

NOTE

STRATIGRAPHIC COLUMN OF THE
PLEISTOCENE DEPOSITS OF ILLINOIS
IS SHOWN ON FIGURE 2.5-5.

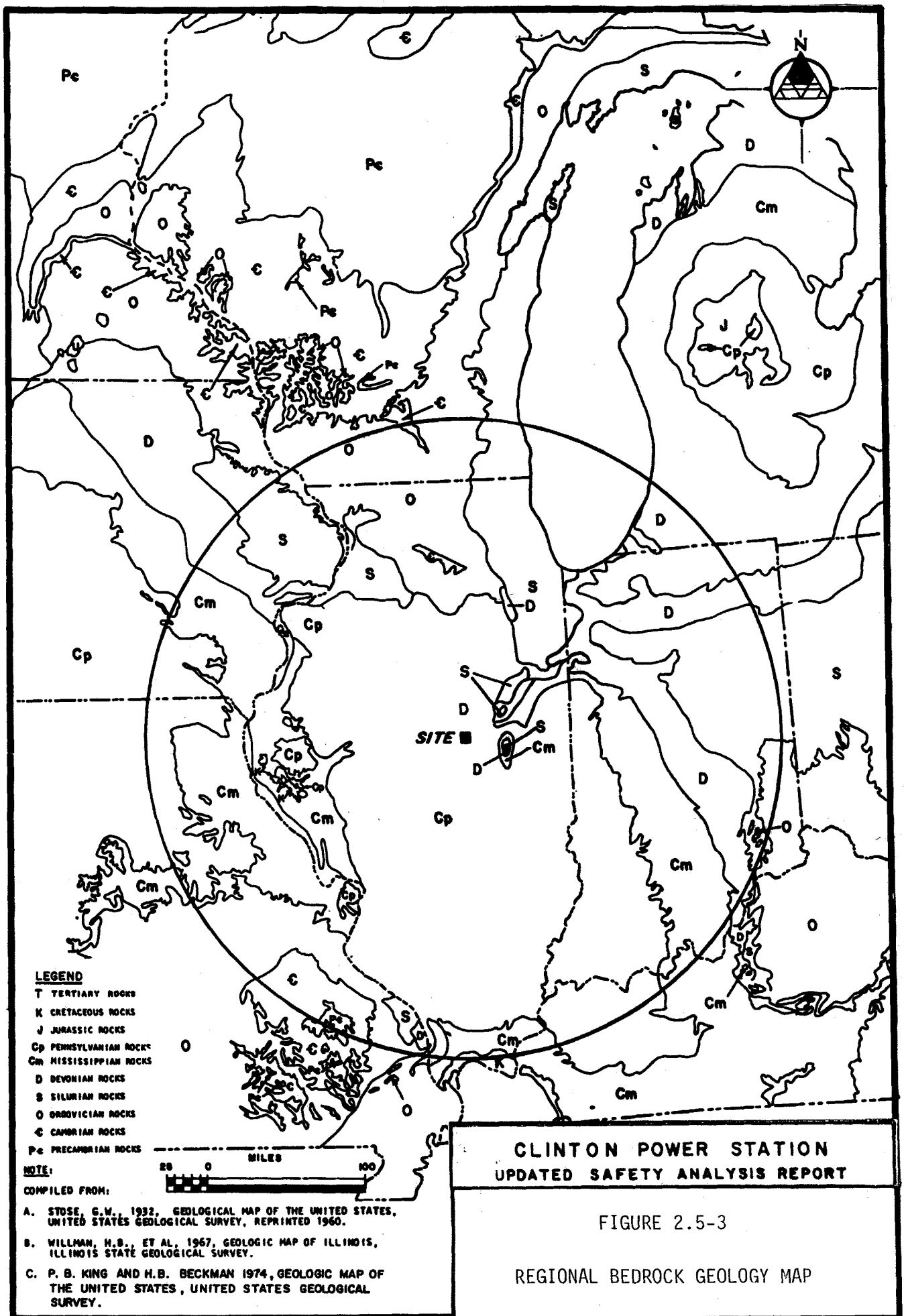
REFERENCE:

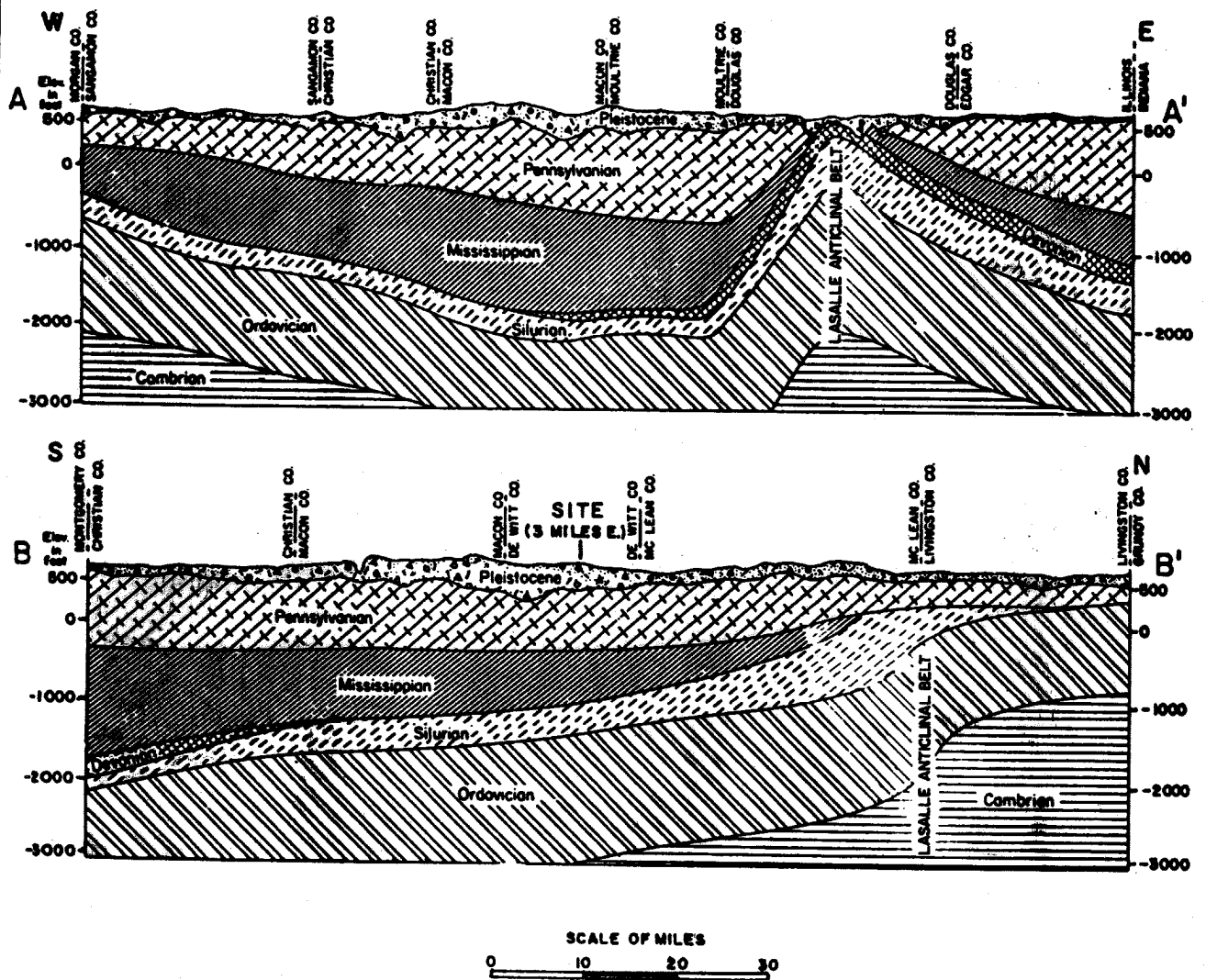
ILLINOIS STATE GEOLOGICAL SURVEY, 1967,
GEOLOGIC MAP OF ILLINOIS.

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FIGURE 2.5-2

REGIONAL STRATIGRAPHIC COLUMN





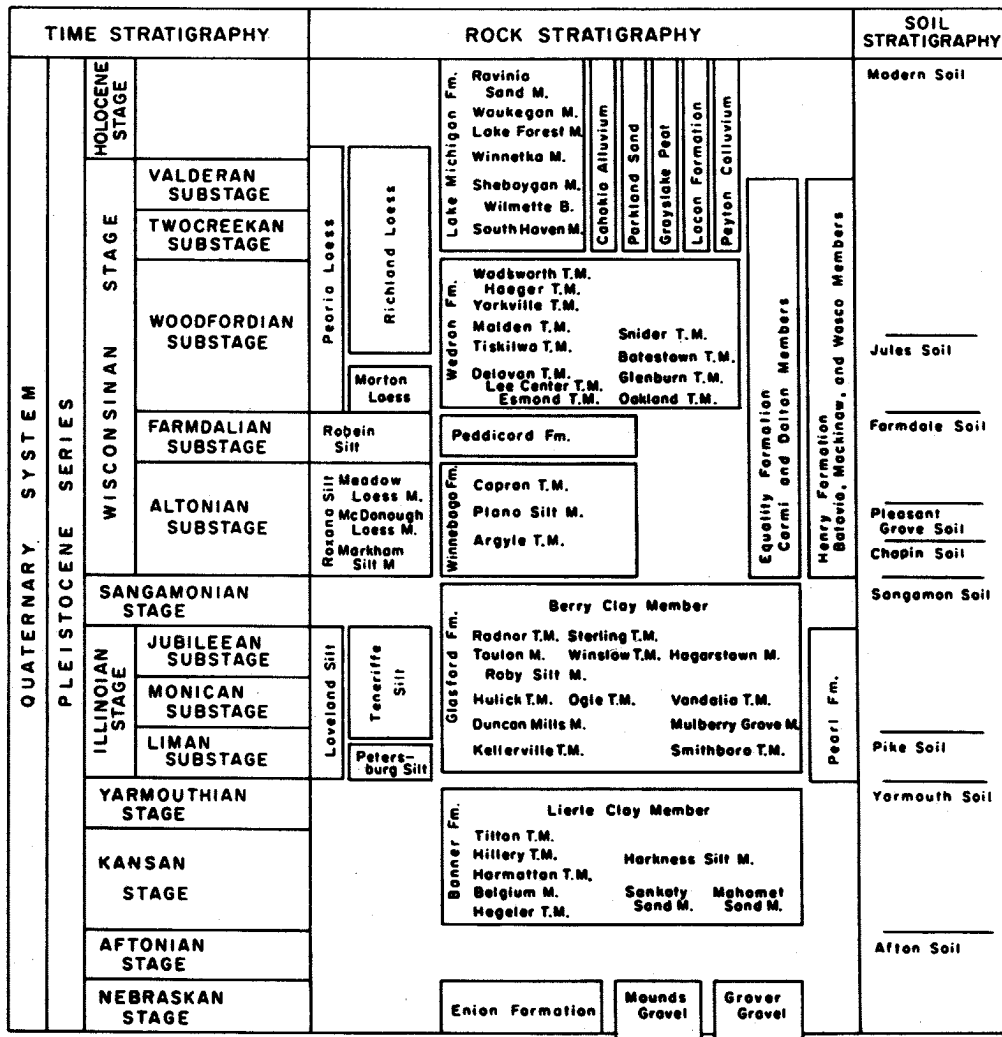
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FIGURE 2.5-4

REGIONAL GEOLOGIC CROSS SECTIONS

NOTES

1. REFER TO FIGURE 2.5-7 FOR LOCATION OF REGIONAL GEOLOGIC CROSS SECTION.
2. MODIFIED FROM: GROUNDWATER GEOLOGY IN EAST CENTRAL ILLINOIS BY L.F. SELKREGG AND J.P. KEMPTON, ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 248, 1958.



Fm.=Formation M.=Member T.M.=Till Member B.=Bed

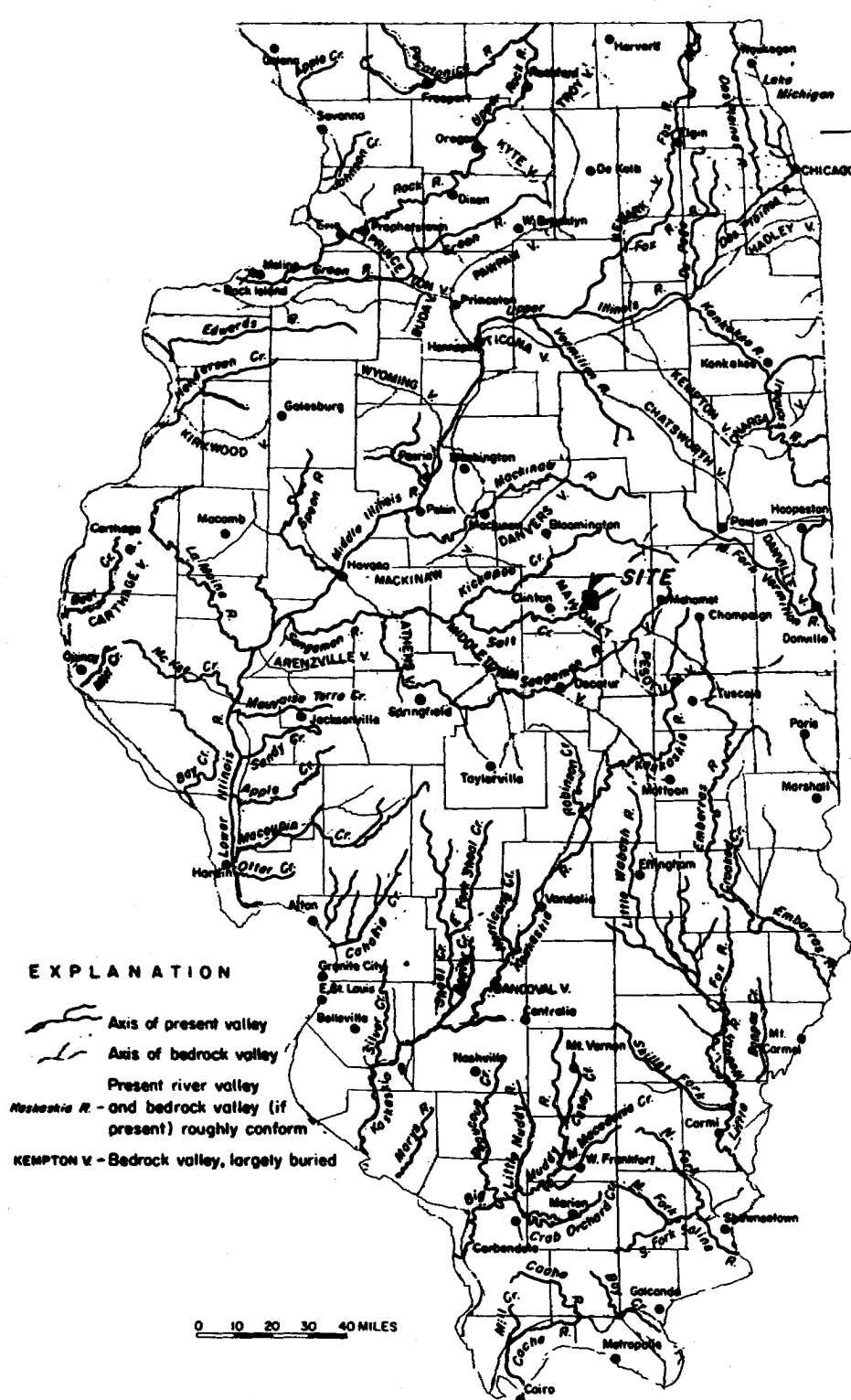
REFERENCE

1. H.B. WILLMAN, ET. AL., HANDBOOK OF ILLINOIS STRATIGRAPHY, BULLETIN 98, ILLINOIS STATE GEOLOGICAL SURVEY, URBANA, 1975.

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FIGURE 2.5-5

STRATIGRAPHIC COLUMN OF THE PLEISTOCENE
DEPOSITS OF ILLINOIS



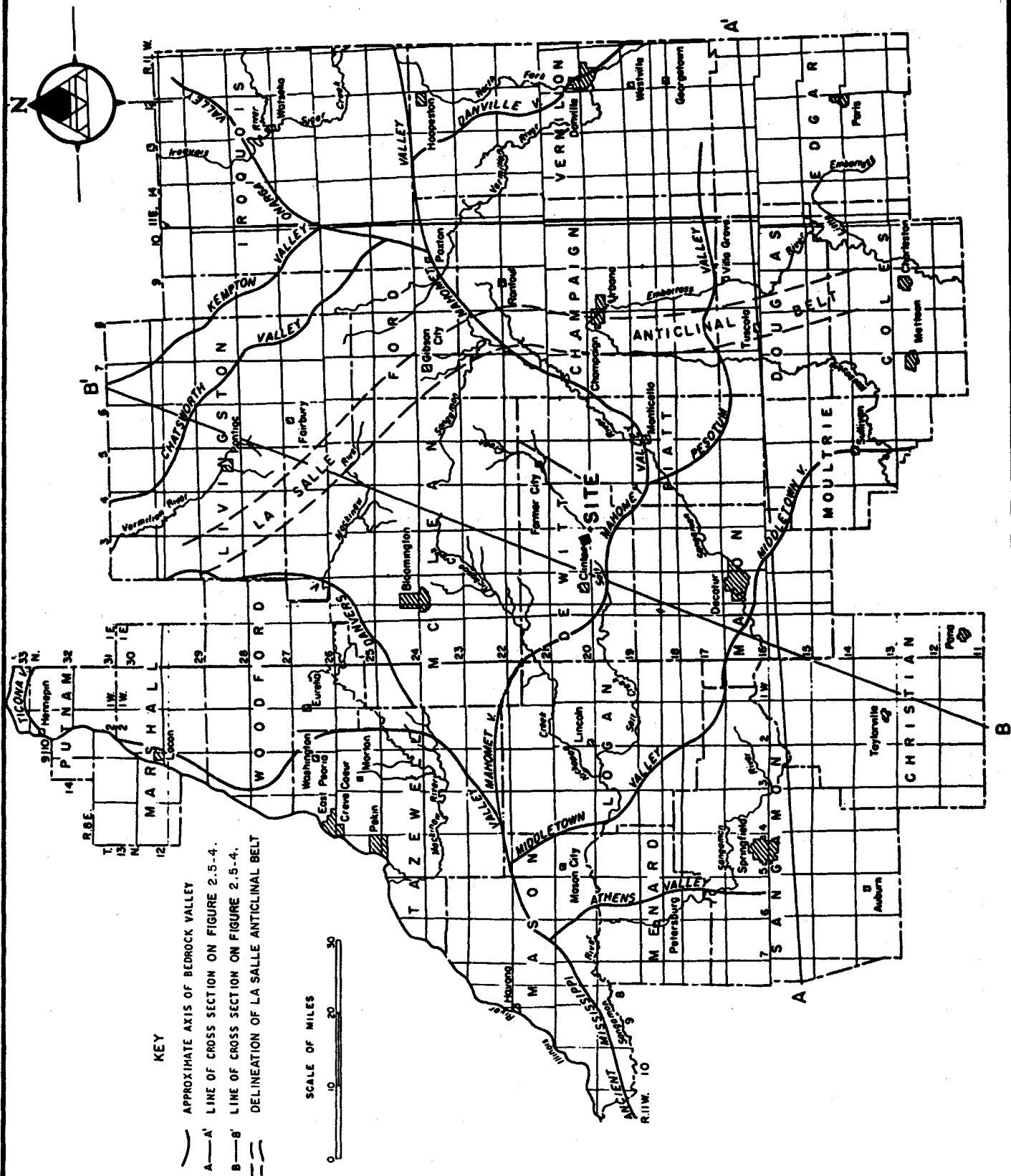
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FIGURE 2.5-6

BEDROCK VALLEY MAP OF ILLINOIS

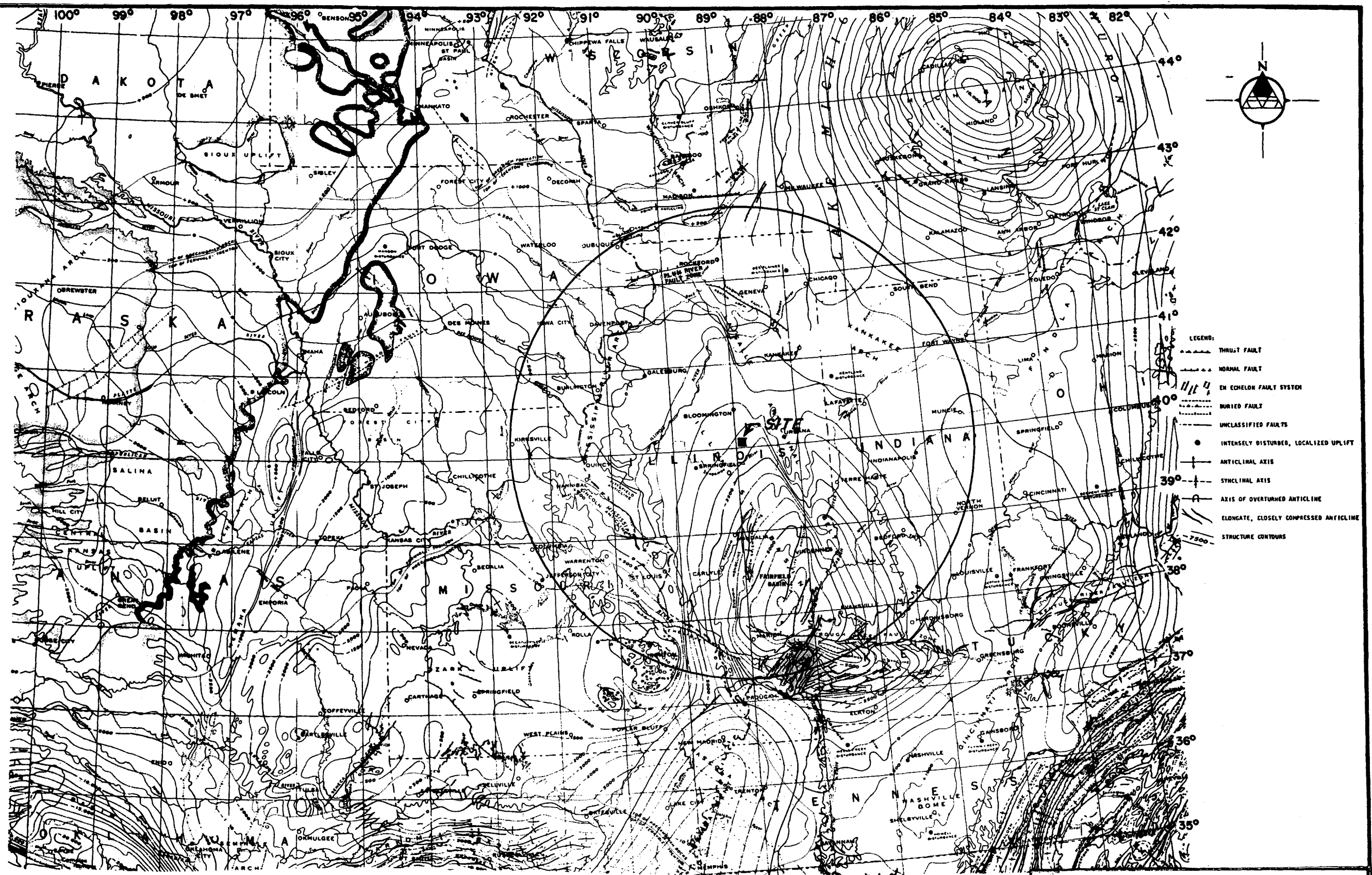
NOTE:

MODIFIED FROM: GLACIAL DRIFT IN ILLINOIS: THICKNESS AND CHARACTER, ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 490, URBANA, 1978.



NOTES:

1. SEE FIGURE 2.5-4 FOR REGIONAL GEOLOGIC CROSS SECTIONS.
2. MODIFIED FROM: SELKREGG, L.F. AND J.P. KEMPTON, GROUNDWATER IN EAST CENTRAL ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 248, 1958.



NOTES:

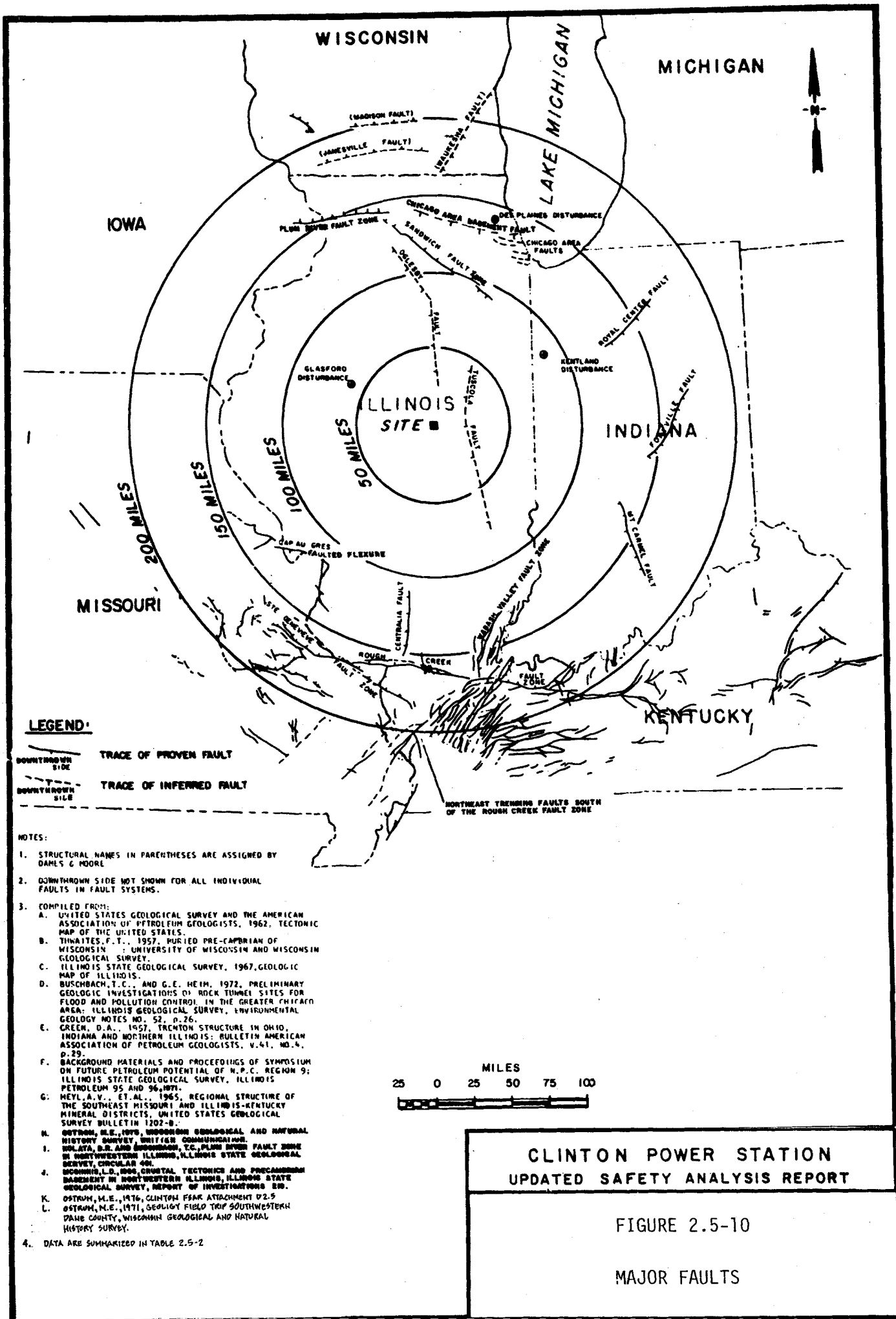
1. STRUCTURE CONTOUR LINES ARE CONSTRUCTED ON THE TOPS OF DIFFERENT LITHOLOGIC UNITS IN DIFFERENT LOCALITIES. THE NAMES AND BOUNDARIES OF THESE CONTOURED UNITS ARE DELINEATED BY DOTTED LINES ON THE MAP.
2. MODIFIED FROM: UNITED STATES GEOLOGICAL SURVEY AND THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1962, TECTONIC MAP OF THE UNITED STATES, AND ILLINOIS STATE GEOLOGICAL SURVEY, 1976, CIRCULAR 491, PLUM RIVER FAULT ZONE IN NORTHWESTERN ILLINOIS.
3. FOLDED STRUCTURES IN THE REGIONAL AREA ARE SHOWN IN MORE DETAIL ON FIGURE 2.5-9. FAULTED STRUCTURES IN THE REGIONAL AREA ARE SHOWN IN MORE DETAIL ON FIGURE 2.5-10.

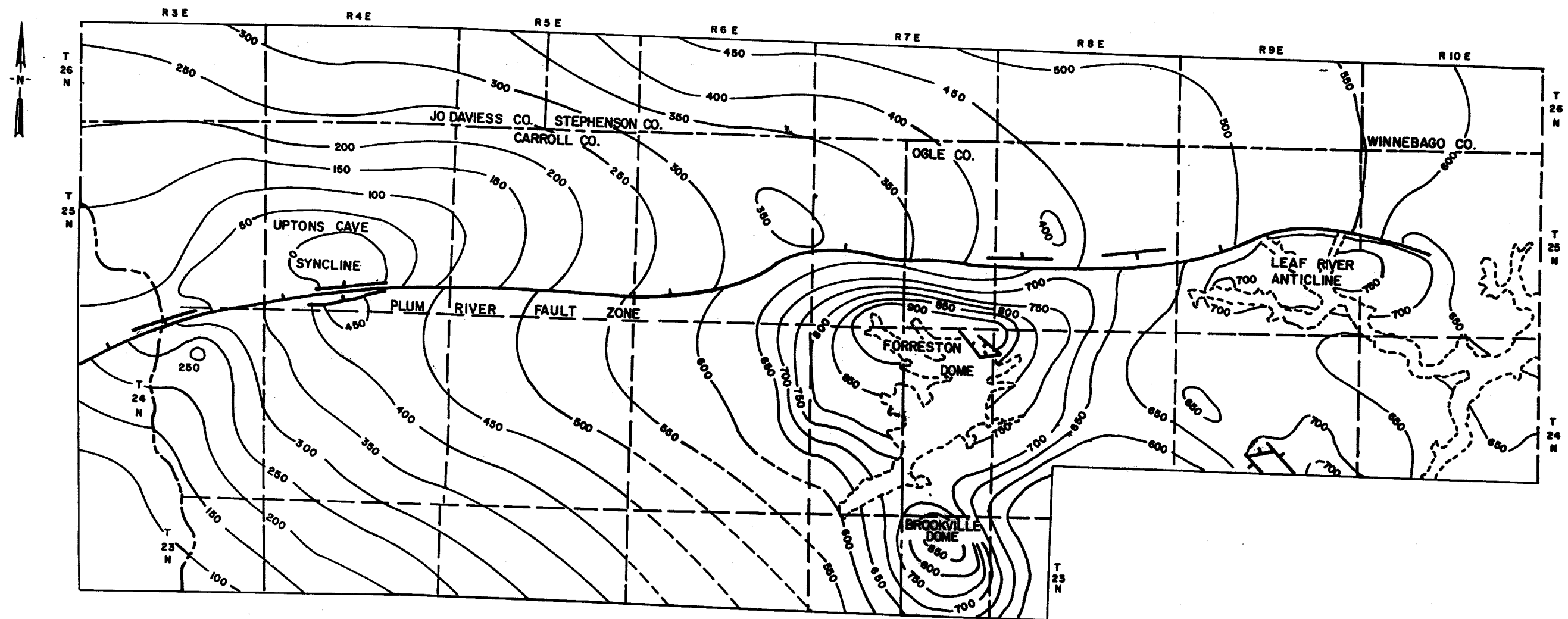
0 25 50 75 100
MILES
CONTOUR INTERVAL — 500 AND 1000 FEET

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FIGURE 2.5-8

REGIONAL TECTONIC MAP



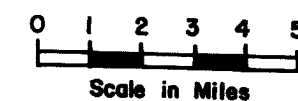


LEGEND

- 100— Structure contours on top of Glenwood Formation
- - -100- - Structure contours on top of Glenwood Formation, inferred
- - - - - Top of Glenwood Formation eroded
- - - - - State Line
- - - - - Township Lines
- - - - - County Lines
- - - - - Trace of Fault
- Downthrust
Side

NOTE

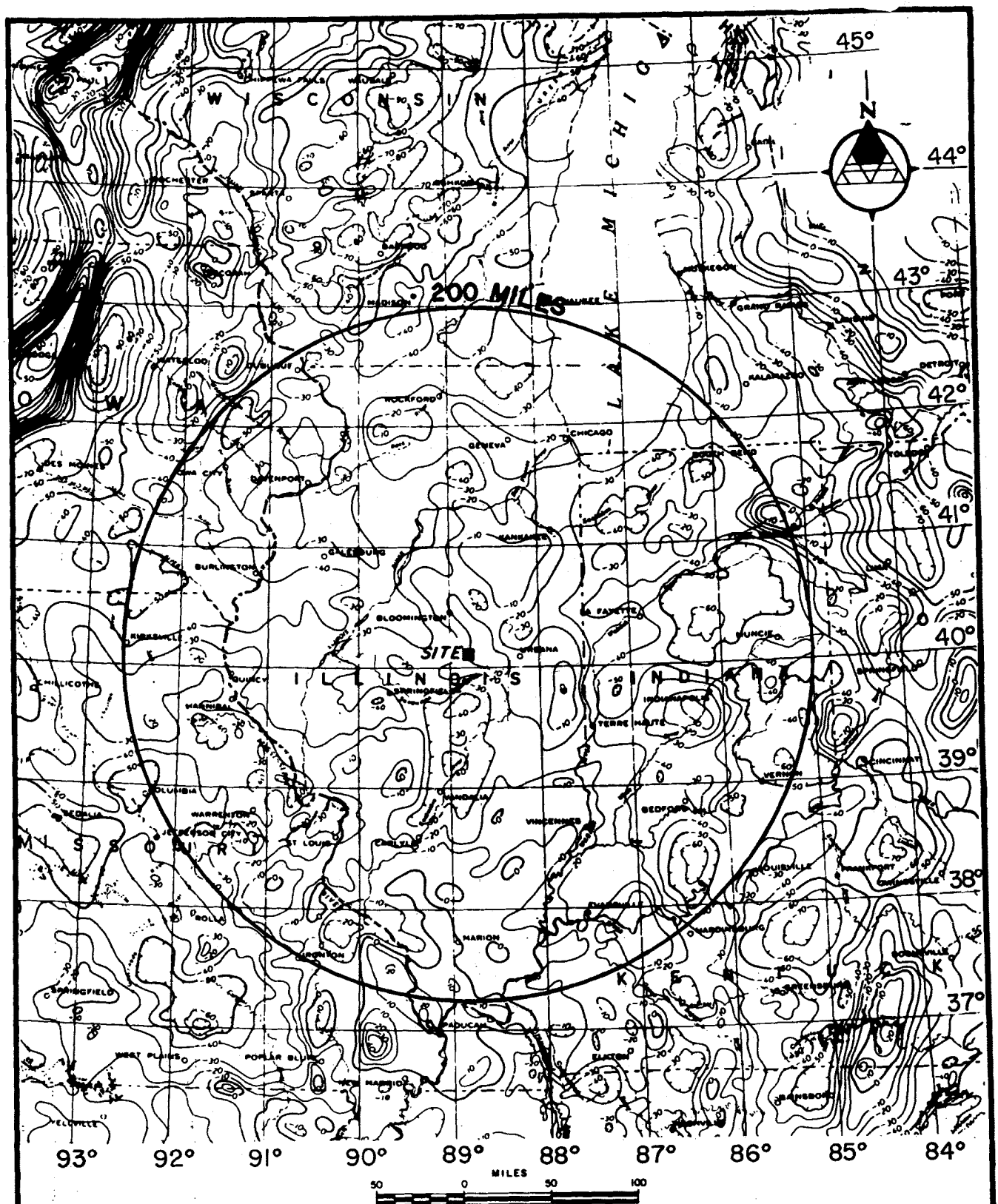
1. Modified from Kolata D.R. and Buschbach T.C., Plum River Fault Zone of Northwestern Illinois, Illinois State Geological Survey Circular 491, 1976.
2. The location of this area with respect to the regional area is shown on Figure 2.5-9.



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FIGURE 2.5-11

PLUM RIVER FAULT ZONE AND ASSOCIATED
STRUCTURES IN ILLINOIS



LEGEND:

-60- BOUGUER GRAVITY CONTOUR
(CONTOUR INTERVAL 10 MILLIGALS)

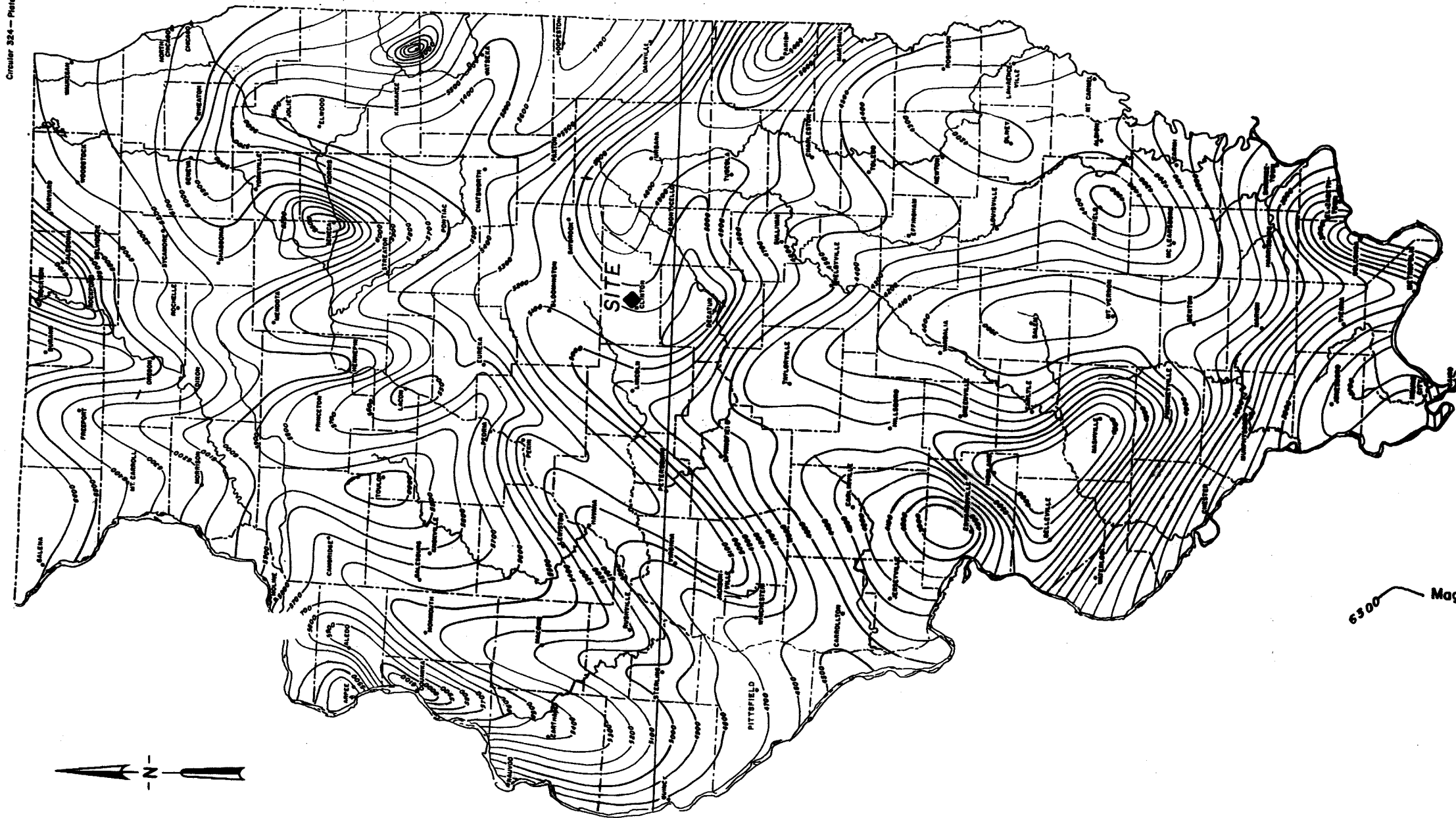
NOTE:

BASE MAP FROM: WOOLARD, G.P. AND JOESTING, H.R.,
1964, BOUGUER GRAVITY ANOMALY MAP OF THE UNITED
STATES: AMERICAN GEOPHYSICAL UNION AND UNITED
STATES GEOLOGICAL SURVEY.

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FIGURE 2.5-12

REGIONAL BOUGUER GRAVITY ANOMALY MAP

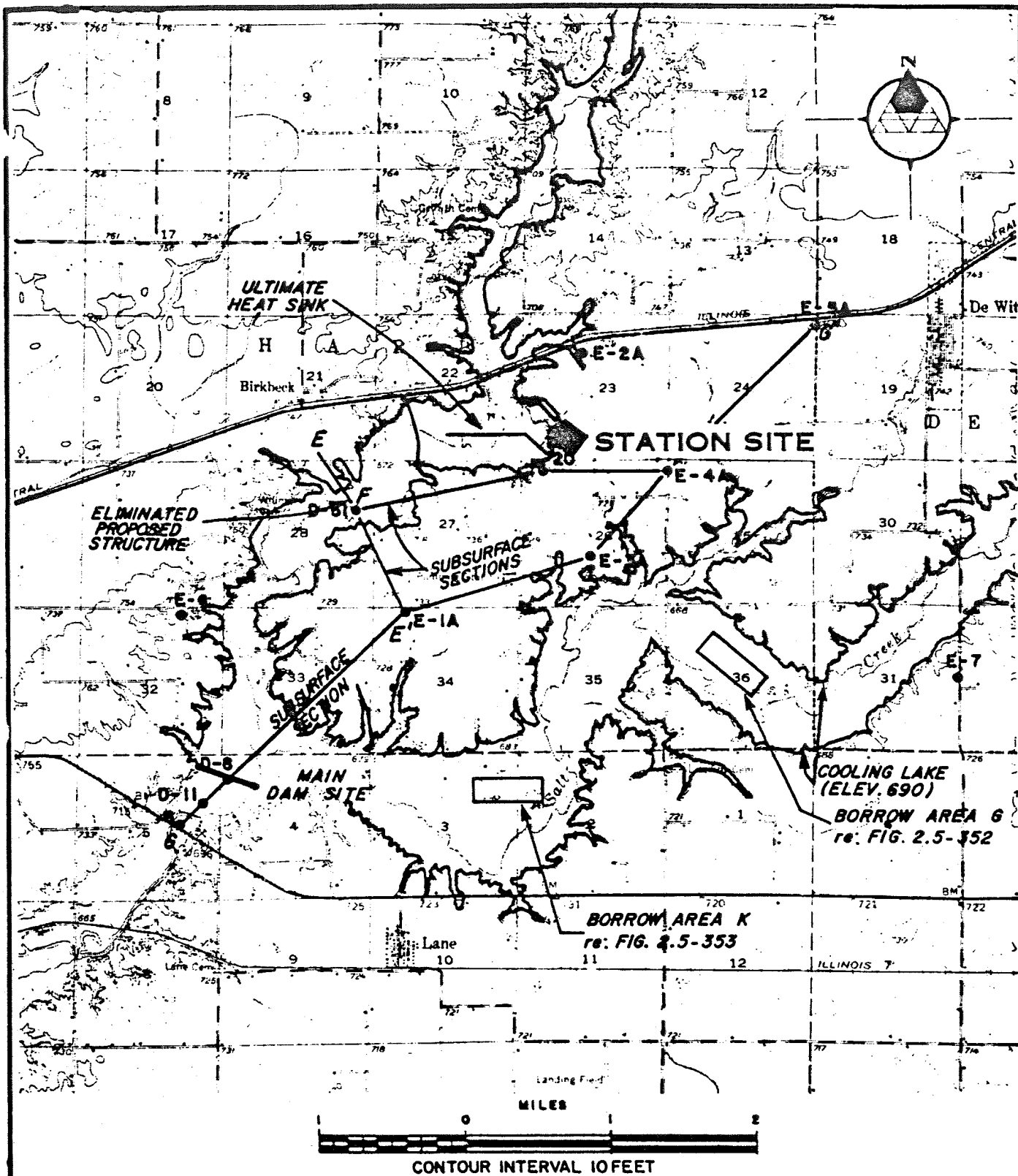


KEY
6300 Magnetic contour lines, interval 100 gammas.

0 10 20 30 40
Scale in Miles

MODIFIED FROM: MCGINNIS, L. D., AND HEIGOLD, P. C., REGIONAL MAPS OF VERTICAL
MAGNETIC INTENSITY IN ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY
CIRCULAR 324, 1961.

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FIGURE 2.5-13
REGIONAL VERTICAL MAGNETIC ANOMALIES



LEGEND:

- E-6 BORING LOCATION
E—E' SUBSURFACE SECTION LOCATION

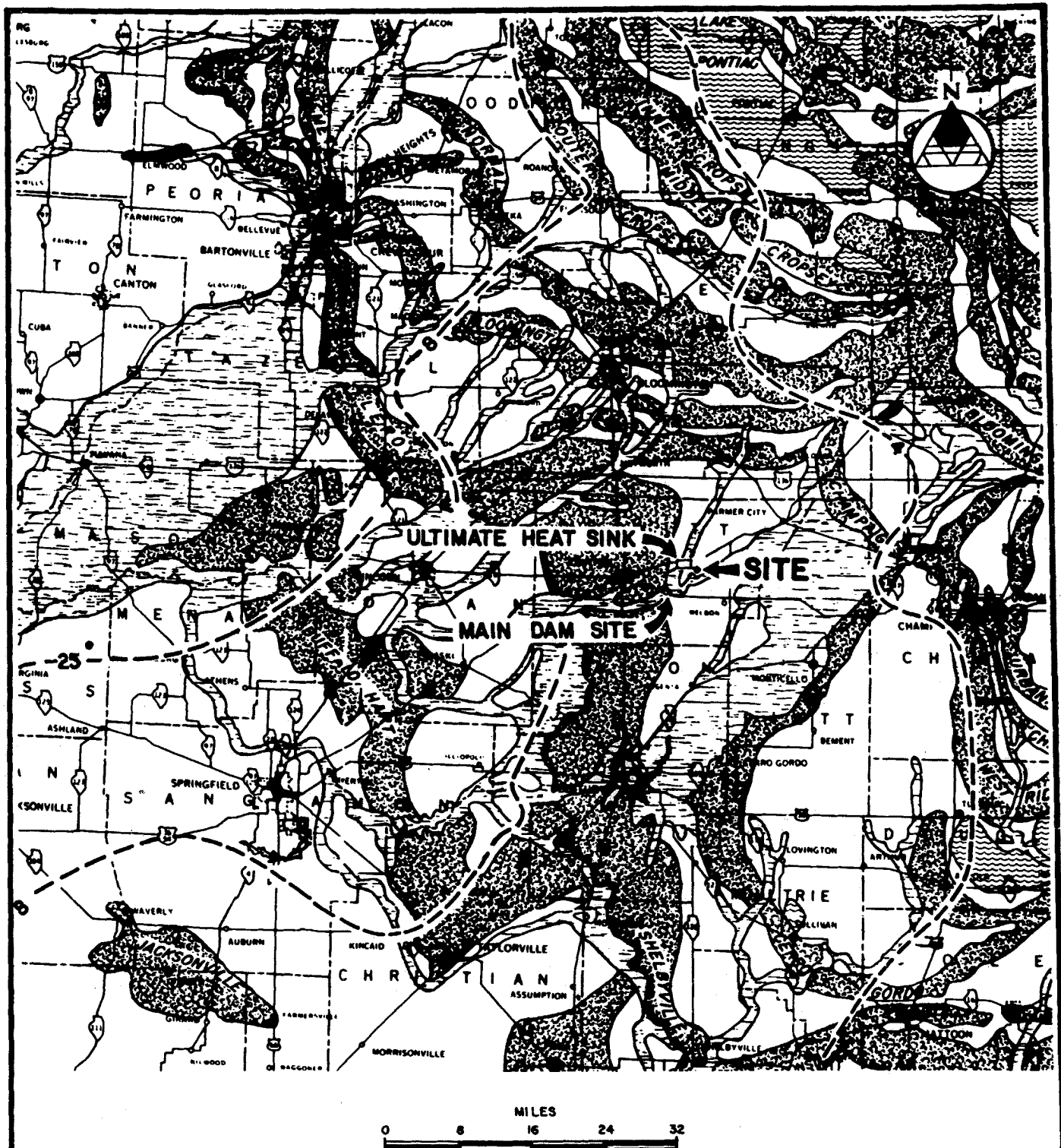
NOTES:

1. REFER TO FIGURES 2.5-278 THROUGH 2.5-280 FOR SUBSURFACE SECTIONS.
2. REFER TO FIGURES 2.5-80, 2.5-83, 2.5-96, AND 2.5-145 THROUGH 2.5-151 FOR LOGS OF BORINGS.
3. BASE MAP MODIFIED FROM: MAROA, ILLINOIS 15 MINUTE QUADRANGLE (1:62500) UNITED STATES GEOLOGICAL SURVEY, 1957.




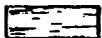

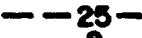


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FIGURE 2.5-14

SITE VICINITY MAP



LEGEND

-  MORAINIC RIDGES
-  LAKEBED SEDIMENTS
-  ICE-CONTACT STRATIFIED DRIFT
-  ALLUVIATED VALLEYS AND OUTWASH PLAINS
-  GROUND MORAINE
-  25
-  8
-  4
- APPROXIMATE THICKNESS OF LOESS
- 25, 8, 4 FOOT CONTOURS

MODIFIED FROM: THORNBURN, T.H., SURFACE DEPOSITS OF ILLINOIS,
UNIVERSITY OF ILLINOIS ENGINEERING EXPERIMENT STATION, CIVIL
ENG. STUDIES, SOIL MECHANICS SERIES 3.

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FIGURE 2.5-15

SURFICIAL GEOLOGY MAP

E 354,000

- NOTES:**
1. REFER TO FIGURES 2.5-19 THROUGH 2.5-73 AND FIGURES 2.5-162 THROUGH 2.5-242 FOR LOGS OF BORINGS.
 2. REFER TO FIGURE 2.5-284 FOR SUBSURFACE SECTIONS J-J' AND K-K'.

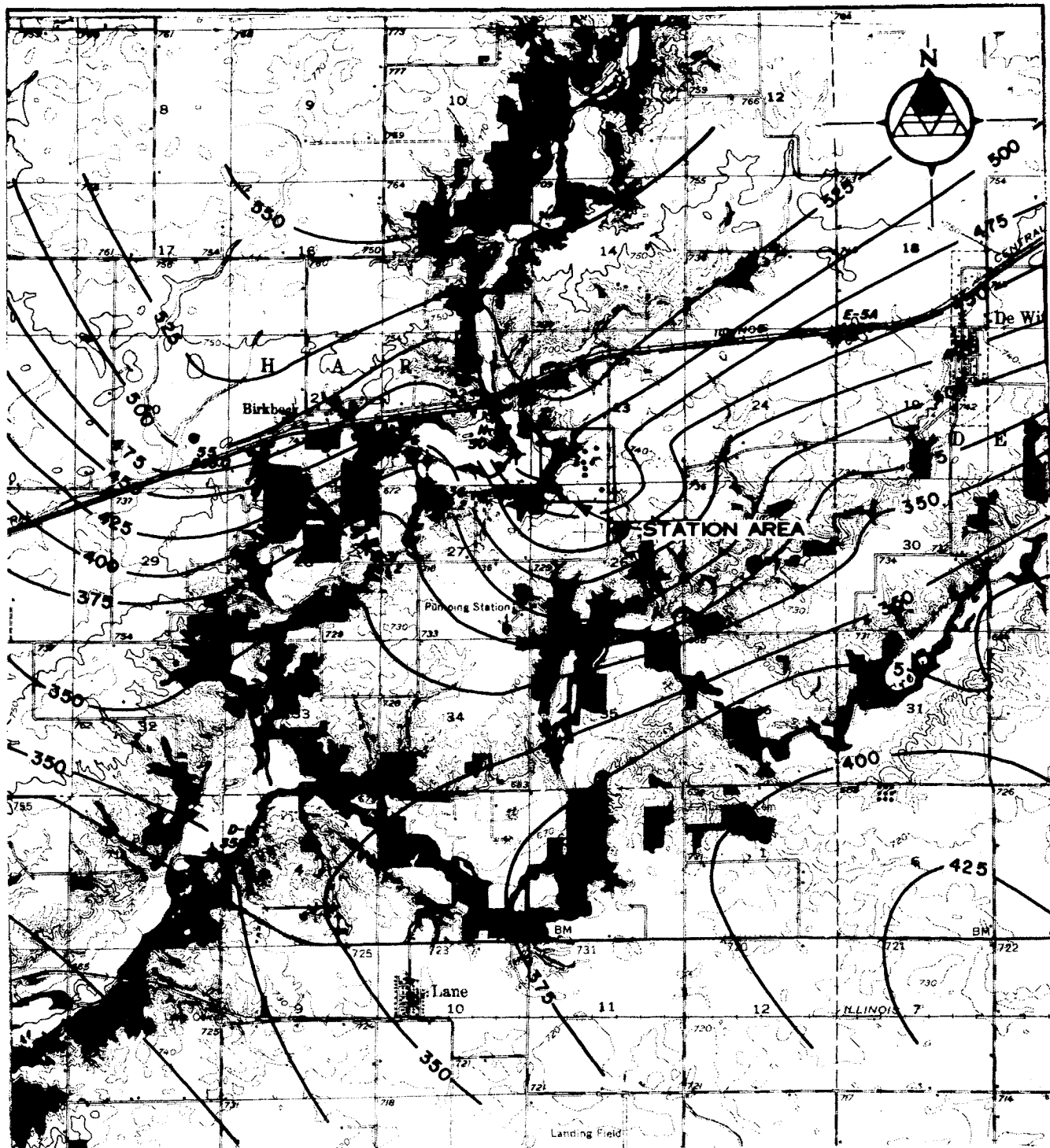
- LEGEND:**
- ◆ LOCATION OF BORINGS THAT EXTEND TO BEDROCK
 - ◆ BORING LOCATION
 - (P) INDICATES PIEZOMETER INSTALLATION
 - INDICATES ALL CATEGORY 1 STRUCTURES
 - SUBSURFACE SECTION LOCATION

NOTE: UNIT 2 HAS BEEN CANCELLED.

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FIGURE 2.5-16

PLOT PLAN - ULTIMATE HEAT SINK



LEGEND:

- ✦ BORING LOCATION
- PRIVATE WATER WELL
- ELEVATION OF TOP OF BEDROCK
- 400— CONTOUR ON TOP OF BEDROCK SURFACE
- CONTOUR INTERVAL 25 FEET

NOTE:

1. BASE MAP MODIFIED FROM: MARGA, ILLINOIS 15 MINUTE QUADRANGLE (1:62,500), UNITED STATES GEOLOGICAL SURVEY, 1957.
2. SEE FIGURE 2.5-282 FOR ENLARGED VIEW OF BORINGS IN PLANT AREA.
3. BEDROCK CONTOURS ADOPTED FROM 'GEOLOGICAL SIGNIFICANCE OF THE GRAVITY FIELDS IN THE DEWITT-MCLEAN COUNTY AREA, ILLINOIS BY P.C. HEIGOLD, L.D. MCGINNIS AND R.H. HOWARD, ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 369, 1964, WITH MODIFICATIONS FROM BOREHOLE DATA.

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FIGURE 2.5-17

CONTOURS ON BEDROCK SURFACE
SITE VICINITY

TIME STRATIGRAPHY				STRATIGRAPHIC UNITS	
				UPLAND	VALLEY
Quaternary System	Pleistocene Series	Holocene Stage		Richland Loess	Cahokia
					Peyton
		Wisconsinan Stage	Valderan Substage	Wedron Formation	Colluvium
			Twocreekan Substage		Alluvium
			Woodfordian Substage		Henry Formation
			Farmdalian Substage		
			Altonian Substage		
		Sangamonian Stage		weathered Glasford Formation	
		Illinoian Stage			
		Yarmouthian Stage		unaltered Glasford Formation	
		Kansan Stage			
		Unconformity			
Pennsylvanian System				McLeansboro Group	Bond Formation
				Kewanee Group	Modesto Formation
					Carbondale Formation

STRATIGRAPHIC DESCRIPTION		
STRATIGRAPHIC UNIT	APPROXIMATE THICKNESS*	GENERAL DESCRIPTION
Cahokia Alluvium	0-35 ft.	Alluvium and silty clay (CL,SM or ML)
Peyton Colluvium	0-10 ft.	
Richland Loess	0-10 ft.	Loess, clayey silt (ML or CL), may be leached, soft.
Henry Formation	0-35 ft.	Stratified sand and gravel (SP, GP, SM).
Wedron Formation	20-55 ft.	Till, clayey sandy silt till (ML or CL), stiff to very stiff, with lenses of stratified sand, gravel, or silt.
Robein Silt	0-2 ft.	Silt (ML or CL), black or dark brown, massive, soft.
weathered Glasford Formation	10-15 ft.	Silt and silty clay (ML or CL), weathered, soft; and till (ML or CL), weathered, soft with lenses of sand or silt; black, dark brown, green.
unaltered Glasford Formation	90-140 + ft.	Till, gray sandy silt (ML or SM), hard. Upper part may contain lenses of stratified sand, silt, or gravel.
Banner Formation	25-105 ft.	Complex sequence, variably consisting of glacio-lactustrine silt (ML or CL), hard; clay till (ML), hard; may be undelain by very dense sand (Mahomet Sand Member), 0-140 ft. thick.
McLeansboro Group and Kewanee Group	Not Completely Penetrated	Alternating beds of shale, siltstone, limestone, and coal bedrock.

NOTES:

- The stratigraphic units are discussed in detail in subsection 2.5.1.2 and Attachment C2.5.
- Figure 2.5-274 shows a comparison of stratigraphic nomenclature used in the FSAR, PSAR, and boring logs.
- Excavations for the Clinton Power Station did not extend below the unaltered Glasford Formation.
- Borings for the Clinton Power Station did not extend below rocks of the Carbondale Formation.
- Illinoian-age till of the Glasford Formation was subjected to a significant period of weathering during the Sangamonian Stage and Altonian Substage.
- Deposits of Cahokia Alluvium and Henry Formation were not differentiated; reported approximate thicknesses of each unit represents a combined thickness for both deposits. The Cahokia Alluvium is Holocene and quite possibly, in part, Valderan/Twocreekan in age; the Henry Formation is Woodfordian (probably early) in age. The Wedron Formation is probably early Woodfordian.

- The Holocene Stage is represented by a significant period of weathering and development of agricultural soil profiles.
- Vertical scale does not represent either relative thickness of stratigraphic units or relative duration of time interval.
- Standard Unified Soil Classification symbols are used.
- Locally, the Peyton Colluvium rests directly on Glasford Formation.

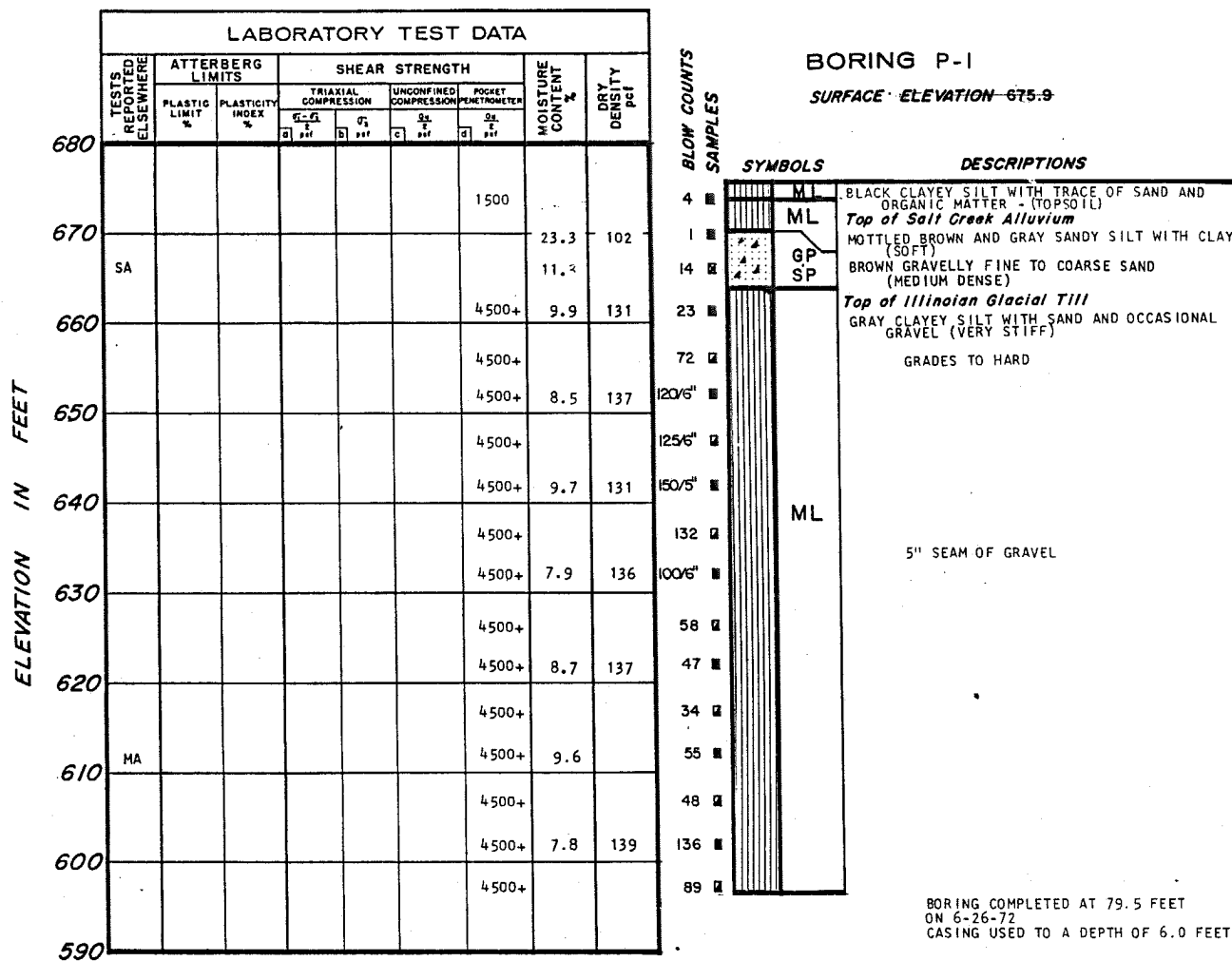
*Based on data from excavations and boring logs.

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FIGURE 2.5-18

SITE STRATIGRAPHIC COLUMN



NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

BORING P-1
SURFACE ELEVATION 675.9

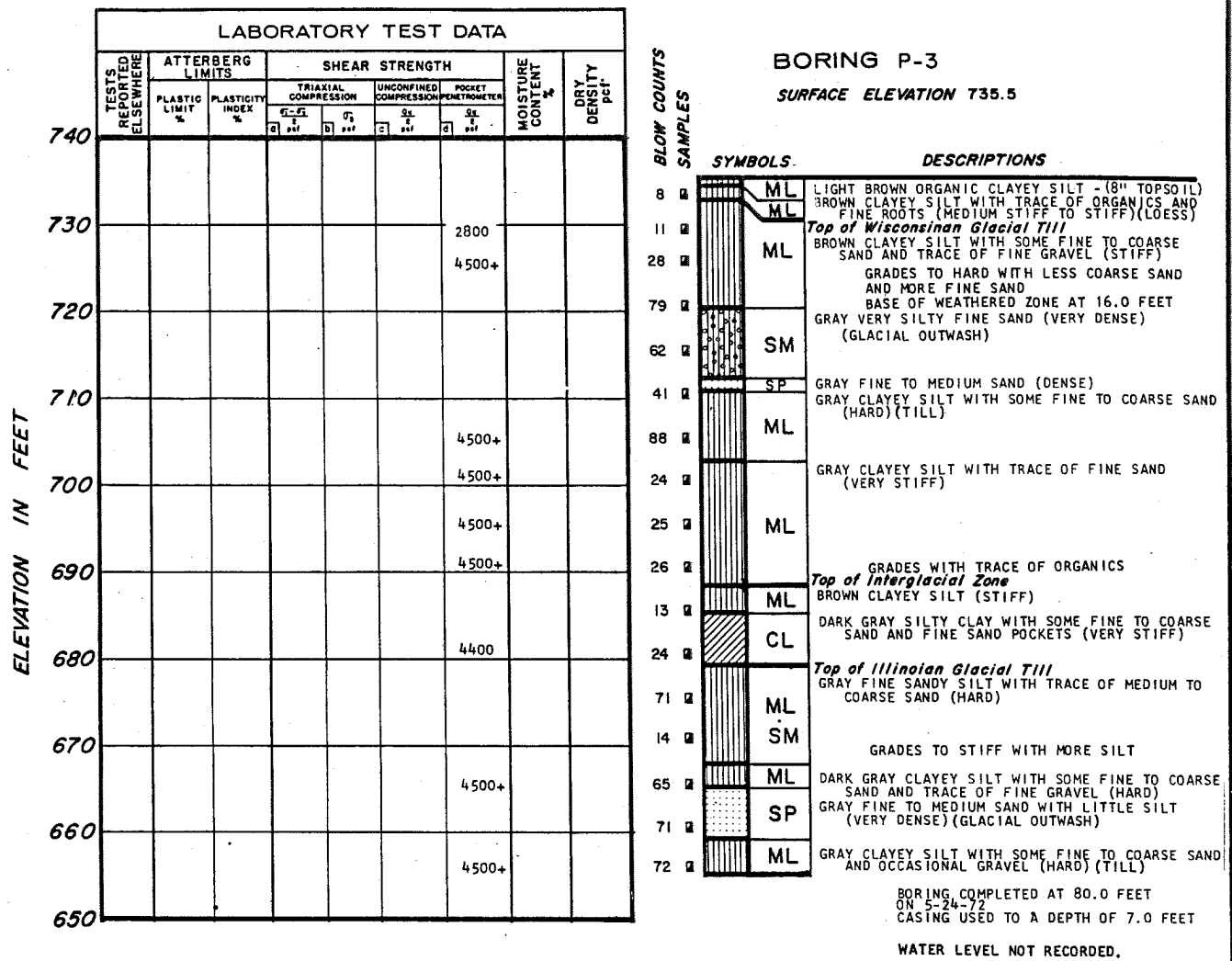
**BLOW COUNTS
SAMPLES**

SYMBOLS

DESCRIPTIONS

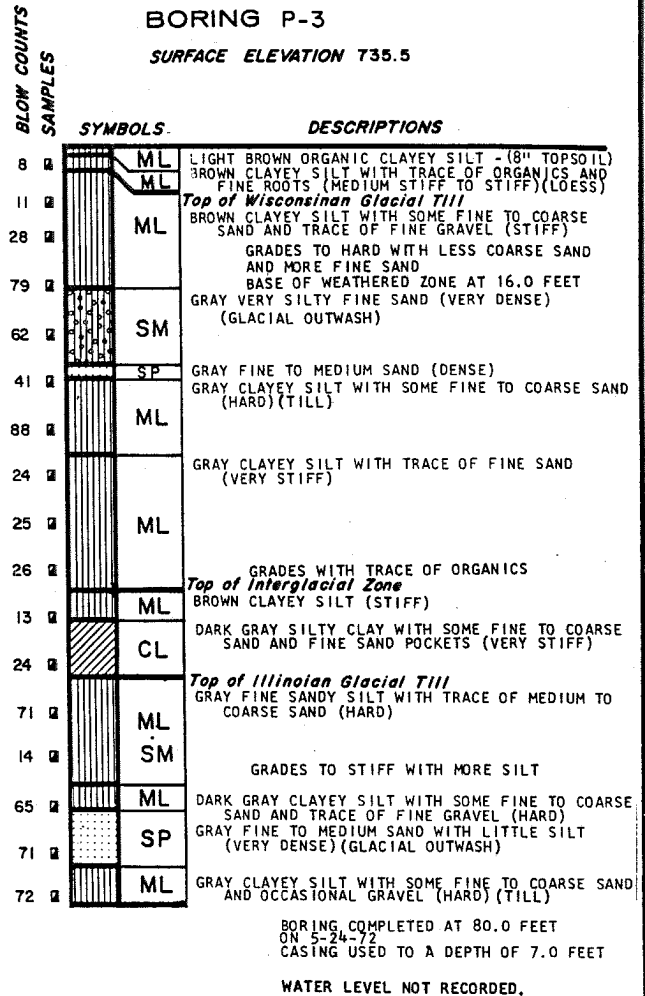
4	■	ML	BLACK CLAYEY SILT WITH TRACE OF SAND AND ORGANIC MATTER - (TOPSOIL)
1	■	ML	Top of Salt Creek Alluvium
14	■	GP SP	MOTTLED BROWN AND GRAY SANDY SILT WITH CLAY (SOFT)
23	■		BROWN GRAVELLY FINE TO COARSE SAND (MEDIUM DENSE)
			Top of Illinoian Glacial Till
72	■		GRAY CLAYEY SILT WITH SAND AND OCCASIONAL GRAVEL (VERY STIFF)
120/6"	■		GRADES TO HARD
125/6"	■		
150/5"	■		
132	■	ML	
100/6"	■		5" SEAM OF GRAVEL
58	■		
47	■		
34	■		
55	■		
48	■		
136	■		
89	■		

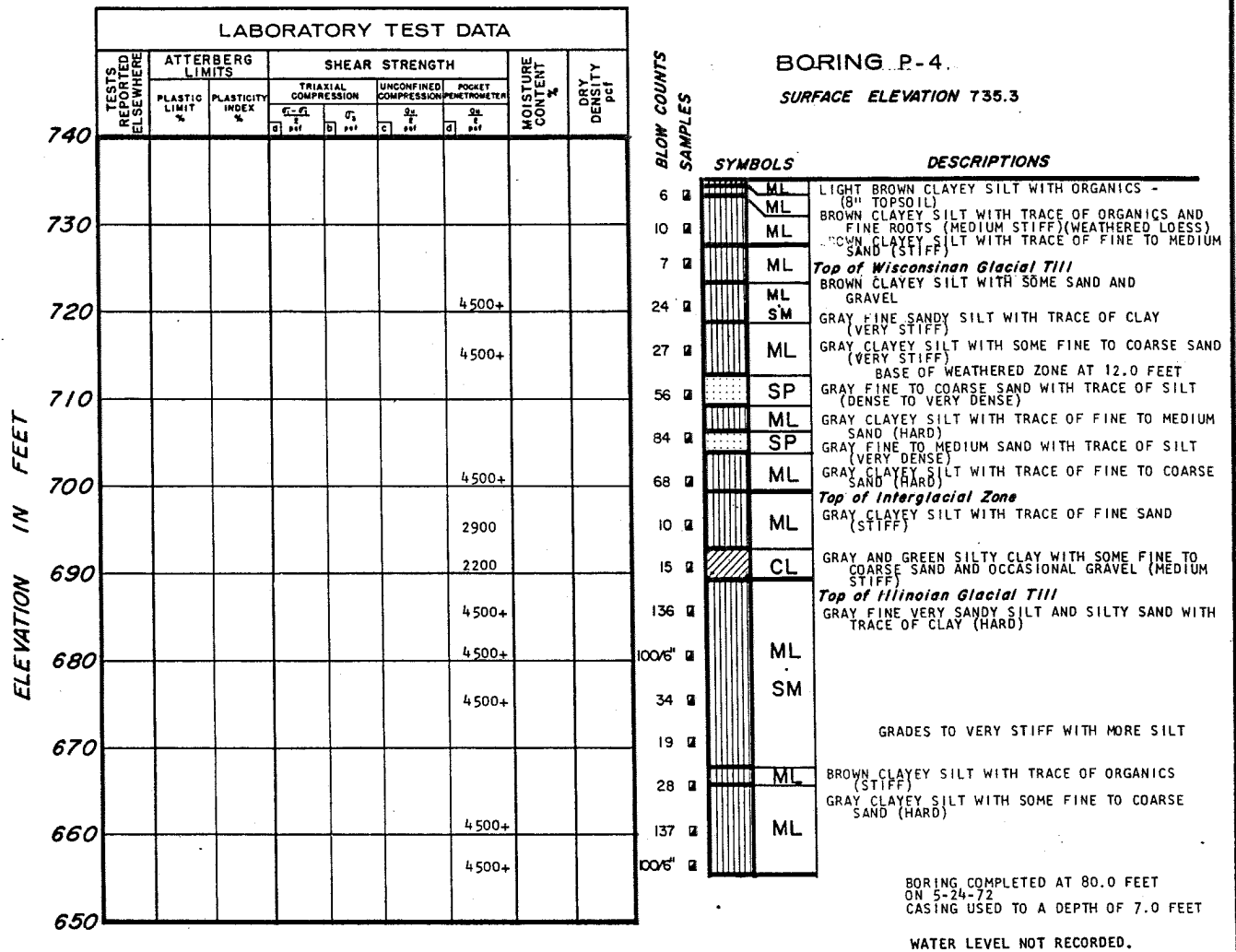
BORING COMPLETED AT 79.5 FEET
ON 6-26-72
CASING USED TO A DEPTH OF 6.0 FEET



NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

BORING P-3
SURFACE ELEVATION 735.5





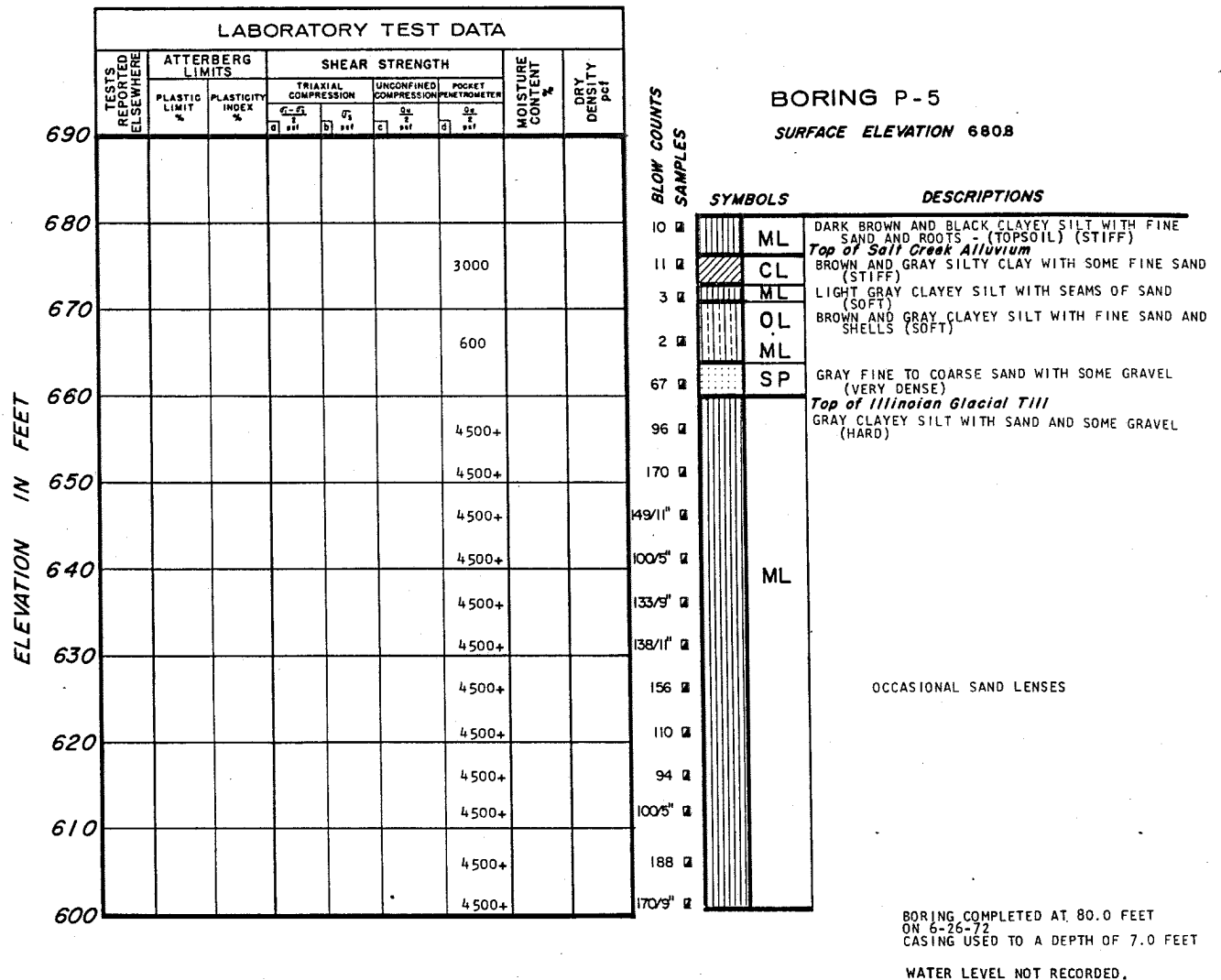
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-21

LOG OF BORING P-4



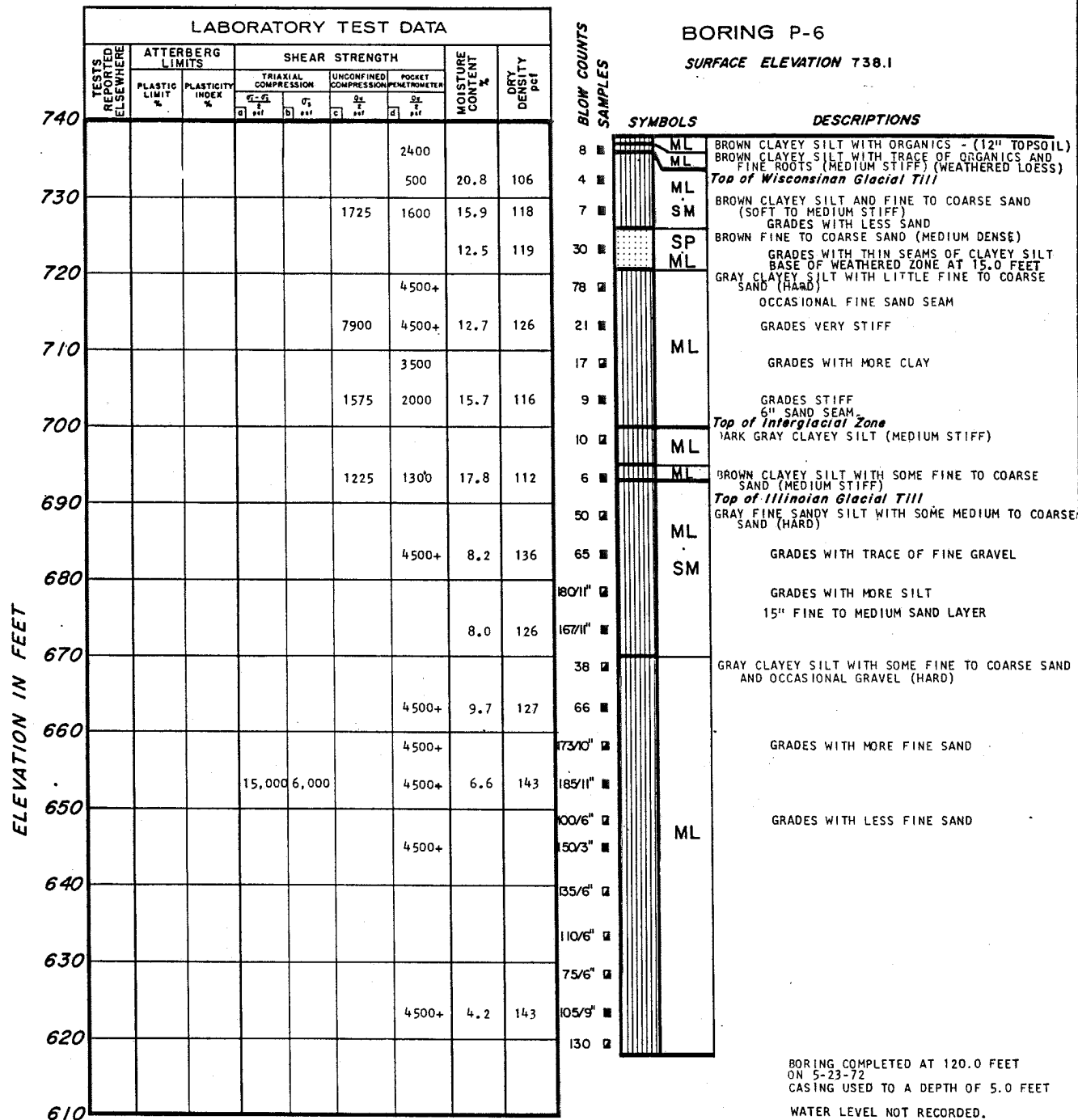
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-22

LOG OF BORING P-5



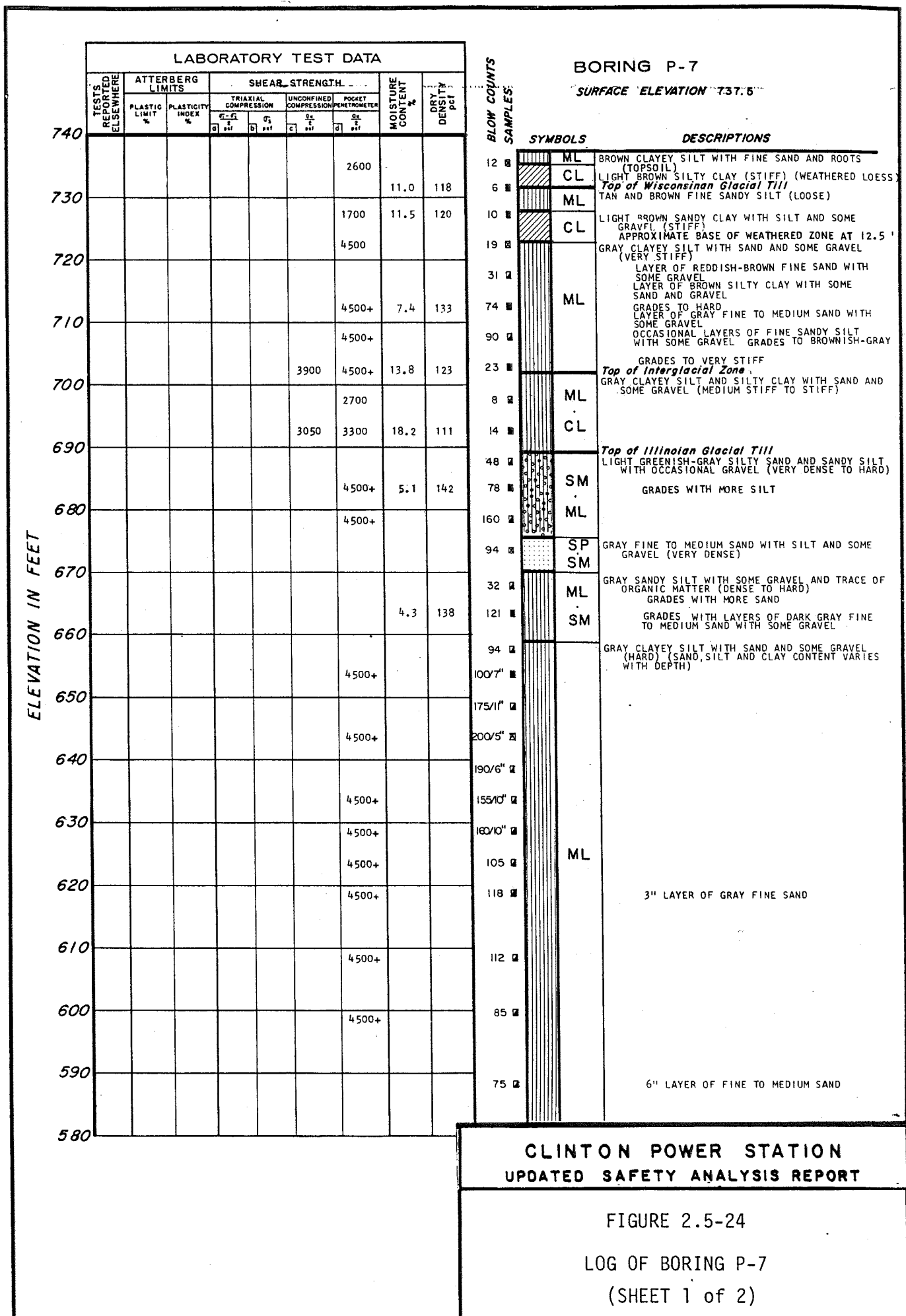
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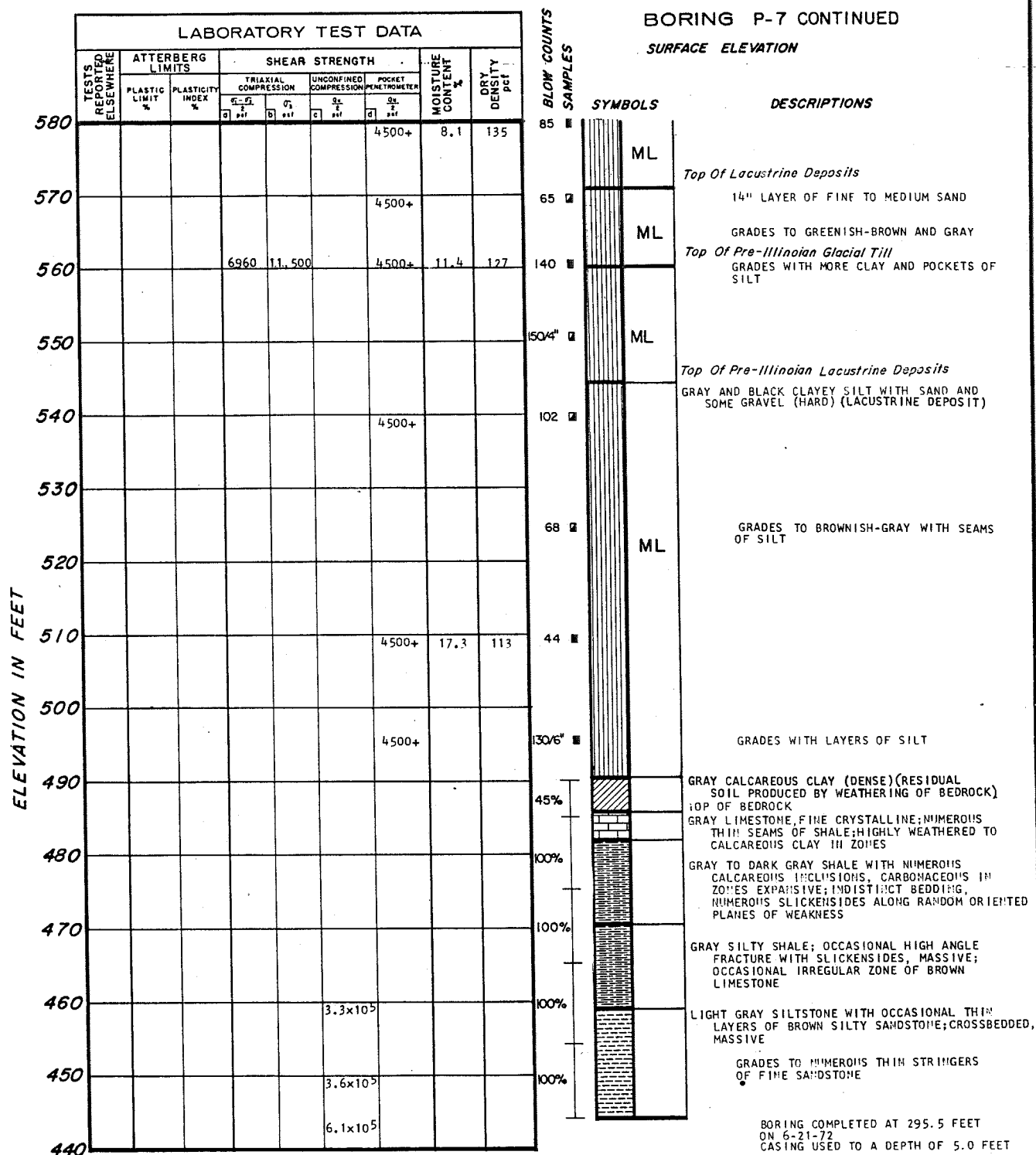
FIGURE 2.5-23

LOG OF BORING P-6

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.





PIEZOMETER INSTALLED ON 7-5-72
BORING P-7B, LOCATED 10 FEET
FROM P-7A, WAS DRILLED TO A
DEPTH OF 78 FEET. A 3/4 INCH
PVC PIPE WITH AN 18 INCH POROUS
STONE TIP WAS PLACED TO ELEVATION
659.5. GRANULAR BACKFILL WAS
PLACED FROM ELEVATION 659.5 TO
667.5; A BENTONITE SEAL FROM
ELEVATION 667.5 TO 669.5 AND
CEMENT GROUT AND GRAVEL FROM
ELEVATION 669.5 TO 737.5.

WATER LEVEL READINGS

DEPTH BELOW GROUND
SURFACE IN FEET

52.7

DATE

8-29-72

REFER TO FIGURE 2.4-36 FOR
WATER LEVEL OBSERVATIONS.

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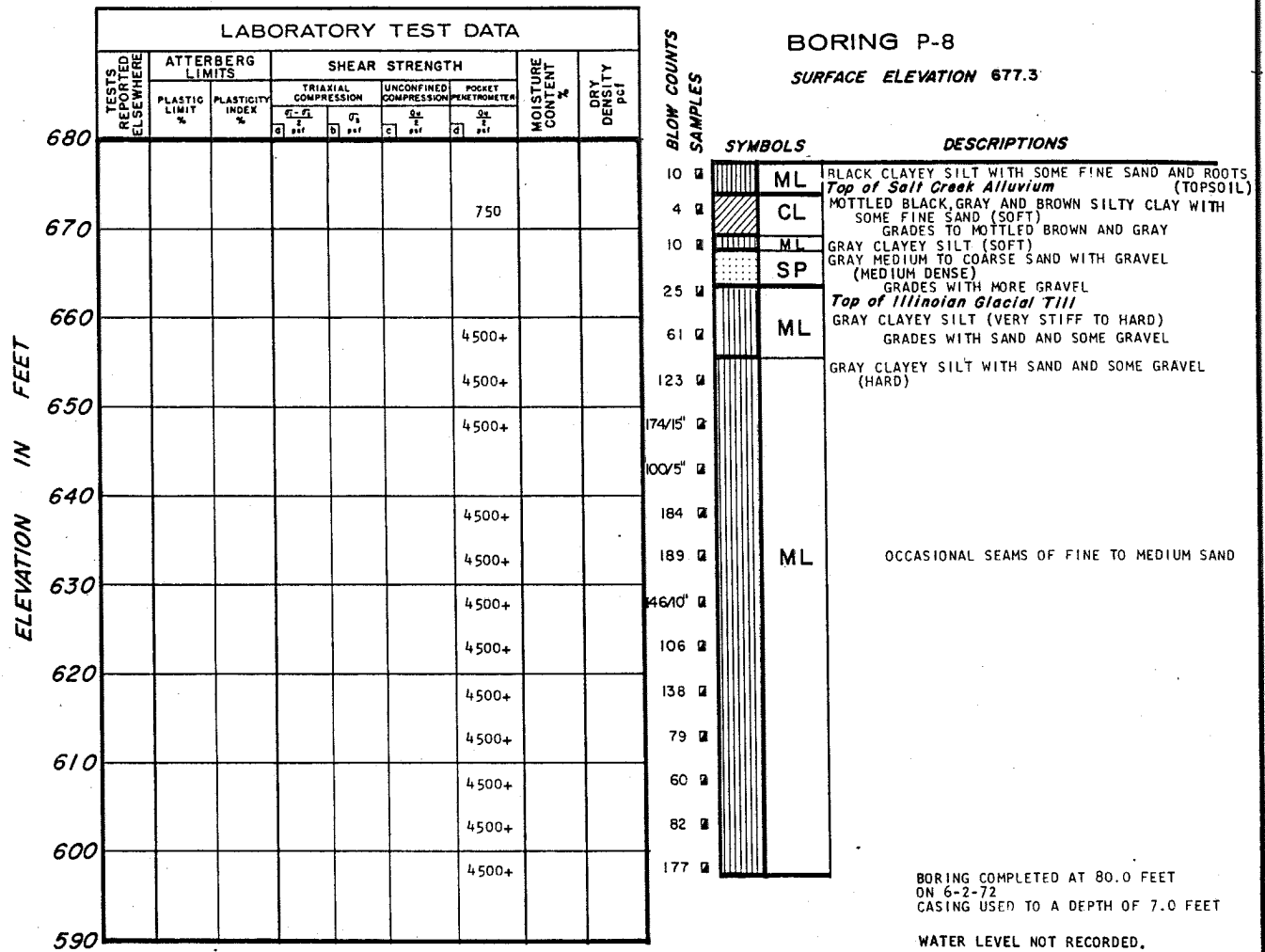
FIGURE 2.5-24

LOG OF BORING P-7

(SHEET 2 of 2)

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



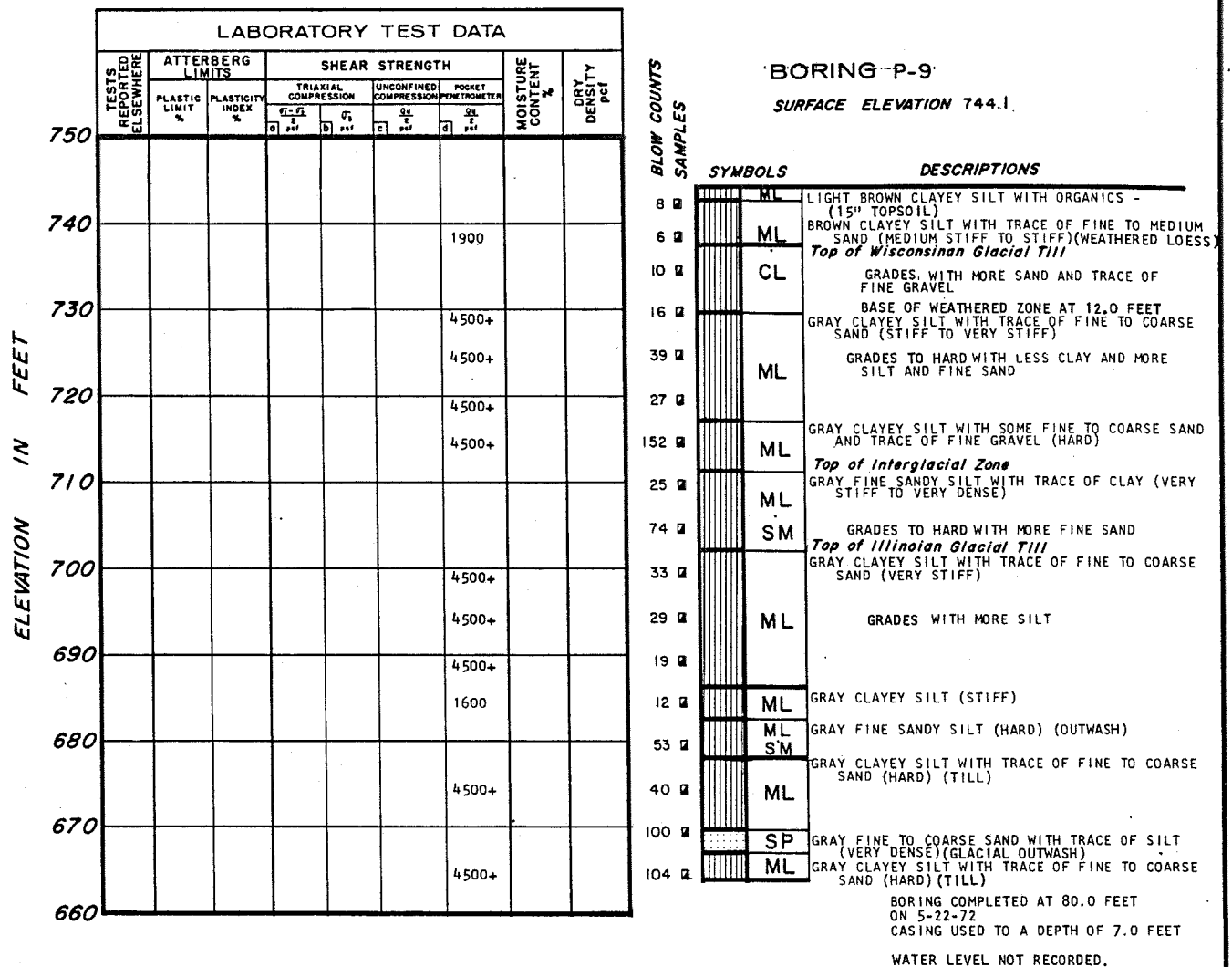
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-25

LOG OF BORING P-8

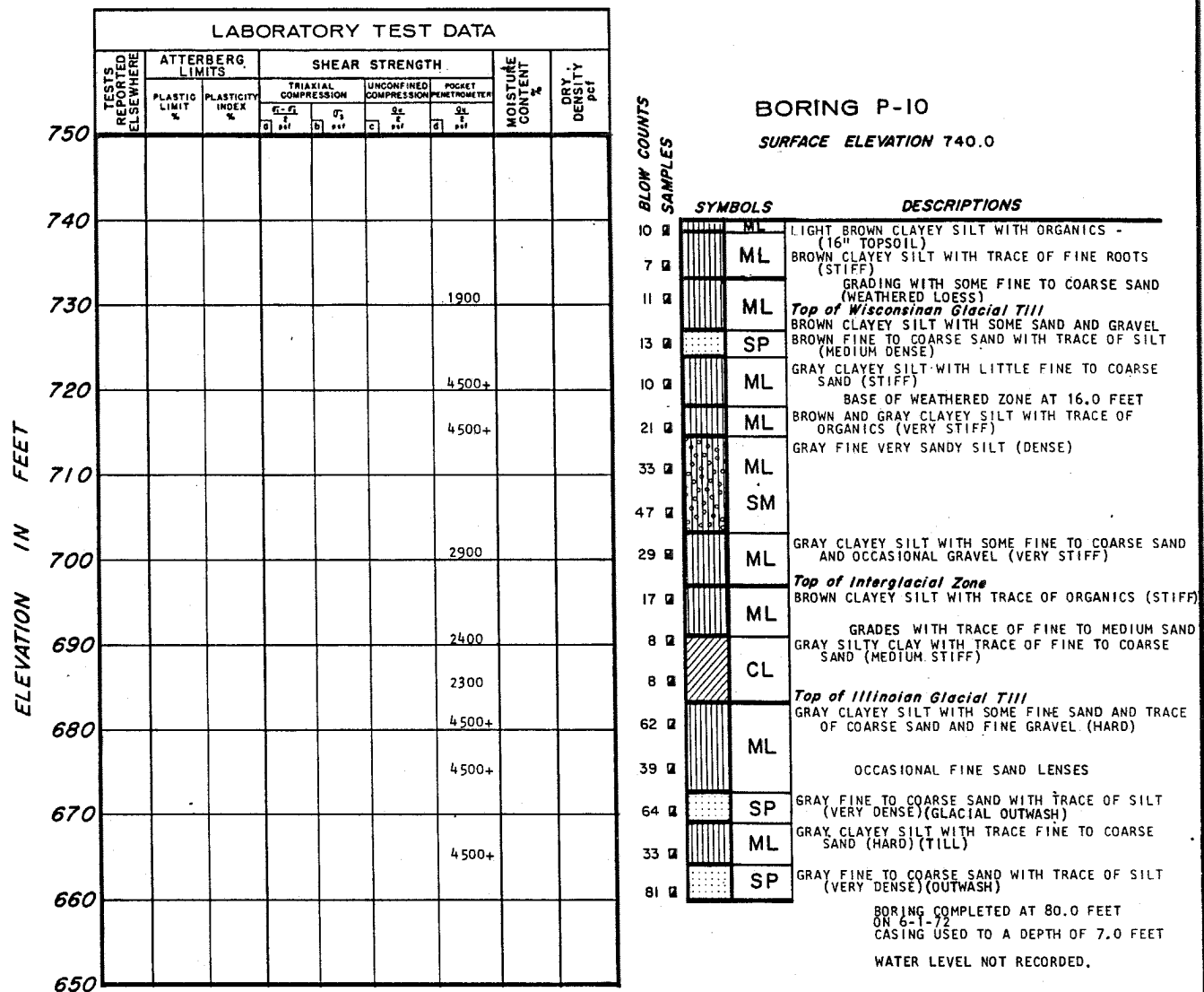


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FIGURE 2.5-26

LOG OF BORING P-9

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



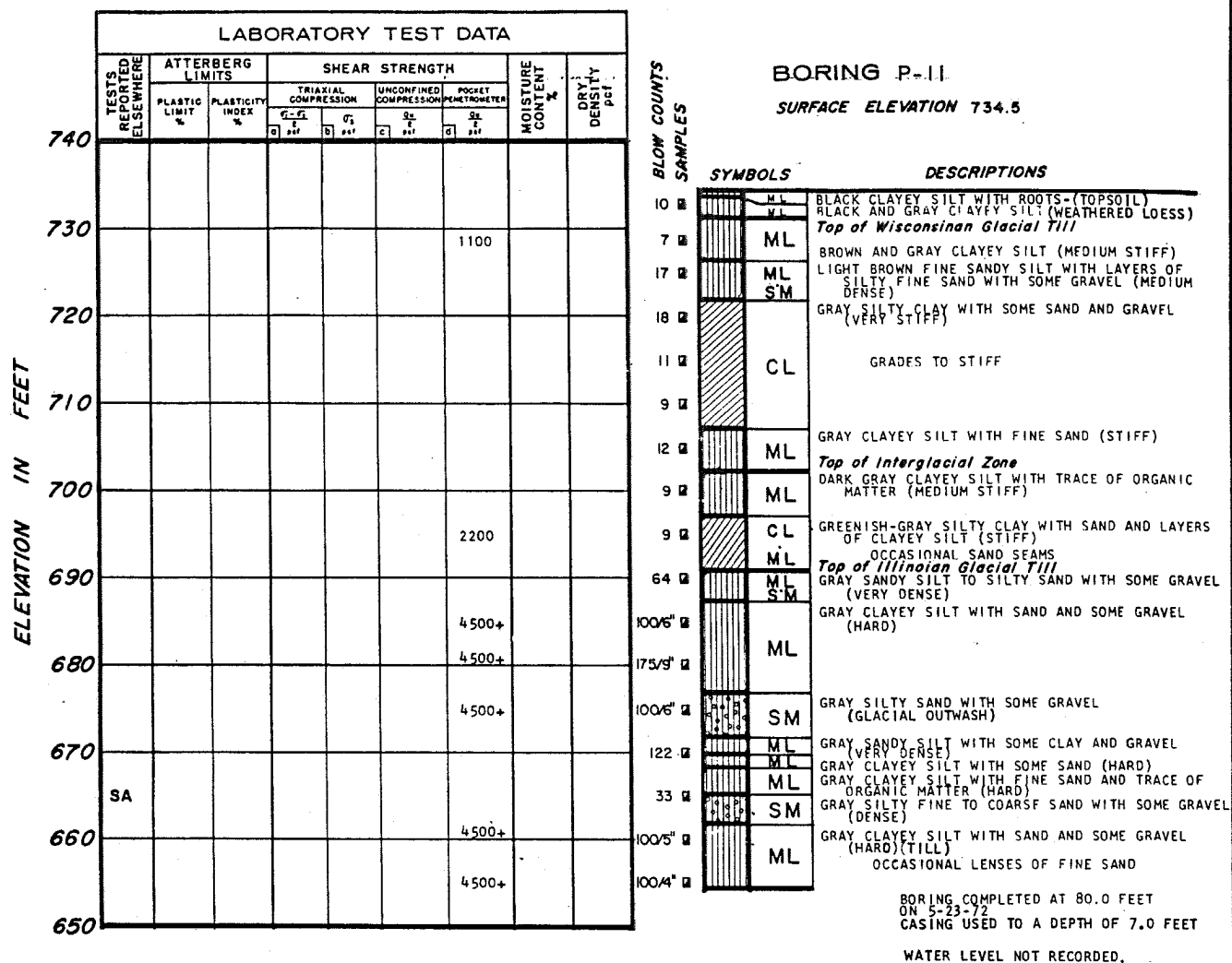
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FIGURE 2.5-27

LOG OF BORING P-10

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



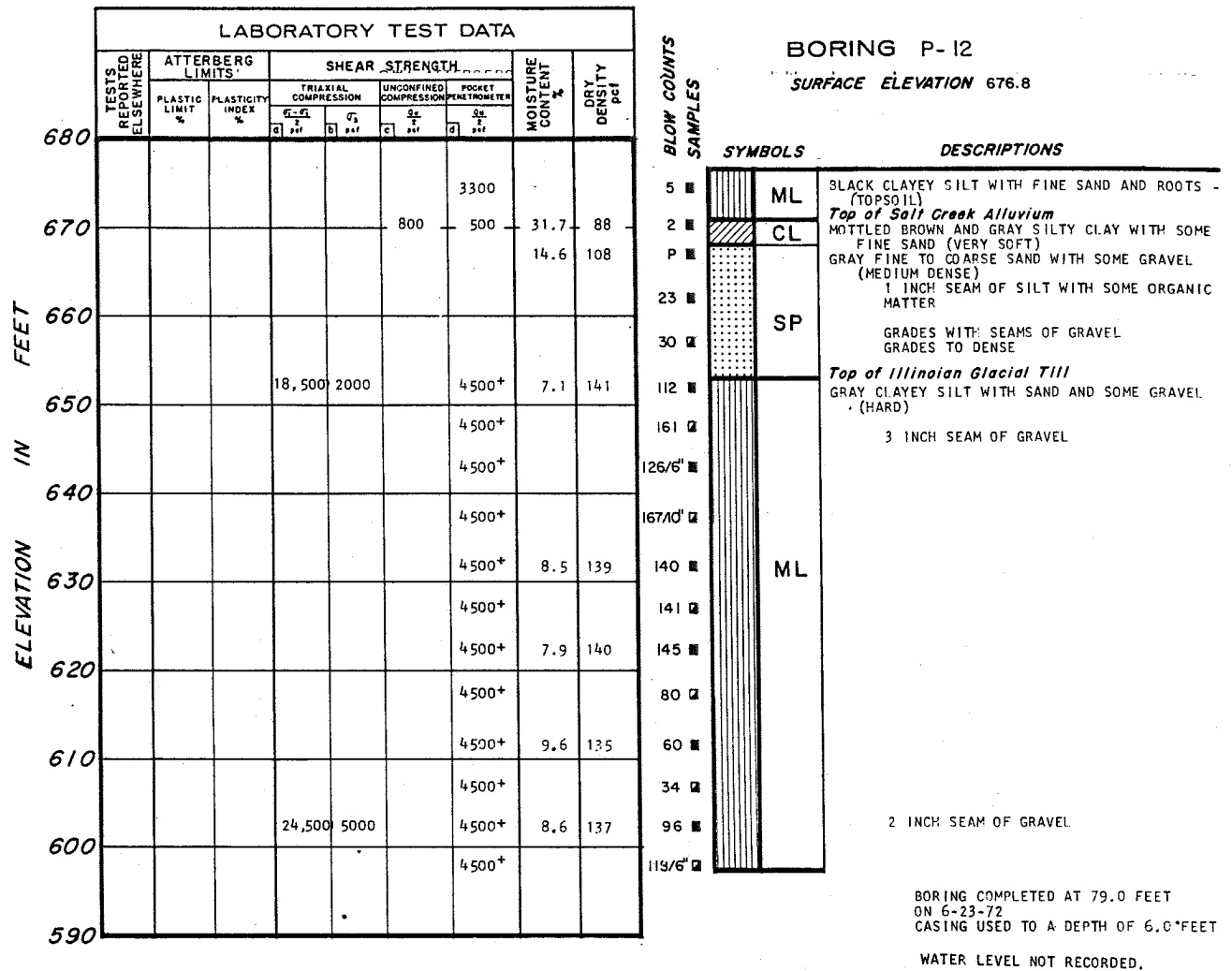
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-28

LOG OF BORING P-11

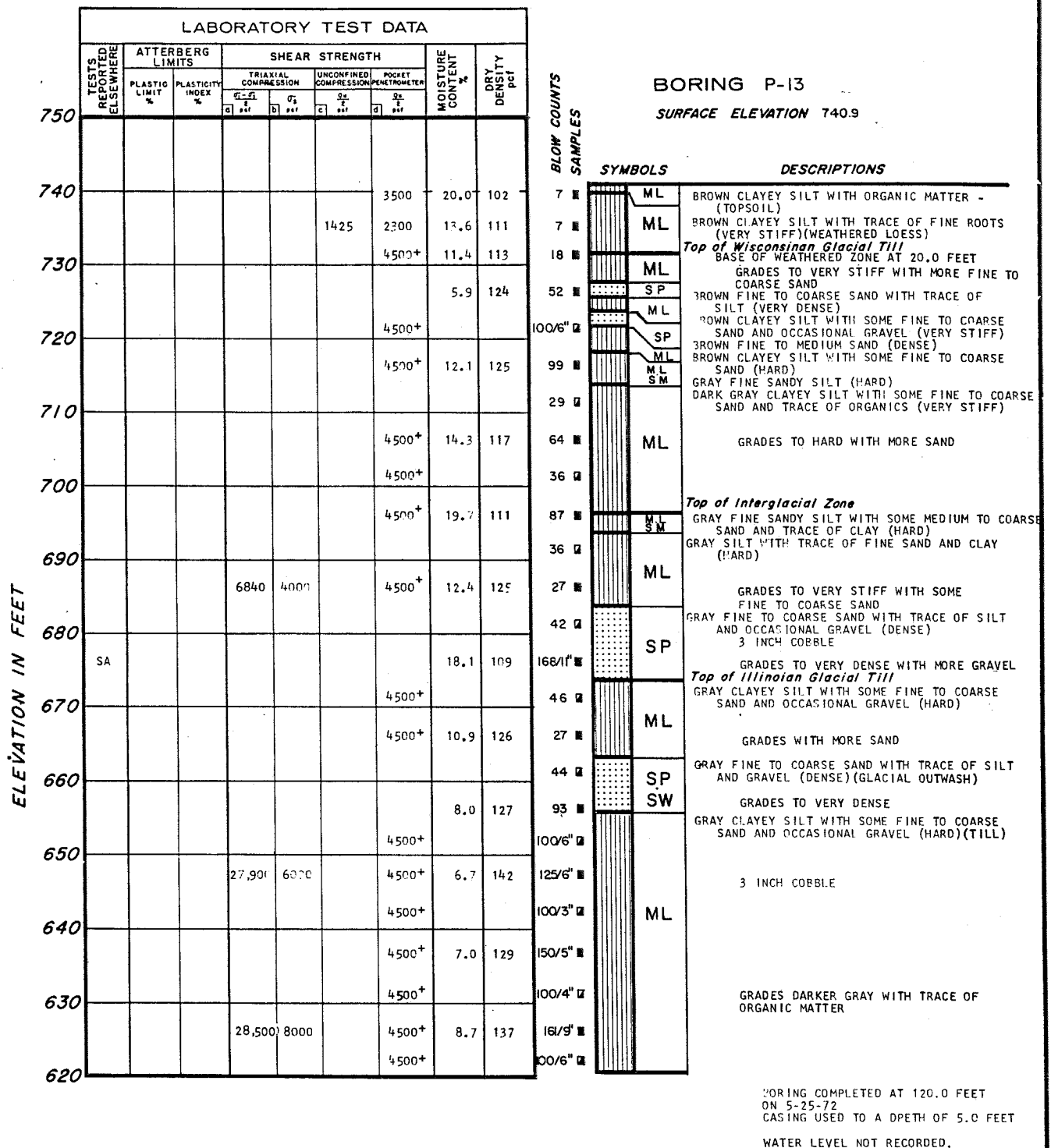


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FIGURE 2.5-29

LOG OF BORING P-12

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-30

LOG OF BORING P-13

ELEVATION IN FEET

LABORATORY TEST DATA									
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf	
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET PENETROMETER			
			$\frac{\sigma_1 - \sigma_3}{2}$ psi	σ_3 psi	$\frac{\sigma_u}{2}$ psi	S_u psi			
740							2400		
							400	18.4	109
730			2320	1000			2100	14.6	121
720									
	TX/DY		880	2500			4500	16.6	117
710									
							1200		
700							4000		
			5880	5000			4500 ⁺	17.2	102
690									
	C	12.5	12.5				1600	16.2	115
680	CHEM*								
			21,700	4000			4500 ⁺	8.1	139
670									
		11.0	4.0				4500 ⁺	5.1	142
660	SA								
	SA PERM						4500 ⁺	9.5	129
650							4500 ⁺		
							4500 ⁺		
640							4500 ⁺		
			> 15,000	9000			4500 ⁺	8.2	139
630							4500 ⁺		
	TX/DY		20,500	9000			4500 ⁺	8.3	139
620							4500 ⁺		
							4500 ⁺		
610	RES. TX/DY		26,300	9000			4500 ⁺	7.6	139
600	SHOCK TX/DY						4500 ⁺		
590							4500 ⁺		
580									

* ON WATER SAMPLE OBTAINED ON 10-7-72

BORING P-14
SURFACE ELEVATION 738.3

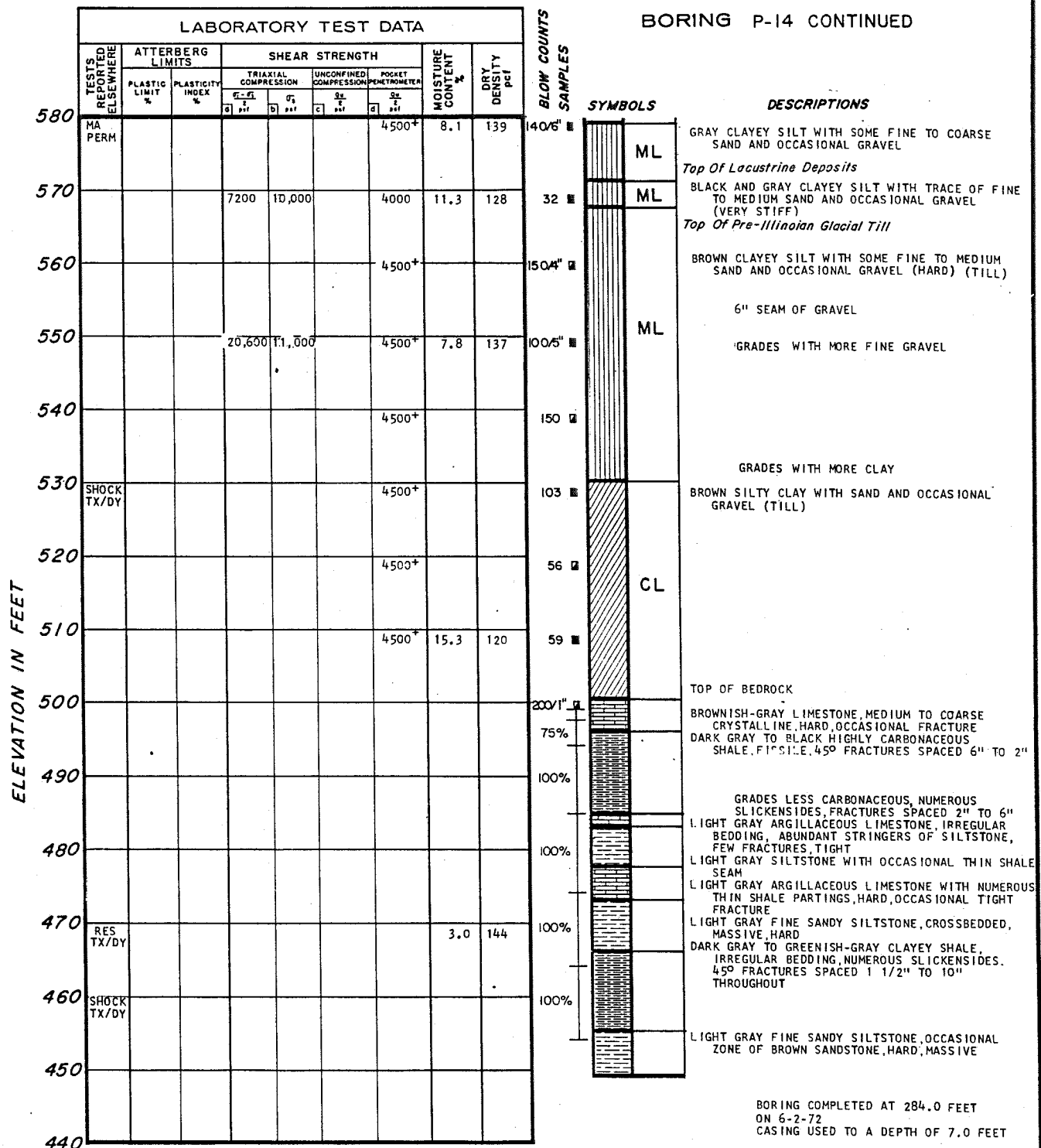
BLOW COUNTS
SAMPLES

SYMBOLS		DESCRIPTORS
8	DL	BROWN CLAYEY SILT WITH SOME ORGANICS - (TOPSOIL)
	ML	MOTTLED BROWN AND GRAY CLAYEY SILT (VERY STIFF) (WEATHERED LOESS)
2	ML	Top of Wisconsinan Glacial Till line to COARSE
8		BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (STIFF)
		BASE OF WEATHERED ZONE 17.0 FEET
35	ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND (STIFF)
65	ML	7" SEAM OF GRAY FINE TO MEDIUM SAND GRAY CLAYEY SILT WITH TRACE OF FINE SAND (HARD)
27		OCCASIONAL FINE SAND STRINGER
33	ML	GRAY CLAYEY SILT WITH SOME FINE TO MEDIUM SAND (HARD)
		2 INCH SEAM OF BROWN FINE SAND
10	CL	GRAY SILTY CLAY WITH TRACE OF FINE TO MEDIUM SAND (STIFF)
11	ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (STIFF)
16		Top of Interglacial Zone
14	ML	DARK GRAYISH-BROWN CLAYEY SILT WITH ORGANIC ODOR
12	CL	DARK GRAY SILTY CLAY WITH TRACE OF FINE SAND (STIFF)
		GRADES WITH SOME FINE TO MEDIUM SAND
100/6"		Top of Illinoian Glacial Till
77	ML	GRAY FINE SANDY SILT WITH SOME MEDIUM TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)
118	SM	
		OCCASIONAL FINE SAND SEAM
106		GRADES CLAYEY
35	SW	BROWN FINE TO MEDIUM SAND WITH TRACE OF SILT (DENSE) (GLACIAL OUTWASH)
100/5"	SM	
		GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (TILL)
100/6"		
100/4"		
140/6"		
100/4"		
160/10"		
105/6"	ML	
127		TRACE OF ORGANICS
100/5"		
100/6"		GRADES WITH LESS COARSE SAND
155	SW	GRAY FINE TO COARSE SAND WITH GRAVEL AND TRACE OF SILT (VERY DENSE)

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-31

LOG OF BORING P-14
(SHEET 1 of 2)

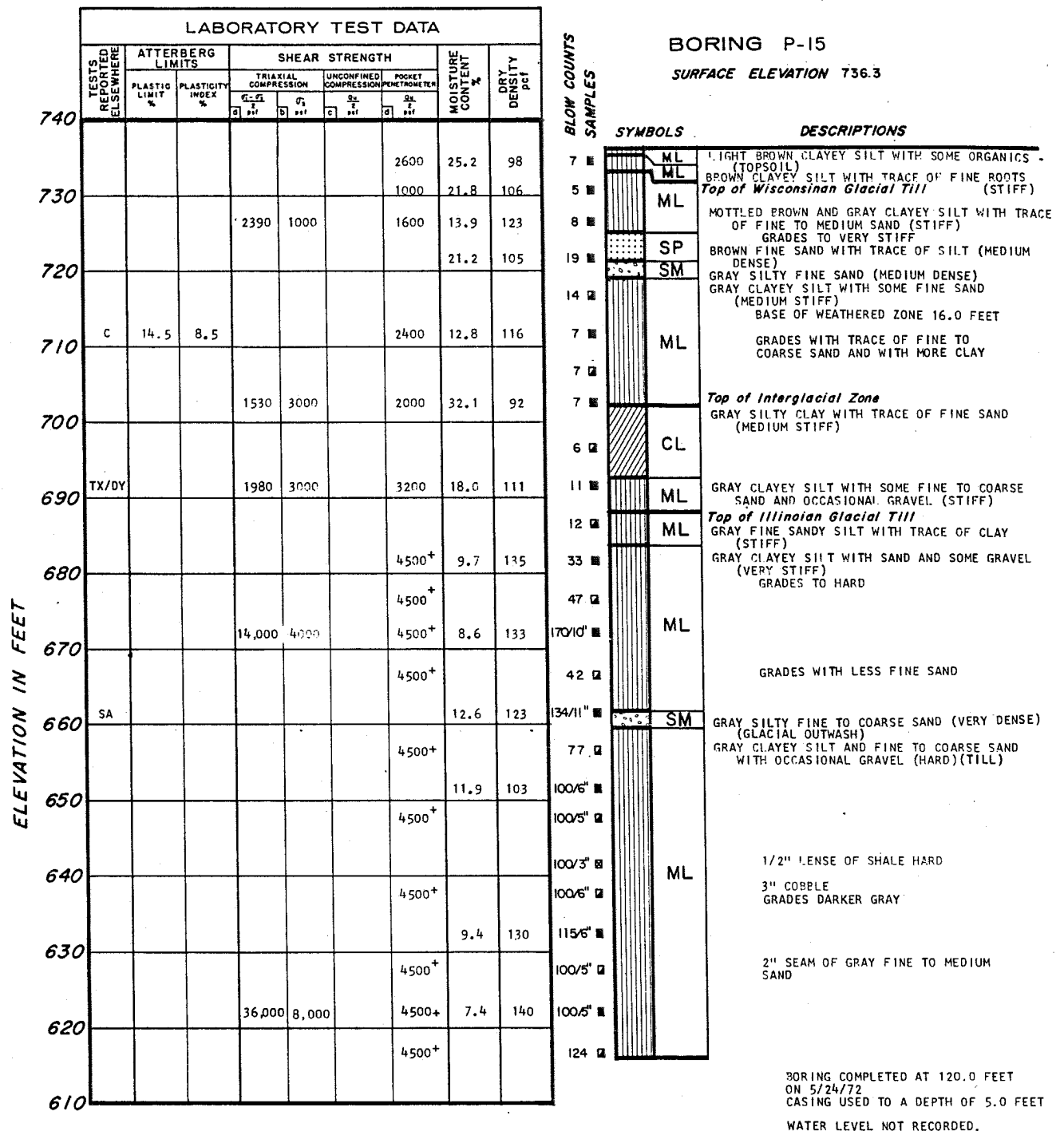


**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-31

LOG OF BORING P-14

(SHEET 2 of 2)

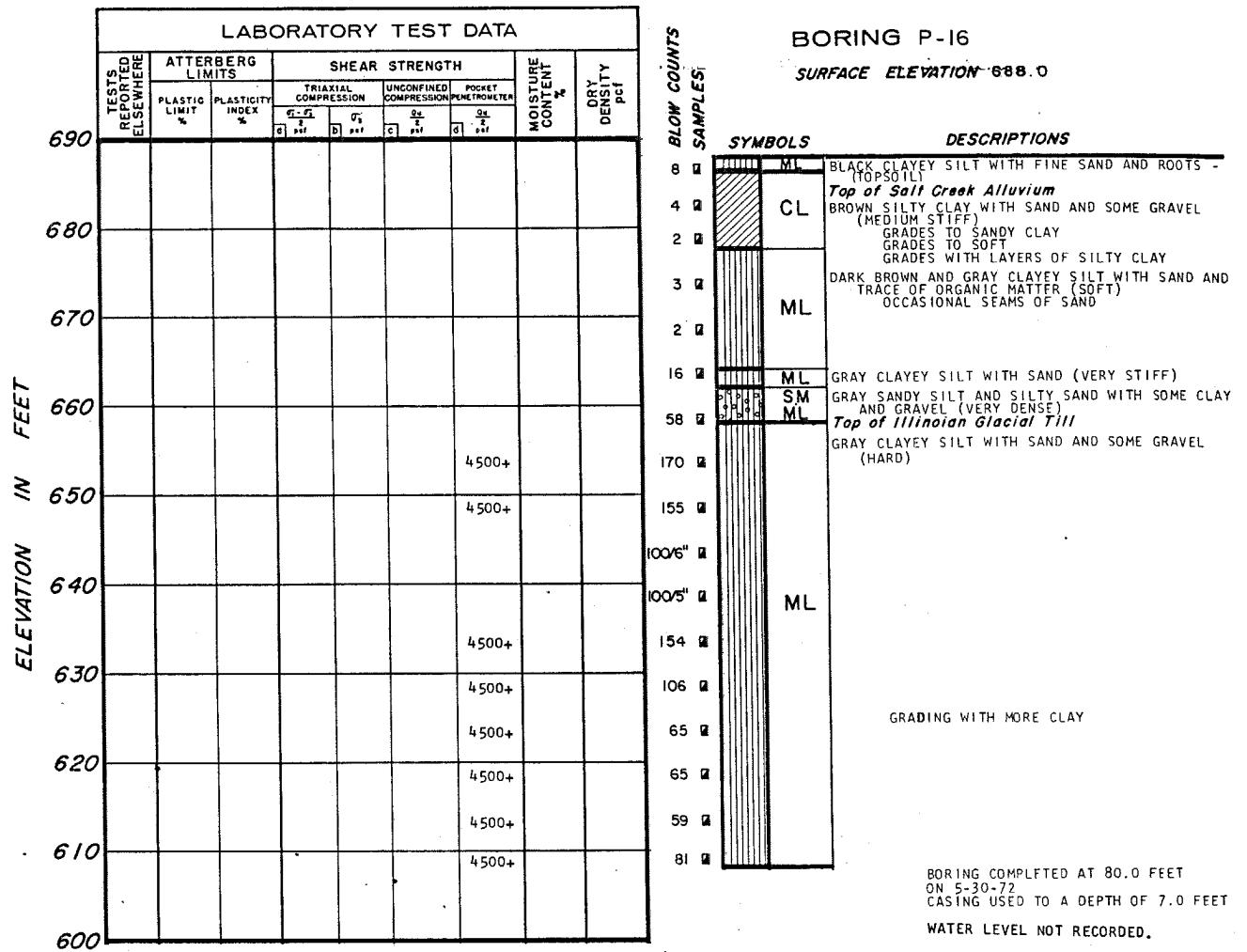


NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-32

LOG OF BORING P-15



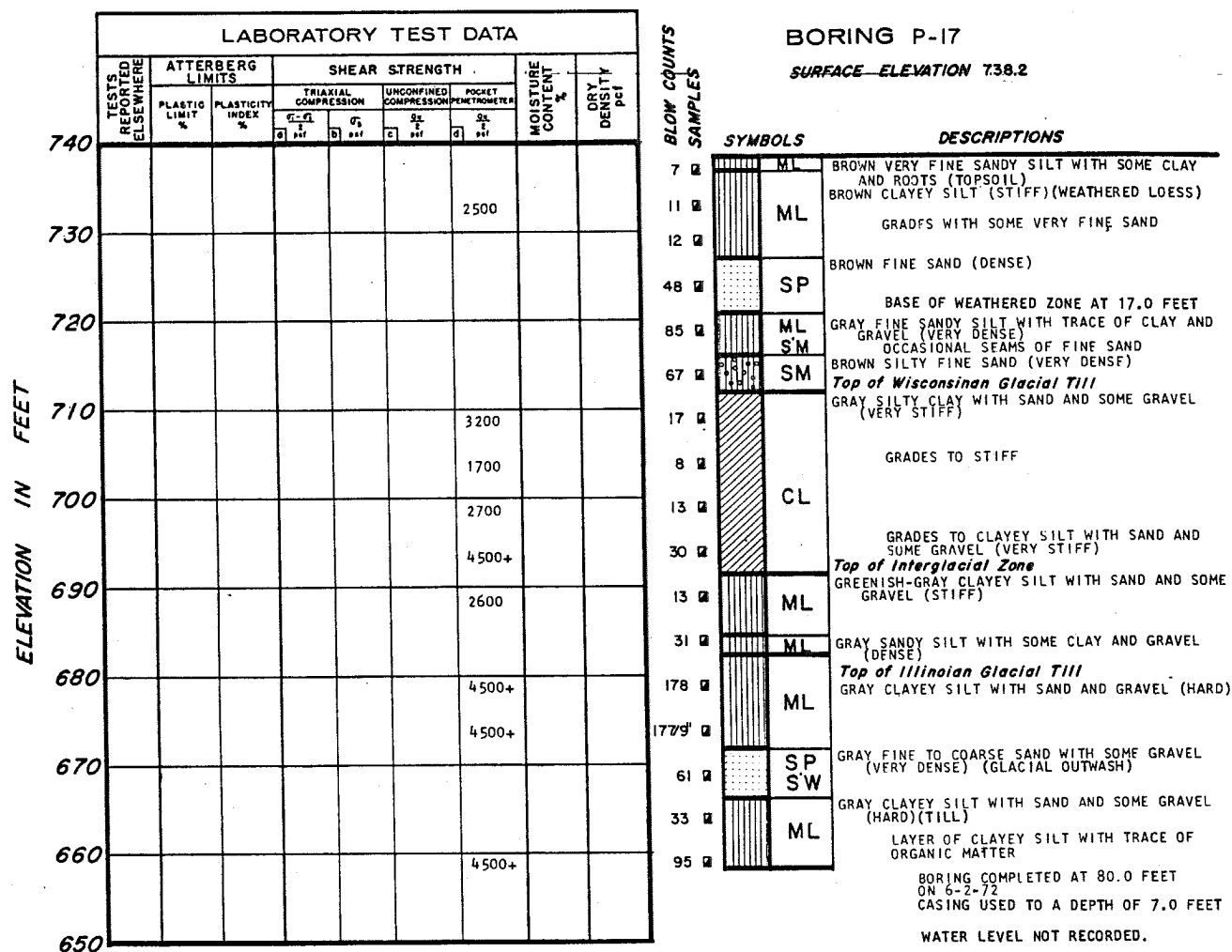
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

**CLINTON POWER STATION
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FIGURE 2.5-33

LOG OF BORING P-16



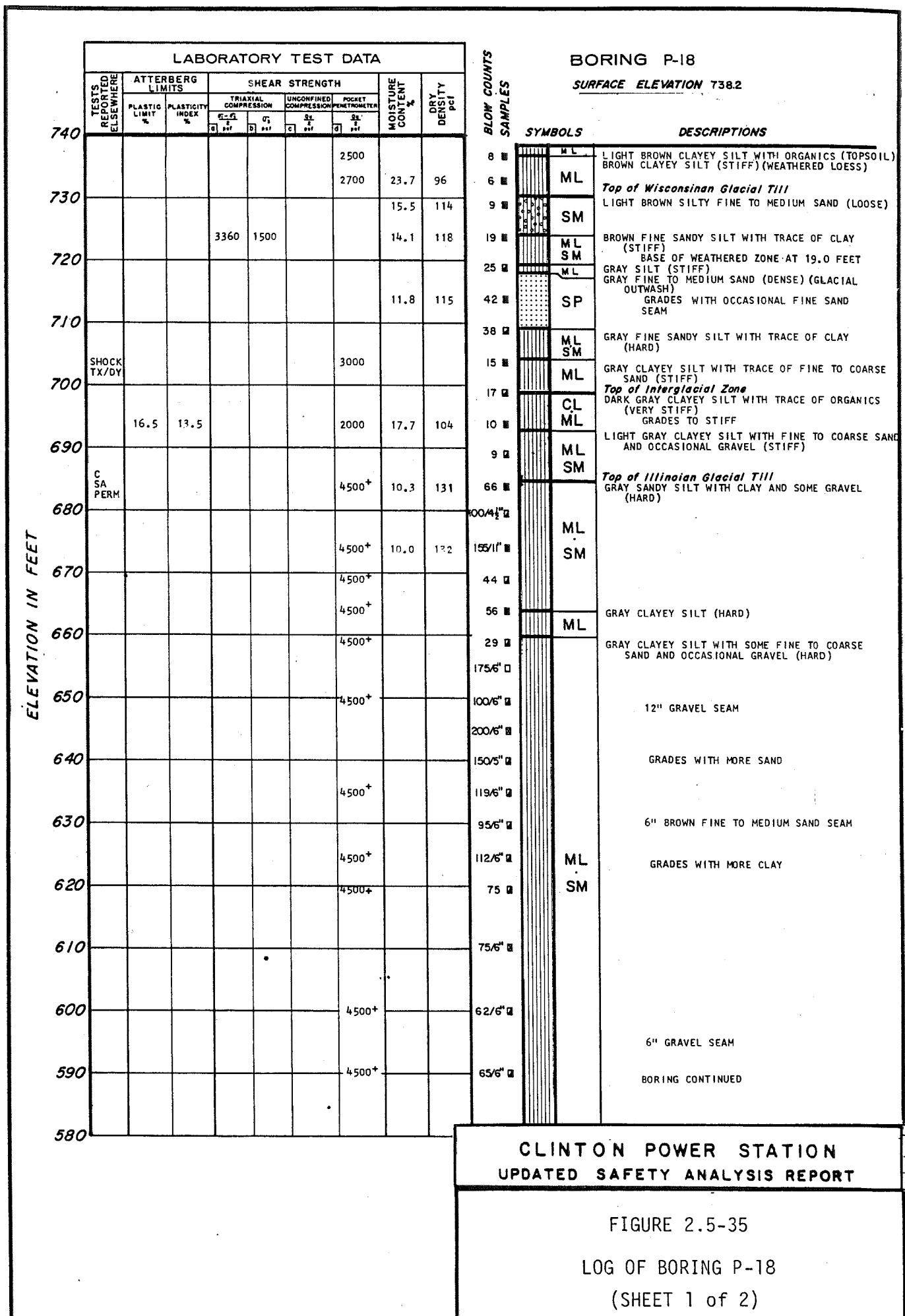
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

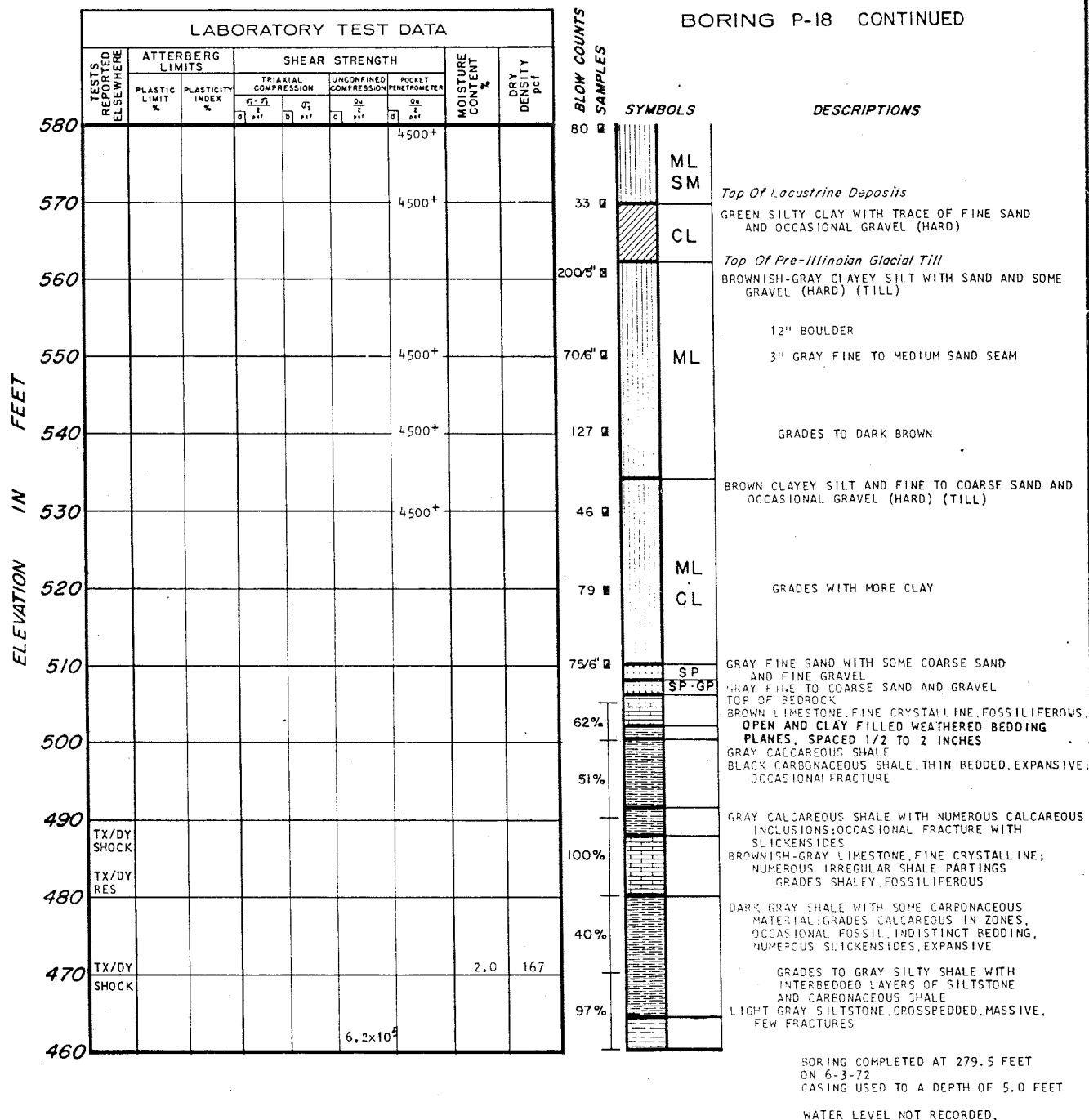
FIGURE 2.5-34

LOG OF BORING P-17

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

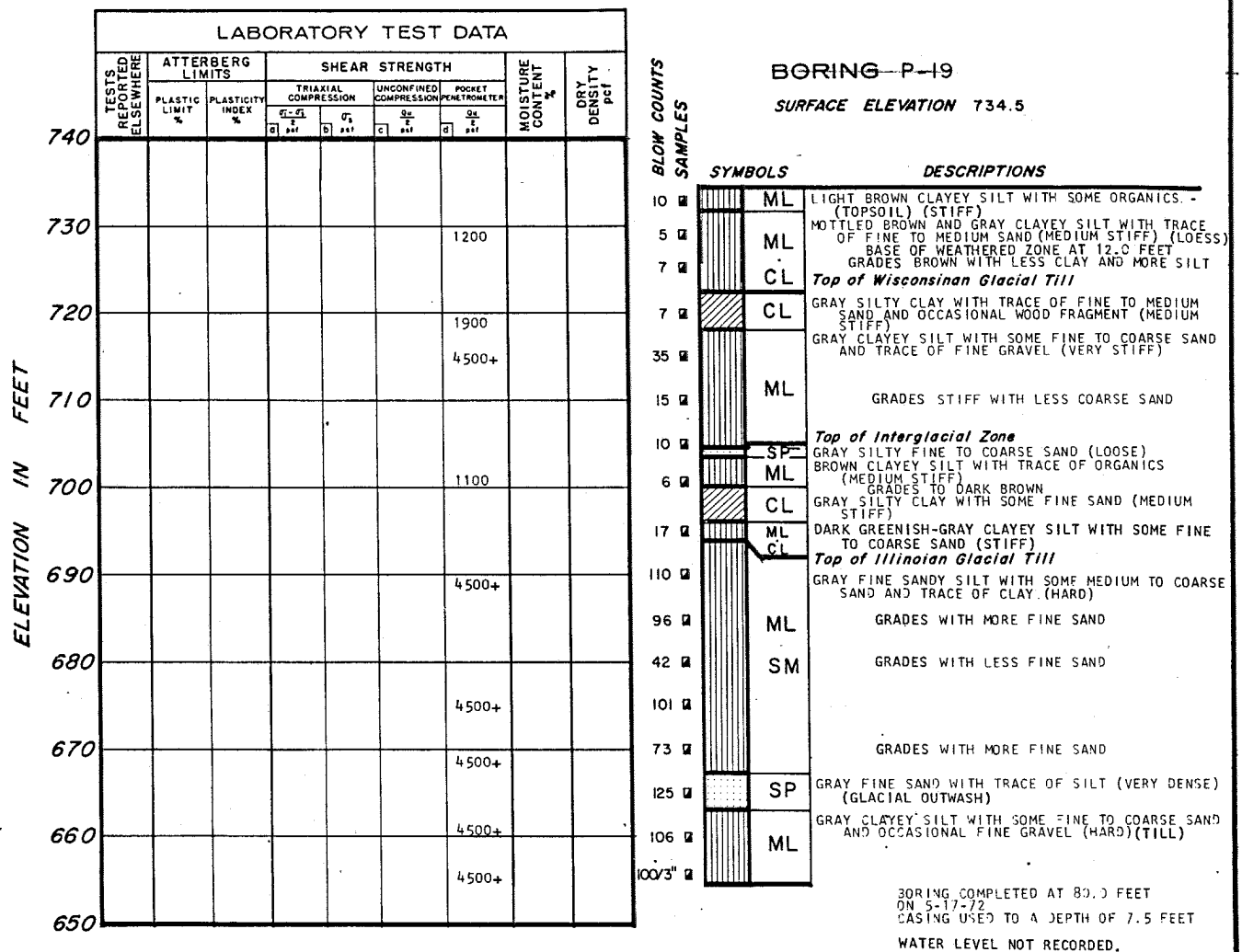




**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-35
LOG OF BORING P-18
(SHEET 2 of 2)

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



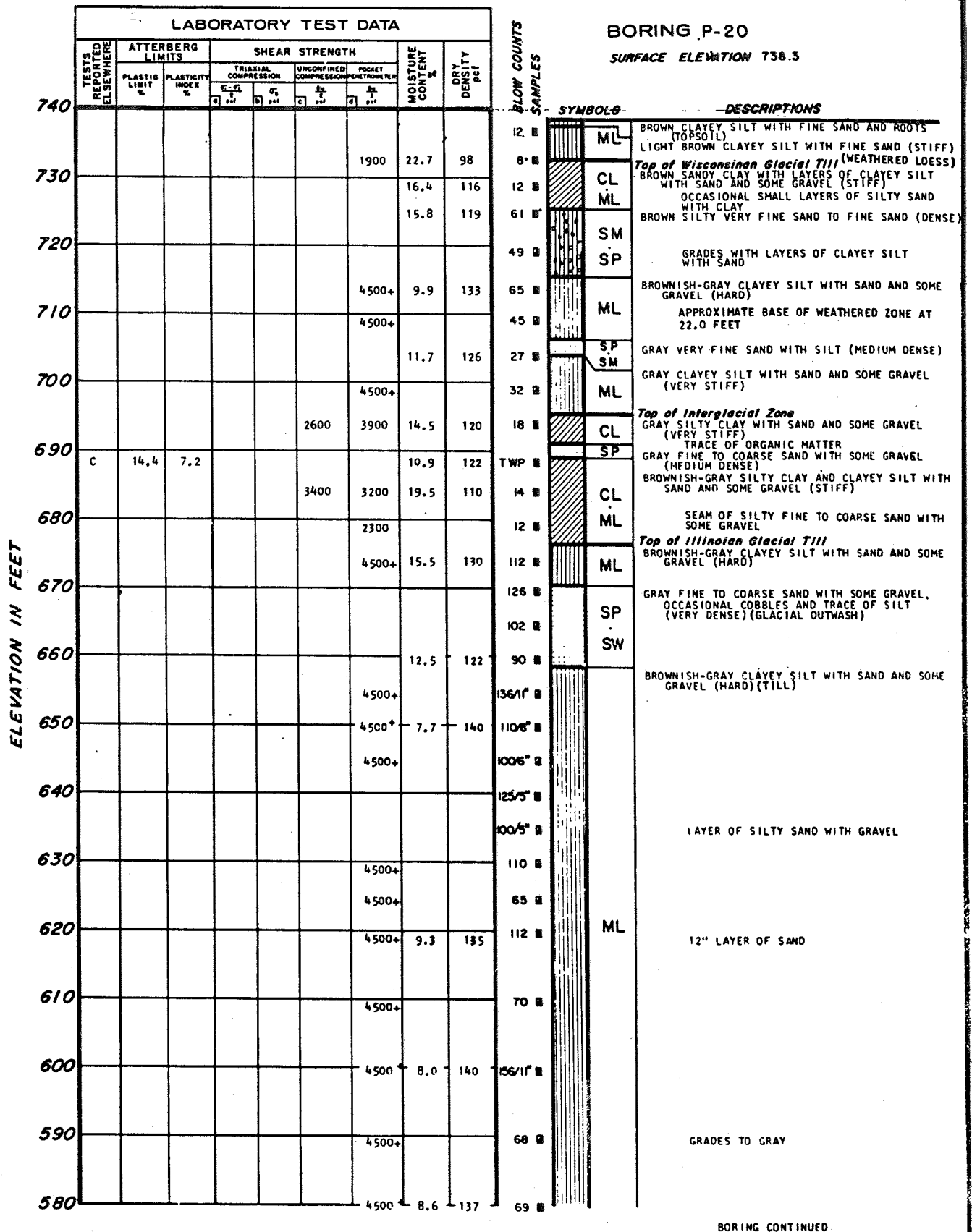
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
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FIGURE 2.5-36

