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gta GEOTOXI ASSOCIATES, INC.
Hydrogeologists and Consultants

SYNOPSIS OF FIELD AND LABORATORY DATA FOR SOIL SAMPLING ADJACENT TO THE SUBSURFACE GAS TANK BUILDING 107 U.S. NAVAL SUBMARINE BASE, NEW LONDON GROTON, CONNECTICUT

Contract No.:

N62472-86-M-3624

Contractor:

Niantic Envirolab, Inc.
249 Boston Post Road
East Lyme, CT 06333

November, 1986

2377 Main Street, Glastonbury, Connecticut 06033 · Tel. (203) 633-7866

ROUTINE REPLY, ENDORSEMENT, TRANSMITTAL OR INFORMATION SHEET

OPNAV 5216/158 (Rev. 7-78)
SN 0107-LF-052-1691

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FROM (*Show telephone number in addition to address*)

Naval Submarine Base New London, Groton, Connecticut (Code 803)

DATE: 18 Nov 86

SUBJECT

REPORT ON SOIL SAMPLES B-107

SERIAL OR FILE NO.: 6280 803

TO:

Commanding Officer
Northern Division
Naval Facilities Engineering Command
Philadelphia, PA 19112 (Code 14)
Attn: Larry Quinn

REFERENCE

ENCLOSURE

gta report of Nov 1986

VIA:

ENDORSEMENT ON

[X] FORWARDED [ ] RETURNED [ ] FOLLOW-UP, OR TRACER [ ] REQUEST [ ] SUBMIT [ ] CERTIFY [ ] MAIL [ ] FILE

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	UNDER YOUR COGNIZANCE	SUBCONTRACT NO. OF SUBJECT ITEM	
X	INFORMATION	APPROPRIATION SYMBOL, SUBHEAD, AND CHARGEABLE ACTIVITY	DETACHED FROM THIS COMMAND
	APPROVAL RECOMMENDED [ ] YES [ ] NO	SHIPPING AT GOVERNMENT EXPENSE [ ] YES [ ] NO	
	[ ] APPROVED [ ] DISAPPROVED	A CERTIFICATE, VICE BILL OF LADING	OTHER
	COMMENT AND/OR CONCURRENCE	COPIES OF CHANGE ORDERS, AMENDMENT OR MODIFICATION	
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SIGNATURE & TITLE
W. L. MANSFIELD

COPY TO:

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Hydrogeologists and Consultants

November 10, 1986

Mr. William Mansfield
Public Works
Building 135
U.S. Naval Submarine Base, New London
Groton, CT 06340

Re: Contract No. N62472-86-M-3624
Field and Laboratory Soil Investigations
Gas Tank, B-107
Naval Submarine Base, New London
Groton, Connecticut

Dear Mr. Mansfield:

The purpose of this letter is to summarize the work recently performed by Niantic Envirolab, Inc., of East Lyme, Connecticut, and our firm in sampling the soil at the referenced location. Included as attachments are:

1) Soil augering logs;

2) Photocopies of the flourescence scans for the samples analyzed; and,

3) Charts and graphs showing the results of laboratory soil physical analyses.

According to information obtained from personnel at the Submarine Base, the tank under investigation is a 64 inch diameter, 2,000 gallon steel tank presently containing, super unleaded gasoline. Historically, the tank may have contained fuel oil. From time to time in the past, 1-2 inches of water have been pumped from the bottom of the tank.

On October 3 and 6, 1986, two (2) soil augerings were made adjacent to the tank in front of Building 107, in accordance with locations designated by the Civil Engineering Department at the Submarine Base. Augerings 011 and 012 were made at the northerly and southerly ends, respectively, of the tank.

At each hole, an asphalt layer 1.5 inches thick, and a 7 inch thick layer of concrete were penetrated before

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augering commenced. The auger holes were advanced using a 3-1/4 inch diameter bucket auger and a 7 cm diameter stony soil auger. Refusal on stones occurred at 36 inches in hole 011, and at 66 inches in hole 012. The groundwater table was not encountered in either hole.

Soil samples were collected for laboratory analysis using the stony soil auger. Two (2) samples, from 30 and 35 inches below surface grade, were collected from hole 011, and three (3) samples, from 36, 55 and 66 inch depths, from hole 012. All samples were placed immediately into 250 ml, amber glass bottles provided by Niantic Envirolab, Inc. Aluminum foil liners were used inside the threaded caps. The samples were delivered within two (2) hours to the laboratory.

One (1) additional sample from each hole was collected for analysis in our laboratory for soil physical parameters. The soil samples were tested for saturated hydraulic conductivity, matrix porosity and particle size distribution (sieve analysis).

