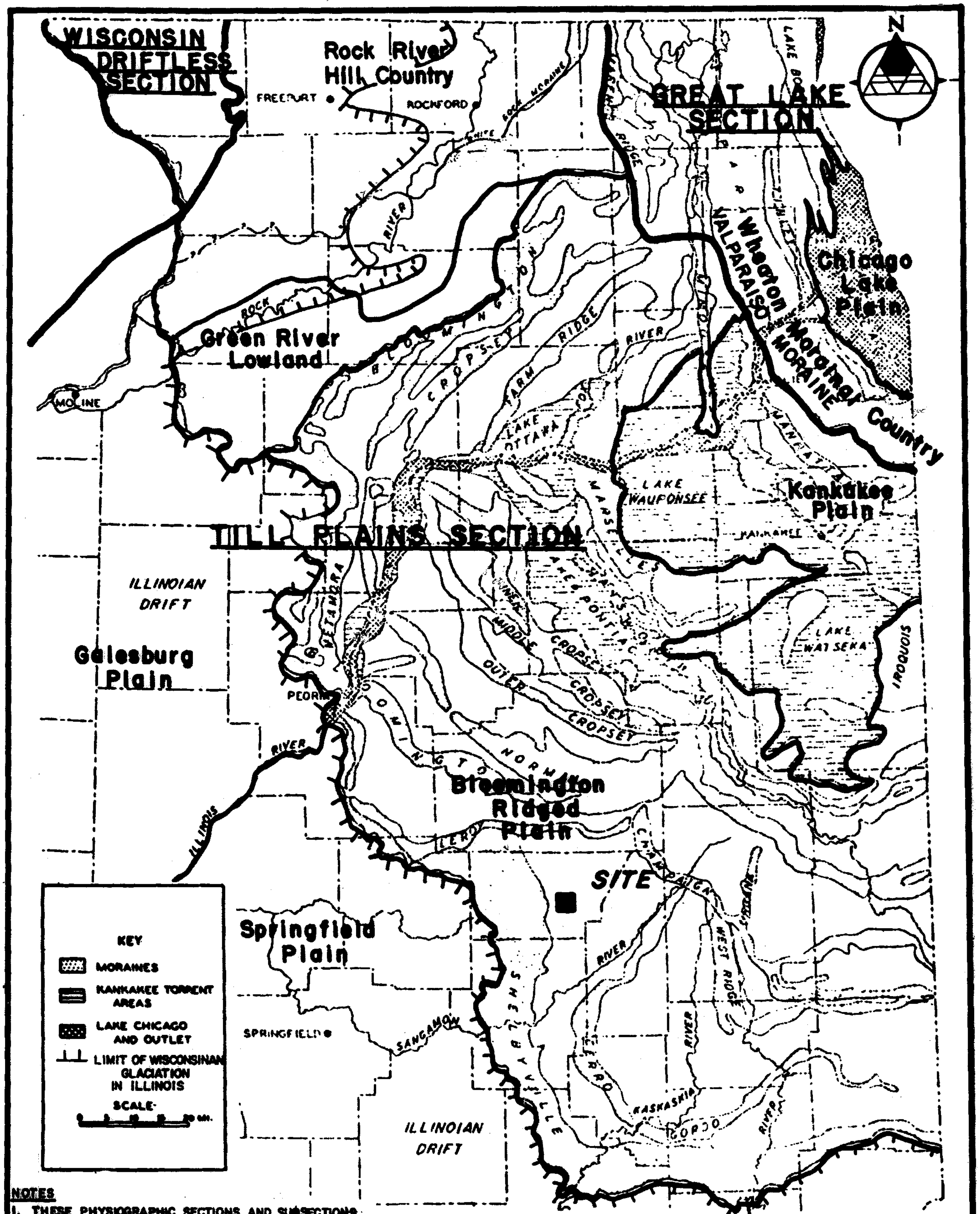

NOTES

1. THESE PHYSIOGRAPHIC SECTIONS AND SUBSECTIONS ARE PART OF THE CENTRAL LOWLAND PHYSIOGRAPHIC PROVINCE.
2. THE AREAS SHOWN IN WHITE ARE PRIMARILY GLACIAL DRIFT AND GROUND MORAINE EXCEPT FOR THE WISCONSIN DRIFTLESS SECTION AND PARTS OF THE GREEN RIVER LOWLAND.
3. COMPLIED FROM:
   A. LEIGHTON, M.M., EKBLAW, G.E., AND HORBERG, C.L. 1948, PHYSIOGRAPHIC DIVISIONS OF ILLINOIS, ILLINOIS STATE GEOLOGIC SURVEY, REPORT OF INVESTIGATIONS 129.
   B. EKBLAW, GEORGE, 1960, GLACIAL MAP OF NORTHEASTERN ILLINOIS: ILLINOIS GEOLOGICAL SURVEY.
   C. FRYE, J.C., ET. AL., 1969, GLACIAL TILLS OF NORTHWESTERN ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 437.

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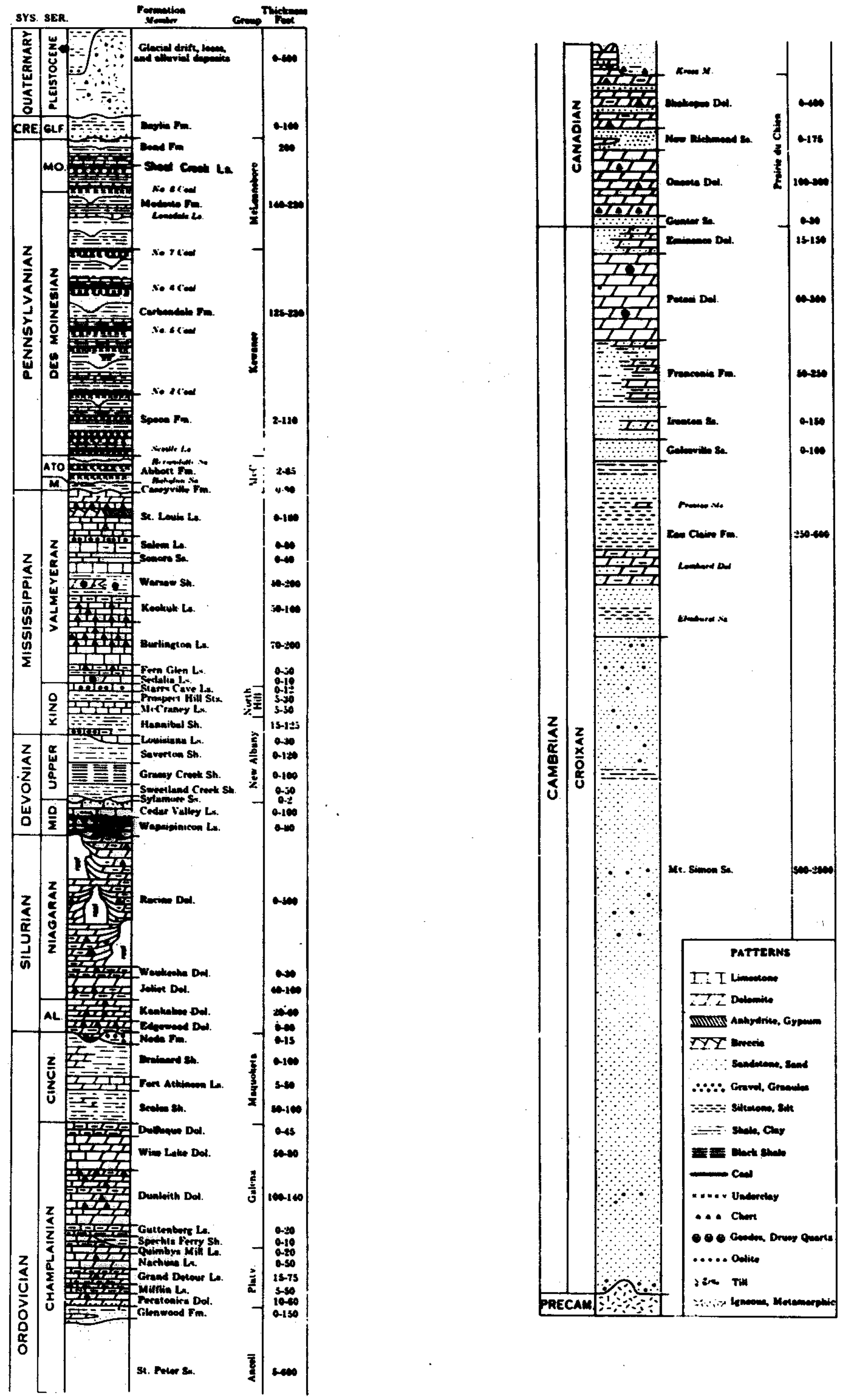
FIGURE 2.5-1

REGIONAL GLACIAL MAP AND PHYSIOGRAPHIC DIVISIONS



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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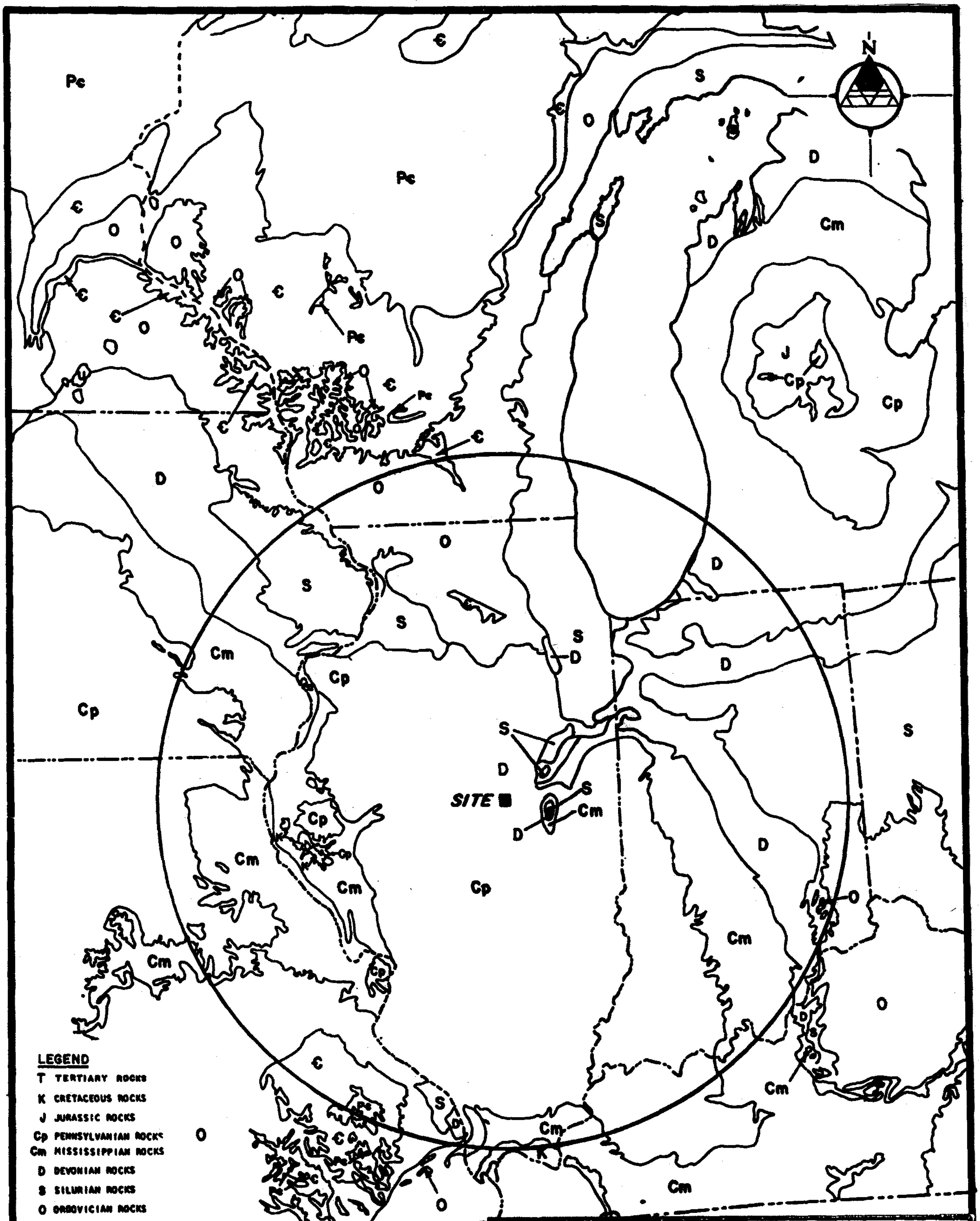
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-2

REGIONAL STRATIGRAPHIC COLUMN



NOTE:

COMPILED FROM:

A. STOSE, G.W., 1932, GEOLOGICAL MAP OF THE UNITED STATES, UNITED STATES GEOLOGICAL SURVEY, REPRINTED 1960.

B. WILLMAN, H.B., ET AL, 1967, GEOLOGIC MAP OF ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY.

C. P. B. KING AND H.B. BECKMAN 1974, GEOLOGIC MAP OF THE UNITED STATES, UNITED STATES GEOLOGICAL SURVEY.

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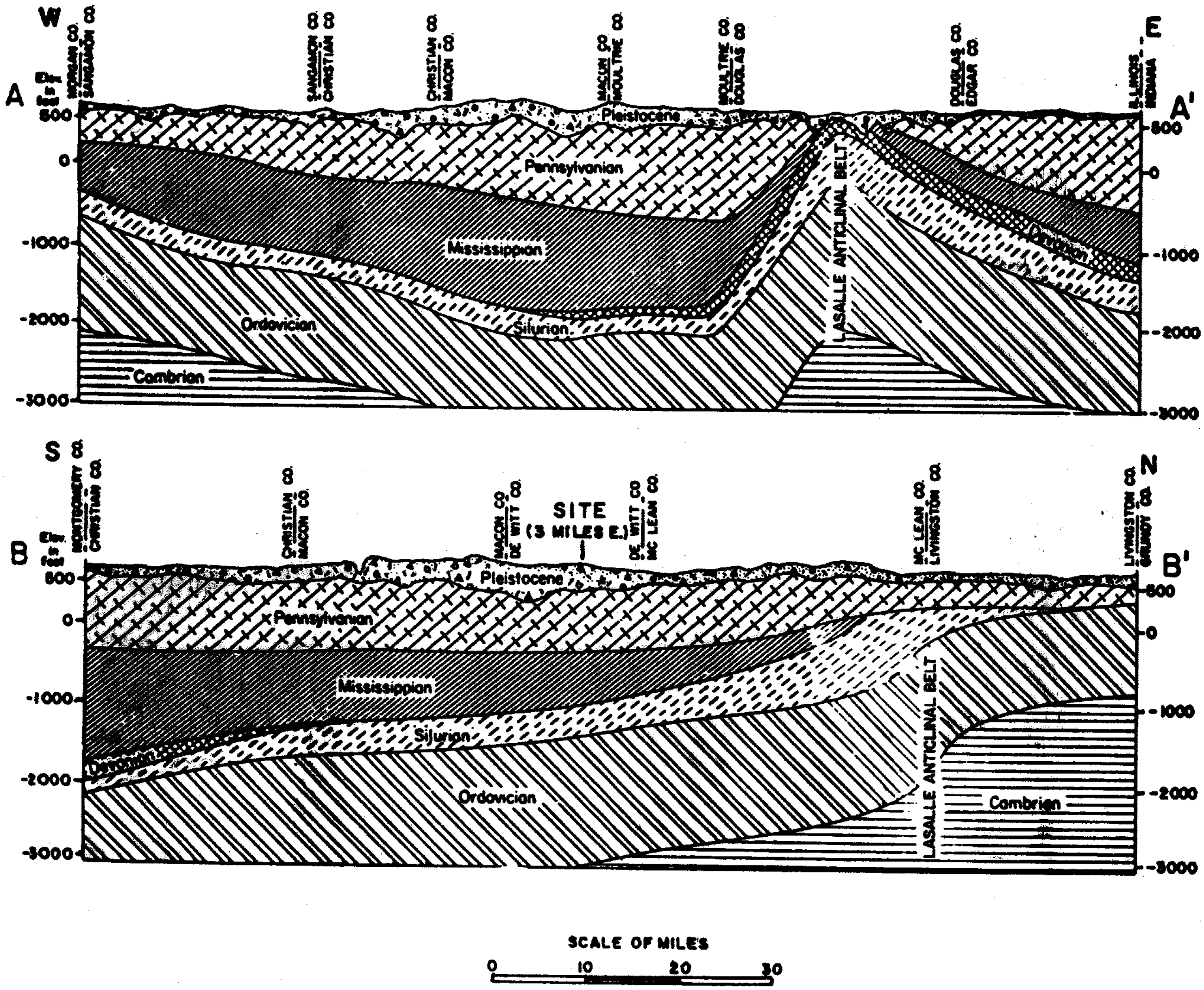
FIGURE 2.5-3

REGIONAL BEDROCK GEOLOGY MAP



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.

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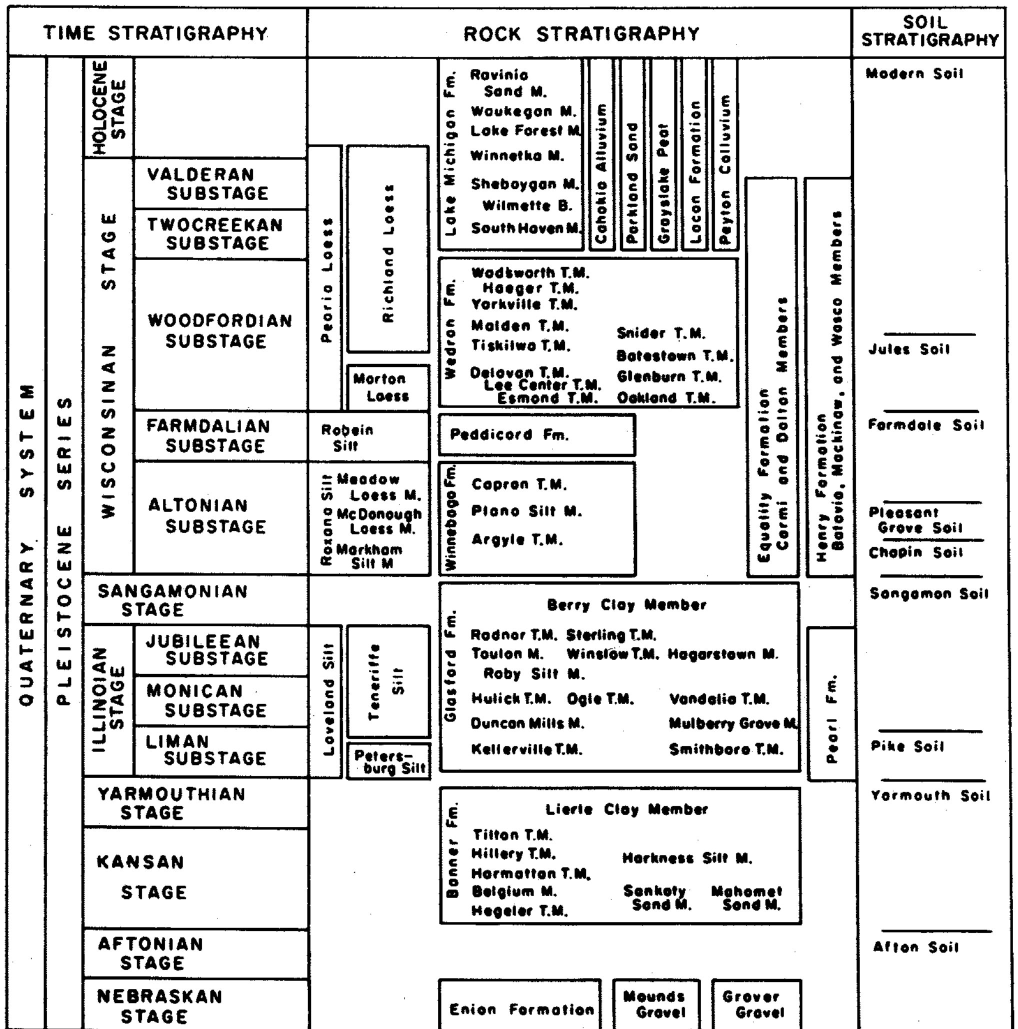
FIGURE 2.5-4

REGIONAL GEOLOGIC CROSS SECTIONS



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

REFERENCE

1. H.B. WILLMAN, ET. AL., HANDBOOK OF ILLINOIS STRATIGRAPHY, BULLETIN 95, ILLINOIS STATE GEOLOGICAL SURVEY, URBANA, 1975.

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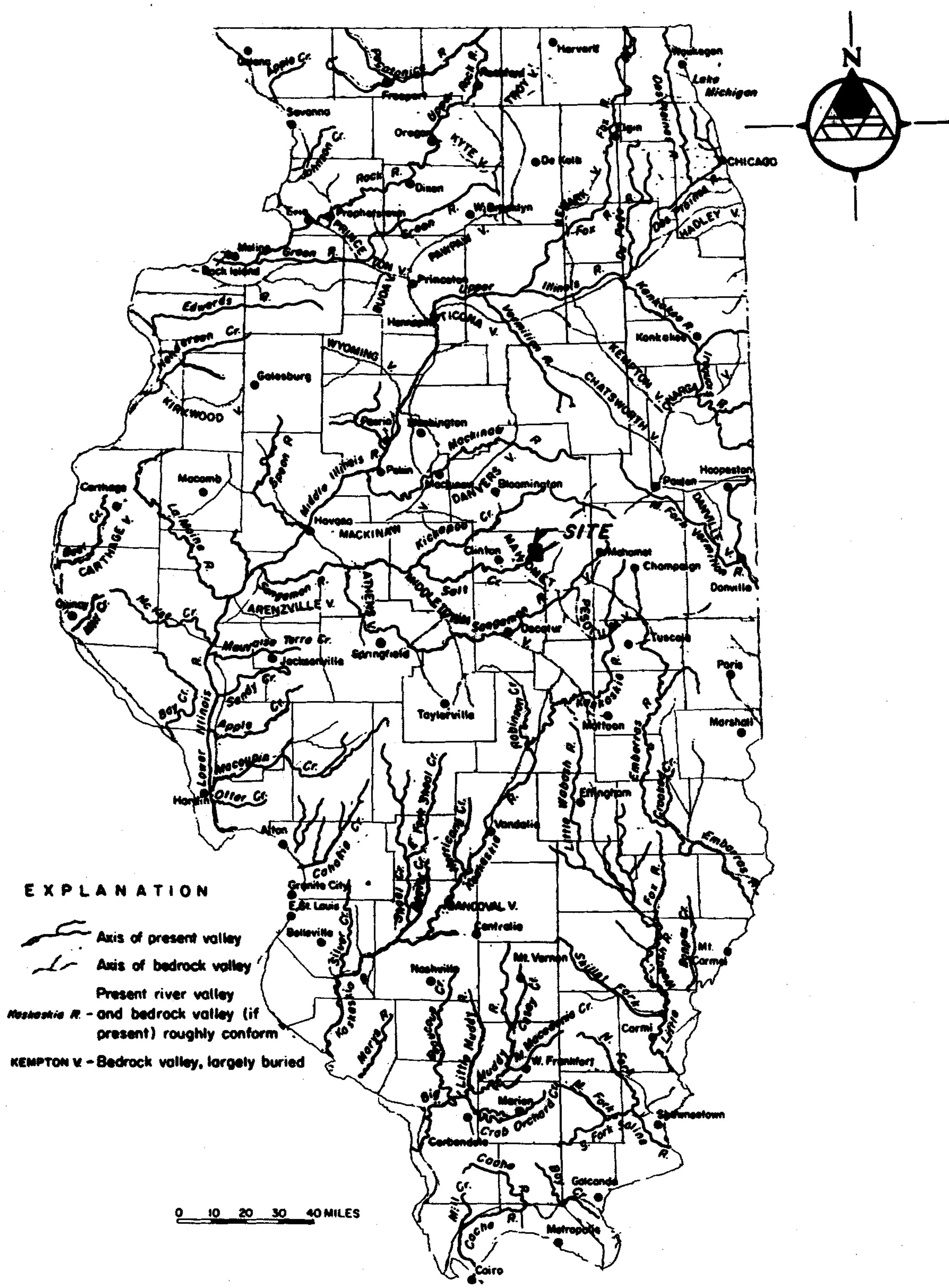
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-5

STRATIGRAPHIC COLUMN OF THE PLEISTOCENE DEPOSITS OF ILLINOIS



NOTE:

MODIFIED FROM: GLACIAL DRIFT IN ILLINOIS: THICKNESS AND CHARACTER, ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 490, URBANA, 1975.

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FIGURE 2.5-6

BEDROCK VALLEY MAP OF ILLINOIS

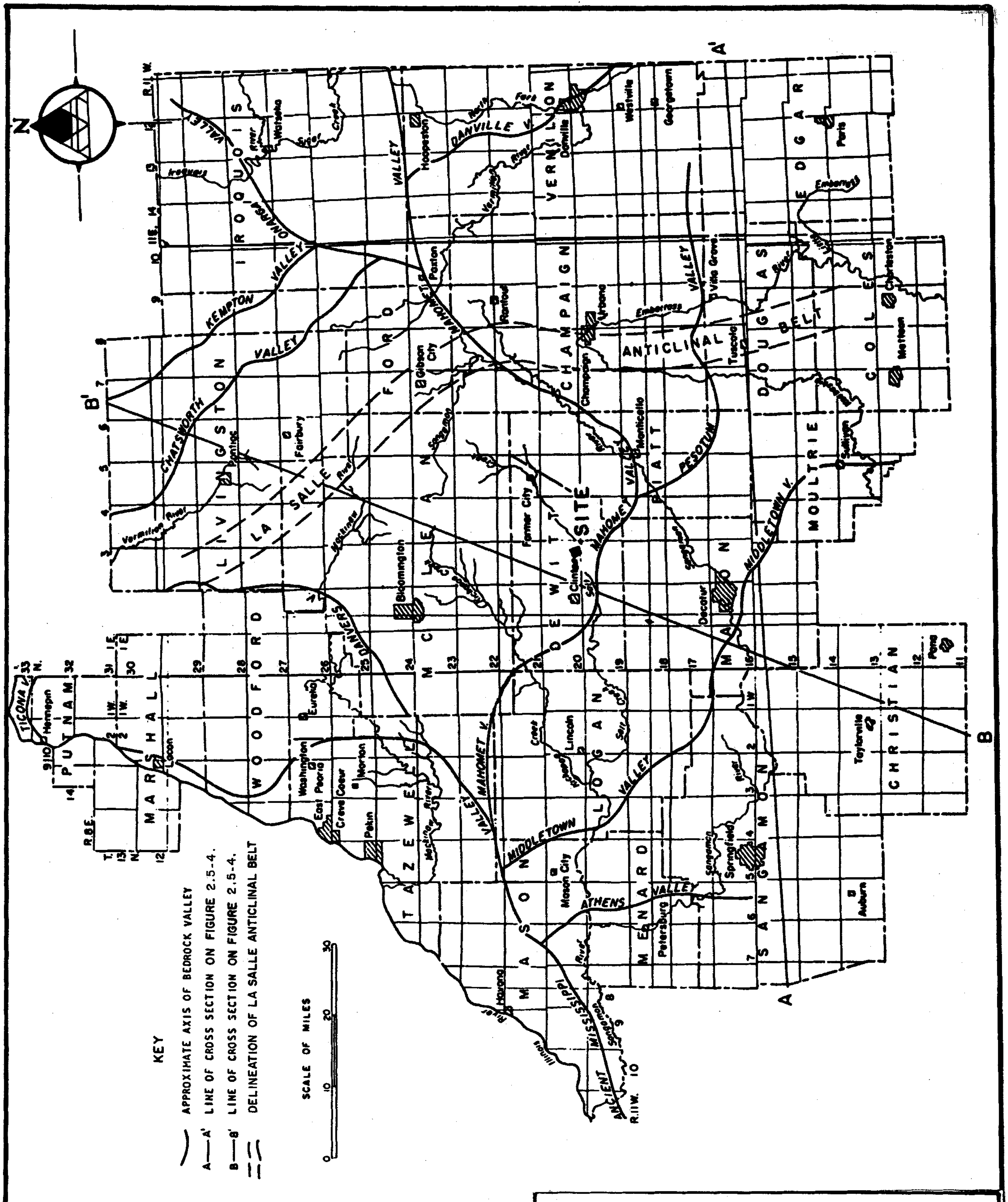

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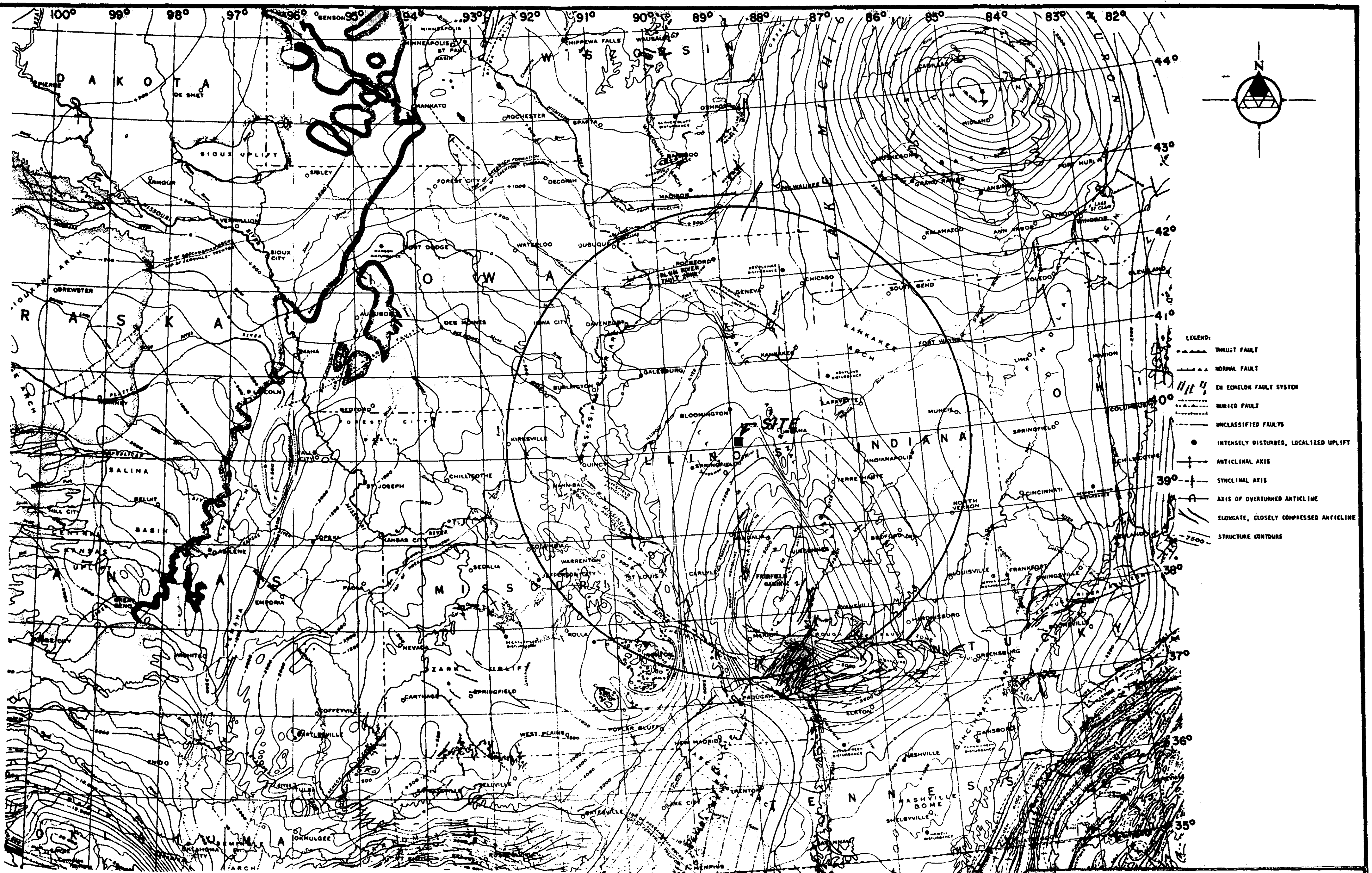
FIGURE 2.5-7

MAHOMET BEDROCK VALLEY AND ITS TRIBUTARIES

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.

MILES
25 0 25 50 75 100

CONTOUR INTERVAL — 500 AND 1000 FEET

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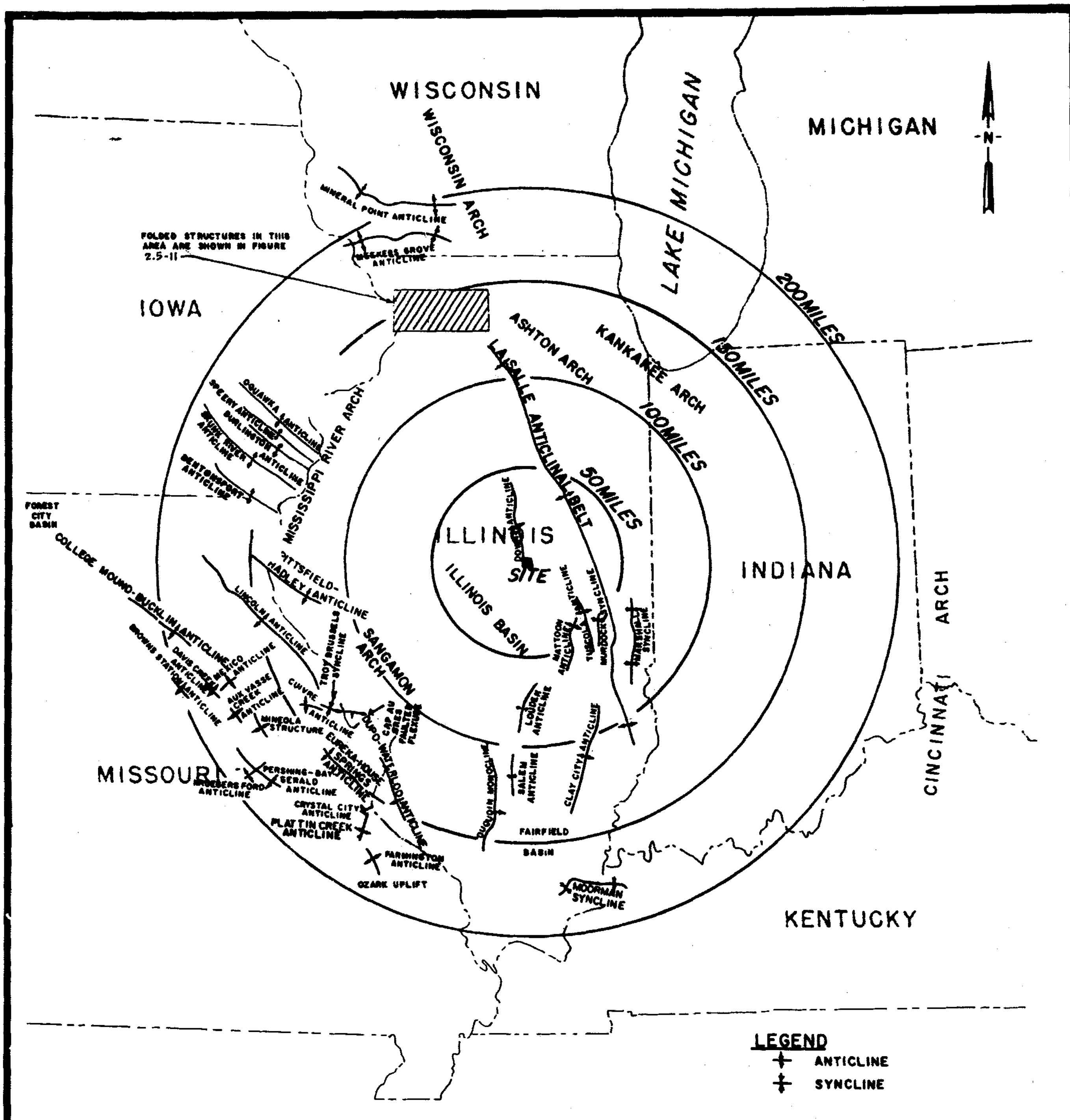
FIGURE 2.5-8

REGIONAL TECTONIC MAP



NOTE:

DATA ARE SUMMARIZED IN TABLE 2.5-1.

COMPILED FROM:

A. UNITED STATES GEOLOGICAL SURVEY AND THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1962, TECTONIC MAP OF THE UNITED STATES.

B. BUSCHBACH, T.C., 1975, CLINTON FSAR ATTACHMENT D2.5

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

D. CLEGG, K.E., 1965, SUBSURFACE GEOLOGY AND COAL RESOURCES OF THE PENNSYLVANIAN SYSTEM IN CLARK AND EDGAR COUNTIES, ILLINOIS ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 380.

E. MCCRACKEN, M.H., 1971, STRUCTURAL FEATURES OF MISSOURI; MISSOURI GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS NUMBER 49

F. MCGINNIS, L.D., AND BRADBURY, V.C., 1964, AEROMAGNETIC STUDY OF THE HARDIN COUNTY AREA, ILLINOIS; ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 363.

G. KOLATA, D.R. AND BUSCBACH, T.C., 1976, PLUM RIVER FAULT ZONE OF NORTWESTERN ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY, CIRCULAR 401.

H. HARRIS, S.E. JR., AND PARKER, M.C., 1964 STRATIGRAPHY OF THE OSAGE SERIES IN SOUTHEASTERN IOWA, IOWA GEOLOGICAL SERVEY, REPORT OF INVESTIGATION I.

I. TREWORGY, J.D., 1981, STRUCTURAL FEATURES IN ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 519

MILES

25 0 25 50 75 100

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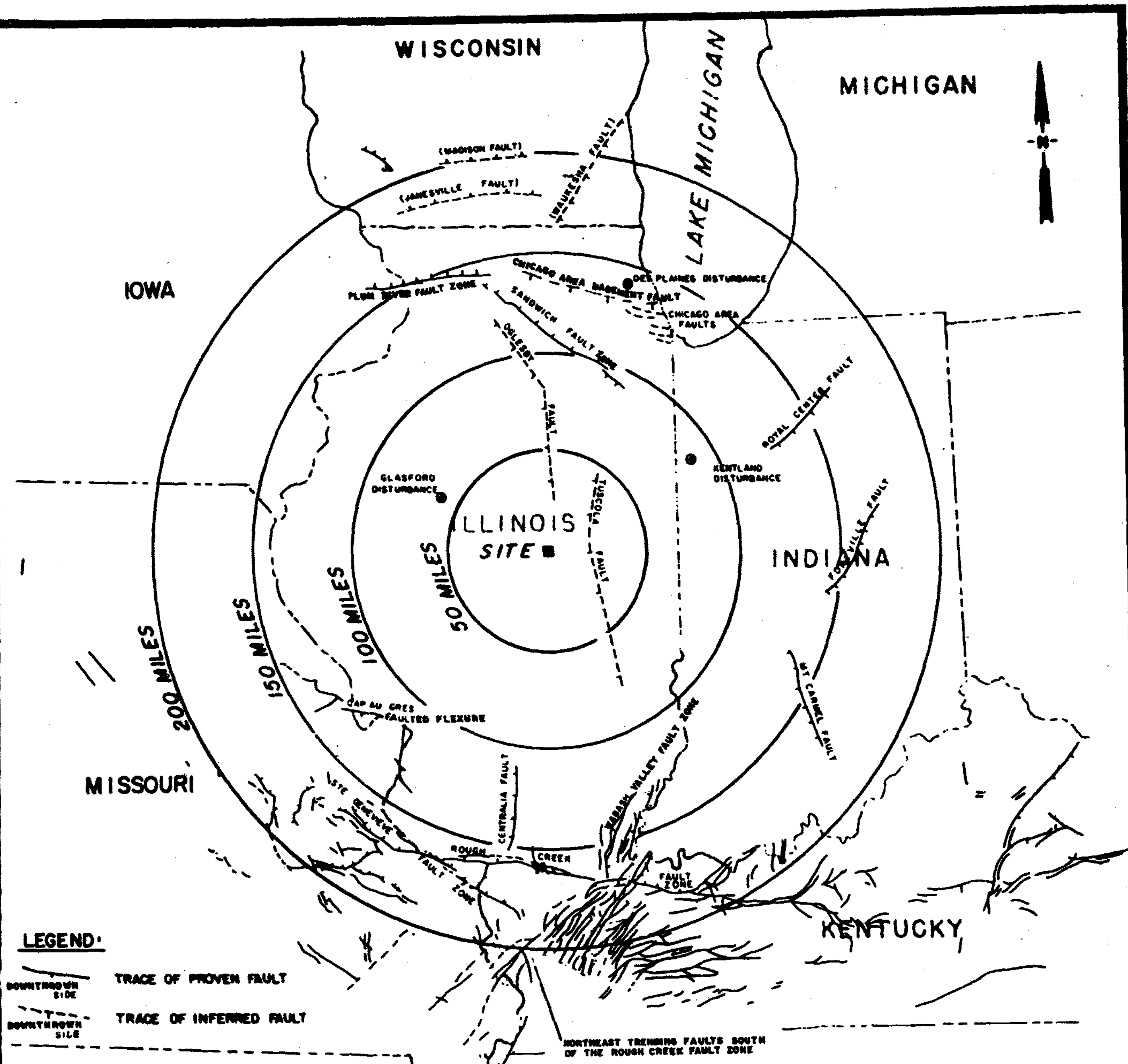
FIGURE 2.5-9

MAJOR FOLDS

6/85



NOTES:

1. STRUCTURAL NAMES IN PARENTHESES ARE ASSIGNED BY DAMES & MOORE

2. DOWNTHROWN SIDE NOT SHOWN FOR ALL INDIVIDUAL FAULTS IN FAULT SYSTEMS.

3. COMPILED FROM:
   - A. UNITED STATES GEOLOGICAL SURVEY AND THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1962, TECTONIC MAP OF THE UNITED STATES.
   - B. THWAITES, F.T., 1957, BURIED PRE-CAMBRIAN OF WISCONSIN : UNIVERSITY OF WISCONSIN AND WISCONSIN GEOLOGICAL SURVEY.
   - C. ILLINOIS STATE GEOLOGICAL SURVEY, 1967, GEOLOGIC MAP OF ILLINOIS.
   - D. BUSCHBACH, T.C., AND G.E. HEIM, 1972, PRELIMINARY GEOLOGIC INVESTIGATIONS OF ROCK TUNNEL SITES FOR FLOOD AND POLLUTION CONTROL IN THE GREATER CHICAGO AREA: ILLINOIS GEOLOGICAL SURVEY, ENVIRONMENTAL GEOLOGY NOTES NO. 52, p.26.
   - E. GREEN, D.A., 1957, TRENTON STRUCTURE IN OHIO, INDIANA AND NORTHERN ILLINOIS: BULLETIN AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, v.41, NO.4, p.29.
   - F. BACKGROUND MATERIALS AND PROCEEDINGS OF SYMPOSIUM ON FUTURE PETROLEUM POTENTIAL OF N.P.C. REGION 9; ILLINOIS STATE GEOLOGICAL SURVEY, ILLINOIS PETROLEUM 95 AND 96, 1971.
   - G. HEYL, A.V., ET.AL., 1965, REGIONAL STRUCTURE OF THE SOUTHEAST MISSOURI AND ILLINOIS-KENTUCKY MINERAL DISTRICTS, UNITED STATES GEOLOGICAL SURVEY BULLETIN 1202-B.
   - H. OSTROM, M.E., 1970, WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY, WRITTEN COMMUNICATION.
   - I. KOLATA, D.R. AND BUSCHBACH, T.C., PLUM RIVER FAULT ZONE IN NORTHWESTERN ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY, CIRCULAR 491.
   - J. MCGINNIS, L.D., 1966, CRUSTAL TECTONICS AND PRECAMBRIAN BASEMENT IN NORTHWESTERN ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS 219.
   - K. OSTRUM, M.E., 1976, CLINTON FSAR ATTACHMENT D2.5
   - L. OSTRUM, M.E., 1971, GEOLOGY FIELD TRIP SOUTHWESTERN DANE COUNTY, WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY.

4. DATA ARE SUMMARIZED IN TABLE 2.5-2

MILES

25 0 25 50 75 100

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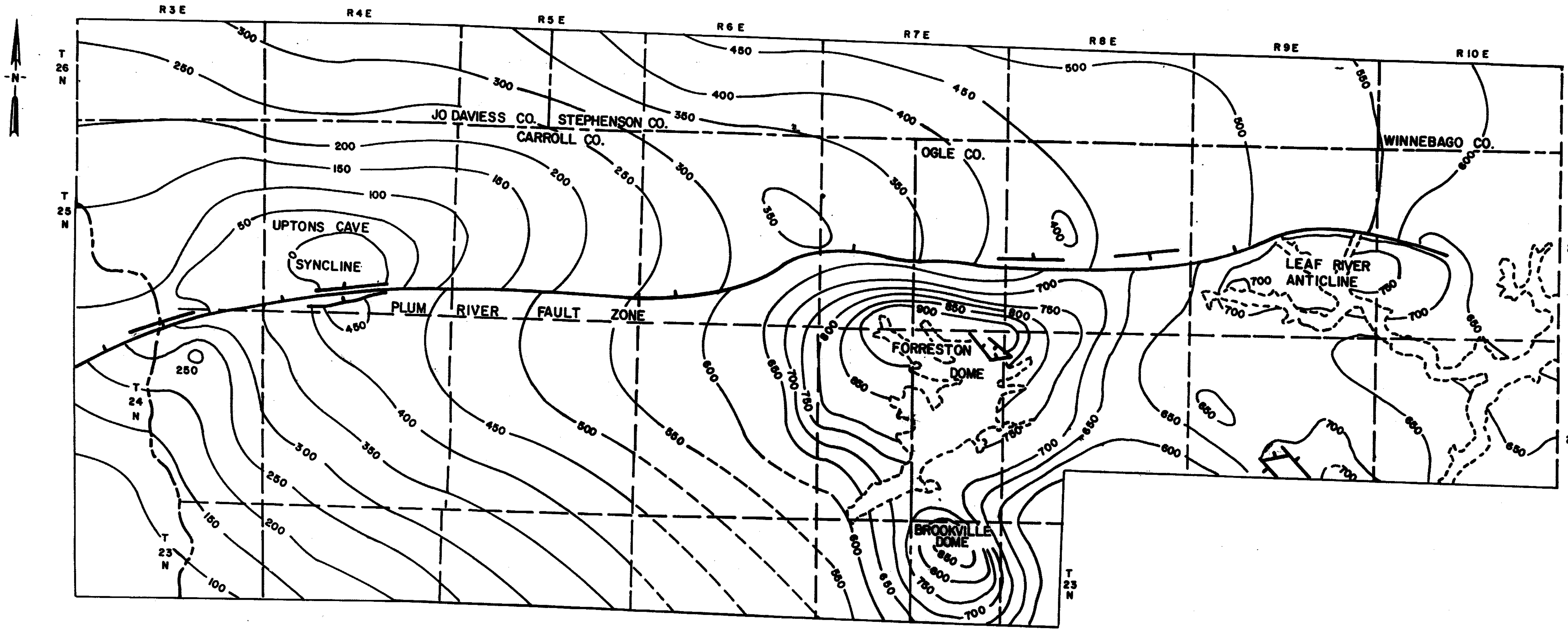
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-10

MAJOR FAULTS



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.

0 1 2 3 4 5

Scale in Miles

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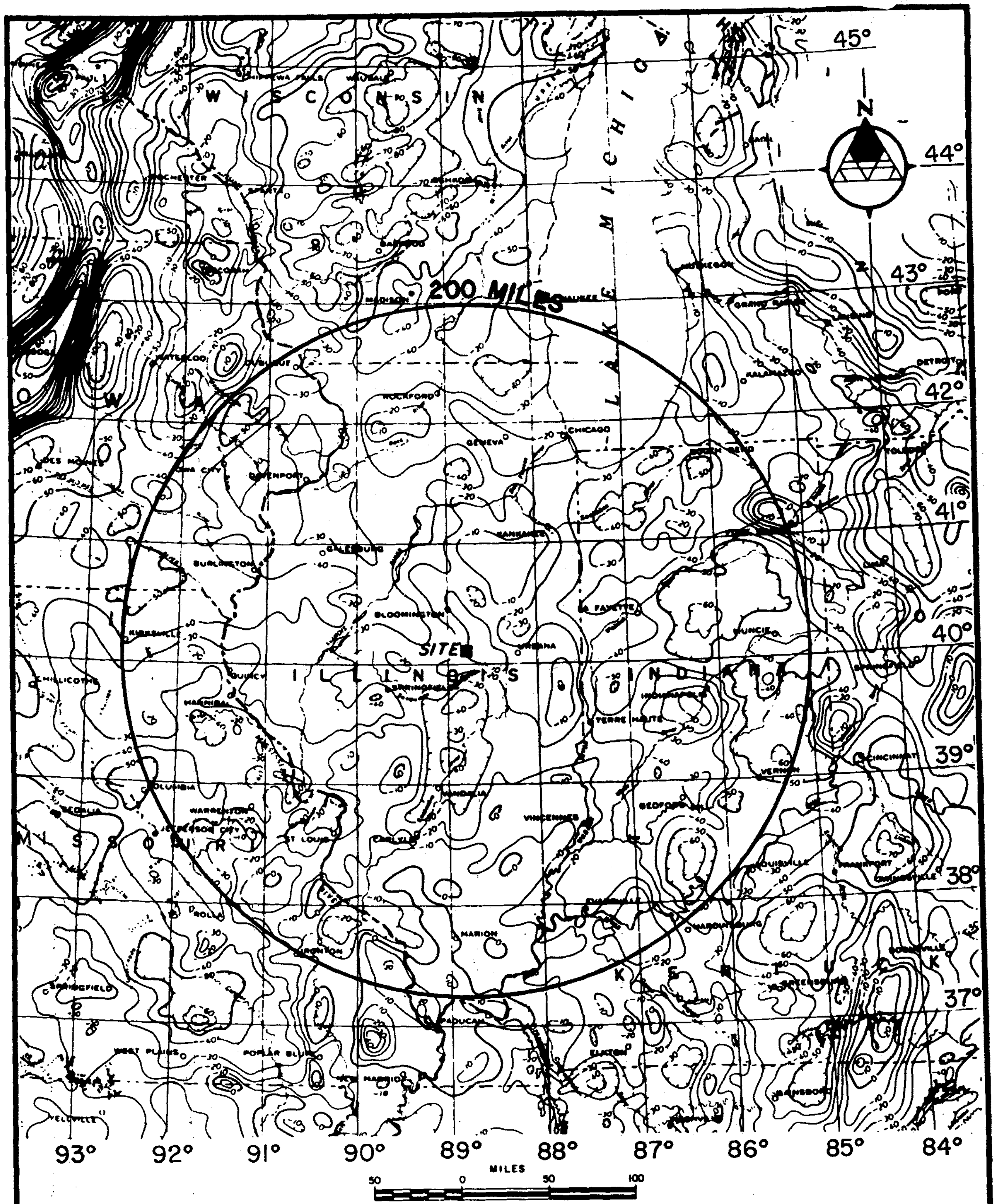
UPDATED SAFETY ANALYSIS REPORT

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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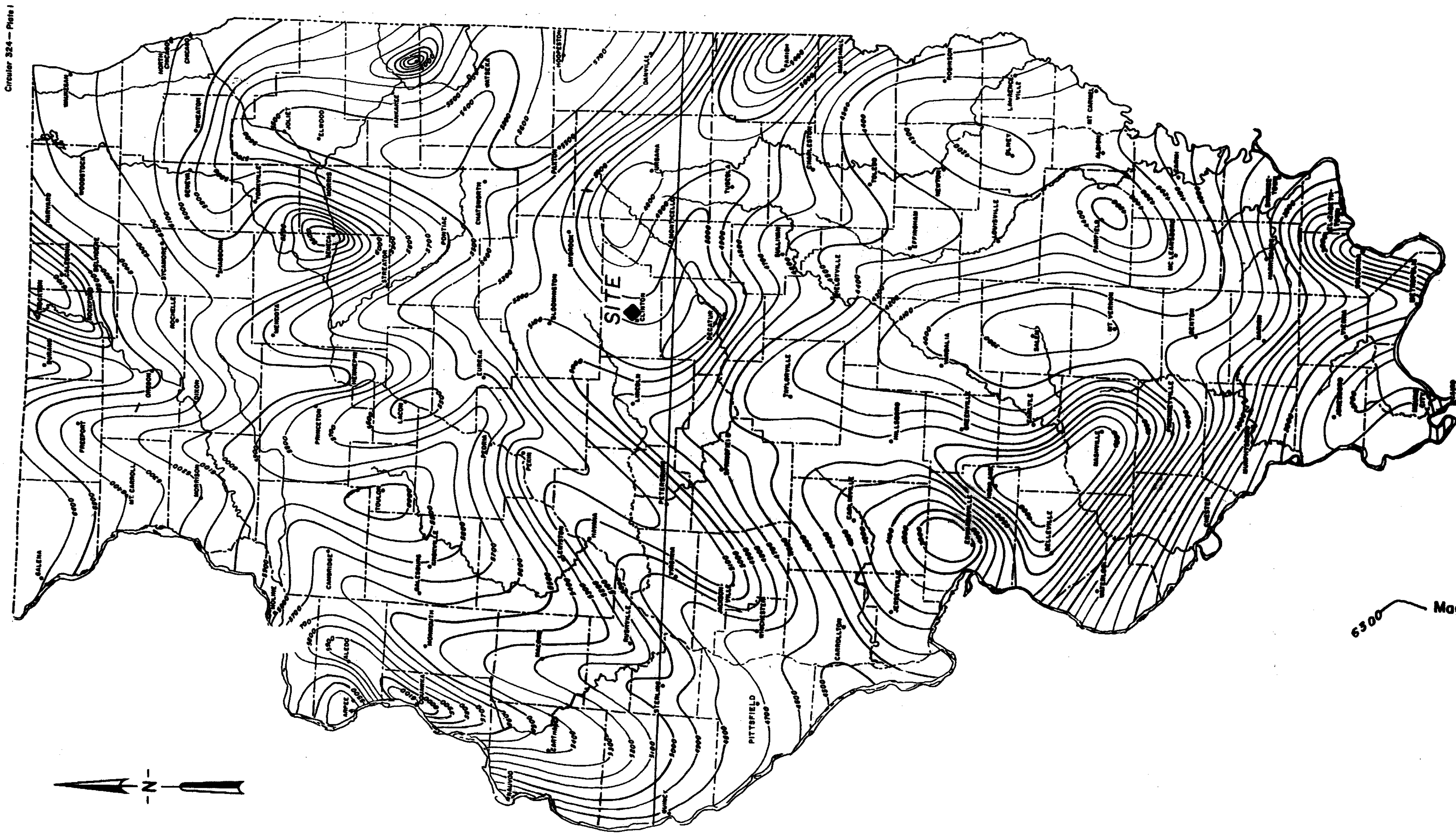
UPDATED SAFETY ANALYSIS REPORT

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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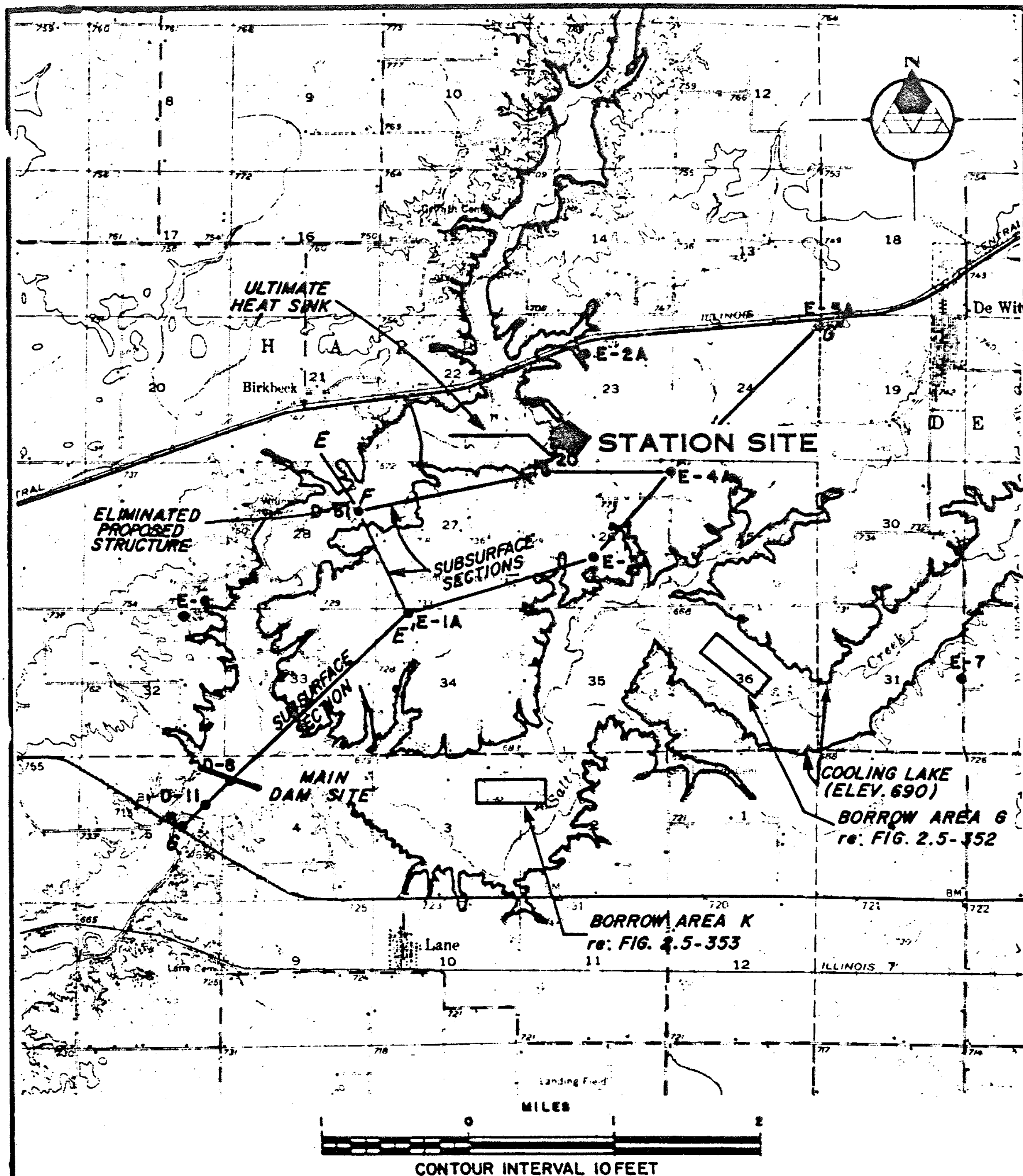
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-13

REGIONAL VERTICAL MAGNETIC ANOMALIES



LEGEND:

E-6 BORING LOCATION

E —— E' SUBSURFACE SECTION LOCATION

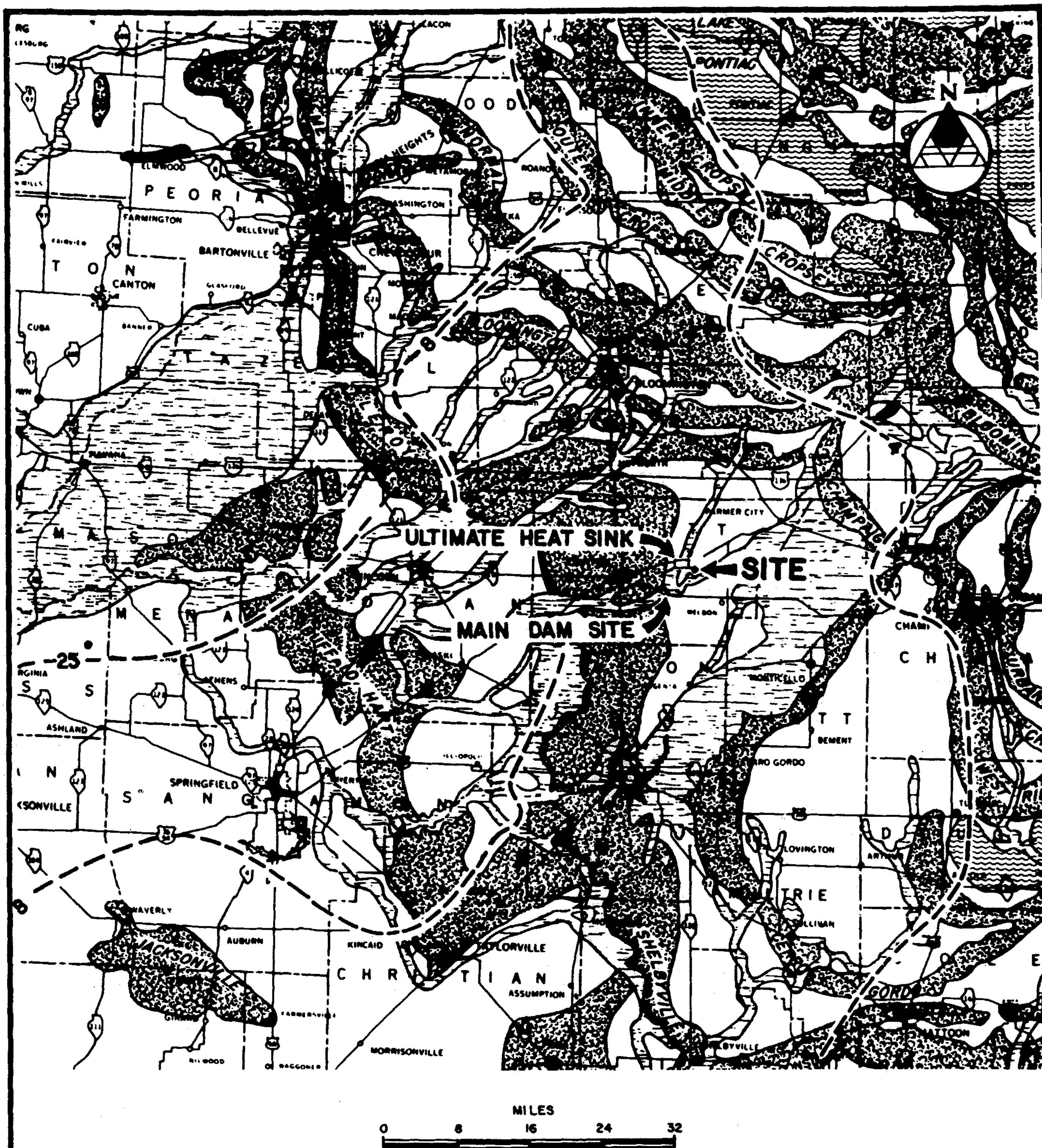
NOTES:

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.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

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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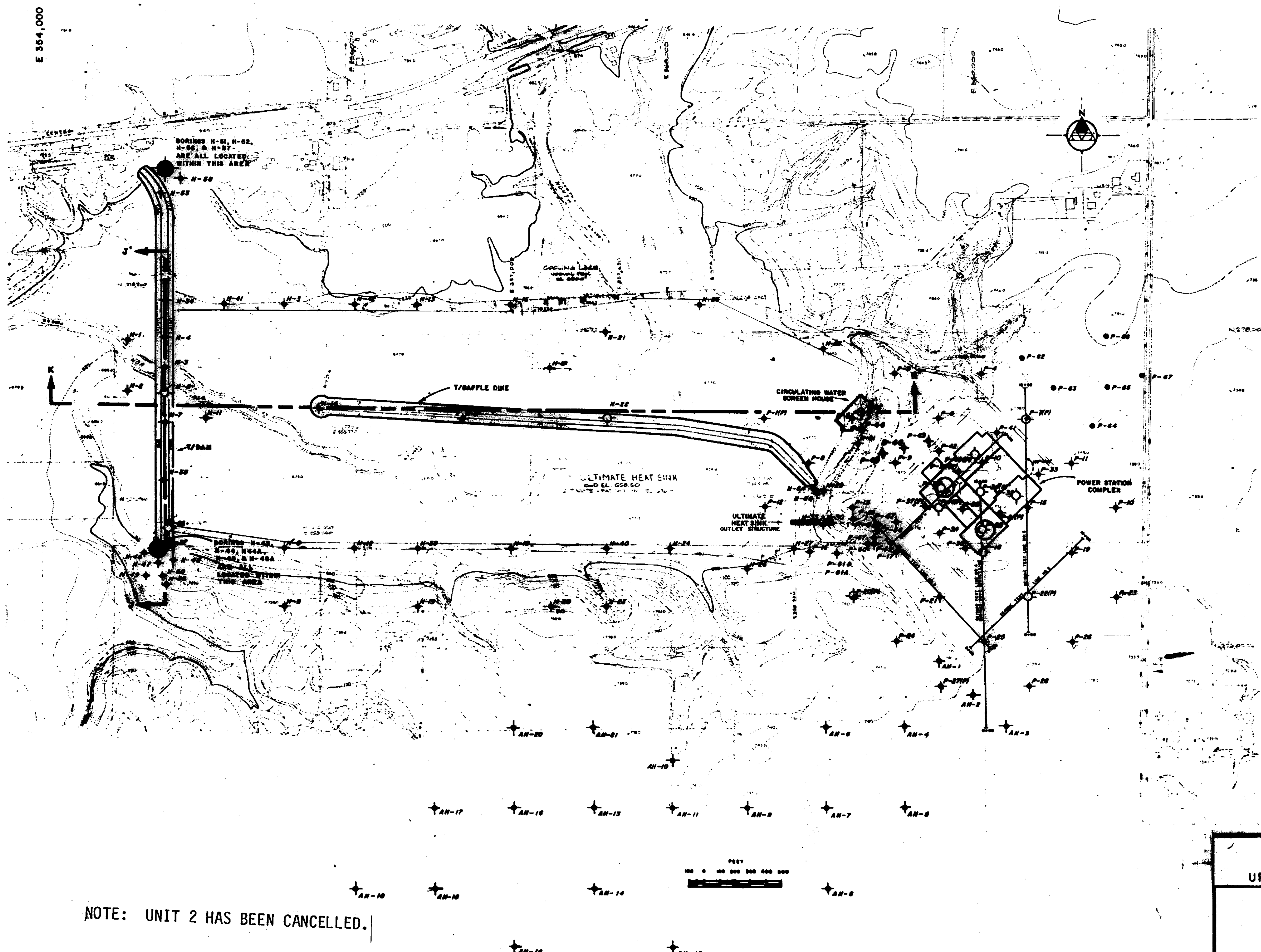
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-15

SURFICIAL GEOLOGY MAP



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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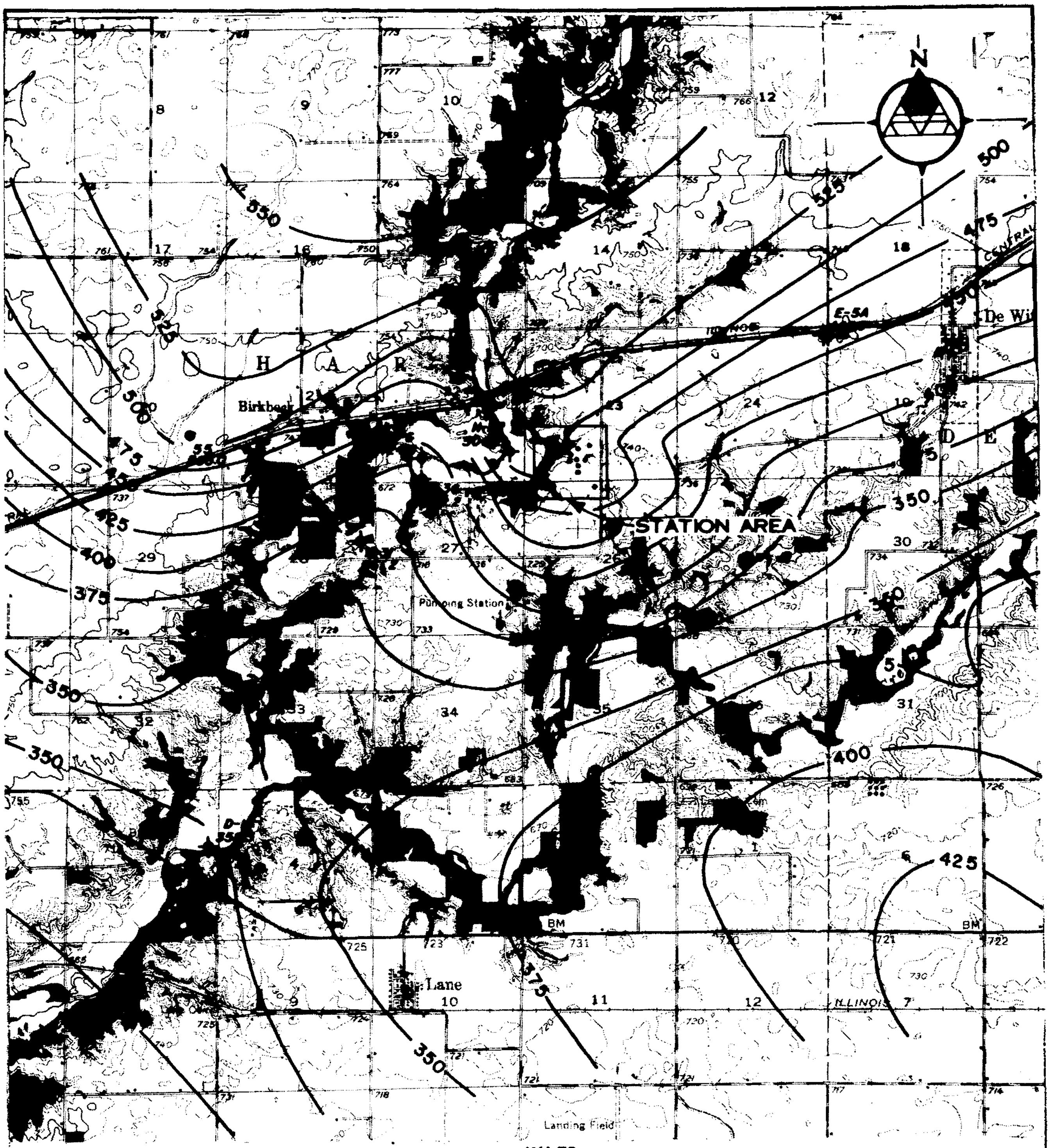
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-16

PLOT PLAN - ULTIMATE HEAT SINK



MILES

1 0 1 2

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: MAROA, 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.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-17

CONTOURS ON BEDROCK SURFACE
SITE VICINITY

TIME STRATIGRAPHY				STRATIGRAPHIC UNITS	
				UPLAND	VALLEY
Quaternary System	Pleistocene Series	Holocene Stage			Cahokia Alluvium; Peyton Colluvium
		Wisconsinan Stage	Valderan Substage	Richland Loess	Cahokia Alluvium; Peyton Colluvium
			Twocreekan Substage	Richland Loess	Henry Formation
			Woodfordian Substage	Wedron Formation	Henry Formation
			Farmdalian Substage	Robein Silt	
			Altonian Substage	weathered Glasford Formation	
		Sangamonian Stage		weathered Glasford Formation	
		Illinoian Stage		weathered Glasford Formation / unaltered Glasford Formation	unaltered Glasford Formation
		Yarmouthian Stage		Banner Formation	Banner Formation
		Kansan Stage		Banner Formation	Banner Formation
Unconformity					
Pennsylvanian System				McLeansboro Group	Bond Formation
				McLeansboro Group	Modesto Formation
				Kewanee Group	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.	Alluvium and silty clay (CL, SM or ML)
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:

1. The stratigraphic units are discussed in detail in subsection 2.5.1.2 and Attachment C2.5.
2. Figure 2.5-274 shows a comparison of stratigraphic nomenclature used in the FSAR, PSAR, and boring logs.
3. Excavations for the Clinton Power Station did not extend below the unaltered Glasford Formation.
4. Borings for the Clinton Power Station did not extend below rocks of the Carbondale Formation.
5. Illinoian-age till of the Glasford Formation was subjected to a significant period of weathering during the Sangamonian Stage and Altonian Substage.
6. 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.
7. The Holocene Stage is represented by a significant period of weathering and development of agricultural soil profiles.
8. Vertical scale does not represent either relative thickness of stratigraphic units or relative duration of time interval.
9. Standard Unified Soil Classification symbols are used.
10. Locally, the Peyton Colluvium rests directly on Glasford Formation.

*Based on data from excavations and boring logs.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-18

SITE STRATIGRAPHIC COLUMN

LABORATORY TEST DATA

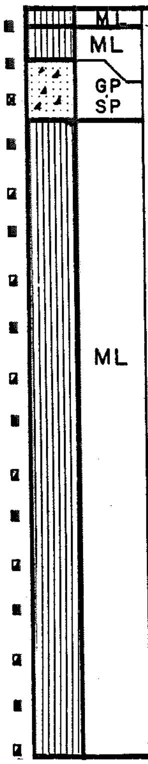
ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620, 610, 600, 590

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						1500			4
							23.3	102	1
SA							11.3		14
						4500+	9.9	131	23
						4500+			72
						4500+	8.5	137	120/6"
						4500+			125/6"
						4500+	9.7	131	150/5"
						4500+			132
						4500+	7.9	136	100/6"
						4500+			58
						4500+	8.7	137	47
						4500+			34
MA						4500+	9.6		55
						4500+			48
						4500+	7.8	139	136
						4500+			89

BORING P-1

SURFACE ELEVATION ~~675.9~~

BLOW COUNTS SAMPLES SYMBOLS DESCRIPTIONS



ML BLACK CLAYEY SILT WITH TRACE OF SAND AND ORGANIC MATTER - (TOPSOIL)

Top of Salt Creek Alluvium

ML MOTTLED BROWN AND GRAY SANDY SILT WITH CLAY (SOFT)

GP SP BROWN GRAVELLY FINE TO COARSE SAND (MEDIUM DENSE)

Top of Illinoian Glacial Till

ML GRAY CLAYEY SILT WITH SAND AND OCCASIONAL GRAVEL (VERY STIFF)

GRADES TO HARD

5" SEAM OF GRAVEL

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

PIEZOMETER INSTALLED ON 6-26-72
PIEZOMETER TIP PLACED AT ELEVATION 609.9. PEA GRAVEL WAS PLACED FROM ELEVATION 596.4 TO ABOVE THE TIP; A BENTONITE SEAL; AND CEMENT GROUT TO ELEVATION 675.9.
PIEZOMETER INSTALLED ON 6-26-72
BORING P-1B WAS DRILLED ADJACENT TO P-1A, AND THE PIEZOMETER TIP WAS PLACED AT ELEVATION 665.9.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET: TIP ELEVATION 609.9	TIP ELEVATION 665.9	DATE
1.9	2.9	8-3-72
1.8	3.1	8-15-72
2.5	3.8	8-6-72

REFER TO FIGURE 2.4-36 FOR WATER LEVEL OBSERVATIONS.

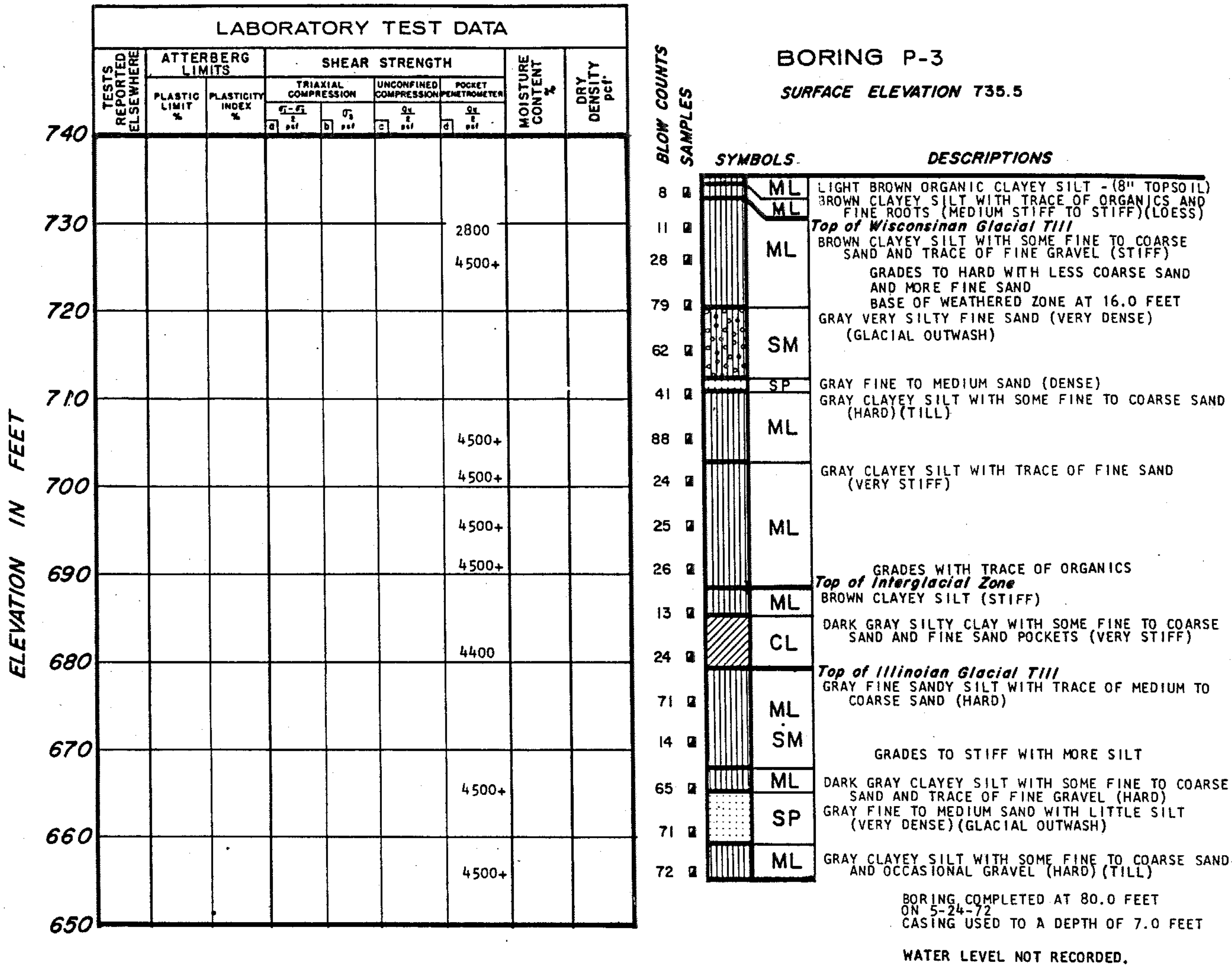
NOTE:

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 2.5-19

LOG OF BORING P-1



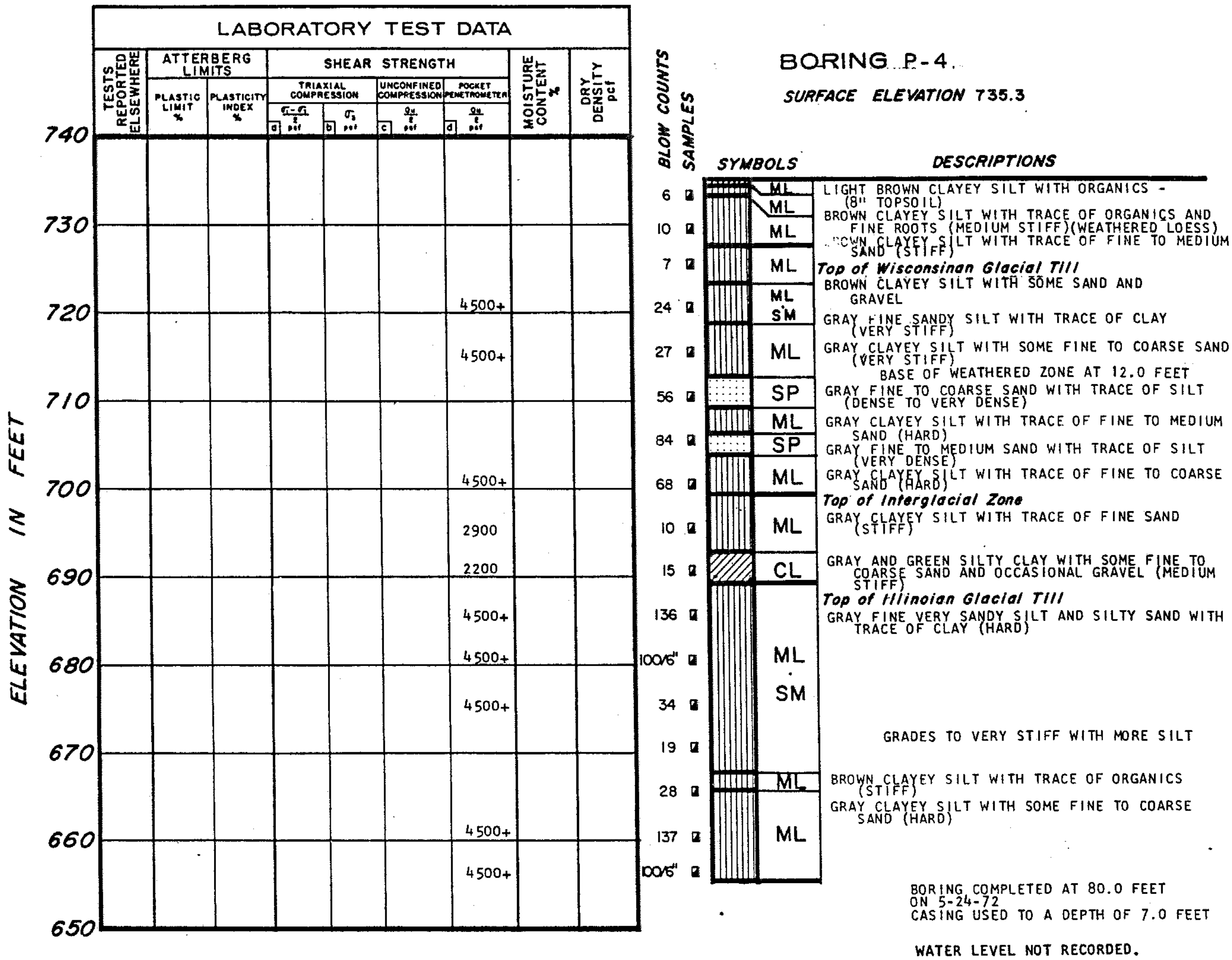
NOTE:

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 2.5-20

LOG OF BORING P-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 2.5-21

LOG OF BORING P-4

BORING P-5

SURFACE ELEVATION 680.8

LABORATORY TEST DATA

Elevation in feet	Tests reported elsewhere	Atterberg limits: plastic limit %	Atterberg limits: plasticity index %	Shear strength: triaxial compression a $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: triaxial compression b σ_3 psf	Shear strength: unconfined compression c $\frac{q_u}{2}$ psf	Shear strength: pocket penetrometer d $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf	Blow counts
690										
680										10
							3000			11
670										3
							600			2
660										67
							4500+			96
650							4500+			170
							4500+			149/11"
640							4500+			100/5"
							4500+			133/9"
630							4500+			138/11"
							4500+			156
620							4500+			110
							4500+			94
610							4500+			100/5"
							4500+			188
600							4500+			170/9"

ELEVATION IN FEET

BLOW COUNTS / SAMPLES

SYMBOLS	DESCRIPTIONS
ML	DARK BROWN AND BLACK CLAYEY SILT WITH FINE SAND AND ROOTS - (TOPSOIL) (STIFF)
	Top of Salt Creek Alluvium
CL	BROWN AND GRAY SILTY CLAY WITH SOME FINE SAND (STIFF)
ML	LIGHT GRAY CLAYEY SILT WITH SEAMS OF SAND (SOFT)
OL-ML	BROWN AND GRAY CLAYEY SILT WITH FINE SAND AND SHELLS (SOFT)
SP	GRAY FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE)
	Top of Illinoian Glacial Till
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
	OCCASIONAL SAND LENSES

BORING COMPLETED AT 80.0 FEET ON 6-26-72
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 2.5-22

LOG OF BORING P-5

BORING P-6

SURFACE ELEVATION 738.1

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{Q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{Q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
						2400			8
						500	20.8	106	4
					1725	1600	15.9	118	7
							12.5	119	30
						4500+			78
					7900	4500+	12.7	126	21
						3500			17
					1575	2000	15.7	116	9
									10
					1225	1300	17.8	112	6
									50
						4500+	8.2	136	65
									180/11"
							8.0	126	167/11"
									38
						4500+	9.7	127	66
						4500+			173/10"
			15,000	6,000		4500+	6.6	143	185/11"
									100/6"
						4500+			150/3"
									135/6"
									110/6"
									75/6"
						4500+	4.2	143	105/9"
									130

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610

BLOW COUNTS / SAMPLES

SYMBOLS / DESCRIPTIONS

- ML — BROWN CLAYEY SILT WITH ORGANICS - (12" TOPSOIL)
- ML — BROWN CLAYEY SILT WITH TRACE OF ORGANICS AND FINE ROOTS (MEDIUM STIFF) (WEATHERED LOESS)
- *Top of Wisconsinan Glacial Till*
- ML-SM — BROWN CLAYEY SILT AND FINE TO COARSE SAND (SOFT TO MEDIUM STIFF)
  - GRADES WITH LESS SAND
- SP — BROWN FINE TO COARSE SAND (MEDIUM DENSE)
- ML — GRADES WITH THIN SEAMS OF CLAYEY SILT
  - BASE OF WEATHERED ZONE AT 15.0 FEET
- ML — GRAY CLAYEY SILT WITH LITTLE FINE TO COARSE SAND (HARD)
  - OCCASIONAL FINE SAND SEAM
  - GRADES VERY STIFF
  - GRADES WITH MORE CLAY
  - GRADES STIFF
  - 6" SAND SEAM.
- *Top of Interglacial Zone*
- ML — DARK GRAY CLAYEY SILT (MEDIUM STIFF)
- ML — BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND (MEDIUM STIFF)
- *Top of Illinoian Glacial Till*
- ML-SM — GRAY FINE SANDY SILT WITH SOME MEDIUM TO COARSE SAND (HARD)
  - GRADES WITH TRACE OF FINE GRAVEL
  - GRADES WITH MORE SILT
  - 15" FINE TO MEDIUM SAND LAYER
- ML — GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)
  - GRADES WITH MORE FINE SAND
  - GRADES WITH LESS FINE SAND

BORING COMPLETED AT 120.0 FEET ON 5-23-72
CASING USED TO A DEPTH OF 5.0 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 2.5-23

LOG OF BORING P-6

LABORATORY TEST DATA

Blow Counts	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
12							2600		
6								11.0	118
10							1700	11.5	120
19							4500		
31									
74							4500+	7.4	133
90							4500+		
23						3900	4500+	13.8	123
8							2700		
14						3050	3300	18.2	111
48									
78							4500+	5.1	142
160							4500+		
94									
32									
121								4.3	138
94									
100/7"							4500+		
175/11"									
200/5"							4500+		
190/6"									
155/10"							4500+		
160/10"							4500+		
105							4500+		
118							4500+		
112							4500+		
85							4500+		
75									

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

BORING P-7

SURFACE ELEVATION 737.5

BLOW COUNTS / SAMPLES / SYMBOLS / DESCRIPTIONS

- **ML** — BROWN CLAYEY SILT WITH FINE SAND AND ROOTS (TOPSOIL)
- **CL** — LIGHT BROWN SILTY CLAY (STIFF) (WEATHERED LOESS)
- *Top of Wisconsinan Glacial Till*
- **ML** — TAN AND BROWN FINE SANDY SILT (LOOSE)
- **CL** — LIGHT BROWN SANDY CLAY WITH SILT AND SOME GRAVEL (STIFF)
  APPROXIMATE BASE OF WEATHERED ZONE AT 12.5'
- **ML** — GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF)
  LAYER OF REDDISH-BROWN FINE SAND WITH SOME GRAVEL
  LAYER OF BROWN SILTY CLAY WITH SOME SAND AND GRAVEL
  GRADES TO HARD
  LAYER OF GRAY FINE TO MEDIUM SAND WITH SOME GRAVEL
  OCCASIONAL LAYERS OF FINE SANDY SILT WITH SOME GRAVEL GRADES TO BROWNISH-GRAY
  GRADES TO VERY STIFF
- *Top of Interglacial Zone*
- **ML-CL** — GRAY CLAYEY SILT AND SILTY CLAY WITH SAND AND SOME GRAVEL (MEDIUM STIFF TO STIFF)
- *Top of Illinoian Glacial Till*
- **SM-ML** — LIGHT GREENISH-GRAY SILTY SAND AND SANDY SILT WITH OCCASIONAL GRAVEL (VERY DENSE TO HARD)
  GRADES WITH MORE SILT
- **SP-SM** — GRAY FINE TO MEDIUM SAND WITH SILT AND SOME GRAVEL (VERY DENSE)
- **ML-SM** — GRAY SANDY SILT WITH SOME GRAVEL AND TRACE OF ORGANIC MATTER (DENSE TO HARD)
  GRADES WITH MORE SAND
  GRADES WITH LAYERS OF DARK GRAY FINE TO MEDIUM SAND WITH SOME GRAVEL
- **ML** — GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) (SAND, SILT AND CLAY CONTENT VARIES WITH DEPTH)
  3" LAYER OF GRAY FINE SAND
  6" LAYER OF FINE TO MEDIUM SAND

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-24

LOG OF BORING P-7

(SHEET 1 of 2)

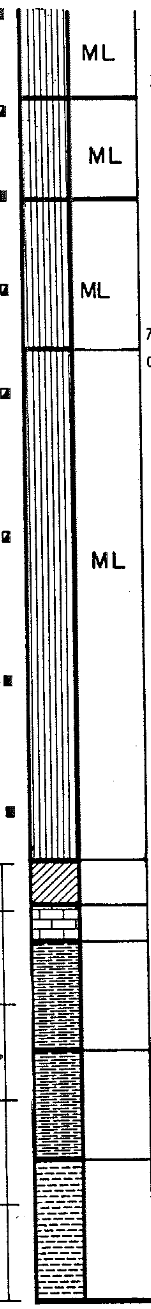
BORING P-7 CONTINUED

SURFACE ELEVATION

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION [b] σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION [c] $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER [d] $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
580							4500+	8.1	135	85
570							4500+			65
560				6960	11,500		4500+	11.4	127	140
550										150/4"
540							4500+			102
530–520										68
510							4500+	17.3	113	44
500–490							4500+			130/6"
490–480										45%
480–470										100%
470–460										100%
460						3.3x10^5				100%
450						3.6x10^5				100%
450–440						6.1x10^5				

SAMPLES · SYMBOLS · DESCRIPTIONS



Top Of Lacustrine Deposits

14" LAYER OF FINE TO MEDIUM SAND

GRADES TO GREENISH-BROWN AND GRAY

Top Of Pre-Illinoian Glacial Till

GRADES WITH MORE CLAY AND POCKETS OF SILT

Top Of Pre-Illinoian Lacustrine Deposits

GRAY AND BLACK CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) (LACUSTRINE DEPOSIT)

GRADES TO BROWNISH-GRAY WITH SEAMS OF SILT

GRADES WITH LAYERS OF SILT

GRAY CALCAREOUS CLAY (DENSE)(RESIDUAL SOIL PRODUCED BY WEATHERING OF BEDROCK)

TOP OF BEDROCK

GRAY LIMESTONE, FINE CRYSTALLINE; NUMEROUS THIN SEAMS OF SHALE; HIGHLY WEATHERED TO CALCAREOUS CLAY IN ZONES

GRAY TO DARK GRAY SHALE WITH NUMEROUS CALCAREOUS INCLUSIONS, CARBONACEOUS IN ZONES EXPANSIVE; INDISTINCT BEDDING, NUMEROUS SLICKENSIDES ALONG RANDOM ORIENTED PLANES OF WEAKNESS

GRAY SILTY SHALE; OCCASIONAL HIGH ANGLE FRACTURE WITH SLICKENSIDES, MASSIVE; OCCASIONAL IRREGULAR ZONE OF BROWN LIMESTONE

LIGHT GRAY SILTSTONE WITH OCCASIONAL THIN LAYERS OF BROWN SILTY SANDSTONE; CROSSBEDDED, MASSIVE

GRADES TO NUMEROUS THIN STRINGERS OF FINE SANDSTONE

BORING COMPLETED AT 295.5 FEET ON 6-21-72
CASING USED TO A DEPTH OF 5.0 FEET

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	DATE
52.7	8-29-72

REFER TO FIGURE 2.4-36 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 2.5-24

LOG OF BORING P-7

(SHEET 2 of 2)

BORING P-8

SURFACE ELEVATION 677.3

LABORATORY TEST DATA

Columns: TESTS REPORTED ELSEWHERE; ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %); SHEAR STRENGTH (TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf [a], σ_3 psf [b]; UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf [c]; POCKET PENETROMETER $\frac{Q_u}{2}$ psf [d]); MOISTURE CONTENT %; DRY DENSITY pcf

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620, 610, 600, 590

BLOW COUNTS	POCKET PENETROMETER $\frac{Q_u}{2}$ psf	SYMBOLS
10		ML
4	750	CL
10		ML
25		SP
61	4500+	ML
123	4500+	ML
174/15"	4500+	ML
100/5"		ML
184	4500+	ML
189	4500+	ML
146/10"	4500+	ML
106	4500+	ML
138	4500+	ML
79	4500+	ML
60	4500+	ML
82	4500+	ML
177	4500+	ML

DESCRIPTIONS

BLACK CLAYEY SILT WITH SOME FINE SAND AND ROOTS (TOPSOIL)

Top of Salt Creek Alluvium

MOTTLED BLACK, GRAY AND BROWN SILTY CLAY WITH SOME FINE SAND (SOFT)

GRADES TO MOTTLED BROWN AND GRAY

GRAY CLAYEY SILT (SOFT)

GRAY MEDIUM TO COARSE SAND WITH GRAVEL (MEDIUM DENSE)

GRADES WITH MORE GRAVEL

Top of Illinoian Glacial Till

GRAY CLAYEY SILT (VERY STIFF TO HARD)

GRADES WITH SAND AND SOME GRAVEL

GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)

OCCASIONAL SEAMS OF FINE TO MEDIUM SAND

BORING COMPLETED AT 80.0 FEET ON 6-2-72
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 2.5-25

LOG OF BORING P-8

BORING P-9

SURFACE ELEVATION 744.1

LABORATORY TEST DATA: TESTS REPORTED ELSEWHERE | ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %) | SHEAR STRENGTH (TRIAXIAL COMPRESSION: a $\frac{\sigma_1-\sigma_3}{2}$ psf, b σ_3 psf; UNCONFINED COMPRESSION: c $\frac{Q_u}{2}$ psf; POCKET PENETROMETER: d $\frac{Q_u}{2}$ psf) | MOISTURE CONTENT % | DRY DENSITY pcf

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660

BLOW COUNTS	SAMPLES	SYMBOLS	POCKET PENETROMETER $\frac{Q_u}{2}$ psf	DESCRIPTIONS
8	■	ML		LIGHT BROWN CLAYEY SILT WITH ORGANICS - (15" TOPSOIL)
6	■	ML	1900	BROWN CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND (MEDIUM STIFF TO STIFF)(WEATHERED LOESS)
				Top of Wisconsinan Glacial Till
10	■	CL		GRADES, WITH MORE SAND AND TRACE OF FINE GRAVEL
				BASE OF WEATHERED ZONE AT 12.0 FEET
16	■	ML	4500+	GRAY CLAYEY SILT WITH TRACE OF FINE TO COARSE SAND (STIFF TO VERY STIFF)
39	■		4500+	GRADES TO HARD WITH LESS CLAY AND MORE SILT AND FINE SAND
27	■		4500+	
152	■	ML	4500+	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND TRACE OF FINE GRAVEL (HARD)
				Top of Interglacial Zone
25	■	ML		GRAY FINE SANDY SILT WITH TRACE OF CLAY (VERY STIFF TO VERY DENSE)
74	■	SM		GRADES TO HARD WITH MORE FINE SAND
				Top of Illinoian Glacial Till
33	■	ML	4500+	GRAY CLAYEY SILT WITH TRACE OF FINE TO COARSE SAND (VERY STIFF)
29	■		4500+	GRADES WITH MORE SILT
19	■		4500+	
12	■	ML	1600	GRAY CLAYEY SILT (STIFF)
53	■	ML SM		GRAY FINE SANDY SILT (HARD) (OUTWASH)
40	■	ML	4500+	GRAY CLAYEY SILT WITH TRACE OF FINE TO COARSE SAND (HARD) (TILL)
100	■	SP		GRAY FINE TO COARSE SAND WITH TRACE OF SILT (VERY DENSE)(GLACIAL OUTWASH)
104	■	ML	4500+	GRAY CLAYEY SILT WITH TRACE OF FINE TO COARSE SAND (HARD)(TILL)

BORING COMPLETED AT 80.0 FEET ON 5-22-72
CASING USED TO A DEPTH OF 7.0 FEET

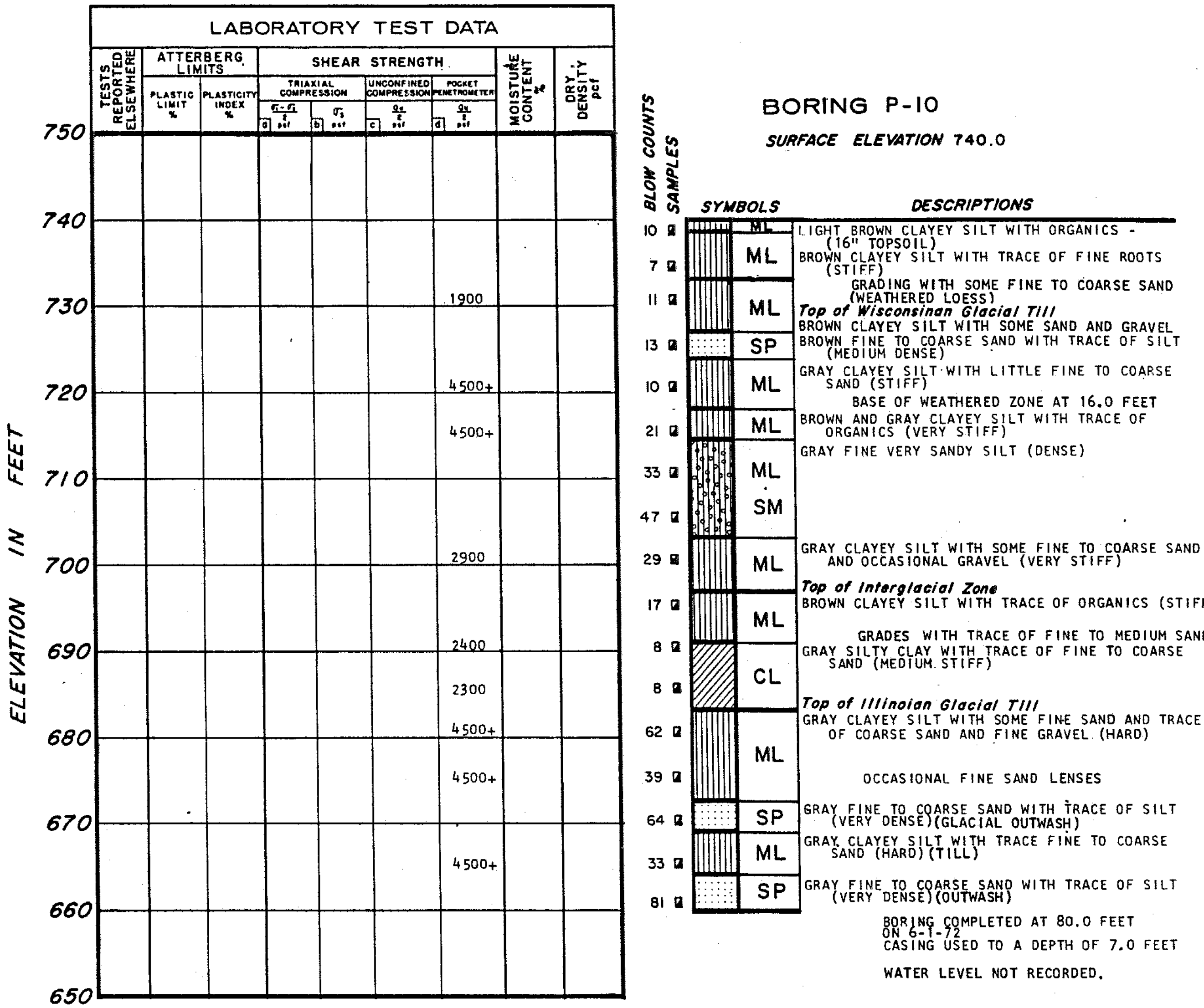
WATER LEVEL NOT RECORDED.