LOG OF BORING P-19



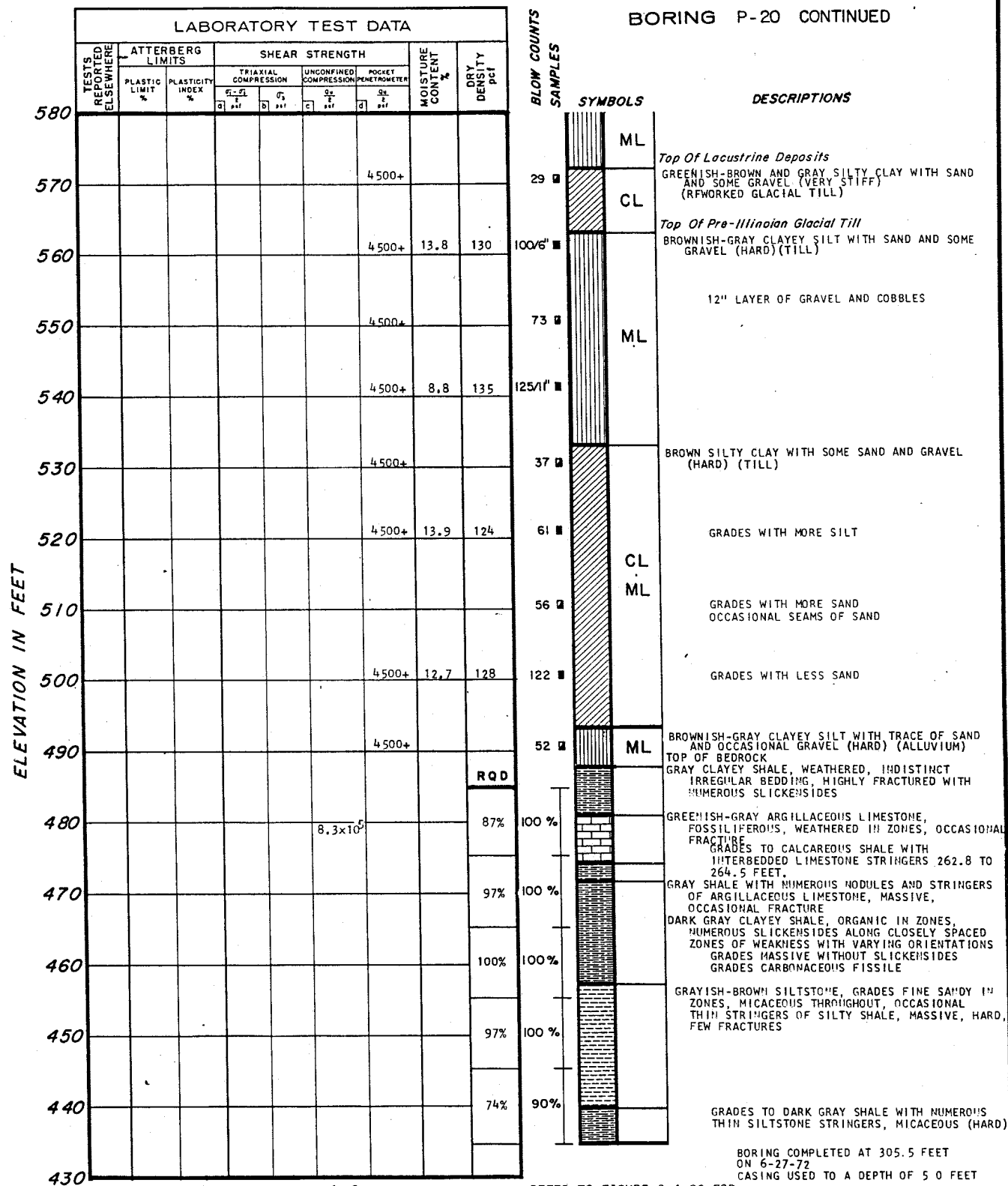
BORING CONTINUED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-37

LOG OF BORING P-20

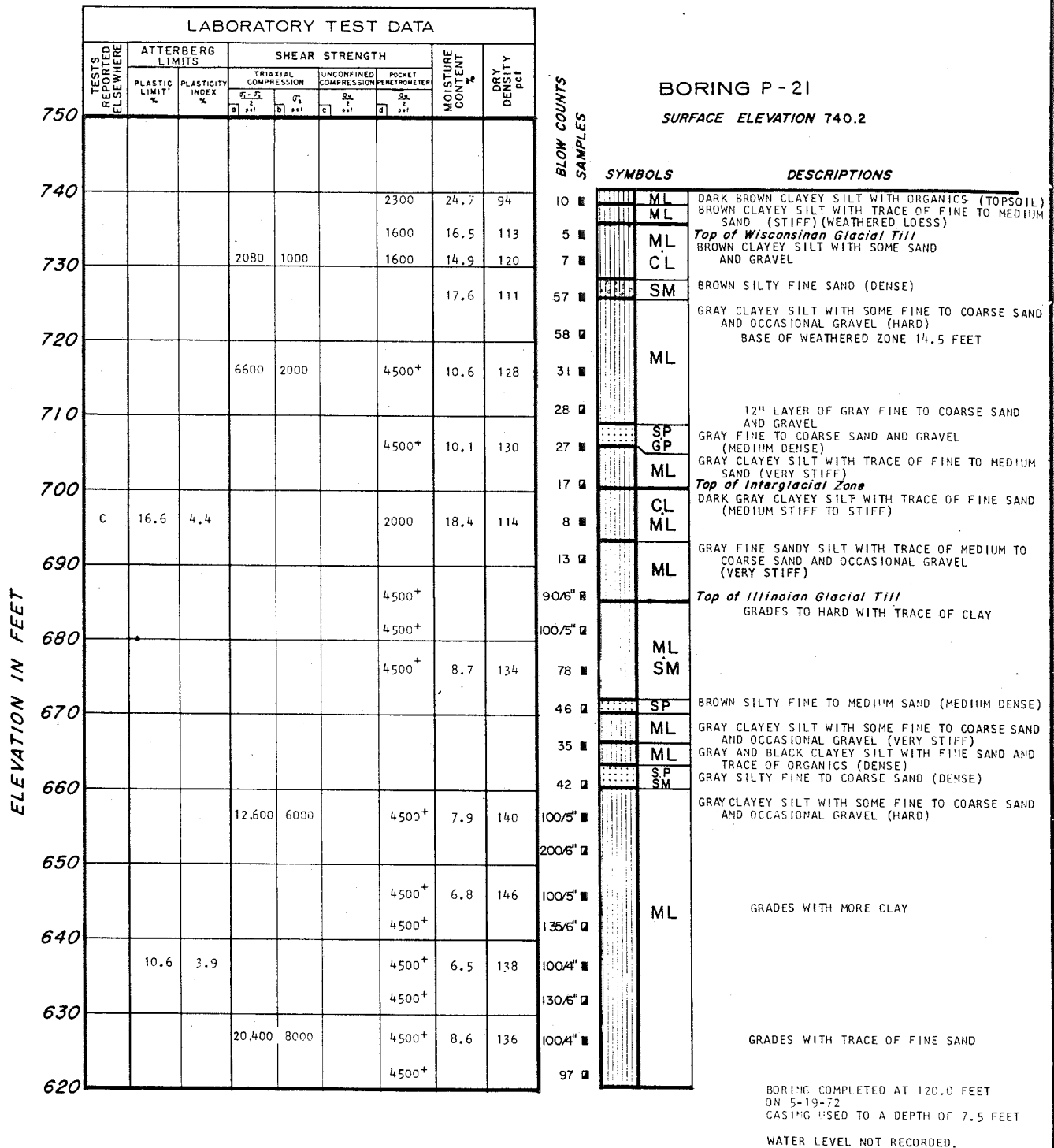
(SHEET 1 of 2)



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-37

LOG OF BORING P-20
(SHEET 2 of 2)



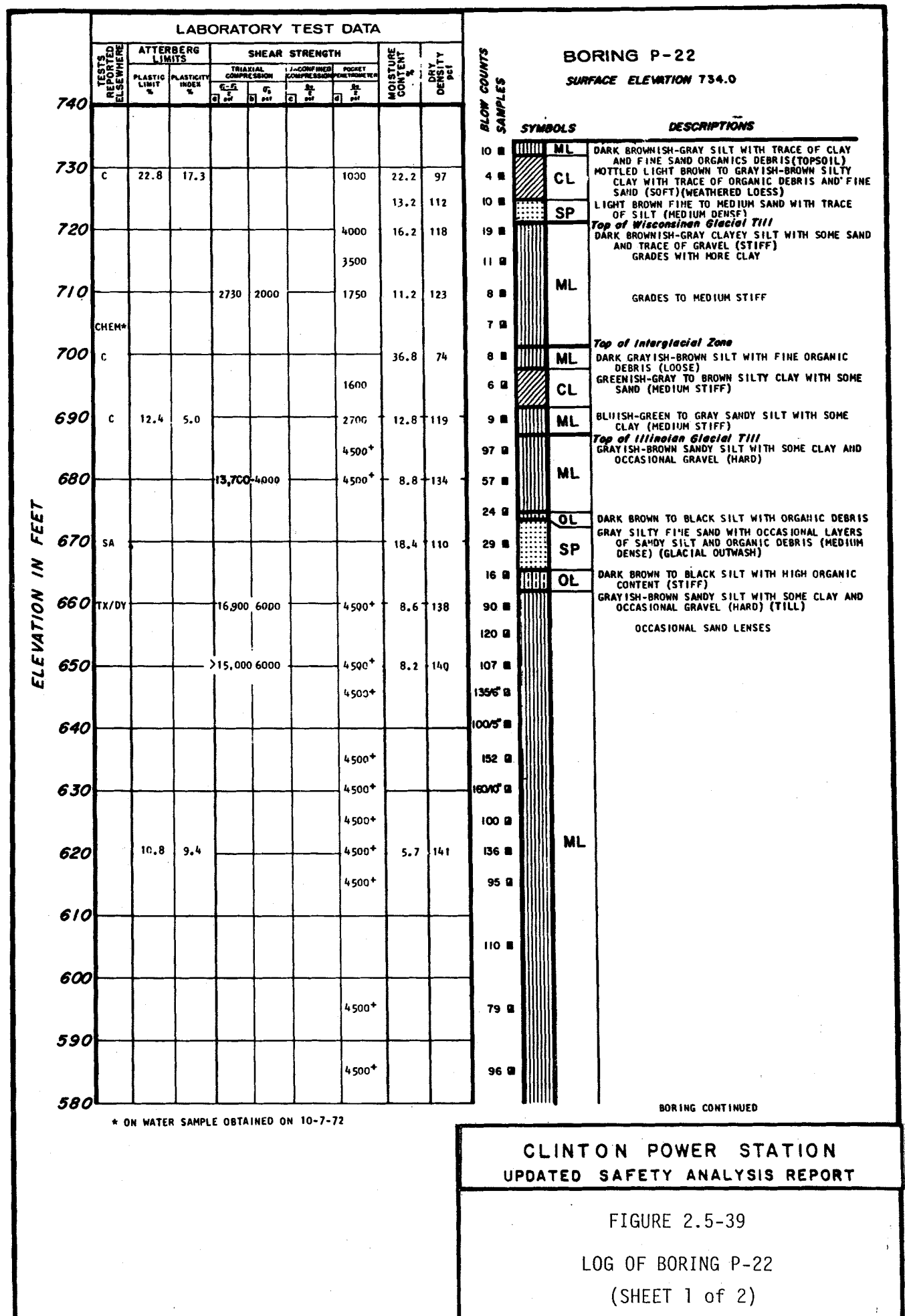
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FIGURE 2.5-38

LOG OF BORING P-21

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



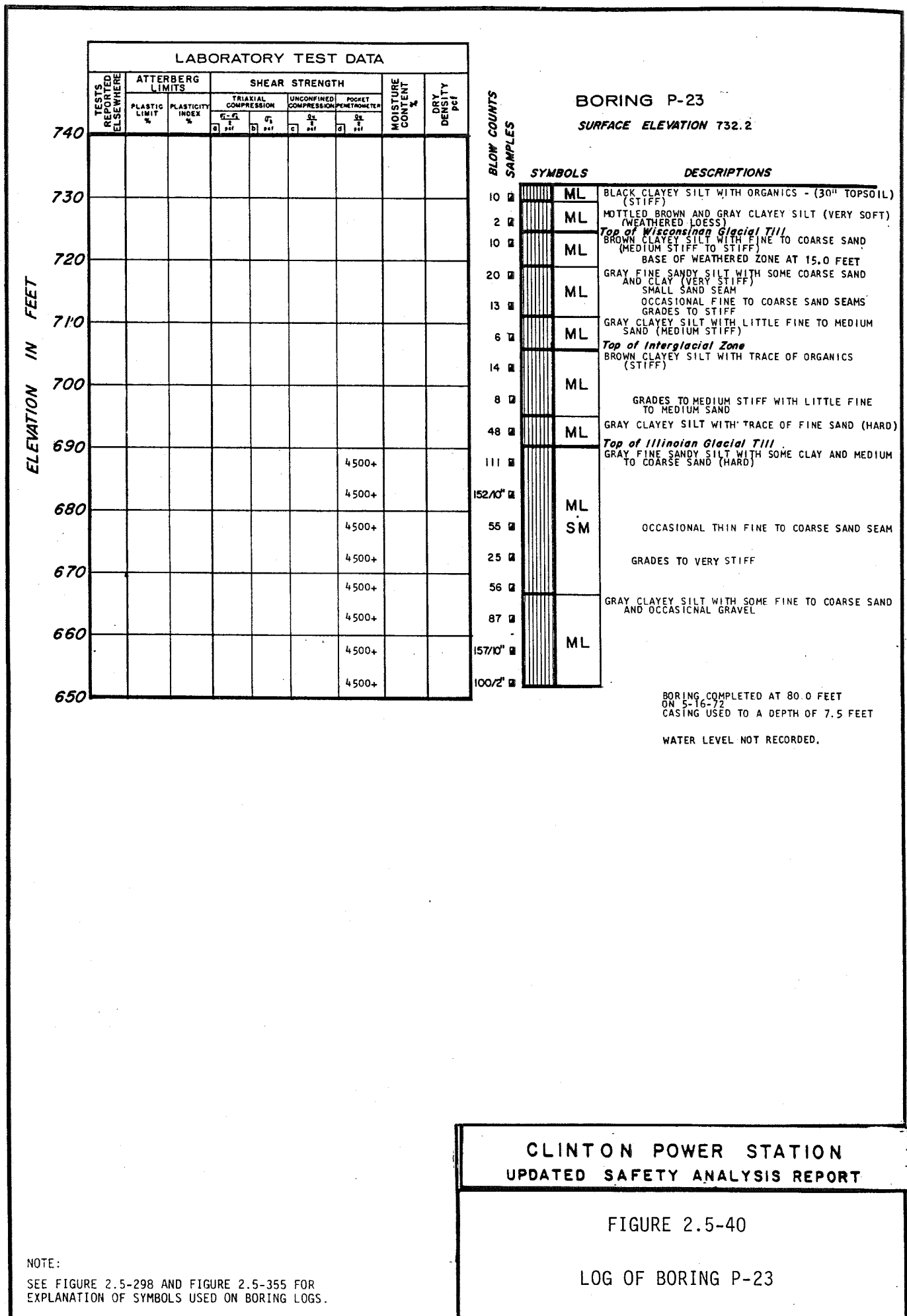
LABORATORY TEST DATA										BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf				
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET PENETROMETER						
			$\frac{P_1 - P_2}{2}$ psi	q_1 psi	q_u psi	$\frac{Q_u}{2}$ psi						
580			19,500	11,000			8.5	137	98	ML	Top Of Lacustrine Deposits	
570									34	CL	GREENISH-BROWN SILTY CLAY WITH SOME SAND (HARD)	
560											Top Of Pre-Illinoian Glacial Till	
550						4500+	8.3	139	156		GRAYISH-BROWN SANDY SILT WITH SOME CLAY AND OCCASIONAL FINE GRAVEL (HARD) TILL GRADES TO BROWNISH-GRAY COLOR	
540						4500+			112			
530						4500+	9.6	136	138	ML	GRADES TO BROWN COLOR WITH INCREASED CLAY CONTENT	
520						4500+			79			
510						4500+			118		SAND AND FINE GRAVEL FROM 222.0 TO 227.5 FEET	
500						4500+			67		BOULDERS AND GRAVEL	
490											TOP OF BEDROCK	
480					4.5 x 10.5				96%		GRAY CALCAREOUS SHALE WITH NUMEROUS CALCAREOUS INCLUSIONS, MASSIVE, WEATHERED, OCCASIONAL FRACTURE GRADES TO GREENISH-GRAY COLOR, NUMEROUS SLICKENSIDES ALONG FRACTURE PLANES	
470									44%		INTERBEDDED IRREGULAR AND GRADATIONAL ZONES OF BROWN LIMESTONE AND GREENISH-GRAY CALCAREOUS SHALE, FOSSILIFEROUS THROUGHOUT WEATHERED	
460									98%		DARK GRAY CARBONACEOUS SHALE, IRREGULAR, INDISTINCT BEDDING, NUMEROUS SLICKENSIDES ALONG RANDOM ORIENTED FRACTURE PLANES GRADES SILTY, NON-CARBONACEOUS	
450									98%		GRAY SILTSTONE WITH OCCASIONAL NODULE OF BROWN LIMESTONE, OCCASIONAL FRACTURE	
440									100%		LIGHT GRAY SILTY SHALE WITH INTERBEDDED IRREGULAR LAYERS AND NODULES OF BROWN LIMESTONE, SOME FRACTURED ZONES WITH NUMEROUS SLICKENSIDES	
											LIGHT GRAY SILTSTONE, MASSIVE, CROSS BEDDED; OCCASIONAL THIN LAYERS OF BROWN SANDSTONE; NUMEROUS THIN SHALE STRINGERS, OCCASIONAL FRACTURE	
											LIGHT GRAY SHALE 283.2 TO 284.2 FEET	
											DARK GRAY SILTY SHALE WITH NUMEROUS THIN SILTSTONE STRINGERS	

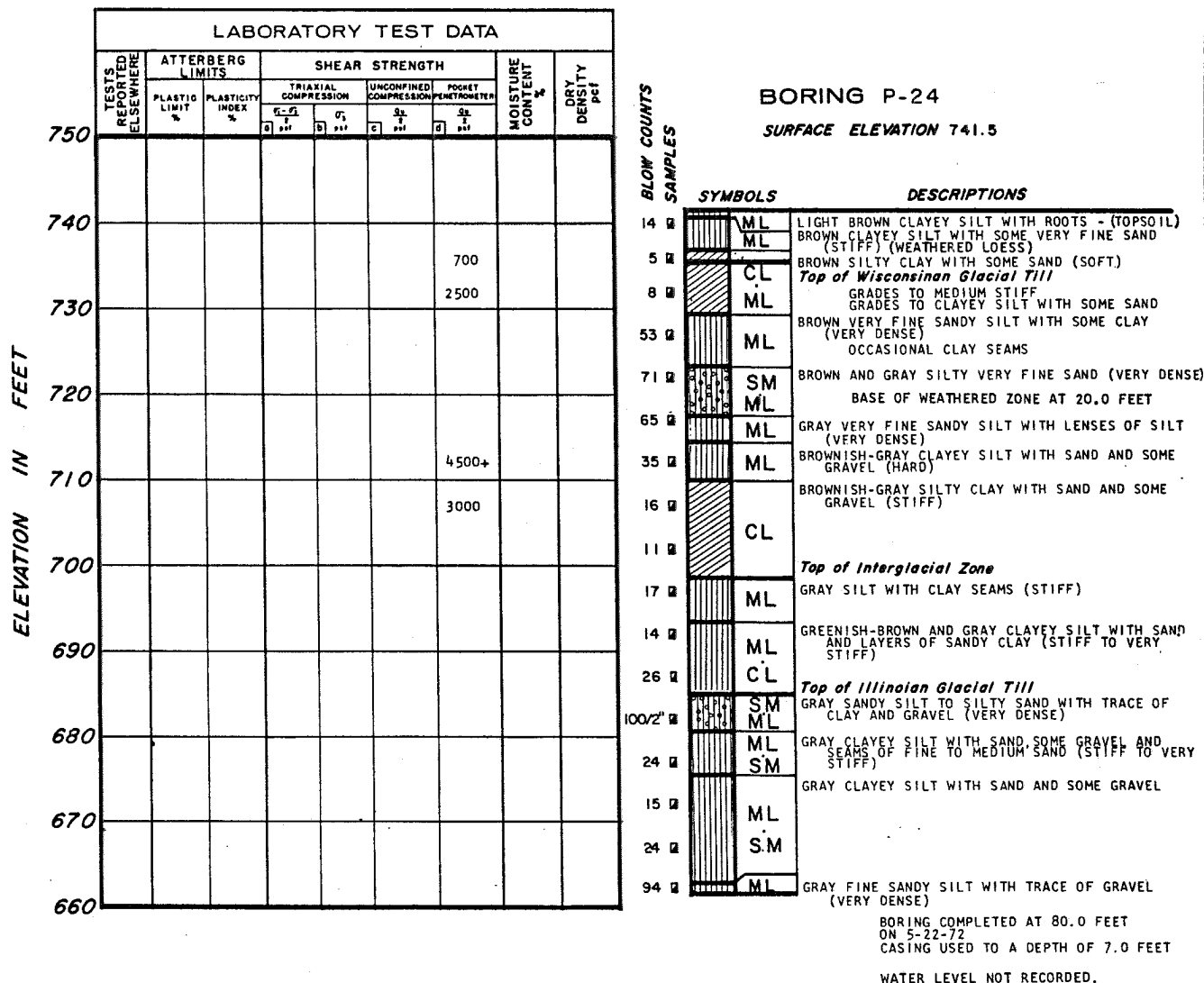
BORING COMPLETED AT 293.5 FEET
ON 6-7-72
CASING USED TO A DEPTH OF 5.0 FEET

<u>DEPTH BELOW GROUND SURFACE IN FEET</u>	<u>DATE</u>
18.2	8-15-72
18.4	8-29-72

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

(SHEET 2 of 2)





BORING P-24
SURFACE ELEVATION 741.5

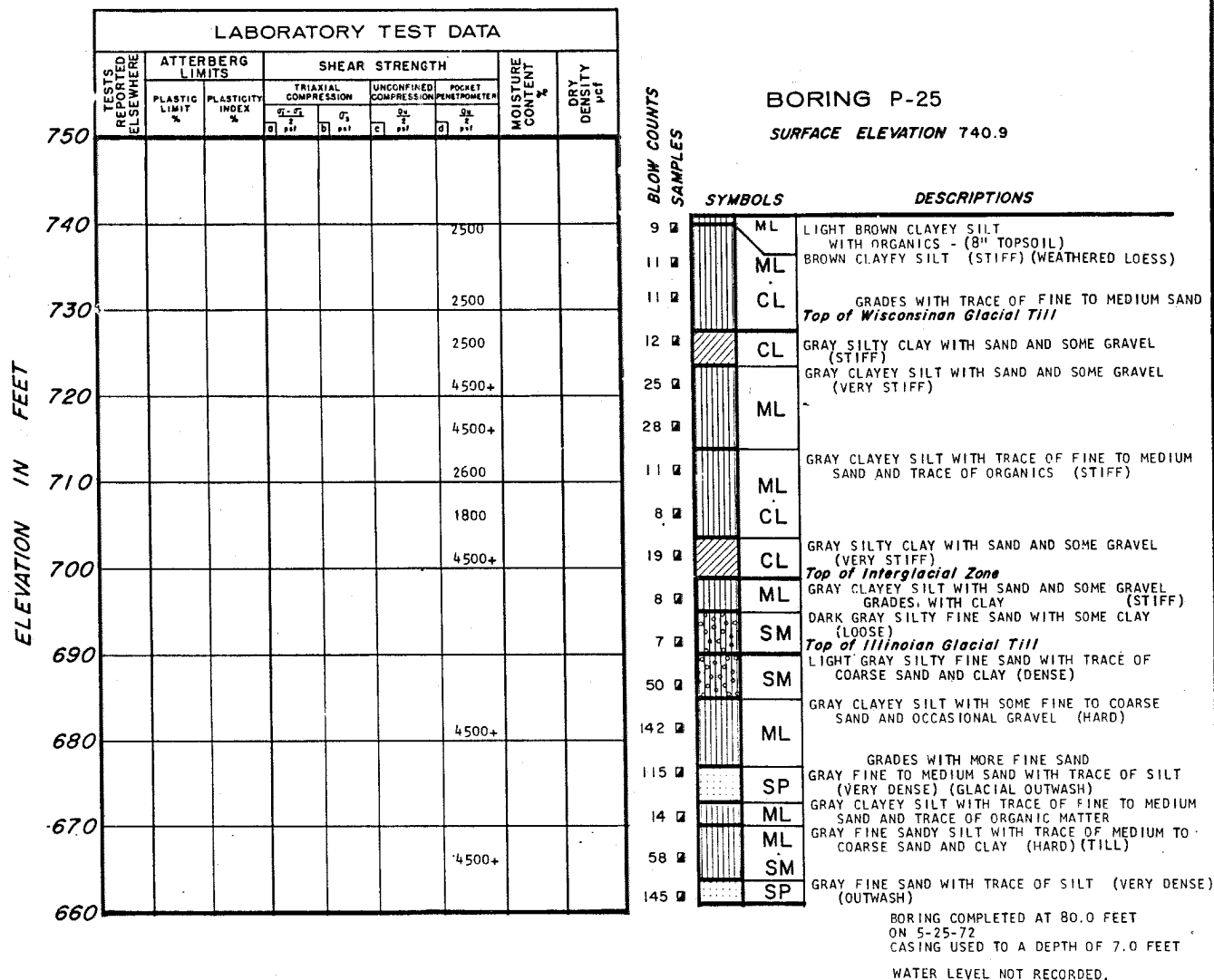
BLOW COUNTS
SAMPLES

	SYMBOLS	DESCRIPTIONS
14	ML	LIGHT BROWN CLAYEY SILT WITH ROOTS - (TOPSOIL)
5	ML	BROWN CLAYEY SILT WITH SOME VERY FINE SAND (STIFF) (WEATHERED LOESS)
8	CL	BROWN SILTY CLAY WITH SOME SAND (SOFT)
		<i>Top of Wisconsinian Glacial Till</i>
	ML	GRADES TO MEDIUM STIFF
53	ML	GRADES TO CLAYEY SILT WITH SOME SAND (VERY DENSE)
71	ML	BROWN VERY FINE SANDY SILT WITH SOME CLAY OCCASIONAL CLAY SEAMS
65	SM	BROWN AND GRAY SILTY VERY FINE SAND (VERY DENSE)
	ML	BASE OF WEATHERED ZONE AT 20.0 FEET
35	ML	GRAY VERY FINE SANDY SILT WITH LENSES OF SILT (VERY DENSE)
16	ML	BROWNISH-GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
11	CL	BROWNISH-GRAY SILTY CLAY WITH SAND AND SOME GRAVEL (STIFF)
		<i>Top of Interglacial Zone</i>
17	ML	GRAY SILT WITH CLAY SEAMS (STIFF)
14	ML	GREENISH-BROWN AND GRAY CLAYEY SILT WITH SAND AND LAYERS OF SANDY CLAY (STIFF TO VERY STIFF)
26	CL	
		<i>Top of Illinoian Glacial Till</i>
100/2'	SM	GRAY SANDY SILT TO SILTY SAND WITH TRACE OF CLAY AND GRAVEL (VERY DENSE)
24	ML	GRAY CLAYEY SILT WITH SAND, SOME GRAVEL AND SEAMS OF FINE TO MEDIUM SAND (STIFF TO VERY STIFF)
15	ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL
24	SM	
94	ML	GRAY FINE SANDY SILT WITH TRACE OF GRAVEL (VERY DENSE)

BORING COMPLETED AT 80.0 FEET
ON 5-22-72
CASING USED TO A DEPTH OF 7.0 FEET
WATER LEVEL NOT RECORDED.

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



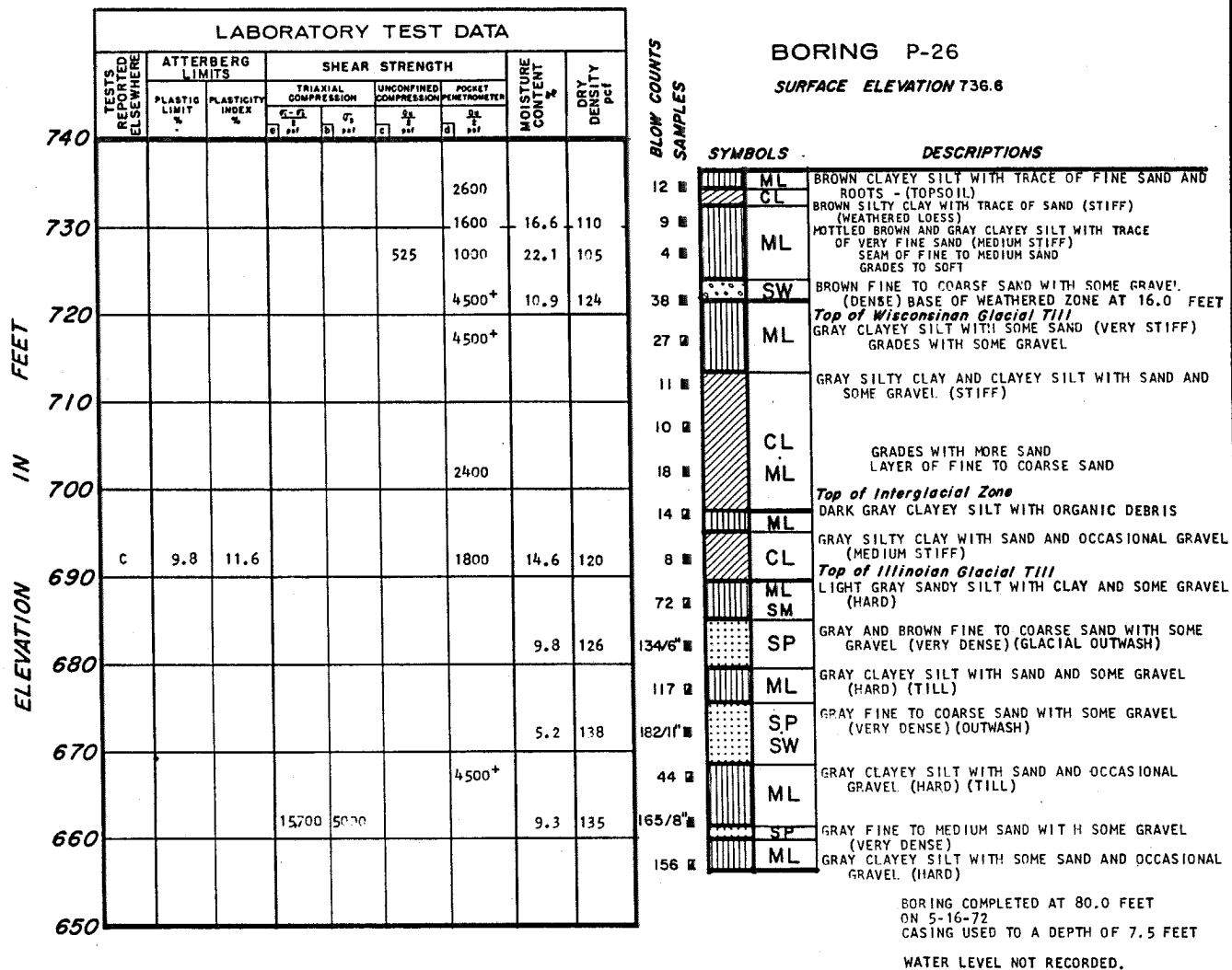
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-42-

LOG OF BORING P-25

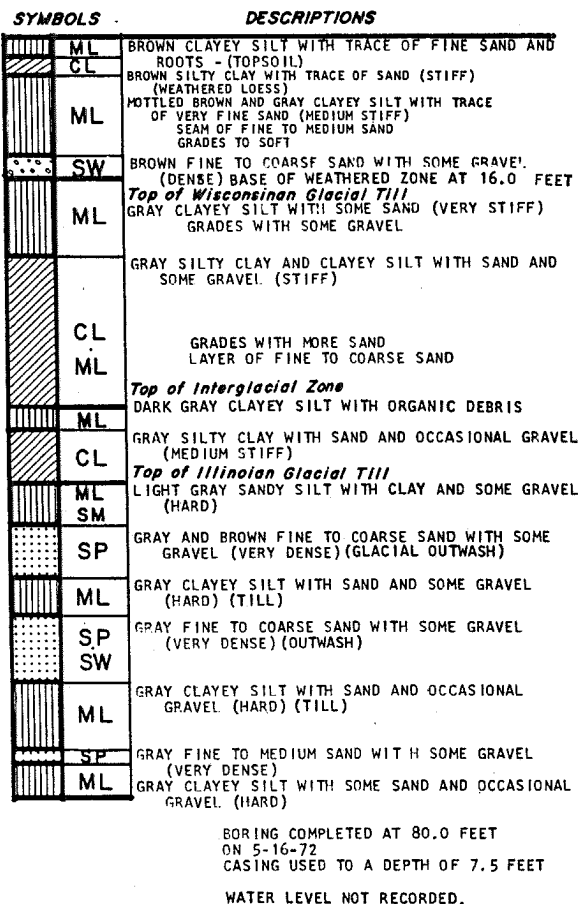
NOTE:

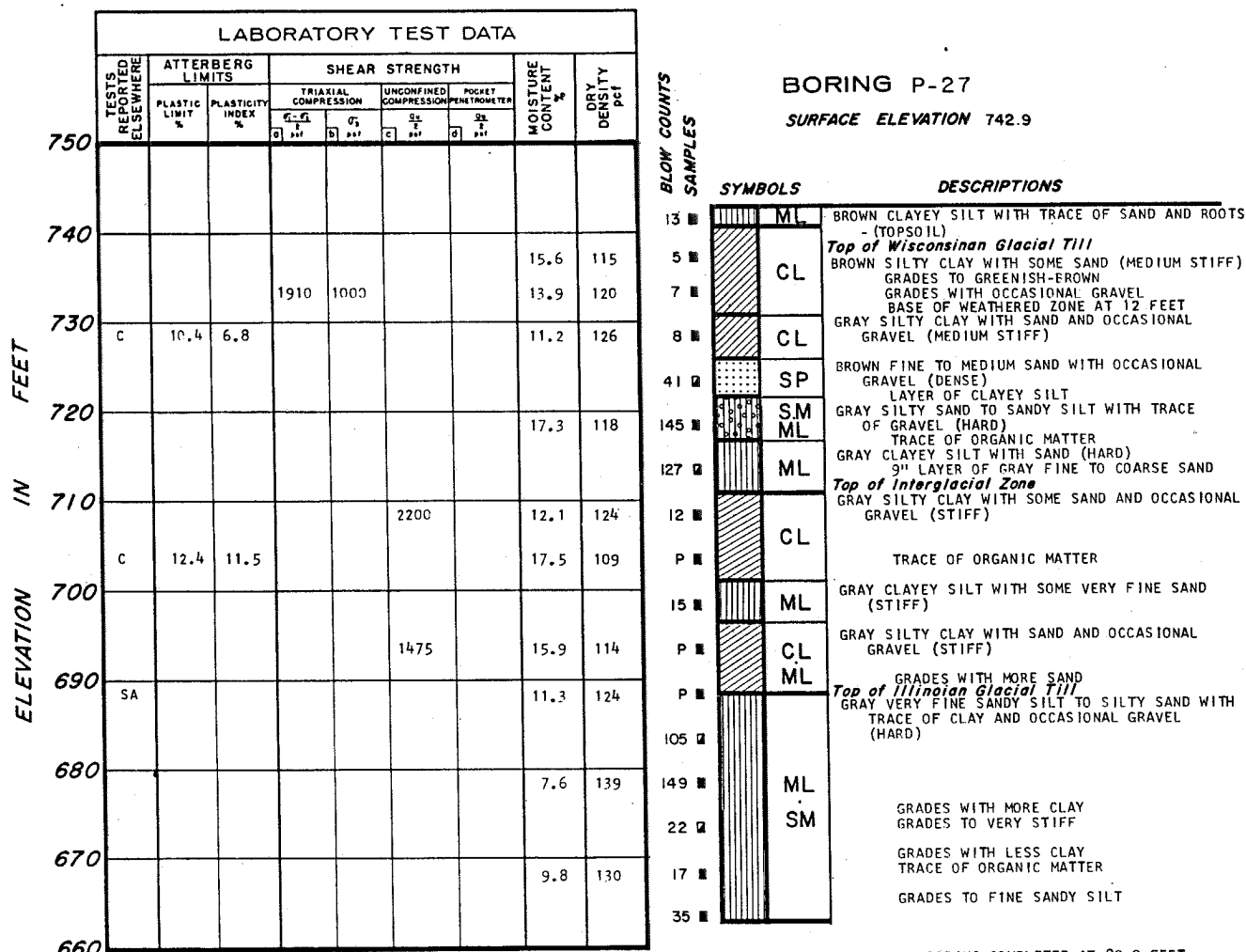
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



BORING P-26
SURFACE ELEVATION 736.8

BLOW COUNTS
SAMPLES





PIEZOMETER INSTALLED ON 6-6-72
TIP ELEVATION 685.4

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
26.5	8-15-72
26.7	8-29-72

REFER TO FIGURE 2.4-36 FOR
WATER LEVEL OBSERVATIONS.

BORING COMPLETED AT 80.0 FEET
ON 6-6-72
CASING USED TO A DEPTH OF 7.0 FEET

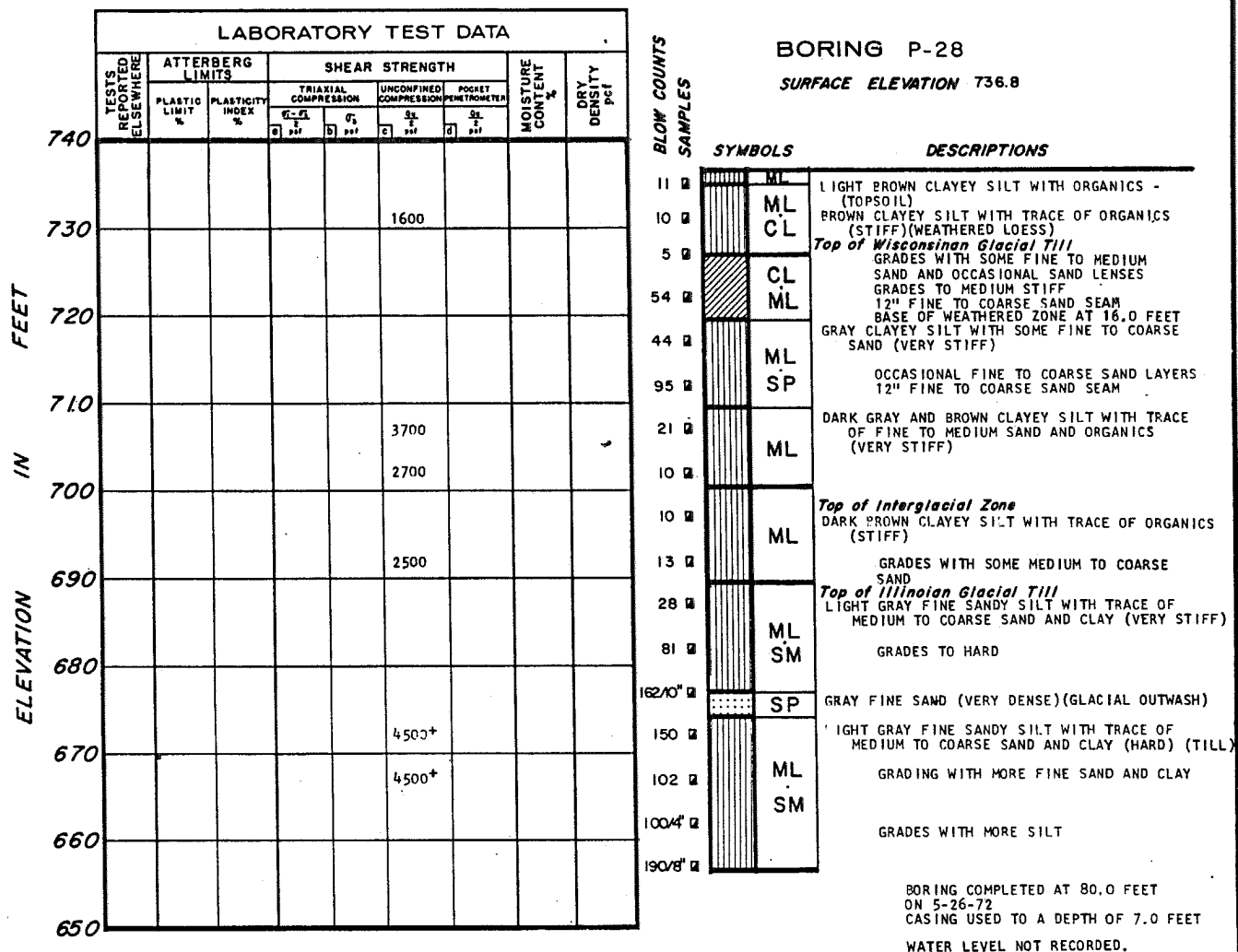
CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-44

LOG OF BORING P-27

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



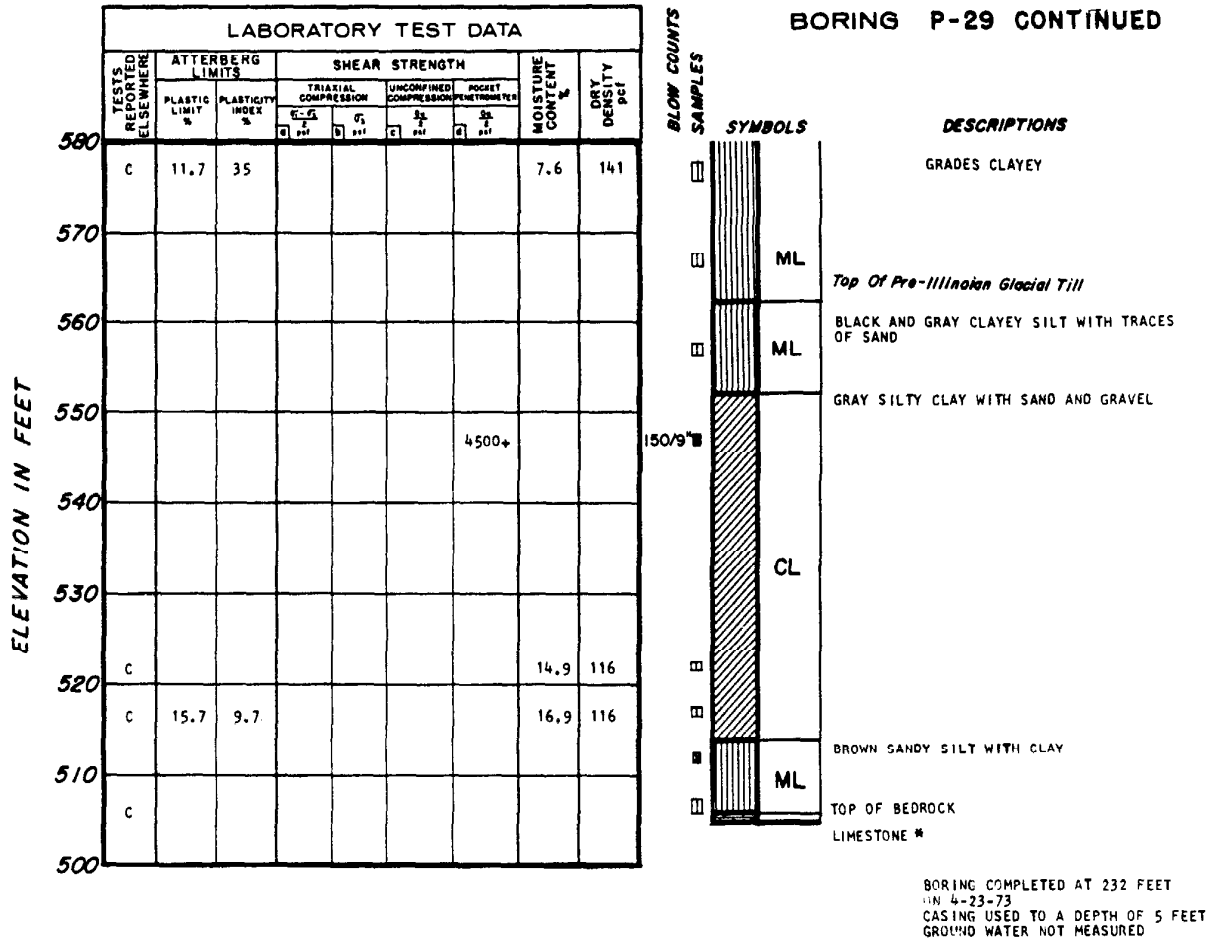
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

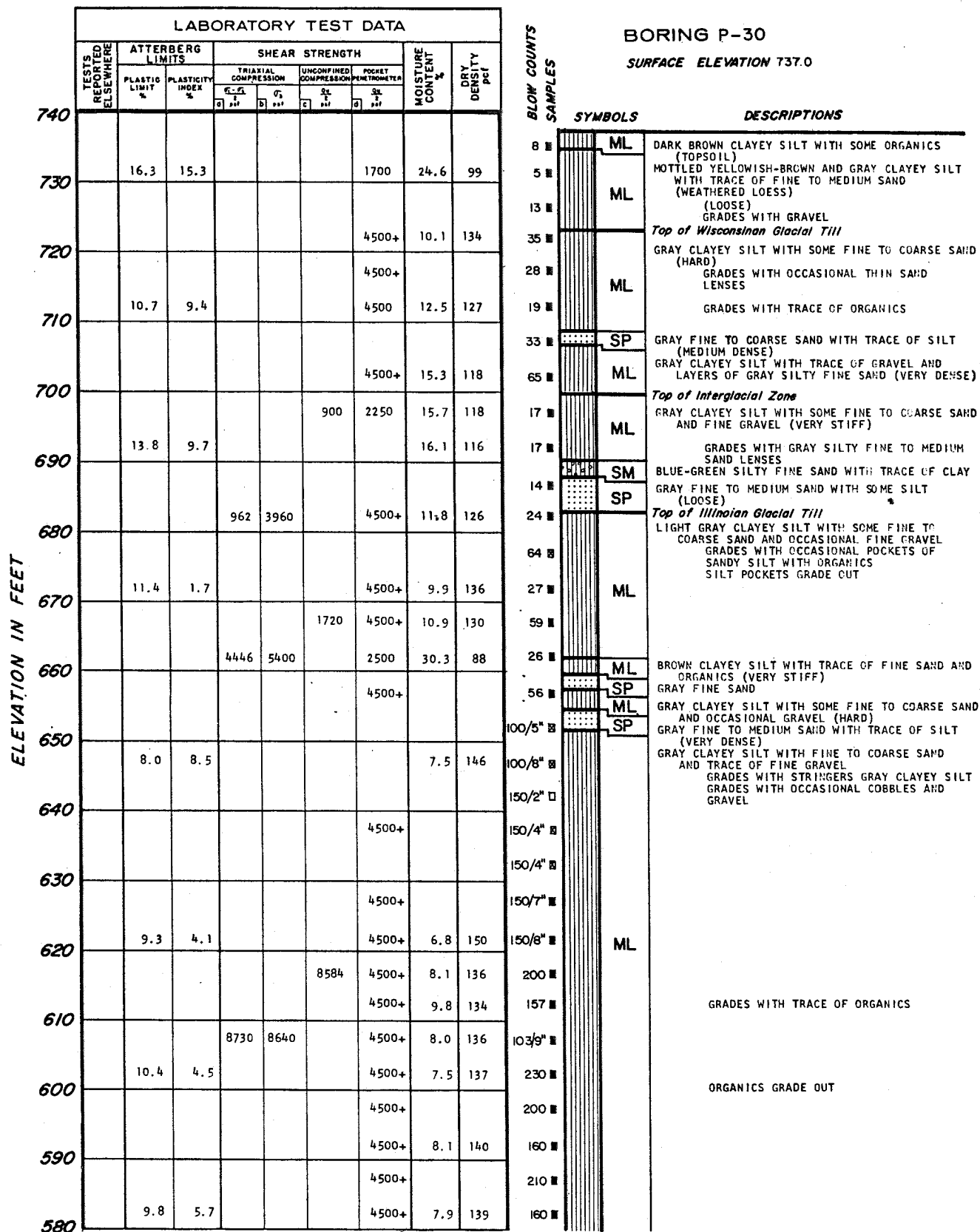
FIGURE 2.5-45

LOG OF BORING P-28

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



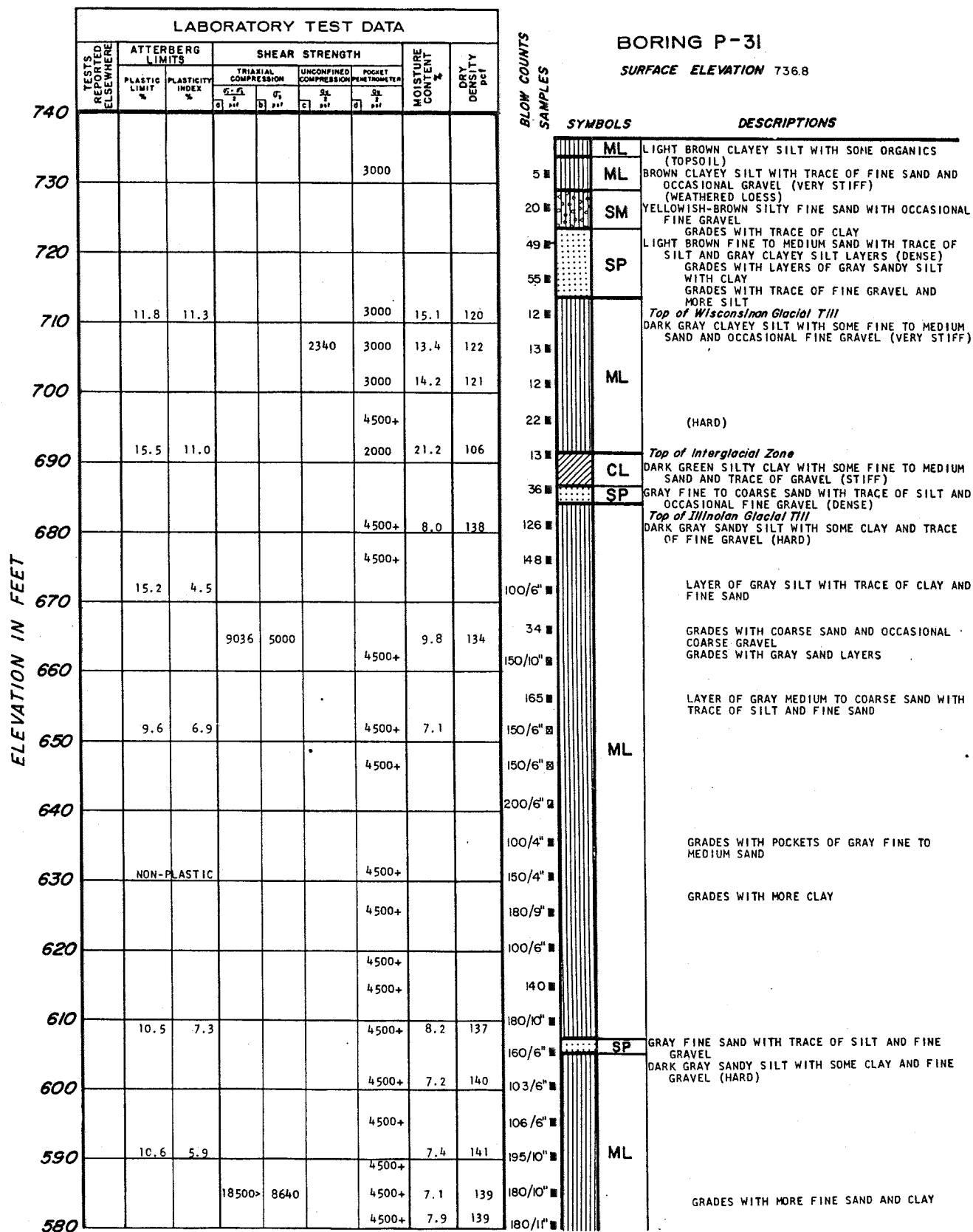


NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
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FIGURE 2.5-47
LOG OF BORING P-30
(SHEET 1 of 2)



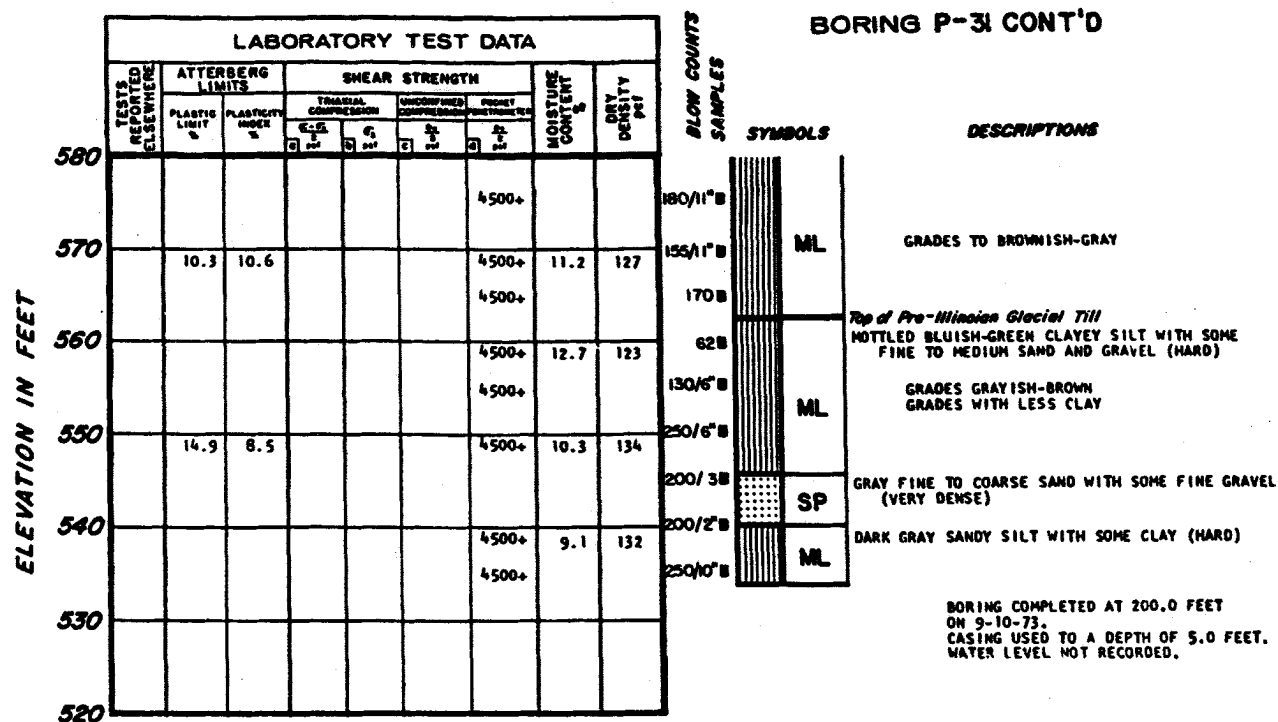
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-48

LOG OF BORING P-31
(SHEET 1 of 2)



PIEZOMETER INSTALLED ON 9-11-73. BORING WAS FILLED WITH GRAVEL AND SEALED WITH BENTONITE TO 159.0 FEET AFTER FLUSHING WITH CLEAN WATER. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 109.0 FEET PERFORATED WAS INSTALLED TO ELEVATION 577.8. GRAVULAR BACKFILL WAS PLACED FROM ELEVATION 577.8 TO 686.8. A BENTONITE SEAL FROM ELEVATION 686.8 TO 688.8; AND CEMENT GROUT FROM ELEVATION 688.8 TO 734.8.

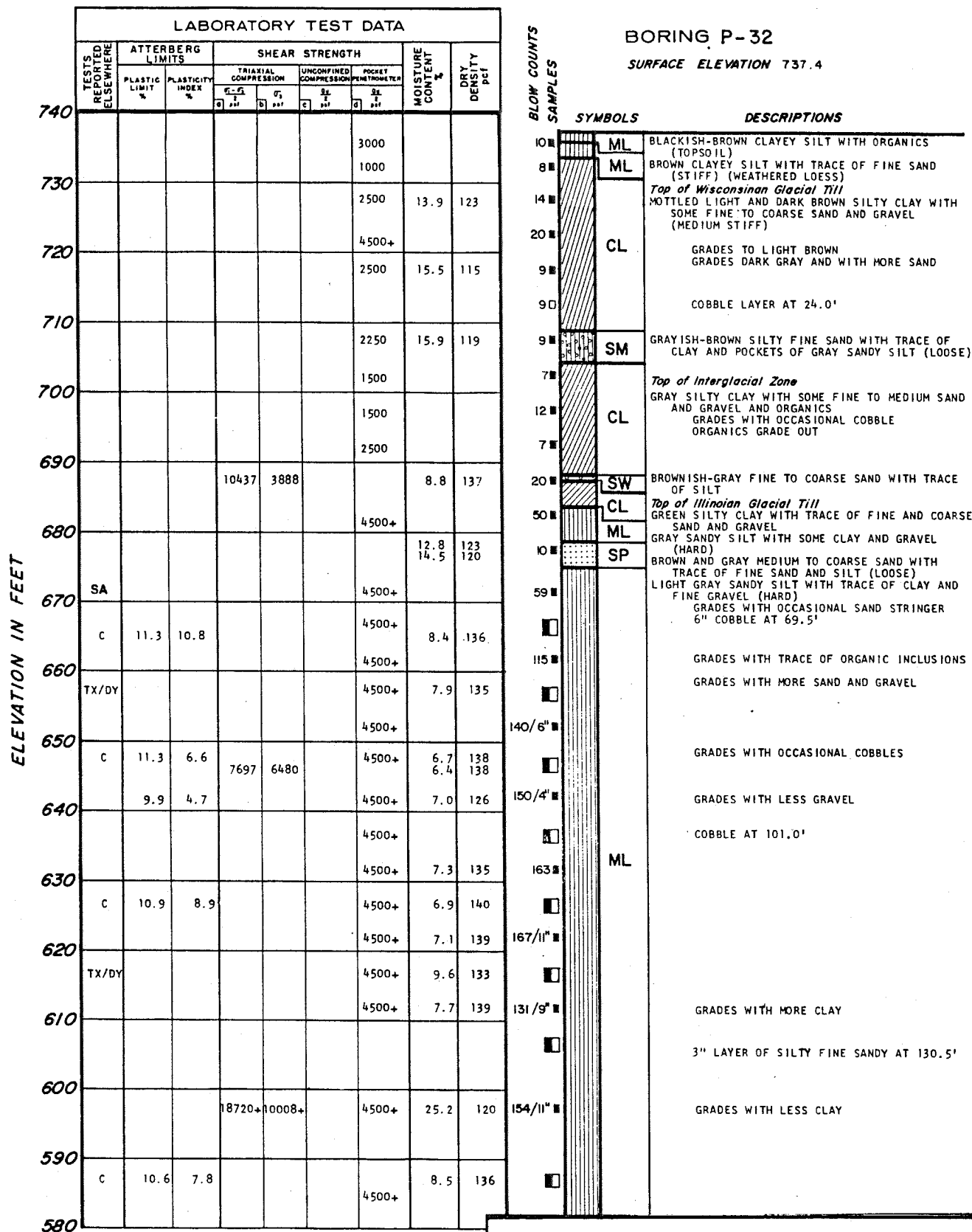
WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
25.3	10-29-73
25.3	11-15-73
24.5	12-31-73

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-48

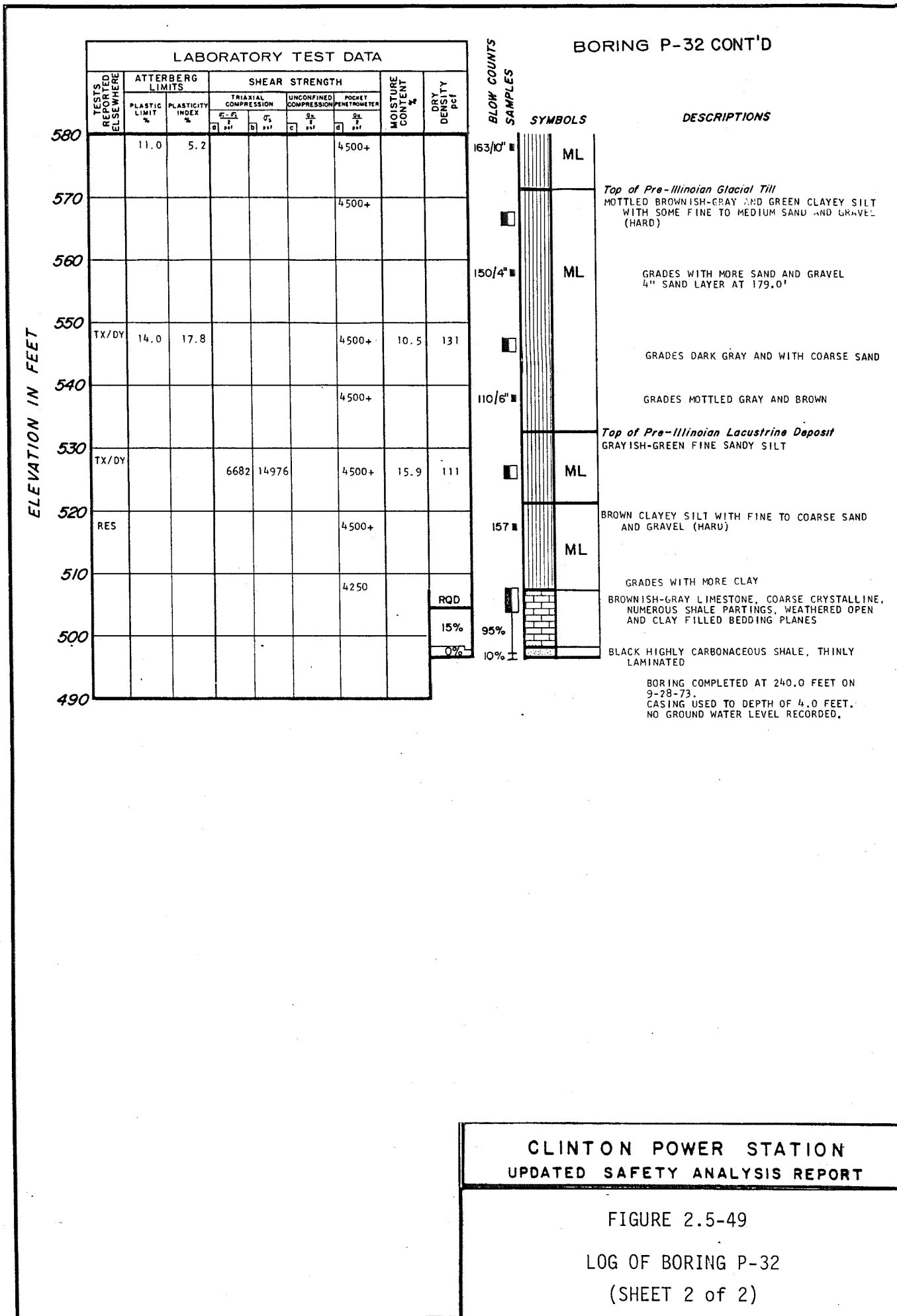
LOG OF BORING P-31
(SHEET 2 of 2)



NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

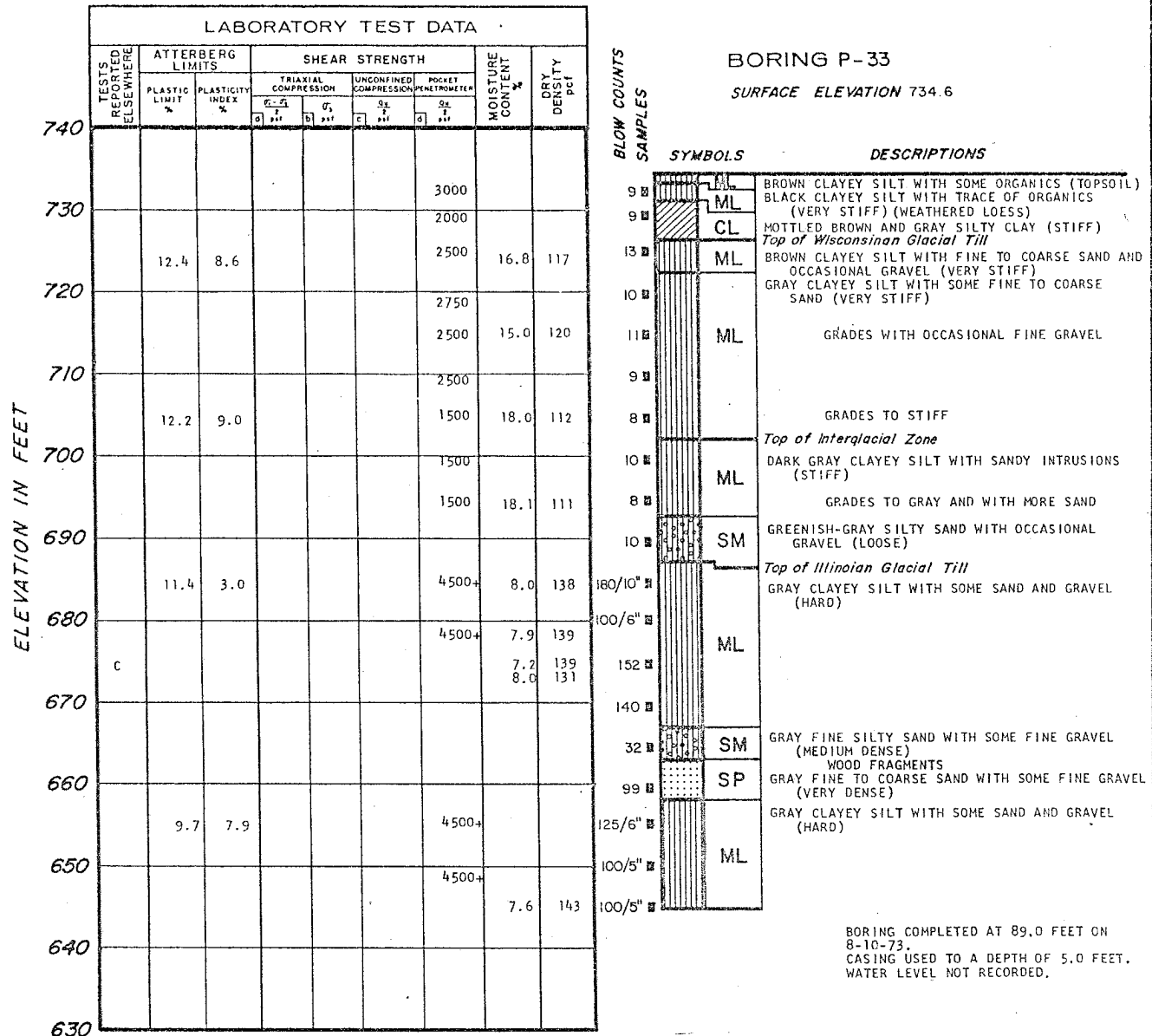
CLINTON POWER STATION
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FIGURE 2.5-49
LOG OF BORING P-32
(SHEET 1 of 2)



**CLINTON POWER STATION
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FIGURE 2.5-49
LOG OF BORING P-32
(SHEET 2 of 2)



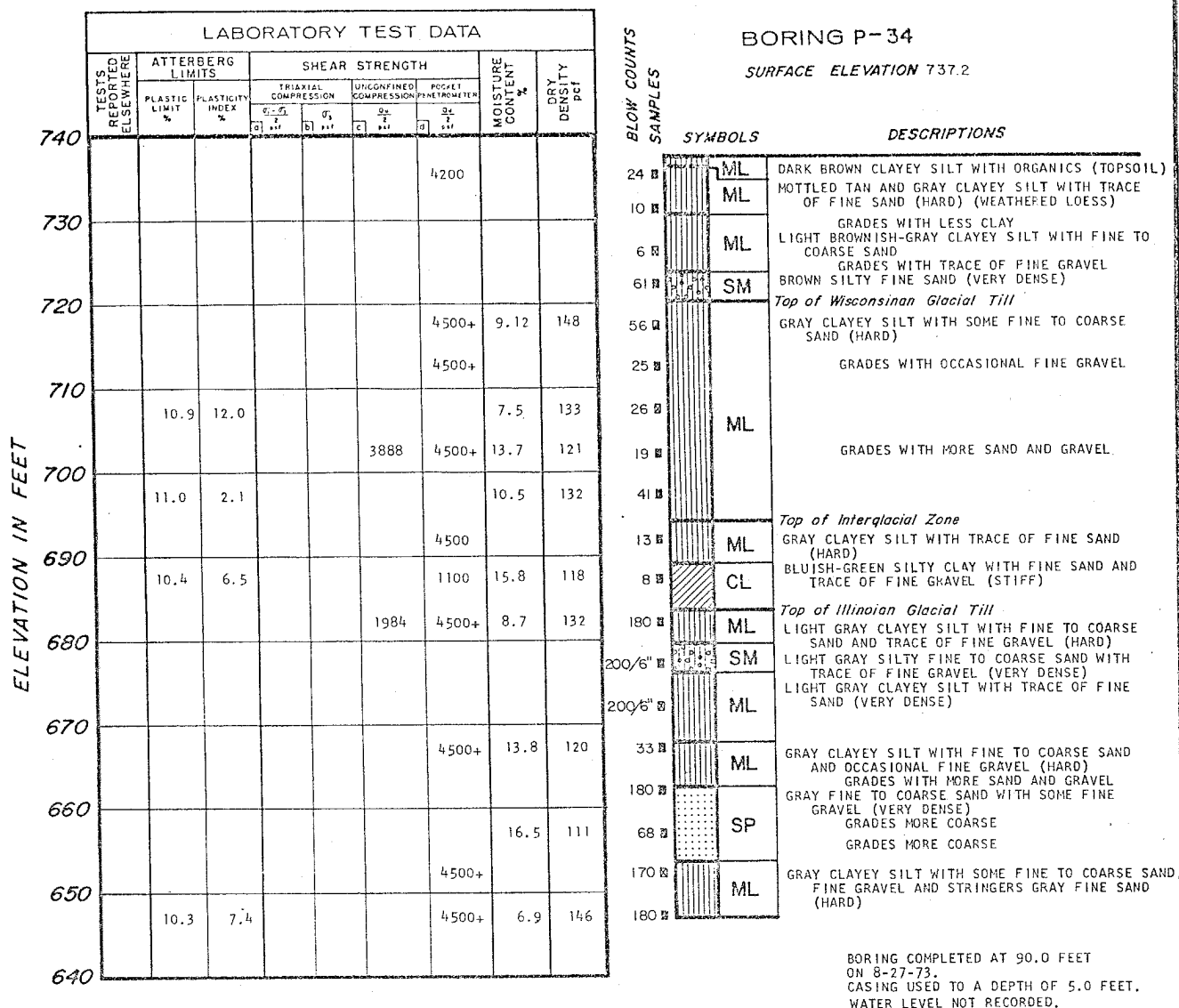
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-50

LOG OF BORING P-33



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-51

LOG OF BORING P-34

NOTE:

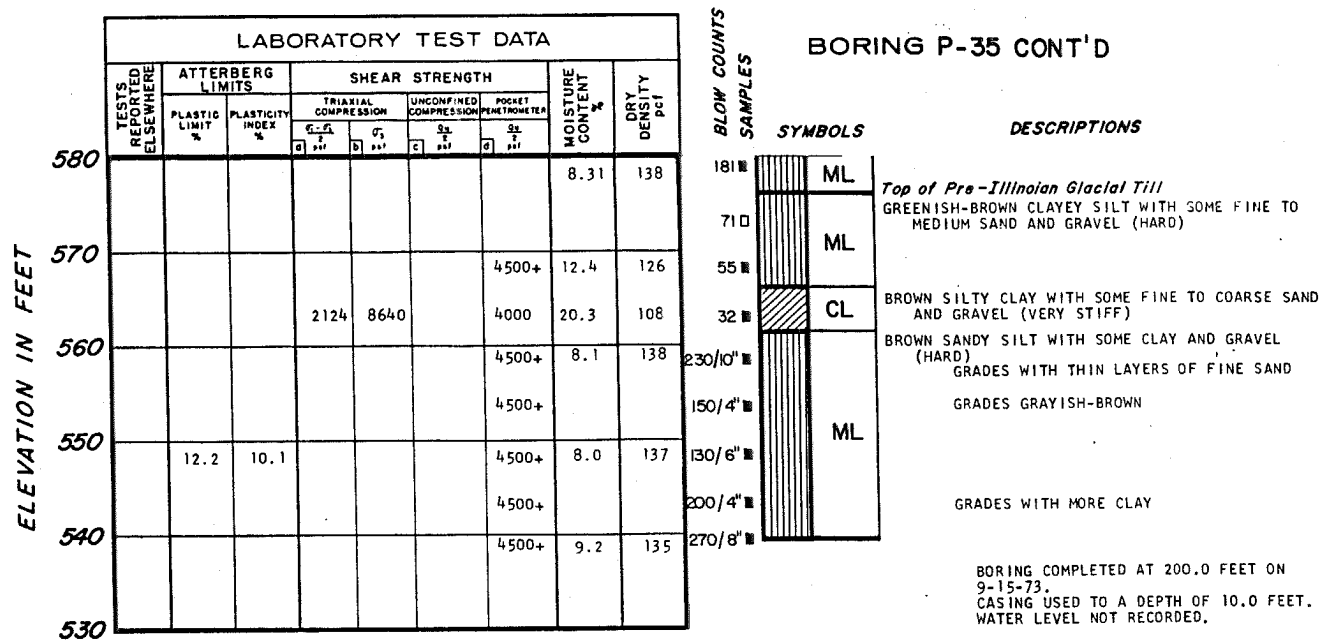
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

SURFACE ELEVATION 737.8

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

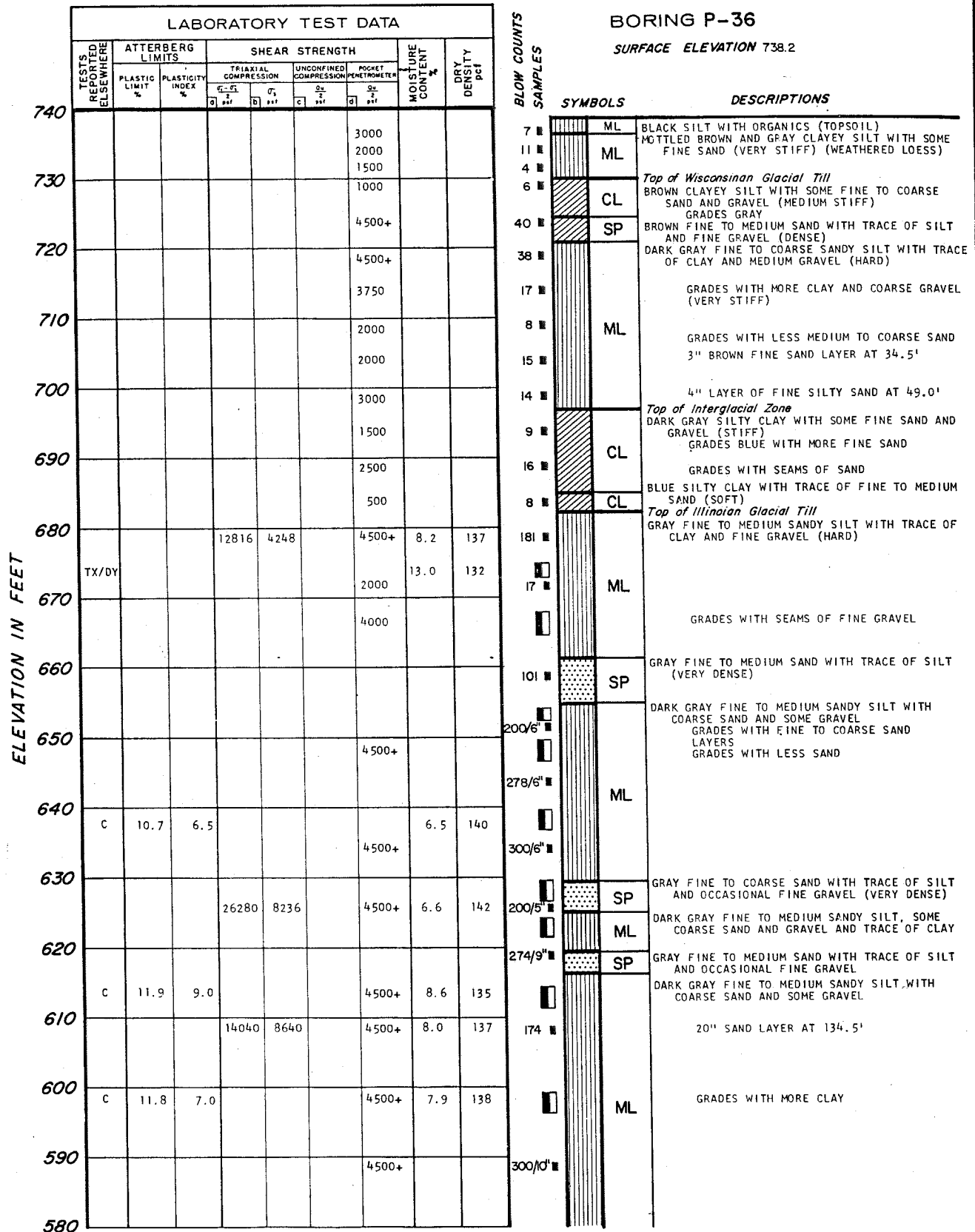
(SHEET 1 of 2)

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-52
LOG OF BORING P-35
(SHEET 2 of 2)



NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

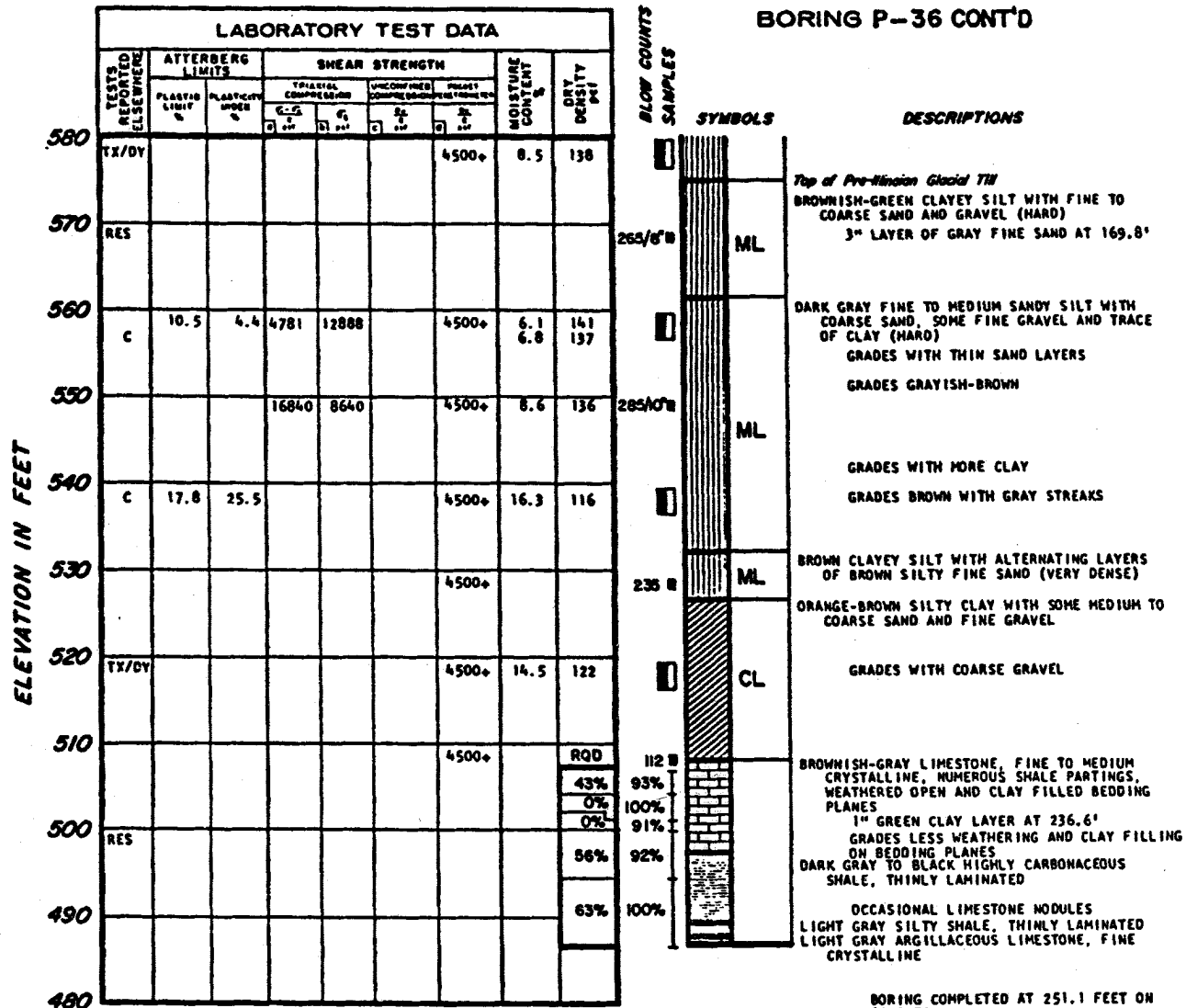
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-53

LOG OF BORING P-36

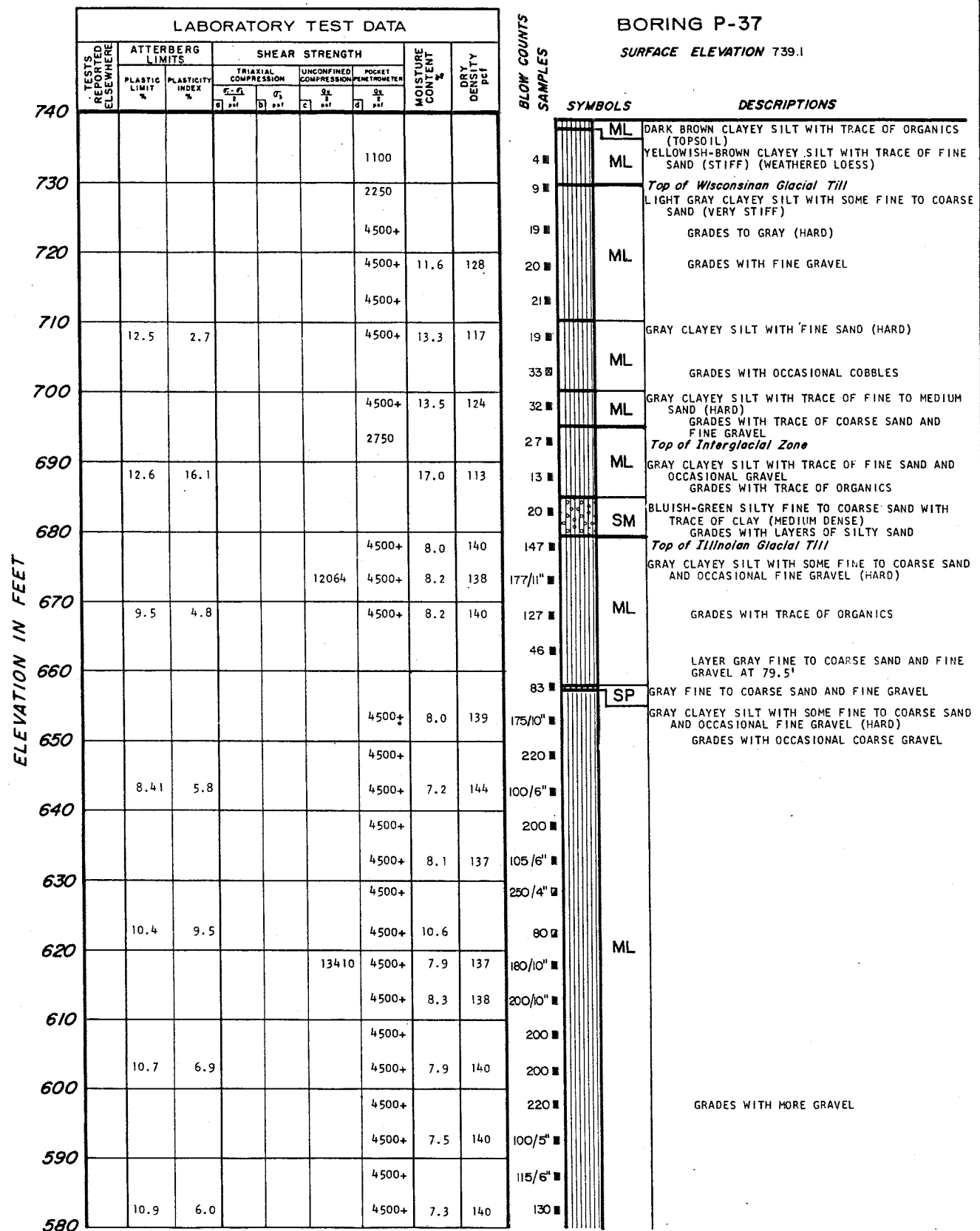
(SHEET 1 of 2)

BORING P-36 CONT'D



CLINTON POWER STATION
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FIGURE 2.5-53
LOG OF BORING P-36
(SHEET 2 of 2)



NOTE:

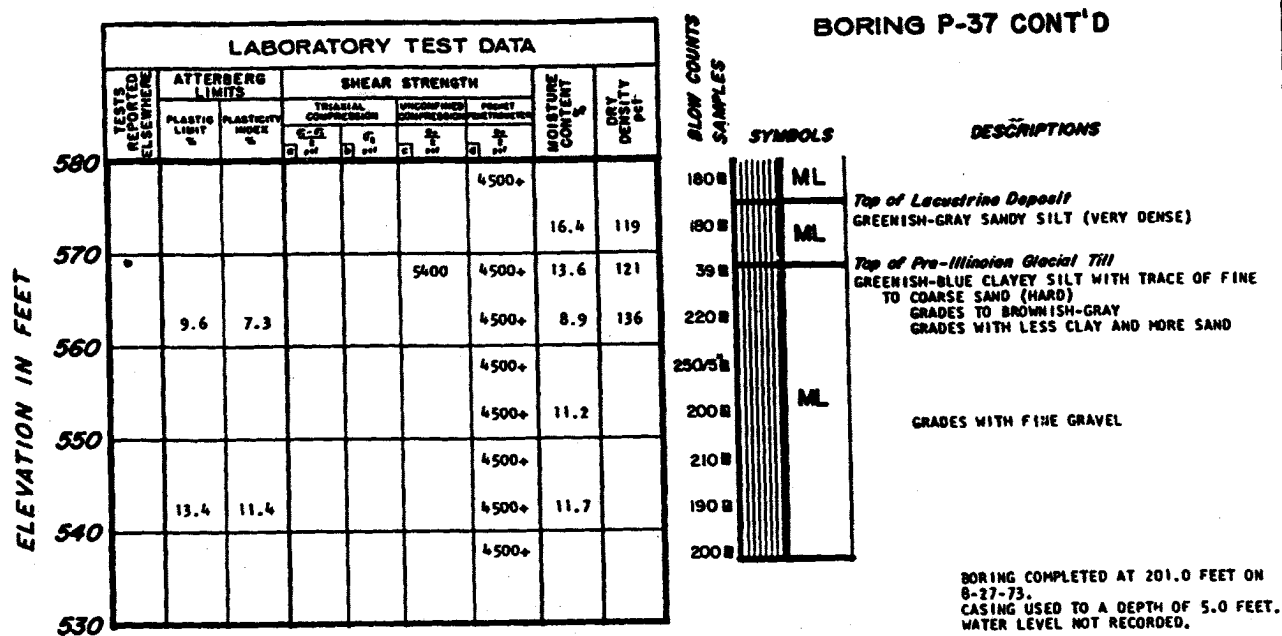
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-54

LOG OF BORING P-37

(SHEET 1 of 2)



PIEZOMETER INSTALLED IN 8-27-73. BOREING WAS FILLED WITH GRAVEL AND SEALED WITH BENTONITE TO 41.0 FEET AFTER FLUSHING WITH CLEAN WATER. A 1 1/2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 24.0 FEET PERFORATED WAS INSTALLED TO ELEVATION 699.1 FEET. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 701.1 TO 726.1; A BENTONITE SEAL FROM ELEVATION 726.1 TO 728.1; AND CEMENT GROUT FROM ELEVATION 728.1 TO 739.1.

WATER LEVEL READINGS

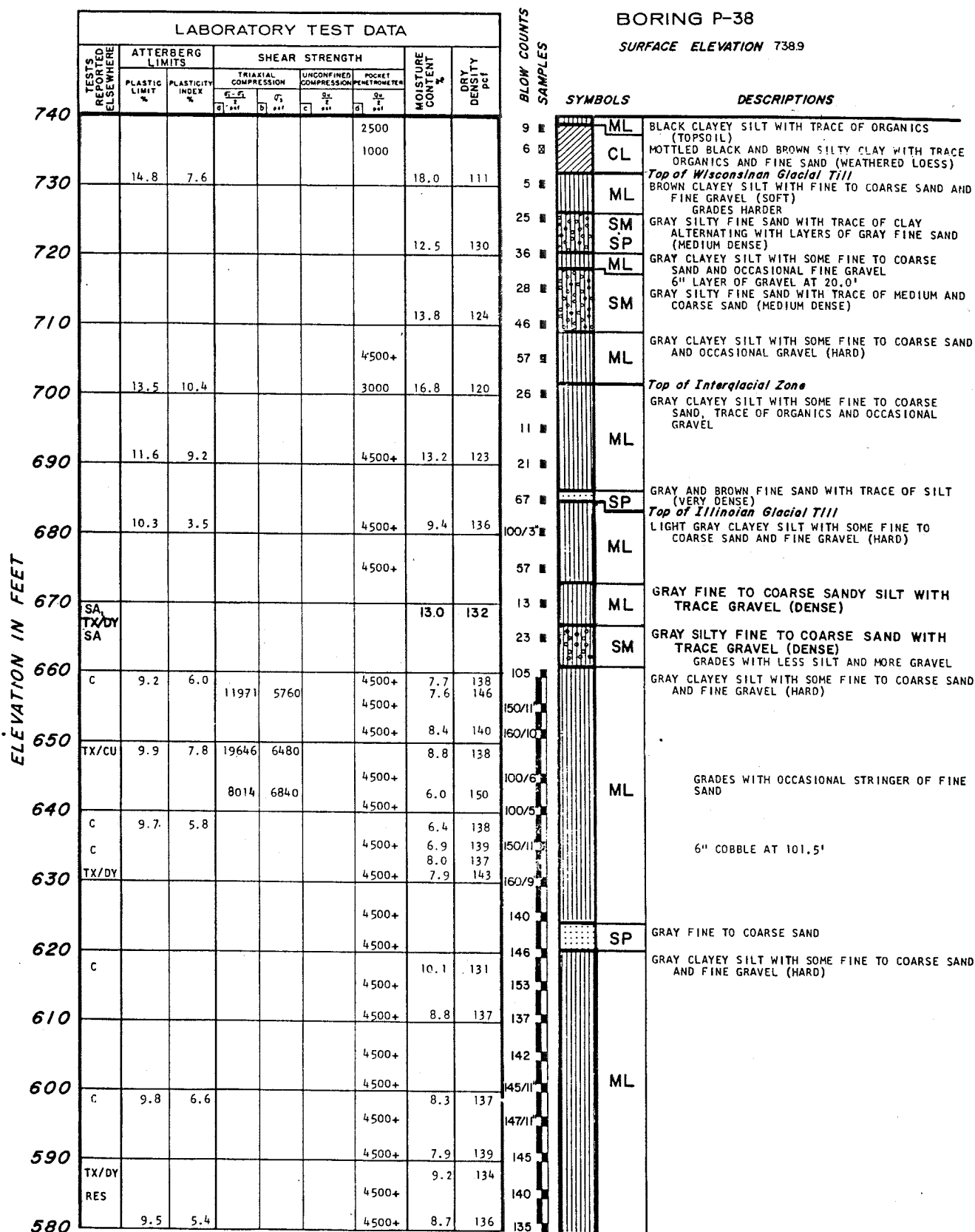
DEPTH BELOW GROUND SURFACE IN FEET	DATE
14.2	10-5-73
16.0	10-29-73
15.9	11-15-73

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-54

LOG OF BOREING P-37

(SHEET 2 of 2)



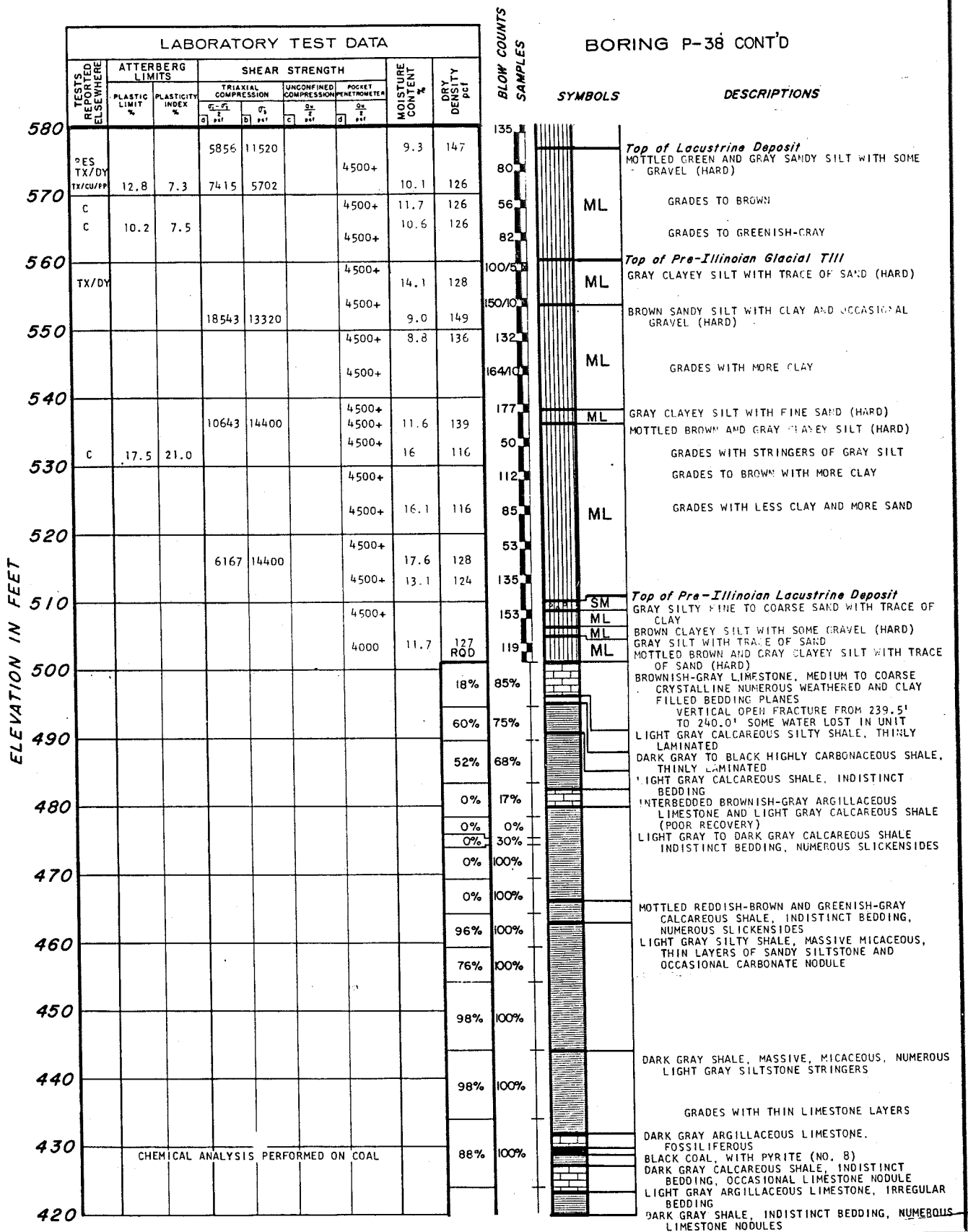
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-55

LOG OF BORING P-38
(SHEET 1 of 3)

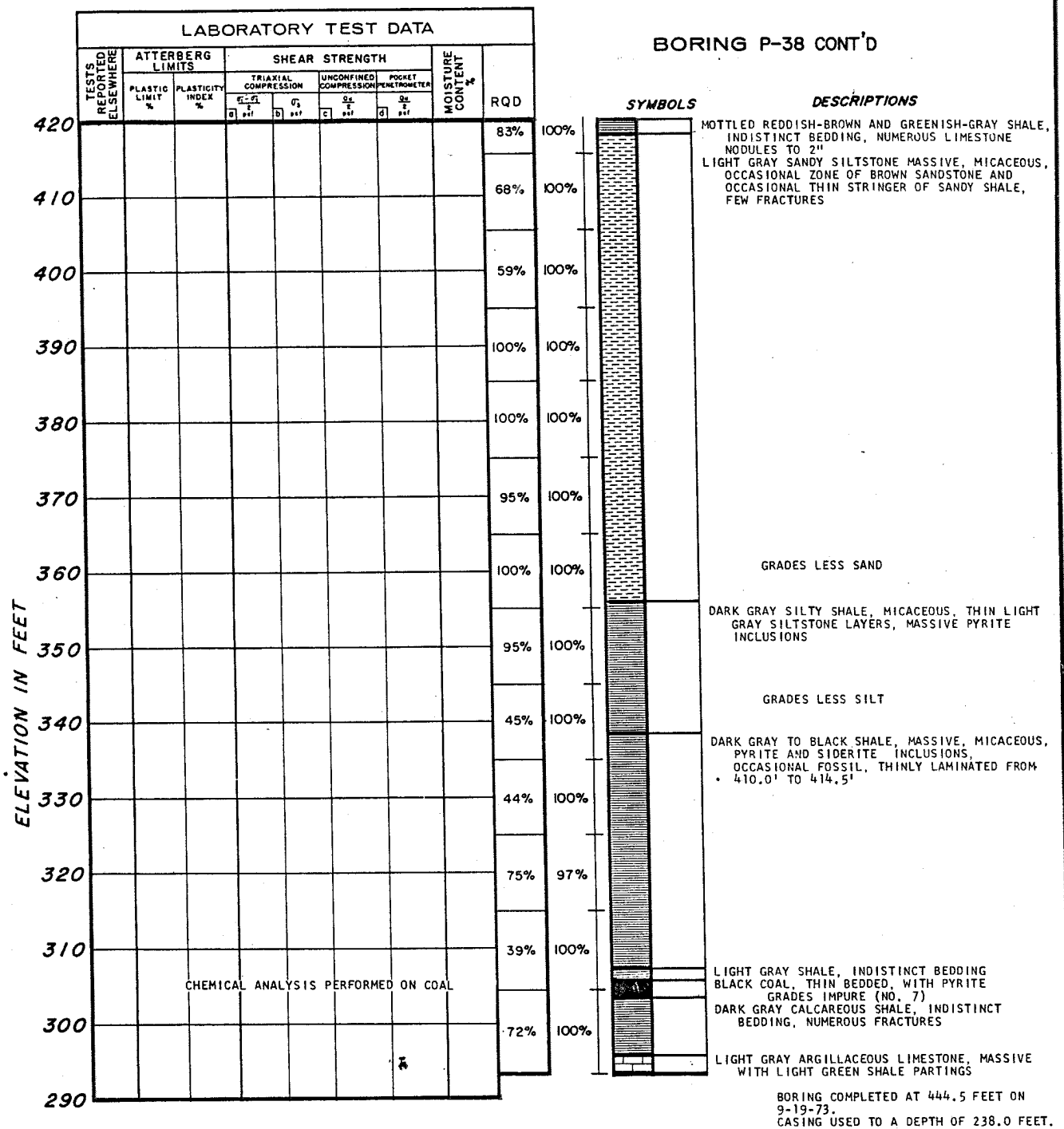
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

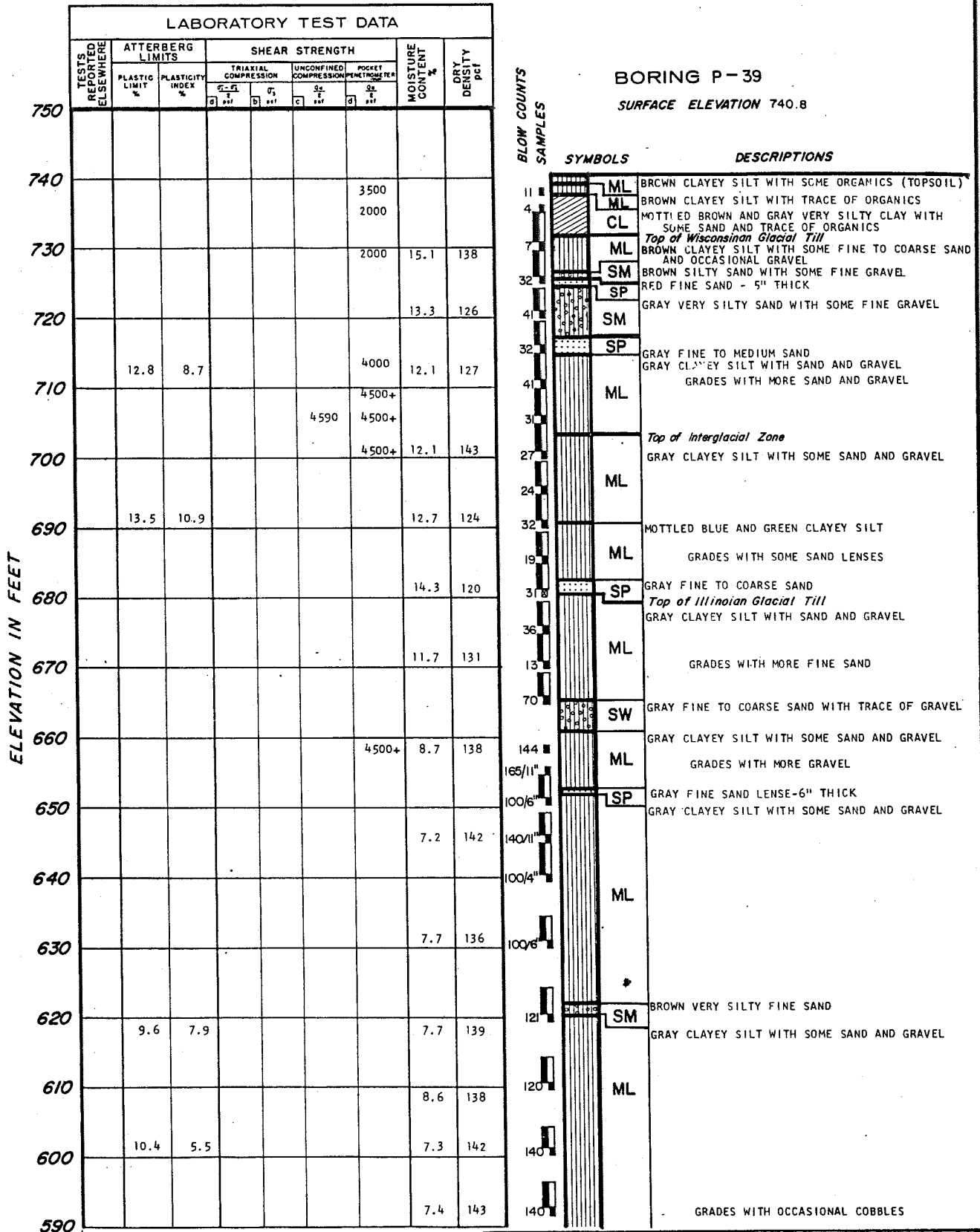
FIGURE 2.5-55
LOG OF BORING P-38
(SHEET 2 of 3)

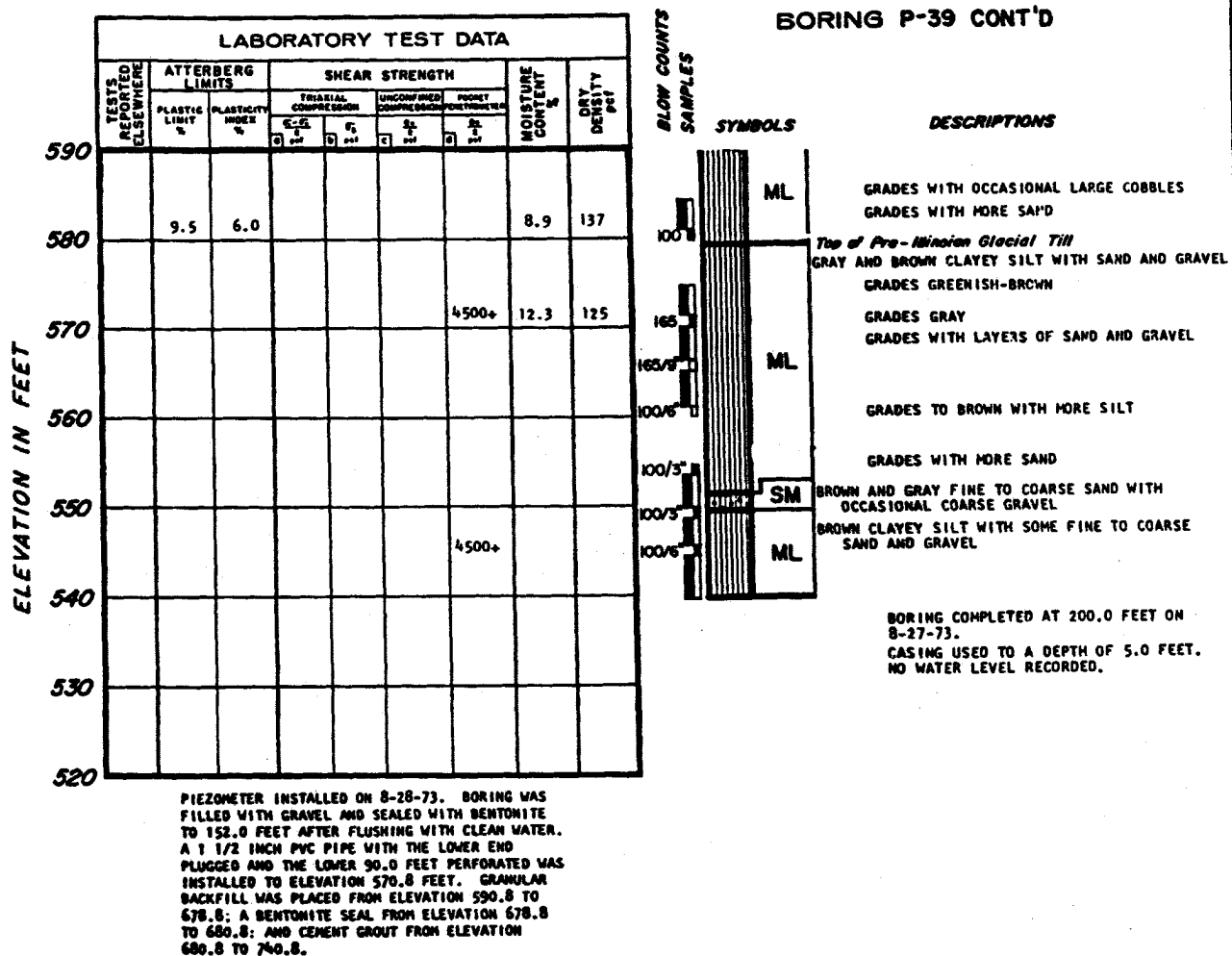


**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-55

LOG OF BORING P-38
(SHEET 3 of 3)





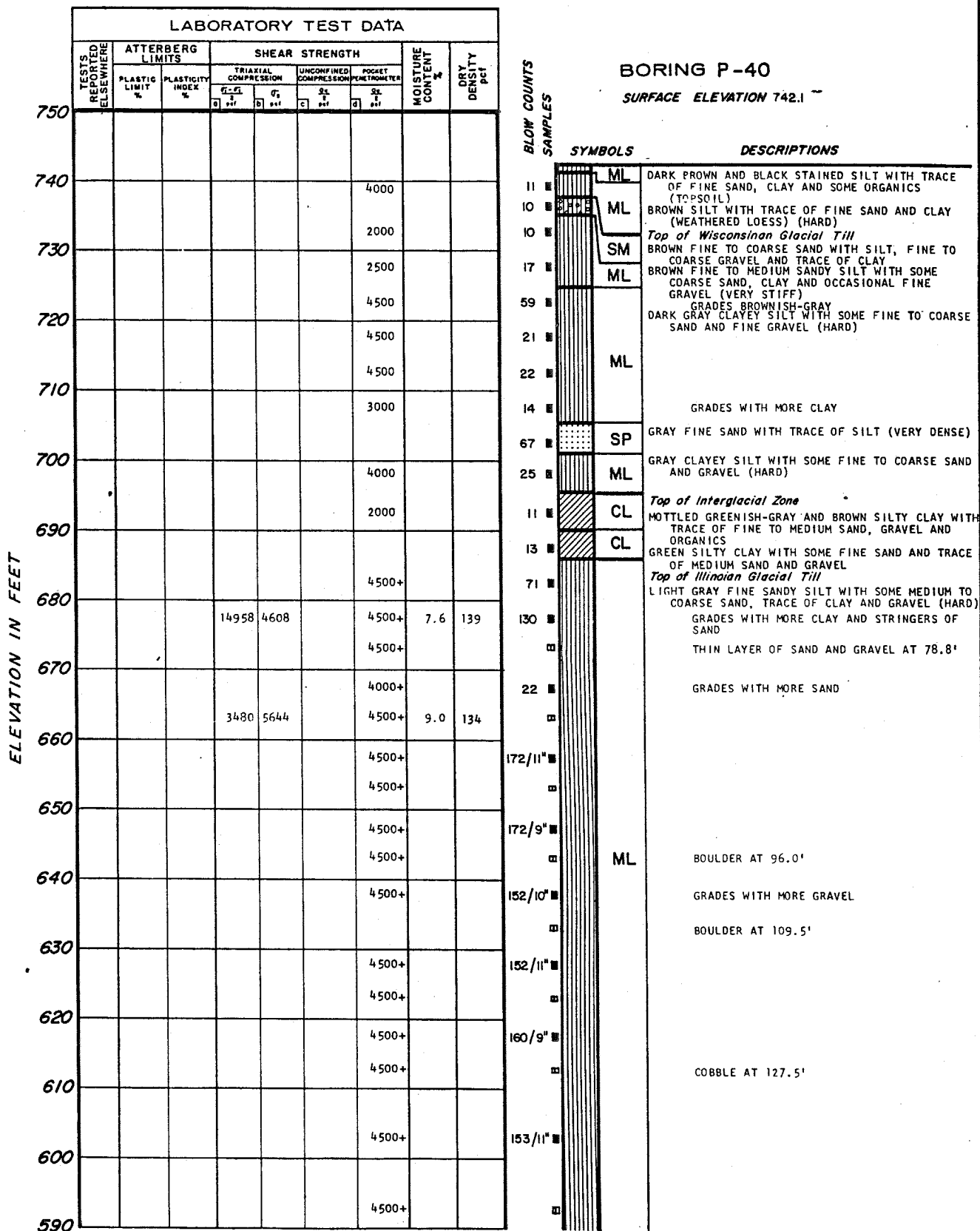
WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
32.9	9-7-73
33.4	10-29-73
33.2	11-15-73

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-56

LOG OF BORING P-39
(SHEET 2 of 2)



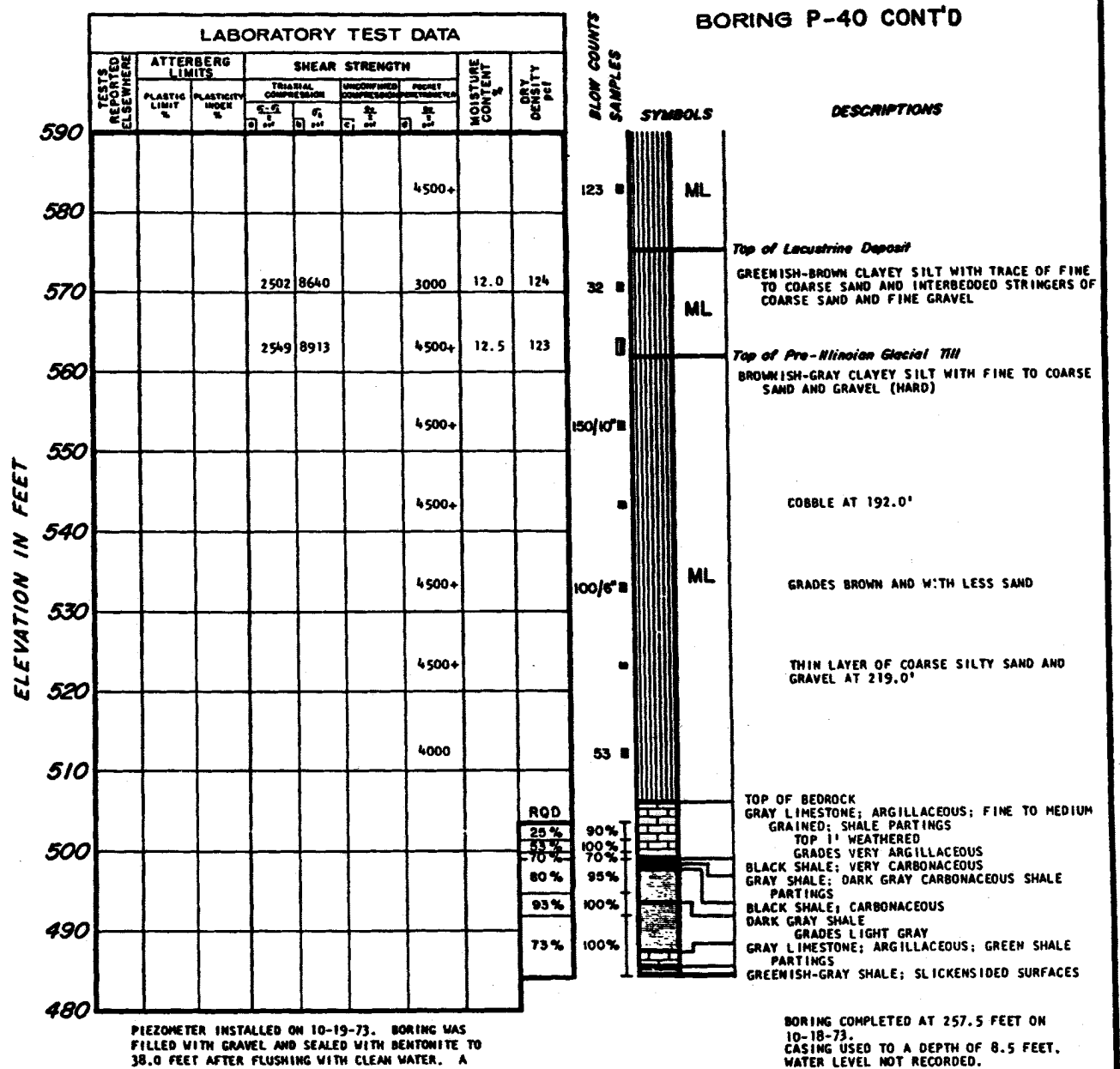
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

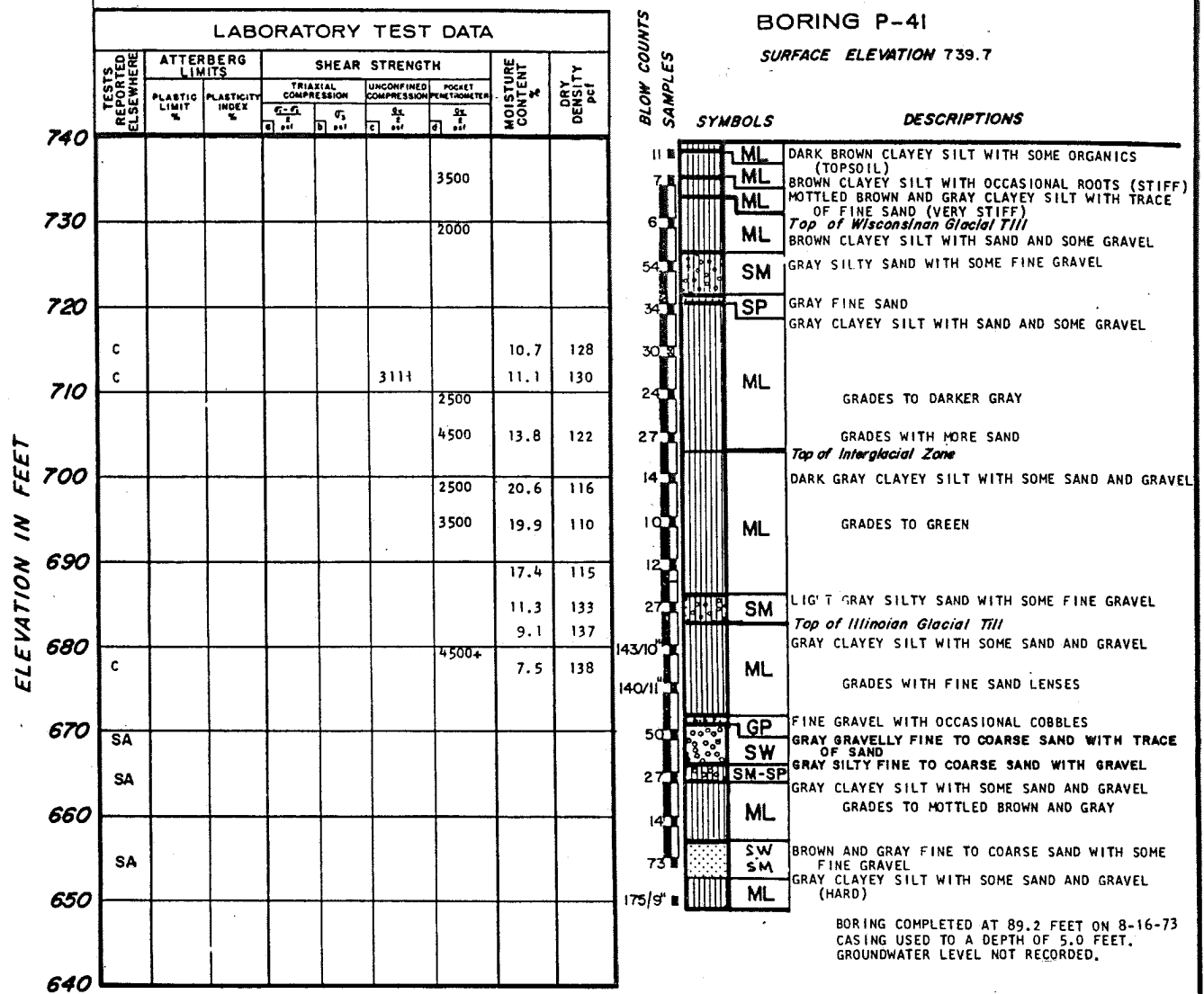
FIGURE 2.5-57

LOG OF BORING P-40
(SHEET 1 of 2)



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-57
LOG OF BORING P-40
(SHEET 2 of 2)



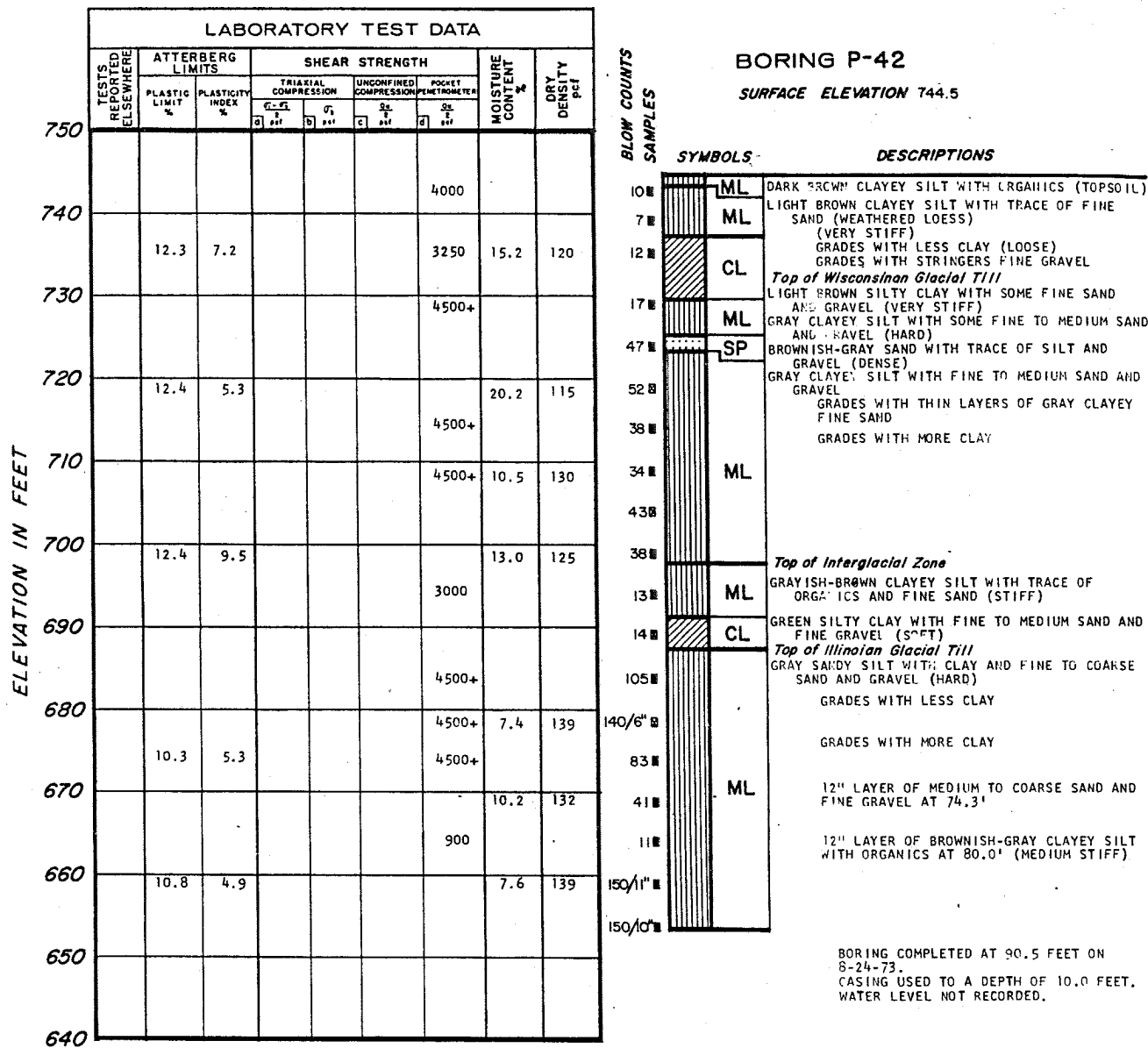
**CLINTON POWER STATION
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FIGURE 2.5-58

LOG OF BORING P-41

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



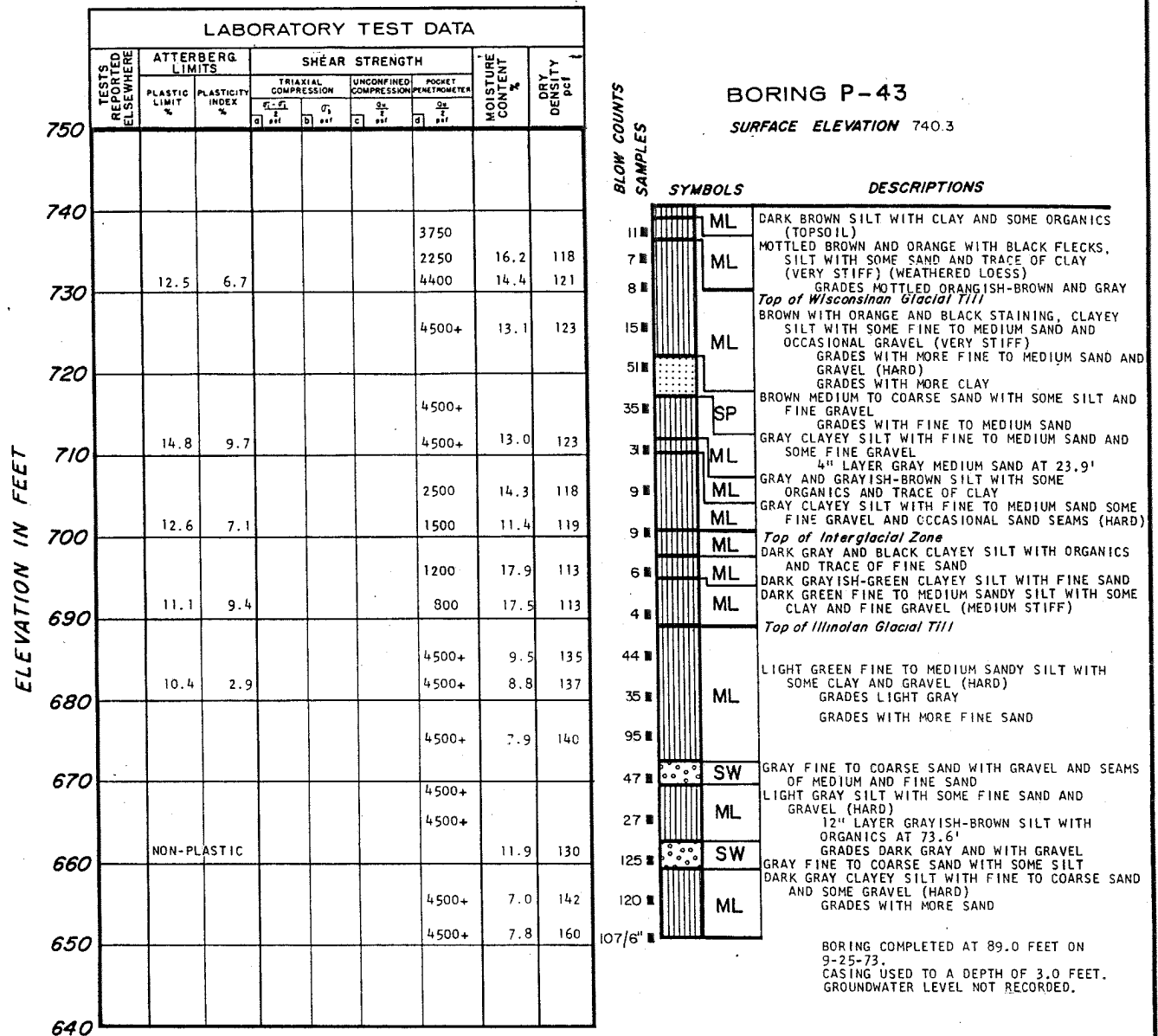
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-59

LOG OF BORING P-42

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



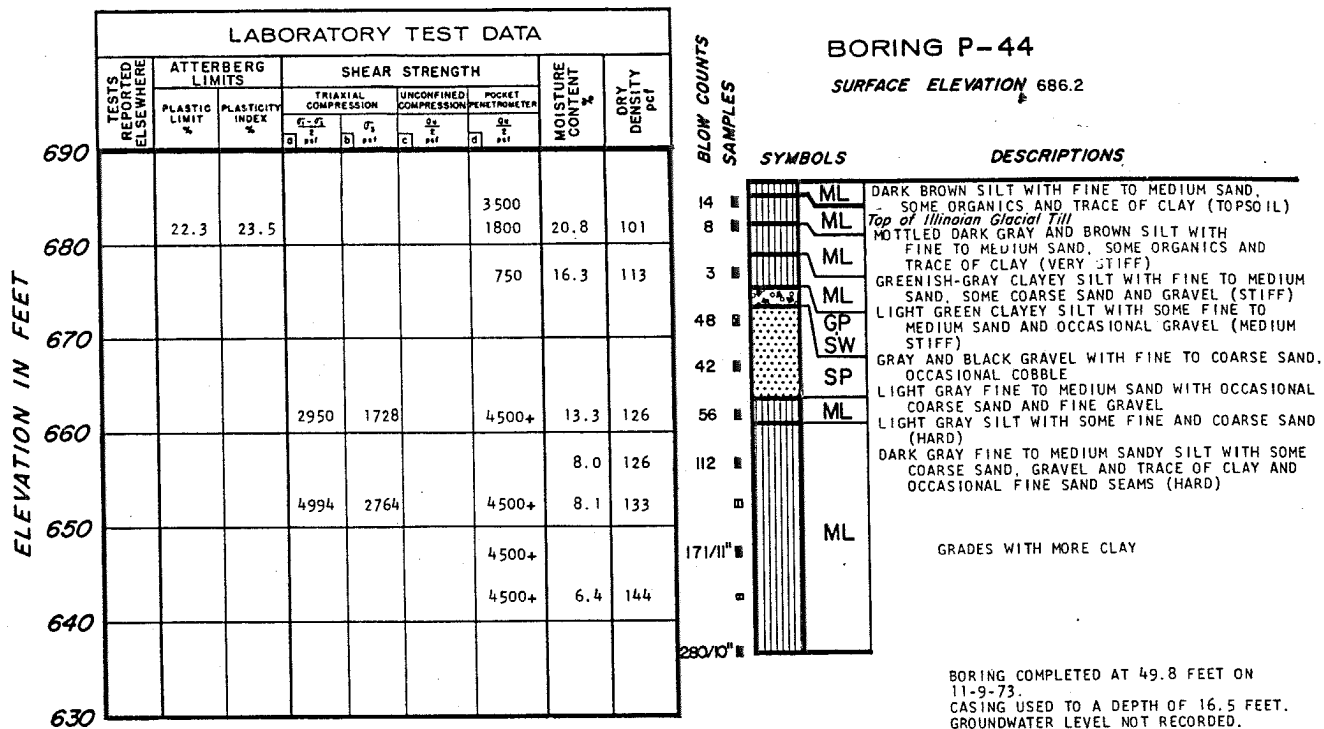
CLINTON POWER STATION
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FIGURE 2.5-60

LOG OF BORING P-43

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

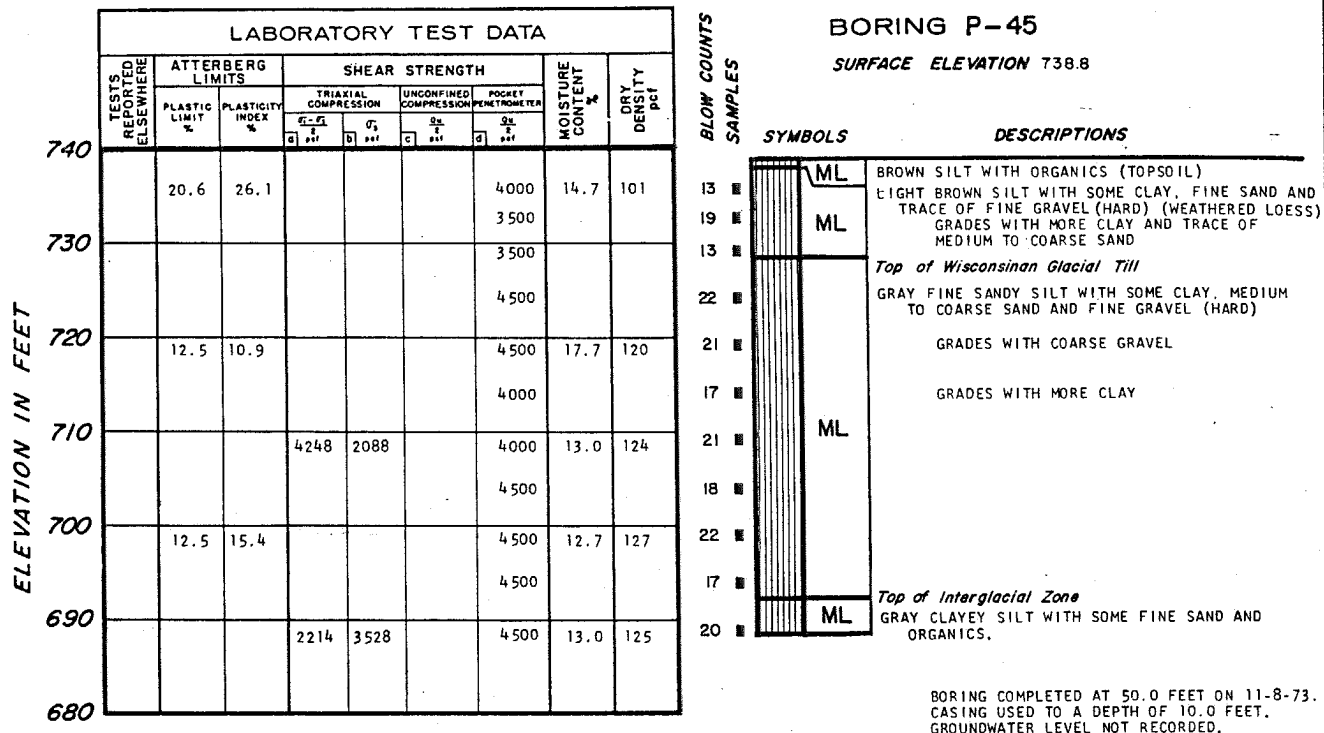


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FIGURE 2.5-61

LOG OF BORING P-44

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



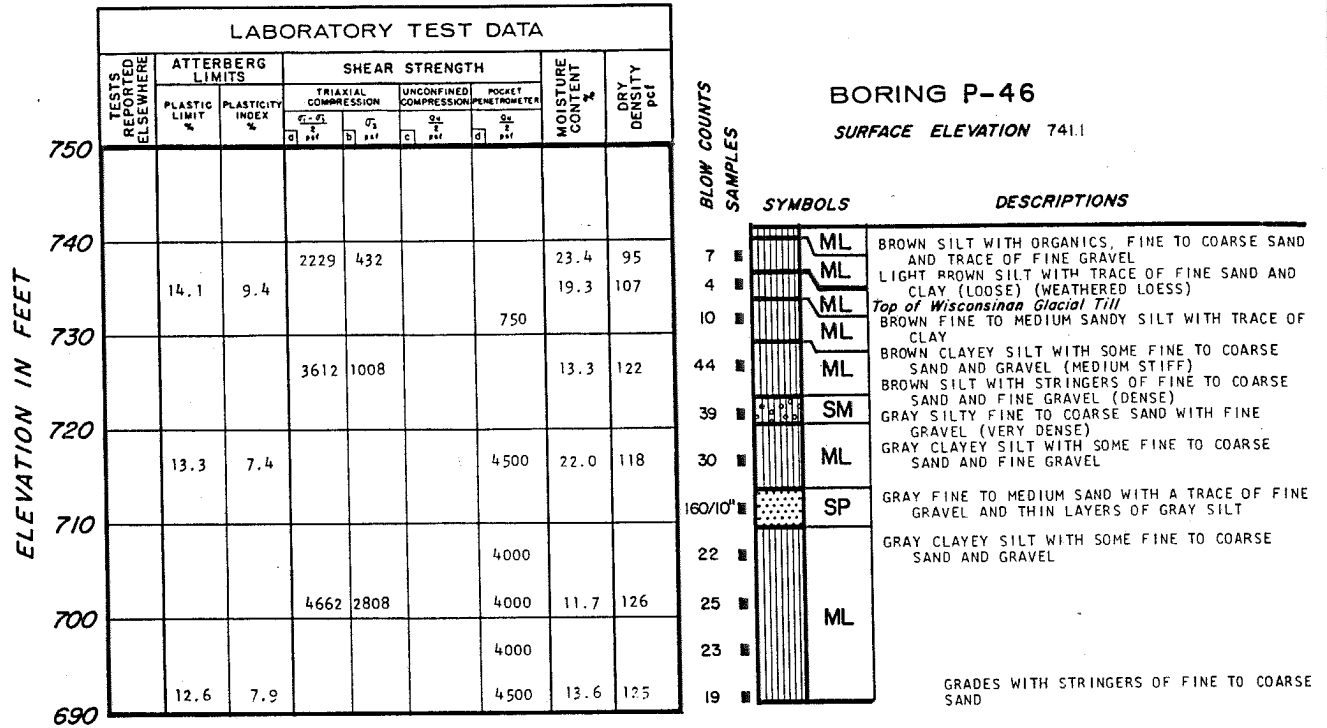
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

**CLINTON POWER STATION
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FIGURE 2.5-62

LOG OF BORING P-45



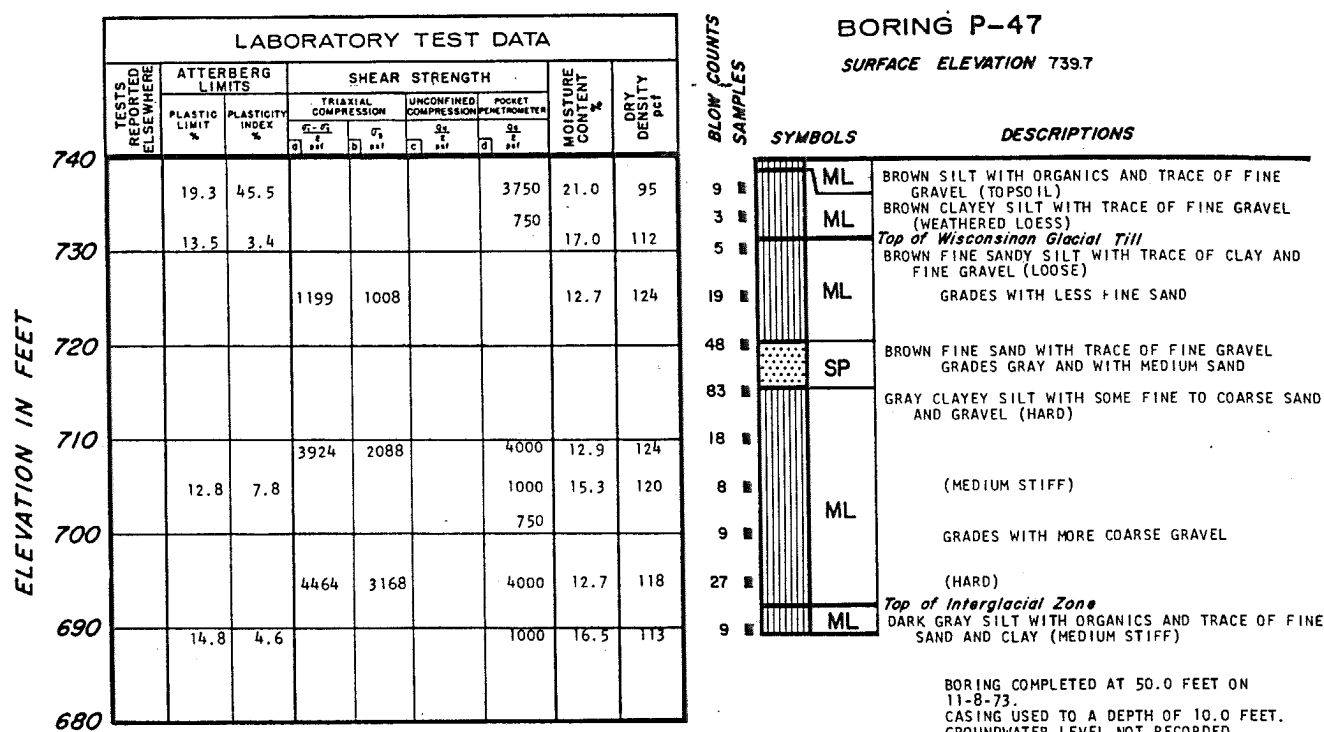
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-63

LOG OF BORING P-46

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



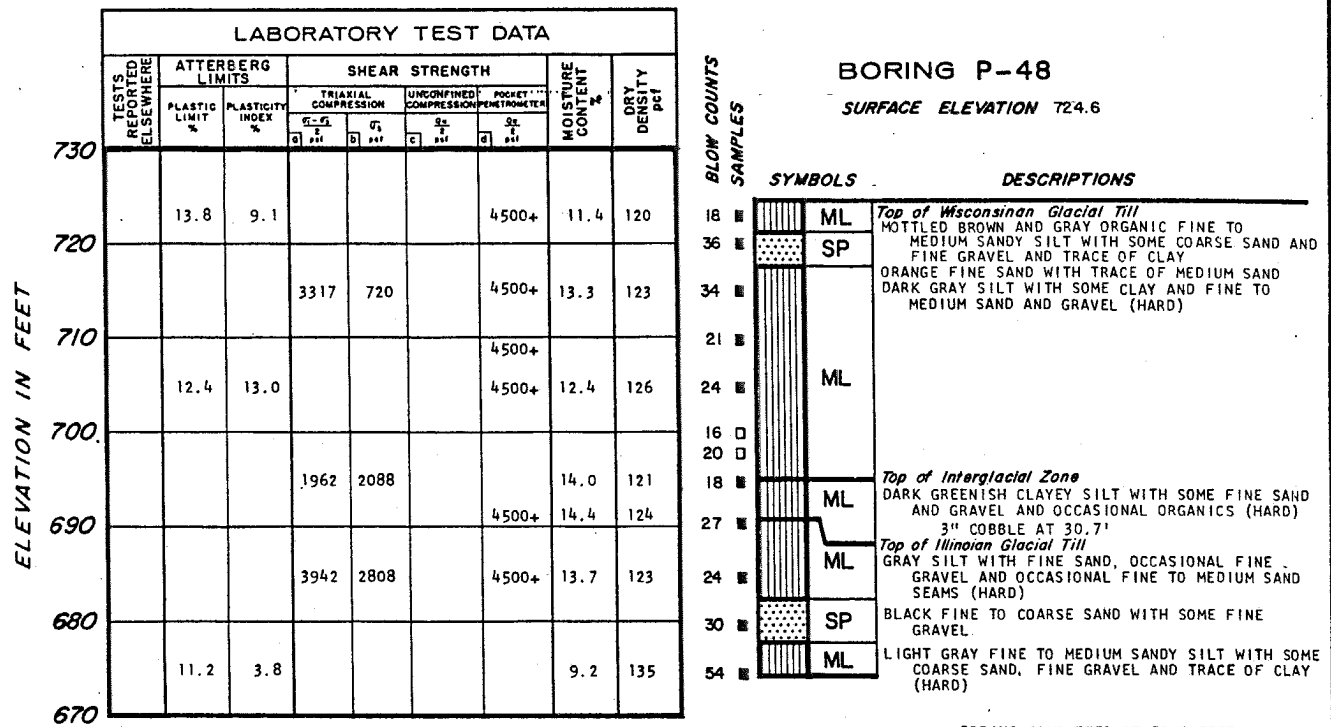
**CLINTON POWER STATION
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FIGURE 2.5-64

LOG OF BORING P-47

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



BORING COMPLETED AT 50.0 FEET ON 11-6-73.
CASING USED TO A DEPTH OF 3.5 FEET.
GROUNDWATER LEVEL NOT RECORDED.