Values for saturated hydraulic conductivity provide a measure of how readily water moves through a soil medium. Matrix porosity measurement indicates the void space in a sample. The particle size distribution analysis is used to measure the nature and degree of sorting that has occurred in unconsolidated materials.

Laboratory verification of the presence or absence of petroleum products was done through the use of flourescence spectroscopic techniques employing both the accepted ASTM flourescence procedure for the identification of waterborne oils, and, synchronous scanning techniques for determining the distribution of aromatic components.

From the scans, the samples taken from Augering 011 indicated the presence of a waste oil (i.e., old crankcase oil, lube oils, etc.) in the range of 50 to 100 parts per billion (ppb). Samples taken at 36 and 55 inch depths from Augering 012, also showed the presence of a waste oil. The 66 inch deep sample from Augering 012, showed the presence of a No. 6 oil at levels of 50 ppb. This latter sample depth corresponded to a field observed textural soil change from a loam to a coarser sand.

gta

Questions regarding the laboratory analyses conducted on the soil samples should be directed to Niantic Envirolab, Inc., at (203)739-4080. If any other questions arise during your review of this synopsis, please feel free to contact our office.

Sincerely yours,

Bruce L. Morton

Bruce L. Morton

Attachments

cc: Niantic Envirolab, Inc.
w/attachs.

gta

SOIL AUGERING LOGS

GEOTOXI ASSOCIATES, INC.

Hydrogeologists and Consultants

DATE 10-3-86

JOB ADDRESS Naval Submarine Base, New London, Groton, CT

FIXED DATUM USED Ground Surface

ELEVATION OF GROUND SURFACE AT THIS BORING

DEPTHS (in) FROM	TO	CLASSIFICATION
Ground Surface	1.5	Asphalt
1.5	8.5	Blue stone concrete
8.5	36	Brown fine sandy loam fill, 20% gravel, cobbles and concrete fragments, 1/2 in. to 5 in. diam. Refusal on stones. No Water

SUPERVISOR B.L. Morton

BORING NO. 011

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GEOTOXI ASSOCIATES, INC.

Hydrogeologists and Consultants

DATE 10-6-86

JOB ADDRESS Naval Submarine Base, New London, Groton, CT

FIXED DATUM USED Ground Surface

ELEVATION OF GROUND SURFACE AT THIS BORING

DEPTHS (in) FROM	TO	CLASSIFICATION
Ground Surface	1.5	Asphalt
1.5	8.5	Blue stone concrete
8.5	55	Brown fine sandy loam fill, 10% gravel 1/4 in. to 3 in. diameter
55	66	Medium to coarse sand with 15% gravel, 1/8 in. to 1 in. diameter
		Refusal on stone. No Water

