APPENDIX A

SOIL BORING LOGS

This information taken from "Report of Geotechnical Exploration – Ash Disposal Area – Kingston Fossil Plant, Kingston, Tennessee," MACTEC Engineering and Consulting, Inc., May 4, 2004.

FIELD EXPLORATORY PROCEDURES

Soil Test Boring (Hollow Stem)

All boring and sampling operations were conducted in general accordance with ASTM D 1586. The borings were advanced by mechanically turning continuous steel hollow-stem auger flights into the ground. At regular intervals, soil samples were obtained with a standard 1.4-inch I.D., 2-inch O.D., split-tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings and then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot of penetration was recorded and is designated the "standard penetration test (SPT) resistance." Proper evaluation of the penetration resistance provides an index to the soil's strength, density, and ability to support foundations.

Representative portions of the soil samples obtained from the split-tube sampler were sealed in glass jars and transported to our laboratory for testing and further examination. Test Boring Records are attached, graphically showing the soil descriptions and penetration resistances.

Plugging and Abandonment of Boreholes

Upon completion of drilling and sampling, the geotechnical boreholes were plugged with a Type I Portland cement-bentonite grout mixture using a tremie pipe method. The borings were plugged in general accordance with the requirements specified by TVA. The borings were plugged immediately after drilling and sampling of the boreholes.

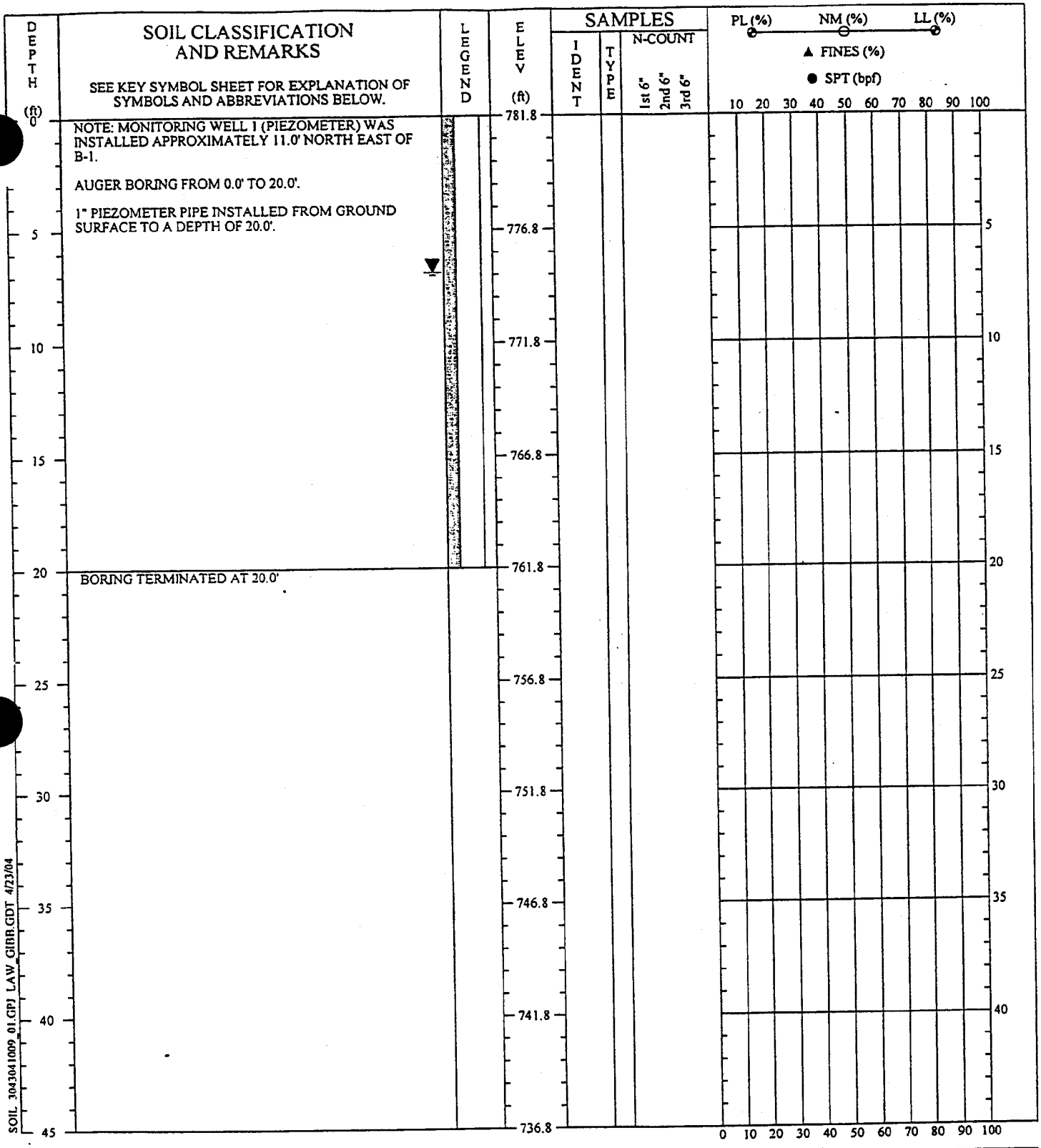
Bulk Samples

Bulk samples of several ash types obtained at various elevations were collected for testing.

Undisturbed Sampling

The relatively undisturbed soil samples were obtained by pushing a section of 3-inch O.D., 16-gauge steel tubing into the soil at the desired sampling level. The sampling procedure is described by ASTM D-1587. The tube, together with the encased soils, was carefully removed from the ground, made airtight, and transported to our laboratory.

To obtain relatively undisturbed samples of ash a 3-1/2-inch OD, 3-inch ID split spoon with liner was used. The spoon was pushed into the bottoms of the boreholes at the desired sampling depths. The ash samples, enclosed in the liners, were then sealed with a wax / motor oil mixture at both ends and then capped to minimize changes in the structure and moisture content of the samples.



REMARKS:

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Driller :	Akins
Prepared By:	Justice
Checked By:	

SOIL TEST BORING RECORD

PROJECT: Kingston Fossil Plant - Ash Diposal Area

DRILLED: March 25, 2004 **BORING NO.:** MW-1

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES N-COUNT 1st 6" 2nd 6" 3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf) 10 20 30 40 50 60 70 80 90 100
0	NOTE: MONITORING WELL 2 (PIEZOMETER) WAS INSTALLED APPROXIMATELY 15.0' NORTH EAST OF B-2.		795.3				
	AUGER BORING FROM 0.0' TO 35.0'.						
	1" PIEZOMETER PIPE INSTALLED FROM GROUND SURFACE TO A DEPTH OF 35.0'.						
5			790.3				5
10			785.3				10
15		▼	780.3				15
20			775.3				20
25			770.3				25
30			765.3				30
35	BORING TERMINATED AT 35.0'		760.3				35
40			755.3				40
45			750.3				0 10 20 30 40 50 60 70 80 90 100

SOIL 3043041009_01.GPJ LAW_GIBB.GDT 4/23/04

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Driller : Akins
Prepared By:Justice
Checked By:

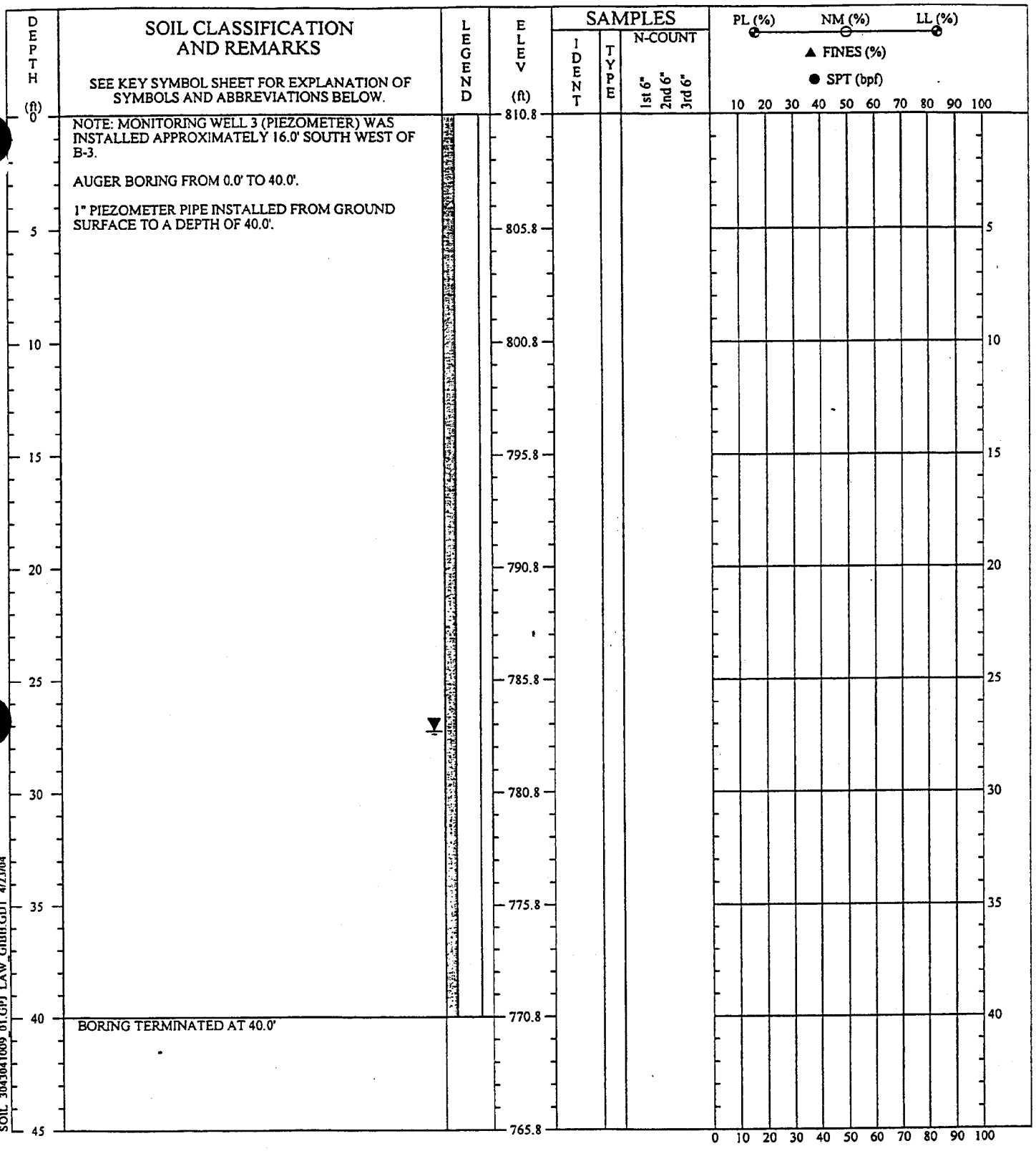
SOIL TEST BORING RECORD

PROJECT: Kingston Fossil Plant - Ash Diposal Area

DRILLED: March 25, 2004 **BORING NO.:** MW-2

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC



SOIL 3043041009_01.GPJ LAW_GIBB.GDT 4/23/04

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Driller :	Akins
Prepared By:	Justice
Checked By:	

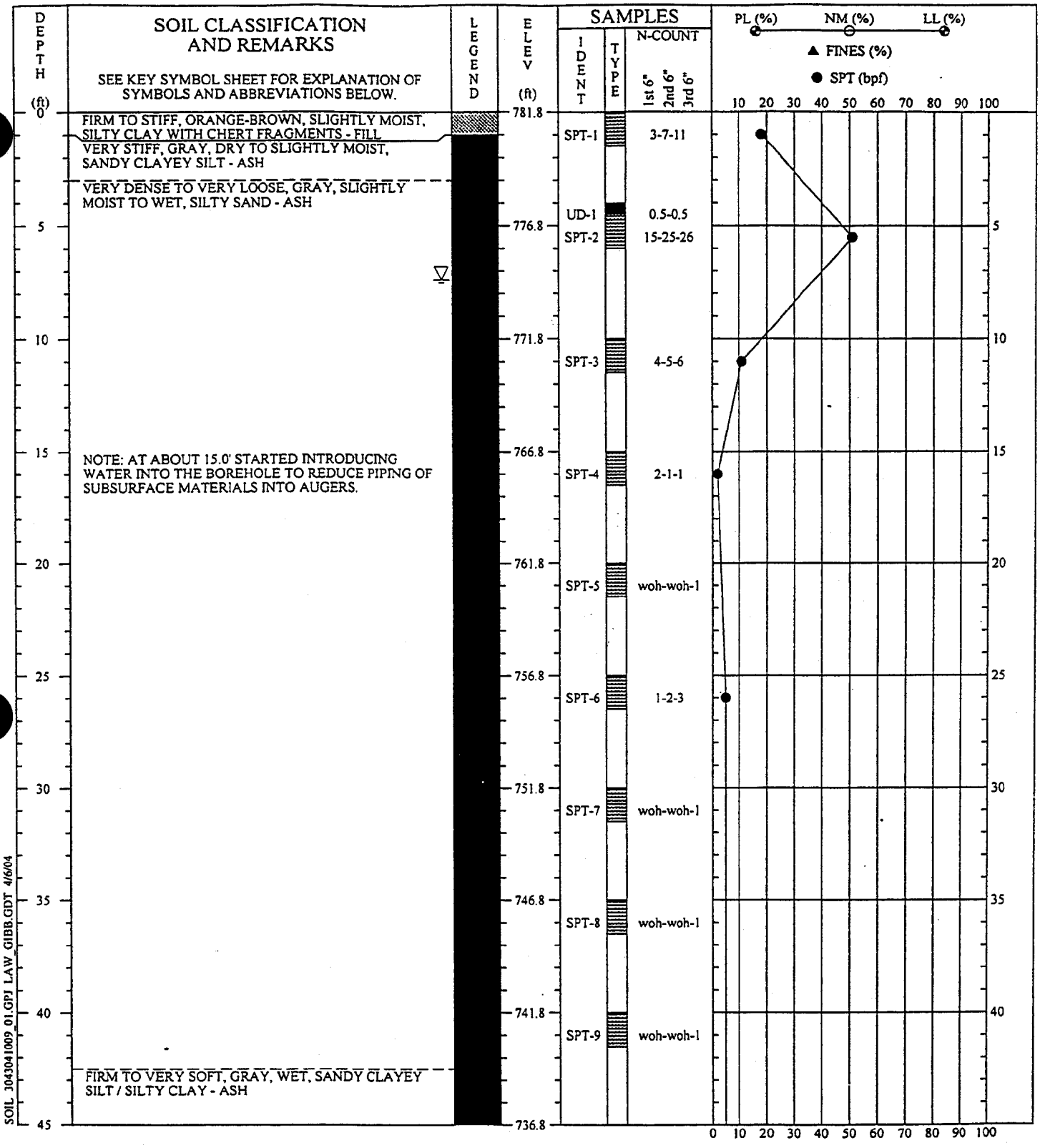
SOIL TEST BORING RECORD

PROJECT: Kingston Fossil Plant - Ash Diposal Area

DRILLED: March 25, 2004 **BORING NO.:** MW-3

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC



REMARKS: STANDARD PENETRATION RESISTANCE TESTING PERFORMED USING AN AUTOMATIC HAMMER.

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Driller : Akins
Prepared By:Justice
Checked By:

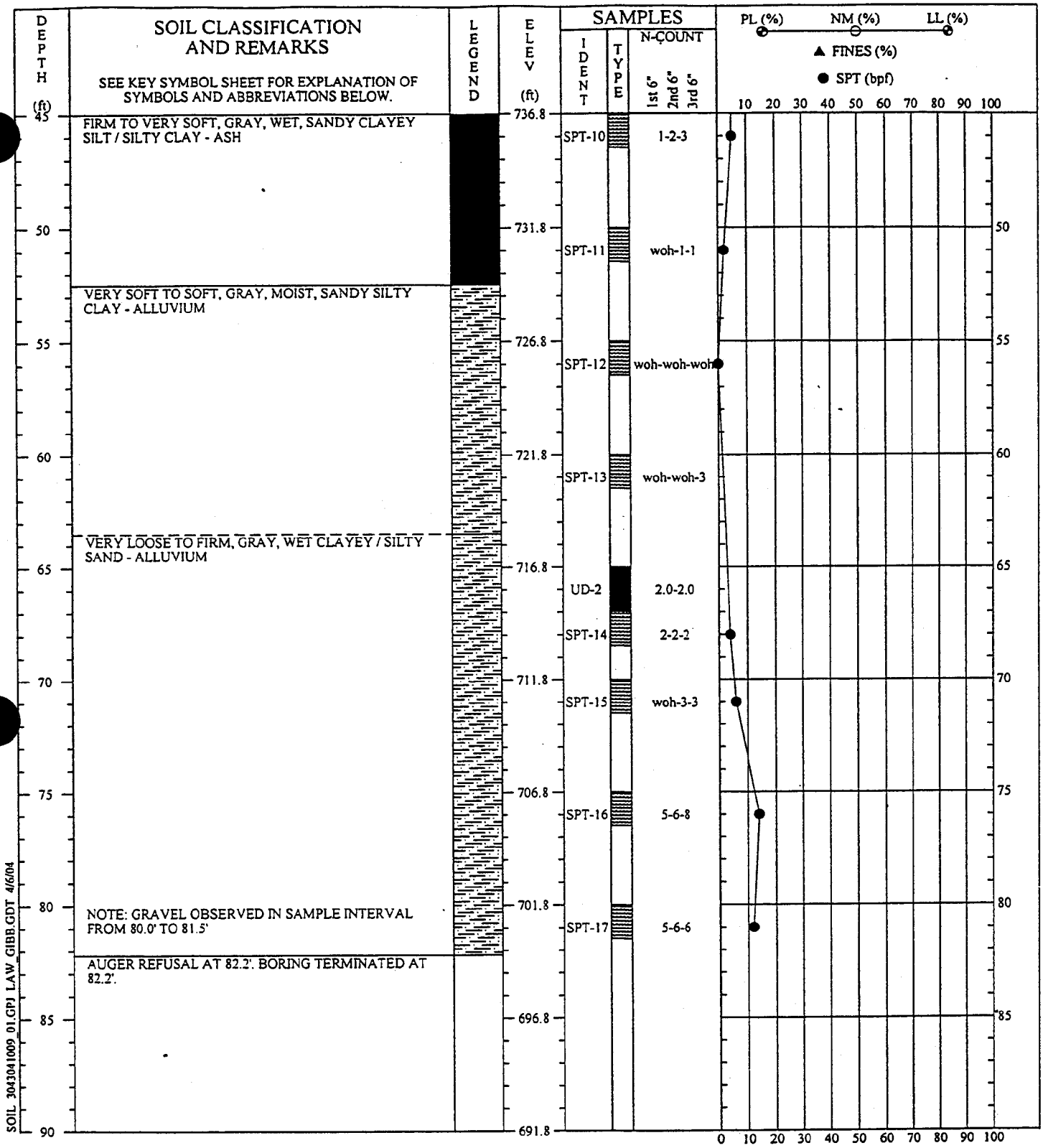
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 8, 2004 **BORING NO.:** B-1

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 2**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 8, 2004 **BORING NO.:** B-1

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.	LEGEND	ELEV (ft)	SAMPLES: IDENT	SAMPLES: TYPE	SAMPLES: N-COUNT (1st 6", 2nd 6", 3rd 6")	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	NOTE: B-1A WAS OFFSET APPROXIMATELY 22.0' SOUTH WEST OF B-1. AUGER BORING FROM 0.0' TO 5.0' USED FOR IN-SITU HYDRAULIC CONDUCTIVITY TESTING.		781.8				10 20 30 40 50 60 70 80 90 100
5	BORING TERMINATED AT 5.0'		776.8				
10			771.8				
15			766.8				
20			761.8				
25			756.8				
30			751.8				
35			746.8				
40			741.8				
45			736.8				0 10 20 30 40 50 60 70 80 90 100

SOIL 3043041009_01.GPJ LAW_GIBB.GDT 4/7/04

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Driller :	Akins
Prepared By:	Justice
Checked By:	

SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 15, 2004 **BORING NO.:** B-1A

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES N-COUNT 1st 6" 2nd 6" 3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW.						10 20 30 40 50 60 70 80 90 100
	NOTE: B-1B WAS OFFSET APPROXIMATELY 47.0' SOUTH WEST OF B-1.						
	AUGER BORING FROM 0.0' TO 5.0' USED FOR IN-SITU HYDRAULIC CONDUCTIVITY TESTING.						
			781.8				
5	BORING TERMINATED AT 5.0'		776.8				5
10			771.8				10
15			766.8				15
20			761.8				20
25			756.8				25
30			751.8				30
35			746.8				35
40			741.8				40
45			736.8				0 10 20 30 40 50 60 70 80 90 100

SOIL 3043041009_01.GPJ LAW_GIBB.GDT 4/7/04

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Driller : Akins
Prepared By:Justice
Checked By:

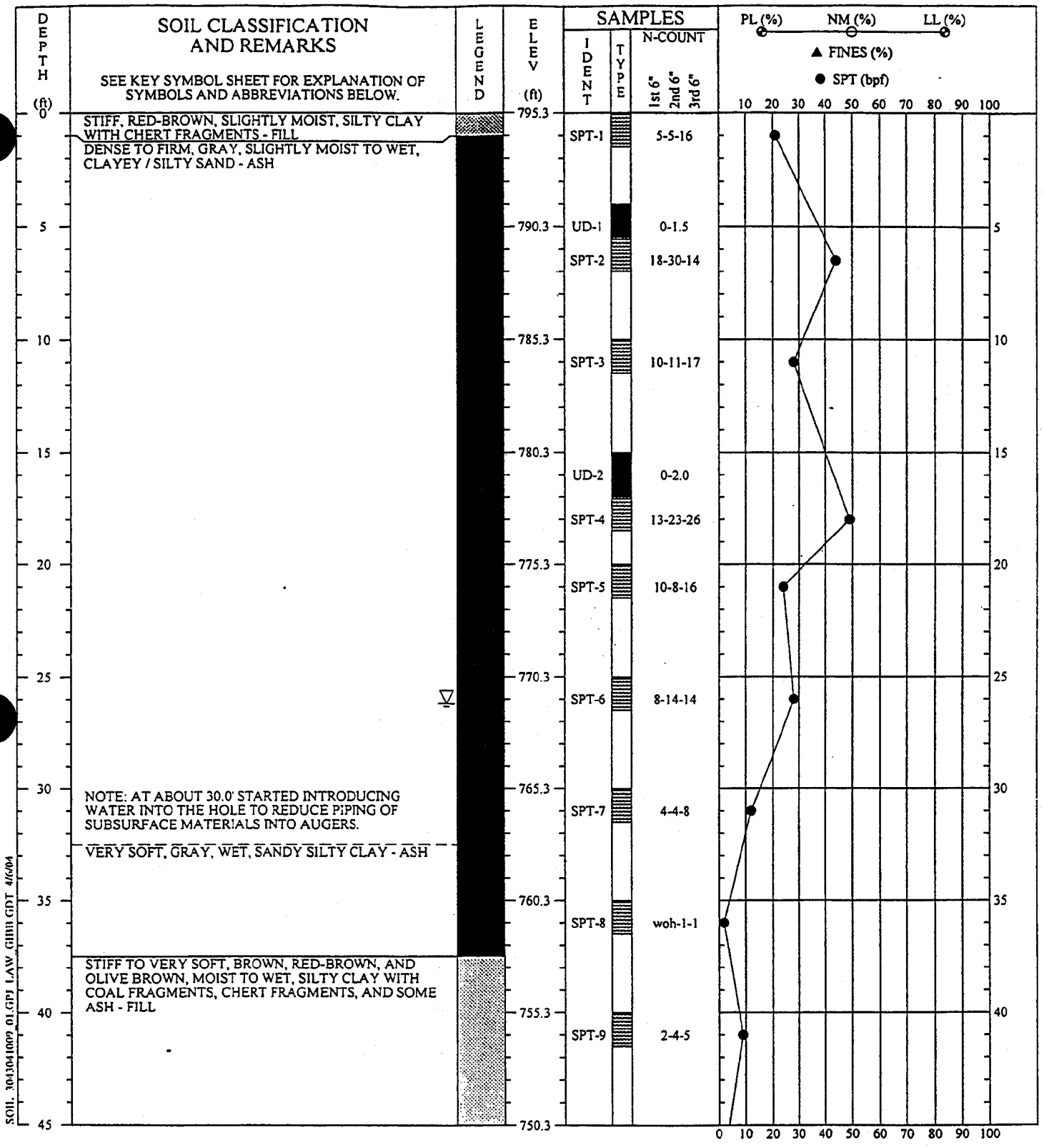
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 15, 2004 **BORING NO.:** B-1B

