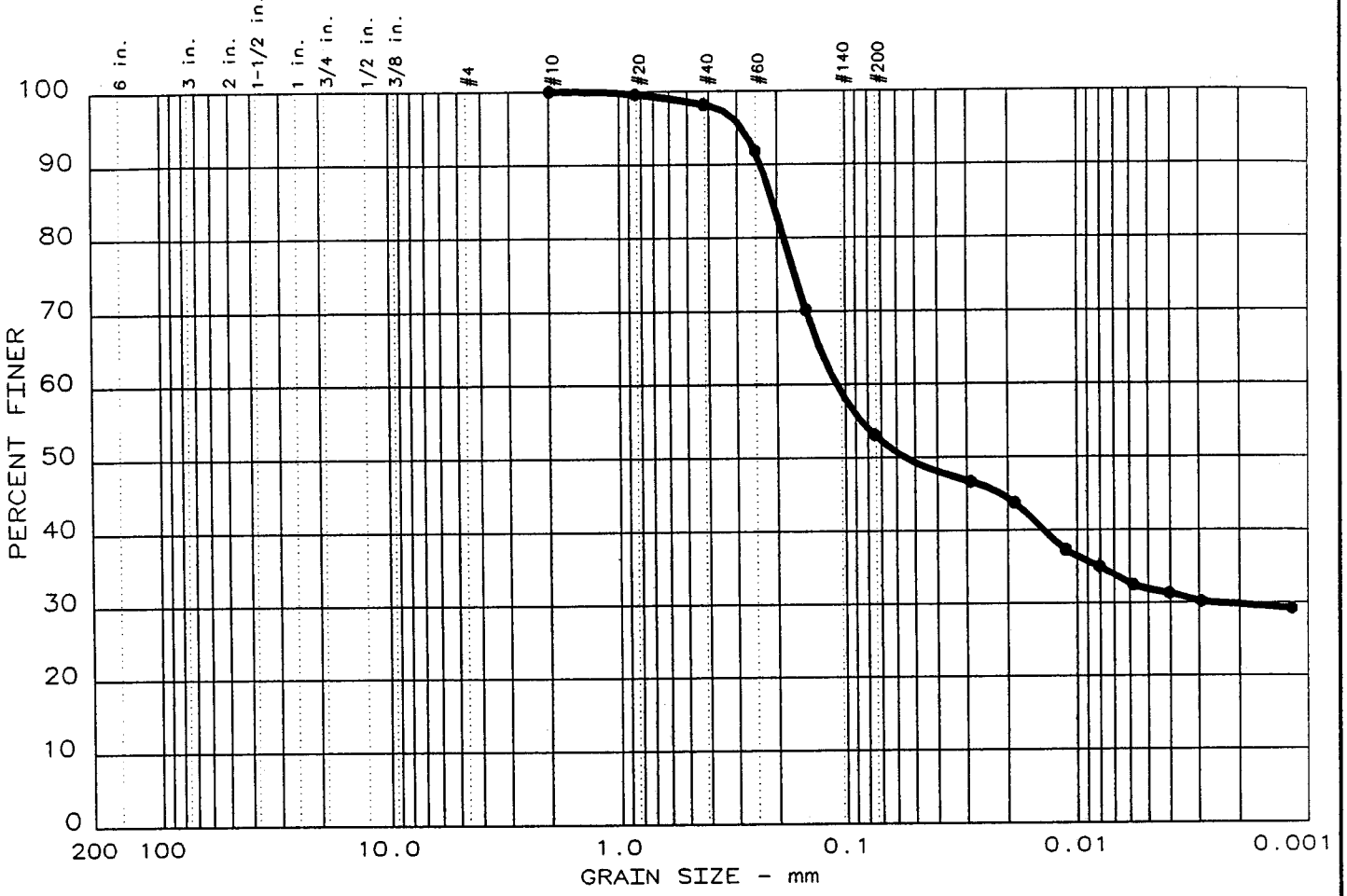
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-3

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	17	0.0	0.0	46.9	21.3	31.8

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	35	17	0.208	0.109	0.0554	0.0023				

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY CLAYEY FINE SAND	CL	A-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 2

Date: OCTOBER 7, 1998

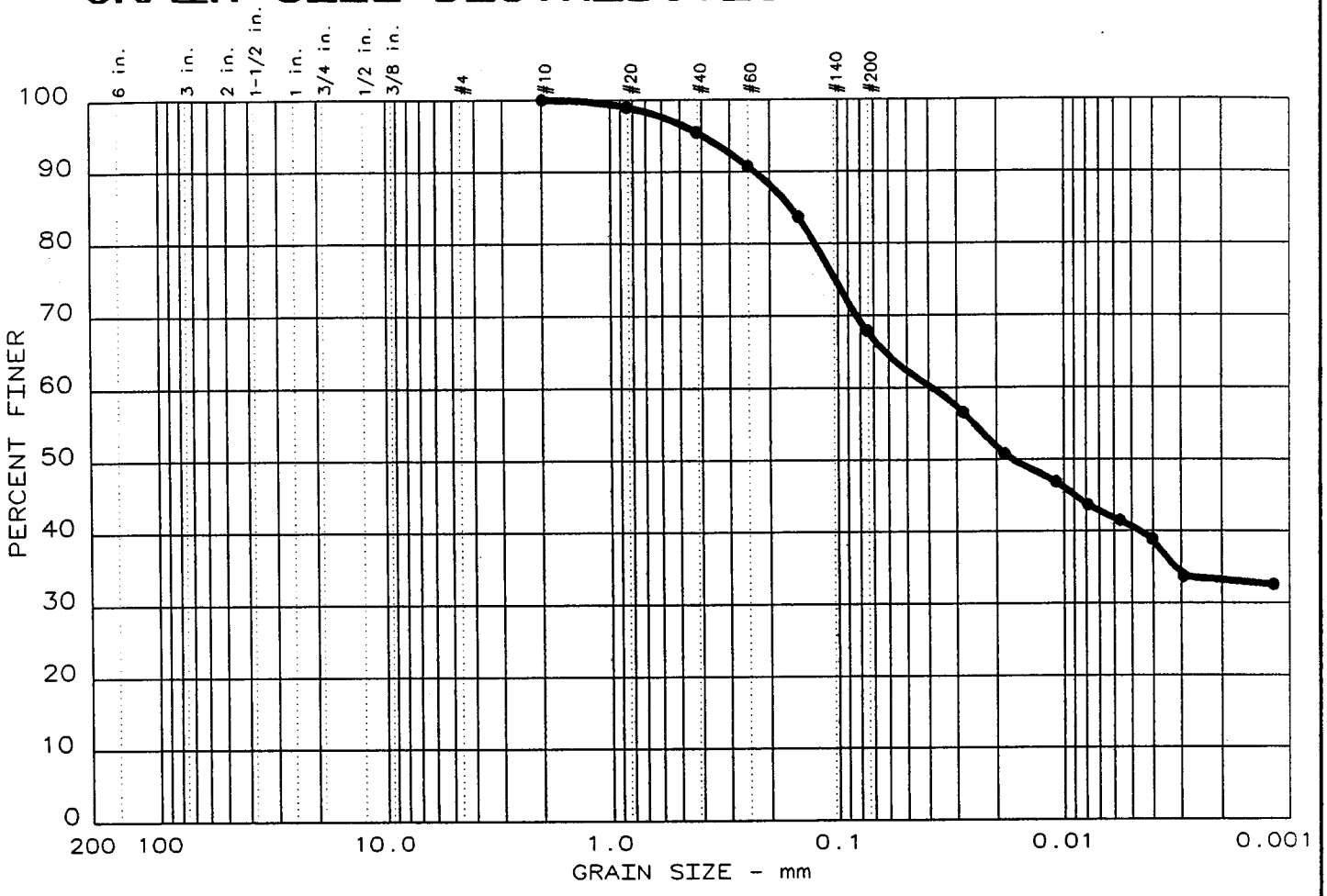
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-2

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	16	0.0	0.0	32.1	27.3	40.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	39	21	0.160		0.0170					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY SANDY CLAY	CL	A-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 1

Date: OCTOBER 7, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-1

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 7.32
Specimen Diameter (cm): 7.16
Dry Unit Weight (pcf): 98.5
Moisture Before Test (%): 13.8
Moisture After Test (%): 27.9

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	8.19 x 10^-3	
Perm. (cm/sec):	6.52 x 10^-6	

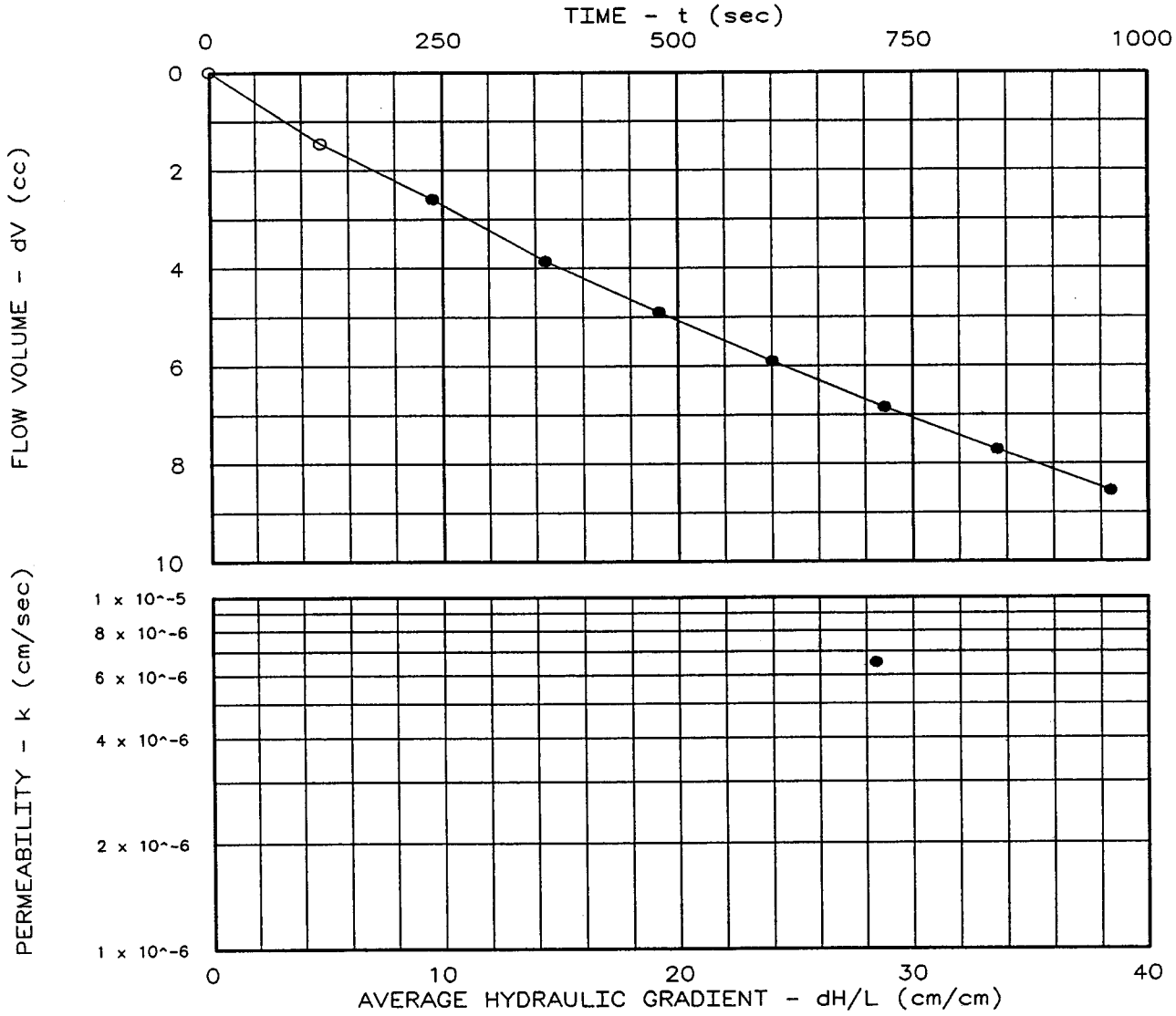
SAMPLE DATA:

Sample Identification: WCL 1A # 17

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 92.8%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.35
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 93.9
Moisture Before Test (%): 26.0
Moisture After Test (%): 27.9

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	1.90 x 10^-3	
Perm. (cm/sec):	1.86 x 10^-6	

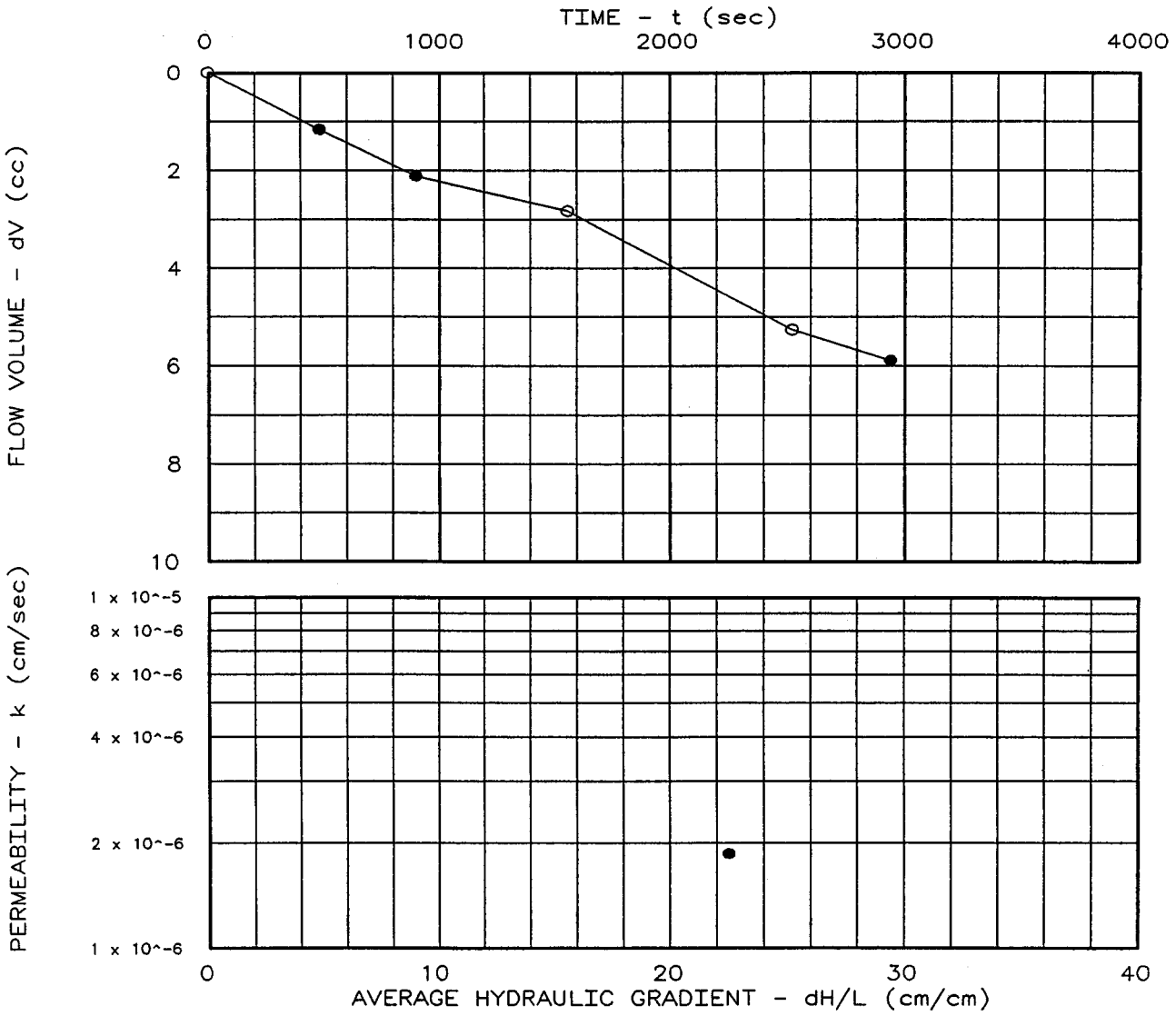
SAMPLE DATA:

Sample Identification: WCL 1A # 18

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 88.4%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.25
Specimen Diameter (cm): 7.26
Dry Unit Weight (pcf): 97.2
Moisture Before Test (%): 20.4
Moisture After Test (%): 27.0

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	8.21 x 10^-3	
Perm. (cm/sec):	8.14 x 10^-6	

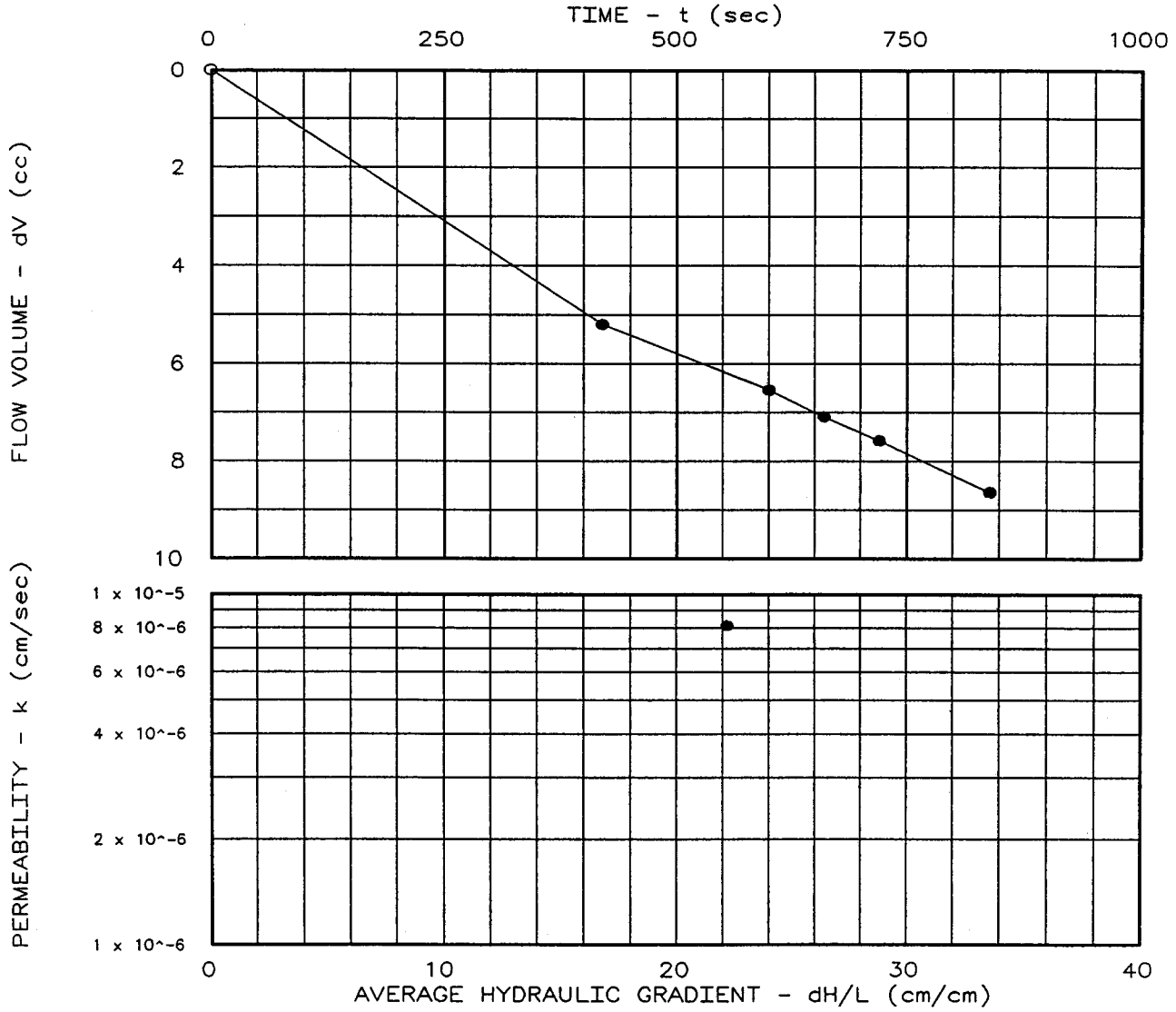
SAMPLE DATA:

Sample Identification: WCL 1A # 20

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 91.5%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.07
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 88.1
Moisture Before Test (%): 32.0
Moisture After Test (%): 33.9
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 66.0
Test Pressure(psi): 63.0
Back Pressure(psi): 60.1
Diff. Head (psi): 2.9
Flow Rate (cc/sec): 1.37 x 10^-3
Perm. (cm/sec): 1.50 x 10^-6

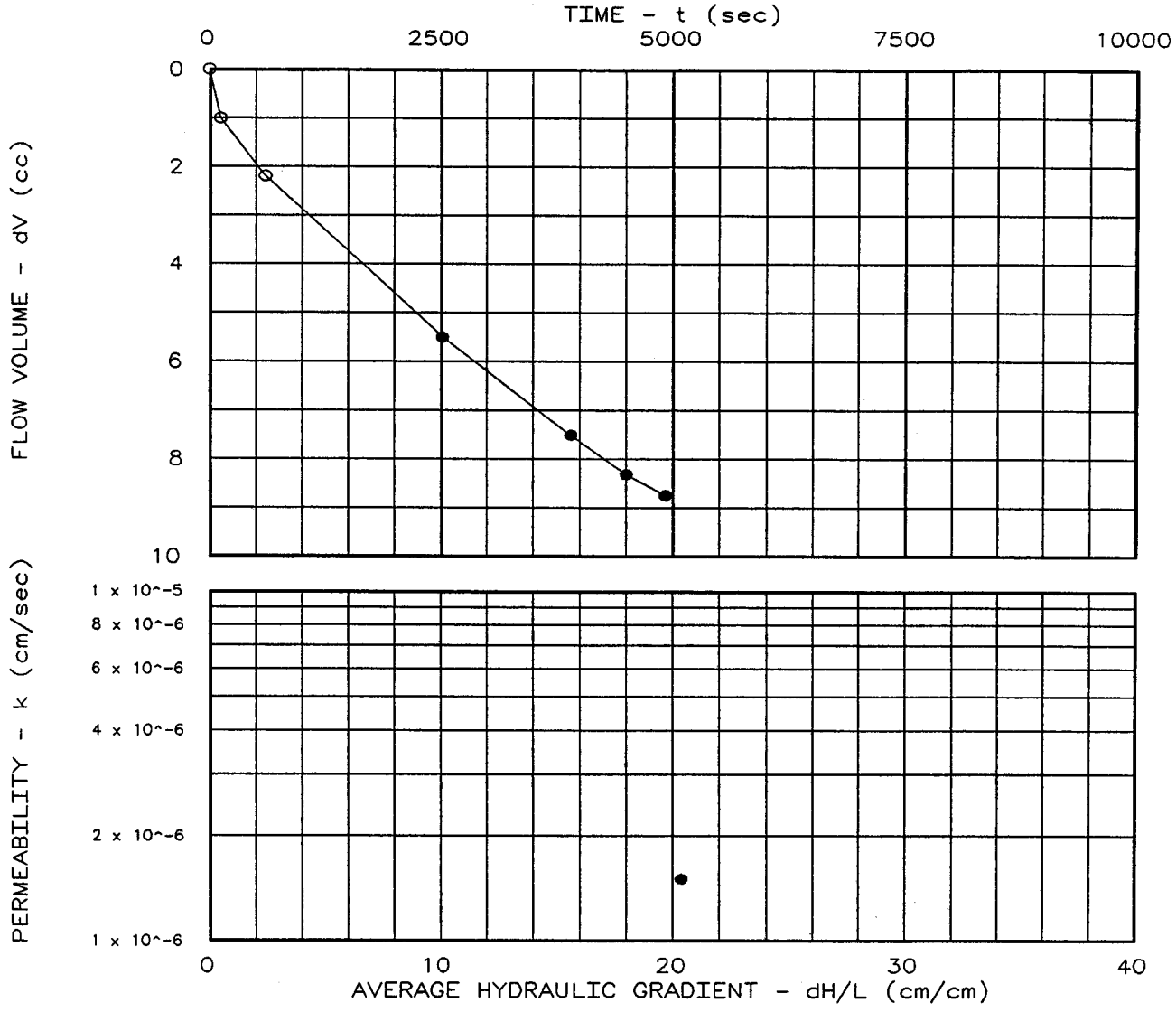
SAMPLE DATA:

Sample Identification: WCL 1A # 21

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 83.0%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 8.76
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 116.1
Moisture Before Test (%): 14.4
Moisture After Test (%): 17.3

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	3.02 x 10^-3	
Perm. (cm/sec):	2.84 x 10^-6	

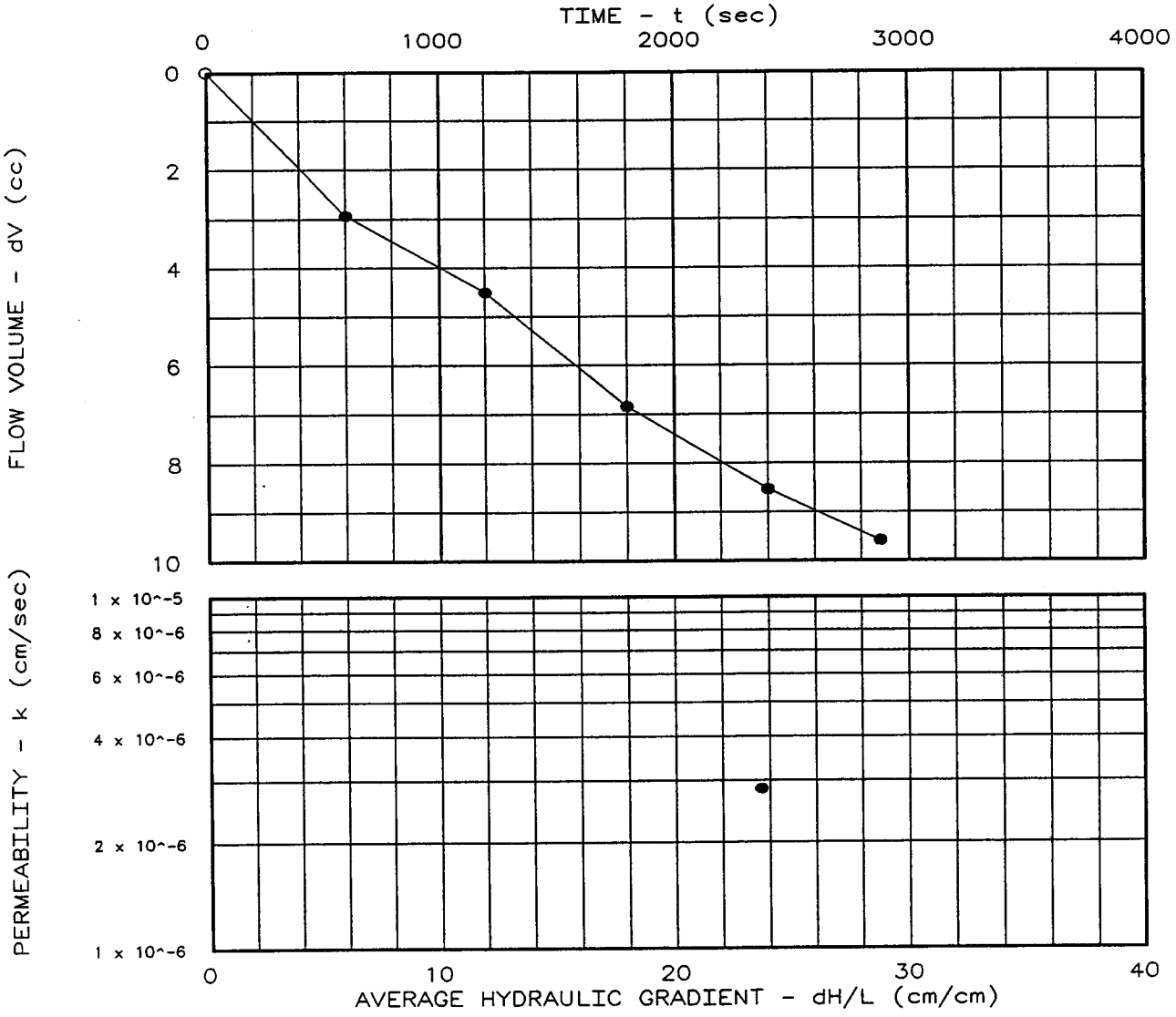
SAMPLE DATA:

Sample Identification: WCL 1A # 22

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 109.3%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.81
Specimen Diameter (cm): 7.12
Dry Unit Weight (pcf): 96.9
Moisture Before Test (%): 28.8
Moisture After Test (%): 27.5

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	3.92 x 10^-4	
Perm. (cm/sec):	4.23 x 10^-7	

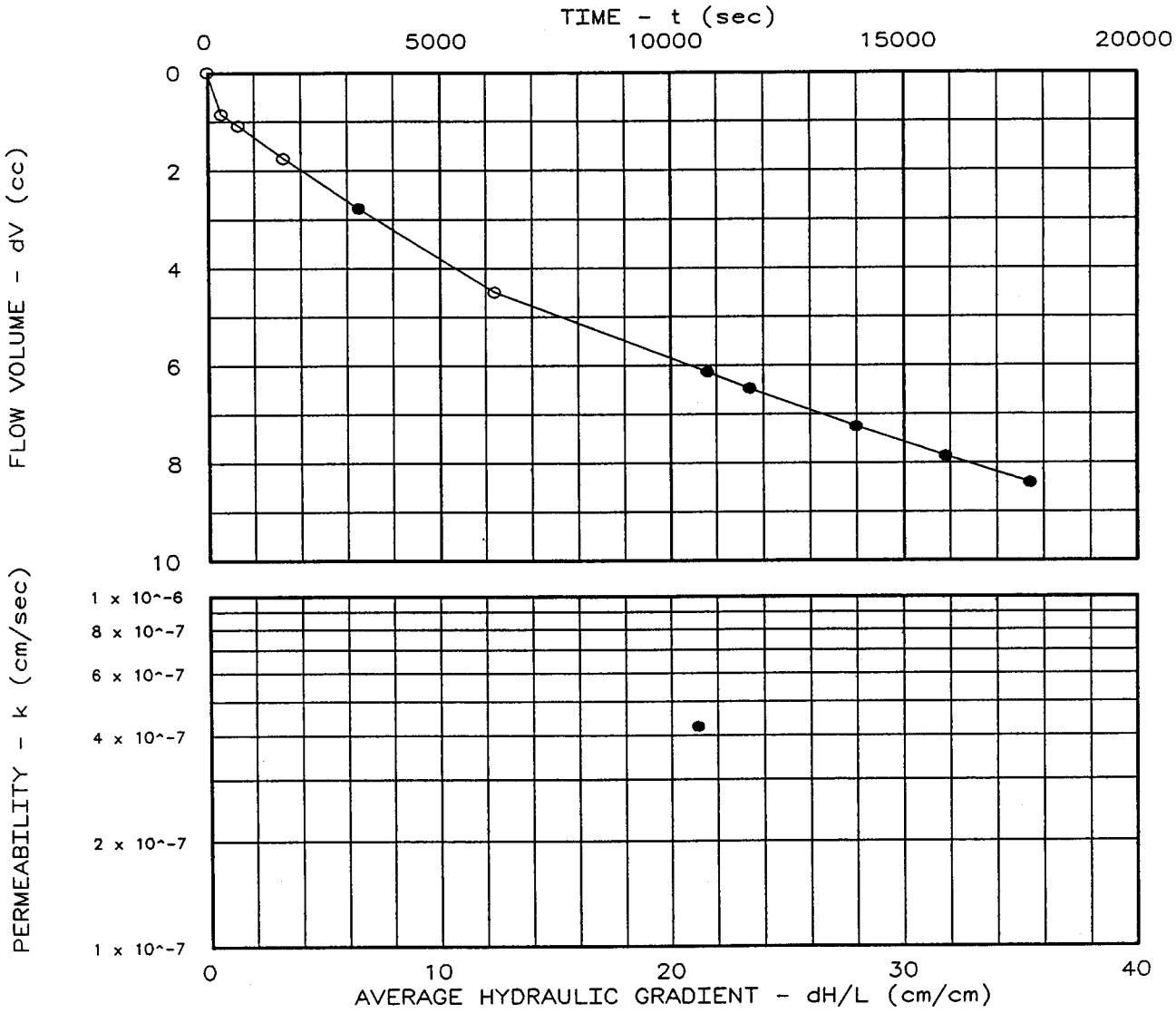
SAMPLE DATA:

Sample Identification: WCL 1A # 23

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 91.3%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.40
Specimen Diameter (cm): 7.16
Dry Unit Weight (pcf): 102.5
Moisture Before Test (%): 18.9
Moisture After Test (%): 24.6

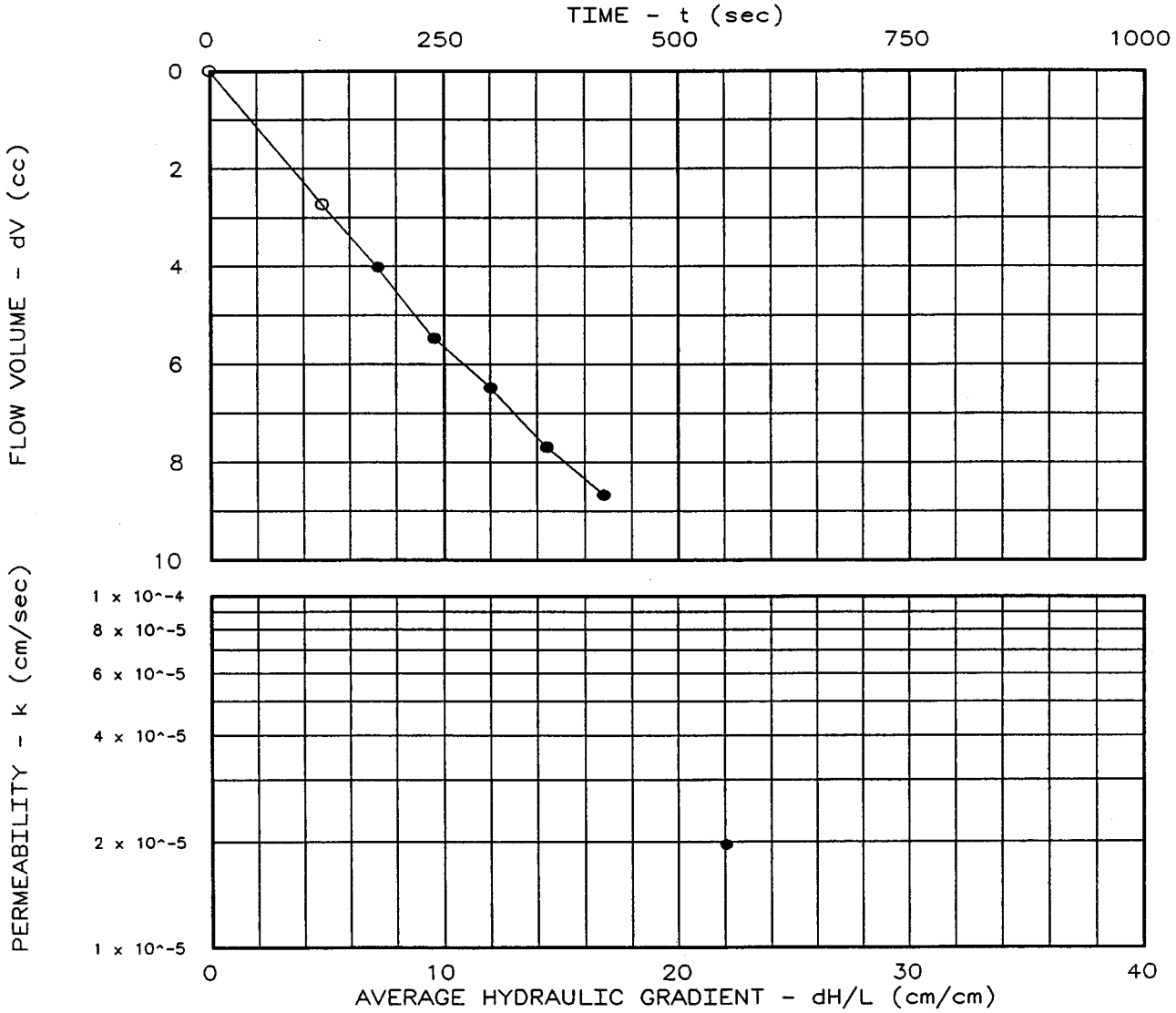
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	1.92 x 10^-2	
Perm. (cm/sec):	1.97 x 10^-5	

SAMPLE DATA:

Sample Identification: WCL 1A # 24

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084 Sample was cracked during extrusion
Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 96.6%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

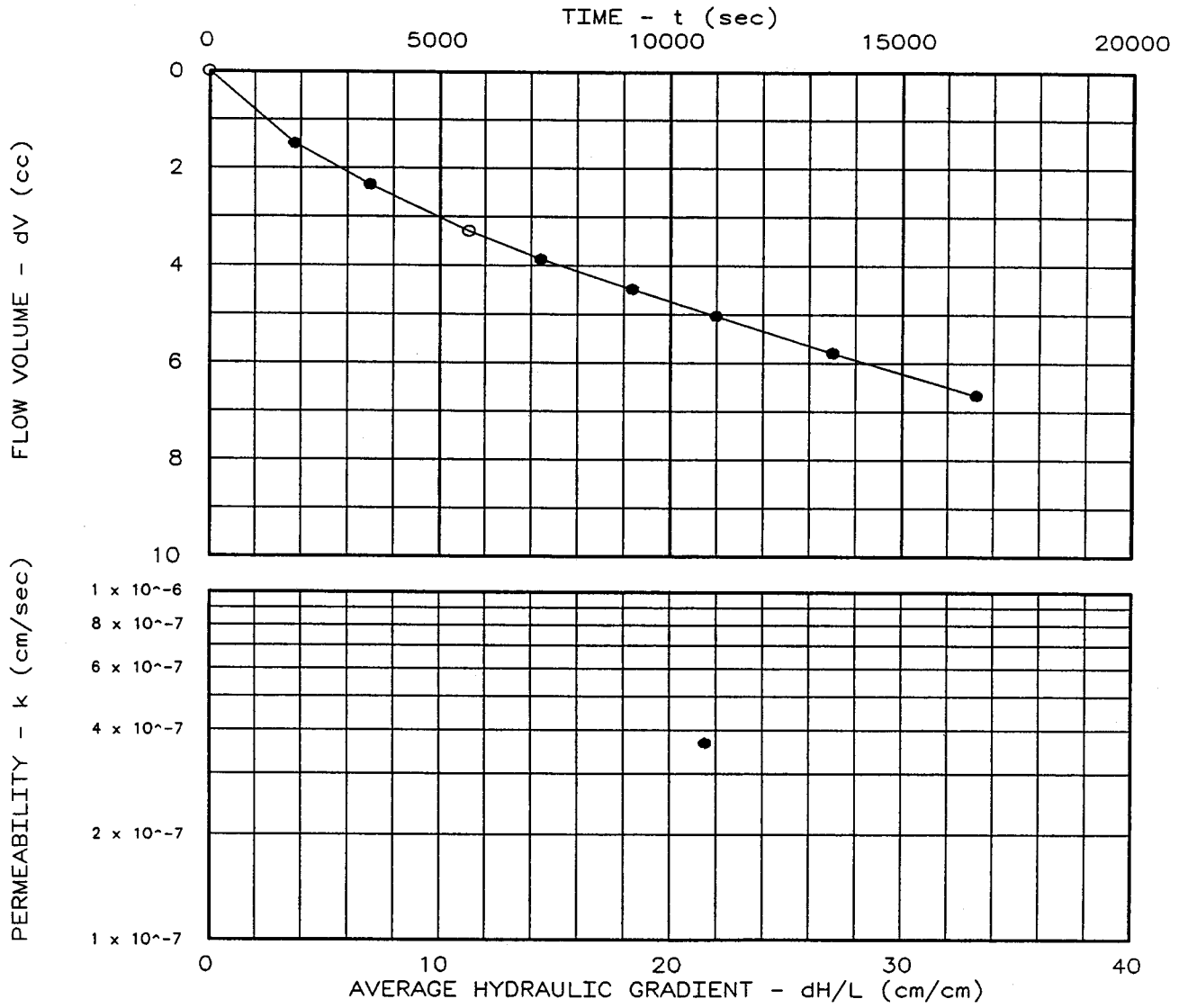
Specimen Height (cm): 9.87
Specimen Diameter (cm): 7.12
Dry Unit Weight (pcf): 115.4
Moisture Before Test (%): 13.9
Moisture After Test (%): 21.0
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 66.0
Test Pressure(psi): 63.0
Back Pressure(psi): 60.0
Diff. Head (psi): 3.0
Flow Rate (cc/sec): 3.46 x 10^-4
Perm. (cm/sec): 3.67 x 10^-7

SAMPLE DATA:

Sample Identification: WCL 1A # 25

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084 Sample was cracked during extrusion
Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 108.6%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 8.03
Specimen Diameter (cm): 7.13
Dry Unit Weight (pcf): 106.0
Moisture Before Test (%): 19.2
Moisture After Test (%): 26.8

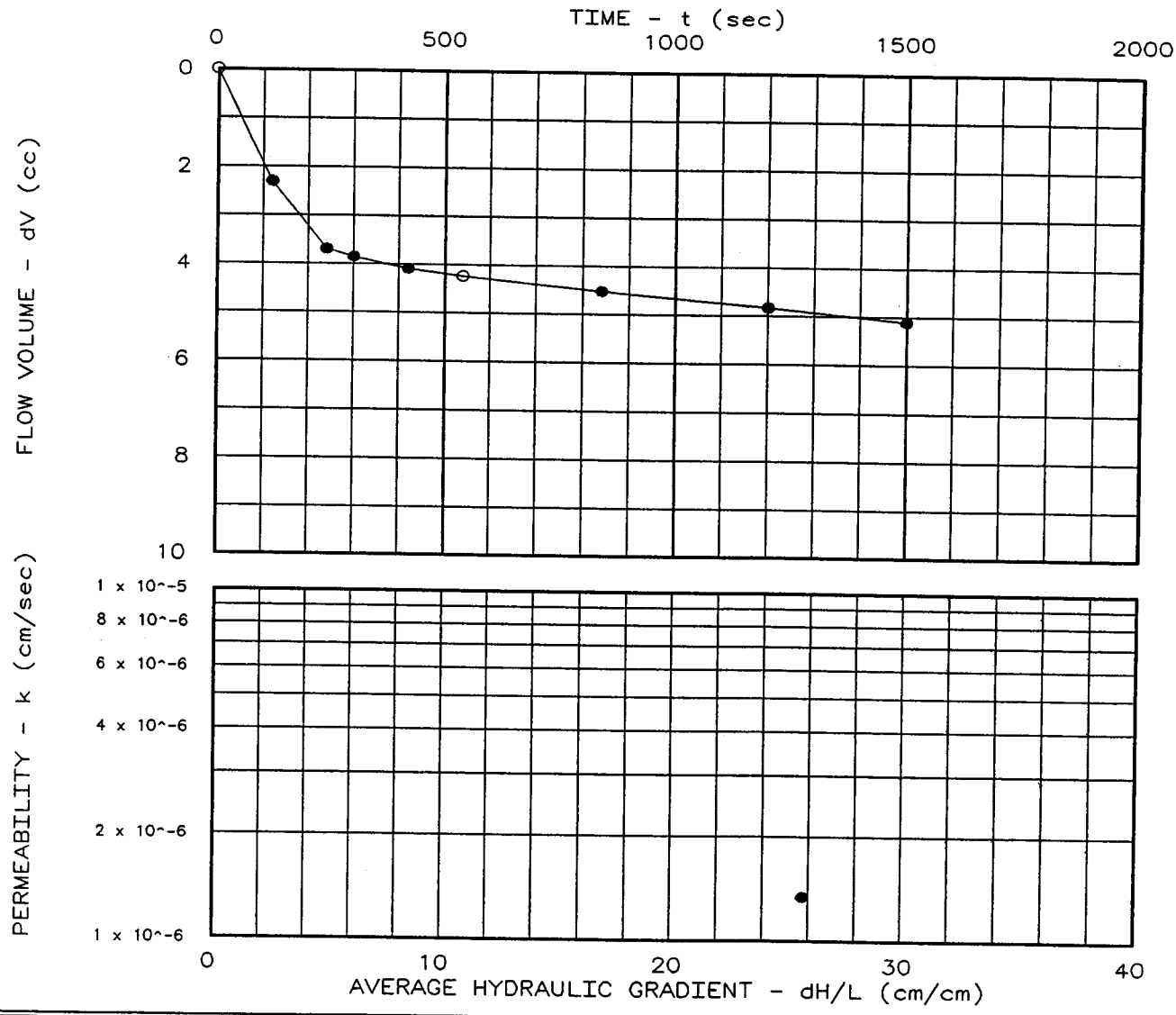
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	1.52 x 10^-3	
Perm. (cm/sec):	1.34 x 10^-6	

SAMPLE DATA:

Sample Identification: WCL 1A # 26

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084 Sample was cracked during extrusion
Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 99.8%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.87
Specimen Diameter (cm): 7.12
Dry Unit Weight (pcf): 115.4
Moisture Before Test (%): 13.9
Moisture After Test (%): 21.0

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	3.46 x 10^-4	
Perm. (cm/sec):	3.67 x 10^-7	