SUPERVISOR B.L. Morton

BORING NO. 012

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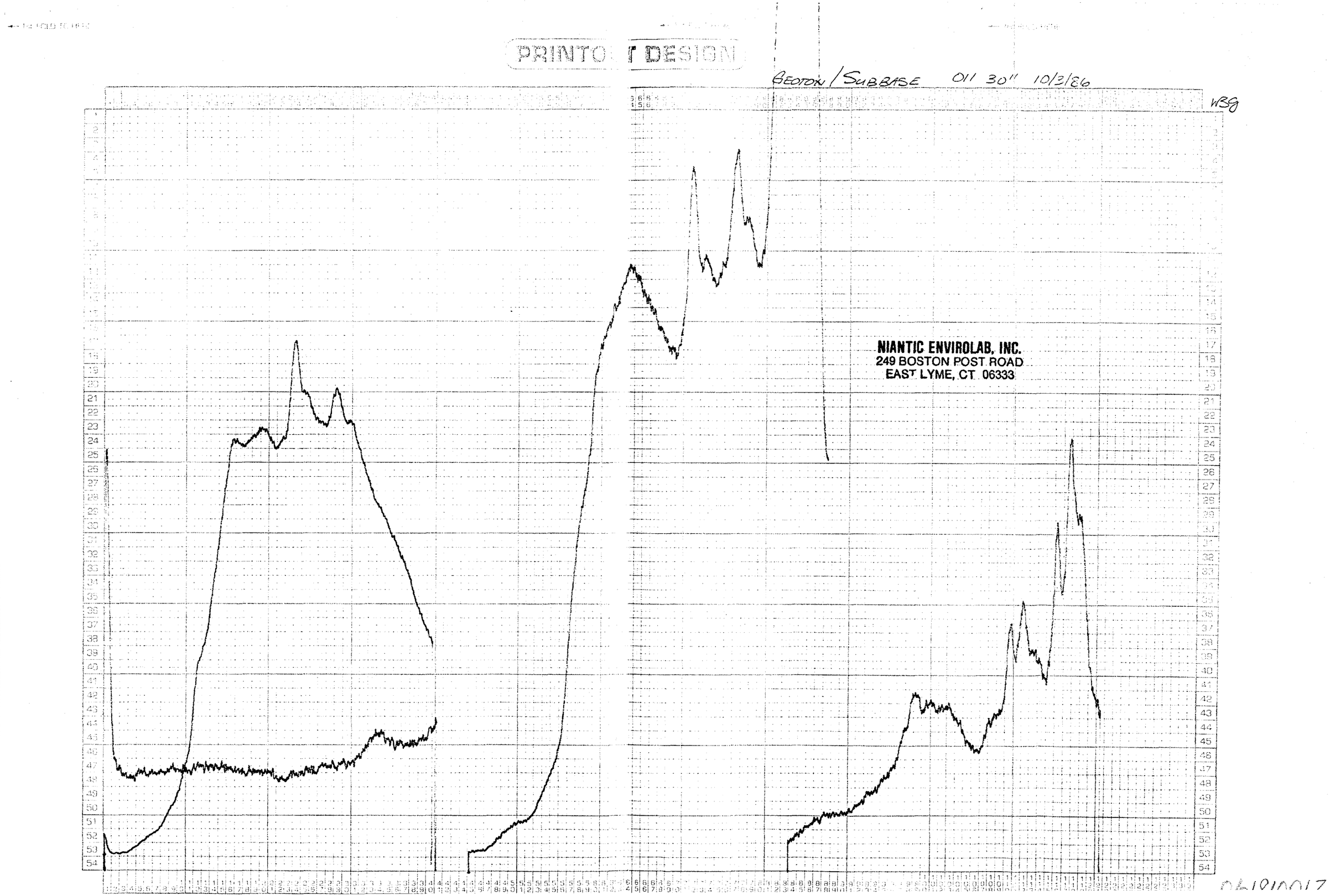
FLUORESCENCE SCANS


PRINTOUT DESIGN
GEOTON / SUBBASE 011 30" 10/3/86
WBG
NIANTIC ENVIROLAB, INC.
249 BOSTON POST ROAD
EAST LYME, CT 06333
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GEOTOX1/SUBBASE 011 35" 10/6/86

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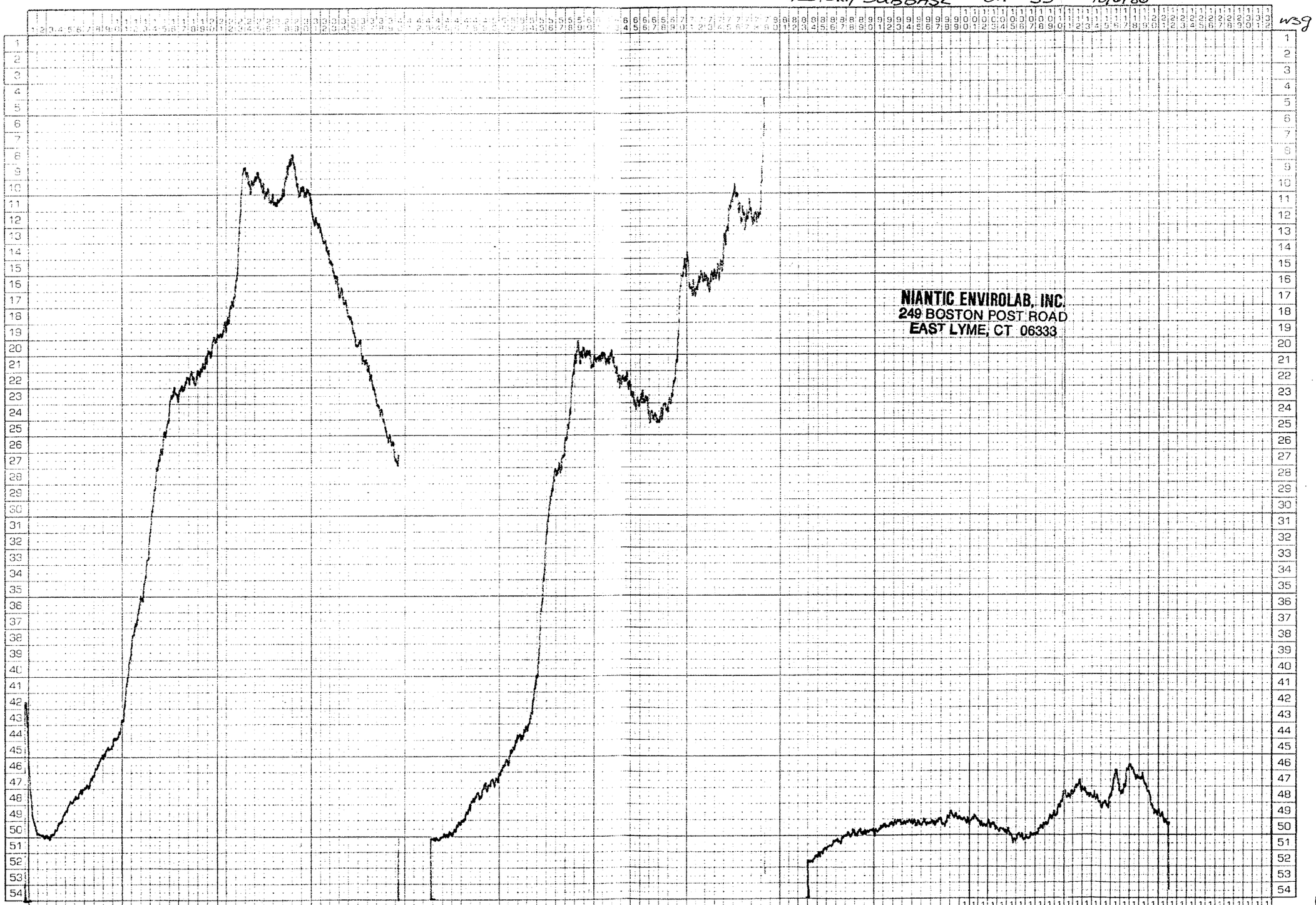