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 2.5-26

LOG OF BORING P-9



CLINTON POWER STATION
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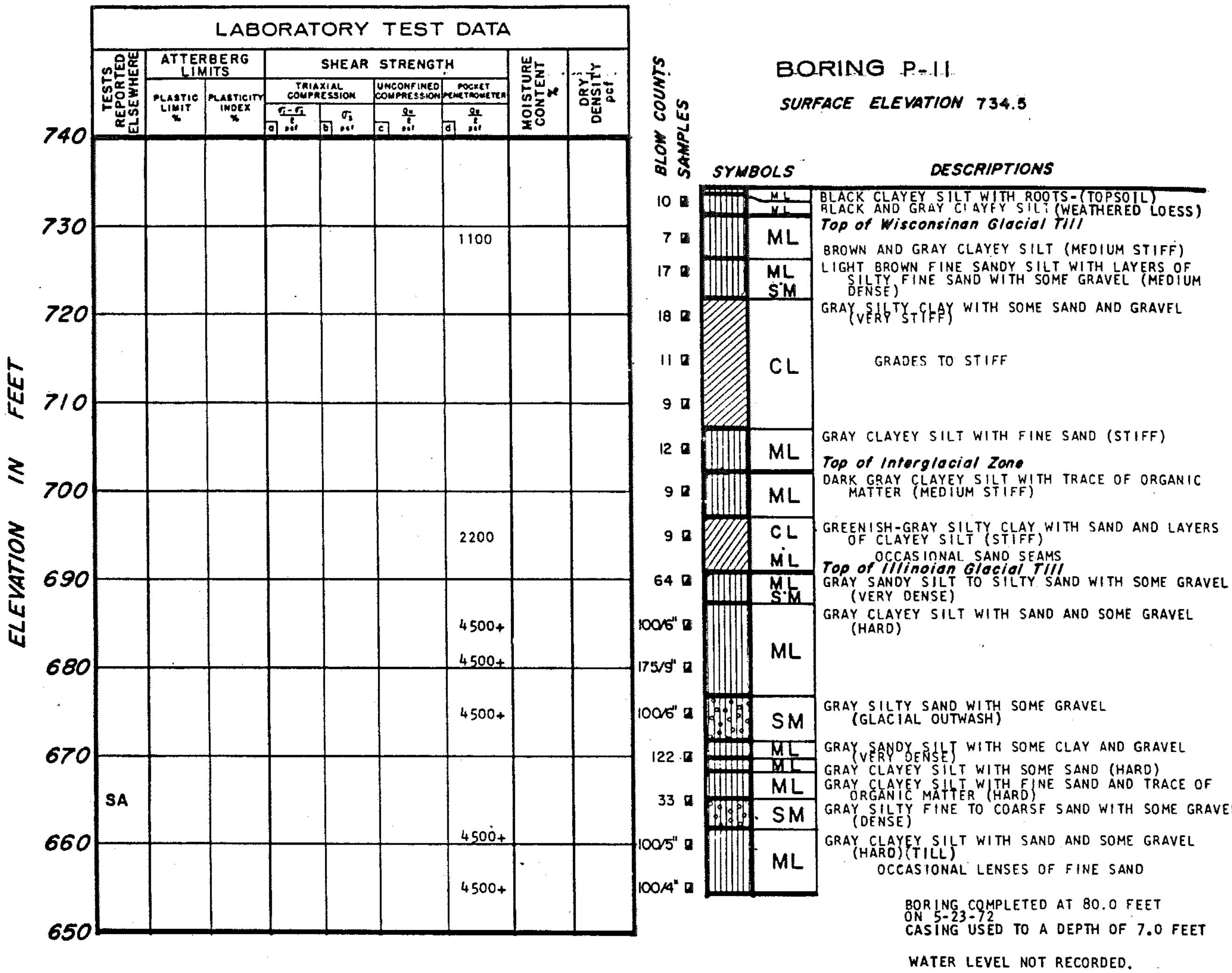
FIGURE 2.5-27

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.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-28

LOG OF BORING P-11

BORING P-12

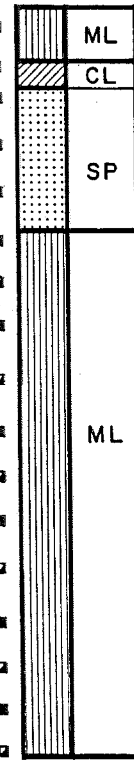
SURFACE ELEVATION 676.8

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression [b] σ_3 psf	Shear Strength: Unconfined Compression [c] $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer [d] $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples
						3300			5
					800	500	31.7	88	2
							14.6	108	P
									23
									30
			18,500	2000		4500+	7.1	141	112
						4500+			161
						4500+			126/6"
						4500+			167/10"
						4500+	8.5	139	140
						4500+			141
						4500+	7.9	140	145
						4500+			80
						4500+	9.6	135	60
						4500+			34
			24,500	5000		4500+	8.6	137	96
						4500+			119/6"

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620, 610, 600, 590

SYMBOLS



DESCRIPTIONS

BLACK CLAYEY SILT WITH FINE SAND AND ROOTS - (TOPSOIL)

Top of Salt Creek Alluvium

MOTTLED BROWN AND GRAY SILTY CLAY WITH SOME FINE SAND (VERY SOFT)

GRAY FINE TO COARSE SAND WITH SOME GRAVEL (MEDIUM DENSE)

1 INCH SEAM OF SILT WITH SOME ORGANIC MATTER

GRADES WITH SEAMS OF GRAVEL

GRADES TO DENSE

Top of Illinoian Glacial Till

GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)

3 INCH SEAM OF GRAVEL

2 INCH SEAM OF GRAVEL

BORING COMPLETED AT 79.0 FEET ON 6-23-72
CASING USED TO A DEPTH OF 6.0 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 2.5-29

LOG OF BORING P-12

BORING P-13

SURFACE ELEVATION 740.9

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression a $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression b σ_3 psf	Shear Strength: Unconfined Compression c $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer d $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
						3500	20.0	102	7
					1425	2300	13.6	111	7
						4500+	11.4	113	18
							5.9	124	52
						4500+			100/6"
						4500+	12.1	125	99
									29
						4500+	14.3	117	64
						4500+			36
						4500+	19.7	111	87
									36
			6840	4000		4500+	12.4	125	27
									42
SA							18.1	109	168/11"
						4500+			46
						4500+	10.9	126	27
									44
							8.0	127	93
						4500+			100/6"
			27,900	6000		4500+	6.7	142	125/6"
						4500+			100/3"
						4500+	7.0	129	150/5"
						4500+			100/4"
			28,500	8000		4500+	8.7	137	161/9"
						4500+			100/6"

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620

BLOW COUNTS / SAMPLES

SYMBOLS	DESCRIPTIONS
ML	BROWN CLAYEY SILT WITH ORGANIC MATTER - (TOPSOIL)
ML	BROWN CLAYEY SILT WITH TRACE OF FINE ROOTS (VERY STIFF)(WEATHERED LOESS)
	Top of Wisconsinan Glacial Till BASE OF WEATHERED ZONE AT 20.0 FEET
ML	GRADES TO VERY STIFF WITH MORE FINE TO COARSE SAND
SP	BROWN FINE TO COARSE SAND WITH TRACE OF SILT (VERY DENSE)
ML	BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (VERY STIFF)
SP	BROWN FINE TO MEDIUM SAND (DENSE)
ML	BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND (HARD)
ML SM	GRAY FINE SANDY SILT (HARD)
ML	DARK GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND TRACE OF ORGANICS (VERY STIFF)
	GRADES TO HARD WITH MORE SAND
	Top of Interglacial Zone
ML SM	GRAY FINE SANDY SILT WITH SOME MEDIUM TO COARSE SAND AND TRACE OF CLAY (HARD)
ML	GRAY SILT WITH TRACE OF FINE SAND AND CLAY (HARD)
	GRADES TO VERY STIFF WITH SOME FINE TO COARSE SAND
SP	GRAY FINE TO COARSE SAND WITH TRACE OF SILT AND OCCASIONAL GRAVEL (DENSE)
	3 INCH COBBLE
	GRADES TO VERY DENSE WITH MORE GRAVEL
	Top of Illinoian Glacial Till
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)
	GRADES WITH MORE SAND
SP SW	GRAY FINE TO COARSE SAND WITH TRACE OF SILT AND GRAVEL (DENSE)(GLACIAL OUTWASH)
	GRADES TO VERY DENSE
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)(TILL)
	3 INCH COBBLE
	GRADES DARKER GRAY WITH TRACE OF ORGANIC MATTER

BORING COMPLETED AT 120.0 FEET ON 5-25-72
CASING USED TO A DPETH OF 5.0 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 2.5-30

LOG OF BORING P-13

BORING P-14

SURFACE ELEVATION 738.3

LABORATORY TEST DATA

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\sigma_1-\sigma_3$ (psf)	TRIAXIAL COMPRESSION σ_3 (psf)	UNCONFINED COMPRESSION q_u (psf)	POCKET PENETROMETER S_u (psf)	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						2400			8
						400	18.4	109	2
			2320	1000		2100	14.6	121	8
									35
									65
TX/DY			880	2500		4500	16.6	117	27
									33
						1200			10
						4000			11
			5880	5000		4500+	17.2	102	16
									14
C	12.5	12.5				1600	16.2	115	12
CHEM*									100/6"
			21,700	4000		4500+	8.1	139	77
									118
	11.0	4.0				4500+	5.1	142	106
SA									35
SA PERM						4500+	9.5	129	100/5"
									100/6"
						4500+			100/4"
						4500+			140/6"
			> 15,000	9000		4500+	8.2	139	100/4"
						4500+			160/10"
TX/DY			20,500	9000		4500+	8.3	139	105/6"
						4500+			127
RES. TX/DY			26,300	9000		4500+	7.6	139	100/5"
SHOCK TX/DY						4500+			100/6"
						4500+			155

* ON WATER SAMPLE OBTAINED ON 10-7-72

SAMPLES / SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	BROWN CLAYEY SILT WITH SOME ORGANICS -(TOPSOIL)
ML	MOTTLED BROWN AND GRAY CLAYEY SILT (VERY STIFF) (WEATHERED LOESS)
ML	*Top of Wisconsinan Glacial Till* BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (STIFF) BASE OF WEATHERED ZONE 17.0 FEET
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND (STIFF) 7" SEAM OF GRAY FINE TO MEDIUM SAND
ML	GRAY CLAYEY SILT WITH TRACE OF FINE SAND (HARD) OCCASIONAL FINE SAND STRINGER
ML	GRAY CLAYEY SILT WITH SOME FINE TO MEDIUM SAND (HARD) 2 INCH SEAM OF BROWN FINE SAND
CL	GRAY SILTY CLAY WITH TRACE OF FINE TO MEDIUM SAND (STIFF)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (STIFF)
ML	*Top of Interglacial Zone* DARK GRAYISH-BROWN CLAYEY SILT WITH ORGANIC ODOR
CL	DARK GRAY SILTY CLAY WITH TRACE OF FINE SAND (STIFF) GRADES WITH SOME FINE TO MEDIUM SAND
ML SM	*Top of Illinoian Glacial Till* GRAY FINE SANDY SILT WITH SOME MEDIUM TO COARSE SAND AND OCCASIONAL GRAVEL (HARD) OCCASIONAL FINE SAND SEAM GRADES CLAYEY
SW SM	BROWN FINE TO MEDIUM SAND WITH TRACE OF SILT (DENSE) (GLACIAL OUTWASH)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (TILL) TRACE OF ORGANICS GRADES WITH LESS COARSE SAND
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

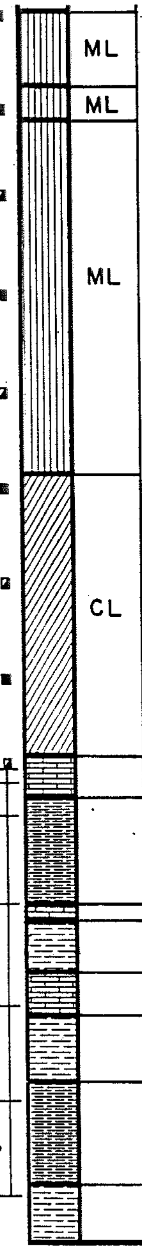
LOG OF BORING P-14

(SHEET 1 of 2)

BORING P-14 CONTINUED

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION [b] σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION [c] $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER [d] $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS / SAMPLES
580	MA PERM						4500+	8.1	139	140/6"
570				7200	10,000		4000	11.3	128	32
560							4500+			150/4"
550				20,600	11,000		4500+	7.8	137	100/5"
540							4500+			150
530	SHOCK TX/DY						4500+			103
520							4500+			56
510							4500+	15.3	120	59
500										200/1"
										75%
490										100%
480										100%
470	RES TX/DY							3.0	144	100%
460	SHOCK TX/DY									100%
450										
440										



DESCRIPTIONS

GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL

Top Of Lacustrine Deposits

BLACK AND GRAY CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND AND OCCASIONAL GRAVEL (VERY STIFF)

Top Of Pre-Illinoian Glacial Till

BROWN CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND OCCASIONAL GRAVEL (HARD) (TILL)

6" SEAM OF GRAVEL

GRADES WITH MORE FINE GRAVEL

GRADES WITH MORE CLAY

BROWN SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (TILL)

TOP OF BEDROCK

BROWNISH-GRAY LIMESTONE, MEDIUM TO COARSE CRYSTALLINE, HARD, OCCASIONAL FRACTURE

DARK GRAY TO BLACK HIGHLY CARBONACEOUS SHALE, FISSILE, 45° FRACTURES SPACED 6" TO 2"

GRADES LESS CARBONACEOUS, NUMEROUS SLICKENSIDES, FRACTURES SPACED 2" TO 6"

LIGHT GRAY ARGILLACEOUS LIMESTONE, IRREGULAR BEDDING, ABUNDANT STRINGERS OF SILTSTONE, FEW FRACTURES, TIGHT

LIGHT GRAY SILTSTONE WITH OCCASIONAL THIN SHALE SEAM

LIGHT GRAY ARGILLACEOUS LIMESTONE WITH NUMEROUS THIN SHALE PARTINGS, HARD, OCCASIONAL TIGHT FRACTURE

LIGHT GRAY FINE SANDY SILTSTONE, CROSSBEDDED, MASSIVE, HARD

DARK GRAY TO GREENISH-GRAY CLAYEY SHALE, IRREGULAR BEDDING, NUMEROUS SLICKENSIDES. 45° FRACTURES SPACED 1 1/2" TO 10" THROUGHOUT

LIGHT GRAY FINE SANDY SILTSTONE, OCCASIONAL ZONE OF BROWN SANDSTONE, HARD, MASSIVE

BORING COMPLETED AT 284.0 FEET ON 6-2-72
CASING USED TO A DEPTH OF 7.0 FEET

PIEZOMETER INSTALLED ON 7-10-72 BORING WAS REOPENED TO 240 FEET AND FLUSHED WITH CLEAN WATER. A 3/4 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET PERFORATED WAS INSTALLED TO ELEVATION 578.33 GRANULAR BACKFILL WAS PLACED FROM ELEVATION 498.3 TO 589.3; A BENTONITE SEAL FROM ELEVATION 589.3 TO 590.3; AND CEMENT GROUT AND GRAVEL FROM ELEVATION 590.3 TO 738.3.

REFER TO FIGURE 2.4-36 FOR WATER LEVEL OBSERVATIONS.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
57.5	8-3-72
56.9	8-22-72
57.3	9-6-72

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 2.5-31

LOG OF BORING P-14

(SHEET 2 of 2)

LABORATORY TEST DATA

Elevation (approx.)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
740										
							2600	25.2	98	7
730							1000	21.8	106	5
				2390	1000		1600	13.9	123	8
								21.2	105	19
720										14
710	C	14.5	8.5				2400	12.8	116	7
										7
				1530	3000		2000	32.1	92	7
700										6
690	TX/DY			1980	3000		3200	18.0	111	11
										12
680							4500+	9.7	135	33
							4500+			47
670				14,000	4000		4500+	8.6	133	170/10"
							4500+			42
660	SA							12.6	123	134/11"
							4500+			77
650								11.9	103	100/6"
							4500+			100/5"
640										100/3"
							4500+			100/6"
630								9.4	130	115/6"
							4500+			100/5"
620				36,000	8,000		4500+	7.4	140	100/5"
							4500+			124
610										

ELEVATION IN FEET

BLOW COUNTS / SAMPLES

BORING P-15

SURFACE ELEVATION 736.3

SYMBOLS	DESCRIPTIONS
ML	LIGHT BROWN CLAYEY SILT WITH SOME ORGANICS (TOPSOIL)
ML	BROWN CLAYEY SILT WITH TRACE OF FINE ROOTS
	Top of Wisconsinan Glacial Till (STIFF)
ML	MOTTLED BROWN AND GRAY CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND (STIFF) GRADES TO VERY STIFF
SP	BROWN FINE SAND WITH TRACE OF SILT (MEDIUM DENSE)
SM	GRAY SILTY FINE SAND (MEDIUM DENSE)
ML	GRAY CLAYEY SILT WITH SOME FINE SAND (MEDIUM STIFF) BASE OF WEATHERED ZONE 16.0 FEET GRADES WITH TRACE OF FINE TO COARSE SAND AND WITH MORE CLAY
	Top of Interglacial Zone
CL	GRAY SILTY CLAY WITH TRACE OF FINE SAND (MEDIUM STIFF)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (STIFF)
	Top of Illinoian Glacial Till
ML	GRAY FINE SANDY SILT WITH TRACE OF CLAY (STIFF)
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF) GRADES TO HARD GRADES WITH LESS FINE SAND
SM	GRAY SILTY FINE TO COARSE SAND (VERY DENSE) (GLACIAL OUTWASH)
ML	GRAY CLAYEY SILT AND FINE TO COARSE SAND WITH OCCASIONAL GRAVEL (HARD)(TILL) 1/2" LENSE OF SHALE HARD 3" COBBLE GRADES DARKER GRAY 2" SEAM OF GRAY FINE TO MEDIUM SAND

BORING COMPLETED AT 120.0 FEET ON 5/24/72
CASING USED TO A DEPTH OF 5.0 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 2.5-32

LOG OF BORING P-15

BORING P-16

SURFACE ELEVATION 688.0

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
									8
									4
									2
									3
									2
									16
									58
						4500+			170
						4500+			155
									100/6"
									100/5"
						4500+			154
						4500+			106
						4500+			65
						4500+			65
						4500+			59
						4500+			81

ELEVATION IN FEET: 690, 680, 670, 660, 650, 640, 630, 620, 610, 600

BLOW COUNTS SAMPLES

SYMBOLS | DESCRIPTIONS

ML — BLACK CLAYEY SILT WITH FINE SAND AND ROOTS - (TOPSOIL)

Top of Salt Creek Alluvium

CL — BROWN SILTY CLAY WITH SAND AND SOME GRAVEL (MEDIUM STIFF)
GRADES TO SANDY CLAY
GRADES TO SOFT
GRADES WITH LAYERS OF SILTY CLAY

ML — DARK BROWN AND GRAY CLAYEY SILT WITH SAND AND TRACE OF ORGANIC MATTER (SOFT)
OCCASIONAL SEAMS OF SAND

ML — GRAY CLAYEY SILT WITH SAND (VERY STIFF)

SM ML — GRAY SANDY SILT AND SILTY SAND WITH SOME CLAY AND GRAVEL (VERY DENSE)

Top of Illinoian Glacial Till

ML — GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)

GRADING WITH MORE CLAY

BORING COMPLETED AT 80.0 FEET ON 5-30-72
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.

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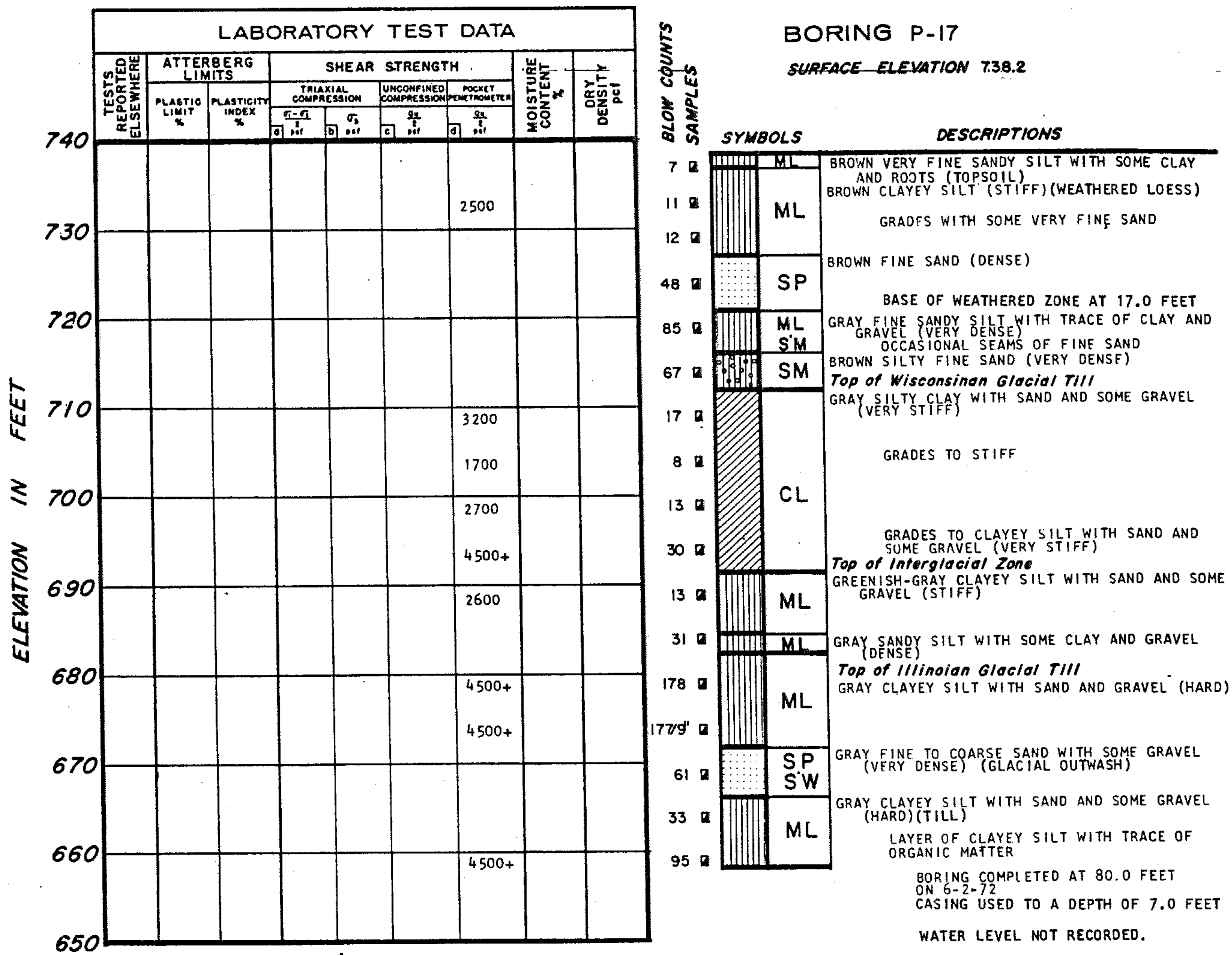
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-33

LOG OF BORING P-16



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 2.5-34

LOG OF BORING P-17

BORING P-18

SURFACE ELEVATION 738.2

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts	Symbols	Descriptions
						2500			8	ML	LIGHT BROWN CLAYEY SILT WITH ORGANICS (TOPSOIL)
						2700	23.7	96	6	ML	BROWN CLAYEY SILT (STIFF)(WEATHERED LOESS)
											Top of Wisconsinan Glacial Till
							15.5	114	9	SM	LIGHT BROWN SILTY FINE TO MEDIUM SAND (LOOSE)
			3360	1500			14.1	118	19	ML SM	BROWN FINE SANDY SILT WITH TRACE OF CLAY (STIFF) BASE OF WEATHERED ZONE AT 19.0 FEET
									25	ML	GRAY SILT (STIFF)
							11.8	115	42	SP	GRAY FINE TO MEDIUM SAND (DENSE) (GLACIAL OUTWASH) GRADES WITH OCCASIONAL FINE SAND SEAM
									38	ML SM	GRAY FINE SANDY SILT WITH TRACE OF CLAY (HARD)
SHOCK TX/DY						3000			15	ML	GRAY CLAYEY SILT WITH TRACE OF FINE TO COARSE SAND (STIFF)
											Top of Interglacial Zone
									17	CL ML	DARK GRAY CLAYEY SILT WITH TRACE OF ORGANICS (VERY STIFF)
	16.5	13.5				2000	17.7	104	10		GRADES TO STIFF
									9	ML SM	LIGHT GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND OCCASIONAL GRAVEL (STIFF)
											Top of Illinoian Glacial Till
C SA PERM						4500+	10.3	131	66	ML SM	GRAY SANDY SILT WITH CLAY AND SOME GRAVEL (HARD)
									100/4½"		
						4500+	10.0	132	155/11"		
						4500+			44		
						4500+			56	ML	GRAY CLAYEY SILT (HARD)
						4500+			29	ML SM	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)
									175/6"		
						4500+			100/6"		12" GRAVEL SEAM
									200/6"		
									150/5"		GRADES WITH MORE SAND
						4500+			119/6"		
									95/6"		6" BROWN FINE TO MEDIUM SAND SEAM
						4500+			112/6"		GRADES WITH MORE CLAY
						4500+			75		
									75/6"		
						4500+			62/6"		
											6" GRAVEL SEAM
						4500+			65/6"		BORING CONTINUED

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

BLOW COUNTS / SAMPLES

CLINTON POWER STATION

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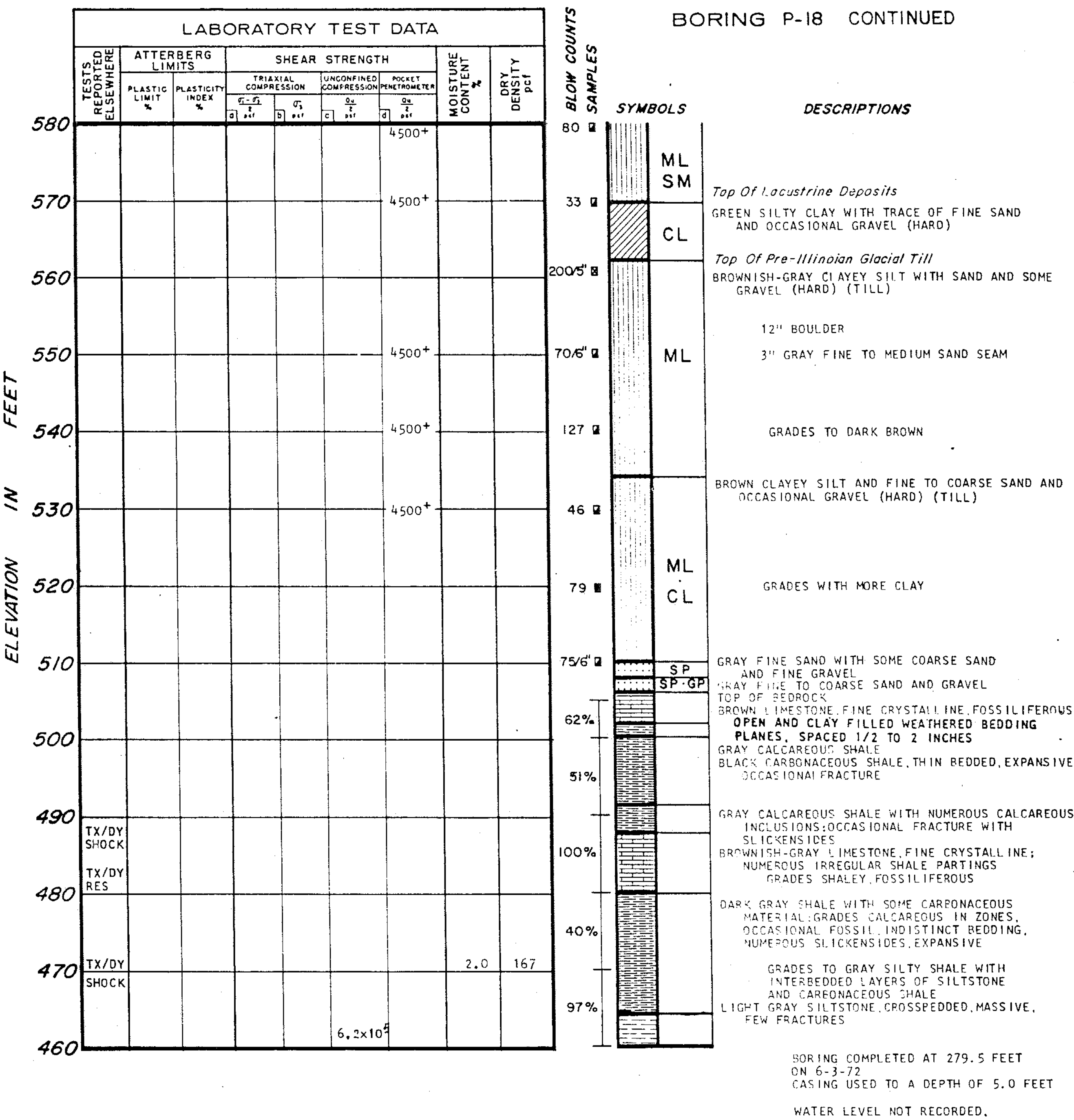
FIGURE 2.5-35

LOG OF BORING P-18

(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
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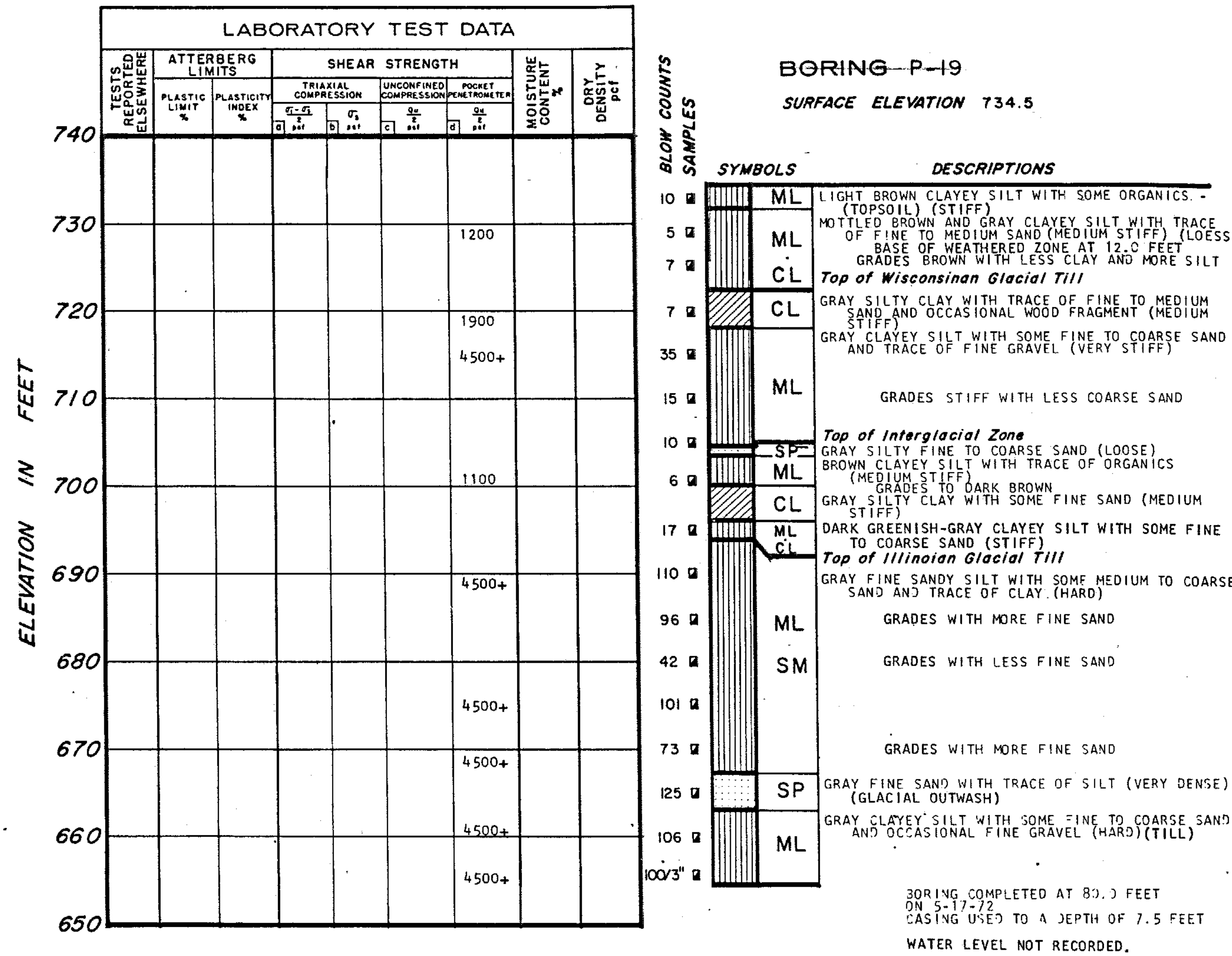
FIGURE 2.5-35

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.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-36

LOG OF BORING P-19

BORING P-20

SURFACE ELEVATION 738.3

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples
									12
						1900	22.7	98	8
							16.4	116	12
							15.8	119	61
									49
						4500+	9.9	133	65
						4500+			45
							11.7	126	27
						4500+			32
					2600	3900	14.5	120	18
C	14.4	7.2					10.9	122	TWP
					3400	3200	19.5	110	14
						2300			12
						4500+	15.5	130	112
									126
									102
							12.5	122	90
						4500+			136/11"
						4500+	7.7	140	110/6"
						4500+			100/6"
									125/5"
									100/5"
						4500+			110
						4500+			65
						4500+	9.3	135	112
						4500+			70
						4500	8.0	140	156/11"
						4500+			68
						4500	8.6	137	69

SYMBOLS / DESCRIPTIONS

Symbol	Description
ML	BROWN CLAYEY SILT WITH FINE SAND AND ROOTS (TOPSOIL)
	LIGHT BROWN CLAYEY SILT WITH FINE SAND (STIFF) (WEATHERED LOESS)
	Top of Wisconsinan Glacial Till
CL-ML	BROWN SANDY CLAY WITH LAYERS OF CLAYEY SILT WITH SAND AND SOME GRAVEL (STIFF)
	OCCASIONAL SMALL LAYERS OF SILTY SAND WITH CLAY
SM-SP	BROWN SILTY VERY FINE SAND TO FINE SAND (DENSE)
	GRADES WITH LAYERS OF CLAYEY SILT WITH SAND
ML	BROWNISH-GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
	APPROXIMATE BASE OF WEATHERED ZONE AT 22.0 FEET
SP-SM	GRAY VERY FINE SAND WITH SILT (MEDIUM DENSE)
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF)
	Top of Interglacial Zone
CL	GRAY SILTY CLAY WITH SAND AND SOME GRAVEL (VERY STIFF)
	TRACE OF ORGANIC MATTER
SP	GRAY FINE TO COARSE SAND WITH SOME GRAVEL (MEDIUM DENSE)
CL-ML	BROWNISH-GRAY SILTY CLAY AND CLAYEY SILT WITH SAND AND SOME GRAVEL (STIFF)
	SEAM OF SILTY FINE TO COARSE SAND WITH SOME GRAVEL
	Top of Illinoian Glacial Till
ML	BROWNISH-GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
SP-SW	GRAY FINE TO COARSE SAND WITH SOME GRAVEL, OCCASIONAL COBBLES AND TRACE OF SILT (VERY DENSE) (GLACIAL OUTWASH)
ML	BROWNISH-GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) (TILL)
	LAYER OF SILTY SAND WITH GRAVEL
	12" LAYER OF SAND
	GRADES TO GRAY

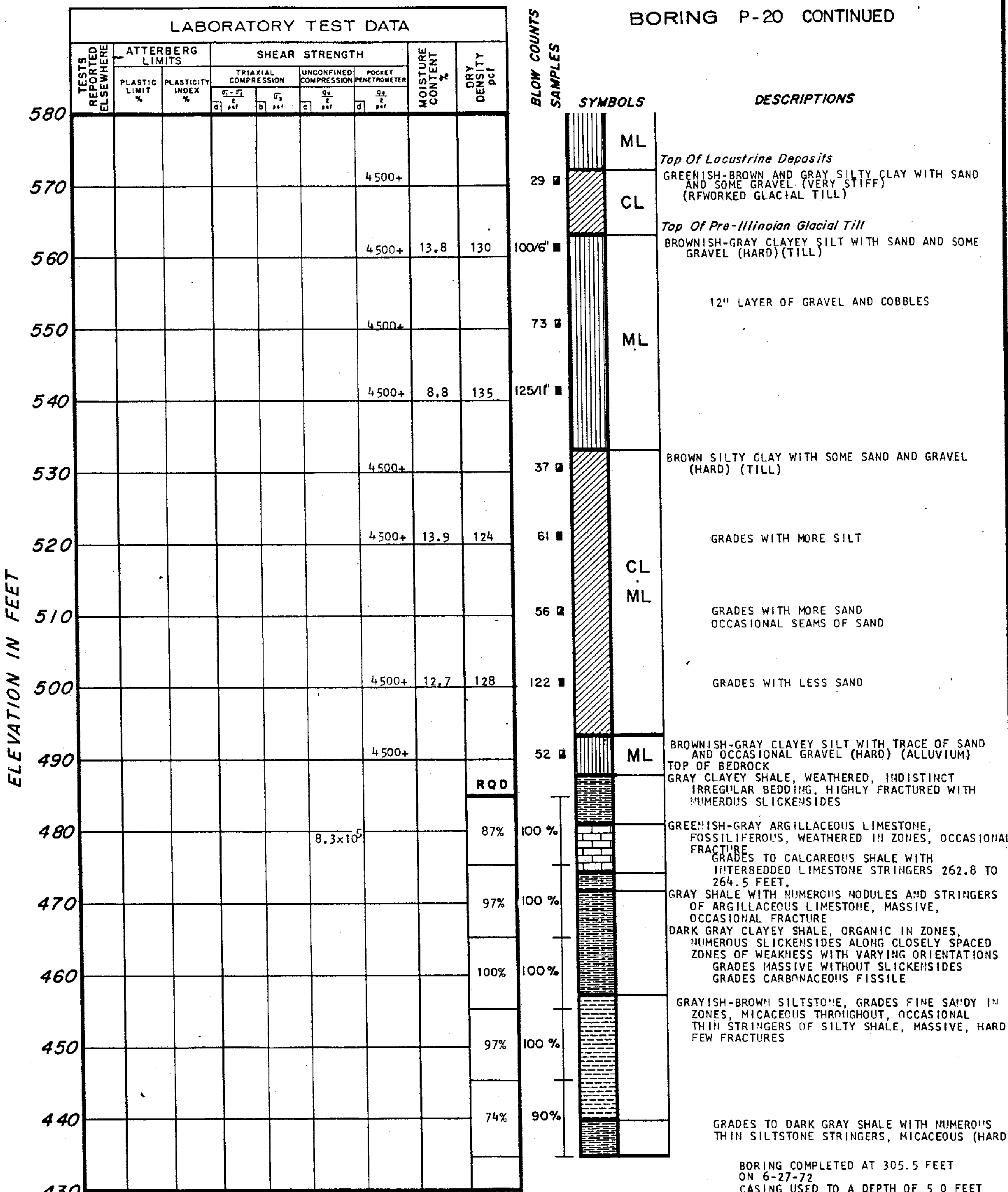
BORING CONTINUED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-37

LOG OF BORING P-20

(SHEET 1 of 2)



PIEZOMETER INSTALLED ON 6-28-72 BORING FLUSHED WITH CLEAN WATER AFTER COMPLETION AT 305.5 FEET. A 3/4 INCH PVC PIPE WITH AN 18 INCH POROUS STONE TIP WAS INSTALLED TO ELEVATION 503.3. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 432.8 TO 568.3;A BENTONITE SEAL FROM ELEVATION 568.3 to 570.3;AND CEMENT GROUT AND GRAVEL FROM ELEVATION 570.3 TO 738.3.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
58.0	8-3-72
58.2	8-22-72
58.4	9-6-72

REFER TO FIGURE 2.4-36 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 2.5-37

LOG OF BORING P-20

(SHEET 2 of 2)

BORING P-21

SURFACE ELEVATION 740.2

LABORATORY TEST DATA

Blow Counts (Samples)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{Q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{Q_u}{2}$ psf	Moisture Content %	Dry Density pcf
10							2300	24.7	94
5							1600	16.5	113
7				2080	1000		1600	14.9	120
57								17.6	111
58									
31				6600	2000		4500+	10.6	128
28									
27							4500+	10.1	130
17									
8	C	16.6	4.4				2000	18.4	114
13									
90/6"							4500+		
100/5"							4500+		
78							4500+	8.7	134
46									
35									
42									
100/5"				12,600	6000		4500+	7.9	140
200/6"									
100/5"							4500+	6.8	146
135/6"							4500+		
100/4"		10.6	3.9				4500+	6.5	138
130/6"							4500+		
100/4"				20,400	8000		4500+	8.6	136
97							4500+		

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620

SYMBOLS	DESCRIPTIONS
ML	DARK BROWN CLAYEY SILT WITH ORGANICS (TOPSOIL)
ML	BROWN CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND (STIFF) (WEATHERED LOESS)
ML CL	*Top of Wisconsinan Glacial Till* BROWN CLAYEY SILT WITH SOME SAND AND GRAVEL
SM	BROWN SILTY FINE SAND (DENSE)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD) BASE OF WEATHERED ZONE 14.5 FEET; 12" LAYER OF GRAY FINE TO COARSE SAND AND GRAVEL
SP GP	GRAY FINE TO COARSE SAND AND GRAVEL (MEDIUM DENSE)
ML	GRAY CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND (VERY STIFF)
CL ML	*Top of Interglacial Zone* DARK GRAY CLAYEY SILT WITH TRACE OF FINE SAND (MEDIUM STIFF TO STIFF)
ML	GRAY FINE SANDY SILT WITH TRACE OF MEDIUM TO COARSE SAND AND OCCASIONAL GRAVEL (VERY STIFF)
ML SM	*Top of Illinoian Glacial Till* GRADES TO HARD WITH TRACE OF CLAY
SP	BROWN SILTY FINE TO MEDIUM SAND (MEDIUM DENSE)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (VERY STIFF)
ML	GRAY AND BLACK CLAYEY SILT WITH FINE SAND AND TRACE OF ORGANICS (DENSE)
SP SM	GRAY SILTY FINE TO COARSE SAND (DENSE)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD); GRADES WITH MORE CLAY; GRADES WITH TRACE OF FINE SAND

BORING COMPLETED AT 120.0 FEET ON 5-19-72
CASING USED TO A DEPTH OF 7.5 FEET

WATER LEVEL NOT RECORDED.

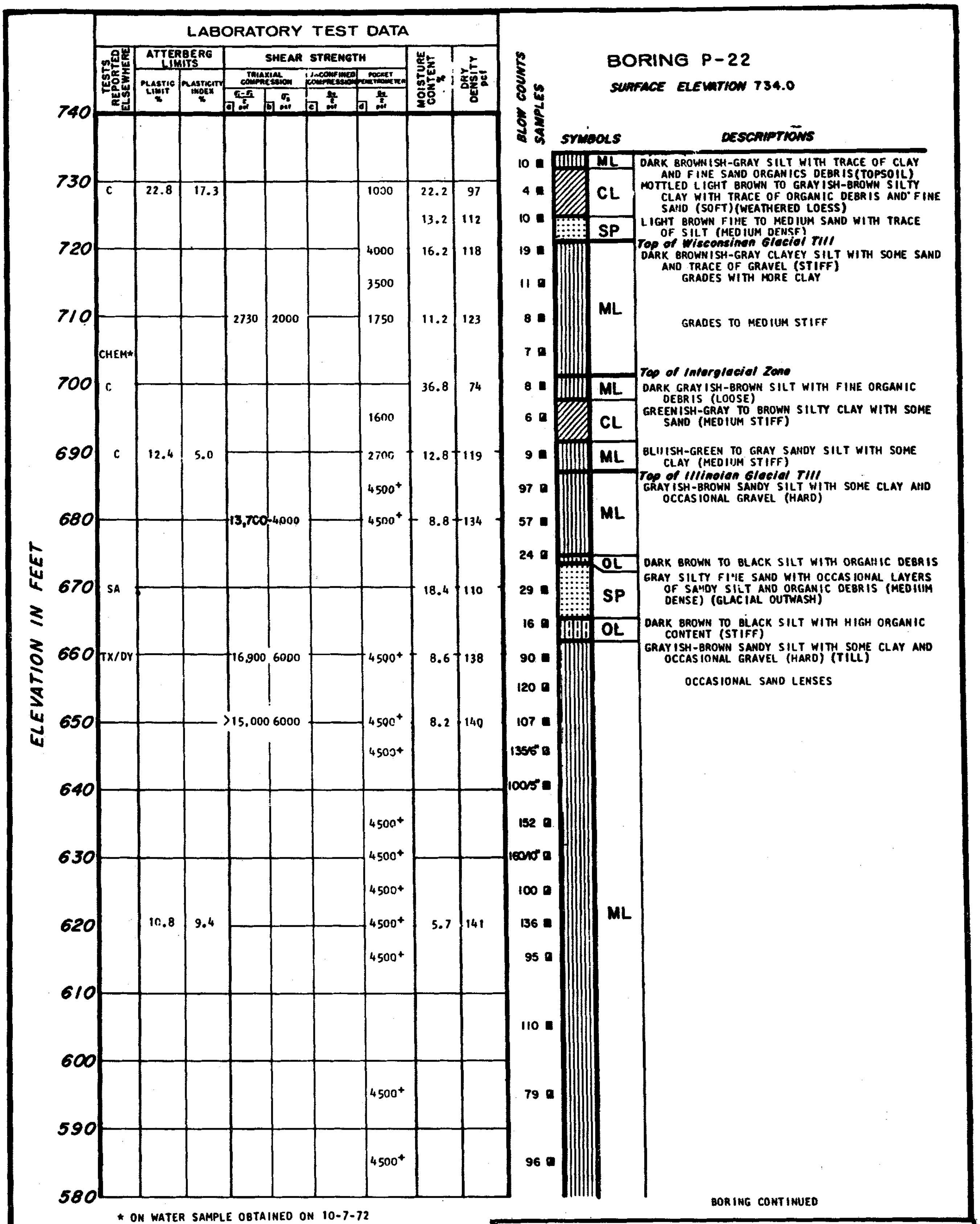
NOTE:

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 2.5-38

LOG OF BORING P-21



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-39

LOG OF BORING P-22

(SHEET 1 of 2)

BORING P-22 CONTINUED

LABORATORY TEST DATA

Elevation in feet (approx.)	Tests reported elsewhere	Atterberg limits: plastic limit %	Atterberg limits: plasticity index %	Shear strength: triaxial compression [a] $\sigma_1-\sigma_3$ psf	Shear strength: triaxial compression [b] σ_3 psf	Shear strength: unconfined compression [c] $\frac{q_u}{2}$ psf	Shear strength: pocket penetrometer [d] $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf	Blow counts / samples	Symbols
575				19,500	11,000			8.5	137	98	ML
565										34	CL
555							4500+	8.3	139	156	ML
545							4500+			112	ML
535							4500+	9.6	136	138	ML
525										79	ML
515							4500+			118	ML
505							4500+			67	ML
485										96%	
478						4.5x10.5					
475										44%	
466										98%	
456										98%	
446										100%	

ELEVATION IN FEET: 580, 570, 560, 550, 540, 530, 520, 510, 500, 490, 480, 470, 460, 450, 440

DESCRIPTIONS

Top Of Lacustrine Deposits

GREENISH-BROWN SILTY CLAY WITH SOME SAND (HARD)

Top Of Pre-Illinoian Glacial Till

GRAYISH-BROWN SANDY SILT WITH SOME CLAY AND OCCASIONAL FINE GRAVEL (HARD) TILL

GRADES TO BROWNISH-GRAY COLOR

GRADES TO BROWN COLOR WITH INCREASED CLAY CONTENT

SAND AND FINE GRAVEL FROM 222.0 TO 22[illegible].5 FEET

BOULDERS AND GRAVEL

TOP OF BEDROCK

GRAY CALCAREOUS SHALE WITH NUMEROUS CALCAREOUS INCLUSIONS, MASSIVE, WEATHERED, OCCASIONAL FRACTURE

GRADES TO GREENISH-GRAY COLOR, NUMEROUS SLICKENSIDES ALONG FRACTURE PLANES

INTERBEDDED IRREGULAR AND GRADATIONAL ZONES OF BROWN LIMESTONE AND GREENISH-GRAY CALCAREOUS SHALE, FOSSILIFEROUS THROUGHOUT WEATHERED

DARK GRAY CARBONACEOUS SHALE, IRREGULAR INDISTINCT BEDDING, NUMEROUS SLICKENSIDES ALONG RANDOM ORIENTED FRACTURE PLANES

GRADES SILTY, NONCARBONACEOUS

GRAY SILTSTONE WITH OCCASIONAL NODULE OF BROWN LIMESTONE, OCCASIONAL FRACTURE

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

PIEZOMETER INSTALLED ON 6-28-72
BORING P-22B, LOCATED 10 FEET FROM P-22A, WAS DRILLED TO A DEPTH OF 64 FEET, A 3/4 INCH PVC PIPE WITH AN 18 INCH POROUS STONE TIP WAS PLACED TO ELEVATION 670.0. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 670.0 TO 679.0: A BENTONITE SEAL FROM 679.0 TO 680.5; AND CEMENT GROUT AND GRAVEL FROM ELEVATION 680.5 TO 734.0.

REFER TO FIGURE 2.4-36 FOR WATER LEVEL OBSERVATIONS.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
18.2	8-15-72
18.4	8-29-72

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 2.5-39

LOG OF BORING P-22

(SHEET 2 of 2)

BORING P-23

SURFACE ELEVATION 732.2

LABORATORY TEST DATA

Columns: TESTS REPORTED ELSEWHERE; ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %); SHEAR STRENGTH (TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf [a], σ_3 psf [b]; UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf [c]; POCKET PENETROMETER $\frac{q_u}{2}$ psf [d]); MOISTURE CONTENT %; DRY DENSITY pcf

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650

BLOW COUNTS	POCKET PENETROMETER $\frac{q_u}{2}$ psf
10	
2	
10	
20	
13	
6	
14	
8	
48	
111	4500+
152/10"	4500+
55	4500+
25	4500+
56	4500+
87	4500+
157/10"	4500+
100/2"	4500+

SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	BLACK CLAYEY SILT WITH ORGANICS - (30" TOPSOIL) (STIFF)
ML	MOTTLED BROWN AND GRAY CLAYEY SILT (VERY SOFT) (WEATHERED LOESS)
	Top of Wisconsinan Glacial Till
ML	BROWN CLAYEY SILT WITH FINE TO COARSE SAND (MEDIUM STIFF TO STIFF); BASE OF WEATHERED ZONE AT 15.0 FEET
ML	GRAY FINE SANDY SILT WITH SOME COARSE SAND AND CLAY (VERY STIFF); SMALL SAND SEAM; OCCASIONAL FINE TO COARSE SAND SEAMS; GRADES TO STIFF
ML	GRAY CLAYEY SILT WITH LITTLE FINE TO MEDIUM SAND (MEDIUM STIFF)
	Top of Interglacial Zone
ML	BROWN CLAYEY SILT WITH TRACE OF ORGANICS (STIFF); GRADES TO MEDIUM STIFF WITH LITTLE FINE TO MEDIUM SAND
ML	GRAY CLAYEY SILT WITH TRACE OF FINE SAND (HARD)
	Top of Illinoian Glacial Till
ML-SM	GRAY FINE SANDY SILT WITH SOME CLAY AND MEDIUM TO COARSE SAND (HARD); OCCASIONAL THIN FINE TO COARSE SAND SEAM; GRADES TO VERY STIFF
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL

BORING COMPLETED AT 80.0 FEET ON 5-16-72
CASING USED TO A DEPTH OF 7.5 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 2.5-40

LOG OF BORING P-23

BORING P-24

SURFACE ELEVATION 741.5

LABORATORY TEST DATA: TESTS REPORTED ELSEWHERE; ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %); SHEAR STRENGTH (TRIAXIAL COMPRESSION a $\sigma_1-\sigma_3$ psf, b σ_3 psf; UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf; POCKET PENETROMETER d $\frac{q_u}{2}$ psf); MOISTURE CONTENT %; DRY DENSITY pcf

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660

BLOW COUNTS / SAMPLES	POCKET PENETROMETER (psf)	SYMBOLS	DESCRIPTIONS
14		ML	LIGHT BROWN CLAYEY SILT WITH ROOTS - (TOPSOIL)
		ML	BROWN CLAYEY SILT WITH SOME VERY FINE SAND (STIFF) (WEATHERED LOESS)
5	700	CL	BROWN SILTY CLAY WITH SOME SAND (SOFT)
			Top of Wisconsinan Glacial Till GRADES TO MEDIUM STIFF
8	2500	ML	GRADES TO CLAYEY SILT WITH SOME SAND
53		ML	BROWN VERY FINE SANDY SILT WITH SOME CLAY (VERY DENSE) OCCASIONAL CLAY SEAMS
71		SM ML	BROWN AND GRAY SILTY VERY FINE SAND (VERY DENSE) BASE OF WEATHERED ZONE AT 20.0 FEET
65		ML	GRAY VERY FINE SANDY SILT WITH LENSES OF SILT (VERY DENSE)
35	4500+	ML	BROWNISH-GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
16	3000	CL	BROWNISH-GRAY SILTY CLAY WITH SAND AND SOME GRAVEL (STIFF)
11			
			Top of Interglacial Zone
17		ML	GRAY SILT WITH CLAY SEAMS (STIFF)
14		ML CL	GREENISH-BROWN AND GRAY CLAYEY SILT WITH SAND AND LAYERS OF SANDY CLAY (STIFF TO VERY STIFF)
26			
			Top of Illinoian Glacial Till
100/2"		SM ML	GRAY SANDY SILT TO SILTY SAND WITH TRACE OF CLAY AND GRAVEL (VERY DENSE)
24		ML SM	GRAY CLAYEY SILT WITH SAND, SOME GRAVEL AND SEAMS OF FINE TO MEDIUM SAND (STIFF TO VERY STIFF)
15		ML SM	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL
24			
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 2.5-41

LOG OF BORING P-24

LABORATORY TEST DATA

Elevation in feet	Tests reported elsewhere	Atterberg limits: Plastic limit %	Atterberg limits: Plasticity index %	Shear strength: Triaxial compression a $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: Triaxial compression b σ_3 psf	Shear strength: Unconfined compression c $\frac{q_u}{2}$ psf	Shear strength: Pocket penetrometer d $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf
750									
740							2500		
730							2500		
							2500		
720							4500+		
							4500+		
710							2600		
							1800		
700							4500+		
690									
680							4500+		
670							4500+		
660									

BORING P-25

SURFACE ELEVATION 740.9

Blow counts	Samples	Symbols	Descriptions
9	◪	ML	LIGHT BROWN CLAYEY SILT WITH ORGANICS - (8" TOPSOIL)
11	◪	ML · CL	BROWN CLAYEY SILT (STIFF) (WEATHERED LOESS)
11	◪		GRADES WITH TRACE OF FINE TO MEDIUM SAND
			Top of Wisconsinan Glacial Till
12	◪	CL	GRAY SILTY CLAY WITH SAND AND SOME GRAVEL (STIFF)
25	◪	ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF)
28	◪		
11	◪	ML · CL	GRAY CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND AND TRACE OF ORGANICS (STIFF)
8	◪		
19	◪	CL	GRAY SILTY CLAY WITH SAND AND SOME GRAVEL (VERY STIFF)
			Top of Interglacial Zone
8	◪	ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL GRADES, WITH CLAY (STIFF)
7	◪	SM	DARK GRAY SILTY FINE SAND WITH SOME CLAY (LOOSE)
			Top of Illinoian Glacial Till
50	◪	SM	LIGHT GRAY SILTY FINE SAND WITH TRACE OF COARSE SAND AND CLAY (DENSE)
142	◪	ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)
			GRADES WITH MORE FINE SAND
115	◪	SP	GRAY FINE TO MEDIUM SAND WITH TRACE OF SILT (VERY DENSE) (GLACIAL OUTWASH)
14	◪	ML	GRAY CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND AND TRACE OF ORGANIC MATTER
58	◪	ML · SM	GRAY FINE SANDY SILT WITH TRACE OF MEDIUM TO COARSE SAND AND CLAY (HARD) (TILL)
145	◪	SP	GRAY FINE SAND WITH TRACE OF SILT (VERY DENSE) (OUTWASH)

BORING COMPLETED AT 80.0 FEET ON 5-25-72

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

BORING P-26

SURFACE ELEVATION 736.6

LABORATORY TEST DATA

Approx. Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\sigma_1-\sigma_3$/2 psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) q_u/2 psf	Shear Strength: Pocket Penetrometer (d) q_u/2 psf	Moisture Content %	Dry Density pcf	Blow Counts
734							2600			12
730							1600	16.6	110	9
727						525	1000	22.1	105	4
722							4500+	10.9	124	38
717							4500+			27
712										11
707										10
702							2400			18
697										14
692	C	9.8	11.6				1800	14.6	120	8
687										72
682								9.8	126	134/6"
677										117
672								5.2	138	182/11"
667							4500+			44
662				15700	5000			9.3	135	165/8"
657										156

ELEVATION IN FEET (740 to 650)

SYMBOLS / DESCRIPTIONS

- **ML** — BROWN CLAYEY SILT WITH TRACE OF FINE SAND AND ROOTS - (TOPSOIL)
- **CL** — BROWN SILTY CLAY WITH TRACE OF SAND (STIFF) (WEATHERED LOESS)
- **ML** — MOTTLED BROWN AND GRAY CLAYEY SILT WITH TRACE OF VERY FINE SAND (MEDIUM STIFF)
  SEAM OF FINE TO MEDIUM SAND
  GRADES TO SOFT
- **SW** — BROWN FINE TO COARSE SAND WITH SOME GRAVEL (DENSE) BASE OF WEATHERED ZONE AT 16.0 FEET

Top of Wisconsinan Glacial Till

- **ML** — GRAY CLAYEY SILT WITH SOME SAND (VERY STIFF)
  GRADES WITH SOME GRAVEL
- **CL ML** — GRAY SILTY CLAY AND CLAYEY SILT WITH SAND AND SOME GRAVEL (STIFF)
  GRADES WITH MORE SAND
  LAYER OF FINE TO COARSE SAND

Top of Interglacial Zone

- **ML** — DARK GRAY CLAYEY SILT WITH ORGANIC DEBRIS
- **CL** — GRAY SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (MEDIUM STIFF)

Top of Illinoian Glacial Till

- **ML SM** — LIGHT GRAY SANDY SILT WITH CLAY AND SOME GRAVEL (HARD)
- **SP** — GRAY AND BROWN FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE) (GLACIAL OUTWASH)
- **ML** — GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) (TILL)
- **SP SW** — GRAY FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE) (OUTWASH)
- **ML** — GRAY CLAYEY SILT WITH SAND AND OCCASIONAL GRAVEL (HARD) (TILL)
- **SP** — GRAY FINE TO MEDIUM SAND WITH SOME GRAVEL (VERY DENSE)
- **ML** — GRAY CLAYEY SILT WITH SOME SAND AND OCCASIONAL GRAVEL (HARD)

BORING COMPLETED AT 80.0 FEET ON 5-16-72
CASING USED TO A DEPTH OF 7.5 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 2.5-43

LOG OF BORING P-26

LABORATORY TEST DATA

Approx. Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples
742										13
737								15.6	115	5
733				1910	1000			13.9	120	7
728	C	10.4	6.8					11.2	126	8
724										41
719								17.3	118	145
714										127
709						2200		12.1	124	12
704	C	12.4	11.5					17.5	109	P
699										15
694						1475		15.9	114	P
689	SA							11.3	124	P
684										105
679								7.6	139	149
674										22
669								9.8	130	17
664										35

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660

BORING P-27

SURFACE ELEVATION 742.9

BLOW COUNTS / *SAMPLES* — *SYMBOLS* — *DESCRIPTIONS*

- ML — BROWN CLAYEY SILT WITH TRACE OF SAND AND ROOTS - (TOPSOIL)
- ***Top of Wisconsinan Glacial Till***
- CL — BROWN SILTY CLAY WITH SOME SAND (MEDIUM STIFF)
  - GRADES TO GREENISH-BROWN
  - GRADES WITH OCCASIONAL GRAVEL
  - BASE OF WEATHERED ZONE AT 12 FEET
- CL — GRAY SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (MEDIUM STIFF)
- SP — BROWN FINE TO MEDIUM SAND WITH OCCASIONAL GRAVEL (DENSE)
  - LAYER OF CLAYEY SILT
- SM ML — GRAY SILTY SAND TO SANDY SILT WITH TRACE OF GRAVEL (HARD)
  - TRACE OF ORGANIC MATTER
- ML — GRAY CLAYEY SILT WITH SAND (HARD)
  - 9" LAYER OF GRAY FINE TO COARSE SAND
- ***Top of Interglacial Zone***
- CL — GRAY SILTY CLAY WITH SOME SAND AND OCCASIONAL GRAVEL (STIFF)
  - TRACE OF ORGANIC MATTER
- ML — GRAY CLAYEY SILT WITH SOME VERY FINE SAND (STIFF)
- CL ML — GRAY SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (STIFF)
  - GRADES WITH MORE SAND
- ***Top of Illinoian Glacial Till***
- ML · SM — GRAY VERY FINE SANDY SILT TO SILTY SAND WITH TRACE OF CLAY AND OCCASIONAL GRAVEL (HARD)
  - GRADES WITH MORE CLAY
  - GRADES TO VERY STIFF
  - GRADES WITH LESS CLAY
  - TRACE OF ORGANIC MATTER
  - GRADES TO FINE SANDY SILT

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

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

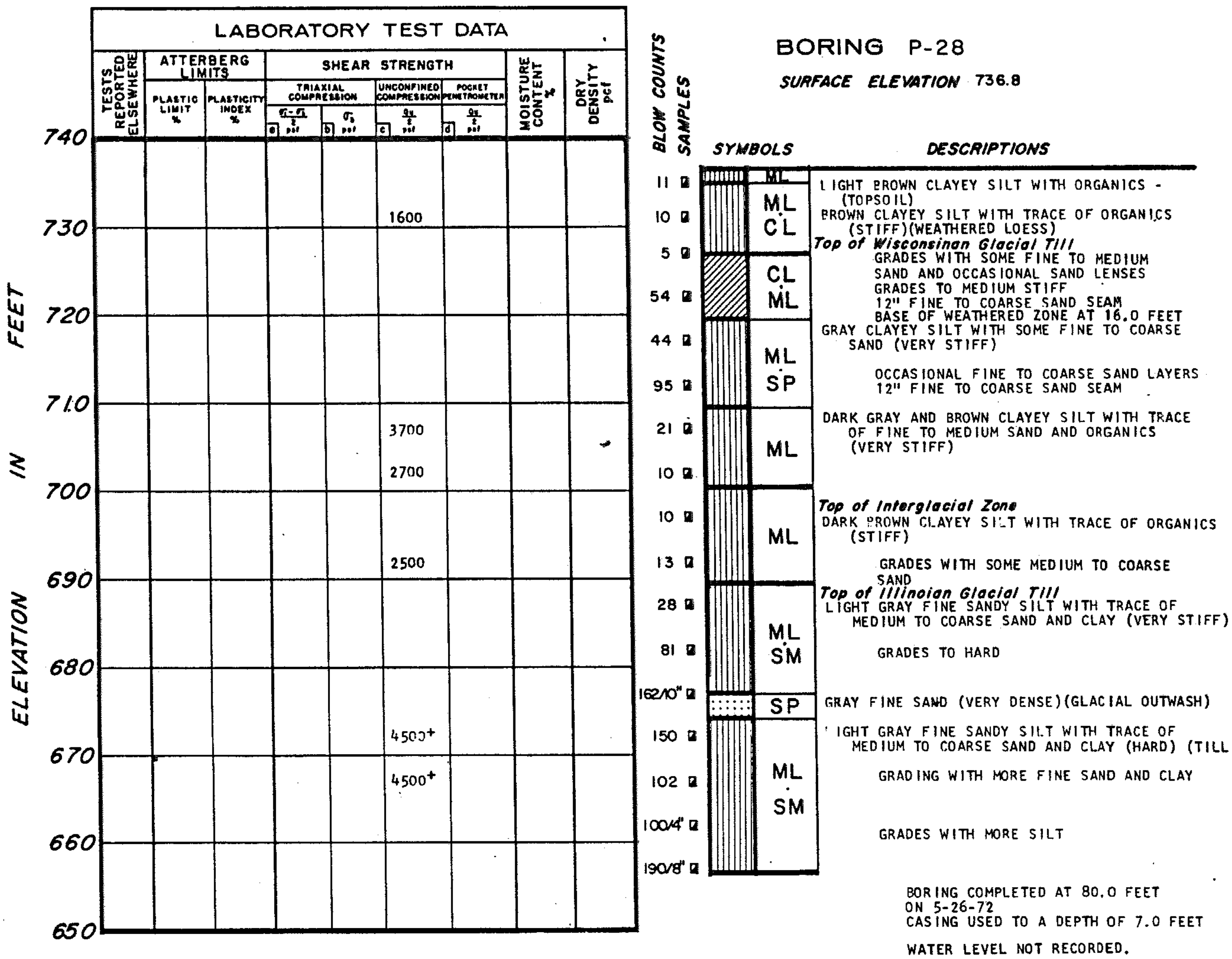
REFER TO FIGURE 2.4-36 FOR WATER LEVEL OBSERVATIONS.

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 2.5-44

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

BORING P-29

SURFACE ELEVATION 737.0

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
740–730										
730–720										
720–710										
710–700	C	16.8	9.2				2750	7.5	121	12
700–690		16.3	7.2			2580		17.3	114	
690–680								11.8	124	16
680–670								8.7	104	
670–660	C							17.7	110	
660–650										
650–640								4.8	149	
640–630										
630–620	C	11.0	5.7					9.9	134	
620–610	C							10.1	136	
610–600										141
600–590										
590–580		11.2	4.5	20,000+	10,240		4500+	7.7	138	138

SYMBOLS / DESCRIPTIONS

- ML — BROWN CLAYEY SILT WITH SOME ORGANICS - (TOPSOIL)
- ML — MOTTLED BROWN AND GRAY CLAYEY SILT (WEATHERED LOESS)
- *Top of Wisconsinan Glacial Till*
- ML — BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL
- ML — GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND
- CL — GRAY SILTY CLAY WITH SAND AND GRAVEL
- *Top of Interglacial Zone*
- ML — GREENISH-GRAY SANDY SILT WITH TRACE OF CLAY AND GRAVEL
- *Top of Illinoian Glacial Till*
- ML — GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL
  - (HARD)
  - (VERY HARD)
  - (VERY HARD)
  - GRADES MORE CLAYEY

NOTES:

A PITCHER SAMPLER 3.0 INCHES IN OUTSIDE DIAMETER AND 2.9 INCHES IN INSIDE DIAMETER WAS USED IN THIS BORING TO OBTAIN UNDISTURBED SAMPLES.

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 2.5-46

LOG OF BORING P-29

(SHEET 1 of 2)

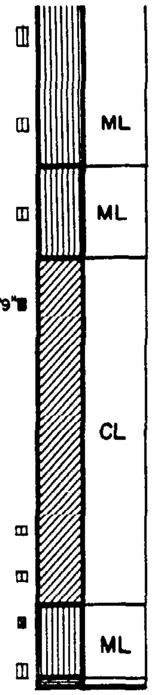
BORING P-29 CONTINUED

LABORATORY TEST DATA

Elevation in feet	Tests reported elsewhere	Atterberg limits: Plastic limit %	Atterberg limits: Plasticity index %	Shear strength: Triaxial compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: Triaxial compression (b) σ_3 psf	Shear strength: Unconfined compression (c) $\frac{q_u}{2}$ psf	Shear strength: Pocket penetrometer (d) $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf
580–570	C	11.7	35					7.6	141
570–560									
560–550									
550–540							4500+		
540–530									
530–520	C							14.9	116
520–510	C	15.7	9.7					16.9	116
510–500	C								

BLOW COUNTS / SAMPLES: 150/9" (at about elevation 545)

SYMBOLS / DESCRIPTIONS



GRADES CLAYEY

Top Of Pre-Illinoian Glacial Till

BLACK AND GRAY CLAYEY SILT WITH TRACES OF SAND

GRAY SILTY CLAY WITH SAND AND GRAVEL

BROWN SANDY SILT WITH CLAY

TOP OF BEDROCK

LIMESTONE *

BORING COMPLETED AT 232 FEET
ON 4-23-73
CASING USED TO A DEPTH OF 5 FEET
GROUND WATER NOT MEASURED

* NOTE:
USED TRI-CONE ROLLER BIT -
NO CORE SAMPLE OBTAINED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-46

LOG OF BORING P-29
(SHEET 2 of 2)

BORING P-30

SURFACE ELEVATION 737.0

LABORATORY TEST DATA

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS / SAMPLES
									8
	16.3	15.3				1700	24.6	99	5
									13
						4500+	10.1	134	35
						4500+			28
	10.7	9.4				4500	12.5	127	19
									33
						4500+	15.3	118	65
					900	2250	15.7	118	17
	13.8	9.7					16.1	116	17
									14
			962	3960		4500+	11.8	126	24
									64
	11.4	1.7				4500+	9.9	136	27
					1720	4500+	10.9	130	59
			4446	5400		2500	30.3	88	26
						4500+			56
									100/5"
	8.0	8.5					7.5	146	100/8"
									150/2"
						4500+			150/4"
									150/4"
						4500+			150/7"
	9.3	4.1				4500+	6.8	150	150/8"
					8584	4500+	8.1	136	200
						4500+	9.8	134	157
			8730	8640		4500+	8.0	136	103/9"
	10.4	4.5				4500+	7.5	137	230
						4500+			200
						4500+	8.1	140	160
						4500+			210
	9.8	5.7				4500+	7.9	139	160

SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	DARK BROWN CLAYEY SILT WITH SOME ORGANICS (TOPSOIL)
ML	MOTTLED YELLOWISH-BROWN AND GRAY CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND (WEATHERED LOESS) (LOOSE); GRADES WITH GRAVEL
	Top of Wisconsinan Glacial Till
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND (HARD); GRADES WITH OCCASIONAL THIN SAND LENSES; GRADES WITH TRACE OF ORGANICS
SP	GRAY FINE TO COARSE SAND WITH TRACE OF SILT (MEDIUM DENSE)
ML	GRAY CLAYEY SILT WITH TRACE OF GRAVEL AND LAYERS OF GRAY SILTY FINE SAND (VERY DENSE)
	Top of Interglacial Zone
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND FINE GRAVEL (VERY STIFF); GRADES WITH GRAY SILTY FINE TO MEDIUM SAND LENSES
SM	BLUE-GREEN SILTY FINE SAND WITH TRACE OF CLAY
SP	GRAY FINE TO MEDIUM SAND WITH SOME SILT (LOOSE)
	Top of Illinoian Glacial Till
ML	LIGHT GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL FINE GRAVEL; GRADES WITH OCCASIONAL POCKETS OF SANDY SILT WITH ORGANICS; SILT POCKETS GRADE OUT
ML	BROWN CLAYEY SILT WITH TRACE OF FINE SAND AND ORGANICS (VERY STIFF)
SP	GRAY FINE SAND
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)
SP	GRAY FINE TO MEDIUM SAND WITH TRACE OF SILT (VERY DENSE)
ML	GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND TRACE OF FINE GRAVEL; GRADES WITH STRINGERS GRAY CLAYEY SILT; GRADES WITH OCCASIONAL COBBLES AND GRAVEL; GRADES WITH TRACE OF ORGANICS; ORGANICS GRADE OUT

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 2.5-47

LOG OF BORING P-30

(SHEET 1 of 2)

BORING P-30 CONT'D

LABORATORY TEST DATA

ELEVATION IN FEET: 580, 570, 560, 550, 540, 530, 520

BLOW COUNTS / SAMPLES	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
119							4500+		
40				3816	8640		4500+	16.1	114
43						4788		14.3	120
51		16.3	19.8				4500+	14.5	122
100/6"							4500+		
125/4"							4500+		
100/4"							4500+	17.3	127
100/5"						9900	4500+	8.3	135
210		11.0	13.6				4500+	8.7	137

SYMBOLS / DESCRIPTIONS

ML

Top of Pre-Illinoian Glacial Till

ML

MOTTLED GRAY AND BROWN CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND OCCASIONAL FINE GRAVEL (HARD)

GRADES GRAYISH-GREEN WITH COARSE SAND AND GRAVEL

GRADES WITH TRACE OF ORGANICS

GRADES BROWN

ORGANICS GRADE OUT

ML

GRAYISH-BROWN SANDY SILT WITH SOME CLAY AND GRAVEL (HARD)

GRADES DARK GRAY

GRADES WITH MORE GRAVEL

GRADES WITH MORE CLAY

GRADES BROWNISH-GRAY WITH LESS SAND

BORING COMPLETED AT 200.0 FEET ON 9-5-73.
CASING USED TO A DEPTH OF 14.0 FEET.
WATER LEVEL NOT RECORDED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-47

LOG OF BORING P-30

(SHEET 2 of 2)

BORING P-31

SURFACE ELEVATION 736.8

LABORATORY TEST DATA

Elevation in feet (approx.)	Tests reported elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\sigma_1 - \sigma_3$ psf	Triaxial Compression (b) σ_3 psf	Unconfined Compression (c) $\frac{q_u}{2}$ psf	Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
740										
730							3000			5
										20
720										49
										55
710		11.8	11.3				3000	15.1	120	12
						2340	3000	13.4	122	13
700							3000	14.2	121	12
							4500+			22
690		15.5	11.0				2000	21.2	106	13
										36
680							4500+	8.0	138	126
							4500+			148
670		15.2	4.5							100/6"
				9036	5000			9.8	134	34
660							4500+			150/10"
										165
650		9.6	6.9				4500+	7.1		150/6"
							4500+			150/6"
640										200/6"
										100/4"
630		NON-PLASTIC					4500+			150/4"
							4500+			180/9"
620										100/6"
							4500+			
							4500+			140
610		10.5	7.3				4500+	8.2	137	180/10"
										160/6"
600							4500+	7.2	140	103/6"
							4500+			106/6"
590		10.6	5.9				4500+	7.4	141	195/10"
				18500>	8640		4500+	7.1	139	180/10"
580							4500+	7.9	139	180/11"

ELEVATION IN FEET

SYMBOLS / DESCRIPTIONS

Symbol	Description
ML	LIGHT BROWN CLAYEY SILT WITH SOME ORGANICS (TOPSOIL)
ML	BROWN CLAYEY SILT WITH TRACE OF FINE SAND AND OCCASIONAL GRAVEL (VERY STIFF) (WEATHERED LOESS)
SM	YELLOWISH-BROWN SILTY FINE SAND WITH OCCASIONAL FINE GRAVEL GRADES WITH TRACE OF CLAY
SP	LIGHT BROWN FINE TO MEDIUM SAND WITH TRACE OF SILT AND GRAY CLAYEY SILT LAYERS (DENSE) GRADES WITH LAYERS OF GRAY SANDY SILT WITH CLAY GRADES WITH TRACE OF FINE GRAVEL AND MORE SILT
ML	*Top of Wisconsinan Glacial Till* DARK GRAY CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND OCCASIONAL FINE GRAVEL (VERY STIFF) (HARD)
CL	*Top of Interglacial Zone* DARK GREEN SILTY CLAY WITH SOME FINE TO MEDIUM SAND AND TRACE OF GRAVEL (STIFF)
SP	GRAY FINE TO COARSE SAND WITH TRACE OF SILT AND OCCASIONAL FINE GRAVEL (DENSE)
ML	*Top of Illinoian Glacial Till* DARK GRAY SANDY SILT WITH SOME CLAY AND TRACE OF FINE GRAVEL (HARD) LAYER OF GRAY SILT WITH TRACE OF CLAY AND FINE SAND GRADES WITH COARSE SAND AND OCCASIONAL COARSE GRAVEL GRADES WITH GRAY SAND LAYERS LAYER OF GRAY MEDIUM TO COARSE SAND WITH TRACE OF SILT AND FINE SAND GRADES WITH POCKETS OF GRAY FINE TO MEDIUM SAND GRADES WITH MORE CLAY
SP	GRAY FINE SAND WITH TRACE OF SILT AND FINE GRAVEL
ML	DARK GRAY SANDY SILT WITH SOME CLAY AND FINE GRAVEL (HARD) GRADES WITH MORE FINE SAND AND CLAY

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)

BORING P-31 CONT'D

LABORATORY TEST DATA

ELEVATION IN FEET: 580, 570, 560, 550, 540, 530, 520

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples	Symbols	Descriptions
						4500+			180/11"	ML	
	10.3	10.6				4500+	11.2	127	155/11"	ML	GRADES TO BROWNISH-GRAY
						4500+			170	ML	
											Top of Pre-Illinoian Glacial Till
						4500+	12.7	123	62	ML	MOTTLED BLUISH-GREEN CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND GRAVEL (HARD)
						4500+			130/6"	ML	GRADES GRAYISH-BROWN; GRADES WITH LESS CLAY
	14.9	8.5				4500+	10.3	134	250/6"	ML	
									200/3	SP	GRAY FINE TO COARSE SAND WITH SOME FINE GRAVEL (VERY DENSE)
						4500+	9.1	132	200/2"	ML	DARK GRAY SANDY SILT WITH SOME CLAY (HARD)
						4500+			250/10"	ML	

BORING COMPLETED AT 200.0 FEET ON 9-10-73.
CASING USED TO A DEPTH OF 5.0 FEET.
WATER LEVEL NOT RECORDED.

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. GRANULAR 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)

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION [b] σ_3 psf	UNCONFINED COMPRESSION [c] $\frac{q_u}{2}$ psf	POCKET PENETROMETER [d] $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
						3000		
						1000		
						2500	13.9	123
						4500+		
						2500	15.5	115
						2250	15.9	119
						1500		
						1500		
						2500		
			10437	3888			8.8	137
						4500+		
							12.8 14.5	123 120
SA						4500+		
						4500+		
C	11.3	10.8					8.4	136
						4500+		
TX/DY						4500+	7.9	135
						4500+		
C	11.3	6.6	7697	6480		4500+	6.7 6.4	138 138
	9.9	4.7				4500+	7.0	126
						4500+		
						4500+	7.3	135
C	10.9	8.9				4500+	6.9	140
						4500+	7.1	139
TX/DY						4500+	9.6	133
						4500+	7.7	139
			18720+	10008+		4500+	25.2	120
C	10.6	7.8					8.5	136
						4500+		

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

BORING P-32

SURFACE ELEVATION 737.4

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
10	ML	BLACKISH-BROWN CLAYEY SILT WITH ORGANICS (TOPSOIL)
8	ML	BROWN CLAYEY SILT WITH TRACE OF FINE SAND (STIFF) (WEATHERED LOESS)
14	CL	*Top of Wisconsinan Glacial Till* MOTTLED LIGHT AND DARK BROWN SILTY CLAY WITH SOME FINE TO COARSE SAND AND GRAVEL (MEDIUM STIFF)
20		GRADES TO LIGHT BROWN; GRADES DARK GRAY AND WITH MORE SAND
9		
9		COBBLE LAYER AT 24.0'
9	SM	GRAYISH-BROWN SILTY FINE SAND WITH TRACE OF CLAY AND POCKETS OF GRAY SANDY SILT (LOOSE)
7	CL	*Top of Interglacial Zone* GRAY SILTY CLAY WITH SOME FINE TO MEDIUM SAND AND GRAVEL AND ORGANICS
12		GRADES WITH OCCASIONAL COBBLE; ORGANICS GRADE OUT
7		
20	SW	BROWNISH-GRAY FINE TO COARSE SAND WITH TRACE OF SILT
	CL	*Top of Illinoian Glacial Till* GREEN SILTY CLAY WITH TRACE OF FINE AND COARSE SAND AND GRAVEL
50	ML	GRAY SANDY SILT WITH SOME CLAY AND GRAVEL (HARD)
10	SP	BROWN AND GRAY MEDIUM TO COARSE SAND WITH TRACE OF FINE SAND AND SILT (LOOSE)
59	ML	LIGHT GRAY SANDY SILT WITH TRACE OF CLAY AND FINE GRAVEL (HARD); GRADES WITH OCCASIONAL SAND STRINGER; 6" COBBLE AT 69.5'
115		GRADES WITH TRACE OF ORGANIC INCLUSIONS
		GRADES WITH MORE SAND AND GRAVEL
140/6"		
		GRADES WITH OCCASIONAL COBBLES
150/4"		GRADES WITH LESS GRAVEL
		COBBLE AT 101.0'
163		
167/11"		
131/9"		GRADES WITH MORE CLAY
		3" LAYER OF SILTY FINE SANDY AT 130.5'
154/11"		GRADES WITH LESS CLAY

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 2.5-49

LOG OF BORING P-32

(SHEET 1 of 2)

BORING P-32 CONT'D

LABORATORY TEST DATA

Elevation in feet	Tests reported elsewhere	Atterberg limits: plastic limit %	Atterberg limits: plasticity index %	Shear strength: triaxial compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: triaxial compression (b) σ_3 psf	Shear strength: unconfined compression (c) $\frac{q_u}{2}$ psf	Shear strength: pocket penetrometer (d) $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf	Blow counts / samples	Symbols
580–570		11.0	5.2				4500+			163/10"	ML
570–560							4500+				ML
560–550										150/4"	ML
550–540	TX/DY	14.0	17.8				4500+	10.5	131		
540–530							4500+			110/6"	
530–520	TX/DY			6682	14976		4500+	15.9	111		ML
520–510	RES						4500+			157	ML
510–500							4250		RQD 15%	95%	
500–490									0%	10%	

DESCRIPTIONS

Top of Pre-Illinoian Glacial Till
MOTTLED BROWNISH-GRAY AND GREEN CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND GRAVEL (HARD)

GRADES WITH MORE SAND AND GRAVEL
4" SAND LAYER AT 179.0'

GRADES DARK GRAY AND WITH COARSE SAND

GRADES MOTTLED GRAY AND BROWN

Top of Pre-Illinoian Lacustrine Deposit
GRAYISH-GREEN FINE SANDY SILT

BROWN CLAYEY SILT WITH FINE TO COARSE SAND AND GRAVEL (HARD)

GRADES WITH MORE CLAY

BROWNISH-GRAY LIMESTONE, COARSE CRYSTALLINE, NUMEROUS SHALE PARTINGS, WEATHERED OPEN AND CLAY FILLED BEDDING PLANES

BLACK HIGHLY CARBONACEOUS SHALE, THINLY LAMINATED

BORING COMPLETED AT 240.0 FEET ON 9-28-73.
CASING USED TO DEPTH OF 4.0 FEET.
NO GROUND WATER LEVEL RECORDED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-49

LOG OF BORING P-32

(SHEET 2 of 2)

BORING P-33

SURFACE ELEVATION 734.6

LABORATORY TEST DATA

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630

Sample (top to bottom)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
1							3000			9
2							2000			9
3		12.4	8.6				2500	16.8	117	13
4							2750			10
5							2500	15.0	120	11
6							2500			9
7		12.2	9.0				1500	18.0	112	8
8							1500			10
9							1500	18.1	111	8
10										10
11		11.4	3.0				4500+	8.0	138	180/10"
12							4500+	7.9	139	100/6"
13	C							7.2 8.0	139 131	152
14										140
15										32
16										99
17		9.7	7.9				4500+			125/6"
18							4500+			100/5"
19								7.6	143	100/5"

SYMBOLS / DESCRIPTIONS

- ML — BROWN CLAYEY SILT WITH SOME ORGANICS (TOPSOIL)
- ML — BLACK CLAYEY SILT WITH TRACE OF ORGANICS (VERY STIFF) (WEATHERED LOESS)
- CL — MOTTLED BROWN AND GRAY SILTY CLAY (STIFF)

Top of Wisconsinan Glacial Till

- ML — BROWN CLAYEY SILT WITH FINE TO COARSE SAND AND OCCASIONAL GRAVEL (VERY STIFF)
- ML — GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND (VERY STIFF)
  - GRADES WITH OCCASIONAL FINE GRAVEL
  - GRADES TO STIFF

Top of Interglacial Zone

- ML — DARK GRAY CLAYEY SILT WITH SANDY INTRUSIONS (STIFF)
  - GRADES TO GRAY AND WITH MORE SAND
- SM — GREENISH-GRAY SILTY SAND WITH OCCASIONAL GRAVEL (LOOSE)

Top of Illinoian Glacial Till

- ML — GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL (HARD)
- SM — GRAY FINE SILTY SAND WITH SOME FINE GRAVEL (MEDIUM DENSE) WOOD FRAGMENTS
- SP — GRAY FINE TO COARSE SAND WITH SOME FINE GRAVEL (VERY DENSE)
- ML — GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL (HARD)

BORING COMPLETED AT 89.0 FEET ON 8-10-73.
CASING USED TO A DEPTH OF 5.0 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 2.5-50

LOG OF BORING P-33

BORING P-34

SURFACE ELEVATION 737.2

LABORATORY TEST DATA

Blow Counts / Samples	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Triaxial Compression (b) σ_3 psf	Unconfined Compression (c) $\frac{q_u}{2}$ psf	Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
24							4200		
10									
6									
61									
56							4500+	9.12	148
25							4500+		
26		10.9	12.0					7.5	133
19						3888	4500+	13.7	121
41		11.0	2.1					10.5	132
13							4500		
8		10.4	6.5				1100	15.8	118
180						1984	4500+	8.7	132
200/6"									
200/6"									
33							4500+	13.8	120
180									
68								16.5	111
170							4500+		
180		10.3	7.4				4500+	6.9	146

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640

SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	DARK BROWN CLAYEY SILT WITH ORGANICS (TOPSOIL)
ML	MOTTLED TAN AND GRAY CLAYEY SILT WITH TRACE OF FINE SAND (HARD) (WEATHERED LOESS) GRADES WITH LESS CLAY
ML	LIGHT BROWNISH-GRAY CLAYEY SILT WITH FINE TO COARSE SAND GRADES WITH TRACE OF FINE GRAVEL
SM	BROWN SILTY FINE SAND (VERY DENSE)
	Top of Wisconsinan Glacial Till
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND (HARD) GRADES WITH OCCASIONAL FINE GRAVEL GRADES WITH MORE SAND AND GRAVEL
	Top of Interglacial Zone
ML	GRAY CLAYEY SILT WITH TRACE OF FINE SAND (HARD)
CL	BLUISH-GREEN SILTY CLAY WITH FINE SAND AND TRACE OF FINE GRAVEL (STIFF)
	Top of Illinoian Glacial Till
ML	LIGHT GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND TRACE OF FINE GRAVEL (HARD)
SM	LIGHT GRAY SILTY FINE TO COARSE SAND WITH TRACE OF FINE GRAVEL (VERY DENSE)
ML	LIGHT GRAY CLAYEY SILT WITH TRACE OF FINE SAND (VERY DENSE)
ML	GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND OCCASIONAL FINE GRAVEL (HARD) GRADES WITH MORE SAND AND GRAVEL
SP	GRAY FINE TO COARSE SAND WITH SOME FINE GRAVEL (VERY DENSE) GRADES MORE COARSE GRADES MORE COARSE
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND FINE GRAVEL AND STRINGERS GRAY FINE SAND (HARD)

BORING COMPLETED AT 90.0 FEET ON 8-27-73.
CASING USED TO A DEPTH OF 5.0 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 2.5-51

LOG OF BORING P-34

BORING P-35

SURFACE ELEVATION 737.8

LABORATORY TEST DATA

Elevation in feet: 740 to 580

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\sigma_1-\sigma_3$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) q_u psf	Shear Strength: Pocket Penetrometer (d) q_u psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples
						250			4
						2750			26
						4500+			25
						4500+			37
						4500+			24
	11.6	12.3					9.8	133	42
									32
						4500+	13.9	123	16
						2800			9
	11.7	9.9				2000	15.1	120	7
						4500+			89
						4500+	7.37	143	110/6"
									250
						4500+	10.0		230
									116
									70
									152/5"
							7.1	141	250
									150/4"
	9.7	4.2				4500+	6.4	143	200/5"
						4500+			150/6"
						4500+	8.4	138	110/6"
						4500+			200/3"
						4500+			200/2"
	10.9	6.4				4500+	7.6	140	270/9"
	11.6	8.1				4500+	7.4	139	200
						4500+			250/10"
						4500+	7.5	140.0	230/10"
						4500+			250
						4500+			250
						4500+			270

SYMBOLS / DESCRIPTIONS

Symbols	Descriptions
ML	BROWN CLAYEY SILT WITH TRACE OF ORGANICS (TOPSOIL)
CL	TAN SILTY CLAY WITH TRACE OF FINE SAND (WEATHERED LOESS)
	Top of Wisconsinan Glacial Till
CL	BROWN SILTY CLAY WITH SOME FINE SAND AND GRAVEL (VERY STIFF)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD) 12" LAYER GRAY SANDY SILT AT 14.0 FEET GRADES WITH LESS CLAY GRADES WITH THIN LAYERS OF SAND 12" LAYER OF SANDY SILT AT 24.5'
SM	GRAY SILTY SAND WITH LAYERS OF GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND GRAVEL GRADES WITH STRINGERS GRAY CLAY
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)
	Top of Interglacial Zone
CL	DARK GRAY SILTY CLAY WITH TRACE OF FINE SAND (STIFF)
CL	GREENISH-BROWN SILTY CLAY WITH FINE SAND AND TRACE OF MEDIUM TO COARSE SAND AND GRAVEL
	Top of Illinoian Glacial Till
ML	GRAY SANDY SILT WITH SOME CLAY AND GRAVEL (HARD) GRADES WITH LAYERS OF GRAY SILT FINE SAND WITH TRACE OF COARSE SAND AND FINE GRAVEL 12" BOULDER AT 173.0 FEET GRADES WITH TRACE OF ORGANICS
SW	GRAY FINE TO COARSE SAND WITH TRACE OF SILT (VERY DENSE) GRADES WITH FINE GRAVEL AND LESS FINE SAND
ML	GRAY SANDY SILT WITH TRACE OF CLAY AND GRAVEL (HARD) GRADES DARK GRAY GRADES WITH THIN LAYERS OF FINE SAND GRADES WITH MORE CLAY GRADES WITH LESS CLAY

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 2.5-52

LOG OF BORING P-35

(SHEET 1 of 2)

BORING P-35 CONT'D

ELEVATION IN FEET: 580, 570, 560, 550, 540, 530

LABORATORY TEST DATA

Blow Counts / Samples	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression a $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression b σ_3 psf	Shear Strength: Unconfined Compression c $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer d $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Symbols
181								8.31	138	ML
71										ML
55							4500+	12.4	126	ML
32				2124	8640		4000	20.3	108	CL
230/10"							4500+	8.1	138	ML
150/4"							4500+			ML
130/6"		12.2	10.1				4500+	8.0	137	ML
200/4"							4500+			ML
270/8"							4500+	9.2	135	ML

DESCRIPTIONS

Top of Pre-Illinoian Glacial Till

GREENISH-BROWN CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND GRAVEL (HARD)

BROWN SILTY CLAY WITH SOME FINE TO COARSE SAND AND GRAVEL (VERY STIFF)

BROWN SANDY SILT WITH SOME CLAY AND GRAVEL (HARD)

GRADES WITH THIN LAYERS OF FINE SAND

GRADES GRAYISH-BROWN

GRADES WITH MORE CLAY

BORING COMPLETED AT 200.0 FEET ON 9-15-73.
CASING USED TO A DEPTH OF 10.0 FEET.
WATER LEVEL NOT RECORDED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-52

LOG OF BORING P-35

(SHEET 2 of 2)

BORING P-36

SURFACE ELEVATION 738.2

LABORATORY TEST DATA

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
						3000		
						2000		
						1500		
						1000		
						4500+		
						4500+		
						3750		
						2000		
						2000		
						3000		
						1500		
						2500		
						500		
			12816	4248		4500+	8.2	137
TX/DY							13.0	132
						2000		
						4000		
						4500+		
C	10.7	6.5					6.5	140
						4500+		
			26280	8236		4500+	6.6	142
C	11.9	9.0				4500+	8.6	135
			14040	8640		4500+	8.0	137
C	11.8	7.0				4500+	7.9	138
						4500+		

BLOW COUNTS / SAMPLES

7, 11, 4, 6, 40, 38, 17, 8, 15, 14, 9, 16, 8, 181, 17, 101, 200/6", 278/6", 300/6", 200/5", 274/9", 174, 300/10"

SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	BLACK SILT WITH ORGANICS (TOPSOIL)
ML	MOTTLED BROWN AND GRAY CLAYEY SILT WITH SOME FINE SAND (VERY STIFF) (WEATHERED LOESS)
	Top of Wisconsinan Glacial Till
CL	BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (MEDIUM STIFF) GRADES GRAY
SP	BROWN FINE TO MEDIUM SAND WITH TRACE OF SILT AND FINE GRAVEL (DENSE)
ML	DARK GRAY FINE TO COARSE SANDY SILT WITH TRACE OF CLAY AND MEDIUM GRAVEL (HARD) GRADES WITH MORE CLAY AND COARSE GRAVEL (VERY STIFF) GRADES WITH LESS MEDIUM TO COARSE SAND 3" BROWN FINE SAND LAYER AT 34.5' 4" LAYER OF FINE SILTY SAND AT 49.0'
	Top of Interglacial Zone
CL	DARK GRAY SILTY CLAY WITH SOME FINE SAND AND GRAVEL (STIFF) GRADES BLUE WITH MORE FINE SAND GRADES WITH SEAMS OF SAND
CL	BLUE SILTY CLAY WITH TRACE OF FINE TO MEDIUM SAND (SOFT)
	Top of Illinoian Glacial Till
ML	GRAY FINE TO MEDIUM SANDY SILT WITH TRACE OF CLAY AND FINE GRAVEL (HARD) GRADES WITH SEAMS OF FINE GRAVEL
SP	GRAY FINE TO MEDIUM SAND WITH TRACE OF SILT (VERY DENSE)
ML	DARK GRAY FINE TO MEDIUM SANDY SILT WITH COARSE SAND AND SOME GRAVEL GRADES WITH FINE TO COARSE SAND LAYERS GRADES WITH LESS SAND
SP	GRAY FINE TO COARSE SAND WITH TRACE OF SILT AND OCCASIONAL FINE GRAVEL (VERY DENSE)
ML	DARK GRAY FINE TO MEDIUM SANDY SILT, SOME COARSE SAND AND GRAVEL AND TRACE OF CLAY
SP	GRAY FINE TO MEDIUM SAND WITH TRACE OF SILT AND OCCASIONAL FINE GRAVEL
ML	DARK GRAY FINE TO MEDIUM SANDY SILT WITH COARSE SAND AND SOME GRAVEL 20" SAND LAYER AT 134.5' GRADES WITH MORE CLAY

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

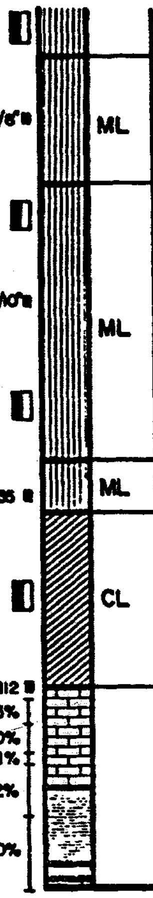
(SHEET 1 of 2)

BORING P-36 CONT'D

LABORATORY TEST DATA

Elevation in Feet	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) psf	Shear Strength: Triaxial Compression (b) psf	Shear Strength: Unconfined Compression (c) psf	Shear Strength: Pocket Penetrometer (d) psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples
580	TX/DY						4500+	8.5	138	
570	RES									265/8"
560	C	10.5	4.4	4781	12888		4500+	6.1 6.8	141 137	
550				16840	8640		4500+	8.6	136	285/10"
540	C	17.8	25.5				4500+	16.3	116	
530							4500+			235
520	TX/DY						4500+	14.5	122	
510							4500+	RQD 43% 0% 0%		112 93% 100% 91%
500	RES								56%	92%
490									63%	100%
480										

ELEVATION IN FEET



DESCRIPTIONS

Top of Pre-Illinoian Glacial Till

BROWNISH-GREEN CLAYEY SILT WITH FINE TO COARSE SAND AND GRAVEL (HARD)
3" LAYER OF GRAY FINE SAND AT 169.8'

DARK GRAY FINE TO MEDIUM SANDY SILT WITH COARSE SAND, SOME FINE GRAVEL AND TRACE OF CLAY (HARD)
GRADES WITH THIN SAND LAYERS
GRADES GRAYISH-BROWN
GRADES WITH MORE CLAY
GRADES BROWN WITH GRAY STREAKS

BROWN CLAYEY SILT WITH ALTERNATING LAYERS OF BROWN SILTY FINE SAND (VERY DENSE)

ORANGE-BROWN SILTY CLAY WITH SOME MEDIUM TO COARSE SAND AND FINE GRAVEL
GRADES WITH COARSE GRAVEL

BROWNISH-GRAY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, NUMEROUS SHALE PARTINGS, WEATHERED OPEN AND CLAY FILLED BEDDING PLANES
1" GREEN CLAY LAYER AT 236.6'
GRADES LESS WEATHERING AND CLAY FILLING ON BEDDING PLANES

DARK GRAY TO BLACK HIGHLY CARBONACEOUS SHALE, THINLY LAMINATED
OCCASIONAL LIMESTONE NODULES

LIGHT GRAY SILTY SHALE, THINLY LAMINATED

LIGHT GRAY ARGILLACEOUS LIMESTONE, FINE CRYSTALLINE

BORING COMPLETED AT 251.1 FEET ON 11-3-73.
CASING USED TO A DEPTH OF 231.0 FEET.
GROUNDWATER LEVEL NOT RECORDED.