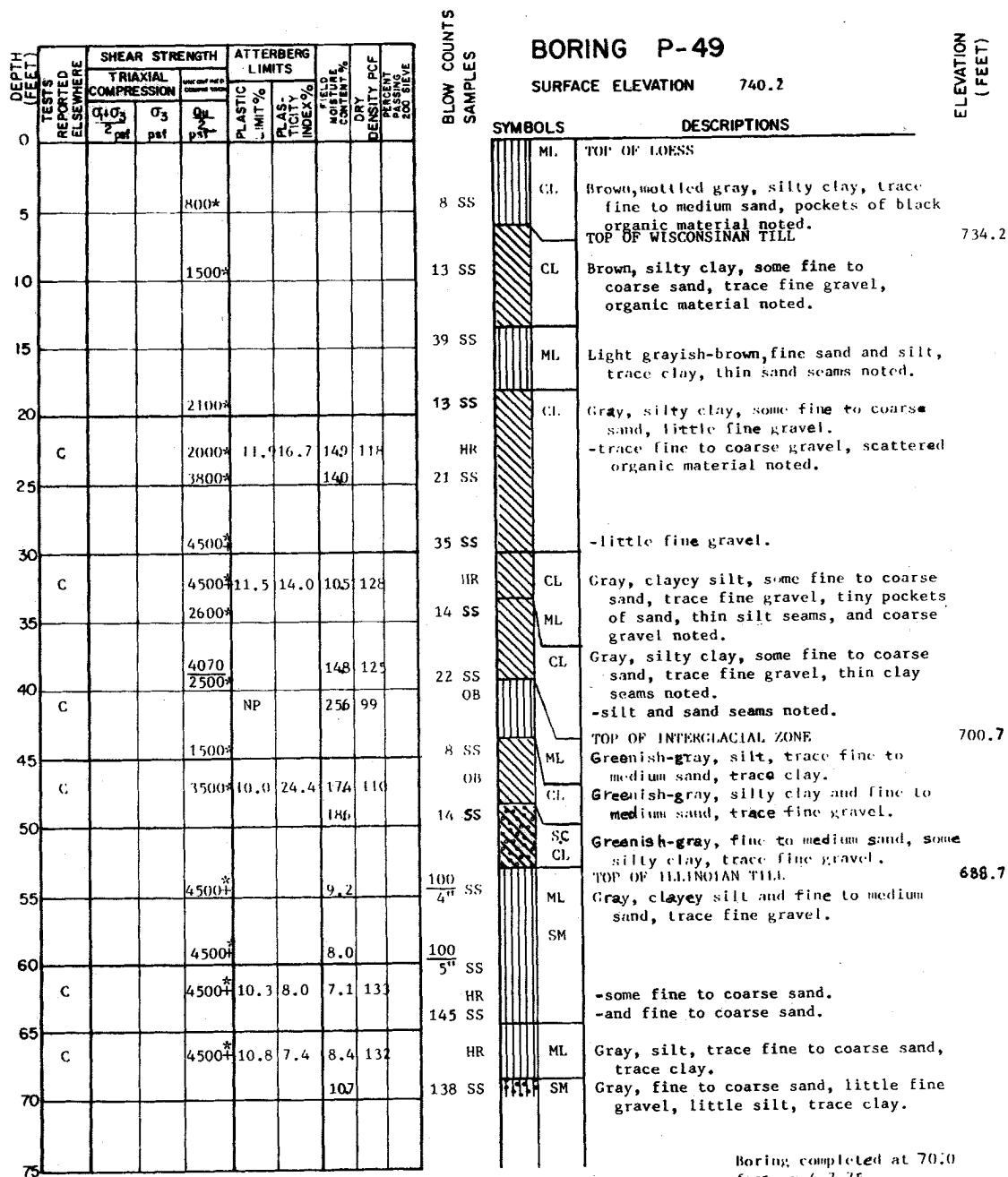
CLINTON POWER STATION
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FIGURE 2.5-65

LOG OF BORING P-48

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



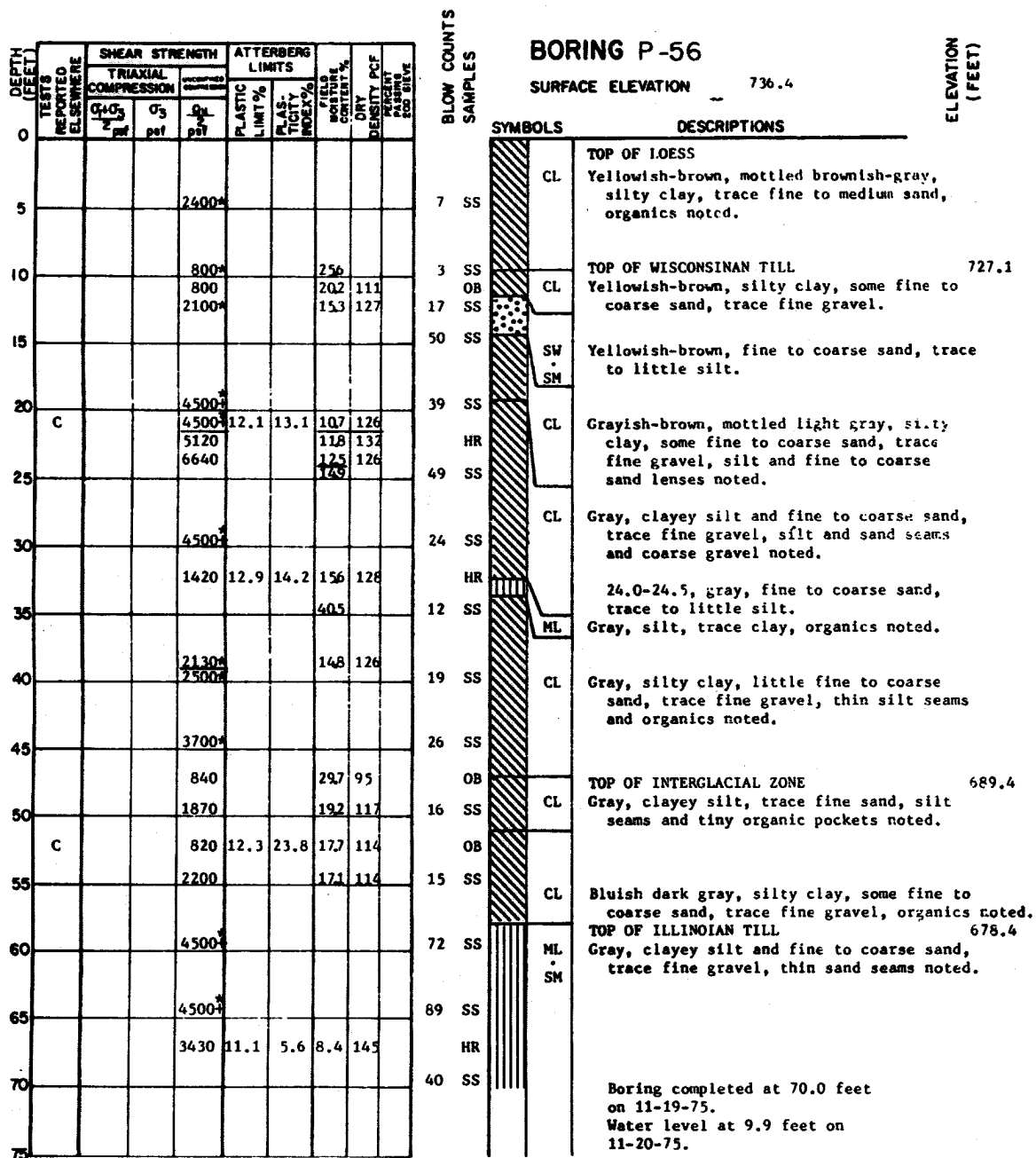
NOTES

Logged by: Sargent & Lundy Engineers
Drilled by: Raymond International
Tested by: Soil Testing Services Inc.

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FIGURE 2.5-66

LOG OF BORING P-49

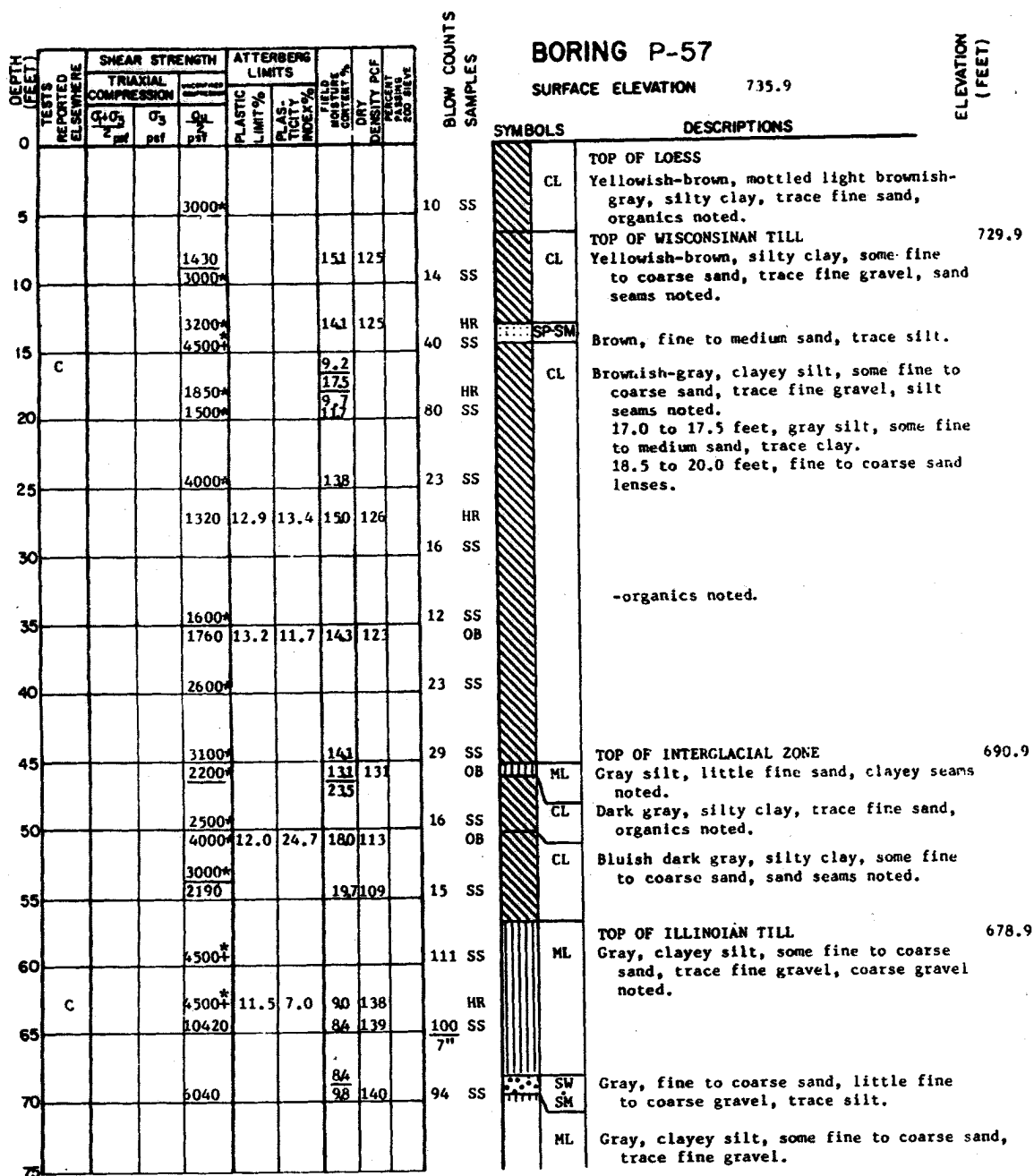


Logged by: Sargent & Lundy Engineers
 Drilled by: Raymond International
 Tested by: Westenhoff & Novick, Inc.

**CLINTON POWER STATION
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FIGURE 2.5-67

LOG OF BORING P-56

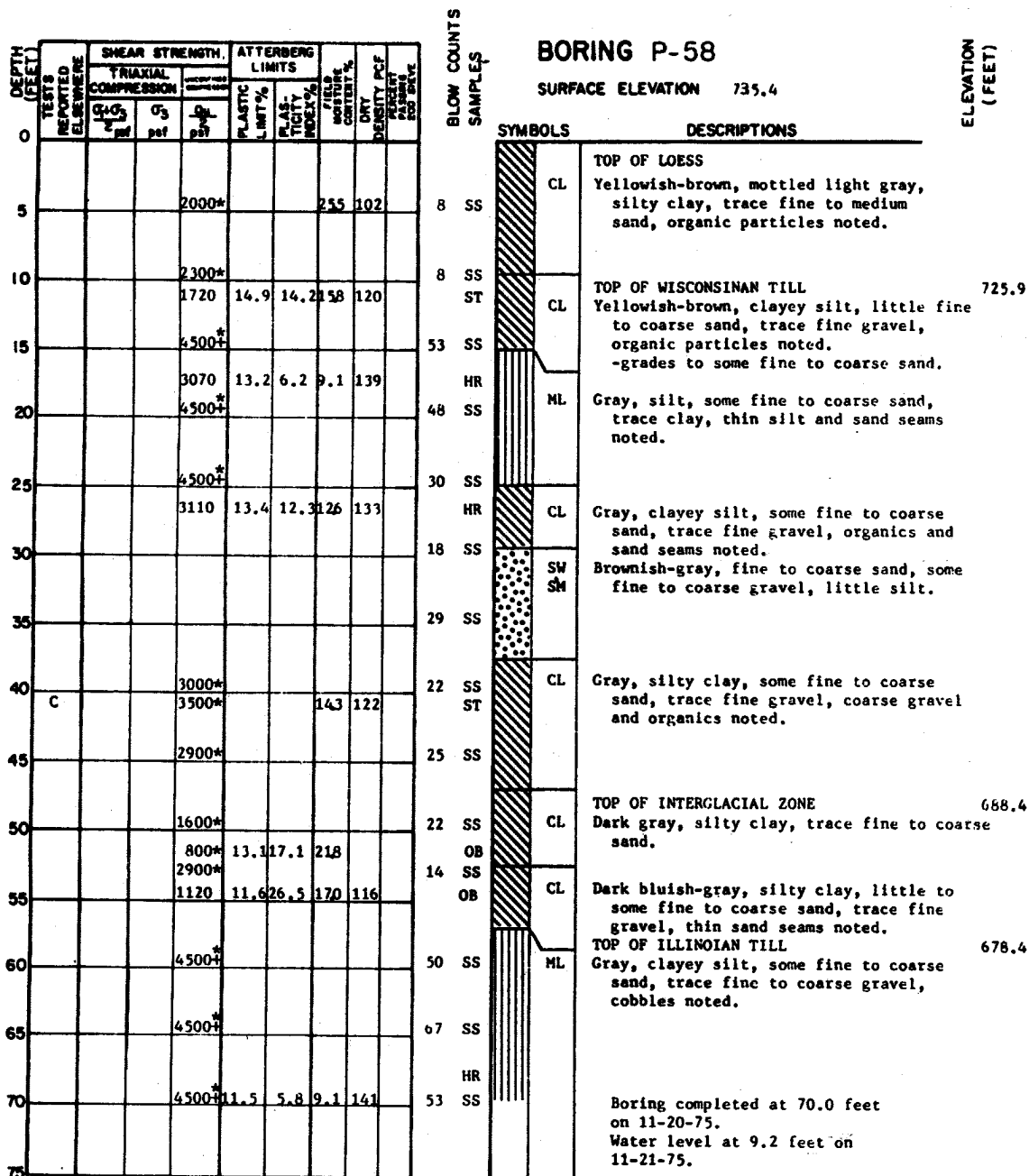


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FIGURE 2.5-68

LOG OF BORING P-57

Logged by: Sargent & Lundy Engineers
Drilled by: Raymond International
Tested by: Westenhoff & Novick, Inc.

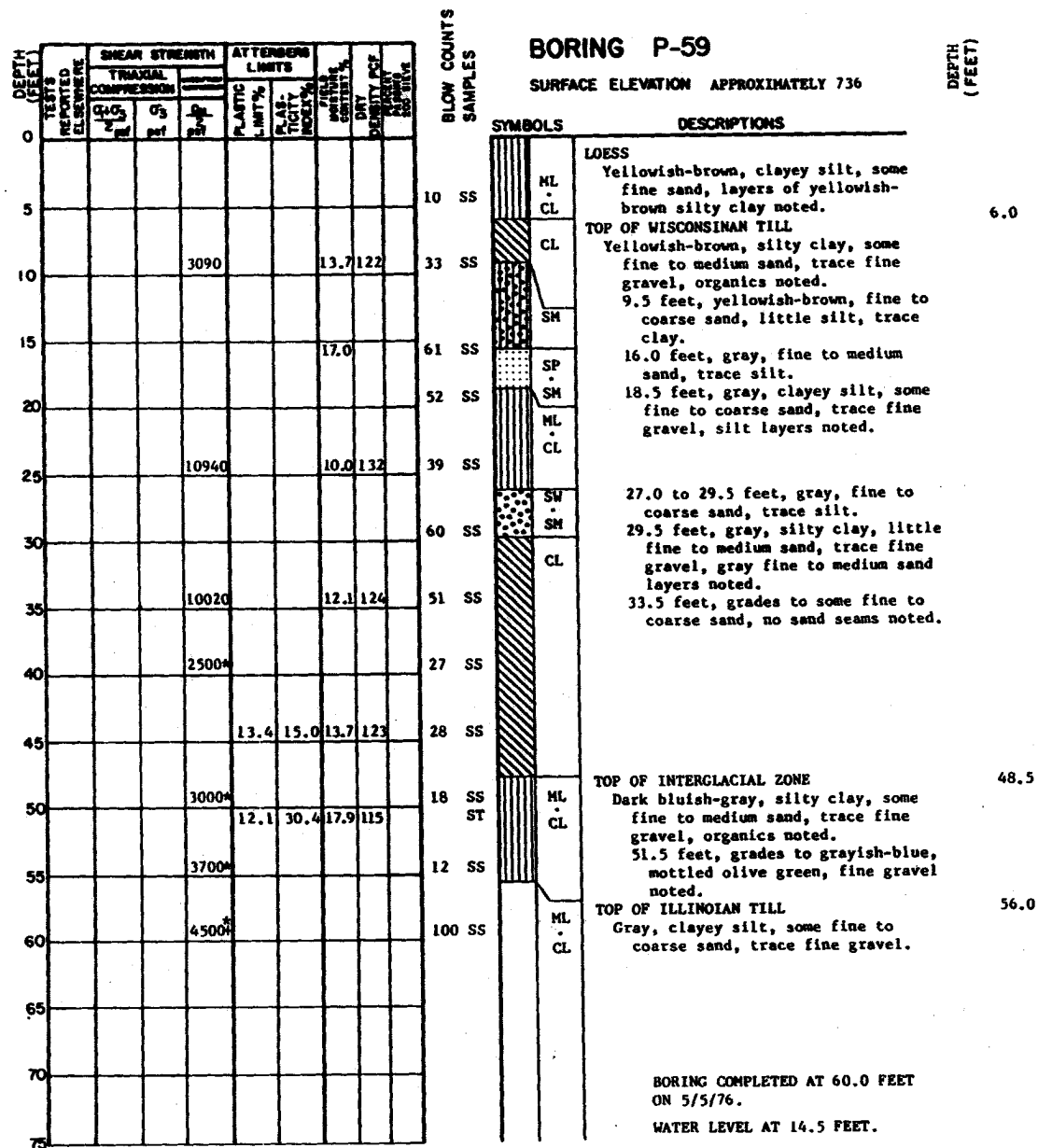


**CLINTON POWER STATION
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FIGURE 2.5-69

LOG OF BORING P-58

Logged by: Sargent & Lundy Engineers
Drilled by: Raymond International
Tested by: Westenhoff & Novick, Inc.



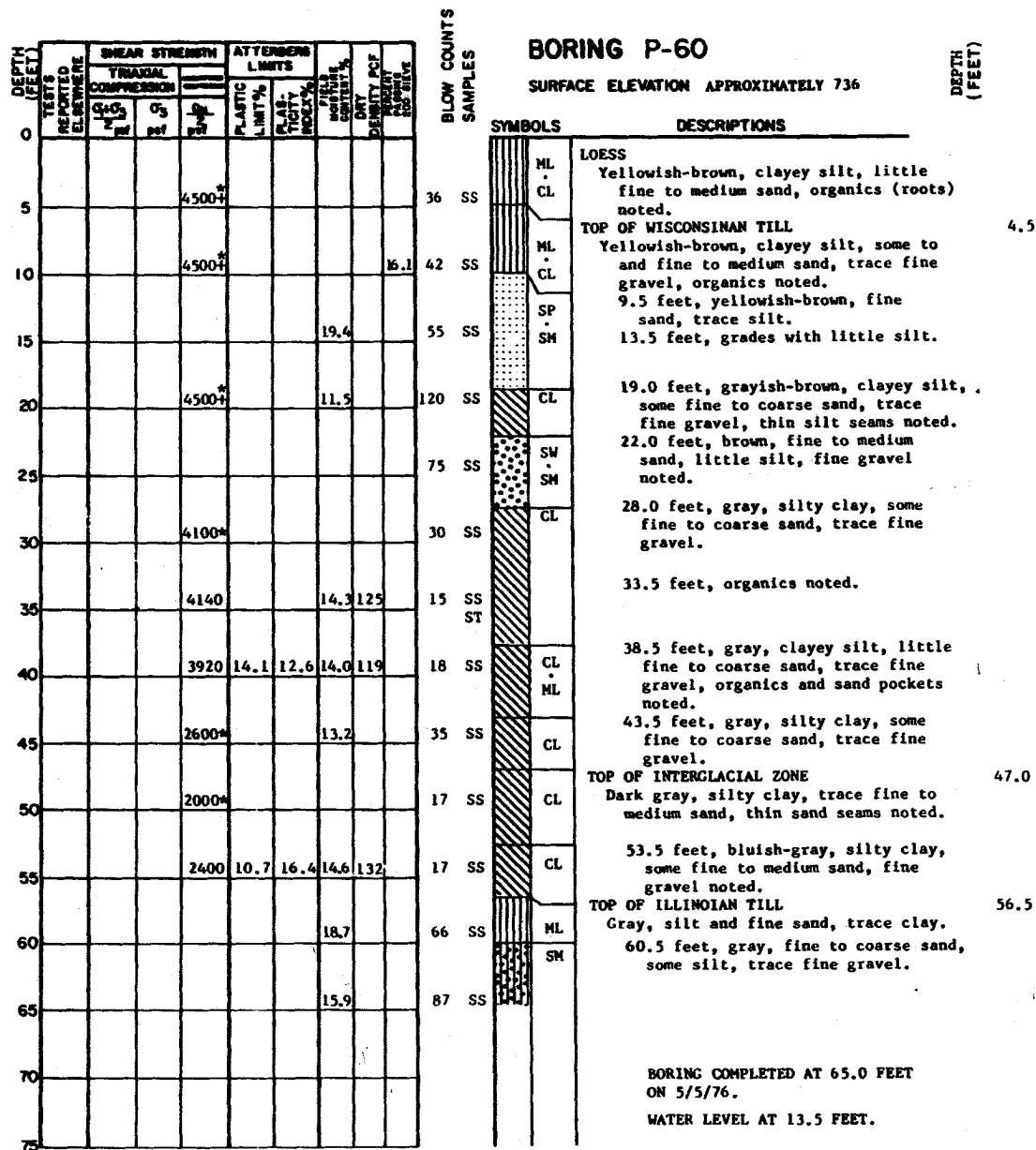
NOTES

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
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FIGURE 2.5-70

LOG OF BORING P-59



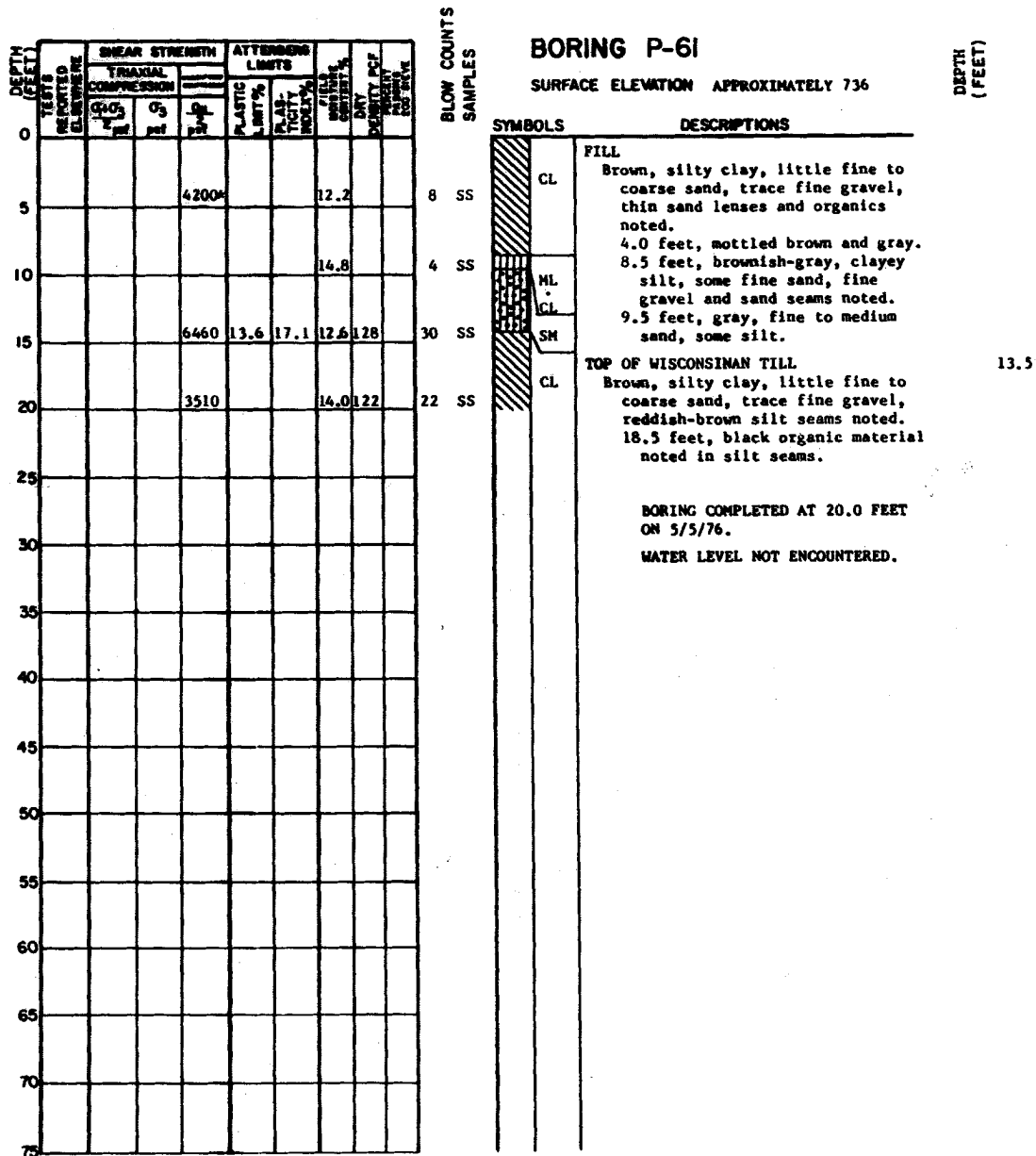
NOTES

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-71

LOG OF BORING P-60



NOTES

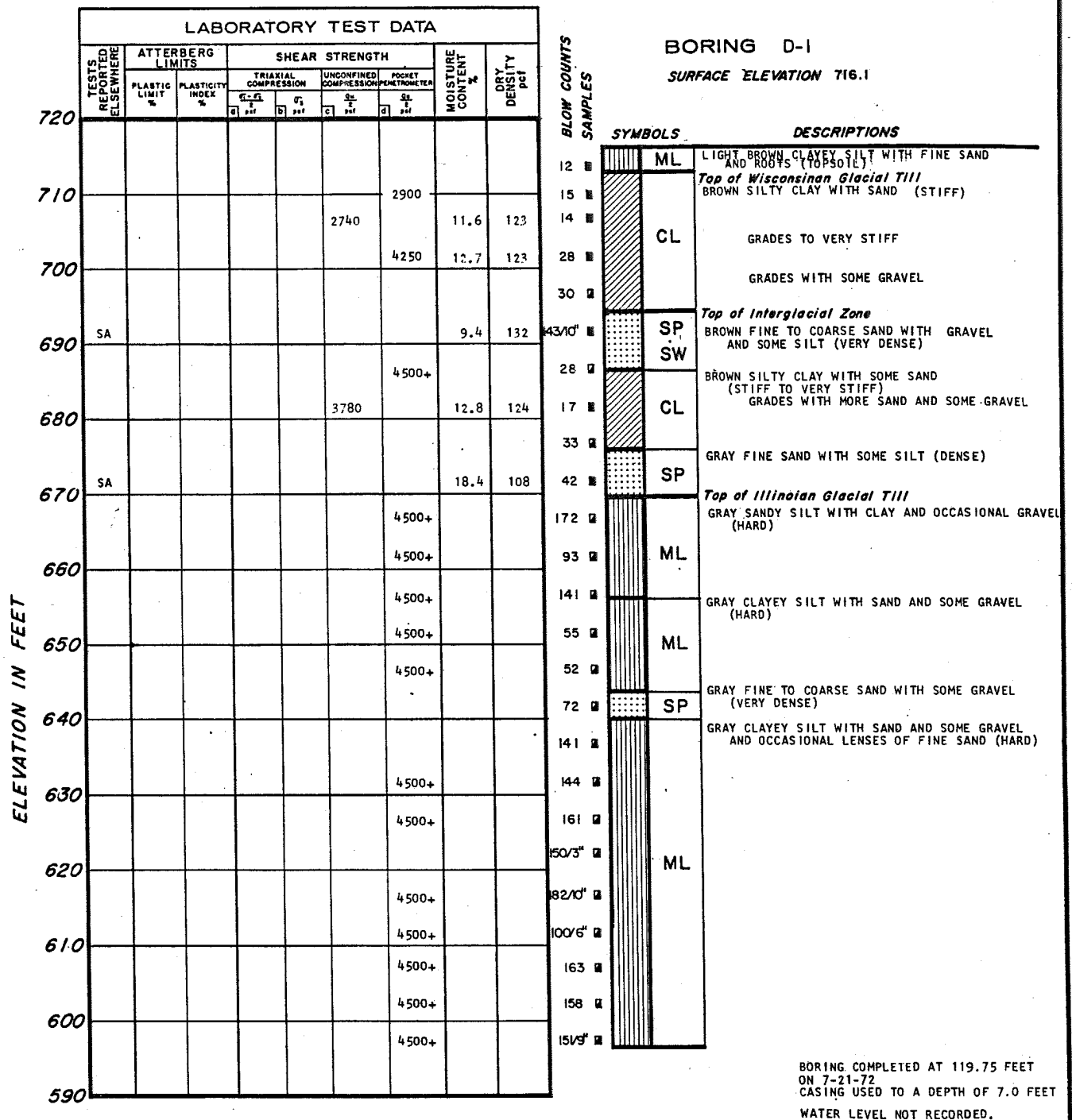
1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
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FIGURE 2.5-72

LOG OF BORING P-61

LOG OF BORING P-61A



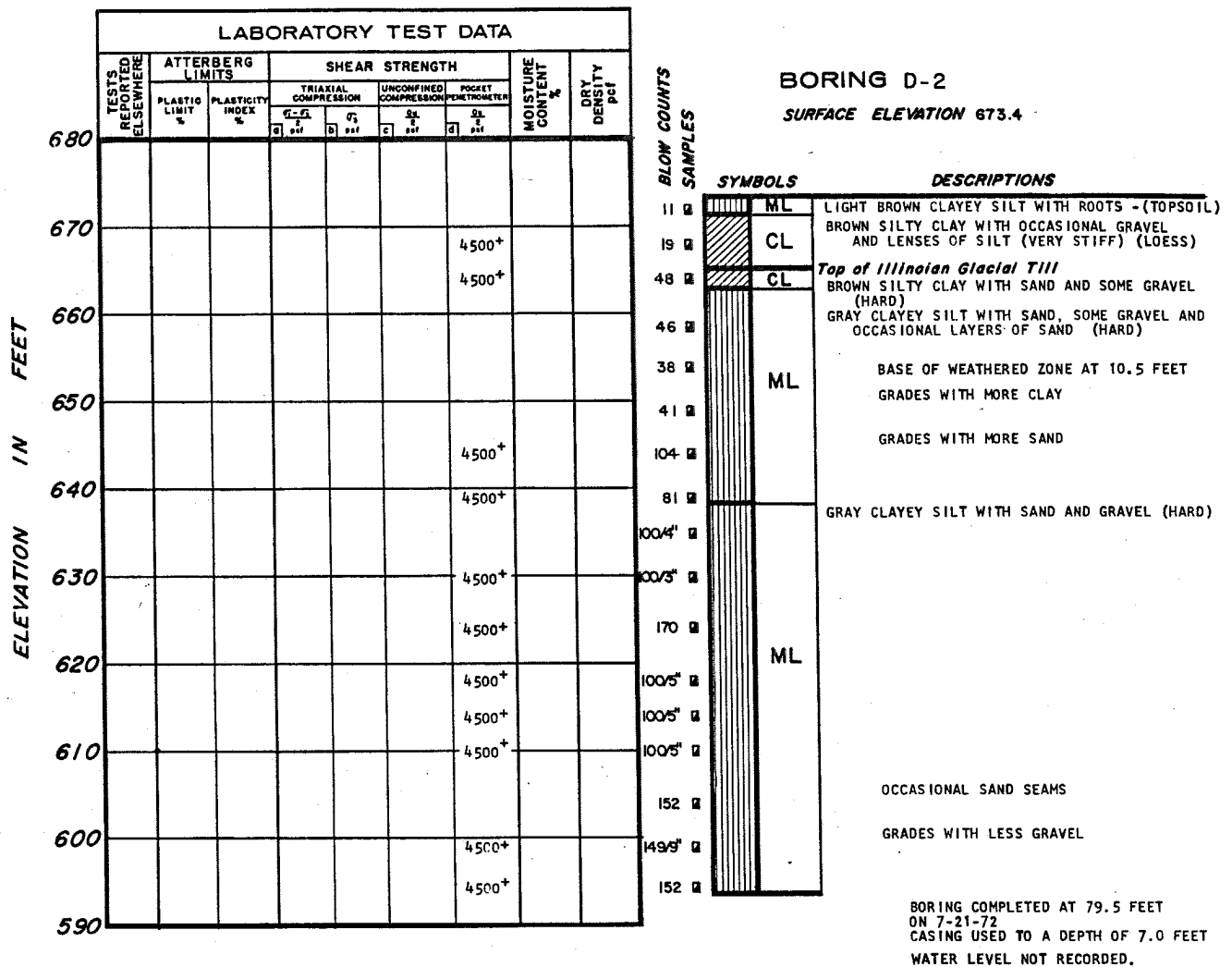
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-74

LOG OF BORING D-1



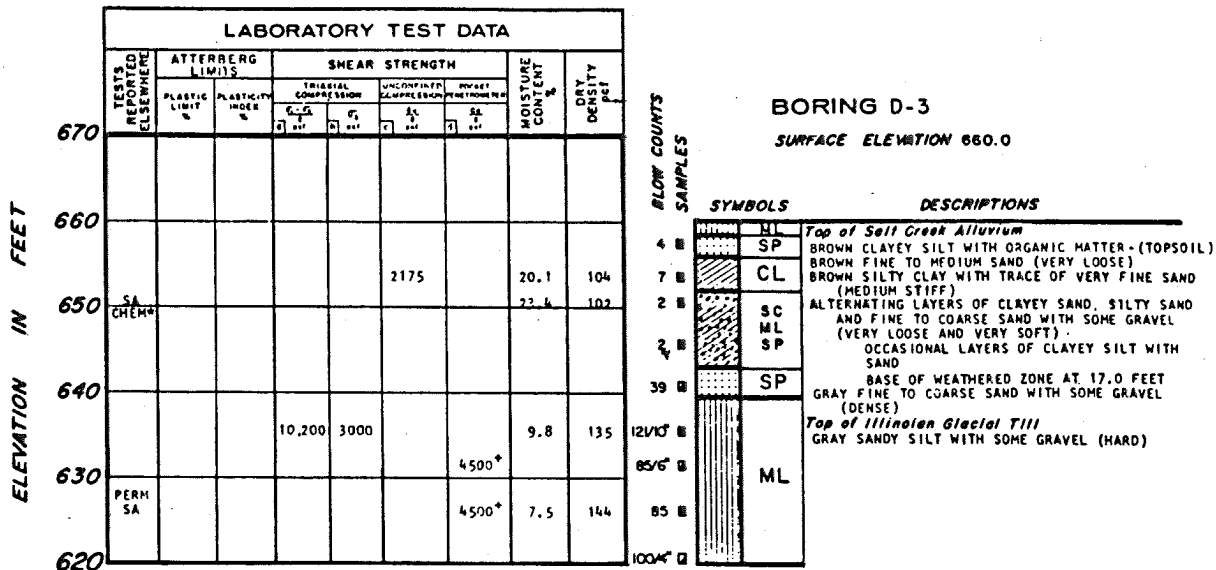
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

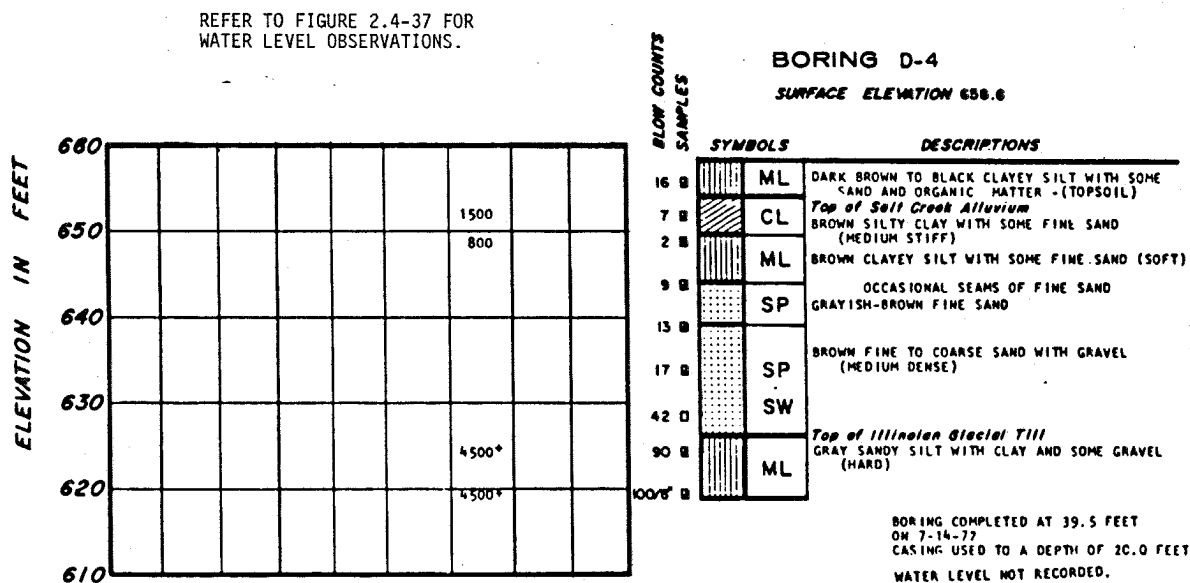
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-75

LOG OF BORING D-2



BORING COMPLETED AT 40.0 FEET
ON 7-13-72
CASING USED TO A DEPTH OF 20.0 FEET



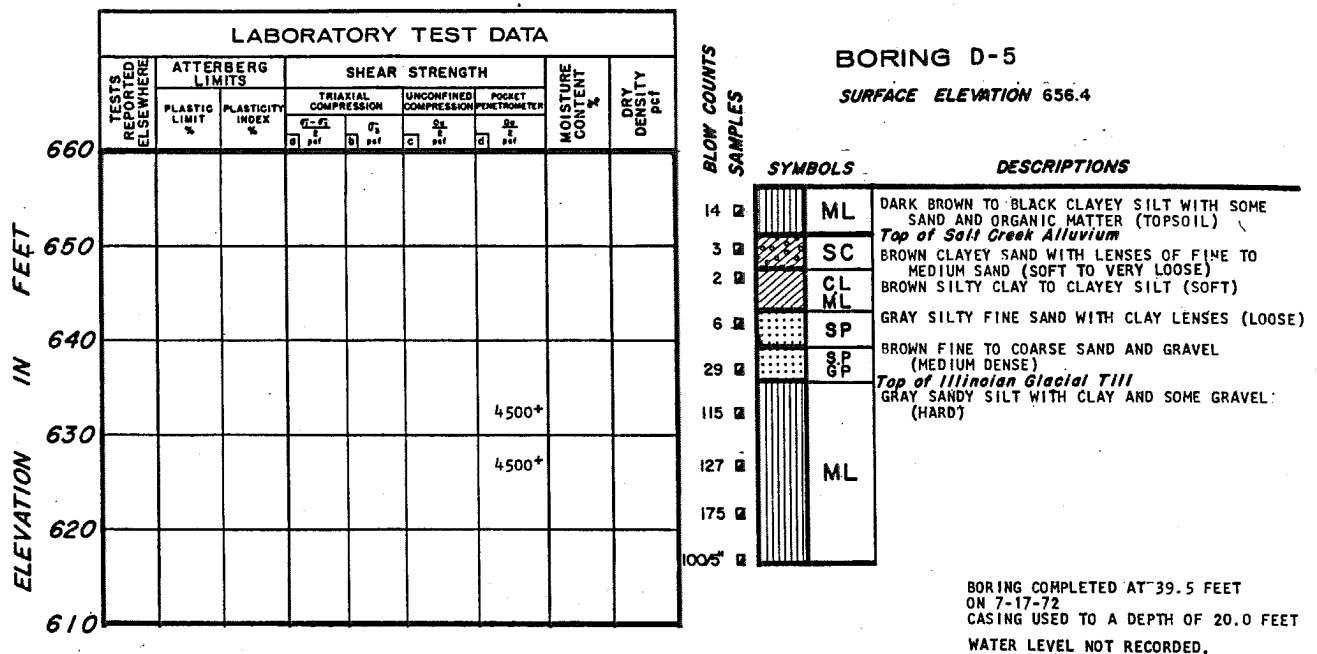
CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-76

LOG OF BORINGS D-3 AND D-4

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-77

LOG OF BORING D-5

LABORATORY TEST DATA									
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf	
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION		UNCONFINED COMPRESSION pcf	POCKET PENETROMETER			
			$\frac{\sigma_1 - \sigma_3}{2}$ pcf	σ_3 pcf					
660									
650	C	20.1	9.5			775	500	27.4 33.1	96 88
640							4500+		
630							4500+	8.8	134
620							4500+	7.1	147
610							4500+		
600	C						4500+	6.5	136
590							4500+		
580				2040	6000		4500+	16.5	115
570	TX/DY			9650	6000		4500+	9.0	135

ELEVATION IN FEET

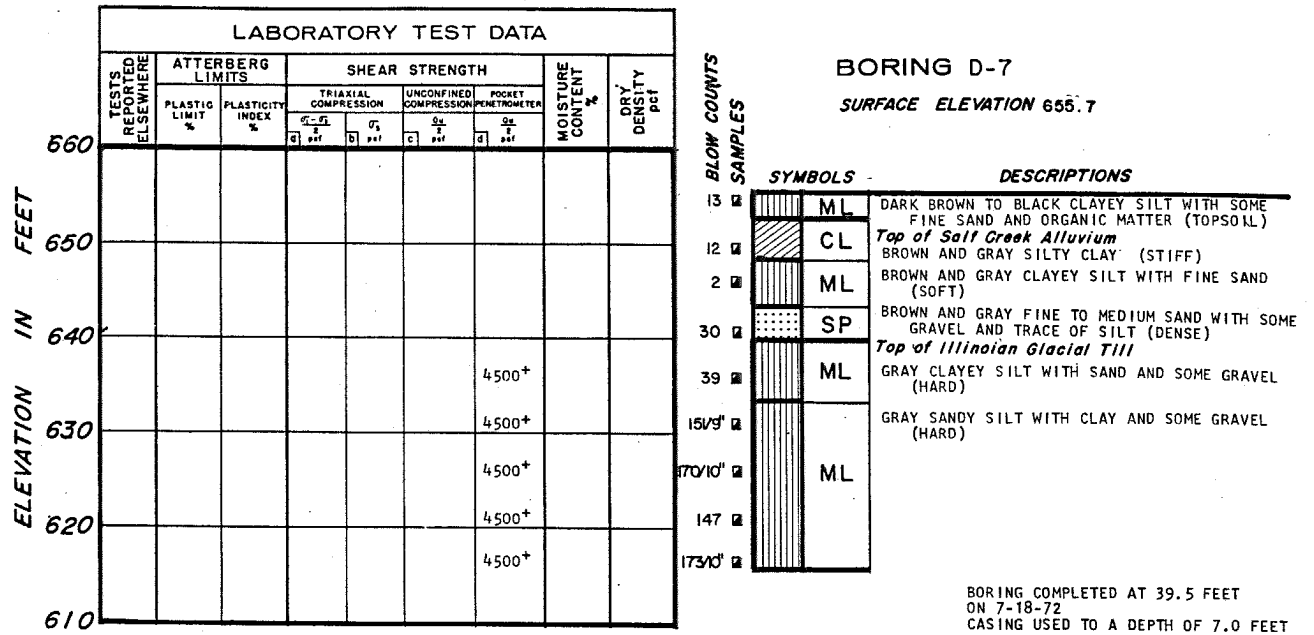
BLOW COUNTS
SAMPLES

SYMBOLS -		DESCRIPTIONS
9	ML	DARK BROWN AND BLACK CLAYEY SILT WITH ROOTS- (TOPSOIL)
4	CL	GRADES WITH MORE CLAY
2/24	ML	Top of Salt Creek Alluvium
		BROWN SILTY CLAY WITH TRACE OF FINE SAND (SOFT)
16	SM	GRADES TO CLAYEY SILT WITH SEAMS OF VERY FINE SANDY SILT
27		GRAY SILTY FINE SAND WITH SOME CLAY (MEDIUM DENSE)
46/10		Top of Illinoian Glacial Till.
91		GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF)
100/7		GRADES TO HARD
135		
116	ML	
83		
136		
129		
93		
108/6	ML	GRAY SILT WITH TRACE OF CLAY (HARD) (GLACIAL OUTWASH)
51	ML	BROWNISH-GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) (TILL)
93		

BORING COMPLETED AT 80.0 FEET
 ON 7-18-72
 CASING USED TO A DEPTH OF 20.0 FEET
 WATER LEVEL NOT RECORDED.

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

LOG OF BORING D-6



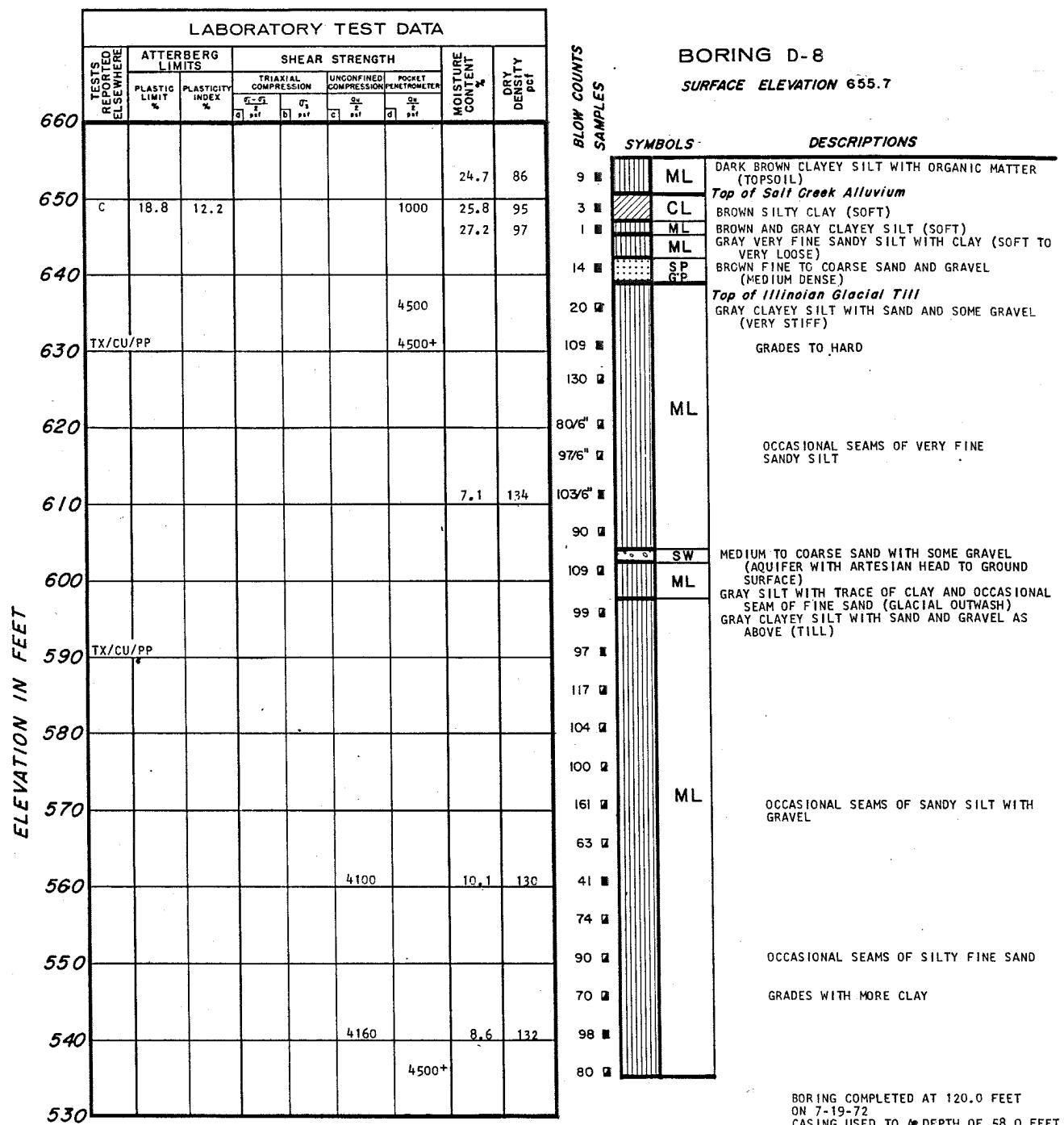
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-79

LOG OF BORING D-7



PIEZOMETER INSTALLED IN D-8 ON 7-19-72
BORING D-8B WAS LOCATED ADJACENT TO
8A AND WAS DRILLED TO A DEPTH OF 16.0 FEET
A 3/4 INCH PVC PIPE WITH THE LOWER END
PLUGGED AND THE LOWER 5 FEET PERFORATED
WAS PLACED AT ELEVATION 639.7. PEA
GRAVEL WAS PLACED FROM ELEVATION 639.7
TO 654.2 AND CEMENT GROUT FROM ELEVATION
654.2 TO 655.7.

WATER LEVEL READINGS

DEPTH BELOW GROUND
SURFACE IN FEET

5.9
6.2
7.8

DATE

8-3-72
8-15-72
9-6-72

REFER TO FIGURE 2.4-37 FOR
WATER LEVEL OBSERVATIONS.

NOTE:

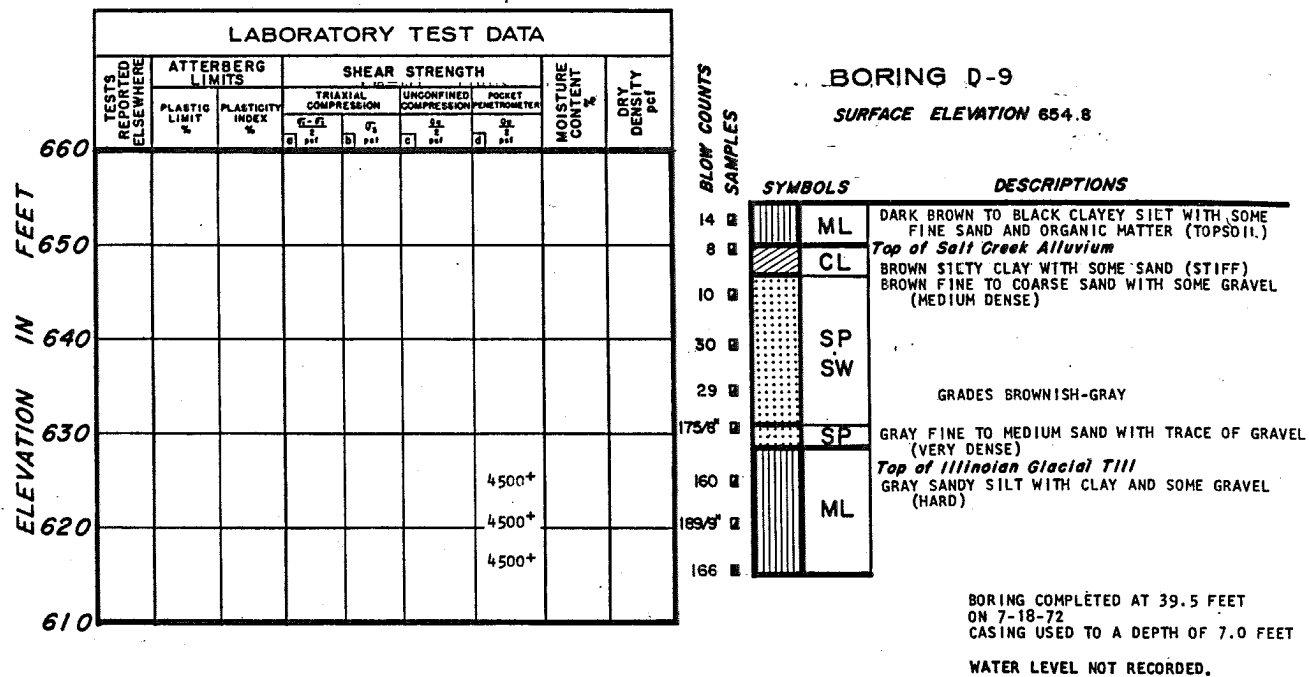
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-80

LOG OF BORING D-8

BORING COMPLETED AT 120.0 FEET
ON 7-19-72
CASING USED TO A DEPTH OF 58.0 FEET



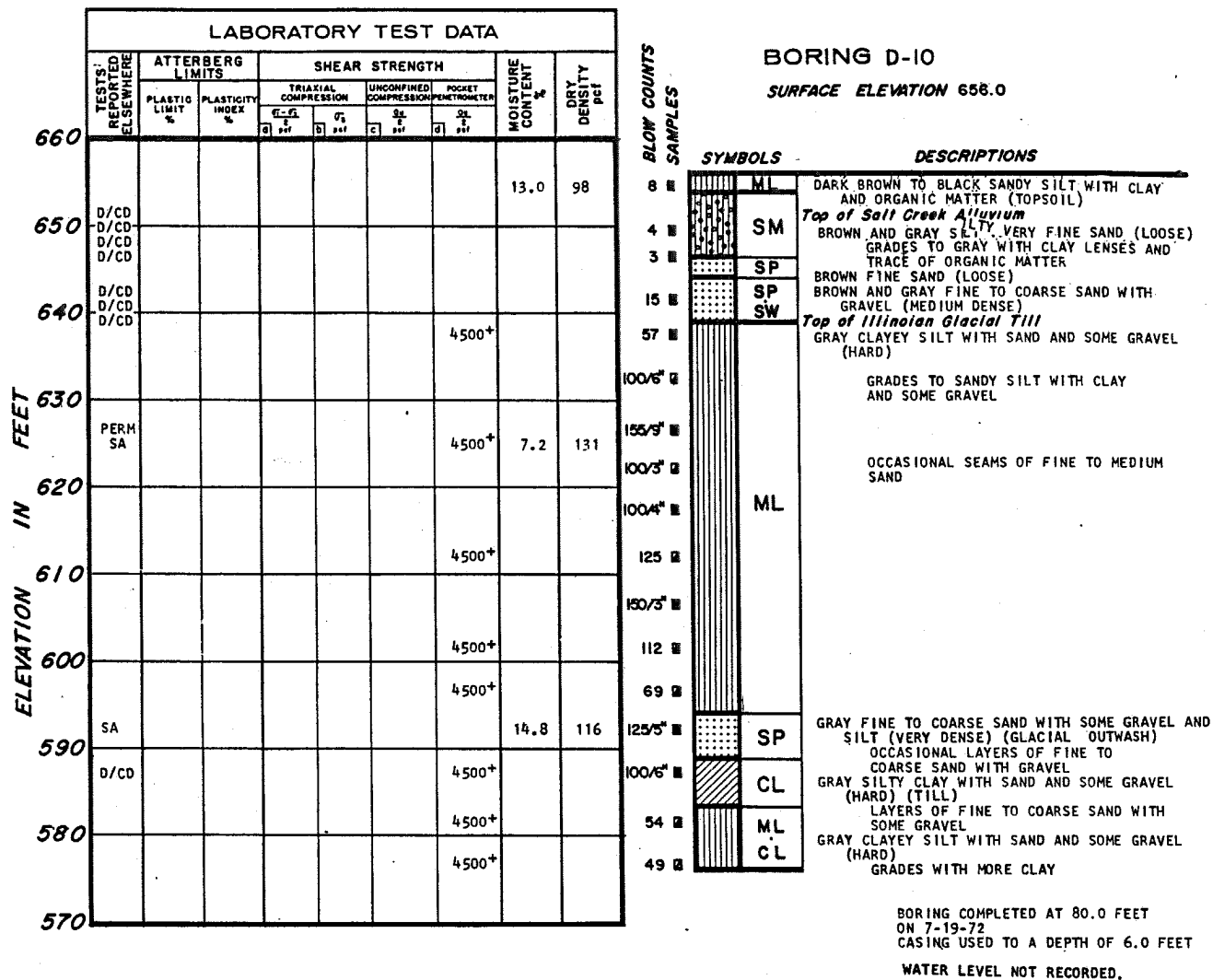
**CLINTON POWER STATION
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FIGURE 2.5-81

LOG OF BORING D-9

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



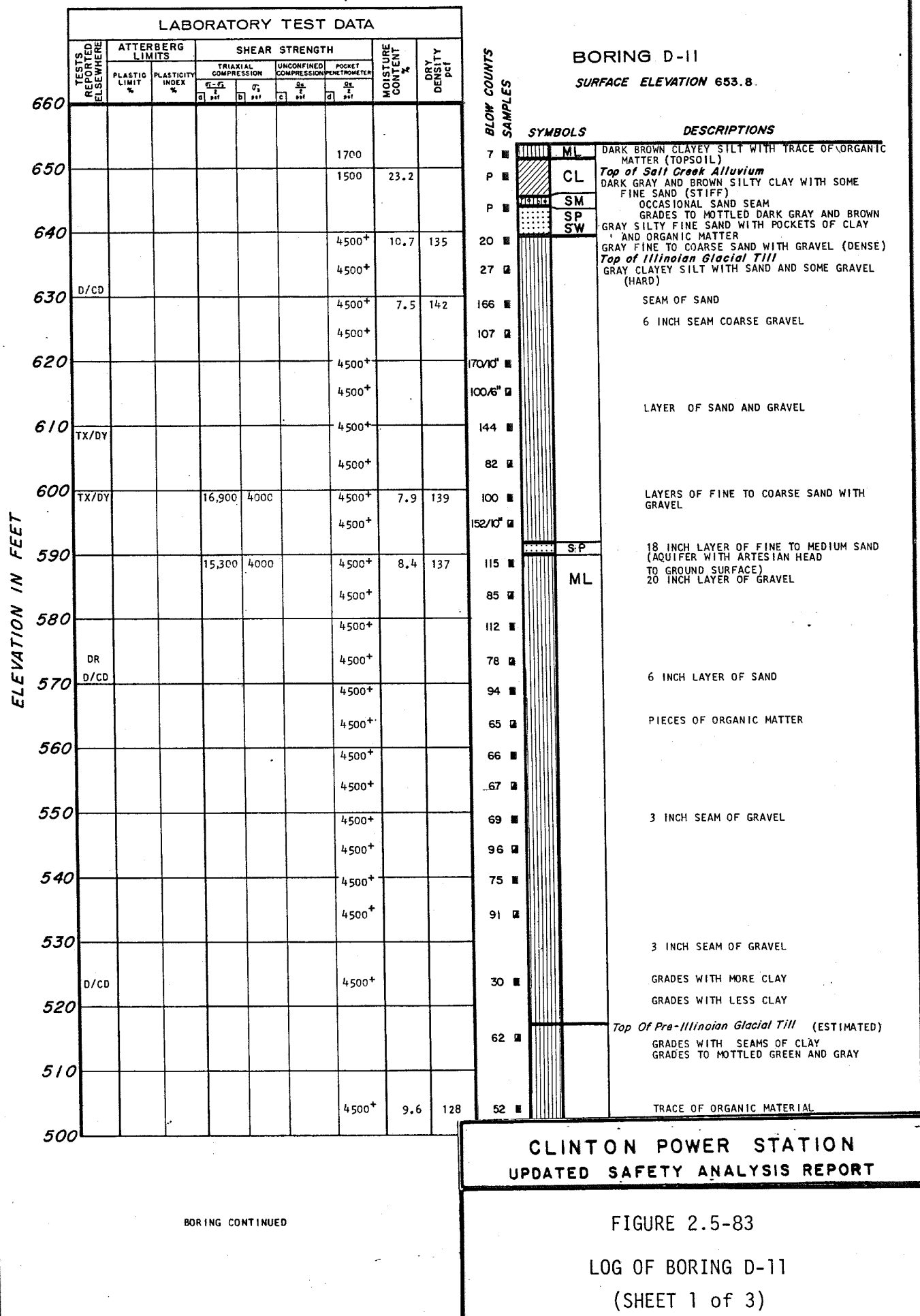
**CLINTON POWER STATION
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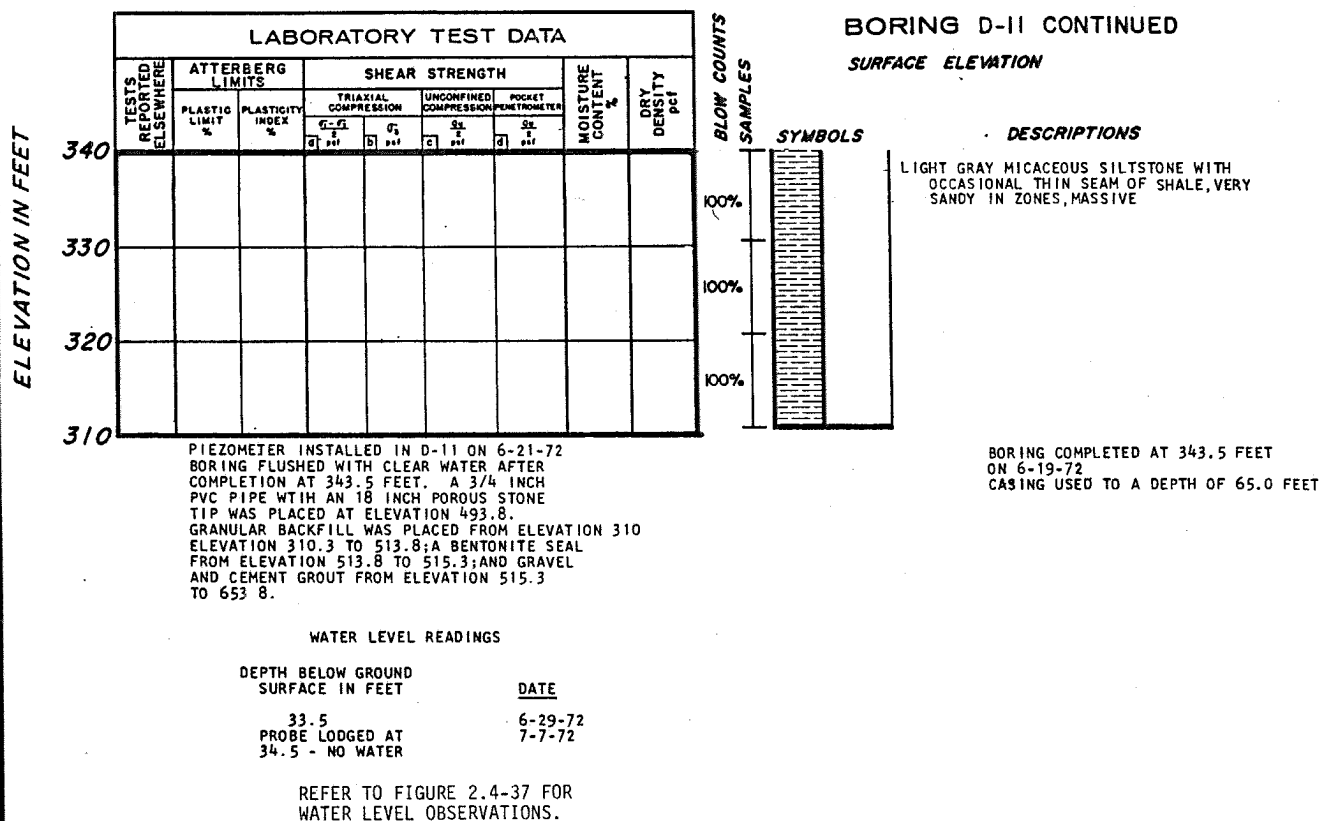
FIGURE 2.5-82

LOG OF BORING D-10

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



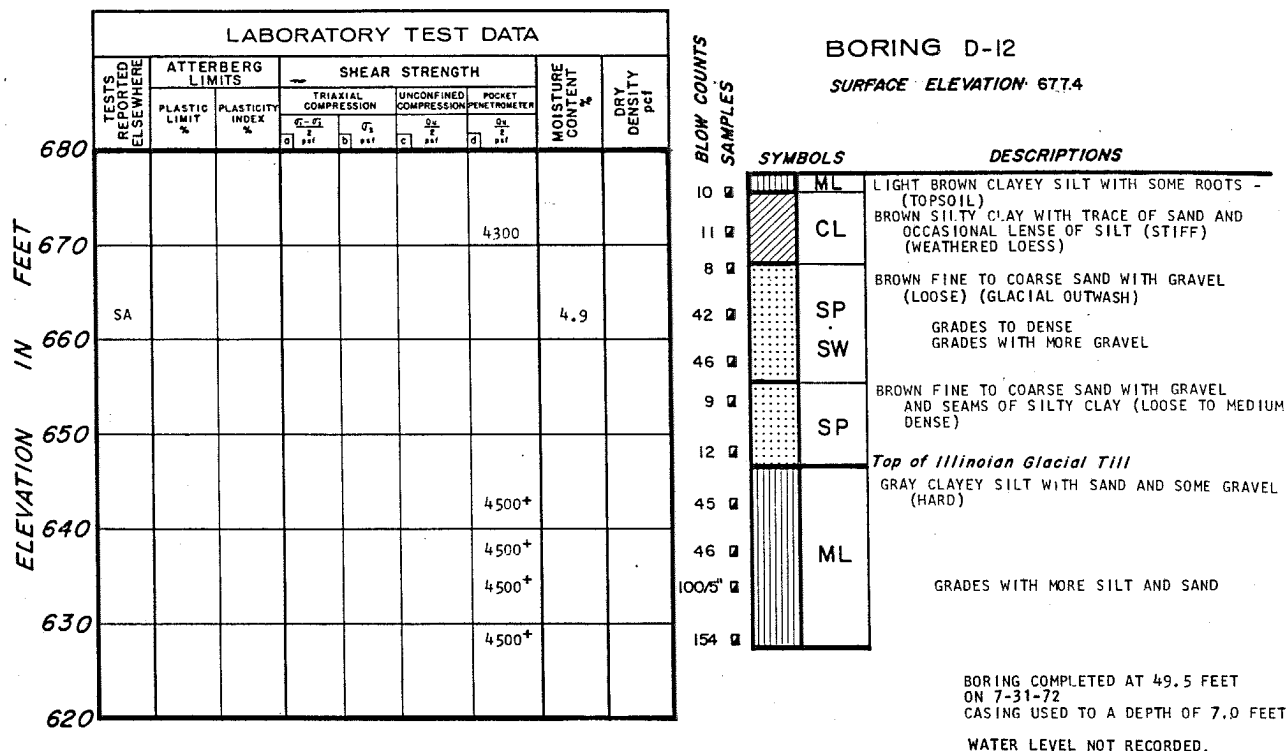


**CLINTON POWER STATION
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FIGURE 2.5-83

LOG OF BORING D-11
(SHEET 3 of 3)

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

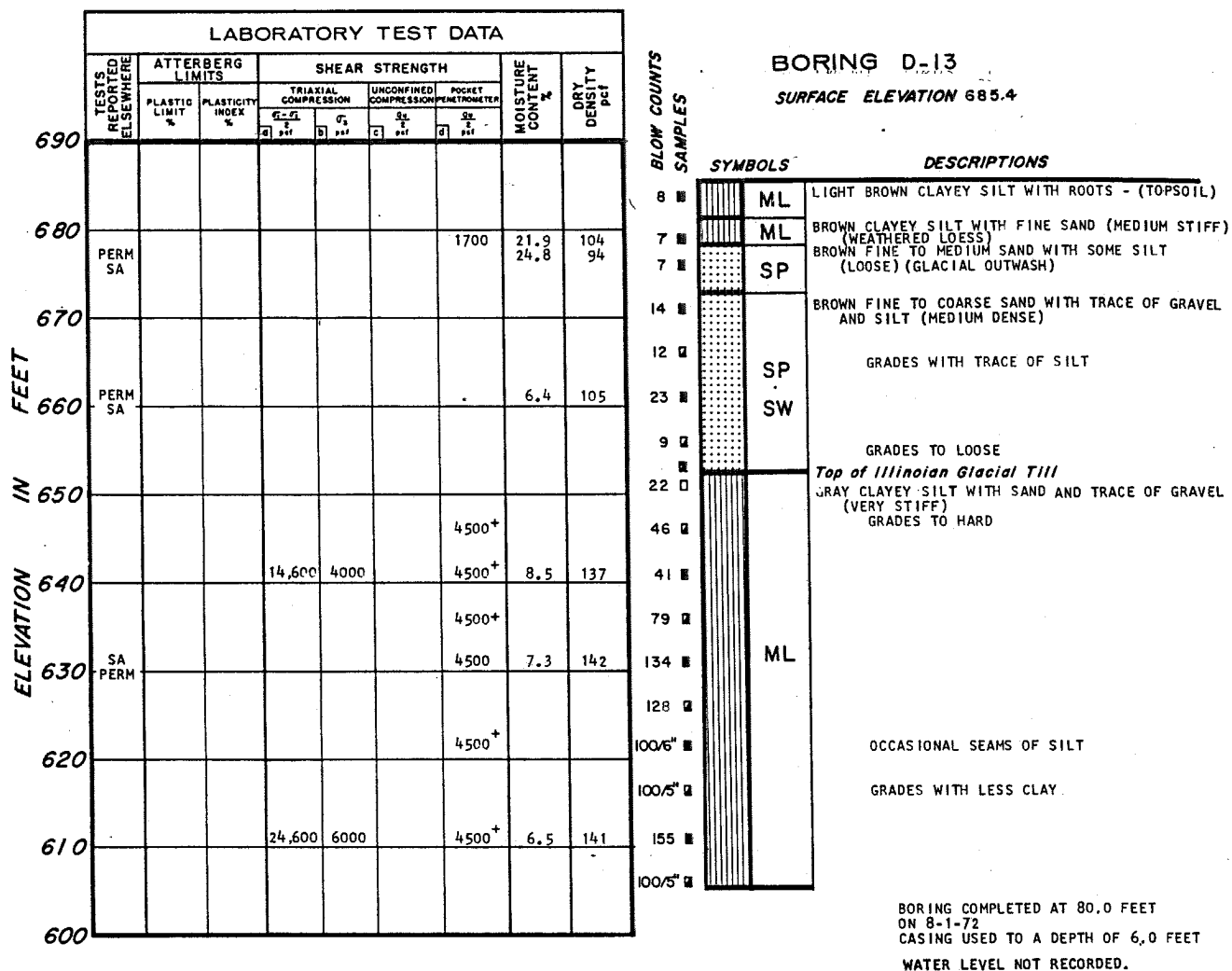


**CLINTON POWER STATION
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FIGURE 2.5-84

LOG OF BORING D-12

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



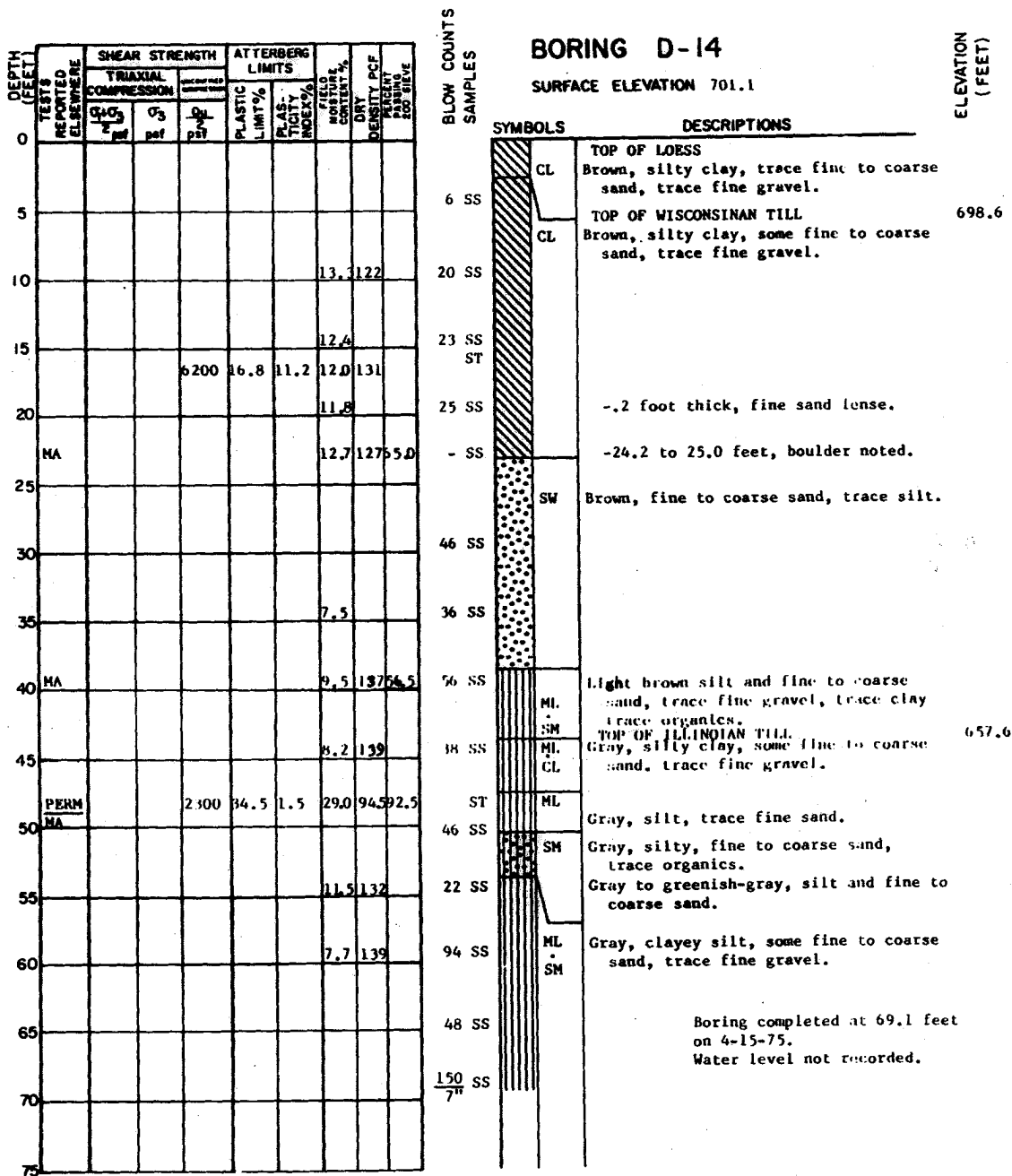
**CLINTON POWER STATION
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FIGURE 2.5-85

LOG OF BORING D-13

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



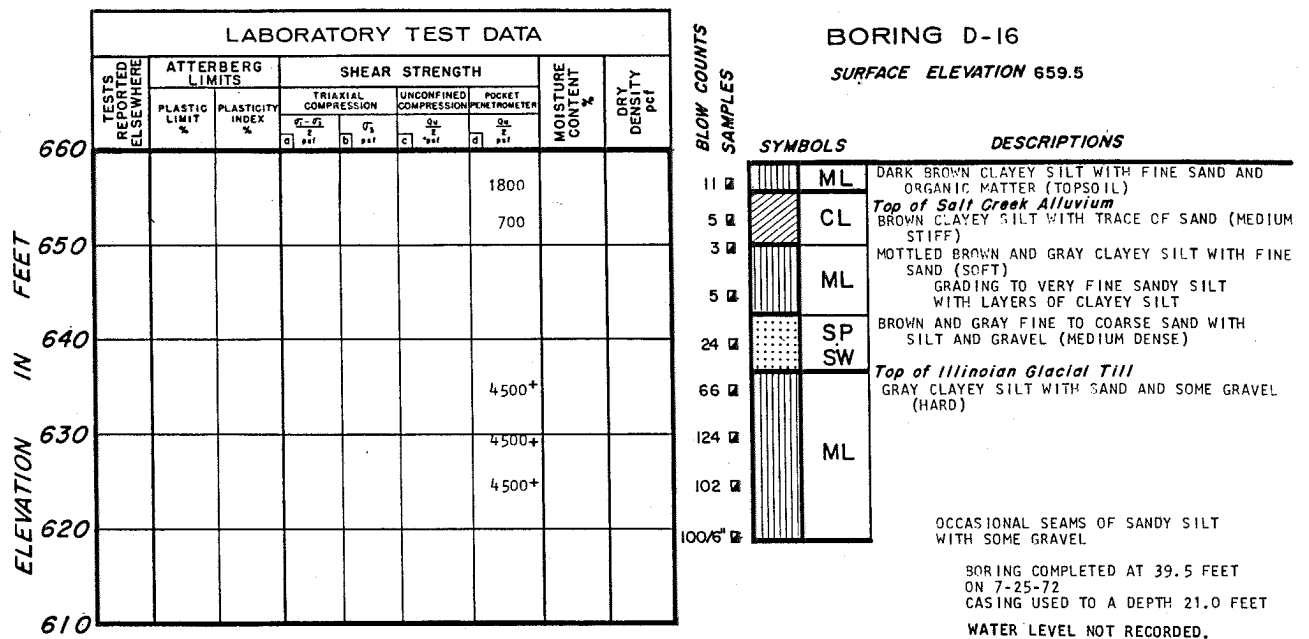
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-86

LOG OF BORING D-14



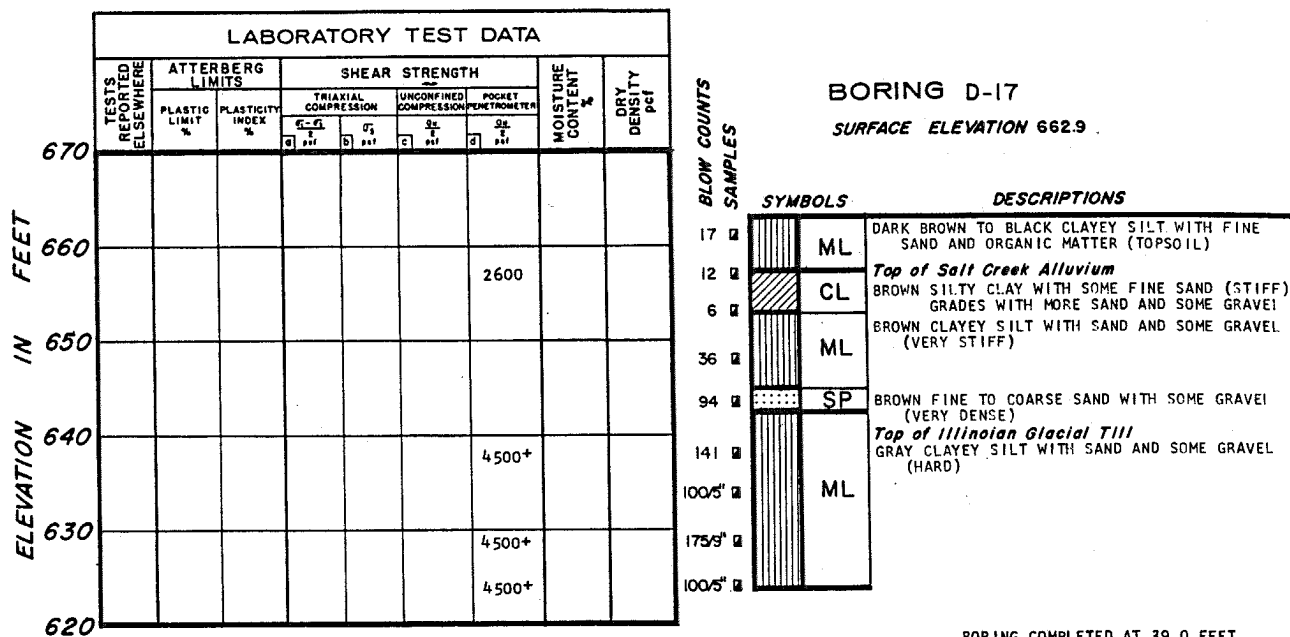
**CLINTON POWER STATION
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FIGURE 2.5-87

LOG OF BORING D-16

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



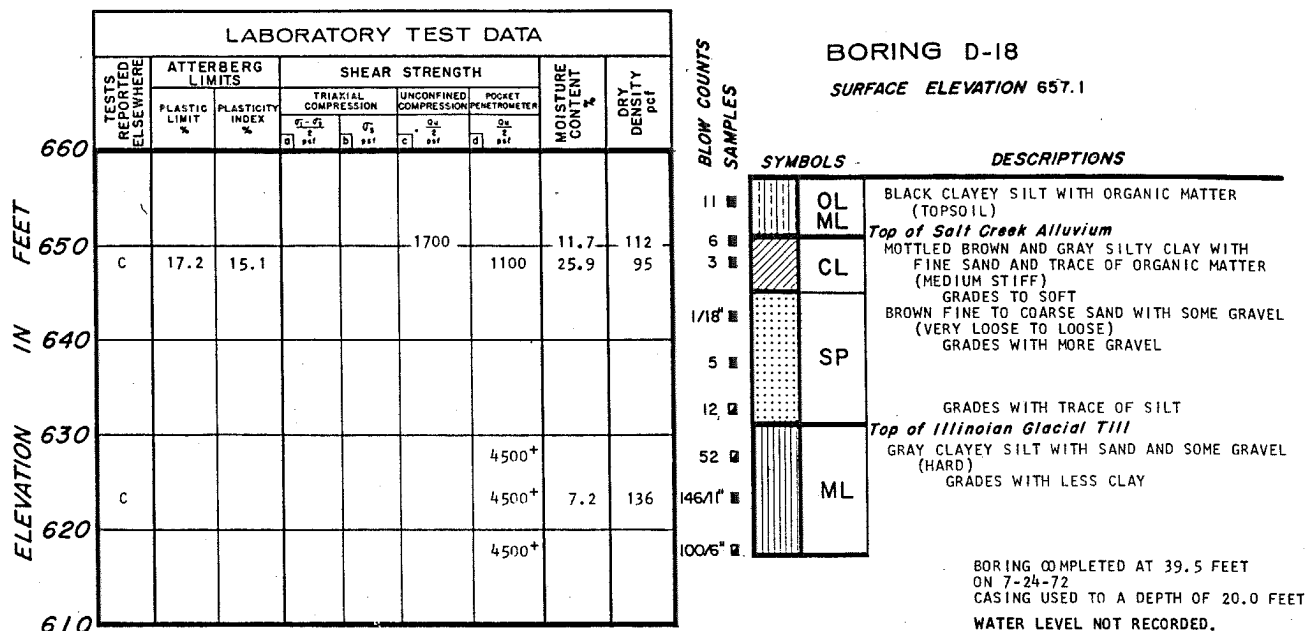
BORING COMPLETED AT 39.0 FEET
ON 7-13-72
CASING USED TO A DEPTH OF 7.0 FEET
WATER LEVEL NOT RECORDED.

CLINTON POWER STATION
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FIGURE 2.5-88

LOG OF BORING D-17

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



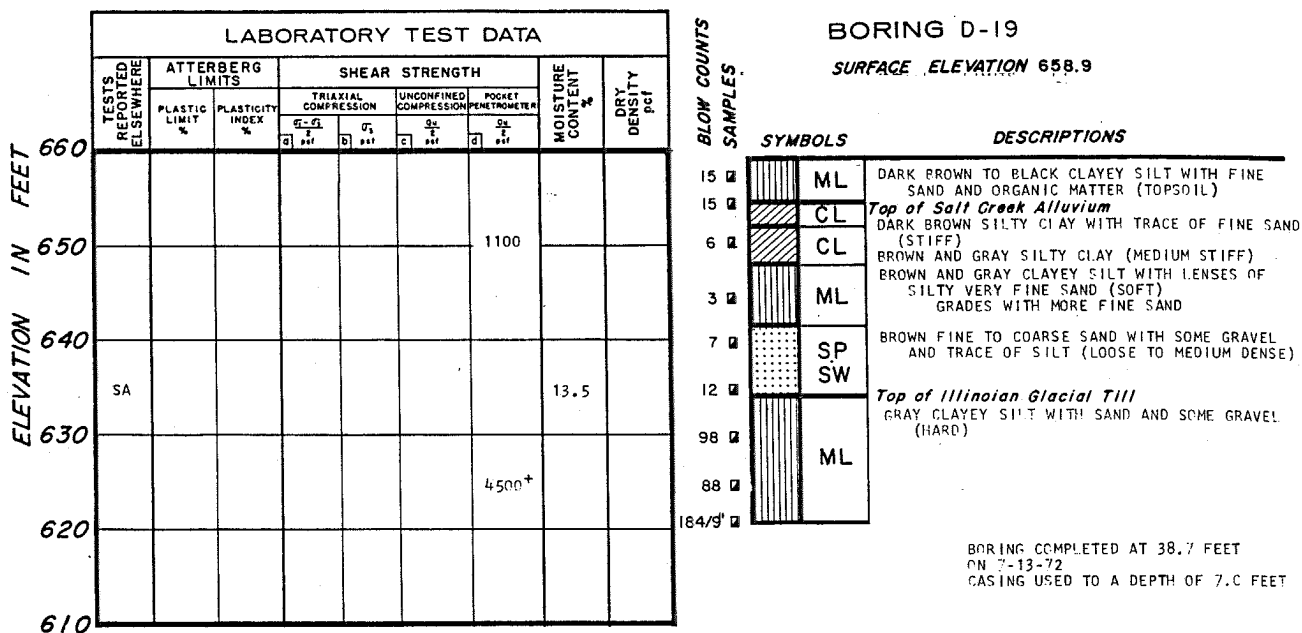
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-89

LOG OF BORING D-18



PIEZOMETERS INSTALLED IN D-19B ON 7-13-72
BORING D-19B WAS DRILLED TO 38.0 FEET
ADJACENT TO D-19A AND WAS FLUSHED WITH
CLEAN WATER AFTER COMPLETION. A 3/4
INCH PVC PIPE WITH A POROUS STONE TIP WAS
PLACED AT ELEVATION 620.9. PEA GRAVEL
WAS PLACED FROM ELEVATION 620.9 TO 625.9.
A BENTONITE SEAL FROM 625.9 TO 628.9,
AND PEA GRAVEL FROM 628.9 TO 630.9.
A 3/4 INCH PVC PIPE WITH A POROUS STONE TIP
WAS PLACED AT ELEVATION 630.9. PEA
GRAVEL WAS PLACED FROM ELEVATION 630.9
TO 635.9; A BENTONITE SEAL FROM ELEVATION
635.9 TO 637.1; AND GRAVEL FROM ELEVATION
637.1 TO 658.9.

WATER LEVEL READINGS

DEPTH BELOW GROUND
SURFACE IN FEET

TIP ELEVATION 620.9	TIP ELEVATION 630.9	DATE
8.9	8.8	8-8-72
9.7	10.0	8-22-72
10.5	10.5	9-6-72

REFER TO FIGURE 2.4-37 FOR
WATER LEVEL OBSERVATIONS.

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FIGURE 2.5-90





LOG OF BORING D-19

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

ELEVATION IN FEET	Point Label
660	1300
650	4500+
640	4500+
630	4500+
620	4500+
610	

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

BLOW COUNTS SAMPLES		BORING D-21		SURFACE ELEVATION 656.0	
		SYMBOLS	DESCRIPTIONS		
11	█		ML	DARK BROWN TO BLACK CLAYEY SILT WITH FINE SAND AND ORGANIC MATTER - (TOPSOIL)	
12	█		CL	<i>Top of Salt Creek Alluvium</i> BROWN AND GRAY SILTY CLAY (STIFF)	
10	█		SP	BROWN FINE TO MEDIUM SAND WITH TRACE OF COARSE SAND AND GRAVEL (MEDIUM DENSE)	
42	█			<i>Top of Illinoian Glacial Till</i>	
80	█			GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)	
89	█			GRADES WITH OCCASIONAL SEAMS OF SAND AND GRAVEL	
185	█		ML		
100'6"	█				
188	█				

BORING COMPLETED AT 40.0 FEET ON 7-14-72
CASING USED TO A DEPTH OF 7.0 FEET,
WATER LEVEL NOT RECORDED.

LOG OF BORINGS D-20 AND D-21

LABORATORY TEST DATA									
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY PCF	
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION		UNCONFINED COMPRESSION				POCKET PENETROMETER
			$\frac{\sigma_1 - \sigma_3}{2}$ psf	σ_3 psf	$\frac{S_u}{2}$ psf	$\frac{S_u}{2}$ psf			
660									
650						900			
640									
630									
620						4500 ⁺			
						4500 ⁺			
						4500 ⁺			
610									

BORING D-22

SURFACE ELEVATION 654.7

BLOW COUNTS
SAMPLES

SYMBOLS

DESCRIPTIONS

8	ML	DARK BROWN TO BLACK CLAYEY SILT WITH SOME FINE SAND AND ORGANIC MATTER - (TOPSOIL)
1	CL	Top of Salt Creek Alluvium
1	SP	BROWN SILTY CLAY WITH SOME SAND (VERY SOFT TO SOFT)
23	SP	BROWN FINE TO MEDIUM SAND WITH TRACE OF SILT (VERY LOOSE)
20	SW	BROWN AND GRAY FINE TO COARSE SAND WITH GRAVEL (MEDIUM DENSE)
95	SM	Top of Illinoian Glacial Till
105		GRAY SILTY FINE TO COARSE SAND WITH SOME GRAVEL AND TRACE OF CLAY (VERY DENSE)
100/9'		GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
100/6"	ML	

BORING COMPLETED AT 39.5 FEET
ON 7-21-72
CASING USED TO A DEPTH OF 19.0 FEET
WATER LEVEL NOT RECORDED.

660									
650						1300			
640									
630						4500 ⁺			
620						4500 ⁺			
610						4500 ⁺			

BLOW COUNTS
SAMPLES

BORING D-23

SURFACE ELEVATION 655.8

SYMBOLS

DESCRIPTIONS

7	ML	DARK BROWN TO BLACK CLAYEY SILT WITH FINE SAND AND ORGANIC MATTER - (TOPSOIL)
9	CL	Top of Salt Creek Alluvium
2	ML	BROWN AND GRAY SILTY CLAY WITH SOME VERY FINE SAND (MEDIUM STIFF)
18	SP	BROWN AND GRAY CLAYEY SILT (VERY SOFT TO SOFT)
29		BROWN FINE TO COARSE SAND WITH SOME GRAVEL (MEDIUM DENSE)
45		Top of Illinoian Glacial Till
160/9'		GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
135		GRADES WITH LESS CLAY
100/5"		
100/6"	ML	

BORING COMPLETED AT 39.0 FEET
ON 7-14-72
CASING USED TO A DEPTH OF 7.0 FEET

PIEZOMETERS INSTALLED IN D-23 ON 7-14-72
BORING D-23B WAS DRILLED TO 35.0 FEET
ADJACENT TO D-23A AND WAS FLUSHED WITH
CLEAN WATER AFTER COMPLETION. A BENTONITE
SEAL WAS PLACED FROM ELEVATION 620.8 TO
624.3, AND A 3/4 INCH PVC PIPE WITH A POROUS STONE
STONE TIP WAS PLACED AT ELEVATION 624.3.
PEA GRAVEL WAS PLACED FROM ELEVATION 624.3
TO 630.8 AND A BENTONITE SEAL FROM ELEVATION
630.8 TO 639.8. A 3/4 INCH PVC PIPE WITH
A POROUS STONE TIP WAS PLACED AT ELEVATION
641.0. PEA GRAVEL WAS PLACED FROM ELEVATION
639.8 TO 644.3; A BENTONITE SEAL FROM ELEVATION
644.3 TO 652.8; AND CONCRETE FROM ELEVATION
652.8 TO 655.8.

WATER LEVEL READINGS

DEPTH BELOW GROUND
SURFACE IN FEET

TIP ELEVATION 624.3

T+P ELEVATION 641.0

DATE

4.9
5.3
6.0

6.4
6.9
8.4

8-8-72
8-22-72
9-6-72

REFER TO FIGURE 2.4-37 FOR
WATER LEVEL OBSERVATIONS.

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-92

LOG OF BORINGS D-22 AND D-23

LABORATORY TEST DATA									
ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf
		PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET PENETROMETER		
				$\frac{\sigma_1 - \sigma_3}{2}$ a psf	σ_3 b psf	$\frac{\sigma_u}{2}$ c psf	$\frac{q_u}{1}$ d psf		
660									
650	D/CD D/CD D/CD D/CD								
640	D/CD D/CD								
630	PERM SA						4500 ⁺	7.4	123
620							4500 ⁺ 4500 ⁺		
610							4500 ⁺		

BORING D-24
SURFACE ELEVATION 655.0

BLOW COUNTS	SAMPLES	SYMBOLS	DESCRIPTIONS
8		ML	DARK BROWN CLAYEY SILT WITH SAND AND ORGANIC MATTER - (TOPSOIL)
		ML	<i>Top of Salt Creek Alluvium</i>
2		SP	DARK BROWN SANDY SILT WITH CLAY (MEDIUM STIFF)
5		SP	BROWN FINE SAND WITH TRACE OF SILT (VERY LOOSE)
		SP	GRAY FINE SAND WITH SEAMS OF CLAY (LOOSE)
7		SP	BROWNISH-GRAY FINE TO COARSE SAND WITH GRAVEL (LOOSE)
70		SP	LAYER OF CLAYEY SILT WITH SAND AND SOME GRAVEL GRAY FINE TO MEDIUM SAND (VERY DENSE)
76		SP	<i>Top of Illinoian Glacial Till</i>
150			GRAY CLAYEY SILT WITH SAND AND TRACE OF GRAVEL (HARD)
100/5"		ML	
94/6"			

BORING COMPLETED AT 39.5 FEET
ON 7-24-72
CASING USED TO A DEPTH OF 18.5 FEET
WATER LEVEL NOT RECORDED.

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS	SHEAR STRENGTH	MOISTURE CONTENT %	DRY DENSITY PCF
660					
650					
640					
630					4500 ⁺
620					4500 ⁺ 4500 ⁺
610					4500 ⁺

BLOW COUNTS	SAMPLES	SYMBOLS	DESCRIPTIONS
8		ML	DARK BROWN TO BLACK CLAYEY SILT WITH FINE SAND AND ORGANIC MATTER (TOPSOIL)
		CL	<i>Top of Salt Creek Alluvium</i>
12		ML	BROWN AND GRAY SILTY CLAY (STIFF)
12		SM	BROWN CLAYEY SILT (SOFT)
		SP	GRAY FINE SAND WITH SILT AND TRACE OF CLAY (MEDIUM DENSE)
18		SP	GRAY FINE TO COARSE SAND WITH SOME GRAVEL (MEDIUM DENSE)
60			GRADES TO VERY DENSE
			<i>Top of Illinoian Glacial Till</i>
154			GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
180/9"		ML	
161/9"			
100/6"			

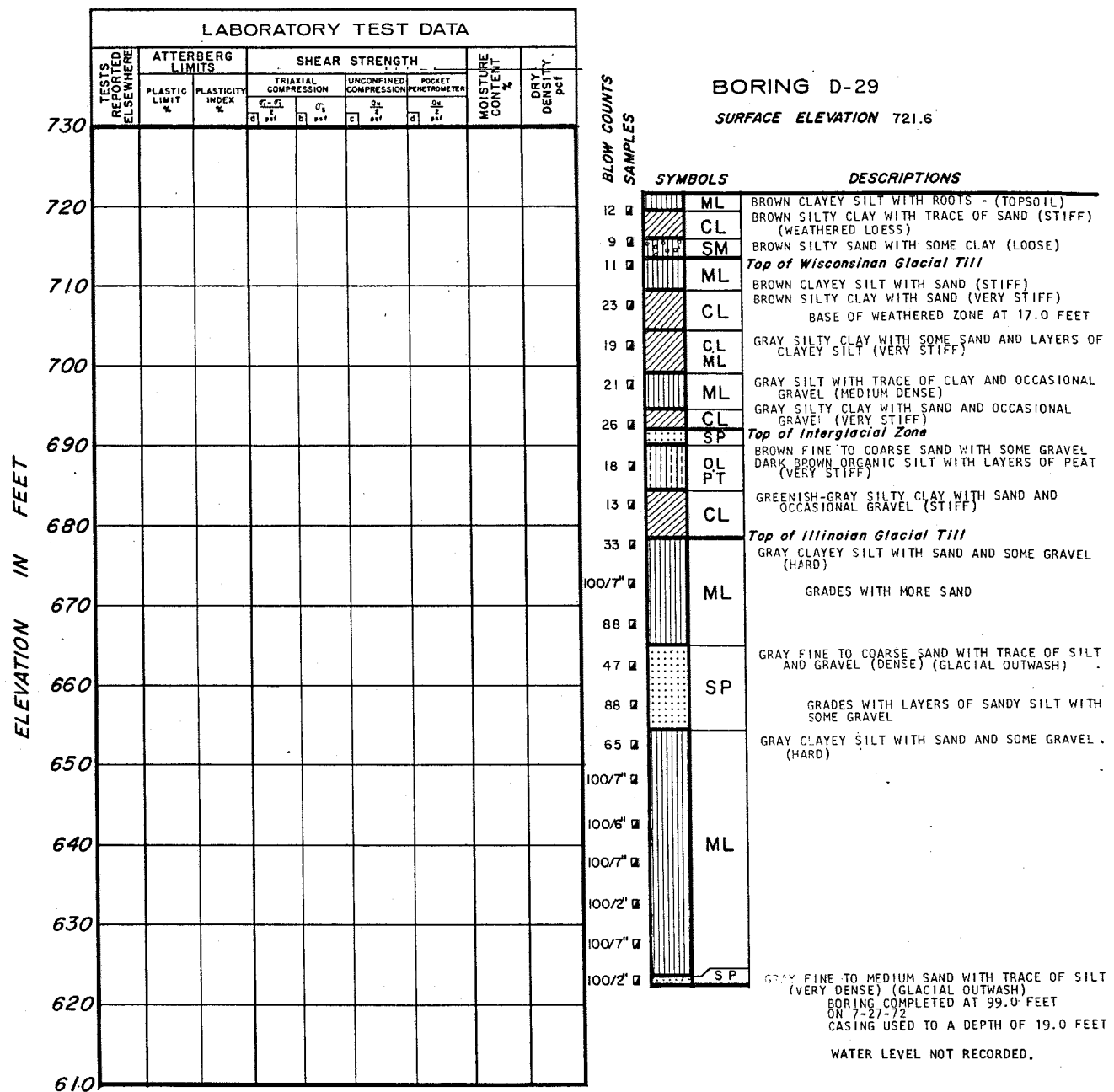
BORING COMPLETED AT 39.0 FEET
ON 7-19-72
CASING USED TO A DEPTH OF 7.0 FEET
WATER LEVEL NOT RECORDED.

**CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT**

FIGURE 2.5-93

LOG OF BORINGS D-24 AND D-25

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



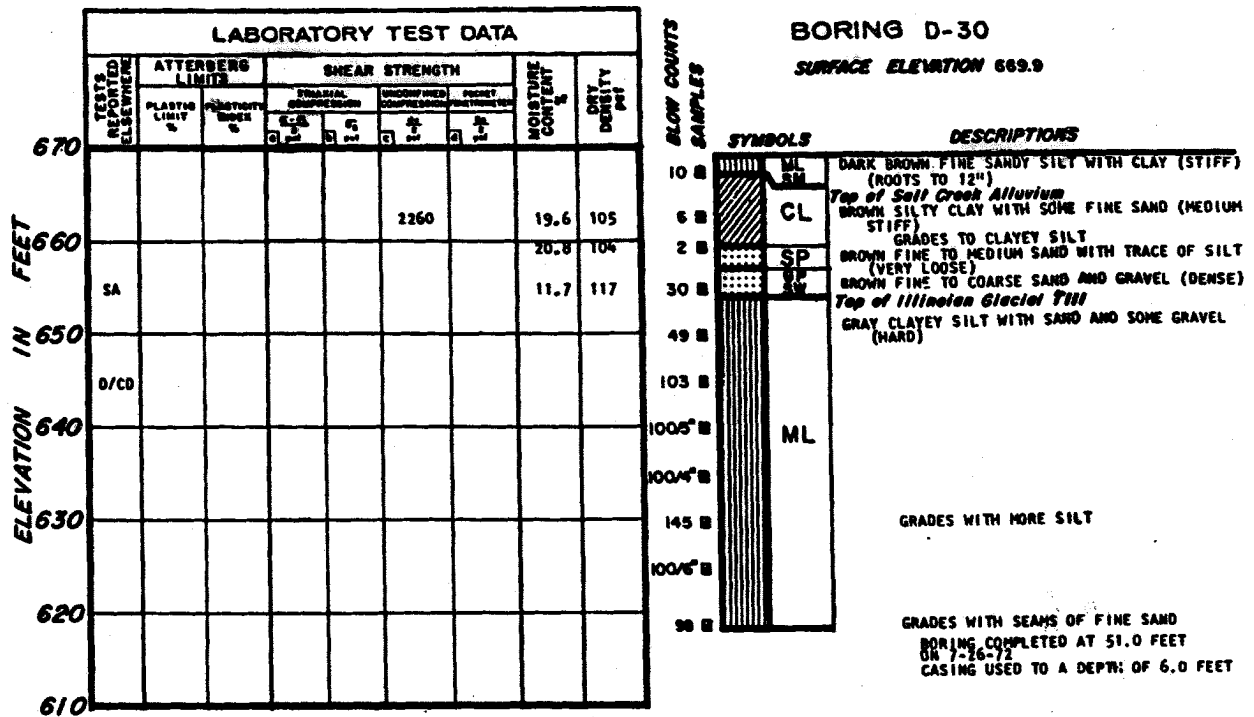
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-94

LOG OF BORING D-29

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



PIEZOMETER D-30A INSTALLED IN BOREING D-30 ON 7-27-72. A 3/4 INCH PVC PIPE WITH A POROUS STONE TIP WAS PLACED AT ELEVATION 620. PEA GRAVEL WAS PLACED FROM ELEVATION 620 TO 625. BENTONITE PLACED FROM ELEVATION 625 TO 627 AND CEMENT GROUT FROM ELEVATION 627 TO 669.9.

PIEZOMETER D-30B INSTALLED IN BOREING D-30B (DRILLED ADJACENT TO D-30A) ON 7-27-72. A 3/4 INCH PVC PIPE WITH A POROUS STONE TIP WAS PLACED AT ELEVATION 658. PEA GRAVEL WAS PLACED FROM ELEVATION 658 TO 666.4 AND CEMENT GROUT FROM ELEVATION 666.4 TO 669.9.

PIEZOMETER D-30C INSTALLED IN BOREING D-30C (DRILLED ADJACENT TO D-30A) ON 8-3-72. 15 FEET OF 4 INCH CASING WAS USED TO SEAL OFF THE SALT CREEK ALLUVIUM. A 3/4 INCH PVC PIPE WITH A POROUS STONE TIP WAS PLACED FROM ELEVATION 680. PEA GRAVEL WAS PLACED FROM ELEVATION 620 TO 625. A BENTONITE SEAL FROM ELEVATION 625 TO 627 AND CEMENT GROUT FROM ELEVATION 627 TO 669.9.

WATER LEVEL READINGS

(DEPTH BELOW GROUND SURFACE IN FEET)

D-30A	D-30B	D-30C	DATE
9.7	9.6	42.3	8-8-72
10.0	10.0	41.9	8-22-72
10.0	10.0	41.8	9-6-72

REFER TO FIGURE 2.4-37 FOR
WATER LEVEL OBSERVATIONS.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-95

LOG OF BOREING D-30

* ON WATER SAMPLE OBTAINED ON 10-7-72

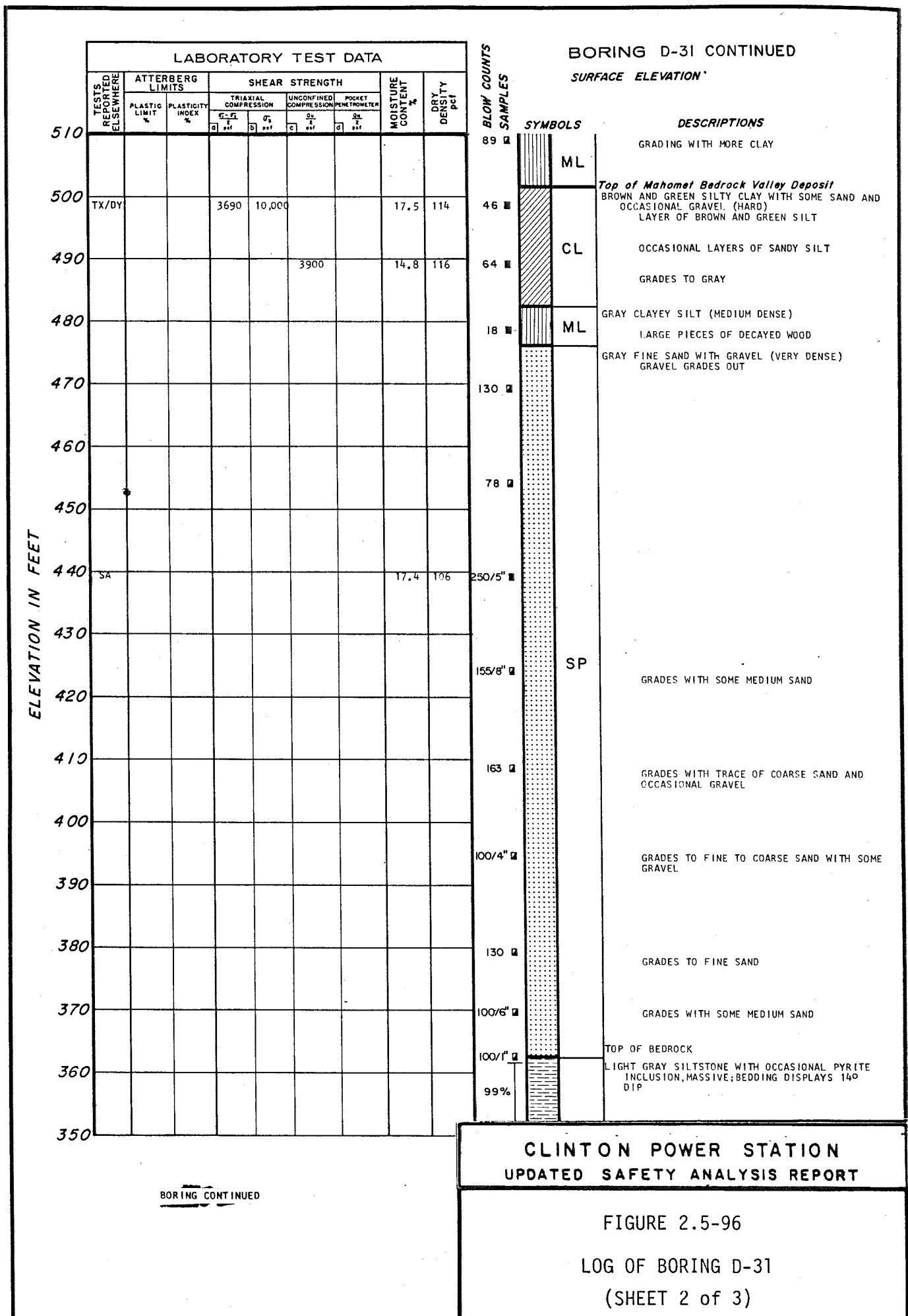
BORING CONTINUED

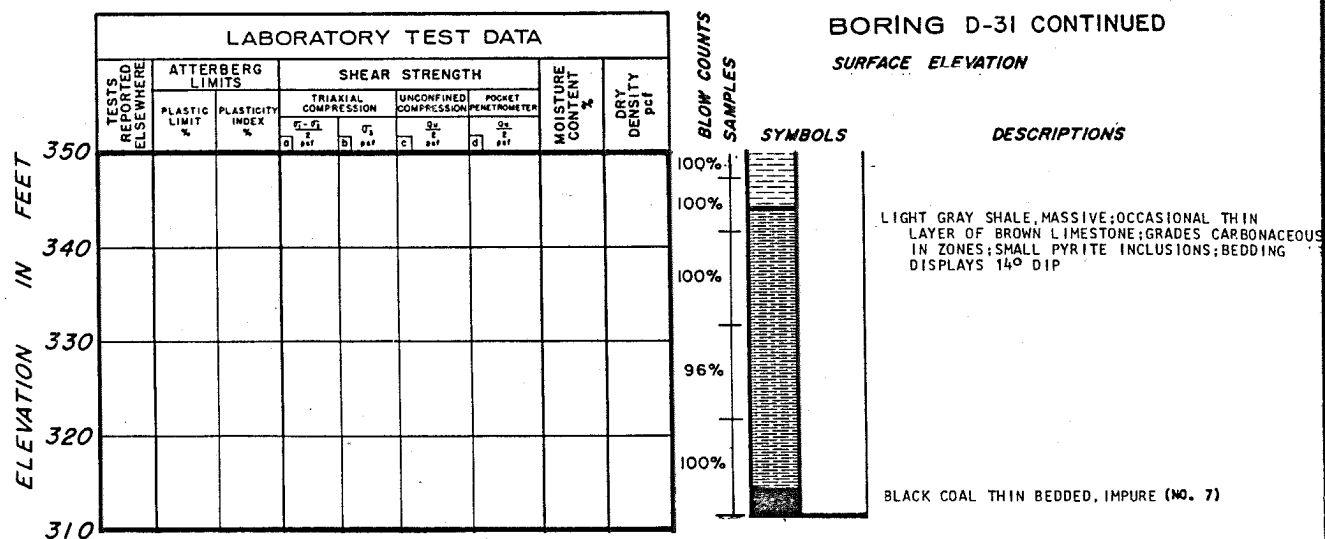
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FIGURE 2.5-96

LOG OF BORING D-31

(SHEET 1 of 3)





PIEZOMETER INSTALLED IN D-31 ON 6-16-72
BORING WAS FLUSHED WITH CLEAN WATER
AFTER COMPLETION AT 356.5 FEET. A 3/4
INCH PVC PIPE WITH AN 18 INCH POROUS STONE
TIP WAS PLACED AT ELEVATION 461.7. GRANULAR
BACKFILL WAS PLACED FROM ELEVATION 311.2
TO 509.7; A BENTONITE SEAL FROM ELEVATION
509.7 TO 511.2; AND CEMENT GROUT AND GRAVEL
FROM 511.2 TO 667.7.

BORING COMPLETED AT 356.5 FEET
ON 6-14-72
CASING USED TO A DEPTH OF 14.0 FEET

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
54.8	8-3-72
54.3	8-15-72
54.7	9-6-72

REFER TO FIGURE 2.4-37 FOR
WATER LEVEL OBSERVATIONS.

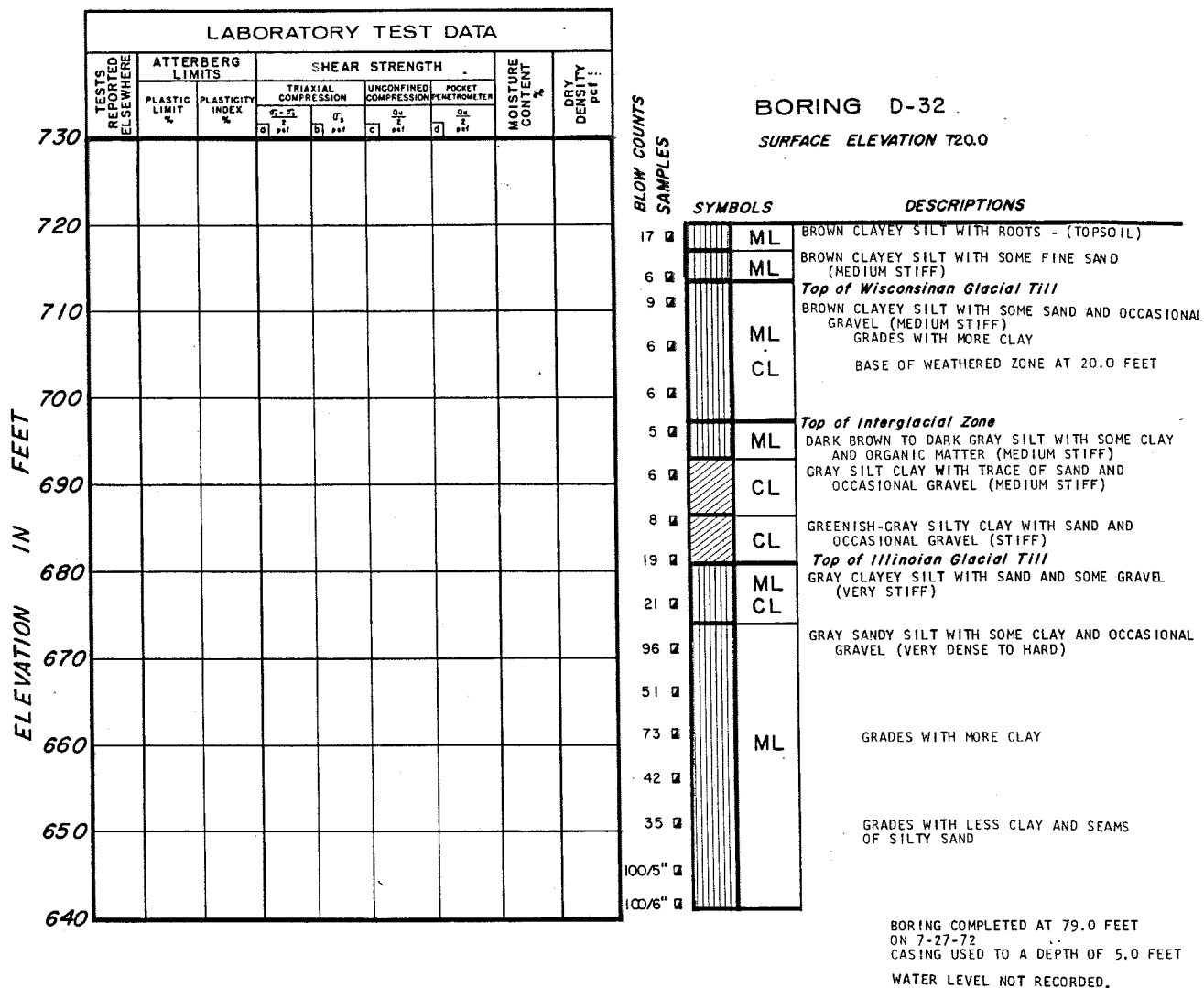
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-96

LOG OF BORING D-31
(SHEET 3 of 3)

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



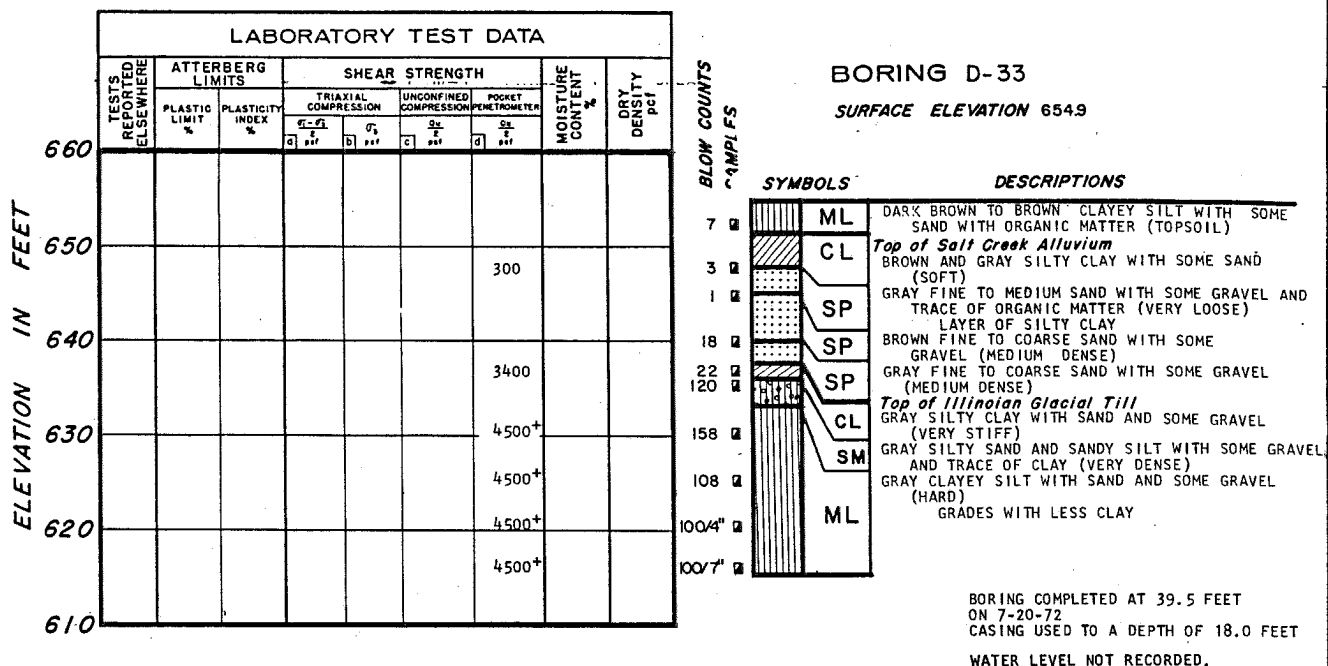
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UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-97

LOG OF BORING D-32

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



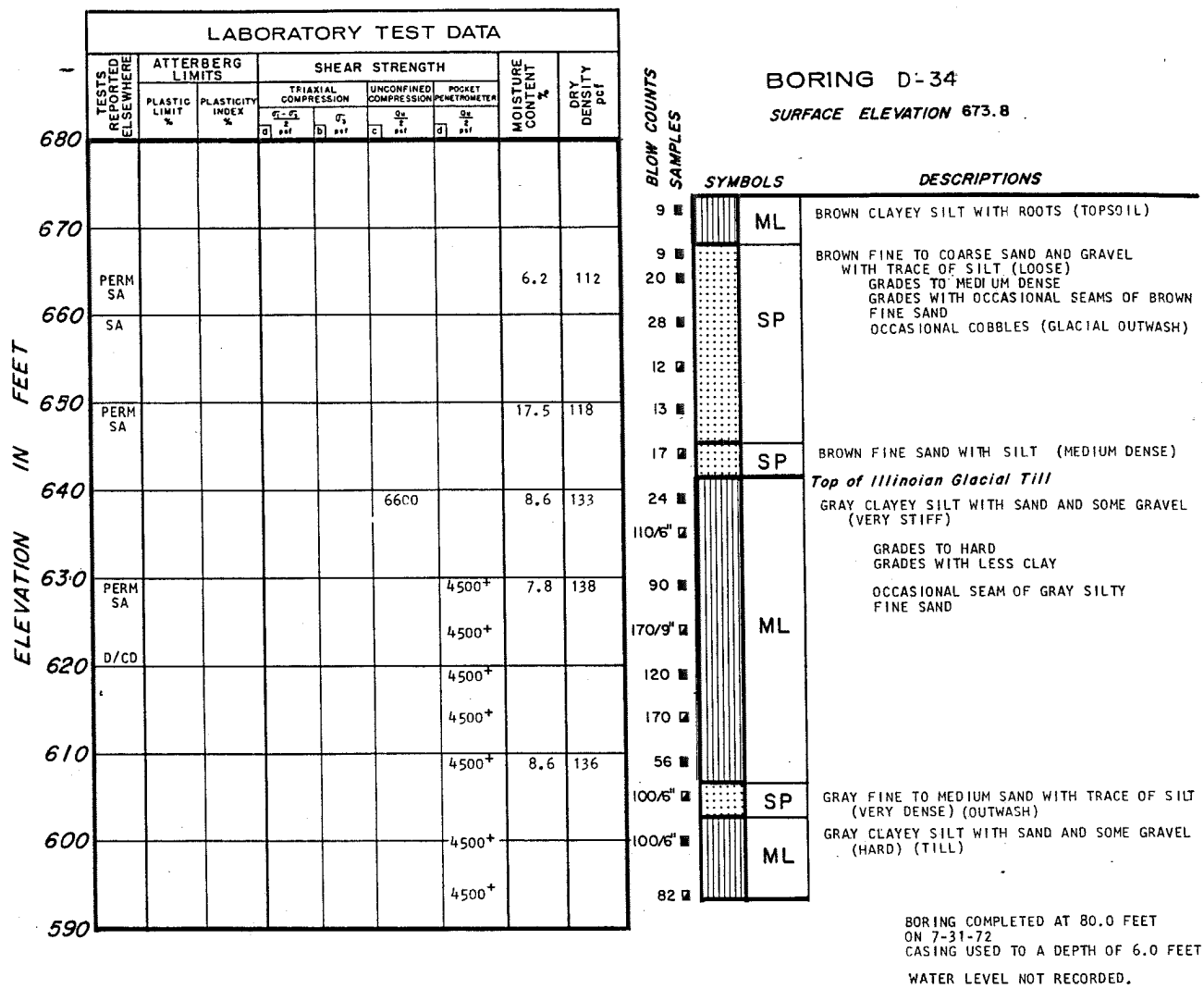
**CLINTON POWER STATION
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FIGURE 2.5-98

LOG OF BORING D-33

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

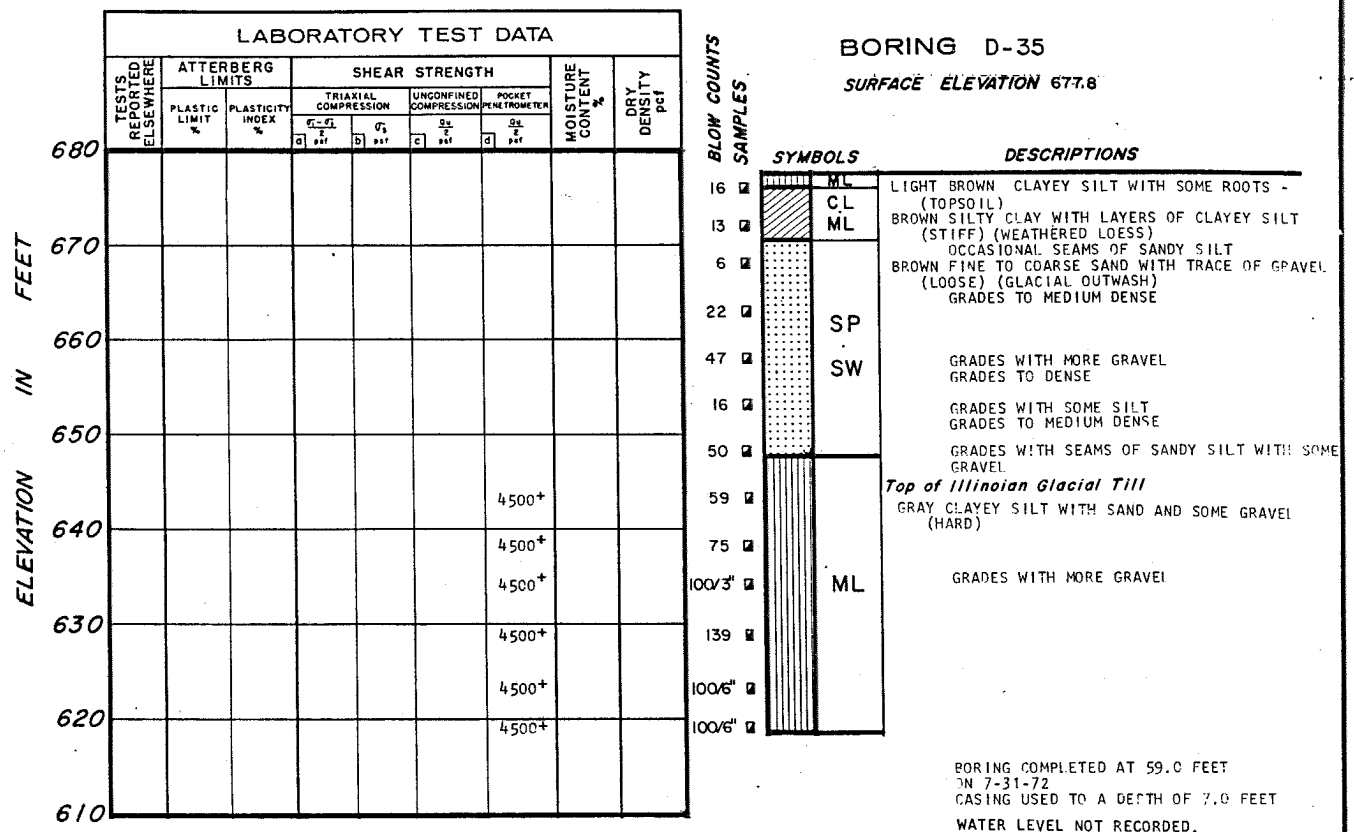


NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-99

LOG OF BORING D-34



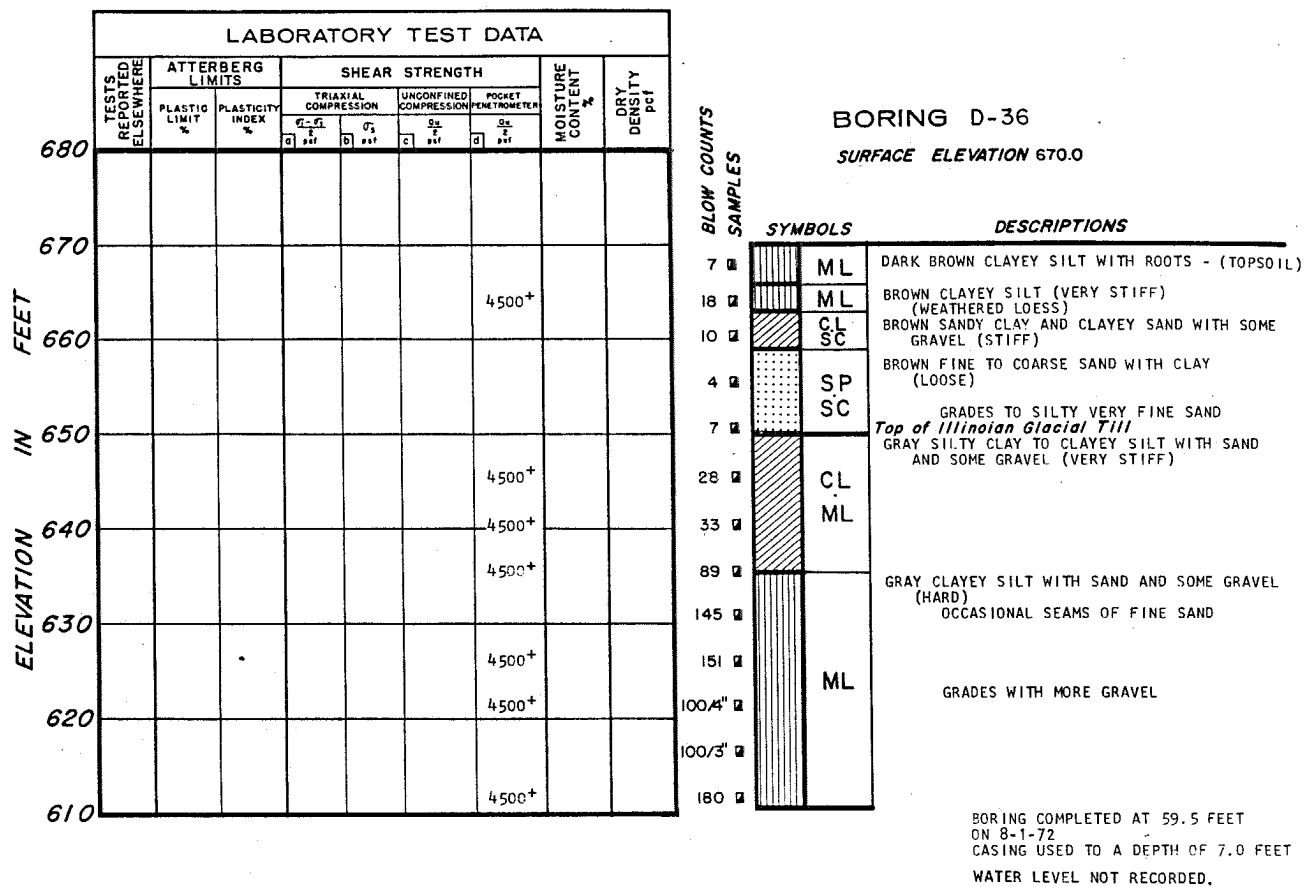
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-100

LOG OF BORING D-35



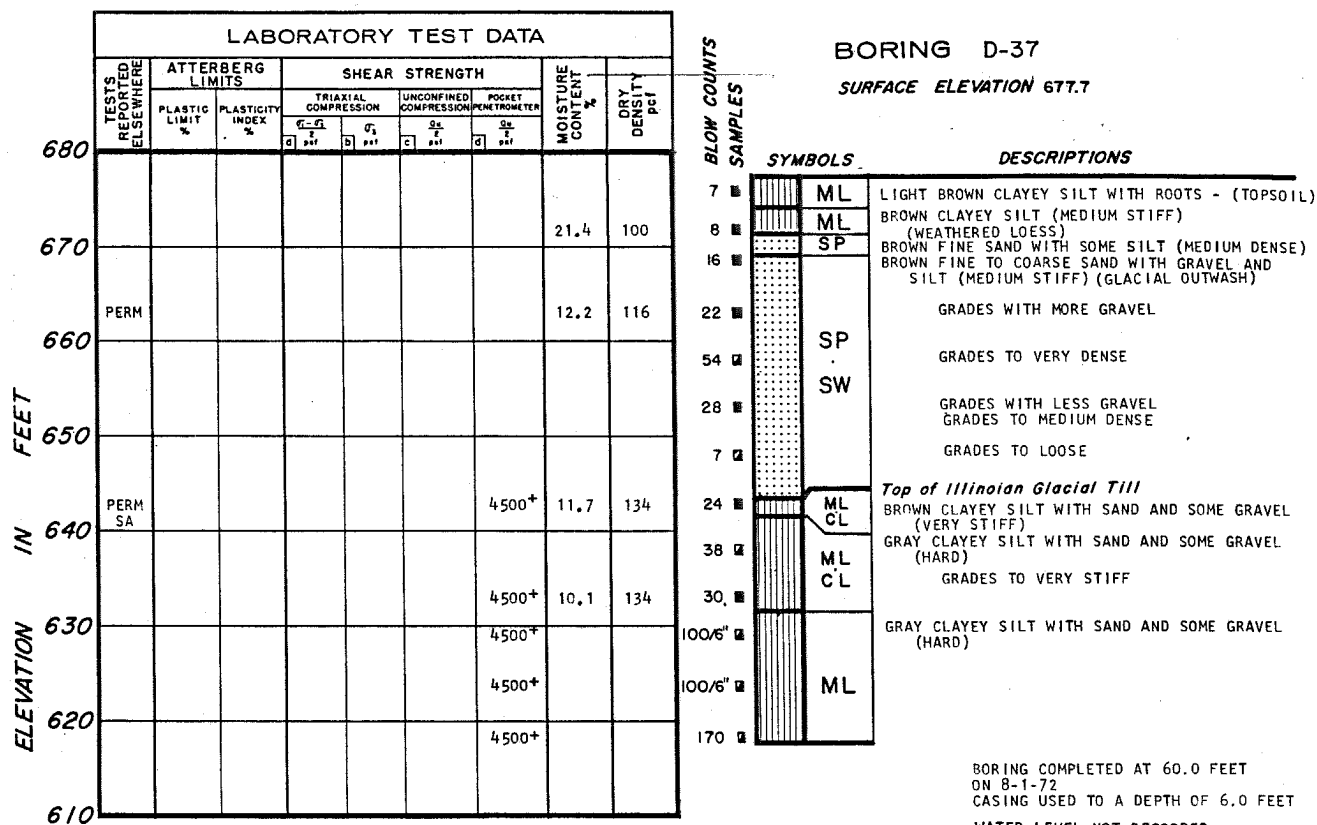
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-101