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GEOTOXI/SUBBASE 012 36" 10/6/86

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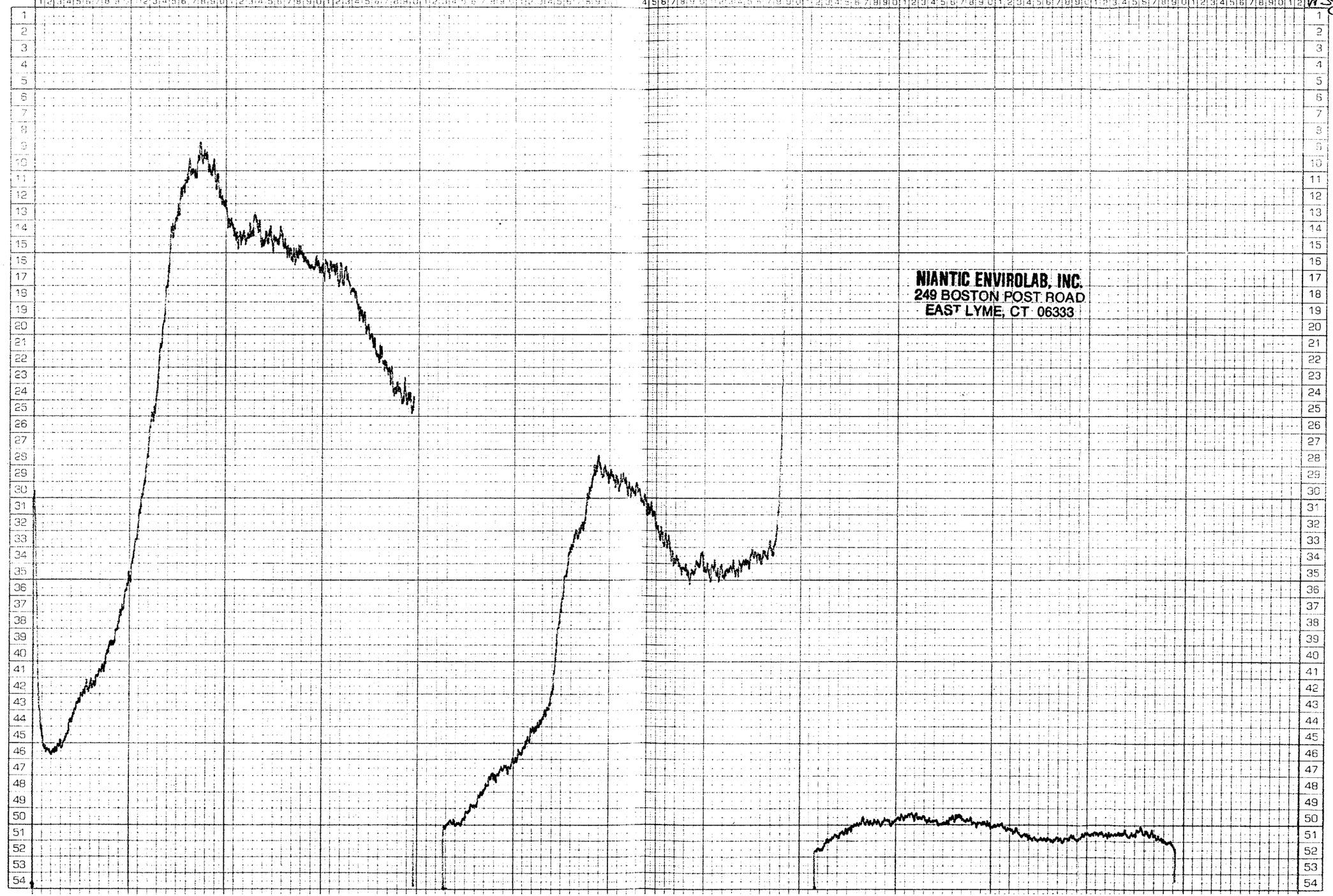