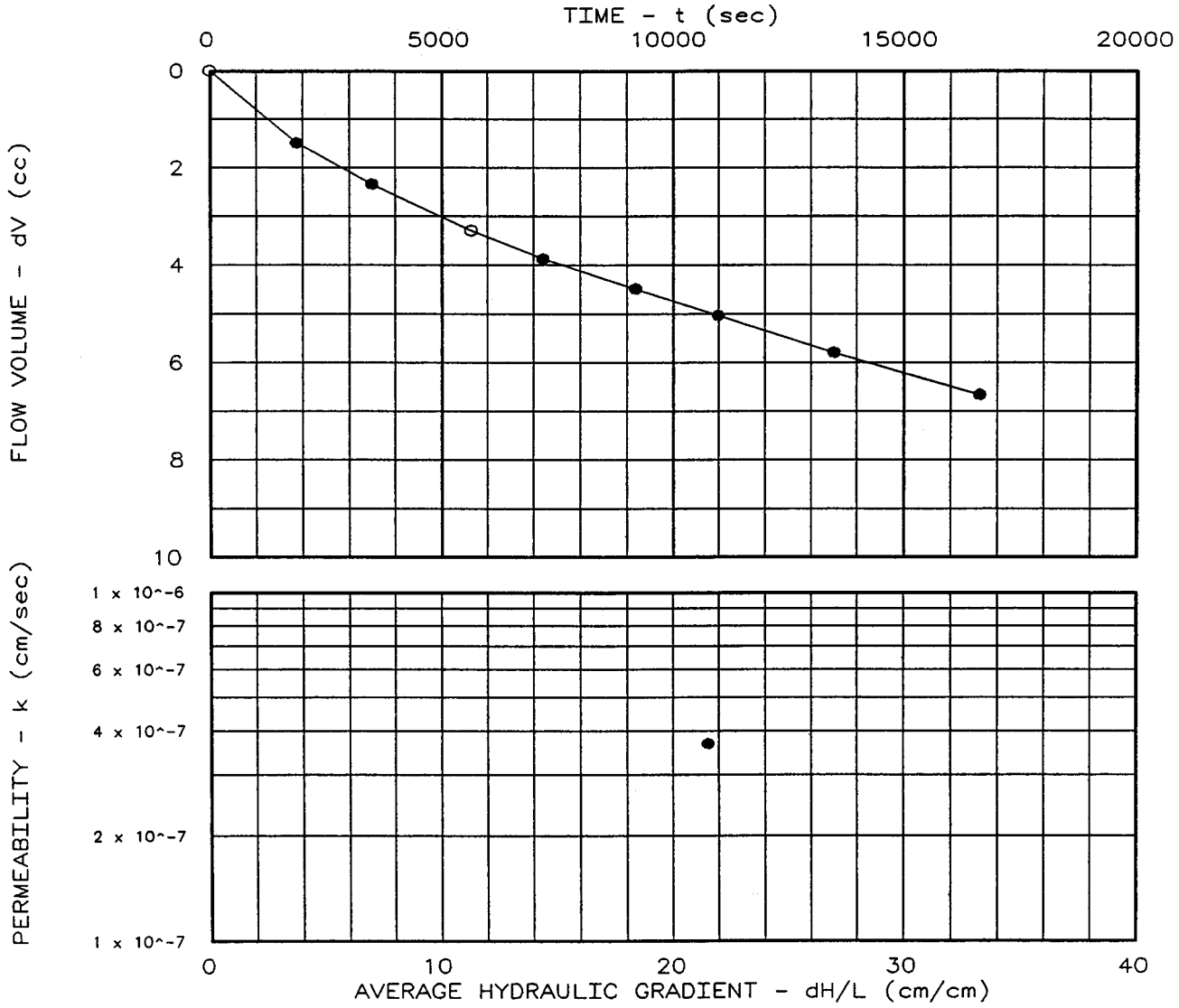
SAMPLE DATA:

Sample Identification: WCL 1A # 25

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 108.6%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 8.03
Specimen Diameter (cm): 7.13
Dry Unit Weight (pcf): 106.0
Moisture Before Test (%): 19.2
Moisture After Test (%): 26.8

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	1.52 x 10^-3	
Perm. (cm/sec):	1.34 x 10^-6	

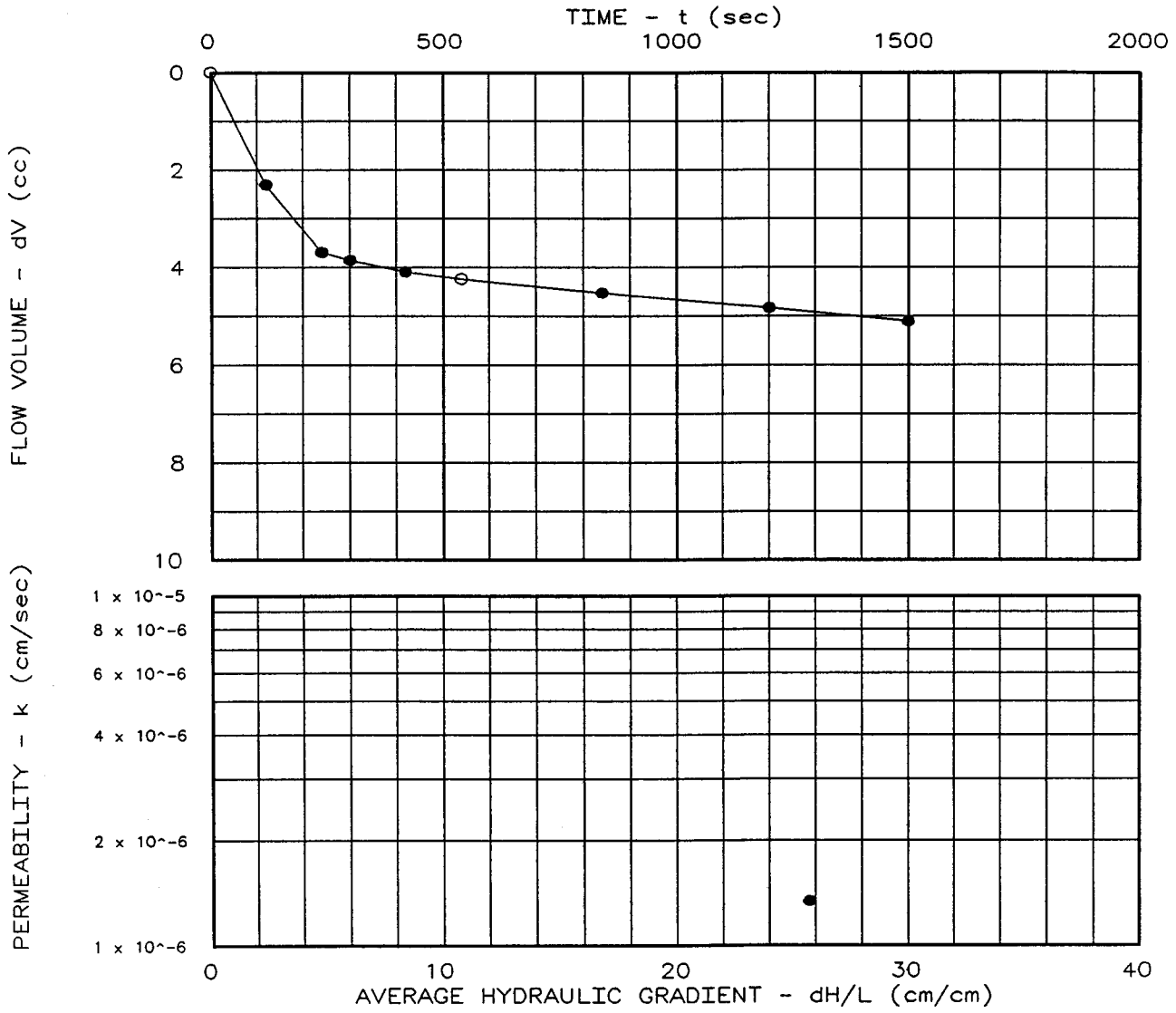
SAMPLE DATA:

Sample Identification: WCL 1A # 26

Visual Description: Tan Gray Silty Clay

Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 99.8%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-8-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.32
Specimen Diameter (cm): 7.18
Dry Unit Weight (pcf): 106.9
Moisture Before Test (%): 20.0
Moisture After Test (%): 23.2

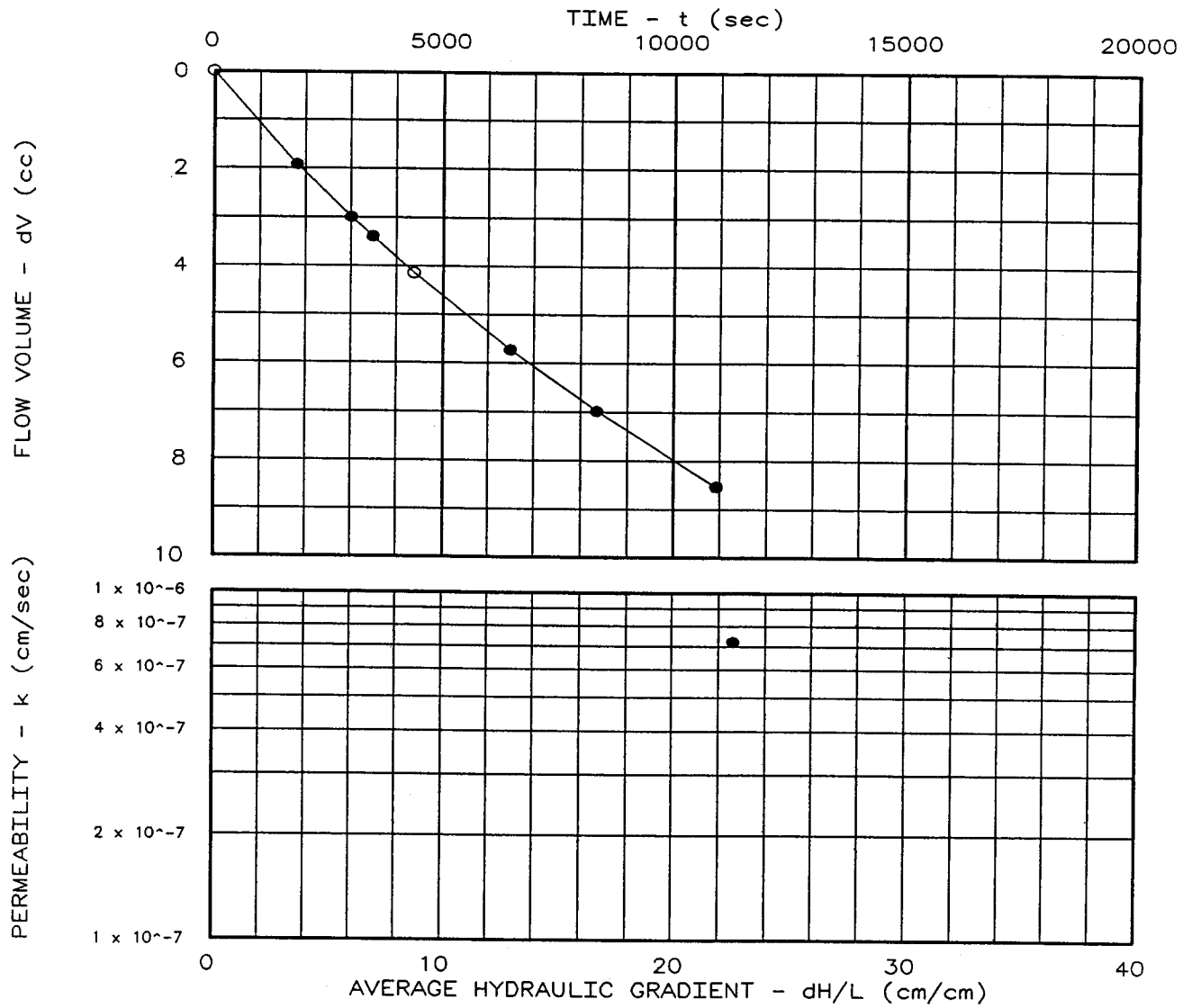
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	7.26 x 10^-4	
Perm. (cm/sec):	7.22 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1B # 1

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 100.7%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-11-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: CFB
Test: CH - Constant head

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: October 19, 1998

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☑ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☑ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☐ other _____

These are transmitted as checked below:

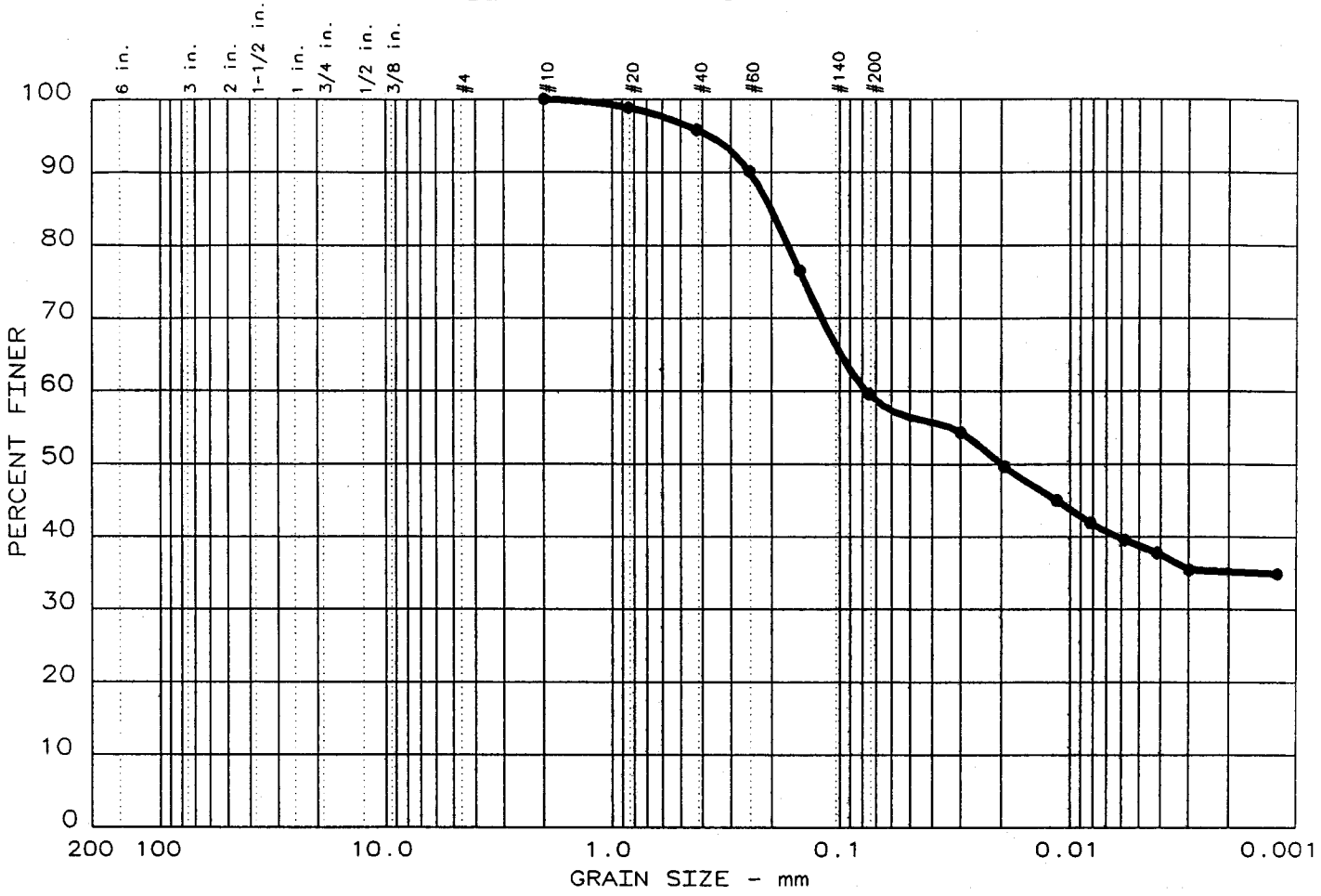
☑ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS:

Signed: M. Highsmith

Copies to: Mr. Gary W. Ahlberg
Mr. Jonathan Bivens

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	20	0.0	0.0	40.4	20.9	38.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	37	20	0.200	0.0767	0.0200					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY CLAYEY FINE SAND	CL	A-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 5

Date: OCTOBER 7, 1998

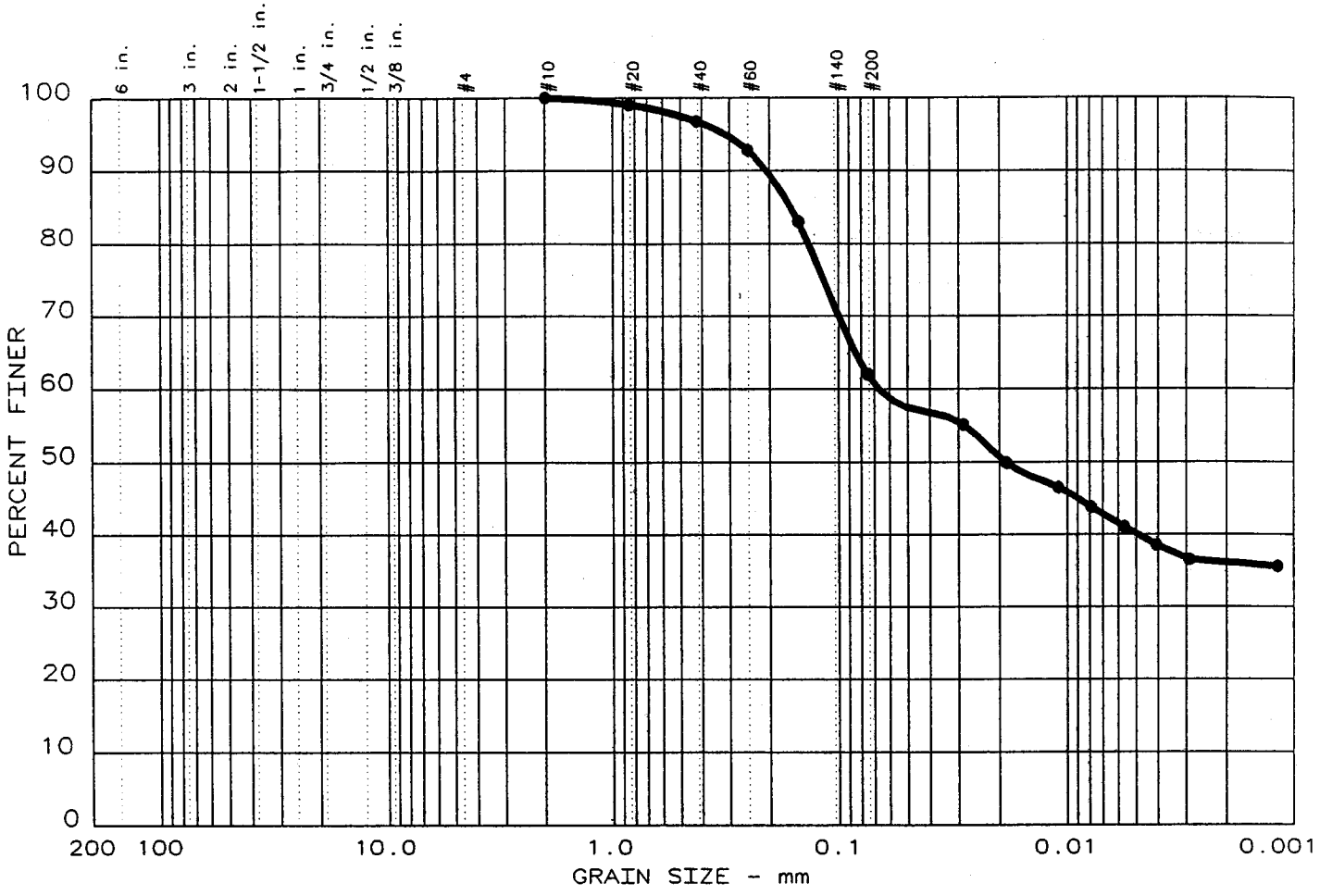
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-5

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	38.0	21.9	40.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	39	22	0.162		0.0188					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY FINE SANDY CLAY	CL	A-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 6

Date: OCTOBER 7, 1998

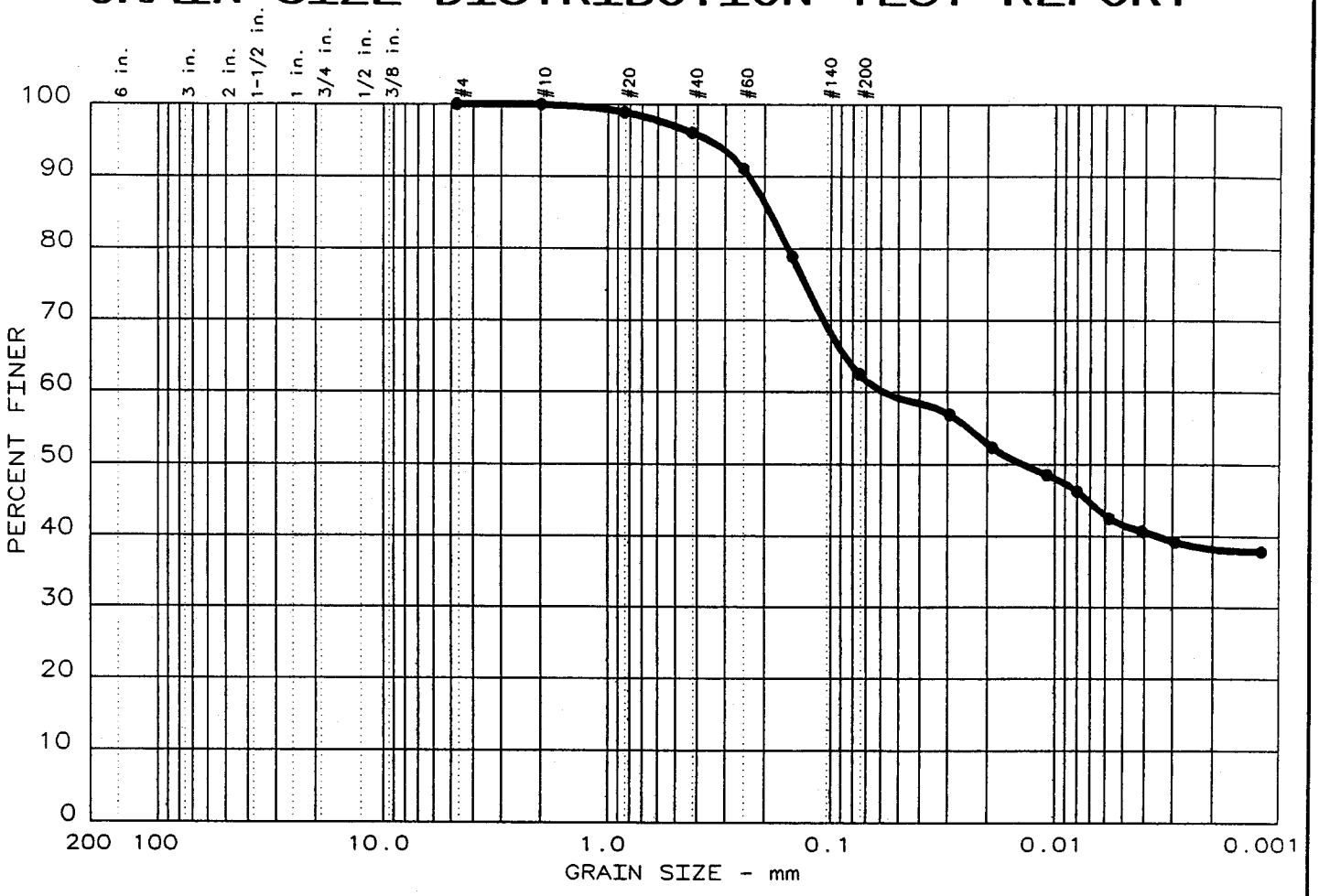
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-6

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	0.0	37.5	21.0	41.5

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	37	22	0.188		0.0140					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY FINE SANDY CLAY	CL	A-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 7

Date: OCTOBER 7, 1998

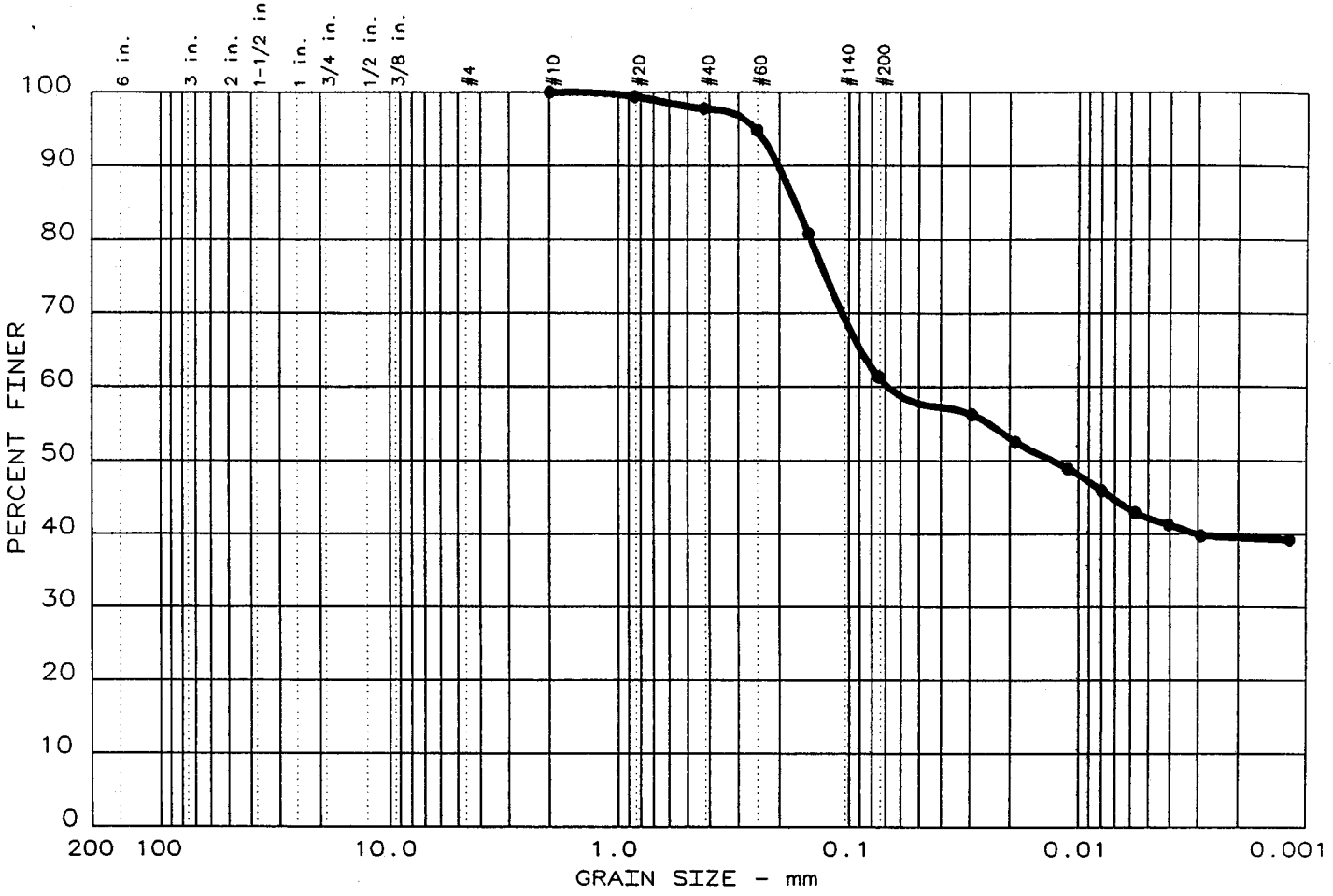
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-7

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	0.0	38.6	19.3	42.1

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	43	26	0.170		0.0130					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SLI SILTY FINE SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 8

Date: OCTOBER 7, 1998

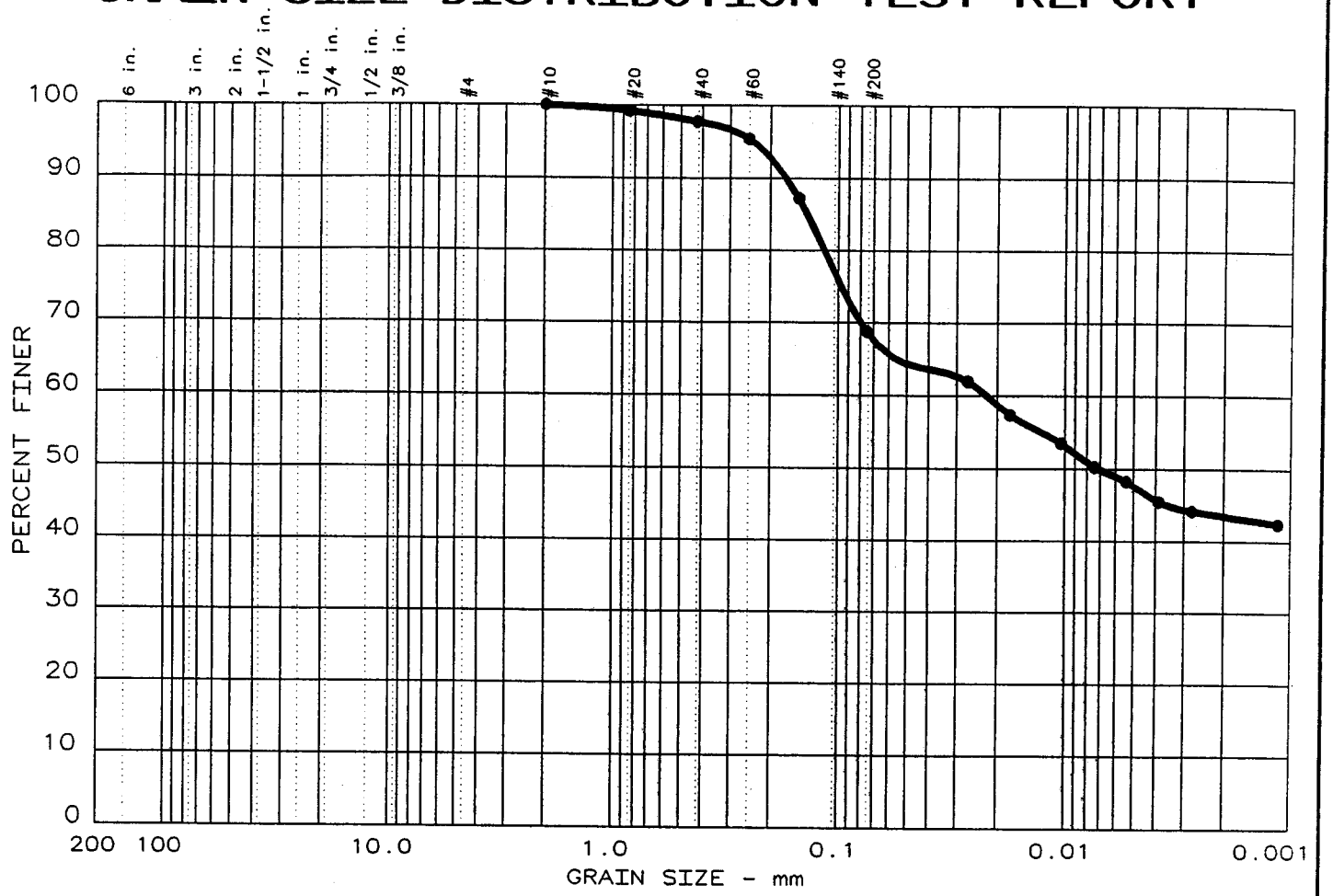
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-8

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	4	0.0	0.0	31.2	21.2	47.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●	45	28	0.136		0.0072					

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW BROWN AND GRAY SILTY FINE SANDY CLAY	CL	A-7-6

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL; WILSON, NC
● Location: AREA 1B; SAMPLE 9

Date: OCTOBER 7, 1998

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

TITAN ATLANTIC GROUP, INC.

Fig. No.: WCL-1B-9

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.35
Specimen Diameter (cm): 7.19
Dry Unit Weight (pcf): 101.4
Moisture Before Test (%): 21.3
Moisture After Test (%): 23.8

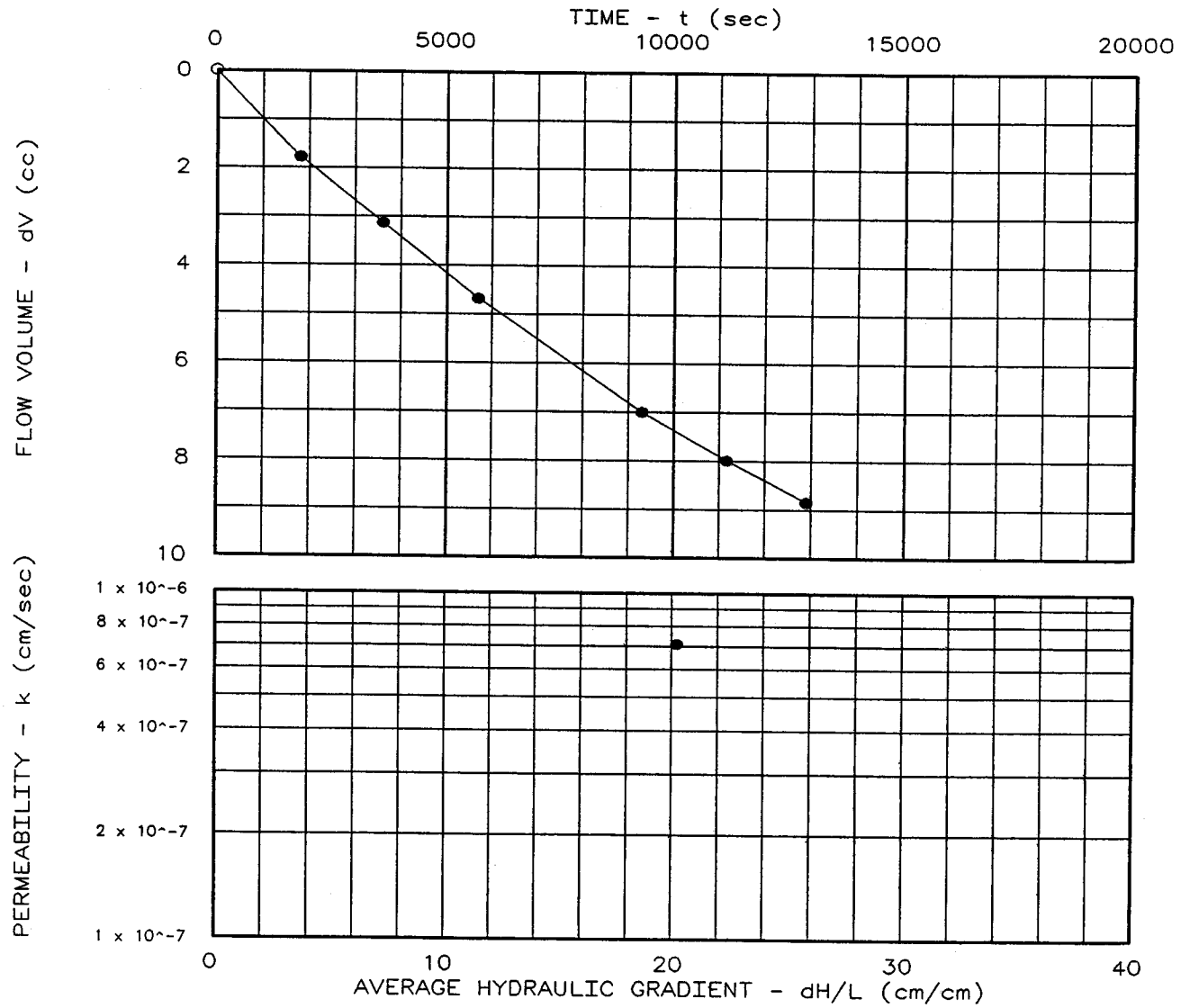
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	6.40 x 10^-4	
Perm. (cm/sec):	7.10 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1B # 3

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 95.5%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-13-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.09
Specimen Diameter (cm): 7.15
Dry Unit Weight (pcf): 106.7
Moisture Before Test (%): 21.4
Moisture After Test (%): 21.2

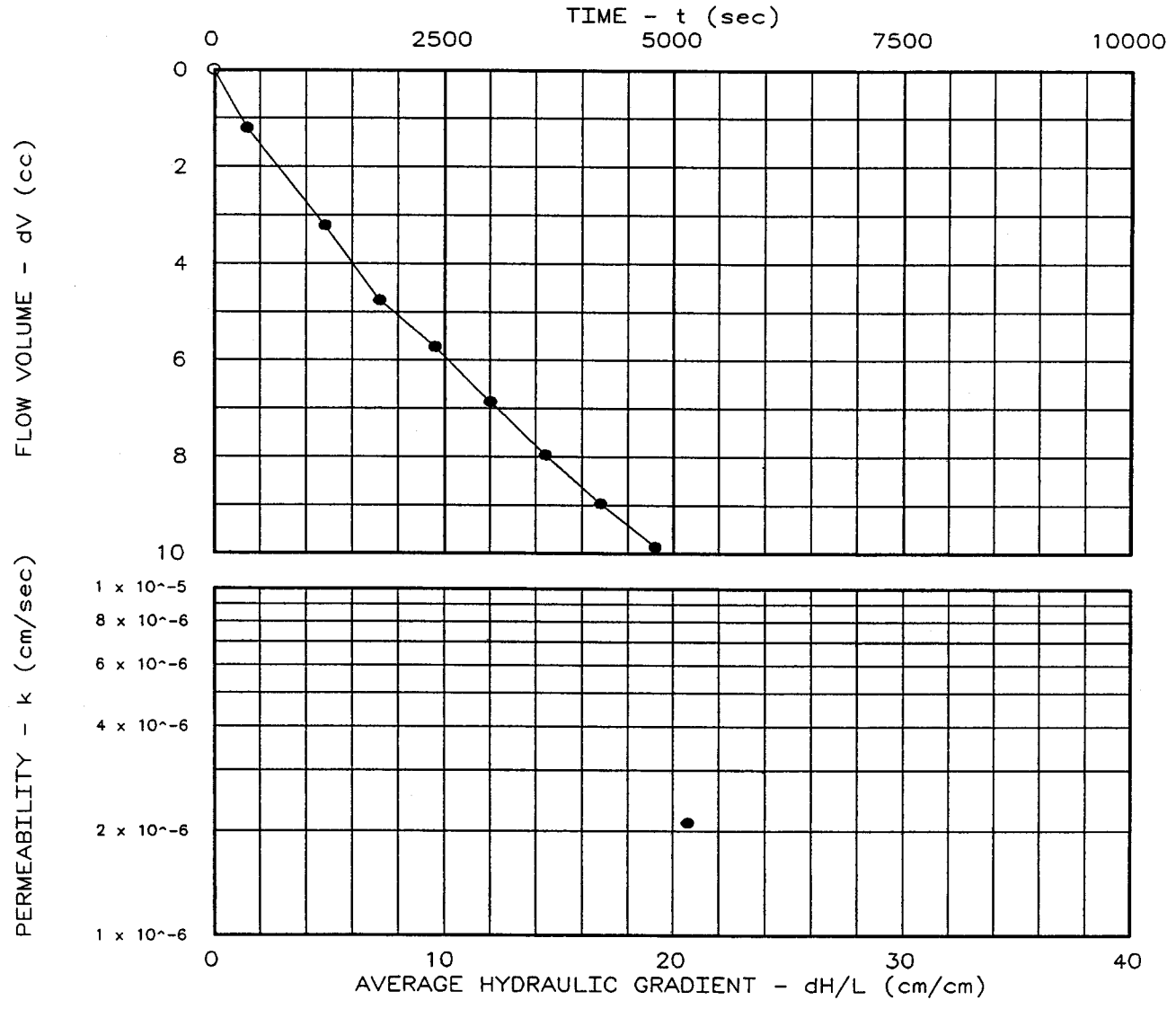
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	1.93 x 10^-3	
Perm. (cm/sec):	2.12 x 10^-6	

SAMPLE DATA:

Sample Identification: WCL 1B # 4

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 100.4%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-13-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.14
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 111.5
Moisture Before Test (%): 20.7
Moisture After Test (%): 17.8

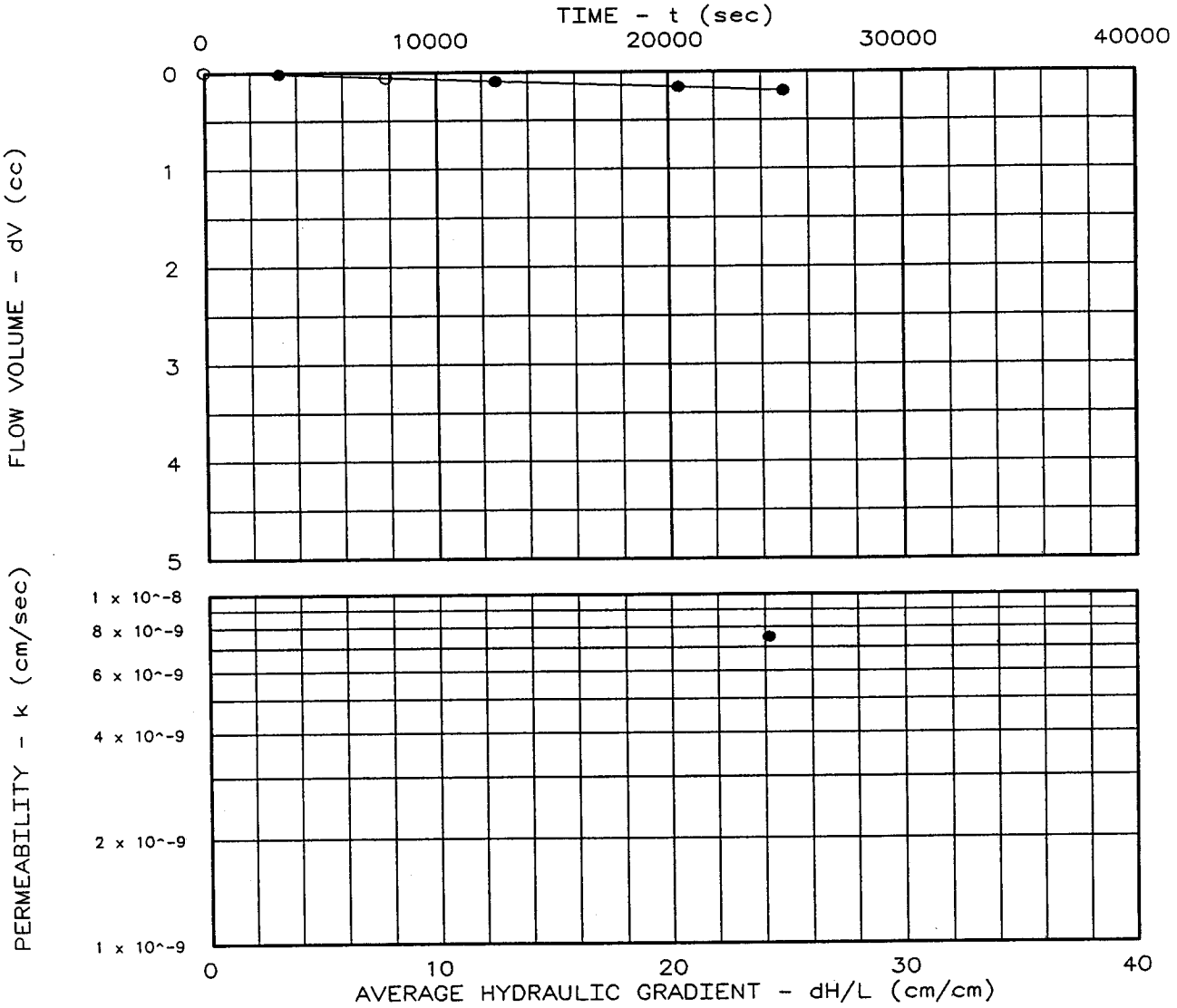
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	8.21 x 10^-6	
Perm. (cm/sec):	7.50 x 10^-9	

SAMPLE DATA:

Sample Identification: WCL 2B Service Road

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 105.0%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-13-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: cfb
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.42
Specimen Diameter (cm): 7.14
Dry Unit Weight (pcf): 101.1
Moisture Before Test (%): 22.2
Moisture After Test (%): 25.8

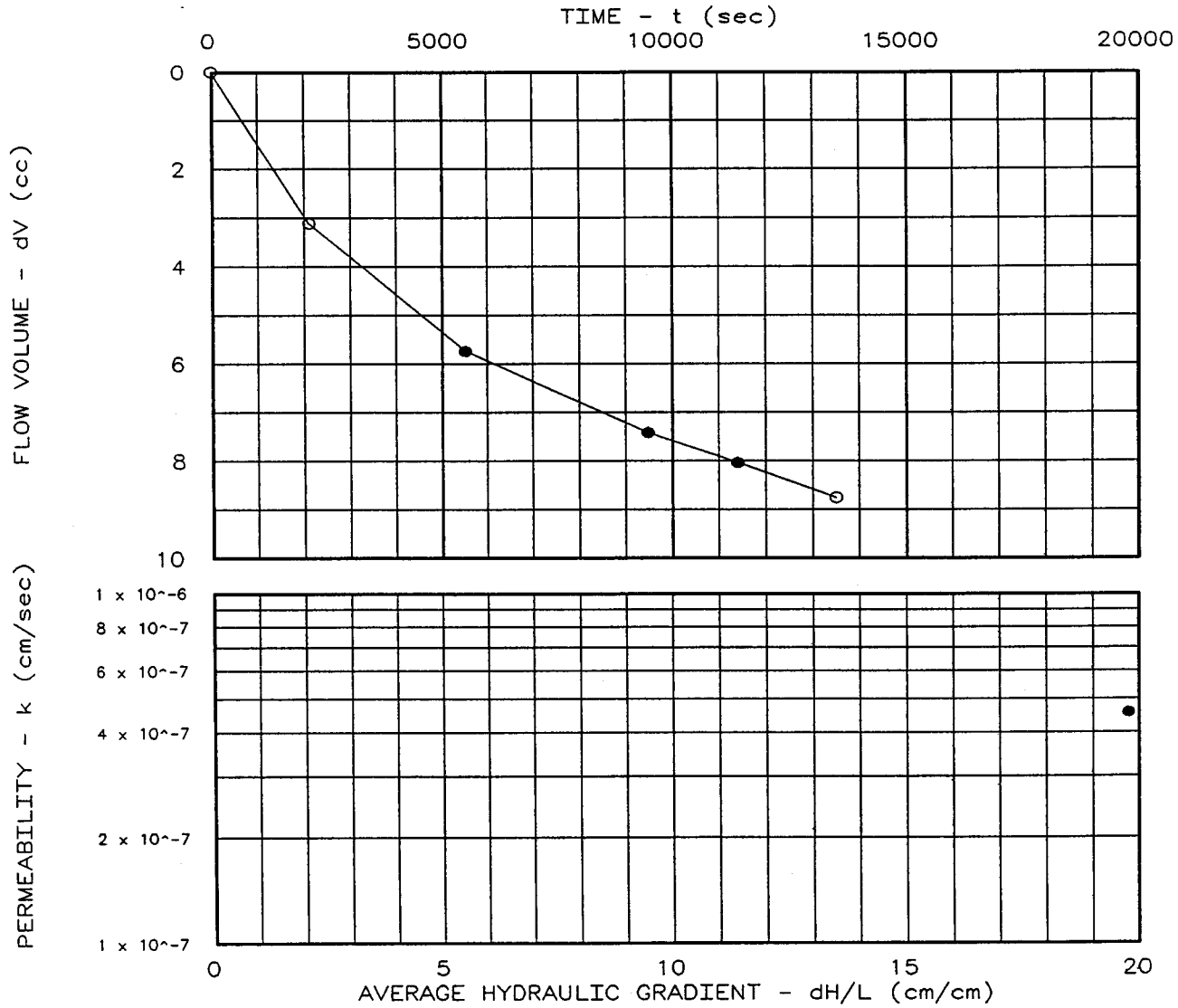
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.1	
Diff. Head (psi):	2.9	
Flow Rate (cc/sec):	3.96 x 10^-4	
Perm. (cm/sec):	4.56 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL 1B # 2

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 95.2%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-13-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 8.09
Specimen Diameter (cm): 7.24
Dry Unit Weight (pcf): 93.3
Moisture Before Test (%): 28.2
Moisture After Test (%): 27.0