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

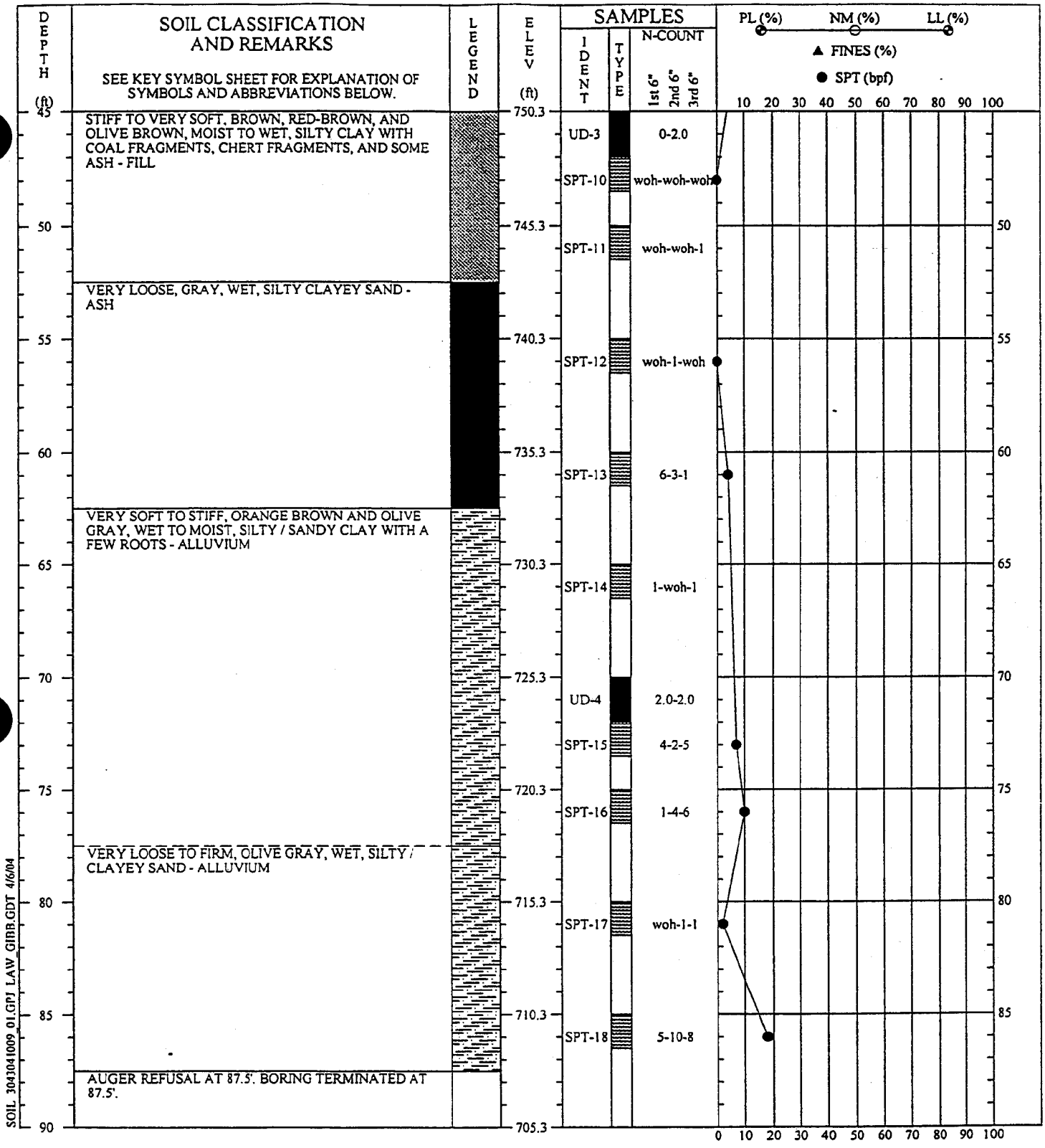
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 4, 2004 **BORING NO.:** B-2

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 2**

MACTEC



SOIL 3043041009 01.GPJ LAW_GIBB.GDT 4/6/04

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Driller :	Akins
Prepared By:	Jusuce
Checked By:	

SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 4, 2004 **BORING NO.:** B-2

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC

DEPTH (ft)	SOIL CLASSIFICATION AND REMARKS	LEGEND	ELEV (ft)	SAMPLES IDENT	SAMPLES TYPE	SAMPLES N-COUNT 1st 6" 2nd 6" 3rd 6"	PL (%) NM (%) LL (%) ▲ FINES (%) ● SPT (bpf)
0	SEE KEY SYMBOL SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS BELOW. NOTE: B-2A WAS OFFSET APPROXIMATELY 15.0' SOUTH WEST OF B-2. AUGER BORING FROM 0.0' TO 5.0' USED FOR IN-SITU HYDRAULIC CONDUCTIVITY TESTING.		795.3				
5	BORING TERMINATED AT 5.0'		790.3				
10			785.3				
15			780.3				
20			775.3				
25			770.3				
30			765.3				
35			760.3				
40			755.3				
45			750.3				

10 20 30 40 50 60 70 80 90 100

0 10 20 30 40 50 60 70 80 90 100

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Driller : Akins
Prepared By:Justice
Checked By:

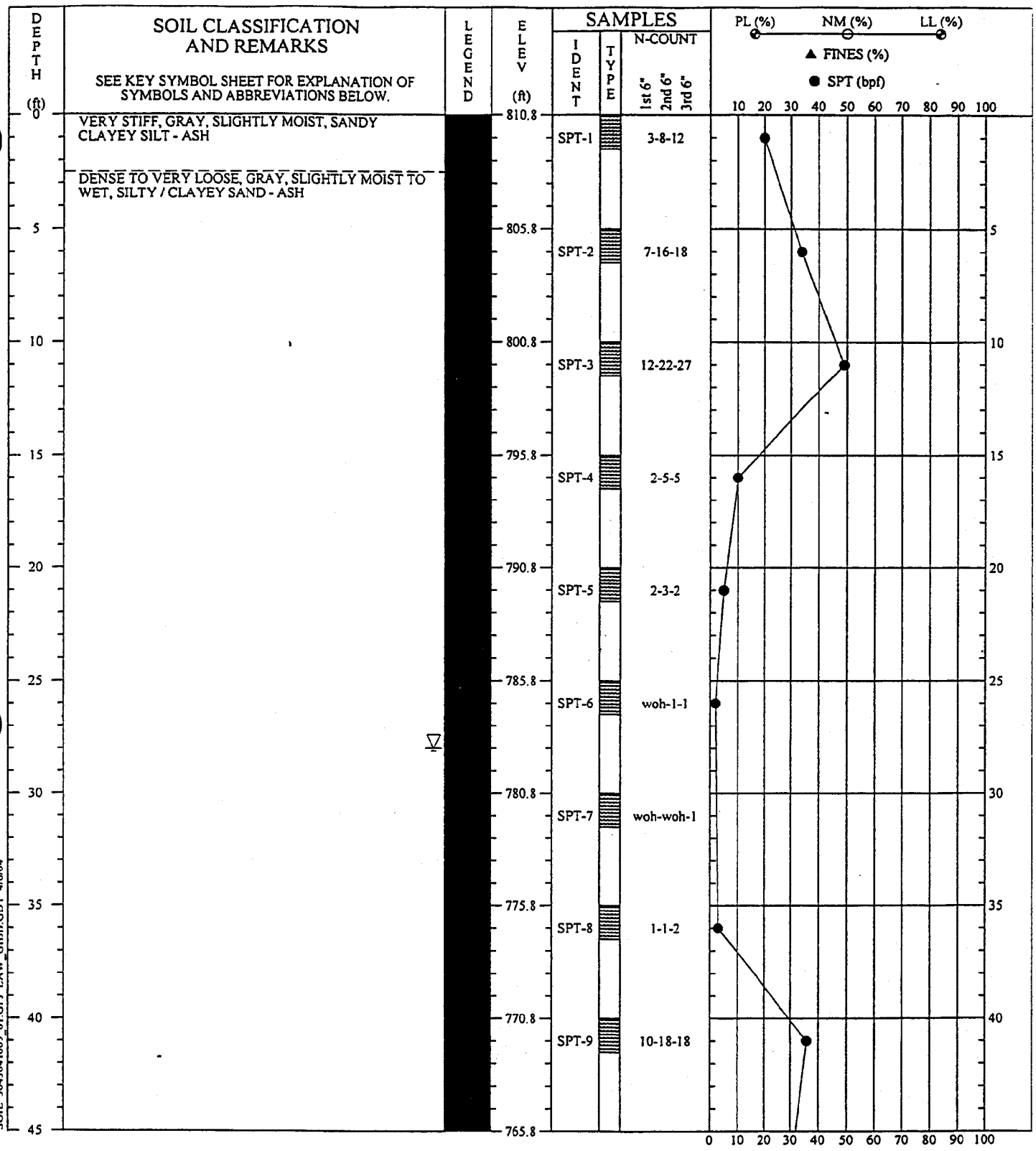
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 15, 2004 **BORING NO.:** B-2A

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC



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Driller :	Akins
Prepared By:	Justice
Checked By:	

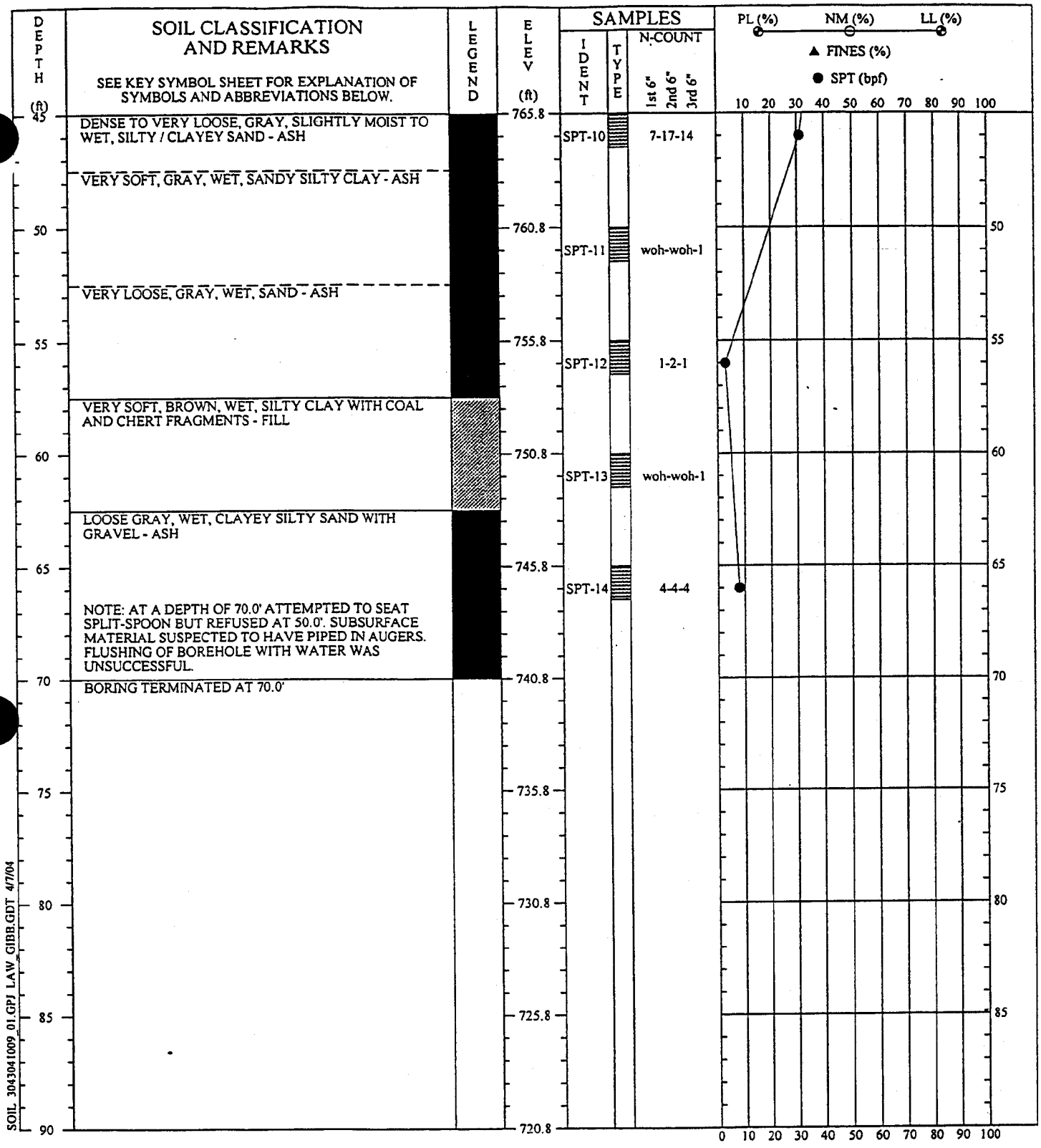
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 3, 2004 **BORING NO.:** B-3

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 2**

MACTEC



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Driller :	Akins
Prepared By:	Justice
Checked By:	

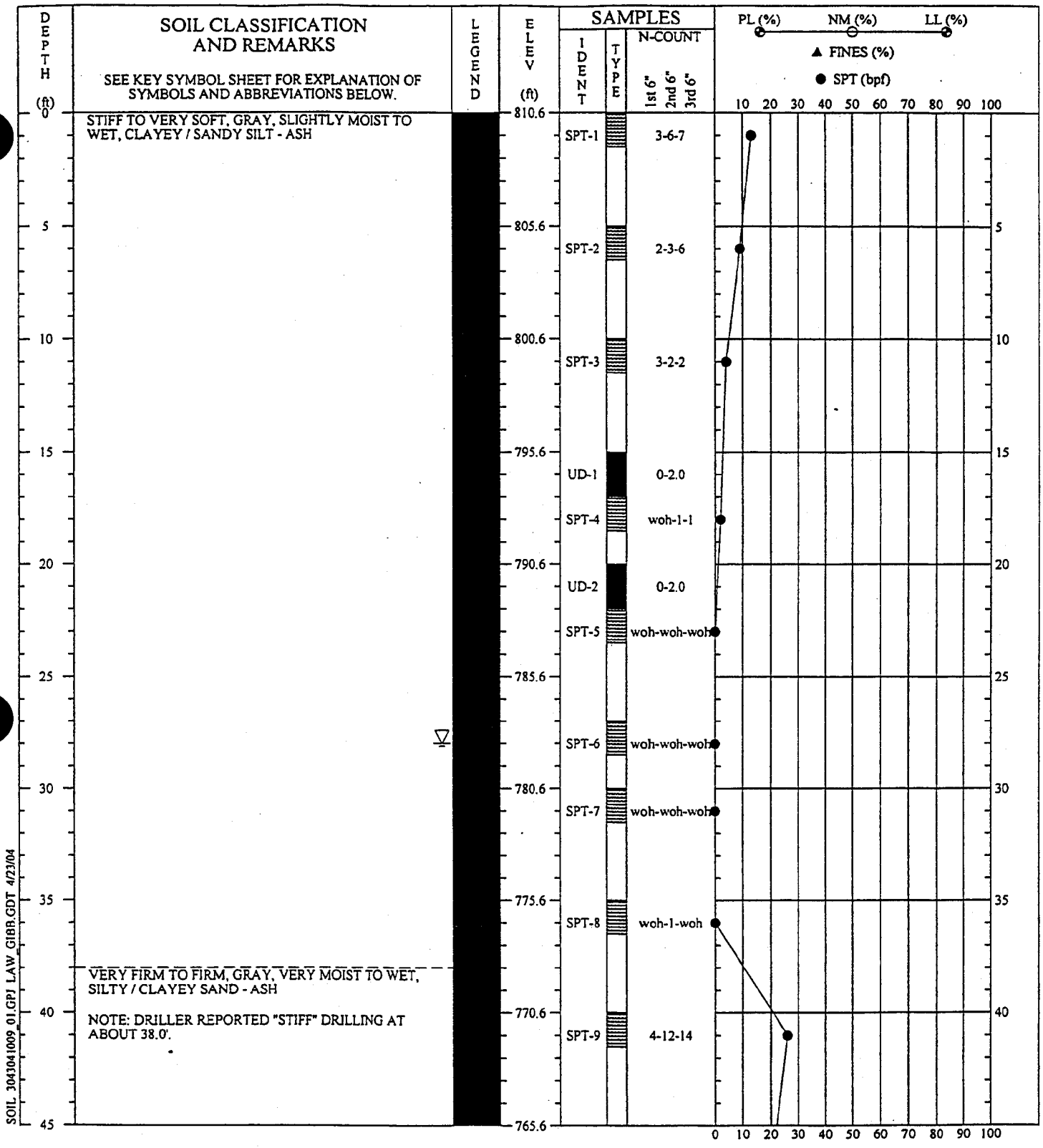
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 3, 2004 **BORING NO.:** B-3

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC



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Driller :	Akins
Prepared By:	Justice
Checked By:	

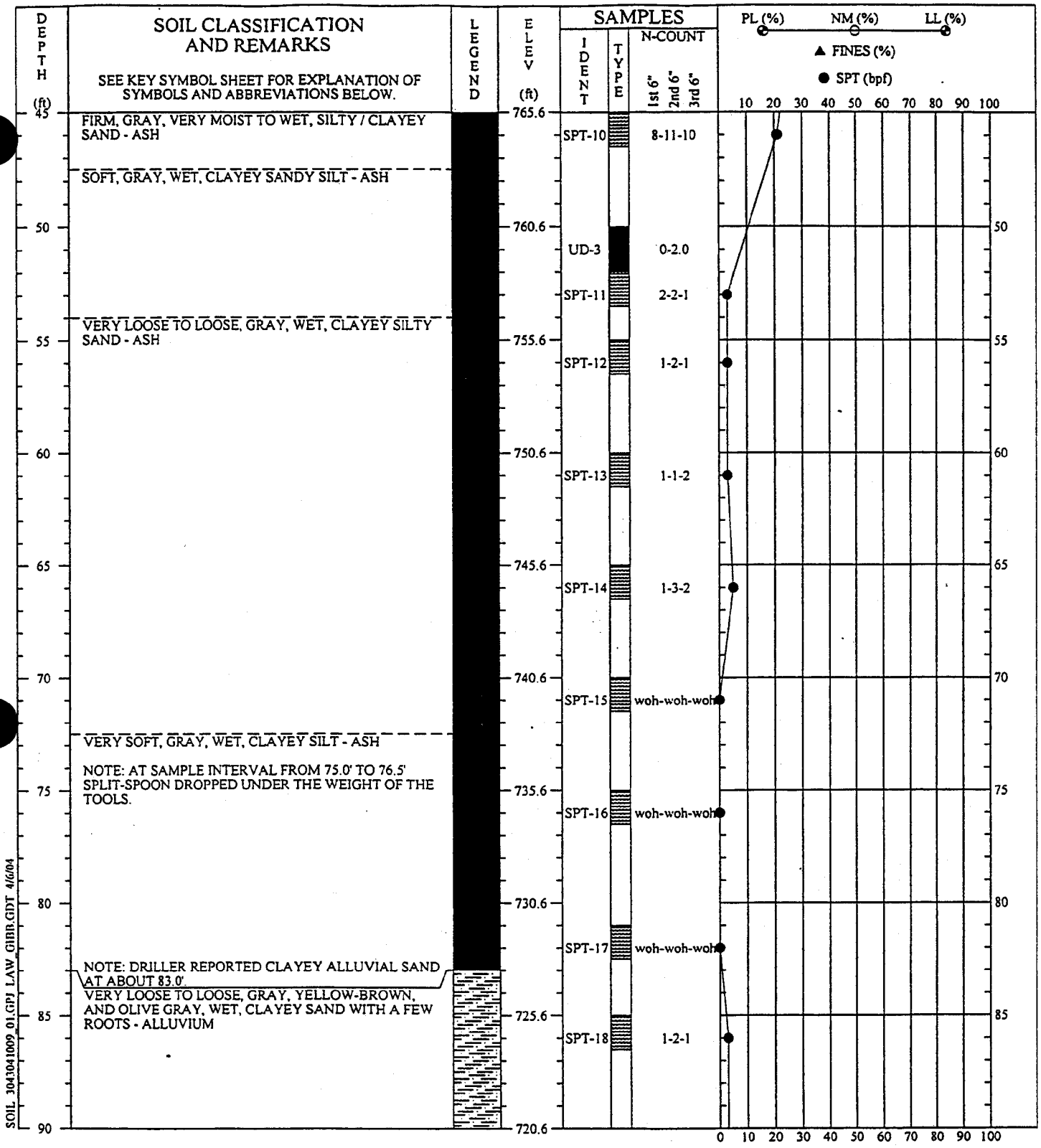
SOIL TEST BORING RECORD

PROJECT: Kingston Fossil Plant - Ash Diposal Area

DRILLED: March 23, 2004 **BORING NO.:** B-4

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 3**

MACTEC



SOIL_3043041009_01.GPJ LAW_GIBB.GDT 4/6/04

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Driller :	Akins
Prepared By:	Justice
Checked By:	