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GEOTOXI / SUBBASE 012 55" 10/6/86

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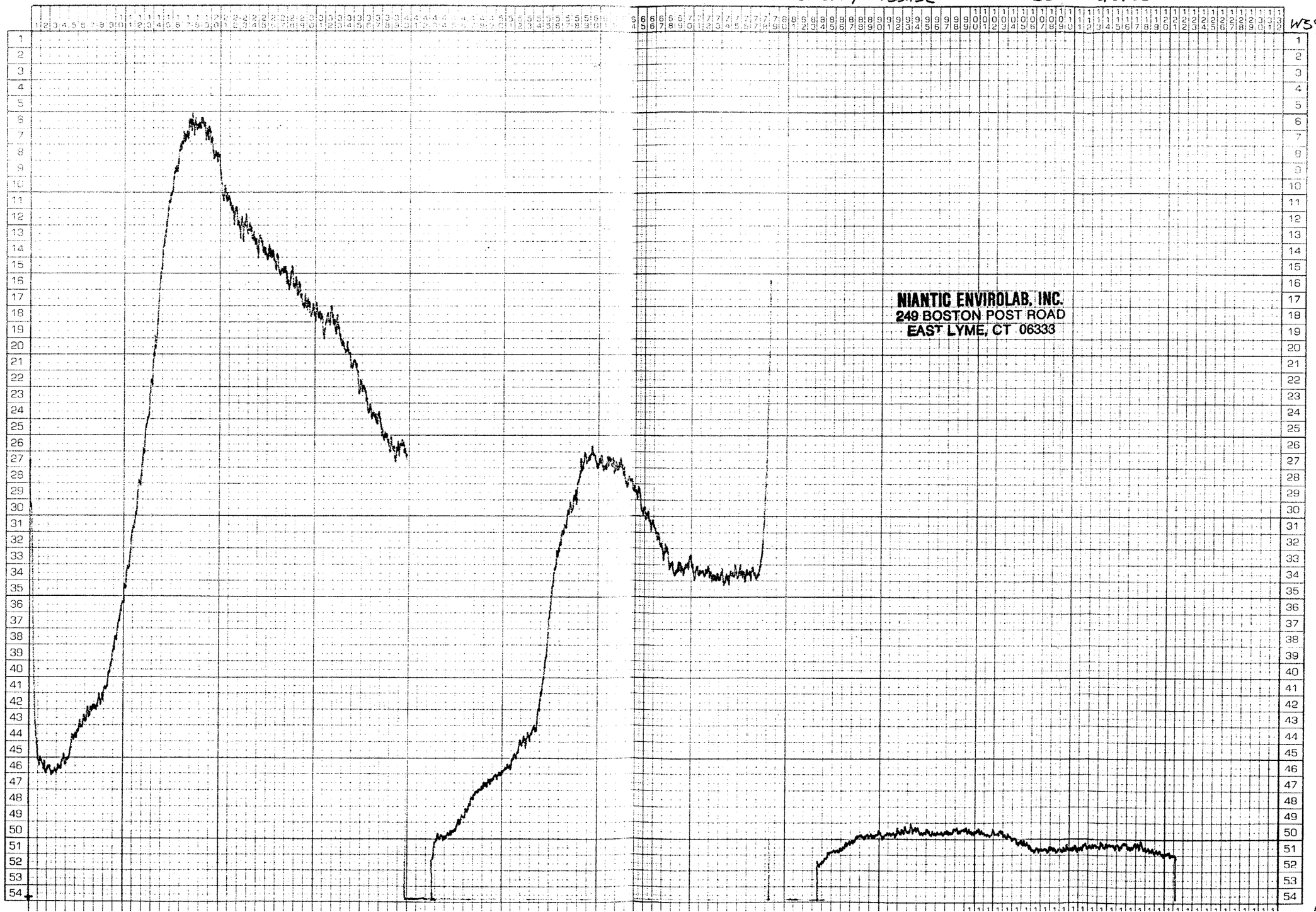