PIEZOMETER INSTALLED ON 11-6-73. BORING WAS FILLED WITH GRAVEL AND SEALED WITH BENTONITE TO 223.0 FEET AFTER FLUSHING WITH CLEAN WATER. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 45.0 FEET PERFORATED WAS INSTALLED TO ELEVATION 515.2. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 515.2 TO 560.2; A BENTONITE SEAL FROM ELEVATION 560.2 TO 562.2; AND CEMENT GROUT FROM ELEVATION 562.2 TO 738.2.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
57.8	11-15-73
56.4	12-31-73

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-53

LOG OF BORING P-36
(SHEET 2 of 2)

BORING P-37

SURFACE ELEVATION 739.1

LABORATORY TEST DATA

Blow Counts / Samples	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
4							1100		
9							2250		
19							4500+		
20							4500+	11.6	128
21							4500+		
19		12.5	2.7				4500+	13.3	117
33									
32							4500+	13.5	124
27							2750		
13		12.6	16.1					17.0	113
20									
147							4500+	8.0	140
177/11"						12064	4500+	8.2	138
127		9.5	4.8				4500+	8.2	140
46									
83									
175/10"							4500+	8.0	139
220							4500+		
100/6"		8.41	5.8				4500+	7.2	144
200							4500+		
105/6"							4500+	8.1	137
250/4"							4500+		
80		10.4	9.5				4500+	10.6	
180/10"						13410	4500+	7.9	137
200/10"							4500+	8.3	138
200							4500+		
200		10.7	6.9				4500+	7.9	140
220							4500+		
100/5"							4500+	7.5	140
115/6"							4500+		
130		10.9	6.0				4500+	7.3	140

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580

SYMBOLS / DESCRIPTIONS

Symbols	Descriptions
ML	DARK BROWN CLAYEY SILT WITH TRACE OF ORGANICS (TOPSOIL)
ML	YELLOWISH-BROWN CLAYEY SILT WITH TRACE OF FINE SAND (STIFF) (WEATHERED LOESS)
	Top of Wisconsinan Glacial Till
ML	LIGHT GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND (VERY STIFF) GRADES TO GRAY (HARD) GRADES WITH FINE GRAVEL
ML	GRAY CLAYEY SILT WITH FINE SAND (HARD) GRADES WITH OCCASIONAL COBBLES
ML	GRAY CLAYEY SILT WITH TRACE OF FINE TO MEDIUM SAND (HARD) GRADES WITH TRACE OF COARSE SAND AND FINE GRAVEL
	Top of Interglacial Zone
ML	GRAY CLAYEY SILT WITH TRACE OF FINE SAND AND OCCASIONAL GRAVEL GRADES WITH TRACE OF ORGANICS
SM	BLUISH-GREEN SILTY FINE TO COARSE SAND WITH TRACE OF CLAY (MEDIUM DENSE) GRADES WITH LAYERS OF SILTY SAND
	Top of Illinoian Glacial Till
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL FINE GRAVEL (HARD) GRADES WITH TRACE OF ORGANICS LAYER GRAY FINE TO COARSE SAND AND FINE GRAVEL AT 79.5'
SP	GRAY FINE TO COARSE SAND AND FINE GRAVEL
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL FINE GRAVEL (HARD) GRADES WITH OCCASIONAL COARSE GRAVEL GRADES WITH MORE GRAVEL

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 2.5-54

LOG OF BORING P-37

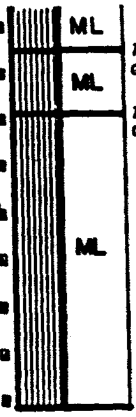
(SHEET 1 of 2)

BORING P-37 CONT'D

ELEVATION IN FEET: 580, 570, 560, 550, 540, 530

LABORATORY TEST DATA										
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS SAMPLES
						4500+			180
							16.4	119	180
•					5400	4500+	13.6	121	39
	9.6	7.3				4500+	8.9	136	220
						4500+			250/5"
						4500+	11.2		200
						4500+			210
	13.4	11.4				4500+	11.7		190
						4500+			200

SYMBOLS



DESCRIPTIONS

Top of Lacustrine Deposit
GREENISH-GRAY SANDY SILT (VERY DENSE)

Top of Pre-Illinoian Glacial Till
GREENISH-BLUE CLAYEY SILT WITH TRACE OF FINE TO COARSE SAND (HARD)
GRADES TO BROWNISH-GRAY
GRADES WITH LESS CLAY AND MORE SAND

GRADES WITH FINE GRAVEL

BORING COMPLETED AT 201.0 FEET ON 8-27-73.
CASING USED TO A DEPTH OF 5.0 FEET.
WATER LEVEL NOT RECORDED.

PIEZOMETER INSTALLED IN 8-27-73. BORING 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 BORING P-37

(SHEET 2 of 2)

BORING P-38

SURFACE ELEVATION 738.9

LABORATORY TEST DATA

Elevation in Feet	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
740							2500			9
							1000			6
730		14.8	7.6					18.0	111	5
										25
720								12.5	130	36
										28
710								13.8	124	46
							4500+			57
700		13.5	10.4				3000	16.8	120	26
										11
690		11.6	9.2				4500+	13.2	123	21
										67
680		10.3	3.5				4500+	9.4	136	100/3"
							4500+			57
670	SA, TX/DY, SA							13.0	132	13
										23
660	C	9.2	6.0				4500+	7.7	138	105
				11971	5760		4500+	7.6	146	150/11"
							4500+	8.4	140	160/10"
650	TX/CU	9.9	7.8	19646	6480			8.8	138	
							4500+			100/6"
				8014	6840			6.0	150	
							4500+			100/5"
640	C	9.7	5.8					6.4	138	
	C						4500+	6.9	139	150/11"
								8.0	137	
630	TX/DY						4500+	7.9	143	160/9"
							4500+			140
620							4500+			146
	C							10.1	131	
							4500+			153
610							4500+	8.8	137	137
							4500+			142
600							4500+			145/11"
	C	9.8	6.6					8.3	137	
							4500+			147/11"
590							4500+	7.9	139	145
	TX/DY							9.2	134	
	RES						4500+			140
580		9.5	5.4				4500+	8.7	136	135

SYMBOLS / DESCRIPTIONS

Symbols	Descriptions
ML	BLACK CLAYEY SILT WITH TRACE OF ORGANICS (TOPSOIL)
CL	MOTTLED BLACK AND BROWN SILTY CLAY WITH TRACE ORGANICS AND FINE SAND (WEATHERED LOESS)
	Top of Wisconsinan Glacial Till
ML	BROWN CLAYEY SILT WITH FINE TO COARSE SAND AND FINE GRAVEL (SOFT) GRADES HARDER
SM SP	GRAY SILTY FINE SAND WITH TRACE OF CLAY ALTERNATING WITH LAYERS OF GRAY FINE SAND (MEDIUM DENSE)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL FINE GRAVEL 6" LAYER OF GRAVEL AT 20.0'
SM	GRAY SILTY FINE SAND WITH TRACE OF MEDIUM AND COARSE SAND (MEDIUM DENSE)
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)
	Top of Interglacial Zone
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND, TRACE OF ORGANICS AND OCCASIONAL GRAVEL
SP	GRAY AND BROWN FINE SAND WITH TRACE OF SILT (VERY DENSE)
	Top of Illinoian Glacial Till
ML	LIGHT GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND FINE GRAVEL (HARD)
ML	GRAY FINE TO COARSE SANDY SILT WITH TRACE GRAVEL (DENSE)
SM	GRAY SILTY FINE TO COARSE SAND WITH TRACE GRAVEL (DENSE) GRADES WITH LESS SILT AND MORE GRAVEL
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND FINE GRAVEL (HARD) GRADES WITH OCCASIONAL STRINGER OF FINE SAND 6" COBBLE AT 101.5'
SP	GRAY FINE TO COARSE SAND
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND FINE GRAVEL (HARD)

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 1 of 3)

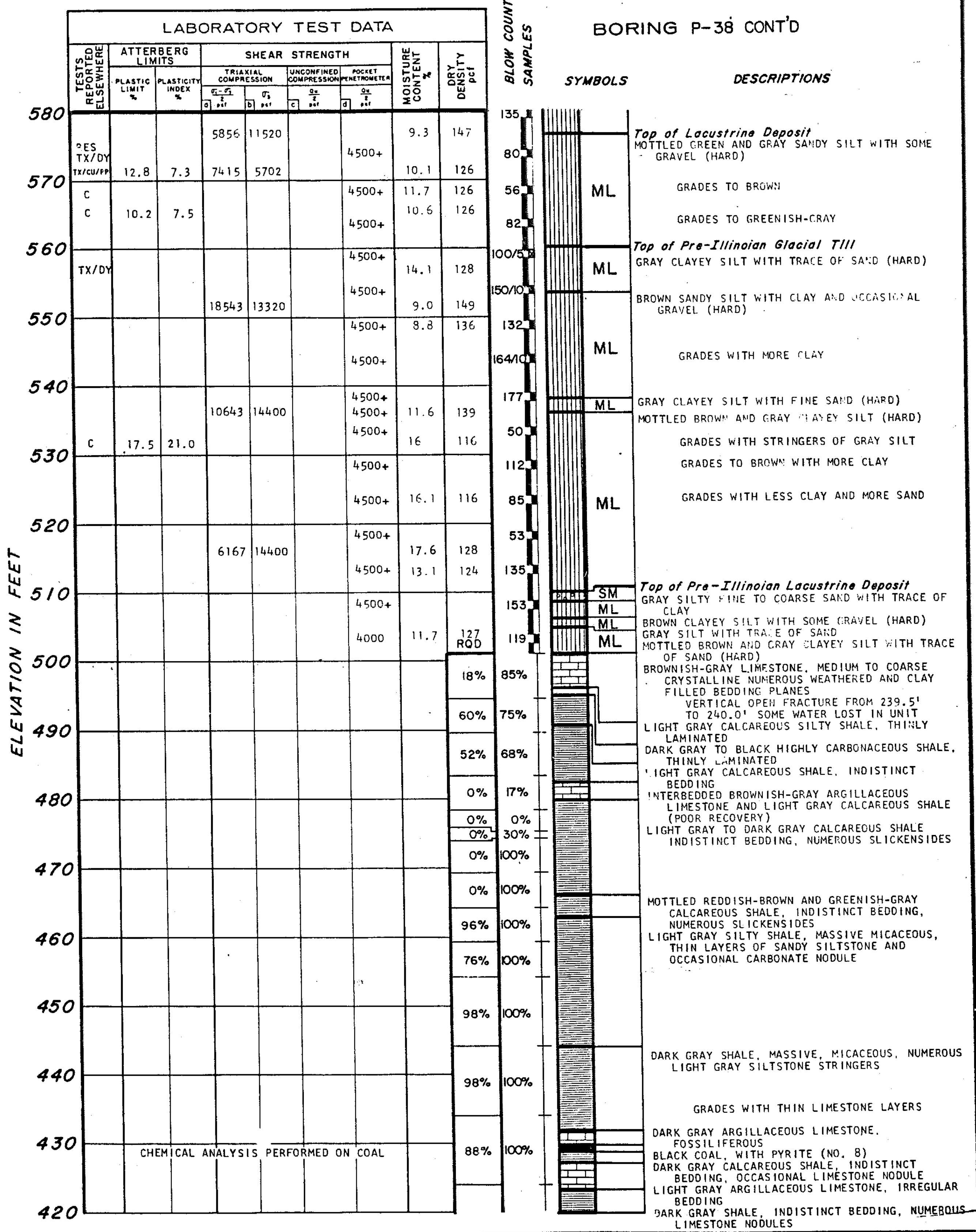


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FIGURE 2.5-55

LOG OF BORING P-38

(SHEET 2 of 3)

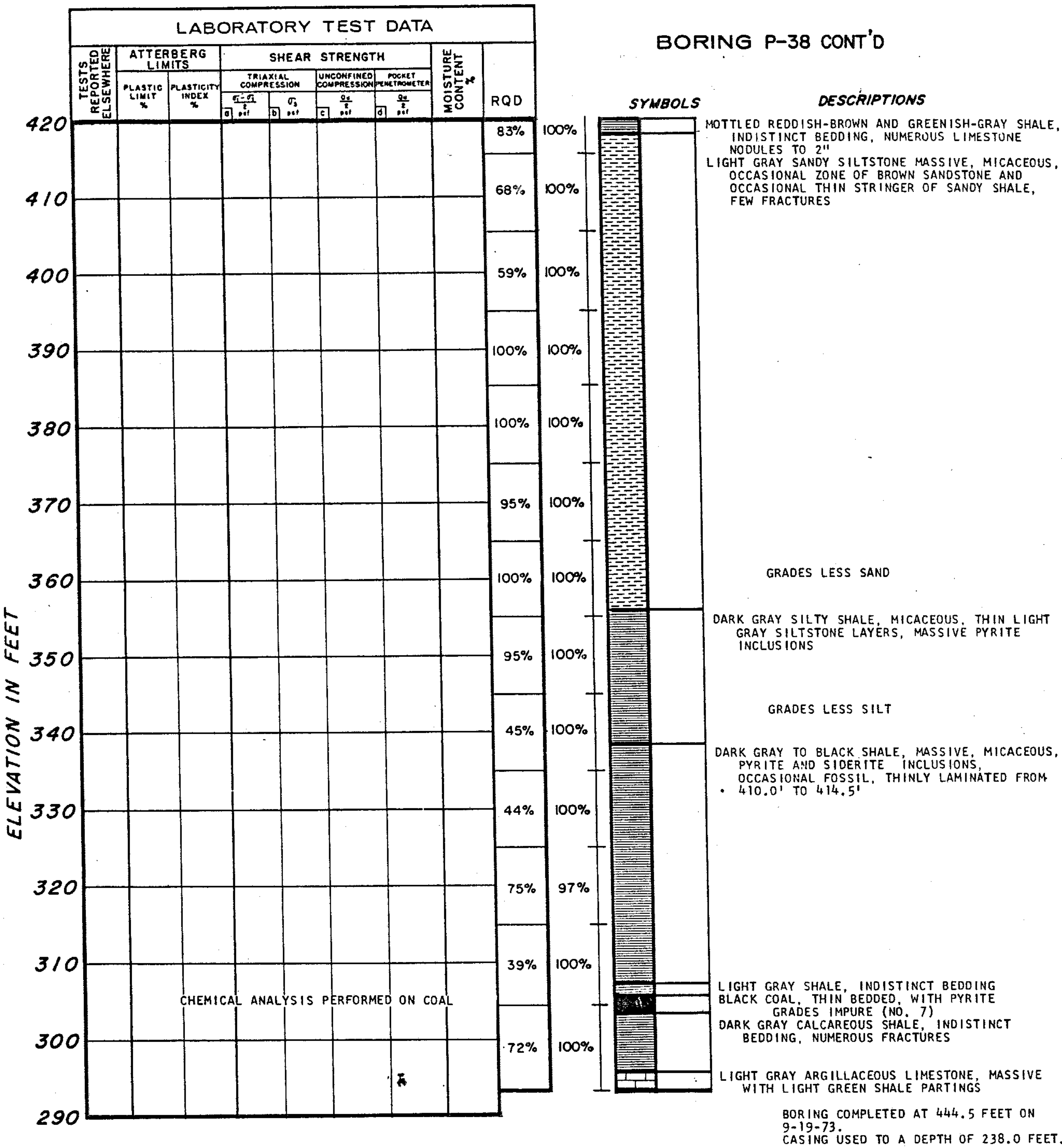

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FIGURE 2.5-55

LOG OF BORING P-38

(SHEET 3 of 3)

BORING P-39

SURFACE ELEVATION 740.8

LABORATORY TEST DATA

Elevation (ft, approx.)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Triaxial Compression: $\sigma_1-\sigma_3$ (a) psf	Triaxial Compression: σ_3 (b) psf	Unconfined Compression: $\frac{q_u}{2}$ (c) psf	Pocket Penetrometer: $\frac{q_u}{2}$ (d) psf	Moisture Content %	Dry Density pcf
739							3500		
736							2000		
730							2000	15.1	138
721								13.3	126
713		12.8	8.7				4000	12.1	127
710							4500+		
707						4590	4500+		
701							4500+	12.1	143
691		13.5	10.9					12.7	124
681								14.3	120
671								11.7	131
658							4500+	8.7	138
646								7.2	142
632								7.7	136
618		9.6	7.9					7.7	139
608								8.6	138
602		10.4	5.5					7.3	142
593								7.4	143

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590

BLOW COUNTS / SAMPLES: 11, 4, 7, 32, 41, 32, 41, 3, 27, 24, 32, 19, 31, 36, 13, 70, 144, 165/11", 100/6", 140/11", 100/4", 100/6", 121, 120, 140, 140

SYMBOLS	DESCRIPTIONS
ML	BROWN CLAYEY SILT WITH SOME ORGANICS (TOPSOIL)
ML	BROWN CLAYEY SILT WITH TRACE OF ORGANICS
CL	MOTTLED BROWN AND GRAY VERY SILTY CLAY WITH SOME SAND AND TRACE OF ORGANICS
	Top of Wisconsinan Glacial Till
ML	BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL
SM	BROWN SILTY SAND WITH SOME FINE GRAVEL
SP	RED FINE SAND - 5" THICK
SM	GRAY VERY SILTY SAND WITH SOME FINE GRAVEL
SP	GRAY FINE TO MEDIUM SAND
ML	GRAY CLAYEY SILT WITH SAND AND GRAVEL GRADES WITH MORE SAND AND GRAVEL
	Top of Interglacial Zone
ML	GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL
ML	MOTTLED BLUE AND GREEN CLAYEY SILT GRADES WITH SOME SAND LENSES
SP	GRAY FINE TO COARSE SAND
	Top of Illinoian Glacial Till
ML	GRAY CLAYEY SILT WITH SAND AND GRAVEL GRADES WITH MORE FINE SAND
SW	GRAY FINE TO COARSE SAND WITH TRACE OF GRAVEL
ML	GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL GRADES WITH MORE GRAVEL
SP	GRAY FINE SAND LENSE-6" THICK
ML	GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL
SM	BROWN VERY SILTY FINE SAND
ML	GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL GRADES WITH OCCASIONAL COBBLES

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 2.5-56

LOG OF BORING P-39

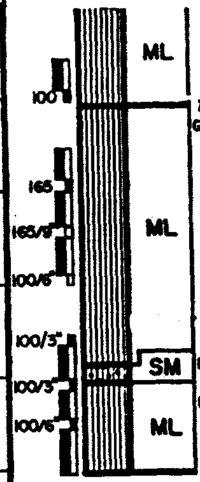
(SHEET 1 of 2)

BORING P-39 CONT'D

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	POCKET PENETROMETER $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
590–580		9.5	6.0					8.9	137
580–570							4500+	12.3	125
570–560									
560–550									
550–540							4500+		
540–530									
530–520									

BLOW COUNTS / SAMPLES — SYMBOLS — DESCRIPTIONS



GRADES WITH OCCASIONAL LARGE COBBLES
GRADES WITH MORE SAND

Top of Pre-Illinoian Glacial Till

GRAY AND BROWN CLAYEY SILT WITH SAND AND GRAVEL
GRADES GREENISH-BROWN
GRADES GRAY
GRADES WITH LAYERS OF SAND AND GRAVEL
GRADES TO BROWN WITH MORE SILT
GRADES WITH MORE SAND

BROWN AND GRAY FINE TO COARSE SAND WITH OCCASIONAL COARSE GRAVEL

BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL

BORING COMPLETED AT 200.0 FEET ON 8-27-73.
CASING USED TO A DEPTH OF 5.0 FEET.
NO WATER LEVEL RECORDED.

PIEZOMETER INSTALLED ON 8-28-73. BORING WAS FILLED WITH GRAVEL AND SEALED WITH BENTONITE TO 152.0 FEET AFTER FLUSHING WITH CLEAN WATER. A 1 1/2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 90.0 FEET PERFORATED WAS INSTALLED TO ELEVATION 570.8 FEET. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 590.8 TO 678.8; A BENTONITE SEAL FROM ELEVATION 678.8 TO 680.8: AND CEMENT GROUT FROM ELEVATION 680.8 TO 740.8.

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)

BORING P-40

SURFACE ELEVATION 742.1

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
						4000			11
									10
						2000			10
						2500			17
						4500			59
						4500			21
						4500			22
						3000			14
									67
						4000			25
						2000			11
									13
						4500+			71
			14958	4608		4500+	7.6	139	130
						4500+			
						4000+			22
			3480	5644		4500+	9.0	134	
						4500+			172/11"
						4500+			
						4500+			172/9"
						4500+			
						4500+			152/10"
						4500+			152/11"
						4500+			
						4500+			160/9"
						4500+			
						4500+			153/11"
						4500+			

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590

BLOW COUNTS / SAMPLES / SYMBOLS / DESCRIPTIONS

- ML — DARK PROWN AND BLACK STAINED SILT WITH TRACE OF FINE SAND, CLAY AND SOME ORGANICS (TOPSOIL)
- ML — BROWN SILT WITH TRACE OF FINE SAND AND CLAY (WEATHERED LOESS) (HARD)
- *Top of Wisconsinan Glacial Till*
- SM — BROWN FINE TO COARSE SAND WITH SILT, FINE TO COARSE GRAVEL AND TRACE OF CLAY
- ML — BROWN FINE TO MEDIUM SANDY SILT WITH SOME COARSE SAND, CLAY AND OCCASIONAL FINE GRAVEL (VERY STIFF)
  - GRADES BROWNISH-GRAY
- ML — DARK GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND FINE GRAVEL (HARD)
  - GRADES WITH MORE CLAY
- SP — GRAY FINE SAND WITH TRACE OF SILT (VERY DENSE)
- ML — GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)
- *Top of Interglacial Zone*
- CL — MOTTLED GREENISH-GRAY AND BROWN SILTY CLAY WITH TRACE OF FINE TO MEDIUM SAND, GRAVEL AND ORGANICS
- CL — GREEN SILTY CLAY WITH SOME FINE SAND AND TRACE OF MEDIUM SAND AND GRAVEL
- *Top of Illinoian Glacial Till*
- ML — LIGHT GRAY FINE SANDY SILT WITH SOME MEDIUM TO COARSE SAND, TRACE OF CLAY AND GRAVEL (HARD)
  - GRADES WITH MORE CLAY AND STRINGERS OF SAND
  - THIN LAYER OF SAND AND GRAVEL AT 78.8'
  - GRADES WITH MORE SAND
  - BOULDER AT 96.0'
  - GRADES WITH MORE GRAVEL
  - BOULDER AT 109.5'
  - COBBLE AT 127.5'

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

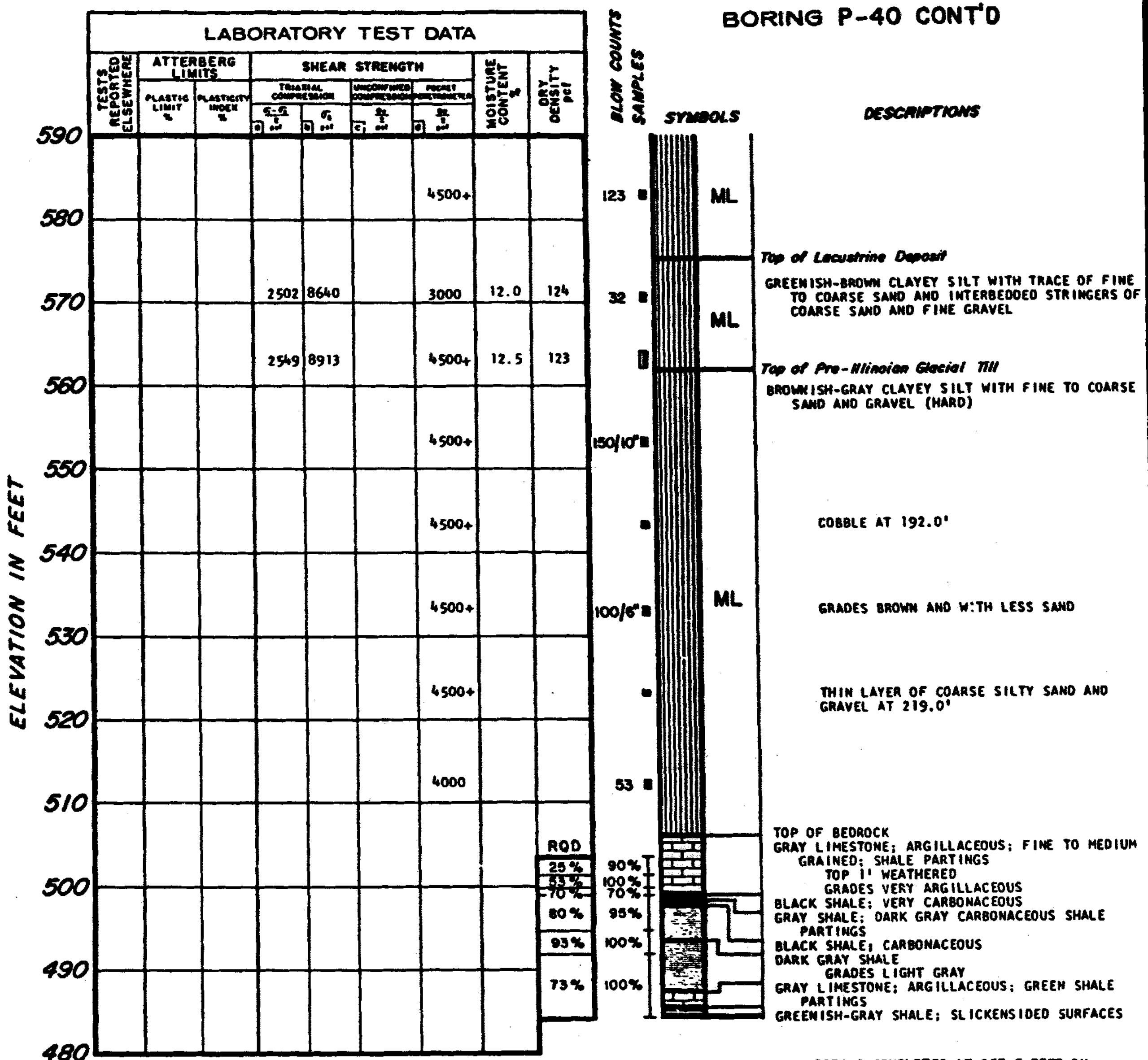
FIGURE 2.5-57

LOG OF BORING P-40

(SHEET 1 of 2)

NOTE:

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



BORING COMPLETED AT 257.5 FEET ON 10-18-73.
CASING USED TO A DEPTH OF 8.5 FEET.
WATER LEVEL NOT RECORDED.

PIEZOMETER INSTALLED ON 10-19-73. BORING WAS FILLED WITH GRAVEL AND SEALED WITH BENTONITE TO 38.0 FEET AFTER FLUSHING WITH CLEAN WATER. A 2 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 28.0 FEET PERFORATED WAS INSTALLED TO ELEVATION 704.1. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 704.1 TO 732.1; A BENTONITE SEAL FROM ELEVATION 732.1 TO 734.1; AND CEMENT GROUT FROM ELEVATION 734.1 TO 742.1.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
12.6	10-29-73
12.4	11-15-73

BECAME INOPERATIVE DECEMBER 31, 1973

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-57

LOG OF BORING P-40

(SHEET 2 of 2)

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
740									
							3500		
730							2000		
720									
	C							10.7	128
	C					3111		11.1	130
710							2500		
							4500	13.8	122
700							2500	20.6	116
							3500	19.9	110
690								17.4	115
								11.3	133
								9.1	137
680							4500+		
	C							7.5	138
670	SA								
	SA								
660									
	SA								
650									
640									

BORING P-41

SURFACE ELEVATION 739.7

BLOW COUNTS	SYMBOLS	DESCRIPTIONS
11	ML	DARK BROWN CLAYEY SILT WITH SOME ORGANICS (TOPSOIL)
7	ML	BROWN CLAYEY SILT WITH OCCASIONAL ROOTS (STIFF)
	ML	MOTTLED BROWN AND GRAY CLAYEY SILT WITH TRACE OF FINE SAND (VERY STIFF)
6	ML	*Top of Wisconsinan Glacial Till* BROWN CLAYEY SILT WITH SAND AND SOME GRAVEL
54	SM	GRAY SILTY SAND WITH SOME FINE GRAVEL
34	SP	GRAY FINE SAND
30, 24, 27	ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL GRADES TO DARKER GRAY GRADES WITH MORE SAND
14, 10, 12	ML	*Top of Interglacial Zone* DARK GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL GRADES TO GREEN
27	SM	LIG'T GRAY SILTY SAND WITH SOME FINE GRAVEL
143/10", 140/11"	ML	*Top of Illinoian Glacial Till* GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL GRADES WITH FINE SAND LENSES
50	GP	FINE GRAVEL WITH OCCASIONAL COBBLES
	SW	GRAY GRAVELLY FINE TO COARSE SAND WITH TRACE OF SAND
27	SM-SP	GRAY SILTY FINE TO COARSE SAND WITH GRAVEL
14	ML	GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL GRADES TO MOTTLED BROWN AND GRAY
73	SW SM	BROWN AND GRAY FINE TO COARSE SAND WITH SOME FINE GRAVEL
175/9"	ML	GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL (HARD)

BORING COMPLETED AT 89.2 FEET ON 8-16-73
CASING USED TO A DEPTH OF 5.0 FEET.
GROUNDWATER 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 2.5-58

LOG OF BORING P-41

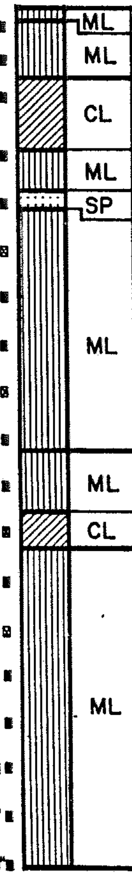
BORING P-42

SURFACE ELEVATION 744.5

LABORATORY TEST DATA

Elevation in feet (approx.)	Tests reported elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
750–740							4000		
740–730		12.3	7.2				3250	15.2	120
730–720							4500+		
720–710		12.4	5.3					20.2	115
720–710							4500+		
710–700							4500+	10.5	130
700–690		12.4	9.5					13.0	125
700–690							3000		
690–680							4500+		
680–670							4500+	7.4	139
680–670		10.3	5.3				4500+		
670–660								10.2	132
670–660							900		
660–650		10.8	4.9					7.6	139
650–640									

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640



BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
10	ML	DARK BROWN CLAYEY SILT WITH ORGANICS (TOPSOIL)
7	ML	LIGHT BROWN CLAYEY SILT WITH TRACE OF FINE SAND (WEATHERED LOESS) (VERY STIFF) GRADES WITH LESS CLAY (LOOSE) GRADES WITH STRINGERS FINE GRAVEL
12	CL	*Top of Wisconsinan Glacial Till* LIGHT BROWN SILTY CLAY WITH SOME FINE SAND AND GRAVEL (VERY STIFF)
17	ML	GRAY CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND GRAVEL (HARD)
47	SP	BROWNISH-GRAY SAND WITH TRACE OF SILT AND GRAVEL (DENSE)
52, 38, 34, 43, 38	ML	GRAY CLAYEY SILT WITH FINE TO MEDIUM SAND AND GRAVEL GRADES WITH THIN LAYERS OF GRAY CLAYEY FINE SAND GRADES WITH MORE CLAY
13	ML	*Top of Interglacial Zone* GRAYISH-BROWN CLAYEY SILT WITH TRACE OF ORGANICS AND FINE SAND (STIFF)
14	CL	GREEN SILTY CLAY WITH FINE TO MEDIUM SAND AND FINE GRAVEL (SOFT)
105, 140/6", 83, 41, 11, 150/11", 150/10"	ML	*Top of Illinoian Glacial Till* GRAY SANDY SILT WITH CLAY AND FINE TO COARSE SAND AND GRAVEL (HARD) GRADES WITH LESS CLAY GRADES WITH MORE CLAY 12" LAYER OF MEDIUM TO COARSE SAND AND FINE GRAVEL AT 74.3' 12" LAYER OF BROWNISH-GRAY CLAYEY SILT WITH ORGANICS AT 80.0' (MEDIUM STIFF)

BORING COMPLETED AT 90.5 FEET ON 8-24-73.
CASING USED TO A DEPTH OF 10.0 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 2.5-59

LOG OF BORING P-42

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
						3750		
						2250	16.2	118
	12.5	6.7				4400	14.4	121
						4500+	13.1	123
						4500+		
	14.8	9.7				4500+	13.0	123
						2500	14.3	118
	12.6	7.1				1500	11.4	119
						1200	17.9	113
	11.1	9.4				800	17.5	113
						4500+	9.5	135
	10.4	2.9				4500+	8.8	137
						4500+	7.9	140
						4500+		
						4500+		
	NON-PLASTIC						11.9	130
						4500+	7.0	142
						4500+	7.8	160

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640

BORING P-43

SURFACE ELEVATION 740.3

BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS
11	ML	DARK BROWN SILT WITH CLAY AND SOME ORGANICS (TOPSOIL)
7	ML	MOTTLED BROWN AND ORANGE WITH BLACK FLECKS, SILT WITH SOME SAND AND TRACE OF CLAY (VERY STIFF) (WEATHERED LOESS)
8		GRADES MOTTLED ORANGISH-BROWN AND GRAY
		Top of Wisconsinan Glacial Till
15	ML	BROWN WITH ORANGE AND BLACK STAINING, CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND OCCASIONAL GRAVEL (VERY STIFF)
51		GRADES WITH MORE FINE TO MEDIUM SAND AND GRAVEL (HARD)
		GRADES WITH MORE CLAY
35	SP	BROWN MEDIUM TO COARSE SAND WITH SOME SILT AND FINE GRAVEL
		GRADES WITH FINE TO MEDIUM SAND
31	ML	GRAY CLAYEY SILT WITH FINE TO MEDIUM SAND AND SOME FINE GRAVEL
		4" LAYER GRAY MEDIUM SAND AT 23.9'
9	ML	GRAY AND GRAYISH-BROWN SILT WITH SOME ORGANICS AND TRACE OF CLAY
	ML	GRAY CLAYEY SILT WITH FINE TO MEDIUM SAND SOME FINE GRAVEL AND OCCASIONAL SAND SEAMS (HARD)
9		*Top of Interglacial Zone*
	ML	DARK GRAY AND BLACK CLAYEY SILT WITH ORGANICS AND TRACE OF FINE SAND
6	ML	DARK GRAYISH-GREEN CLAYEY SILT WITH FINE SAND
4	ML	DARK GREEN FINE TO MEDIUM SANDY SILT WITH SOME CLAY AND FINE GRAVEL (MEDIUM STIFF)
		Top of Illinoian Glacial Till
44	ML	LIGHT GREEN FINE TO MEDIUM SANDY SILT WITH SOME CLAY AND GRAVEL (HARD)
35		GRADES LIGHT GRAY
95		GRADES WITH MORE FINE SAND
47	SW	GRAY FINE TO COARSE SAND WITH GRAVEL AND SEAMS OF MEDIUM AND FINE SAND
27	ML	LIGHT GRAY SILT WITH SOME FINE SAND AND GRAVEL (HARD)
		12" LAYER GRAYISH-BROWN SILT WITH ORGANICS AT 73.6'
		GRADES DARK GRAY AND WITH GRAVEL
125	SW	GRAY FINE TO COARSE SAND WITH SOME SILT
120	ML	DARK GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND SOME GRAVEL (HARD)
107/6"		GRADES WITH MORE SAND

BORING COMPLETED AT 89.0 FEET ON 9-25-73.
CASING USED TO A DEPTH OF 3.0 FEET.
GROUNDWATER 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 2.5-60

LOG OF BORING P-43

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Triaxial Compression: a $\frac{\sigma_1-\sigma_3}{2}$ psf	Triaxial Compression: b σ_3 psf	Unconfined Compression: c $\frac{q_u}{2}$ psf	Pocket Penetrometer: d $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
690–680							3500		
		22.3	23.5				1800	20.8	101
680–670							750	16.3	113
670–660				2950	1728		4500+	13.3	126
660–650								8.0	126
				4994	2764		4500+	8.1	133
650–640							4500+		
							4500+	6.4	144
640–630									

ELEVATION IN FEET: 690, 680, 670, 660, 650, 640, 630

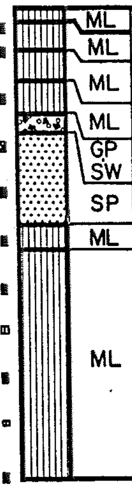
BORING P-44

SURFACE ELEVATION 686.2

BLOW COUNTS
14
8
3
48
42
56
112
171/11"
280/10"

SAMPLES

SYMBOLS



DESCRIPTIONS

DARK BROWN SILT WITH FINE TO MEDIUM SAND, SOME ORGANICS AND TRACE OF CLAY (TOPSOIL)

Top of Illinoian Glacial Till

MOTTLED DARK GRAY AND BROWN SILT WITH FINE TO MEDIUM SAND, SOME ORGANICS AND TRACE OF CLAY (VERY STIFF)

GREENISH-GRAY CLAYEY SILT WITH FINE TO MEDIUM SAND, SOME COARSE SAND AND GRAVEL (STIFF)

LIGHT GREEN CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND OCCASIONAL GRAVEL (MEDIUM STIFF)

GRAY AND BLACK GRAVEL WITH FINE TO COARSE SAND, OCCASIONAL COBBLE

LIGHT GRAY FINE TO MEDIUM SAND WITH OCCASIONAL COARSE SAND AND FINE GRAVEL

LIGHT GRAY SILT WITH SOME FINE AND COARSE SAND (HARD)

DARK GRAY FINE TO MEDIUM SANDY SILT WITH SOME COARSE SAND, GRAVEL AND TRACE OF CLAY AND OCCASIONAL FINE SAND SEAMS (HARD)

GRADES WITH MORE CLAY

BORING COMPLETED AT 49.8 FEET ON 11-9-73.
CASING USED TO A DEPTH OF 16.5 FEET.
GROUNDWATER 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 2.5-61

LOG OF BORING P-44

BORING P-45

SURFACE ELEVATION 738.8

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ (a) psf	Shear Strength: Triaxial Compression σ_3 (b) psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ (c) psf	Shear Strength: Pocket Penetrometer $\frac{q_u}{2}$ (d) psf	Moisture Content %	Dry Density pcf	Blow Counts
	20.6	26.1				4000	14.7	101	13
						3500			19
						3500			13
						4500			22
	12.5	10.9				4500	17.7	120	21
						4000			17
			4248	2088		4000	13.0	124	21
						4500			18
	12.5	15.4				4500	12.7	127	22
						4500			17
			2214	3528		4500	13.0	125	20

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680

BLOW COUNTS / SAMPLES / SYMBOLS / DESCRIPTIONS

Symbols	Descriptions
ML	BROWN SILT WITH ORGANICS (TOPSOIL)
ML	LIGHT BROWN SILT WITH SOME CLAY, FINE SAND AND TRACE OF FINE GRAVEL (HARD) (WEATHERED LOESS) GRADES WITH MORE CLAY AND TRACE OF MEDIUM TO COARSE SAND
	Top of Wisconsinan Glacial Till
ML	GRAY FINE SANDY SILT WITH SOME CLAY, MEDIUM TO COARSE SAND AND FINE GRAVEL (HARD) GRADES WITH COARSE GRAVEL GRADES WITH MORE CLAY
	Top of Interglacial Zone
ML	GRAY CLAYEY SILT WITH SOME FINE SAND AND ORGANICS.

BORING COMPLETED AT 50.0 FEET ON 11-8-73.
CASING USED TO A DEPTH OF 10.0 FEET.
GROUNDWATER 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 2.5-62

LOG OF BORING P-45

BORING P-46

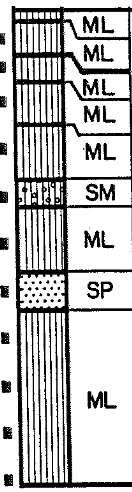
SURFACE ELEVATION 741.1

LABORATORY TEST DATA

ELEVATION IN FEET (approx.)	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
740–730				2229	432			23.4	95	7
		14.1	9.4					19.3	107	4
							750			10
730–720				3612	1008			13.3	122	44
										39
720–710		13.3	7.4				4500	22.0	118	30
										160/10"
710–700							4000			22
				4662	2808		4000	11.7	126	25
700–690							4000			23
		12.6	7.9				4500	13.6	125	19

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690

BLOW COUNTS / SAMPLES / SYMBOLS / DESCRIPTIONS



- ML — BROWN SILT WITH ORGANICS, FINE TO COARSE SAND AND TRACE OF FINE GRAVEL
- ML — LIGHT BROWN SILT WITH TRACE OF FINE SAND AND CLAY (LOOSE) (WEATHERED LOESS)

Top of Wisconsinan Glacial Till

- ML — BROWN FINE TO MEDIUM SANDY SILT WITH TRACE OF CLAY
- ML — BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (MEDIUM STIFF)
- ML — BROWN SILT WITH STRINGERS OF FINE TO COARSE SAND AND FINE GRAVEL (DENSE)
- SM — GRAY SILTY FINE TO COARSE SAND WITH FINE GRAVEL (VERY DENSE)
- ML — GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND FINE GRAVEL
- SP — GRAY FINE TO MEDIUM SAND WITH A TRACE OF FINE GRAVEL AND THIN LAYERS OF GRAY SILT
- ML — GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL

GRADES WITH STRINGERS OF FINE TO COARSE SAND

BORING COMPLETED AT 50.0 FEET ON 11-7-73.
CASING USED TO A DEPTH OF 10.0 FEET.
GROUNDWATER 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 2.5-63

LOG OF BORING P-46

LABORATORY TEST DATA

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf [a]	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf [b]	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf [c]	SHEAR STRENGTH: POCKET PENETROMETER $\frac{q_u}{2}$ psf [d]	MOISTURE CONTENT %	DRY DENSITY pcf
	19.3	45.5				3750	21.0	95
						750		
	13.5	3.4					17.0	112
			1199	1008			12.7	124
			3924	2088		4000	12.9	124
	12.8	7.8				1000	15.3	120
						750		
			4464	3168		4000	12.7	118
	14.8	4.6				1000	16.5	113

BORING P-47

SURFACE ELEVATION 739.7

BLOW COUNTS	SYMBOLS	DESCRIPTIONS
9	ML	BROWN SILT WITH ORGANICS AND TRACE OF FINE GRAVEL (TOPSOIL)
3	ML	BROWN CLAYEY SILT WITH TRACE OF FINE GRAVEL (WEATHERED LOESS)
		Top of Wisconsinan Glacial Till
5	ML	BROWN FINE SANDY SILT WITH TRACE OF CLAY AND FINE GRAVEL (LOOSE)
19		GRADES WITH LESS FINE SAND
48	SP	BROWN FINE SAND WITH TRACE OF FINE GRAVEL
		GRADES GRAY AND WITH MEDIUM SAND
83	ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)
18		
8		(MEDIUM STIFF)
9		GRADES WITH MORE COARSE GRAVEL
27		(HARD)
		Top of Interglacial Zone
9	ML	DARK GRAY SILT WITH ORGANICS AND TRACE OF FINE SAND AND CLAY (MEDIUM STIFF)

BORING COMPLETED AT 50.0 FEET ON 11-8-73.
CASING USED TO A DEPTH OF 10.0 FEET.
GROUNDWATER 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 2.5-64

LOG OF BORING P-47

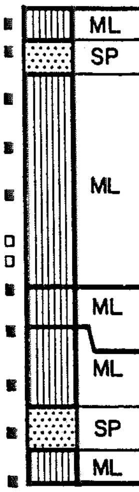
LABORATORY TEST DATA

Elevation in feet	Tests reported elsewhere	Atterberg limits: Plastic limit %	Atterberg limits: Plasticity index %	Shear strength: Triaxial compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: Triaxial compression (b) σ_3 psf	Shear strength: Unconfined compression (c) $\frac{q_u}{2}$ psf	Shear strength: Pocket penetrometer (d) $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf
730–720		13.8	9.1				4500+	11.4	120
720–710				3317	720		4500+	13.3	123
710–700							4500+		
		12.4	13.0				4500+	12.4	126
700–690				1962	2088			14.0	121
							4500+	14.4	124
690–680				3942	2808		4500+	13.7	123
680–670		11.2	3.8					9.2	135

BORING P-48

SURFACE ELEVATION 724.6

BLOW COUNTS / SAMPLES: 18, 36, 34, 21, 24, 16, 20, 18, 27, 24, 30, 54



SYMBOLS — **DESCRIPTIONS**

Top of Wisconsinan Glacial Till
MOTTLED BROWN AND GRAY ORGANIC FINE TO MEDIUM SANDY SILT WITH SOME COARSE SAND AND FINE GRAVEL AND TRACE OF CLAY
ORANGE FINE SAND WITH TRACE OF MEDIUM SAND
DARK GRAY SILT WITH SOME CLAY AND FINE TO MEDIUM SAND AND GRAVEL (HARD)

Top of Interglacial Zone
DARK GREENISH CLAYEY SILT WITH SOME FINE SAND AND GRAVEL AND OCCASIONAL ORGANICS (HARD)
3" COBBLE AT 30.7'

Top of Illinoian Glacial Till
GRAY SILT WITH FINE SAND, OCCASIONAL FINE GRAVEL AND OCCASIONAL FINE TO MEDIUM SAND SEAMS (HARD)
BLACK FINE TO COARSE SAND WITH SOME FINE GRAVEL
LIGHT GRAY FINE TO MEDIUM SANDY SILT WITH SOME COARSE SAND, FINE GRAVEL AND TRACE OF CLAY (HARD)

BORING COMPLETED AT 50.0 FEET ON 11-6-73.
CASING USED TO A DEPTH OF 3.5 FEET.
GROUNDWATER 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 2.5-65

LOG OF BORING P-48

BORING P-49

SURFACE ELEVATION 740.2

Depth (feet)	Tests reported elsewhere	Shear strength: Triaxial compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Shear strength: Triaxial compression σ_3 psf	Shear strength: $\frac{q_u}{2}$ psf	Atterberg limits: Plastic limit %	Atterberg limits: Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
0–5				800*						8	SS
5–10				1500*						13	SS
10–15										39	SS
15–20				2100*						13	SS
20–25	C			2000*	11.9	16.7	149	118			HR
20–25				3800*			140			21	SS
25–30				4500*						35	SS
30–35	C			4500*	11.5	14.0	105	128			HR
30–35				2600*						14	SS
35–40				4070 / 2500*			148	125		22	SS
40–45											OB
40–45	C				NP		256	99			
40–45				1500*						8	SS
45–50	C			3500*	10.0	24.4	174	110			OB
45–50							186			14	SS
50–55				4500+*			9.2			100/4"	SS
55–60				4500+*			8.0			100/5"	SS
60–65	C			4500+*	10.3	8.0	7.1	133			HR
60–65										145	SS
65–70	C			4500+*	10.8	7.4	8.4	132			HR
65–70							107			138	SS
70–75											

Symbols	Descriptions	Elevation (feet)
ML	TOP OF LOESS	
CL	Brown, mottled gray, silty clay, trace fine to medium sand, pockets of black organic material noted.	
	TOP OF WISCONSINAN TILL	734.2
CL	Brown, silty clay, some fine to coarse sand, trace fine gravel, organic material noted.	
ML	Light grayish-brown, fine sand and silt, trace clay, thin sand seams noted.	
CL	Gray, silty clay, some fine to coarse sand, little fine gravel.	
	-trace fine to coarse gravel, scattered organic material noted.	
	-little fine gravel.	
CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel, tiny pockets of sand, thin silt seams, and coarse gravel noted.	
ML		
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel, thin clay seams noted.	
	-silt and sand seams noted.	
	TOP OF INTERGLACIAL ZONE	700.7
ML	Greenish-gray, silt, trace fine to medium sand, trace clay.	
CL	Greenish-gray, silty clay and fine to medium sand, trace fine gravel.	
SC CL	Greenish-gray, fine to medium sand, some silty clay, trace fine gravel.	
	TOP OF ILLINOIAN TILL	688.7
ML SM	Gray, clayey silt and fine to medium sand, trace fine gravel.	
	-some fine to coarse sand.	
	-and fine to coarse sand.	
ML	Gray, silt, trace fine to coarse sand, trace clay.	
SM	Gray, fine to coarse sand, little fine gravel, little silt, trace clay.	

Boring completed at 70.0 feet on 4-7-75.
Water level at 4.5 feet.

NOTES

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-66

LOG OF BORING P-49

BORING P-56

SURFACE ELEVATION 736.4

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
			2400*						7	SS
			800*			25.6			3	SS
			800			20.2	111			OB
			2100*			15.3	127		17	SS
									50	SS
			4500+*						39	SS
C			4500+*	12.1	13.1	10.7	126			
			5120			11.8	132			HR
			6640			12.5	126			
						14.9			49	SS
			4500+*						24	SS
			1420	12.9	14.2	15.6	128			HR
						40.5			12	SS
			2130*			14.8	126			
			2500*						19	SS
			3700*						26	SS
			840			29.7	95			OB
			1870			19.2	117		16	SS
C			820	12.3	23.8	17.7	114			OB
			2200			17.1	114		15	SS
			4500+*						72	SS
			4500+*						89	SS
			3430	11.1	5.6	8.4	145			HR
									40	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
CL	Yellowish-brown, mottled brownish-gray, silty clay, trace fine to medium sand, organics noted.	
	TOP OF WISCONSINAN TILL	727.1
CL	Yellowish-brown, silty clay, some fine to coarse sand, trace fine gravel.	
SW • SM	Yellowish-brown, fine to coarse sand, trace to little silt.	
CL	Grayish-brown, mottled light gray, silty clay, some fine to coarse sand, trace fine gravel, silt and fine to coarse sand lenses noted.	
CL	Gray, clayey silt and fine to coarse sand, trace fine gravel, silt and sand seams and coarse gravel noted.	
	24.0-24.5, gray, fine to coarse sand, trace to little silt.	
ML	Gray, silt, trace clay, organics noted.	
CL	Gray, silty clay, little fine to coarse sand, trace fine gravel, thin silt seams and organics noted.	
	TOP OF INTERGLACIAL ZONE	689.4
CL	Gray, clayey silt, trace fine sand, silt seams and tiny organic pockets noted.	
CL	Bluish dark gray, silty clay, some fine to coarse sand, trace fine gravel, organics noted.	
	TOP OF ILLINOIAN TILL	678.4
ML • SM	Gray, clayey silt and fine to coarse sand, trace fine gravel, thin sand seams noted.	

Boring completed at 70.0 feet on 11-19-75.
Water level at 9.9 feet on 11-20-75.

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-67

LOG OF BORING P-56

BORING P-57

SURFACE ELEVATION 735.9

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
			3000*						10	SS
			1430			151	125			
			3000*						14	SS
			3200*			141	125			HR
			4500+*						40	SS
C						9.2 / 17.5				
			1850*			9.7 / 11.7				HR
			1500*						80	SS
			4000*			138			23	SS
			1320	12.9	13.4	150	126			HR
									16	SS
			1600*						12	SS
			1760	13.2	11.7	143	123			OB
			2600*						23	SS
			3100*			141			29	SS
			2200*			131 / 235	131			OB
			2500*						16	SS
			4000*	12.0	24.7	180	113			OB
			3000*							
			2190			197	109		15	SS
			4500+*						111	SS
C			4500+*	11.5	7.0	90	138			HR
			10420			84	139		100 / 7"	SS
			6040			84 / 98	140		94	SS

DEPTH (FEET): 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Yellowish-brown, mottled light brownish-gray, silty clay, trace fine sand, organics noted.	
CL	TOP OF WISCONSINAN TILL Yellowish-brown, silty clay, some fine to coarse sand, trace fine gravel, sand seams noted.	729.9
SP-SM	Brown, fine to medium sand, trace silt.	
CL	Brownish-gray, clayey silt, some fine to coarse sand, trace fine gravel, silt seams noted. 17.0 to 17.5 feet, gray silt, some fine to medium sand, trace clay. 18.5 to 20.0 feet, fine to coarse sand lenses. -organics noted.	
ML	TOP OF INTERGLACIAL ZONE Gray silt, little fine sand, clayey seams noted.	690.9
CL	Dark gray, silty clay, trace fine sand, organics noted.	
CL	Bluish dark gray, silty clay, some fine to coarse sand, sand seams noted.	
ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine gravel, coarse gravel noted.	678.9
SW SM	Gray, fine to coarse sand, little fine to coarse gravel, trace silt.	
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	

Boring completed at 70.0 feet on 11-18-75.
Water level at 9.9 feet on 11-20-75.

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-68

LOG OF BORING P-57

BORING P-58

SURFACE ELEVATION 735.4

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				2000*			255	102		8	SS
10				2300*						8	SS
				1720	14.9	14.2	158	120			ST
15				4500+*						53	SS
				3070	13.2	6.2	9.1	139			HR
20				4500+*						48	SS
25				4500+*						30	SS
				3110	13.4	12.3	126	133			HR
30										18	SS
35										29	SS
40				3000*						22	SS
	C			3500*			143	122			ST
45				2900*						25	SS
50				1600*						22	SS
				800*	13.1	17.1	218				OB
				2900*						14	SS
55				1120	11.6	26.5	170	116			OB
60				4500+*						50	SS
65				4500+*						67	SS
											HR
70				4500+*	11.5	5.8	9.1	141		53	SS
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Yellowish-brown, mottled light gray, silty clay, trace fine to medium sand, organic particles noted.	
CL	TOP OF WISCONSINAN TILL Yellowish-brown, clayey silt, little fine to coarse sand, trace fine gravel, organic particles noted. -grades to some fine to coarse sand.	725.9
ML	Gray, silt, some fine to coarse sand, trace clay, thin silt and sand seams noted.	
CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel, organics and sand seams noted.	
SW SM	Brownish-gray, fine to coarse sand, some fine to coarse gravel, little silt.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel, coarse gravel and organics noted.	
CL	TOP OF INTERGLACIAL ZONE Dark gray, silty clay, trace fine to coarse sand.	688.4
CL	Dark bluish-gray, silty clay, little to some fine to coarse sand, trace fine gravel, thin sand seams noted.	
ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine to coarse gravel, cobbles noted.	678.4

Boring completed at 70.0 feet on 11-20-75.
Water level at 9.2 feet on 11-21-75.

Logged by: Sargent & Lundy Engineers

Drilled by: Raymond International

Tested by: Westenhoff & Novick, Inc.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-69

LOG OF BORING P-58

BORING P-59

SURFACE ELEVATION APPROXIMATELY 736

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
									10	SS
			3090			13.7	122		33	SS
						17.0			61	SS
									52	SS
			10940			10.0	132		39	SS
									60	SS
			10020			12.1	124		51	SS
			2500*						27	SS
				13.4	15.0	13.7	123		28	SS
			3000*						18	SS
				12.1	30.4	17.9	115			ST
			3700*						12	SS
			4500*						100	SS

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	DEPTH (FEET)
ML-CL	LOESS Yellowish-brown, clayey silt, some fine sand, layers of yellowish-brown silty clay noted.	6.0
CL	TOP OF WISCONSINAN TILL Yellowish-brown, silty clay, some fine to medium sand, trace fine gravel, organics noted.	
SM	9.5 feet, yellowish-brown, fine to coarse sand, little silt, trace clay.	
SP	16.0 feet, gray, fine to medium sand, trace silt.	
SM		
ML-CL	18.5 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel, silt layers noted.	
SW-SM	27.0 to 29.5 feet, gray, fine to coarse sand, trace silt.	
CL	29.5 feet, gray, silty clay, little fine to medium sand, trace fine gravel, gray fine to medium sand layers noted. 33.5 feet, grades to some fine to coarse sand, no sand seams noted.	
ML-CL	TOP OF INTERGLACIAL ZONE Dark bluish-gray, silty clay, some fine to medium sand, trace fine gravel, organics noted. 51.5 feet, grades to grayish-blue, mottled olive green, fine gravel noted.	48.5
ML-CL	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine gravel.	56.0

BORING COMPLETED AT 60.0 FEET ON 5/5/76.

WATER LEVEL AT 14.5 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 2.5-70

LOG OF BORING P-59

BORING P-60

SURFACE ELEVATION APPROXIMATELY 736

Tests reported elsewhere	Triaxial compression $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	Plastic limit %	Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
			4500+*						36	SS
			4500+*					16.1	42	SS
						19.4			55	SS
			4500+*			11.5			120	SS
									75	SS
			4100*						30	SS
			4140			14.3	125		15	SS ST
			3920	14.1	12.6	14.0	119		18	SS
			2600*			13.2			35	SS
			2000*						17	SS
			2400	10.7	16.4	14.6	132		17	SS
						18.7			66	SS
						15.9			87	SS

Symbols	Descriptions	Depth (feet)
ML·CL	LOESS Yellowish-brown, clayey silt, little fine to medium sand, organics (roots) noted.	
ML·CL	TOP OF WISCONSINAN TILL Yellowish-brown, clayey silt, some to and fine to medium sand, trace fine gravel, organics noted.	4.5
SP·SM	9.5 feet, yellowish-brown, fine sand, trace silt. 13.5 feet, grades with little silt.	
CL	19.0 feet, grayish-brown, clayey silt, some fine to coarse sand, trace fine gravel, thin silt seams noted.	
SW·SM	22.0 feet, brown, fine to medium sand, little silt, fine gravel noted.	
CL	28.0 feet, gray, silty clay, some fine to coarse sand, trace fine gravel. 33.5 feet, organics noted.	
CL·ML	38.5 feet, gray, clayey silt, little fine to coarse sand, trace fine gravel, organics and sand pockets noted.	
CL	43.5 feet, gray, silty clay, some fine to coarse sand, trace fine gravel.	
CL	TOP OF INTERGLACIAL ZONE Dark gray, silty clay, trace fine to medium sand, thin sand seams noted.	47.0
CL	53.5 feet, bluish-gray, silty clay, some fine to medium sand, fine gravel noted.	
ML	TOP OF ILLINOIAN TILL Gray, silt and fine sand, trace clay.	56.5
SM	60.5 feet, gray, fine to coarse sand, some silt, trace fine gravel.	

BORING COMPLETED AT 65.0 FEET ON 5/5/76.

WATER LEVEL AT 13.5 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 2.5-71

LOG OF BORING P-60

BORING P-61

SURFACE ELEVATION APPROXIMATELY 736

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\sigma_1-\sigma_3$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: q_u psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				4200*			12.2			8	SS
10							14.8			4	SS
15				6460	13.6	17.1	12.6	128		30	SS
20				3510			14.0	122		22	SS

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	DEPTH (FEET)
CL	FILL Brown, silty clay, little fine to coarse sand, trace fine gravel, thin sand lenses and organics noted. 4.0 feet, mottled brown and gray.	
ML - CL	8.5 feet, brownish-gray, clayey silt, some fine sand, fine gravel and sand seams noted.	
SM	9.5 feet, gray, fine to medium sand, some silt.	
CL	TOP OF WISCONSINAN TILL Brown, silty clay, little fine to coarse sand, trace fine gravel, reddish-brown silt seams noted. 18.5 feet, black organic material noted in silt seams.	13.5

BORING COMPLETED AT 20.0 FEET ON 5/5/76.

WATER LEVEL NOT ENCOUNTERED.

NOTES

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-72

LOG OF BORING P-61

BORING P-61A

SURFACE ELEVATION APPROXIMATELY 736

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5										2	SS
10					12.5	17.1	14.6			12	SS
15				1210			13.9	121		13	SS
20				1600*			13.3	117		14	SS
25				1290			12.9	120		18	SS
30				920			13.2	117		10	SS
35				3500*			16.0			13	SS
40				1090			25.8	105		5	SS

SYMBOLS	DESCRIPTIONS	DEPTH (FEET)
CL	FILL Brownish-gray, clayey silt, little fine to coarse sand, trace fine gravel. 13.5 feet, grades to gray, silty clay, little fine to coarse sand, trace fine gravel.	
SM	18.5 to 19.5 feet, brown, fine to coarse sand.	
CL	19.5 feet, gray, silty clay, little fine to coarse sand, trace fine gravel. 23.5 feet, fine gravel, fine to coarse sand seams noted.	
CL	TOP WISCONSINAN TILL Dark gray, silty clay, trace fine to medium sand, organics noted (topsoil).	36.5

BORING COMPLETED AT 40.0 FEET ON 5/5/76.

water level at 18.5 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 2.5-73

LOG OF BORING P-61A

BORING D-1

SURFACE ELEVATION 716.1

LABORATORY TEST DATA

Elevation in feet (axis: 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590)

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples
									12
						2900			15
					2740		11.6	123	14
						4250	12.7	123	28
									30
SA							9.4	132	143/10"
						4500+			28
					3780		12.8	124	17
									33
SA							18.4	108	42
						4500+			172
						4500+			93
						4500+			141
						4500+			55
						4500+			52
									72
									141
						4500+			144
						4500+			161
									150/3"
						4500+			182/10"
						4500+			100/6"
						4500+			163
						4500+			158
						4500+			151/9"

SYMBOLS / DESCRIPTIONS

Symbols	Descriptions
ML	LIGHT BROWN CLAYEY SILT WITH FINE SAND AND ROOTS (TOPSOIL)
	Top of Wisconsinan Glacial Till
CL	BROWN SILTY CLAY WITH SAND (STIFF) GRADES TO VERY STIFF GRADES WITH SOME GRAVEL
	Top of Interglacial Zone
SP SW	BROWN FINE TO COARSE SAND WITH GRAVEL AND SOME SILT (VERY DENSE)
CL	BROWN SILTY CLAY WITH SOME SAND (STIFF TO VERY STIFF) GRADES WITH MORE SAND AND SOME GRAVEL
SP	GRAY FINE SAND WITH SOME SILT (DENSE)
	Top of Illinoian Glacial Till
ML	GRAY SANDY SILT WITH CLAY AND OCCASIONAL GRAVEL (HARD)
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
SP	GRAY FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE)
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL AND OCCASIONAL LENSES OF FINE SAND (HARD)

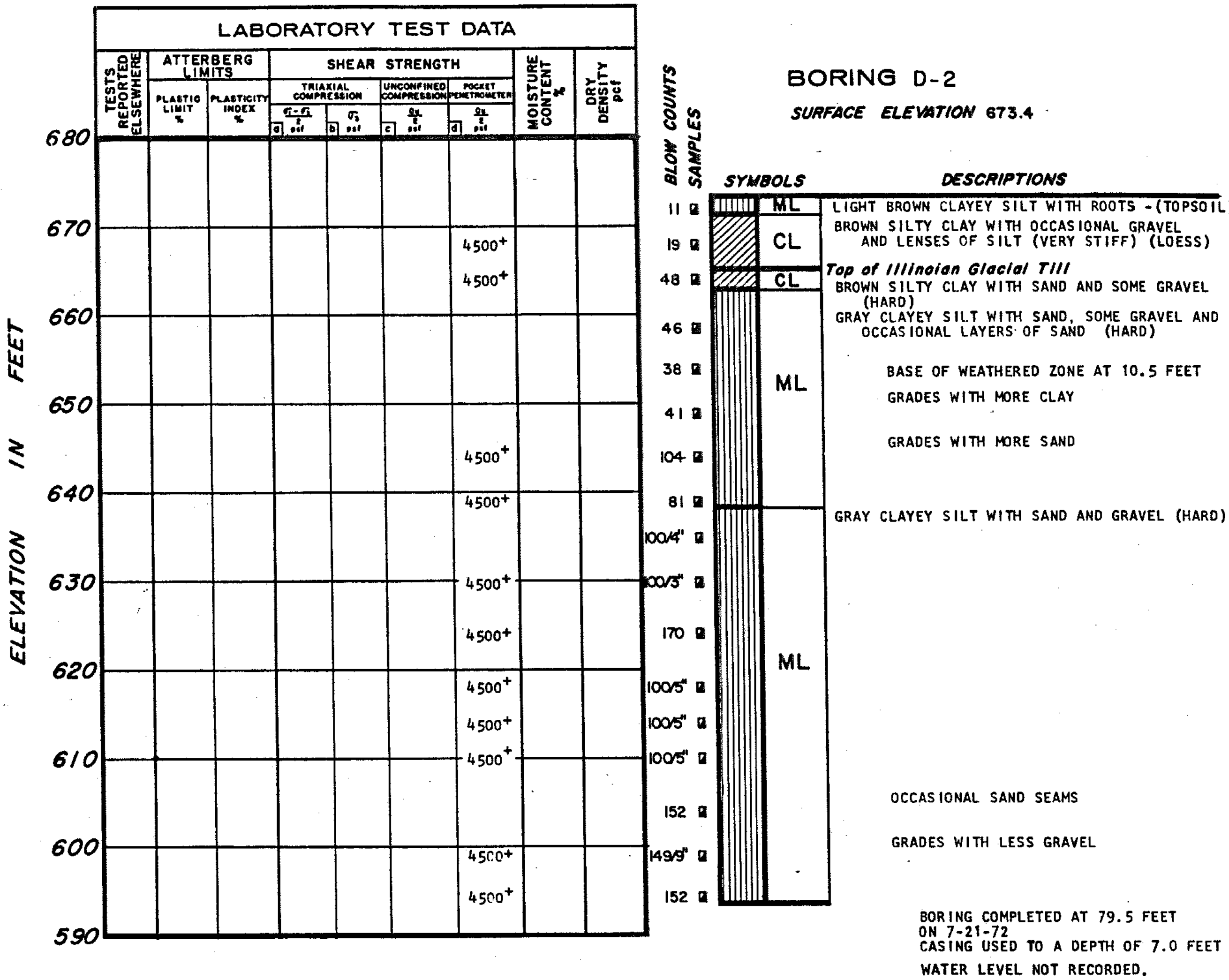
BORING COMPLETED AT 119.75 FEET ON 7-21-72
CASING USED TO A DEPTH OF 7.0 FEET
WATER LEVEL NOT RECORDED.

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 2.5-74

LOG OF BORING D-1



NOTE:

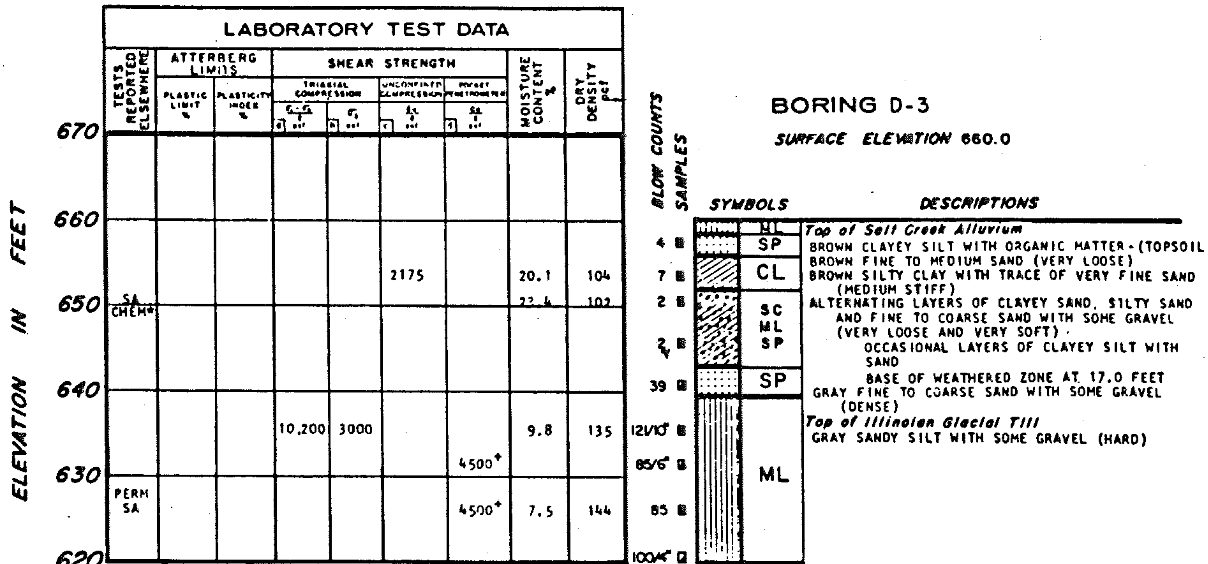
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-75

LOG OF BORING D-2



* ON WATER SAMPLE OBTAINED ON 10-7-72

PIEZOMETER INSTALLED IN D-3A ON 7-13-72
A 3/4 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET PERFORATED WAS PLACED AT ELEVATION 620.0. PEA GRAVEL WAS PLACED FROM ELEVATION 620.0 TO 630.0; A BENTONITE SEAL FROM ELEVATION 630.0 TO 632.0; AND PEA GRAVEL AND CEMENT GROUT FROM ELEVATION 632.0 TO 660.0.

PIEZOMETER INSTALLED IN D-3B ON 7-13-72
BORING D-3B WAS LOCATED 6 FEET FROM D-3A AND WAS DRILLED TO A DEPTH OF 20.5 FEET. A 3/4 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET PERFORATED WAS PLACED AT ELEVATION 639.5. PEA GRAVEL WAS PLACED FROM ELEVATION 639.5 TO 649.5; A BENTONITE SEAL FROM ELEVATION 649.5 TO 651.5; AND PEA GRAVEL AND CEMENT GROUT FROM ELEVATION 651.5 TO 660.0.

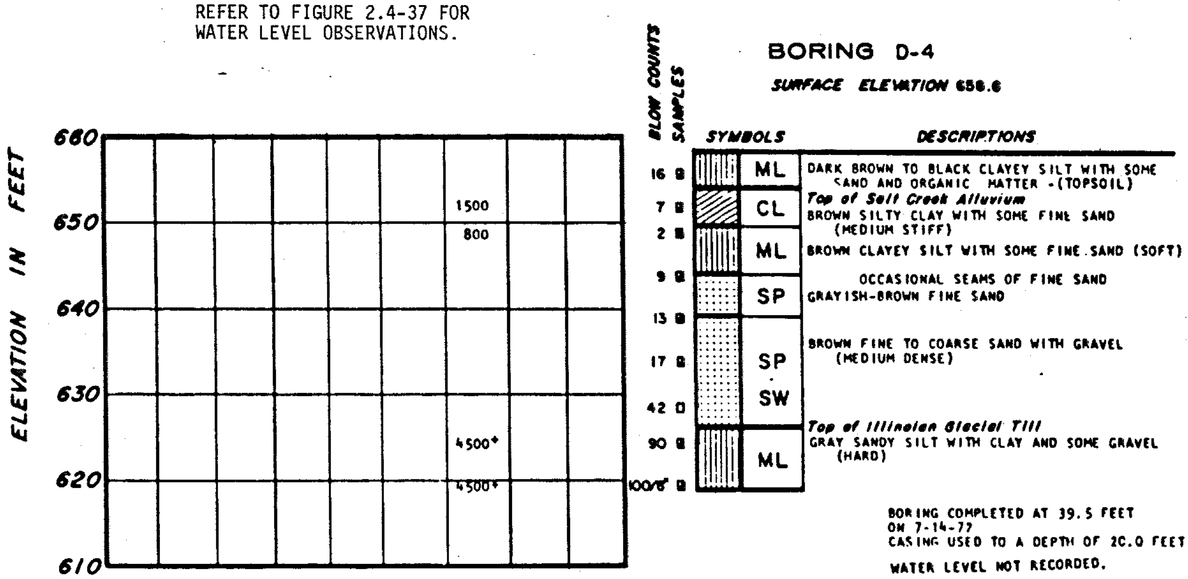
WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET

TIP ELEVATION 620.0	TIP ELEVATION 639.5	DATE
9.7	9.9	8-3-72
10.0	10.3	8-15-72
11.0	11.5	9-6-72

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

REFER TO FIGURE 2.4-37 FOR WATER LEVEL OBSERVATIONS.



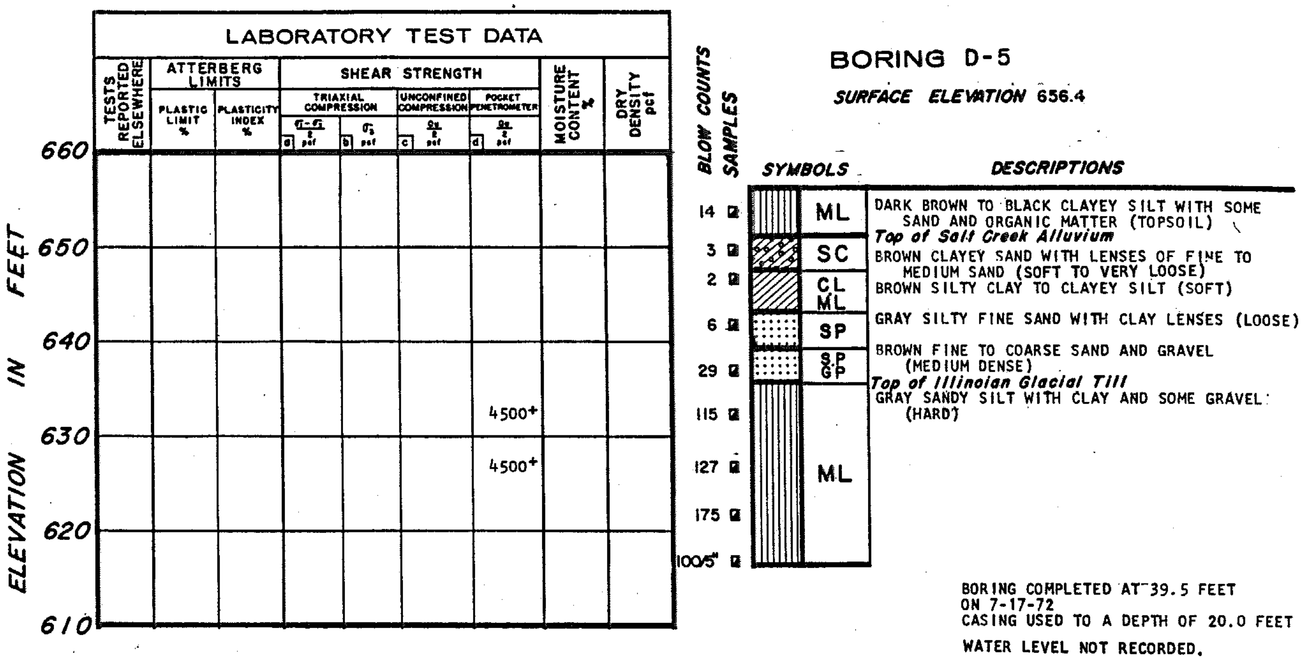
BORING COMPLETED AT 39.5 FEET
ON 7-14-72
CASING USED TO A DEPTH OF 20.0 FEET
WATER LEVEL NOT RECORDED.

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 2.5-76

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.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-77

LOG OF BORING D-5

BORING D-6

SURFACE ELEVATION 656.0

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
									9
					775		27.4	96	4
C	20.1	9.5				500	33.1	88	2/24"
									16
						4500+			27
						4500+	8.8	134	46/10"
						4500+			91
						4500+	7.1	147	100/7"
						4500+			135
						4500+			116
						4500+			83
C						4500+	6.5	136	136
						4500+			129
						4500+			93
			2040	6000		4500+	16.5	115	108/6"
						4500+			51
TX/DY			9650	6000		4500+	9.0	135	93

ELEVATION IN FEET: 660, 650, 640, 630, 620, 610, 600, 590, 580, 570

BLOW COUNTS / SAMPLES

SYMBOLS	*DESCRIPTIONS*
ML CL	DARK BROWN AND BLACK CLAYEY SILT WITH ROOTS- (TOPSOIL) GRADES WITH MORE CLAY
CL ML	***Top of Salt Creek Alluvium*** BROWN SILTY CLAY WITH TRACE OF FINE SAND (SOFT) GRADES TO CLAYEY SILT WITH SEAMS OF VERY FINE SANDY SILT
SM	GRAY SILTY FINE SAND WITH SOME CLAY (MEDIUM DENSE)
ML	***Top of Illinoian Glacial Till.*** GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF) GRADES TO HARD
ML	GRAY SILT WITH TRACE OF CLAY (HARD) (GLACIAL OUTWASH)
ML	BROWNISH-GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) (TILL)

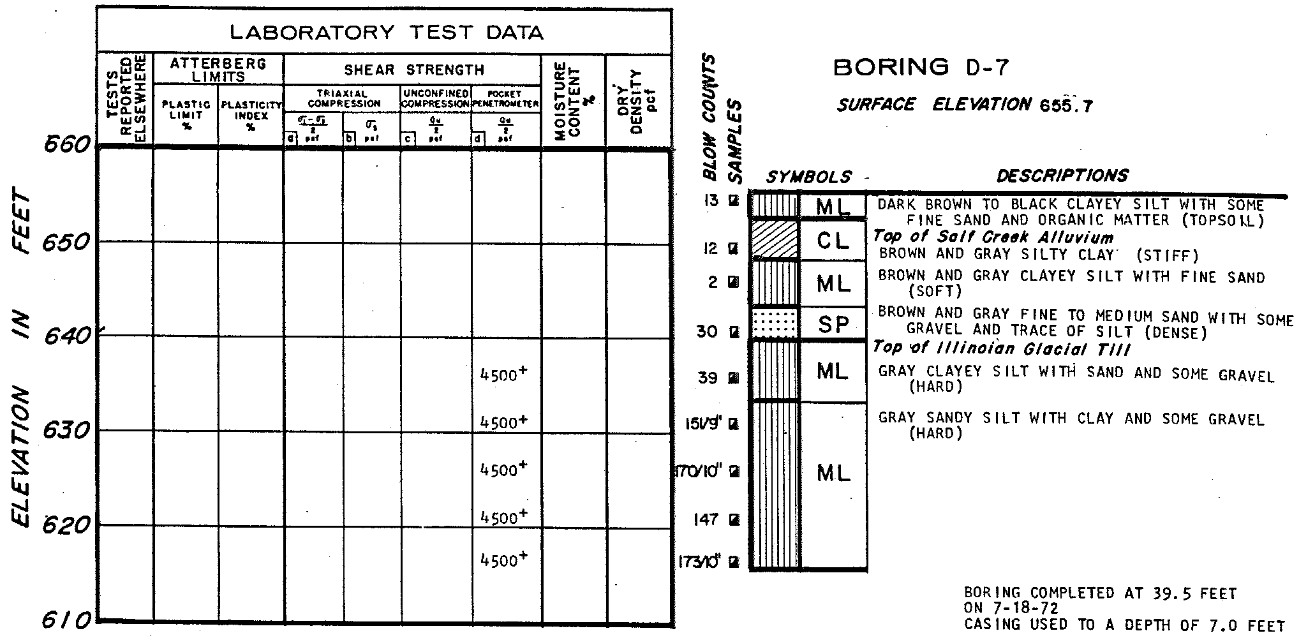
BORING COMPLETED AT 80.0 FEET ON 7-18-72
CASING USED TO A DEPTH OF 20.0 FEET
WATER LEVEL NOT RECORDED.

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 2.5-78

LOG OF BORING D-6



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 2.5-79

LOG OF BORING D-7

BORING D-8

SURFACE ELEVATION 655.7

ELEVATION IN FEET: 660, 650, 640, 630, 620, 610, 600, 590, 580, 570, 560, 550, 540, 530

LABORATORY TEST DATA

BLOW COUNTS	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION [b] σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION [c] $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER [d] $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
9								24.7	86
3	C	18.8	12.2				1000	25.8	95
1								27.2	97
14									
20							4500		
109	TX/CU/PP						4500+		
130									
80/6"									
97/6"									
103/6"								7.1	134
90									
109									
99									
97	TX/CU/PP								
117									
104									
100									
161									
63									
41						4100		10.1	130
74									
90									
70									
98						4160		8.6	132
80							4500+		

SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	DARK BROWN CLAYEY SILT WITH ORGANIC MATTER (TOPSOIL)
	Top of Salt Creek Alluvium
CL	BROWN SILTY CLAY (SOFT)
ML	BROWN AND GRAY CLAYEY SILT (SOFT)
ML	GRAY VERY FINE SANDY SILT WITH CLAY (SOFT TO VERY LOOSE)
SP GP	BROWN FINE TO COARSE SAND AND GRAVEL (MEDIUM DENSE)
	Top of Illinoian Glacial Till
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF)
	GRADES TO HARD
	OCCASIONAL SEAMS OF VERY FINE SANDY SILT
SW	MEDIUM TO COARSE SAND WITH SOME GRAVEL (AQUIFER WITH ARTESIAN HEAD TO GROUND SURFACE)
ML	GRAY SILT WITH TRACE OF CLAY AND OCCASIONAL SEAM OF FINE SAND (GLACIAL OUTWASH)
ML	GRAY CLAYEY SILT WITH SAND AND GRAVEL AS ABOVE (TILL)
	OCCASIONAL SEAMS OF SANDY SILT WITH GRAVEL
	OCCASIONAL SEAMS OF SILTY FINE SAND
	GRADES WITH MORE CLAY

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

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 PLACE 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	DATE
5.9	8-3-72
6.2	8-15-72
7.8	9-6-72

REFER TO FIGURE 2.4-37 FOR WATER LEVEL OBSERVATIONS.