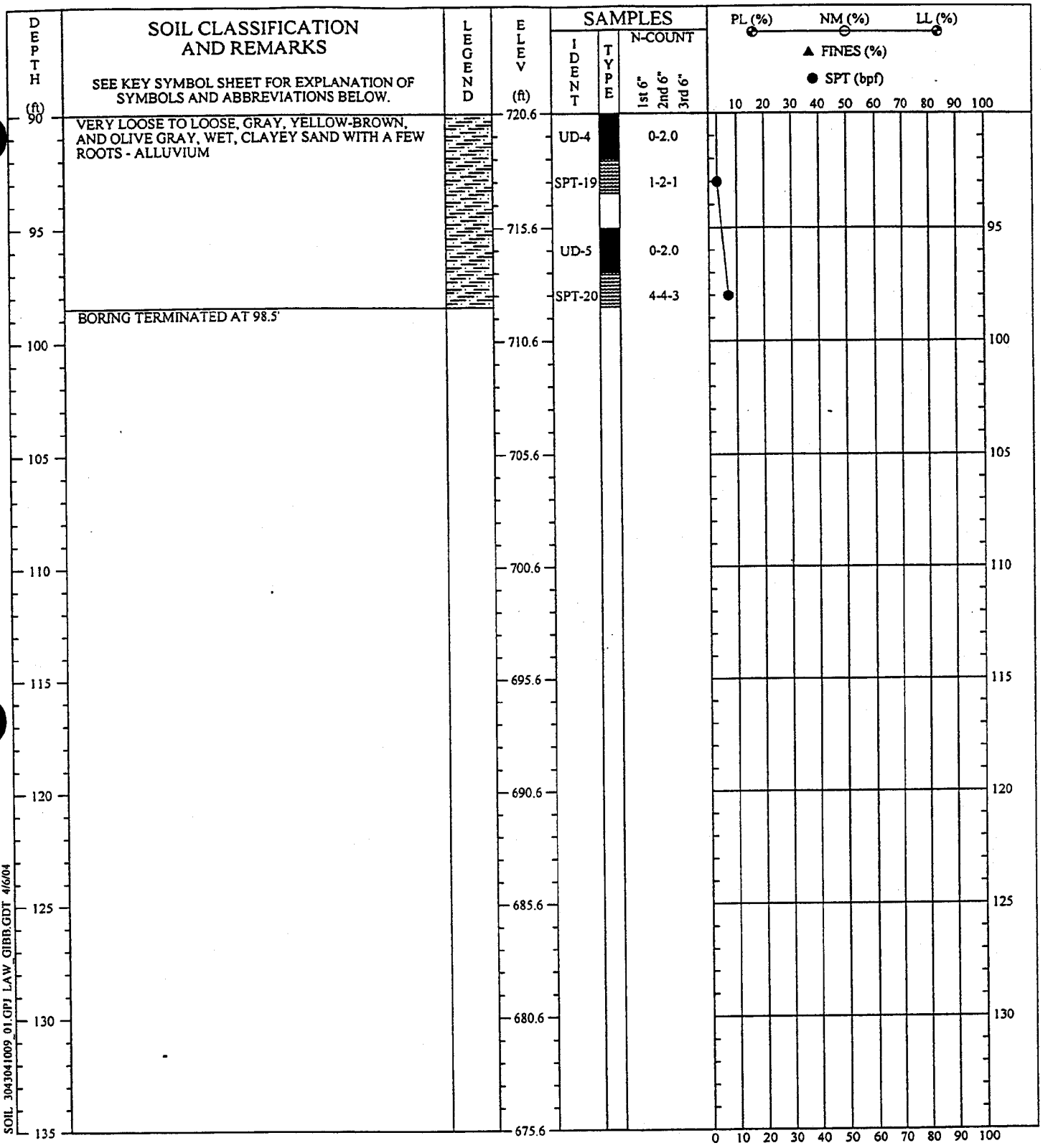
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 23, 2004 **BORING NO.:** B-4

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 3**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

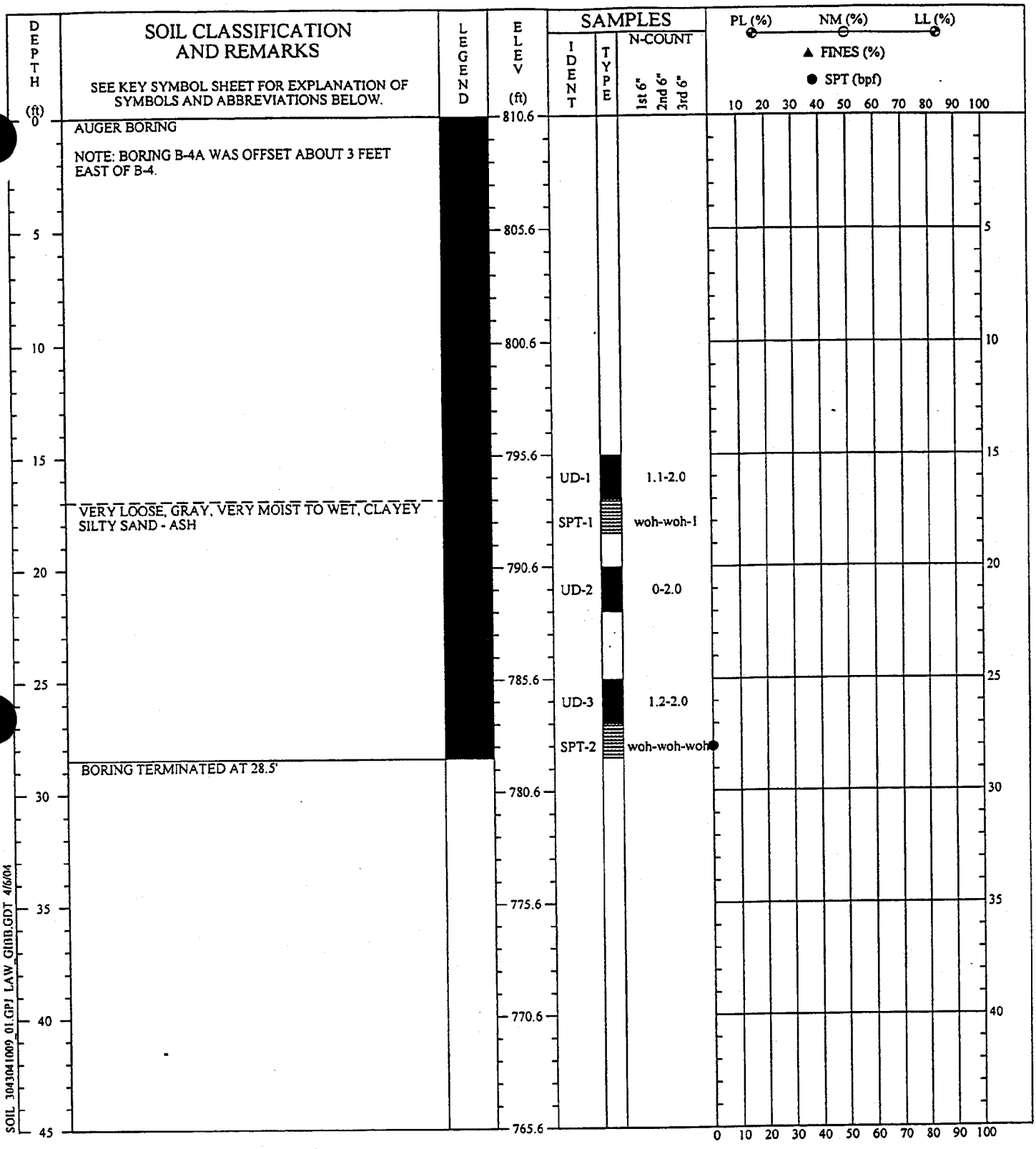
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 23, 2004 **BORING NO.:** B-4

PROJ. NO.: 3043041009/0001 **PAGE 3 OF 3**

MACTEC



REMARKS: STANDARD PENETRATION RESISTANCE TESTING PERFORMED USING AN AUTOMATIC HAMMER. NO GROUND WATER ENCOUNTERED AT TIME OF EXPLORATION.

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Driller :	Akins
Prepared By:	Justice
Checked By:	

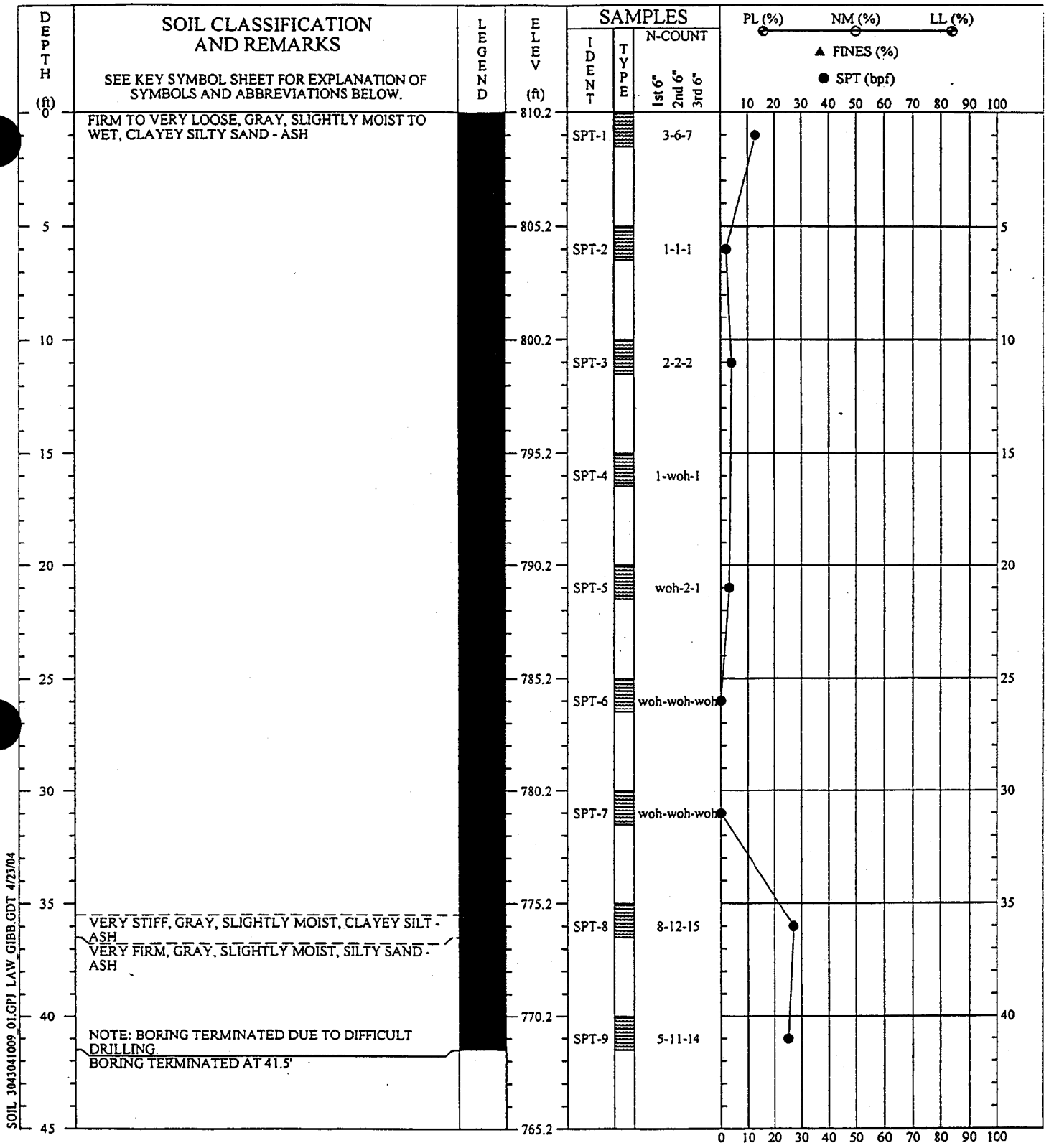
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 24, 2004 **BORING NO.:** B-4A

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC



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Driller :	Akins
Prepared By:	Justice
Checked By:	

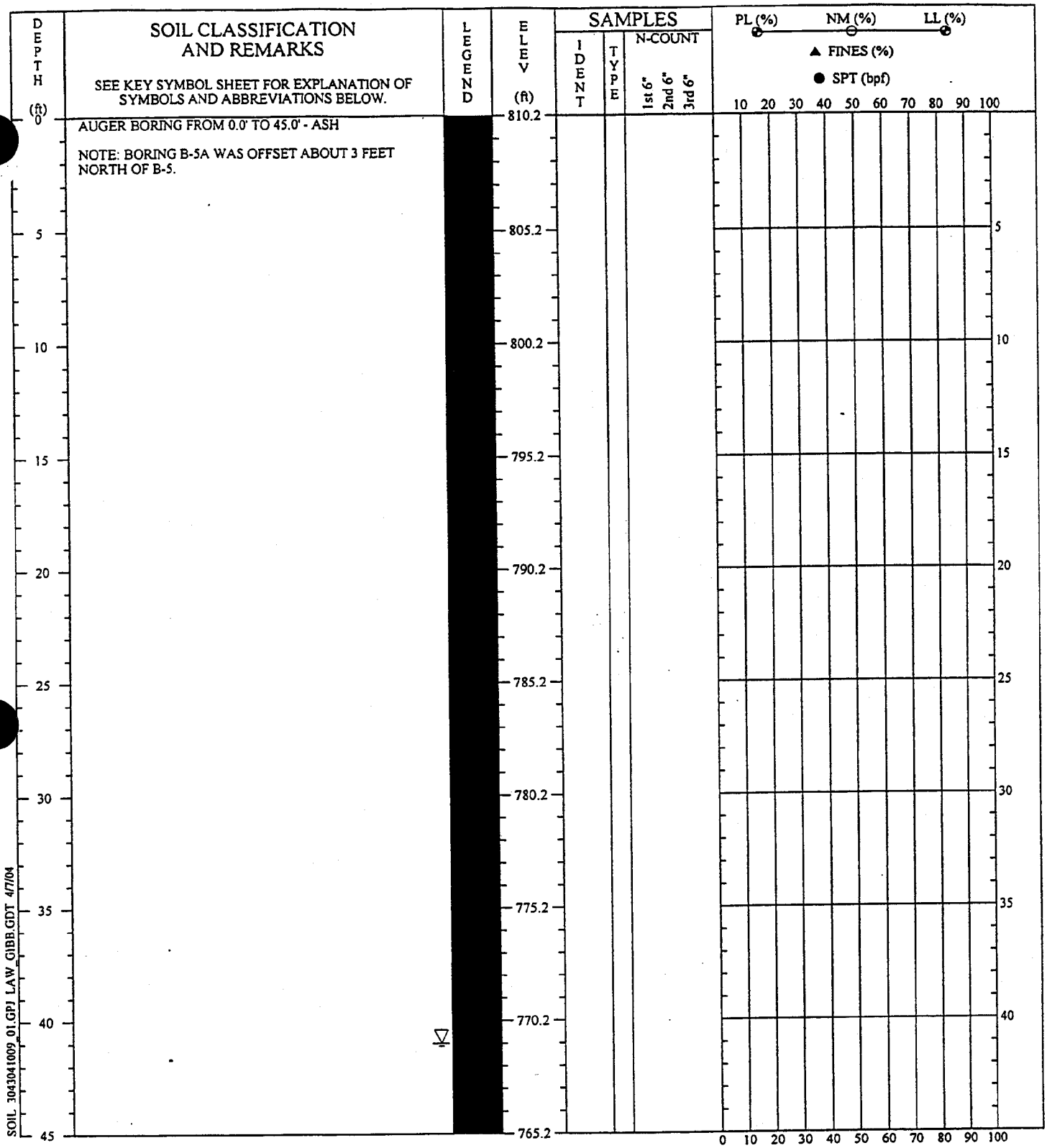
SOIL TEST BORING RECORD

PROJECT: Kingston Fossil Plant - Ash Diposal Area

DRILLED: March 1, 2004 **BORING NO.:** B-5

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

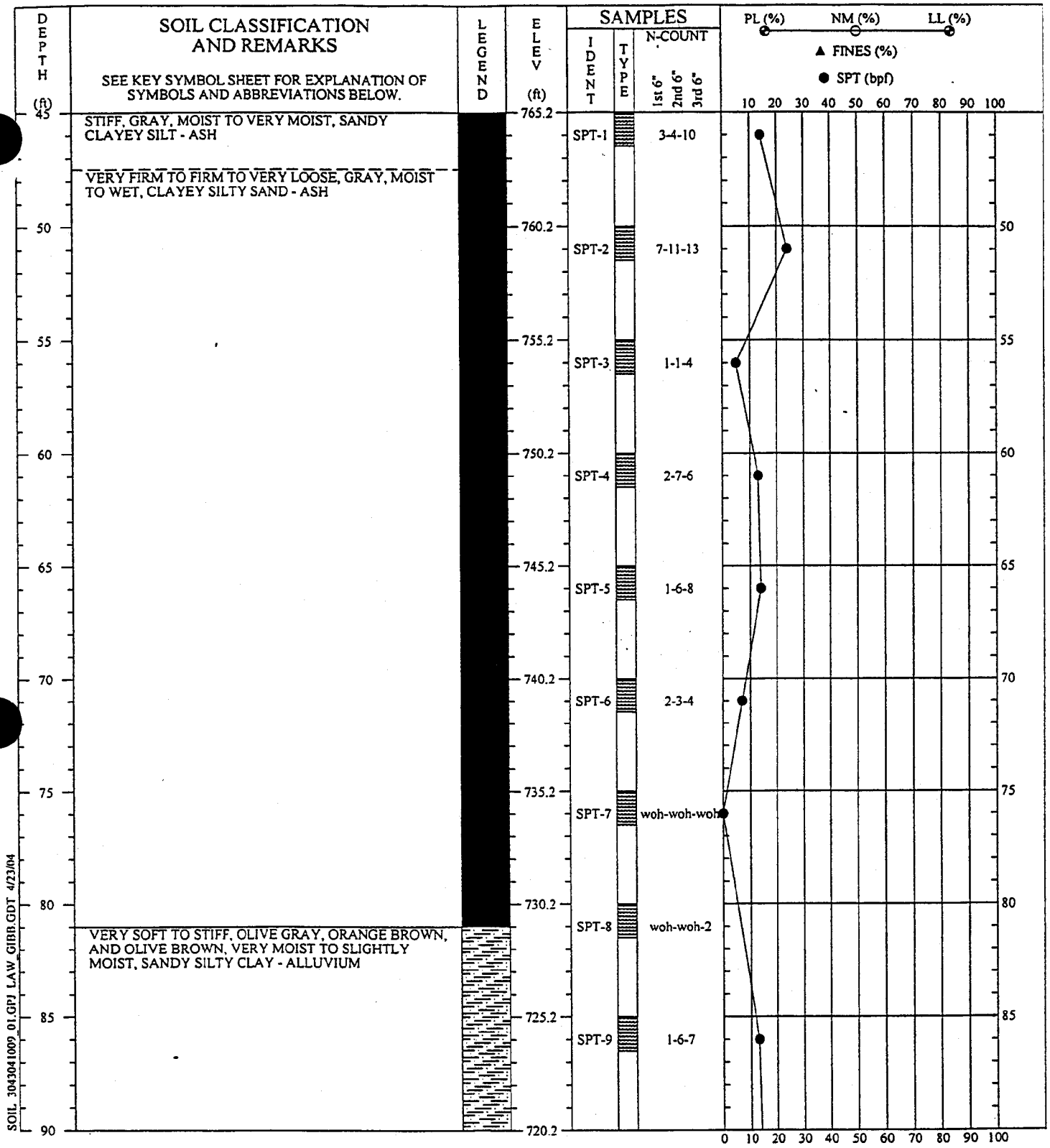
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 2, 2004 **BORING NO.:** B-5A

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 3**

MACTEC



SOIL 3043041009_01.GPJ LAW_GIBB.GDT 4/23/04

REMARKS: STANDARD PENETRATION RESISTANCE TESTING PERFORMED USING AN AUTOMATIC HAMMER.

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Driller :	Akins
Prepared By:	Justice
Checked By:	

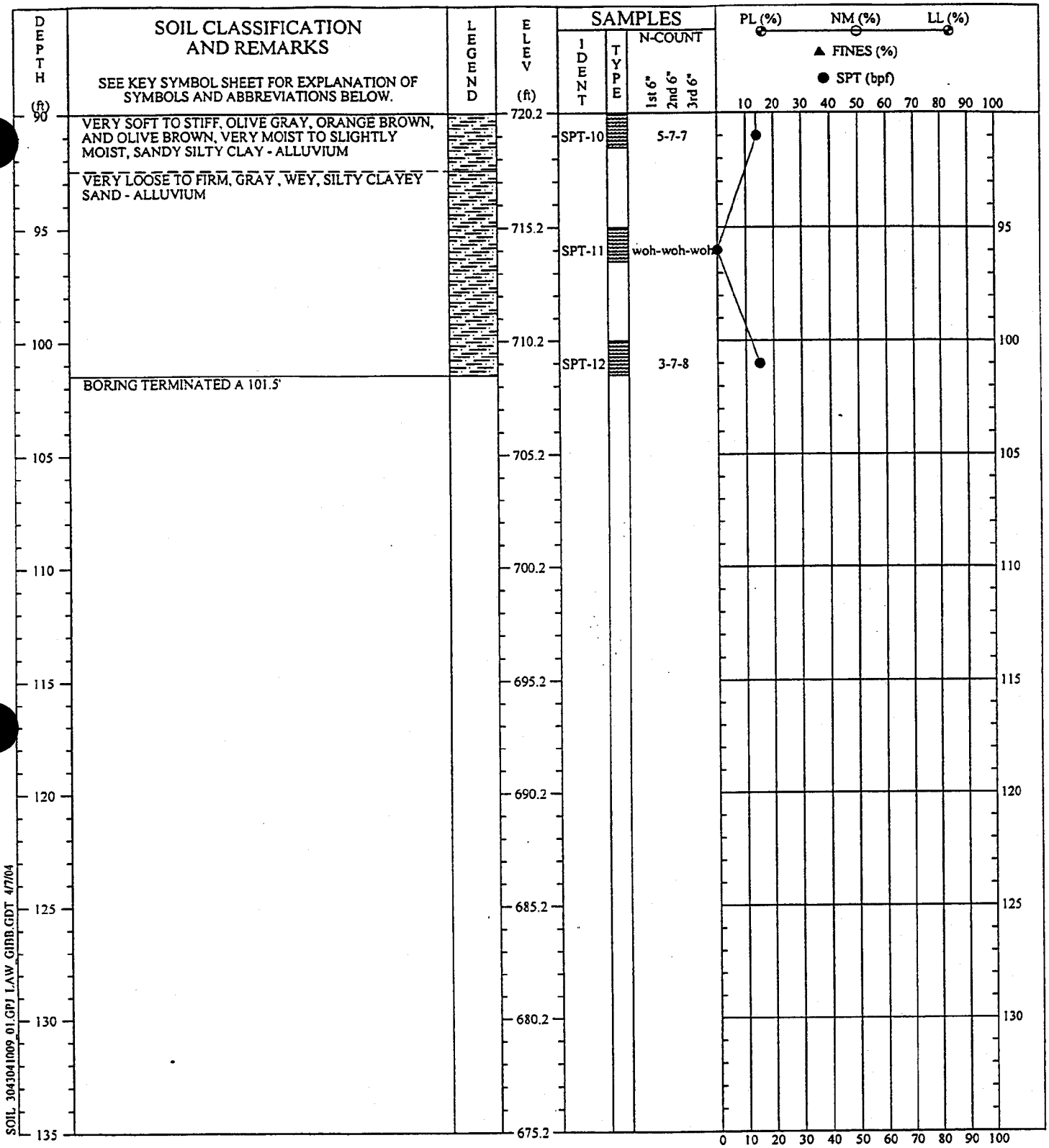
SOIL TEST BORING RECORD

PROJECT: Kingston Fossil Plant - Ash Diposal Area

DRILLED: March 2, 2004 **BORING NO.:** B-5A

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 3**

MACTEC



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Driller :	Akins
Prepared By:	Justice
Checked By:	