LOG OF BORING D-36



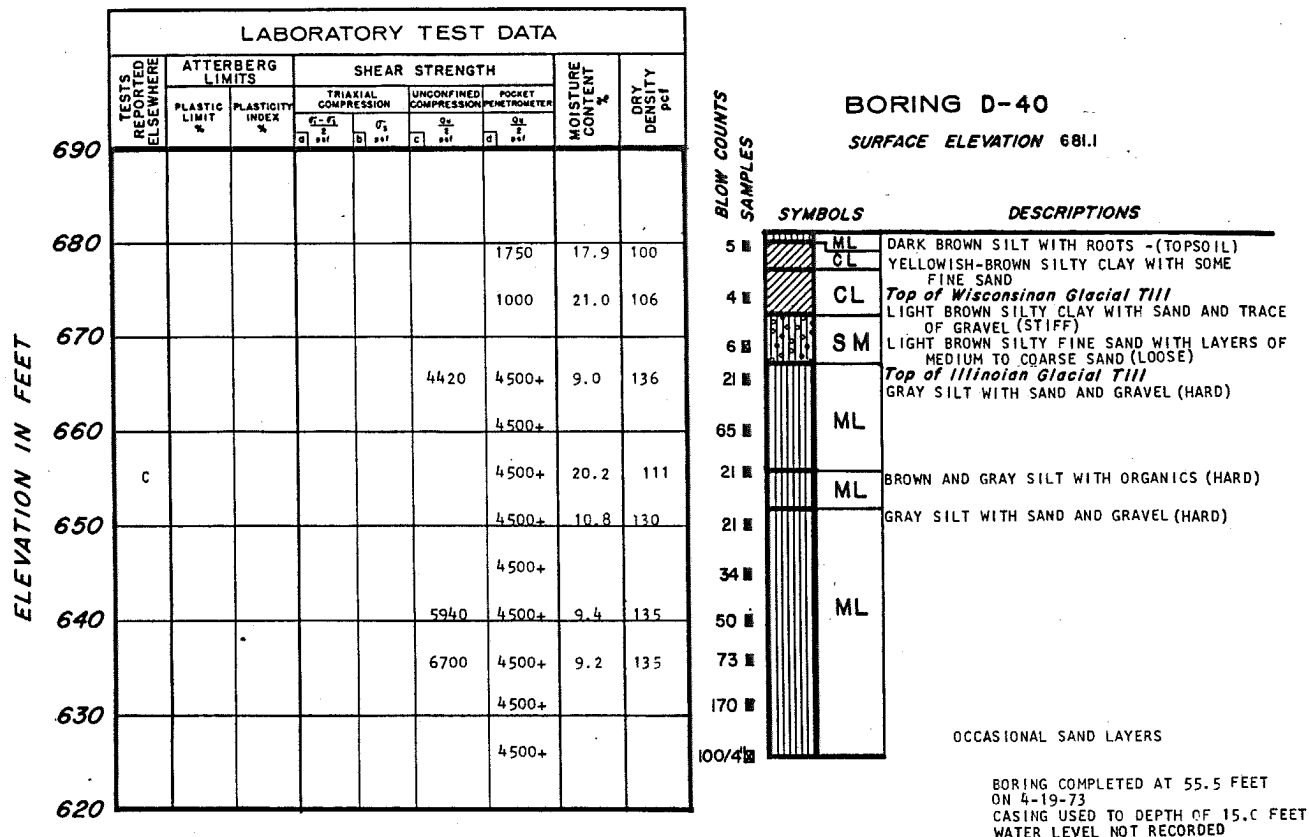
NOTE:

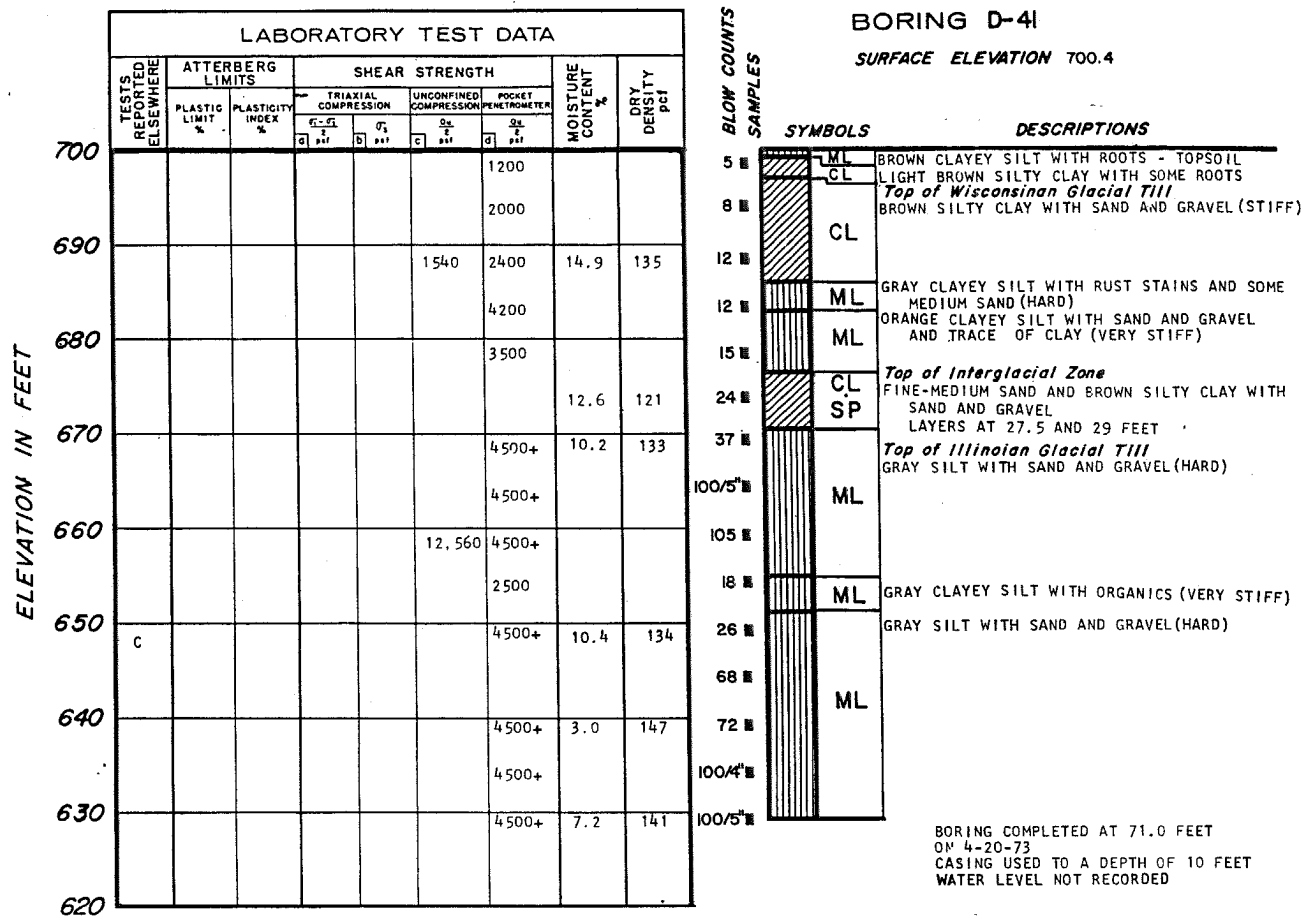
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-102

LOG OF BORING D-37





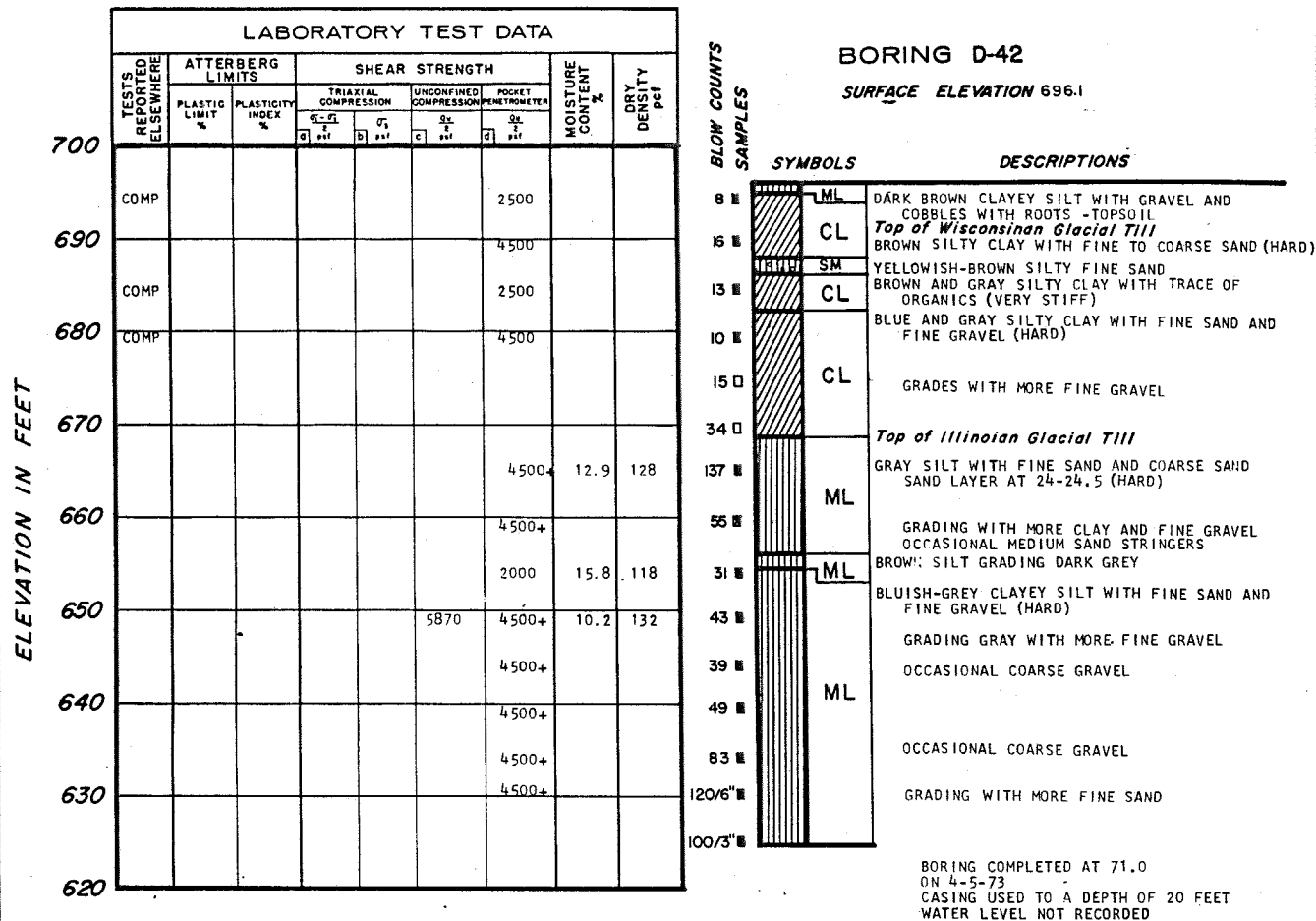
CLINTON POWER STATION
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FIGURE 2.5-104

LOG OF BORING D-41

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



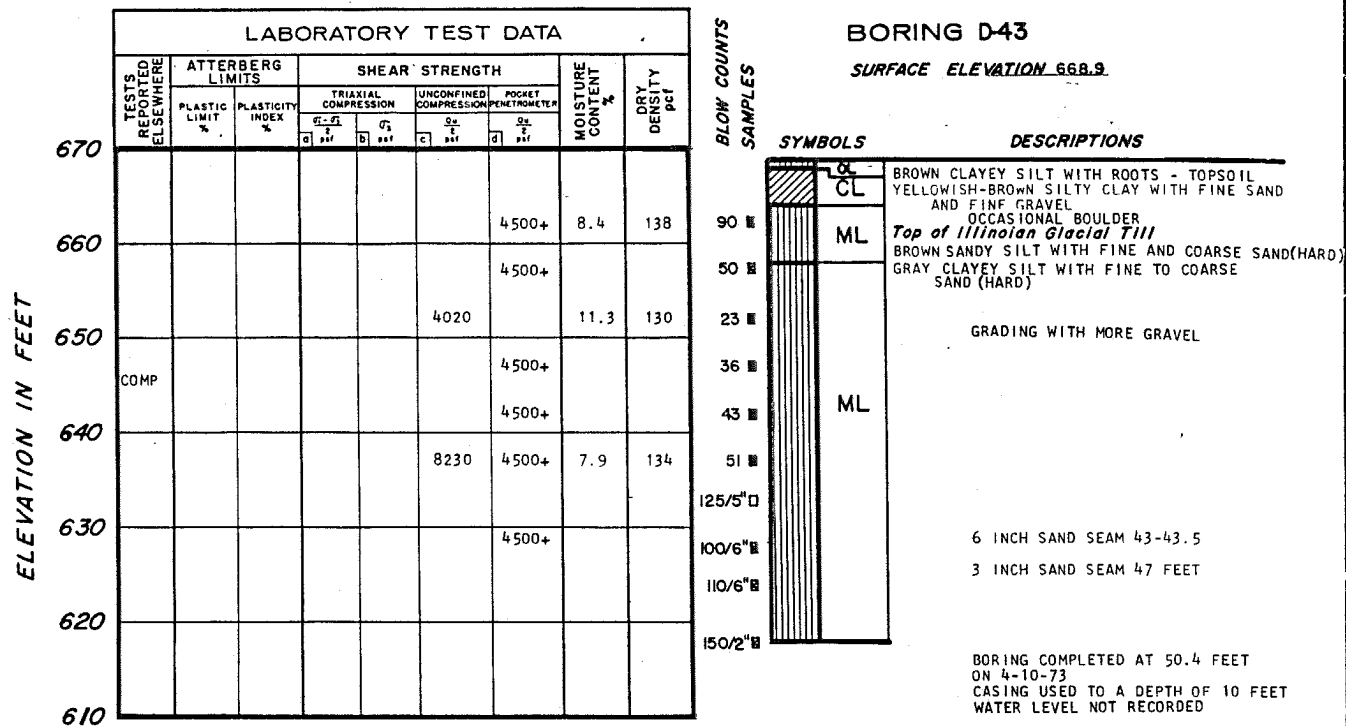
**CLINTON POWER STATION
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FIGURE 2.5-105

LOG OF BORING D-42

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-106

LOG OF BORING D-43

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

ELEVATION IN FEET

LABORATORY TEST DATA										
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH						MOISTURE CONTENT %	DRY DENSITY pcf
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET PENETROMETER				
			$\frac{\sigma_1 - \sigma_3}{2}$ T psi	σ_3 D psi	σ_u T psi	$\frac{Q_u}{2}$ T psi				
								2000		
								1000	31.0	92
								1000		
								4500+		
						10,640		4500+	7.1	140

BLOW COUNTS
SAMPLES

BORING D-44
SURFACE ELEVATION 660.0

SYMBOLS

DESCRIPTIONS

8	CL	LIGHT BROWN SANDY CLAY WITH OCCASIONAL GRAVEL <i>Top of Salt Creek Alluvium</i>
	ML	DARK GRAY CLAYEY SILT WITH SAND
5	CL	DARK GRAY TO BLACK CLAY WITH SILTY SAND AND TRACE OF GRAVEL AND ORGANICS (STIFF) GRADES WITH MORE SAND
2	SC	LIGHT BROWN CLAYEY SAND
	CL	LIGHT BROWN SANDY CLAY
	SC	GRAY CLAYEY SAND
34		<i>Top of Wignan Glacial Till</i>
	ML	GRAY CLAYEY SILT WITH SAND AND OCCASIONAL GRAVEL (HARD)
125		
100/3		GRADES VERY SANDY

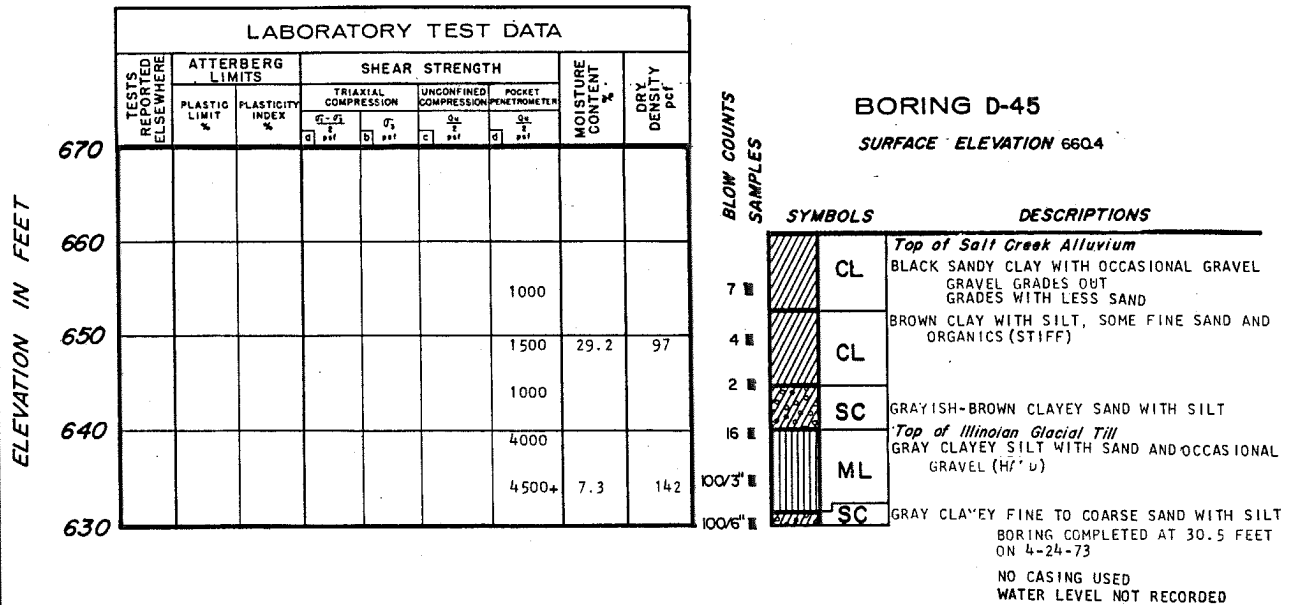
BORING COMPLETED AT 32.8 FEET
ON 4-24-73
NO CASING USED
WATER LEVEL NOT RECORDED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-107

LOG OF BORING D-44

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



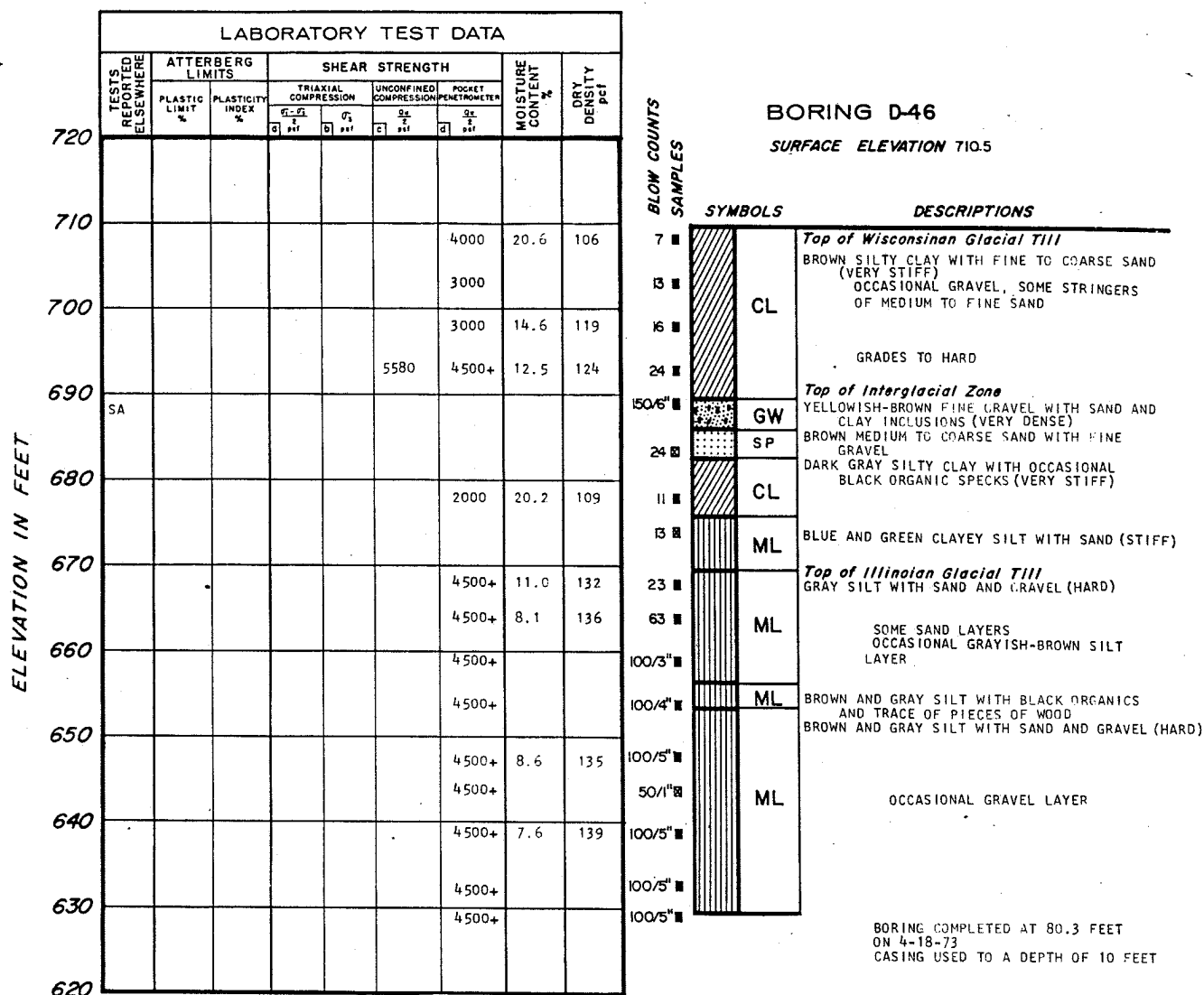
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-108

LOG OF BORING D-45



A PIEZOMETER WAS INSTALLED IN D-46A ON 4-24-73. BOREING D-46A WAS AUGURED TO 29.0 FEET ADJACENT TO D-46. A 3/4 INCH CPVC PIPE WITH A CAPPED TIP WAS PLACED AT ELEVATION 681.5. THE PIPE WAS SLOTTED FROM ELEVATION 681.5 TO 701.5. PEA GRAVEL WAS PLACED FROM ELEVATION 681.5 TO 708.5. A CONCRETE SEAL WAS PLACED FROM ELEVATION 708.5 TO 710.5.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
18.6	4-25-73
18.2	4-27-73
18.8	4-30-73
20.0	6-12-73
20.3	7-3-73

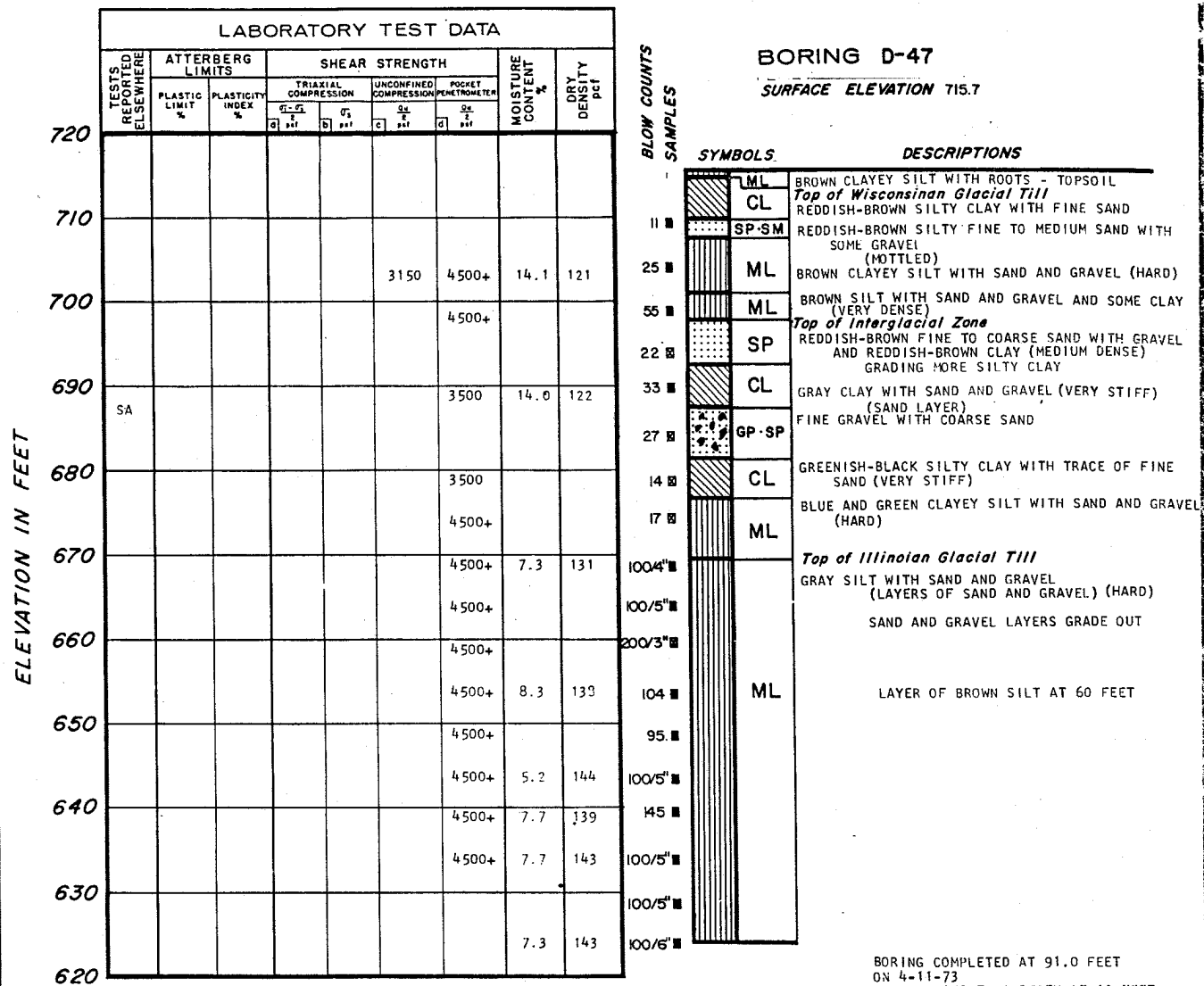
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-109

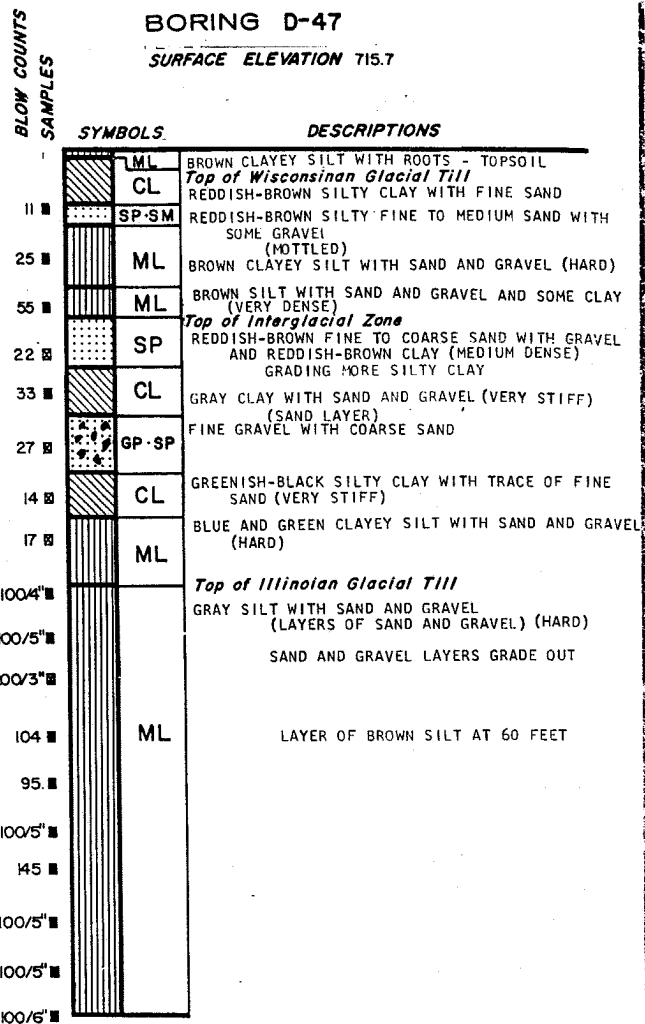
LOG OF BORING D-46



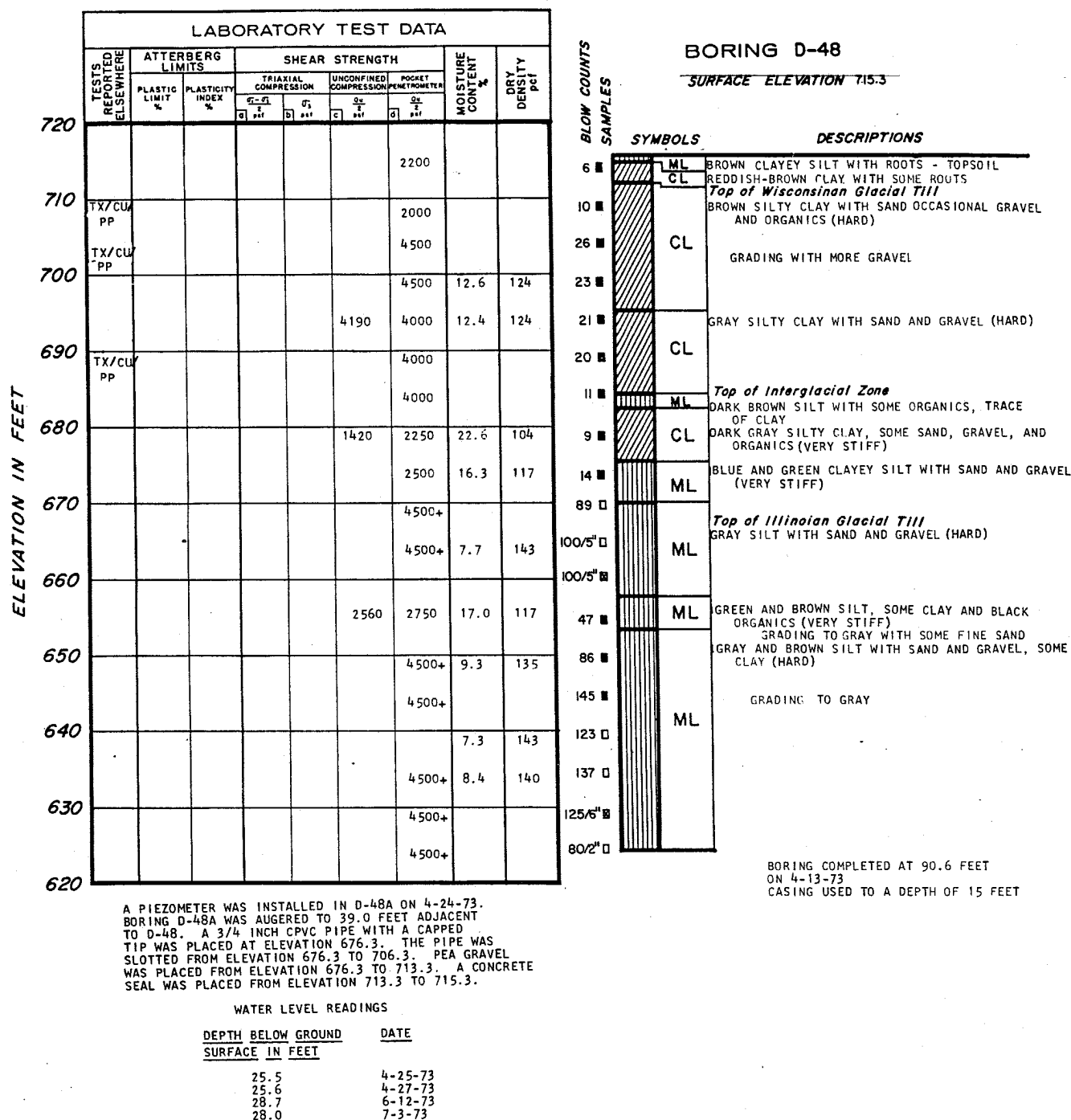
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

BORING D-47
SURFACE ELEVATION 715.7



BORING COMPLETED AT 91.0 FEET
ON 4-11-73
CASING USED TO A DEPTH OF 10 FEET



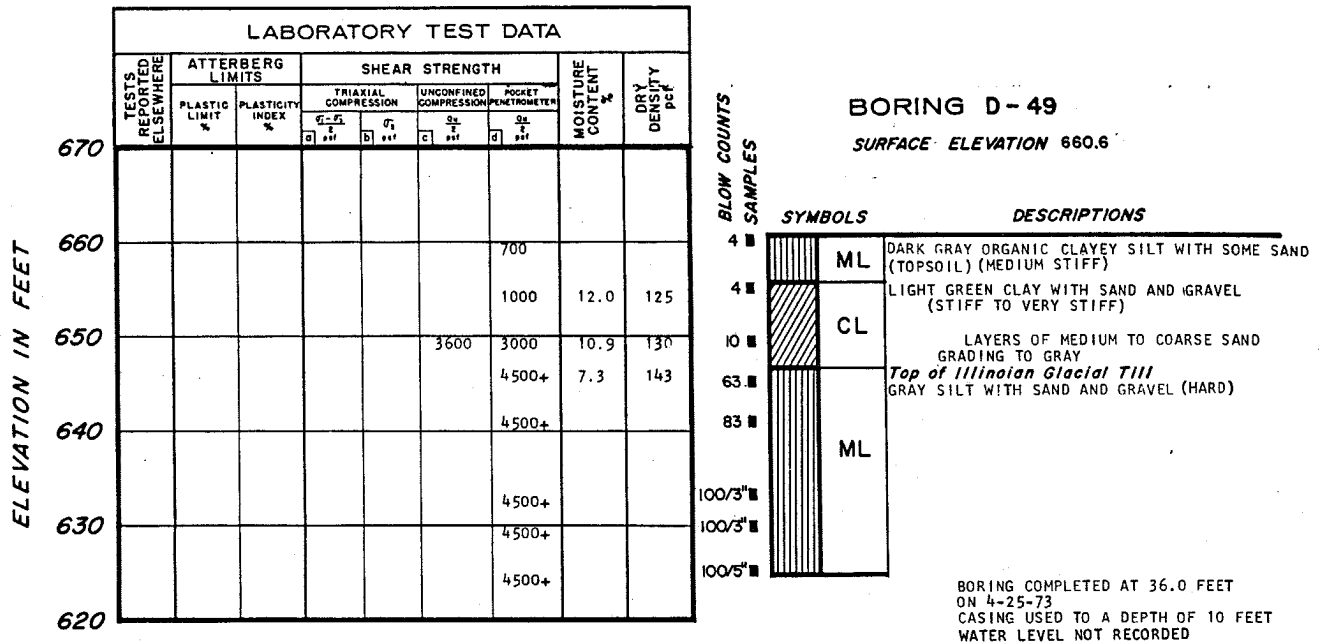
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-111

LOG OF BORING D-48

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



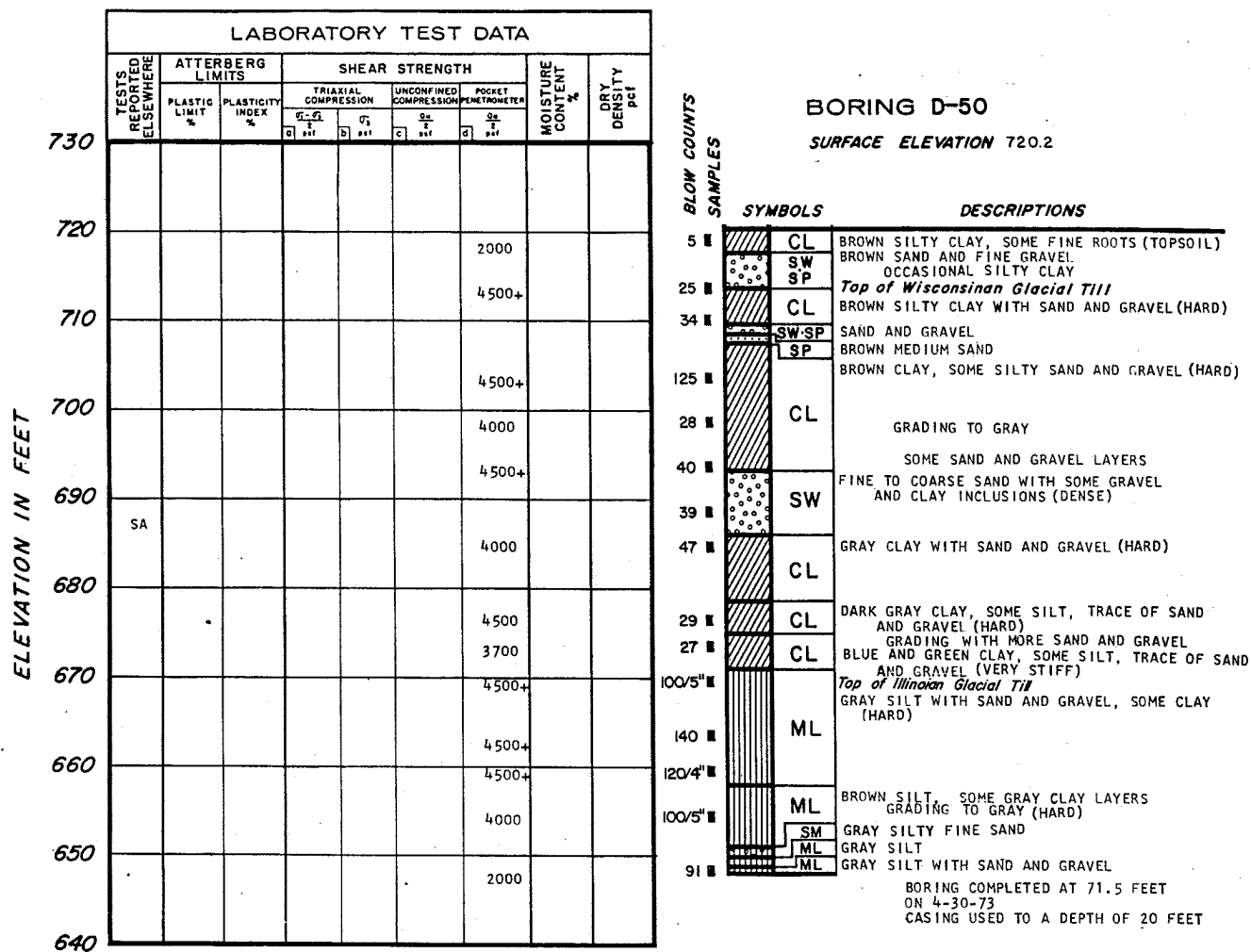
**CLINTON POWER STATION
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FIGURE 2.5-112

LOG OF BORING D-49

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



A PIEZOMETER WAS INSTALLED IN D-50A ON 4-30-73. BORING D-50A WAS AUGERED TO 37.0 FEET ADJACENT TO D-50. A 3/4 INCH CPVC PIPE WITH A CAPPED TIP WAS PLACED AT ELEVATION 683.2. THE PIPE WAS SLOTTED FROM ELEVATION 683.2 TO 713.2. PEA GRAVEL WAS PLACED FROM ELEVATION 783.2 TO 718.2. A CONCRETE SEAL WAS PLACED FROM ELEVATION 718.2 TO 720.2.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
20.0	4-30-73
20.3	6-12-73
20.8	7-3-73

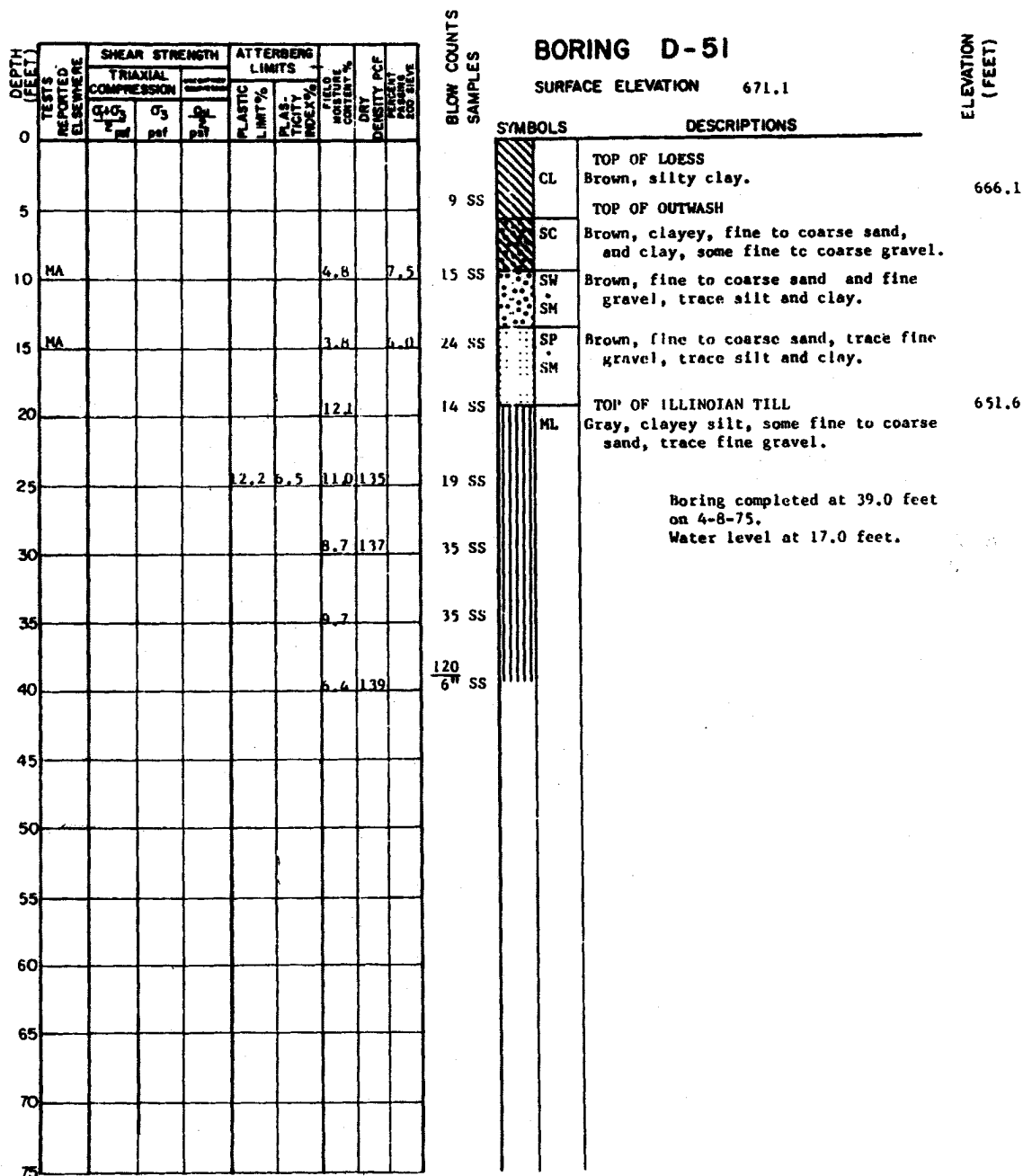
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-113

LOG OF BORING D-50

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



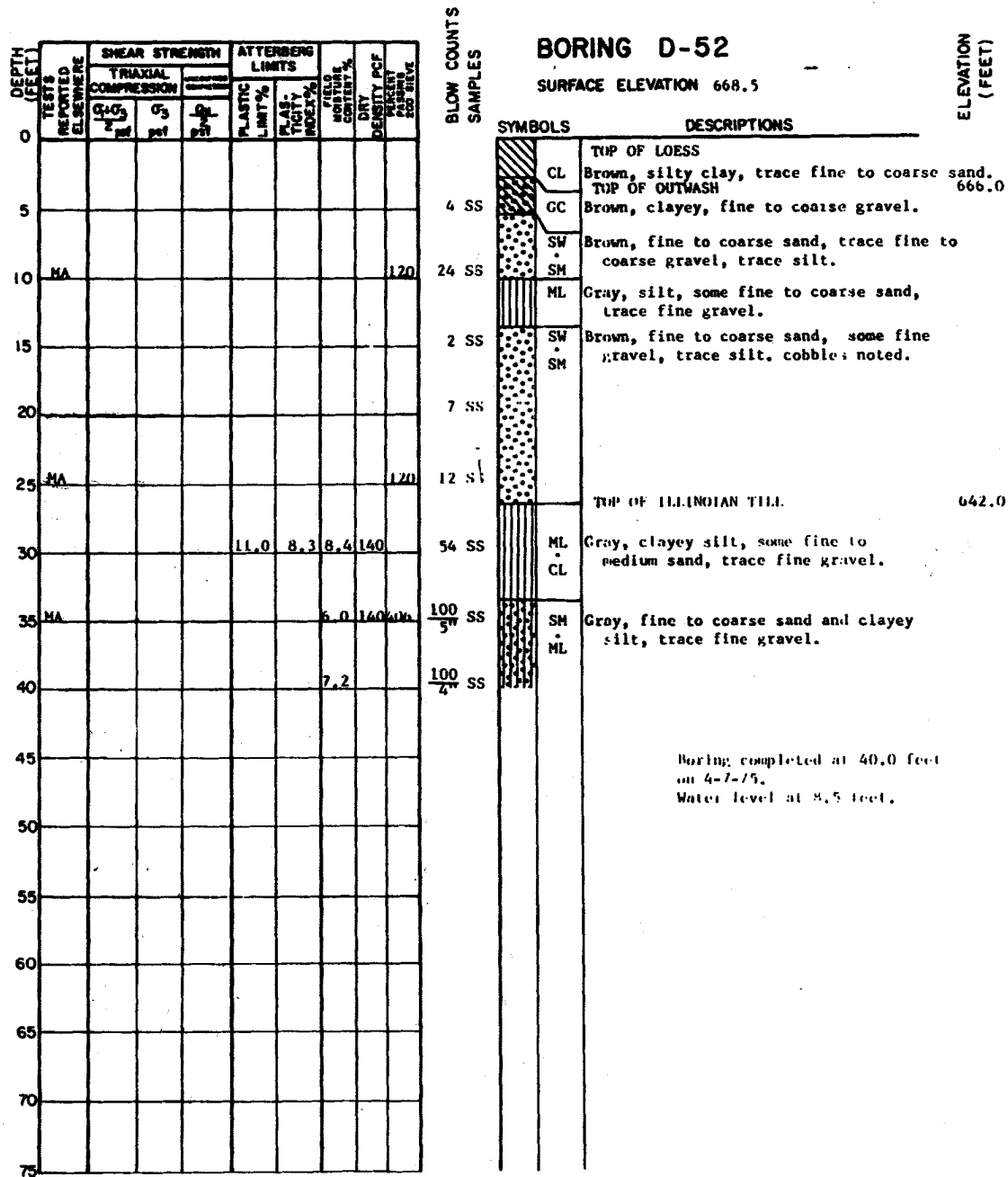
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-114

LOG OF BORING D-51



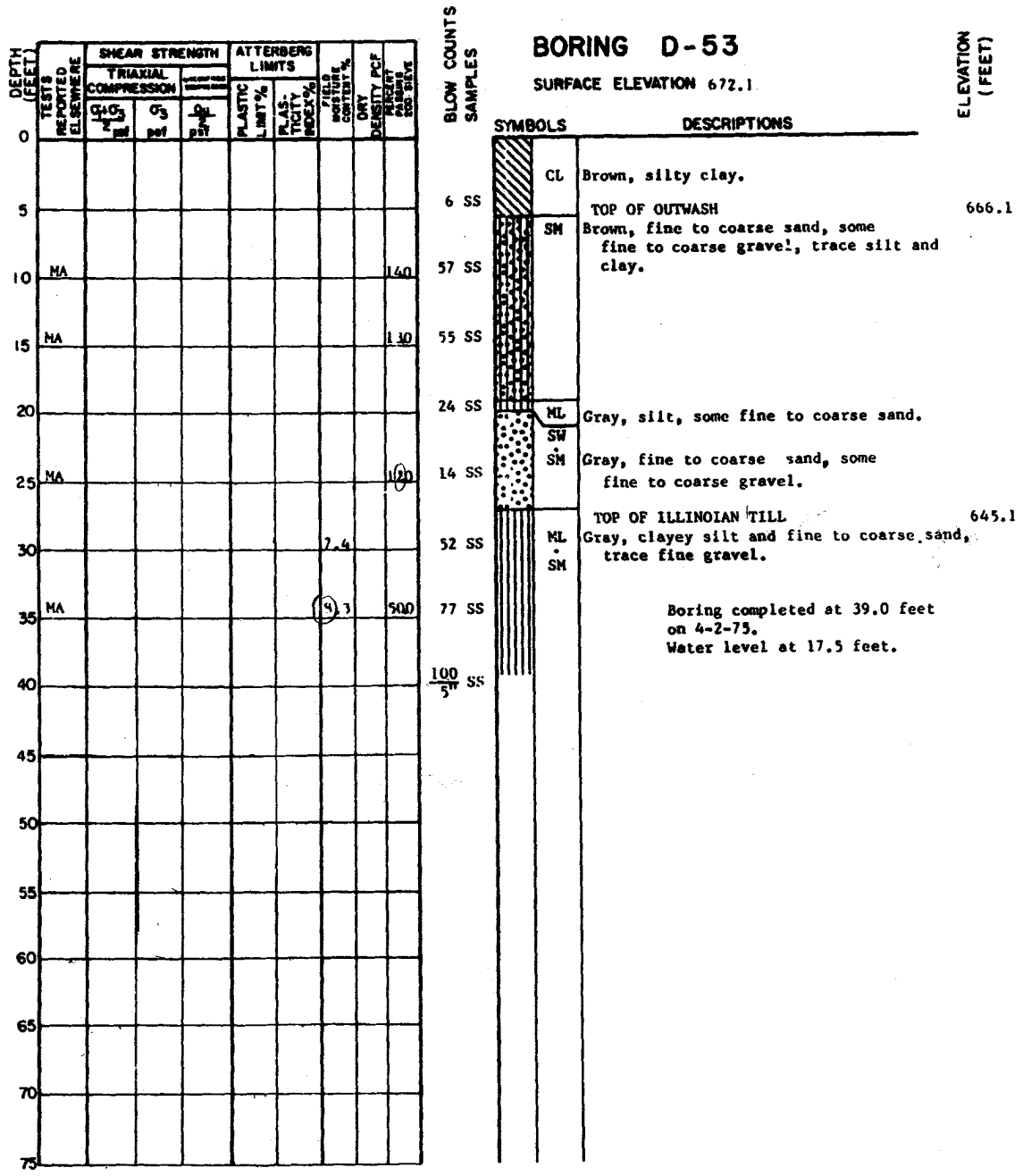
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-115

LOG OF BORING D-52



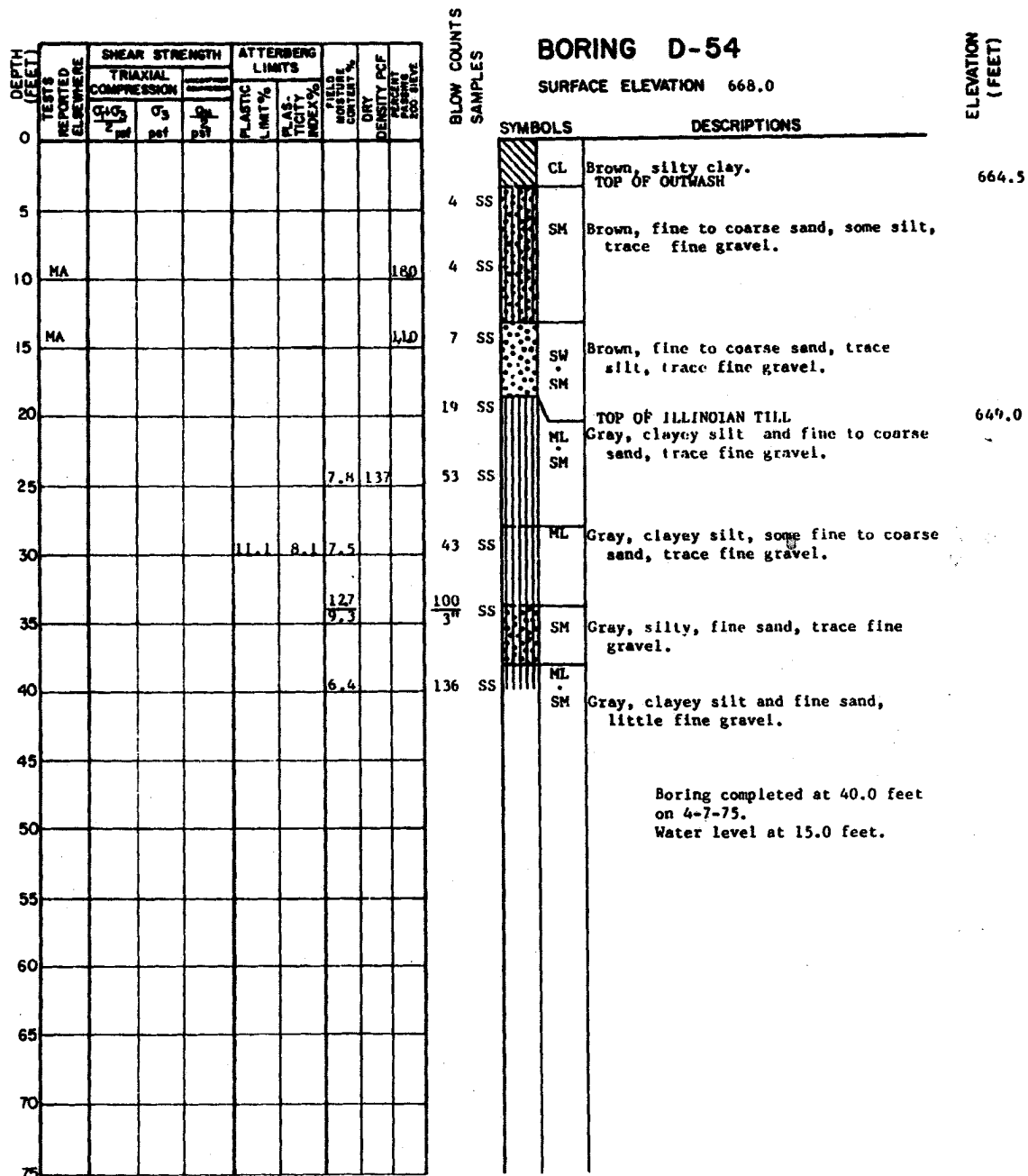
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-116

LOG OF BORING D-53



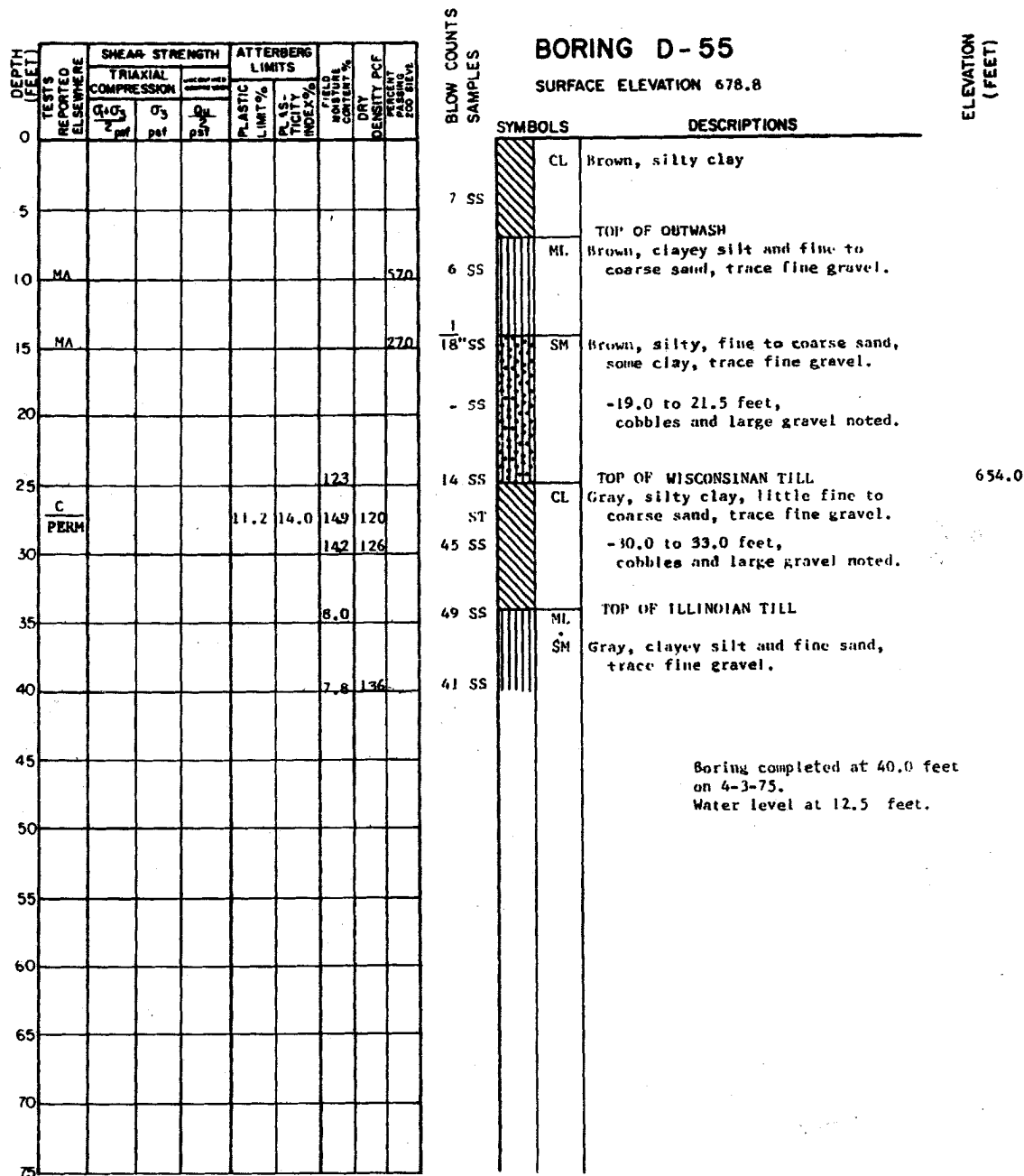
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-117

LOG OF BORING D-54



NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-118

LOG OF BORING D-55

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD WATER CONTENT %	DRY DENSITY PCF	PERCENT FINE SOIL
		TRIAXIAL COMPRESSION		UNCONSOLIDATED SAMPLING	PLASTIC LIMIT %	LIQUID LIMIT %				
		$\sigma_1 - \sigma_3$ psi	σ_3 psi							
0										
5										
10										
15	MA									190
20										
25										
30	MA									100
35								237		
40								112		
45								7.5	138	
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING D-56

SURFACE ELEVATION 686.8

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
CL		Brown, silty clay.	
6 SS		TOP OF OUTWASH	682.3
SM		Brown, fine to coarse sand, some silt and clay.	
4 SS		-trace fine gravel.	
13 SS			
20 SS		Brown, fine sand.	
28 SS		Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
5 SS			
10 SS		Light brown, fine sand, trace fine gravel, trace silt.	
26 SS		Gray, fine to coarse sand, some fine to coarse gravel, trace silt.	
		TOP OF ILLINOIAN TILL	647.3
		Gray, clayey silt and fine to coarse sand, trace fine gravel.	
78 SS			
55 SS		Gray, clayey silt, some fine to coarse sand, trace fine gravel.	

Boring completed at 50.0 feet
on 4-4-75.
Water level at 29.0 feet.

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-119

LOG OF BORING D-56

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE			
		COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %							
		$\frac{\sigma_1 + \sigma_3}{2}$	σ_3	$\frac{\sigma_1}{2}$									
		psi	pcf	psf									
0													
5								236					
10								229					
15								127	124				
20													
25	MA									5.0			
30					12.6	8.2	7.9	135					
35								7.1	137				
40													
45	MA							149		525			
50	MA							8.4	140	475			
55								7.0					
60													
65													
70													
75													

BLOW COUNTS
SAMPLES

BORING D-57

SURFACE ELEVATION 694.0

ELEVATION
(FEET)

SYMBOLS	DESCRIPTIONS
CL	Brown, silty clay, trace fine to coarse sand.
6 SS	TOP OF WISCONSINAN TILL
2 SS	ML CL
21 SS	-some fine to coarse sand, trace fine gravel.
52 SS	SW SM
29 SS	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.
69 SS	-26.0 to 27.0 feet, cobbles and large gravel noted. TOP OF ILLINOIAN TILL
79 SS	ML
54 SS	Gray, clayey silt, some fine to coarse sand, trace fine gravel.
25 SS	-37.0 feet, cobbles noted.
58 SS	ML SM
95 SS	Gray, clayey silt and fine to coarse sand, trace fine gravel.
80 SS	Boring completed at 60.0 feet on 4-8-75. Water level at 12.5 feet.

687.5

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-120

LOG OF BORING D-57

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER CONTENT PCF
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	LIQUIDITY LIMIT %	PLASTICITY INDEX %			
		Q ₁₀ psi	Q ₃ psi	Q ₁ psi						
0										
5										
10	MA							207		255
15								227	115	
20								218		
25	MA				13.1 NP	14.2		148 108	124	160
30					11.9	7.1		117	143	
35								103	134	
40								103		
45	MA							132		463
50	MA							112	135	510
55								9.1	141	
60								110		
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING D-58

SURFACE ELEVATION 695.7

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
	CL	TOP OF LOESS	
		Brown, silty clay, trace fine sand.	
6 SS			
		TOP OF OUTWASH	688.2
4 SS	SM	Brown, silty, fine to coarse sand, trace fine gravel.	
		TOP OF WISCONSINAN TILL	682.2
20 SS	CL	Brown, silty clay, trace fine to coarse sand, trace fine gravel.	
9 SS			
ST		- 18.5 feet color grades to gray.	
15 SS	SM	Reddish brown, fine to coarse sand, some fine gravel, some silt and clay.	
		TOP OF ILLINOIAN TILL	669.7
33 SS	ML	Gray, clayey silt, trace fine to coarse sand, trace fine gravel.	
79 SS			
26 SS	ML SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
37 SS	SM ML	Gray, clayey silt and fine to medium sand.	
23 SS	ML SM	Greenish gray to gray, clayey silt and fine to coarse sand, trace fine gravel.	
68 SS		- 53.3 feet color grades to gray.	
42 SS	ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
		Boring completed at 60.0 feet on 4-7-75.	
		Water level at 6.5 feet.	

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-121

LOG OF BORING D-58

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER CONTENT % AT 200 SIEVE
		TRIAXIAL COMPRESSION		C _u psi	PLASTIC LIMIT %	LIQUID LIMIT %	PLASTICITY INDEX %			
		Q ₁ -Q ₃ psi	Q ₃ psi							
0										
5										
10								208	115	
15	MA							134	126	20
20	MA							133	125	20
25								130	122	
30				5600				8.9	138	
35	MA							126		
40										
45										
50	C PERM MA				27.0	26.7		269	102	980
55								104		
60								8.7		
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING D-59

SURFACE ELEVATION 697.2

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
	CL	TOP OF LOESS	
		Brown, silty clay.	
6 SS		TOP OF WISCONSINAN TILL	692.2
	CL	Brown, silty clay, little fine to coarse sand, trace fine gravel.	
6 SS		-13.5 to 14.0 feet, fine to coarse sand lense noted.	
14 SS	ML		
	CL	Brown, clayey silt, some fine to coarse sand, trace fine gravel.	
27 SS			
	CL	TOP OF INTERGLACIAL ZONE	675.2
		Greenish-gray, silty clay, some fine to coarse sand, trace fine gravel.	
14 SS			
	ST		
36 SS	SM	Gray, silty, fine sand, trace fine gravel.	
57 SS	ML	TOP OF ILLINOIAN TILL	663.7
	SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
63 SS			
	MH		
39 SS		Gray, silt, varved.	
	ST		
	SM	Gray, fine to coarse sand, silt lenses noted.	
20 SS			
80 SS	ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
58 SS			

Boring completed at 60.0 feet
on 4-10-75.
Water level at 23.0 feet.

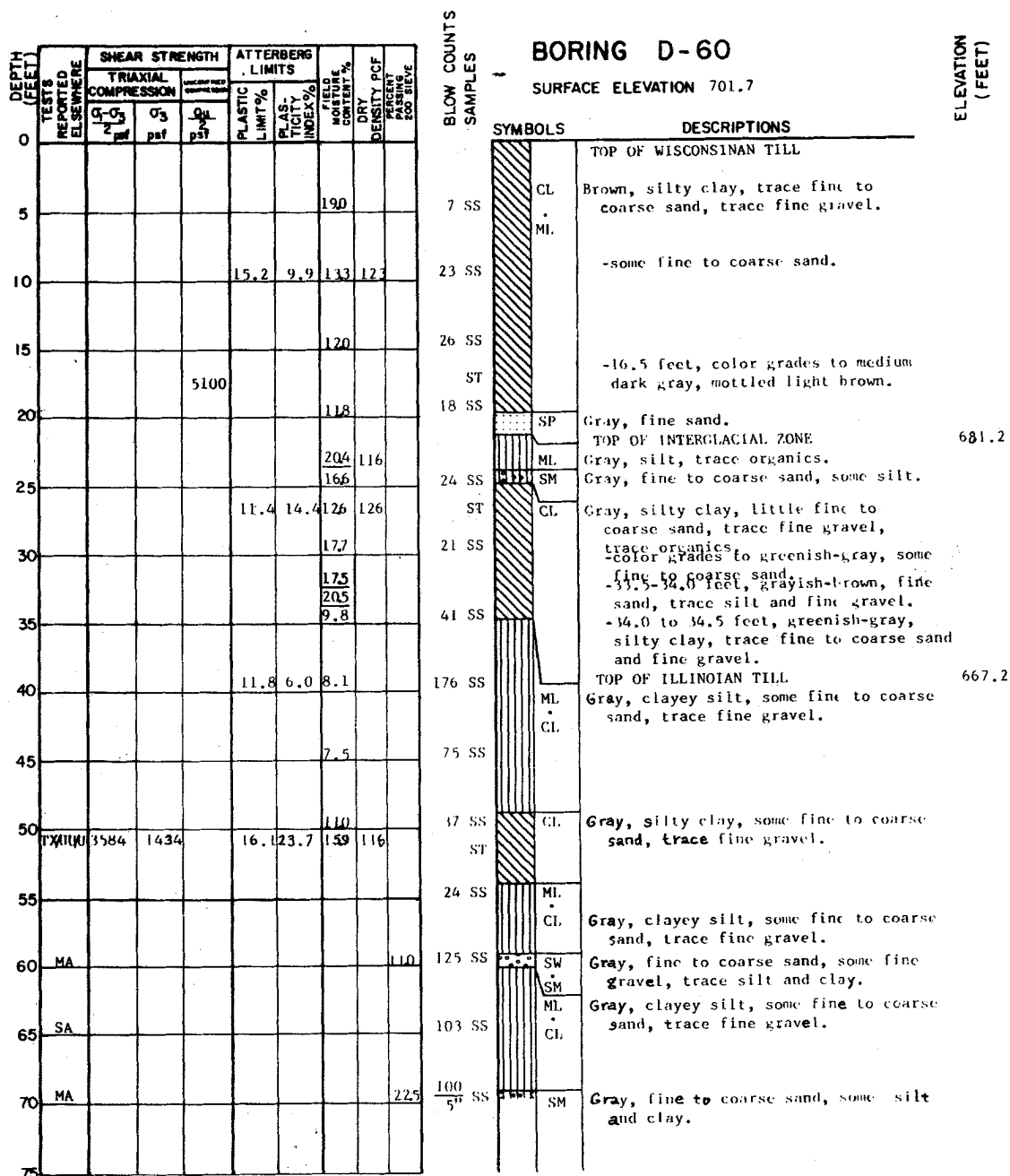
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-122

LOG OF BORING D-59



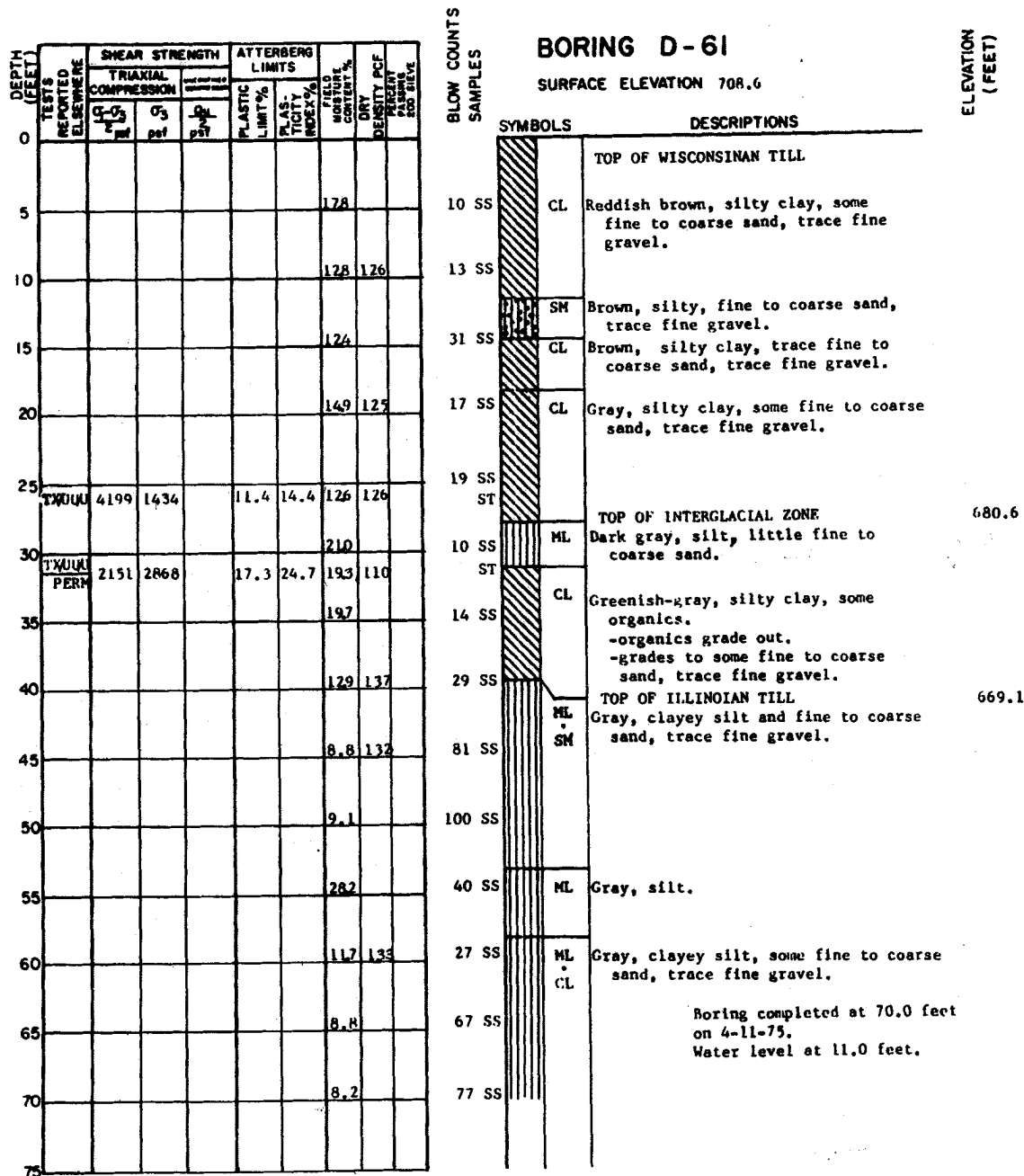
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-123

LOG OF BORING D-60



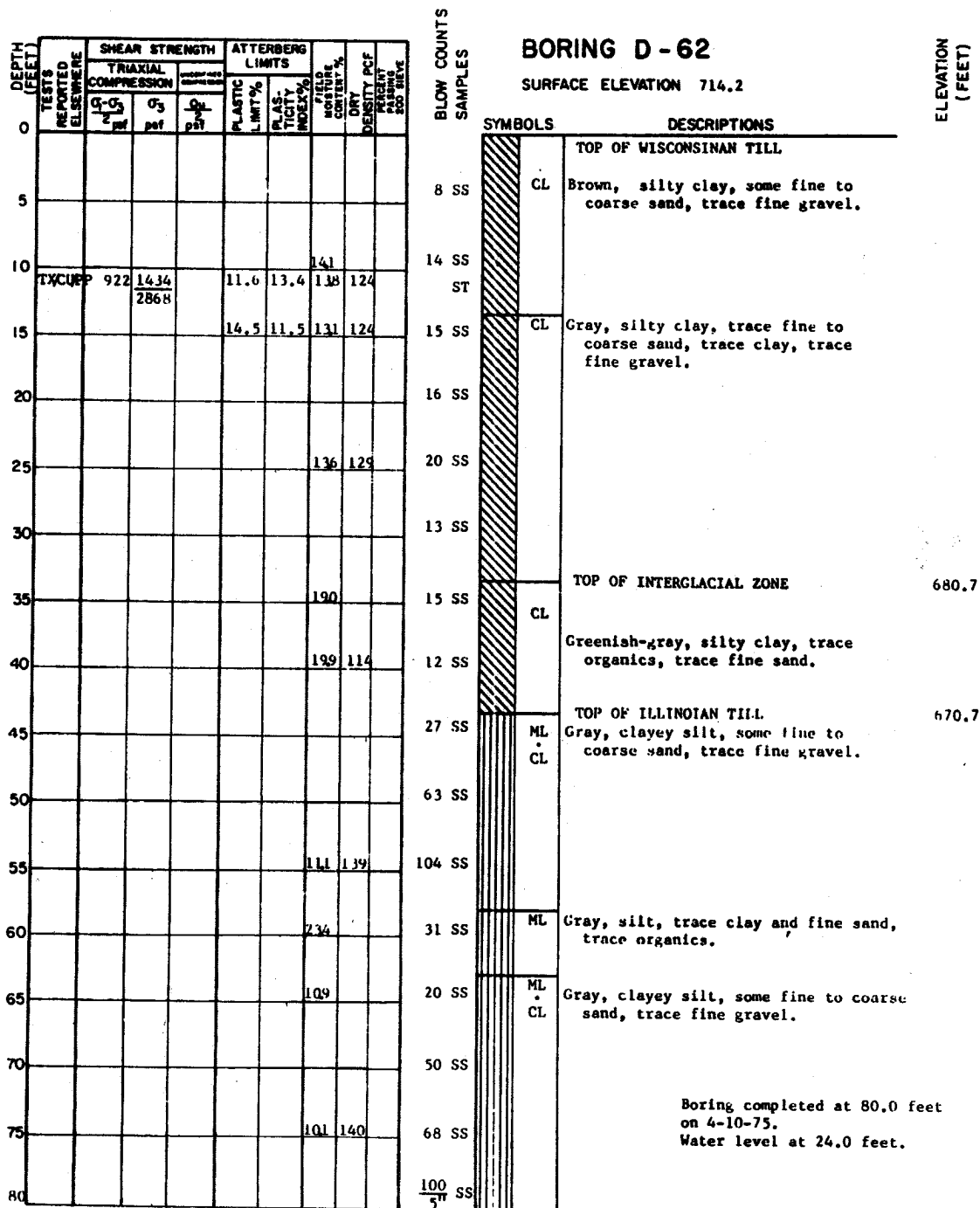
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-124

LOG OF BORING D-61



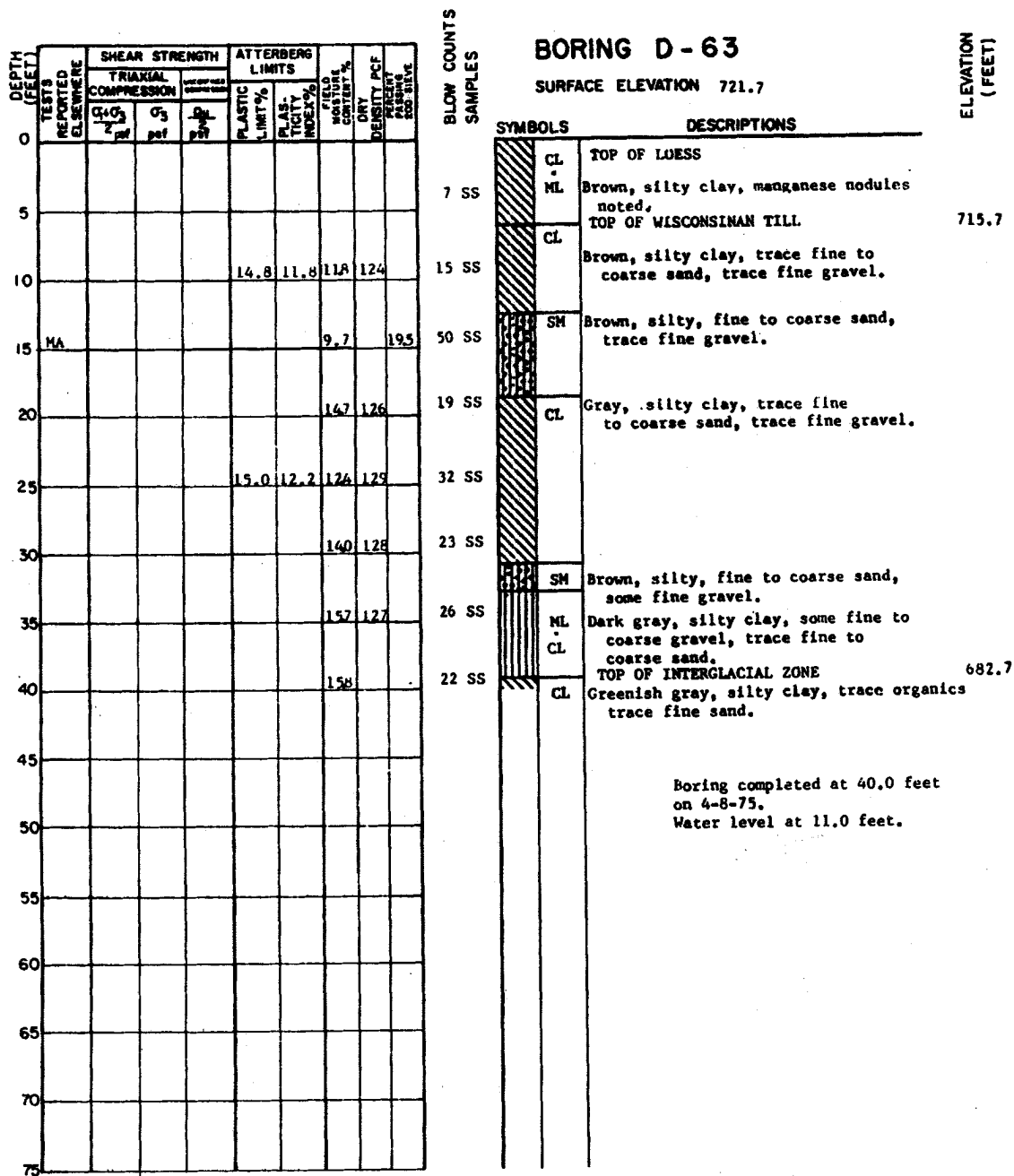
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-125

LOG OF BORING D-62



NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-126

LOG OF BORING D-63

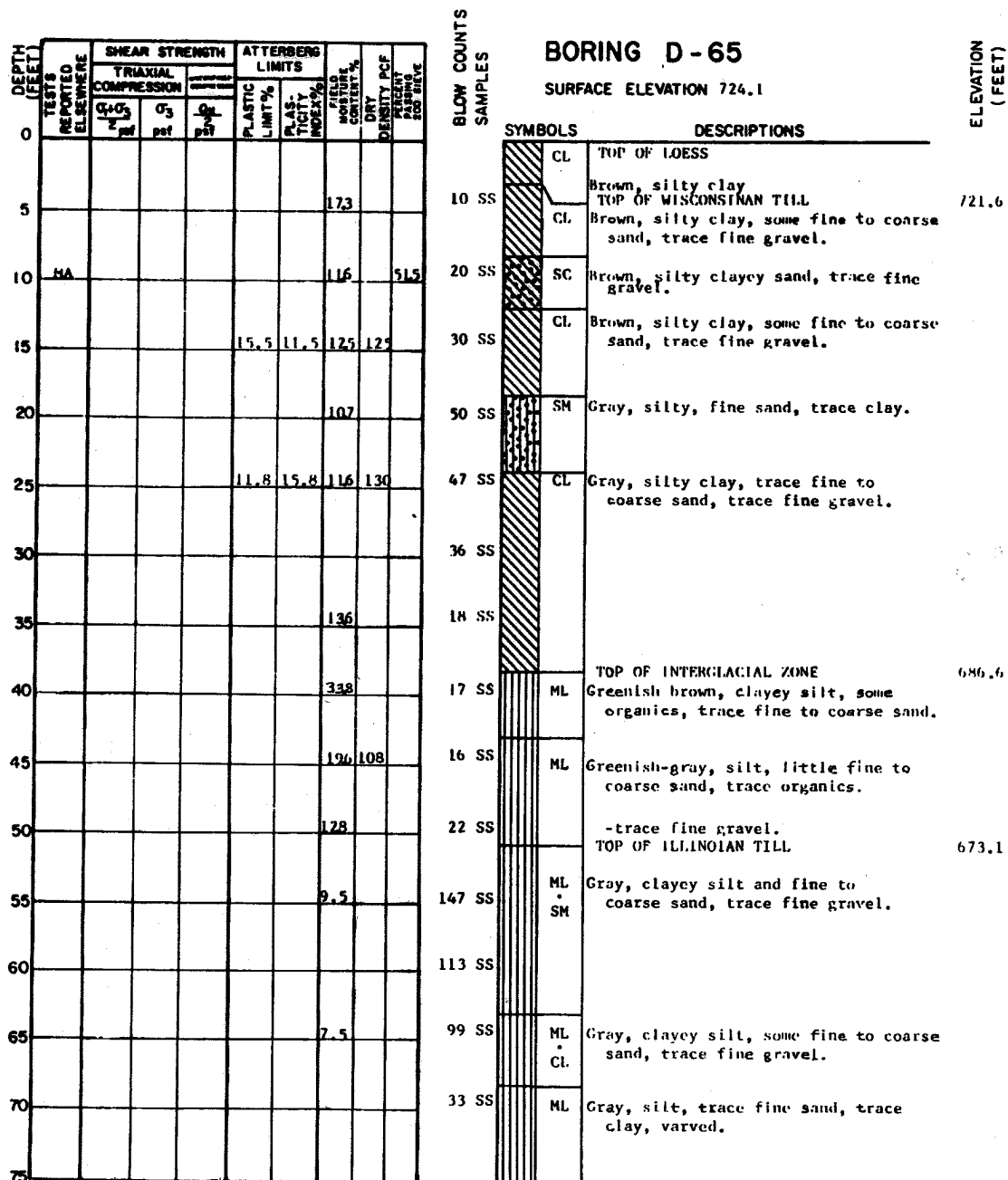
BLOW COUNTS SAMPLES

SURFACE ELEVATION 712.2

ELEVATION
(FEET)

Boring completed at 78.7 feet
on 4-9-75.
Water level not recorded.

LOG OF BORING D-64



BORING CONTINUED

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Service*, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-128

LOG OF BORING D-65

(SHEET 1 of 2)

ELEVATION
(FEET)

NOTES

- CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-128
LOG OF BORING D-65
(SHEET 2 of 2)

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING NO. 200 SIEVE
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %	FIELD MOISTURE CONTENT %			
		$\sigma_1 - \sigma_3$ psi	σ_3 psi	σ_d psi						
0										
5					12.3	21.5	105			
10	MA				14.5	14.5	120		680	
15										
20					13.4	14.8	178			
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING S-2

SURFACE ELEVATION 704.9

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS
AG	CL	Grayish brown, silty clay (topsoil). TOP OF WISCONSINAN TILL
BG	CL	Reddish brown, silty clay, trace fine to coarse sand, trace fine gravel.
BG	CL	Brown, clayey silt, some fine to coarse sand.
BG		16.0 feet, color grades to gray, trace fine gravel.
Boring completed at 20.0 feet on 4-3-75. Water level not recorded.		

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-129

LOG OF BORING S-2

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	TEST NUMBER AND DATE
		COMPRESSION			PLASTIC LIMIT %	LIQUID LIMIT %	PLASTICITY INDEX %			
		$\sigma_1 - \sigma_3$ psf	σ_3 psf	σ_1 psf						
0										
5								16.3		
10								13.0		
15										
20	COMP HA UC/R							8.8		600
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING S-3

SURFACE ELEVATION 725.0

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
AG	ML	TOP OF LOESS	
		Brown, clayey silt, manganese nodules noted.	
	ML	Yellow, silt, trace fine sand and clay.	
BG			
		TOP OF WISCONSINAN TILL	714.0
BK	CL	Brown, silty clay, little fine to coarse sand.	
	CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
BN			

Boring completed at 20.0 feet on 4-3-75.
Water level at 11.0 feet.

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-130

LOG OF BORING S-3

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
		TRIAXIAL COMPRESSION			PLASTIC					
		$\sigma_1 + \sigma_3$ 2	σ_3	$\frac{\sigma_1}{2}$	LIMIT %	PLAS- TICITY INDEX %				
		psf	psf	psf						
0										
5					12.6	11.2	134			
10										
15	COMP UC/R				13.8	13.2	9.4			
20										
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING S-4

SURFACE ELEVATION 722.8

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
AG	CL • ML	TOP OF LOESS Brown, silty clay, manganese nodules noted.	
		TOP OF WISCONSINAN TILL	718.3
BG	CL	Brown, clayey silt, some fine to coarse sand, trace fine gravel.	
BG			
	ML	Gray, silt, trace fine to coarse sand, trace fine gravel.	
Boring completed at 20.0 feet on 4-4-75. Water level at 16.5 feet.			

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-131

LOG OF BORING S-4

LABORATORY TEST DATA									
ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH					
		PLASTIC LIGHT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION			UNCONFINED COMPRESSION		
				\bar{C}	\bar{A}	\bar{F}_c	\bar{C}	\bar{A}	\bar{F}_c
720									
710	C C SA COMP								
700									
690									

BORING S-5
SURFACE ELEVATION 719.0

BLOW COUNTS
SAMPLES

SYMBOLS	DESCRIPTIONS
7 # ML	LIGHT BROWN CLAYEY SILT WITH SOME ROOTS (TOPSOIL)
7 # CL	BROWN SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (MEDIUM STIFF)
17 # CL	GRADES TO STIFF
19 # CL	GRAY SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (VERY STIFF)
23 # CL	

BORING COMPLETED AT 20.0 FEET
ON 7-28-72
NO CASING USED
WATER LEVEL NOT RECORDED.

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS	SHEAR STRENGTH	MOISTURE CONTENT %	DRY DENSITY P.C.F.
680					
670					
660					
650					

BLOW COUNTS
SAMPLES

SYMBOLS	DESCRIPTIONS
4 # ML	DARK BROWN CLAYEY SILT WITH SOME SAND AND ORGANIC MATTER - (TOPSOIL)
2 # ML	DARK GRAY AND BROWN SILTY CLAY AND CLAYEY SILT WITH SOME GRAVEL AND OCCASIONAL SEAMS OF SILTY SAND. (SOFT)
30 # ML	GRAY SANDY SILT WITH CLAY AND SOME GRAVEL (VERY STIFF)
19 # ML	
17 # ML	

GRADES WITH MORE SAND

BORING COMPLETED AT 20.0 FEET
ON 7-28-72
NO CASING USED
WATER LEVEL NOT RECORDED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-132

LOG OF BORINGS S-5 AND S-6

NOTES

1. LOGGED BY: DAMES & MOORE
2. DRILLED BY: RAYMOND INTERNATIONAL
3. TESTED BY: DAMES & MOORE

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS		FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT SAND AND GRAVEL
		TRIAXIAL COMPRESSION		$\frac{p}{p_{25}}$	PLASTIC LIMIT %	PLAS- TICITY INDEX %			
		$\frac{\sigma_1 + \sigma_3}{2}$ psi	σ_3 psi						
0									
5							144		
10	COMP PERM				12.8	10.0	109		
15								105	
20	COMP PERM UC/R				25.5	12.7	105		
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									

BLOW COUNTS
SAMPLES

BORING S-8

SURFACE ELEVATION 733.8

ELEVATION
(FEET)

SYMBOLS

DESCRIPTIONS

AG	CL	TOP OF LOESS	
	ML	Brown, silty clay, manganese nodules noted.	
BG		TOP OF WISCONSINAN TILL	731.3
	CL	Brown, clayey silt, little fine to coarse sand, trace fine gravel.	
BG		6.0 feet, some fine to coarse sand.	
		11.0 feet, color grades to gray.	

Boring completed at 20.0 feet
on 4-2-75.
Water level at 18.5 feet.

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-133

LOG OF BORING S-8

LABORATORY TEST DATA										
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH						MOISTURE CONTENT %	DRY DENSITY PCF
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION		UNCONSOLIDATED COMPRESSION		POCKET SHEAR TEST			
			σ_1 PSI	σ_3 PSI	σ_1 PSI	σ_3 PSI	σ_1 PSI	σ_3 PSI		
720										
710	COMP UC/R	13.1	9.3					4500+	10.8	22.2
700								3000	13.6	
								3500	13.4	
690	COMP	13.5	10.7						11.1	
								4500+	11.4	
680									11.1	
									12.1	
670										

BLOW COUNTS
SAMPLES

BORING S-9 SURFACE ELEVATION 717.2

SYMBOLS	DESCRIPTIONS
ML	BROWN CLAYEY SILT WITH ROOTS Top of Wisconsinan Glacial Till BROWN SILTY CLAY (HARD)
	GRADES WITH GRAVEL GRADES TO VERY STIFF GRAVEL GRADES OUT
CL	GRADES WITH SAND GRADES TO HARD GRADES TO GRAY AND WITH GRAVEL

BORING COMPLETED AT 40.0 FEET
ON 3-19-73
NO CASING USED
WATER LEVEL NOT RECORDED

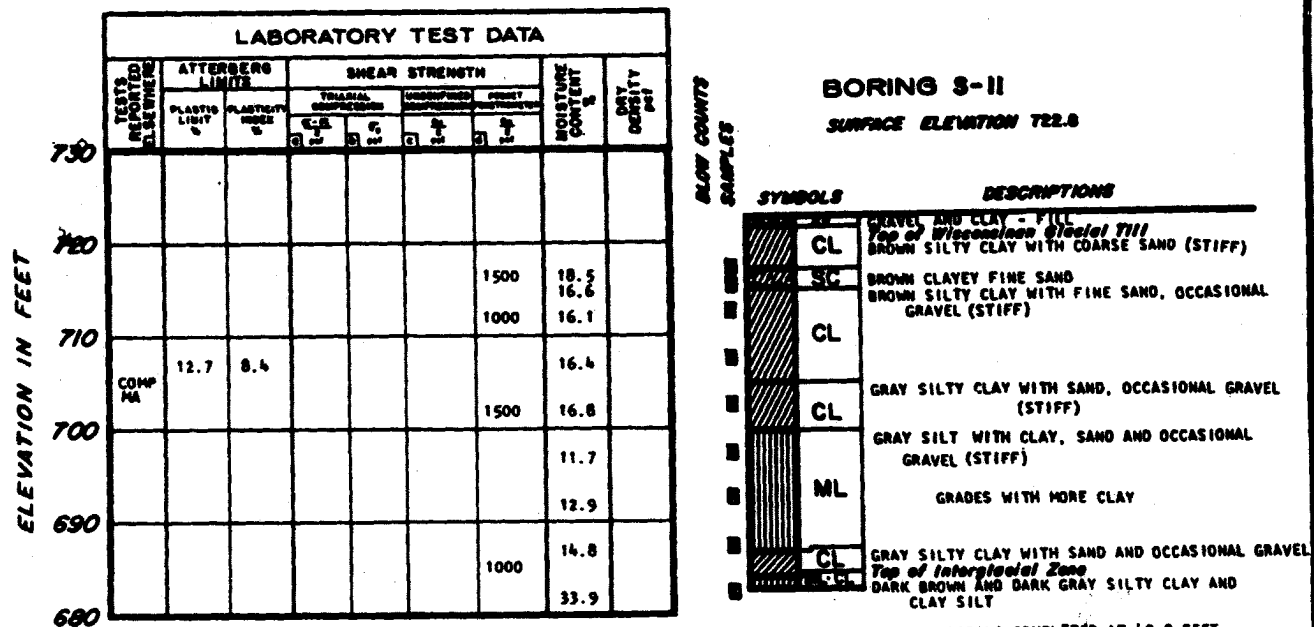
NOTES

1. LOGGED BY: DAMES & MOORE
2. DRILLED BY: RAYMOND INTERNATIONAL
3. TESTED BY: DAMES & MOORE

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-134

LOG OF BORING S-9



LABORATORY TEST DATA									
ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH					
		PLASTIC LIGHT %	PLASTIC INDEX %	TENSILE COMPRESSION		UNSATURATED COMPRESSION		MOISTURE CONTENT %	DRY DENSITY PCF
				\bar{C}_u PSI	\bar{C}_u PCF	\bar{C}_u PSI	\bar{C}_u PCF		
730									
720	UC/R	14.0	9.0					23.1	
710	COMP							1000 14.9	
								2000 13.2	
700	COMP	11.2	7.4					14.5	
								2000 14.7	
690	COMP MA	13.0	8.6					1000 15.9	
680								1000 15.9	

BLOW COUNTS
SAMPLES

BORING S-12

SURFACE ELEVATION 722.2

SYMBOLS	DESCRIPTIONS
CL	GRAVEL - FILL Top of Wisconsin Glacial Till BROWN SILTY CLAY (STIFF)
CL	GRADES SANDY GRADES WITH SAND AND GRAVEL GRAY SILTY CLAY WITH SAND AND GRAVEL (STIFF)
CL	GRADES WITH LESS SILT
CL	GRADES WITH MORE SILT Top of Interstitial Zone BROWN SILTY CLAY AND CLAYEY SILT

BORING COMPLETED AT 40.0 FEET
ON 3-19-73
NO CASING USED
WATER LEVEL NOT RECORDED

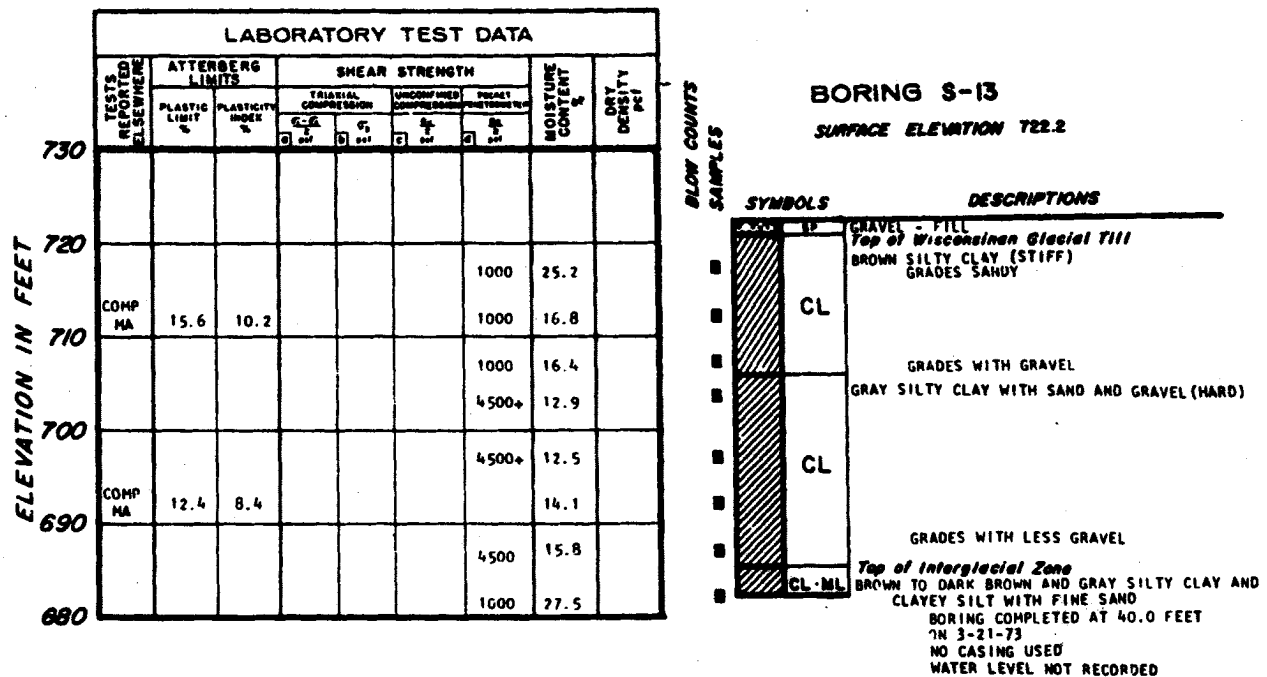
NOTES

1. LOGGED BY: DAMES & MOORE
2. DRILLED BY: RAYMOND INTERNATIONAL
3. TESTED BY: DAMES & MOORE

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-137

LOG OF BORING S-12



NOTES

1. LOGGED BY: DAMES & MOORE
2. DRILLED BY: RAYMOND INTERNATIONAL
3. TESTED BY: DAMES & MOORE

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-138

LOG OF BORING S-13

LABORATORY TEST DATA											
ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH						MOISTURE CONTENT %	DRY DENSITY PCF
		PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION			UNCONFINED COMPRESSION		MOISTURE CONTENT %		
				Q _u psi	Q _u psi	Q _u psi	Q _u psi	Q _u psi			
740											
730											
720	PERM C COMP UC/R	16.6	11.4					1500	24.9		
									16.6		
									14.3		
710								3500	15.3		
	UC/R	12.2	6.8					4500+	12.2		
700	COMP TR/UL R								14.9		
									11.7		
690								3500	17.7		
									16.6		
680	COMP										

BLOW COUNTS
SAMPLES

BORING S-14

SURFACE ELEVATION 730.2

SYMBOLS	DESCRIPTIONS
SP	GRAVEL - FILL Top of Wisconsin Glacial Till BROWN SILTY CLAY (STIFF)
CL	GRADES WITH FINE SAND GRAY SILTY CLAY WITH SAND AND GRAVEL (VERY STIFF TO HARD) GRADES WITH MORE SAND GRADES WITH LESS SAND
CL	Top of Interglacial Zone GRAY SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (VERY STIFF) VERY SILTY SAND AND GRAVEL GRADE OUT 43 TO 46 FEET GREEN SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL
CL	

BORING COMPLETED AT 50.0 FEET
ON 3-19-73
NO CASING USED
WATER LEVEL NOT RECORDED

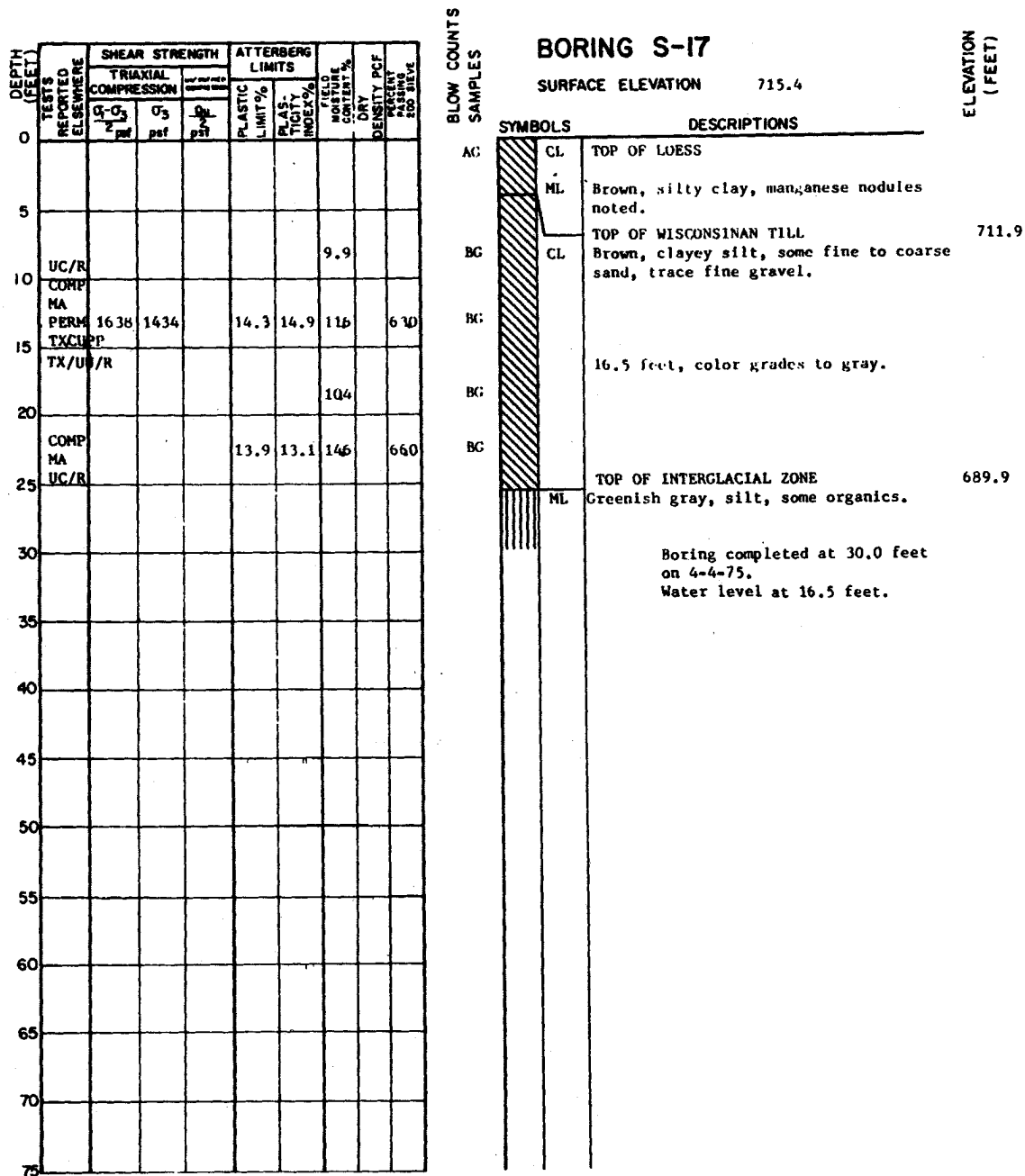
NOTES

1. LOGGED BY: DAMES & MOORE
2. DRILLED BY: RAYMOND INTERNATIONAL
3. TESTED BY: DAMES & MOORE

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-139

LOG OF BORING S-14



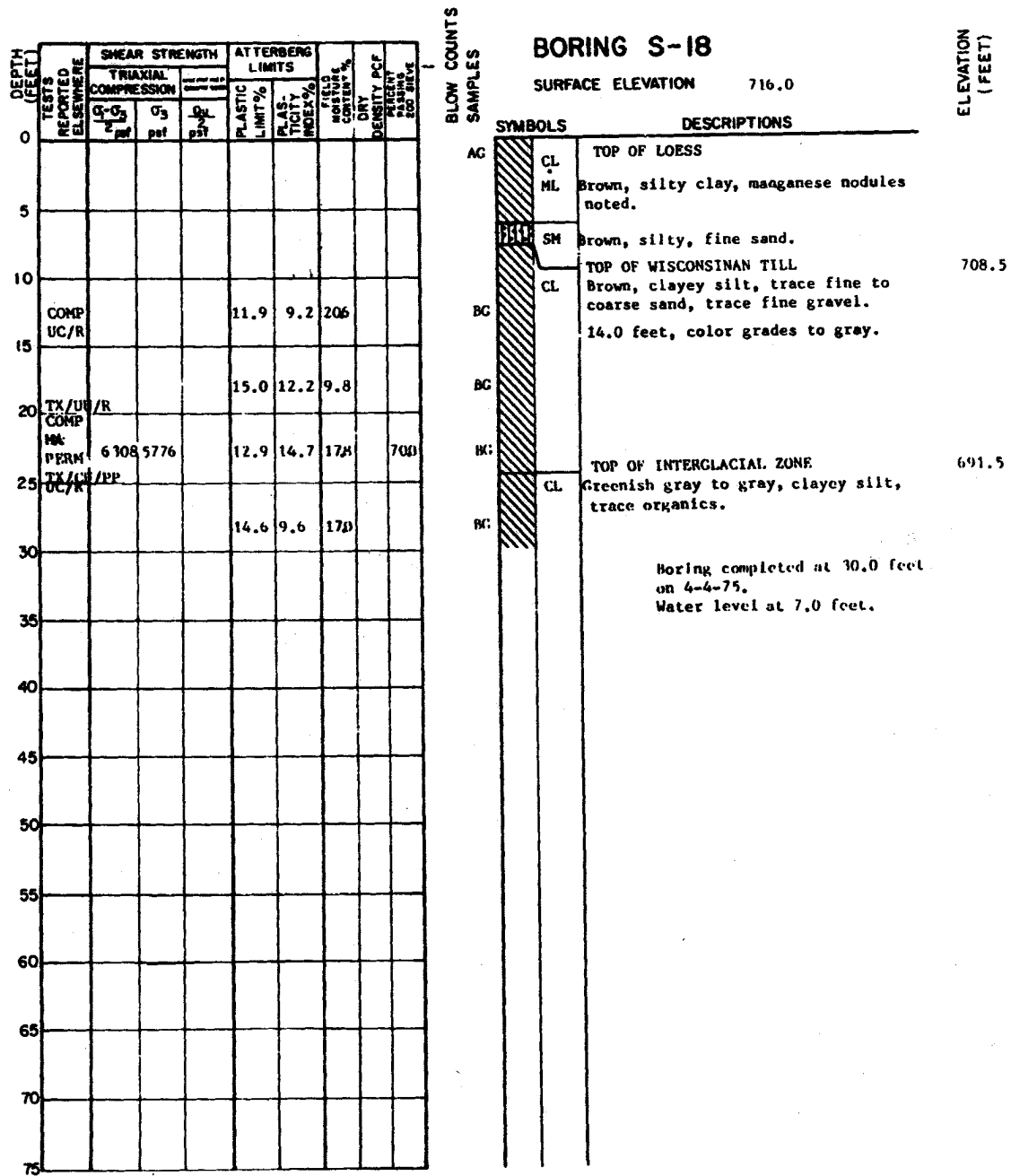
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-140

LOG OF BORING S-17



NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-141

LOG OF BORING S-18

**BLOW COUNTS
SAMPLES**

SURFACE ELEVATION **725.5**

ELEVATION
(FEET)

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-142

LOG OF BORING S-19

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENBERG LIMITS		FILLS MOISTURE CONTENT %	DRY DENSITY PCF	WATER CONTENT %	FLUIDITY INDEX	SAND PERCENT	GRAVEL PERCENT
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	PLAS. FRICT. INDEX %						
		Q ₁ -Q ₂ psi	Q ₃ psi	Q ₄ psi								
0												
5	COMP TXCURP UC/R	786	1434		15.0	15.0	146					
10							119					
15							120					
20	COMP TXCURP	5960	5776		13.8	15.0	107					
25												
30												
35												
40												
45												
50												
55												
60												
65												
70												
75												

BLOW COUNTS
SAMPLES

BORING S-20

SURFACE ELEVATION 724.9

ELEVATION
(FEET)

SYMBOLS	DESCRIPTIONS
AC	TOP OF LOESS Brown, silty clay, manganese nodules noted. TOP OF WISCONSINAN TILL. 722.4
BC	CL. Brown, clayey silt, some fine to coarse sand, trace fine gravel.
BC	-13.0 feet, color grades to gray.
BC	
BC	
BC	
ML	TOP OF INTERGLACIAL ZONE 687.9 Greenish gray, silt, trace organics.
	Boring completed at 40.0 feet on 4-7-75. Water level at 18.0 feet.

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-143

LOG OF BORING S-20

BLOW COUNTS SAMPLES

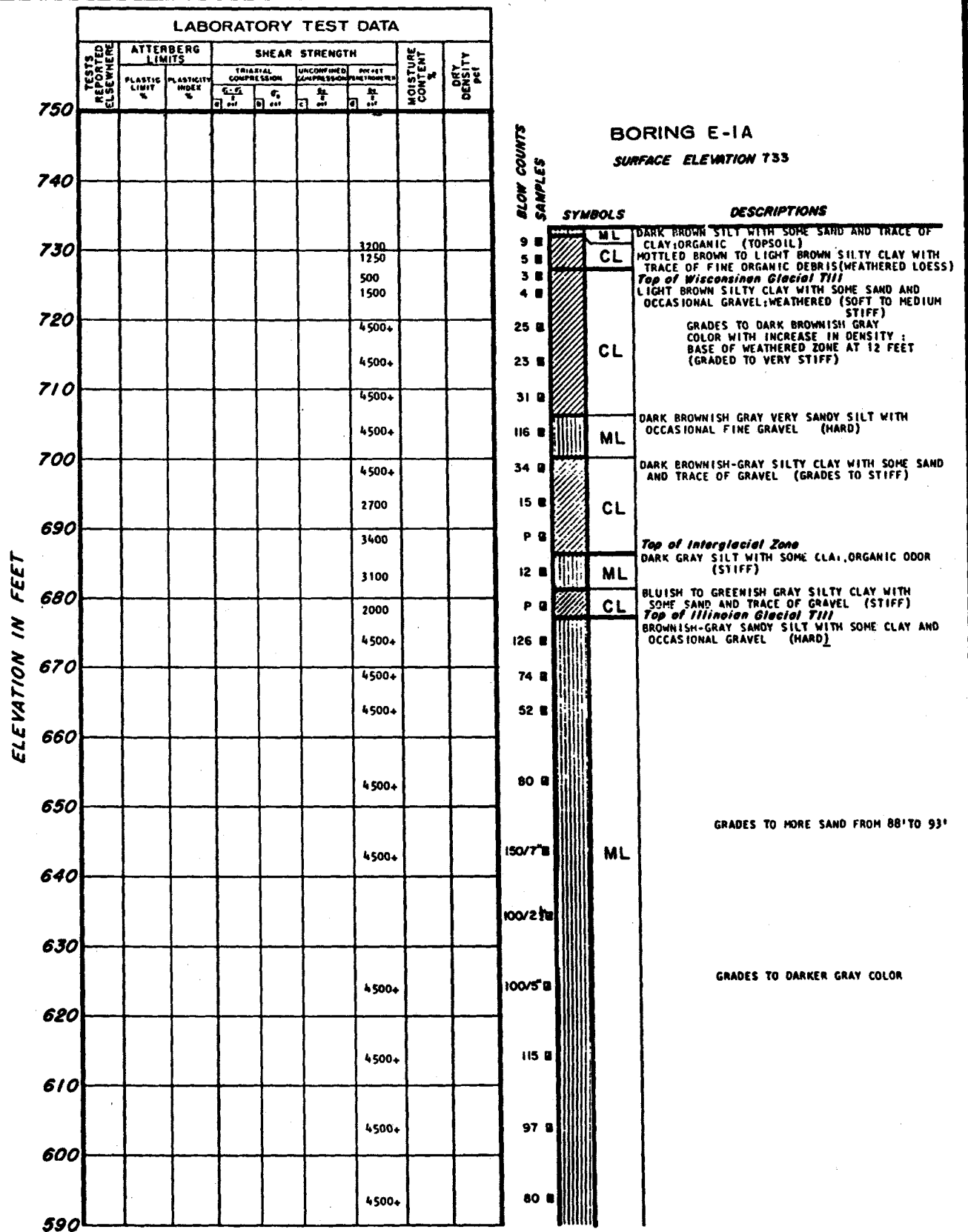
SURFACE ELEVATION 736.4

ELEVATION
(FEET)

Boring completed at 50.0 feet
on 4-3-75.
Water level at 4.0 feet.

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Soil Testing Services, Inc.

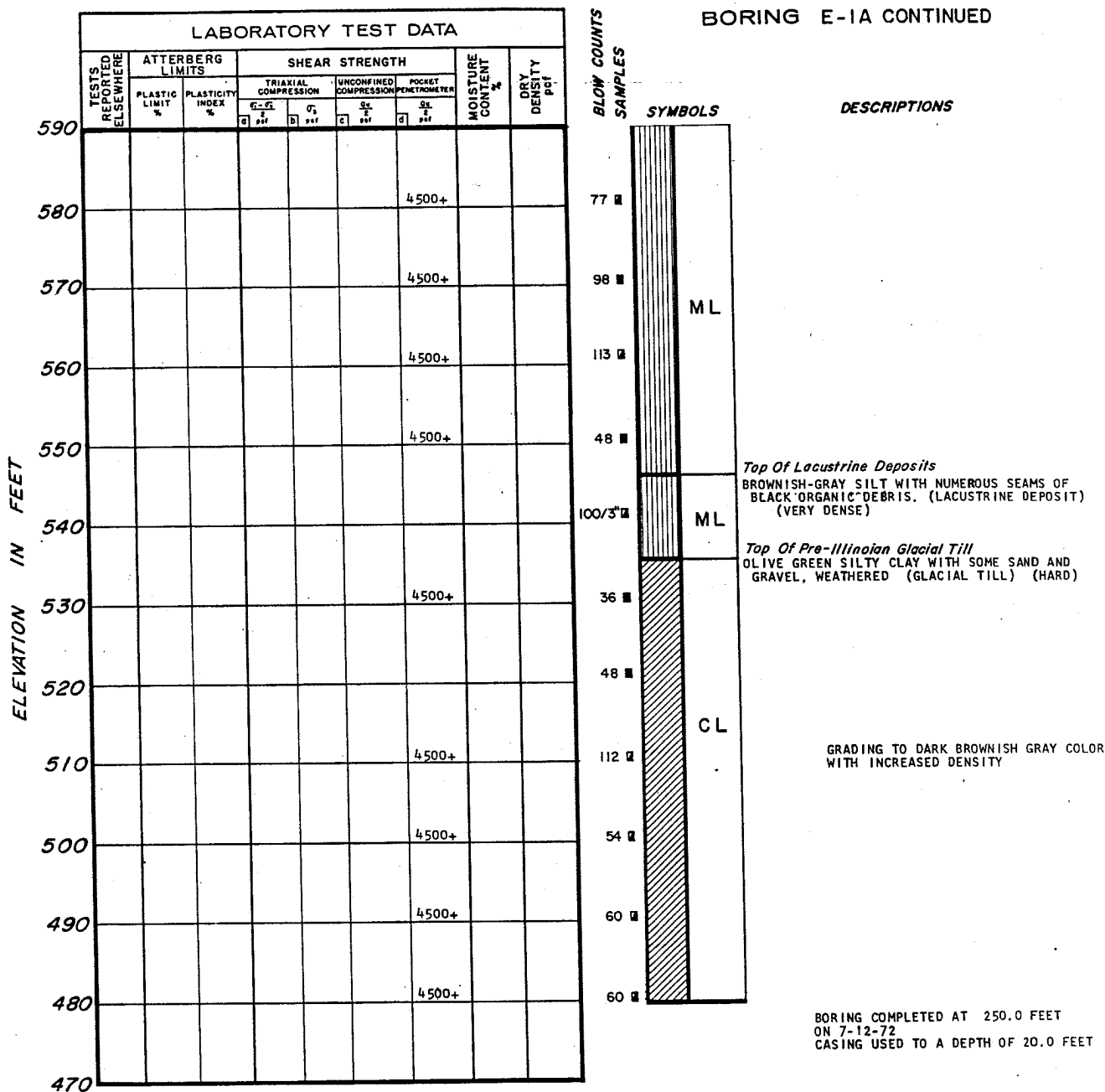
LOG OF BORING S-21



BORING CONTINUED

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FIGURE 2.5-145
LOG OF BORING E-1A
(SHEET 1 of 2)



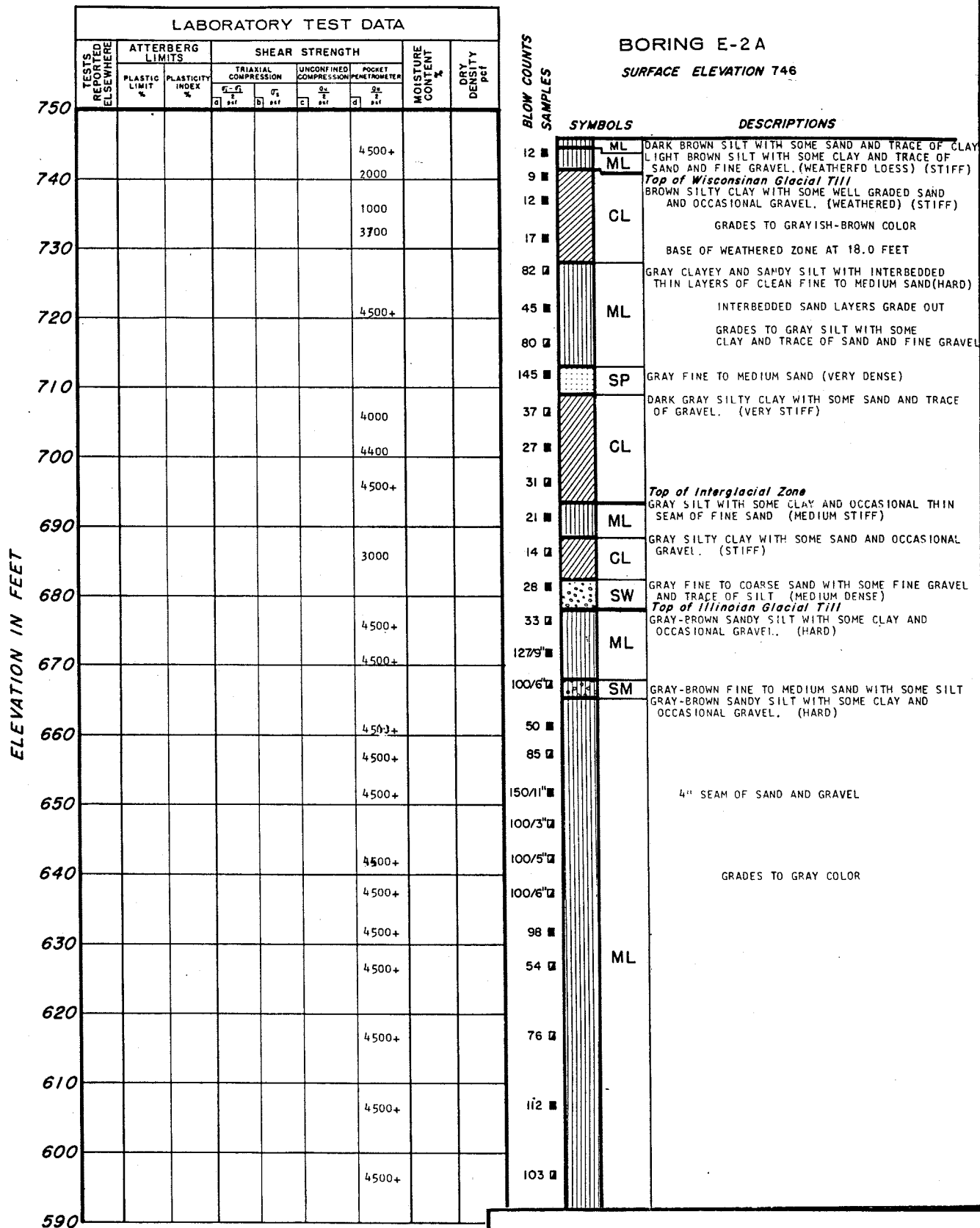
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING E-1A
(SHEET 2 of 2)

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

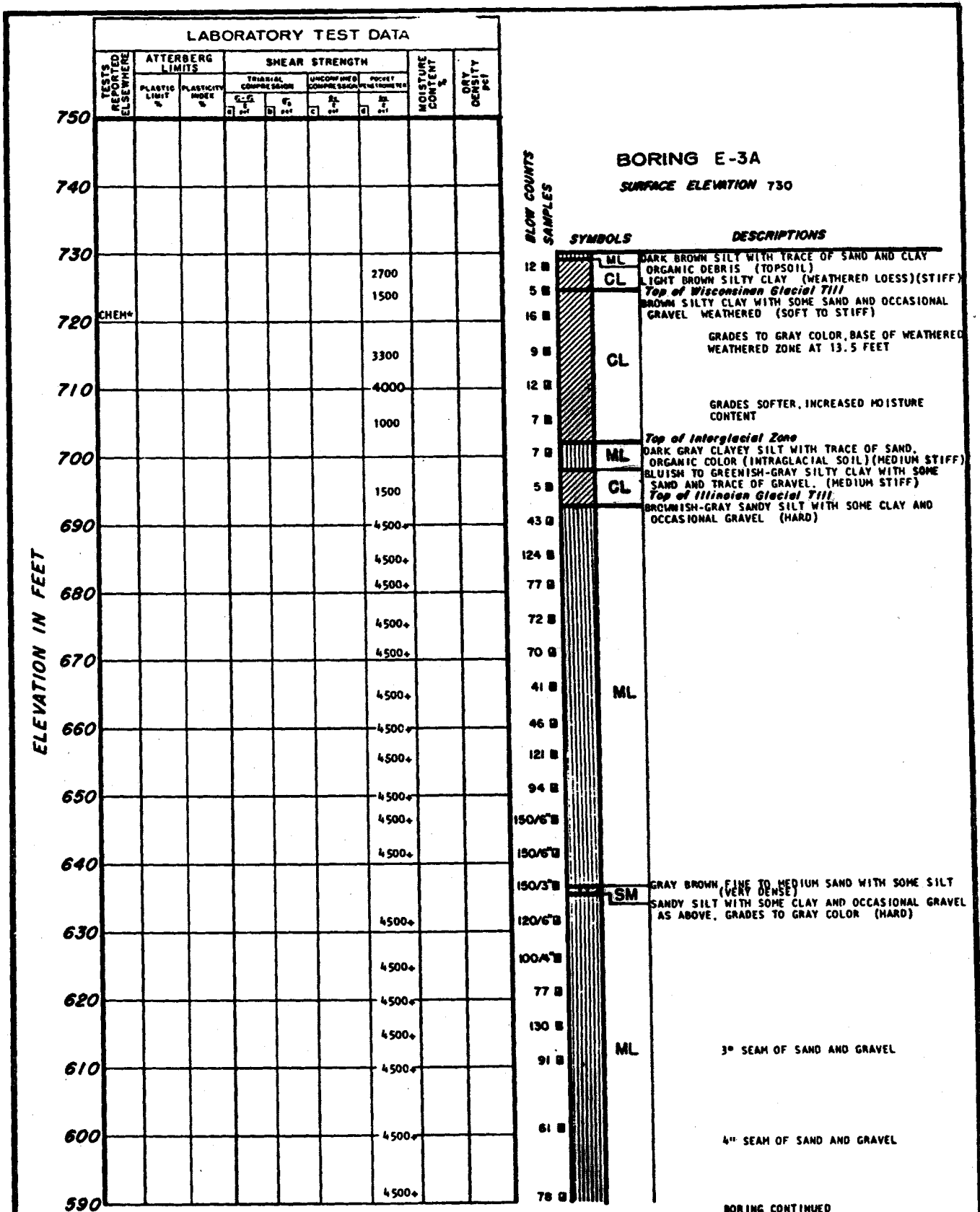


BORING CONTINUED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

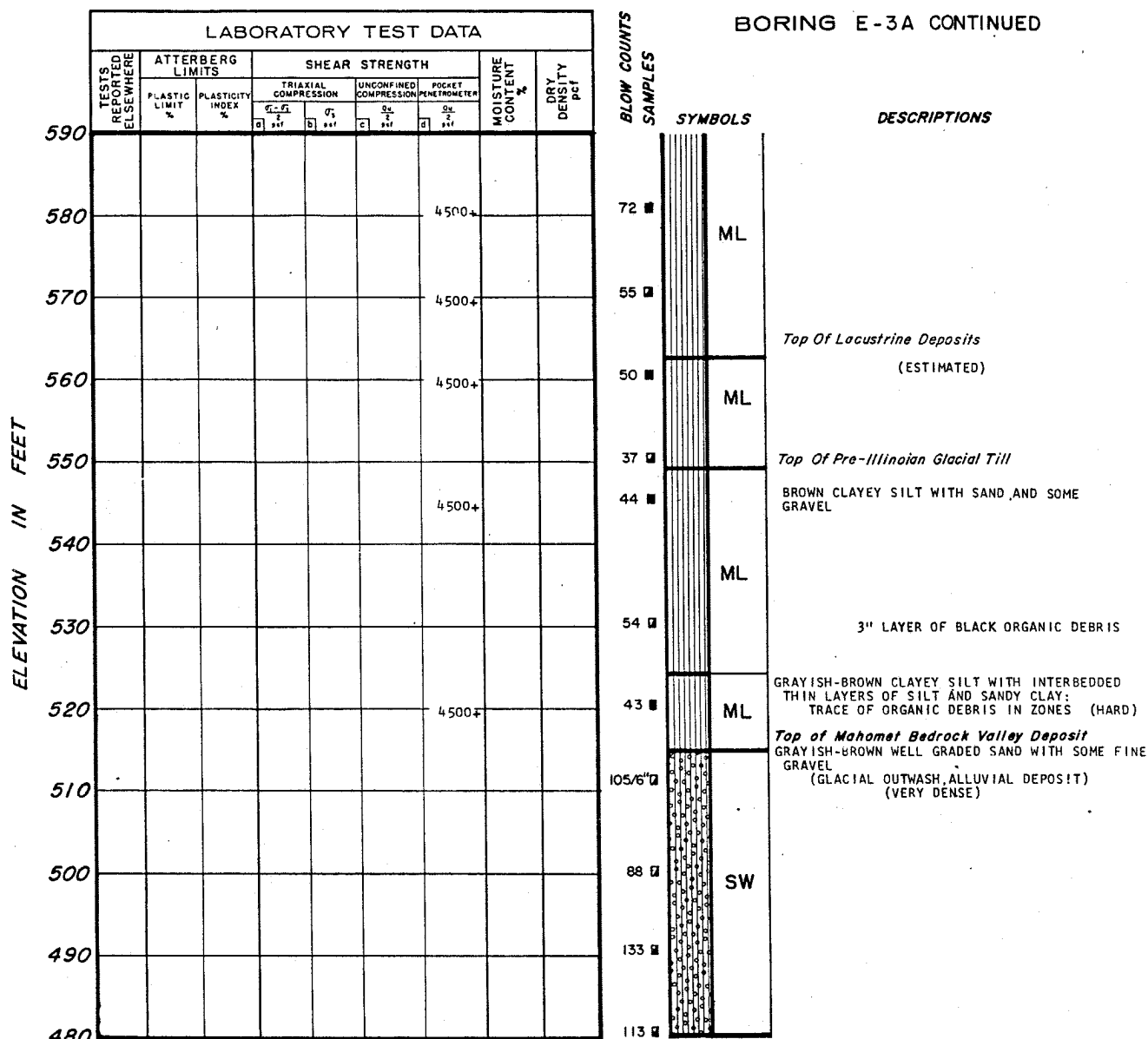
FIGURE 2.5-146

LOG OF BORING E-2A
(SHEET 1 of 2)



**CLINTON POWER STATION
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FIGURE 2.5-147
LOG OF BORING E-3A
(SHEET 1 of 2)



PIEZOMETER INSTALLED IN E-3A ON 7-5-72 BORING WAS REOPENED TO 238 FEET. A 3/4 INCH PVC PIPE WITH AN 18 INCH POROUS STONE TIP WAS PLACED AT ELEVATION 495. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 492 TO 516; A BENTONITE PLUG FROM ELEVATION 516 TO 518; AND CEMENT GROUT FROM ELEVATIONS 518 TO 730.

PIEZOMETER INSTALLED ON 7-12-72 BORING E-3B LOCATED 10 FEET FROM E-3A WAS DRILLED TO A DEPTH OF 75 FEET. A 3/4 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET PERFORATED WAS PLACED AT ELEVATION 655. GRANULAR BACKFILL WAS PLACED FROM ELEVATIONS 655 TO 662; A BENTONITE SEAL FROM ELEVATIONS 662 TO 663; AND PEA GRAVEL AND CEMENT GROUT FROM ELEVATIONS 663 TO 730.

WATER LEVEL READINGS

DEPTH BELOW GROUND
SURFACE IN FEET

TIP ELEVATION 492.0 TIP ELEVATION 657.5 DATE

81.6
81.8

8-15-72
9-6-72

REFER TO FIGURE 2.4-38 FOR
WATER LEVEL OBSERVATIONS.

BORING COMPLETED AT 249.5 FEET
ON 6-29-72

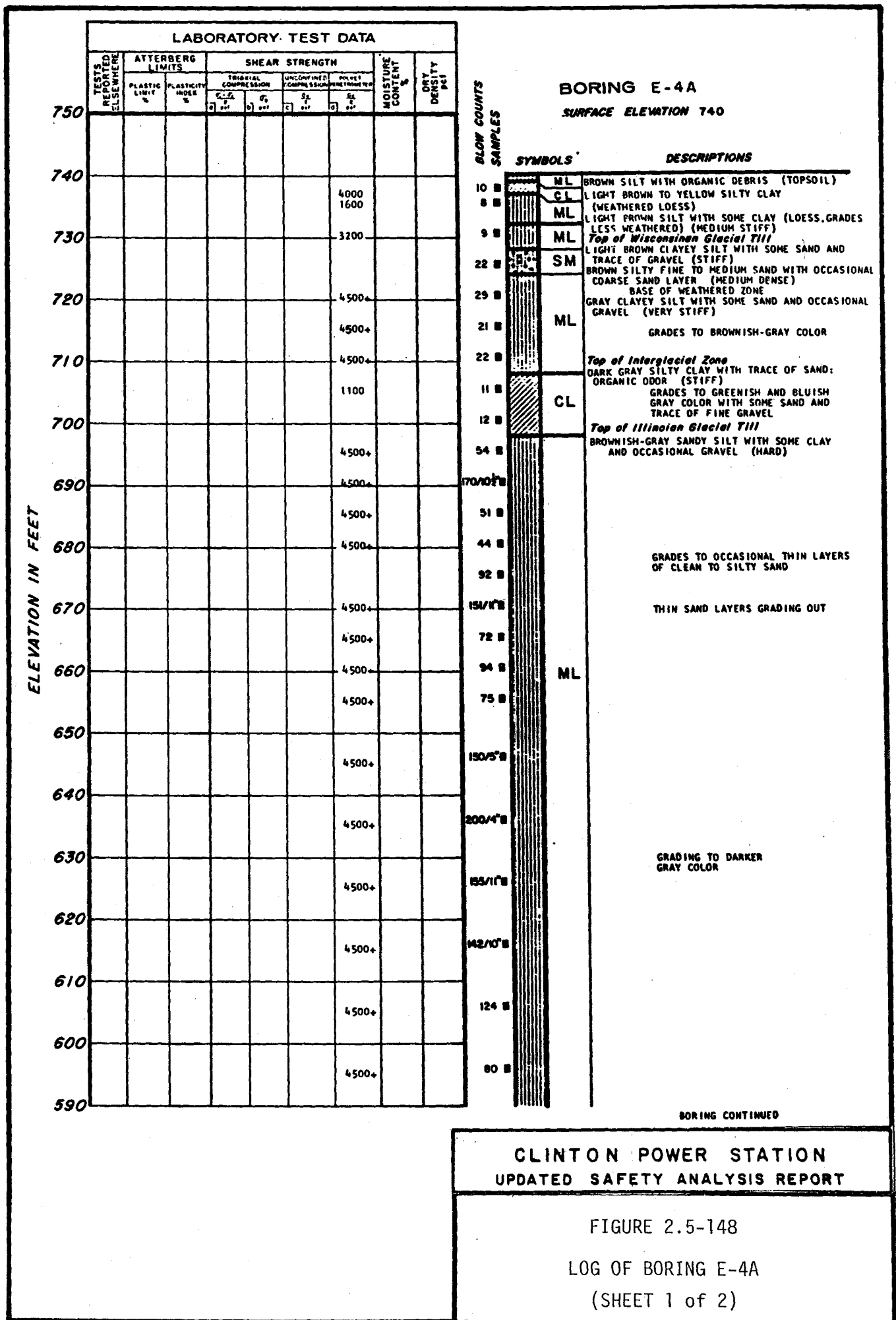
**CLINTON POWER STATION
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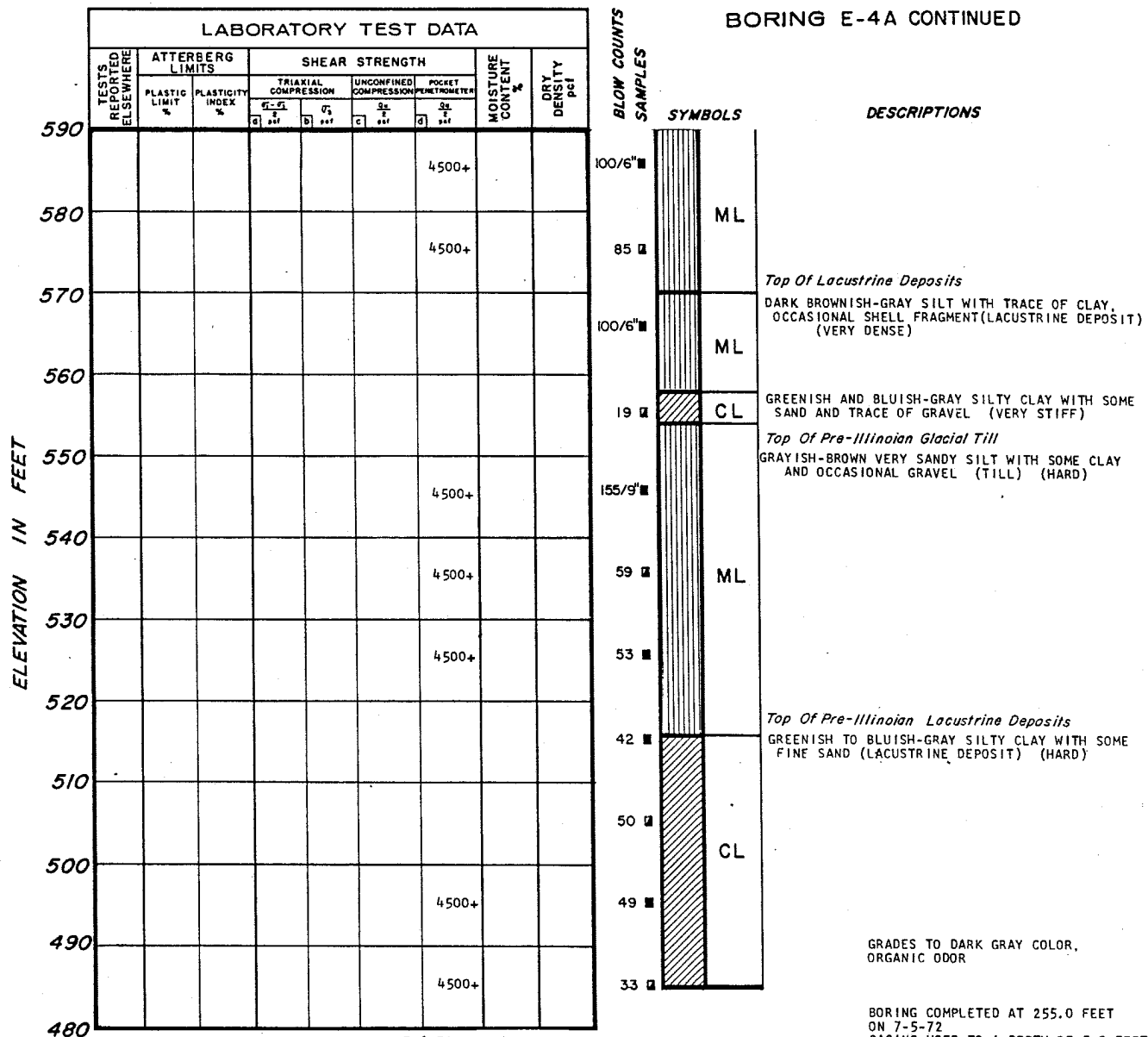
FIGURE 2.5-147

LOG OF BORING E-3A
(SHEET 2 of 2)

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.





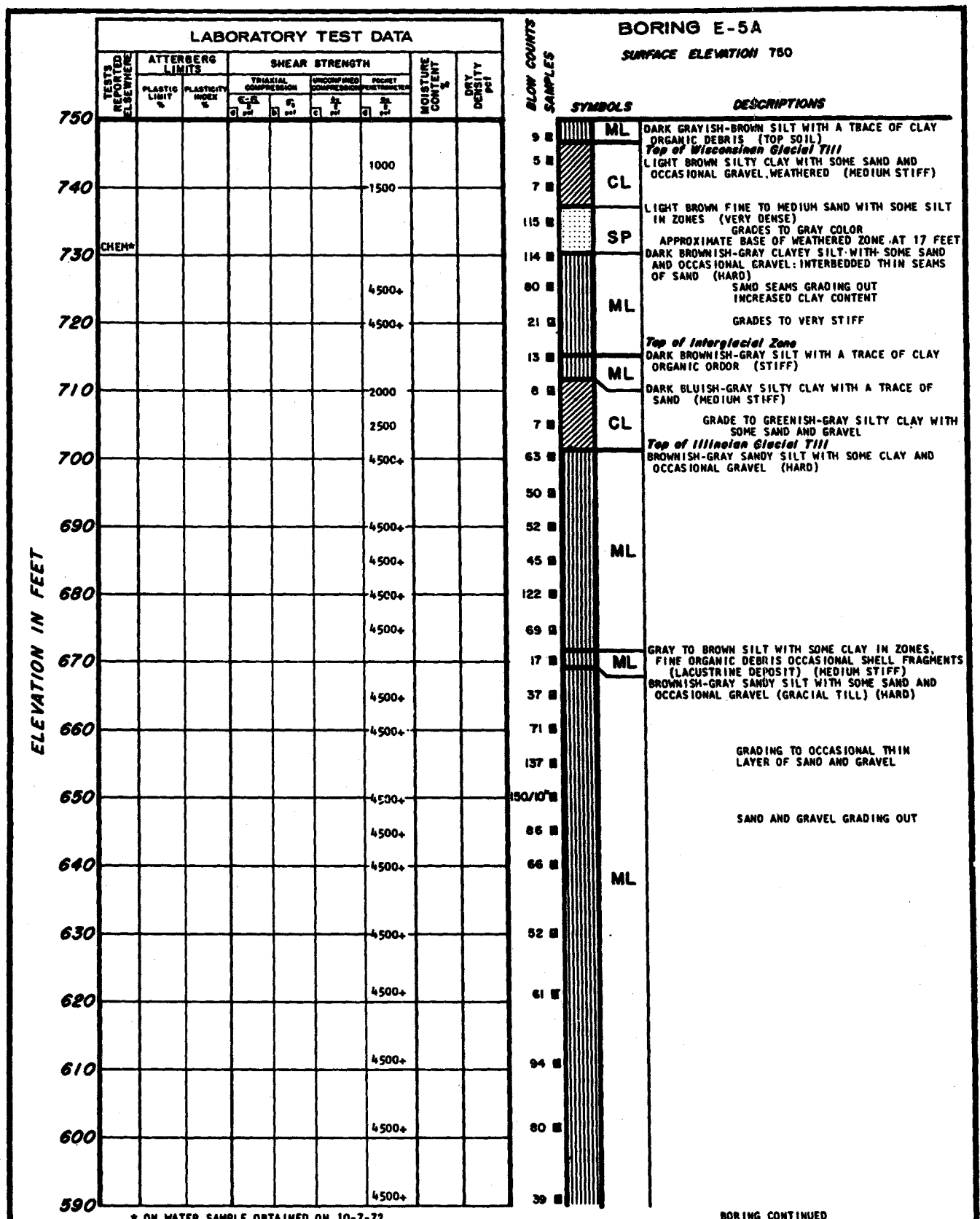
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-148

LOG OF BORING E-4A
(SHEET 2 of 2)

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

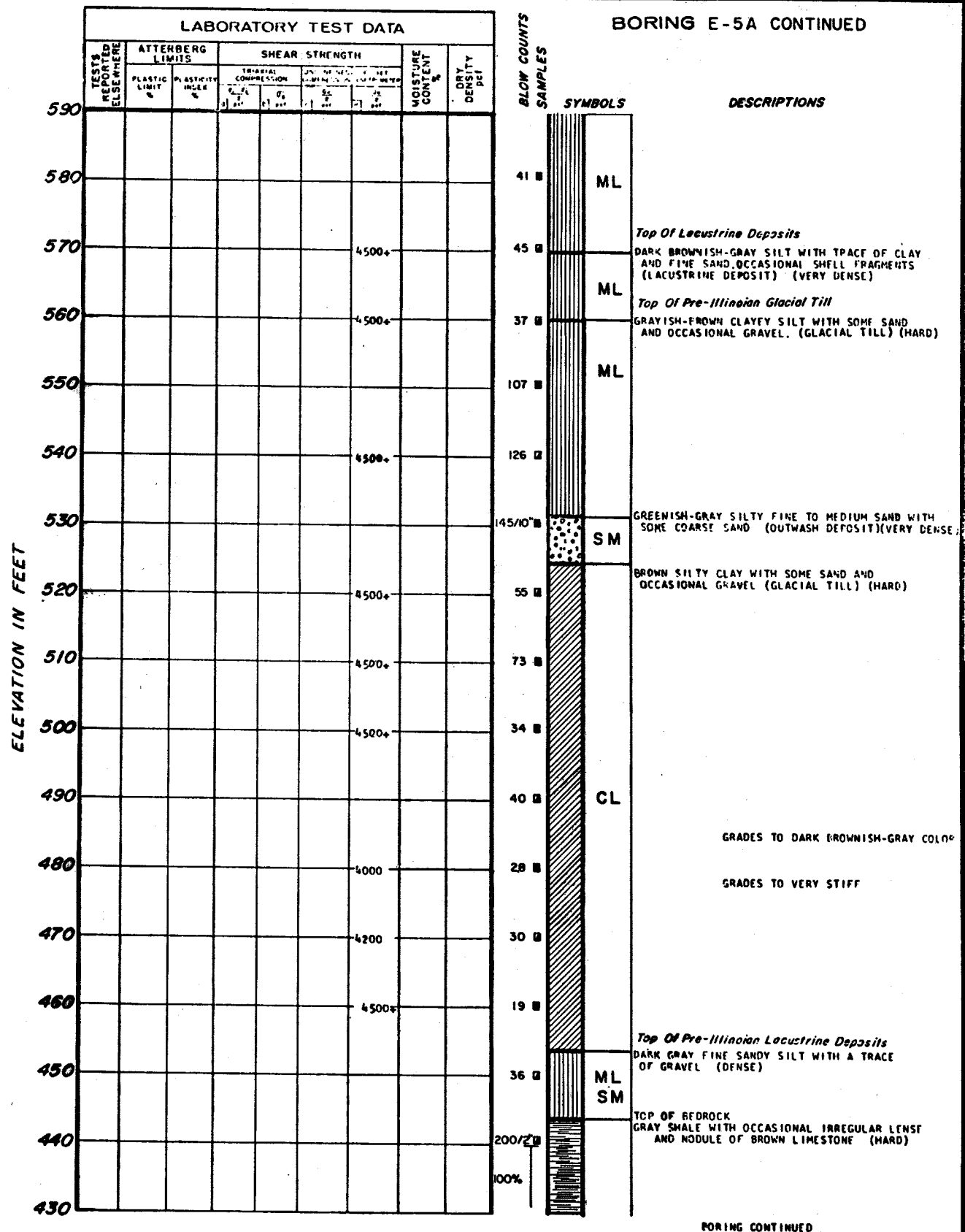


**CLINTON POWER STATION
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FIGURE 2.5-149

LOG OF BORING E-5A

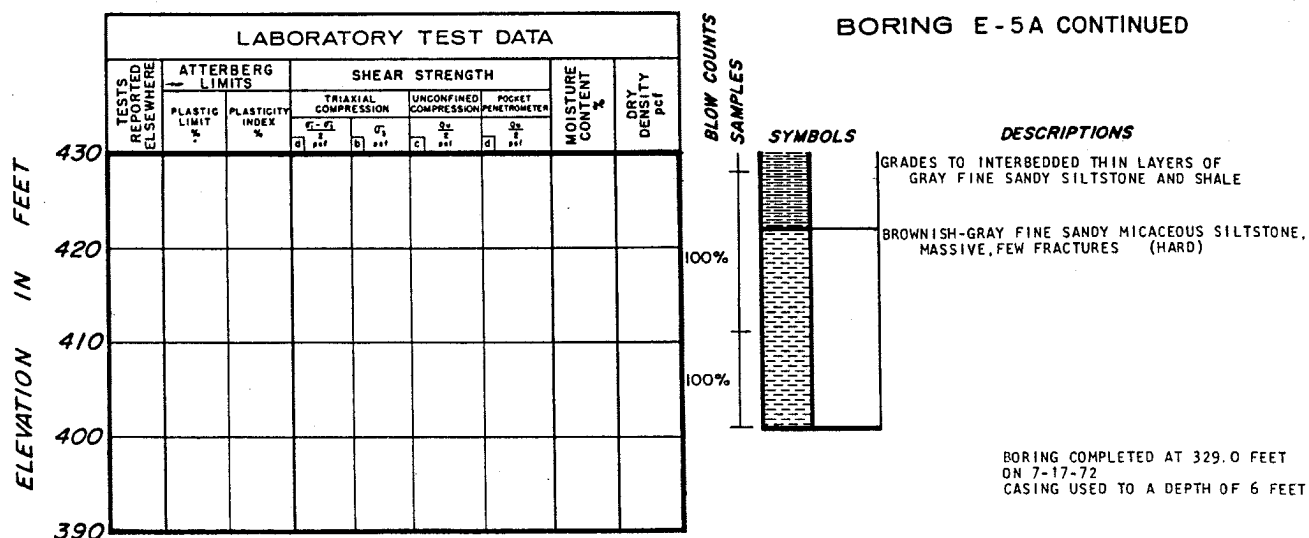
(SHEET 1 of 3)



**CLINTON POWER STATION
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FIGURE 2.5-149

LOG OF BORING E-5A
(SHEET 2 of 3)



PIEZOMETER INSTALLED ON 7-19-72 BORING E-5B, LOCATED 10 FEET FROM E-5A, WAS DRILLED TO A DEPTH OF 76 FEET. A 3/4 INCH PVC PIPE WITH AN 18 INCH POROUS STONE TIP WAS PLACED TO ELEVATION 675. GRANULAR BACKFILL WAS PLACED BETWEEN ELEVATIONS 674 TO 680; A BENTONITE SEAL BETWEEN ELEVATIONS 680 AND 683; AND CEMENT GROUT FROM ELEVATION 683 TO 750.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
16.8	8-3-72
16.9	8-15-72
17.3	9-6-72

REFER TO FIGURE 2.4-38 FOR WATER LEVEL OBSERVATIONS.