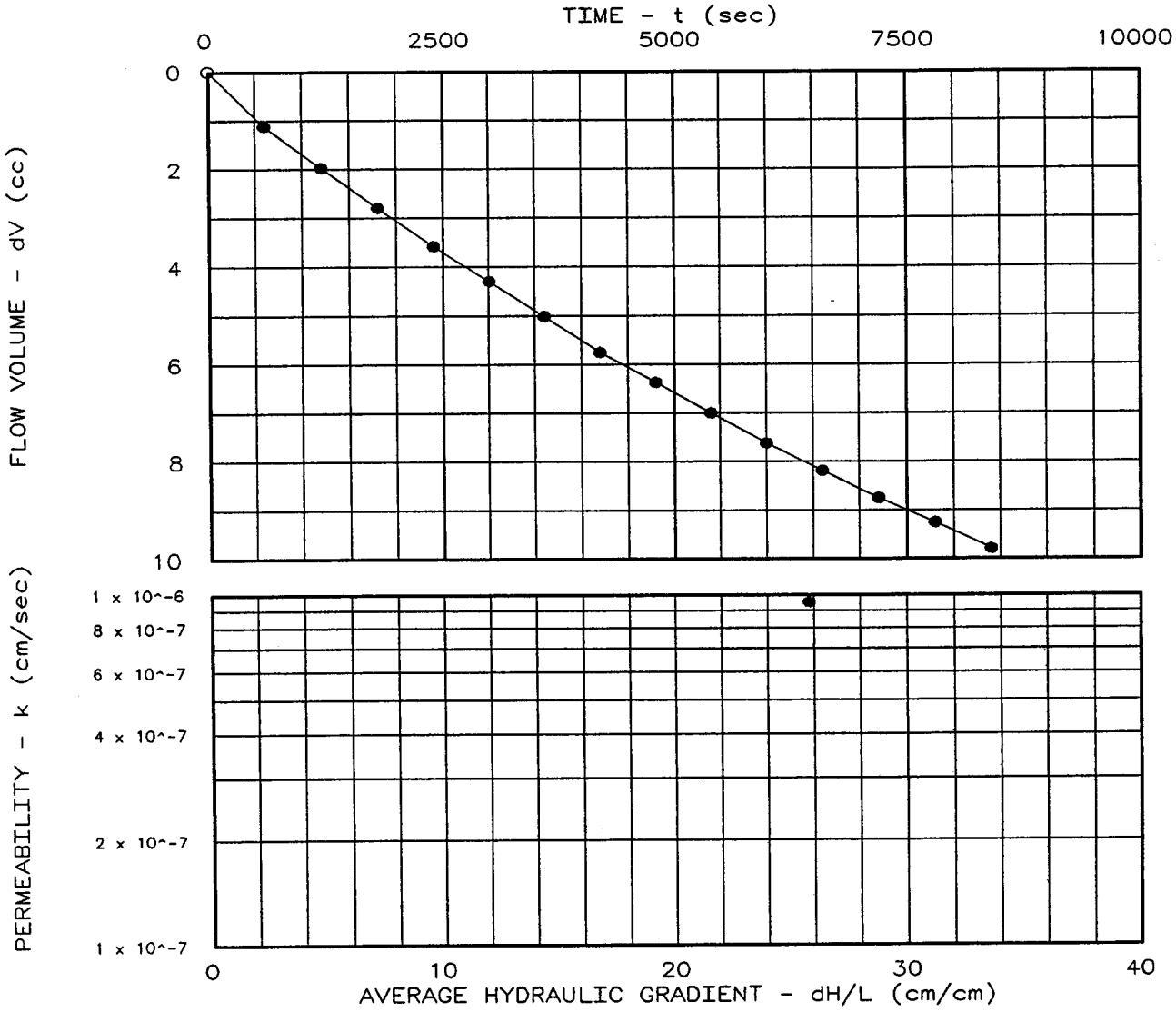
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	1.11 x 10^-3	
Perm. (cm/sec):	9.48 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL-1A-#24 RETEST

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 87.9%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-18-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.45
Specimen Diameter (cm): 7.13
Dry Unit Weight (pcf): 99.0
Moisture Before Test (%): 24.3
Moisture After Test (%): 27.9

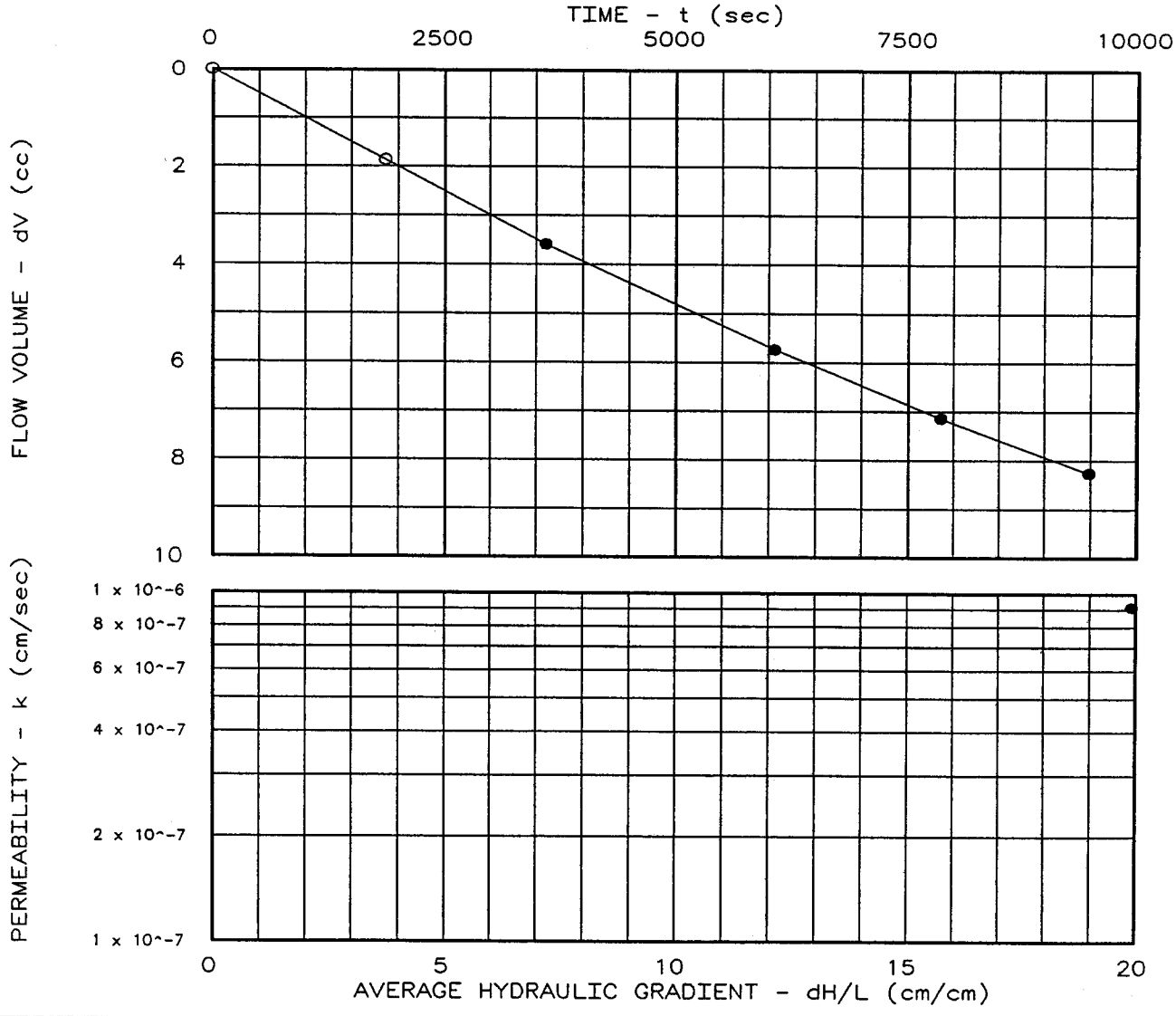
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	7.97 x 10^-4	
Perm. (cm/sec):	9.12 x 10^-7	

SAMPLE DATA:

Sample Identification: WCL-1B-#5

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 93.2%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-18-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 9.45
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 95.6
Moisture Before Test (%): 25.7
Moisture After Test (%): 29.1

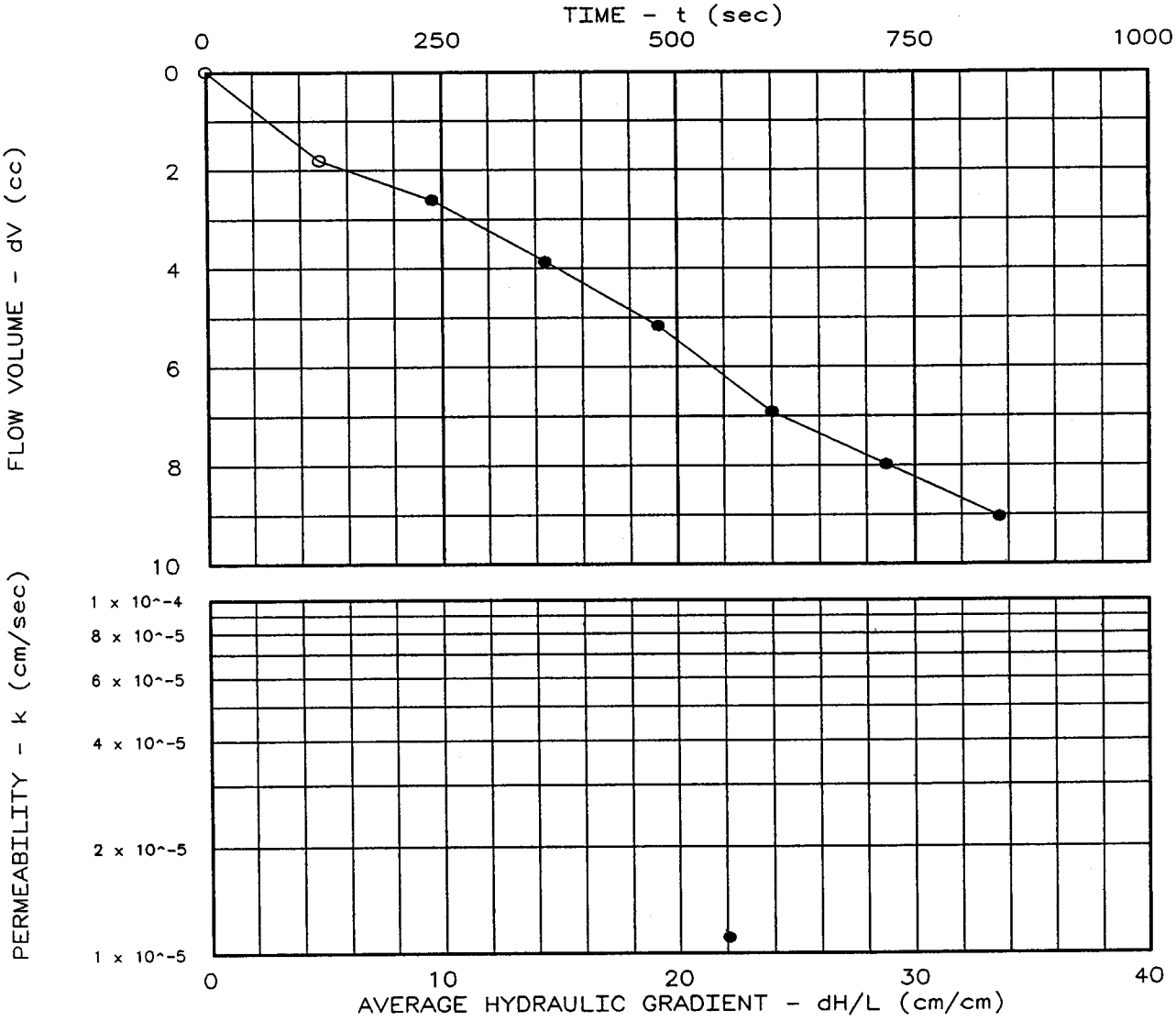
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	1.10 x 10^-2	
Perm. (cm/sec):	1.11 x 10^-5	

SAMPLE DATA:

Sample Identification: WCL-1B-#6

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 90.1%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-18-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.28
Specimen Diameter (cm): 7.23
Dry Unit Weight (pcf): 99.2
Moisture Before Test (%): 24.3
Moisture After Test (%): 25.4

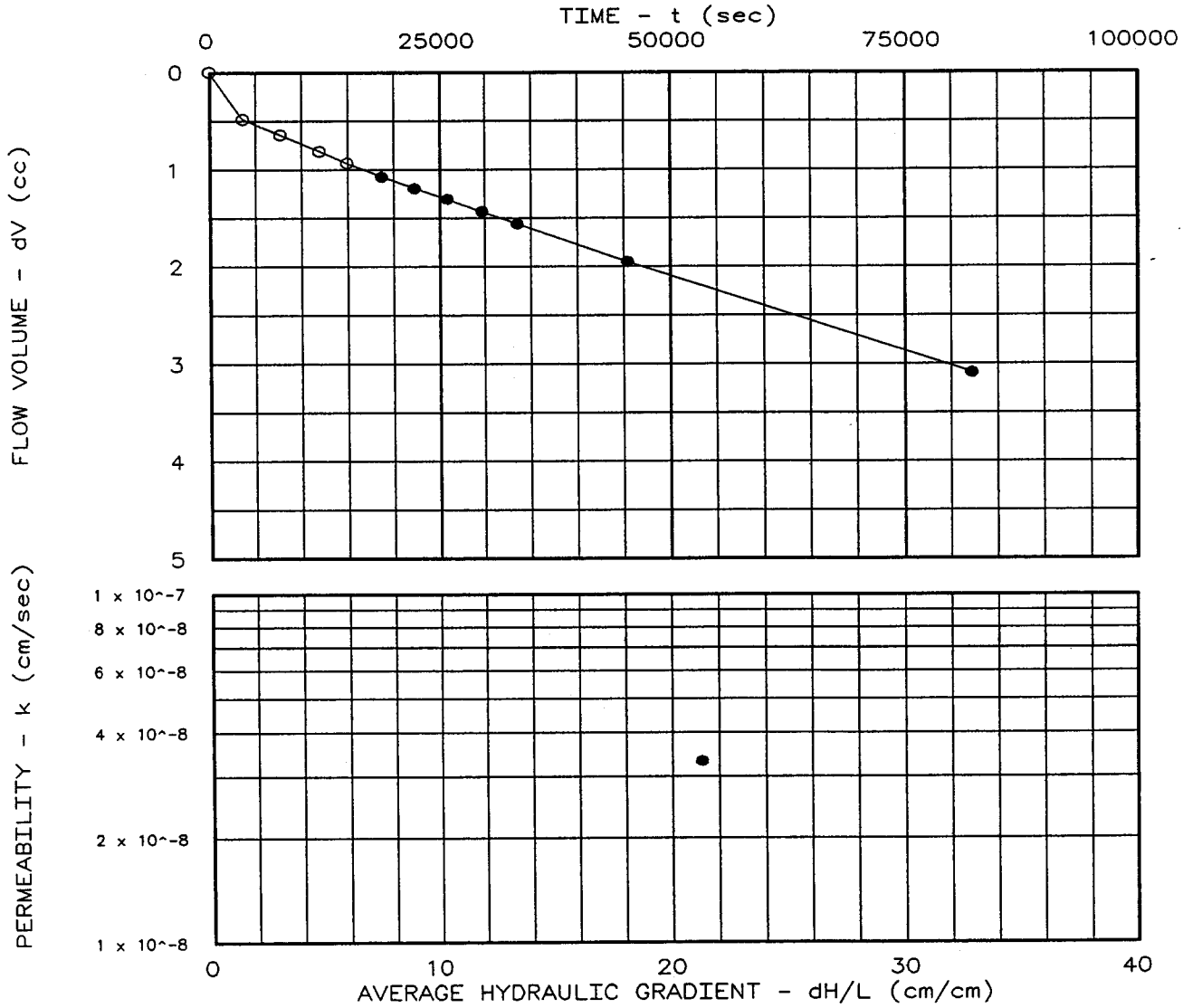
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	59.9	
Diff. Head (psi):	3.1	
Flow Rate (cc/sec):	3.18 x 10^-5	
Perm. (cm/sec):	3.32 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL-1B-#7

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 93.4%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-18-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

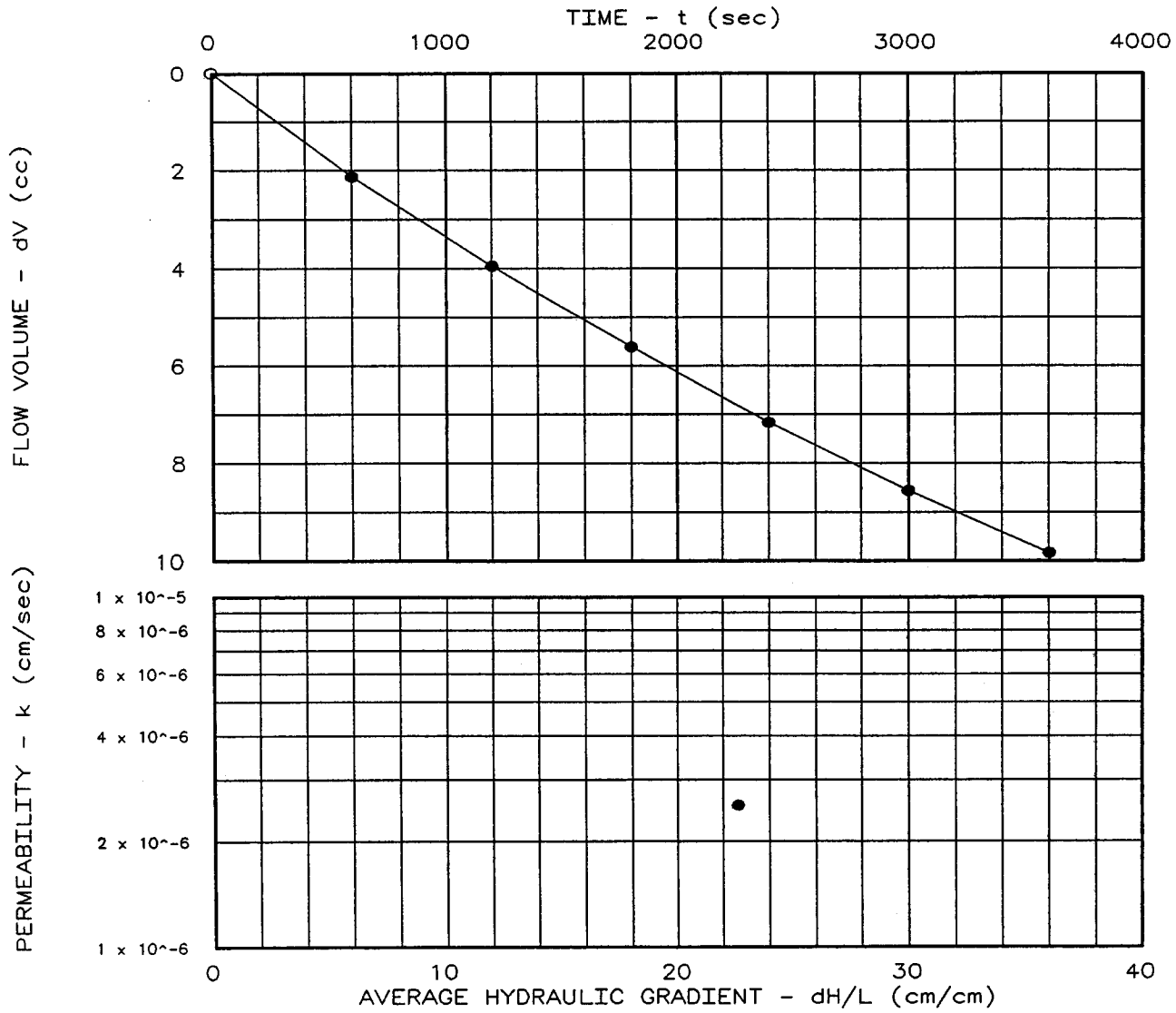
Specimen Height (cm): 9.19
Specimen Diameter (cm): 7.20
Dry Unit Weight (pcf): 99.6
Moisture Before Test (%): 25.1
Moisture After Test (%): 25.2
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 66.0
Test Pressure(psi): 63.0
Back Pressure(psi): 60.0
Diff. Head (psi): 3.0
Flow Rate (cc/sec): 2.57 x 10^-3
Perm. (cm/sec): 2.54 x 10^-6

SAMPLE DATA:

Sample Identification: WCL-1B-#8

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 93.7%
Permeameter type: Flexible Wall
Sample type: Undisturbed



Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-18-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

PERMEABILITY TEST REPORT

TEST DATA:

Specimen Height (cm): 10.38
Specimen Diameter (cm): 7.22
Dry Unit Weight (pcf): 93.1
Moisture Before Test (%): 30.8
Moisture After Test (%): 26.7

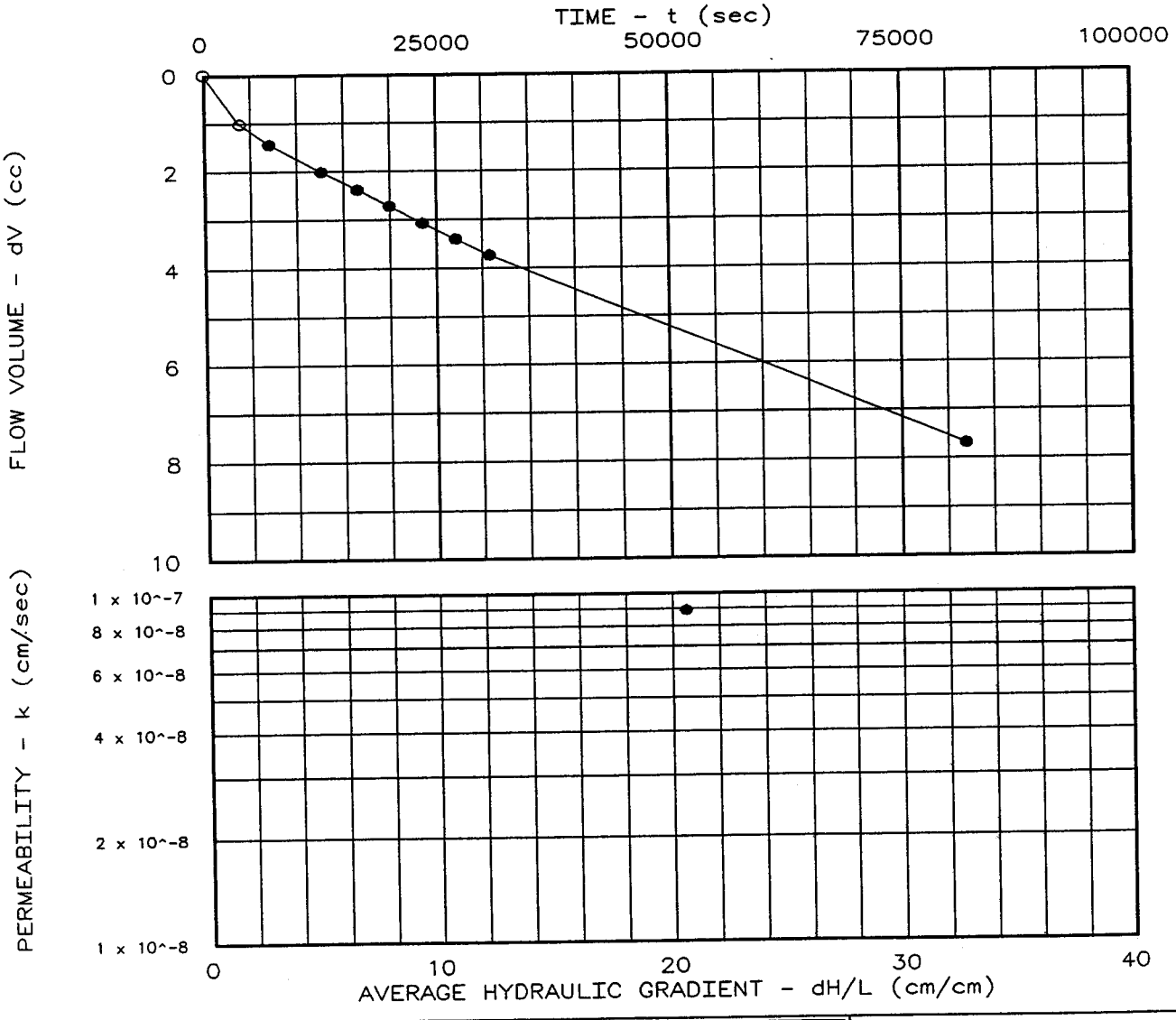
Run Number:	1 ●	2 ▲
Cell Pressure (psi):	66.0	
Test Pressure(psi):	63.0	
Back Pressure(psi):	60.0	
Diff. Head (psi):	3.0	
Flow Rate (cc/sec):	8.22 x 10^-5	
Perm. (cm/sec):	8.89 x 10^-8	

SAMPLE DATA:

Sample Identification: WCL-1B-#9

Visual Description: Gray and Yellow Brown Silty Sandy Clay
Remarks: ASTM D-5084

Maximum Dry Density (pcf): 106.2
Optimum Moisture Content (%): 14.3
ASTM(D698)
Percent Compaction: 87.7%
Permeameter type: Flexible Wall
Sample type: Undisturbed



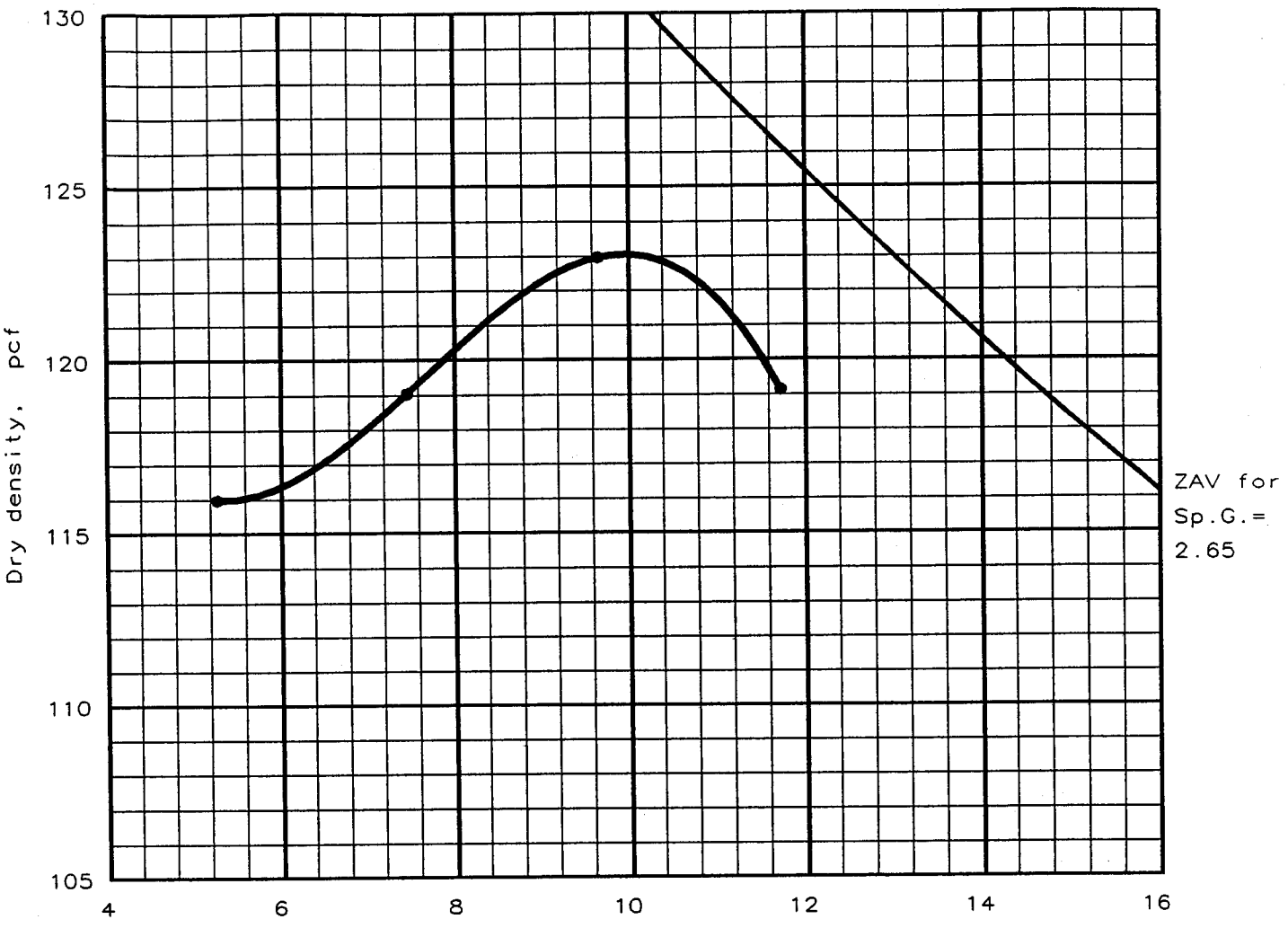
Project: Wilson County Landfill
Location: Wilson, North Carolina
Date: 10-18-98

PERMEABILITY TEST REPORT

TITAN ATLANTIC GROUP, INC.

Project No.: 8077-80
File No.:
Lab No.:
Tested by: GW
Checked by: CFB
Test: CH - Constant head

MOISTURE-DENSITY RELATIONSHIP TEST



Test specification: ASTM D 698-91 Procedure A, Standard

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

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 123.1 pcf Optimum moisture = 10.0 %	BRN GRY SLI CLAYEY SILTY FI SAND W/ OCC ORGANICS

Project No.: 8077-80
Project: WILSON COUNTY LANDFILL
Location: WILSON, NORTH CAROLINA

Date: OCTOBER 20, 1998

Remarks:
PROPOSED TOPSOIL AND VEGETATIVE LAYER

MOISTURE-DENSITY RELATIONSHIP TEST

TITAN ATLANTIC GROUP, INC.

Fig. No. TPS-1

TITAN ATLANTIC GROUP, INC.
111-C W. Fire Tower Road
Winterville, North Carolina 28590
FAX # (919) 353-0002
PHONE # (919) 353-1600

TO: Wilson County DSW
Post Office Box 1728
Wilson, NC 27894-1728

DATE: January 13, 1999

Job Name: Wilson County Landfill

Titan Job No.: 8077-80

Attention: Mr. G. Steven Clayton

Gentlemen:

We are sending you ☒ attached ☐ *under separate cover,* the following items:

☐ concrete test report ☐ laboratory test results ☐ field density reports

☐ report of daily activities ☐ report draft ☐ standard Proctor report

☒ other hand auger Summary

These are transmitted as checked below:

☒ for information ☐ for approval ☐ sent at your request ☐ for your review and comment

REMARKS: Reports dated January 7, 1999.

Signed: Bob Neel

Copies to: Mr. Gary W. Ahlberg
Mr. Gary Jones

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (252) 353-1600

CLIENT: Wilson County

PROJECT: Wilson County Landfill

WEATHER: Sunny and cool

TITAN JOB NO. : 8077-80

DATE: 01/07/99 PERSONNEL: M. Stout

As requested by Mr. Gary Ahlberg, a representative of Titan Atlantic Group, Inc. was on site to perform hand auger borings in the soils installed for the land fill cap.

The purpose of the hand auger borings was to confirm the thickness of the various layers of the landfill cap, specifically the clay liner thickness and vegetative cover layer thickness. The locations selected for testing by Mr. Ahlberg were indicated to be of insufficient thickness according to surveys of the site.

The results of our testing are shown on the attached table. All of the locations tested had soil layer thicknesses greater than required by project specifications.

Mr. Gary Ahlberg was informed of our findings.

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

TITAN ATLANTIC GROUP
111-C W. FIRE TOWER RD.
WINTERVILLE, N.C. 28590
TELEPHONE (252) 353-1600

Job # 8077-80
Date: January 7, 1999

Grid Number:	Findings:
585	24" overburden on GCL
599	13" vegetative cover 24" + clay liner
525	18+" vegetative cover 24+" clay liner
512	18" vegetative cover 24+" clay liner
491	"Bad" cover stake location
705	18" vegetative cover 24" + clay liner
728	18" + vegetative cover 24" + clay liner
732	18" + vegetative cover 24" + clay liner
734	18" + vegetative cover 24" clay liner
777	18+" vegetative cover 24+" clay liner
640	18+" vegetative cover 24" + clay liner
676	18+" vegetative cover 24" + clay liner
701	18" vegetative cover 24" + clay liner
785	18" vegetative cover 24" + clay liner

RESPECTFULLY SUBMITTED
TITAN ATLANTIC

Bob Keel

GEOSYNTHETIC CLAY LINER
CONSTRUCTION QUALITY ASSURANCE
MQA/MQC DATA REPORTS
PANEL LAYOUT AND LOG

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

19-Aug-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipment to Wilson County LF Cap, Wilson, NC. This shipment left our CETCO - Fairmount, GA, plant on 8/18/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Michele Waters

Michele Waters
Quality Assurance Coordinator

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County Landfill Cap

PREPARED FOR:

Mr. Steve Clayton
Wilson County Solid Waste Depai
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY: Cynthia Willix
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LANDFILL CAP
WILSON, NC
CUSTOMER PO# WILSON CO.
ORDER# 90257

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	WILSON COUNTY LANDFILL
DATE:	AUGUST 18, 1998
ORDER NUMBER:	90257
PRODUCT:	BENTOMAT ST

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 19 day of Aug., 1998.

Cynthia Willix

Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County Landfill cap

ORDER # : 90257

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

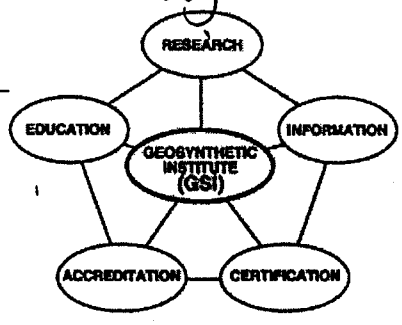
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Michele Waters
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 19 day of Aug. 1998

Cynthia Willix
Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002



STRAIGHT BILL OF LADING—ORIGINAL—~~NOT~~ NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE A&S

CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

ROUTING/CONTRACT:

Steve Clayton

DELIVERING CARRIER:

DEL DATE 8/19/98

SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPER'S NO: 000090257

SHIP DATE: ~~8/18/98~~ 8/18/98

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 6000000SF OF ST W/267 BAGS OF CLAY

31500

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~9450.0000~~ 15 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	43469 ~~[redacted]~~
~~315.0000~~ 15 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	700 ~~[redacted]~~

GROSS: .00 TARE: .00 NET: 44169 ~~[redacted]~~

Charlie: 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

OILOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

4:50

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if its route otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

James Benedict

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000090257
ORDER DATE: 8/07/98
SHIP DATE:. 8/18/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT SF	199833030	00009644	150.0	15.0	2250.0	3164
030-BENTOMAT ST		SFT SF	199833030	00009645	150.0	15.0	2250.0	3098
030-BENTOMAT ST		SFT SF	199833030	00009646	150.0	15.0	2250.0	3096
030-BENTOMAT ST		SFT SF	199833030	00009647	150.0	15.0	2250.0	3081
[redacted]BENTOMAT ST		SFT SF	199833030	00009648	150.0	15.0	2250.0	3094
030-BENTOMAT ST		SFT SF	199833030	00009649	150.0	15.0	2250.0	3106
030-BENTOMAT ST		SFT SF	199833030	00009650	150.0	15.0	2250.0	3077
030-BENTOMAT ST		SFT SF	199833030	00009651	150.0	15.0	2250.0	3103
030-BENTOMAT ST		SFT SF	199833030	00009652	150.0	15.0	2250.0	3092
030-BENTOMAT ST		SFT SF	199833030	00009653	150.0	15.0	2250.0	3107
030-BENTOMAT ST		SFT SF	199833030	00009654	150.0	15.0	2250.0	3113
030-BENTOMAT ST		SFT SF	199833030	00009655	150.0	15.0	2250.0	3110
030-BENTOMAT ST		SFT SF	199833030	00009656	150.0	15.0	2250.0	3111
030-BENTOMAT ST		SFT SF	199833030	00009920	150.0	15.0	2250.0	3117
ORDER TOTALS.....							31500.0	43469.

TOTAL ITEMS..... 14

[redacted]

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#FT2 QCT#FT2
8/19/98 8:13:05

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090257

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199833030	00009920	1.06	12.80	114.00	32.10
030-BENTOMAT ST	199833030	00009656	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009655	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009654	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009653	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009652	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009651	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009650	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009649	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009648	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009647	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009646	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009645	.97	20.00	141.60	21.40
030-BENTOMAT ST	199833030	00009644	.97*	20.00	141.60	21.40*

NOTE:
An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

DATE: 06-Aug-98

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 30-Jul-98
in ATSF 313901
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.7
MOISTURE	ASTM D 2216	12.0% MAX.	8.4
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: D.M.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 88098

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 29-Jul-98

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **27-Jul-98**
in **BN 446111**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.6
MOISTURE	ASTM D 2216	12.0% MAX.	8.4
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	12.6

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **D.M.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our
Order Number **88092**

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#TF1 QCT#TF1
8/19/98 8:13:05

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090257

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199833030									
00009644	030-BENTOMAT ST	150	2250	3164	7285376		199832010	00001847	446111
00009645	030-BENTOMAT ST	150	2250	3098	7285376		199832010	00001847	446111
00009646	030-BENTOMAT ST	150	2250	3096	7285376		199832010	00001847	446111
00009647	030-BENTOMAT ST	150	2250	3081	7285376		199832010	00001847	446111
00009648	030-BENTOMAT ST	150	2250	3094	7285376		199832010	00001847	446111
00009649	030-BENTOMAT ST	150	2250	3106	7285376		199832010	00001847	446111
00009650	030-BENTOMAT ST	150	2250	3077	7285376		199832010	00001847	446111
00009651	030-BENTOMAT ST	150	2250	3103	7285376		199832010	00001847	446111
00009652	030-BENTOMAT ST	150	2250	3092	7285376		199832010	00001847	446111
00009653	030-BENTOMAT ST	150	2250	3107	7312632		199832010	00001847	446111
00009654	030-BENTOMAT ST	150	2250	3113	7312632		199832010	00001847	446111
00009655	030-BENTOMAT ST	150	2250	3110	7312632		199832010	00001847	446111
00009656	030-BENTOMAT ST	150	2250	3111	7312632		199832010	00001847	446111
00009920	030-BENTOMAT ST	150	2250	3117	7380484		5145108A		313901

TOTAL SQUARE FEET..... 31,500

1998 WEEKLY QA DATA
BENTOMAT ST
Production Facility: Fairmount, GA

Week	Lot/Roll #	Permeability (cm/sec)	Flux ($m^3/m^2/sec$)	Week	Lot/Roll #	Permeability (cm/sec)	Flux ($m^3/m^2/sec$)
1	No Production			27	9827030/6464	2.3×10^{-9}	6.6×10^{-9}
2	9802030/147	1.2×10^{-9}	3.0×10^{-9}	28	9828030/6636	1.7×10^{-9}	4.2×10^{-9}
3	No Production			29	9829030/7080	1.7×10^{-9}	3.7×10^{-9}
4	9804030/500	1.9×10^{-9}	3.7×10^{-9}	30			
5	9805030/738	1.5×10^{-9}	3.0×10^{-9}	31			
6	9806030/668	1.0×10^{-9}	2.7×10^{-9}	32			
7	No Production			33			
8	No Production			34			
9	9809030/890	1.6×10^{-9}	3.9×10^{-9}	35			
10	No Production			36			
11	9811030/830	4.0×10^{-9}	8.4×10^{-9}	37			
12	9812030/1462	1.2×10^{-9}	3.2×10^{-9}	38			
13	9813030/1674	2.8×10^{-9}	6.8×10^{-9}	39			
14	9814030/1890	1.2×10^{-9}	3.0×10^{-9}	40			
15	9815030/2506	2.2×10^{-9}	6.4×10^{-9}	41			
16	9816030/2650	2.0×10^{-9}	5.6×10^{-9}	42			
17	9817030/3142	2.6×10^{-9}	5.7×10^{-9}	43			
18	9818030/3446	2.2×10^{-9}	5.8×10^{-9}	44			
19	No Production			45			
20	9820030/3908	2.1×10^{-9}	5.7×10^{-9}	46			
21	9821030/4022	1.8×10^{-9}	3.9×10^{-9}	47			
22	9822030/4208	1.5×10^{-9}	3.9×10^{-9}	48			
23	9823030/4454	1.6×10^{-9}	4.0×10^{-9}	49			
24	9824030/5010	1.9×10^{-9}	5.7×10^{-9}	50			
25	9825030/5475	2.3×10^{-9}	6.0×10^{-9}	51			
26	9826030/5841	2.4×10^{-9}	6.8×10^{-9}	52			

All testing is performed according to ASTM D5887 using 5psi confining pressure and 2psi head pressure.

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

20-Aug-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipments to Wilson County LF Cap, Wilson, NC. These shipments left our CETCO - Fairmount, GA, plant on 8/19/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Michele Waters

Michele Waters
Quality Assurance Coordinator

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County Landfill Cap

PREPARED FOR:

Mr. Steve Clayton
Wilson County Solid Waste Depai
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY: Cynthia Willix
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LANDFILL CAP
WILSON, NC
CUSTOMER PO# WILSON CO.
ORDER# 90258-90260

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

Printed on recycled paper

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	WILSON COUNTY LANDFILL
DATE:	AUGUST 19, 1998
ORDER NUMBER:	90258-90260
PRODUCT:	BENTOMAT ST

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 20 day of Aug., 1998.

Cynthia Willix

Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

CETCO

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County Landfill cap

ORDER # : 90258-90260

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

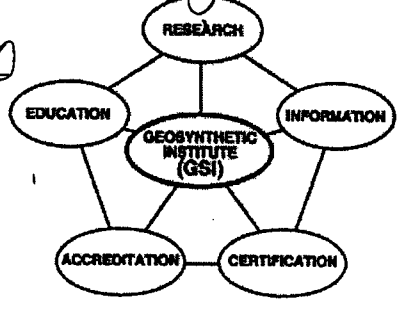
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Michele Waters
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 20 day of Aug 1998.

Cynthia Willis
Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002



STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OI

CARRIER NAME: NATIONWIDE Landstar

CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:

DEL DATE: 8/20/98

SHIPPER'S NO: 000090258

SHIP DATE: ~~[illegible]~~ 8/19/98

SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPING PLANT: FAIRMOUNT, GA
P.O. BOX 88
FAIRMOUNT GA 30139

INE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

RDER COMMENTS TOTAL ORDER IS FOR 600000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
315.00 ~~[illegible]~~		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	45602 ~~[illegible]~~
~~[illegible] Rolls 150'~~			
15.0000		CG-50 SEAMING CLAY (10902/024)	750 ~~[illegible]~~
5000 Bags		CLAY-BENTONITE-GROUND (CLASS 50) 3295232	

GROSS: .00 TARE: .00 NET: 46,352 ~~[illegible]~~

Will take delivery at 7:00AM

Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on [illegible] otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of [illegible] destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and [illegible] of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tarrif if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

X Hugh Gillman

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1250 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000090258
ORDER DATE: 8/07/98
SHIP DATE:. 8/19/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

PO: WILSON CO

WILSON NC 27893

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST	SFT SF	199833030	00009209	150.0	15.0	2250.0	3118
030-BENTOMAT ST	SFT SF	199833030	00009396	150.0	15.0	2250.0	3029
030-BENTOMAT ST	SFT SF	199834030	00010064	150.0	15.0	2250.0	3279
030-BENTOMAT ST	SFT SF	199834030	00010084	150.0	15.0	2250.0	3268
0[redacted]BENTOMAT ST	SFT SF	199834030	00010085	150.0	15.0	2250.0	3290
030-BENTOMAT ST	SFT SF	199834030	00010086	150.0	15.0	2250.0	3310
030-BENTOMAT ST	SFT SF	199834030	00010087	150.0	15.0	2250.0	3273
030-BENTOMAT ST	SFT SF	199834030	00010088	150.0	15.0	2250.0	3258
030-BENTOMAT ST	SFT SF	199834030	00010090	150.0	15.0	2250.0	3301
030-BENTOMAT ST	SFT SF	199834030	00010091	150.0	15.0	2250.0	3292
030-BENTOMAT ST	SFT SF	199834030	00010093	150.0	15.0	2250.0	3310
030-BENTOMAT ST	SFT SF	199834030	00010094	150.0	15.0	2250.0	3274
030-BENTOMAT ST	SFT SF	199834030	00010095	150.0	15.0	2250.0	3281
030-BENTOMAT ST	SFT SF	199834030	00010104	150.0	15.0	2250.0	3319

ORDER TOTALS.....	31500.0	45602.
TOTAL ITEMS..... 14		

15 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

CARRIER NAME: NATIONWIDE /TEI
CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823
SOLDTO: 2893 SHIPTO: 01
CONSIGNED P.O.#: WILSON CO
CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:
DEL DATE: 8/20/98
SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPER'S NO: 000090259
SHIP DATE: 8/19/9

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 600000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
33750.0000		BENTOMAT ST	45977
15 Rolls-150		CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	
15.0000		CG-50 SEAMING CLAY (10902/024)	700
14 Bags		CLAY-BENTONITE GROUND (CLASS 50) 3295232	

GROSS: .00 TARE: .00 NET: 46677

Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if o[illegible]ts, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of [illegible]e to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms an[illegible]ons of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tarrif if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Vt. Dude TRK.
Alvin Parham

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1250 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000090259
ORDER DATE: 8/07/98
SHIP DATE:. 8/19/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010089	150.0	15.0	2250.0	3337
030-BENTOMAT ST		SFT	SF 199834030	00010092	150.0	15.0	2250.0	3300
030-BENTOMAT ST		SFT	SF 199834030	00010096	150.0	15.0	2250.0	3271
030-BENTOMAT ST		SFT	SF 199834030	00010097	150.0	15.0	2250.0	3310
030-BENTOMAT ST		SFT	SF 199834030	00010098	150.0	15.0	2250.0	3254
030-BENTOMAT ST		SFT	SF 199834030	00010099	150.0	15.0	2250.0	3327
030-BENTOMAT ST		SFT	SF 199834030	00010100	150.0	15.0	2250.0	3262
030-BENTOMAT ST		SFT	SF 199834030	00010101	150.0	15.0	2250.0	3270
030-BENTOMAT ST		SFT	SF 199834030	00010102	150.0	15.0	2250.0	3291
030-BENTOMAT ST		SFT	SF 199834030	00010103	150.0	15.0	2250.0	3287
030-BENTOMAT ST		SFT	SF 199834030	00010105	150.0	15.0	2250.0	3277
030-BENTOMAT ST		SFT	SF 199834030	00010106	150.0	15.0	2250.0	3268
030-BENTOMAT ST		SFT	SF 199834030	00010107	150.0	15.0	2250.0	3259
030-BENTOMAT ST		SFT	SF 199834030	00010108	150.0	15.0	2250.0	3264

ORDER TOTALS..... 31500.0 45977.