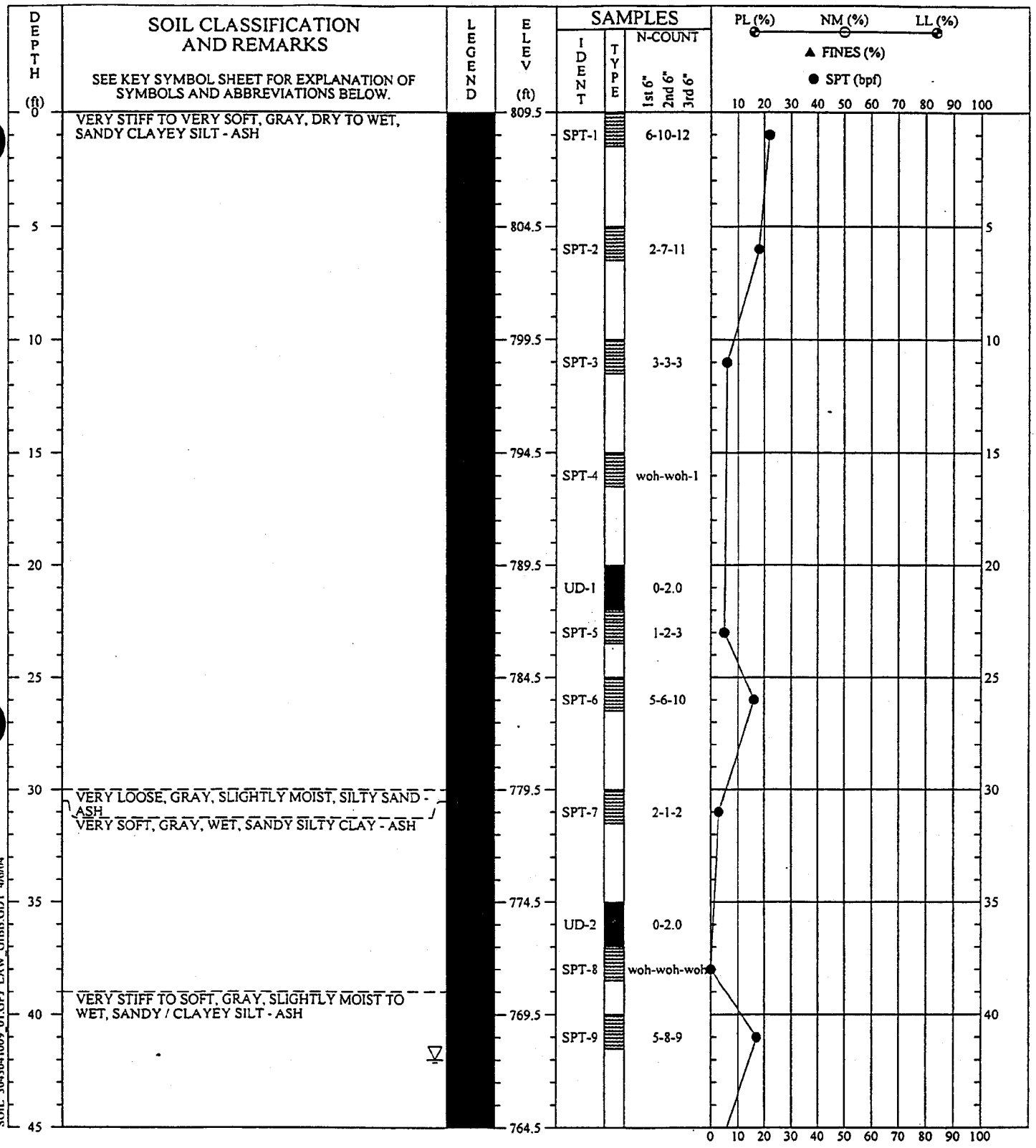
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 2, 2004 **BORING NO.:** B-5A

PROJ. NO.: 3043041009/0001 **PAGE 3 OF 3**

MACTEC



SOIL_3043041009_01.GPJ LAW_GIBB.GDT 4/6/04

REMARKS: STANDARD PENETRATION RESISTANCE TESTING PERFORMED USING AN AUTOMATIC HAMMER.

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BEWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

Driller :	Akins
Prepared By:	Justice
Checked By:	

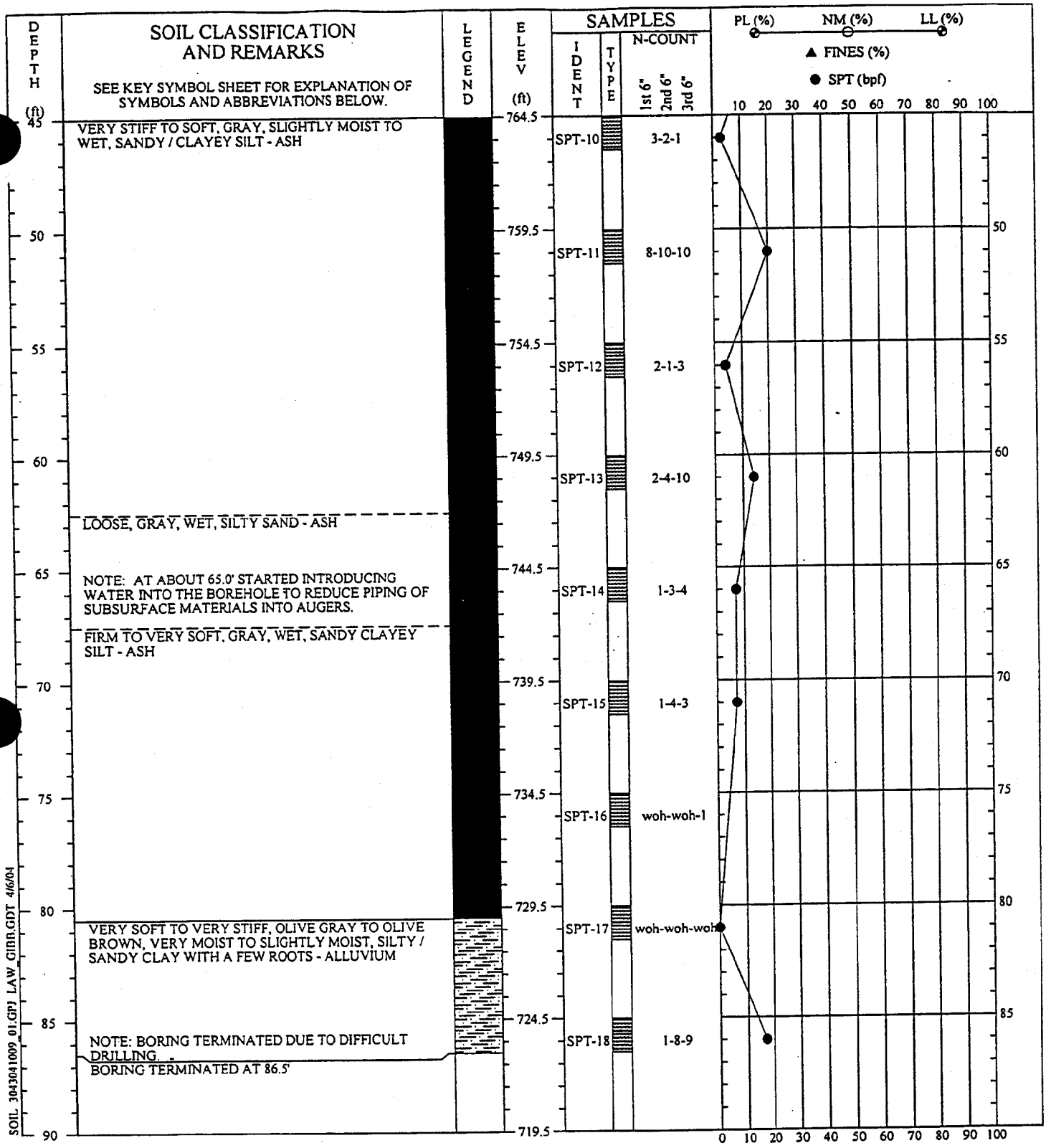
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 10, 2004 **BORING NO.:** B-6

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 2**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

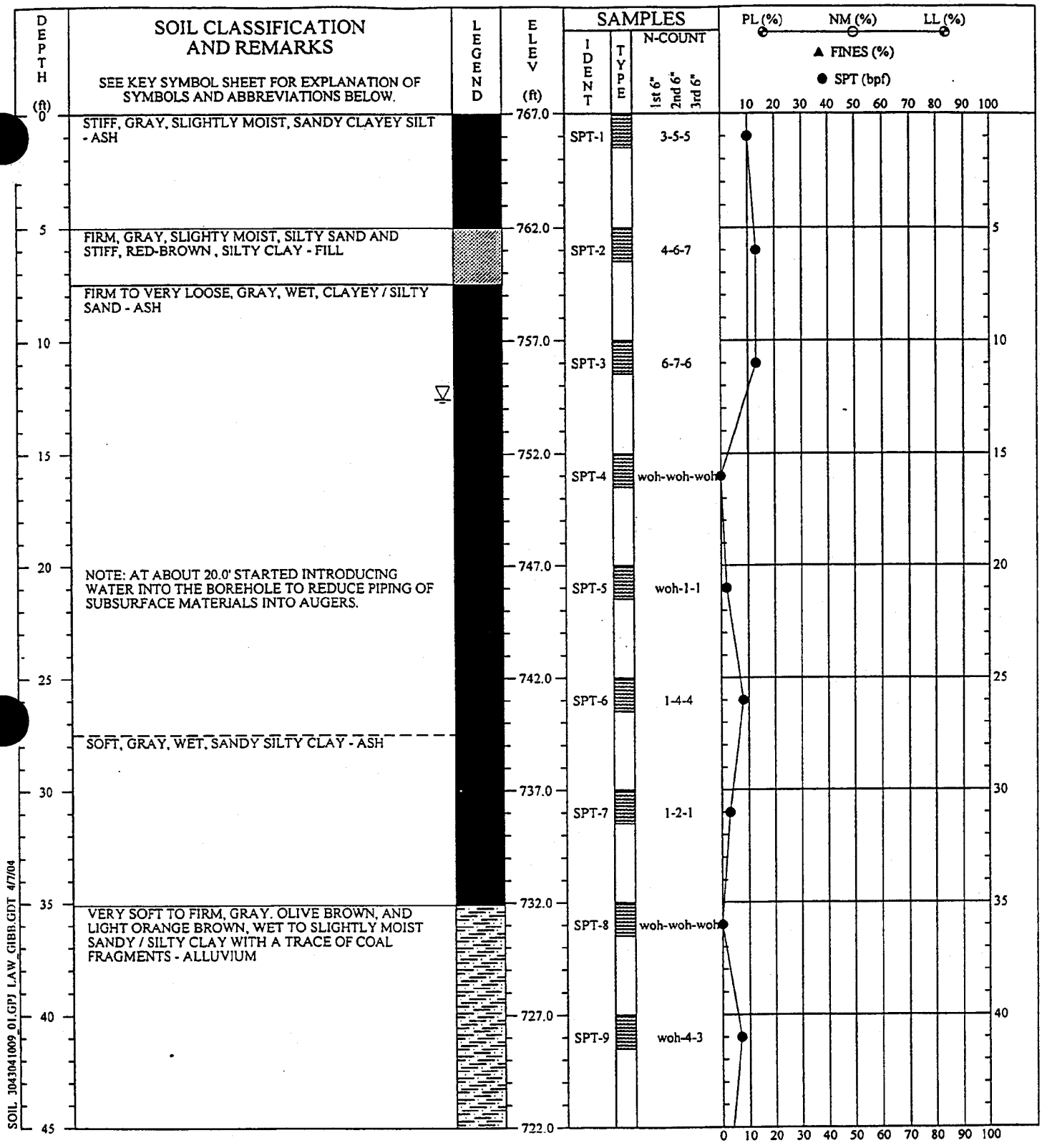
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 10, 2004 **BORING NO.:** B-6

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC



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Driller : Akins
Prepared By: Justice
Checked By:

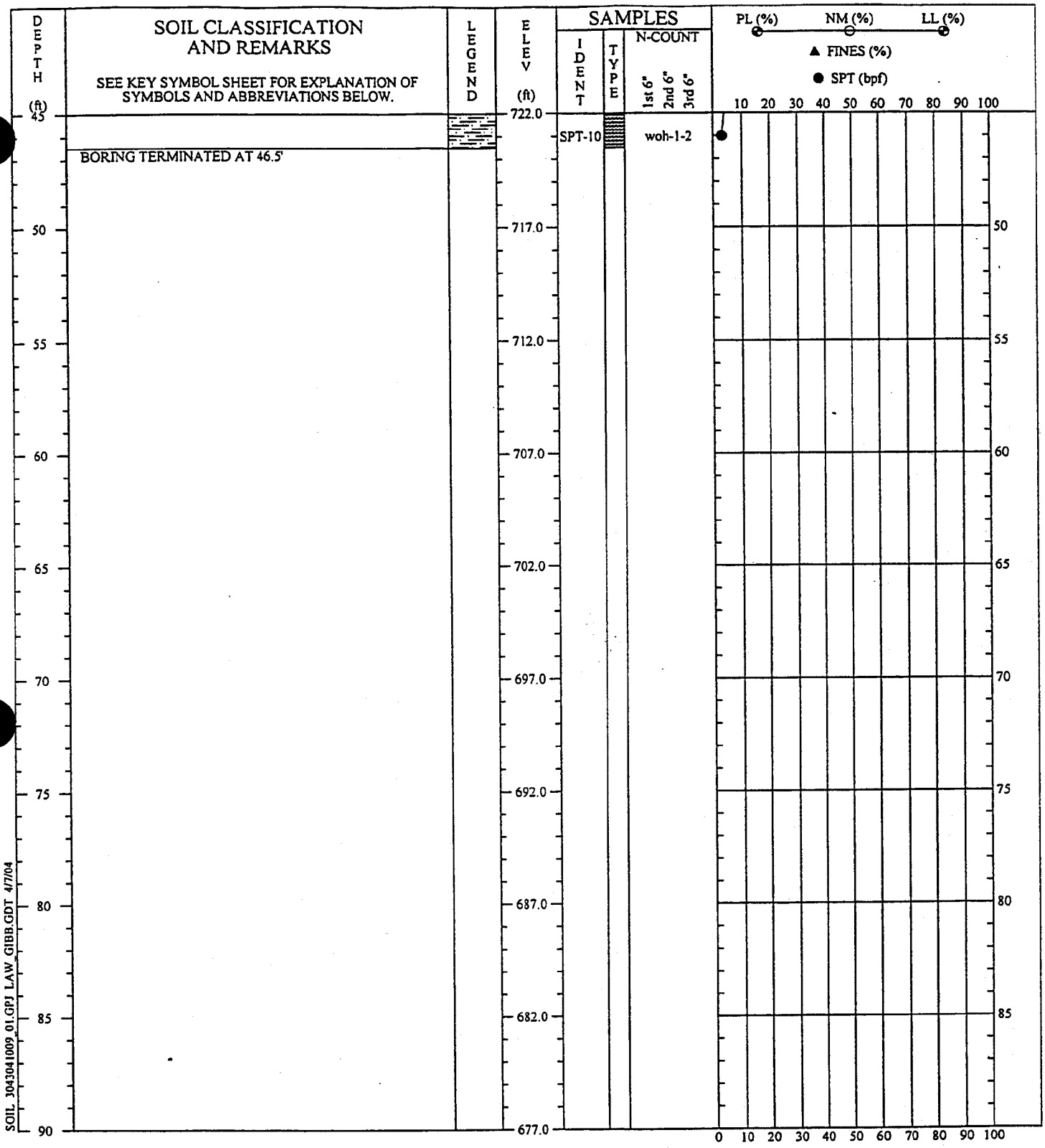
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 11, 2004 **BORING NO.:** B-7

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 2**

MACTEC



SOIL_3043041009_01.GPJ LAW_GIBB.GDT 4/7/04

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Driller :	Akins
Prepared By:	Justice
Checked By:	

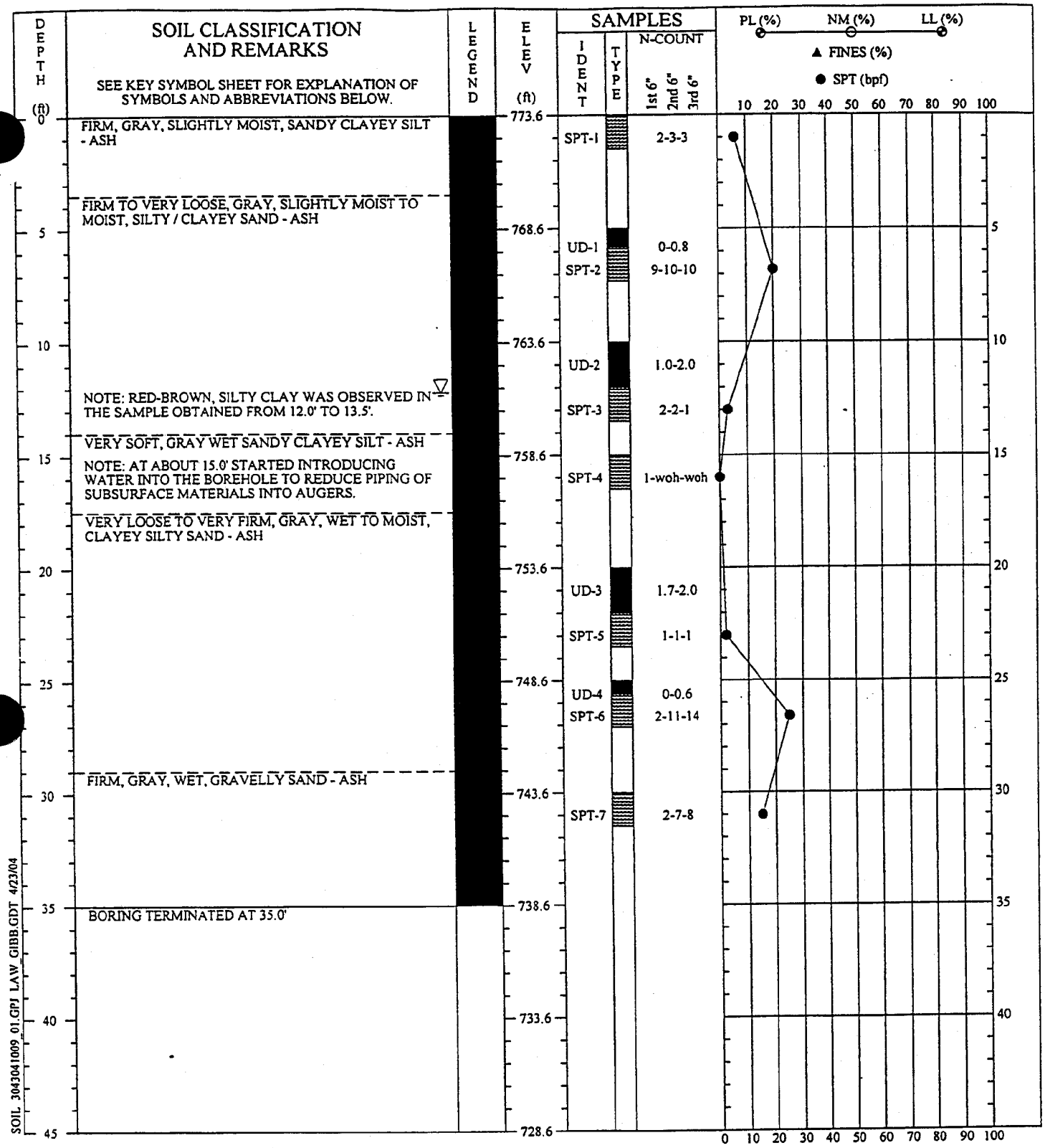
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 11, 2004 **BORING NO.:** B-7

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

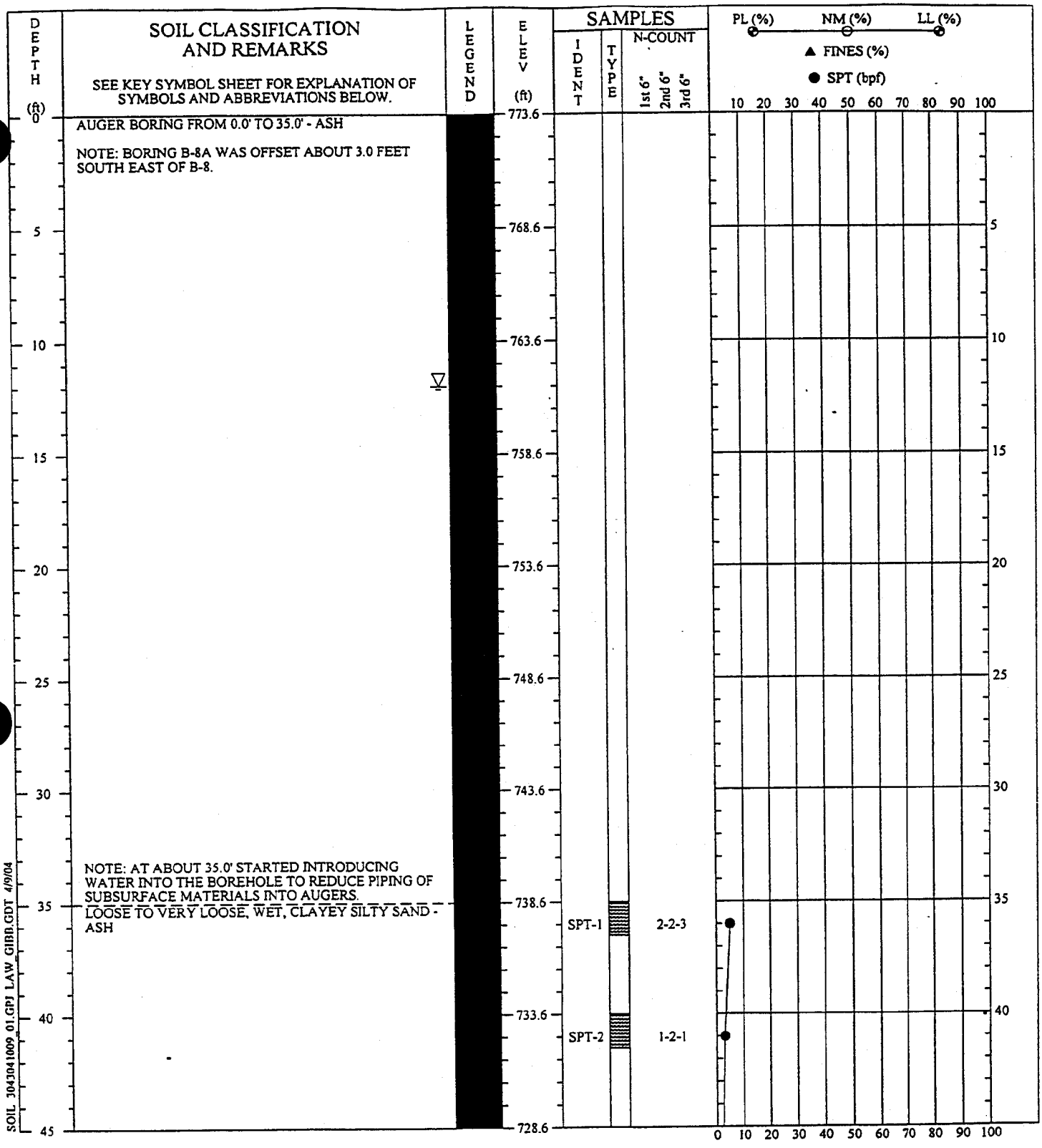
SOIL TEST BORING RECORD

PROJECT: Kingston Fossil Plant - Ash Diposal Area

DRILLED: March 19, 2004 **BORING NO.:** B-8

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC



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Driller :	Akins
Prepared By:	Justice
Checked By:	