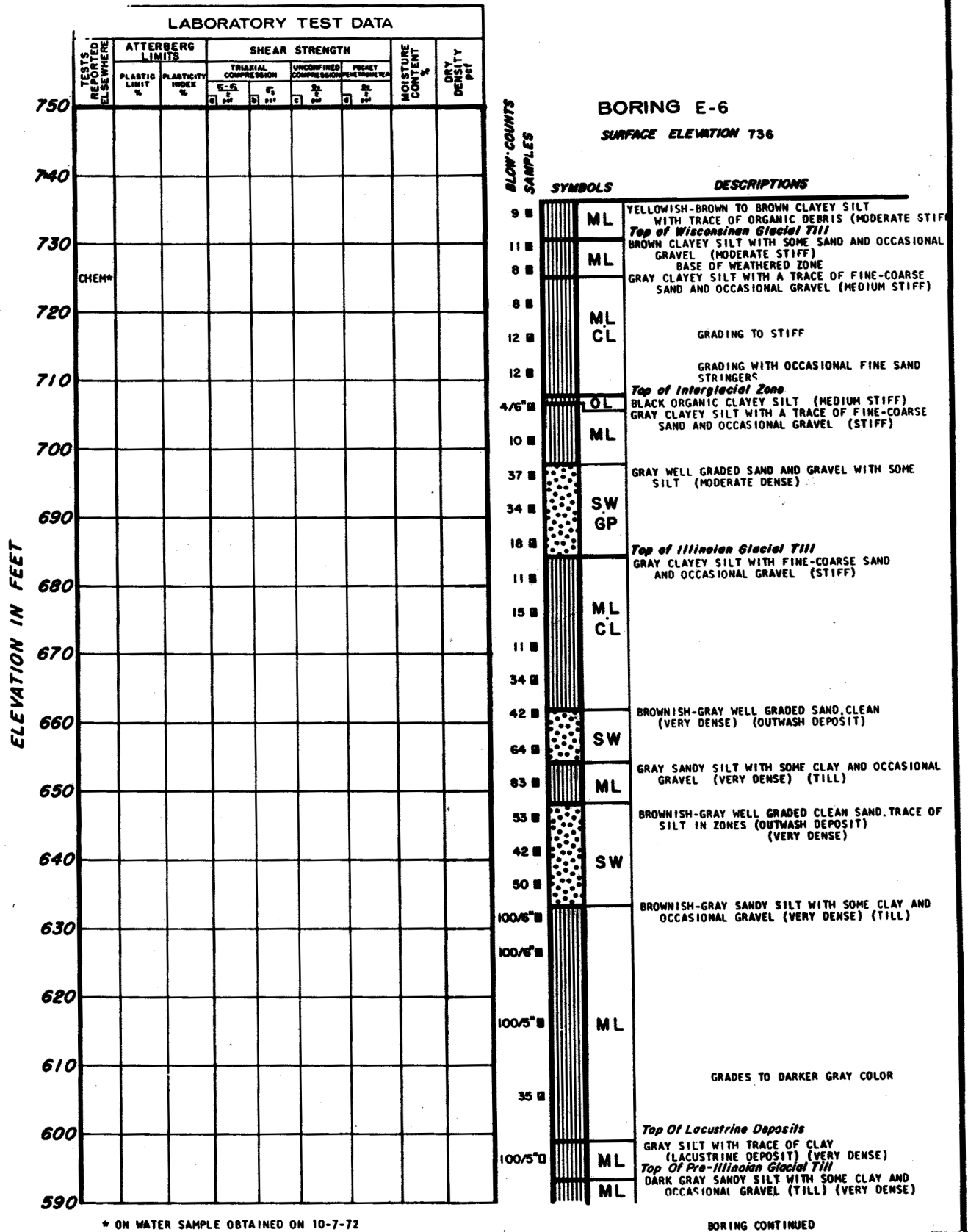
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-149

LOG OF BORING E-5A
(SHEET 3 of 3)

NOTE:

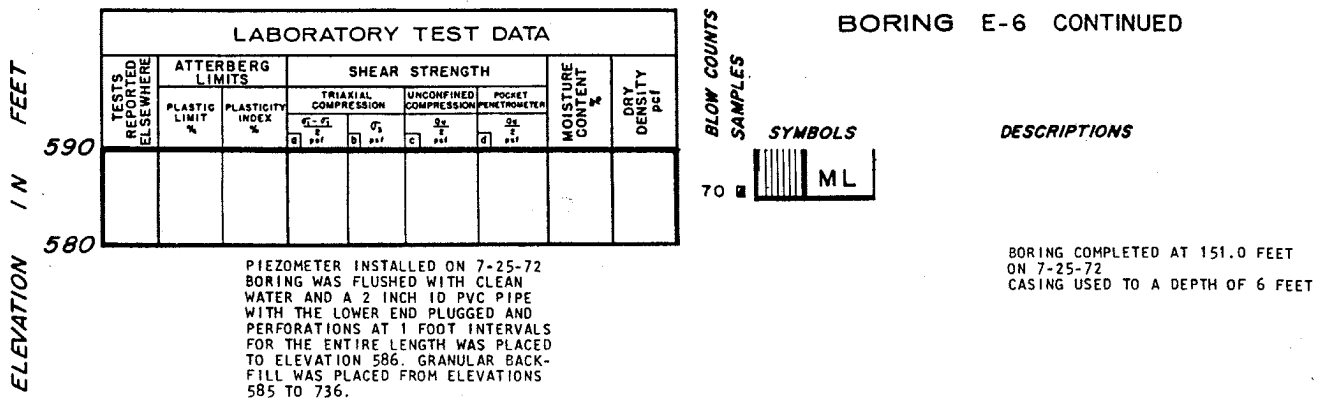
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



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UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-150

LOG OF BORING E-6
(SHEET 1 of 2)



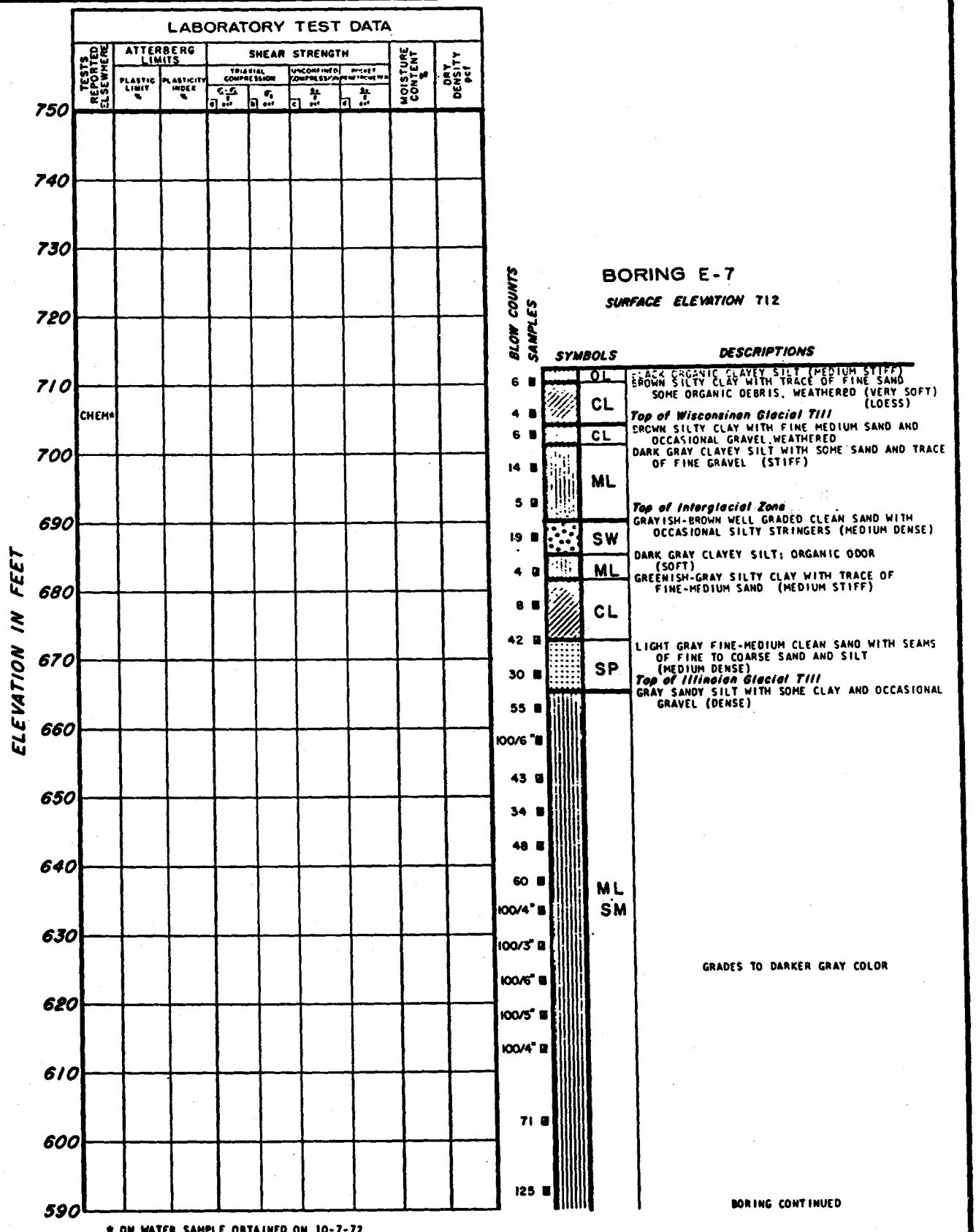
PIEZOMETER INSTALLED ON 7-25-72
BORING WAS FLUSHED WITH CLEAN
WATER AND A 2 INCH ID PVC PIPE
WITH THE LOWER END PLUGGED AND
PERFORATIONS AT 1 FOOT INTERVALS
FOR THE ENTIRE LENGTH WAS PLACED
TO ELEVATION 586. GRANULAR BACK-
FILL WAS PLACED FROM ELEVATIONS
585 TO 736.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
11.8	9-19-72
11.4	9-26-72
11.3	10-10-72

REFER TO FIGURE 2.4-38 FOR
WATER LEVEL OBSERVATIONS.

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



CLINTON POWER STATION
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FIGURE 2.5-151

LOG OF BORING E-7

(SHEET 1 of 2)

LABORATORY TEST DATA									
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf	
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET PENETROMETER			
			$\frac{\sigma_1 - \sigma_3}{2}$ a psi	σ_3 b psi	$\frac{q_u}{2}$ c psi	q_u d psi			
590									
580									
570									
560									
550									

PIEZOMETER INSTALLED IN 7-20-72
BORING WAS FLUSHED WITH CLEAN WATER
AND A 3 INCH ID PIPE WITH THE LOWER
END PLUGGED AND PERFORATION AT 1 FOOT
INTERVALS FOR THE ENTIRE LENGTH WAS
PLACED TO ELEVATION 562. GRANULAR
BACKFILL WAS PLACED FROM ELEVATION
560.5 TO 712.

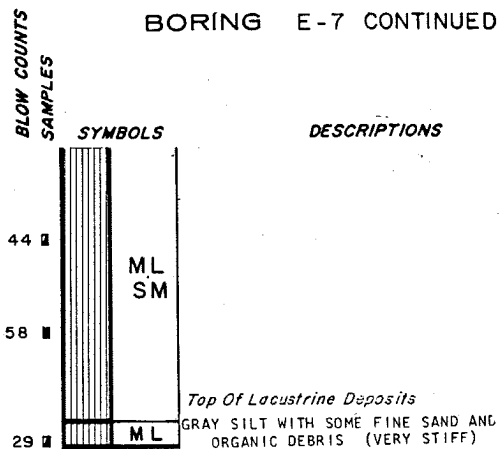
DEPTH BELOW GROUND
SURFACE IN FEET

DATE

5.5	9-19-72
2.4	9-26-72
3.7	10-10-72

REFER TO FIGURE 2.4-38 FOR
WATER LEVEL OBSERVATIONS.

BORING E-7 CONTINUED



BORING COMPLETED AT 151.5 FEET
ON 7-20-72
CASING USED TO A DEPTH OF 6.0 FEET

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-151

LOG OF BORING E-7

(SHEET 2 of 2)

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

LABORATORY TEST DATA										
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH						MOISTURE CONTENT %	DRY DENSITY pcf
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION		UNCONFINED COMPRESSION		POCKET PENETROMETER			
			$\frac{\sigma_1 - \sigma_3}{2}$	σ_3	$\frac{q_u}{2}$	$\frac{q_u}{2}$				
			a psi	b psi	c psi	d psi				
680										
670	24	27								
660										
650										
640										

ELEVATION IN FEET

700									
690									
680									
670									
660									
650									

BORING G-1

SURFACE ELEVATION 675.1

SAMPLES

SYMBOLS

DESCRIPTIONS

☒	CH	BROWN SILTY CLAY WITH SOME FINE ROOTS (MEDIUM STIFF TO STIFF)
☒		GRADING MOIST
☒	SM	BROWN SILTY FINE TO MEDIUM SAND (DENSE)
☒		GRADING WITH LESS SILT
☒	SW	GRADING WITH SOME COARSER SAND
☒		BROWN FINE TO COARSE SAND WITH SOME SILT AND FINE TO COARSE GRAVEL (DENSE)
☒	CL	GRAY FINE TO MEDIUM SANDY CLAY WITH OCCASIONAL FINE GRAVEL (VERY STIFF)

BORING COMPLETED ON 8-22-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 11.0 FEET ON 8-22-73.

BORING G-2

SURFACE ELEVATION 692.3

SAMPLES

SYMBOLS

DESCRIPTIONS

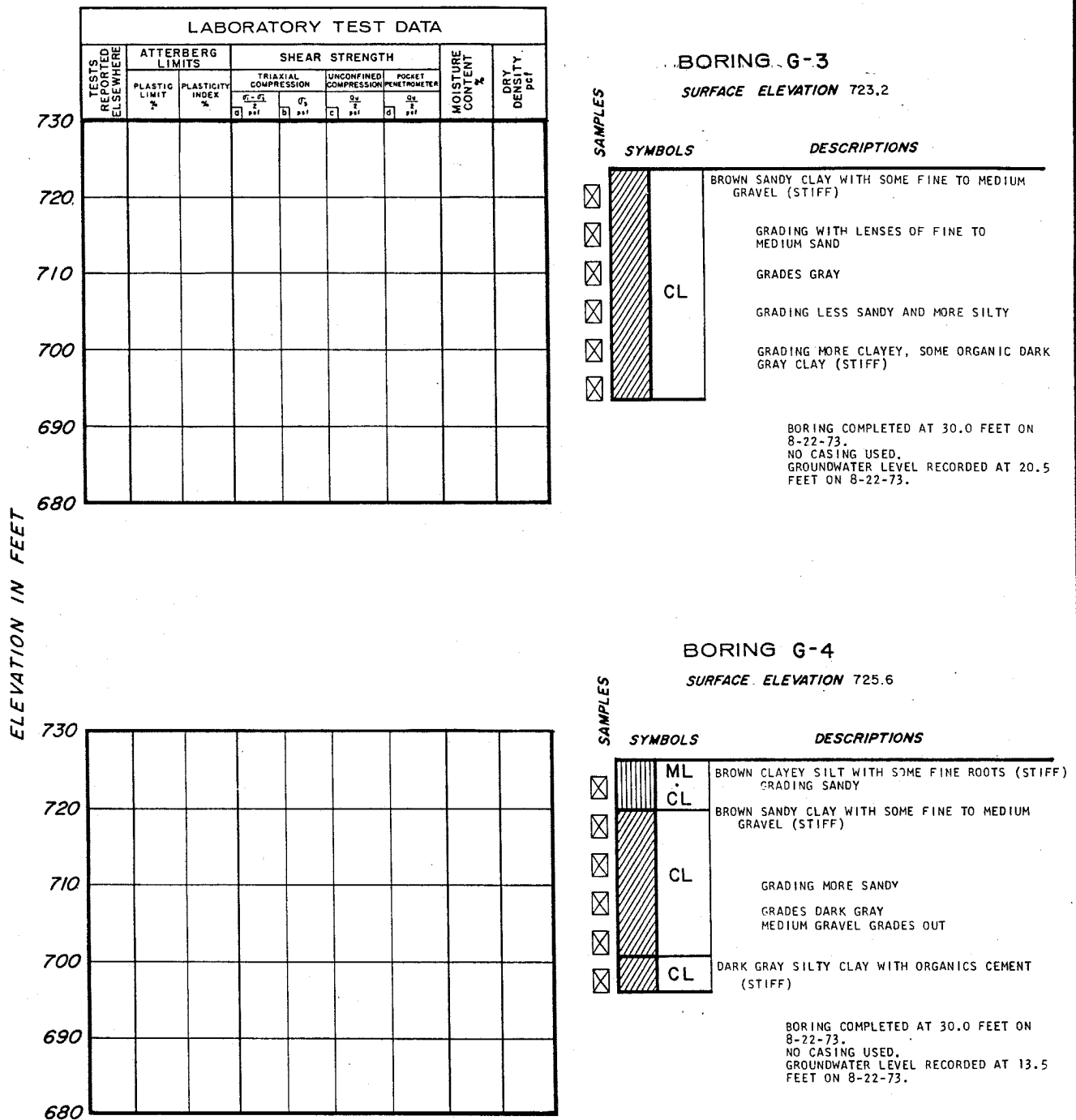
☒	ML	BROWN CLAYEY SILT WITH SOME FINE ROOTS (STIFF)
☒	CL	GRADING MOIST
☒		GRADING MORE CLAYEY
☒	SC	BROWN CLAYEY FINE SAND WITH SOME SILT (MEDIUM STIFF)
☒		GRADING STIFFER
☒	SC	GRADING WITH MORE MEDIUM TO COARSE SAND
☒	SM	GRAY CLAYEY FINE TO COARSE SAND WITH SOME FINE GRAVEL (VERY DENSE)
☒		GRADING LESS CLAYEY
☒	SM	GRADING WITH MORE MEDIUM SIZE GRAVEL
☒		GRAY SILTY FINE TO COARSE SAND (DENSE)
☒		GRADING MORE CLAYEY WITH OCCASIONAL GRAVEL

BORING COMPLETED AT 30.0 FEET
ON 8-22-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 11.0 FEET ON 8-22-73.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-152

LOG OF BORINGS G-1 AND G-2



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-153

LOG OF BORINGS G-3 AND G-4

ELEVATION IN FEET

LABORATORY TEST DATA								
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET PENETROMETER		
			$\frac{\sigma_1 - \sigma_3}{2}$	σ_3	$\frac{Q_u}{2}$	$\frac{Q_u}{E}$		
			a psi	b psi	c psi	d psi		
730								
	26	23						
720								
710								
700								
690								

BORING G-5

SURFACE ELEVATION 729.3

SAMPLES	SYMBOLS		DESCRIPTIONS
	CL		
	GC		
	CL		
			DARK BROWN SILTY CLAY WITH SOME FINE ROOTS (MEDIUM STIFF) GRADING MORE CLAYEY GRADING WITH OCCASIONAL MEDIUM GRAVEL
			LIGHT BROWN AND GRAY CLAYEY FINE TO MEDIUM SAND AND GRAVEL (MEDIUM DENSE) GRADING WITH LESS FINE SAND GRADING MORE CLAYEY
			BROWN AND GRAY FINE SANDY CLAY (MEDIUM STIFF TO STIFF) GRADING GRAY AND STIFFER GRADING DARKER GRAY WITH OCCASIONAL FINE GRAVEL (STIFF TO VERY STIFF) GRADING MORE SANDY

BORING COMPLETED AT 30.0 FEET ON 8-17-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 9.5 FEET ON 8-17-73.

680								
670								
660	SA						18.2 11.6	
650	SA						16.0	
640								
630								

BORING G-6

SURFACE ELEVATION 677.8

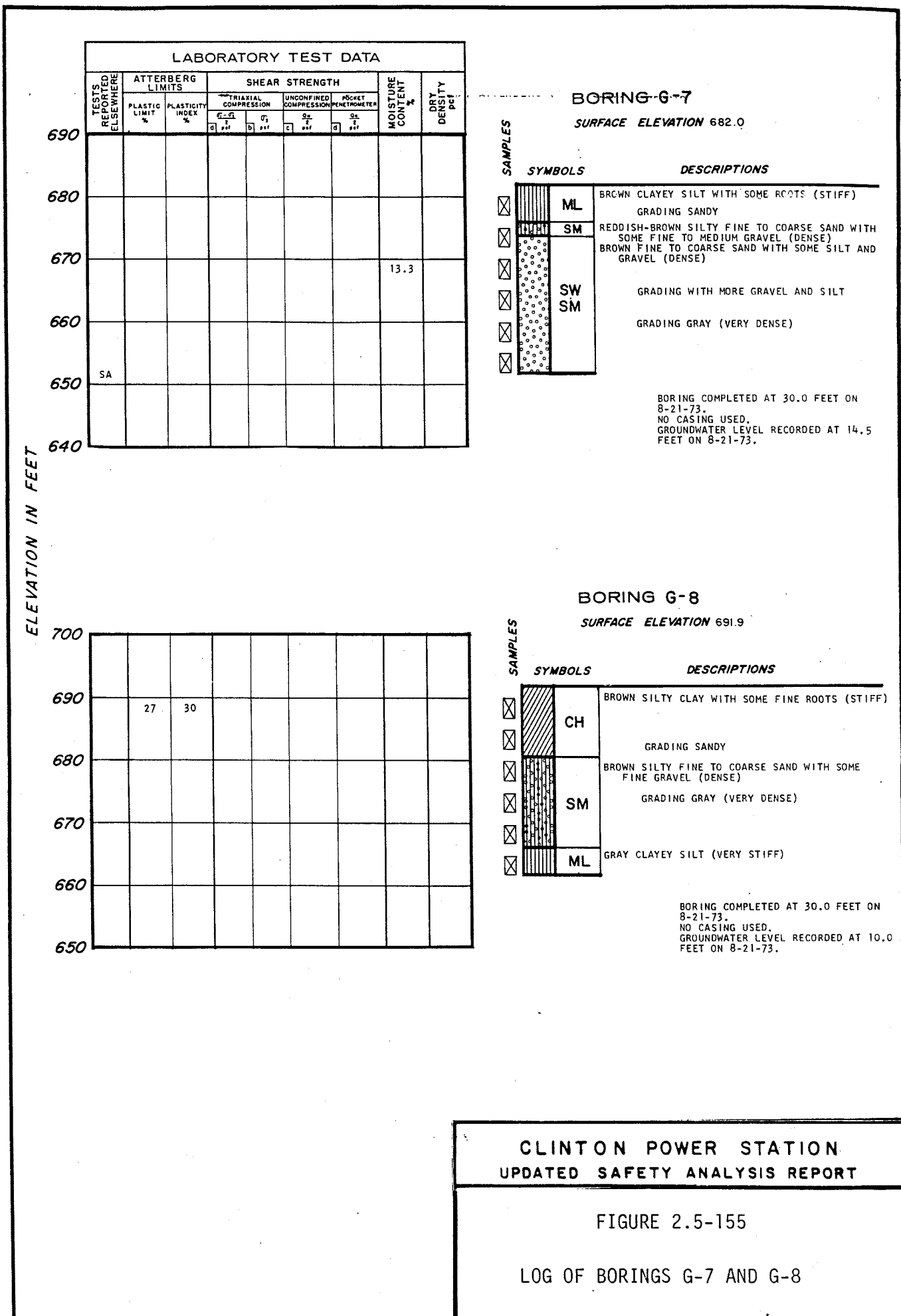
SAMPLES	SYMBOLS		DESCRIPTIONS
	ML		
	SC		
	ML		
			BROWN CLAYEY SILT WITH SOME FINE ROOTS (STIFF) GRADING SANDY BROWN FINE MEDIUM SAND WITH SOME CLAY (MEDIUM DENSE TO DENSE) GRADING WITH SOME FINE TO MEDIUM GRAVEL
			GRADING WITH LESS GRAVEL AND MORE SILT
			GRADING WITH MORE COARSE GRAVEL (DENSE)
			GRAY CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND GRAVEL (VERY STIFF)

BORING COMPLETED AT 30.0 FEET ON 8-21-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 13.5 FEET ON 8-21-73.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-154

LOG OF BORINGS G-5 AND G-6



ELEVATION IN FEET

LABORATORY TEST DATA										
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH						MOISTURE CONTENT %	DRY DENSITY pcf
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION		UNCONFINED COMPRESSION		POCKET PENETROMETER			
			$\sigma_1 - \sigma_3$	σ_3	q_u	c_u	S_u	S_u		
			a pcf	b pcf	c pcf	d pcf	e pcf	f pcf		
730										
720										
710										
700										
690										
680										

BORING G-9

SURFACE ELEVATION 724.9

SAMPLES	SYMBOLS	DESCRIPTIONS
☒	CL	BROWN SILTY CLAY WITH SOME ROOTS (STIFF)
☒	ML	GRADING MORE SILTY
☒	SM	REDDISH-BROWN SILTY FINE TO COARSE SAND WITH FINE TO MEDIUM GRAVEL (VERY DENSE)
☒		GRADING LESS SANDY
☒		GRADING MORE SANDY
☒		GRADING DARK GRAYISH-BROWN
☒		GRADING GRAY AND MORE SILTY
☒	ML	DARK GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND SOME FINE GRAVEL (STIFF TO VERY STIFF)
		GRADING WITH SOME PEAT

BORING COMPLETED AT 30.0 FEET ON 8-20-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 14.5 FEET ON 8-20-73.

BORING G-10

SURFACE ELEVATION 727.2

SAMPLES	SYMBOLS	DESCRIPTIONS
☒	CL	MOTTLED BROWN AND GRAY SILTY CLAY WITH SOME FINE SAND (STIFF)
☒	SM	ORANGE-BROWN SILTY SAND WITH OCCASIONAL FINE TO MEDIUM GRAVEL AND SOME CLAY (MEDIUM DENSE)
☒	SP	REDDISH-BROWN SAND WITH SOME GRAVEL AND SILT (MEDIUM DENSE TO DENSE)
☒	ML	GRAY CLAYEY SILT WITH OCCASIONAL FINE GRAVEL (STIFF TO VERY STIFF)
☒	GC	GRAY CLAYEY GRAVEL WITH SOME SAND (DENSE)
☒	SC	GRADING DENSER WITH MORE FINE TO MEDIUM GRAVEL
☒	ML	GRADING WITH LESS GRAVEL
☒	PT	GRAY CLAYEY SILT WITH SOME SAND AND OCCASIONAL FINE GRAVEL (STIFF)
☒	ML	DARK GRAY PEAT
		GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL

BORING COMPLETED AT 30.0 FEET ON 8-17-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 7.0 FEET ON 8-17-73.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-156

LOG OF BORINGS G-9 AND G-10

LABORATORY TEST DATA									
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf	
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION		UNCONFINED COMPRESSION				POCKET PENETROMETER
			$\frac{\sigma_1 - \sigma_3}{2}$	σ_3	$\frac{q_u}{2}$	q_u			
			a psi	b psi	c psi	d psi			
680									
670									
660	SA	NONPLASTIC							
650									
640									

BORING G-11

SURFACE ELEVATION 675.3

SAMPLES	SYMBOLS		DESCRIPTIONS
×	ML	CL	BROWN CLAYEY SILT WITH SOME ROOTS (MEDIUM STIFF)
×	SM	SW	BROWN SILTY FINE TO COARSE SAND WITH SOME FINE TO MEDIUM GRAVEL AND SOME CLAY (DENSE)
×	SM	SW	GRADING MORE GRAVELLY AND LESS SILTY
×	SM	SW	BROWN FINE TO COARSE SAND WITH SOME SILT AND GRAVEL (DENSE)
×	SM	SW	GRAY SILTY FINE TO MEDIUM SAND WITH SOME CLAY AND OCCASIONAL FINE GRAVEL (VERY DENSE)
×	SM		GRADING MORE SANDY
×	SM		GRADING WITH MORE FINE TO MEDIUM GRAVEL

BORING COMPLETED AT 30.0 FEET ON 8-21-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 7.0 FEET ON 8-21-73.

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf
		PLASTIC LIMIT %	PLASTICITY INDEX %	$\frac{q_1 - q_2}{2}$ psi	q_3 psi	$\frac{q_1}{2}$ psi	q_2 psi		
690									
680									
670	SA								
660	SA	NONPLASTIC						17.8	
650									
640									

BORING G-12

SURFACE ELEVATION 685.1

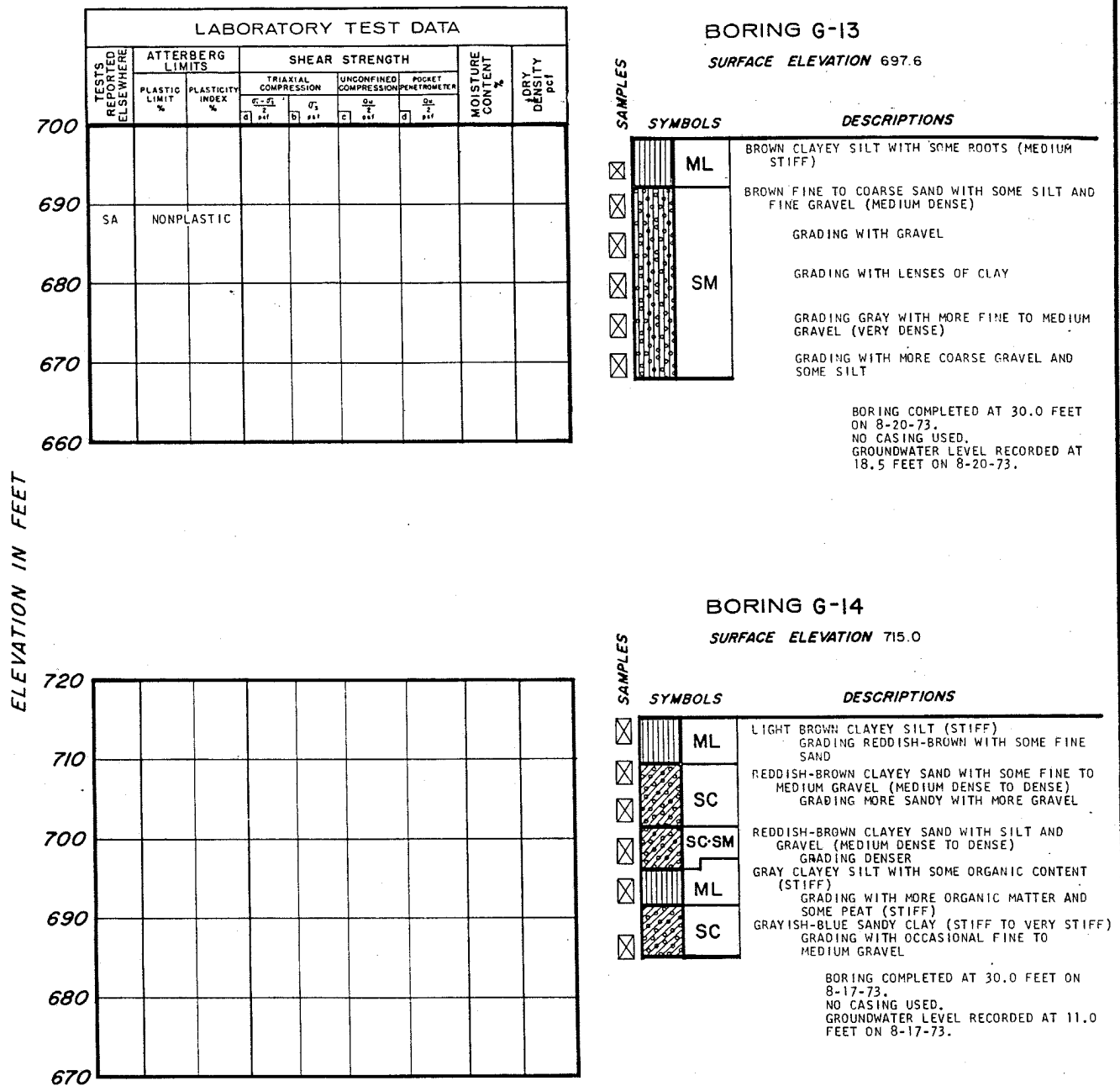
SAMPLES	SYMBOLS		DESCRIPTIONS
×	ML	CL	BROWN CLAYEY SILT (STIFF)
×	SM	SW	BROWN SILTY FINE TO COARSE SAND WITH SOME FINE TO MEDIUM GRAVEL (DENSE)
×	SM	SW	GRADING WITH SOME CLAY
×	SM	SW	LIGHT BROWN FINE TO COARSE SAND WITH SOME SILT AND TRACE OF GRAVEL (DENSE)
×	SM	SW	GRADING WITH LESS GRAVEL AND COARSE SAND
×	SM	SW	GRAY SILTY SAND WITH SOME FINE TO MEDIUM GRAVEL (VERY DENSE)
×	SM	SW	GRADING MORE SILTY

BORING COMPLETED AT 30.0 FEET ON 8-20-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 17.5 FEET ON 8-20-73.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-157

LOG OF BORINGS G-11 AND G-12



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-158

LOG OF BORINGS G-13 AND G-14

ELEVATION IN FEET

LABORATORY TEST DATA									
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH					MOISTURE CONTENT %	DRY DENSITY pcf
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET COMPRESSION PENETROMETER			
			$\frac{\sigma_1 - \sigma_3}{2}$ pcf	σ_3 pcf	$\frac{Q_u}{2}$ pcf	$\frac{Q_u}{4}$ pcf			
SA	17	13							
</									

BORING G-15

SURFACE ELEVATION 669.6

SAMPLES

SYMBOLS

DESCRIPTIONS

CL	DARK GRAY SILTY CLAY (MEDIUM STIFF)
SC	BROWN SILTY FINE TO COARSE SAND WITH SOME GRAVEL (MEDIUM DENSE) GRADING WITH LENSES OF GRAY SILTY CLAY GRADING WITH CLAY GRADING WITH LESS GRAVEL GRADING WITH COARSER SAND
SM	GRAY SILTY FINE TO COARSE SAND WITH SOME FINE TO MEDIUM SIZE GRAVEL (VERY DENSE)

BORING COMPLETED AT 30.0 FEET
ON 8-21-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT
9.5 FEET ON 8-21-73.

BORING G-16

SURFACE ELEVATION 678.1

SAMPLES

SYMBOLS

DESCRIPTIONS

ML	BROWN SILT WITH SOME ORGANICS, TRACE OF FINE SAND AND CLAY (TOPSOIL)
ML	BROWN SILT WITH CLAY AND TRACE OF FINE SAND (STIFF)
SM	BROWN FINE TO MEDIUM SAND WITH SOME SILT AND GRAVEL
SP	BROWN FINE TO MEDIUM SAND WITH SOME GRAVEL AND TRACE OF SILT
SM	BROWN FINE TO COARSE SAND WITH SOME SILT AND GRAVEL GRADES WITH LESS GRAVEL GRADES WITH MORE FINE SAND AND SILT GRADES WITH LESS SILT GRADES WITH LENSES OF FINE AND MEDIUM SAND
ML	GRAYISH-BROWN SILT WITH SOME CLAY, FINE SAND AND GRAVEL

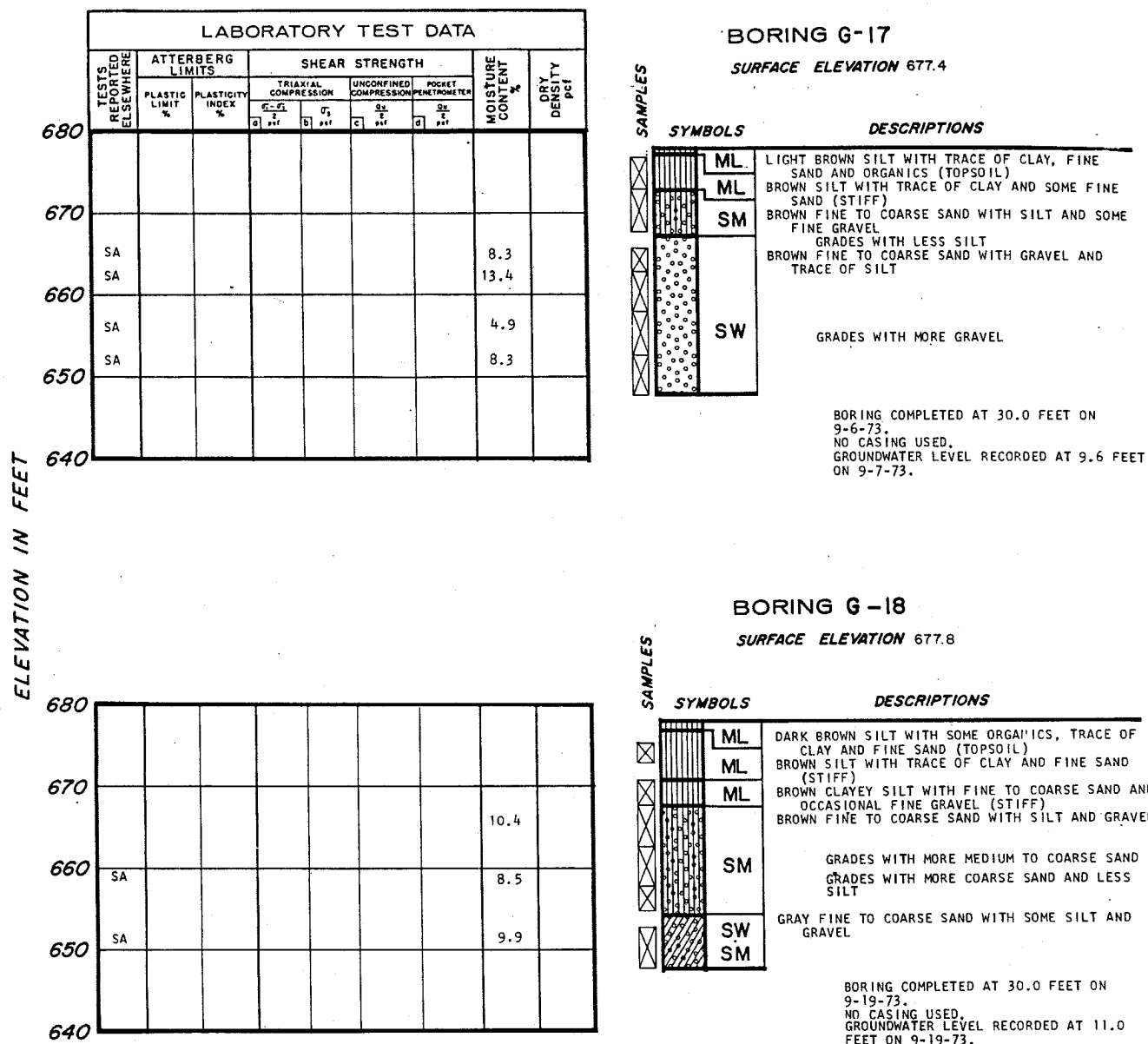
BORING COMPLETED AT 30.0 FEET ON
9-19-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT
11.5 FEET ON 9-19-73.

680									
670	SA							9.4	
								7.5	
								9.7	
660	SA							9.8	
								9.7	
650	SA							9.4	
640									

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FIGURE 2.5-159

LOG OF BORINGS G-15 AND G-16



ELEVATION IN FEET

LABORATORY TEST DATA									
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf	
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET PENETROMETER			
			$\frac{\sigma_1 - \sigma_3}{2}$ psi	σ_3 psi	$\frac{S_u}{2}$ psi	$\frac{S_u}{2}$ psi			
690									
680									
	SA						7.1		
670									
	SA						7.3		
	SA						9.9		
660									
650									
640									

BORING G-19

SURFACE ELEVATION 682.6

SAMPLES	SYMBOLS	DESCRIPTIONS
×	ML	BROWN SILT WITH SOME ORGANICS AND TRACE OF CLAY AND FINE SAND (TOPSOIL)
×	ML	BROWN SILT WITH SOME CLAY AND TRACE OF FINE SAND (STIFF)
×	SM	GRADES WITH MORE FINE SAND
×	SM	DARK BROWN SILTY SAND WITH SOME CLAY
×	SM	BROWN FINE TO COARSE SAND WITH SOME GRAVEL AND SILT
×	SM	GRADES WITH MORE FINE SAND
×	SM	GRADES WITH LESS FINE SAND
×	SM	COARSE GRAVEL GRADES OUT
×	SM	GRAY FINE TO COARSE SAND WITH SILT AND SOME FINE GRAVEL
×	ML	GRAY AND BROWN LAYERED SILT WITH SEAMS OF SAND AND FINE GRAVEL AND TRACE OF ORGANICS (MEDIUM STIFF)
×	ML	LIGHT GRAY SANDY SILT WITH SOME GRAVEL (MEDIUM STIFF)

BORING COMPLETED AT 30.0 FEET ON 9-19-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 16.0 FEET ON 9-19-73.

BORING G-20

SURFACE ELEVATION 668.9

SAMPLES	SYMBOLS	DESCRIPTIONS
×	CL	BLACK CLAY WITH SILT AND TRACE OF FINE SAND AND ORGANICS (TOPSOIL)
×	CL	DARK GRAY TO BLACK CLAY WITH SILT, TRACE OF FINE SAND AND SOME ORGANICS (VERY STIFF)
×	SM	GRADES LESS STIFF
×	SM	BROWN FINE TO COARSE SAND WITH SOME SILT, GRAVEL AND TRACE OF CLAY
×	SM	GRADES WITH SOME SEAMS OF CLAYEY SILT AND CLAYEY SAND
×	SM	GRADES WITH LESS SILT
×	SM	GRAY SILTY FINE TO COARSE SAND WITH SOME GRAVEL, TRACE OF CLAY AND SOME SEAMS AND LAYERS OF SILT
×	ML	GRAY SANDY SILT WITH SOME FINE GRAVEL AND TRACE OF CLAY
×	ML	GRADES WITH SEAMS OF FINE SAND

BORING COMPLETED AT 30.0 FEET ON 9-20-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 3.2 FEET ON 9-20-73.

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FIGURE 2.5-161

LOG OF BORINGS G-19 AND G-20

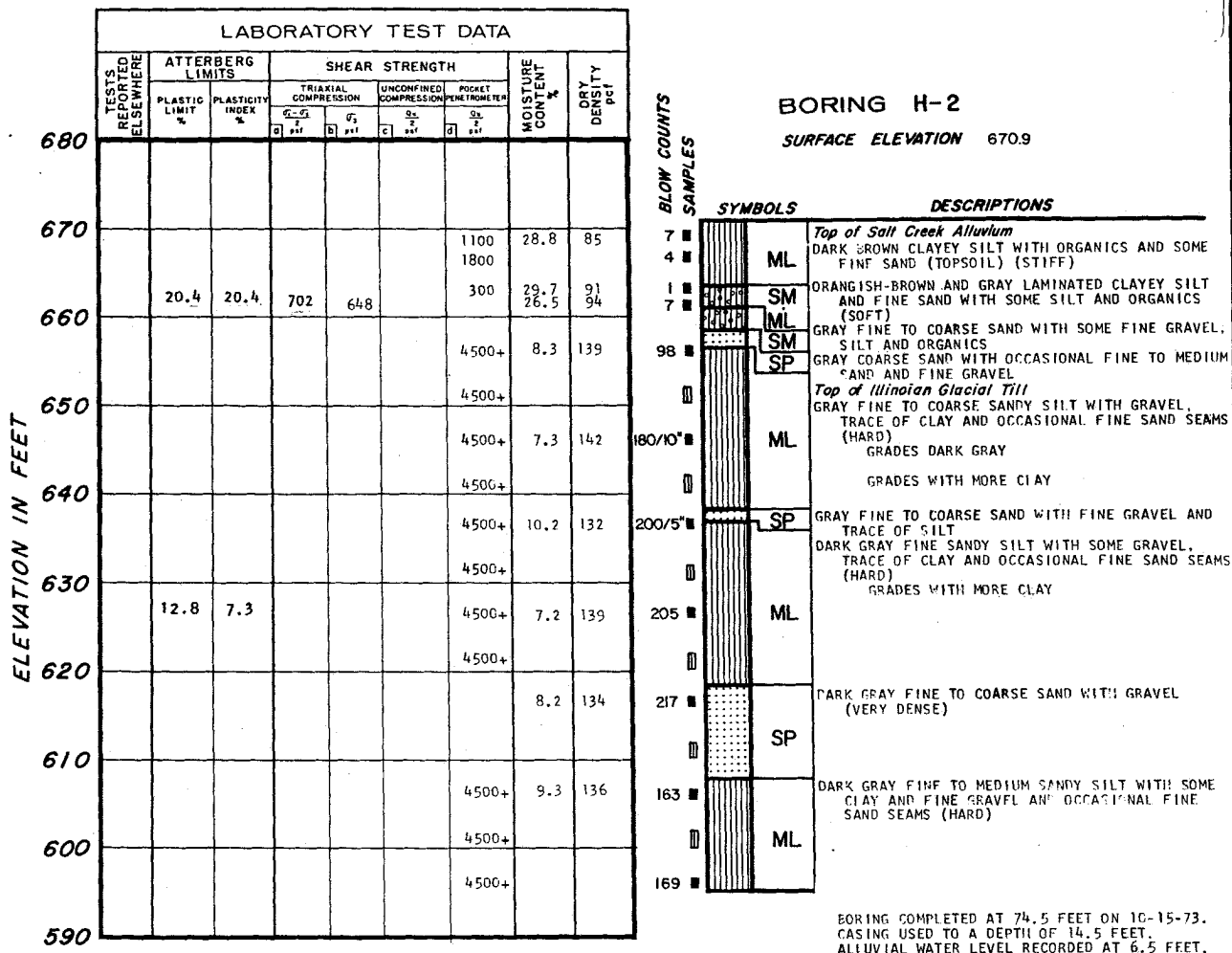
BORING COMPLETED AT 76.5 FEET ON 10-30-73.
CASING USED TO A DEPTH OF 5.0 FEET.
ALLUVIAL WATER LEVEL NOT RECORDED.

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-162

LOG OF BORING H-1



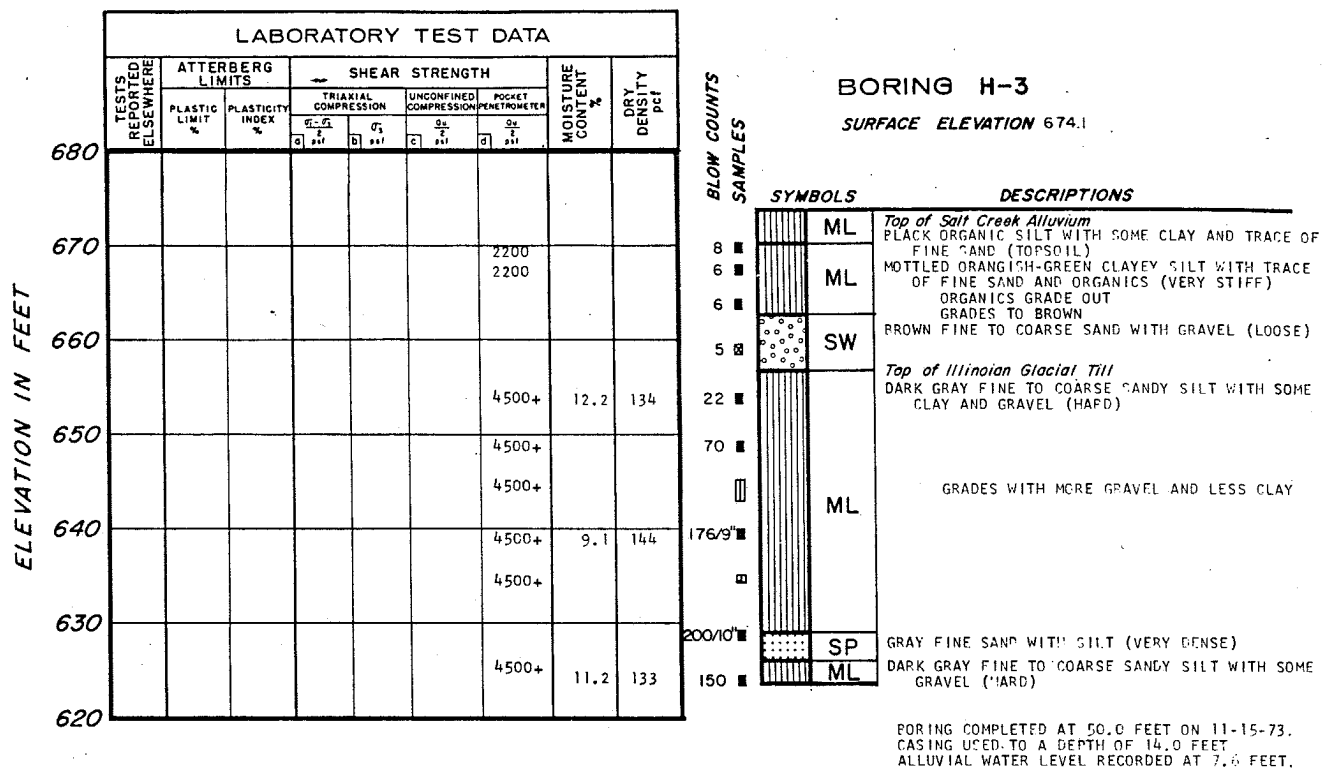
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FIGURE 2.5-163

LOG OF BORING H-2

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

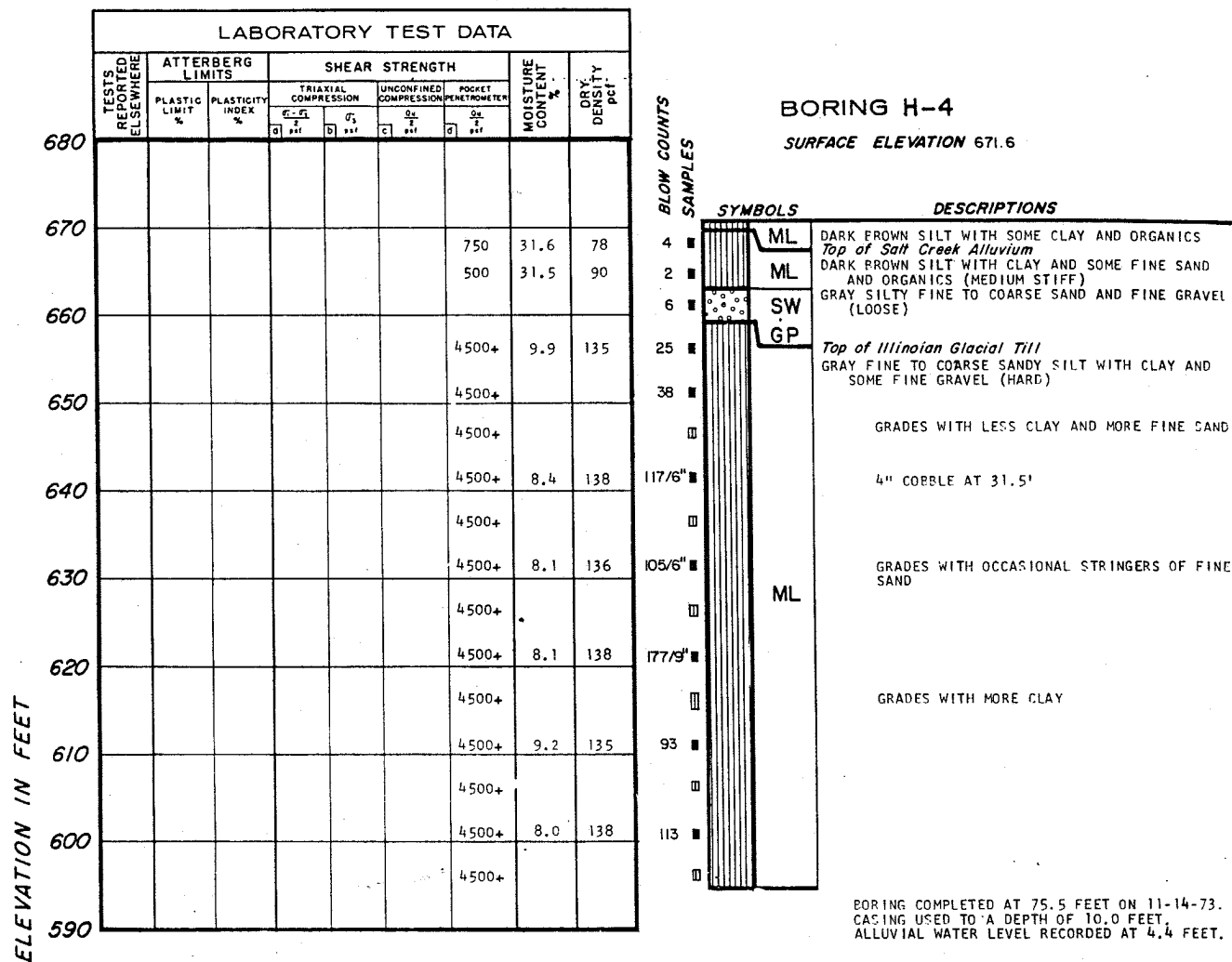


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FIGURE 2.5-164

LOG OF BORING H-3

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

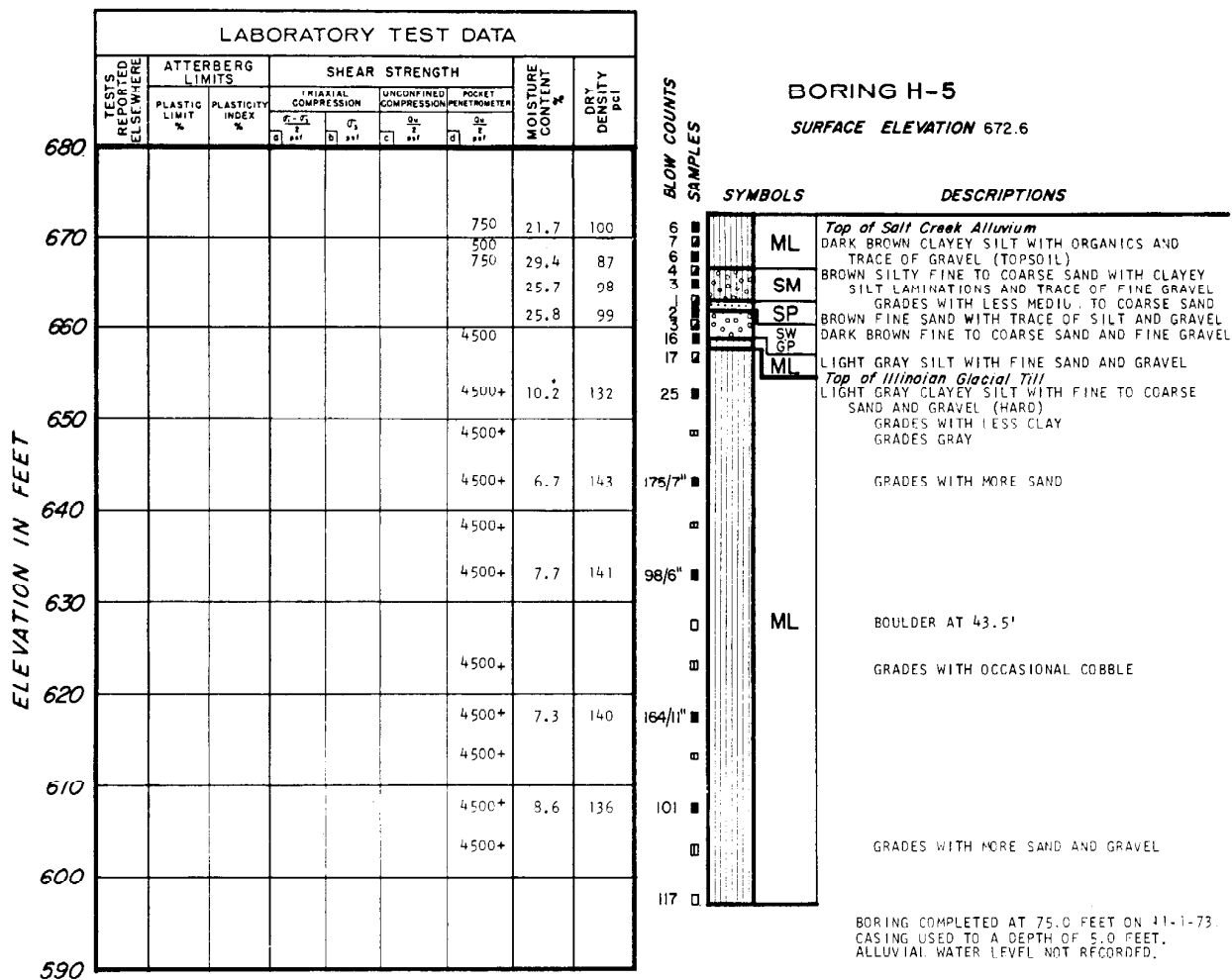


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FIGURE 2.5-165

LOG OF BORING H-4

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



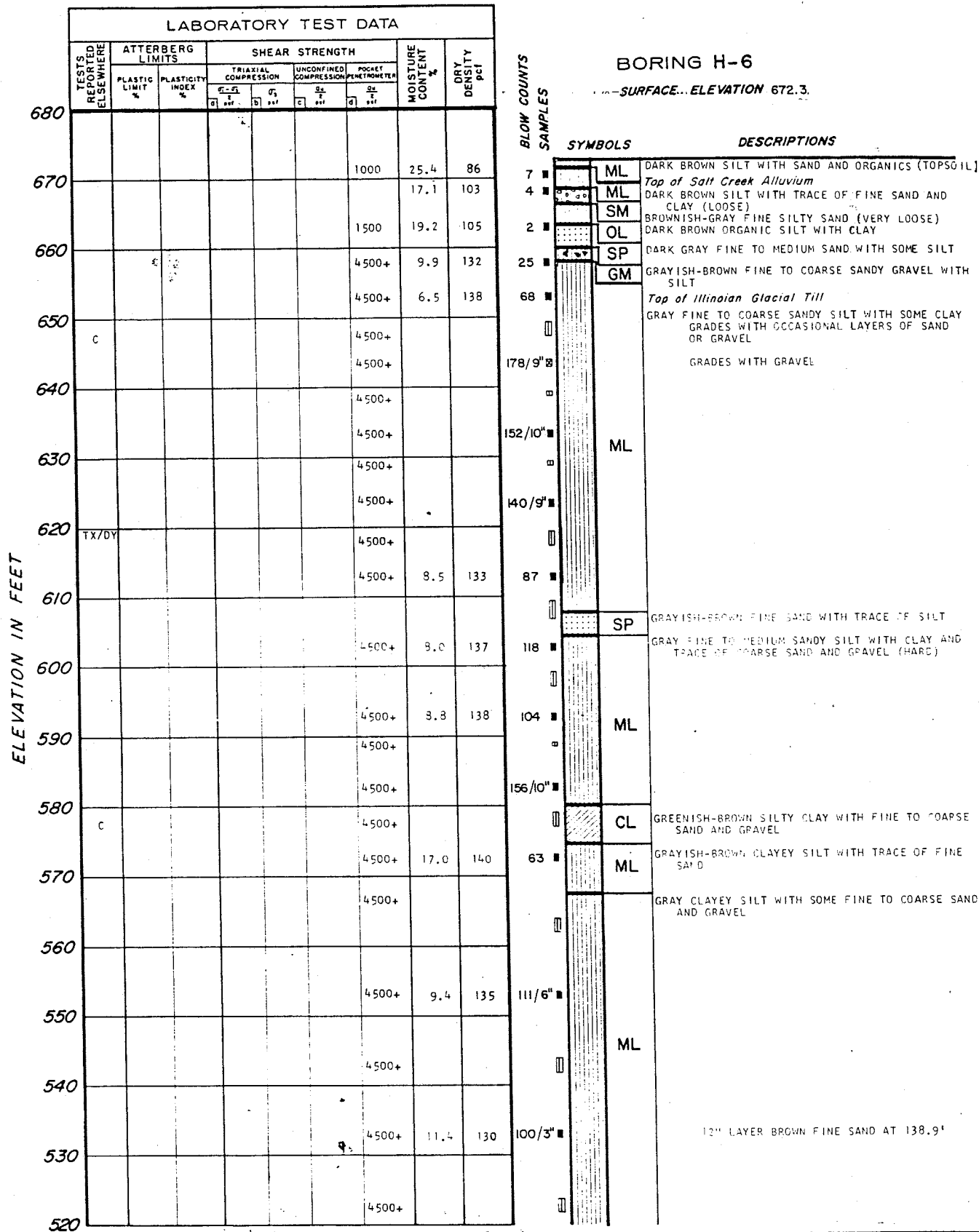
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FIGURE 2.5-166

LOG OF BORING H-5

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



NOTE:

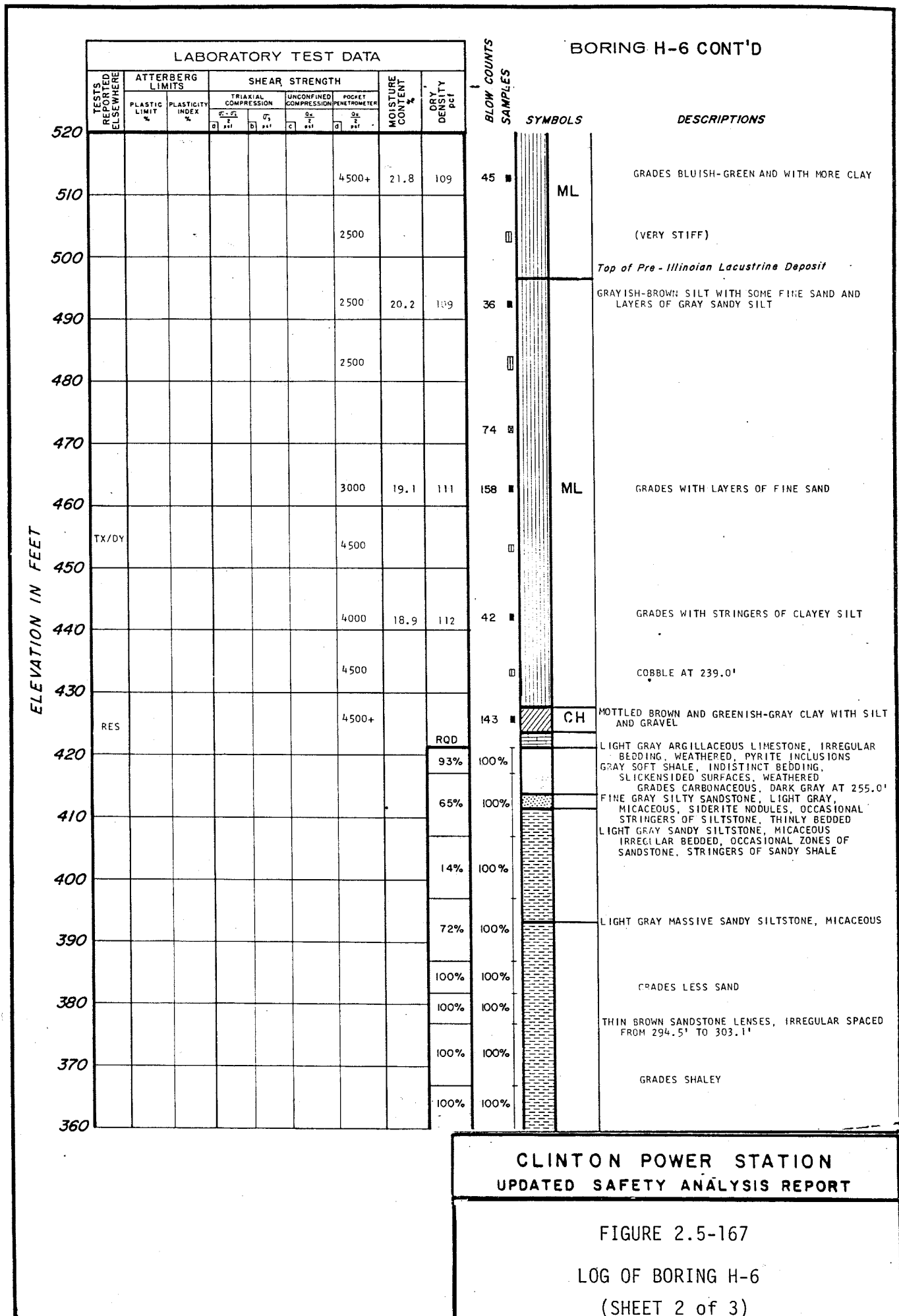
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

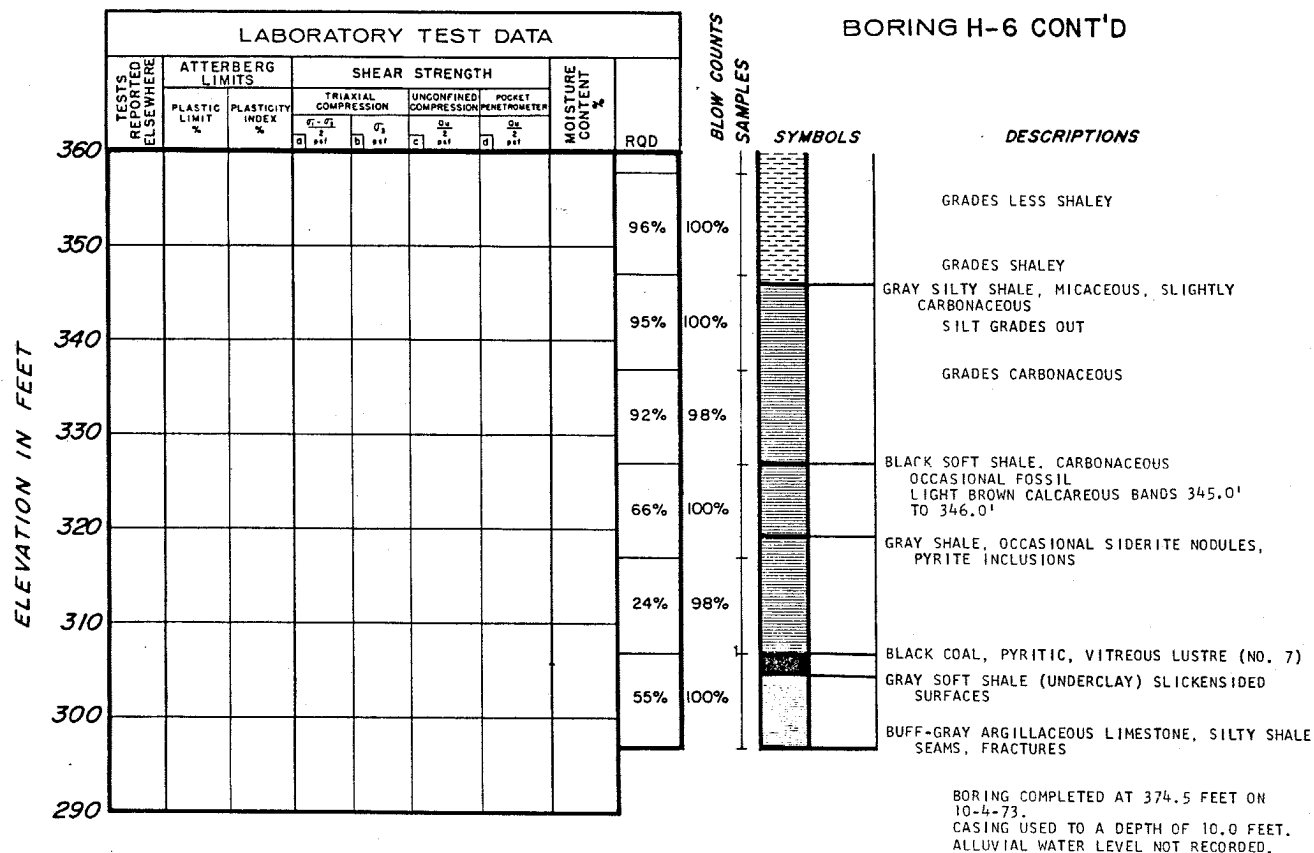
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FIGURE 2.5-167

LOG OF BORING H-6

(SHEET 1 of 3)

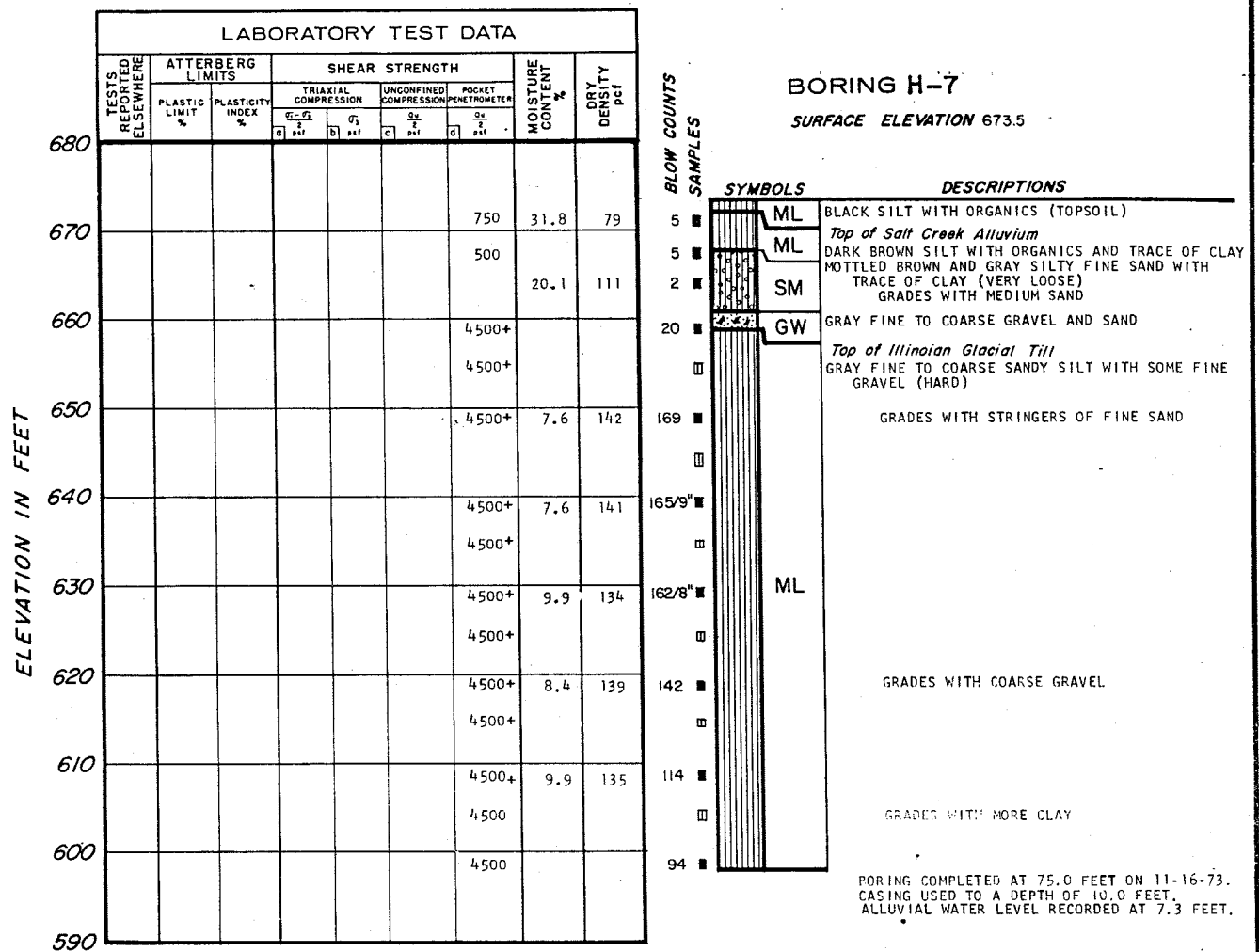




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FIGURE 2.5-167

LOG OF BORING H-6
(SHEET 3 of 3)



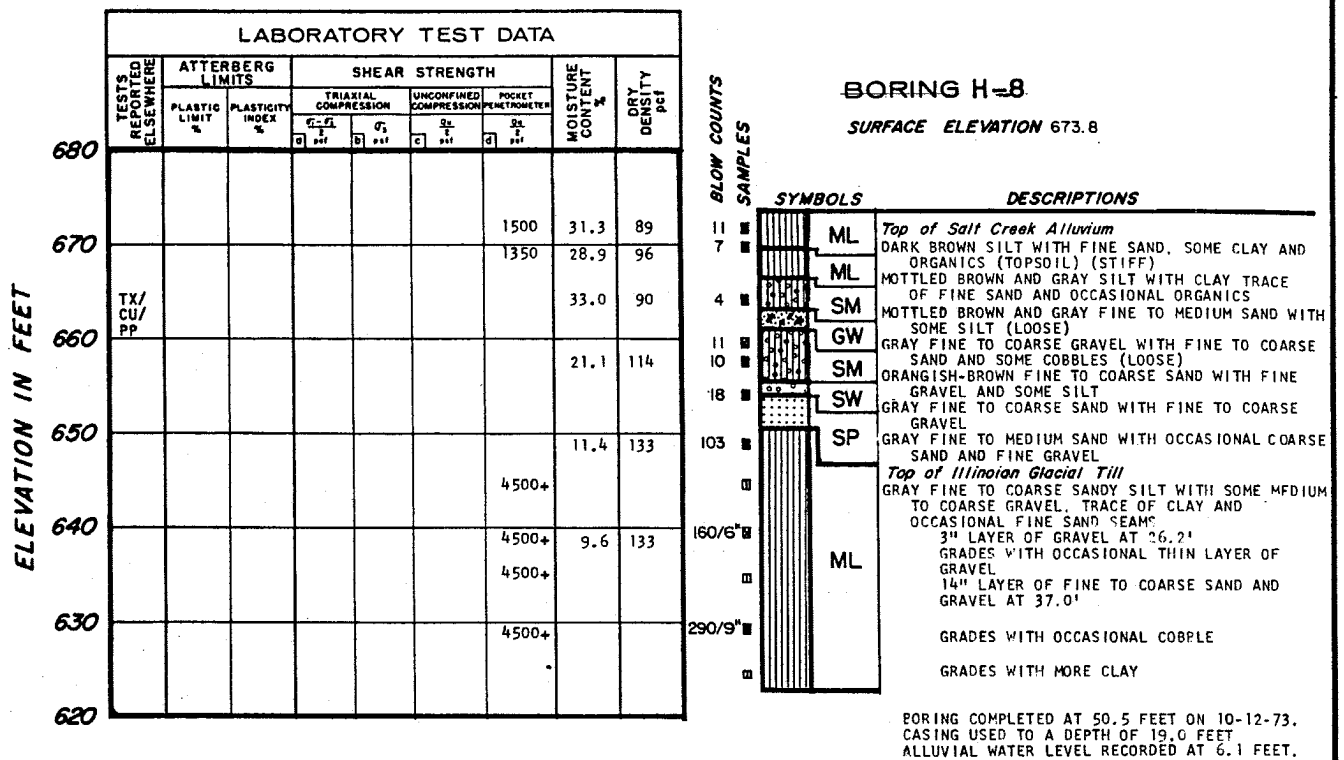
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-168

LOG OF BORING H-7



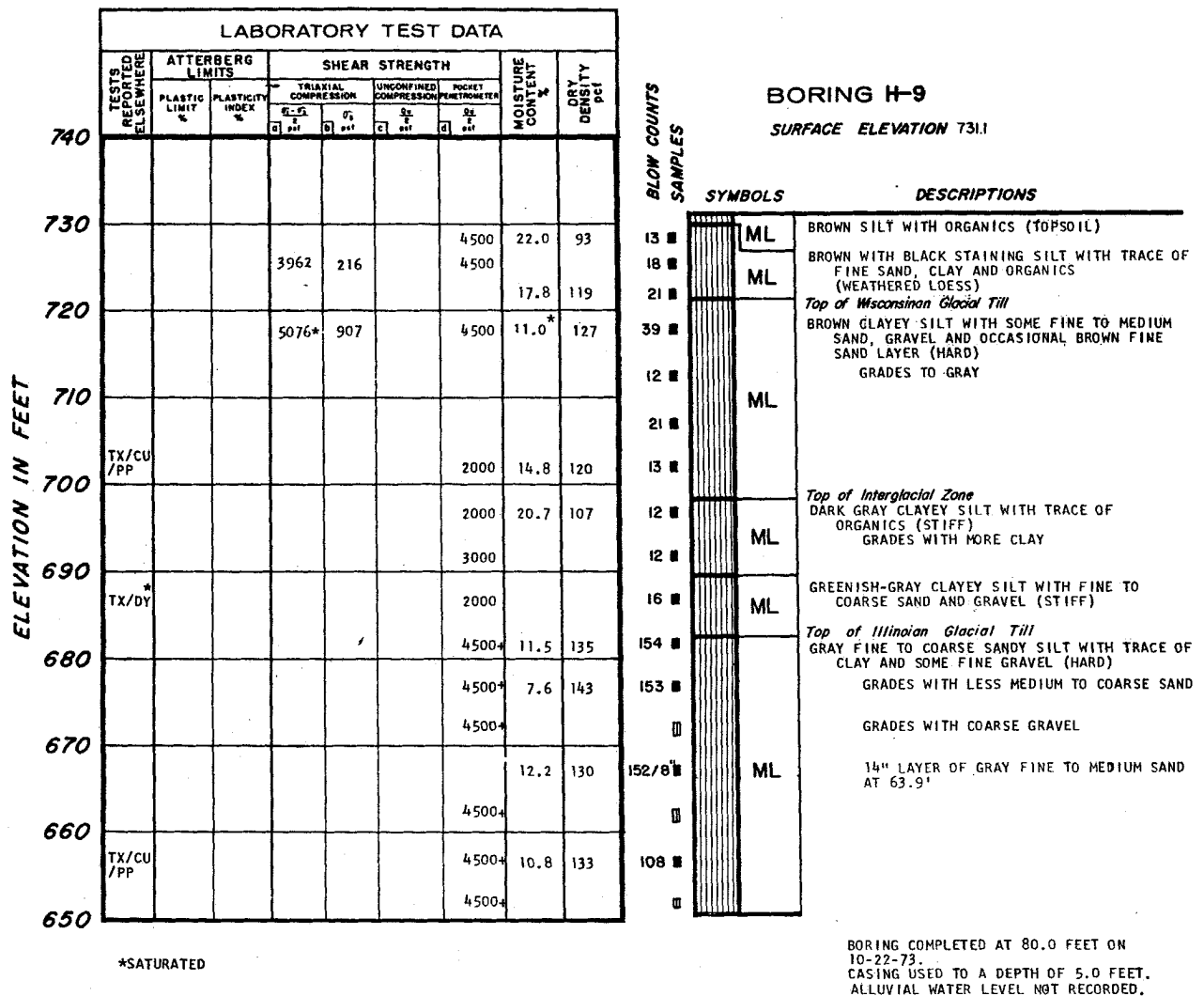
**CLINTON POWER STATION
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FIGURE 2.5-169

LOG OF BORING H-8

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

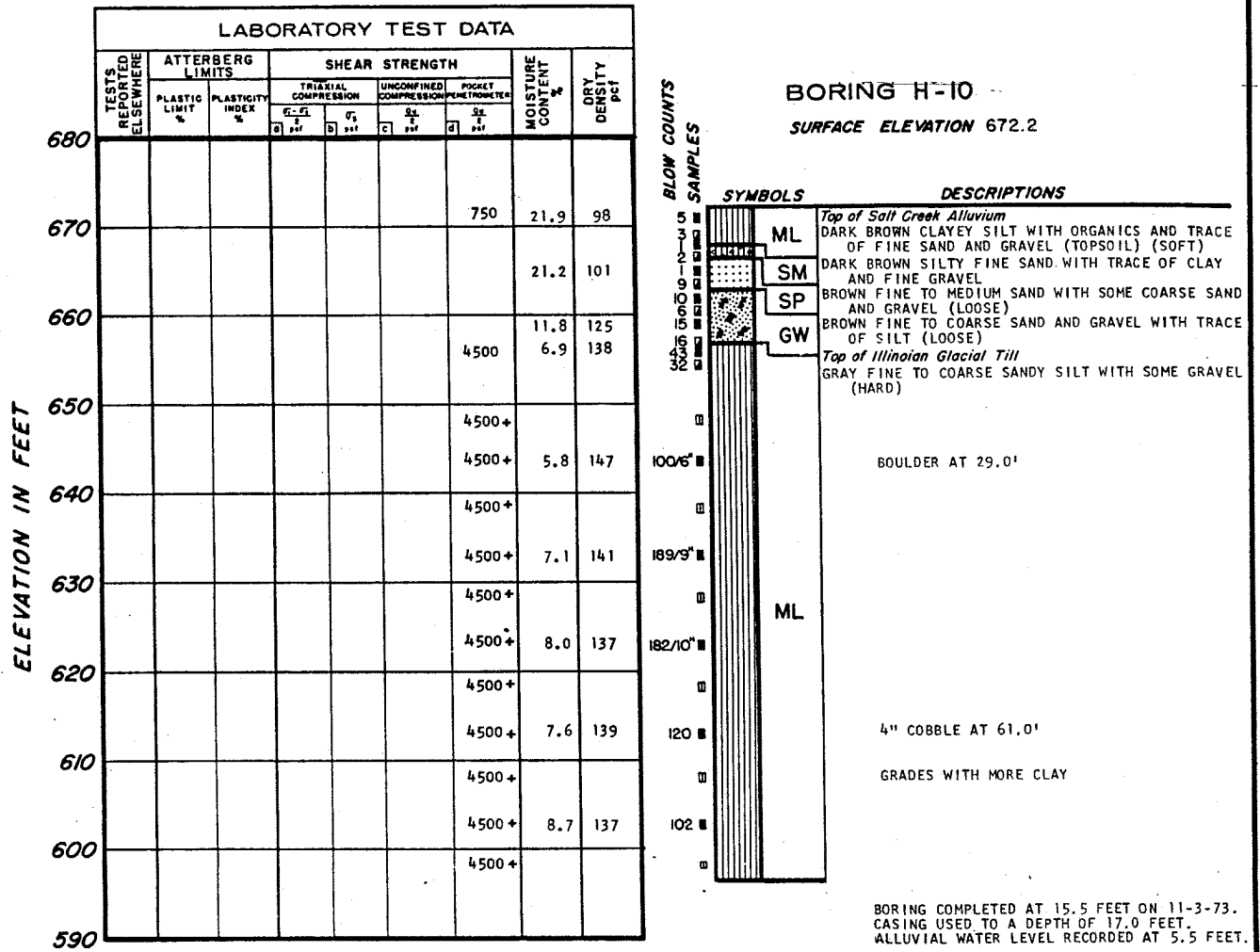


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FIGURE 2.5-170

LOG OF BORING H-9

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



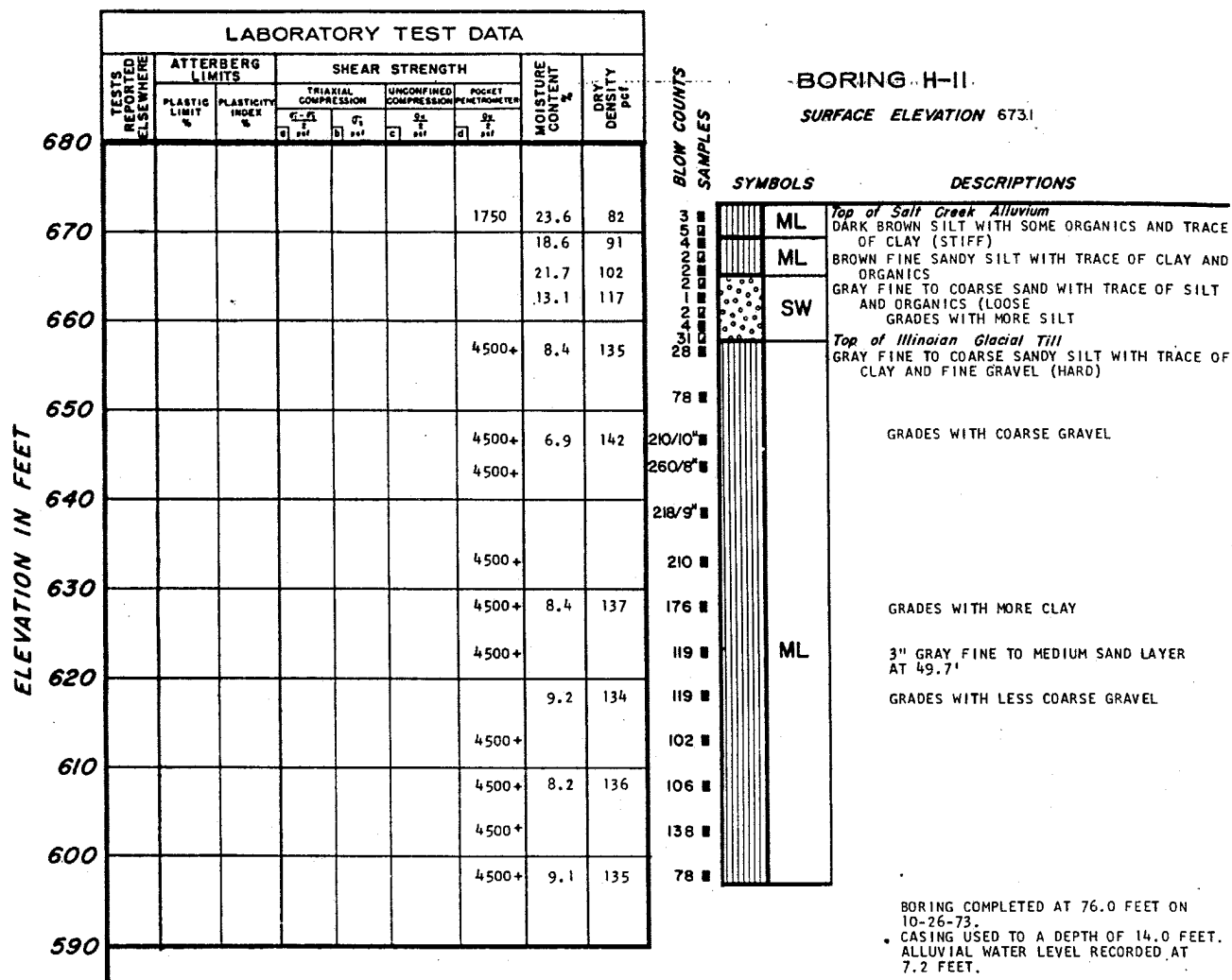
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FIGURE 2.5-171

LOG OF BORING H-10

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
 UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-172

LOG OF BORING H-11

ELEVATION IN FEET

LABORATORY TEST DATA									
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf	
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAxIAL COMPRESSION		UNCONFINED COMPRESSION	POCKET PENETROMETER			
			$\frac{\sigma_1 - \sigma_3}{2}$ psi	σ_3 psi					$\frac{q_u}{2}$ psi
680									
670							23.3	86	
							29.6	92	
							17.1	123	
660							13.8	132	
							13.3		
650							4500+		
							4500+	10.6	137
640							4500+		
							4500+	11.9	135
630							4500+		
							4500+	11.6	136
620									

BLOW COUNTS
SAMPLES

BORING H-12

SURFACE ELEVATION 674.6

SYMBOLS		DESCRIPTIONS
15	ML	Top of Salt Creek Alluvium
7	ML	BLACK ORGANIC CLAY WITH SOME SILT AND FINE SAND (TOPSOIL)
2	ML	MOTTLED DARK BROWN AND ORANGISH-BROWN SILT WITH SOME FINE SAND, CLAY AND ORGANIC (STIFF)
14		Top of Illinoian Glacial Till
26		LIGHT GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND FINE GRAVEL
43		GRADES WITH COARSE GRAVEL AND MORE CLAY
		GRADES WITH MORE GRAVEL AND LESS CLAY
207/10"	ML	
238/11"		
201		

BORING COMPLETED AT 49.5 FEET ON 11-6-73.
CASING USED TO A DEPTH OF 21.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 8.0 FEET.

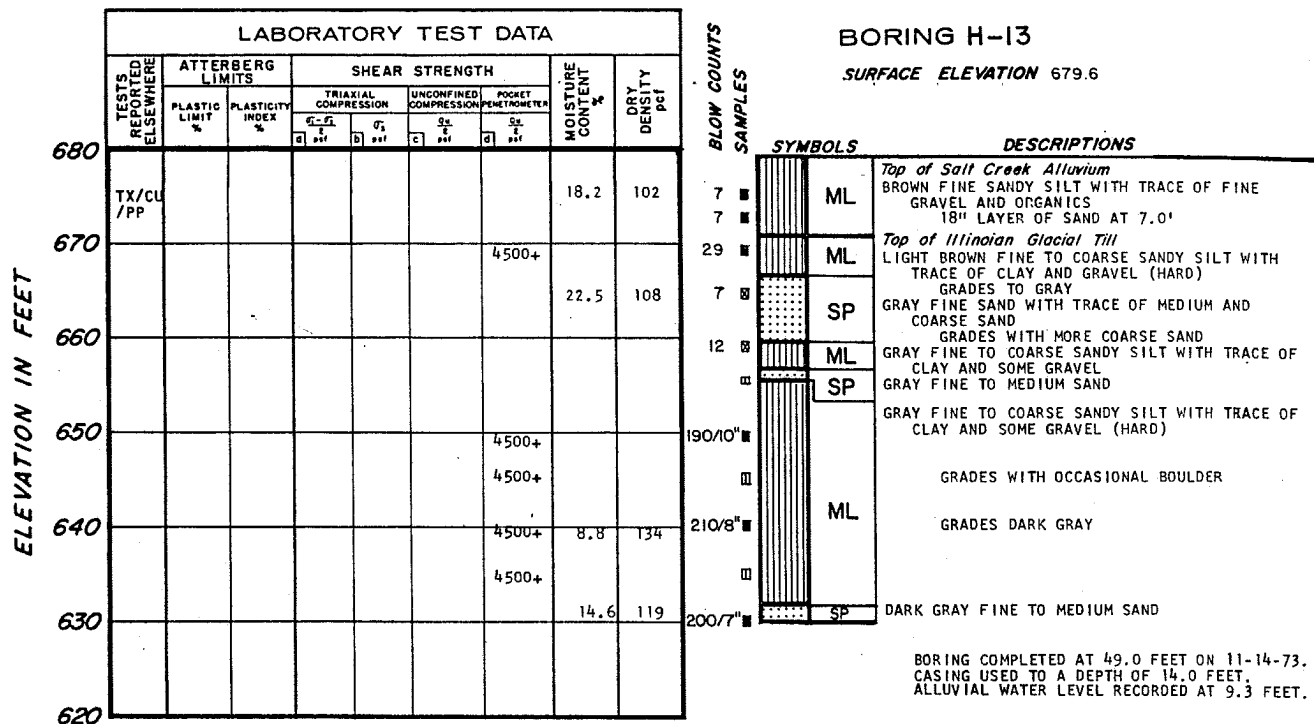
CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-173

LOG OF BORING H-12

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



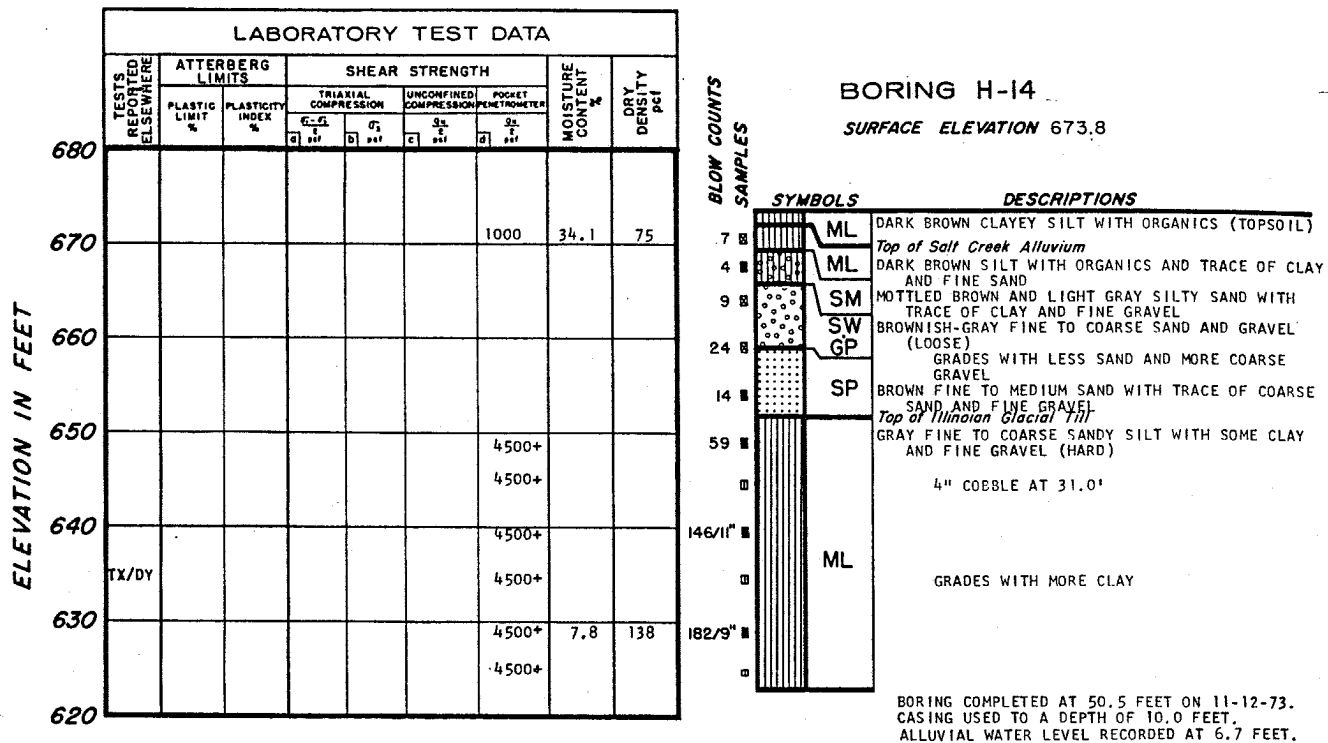
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-174

LOG OF BORING H-13



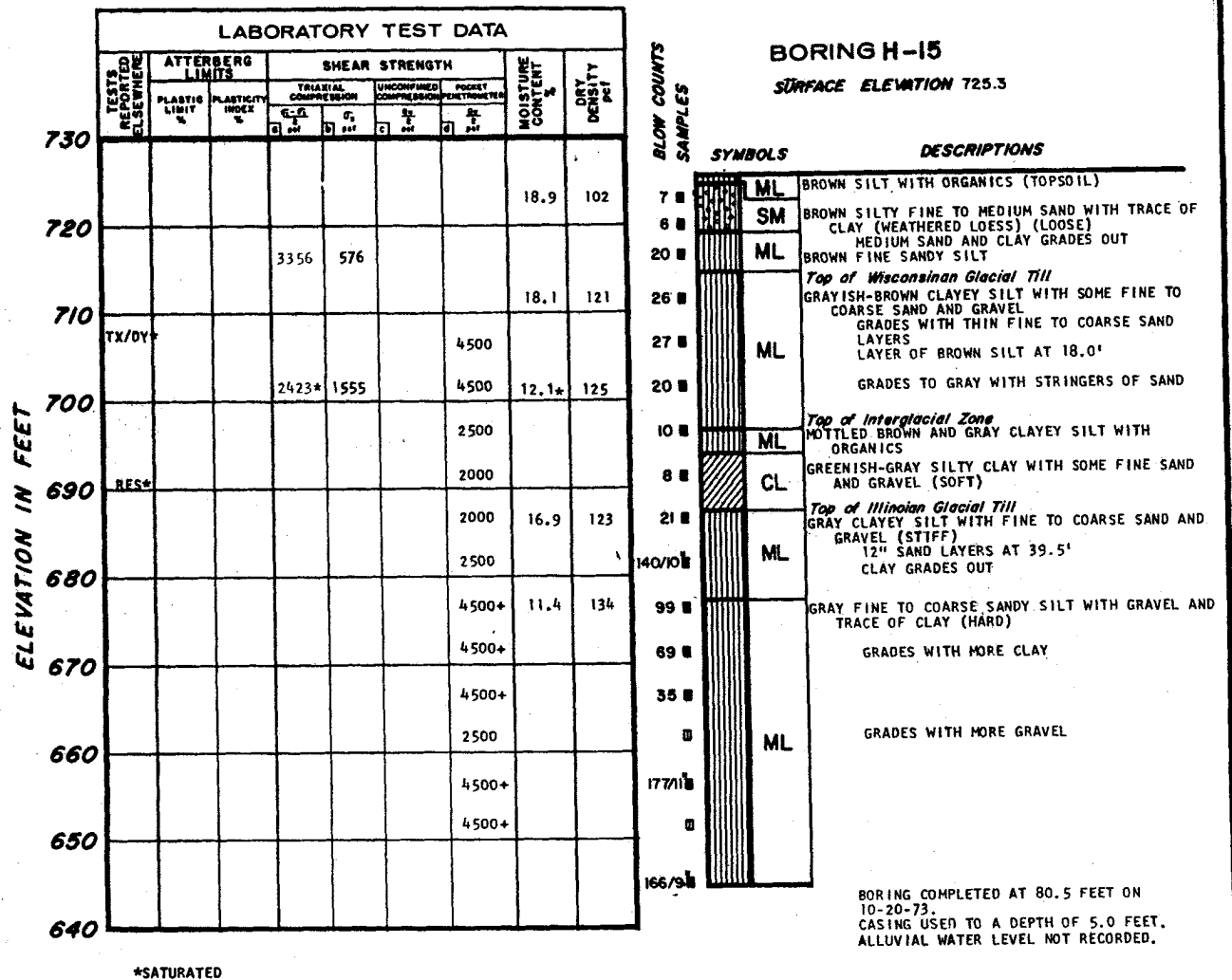
NOTE:

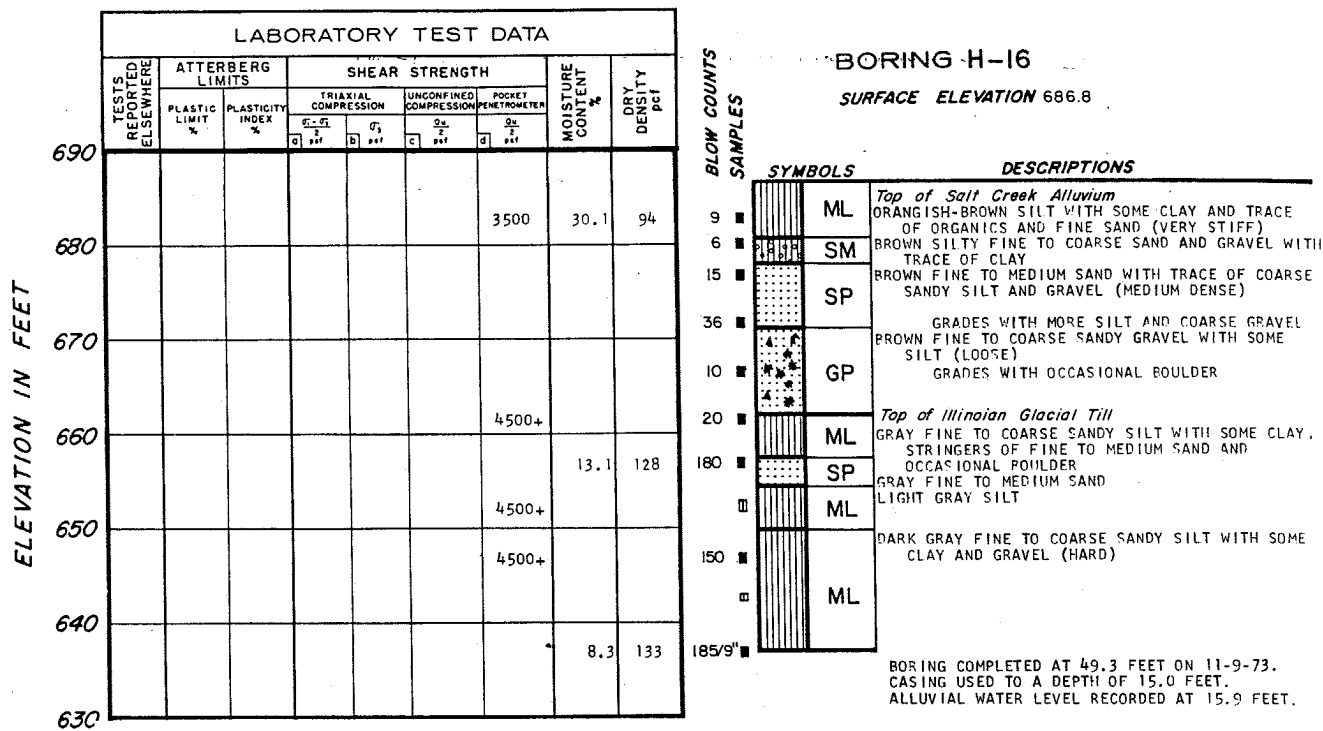
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-175

LOG OF BORING H-14



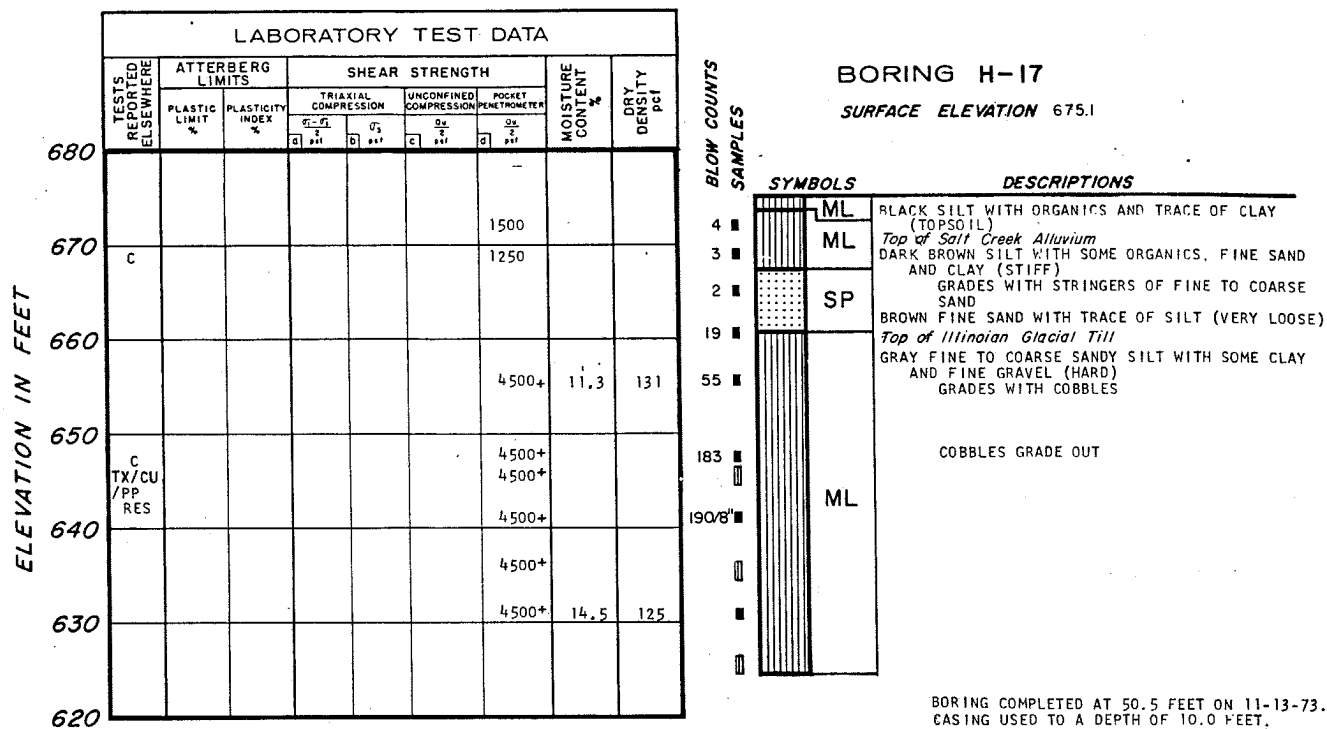


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FIGURE 2.5-177

LOG OF BORING H-16

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



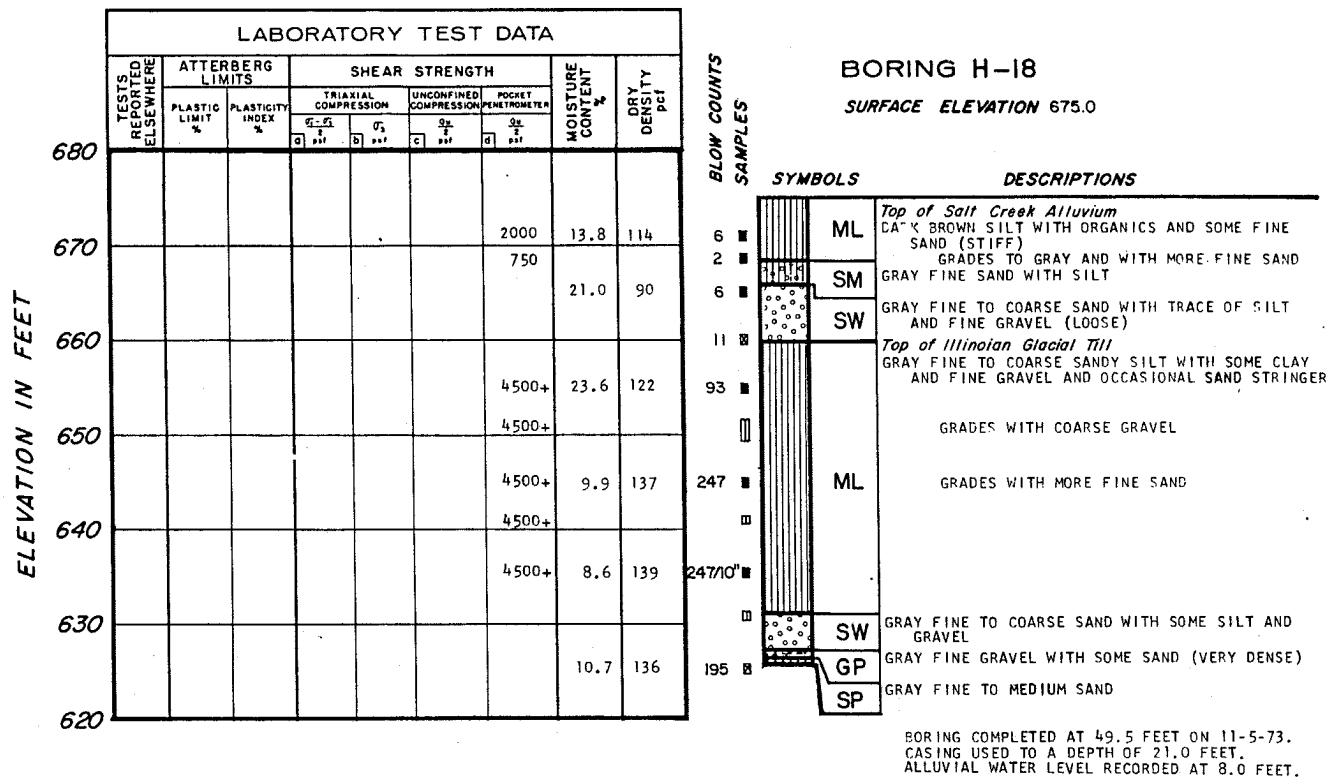
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FIGURE 2.5-178

LOG OF BORING H-17

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



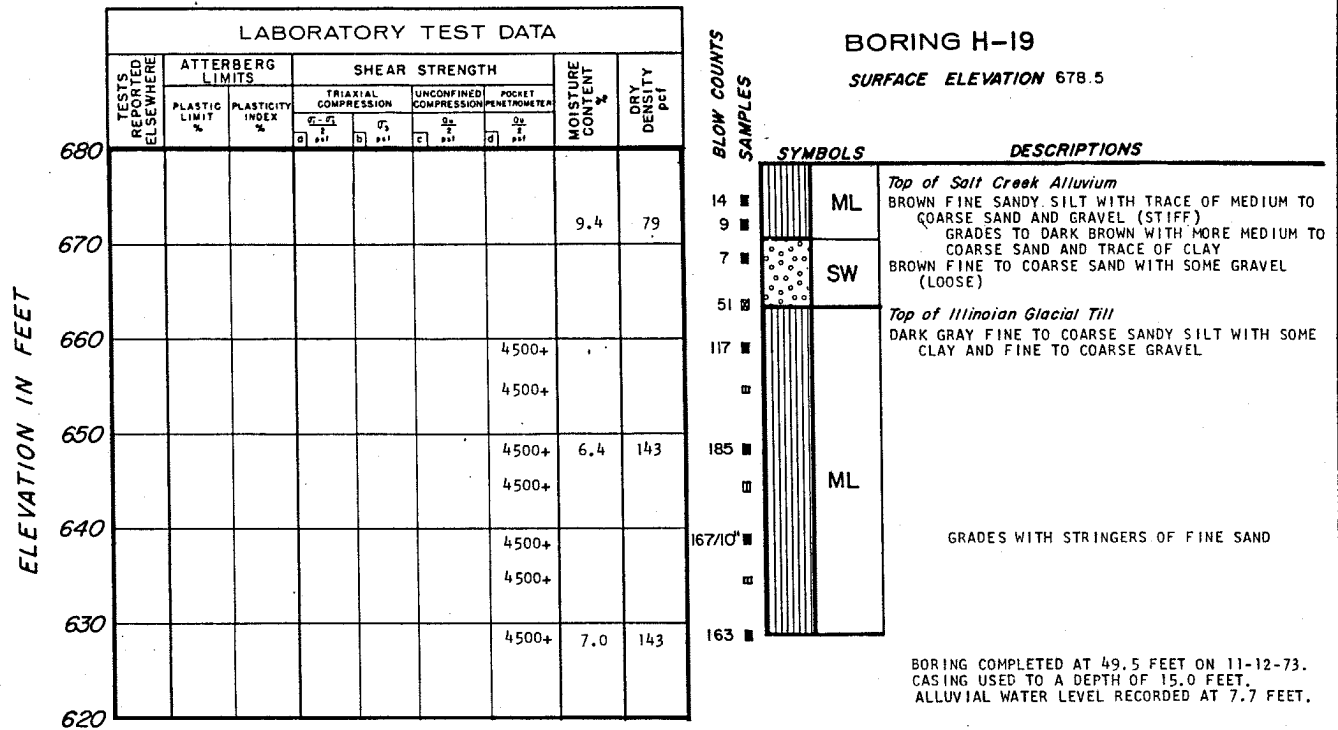
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-179

LOG OF BORING H-18



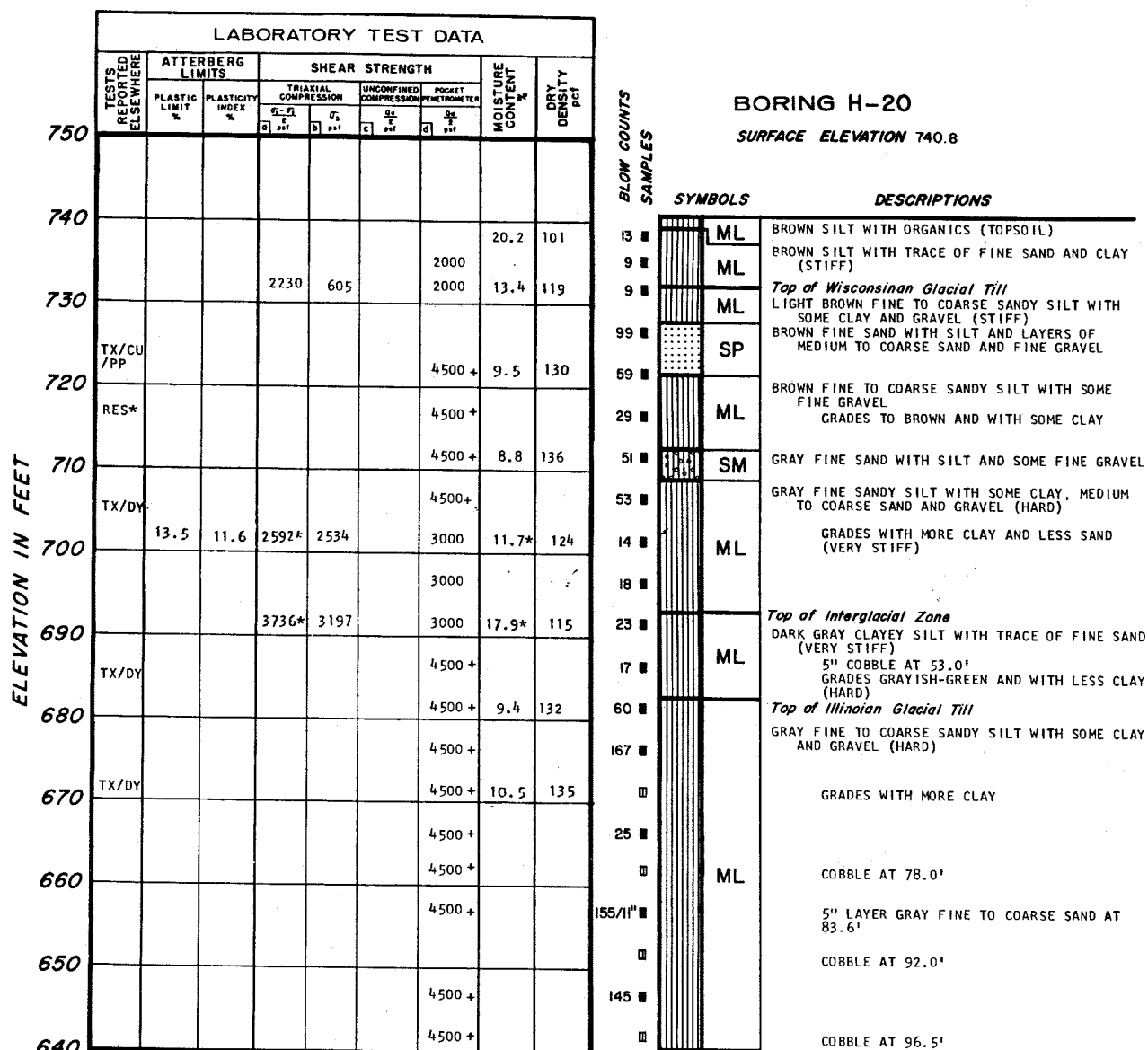
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
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FIGURE 2.5-180

LOG OF BORING H-19



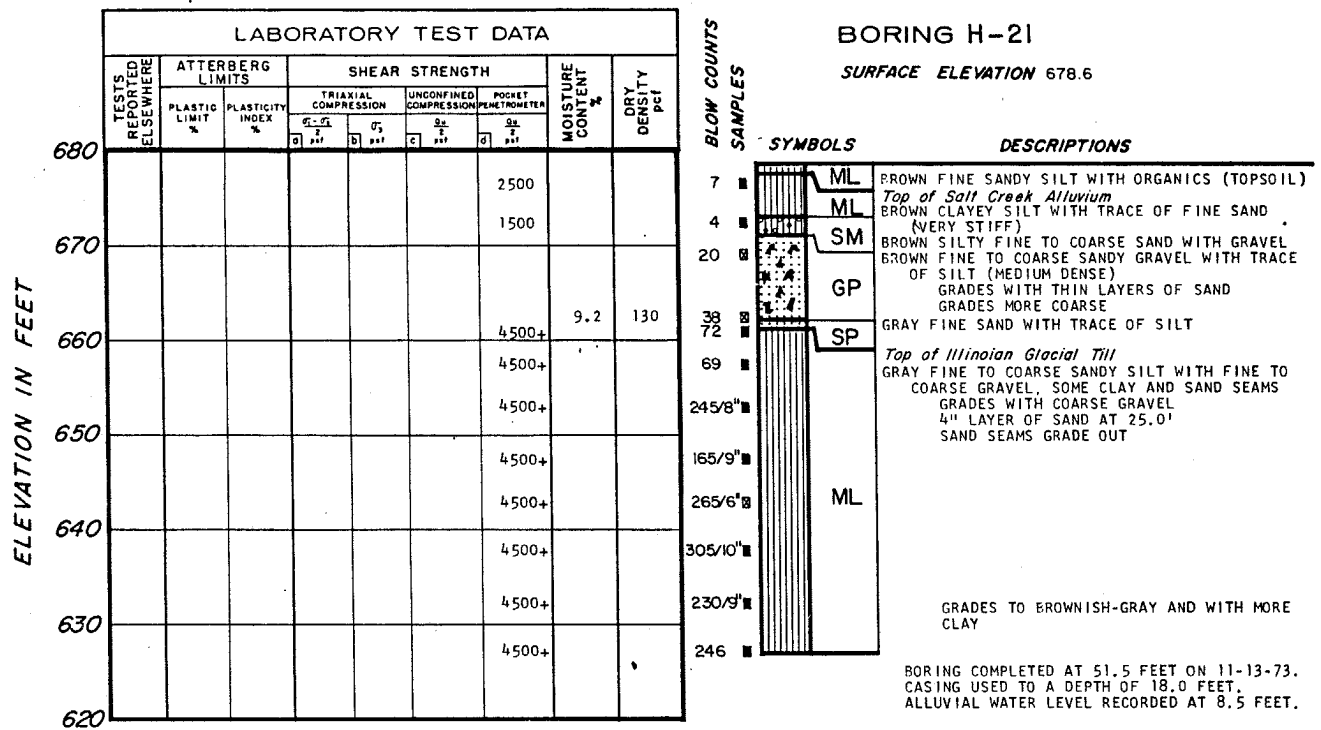
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FIGURE 2.5-181

LOG OF BORING H-20

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



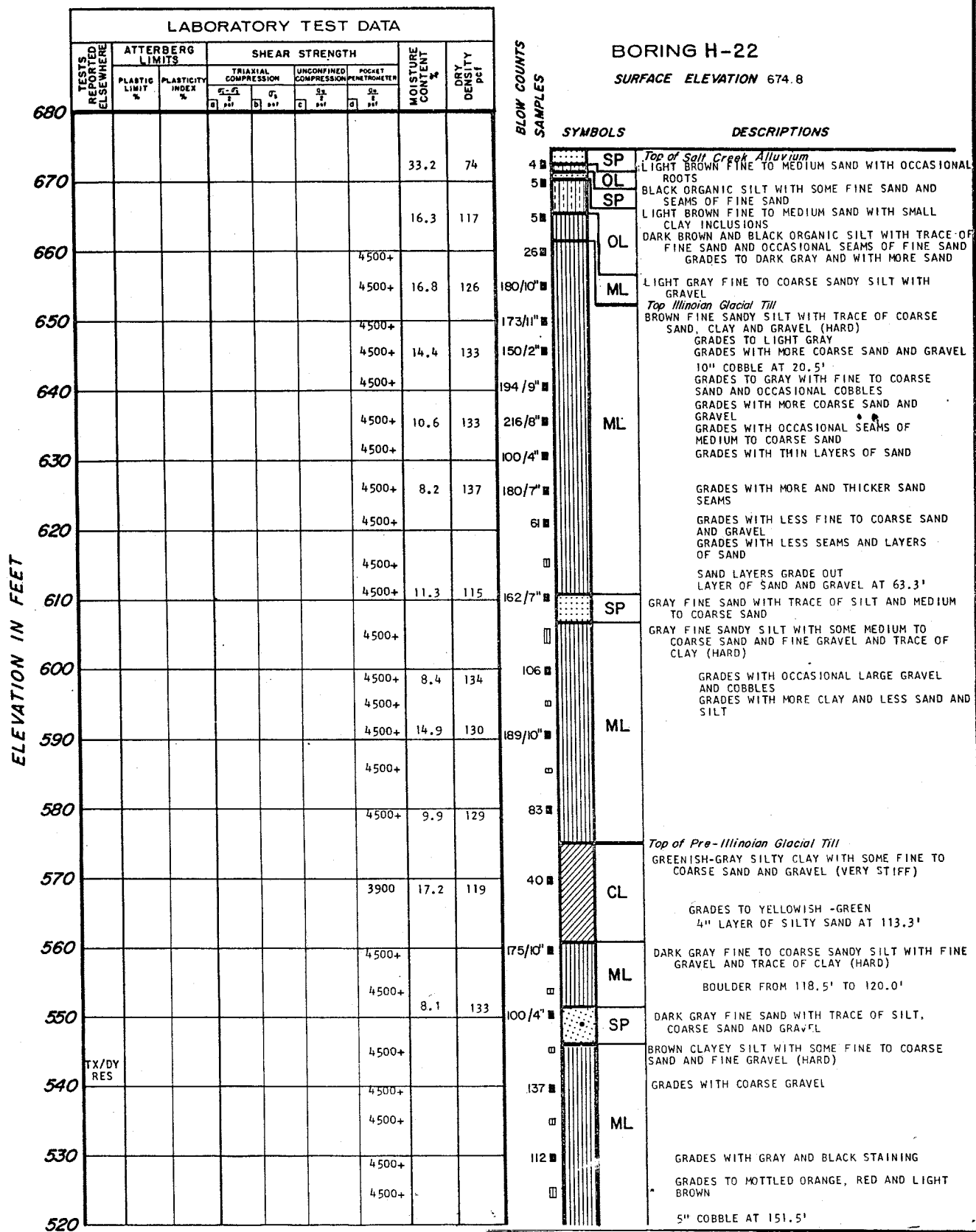
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FIGURE 2.5-182

LOG OF BORING H-21

NOTE:

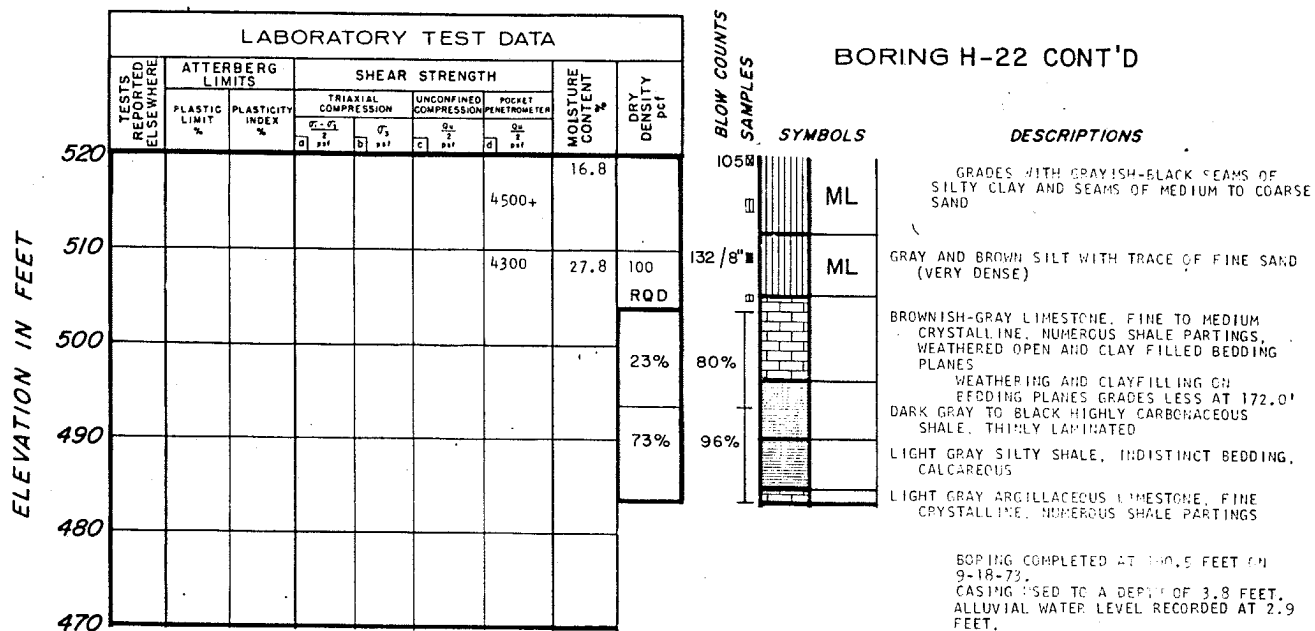
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

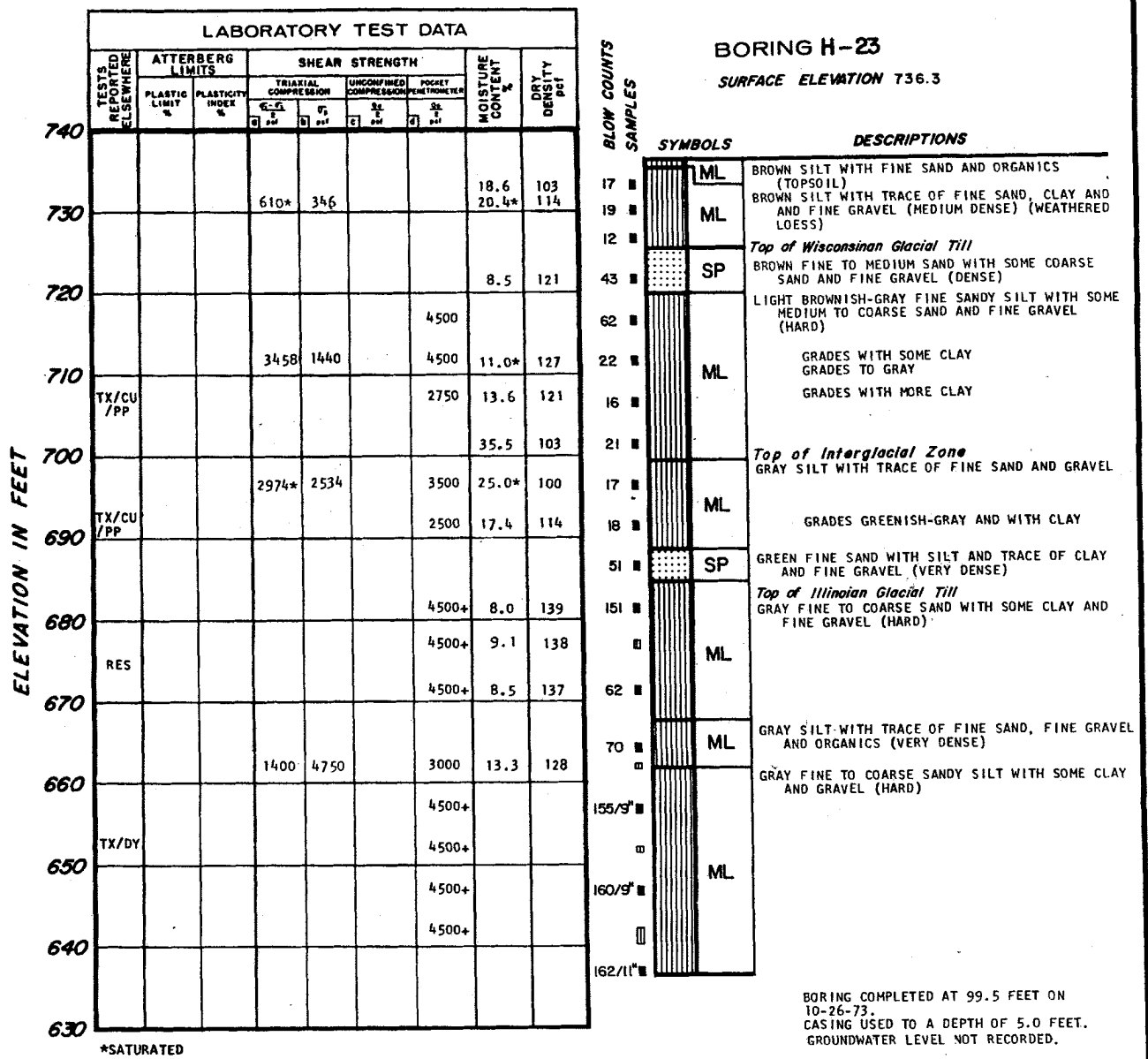
FIGURE 2.5-183
LOG OF BORING H-22
(SHEET 1 of 2)



**CLINTON POWER STATION
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FIGURE 2.5-183

LOG OF BORING H-22
(SHEET 2 of 2)



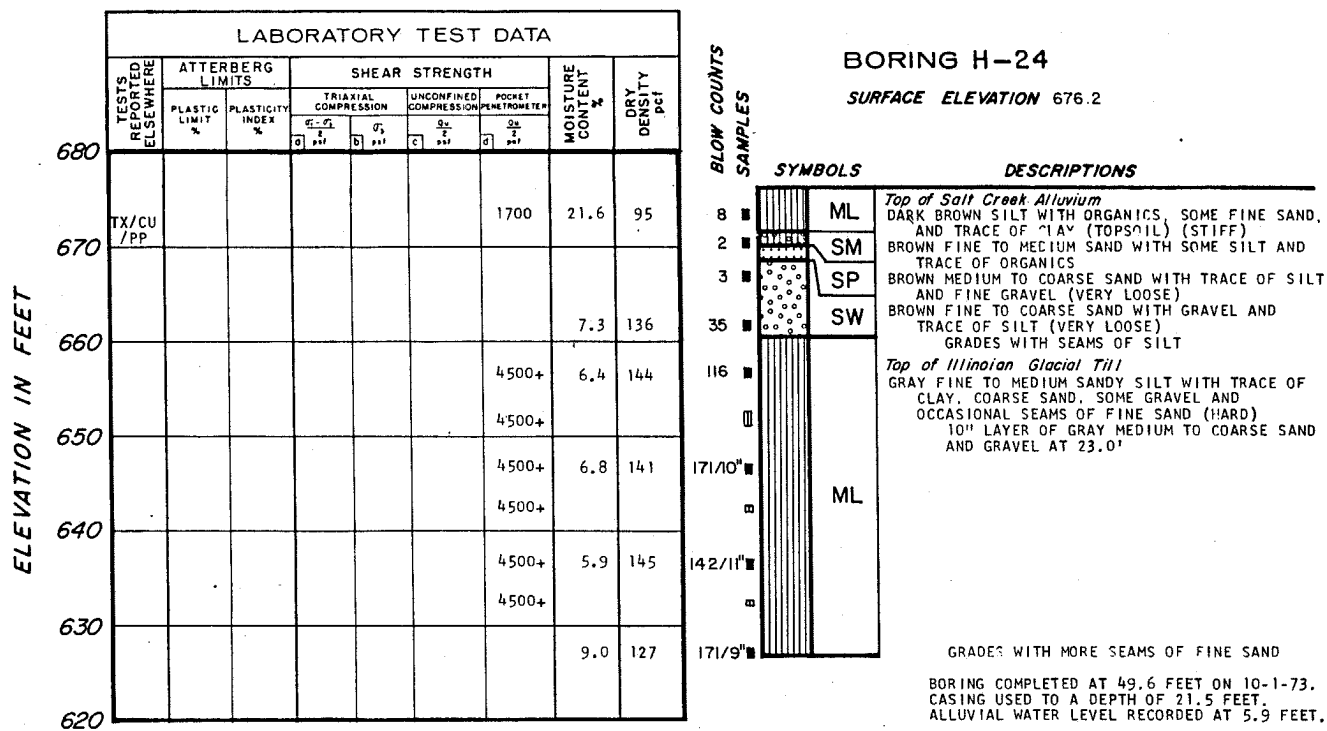
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FIGURE 2.5-184

LOG OF BORING H-23

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



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FIGURE 2.5-185

LOG OF BORING H-24

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

LABORATORY TEST DATA									
ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf
		PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION		UNCONFINED COMPRESSION			
				PENETROMETER					
				$\sigma_1 - \sigma_3$ psi	σ_3 psi	$\frac{q_u}{2}$ psi	$\frac{s_u}{2}$ psi		
680									
670	TX/CU /PP						500		
660								21.1	105
650							4500+	6.5	142
640							4500+	6.2	143
630	TX/CU /PP						4500+	6.6	146
620							4500+	8.5	138

BORING H-25
SURFACE ELEVATION 677.2

BLOW COUNTS
SAMPLES

	SYMBOLS	DESCRIPTIONS
4	ML	Top of Soft Creek Alluvium
2	ML	DARK BROWN SILT WITH CLAY, SAND AND ORGANICS
5	OL	BROWN SILT WITH TRACE OF CLAY AND FINE SAND (SOFT)
20	SP	BLACK ORGANIC SILT WITH SOME CLAY AND TRACE OF FINE SAND (MEDIUM STIFF)
88	SW	GRAY FINE SAND WITH TRACE OF SILT AND OCCASIONAL SEAMS OF ORGANIC SILT (VERY LOOSE)
	ML	GRAY FINE TO COARSE SAND WITH GRAVEL AND TRACE OF SILT
	ML	LIGHT GREENISH-GRAY SILT WITH SOME FINE SAND AND FINE GRAVEL (MEDIUM DENSE)
	ML	Top of Illinoian Glacial Till
158	ML	DARK GRAY FINE TO COARSE SANDY SILT WITH GRAVEL AND TRACE OF CLAY (HARD)
	ML	LIGHT GREENISH-GRAY FINE TO MEDIUM SANDY SILT WITH COARSE SAND AND GRAVEL (HARD)
116/4'	ML	DARK GRAY FINE TO COARSE SANDY SILT WITH SOME GRAVEL AND TRACE OF CLAY (HARD) GRADES WITH MORE FINE SAND
		GRADES WITH LESS SAND AND GRAVEL
88		GRADES WITH MORE CLAY

BORING COMPLETED AT 50.0 FEET ON 9-21-73.
CASING USED TO A DEPTH OF 3.5 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 5.3 FEET.