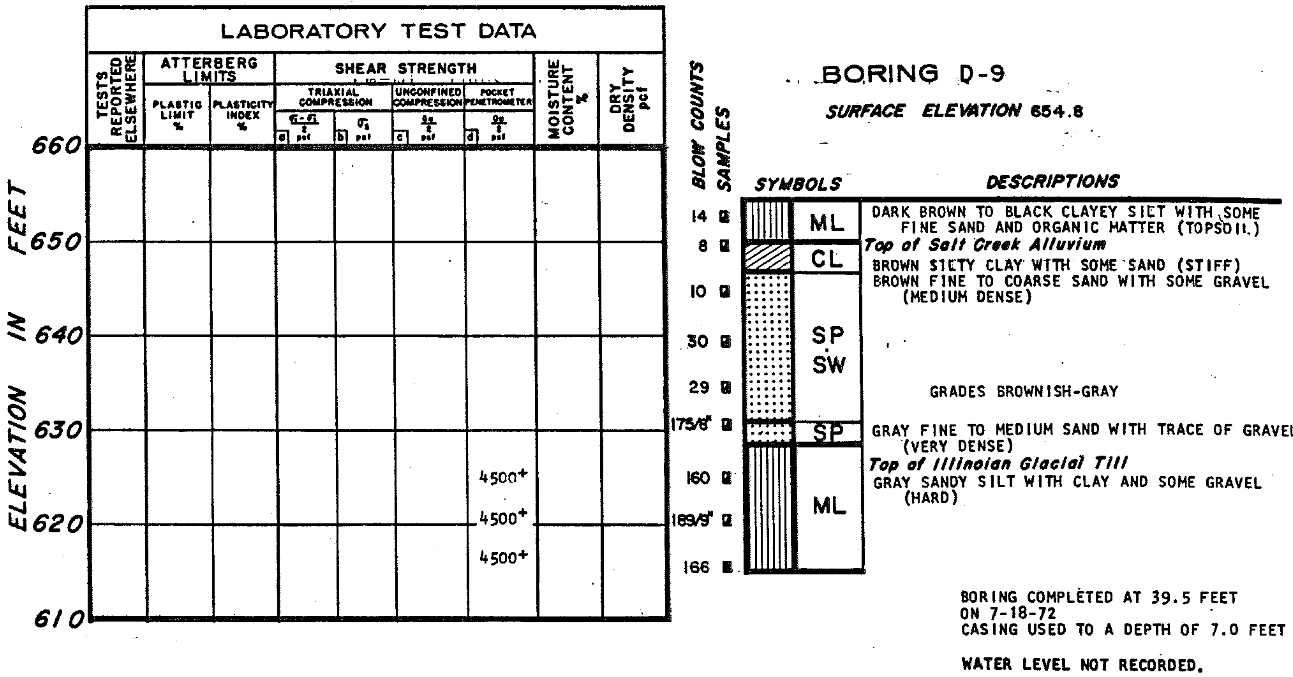
NOTE:

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 2.5-80

LOG OF BORING D-8



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 2.5-81

LOG OF BORING D-9

BORING D-10

SURFACE ELEVATION 656.0

LABORATORY TEST DATA

Tests Reported Elsewhere	Plastic Limit %	Plasticity Index %	Triaxial Compression (a) $\sigma_1-\sigma_3$ psf	Triaxial Compression (b) σ_3 psf	Unconfined Compression (c) $\frac{q_u}{2}$ psf	Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples
							13.0	98	8
D/CD D/CD									4
D/CD D/CD									3
D/CD D/CD D/CD									15
						4500+			57
									100/6"
PERM SA						4500+	7.2	131	155/9"
									100/3"
									100/4"
						4500+			125
									150/3"
						4500+			112
						4500+			69
SA							14.8	116	125/5"
D/CD						4500+			100/6"
						4500+			54
						4500+			49

ELEVATION IN FEET: 660, 650, 640, 630, 620, 610, 600, 590, 580, 570

SYMBOLS	DESCRIPTIONS
ML	DARK BROWN TO BLACK SANDY SILT WITH CLAY AND ORGANIC MATTER (TOPSOIL)
	Top of Salt Creek Alluvium
SM	BROWN AND GRAY SILTY VERY FINE SAND (LOOSE) GRADES TO GRAY WITH CLAY LENSES AND TRACE OF ORGANIC MATTER
SP	BROWN FINE SAND (LOOSE)
SP SW	BROWN AND GRAY FINE TO COARSE SAND WITH GRAVEL (MEDIUM DENSE)
	Top of Illinoian Glacial Till
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) GRADES TO SANDY SILT WITH CLAY AND SOME GRAVEL OCCASIONAL SEAMS OF FINE TO MEDIUM SAND
SP	GRAY FINE TO COARSE SAND WITH SOME GRAVEL AND SILT (VERY DENSE) (GLACIAL OUTWASH) OCCASIONAL LAYERS OF FINE TO COARSE SAND WITH GRAVEL
CL	GRAY SILTY CLAY WITH SAND AND SOME GRAVEL (HARD) (TILL) LAYERS OF FINE TO COARSE SAND WITH SOME GRAVEL
ML CL	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) GRADES WITH MORE CLAY

BORING COMPLETED AT 80.0 FEET ON 7-19-72
CASING USED TO A DEPTH OF 6.0 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 2.5-82

LOG OF BORING D-10

BORING D-11

SURFACE ELEVATION 653.8

LABORATORY TEST DATA

ELEVATION IN FEET: 660, 650, 640, 630, 620, 610, 600, 590, 580, 570, 560, 550, 540, 530, 520, 510, 500

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						1700			7
						1500	23.2		P
									P
						4500+	10.7	135	20
						4500+			27
D/CD									
						4500+	7.5	142	166
						4500+			107
						4500+			170/10"
						4500+			100/6"
TX/DY						4500+			144
						4500+			82
TX/DY			16,900	4000		4500+	7.9	139	100
						4500+			152/10"
			15,300	4000		4500+	8.4	137	115
						4500+			85
						4500+			112
DR						4500+			78
D/CD									
						4500+			94
						4500+			65
						4500+			66
						4500+			67
						4500+			69
						4500+			96
						4500+			75
						4500+			91
D/CD						4500+			30
									62
						4500+	9.6	128	52

SAMPLES / SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	DARK BROWN CLAYEY SILT WITH TRACE OF ORGANIC MATTER (TOPSOIL)
CL	*Top of Salt Creek Alluvium* DARK GRAY AND BROWN SILTY CLAY WITH SOME FINE SAND (STIFF)
SM	OCCASIONAL SAND SEAM; GRADES TO MOTTLED DARK GRAY AND BROWN GRAY SILTY FINE SAND WITH POCKETS OF CLAY AND ORGANIC MATTER
SP SW	GRAY FINE TO COARSE SAND WITH GRAVEL (DENSE)
	Top of Illinoian Glacial Till GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
	SEAM OF SAND
	6 INCH SEAM COARSE GRAVEL
	LAYER OF SAND AND GRAVEL
	LAYERS OF FINE TO COARSE SAND WITH GRAVEL
S.P	18 INCH LAYER OF FINE TO MEDIUM SAND (AQUIFER WITH ARTESIAN HEAD TO GROUND SURFACE)
ML	20 INCH LAYER OF GRAVEL
	6 INCH LAYER OF SAND
	PIECES OF ORGANIC MATTER
	3 INCH SEAM OF GRAVEL
	3 INCH SEAM OF GRAVEL
	GRADES WITH MORE CLAY
	GRADES WITH LESS CLAY
	Top Of Pre-Illinoian Glacial Till (ESTIMATED)
	GRADES WITH SEAMS OF CLAY
	GRADES TO MOTTLED GREEN AND GRAY
	TRACE OF ORGANIC MATERIAL

BORING CONTINUED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-83

LOG OF BORING D-11
(SHEET 1 of 3)

BORING D-11 CONTINUED

SURFACE ELEVATION

LABORATORY TEST DATA

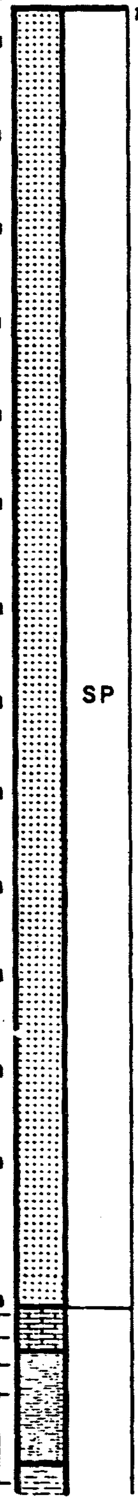
Column headings: TESTS REPORTED ELSEWHERE | ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %) | SHEAR STRENGTH (TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ (a) ksf, σ_3 (b) ksf; UNCONFINED COMPRESSION $\frac{q_u}{2}$ (c) ksf; POCKET PENETROMETER $\frac{q_u}{2}$ (d) ksf) | MOISTURE CONTENT % | DRY DENSITY pcf

ELEVATION IN FEET: 500, 490, 480, 470, 460, 450, 440, 430, 420, 410, 400, 390, 380, 370, 360, 350, 340

Tests Reported Elsewhere	Moisture Content %	Dry Density pcf	Blow Counts / Samples	Descriptions
			92	*Top of Mahomet Bedrock Valley Deposit* GRAY FINE SAND (VERY DENSE) (ALLUVIUM)
SA	17.8	109	160	
				GRADES TO VERY FINE SAND
			131	
				GRADES TO FINE SAND WITH TRACE OF MEDIUM SAND
TX/DY			141	
				GRADES TO VERY FINE SAND WITH TRACE OF SILT AND GRAVEL
			95	
			180	
				GRADES WITH TRACE OF MEDIUM TO COARSE SAND
			116	
				GRADES TO BROWN FINE SAND
TX/DY DR			200/4"	
				GRADES WITH SEAMS OF GRAVEL
				GRADES TO FINE TO MEDIUM SAND
			160/9"	
SA DR	16.5	109	225	
				TRACE OF COARSE SAND
			150/9"	
				GRADES TO VERY FINE TO FINE SAND WITH TRACE OF SILT
			176/11"	
			163/10"	
		RQD	200/4"	TOP OF BEDROCK

RQD	Descriptions
100%	GRAY TO BROWN MOTTLED LIMESTONE, FINE CRYSTALLINE, MASSIVE, FEW SMALL ISOLATED VUGS, OCCASIONAL TIGHT FRACTURE
92%	GRADES TO NUMEROUS IRREGULAR SHALE SEAMS
100%	GRAY SHALE; INDISTINCT BEDDING, NUMEROUS SLICKENSIDES ALONG RANDOM ORIENTED PLANES OF WEAKNESS, OCCASIONAL 45° FRACTURE
100%	GRADES TO PURPLE COLOR GRADES TO GRAY COLOR

SYMBOLS



BORING CONTINUED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

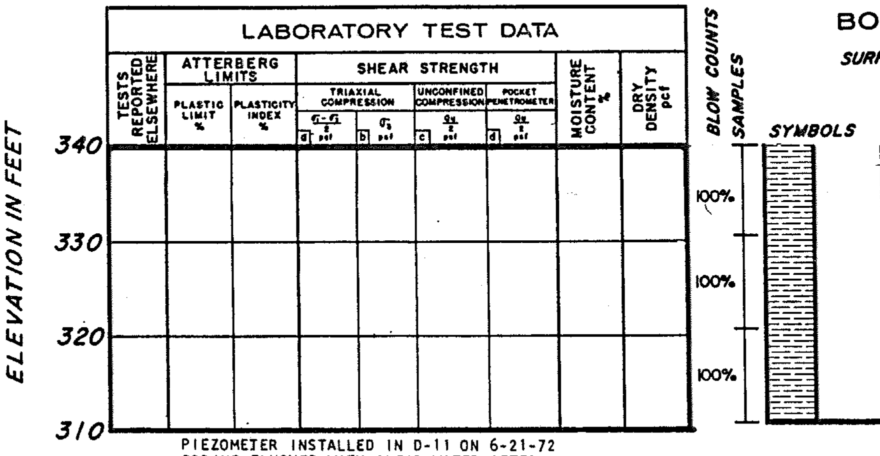
FIGURE 2.5-83

LOG OF BORING D-11

(SHEET 2 of 3)

BORING D-11 CONTINUED

SURFACE ELEVATION



DESCRIPTIONS

LIGHT GRAY MICACEOUS SILTSTONE WITH OCCASIONAL THIN SEAM OF SHALE, VERY SANDY IN ZONES, MASSIVE

BORING COMPLETED AT 343.5 FEET ON 6-19-72
CASING USED TO A DEPTH OF 65.0 FEET

PIEZOMETER INSTALLED IN D-11 ON 6-21-72
BORING FLUSHED WITH CLEAR WATER AFTER COMPLETION AT 343.5 FEET. A 3/4 INCH PVC PIPE WTIH AN 18 INCH POROUS STONE TIP WAS PLACED AT ELEVATION 493.8.
GRANULAR BACKFILL WAS PLACED FROM ELEVATION 310 ELEVATION 310.3 TO 513.8; A BENTONITE SEAL FROM ELEVATION 513.8 TO 515.3; AND GRAVEL AND CEMENT GROUT FROM ELEVATION 515.3 TO 653 8.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
33.5	6-29-72
PROBE LODGED AT 34.5 - NO WATER	7-7-72

REFER TO FIGURE 2.4-37 FOR WATER LEVEL OBSERVATIONS.

NOTE:

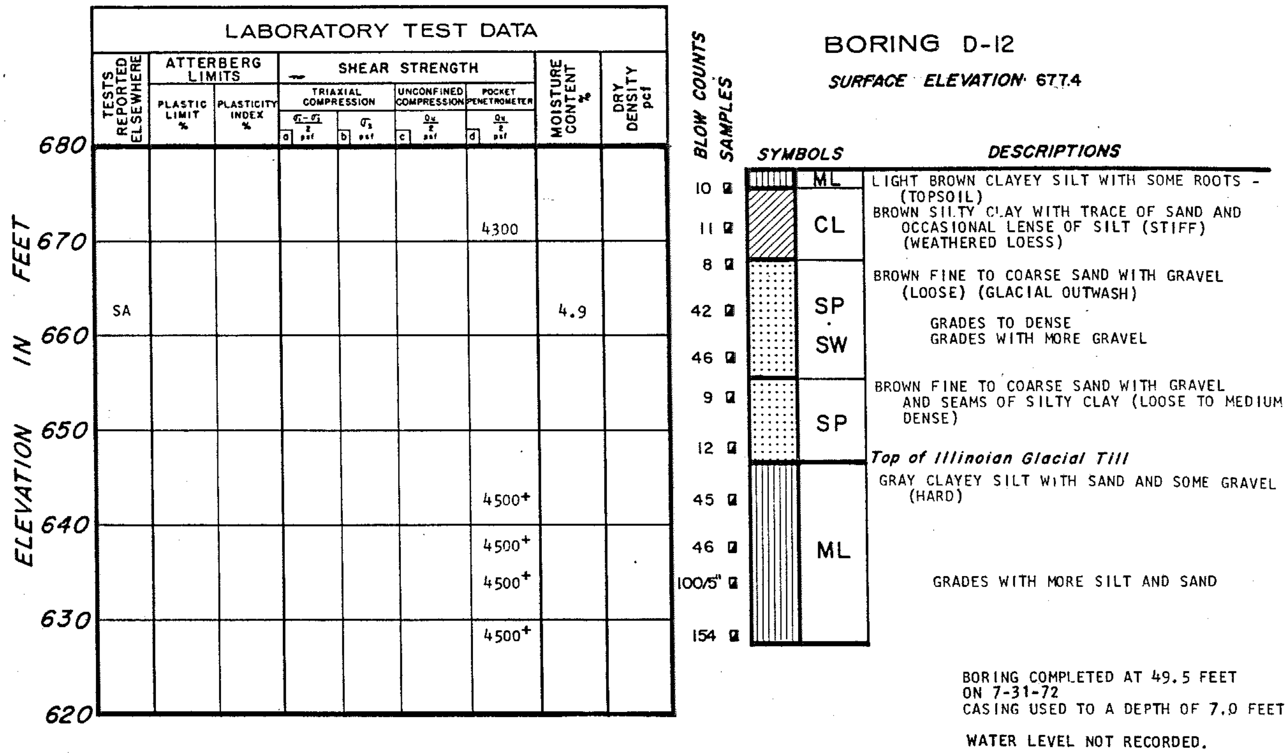
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-83

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
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-84

LOG OF BORING D-12

LABORATORY TEST DATA

ELEVATION IN FEET: 690, 680, 670, 660, 650, 640, 630, 620, 610, 600

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION [b] σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION [c] $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER [d] $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
PERM SA						1700	21.9 24.8	104 94
PERM SA						-	6.4	105
						4500+		
			14,600	4000		4500+	8.5	137
						4500+		
SA PERM						4500	7.3	142
						4500+		
			24,600	6000		4500+	6.5	141

BORING D-13

SURFACE ELEVATION 685.4

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
8	ML	LIGHT BROWN CLAYEY SILT WITH ROOTS - (TOPSOIL)
7	ML	BROWN CLAYEY SILT WITH FINE SAND (MEDIUM STIFF) (WEATHERED LOESS)
7	SP	BROWN FINE TO MEDIUM SAND WITH SOME SILT (LOOSE) (GLACIAL OUTWASH)
14	SP-SW	BROWN FINE TO COARSE SAND WITH TRACE OF GRAVEL AND SILT (MEDIUM DENSE)
12		GRADES WITH TRACE OF SILT
23		
9		GRADES TO LOOSE
		Top of Illinoian Glacial Till
22	ML	GRAY CLAYEY SILT WITH SAND AND TRACE OF GRAVEL (VERY STIFF)
46		GRADES TO HARD
41		
79		
134		
128		
100/6"		OCCASIONAL SEAMS OF SILT
100/5"		GRADES WITH LESS CLAY
155		
100/5"		

BORING COMPLETED AT 80.0 FEET
ON 8-1-72
CASING USED TO A DEPTH OF 6.0 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 2.5-85

LOG OF BORING D-13

BORING D-14

SURFACE ELEVATION 701.1

Depth (feet)	Tests reported elsewhere	Triaxial compression $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	Unconfined compression $\frac{Q_u}{2}$ psf	Plastic limit %	Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
7										6	SS
9							13.3	122		20	SS
14							12.4			23	SS
16				6200	16.8	11.2	12.0	131			ST
19							11.8			25	SS
22	MA						12.7	127	55.0	-	SS
30										46	SS
35							7.5			36	SS
40	MA						9.5	137	64.5	56	SS
44							8.2	139		38	SS
48	PERM MA			2300	34.5	1.5	29.0	94.5	92.5		ST
50										46	SS
54							11.5	132		22	SS
59							7.7	139		94	SS
64										48	SS
69										150/7"	SS

Symbols	Descriptions	Elevation (feet)
	TOP OF LOESS	
CL	Brown, silty clay, trace fine to coarse sand, trace fine gravel.	
	TOP OF WISCONSINAN TILL	698.6
CL	Brown, silty clay, some fine to coarse sand, trace fine gravel.	
	-.2 foot thick, fine sand lense.	
	-24.2 to 25.0 feet, boulder noted.	
SW	Brown, fine to coarse sand, trace silt.	
ML-SM	Light brown silt and fine to coarse sand, trace fine gravel, trace clay trace organics.	
	TOP OF ILLINOIAN TILL	657.6
ML-CL	Gray, silty clay, some fine to coarse sand, trace fine gravel.	
ML	Gray, silt, trace fine sand.	
SM	Gray, silty, fine to coarse sand, trace organics.	
	Gray to greenish-gray, silt and fine to coarse sand.	
ML-SM	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	

Boring completed at 69.1 feet on 4-15-75.
Water level not recorded.

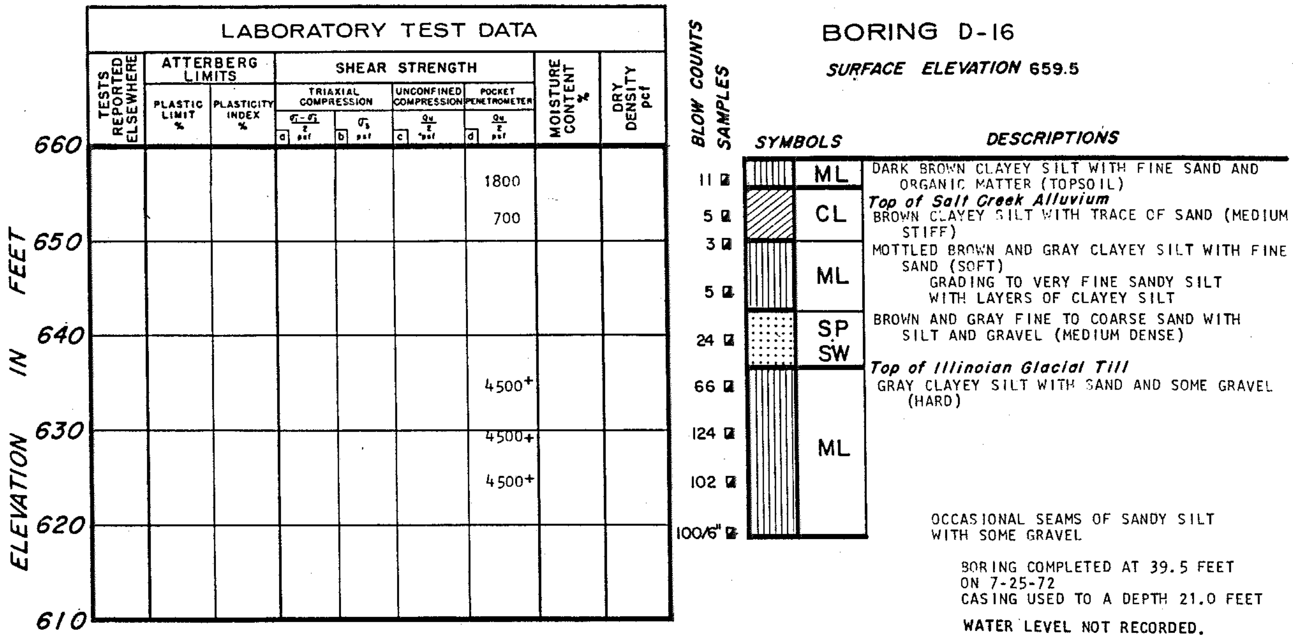
NOTES

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 2.5-86

LOG OF BORING D-14



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 2.5-87

LOG OF BORING D-16

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
670									
660							2600		
650									
640							4500+		
630							4500+		
							4500+		
620									

BORING D-17

SURFACE ELEVATION 662.9

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
17	ML	DARK BROWN TO BLACK CLAYEY SILT WITH FINE SAND AND ORGANIC MATTER (TOPSOIL)
		Top of Salt Creek Alluvium
12	CL	BROWN SILTY CLAY WITH SOME FINE SAND (STIFF) GRADES WITH MORE SAND AND SOME GRAVEL
6		
36	ML	BROWN CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF)
94	SP	BROWN FINE TO COARSE SAND WITH SOME GRAVEL (VERY DENSE)
		Top of Illinoian Glacial Till
141	ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
100/5"		
175/9"		
100/5"		

BORING COMPLETED AT 39.0 FEET ON 7-13-72
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 2.5-88

LOG OF BORING D-17

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{Q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{Q_u}{2}$ psf	Moisture Content %	Dry Density pcf
~651						1700		11.7	112
~649	C	17.2	15.1				1100	25.9	95
~628							4500+		
~624	C						4500+	7.2	136
~619							4500+		

ELEVATION IN FEET: 660, 650, 640, 630, 620, 610

BORING D-18

SURFACE ELEVATION 657.1

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
11	OL ML	BLACK CLAYEY SILT WITH ORGANIC MATTER (TOPSOIL)
		Top of Salt Creek Alluvium
6 3	CL	MOTTLED BROWN AND GRAY SILTY CLAY WITH FINE SAND AND TRACE OF ORGANIC MATTER (MEDIUM STIFF) GRADES TO SOFT
1/18" 5 12	SP	BROWN FINE TO COARSE SAND WITH SOME GRAVEL (VERY LOOSE TO LOOSE) GRADES WITH MORE GRAVEL GRADES WITH TRACE OF SILT
		Top of Illinoian Glacial Till
52 146/11" 100/6"	ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) GRADES WITH LESS CLAY

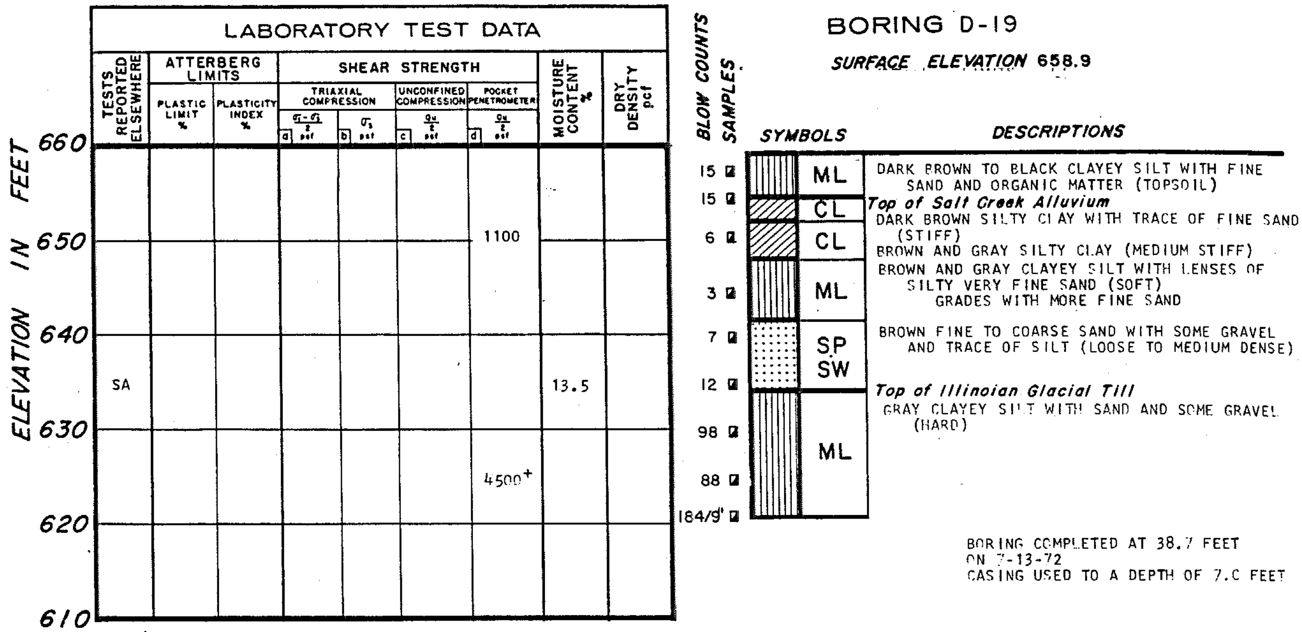
BORING COMPLETED AT 39.5 FEET ON 7-24-72
CASING USED TO A DEPTH OF 20.0 FEET
WATER LEVEL NOT RECORDED.

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 2.5-89

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 ELEVATON 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 PLACE 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.

NOTE:

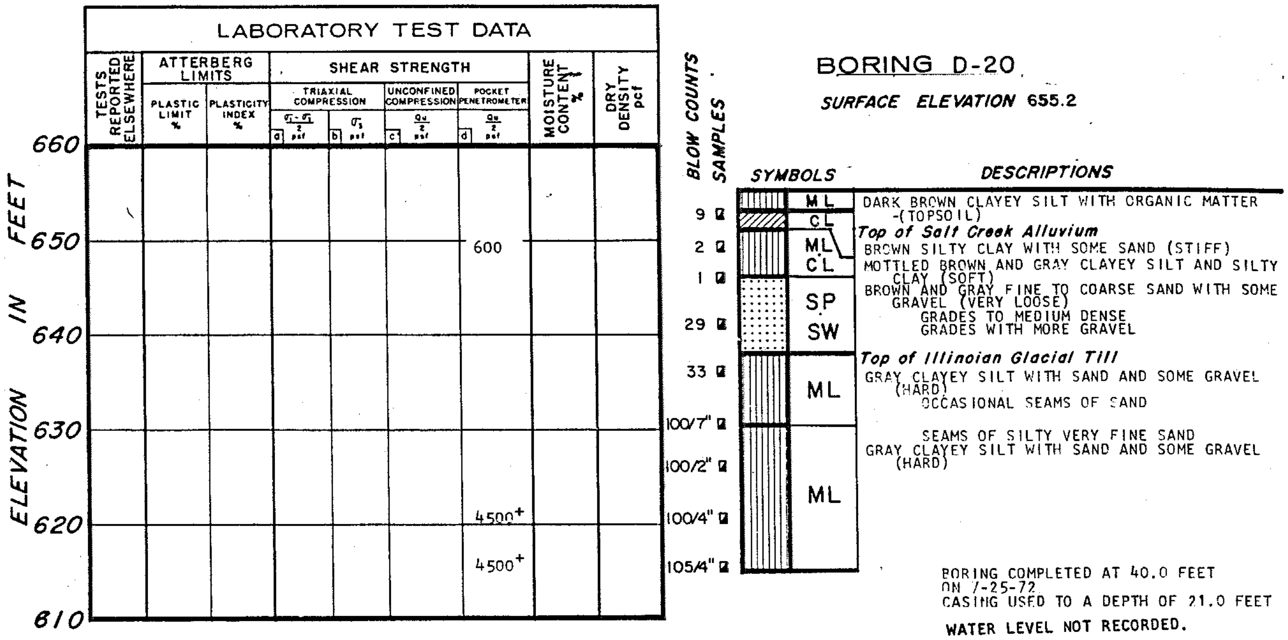
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

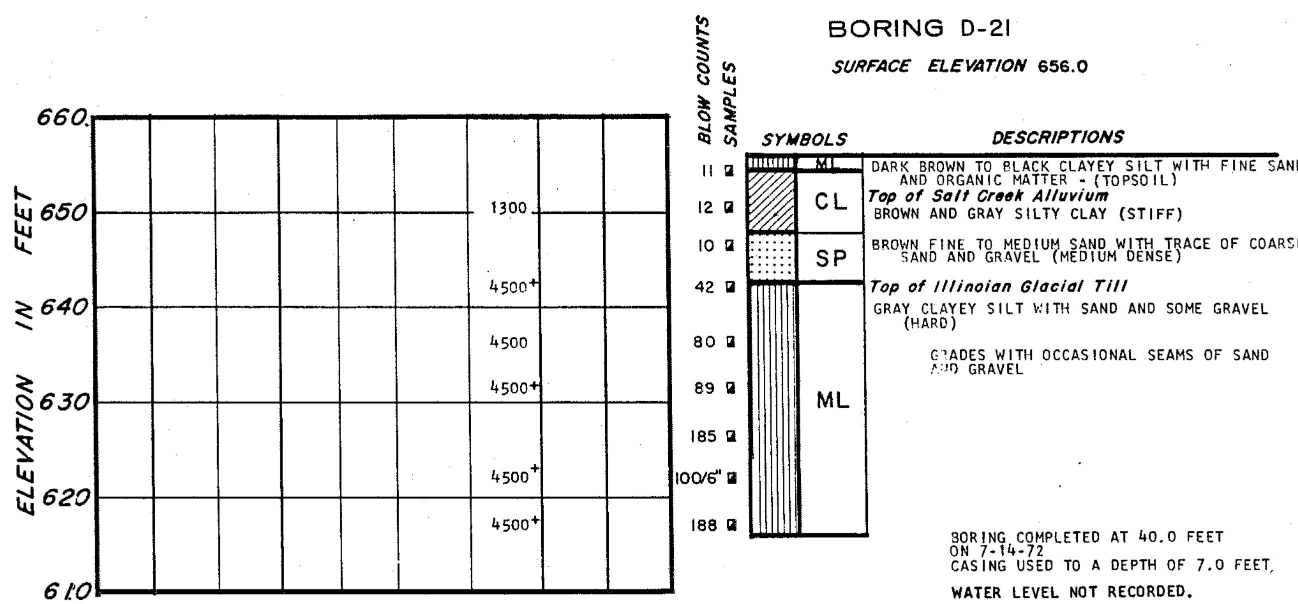
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-90

LOG OF BORING D-19





NOTE:

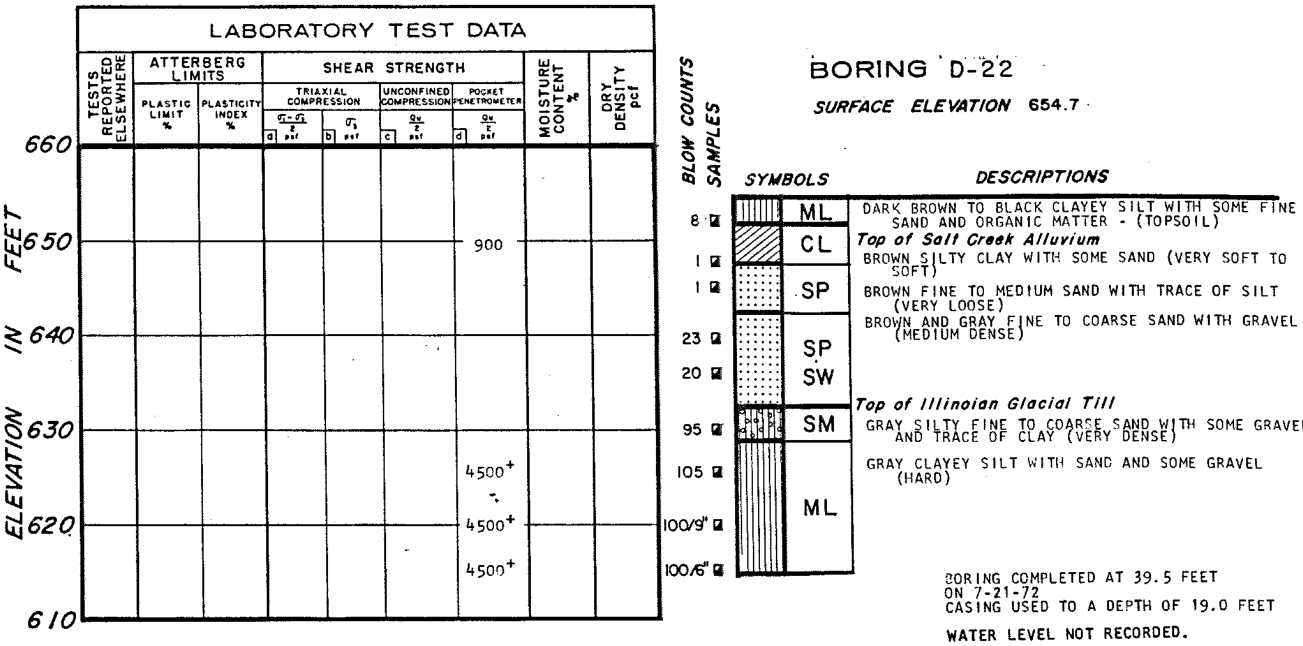
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

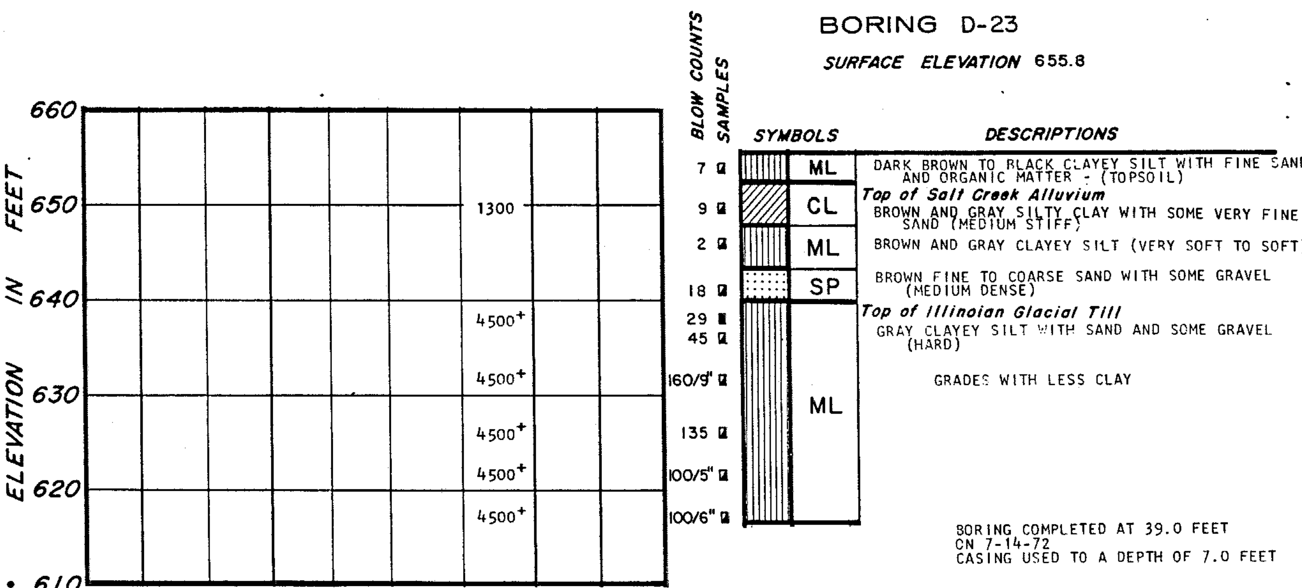
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-91

LOG OF BORINGS D-20 AND D-21





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 FROMELEVATION 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	TIP ELEVATION 641.0	DATE
4.9	6.4	8-8-72
5.3	6.9	8-22-72
6.0	8.4	9-6-72

REFER TO FIGURE 2.4-37 FOR WATER LEVEL OBSERVATIONS.

NOTE:

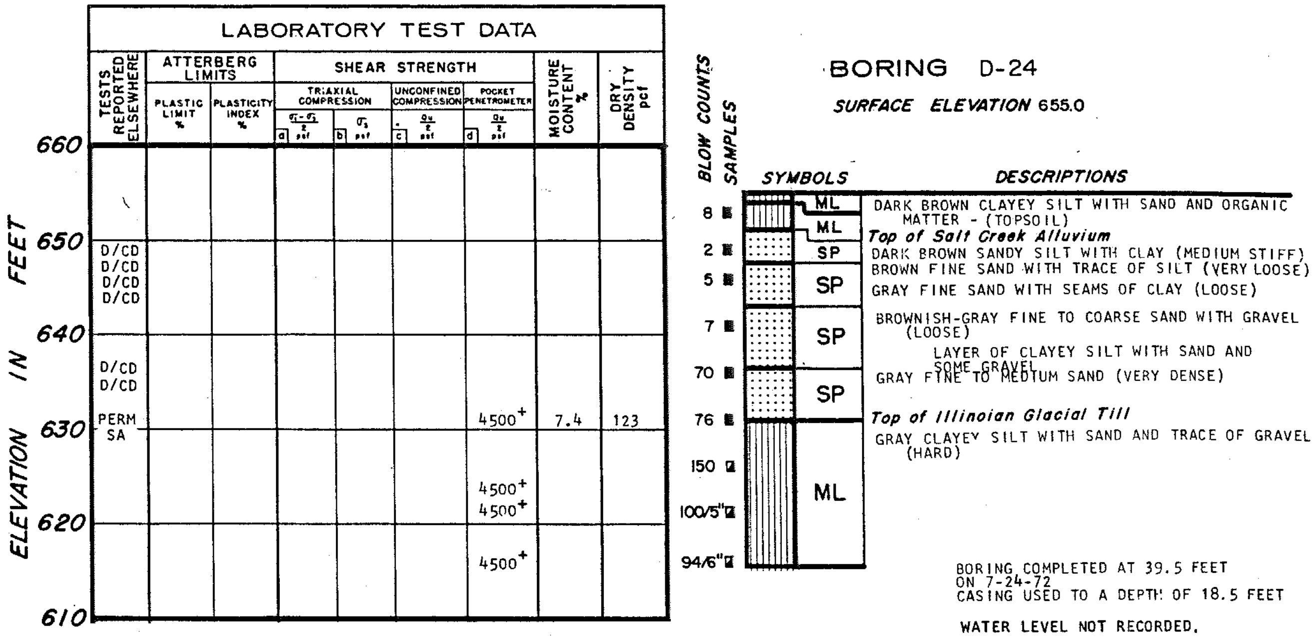
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

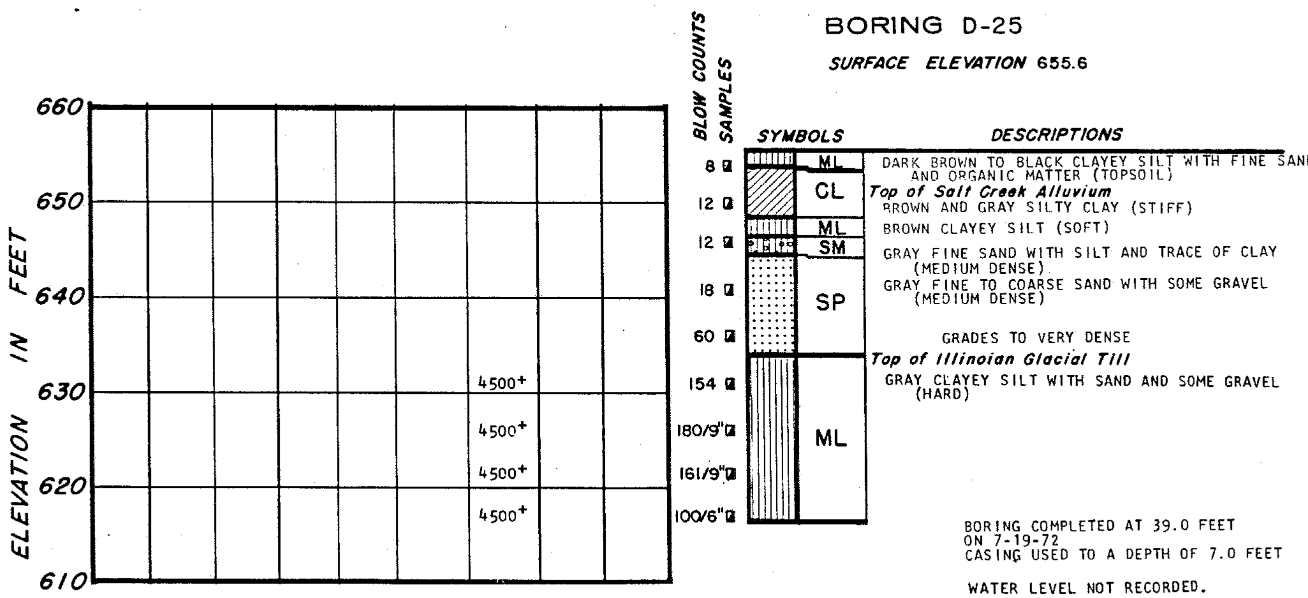
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-92

LOG OF BORINGS D-22 AND D-23





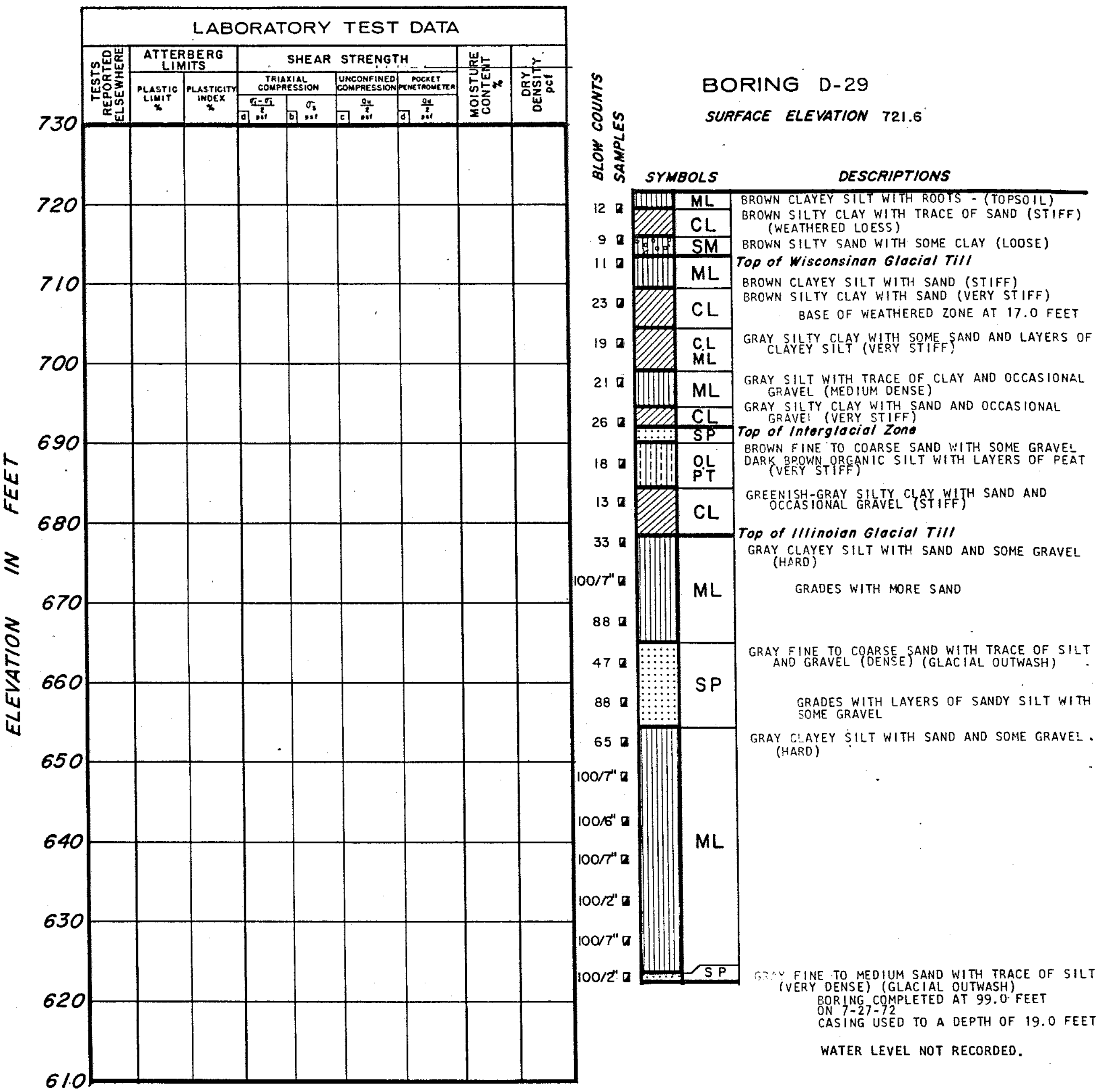
NOTE:

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

CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-93

LOG OF BORINGS D-24 AND D-25



NOTE:

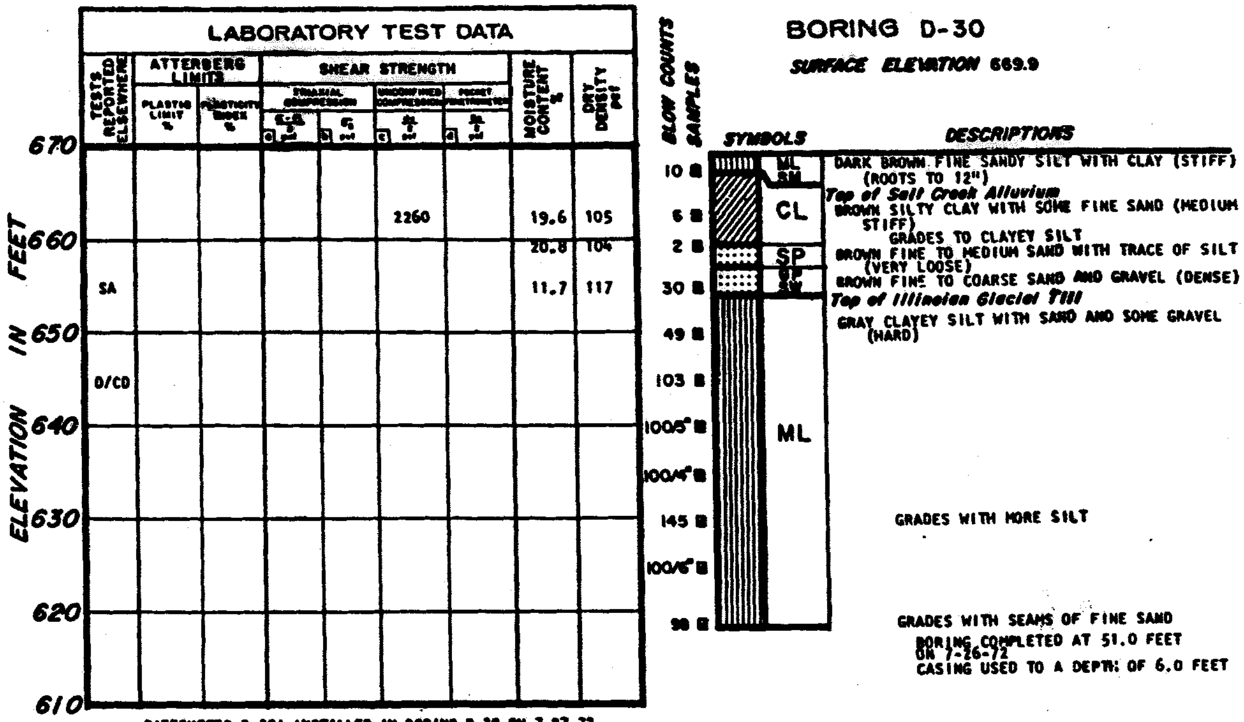
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-94

LOG OF BORING D-29



PIEZOMETER D-30A INSTALLED IN BORING 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 625 TO 627 AND CEMENT GROUT FROM ELEVATION 627 TO 669.9.

PIEZOMETER D-30B INSTALLED IN BORING 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 BORING 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 620, 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 BORING D-30

BORING D-31

SURFACE ELEVATION 667.7

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\sigma_1-\sigma_3$ psf (a)	Shear Strength: Triaxial Compression σ_3 psf (b)	Shear Strength: Unconfined Compression q_u psf (c)	Shear Strength: Pocket Penetrometer q_u psf (d)	Moisture Content %	Dry Density pcf	Blow Counts
670–660										2
										2
660–650								21.4	98	9
										34
	TX/DY									43
650–640				2950	2500			8.3	131	121/11"
	TX/DY			15,000	2500			7.6	140	95
640–630										100/6"
										149/6"
										150/9"
630–620										160
										116/6"
								8.2	138	146
620–610				22,800	5000			8.4	137	71
										105
610–600	CHEM*							8.6	135	111
										75
600–590								9.0	138	81
										53
590–580				18,000	7000			8.8	137	95
										82
580–570								7.7	143	105
										40
570–560								17.2	116	39
										68
560–550										140/6"
										200/4"
550–540										109
540–530	TX/DY									95
530–520										70
520–510				6080	10,000			11.6	129	80

ELEVATION IN FEET

SYMBOLS / DESCRIPTIONS

Symbol	Description
ML	DARK BROWN CLAYEY SILT WITH FINE SAND AND ORGANIC MATTER (TOPSOIL)
	Top of Salt Creek Alluvium
SM	DARK BROWN AND GRAY SILT SAND WITH CLAY (VERY LOOSE)
SP	BROWN FINE SAND
SC	DARK GRAY CLAYEY SAND WITH SILT AND SOME GRAVEL (LOOSE)
SP	GRAY FINE TO COARSE SAND WITH SOME GRAVEL (LOOSE)
	Top of Illinoian Glacial Till
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) GRADES TO SANDY SILT WITH CLAY AND SOME GRAVEL GRADES OCCASIONAL SEAMS OF FINE SAND LAYER OF FINE TO MEDIUM SAND GRADES WITH MORE CLAY
CL	GREENISH-BROWN SILT CLAY WITH SAND AND SOME GRAVEL (HARD) GRADING BLUISH-GREEN GRADES TO GREENISH-BROWN AND GRAY GRADES WITH LESS CLAY
SM	GRAYISH-BROWN CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
SP	GRAY FINE TO COARSE SAND WITH TRACE OF SILT (VERY DENSE)
ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD) GRADING BROWNISH-GRAY

* ON WATER SAMPLE OBTAINED ON 10-7-72

BORING CONTINUED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-96

LOG OF BORING D-31

(SHEET 1 of 3)

BORING D-31 CONTINUED

SURFACE ELEVATION

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
510										89	ML	GRADING WITH MORE CLAY
												Top of Mahomet Bedrock Valley Deposit
											CL	BROWN AND GREEN SILTY CLAY WITH SOME SAND AND OCCASIONAL GRAVEL (HARD)
500	TX/DY			3690	10,000			17.5	114	46		LAYER OF BROWN AND GREEN SILT
490						3900		14.8	116	64		OCCASIONAL LAYERS OF SANDY SILT
												GRADES TO GRAY
											ML	GRAY CLAYEY SILT (MEDIUM DENSE)
480										18		LARGE PIECES OF DECAYED WOOD
											SP	GRAY FINE SAND WITH GRAVEL (VERY DENSE)
												GRAVEL GRADES OUT
470										130		
460										78		
450												
440	SA							17.4	106	250/5"		
430										155/8"		GRADES WITH SOME MEDIUM SAND
420												
410										163		GRADES WITH TRACE OF COARSE SAND AND OCCASIONAL GRAVEL
400										100/4"		GRADES TO FINE TO COARSE SAND WITH SOME GRAVEL
390												
380										130		GRADES TO FINE SAND
370										100/6"		GRADES WITH SOME MEDIUM SAND
										100/1"		TOP OF BEDROCK
360										99%		LIGHT GRAY SILTSTONE WITH OCCASIONAL PYRITE INCLUSION, MASSIVE; BEDDING DISPLAYS 14° DIP
350												

BORING CONTINUED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-96

LOG OF BORING D-31

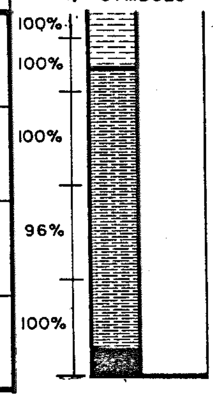
(SHEET 2 of 3)

	LABORATORY TEST DATA								
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	DRY DENSITY pcf
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	POCKET PENETROMETER $\frac{q_u}{2}$ psf		

ELEVATION IN FEET: 350, 340, 330, 320, 310

BORING D-31 CONTINUED

SURFACE ELEVATION



DESCRIPTIONS

LIGHT GRAY SHALE,MASSIVE;OCCASIONAL THIN LAYER OF BROWN LIMESTONE;GRADES CARBONACEOUS IN ZONES;SMALL PYRITE INCLUSIONS;BEDDING DISPLAYS 14° DIP

BLACK COAL THIN BEDDED, IMPURE (NO. 7)

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

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.

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.

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 2.5-96

LOG OF BORING D-31

(SHEET 3 of 3)

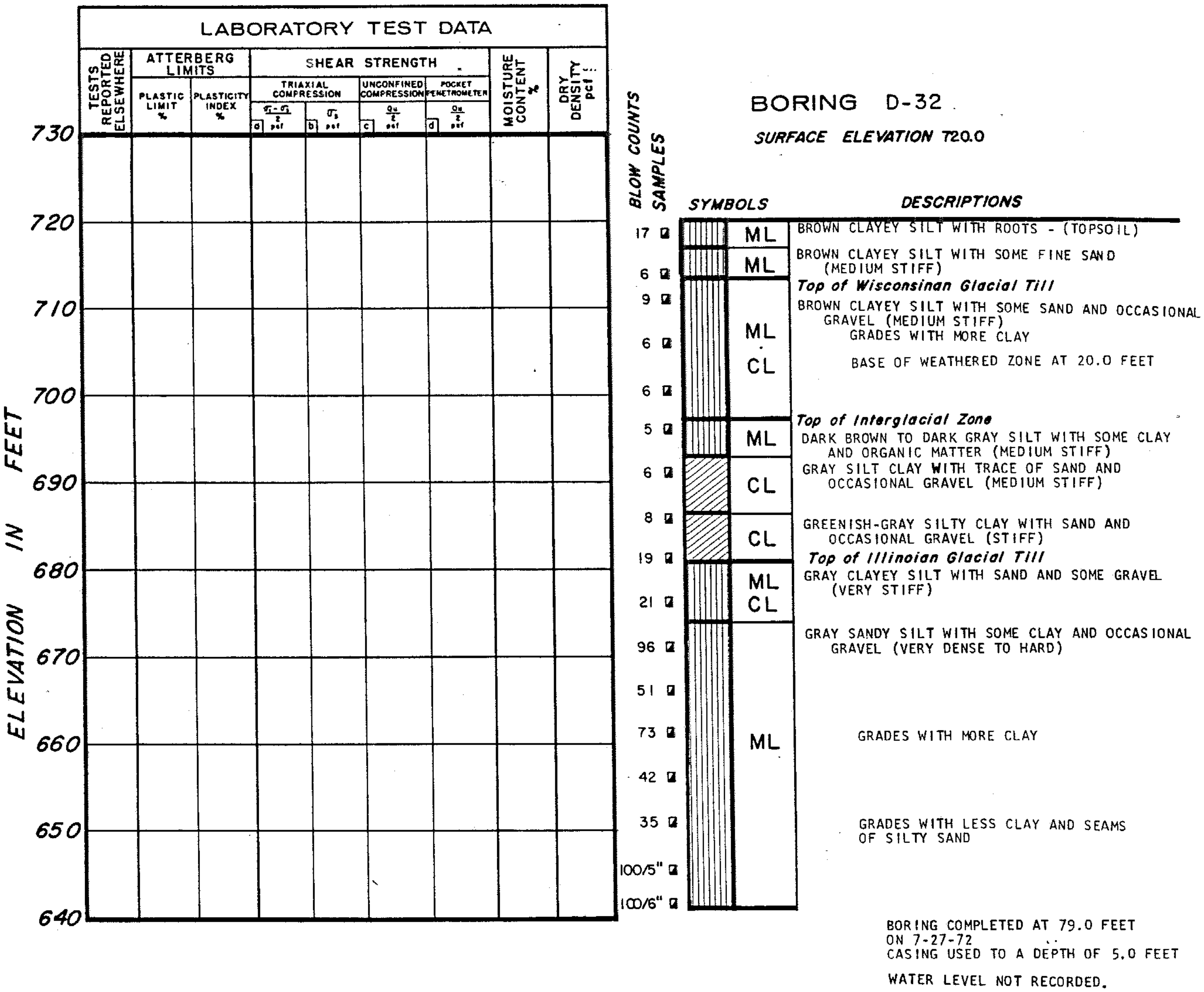


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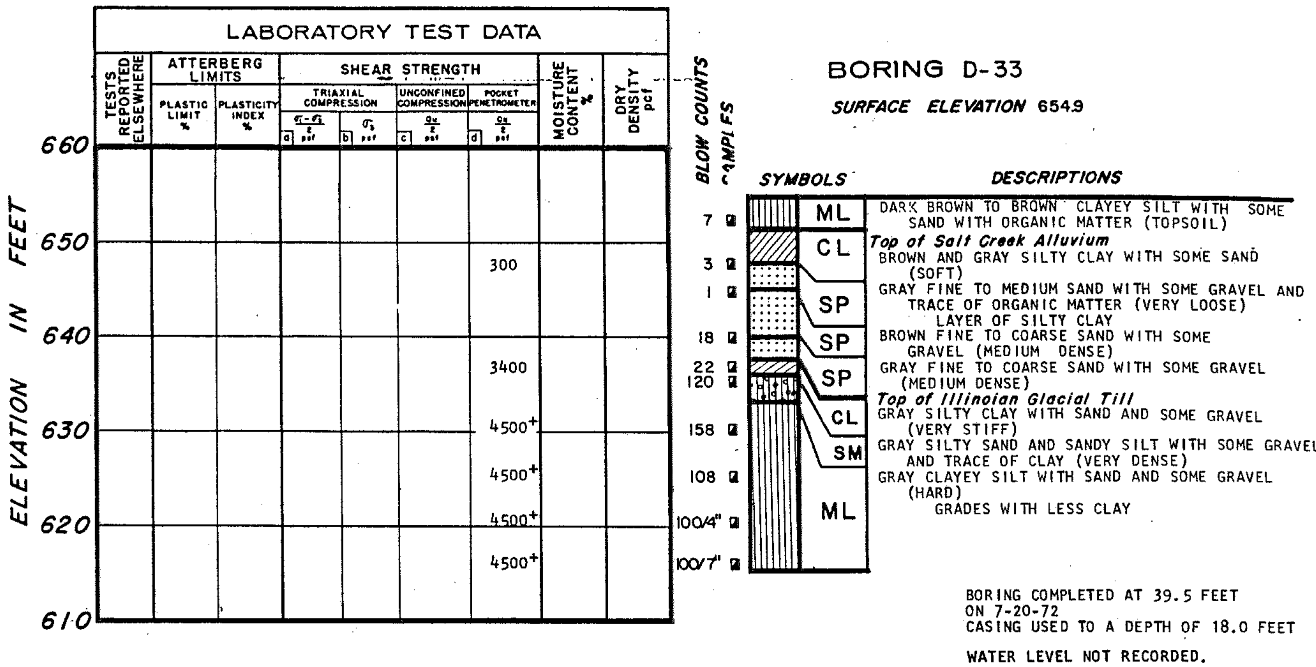
FIGURE 2.5-97

LOG OF BORING D-32

NOTE:

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



NOTE:

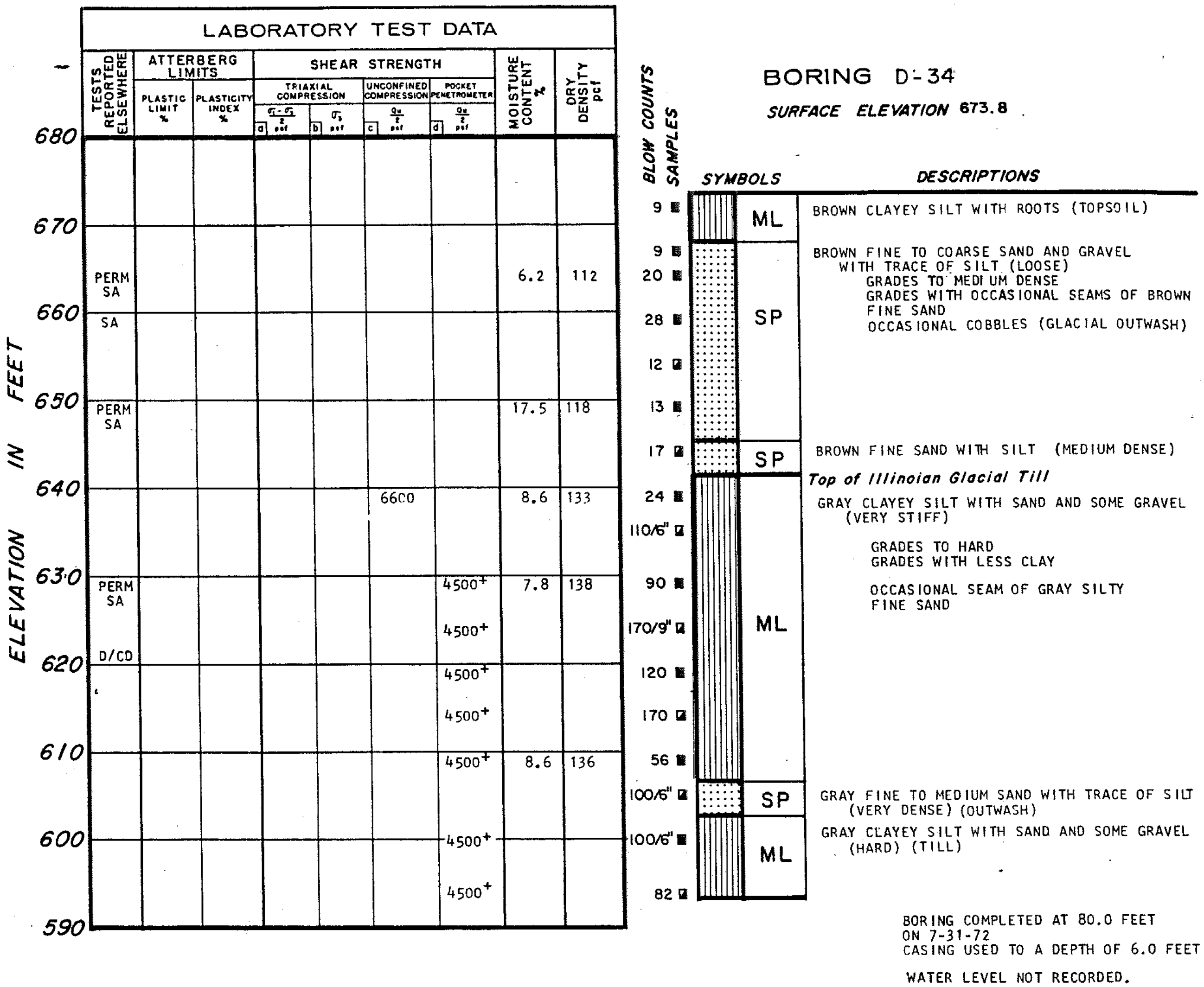
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-98

LOG OF BORING D-33



NOTE:

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-99

LOG OF BORING D-34

BORING D-35

SURFACE ELEVATION 677.8

LABORATORY TEST DATA: TESTS REPORTED ELSEWHERE; ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %); SHEAR STRENGTH (TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf, b σ_3 psf; UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf; POCKET PENETROMETER d $\frac{q_u}{2}$ psf); MOISTURE CONTENT %; DRY DENSITY pcf

ELEVATION IN FEET	POCKET PENETROMETER $\frac{q_u}{2}$ psf	BLOW COUNTS	SYMBOLS	DESCRIPTIONS
680		16	ML	LIGHT BROWN CLAYEY SILT WITH SOME ROOTS - (TOPSOIL)
		13	CL ML	BROWN SILTY CLAY WITH LAYERS OF CLAYEY SILT (STIFF) (WEATHERED LOESS) OCCASIONAL SEAMS OF SANDY SILT
670		6	SP SW	BROWN FINE TO COARSE SAND WITH TRACE OF GRAVEL (LOOSE) (GLACIAL OUTWASH)
		22		GRADES TO MEDIUM DENSE
660		47		GRADES WITH MORE GRAVEL GRADES TO DENSE
		16		GRADES WITH SOME SILT GRADES TO MEDIUM DENSE
650		50		GRADES WITH SEAMS OF SANDY SILT WITH SOME GRAVEL
	4500+	59	ML	*Top of Illinoian Glacial Till* GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
640	4500+	75		
	4500+	100/3"		GRADES WITH MORE GRAVEL
630	4500+	139		
	4500+	100/6"		
620	4500+	100/6"		
610				

BORING COMPLETED AT 59.0 FEET ON 7-31-72
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 2.5-100

LOG OF BORING D-35

BORING D-36

SURFACE ELEVATION 670.0

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{Q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{Q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS	SYMBOLS	DESCRIPTIONS
680												
670										7	ML	DARK BROWN CLAYEY SILT WITH ROOTS - (TOPSOIL)
							4500^+			18	ML	BROWN CLAYEY SILT (VERY STIFF) (WEATHERED LOESS)
660										10	CL SC	BROWN SANDY CLAY AND CLAYEY SAND WITH SOME GRAVEL (STIFF)
										4	SP SC	BROWN FINE TO COARSE SAND WITH CLAY (LOOSE)
650										7		GRADES TO SILTY VERY FINE SAND
												Top of Illinoian Glacial Till
							4500^+			28	CL ML	GRAY SILTY CLAY TO CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF)
640							4500^+			33		
							4500^+			89	ML	GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
630										145		OCCASIONAL SEAMS OF FINE SAND
							4500^+			151		
620							4500^+			100/4"		GRADES WITH MORE GRAVEL
										100/3"		
610							4500^+			180		

BORING COMPLETED AT 59.5 FEET ON 8-1-72
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 2.5-101

LOG OF BORING D-36

LABORATORY TEST DATA

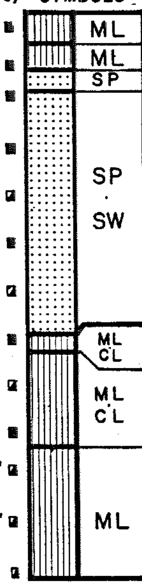
Blow Counts (Samples)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
7									
8								21.4	100
16									
22	PERM							12.2	116
54									
28									
7									
24	PERM SA						4500+	11.7	134
38									
30							4500+	10.1	134
100/6"							4500+		
100/6"							4500+		
170							4500+		

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620, 610

BORING D-37

SURFACE ELEVATION 677.7

SYMBOLS



DESCRIPTIONS

LIGHT BROWN CLAYEY SILT WITH ROOTS - (TOPSOIL)
BROWN CLAYEY SILT (MEDIUM STIFF) (WEATHERED LOESS)
BROWN FINE SAND WITH SOME SILT (MEDIUM DENSE)
BROWN FINE TO COARSE SAND WITH GRAVEL AND SILT (MEDIUM STIFF) (GLACIAL OUTWASH)
GRADES WITH MORE GRAVEL
GRADES TO VERY DENSE
GRADES WITH LESS GRAVEL
GRADES TO MEDIUM DENSE
GRADES TO LOOSE

Top of Illinoian Glacial Till

BROWN CLAYEY SILT WITH SAND AND SOME GRAVEL (VERY STIFF)
GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)
GRADES TO VERY STIFF
GRAY CLAYEY SILT WITH SAND AND SOME GRAVEL (HARD)

BORING COMPLETED AT 60.0 FEET ON 8-1-72
CASING USED TO A DEPTH OF 6.0 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 2.5-102

LOG OF BORING D-37

LABORATORY TEST DATA

ELEVATION IN FEET (690 – 620)

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{Q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{Q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts / Samples
						1750	17.9	100	5
						1000	21.0	106	4
									6
					4420	4500+	9.0	136	21
						4500+			65
C						4500+	20.2	111	21
						4500+	10.8	130	21
						4500+			34
					5940	4500+	9.4	135	50
					6700	4500+	9.2	135	73
						4500+			170
						4500+			100/4"

BORING D-40

SURFACE ELEVATION 681.1

SYMBOLS	DESCRIPTIONS
ML	DARK BROWN SILT WITH ROOTS -(TOPSOIL)
CL	YELLOWISH-BROWN SILTY CLAY WITH SOME FINE SAND
CL	*Top of Wisconsinan Glacial Till* LIGHT BROWN SILTY CLAY WITH SAND AND TRACE OF GRAVEL (STIFF)
SM	LIGHT BROWN SILTY FINE SAND WITH LAYERS OF MEDIUM TO COARSE SAND (LOOSE)
ML	*Top of Illinoian Glacial Till* GRAY SILT WITH SAND AND GRAVEL (HARD)
ML	BROWN AND GRAY SILT WITH ORGANICS (HARD)
ML	GRAY SILT WITH SAND AND GRAVEL (HARD)

OCCASIONAL SAND LAYERS

BORING COMPLETED AT 55.5 FEET
ON 4-19-73
CASING USED TO DEPTH OF 15.0 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 2.5-103

LOG OF BORING D-40

BORING D-41

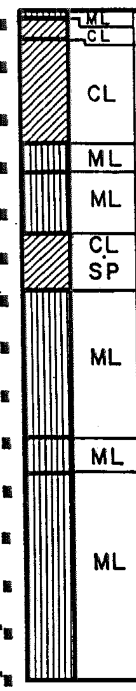
SURFACE ELEVATION 700.4

LABORATORY TEST DATA

ELEVATION IN FEET (700 – 620)

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION b σ_3 psf	UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS / SAMPLES
						1200			5
						2000			8
					1540	2400	14.9	135	12
						4200			12
						3500			15
							12.6	121	24
						4500+	10.2	133	37
						4500+			100/5"
					12,560	4500+			105
						2500			18
C						4500+	10.4	134	26
									68
						4500+	3.0	147	72
						4500+			100/4"
						4500+	7.2	141	100/5"

SYMBOLS ***DESCRIPTIONS***



BROWN CLAYEY SILT WITH ROOTS - TOPSOIL
LIGHT BROWN SILTY CLAY WITH SOME ROOTS
Top of Wisconsinan Glacial Till
BROWN SILTY CLAY WITH SAND AND GRAVEL (STIFF)
GRAY CLAYEY SILT WITH RUST STAINS AND SOME MEDIUM SAND (HARD)
ORANGE CLAYEY SILT WITH SAND AND GRAVEL AND TRACE OF CLAY (VERY STIFF)
Top of Interglacial Zone
FINE-MEDIUM SAND AND BROWN SILTY CLAY WITH SAND AND GRAVEL LAYERS AT 27.5 AND 29 FEET
Top of Illinoian Glacial Till
GRAY SILT WITH SAND AND GRAVEL (HARD)
GRAY CLAYEY SILT WITH ORGANICS (VERY STIFF)
GRAY SILT WITH SAND AND GRAVEL (HARD)

BORING COMPLETED AT 71.0 FEET
ON 4-20-73
CASING USED TO A DEPTH OF 10 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 2.5-104

LOG OF BORING D-41

LABORATORY TEST DATA

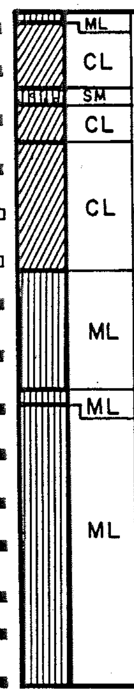
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
COMP						2500			8
						4500			16
COMP						2500			13
COMP						4500			10
									15
									34
						4500+	12.9	128	137
						4500+			55
						2000	15.8	118	31
					5870	4500+	10.2	132	43
						4500+			39
						4500+			49
						4500+			83
						4500+			120/6"
									100/3"

ELEVATION IN FEET: 700, 690, 680, 670, 660, 650, 640, 630, 620

BORING D-42

SURFACE ELEVATION 696.1

BLOW COUNTS / SAMPLES — SYMBOLS — DESCRIPTIONS



DARK BROWN CLAYEY SILT WITH GRAVEL AND COBBLES WITH ROOTS -TOPSOIL

Top of Wisconsinan Glacial Till

BROWN SILTY CLAY WITH FINE TO COARSE SAND (HARD)

YELLOWISH-BROWN SILTY FINE SAND

BROWN AND GRAY SILTY CLAY WITH TRACE OF ORGANICS (VERY STIFF)

BLUE AND GRAY SILTY CLAY WITH FINE SAND AND FINE GRAVEL (HARD)

GRADES WITH MORE FINE GRAVEL

Top of Illinoian Glacial Till

GRAY SILT WITH FINE SAND AND COARSE SAND SAND LAYER AT 24-24.5 (HARD)

GRADING WITH MORE CLAY AND FINE GRAVEL OCCASIONAL MEDIUM SAND STRINGERS

BROWN SILT GRADING DARK GREY

BLUISH-GREY CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)

GRADING GRAY WITH MORE FINE GRAVEL

OCCASIONAL COARSE GRAVEL

OCCASIONAL COARSE GRAVEL

GRADING WITH MORE FINE SAND

BORING COMPLETED AT 71.0
ON 4-5-73
CASING USED TO A DEPTH OF 20 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 2.5-105

LOG OF BORING D-42

BORING D-43

SURFACE ELEVATION 668.9

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS / SAMPLES
670										
							4500+	8.4	138	90
660										
							4500+			50
						4020		11.3	130	23
650										
							4500+			36
	COMP									
							4500+			43
640										
						8230	4500+	7.9	134	51
										125/5"
630										
							4500+			100/6"
										110/6"
620										
										150/2"
610										

SYMBOLS	DESCRIPTIONS
OL	BROWN CLAYEY SILT WITH ROOTS - TOPSOIL
CL	YELLOWISH-BROWN SILTY CLAY WITH FINE SAND AND FINE GRAVEL OCCASIONAL BOULDER
	Top of Illinoian Glacial Till
ML	BROWN SANDY SILT WITH FINE AND COARSE SAND(HARD)
ML	GRAY CLAYEY SILT WITH FINE TO COARSE SAND (HARD) GRADING WITH MORE GRAVEL 6 INCH SAND SEAM 43-43.5 3 INCH SAND SEAM 47 FEET

BORING COMPLETED AT 50.4 FEET ON 4-10-73
CASING USED TO A DEPTH OF 10 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 2.5-106

LOG OF BORING D-43

LABORATORY TEST DATA

ELEVATION IN FEET

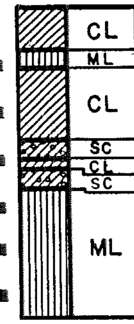
660, 650, 640, 630, 620

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf (d)	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf (b)	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{Qu}{2}$ psf (c)	SHEAR STRENGTH: POCKET PENETROMETER $\frac{Qu}{2}$ psf (d)	MOISTURE CONTENT %	DRY DENSITY pcf
						2000		
						1000	31.0	92
						1000		
						4500+		
					10,640	4500+	7.1	140

BORING D-44

SURFACE ELEVATION 660.0

BLOW COUNTS *SAMPLES* | *SYMBOLS* | *DESCRIPTIONS*



BLOW COUNTS	SYMBOL	DESCRIPTIONS
	CL	LIGHT BROWN SANDY CLAY WITH OCCASIONAL GRAVEL ***Top of Salt Creek Alluvium***
8	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 *Top of Illinoian Glacial Till*
34 125 100/3"	ML	GRAY CLAYEY SILT WITH SAND AND OCCASIONAL GRAVEL (HARD) GRADES VERY SANDY

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

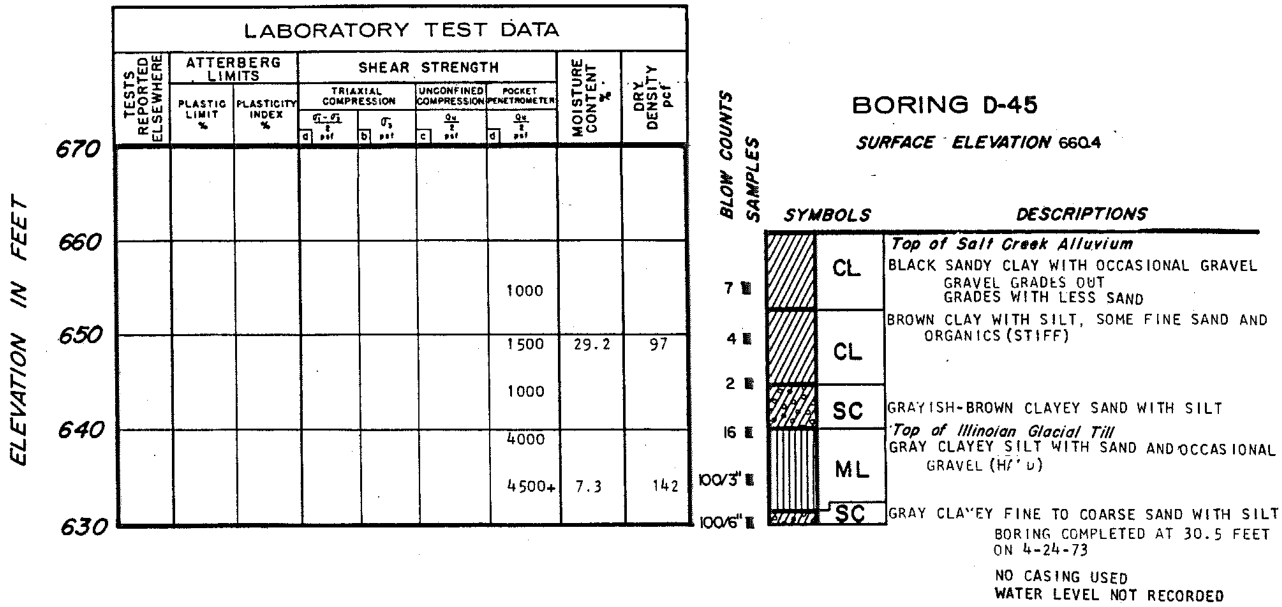
NOTE:

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 2.5-107

LOG OF BORING D-44



NOTE:

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-108

LOG OF BORING D-45

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						4000	20.6	106	7
						3000			13
						3000	14.6	119	16
					5580	4500+	12.5	124	24
SA									150/6"
									24
						2000	20.2	109	11
									13
						4500+	11.0	132	23
						4500+	8.1	136	63
						4500+			100/3"
						4500+			100/4"
						4500+	8.6	135	100/5"
						4500+			50/1"
						4500+	7.6	139	100/5"
						4500+			100/5"
						4500+			100/5"

ELEVATION IN FEET: 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620

BLOW COUNTS SAMPLES

BORING D-46

SURFACE ELEVATION 710.5

SYMBOLS	DESCRIPTIONS
CL	***Top of Wisconsinan Glacial Till*** BROWN SILTY CLAY WITH FINE TO COARSE SAND (VERY STIFF) OCCASIONAL GRAVEL, SOME STRINGERS OF MEDIUM TO FINE SAND; GRADES TO HARD
GW	***Top of Interglacial Zone*** YELLOWISH-BROWN FINE GRAVEL WITH SAND AND CLAY INCLUSIONS (VERY DENSE)
SP	BROWN MEDIUM TO COARSE SAND WITH FINE GRAVEL
CL	DARK GRAY SILTY CLAY WITH OCCASIONAL BLACK ORGANIC SPECKS (VERY STIFF)
ML	BLUE AND GREEN CLAYEY SILT WITH SAND (STIFF)
ML	***Top of Illinoian Glacial Till*** GRAY SILT WITH SAND AND GRAVEL (HARD); SOME SAND LAYERS; OCCASIONAL GRAYISH-BROWN SILT LAYER
ML	BROWN AND GRAY SILT WITH BLACK ORGANICS AND TRACE OF PIECES OF WOOD
ML	BROWN AND GRAY SILT WITH SAND AND GRAVEL (HARD); OCCASIONAL GRAVEL LAYER

BORING COMPLETED AT 80.3 FEET
ON 4-18-73
CASING USED TO A DEPTH OF 10 FEET

A PIEZOMETER WAS INSTALLED IN D-46A ON 4-24-73. BORING D-46A WAS AUGERED 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

BORING D-47

SURFACE ELEVATION 715.7

LABORATORY TEST DATA

Elevation axis: ELEVATION IN FEET, 720 to 620 (720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620)

BLOW COUNTS / SAMPLES	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (σ1-σ3)/2 psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION qu/2 psf	SHEAR STRENGTH: POCKET PENETROMETER qu/2 psf	MOISTURE CONTENT %	DRY DENSITY pcf
11									
25						3150	4500+	14.1	121
55							4500+		
22									
33	SA						3500	14.0	122
27									
14							3500		
17							4500+		
100/4"							4500+	7.3	131
100/5"							4500+		
200/3"							4500+		
104							4500+	8.3	133
95							4500+		
100/5"							4500+	5.2	144
145							4500+	7.7	139
100/5"							4500+	7.7	143
100/5"									
100/6"								7.3	143

SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	BROWN CLAYEY SILT WITH ROOTS - TOPSOIL
	Top of Wisconsinan Glacial Till
CL	REDDISH-BROWN SILTY CLAY WITH FINE SAND
SP-SM	REDDISH-BROWN SILTY FINE TO MEDIUM SAND WITH SOME GRAVEL (MOTTLED)
ML	BROWN CLAYEY SILT WITH SAND AND GRAVEL (HARD)
ML	BROWN SILT WITH SAND AND GRAVEL AND SOME CLAY (VERY DENSE)
	Top of Interglacial Zone
SP	REDDISH-BROWN FINE TO COARSE SAND WITH GRAVEL AND REDDISH-BROWN CLAY (MEDIUM DENSE) GRADING MORE SILTY CLAY
CL	GRAY CLAY WITH SAND AND GRAVEL (VERY STIFF) (SAND LAYER)
GP-SP	FINE GRAVEL WITH COARSE SAND
CL	GREENISH-BLACK SILTY CLAY WITH TRACE OF FINE SAND (VERY STIFF)
ML	BLUE AND GREEN CLAYEY SILT WITH SAND AND GRAVEL (HARD)
	Top of Illinoian Glacial Till
ML	GRAY SILT WITH SAND AND GRAVEL (LAYERS OF SAND AND GRAVEL) (HARD)
	SAND AND GRAVEL LAYERS GRADE OUT
	LAYER OF BROWN SILT AT 60 FEET

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

A PIEZOMETER WAS INSTALLED IN D-47A ON 4-24-73. BORING D-47A WAS AUGERED TO 38.0 FEET ADJACENT TO D-47. A 3/4 INCH CPVC PIPE WITH A CAPPED TIP WAS PLACED AT ELEVATION 677.7. THE PIPE WAS SLOTTED FROM ELEVATION 677.7 TO 707.7. PEA GRAVEL WAS PLACED FROM ELEVATION 677.7 TO 713.7. A CONCRETE SEAL WAS PLACED FROM ELEVATION 713.7 TO 715.7.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
13.3	4-25-73
14.3	4-27-73
14.4	4-30-73
18.1	6-12-73
18.5	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 2.5-110

LOG OF BORING D-47

LABORATORY TEST DATA

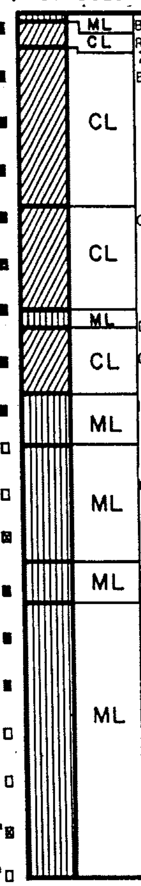
ELEVATION IN FEET: 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						2200			6
TX/CU PP						2000			10
TX/CU PP						4500			26
						4500	12.6	124	23
					4190	4000	12.4	124	21
TX/CU PP						4000			20
						4000			11
					1420	2250	22.6	104	9
						2500	16.3	117	14
						4500+			89
						4500+	7.7	143	100/5"
									100/5"
					2560	2750	17.0	117	47
						4500+	9.3	135	86
						4500+			145
							7.3	143	123
						4500+	8.4	140	137
						4500+			125/6"
						4500+			80/2"

BORING D-48

SURFACE ELEVATION 715.3

BLOW COUNTS SAMPLES | SYMBOLS | DESCRIPTIONS



ML BROWN CLAYEY SILT WITH ROOTS - TOPSOIL

CL REDDISH-BROWN CLAY WITH SOME ROOTS

Top of Wisconsinan Glacial Till

CL BROWN SILTY CLAY WITH SAND OCCASIONAL GRAVEL AND ORGANICS (HARD)

GRADING WITH MORE GRAVEL

CL GRAY SILTY CLAY WITH SAND AND GRAVEL (HARD)

Top of Interglacial Zone

ML DARK BROWN SILT WITH SOME ORGANICS, TRACE OF CLAY

CL DARK GRAY SILTY CLAY, SOME SAND, GRAVEL, AND ORGANICS (VERY STIFF)

ML BLUE AND GREEN CLAYEY SILT WITH SAND AND GRAVEL (VERY STIFF)

Top of Illinoian Glacial Till

ML GRAY SILT WITH SAND AND GRAVEL (HARD)

ML GREEN AND BROWN SILT, SOME CLAY AND BLACK ORGANICS (VERY STIFF)

GRADING TO GRAY WITH SOME FINE SAND

ML GRAY AND BROWN SILT WITH SAND AND GRAVEL, SOME CLAY (HARD)

GRADING TO GRAY

BORING COMPLETED AT 90.6 FEET
ON 4-13-73
CASING USED TO A DEPTH OF 15 FEET

A PIEZOMETER WAS INSTALLED IN D-48A ON 4-24-73. BORING D-48A WAS AUGERED TO 39.0 FEET ADJACENT TO D-48. A 3/4 INCH CPVC PIPE WITH A CAPPED TIP WAS PLACED AT ELEVATION 676.3. THE PIPE WAS SLOTTED FROM ELEVATION 676.3 TO 706.3. PEA GRAVEL WAS PLACED FROM ELEVATION 676.3 TO 713.3. A CONCRETE SEAL WAS PLACED FROM ELEVATION 713.3 TO 715.3.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
25.5	4-25-73
25.6	4-27-73
28.7	6-12-73
28.0	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 2.5-111

LOG OF BORING D-48

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression [b] σ_3 psf	Shear Strength: Unconfined Compression [c] $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer [d] $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
						700			4
						1000	12.0	125	4
					3600	3000	10.9	130	10
						4500+	7.3	143	63
						4500+			83
						4500+			100/3"
						4500+			100/3"
						4500+			100/5"

ELEVATION IN FEET: 670, 660, 650, 640, 630, 620

BORING D-49

SURFACE ELEVATION 660.6

BLOW COUNTS / SAMPLES — SYMBOLS — DESCRIPTIONS

ML — DARK GRAY ORGANIC CLAYEY SILT WITH SOME SAND (TOPSOIL) (MEDIUM STIFF)

CL — LIGHT GREEN CLAY WITH SAND AND GRAVEL (STIFF TO VERY STIFF)

LAYERS OF MEDIUM TO COARSE SAND GRADING TO GRAY

Top of Illinoian Glacial Till

ML — GRAY SILT WITH SAND AND GRAVEL (HARD)

BORING COMPLETED AT 36.0 FEET ON 4-25-73
CASING USED TO A DEPTH OF 10 FEET
WATER LEVEL NOT RECORDED

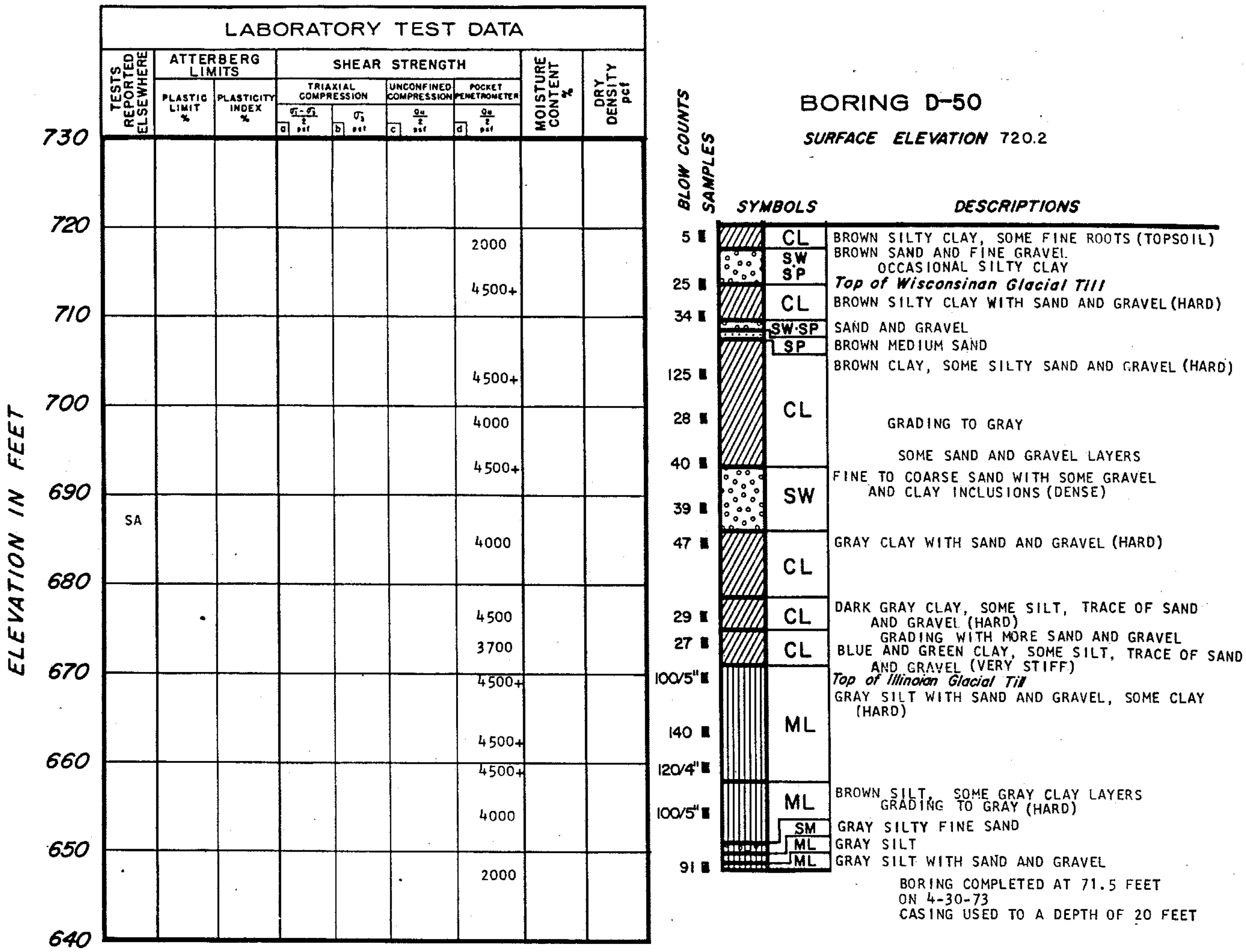
NOTE:

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 2.5-112

LOG OF BORING D-49



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

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 2.5-113

LOG OF BORING D-50

BORING D-51

SURFACE ELEVATION 671.1

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS / SAMPLES
0										
5										9 SS
10	MA						4.8		7.5	15 SS
15	MA						3.8		6.0	24 SS
20							12.1			14 SS
25					12.2	6.5	11.0	135		19 SS
30							8.7	137		35 SS
35							9.7			35 SS
40							6.4	139		120/6" SS
45										
50										
55										
60										
65										
70										
75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
CL	Brown, silty clay.	666.1
	TOP OF OUTWASH	
SC	Brown, clayey, fine to coarse sand, and clay, some fine tc coarse gravel.	
SW • SM	Brown, fine to coarse sand and fine gravel, trace silt and clay.	
SP • SM	Brown, fine to coarse sand, trace fine gravel, trace silt and clay.	
	TOP OF ILLINOIAN TILL	651.6
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	

Boring completed at 39.0 feet on 4-8-75.
Water level at 17.0 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 2.5-114

LOG OF BORING D-51

BORING D-52

SURFACE ELEVATION 668.5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5										4	SS
10	MA								120	24	SS
15										2	SS
20										7	SS
25	MA								120	12	SS
30					11.0	8.3	8.4	140		54	SS
35	MA						6.0	140	40.6	100/5"	SS
40							7.2			100/4"	SS
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
CL	Brown, silty clay, trace fine to coarse sand.	
	TOP OF OUTWASH	666.0
GC	Brown, clayey, fine to coarse gravel.	
SW-SM	Brown, fine to coarse sand, trace fine to coarse gravel, trace silt.	
ML	Gray, silt, some fine to coarse sand, trace fine gravel.	
SW-SM	Brown, fine to coarse sand, some fine gravel, trace silt, cobbles noted.	
	TOP OF ILLINOIAN TILL	642.0
ML-CL	Gray, clayey silt, some fine to medium sand, trace fine gravel.	
SM-ML	Gray, fine to coarse sand and clayey silt, trace fine gravel.	

Boring completed at 40.0 feet on 4-7-75.
Water level at 8.5 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 2.5-115

LOG OF BORING D-52

BORING D-53

SURFACE ELEVATION 672.1

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5										6	SS
10	MA								140	57	SS
15	MA								130	55	SS
20										24	SS
25	MA								120	14	SS
30							7.4			52	SS
35	MA						9.3		500	77	SS
40										100/5"	SS
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	Brown, silty clay.	
	TOP OF OUTWASH	666.1
SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt and clay.	
ML	Gray, silt, some fine to coarse sand.	
SW • SM	Gray, fine to coarse sand, some fine to coarse gravel.	
	TOP OF ILLINOIAN TILL	645.1
ML • SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	

Boring completed at 39.0 feet on 4-2-75.
Water level at 17.5 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 2.5-116

LOG OF BORING D-53

BORING D-54

SURFACE ELEVATION 668.0

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
4										4	SS
9	MA								180	4	SS
14	MA								110	7	SS
19										19	SS
24							7.8	137		53	SS
29					11.1	8.1	7.5			43	SS
34							127 / 9.3			100 / 3"	SS
39							6.4			136	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	Brown, silty clay.	
	TOP OF OUTWASH	664.5
SM	Brown, fine to coarse sand, some silt, trace fine gravel.	
SW-SM	Brown, fine to coarse sand, trace silt, trace fine gravel.	
	TOP OF ILLINOIAN TILL	649.0
ML-SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
SM	Gray, silty, fine sand, trace fine gravel.	
ML-SM	Gray, clayey silt and fine sand, little fine gravel.	

Boring completed at 40.0 feet on 4-7-75.
Water level at 15.0 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 2.5-117

LOG OF BORING D-54

BORING D-55

SURFACE ELEVATION 678.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5										7	SS
10	MA								570	6	SS
15	MA								270	1/18"	SS
20										-	SS
25							123			14	SS
	C / PERM				11.2	14.0	149	120			ST
30							142	126		45	SS
35							8.0			49	SS
40							7.8	136		41	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	Brown, silty clay	
	TOP OF OUTWASH	
ML	Brown, clayey silt and fine to coarse sand, trace fine gravel.	
SM	Brown, silty, fine to coarse sand, some clay, trace fine gravel. -19.0 to 21.5 feet, cobbles and large gravel noted.	
	TOP OF WISCONSINAN TILL	654.0
CL	Gray, silty clay, little fine to coarse sand, trace fine gravel. -30.0 to 33.0 feet, cobbles and large gravel noted.	
	TOP OF ILLINOIAN TILL	
ML • SM	Gray, clayey silt and fine sand, trace fine gravel.	

Boring completed at 40.0 feet on 4-3-75.
Water level at 12.5 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 2.5-118

LOG OF BORING D-55

BORING D-56

SURFACE ELEVATION 686.8

Depth (feet)	Tests reported elsewhere	Shear strength: Triaxial compression $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	Unconfined compression $\frac{q_u}{2}$ psf	Atterberg limits: Plastic limit %	Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
5										6	SS
10										4	SS
15	MA								19.0	13	SS
20										20	SS
25										28	SS
30	MA								10.0	5	SS
35							23.7			10	SS
40							11.2			26	SS
45							7.5	138		78	SS
50										55	SS

Symbols	Descriptions	Elevation (feet)
CL	Brown, silty clay.	
	TOP OF OUTWASH	682.3
SM	Brown, fine to coarse sand, some silt and clay. -trace fine gravel.	
SP	Brown, fine sand.	
SW-SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
SP	Light brown, fine sand, trace fine gravel, trace silt.	
SW-SM	Gray, fine to coarse sand, some fine to coarse gravel, trace silt.	
	TOP OF ILLINOIAN TILL	647.3
ML-SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
ML	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

BORING D-57

SURFACE ELEVATION 694.0

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{Q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5							236			6	SS
10							229			2	SS
15							127	124		21	SS
20										52	SS
25	MA								5.0	29	SS
30					12.6	8.2	7.9	135		69	SS
35							7.1	137		79	SS
40										54	SS
45	MA						149		525	25	SS
50	MA						8.4	140	475	58	SS
55							7.0			95	SS
60										80	SS
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	Brown, silty clay, trace fine to coarse sand.	
	TOP OF WISCONSINAN TILL	687.5
ML • CL	Brown, clayey silt, trace fine to coarse sand.	
	-some fine to coarse sand, trace fine gravel.	
SW • SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
	-26.0 to 27.0 feet, cobbles and large gravel noted.	
	TOP OF ILLINOIAN TILL	
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
	-37.0 feet, cobbles noted.	
ML • SM	Gray, clayey silt and fine to medium sand.	
SM • ML	Gray, clayey silt and fine to coarse sand, trace fine gravel.	