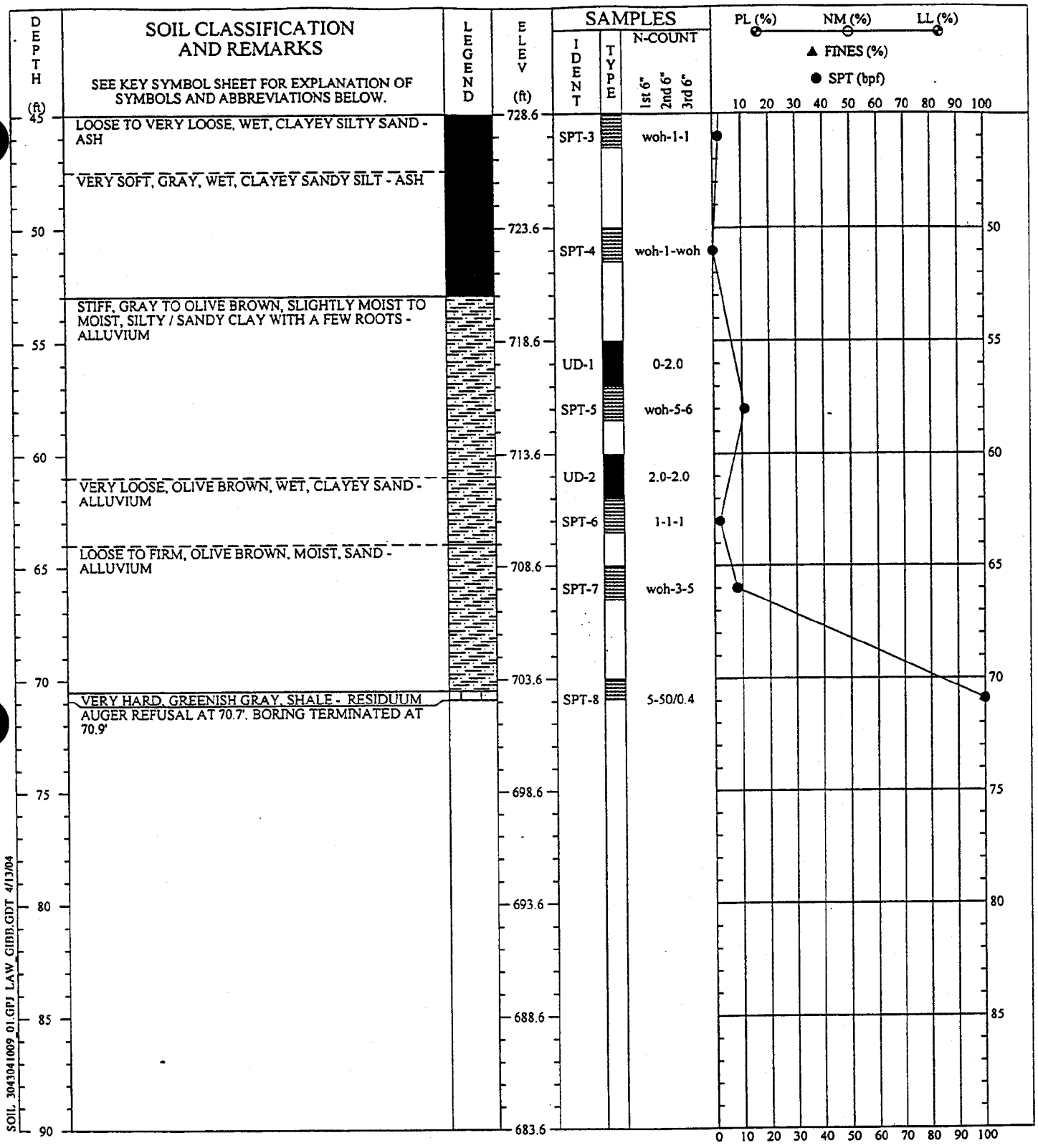
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 22, 2004 **BORING NO.:** B-8A

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 2**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

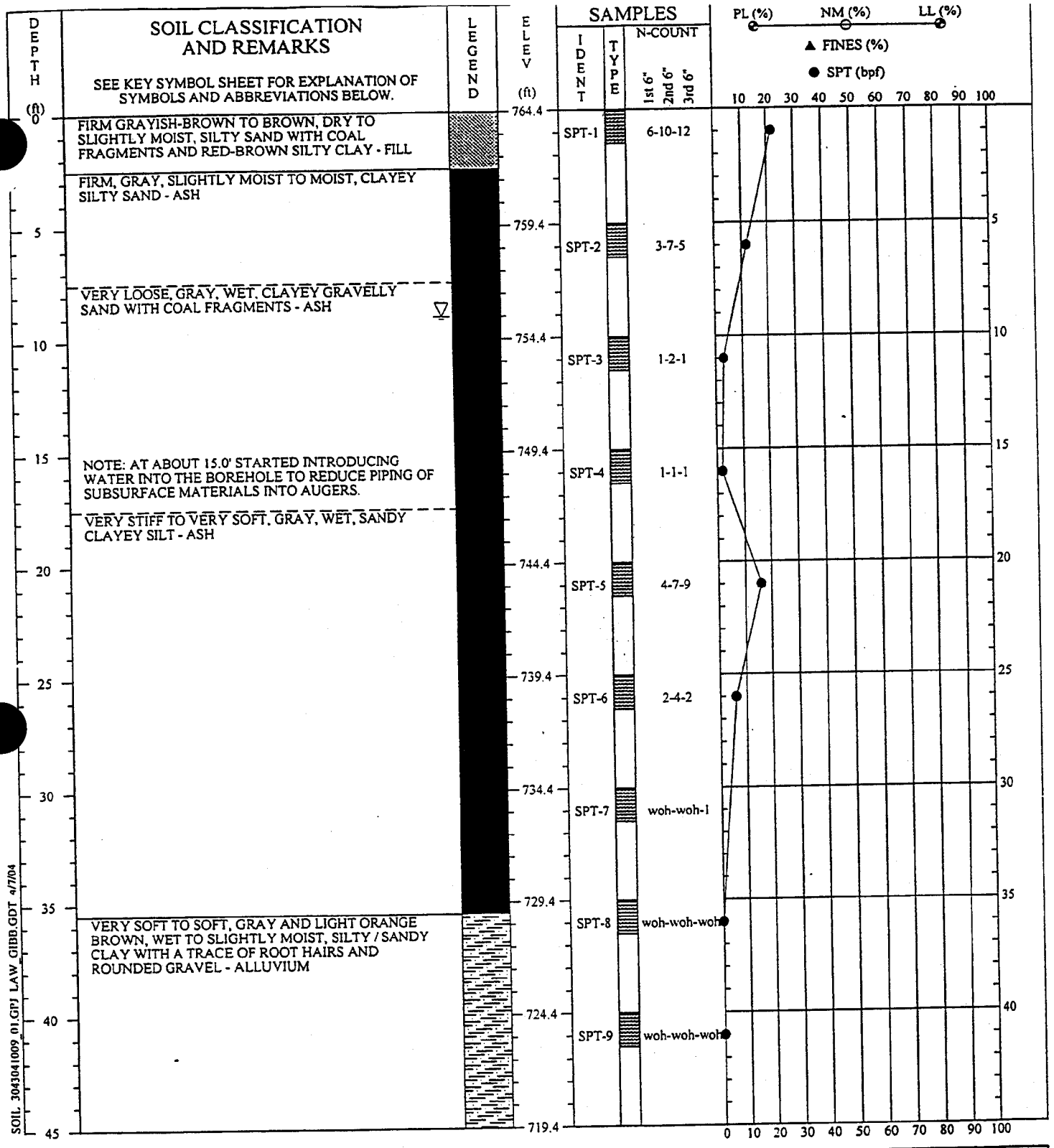
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 22, 2004 **BORING NO.:** B-8A

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

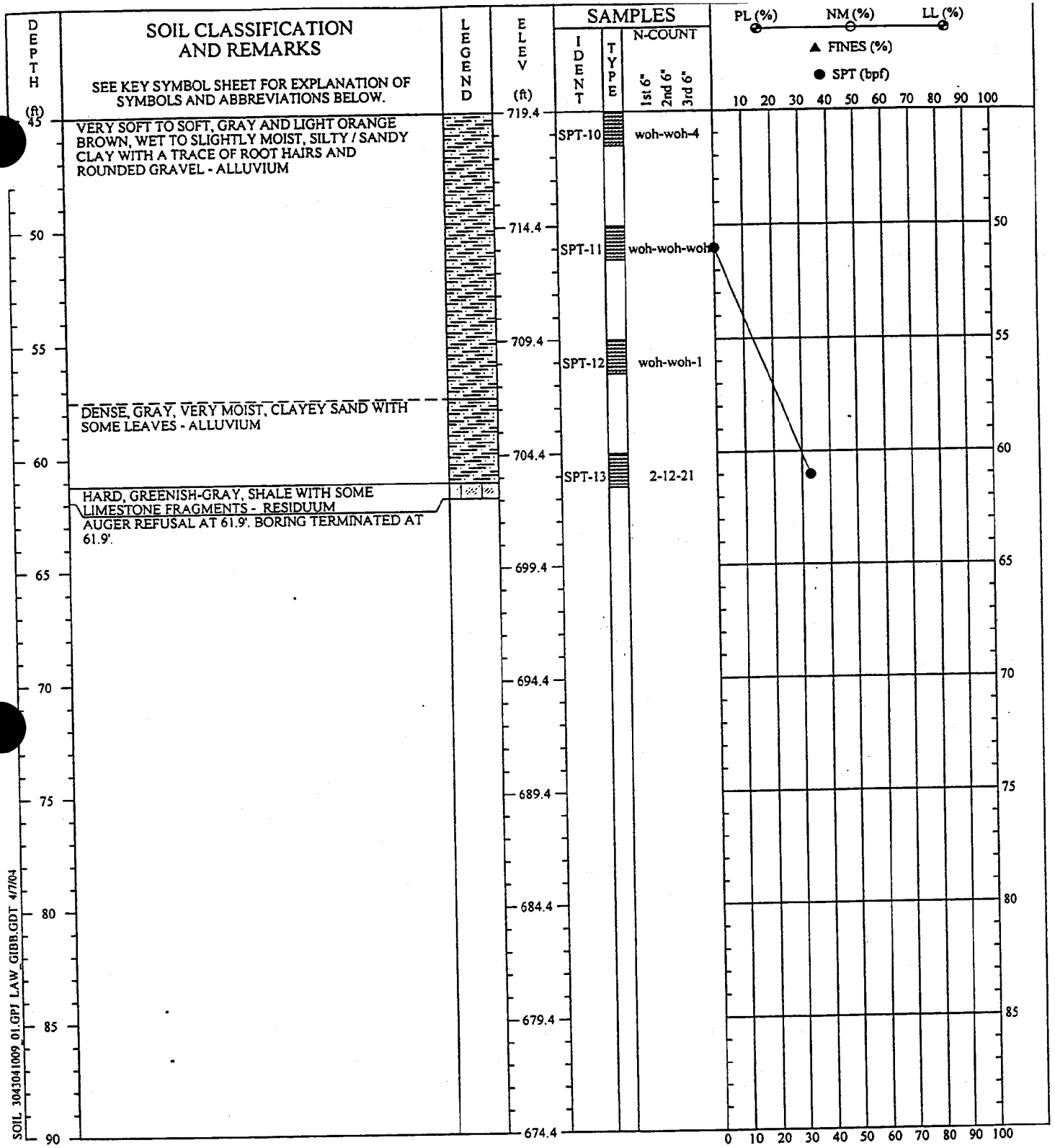
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 12, 2004 **BORING NO.:** B-9

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 2**

MACTEC



SOIL 3043041009_01.GPJ LAW_GIBB.GDT 4/7/04

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Driller :	Akins
Prepared By:	Justice
Checked By:	

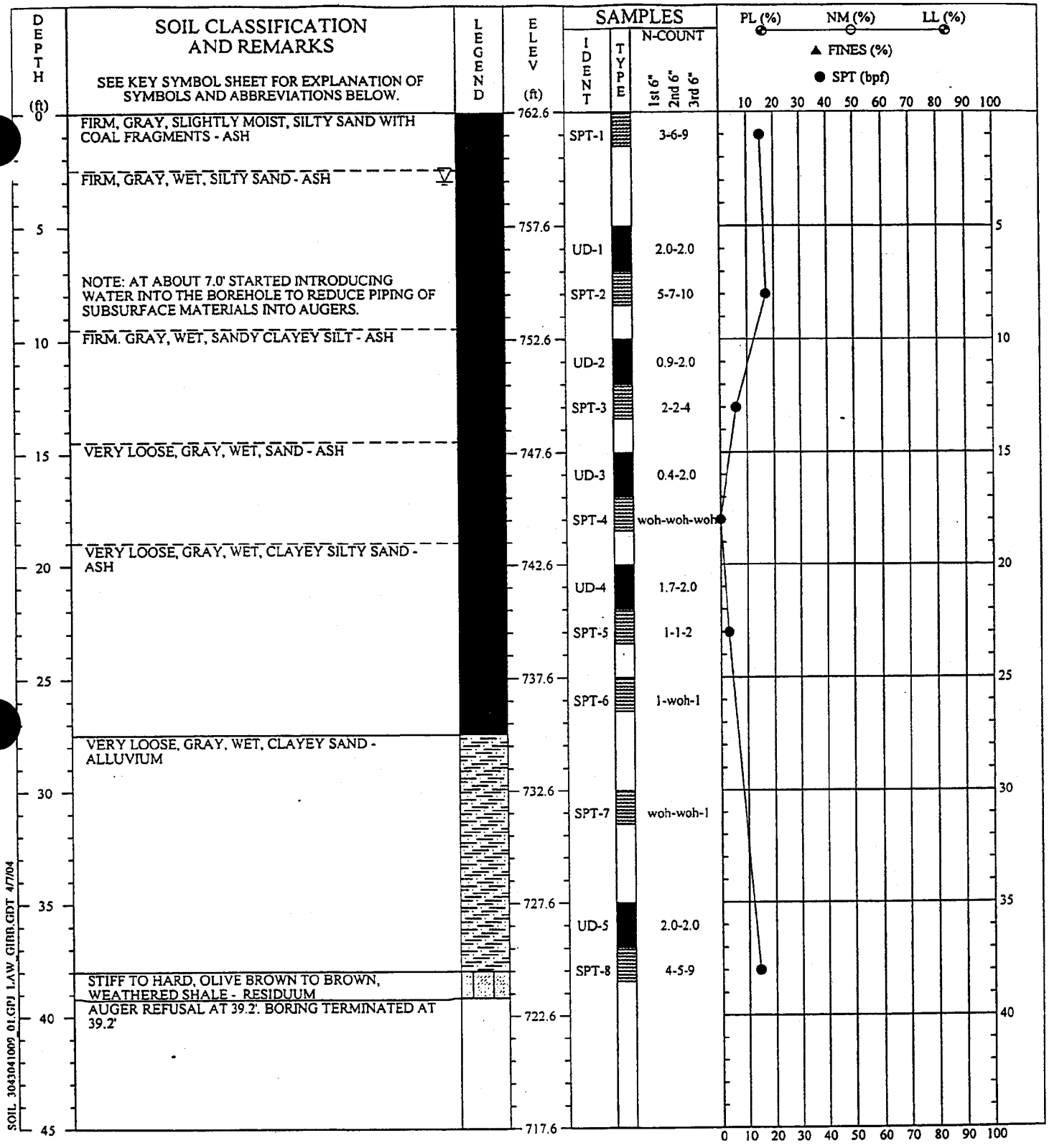
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 12, 2004 **BORING NO.:** B-9

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC



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Driller :	Akins
Prepared By:	Justice
Checked By:	

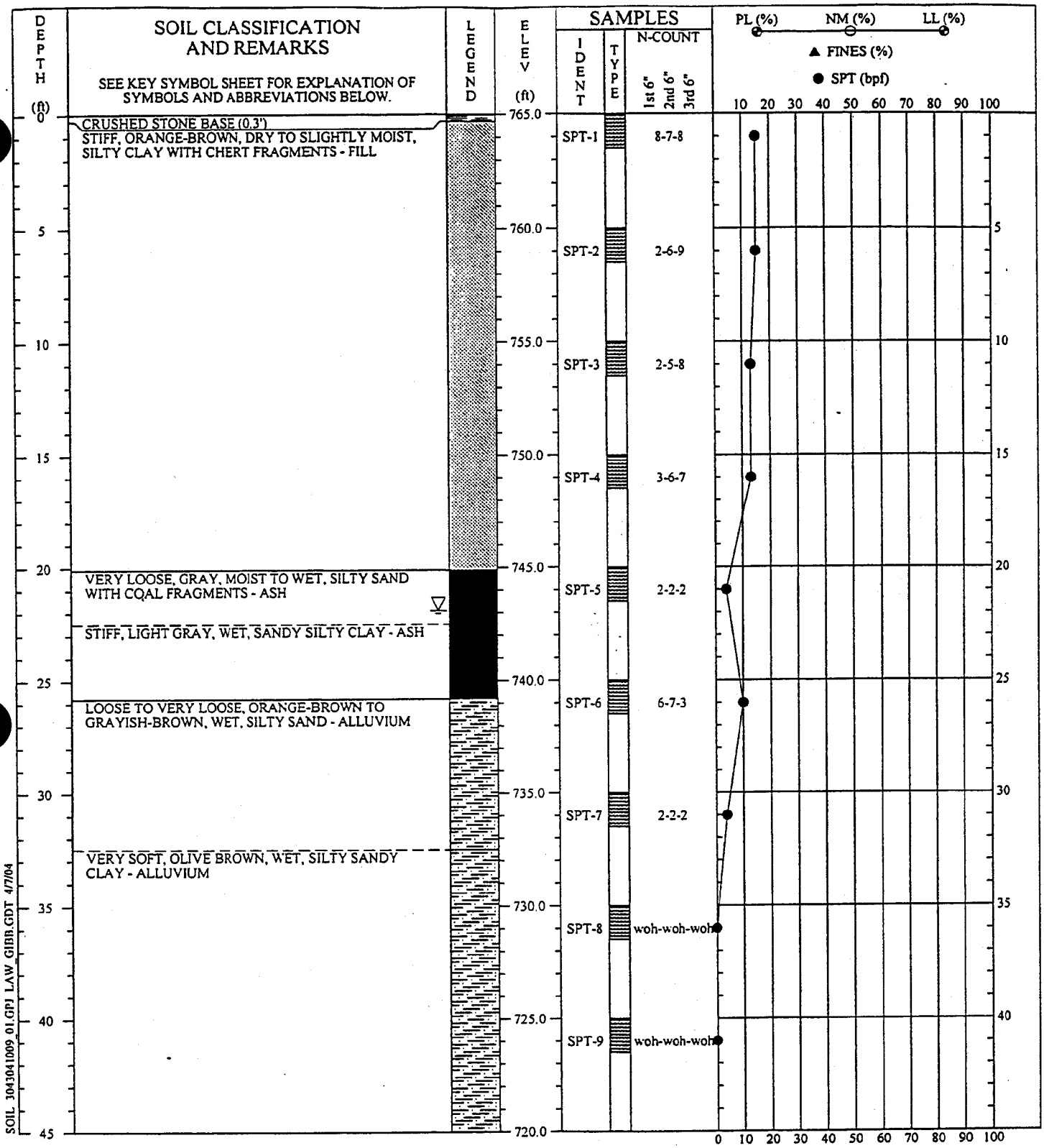
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 18, 2004 **BORING NO.:** B-10

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 1**

MACTEC



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Driller : Akins
Prepared By:Justice
Checked By:

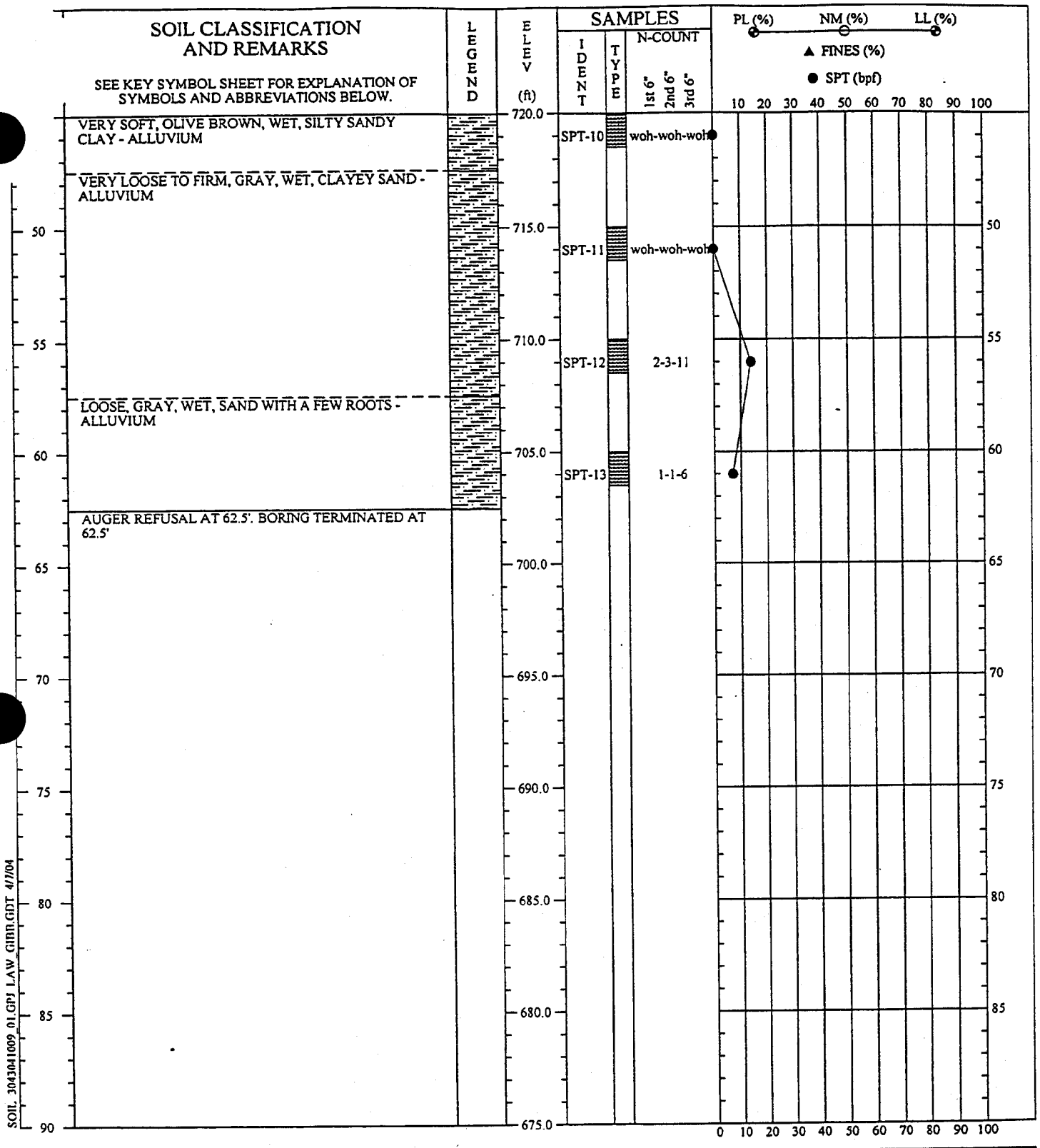
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 15, 2004 **BORING NO.:** B-11