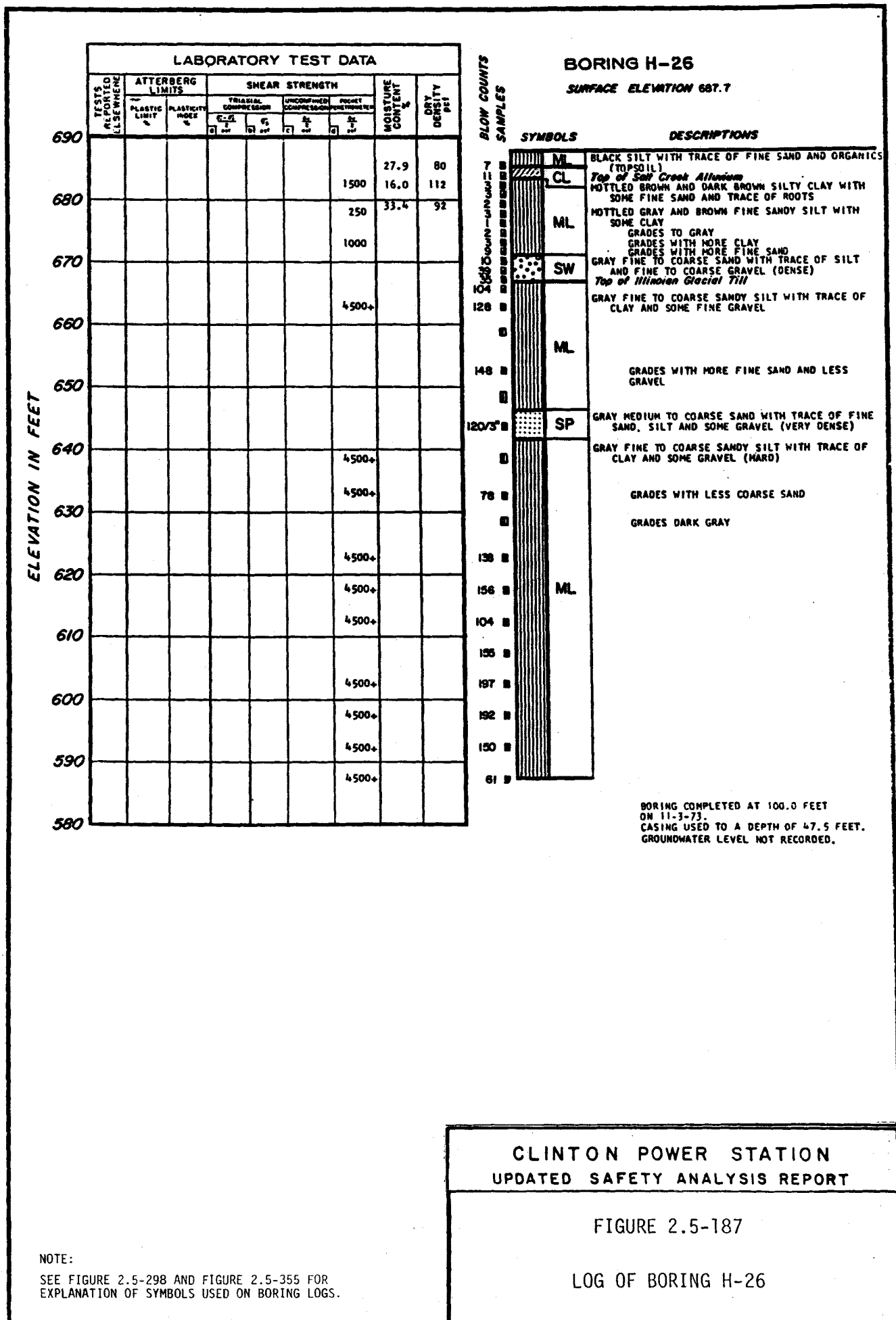
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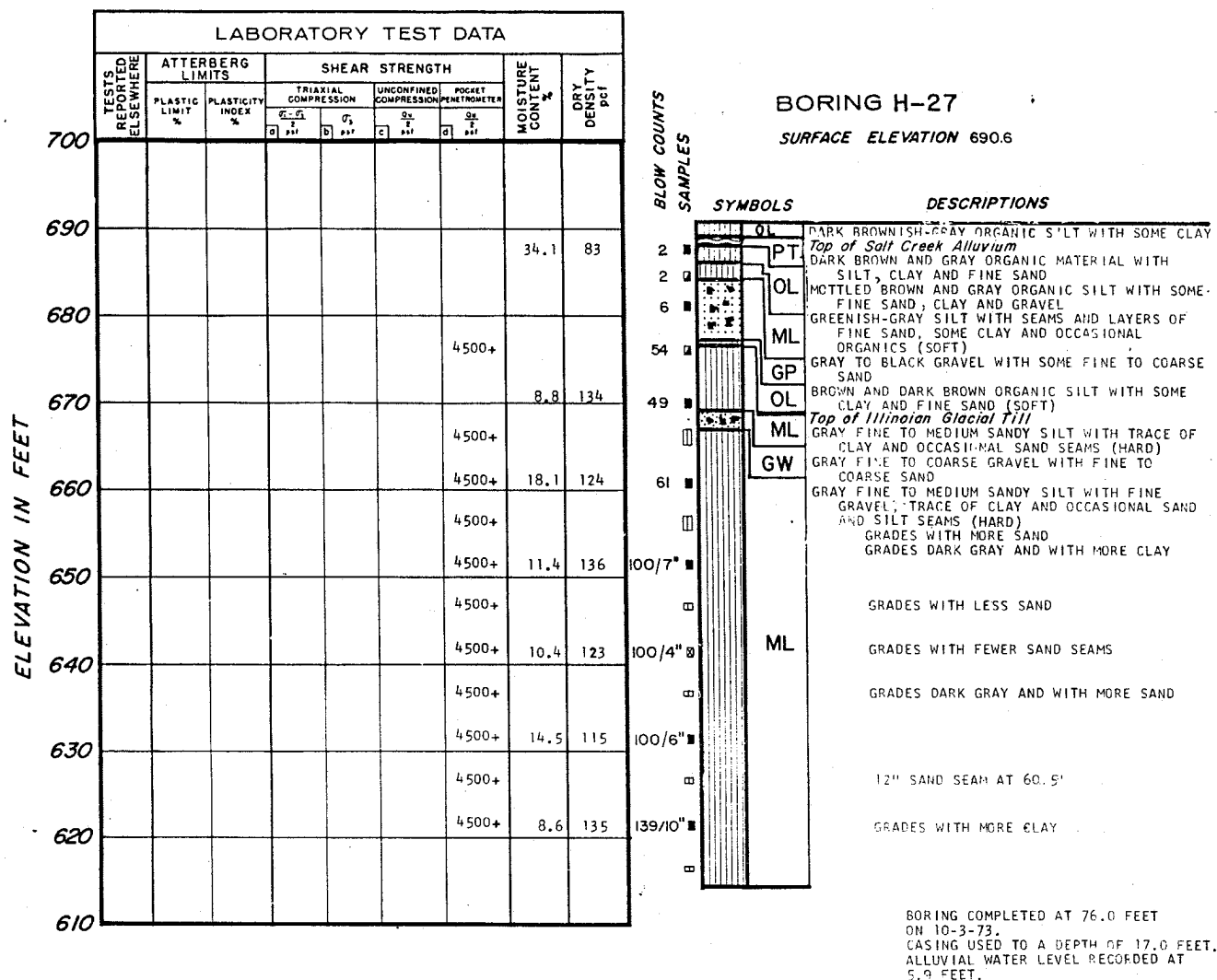
FIGURE 2.5-186

LOG OF BORING H-25

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.





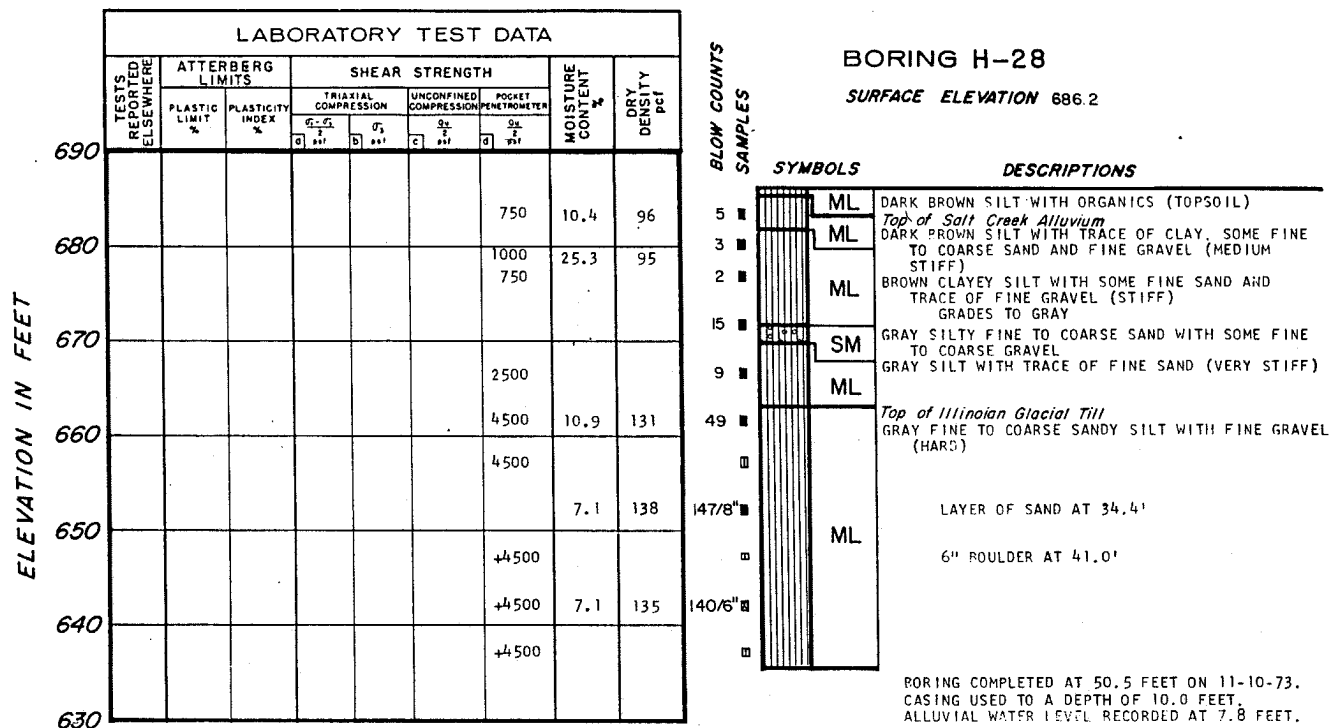
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FIGURE 2.5-188

LOG OF BORING H-27

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.



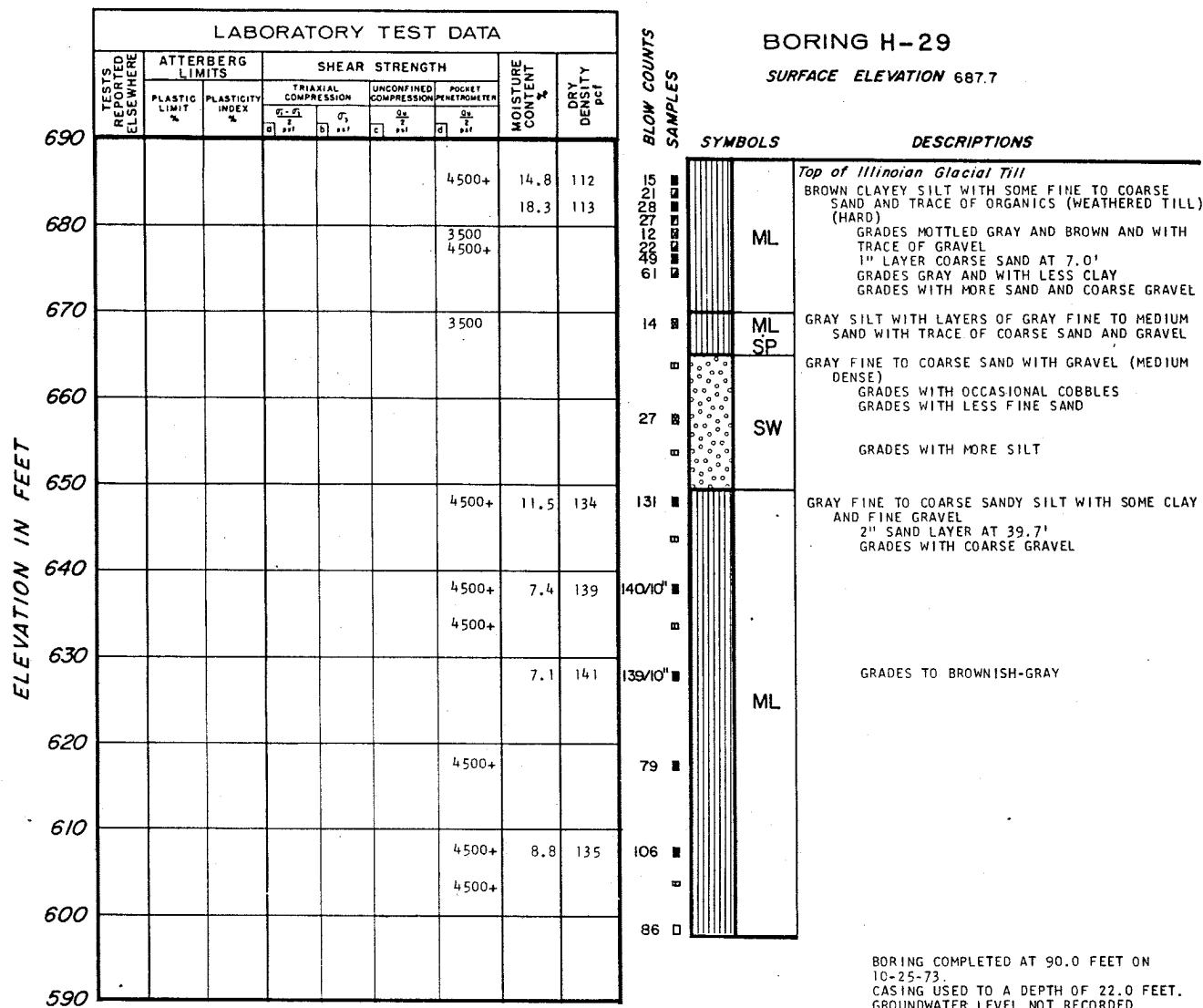
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-189

LOG OF BORING H-28



NOTES:

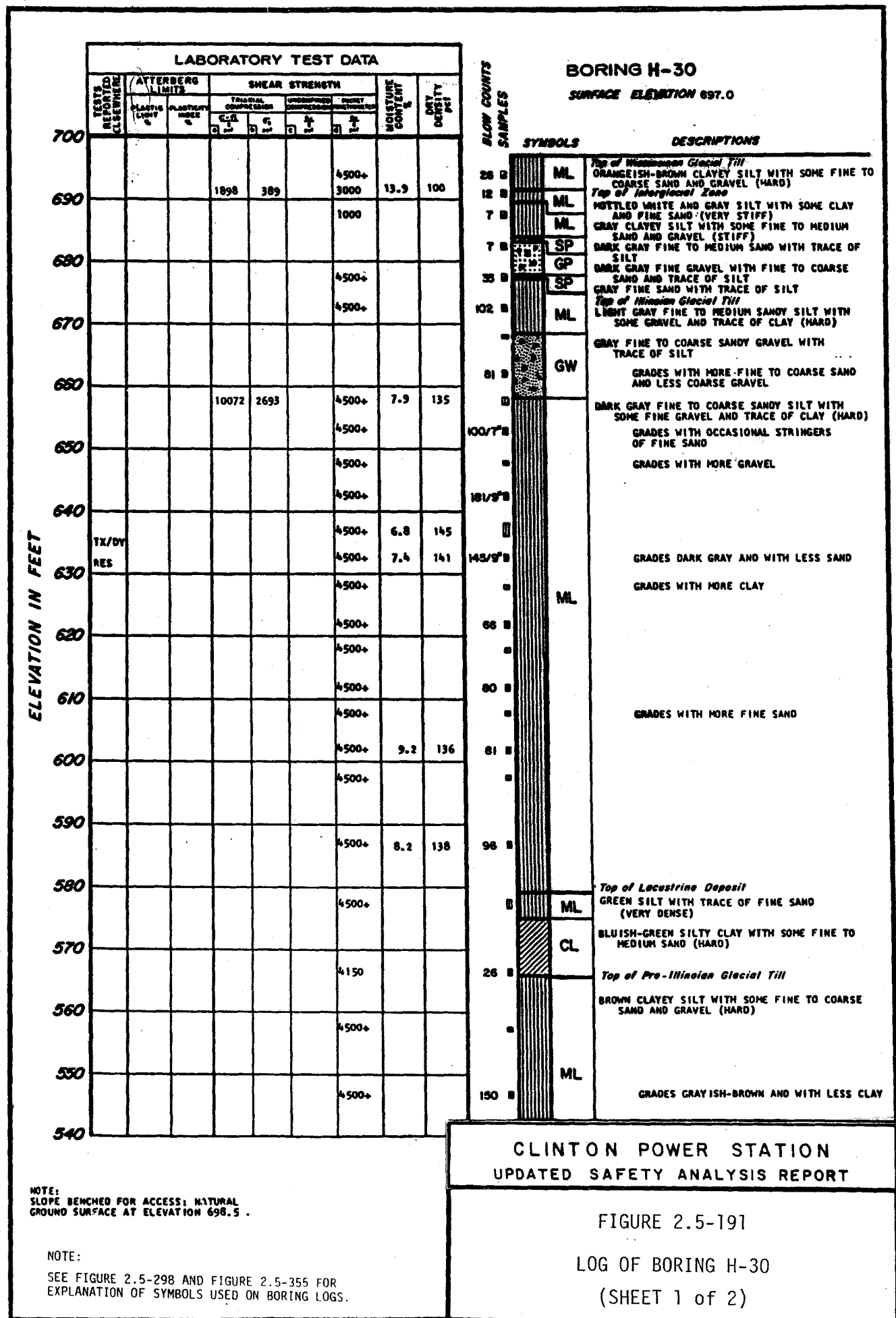
SLOPE BENCHED FOR ACCESS; NATURAL GROUND SURFACE AT ELEVATION 689.7.

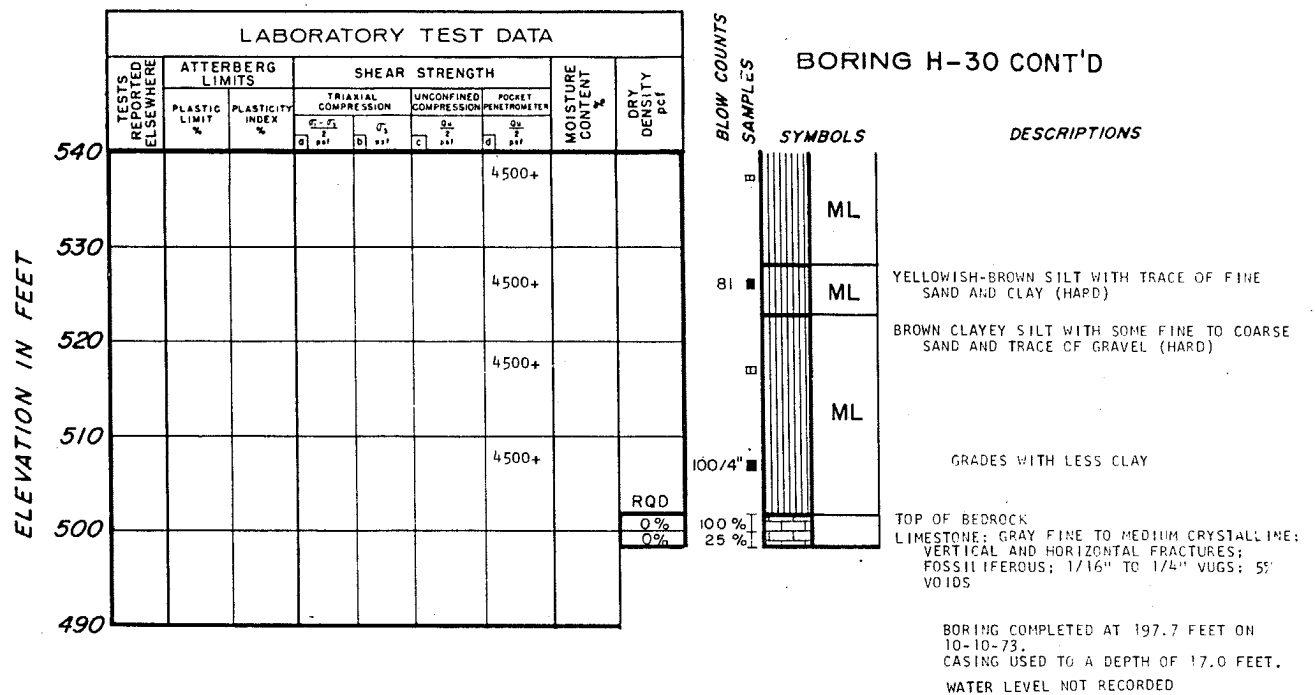
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

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FIGURE 2.5-190

LOG OF BORING H-29

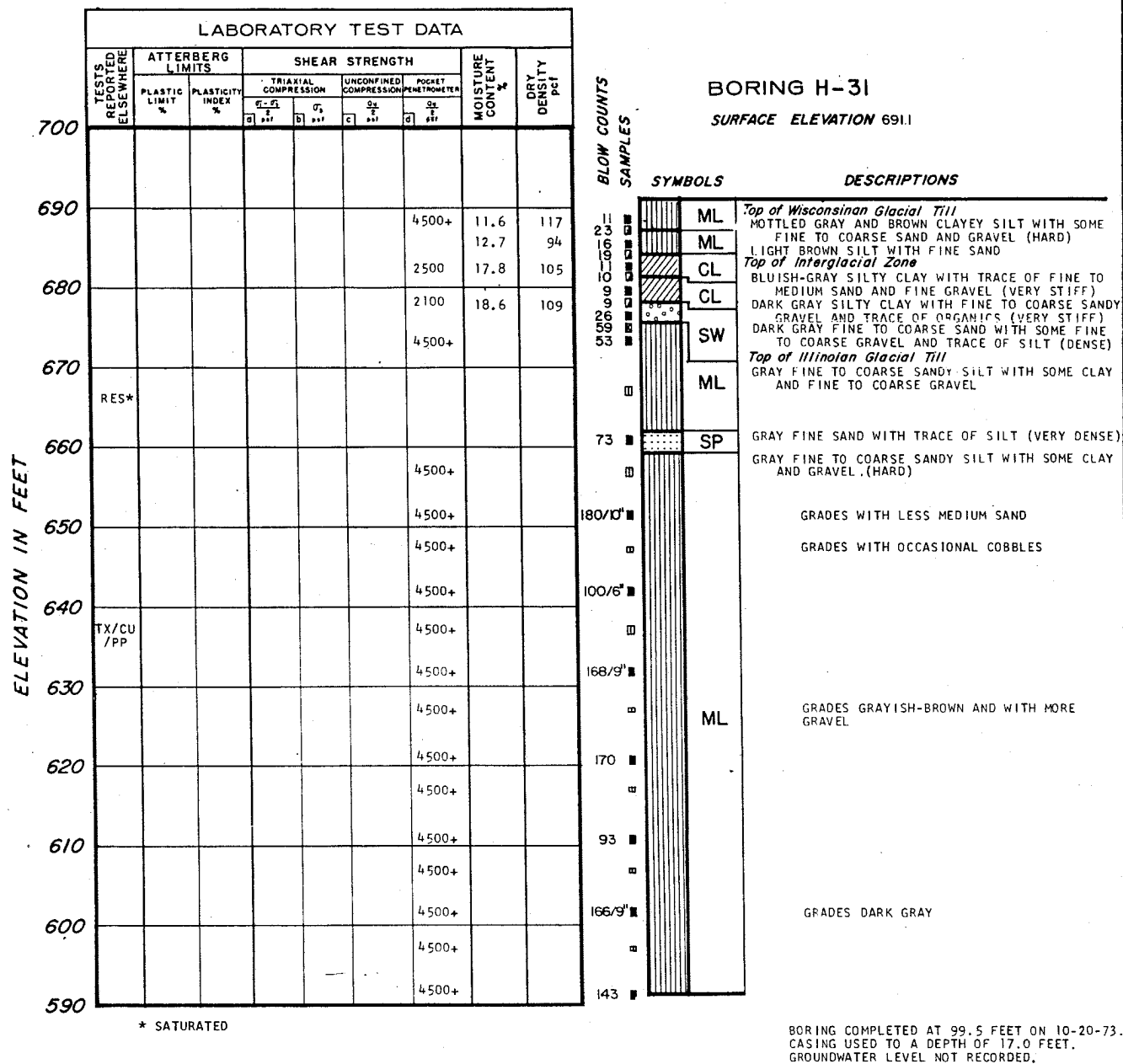




**CLINTON POWER STATION
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FIGURE 2.5-191

LOG OF BORING H-30
(SHEET 2 of 2)



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-192

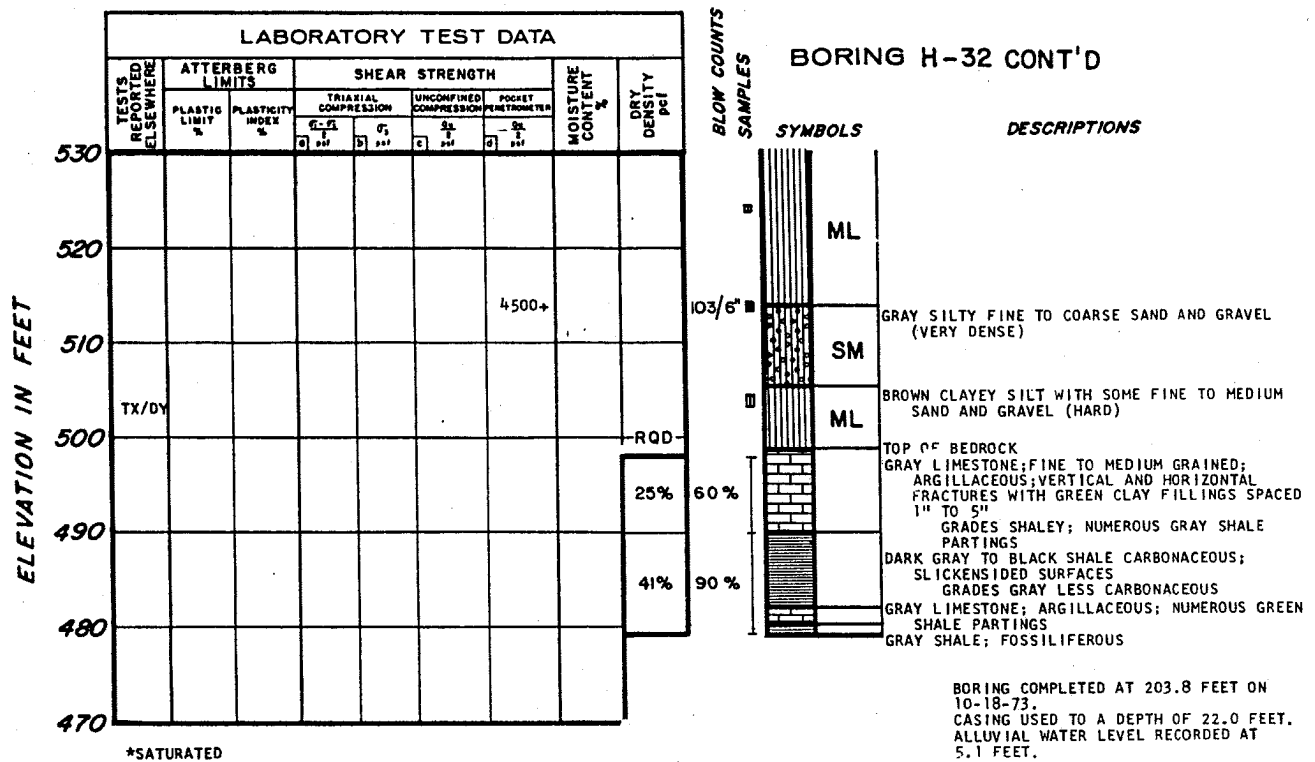
LOG OF BORING H-31

BORING H-32
SURFACE ELEVATION 684.6

*SATURATED

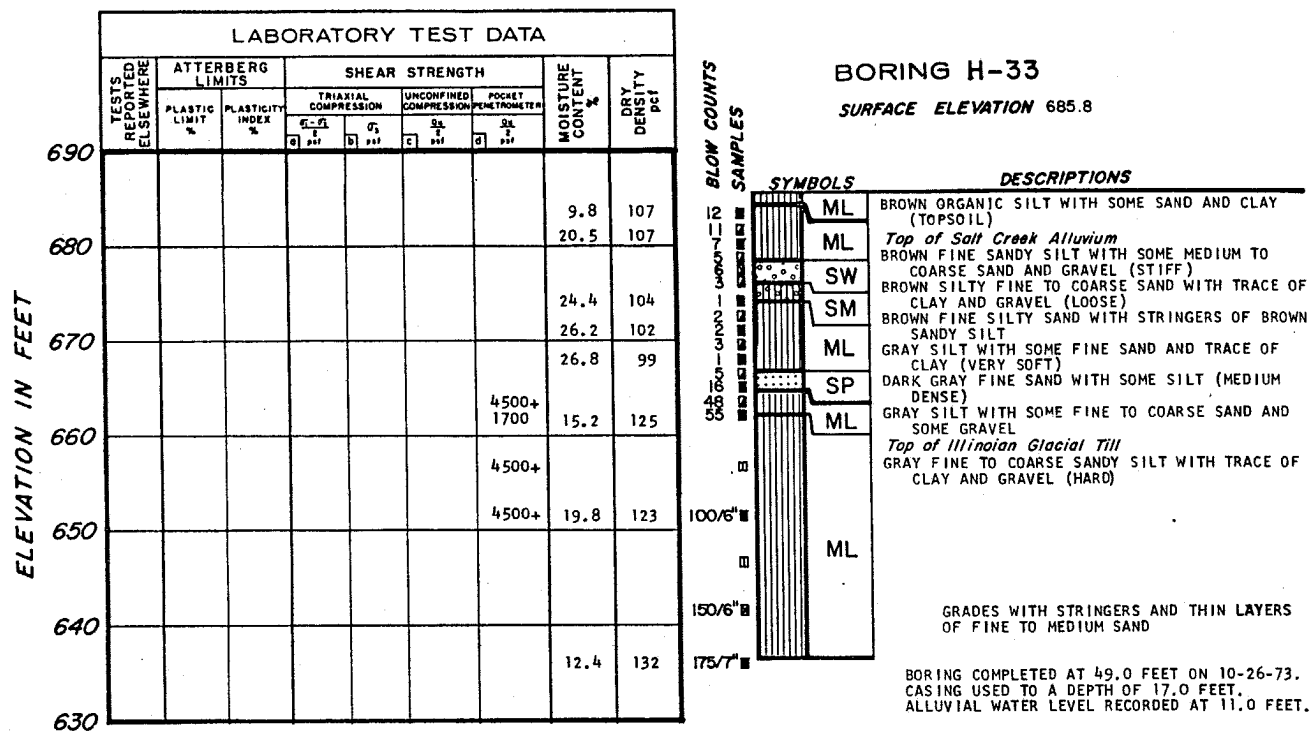
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

(SHEET 1 of 2)



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-193
LOG OF BORING H-32
(SHEET 2 of 2)



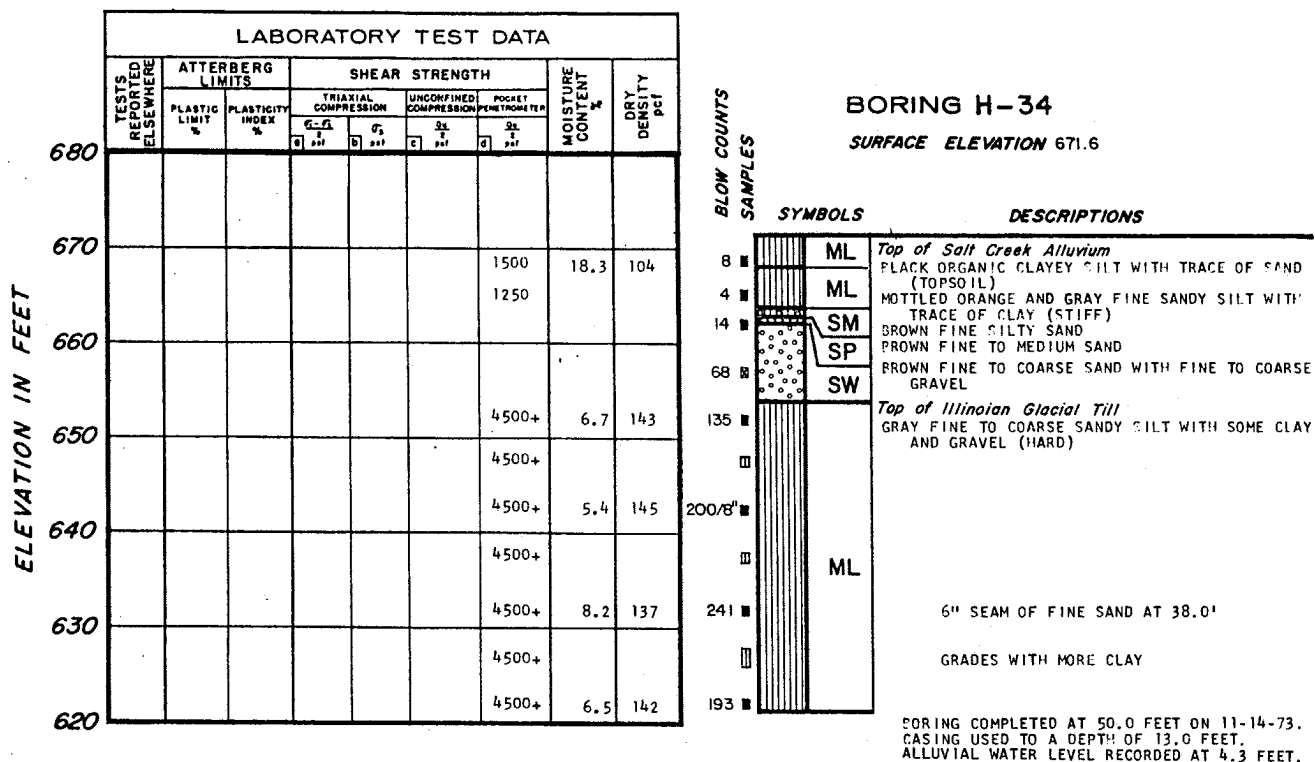
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-194

LOG OF BORING H-33

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



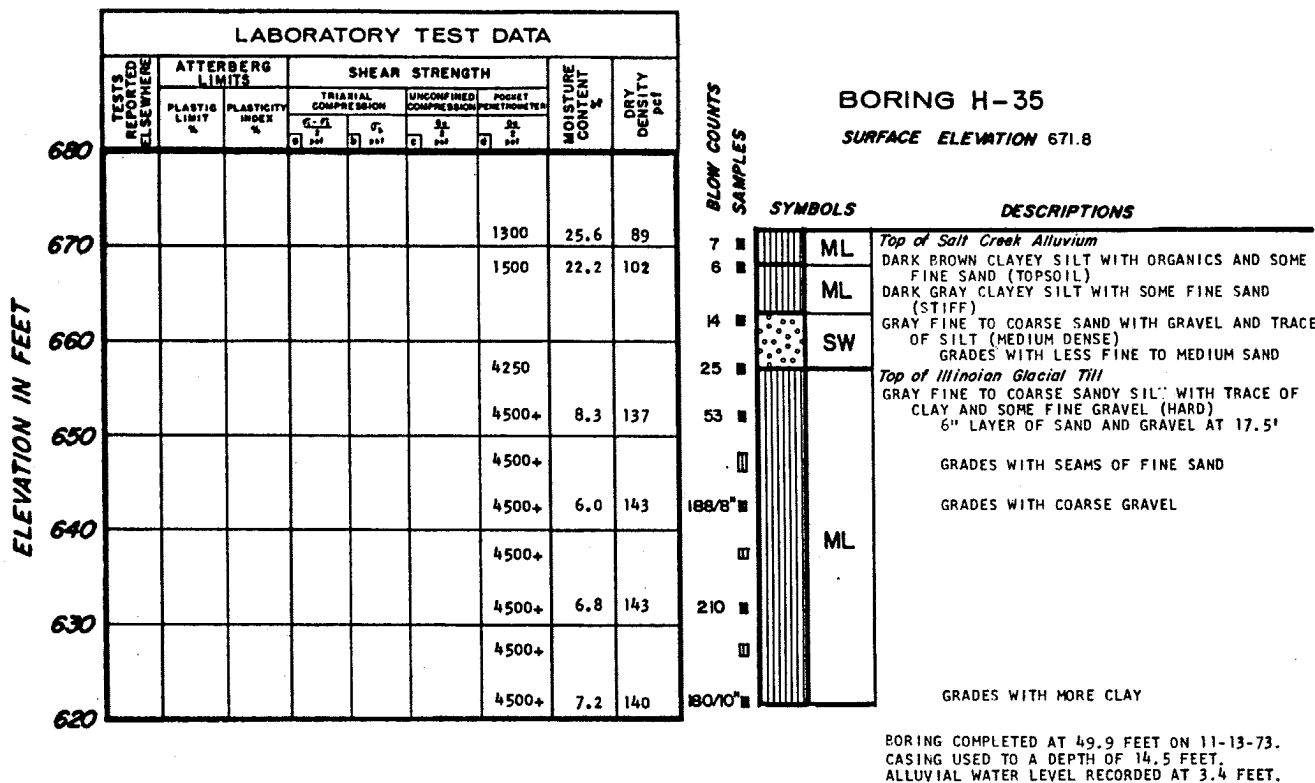
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-195

LOG OF BORING H-34



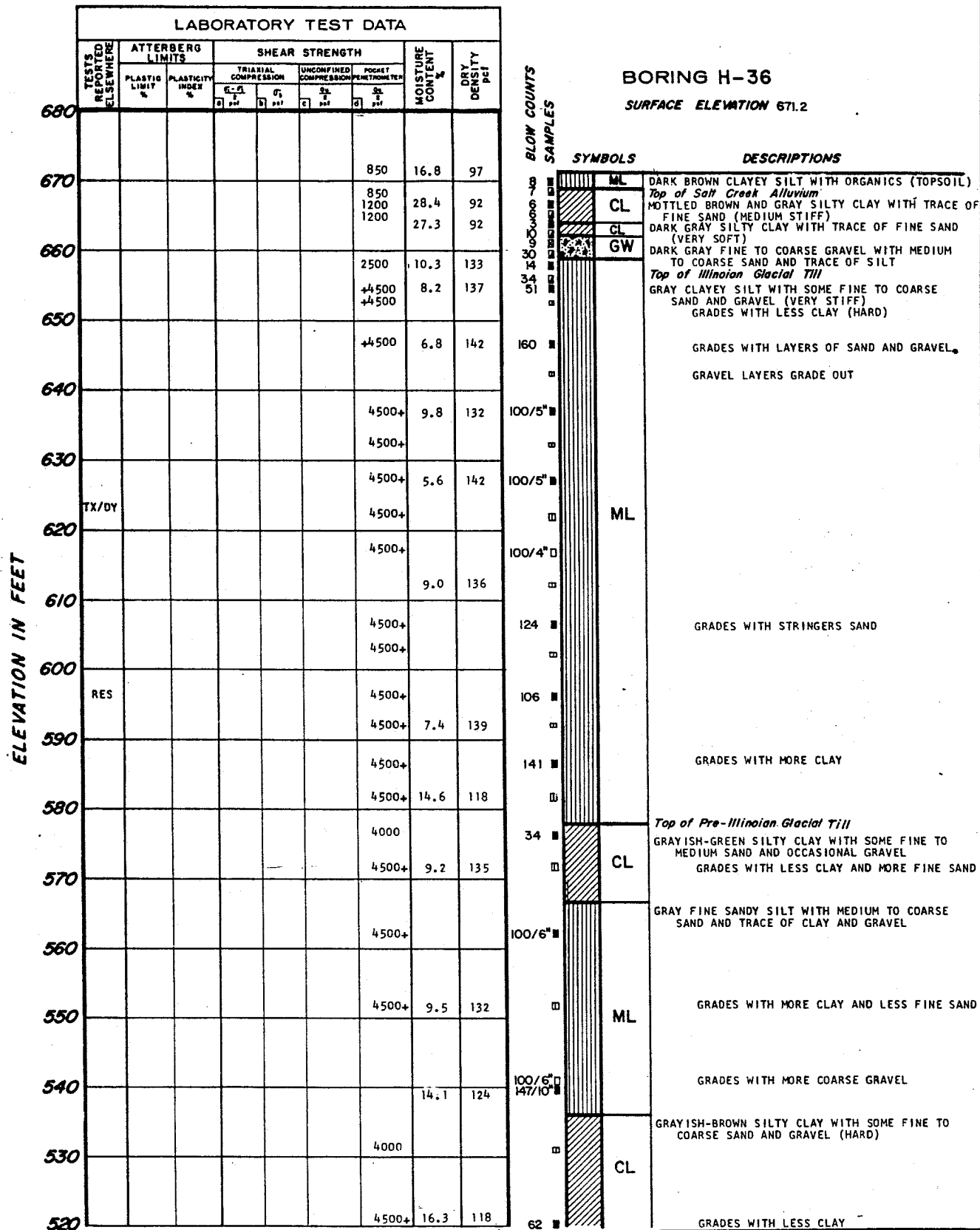
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-196

LOG OF BORING H-35

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



NOTE:

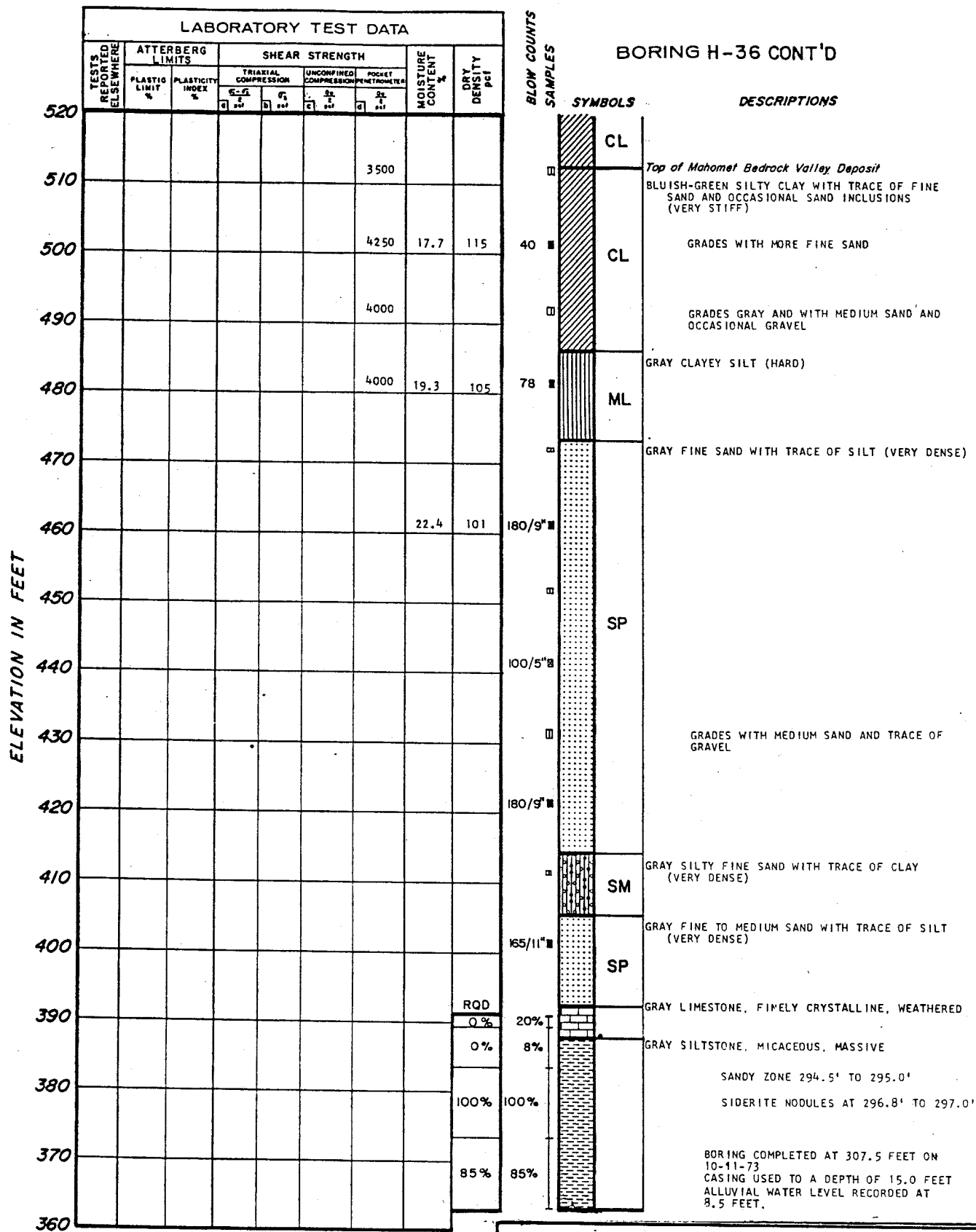
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-197

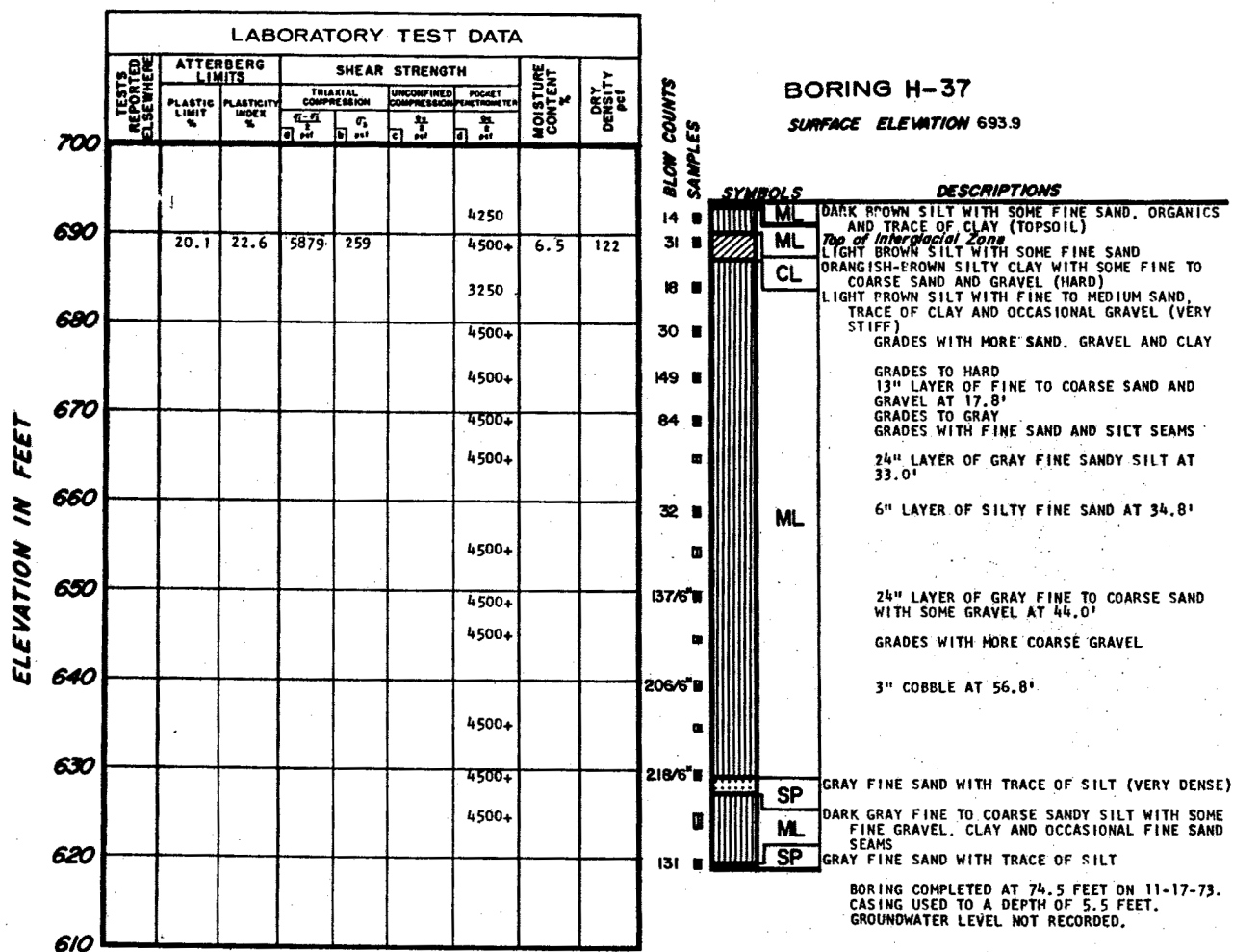
LOG OF BORING H-36

(SHEET 1 of 2)



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-197
LOG OF BORING H-36
(SHEET 2 of 2)



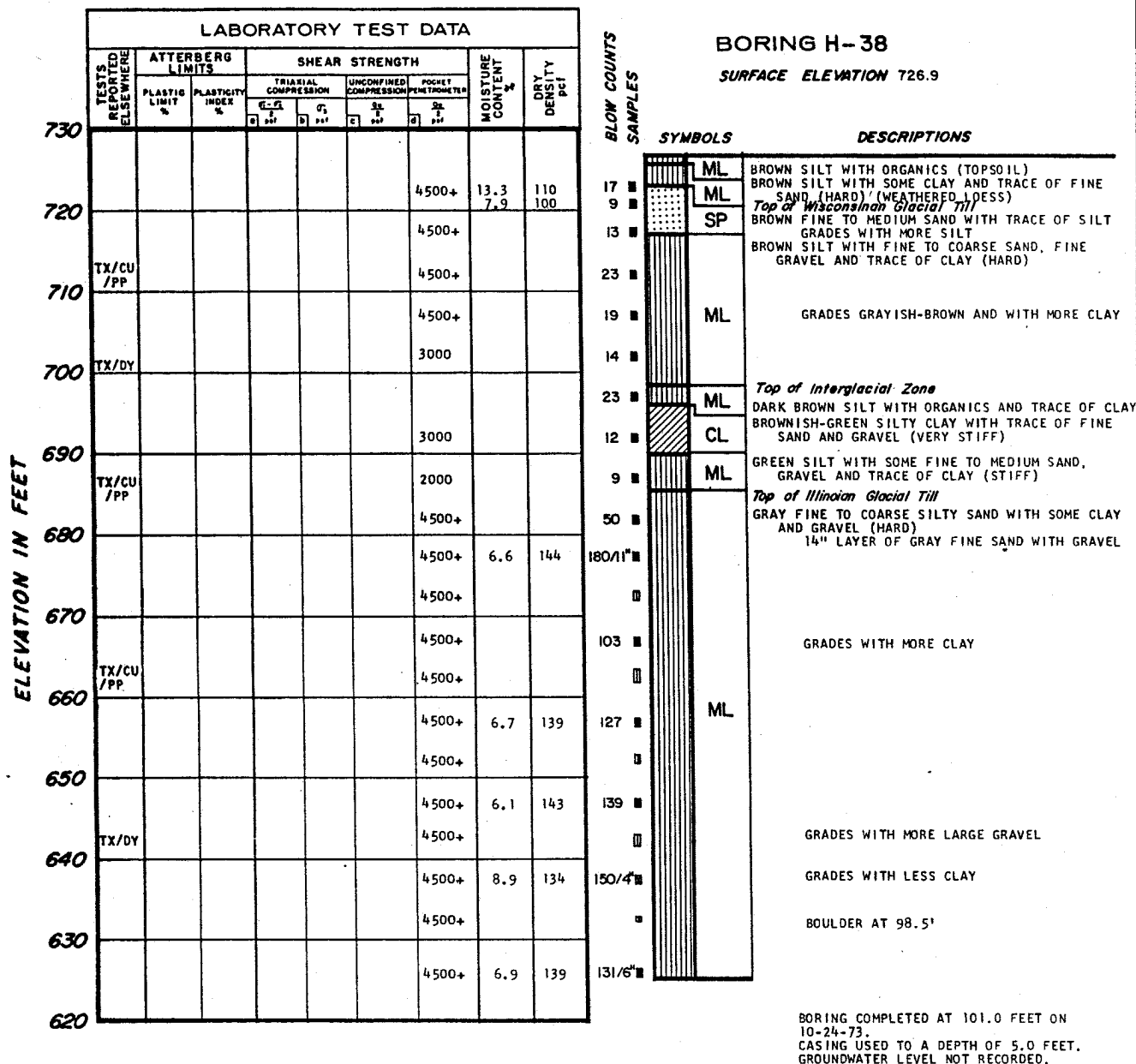
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-198

LOG OF BORING H-37



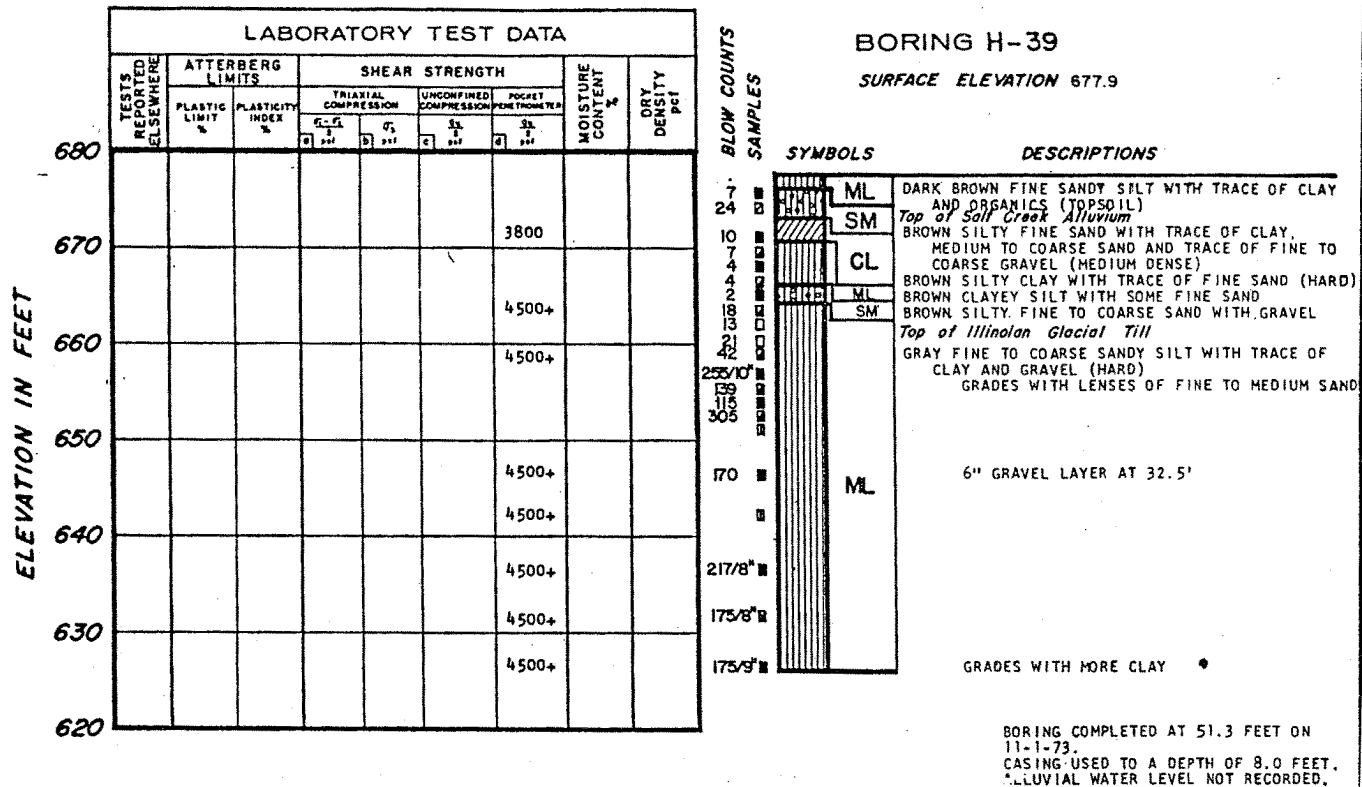
**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-199

LOG OF BORING H-38

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

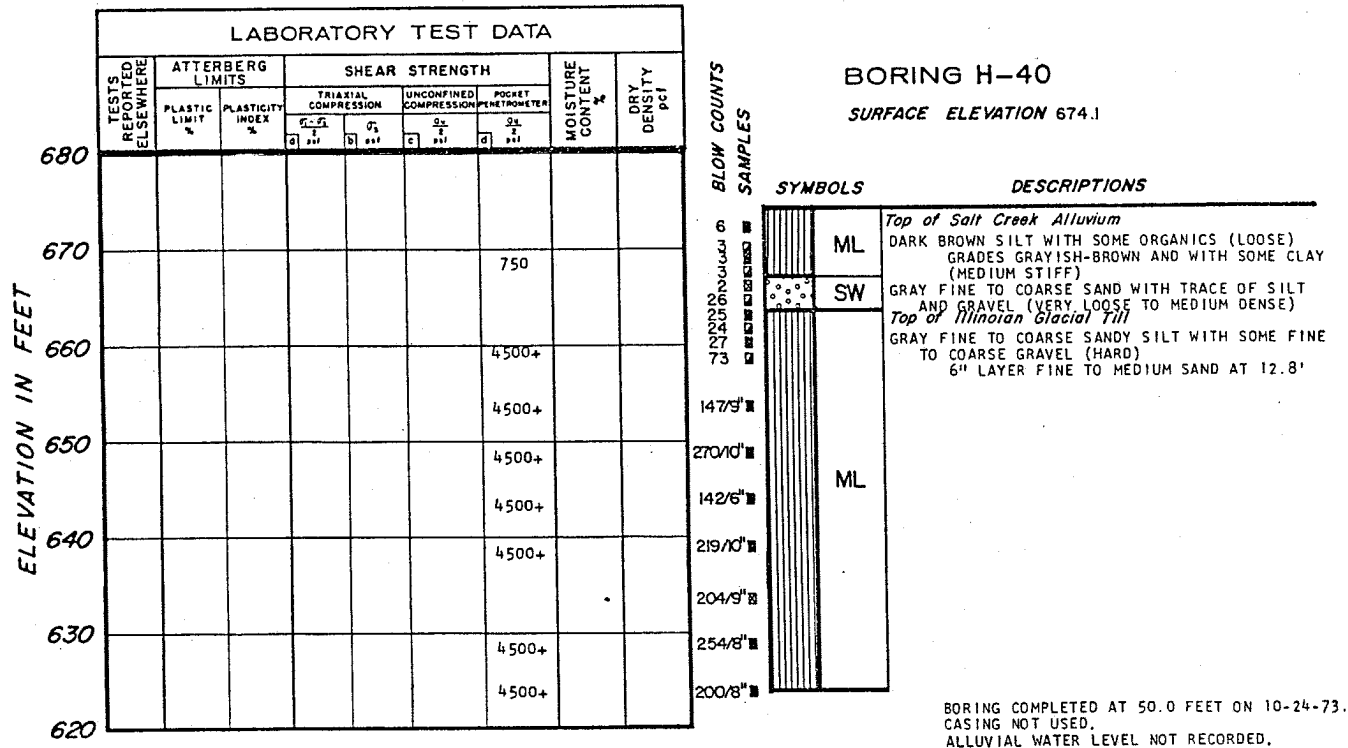


**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-200

LOG OF BORING H-39

NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



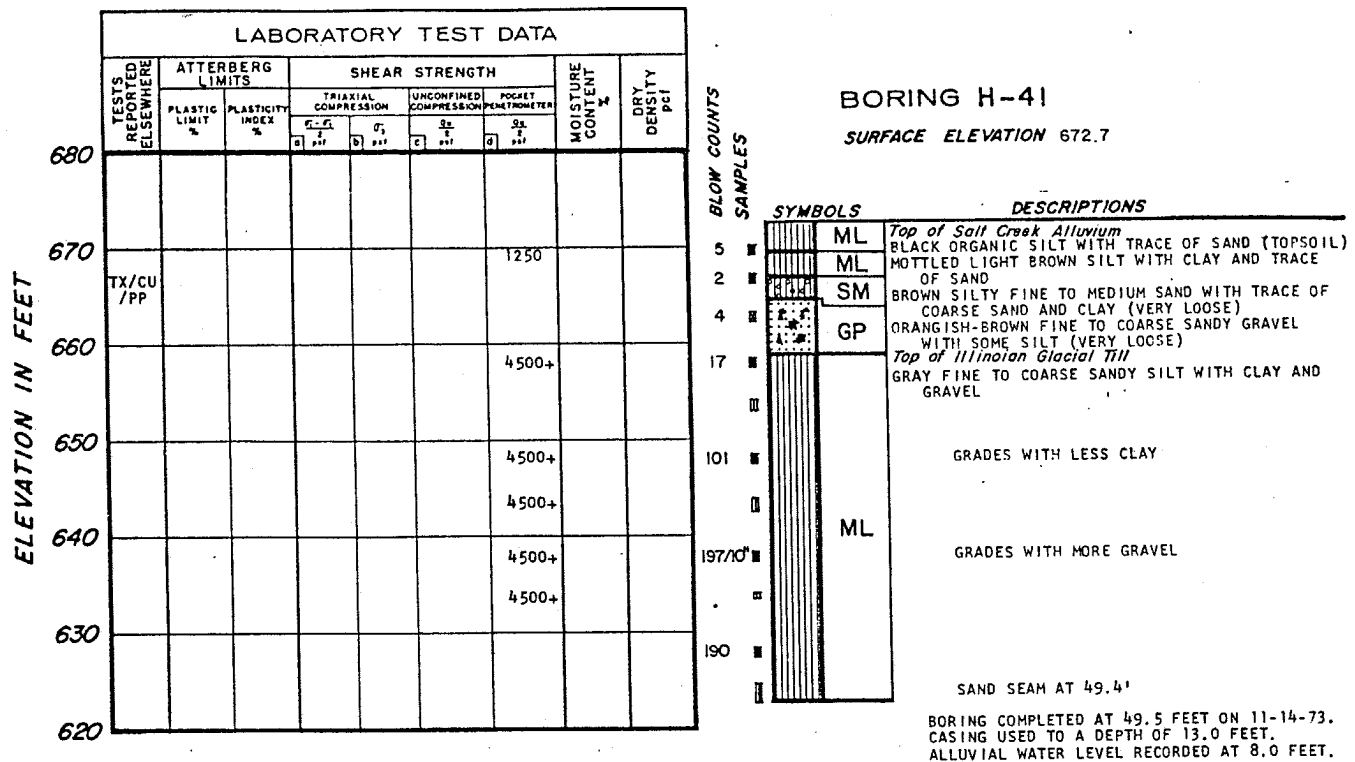
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

**CLINTON POWER STATION
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FIGURE 2.5-201

LOG OF BORING H-40



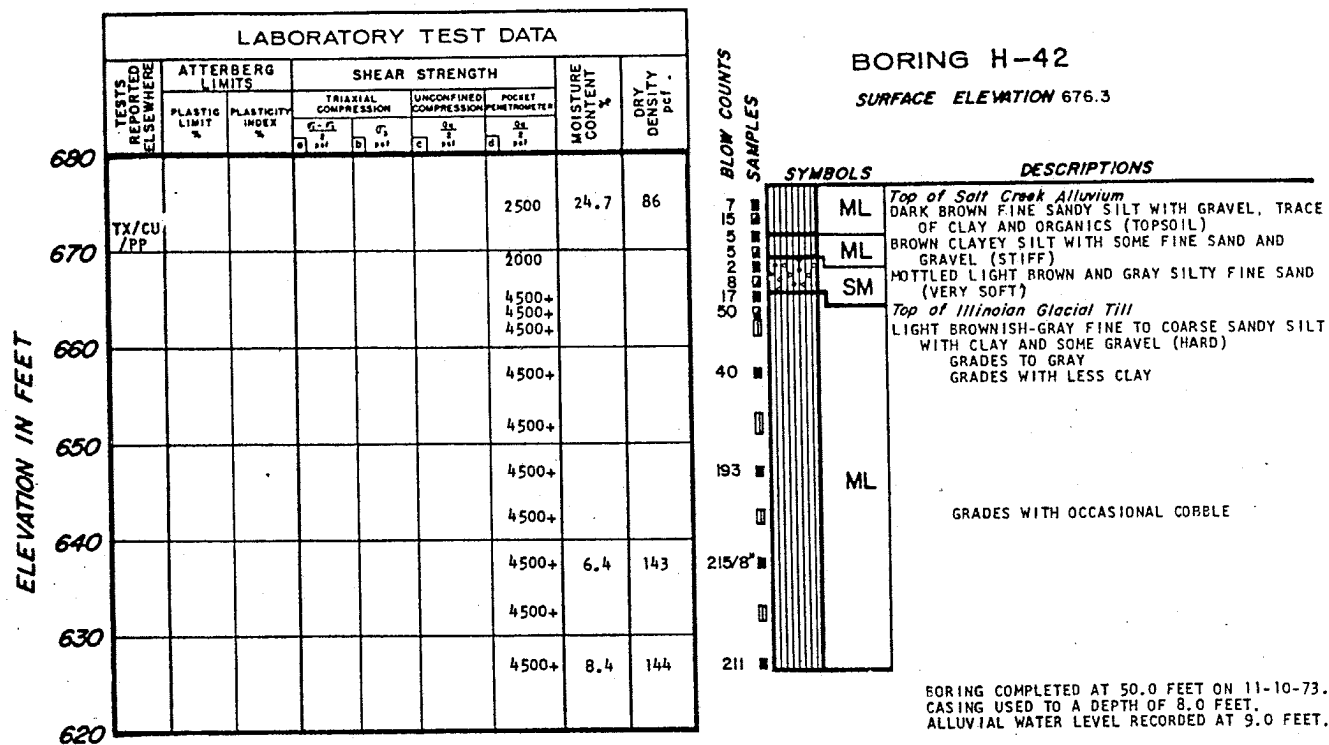
NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-202

LOG OF BORING H-41



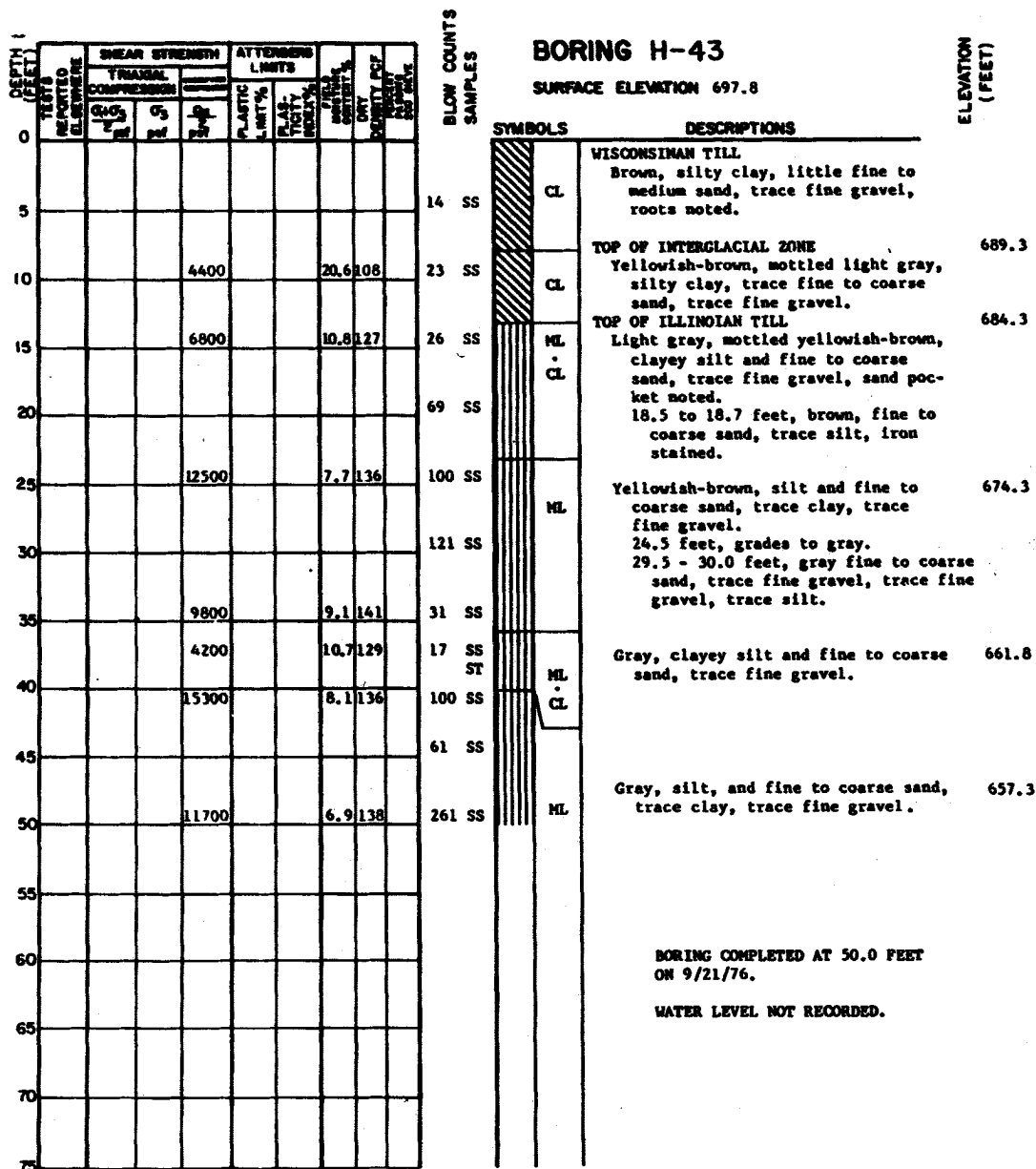
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-203

LOG OF BORING H-42

NOTE:

SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR
EXPLANATION OF SYMBOLS USED ON BORING LOGS.



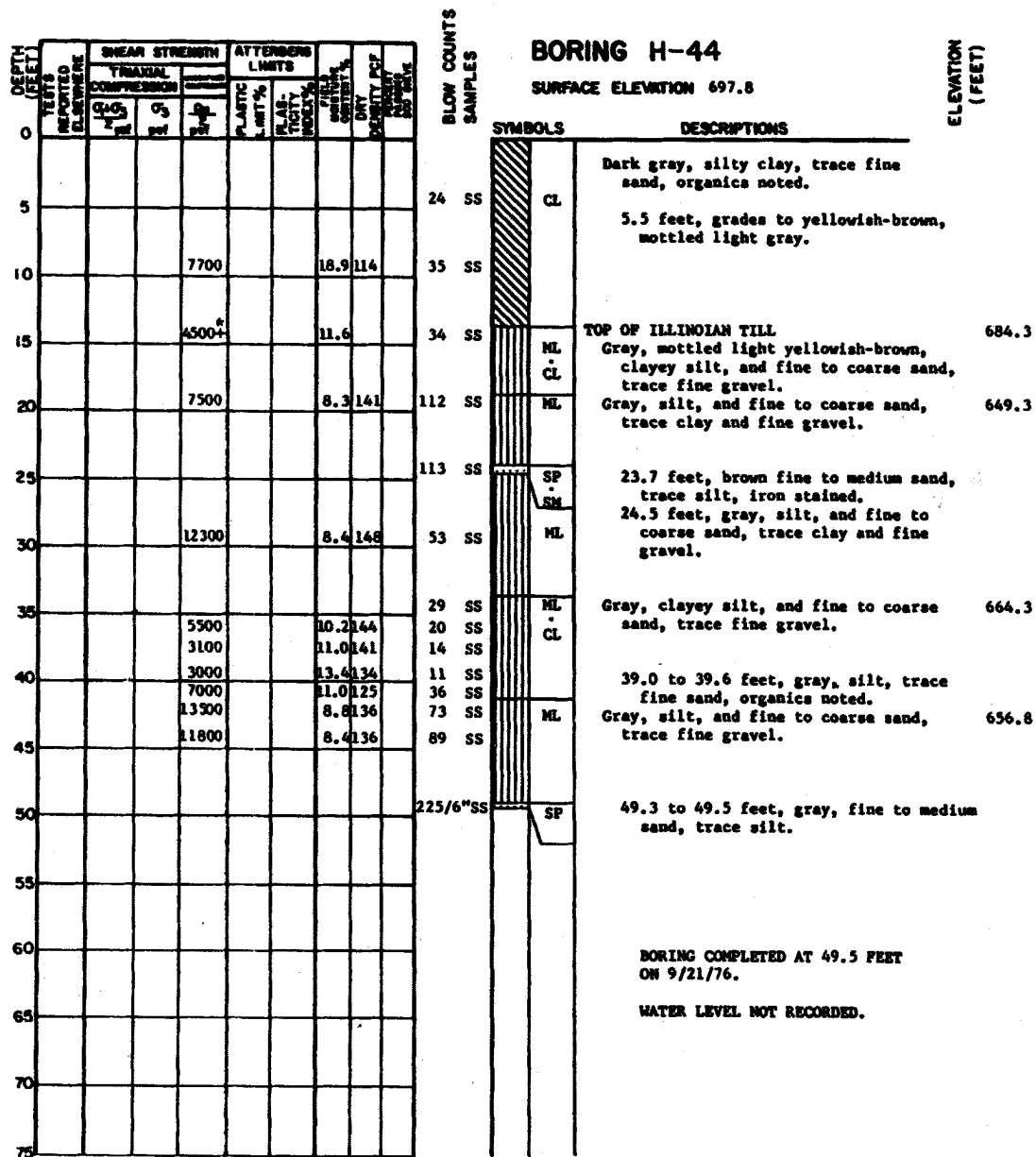
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-204

LOG OF BORING H-43



NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-205

LOG OF BORING H-44

DEPTH (FEET)	TESTS REPORTED ELEMENTS	SHEAR STRENGTH			ATTENDING LIMITS			FIELD TESTING EQUIPMENT	BENT DENSITY CF
		TRIAXIAL COMPRESSION			PLASTIC LIMITS				
		Q_{100}	Q_5	Q_{10}	PLASTIC LIMIT %	PLASTICITY INDEX %	PLASTICITY INDEX %		
		psi	psi	psi					
0									
5									
10									
15									
20									
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									

BORING H-44A SURFACE ELEVATION 697.8

BLOW COUNTS
SAMPLES

ELEVATION
(FEET)

SYMBOLS	DESCRIPTIONS
	Rotary drilled without sampling to 35.0 feet.
ST	Gray, clayey silt and fine to coarse sand, trace fine gravel.
ST	39.0 to 39.6 feet, gray, silt, trace fine sand, organics noted.
	BORING COMPLETED AT 39.9 FEET ON 9/21/76.
	WATER LEVEL NOT RECORDED.

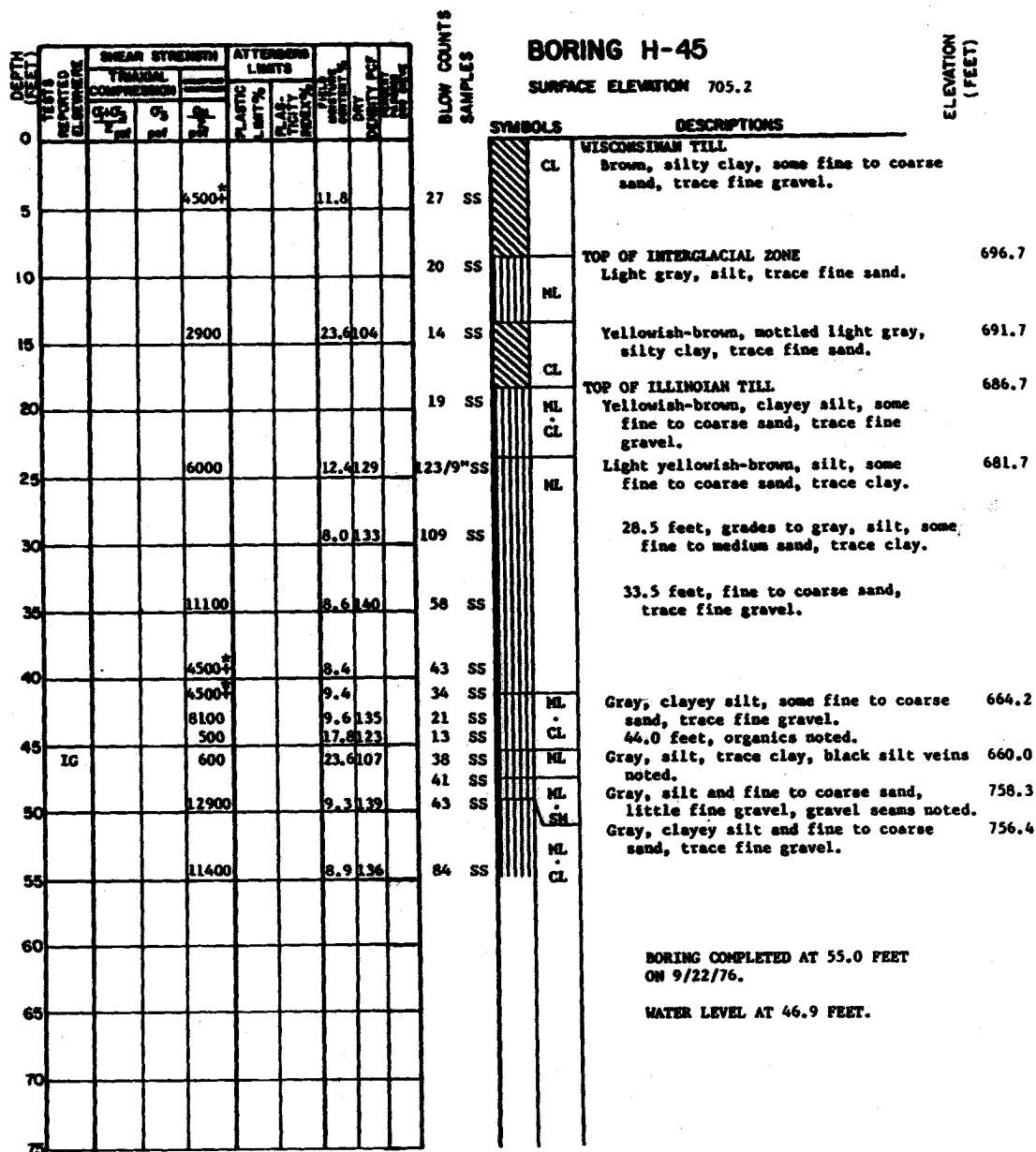
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-206

LOG OF BORING H-44A



NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-207

LOG OF BORING H-45

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENDING LIMITS			WATER CONTENT, PERCENT %	FLUIDITY INDEX, %	UNIT WEIGHT, PCF	SOUNDNESS INDEX, %	SAND CONTENT, %
		TRIAxIAL COMPRESSION			UNCONSOLIDATED SAMPLING							
		Q ₁	Q ₂	Q ₃	PLASTIC LIMIT, %	PLASTICITY INDEX, %	LIQUIDITY LIMIT, %					
		1	2	3	1	2	3					
		in	pcf	pcf								
0												
5												
10												
15												
20												
25												
30												
35												
40												
45												
50												
55												
60												
65												
70												
75												

BLOW COUNTS
SAMPLES

BORING H-45A

SURFACE ELEVATION 705.2

ELEVATION
(FEET)

SYMBOLS

DESCRIPTIONS

Rotary drilled without sampling to
42.5 feet.

ST
ST
ST

ML
CL
ML
ML
SH

Gray, clayey silt, some fine to coarse
sand, trace fine gravel.
44.0 feet, organics noted.
Gray, silt, trace clay, black silt
veins noted.
Gray, silt and fine to coarse sand,
little fine gravel, gravel seams
noted.

660.0
758.3

BORING COMPLETED AT 47.7 FEET
ON 9/22/76.

WATER LEVEL NOT RECORDED.

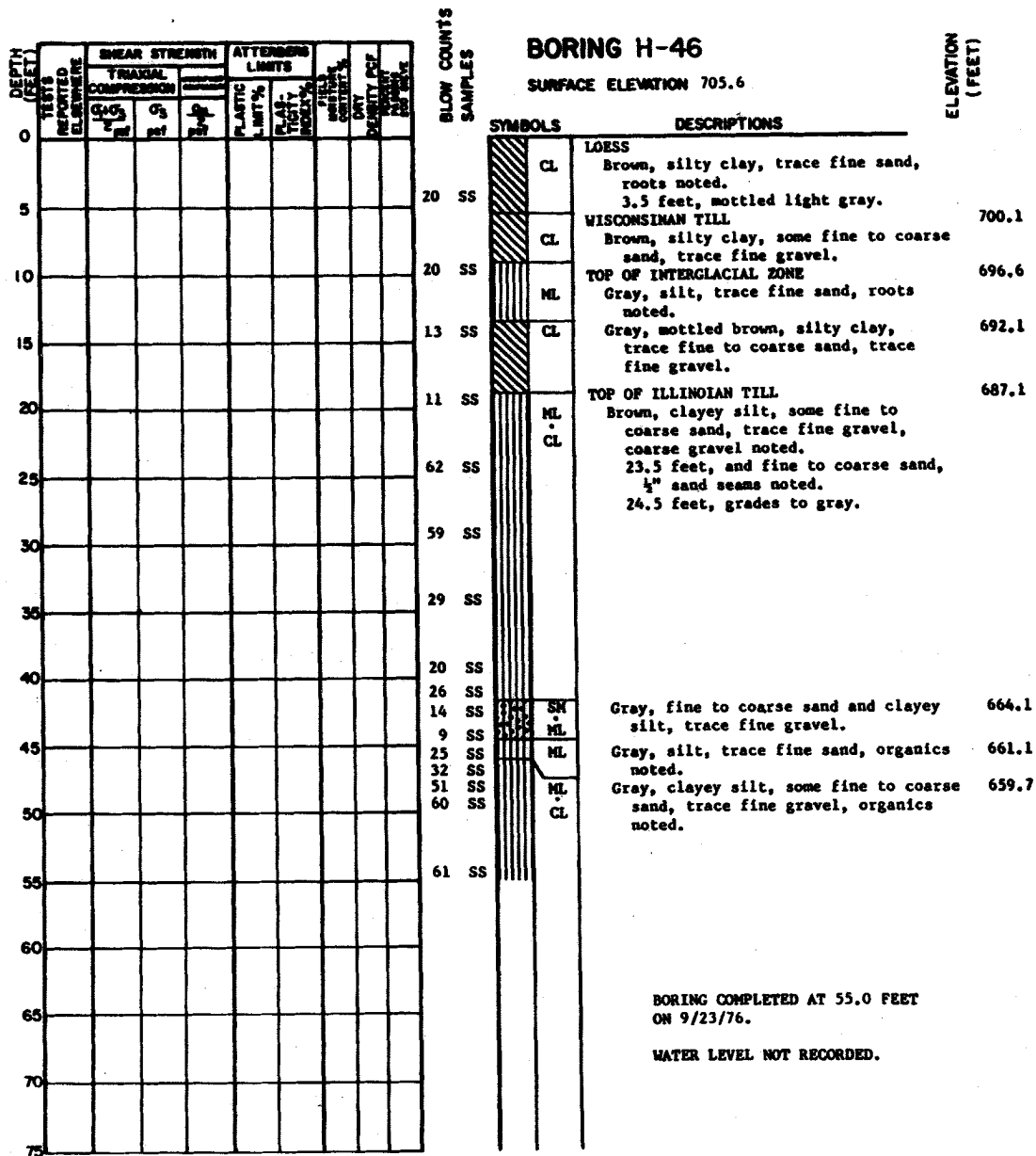
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-208

LOG OF BORING H-45A



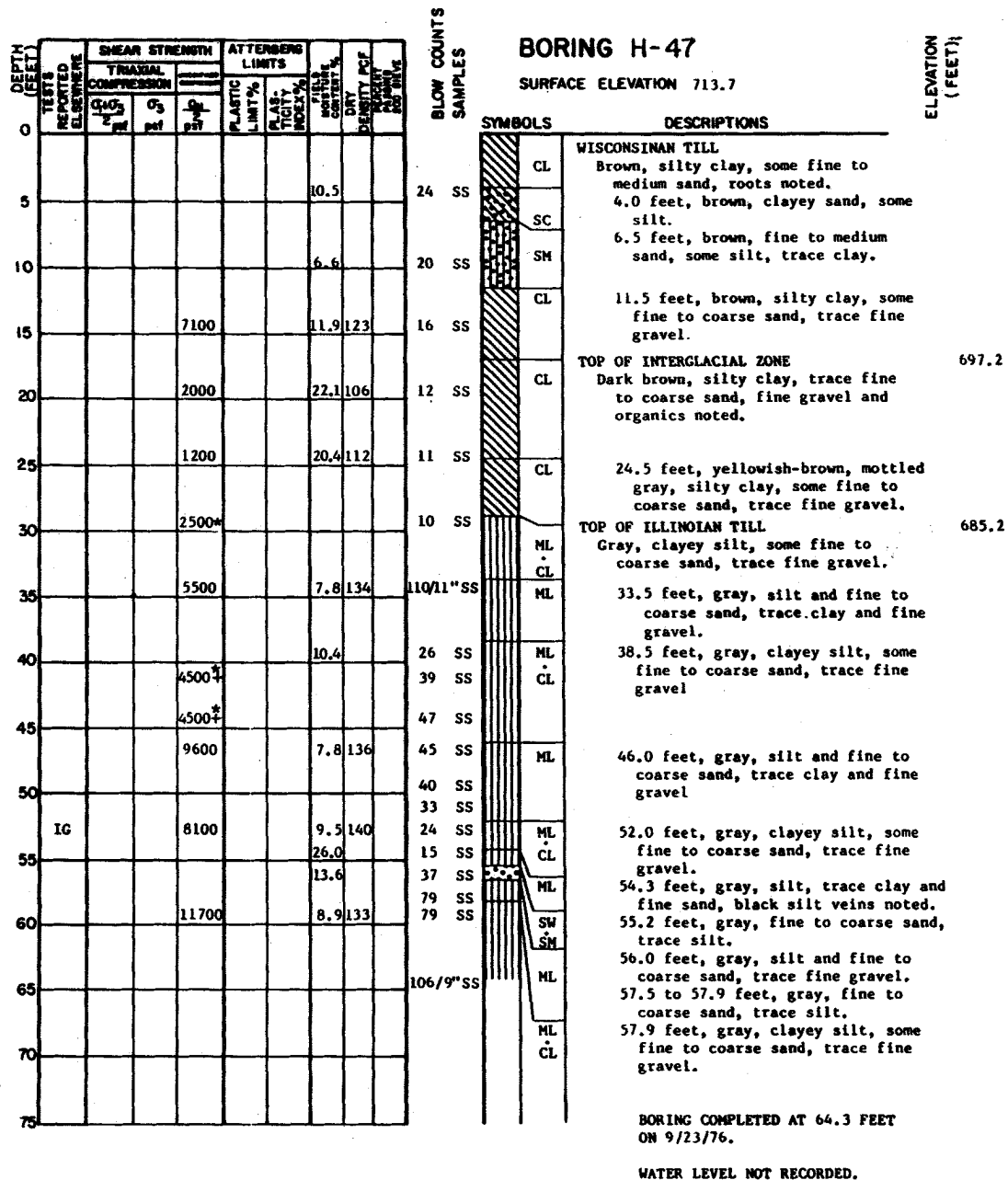
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
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FIGURE 2.5-209

LOG OF BORING H-46



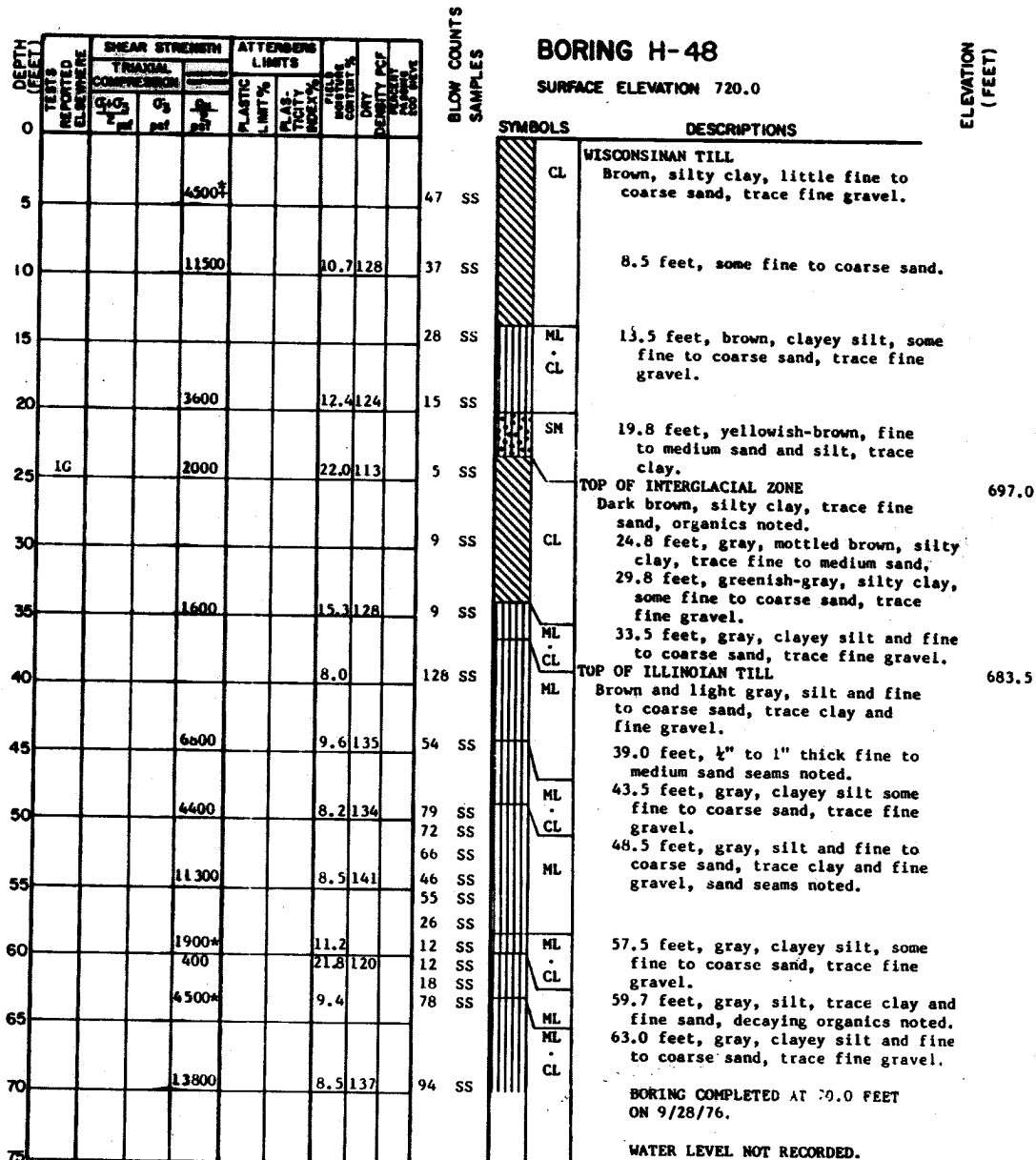
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-210

LOG OF BORING H-47



**BLOW COUNTS
SAMPLES**

SURFACE ELEVATION 716.1

ELEVATION
(FEET)

BORING COMPLETED AT 65.0 FEET
ON 9/27/76.

WATER LEVEL NOT RECORDED.

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

LOG OF BORING H-49

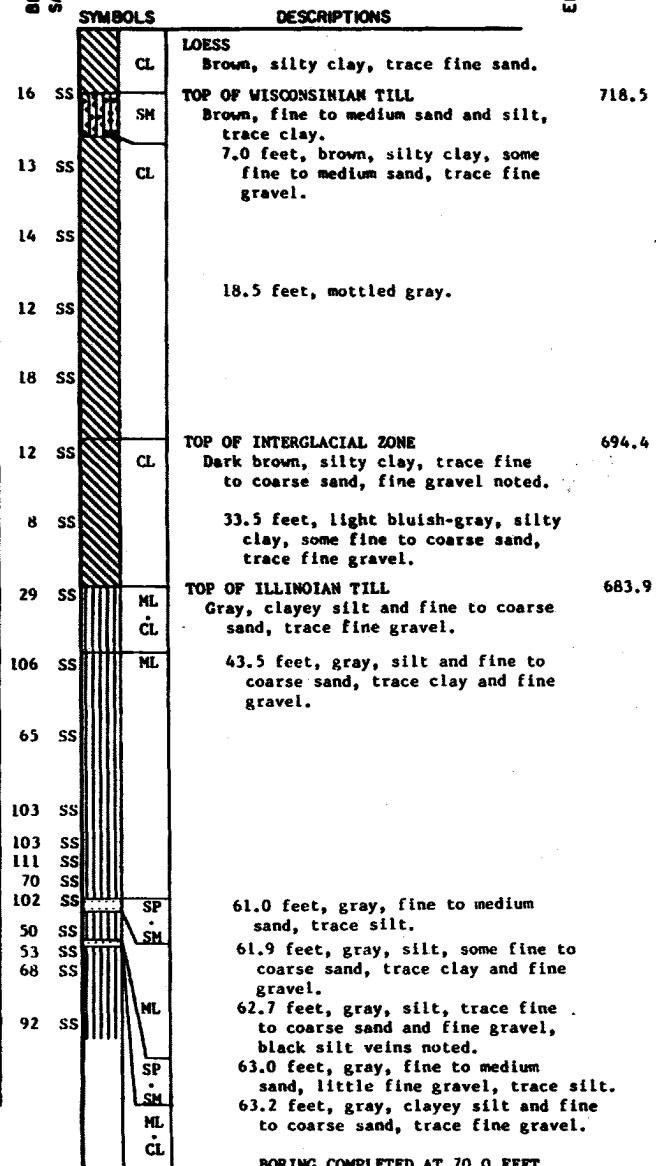
DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENDING LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WET DENSITY PCF	TEST DATE
		TRIAXIAL COMPRESSION			PLASTIC						
		Q+Q _u psi	Q _s psi	P _u psi	PL %	LL %	PI %				
0											
5											
10											
15				2600				14.2	120		
20				3900				15.0	123		
25											
30				3100				20.4	107		
35				2200*							
40				6000				11.0	132		
45				* 4500+							
50				12200				8.4	138		
55				* 4500+							
				4500* 4500*							
60				11300				8.0	142		
								16.9			
								9.9			
65				* 4500+							
70				14900				7.7	140		
75											

BLOW COUNTS
SAMPLES

BORING H-50

SURFACE ELEVATION 722.9

ELEVATION
(FEET)



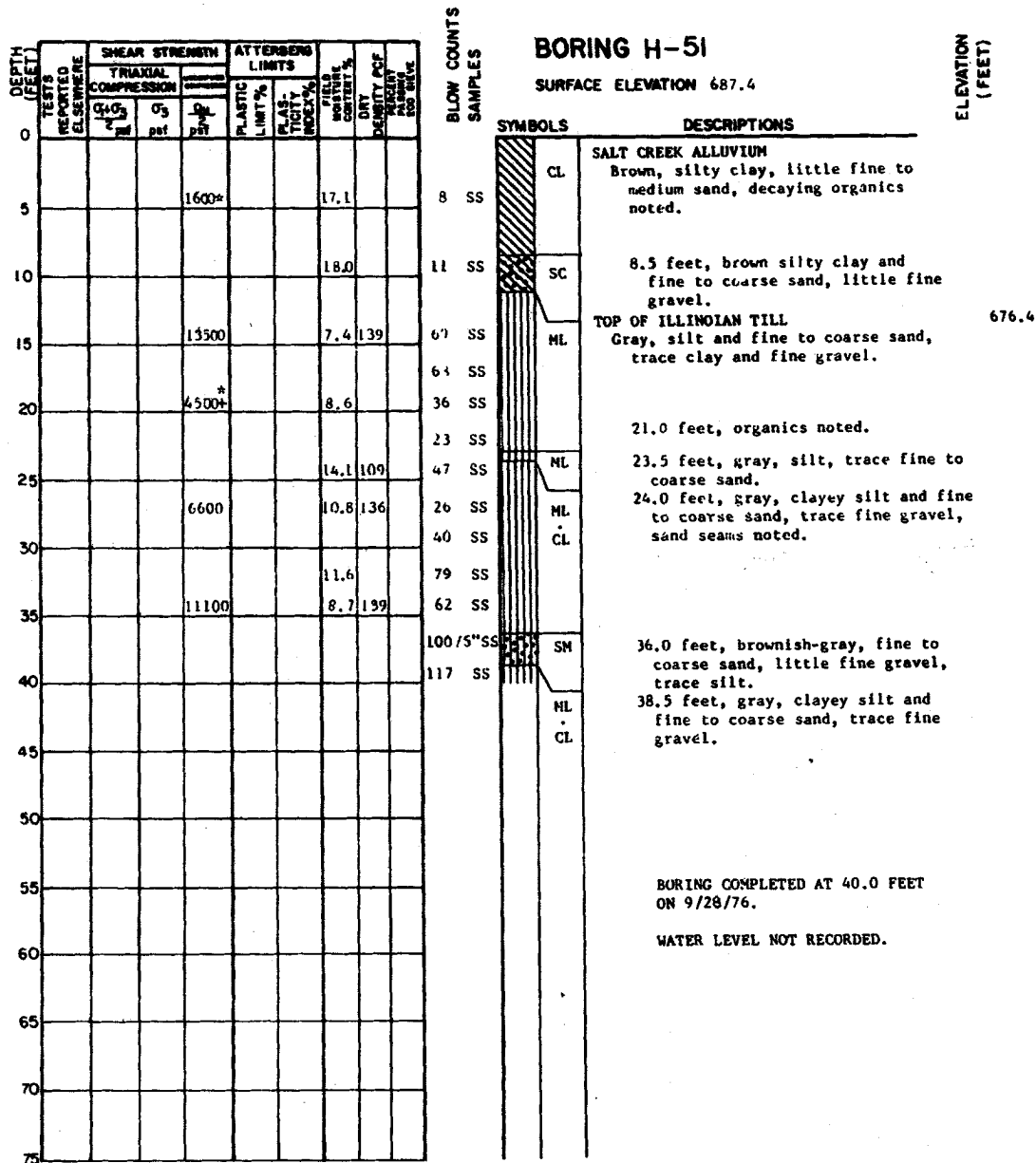
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-213

LOG OF BORING H-50



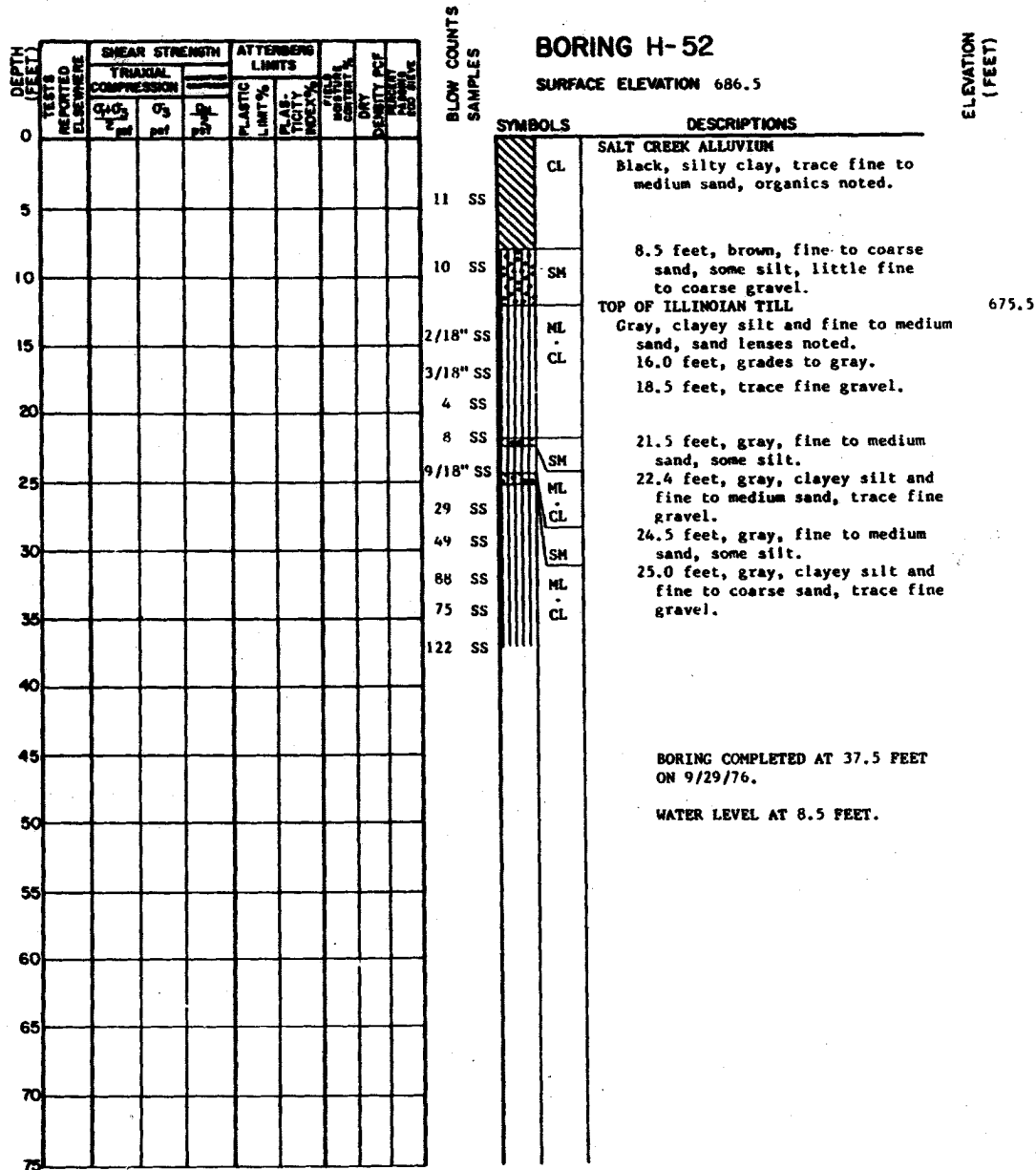
NOTES

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-214

LOG OF BORING H-51



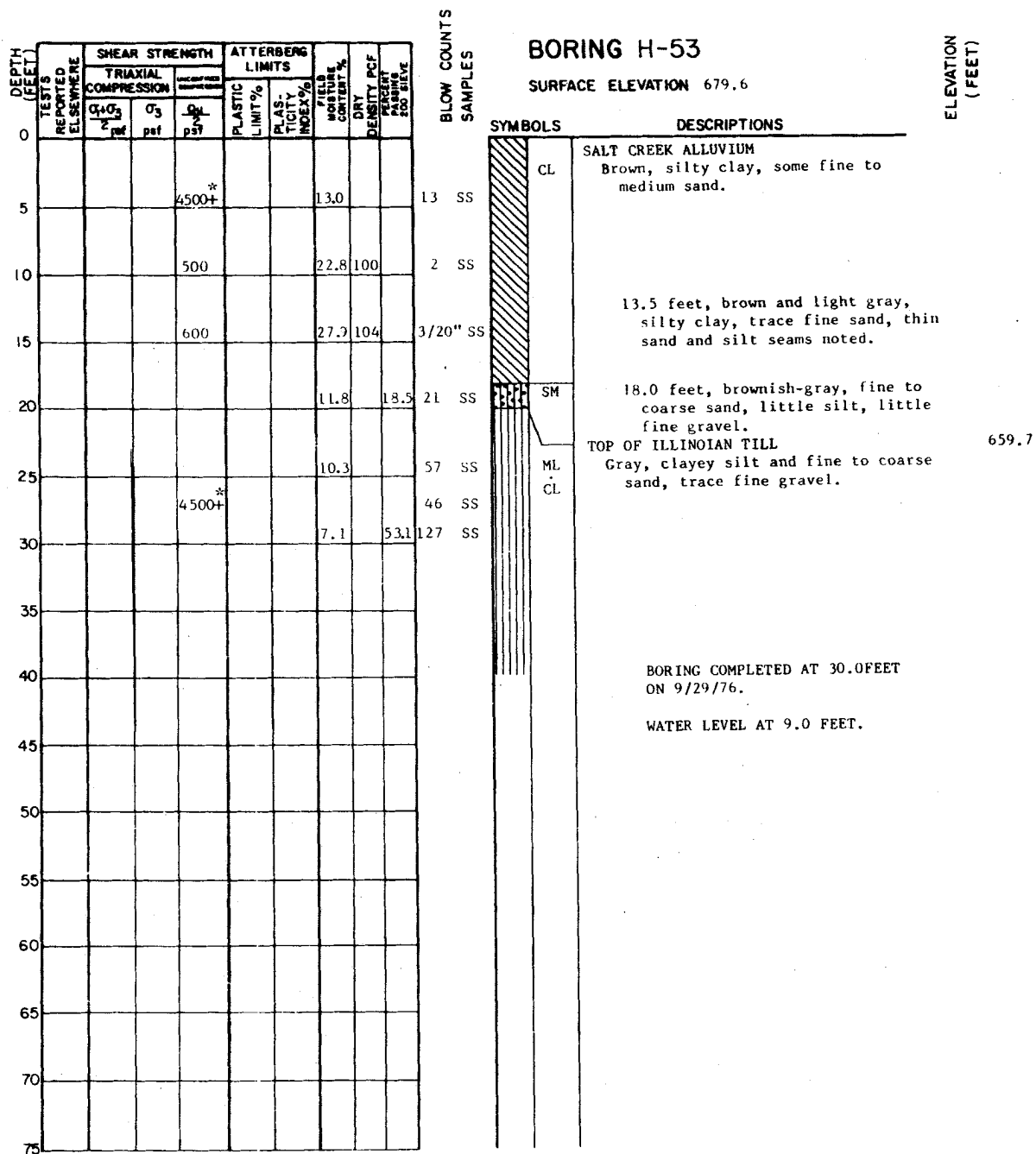
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-215

LOG OF BORING H-52



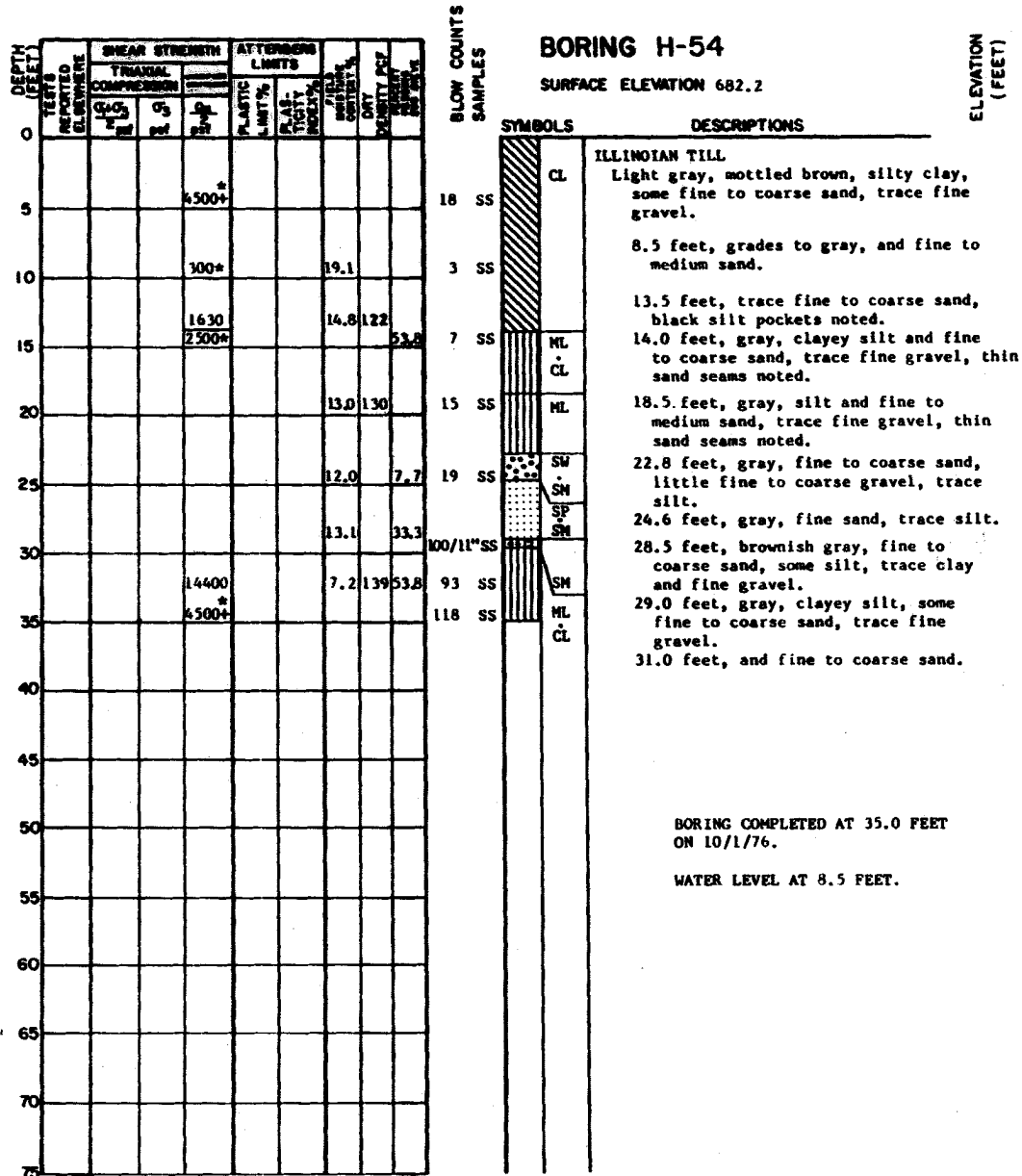
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-216

LOG OF BORING H-53



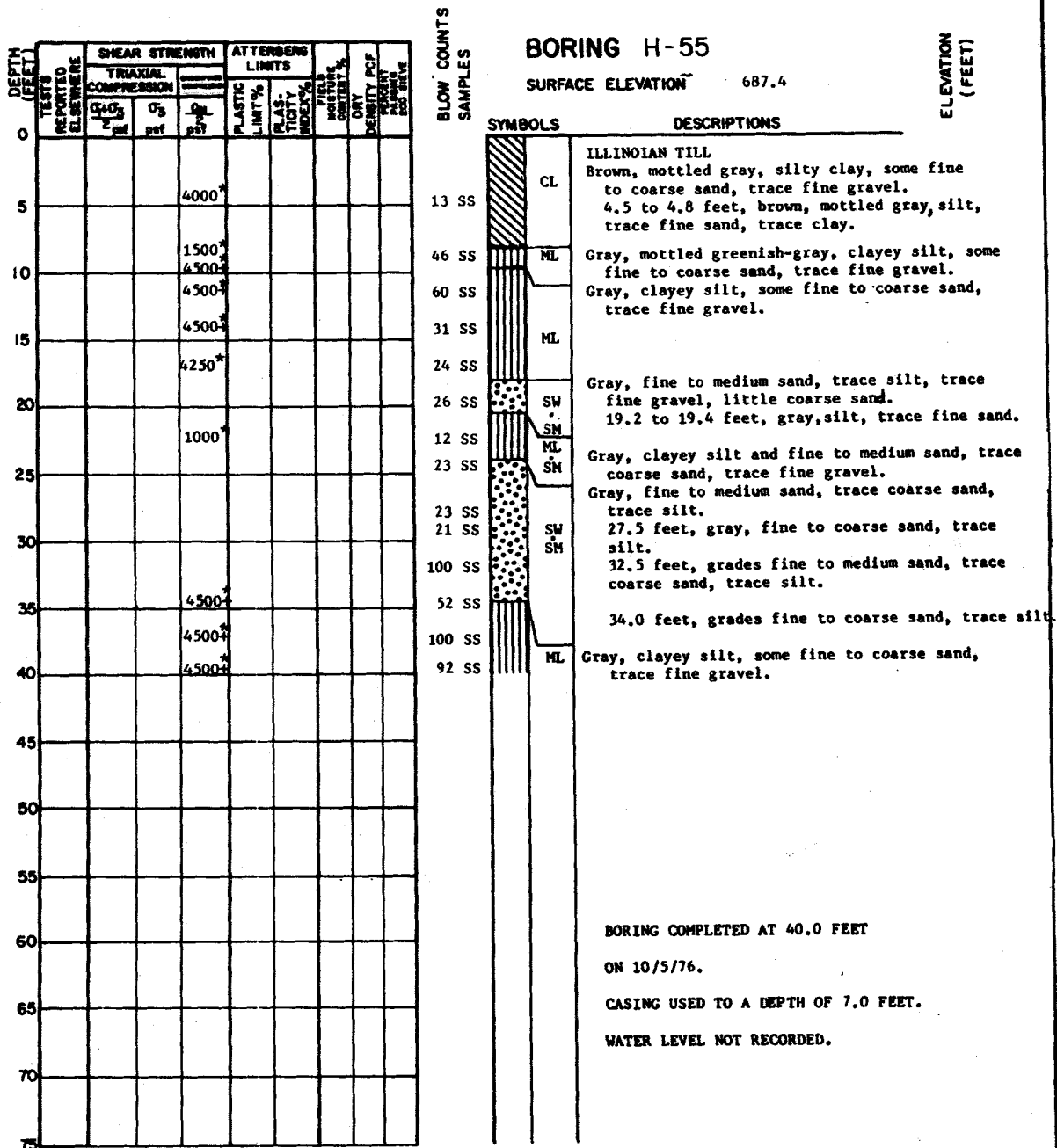
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-217

LOG OF BORING H-54



NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-218

LOG OF BORING H-55

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PLASTIC LIMIT PI	FLUIDITY INDEX %	UNSATURATED DENSITY PCF	WATER CONTENT %
		COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %	FIELD MOISTURE CONTENT %						
		$\sigma_1 + \sigma_3$ psi	σ_3 psi	q_u psi									
0				1000*									
5													
				500*									
10				500*									
				500*									
15				500*									
				3750*									
20				1500*									
				4500*									
				4500*									
25				4500*									
				4500*									
				4500*									
30				4500*									
35													
40													
45													
50													
55													
60													
65													
70													
75													

BLOW COUNTS
SAMPLES

BORING H-56

SURFACE ELEVATION 680.7

ELEVATION
(FEET)

SYMBOLS

DESCRIPTIONS

7 SS	SM	SALT CREEK ALLUVIUM Brown, silty, fine to coarse sand, some clay, trace fine gravel.	676.2
3 SS	ML SM	TOP OF ILLINOIAN TILL Brown, clayey silt and fine to coarse sand, trace fine gravel.	
6 SS	ML SM	Gray, clayey silt and fine to medium sand, silt and sand lenses noted.	
6 SS	SM	9.5 to 9.7 feet, gray, fine to medium sand, some silt.	
25 SS	ML	9.7 to 12.0 feet, gray, silt, some clay, trace fine sand, trace fine gravel.	
27 SS	ML SM	12.0 feet, gray, clayey silt and fine to coarse sand, trace fine gravel.	
36 SS	ML	17.2 feet, gray, silt, trace fine sand, fine gravel and organics noted.	
120 SS	ML SM	Gray, clayey silt and fine to coarse sand, trace fine gravel, coarse gravel noted.	
99 SS	SP	26.0 to 26.6 feet, gray, fine to medium sand, trace silt.	
96 SS	ML SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	

BORING COMPLETED AT 30.0 FEET

ON 10/5/76.

CASING USED TO A DEPTH OF 10.0 FEET.

WATER LEVEL AT 7.0 FEET.

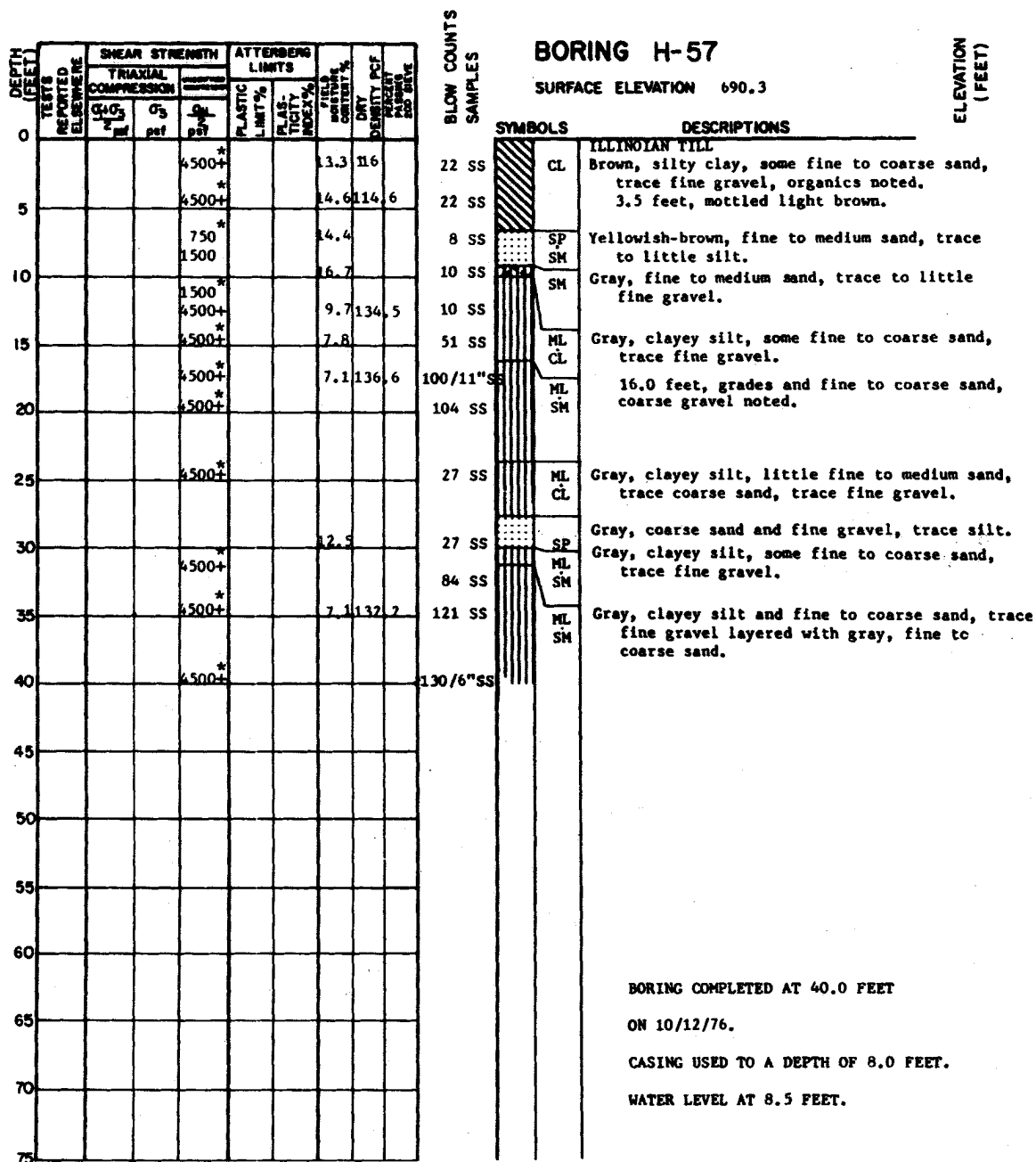
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-219

LOG OF BORING H-56



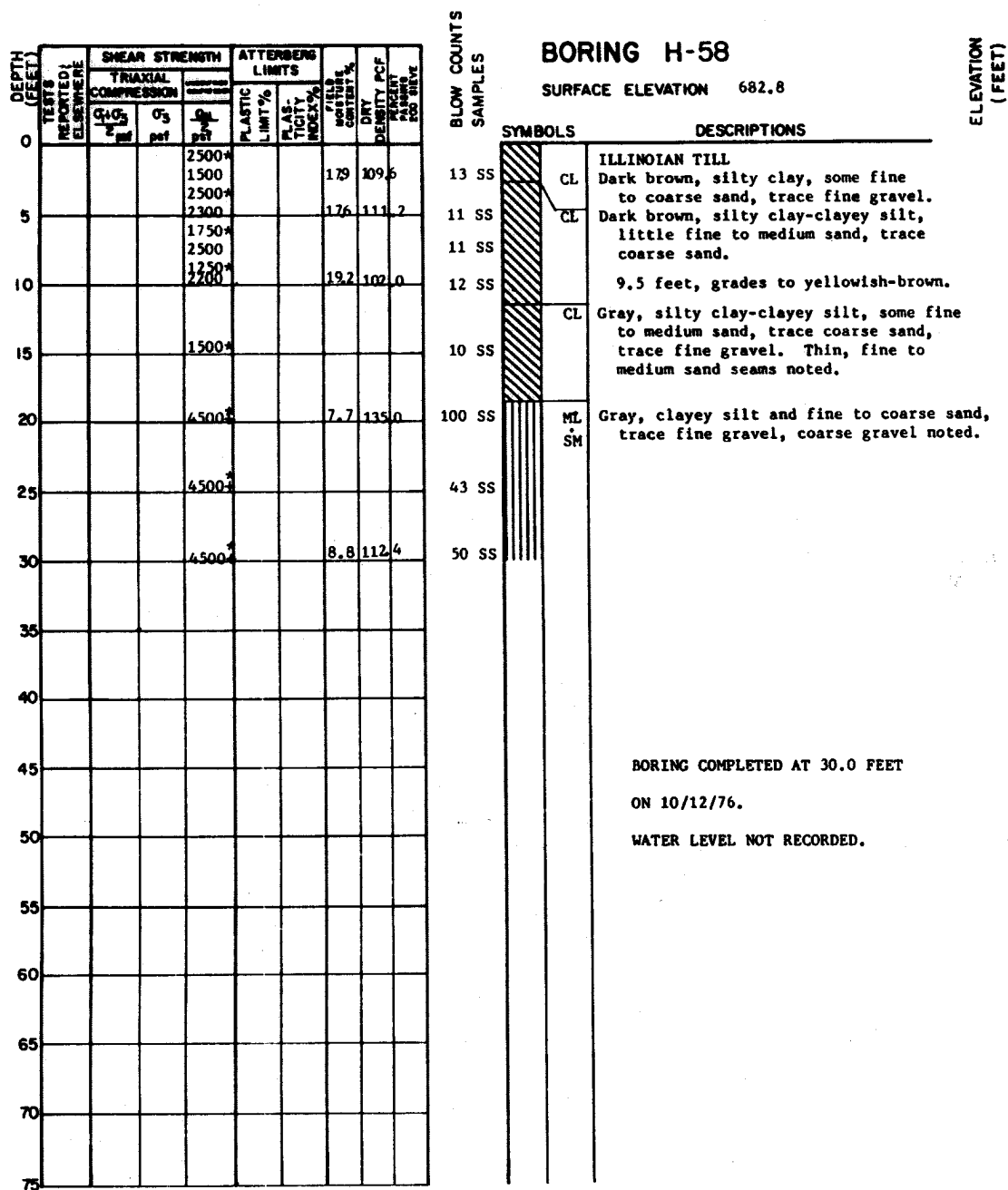
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-220

LOG OF BORING H-57



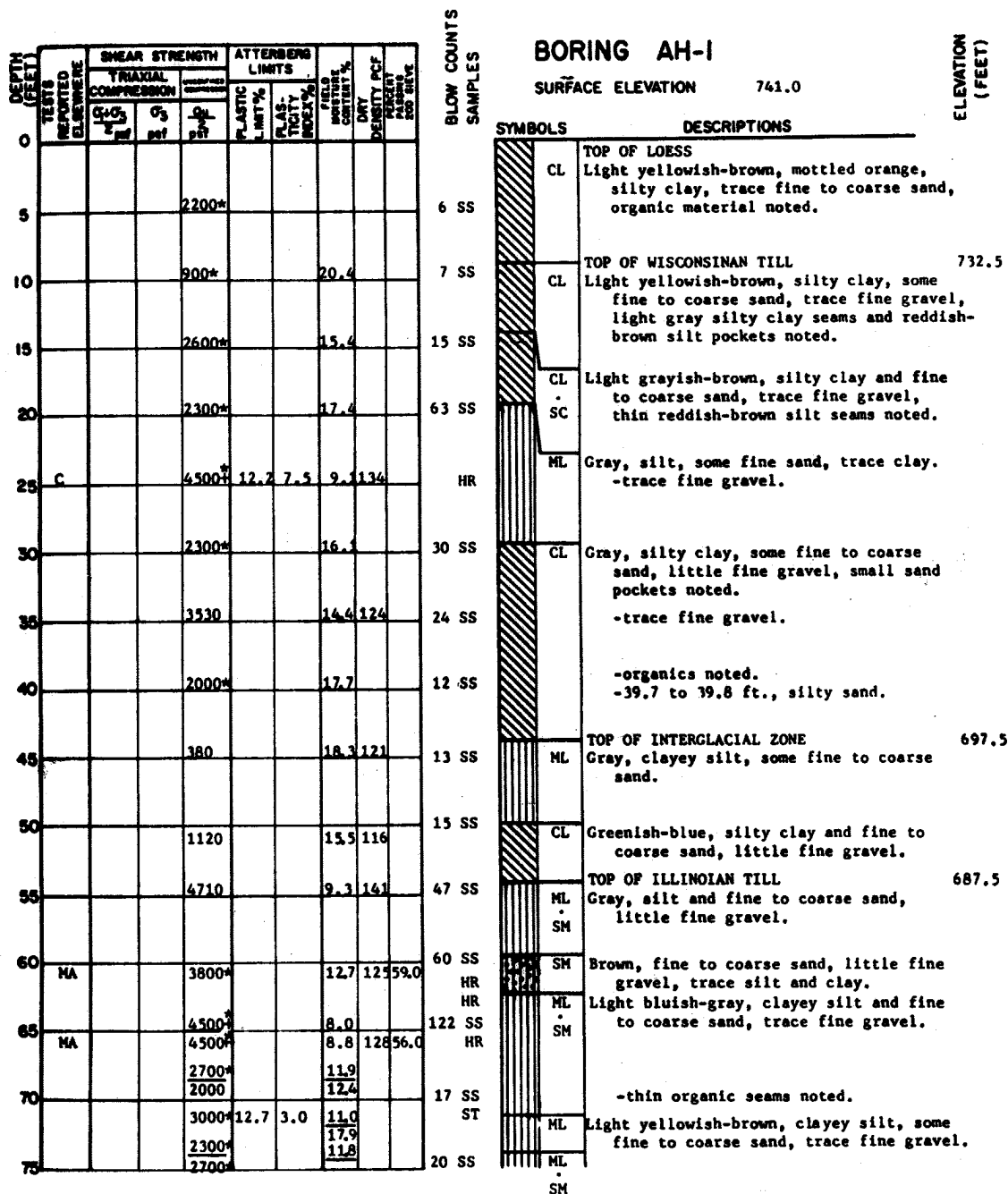
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-221

LOG OF BORING H-58



Boring continued.....

NOTES

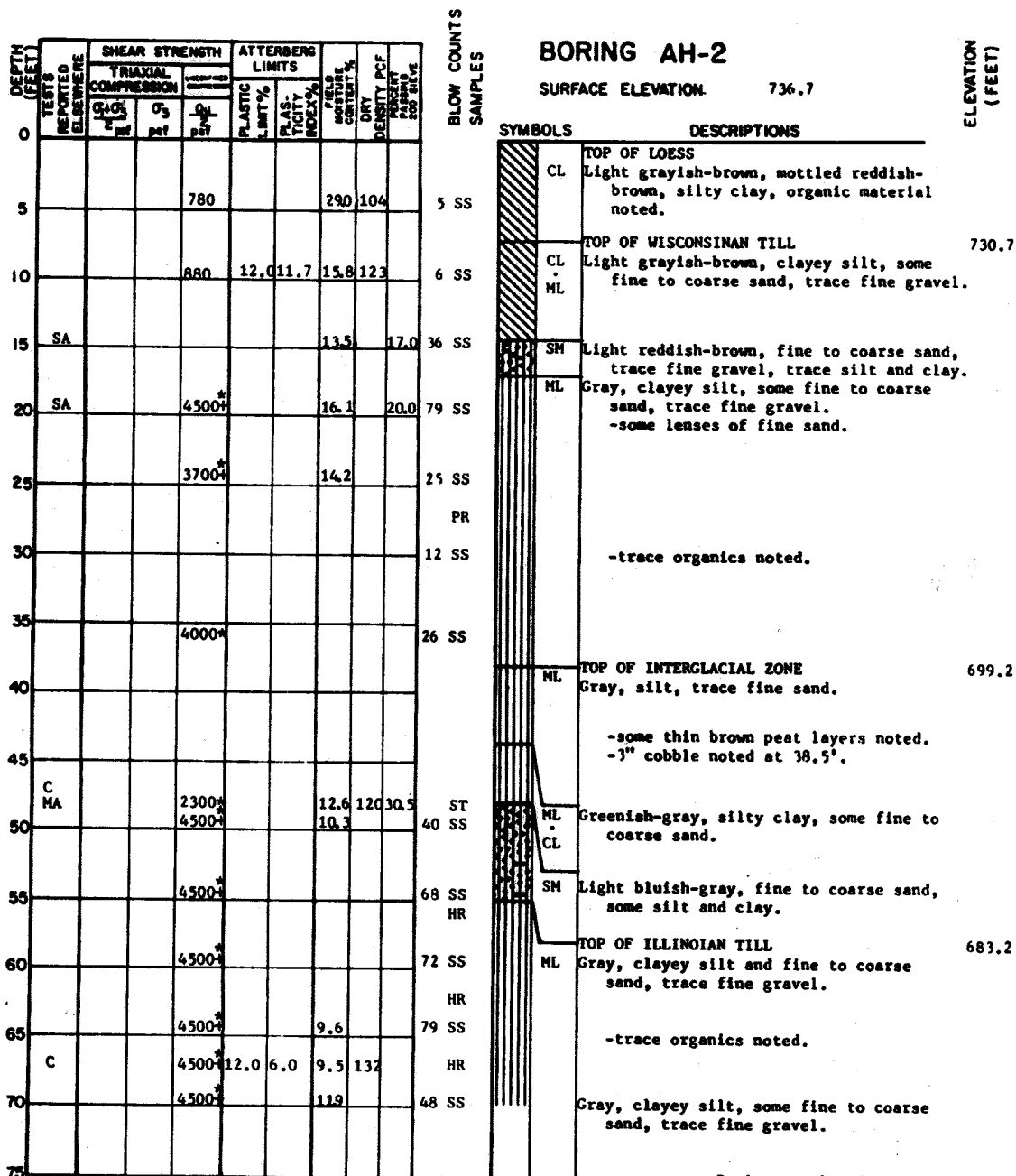
Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-222

LOG OF BORING AH-1
(SHEET 1 of 2)

FIGURE 2.5-222
LOG OF BORING AH-1
(SHEET 2 of 2)



NOTES

Logged by: Sargent & Lundy

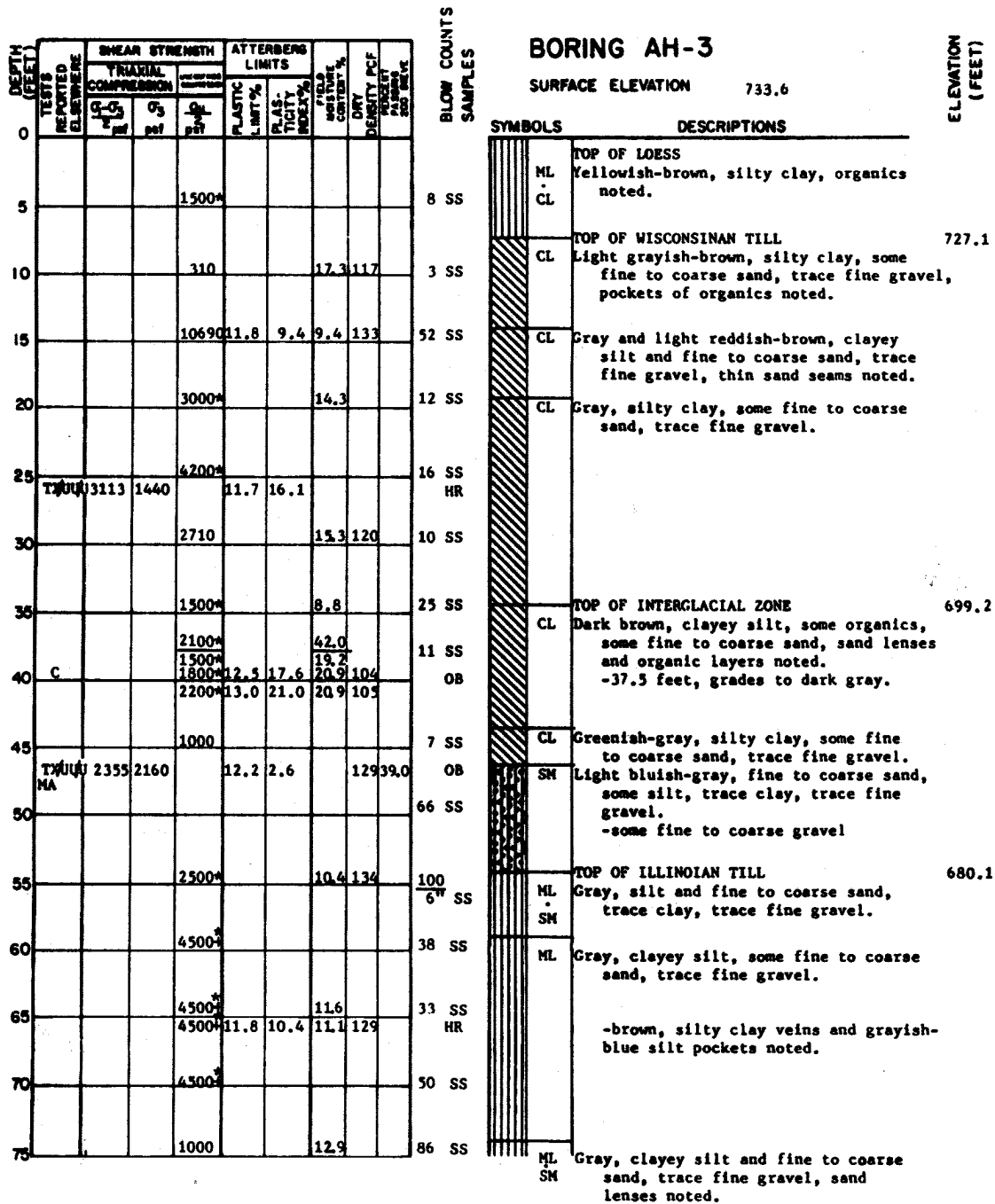
Drilled by: Raymond International

Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-223

LOG OF BORING AH-2



Boring completed at 75.0 feet on 4-4-75.
Water level at 3.0 feet.

NOTES

Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-224

LOG OF BORING AH-3

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENBERG LIMITS			WATER CONTENT %	DRY DENSITY PCF	PERCENT WATER FOR LIQUIDITY
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	FLUIDITY LIMIT %	PLASTICITY INDEX %			
		σ_1	σ_3	σ_1						
		psi	psi	psi						
0										
5	TC	1434	1413	2000*	16.3	32.0		99		
				1000*				26.8		
10	IG			2000*				17.6	114	
				2200*				15.0		
	MA			3200*				17.8	117	1.0
15				1000*				17.7	121	1.0
								14.6		
20										
				1300*	11.2	10.1	9.3	140		
25				2700*						
30				2800*				16.4		
35				1000*				16.8		
40				1370				17.0	117	
				2100*				16.6		
45				1530				17.8	114	
				3200*						
50				2700*						
				1360	10.8	11.4	15.6	120		
				4100*						
55				1000				14.2		
60				6980				8.3	135	
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING AH-4

SURFACE ELEVATION

737.4

ELEVATION
(FEET)

SYMBOLS

DESCRIPTIONS

ST	CL	TOP OF LOESS Light yellowish-brown, mottled gray, silty clay, manganese nodules noted.	
2 SS			
ST	CL	TOP OF WISCONSINAN TILL Light yellowish-brown, silty clay, some fine to coarse sand, trace fine gravel, pockets of organic material and fine sand pockets noted.	731.4
12 SS			
ST			
36 SS	SM	Brown, silty, fine to coarse sand, trace fine gravel, trace clay.	
52 SS	CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
54 SS	ML		
14 SS			
7 SS			
8 SS		-and fine to coarse sand, little fine gravel.	
7 SS			
ST		-little fine to coarse sand, trace fine gravel, silt pockets noted.	
11 SS	ML	TOP OF INTERGLACIAL ZONE Gray, silt, silty clay veins noted.	696.5
	ML	Gray, clayey silt, trace fine sand, trace organic materials.	
12 SS	CL		
ST	SC	Greenish-blue, silty clay and fine to coarse sand, trace fine gravel.	
69 SS	ML	TOP OF ILLINOIAN TILL Light bluish-gray, silty clay and fine to coarse sand, trace fine gravel.	683.9
	SM	-54.4 to 54.8 feet, lenses of fine to medium sand, little silt, little fine gravel, trace clay.	
100 SS		Gray, silty clay, some fine to coarse sand, trace fine gravel.	
6"	ML		

Boring completed at 59.0 feet
on 3-19-75.
Water level at 5.0 feet.

NOTES

Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-225

LOG OF BORING AH-4

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER CONTENT PCF
		TRIAXIAL COMPRESSION			PLASTIC					
		σ_1 psi	σ_3 psi	σ_d psi	LIMIT %	PLAS- TICITY INDEX %				
		σ_1 psi	σ_3 psi	σ_d psi						
0										
5				2300*				25.5	90	
10	TCUPP1229	1413	700		15.5	30.8	32.2	29.2		
15	IG			1500				16.3		
20				3500				12.6	128	
25				4500*				12.3		
30				4500*						
35				4200*				14.8		
40				7300	11.1	16.7	12.1	126		
45				3000*				14.2		
50				1320				53.4	58	
55				2200				17.3		
60				2000*				11.1		
65				4000*				10.7		
70				3750				11.3		
75										

BLOW COUNTS
SAMPLES

BORING AH-5

SURFACE ELEVATION 730.8

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
CL	TOP OF LOESS		
ST	Black, mottled yellowish-brown, silty clay, trace fine sand, decaying organic material noted.		
CL	TOP OF WISCONSINAN TILL		724.3
5 SS	Brown, silty clay, some fine to coarse sand, trace fine gravel, pockets of organic material noted.		
22 SS	Gray, clayey silt and fine to medium sand, trace fine gravel, .025 foot thick sand lenses noted.		
27 SS	Gray, clayey silt, some fine to coarse sand, trace fine gravel.		
20 SS	-little fine to coarse sand.		
32 SS			
16 SS			
23 SS	TOP OF INTERGLACIAL ZONE		692.8
12 SS	Brownish-black, organic clayey silt.		
14 SS	Gray, silty clay, some fine to coarse sand, trace fine gravel.		
13 SS	Light bluish-gray, fine to coarse sand, some fine gravel, some silt and clay.		
46 SS	TOP OF ILLINOIAN TILL		676.3
	Gray, clayey silt, some fine to coarse sand, trace fine gravel.		
	Boring completed at 60.0 feet on 3-19-75.		
	Water level at 4.0 feet.		

NOTES

Logged by: Sargent & Lundy

Drilled by: Raymond International

Tested by: Westenhoff & Novick

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-226

LOG OF BORING AH-5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS--			MOISTURE CONTENT %	DRY DENSITY PCF	WATER CONTENT PCF	WATER CONTENT PCF
		COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %	FLUIDITY INDEX %				
		C _u -C _s 2 psi	C _s psi	Q _u 2 psi							
0											
5				500*				20.5			
10											
15				1000*				22.0			
20				7580				9.9	136		
25	NA			4000*	12.2	13.8	11.9	121	720		
30				4400*				13.9			
35				3050				14.5	120		
40				3200*	12.1	13.6	14.5				
45											
50				4300*				13.3			
55				3460				15.3	116		
60				4500*				14.5			
65				970				11.5	135		
70											
75											

NOTES

Logged by: Sargent & Lundy

Drilled by: Raymond International

Tested by: Westenhoff & Novick

BORING AH-6

SURFACE ELEVATION

737.9

ELEVATION
(FEET)

BLOW COUNTS
SAMPLES

SYMBOLS

DESCRIPTIONS

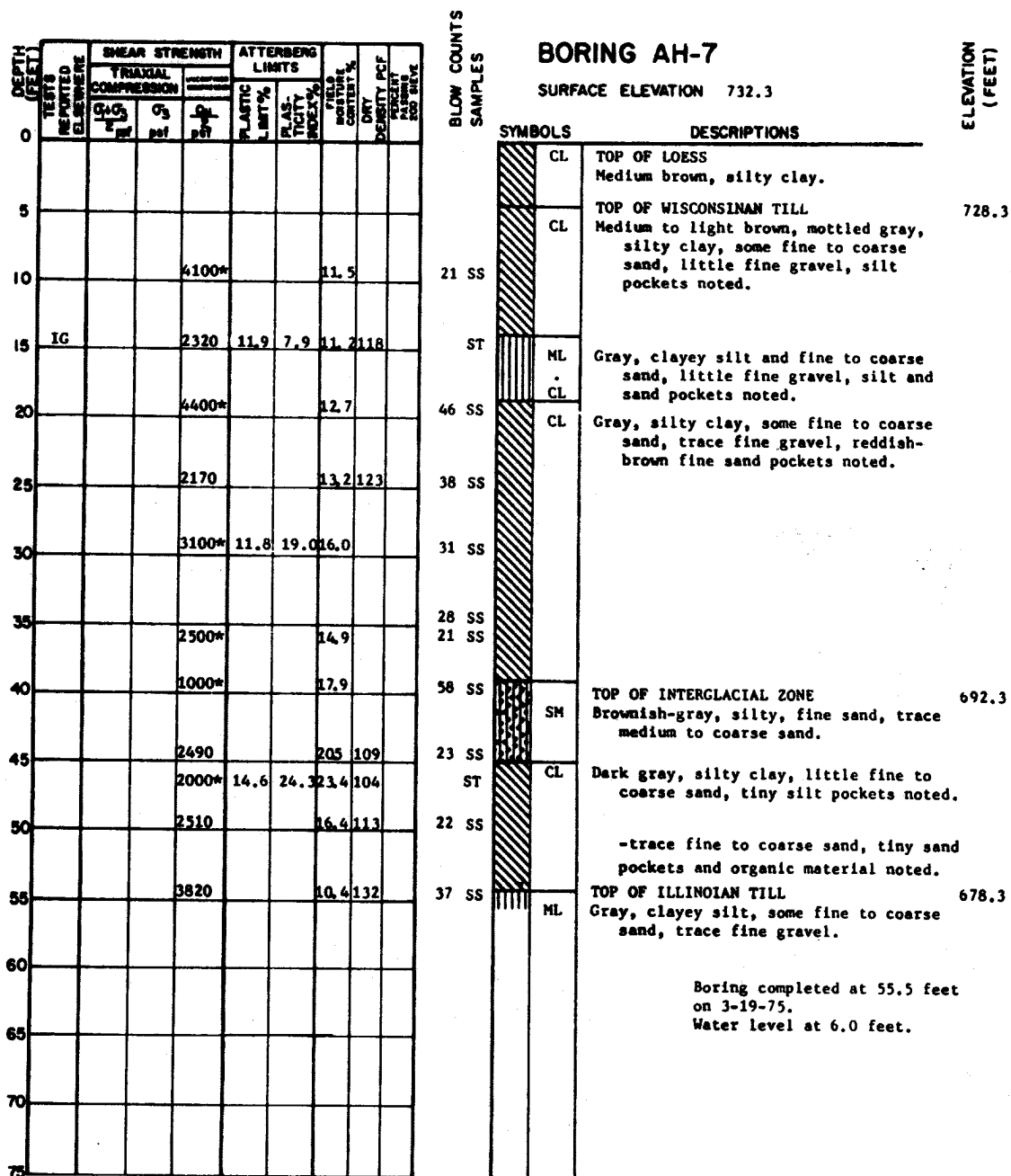
3 SS	CL	TOP OF LOESS Brown, silty clay, trace fine to coarse sand, pockets of fine sand and organic material noted.
24 SS	SP SM	TOP OF WISCONSINAN TILL 731.4 Light reddish-brown, fine to medium sand, trace silt, trace fine gravel.
46 SS		
44 SS	CL ML	Gray, clayey silt and fine to coarse sand, trace fine gravel.
30 SS		
ST		-some fine to coarse sand, black silty clay seams noted.
24 SS		
19 SS		
16 SS		-pockets of black organic material noted.
11 SS		
40 SS		
24 SS	CL	TOP OF INTERGLACIAL ZONE 685.4 Greenish-gray, clayey silt, some fine to coarse sand, trace fine gravel, thin seams of black organic material noted.
43 SS	ML SM	Gray, silt and fine sand, trace clay, trace fine gravel.
51 SS	ML	TOP OF ILLINOIAN TILL 675.4 Gray, silt, some clay, some fine to coarse sand, trace fine gravel.