TOTAL ITEMS..... 14

14 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE 15E

CONSIGNED TO: WILSON COUNTY LANDFILL

4537 LANDFILL RD

WILSON NC 27893

PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:

DEL DATE: 8/20/98

SHIPPER: CETCO

1350 W SHURE DR.

ARLINGTON HGTS IL 60004

SHIPPER'S NO: 000090260

SHIP DATE: ~~8/18/98~~ 8/19/98

SHIPPING PLANT: FAIRMOUNT,GA

P.O. BOX 88

FAIRMOUNT GA 30139

INE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

RDER COMMENTS TOTAL ORDER IS FOR 600000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~3,500.0000~~ 5 Rolls-150		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44773
15.0000 15 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	700

GROSS: .00 TARE: .00 NET: 45473

Will take delivery at 7:00 Am

Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

5:50

"MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

ECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, , otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms ions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment,) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

per hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation s shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: James Womack

ss is to certify that the above named materials are properly classified, described, ckaged, marked and labeled and are in proper condition for transportation ac- ding to the applicable regulations of the Department of Transportation.

ar

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

P A C K I N G L I S T

COLLOID ENVIRONMENTAL TECH CO
[redacted] WEST SHURE DRIVE
[redacted]NGTON HEIGHTS IL 60004

ORDER NO:.. 000090260
ORDER DATE: 8/07/98
SHIP DATE:. 8/19/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010143	150.0	15.0	2250.0	3222
030-BENTOMAT ST		SFT	SF 199834030	00010147	150.0	15.0	2250.0	3196
030-BENTOMAT ST		SFT	SF 199834030	00010148	150.0	15.0	2250.0	3122
030-BENTOMAT ST		SFT	SF 199834030	00010152	150.0	15.0	2250.0	3232
[redacted]BENTOMAT ST		SFT	SF 199834030	00010153	150.0	15.0	2250.0	3212
030-BENTOMAT ST		SFT	SF 199834030	00010154	150.0	15.0	2250.0	3208
030-BENTOMAT ST		SFT	SF 199834030	00010155	150.0	15.0	2250.0	3196
030-BENTOMAT ST		SFT	SF 199834030	00010156	150.0	15.0	2250.0	3208
030-BENTOMAT ST		SFT	SF 199834030	00010158	150.0	15.0	2250.0	3172
030-BENTOMAT ST		SFT	SF 199834030	00010159	150.0	15.0	2250.0	3168
030-BENTOMAT ST		SFT	SF 199834030	00010160	150.0	15.0	2250.0	3178
030-BENTOMAT ST		SFT	SF 199834030	00010161	150.0	15.0	2250.0	3221
030-BENTOMAT ST		SFT	SF 199834030	00010162	150.0	15.0	2250.0	3218
030-BENTOMAT ST		SFT	SF 199834030	00010163	150.0	15.0	2250.0	3220

ORDER TOTALS.....	31500.0	44773.
TOTAL ITEMS..... 14		

14 Bags

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#FT2 QCT#FT2
8/20/98 7:22:04

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090258

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010104	1.06	18.40	140.20	24.60
030-BENTOMAT ST	199834030	00010095	1.06	18.40	140.20	26.90
030-BENTOMAT ST	199834030	00010094	1.06	18.40	140.20	26.90
030-BENTOMAT ST	199834030	00010093	1.06	18.40	140.20	26.90
030-BENTOMAT ST	199834030	00010091	1.06	18.40	140.20	26.90
030-BENTOMAT ST	199834030	00010090	1.06	18.40	140.20	26.90
030-BENTOMAT ST	199834030	00010088	1.00	11.60	98.80	29.60
030-BENTOMAT ST	199834030	00010087	1.00	11.60	98.80	29.60
030-BENTOMAT ST	199834030	00010086	1.00	11.60	98.80	29.60
030-BENTOMAT ST	199834030	00010085	1.00	11.60	98.80	29.60
030-BENTOMAT ST	199834030	00010084	1.00	11.60	98.80	29.60
030-BENTOMAT ST	199834030	00010064	1.04	11.60	98.80	37.50*
030-BENTOMAT ST	199833030	00009396	.97	16.40	127.80	22.80
030-BENTOMAT ST	199833030	00009209	1.00	11.60	92.80	29.90

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
8/20/98 7:20:54

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090259

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010108	1.08	18.40	140.20	21.00
030-BENTOMAT ST	199834030	00010107	1.08	18.40	140.20	21.00
030-BENTOMAT ST	199834030	00010106	1.08	18.40	140.20	21.00
030-BENTOMAT ST	199834030	00010105	1.08*	18.40	140.20	21.00*
030-BENTOMAT ST	199834030	00010103	1.06	18.40	140.20	24.60
030-BENTOMAT ST	199834030	00010102	1.06	18.40	140.20	24.60
030-BENTOMAT ST	199834030	00010101	1.06	18.40	140.20	24.60
030-BENTOMAT ST	199834030	00010100	1.06	18.40	140.20	24.60
030-BENTOMAT ST	199834030	00010099	1.06	18.40	140.20	24.60
030-BENTOMAT ST	199834030	00010098	1.06	18.40	140.20	24.60
030-BENTOMAT ST	199834030	00010097	1.06	18.40	140.20	24.60*
030-BENTOMAT ST	199834030	00010096	1.06	18.40	140.20	26.90
030-BENTOMAT ST	199834030	00010092	1.06	18.40	140.20	26.90
030-BENTOMAT ST	199834030	00010089	1.06*	18.40*	140.20*	26.90*

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
8/20/98 7:27:58

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090260

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010163	1.00	15.60	122.80	22.50
030-BENTOMAT ST	199834030	00010162	1.00	15.60	122.80	22.50
030-BENTOMAT ST	199834030	00010161	1.00	15.60	122.80	22.50
030-BENTOMAT ST	199834030	00010160	1.00	15.60	122.80	22.50
030-BENTOMAT ST	199834030	00010159	1.00	15.60	122.80	22.50
030-BENTOMAT ST	199834030	00010158	1.00	15.60	122.80	22.50
030-BENTOMAT ST	199834030	00010156	1.00*	15.60	122.80	22.50*
030-BENTOMAT ST	199834030	00010155	1.05	15.60	122.80	26.20
030-BENTOMAT ST	199834030	00010154	1.05	15.60	122.80	26.20
030-BENTOMAT ST	199834030	00010153	1.05	15.60	122.80	26.20
030-BENTOMAT ST	199834030	00010152	1.05	15.60	122.80	26.20
030-BENTOMAT ST	199834030	00010148	1.05	15.60	122.80	26.20*
030-BENTOMAT ST	199834030	00010147	1.05	15.60	122.80	27.60
030-BENTOMAT ST	199834030	00010143	1.05	15.60	122.80	27.60

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 24-Jul-98

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 20-Jul-98
in BN 453149
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.6
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	24
FLUID LOSS	ASTM D 5891	18.0 MAX.	13

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 88079

AMERICAN COLLOID COMPANY
PO Box 160 ✦ Belle Fourche, South Dakota 57717
(605) 892-2591 ✦ FAX (605) 892-4887

Certificate of Analysis

Date: 29-Jul-98

TO: CETCO
234 GORDON STREET
FAIRMOUNT GA. 30139

ATTN: Quality Control

Dear Customer:

A shipment of **CG-50** left our Belle Fourche, South Dakota plant on **24-July-98** in **DME 49343** as requested on your order number **31-2864**. The shipment was from lot number **BULK**

A sample from this shipment was tested, and given the following results:

Test	Required Specifications	Actual Results
Moisture	12% Maximum	9.4
Sieve	0.0% Max. on 10 Mesh	0.0
Sieve	1.0% Thru 200 Mesh	0.2
Free Swell	24 Minimum	24
Fluid Loss	18 Max.	17.8

We hereby certify that the results shown above represent this shipment. Tests were conducted using American Colloid Company and/or customer approved laboratory procedures.

Tests Conducted By: D. Pierce

Approved By: Duane Pierce, Quality Assurance

In any correspondence regarding this shipment, please refer to our Order number **283151**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

DATE: 28-Jul-98

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **25-Jul-98**
in **BN 450272**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.7
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	24
FLUID LOSS	ASTM D 5891	18.0 MAX.	12.8

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our
Order Number **88088**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 05-Aug-98

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **03-Aug-98**
in **BN 455812**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.4
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	14.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88104**

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

QCG#TF1 QCT#TF1
8/20/98 13:00:37

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090258

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199833030									
00009209	030-BENTOMAT ST	150	2250	3118	7301116		199831010	00001796	453149
00009396	030-BENTOMAT ST	150	2250	3029	7308728		199832010	00001836	450272
LOT# 199834030									
00010064	030-BENTOMAT ST	150	2250	3279	7429741		199833010	00001876	49343
00010084	030-BENTOMAT ST	150	2250	3268	7435713		199833010	00001896	455812
00010085	030-BENTOMAT ST	150	2250	3290	7423300		199833010	00001864	455812
00010086	030-BENTOMAT ST	150	2250	3310	7423300		199833010	00001864	455812
00010087	030-BENTOMAT ST	150	2250	3273	7423300		199833010	00001864	455812
00010088	030-BENTOMAT ST	150	2250	3258	7423300		199833010	00001864	455812
00010090	030-BENTOMAT ST	150	2250	3301	7423300		199833010	00001864	455812
00010091	030-BENTOMAT ST	150	2250	3292	7423300		199833010	00001864	455812
00010093	030-BENTOMAT ST	150	2250	3310	7423300		199833010	00001864	455812
00010094	030-BENTOMAT ST	150	2250	3274	7423300		199833010	00001864	455812
00010095	030-BENTOMAT ST	150	2250	3281	7423300		199833010	00001864	455812
00010104	030-BENTOMAT ST	150	2250	3319	7426327		199834010	00001921	455812

TOTAL SQUARE FEET..... 31.500

QCG#TF1 QCT#TF1
8/20/98 13:00:56

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090259

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010089	030-BENTOMAT ST	150	2250	3337	7423300		199833010	00001864	455812
00010092	030-BENTOMAT ST	150	2250	3300	7423300		199833010	00001864	455812
00010096	030-BENTOMAT ST	150	2250	3271	7423300		199833010	00001864	455812
00010097	030-BENTOMAT ST	150	2250	3310	7423300		199833010	00001873	455812
00010098	030-BENTOMAT ST	150	2250	3254	7423300		199833010	00001873	455812
00010099	030-BENTOMAT ST	150	2250	3327	7423300		199833010	00001873	455812
00010100	030-BENTOMAT ST	150	2250	3262	7423300		199833010	00001873	455812
00010101	030-BENTOMAT ST	150	2250	3270	7423300		199833010	00001873	455812
00010102	030-BENTOMAT ST	150	2250	3291	7423300		199833010	00001873	455812
00010103	030-BENTOMAT ST	150	2250	3287	7423300		199834010	00001921	455812
00010105	030-BENTOMAT ST	150	2250	3277	7426327		199834010	00001921	455812
00010106	030-BENTOMAT ST	150	2250	3268	7426327		199834010	00001921	455812
00010107	030-BENTOMAT ST	150	2250	3259	7426327		199834010	00001921	455812
00010108	030-BENTOMAT ST	150	2250	3264	7426327		199834010	00001921	455812

TOTAL SQUARE FEET..... 31,500

QCG#TF1 QCT#TF1
8/20/98 13:01:14

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090260

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010143	030-BENTOMAT ST	150	2250	3222	7428267		199831010	00001779	455812
00010147	030-BENTOMAT ST	150	2250	3196	7419224		199831010	00001774	455812
00010148	030-BENTOMAT ST	150	2250	3122	7419224		199831010	00001774	455812
00010152	030-BENTOMAT ST	150	2250	3232	7419224		199831010	00001774	455812
00010153	030-BENTOMAT ST	150	2250	3212	7419224		199831010	00001774	455812
00010154	030-BENTOMAT ST	150	2250	3208	7419224		199831010	00001774	455812
00010155	030-BENTOMAT ST	150	2250	3196	7419224		199831010	00001774	455812
00010156	030-BENTOMAT ST	150	2250	3208	7419224		199831010	00001774	455812
00010158	030-BENTOMAT ST	150	2250	3172	7419224		199831010	00001774	455812
00010159	030-BENTOMAT ST	150	2250	3168	7419224		199831010	00001774	455812
00010160	030-BENTOMAT ST	150	2250	3178	7419224		199831010	00001774	455812
00010161	030-BENTOMAT ST	150	2250	3221	7419224		199831010	00001774	455812
00010162	030-BENTOMAT ST	150	2250	3218	7419224		199831010	00001774	455812
00010163	030-BENTOMAT ST	150	2250	3220	7419224		199831010	00001774	455812

TOTAL SQUARE FEET..... 31,500

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

21-Aug-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipment to Wilson County LF Cap, Wilson, NC. This shipment left our CETCO - Fairmount, GA, plant on 8/20/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Michele Waters

Michele Waters
Quality Assurance Coordinator

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County Landfill Cap

PREPARED FOR:

Mr. Steve Clayton
Wilson County Solid Waste Depai
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY: Cynthia Willix
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

Printed on recycled paper

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LANDFILL CAP
WILSON, NC
CUSTOMER PO# WILSON CO.
ORDER# 90261

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	WILSON COUNTY LANDFILL
DATE:	AUGUST 20, 1998
ORDER NUMBER:	90261
PRODUCT:	BENTOMAT ST

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 20 day of Aug., 19 98.

Cynthia Willix

Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

CETCO

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County Landfill cap

ORDER # : 90261

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

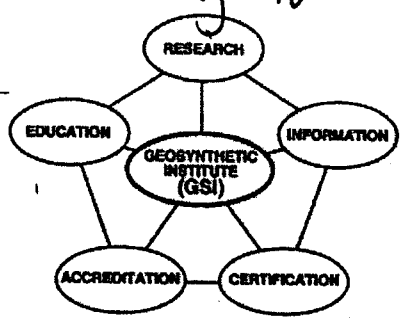
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Michelle Waters
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 20 day of Aug 1998.

Cynthia Willix
Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002



STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF 1

CARRIER NAME: NATIONWIDE / TET

CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:

DEL DATE 8/21/98

SHIPPER'S NO: 000090261

SHIP DATE: ~~8/20/98~~ 8/20/98

SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

TE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

IER COMMENTS TOTAL ORDER IS FOR 6000000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
31,500 ~~31,500.0000~~ 1 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	45014 [redacted]
~~15.0000~~ 15 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	700 [redacted]

45714

GROSS: .00 TARE: .00 NET:

Can take delivery at 7:00AM

Contact: Charlie 813-423-1735

ject to Section 7 of conditions, if this shipment is e delivered to the consignee without recourse on consignor, the consignor shall sign the following sment:
he carrier shall not make delivery of this shipment out payment of freight and all other lawful charges.

LLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

1:10

CARRIER: Bluspins

Dan Stanley

RK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

EIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except ted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood ughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, its r otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion id r destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms con the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment,) in pplicable motor carrier classification or tariff if this is a motor carrier shipment.

per hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation is shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

is is to certify that the above named materials are properly classified, described, ckaged, marked and labeled and are in proper condition for transportation ac- rding to the applicable regulations of the Department of Transportation.

Per

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000090261
ORDER DATE: 8/07/98
SHIP DATE:. 8/20/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010181	150.0	15.0	2250.0	3239
030-BENTOMAT ST		SFT	SF 199834030	00010183	150.0	15.0	2250.0	3251
030-BENTOMAT ST		SFT	SF 199834030	00010184	150.0	15.0	2250.0	3240
030-BENTOMAT ST		SFT	SF 199834030	00010185	150.0	15.0	2250.0	3246
030-BENTOMAT ST		SFT	SF 199834030	00010186	150.0	15.0	2250.0	3243
[redacted]BENTOMAT ST		SFT	SF 199834030	00010187	150.0	15.0	2250.0	3230
030-BENTOMAT ST		SFT	SF 199834030	00010188	150.0	15.0	2250.0	2861
030-BENTOMAT ST		SFT	SF 199834030	00010189	150.0	15.0	2250.0	3226
030-BENTOMAT ST		SFT	SF 199834030	00010191	150.0	15.0	2250.0	3331
030-BENTOMAT ST		SFT	SF 199834030	00010192	150.0	15.0	2250.0	3213
030-BENTOMAT ST		SFT	SF 199834030	00010193	150.0	15.0	2250.0	3214
030-BENTOMAT ST		SFT	SF 199834030	00010194	150.0	15.0	2250.0	3249
030-BENTOMAT ST		SFT	SF 199834030	00010195	150.0	15.0	2250.0	3226
030-BENTOMAT ST		SFT	SF 199834030	00010199	150.0	15.0	2250.0	3245

ORDER TOTALS..... 31500.0 45014.

TOTAL ITEMS..... 14

14 Bags

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#FT2 QCT#FT2
8/21/98 7:55:42

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090261

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010199	1.12	16.80	122.80	29.90
030-BENTOMAT ST	199834030	00010195	1.12	16.80	122.80	29.90
030-BENTOMAT ST	199834030	00010194	1.12	16.80	122.80	29.90
030-BENTOMAT ST	199834030	00010193	1.12	16.80	122.80	29.90
030-BENTOMAT ST	199834030	00010192	1.12	16.80	122.80	29.90
030-BENTOMAT ST	199834030	00010191	1.12	16.80	122.80	29.90*
030-BENTOMAT ST	199834030	00010189	1.12	16.80	122.80	20.00
030-BENTOMAT ST	199834030	00010188	1.12	16.80	122.80	20.00
030-BENTOMAT ST	199834030	00010187	1.12	16.80	122.80	20.00
030-BENTOMAT ST	199834030	00010186	1.12	16.80	122.80	20.00
030-BENTOMAT ST	199834030	00010185	1.12	16.80	122.80	20.00
030-BENTOMAT ST	199834030	00010184	1.12	16.80	122.80	20.00
030-BENTOMAT ST	199834030	00010183	1.12	16.80	122.80	20.00
030-BENTOMAT ST	199834030	00010181	1.12*	16.80*	122.80	20.00*

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

DATE: 05-Aug-98

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **03-Aug-98**
in **BN 455188**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.5
MOISTURE	ASTM D 2216	12.0% MAX.	8.8
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	14.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88103**

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090261

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010181	030-BENTOMAT ST	150	2250	3239	7429743		199833010	00001878	455188
00010183	030-BENTOMAT ST	150	2250	3251	7429743		199833010	00001878	455188
00010184	030-BENTOMAT ST	150	2250	3240	7429743		199833010	00001878	455188
00010185	030-BENTOMAT ST	150	2250	3246	7429743		199833010	00001878	455188
00010186	030-BENTOMAT ST	150	2250	3243	7429743		199833010	00001878	455188
00010187	030-BENTOMAT ST	150	2250	3230	7429743		199833010	00001878	455188
00010188	030-BENTOMAT ST	150	2250	2861	7429743		199833010	00001878	455188
00010189	030-BENTOMAT ST	150	2250	3226	7429743		199833010	00001878	455188
00010191	030-BENTOMAT ST	150	2250	3331	7429743		199833010	00001878	455188
00010192	030-BENTOMAT ST	150	2250	3213	7429743		199833010	00001878	455188
00010193	030-BENTOMAT ST	150	2250	3214	7266473		199833010	00001878	455188
00010194	030-BENTOMAT ST	150	2250	3249	7429743		199833010	00001878	455188
00010195	030-BENTOMAT ST	150	2250	3226	7429743		199833010	00001878	455188
00010199	030-BENTOMAT ST	150	2250	3245	7429743		199833010	00001878	455188

TOTAL SQUARE FEET..... 31,500

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

8-Sep-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipments to Wilson County LF Cap, Wilson, NC. These shipments left our CETCO - Fairmount, GA, plant on 9/4/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County Landfill Cap

PREPARED FOR:

Mr. Steve Clayton
Wilson County Solid Waste Depai
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY: Michele Waters
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LANDFILL CAP
WILSON, NC
CUSTOMER PO# WILSON CO.
ORDER# 91682,92507

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	WILSON COUNTY LANDFILL
DATE:	SEPTEMBER 4, 1998
ORDER NUMBER:	91682,92507
PRODUCT:	BENTOMAT ST

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 8 day of Sept., 1998.

Judy Hall

Notary Public

OFFICIAL SEAL
JUDY HALL
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County Landfill cap

ORDER # : 91682, 92507

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

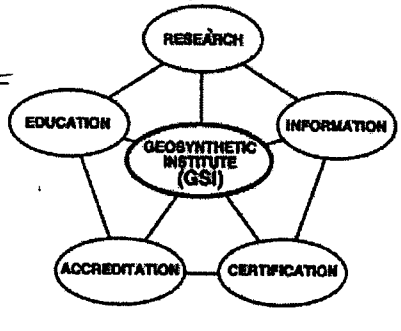
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Michelle Waters
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 8 day of Sept. 1998

Judy Hall
Notary Public

OFFICIAL SEAL
JUDY HALL
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002



STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE PAGE 1 OF

CARRIER NAME: Bulldog

CONSIGNED TO: NATIONWIDE
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

DELIVERING CARRIER:

DEL DATE: 9/8/98

SHIPPER'S NO:

SHIP DATE: 000091682

SHIPPER: 9/4/98
CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SOLDTO: [redacted]

CONSIGNED P.O.#: SHIPTO: 01

CAR/VEHICLE#: WILSON COUNTY

SHIPPING PLANT:
FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS ADDITIONAL 3 T/L'S NEEDED FOR THIS ORDER
ORDER COMMENTS MATERIAL WEIGHING HEAVY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
[redacted] 15 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	43887 [redacted]

GROSS: .00 TARE: .00 NET: 700

15 Bags 030-CG50 Seaming Clay wt 44587

Contact: Charlie or Milton 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

2:05

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000091682
ORDER DATE: 8/27/98
SHIP DATE:. 9/04/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON COUNTY

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199835030	00011249	150.0	15.0	2250.0	2999
030-BENTOMAT ST		SFT	SF 199835030	00011253	150.0	15.0	2250.0	2965
030-BENTOMAT ST		SFT	SF 199836030	00011414	150.0	15.0	2250.0	3127
030-BENTOMAT ST		SFT	SF 199836030	00011424	150.0	15.0	2250.0	3136
030-BENTOMAT ST		SFT	SF 199836030	00011425	150.0	15.0	2250.0	3137
030-BENTOMAT ST		SFT	SF 199836030	00011426	150.0	15.0	2250.0	3143
030-BENTOMAT ST		SFT	SF 199836030	00011428	150.0	15.0	2250.0	3128
030-BENTOMAT ST		SFT	SF 199836030	00011616	150.0	15.0	2250.0	3178
030-BENTOMAT ST		SFT	SF 199836030	00011618	150.0	15.0	2250.0	3166
030-BENTOMAT ST		SFT	SF 199836030	00011619	150.0	15.0	2250.0	3203
030-BENTOMAT ST		SFT	SF 199836030	00011620	150.0	15.0	2250.0	3179
030-BENTOMAT ST		SFT	SF 199836030	00011628	150.0	15.0	2250.0	3192
030-BENTOMAT ST		SFT	SF 199836030	00011629	150.0	15.0	2250.0	3160
030-BENTOMAT ST		SFT	SF 199836030	00011630	150.0	15.0	2250.0	3174

ORDER TOTALS.....	31500.0	43887.
TOTAL ITEMS.....	14	

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF 1

CARRIER NAME: NATIONWIDE Virginia Dude

DELIVERING CARRIER:

CONSIGNED TO: WILSON COUNTY LANDFILL

4537 LANDFILL RD

WILSON NC 27893

PHONE: 252 399 2823

DEL DATE: 9/8/98

SHIPPER'S NO: 000092507

SHIP DATE: 9/4/98

SHIPPER: CETCO

1350 W SHURE DR.

ARLINGTON HGTS IL 60004

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON COUNTY

CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA

P.O. BOX 88

FAIRMOUNT GA 30139

ROUTING/CONTRACT:

NE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

DER COMMENTS ADDITIONAL ORDER FOR WILSON COUNTY VIA FAX 9/3/98

DER COMMENTS 145,000 SF WITH 60 BAGS

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
3[redacted]0.0000 5 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	46929 [redacted] 750
15.0000 15 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	

GROSS: .00 TARE: .00 NET: 47679

Contact: Charlie or Milton 813-423-1735

ubject to Section 7 of conditions, if this shipment is be delivered to the consignee without recourse on ne consignor, the consignor shall sign the following tatement:
The carrier shall not make delivery of this shipment vithout payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on [redacted] otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Dude TRK. 9/4/98

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000092507
ORDER DATE: 9/04/98
SHIP DATE:. 9/04/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

PO: WILSON COUNTY

WILSON NC 27893

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT SF	199835030	00011243	150.0	15.0	2250.0	2901
030-BENTOMAT ST		SFT SF	199835030	00011244	150.0	15.0	2250.0	2900
030-BENTOMAT ST		SFT SF	199835030	00011252	150.0	15.0	2250.0	2934
030-BENTOMAT ST		SFT SF	199835030	00011256	150.0	15.0	2250.0	2998
0[redacted]BENTOMAT ST		SFT SF	199836030	00011421	150.0	15.0	2250.0	3156
030-BENTOMAT ST		SFT SF	199836030	00011422	150.0	15.0	2250.0	3164
030-BENTOMAT ST		SFT SF	199836030	00011615	150.0	15.0	2250.0	3200
030-BENTOMAT ST		SFT SF	199836030	00011624	150.0	15.0	2250.0	3171
030-BENTOMAT ST		SFT SF	199836030	00011817	150.0	15.0	2250.0	3310
030-BENTOMAT ST		SFT SF	199836030	00011818	150.0	15.0	2250.0	3294
030-BENTOMAT ST		SFT SF	199836030	00011819	150.0	15.0	2250.0	3223
030-BENTOMAT ST		SFT SF	199836030	00011820	150.0	15.0	2250.0	3182
030-BENTOMAT ST		SFT SF	199836030	00011821	150.0	15.0	2250.0	3180
030-BENTOMAT ST		SFT SF	199836030	00011822	150.0	15.0	2250.0	3147
030-BENTOMAT ST		SFT SF	199836030	00011823	150.0	15.0	2250.0	3169
ORDER TOTALS.....							33750.0	46929.

TOTAL ITEMS..... 15

15 Bags

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#FT2 QCT#FT2
9/08/98 8:14:05

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000091682

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199836030	00011630	.99	12.80	103.80	30.80
030-BENTOMAT ST	199836030	00011629	.99	12.80	103.80	30.80
030-BENTOMAT ST	199836030	00011628	.99	12.80	103.80	30.80
030-BENTOMAT ST	199836030	00011620	.99	12.80	103.80	34.30
030-BENTOMAT ST	199836030	00011619	.99	12.80	103.80	34.30
030-BENTOMAT ST	199836030	00011618	.99	12.80	103.80	34.30
030-BENTOMAT ST	199836030	00011616	.98	16.00	128.40	17.50
030-BENTOMAT ST	199836030	00011428	1.00	12.40	122.40	19.40
030-BENTOMAT ST	199836030	00011426	1.00	12.40	122.40	19.40
030-BENTOMAT ST	199836030	00011425	1.00	12.40	122.40	19.40
030-BENTOMAT ST	199836030	00011424	1.00*	12.40	122.40	19.40*
030-BENTOMAT ST	199836030	00011414	.95*	12.40	122.40	16.40*
030-BENTOMAT ST	199835030	00011253	.97	14.40	101.20	31.10
030-BENTOMAT ST	199835030	00011249	.97	14.40	101.20	33.10

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
9/08/98 8:14:22

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000092507

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199836030	00011823	1.00	12.00	102.40	21.40
030-BENTOMAT ST	199836030	00011822	1.00	12.00	102.40	21.40
030-BENTOMAT ST	199836030	00011821	1.00	12.00	102.40	21.40
030-BENTOMAT ST	199836030	00011820	1.00	12.00	102.40	21.40
030-BENTOMAT ST	199836030	00011819	1.00	12.00	102.40	21.40
030-BENTOMAT ST	199836030	00011818	1.00	12.00	102.40	21.40
030-BENTOMAT ST	199836030	00011817	1.00	12.00	102.40	21.40*
030-BENTOMAT ST	199836030	00011624	.99	12.80	103.80	34.30
030-BENTOMAT ST	199836030	00011615	.98	16.00	128.40	17.50
030-BENTOMAT ST	199836030	00011422	.95	12.40	122.40	16.40
030-BENTOMAT ST	199836030	00011421	.95	12.40	122.40	16.40
030-BENTOMAT ST	199835030	00011256	.97	14.40	101.20	31.10
030-BENTOMAT ST	199835030	00011252	.97	14.40	101.20	31.10
030-BENTOMAT ST	199835030	00011244	.97	14.40	101.20	33.10
030-BENTOMAT ST	199835030	00011243	.97*	14.40	101.20	33.10*

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 17-Aug-98

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 14-Aug-98
in ATSF 314508
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.7
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.8

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: R.P.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our
Order Number 90506

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 14-Aug-98

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 12-Aug-98
in ATSF 314609
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.5
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 90500

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 10-Aug-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **06-Aug-98**
in **BN 453296**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.6
MOISTURE	ASTM D 2216	12.0% MAX.	8.8
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our
Order Number **88114**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 10-Aug-98

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 06-Aug-98
in ATSF 314270
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.4
MOISTURE	ASTM D 2216	12.0% MAX.	8.4
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 88113

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper

QCG#TF1 QCT#TF1
9/08/98 8:14:05

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000091682

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199835030									
00011249	030-BENTOMAT ST	150	2250	2999	7304266		199833010	00001899	314270
00011253	030-BENTOMAT ST	150	2250	2965	7304266		199833010	00001899	314270
LOT# 199836030									
00011414	030-BENTOMAT ST	150	2250	3127	7447755		199835030	00002030	314609
00011424	030-BENTOMAT ST	150	2250	3136	7437902		199835030	00002006	314609
00011425	030-BENTOMAT ST	150	2250	3137	7437902		199835030	00002006	314609
00011426	030-BENTOMAT ST	150	2250	3143	7437902		199835030	00002006	314609
00011428	030-BENTOMAT ST	150	2250	3128	7437902		199835030	00002006	314609
00011616	030-BENTOMAT ST	150	2250	3178	7197673		199836010	00002054	453296
00011618	030-BENTOMAT ST	150	2250	3166	7168642		199836010	00002054	453296
00011619	030-BENTOMAT ST	150	2250	3203	7168642		199836010	00002054	453296
00011620	030-BENTOMAT ST	150	2250	3179	7168642		199836010	00002054	453296
00011628	030-BENTOMAT ST	150	2250	3192	7168642		199836010	00002054	453296
00011629	030-BENTOMAT ST	150	2250	3160	7168642		199836010	00002054	453296
00011630	030-BENTOMAT ST	150	2250	3174	7168642		199836010	00002060	453296

TOTAL SQUARE FEET..... 31.500

QCG#TF1 QCT#TF1
9/08/98 8:14:22

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000092507

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199835030									
00011243	030-BENTOMAT ST	150	2250	2901	7304266		199834010	00001953	314270
00011244	030-BENTOMAT ST	150	2250	2900	7304266		199834010	00001953	314270
00011252	030-BENTOMAT ST	150	2250	2934	7304266		199833010	00001899	314270
00011256	030-BENTOMAT ST	150	2250	2998	7428263		199833010	00001899	314270
LOT# 199836030									
00011421	030-BENTOMAT ST	150	2250	3156	7447755		199835030	00002030	314609
00011422	030-BENTOMAT ST	150	2250	3164	7447755		199835030	00002030	314609
00011615	030-BENTOMAT ST	150	2250	3200	7197673		199836010	00002054	453296
00011624	030-BENTOMAT ST	150	2250	3171	7168642		199836010	00002054	453296
00011817	030-BENTOMAT ST	150	2250	3310	7211850		B801138A		314508
00011818	030-BENTOMAT ST	150	2250	3294	7211850		B801138A		314508
00011819	030-BENTOMAT ST	150	2250	3223	7165794		B801138A		314508
00011820	030-BENTOMAT ST	150	2250	3182	7165794		B801138A		314508
00011821	030-BENTOMAT ST	150	2250	3180	7165794		B801138A		314508
00011822	030-BENTOMAT ST	150	2250	3147	7165794		B801138A		314508
00011823	030-BENTOMAT ST	150	2250	3169	7165794		5145600A		314508

TOTAL SQUARE FEET..... 33,750

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

28-Aug-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipments to Wilson County LF Cap, Wilson, NC. These shipments left our CETCO - Fairmount, GA, plant on 8/21/98,8/25/98-8/27/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Michele Waters

Michele Waters
Quality Assurance Coordinator

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County Landfill Cap

PREPARED FOR:

Mr. Steve Clayton
Wilson County Solid Waste Depai
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY: Cynthia Willix
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LANDFILL CAP
WILSON, NC
CUSTOMER PO# WILSON CO.
ORDER# 90262-90269

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	**WILSON COUNTY LANDFILL**
DATE:	**AUGUST 21,25-27, 1998**
ORDER NUMBER:	**90262-90269**
PRODUCT:	**BENTOMAT ST**

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 29 **day of** Aug. **,19** 98 **.**

Cynthia Willix

Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

Printed on recycled paper.

CETCO

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County Landfill cap

ORDER # : 90262-90269

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

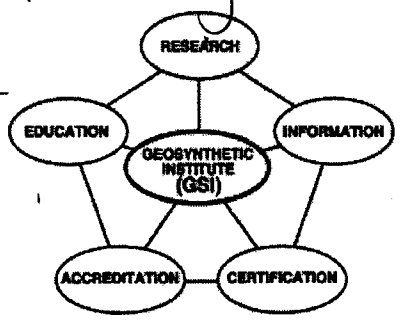
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Michele Waters
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 29 day of Aug 19 98

Cynthia Willix
Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002



461

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

CARRIER NAME: NATIONWIDE / Bulldog

CONSIGNED TO: WILSON COUNTY LANDFILL

4537 LANDFILL RD

WILSON NC 27893

PHONE: 252 399 2823

DELIVERING CARRIER:

DEL DATE: 8/24/98

SHIPPER'S NO: 000090262

SHIP DATE: [redacted] 8/21/98

SHIPPER: CETCO

1350 W SHURE DR.

ARLINGTON HGTS IL 60004

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA

P.O. BOX 88

FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 6000005F OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
33750.0000 [redacted] Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44550 [redacted] 700
15.0000 15 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	

GROSS: .00 TARE: .00 NET: 45250 [redacted]

Contact: Charlie 813-423-1735

Call if you can deliver on Saturday 8/22, will take

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

"MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throu[redacted]is contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on[redacted] otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of s[redacted] to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

Darren Mosley

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1250 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000090262
ORDER DATE: 8/07/98
SHIP DATE:. 8/21/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010217	150.0	15.0	2250.0	3206
030-BENTOMAT ST		SFT	SF 199834030	00010218	150.0	15.0	2250.0	3194
030-BENTOMAT ST		SFT	SF 199834030	00010219	150.0	15.0	2250.0	3215
030-BENTOMAT ST		SFT	SF 199834030	00010220	150.0	15.0	2250.0	3227
030-BENTOMAT ST		SFT	SF 199834030	00010221	150.0	15.0	2250.0	3210
030-BENTOMAT ST		SFT	SF 199834030	00010222	150.0	15.0	2250.0	3204
030-BENTOMAT ST		SFT	SF 199834030	00010223	150.0	15.0	2250.0	3195
030-BENTOMAT ST		SFT	SF 199834030	00010224	150.0	15.0	2250.0	3123
030-BENTOMAT ST		SFT	SF 199834030	00010225	150.0	15.0	2250.0	3174
030-BENTOMAT ST		SFT	SF 199834030	00010226	150.0	15.0	2250.0	3167
030-BENTOMAT ST		SFT	SF 199834030	00010227	150.0	15.0	2250.0	3144
030-BENTOMAT ST		SFT	SF 199834030	00010228	150.0	15.0	2250.0	3167
030-BENTOMAT ST		SFT	SF 199834030	00010229	150.0	15.0	2250.0	3179
030-BENTOMAT ST		SFT	SF 199834030	00010230	150.0	15.0	2250.0	3145

ORDER TOTALS.....	31500.0	44550.
TOTAL ITEMS..... 14		

IH Bacf

465

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF 1

CARRIER NAME: NATIONWIDE X Bulldog
CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823
SOLDTO: 2893 SHIPTO: 01
CONSIGNED P.O.#: WILSON CO
CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:
DEL DATE: 8/24/98
SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPER'S NO: 000090263
SHIP DATE: 8/21/98

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

INE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

DER COMMENTS TOTAL ORDER IS FOR 600000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
33750.0000 15 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44602 [redacted]
15.0000 15 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	700 [redacted]

ROSS: .00 TARE: .00 NET: 45302 [redacted]

Contact: Charlie 813-423-1735

Call if you can deliver on Saturday 8/22, will take 3:50

ject to Section 7 of conditions, if this shipment is e delivered to the consignee without recourse on consignor, the consignor shall sign the following ement: he carrier shall not make delivery of this shipment hout payment of freight and all other lawful charges. LLOID ENVIRONMENTAL TEC (Signature of Consignor)	If charges are to be prepaid, write or stamp here, "Prepaid." PREPAID Shipper liable for line haul charges only. COD charges to be paid by: Consignee

RK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

EIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except ted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood ghout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, its ro[illegible]wise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion id rou[illegible]ination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms condit[illegible]he Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment,) in the applicable motor carrier classification or tarrif if this is a motor carrier shipment.

per hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation is shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Darrell Manigault

is is to certify that the above named materials are properly classified, described, ckaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
[redacted] WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000090263
ORDER DATE: 8/07/98
SHIP DATE:. 8/21/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199833030	00009972	150.0	15.0	2250.0	3095
030-BENTOMAT ST		SFT	SF 199833030	00009975	150.0	15.0	2250.0	3025
030-BENTOMAT ST		SFT	SF 199834030	00010139	150.0	15.0	2250.0	3292
030-BENTOMAT ST		SFT	SF 199834030	00010140	150.0	15.0	2250.0	3228
[redacted]BENTOMAT ST		SFT	SF 199834030	00010144	150.0	15.0	2250.0	3199
030-BENTOMAT ST		SFT	SF 199834030	00010145	150.0	15.0	2250.0	3199
030-BENTOMAT ST		SFT	SF 199834030	00010146	150.0	15.0	2250.0	3210
030-BENTOMAT ST		SFT	SF 199834030	00010149	150.0	15.0	2250.0	3250
030-BENTOMAT ST		SFT	SF 199834030	00010150	150.0	15.0	2250.0	3218
030-BENTOMAT ST		SFT	SF 199834030	00010163	150.0	15.0	2250.0	3220
030-BENTOMAT ST		SFT	SF 199834030	00010200	150.0	15.0	2250.0	3318
030-BENTOMAT ST		SFT	SF 199834030	00010262	150.0	15.0	2250.0	3144
030-BENTOMAT ST		SFT	SF 199834030	00010275	150.0	15.0	2250.0	3093
030-BENTOMAT ST		SFT	SF 199834030	00010293	150.0	15.0	2250.0	3111
							========	=======
ORDER TOTALS.....							31500.0	44602.

TOTAL ITEMS..... 14

14 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE PAGE 1 OF

CARRIER NAME: NATIONWIDE / Bulldog
CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

DELIVERING CARRIER:
DEL DATE: 8/26/98
SHIPPER'S NO: 000090264
SHIP DATE: [redacted] 8/25/98
SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01
CONSIGNED P.O.#: WILSON CO
CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 600000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
31500 ~~31500.0000~~ [redacted] Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44862 [redacted]
14 15.0000		CG-50 SEAMING CLAY (10902/024)	700 [redacted]
14 [redacted] Bags		CLAY-BENTONITE-GROUND (CLASS 50) 3295232	

GROSS: .00 TARE: .00 NET: 45,562 [redacted]

Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.
COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as p[redacted]contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood th[redacted]this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if o[redacted]e, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:
X Wayne Wallace

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.
Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1250 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000090264
ORDER DATE: 8/07/98
SHIP DATE:. 8/26/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010430	150.0	15.0	2250.0	3152
030-BENTOMAT ST		SFT	SF 199834030	00010601	150.0	15.0	2250.0	3203
030-BENTOMAT ST		SFT	SF 199834030	00010602	150.0	15.0	2250.0	3210
030-BENTOMAT ST		SFT	SF 199834030	00010603	150.0	15.0	2250.0	3232
030-BENTOMAT ST		SFT	SF 199834030	00010607	150.0	15.0	2250.0	3259
030-BENTOMAT ST		SFT	SF 199834030	00010611	150.0	15.0	2250.0	3220
030-BENTOMAT ST		SFT	SF 199834030	00010615	150.0	15.0	2250.0	3214
030-BENTOMAT ST		SFT	SF 199834030	00010617	150.0	15.0	2250.0	3194
030-BENTOMAT ST		SFT	SF 199834030	00010618	150.0	15.0	2250.0	3190
030-BENTOMAT ST		SFT	SF 199834030	00010619	150.0	15.0	2250.0	3172
030-BENTOMAT ST		SFT	SF 199834030	00010620	150.0	15.0	2250.0	3211
030-BENTOMAT ST		SFT	SF 199834030	00010623	150.0	15.0	2250.0	3206
030-BENTOMAT ST		SFT	SF 199834030	00010625	150.0	15.0	2250.0	3219
030-BENTOMAT ST		SFT	SF 199834030	00010628	150.0	15.0	2250.0	3180
ORDER TOTALS.....							31500.0	44862.

TOTAL ITEMS..... 14

14 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE TEF

CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC 27893
PHONE: 252 399 2823

DELIVERING CARRIER:

DEL DATE: 8/26/98

SHIPPER'S NO: 000090265

SHIP DATE: [redacted] 8/25/98

SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

ROUTING/CONTRACT:

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 6000005F OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
31500 [redacted] Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44022 [redacted]
15.0000 [redacted] Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	700 [redacted]

GROSS: .00 TARE: .00 NET: 44722 [redacted]

Can take delivery at 7:00AM
Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

Larry Stalls

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
[redacted]0 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000090265
ORDER DATE: 8/07/98
SHIP DATE:. 8/26/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

PO: WILSON CO

WILSON NC 27893

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010426	150.0	15.0	2250.0	3174
030-BENTOMAT ST		SFT	SF 199834030	00010427	150.0	15.0	2250.0	3216
030-BENTOMAT ST		SFT	SF 199834030	00010428	150.0	15.0	2250.0	3128
030-BENTOMAT ST		SFT	SF 199834030	00010429	150.0	15.0	2250.0	3142
[redacted]BENTOMAT ST		SFT	SF 199834030	00010431	150.0	15.0	2250.0	3153
030-BENTOMAT ST		SFT	SF 199834030	00010432	150.0	15.0	2250.0	3128
030-BENTOMAT ST		SFT	SF 199834030	00010433	150.0	15.0	2250.0	3148
030-BENTOMAT ST		SFT	SF 199834030	00010434	150.0	15.0	2250.0	3172
030-BENTOMAT ST		SFT	SF 199834030	00010435	150.0	15.0	2250.0	3177
030-BENTOMAT ST		SFT	SF 199834030	00010436	150.0	15.0	2250.0	2997
030-BENTOMAT ST		SFT	SF 199834030	00010437	150.0	15.0	2250.0	3163
030-BENTOMAT ST		SFT	SF 199834030	00010438	150.0	15.0	2250.0	3138
030-BENTOMAT ST		SFT	SF 199834030	00010439	150.0	15.0	2250.0	3129
030-BENTOMAT ST		SFT	SF 199834030	00010440	150.0	15.0	2250.0	3157

ORDER TOTALS..... 31500.0 44022.