PROJ. NO.: 3043041009/0001 **PAGE** 1 **OF** 2

MACTEC



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Driller :	Akins
Prepared By:	Justice
Checked By:	

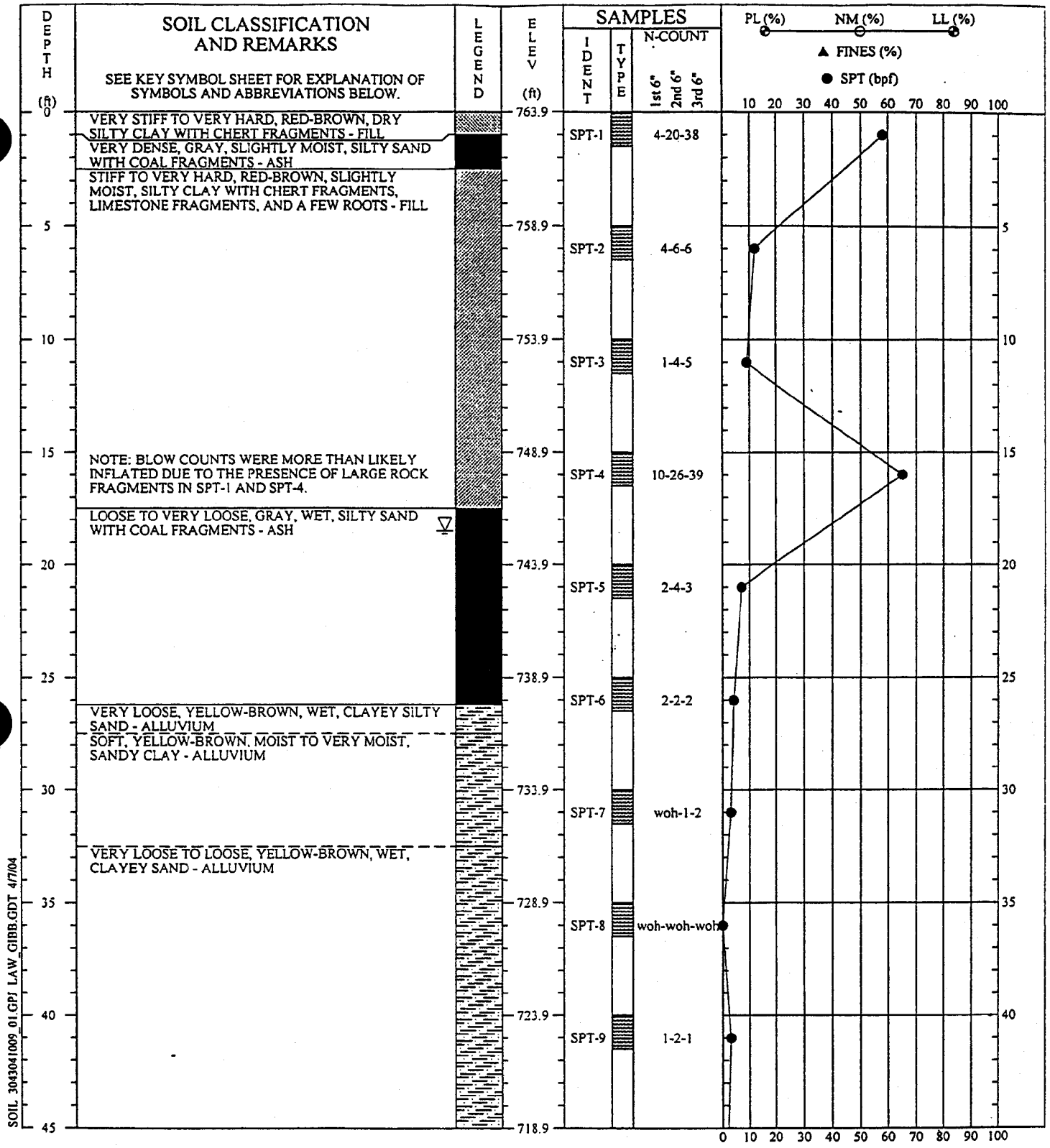
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 15, 2004 **BORING NO.:** B-11

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC



SOIL 3043041009_01.GPJ LAW_GIBB.GDT 4/7/04

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Driller : Akins
Prepared By:Justice
Checked By:

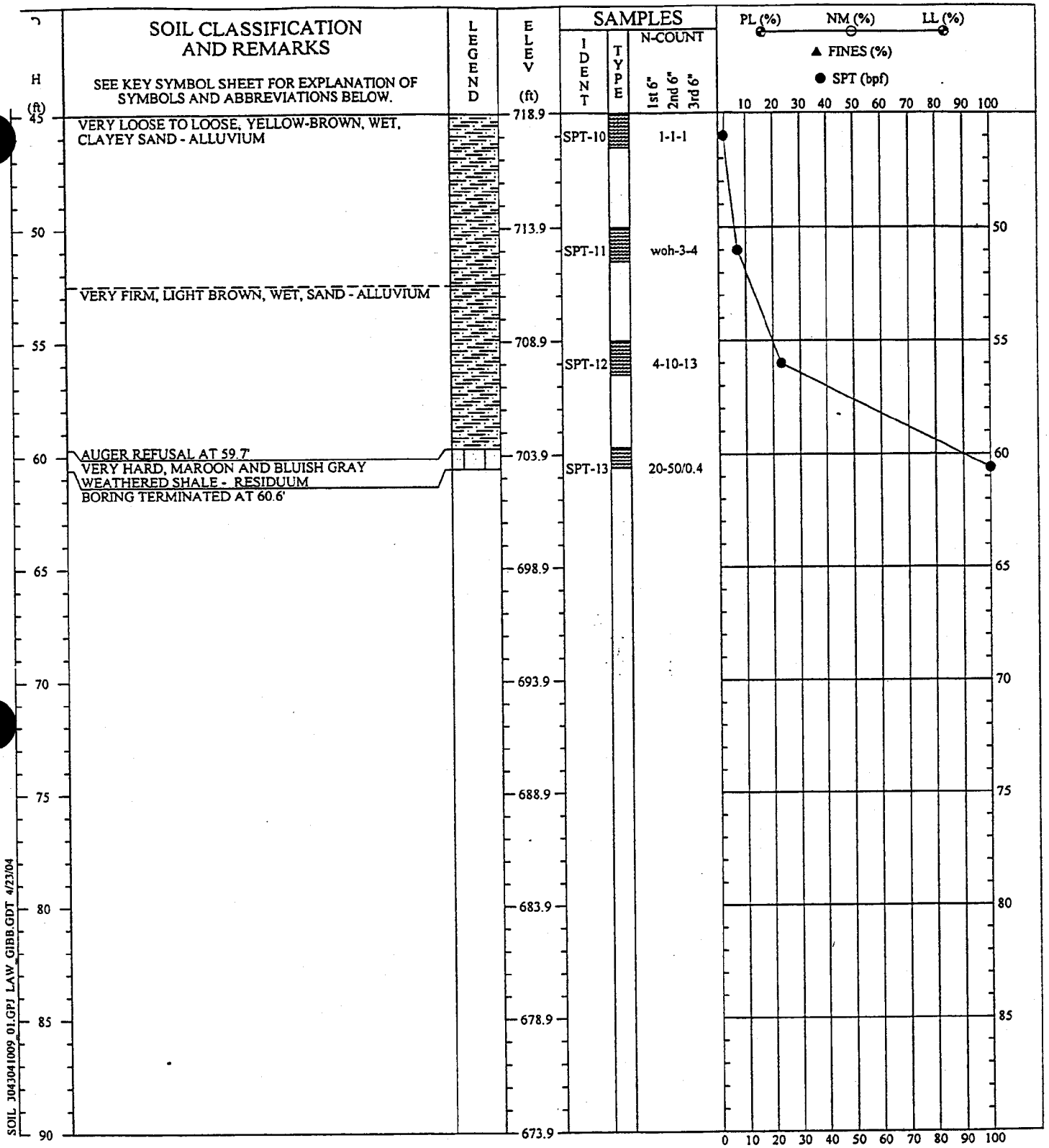
SOIL TEST BORING RECORD

PROJECT: TVA Kingston Ash

DRILLED: March 16, 2004 **BORING NO.:** B-12

PROJ. NO.: 3043041009/0001 **PAGE 1 OF 2**

MACTEC



SOIL 3043041009 01.GPJ LAW_GIBB.GDT 4/23/04

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Driller : Akins
Prepared By:Justice
Checked By:

SOIL TEST BORING RECORD

PROJECT: Kingston Fossil Plant - Ash Diposal Area

DRILLED: March 16, 2004 **BORING NO.:** B-12

PROJ. NO.: 3043041009/0001 **PAGE 2 OF 2**

MACTEC

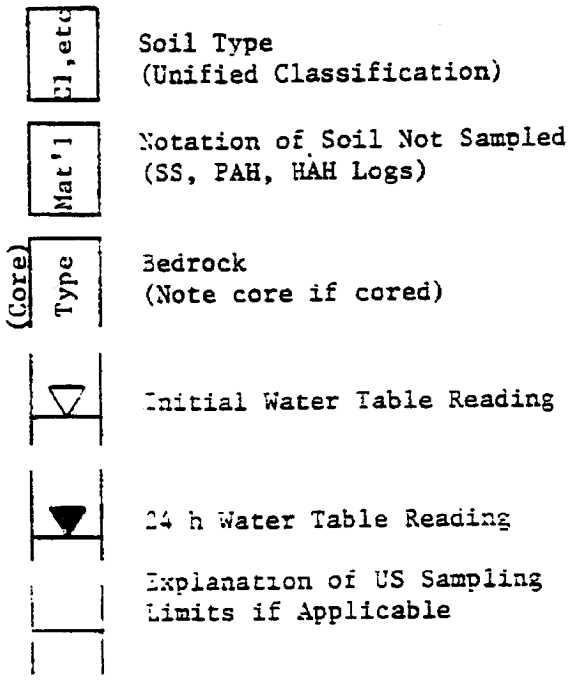
This information taken from "Kingston Fossil Plant – Dredge Cells/Closure Soil Investigation," Singleton Laboratories Report 015-672-142A, September 29, 1994.

SINGLETON LABORATORIES

SOIL PROFILE LEGEND AND SYMBOLS

Depth 1"=5'	El	SPT (N)	Log*	W	LL	PI	Gr	Description or Test Results
Boring Depth and Scale	Elevation	Blows Per Foot (SS Boring)	Lab Soil Type	Moisture Content	Liquid Limit	Plasticity Index	Soil Group Number	

Legend



Boring Symbols

SS - 2-in. od Split Spoon Boring

SPT - Standard Penetration Test Blows Per Foot With 2-in. Split Spoon

CPT - Cone Penetration Test

US - Undisturbed Sample Boring

PAH - Power Auger Hole

HAH - Hand Auger Hole

TP - Test Pit or Trench

V - Vane Shear

P - Piezometer

Under Description or Test Results		
Test	Engineering Test Results	
Q, R, $\bar{R}$, S	Friction Angle (degrees)	Cohesion (tsf)
UC	Unconfined Compressive Strength (tsf)	Sensitivity Ratio
C	Compression Index	Preconsolidation Pressure (tsf)
k	Coefficient of Permeability (cm/sec)	

Example:

Q 12.0 0.62 R 19.6 0.21 S 34.0 0
UC 4.0 2.6 C 0.72 2.0 k 5.6

Soil Test Symbols

Q - Unconsolidated-Undrained Triaxial Compression

R - Consolidated-Undrained Triaxial Compression (Saturated)

$\bar{R}$ - Effective Consolidated-Undrained Triaxial Compression

R nat - Consolidated-Undrained Triaxial Compression (Natural Moisture)

S - Consolidated-Drained Direct Shear

UC - Unconfined Compression

C - Consolidation

k - Permeability

FLA

SINGLETON LABORATORIES

FIELD LOG ABBREVIATIONS

Typical Name	Abbreviation
Sandy gravel	sd gv
Silty gravel	si gv
Clayey gravel	cl gv
Sand	sd
Silty sand	si sd
Clayey sand	cl sd
Sandy silt	sd si
Clayey silt	cl si
Fat silt	ft si
Sandy clay	sd cl
Silty clay	si cl
Medium clay	md cl
Fat clay	ft cl
Cobble	cob
Blouder	bldr
Riprap	rr
Topsoil	ts

Name Modifiers

Clean	cln
Coarse	crs
Dirty	dty
Fine	fn
Organic	org
Poorly graded	pgd
Well graded	wgd
Degraded	degd

Gravel Shape

Angular	ang
Platy	plty
Round/Rounded	rd
Subangular	sb ang
Subrounded	sb rd

Lithology and Mineralogy	Abbreviation
Bedrock	br
Chert	cht
Dolomite	dol
Limestone	ls
Manganese	mn
Micaceous	mic
Pyrite	py
Quartz	qtz
Sandstone	ss
Shale	sh
Bentonite	bent
Hematite	hem

Color

Black	blk
Blue	blu
Brown	brn
Cream	crm
Dark	dk
Gray	gy
Green	grn
Light	lt
Maroon	mrn
Mottled	mott
Olive	olv
Pink	pk
Purple	pur
Red	r
Rust	rst
Tan	tn
White	wht
Yellow	yel

Structure	Abbreviation	Consistency	Abbreviation
Blocky	blky	Dense	dns
Fissured	fis	Firm	f
Homogeneous	homo	Hard	hd
Laminated	lam	Loose	lse
Saprolitic	sapr	Soft	s
Shaly	shly	Stiff	stf
Slickensided	slsid	Very Stiff	v stf
Stratified	strat		

Origin		Moisture	
Alluvial	all	Dry	d
Colluvial	coll	Moist	mst
Loess	lss	V Moist	v mst
Residual	resd	Wet	w

General Modifiers

Alternate/Alternating	alt	Layers	lyrs
Angle	∠	Low	l
Augering	augg	Material	mtl
Bottom Ash	ba	Medium	md
Coal	col	Mud	mud
Contaminated	cont	Original	orig
Dip	dp	Partings	prtgs
Disturbed	dstrb	Plastic	plstc
Debris	dbr	River	rvr
Discontinued	disc	Roots	rts
Drive	dr	Rough	rou
Dust	dst	Slow	sl
Elevation	el	Small	sm
Feet	ft	Spoil	sp
Fill	fl	Terraced	ter
Fiber	fbr	Thick	thk
Fly Ash	fa	Thin	thn
High/highly	h	Trace	tr
Horizontal	hor	Variable	var
Hydraulic	hyd	Vegetation	veg
Inch	in	Vertical	vert
Inclusion	inc	Weathered	wth
Incomplete Recovery	IR	With	w/
Interface	infa	Wood	wd

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP
BORING: SS-1 STATION:
DATE DRILLED: 7/28/94

FEATURE: DREDGE CELLS
RANGE:
PREPARED BY: mhd

SURFACE EL: 752.0
CHECKED BY: TA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	750							
5			CL	12.4	31	12	5	TN & GY SI CL, D
	745							
10			CL	19.2	26	8	9	LT BRN SI CL W/TR GY TS, MST
	740							
15			CL	17.0	26	8	6	BRN SI CL, D
	735							
20			CL	27.1	26	8	9	BRN & GY SI CL, V MST
	730							
25			CL	24.1	26	8	9	BRN & GY SI CL, V MST
	725							
30			SM	19.6	NP	NP	10	GY SI SC TR GV, MST (FA)
	720							
35								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP
FEATURE: DREDGE CELLS
BORING: SS-1 STATION:
RANGE:
SURFACE EL: 752.0
DATE DRILLED: 7/28/94
PREPARED BY: mhd
CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
			SM	27.6	NP	NP	10	GY SI SD, V MST (FA)
	715							
40								REFUSAL
								GROUND WATER LEVEL = 8'9"
	710							
45								
	705							
50								
	700							
55								
	695							
60								
	690							
65								
	685							
70								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-2 STATION: RANGE: SURFACE EL: 764.0

DATE DRILLED: 7/27/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
5	760	14	MH-CH	21.9	59	28	2	BRN SI CL W/GV, TR TS, D
10	755	10	MH-CH	22.8	59	28	2	R-BRN SI CL, TR GV, D
15	750	8	MH-CH	28.0	59	28	2	R-BRN SI CL, TR GV, MST
20	745	13	SM	25.6	NP	NP	10	GY SI SD W/TR GV (FA), V MST
25	740	-	SM	19.0	NP	NP	10	GY SI SD W/GV (FA), W
30	735	-	SM	28.1	NP	NP	3	BRN SD WI CL (FA), W
35	730							

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-2 STATION: RANGE: SURFACE EL: 764.0

DATE DRILLED: 7/27/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		-	CL	33.6	26	8	9	BRN SI CL W/GY SI (FA), V MST
	725							
40		3	CL	20.1	26	8	9	ORNG & GY SI CL, V MST
	720							
45		28	ML	14.0	NP	NP	8	GY SD mix W/PKTS GY CL, MST
	715							
50		50+	ML	15.8	NP	NP	8	GY SD mix W/PKTS GY CL, MST
								REFUSAL
	710							GROUND WATER LEVEL = 5'8"
55								
	705							
60								
	700							
65								
	695							
70								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-3 STATION: RANGE: SURFACE EL: 773.0

DATE DRILLED: 7/28/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	770							
5		25	ML	23.3	NP	NP	12	GY CL SI (FA), MST
	765							
10		5	SM	23.0	NP	NP	10	GY SD CL, TR GV (FA), V MST
	760							
15		4	SM	28.6	NP	NP	10	GY SD CL, TR GV (FA), V MST
	755							
20		1	SM	28.6	NP	NP	10	GY SD SI CL, TR GV (FA), W
	750							
25		2	SM	27.1	NP	NP	10	GY SD SI CL, TR GV (FA), W
	745							
30		1	SM	27.0	NP	NP	10	GY SD SI CL, TR GV (FA), W
	740							
35								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-3 STATION: RANGE: SURFACE EL: 773.0

DATE DRILLED: 7/28/94 PREPARED BY: mhd CHECKED BY: JAC

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		2	ML	28.8	NP	NP	12	GY SD SI CL, TR GV (FA), W
	735							
40		2	SM	22.0	NP	NP	10	GY SD SI CL, TR GV (FA), W
	730							
45		-	ML	33.9	NP	NP	12	GY CL SI, TR GV (FA), W
	725							
50		-	ML	15.7	NP	NP	8	GY CL SI W/GV (FA), V MST
	720							
55		50+	ML	5.8	NP	NP	12	GY CL SI, TR GV
	715							REFUSAL
60								GROUND WATER LEVEL = 9'8"
	710							
65								
	705							
70								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-4 STATION: RANGE: SURFACE EL: 752.0

DATE DRILLED: 7/26/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	750							
5		10	CL	14.2	26	8	6	LT BRN SI CL w/TS, D
	745							
10		3	CL-ML	23.8	26	4	1	BRN & GY SI CL w/TS, MST
	740							
15		8	CL	22.3	31	12	5	TN & GY SI CL (FA), V MST
	735							
20		4	SM	20.9	NP	NP	3	TN SI SD, MST
	730							
25		-	SM	34.8	NP	NP	3	TN SI SD, MST
	725							
30		7	SM	21.4	NP	NP	3	TN SI SD, MST
	720							
35								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP
FEATURE: DREDGE CELLS
BORING: SS-4 STATION:
RANGE:
SURFACE EL: 752.0
DATE DRILLED: 7/26/94
PREPARED BY: mhd
CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	715	36	SM	20.4	NP	NP	3	TN SI SD, MST
40	710							REFUSAL GROUND WATER LEVEL = 9'0"
45	705							
50	700							
55	695							
60	690							
65	685							
70								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-5 STATION: RANGE: SURFACE EL: 764.0

DATE DRILLED: 7/27/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
5	760	18	MH-CH	19.6	59	28	2	R-BRN SI CL w/TR CTH, D
10	755	14	MH-CH	24.2	59	28	2	BRN SI CL w/GV, D
15	750	54	CL-ML	23.5	26	4	1	BRN SI CL w/PKTS GY CL SI, TR CHT, MST
20	745	20	SM	24.3	NP	NP	10	GY SI SD, TR GV (FA), MST
25	740	3	CL	20.9	26	8	6	LT BRN SD SI CL, TR GV, V MST
30	735	14	CL	23.6	31	12	5	TN & GY SI CL, V MST
35	730							

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS
BORING: SS-5 STATION: RANGE: SURFACE EL: 764.0
DATE DRILLED: 7/27/94 PREPARED BY: mhd CHECKED BY: ~~TA~~ C

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		16	ML	21.5	NP	NP	7	BRN SI CL w/GY FA, V MST
	725							
40		2	SM	24.2	NP	NP	3	ORNG CL SD, V MST
	720							
45		2	CL	21.9	26	8	9	TN CL SI w/PKTS GY FA, V MST
	715							
50		30	SC/SM	10.8	NP	NP	4	LT BRN SI SD w/GV, V MST
	710							
55		50+	ML	13.9	NP	NP	12	BRN & GY CL SI, FA, MST
								REFUSAL
								GROUND WATER LEVEL = 20'
	705							
60								
	700							
65								
	695							
70								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-6 STATION: RANGE: SURFACE EL: 773.0

DATE DRILLED: 8/1/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	770							
5		24	ML	25.2	NP	NP	12	GY SI (FA), MST
	765							
10		5	SM	19.7	NP	NP	10	GY SI (FA), MST
	760							
15		2	SM	28.8	NP	NP	11	GY SI SD (FA), MST
	755							
20		-	ML	25.8	NP	NP	12	GY SI (FA), MST
	750							
25		3	ML	23.3	NP	NP	8	BRN SI CL w/GY FA, TR GV, V MST
	745							
30		1	ML	32.7	NP	NP	12	GY SI (FA), W
	740							
35								