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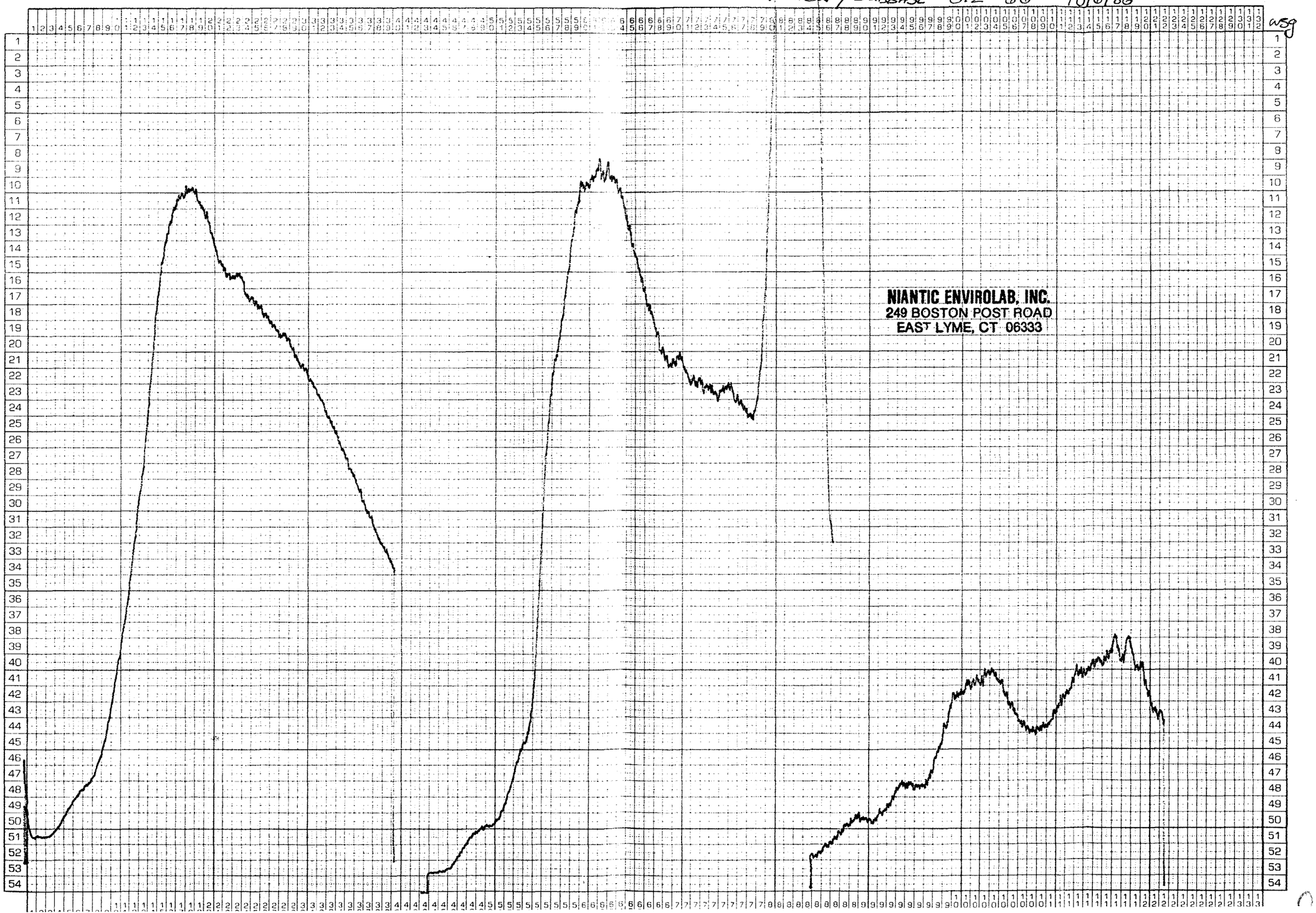
GEOTOX / SUBBASE 012 66" 10/6/86



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SOIL PHYSICAL PARAMETERS

VALUES FOR SATURATED HYDRAULIC
CONDUCTIVITY AND POROSITY
GASOLINE TANK, B-107
NAVAL SUBMARINE BASE, NEW LONDON
GROTON, CONNECTICUT

SAMPLE	K-VALUE (CM/SEC)	K-VALUE (FT/DAY)	POROSITY (%)
011	1.15E-02	32.49	32
012	2.61E-03	7.41	33

K = Saturated hydraulic conductivity.