Boring completed at 64.0 feet
on 3-18-75.
Water level 8.5 feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-227

LOG OF BORING AH-6



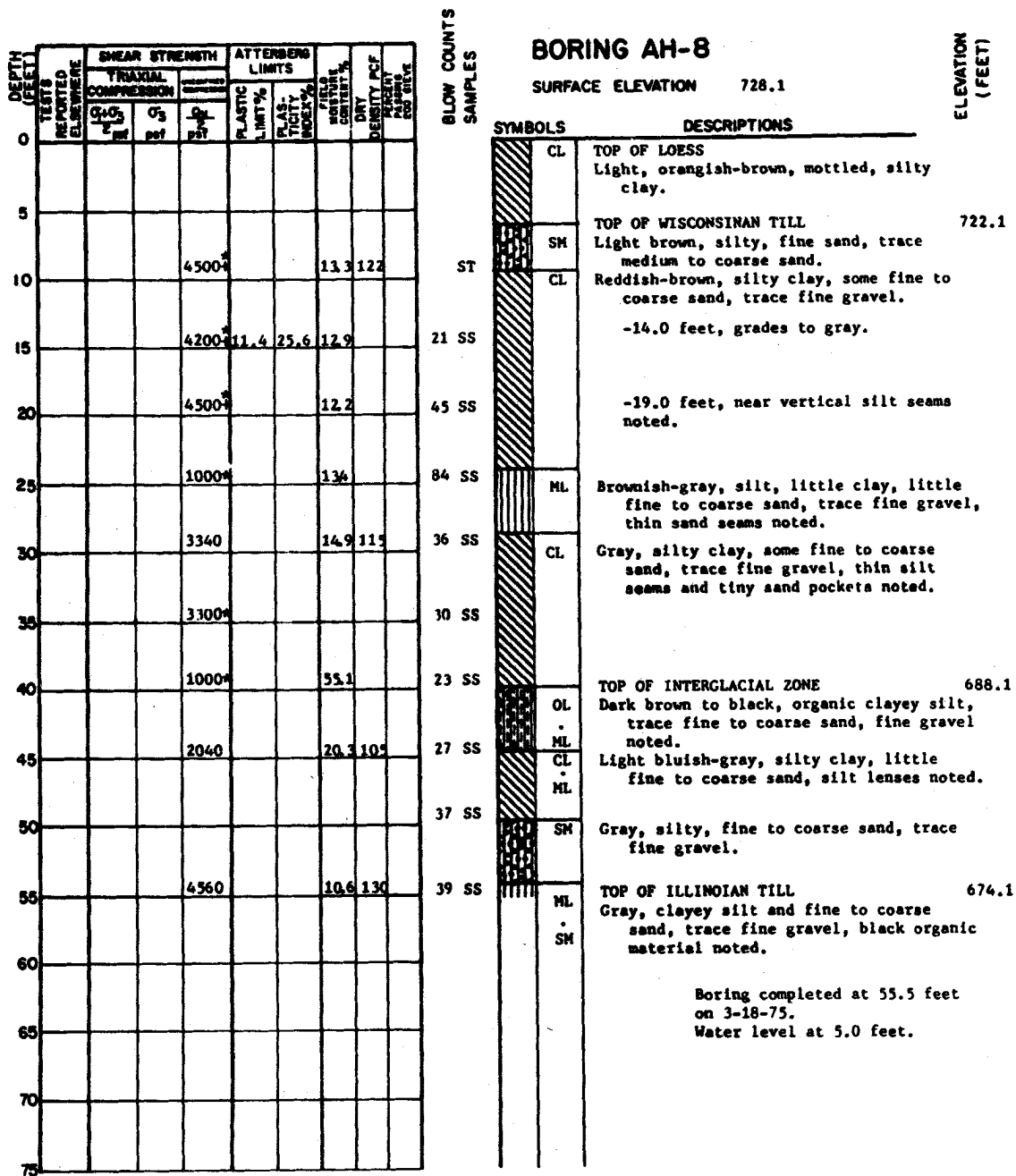
NOTES

Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-228

LOG OF BORING AH-7



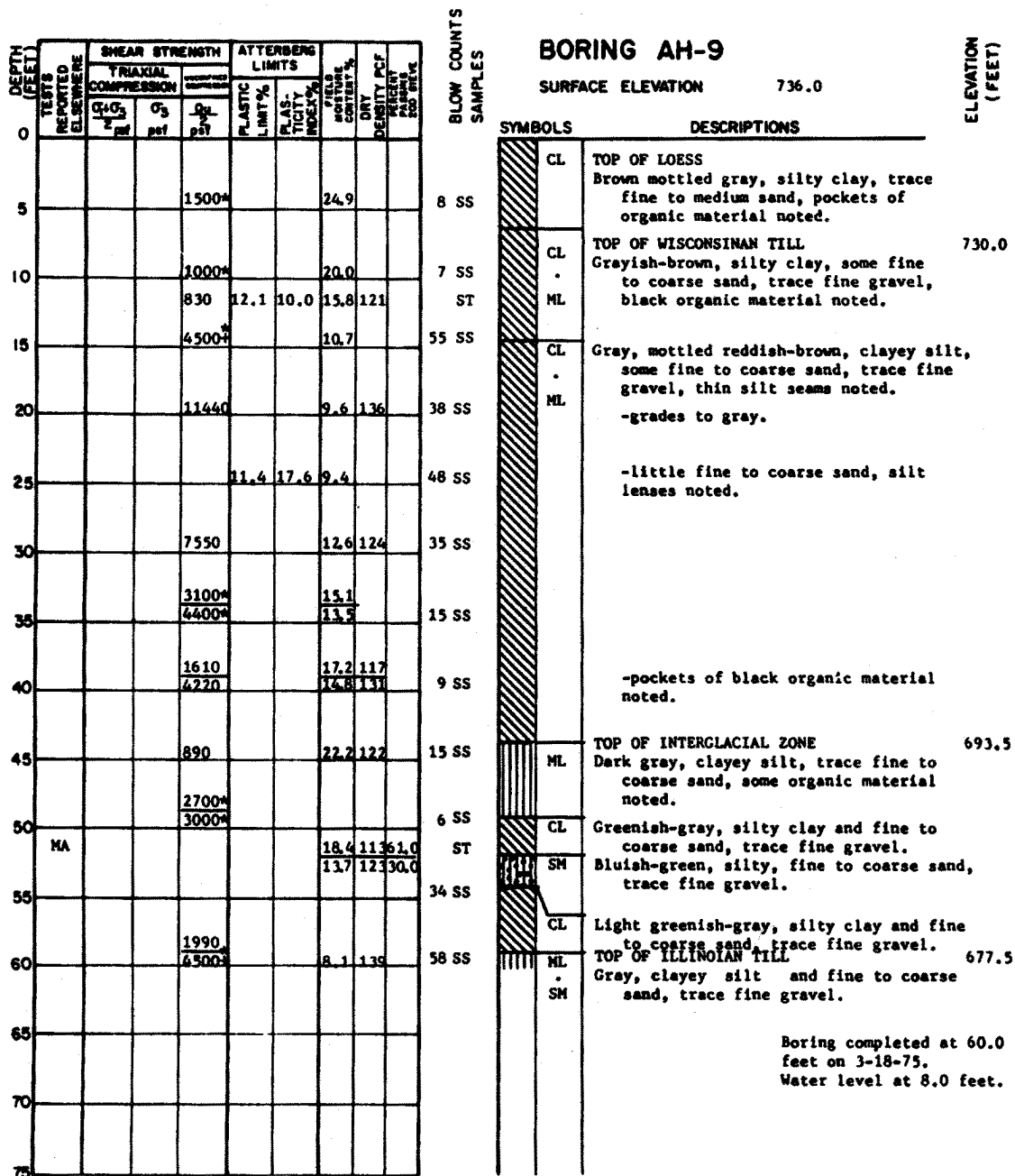
NOTES

Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-229

LOG OF BORING AH-8



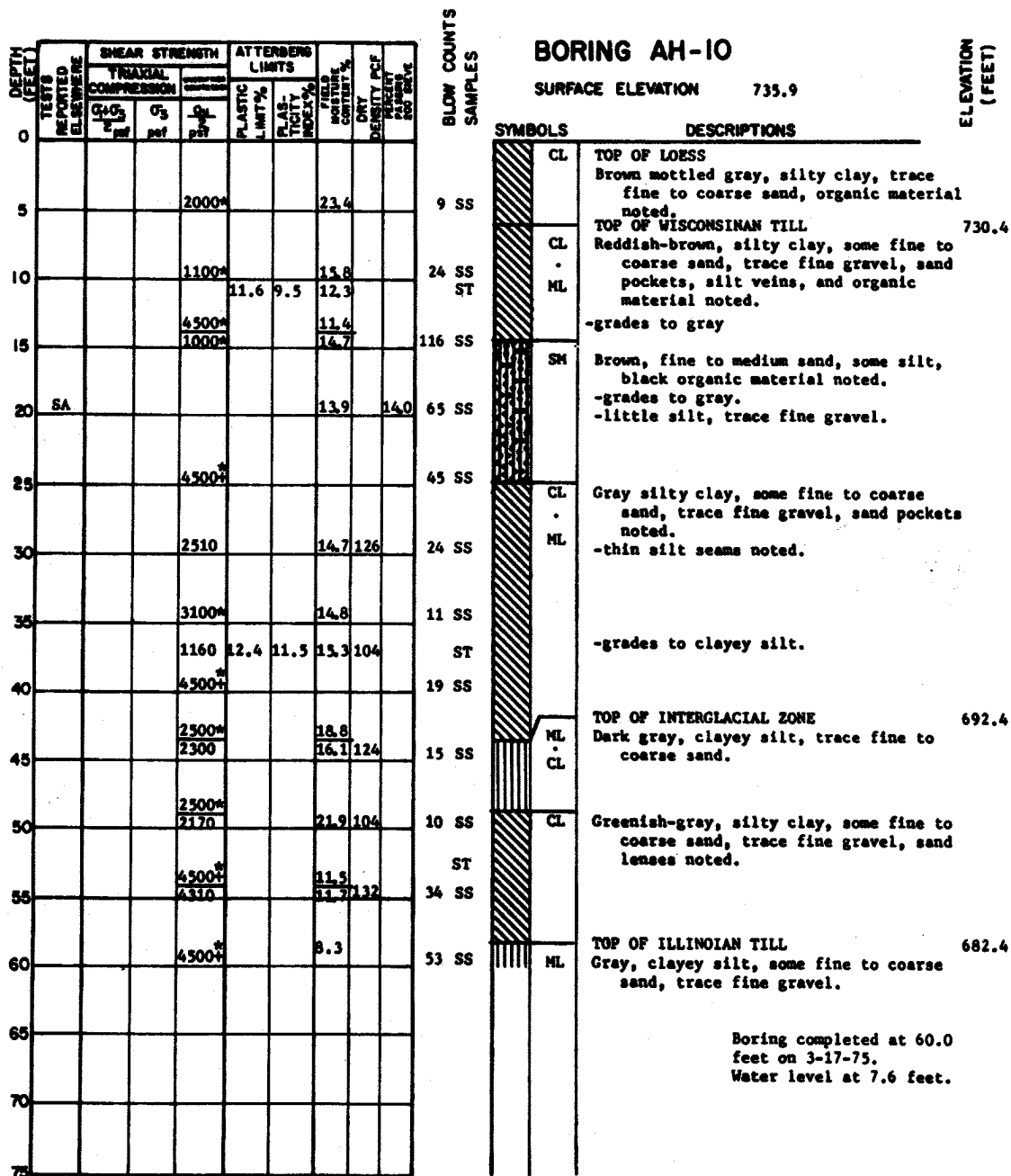
NOTES

Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-230

LOG OF BORING AH-9



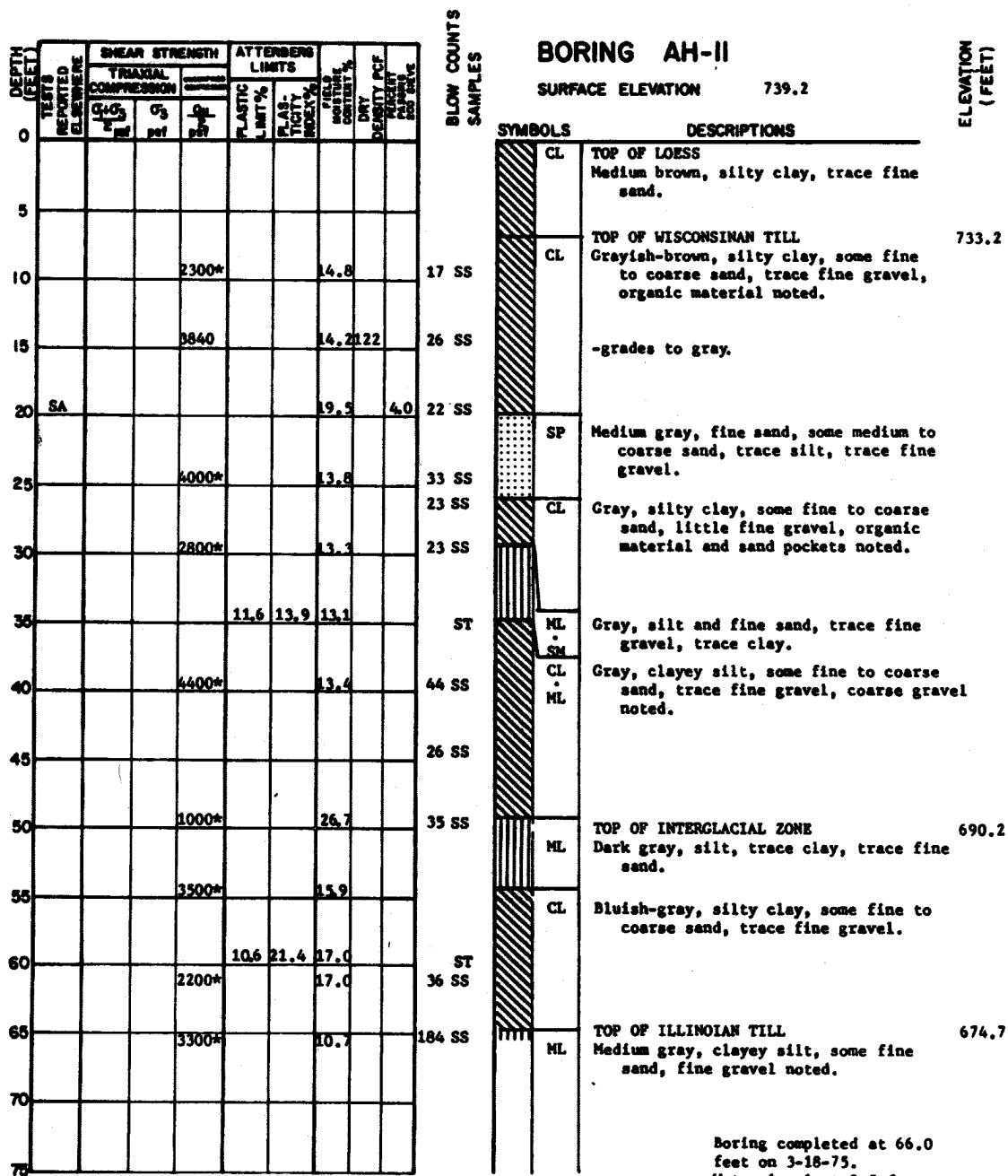
NOTES

Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-231

LOG OF BORING AH-10



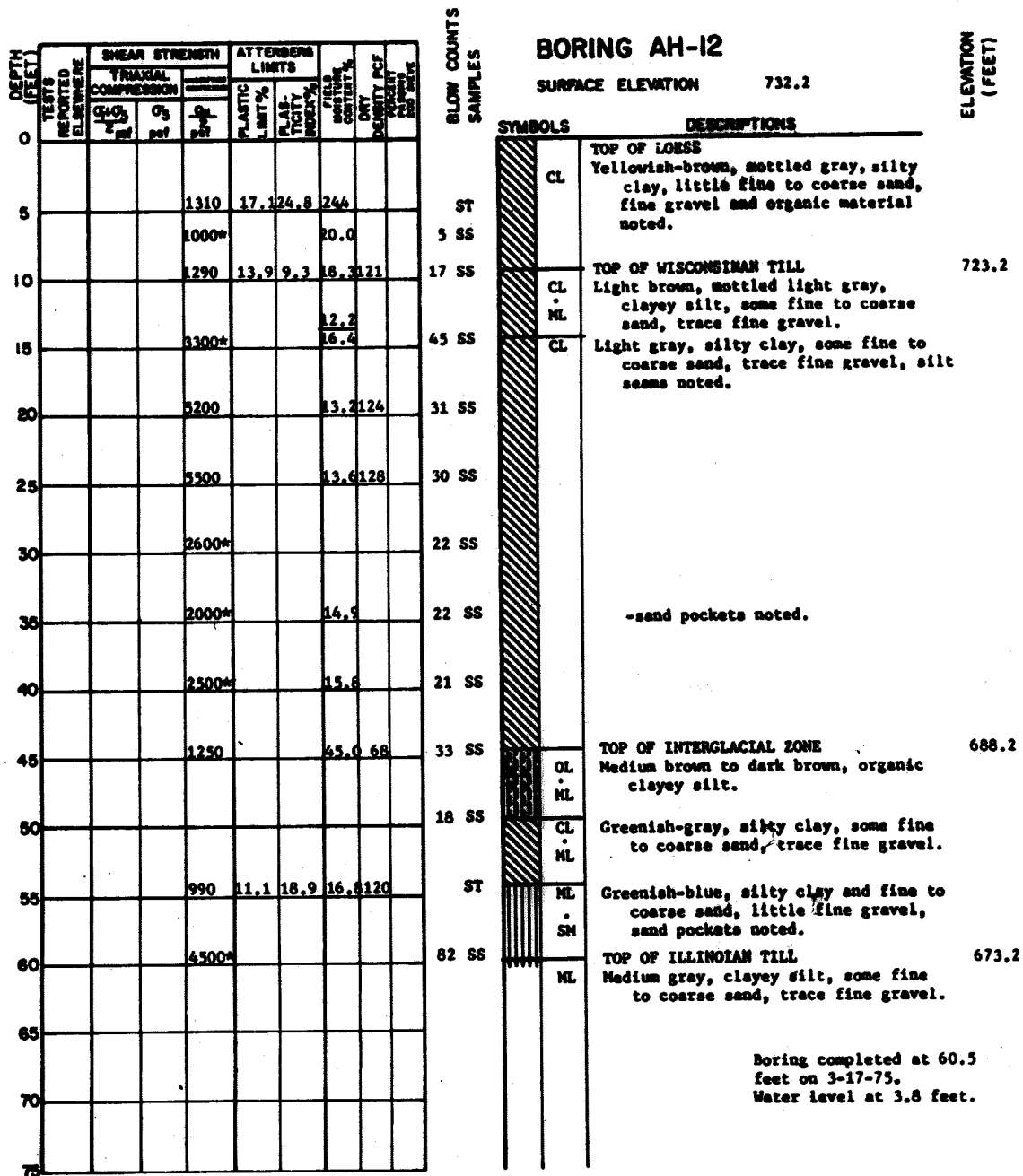
NOTES

Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-232

LOG OF BORING AH-11



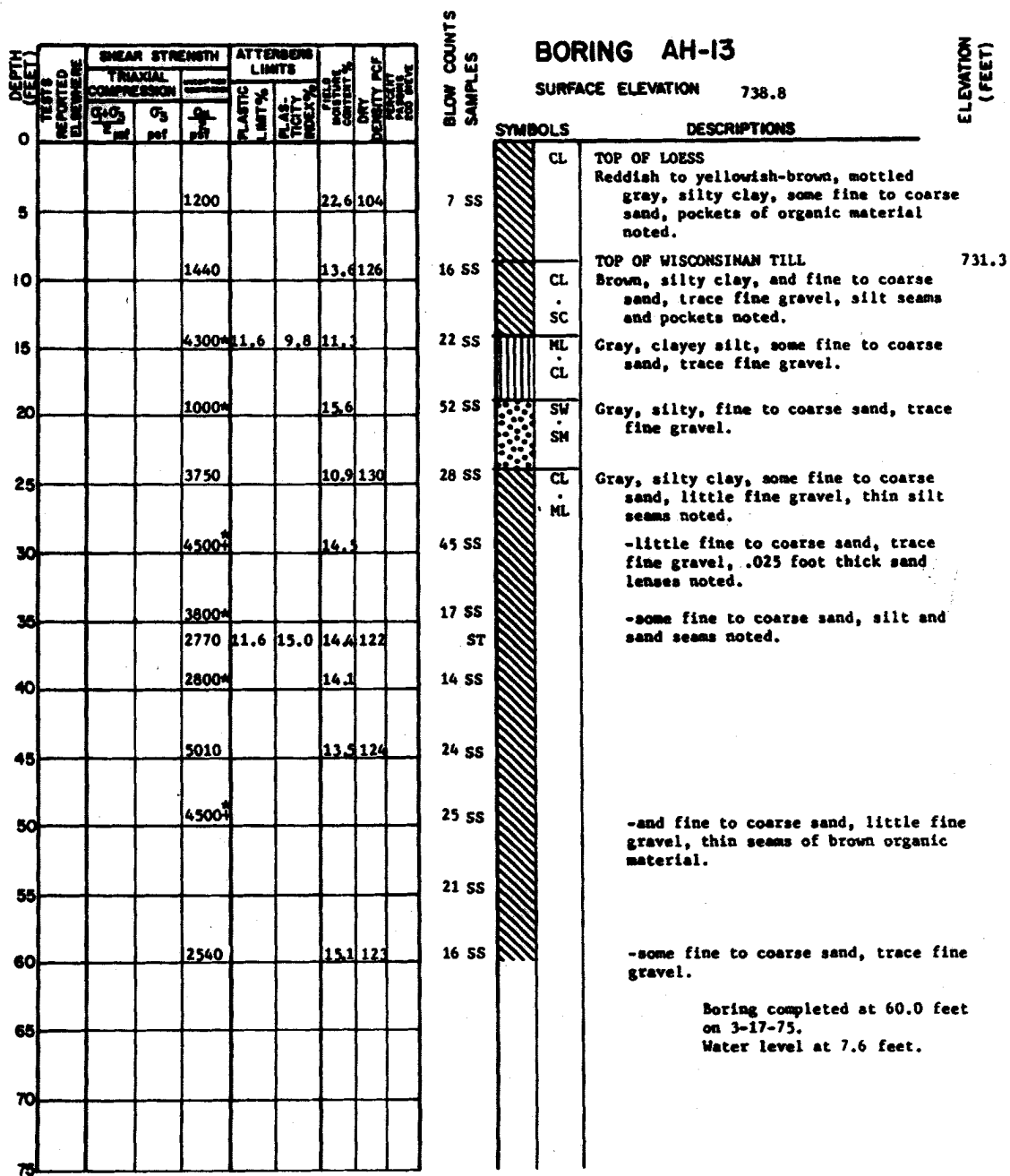
NOTES

Logged by: Sargent & Lundy
 Drilled by: Raymond International
 Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-233

LOG OF BORING AH-12



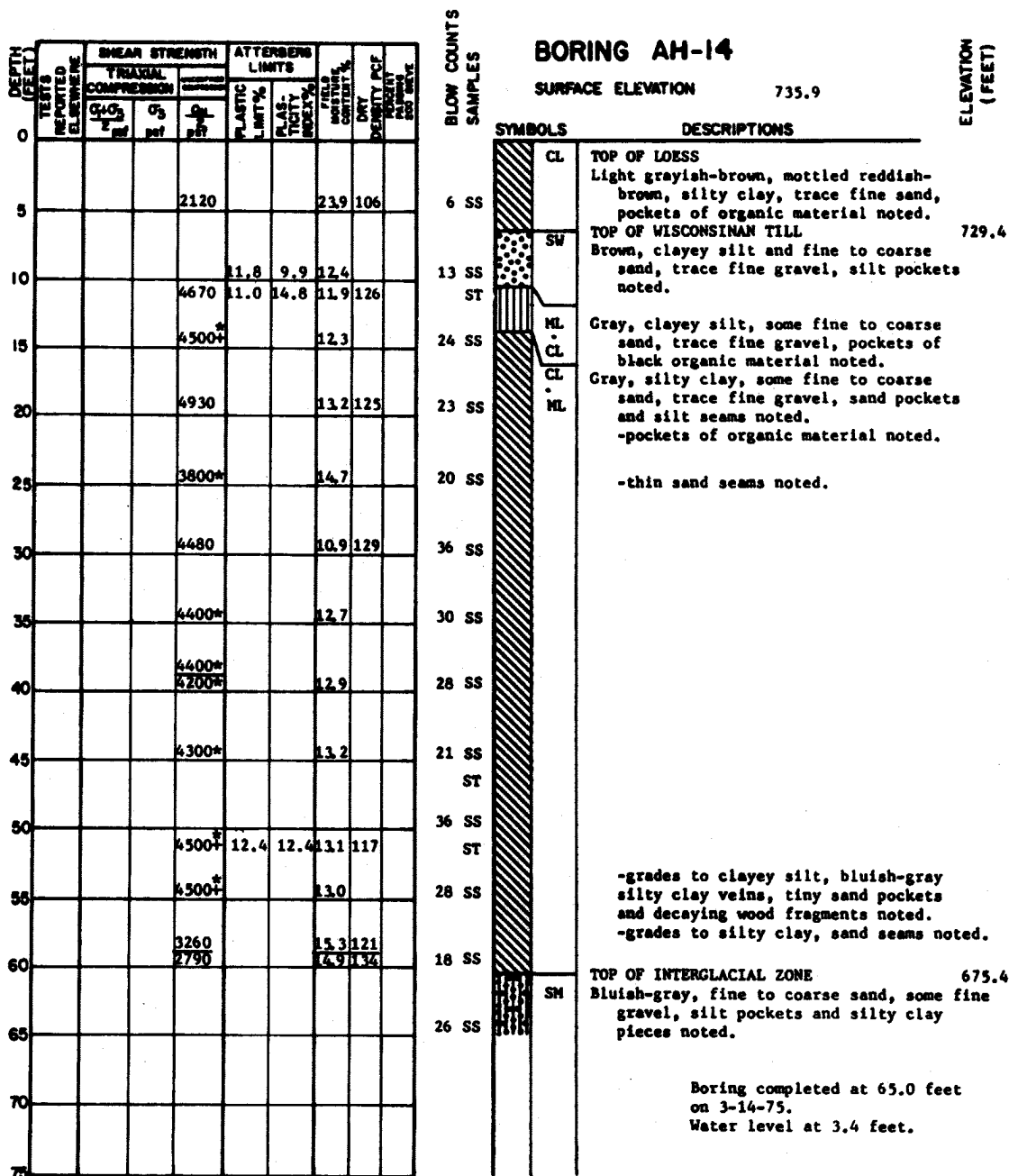
NOTES

Logged by: Sargent & Lundy
 Drilled by: Raymond International
 Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-234

LOG OF BORING AH-13



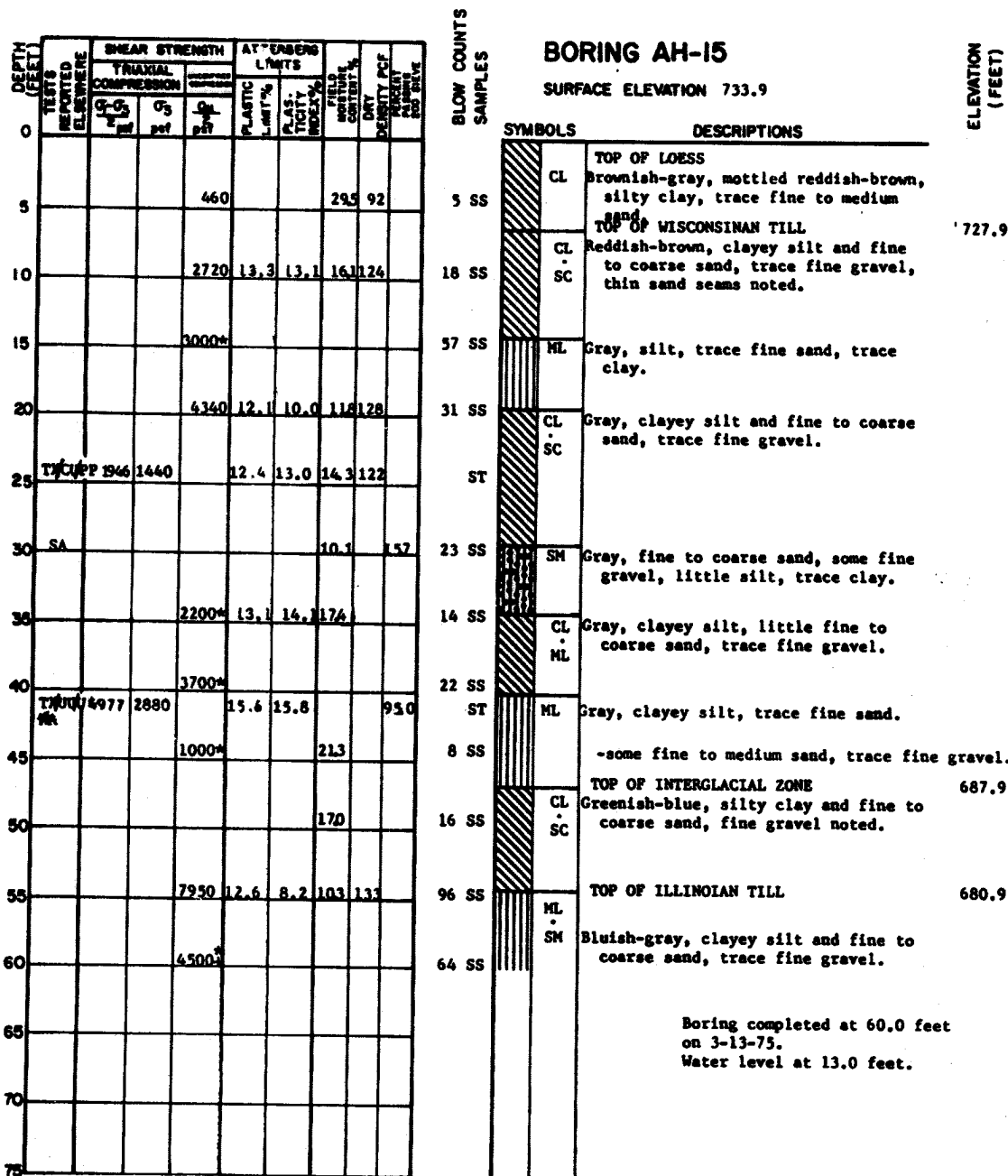
NOTES

Logged by: Sargent & Lundy
Drilled by: Raymond International
Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-235

LOG OF BORING AH-14



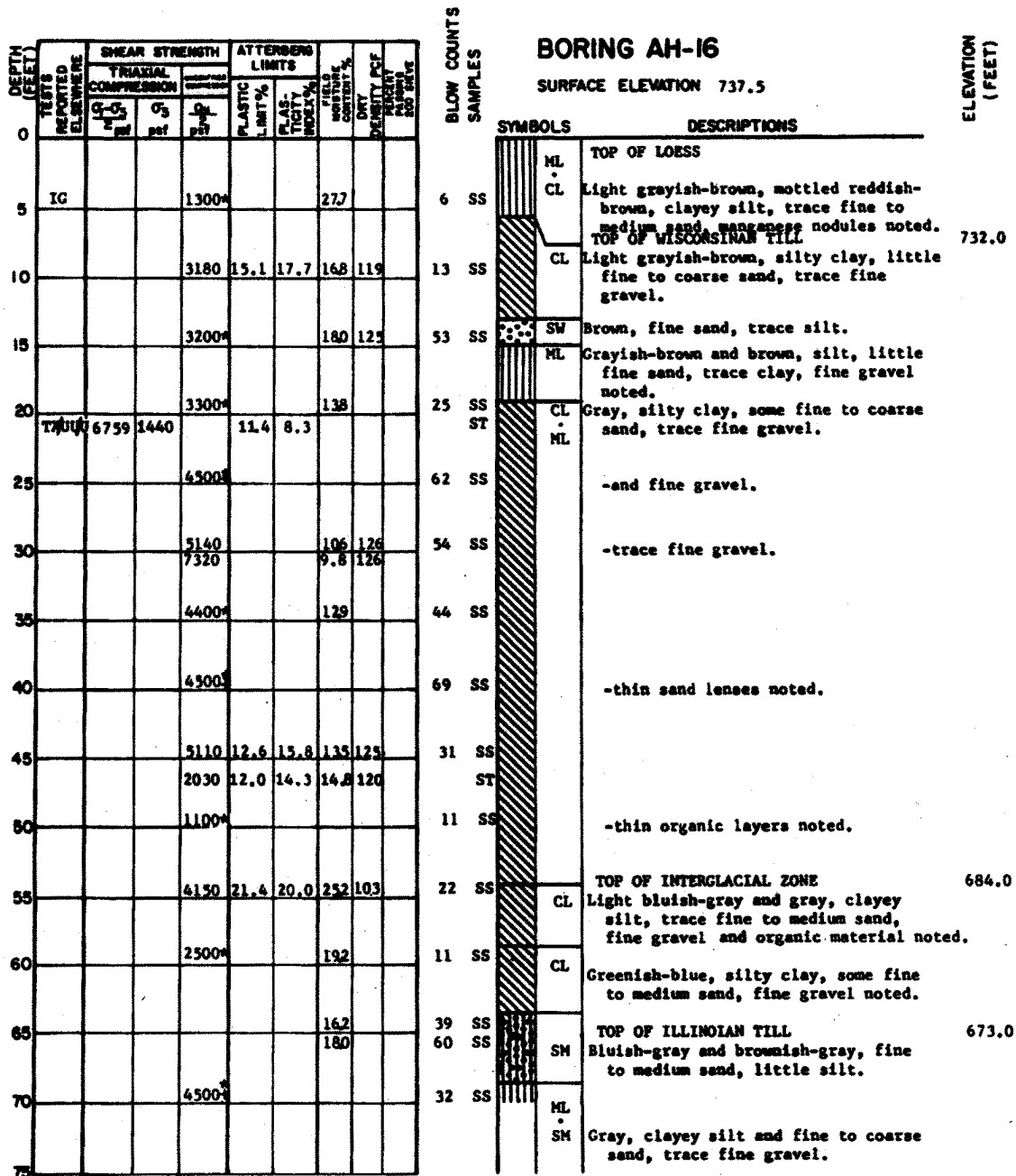
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-236

LOG OF BORING AH-15



Boring completed at 70.0 feet
on 3-17-75.
Water level at 12.5 feet.

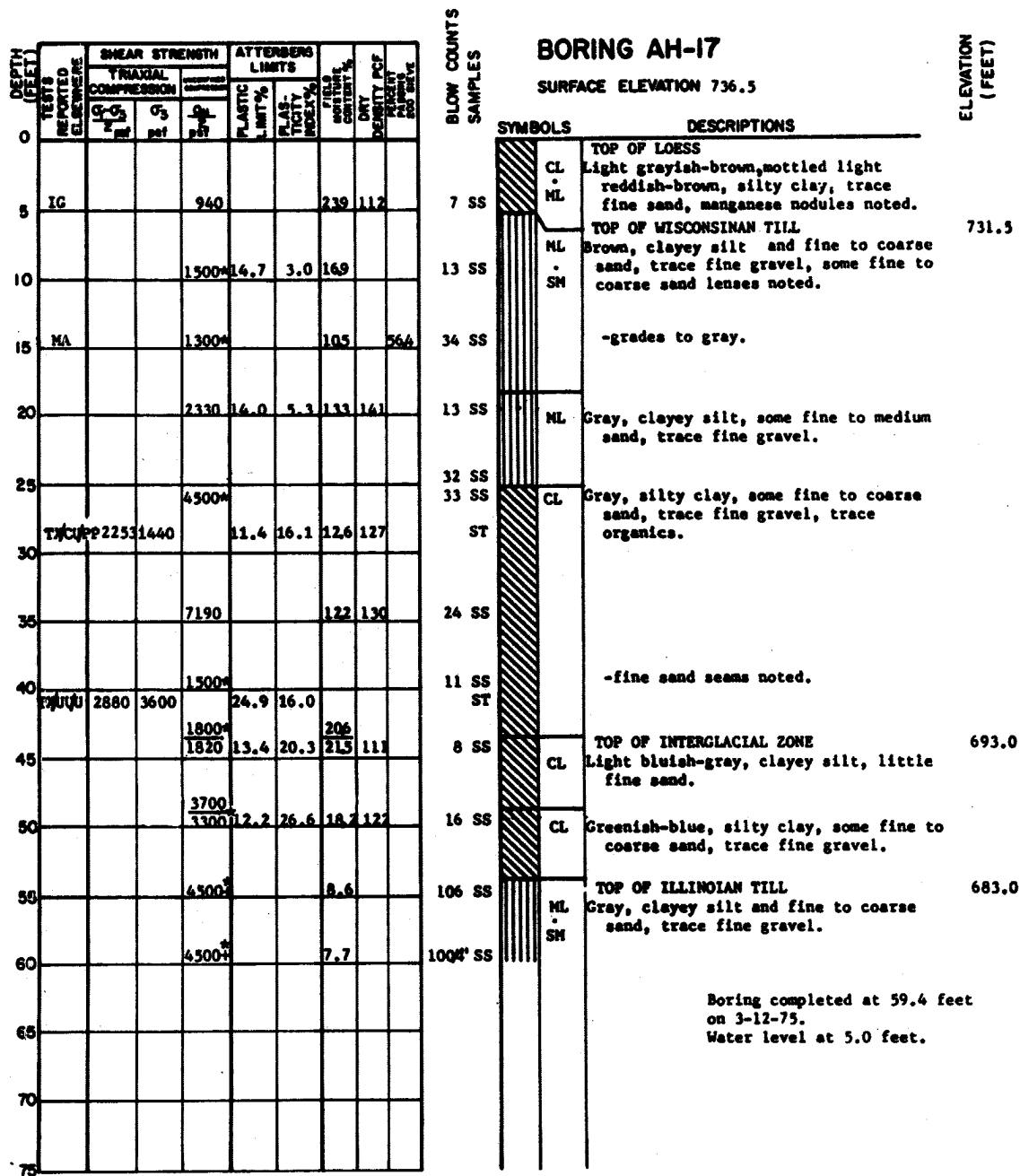
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-237

LOG OF BORING AH-16



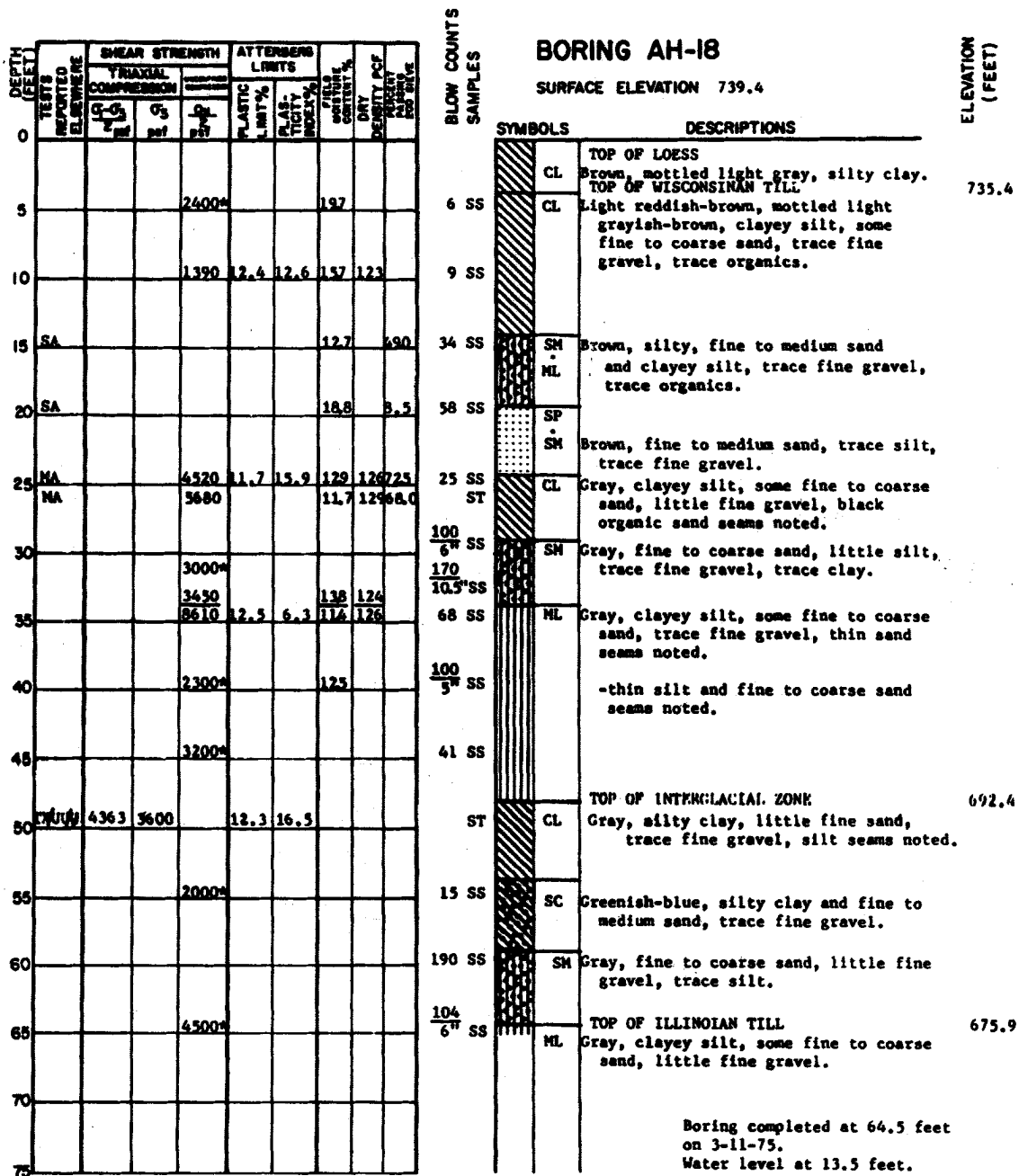
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-238

LOG OF BORING AH-17



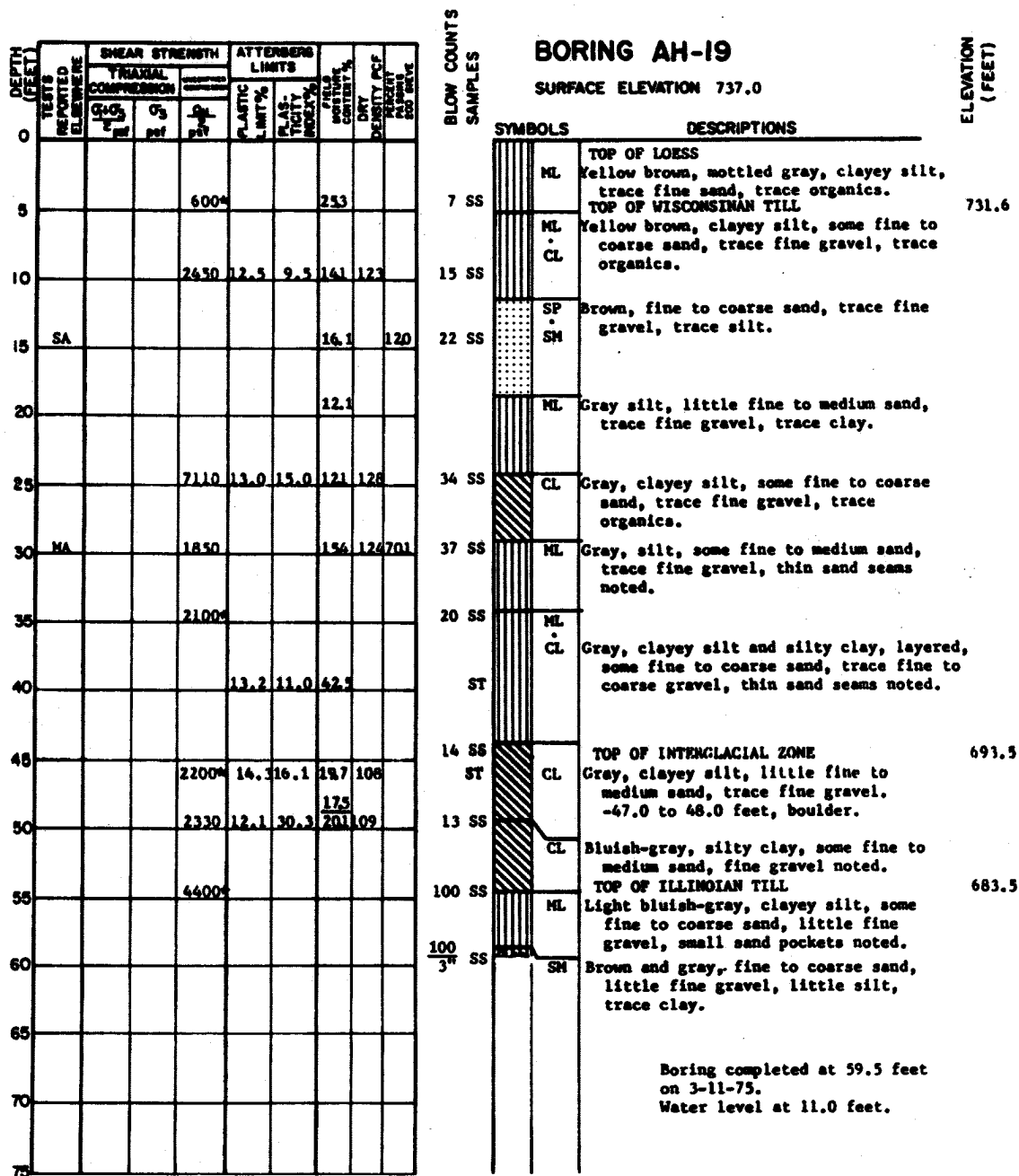
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-239

LOG OF BORING AH-18



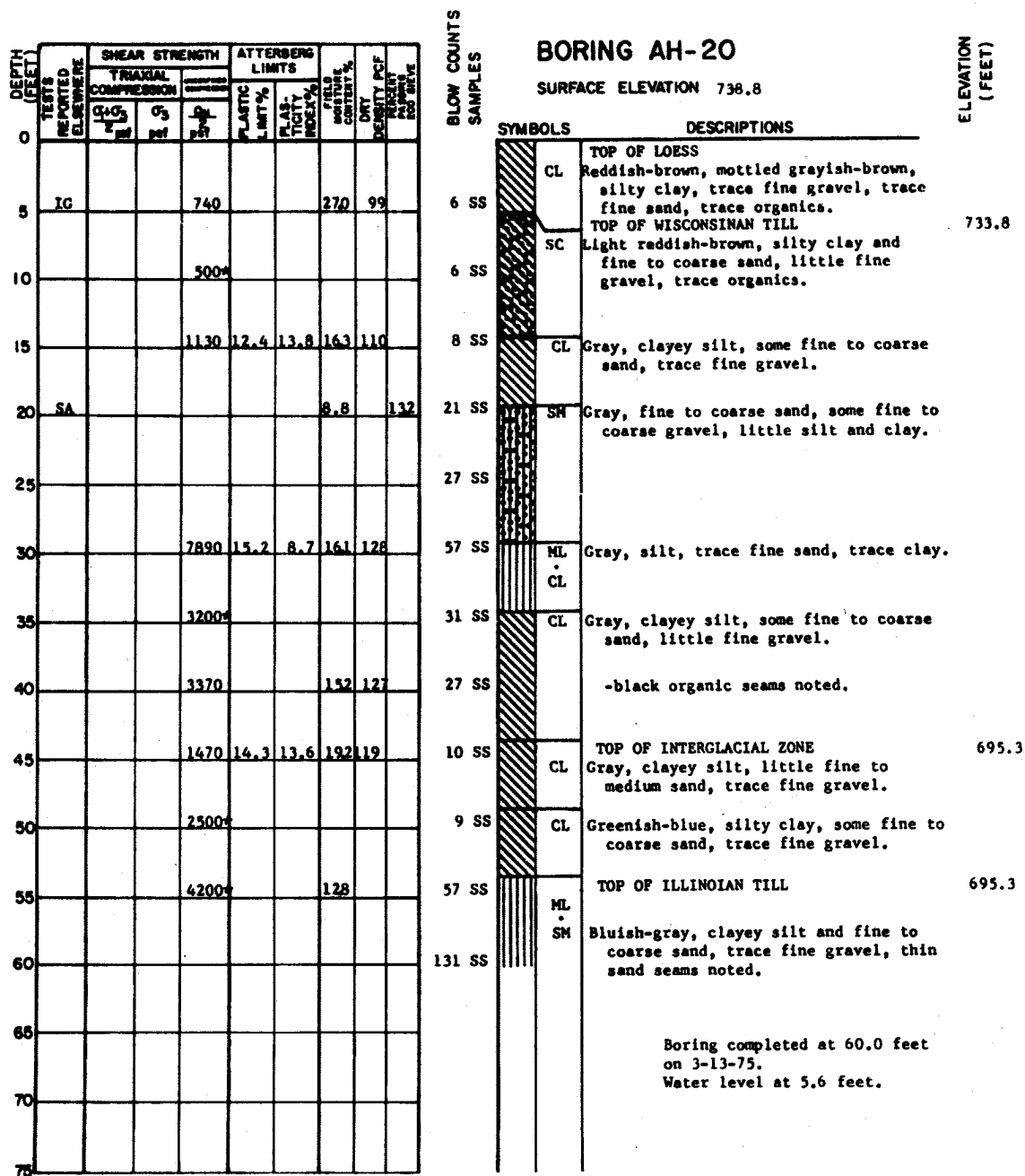
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-240

LOG OF BORING AH-19



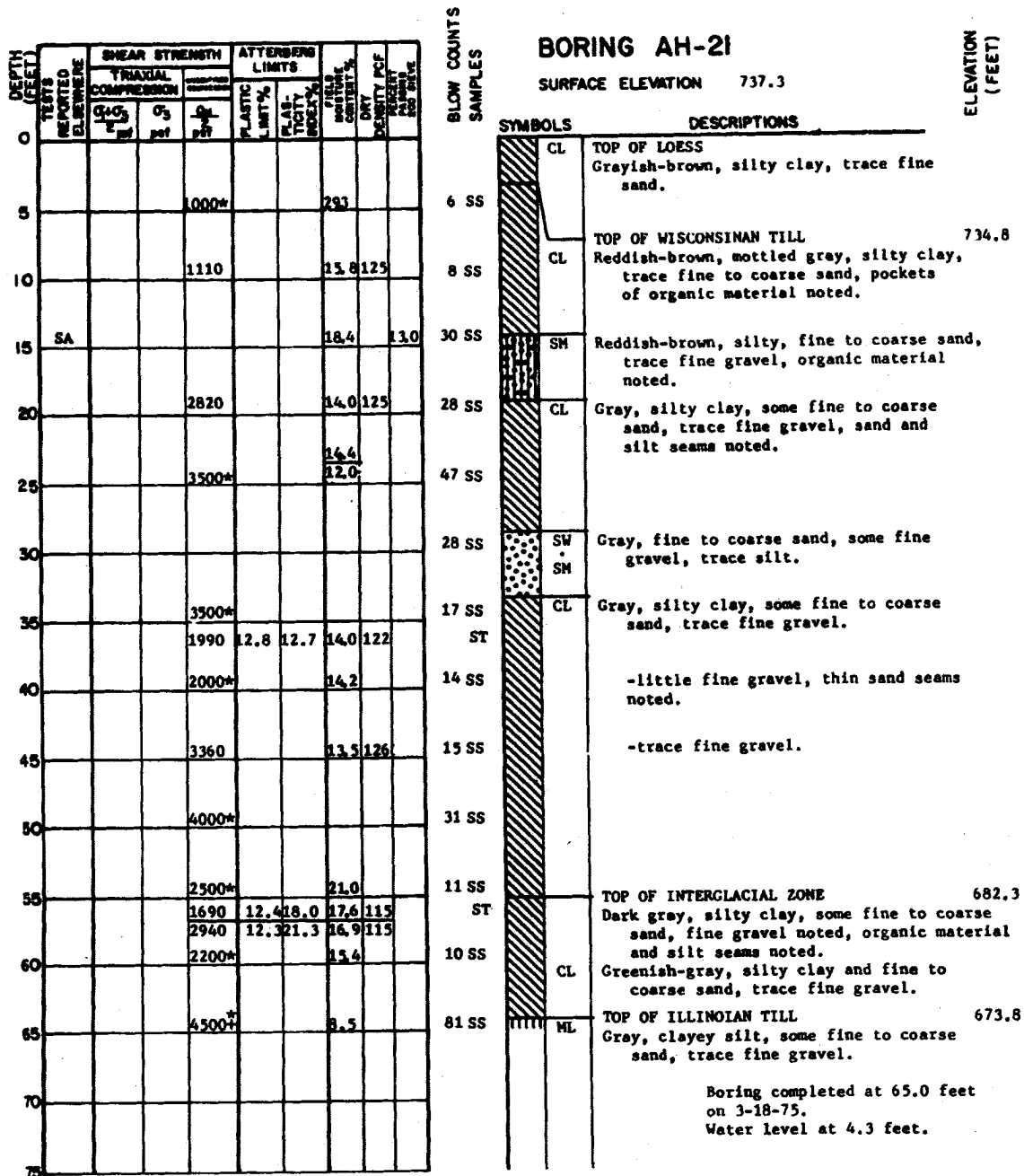
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-241

LOG OF BORING AH-20



NOTES

Logged by: Sargent & Lundy

Drilled by: Raymond International

Tested by: Westenhoff & Novick

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-242

LOG OF BORING AH-21

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			WET DENSITY PCF	DRY DENSITY PCF	PERCENT WATER BY WEIGHT	PERCENT FINE SAND
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	FLUIDITY INDEX %	MOISTURE CONTENT %				
		σ_1 psi	σ_3 psi	σ_d psi							
0											
5											
10											
15	SA										158
20	SA										8.7
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											

BLOW COUNTS
SAMPLES

BORING K-1

SURFACE ELEVATION 671.9

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
AG	ML	TOP OF SALT CREEK ALLUVIUM Blackish-gray, silt, some clay, trace fine to coarse sand.	
	CL ML	Brown, silty clay, trace fine to coarse sand, trace fine gravel. TOP OF OUTWASH	661.4
BC	SM	Brown, fine to coarse sand, trace fine gravel, little silt.	
BC	SW SM	Brown, fine to coarse sand, trace silt, trace fine gravel.	
	ML	TOP OF ILLINOIAN TILL. Gray, clayey silt, trace fine to medium sand, trace fine gravel.	643.9
Boring completed at 30.0 feet on 3-20-75. Water level at 12.5 feet.			

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on bulk samples from 10.5 to 25.5 feet depth.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-243

LOG OF BORING K-1

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS		FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING NO. 20 SIEVE
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %			
		$\sigma_1 - \sigma_3$	σ_3	$\frac{\sigma_1}{\sigma_3}$					
		psf	psf	pcf					
0									
5	SA								20.5
10									
15	SA								13.3
20	SA								9.9
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									

BLOW COUNTS
SAMPLES

BORING K-2

SURFACE ELEVATION 670.5

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
AC	CL ML	TOP OF SALT CREEK ALLUVIUM	
		Brown, silty clay, trace fine sand.	
BC	SM	TOP OF OUTWASH	665.0
		Brown, fine to coarse sand, some silt, some fine to coarse gravel.	
BC	GM	Brown, fine to coarse gravel, some fine to coarse sand, some silt.	
BC	SW SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
		TOP OF ILLINOIAN TILL	642.5
	ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
		Boring completed at 30.0 feet on 3-19-75.	
		Water level at 11.0 feet.	

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westernhoff and Novick, Inc.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-244

LOG OF BORING K-2

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %				
		UNCONFINE D COMPRESSION								
		$\frac{\sigma_1 + \sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf						
0										
5										
10	SA									233
15	SA									135
20										
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING K-3

SURFACE ELEVATION 669.3

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
AG	CL • ML	TOP OF SALT CREEK ALLUVIUM	
		Dark brown, silty clay, trace fine to coarse sand, trace fine gravel.	
BG	SM	TOP OF OUTWASH	663.3
		Brown, silty, fine to medium sand, trace fine to coarse gravel.	
BC		- some silt.	
	ML	Gray, silt, some fine to coarse sand, some fine gravel, trace organics.	
		TOP OF ILLINOIAN TILL	642.3
	ML	Gray, clayey silt, trace fine gravel.	
		Boring completed at 30.0 feet on 3-20-75.	
		Water level at 9.5 feet.	

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on mixed bulk samples from 10.0 to 15.0 feet depth in K-3 and 15.0 to 25.0 feet in K-7.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-245

LOG OF BORING K-3

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS				FLDS MOISTURE CONTENT %	DRY DENSITY PCF	PCF PERCENT WET 200 SIEVE
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %	LIQUID LIMIT %	SHRINKAGE VALUE %			
		$\frac{\sigma_1 + \sigma_3}{2}$ psi	σ_3 psi	$\frac{\sigma_1 - \sigma_3}{2}$ psi							
0											
5											
10											
15	SA									121	
20											
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											

BLOW COUNTS
SAMPLES

BORING K-4

SURFACE ELEVATION 684.1

ELEVATION
(FEET)

SYMBOLS

DESCRIPTIONS

AG

BC

CL

ML

SM

ML

TOP OF SALT CREEK ALLUVIUM

Brown, silty clay, trace fine sand.

TOP OF OUTWASH

672.6

Brown, fine to coarse sand,
trace fine gravel, trace silt.

TOP OF ILLINOIAN TILL.

663.1

Gray, clayey silt, trace fine to
coarse sand, trace fine gravel.

Boring completed at 30.0 feet
on 3-20-75.
Water level at 6.5 feet.

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on mixed bulk samples from 12.0 to 21.0 feet depth in K-4 and 6.5 to 15.0 feet depth in K-5.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-246

LOG OF BORING K-4

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH:			ATTERBERG LIMITS		FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING NO. 200 SIEVE
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	LIQUID LIMIT %			
		UNSATURATED TEST							
		$\frac{\sigma_1 + \sigma_3}{2}$ psf	σ_3 psf	$\frac{\sigma_1 - \sigma_3}{2}$ psf					
0									
5	SA								194
10	SA								109
15	SA								226
20	SA								162
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									

BLOW COUNTS
SAMPLES

BORING K-5

SURFACE ELEVATION 683.3

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
AC	CL ML	TOP OF SALT CREEK ALLUVIUM	
		Brown, silty clay, trace fine sand.	
		TOP OF OUTWASH	676.8
BC	SM	Brown, fine to coarse sand, some fine to coarse gravel some silt.	
	SP	Brown, fine to coarse sand, some fine gravel, trace silt.	
BC	SM		
	SM	Brown, silty, fine to coarse sand and fine to coarse gravel.	
BC	GM		
	SM	Brown, fine to coarse sand, some fine to coarse gravel, some silt.	
BC	ML	TOP OF ILLINOIAN TILL.	660.3
		Gray, clayey silt, trace fine gravel.	
Boring completed at 30.0 feet on 3-20-75.			
Water level at 17.5 feet.			

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on bulk samples from 6.5 to 20.0 feet depth and on mixed bulk samples from 6.5 to 15.0 feet depth in K-5 and 12.0 to 21.0 feet depth in K-4.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-247

LOG OF BORING K-5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENBERG LIMITS			MOISTURE CONTENT %	DRY DENSITY PCF	RELATIVE DENSITY PERCENT 200 WAVE 500 WAVE
		TRIAXIAL			PLASTIC LIMIT %	PLAS- TICITY INDEX %	LIQUID LIMIT %			
		COMPRESSION								
		σ_1 psi	σ_3 psi	$\frac{\sigma_1}{2}$ psi						
0										
5										
10	SA									24.1
15	SA									9.2
20										
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING K-6

SURFACE ELEVATION 671.8

ELEVATION
(FEET)

SYMBOLS	DESCRIPTIONS	
AG	CL ML	TOP OF SALT CREEK ALLUVIUM
		Brown, silty clay, trace fine sand.
		665.3
		TOP OF OUTWASH
BG	SM	Brown, fine to coarse sand, some fine to coarse gravel, some silt.
BG	SW SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.
	ML	Gray, silt, trace fine gravel, trace fine to medium sand, trace organics.
	ML	TOP OF ILLINOIAN TILL
		650.8
		Gray, clayey silt, trace fine sand, trace fine gravel.
		Boring completed at 30.0 feet on 3-19-75.
		Water level at 13.5 feet.

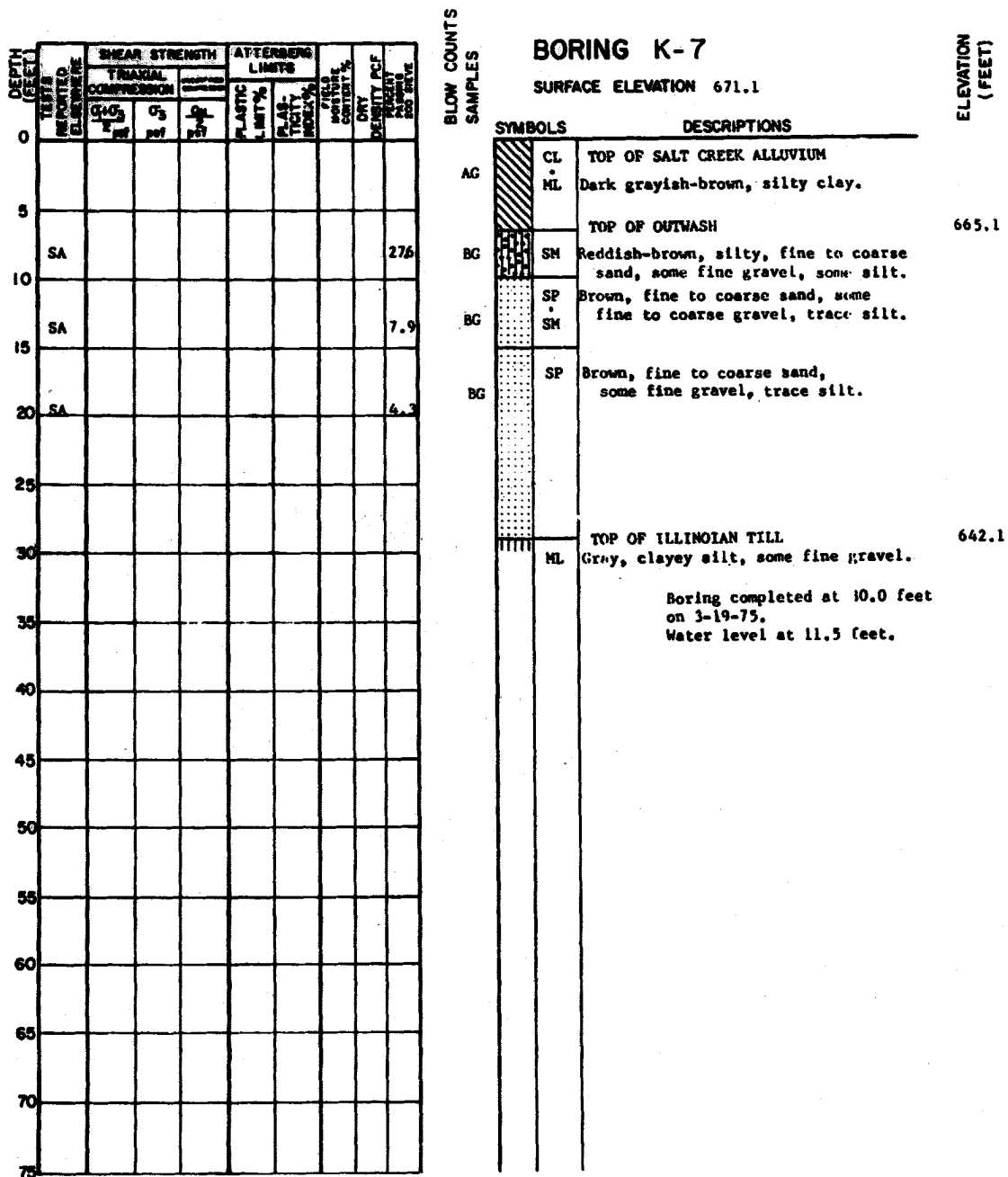
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on bulk samples from 6.5 to 13.0 feet depth.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-248

LOG OF BORING K-6



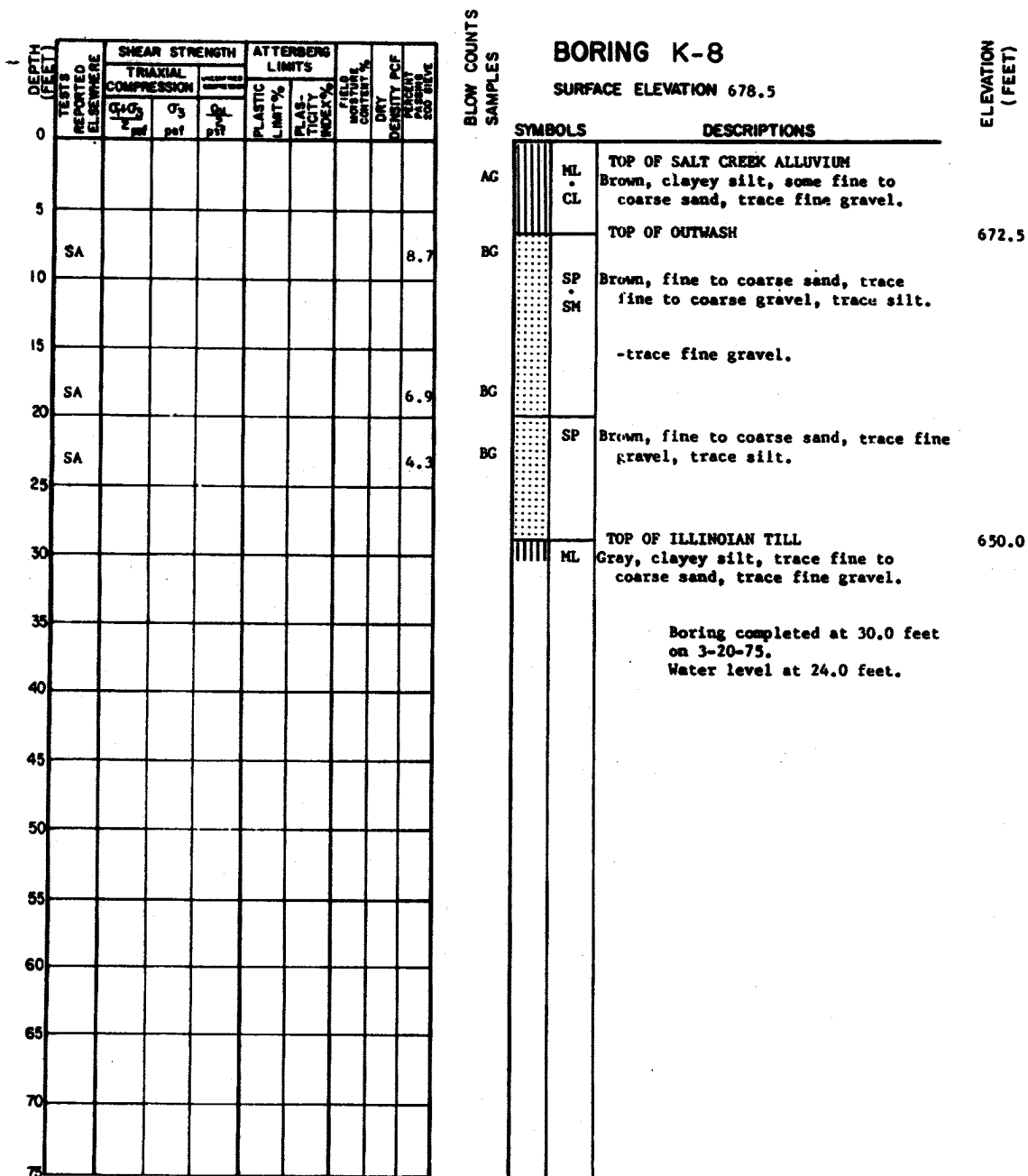
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on mixed bulk samples from 15.0 to 25.0 feet depth in K-7 and 10.0 to 15.0 feet depth in K-3.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-249

LOG OF BORING K-7



NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on bulk samples from 6.0 to 20.0 feet depth.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-250

LOG OF BORING K-8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENBERG LIMITS			FIELD moisture content, %	DRY PCF	DESIGN PCF BASED ON SPT BLIVE
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %				
		σ_1 psi	σ_3 psi	ϕ psi						
0										
5										
10	SA									18.5
15	SA									23
20	SA									8.4
25	SA									7.7
30	SA									4.1
35										
40										
45										
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING K-11

SURFACE ELEVATION 682.5

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
AG	CL • ML	TOP OF SALT CREEK ALLUVIUM	
		Brown, silty clay, trace fine sand.	
		TIP OF OUTWASH	677.5
BC	SM	Brown, fine to coarse sand, some silt, trace fine gravel.	
BC			
BC	SP • SM	Brown, fine to coarse sand, some fine gravel, trace silt.	
BC			
BC	SP	Brown, fine to coarse sand, some fine gravel, trace silt.	
BC			
Boring completed at 30.0 feet on 3-20-75. Water level at 28.0 feet.			

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on bulk samples from 5.0 to 25.0 feet depth.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-251

LOG OF BORING K-11

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTERBERG LIMITS			FIELD NOTES	DRY DENSITY pcf	DESIGNATION PASSING NO. 200 SIEVE
		TRIAXIAL COMPRESSION			LIMITS					
		σ_1 psi	σ_3 psi	$\sigma_1 - \sigma_3$ psi	PLASTIC LIMIT %	PLAS- TICITY INDEX %	FLUIDITY INDEX %			
0										
5	HA									47.6
	SA									15.1
10										
	SA									7.3
15										
	SA									3.8
20										
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING K-12

SURFACE ELEVATION 673.8

ELEVATION
(FEET)

SYMBOLS		DESCRIPTIONS	
AC	CL	TOP OF SALT CREEK ALLUVIUM	
BG	ML	Brown, silty clay, trace fine to coarse sand.	
BG	SM	TOP OF OUTWASH	671.8
	ML	Brown, fine to coarse sand and clayey silt.	
BG	SM	Brown, fine to coarse sand, some fine gravel, some silt.	
	SP		
BG	SM	Brown, fine to coarse sand, some fine gravel, trace silt.	
	SP	Brown, fine to coarse sand, trace fine gravel, trace silt.	
	ML	TOP OF ILLINOIAN TILL	652.8
	CL	Greenish-gray, clayey silt, trace fine gravel, trace organics.	
	ML	Gray, clayey silt, trace fine to coarse sand, trace fine gravel.	

Boring completed at 30.0 feet
on 3-20-75.
Water level at 21.5 feet.

NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.
4. Compaction and relative density tests performed on bulk samples from 5.0 to 20.0 feet depth.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-252

LOG OF BORING K-12

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH			ATTENBERG LIMITS			FLUID CONTENT %	DRY DENSITY PCF	WET DENSITY PCF FOR SPT BLADE
		TRIAXIAL COMPRESSION			PLASTIC LIMIT %	PLAS- TICITY INDEX %	LIQUID LIMIT %			
		σ_1 psi	σ_3 psi	$\frac{\sigma_1}{\sigma_3}$ psi						
0										
5										
10	SA									23.7
15	SA									8.8
20	SA									7.5
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

BLOW COUNTS
SAMPLES

BORING K-15

SURFACE ELEVATION 668.4

ELEVATION
(FEET)

SYMBOLS

DESCRIPTIONS

	CL	TOP OF SALT CREEK ALLUVIUM	
	ML	Brown, silty clay.	
	SM	TOP OF OUTWASH	663.9
BG		Brown, silty, fine to coarse sand, some fine to coarse gravel.	
BG	SP SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
BG	SW SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
		TOP OF ILLINOIAN TILL	645.4
	ML	Gray, silty clay, some fine to coarse sand, some fine gravel.	

Boring completed at 30.0 feet
on 3-19-75.
Water level at 9.0 feet.

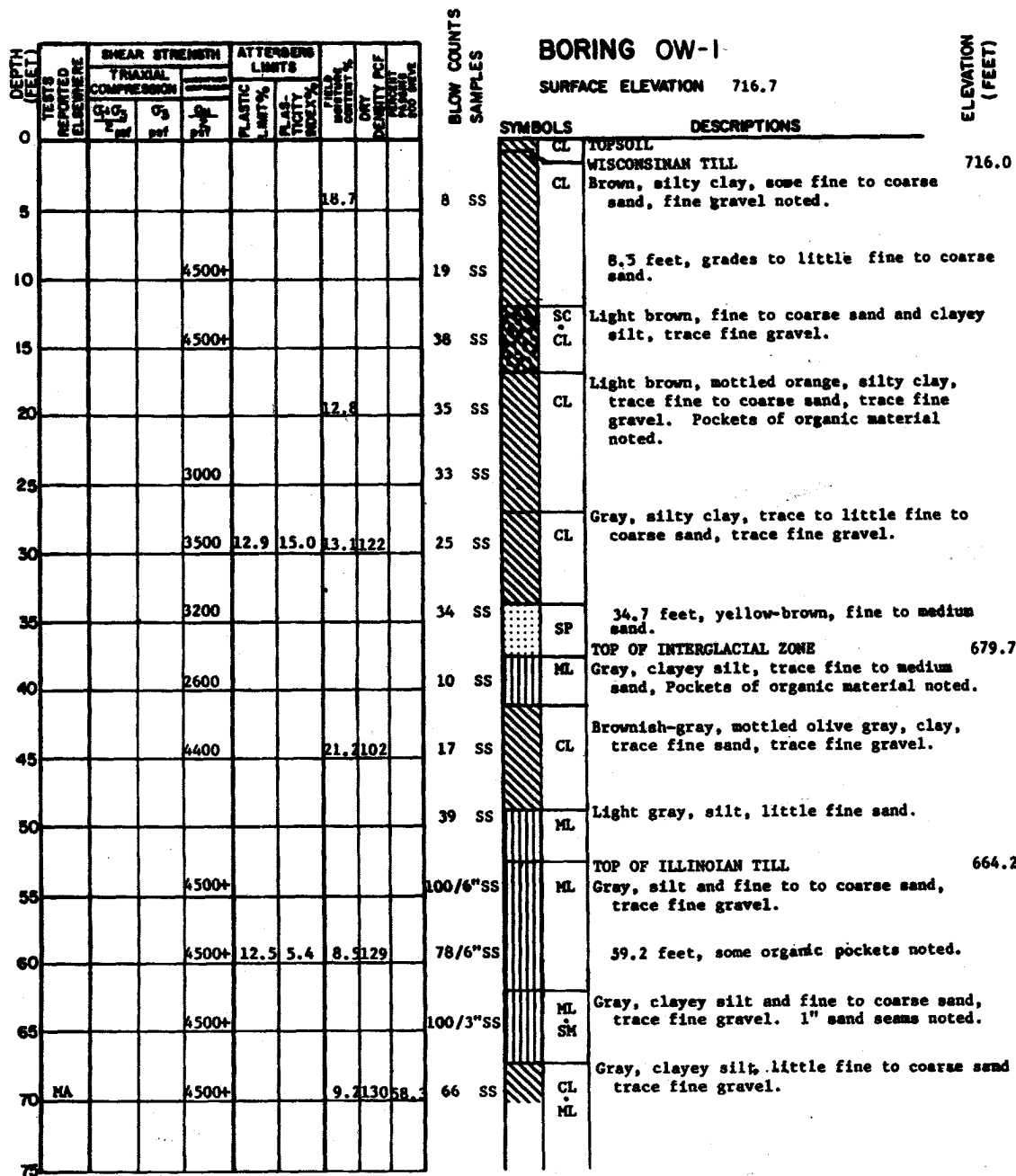
NOTES

1. Logged by: Sargent & Lundy Engineers
2. Drilled by: Raymond International
3. Tested by: Westenhoff and Novick, Inc.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-253

LOG OF BORING K-15



PIEZOMETER INSTALLED ON 5/12/76. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 646.7. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 646.7 TO 656.7; BEN-TONITE SEAL FROM ELEVATION 656.7 TO 658.7; AND CEMENT GROUT FROM ELEVATION 658.7 TO 716.7.

BORING COMPLETED AT 70.0 FEET.

ON 5/12/76.

CASING USED TO A DEPTH OF 10.0 FEET.

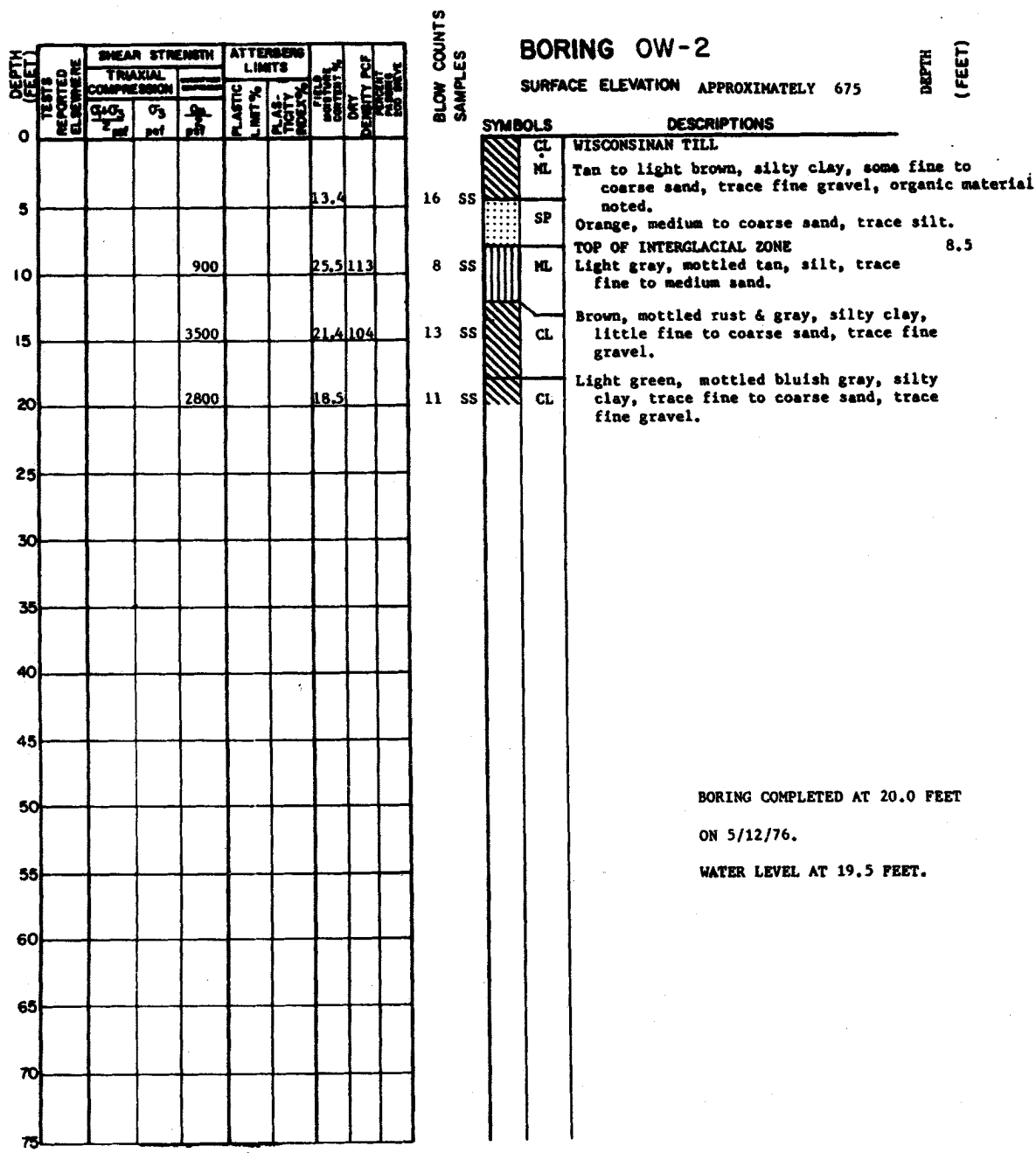
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-254

LOG OF BORING OW-1



PIEZOMETER INSTALLED ON 5/12/76. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 675. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 675 TO 690; BENTONITE SEAL FROM ELEVATION 690 TO 692; AND CEMENT GROUT FROM ELEVATION 692 TO 695.

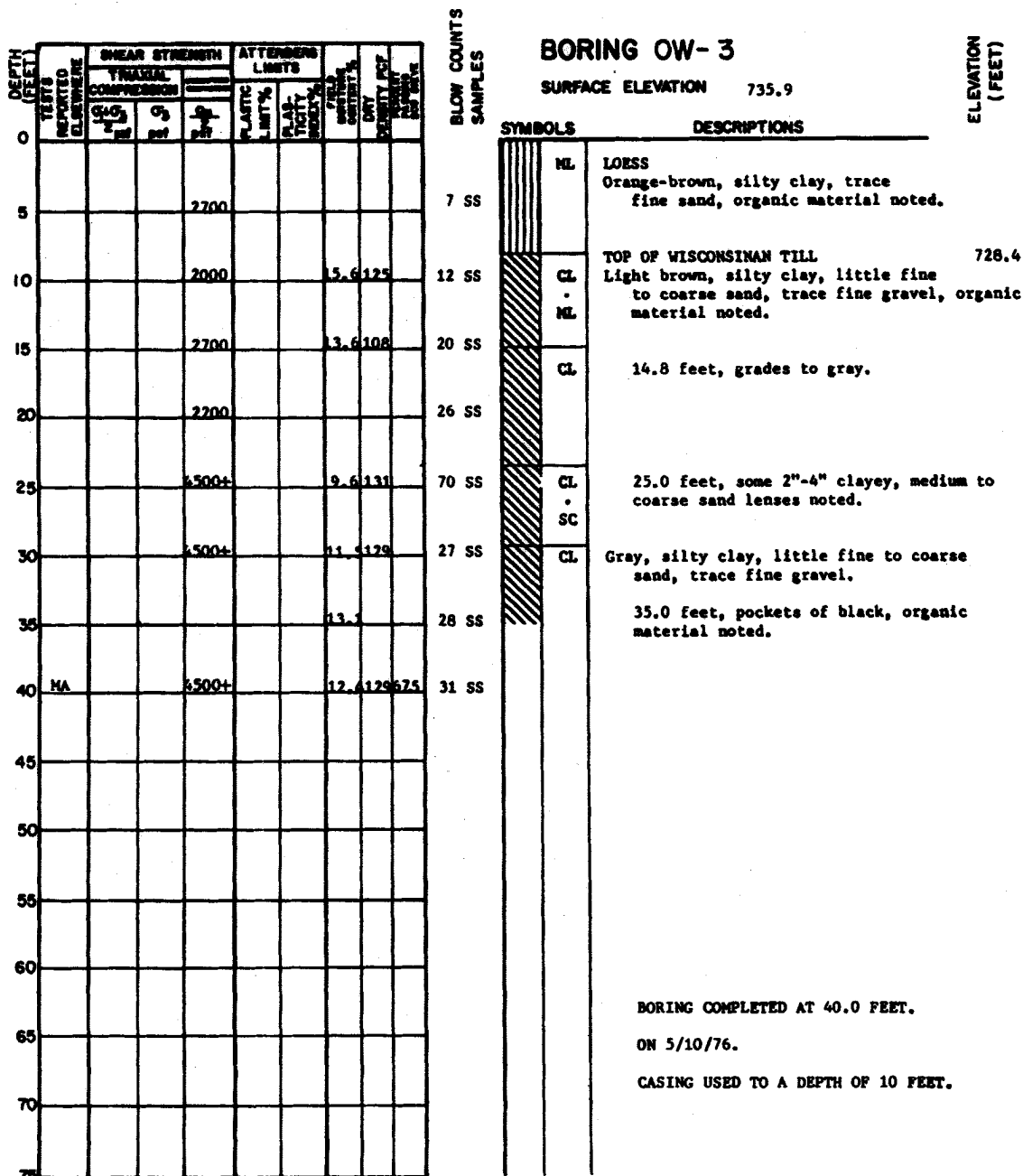
BORING COMPLETED AT 20.0 FEET
ON 5/12/76.
WATER LEVEL AT 19.5 FEET.

- NOTES:
1. LOGGED BY: SARGENT & LUNDY.
 2. DRILLED BY: RAYMOND INTERNATIONAL.
 3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION
 UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-255

 LOG OF BORING OW-2



PIEZMETER INSTALLED IN OW-3 DEEP ON 5/10/76. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 695.9. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 695.9 TO 705.9, BENTONITE SEAL FROM ELEVATION 705.9 TO 707.9, AND CEMENT GROUT FROM ELEVATION 707.9 TO 735.9.

PIEZMETER INSTALLED ON 5/10/76. BORING OW-3 SHALLOW LOCATED 2 FEET NORTH OF OW-3 DEEP WAS DRILLED TO A DEPTH OF 10 FEET. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 725.9. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 725.9 TO 730.9, BENTONITE SEAL FROM ELEVATION 730.9 TO 732.9, AND CEMENT GROUT FROM ELEVATION 732.9 TO 735.9.

NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

BORING OW-3

SURFACE ELEVATION 735.9

BORING COMPLETED AT 40.0 FEET.

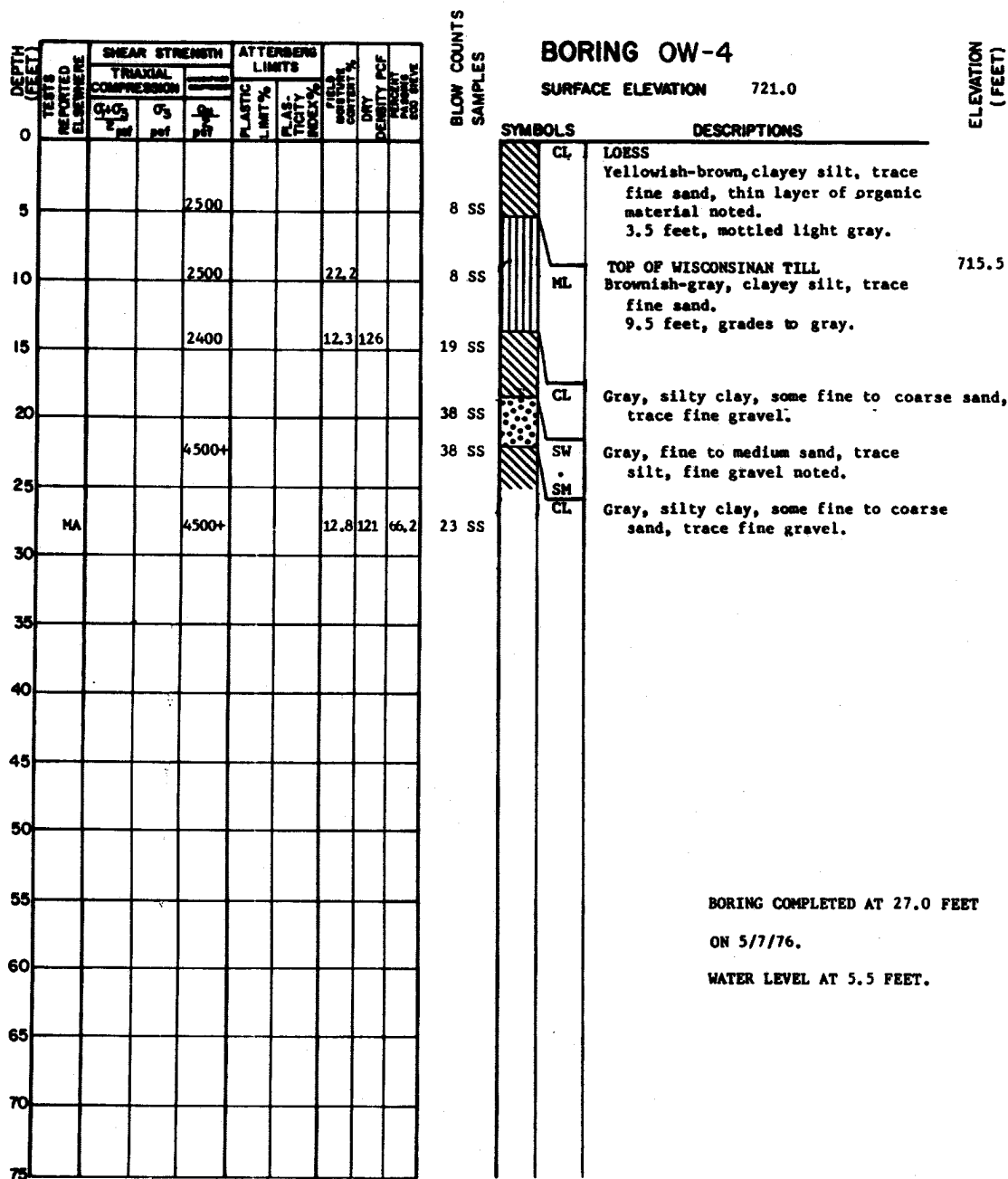
ON 5/10/76.

CASING USED TO A DEPTH OF 10 FEET.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-256

LOG OF BORING OW-3



PIEZOMETER INSTALLED IN OW-4 DEEP ON 5-7-76. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 697.5 GRANULAR BACKFILL WAS PLACED FROM ELEVATION 697.5 TO 711; BENTONITE SEAL FROM ELEVATION 711 TO 713; AND CEMENT GROUT FROM ELEVATION 713 TO 721.

PIEZOMETER INSTALLED ON 5-7-76. BORING OW-4 SHALLOW LOCATED 3.5 FEET NORTH OF OW-4 DEEP WAS DRILLED TO A DEPTH OF 6.9 FEET. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 714.1 GRANULAR BACKFILL WAS PLACED FROM ELEVATION 714.1 TO 718.1; BENTONITE SEAL FROM ELEVATION 718.1 TO 720.1; CEMENT GROUT FROM ELEVATION 720.1 TO 721.0.

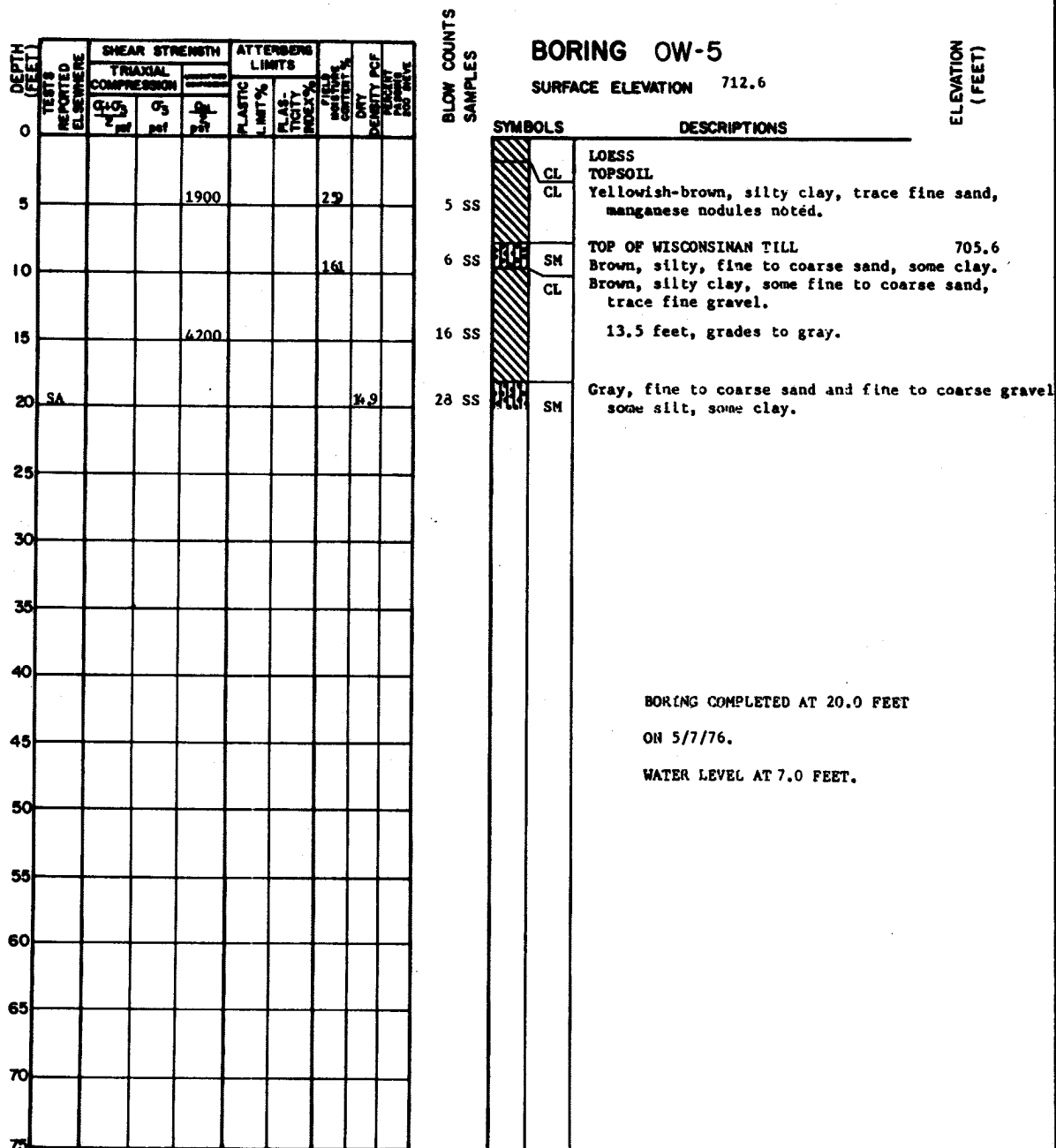
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTERNHOFF & NOVICK.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-257

LOG OF BORING OW-4



PIEZOMETER INSTALLED IN OW-5 DEEP ON 5/7/76. A 2 INCH INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 694.4. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 694.4 TO 702.6; BENTONITE SEAL FROM ELEVATION 702.6 TO 704.6; AND CEMENT GROUT FROM ELEVATION 704.6 TO 712.6.

PIEZOMETER INSTALLED ON 5/7/76. BORING OW-5 SHALLOW LOCATED 2 FEET SOUTH OF OW-5 DEEP WAS DRILLED TO A DEPTH OF 8 FEET. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 704.6. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 704.6 TO 708.6; BENTONITE SEAL FROM ELEVATION 708.6 TO 710. AND CEMENT GROUT FROM ELEVATION 710.6 TO 712.6.

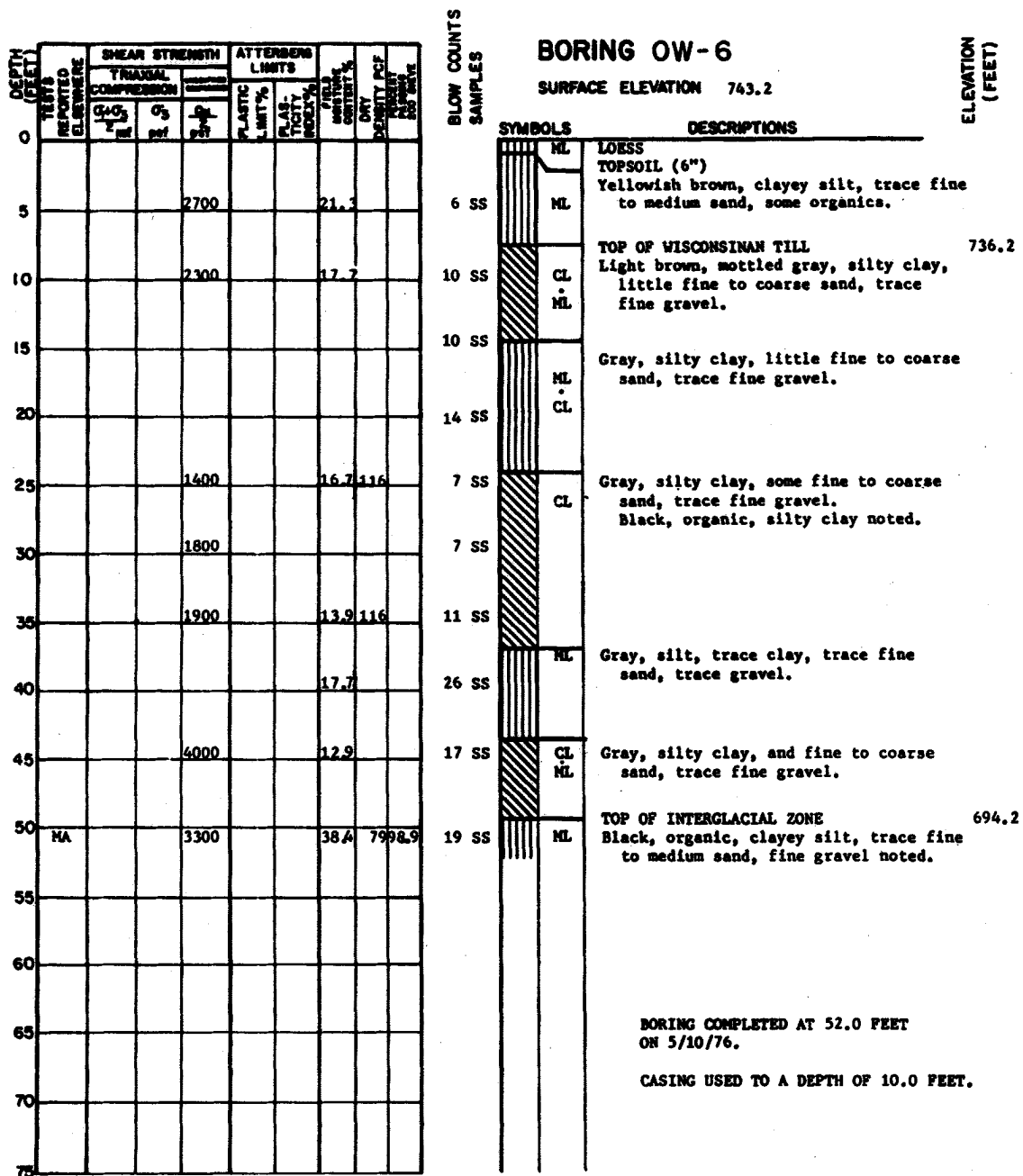
CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

FIGURE 2.5-258

LOG OF BORING OW-5



PIEZOMETER INSTALLED IN OW-6 DEEP ON 5/10/76. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED AT ELEVATION 691.2. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 691.2 TO 733.2; BENTONITE SEAL FROM ELEVATION 733.2 TO 735.2; AND CEMENT GROUT FROM ELEVATION 735.2 TO 743.2.

PIEZOMETER INSTALLED ON 5/10/76. BORING OW-6 SHALLOW LOCATED 2 FEET NORTH OF OW-6 DEEP WAS DRILLED TO A DEPTH OF 7.5 FEET. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED AT ELEVATION 735.8. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 735.8 TO 740.8; BENTONITE SEAL FROM ELEVATION 740.8 TO 741.8; AND CEMENT GROUT FROM 741.8 TO 743.2.

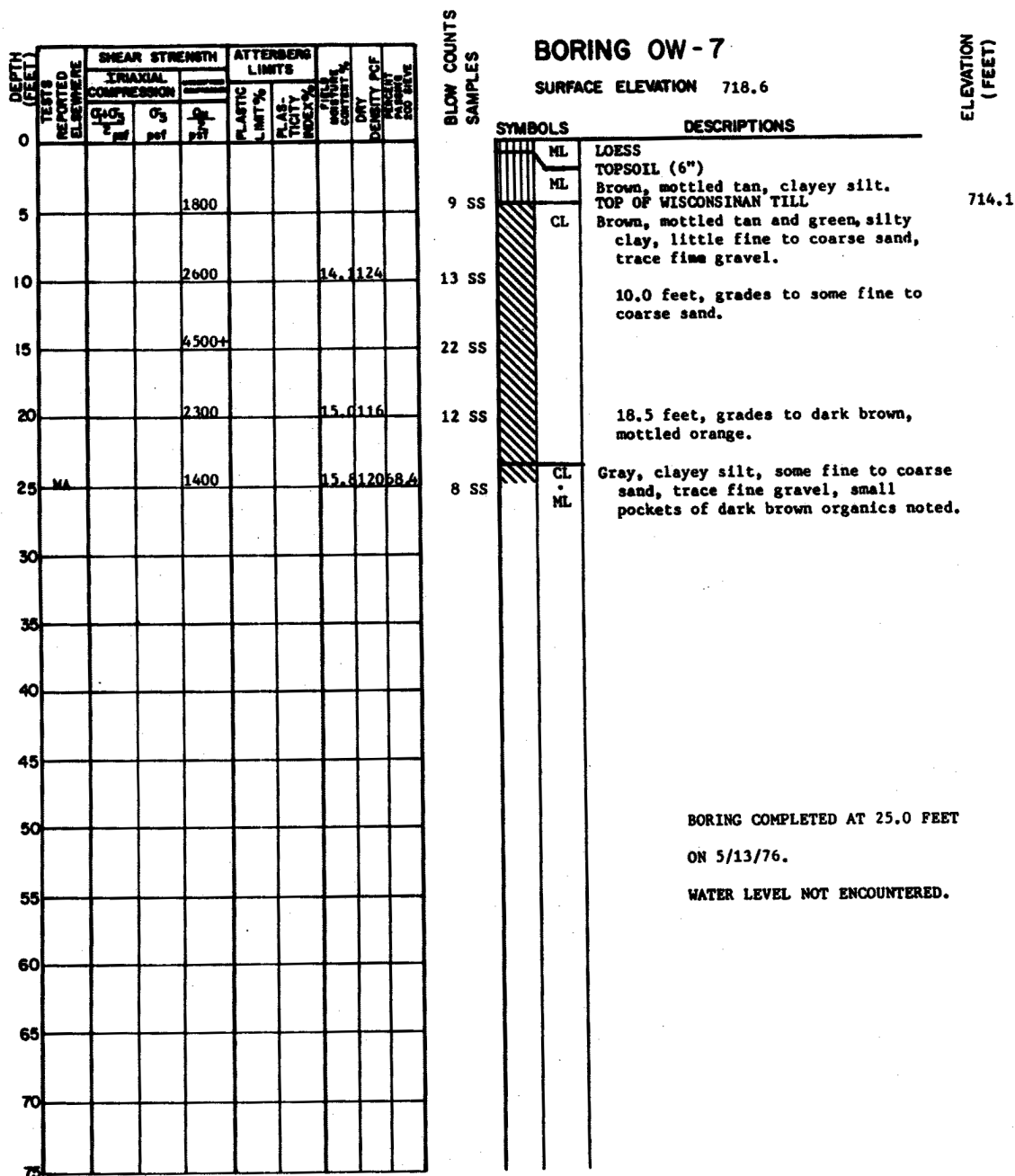
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-259

LOG OF BORING OW-6



PIEZOMETER INSTALLED IN OW-7 DEEP ON 5/13/76. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED AT ELEVATION 693.6. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 693.6 TO 708.6; BENTONITE SEAL FROM ELEVATION 708.6 TO 710.6; AND CEMENT GROUT FROM 710.6 TO 718.6.

PIEZOMETER INSTALLED ON 5/13/76, BORING OW-7 SHALLOW LOCATED 2.5 FEET WEST OF OW-7 DEEP WAS DRILLED TO A DEPTH OF 6.0 FEET. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED AT ELEVATION 712.6. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 712.6 TO 716.6; BENTONITE SEAL FROM ELEVATION 716.6 TO 717.6; AND CEMENT GROUT FROM ELEVATION 717.6 TO 718.6.

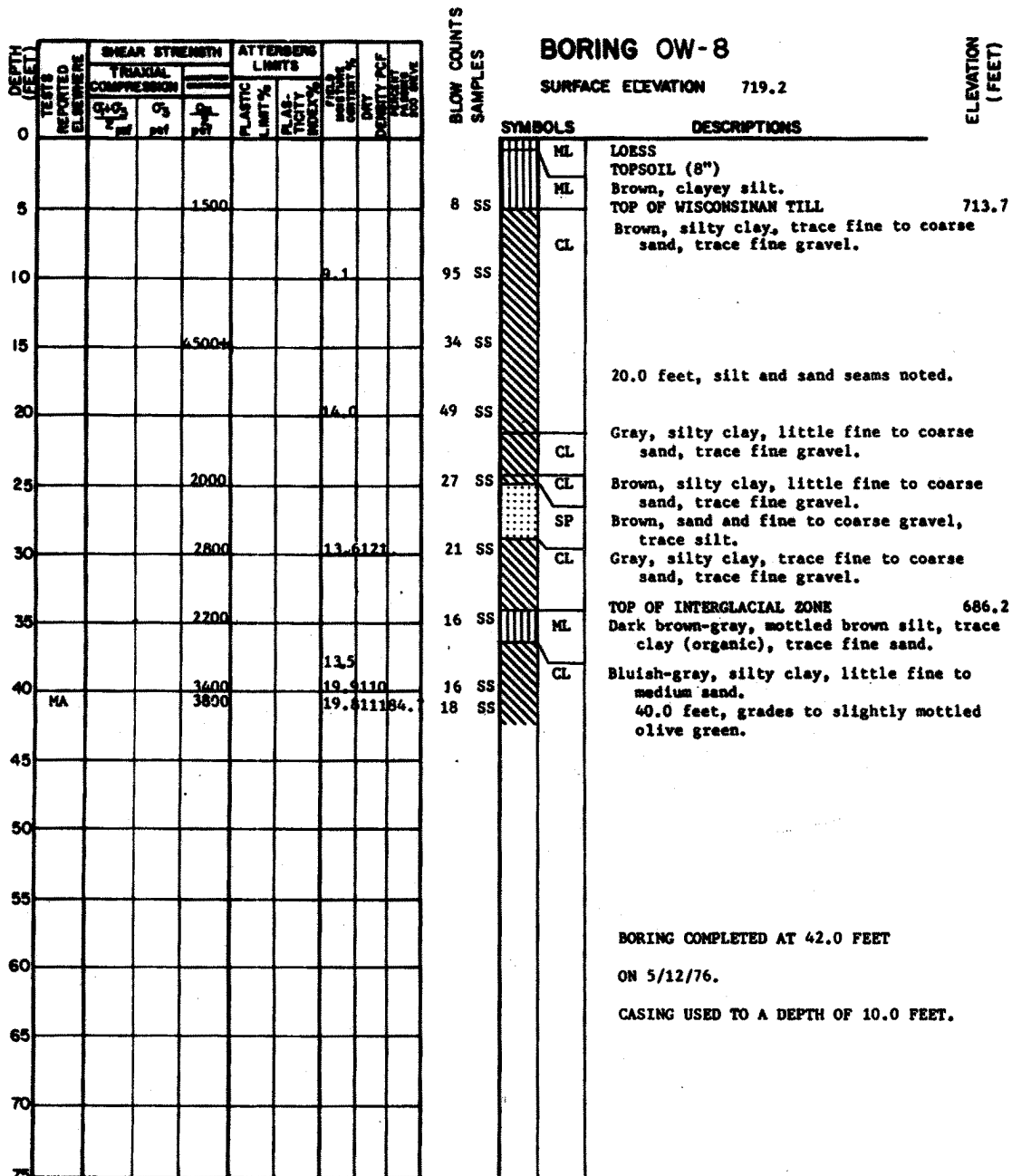
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-260

LOG OF BORING OW-7



PIEZOMETER INSTALLED ON 5/12/76. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 3 FEET PERFORATED WAS PLACED TO ELEVATION 677.2. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 677.2 TO 701.2; BENTONITE SEAL FROM ELEVATION 701.2 TO 703.2; AND CEMENT GROUT FROM ELEVATION 703.2 TO 719.2.

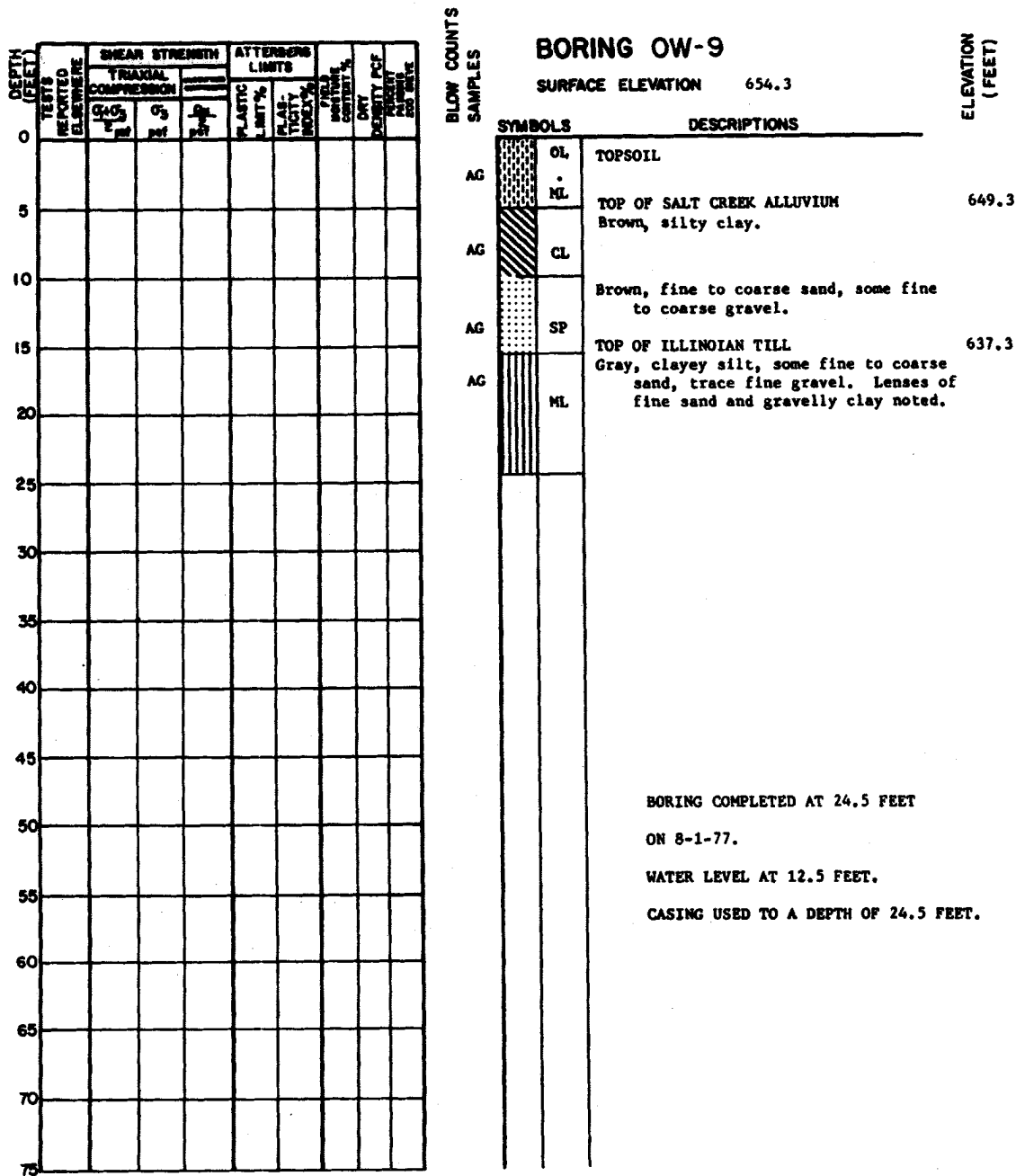
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: RAYMOND INTERNATIONAL.
3. TESTED BY: WESTENHOFF & NOVICK.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-261

LOG OF BORING OW-8



PIEZOMETER INSTALLED ON 8-1-77. A 1½ INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET SLOTTED WAS PLACED TO ELEVATION 629.8. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 629.8 TO 637.8; BENTONITE SEAL FROM ELEVATION 637.8 TO 639.8; AND GRANULAR BACKFILL FROM ELEVATION 639.8 TO 654.3.

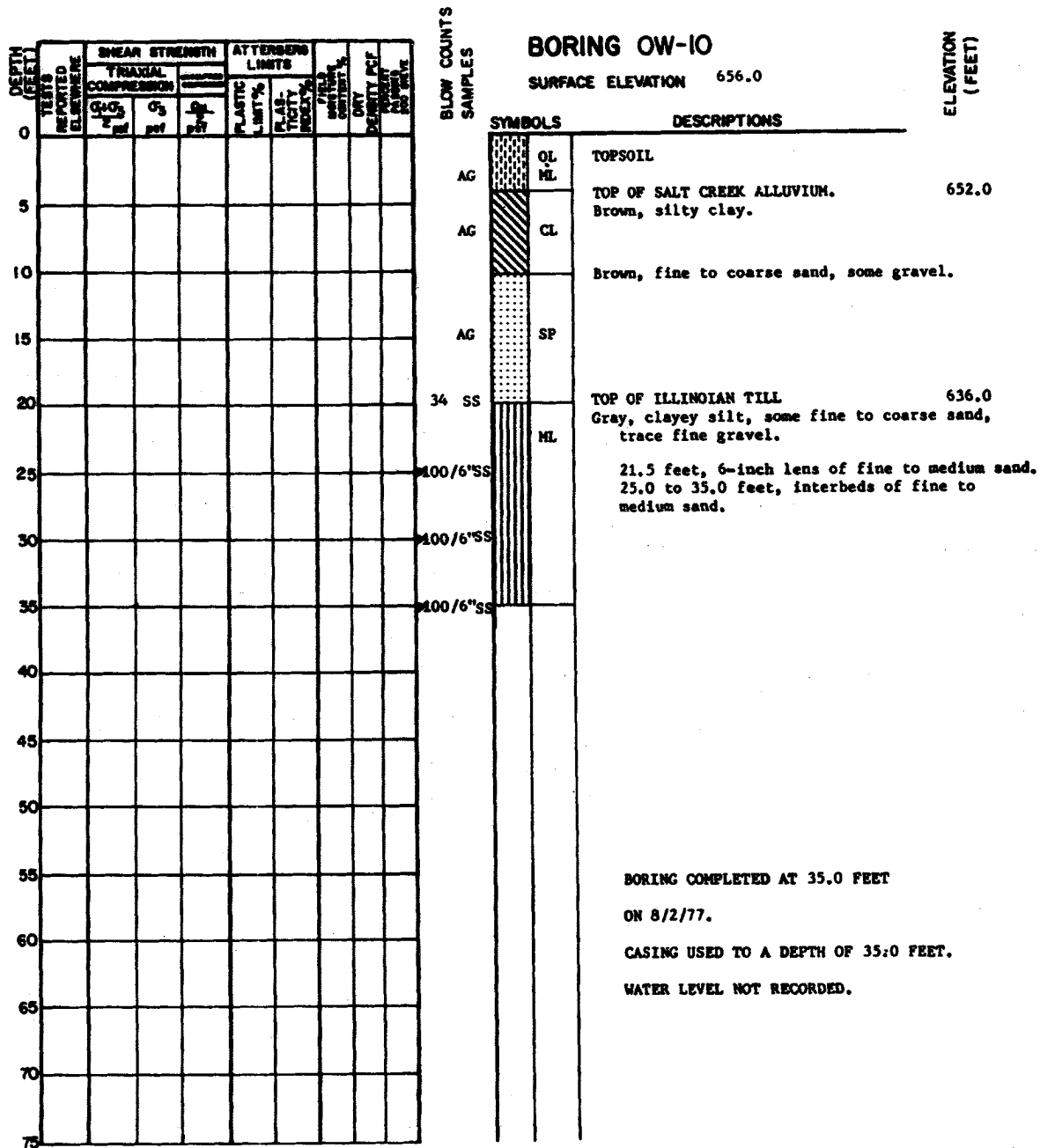
NOTES:

1. LOGGED BY: SOIL TESTING SERVICES.
2. DRILLED BY: SOIL TESTING SERVICES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-262

LOG OF BORING OW-9



PIEZOMETER INSTALLED ON 8/2/77. A 1½ INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET SLOTTED WAS PLACED TO ELEVATION 621.0. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 621.0 TO 629.0; BENTONITE SEAL FROM ELEVATION 629.0 TO 631.0; AND GRANULAR BACKFILL FROM ELEVATION 631.0 TO 656.0.

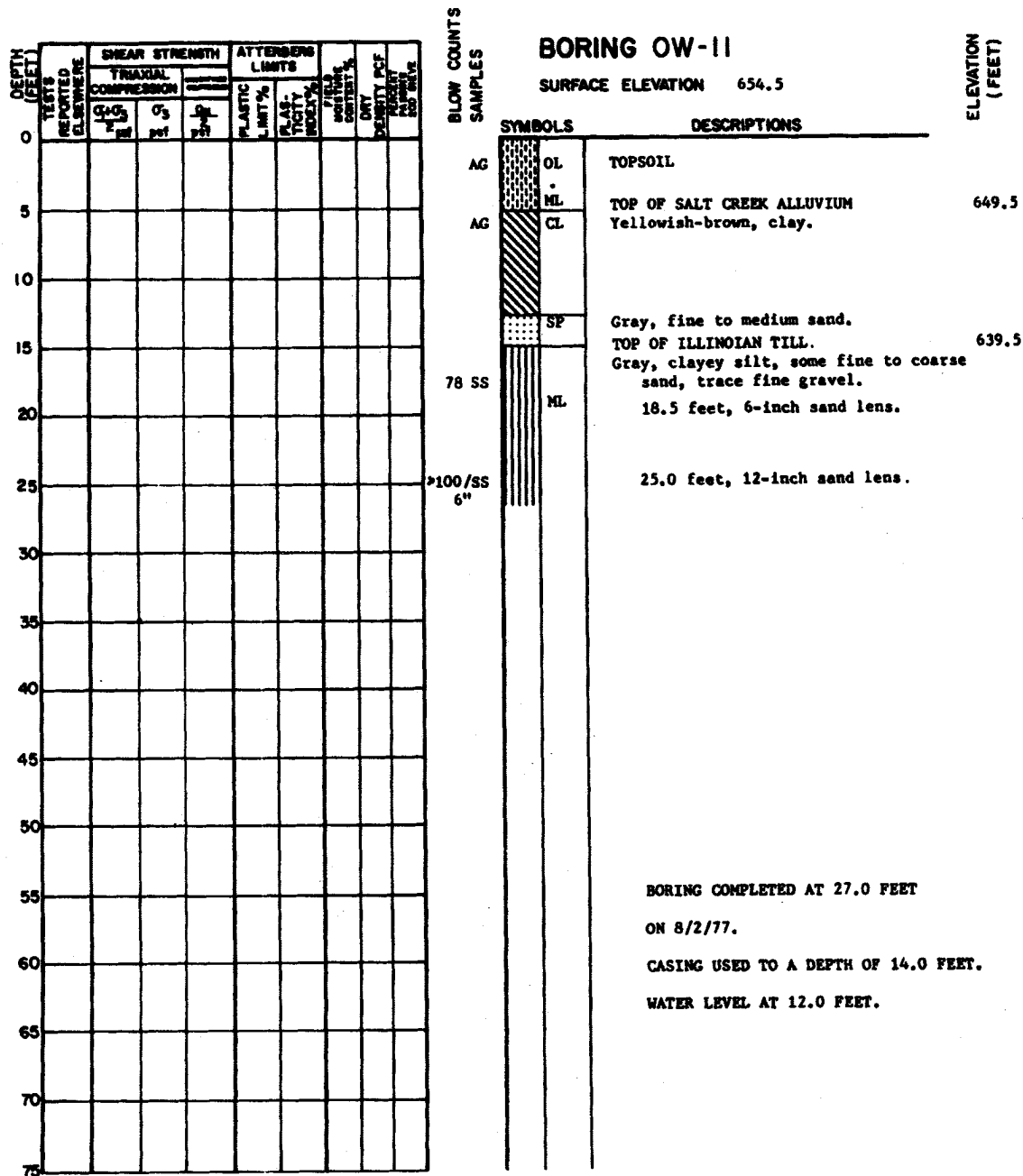
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-263

LOG OF BORING OW-10



PIEZOMETER INSTALLED ON 8/2/77. A 1½ INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET SLOTTED WAS PLACED TO ELEVATION 627.5. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 627.5 TO 635.5; BENTONITE SEAL FROM ELEVATION 635.5 TO 637.5; AND GRANULAR BACKFILL FROM ELEVATION 637.5 TO 654.5.

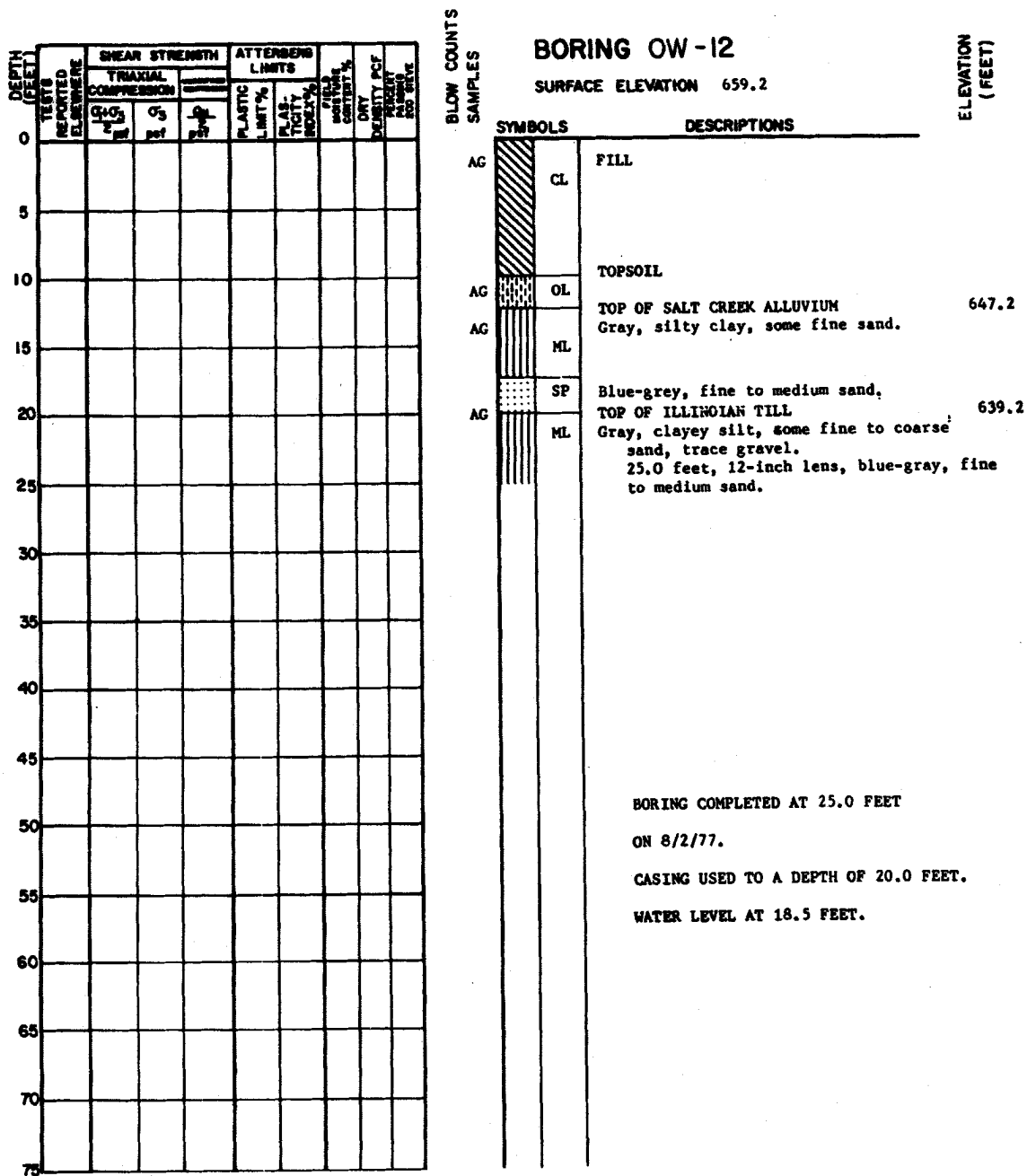
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-264

LOG OF BORING OW-11



PIEZOMETER INSTALLED ON 8/2/77. A 1 1/2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET SLOTTED WAS PLACED TO ELEVATION 634.2. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 634.2 TO 642.2; BENTONITE SEAL FROM ELEVATION 642.2 TO 644.2; AND GRANULAR BACKFILL FROM ELEVATION 644.2 TO 659.2.

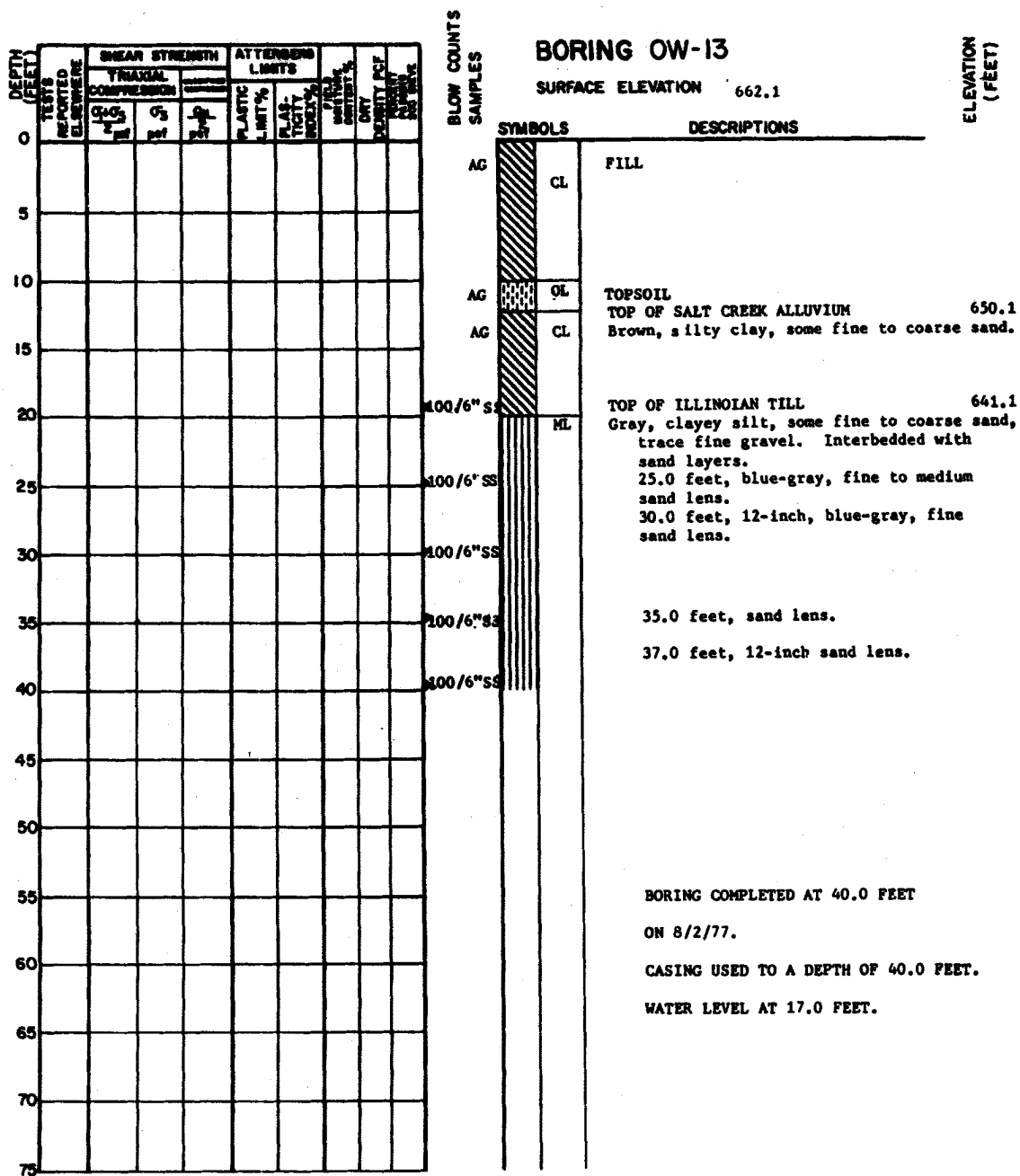
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-265

LOG OF BORING OW-12



PIEZOMETER INSTALLED ON 8/2/77. A 1½ INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET SLOTTED WAS PLACED AT ELEVATION 622.1. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 622.1 TO 630.1; BENTONITE SEAL FROM ELEVATION 630.1 TO 632.1; AND GRANULAR BACKFILL FROM ELEVATION 632.1 TO 662.1.

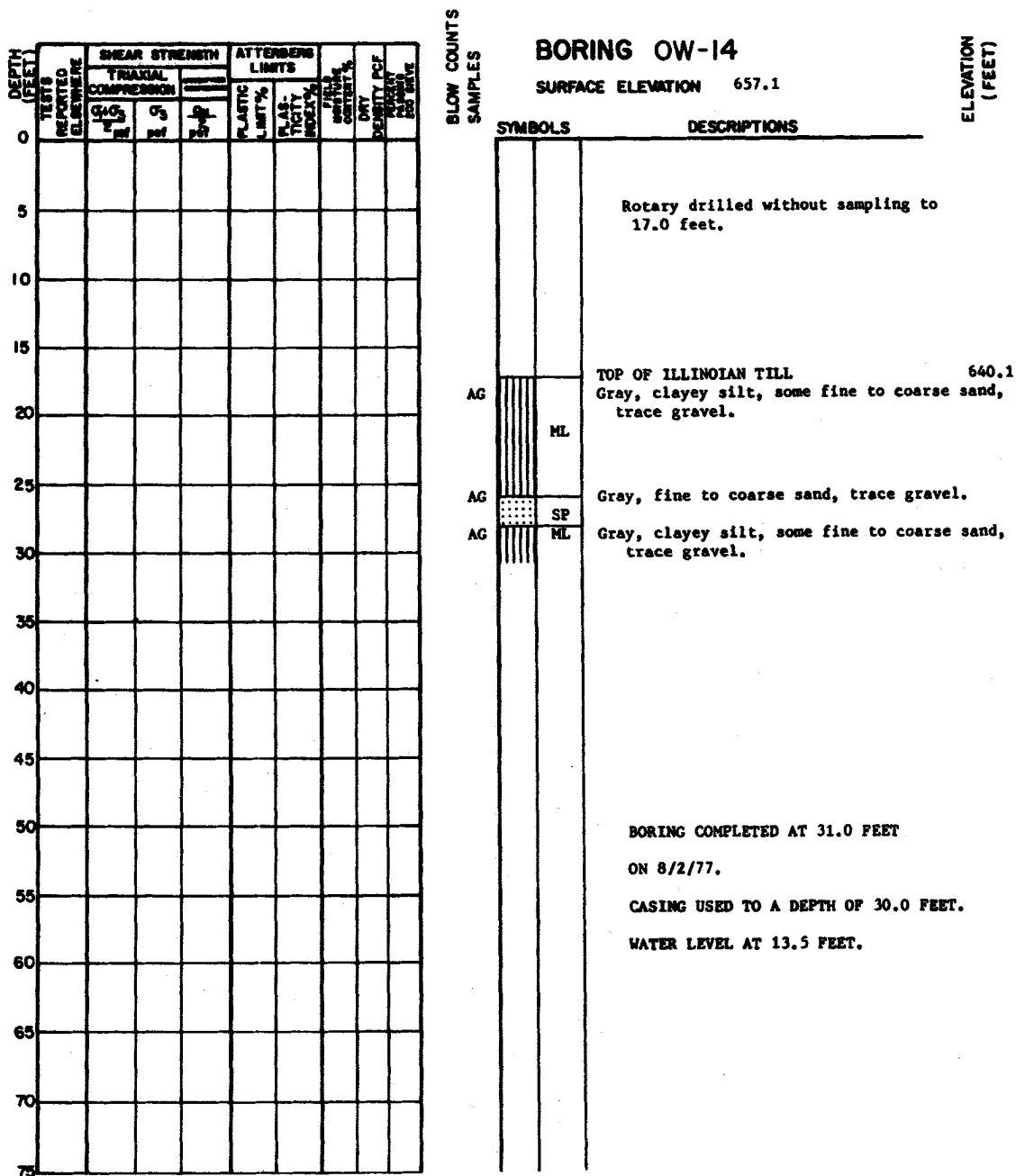
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-266

LOG OF BORING OW-13



PIEZOMETER INSTALLED ON 8/2/77. A 1 1/2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET SLOTTED WAS PLACED FROM ELEVATION 626.1. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 626.1 TO 634.1; BENTONITE SEAL FROM ELEVATION 634.1 TO 636.1; AND GRANULAR BACKFILL FROM ELEVATION 636.1 TO 657.1.

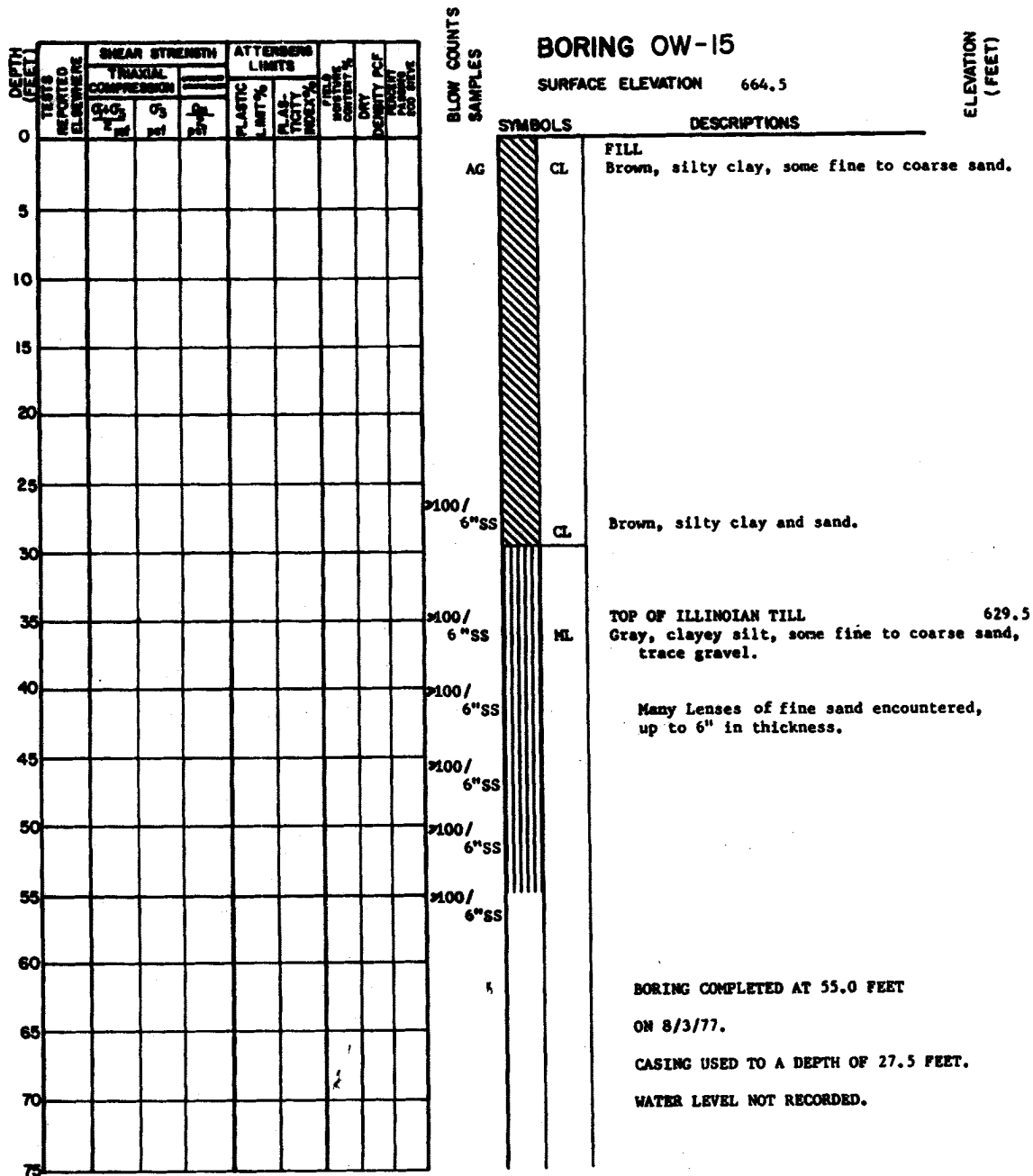
NOTES:

1. LOGGED BY SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-267

LOG OF BORING OW-14



PIEZOMETER INSTALLED ON 8/3/77. A 1½ INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET SLOTTED WAS PLACED TO ELEVATION 609.5. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 609.5 TO 617.5; BENTONITE SEAL FROM ELEVATION 617.5 TO 619.5; AND GRANULAR BACKFILL FROM ELEVATION 619.5 TO 664.5.

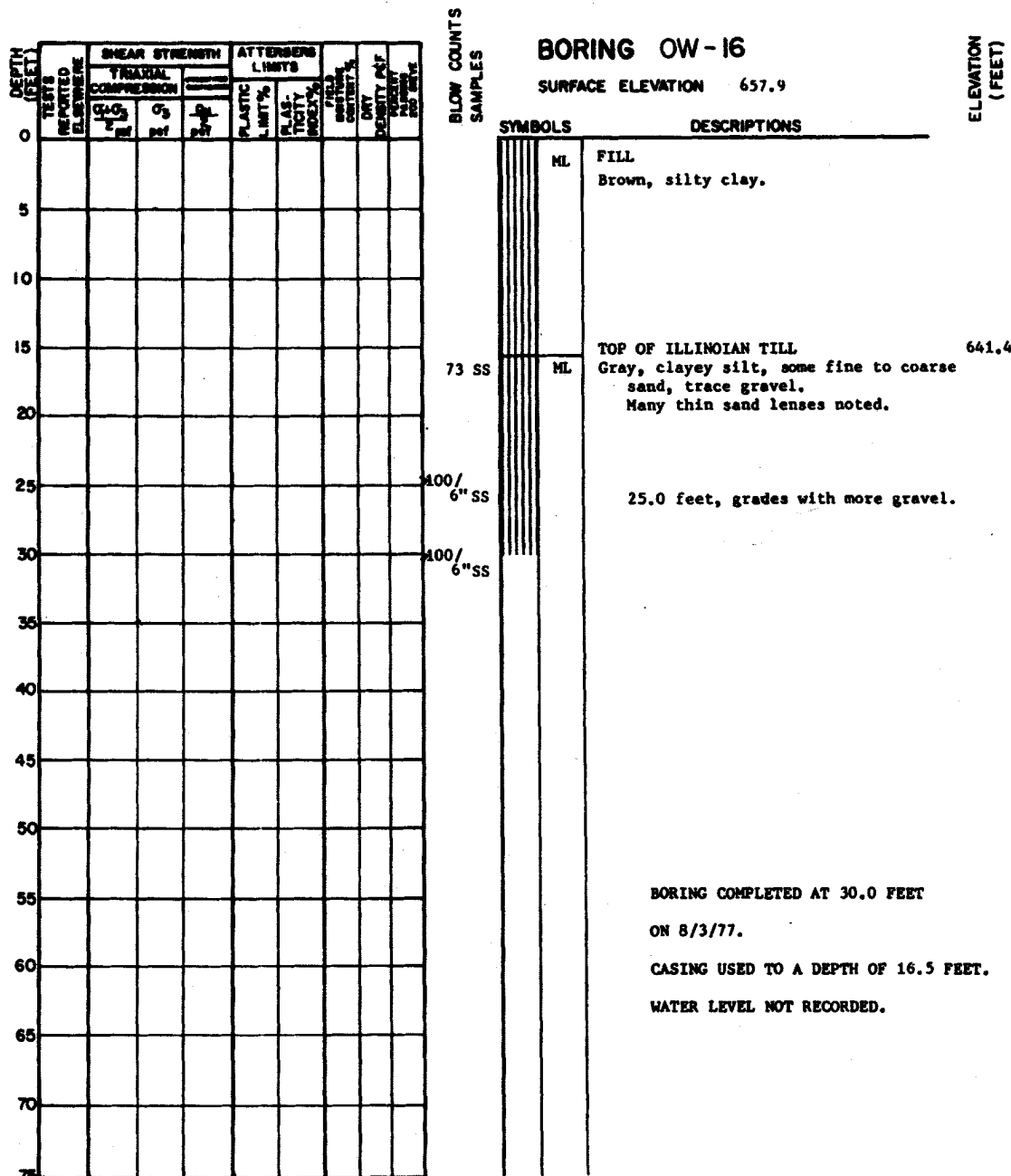
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-268

LOG OF BORING OW-15



PIEZOMETER INSTALLED ON 8/3/77. A 1½ INCH PVC
 PIPE WITH THE LOWER END PLUGGED AND THE LOWER
 5 FEET SLOTTED WAS PLACED AT ELEVATION 627.9
 GRANULAR BACKFILL WAS PLACED FROM ELEVATION
 627.9 TO 635.9; BENTONITE SEAL FROM ELEVATION
 635.9 TO 637.9; AND GRANULAR BACKFILL FROM
 ELEVATION 637.9 TO 657.9.