Boring completed at 60.0 feet on 4-8-75.
Water level at 12.5 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 2.5-120

LOG OF BORING D-57

BORING D-58

SURFACE ELEVATION 695.7

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5										6	SS
10	MA						20.7		25.5	4	SS
15							22.7	115		20	SS
20							21.8			9	SS
					13.1 / NP	14.2	14.8 / 10.8	124			ST
25	MA								14.0	15	SS
30					11.9	7.1	11.7	143		33	SS
35							10.3	136		79	SS
40							10.3			26	SS
45	MA						13.2		46.5	37	SS
50	MA						11.2	135	51.0	23	SS
55							9.1	141		68	SS
60							11.0			42	SS
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
CL	Brown, silty clay, trace fine sand.	
	TOP OF OUTWASH	688.2
SM	Brown, silty, fine to coarse sand, trace fine gravel.	
	TOP OF WISCONSINAN TILL	682.2
CL	Brown, silty clay, trace fine to coarse sand, trace fine gravel. - 18.5 feet color grades to gray.	
SM	Reddish brown, fine to coarse sand, some fine gravel, some silt and clay.	
	TOP OF ILLINOIAN TILL	669.7
ML	Gray, clayey silt, trace fine to coarse sand, trace fine gravel.	
ML - SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
SM - ML	Gray, clayey silt and fine to medium sand.	
ML - SM	Greenish gray to gray, clayey silt and fine to coarse sand, trace fine gravel. -53.3 feet color grades to gray.	
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

BORING D-59

SURFACE ELEVATION 697.2

Depth (feet)	Tests reported elsewhere	Shear strength: Triaxial compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Shear strength: Triaxial compression σ_3 psf	Shear strength: $\frac{q_u}{2}$ psf	Atterberg limits: Plastic limit %	Atterberg limits: Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts / Samples
5										6 SS
10							208	115		6 SS
15	MA						134	126	620	14 SS
20	MA						133	125	620	27 SS
25							130	122		14 SS
				5600			8.9	138		ST
30							124			36 SS
35	MA						8.0	136	525	57 SS
40										63 SS
45							223	114		39 SS
50	C / PERM / MA				27.0	26.7	269	102	980	ST
							104			20 SS
55										80 SS
60							8.7			58 SS

Symbols	Descriptions	Elevation (feet)
CL	TOP OF LOESS Brown, silty clay.	
	TOP OF WISCONSINAN TILL	692.2
CL	Brown, silty clay, little fine to coarse sand, trace fine gravel.	
	-13.5 to 14.0 feet, fine to coarse sand lense noted.	
ML-CL	Brown, clayey silt, some fine to coarse sand, trace fine gravel.	
	TOP OF INTERGLACIAL ZONE	675.2
CL	Greenish-gray, silty clay, some fine to coarse sand, trace fine gravel.	
SM	Gray, silty, fine sand, trace fine gravel.	
	TOP OF ILLINOIAN TILL	663.7
ML-SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
MH	Gray, silt, varved.	
SM	Gray, fine to coarse sand, silt lenses noted.	
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	

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

BORING D-60

SURFACE ELEVATION 701.7

Depth (feet)	Tests reported elsewhere	Shear strength: Triaxial compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: Triaxial compression σ_3 psf	Shear strength: Unconfined compression $\frac{q_u}{2}$ psf	Atterberg limits: Plastic limit %	Atterberg limits: Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts / Samples
0–5							19.0			7 SS
5–10					15.2	9.9	13.3	123		23 SS
10–15							12.0			26 SS
15–20				5100						ST
15–20							11.8			18 SS
20–25							20.4	116		
20–25							16.6			24 SS
25–30					11.4	14.4	12.6	126		ST
25–30							17.7			21 SS
30–35							17.5			
30–35							20.5			
30–35							9.8			41 SS
35–40					11.8	6.0	8.1			176 SS
40–45							7.5			75 SS
45–50							11.0			37 SS
50–55	TX(UU)	3584	1434		16.1	23.7	15.9	116		ST
50–55										24 SS
55–60	MA								110	125 SS
60–65	SA									103 SS
65–70	MA								225	100/5" SS

Symbols	Descriptions	Elevation (feet)
	TOP OF WISCONSINAN TILL	
CL - ML	Brown, silty clay, trace fine to coarse sand, trace fine gravel.	
	-some fine to coarse sand.	
	-16.5 feet, color grades to medium dark gray, mottled light brown.	
SP	Gray, fine sand.	
	TOP OF INTERGLACIAL ZONE	681.2
ML	Gray, silt, trace organics.	
SM	Gray, fine to coarse sand, some silt.	
CL	Gray, silty clay, little fine to coarse sand, trace fine gravel, trace organics.	
	-color grades to greenish-gray, some fine to coarse sand.	
	-33.5-34.0 feet, grayish-brown, fine sand, trace silt and fine gravel.	
	-34.0 to 34.5 feet, greenish-gray, silty clay, trace fine to coarse sand and fine gravel.	
	TOP OF ILLINOIAN TILL	667.2
ML - CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel.	
ML - CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
SW - SM	Gray, fine to coarse sand, some fine gravel, trace silt and clay.	
ML - CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
SM	Gray, fine to coarse sand, some silt and clay.	

Boring completed at 69.0 feet on 4-9-75.
Water level at 23.5 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 2.5-123

LOG OF BORING D-60

BORING D-61

SURFACE ELEVATION 708.6

Depth (feet)	Tests reported elsewhere	Triaxial compression $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	Unconfined compression $\frac{q_u}{2}$ psf	Plastic limit %	Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
5							17.8			10	SS
10							12.8	126		13	SS
15							12.4			31	SS
20							14.9	125		17	SS
25										19	SS
26	TXUUU	4199	1434		11.4	14.4	12.6	126			ST
30							21.0			10	SS
31	TXUUU PERM	2151	2868		17.3	24.7	19.3	110			ST
35							19.7			14	SS
40							12.9	137		29	SS
45							8.8	132		81	SS
50							9.1			100	SS
55							28.2			40	SS
60							11.7	133		27	SS
65							8.8			67	SS
70							8.2			77	SS

Symbols	Descriptions	Elevation (feet)
	TOP OF WISCONSINAN TILL	
CL	Reddish brown, silty clay, some fine to coarse sand, trace fine gravel.	
SM	Brown, silty, fine to coarse sand, trace fine gravel.	
CL	Brown, silty clay, trace fine to coarse sand, trace fine gravel.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel.	
	TOP OF INTERGLACIAL ZONE	680.6
ML	Dark gray, silt, little fine to coarse sand.	
CL	Greenish-gray, silty clay, some organics. -organics grade out. -grades to some fine to coarse sand, trace fine gravel.	
	TOP OF ILLINOIAN TILL	669.1
ML • SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
ML	Gray, silt.	
ML • CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	

Boring completed at 70.0 feet on 4-11-75.
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 2.5-124

LOG OF BORING D-61

BORING D-62

SURFACE ELEVATION 714.2

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5										8	SS
10							141			14	SS
	TXCUPP	922	1434 / 2868		11.6	13.4	138	124			ST
15					14.5	11.5	131	124		15	SS
20										16	SS
25							136	129		20	SS
30										13	SS
35							190			15	SS
40							199	114		12	SS
45										27	SS
50										63	SS
55							111	139		104	SS
60							234			31	SS
65							109			20	SS
70										50	SS
75							101	140		68	SS
80										100/5"	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF WISCONSINAN TILL	
CL	Brown, silty clay, some fine to coarse sand, trace fine gravel.	
CL	Gray, silty clay, trace fine to coarse sand, trace clay, trace fine gravel.	
	TOP OF INTERGLACIAL ZONE	680.7
CL	Greenish-gray, silty clay, trace organics, trace fine sand.	
	TOP OF ILLINOIAN TILL	670.7
ML • CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
ML	Gray, silt, trace clay and fine sand, trace organics.	
ML • CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	

Boring completed at 80.0 feet on 4-10-75.
Water level at 24.0 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 2.5-125

LOG OF BORING D-62

BORING D-63

SURFACE ELEVATION 721.7

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
~4										7	SS
~9					14.8	11.8	118	124		15	SS
15	MA						9.7		19.5	50	SS
~19							147	126		19	SS
~24					15.0	12.2	124	129		32	SS
~29							140	128		23	SS
~34							157	127		26	SS
~39							158			22	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
CL-ML	Brown, silty clay, manganese nodules noted.	
	TOP OF WISCONSINAN TILL	715.7
CL	Brown, silty clay, trace fine to coarse sand, trace fine gravel.	
SM	Brown, silty, fine to coarse sand, trace fine gravel.	
CL	Gray, silty clay, trace fine to coarse sand, trace fine gravel.	
SM	Brown, silty, fine to coarse sand, some fine gravel.	
ML-CL	Dark gray, silty clay, some fine to coarse gravel, trace fine to coarse sand.	
	TOP OF INTERGLACIAL ZONE	682.7
CL	Greenish gray, silty clay, trace organics trace fine sand.	

Boring completed at 40.0 feet on 4-8-75.
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 2.5-126

LOG OF BORING D-63

BORING D-64

SURFACE ELEVATION 712.2

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

Tests Reported Elsewhere	Shear Strength – Triaxial Compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Shear Strength – Triaxial Compression σ_3 psf	Shear Strength $\frac{q_u}{2}$ psf	Atterberg Limits – Plastic Limit %	Atterberg Limits – Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts / Samples	Symbols	Descriptions	Elevation (Feet)
										CL • ML	TOP OF LOESS	
									12 SS		Brown, silty clay, trace fine sand.	
										CL	TOP OF WISCONSINAN TILL Brown, silty clay, some fine to coarse sand, trace fine gravel.	709.7
						137	126		19 SS			
						121	124		14 SS	CL	Gray, silty clay, trace fine to coarse sand, trace fine gravel.	
						141			27 SS			
									20 SS			
C / PERM / TXUUU	3175	2868		19.3	11.8	179	114		ST		TOP OF INTERGLACIAL ZONE	684.2
						191			14 SS	CL	Grayish-green, silty clay, trace organics, trace fine sand.	
			1300			17.5 / 17.9	118 / 116		14 SS			
										ML	Greenish-gray, clayey silt, little fine to coarse sand, trace fine to coarse gravel, trace organics.	
						142			20 SS			
											-grades bluish-gray. TOP OF ILLINOIAN TILL	668.7
									38 SS	ML • SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
			6500			9.7	140		121 SS			
						9.2			60 SS	ML • CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
						130	130		32 SS		-grades to bluish-gray.	
						105			32 SS		-grades to gray.	
						8.3	141		71 SS			
									31 SS	ML	Gray, silt, some fine to coarse sand lenses, cobbles noted.	
						198	117		100/3" SS			

Boring completed at 78.7 feet on 4-9-75.
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 2.5-127

LOG OF BORING D-64

BORING D-65

SURFACE ELEVATION 724.1

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS / SAMPLES
0										
5							17.3			10 SS
10	HA						11.6		51.5	20 SS
15					15.5	11.5	12.5	125		30 SS
20							10.7			50 SS
25					11.8	15.8	11.6	130		47 SS
30										36 SS
35							13.6			18 SS
40							33.8			17 SS
45							19.6	108		16 SS
50							12.8			22 SS
55							9.5			147 SS
60										113 SS
65							7.5			99 SS
70										33 SS
75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Brown, silty clay	
	TOP OF WISCONSINAN TILL	721.6
CL	Brown, silty clay, some fine to coarse sand, trace fine gravel.	
SC	Brown, silty clayey sand, trace fine gravel.	
CL	Brown, silty clay, some fine to coarse sand, trace fine gravel.	
SM	Gray, silty, fine sand, trace clay.	
CL	Gray, silty clay, trace fine to coarse sand, trace fine gravel.	
	TOP OF INTERGLACIAL ZONE	686.6
ML	Greenish brown, clayey silt, some organics, trace fine to coarse sand.	
ML	Greenish-gray, silt, little fine to coarse sand, trace organics. -trace fine gravel.	
	TOP OF ILLINOIAN TILL	673.1
ML-SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
ML-CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
ML	Gray, silt, trace fine sand, trace clay, varved.	

BORING CONTINUED

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 2.5-128

LOG OF BORING D-65

(SHEET 1 of 2)

BORING D-65 (cont.)

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION σ_3 psf	UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
70											
75							16.7			31	SS
80										95	SS
85							8.2			145	SS
90										100/5"	SS
95							8.2	111		215	SS
100										265	SS

SYMBOLS / DESCRIPTIONS / ELEVATION (FEET)

-73.5 to 78.5 feet, fine to medium sand lenses, trace clay.

ML-CL Gray, clayey silt, some fine to coarse sand, trace fine gravel.

Boring completed at 100.0 feet on 4-15-75.
Water level at 12.0 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 2.5-128

LOG OF BORING D-65

(SHEET 2 of 2)

BORING S-2

SURFACE ELEVATION 704.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
0									
					12.3	21.5	105		
5									
	MA				14.5	14.5	120		680
10									
15									
					13.4	14.8	178		
20									
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL	Grayish brown, silty clay (topsoil). TOP OF WISCONSINAN TILL	703.9
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

BORING S-3

SURFACE ELEVATION 725.0

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONF. COMP. $\frac{q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
0–5									
5–10							16.3		
10–15							13.0		
15–20	COMP MA UC/R						8.8		600
20–25									
25–30									
30–35									
35–40									
40–45									
45–50									
50–55									
55–60									
60–65									
65–70									
70–75									

BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	ML	TOP OF LOESS Brown, clayey silt, manganese nodules noted.	
BG	ML	Yellow, silt, trace fine sand and clay.	
BG	CL	TOP OF WISCONSINAN TILL Brown, silty clay, little fine to coarse sand.	714.0
BG	CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	

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

BORING S-4

SURFACE ELEVATION 722.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT%	PLASTICITY INDEX%	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS / SAMPLES
0–5										AG
5–10					12.6	11.2	134			BG
10–15	COMP UC/R				13.8	13.2	9.4			BG
15–75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL • ML	TOP OF LOESS Brown, silty clay, manganese nodules noted.	
CL	TOP OF WISCONSINAN TILL Brown, clayey silt, some fine to coarse sand, trace fine gravel.	718.3
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

BORING S-5

SURFACE ELEVATION 719.0

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (c-σ, psf)	SHEAR STRENGTH: TRIAXIAL COMPRESSION (σ₃, psf)	SHEAR STRENGTH: UNCONFINED COMPRESSION (psf)	SHEAR STRENGTH: POCKET PENETROMETER (psf)	MOISTURE CONTENT %	DRY DENSITY PCF	BLOW COUNTS	SYMBOLS	DESCRIPTIONS
720								14.3	90	7	ML	LIGHT BROWN CLAYEY SILTY WITH SOME ROOTS (TOPSOIL)
	C C SA COMP						3300	17.0	111	7	CL	BROWN SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (MEDIUM STIFF)
710							4500	[illegible].3	121	17		GRADES TO STIFF
							4500	14.4	120	19		
700							4500+	11.6	127	23	CL	GRAY SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL (VERY STIFF)
690												

BORING COMPLETED AT 20.0 FEET
ON 7-28-72
NO CASING USED

WATER LEVEL NOT RECORDED.

BORING S-6

SURFACE ELEVATION 670.1

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (c-σ, psf)	SHEAR STRENGTH: TRIAXIAL COMPRESSION (σ₃, psf)	SHEAR STRENGTH: UNCONFINED COMPRESSION (psf)	SHEAR STRENGTH: POCKET PENETROMETER (psf)	MOISTURE CONTENT %	DRY DENSITY PCF	BLOW COUNTS	SYMBOLS	DESCRIPTIONS
680												
670										4	ML	DARK BROWN CLAYEY SILT WITH SOME SAND AND ORGANIC MATTER - (TOPSOIL)
							700	21.3	91	2	ML-CL	DARK GRAY AND BROWN SILTY CLAY AND CLAYEY SILT WITH SOME GRAVEL AND OCCASIONAL SEAMS OF SILTY SAND. (SOFT)
660							4500			30	ML	GRAY SANDY SILT WITH CLAY AND SOME GRAVEL (VERY STIFF)
							4500+	9.4	132	19		
650							4500+			17		GRADES WITH MORE SAND

BORING COMPLETED AT 20.0 FEET
ON 7-28-72
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 2.5-132

LOG OF BORINGS S-5 AND S-6

BORING S-8

SURFACE ELEVATION 733.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
0–5							144		
5–10	COMP PERM				12.8	10.0	109		
10–15							105		
15–20	COMP PERM UC/R				25.5	12.7	105		
20–75									

SAMPLES / BLOW COUNTS	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL ML	TOP OF LOESS Brown, silty clay, manganese nodules noted.	
BG	CL	TOP OF WISCONSINAN TILL Brown, clayey silt, little fine to coarse sand, trace fine gravel. 6.0 feet, some fine to coarse sand. 11.0 feet, color grades to gray.	731.3
BG			
BG			
BG			

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

ELEVATION IN FEET: 720, 710, 700, 690, 680, 670

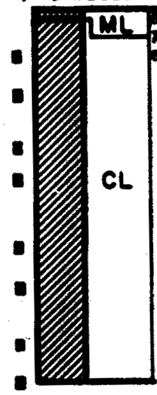
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) psf	SHEAR STRENGTH: POCKET PENETROMETER (d) psf	MOISTURE CONTENT %	DRY DENSITY pcf
							22.2	
COMP UC/R	13.1	9.3				4500+	10.8	
						3000	13.6	
						3500	13.4	
	13.5	10.7					11.1	
COMP								
						4500+	11.4	
							11.1	
							12.1	

BORING S-9

SURFACE ELEVATION 717.2

BLOW COUNTS / SAMPLES

SYMBOLS | DESCRIPTIONS



BROWN CLAYEY SILT WITH ROOTS
Top of Wisconsinan Glacial Till
BROWN SILTY CLAY (HARD)
GRADES WITH GRAVEL
GRADES TO VERY STIFF
GRAVEL GRADES OUT
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: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
730									
720	COMP TX/CU PP	18.2	25.7				1000	26.6	
		10.3	20.9					17.9	
							1000	18.5	
710								17.3	
	COMP	12.7	11.2				2500	13.1	
	TX/CU PP	11.5	10.2				1500	17.1	
700	UC/R PERM	13.9	9.5					15.9	
690							1500	16.9	
680									

BORING S-10

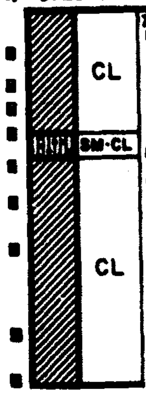
SURFACE ELEVATION 722.6

BLOW COUNTS

SAMPLES

SYMBOLS

DESCRIPTIONS



Top of Wisconsinan Glacial Till
BROWN SILTY CLAY (STIFF)
GRADES WITH FINE TO MEDIUM SAND

GRADES WITH MEDIUM TO COARSE SAND, OCCASIONAL GRAVEL
GRADES WITH MORE SILT

BROWN SILTY SAND WITH CLAY

GRAY SILTY CLAY WITH SAND AND GRAVEL (STIFF)

GRADES WITH MORE SAND

GRADES BACK TO GRAY SILTY CLAY WITH SAND AND GRAVEL

BORING COMPLETED AT 40.0 FEET
ON 3-16-73
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 2.5-135

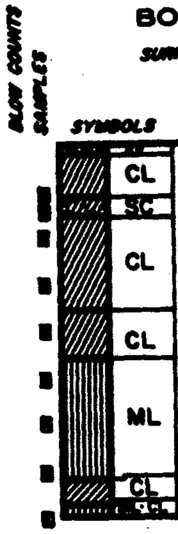
LOG OF BORING S-10

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{S_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{S_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
730–720									
720–710							1500 1000	18.5 16.6 16.1	
710–700	COMP HA	12.7	8.4				1500	16.4 16.8	
700–690								11.7 12.9	
690–680							1000	14.8 33.9	

BORING S-11

SURFACE ELEVATION 722.8



DESCRIPTIONS

GRAVEL AND CLAY - FILL

Top of Wisconsinan Glacial Till

BROWN SILTY CLAY WITH COARSE SAND (STIFF)

BROWN CLAYEY FINE SAND

BROWN SILTY CLAY WITH FINE SAND, OCCASIONAL GRAVEL (STIFF)

GRAY SILTY CLAY WITH SAND, OCCASIONAL GRAVEL (STIFF)

GRAY SILT WITH CLAY, SAND AND OCCASIONAL GRAVEL (STIFF)

GRADES WITH MORE CLAY

GRAY SILTY CLAY WITH SAND AND OCCASIONAL GRAVEL

Top of Interglacial Zone

DARK BROWN AND DARK GRAY SILTY CLAY AND CLAY SILT

BORING COMPLETED AT 40.0 FEET
ON 3-21-73
NO CASING USED
WATER NOT 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

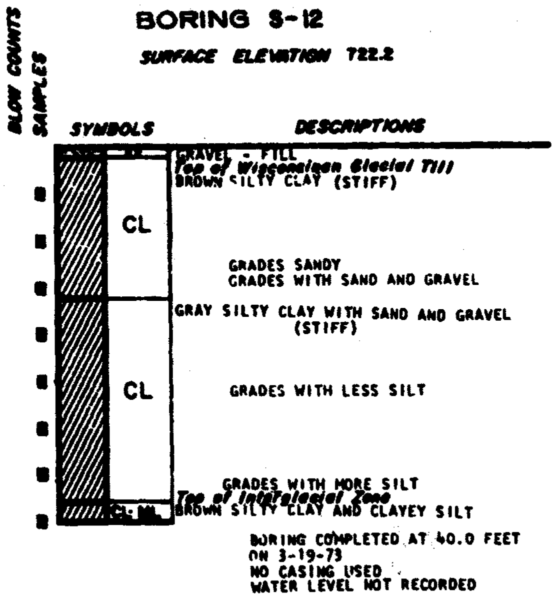
FIGURE 2.5-136

LOG OF BORING S-11

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression	Shear Strength: Triaxial Compression	Shear Strength: Unconfined Compression	Shear Strength: Pocket Penetrometer	Moisture Content %	Dry Density pcf
720–710	UC/R	14.0	9.0					23.1	
	COMP						1000	14.9	
710–700							2000	13.2	
	COMP	11.2	7.4					14.5	
700–690							2000	14.7	
	COMP MA	13.0	8.6				1000	15.9	
690–680							1000	15.9	

ELEVATION IN FEET (730, 720, 710, 700, 690, 680)



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

LABORATORY TEST DATA

ELEVATION IN FEET: 730, 720, 710, 700, 690, 680

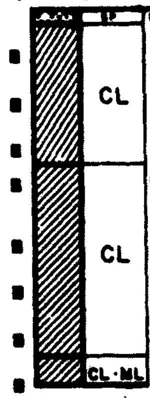
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
						1000	25.2	
COMP MA	15.6	10.2				1000	16.8	
						1000	16.4	
						4500+	12.9	
						4500+	12.5	
COMP MA	12.4	8.4					14.1	
						4500	15.8	
						1000	27.5	

BORING S-13

SURFACE ELEVATION 722.2

BLOW COUNTS
SAMPLES

SYMBOLS | DESCRIPTIONS



GRAVEL - FILL

Top of Wisconsinan Glacial Till

BROWN SILTY CLAY (STIFF)

GRADES SANDY

GRADES WITH GRAVEL

GRAY SILTY CLAY WITH SAND AND GRAVEL (HARD)

GRADES WITH LESS GRAVEL

Top of Interglacial Zone

BROWN TO DARK BROWN AND GRAY SILTY CLAY AND CLAYEY SILT WITH FINE SAND

BORING COMPLETED AT 40.0 FEET ON 3-21-73

NO CASING USED

WATER LEVEL NOT RECORDED

NOTES

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

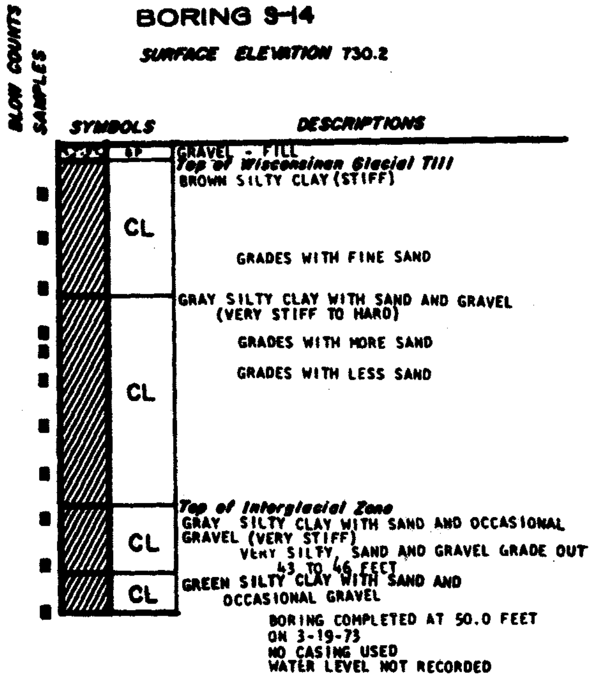
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-138

LOG OF BORING S-13

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) psf	SHEAR STRENGTH: POCKET PENETROMETER (d) psf	MOISTURE CONTENT %	DRY DENSITY pcf
740									
730	PERM C COMP UC/R	16.6	11.4				1500	24.9	
								16.6	
720								14.3	
							3500	15.3	
710	UC/R	12.2	6.8				4500+	12.2	
	COMP							14.9	
700	TX/UU R							11.7	
							3500	17.7	
690								16.6	
	COMP								
680									



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

BORING S-17

SURFACE ELEVATION 715.4

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	SAMPLES
0										AC
5–10	UC/R						9.9			BG
10–15	COMP MA PERM TXCUPP	1638	1434		14.3	14.9	116		630	BG
15–20	TX/UU/R						104			BG
20–25	COMP MA UC/R				13.9	13.1	146		660	BG

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS	
ML	Brown, silty clay, manganese nodules noted.	
	TOP OF WISCONSINAN TILL	711.9
CL	Brown, clayey silt, some fine to coarse sand, trace fine gravel.	
	16.5 feet, color grades to gray.	
	TOP OF INTERGLACIAL ZONE	689.9
ML	Greenish gray, silt, some organics.	

Boring completed at 30.0 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 2.5-140

LOG OF BORING S-17

BORING S-18

SURFACE ELEVATION 716.0

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT%	PLASTICITY INDEX%	FIELD MOISTURE CONTENT%	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	SAMPLES
0										AG
12.5	COMP UC/R				11.9	9.2	206			BG
17.5					15.0	12.2	9.8			BG
22.5	TX/UU/R COMP MA PERM TX/CU/PP UC/R	6308	5776		12.9	14.7	178		700	BG
27.5					14.6	9.6	170			BG

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL-ML	TOP OF LOESS Brown, silty clay, manganese nodules noted.	
SM	Brown, silty, fine sand.	
CL	TOP OF WISCONSINAN TILL Brown, clayey silt, trace fine to coarse sand, trace fine gravel. 14.0 feet, color grades to gray.	708.5
CL	TOP OF INTERGLACIAL ZONE Greenish gray to gray, clayey silt, trace organics.	691.5

Boring completed at 30.0 feet on 4-4-75.
Water level at 7.0 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 2.5-141

LOG OF BORING S-18

BORING S-19

SURFACE ELEVATION 725.5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	SAMPLES / BLOW COUNTS
0–5										AG
5–10					13.5	12.2	141			BG
10–15	COMP PERM TXCUPP	6923	5776				119			BG
15–20							8.9			BG
20–25	COMP PERM TXCUPP	2560	2888		12.8	13.5	9.2			IN:
25–75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL · ML	TOP OF LOESS Grayish brown to brown, silty clay, manganese nodules noted.	
CL	TOP OF WISCONSINAN TILL Brown, clayey silt, little fine to coarse sand, trace fine gravel.	721.5
SM	Brown silty, fine to coarse sand, trace fine gravel.	
CL	Brown, clayey silt, some fine to coarse sand, trace fine gravel. 15.0 feet, color grades to gray.	
ML	TOP OF INTERGLACIAL ZONE Dark gray, mottled light gray, silt, trace organics.	695.5
CL	Gray, silty clay, trace organics.	

Boring completed at 40.0 feet on 4-2-75.
Water level at 9.0 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 2.5-142

LOG OF BORING S-19

BORING S-20

SURFACE ELEVATION 724.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	SAMPLES / BLOW COUNTS
0										AG
5–10	COMP TX/CUPP UC/R	786	1434		15.0	15.0	146			BG
10–15							119			BG
15–20							120			BG
20–25	COMP TX/CUPP	5960	5776		13.8	15.0	107			BG

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL-ML	TOP OF LOESS Brown, silty clay, manganese nodules noted.	
CL	TOP OF WISCONSINAN TILL Brown, clayey silt, some fine to coarse sand, trace fine gravel. -13.0 feet, color grades to gray.	722.4
ML	TOP OF INTERGLACIAL ZONE Greenish gray, silt, trace organics.	687.9

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

BORING S-21

SURFACE ELEVATION 736.4

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT%	ATTERBERG LIMITS: PLASTICITY INDEX%	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
									AG
						141			BG
MA				13.4	10.0	122		670	BG
						148			BG
						135			BG
COMP MA UC/R				14.0	13.0	102		700	BG

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
CL-ML	Grayish brown to brown, silty clay, manganese nodules noted.	
	TOP OF WISCONSINAN TILL	732.9
ML	Brown, silt, some fine to coarse sand, trace clay, trace fine gravel.	
SM	Brown, silty, fine to coarse sand.	
CL	Brown, silty clay, little fine to coarse sand, trace fine gravel.	
CL	Brown, clayey silt and fine to coarse sand, trace fine gravel.	
ML	Gray, silt, some fine to coarse sand, trace fine gravel.	
SM	Gray, silty, fine to coarse sand.	
CL	Gray, clayey silt, and fine to coarse sand, trace fine gravel. -grades some fine to coarse sand.	
	TOP INTERGLACIAL ZONE	691.4
ML	Blackish gray, silt, trace fine sand, trace organics.	

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

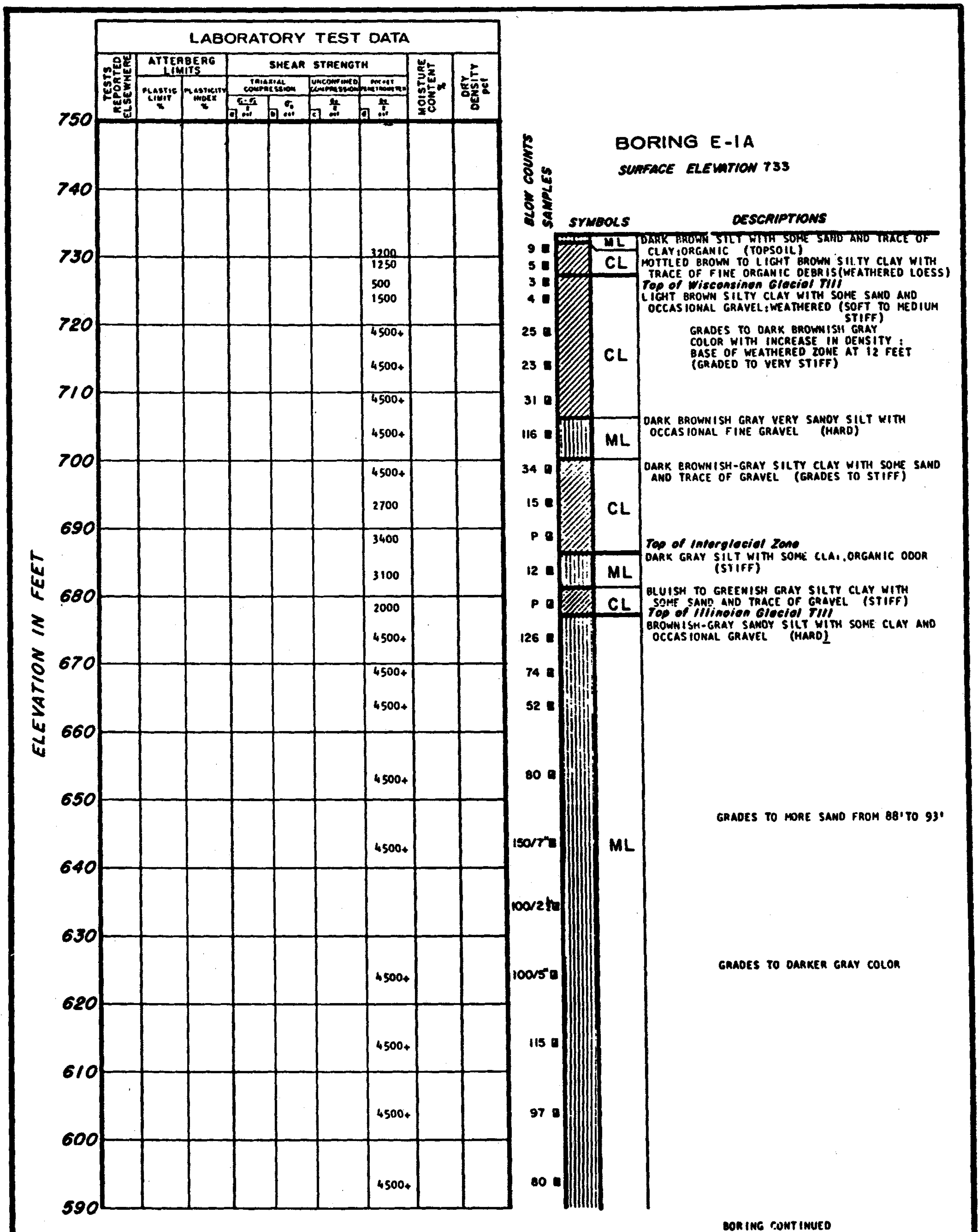
NOTES

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 2.5-144

LOG OF BORING S-21



BORING CONTINUED

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING E-1A

(SHEET 1 of 2)

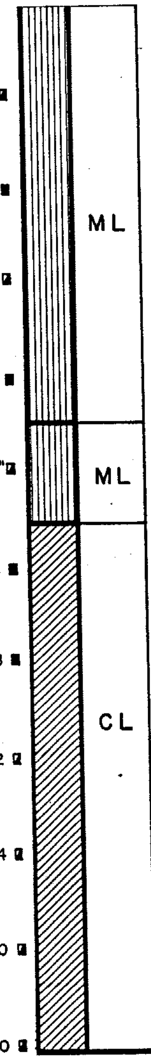
BORING E-1A CONTINUED

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS / SAMPLES
						4500+			77
						4500+			98
						4500+			113
						4500+			48
									100/3"
						4500+			36
									48
						4500+			112
						4500+			54
						4500+			60
						4500+			60

ELEVATION IN FEET: 590, 580, 570, 560, 550, 540, 530, 520, 510, 500, 490, 480, 470

SYMBOLS



DESCRIPTIONS

Top Of Lacustrine Deposits
BROWNISH-GRAY SILT WITH NUMEROUS SEAMS OF BLACK ORGANIC DEBRIS. (LACUSTRINE DEPOSIT) (VERY DENSE)

Top Of Pre-Illinoian Glacial Till
OLIVE GREEN SILTY CLAY WITH SOME SAND AND GRAVEL, WEATHERED (GLACIAL TILL) (HARD)

GRADING TO DARK BROWNISH GRAY COLOR WITH INCREASED DENSITY

BORING COMPLETED AT 250.0 FEET ON 7-12-72
CASING USED TO A DEPTH OF 20.0 FEET

PIEZOMETER INSTALLED ON 7-13-72
BORING E-1B, LOCATED 10 FEET FROM E-1A, WAS DRILLED TO A DEPTH OF 40 FEET. A 3/4 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET PERFORATED WAS PLACED TO ELEVATION 693. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 693 TO 703; BENTONITE SEAL FROM ELEVATION 703 TO 705; AND CEMENT GROUT FROM ELEVATION 705 TO 733.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
10.0	8-3-72
10.6	8-22-72
11.7	9-6-72

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
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING E-1A

(SHEET 2 of 2)

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf (a)	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf (b)	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf (c)	SHEAR STRENGTH: POCKET PENETROMETER $\frac{q_u}{2}$ psf (d)	MOISTURE CONTENT %	DRY DENSITY pcf
						4500+		
						2000		
						1000		
						3700		
						4500+		
						4000		
						4400		
						4500+		
						3000		
						4500+		
						4500+		
						4500+		
						4500+		
						4500+		
						4500+		
						4500+		
						4500+		
						4500+		
						4500+		
						4500+		
						4500+		

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590

BORING CONTINUED

BORING E-2A

SURFACE ELEVATION 746

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
12	ML	DARK BROWN SILT WITH SOME SAND AND TRACE OF CLAY
9	ML	LIGHT BROWN SILT WITH SOME CLAY AND TRACE OF SAND AND FINE GRAVEL. (WEATHERED LOESS) (STIFF)
12	CL	*Top of Wisconsinan Glacial Till* BROWN SILTY CLAY WITH SOME WELL GRADED SAND AND OCCASIONAL GRAVEL. (WEATHERED) (STIFF)
17		GRADES TO GRAYISH-BROWN COLOR; BASE OF WEATHERED ZONE AT 18.0 FEET
82	ML	GRAY CLAYEY AND SANDY SILT WITH INTERBEDDED THIN LAYERS OF CLEAN FINE TO MEDIUM SAND (HARD)
45		INTERBEDDED SAND LAYERS GRADE OUT
80		GRADES TO GRAY SILT WITH SOME CLAY AND TRACE OF SAND AND FINE GRAVEL
145	SP	GRAY FINE TO MEDIUM SAND (VERY DENSE)
37	CL	DARK GRAY SILTY CLAY WITH SOME SAND AND TRACE OF GRAVEL. (VERY STIFF)
27		
31		
21	ML	*Top of Interglacial Zone* GRAY SILT WITH SOME CLAY AND OCCASIONAL THIN SEAM OF FINE SAND (MEDIUM STIFF)
14	CL	GRAY SILTY CLAY WITH SOME SAND AND OCCASIONAL GRAVEL. (STIFF)
28	SW	GRAY FINE TO COARSE SAND WITH SOME FINE GRAVEL AND TRACE OF SILT (MEDIUM DENSE)
33	ML	*Top of Illinoian Glacial Till* GRAY-BROWN SANDY SILT WITH SOME CLAY AND OCCASIONAL GRAVEL. (HARD)
127/9"		
100/6"	SM	GRAY-BROWN FINE TO MEDIUM SAND WITH SOME SILT
50	ML	GRAY-BROWN SANDY SILT WITH SOME CLAY AND OCCASIONAL GRAVEL. (HARD)
85		
150/11"		4" SEAM OF SAND AND GRAVEL
100/3"		
100/5"		
100/6"		GRADES TO GRAY COLOR
98		
54		
76		
112		
103		

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-146

LOG OF BORING E-2A

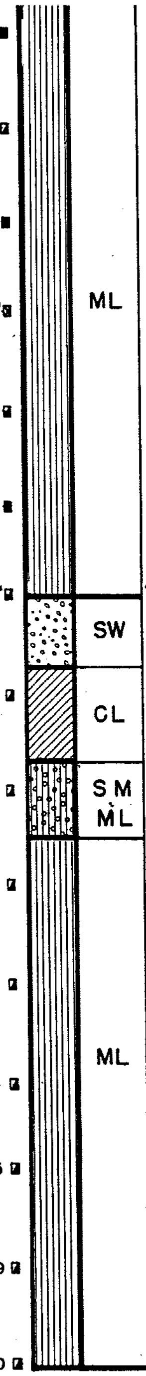
(SHEET 1 of 2)

BORING E-2A CONTINUED

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	POCKET PENETROMETER $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
590–580							4500+		
580–570							4500+		
570–560							4500+		
560–550							4500+		
550–540							4500+		
540–530							4500+		
530–520									
520–510									
510–500									
500–490									
490–480									
480–470									
470–460									
460–450									
450–440									

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
125	ML	
44	ML	6" LAYER OF SAND AND GRAVEL. GRADES TO GRAY-BROWN COLOR
86	ML	
100/6"	ML	
48	ML	
41	ML	SAND AND GRAVEL CONTENT INCREASING
100/4"		*Base of Illinoian Glacial Till*
	SW	GRAY-BROWN WELL GRADED SAND WITH SOME GRAVEL AND TRACE OF SILT (ALLUVIUM) (VERY DENSE)
40	CL	GRAY SILTY CLAY WITH SOME SAND AND TRACE OF GRAVEL; OCCASIONAL THIN SEAM OF SILT (HARD)
86	SM ML	GRAYISH-BROWN TO GRAY SILT TO SILTY SAND BEDDED.ORGANIC DEBRIS.IN ZONES.OCCASIONAL SHELL FRAGMENTS. (ALLUVIAL OR LACUSTRINE DEPOSIT) (VERY DENSE)
21	ML	GRAYISH-BROWN TO GRAY SILT WITH SAND, BEDDED ORGANIC DEBRIS IN ZONES, OCCASIONAL SHELL FRAGMENTS. (ALLUVIAL OR LACUSTRINE DEPOSITS) (VERY DENSE)
57	ML	GRADES VERY DENSE
4	ML	GRADES SOFT WITH INCREASED FINE ORGANIC DEBRIS. GRADES MORE DENSE,ORGANIC DEBRIS DECREASING
65	ML	
29	ML	
40	ML	GRADES OCCASIONAL SEAM OF SILTY CLAY



BORING COMPLETED AT 300.0 FEET ON 7-10-72
CASING USED TO A DEPTH OF 6.0 FEET

PIEZOMETER INSTALLED ON 7-12-72
BORING E-2B,LOCATED 10 FEET FROM E-2A,WAS DRILLED TO A DEPTH OF 68 FEET. A 3/4 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET PERFORATED WAS PLACED TO ELEVATION 678. GRANULAR BACKFILL WAS PLACED FROM ELEVATION 678 TO 686; A BENTONITE SEAL FROM ELEVATION 686 TO 687; AND CEMENT GRANT FROM ELEVATION 687 TO 746.

REFER TO FIGURE 2.4-38 FOR WATER LEVEL OBSERVATIONS.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
32.8	8-3-72
32.9	8-22-72
33.4	9-6-72

NOTE:

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

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FIGURE 2.5-146

LOG OF BORING E-2A

(SHEET 2 of 2)

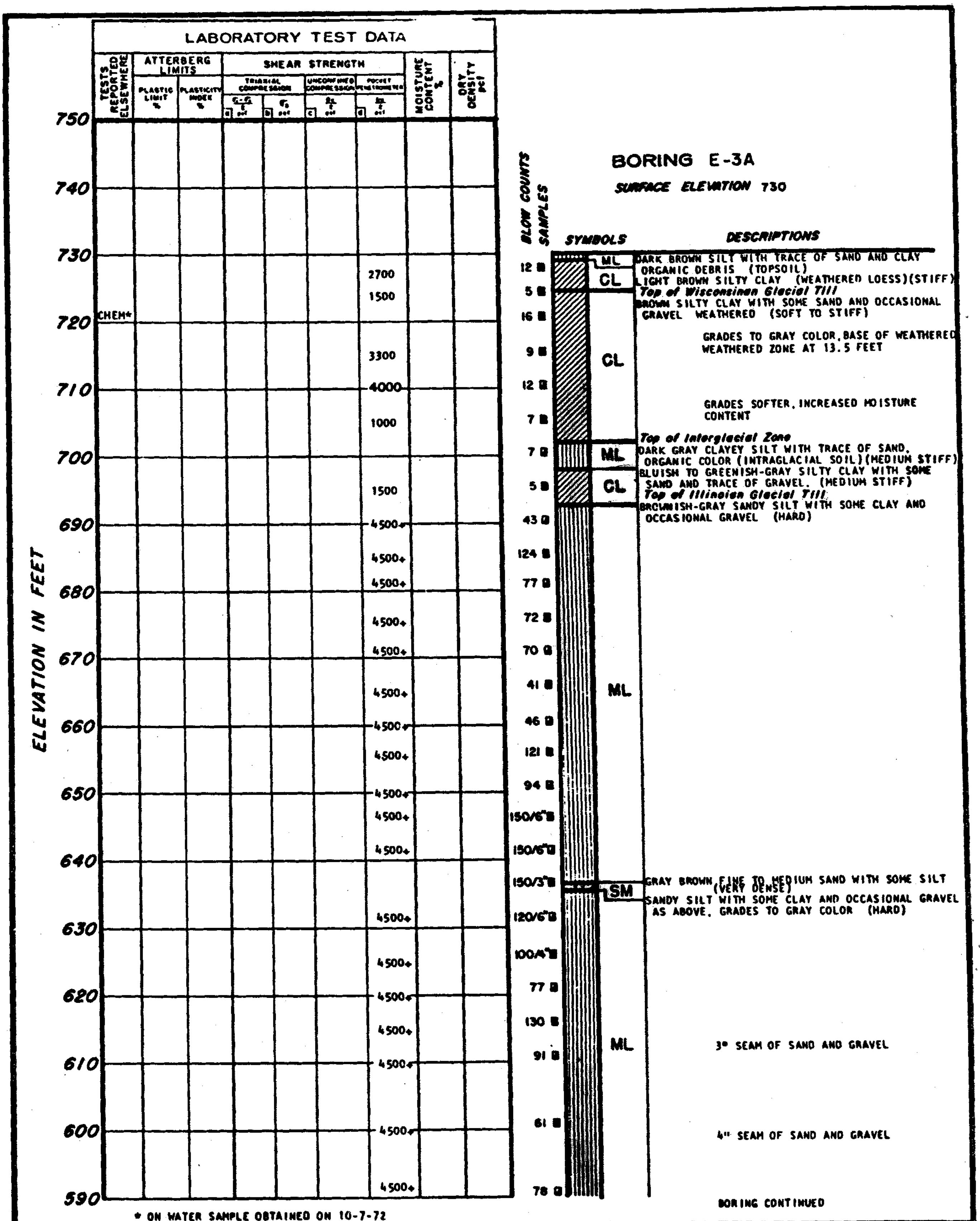

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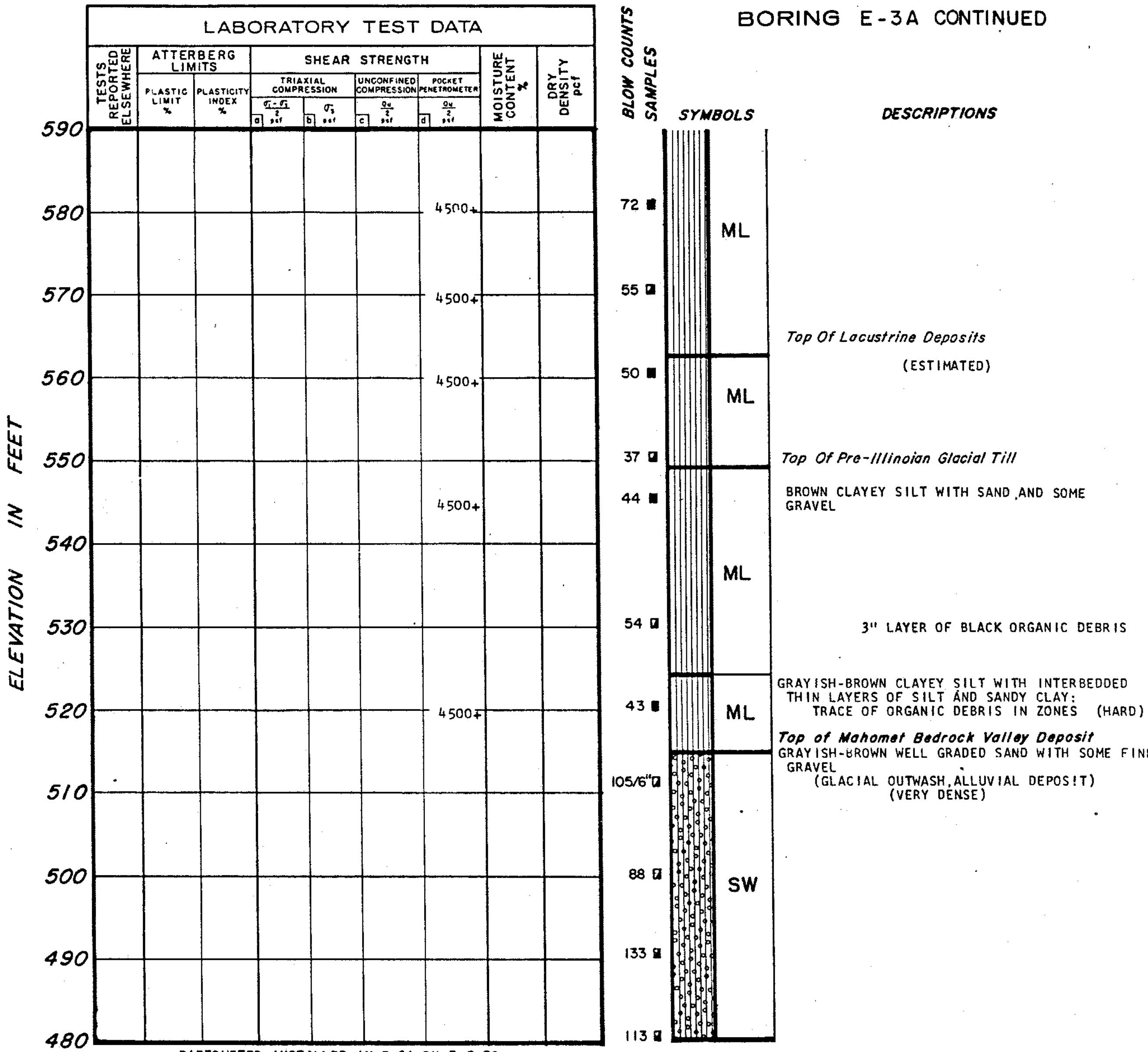
FIGURE 2.5-147

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 622 TO 633; AND PEA GRAVEL AND CEMENT GROUT FROM ELEVATIONS 663 TO 730.

BORING COMPLETED AT 249.5 FEET ON 6-29-72

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET

TIP ELEVATION 492.0	TIP ELEVATION 657.5	DATE
81.6		8-15-72
81.8		9-6-72

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 2.5-147

LOG OF BORING E-3A

(SHEET 2 of 2)

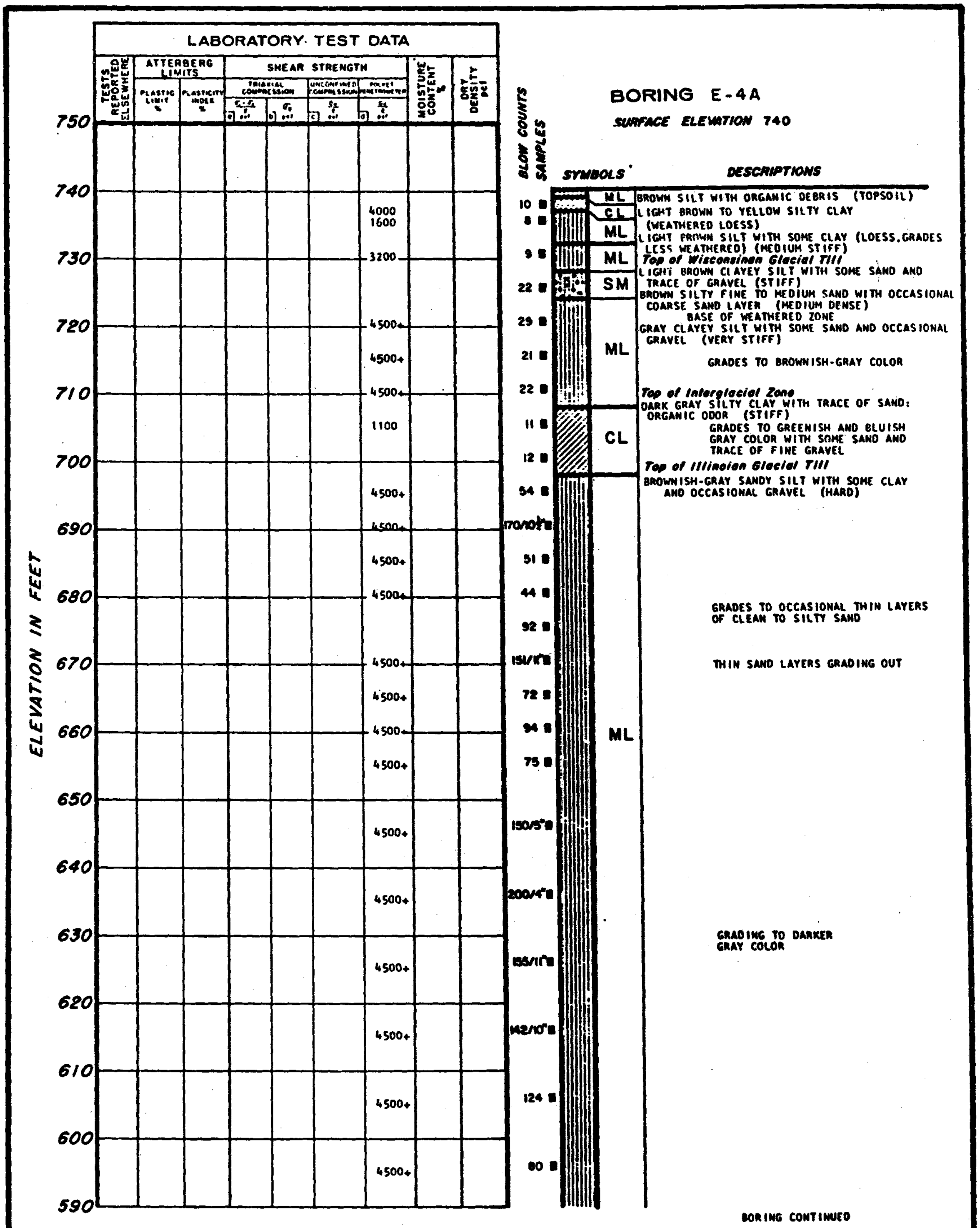

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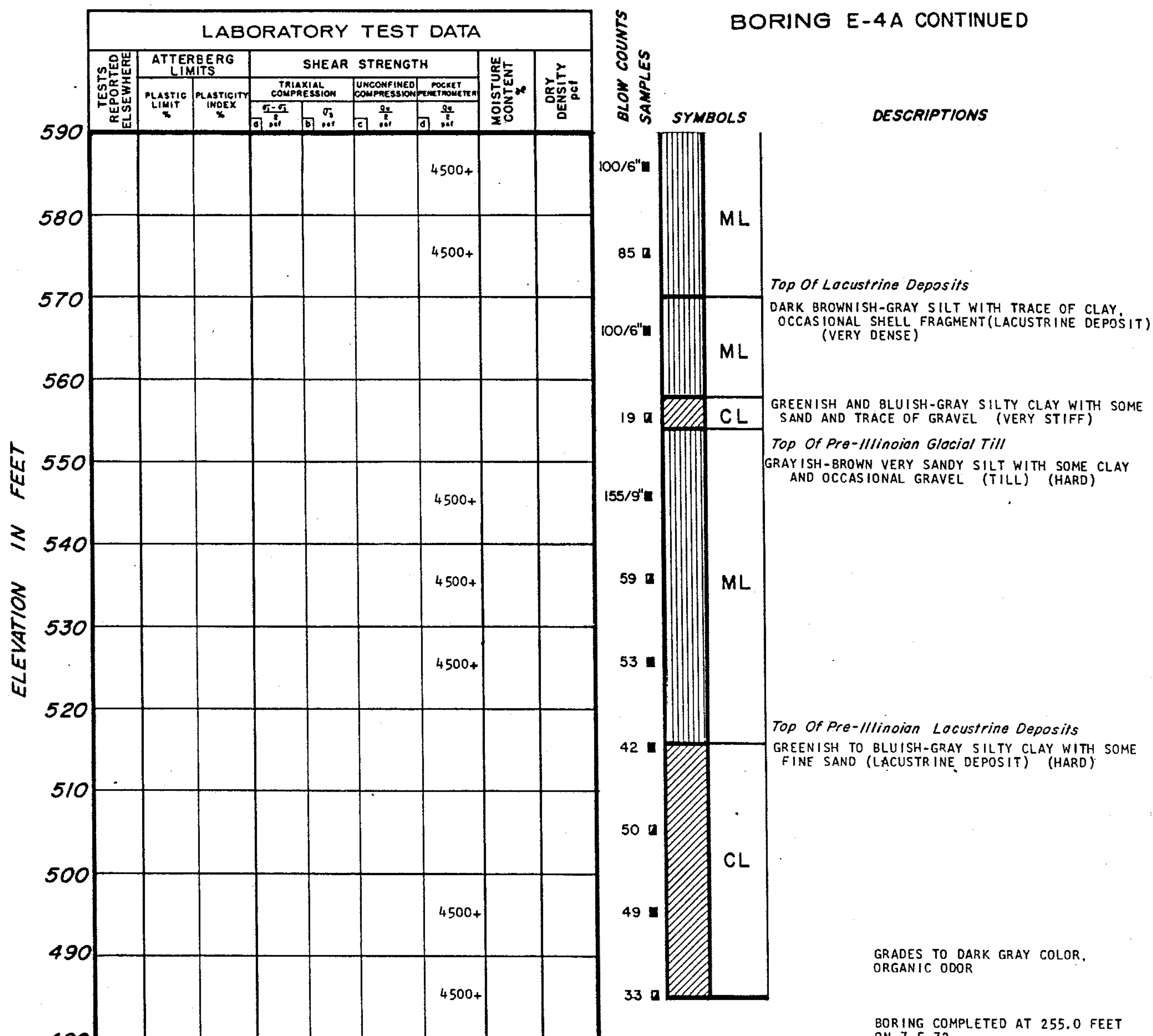
FIGURE 2.5-148

LOG OF BORING E-4A

(SHEET 1 of 2)



BORING COMPLETED AT 255.0 FEET ON 7-5-72
CASING USED TO A DEPTH OF 5.0 FEET

PIEZOMETER INSTALLED ON 7-6-72
BORING E-4B LOCATED 10 FEET FROM E-4A WAS DRILLED TO A DEPTH OF 76 FEET. A 3/4 INCH PVC PIPE WITH THE LOWER END PLUGGED AND THE LOWER 5 FEET PERFORATED WAS PLACED AT ELEVATION 644. GRANULAR BACKFILL WAS PLACED FROM ELEVATIONS 644 TO 654; A BENTONITE SEAL FROM ELEVATIONS 654 TO 656 AND PEA GRAVEL AND CEMENT GROUT FROM ELEVATIONS 656 TO 740.

WATER LEVEL READINGS

DEPTH BELOW GROUND SURFACE IN FEET	DATE
26.6	8-3-72
26.8	8-15-72
27.9	9-6-72

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.

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FIGURE 2.5-148

LOG OF BORING E-4A

(SHEET 2 of 2)

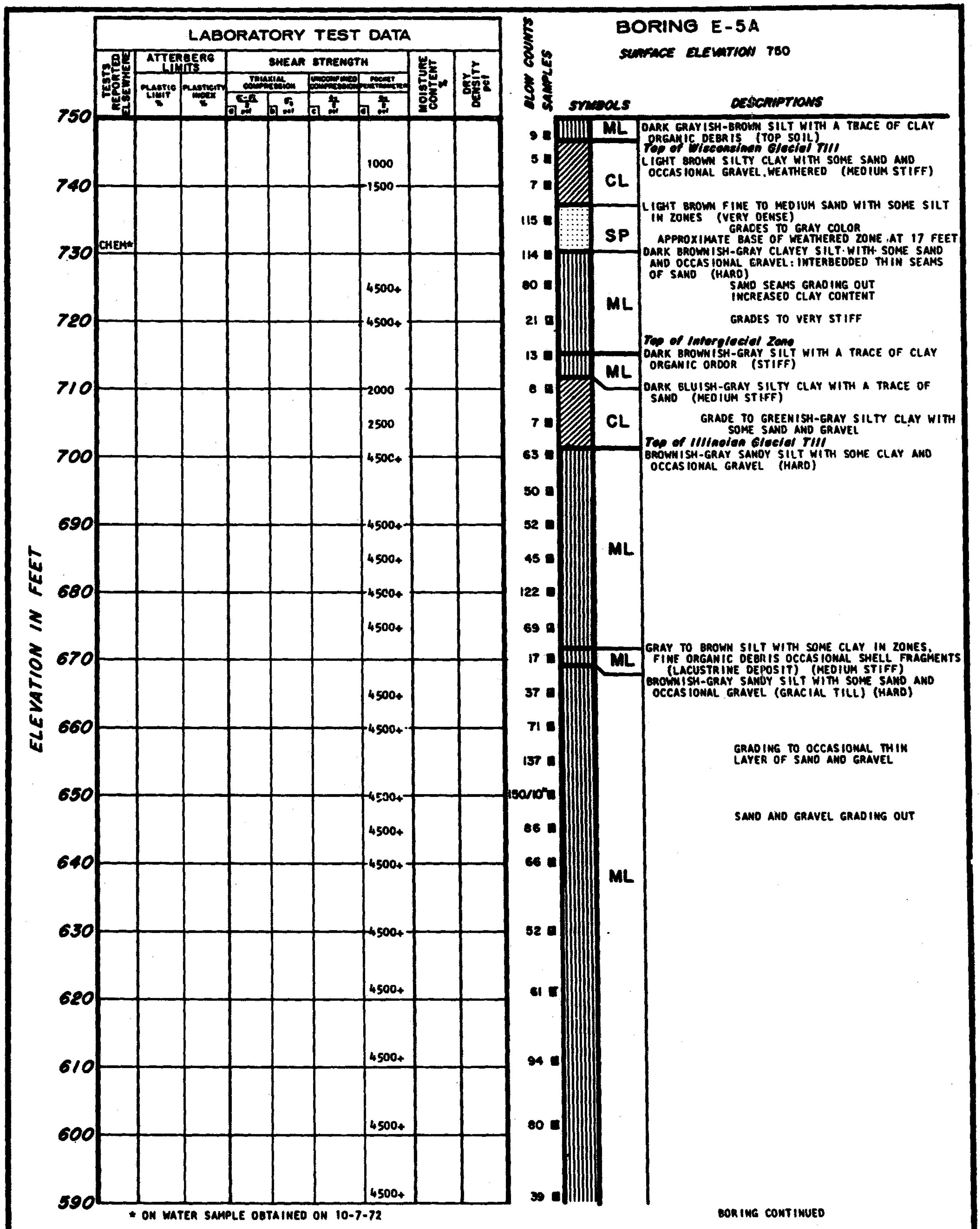

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FIGURE 2.5-149

LOG OF BORING E-5A

(SHEET 1 of 3)

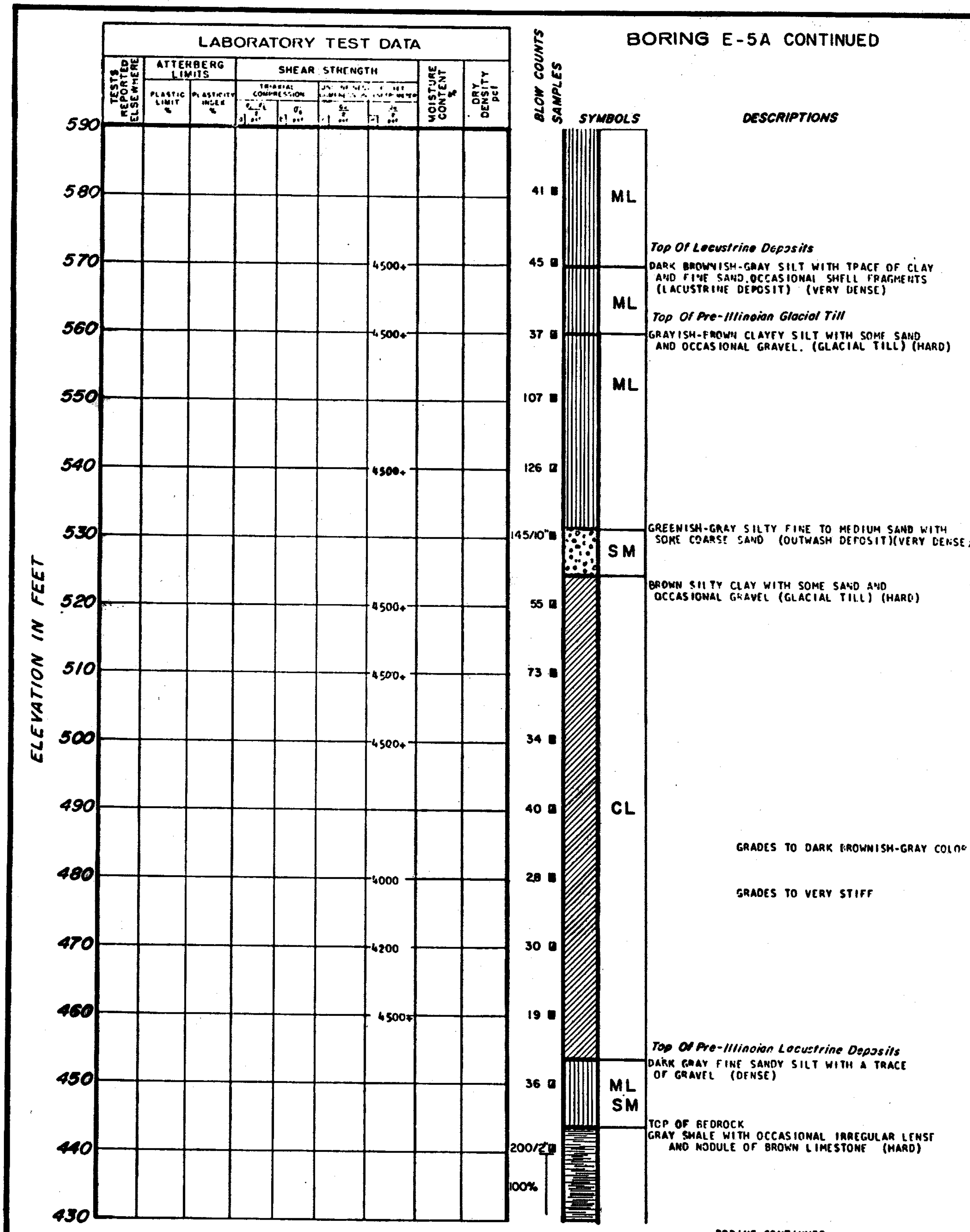

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FIGURE 2.5-149

LOG OF BORING E-5A

(SHEET 2 of 3)

BORING E-5A CONTINUED

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf (a)	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf (b)	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{Qu}{2}$ psf (c)	SHEAR STRENGTH: POCKET PENETROMETER $\frac{Qu}{2}$ psf (d)	MOISTURE CONTENT %	DRY DENSITY pcf

ELEVATION IN FEET: 430, 420, 410, 400, 390

BLOW COUNTS

SAMPLES

SYMBOLS

DESCRIPTIONS

100%

100%

GRADES TO INTERBEDDED THIN LAYERS OF GRAY FINE SANDY SILTSTONE AND SHALE

BROWNISH-GRAY FINE SANDY MICACEOUS SILTSTONE, MASSIVE, FEW FRACTURES (HARD)

BORING COMPLETED AT 329.0 FEET ON 7-17-72
CASING USED TO A DEPTH OF 6 FEET

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.

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 2.5-149

LOG OF BORING E-5A

(SHEET 3 of 3)

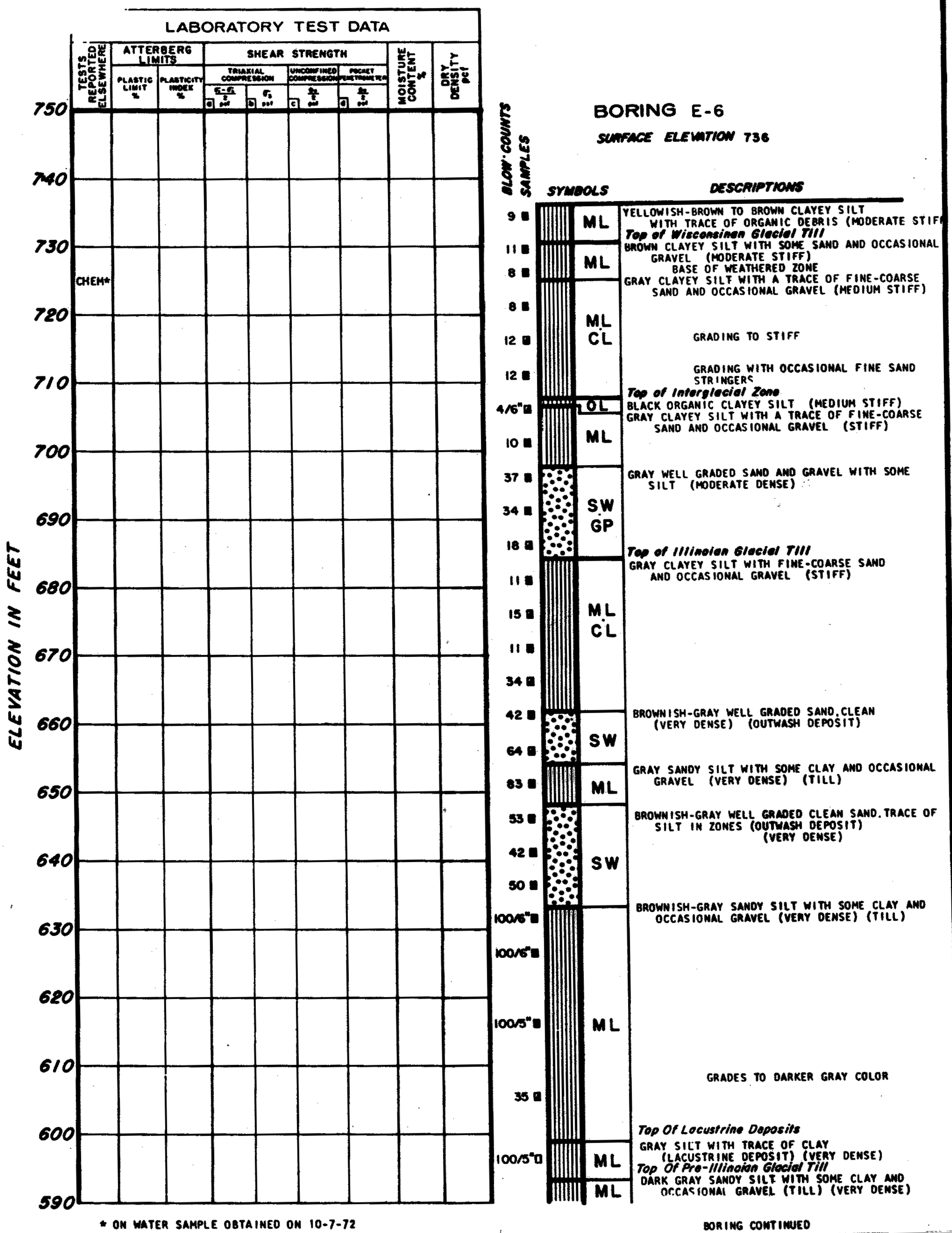

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FIGURE 2.5-150

LOG OF BORING E-6
(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		
			a $\frac{\sigma_1-\sigma_3}{2}$ psf	b σ_3 psf	c $\frac{qu}{2}$ psf	d $\frac{qu}{2}$ psf		

ELEVATION IN FEET: 590, 580

BLOW COUNTS | SAMPLES | SYMBOLS | DESCRIPTIONS

70 | ML

BORING E-6 CONTINUED

BORING COMPLETED AT 151.0 FEET ON 7-25-72
CASING USED TO A DEPTH OF 6 FEET

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 2.5-150

LOG OF BORING E-6

(SHEET 2 of 2)

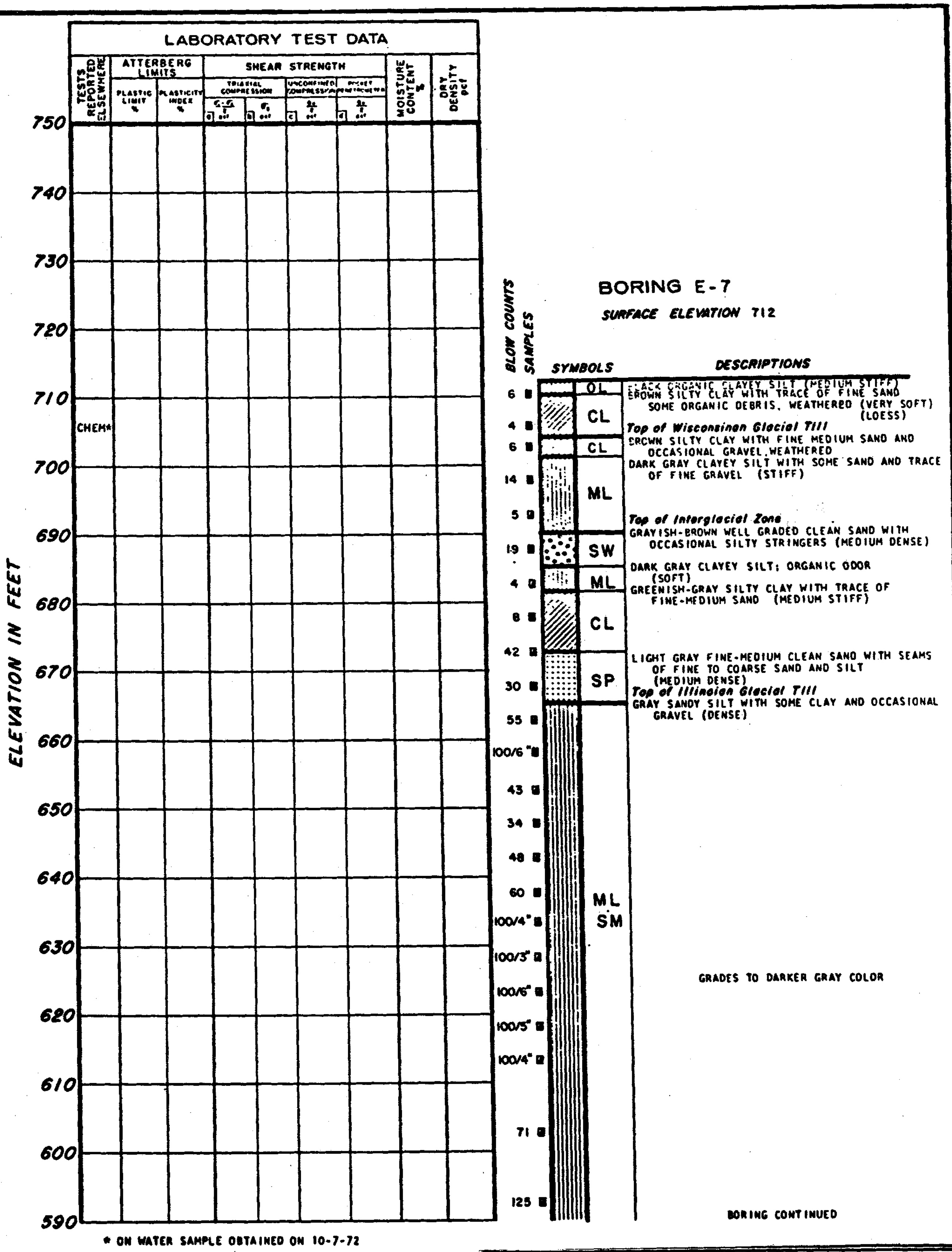

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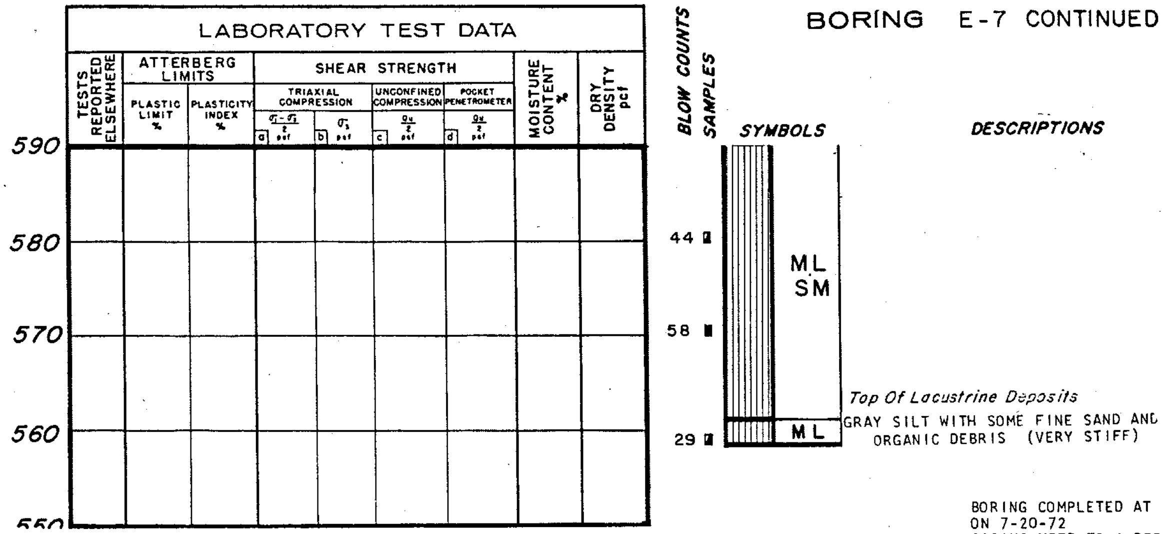
FIGURE 2.5-151

LOG OF BORING E-7

(SHEET 1 of 2)



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

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.

NOTE:

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

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FIGURE 2.5-151

LOG OF BORING E-7

(SHEET 2 of 2)

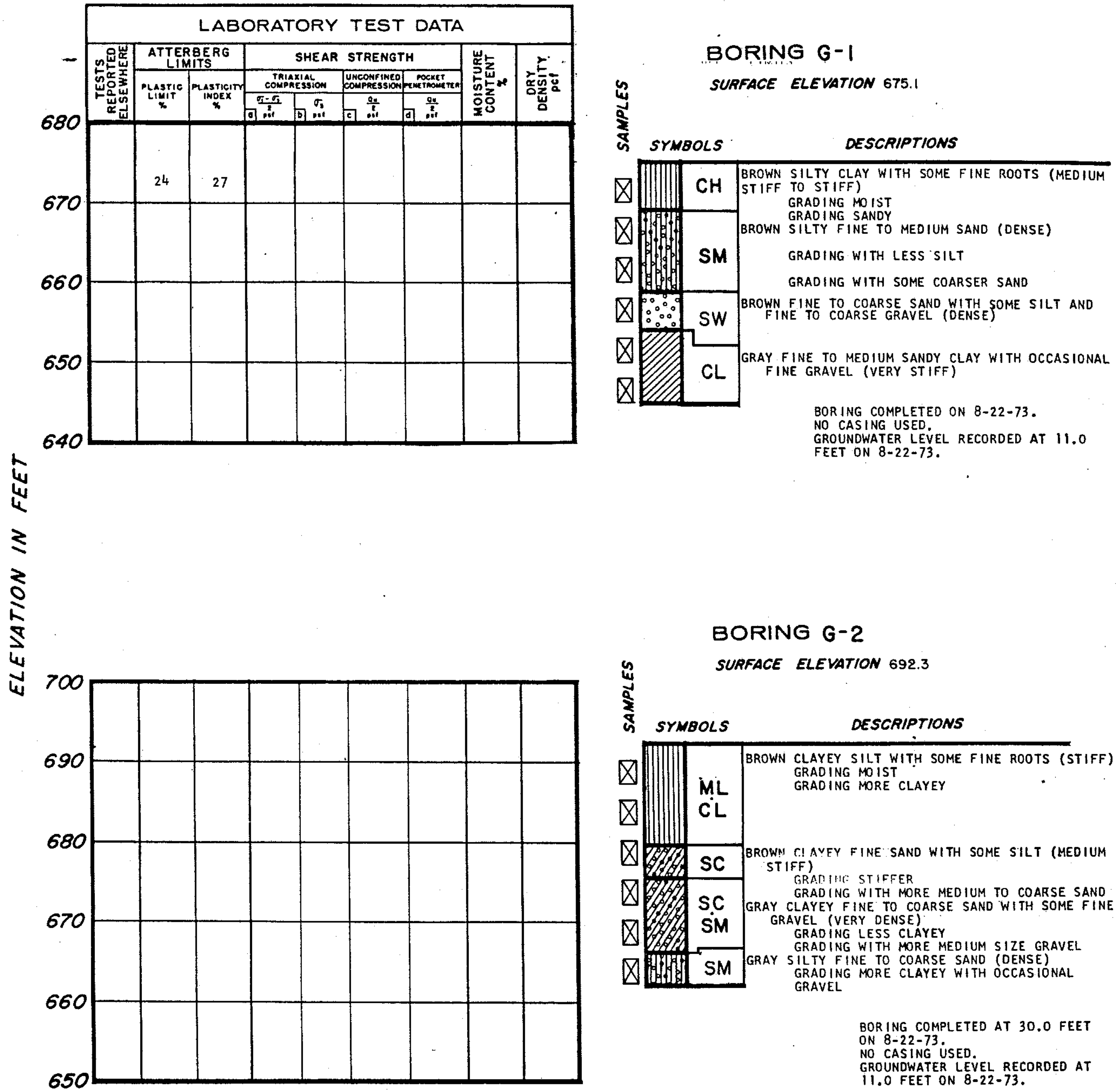

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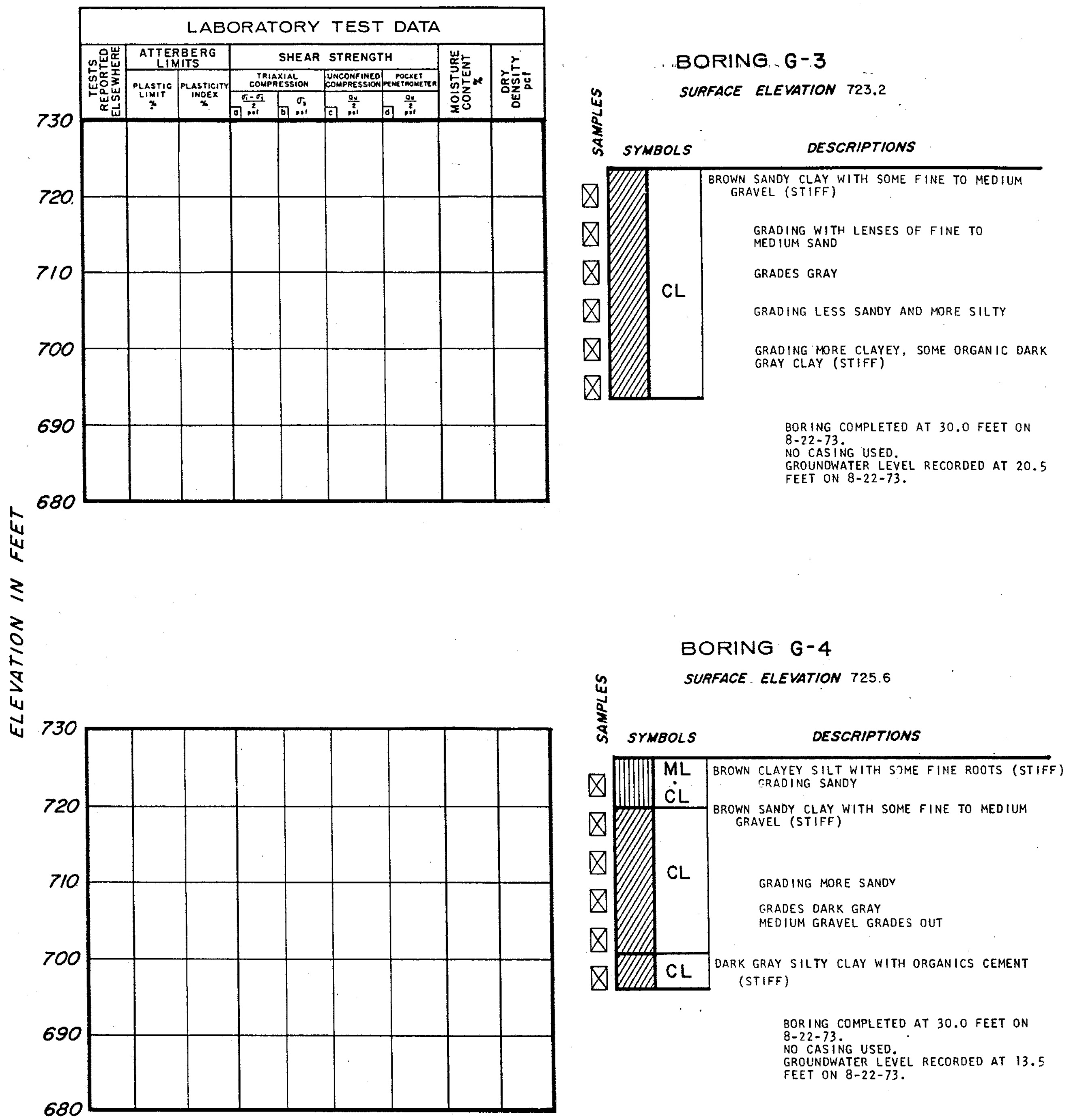
FIGURE 2.5-152

LOG OF BORINGS G-1 AND G-2



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UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORINGS G-3 AND G-4

ELEVATION IN FEET

LABORATORY TEST DATA

Elevation	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression a $\frac{\sigma_1-\sigma_3}{2}$ psf	Triaxial Compression b σ_3 psf	Unconfined Compression c $\frac{q_u}{2}$ psf	Pocket Penetrometer d $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
730–720		26	23						
720–710									
710–700									
700–690									

Elevation	Tests Reported Elsewhere	Plastic Limit %	Plasticity Index %	Triaxial a	Triaxial b	Unconfined c	Pocket Penetrometer d	Moisture Content %	Dry Density pcf
680–670									
670–660	SA							18.2 11.6	
660–650	SA							16.0	
650–640									
640–630									

BORING G-5

SURFACE ELEVATION 729.3

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

BORING G-6

SURFACE ELEVATION 677.8

SAMPLES	SYMBOLS	DESCRIPTIONS
	ML	BROWN CLAYEY SILT WITH SOME FINE ROOTS (STIFF) GRADING SANDY
⊠ ⊠ ⊠ ⊠ ⊠	SC	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)
⊠	ML	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

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
690									
680									
670								13.3	
660									
650	SA								
640									

BORING G-7

SURFACE ELEVATION 682.0

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

BORING COMPLETED AT 30.0 FEET ON 8-21-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 14.5 FEET ON 8-21-73.

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL $\frac{\sigma_1-\sigma_3}{2}$	TRIAXIAL σ_3	UNCONFINED $\frac{q_u}{2}$	POCKET PENETROMETER $\frac{q_u}{2}$	MOISTURE CONTENT %	DRY DENSITY pcf
700									
690		27	30						
680									
670									
660									
650									

BORING G-8

SURFACE ELEVATION 691.9

SAMPLES	SYMBOLS	DESCRIPTIONS
☒ ☒	CH	BROWN SILTY CLAY WITH SOME FINE ROOTS (STIFF) GRADING SANDY
☒ ☒ ☒	SM	BROWN SILTY FINE TO COARSE SAND WITH SOME FINE GRAVEL (DENSE) GRADING GRAY (VERY DENSE)
☒	ML	GRAY CLAYEY SILT (VERY STIFF)

BORING COMPLETED AT 30.0 FEET ON 8-21-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 10.0 FEET ON 8-21-73.

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UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-155

LOG OF BORINGS G-7 AND G-8

LABORATORY TEST DATA									
ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{Qu}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{Qu}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
730									
720									
710									
700									
690									
680									

BORING G-9

SURFACE ELEVATION 724.9

SAMPLES *SYMBOLS* *DESCRIPTIONS*

SYMBOLS	DESCRIPTIONS
CL ML	BROWN SILTY CLAY WITH SOME ROOTS (STIFF) 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.

ELEVATION IN FEET									
730									
720									
710									
700									
690									

BORING G-10

SURFACE ELEVATION 727.2

SAMPLES *SYMBOLS* *DESCRIPTIONS*

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 SC	GRAY CLAYEY GRAVEL WITH SOME SAND (DENSE) GRADING DENSER WITH MORE FINE TO MEDIUM GRAVEL GRADING WITH LESS GRAVEL
ML	GRAY CLAYEY SILT WITH SOME SAND AND OCCASIONAL FINE GRAVEL (STIFF)
PT	DARK GRAY PEAT
ML	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

ELEVATION IN FEET

ELEVATION	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\sigma_1-\sigma_3$ / 2 psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c q_u / 2 psf	SHEAR STRENGTH: POCKET PENETROMETER d q_u / 2 psf	MOISTURE CONTENT %	DRY DENSITY pcf
680									
670									
	SA	NONPLASTIC							
660									
650									
640									

BORING G-11

SURFACE ELEVATION 675.3

SAMPLES	SYMBOLS	DESCRIPTIONS
☒	ML CL	BROWN CLAYEY SILT WITH SOME ROOTS (MEDIUM STIFF) GRADING SANDY
☒	SM	BROWN SILTY FINE TO COARSE SAND WITH SOME FINE TO MEDIUM GRAVEL AND SOME CLAY (DENSE)
	SW	GRADING MORE GRAVELLY AND LESS SILTY
☒	SW	BROWN FINE TO COARSE SAND WITH SOME SILT AND GRAVEL (DENSE)
☒ ☒ ☒	SM	GRAY SILTY FINE TO MEDIUM SAND WITH SOME CLAY AND OCCASIONAL FINE GRAVEL (VERY DENSE) GRADING MORE SANDY 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	TESTS REPORTED ELSEWHERE	PLASTIC LIMIT	PLASTICITY INDEX	a	b	c	d	MOISTURE CONTENT	DRY DENSITY
690									
680									
	SA								
670									
	SA	NONPLASTIC						17.8	
660									
650									
660									

BORING G-12

SURFACE ELEVATION 685.1

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

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FIGURE 2.5-157

LOG OF BORINGS G-11 AND G-12

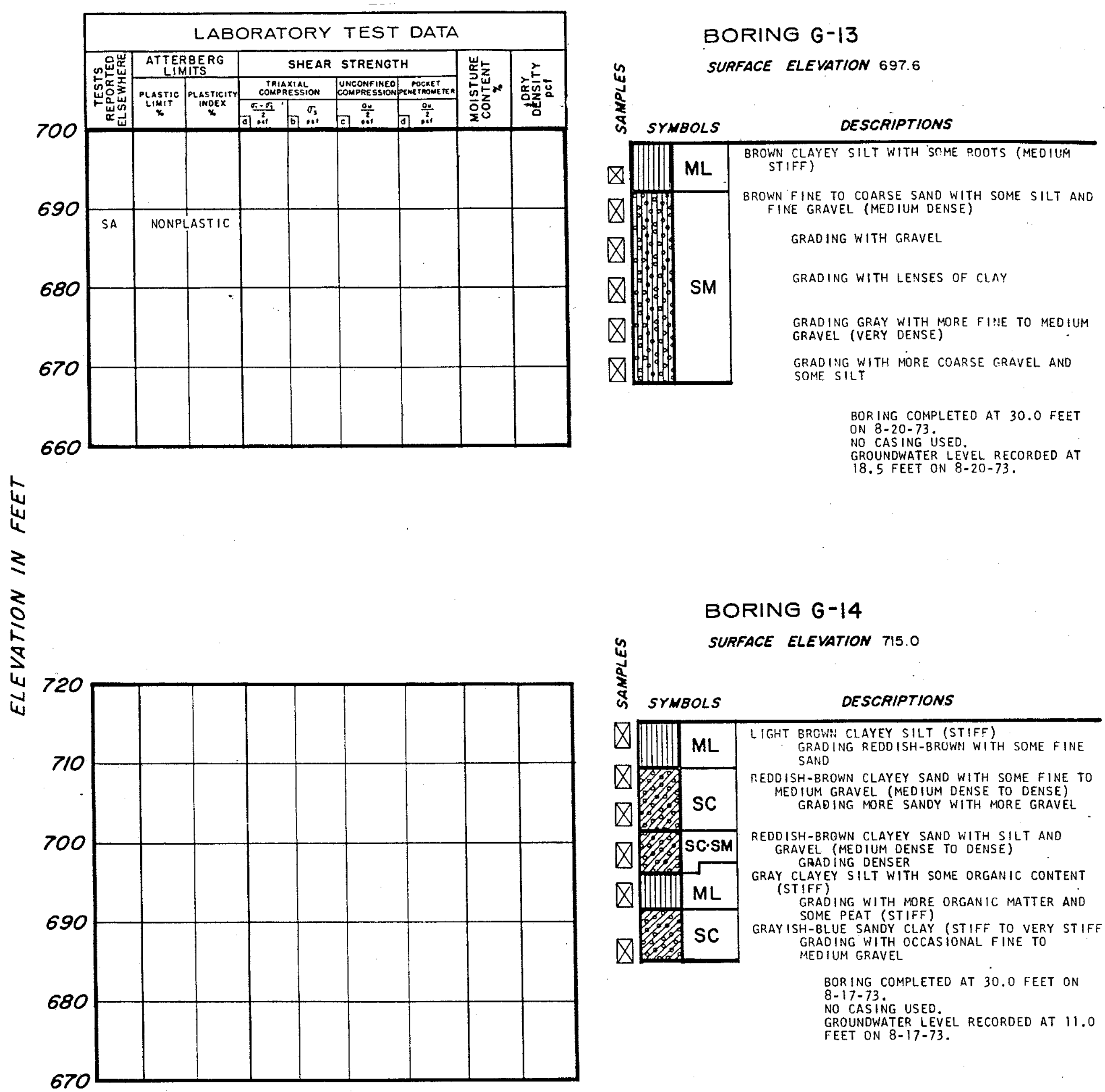

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FIGURE 2.5-158

LOG OF BORINGS G-13 AND G-14

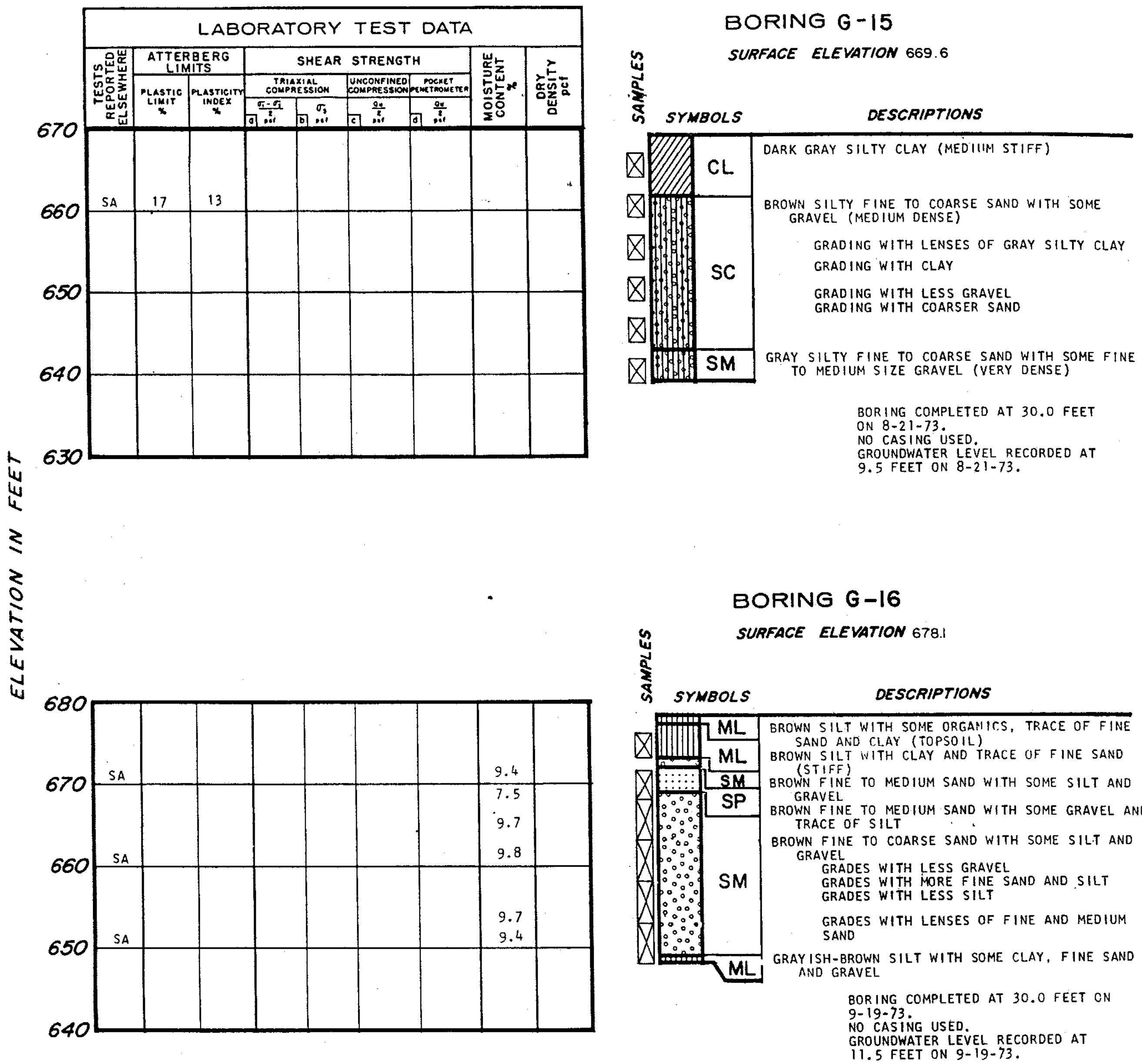

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FIGURE 2.5-159

LOG OF BORINGS G-15 AND G-16

LABORATORY TEST DATA

ELEVATION IN FEET

BORING G-17

Elevation	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
680									
670									
	SA							8.3	
	SA							13.4	
660									
	SA							4.9	
	SA							8.3	
650									
640									

BORING G-17

SURFACE ELEVATION 677.4

SAMPLES	SYMBOLS	DESCRIPTIONS
	ML	LIGHT BROWN SILT WITH TRACE OF CLAY, FINE SAND AND ORGANICS (TOPSOIL)
	ML	BROWN SILT WITH TRACE OF CLAY AND SOME FINE SAND (STIFF)
	SM	BROWN FINE TO COARSE SAND WITH SILT AND SOME FINE GRAVEL GRADES WITH LESS SILT
	SW	BROWN FINE TO COARSE SAND WITH GRAVEL AND TRACE OF SILT GRADES WITH MORE GRAVEL

BORING COMPLETED AT 30.0 FEET ON 9-6-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 9.6 FEET ON 9-7-73.