1"=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP
BORING: SS-6 STATION:
DATE DRILLED: 8/1/94

FEATURE: DREDGE CELLS
RANGE:
PREPARED BY: mhd

SURFACE EL: 773.0
CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		9	CL	19.6	26	8	9	BRN CL SI mix w/FA
	735							
40		12	SM	19.4	NP	NP	3	BRN SI SD, V MST
	730							
45		1	SM	29.3	NP	NP	3	BRN SI SD, V MST
	725							
50		3	SM	21.8	NP	NP	3	BRN SD CL, V MST
	720							
55		6	ML	22.3	NP	NP	8	GY SI SD w/FA, MST
	715							
60		50+	ML	9.9	NP	NP	12	GY SI, FA, MST
	710							REFUSAL
65								GROUND WATER LEVEL = 16' 7"
	705							
70								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-8 STATION: RANGE: SURFACE EL: 782.0

DATE DRILLED: 8/2/94 PREPARED BY: mhd CHECKED BY: TH

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	780							
5		50+	SM	17.6	NP	NP	10	GY SI (FA), TR GV, D
	775							
10		50+	SM	18.4	NP	NP	10	GY SI (FA), TR GV, D
	770							
15		50+	SM	21.9	NP	NP	10	GY SI (FA), TR GV, D
	765							
20		8	SM	43.9	NP	NP	11	GY SI SD (FA), MST
	760							
25		15	SM	17.9	NP	NP	10	GY SI SD W/GY (FA), MST
	755							
30		-	ML	31.7	NP	NP	12	GY SI (FA), W
	750							
35								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP — FEATURE: DREDGE CELLS

BORING: SS-8 — STATION: — RANGE: — SURFACE EL: 782.0

DATE DRILLED: 8/2/94 — PREPARED BY: mhd — CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		-	ML	24.4	NP	NP	12	GY SI (FA), MST
	745							
40		3	ML	23.8	NP	NP	12	GY SI (FA), MST
	740							
45		9	ML	31.2	NP	NP	12	GY SI (FA), MST
	735							
50		4	ML	22.3	NP	NP	8	GY CL SI w/LUMPS TN SI CL, MST
	730							
55		13	ML	18.2	NP	NP	7	MOTT BRN/TN/GY SI CL, MST
	725							
60		13	ML	18.6	NP	NP	7	MOTT BRN/TN/GY SI CL, MST
	720							
65		4	SC/SM	27.7	NP	NP	4	TN SI SD, W
	715							
70								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS
BORING: SS-8 STATION: RANGE: SURFACE EL: 782.0
DATE DRILLED: 8/2/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		5	SM	24.9	NP	NP	10	GY SD SI (FA), W
	710							
75		7	SC/SM	22.7	NP	NP	4	TN SI SD, V MST
	705							
								REFUSAL
80								GROUND WATER LEVEL = 11' 3"
	700							
85								
	695							
90								
	690							
95								
	685							
100								
	680							
105								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS
BORING: SS-9 STATION: RANGE: SURFACE EL: 795.0
DATE DRILLED: 8/2/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	795							
5	790	20	ML	17.8	NP	NP	12	GY SI (FA), MST
10	785	50+	ML	19.5	NP	NP	12	GY SI (FA), MST
15	780	44	ML	20.1	NP	NP	12	GY SI (FA), MST
20	775	46	ML	18.3	NP	NP	12	GY SI (FA), MST
25	770	6	ML	30.2	NP	NP	12	GY SI (FA), MST
30	765	5	ML	35.2	NP	NP	12	GY SI (FA), W
35	760							

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS
BORING: SS-9 STATION: RANGE: SURFACE EL: 795.0
DATE DRILLED: 8/2/94 PREPARED BY: mhd CHECKED BY: TAL

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	760	2	ML	17.3	NP	NP	12	GY SI (FA), W
40	755	1	ML	31.0	NP	NP	12	GY SI (FA), W
45	750	-	ML	23.0	NP	NP	12	GY SI (FA), D
50	745	-	ML	31.7	NP	NP	12	GY SI (FA), TR GV, W
55	740	5	ML	30.0	NP	NP	12	GY SI (FA), TR GV, W
60	735	6	ML	32.6	NP	NP	12	GY SI (FA), TR GV, W
65	730	-	ML	26.9	NP	NP	8	BRN SI CL W/GY SI (FA), MST
70	725							

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-9 STATION: RANGE: SURFACE EL: 795.0

DATE DRILLED: 8/2/94 PREPARED BY: mhd CHECKED BY: JAL

DEPTH ft.	EL 725	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		13	CL	19.2	26	8	9	BRN, TN & GY SI CL, TR CL, MST
75	720	19	CL	19.5	26	8	6	ORNG-BRN SI CL, MST
80	715	4	SM	20.5	NP	NP	10	GY SD SI, W
85	710	19	SC/SM	23.1	NP	NP	4	TN SI SD
90	705	8	SC/SM	23.1	NP	NP	4	GY SI SD
95	700							REFUSAL GROUND WATER LEVEL = 29'
100	695							
105	690							

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS

BORING: SS-10 STATION: RANGE: SURFACE EL: 797.5

DATE DRILLED: 8/8/94 PREPARED BY: mhd CHECKED BY: TA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
	795							
5		50+	ML	17.3	NP	NP	12	GY SI (FA), MST
	790							
10		26	ML	24.7	NP	NP	12	GY SI (FA), MST
	785							
15		25	ML	15.0	NP	NP	12	GY SD SI, TR GV, MST
	780							
20		5	ML	22.1	NP	NP	12	GY SI (FA), MST
	775							
25		4	ML	27.4	NP	NP	12	GY SI (FA), MST
	770							
30		14	ML	29.1	NP	NP	12	GY SI (FA), MST
	765							
35								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP
FEATURE: DREDGE CELLS
BORING: SS-10 STATION:
RANGE:
SURFACE EL: 797.5
DATE DRILLED: 8/8/94
PREPARED BY: mhd
CHECKED BY: TA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		18	SM	31.2	NP	NP	11	GY SD SI (FA) w/GV, W
	760							
40		9	ML	31.4	NP	NP	12	GY SI (FA), V MST
	755							
45		-	ML	27.0	NP	NP	12	GY SD SI w/GV (FA), V MST
	750							
50		-	ML	27.2	NP	NP	12	GY SD SI w/GV (FA), V MST
	745							
55		6	SM	30.7	NP	NP	11	GY PGD SI SD (FA), V MST
	740							
60		9	SM	16.4	NP	NP	11	GY PGD SI SD (FA), V MST
	735							
65		25	SM	19.4	NP	NP	11	CRS PGD SI SD w/GV (FA)
	730							
70								

1''=5'

* LAB CLASSIF.

SINGLETON LABORATORIES

SOIL PROFILE: SPLIT-SPOON

PROJECT: KINGSTON FP FEATURE: DREDGE CELLS
BORING: SS-10 STATION: RANGE: SURFACE EL: 797.5
DATE DRILLED: 8/8/94 PREPARED BY: mhd CHECKED BY: TA

DEPTH ft.	EL	SPT (N)	* LOG	W	LL	PI	GR	FIELD DESCRIPTION
		39	ML	19.0	NP	NP	8	BRN SI CL W/PKTS GY SI (FA), V MST
	725							
75		17	CL	19.2	26	8	9	BRN & GY SI CL, V MST
	720							
80		18	CL	16.9	26	8	6	ORNG-BRN SD SI CL, MST
	715							
85		16	ML	18.9	NP	NP	8	GY SI SD, MST
	710							
90		50+	ML	3.7	NP	NP	8	GY SI SD W/GV
	705							
95								
	700							REFUSAL
								GROUND WATER LEVEL =
100								
	695							
105								

1''=5'

* LAB CLASSIF.

This information taken from "Report of Soil Borings, Monitoring Well Installation and Soil Laboratory Testing – Tennessee Valley Authority – Watts Bar and Kingston Facilities," Law Engineering, November 30, 1988.

FIELD EXPLORATORY PROCEDURES

SOIL TEST BORING (HOLLOW STEM)

All boring and sampling operations were conducted in general accordance with ASTM Designation D 1586-67. The borings were advanced by mechanically twisting continuous steel hollow-stem auger flights into the ground. At regular intervals, soil samples were obtained with a standard 1.4-inch I.D., 2-inch O.D., split-tube sampler. The sampler was first seated 6 inches to penetrate any loose cuttings and then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot of penetration was recorded and is designated the "standard penetration resistance". The penetration resistance, when properly evaluated, is an index to the soil strength, density and ability to support foundations.

Representative portions of the soil samples, obtained from the split-tube sampler, were sealed in glass jars and transported to our laboratory. In the laboratory, the samples were examined by our engineer to verify the driller's field classifications. Test Boring Records are attached, graphically showing the soil descriptions and penetration resistances.

Law Engineering

Boring Record

BORING NUMBER J-9A
DATE DRILLED 10-3-88
JOB NUMBER K-88195
PAGE 1 OF 2

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0	GRAY FLY ASH WHICH CONTAINS COAL FRAGMENTS AND CINDERS. MOISTURE CONTENT INCREASED IN SAMPLES TO A DEPTH OF 13 FEET AT WHICH TIME THE SAMPLES BECAME SATURATED.		
13.0			
40.0			

REMARKS: * ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Boring Record

BORING NUMBER J - 9A
DATE DRILLED 10-3-88
JOB NUMBER K-88195
PAGE 2 OF 2

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
40.0	GRAY FLY ASH WHICH CONTAINS COAL FRAGMENTS AND CINDERS. MOISTURE CONTENT INCREASED IN SAMPLES TO A DEPTH OF 13 FEET AT WHICH TIME THE SAMPLES BECAME SATURATED.		
67.7	REFUSAL		

REMARKS: * ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Boring Record

BORING NUMBER J-9B
DATE DRILLED 10-3-88
JOB NUMBER K-88195
PAGE 1 OF 3

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0	DRY GRAY ASH		
35.0	ALLUVIAL CLAY, SAND AND GRAVEL WITH WEATHERED SHALE FRAGMENTS		
40.0			

REMARKS: BORING DRILLED USING AIR ROTARY EQUIPMENT
* ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Boring Record

BORING NUMBER J-9B
DATE DRILLED 10-3-88
JOB NUMBER K-88195
PAGE 2 OF 3

DEPTH (FT.)	DESCRIPTION	ELEV.	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
40.0	ALLUVIAL CLAY, SAND AND GRAVEL WITH WEATHERED SHALE FRAGMENTS		
67.5	BLUE GRAY SHALE WITH CALCITE JOINTS		
80.0			

REMARKS:

Law Engineering

Boring Record

BORING NUMBER J-9B
DATE DRILLED 10-3-88
JOB NUMBER K-88195
PAGE 3 OF 3

DEPTH (FT.)	DESCRIPTION	ELEV.	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
80.0	BLUE GRAY SHALE WITH CALCITE JOINTS		
82.4	BORING TERMINATED		

REMARKS:

Law Engineering

BORING NUMBER J-10
DATE DRILLED 9-27-88
JOB NUMBER K-88195
PAGE 1 OF 1

Boring Record

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0	WASH BORING TO A PREDETERMINED DEPTH	12.0	
15.0	BORING TERMINATED		

REMARKS: * ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Boring Record

BORING NUMBER J-10A
DATE DRILLED 9-27-88
JOB NUMBER K-88195
PAGE 1 OF 1

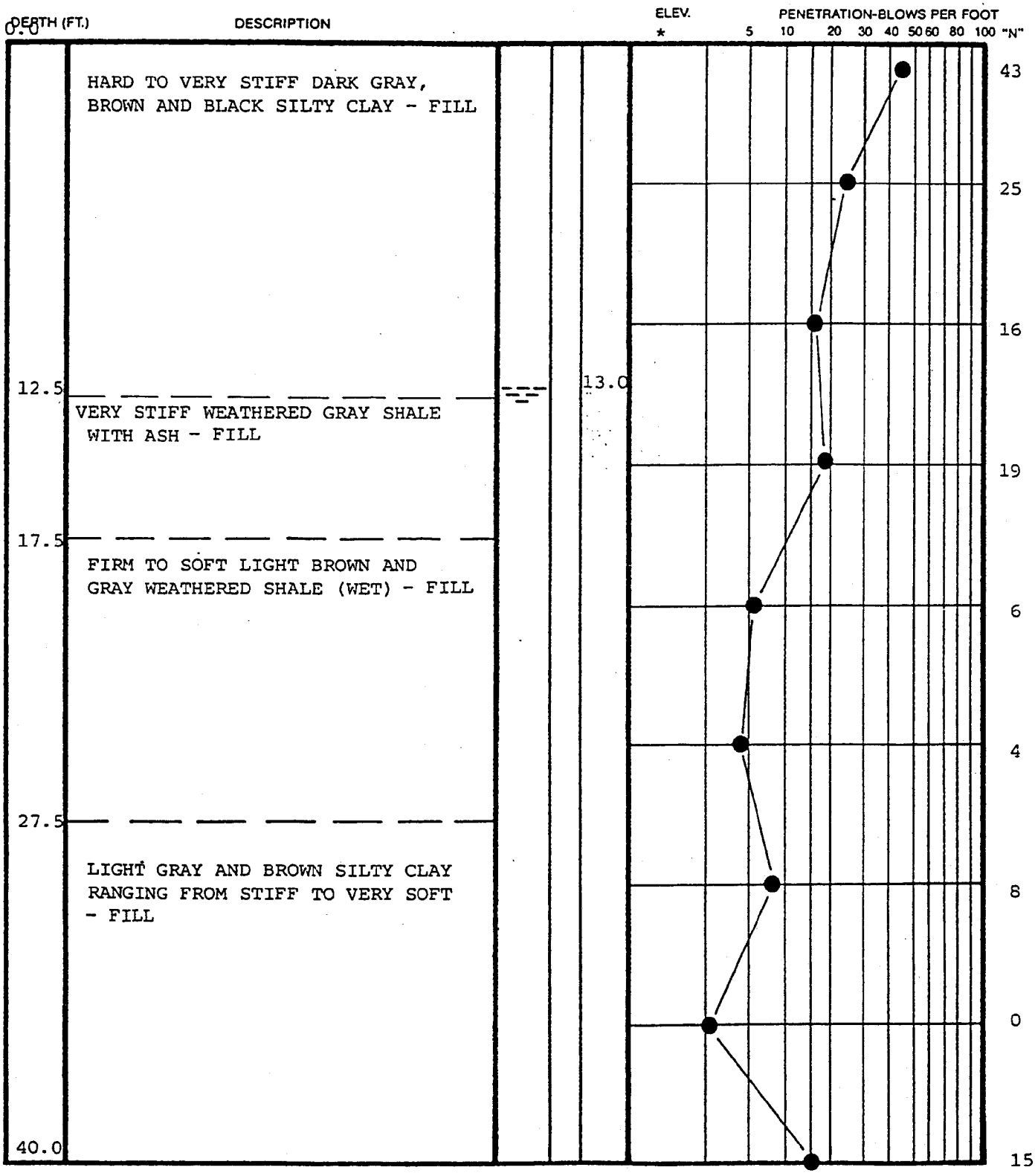
DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0	WASH BORING TO A PREDETERMINED DEPTH		
29.9	BORING TERMINATED		

REMARKS: * ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Soil Test Boring Record

BORING NUMBER J-10B
DATE DRILLED 9-27-88
JOB NUMBER K-88195
PAGE 1 OF 2



REMARKS: * ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Soil Test Boring Record

BORING NUMBER J-10 B
DATE DRILLED 9-27-88
JOB NUMBER K-88195
PAGE 2 OF 2

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
40.0			
	LIGHT GRAY AND BROWN SILTY CLAY RANGING FROM STIFF TO VERY SOFT - FILL		15
			0
49.4	REFUSAL		50/0.2

REMARKS: * ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Boring Record

BORING NUMBER J-11B
DATE DRILLED 9-19-88
JOB NUMBER K-88195
PAGE 1 OF 1

DEPTH (FT.)	DESCRIPTION	ELEV.	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0			
1.0	RED SILTY CLAY-POSSIBLE FILL		
	TANNISH-BROWN SHALEY SILTY CLAY - RESIDUUM		
5.0	DARK BROWN AND GRAYISH GREEN SHALE		
31.5	BORING TERMINATED		

REMARKS: BORING ADVANCED USING AIR ROTARY EQUIPMENT

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

Law Engineering

Soil Test Boring Record

BORING NUMBER J-11B
DATE DRILLED 9-23-88
JOB NUMBER K-88195
PAGE 1 OF 1

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0			
0.2	TOPSOIL		
	VERY STIFF BROWN CLAYEY DESICATED		
2.5	SHALE - RESIDUUM		
	VERY HARD GRAY VERY WEATHERED SHALE - RESIDUUM		
5.2			
	REFUSAL		

21

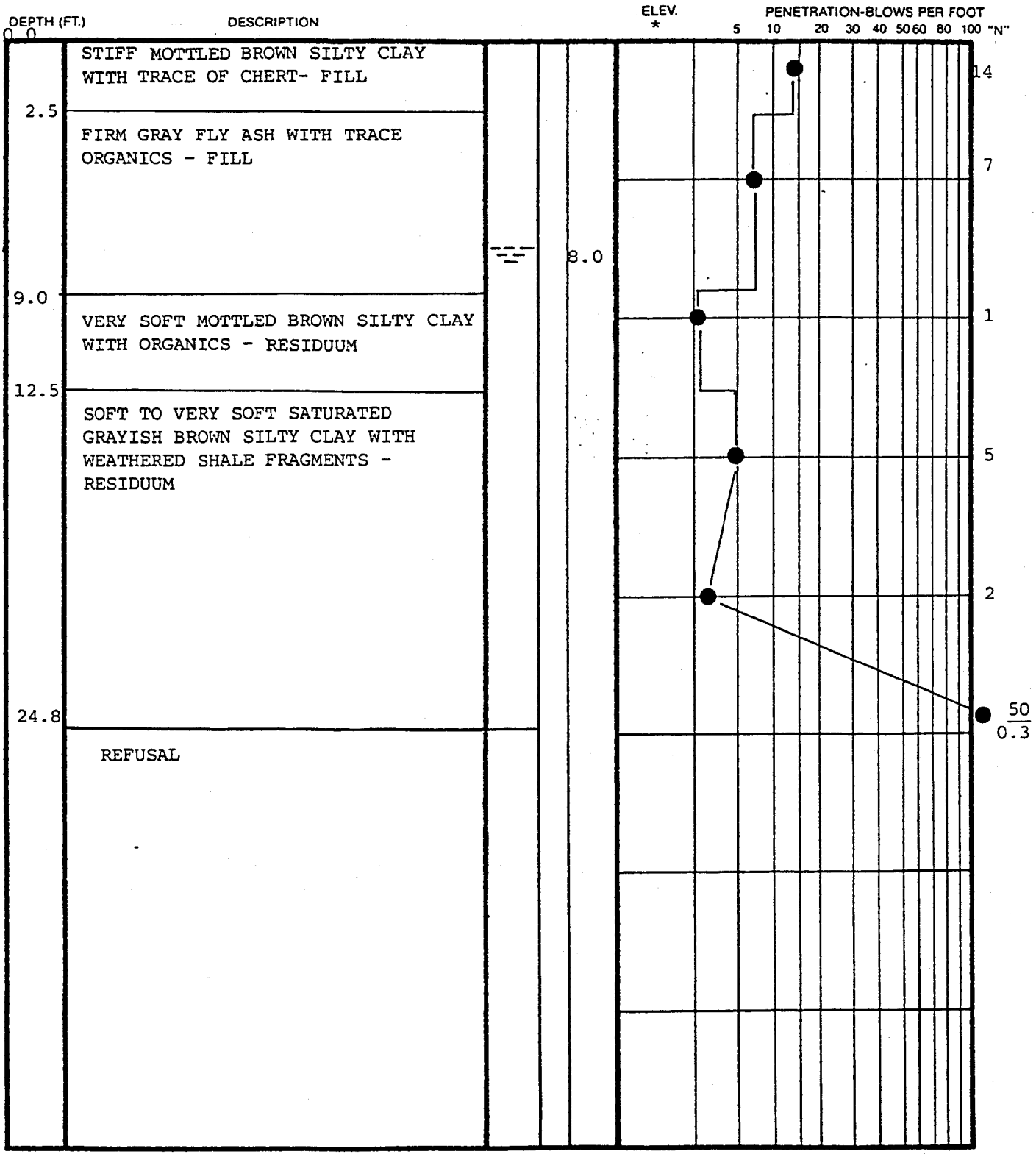
5/0.