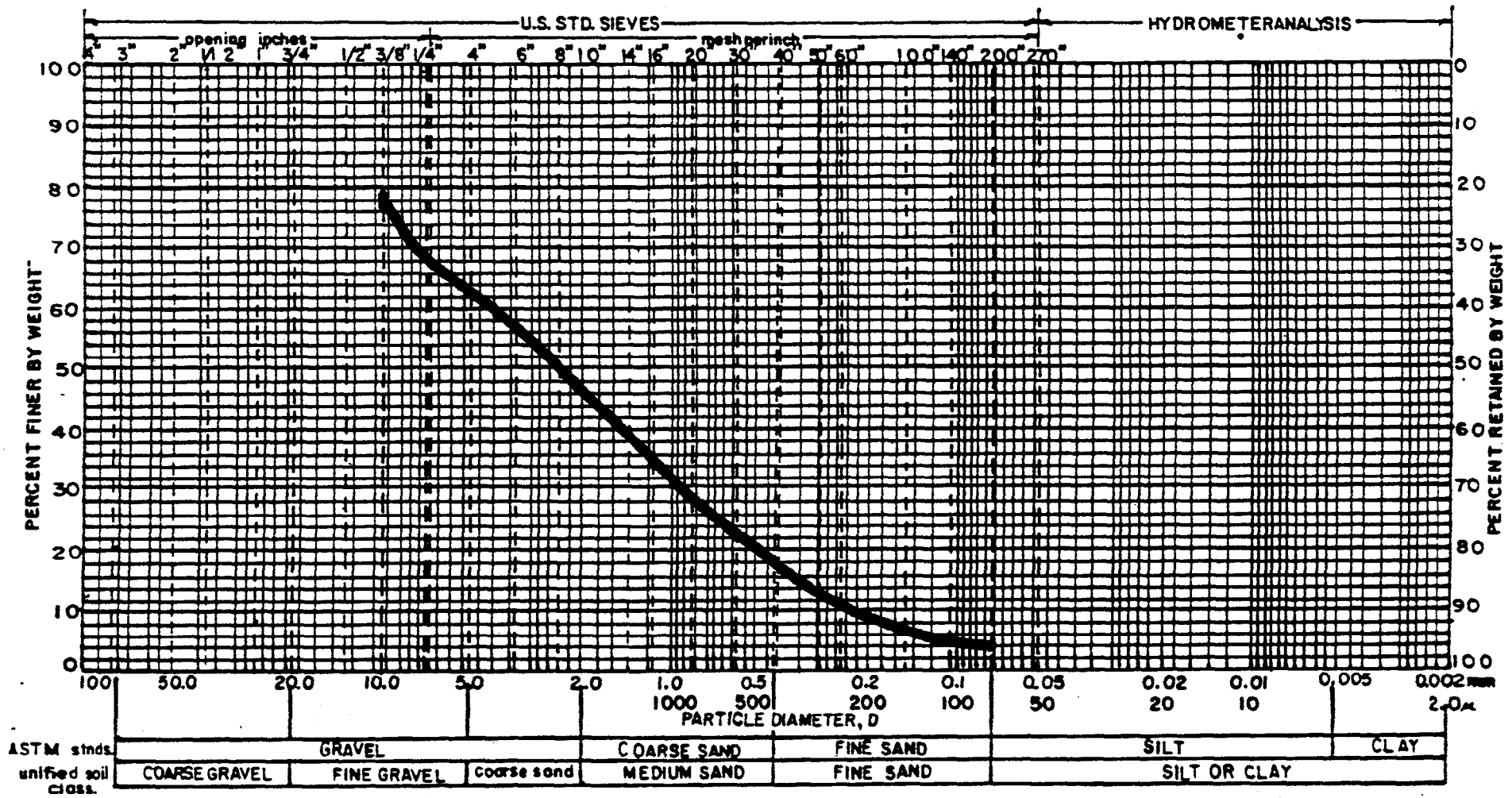
Depth of samples measured below surface grade.

PARTICLE SIZE DISTRIBUTION ANALYSES
GASOLINE TANK, B-107
NAVAL SUBMARINE BASE, NEW LONDON
GROTON, CONNECTICUT

SIEVE SIZE	Sample 011	Sample 012
3/8 IN.	78	85
1/4 IN.	67	76
#4	61	70
#8	49	57
#10	45	54
#16	34	45
#20	28	38
#30	22	32
#40	17	27
#50	13	22
#80	9	15
#200	4	7
RETAINED IN PAN	4	7

Values represent percent finer (by weight) passing individual sieves.