BORING G-18

Elevation	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
680									
670									
								10.4	
660	SA							8.5	
	SA							9.9	
650									
640									

BORING G-18

SURFACE ELEVATION 677.8

SAMPLES	SYMBOLS	DESCRIPTIONS
	ML	DARK BROWN SILT WITH SOME ORGANICS, TRACE OF CLAY AND FINE SAND (TOPSOIL)
	ML	BROWN SILT WITH TRACE OF CLAY AND FINE SAND (STIFF)
	ML	BROWN CLAYEY SILT WITH FINE TO COARSE SAND AND OCCASIONAL FINE GRAVEL (STIFF)
	SM	BROWN FINE TO COARSE SAND WITH SILT AND GRAVEL GRADES WITH MORE MEDIUM TO COARSE SAND GRADES WITH MORE COARSE SAND AND LESS SILT
	SW SM	GRAY FINE TO COARSE SAND WITH SOME SILT AND GRAVEL

BORING COMPLETED AT 30.0 FEET ON 9-19-73.
NO CASING USED.
GROUNDWATER LEVEL RECORDED AT 11.0 FEET ON 9-19-73.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORINGS G-17 AND G-18

ELEVATION IN FEET

LABORATORY TEST DATA

Elevation	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
690									
680									
	SA							7.1	
670									
	SA								
	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)
GRADES WITH MORE FINE SAND

SM — DARK BROWN SILTY SAND WITH SOME CLAY

SM — BROWN FINE TO COARSE SAND WITH SOME GRAVEL AND SILT
GRADES WITH MORE FINE SAND
GRADES WITH LESS FINE SAND
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.

Elevation	Tests Reported Elsewhere	Plastic Limit %	Plasticity Index %	(a)	(b)	(c)	(d)	Moisture Content %	Dry Density pcf
670									
660									
	SA							11.9	
	SA							9.5	
650									
	SA								
640									
630									

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)
GRADES LESS STIFF

SM — BROWN FINE TO COARSE SAND WITH SOME SILT, GRAVEL AND TRACE OF CLAY
GRADES WITH SOME SEAMS OF CLAYEY SILT AND CLAYEY SAND
GRADES WITH LESS SILT

SM — GRAY SILTY FINE TO COARSE SAND WITH SOME GRAVEL, TRACE OF CLAY AND SOME SEAMS AND AND LAYERS OF SILT

ML — GRAY SANDY SILT WITH SOME FINE GRAVEL AND TRACE OF CLAY
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.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORINGS G-19 AND G-20

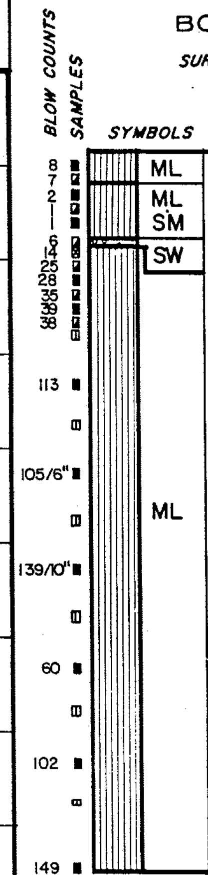
LABORATORY TEST DATA

Elevation in feet	Tests reported elsewhere	Atterberg limits: Plastic limit %	Atterberg limits: Plasticity index %	Shear strength: Triaxial compression a $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: Triaxial compression b σ_3 psf	Shear strength: Unconfined compression c $\frac{q_u}{2}$ psf	Shear strength: Pocket penetrometer d $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf
680–670									
670–660	C						2000	23.8	96
660–650							4500+	9.1	135
							4500+	8.3	137
650–640							4500+		
640–630							4500+	5.9	144
630–620							4500+	7.6	139
620–610							4500+	9.3	136
610–600							4500+	7.8	138
							4500+	8.1	136
600–590									

ELEVATION IN FEET

BORING H-1

SURFACE ELEVATION 671.7



DESCRIPTIONS

Top of Salt Creek Alluvium
DARK BROWN SILT WITH SOME FINE SAND, CLAY AND TRACE OF ROOTS (TOPSOIL)
DARK BROWN AND GRAY LAMINATED CLAYEY SILT AND SILTY FINE SAND WITH TRACE OF GRAVEL AND ROOTS
BROWN FINE TO COARSE SAND WITH TRACE OF SILT
Top of Illinoian Glacial Till
GRAY FINE TO COARSE SANDY SILT WITH TRACE OF CLAY AND GRAVEL
GRADES WITH MORE CLAY

GRADES WITH MORE FINE GRAVEL

BOULDER AT 30.0'

14" LAYER GRAY FINE SAND AT 73.8'

BORING COMPLETED AT 76.5 FEET ON 10-30-73.
CASING USED TO A DEPTH OF 5.0 FEET.
ALLUVIAL 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 2.5-162

LOG OF BORING H-1

LABORATORY TEST DATA

Elevation in feet	Tests reported elsewhere	Atterberg limits: plastic limit %	Atterberg limits: plasticity index %	Shear strength: triaxial compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: triaxial compression (b) σ_3 psf	Shear strength: unconfined compression (c) $\frac{q_u}{2}$ psf	Shear strength: pocket penetrometer (d) $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf
680									
670							1100	28.8	85
							1800		
		20.4	20.4	702	648		300	29.7 26.5	91 94
660							4500+	8.3	139
							4500+		
650							4500+	7.3	142
							4500+		
640							4500+	10.2	132
							4500+		
630		12.8	7.3				4500+	7.2	139
							4500+		
620								8.2	134
610							4500+	9.3	136
							4500+		
600							4500+		
590									

BORING H-2

SURFACE ELEVATION 670.9

Blow counts	Symbols	Descriptions
7 4	ML	*Top of Salt Creek Alluvium* DARK BROWN CLAYEY SILT WITH ORGANICS AND SOME FINE SAND (TOPSOIL) (STIFF)
1 7	SM ML	ORANGISH-BROWN AND GRAY LAMINATED CLAYEY SILT AND FINE SAND WITH SOME SILT AND ORGANICS (SOFT)
	SM	GRAY FINE TO COARSE SAND WITH SOME FINE GRAVEL, SILT AND ORGANICS
98	SP	GRAY COARSE SAND WITH OCCASIONAL FINE TO MEDIUM SAND AND FINE GRAVEL
180/10"	ML	*Top of Illinoian Glacial Till* GRAY FINE TO COARSE SANDY SILT WITH GRAVEL, TRACE OF CLAY AND OCCASIONAL FINE SAND SEAMS (HARD) GRADES DARK GRAY GRADES WITH MORE CLAY
200/5"	SP	GRAY FINE TO COARSE SAND WITH FINE GRAVEL AND TRACE OF SILT
205	ML	DARK GRAY FINE SANDY SILT WITH SOME GRAVEL, TRACE OF CLAY AND OCCASIONAL FINE SAND SEAMS (HARD) GRADES WITH MORE CLAY
217	SP	DARK GRAY FINE TO COARSE SAND WITH GRAVEL (VERY DENSE)
163 169	ML	DARK GRAY FINE TO MEDIUM SANDY SILT WITH SOME CLAY AND FINE GRAVEL AND OCCASIONAL FINE SAND SEAMS (HARD)

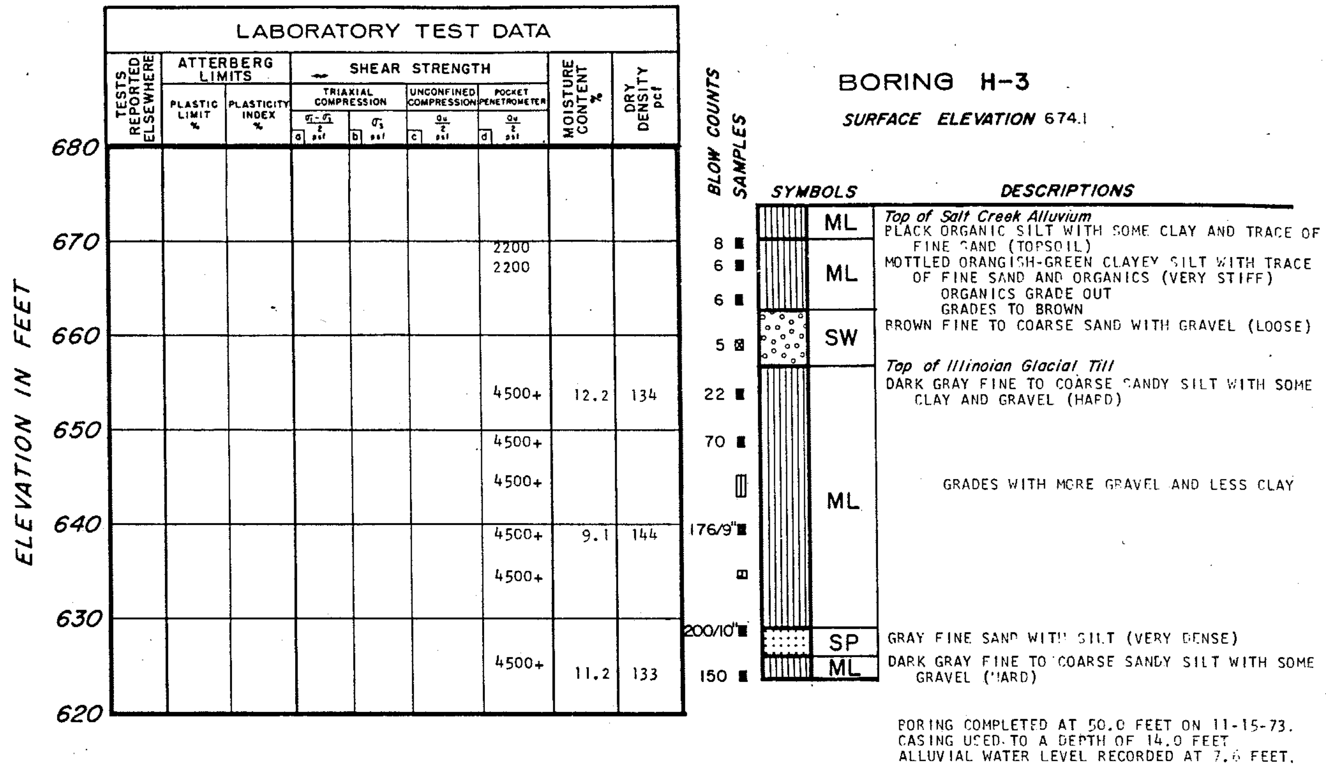
BORING COMPLETED AT 74.5 FEET ON 10-15-73.
CASING USED TO A DEPTH OF 14.5 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 6.5 FEET.

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 2.5-163

LOG OF BORING H-2



NOTE:

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

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING H-3

LABORATORY TEST DATA

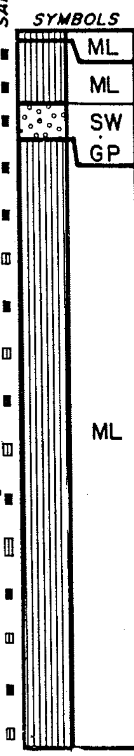
ELEVATION IN FEET (680 to 590)

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{Q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{Q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
						750	31.6	78	4
						500	31.5	90	2
									6
						4500+	9.9	135	25
						4500+			38
						4500+			
						4500+	8.4	138	117/6"
						4500+			
						4500+	8.1	136	105/6"
						4500+			
						4500+	8.1	138	177/9"
						4500+			
						4500+	9.2	135	93
						4500+			
						4500+	8.0	138	113
						4500+			

BORING H-4

SURFACE ELEVATION 671.6

BLOW COUNTS / SAMPLES / SYMBOLS / DESCRIPTIONS



ML — DARK BROWN SILT WITH SOME CLAY AND ORGANICS

Top of Salt Creek Alluvium

ML — DARK BROWN SILT WITH CLAY AND SOME FINE SAND AND ORGANICS (MEDIUM STIFF)

SW — GRAY SILTY FINE TO COARSE SAND AND FINE GRAVEL (LOOSE)

GP

Top of Illinoian Glacial Till

ML — GRAY FINE TO COARSE SANDY SILT WITH CLAY AND SOME FINE GRAVEL (HARD)

GRADES WITH LESS CLAY AND MORE FINE SAND

4" COBBLE AT 31.5'

GRADES WITH OCCASIONAL STRINGERS OF FINE SAND

GRADES WITH MORE CLAY

BORING COMPLETED AT 75.5 FEET ON 11-14-73.
CASING USED TO A DEPTH OF 10.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 4.4 FEET.

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 2.5-165

LOG OF BORING H-4

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{Q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{Q_u}{2}$ psf	Moisture Content %	Dry Density pcf
680									
							750	21.7	100
670							500 750	29.4	87
								25.7	98
								25.8	99
660							4500		
							4500+	10.2	132
650							4500+		
							4500+	6.7	143
640							4500+		
							4500+	7.7	141
630									
							4500+		
620							4500+	7.3	140
							4500+		
610							4500+	8.6	136
							4500+		
600									
590									

ELEVATION IN FEET

BORING H-5

SURFACE ELEVATION 672.6

BLOW COUNTS: 6, 7, 6, 4, 3, 2, 3, 16, 17, 25, 175/7", 98/6", 164/11", 101, 117

SYMBOLS	DESCRIPTIONS
ML	*Top of Salt Creek Alluvium* DARK BROWN CLAYEY SILT WITH ORGANICS AND TRACE OF GRAVEL (TOPSOIL)
SM	BROWN SILTY FINE TO COARSE SAND WITH CLAYEY SILT LAMINATIONS AND TRACE OF FINE GRAVEL GRADES WITH LESS MEDIUM TO COARSE SAND
SP	BROWN FINE SAND WITH TRACE OF SILT AND GRAVEL
SW GP	DARK BROWN FINE TO COARSE SAND AND FINE GRAVEL
ML	LIGHT GRAY SILT WITH FINE SAND AND GRAVEL
ML	*Top of Illinoian Glacial Till* LIGHT GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND GRAVEL (HARD) GRADES WITH LESS CLAY GRADES GRAY GRADES WITH MORE SAND BOULDER AT 43.5' GRADES WITH OCCASIONAL COBBLE GRADES WITH MORE SAND AND GRAVEL

BORING COMPLETED AT 75.0 FEET ON 11-1-73.
CASING USED TO A DEPTH OF 5.0 FEET.
ALLUVIAL 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 2.5-166

LOG OF BORING H-5

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression a ($\sigma_1-\sigma_3$, ksf)	Triaxial Compression b (σ_3, ksf)	Unconfined Compression c ($q_u/2$, ksf)	Pocket Penetrometer d ($q_u/2$, ksf)	Moisture Content %	Dry Density pcf	Blow Counts
680–670							1000	25.4	86	7
670–660								17.1	103	4
							1500	19.2	105	2
660–650							4500+	9.9	132	25
							4500+	6.5	138	68
650–640	C						4500+			
							4500+			178/9"
640–630							4500+			
							4500+			152/10"
630–620							4500+			
							4500+			140/9"
620–610	TX/DY						4500+			
							4500+	8.5	133	87
610–600							4500+	8.0	137	118
600–590							4500+	8.8	138	104
590–580							4500+			
							4500+			156/10"
580–570	C						4500+			
							4500+	17.0	140	63
570–560							4500+			
560–550							4500+	9.4	135	111/6"
550–540							4500+			
540–530							4500+	11.4	130	100/3"
530–520							4500+			

ELEVATION IN FEET

BORING H-6

SURFACE ELEVATION 672.3

BLOW COUNTS / SAMPLES / SYMBOLS / DESCRIPTIONS

Symbol	Description
ML	DARK BROWN SILT WITH SAND AND ORGANICS (TOPSOIL)
	Top of Salt Creek Alluvium
ML	DARK BROWN SILT WITH TRACE OF FINE SAND AND CLAY (LOOSE)
SM	BROWNISH-GRAY FINE SILTY SAND (VERY LOOSE)
OL	DARK BROWN ORGANIC SILT WITH CLAY
SP	DARK GRAY FINE TO MEDIUM SAND WITH SOME SILT
GM	GRAYISH-BROWN FINE TO COARSE SANDY GRAVEL WITH SILT
	Top of Illinoian Glacial Till
ML	GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY GRADES WITH OCCASIONAL LAYERS OF SAND OR GRAVEL GRADES WITH GRAVEL
SP	GRAYISH-BROWN FINE SAND WITH TRACE OF SILT
ML	GRAY FINE TO MEDIUM SANDY SILT WITH CLAY AND TRACE OF COARSE SAND AND GRAVEL (HARD)
CL	GREENISH-BROWN SILTY CLAY WITH FINE TO COARSE SAND AND GRAVEL
ML	GRAYISH-BROWN CLAYEY SILT WITH TRACE OF FINE SAND
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL 12" LAYER BROWN FINE SAND AT 138.9'

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 2.5-167

LOG OF BORING H-6

(SHEET 1 of 3)

BORING H-6 CONT'D

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER $\frac{Q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	RQD	BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
520													
							4500+	21.8	109		45	ML	GRADES BLUISH-GREEN AND WITH MORE CLAY
510													
							2500						(VERY STIFF)
500													*Top of Pre-Illinoian Lacustrine Deposit*
							2500	20.2	109		36		GRAYISH-BROWN SILT WITH SOME FINE SAND AND LAYERS OF GRAY SANDY SILT
490													
							2500						
480													
											74		
470													
							3000	19.1	111		158	ML	GRADES WITH LAYERS OF FINE SAND
460													
	TX/DY						4500						
450													
							4000	18.9	112		42		GRADES WITH STRINGERS OF CLAYEY SILT
440													
							4500						COBBLE AT 239.0'
430													
	RES						4500+				143	CH	MOTTLED BROWN AND GREENISH-GRAY CLAY WITH SILT AND GRAVEL
420										93%	100%		LIGHT GRAY ARGILLACEOUS LIMESTONE, IRREGULAR BEDDING, WEATHERED, PYRITE INCLUSIONS GRAY SOFT SHALE, INDISTINCT BEDDING, SLICKENSIDED SURFACES, WEATHERED GRADES CARBONACEOUS, DARK GRAY AT 255.0'
										65%	100%		FINE GRAY SILTY SANDSTONE, LIGHT GRAY, MICACEOUS, SIDERITE NODULES, OCCASIONAL STRINGERS OF SILTSTONE, THINLY BEDDED LIGHT GRAY SANDY SILTSTONE, MICACEOUS IRREGULAR BEDDED, OCCASIONAL ZONES OF SANDSTONE, STRINGERS OF SANDY SHALE
410													
										14%	100%		
400													
										72%	100%		LIGHT GRAY MASSIVE SANDY SILTSTONE, MICACEOUS
390													
										100%	100%		GRADES LESS SAND
380										100%	100%		THIN BROWN SANDSTONE LENSES, IRREGULAR SPACED FROM 294.5' TO 303.1'
										100%	100%		
370													GRADES SHALEY
										100%	100%		
360													

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-167

LOG OF BORING H-6

(SHEET 2 of 3)

BORING H-6 CONT'D

LABORATORY TEST DATA											
TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS		SHEAR STRENGTH				MOISTURE CONTENT %	RQD	BLOW COUNTS	SAMPLES
	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION b σ_3 psf	UNCONFINED COMPRESSION c $\frac{Qu}{2}$ psf	POCKET PENETROMETER d $\frac{Qu}{2}$ psf				
								96%		100%
								95%		100%
								92%		98%
								66%		100%
								24%		98%
								55%		100%

ELEVATION IN FEET: 360, 350, 340, 330, 320, 310, 300, 290

SYMBOLS

DESCRIPTIONS

GRADES LESS SHALEY

GRADES SHALEY

GRAY SILTY SHALE, MICACEOUS, SLIGHTLY CARBONACEOUS

SILT GRADES OUT

GRADES CARBONACEOUS

BLACK SOFT SHALE, CARBONACEOUS
OCCASIONAL FOSSIL
LIGHT BROWN CALCAREOUS BANDS 345.0' TO 346.0'

GRAY SHALE, OCCASIONAL SIDERITE NODULES, PYRITE INCLUSIONS

BLACK COAL, PYRITIC, VITREOUS LUSTRE (NO. 7)

GRAY SOFT SHALE (UNDERCLAY) SLICKENSIDED SURFACES

BUFF-GRAY ARGILLACEOUS LIMESTONE, SILTY SHALE SEAMS, FRACTURES

BORING COMPLETED AT 374.5 FEET ON 10-4-73.
CASING USED TO A DEPTH OF 10.0 FEET.
ALLUVIAL WATER LEVEL NOT RECORDED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-167

LOG OF BORING H-6

(SHEET 3 of 3)

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						750	31.8	79	5
						500			5
							20.1	111	2
						4500+			20
						4500+			
						4500+	7.6	142	169
						4500+	7.6	141	165/9"
						4500+			
						4500+	9.9	134	162/8"
						4500+			
						4500+	8.4	139	142
						4500+			
						4500+	9.9	135	114
						4500			
						4500			94

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620, 610, 600, 590

BLOW COUNTS / SAMPLES

BORING H-7

SURFACE ELEVATION 673.5

SYMBOLS	DESCRIPTIONS
ML	BLACK SILT WITH ORGANICS (TOPSOIL)
	Top of Salt Creek Alluvium
ML	DARK BROWN SILT WITH ORGANICS AND TRACE OF CLAY
SM	MOTTLED BROWN AND GRAY SILTY FINE SAND WITH TRACE OF CLAY (VERY LOOSE) GRADES WITH MEDIUM SAND
GW	GRAY FINE TO COARSE GRAVEL AND SAND
	Top of Illinoian Glacial Till
ML	GRAY FINE TO COARSE SANDY SILT WITH SOME FINE GRAVEL (HARD)
	GRADES WITH STRINGERS OF FINE SAND
	GRADES WITH COARSE GRAVEL
	GRADES WITH MORE CLAY

PORING COMPLETED AT 75.0 FEET ON 11-16-73.
CASING USED TO A DEPTH OF 10.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 7.3 FEET.

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 2.5-168

LOG OF BORING H-7

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						1500	31.3	89	11
						1350	28.9	96	7
TX/ CU/ PP							33.0	90	4
									11
							21.1	114	10
									18
							11.4	133	103
						4500+			
						4500+	9.6	133	160/6"
						4500+			
						4500+			290/9"

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620

BORING H-8

SURFACE ELEVATION 673.8

BLOW COUNTS | SAMPLES | SYMBOLS | DESCRIPTIONS

Top of Salt Creek Alluvium

ML — DARK BROWN SILT WITH FINE SAND, SOME CLAY AND ORGANICS (TOPSOIL) (STIFF)

ML — MOTTLED BROWN AND GRAY SILT WITH CLAY TRACE OF FINE SAND AND OCCASIONAL ORGANICS

SM — MOTTLED BROWN AND GRAY FINE TO MEDIUM SAND WITH SOME SILT (LOOSE)

GW — GRAY FINE TO COARSE GRAVEL WITH FINE TO COARSE SAND AND SOME COBBLES (LOOSE)

SM — ORANGISH-BROWN FINE TO COARSE SAND WITH FINE GRAVEL AND SOME SILT

SW — GRAY FINE TO COARSE SAND WITH FINE TO COARSE GRAVEL

SP — GRAY FINE TO MEDIUM SAND WITH OCCASIONAL COARSE SAND AND FINE GRAVEL

Top of Illinoian Glacial Till

ML — GRAY FINE TO COARSE SANDY SILT WITH SOME MEDIUM TO COARSE GRAVEL, TRACE OF CLAY AND OCCASIONAL FINE SAND SEAMS

3" LAYER OF GRAVEL AT 26.2'

GRADES WITH OCCASIONAL THIN LAYER OF GRAVEL

14" LAYER OF FINE TO COARSE SAND AND GRAVEL AT 37.0'

GRADES WITH OCCASIONAL COBBLE

GRADES WITH MORE CLAY

BORING COMPLETED AT 50.5 FEET ON 10-12-73.
CASING USED TO A DEPTH OF 19.0 FEET
ALLUVIAL WATER LEVEL RECORDED AT 6.1 FEET.

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 2.5-169

LOG OF BORING H-8

LABORATORY TEST DATA

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION (b) σ_3 psf	UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS / SAMPLES
						4500	22.0	93	13 ■
			3962	216		4500			18 ■
							17.8	119	21 ■
			5076*	907		4500	11.0*	127	39 ■
									12 ■
									21 ■
TX/CU /PP						2000	14.8	120	13 ■
						2000	20.7	107	12 ■
						3000			12 ■
TX/DY*						2000			16 ■
						4500+	11.5	135	154 ■
						4500+	7.6	143	153 ■
						4500+			▯
							12.2	130	152/8" ■
						4500+			▯
TX/CU /PP						4500+	10.8	133	108 ■
						4500+			▯

*SATURATED

BORING H-9

SURFACE ELEVATION 731.1

SYMBOLS	DESCRIPTIONS
	BROWN SILT WITH ORGANICS (TOPSOIL)
ML	BROWN WITH BLACK STAINING SILT WITH TRACE OF FINE SAND, CLAY AND ORGANICS (WEATHERED LOESS)
ML	*Top of Wisconsinan Glacial Till* BROWN CLAYEY SILT WITH SOME FINE TO MEDIUM SAND, GRAVEL AND OCCASIONAL BROWN FINE SAND LAYER (HARD) GRADES TO GRAY
ML	*Top of Interglacial Zone* DARK GRAY CLAYEY SILT WITH TRACE OF ORGANICS (STIFF) GRADES WITH MORE CLAY
ML	GREENISH-GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND GRAVEL (STIFF)
ML	*Top of Illinoian Glacial Till* GRAY FINE TO COARSE SANDY SILT WITH TRACE OF CLAY AND SOME FINE GRAVEL (HARD) GRADES WITH LESS MEDIUM TO COARSE SAND GRADES WITH COARSE GRAVEL 14" LAYER OF GRAY FINE TO MEDIUM SAND AT 63.9'

BORING COMPLETED AT 80.0 FEET ON 10-22-73.
CASING USED TO A DEPTH OF 5.0 FEET.
ALLUVIAL 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 2.5-170

LOG OF BORING H-9

LABORATORY TEST DATA

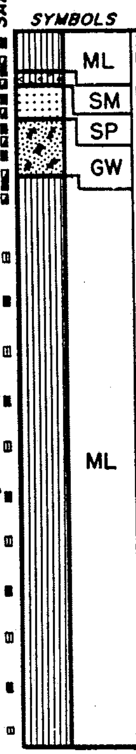
ELEVATION IN FEET (680 – 590)

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Triaxial Compression (b) σ_3 psf	Unconfined Compression (c) $\frac{q_u}{2}$ psf	Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
						750	21.9	98
							21.2	101
							11.8	125
						4500	6.9	138
						4500+		
						4500+	5.8	147
						4500+		
						4500+	7.1	141
						4500+		
						4500+	8.0	137
						4500+		
						4500+	7.6	139
						4500+		
						4500+	8.7	137
						4500+		

BORING H-10

SURFACE ELEVATION 672.2

BLOW COUNTS / SAMPLES: 5, 3, 1, 2, 1, 9, 9, 10, 6, 15, 16, 43, 32, 100/6", 189/9", 182/10", 120, 102



SYMBOLS — *DESCRIPTIONS*

Top of Salt Creek Alluvium

ML — DARK BROWN CLAYEY SILT WITH ORGANICS AND TRACE OF FINE SAND AND GRAVEL (TOPSOIL) (SOFT)

SM — DARK BROWN SILTY FINE SAND WITH TRACE OF CLAY AND FINE GRAVEL

SP — BROWN FINE TO MEDIUM SAND WITH SOME COARSE SAND AND GRAVEL (LOOSE)

GW — BROWN FINE TO COARSE SAND AND GRAVEL WITH TRACE OF SILT (LOOSE)

Top of Illinoian Glacial Till

ML — GRAY FINE TO COARSE SANDY SILT WITH SOME GRAVEL (HARD)

BOULDER AT 29.0'

4" COBBLE AT 61.0'

GRADES WITH MORE CLAY

BORING COMPLETED AT 15.5 FEET ON 11-3-73.
CASING USED TO A DEPTH OF 17.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 5.5 FEET.

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 2.5-171

LOG OF BORING H-10

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
680										
							1750	23.6	82	3
670								18.6	91	5 4
								21.7	102	2 2 2
								13.1	117	2 1 2
660										4 3 31
							4500+	8.4	135	28
										78
650										
							4500+	6.9	142	210/10"
							4500+			260/8"
640										218/9"
							4500+			210
630							4500+	8.4	137	176
							4500+			119
620								9.2	134	119
							4500+			102
610							4500+	8.2	136	106
							4500+			138
600							4500+	9.1	135	78
590										

ELEVATION IN FEET

BORING H-11

SURFACE ELEVATION 673.1

BLOW COUNTS / SAMPLES

SYMBOLS	DESCRIPTIONS
ML	*Top of Salt Creek Alluvium* DARK BROWN SILT WITH SOME ORGANICS AND TRACE OF CLAY (STIFF)
ML	BROWN FINE SANDY SILT WITH TRACE OF CLAY AND ORGANICS
SW	GRAY FINE TO COARSE SAND WITH TRACE OF SILT AND ORGANICS (LOOSE GRADES WITH MORE SILT
ML	*Top of Illinoian Glacial Till* GRAY FINE TO COARSE SANDY SILT WITH TRACE OF CLAY AND FINE GRAVEL (HARD) GRADES WITH COARSE GRAVEL GRADES WITH MORE CLAY 3" GRAY FINE TO MEDIUM SAND LAYER AT 49.7' GRADES WITH LESS COARSE GRAVEL

BORING COMPLETED AT 76.0 FEET ON 10-26-73.
CASING USED TO A DEPTH OF 14.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 7.2 FEET.

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

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
							23.3	86	15
							29.6	92	7
									2
							17.1	123	14
							13.8	132	26
							13.3		43
						4500+			
						4500+	10.6	137	207/10"
						4500+			
						4500+	11.9	135	238/11"
						4500+			
						4500+	11.6	136	201

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620

BLOW COUNTS — SAMPLES — SYMBOLS

BORING H-12

SURFACE ELEVATION 674.6

DESCRIPTIONS

ML — *Top of Salt Creek Alluvium*
BLACK ORGANIC CLAY WITH SOME SILT AND FINE SAND (TOPSOIL)

ML — MOTTLED DARK BROWN AND ORANGISH-BROWN SILT WITH SOME FINE SAND, CLAY AND ORGANIC (STIFF)

ML — *Top of Illinoian Glacial Till*
LIGHT GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND FINE GRAVEL
GRADES WITH COARSE GRAVEL AND MORE CLAY

GRADES WITH MORE GRAVEL AND LESS CLAY

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.

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 2.5-173

LOG OF BORING H-12

BORING H-13

SURFACE ELEVATION 679.6

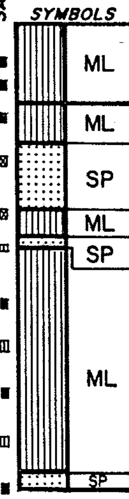
LABORATORY TEST DATA

ELEVATION IN FEET (680, 670, 660, 650, 640, 630, 620)

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
TX/CU /PP							18.2	102	7
									7
						4500+			29
							22.5	108	7
									12
						4500+			190/10"
						4500+			
						4500+	8.8	134	210/8"
						4500+			
							14.6	119	200/7"

SAMPLES

SYMBOLS / DESCRIPTIONS



Symbol	Description
	Top of Salt Creek Alluvium
ML	BROWN FINE SANDY SILT WITH TRACE OF FINE GRAVEL AND ORGANICS 18" LAYER OF SAND AT 7.0'
	Top of Illinoian Glacial Till
ML	LIGHT BROWN FINE TO COARSE SANDY SILT WITH TRACE OF CLAY AND GRAVEL (HARD) GRADES TO GRAY
SP	GRAY FINE SAND WITH TRACE OF MEDIUM AND COARSE SAND GRADES WITH MORE COARSE SAND
ML	GRAY FINE TO COARSE SANDY SILT WITH TRACE OF CLAY AND SOME GRAVEL
SP	GRAY FINE TO MEDIUM SAND
ML	GRAY FINE TO COARSE SANDY SILT WITH TRACE OF CLAY AND SOME GRAVEL (HARD) GRADES WITH OCCASIONAL BOULDER GRADES DARK GRAY
SP	DARK GRAY FINE TO MEDIUM SAND

BORING COMPLETED AT 49.0 FEET ON 11-14-73.
CASING USED TO A DEPTH OF 14.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 9.3 FEET.

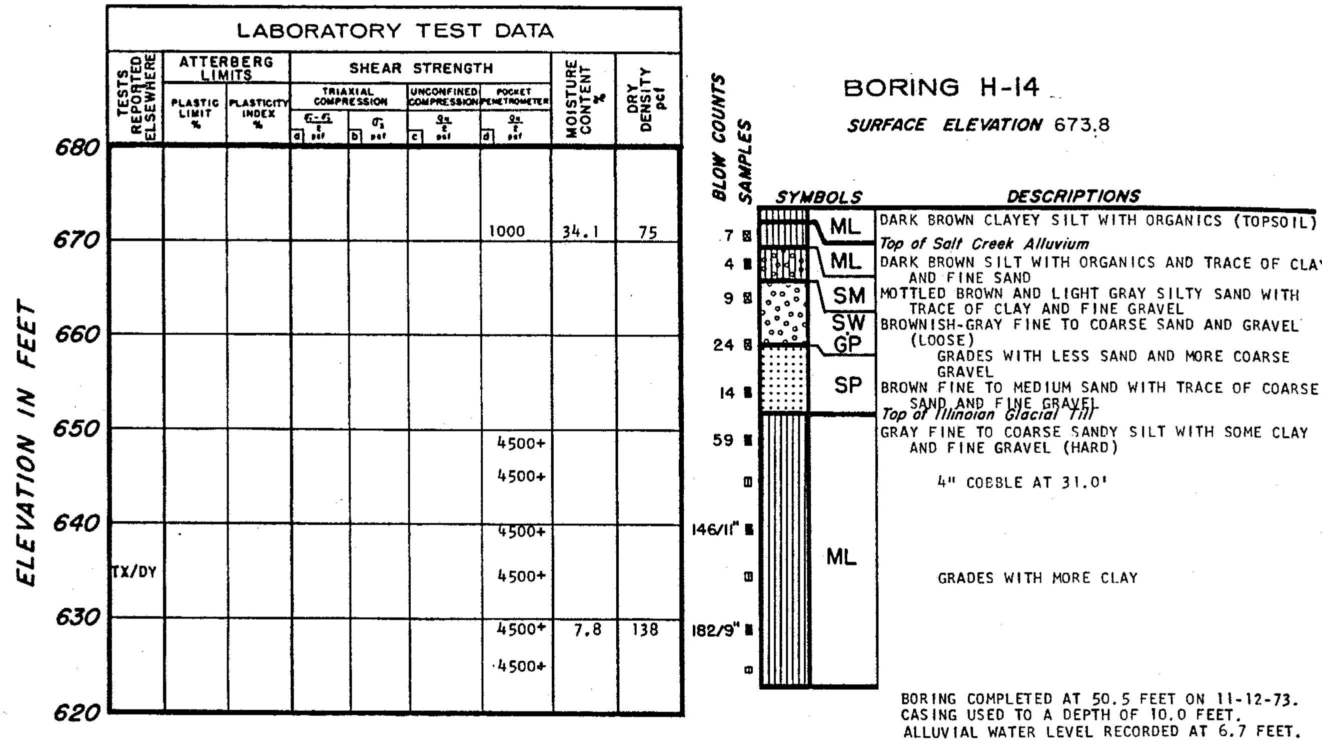
NOTE:

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 2.5-174

LOG OF BORING H-13



NOTE:

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-175

LOG OF BORING H-14

BORING H-15

SURFACE ELEVATION 725.3

LABORATORY TEST DATA

ELEVATION IN FEET (730 to 640)

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS SAMPLES
							18.9	102	7
									6
			3356	576					20
							18.1	121	26
TX/DY*						4500			27
			2423*	1555		4500	12.1*	125	20
						2500			10
RES*						2000			8
						2000	16.9	123	21
						2500			140/10"
						4500+	11.4	134	99
						4500+			69
						4500+			35
						2500			
						4500+			177/11"
						4500+			
									166/9"

*SATURATED

SYMBOLS	DESCRIPTIONS
ML	BROWN SILT WITH ORGANICS (TOPSOIL)
SM	BROWN SILTY FINE TO MEDIUM SAND WITH TRACE OF CLAY (WEATHERED LOESS) (LOOSE) MEDIUM SAND AND CLAY GRADES OUT
ML	BROWN FINE SANDY SILT
ML	*Top of Wisconsinan Glacial Till* GRAYISH-BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL GRADES WITH THIN FINE TO COARSE SAND LAYERS LAYER OF BROWN SILT AT 18.0' GRADES TO GRAY WITH STRINGERS OF SAND
ML	*Top of Interglacial Zone* MOTTLED BROWN AND GRAY CLAYEY SILT WITH ORGANICS
CL	GREENISH-GRAY SILTY CLAY WITH SOME FINE SAND AND GRAVEL (SOFT)
ML	*Top of Illinoian Glacial Till* GRAY CLAYEY SILT WITH FINE TO COARSE SAND AND GRAVEL (STIFF) 12" SAND LAYERS AT 39.5' CLAY GRADES OUT
ML	GRAY FINE TO COARSE SANDY SILT WITH GRAVEL AND TRACE OF CLAY (HARD) GRADES WITH MORE CLAY GRADES WITH MORE GRAVEL

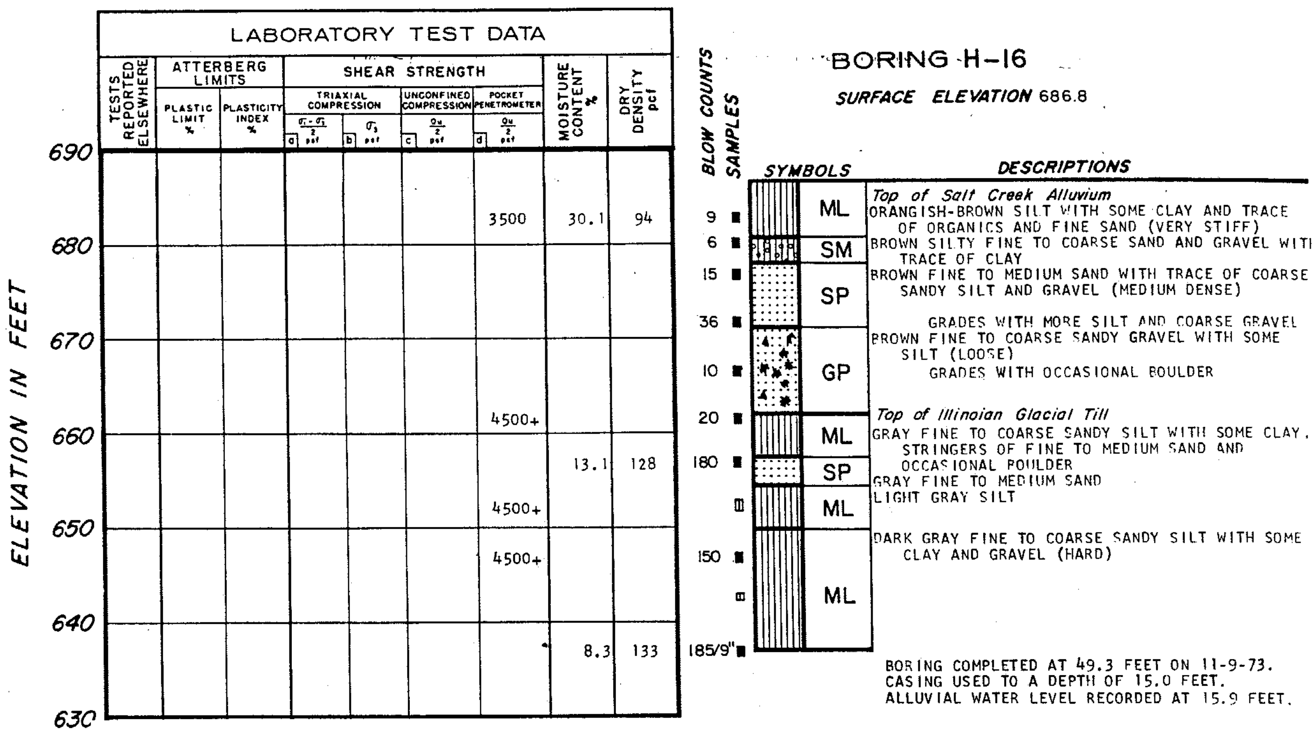
BORING COMPLETED AT 80.5 FEET ON 10-20-73.
CASING USED TO A DEPTH OF 5.0 FEET.
ALLUVIAL WATER LEVEL NOT RECORDED.

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 2.5-176

LOG OF BORING H-15



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 2.5-177

LOG OF BORING H-16

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{Qu}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{Qu}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
						—		
						1500		
C						1250		
						4500+	11.3	131
C TX/CU /PP RES						4500+		
						4500+		
						4500+		
						4500+		
						4500+	14.5	125

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620

BORING H-17

SURFACE ELEVATION 675.1

BLOW COUNTS	SAMPLES	SYMBOLS	DESCRIPTIONS
		ML	BLACK SILT WITH ORGANICS AND TRACE OF CLAY (TOPSOIL)
			Top of Salt Creek Alluvium
4	■	ML	DARK BROWN SILT WITH SOME ORGANICS, FINE SAND AND CLAY (STIFF)
3	■		GRADES WITH STRINGERS OF FINE TO COARSE SAND
2	■	SP	BROWN FINE SAND WITH TRACE OF SILT (VERY LOOSE)
			Top of Illinoian Glacial Till
19	■	ML	GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND FINE GRAVEL (HARD)
55	■		GRADES WITH COBBLES
183	■		COBBLES GRADE OUT
	▯		
190/8"	■		
	▯		
	■		
	▯		

BORING COMPLETED AT 50.5 FEET ON 11-13-73.
CASING USED TO A DEPTH OF 10.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 7.4 FEET.

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 2.5-178

LOG OF BORING H-17

LABORATORY TEST DATA

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						2000	13.8	114	6
						750			2
							21.0	90	6
									11
						4500+	23.6	122	93
						4500+			
						4500+	9.9	137	247
						4500+			
						4500+	8.6	139	247/10"
							10.7	136	195

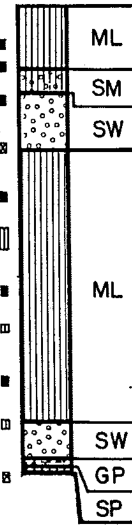
ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620

BLOW COUNTS SAMPLES

BORING H-18

SURFACE ELEVATION 675.0

SYMBOLS ***DESCRIPTIONS***



ML — *Top of Salt Creek Alluvium*
DA̅K BROWN SILT WITH ORGANICS AND SOME FINE SAND (STIFF)
GRADES TO GRAY AND WITH MORE FINE SAND

SM — GRAY FINE SAND WITH SILT

SW — GRAY FINE TO COARSE SAND WITH TRACE OF SILT AND FINE GRAVEL (LOOSE)

ML — *Top of Illinoian Glacial Till*
GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND FINE GRAVEL AND OCCASIONAL SAND STRINGER
GRADES WITH COARSE GRAVEL
GRADES WITH MORE FINE SAND

SW — GRAY FINE TO COARSE SAND WITH SOME SILT AND GRAVEL

GP — GRAY FINE GRAVEL WITH SOME SAND (VERY DENSE)

SP — GRAY FINE TO MEDIUM SAND

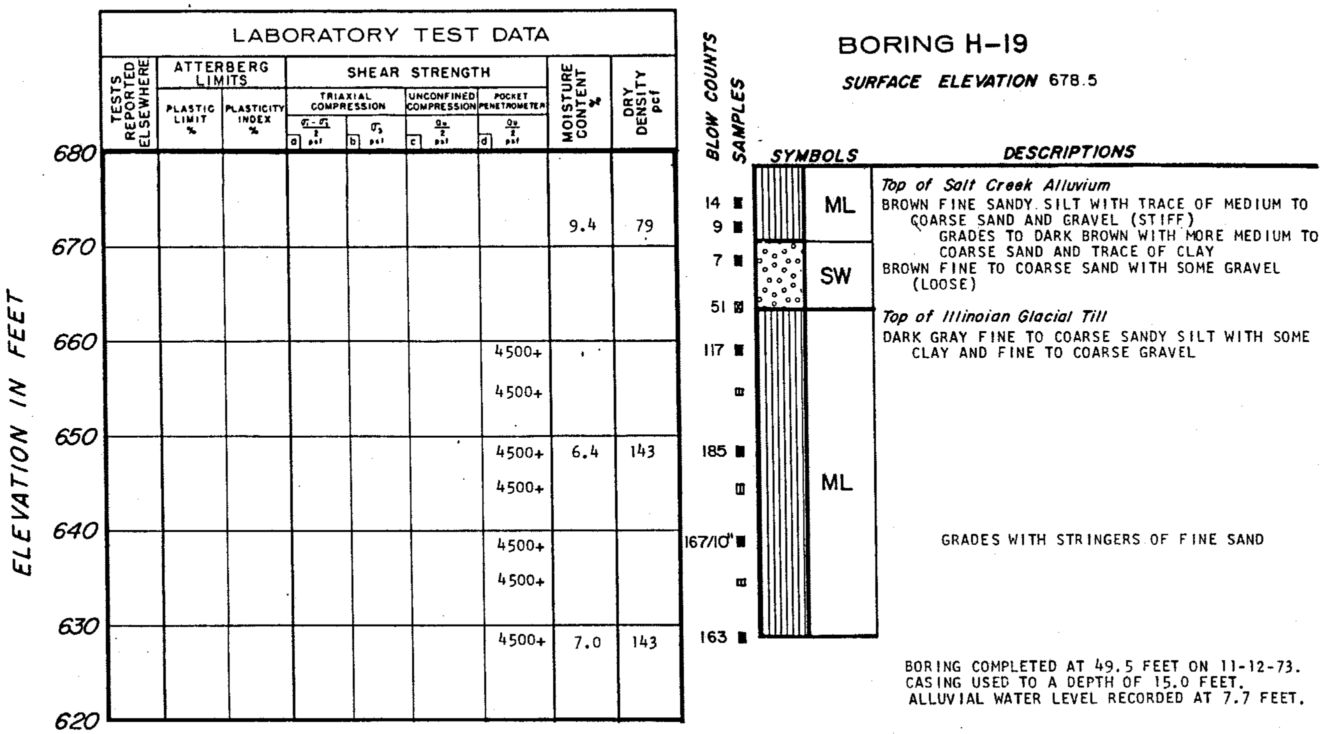
BORING COMPLETED AT 49.5 FEET ON 11-5-73.
CASING USED TO A DEPTH OF 21.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 8.0 FEET.

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 2.5-179

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

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-180

LOG OF BORING H-19

LABORATORY TEST DATA

ELEVATION IN FEET: 750, 740, 730, 720, 710, 700, 690, 680, 670, 660, 650, 640

BORING H-20

SURFACE ELEVATION 740.8

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS	SYMBOLS	DESCRIPTIONS
							20.2	101	13	ML	BROWN SILT WITH ORGANICS (TOPSOIL)
						2000			9	ML	BROWN SILT WITH TRACE OF FINE SAND AND CLAY (STIFF)
			2230	605		2000	13.4	119	9	ML	*Top of Wisconsinan Glacial Till* LIGHT BROWN FINE TO COARSE SANDY SILT WITH SOME CLAY AND GRAVEL (STIFF)
									99	SP	BROWN FINE SAND WITH SILT AND LAYERS OF MEDIUM TO COARSE SAND AND FINE GRAVEL
TX/CU /PP						4500 +	9.5	130	59	ML	BROWN FINE TO COARSE SANDY SILT WITH SOME FINE GRAVEL
RES*						4500 +			29		GRADES TO BROWN AND WITH SOME CLAY
						4500 +	8.8	136	51	SM	GRAY FINE SAND WITH SILT AND SOME FINE GRAVEL
TX/DY						4500+			53	ML	GRAY FINE SANDY SILT WITH SOME CLAY, MEDIUM TO COARSE SAND AND GRAVEL (HARD)
	13.5	11.6	2592*	2534		3000	11.7*	124	14		GRADES WITH MORE CLAY AND LESS SAND (VERY STIFF)
						3000			18		
			3736*	3197		3000	17.9*	115	23	ML	*Top of Interglacial Zone* DARK GRAY CLAYEY SILT WITH TRACE OF FINE SAND (VERY STIFF)
TX/DY						4500 +			17		5" COBBLE AT 53.0' GRADES GRAYISH-GREEN AND WITH LESS CLAY (HARD)
						4500 +	9.4	132	60	ML	*Top of Illinoian Glacial Till* GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND GRAVEL (HARD)
						4500 +			167		
TX/DY						4500 +	10.5	135			GRADES WITH MORE CLAY
						4500 +			25		
						4500 +					COBBLE AT 78.0'
						4500 +			155/11"		5" LAYER GRAY FINE TO COARSE SAND AT 83.6'
											COBBLE AT 92.0'
						4500 +			145		
						4500 +					COBBLE AT 96.5'

* SATURATED

BORING COMPLETED AT 100.0 FEET ON 10-25-73.
CASING USED TO A DEPTH OF 5.0 FEET.
GROUNDWATER 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 2.5-181

LOG OF BORING H-20

BORING H-21

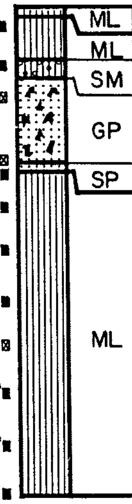
SURFACE ELEVATION 678.6

LABORATORY TEST DATA

ELEVATION IN FEET (680 to 620)

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{Q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{Q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
						2500			7
						1500			4
									20
							9.2	130	38
						4500+			72
						4500+			69
						4500+			245/8"
						4500+			165/9"
						4500+			265/6"
						4500+			305/10"
						4500+			230/9"
						4500+			246

SAMPLES | SYMBOLS | DESCRIPTIONS



BROWN FINE SANDY SILT WITH ORGANICS (TOPSOIL)
Top of Salt Creek Alluvium
BROWN CLAYEY SILT WITH TRACE OF FINE SAND (VERY STIFF)
BROWN SILTY FINE TO COARSE SAND WITH GRAVEL
BROWN FINE TO COARSE SANDY GRAVEL WITH TRACE OF SILT (MEDIUM DENSE)
GRADES WITH THIN LAYERS OF SAND
GRADES MORE COARSE
GRAY FINE SAND WITH TRACE OF SILT
Top of Illinoian Glacial Till
GRAY FINE TO COARSE SANDY SILT WITH FINE TO COARSE GRAVEL, SOME CLAY AND SAND SEAMS
GRADES WITH COARSE GRAVEL
4" LAYER OF SAND AT 25.0'
SAND SEAMS GRADE OUT

GRADES TO BROWNISH-GRAY AND WITH MORE CLAY

BORING COMPLETED AT 51.5 FEET ON 11-13-73.
CASING USED TO A DEPTH OF 18.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 8.5 FEET.

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 2.5-182

LOG OF BORING H-21

BORING H-22

SURFACE ELEVATION 674.8

LABORATORY TEST DATA

Elevation scale (feet): 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580, 570, 560, 550, 540, 530, 520

ELEVATION IN FEET

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION [b] σ_3 psf	UNCONFINED COMPRESSION [c] $\frac{q_u}{2}$ psf	POCKET PENETROMETER [d] $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
							33.2	74	4
									5
							16.3	117	5
						4500+			26
						4500+	16.8	126	180/10"
						4500+			173/11"
						4500+	14.4	133	150/2"
						4500+			194/9"
						4500+	10.6	133	216/8"
						4500+			100/4"
						4500+	8.2	137	180/7"
						4500+			61
						4500+			
						4500+	11.3	115	162/7"
						4500+			
						4500+	8.4	134	106
						4500+			
						4500+	14.9	130	189/10"
						4500+			
						4500+	9.9	129	83
						3900	17.2	119	40
						4500+			175/10"
						4500+			
							8.1	133	100/4"
TX/DY RES						4500+			
						4500+			137
						4500+			
						4500+			112
						4500+			

SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
SP	*Top of Salt Creek Alluvium* LIGHT BROWN FINE TO MEDIUM SAND WITH OCCASIONAL ROOTS
OL	BLACK ORGANIC SILT WITH SOME FINE SAND AND SEAMS OF FINE SAND
SP	LIGHT BROWN FINE TO MEDIUM SAND WITH SMALL CLAY INCLUSIONS
OL	DARK BROWN AND BLACK ORGANIC SILT WITH TRACE OF FINE SAND AND OCCASIONAL SEAMS OF FINE SAND GRADES TO DARK GRAY AND WITH MORE SAND
ML	LIGHT GRAY FINE TO COARSE SANDY SILT WITH GRAVEL
ML	*Top Illinoian Glacial Till* BROWN FINE SANDY SILT WITH TRACE OF COARSE SAND, CLAY AND GRAVEL (HARD) GRADES TO LIGHT GRAY GRADES WITH MORE COARSE SAND AND GRAVEL 10" COBBLE AT 20.5' GRADES TO GRAY WITH FINE TO COARSE SAND AND OCCASIONAL COBBLES GRADES WITH MORE COARSE SAND AND GRAVEL GRADES WITH OCCASIONAL SEAMS OF MEDIUM TO COARSE SAND GRADES WITH THIN LAYERS OF SAND GRADES WITH MORE AND THICKER SAND SEAMS GRADES WITH LESS FINE TO COARSE SAND AND GRAVEL GRADES WITH LESS SEAMS AND LAYERS OF SAND SAND LAYERS GRADE OUT LAYER OF SAND AND GRAVEL AT 63.3'
SP	GRAY FINE SAND WITH TRACE OF SILT AND MEDIUM TO COARSE SAND
ML	GRAY FINE SANDY SILT WITH SOME MEDIUM TO COARSE SAND AND FINE GRAVEL AND TRACE OF CLAY (HARD) GRADES WITH OCCASIONAL LARGE GRAVEL AND COBBLES GRADES WITH MORE CLAY AND LESS SAND AND SILT
CL	*Top of Pre-Illinoian Glacial Till* GREENISH-GRAY SILTY CLAY WITH SOME FINE TO COARSE SAND AND GRAVEL (VERY STIFF) GRADES TO YELLOWISH -GREEN 4" LAYER OF SILTY SAND AT 113.3'
ML	DARK GRAY FINE TO COARSE SANDY SILT WITH FINE GRAVEL AND TRACE OF CLAY (HARD) BOULDER FROM 118.5' TO 120.0'
SP	DARK GRAY FINE SAND WITH TRACE OF SILT, COARSE SAND AND GRAVEL
ML	BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND FINE GRAVEL (HARD) GRADES WITH COARSE GRAVEL GRADES WITH GRAY AND BLACK STAINING GRADES TO MOTTLED ORANGE, RED AND LIGHT BROWN 5" COBBLE AT 151.5'

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)

BORING H-22 CONT'D

ELEVATION IN FEET	LABORATORY TEST DATA: TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION [a] $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION [b] σ_3 psf	UNCONFINED COMPRESSION [c] $\frac{q_u}{2}$ psf	POCKET PENETROMETER [d] $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS
520							4500+	16.8		105	ML	GRADES WITH GRAYISH-BLACK SEAMS OF SILTY CLAY AND SEAMS OF MEDIUM TO COARSE SAND
510							4300	27.8	100	132/8"	ML	GRAY AND BROWN SILT WITH TRACE OF FINE SAND (VERY DENSE)
									RQD			
500									23%	80%		BROWNISH-GRAY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, NUMEROUS SHALE PARTINGS, WEATHERED OPEN AND CLAY FILLED BEDDING PLANES WEATHERING AND CLAYFILLING ON BEDDING PLANES GRADES LESS AT 172.0'
												DARK GRAY TO BLACK HIGHLY CARBONACEOUS SHALE, THINLY LAMINATED
490									73%	96%		LIGHT GRAY SILTY SHALE, INDISTINCT BEDDING, CALCAREOUS
												LIGHT GRAY ARGILLACEOUS LIMESTONE, FINE CRYSTALLINE, NUMEROUS SHALE PARTINGS
480												
470												

BORING COMPLETED AT [illegible]0.5 FEET ON 9-18-73.
CASING USED TO A DEPTH OF 3.8 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 2.9 FEET.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-183

LOG OF BORING H-22

(SHEET 2 of 2)

LABORATORY TEST DATA

Elevation in Feet	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\sigma_1-\sigma_3$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
740										
								18.6	103	17
				610*	346			20.4*	114	19
730										12
								8.5	121	43
720							4500			62
				3458	1440		4500	11.0*	127	22
710	TX/CU /PP						2750	13.6	121	16
								35.5	103	21
700				2974*	2534		3500	25.0*	100	17
	TX/CU /PP						2500	17.4	114	18
690										51
							4500+	8.0	139	151
680							4500+	9.1	138	
	RES						4500+	8.5	137	62
670										70
				1400	4750		3000	13.3	128	
660							4500+			155/9"
	TX/DY						4500+			
650							4500+			160/9"
							4500+			
640										162/11"
630										

*SATURATED

BORING H-23

SURFACE ELEVATION 736.3

SYMBOLS	DESCRIPTIONS
ML	BROWN SILT WITH FINE SAND AND ORGANICS (TOPSOIL)
ML	BROWN SILT WITH TRACE OF FINE SAND, CLAY AND AND FINE GRAVEL (MEDIUM DENSE) (WEATHERED LOESS)
	Top of Wisconsinan Glacial Till
SP	BROWN FINE TO MEDIUM SAND WITH SOME COARSE SAND AND FINE GRAVEL (DENSE)
ML	LIGHT BROWNISH-GRAY FINE SANDY SILT WITH SOME MEDIUM TO COARSE SAND AND FINE GRAVEL (HARD) GRADES WITH SOME CLAY GRADES TO GRAY GRADES WITH MORE CLAY
	Top of Interglacial Zone
ML	GRAY SILT WITH TRACE OF FINE SAND AND GRAVEL GRADES GREENISH-GRAY AND WITH CLAY
SP	GREEN FINE SAND WITH SILT AND TRACE OF CLAY AND FINE GRAVEL (VERY DENSE)
	Top of Illinoian Glacial Till
ML	GRAY FINE TO COARSE SAND WITH SOME CLAY AND FINE GRAVEL (HARD)
ML	GRAY SILT WITH TRACE OF FINE SAND, FINE GRAVEL AND ORGANICS (VERY DENSE)
ML	GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND GRAVEL (HARD)

BORING COMPLETED AT 99.5 FEET ON 10-26-73.
CASING USED TO A DEPTH OF 5.0 FEET.
GROUNDWATER LEVEL NOT RECORDED.

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 2.5-184

LOG OF BORING H-23

LABORATORY TEST DATA

ELEVATION IN FEET (680 to 620)

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
680–670	TX/CU /PP						1700	21.6	95	8
670–660										2
										3
								7.3	136	35
660–650							4500+	6.4	144	116
							4500+			
650–640							4500+	6.8	141	171/10"
							4500+			
640–630							4500+	5.9	145	142/11"
							4500+			
630–620								9.0	127	171/9"

BORING H-24

SURFACE ELEVATION 676.2

BLOW COUNTS | SAMPLES | SYMBOLS | DESCRIPTIONS

Top of Salt Creek Alluvium

ML — DARK BROWN SILT WITH ORGANICS, SOME FINE SAND, AND TRACE OF CLAY (TOPSOIL) (STIFF)

SM — BROWN FINE TO MEDIUM SAND WITH SOME SILT AND TRACE OF ORGANICS

SP — BROWN MEDIUM TO COARSE SAND WITH TRACE OF SILT AND FINE GRAVEL (VERY LOOSE)

SW — BROWN FINE TO COARSE SAND WITH GRAVEL AND TRACE OF SILT (VERY LOOSE)
GRADES WITH SEAMS OF SILT

Top of Illinoian Glacial Till

ML — GRAY FINE TO MEDIUM SANDY SILT WITH TRACE OF CLAY, COARSE SAND, SOME GRAVEL AND OCCASIONAL SEAMS OF FINE SAND (HARD)
10" LAYER OF GRAY MEDIUM TO COARSE SAND AND GRAVEL AT 23.0'

GRADES WITH MORE SEAMS OF FINE SAND

BORING COMPLETED AT 49.6 FEET ON 10-1-73.
CASING USED TO A DEPTH OF 21.5 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 5.9 FEET.

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 2.5-185

LOG OF BORING H-24

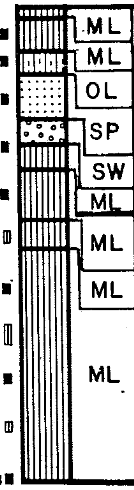
BORING H-25

SURFACE ELEVATION 677.2

LABORATORY TEST DATA

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

BLOW COUNTS / SAMPLES, SYMBOLS, DESCRIPTIONS



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

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.

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

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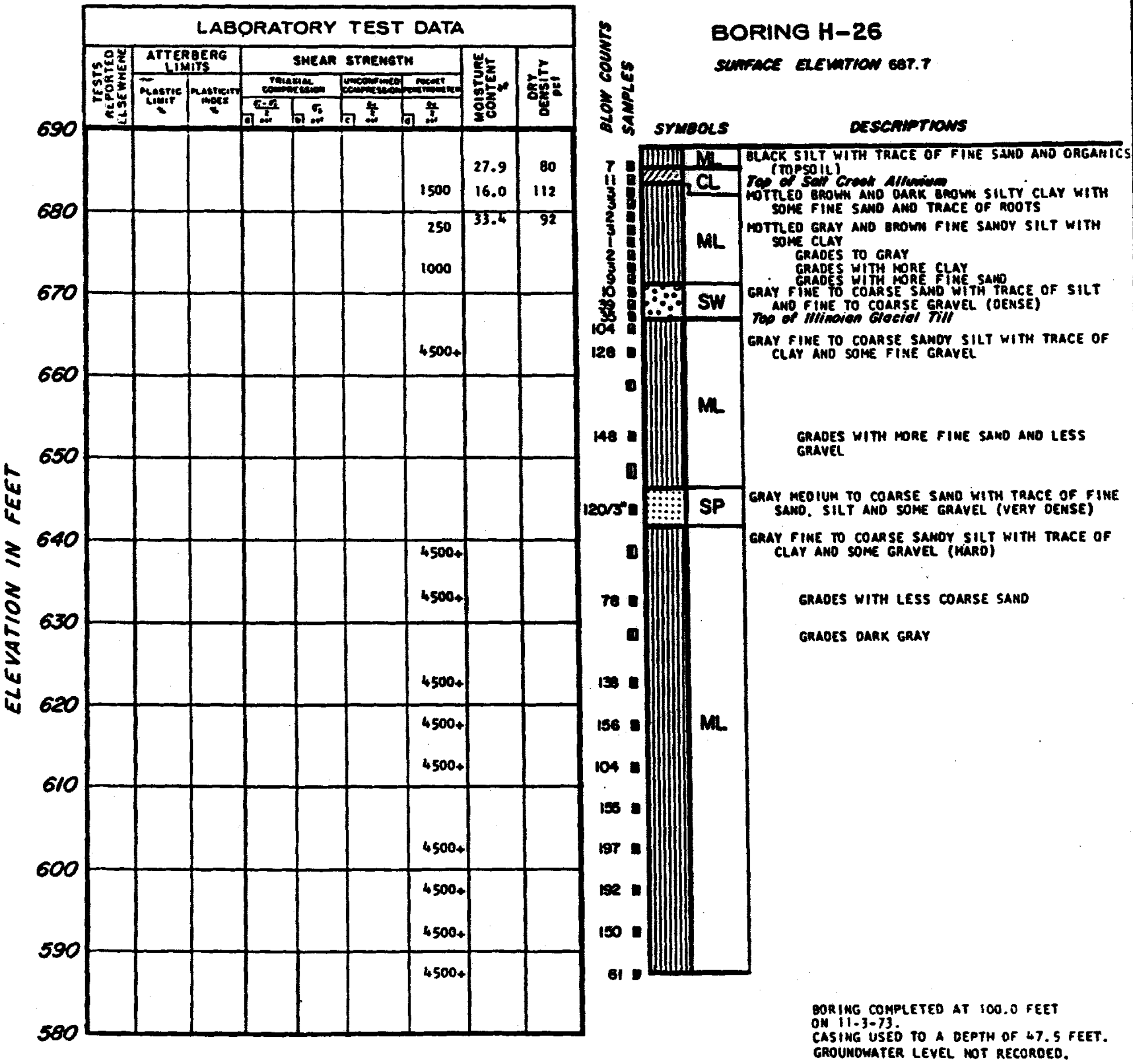
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-186

LOG OF BORING H-25



NOTE:

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

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-187

LOG OF BORING H-26

BORING H-27

SURFACE ELEVATION 690.6

LABORATORY TEST DATA

Elevation in feet	Tests reported elsewhere	Atterberg limits: plastic limit %	Atterberg limits: plasticity index %	Shear strength, triaxial compression: (a) $\sigma_1-\sigma_3$ / 2, psf	Shear strength, triaxial compression: (b) σ_3, psf	Shear strength, unconfined compression: (c) Q_u / 2, psf	Shear strength, pocket penetrometer: (d) Q_u / 2, psf	Moisture content %	Dry density pcf	Blow counts
700										
690								34.1	83	2
										2
										6
680							4500+			54
670								8.8	134	49
							4500+			
660							4500+	18.1	124	61
							4500+			
650							4500+	11.4	136	100/7"
							4500+			
640							4500+	10.4	123	100/4"
							4500+			
630							4500+	14.5	115	100/6"
							4500+			
620							4500+	8.6	135	139/10"
610										

SYMBOLS / DESCRIPTIONS

Symbol	Description
OL	DARK BROWNISH-GRAY ORGANIC SILT WITH SOME CLAY
	Top of Salt Creek Alluvium
PT	DARK BROWN AND GRAY ORGANIC MATERIAL WITH SILT, CLAY AND FINE SAND
OL	MOTTLED BROWN AND GRAY ORGANIC SILT WITH SOME FINE SAND, CLAY AND GRAVEL
ML	GREENISH-GRAY SILT WITH SEAMS AND LAYERS OF FINE SAND, SOME CLAY AND OCCASIONAL ORGANICS (SOFT)
GP	GRAY TO BLACK GRAVEL WITH SOME FINE TO COARSE SAND
OL	BROWN AND DARK BROWN ORGANIC SILT WITH SOME CLAY AND FINE SAND (SOFT)
	Top of Illinoian Glacial Till
ML	GRAY FINE TO MEDIUM SANDY SILT WITH TRACE OF CLAY AND OCCASIONAL SAND SEAMS (HARD)
GW	GRAY FINE TO COARSE GRAVEL WITH FINE TO COARSE SAND
ML	GRAY FINE TO MEDIUM SANDY SILT WITH FINE GRAVEL, TRACE OF CLAY AND OCCASIONAL SAND AND SILT SEAMS (HARD) GRADES WITH MORE SAND GRADES DARK GRAY AND WITH MORE CLAY GRADES WITH LESS SAND GRADES WITH FEWER SAND SEAMS GRADES DARK GRAY AND WITH MORE SAND 12" SAND SEAM AT 60.5' GRADES WITH MORE CLAY

BORING COMPLETED AT 76.0 FEET
ON 10-3-73.
CASING USED TO A DEPTH OF 17.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT
5.9 FEET.

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

BORING H-28

SURFACE ELEVATION 686.2

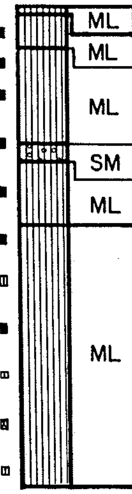
LABORATORY TEST DATA

ELEVATION IN FEET (690 – 630)

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf	Blow Counts
						750	10.4	96	5
						1000	25.3	95	3
						750			2
									15
						2500			9
						4500	10.9	131	49
						4500			
							7.1	138	147/8"
						+4500			
						+4500	7.1	135	140/6"
						+4500			

SAMPLES

SYMBOLS



DESCRIPTIONS

DARK BROWN SILT WITH ORGANICS (TOPSOIL)

Top of Salt Creek Alluvium

DARK BROWN SILT WITH TRACE OF CLAY, SOME FINE TO COARSE SAND AND FINE GRAVEL (MEDIUM STIFF)

BROWN CLAYEY SILT WITH SOME FINE SAND AND TRACE OF FINE GRAVEL (STIFF)
GRADES TO GRAY

GRAY SILTY FINE TO COARSE SAND WITH SOME FINE TO COARSE GRAVEL

GRAY SILT WITH TRACE OF FINE SAND (VERY STIFF)

Top of Illinoian Glacial Till

GRAY FINE TO COARSE SANDY SILT WITH FINE GRAVEL (HARD)

LAYER OF SAND AT 34.4'

6" BOULDER AT 41.0'

BORING COMPLETED AT 50.5 FEET ON 11-10-73.
CASING USED TO A DEPTH OF 10.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 7.8 FEET.

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 2.5-189

LOG OF BORING H-28

BORING H-29

SURFACE ELEVATION 687.7

LABORATORY TEST DATA

ELEVATION IN FEET (690 to 590)

TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION b σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION c $\frac{Qu}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER d $\frac{Qu}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf
						4500+	14.8	112
							18.3	113
						3500		
						4500+		
						3500		
						4500+	11.5	134
						4500+	7.4	139
						4500+		
							7.1	141
						4500+		
						4500+	8.8	135
						4500+		

BLOW COUNTS: 15, 21, 28, 27, 12, 22, 49, 61, 14, 27, 131, 140/10", 139/10", 79, 106, 86

SYMBOLS / DESCRIPTIONS

ML

Top of Illinoian Glacial Till

BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND TRACE OF ORGANICS (WEATHERED TILL) (HARD)
- GRADES MOTTLED GRAY AND BROWN AND WITH TRACE OF GRAVEL
- 1" LAYER COARSE SAND AT 7.0'
- GRADES GRAY AND WITH LESS CLAY
- GRADES WITH MORE SAND AND COARSE GRAVEL

ML SP

GRAY SILT WITH LAYERS OF GRAY FINE TO MEDIUM SAND WITH TRACE OF COARSE SAND AND GRAVEL

SW

GRAY FINE TO COARSE SAND WITH GRAVEL (MEDIUM DENSE)
- GRADES WITH OCCASIONAL COBBLES
- GRADES WITH LESS FINE SAND
- GRADES WITH MORE SILT

ML

GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND FINE GRAVEL
- 2" SAND LAYER AT 39.7'
- GRADES WITH COARSE GRAVEL
- GRADES TO BROWNISH-GRAY

BORING COMPLETED AT 90.0 FEET ON 10-25-73.
CASING USED TO A DEPTH OF 22.0 FEET.
GROUNDWATER LEVEL NOT RECORDED.

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.

FIGURE 2.5-190

LOG OF BORING H-29

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a)	Shear Strength: Triaxial Compression (b)	Shear Strength: Unconfined Compression (c)	Shear Strength: Pocket Penetrometer (d)	Moisture Content %	Dry Density pcf
							4500+		
				1898	389		3000	13.9	100
							1000		
							4500+		
							4500+		
				10072	2693		4500+	7.9	135
							4500+		
							4500+		
							4500+		
	TX/DY						4500+	6.8	145
	RES						4500+	7.4	141
							4500+		
							4500+		
							4500+		
							4500+		
							4500+		
							4500+	9.2	136
							4500+		
							4500+	8.2	138
							4500+		
							4150		
							4500+		
							4500+		

ELEVATION IN FEET: 700, 690, 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580, 570, 560, 550, 540

BORING H-30

SURFACE ELEVATION 697.0

BLOW COUNTS	SYMBOLS	DESCRIPTIONS
		Top of Wisconsinan Glacial Till
26	ML	ORANGEISH-BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)
		Top of Interglacial Zone
12	ML	MOTTLED WHITE AND GRAY SILT WITH SOME CLAY AND FINE SAND (VERY STIFF)
7	ML	GRAY CLAYEY SILT WITH SOME FINE TO MEDIUM SAND AND GRAVEL (STIFF)
7	SP	DARK GRAY FINE TO MEDIUM SAND WITH TRACE OF SILT
	GP	DARK GRAY FINE GRAVEL WITH FINE TO COARSE SAND AND TRACE OF SILT
35	SP	GRAY FINE SAND WITH TRACE OF SILT
		Top of Illinoian Glacial Till
102	ML	LIGHT GRAY FINE TO MEDIUM SANDY SILT WITH SOME GRAVEL AND TRACE OF CLAY (HARD)
	GW	GRAY FINE TO COARSE SANDY GRAVEL WITH TRACE OF SILT
81		GRADES WITH MORE FINE TO COARSE SAND AND LESS COARSE GRAVEL
	ML	DARK GRAY FINE TO COARSE SANDY SILT WITH SOME FINE GRAVEL AND TRACE OF CLAY (HARD)
100/7"		GRADES WITH OCCASIONAL STRINGERS OF FINE SAND
		GRADES WITH MORE GRAVEL
181/9"		
145/9"		GRADES DARK GRAY AND WITH LESS SAND
		GRADES WITH MORE CLAY
66		
80		
		GRADES WITH MORE FINE SAND
81		
98		
		Top of Lacustrine Deposit
	ML	GREEN SILT WITH TRACE OF FINE SAND (VERY DENSE)
	CL	BLUISH-GREEN SILTY CLAY WITH SOME FINE TO MEDIUM SAND (HARD)
26		*Top of Pre-Illinoian Glacial Till*
	ML	BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)
150		GRADES GRAYISH-BROWN AND WITH LESS CLAY

NOTE:
SLOPE BENCHED FOR ACCESS; NATURAL GROUND SURFACE AT ELEVATION 698.5 .

NOTE:

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

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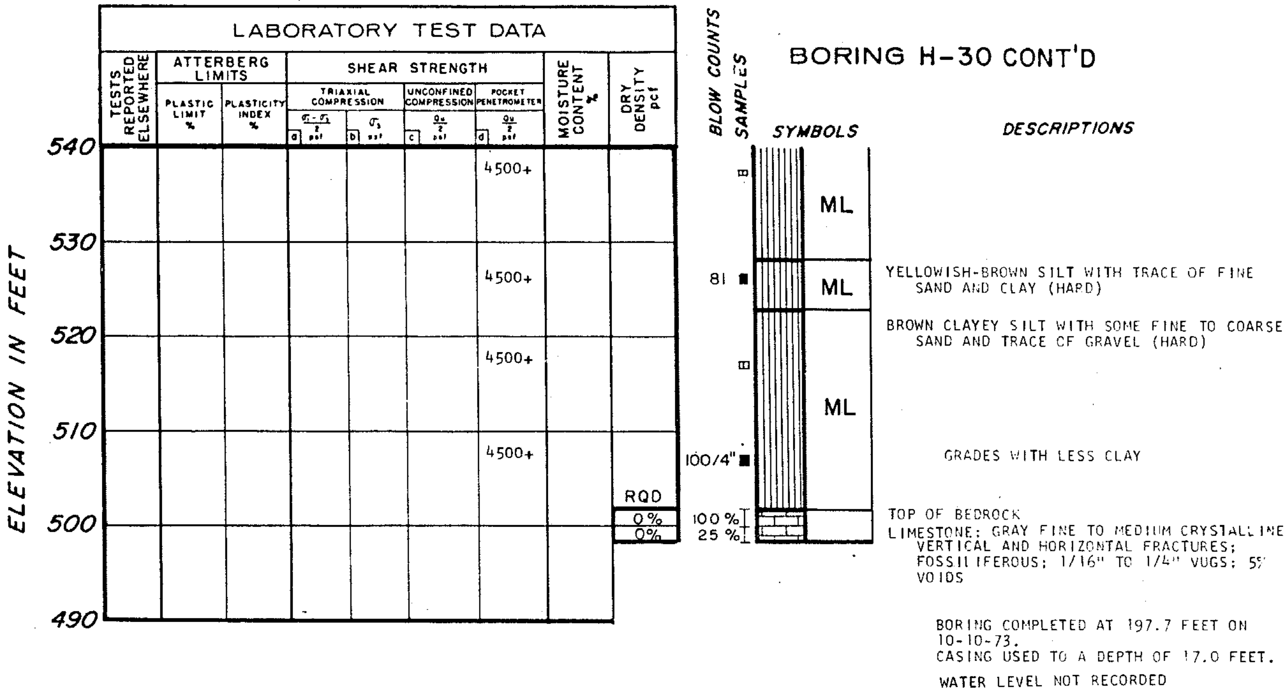
FIGURE 2.5-191

LOG OF BORING H-30

(SHEET 1 of 2)



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-191

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

BORING H-31

SURFACE ELEVATION 691.1

LABORATORY TEST DATA

Elevation in feet (approx.)	Tests reported elsewhere	Atterberg limits: plastic limit %	Atterberg limits: plasticity index %	Shear strength: triaxial compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear strength: triaxial σ_3 psf	Shear strength: unconfined compression $\frac{q_u}{2}$ psf	Shear strength: pocket penetrometer $\frac{q_u}{2}$ psf	Moisture content %	Dry density pcf	Blow counts
690–680							4500+	11.6	117	11, 23
								12.7	94	16
							2500	17.8	105	19, 11, 10
680–670							2100	18.6	109	9, 9
							4500+			26, 59, 53
670–660	RES*									
										73
660–650							4500+			
							4500+			180/10"
650–640							4500+			
							4500+			100/6"
640–630	TX/CU /PP						4500+			
							4500+			168/9"
630–620							4500+			
							4500+			170
620–610							4500+			
							4500+			93
610–600							4500+			
							4500+			166/9"
600–590							4500+			
							4500+			143

* SATURATED

SYMBOLS / DESCRIPTIONS

Symbols	Descriptions
ML	*Top of Wisconsinan Glacial Till* MOTTLED GRAY AND BROWN CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)
ML	LIGHT BROWN SILT WITH FINE SAND
CL	*Top of Interglacial Zone* BLUISH-GRAY SILTY CLAY WITH TRACE OF FINE TO MEDIUM SAND AND FINE GRAVEL (VERY STIFF)
CL	DARK GRAY SILTY CLAY WITH FINE TO COARSE SANDY GRAVEL AND TRACE OF ORGANICS (VERY STIFF)
SW	DARK GRAY FINE TO COARSE SAND WITH SOME FINE TO COARSE GRAVEL AND TRACE OF SILT (DENSE)
ML	*Top of Illinoian Glacial Till* GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND FINE TO COARSE GRAVEL
SP	GRAY FINE SAND WITH TRACE OF SILT (VERY DENSE)
ML	GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND GRAVEL (HARD) GRADES WITH LESS MEDIUM SAND GRADES WITH OCCASIONAL COBBLES GRADES GRAYISH-BROWN AND WITH MORE GRAVEL GRADES DARK GRAY

BORING COMPLETED AT 99.5 FEET ON 10-20-73.
CASING USED TO A DEPTH OF 17.0 FEET.
GROUNDWATER LEVEL NOT RECORDED.

NOTES:

SLOPE BENCHED FOR ACCESS; NATURAL GROUND SURFACE AT ELEVATION 692.6.

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

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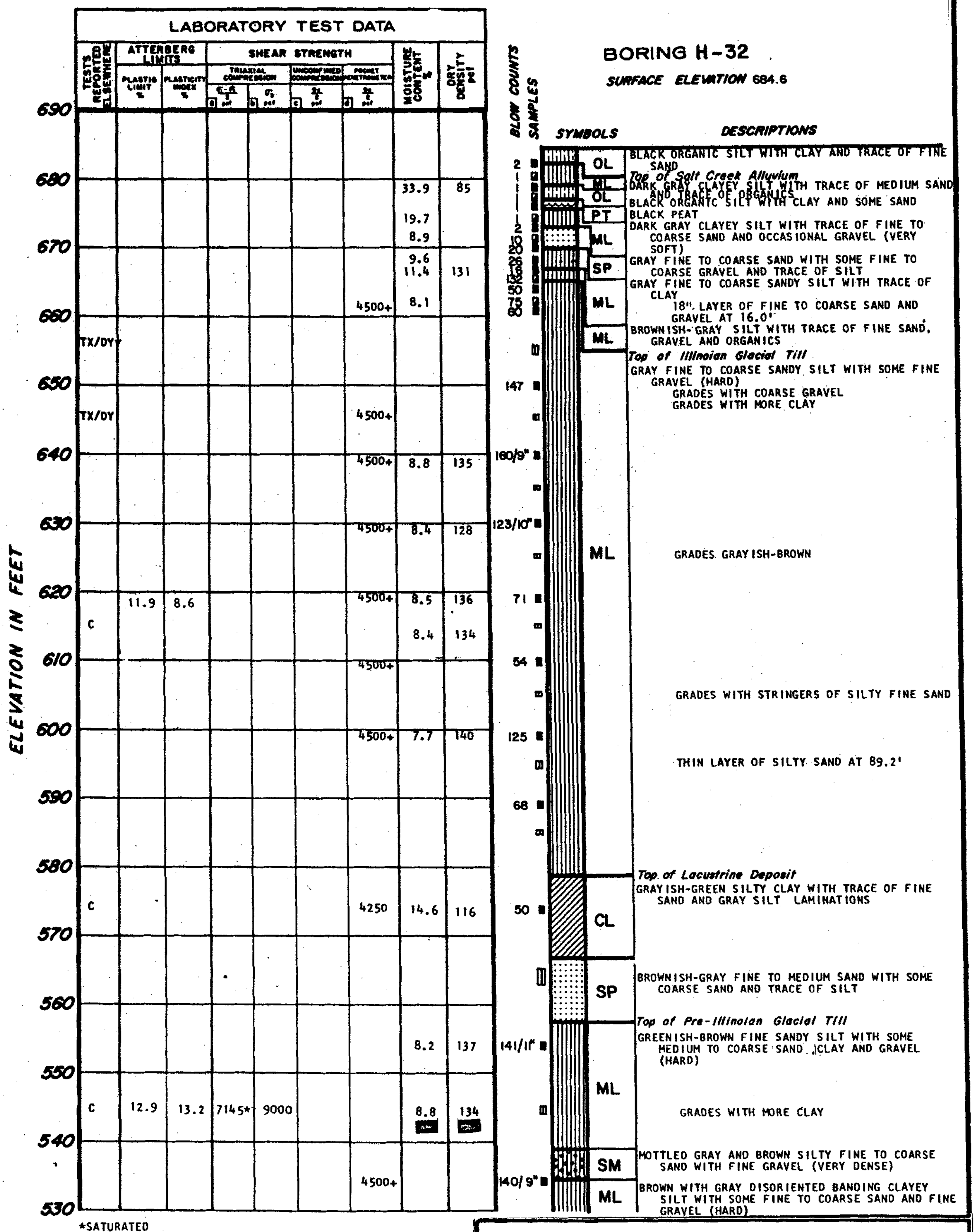
FIGURE 2.5-192

LOG OF BORING H-31



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 2.5-193

LOG OF BORING H-32

(SHEET 1 of 2)

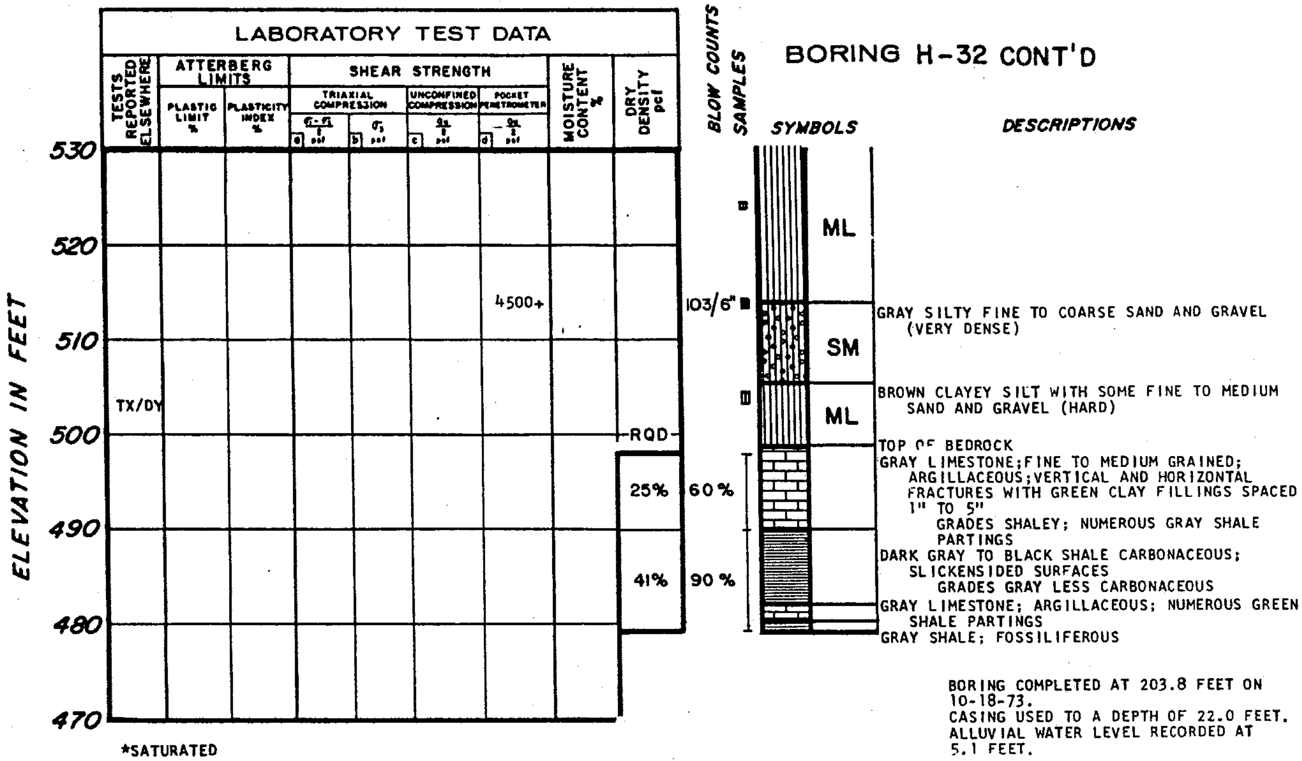

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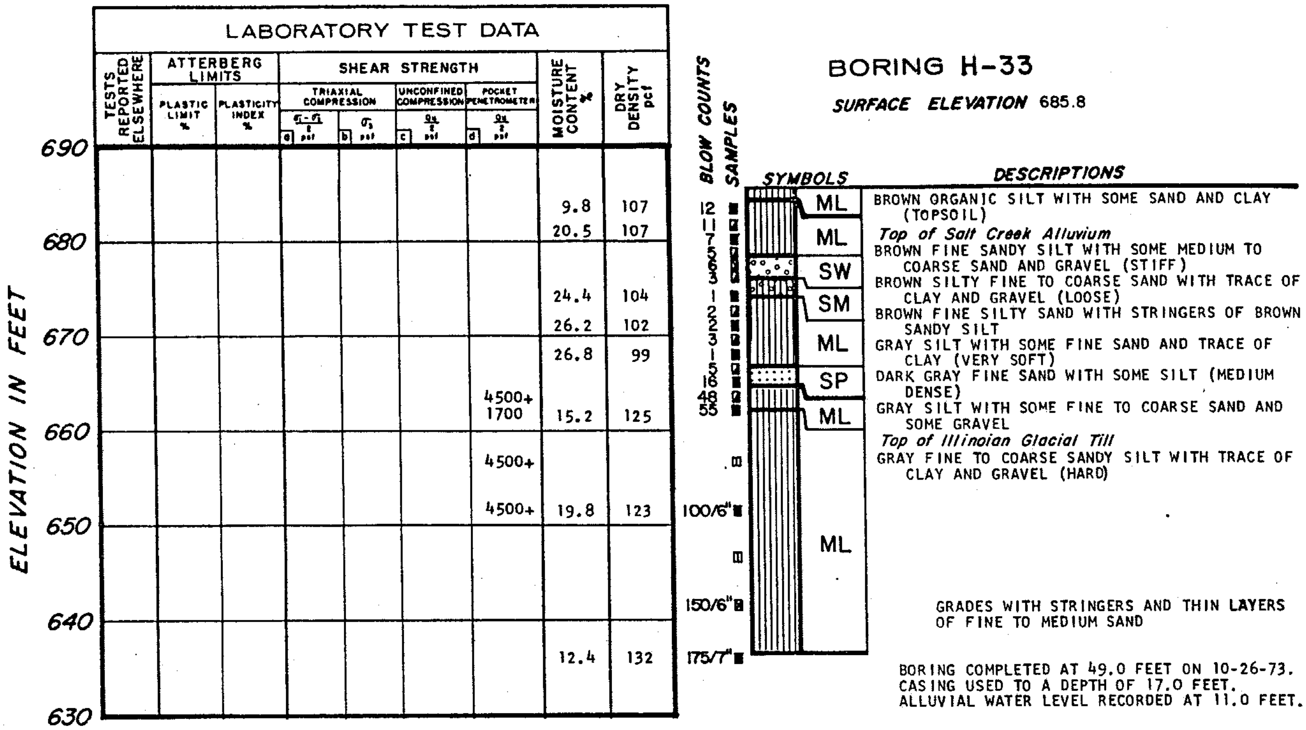
FIGURE 2.5-193

LOG OF BORING H-32

(SHEET 2 of 2)



BORING H-33

SURFACE ELEVATION 685.8

BORING COMPLETED AT 49.0 FEET ON 10-26-73.
CASING USED TO A DEPTH OF 17.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 11.0 FEET.

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 2.5-194

LOG OF BORING H-33

BORING H-34

SURFACE ELEVATION 671.6

LABORATORY TEST DATA

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression a (σ1-σ3)/2 psf	Shear Strength: Triaxial Compression b σ3 psf	Shear Strength: Unconfined Compression c Qu/2 psf	Shear Strength: Pocket Penetrometer d Qu/2 psf	Moisture Content %	Dry Density pcf	Blow Counts
						1500	18.3	104	8
						1250			4
									14
									68
						4500+	6.7	143	135
						4500+			
						4500+	5.4	145	200/8"
						4500+			
						4500+	8.2	137	241
						4500+			
						4500+	6.5	142	193

BLOW COUNTS / SAMPLES / SYMBOLS / DESCRIPTIONS

Symbol	Description
	Top of Salt Creek Alluvium
ML	BLACK ORGANIC CLAYEY SILT WITH TRACE OF SAND (TOPSOIL)
ML	MOTTLED ORANGE AND GRAY FINE SANDY SILT WITH TRACE OF CLAY (STIFF)
SM	BROWN FINE SILTY SAND
SP	BROWN FINE TO MEDIUM SAND
SW	BROWN FINE TO COARSE SAND WITH FINE TO COARSE GRAVEL
	Top of Illinoian Glacial Till
ML	GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY AND GRAVEL (HARD)
	6" SEAM OF FINE SAND AT 38.0'
	GRADES WITH MORE CLAY

BORING COMPLETED AT 50.0 FEET ON 11-14-73.
CASING USED TO A DEPTH OF 13.0 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 4.3 FEET.