REMARKS: *ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Soil Test Boring Record

BORING NUMBER J-12A
DATE DRILLED 9-22-88
JOB NUMBER K-88195
PAGE 1 OF 1



REMARKS: * ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Boring Record

BORING NUMBER J-12B
DATE DRILLED 9-26-88
JOB NUMBER K-88195
PAGE 1 OF 2

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0	RED-BROWN SILTY CLAY WITH CHERT FRAGMENTS		
3.0	DARK GRAY ASH AND ASH AND ASH CLAY MIXTURE		
20.0	GREENISH GRAY SHALE SLURRY WITH LIMESTONE FRAGMENTS		
28.0	DUE TO A CAVE-IN AT 28.0 FEET THE BORING WAS OFFSET AND RE-DRILLED GRAY SHALE		
40.0			

REMARKS: BORING ADVANCED USING AIR ROTARY EQUIPMENT
* ELEVATION TO BE PROVIDED BY TVA

Law Engineering

Boring Record

BORING NUMBER J-12B
DATE DRILLED 9-26-88
JOB NUMBER K-88195
PAGE 2 OF 2

DEPTH (FT.)	DESCRIPTION	ELEV.	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
40.0	GRAY SHALE		
54.2	BORING TERMINATED		

REMARKS:

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Law Engineering

Soil Test Boring Record

BORING NUMBER J-13A
DATE DRILLED 9-28-88
JOB NUMBER K-88195
PAGE 1 OF 2

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
1.5	VERY STIFF MOTTLED BROWN SILTY CLAY - FILL		
	BLACK FLY ASH	14.0	17, 35, 47, 93, 14, 8, 11, 12, 14
40.0			

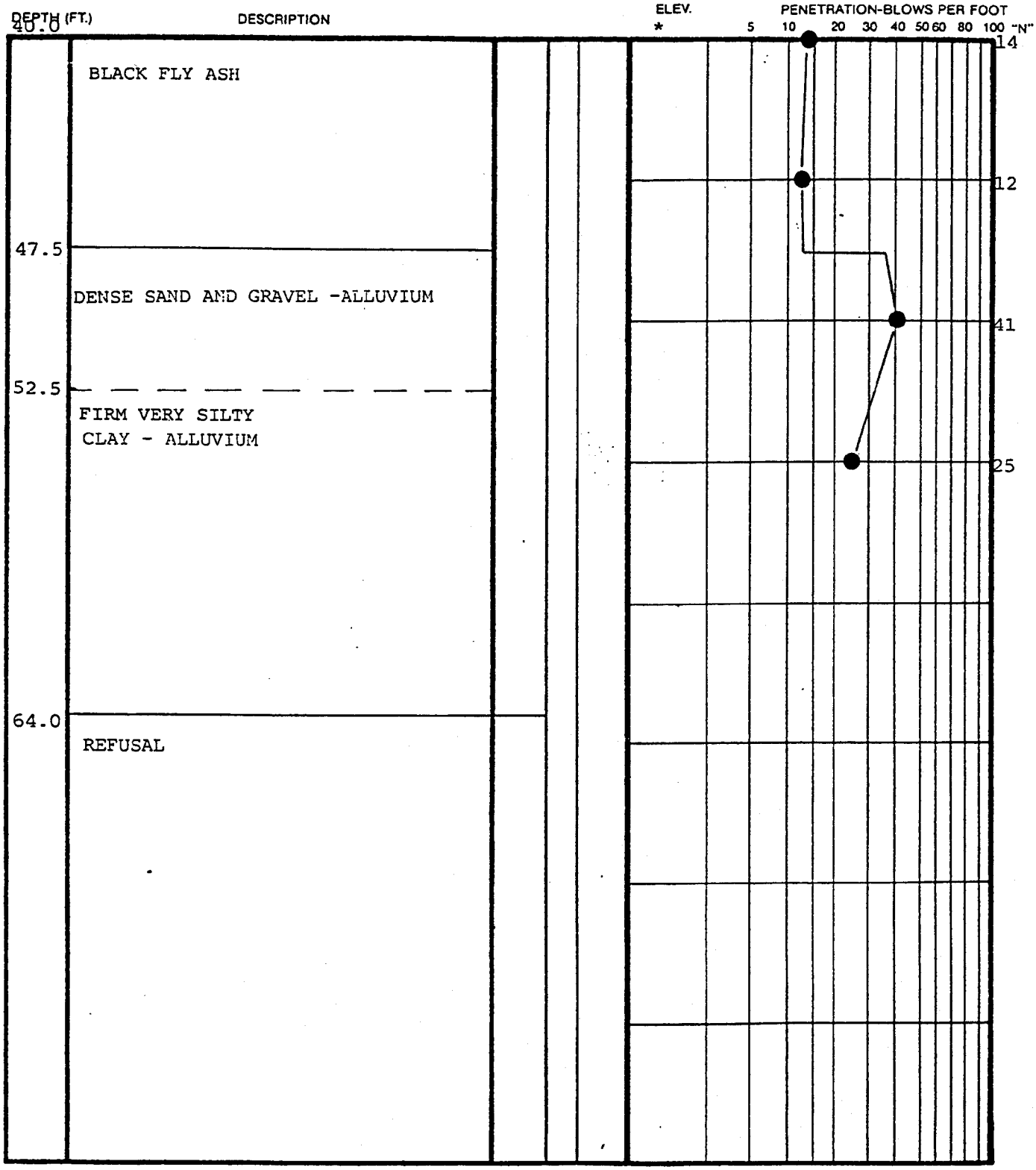
REMARKS: * ELEVATION TO BE PROVIDED BY TVA

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

Law Engineering

Soil Test Boring Record

BORING NUMBER J-13 A
DATE DRILLED 9-28-88
JOB NUMBER K-88195
PAGE 2 OF 2



REMARKS: * ELEVATION TO BE PROVIDED BY TVA

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS USED ABOVE

Law Engineering

Boring Record

BORING NUMBER J-13B
DATE DRILLED 9/29 - 30/88
JOB NUMBER K-88195
PAGE 1 OF 3

DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0 0			
0.5	TOPSOIL		
	BROWN SILTY CLAY AND WEATHERED SHALE		
4.0			
	GRAY ASH		
40.0			

REMARKS: BORING ADVANCED USING AIR ROTARY EQUIPMENT
* ELEVATION TO BE PROVIDED BY TVA

SEE KEY SHEET FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

Law Engineering

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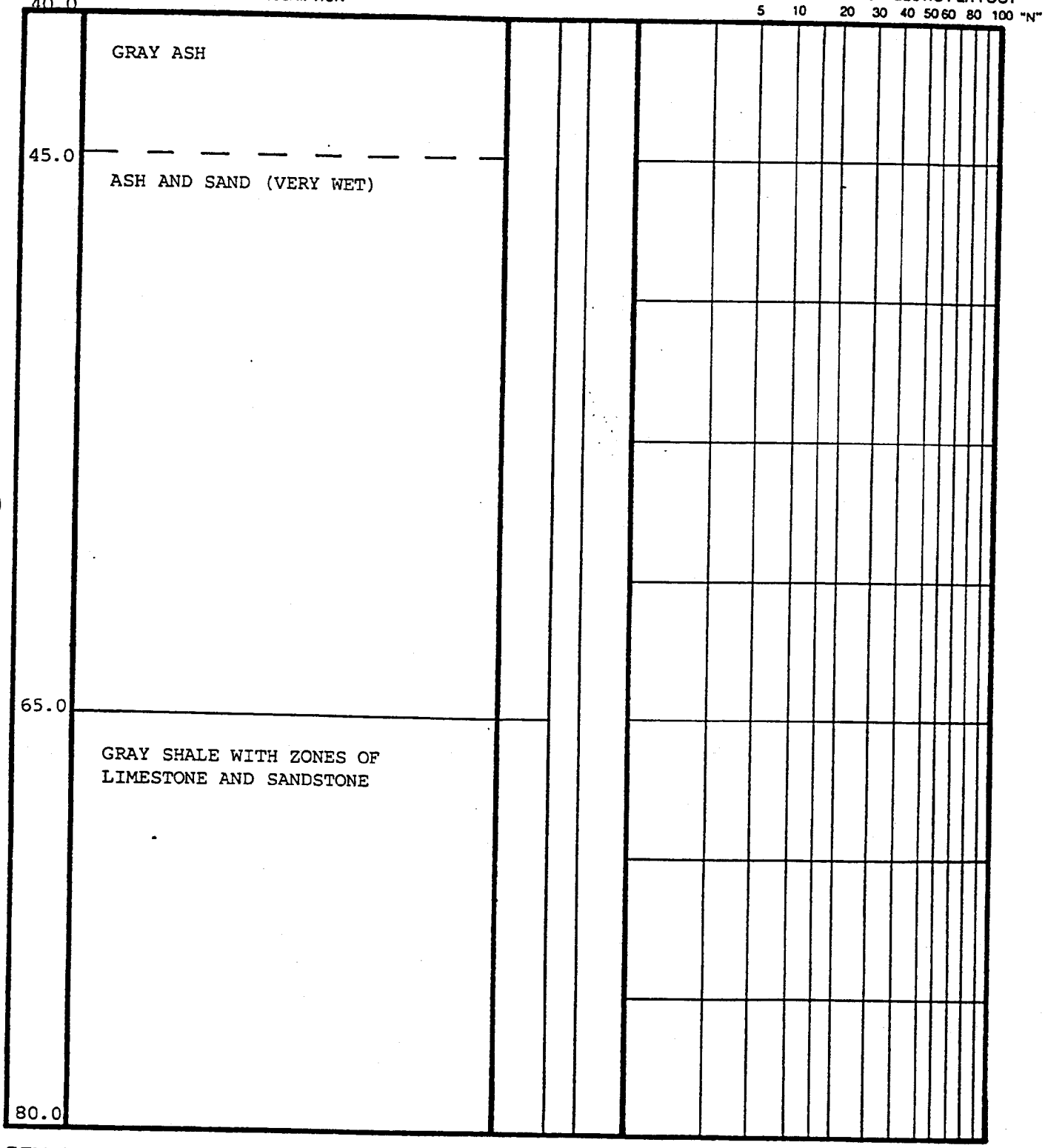

REMARKS:

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DEPTH (FT.)	DESCRIPTION	ELEV.	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
80.0			
	GRAY SHALE WITH ZONES OF LIMESTONE AND SANDSTONE		
82.0	BORING TERMINATED		

REMARKS:

Law Engineering

Soil Test Boring Record

BORING NUMBER J-14
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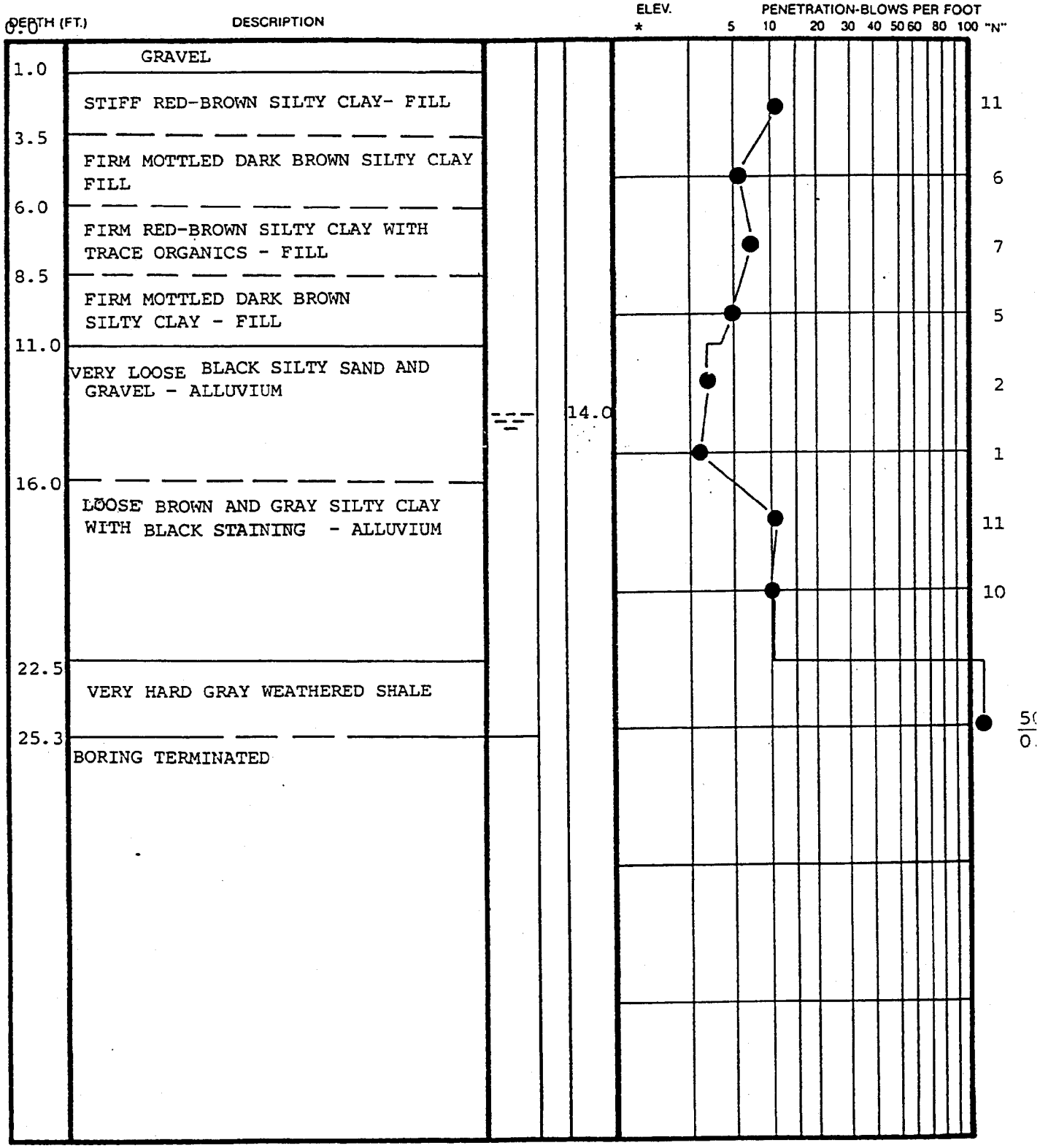

REMARKS: *ELEVATION TO BE PROVIDED BY TVA

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Boring Record

BORING NUMBER J-14A
DATE DRILLED 9-22-88
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DEPTH (FT.) O.D.	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
	RED-BROWN AND DARK BROWN SILTY CLAY WITH ROCK FRAGMENTS-FILL (FILL USED FOR CONSTRUCTING THE RAILROAD)		
17.0	TANISH GRAY SILT WITH TRACE OF ASH - FILL		
19.0	WEATHERED BROWN AND TAN SHALE		
25.0	BORING TERMINATED		

REMARKS: BORING ADVANCED USING AIR ROTARY EQUIPMENT
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Boring Record

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DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0	RED BROWN SILTY CLAY -FILL (FILL USED FOR CONSTRUCTING THE RAILROAD)		
18.0	GRAY BROWN SILTY CLAY WITH A TRACE OF ASH		
	REFUSAL		
24.5	BROWN AND GRAY TO GRAY SHALE WITH CALCITE SEAMS		
40.0	BORING TERMINATED		

REMARKS: BORING ADVANCED USING AIR ROTARY EQUIPMENT
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Soil Test Boring Record

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JOB NUMBER K-88195
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DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0			
	STIFF MOTTLED REDDISH-BROWN SILTY CLAY - FILL		13
2.0			
	STIFF MOTTLED BROWN SILTY CLAY WITH ROCK FRAGMENT - FILL		10
4.0			
	SOFT TO FIRM REDDISH BROWN SILTY CLAY - RESIDUUM		4
			9
			25
10.5			
	LIGHT BROWN VERY WEATHERED SHALE-RESIDUUM		50/0.
12.0			
	REFUSAL		

REMARKS: * ELEVATION TO BE PROVIDED BY TVA

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Boring Record

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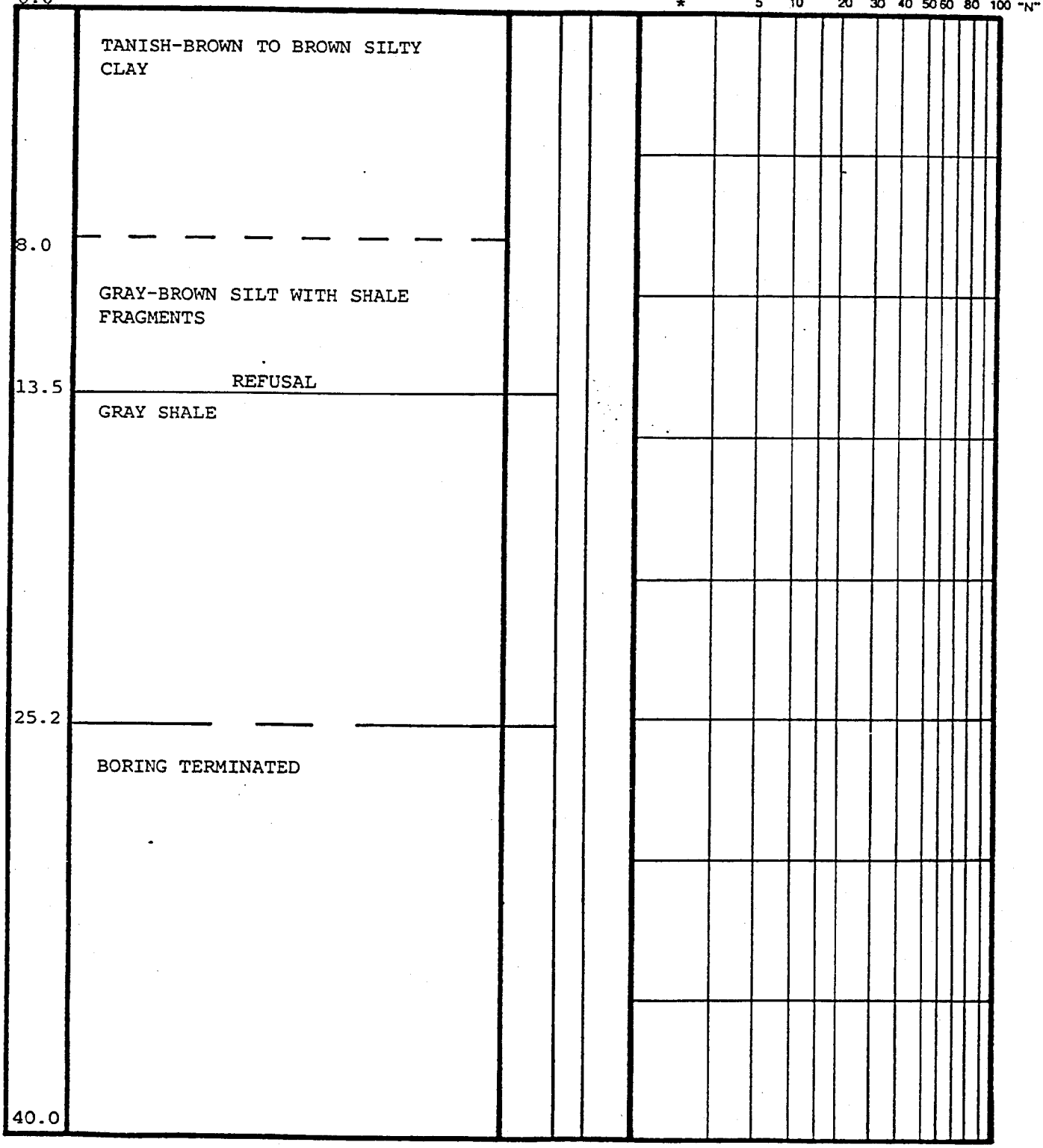

REMARKS: BORING ADVANCED USING AIR ROTARY EQUIPMENT
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DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0			
	WEATHERED SHALE		
3.0			
	BROWN AND GRAY-BROWN SILTY CLAY WITH TRACE SHALE FRAGMENTS		
14.0			
	GRAY SHALE		
40.0			

REMARKS: BORING ADVANCED USING AIR ROTARY EQUIPMENT

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DEPTH (FT.)	DESCRIPTION	ELEV.	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
40.0	GRAY SHALE		
44.2	BORING TERMINATED		

REMARKS:

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BORING NUMBER J-16A
DATE DRILLED 10-5-88
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DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
0.0			
0.2	TOPSOIL		
	RED-BROWN AND BROWN SILTY CLAY - FILL		
13.0	GRAY BROWN SILTY CLAY - FILL (SOME OF THE SOILS APPEAR TO BE ASSOICIATED WITH AN OLD ROAD SURFACE)	14.0	
18.0	RED BROWN SANDY CLAY (SLURRY) - POSSIBLE RESIDUUM		
40.0			

REMARKS: * ELEVATION TO BE PROVIDED BY TVA

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DEPTH (FT.)	DESCRIPTION	ELEV. *	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
40.0			
	GRAY BROWN SANDY CLAYEY SILT WHICH GRADES TO GRAY CLAY-SAND -RESIDUUM		
61.0			
	GRAY SANDY CLAY CONTAINING WEATHERED SHALE FRAGMENTS -RESIDUUM		
64.7			
	REFUSAL		

REMARKS: * ELEVATION TO BE PROVIDED BY TVA

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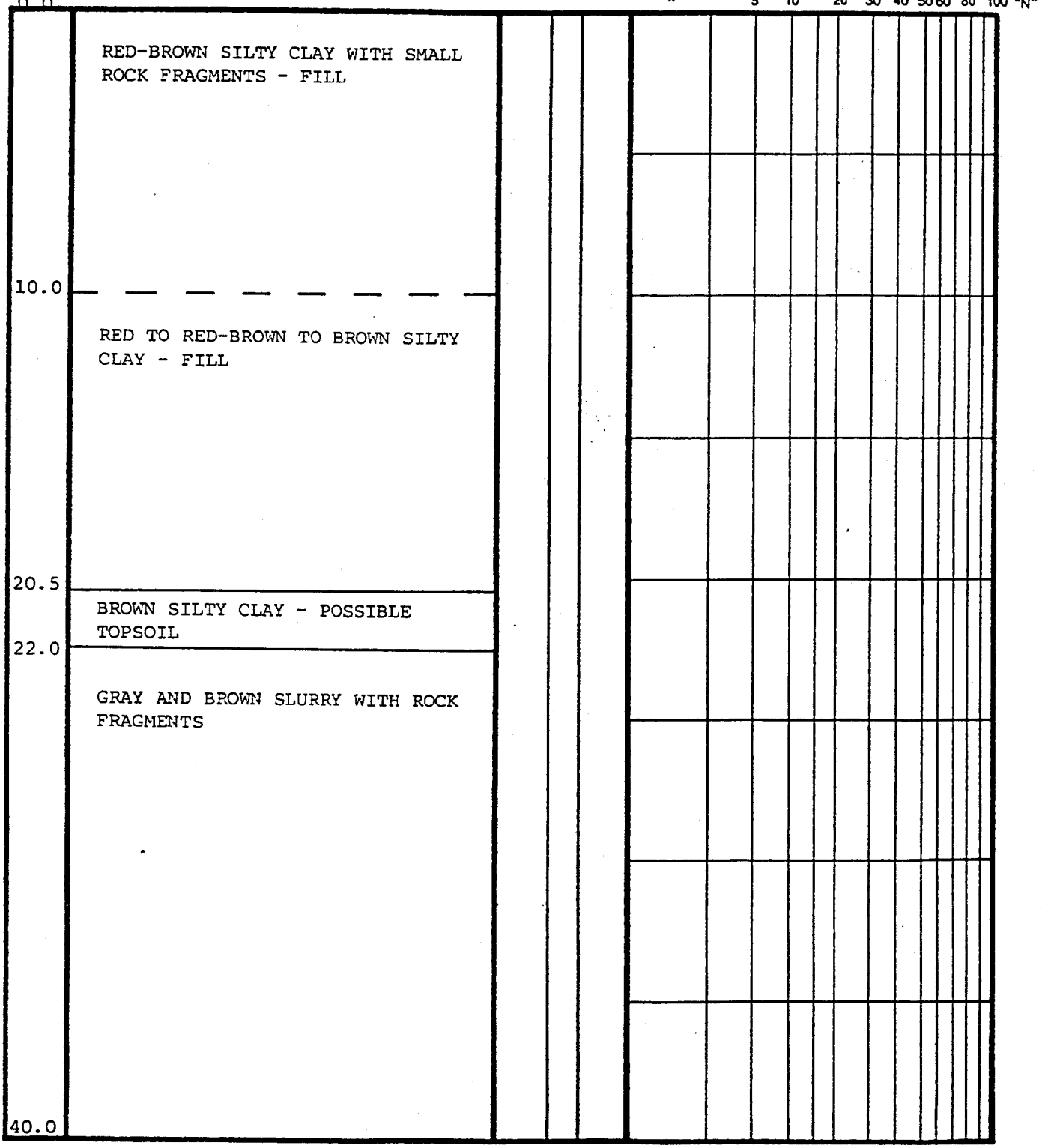

REMARKS: BORING ADVANCED USING AIR ROTARY EQUIPMENT

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BORING NUMBER J-16B
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DEPTH (FT.)	DESCRIPTION	ELEV.	PENETRATION-BLOWS PER FOOT 5 10 20 30 40 50 60 80 100 "N"
40.0			
41.0	CASING "BLEW-OUT" AROUND 41 FEET. THE BORING WAS OFFSET AND REDRILLED RED-BROWN, BROWN AND GRAY SILTY CLAY WITH SHALE FRAGMENTS		
56.0	BROWN AND GRAY SHALE		
73.0	BORING TERMINATED		

REMARKS:

VERTICAL PROFILE OF THE SUBSTRATUM AT PLANT J's MONITORING WELL LOCATIONS