TOTAL ITEMS..... 14

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE PAGE 1 OF

CARRIER NAME: NATIONWIDE America
CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

DELIVERING CARRIER:
DEL DATE: 8/27/98
SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPER'S NO: 000090266
SHIP DATE: [redacted] 8/26/98

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01
CONSIGNED P.O.#: WILSON CO
CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 6000005F OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
33750.0000		BENTOMAT ST	46285 [redacted]
5 Rolls-150'		CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	
15.0000		CG-50 SEAMING CLAY	750 [redacted]
15 Bags		(10902/024)	
		CLAY-BENTONITE-GROUND (CLASS 50)	
		3295232	

GROSS: .00 TARE: .00 NET: 47035 [redacted]

Can take delivery at 7:00AM
Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."
PREPAID

Shipper liable for line haul charges only.
COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its own route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: x

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.
Per _____

PLACARDS REQUIRED ☐ YES ☐ NO—FURNISHED BY CARRIER

PLACARDS SUPPLIED DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000090266
ORDER DATE: 8/07/98
SHIP DATE:. 8/26/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010321	150.0	15.0	2250.0	3109
030-BENTOMAT ST		SFT	SF 199834030	00010329	150.0	15.0	2250.0	3071
030-BENTOMAT ST		SFT	SF 199834030	00010339	150.0	15.0	2250.0	3159
030-BENTOMAT ST		SFT	SF 199834030	00010343	150.0	15.0	2250.0	3051
030-BENTOMAT ST		SFT	SF 199834030	00010362	150.0	15.0	2250.0	3056
030-BENTOMAT ST		SFT	SF 199834030	00010365	150.0	15.0	2250.0	3062
030-BENTOMAT ST		SFT	SF 199834030	00010368	150.0	15.0	2250.0	3050
030-BENTOMAT ST		SFT	SF 199834030	00010374	150.0	15.0	2250.0	3097
030-BENTOMAT ST		SFT	SF 199834030	00010378	150.0	15.0	2250.0	3040
030-BENTOMAT ST		SFT	SF 199834030	00010379	150.0	15.0	2250.0	3068
030-BENTOMAT ST		SFT	SF 199834030	00010382	150.0	15.0	2250.0	3069
030-BENTOMAT ST		SFT	SF 199834030	00010386	150.0	15.0	2250.0	3110
030-BENTOMAT ST		SFT	SF 199834030	00010391	150.0	15.0	2250.0	3103
030-BENTOMAT ST		SFT	SF 199834030	00010393	150.0	15.0	2250.0	3132
030-BENTOMAT ST		SFT	SF 199834030	00010394	150.0	15.0	2250.0	3108
ORDER TOTALS.....							33750.0	46285.
TOTAL ITEMS.....			15					

15 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE, Landstar

DELIVERING CARRIER:

CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

DEL DATE: 8/27/98

SHIPPER'S NO: 000090267
SHIP DATE: 8/26/98

SHIPPER: CETCO
1350 W SHURE DR,
ARLINGTON HGTS IL 60004

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 600000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
3-1500		BENTOMAT ST	44855
14 Rolls-150'		CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	
15.0000		CG-50 SEAMING CLAY	700
14000 Bags		(10902/024)	
		CLAY-BENTONITE-GROUND (CLASS 50)	
		3295232	

GROSS: .00 TARE: .00 NET: 45,555

Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Kayce

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
[redacted]0 WEST SHURE DRIVE
[redacted]LINGTON HEIGHTS IL 60004

ORDER NO:.. 000090267
ORDER DATE: 8/07/98
SHIP DATE:. 8/26/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF	199834030	00010604	150.0	15.0	2250.0	3242
030-BENTOMAT ST		SFT	SF	199834030	00010605	150.0	15.0	2250.0	3249
030-BENTOMAT ST		SFT	SF	199834030	00010606	150.0	15.0	2250.0	3213
030-BENTOMAT ST		SFT	SF	199834030	00010608	150.0	15.0	2250.0	3191
[redacted]-BENTOMAT ST		SFT	SF	199834030	00010609	150.0	15.0	2250.0	3167
030-BENTOMAT ST		SFT	SF	199834030	00010610	150.0	15.0	2250.0	3214
030-BENTOMAT ST		SFT	SF	199834030	00010612	150.0	15.0	2250.0	3197
030-BENTOMAT ST		SFT	SF	199834030	00010613	150.0	15.0	2250.0	3190
030-BENTOMAT ST		SFT	SF	199834030	00010614	150.0	15.0	2250.0	3206
030-BENTOMAT ST		SFT	SF	199834030	00010616	150.0	15.0	2250.0	3243
030-BENTOMAT ST		SFT	SF	199834030	00010621	150.0	15.0	2250.0	3204
030-BENTOMAT ST		SFT	SF	199834030	00010622	150.0	15.0	2250.0	3192
030-BENTOMAT ST		SFT	SF	199834030	00010626	150.0	15.0	2250.0	3168
030-BENTOMAT ST		SFT	SF	199834030	00010627	150.0	15.0	2250.0	3179
							========	=======
ORDER TOTALS.....							31500.0	44855.
TOTAL ITEMS.....			14					

14 Bags

STRAIGHT BILL OF LADING—ORIGINAL ~~—NOT~~ NEGOTIABLE PAGE 1 OF

CARRIER NAME: NATIONWIDE / TET

CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:

DEL DATE: 8/28/98

SHIPPER'S NO: 000090268

SHIP DATE: [redacted] 8/27/98

SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 6000005F OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
43750.0000 15 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	43,548 [redacted]
15.0000 15 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	750 [redacted] Total wt 44,298

GROSS: .00 TARE: .00 NET: [redacted]

Can deliver after 7:00 AM

Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.
COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except [redacted] (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, [redacted] route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED ☐ YES ☐ NO—FURNISHED BY CARRIER

PLACARDS SUPPLIED

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
[redacted]0 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000090268
ORDER DATE: 8/07/98
SHIP DATE:. 8/27/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

PO: WILSON CO

WILSON NC 27893

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST	SFT SF	199835030	00010852	150.0	15.0	2250.0	2873
030-BENTOMAT ST	SFT SF	199835030	00010853	150.0	15.0	2250.0	2859
030-BENTOMAT ST	SFT SF	199835030	00010855	150.0	15.0	2250.0	2891
030-BENTOMAT ST	SFT SF	199835030	00010856	150.0	15.0	2250.0	2872
[redacted]BENTOMAT ST	SFT SF	199835030	00010857	150.0	15.0	2250.0	2977
030-BENTOMAT ST	SFT SF	199835030	00010860	150.0	15.0	2250.0	2936
030-BENTOMAT ST	SFT SF	199835030	00010861	150.0	15.0	2250.0	2845
030-BENTOMAT ST	SFT SF	199835030	00010862	150.0	15.0	2250.0	2942
030-BENTOMAT ST	SFT SF	199835030	00010863	150.0	15.0	2250.0	2846
030-BENTOMAT ST	SFT SF	199835030	00010867	150.0	15.0	2250.0	2875
030-BENTOMAT ST	SFT SF	199835030	00010868	150.0	15.0	2250.0	2868
030-BENTOMAT ST	SFT SF	199835030	00010871	150.0	15.0	2250.0	2905
030-BENTOMAT ST	SFT SF	199835030	00010872	150.0	15.0	2250.0	2872
030-BENTOMAT ST	SFT SF	199835030	00010936	150.0	15.0	2250.0	2966
030-BENTOMAT ST	SFT SF	199835030	00010941	150.0	15.0	2250.0	3021
ORDER TOTALS.....						33750.0	43548.
[redacted]OTAL ITEMS.....	15						

15 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE Virginia Dude

DELIVERING CARRIER:

CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

DEL DATE 8/28/98

SHIPPER'S NO: 000090269

SHIP DATE: [redacted] 8/27/98

SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 600000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
33750.0000 [redacted] Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44,101 [redacted]
14 15.0000 ~~15~~ Bags 14		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	750 [redacted] 44,851.0

GROSS: .00 TARE: .00 NET: [redacted]

Can deliver after 7:00AM
Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood thro[redacted] this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if o[redacted], otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of s[redacted] to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tarrif if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: X VA. Dude TRK. Alvin Parham 8/27/

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

ORIGINAL

P A C K I N G L I S T

COLLOID ENVIRONMENTAL TECH CO
[redacted]0 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000090269
ORDER DATE: 8/07/98
SHIP DATE:. 8/27/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

PO: WILSON CO

WILSON NC 27893

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199833030	00009825	150.0	15.0	2250.0	3139
030-BENTOMAT ST		SFT	SF 199833030	00009826	150.0	15.0	2250.0	3113
030-BENTOMAT ST		SFT	SF 199834030	00010246	150.0	15.0	2250.0	3158
030-BENTOMAT ST		SFT	SF 199834030	00010249	150.0	15.0	2250.0	3142
[redacted]BENTOMAT ST		SFT	SF 199834030	00010376	150.0	15.0	2250.0	3034
030-BENTOMAT ST		SFT	SF 199834030	00010381	150.0	15.0	2250.0	3072
030-BENTOMAT ST		SFT	SF 199834030	00010383	150.0	15.0	2250.0	3090
030-BENTOMAT ST		SFT	SF 199834030	00010565	150.0	15.0	2250.0	3250
030-BENTOMAT ST		SFT	SF 199834030	00010566	150.0	15.0	2250.0	3225
030-BENTOMAT ST		SFT	SF 199834030	00010567	150.0	15.0	2250.0	3145
030-BENTOMAT ST		SFT	SF 199834030	00010568	150.0	15.0	2250.0	3204
030-BENTOMAT ST		SFT	SF 199834030	00010569	150.0	15.0	2250.0	3192
030-BENTOMAT ST		SFT	SF 199834030	00010570	150.0	15.0	2250.0	3235
030-BENTOMAT ST		SFT	SF 199834030	00010573	150.0	15.0	2250.0	3102

ORDER TOTALS.....	31500.0	44101.
TOTAL ITEMS..... 14		

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#FT2 QCT#FT2
8/24/98 8:45:56

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090262

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010230	1.10	16.80	103.00	26.90
030-BENTOMAT ST	199834030	00010229	1.10	16.80	103.00	26.90
030-BENTOMAT ST	199834030	00010228	1.10	16.80	103.00	26.90
030-BENTOMAT ST	199834030	00010227	1.10	16.80	103.00	26.90
030-BENTOMAT ST	199834030	00010226	1.10	16.80	103.00	26.90
030-BENTOMAT ST	199834030	00010225	1.10	16.80	103.00	26.90
030-BENTOMAT ST	199834030	00010224	1.10	16.80	103.00	26.90
030-BENTOMAT ST	199834030	00010223	1.10	16.80	103.00	26.90*
030-BENTOMAT ST	199834030	00010222	1.10	16.80	103.00	35.40
030-BENTOMAT ST	199834030	00010221	1.10	16.80	103.00	35.40
030-BENTOMAT ST	199834030	00010220	1.10	16.80	103.00	35.40
030-BENTOMAT ST	199834030	00010219	1.10	16.80	103.00	35.40
030-BENTOMAT ST	199834030	00010218	1.10	16.80	103.00	35.40
030-BENTOMAT ST	199834030	00010217	1.10	16.80	103.00	35.40

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
8/24/98 8:46:17

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090263

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010293	1.02	17.60	125.80	22.40
030-BENTOMAT ST	199834030	00010275	1.04	17.60	125.80	31.70
030-BENTOMAT ST	199834030	00010262	.99	17.60	125.80	27.40
030-BENTOMAT ST	199834030	00010200	1.12	16.80	122.80	29.90
030-BENTOMAT ST	199834030	00010163	1.00	15.60	122.80	22.50
030-BENTOMAT ST	199834030	00010150	1.05	15.60	122.80	26.20
030-BENTOMAT ST	199834030	00010149	1.05	15.60	122.80	26.20
030-BENTOMAT ST	199834030	00010146	1.05	15.60	122.80	27.60
030-BENTOMAT ST	199834030	00010145	1.05	15.60	122.80	27.60
030-BENTOMAT ST	199834030	00010144	1.05	15.60	122.80	27.60
030-BENTOMAT ST	199834030	00010140	1.05*	15.60	122.80	27.60*
030-BENTOMAT ST	199834030	00010139	1.00	15.60	122.80	29.60
030-BENTOMAT ST	199833030	00009975	1.02	17.60	166.00	19.70
030-BENTOMAT ST	199833030	00009972	1.02	17.60	166.00	25.90

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 05-Aug-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **03-Aug-98**
in **BN 455188**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.5
MOISTURE	ASTM D 2216	12.0% MAX.	8.8
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	14.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88103**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 06-Aug-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **30-Jul-98**
in **ATSF 313901**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.7
MOISTURE	ASTM D 2216	12.0% MAX.	8.4
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **D.M.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88098**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 05-Aug-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **03-Aug-98**
in **BN 455812**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.4
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	14.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88104**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

DATE: 05-Aug-98

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **03-Aug-98**
in **BN 447366**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	1
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	24
FLUID LOSS	ASTM D 5891	18.0 MAX.	13

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **R.P.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88101**

QCG#FT2 QCT#FT2
8/28/98 15:47:17

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090268

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199835030	00010941	.94	18.00	141.40	34.20
030-BENTOMAT ST	199835030	00010936	.94	18.00	141.40	34.20
030-BENTOMAT ST	199835030	00010872	1.03	11.20	93.20	20.40
030-BENTOMAT ST	199835030	00010871	1.03	11.20	93.20	20.40
030-BENTOMAT ST	199835030	00010868	1.03	11.20	93.20	20.40
030-BENTOMAT ST	199835030	00010867	1.03	11.20	93.20	20.40
030-BENTOMAT ST	199835030	00010863	1.04	11.20	93.20	26.00
030-BENTOMAT ST	199835030	00010862	1.04	11.20	93.20	26.00
030-BENTOMAT ST	199835030	00010861	1.04	11.20	93.20	26.00
030-BENTOMAT ST	199835030	00010860	1.04	11.20	93.20	26.00
030-BENTOMAT ST	199835030	00010857	1.04	11.20	93.20	26.00
030-BENTOMAT ST	199835030	00010856	1.04	11.20	93.20	26.00
030-BENTOMAT ST	199835030	00010855	1.04	11.20	93.20	26.00
030-BENTOMAT ST	199835030	00010853	1.04	11.20	93.20	31.60
030-BENTOMAT ST	199835030	00010852	1.04	11.20	93.20	31.60

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
8/28/98 15:47:35

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090269

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010573	1.08	11.20	89.40	22.30
030-BENTOMAT ST	199834030	00010570	1.08	11.20	89.40	22.30
030-BENTOMAT ST	199834030	00010569	1.08	11.20	89.40	22.30
030-BENTOMAT ST	199834030	00010568	1.08	11.20	89.40	22.30
030-BENTOMAT ST	199834030	00010567	1.08	11.20	89.40	22.30
030-BENTOMAT ST	199834030	00010566	1.08	11.20	89.40	22.30
030-BENTOMAT ST	199834030	00010565	1.08	11.20	89.40	22.30
030-BENTOMAT ST	199834030	00010383	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010381	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010376	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010249	.99	17.60	125.80	31.50
030-BENTOMAT ST	199834030	00010246	1.07	16.80	103.00	33.30
030-BENTOMAT ST	199833030	00009826	1.00	12.00	99.00	19.00
030-BENTOMAT ST	199833030	00009825	1.00	12.00	99.00	19.00

NOTE:
An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
8/28/98 15:48:28

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090264

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010628	1.10	16.00	135.80	19.20
030-BENTOMAT ST	199834030	00010625	1.10*	16.00	135.80	19.20*
030-BENTOMAT ST	199834030	00010623	1.05	16.00	135.80	20.20
030-BENTOMAT ST	199834030	00010620	1.05	16.00	135.80	20.20
030-BENTOMAT ST	199834030	00010619	1.05	16.00	135.80	20.20
030-BENTOMAT ST	199834030	00010618	1.05	16.00	135.80	20.20
030-BENTOMAT ST	199834030	00010617	1.05	16.00	135.80	20.20
030-BENTOMAT ST	199834030	00010615	1.05	16.00	135.80	20.20*
030-BENTOMAT ST	199834030	00010611	1.05	16.00	135.80	21.40
030-BENTOMAT ST	199834030	00010607	1.05*	16.00	135.80	21.40*
030-BENTOMAT ST	199834030	00010603	1.04	16.00	135.80	21.10
030-BENTOMAT ST	199834030	00010602	1.04	16.00	135.80	21.10
030-BENTOMAT ST	199834030	00010601	1.04	16.00	135.80	21.10
030-BENTOMAT ST	199834030	00010430	1.06	18.00	152.20	29.90

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
8/28/98 15:49:15

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090265

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010440	1.02	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010439	1.02	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010438	1.02	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010437	1.02	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010436	1.02	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010435	1.02*	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010434	1.06	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010433	1.06	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010432	1.06	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010431	1.06	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010429	1.06	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010428	1.06	18.00	152.20	29.90
030-BENTOMAT ST	199834030	00010427	1.06*	18.00	152.20	29.90*
030-BENTOMAT ST	199834030	00010426	1.04	18.00	152.20	31.70

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
8/28/98 15:50:00

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090266

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010394	.97	20.00	139.00	32.30
030-BENTOMAT ST	199834030	00010393	.97	20.00	139.00	32.30
030-BENTOMAT ST	199834030	00010391	.97	20.00	139.00	32.30
030-BENTOMAT ST	199834030	00010386	.97	20.00	139.00	32.30
030-BENTOMAT ST	199834030	00010382	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010379	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010378	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010374	.97*	20.00*	139.00*	38.80*
030-BENTOMAT ST	199834030	00010368	.93	18.40	135.60	21.50
030-BENTOMAT ST	199834030	00010365	.93	18.40	135.60	21.50
030-BENTOMAT ST	199834030	00010362	.93	18.40	135.60	21.50*
030-BENTOMAT ST	199834030	00010343	.94	18.00	131.80	25.30
030-BENTOMAT ST	199834030	00010339	.94	18.00	131.80	25.70
030-BENTOMAT ST	199834030	00010329	.94*	18.00*	131.80*	25.70*
030-BENTOMAT ST	199834030	00010321	1.00	17.20	115.20*	27.60*

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
8/28/98 15:50:42

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090267

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010627	1.10	16.00	135.80	19.20
030-BENTOMAT ST	199834030	00010626	1.10	16.00	135.80	19.20
030-BENTOMAT ST	199834030	00010622	1.05	16.00	135.80	20.20
030-BENTOMAT ST	199834030	00010621	1.05	16.00	135.80	20.20
030-BENTOMAT ST	199834030	00010616	1.05	16.00	135.80	20.20
030-BENTOMAT ST	199834030	00010614	1.05	16.00	135.80	21.40
030-BENTOMAT ST	199834030	00010613	1.05	16.00	135.80	21.40
030-BENTOMAT ST	199834030	00010612	1.05	16.00	135.80	21.40
030-BENTOMAT ST	199834030	00010610	1.05	16.00	135.80	21.40
030-BENTOMAT ST	199834030	00010609	1.05	16.00	135.80	21.40
030-BENTOMAT ST	199834030	00010608	1.05	16.00	135.80	21.40
030-BENTOMAT ST	199834030	00010606	1.04	16.00	135.80	21.10
030-BENTOMAT ST	199834030	00010605	1.04	16.00	135.80	21.10
030-BENTOMAT ST	199834030	00010604	1.04	16.00	135.80	21.10

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 10-Aug-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **05-Aug-98**
in **BNSF 420283**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.9
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	24
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.4

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **D.M.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88109**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

DATE: 29-Jul-98

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on
in BN 453962
as requested on your order no. 27-Jul-98
VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0
MOISTURE	ASTM D 2216	12.0% MAX.	0.5
FREE SWELL	ASTM D 5890	24 MIN.	8.4
FLUID LOSS	ASTM D 5891	18.0 MAX.	25
			13.4

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 88093

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

DATE: 10-Aug-98

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 05-Aug-98
in BNSF 420451
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.4
MOISTURE	ASTM D 2216	12.0% MAX.	9.6
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.8

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 88111

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

DATE: 06-Aug-98

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 04-Aug-98
in BN 453312
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.8
MOISTURE	ASTM D 2216	12.0% MAX.	8.8
FREE SWELL	ASTM D 5890	24 MIN.	24
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.4

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 88108

AMERICAN COLLOID COMPANY
PO Box 160 ♦ Belle Fourche, South Dakota 57717
(605) 892-2591 ♦ FAX (605) 892-4887

Certificate of Analysis

Date: 25-Aug-98

TO: Cetco
234 Gordon Street
Fairmount, GA 30139

ATTN: Quality Control Fax # 706/337-7334

Dear Customer:

A shipment of **CG-50** left our Belle Fourche, South Dakota plant on **July-98** in **DME 49022** as requested on your order number **31-2864**. The shipment was from lot number **Bulk**.

A sample from this shipment was tested, and given the following results:

Test	Required Specifications	Actual Results
Moisture	12% Maximum	7.8
Sieve	0% Max. on 10 Mesh	0
Sieve	1.0% Max. Thru 200 Mesh	0.1
Free Swell	24 mls. Minimum	24
Fluid Loss	18.0 Maximum	17.4

We hereby certify that the results shown above represent this shipment. Tests were conducted using American Colloid Company and/or customer approved laboratory procedures.

Tests Conducted By: D. Pierce

Approved By: Darren K. Howard Quality Assurance

In any correspondence regarding this shipment, please refer to our Order number **283577**.

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090262

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010217	030-BENTOMAT ST	150	2250	3206	7248952		199834010	00001931	447366
00010218	030-BENTOMAT ST	150	2250	3194	7248952		199834010	00001931	447366
00010219	030-BENTOMAT ST	150	2250	3215	7248952		199834010	00001931	447366
00010220	030-BENTOMAT ST	150	2250	3227	7248952		199834010	00001931	447366
00010221	030-BENTOMAT ST	150	2250	3210	7248952		199834010	00001929	447366
00010222	030-BENTOMAT ST	150	2250	3204	7248952		199834010	00001929	447366
00010223	030-BENTOMAT ST	150	2250	3195	7248952		199834010	00001929	447366
00010224	030-BENTOMAT ST	150	2250	3123	7248952		199834010	00001929	447366
00010225	030-BENTOMAT ST	150	2250	3174	7248952		199834010	00001929	447366
00010226	030-BENTOMAT ST	150	2250	3167	7248952		199834010	00001929	447366
00010227	030-BENTOMAT ST	150	2250	3144	7248952		199834010	00001929	447366
00010228	030-BENTOMAT ST	150	2250	3167	7248952		199834010	00001929	447366
00010229	030-BENTOMAT ST	150	2250	3179	7248952		199834010	00001929	447366
00010230	030-BENTOMAT ST	150	2250	3145	7248952		199834010	00001929	447366

TOTAL SQUARE FEET..... 31,500

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090263

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199833030									
00009972	030-BENTOMAT ST	150	2250	3095	7306487		5143980A		313901
00009975	030-BENTOMAT ST	150	2250	3025	7306487		5143980A		313901
LOT# 199834030									
00010139	030-BENTOMAT ST	150	2250	3292	7428267		199831010	00001779	455812
00010140	030-BENTOMAT ST	150	2250	3228	7428267		199831010	00001779	455812
00010144	030-BENTOMAT ST	150	2250	3199	7428267		199831010	00001774	455812
00010145	030-BENTOMAT ST	150	2250	3199	7428267		199831010	00001774	455812
00010146	030-BENTOMAT ST	150	2250	3210	7428267		199831010	00001774	455812
00010149	030-BENTOMAT ST	150	2250	3250	7419224		199831010	00001774	455812
00010150	030-BENTOMAT ST	150	2250	3218	7419224		199831010	00001774	455812
00010163	030-BENTOMAT ST	150	2250	3220	7419224		199831010	00001774	455812
00010200	030-BENTOMAT ST	150	2250	3318	7360189		199834010	00001926	455188
00010262	030-BENTOMAT ST	150	2250	3144	7363888		199834010	00001928	447366
00010275	030-BENTOMAT ST	150	2250	3093	7231219		199833010	00001890	447366
00010293	030-BENTOMAT ST	150	2250	3111	7235928		199833010	00001905	49022

TOTAL SQUARE FEET..... 31,500

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090268

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199835030									
00010852	030-BENTOMAT ST	150	2250	2873	7175640		199835010	00001991	420283
00010853	030-BENTOMAT ST	150	2250	2859	7175640		199835010	00001991	420283
00010855	030-BENTOMAT ST	150	2250	2891	7254971		199835010	00001991	420283
00010856	030-BENTOMAT ST	150	2250	2872	7254971		199835010	00001991	420283
00010857	030-BENTOMAT ST	150	2250	2977	7254971		199835010	00001991	420283
00010860	030-BENTOMAT ST	150	2250	2936	7254971		199834010	00001945	420283
00010861	030-BENTOMAT ST	150	2250	2845	7254971		199834010	00001945	420283
00010862	030-BENTOMAT ST	150	2250	2942	7254971		199834010	00001945	420283
00010863	030-BENTOMAT ST	150	2250	2846	7254971		199834010	00001945	420283
00010867	030-BENTOMAT ST	150	2250	2875	7254971		199834010	00001945	420283
00010868	030-BENTOMAT ST	150	2250	2868	7254971		199834010	00001945	420283
00010871	030-BENTOMAT ST	150	2250	2905	7254971		199833010	00001898	453312
00010872	030-BENTOMAT ST	150	2250	2872	7254971		199833010	00001898	453312
00010936	030-BENTOMAT ST	150	2250	2966	7197667		199834010	00001952	453312
00010941	030-BENTOMAT ST	150	2250	3021	7197667		199834010	00001950	453312

TOTAL SQUARE FEET..... 33,750

TOTAL PAGES 1

QCG#TF1 QCT#TF1
8/28/98 15:47:35

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090269

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199833030									
00009825	030-BENTOMAT ST	150	2250	3139	7319813		199831010	00001772	453962
00009826	030-BENTOMAT ST	150	2250	3113	7319813		199831010	00001772	453962
LOT# 199834030									
00010246	030-BENTOMAT ST	150	2250	3158	7365348		199834010	00001933	447366
00010249	030-BENTOMAT ST	150	2250	3142	7365348		199834010	00001933	447366
00010376	030-BENTOMAT ST	150	2250	3034	7359107		199833010	00001912	49022
00010381	030-BENTOMAT ST	150	2250	3072	7365342		199833010	00001912	49022
00010383	030-BENTOMAT ST	150	2250	3090	7365342		199833010	00001912	49022
00010565	030-BENTOMAT ST	150	2250	3250	7423301		5145167A		420451
00010566	030-BENTOMAT ST	150	2250	3225	7423301		5145167A		420451
00010567	030-BENTOMAT ST	150	2250	3145	7423301		5145167A		420451
00010568	030-BENTOMAT ST	150	2250	3204	7423301		5145167A		420451
00010569	030-BENTOMAT ST	150	2250	3192	7423301		5145167A		420451
00010570	030-BENTOMAT ST	150	2250	3235	7423301		5145167A		420451
00010573	030-BENTOMAT ST	150	2250	3102	7423301		5145167A		420451

TOTAL SQUARE FEET..... 31,500

QCG#TF1 QCT#TF1
8/28/98 15:48:27

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090264

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010430	030-BENTOMAT ST	150	2250	3152	7371959		199833010	00001889	49022
00010601	030-BENTOMAT ST	150	2250	3203	7249755		199833010	00001887	420451
00010602	030-BENTOMAT ST	150	2250	3210	7249755		199833010	00001887	420451
00010603	030-BENTOMAT ST	150	2250	3232	7249755		199833010	00001887	420451
00010607	030-BENTOMAT ST	150	2250	3259	7249755		199833010	00001887	420451
00010611	030-BENTOMAT ST	150	2250	3220	7429742		199833010	00001887	420451
00010615	030-BENTOMAT ST	150	2250	3214	7429742		199833010	00001897	420451
00010617	030-BENTOMAT ST	150	2250	3194	7429742		199833010	00001897	420451
00010618	030-BENTOMAT ST	150	2250	3190	7429742		199833010	00001897	420451
00010619	030-BENTOMAT ST	150	2250	3172	7429742		199833010	00001897	420451
00010620	030-BENTOMAT ST	150	2250	3211	7429742		199832010	00001850	420451
00010623	030-BENTOMAT ST	150	2250	3206	7429742		199832010	00001850	420451
00010625	030-BENTOMAT ST	150	2250	3219	7429742		199832010	00001850	420451
00010628	030-BENTOMAT ST	150	2250	3180	7412155		199832010	00001850	420451

TOTAL SQUARE FEET..... 31,500

TOTAL PAGES 1

QCG#TF1 QCT#TF1
8/28/98 15:49:14

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090265

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010426	030-BENTOMAT ST	150	2250	3174	7371959		199833010	00001889	49022
00010427	030-BENTOMAT ST	150	2250	3216	7371959		199833010	00001889	49022
00010428	030-BENTOMAT ST	150	2250	3128	7371959		199833010	00001889	49022
00010429	030-BENTOMAT ST	150	2250	3142	7371959		199833010	00001889	49022
00010431	030-BENTOMAT ST	150	2250	3153	7371959		199833010	00001889	49022
00010432	030-BENTOMAT ST	150	2250	3128	7371959		199833010	00001889	49022
00010433	030-BENTOMAT ST	150	2250	3148	7371959		199833010	00001889	49022
00010434	030-BENTOMAT ST	150	2250	3172	7371959		199833010	00001889	49022
00010435	030-BENTOMAT ST	150	2250	3177	7371959		199833010	00001889	49022
00010436	030-BENTOMAT ST	150	2250	2997	7371959		199833010	00001913	49022
00010437	030-BENTOMAT ST	150	2250	3163	7371959		199833010	00001913	49022
00010438	030-BENTOMAT ST	150	2250	3138	7371959		199833010	00001913	49022
00010439	030-BENTOMAT ST	150	2250	3129	7371959		199833010	00001913	49022
00010440	030-BENTOMAT ST	150	2250	3157	7371959		199833010	00001913	49022

TOTAL SQUARE FEET..... 31.500

TOTAL PAGES 1

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090266

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010321	030-BENTOMAT ST	150	2250	3109	7231465		199833010	00001900	49022
00010329	030-BENTOMAT ST	150	2250	3071	7231465		199833010	00001914	49022
00010339	030-BENTOMAT ST	150	2250	3159	7254973		199832010	00001848	49022
00010343	030-BENTOMAT ST	150	2250	3051	7254973		199832010	00001848	49022
00010362	030-BENTOMAT ST	150	2250	3056	7359107		199833010	00001901	49022
00010365	030-BENTOMAT ST	150	2250	3062	7359107		199833010	00001891	49022
00010368	030-BENTOMAT ST	150	2250	3050	7359107		199833010	00001891	49022
00010374	030-BENTOMAT ST	150	2250	3097	7359107		199833010	00001912	49022
00010378	030-BENTOMAT ST	150	2250	3040	7359107		199833010	00001912	49022
00010379	030-BENTOMAT ST	150	2250	3068	7359107		199833010	00001912	49022
00010382	030-BENTOMAT ST	150	2250	3069	7365342		199833010	00001912	49022
00010386	030-BENTOMAT ST	150	2250	3110	7365342		199832010	00001849	49022
00010391	030-BENTOMAT ST	150	2250	3103	7360514		199832010	00001849	49022
00010393	030-BENTOMAT ST	150	2250	3132	7360514		199832010	00001849	49022
00010394	030-BENTOMAT ST	150	2250	3108	7360514		199834010	00001916	49022

TOTAL SQUARE FEET..... 33.750

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090267

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010604	030-BENTOMAT ST	150	2250	3242	7249755		199833010	00001887	420451
00010605	030-BENTOMAT ST	150	2250	3249	7249755		199833010	00001887	420451
00010606	030-BENTOMAT ST	150	2250	3213	7249755		199833010	00001887	420451
00010608	030-BENTOMAT ST	150	2250	3191	7429742		199833010	00001887	420451
00010609	030-BENTOMAT ST	150	2250	3167	7429742		199833010	00001887	420451
00010610	030-BENTOMAT ST	150	2250	3214	7429742		199833010	00001887	420451
00010612	030-BENTOMAT ST	150	2250	3197	7429742		199833010	00001897	420451
00010613	030-BENTOMAT ST	150	2250	3190	7429742		199833010	00001897	420451
00010614	030-BENTOMAT ST	150	2250	3206	7429742		199833010	00001897	420451
00010616	030-BENTOMAT ST	150	2250	3243	7429742		199833010	00001897	420451
00010621	030-BENTOMAT ST	150	2250	3204	7429742		199832010	00001850	420451
00010622	030-BENTOMAT ST	150	2250	3192	7429742		199832010	00001850	420451
00010626	030-BENTOMAT ST	150	2250	3168	7429742		199832010	00001850	420451
00010627	030-BENTOMAT ST	150	2250	3179	7412155		199832010	00001850	420451

TOTAL SQUARE FEET..... 31,500

CETCO 1350 W. Shure Dr. Arlington Hgts., IL **Computation Sheet: GRI Accredited ASTM Method D-5887, Index Flux**

Sample: Bentomat ST
Lot# 199833030 **Roll#** 9242
Project # : Bentomat QA

Permeability equation : ((0.879*Thickness)/(2*Pi*r^2*Time))*ln(Change in Head)

Flux equation : ((Inflow+Outflow)/200)/Pi*r^2/Time

Initial Thickness : 0.84 cm. **Hydration :** 48hrs **Permeant :** De-aired DI Water

Test Position : 315 **Initial Head :** 2psi 140.6 cm. **Analyst :** NP **Date:** 8/28/98

Cell Size : 4 in. **Max. Effective Stress :** 5psi 34.5kPa **Requested by :** **Date Started:** 8/13/98

Final Thickness: 0.83 cm.

*** indicates value meets Flux Ratio ASTM termination criteria**

Conversions : 1 psi = 2.307 feet of head 1 foot of head = 30.48 cm 1 psi = 70.32 cm Flux (English) = Flux * 9.2366E+10

Date	Time (min)	Reading In	X	Reading Out	Y	X-Y	Head (cm)	H (cm)	Initial K (cm/sec)	Initial Flux ($m^3/m^2/sec$)		Avg Flux ($m^3/m^2/sec$)	Final K (cm/sec)	Final Flux (Gal/Acre /Day)	Inflow to Outflow Ratio	
8/17/98	0	0.0	24.0	24.0	0.0	24.0	140.63	164.63								
	105	0.3	23.7	23.9	0.1	23.6	140.63	164.23	1.76E-09	3.92E-09			1.74E-9		3.00	2.94E-09
	233	0.8	23.2	23.7	0.3	22.9	140.63	163.53	2.53E-09	5.62E-09			2.50E-9		2.50	4.22E-09
	309	1.0	23.0	23.5	0.5	22.5	140.63	163.13	2.45E-09	5.41E-09			2.42E-9		1.00	4.06E-09
	488	1.5	22.5	23.0	1.0	21.5	140.63	162.13	2.61E-09	5.74E-09	*		2.58E-9		1.00	4.31E-09
8/18/98	1418	3.5	20.5	21.3	2.7	17.8	140.63	158.43	1.88E-09	4.09E-09	*		1.86E-9		1.18	3.07E-09
	1589	3.8	20.2	21.0	3.0	17.2	140.63	157.83	1.68E-09	3.61E-09			1.66E-9		1.00	2.70E-09
	1737	4.1	19.9	20.7	3.3	16.6	140.63	157.27	1.82E-09	3.89E-09	*		1.80E-9		1.15	2.92E-09
	1837	4.3	19.7	20.5	3.5	16.2	140.63	156.83	2.13E-09	4.52E-09	*		2.10E-9		0.83	3.39E-09
	1935	4.5	19.5	20.3	3.7	15.8	140.63	156.43	1.98E-09	4.20E-09	*		1.95E-9		1.00	3.15E-09
8/19/98	2881	6.3	17.7	18.5	5.5	12.2	140.63	152.83	1.87E-09	3.91E-09	*	**4.21E-09**	1.85E-9	389	1.00	2.93E-09
											#					0.00E+00

Final Flux' 4.2E-9 $m^3/m^2/sec$

Final Hydraulic Conductivity 2.0E-9 cm/s

CETCO 1350 W. Shure Dr. Arlington Hgts., IL **Computation Sheet: GRI Accredited ASTM Method D-5887, Index Flux**

Sample: Bentomat ST
Lot# 199834030 **Roll#** 10005
Project #: Bentomat QA

Permeability equation : ((0.879*Thickness)/(2*Pi*r^2*Time))*ln(Change in Head)

Flux equation : ((Inflow+Outflow)/200)/Pi*r^2/Time

Initial Thickness : 0.77 cm. **Hydration :** 48hrs **Permeant :** De-aired DI Water

Test Position : 306 **Initial Head :** 2psi 140.6 cm. **Analyst :** NP **Date:** 8/28/98

Cell Size : 4 in. **Max. Effective Stress :** 5psi 34.5kPa **Requested by :** **Date Started:** 8/18/98

Final Thickness 0.73 cm. *** indicates value meets Flux Ratio ASTM termination criteria**

Conversions : 1 psi = 2.307 feet of head 1 foot of head = 30.48 cm 1 psi = 70.32 cm Flux (English) = Flux * 9.2366E+10

Date	Time (min)	Reading In	X	Reading Out	Y	X-Y	Head (cm)	H (cm)	Initial K (cm/sec)	Initial Flux ($m^3/m^2/sec$)		Avg Flux ($m^3/m^2/sec$)	Final K (cm/sec)	Final Flux (Gal/Acre /Day)	Inflow to Outflow Ratio	
8/20/98	0	0.0	24.0	24.0	0.0	24.0	140.63	164.63								
	61	3.0	21.0	21.5	2.5	18.5	140.63	159.13	3.88E-08	9.27E-08			3.67E-8		1.20	6.95E-08
8/21/98	957	9.3	14.7	17.0	7.0	7.7	140.63	148.33	5.46E-09	1.24E-08			5.17E-9		1.40	9.29E-09
	1044	9.6	14.4	16.7	7.3	7.1	140.63	147.73	3.24E-09	7.09E-09			3.07E-9		1.00	5.32E-09
	1199	10.0	14.0	16.3	7.7	6.3	140.63	146.93	2.44E-09	5.31E-09			2.31E-9		1.00	3.98E-09
	1320	10.4	13.6	15.9	8.1	5.5	140.63	146.13	3.14E-09	6.80E-09			2.98E-9		1.00	5.10E-09
	1462	10.7	13.3	15.6	8.4	4.9	140.63	145.53	2.02E-09	4.34E-09			1.91E-9		1.00	3.26E-09
8/22/98	2390	13.0	11.0	13.7	10.3	0.7	140.63	141.33	2.20E-09	4.65E-09	*		2.08E-9		1.21	3.49E-09
	2438	13.1	10.9	13.6	10.4	0.5	140.63	141.13	2.05E-09	4.28E-09	*		1.95E-9		1.00	3.21E-09
	2568	13.4	10.6	13.3	10.7	-0.1	140.63	140.53	2.28E-09	4.74E-09	*		2.16E-9		1.00	3.56E-09
8/24/98	5285	19.0	5.0	8.3	15.7	-10.7	140.63	129.93	2.01E-09	4.01E-09	*	**4.35E-09**	1.90E-9	401	1.12	3.01E-09
																0.00E+00

Final Flux ' 4.3E-9 $m^3/m^2/sec$

Final Hydraulic Conductivity 2.0E-9 cm/s

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

31-Aug-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipments to Wilson County LF Cap, Wilson, NC. These shipments left our CETCO - Fairmount, GA, plant on 8/28/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Michele Waters

Michele Waters
Quality Assurance Coordinator

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County Landfill Cap

PREPARED FOR:

Mr. Steve Clayton
Wilson County Solid Waste Depai
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY: Cynthia Willix
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LANDFILL CAP
WILSON, NC
CUSTOMER PO# WILSON CO.
ORDER# 90270-90272,91680

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	**WILSON COUNTY LANDFILL**
DATE:	**AUGUST 28, 1998**
ORDER NUMBER:	**90270-90272,91680**
PRODUCT:	**BENTOMAT ST**

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 1 **day of** Sept., 19 98.

Cynthia Willix

Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

Printed on recycled paper.

CETCO

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County Landfill cap

ORDER # : 90270-90272,91680

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Michele Waters
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 1 day of Sept. 1998

Cynthia Willix
Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

Printed on recycled paper.

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE PAGE 1 OF

CARRIER NAME: NATIONWIDE ~~[illegible]~~ SITE
CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01
CONSIGNED P.O.#: WILSON CO
CAR/VEHICLE#:

ROUTING/CONTRACT:

DELIVERING CARRIER:
DEL DATE: 8/31/98
SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPER'S NO: 000090270
SHIP DATE: ~~8/28/98~~ 8/28/98

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 600000SF OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~31500~~ 14 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	43071
15.0000 14 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	700

GROSS: .00 TARE: .00 NET: 43771

Contact: Charlie 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."
PREPAID

Shipper liable for line haul charges only.
COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: James Mans

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.
Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
[redacted]NGTON HEIGHTS IL 60004

ORDER NO:.. 000090270
ORDER DATE: 8/07/98
SHIP DATE:. 8/28/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010216	150.0	15.0	2250.0	3214
030-BENTOMAT ST		SFT	SF 199834030	00010296	150.0	15.0	2250.0	3110
030-BENTOMAT ST		SFT	SF 199834030	00010318	150.0	15.0	2250.0	3104
030-BENTOMAT ST		SFT	SF 199834030	00010327	150.0	15.0	2250.0	3065
030-BENTOMAT ST		SFT	SF 199834030	00010331	150.0	15.0	2250.0	3046
03[redacted]ENTOMAT ST		SFT	SF 199834030	00010334	150.0	15.0	2250.0	3079
030-BENTOMAT ST		SFT	SF 199834030	00010335	150.0	15.0	2250.0	3089
030-BENTOMAT ST		SFT	SF 199834030	00010338	150.0	15.0	2250.0	3069
030-BENTOMAT ST		SFT	SF 199834030	00010342	150.0	15.0	2250.0	3054
030-BENTOMAT ST		SFT	SF 199834030	00010344	150.0	15.0	2250.0	3052
030-BENTOMAT ST		SFT	SF 199834030	00010345	150.0	15.0	2250.0	3041
030-BENTOMAT ST		SFT	SF 199834030	00010346	150.0	15.0	2250.0	3065
030-BENTOMAT ST		SFT	SF 199834030	00010348	150.0	15.0	2250.0	3056
030-BENTOMAT ST		SFT	SF 199834030	00010352	150.0	15.0	2250.0	3027

ORDER TOTALS.....	31500.0	43071.
TOTAL ITEMS..... 14		

14 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF 1

CARRIER NAME: NATIONWIDE Virginia Dude DELIVERING CARRIER:

CONSIGNED TO: WILSON COUNTY LANDFILL

4537 LANDFILL RD

SHIPPER'S NO: 000090271

DEL DATE 8/31/98 SHIP DATE: [redacted] 8/28/98

SHIPPER: CETCO

1350 W SHURE DR.

ARLINGTON HGTS IL 60004

WILSON NC 27893

PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA

P.O. BOX 88

FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 6000005F OF ST W/267 BAGS OF CLAY

31,500 QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
[redacted] Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44,913 [redacted]
14 [redacted] Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	700 [redacted]
14			Total wt. 45,613.0

GROSS: .00 TARE: .00 NET: [redacted]

Contact: Charlie or Milton 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Doug Womack

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

P A C K I N G L I S T

COLLOID ENVIRONMENTAL TECH CO
[redacted]50 WEST SHURE DRIVE
[redacted]LINGTON HEIGHTS IL 60004

ORDER NO:.. 000090271
ORDER DATE: 8/07/98
SHIP DATE:. 8/28/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199834030	00010312	150.0	15.0	2250.0	3099
030-BENTOMAT ST		SFT	SF 199834030	00010320	150.0	15.0	2250.0	3063
030-BENTOMAT ST		SFT	SF 199834030	00010325	150.0	15.0	2250.0	3123
030-BENTOMAT ST		SFT	SF 199834030	00010377	150.0	15.0	2250.0	3037
[redacted]BENTOMAT ST		SFT	SF 199834030	00010444	150.0	15.0	2250.0	3175
030-BENTOMAT ST		SFT	SF 199834030	00010549	150.0	15.0	2250.0	3285
030-BENTOMAT ST		SFT	SF 199834030	00010553	150.0	15.0	2250.0	3276
030-BENTOMAT ST		SFT	SF 199834030	00010556	150.0	15.0	2250.0	3280
030-BENTOMAT ST		SFT	SF 199834030	00010557	150.0	15.0	2250.0	3274
030-BENTOMAT ST		SFT	SF 199834030	00010559	150.0	15.0	2250.0	3286
030-BENTOMAT ST		SFT	SF 199834030	00010560	150.0	15.0	2250.0	3271
030-BENTOMAT ST		SFT	SF 199834030	00010561	150.0	15.0	2250.0	3250
030-BENTOMAT ST		SFT	SF 199834030	00010563	150.0	15.0	2250.0	3279
030-BENTOMAT ST		SFT	SF 199834030	00010564	150.0	15.0	2250.0	3215

ORDER TOTALS.....	31500.0	44913.
TOTAL ITEMS..... 14		

[redacted] Plus 14 Bags

STRAIGHT BILL OF LADING—ORIGINAL—~~NOT~~ NEGOTIABLE

PAGE 1 OF 1

CARRIER NAME: NATIONWIDE /STE

DELIVERING CARRIER:

CONSIGNED TO: WILSON COUNTY LANDFILL

4537 LANDFILL RD

DEL DATE: 8/31/98

SHIPPER'S NO: 000090272

SHIP DATE: [redacted] 8/28/98

SHIPPER: CETCO

1350 W SHURE DR.

ARLINGTON HGTS IL 60004

WILSON NC 27893

PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON CO

CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA

P.O. BOX 88

FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS TOTAL ORDER IS FOR 6000005F OF ST W/267 BAGS OF CLAY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
33750.0000 [redacted] Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44383 [redacted]
15.0000 15 Bags		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	750 [redacted]

GROSS: .00 TARE: .00 NET: 45,133 [redacted]

Contact: Charlie or Milton 813-423-1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
[redacted]0 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000090272
ORDER DATE: 8/07/98
SHIP DATE:. 8/28/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON CO

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199835030	00010954	150.0	15.0	2250.0	3068
030-BENTOMAT ST		SFT	SF 199835030	00010955	150.0	15.0	2250.0	3059
030-BENTOMAT ST		SFT	SF 199835030	00010956	150.0	15.0	2250.0	3084
030-BENTOMAT ST		SFT	SF 199835030	00010957	150.0	15.0	2250.0	3025
[redacted]BENTOMAT ST		SFT	SF 199835030	00010958	150.0	15.0	2250.0	2957
030-BENTOMAT ST		SFT	SF 199835030	00010959	150.0	15.0	2250.0	2942
030-BENTOMAT ST		SFT	SF 199835030	00010960	150.0	15.0	2250.0	2930
030-BENTOMAT ST		SFT	SF 199835030	00010961	150.0	15.0	2250.0	2941
030-BENTOMAT ST		SFT	SF 199835030	00010962	150.0	15.0	2250.0	2964
030-BENTOMAT ST		SFT	SF 199835030	00010964	150.0	15.0	2250.0	2948
030-BENTOMAT ST		SFT	SF 199835030	00010965	150.0	15.0	2250.0	3028
030-BENTOMAT ST		SFT	SF 199835030	00010966	150.0	15.0	2250.0	2996
030-BENTOMAT ST		SFT	SF 199835030	00010967	150.0	15.0	2250.0	2871
030-BENTOMAT ST		SFT	SF 199835030	00010968	150.0	15.0	2250.0	2809
030-BENTOMAT ST		SFT	SF 199835030	00011022	150.0	15.0	2250.0	2761
							========	=======
ORDER TOTALS.....							33750.0	44383.

[redacted]TOTAL ITEMS..... 15

15 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF 1

CARRIER NAME: Bulldog

CONSIGNED TO: NATIONWIDE
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

SOLD TO: 2893

CONSIGNED P.O.#: SHIPTO: 01

CAR/VEHICLE#: WILSON COUNTY

ROUTING/CONTRACT:

DELIVERING CARRIER: 8/31/98

SHIPPER'S NO: 000091680

SHIP DATE: 8/28/98

SHIPPER: DEL DATE: [redacted]
CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SHIPPING PLANT:
FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

INE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

RDER COMMENTS ADDITIONAL 3 T/L'S NEEDED FOR THIS ORDER
RDER COMMENTS MATERIAL WEIGHING HEAVY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
31500		BENTOMAT ST	43074 [redacted]
4 Rolls-150'		CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	700

GROSS: .00 TARE: .00 NET: 43074

4 Bags 030-CG50 Seaming Clay
Can deliver at 7:00 Am
Contact: Charlie or Milton 813-423-1735

ubject to Section 7 of conditions, if this shipment is be delivered to the consignee without recourse on e consignor, the consignor shall sign the following atement:
The carrier shall not make delivery of this shipment thout payment of freight and all other lawful charges.

OLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

ARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

CEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood oughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, n its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion said ro[redacted]destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms d con[redacted] the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, (2) in [redacted]licable motor carrier classification or tarrif if this is a motor carrier shipment.
pper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation his shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: David Jaynes

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

ORIGINAL

P A C K I N G L I S T

COLLOID ENVIRONMENTAL TECH CO
[redacted]0 WEST SHURE DRIVE
[redacted]LINGTON HEIGHTS IL 60004

ORDER NO:.. 000091680
ORDER DATE: 8/27/98
SHIP DATE:. 8/28/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON COUNTY

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF	199834030	00010299	150.0	15.0	2250.0	3134
030-BENTOMAT ST		SFT	SF	199834030	00010300	150.0	15.0	2250.0	3135
030-BENTOMAT ST		SFT	SF	199834030	00010305	150.0	15.0	2250.0	3131
030-BENTOMAT ST		SFT	SF	199834030	00010306	150.0	15.0	2250.0	3146
[redacted]BENTOMAT ST		SFT	SF	199834030	00010307	150.0	15.0	2250.0	3099
030-BENTOMAT ST		SFT	SF	199834030	00010317	150.0	15.0	2250.0	3054
030-BENTOMAT ST		SFT	SF	199834030	00010319	150.0	15.0	2250.0	3060
030-BENTOMAT ST		SFT	SF	199834030	00010323	150.0	15.0	2250.0	2969
030-BENTOMAT ST		SFT	SF	199834030	00010366	150.0	15.0	2250.0	3056
030-BENTOMAT ST		SFT	SF	199834030	00010367	150.0	15.0	2250.0	3043
030-BENTOMAT ST		SFT	SF	199834030	00010369	150.0	15.0	2250.0	3047
030-BENTOMAT ST		SFT	SF	199834030	00010375	150.0	15.0	2250.0	3030
030-BENTOMAT ST		SFT	SF	199834030	00010379	150.0	15.0	2250.0	3068
030-BENTOMAT ST		SFT	SF	199834030	00010389	150.0	15.0	2250.0	3102
							========	=======
ORDER TOTALS.....							31500.0	43074.