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

BORING H-35

SURFACE ELEVATION 671.8

LABORATORY TEST DATA

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION (b) σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION (c) $\frac{q_u}{2}$ psf	SHEAR STRENGTH: POCKET PENETROMETER (d) $\frac{q_u}{2}$ psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
							1300	25.6	89	7
							1500	22.2	102	6
										14
							4250			25
							4500+	8.3	137	53
							4500+			
							4500+	6.0	143	188/8"
							4500+			
							4500+	6.8	143	210
							4500+			
							4500+	7.2	140	180/10"

Elevation scale: 680, 670, 660, 650, 640, 630, 620

SYMBOLS / DESCRIPTIONS

SYMBOLS	DESCRIPTIONS
ML	*Top of Salt Creek Alluvium* DARK BROWN CLAYEY SILT WITH ORGANICS AND SOME FINE SAND (TOPSOIL)
ML	DARK GRAY CLAYEY SILT WITH SOME FINE SAND (STIFF)
SW	GRAY FINE TO COARSE SAND WITH GRAVEL AND TRACE OF SILT (MEDIUM DENSE) GRADES WITH LESS FINE TO MEDIUM SAND
ML	*Top of Illinoian Glacial Till* GRAY FINE TO COARSE SANDY SILT WITH TRACE OF CLAY AND SOME FINE GRAVEL (HARD) 6" LAYER OF SAND AND GRAVEL AT 17.5' GRADES WITH SEAMS OF FINE SAND GRADES WITH COARSE GRAVEL GRADES WITH MORE CLAY

BORING COMPLETED AT 49.9 FEET ON 11-13-73.
CASING USED TO A DEPTH OF 14.5 FEET.
ALLUVIAL WATER LEVEL RECORDED AT 3.4 FEET.

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 2.5-196

LOG OF BORING H-35

BORING H-36

SURFACE ELEVATION 671.2

LABORATORY TEST DATA

Elevation (ft)	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression a ($\frac{\sigma_1-\sigma_3}{2}$ psf)	Shear Strength: Triaxial Compression b (σ_3 psf)	Shear Strength: Unconfined Compression c ($\frac{q_u}{2}$ psf)	Shear Strength: Pocket Penetrometer d ($\frac{q_u}{2}$ psf)	Moisture Content %	Dry Density pcf
680–670							850	16.8	97
670–660							850 1200 1200	28.4 27.3	92 92
660–650							2500	10.3	133
							+4500 +4500	8.2	137
650–640							+4500	6.8	142
640–630							4500+	9.8	132
							4500+		
630–620							4500+	5.6	142
	TX/DY						4500+		
620–610							4500+		
								9.0	136
610–600							4500+		
							4500+		
600–590	RES						4500+		
							4500+	7.4	139
590–580							4500+		
							4500+	14.6	118
580–570							4000		
							4500+	9.2	135
570–560							4500+		
560–550							4500+	9.5	132
550–540									
540–530								14.1	124
530–520							4000		
							4500+	16.3	118

ELEVATION IN FEET: 680, 670, 660, 650, 640, 630, 620, 610, 600, 590, 580, 570, 560, 550, 540, 530, 520

BLOW COUNTS

Elevation range (ft)	Blow counts
670–660	8, 7, 6, 6, 3, 10, 9, 30
660–650	14, 34, 51
650–640	160
640–630	100/5"
630–620	100/5"
620–610	100/4"
610–600	124
600–590	106
590–580	141
580–570	34
570–560	100/6"
550–540	100/6"
540–530	147/10"
530–520	62

SYMBOLS AND DESCRIPTIONS

Symbol	Description
ML	DARK BROWN CLAYEY SILT WITH ORGANICS (TOPSOIL)
	Top of Salt Creek Alluvium
CL	MOTTLED BROWN AND GRAY SILTY CLAY WITH TRACE OF FINE SAND (MEDIUM STIFF)
CL	DARK GRAY SILTY CLAY WITH TRACE OF FINE SAND (VERY SOFT)
GW	DARK GRAY FINE TO COARSE GRAVEL WITH MEDIUM TO COARSE SAND AND TRACE OF SILT
	Top of Illinoian Glacial Till
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (VERY STIFF)
	GRADES WITH LESS CLAY (HARD)
	GRADES WITH LAYERS OF SAND AND GRAVEL
	GRAVEL LAYERS GRADE OUT
	GRADES WITH STRINGERS SAND
	GRADES WITH MORE CLAY
	Top of Pre-Illinoian Glacial Till
CL	GRAYISH-GREEN SILTY CLAY WITH SOME FINE TO MEDIUM SAND AND OCCASIONAL GRAVEL
	GRADES WITH LESS CLAY AND MORE FINE SAND
ML	GRAY FINE SANDY SILT WITH MEDIUM TO COARSE SAND AND TRACE OF CLAY AND GRAVEL
	GRADES WITH MORE CLAY AND LESS FINE SAND
	GRADES WITH MORE COARSE GRAVEL
CL	GRAYISH-BROWN SILTY CLAY WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)
	GRADES WITH LESS CLAY

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)

LABORATORY TEST DATA

BORING H-36 CONT'D

ELEVATION IN FEET	TESTS REPORTED ELSEWHERE	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	SHEAR STRENGTH: TRIAXIAL COMPRESSION a ($\frac{\sigma_1-\sigma_3}{2}$ psf)	SHEAR STRENGTH: TRIAXIAL COMPRESSION b (σ_3 psf)	SHEAR STRENGTH: UNCONFINED COMPRESSION c ($\frac{q_u}{2}$ psf)	SHEAR STRENGTH: POCKET PENETROMETER d ($\frac{q_u}{2}$ psf)	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS	SYMBOLS
520											CL
510							3500				
500							4250	17.7	115	40	CL
490							4000				
480							4000	19.3	105	78	ML
470											
460								22.4	101	180/9"	
450											SP
440										100/5"	
430											
420										180/9"	
410											SM
400										165/11"	SP
390									RQD 0 %	20%	
390									0%	8%	
380									100%	100%	
370									85%	85%	
360											

SAMPLES

SYMBOLS

DESCRIPTIONS

Top of Mahomet Bedrock Valley Deposit

BLUISH-GREEN SILTY CLAY WITH TRACE OF FINE SAND AND OCCASIONAL SAND INCLUSIONS (VERY STIFF)

GRADES WITH MORE FINE SAND

GRADES GRAY AND WITH MEDIUM SAND AND OCCASIONAL GRAVEL

GRAY CLAYEY SILT (HARD)

GRAY FINE SAND WITH TRACE OF SILT (VERY DENSE)

GRADES WITH MEDIUM SAND AND TRACE OF GRAVEL

GRAY SILTY FINE SAND WITH TRACE OF CLAY (VERY DENSE)

GRAY FINE TO MEDIUM SAND WITH TRACE OF SILT (VERY DENSE)

GRAY LIMESTONE, FINELY CRYSTALLINE, WEATHERED

GRAY SILTSTONE, MICACEOUS, MASSIVE

SANDY ZONE 294.5' TO 295.0'

SIDERITE NODULES AT 296.8' TO 297.0'

BORING COMPLETED AT 307.5 FEET ON 10-11-73
CASING USED TO A DEPTH OF 15.0 FEET
ALLUVIAL WATER LEVEL RECORDED AT 8.5 FEET.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-197

LOG OF BORING H-36

(SHEET 2 of 2)

LABORATORY TEST DATA

Blow Counts	Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psi	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
14							4250		
31		20.1	22.6	5879	259		4500+	6.5	122
18							3250		
30							4500+		
149							4500+		
84							4500+		
							4500+		
32									
							4500+		
137/6"							4500+		
							4500+		
206/6"									
							4500+		
218/6"							4500+		
							4500+		
131									

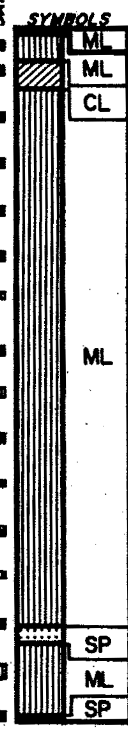
ELEVATION IN FEET: 700, 690, 680, 670, 660, 650, 640, 630, 620, 610

BLOW COUNTS / SAMPLES

BORING H-37

SURFACE ELEVATION 693.9

SYMBOLS



DESCRIPTIONS

DARK BROWN SILT WITH SOME FINE SAND, ORGANICS AND TRACE OF CLAY (TOPSOIL)

Top of Interglacial Zone

LIGHT BROWN SILT WITH SOME FINE SAND

ORANGISH-BROWN SILTY CLAY WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)

LIGHT BROWN SILT WITH FINE TO MEDIUM SAND, TRACE OF CLAY AND OCCASIONAL GRAVEL (VERY STIFF)

GRADES WITH MORE SAND, GRAVEL AND CLAY

GRADES TO HARD

13" LAYER OF FINE TO COARSE SAND AND GRAVEL AT 17.8'

GRADES TO GRAY

GRADES WITH FINE SAND AND SILT SEAMS

24" LAYER OF GRAY FINE SANDY SILT AT 33.0'

6" LAYER OF SILTY FINE SAND AT 34.8'

24" LAYER OF GRAY FINE TO COARSE SAND WITH SOME GRAVEL AT 44.0'

GRADES WITH MORE COARSE GRAVEL

3" COBBLE AT 56.8'

GRAY FINE SAND WITH TRACE OF SILT (VERY DENSE)

DARK GRAY FINE TO COARSE SANDY SILT WITH SOME FINE GRAVEL, CLAY AND OCCASIONAL FINE SAND SEAMS

GRAY FINE SAND WITH TRACE OF SILT

BORING COMPLETED AT 74.5 FEET ON 11-17-73.
CASING USED TO A DEPTH OF 5.5 FEET.
GROUNDWATER 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 2.5-198

LOG OF BORING H-37

BORING H-38

SURFACE ELEVATION 726.9

LABORATORY TEST DATA

Column headings: TESTS REPORTED ELSEWHERE; ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %); SHEAR STRENGTH (TRIAXIAL COMPRESSION $\sigma_1-\sigma_3$ psf, σ_3 psf; UNCONFINED COMPRESSION q_u psf; POCKET PENETROMETER q_u psf); MOISTURE CONTENT %; DRY DENSITY pcf; BLOW COUNTS; SAMPLES

TESTS REPORTED ELSEWHERE	PLASTIC LIMIT %	PLASTICITY INDEX %	TRIAXIAL $\sigma_1-\sigma_3$ psf	TRIAXIAL σ_3 psf	UNCONFINED q_u psf	POCKET PENETROMETER q_u psf	MOISTURE CONTENT %	DRY DENSITY pcf	BLOW COUNTS
						4500+	13.3	110	17
							7.9	100	9
						4500+			13
TX/CU /PP						4500+			23
						4500+			19
TX/DY						3000			14
									23
						3000			12
TX/CU /PP						2000			9
						4500+			50
						4500+	6.6	144	180/11"
						4500+			
						4500+			103
TX/CU /PP						4500+			
						4500+	6.7	139	127
						4500+			
						4500+	6.1	143	139
TX/DY						4500+			
						4500+	8.9	134	150/4"
						4500+			
						4500+	6.9	139	131/6"

ELEVATION IN FEET: 730, 720, 710, 700, 690, 680, 670, 660, 650, 640, 630, 620

SYMBOLS	DESCRIPTIONS
ML	BROWN SILT WITH ORGANICS (TOPSOIL)
ML	BROWN SILT WITH SOME CLAY AND TRACE OF FINE SAND (HARD) (WEATHERED LOESS)
	Top of Wisconsinan Glacial Till
SP	BROWN FINE TO MEDIUM SAND WITH TRACE OF SILT GRADES WITH MORE SILT
ML	BROWN SILT WITH FINE TO COARSE SAND, FINE GRAVEL AND TRACE OF CLAY (HARD)
	GRADES GRAYISH-BROWN AND WITH MORE CLAY
	Top of Interglacial Zone
ML	DARK BROWN SILT WITH ORGANICS AND TRACE OF CLAY
CL	BROWNISH-GREEN SILTY CLAY WITH TRACE OF FINE SAND AND GRAVEL (VERY STIFF)
ML	GREEN SILT WITH SOME FINE TO MEDIUM SAND, GRAVEL AND TRACE OF CLAY (STIFF)
	Top of Illinoian Glacial Till
ML	GRAY FINE TO COARSE SILTY SAND WITH SOME CLAY AND GRAVEL (HARD)
	14" LAYER OF GRAY FINE SAND WITH GRAVEL
	GRADES WITH MORE CLAY
	GRADES WITH MORE LARGE GRAVEL
	GRADES WITH LESS CLAY
	BOULDER AT 98.5'

BORING COMPLETED AT 101.0 FEET ON 10-24-73.
CASING USED TO A DEPTH OF 5.0 FEET.
GROUNDWATER LEVEL NOT RECORDED.

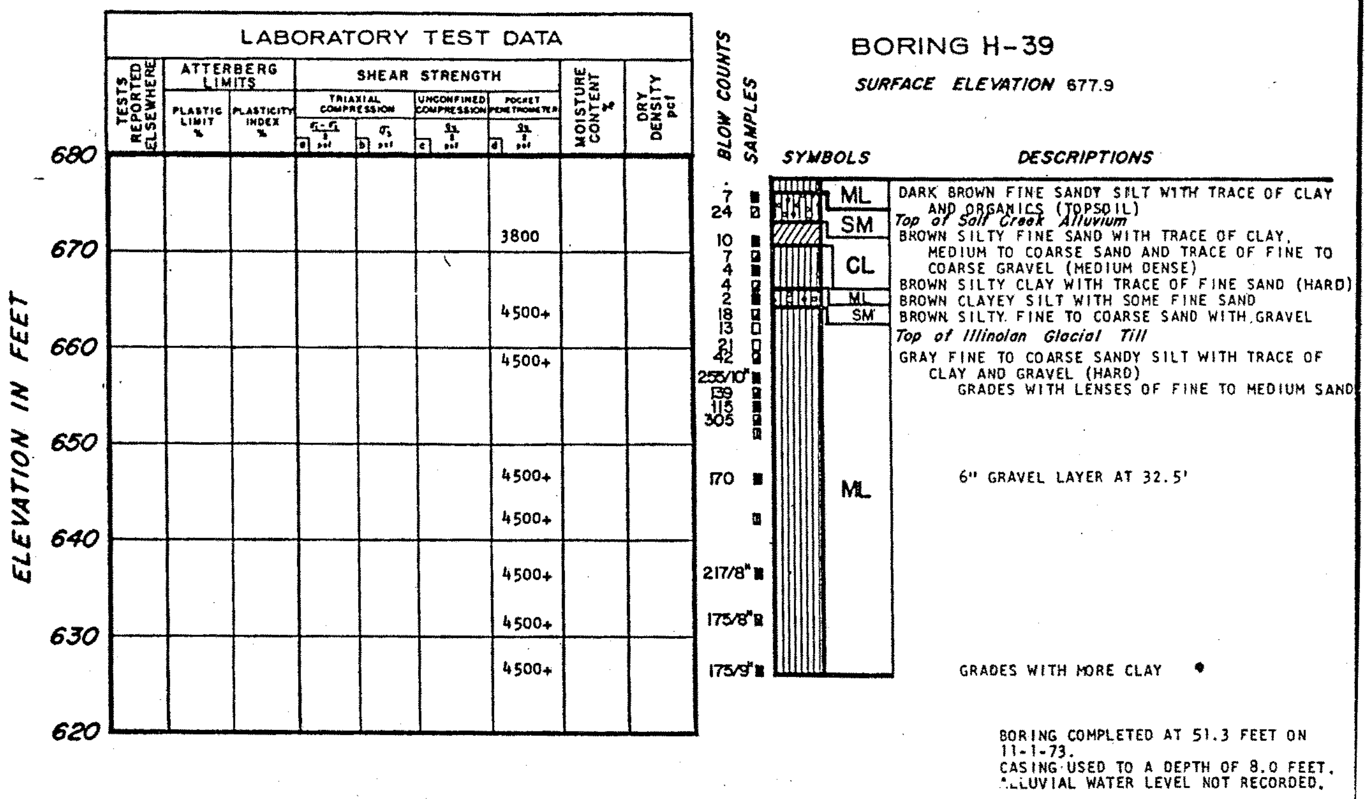
NOTE:

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 2.5-199

LOG OF BORING H-38



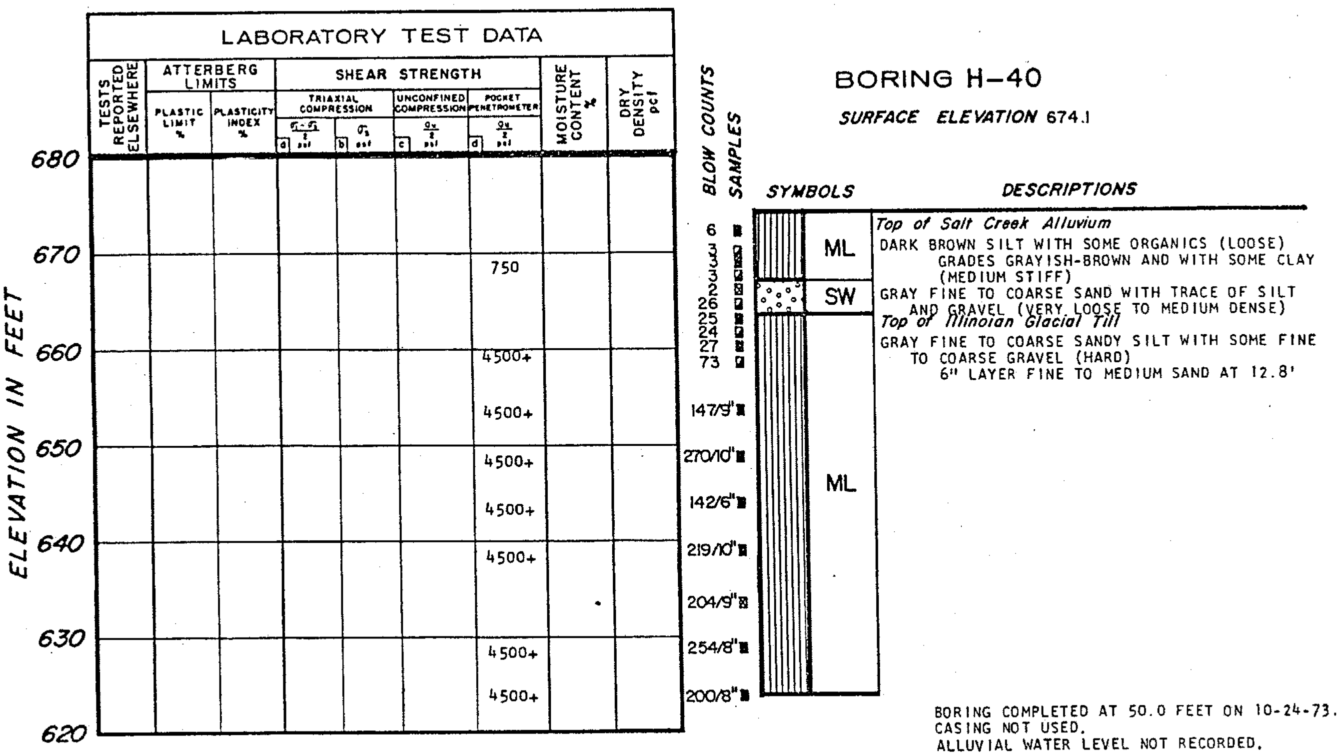
NOTE:

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:

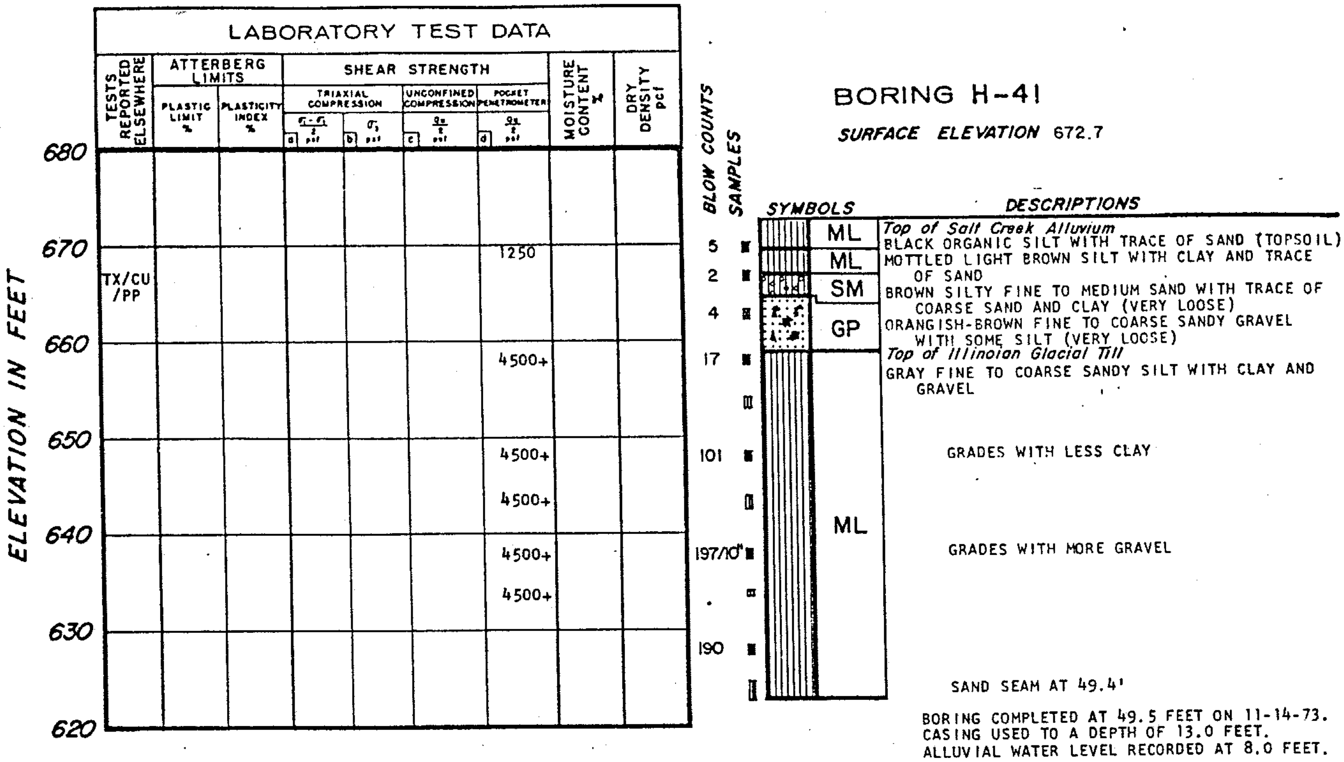
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-201

LOG OF BORING H-40



NOTE:

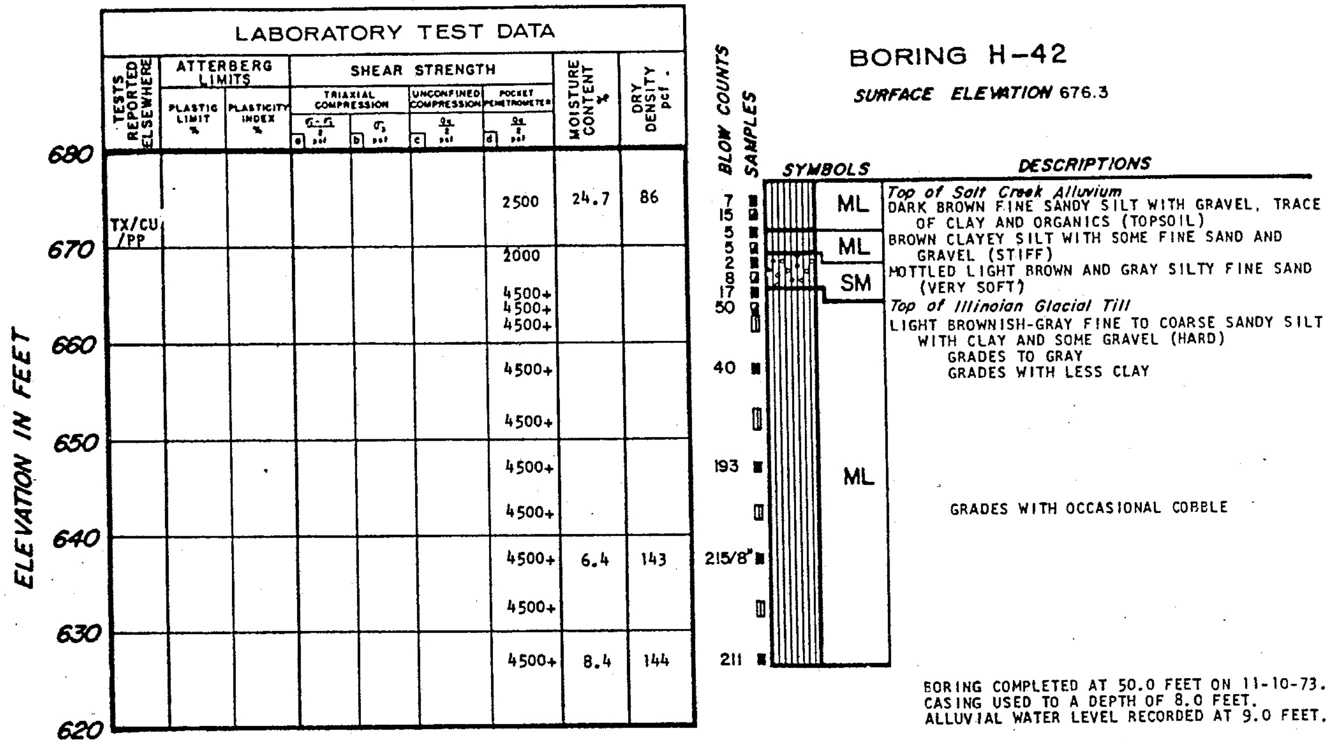
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-202

LOG OF BORING H-41



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 2.5-203

LOG OF BORING H-42

BORING H-43

SURFACE ELEVATION 697.8

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	[illegible]	BLOW COUNTS	SAMPLES
									14	SS
			4400			20.6	108		23	SS
			6800			10.8	127		26	SS
									69	SS
			12500			7.7	136		100	SS
									121	SS
			9800			9.1	141		31	SS
			4200			10.7	129		17	SS
										ST
			15300			8.1	136		100	SS
									61	SS
			11700			6.9	138		261	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	**WISCONSINAN TILL** Brown, silty clay, little fine to medium sand, trace fine gravel, roots noted.	
CL	**TOP OF INTERGLACIAL ZONE** Yellowish-brown, mottled light gray, silty clay, trace fine to coarse sand, trace fine gravel.	689.3
ML • CL	**TOP OF ILLINOIAN TILL** Light gray, mottled yellowish-brown, clayey silt and fine to coarse sand, trace fine gravel, sand pocket noted. 18.5 to 18.7 feet, brown, fine to coarse sand, trace silt, iron stained.	684.3
ML	Yellowish-brown, silt and fine to coarse sand, trace clay, trace fine gravel. 24.5 feet, grades to gray. 29.5 - 30.0 feet, gray fine to coarse sand, trace fine gravel, trace fine gravel, trace silt.	674.3
ML • CL	Gray, clayey silt and fine to coarse sand, trace fine gravel.	661.8
ML	Gray, silt, and fine to coarse sand, trace clay, trace fine gravel.	657.3

BORING COMPLETED AT 50.0 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 2.5-204

LOG OF BORING H-43

BORING H-44

SURFACE ELEVATION 697.8

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
									24	SS
			7700			18.9	114		35	SS
			4500+*			11.6			34	SS
			7500			8.3	141		112	SS
									113	SS
			12300			8.4	148		53	SS
									29	SS
			5500			10.2	144		20	SS
			3100			11.0	141		14	SS
			3000			13.4	134		11	SS
			7000			11.0	125		36	SS
			13300			8.8	136		73	SS
			11800			8.4	136		89	SS
									225/6"	SS

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	Dark gray, silty clay, trace fine sand, organics noted.	
	5.5 feet, grades to yellowish-brown, mottled light gray.	
ML-CL	TOP OF ILLINOIAN TILL Gray, mottled light yellowish-brown, clayey silt, and fine to coarse sand, trace fine gravel.	684.3
ML	Gray, silt, and fine to coarse sand, trace clay and fine gravel.	649.3
SP-SM	23.7 feet, brown fine to medium sand, trace silt, iron stained.	
ML	24.5 feet, gray, silt, and fine to coarse sand, trace clay and fine gravel.	
ML-CL	Gray, clayey silt, and fine to coarse sand, trace fine gravel.	664.3
	39.0 to 39.6 feet, gray, silt, trace fine sand, organics noted.	
ML	Gray, silt, and fine to coarse sand, trace fine gravel.	656.8
SP	49.3 to 49.5 feet, gray, fine to medium sand, trace silt.	

BORING COMPLETED AT 49.5 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 2.5-205

LOG OF BORING H-44

BORING H-44A

SURFACE ELEVATION 697.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PASSING NO. 200 SIEVE	BLOW COUNTS	SAMPLES	SYMBOLS	DESCRIPTIONS
0													
5													Rotary drilled without sampling to 35.0 feet.
35											ST	ML-CL	Gray, clayey silt and fine to coarse sand, trace fine gravel.
40											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.

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 2.5-206

LOG OF BORING H-44A

BORING H-45

SURFACE ELEVATION 705.2

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	[illegible]	BLOW COUNTS	SAMPLES
			4500+*			11.8			27	SS
									20	SS
			2900			23.6	104		14	SS
									19	SS
			6000			12.4	129		123/9"	SS
						8.0	133		109	SS
			11100			8.6	140		58	SS
			4500+*			8.4			43	SS
			4500+*			9.4			34	SS
			8100			9.6	135		21	SS
			500			17.8	123		13	SS
IG			600			23.6	107		38	SS
									41	SS
			12900			9.3	139		43	SS
			11400			8.9	136		84	SS

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	WISCONSINAN TILL Brown, silty clay, some fine to coarse sand, trace fine gravel.	
ML	TOP OF INTERGLACIAL ZONE Light gray, silt, trace fine sand.	696.7
CL	Yellowish-brown, mottled light gray, silty clay, trace fine sand.	691.7
ML-CL	TOP OF ILLINOIAN TILL Yellowish-brown, clayey silt, some fine to coarse sand, trace fine gravel.	686.7
ML	Light yellowish-brown, silt, some fine to coarse sand, trace clay. 28.5 feet, grades to gray, silt, some fine to medium sand, trace clay. 33.5 feet, fine to coarse sand, trace fine gravel.	681.7
ML-CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel. 44.0 feet, organics noted.	664.2
ML	Gray, silt, trace clay, black silt veins noted.	660.0
ML-SM	Gray, silt and fine to coarse sand, little fine gravel, gravel seams noted.	758.3
ML-CL	Gray, clayey silt and fine to coarse sand, trace fine gravel.	756.4

BORING COMPLETED AT 55.0 FEET ON 9/22/76.

WATER LEVEL AT 46.9 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 2.5-207

LOG OF BORING H-45

BORING H-45A

SURFACE ELEVATION 705.2

DEPTH (FEET)	SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0–42.5			Rotary drilled without sampling to 42.5 feet.	
42.5	ST	ML-CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel. 44.0 feet, organics noted.	
	ST	ML	Gray, silt, trace clay, black silt veins noted.	660.0
	ST	ML-SM	Gray, silt and fine to coarse sand, little fine gravel, gravel seams noted.	758.3

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

WATER LEVEL NOT RECORDED.

Laboratory data columns (no entries): TESTS REPORTED ELSEWHERE; SHEAR STRENGTH — TRIAXIAL COMPRESSION ($\sigma_1-\sigma_3$ psf, σ_3 psf), UNCONFINED COMPRESSION (psf); ATTERBERG LIMITS — PLASTIC LIMIT %, PLASTICITY INDEX %; FIELD MOISTURE CONTENT %; DRY DENSITY PCF; BLOW COUNTS.

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

BORING H-46

SURFACE ELEVATION 705.6

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

BLOW COUNTS	SAMPLES
20	SS
20	SS
13	SS
11	SS
62	SS
59	SS
29	SS
20	SS
26	SS
14	SS
9	SS
25	SS
32	SS
51	SS
60	SS
61	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	LOESS Brown, silty clay, trace fine sand, roots noted. 3.5 feet, mottled light gray.	
CL	WISCONSINAN TILL Brown, silty clay, some fine to coarse sand, trace fine gravel.	700.1
ML	TOP OF INTERGLACIAL ZONE Gray, silt, trace fine sand, roots noted.	696.6
CL	Gray, mottled brown, silty clay, trace fine to coarse sand, trace fine gravel.	692.1
ML-CL	TOP OF ILLINOIAN TILL Brown, clayey silt, some fine to coarse sand, trace fine gravel, coarse gravel noted. 23.5 feet, and fine to coarse sand, ½" sand seams noted. 24.5 feet, grades to gray.	687.1
SM-ML	Gray, fine to coarse sand and clayey silt, trace fine gravel.	664.1
ML	Gray, silt, trace fine sand, organics noted.	661.1
ML-CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel, organics noted.	659.7

BORING COMPLETED AT 55.0 FEET ON 9/23/76.

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 2.5-209

LOG OF BORING H-46

BORING H-47

SURFACE ELEVATION 713.7

Tests Reported Elsewhere	Shear Strength: Triaxial Compression $\frac{\sigma_1 - \sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: $\frac{Q_u}{2}$ psf	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts	Samples
						10.5			24	SS
						6.6			20	SS
			7100			11.9	123		16	SS
			2000			22.1	106		12	SS
			1200			20.4	112		11	SS
			2500*						10	SS
			5500			7.8	134		110/11"	SS
						10.4			26	SS
			4500+*						39	SS
			4500+*						47	SS
			9600			7.8	136		45	SS
									40	SS
									33	SS
IG			8100			9.5	140		24	SS
						26.0			15	SS
						13.6			37	SS
									79	SS
			11700			8.9	133		79	SS
									106/9"	SS

Symbols	Descriptions	Elevation (Feet)
	WISCONSINAN TILL	
CL	Brown, silty clay, some fine to medium sand, roots noted.	
SC	4.0 feet, brown, clayey sand, some silt.	
SM	6.5 feet, brown, fine to medium sand, some silt, trace clay.	
CL	11.5 feet, brown, silty clay, some fine to coarse sand, trace fine gravel.	
	TOP OF INTERGLACIAL ZONE	697.2
CL	Dark brown, silty clay, trace fine to coarse sand, fine gravel and organics noted.	
CL	24.5 feet, yellowish-brown, mottled gray, silty clay, some fine to coarse sand, trace fine gravel.	
	TOP OF ILLINOIAN TILL	685.2
ML-CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
ML	33.5 feet, gray, silt and fine to coarse sand, trace clay and fine gravel.	
ML-CL	38.5 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel	
ML	46.0 feet, gray, silt and fine to coarse sand, trace clay and fine gravel	
ML-CL	52.0 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel.	
ML	54.3 feet, gray, silt, trace clay and fine sand, black silt veins noted.	
SW-SM	55.2 feet, gray, fine to coarse sand, trace silt.	
ML	56.0 feet, gray, silt and fine to coarse sand, trace fine gravel.	
	57.5 to 57.9 feet, gray, fine to coarse sand, trace silt.	
ML-CL	57.9 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel.	

BORING COMPLETED AT 64.3 FEET ON 9/23/76.

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 2.5-210

LOG OF BORING H-47

BORING H-48

SURFACE ELEVATION 720.0

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	[illegible] psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5				4500‡						47	SS
10				11500			10.7	128		37	SS
15										28	SS
20				3600			12.4	124		15	SS
25	1G			2000			22.0	113		5	SS
30										9	SS
35				1600			15.3	128		9	SS
40							8.0			128	SS
45				6600			9.6	135		54	SS
50				4400			8.2	134		79	SS
										72	SS
										66	SS
55				11300			8.5	141		46	SS
										55	SS
										26	SS
60				1900*			11.2			12	SS
				400			21.8	120		12	SS
										18	SS
				4500*			9.4			78	SS
65											
70				13800			8.5	137		94	SS
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	WISCONSINAN TILL Brown, silty clay, little fine to coarse sand, trace fine gravel. 8.5 feet, some fine to coarse sand.	
ML · CL	13.5 feet, brown, clayey silt, some fine to coarse sand, trace fine gravel.	
SM	19.8 feet, yellowish-brown, fine to medium sand and silt, trace clay.	
CL	TOP OF INTERGLACIAL ZONE Dark brown, silty clay, trace fine sand, organics noted. 24.8 feet, gray, mottled brown, silty clay, trace fine to medium sand. 29.8 feet, greenish-gray, silty clay, some fine to coarse sand, trace fine gravel.	697.0
ML · CL	33.5 feet, gray, clayey silt and fine to coarse sand, trace fine gravel.	
ML	TOP OF ILLINOIAN TILL Brown and light gray, silt and fine to coarse sand, trace clay and fine gravel. 39.0 feet, ¼" to 1" thick fine to medium sand seams noted.	683.5
ML · CL	43.5 feet, gray, clayey silt some fine to coarse sand, trace fine gravel.	
ML	48.5 feet, gray, silt and fine to coarse sand, trace clay and fine gravel, sand seams noted.	
ML · CL	57.5 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel.	
ML	59.7 feet, gray, silt, trace clay and fine sand, decaying organics noted.	
ML · CL	63.0 feet, gray, clayey silt and fine to coarse sand, trace fine gravel.	

BORING COMPLETED AT 70.0 FEET ON 9/28/76.

WATER LEVEL NOT RECORDED.

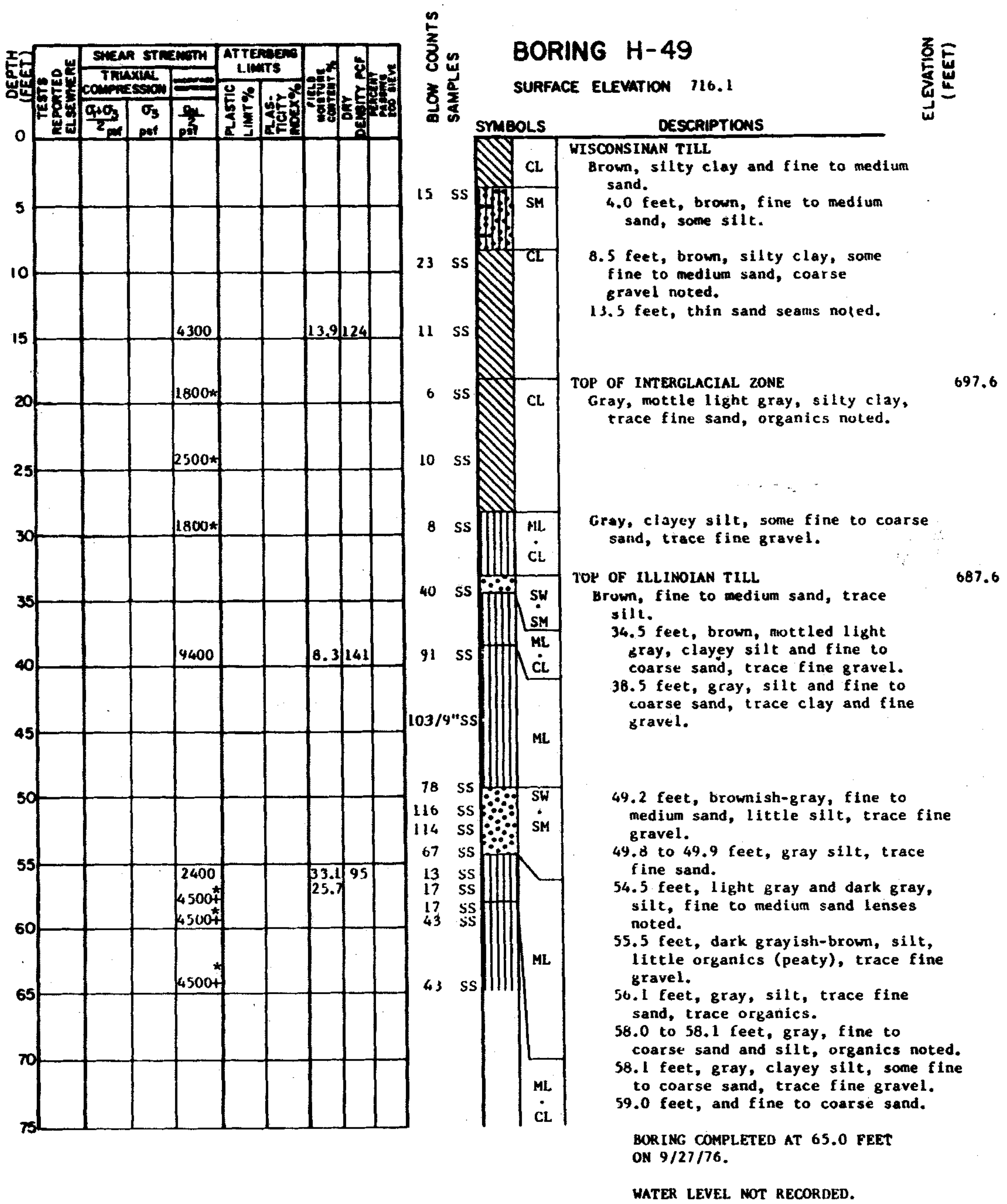
NOTES:

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-211

LOG OF BORING H-48



NOTES:

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

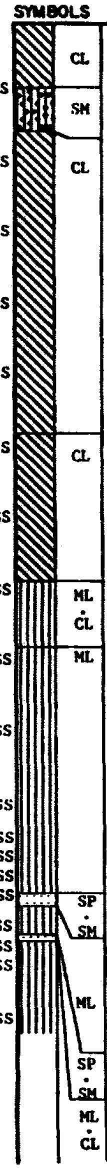
FIGURE 2.5-212

LOG OF BORING H-49

BORING H-50

SURFACE ELEVATION 722.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	RECOVERY PERCENT RQD	BLOW COUNTS	SAMPLES
										16	SS
										13	SS
				2600			14.2	120		14	SS
				3900			15.0	123		12	SS
										18	SS
				3100			20.4	107		12	SS
				2200+						8	SS
				6000			11.0	132		29	SS
				4500+*						106	SS
				12200			8.4	138		65	SS
				4500+*						103	SS
				4500+*						103	SS
				4500+*						111	SS
				11300			8.0	142		70	SS
										102	SS
							16.9				
							9.9			50	SS
				4500+*						53	SS
										68	SS
				14900			7.7	140		92	SS



SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	**LOESS** Brown, silty clay, trace fine sand.	
SM	**TOP OF WISCONSINIAN TILL** Brown, fine to medium sand and silt, trace clay.	718.5
CL	7.0 feet, brown, silty clay, some fine to medium sand, trace fine gravel.	
	18.5 feet, mottled gray.	
CL	**TOP OF INTERGLACIAL ZONE** Dark brown, silty clay, trace fine to coarse sand, fine gravel noted.	694.4
	33.5 feet, light bluish-gray, silty clay, some fine to coarse sand, trace fine gravel.	
ML-CL	**TOP OF ILLINOIAN TILL** Gray, clayey silt and fine to coarse sand, trace fine gravel.	683.9
ML	43.5 feet, gray, silt and fine to coarse sand, trace clay and fine gravel.	
SP-SM	61.0 feet, gray, fine to medium sand, trace silt.	
ML	61.9 feet, gray, silt, some fine to coarse sand, trace clay and fine gravel.	
	62.7 feet, gray, silt, trace fine to coarse sand and fine gravel, black silt veins noted.	
SP-SM	63.0 feet, gray, fine to medium sand, little fine gravel, trace silt.	
ML-CL	63.2 feet, gray, clayey silt and fine to coarse sand, trace fine gravel.	

BORING COMPLETED AT 70.0 FEET ON 9/24/76.

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

BORING H-51

SURFACE ELEVATION 687.4

Approx. depth (feet)	Tests reported elsewhere	Triaxial compression $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	Unconfined compression $\frac{Q_u}{2}$ psf	Plastic limit %	Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
4				1600*			17.1			8	SS
9							18.0			11	SS
14				13500			7.4	139		67	SS
17										63	SS
19				4500+*			8.6			36	SS
22										23	SS
24							14.1	109		47	SS
27				6600			10.8	136		26	SS
29										40	SS
32							11.6			79	SS
34				11100			8.7	139		62	SS
37										100/5"	SS
39										117	SS

Symbols	Descriptions	Elevation (feet)
CL	SALT CREEK ALLUVIUM Brown, silty clay, little fine to medium sand, decaying organics noted.	
SC	8.5 feet, brown silty clay and fine to coarse sand, little fine gravel.	
ML	TOP OF ILLINOIAN TILL Gray, silt and fine to coarse sand, trace clay and fine gravel. 21.0 feet, organics noted.	676.4
ML	23.5 feet, gray, silt, trace fine to coarse sand.	
ML-CL	24.0 feet, gray, clayey silt and fine to coarse sand, trace fine gravel, sand seams noted.	
SM	36.0 feet, brownish-gray, fine to coarse sand, little fine gravel, trace silt.	
ML-CL	38.5 feet, gray, clayey silt and fine to coarse sand, trace fine gravel.	

BORING COMPLETED AT 40.0 FEET ON 9/28/76.

WATER LEVEL NOT RECORDED.

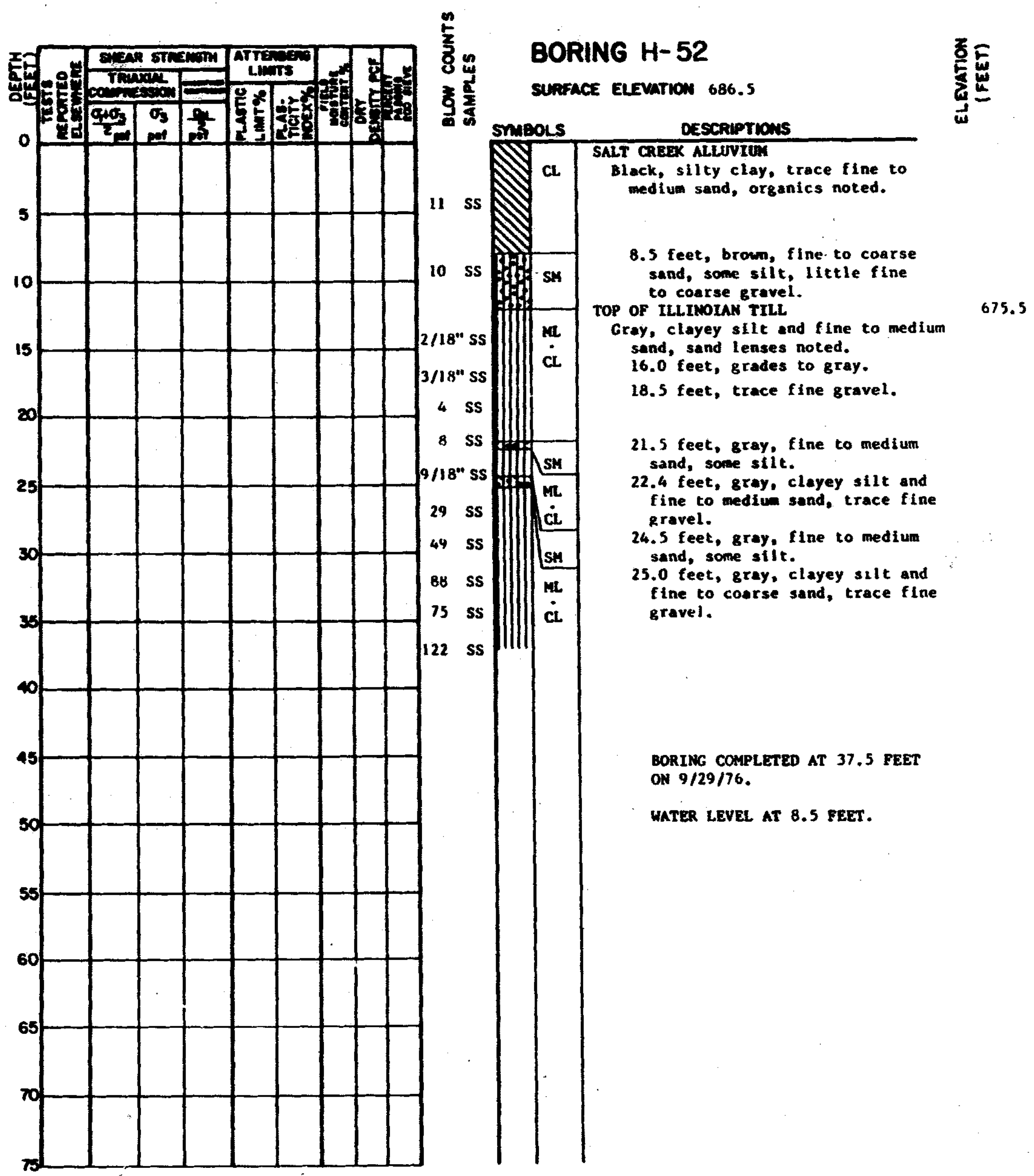
NOTES

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-214

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

BORING H-53

SURFACE ELEVATION 679.6

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5				4500+*			13.0			13	SS
10				500			22.8	100		2	SS
15				600			27.9	104		3/20"	SS
20							11.8		18.5	21	SS
25							10.3			57	SS
				4500+*						46	SS
30							7.1		53.1	127	SS

SYMBOLS / DESCRIPTIONS / ELEVATION (FEET)

CL — SALT CREEK ALLUVIUM
Brown, silty clay, some fine to medium sand.

13.5 feet, brown and light gray, silty clay, trace fine sand, thin sand and silt seams noted.

SM — 18.0 feet, brownish-gray, fine to coarse sand, little silt, little fine gravel.

TOP OF ILLINOIAN TILL — 659.7

ML-CL — Gray, clayey silt and fine to coarse sand, trace fine gravel.

BORING COMPLETED AT 30.0FEET ON 9/29/76.

WATER LEVEL AT 9.0 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 2.5-216

LOG OF BORING H-53

BORING H-54

SURFACE ELEVATION 682.2

Tests reported elsewhere	Triaxial compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Triaxial compression σ_3 psf	$\frac{q_u}{2}$ psf	Plastic limit %	Plasticity index %	Field moisture content %	Dry density pcf	[illegible]	Blow counts	Samples
			4500+*						18	SS
			300*			19.1			3	SS
			1630			14.8	122			
			2500*					53.8	7	SS
						13.0	130		15	SS
						12.0		7.7	19	SS
						13.1		33.3	100/11"	SS
			14400			7.2	139	53.8	93	SS
			4500+*						118	SS

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

ELEVATION (FEET)

SYMBOLS	DESCRIPTIONS
	ILLINOIAN TILL
CL	Light gray, mottled brown, silty clay, some fine to coarse sand, trace fine gravel.
	8.5 feet, grades to gray, and fine to medium sand.
	13.5 feet, trace fine to coarse sand, black silt pockets noted.
ML · CL	14.0 feet, gray, clayey silt and fine to coarse sand, trace fine gravel, thin sand seams noted.
ML	18.5 feet, gray, silt and fine to medium sand, trace fine gravel, thin sand seams noted.
SW · SM	22.8 feet, gray, fine to coarse sand, little fine to coarse gravel, trace silt.
SP · SM	24.6 feet, gray, fine sand, trace silt.
SM	28.5 feet, brownish gray, fine to coarse sand, some silt, trace clay and fine gravel.
ML · CL	29.0 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel.
	31.0 feet, and fine to coarse sand.

BORING COMPLETED AT 35.0 FEET ON 10/1/76.

WATER LEVEL AT 8.5 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 2.5-217

LOG OF BORING H-54

BORING H-55

SURFACE ELEVATION 687.4

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
0–5				4000*						13 SS
5–10				1500*						46 SS
				4500*						
10–15				4500*						60 SS
				4500*						31 SS
15–20				4250*						24 SS
										26 SS
20–25				1000*						12 SS
										23 SS
25–30										23 SS
										21 SS
30–35										100 SS
				4500*						52 SS
35–40				4500*						100 SS
				4500*						92 SS

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

ELEVATION (FEET)

SYMBOLS	DESCRIPTIONS
	ILLINOIAN TILL
CL	Brown, mottled gray, silty clay, some fine to coarse sand, trace fine gravel. 4.5 to 4.8 feet, brown, mottled gray, silt, trace fine sand, trace clay.
ML	Gray, mottled greenish-gray, clayey silt, some fine to coarse sand, trace fine gravel.
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.
SW-SM	Gray, fine to medium sand, trace silt, trace fine gravel, little coarse sand. 19.2 to 19.4 feet, gray, silt, trace fine sand.
ML-SM	Gray, clayey silt and fine to medium sand, trace coarse sand, trace fine gravel.
SW-SM	Gray, fine to medium sand, trace coarse sand, trace silt. 27.5 feet, gray, fine to coarse sand, trace silt. 32.5 feet, grades fine to medium sand, trace coarse sand, trace silt. 34.0 feet, grades fine to coarse sand, trace silt.
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel.

BORING COMPLETED AT 40.0 FEET ON 10/5/76.

CASING USED TO A DEPTH OF 7.0 FEET.

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 2.5-218

LOG OF BORING H-55

BORING H-56

SURFACE ELEVATION 680.7

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS / SAMPLES
				1000*						
										7 SS
				500*						3 SS
				500*						6 SS
				500*						6 SS
				3750*						25 SS
				1500*						27 SS
				4500*						36 SS
				4500+*						120 SS
				4500+*						99 SS
				4500+*						96 SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	SALT CREEK ALLUVIUM	
SM	Brown, silty, fine to coarse sand, some clay, trace fine gravel.	
	TOP OF ILLINOIAN TILL	676.2
ML SM	Brown, clayey silt and fine to coarse sand, trace fine gravel.	
ML SM	Gray, clayey silt and fine to medium sand, silt and sand lenses noted.	
SM	9.5 to 9.7 feet, gray, fine to medium sand, some silt.	
ML	9.7 to 12.0 feet, gray, silt, some clay, trace fine sand, trace fine gravel.	
ML SM	12.0 feet, gray, clayey silt and fine to coarse sand, trace fine gravel.	
ML	17.2 feet, gray, silt, trace fine sand, fine gravel and organics noted.	
ML SM	Gray, clayey silt and fine to coarse sand, trace fine gravel, coarse gravel noted.	
SP	26.0 to 26.6 feet, gray, fine to medium sand, trace silt.	
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

BORING H-57

SURFACE ELEVATION 690.3

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
				4500+*			13.3	116		22	SS
				4500+*			14.6	114.6		22	SS
5											
				750*			14.4			8	SS
				1500							
10							16.7			10	SS
				1500*							
				4500+			9.7	134.5		10	SS
15				4500+*			7.8			51	SS
				4500+*			7.1	136.6		100/11"	SS
20				4500+*						104	SS
25				4500+*						27	SS
30							12.5			27	SS
				4500+*							
										84	SS
35				4500+*			7.1	132.2		121	SS
40				4500+*						130/6"	SS
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS
	ILLINOIAN TILL
CL	Brown, silty clay, some fine to coarse sand, trace fine gravel, organics noted. 3.5 feet, mottled light brown.
SP SM	Yellowish-brown, fine to medium sand, trace to little silt.
SM	Gray, fine to medium sand, trace to little fine gravel.
ML CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.
ML SM	16.0 feet, grades and fine to coarse sand, coarse gravel noted.
ML CL	Gray, clayey silt, little fine to medium sand, trace coarse sand, trace fine gravel.
SP	Gray, coarse sand and fine gravel, trace silt.
ML SM	Gray, clayey silt, some fine to coarse sand, trace fine gravel.
ML SM	Gray, clayey silt and fine to coarse sand, trace fine gravel layered with gray, fine to coarse sand.

ELEVATION (FEET)

BORING COMPLETED AT 40.0 FEET

ON 10/12/76.

CASING USED TO A DEPTH OF 8.0 FEET.

WATER LEVEL AT 8.5 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 2.5-220

LOG OF BORING H-57

BORING H-58

SURFACE ELEVATION 682.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0–5				2500* 1500			17.9	109.6		13	SS
5				2500* 2300			17.6	111.2		11	SS
				1750* 2500						11	SS
10				1250* 2200			19.2	102.0		12	SS
15				1500*						10	SS
20				4500*			7.7	135.0		100	SS
25				4500*						43	SS
30				4500*			8.8	112.4		50	SS
35											
40											
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS
	ILLINOIAN TILL
CL	Dark brown, silty clay, some fine to coarse sand, trace fine gravel.
CL	Dark brown, silty clay-clayey silt, little fine to medium sand, trace coarse sand. 9.5 feet, grades to yellowish-brown.
CL	Gray, silty clay-clayey silt, some fine to medium sand, trace coarse sand, trace fine gravel. Thin, fine to medium sand seams noted.
ML-SM	Gray, clayey silt and fine to coarse sand, trace fine gravel, coarse gravel noted.

ELEVATION (FEET)

BORING COMPLETED AT 30.0 FEET

ON 10/12/76.

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

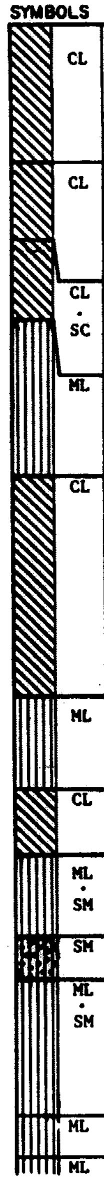
FIGURE 2.5-221

LOG OF BORING H-58

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5				2200*						6	SS
10				900*			20.4			7	SS
15				2600*			15.4			15	SS
20				2300*			17.4			63	SS
25	C			4500+*	12.2	7.5	9.1	134			HR
30				2300*			16.1			30	SS
35				3530			14.4	124		24	SS
40				2000*			17.7			12	SS
45				380			18.3	121		13	SS
50										15	SS
				1120			15.5	116			
55				4710			9.3	141		47	SS
60										60	SS
	MA			3800*			12.7	125	59.0		HR
											HR
65				4500+*			8.0			122	SS
	MA			4500+*			8.8	128	56.0		HR
				2700* / 2000			11.9 / 12.4				
70										17	SS
				3000*	12.7	3.0	11.0 / 17.9				ST
75				2300* / 2700*			11.8			20	SS

BORING AH-1

SURFACE ELEVATION 741.0



SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
CL	Light yellowish-brown, mottled orange, silty clay, trace fine to coarse sand, organic material noted.	
	TOP OF WISCONSINAN TILL	732.5
CL	Light yellowish-brown, silty clay, some fine to coarse sand, trace fine gravel, light gray silty clay seams and reddish-brown silt pockets noted.	
CL • SC	Light grayish-brown, silty clay and fine to coarse sand, trace fine gravel, thin reddish-brown silt seams noted.	
ML	Gray, silt, some fine sand, trace clay. -trace fine gravel.	
CL	Gray, silty clay, some fine to coarse sand, little fine gravel, small sand pockets noted. -trace fine gravel. -organics noted. -39.7 to 39.8 ft., silty sand.	
	TOP OF INTERGLACIAL ZONE	697.5
ML	Gray, clayey silt, some fine to coarse sand.	
CL	Greenish-blue, silty clay and fine to coarse sand, little fine gravel.	
	TOP OF ILLINOIAN TILL	687.5
ML • SM	Gray, silt and fine to coarse sand, little fine gravel.	
SM	Brown, fine to coarse sand, little fine gravel, trace silt and clay.	
ML • SM	Light bluish-gray, clayey silt and fine to coarse sand, trace fine gravel. -thin organic seams noted.	
ML	Light yellowish-brown, clayey silt, some fine to coarse sand, trace fine gravel.	
ML • SM		

Boring continued.......

NOTES

Logged by: Sargent & Lundy

Drilled by: Raymond International

Tested by: Westenhoff & Novick

FIGURE 2.5-222

LOG OF BORING AH-1

(SHEET 1 of 2)

BORING AH-1 (cont'd)

SURFACE ELEVATION

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
										17 SS ST	ML		
				2300 2700			11.8						
75										20 SS	ML · SM	Light bluish-gray, clayey silt and fine to coarse sand, trace fine gravel.	
				4500+* 8150	11.2	11.2	10.5	133					
80										40 SS	ML · CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
85				4500+*			8.0			174/11" SS		Boring completed at 84.9 feet on 3-26-75. Water level at 18.0 feet.	

NOTES

Logged by: Sargent & Lundy

Drilled by: Raymond International

Tested by: Westenhoff & Novick

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-222

LOG OF BORING AH-1

(SHEET 2 of 2)

BORING AH-2

SURFACE ELEVATION 736.7

Tests reported elsewhere	Triaxial compression $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	Unconfined compression $\frac{q_u}{2}$ psf	Plastic limit %	Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
			780			29.0	104		5	SS
			880	12.0	11.7	15.8	123		6	SS
SA						13.5		17.0	36	SS
SA			4500*			16.1		20.0	79	SS
			3700*			14.2			25	SS
										PR
									12	SS
			4000*						26	SS
C MA			2300*			12.6	120	30.5		ST
			4500*			10.3			40	SS
			4500*						68	SS
										HR
			4500*						72	SS
										HR
			4500*			9.6			79	SS
C			4500*	12.0	6.0	9.5	132			HR
			4500*			11.9			48	SS

Symbols	Descriptions	Elevation (feet)
CL	TOP OF LOESS Light grayish-brown, mottled reddish-brown, silty clay, organic material noted.	
CL-ML	TOP OF WISCONSINAN TILL Light grayish-brown, clayey silt, some fine to coarse sand, trace fine gravel.	730.7
SM	Light reddish-brown, fine to coarse sand, trace fine gravel, trace silt and clay.	
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel. -some lenses of fine sand. -trace organics noted.	
ML	TOP OF INTERGLACIAL ZONE Gray, silt, trace fine sand. -some thin brown peat layers noted. -3" cobble noted at 38.5'.	699.2
ML-CL	Greenish-gray, silty clay, some fine to coarse sand.	
SM	Light bluish-gray, fine to coarse sand, some silt and clay.	
ML	TOP OF ILLINOIAN TILL Gray, clayey silt and fine to coarse sand, trace fine gravel. -trace organics noted. Gray, clayey silt, some fine to coarse sand, trace fine gravel.	683.2

Boring completed at 69.5 feet on 4-2-75.
Water level not recorded.

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 AH-3

SURFACE ELEVATION 733.6

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{Q_u}{2}$ psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
0										
5				1500*						8 SS
10				310			17.3	117		3 SS
15				10690	11.8	9.4	9.4	133		52 SS
20				3000*			14.3			12 SS
25				4200*						16 SS
	TX/UU	3113	1440		11.7	16.1				HR
30				2710			15.3	120		10 SS
35				1500*			8.8			25 SS
				2100*			42.0			11 SS
				1500*			19.2			
40	C			1800*	12.5	17.6	20.9	104		OB
				2200*	13.0	21.0	20.9	105		
45				1000						7 SS
	TX/UU MA	2355	2160		12.2	2.6		129	39.0	OB
50										66 SS
55				2500*			10.4	134		100/6" SS
60				4500*						38 SS
65				4500*			11.6			33 SS
				4500*	11.8	10.4	11.1	129		HR
70				4500*						50 SS
75				1000			12.9			86 SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
ML-CL	TOP OF LOESS Yellowish-brown, silty clay, organics noted.	
CL	TOP OF WISCONSINAN TILL Light grayish-brown, silty clay, some fine to coarse sand, trace fine gravel, pockets of organics noted.	727.1
CL	Gray and light reddish-brown, clayey silt and fine to coarse sand, trace fine gravel, thin sand seams noted.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel.	
CL	TOP OF INTERGLACIAL ZONE Dark brown, clayey silt, some organics, some fine to coarse sand, sand lenses and organic layers noted. -37.5 feet, grades to dark gray.	699.2
CL	Greenish-gray, silty clay, some fine to coarse sand, trace fine gravel.	
SM	Light bluish-gray, fine to coarse sand, some silt, trace clay, trace fine gravel. -some fine to coarse gravel	
ML-SM	TOP OF ILLINOIAN TILL Gray, silt and fine to coarse sand, trace clay, trace fine gravel.	680.1
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel. -brown, silty clay veins and grayish-blue silt pockets noted.	
ML-SM	Gray, clayey silt and fine to coarse sand, trace fine gravel, sand lenses noted.	

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

BORING AH-4

SURFACE ELEVATION 737.4

Tests Reported Elsewhere	Shear Strength – Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength – Triaxial Compression σ_3 psf	Shear Strength – Unconfined Compression $\frac{q_u}{2}$ psf	Atterberg Limits – Plastic Limit %	Atterberg Limits – Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts	Samples
TXCUPP	1436	1413	2000*	16.3	32.0		99			ST
			1000*			26.8			2	SS
IG			2000*			17.6	114			ST
			2200*			15.0			12	SS
MA			3200*			17.8	117	71.0		ST
			1000*			17.1 19.6	121	34.0	36	SS
									52	SS
			1300	11.2	10.1	9.3	140		54	SS
			2700*						14	SS
			2800*			16.4			7	SS
			1000*			16.8			8	SS
			1370			17.0	117		7	SS ST
			2100*			16.6				
			1530			17.8	114		11	SS
			3200*							
			2700*						12	SS
			1360	10.8	11.4	15.6	120			ST
			4100*							
			1000			14.2			69	SS
			6980			8.3	135		100/6"	SS

Depth (feet): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

Symbols	Descriptions	Elevation (feet)
CL	TOP OF LOESS Light yellowish-brown, mottled gray, silty clay, manganese nodules noted.	
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
SM	Brown, silty, fine to coarse sand, trace fine gravel, trace clay.	
CL-ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel. -and fine to coarse sand, little fine gravel. -little fine to coarse sand, trace fine gravel, silt pockets noted.	
ML	TOP OF INTERGLACIAL ZONE Gray, silt, silty clay veins noted.	696.5
ML-CL	Gray, clayey silt, trace fine sand, trace organic materials.	
CL-SC	Greenish-blue, silty clay and fine to coarse sand, trace fine gravel.	
ML-SM	TOP OF ILLINOIAN TILL Light bluish-gray, silty clay and fine to coarse sand, trace fine gravel. -54.4 to 54.8 feet, lense of fine to medium sand, little silt, little fine gravel, trace clay.	683.9
ML	Gray, silty clay, some fine to coarse sand, trace fine gravel.	

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

BORING AH-5

SURFACE ELEVATION 730.8

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
			2300*			25.5	90			ST
TX/CU/PP	1229	1413	700	15.5	30.8	32.2	92			ST
			1500			16.3			5	SS
IG			3500			12.6	128			ST
			4500+*			12.3			22	SS
			4500+*						27	SS
			4200*			14.8			20	SS
			7300	11.1	16.7	12.1	126		32	SS
			3000*			14.2			16	SS
			1320			53.4	58		23	SS
			2200			17.3			12	SS
									14	SS
			2000*			13.1			13	SS
			4000* / 3750			10.7 / 11.9	135		46	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Black, mottled yellowish-brown, silty clay, trace fine sand, decaying organic material noted.	
CL	TOP OF WISCONSINAN TILL Brown, silty clay, some fine to coarse sand, trace fine gravel, pockets of organic material noted.	724.3
ML • SM	Gray, clayey silt and fine to medium sand, trace fine gravel, .025 foot thick sand lenses noted.	
CL • ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel. -little fine to coarse sand.	
OL • ML	TOP OF INTERGLACIAL ZONE Brownish-black, organic clayey silt.	692.8
ML • CL	Gray, silty clay, some fine to coarse sand, trace fine gravel.	
SM	Light bluish-gray, fine to coarse sand, some fine gravel, some silt and clay.	
ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine gravel.	676.3

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

BORING AH-6

SURFACE ELEVATION 737.9

Tests Reported Elsewhere	Shear Strength: Triaxial Compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts / Samples
			500*			20.5			3 SS
									24 SS
			1000*			22.0			46 SS
			7580			9.9	136		44 SS
									30 SS
MA			4000*	12.2	13.8	11.9	121	720	ST
			4400*			13.9			24 SS
			3050			14.5	120		19 SS
			3200*	12.1	13.6	14.5			16 SS
									11 SS
			4300*			13.3			40 SS
			3460			15.3	116		24 SS
			4500*			14.5			43 SS
			970			13.5	135		51 SS

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

Symbols	Descriptions	Elevation (Feet)
CL	TOP OF LOESS Brown, silty clay, trace fine to coarse sand, pockets of fine sand and organic material noted.	
SP • SM	TOP OF WISCONSINAN TILL Light reddish-brown, fine to medium sand, trace silt, trace fine gravel.	731.4
CL • ML	Gray, clayey silt and fine to coarse sand, trace fine gravel. -some fine to coarse sand, black silty clay seams noted. -pockets of black organic material noted.	
CL	TOP OF INTERGLACIAL ZONE Greenish-gray, clayey silt, some fine to coarse sand, trace fine gravel, thin seams of black organic material noted.	685.4
ML • SM	Gray, silt and fine sand, trace clay, trace fine gravel.	
ML	TOP OF ILLINOIAN TILL Gray, silt, some clay, some fine to coarse sand, trace fine gravel.	675.4

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

NOTES

Logged by: Sargent & Lundy

Drilled by: Raymond International

Tested by: Westenhoff & Novick

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-227

LOG OF BORING AH-6

BORING AH-7

SURFACE ELEVATION 732.3

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
10				4100*			11.5			21	SS
15	IG			2320	11.9	7.9	11.2	118			ST
20				4400*			12.7			46	SS
25				2170			13.2	123		38	SS
30				3100*	11.8	19.0	16.0			31	SS
35										28	SS
				2500*			14.9			21	SS
40				1000*			17.9			58	SS
45				2490			20.5	109		23	SS
				2000*	14.6	24.3	23.4	104			ST
50				2510			16.4	113		22	SS
55				3820			10.4	132		37	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Medium brown, silty clay.	
CL	TOP OF WISCONSINAN TILL Medium to light brown, mottled gray, silty clay, some fine to coarse sand, little fine gravel, silt pockets noted.	728.3
ML - CL	Gray, clayey silt and fine to coarse sand, little fine gravel, silt and sand pockets noted.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel, reddish-brown fine sand pockets noted.	
SM	TOP OF INTERGLACIAL ZONE Brownish-gray, silty, fine sand, trace medium to coarse sand.	692.3
CL	Dark gray, silty clay, little fine to coarse sand, tiny silt pockets noted. -trace fine to coarse sand, tiny sand pockets and organic material noted.	
ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine gravel.	678.3

Boring completed at 55.5 feet on 3-19-75.
Water level at 6.0 feet.

NOTES

Logged by: Sargent & Lundy

Drilled by: Raymond International

Tested by: Westenhoff & Novick

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-228

LOG OF BORING AH-7

BORING AH-8

SURFACE ELEVATION 728.1

Tests Reported Elsewhere	Shear Strength – Triaxial Compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Shear Strength – Triaxial Compression σ_3 psf	Shear Strength – Unconfined Compression $\frac{q_u}{2}$ psf	Atterberg Limits – Plastic Limit %	Atterberg Limits – Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts	Samples
			4500*			11.3	122			ST
			4200*	11.4	25.6	12.9			21	SS
			4500*			12.2			45	SS
			1000*			13.4			84	SS
			3340			14.9	115		36	SS
			3300*						30	SS
			1000*			55.1			23	SS
			2040			20.3	105		27	SS
									37	SS
			4560			10.6	130		39	SS

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Light, orangish-brown, mottled, silty clay.	
SM	TOP OF WISCONSINAN TILL Light brown, silty, fine sand, trace medium to coarse sand.	722.1
CL	Reddish-brown, silty clay, some fine to coarse sand, trace fine gravel. -14.0 feet, grades to gray. -19.0 feet, near vertical silt seams noted.	
ML	Brownish-gray, silt, little clay, little fine to coarse sand, trace fine gravel, thin sand seams noted.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel, thin silt seams and tiny sand pockets noted.	
OL-ML	TOP OF INTERGLACIAL ZONE Dark brown to black, organic clayey silt, trace fine to coarse sand, fine gravel noted.	688.1
CL-ML	Light bluish-gray, silty clay, little fine to coarse sand, silt lenses noted.	
SM	Gray, silty, fine to coarse sand, trace fine gravel.	
ML-SM	TOP OF ILLINOIAN TILL Gray, clayey silt and fine to coarse sand, trace fine gravel, black organic material noted.	674.1

Boring completed at 55.5 feet on 3-18-75.
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 2.5-229

LOG OF BORING AH-8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
				1500*			24.9			8	SS
5											
				1000*			20.0			7	SS
10											
				830	12.1	10.0	15.8	121			ST
				4500+*			10.7			55	SS
15											
				11440			9.6	136		38	SS
20											
					11.4	17.6	9.4			48	SS
25											
				7550			12.6	124		35	SS
30											
				3100* / 4400*			15.1 / 13.5			15	SS
35											
				1610 / 4220			17.2 / 14.8	117 / 131		9	SS
40											
				890			22.2	122		15	SS
45											
				2700* / 3000*						6	SS
50											
	MA						18.4 / 13.7	113 / 123	61.0 / 30.0		ST
										34	SS
55											
				1990* / 4500+*			8.1	139		58	SS
60											
65											
70											
75											

BORING AH-9

SURFACE ELEVATION 736.0

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Brown mottled gray, silty clay, trace fine to medium sand, pockets of organic material noted.	
CL - ML	TOP OF WISCONSINAN TILL Grayish-brown, silty clay, some fine to coarse sand, trace fine gravel, black organic material noted.	730.0
CL - ML	Gray, mottled reddish-brown, clayey silt, some fine to coarse sand, trace fine gravel, thin silt seams noted. -grades to gray. -little fine to coarse sand, silt lenses noted. -pockets of black organic material noted.	
ML	TOP OF INTERGLACIAL ZONE Dark gray, clayey silt, trace fine to coarse sand, some organic material noted.	693.5
CL	Greenish-gray, silty clay and fine to coarse sand, trace fine gravel.	
SM	Bluish-green, silty, fine to coarse sand, trace fine gravel.	
CL	Light greenish-gray, silty clay and fine to coarse sand, trace fine gravel.	
ML - SM	TOP OF ILLINOIAN TILL Gray, clayey silt and fine to coarse sand, trace fine gravel.	677.5

Boring completed at 60.0 feet on 3-18-75.
Water level at 8.0 feet.

NOTES

Logged by: Sargent & Lundy

Drilled by: Raymond International

Tested by: Westenhoff & Novick

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-230

LOG OF BORING AH-9

BORING AH-10

SURFACE ELEVATION 735.9

Tests Reported Elsewhere	Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Triaxial Compression σ_3 psf	$\frac{Q_u}{2}$ psf	Plastic Limit %	Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts	Samples
			2000*			23.4			9	SS
			1100*			15.8			24	SS
				11.6	9.5	12.3				ST
			4500*			11.4				
			1000*			14.7			116	SS
SA						13.9		14.0	65	SS
			4500+*						45	SS
			2510			14.7	126		24	SS
			3100*			14.8			11	SS
			1160	12.4	11.5	15.3	104			ST
			4500+*						19	SS
			2500*			18.8				
			2300			16.1	124		15	SS
			2500*							
			2170			21.9	104		10	SS
										ST
			4500+*			11.5				
			4310			11.7	132		34	SS
			4500+*			8.3			53	SS

Symbols	Descriptions	Elevation (Feet)
CL	TOP OF LOESS Brown mottled gray, silty clay, trace fine to coarse sand, organic material noted.	
CL-ML	TOP OF WISCONSINAN TILL Reddish-brown, silty clay, some fine to coarse sand, trace fine gravel, sand pockets, silt veins, and organic material noted. -grades to gray	730.4
SM	Brown, fine to medium sand, some silt, black organic material noted. -grades to gray. -little silt, trace fine gravel.	
CL-ML	Gray silty clay, some fine to coarse sand, trace fine gravel, sand pockets noted. -thin silt seams noted. -grades to clayey silt.	
ML-CL	TOP OF INTERGLACIAL ZONE Dark gray, clayey silt, trace fine to coarse sand.	692.4
CL	Greenish-gray, silty clay, some fine to coarse sand, trace fine gravel, sand lenses noted.	
ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine gravel.	682.4

Boring completed at 60.0 feet on 3-17-75.
Water level at 7.6 feet.

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

BORING AH-11

SURFACE ELEVATION 739.2

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS / SAMPLES
10				2300*			14.8			17 SS
15				3840			14.2	122		26 SS
20	SA						19.5		4.0	22 SS
25				4000*			13.8			33 SS
										23 SS
30				2800*			13.3			23 SS
35					11.6	13.9	13.1			ST
40				4400*			13.4			44 SS
45										26 SS
50				1000*			26.7			35 SS
55				3500*			15.9			
60					10.6	21.4	17.0			ST
				2200*			17.0			36 SS
65				3300*			10.7			184 SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Medium brown, silty clay, trace fine sand.	
CL	TOP OF WISCONSINAN TILL Grayish-brown, silty clay, some fine to coarse sand, trace fine gravel, organic material noted. -grades to gray.	733.2
SP	Medium gray, fine sand, some medium to coarse sand, trace silt, trace fine gravel.	
CL	Gray, silty clay, some fine to coarse sand, little fine gravel, organic material and sand pockets noted.	
ML-SM	Gray, silt and fine sand, trace fine gravel, trace clay.	
CL-ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel, coarse gravel noted.	
ML	TOP OF INTERGLACIAL ZONE Dark gray, silt, trace clay, trace fine sand.	690.2
CL	Bluish-gray, silty clay, some fine to coarse sand, trace fine gravel.	
ML	TOP OF ILLINOIAN TILL Medium gray, clayey silt, some fine sand, fine gravel noted.	674.7

Boring completed at 66.0 feet on 3-18-75.
Water level at 8.5 feet.

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

Tests Reported Elsewhere	Shear Strength: Triaxial Compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: $\frac{q_u}{2}$ psf	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts	Samples
			1310	17.1	24.8	244				ST
			1000*			20.0			5	SS
			1290	13.9	9.3	18.3	121		17	SS
			3300*			12.2 / 16.4			45	SS
			5200			13.2	124		31	SS
			5500			13.6	128		30	SS
			2600*						22	SS
			2000*			14.9			22	SS
			2500*			15.6			21	SS
			1250			45.0	68		33	SS
									18	SS
			990	11.1	18.9	16.8	120			ST
			4500*						82	SS

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

BORING AH-12

SURFACE ELEVATION 732.2

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Yellowish-brown, mottled gray, silty clay, little fine to coarse sand, fine gravel and organic material noted.	
CL • ML	TOP OF WISCONSINAN TILL Light brown, mottled light gray, clayey silt, some fine to coarse sand, trace fine gravel.	723.2
CL	Light gray, silty clay, some fine to coarse sand, trace fine gravel, silt seams noted. -sand pockets noted.	
OL • ML	TOP OF INTERGLACIAL ZONE Medium brown to dark brown, organic clayey silt.	688.2
CL • ML	Greenish-gray, silty clay, some fine to coarse sand, trace fine gravel.	
ML • SM	Greenish-blue, silty clay and fine to coarse sand, little fine gravel, sand pockets noted.	
ML	TOP OF ILLINOIAN TILL Medium gray, clayey silt, some fine to coarse sand, trace fine gravel.	673.2

Boring completed at 60.5 feet on 3-17-75.
Water level at 3.8 feet.

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

BORING AH-13

SURFACE ELEVATION 738.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS / SAMPLES
5				1200			22.6	104		7 SS
10				1440			13.6	126		16 SS
15				4300*	11.6	9.8	11.1			22 SS
20				1000*			15.6			52 SS
25				3750			10.9	130		28 SS
30				4500+*			14.5			45 SS
35				3800*						17 SS
				2770	11.6	15.0	14.4	122		ST
40				2800*			14.1			14 SS
45				5010			13.5	124		24 SS
50				4500+*						25 SS
55										21 SS
60				2540			15.1	123		16 SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Reddish to yellowish-brown, mottled gray, silty clay, some fine to coarse sand, pockets of organic material noted.	
CL-SC	TOP OF WISCONSINAN TILL Brown, silty clay, and fine to coarse sand, trace fine gravel, silt seams and pockets noted.	731.3
ML-CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
SW-SM	Gray, silty, fine to coarse sand, trace fine gravel.	
CL-ML	Gray, silty clay, some fine to coarse sand, little fine gravel, thin silt seams noted. -little fine to coarse sand, trace fine gravel, .025 foot thick sand lenses noted. -some fine to coarse sand, silt and sand seams noted. -and fine to coarse sand, little fine gravel, thin seams of brown organic material. -some fine to coarse sand, trace fine gravel.	

Boring completed at 60.0 feet on 3-17-75.
Water level at 7.6 feet.

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

BORING AH-14

SURFACE ELEVATION 735.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				2120			23.9	106		6	SS
10					11.8	9.9	12.4			13	SS
				4670	11.0	14.8	11.9	126			ST
15				4500+*			12.3			24	SS
20				4930			13.2	125		23	SS
25				3800*			14.7			20	SS
30				4480			10.9	129		36	SS
35				4400*			12.7			30	SS
40				4400* / 4200*			12.9			28	SS
45				4300*			13.2			21	SS
											ST
50										36	SS
				4500+*	12.4	12.4	13.1	117			ST
55				4500+*			13.0			28	SS
60				3260 / 2790			15.3 / 14.9	121 / 134		18	SS
65										26	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Light grayish-brown, mottled reddish-brown, silty clay, trace fine sand, pockets of organic material noted.	
SW	TOP OF WISCONSINAN TILL Brown, clayey silt and fine to coarse sand, trace fine gravel, silt pockets noted.	729.4
ML-CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel, pockets of black organic material noted.	
CL-ML	Gray, silty clay, some fine to coarse sand, trace fine gravel, sand pockets and silt seams noted. -pockets of organic material noted. -thin sand seams noted. -grades to clayey silt, bluish-gray silty clay veins, tiny sand pockets and decaying wood fragments noted. -grades to silty clay, sand seams noted.	
SM	TOP OF INTERGLACIAL ZONE Bluish-gray, fine to coarse sand, some fine gravel, silt pockets and silty clay pieces noted.	675.4

Boring completed at 65.0 feet on 3-14-75.
Water level at 3.4 feet.

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

BORING AH-15

SURFACE ELEVATION 733.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5				460			29.5	92		5	SS
10				2720	13.3	13.1	16.1	124		18	SS
15				3000*						57	SS
20				4340	12.1	10.0	11.8	128		31	SS
25	TX/CU/PP	1946	1440		12.4	13.0	14.3	122			ST
30	SA						10.1		57	23	SS
35				2200*	13.1	14.1	17.4			14	SS
40				3700*						22	SS
	TX/UU/MR	4977	2880		15.6	15.8			95.0		ST
45				1000*			21.3			8	SS
50							17.0			16	SS
55				7950	12.6	8.2	10.3	133		96	SS
60				4500*						64	SS
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Brownish-gray, mottled reddish-brown, silty clay, trace fine to medium sand.	
	TOP OF WISCONSINAN TILL	727.9
CL • SC	Reddish-brown, clayey silt and fine to coarse sand, trace fine gravel, thin sand seams noted.	
ML	Gray, silt, trace fine sand, trace clay.	
CL • SC	Gray, clayey silt and fine to coarse sand, trace fine gravel.	
SM	Gray, fine to coarse sand, some fine gravel, little silt, trace clay.	
CL • ML	Gray, clayey silt, little fine to coarse sand, trace fine gravel.	
ML	Gray, clayey silt, trace fine sand. -some fine to medium sand, trace fine gravel.	
	TOP OF INTERGLACIAL ZONE	687.9
CL • SC	Greenish-blue, silty clay and fine to coarse sand, fine gravel noted.	
	TOP OF ILLINOIAN TILL	680.9
ML • SM	Bluish-gray, clayey silt and fine to coarse sand, trace fine gravel.	

Boring completed at 60.0 feet on 3-13-75.
Water level at 13.0 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 2.5-236

LOG OF BORING AH-15

BORING AH-16

SURFACE ELEVATION 737.5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH — TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS — PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5	IG			1300*			27.7			6	SS
10				3180	15.1	17.7	16.8	119		13	SS
15				3200*			18.0	125		53	SS
20				3300*			13.8			25	SS
21	TXUU	6759	1440		11.4	8.3					ST
25				4500*						62	SS
30				5140			10.6	126		54	SS
30				7320			9.8	126			
35				4400*			12.9			44	SS
40				4500*						69	SS
45				5110	12.6	15.8	13.5	125		31	SS
47				2030	12.0	14.3	14.8	120			ST
50				1100*						11	SS
55				4150	21.4	20.0	25.2	103		22	SS
60				2500*			19.2			11	SS
65							16.2			39	SS
66							18.0			60	SS
70				4500*						32	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
ML-CL	Light grayish-brown, mottled reddish-brown, clayey silt, trace fine to medium sand, manganese nodules noted.	
	TOP OF WISCONSINAN TILL	732.0
CL	Light grayish-brown, silty clay, little fine to coarse sand, trace fine gravel.	
SW	Brown, fine sand, trace silt.	
ML	Grayish-brown and brown, silt, little fine sand, trace clay, fine gravel noted.	
CL-ML	Gray, silty clay, some fine to coarse sand, trace fine gravel.	
	-and fine gravel.	
	-trace fine gravel.	
	-thin sand lenses noted.	
	-thin organic layers noted.	
	TOP OF INTERGLACIAL ZONE	684.0
CL	Light bluish-gray and gray, clayey silt, trace fine to medium sand, fine gravel and organic material noted.	
CL	Greenish-blue, silty clay, some fine to medium sand, fine gravel noted.	
	TOP OF ILLINOIAN TILL	673.0
SM	Bluish-gray and brownish-gray, fine to medium sand, little silt.	
ML-SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	

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

BORING AH-17

SURFACE ELEVATION 736.5

Depth (feet)	Tests reported elsewhere	Triaxial compression $\frac{\sigma_1-\sigma_3}{2}$ psf	Triaxial compression σ_3 psf	Unconfined compression q_u psf	Plastic limit %	Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
5	IG			940			239	112		7	SS
10				1500*	14.7	3.0	169			13	SS
15	MA			1300*			105		564	34	SS
20				2330	14.0	5.3	133	141		13	SS
25										32	SS
				4500*						33	SS
	TX/CU/PP	2253	1440		11.4	16.1	12.6	127			ST
35				7190			122	130		24	SS
40				1500*						11	SS
	TX/UU	2880	3600		24.9	16.0					ST
45				1800* / 1820	13.4	20.3	206 / 215	111		8	SS
50				3700* / 3300	12.2	26.6	18.2	122		16	SS
55				4500+*			8.6			106	SS
60				4500+*			7.7			100/4"	SS
65											
70											
75											

Symbols	Descriptions	Elevation (feet)
	TOP OF LOESS	
CL • ML	Light grayish-brown, mottled light reddish-brown, silty clay, trace fine sand, manganese nodules noted.	
	TOP OF WISCONSINAN TILL	731.5
ML • SM	Brown, clayey silt and fine to coarse sand, trace fine gravel, some fine to coarse sand lenses noted.	
	-grades to gray.	
ML	Gray, clayey silt, some fine to medium sand, trace fine gravel.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel, trace organics.	
	-fine sand seams noted.	
	TOP OF INTERGLACIAL ZONE	693.0
CL	Light bluish-gray, clayey silt, little fine sand.	
CL	Greenish-blue, silty clay, some fine to coarse sand, trace fine gravel.	
	TOP OF ILLINOIAN TILL	683.0
ML • SM	Gray, clayey silt and fine to coarse sand, trace fine gravel.	

Boring completed at 59.4 feet on 3-12-75.
Water level at 5.0 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 2.5-238

LOG OF BORING AH-17

BORING AH-18

SURFACE ELEVATION 739.4

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				2400*			197			6	SS
10				1390	12.4	12.6	157	123		9	SS
15	SA						12.7		490	34	SS
20	SA						18.8		8.5	58	SS
25	MA			4520	11.7	15.9	129	126	725	25	SS
	MA			5680			11.7	129	68.0		ST
										100/6"	SS
				3000*						170/10.5"	SS
35				3450/8610	12.5	6.3	138/114	124/126		68	SS
40				2300*			125			100/5"	SS
45				3200*						41	SS
50	[illegible]	4363	3600		12.3	16.5					ST
55				2000*						15	SS
60										190	SS
65				4500*						104/6"	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
CL	Brown, mottled light gray, silty clay.	
	TOP OF WISCONSINAN TILL	735.4
CL	Light reddish-brown, mottled light grayish-brown, clayey silt, some fine to coarse sand, trace fine gravel, trace organics.	
SM-ML	Brown, silty, fine to medium sand and clayey silt, trace fine gravel, trace organics.	
SP-SM	Brown, fine to medium sand, trace silt, trace fine gravel.	
CL	Gray, clayey silt, some fine to coarse sand, little fine gravel, black organic sand seams noted.	
SM	Gray, fine to coarse sand, little silt, trace fine gravel, trace clay.	
ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel, thin sand seams noted. -thin silt and fine to coarse sand seams noted.	
	TOP OF INTERGLACIAL ZONE	692.4
CL	Gray, silty clay, little fine sand, trace fine gravel, silt seams noted.	
SC	Greenish-blue, silty clay and fine to medium sand, trace fine gravel.	
SM	Gray, fine to coarse sand, little fine gravel, trace silt.	
	TOP OF ILLINOIAN TILL	675.9
ML	Gray, clayey silt, some fine to coarse sand, little fine gravel.	

Boring completed at 64.5 feet on 3-11-75.
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.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-239

LOG OF BORING AH-18

BORING AH-19

SURFACE ELEVATION 737.0

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5				600*			253			7	SS
10				2430	12.5	9.5	141	123		15	SS
15	SA						16.1		120	22	SS
20							12.1				
25				7110	13.0	15.0	121	128		34	SS
30	MA			1850			154	124	701	37	SS
35				2100*						20	SS
40					13.2	11.0	42.5				ST
45										14	SS
				2200*	14.3	16.1	19.7	108			ST
50				2330	12.1	30.3	17.5 / 201	109		13	SS
55				4400*						100	SS
60										100/3"	SS
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF LOESS	
ML	Yellow brown, mottled gray, clayey silt, trace fine sand, trace organics.	
	TOP OF WISCONSINAN TILL	731.6
ML • CL	Yellow brown, clayey silt, some fine to coarse sand, trace fine gravel, trace organics.	
SP • SM	Brown, fine to coarse sand, trace fine gravel, trace silt.	
ML	Gray silt, little fine to medium sand, trace fine gravel, trace clay.	
CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel, trace organics.	
ML	Gray, silt, some fine to medium sand, trace fine gravel, thin sand seams noted.	
ML • CL	Gray, clayey silt and silty clay, layered, some fine to coarse sand, trace fine to coarse gravel, thin sand seams noted.	
	TOP OF INTERGLACIAL ZONE	693.5
CL	Gray, clayey silt, little fine to medium sand, trace fine gravel. -47.0 to 48.0 feet, boulder.	
CL	Bluish-gray, silty clay, some fine to medium sand, fine gravel noted.	
	TOP OF ILLINOIAN TILL	683.5
ML	Light bluish-gray, clayey silt, some fine to coarse sand, little fine gravel, small sand pockets noted.	
SM	Brown and gray, fine to coarse sand, little fine gravel, little silt, trace clay.	

Boring completed at 59.5 feet on 3-11-75.
Water level at 11.0 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 2.5-240

LOG OF BORING AH-19

BORING AH-20

SURFACE ELEVATION 738.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5	IC			740			270	99		6	SS
10				500*						6	SS
15				1130	12.4	13.8	163	110		8	SS
20	SA						8.8		132	21	SS
25										27	SS
30				7890	15.2	8.7	161	128		57	SS
35				3200*						31	SS
40				3370			152	127		27	SS
45				1470	14.3	13.6	192	119		10	SS
50				2500*						9	SS
55				4200*			128			57	SS
60										131	SS
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF LOESS Reddish-brown, mottled grayish-brown, silty clay, trace fine gravel, trace fine sand, trace organics.	
	TOP OF WISCONSINAN TILL	733.8
SC	Light reddish-brown, silty clay and fine to coarse sand, little fine gravel, trace organics.	
CL	Gray, clayey silt, some fine to coarse sand, trace fine gravel.	
SM	Gray, fine to coarse sand, some fine to coarse gravel, little silt and clay.	
ML • CL	Gray, silt, trace fine sand, trace clay.	
CL	Gray, clayey silt, some fine to coarse sand, little fine gravel. -black organic seams noted.	
	TOP OF INTERGLACIAL ZONE	695.3
CL	Gray, clayey silt, little fine to medium sand, trace fine gravel.	
CL	Greenish-blue, silty clay, some fine to coarse sand, trace fine gravel.	
	TOP OF ILLINOIAN TILL	695.3
ML • SM	Bluish-gray, clayey silt and fine to coarse sand, trace fine gravel, thin sand seams noted.	

Boring completed at 60.0 feet on 3-13-75.
Water level at 5.6 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 2.5-241

LOG OF BORING AH-20

BORING AH-21

SURFACE ELEVATION 737.3

Tests Reported Elsewhere	Shear Strength – Triaxial Compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Shear Strength – Triaxial Compression σ_3 psf	Shear Strength – [illegible] $\frac{q_u}{2}$ psf	Atterberg Limits – Plastic Limit %	Atterberg Limits – Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts / Samples
			1000*			29.3			6 SS
			1110			15.8	125		8 SS
SA						18.4		13.0	30 SS
			2820			14.0	125		28 SS
			3500*			14.4 12.0			47 SS
									28 SS
			3500*						17 SS
			1990	12.8	12.7	14.0	122		ST
			2000*			14.2			14 SS
			3360			13.5	126		15 SS
			4000*						31 SS
			2500*			21.0			11 SS
			1690	12.4	18.0	17.6	115		ST
			2940	12.3	21.3	16.9	115		
			2200*			15.4			10 SS
			4500+*			8.5			81 SS

Symbols	Descriptions	Elevation (Feet)
CL	TOP OF LOESS Grayish-brown, silty clay, trace fine sand.	
CL	TOP OF WISCONSINAN TILL Reddish-brown, mottled gray, silty clay, trace fine to coarse sand, pockets of organic material noted.	734.8
SM	Reddish-brown, silty, fine to coarse sand, trace fine gravel, organic material noted.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel, sand and silt seams noted.	
SW-SM	Gray, fine to coarse sand, some fine gravel, trace silt.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel. -little fine gravel, thin sand seams noted. -trace fine gravel.	
CL	TOP OF INTERGLACIAL ZONE Dark gray, silty clay, some fine to coarse sand, fine gravel noted, organic material and silt seams noted. Greenish-gray, silty clay and fine to coarse sand, trace fine gravel.	682.3
ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine gravel.	673.8

Boring completed at 65.0 feet on 3-18-75.
Water level at 4.3 feet.