Depths of samples measured below surface grade. IS WHAT ?



SAMPLE INFORMATION:

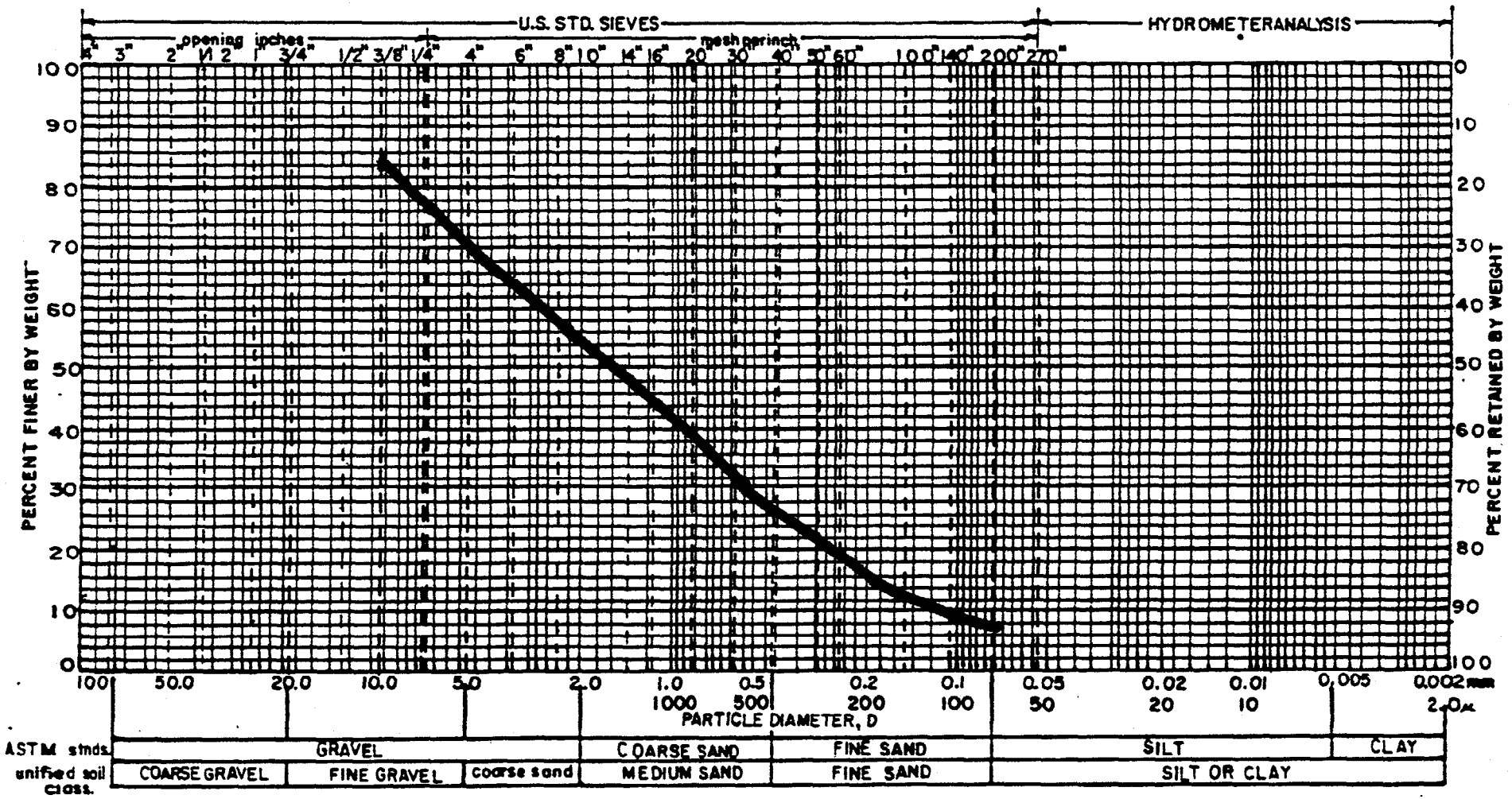
Gasoline Tank, B-107 sample 011

GEOTOXI ASSOCIATES, INC.

PARTICLE SIZE DISTRIBUTION

Naval Submarine Base, New London
Groton, Connecticut

dr by:	ck'd	date:	proj. no.



SAMPLE INFORMATION:

Gasoline Tank, B-107 sample 012

GEOTOXI ASSOCIATES, INC.

PARTICLE SIZE DISTRIBUTION

Naval Submarine Base, New London
Groton, Connecticut

dr by:	ck'd	date:	proj. no.