TOTAL ITEMS..... 14

[redacted]

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090270

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010352	.93	18.40	135.60	24.90
030-BENTOMAT ST	199834030	00010348	.94	18.00	131.80	25.30
030-BENTOMAT ST	199834030	00010346	.94	18.00	131.80	25.30
030-BENTOMAT ST	199834030	00010345	.94	18.00	131.80	25.30
030-BENTOMAT ST	199834030	00010344	.94	18.00	131.80	25.30
030-BENTOMAT ST	199834030	00010342	.94	18.00	131.80	25.30
030-BENTOMAT ST	199834030	00010338	.94	18.00	131.80	25.70
030-BENTOMAT ST	199834030	00010335	.94	18.00	131.80	25.70
030-BENTOMAT ST	199834030	00010334	.94	18.00	131.80	25.70
030-BENTOMAT ST	199834030	00010331	.94	18.00	131.80	25.70
030-BENTOMAT ST	199834030	00010327	1.00	17.20	115.20	27.60
030-BENTOMAT ST	199834030	00010318	1.00	17.20	112.80	29.10
030-BENTOMAT ST	199834030	00010296	1.04	20.00	150.00	30.00
030-BENTOMAT ST	199834030	00010216	1.10	16.80	103.00	35.40

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090271

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010564	1.08	11.20	89.40	22.30
030-BENTOMAT ST	199834030	00010563	1.08*	11.20	89.40	22.30*
030-BENTOMAT ST	199834030	00010561	1.05	11.20	89.40	27.20
030-BENTOMAT ST	199834030	00010560	1.05	11.20	89.40	27.20
030-BENTOMAT ST	199834030	00010559	1.05	11.20	89.40	27.20
030-BENTOMAT ST	199834030	00010557	1.05	11.20	89.40	27.20
030-BENTOMAT ST	199834030	00010556	1.05	11.20	89.40	27.20
030-BENTOMAT ST	199834030	00010553	1.05	11.20	89.40	27.20
030-BENTOMAT ST	199834030	00010549	1.05	16.80	139.00	28.70
030-BENTOMAT ST	199834030	00010444	1.02	18.00	152.20	25.30
030-BENTOMAT ST	199834030	00010377	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010320	1.00	17.20	112.80	29.10
030-BENTOMAT ST	199834030	00010312	1.04	20.00	150.00	30.00

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000090272

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199835030	00011022	1.06	17.60	142.40	20.10
030-BENTOMAT ST	199835030	00010968	1.00	17.60	142.40	23.81
030-BENTOMAT ST	199835030	00010967	1.00	17.60	142.40	23.81
030-BENTOMAT ST	199835030	00010966	1.00	17.60	142.40	23.81
030-BENTOMAT ST	199835030	00010965	1.00	17.60	142.40	23.81
030-BENTOMAT ST	199835030	00010964	1.00*	17.60	142.40	23.81*
030-BENTOMAT ST	199835030	00010962	1.05	17.60	142.40	23.80
030-BENTOMAT ST	199835030	00010961	1.05	17.60	142.40	23.80
030-BENTOMAT ST	199835030	00010960	1.05	17.60	142.40	23.80
030-BENTOMAT ST	199835030	00010959	1.05	17.60	142.40	23.80
030-BENTOMAT ST	199835030	00010958	1.05	17.60	142.40	23.80
030-BENTOMAT ST	199835030	00010957	1.05	17.60	142.40	23.80
030-BENTOMAT ST	199835030	00010956	1.05*	17.60	142.40	23.80*
030-BENTOMAT ST	199835030	00010955	1.11	17.60	142.40	23.70
030-BENTOMAT ST	199835030	00010954	1.11	17.60	142.40	23.70

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000091680

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199834030	00010389	.97	20.00	139.00	32.30
030-BENTOMAT ST	199834030	00010379	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010375	.97	20.00	139.00	38.80
030-BENTOMAT ST	199834030	00010369	.93	18.40	135.60	21.50
030-BENTOMAT ST	199834030	00010367	.93	18.40	135.60	21.50
030-BENTOMAT ST	199834030	00010366	.93	18.40	135.60	21.50
030-BENTOMAT ST	199834030	00010323	1.00	17.20	115.20	27.60
030-BENTOMAT ST	199834030	00010319	1.00	17.20	112.80	29.10
030-BENTOMAT ST	199834030	00010317	1.00	17.20	112.80	29.10
030-BENTOMAT ST	199834030	00010307	1.04	20.00	150.00	30.00
030-BENTOMAT ST	199834030	00010306	1.04	20.00	150.00	30.00
030-BENTOMAT ST	199834030	00010305	1.04	20.00	150.00	30.00
030-BENTOMAT ST	199834030	00010300	1.04	20.00	150.00	30.00
030-BENTOMAT ST	199834030	00010299	1.04	20.00	150.00	30.00

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

DATE: 06-Aug-98

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **04-Aug-98**
in **BN 453312**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.8
MOISTURE	ASTM D 2216	12.0% MAX.	8.8
FREE SWELL	ASTM D 5890	24 MIN.	24
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.4

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88108**

AMERICAN COLLOID COMPANY

CERTIFICATE OF ANALYSIS

DATE: 7/28/98

TO: CETCO COMPANY
234 GORDON STREET
FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

A shipment of DC3 Western Powder left our Upton, Wyoming plant in BN #454800 on 7/28/98 as requested on your order number

A sample from this shipment was tested, and gave the following results:

TEST	SPECIFICATION	RESULTS
Moisture		7.1
Free Swell		28.0
Fluid Loss		16.0
Viscosity		5.5

We hereby certify that the test results shown above represent this shipment. Test were conducted using American Colloid Company and/or customer approved laboratory procedures.

TEST CONDUCTED BY: WG

APPROVED BY: John Henwood,Q.A. Coordinator
AMERICAN COLLOID COMPANY

In any correspondence regarding this shipment, please refer to our order no. 282763

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 10-Aug-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **05-Aug-98**
in **BNSF 420451**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.4
MOISTURE	ASTM D 2216	12.0% MAX.	9.6
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.8

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88111**

AMERICAN COLLOID COMPANY
PO Box 160 ♦ Belle Fourche, South Dakota 57717
(605) 892-2591 ♦ FAX (605) 892-4887

Certificate of Analysis

Date: 25-Aug-98

TO: Cetco
234 Gordon Street
Fairmount, GA 30139

ATTN: Quality Control Fax # 706/337-7334

Dear Customer:

A shipment of **CG-50** left our Belle Fourche, South Dakota plant on **July-98** in **DME 49022** as requested on your order number **31-2864**. The shipment was from lot number **Bulk**.

A sample from this shipment was tested, and given the following results:

Test	Required Specifications	Actual Results
Moisture	12% Maximum	7.8
Sieve	0% Max. on 10 Mesh	0
Sieve	1.0% Max. Thru 200 Mesh	0.1
Free Swell	24 mls. Minimum	24
Fluid Loss	18.0 Maximum	17.4

We hereby certify that the results shown above represent this shipment. Tests were conducted using American Colloid Company and/or customer approved laboratory procedures.

Tests Conducted By: D. Pierce

Approved By: Darren K. Howard, Quality Assurance

In any correspondence regarding this shipment, please refer to our Order number **283577**.

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

DATE: 06-Aug-98

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **04-Aug-98**
In **ATSF 314370**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.6
MOISTURE	ASTM D 2216	12.0% MAX.	8.8
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	14.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **D.M.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88107**

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#TF1 QCT#TF1
8/31/98 7:54:25

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000091680

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010299	030-BENTOMAT ST	150	2250	3134	7229727		199832010	00001855	49022
00010300	030-BENTOMAT ST	150	2250	3135	7229727		199832010	00001855	49022
00010305	030-BENTOMAT ST	150	2250	3131	7229727		199832010	00001855	49022
00010306	030-BENTOMAT ST	150	2250	3146	7229727		199833010	00001905	49022
00010307	030-BENTOMAT ST	150	2250	3099	7229727		199833010	00001905	49022
00010317	030-BENTOMAT ST	150	2250	3054	7231465		199833010	00001900	49022
00010319	030-BENTOMAT ST	150	2250	3060	7231465		199833010	00001900	49022
00010323	030-BENTOMAT ST	150	2250	2969	7231465		199833010	00001900	49022
00010366	030-BENTOMAT ST	150	2250	3056	7359107		199833010	00001891	49022
00010367	030-BENTOMAT ST	150	2250	3043	7359107		199833010	00001891	49022
00010369	030-BENTOMAT ST	150	2250	3047	7359107		199833010	00001891	49022
00010375	030-BENTOMAT ST	150	2250	3030	7359107		199833010	00001912	49022
00010379	030-BENTOMAT ST	150	2250	3068	7359107		199833010	00001912	49022
00010389	030-BENTOMAT ST	150	2250	3102	7365342		199832010	00001849	49022

TOTAL SQUARE FEET..... 31,500

QCG#TF1 QCT#TF1
8/31/98 7:55:19

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090272

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199835030									
00010954	030-BENTOMAT ST	150	2250	3068	7259780		199834010	00001948	453312
00010955	030-BENTOMAT ST	150	2250	3059	7259780		199834010	00001948	453312
00010956	030-BENTOMAT ST	150	2250	3084	7259780		199834010	00001948	453312
00010957	030-BENTOMAT ST	150	2250	3025	7259780		199834010	00001987	453312
00010958	030-BENTOMAT ST	150	2250	2957	7259780		199834010	00001987	453312
00010959	030-BENTOMAT ST	150	2250	2942	7259780		199834010	00001987	453312
00010960	030-BENTOMAT ST	150	2250	2930	7259780		199834010	00001987	453312
00010961	030-BENTOMAT ST	150	2250	2941	7259780		199834010	00001987	453312
00010962	030-BENTOMAT ST	150	2250	2964	7259780		199834010	00001987	453312
00010964	030-BENTOMAT ST	150	2250	2948	7259780		199834010	00001987	453312
00010965	030-BENTOMAT ST	150	2250	3028	7259780		199834010	00001987	453312
00010966	030-BENTOMAT ST	150	2250	2996	7259780		199834010	00001987	453312
00010967	030-BENTOMAT ST	150	2250	2871	7233425		199834010	00001987	453312
00010968	030-BENTOMAT ST	150	2250	2809	7233425		199834010	00001987	453312
00011022	030-BENTOMAT ST	150	2250	2761	7232033		199834010	00001980	314370

TOTAL SQUARE FEET..... 33,750

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090271

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010312	030-BENTOMAT ST	150	2250	3099	7229727		199833010	00001905	49022
00010320	030-BENTOMAT ST	150	2250	3063	7231465		199833010	00001900	49022
00010377	030-BENTOMAT ST	150	2250	3037	7359107		199833010	00001912	49022
00010444	030-BENTOMAT ST	150	2250	3175	7371959		199833010	00001913	49022
00010549	030-BENTOMAT ST	150	2250	3285	7426329		5145103A		454800
00010553	030-BENTOMAT ST	150	2250	3276	7426329		5145103A		454800
00010556	030-BENTOMAT ST	150	2250	3280	7423301		5145103A		420451
00010557	030-BENTOMAT ST	150	2250	3274	7423301		5145103A		420451
00010559	030-BENTOMAT ST	150	2250	3286	7423301		5145154A		420451
00010560	030-BENTOMAT ST	150	2250	3271	7423301		5145154A		420451
00010561	030-BENTOMAT ST	150	2250	3250	7423301		5145154A		420451
00010563	030-BENTOMAT ST	150	2250	3279	7423301		5145154A		420451
00010564	030-BENTOMAT ST	150	2250	3215	7423301		5145154A		420451

TOTAL SQUARE FEET..... 29,250

TOTAL PAGES 1

QCG#TF1 QCT#TF1
8/31/98 7:51:35

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000090270

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199834030									
00010216	030-BENTOMAT ST	150	2250	3214	7248952		199834010	00001931	447366
00010296	030-BENTOMAT ST	150	2250	3110	7229727		5144065A		49022
00010318	030-BENTOMAT ST	150	2250	3104	7231465		199833010	00001900	49022
00010327	030-BENTOMAT ST	150	2250	3065	7231465		199833010	00001914	49022
00010331	030-BENTOMAT ST	150	2250	3046	7231465		199833010	00001914	49022
00010334	030-BENTOMAT ST	150	2250	3079	7231465		199833010	00001914	49022
00010335	030-BENTOMAT ST	150	2250	3089	7231465		199833010	00001914	49022
00010338	030-BENTOMAT ST	150	2250	3069	7231465		199832010	00001848	49022
00010342	030-BENTOMAT ST	150	2250	3054	7254973		199832010	00001848	49022
00010344	030-BENTOMAT ST	150	2250	3052	7254973		199832010	00001848	49022
00010345	030-BENTOMAT ST	150	2250	3041	7254973		199832010	00001848	49022
00010346	030-BENTOMAT ST	150	2250	3065	7254973		199832010	00001848	49022
00010348	030-BENTOMAT ST	150	2250	3056	7254973		199832010	00001915	49022
00010352	030-BENTOMAT ST	150	2250	3027	7254973		199832010	00001915	49022

TOTAL SQUARE FEET..... 31,500

TOTAL PAGES 1

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

1-Sep-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipment to Wilson County LF Cap, Wilson, NC. This shipment left our CETCO - Fairmount, GA, plant on 8/31/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Michele Waters

Michele Waters
Quality Assurance Coordinator

Printed on recycled paper.

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County Landfill Cap

PREPARED FOR:

Mr. Steve Clayton
Wilson County Solid Waste Depai
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY: Michele Waters
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

Printed on recycled paper.

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LANDFILL CAP
WILSON, NC
CUSTOMER PO# WILSON CO.
ORDER# 91681

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

Printed on recycled paper.

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	**WILSON COUNTY LANDFILL**
DATE:	**AUGUST 31, 1998**
ORDER NUMBER:	**91681**
PRODUCT:	**BENTOMAT ST**

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 1 **day of** Sept., **19** 98.

Cynthia Willix

Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
JUL 7, 2002

Printed on recycled paper.

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County Landfill cap

ORDER # : 91681

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

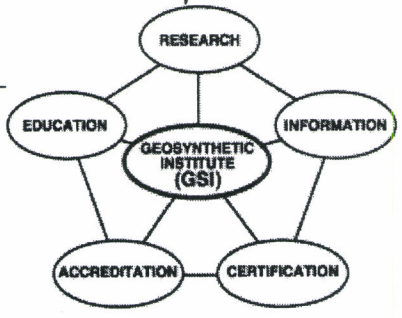
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Michele Waters
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 1 day of Sept. 1998

Cynthia Willix
Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002



Printed on recycled paper.

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE PAGE 1 OF

CARRIER NAME: Landstar

DELIVERING CARRIER:

CONSIGNED TO: NATIONWIDE
WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC 27893
PHONE: 252 399 2823

DEL DATE: 9/1/98

SHIPPER'S NO: 000091681
SHIP DATE: 8/31/98

SHIPPER:
CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SOLDTO: 3803 SHIPTO: 01
CONSIGNED P.O.#:
CAR/VEHICLE#: WILSON COUNTY

SHIPPING PLANT:
FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS ADDITIONAL 3 T/L'S NEEDED FOR THIS ORDER
ORDER COMMENTS MATERIAL WEIGHING HEAVY

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
50.0000		BENTOMAT ST	44047 [redacted]
15 Rolls-150'		CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	750
GROSS: .00		TARE: .00	NET: 44797 [redacted]

15 Bags 030 CG-50 Seaming Clay

Contact: Charlie 813 423 1735

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

***MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS**

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Dalton Rigsby

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED ☐ YES ☐ NO—FURNISHED BY CARRIER

PLACARDS SUPPLIED

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
[redacted]0 WEST SHURE DRIVE
[redacted]LINGTON HEIGHTS IL 60004

ORDER NO:.. 000091681
ORDER DATE: 8/27/98
SHIP DATE:. 8/31/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON COUNTY

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT SF	199835030	00011250	150.0	15.0	2250.0	3000
030-BENTOMAT ST		SFT SF	199835030	00011251	150.0	15.0	2250.0	2948
030-BENTOMAT ST		SFT SF	199835030	00011258	150.0	15.0	2250.0	2954
030-BENTOMAT ST		SFT SF	199835030	00011259	150.0	15.0	2250.0	2947
[redacted]-BENTOMAT ST		SFT SF	199835030	00011260	150.0	15.0	2250.0	2978
030-BENTOMAT ST		SFT SF	199835030	00011261	150.0	15.0	2250.0	2980
030-BENTOMAT ST		SFT SF	199835030	00011262	150.0	15.0	2250.0	2931
030-BENTOMAT ST		SFT SF	199835030	00011299	150.0	15.0	2250.0	2963
030-BENTOMAT ST		SFT SF	199835030	00011300	150.0	15.0	2250.0	2775
030-BENTOMAT ST		SFT SF	199835030	00011301	150.0	15.0	2250.0	2860
030-BENTOMAT ST		SFT SF	199835030	00011303	150.0	15.0	2250.0	3024
030-BENTOMAT ST		SFT SF	199835030	00011308	150.0	15.0	2250.0	2823
030-BENTOMAT ST		SFT SF	199835030	00011311	150.0	15.0	2250.0	2912
030-BENTOMAT ST		SFT SF	199835030	00011312	150.0	15.0	2250.0	2966
030-BENTOMAT ST		SFT SF	199835030	00011314	150.0	15.0	2250.0	2986

ORDER TOTALS..... 33750.0 44047.

[redacted]TOTAL ITEMS..... 15

15 Bags

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#FT2 QCT#FT2
9/01/98 7:26:07

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000091681

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199835030	00011314	1.00	15.20	125.00	21.80
030-BENTOMAT ST	199835030	00011311	1.00	15.20	125.00	17.90
030-BENTOMAT ST	199835030	00011308	1.00	15.20	125.00	17.90
030-BENTOMAT ST	199835030	00011303	.93	15.20	125.00	17.40
030-BENTOMAT ST	199835030	00011301	.93	15.20	125.00	17.40
030-BENTOMAT ST	199835030	00011300	.93	15.20	125.00	17.40
030-BENTOMAT ST	199835030	00011299	.93	15.20	125.00	17.40
030-BENTOMAT ST	199835030	00011262	.99	14.40	101.20	26.70
030-BENTOMAT ST	199835030	00011261	.99	14.40	101.20	26.70
030-BENTOMAT ST	199835030	00011260	.99*	14.40	101.20	26.70*
030-BENTOMAT ST	199835030	00011259	.97	14.40	101.20	31.10
030-BENTOMAT ST	199835030	00011258	.97	14.40	101.20	31.10
030-BENTOMAT ST	199835030	00011251	.97	14.40	101.20	31.10*
030-BENTOMAT ST	199835030	00011250	.97	14.40	101.20	33.10

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

DATE: 10-Aug-98

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **06-Aug-98**
in **BN 447373**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.6
MOISTURE	ASTM D 2216	12.0% MAX.	8.8
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.8

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88112**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

DATE: 10-Aug-98

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **06-Aug-98**
in **ATSF 314270**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.4
MOISTURE	ASTM D 2216	12.0% MAX.	8.4
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.2

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **88113**

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000091681

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199835030									
00011250	030-BENTOMAT ST	150	2250	3000	7304266		199833010	00001899	314270
00011251	030-BENTOMAT ST	150	2250	2948	7304266		199833010	00001899	314270
00011258	030-BENTOMAT ST	150	2250	2954	7428263		199833010	00001899	314270
00011259	030-BENTOMAT ST	150	2250	2947	7428263		199833010	00001899	314270
00011260	030-BENTOMAT ST	150	2250	2978	7428263		199833010	00001899	314270
00011261	030-BENTOMAT ST	150	2250	2980	7428263		199833010	00001899	314270
00011262	030-BENTOMAT ST	150	2250	2931	7428263		199833010	00001899	314270
00011299	030-BENTOMAT ST	150	2250	2963	7217908		199831010	00001781	447373
00011300	030-BENTOMAT ST	150	2250	2775	7217908		199831010	00001781	447373
00011301	030-BENTOMAT ST	150	2250	2860	7217908		199835010	00002024	447373
00011303	030-BENTOMAT ST	150	2250	3024	7217908		199835010	00002024	447373
00011308	030-BENTOMAT ST	150	2250	2823	7285379		199835010	00001989	447373
00011311	030-BENTOMAT ST	150	2250	2912	7285379		199835010	00001989	447373
00011314	030-BENTOMAT ST	150	2250	2986	7285379		199835010	00001989	447373

TOTAL SQUARE FEET..... 31,500

TOTAL PAGES 1

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

30-Sep-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipments to Wilson County LF Cap, Wilson, NC. These shipments left our CETCO - Fairmount, GA, plant on 9/29/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County Landfill Cap

PREPARED FOR:

Mr. Steve Clayton
Wilson County Solid Waste Depai
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY:

Michele Waters
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LANDFILL CAP
WILSON, NC
CUSTOMER PO# WILSON CO.
ORDER# 92512-92514

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	WILSON COUNTY LANDFILL
DATE:	SEPTEMBER 29, 1998
ORDER NUMBER:	92512-92514
PRODUCT:	BENTOMAT ST

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Michele Waters

Michele Waters
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 30th day of Sept., 19 98.

Cynthia Willix

Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County Landfill cap

ORDER # : 92512-92514

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

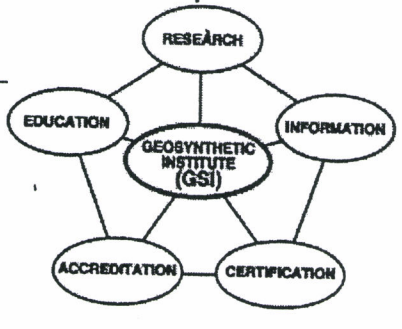
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Michelle Waters
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 30th day of Sept. 1998

Cynthia Willix
Notary Public

OFFICIAL SEAL
CYNTHIA WILLIX
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002



STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE HES

CONSIGNED TO: WILSON COUNTY LANDFILL

4537 LANDFILL RD

WILSON NC 27893

PHONE: 252 399 2823

DELIVERING CARRIER:

DEL DATE: 9/30/98

SHIPPER'S NO: 000092512

SHIP DATE: 9/29/98

SHIPPER: CETCO

1350 W SHURE DR.

ARLINGTON HGTS IL 60004

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#:

CAR/VEHICLE#: WILSON COUNTY

SHIPPING PLANT: FAIRMOUNT,GA

P.O. BOX 88

FAIRMOUNT GA 30139

ROUTING/CONTRACT:

Driver please call Charlie 813-423-1735, give him E.T.A.

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS ADDITIONAL ORDER FOR WILSON COUNTY VIA FAX 9/3/98

ORDER COMMENTS 145,000 SF WITH 60 BAGS

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
14 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44521

GROSS: .00 TARE: .00 NET: 44521

ubject to Section 7 of conditions, if this shipment is be delivered to the consignee without recourse on ie consignor, the consignor shall sign the following tatement:

The carrier shall not make delivery of this shipment ithout payment of freight and all other lawful charges.

OLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

ECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood rough this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, on l otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion sa destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms nd co ns of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

hipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000092512
ORDER DATE: 9/04/98
SHIP DATE:. 9/29/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

PO: WILSON COUNTY

WILSON NC 27893

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST	SFT SF	199839030	00014177	150.0	15.0	2250.0	3147
030-BENTOMAT ST	SFT SF	199839030	00014178	150.0	15.0	2250.0	3142
030-BENTOMAT ST	SFT SF	199839030	00014180	150.0	15.0	2250.0	3145
030-BENTOMAT ST	SFT SF	199839030	00014181	150.0	15.0	2250.0	3176
030-BENTOMAT ST	SFT SF	199839030	00014186	150.0	15.0	2250.0	3155
030-BENTOMAT ST	SFT SF	199839030	00014191	150.0	15.0	2250.0	3164
030-BENTOMAT ST	SFT SF	199840030	00014232	150.0	15.0	2250.0	3215
030-BENTOMAT ST	SFT SF	199840030	00014233	150.0	15.0	2250.0	3228
030-BENTOMAT ST	SFT SF	199840030	00014235	150.0	15.0	2250.0	3222
030-BENTOMAT ST	SFT SF	199840030	00014236	150.0	15.0	2250.0	3184
030-BENTOMAT ST	SFT SF	199840030	00014237	150.0	15.0	2250.0	3165
030-BENTOMAT ST	SFT SF	199840030	00014238	150.0	15.0	2250.0	3191
030-BENTOMAT ST	SFT SF	199840030	00014240	150.0	15.0	2250.0	3191
030-BENTOMAT ST	SFT SF	199840030	00014241	150.0	15.0	2250.0	3196
ORDER TOTALS.....						31500.0	44521.
TOTAL ITEMS.....	14						

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE Virginia Dude

DELIVERING CARRIER:

CONSIGNED TO: WILSON COUNTY LANDFILL

4537 LANDFILL RD

DEL DATE: 9/30/98

SHIPPER'S NO: 000092513

SHIP DATE: 9/29/98

SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

WILSON NC 27893

PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON COUNTY

CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

Driver please call Charlie 813-423-1735, give him E.T.A.

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS ADDITIONAL ORDER FOR WILSON COUNTY VIA FAX 9/3/98

ORDER COMMENTS 145,000 SF WITH 60 BAGS

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
31500			
14 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	45177
		CG-50 SEAMING CLAY (10902/024)	700
14 Bags (on a pallet)		CLAY-BENTONITE-GROUND (CLASS 50) 3295232	

GROSS: .00 TARE: .00 NET: 45877

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Don Fuller

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000092513
ORDER DATE: 9/04/98
SHIP DATE:. 9/29/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

PO: WILSON COUNTY

WILSON NC 27893

PRODUCT	SIZE U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST	SFT SF	199839030	00013728	150.0	15.0	2250.0	3258
030-BENTOMAT ST	SFT SF	199840030	00014220	150.0	15.0	2250.0	3258
030-BENTOMAT ST	SFT SF	199840030	00014221	150.0	15.0	2250.0	3227
030-BENTOMAT ST	SFT SF	199840030	00014222	150.0	15.0	2250.0	3201
030-BENTOMAT ST	SFT SF	199840030	00014223	150.0	15.0	2250.0	3230
030-BENTOMAT ST	SFT SF	199840030	00014225	150.0	15.0	2250.0	3231
030-BENTOMAT ST	SFT SF	199840030	00014226	150.0	15.0	2250.0	3264
030-BENTOMAT ST	SFT SF	199840030	00014227	150.0	15.0	2250.0	3260
030-BENTOMAT ST	SFT SF	199840030	00014228	150.0	15.0	2250.0	3209
030-BENTOMAT ST	SFT SF	199840030	00014229	150.0	15.0	2250.0	3187
030-BENTOMAT ST	SFT SF	199840030	00014230	150.0	15.0	2250.0	3214
030-BENTOMAT ST	SFT SF	199840030	00014231	150.0	15.0	2250.0	3200
030-BENTOMAT ST	SFT SF	199840030	00014234	150.0	15.0	2250.0	3223
030-BENTOMAT ST	SFT SF	199840030	00014239	150.0	15.0	2250.0	3215

ORDER TOTALS..... 31500.0 45177.

TOTAL ITEMS..... 14

14 Bags

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: NATIONWIDE / SIE

CONSIGNED TO: WILSON COUNTY LANDFILL

4537 LANDFILL RD

WILSON NC 27893

PHONE: ~~252 399 2823~~

DELIVERING CARRIER:

DEL DATE: 9/30/98

SHIPPER'S NO: 000092514

SHIP DATE: 9/29/98

SHIPPER: CETCO

1350 W SHURE DR.

ARLINGTON HGTS IL 60004

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#:

CAR/VEHICLE#: WILSON COUNTY

SHIPPING PLANT: FAIRMOUNT, GA

P.O. BOX 88

FAIRMOUNT GA 30139

ROUTING/CONTRACT:

Call Charlie 813-423-1735, give him E.T.A.

INE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

RDER COMMENTS ADDITIONAL ORDER FOR WILSON COUNTY VIA FAX 9/3/98

RDER COMMENTS 145,000 SF WITH 60 BAGS

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
~~31500~~			
~~14~~ Rolls 150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	45235
28 Bags (on a pallet)		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	1400

GROSS: .00 TARE: .00 NET: 46635

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Jason Mann

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

ORIGINAL

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000092514
ORDER DATE: 9/04/98
SHIP DATE:. 9/29/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON COUNTY

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199839030	00013695	150.0	15.0	2250.0	3356
030-BENTOMAT ST		SFT	SF 199839030	00013702	150.0	15.0	2250.0	3294
030-BENTOMAT ST		SFT	SF 199839030	00013703	150.0	15.0	2250.0	3308
030-BENTOMAT ST		SFT	SF 199839030	00013704	150.0	15.0	2250.0	3340
030-BENTOMAT ST		SFT	SF 199839030	00013715	150.0	15.0	2250.0	3259
030-BENTOMAT ST		SFT	SF 199839030	00013717	150.0	15.0	2250.0	3223
030-BENTOMAT ST		SFT	SF 199839030	00013720	150.0	15.0	2250.0	3200
030-BENTOMAT ST		SFT	SF 199839030	00013721	150.0	15.0	2250.0	3214
030-BENTOMAT ST		SFT	SF 199839030	00013722	150.0	15.0	2250.0	3221
030-BENTOMAT ST		SFT	SF 199839030	00014169	150.0	15.0	2250.0	3172
030-BENTOMAT ST		SFT	SF 199839030	00014173	150.0	15.0	2250.0	3152
030-BENTOMAT ST		SFT	SF 199839030	00014174	150.0	15.0	2250.0	3140
030-BENTOMAT ST		SFT	SF 199839030	00014175	150.0	15.0	2250.0	3157
030-BENTOMAT ST		SFT	SF 199839030	00014176	150.0	15.0	2250.0	3199
							========	=======
ORDER TOTALS.....							31500.0	45235.

TOTAL ITEMS..... 14

28 Bags

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#FT2 QCT#FT2
9/30/98 7:11:20

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000092512

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199840030	00014241	.98	18.00	139.40	21.00
030-BENTOMAT ST	199840030	00014240	.98	18.00	139.40	21.00
030-BENTOMAT ST	199840030	00014238	.98	18.00	139.40	21.00
030-BENTOMAT ST	199840030	00014237	.98	18.00	139.40	21.00
030-BENTOMAT ST	199840030	00014236	.98	18.00	139.40	21.00
030-BENTOMAT ST	199840030	00014235	.98*	18.00	139.40	21.00*
030-BENTOMAT ST	199840030	00014233	1.03	18.00	139.40	26.00
030-BENTOMAT ST	199840030	00014232	1.03	18.00	139.40	26.00
030-BENTOMAT ST	199839030	00014191	.99	12.00	101.40	24.50
030-BENTOMAT ST	199839030	00014186	.99	12.00	101.40	24.50
030-BENTOMAT ST	199839030	00014181	.99	12.00	101.40	19.70
030-BENTOMAT ST	199839030	00014180	.99	12.00	101.40	19.70
030-BENTOMAT ST	199839030	00014178	.99	12.00	101.40	19.70
030-BENTOMAT ST	199839030	00014177	.99*	12.00	101.40	19.70*

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000092513

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199840030	00014239	.98	18.00	139.40	21.00
030-BENTOMAT ST	199840030	00014234	1.03	18.00	139.40	26.00
030-BENTOMAT ST	199840030	00014231	1.03	18.00	139.40	26.00
030-BENTOMAT ST	199840030	00014230	1.03	18.00	139.40	26.00
030-BENTOMAT ST	199840030	00014229	1.03	18.00	139.40	26.00
030-BENTOMAT ST	199840030	00014228	1.03	18.00	139.40	26.00
030-BENTOMAT ST	199840030	00014227	1.03	18.00	139.40	26.00*
030-BENTOMAT ST	199840030	00014226	1.03	18.00	139.40	27.90
030-BENTOMAT ST	199840030	00014225	1.03	18.00	139.40	27.90
030-BENTOMAT ST	199840030	00014223	1.03	18.00	139.40	27.90
030-BENTOMAT ST	199840030	00014222	1.03	18.00	139.40	27.90
030-BENTOMAT ST	199840030	00014221	1.03	18.00	139.40	27.90
030-BENTOMAT ST	199840030	00014220	1.03	18.00	139.40	27.90
030-BENTOMAT ST	199839030	00013728	1.04	17.20	139.60	26.30

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
9/30/98 7:10:41

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000092514

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199839030	00014176	1.01	12.00	101.40	22.80
030-BENTOMAT ST	199839030	00014175	1.01	12.00	101.40	22.80
030-BENTOMAT ST	199839030	00014174	1.01	12.00	101.40	22.80
030-BENTOMAT ST	199839030	00014173	1.01	12.00	101.40	22.80
030-BENTOMAT ST	199839030	00014169	1.01	12.00	101.40	22.80*
030-BENTOMAT ST	199839030	00013722	1.06	17.20	139.60	18.40
030-BENTOMAT ST	199839030	00013721	1.06	17.20	139.60	18.40
030-BENTOMAT ST	199839030	00013720	1.06	17.20	139.60	18.40
030-BENTOMAT ST	199839030	00013717	1.06	17.20	139.60	18.40
030-BENTOMAT ST	199839030	00013715	1.06	17.20	139.60	18.40*
030-BENTOMAT ST	199839030	00013704	1.05	16.00	139.87	23.10
030-BENTOMAT ST	199839030	00013703	1.05	16.00	139.87	23.10
030-BENTOMAT ST	199839030	00013702	1.05	16.00	139.87	23.10
030-BENTOMAT ST	199839030	00013695	1.05	16.00	139.87*	23.10*

NOTE:
An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 21-Aug-98

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **17-Aug-98**
in **BN 454066**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.9
MOISTURE	ASTM D 2216	12.0% MAX.	8.4
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.4

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **D.M.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **90512**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 04-Sep-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **02-Sep-98**
in **BN 447415**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.5
MOISTURE	ASTM D 2216	12.0% MAX.	8.4
FREE SWELL	ASTM D 5890	24 MIN.	25
FLUID LOSS	ASTM D 5891	18.0 MAX.	13.4

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **R.P.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **91904**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 01-Sep-98

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 28-Aug-98
in ATSF 314663
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.5
MOISTURE	ASTM D 2216	12.0% MAX.	9.2
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 90542

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

QCG#TF1 QCT#TF1
9/30/98 7:11:20

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000092512

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199839030									
00014177	030-BENTOMAT ST	150	2250	3147	7473266		199839010	00002245	447415
00014178	030-BENTOMAT ST	150	2250	3142	7473266		199839010	00002245	447415
00014180	030-BENTOMAT ST	150	2250	3145	7473266		199839010	00002245	447415
00014181	030-BENTOMAT ST	150	2250	3176	7473266		199839010	00002245	447415
00014186	030-BENTOMAT ST	150	2250	3155	7471532		199839010	00002246	447415
00014191	030-BENTOMAT ST	150	2250	3164	7471532		199839010	00002246	447415
LOT# 199840030									
00014232	030-BENTOMAT ST	150	2250	3215	7471534		B801597A		454066
00014233	030-BENTOMAT ST	150	2250	3228	7471534		B801597A		454066
00014235	030-BENTOMAT ST	150	2250	3222	7471534		B801729A		454066
00014236	030-BENTOMAT ST	150	2250	3184	7471534		B801729A		454066
00014237	030-BENTOMAT ST	150	2250	3165	7471534		B801729A		454066
00014238	030-BENTOMAT ST	150	2250	3191	7471534		B801729A		454066
00014240	030-BENTOMAT ST	150	2250	3191	7471534		B801842A		454066
00014241	030-BENTOMAT ST	150	2250	3196	7471534		B801842A		454066

TOTAL SQUARE FEET..... 31,500

TOTAL PAGES 1

QCG#TF1 QCT#TF1
9/30/98 7:11:01

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000092513

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199839030									
00013728	030-BENTOMAT ST	150	2250	3258	7462765		199838010	00002210	314663
LOT# 199840030									
00014220	030-BENTOMAT ST	150	2250	3258	7464673		B801597A		454066
00014221	030-BENTOMAT ST	150	2250	3227	7464673		B801597A		454066
00014222	030-BENTOMAT ST	150	2250	3201	7464673		B801597A		454066
00014223	030-BENTOMAT ST	150	2250	3230	7464673		B801597A		454066
00014225	030-BENTOMAT ST	150	2250	3231	7464673		B801597A		454066
00014226	030-BENTOMAT ST	150	2250	3264	7471534		B801597A		454066
00014227	030-BENTOMAT ST	150	2250	3260	7471534		B801597A		454066
00014228	030-BENTOMAT ST	150	2250	3209	7471534		B801597A		454066
00014229	030-BENTOMAT ST	150	2250	3187	7471534		B801597A		454066
00014230	030-BENTOMAT ST	150	2250	3214	7471534		B801597A		454066
00014231	030-BENTOMAT ST	150	2250	3200	7471534		B801597A		454066
00014234	030-BENTOMAT ST	150	2250	3223	7471534		B801728A		454066
00014239	030-BENTOMAT ST	150	2250	3215	7471534		B801729A		454066

TOTAL SQUARE FEET..... 31,500

QCG#TF1 QCT#TF1
9/30/98 7:10:41

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000092514

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199839030									
00013695	030-BENTOMAT ST	150	2250	3356	7462766		199839010	00002231	314663
00013702	030-BENTOMAT ST	150	2250	3294	7462766		199839010	00002221	314663
00013703	030-BENTOMAT ST	150	2250	3308	7462766		199839010	00002221	314663
00013704	030-BENTOMAT ST	150	2250	3340	7462766		199839010	00002232	314663
00013715	030-BENTOMAT ST	150	2250	3259	7462765		199839010	00002228	314663
00013717	030-BENTOMAT ST	150	2250	3223	7462765		199839010	00002228	314663
00013720	030-BENTOMAT ST	150	2250	3200	7462765		199839010	00002228	314663
00013721	030-BENTOMAT ST	150	2250	3214	7462765		199839010	00002228	314663
00013722	030-BENTOMAT ST	150	2250	3221	7462765		199839010	00002228	314663
00014169	030-BENTOMAT ST	150	2250	3172	7473266		199839010	00002247	447415
00014173	030-BENTOMAT ST	150	2250	3152	7473266		199839010	00002247	447415
00014174	030-BENTOMAT ST	150	2250	3140	7473266		199839010	00002247	447415
00014175	030-BENTOMAT ST	150	2250	3157	7473266		199839010	00002245	447415
00014176	030-BENTOMAT ST	150	2250	3199	7473266		199839010	00002245	447415

TOTAL SQUARE FEET..... 31,500

CETCO 1350 W. Shure Dr. Arlington Hgts., IL **Computation Sheet: GRI Accredited ASTM Method D-5887, Index Flux**

Sample: Bentomat ST
Lot# 199835030 Roll# 10729
Project # : Bentomat QA

Permeability equation : ((0.879*Thickness)/(2*Pi*r^2*Time))*ln(Change in Head)

Flux equation : ((Inflow+Outflow)/200)/Pi*r^2/Time

Initial Thickness : 0.78 cm. Hydration : 48hrs Permeant : De-aired DI Water

Test Position : 301 Initial Head : 2psi 140.6 cm. Analyst : NP Date: 9/30/98

Cell Size : 4 in. Max. Effective Stress : 5psi 34.5kPa Requested by : Date Started: 9/1/98

Final Thickness 0.74 cm.

* indicates value meets Flux Ratio ASTM termination criteria

Conversions : 1 psi = 2.307 feet of head 1 foot of head = 30.48 cm 1 psi = 70.32 cm Flux (English) = Flux * 9.2366E+10

Date	Time (min)	Reading In	X	Reading Out	Y	X-Y	Head (cm)	H (cm)	Initial K (cm/sec)	Initial Flux ($m^3/m^2/sec$)		Avg Flux ($m^3/m^2/sec$)	Final K (cm/sec)	Final Flux (Gal/Acre /Day)	Inflow to Outflow Ratio	
9/3/98	0	0.0	24.0	24.0	0.0	24.0	140.63	164.63								
	70	0.2	23.8	23.9	0.1	23.7	140.63	164.33	1.84E-09	4.41E-09			1.74E-9		2.00	3.30E-09
	162	0.4	23.6	23.9	0.1	23.5	140.63	164.13	9.33E-10	2.23E-09			8.85E-10			1.68E-09
	276	0.8	23.2	23.8	0.2	23.0	140.63	163.63	1.89E-09	4.51E-09			1.79E-9		4.00	3.38E-09
	367	1.0	23.0	23.6	0.4	22.6	140.63	163.23	1.90E-09	4.52E-09	*		1.80E-9		1.00	3.39E-09
9/4/98	1270	2.6	21.4	22.2	1.8	19.6	140.63	160.23	1.45E-09	3.41E-09	*		1.37E-9		1.14	2.56E-09
	1394	2.8	21.2	22.0	2.0	19.2	140.63	159.83	1.42E-09	3.32E-09	*		1.35E-9		1.00	2.49E-09
	1544	3.1	20.9	21.7	2.3	18.6	140.63	159.23	1.77E-09	4.11E-09	*		1.68E-9		1.00	3.08E-09
	1683	3.4	20.6	21.4	2.6	18.0	140.63	158.63	1.91E-09	4.44E-09	*	**3.95E-09**	1.82E-9	365	1.00	3.33E-09
																0.00E+00

Final Flux 4.0E-9 $m^3/m^2/sec$

Final Hydraulic Conductivity 1.6E-9 cm/s

CETCO 1350 W. Shure Dr. Arlington Hgts., IL **Computation Sheet: GRI Accredited ASTM Method D-5887, Index Flux**

Sample: Bentomat ST
Lot# 199836030 Roll# 11405
Project # : Bentomat QA

Permeability equation : ((0.879*Thickness)/(2*Pi*r^2*Time))*ln(Change in Head)

Flux equation : ((Inflow+Outflow)/200)/Pi*r^2/Time

Initial Thickness : 0.72 cm. Hydration : 48hrs Permeant : De-aired DI Water

Test Position : 316 Initial Head : 2psi 140.6 cm. Analyst : NP Date: 9/30/98

Cell Size : 4 in. Max. Effective Stress : 5psi 34.5kPa Requested by : Date Started: 9/5/98

Final Thickness: 0.77 cm. * indicates value meets Flux Ratio ASTM termination criteria

Conversions : 1 psi = 2.307 feet of head 1 foot of head = 30.48 cm 1 psi = 70.32 cm Flux (English) = Flux * 9.2366E+10

Date	Time (min)	Reading In	X	Reading Out	Y	X-Y	Head (cm)	H (cm)	Initial K (cm/sec)	Initial Flux ($m^3/m^2/sec$)		Avg Flux ($m^3/m^2/sec$)	Final K (cm/sec)	Final Flux (Gal/Acre /Day)	Inflow to Outflow Ratio	
9/8/98	0	0.0	24.0	24.0	0.0	24.0	140.63	164.63								
	69	0.3	23.7	24.0	0.0	23.7	140.63	164.33	1.72E-09	4.47E-09			1.84E-9			3.35E-09
	180	0.5	23.5	23.9	0.1	23.4	140.63	164.03	1.07E-09	2.78E-09			1.15E-9		2.00	2.08E-09
	294	0.8	23.2	23.8	0.2	23.0	140.63	163.63	1.39E-09	3.61E-09			1.49E-9		3.00	2.70E-09
	352	0.9	23.1	23.7	0.3	22.8	140.63	163.43	1.37E-09	3.54E-09	*		1.47E-9		1.00	2.66E-09
9/9/98	1299	2.6	21.4	22.8	1.2	20.2	140.63	160.83	1.10E-09	2.82E-09	*		1.18E-9		1.89	2.12E-09
	1374	2.7	21.3	22.7	1.3	20.0	140.63	160.63	1.08E-09	2.74E-09	*		1.15E-9		1.00	2.06E-09
	1503	2.9	21.1	22.5	1.5	19.6	140.63	160.23	1.26E-09	3.19E-09	*		1.34E-9		1.00	2.39E-09
	1659	3.1	20.9	22.3	1.7	19.2	140.63	159.83	1.04E-09	2.64E-09	*	2.85E-09	1.11E-9	264	1.00	1.98E-09
																0.00E+00

Final Flux 2.9E-9 $m^3/m^2/sec$

Final Hydraulic Conductivity 1.2E-9 cm/s

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY

234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

* FAX COVER SHEET *

DATE: 9.30.98 FAX# (910) 602-6488

TO: Gary

FROM: Michele

OF PAGES: 26 (WITH COVER SHEET)

REMARKS:

Printed on recycled paper.

TRANSMIT CONFIRMATION REPORT

NO.	:	008
RECEIVER	:	9106026488
TRANSMITTER	:	CETCO/FAIRMOUNT
DATE	:	SEP 30'98 11:25
DURATION	:	11'50
MODE	:	STD
PAGES	:	26
RESULT	:	OK

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

9-Oct-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipments to Wilson County LF Cap, Wilson, NC. These shipments left our CETCO - Fairmount, GA, plant on 10/8/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Cynthia Willix

Cynthia Willix
Quality Assurance Coordinator
CETCO

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County LF Cap

PREPARED FOR:
Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY:
Cynthia Willix
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LF CAP
WILSON, NC
CUSTOMER PO# WILSON COUNTY
ORDER# 94329,94477

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	WILSON COUNTY LF
DATE:	OCTOBER 8, 1998
ORDER NUMBER:	94329,94477
PRODUCT:	BENTOMAT ST

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Cynthia Willix

Cynthia Willix
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 9th day of Oct., 1998.

Judy Hall

Notary Public

OFFICIAL SEAL
JUDY HALL
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002

Printed on recycled paper.

CETCO

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County LF Cap

ORDER # : 94329,94477

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

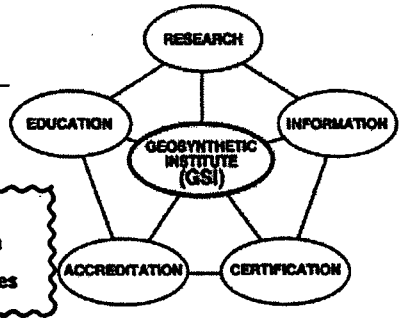
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Cynthia Willis
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 9th day of Oct. 1998.