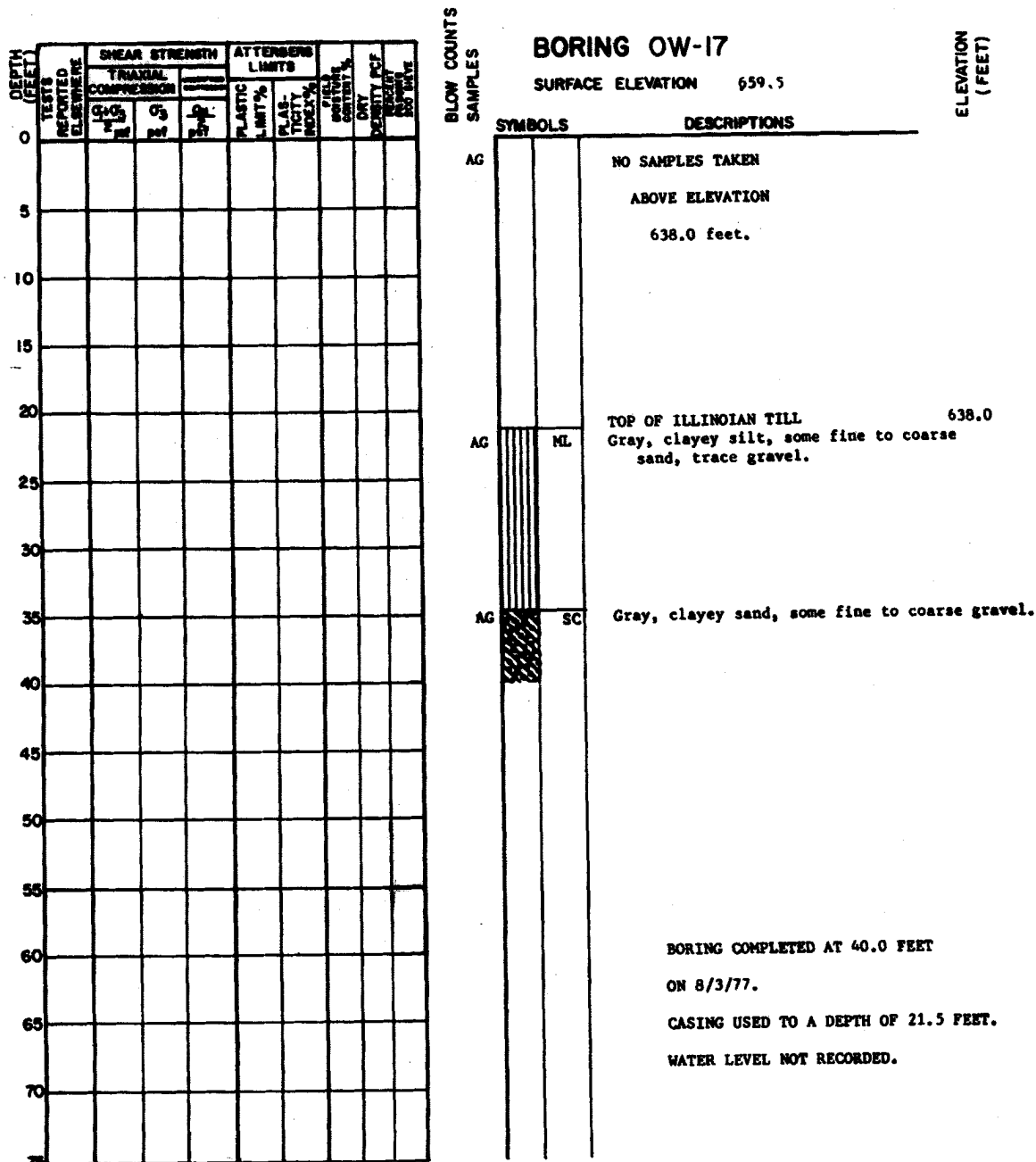
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-269

LOG OF BORING OW-16



PIEZOMETER INSTALLED ON 8/3/77. A 1½ INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET SLOTTED WAS PLACED TO ELEVATION 619.5. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 619.5 TO 627.5; BENTONITE SEAL FROM ELEVATION 627.5 TO 629.5; AND GRANULAR BACKFILL FROM ELEVATION 629.5 TO 659.5.

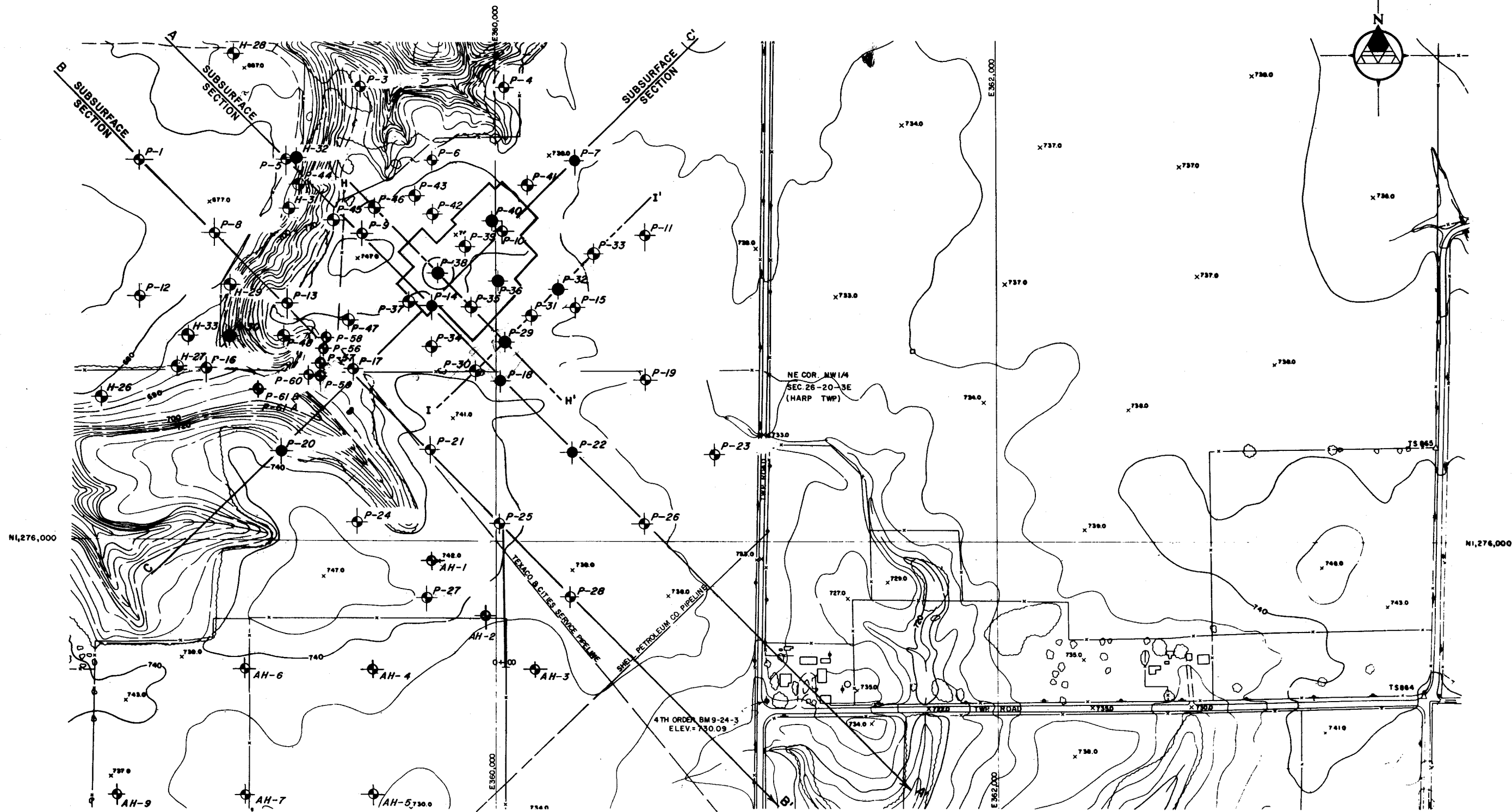
NOTES:

1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-270

LOG OF BORING OW-17

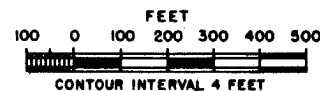


LEGEND:

- 740 — TOPOGRAPHIC CONTOURS
- P-1 BORING LOCATION
- LOCATION OF BORING THAT EXTENDED TO BEDROCK.
- H — H' SUBSURFACE SECTION LOCATION

NOTES:

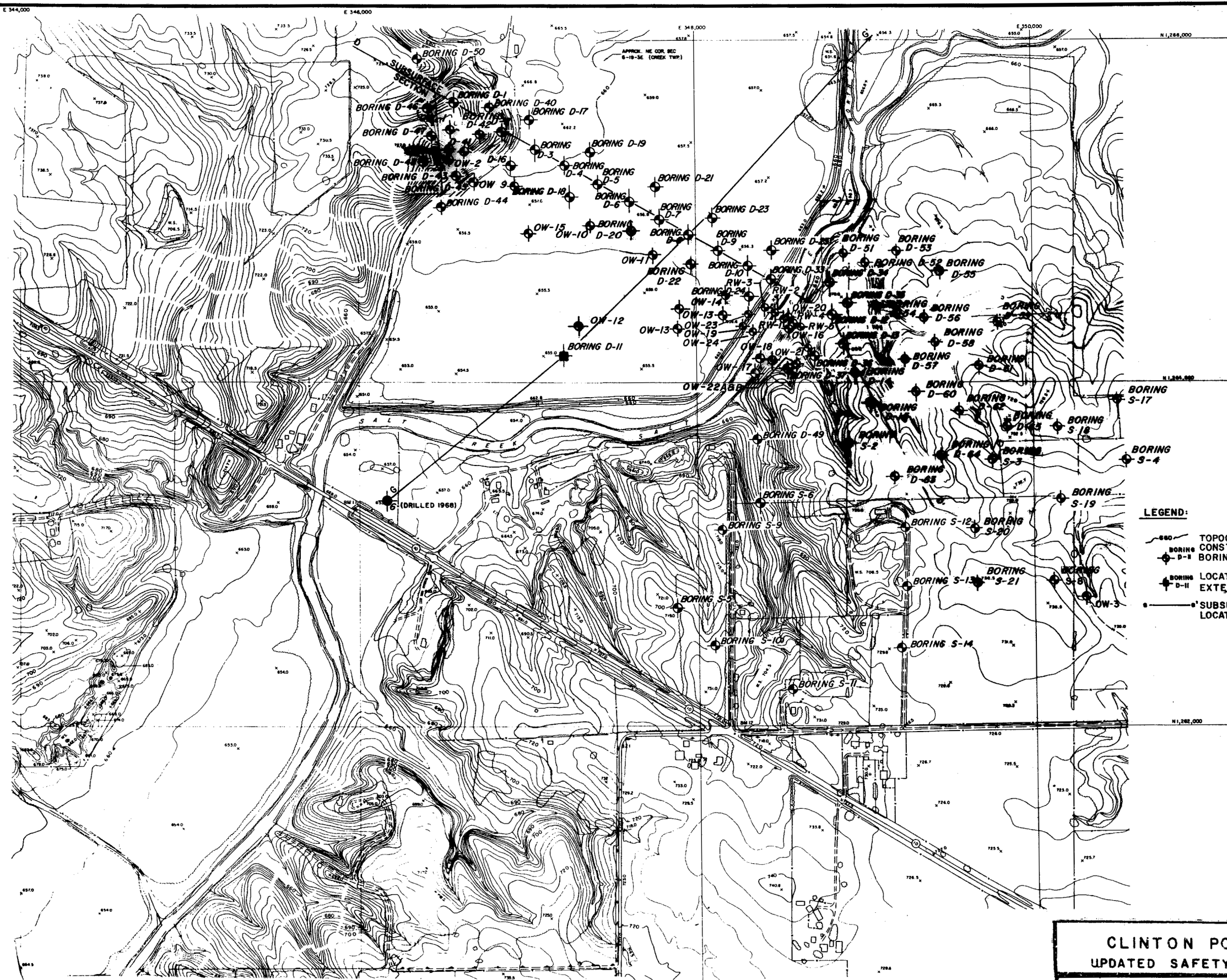
1. BORING LOCATIONS ARE SHOWN ON THE MAP. BORING LOCATIONS ARE SHOWN ON THE MAP.
2. BORING LOCATIONS ARE SHOWN ON THE MAP. BORING LOCATIONS ARE SHOWN ON THE MAP.



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-271

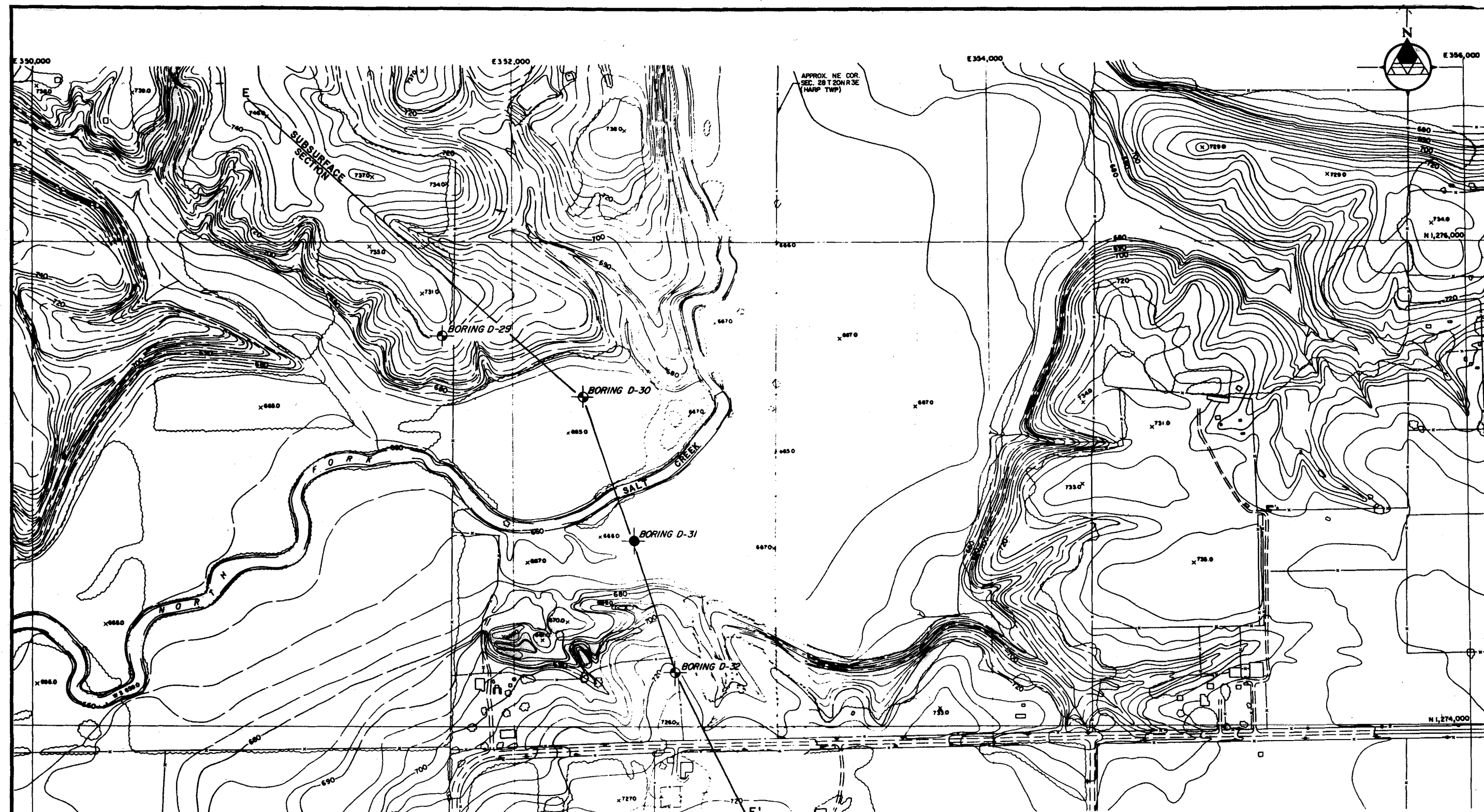
PLOT PLAN - STATION SITE



CLINTON POWER STATION
 UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-272

PLOT PLAN - DAM SITE
 AND BORROW AREA



- NOTES:
1. REFER TO FIGURE 2.5-278 FOR SUBSURFACE SECTION.
 2. REFER TO FIGURES 2.5-94 THROUGH 2.5-97 FOR LOG OF BORINGS.

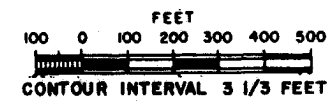
LEGEND

700 TOPOGRAPHIC CONTOURS

BORING D-30 BORING LOCATION

BORING D-31 LOCATION OF BORING THAT EXTENDED TO BEDROCK.

E — E' SUB SURFACE SECTION LOCATION



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-273

SECTION E-E' ALONG NORTH FORK
OF SALT CREEK

TIME STRATIGRAPHY			STRATIGRAPHIC UNITS				
			FSAR		PSAR	BORING LOGS	
Quaternary System	Pleistocene Series	Holocene Stage	Cahokia Alluvium	Peyton Colluvium	Salt Creek Alluvium or Flood Plain Alluvium and Recent Channel Deposits	Salt Creek Alluvium	
		Wisconsinan Stage	Valderan Substage	Richland Loess	Henry Formation	Loess	Loess
			Twocreekan Substage				
			Woodfordian Substage	Wedron Formation	Wisconsinan Till or Wisconsinan Glacial Till	Wisconsinan Glacial Till	
			Farmdalian Substage	Robein Silt	Interglacial Zone or Sangamon Interglacial Zone or Sangamon Soil Interval	Interglacial Zone	
			Altonian Substage				
		Sangamonian Stage	weathered Glasford Formation				
		Illinoian Stage	unaltered Glasford Formation	Illinoian Till or Illinoian Glacial Till	Illinoian Glacial Till		
		Yarmouthian Stage	Banner Formation	Lacustrine Deposit	Lacustrine Deposit		
		Kansan Stage		Pre-Illinoian Glacial Till or Kansan Till	Pre-Illinoian Glacial Till		
Pre-Illinoian Alluvial and Lacustrine Deposit or Kansan Alluvial or Lacustrine Soils	Pre-Illinoian Lacustrine Deposit						
		Bedrock Valley Outwash Deposit or Mahomet Valley Deposit	Mahomet Bedrock Valley Deposit				
Unconformity							
Pennsylvanian System			Bedrock	Bedrock	Bedrock		

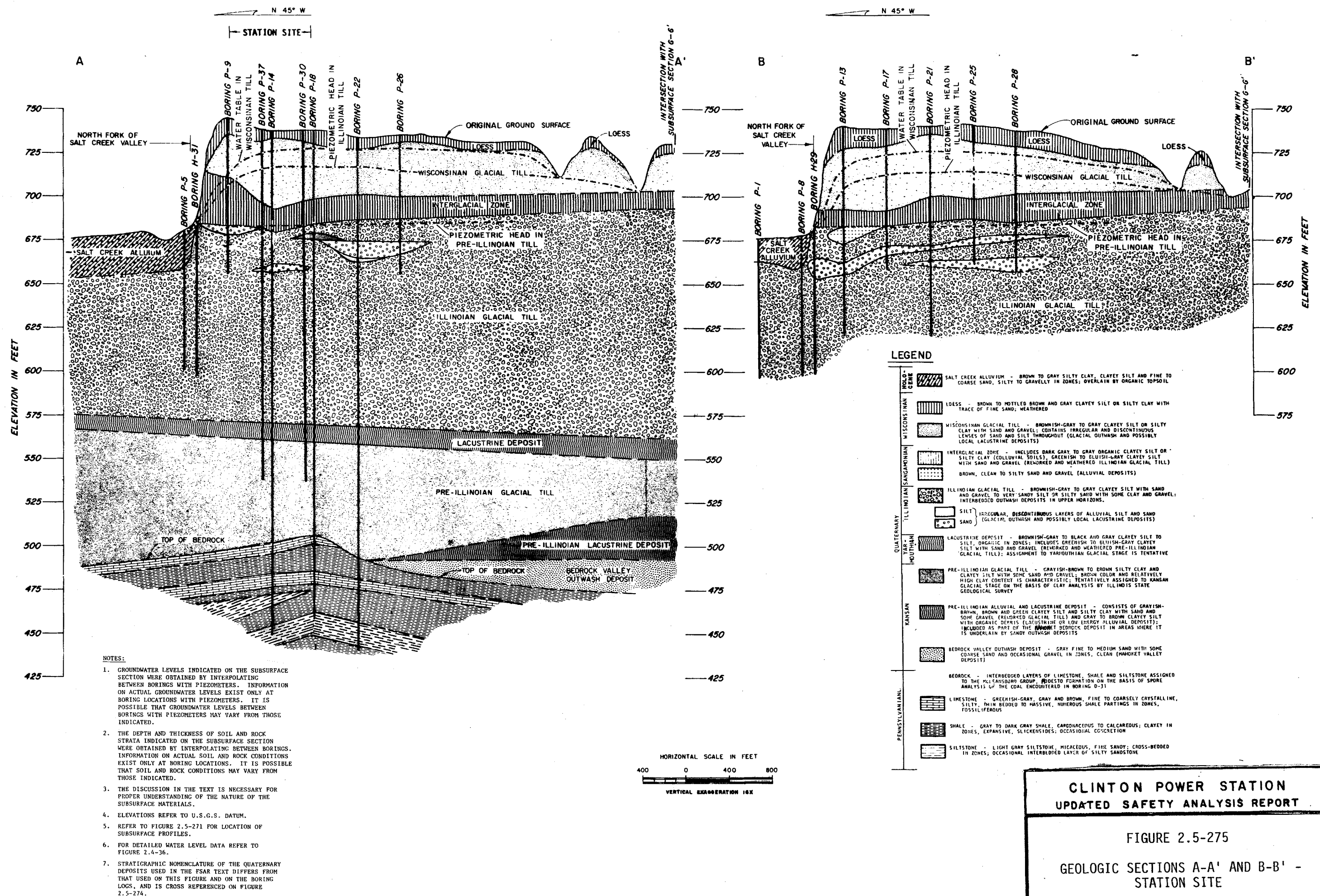
NOTES:

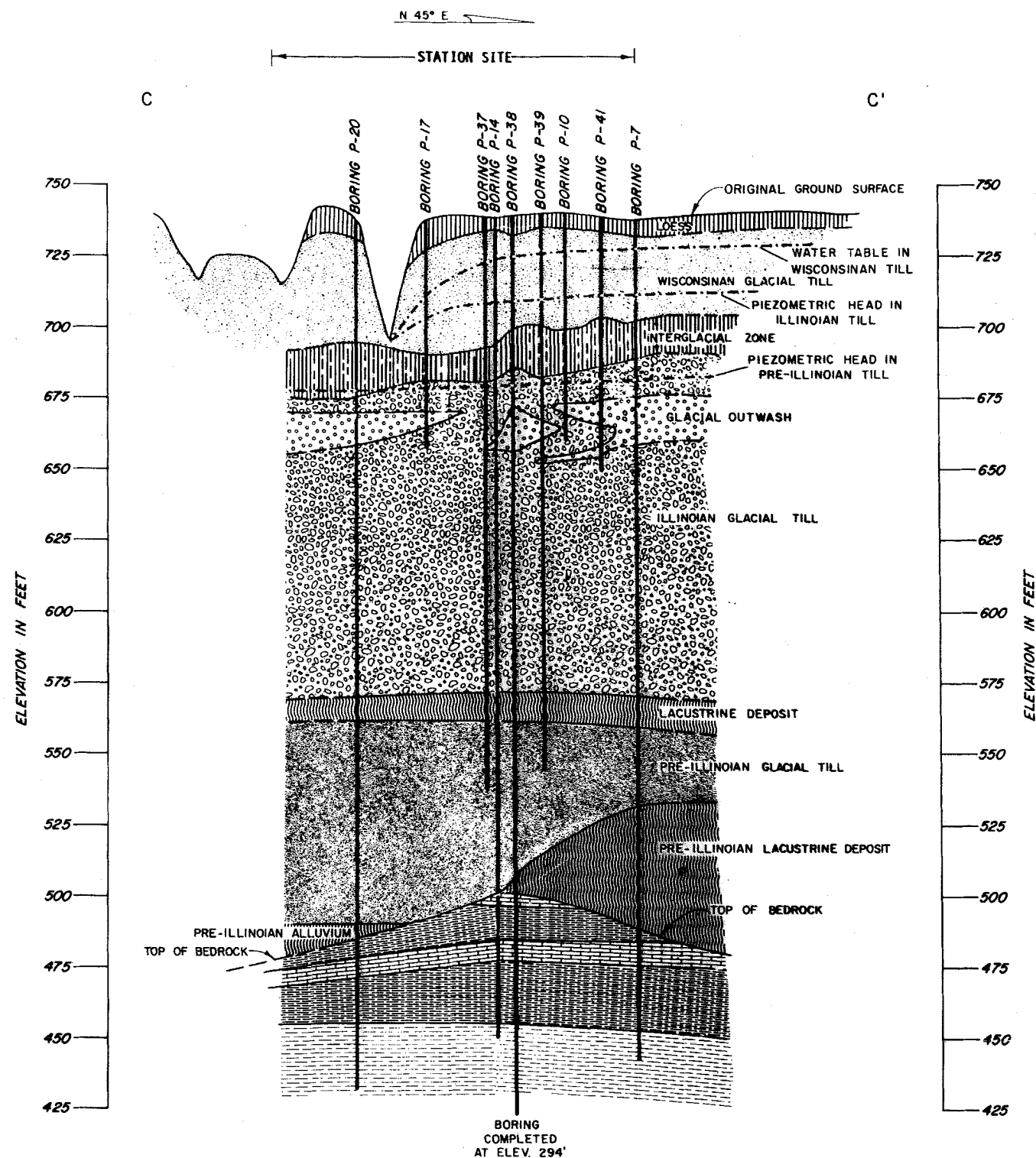
1. EXCAVATIONS FOR THE CLINTON POWER STATION DID NOT EXTEND BELOW THE UNALTERED GLASFORD FORMATION.
2. BORINGS FOR THE CLINTON POWER STATION DID NOT EXTEND INTO ROCKS OLDER THAN THOSE OF THE PENNSYLVANIAN SYSTEM.
3. ILLINOIAN-AGE TILL OF THE GLASFORD FORMATION WAS SUBJECTED TO A SIGNIFICANT PERIOD OF WEATHERING DURING THE SANGAMONIAN STAGE AND ALTONIAN SUBSTAGE.
4. DEPOSITS OF CAHOKIA ALLUVIUM AND HENRY FORMATION WERE NOT DIFFERENTIATED.
5. THE HOLOCENE STAGE IS REPRESENTED BY A SIGNIFICANT PERIOD OF WEATHERING AND DEVELOPMENT OF AGRICULTURAL SOIL PROFILES (MODERN SOIL).
6. VERTICAL SCALE DOES NOT REPRESENT EITHER RELATIVE THICKNESS OF STRATIGRAPHIC UNITS OR RELATIVE DURATION OF TIME INTERVAL.

**CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT**

FIGURE 2.5-274

COMPARISON OF TERMINOLOGY USED FOR THE
FSAR, PSAR AND BORING LOGS





LEGEND

QUATERNARY	LOESS - BROWN TO MOTTLED BROWN AND GRAY CLAYEY SILT OR SILTY CLAY WITH TRACE OF FINE SAND; WEATHERED
WISCONSINAN	WISCONSINAN GLACIAL TILL - BROWNISH-GRAY TO GRAY CLAYEY SILT OR SILTY CLAY WITH SAND AND GRAVEL; CONTAINS IRREGULAR AND DISCONTINUOUS LENSES OF SAND AND SILT THROUGHOUT (GLACIAL OUTWASH AND POSSIBLY LOCAL LACUSTRINE DEPOSITS)
ILLINOIAN	INTERGLACIAL ZONE - INCLUDES DARK GRAY TO GRAY ORGANIC CLAYEY SILT OR SILTY CLAY (COLLUVIAL SOILS); GREENISH TO BLuish-GRAY CLAYEY SILT WITH SAND AND GRAVEL (REWORKED AND WEATHERED ILLINOIAN GLACIAL TILL)
ILLINOIAN	ILLINOIAN GLACIAL TILL - BROWNISH-GRAY TO GRAY CLAYEY SILT WITH SAND AND GRAVEL TO VERY SANDY SILT OR SILTY SAND WITH SOME CLAY AND GRAVEL; INTERBEDDED OUTWASH DEPOSITS IN UPPER HORIZONS
YAR-MOUTHIAN	LACUSTRINE DEPOSIT - BROWNISH-GRAY TO BLACK AND GRAY CLAYEY SILT TO SILT, ORGANIC IN ZONES; INCLUDES GREENISH TO BLuish-GRAY CLAYEY SILT WITH SAND AND GRAVEL (REWORKED AND WEATHERED PRE-ILLINOIAN GLACIAL TILL); ASSIGNMENT TO YAR-MOUTHIAN GLACIAL STAGE IS TENTATIVE
PRE-ILLINOIAN	PRE-ILLINOIAN GLACIAL TILL - GRAYISH-BROWN TO BROWN SILTY CLAY AND CLAYEY SILT WITH SOME SAND AND GRAVEL; BROWN COLOR AND RELATIVELY HIGH CLAY CONTENT IS CHARACTERISTIC; TENTATIVELY ASSIGNED TO KANSAN GLACIAL STAGE ON THE BASIS OF CLAY ANALYSIS BY ILLINOIS STATE GEOLOGICAL SURVEY
KANSAN	PRE-ILLINOIAN ALLUVIAL AND LACUSTRINE DEPOSIT - CONSISTS OF GRAYISH-BROWN, BROWN AND GREEN CLAYEY SILT AND SILTY CLAY WITH SAND AND SOME GRAVEL (REWORKED GLACIAL TILL) AND GRAY TO BROWN CLAYEY SILT WITH ORGANIC DEBRIS (LACUSTRINE OR LOW ENERGY ALLUVIAL DEPOSIT); INCLUDED AS PART OF THE MANHATTAN BEDROCK DEPOSIT IN AREAS WHERE IT IS UNDERLAIN BY SANDY OUTWASH DEPOSITS
PENNSYLVANIAN	BEDROCK - INTERBEDDED LAYERS OF LIMESTONE, SHALE AND SILTSTONE ASSIGNED TO THE MCLAINSBORO GROUP, FOLDED FORMATION ON THE BASIS OF SPORE ANALYSIS OF THE COAL ENCOUNTERED IN BORING 0-31
	LIMESTONE - GREENISH-GRAY, GRAY AND BROWN, FINE TO COARSELY CRYSTALLINE, SILTY, THIN BEDDED TO MASSIVE, NUMEROUS SHALE PARTINGS IN ZONES, FOSSILIFEROUS
	SHALE - GRAY TO DARK GRAY SHALE, CARBONACEOUS TO CALCAREOUS; CLAYEY IN ZONES, EXPANSIVE, SLICKENSIDES; OCCASIONAL CONCRETION
	SILTSTONE - LIGHT GRAY SILTSTONE, MICACEOUS, FINE SANDY; CROSS-BEDDED IN ZONES; OCCASIONAL INTERBEDDED LAYER OF SILTY SANDSTONE

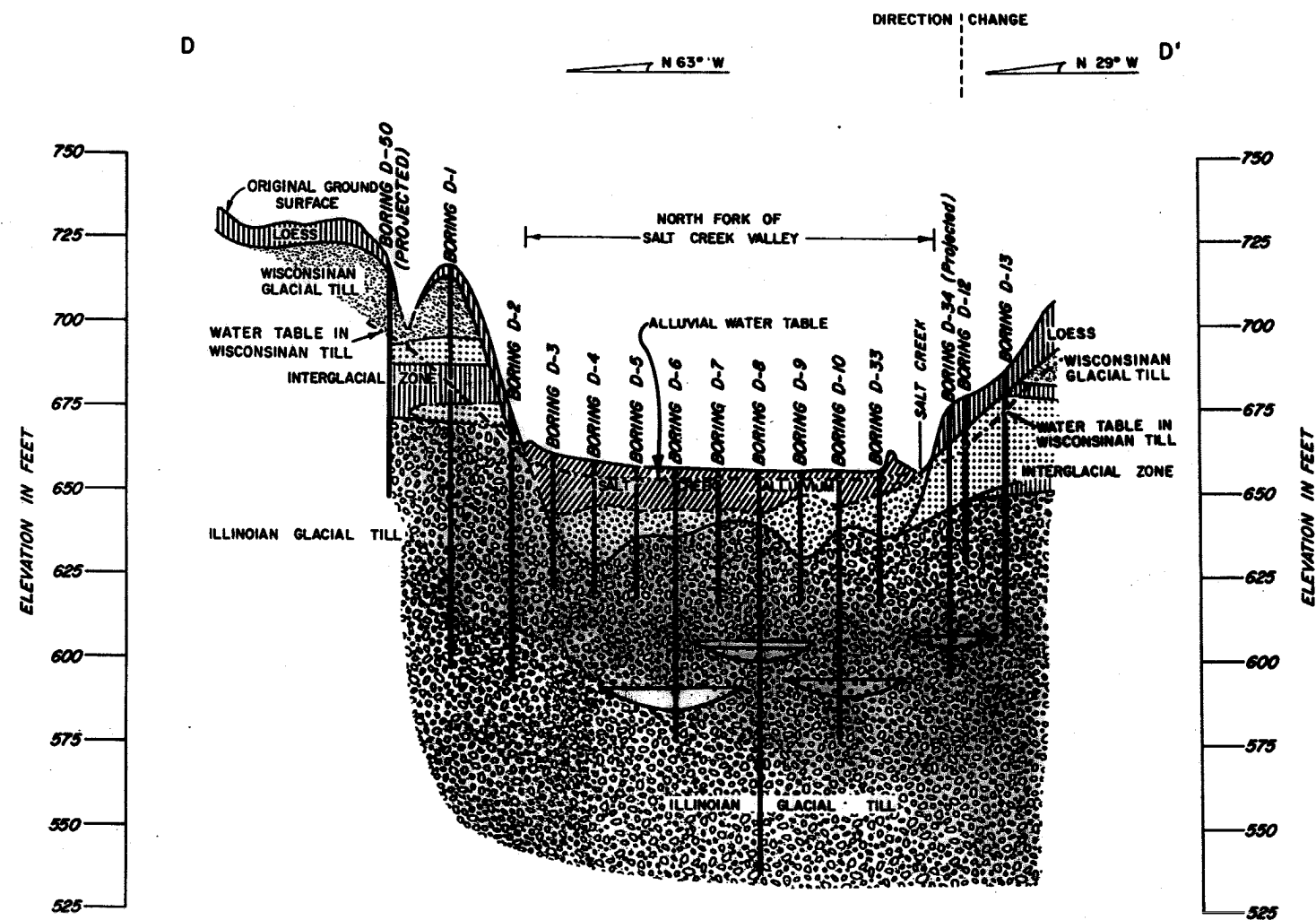
NOTES:

- GROUNDWATER LEVELS INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS WITH PIEZOMETERS. INFORMATION ON ACTUAL GROUNDWATER LEVELS EXIST ONLY AT BORING LOCATIONS WITH PIEZOMETERS. IT IS POSSIBLE THAT GROUNDWATER LEVELS BETWEEN BORINGS WITH PIEZOMETERS MAY VARY FROM THOSE INDICATED.
- THE DEPTH AND THICKNESS OF SOIL AND ROCK STRATA INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS. INFORMATION ON ACTUAL SOIL AND ROCK CONDITIONS EXIST ONLY AT BORING LOCATIONS. IT IS POSSIBLE THAT SOIL AND ROCK CONDITIONS MAY VARY FROM THOSE INDICATED.
- THE DISCUSSION IN THE TEXT IS NECESSARY FOR PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.
- ELEVATIONS REFER TO U.S.G.S. DATUM.
- REFER TO FIGURE 2.5-271 FOR LOCATION OF SUBSURFACE PROFILES.
- FOR DETAILED WATER LEVEL DATA REFER TO FIGURE 2.4-36.
- STRATIGRAPHIC NOMENCLATURE OF THE QUATERNARY DEPOSITS USED IN THE FSAR TEXT DIFFERS FROM THAT USED ON THIS FIGURE AND ON THE BORING LOGS, AND IS CROSS REFERENCED ON FIGURE 2.5-274.

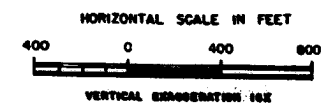
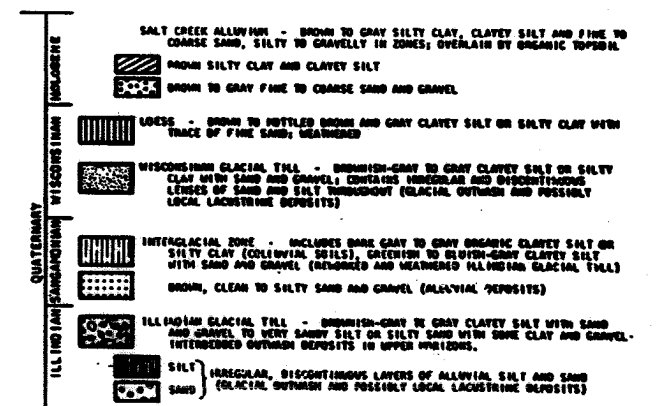
CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-276

GEOLOGIC SECTION C-C' - STATION SITE



LEGEND



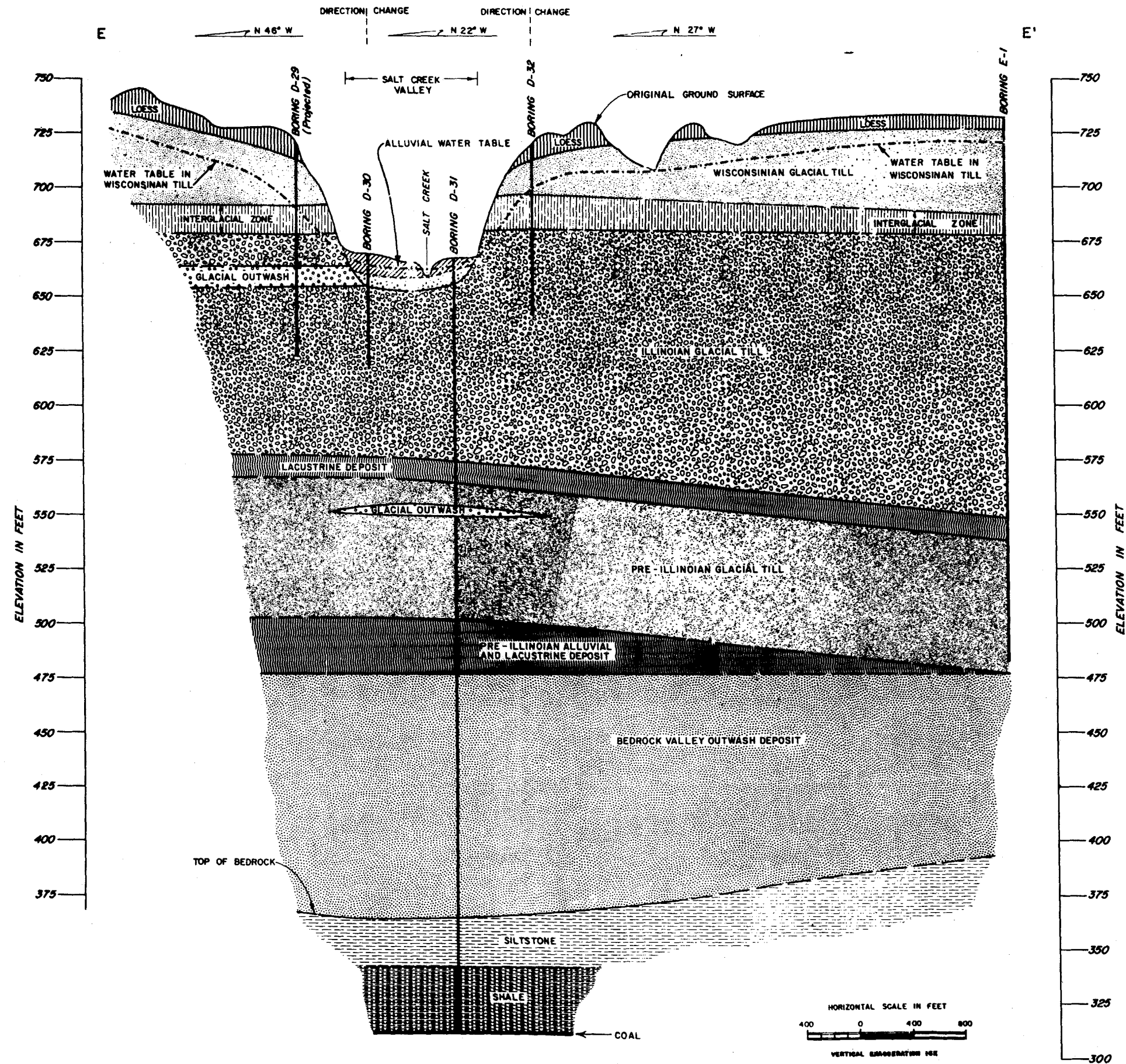
NOTES:

- GROUNDWATER LEVELS INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS WITH PIEZOMETERS. INFORMATION ON ACTUAL GROUNDWATER LEVELS EXIST ONLY AT BORING LOCATIONS WITH PIEZOMETERS. IT IS POSSIBLE THAT GROUNDWATER LEVELS BETWEEN BORINGS WITH PIEZOMETERS MAY VARY FROM THOSE INDICATED.
- THE DEPTH AND THICKNESS OF SOIL AND ROCK STRATA INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS. INFORMATION ON ACTUAL SOIL AND ROCK CONDITIONS EXIST ONLY AT BORING LOCATIONS. IT IS POSSIBLE THAT SOIL AND ROCK CONDITIONS MAY VARY FROM THOSE INDICATED.
- THE DISCUSSION IN THE TEXT IS NECESSARY FOR PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.
- ELEVATIONS REFER TO U.S.G.S. DATUM.
- REFER TO FIGURE 2.5-272 FOR LOCATION OF SUBSURFACE PROFILES.
- FOR DETAILED WATER LEVEL DATA REFER TO FIGURES 2.4-37 AND 2.4-41.
- STRATIGRAPHIC NOMENCLATURE OF THE QUATERNARY DEPOSITS USED IN THE PSAR TEXT DIFFERS FROM THAT USED ON THIS FIGURE AND ON THE BORING LOGS, AND IS CROSS REFERENCED ON FIGURE 2.5-274.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

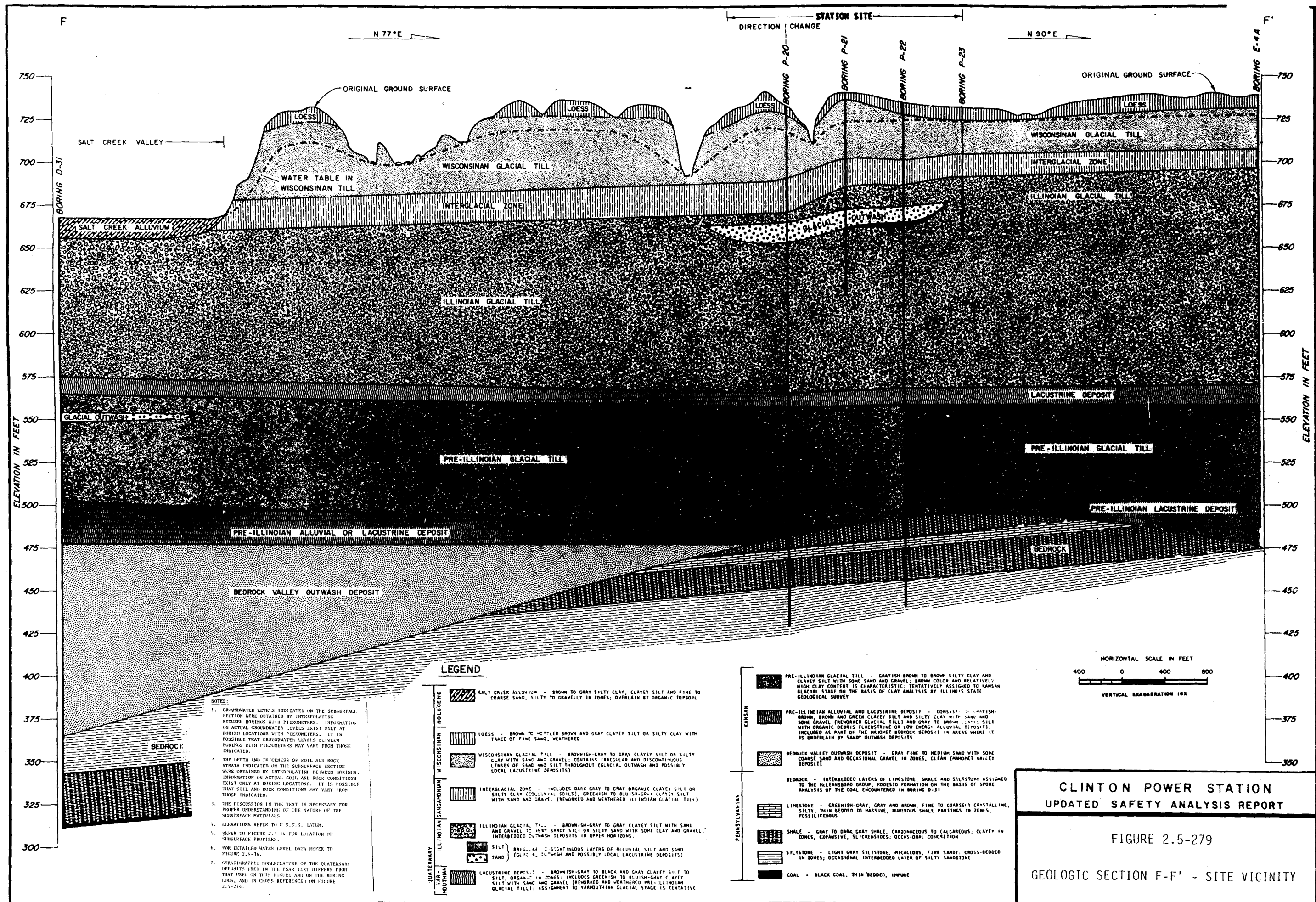
FIGURE 2.5-277

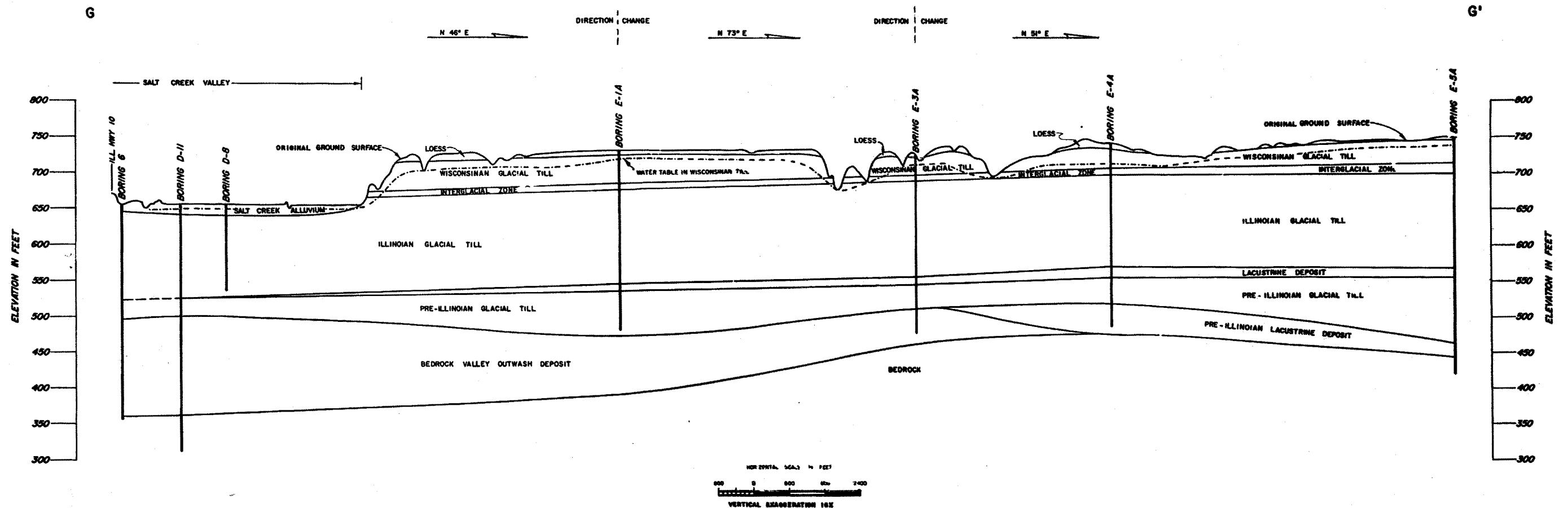
GEOLOGIC SECTION D-D' - DAM SITE



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-278
**GEOLOGIC SECTION E-E' - ALONG NORTH
FORK OF SALT CREEK**





NOTES:

- GROUNDWATER LEVELS INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS WITH PIEZOMETERS. INFORMATION ON ACTUAL GROUNDWATER LEVELS EXIST ONLY AT BORING LOCATIONS WITH PIEZOMETERS. IT IS POSSIBLE THAT GROUNDWATER LEVELS BETWEEN BORINGS WITH PIEZOMETERS MAY VARY FROM THOSE INDICATED.
- THE DEPTH AND THICKNESS OF SOIL AND ROCK STRATA INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS. INFORMATION ON ACTUAL SOIL AND ROCK CONDITIONS EXIST ONLY AT BORING LOCATIONS. IT IS POSSIBLE THAT SOIL AND ROCK CONDITIONS MAY VARY FROM THOSE INDICATED.
- THE DISCUSSION IN THE TEXT IS NECESSARY FOR PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.
- ELEVATIONS REFER TO U.S.G.S. DATUM.
- REFER TO FIGURE 2.5-14 FOR LOCATION OF SUBSURFACE PROFILES.
- FOR DETAILED WATER LEVEL DATA REFER TO FIGURES 2.4-37, 2.4-38, 2.4-41, 2.4-42 AND 2.4-43.
- STRATIGRAPHIC NOMENCLATURE OF THE QUATERNARY DEPOSITS USED IN THE FSAR TEXT DIFFERS FROM THAT USED ON THIS FIGURE AND ON THE BORING LOGS, AND IS CROSS REFERENCED ON FIGURE 2.5-274.

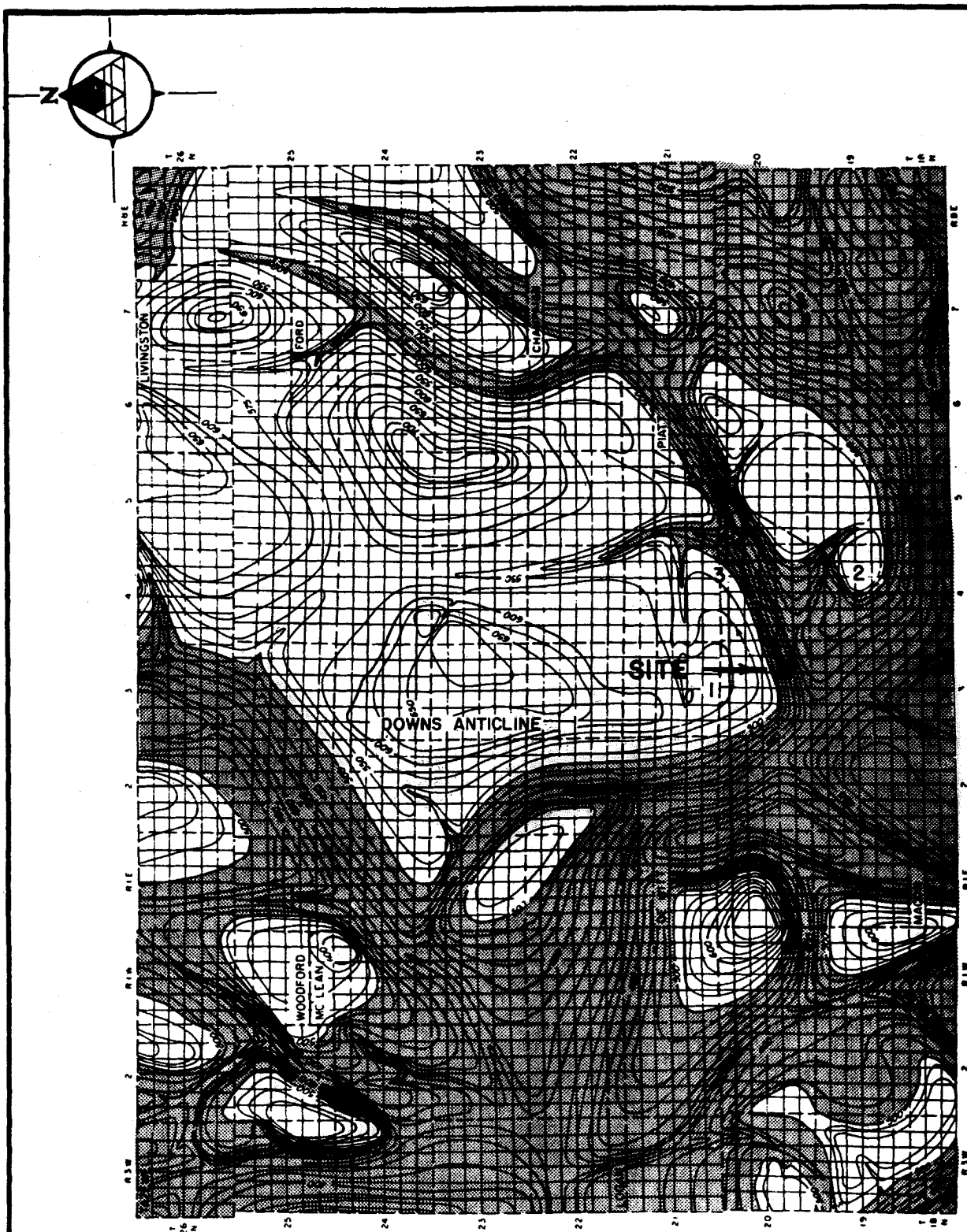
LEGEND

QUATERNARY	SALT CREEK ALLUVIUM - BROWN TO GRAY SALTY CLAY, CLAYED SALT AND FINE TO COARSE SAND, SILTY TO GRAVELLY IN BORES; UNDERLAIN BY ORGANIC MAPPING.
QUATERNARY	LOESS - BROWN TO MOTTLED BROWN AND GRAY CLAYEY SILT OR SILTY CLAY WITH TRACE OF FINE SAND; WEATHERED.
QUATERNARY	WISCONSINAN GLACIAL TILL - BROWNISH-GRAY TO BROWN CLAYEY SILT OR SILTY CLAY WITH SAND AND GRAVEL; CONTAINS HERRINGBONE AND DISSEMINATED LENSES OF SAND AND SILT THROUGHOUT (GLACIAL, SUBGLACIAL AND POSSIBLY LOCAL LACUSTRINE DEPOSITS).
QUATERNARY	INTERGLACIAL ZONE - INCLUDES BROWN GRAY TO BROWN GRAYEY CLAYEY SILT OR SILTY CLAY (COLLUVIAL SOILS), GRAVELLY TO GRAVELLY CLAYEY SILT WITH SAND AND GRAVEL (REWORKED AND WEATHERED ILLINOIAN GLACIAL TILL).
QUATERNARY	ILLINOIAN GLACIAL TILL - BROWNISH-GRAY TO BROWN CLAYEY SILT WITH SAND AND GRAVEL TO VERY SANDY SILT OR SILTY SAND WITH SOME CLAY AND GRAVEL; LATERAL OUTWASH DEPOSITS IN UPPER MEMBER.
QUATERNARY	LACUSTRINE DEPOSIT - BROWNISH-GRAY TO BLACK GRAY CLAYEY SILT TO SILT, ORGANIC IN SOME; INCLUDES SHEETED TO BROWN-GRAY CLAYEY SILT WITH SAND AND GRAVEL (REWORKED AND WEATHERED PRE-ILLINOIAN GLACIAL TILL); ASSIGNMENT TO VANCOUVERIAN GLACIAL STAGE IS TENTATIVE.
QUATERNARY	PRE-ILLINOIAN GLACIAL TILL - GRAYISH-BROWN TO BROWN SILTY CLAY AND CLAYEY SILT WITH SOME SAND AND GRAVEL; BROWN GRAY TO RELATIVELY HIGH CLAY CONTENT (IS CHARACTERISTIC); SUBSEQUENTLY REWORKED TO BROWN GLACIAL STAGE ON THE BASIS OF CLAY ANALYSIS OF HALLAM'S STAGE GEOLOGICAL SURVEY.
QUATERNARY	PRE-ILLINOIAN ALLUVIAL AND LACUSTRINE DEPOSIT - CONSISTS OF GRAYISH-BROWN, BROWN AND GRAY CLAYEY SILT AND SILTY CLAY WITH SAND AND GRAVEL; INCLUDES GLACIAL SILT AND SAND TO VERY CLAYEY SILT WITH ORGANIC DEBRIS (EXHIBITING OR LOW ORGANIC DEBRIS); INCLUDES AS PART OF THE MOTTLED BEDROCK DEPOSIT IN AREAS WHERE IT IS UNDERLAIN BY SANDY OUTWASH DEPOSITS.
QUATERNARY	GEORGE VALLEY OUTWASH DEPOSIT - GRAY FINE TO MEDIUM SAND WITH SOME COARSE SAND AND OCCASIONAL GRAVEL IN BORES; CLAYEY SUBGLACIAL DEPOSIT.
QUATERNARY	BEDROCK - INTERBEDDED LAYERS OF LIMESTONE, SHALE AND SLATSTONE ASSIGNED TO THE HILLSBORO GROUP, SUBJECT TO FURTHER STUDY ON THE BASIS OF SPORE ANALYSIS OF THE COAL ENCOUNTERED IN BORING D-8.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-280

GEOLOGIC SECTION G-G' - SITE VICINITY



KEY:

- 1) WAPPELLA DOME
- 2) DELAND DOME
- 3) PARNELL DOME

~800~ CONTOURS ON BEDROCK SURFACE

■ APPROXIMATE POSITION OF MAHOMET VALLEY FILL DEPOSITS

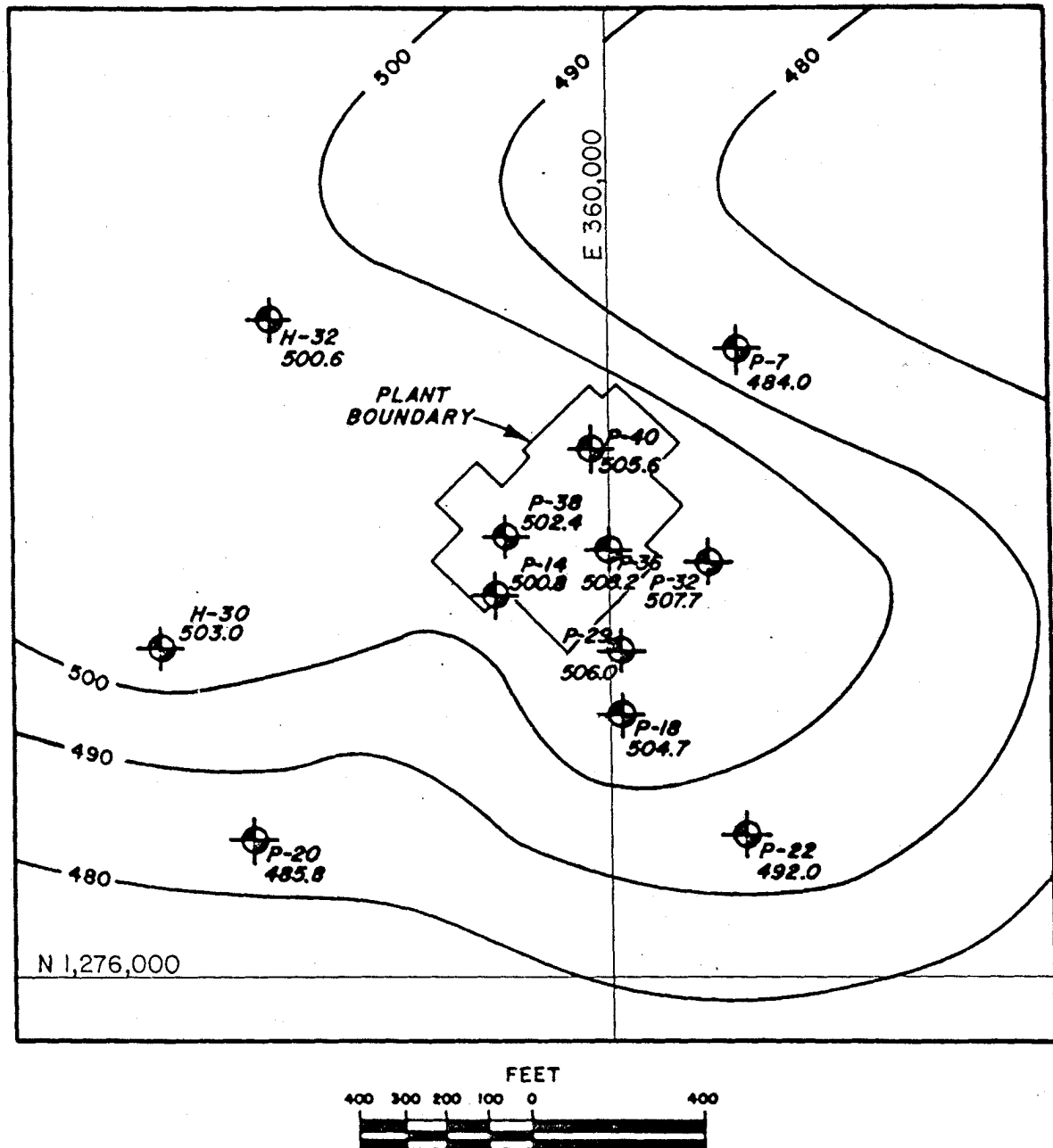
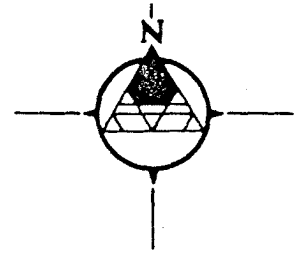
NOTE:

MODIFIED FROM: GEOLOGICAL SIGNIFICANCE OF THE GRAVITY FIELDS IN THE DEWITT - MCLEAN COUNTY AREA, ILLINOIS BY P.C. HETGOLD, L.D. MCGINNIS AND R.H. HOWARD: ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 369, 1964.

**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-281

RELIEF OF BEDROCK SURFACE



LEGEND:



BORING LOCATION



ELEVATION OF TOP OF BEDROCK



CONTOUR ON TOP OF BEDROCK SURFACE

CONTOUR INTERVAL 10 FEET

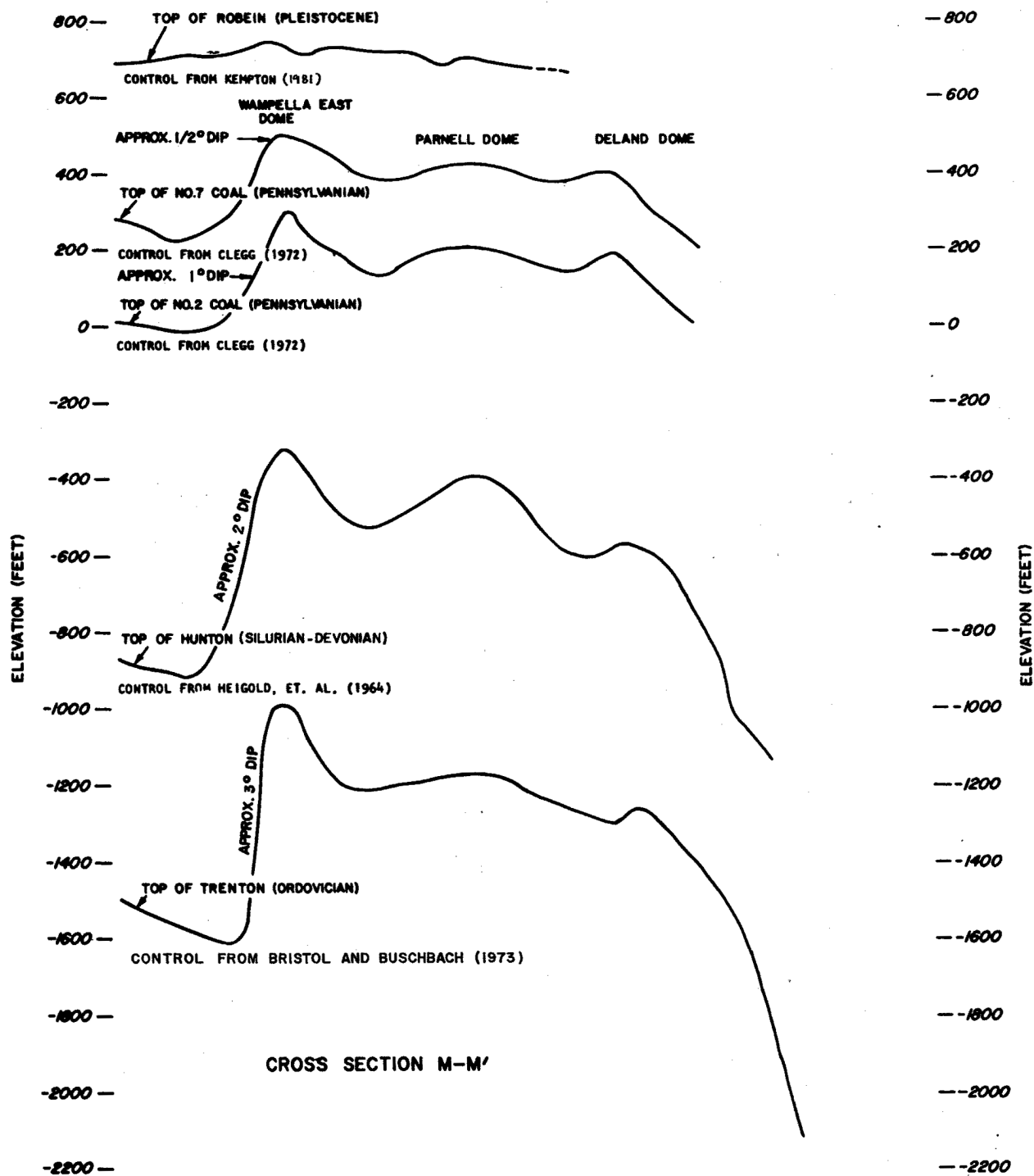
NOTES:

1. ENLARGED VIEW OF BORINGS IN PLANT AREA FROM FIGURE 2.5-17.
2. BEDROCK CONTOURS ARE BASED ON GEOLOGICAL SIGNIFICANCE OF THE GRAVITY FIELDS IN THE DEWITT-MCLEAN COUNTY AREA, ILLINOIS BY P.C. HEIGOLD, L.D. MCGINNIS AND R.H. HOWARD; ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 369, 1964, WITH MODIFICATION FROM BOREHOLE DATA.

CLINTON POWER STATION FINAL SAFETY ANALYSIS REPORT

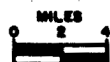
FIGURE 2.5-282

CONTOURS OF BEDROCK SURFACE STATION SITE



REFERENCES:

- KEMPTON, J.P., 1981, ILL. STATE GEOL. SURVEY ENVIRONMENTAL GEOLOGY NOTE 100.
- CLEGG, K.E., 1972, ILL. STATE GEOL. SURVEY CIRCULAR 473
- HEIGOLD, P.C. ET AL. 1964, ILL. STATE GEOL. SURVEY CIRCULAR 369
- BRISTOL, H.M. & BUSCHBACH, T.C., 1973, ILL. STATE GEOL. SURVEY, ILL. PETROLEUM 99.



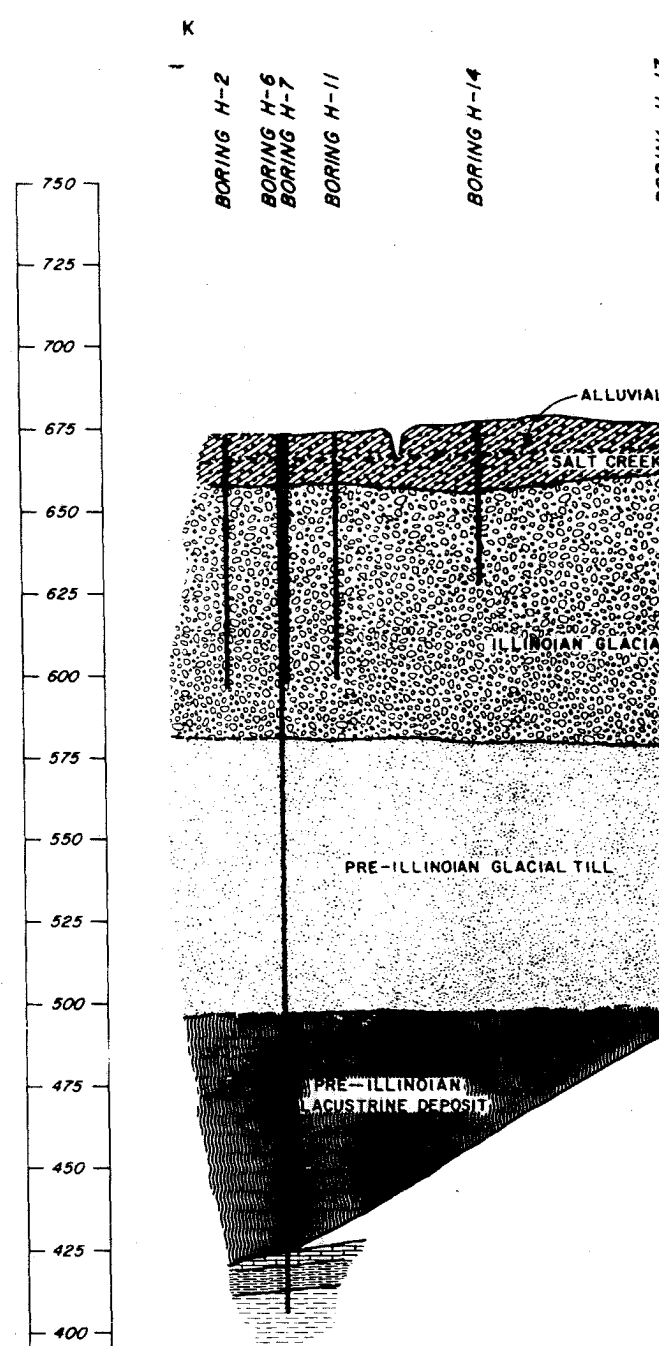
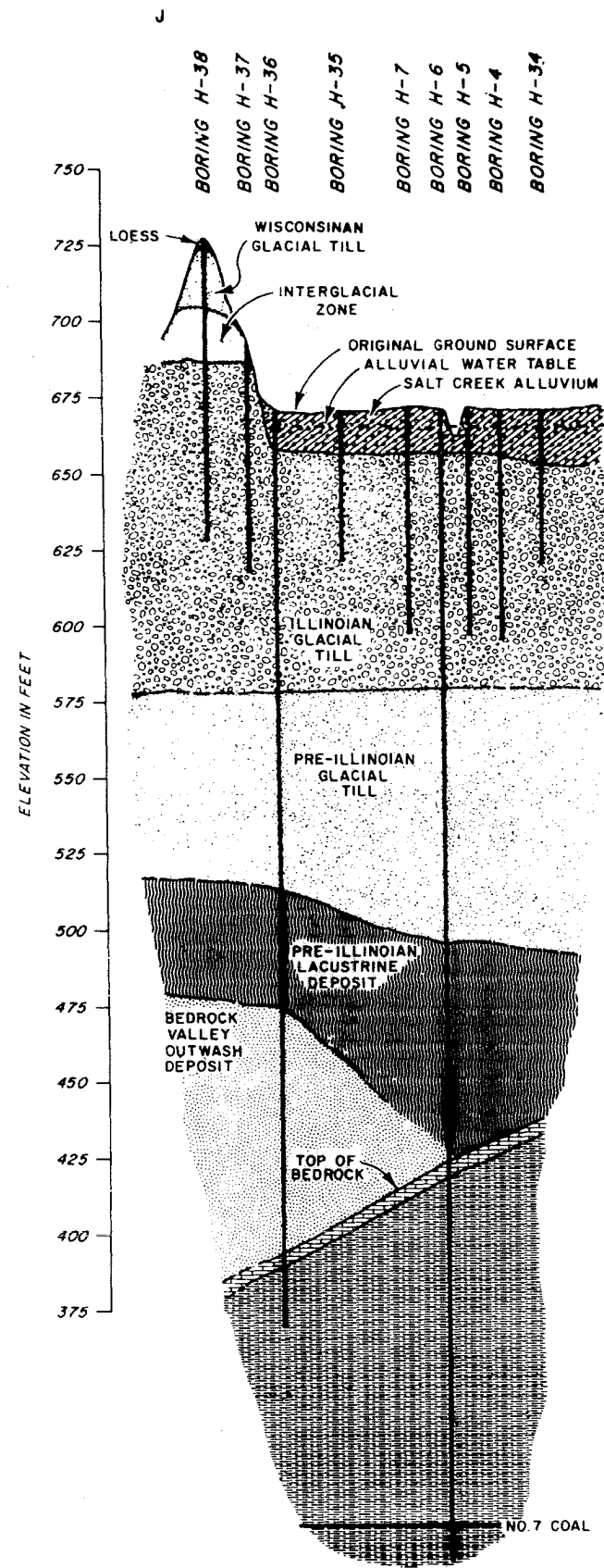
VERTICAL EXAGGERATION 100.0X

NOTE: SEE FIGURE 2.5-285 FOR LOCATION OF THE CROSS SECTION

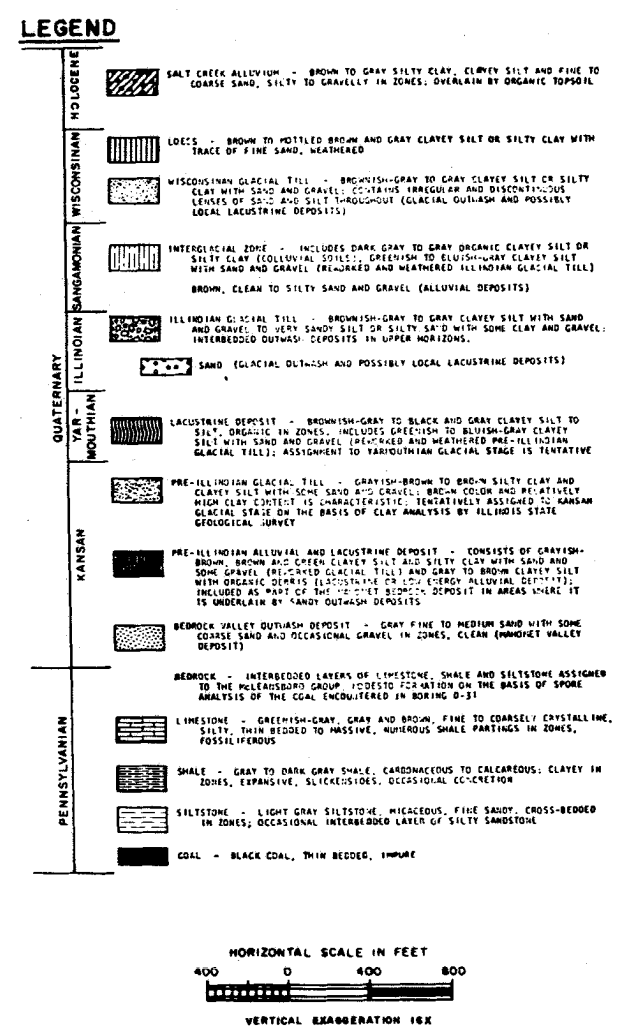
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FIGURE 2.5-283

WAPELLA EAST, PARNELL AND DELAND
DOMES, CROSS SECTION M-M'



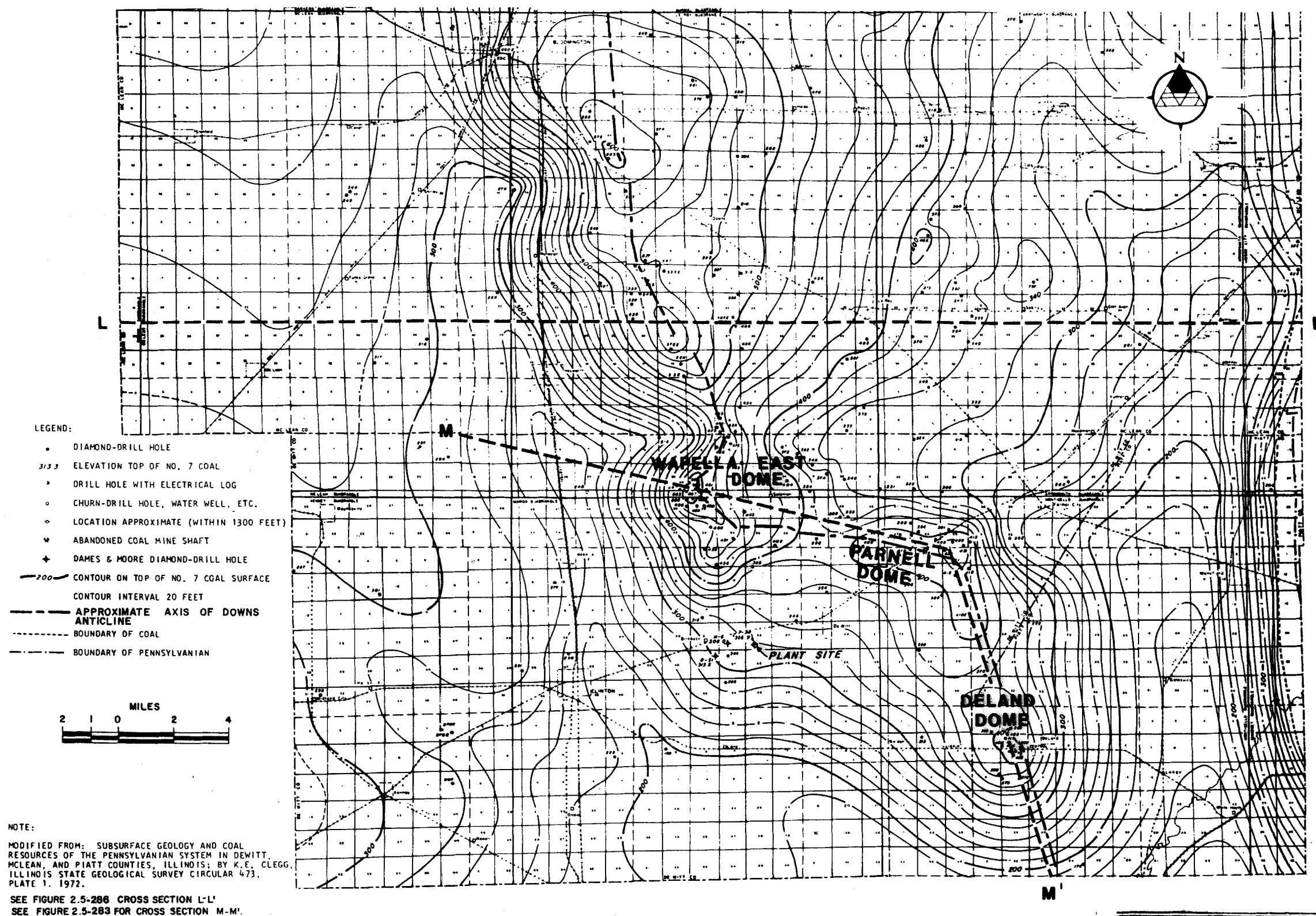
- NOTES:**
1. GROUNDWATER LEVELS INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS WITH OBSERVED WATER LEVELS.
 2. THE DEPTH AND THICKNESS OF SOIL AND ROCK STRATA INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS. INFORMATION ON ACTUAL SOIL AND ROCK CONDITIONS EXIST ONLY AT BORING LOCATIONS. IT IS POSSIBLE THAT SOIL AND ROCK CONDITIONS MAY VARY FROM THOSE INDICATED.
 3. THE DISCUSSION IN THE TEXT IS NECESSARY FOR PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.
 4. ELEVATIONS REFER TO U.S.G.S. DATUM.
 5. REFER TO FIGURE 2.5-16 FOR LOCATION OF SUBSURFACE PROFILES.
 6. FOR DETAILED WATER LEVEL DATA REFER TO FIGURES 2.5-162 THROUGH 2.5-203.
 7. STRATIGRAPHIC NOMENCLATURE OF THE QUATERNARY DEPOSITS USED IN THE PSAR TEXT DIFFERS FROM THAT USED ON THIS FIGURE AND ON THE BORING LOGS, AND IS CROSS REFERENCED ON FIGURE 2.5-274.



**CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT**

FIGURE 2.5-284

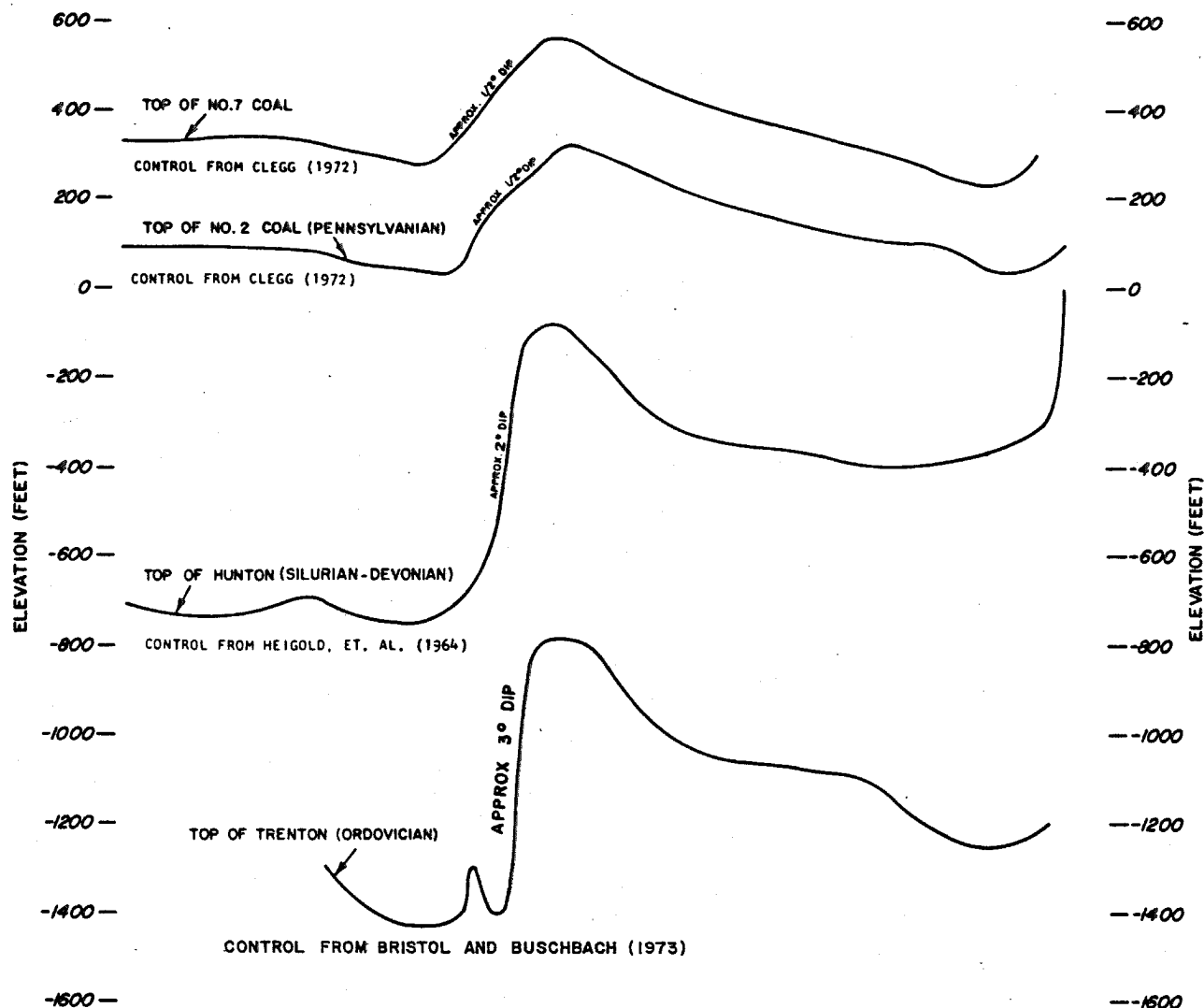
**ULTIMATE HEAT SINK GEOLOGIC
SECTIONS J-J' AND K-K'**



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-285

STRUCTURAL CONTOUR MAP OF THE TOP OF
THE NUMBER 7 COAL MEMBER



REFERENCES: CROSS SECTION L-L'

KEMPTON, J.P., 1981, ILL. STATE GEOL. SURVEY ENVIRONMENTAL GEOLOGY NOTE 100.

CLEGG, K.E., 1972, ILL. STATE GEOL. SURVEY CIRCULAR 473.

HEIGOLD, P.C. ET. AL. 1964, ILL. STATE GEOL. SURVEY CIRCULAR 369

BRISTOL, H.M. & BUSCHBACH, T.C., 1973, ILL. STATE GEOL. SURVEY, ILL. PETROLEUM 99.

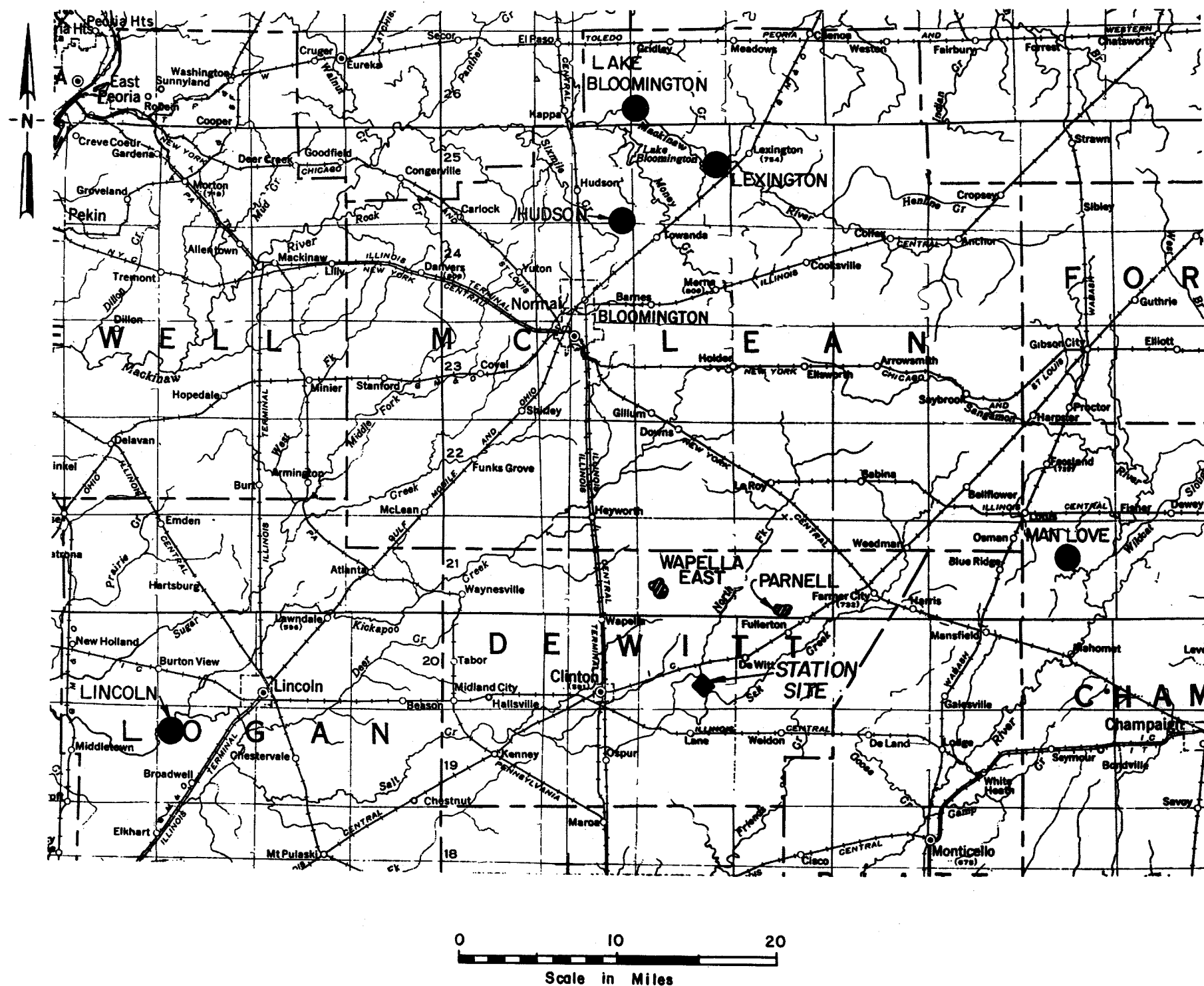


NOTE: SEE FIGURE 2.5-285 FOR LOCATION OF THE CROSS SECTION

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FIGURE 2.5-286

DOWNS ANTICLINE - CROSS SECTION L-L'



LEGEND

- Gas Storage Project
- ▨ Oil field

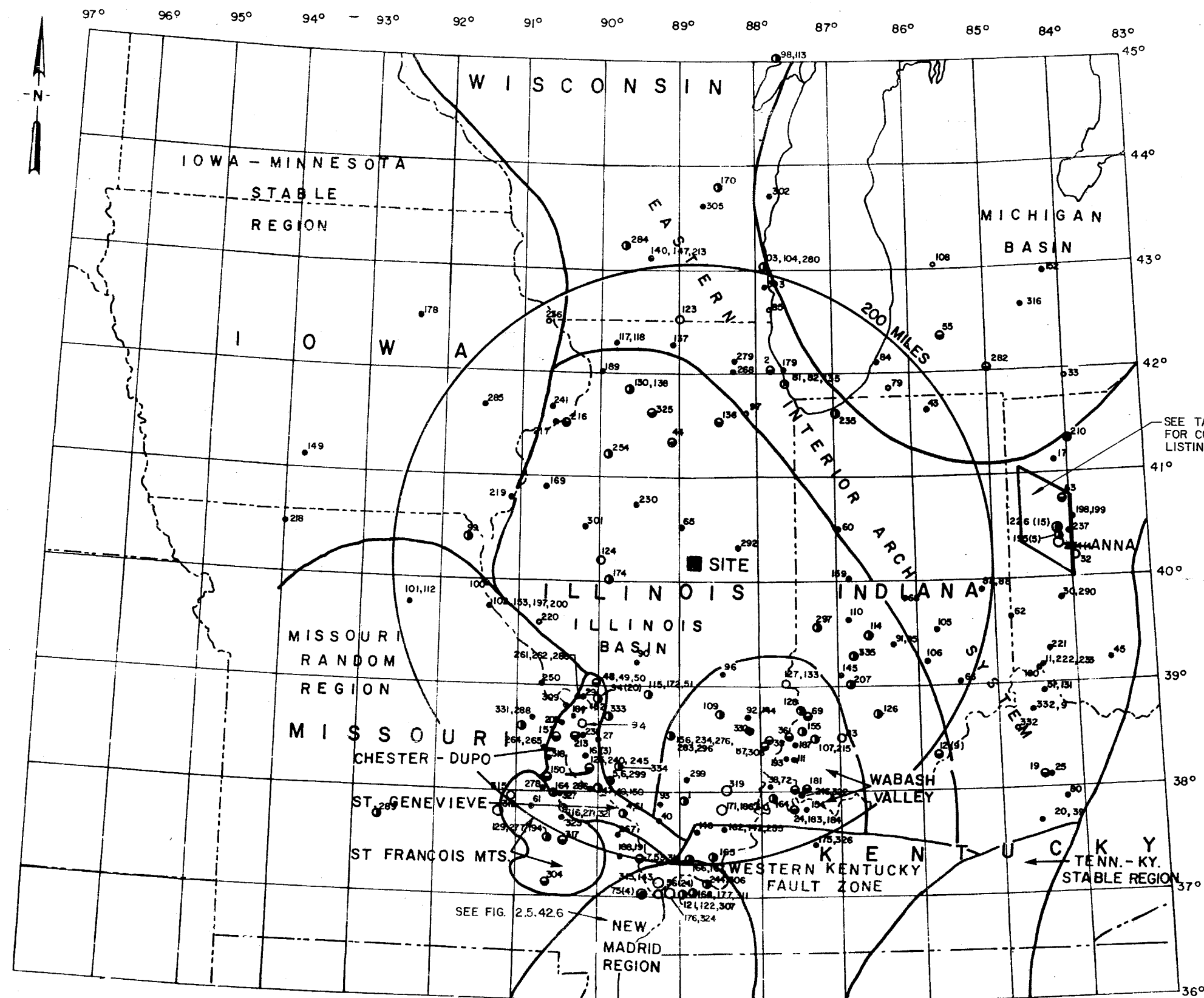
NOTES

1. Adapted from W. F. Meents, Oil and Gas Industry in Illinois, 1977, Illinois State Geological Survey, Urbana, 1977.

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FIGURE 2.5-287

LOCATION OF GAS STORAGE PROJECTS AND
OIL FIELDS IN THE SITE VICINITY



LEGEND

LOCATION OF MAXIMUM INTENSITY

- INTENSITY NOT RECORDED
- IV OR LESS
- IV-V TO V
- V-VI TO VI
- VI-VII TO VII
- VII-VIII TO VIII

SEE TABLE 2.5.4
FOR COMPLETE
LISTING

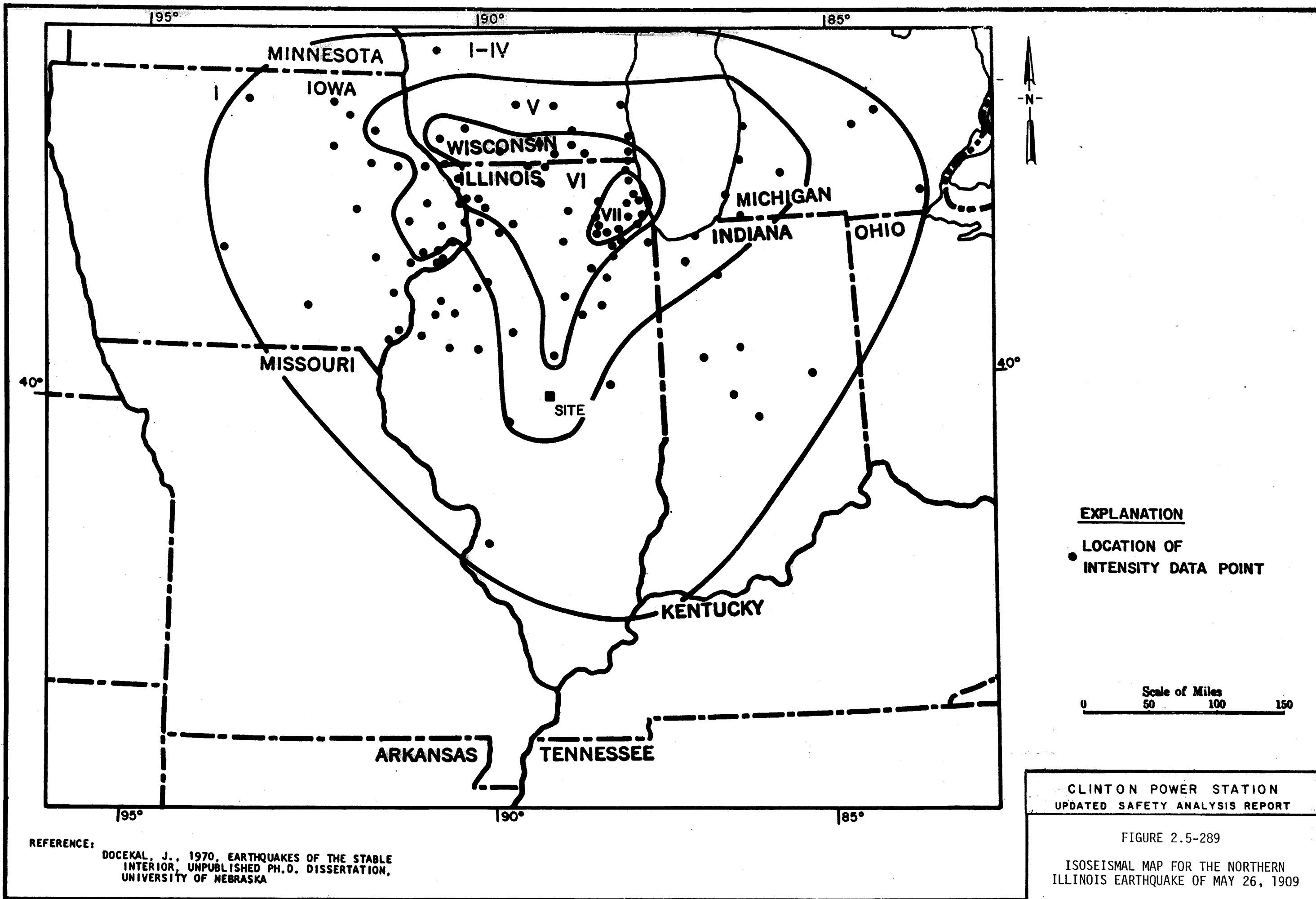
NOTES

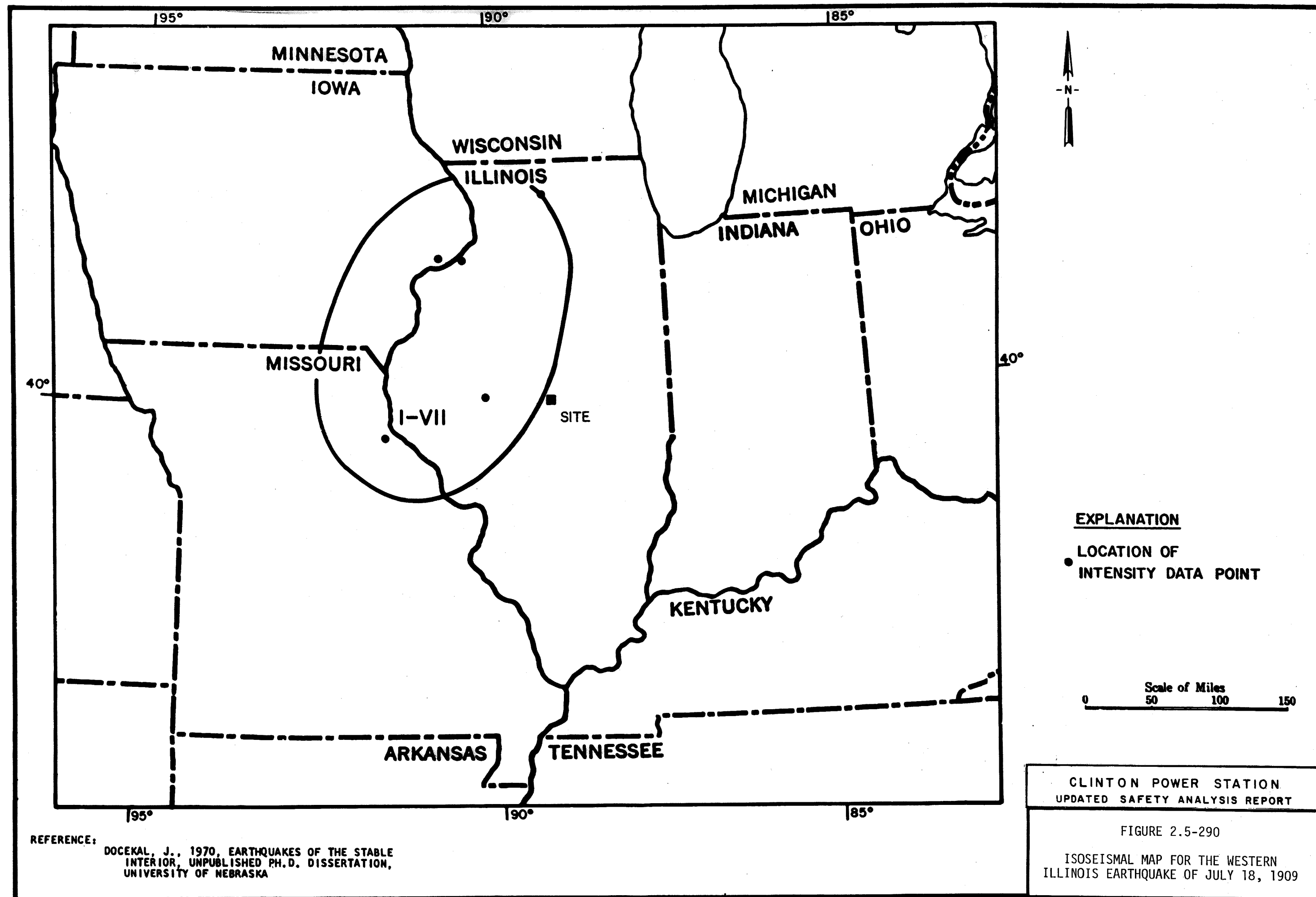
1. BASIS FOR SEISMOTECTONIC BOUNDARIES DISCUSSED IN TEXT.
2. ONLY THE LARGEST EVENT IS PRESENTED ON MAP.
3. EARTHQUAKES LISTED IN TABLE 2.5.4 NOS. IN PARENTHESES INDICATE NO. OF EVENTS AT ONE LOCATION.

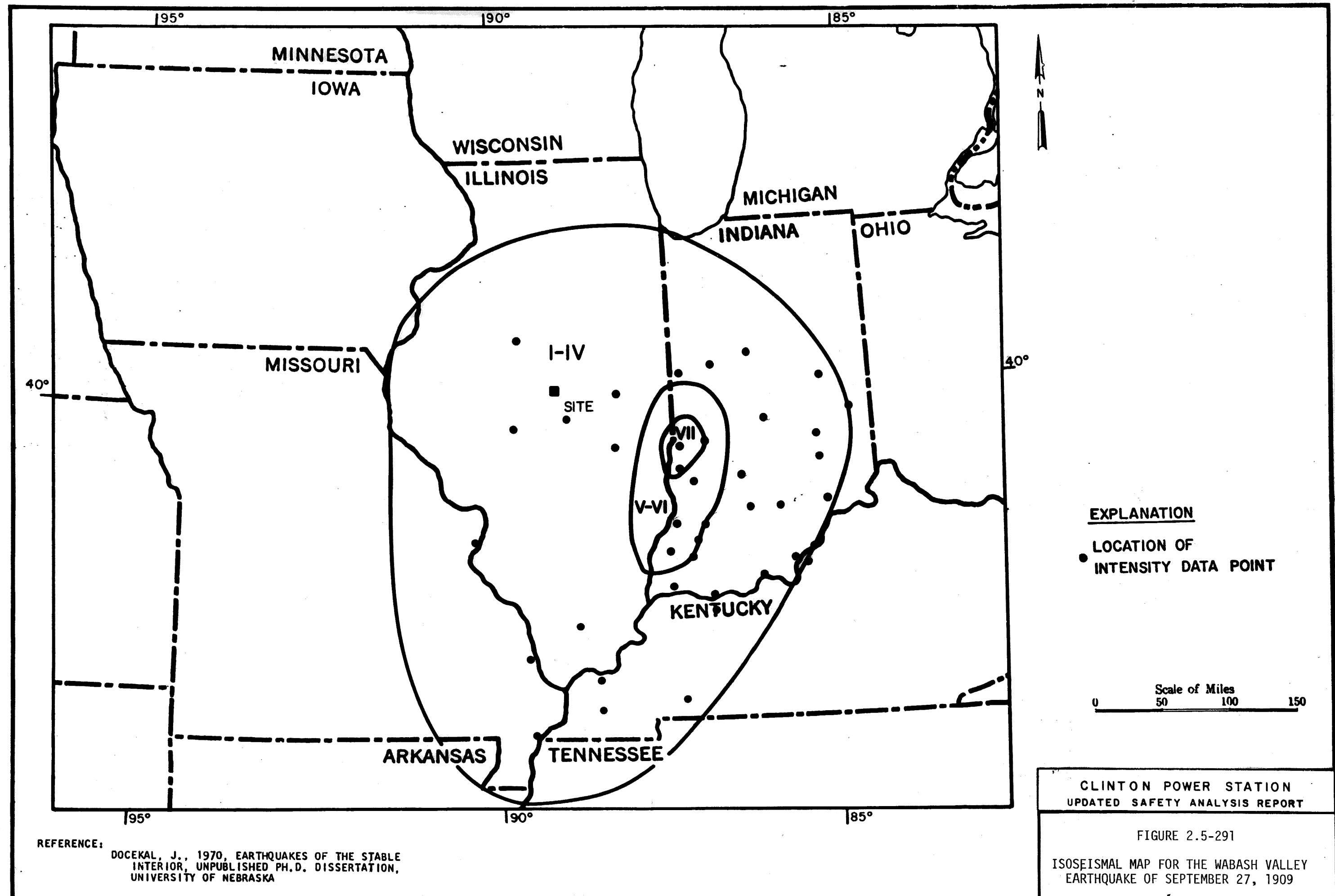
0 25 50 75 100
SCALE IN MILES

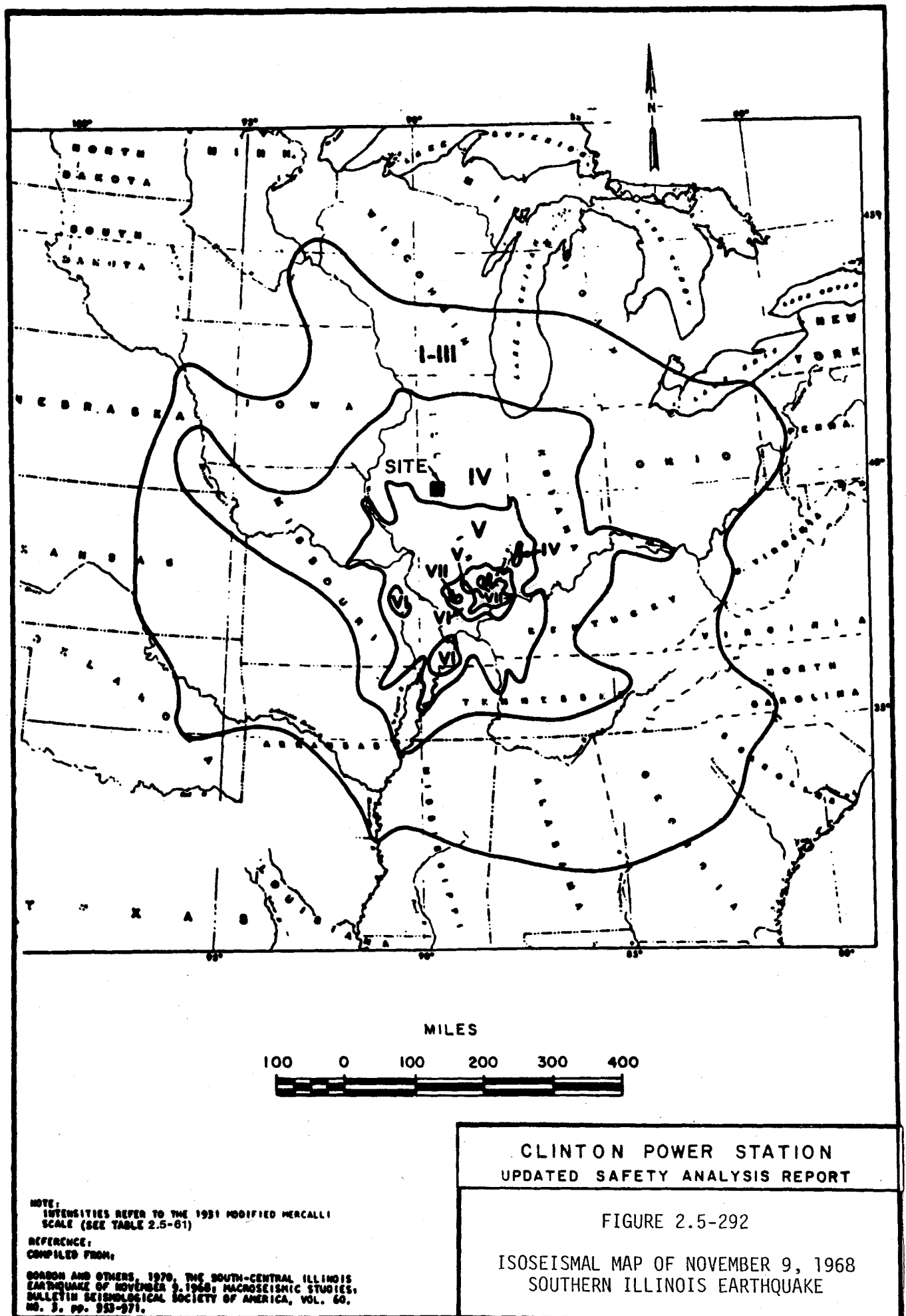
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

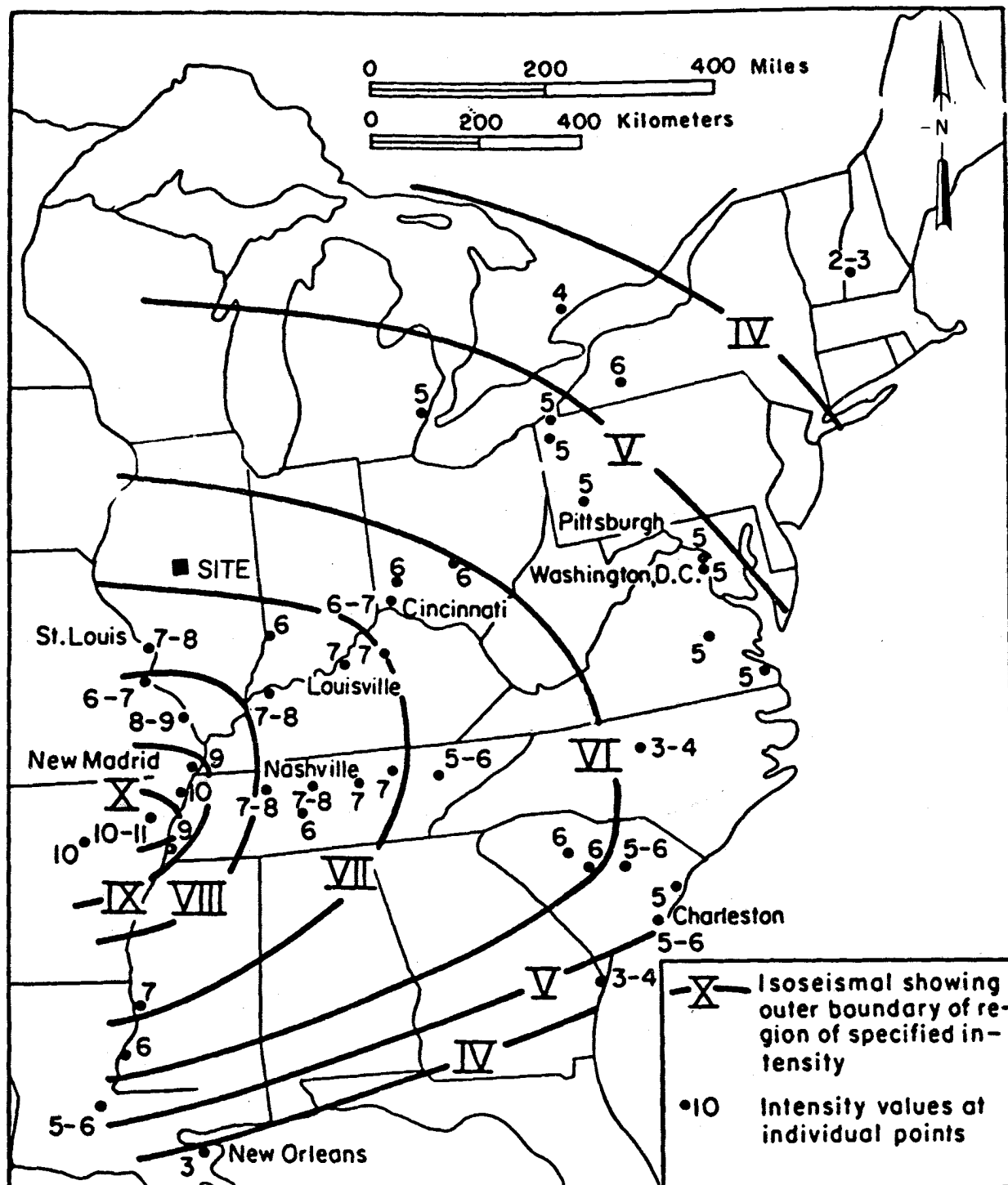
FIGURE 2.5-288
EARTHQUAKE EPICENTERS AND RELATIONSHIP
TO SEISMOTECTONIC REGIONS











NOTES:

1. INTENSITIES REFER TO THE 1931 MODIFIED MERCALLI SCALE.
2. ISOSEISMAL LINES INDICATE THE APPROXIMATE OUTER BOUNDARY OF THE REGION OF SPECIFIED INTENSITY.

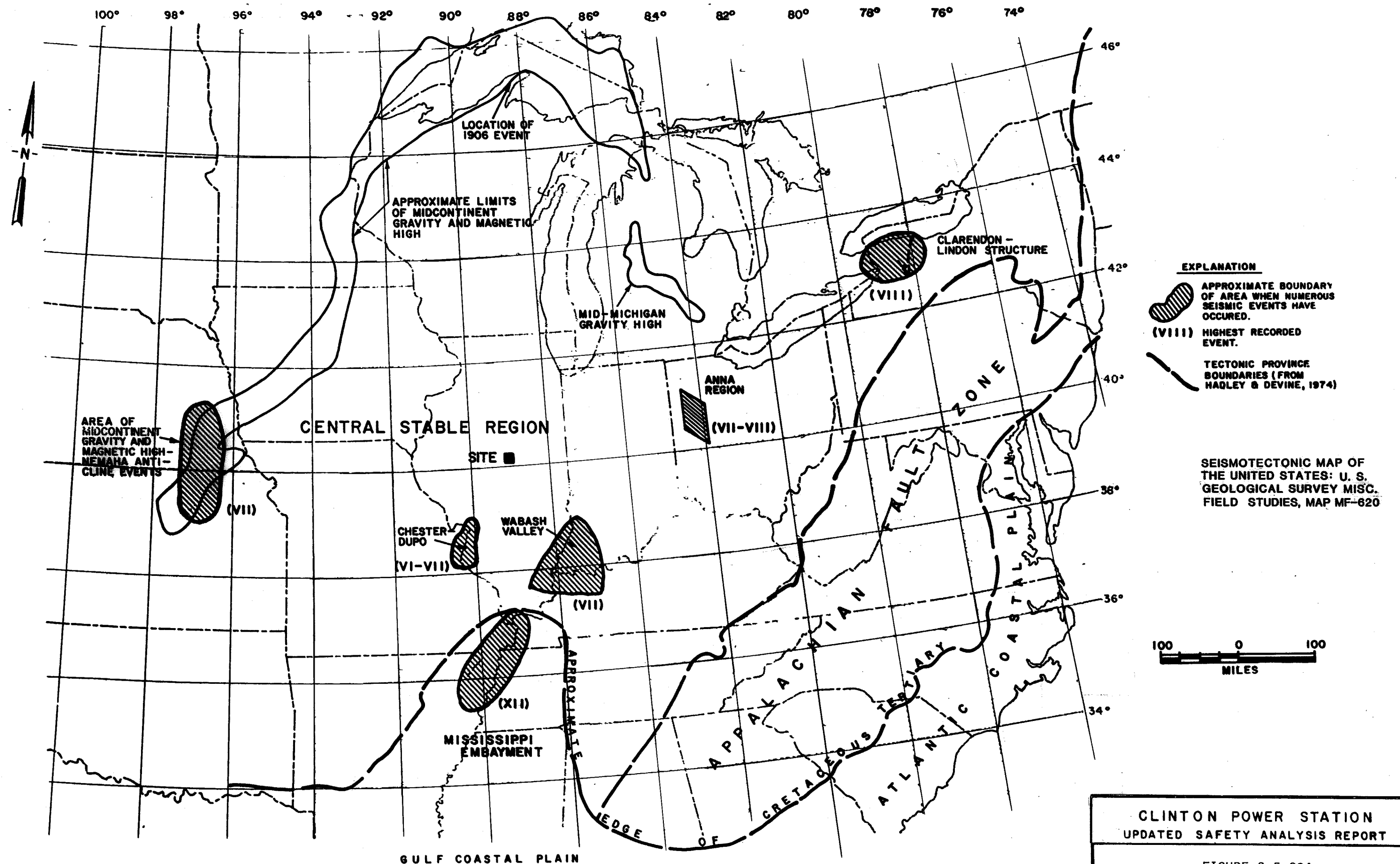
REFERENCE:

NUTTLI, O.W. 1973, THE MISSISSIPPI VALLEY EARTHQUAKE OF 1811 AND 1812, INTENSITIES, GROUND MOTION, AND MAGNITUDES; SEISMOLOGICAL SOCIETY OF AMERICA, BULL. 63, NO. 1 P. 227-248.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-293

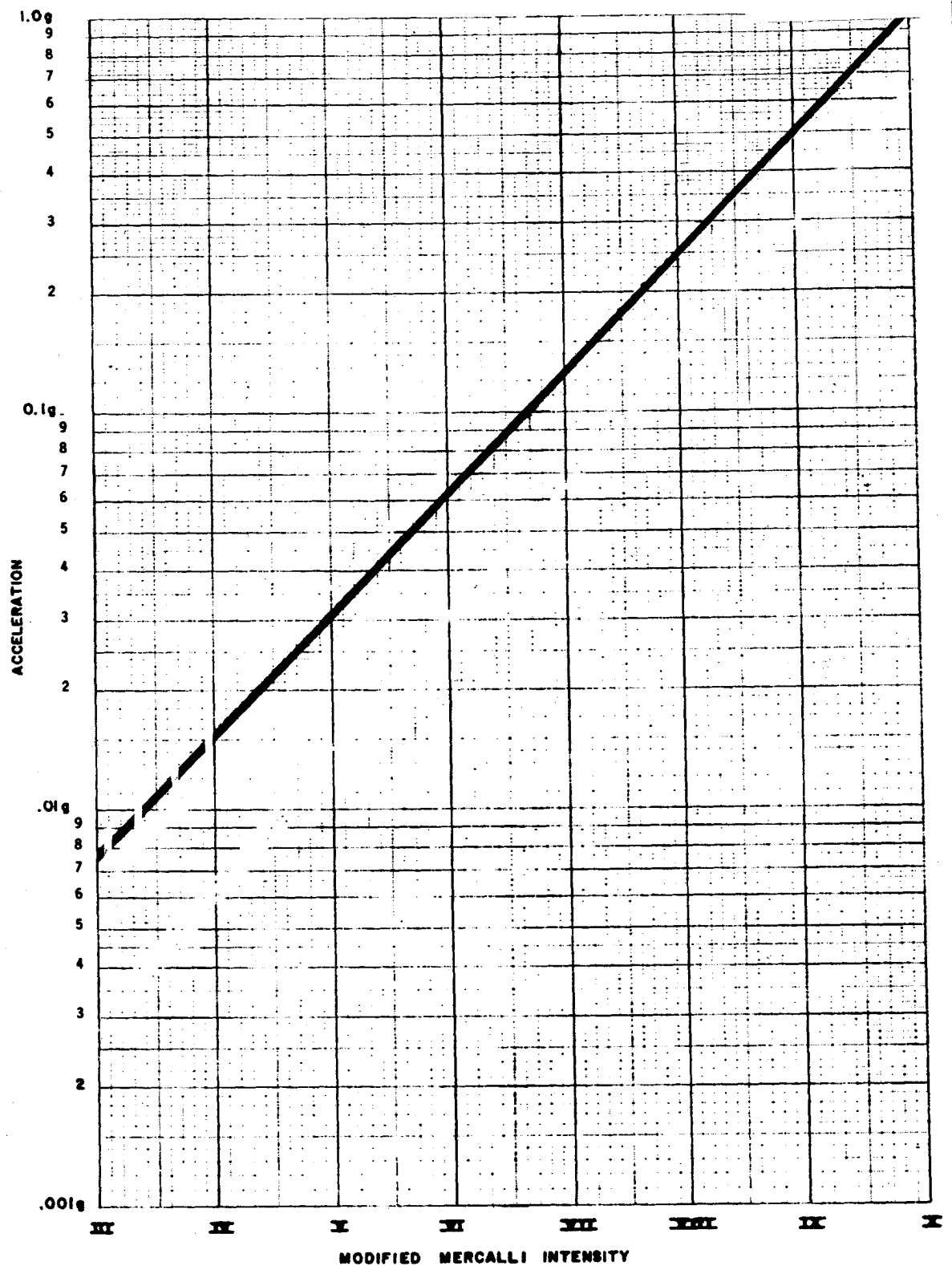
ISOSEISMAL MAP FOR NEW MADRID EARTHQUAKE OF DECEMBER 16, 1811



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-294

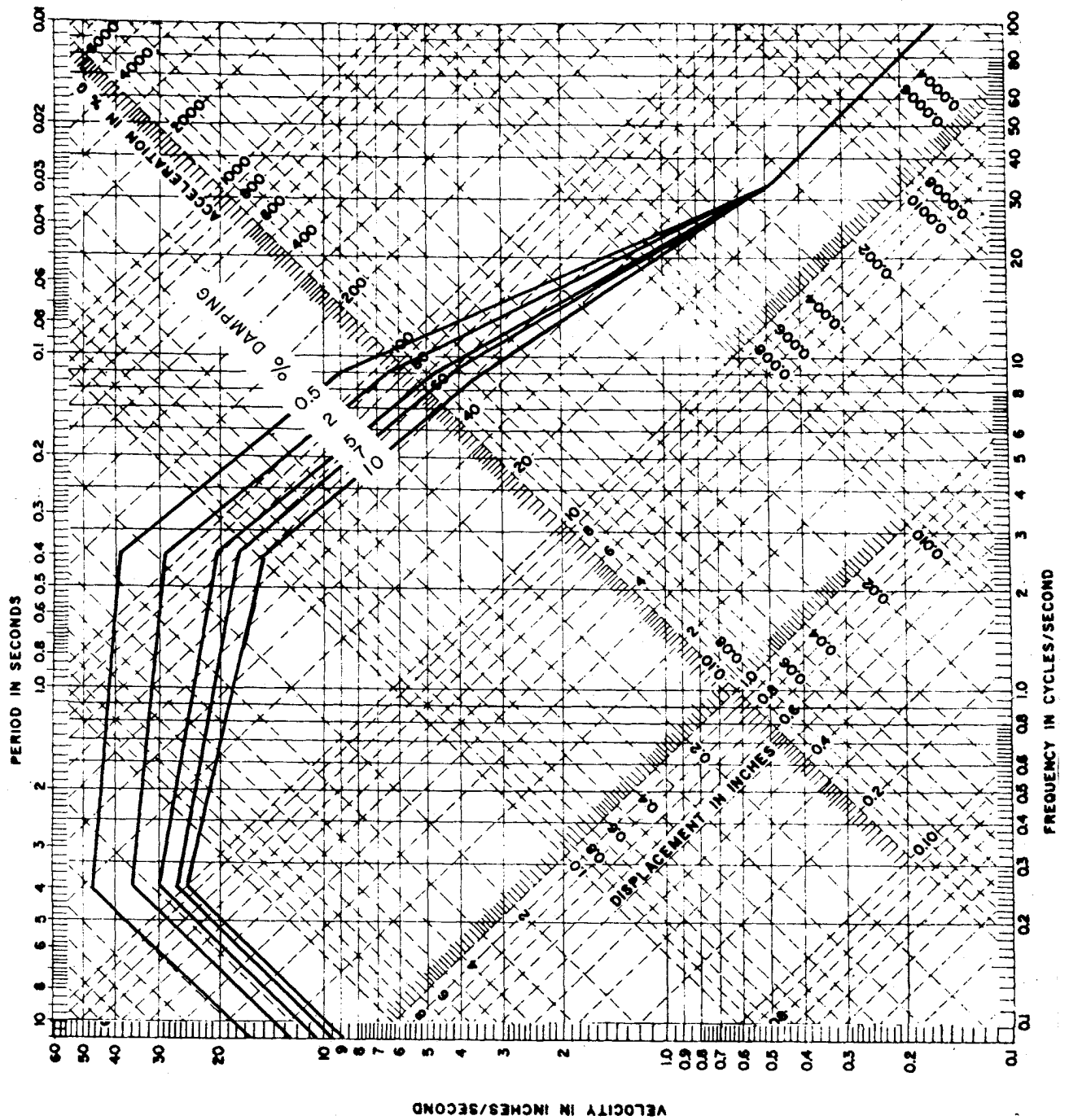
AREAS OF RELATIVELY HIGH SEISMICITY
IN CENTRAL UNITED STATES



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REFERENCE: TRIFUNAC, M.D., AND BRADY, A.G., 1975, ON THE CORRELATION OF SEISMIC INTENSITY SCALES WITH THE PEAKS OF RECORDED STRONG GROUND MOTION; SEISMOL. SOC. AMERICA BULL., VOL. 65, NO. 1, pp.139-162.

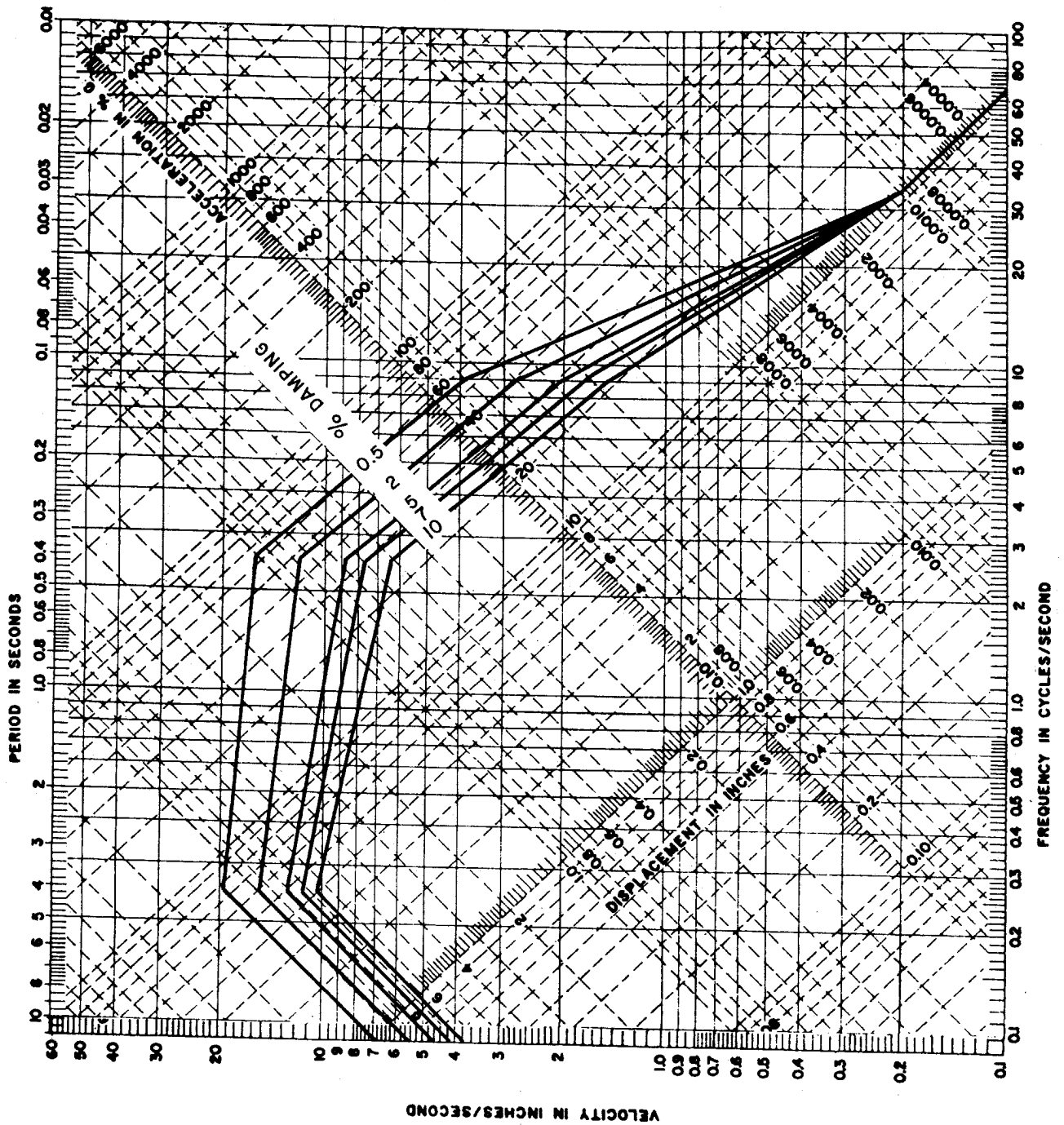
FIGURE 2.5-295
COMPARISON OF EARTHQUAKE INTENSITY
AND AVERAGE HORIZONTAL ACCELERATION



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FIGURE 2.5-296

HORIZONTAL SPECTRA FOR A MAXIMUM
HORIZONTAL GROUND ACCELERATION OF 26%
OF GRAVITY (SAFE SHUTDOWN EARTHQUAKE)



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FIGURE 2.5-297
HORIZONTAL SPECTRA FOR A MAXIMUM
HORIZONTAL GROUND ACCELERATION OF 11%
OF GRAVITY (OPERATING-BASIS EARTHQUAKE)

KEY TO LOG OF BORINGS

KEY TO SAMPLES				KEY TO TEST DATA		
BORINGS LOGGED BY:			SAMPLE DESCRIPTION	SHEAR STRENGTH DATA:		
WOODWARD-CLYDE CONSULTANTS	DAMES & MOORE	SARGENT & LUNDY ENGINEERS		DAMES & MOORE	SARGENT & LUNDY ENGINEERS	TEST DESCRIPTION
	15 ■		INDICATES THE NUMBER OF BLOWS REQUIRED TO DRIVE A DAMES & MOORE TYPE U SAMPLER, ONE FOOT WITH A 140 POUND WEIGHT FALLING 24 INCHES.	a.	$\frac{\sigma_1 - \sigma_3}{2}$	<u>Triaxial Compression</u> SHEAR STRENGTH DEFINED AS ONE-HALF THE PEAK AXIAL COMPRESSIVE STRESS IN PSF OR ONE-HALF THE AXIAL COMPRESSIVE STRESS AT 10 PERCENT AXIAL STRAIN, WHICHEVER OCCURS FIRST.
	P ■		INDICATES DEPTH OF RELATIVELY UNDISTURBED SAMPLE OBTAINED WITH A DAMES & MOORE TYPE U SAMPLER.	b.	σ_3	CELL PRESSURE IN PSF FOR UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TESTS.
	■		INDICATES DAMES & MOORE TYPE U SAMPLER WAS HYDRAULICALLY PUSHED TO OBTAIN SAMPLE.			<u>Unconfined Compression</u>
	□		INDICATES DEPTH OF DISTURBED SAMPLE OBTAINED WITH A DAMES & MOORE TYPE U SAMPLER.	c.	Qu/2	SHEAR STRENGTH DEFINED AS ONE-HALF THE PEAK AXIAL COMPRESSIVE STRESS IN PSF.
			INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY USING A DAMES & MOORE TYPE U SAMPLER.	d.	Qu/2*	SHEAR STRENGTH DEFINED AS COHESION IN PSF AS DETERMINED BY A POCKET PENETROMETER. VALUES IN EXCESS OF 4500 PSF ARE INDICATED BY 4500+.
21 ■	20 ■	23 SS	INDICATES THE NUMBER OF BLOWS REQUIRED TO DRIVE A SPLIT SPOON SAMPLER, WITH AN OUTSIDE DIAMETER OF 2.0 INCHES, ONE FOOT WITH A 140 POUND WEIGHT FALLING 30 INCHES (ASTM Test Designation D1586-67).	<u>TESTS REPORTED ELSEWHERE:</u> DAMES & MOORE/SARGENT & LUNDY ENGINEERS		
□			INDICATES DEPTH OF SAMPLE OBTAINED USING A SPLIT SPOON SAMPLER WITH AN OUTSIDE DIAMETER OF 2.0 INCHES.	C	CONSOLIDATION TEST	
			INDICATES DEPTH OF SPLIT SPOON SAMPLE WITH NO RECOVERY.	CHEM	CHEMICAL TEST ON GROUNDWATER SAMPLES	
		AG	INDICATES AUGER BORING.	COMP	BULK COMPACTION TEST	
△	■	BC	INDICATES DEPTH OF DISTURBED SAMPLE OBTAINED WITH CONTINUOUS FLIGHT AUGERS.	D/CD	CONSOLIDATED - DRAINED DIRECT SHEAR TEST	
		ST	INDICATES DEPTH OF UNDISTURBED SAMPLE OBTAINED USING A SHELBY TUBE WITH AN OUTSIDE DIAMETER OF 3.0 INCHES AND AN INSIDE DIAMETER OF 2.9 INCHES.	IG	LOSS ON IGNITION	
		PR	INDICATES DEPTH OF RELATIVELY UNDISTURBED SAMPLE OBTAINED WITH A PITCHER SAMPLER WITH AN OUTSIDE DIAMETER OF 3.0 INCHES AND AN INSIDE DIAMETER OF 2.9 INCHES.	MA	MECHANICAL PARTICLE SIZE ANALYSIS (SIEVE AND HYDROMETER)	
		OB	INDICATES DEPTH OF RELATIVELY UNDISTURBED SAMPLE OBTAINED USING AN OSTERBERG SAMPLER WITH AN OUTSIDE DIAMETER OF 3.0 INCHES AND AN INSIDE DIAMETER OF 2.9 INCHES.	PERM	LABORATORY PERMEABILITY TEST	
		HR	INDICATES DEPTH OF RELATIVELY UNDISTURBED SAMPLE OBTAINED WITH A DOUBLE TUBE CORE BARREL WITH AN INSIDE DIAMETER OF 4.0 INCHES. (HIGH RECOVERY CORE BARREL)	DR	RELATIVE DENSITY TEST	
95% I			INDICATES DEPTH, LENGTH AND PERCENT OF CORE RUN RECOVERED FOR NX DIAMOND DRILL ROCK CORING.	RES	RESONANT COLUMN TEST	
RQD			INDICATES PERCENT OF ROCK QUALITY DESIGNATION FOR NX DIAMOND DRILL ROCK CORING.	SA	SIEVE ANALYSIS	
				SHOCK	SHOCKSCOPE TEST	
				TX/CD	CONSOLIDATED-DRAINED TRIAXIAL COMPRESSION TEST	
				TX/CU/PP	CONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST WITH PORE PRESSURE MEASUREMENTS	
				TX/DY	DYNAMIC TRIAXIAL COMPRESSION TEST	
				TX/UU/U	UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ON UNDISTURBED SAMPLE.	
				TX/UU/R	UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ON REMOLDED SAMPLES	
				UC/R	UNCONFINED COMPRESSION TEST ON REMOLDED SAMPLES	

ELEVATION REFERENCE

ELEVATIONS REFER TO MEAN SEA LEVEL DATUM.

DRILLING REFERENCE

BORINGS WERE DRILLED USING TRUCK-MOUNTED
AUGER/ROTARY WASH TYPE DRILLING EQUIPMENT.

PIEZOMETER REFERENCE

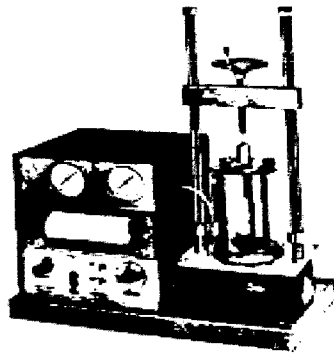
PIEZOMETERS WERE INSTALLED IN BORINGS TO RECORD GROUND WATER CONDITIONS. DETAILS OF EACH INSTALLATION ARE DESCRIBED ON THE BORING LOGS.

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FIGURE 2.5-298

KEY TO LOG OF BORINGS

Triaxial Compression Test Unit



TRIAxIAL COMPRESSION TEST UNIT

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Figure 2.5-299
Sheet 1 of 2
UNCONFINED COMPRESSION
AND TRIAXIAL COMPRESSION
TESTS (METHOD)

NOTES FOR FIGURE 2.5-299

Methods of Performing Unconfined Compression and Triaxial Compression Tests

The shearing strengths of soils are determined from the results of unconfined compression and triaxial compression tests. In triaxial compression tests the test method and the magnitude of the confining pressure are chosen to simulate anticipated field conditions.

Unconfined compression and triaxial compression tests are performed on undisturbed, or remolded samples of soil, approximately six inches in length and two and one-half inches in diameter. The tests are run either strain-controlled or stress-controlled. In a strain-controlled test the sample is subjected to a constant rate of deflection and the resulting stresses are recorded. In a stress-controlled test the sample is subjected to equal increments of load with each increment being maintained until an equilibrium condition with respect to strain is achieved.

Yield, peak, or ultimate stresses are determined from the stress-strain plot for each sample and the principal stresses are evaluated. The principal stresses are plotted on a Mohr's circle diagram to determine the shearing strength of the soil type being tested.

Unconfined compression tests can be performed only on samples with sufficient cohesion so that the soil will stand as an unsupported cylinder. These tests may be run at natural moisture content or on artificially saturated soils.

In a triaxial compression test the sample is encased in a rubber membrane, placed in a test chamber, and subjected to a confining pressure throughout the duration of the test. Normally, this confining pressure is maintained at a constant level, although for special tests it may be varied in relation to the measured stresses. Triaxial compression tests may be run on soils at field moisture content or on artificially saturated samples.

The tests are performed in one of the following ways:

Unconsolidated-undrained: The confining pressure is imposed on the sample at the start of the test. No drainage is permitted and the stresses which are measured represent the sum of the intergranular stresses and pore water pressures.

Consolidated-undrained: The sample is allowed to consolidate fully under the applied confining pressure prior to the start of the test. The volume change is determined by measuring the water and/or air expelled during consolidation. No drainage is permitted during the test and the stresses which are measured are the same as for the unconsolidated-undrained test.

Drained: The intergranular stresses in a sample may be measured by performing a drained, or slow, test. In this test, the sample is fully saturated and consolidated prior to the start of the test. During the test, drainage is permitted and the test is performed at a slow enough rate to prevent the buildup of pore water pressures. The resulting stresses which are measured represent only the intergranular stresses. These tests are usually performed on samples of generally non-cohesive soils, although the test procedure is applicable to cohesive soils if a sufficiently slow test rate is used.

An alternate means of obtaining the data resulting from the drained test is to perform an undrained test in which special equipment is used to measure the pore water pressures. The differences between the total stresses and the pore water pressures measured are the intergranular stresses.

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Figure 2.5-299
Sheet 2 of 2
UNCONFINED COMPRESSION
AND TRIAXIAL COMPRESSION
TESTS (METHOD)