Judy Hall
Notary Public

OFFICIAL SEAL
JUDY HALL
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 7, 2002



Stuart

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 OF

CARRIER NAME: / Bulldog

CONSIGNED TO: NATIONWIDE
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

DELIVERING CARRIER:

SHIPPER'S NO: 10/9/98

SHIP DATE: 000094329

SHIPPER DATE: [redacted]

CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

10/8/98

SOLD TO: CONSIGNED PO#: SHIPTO: 01

CAR/VEHICLE#: WILSON COUNTY

SHIPPING PLANT:
FAIRMOUNT, GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

Contact Charlie 813-423-1735

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS ADDITIONAL B/L NEEDED FOR THIS ORDER - MATERIAL WEIGHING
ORDER COMMENTS HEAVY

QUANTITY	HM	DESCRIPTION OF ARTICLES / PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
31500			
[redacted] 14 Rolls-150' [redacted]		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	44544 [redacted]
		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3295232	1400 [redacted]

28 Bags (on pallet, side loaded)

GROSS: .00 TARE: .00 NET: 45944 [redacted]

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.
COD charges to be paid by: Consignee

3:35

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on [redacted]ute, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of [redacted] to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms an[redacted]ns of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) [redacted]e applicable motor carrier classification or tarrif if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tarrif which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER: Bulldog
Scott Jensen

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO—FURNISHED BY CARRIER
DRIVERS SIGNATURE:

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
[redacted]INGTON HEIGHTS IL 60004

ORDER NO:.. 000094329
ORDER DATE: 9/29/98
SHIP DATE:. 10/08/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON COUNTY

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT SF	199841030	00014961	150.0	15.0	2250.0	3235
030-BENTOMAT ST		SFT SF	199841030	00014979	150.0	15.0	2250.0	3210
030-BENTOMAT ST		SFT SF	199841030	00014997	150.0	15.0	2250.0	3195
030-BENTOMAT ST		SFT SF	199841030	00015098	150.0	15.0	2250.0	3180
030-BENTOMAT ST		SFT SF	199841030	00015099	150.0	15.0	2250.0	3179
030-BENTOMAT ST		SFT SF	199841030	00015100	150.0	15.0	2250.0	3122
030-BENTOMAT ST		SFT SF	199841030	00015104	150.0	15.0	2250.0	3189
030-BENTOMAT ST		SFT SF	199841030	00015105	150.0	15.0	2250.0	3177
030-BENTOMAT ST		SFT SF	199841030	00015106	150.0	15.0	2250.0	3211
030-BENTOMAT ST		SFT SF	199841030	00015107	150.0	15.0	2250.0	3180
030-BENTOMAT ST		SFT SF	199841030	00015111	150.0	15.0	2250.0	3189
030-BENTOMAT ST		SFT SF	199841030	00015112	150.0	15.0	2250.0	3177
030-BENTOMAT ST		SFT SF	199841030	00015117	150.0	15.0	2250.0	3149
030-BENTOMAT ST		SFT SF	199841030	00015119	150.0	15.0	2250.0	3151
ORDER TOTALS.....							31500.0	44544.
TOTAL ITEMS.....			14					

28 Bags

Standard

STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE PAGE 1 OF

Bulldog

CARRIER NAME: NATIONWIDE

CONSIGNED TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893
PHONE: 252 399 2823

DELIVERING CARRIER:

DEL DATE: 10/9/98 SHIPPER'S NO: 000094477

SHIP DATE: 10/8/98

SHIPPER: CETCO
1350 W SHURE DR.
ARLINGTON HGTS IL 60004

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON COUNTY

CAR/VEHICLE#:

SHIPPING PLANT: FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

ROUTING/CONTRACT:

Contact: Charlie 813-423-1735

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS CUSTOMER NEEDS ADDITIONAL MATERIAL (42 ROLLS) PER ALISA

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
31500.0000		BENTOMAT ST	[redacted]
14 Rolls-150'		CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	
[redacted]		[redacted]	[redacted]

GROSS: .00 TARE: .00 NET: 44940

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC
(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.
COD charges to be paid by: Consignee

*MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if [redacted], otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of [redacted] to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED ☐ YES ☐ NO—FURNISHED BY CARRIER

PLACARDS SUPPLIED DRIVERS SIGNATURE:

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1250 WEST SHURE DRIVE
[redacted]NGTON HEIGHTS IL 60004

ORDER NO:.. 000094477
ORDER DATE: 10/01/98
SHIP DATE:. 10/08/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

WILSON NC 27894

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

WILSON NC 27893

PO: WILSON COUNTY

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT	SF 199841030	00014942	150.0	15.0	2250.0	3200
030-BENTOMAT ST		SFT	SF 199841030	00014943	150.0	15.0	2250.0	3218
030-BENTOMAT ST		SFT	SF 199841030	00014944	150.0	15.0	2250.0	3219
030-BENTOMAT ST		SFT	SF 199841030	00014945	150.0	15.0	2250.0	3280
0[redacted]BENTOMAT ST		SFT	SF 199841030	00014950	150.0	15.0	2250.0	3181
030-BENTOMAT ST		SFT	SF 199841030	00014951	150.0	15.0	2250.0	3177
030-BENTOMAT ST		SFT	SF 199841030	00014952	150.0	15.0	2250.0	3175
030-BENTOMAT ST		SFT	SF 199841030	00014953	150.0	15.0	2250.0	3188
030-BENTOMAT ST		SFT	SF 199841030	00014954	150.0	15.0	2250.0	3241
030-BENTOMAT ST		SFT	SF 199841030	00014963	150.0	15.0	2250.0	3278
030-BENTOMAT ST		SFT	SF 199841030	00014968	150.0	15.0	2250.0	3226
030-BENTOMAT ST		SFT	SF 199841030	00014969	150.0	15.0	2250.0	3322
030-BENTOMAT ST		SFT	SF 199841030	00015096	150.0	15.0	2250.0	3129
030-BENTOMAT ST		SFT	SF 199841030	00015097	150.0	15.0	2250.0	3106
							========	=======
ORDER TOTALS.....							31500.0	44940.
TOTAL ITEMS.....			14					

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000094329

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199841030	00015119	.98	13.20	120.80	33.10
030-BENTOMAT ST	199841030	00015117	.98	13.20	120.80	33.10
030-BENTOMAT ST	199841030	00015112	1.00	13.20	120.80	36.00
030-BENTOMAT ST	199841030	00015111	1.00	13.20	120.80	36.00
030-BENTOMAT ST	199841030	00015107	1.00	13.20	120.80	36.00
030-BENTOMAT ST	199841030	00015106	1.00	13.20	120.80	36.00
030-BENTOMAT ST	199841030	00015105	1.00	13.20	120.80	36.00*
030-BENTOMAT ST	199841030	00015104	1.00	13.20	120.80	32.80
030-BENTOMAT ST	199841030	00015100	1.00	13.20	120.80	32.80
030-BENTOMAT ST	199841030	00015099	1.00	13.20	120.80	32.80
030-BENTOMAT ST	199841030	00015098	1.00*	13.20	120.80	32.80*
030-BENTOMAT ST	199841030	00014997	1.01*	21.20	174.00	41.00*
030-BENTOMAT ST	199841030	00014979	.98	21.20	174.00	23.60
030-BENTOMAT ST	199841030	00014961	1.02	21.20	174.00	21.00

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

QCG#FT2 QCT#FT2
10/09/98 8:11:25

COLLOID ENVIRONMENTAL TECH CO

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000094477

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199841030	00015097	.99	13.20	120.80	41.90
030-BENTOMAT ST	199841030	00015096	.99	13.20	120.80	41.90
030-BENTOMAT ST	199841030	00014969	.98	21.20	174.00	22.00
030-BENTOMAT ST	199841030	00014968	.98	21.20	174.00	22.00
030-BENTOMAT ST	199841030	00014963	1.02	21.20	174.00	21.00
030-BENTOMAT ST	199841030	00014954	1.02	21.20	174.00	20.40
030-BENTOMAT ST	199841030	00014953	1.02	21.20	174.00	20.40
030-BENTOMAT ST	199841030	00014952	1.02	21.20	174.00	20.40
030-BENTOMAT ST	199841030	00014951	1.02	21.20	174.00	20.40
030-BENTOMAT ST	199841030	00014950	1.02	21.20	174.00	20.40
030-BENTOMAT ST	199841030	00014945	1.07	15.20	133.00	30.10
030-BENTOMAT ST	199841030	00014944	1.07	15.20	133.00	30.10
030-BENTOMAT ST	199841030	00014943	1.07	15.20	133.00	30.10
030-BENTOMAT ST	199841030	00014942	1.07	15.20	133.00	30.10

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 26-Aug-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **24-Aug-98**
in **BN 450109**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.3
MOISTURE	ASTM D 2216	12.0% MAX.	8
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	12

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **C.L.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **90527**

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

DATE: 10-Sep-98

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 08-Sep-98
in BN 458541
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.6
MOISTURE	ASTM D 2216	12.0% MAX.	9.2
FREE SWELL	ASTM D 5890	24 MIN.	24
FLUID LOSS	ASTM D 5891	18.0 MAX.	15

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: D.M.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 91910

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

DATE: 27-Aug-98

TO: **CETCO - CLAYMAX CORP.**
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: **CYNTHIA WILLIX**

Dear Sirs:

A shipment of **CG 50**
left our Lovell, WY plant on **25-Aug-98**
in **BN 455840**
as requested on your order no. **VERBAL**

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.7
MOISTURE	ASTM D 2216	12.0% MAX.	7.6
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	12

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: **R.P.**

Approved By: **MOSES BRISENO**

CETCO

In any correspondence regarding this shipment, please refer to our Order Number **90529**

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000094329

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199841030									
00014961	030-BENTOMAT ST	150	2250	3235	335474		199840010	00002292	458541
00014979	030-BENTOMAT ST	150	2250	3210	335474		199840010	00002223	458541
00014997	030-BENTOMAT ST	150	2250	3195	335474		199840010	00002223	458541
00015098	030-BENTOMAT ST	150	2250	3180	7488228		199841010	00002330	450109
00015099	030-BENTOMAT ST	150	2250	3179	341659		199841010	00002330	450109
00015100	030-BENTOMAT ST	150	2250	3122	341659		199841010	00002330	450109
00015104	030-BENTOMAT ST	150	2250	3189	341659		199840010	00002306	455840
00015105	030-BENTOMAT ST	150	2250	3177	341659		199840010	00002306	455840
00015106	030-BENTOMAT ST	150	2250	3211	341659		199840010	00002306	455840
00015107	030-BENTOMAT ST	150	2250	3180	341659		199840010	00002306	455840
00015111	030-BENTOMAT ST	150	2250	3189	341659		199840010	00002306	455840
00015112	030-BENTOMAT ST	150	2250	3177	341659		199841010	00002335	455840
00015117	030-BENTOMAT ST	150	2250	3149	7487727		199841010	00002335	455840
00015119	030-BENTOMAT ST	150	2250	3151	7487727		199841010	00002335	455840

TOTAL SQUARE FEET..... 31,500

TOTAL PAGES 1

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000094477

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199841030									
00014942	030-BENTOMAT ST	150	2250	3200	7481312		199839010	00002250	458541
00014943	030-BENTOMAT ST	150	2250	3218	7481312		199839010	00002250	458541
00014944	030-BENTOMAT ST	150	2250	3219	7481312		199839010	00002250	458541
00014945	030-BENTOMAT ST	150	2250	3280	7481312		199839010	00002250	458541
00014950	030-BENTOMAT ST	150	2250	3181	7481312		B801715A	00002250	458541
00014951	030-BENTOMAT ST	150	2250	3177	7481312		199840010	00002292	458541
00014952	030-BENTOMAT ST	150	2250	3175	7481312		199840010	00002292	458541
00014953	030-BENTOMAT ST	150	2250	3188	335474		199840010	00002292	458541
00014954	030-BENTOMAT ST	150	2250	3241	335474		199840010	00002292	458541
00014963	030-BENTOMAT ST	150	2250	3278	335474		199840010	00002223	458541
00014968	030-BENTOMAT ST	150	2250	3226	335474		199840010	00002292	458541
00014969	030-BENTOMAT ST	150	2250	3322	335474		199840010	00002223	458541
00015096	030-BENTOMAT ST	150	2250	3129	7488228		199840010	00002331	450109
00015097	030-BENTOMAT ST	150	2250	3106	7488228		199840010	00002331	450109

TOTAL SQUARE FEET..... 31.500

CETCO 1350 W. Shure Dr. Arlington Hgts., IL **Computation Sheet: GRI Accredited ASTM Method D-5887, Index Flux**

Sample: Bentomat ST
Lot# 199839030 Roll# 13560
Project # : Bentomat QA

Permeability equation : ((0.879*Thickness)/(2*Pi*r^2*Time))*ln(Change in Head)

Flux equation : ((Inflow+Outflow)/200)/Pi*r^2/Time

Initial Thickness : 0.70 cm. Hydration : 48hrs Permeant : De-aired DI Water

Test Position : 309 Initial Head : 2psi 140.6 cm. Analyst : NP Date: 10/6/98

Cell Size : 4 in. Max. Effective Stress : 5psi 34.5kPa Requested by : Date Started: 9/25/98

Final Thickness 0.76 cm.

* indicates value meets Flux Ratio ASTM termination criteria

Conversions : 1 psi = 2.307 feet of head 1 foot of head = 30.48 cm 1 psi = 70.32 cm Flux (English) = Flux * 9.2366E+10

Date	Time (min)	Reading In	X	Reading Out	Y	X-Y	Head (cm)	H (cm)	Initial K (cm/sec)	Initial Flux ($m^3/m^2/sec$)		Avg Flux ($m^3/m^2/sec$)	Final K (cm/sec)	Final Flux (Gal/Acre /Day)	Inflow to Outflow Ratio
9/28/98	0	0.0	24.0	24.0	0.0	24.0	140.63	164.63							
	182	1.3	22.7	23.9	0.1	22.6	140.63	163.23	2.97E-09	7.91E-09			3.22E-9		13.00
	305	1.8	22.2	23.8	0.2	22.0	140.63	162.63	1.89E-09	5.01E-09			2.06E-9		5.00
9/29/98	1314	4.6	19.4	22.0	2.0	17.4	140.63	158.03	1.80E-09	4.69E-09	*		1.95E-9		1.56
	1421	4.8	19.2	21.8	2.2	17.0	140.63	157.63	1.50E-09	3.84E-09	*		1.63E-9		1.00
	1483	4.9	19.1	21.7	2.3	16.8	140.63	157.43	1.30E-09	3.32E-09	*		1.41E-9		1.00
	1634	5.2	18.8	21.4	2.6	16.2	140.63	156.83	1.60E-09	4.08E-09	*		1.74E-9		1.00
	1716	5.4	18.6	21.2	2.8	15.8	140.63	156.43	1.97E-09	5.01E-09	*	4.14E-09	2.14E-9	382	1.00

Final Flux 4.1E-9 $m^3/m^2/sec$

Final Hydraulic Conductivity 1.8E-9 cm/s

CETCO
COLLOID ENVIRONMENTAL TECHNOLOGIES COMPANY
234 Gordon Street • Fairmount, GA 30139 • USA
(706) 337-5316 • Fax (706) 337-7334

16-Oct-98

Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

Dear Mr. Clayton:

Please find enclosed the MQA/MQC Data Package for Geosynthetic Clay Liner (GCL) shipment to Wilson County LF Cap, Wilson, NC. This shipment left our CETCO - Fairmount, GA, plant on 10/14/98.

If you have any questions regarding the enclosed QA/QC information, please contact Mr. Derek Reece @ 1-800-220-2536.

Sincerely,

Cynthia Willix

Cynthia Willix
Quality Assurance Coordinator
CETCO

CETCO

GEOSYNTHETIC CLAY LINER

MANUFACTURING QA/QC DATA PACKAGE

PROJECT NAME: Wilson County LF Cap

PREPARED FOR:
Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PREPARED BY:
Cynthia Willix
CETCO
P. O. Box 88
234 Gordon Street
Fairmount, GA 30139
Telephone # (706) 337-5316
Fax # (706) 337-2215

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER

DAILY MANUFACTURING QA/QC DATA

FOR ALL GCL MANUFACTURED ON:

WILSON COUNTY LF CAP
WILSON, NC
CUSTOMER PO# WILSON COUNTY
ORDER# 94479

CONTENTS:

1. **DAILY GCL PRODUCTION CERTIFICATION**
2. **GCL MANUFACTURING CERTIFICATON AND TEST RESULTS**
3. **GCL MQA TRACKING FORM**

CETCO

DAILY GEOSYNTHETIC CLAY LINER PRODUCTION CERTIFICATION

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

CETCO

GEOSYNTHETIC CLAY LINER MANUFACTURING CERTIFICATION

CETCO JOB:	**WILSON COUNTY LF CAP**
DATE:	**OCTOBER 14, 1998**
ORDER NUMBER:	**94479**
PRODUCT:	**BENTOMAT ST**

Colloid Environmental Technologies Company (CETCO) hereby affirms and certifies that all of the Geosynthetic Clay Liner (GCL) manufactured in this lot achieves the physical and chemical criteria listed on the attached analysis sheets.

Cynthia Willix

Cynthia Willix
Quality Assurance Coordinator
CETCO

Subscribed and sworn to before me this 19 **day of** Oct. **,19** 98 **.**

Diane Hunsucker

Notary Public

OFFICIAL SEAL
DIANE B. HUNSUCKER
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 2, 2002

Printed on recycled paper.

CETCO

BENTOMAT ST
MANUFACTURING CERTIFICATION

TO: Mr. Steve Clayton
Wilson County Solid Waste Department
113 East Nash Street, 3rd Floor
Wilson, NC 27894-1728

PROJECT: Wilson County LF Cap

ORDER # : 94479

CETCO hereby affirms and certifies that Bentomat ST material supplied to this project will meet the physical criteria listed below:

PROPERTY	TEST METHOD	MINIMUM VALUE
Finished Product		
Bentonite Mass/Area	ASTM D 5993*	0.75 lb/sq.ft. min.
Grab Strength	ASTM D 4632	90 lbs. MARV
Grab Elongation	ASTM D 4632	10% typical
Index Flux	ASTM D 5887	1 x 10(-8) m3/m2/sec (max.)
Peel Strength	ASTM D 4632(modified)	15 lbs. min.
Permeabilty	ASTM D 5084	max. 5 x 10(-9) cm/sec

* Reported at 0% moisture content.

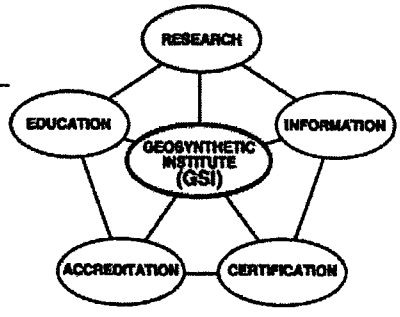
GAI Lab Accredited Test Methods were followed during confromance testing for :
ASTM D 5993 - Bentonite Mass/Area
ASTM D 4632 - Grab Strength and Grab Elongation

Cynthia Willix
Colloid Environmental Technologies Co. (CETCO)

Subscribed and sworn to before me this 19 day of Oct. 1998.

Diane Hunsucker
Notary Public

OFFICIAL SEAL
DIANE B. HUNSUCKER
Notary Public, Georgia
GORDON COUNTY
My Commission Expires
Jan. 2, 2002



STRAIGHT BILL OF LADING—ORIGINAL—NOT NEGOTIABLE

PAGE 1 O

CARRIER NAME: NATIONWIDE / Bulldog

DELIVERING CARRIER:

CONSIGNED TO: WILSON COUNTY LANDFILL

10/15/98

SHIPPER'S NO: 000094479

4537 LANDFILL RD

DEL DATE: [redacted] SHIP DATE: [redacted]

SHIPPER: CETCO

10/14/98

1350 W SHURE DR.

WILSON NC 27893 ARLINGTON HGTS IL 60004

PHONE: 252 399 2823

SOLDTO: 2893 SHIPTO: 01

CONSIGNED P.O.#: WILSON COUNTY

SHIPPING PLANT: FAIRMOUNT,GA

CAR/VEHICLE#:

P.O. BOX 88

FAIRMOUNT GA 30139

ROUTING/CONTRACT: (813)

Contact: Charlie 423-1735

LINE COMMENTS ALL BAGGED SHIPMENTS LOADED ON FLATBED OR OPEN TOP TRAILERS MUST BE COVERED WITH ADEQUATE TARPAULIN PRIOR TO HIGHWAY MOVEMENT. CARRIER WILL BE HELD FULLY RESPONSIBLE FOR LOSS OR DAMAGE OCCURRING TO UNPROTECTED LOADS.

ORDER COMMENTS CUSTOMER NEEDS ADDITIONAL MATERIAL (42 ROLLS) PER ALISA

QUANTITY	HM	DESCRIPTION OF ARTICLES PROD DESCRIPTION	WEIGHT (SUBJECT TO CORRECTION)
2-1000			
12 Rolls-150'		BENTOMAT ST CLOTH, SYNTHETIC FIBRE, NOT WOVEN, KNITTED NOR STITCHED	37994
12 Bags (on pallet-load from side)		CG-50 SEAMING CLAY (10902/024) CLAY-BENTONITE-GROUND (CLASS 50) 3296232	600

GROSS: .00 TARE: .00 NET: 38594

Subject to Section 7 of conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

COLLOID ENVIRONMENTAL TEC

(Signature of Consignor)

If charges are to be prepaid, write or stamp here, "Prepaid."

PREPAID

Shipper liable for line haul charges only.

COD charges to be paid by: Consignee

2:55

"MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS DEFINED IN TITLE 49 OF THE CODE OF FEDERAL REGULATIONS

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on [redacted], otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of [redacted] to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the terms and [redacted]ns of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classifications in effect on the date hereof, if this is a rail or a rail-water shipment, or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.

Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CARRIER:

Johnnie Richburg

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Per _____

PLACARDS REQUIRED

PLACARDS SUPPLIED

☐ YES ☐ NO—FURNISHED BY CARRIER

DRIVERS SIGNATURE:

PACKING LIST

COLLOID ENVIRONMENTAL TECH CO
1350 WEST SHURE DRIVE
ARLINGTON HEIGHTS IL 60004

ORDER NO:.. 000094479
ORDER DATE: 10/01/98
SHIP DATE:. 10/14/98

SOLD TO: 2893
WILSON CO DEPT OF SOLID WASTE
PO BOX 1728

SHIP FROM:. FAIRMOUNT,GA
FRT TERMS:. PREPAID & ABSORBED
SHIP VIA:.. NATIONWIDE

WILSON NC 27894

SHIP TO: 01
WILSON COUNTY LANDFILL
4537 LANDFILL RD

PO: WILSON COUNTY

WILSON NC 27893

PRODUCT	SIZE	U/M	LOT #	ROLL#	LNGTH	WIDTH	SHIP QTY	WEIGH
030-BENTOMAT ST		SFT SF	199842030	00015414	150.0	15.0	2250.0	3162
030-BENTOMAT ST		SFT SF	199842030	00015418	150.0	15.0	2250.0	3137
030-BENTOMAT ST		SFT SF	199842030	00015423	150.0	15.0	2250.0	3167
030-BENTOMAT ST		SFT SF	199842030	00015424	150.0	15.0	2250.0	3173
030-BENTOMAT ST		SFT SF	199842030	00015430	150.0	15.0	2250.0	3184
030-BENTOMAT ST		SFT SF	199842030	00015434	150.0	15.0	2250.0	3170
030-BENTOMAT ST		SFT SF	199842030	00015437	150.0	15.0	2250.0	3160
030-BENTOMAT ST		SFT SF	199842030	00015441	150.0	15.0	2250.0	3181
030-BENTOMAT ST		SFT SF	199842030	00015442	150.0	15.0	2250.0	3210
030-BENTOMAT ST		SFT SF	199842030	00015443	150.0	15.0	2250.0	3196
030-BENTOMAT ST		SFT SF	199842030	00015444	150.0	15.0	2250.0	3120
030-BENTOMAT ST		SFT SF	199842030	00015445	150.0	15.0	2250.0	3134

ORDER TOTALS..... 27000.0 37994.

TOTAL ITEMS..... 12

12 Bags

CETCO

GEOSYNTHETIC CLAY LINER QUALITY TEST RESULTS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

GCL QUALITY DATA

FAIRMOUNT,GA
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

O R D E R # 000094479

MATERIAL	LOT No.	ROLL No	BENTONITE MASS/AREA 0.75 lb/sqft ASTM D 5993	GRAB ELONGATION 10% Typical ASTM D 4632	GRAB STRENGTH 90 lbs ASTM D 4632	PEEL STRENGTH 15 lbs ASTM D 4632
030-BENTOMAT ST	199842030	00015445	.98	16.00	138.80	21.00
030-BENTOMAT ST	199842030	00015444	.98	16.00	138.80	21.00
030-BENTOMAT ST	199842030	00015443	.98	16.00	138.80	21.00
030-BENTOMAT ST	199842030	00015442	.98	16.00	138.80	21.00
030-BENTOMAT ST	199842030	00015441	.98	16.00	138.80	21.00
030-BENTOMAT ST	199842030	00015437	.98	16.00	138.80	20.40
030-BENTOMAT ST	199842030	00015434	.98	16.00	138.80	20.40
030-BENTOMAT ST	199842030	00015430	.98*	16.00	138.80	20.40*
030-BENTOMAT ST	199842030	00015424	1.04	16.00	138.80	22.40
030-BENTOMAT ST	199842030	00015423	1.04	16.00	138.80	22.40
030-BENTOMAT ST	199842030	00015418	1.04	16.00	138.80	21.30
030-BENTOMAT ST	199842030	00015414	1.04*	16.00	138.80	21.30*

NOTE:

An asterisk indicates the actual test done on the roll and the roll tested.
If an asterisk is not present, test results are based on the previous roll tested.
Mass Area and Moisture content are tested a minimum of every 40,000sf.
Grab Strength is tested a minimum of every 200,000sf.
Bentonite Mass/Area is reported at 0% moisture cont ent.
Grab Elongation is tested a minimum of every 200,000sf.

*** End of Report ***

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

DATE: 01-Sep-98

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 29-Aug-98
in BN 458600
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.5
MOISTURE	ASTM D 2216	12.0% MAX.	8.4
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 90544

BENTONITE
CERTIFICATE OF ANALYSIS

CETCO
92 HWY 37
LOVELL, WYO. 82431

TO: CETCO - CLAYMAX CORP.
P.O. BOX 88

FAIRMOUNT, GA. 30139

ATTN: CYNTHIA WILLIX

DATE: 01-Sep-98

Dear Sirs:

A shipment of CG 50
left our Lovell, WY plant on 29-Aug-98
in BN 447196
as requested on your order no. VERBAL

A sample from this shipment was tested, and gave the following results:

TEST	METHOD	REQ. SPECIFICATION	ACTUAL RESULTS
RET. 10 MESH	ASTM C 136	0% .	0
PASSING 200 MESH	ASTM C 136	1.0 % MAX	0.5
MOISTURE	ASTM D 2216	12.0% MAX.	8.8
FREE SWELL	ASTM D 5890	24 MIN.	26
FLUID LOSS	ASTM D 5891	18.0 MAX.	13

We hereby certify that the results shown above represent this shipment.
Tests were conducted using American Standard Test Methods and/or customer approved laboratory procedures.
Product made in the U.S.A.

Tests Conducted By: C.L.

Approved By: MOSES BRISENO

CETCO

In any correspondence regarding this shipment, please refer to our Order Number 90543

CETCO

GEOSYNTHETIC CLAY LINER MQA TRACKING FORMS

A Wholly Owned Subsidiary of AMCOL International

Printed on recycled paper.

COLLOID ENVIRONMENTAL TECH CO
GCL MQA/MQC TRACKING FORM

CETCO FAIRMOUNT PLANT
P.O. BOX 88
FAIRMOUNT GA 30139

SHIP TO: WILSON COUNTY LANDFILL
4537 LANDFILL RD
WILSON NC

ORDER NUMBER 000094479

ROLL#	MATERIAL	ROLL LENGTH	SQUARE FEET	ROLL WEIGHT	GEOSYNTHETIC TOP LOT#	GEOSYNTHETIC TOP ROLL#	GEOSYNTHETIC BOTTOM LOT#	GEOSYNTHETIC BOTTOM ROLL#	CLAY LOT#
LOT# 199842030									
00015414	030-BENTOMAT ST	150	2250	3162	7481317		199842010	00002377	447196
00015418	030-BENTOMAT ST	150	2250	3137	7481317		199842010	00002378	447196
00015423	030-BENTOMAT ST	150	2250	3167	7481317		199842010	00002378	447196
00015424	030-BENTOMAT ST	150	2250	3173	7481317		199842010	00002378	447196
00015430	030-BENTOMAT ST	150	2250	3184	7489209		199841010	00002350	447196
00015434	030-BENTOMAT ST	150	2250	3170	7489209		199841010	00002350	447196
00015437	030-BENTOMAT ST	150	2250	3160	7489209		199841010	00002350	447196
00015441	030-BENTOMAT ST	150	2250	3181	7489209		199841010	00002380	447196
00015442	030-BENTOMAT ST	150	2250	3210	7489209		199841010	00002380	447196
00015443	030-BENTOMAT ST	150	2250	3196	7489209		199841010	00002380	447196
00015444	030-BENTOMAT ST	150	2250	3120	7489209		199841010	00002380	458600
00015445	030-BENTOMAT ST	150	2250	3134	7489209		199841010	00002380	458600

TOTAL SQUARE FEET..... 27,000

TOTAL PAGES 1

CETCO 1350 W. Shure Dr. Arlington Hgts., IL Computation Sheet: GRI Accredited ASTM Method D-5887, Index Flux

Sample: Bentomat ST
Lot# 199839030 Roll# 13560
Project # : Bentomat QA

Permeability equation : ((0.879*Thickness)/(2*Pi*r^2*Time))*ln(Change in Head)

Flux equation : ((Inflow+Outflow)/200)/Pi*r^2/Time

Initial Thickness : 0.70 cm. Hydration : 48hrs Permeant : De-aired DI Water

Test Position : 309 Initial Head : 2psi 140.6 cm. Analyst : NP Date: 10/6/98

Cell Size : 4 in. Max. Effective Stress : 5psi 34.5kPa Requested by : Date Started: 9/25/98

Final Thickness 0.76 cm. * Indicates value meets Flux Ratio ASTM termination criteria

Conversions : 1 psi = 2.307 feet of head 1 foot of head = 30.48 cm 1 psi = 70.32 cm Flux (English) = Flux * 9.2366E+10

Date	Time (min)	Reading In	X	Reading Out	Y	X-Y	Head (cm)	H (cm)	Initial K (cm/sec)	Initial Flux ($m^3/m^2/sec$)		Avg Flux ($m^3/m^2/sec$)	Final K (cm/sec)	Final Flux (Gal/Acre /Day)	Inflow to Outflow Ratio
9/28/98	0	0.0	24.0	24.0	0.0	24.0	140.63	164.63							
	182	1.3	22.7	23.9	0.1	22.6	140.63	163.23	2.97E-09	7.91E-09			3.22E-9		13.00
	305	1.8	22.2	23.8	0.2	22.0	140.63	162.63	1.89E-09	5.01E-09			2.06E-9		5.00
9/29/98	1314	4.6	19.4	22.0	2.0	17.4	140.63	158.03	1.80E-09	4.69E-09	*		1.95E-9		1.56
	1421	4.8	19.2	21.8	2.2	17.0	140.63	157.63	1.50E-09	3.84E-09	*		1.63E-9		1.00
	1483	4.9	19.1	21.7	2.3	16.8	140.63	157.43	1.30E-09	3.32E-09	*		1.41E-9		1.00
	1634	5.2	18.8	21.4	2.6	16.2	140.63	156.83	1.60E-09	4.08E-09	*		1.74E-9		1.00
	1716	5.4	18.6	21.2	2.8	15.8	140.63	156.43	1.97E-09	5.01E-09	*	4.14E-09	2.14E-9	382	1.00

Final Flux 4.1E-9 $m^3/m^2/sec$

Final Hydraulic Conductivity 1.8E-9 cm/s

CETCO 1350 W. Shure Dr. Arlington Hgts., IL **Computation Sheet:Test Method: GRI-GCL 2**

Sample: Bentomat ST **Permeability equation :** ((0.879*Thickness)/(2*Pi*r^2*Time))*ln(Change in Head)

Lot# 199840030 Roll# 14271

Project # : Bentomat QA **Flux equation :** ((Inflow+Outflow)/200)/Pi*r^2/Time

Initial Thickness : 0.79 cm. **Hydration :** 48hrs **Permeant :** De-aired DI Water

Test Position : 305 **Initial Head :** 2psi 140.6 cm. **Analyst :** NP **Date:** 10/16/98

Cell Size : 4 in. **Max. Effective Stress :** 5psi 34.5kPa **Requested by :** **Date Started:** 10/7/98

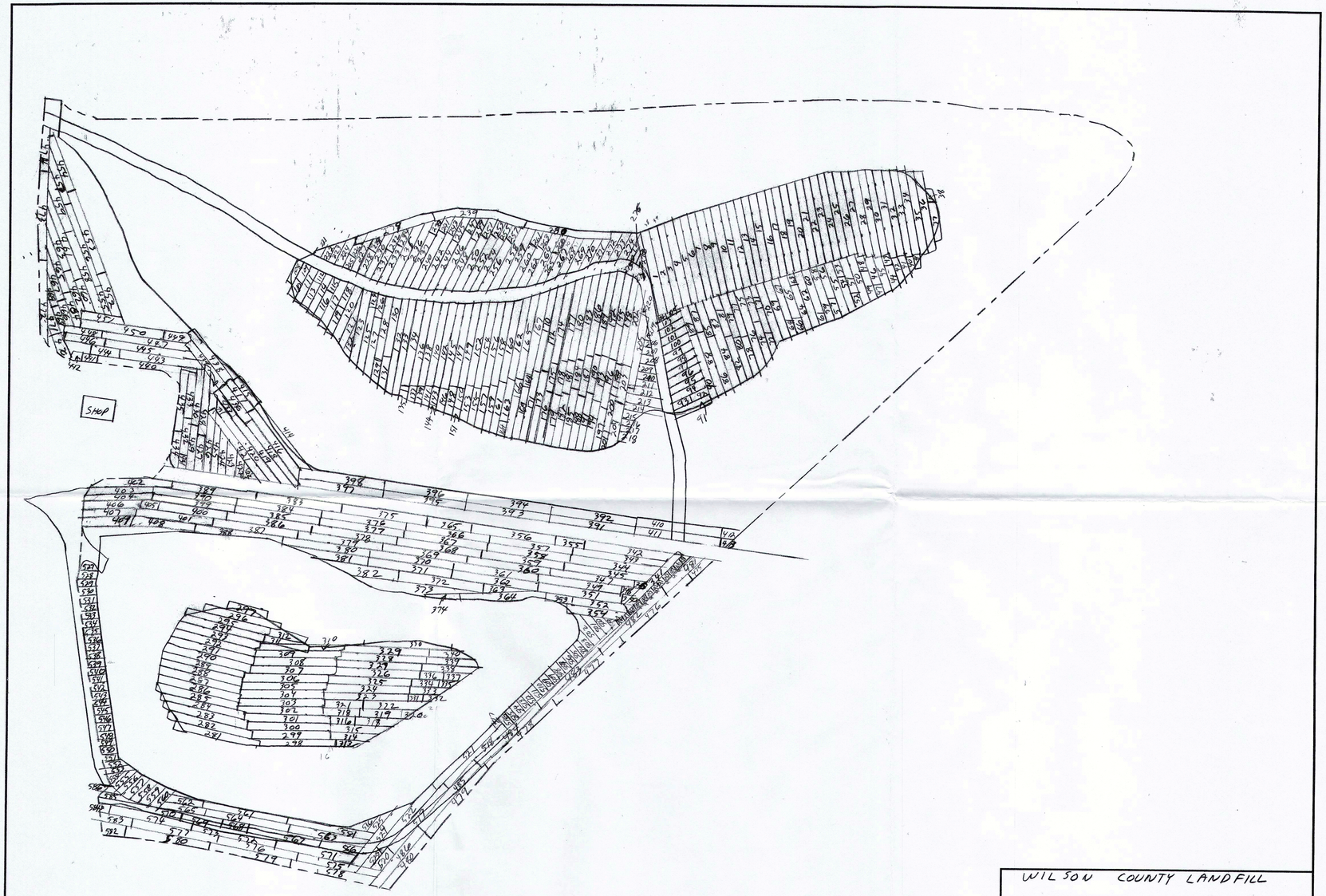
Final Thickness 0.71 cm. *** indicates value meets Flux Ratio ASTM termination criteria**

Conversions : 1 psi = 2.307 feet of head 1 foot of head = 30.48 cm 1 psi = 70.32 cm Flux (English) = Flux * 9.2366E+10

Date	Time (min)	Reading In	X	Reading Out	Y	X-Y	Head (cm)	H (cm)	Initial K (cm/sec)	Initial Flux ($m^3/m^2/sec$)		Avg Flux ($m^3/m^2/sec$)	Final K (cm/sec)	Final Flux (Gal/Acre /Day)	Inflow to Outflow Ratio
10/12/98	0	0.0	24.0	24.0	0.0	24.0	140.63	164.63							
	108	1.6	22.4	23.0	1.0	21.4	140.63	162.03	1.05E-08	2.47E-08			9.46E-9		1.60
	191	2.7	21.3	22.1	1.9	19.4	140.63	160.03	1.07E-08	2.48E-08	*		9.60E-9		1.22
	340	4.1	19.9	20.8	3.2	16.7	140.63	157.33	8.15E-09	1.86E-08	*		7.33E-9		1.08
	460	5.3	18.7	19.9	4.1	14.6	140.63	155.23	7.99E-09	1.80E-08	*		7.18E-9		1.33
10/13/98	1403	10.7	13.3	15.0	9.0	4.3	140.63	144.93	5.20E-09	1.12E-08			4.67E-9		1.10
	0	0.0	24.0	24.0	0.0	24.0	140.63	164.63							
	79	0.8	23.2	23.8	0.2	23.0	140.63	163.63	5.50E-09	1.30E-08			4.95E-9		4.00
	188	2.0	22.0	23.2	0.8	21.2	140.63	161.83	7.24E-09	1.70E-08			6.51E-9		2.00
	390	3.3	20.7	22.3	1.7	19.0	140.63	159.63	4.84E-09	1.12E-08			4.35E-9		1.44
	548	4.2	19.8	21.7	2.3	17.5	140.63	158.13	4.26E-09	9.76E-09	*		3.83E-9		1.50
10/14/98	1510	8.9	15.1	17.9	6.1	9.0	140.63	149.63	4.10E-09	9.08E-09	*		3.68E-9		1.24
	1600	9.2	14.8	17.6	6.4	8.4	140.63	149.03	3.19E-09	6.85E-09	*		2.86E-9		1.00
	1782	9.7	14.3	17.1	6.9	7.4	140.63	148.03	2.64E-09	5.65E-09	*		2.37E-9		1.00
	1864	9.9	14.1	16.9	7.1	7.0	140.63	147.63	2.36E-09	5.01E-09	*	5.84E-09	2.12E-9	539	1.19

Final Flux 5.8E-9 $m^3/m^2/sec$

Final Hydraulic Conductivity 2.5E-9 cm/s



WILSON COUNTY LANDFILL

SCALE: 1" = 100'	APPROVED BY:	DRAWN BY CE
DATE: 10/15/98		REVISED

ASBUILT GCL LAYOUT

EROSION CONTROL SYSTEMS OF FL
1-800-209-6198

DRAWING NUMBER A1

PANEL	ROLL	LOT
1	9653	19983303
2	9655	
3	9650	
4	9646	
5	9645	
6	9647	
7	9651	
8	9652	
9	9649	
10	10093	19983403
11	10098	
12	10081	
13	10064	
14	10085	
15	10095	
16	10094	
17	10104	
18	10101	
19	10102	
20	10090	
21	10106	
22	10108	
23	10105	
24	10092	
25	10097	
26	10086	
27	9209	19983303
28	10084	19983403
29	10099	
30	10098	
31	10100	
32	10103	
33	10089	
34	10096	
35	10107	
36	10161	
37	10156	
38	10150	
39	10156	
40	10156	
41	10157	
42	10159	
43	10160	
44	10159	
45	10160	
46	10160	
47	9656	19983303
48	9644	
49	9656	
50	9644	
51	9644	
52	10091	19983403
53	9920	19983303
54	10091	19983403
55	9920	19983303
56	9920	
57	9396	
58	9396	
59	10143	19983403
60	10143	
61	10162	
62	10162	
63	10162	
64	10163	
65	10163	
66	10152	
67	10152	
68	10153	
69	10153	
70	10193	
71	10193	
72	10191	
73	10191	
74	10195	
75	10195	
76	10192	
77	10192	
78	10187	
79	10189	
80	10194	
81	10194	
82	10148	
83	10148	
84	10158	19983403
85	10158	19983403
86	9654	19983303
87	9654	
88	9648	
89	10154	19983403
90	10147	
91	10147	
92	10147	
93	10185	
94	10185	
95	10155	
96	10155	
97	10187	
98	10187	
99	10183	
100	10183	
101	10183	
102	10188	
103	10188	
104	10188	
105	10186	
106	10186	
107	10186	
108	10186	
109	10273	
110	10186	
111	10273	
112	10163	
113	10293	
114	10163	
115	10150	
116	10163	
117	10150	
118	9972	19983303
119	10150	19983403
120	9972	19983303
121	9972	
122	9975	
123	10149	19983403
124	10149	
125	10139	
126	10139	
127	10146	
128	10140	
129	10146	
130	10140	
131	10200	
132	10262	
133	10220	
134	10227	
135	10200	
136	10224	
137	10200	
138	10221	
139	10200	
140	10226	
141	10200	
142	10229	
143	10200	
144	10228	
145	10230	
146	10228	
147	10181	
148	10228	
149	10275	
150	10228	
151	10218	
152	10225	
153	10218	
154	10184	
155	10218	
156	10199	
157	10144	
158	10145	
159	10144	
160	10223	
161	10222	
162	10217	
163	10222	
164	10335	
165	10219	
166	10325	
167	10346	
168	10325	19983403
169	10560	19983403
170	10296	
171	10560	
172	10342	
173	10320	
174	10338	
175	10564	
176	10320	
177	10348	
178	10564	
179	10327	
180	10335	
181	10327	
182	10557	
183	10375	
184	10557	
185	10317	
186	10319	19983403
187	10964	19983503
188	11312	19983503
189	10306	19983403
190	10964	19983503
191	11312	19983503
192	10389	19983403
193	11258	19983503
194	11308	19983503
195	10444	19983403
196	11258	19983503
197	11308	19983503
198	10563	19983403
199	11359	19983503
200	11250	19983503
201	10352	19983403
202	11314	19983503
203	11303	19983503
204	10352	19983403
205	11311	19983503
206	10599	19983403
207	10599	
208	10599	
209	10599	19983403
210	11299	19983503
211	11299	
212	11251	
213	11251	
214	11300	
215	11300	
216	11300	
217	11300	
218	11300	
219	11260	
220	11260	19983503
221	10627	19983403
222	10627	19983403
223	10856	19983503
224	10627	19983403
225	10856	19983503
226	10612	19983403
227	10856	19983503
228	10612	19983403
229	10610	
230	10612	
231	10608	
232	10610	
233	10608	19983403
234	10966	19983503
235	9826	19983803
236	10966	19983403
237	10957	19983503
238	9826	19983803
239	10249	19983403
240	10246	19983403
241	10957	19983503
242	11301	19983503
243	10246	19983403
244	10568	19983403
245	11301	19983503
246	10565	19983403
247	10568	19983403
248	9825	19983803
249	10565	19983603
250	10566	19983903
251	9825	19983803
252	11261	19983503
253	10966	19983403
254	11022	19983503
255	11261	
256	11022	
257	11022	19983503
258	10381	19983403
259	10573	
260	10381	
261	10569	
262	10573	
263	10569	
264	10570	
265	10569	
266	10570	
267	10616	
268	10616	
269	10609	
270	10609	
271	10613	
272	10609	
273	10613	
274	10613	19983403
275	10863	19983503
276	10613	19983403
277	10863	19983503
278	10621	19983403
279	10567	19983403
280	10961	19983503
281	10955	19983503
282	10559	19983403
283	10968	19983503
284	10621	19983503
285	10549	19983403
286	10958	19983503
287	10556	19983403
288	10965	19983503
289	10553	19983403
290	10956	19983503
291	10561	19983403
292	10967	19983503
293	10960	19983503
294	10366	19983403
295	10377	19983403
296	10867	19983503
297	10936	19983503
298	10299	19983403
299	10379	
300	10323	
301	10312	19983403
302	10954	19983503
303	10374	19983503
304	10344	
305	10367	
306	10318	
307	10307	
308	10305	19983403
309	10872	19983503
310	10369	19983403
311	10936	19983503
312	10936	19983503
313	10216	19983403
314	10216	
315	10395	
316	10395	19983403
317	10852	19983503
318	10852	
319	10868	
320	10857	
321	10941	
322	10857	
323	10871	19983503
324	10300	19983403
325	10861	19983503
326	10862	
327	10860	
328	10855	19983503
329	10388	19983403
330	10863	19983503
331	10941	
332	11260	
333	10853	
334	10853	19983503
335	10376	19983403
336	10376	19983403
337	10371	19983403
338	10371	19983403
339	10962	19983503
340	10962	19983503
341	10429	19983403
342	10611	
343	10615	
344	10623	
345	10619	
346	10435	
347	10440	
348	10435	
349	10436	
350	10435	
351	10431	
352	10439	
353	10435	
354	10439	
355	10621	
356	10374	
357	10382	
358	10393	
359	10379	
360	10329	
361	10343	
362	10382	
363	10379	
364	10365	
365	10379	
366	10432	
367	10391	
368	10434	
369	10426	
370	10603	
371	10438	
372	10427	
373	10368	
374	10379	
375	10321	
376	10378	
377	10428	
378	10386	
379	10625	
380	10602	
381	10628	
382	10628	19983403
383	11820	19983603
384	11615	
385	11624	
386	11814	
387	11821	
388	11610	
389	11822	
390	11823	19983603
391	10430	19983403
392	10617	
393	10620	19983403
394	11256	19983503
395	10607	19983403
396	11818	19983603
397	11817	
398	11421	19983503
399	10937	19983403
400	10394	19983403
401	11249	19983503
402	13715	19983703
403	13717	19983703
404	11422	19983503
405	13720	19983903
406	11422	19983503
407	13720	19983903
408	13720	19983703
409	11422	19983503
410	14227	19984003
411	14228	19984003
412	11253	19983503
413	11253	
414	14732	19984003
415	13721	19983503
416	13721	19983703
417	14167	19984003
418	14240	19984003
419	13722	19983903
420	14237	19984003
421	14237	19984003
422	11629	19983503
423	11629	
424	11629	
425	14225	19984003
426	14225	
427	14225	
428	14230	
429	14230	
430	14223	
431	14236	
432	14223	
433	14180	19983903
434	14180	
435	14186	19983903
436	10933	19983603
437	10933	
438	14176	19983903
439	14176	
440	14173	
441	13702	
442	13705	
443	14174	
444	13704	
445	14175	
446	13704	
447	13702	
448	13708	
449	13704	
450	13695	19983903
451	14951	19984103
452	14952	
453	15096	
454	14952	
455	14952	
456	14963	
457	14944	
458	14950	
459	14944	
460	14951	
461	14945	
462	14943	
463	14951	
464	14954	
465	14963	
466	14954	
467	15097	
468	15097	
469	14969	
470	14969	
471	14968	
472	14969	
473	14953	
474	14952	
475	14968	
476	14997	19984103
477	14235	19984003
478	14238	
479	14191	
480	14241	
481	14968	19984103
482	15099	
483	15098	
484	15112	
485	15104	
486	14781	19984003
487	14222	
488		
489		
490		
491	14234	
492		
493		
494		
495		
496		
497	14229	
498		
499		
500		
501	14220	
502		
503		
504		
505	14221	19984003
506		
507		
508		
509	15111	19984103
510		
511		
512		
513	15107	
514		
515		
516		
517		
518		
519	15106	
520	15100	
521	14239	19984003
522	14226	
523	13728	
524	14231	
525	14239	
526	14239	
527	14239	
528	14239	
529	14239	
530	14961	19984103
531		
532		
533		
534	14979	
535		
536		
537	11620	19983603
538		
539		
540	11630	
541		
542		
543		
544	11620	
545	14979	19984103
546	11420	19983603
547		
548		
549		
550	11428	
551		
552		
553		
554	11618	
555		
556		
557		
558	11243	
559		
560		
561	11252	
562	11628	
563	11644	
564	11424	
565	15443	19984203
566	11616	19983603
567	11253	
568	11628	
569	15443	19984203
570	15437	19984203
571	11249	
572	11425	
573	15444	19984203
574	15414	19984203
575	14236	19984003
576	15117	19984103
577	14177	19984003
578	15105	19984103
579	14178	19983903
580	15119	19984103
581	11619	19983603
582	15430	19984203
583	15423	
584	15423	
585	15418	
586	15418	

WILSON COUNTY LAND FILL

SCALE: 1" = 100'

APPROVED BY:

DRAWN BY C.E.

DATE: 10/15/98

REVISED

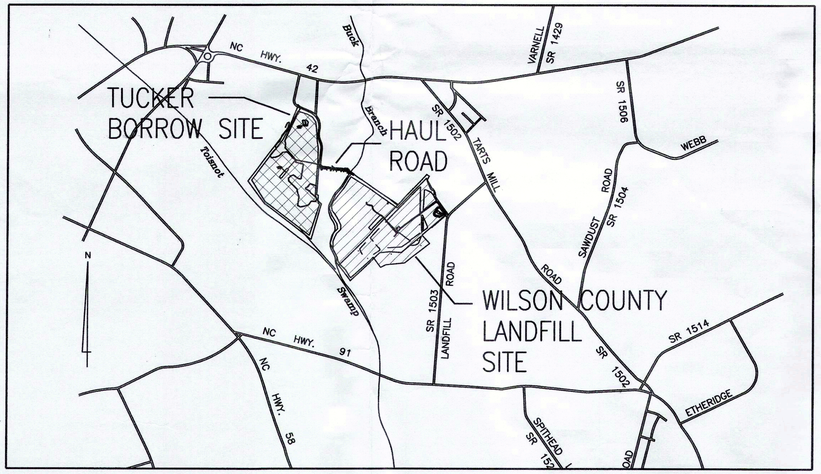
ASBUILT GCL LAYOUT

EROSION CONTROL SYSTEMS OFF 1-800-209-6198

DRAWING NUMBER A2

98-01

CONSTRUCTION PLANS FOR THE WILSON COUNTY LANDFILL FINAL COVER PROJECT



VICINITY MAP

SCALE - 1 INCH=3000 FEET

DRAWING INDEX

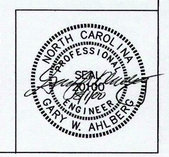
DRAWING NO.	DRAWING TITLE
1	LANDFILL SITE PLAN
2	(See Drawing 3)
3	FINAL COVER PLAN
4	STORMWATER DRAINAGE PLAN
5	DETAILS
6	DETAILS

AUG 2000
Received
Solid Waste
Section

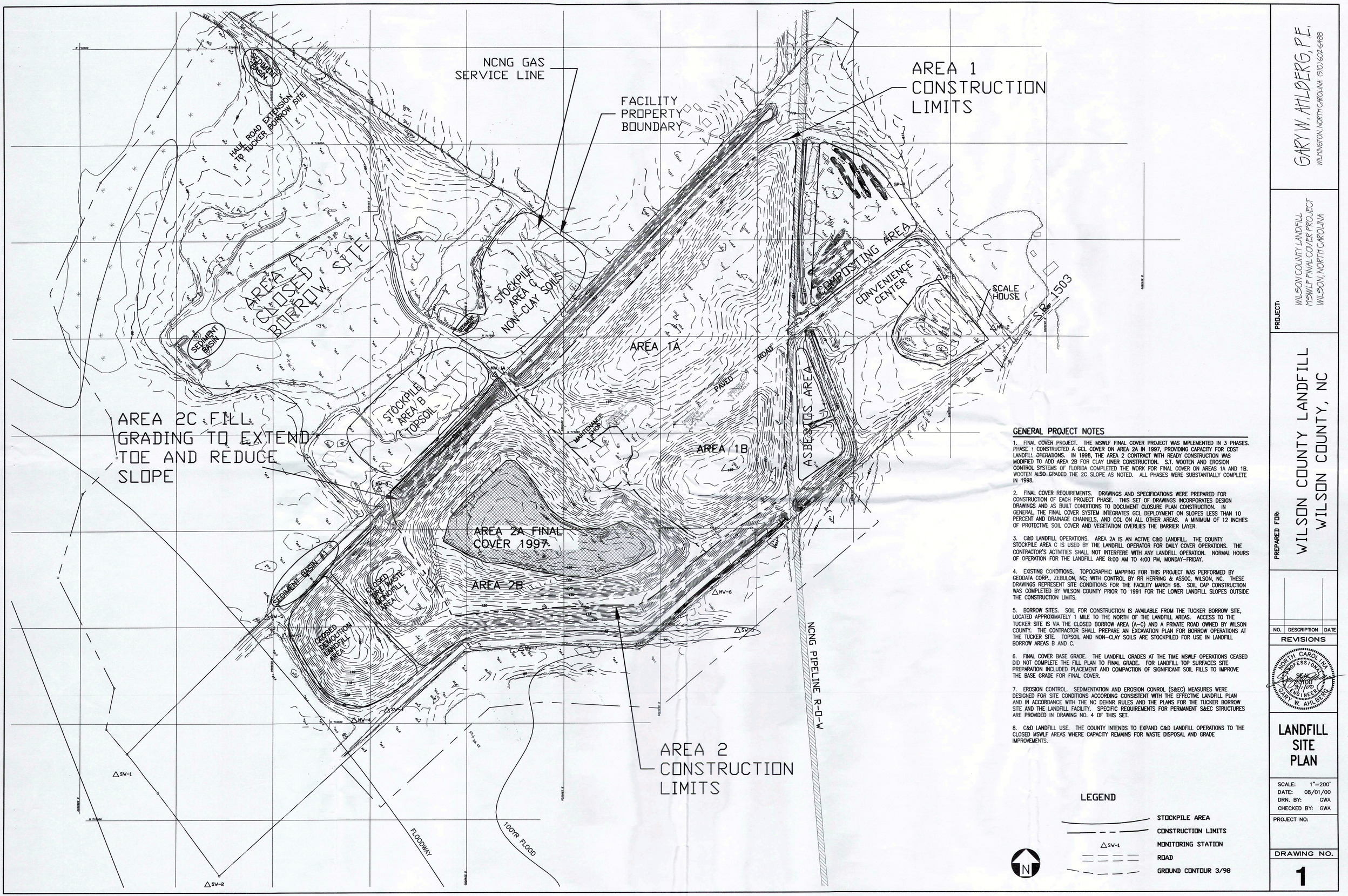
WILSON COUNTY, NORTH CAROLINA
AUGUST 2000

DOCUMENTATION AND AS-BUILT RECORDS

GARY W. AHLBERG, P.E.
P.O. BOX 58
WILMINGTON, NORTH CAROLINA
28402
910.602.6488



98-01



GENERAL PROJECT NOTES

1. FINAL COVER PROJECT. THE MSWLF FINAL COVER PROJECT WAS IMPLEMENTED IN 3 PHASES. PHASE 1 CONSTRUCTED A GCL COVER ON AREA 2A IN 1997, PROVIDING CAPACITY FOR CDST LANDFILL OPERATIONS. IN 1998, THE AREA 2 CONTRACT WITH READY CONSTRUCTION WAS MODIFIED TO ADD AREA 2B FOR CLAY LINER CONSTRUCTION. S.T. WOOTEN AND EROSION CONTROL SYSTEMS OF FLORIDA COMPLETED THE WORK FOR FINAL COVER ON AREAS 1A AND 1B. WOOTEN ALSO GRADED THE 2C SLOPE AS NOTED. ALL PHASES WERE SUBSTANTIALLY COMPLETE IN 1998.

2. FINAL COVER REQUIREMENTS. DRAWINGS AND SPECIFICATIONS WERE PREPARED FOR CONSTRUCTION OF EACH PROJECT PHASE. THIS SET OF DRAWINGS INCORPORATES DESIGN DRAWINGS AND AS BUILT CONDITIONS TO DOCUMENT CLOSURE PLAN CONSTRUCTION. IN GENERAL, THE FINAL COVER SYSTEM INTEGRATES GCL DEPLOYMENT ON SLOPES LESS THAN 10 PERCENT AND DRAINAGE CHANNELS, AND CCL ON ALL OTHER AREAS. A MINIMUM OF 12 INCHES OF PROTECTIVE SOIL COVER AND VEGETATION OVERLIES THE BARRIER LAYER.

3. C&D LANDFILL OPERATIONS. AREA 2A IS AN ACTIVE C&D LANDFILL. THE COUNTY STOCKPILE AREA C IS USED BY THE LANDFILL OPERATOR FOR DAILY COVER OPERATIONS. THE CONTRACTOR'S ACTIVITIES SHALL NOT INTERFERE WITH ANY LANDFILL OPERATION. NORMAL HOURS OF OPERATION FOR THE LANDFILL ARE 8:00 AM TO 4:00 PM, MONDAY–FRIDAY.

4. EXISTING CONDITIONS. TOPOGRAPHIC MAPPING FOR THIS PROJECT WAS PERFORMED BY GEODATA CORP., ZEBULON, NC; WITH CONTROL BY RR HERRING & ASSOC, WILSON, NC. THESE DRAWINGS REPRESENT SITE CONDITIONS FOR THE FACILITY MARCH 98. SOIL CAP CONSTRUCTION WAS COMPLETED BY WILSON COUNTY PRIOR TO 1991 FOR THE LOWER LANDFILL SLOPES OUTSIDE THE CONSTRUCTION LIMITS.

5. BORROW SITES. SOIL FOR CONSTRUCTION IS AVAILABLE FROM THE TUCKER BORROW SITE, LOCATED APPROXIMATELY 1 MILE TO THE NORTH OF THE LANDFILL AREAS. ACCESS TO THE TUCKER SITE IS VIA THE CLOSED BORROW AREA (A–C) AND A PRIVATE ROAD OWNED BY WILSON COUNTY. THE CONTRACTOR SHALL PREPARE AN EXCAVATION PLAN FOR BORROW OPERATIONS AT THE TUCKER SITE. TOPSOIL AND NON–CLAY SOILS ARE STOCKPILED FOR USE IN LANDFILL BORROW AREAS B AND C.

6. FINAL COVER BASE GRADE. THE LANDFILL GRADES AT THE TIME MSWLF OPERATIONS CEASED DID NOT COMPLETE THE FILL PLAN TO FINAL GRADE. FOR LANDFILL TOP SURFACES SITE PREPARATION INCLUDED PLACEMENT AND COMPACTION OF SIGNIFICANT SOIL FILLS TO IMPROVE THE BASE GRADE FOR FINAL COVER.

7. EROSION CONTROL. SEDIMENTATION AND EROSION CONROL (S&EC) MEASURES WERE DESIGNED FOR SITE CONDITIONS ACCORDING CONSISTENT WITH THE EFFECTIVE LANDFILL PLAN AND IN ACCORDANCE WITH THE NC DEHNR RULES AND THE PLANS FOR THE TUCKER BORROW SITE AND THE LANDFILL FACILITY. SPECIFIC REQUIREMENTS FOR PERMANENT S&EC STRUCTURES ARE PROVIDED IN DRAWING NO. 4 OF THIS SET.

8. C&D LANDFILL USE. THE COUNTY INTENDS TO EXPAND C&D LANDFILL OPERATIONS TO THE CLOSED MSWLF AREAS WHERE CAPACITY REMAINS FOR WASTE DISPOSAL AND GRADE IMPROVEMENTS.

LEGEND

- STOCKPILE AREA
- CONSTRUCTION LIMITS
- △SW-1 MONITORING STATION
- ROAD
- GROUND CONTOUR 3/98

N

GARY W. AHLBERG, P.E.
WILMINGTON, NORTH CAROLINA (910) 602-6488

PROJECT:
WILSON COUNTY LANDFILL
MSWLF FINAL COVER PROJECT
WILSON, NORTH CAROLINA

PREPARED FOR:
WILSON COUNTY LANDFILL
WILSON COUNTY, NC

NO.	DESCRIPTION	DATE

REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20102 GARY W. AHLBERG

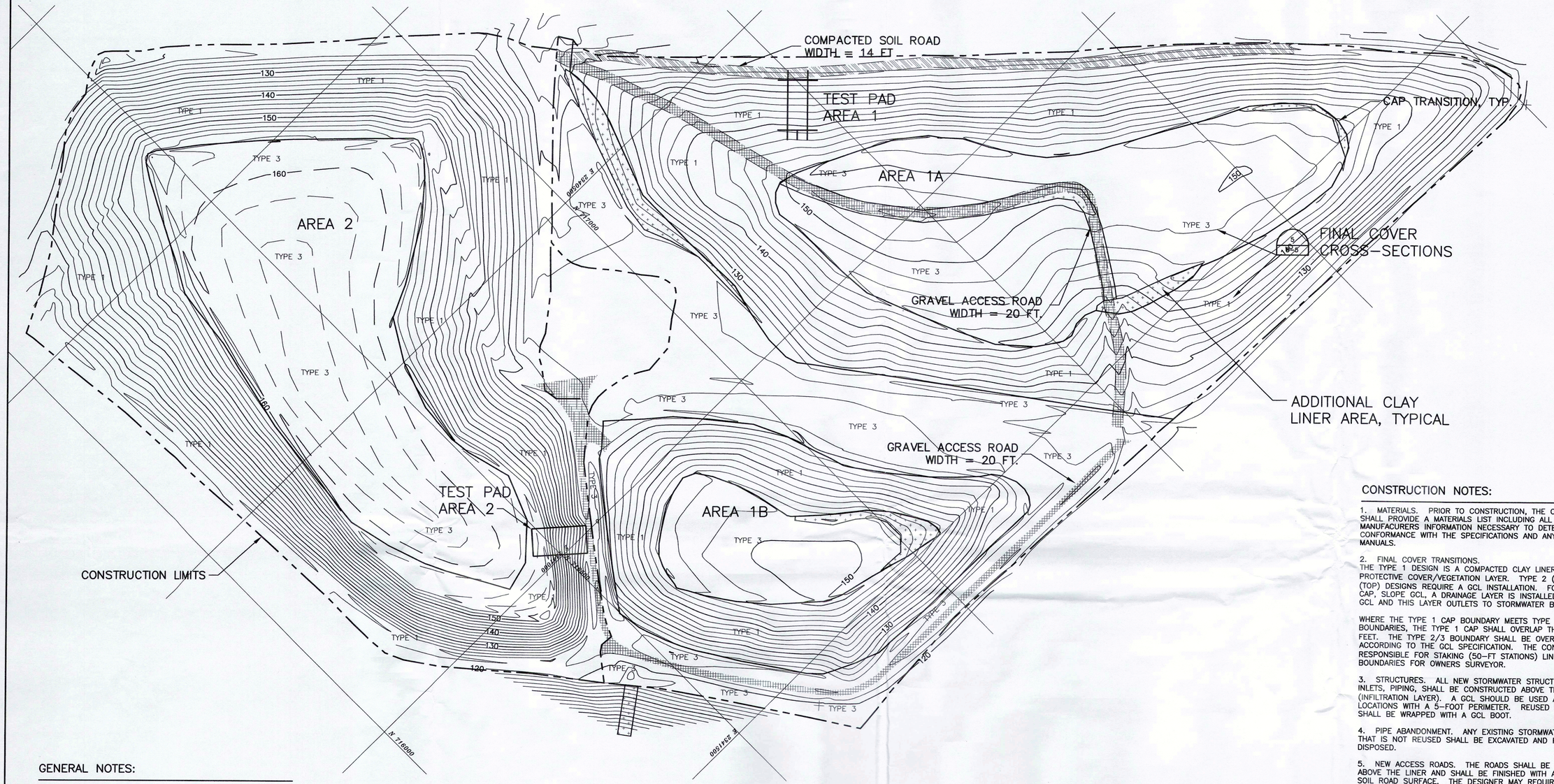
LANDFILL SITE PLAN

SCALE: 1"=200'
DATE: 08/01/00
DRN. BY: GWA
CHECKED BY: GWA

PROJECT NO:

DRAWING NO.

1



GENERAL NOTES:

1. CONSTRUCTION LIMITS. AREA 1 IS APPROXIMATELY 37 AC; THE PAVED ROAD DIVIDES THE LANDFILL INTO SUBAREAS 1A (25 AC) AND 1B (12 AC). AREA 2 IS APPROXIMATELY 25 ACRES.

2. CAP ALTERNATIVES. THREE FINAL COVER DESIGNS ARE SPECIFIED IN THE PLANS. THE TYPE 2 CAP WAS NOT USED. ALL TYPE 3 CONSTRUCTION UTILIZED BENTOMAT ST FOR CONSTRUCTION IN 1998. AREA 2A GCL MATERIAL IS CLAYMAX 200R, UNREINFORCED GCL.

3. CONSTRUCTION SCHEDULE. TYPE 2 AND 3 FINAL COVER INSTALLATION IS INDEPENDENT OF CLAY CONSTRUCTION IN AREA 2. COMMENCEMENT OF CLAY LINER INSTALLATION IN AREA 1 IS DEPENDENT ON THE AREA 2 CONTRACTOR'S SCHEDULE. AREA 2 IS EXPECTED TO BE COMPLETE BY 1 SEPT 98.

4. CLAY LINER TEST PAD. THREE TEST PADS WERE CONSTRUCTED FOR THE PROJECT. SEE TEST PAD REPORTS FOR DETAILS.

5. LANDFILL CONDITIONS AND GRADING. THE SITE IS PREDOMINATELY BARE GROUND AND LOW VEGETATION. WITH THE APPROVAL OF THE PROJECT MANAGER, SITE PREPARATION WASTE MAY BE DEPLOYED ON THE LOWER SLOPES. ADDITIONAL GRADING WILL BE PERFORMED BY THE OWNER PRIOR TO THE CONTRACTOR'S WORK. PROPOSED GRADE CONTOURS (GREY) INDICATE REMOVAL OF A SOIL STOCKPILE IN AREA 1A AND GRADING ON THE TOP AREAS TO ESTABLISH A 5% SLOPE. ACTUAL TOPOGRAPHY WILL BE OBTAINED BY THE OWNER'S SURVEYOR PRIOR TO LINER INSTALLATION. THE CONTRACTOR IS REQUIRED TO PERFORM FINE GRADING TO REMOVE SLOPE IRREGULARITIES. ADDITIONAL GRADING MAY BE DIRECTED BY THE DESIGNER.

6. LANDFILL TOPOGRAPHY. THE TOPOGRAPHY SHOWN ON THIS DRAWING IS A DIGITAL TERRRAIN MODEL BASED ON THE OWNER'S SURVEY OF THE TOP OF PROTECTIVE COVER, CHANNEL AND SLOPE TOES, AND OTHER PAYMENT FEATURES. RR HERRING AND ASSOCIATES, WILSON, NORTH CAROLINA IS THE OWNERS SURVEYOR AND PROVIDED SURVEY GRID CHECKS ON SOIL LAYER THICKNESS.

7. TEMPORARY STORMWATER DIVERSION. IN ORDER TO MINIMIZE RUN-ON IN CONSTRUCTION AREAS, TEMPORARY DIVERSION DITCHES SHALL BE ESTABLISHED AS NECESSARY. WHERE PRACITICAL, THE DIVERSIONS SHALL BE LOCATED ACCORDING TO THE PLANS FOR PERMANENT STORMWATER BERMS.

8. TECHNICAL SPECIFICATIONS. REFER TO THE PROJECT SPECIFICATIONS FOR DETAILED CONSTRUCTION REQUIREMENTS.

CONSTRUCTION NOTES:

1. MATERIALS. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE A MATERIALS LIST INCLUDING ALL MANUFACURERS INFORMATION NECESSARY TO DETERMINE CONFORMANCE WITH THE SPECIFICATIONS AND ANY INSTALLATION MANUALS.

2. FINAL COVER TRANSITIONS.
THE TYPE 1 DESIGN IS A COMPACTED CLAY LINER WITH PROTECTIVE COVER/VEGETATION LAYER. TYPE 2 (SLOPE) AND 3 (TOP) DESIGNS REQUIRE A GCL INSTALLATION. FOR THE TYPE 2 CAP, SLOPE GCL, A DRAINAGE LAYER IS INSTALLED ABOVE THE GCL AND THIS LAYER OUTLETS TO STORMWATER BERMS.

WHERE THE TYPE 1 CAP BOUNDARY MEETS TYPE 2 OR 3 BOUNDARIES, THE TYPE 1 CAP SHALL OVERLAP THE GCL BY 5 FEET. THE TYPE 2/3 BOUNDARY SHALL BE OVERLAPPED ACCORDING TO THE GCL SPECIFICATION. THE CONTRACTOR IS RESPONSIBLE FOR STAKING (50-FT STATIONS) LINER BOUNDARIES FOR OWNERS SURVEYOR.

3. STRUCTURES. ALL NEW STORMWATER STRUCTURES, DROP INLETS, PIPING, SHALL BE CONSTRUCTED ABOVE THE LINER (INFILTRATION LAYER). A GCL SHOULD BE USED AT STRUCTURE LOCATIONS WITH A 5-FOOT PERIMETER. REUSED CULVERT ENDS SHALL BE WRAPPED WITH A GCL BOOT.

4. PIPE ABANDONMENT. ANY EXISTING STORMWATER PIPING THAT IS NOT REUSED SHALL BE EXCAVATED AND PROPERLY DISPOSED.

5. NEW ACCESS ROADS. THE ROADS SHALL BE CONSTRUCTED ABOVE THE LINER AND SHALL BE FINISHED WITH A GRAVEL OR SOIL ROAD SURFACE. THE DESIGNER MAY REQUIRE INSTALLATION OF A LOAD DISTRIBUTING GEOGRID FOR SPECIFIC ROAD SEGMENTS.

6. QUALITY CONTROL DOCUMENTATION. AT LEAST 14 DAYS PRIOR TO INSTALLATION, THE CONTRACTOR SHALL PROVIDE ALL MATERIAL QUALITY CONTROL AND TESTING DATA FOR LINER MATERIALS. THE DATA SHALL BE PROVIDED TO THE APPROPRIATE QAC AS SPECIFIED.

7. CONTRACTORS. READY CONSTRUCTION IS THE CONTRACTOR OF RECORD FOR AREA 2 FINAL COVER. WITH THE EXCEPTION OF GCL INSTALLATION, S.T. WOOTEN IS THE CONTRACTOR OF RECORD FOR AREA 1 FINAL COVER. EROSION CONTROL SYSTEMS OF FLORIDA INSTALLED THE TYPE 3 COVER IN AREA 1 AND COMPLETED THE NORTHERN END OF AREA 2A GCL.

GARY W. AHLBERG, P.E.
WILMINGTON, NORTH CAROLINA (910) 602-6488

PROJECT:
WILSON COUNTY LANDFILL
MSWLF FINAL COVER PROJECT
WILSON, NORTH CAROLINA

PREPARED FOR:
WILSON COUNTY LANDFILL
WILSON COUNTY, NC

NO.	DESCRIPTION	DATE
1	CAP TYPE BOUNDARIES	8/14/98

REVISIONS

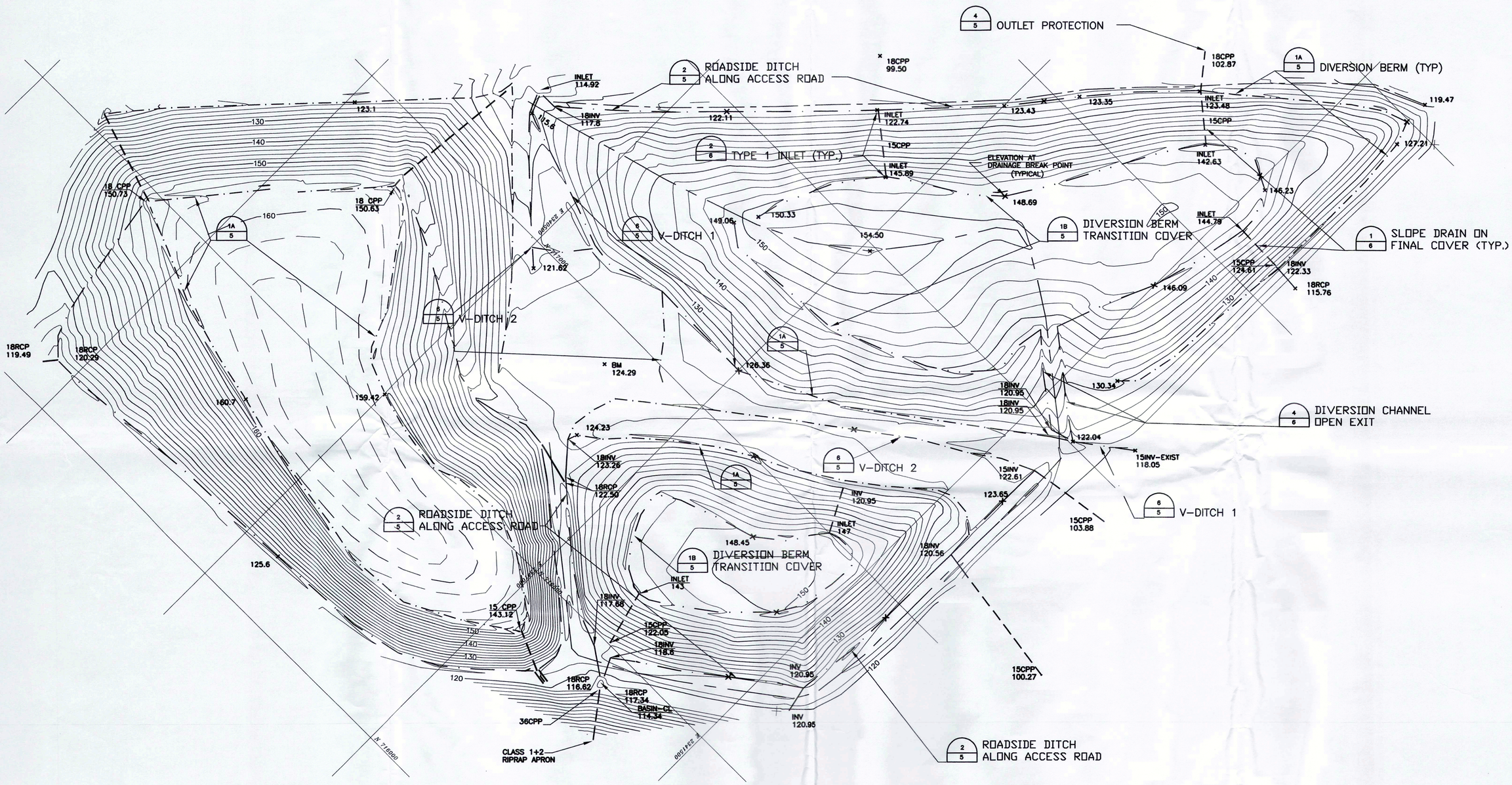
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20100 GARY W. AHLBERG

FINAL COVER PLAN

SCALE: 1"=100'
DATE: 08/01/00
DRN. BY: GWA
CHECKED BY: GWA

PROJECT NO:

DRAWING NO.
3



GARY W. AHLBERG, P.E.
WILMINGTON, NORTH CAROLINA 910.602.6488

PROJECT:
WILSON COUNTY LANDFILL
MSWLF FINAL COVER PROJECT
WILSON, NORTH CAROLINA

PREPARED FOR:
WILSON COUNTY LANDFILL
WILSON COUNTY, NC

NO.	DESCRIPTION	DATE

REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20100 GARY W. AHLBERG

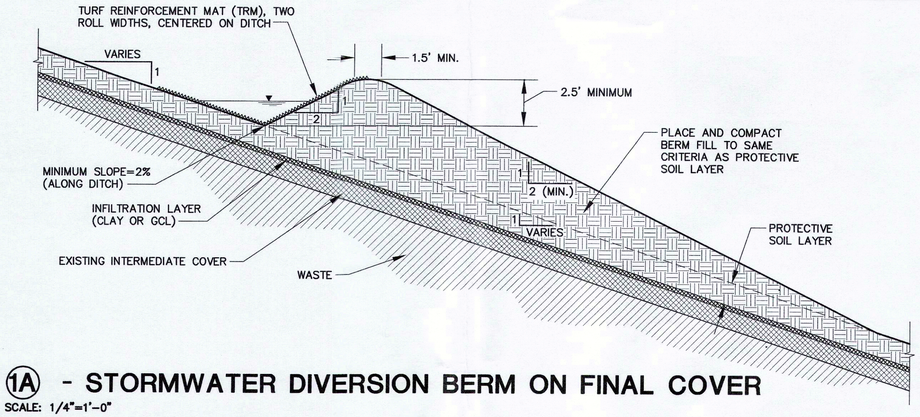
STORMWATER DRAINAGE PLAN

SCALE: 1"=100'
DATE: 08/01/00
DRN. BY: GWA
CHECKED BY: GWA

PROJECT NO:

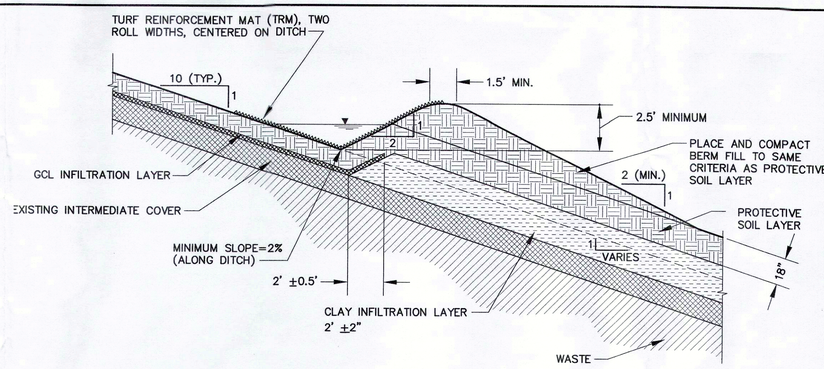
DRAWING NO.

4



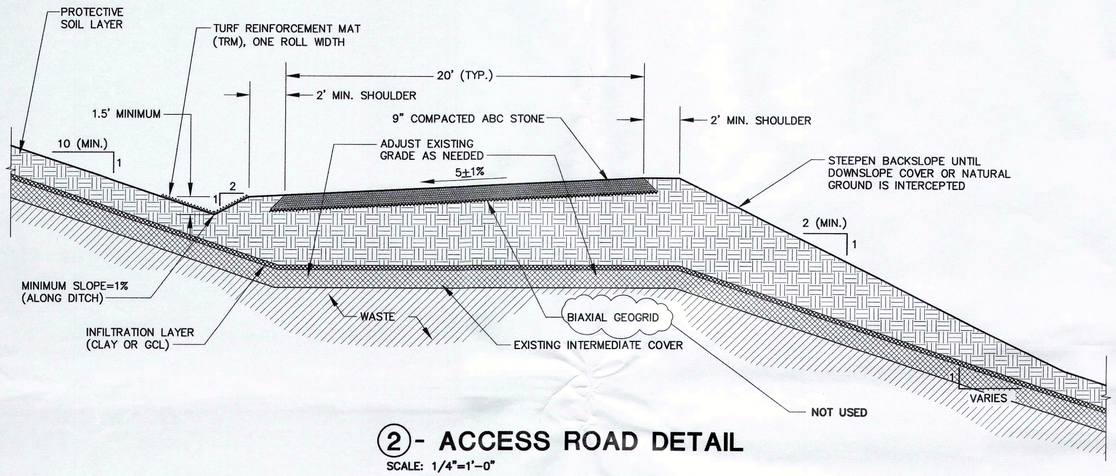
(1A) - STORMWATER DIVERSION BERM ON FINAL COVER

SCALE: 1/4"=1'-0"



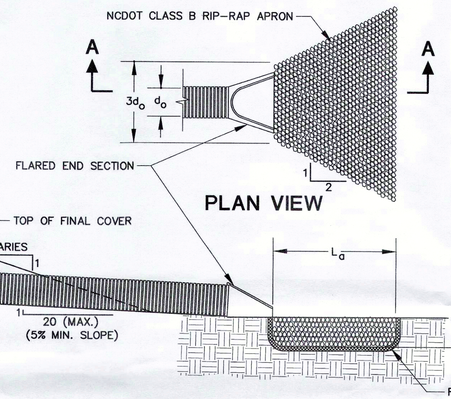
(1B) - STORMWATER DIVERSION BERM ON TRANSITION COVER

SCALE: 1/4"=1'-0"

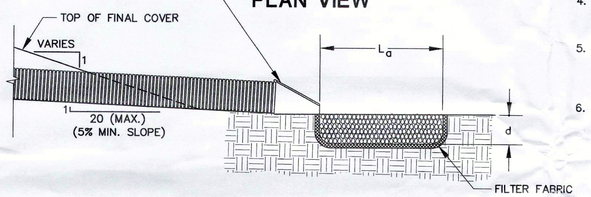


(2) - ACCESS ROAD DETAIL

SCALE: 1/4"=1'-0"



PLAN VIEW



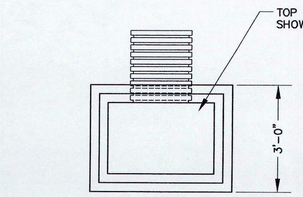
SECTION A-A

NOTES:

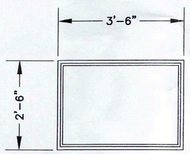
1. L_a IS THE LENGTH OF THE RIP-RAP APRON (MIN. $4d_o$).
2. d=1.5 TIMES THE MAXIMUM SPECIFIED STONE DIAMETER (MIN. 12").
3. d_o=PIPE DIAMETER.
4. IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP THE CHANNEL BANKS TO THE TOP OF THE BANK.
5. AN APPROVED FILTER FABRIC SHALL BE INSTALLED BETWEEN THE RIP-RAP AND SOIL FOUNDATION, WITH THE EDGES ANCHORED, PER MANUFACTURER'S GUIDELINES.
6. OUTLET PROTECTION SHALL CONFORM TO NC EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.

(4) - SLOPE DRAIN/CULVERT OUTLET

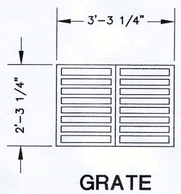
NOT TO SCALE



PLAN



FRAME

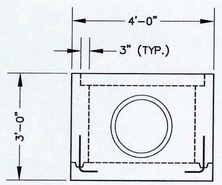


GRATE

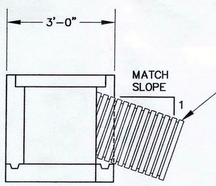
USED FOR THE THREE SLOPE DRAIN INLETS ON AREA 2 ONLY

NOTE:

DIMENSIONS AND DETAILS ARE FROM NCDOT DRAWING 840.14 (STANDARD DRAWING FOR CONCRETE DROP INLET 12" THRU 30" PIPE) AND DRAWING 840.16 (STANDARD DRAWING FOR DROP INLET FRAME AND GRATE FOR USE WITH STD. DWGS. 840.16 AND 840.15). DROP INLET SHALL CONFORM TO NCDOT STANDARDS AND SPECIFICATIONS.



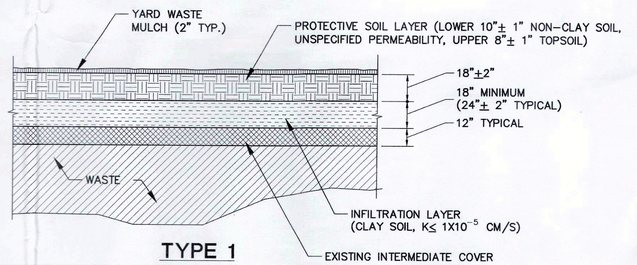
ELEVATION



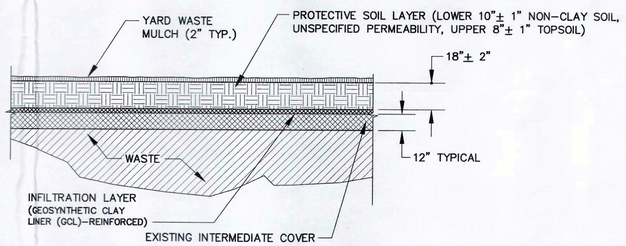
SECTION

(3) - TYPE 2 (R/C) DROP INLET

SCALE: 1/2"=1'-0"



TYPE 1

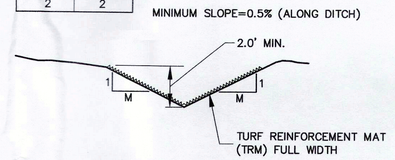


TYPE 3

(5) - FINAL COVER CROSS-SECTIONS

NOT TO SCALE

V-DITCH SCHEDULE	
DITCH	M
1	5 MAX.
2	2



(6) - V-DITCH CROSS-SECTION

NOT TO SCALE

GARY W. AHLBERG, P.E.
WILMINGTON, NORTH CAROLINA (910)602-6468
ECOLOGIC ASSOCIATES, P.C.
GREENSBORO, NORTH CAROLINA (336)271-5093

PROJECT: WILSON COUNTY LANDFILL CONSTRUCTION PLAN WILSON, NORTH CAROLINA

PREPARED FOR: WILSON COUNTY LANDFILL WILSON COUNTY, NC

NO.	DESCRIPTION	DATE
1	CHANGE DETAIL 1 TO 1A, ADD DETAIL 1B, DELETE TYPE 2 FINAL COVER SECTION	8/7/98

REVISIONS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 009610 GARY W. AHLBERG

DETAILS

SCALE: AS NOTED
DATE: 08/01/00
DRN. BY: MAH
CHECKED BY: GWA

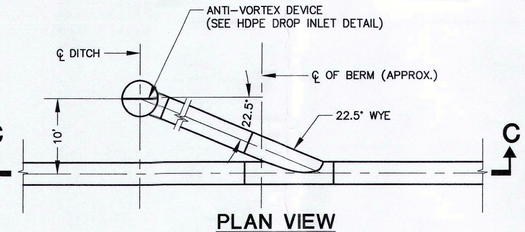
PROJECT NO:

DRAWING NO.

5

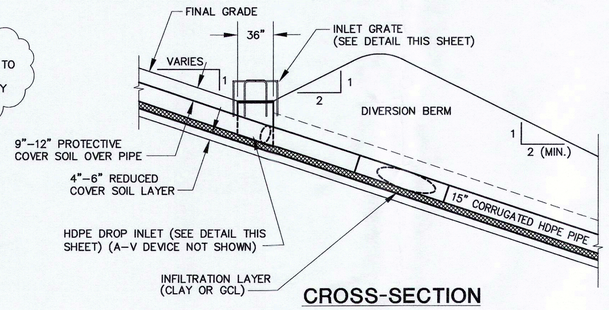
SLOPE DRAIN NOTES:

1. SHIFT BERM OUT AT INLET BY AMOUNT EQUAL TO INLET DIAMETER, D.
2. PIPE SHALL BE ADS CORRUGATED HDPE OR EQUIVALENT. ALL COUPLINGS SHALL BE WATERTIGHT AND PROVIDE A CONTINUOUS FLOW CHANNEL.
3. REMOVE 4"–6" OF PROTECTIVE COVER SOIL LAYER, APPROXIMATELY 8' WIDE, ALONG SLOPE DRAIN ALIGNMENT PRIOR TO INSTALLING INFILTRATION LAYER.



PLAN VIEW

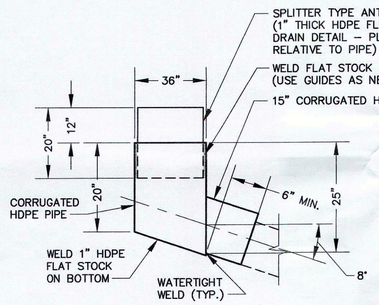
WHERE TRENCHING THROUGH CLAY LINER WAS NECESSARY TO MAKE GRADE, GCL WAS USED TO LINE THE TRENCH AND KEY INTO ADJACENT CCL TOP.



CROSS-SECTION

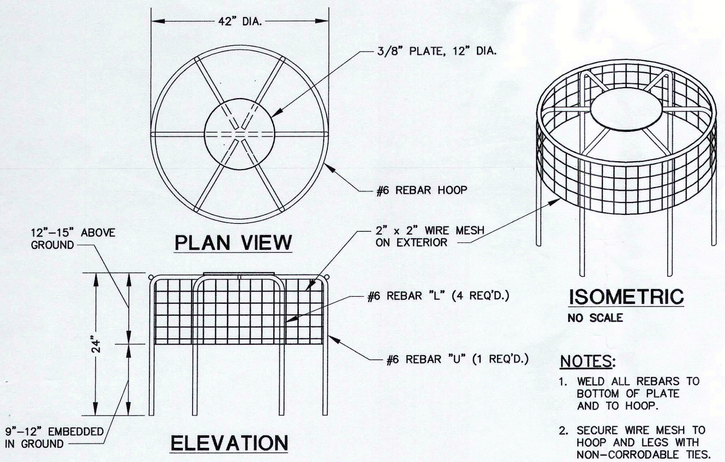
① - SLOPE DRAIN ON FINAL COVER

SCALE: 1/4"=1'–0"



② - TYPE 1 (HDPE) DROP INLET

NOT TO SCALE

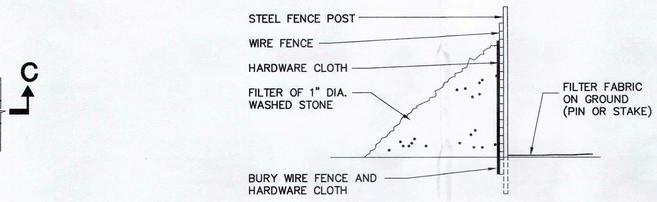


NOTES:

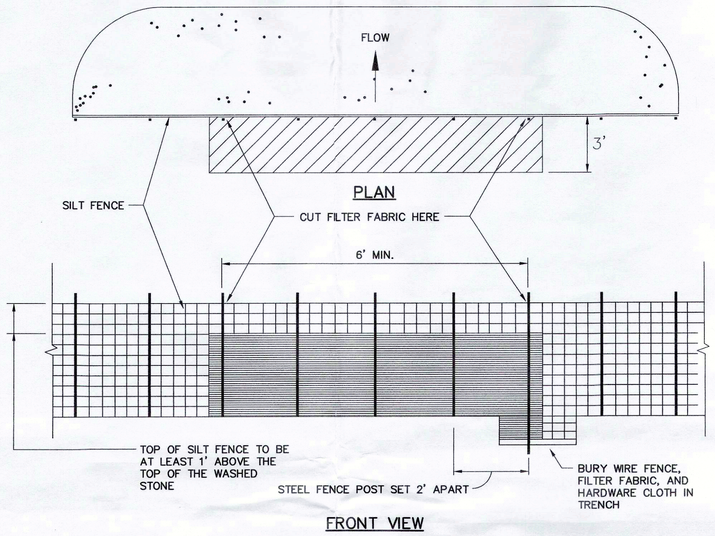
1. WELD ALL REBARS TO BOTTOM OF PLATE AND TO HOOP.
2. SECURE WIRE MESH TO HOOP AND LEGS WITH NON–CORRODABLE TIES.

③ - INLET GRATE

SCALE: 1"=1'–0"



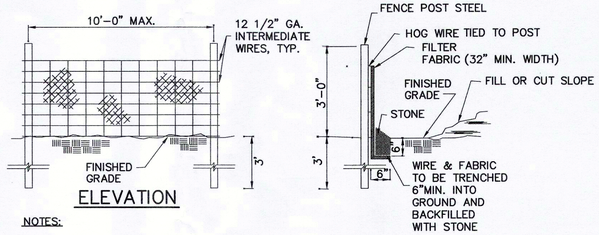
SECTION



FRONT VIEW

⑤ - SILT FENCE OUTLET (EVERY 300')

NOT TO SCALE



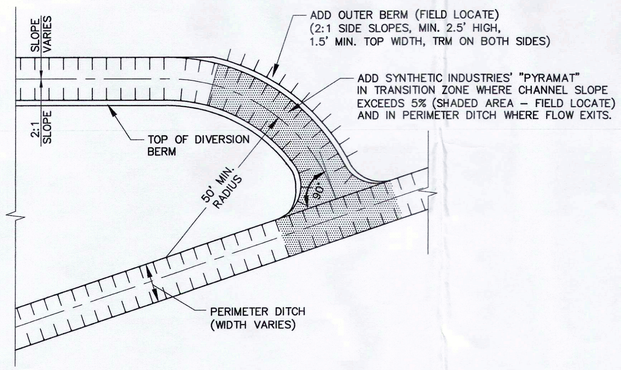
SECTION

NOTES:

- POSTS: METAL – 6' LONG, TRIANGLE STEP MAX. PLACEMENT OF POSTS TO BE 10' APART.
- WIRE: 32" MIN. WIDTH HOGWIRE, 10 GA. LINE WIRE.
- FABRIC: PROPEX (BY AMOCO) OR EQUAL
- STONE: #4 WASHED STONE, TO BE PLACED 6" DEEP.
- SPACING: PLACEMENT OF POSTS USING HOGWIRE TO BE 10' APART. PLACEMENT OF POST WITHOUT HOGWIRE TO BE 6' APART.

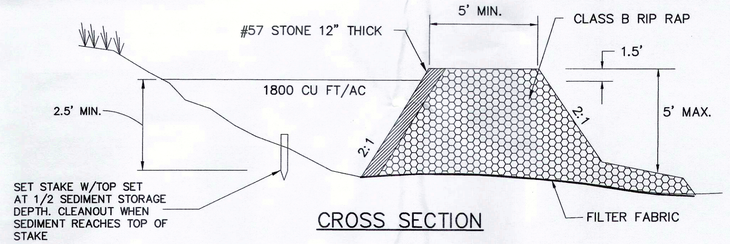
⑥ - SILT FENCE

NOT TO SCALE

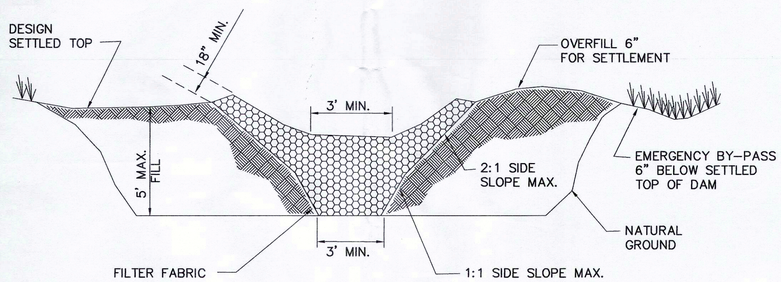


④ - DIVERSION CHANNEL OPEN EXIT

SCALE: 1"=20'



CROSS SECTION



FRONT VIEW

⑦ - SEDIMENT TRAP

NOT TO SCALE

GARY W. AHLBERG, P.E.
WILMINGTON, NORTH CAROLINA (910) 602-6468
ECOLOGIC ASSOCIATES, P.C.
GREENSBORO, NORTH CAROLINA (336) 271-2295

PROJECT:
WILSON COUNTY LANDFILL
CONSTRUCTION PLAN
WILSON, NORTH CAROLINA

PREPARED FOR:
WILSON COUNTY LANDFILL
WILSON COUNTY, NC

NO.	DESCRIPTION	DATE

REVISIONS

NORTH CAROLINA PROFESSIONAL SEAL 020626 ENGINEER GARY W. AHLBERG

DETAILS

SCALE: NOTED
DATE: 08/01/00
DRN. BY: MAH
CHECKED BY: MAT

PROJECT NO:

DRAWING NO.

6