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

BORING K-1

SURFACE ELEVATION 671.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
15	SA								15.8
20	SA								8.7

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
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
BG	SM	Brown, fine to coarse sand, trace fine gravel, little silt.	
BG	SW - SM	Brown, fine to coarse sand, trace silt, trace fine gravel.	
		TOP OF ILLINOIAN TILL	643.9
	ML	Gray, clayey silt, trace fine to medium sand, trace fine gravel.	

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

BORING K-2

SURFACE ELEVATION 670.5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
0–5										AC
5–10	SA								20.5	BG
10–15	SA								13.3	BG
15–20	SA								9.9	BG
20–75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL-ML	TOP OF SALT CREEK ALLUVIUM Brown, silty clay, trace fine sand.	
SM	TOP OF OUTWASH Brown, fine to coarse sand, some silt, some fine to coarse gravel.	665.0
GM	Brown, fine to coarse gravel, some fine to coarse sand, some silt.	
SW-SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
ML	TOP OF ILLINOIAN TILL Grey, clayey silt, some fine to coarse sand, trace fine gravel.	642.5

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: Westenhoff 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 TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
0									
5									
	SA								23.3
10									
	SA								13.5
15									
20									
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									

BORING K-3

SURFACE ELEVATION 669.3

BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		TOP OF SALT CREEK ALLUVIUM	
AG	CL-ML	Dark brown, silty clay, trace fine to coarse sand, trace fine gravel.	
		TOP OF OUTWASH	663.3
BG	SM	Brown, silty, fine to medium sand, trace fine to coarse gravel. - some silt.	
BG			
	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

BORING K-4

SURFACE ELEVATION 684.1

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0												TOP OF SALT CREEK ALLUVIUM	
										AG	CL-ML	Brown, silty clay, trace fine sand.	
11.5												TOP OF OUTWASH	672.6
15	SA								21	BG	SM	Brown, fine to coarse sand, trace fine gravel, trace silt.	
21												TOP OF ILLINOIAN TILL	663.1
											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 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

BORING K-5

SURFACE ELEVATION 683.3

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0										AG	CL • ML	TOP OF SALT CREEK ALLUVIUM Brown, silty clay, trace fine sand.	
5												TOP OF OUTWASH	676.8
	SA								19.4	BG	SM	Brown, fine to coarse sand, some fine to coarse gravel some silt.	
10	SA								10.9	BC	SP • SM	Brown, fine to coarse sand, some fine gravel, trace silt.	
15	SA								22.6	BG	SM • GM	Brown, silty, fine to coarse sand and fine to coarse gravel.	
20	SA								16.2	BG	SM	Brown, fine to coarse sand, some fine to coarse gravel, some silt.	
												TOP OF ILLINOIAN TILL	660.3
25											ML	Gray, clayey silt, trace fine gravel.	
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

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

BORING K-6

SURFACE ELEVATION 671.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\sigma_1-\sigma_3$ psf	σ_3 psf	UNCONFINED COMPRESSION q_u psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
0									
5	SA								241
10	SA								9.2
15									
20									
25									
30									
35									
40									
45									
50									
55									
60									
65									
70									
75									

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL • ML	TOP OF SALT CREEK ALLUVIUM Brown, silty clay, trace fine sand.	
BG	SM	TOP OF OUTWASH Brown, fine to coarse sand, some fine to coarse gravel, some silt.	665.3
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 Gray, clayey silt, trace fine sand, trace fine gravel.	650.8

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 perfromed on bulk samples from 6.5 to 15.0 feet depth.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-248

LOG OF BORING K-6

BORING K-7

SURFACE ELEVATION 671.1

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
0–5										AG
5–10	SA								27.6	BG
10–15	SA								7.9	BG
15–20										BG
20	SA								4.3	

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF SALT CREEK ALLUVIUM	
CL • ML	Dark grayish-brown, silty clay.	
	TOP OF OUTWASH	665.1
SM	Reddish-brown, silty, fine to coarse sand, some fine gravel, some silt.	
SP • SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
SP	Brown, fine to coarse sand, some fine gravel, trace silt.	
	TOP OF ILLINOIAN TILL	642.1
ML	Gray, clayey silt, some fine gravel.	

Boring completed at 30.0 feet on 3-19-75.
Water level at 11.5 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 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

BORING K-8

SURFACE ELEVATION 678.5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0–6										AG	ML • CL	TOP OF SALT CREEK ALLUVIUM Brown, clayey silt, some fine to coarse sand, trace fine gravel.	
6												TOP OF OUTWASH	672.5
~8	SA								8.7	BG	SP • SM	Brown, fine to coarse sand, trace fine to coarse gravel, trace silt. -trace fine gravel.	
~18	SA								6.9	BG			
~23	SA								4.3	BG	SP	Brown, fine to coarse sand, trace fine gravel, trace silt.	
28.5											ML	TOP OF ILLINOIAN TILL Gray, clayey silt, trace fine to coarse sand, trace fine gravel.	650.0

Boring completed at 30.0 feet on 3-20-75.
Water level at 24.0 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 6.0 to 20.0 feet depth.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-250

LOG OF BORING K-8

BORING K-11

SURFACE ELEVATION 682.5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0–5										AG	CL • ML	TOP OF SALT CREEK ALLUVIUM Brown, silty clay, trace fine sand. TOP OF OUTWASH	677.5
5–10	SA								18.5	BG	SM	Brown, fine to coarse sand, some silt, trace fine gravel.	
10–15	SA								23	BG	SM		
15–20	SA								8.4	BG	SP • SM	Brown, fine to coarse sand, some fine gravel, trace silt.	
20–25	SA								7.7	BG	SP • SM		
25–30	SA								4.1	BG	SP	Brown, fine to coarse sand, some fine gravel, trace silt.	

Boring completed at 30.0 feet on 3-20-75.
Water level at 28.0 feet.

(Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75)

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

BORING K-12

SURFACE ELEVATION 673.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1 - \sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	SAMPLES	BLOW COUNTS
0										AG	
5	MA								47.4	BG	
	SA								15.1	BG	
10											
	SA								7.3	BG	
15											
	SA								3.8	BG	
20											
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF SALT CREEK ALLUVIUM	
CL • ML	Brown, silty clay, trace fine to coarse sand.	
	TOP OF OUTWASH	671.8
SM • ML	Brown, fine to coarse sand and clayey silt.	
SM	Brown, fine to coarse sand, some fine gravel, some silt.	
SP • SM	Brown, fine to coarse sand, some fine gravel, trace silt.	
SP	Brown, fine to coarse sand, trace fine gravel, trace silt.	
	TOP OF ILLINOIAN TILL	652.8
ML • 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 perfromed 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

BORING K-15

SURFACE ELEVATION 668.4

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5	SA								23.7		BG
10	SA								8.8		BG
15	SA								7.5		BG
20											
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF SALT CREEK ALLUVIUM	
CL • ML	Brown, silty clay.	
	TOP OF OUTWASH	663.9
SM	Brown, silty, fine to coarse sand, some fine to coarse gravel.	
SP • SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
SW • SM	Brown, fine to coarse sand, some fine to coarse gravel, trace silt.	
	TOP OF ILLINOIAN TILL	645.4
ML	Grey, 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

BORING OW-1

SURFACE ELEVATION 716.7

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1 - \sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: [illegible] psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0–5							18.7			8	SS
5–10				4500+						19	SS
10–15				4500+						38	SS
15–20							12.8			35	SS
20–25				3000						33	SS
25–30				3500	12.9	15.0	13.1	122		25	SS
30–35				3200						34	SS
35–40				2600						10	SS
40–45				4400			21.2	102		17	SS
45–50										39	SS
50–55				4500+						100/6"	SS
55–60				4500+	12.5	5.4	8.5	129		78/6"	SS
60–65				4500+						100/3"	SS
65–70	MA			4500+			9.2	130	58.3	66	SS
70–75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOPSOIL	
	WISCONSINAN TILL	716.0
CL	Brown, silty clay, some fine to coarse sand, fine gravel noted.	
	8.3 feet, grades to little fine to coarse sand.	
SC • CL	Light brown, fine to coarse sand and clayey silt, trace fine gravel.	
CL	Light brown, mottled orange, silty clay, trace fine to coarse sand, trace fine gravel. Pockets of organic material noted.	
CL	Gray, silty clay, trace to little fine to coarse sand, trace fine gravel.	
SP	34.7 feet, yellow-brown, fine to medium sand.	
	TOP OF INTERGLACIAL ZONE	679.7
ML	Gray, clayey silt, trace fine to medium sand, Pockets of organic material noted.	
CL	Brownish-gray, mottled olive gray, clay, trace fine sand, trace fine gravel.	
ML	Light gray, silt, little fine sand.	
	TOP OF ILLINOIAN TILL	664.2
ML	Gray, silt and fine to to coarse sand, trace fine gravel.	
	59.2 feet, some organic pockets noted.	
ML • SM	Gray, clayey silt and fine to coarse sand, trace fine gravel. 1" sand seams noted.	
CL • ML	Gray, clayey silt, little fine to coarse sand trace fine gravel.	

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; BENTONITE 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

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5							13.4			16	SS
10				900			25.5	113		8	SS
15				3500			21.4	104		13	SS
20				2800			18.5			11	SS

BORING OW-2

SURFACE ELEVATION APPROXIMATELY 675

SYMBOLS	DESCRIPTIONS	DEPTH (FEET)
CL-ML	WISCONSINAN TILL Tan to light brown, silty clay, some fine to coarse sand, trace fine gravel, organic material noted.	
SP	Orange, medium to coarse sand, trace silt.	
	TOP OF INTERGLACIAL ZONE	8.5
ML	Light gray, mottled tan, silt, trace fine to medium sand.	
CL	Brown, mottled rust & gray, silty clay, little fine to coarse sand, trace fine gravel.	
CL	Light green, mottled bluish gray, silty clay, trace fine to coarse sand, trace fine gravel.	

BORING COMPLETED AT 20.0 FEET

ON 5/12/76.

WATER LEVEL AT 19.5 FEET.

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.

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

BORING OW-3

SURFACE ELEVATION 735.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				2700						7	SS
10				2000			15.6	125		12	SS
15				2700			13.6	108		20	SS
20				2200						26	SS
25				4500+			9.6	131		70	SS
30				4500+			11.5	129		27	SS
35							13.1			28	SS
40	MA			4500+			12.4	129	675	31	SS
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
ML	LOESS Orange-brown, silty clay, trace fine sand, organic material noted.	
CL - ML	TOP OF WISCONSINAN TILL Light brown, silty clay, little fine to coarse sand, trace fine gravel, organic material noted.	728.4
CL	14.8 feet, grades to gray.	
CL - SC	25.0 feet, some 2"-4" clayey, medium to coarse sand lenses noted.	
CL	Gray, silty clay, little fine to coarse sand, trace fine gravel. 35.0 feet, pockets of black, organic material noted.	

BORING COMPLETED AT 40.0 FEET.

ON 5/10/76.

CASING USED TO A DEPTH OF 10 FEET.

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.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-256

LOG OF BORING OW-3

BORING OW-4

SURFACE ELEVATION 721.0

TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
			2500						8 SS
			2500			22.2			8 SS
			2400			12.3	126		19 SS
									38 SS
			4500+						38 SS
MA			4500+			12.8	121	66.2	23 SS

DEPTH (FEET): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	LOESS Yellowish-brown, clayey silt, trace fine sand, thin layer of organic material noted. 3.5 feet, mottled light gray.	
ML	TOP OF WISCONSINAN TILL Brownish-gray, clayey silt, trace fine sand. 9.5 feet, grades to gray.	715.5
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel.	
SW-SM	Gray, fine to medium sand, trace silt, fine gravel noted.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel.	

BORING COMPLETED AT 27.0 FEET

ON 5/7/76.

WATER LEVEL AT 5.5 FEET.

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 [illegible] AND 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

BORING OW-5

SURFACE ELEVATION 712.6

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	TRIAXIAL COMPRESSION σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				1900			25.9			5	SS
10							16.1			6	SS
15				4200						16	SS
20	SA							14.9		28	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	LOESS TOPSOIL	
CL	Yellowish-brown, silty clay, trace fine sand, manganese nodules notéd.	
	TOP OF WISCONSINAN TILL	705.6
SM	Brown, silty, fine to coarse sand, some clay.	
CL	Brown, silty clay, some fine to coarse sand, trace fine gravel. 13.5 feet, grades to gray.	
SM	Gray, fine to coarse sand and fine to coarse gravel some silt, some clay.	

BORING COMPLETED AT 20.0 FEET

ON 5/7/76.

WATER LEVEL AT 7.0 FEET.

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 703.6 TO 710. AND CEMENT GROUT FROM ELEVATION 710.6 TO 712.6.

NOTES:

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

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-258

LOG OF BORING OW-5

BORING OW-6

SURFACE ELEVATION 743.2

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	Q_u psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				2700			21.3			6	SS
10				2300			17.7			10	SS
15										10	SS
20										14	SS
25				1400			16.7	116		7	SS
30				1800						7	SS
35				1900			13.9	116		11	SS
40							17.7			26	SS
45				4000			12.9			17	SS
50	MA			3300			38.4	79	98.9	19	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
ML	LOESS	
	TOPSOIL (6")	
ML	Yellowish brown, clayey silt, trace fine to medium sand, some organics.	
	TOP OF WISCONSINAN TILL	736.2
CL-ML	Light brown, mottled gray, silty clay, little fine to coarse sand, trace fine gravel.	
ML-CL	Gray, silty clay, little fine to coarse sand, trace fine gravel.	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel. Black, organic, silty clay noted.	
ML	Gray, silt, trace clay, trace fine sand, trace gravel.	
CL ML	Gray, silty clay, and fine to coarse sand, trace fine gravel.	
	TOP OF INTERGLACIAL ZONE	694.2
ML	Black, organic, clayey silt, trace fine to medium sand, fine gravel noted.	

BORING COMPLETED AT 52.0 FEET ON 5/10/76.

CASING USED TO A DEPTH OF 10.0 FEET.

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 743.3.

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

BORING OW-7

SURFACE ELEVATION 718.6

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
5				1800						9 SS
10				2600			14.1	124		13 SS
15				4500+						22 SS
20				2300			15.0	116		12 SS
25	MA			1400			15.8	120	68.4	8 SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
ML	LOESS TOPSOIL (6")	
ML	Brown, mottled tan, clayey silt.	
	TOP OF WISCONSINAN TILL	714.1
CL	Brown, mottled tan and green, silty clay, little fine to coarse sand, trace fine gravel. 10.0 feet, grades to some fine to coarse sand. 18.5 feet, grades to dark brown, mottled orange.	
CL-ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel, small pockets of dark brown organics noted.	

BORING COMPLETED AT 25.0 FEET

ON 5/13/76.

WATER LEVEL NOT ENCOUNTERED.

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

BORING OW-8

SURFACE ELEVATION 719.2

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{Q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING NO. 200 SIEVE	BLOW COUNTS	SAMPLES
5				1500						8	SS
10							9.1			95	SS
15				4500+						34	SS
20							14.0			49	SS
25				2000						27	SS
30				2800			13.6	121		21	SS
35				2200						16	SS
							13.5				
40				3400			19.9	110		16	SS
	MA			3800			19.4	111	84.?	18	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
ML	LOESS TOPSOIL (8")	
ML	Brown, clayey silt.	
	TOP OF WISCONSINAN TILL	713.7
CL	Brown, silty clay, trace fine to coarse sand, trace fine gravel. 20.0 feet, silt and sand seams noted.	
CL	Gray, silty clay, little fine to coarse sand, trace fine gravel.	
CL	Brown, silty clay, little fine to coarse sand, trace fine gravel.	
SP	Brown, sand and fine to coarse gravel, trace silt.	
CL	Gray, silty clay, trace fine to coarse sand, trace fine gravel.	
	TOP OF INTERGLACIAL ZONE	686.2
ML	Dark brown-gray, mottled brown silt, trace clay (organic), trace fine sand.	
CL	Bluish-gray, silty clay, little fine to medium sand. 40.0 feet, grades to slightly mottled olive green.	

BORING COMPLETED AT 42.0 FEET ON 5/12/76.

CASING USED TO A DEPTH OF 10.0 FEET.

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

BORING OW-9

SURFACE ELEVATION 654.3

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0											AG	OL • ML	TOPSOIL	
5											AG	CL	TOP OF SALT CREEK ALLUVIUM Brown, silty clay.	649.3
10											AG	SP	Brown, fine to coarse sand, some fine to coarse gravel.	
15											AG	ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine gravel. Lenses of fine sand and gravelly clay noted.	637.3
20														
25														
30														
35														
40														
45														
50														
55														
60														
65														
70														
75														

BORING COMPLETED AT 24.5 FEET

ON 8-1-77.

WATER LEVEL AT 12.5 FEET.

CASING USED TO A DEPTH OF 24.5 FEET.

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

BORING OW-10

SURFACE ELEVATION 656.0

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1-\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING NO. 200 SIEVE	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0										AG	OL ML	TOPSOIL	
5										AG	CL	TOP OF SALT CREEK ALLUVIUM. Brown, silty clay.	652.0
10												Brown, fine to coarse sand, some gravel.	
15										AG	SP		
20										34 SS	ML	TOP OF ILLINOIAN TILL. Gray, clayey silt, some fine to coarse sand, trace fine gravel. 21.5 feet, 6-inch lens of fine to medium sand. 25.0 to 35.0 feet, interbeds of fine to medium sand.	636.0
25										100/6"SS			
30										100/6"SS			
35										100/6"SS			
40													
45													
50													
55													
60													
65													
70													
75													

BORING COMPLETED AT 35.0 FEET

ON 8/2/77.

CASING USED TO A DEPTH OF 35.0 FEET.

WATER LEVEL NOT RECORDED.

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

BORING OW-11

SURFACE ELEVATION 654.5

DEPTH (FEET)	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0–3	AG	OL-ML	TOPSOIL	
4	AG	CL	TOP OF SALT CREEK ALLUVIUM. Yellowish-brown, clay.	649.5
13		SP	Gray, fine to medium sand.	
15			TOP OF ILLINOIAN TILL.	639.5
	78 SS	ML	Gray, clayey silt, some fine to coarse sand, trace fine gravel. 18.5 feet, 6-inch sand lens.	
25	>100/SS 6"		25.0 feet, 12-inch sand lens.	

Column headings (no data entered): TESTS REPORTED ELSEWHERE; SHEAR STRENGTH — TRIAXIAL COMPRESSION ($\frac{\sigma_1+\sigma_3}{2}$ psf, σ_3 psf), $\frac{q_u}{2}$ psf; ATTERBERG LIMITS — PLASTIC LIMIT %, PLASTICITY INDEX %; FIELD MOISTURE CONTENT %; DRY DENSITY PCF; PERCENT PASSING 200 SIEVE.

BORING COMPLETED AT 27.0 FEET ON 8/2/77.

CASING USED TO A DEPTH OF 14.0 FEET.

WATER LEVEL AT 12.0 FEET.

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

BORING OW-12

SURFACE ELEVATION 659.2

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

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL	FILL	
AG	OL	TOPSOIL	
AG	ML	TOP OF SALT CREEK ALLUVIUM Gray, silty clay, some fine sand.	647.2
	SP	Blue-grey, fine to medium sand.	
AG	ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace gravel. 25.0 feet, 12-inch lens, blue-gray, fine to medium sand.	639.2

BORING COMPLETED AT 25.0 FEET ON 8/2/77.

CASING USED TO A DEPTH OF 20.0 FEET.

WATER LEVEL AT 18.5 FEET.

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 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

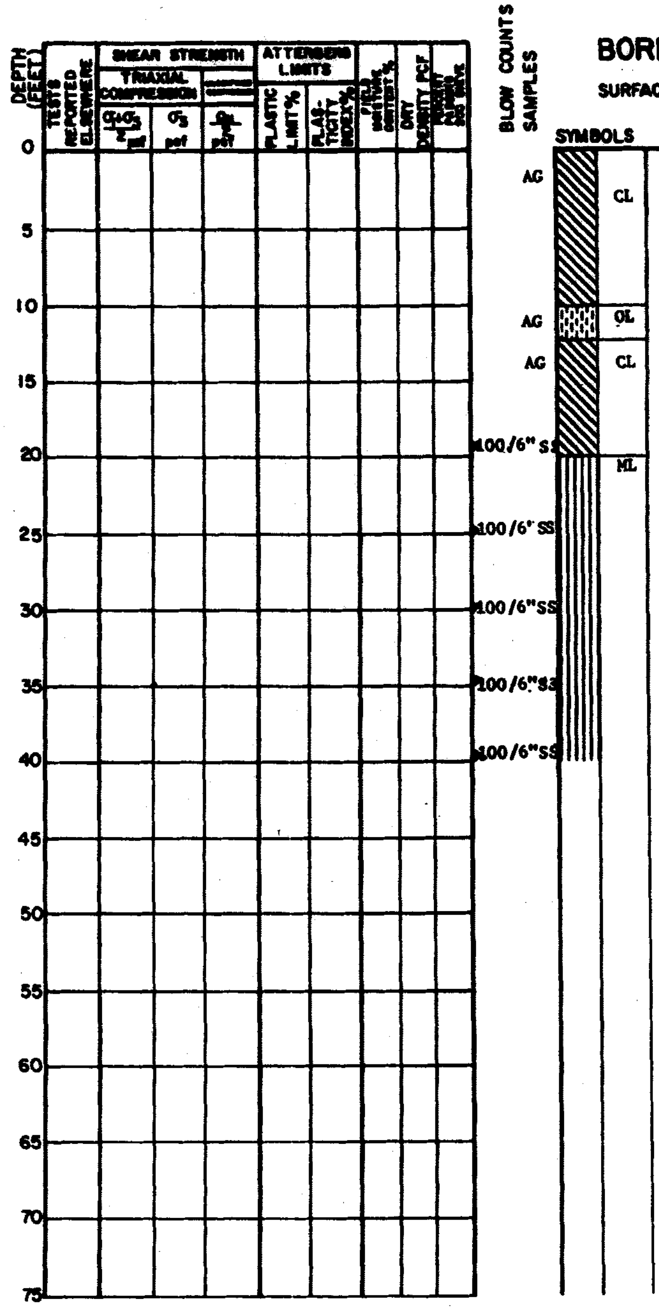
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-265

LOG OF BORING OW-12

BORING OW-13

SURFACE ELEVATION 662.1



DESCRIPTIONS

FILL

TOPSOIL

TOP OF SALT CREEK ALLUVIUM 650.1

Brown, silty clay, some fine to coarse sand.

TOP OF ILLINOIAN TILL 641.1

Gray, clayey silt, some fine to coarse sand, trace fine gravel. Interbedded with sand layers.

25.0 feet, blue-gray, fine to medium sand lens.

30.0 feet, 12-inch, blue-gray, fine sand lens.

35.0 feet, sand lens.

37.0 feet, 12-inch sand lens.

BORING COMPLETED AT 40.0 FEET

ON 8/2/77.

CASING USED TO A DEPTH OF 40.0 FEET.

WATER LEVEL AT 17.0 FEET.

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.

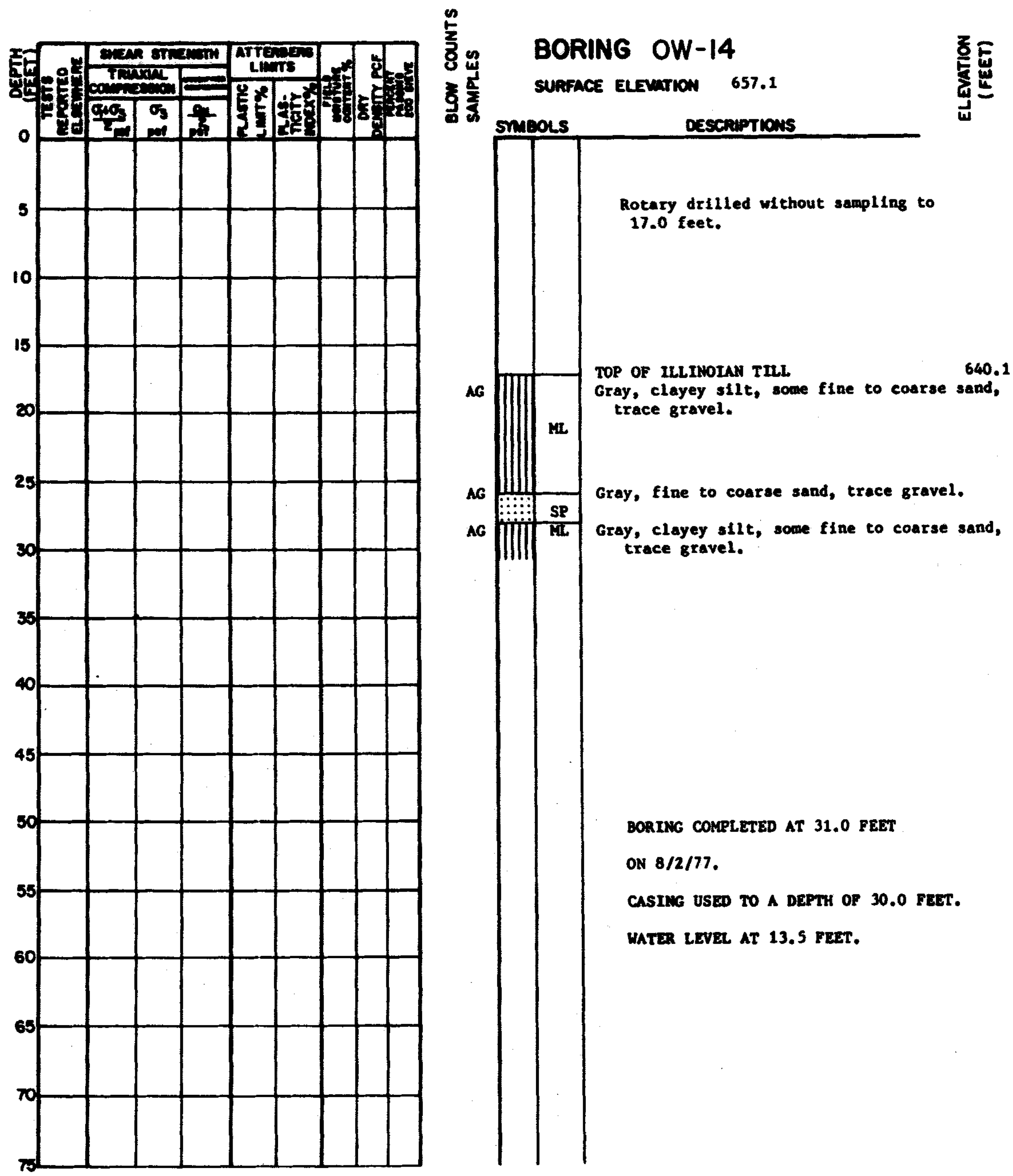
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-266

LOG OF BORING OW-13

BORING OW-14

SURFACE ELEVATION 657.1



PIEZOMETER INSTALLED ON 8/2/77. A 1¼ 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

BORING OW-15

SURFACE ELEVATION 664.5

DEPTH (FEET)	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0	AG	CL	FILL Brown, silty clay, some fine to coarse sand.	
27.5	>100/ 6"SS	CL	Brown, silty clay and sand.	
35	>100/ 6"SS	ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace gravel.	629.5
40	>100/ 6"SS		Many Lenses of fine sand encountered, up to 6" in thickness.	
45	>100/ 6"SS			
50	>100/ 6"SS			
55	>100/ 6"SS			

Laboratory test columns (no entries): TESTS REPORTED ELSEWHERE; SHEAR STRENGTH – TRIAXIAL COMPRESSION ($\frac{\sigma_1+\sigma_3}{2}$ psf, σ_3 psf), ($\frac{Q_u}{2}$ psf); ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %); FIELD MOISTURE CONTENT %; DRY DENSITY PCF; PERCENT PASSING 200 SIEVE. Depth scale 0–75 feet.

BORING COMPLETED AT 55.0 FEET ON 8/3/77.

CASING USED TO A DEPTH OF 27.5 FEET.

WATER LEVEL NOT RECORDED.

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

BORING OW-16

SURFACE ELEVATION 657.9

DEPTH (FEET)	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0		ML	FILL Brown, silty clay.	
15	73 SS	ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace gravel. Many thin sand lenses noted.	641.4
25	100/6" SS		25.0 feet, grades with more gravel.	
30	100/6" SS			

BORING COMPLETED AT 30.0 FEET ON 8/3/77.

CASING USED TO A DEPTH OF 16.5 FEET.

WATER LEVEL NOT RECORDED.

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.

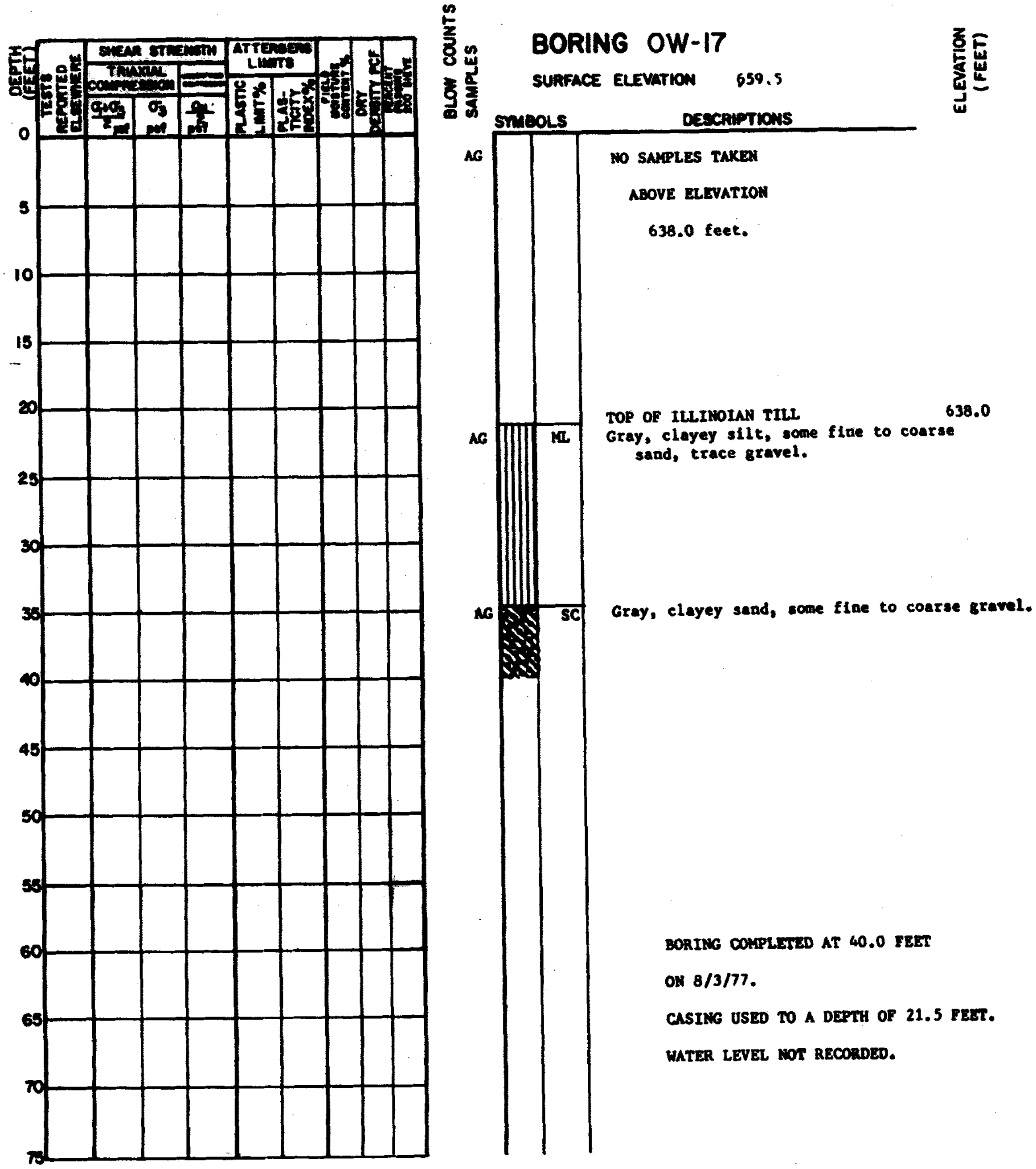
NOTES:

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:

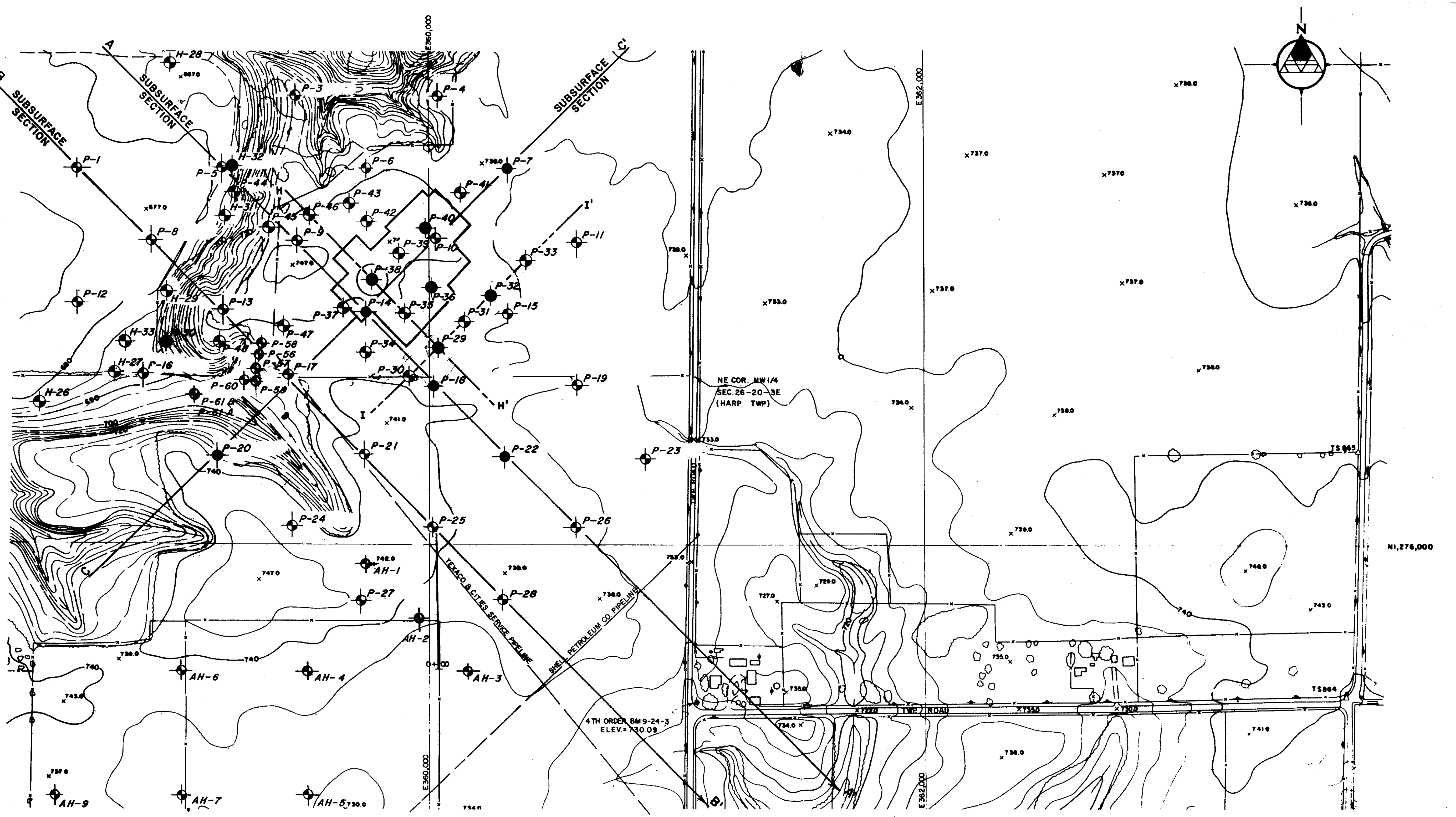
1. LOGGED BY: SARGENT & LUNDY.
2. DRILLED BY: SOIL TESTING SERVICES.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-270

LOG OF BORING OW-17

REV. 3 SEPT. 1991



LEGEND:

—740— TOPOGRAPHIC CONTOURS

P-1 BORING LOCATION

LOCATION OF BORING THAT EXTENDED TO BEDROCK.

H ——— H' SUBSURFACE SECTION LOCATION

NOTES:

FEET

100 0 100 200 300 400 500

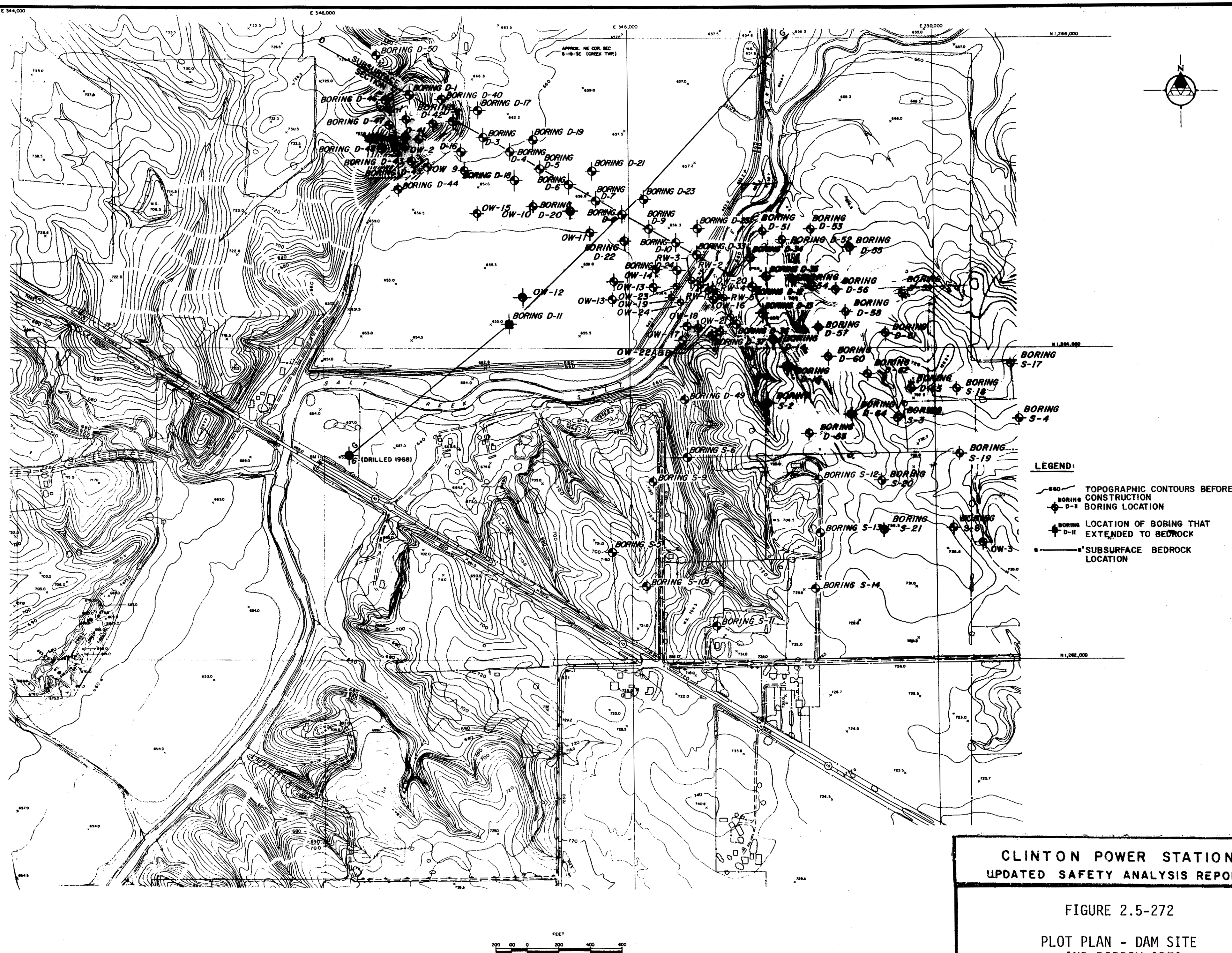
CONTOUR INTERVAL 4 FEET

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-271

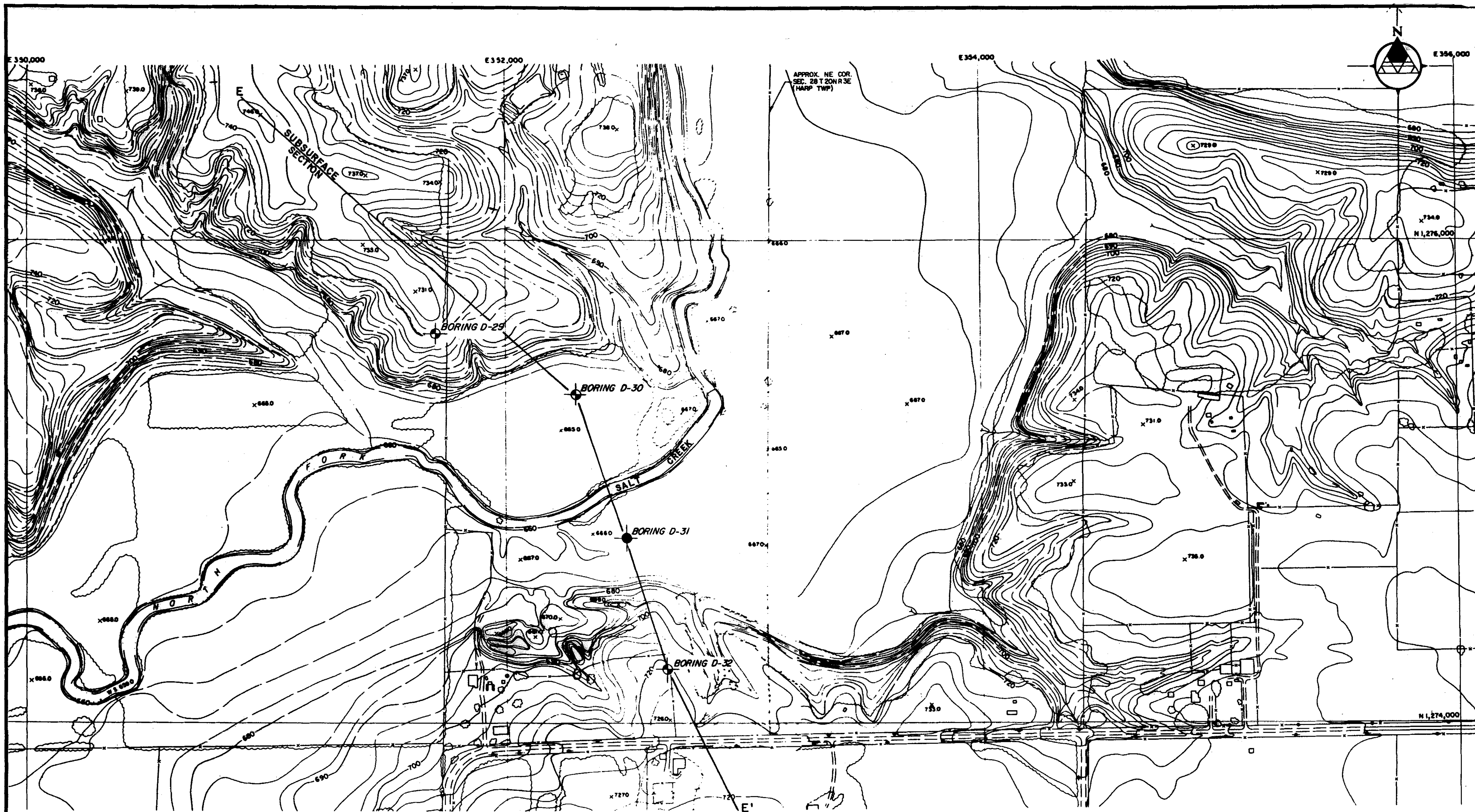
PLOT PLAN - STATION SITE



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

FEET

100 0 100 200 300 400 500

CONTOUR INTERVAL 3 1/3 FEET

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	STRATIGRAPHIC UNITS: PSAR	STRATIGRAPHIC UNITS: 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; Peyton Colluvium	Loess	Loess
			Twocreekan Substage	Richland Loess; Henry Formation		
			Woodfordian Substage	Wedron Formation; Henry 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 Alluvial and Lacustrine Deposit or Kansan Alluvial or Lacustrine Soils; Bedrock Valley Outwash Deposit or Mahomet Valley Deposit	Pre-Illinoian Glacial Till; Pre-Illinoian Lacustrine Deposit; Mahomet Bedrock Valley Deposit
Unconformity						
Pennsylvanian System				Bedrock	Bedrock	Bedrock

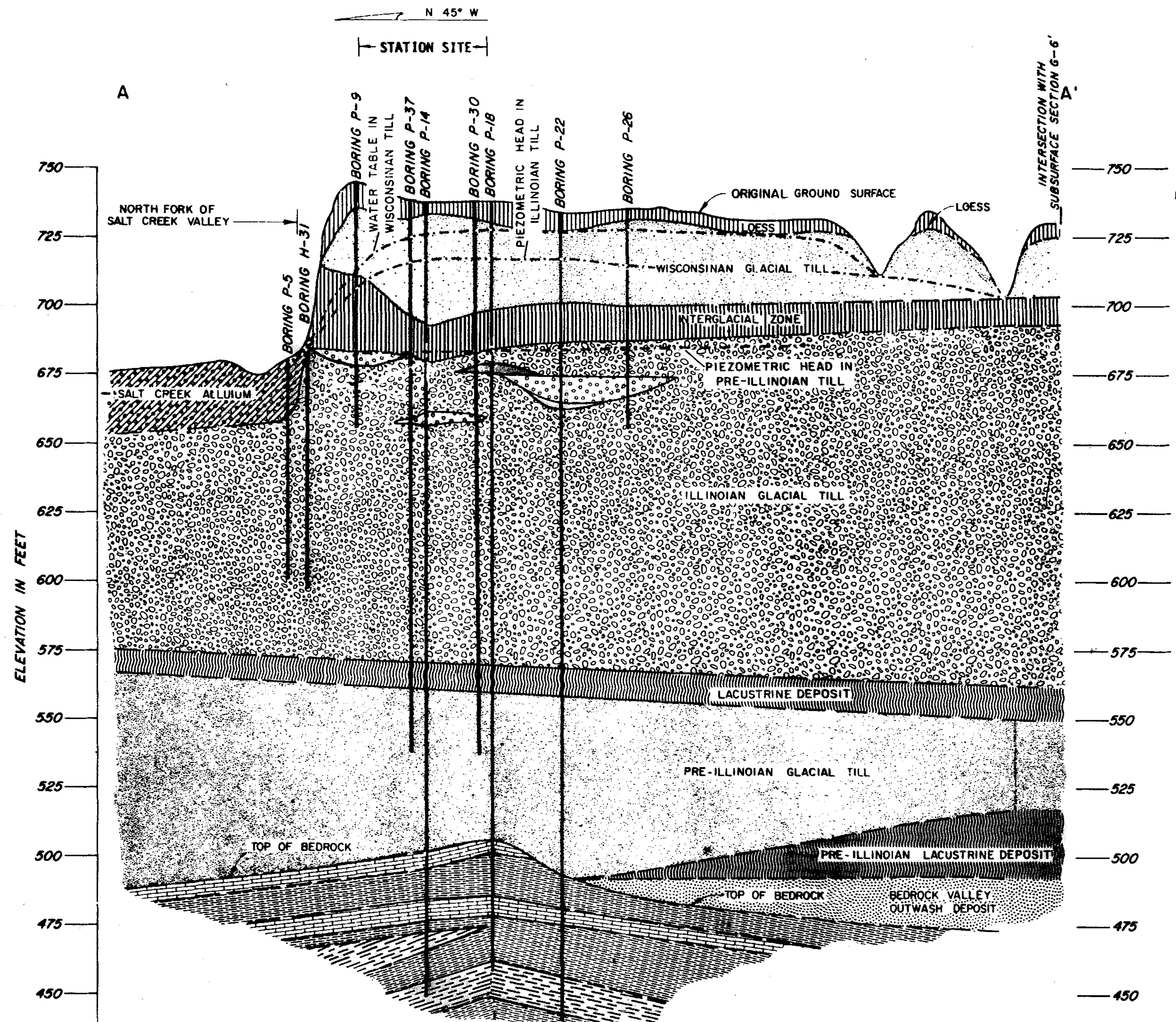
NOTES:

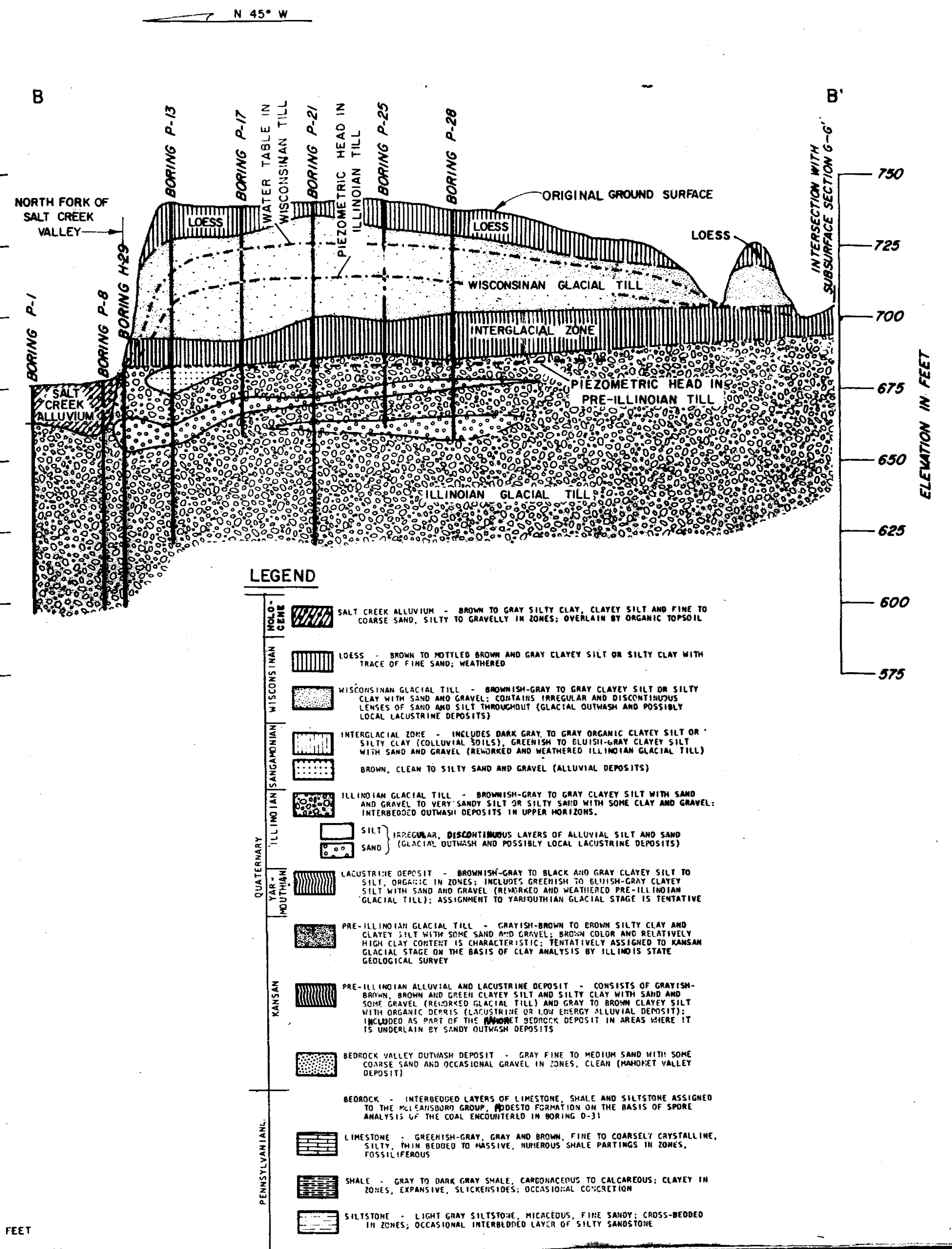
1. EXCAVATIONS FOR THE CLINTON POWER STATION DID NOT EXTEND BELOW THE UNALTERED GLASFORD FORMATION.
2. BORINGS FOR THE CLINTON POWER STATION DID NOT EXTEND INTO ROCKS OLDER THAN THOSE OF THE PENNSYLVANIAN SYSTEM.
3. ILLINOIAN-AGE TILL OF THE GLASFORD FORMATION WAS SUBJECTED TO A SIGNIFICANT PERIOD OF 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





NOTES:

1. 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.
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 2.5-271 FOR LOCATION OF SUBSURFACE PROFILES.
6. FOR DETAILED WATER LEVEL DATA REFER TO FIGURE 2.4-36.
7. 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.

HORIZONTAL SCALE IN FEET

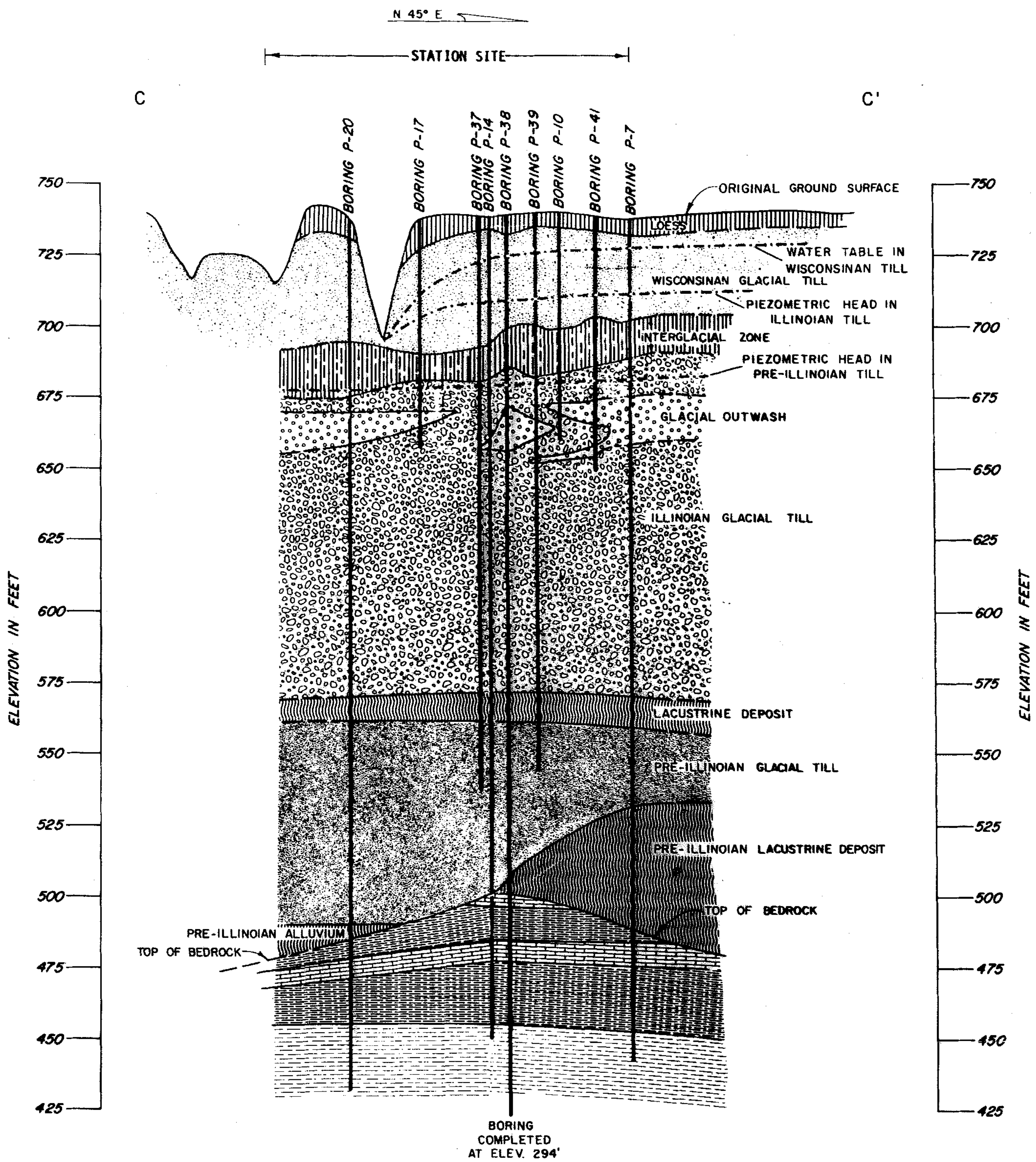
400 0 400 800

VERTICAL EXAGGERATION 16X

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-275

GEOLOGIC SECTIONS A-A' AND B-B' - STATION SITE



LEGEND

QUATERNARY

WISCONSINAN

LOESS - BROWN TO MOTTLED BROWN AND GRAY CLAYEY SILT OR SILTY CLAY WITH TRACE OF FINE SAND; WEATHERED

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)

SANGAMONIAN

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 YARMOUTHIAN GLACIAL STAGE IS TENTATIVE

KANSAN

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

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 MAHOMET BEDROCK DEPOSIT IN AREAS WHERE IT IS UNDERLAIN BY SANDY OUTWASH DEPOSITS

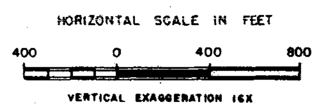
PENNSYLVANIAN

BEDROCK - INTERBEDDED LAYERS OF LIMESTONE, SHALE AND SILTSTONE ASSIGNED TO THE McLEANSBORO GROUP, MODESTO FORMATION ON THE BASIS OF SPORE ANALYSIS OF THE COAL ENCOUNTERED IN BORING O-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



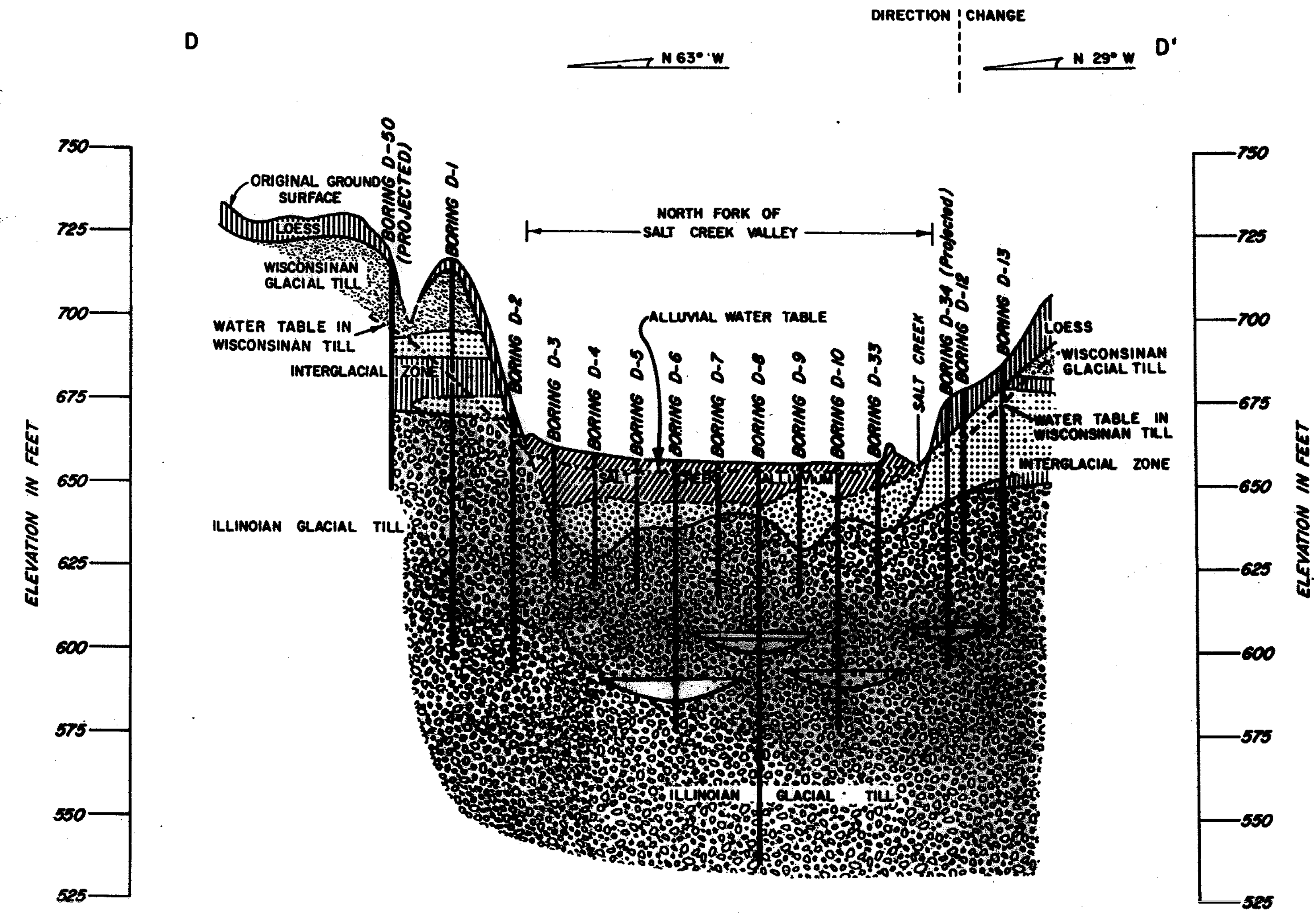
NOTES:

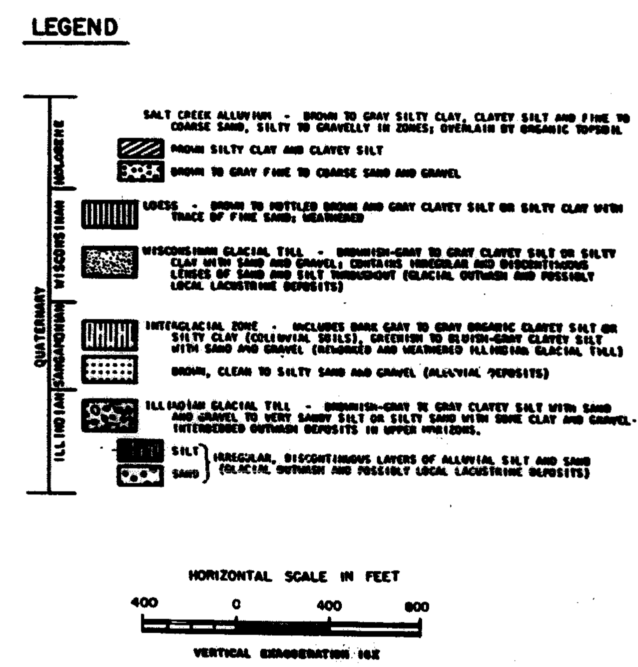
1. GROUNDWATER LEVELS INDICATED ON THE SUBSURFACE SECTION WERE OBTAINED BY INTERPOLATING BETWEEN BORINGS WITH PIEZOMETERS. INFORMATION ON ACTUAL GROUNDWATER LEVELS EXIST ONLY AT BORING LOCATIONS WITH PIEZOMETERS. IT IS POSSIBLE THAT GROUNDWATER LEVELS BETWEEN BORINGS WITH PIEZOMETERS MAY VARY FROM THOSE INDICATED.
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 2.5-271 FOR LOCATION OF SUBSURFACE PROFILES.
6. FOR DETAILED WATER LEVEL DATA REFER TO FIGURE 2.4-36.
7. STRATIGRAPHIC NOMENCLATURE OF THE QUATERNA' DEPOSITS USED IN THE FSAR TEXT DIFFERS FR' THAT USED ON THIS FIGURE AND ON THE BORIN 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





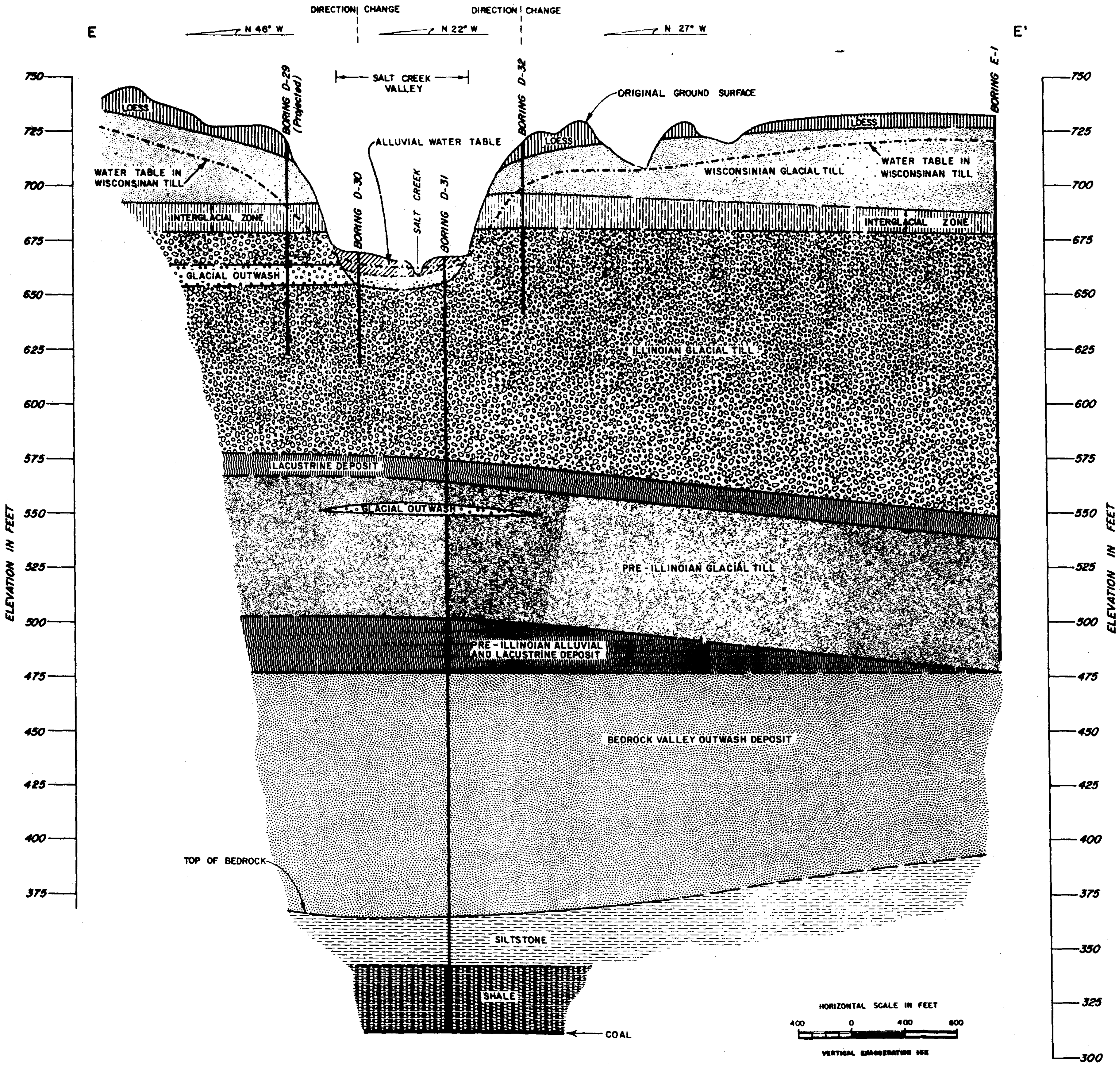
NOTES:

1. 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.
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 2.5-272 FOR LOCATION OF SUBSURFACE PROFILES.
6. FOR DETAILED WATER LEVEL DATA REFER TO FIGURES 2.4-37 AND 2.4-41.
7. 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 2.5-277

GEOLOGIC SECTION D-D' - DAM SITE



LEGEND

QUATERNARY

HOLOCENE

SALT CREEK ALLUVIUM - BROWN TO GRAY SILTY CLAY, CLAYEY SILT AND FINE TO COARSE SAND, SILTY TO GRAVELLY IN ZONES; OVERLAIN BY ORGANIC TOPSOIL

BROWN SILTY CLAY AND CLAYEY SILT

BROWN TO GRAY FINE TO COARSE SAND AND GRAVEL

WISCONSINAN

LOESS - BROWN TO MOTTLED BROWN AND GRAY CLAYEY SILT OR SILTY CLAY WITH TRACE OF FINE SAND; WEATHERED

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)

SANGAMONIAN

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.

YARMOUTHIAN

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 YARMOUTHIAN GLACIAL STAGE IS TENTATIVE

KANSAN

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

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 MAHOMET BEDROCK DEPOSIT IN AREAS WHERE IT IS UNDERLAIN BY SANDY OUTWASH DEPOSITS

BEDROCK VALLEY OUTWASH DEPOSIT - GRAY FINE TO MEDIUM SAND WITH SOME COARSE SAND AND OCCASIONAL GRAVEL IN ZONES, CLEAN (MAHOMET VALLEY DEPOSIT)

PENNSYLVANIAN

BEDROCK - INTERBEDDED LAYERS OF LIMESTONE, SHALE AND SILTSTONE ASSIGNED TO THE McLEANSBORO GROUP, MODESTO FORMATION ON THE BASIS OF SPORE ANALYSIS OF THE COAL ENCOUNTERED IN BORING D-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

COAL - BLACK COAL, THIN BEDDED, IMPURE

NOTES:

1. 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.
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 2.5-273 FOR LOCATION OF SUBSURFACE PROFILES.
6. FOR DETAILED WATER LEVEL DATA REFER TO FIGURES 2.4-37, 2.4-38, 2.4-41 AND 2.4-42.
7. 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.

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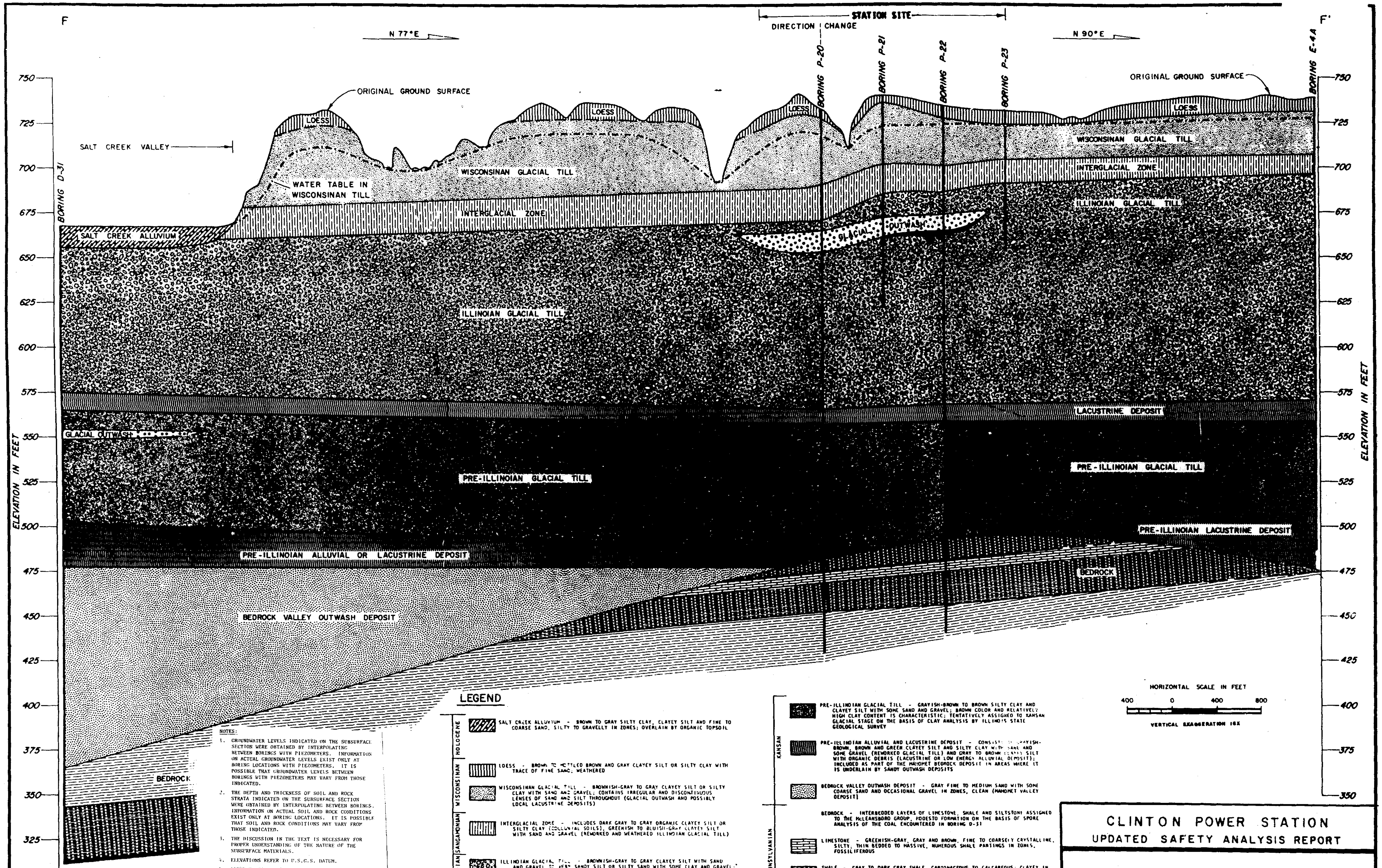
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-278

GEOLOGIC SECTION E-E' - ALONG NORTH FORK OF SALT CREEK



NOTES:

1. 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.
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 2.5-14 FOR LOCATION OF SUBSURFACE PROFILES.
6. FOR DETAILED WATER LEVEL DATA REFER TO FIGURE 2.4-36.
7. 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

HOLOCENE

SALT CREEK ALLUVIUM - BROWN TO GRAY SILTY CLAY, CLAYEY SILT AND FINE TO COARSE SAND, SILTY TO GRAVELLY IN ZONES; OVERLAIN BY ORGANIC TOPSOIL

WISCONSINAN

LOESS - BROWN TO MOTTLED BROWN AND GRAY CLAYEY SILT OR SILTY CLAY WITH TRACE OF FINE SAND; WEATHERED

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)

SANGAMONIAN

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.

SILT, SAND - IRREGULAR, DISCONTINUOUS LAYERS OF ALLUVIAL SILT AND SAND (GLACIAL OUTWASH AND POSSIBLY LOCAL LACUSTRINE DEPOSITS)

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 YARMOUTHIAN GLACIAL STAGE IS TENTATIVE

KANSAN

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

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 MAHOMET BEDROCK DEPOSIT IN AREAS WHERE IT IS UNDERLAIN BY SANDY OUTWASH DEPOSITS

BEDROCK VALLEY OUTWASH DEPOSIT - GRAY FINE TO MEDIUM SAND WITH SOME COARSE SAND AND OCCASIONAL GRAVEL IN ZONES, CLEAN (MAHOMET VALLEY DEPOSIT)

PENNSYLVANIAN

BEDROCK - INTERBEDDED LAYERS OF LIMESTONE, SHALE AND SILTSTONE ASSIGNED TO THE McLEANSBORO GROUP, MODESTO FORMATION ON THE BASIS OF SPORE ANALYSIS OF THE COAL ENCOUNTERED IN BORING D-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

COAL - BLACK COAL, THIN BEDDED, IMPURE

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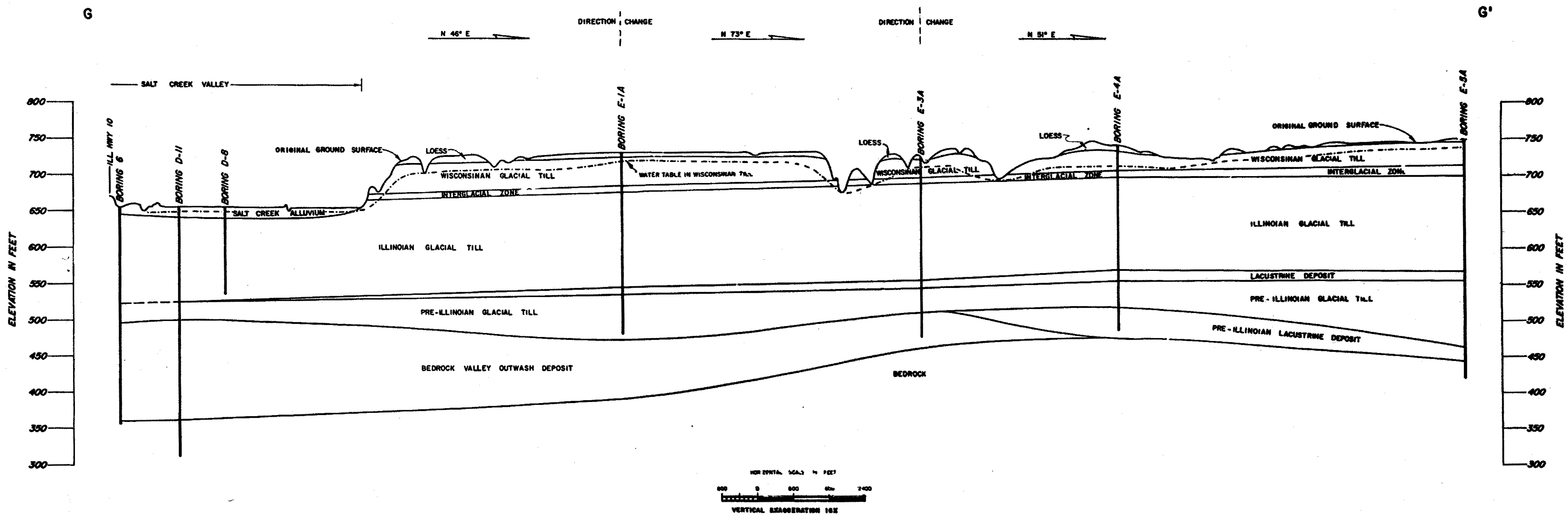
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-279

GEOLOGIC SECTION F-F' - SITE VICINITY



LEGEND

QUATERNARY – HOLOCENE	SALT CREEK ALLUVIUM - [illegible] TO GRAY SILTY CLAY, CLAYEY SILT AND FINE TO COARSE SAND, SILTY TO GRAVELLY IN ZONES; [illegible] BY ORGANIC TOPSOIL
QUATERNARY – WISCONSINAN	LOESS - BROWN TO MOTTLED BROWN AND GRAY CLAYEY SILT OR SILTY CLAY WITH TRACE OF FINE SAND; WEATHERED
	WISCONSINAN GLACIAL TILL - BROWNISH-GRAY TO GRAY CLAYEY SILT OR SILTY CLAY WITH SAND AND GRAVEL; CONTAINS [illegible] AND DISCONTINUOUS LENSES OF SAND AND SILT THROUGHOUT ([illegible] AND POSSIBLY LOCAL LACUSTRINE DEPOSITS)
QUATERNARY – SANGAMONIAN	INTERGLACIAL ZONE - INCLUDES DARK GRAY TO [illegible] CLAYEY SILT OR SILTY CLAY (COLLUVIAL SOILS), GREENISH TO [illegible] CLAYEY SILT WITH SAND AND GRAVEL ([illegible] AND [illegible] GLACIAL TILL)
QUATERNARY – ILLINOIAN	ILLINOIAN GLACIAL TILL - [illegible] 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 [illegible]
QUATERNARY – YARMOUTHIAN	LACUSTRINE DEPOSIT - BROWNISH-GRAY TO BLACK AND GRAY CLAYEY SILT TO SILT, ORGANIC IN ZONES; INCLUDES GREENISH TO [illegible] CLAYEY SILT WITH SAND AND GRAVEL ([illegible] AND [illegible] PRE-ILLINOIAN GLACIAL TILL); ASSIGNMENT TO YARMOUTHIAN [illegible] STAGE IS TENTATIVE
QUATERNARY – KANSAN	PRE-ILLINOIAN GLACIAL TILL - GRAYISH-[illegible] TO BROWN SILTY CLAY AND CLAYEY SILT WITH SOME SAND AND GRAVEL; [illegible] AND RELATIVELY HIGH CLAY CONTENT IS CHARACTERISTIC; [illegible] ASSIGNED TO KANSAN GLACIAL STAGE ON THE BASIS OF CLAY ANALYSIS BY ILLINOIS STATE GEOLOGICAL SURVEY
	PRE-ILLINOIAN ALLUVIAL AND LACUSTRINE DEPOSIT - [illegible] OF GRAYISH-BROWN, BROWN AND GREEN CLAYEY SILT AND SILTY CLAY WITH SAND AND SOME GRAVEL ([illegible] GLACIAL TILL) AND GRAY TO [illegible] CLAYEY SILT WITH ORGANIC DEBRIS (LACUSTRINE OR LOW ENERGY [illegible] DEPOSIT); INCLUDED AS PART OF THE [illegible] BEDROCK DEPOSIT IN AREAS WHERE IT IS UNDERLAIN BY SANDY OUTWASH DEPOSITS
	BEDROCK VALLEY OUTWASH DEPOSIT - GRAY FINE TO [illegible] SAND WITH SOME COARSE SAND AND OCCASIONAL GRAVEL IN ZONES, CLEAN ([illegible] VALLEY DEPOSIT)
PENNSYLVANIAN	BEDROCK - INTERBEDDED LAYERS OF LIMESTONE, SHALE AND SILTSTONE ASSIGNED TO THE MCLEANSBORO GROUP, [illegible] FORMATION ON THE BASIS OF SPORE ANALYSIS OF THE COAL ENCOUNTERED IN BORING [illegible]

NOTES:

1. 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.
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.
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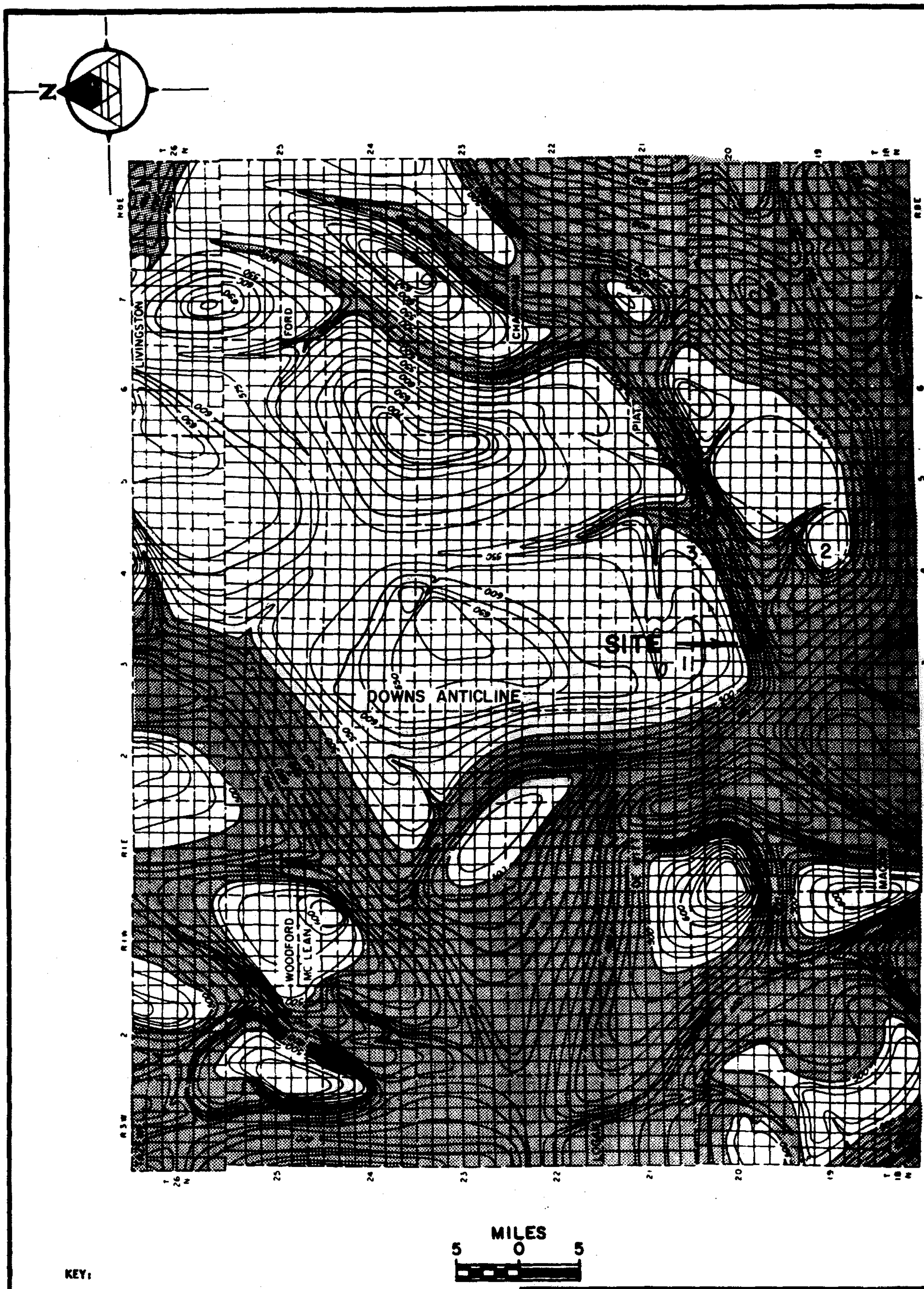
4. ELEVATIONS REFER TO U.S.G.S. DATUM.
5. REFER TO FIGURE 2.5-14 FOR LOCATION OF SUBSURFACE PROFILES.
6. FOR DETAILED WATER LEVEL DATA REFER TO FIGURES 2.4-37, 2.4-38, 2.4-41, 2.4-42 AND 2.4-43.
7. STRATIGRAPHIC NOMENCLATURE OF THE QUATERNARY DEPOSITS USED IN THE FSAR TEXT DIFFERS FROM THAT USED ON THIS FIGURE AND ON THE BORING LOGS, AND IS CROSS REFERENCED ON FIGURE 2.5-274.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-280

GEOLOGIC SECTION G-G' - SITE VICINITY



KEY:

1) WAPELLA DOME

2) DELAND DOME

3) PARNELL DOME

~500~ CONTOURS ON BEDROCK SURFACE

APPROXIMATE POSITION OF MAHOMET VALLEY FILL DEPOSITS

NOTE:

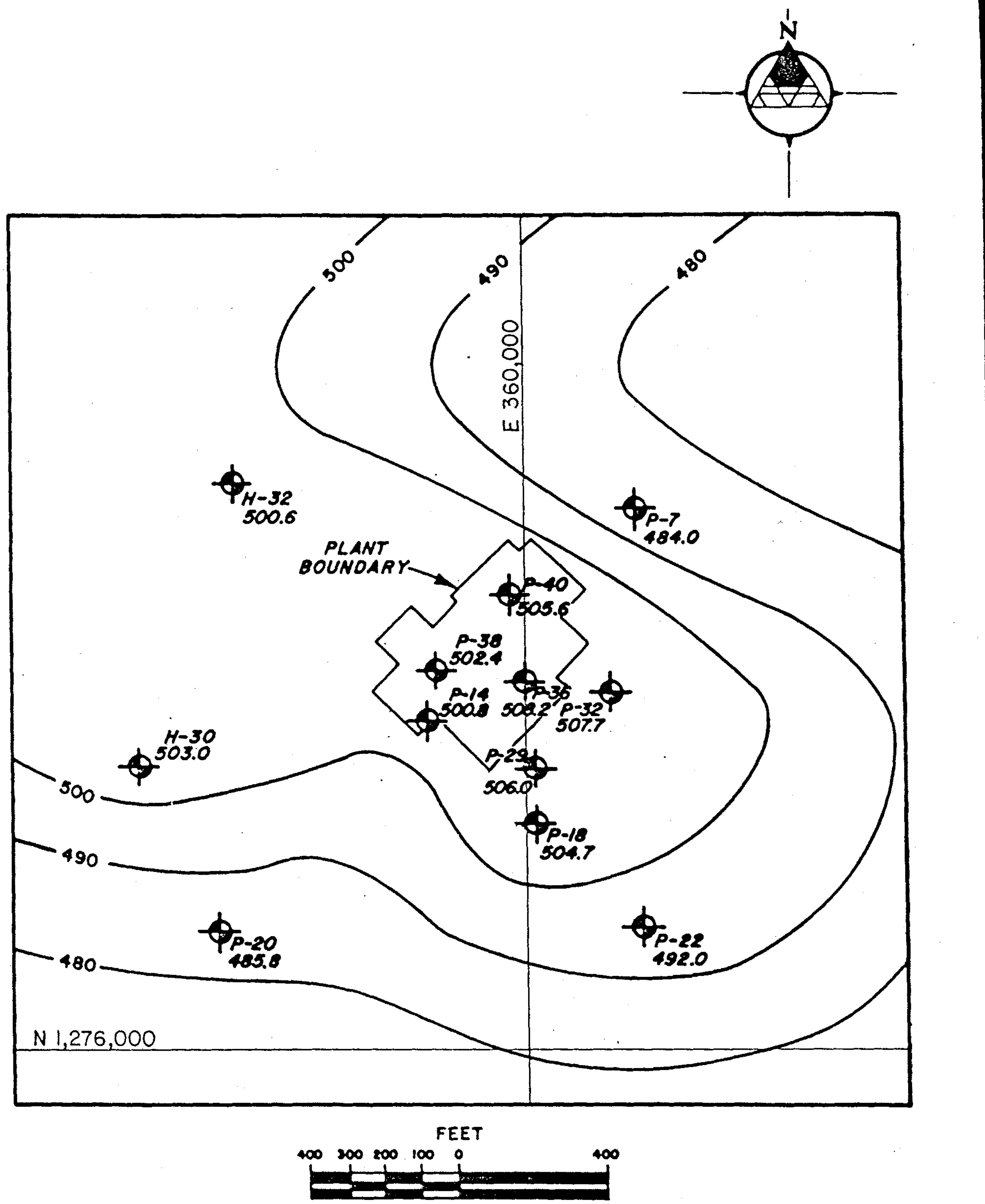
MODIFIED FROM: GEOLOGICAL SIGNIFICANCE OF THE GRAVITY FIELDS IN THE DEWITT - McLEAN COUNTY AREA, ILLINOIS BY P.C. HEIGOLD, L.D. McGINNIS AND R.H. HOWARD: ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 369, 1964.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-281

RELIEF OF BEDROCK SURFACE

REV. 3 SEPT. 1991



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.

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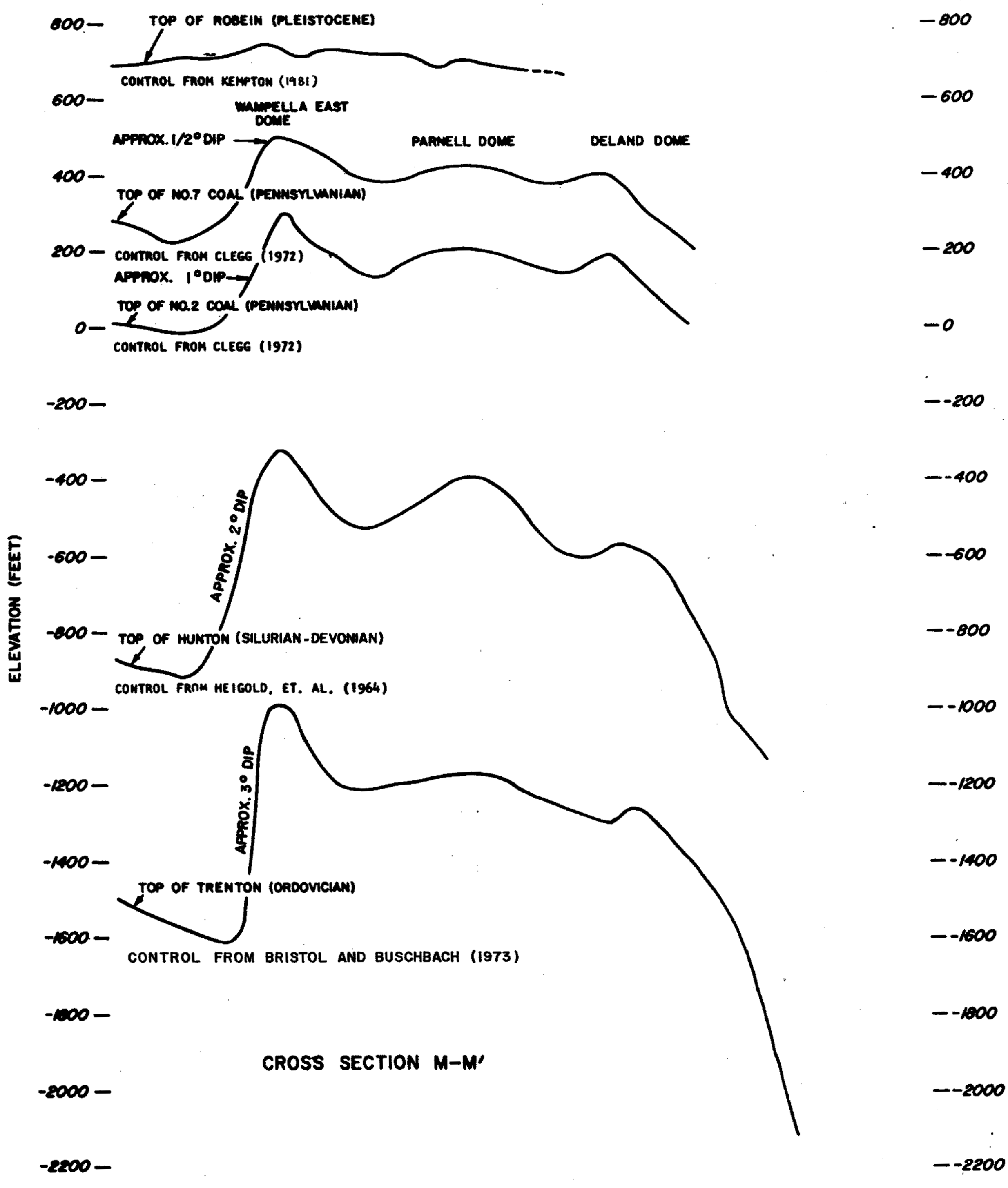
FINAL SAFETY ANALYSIS REPORT

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.

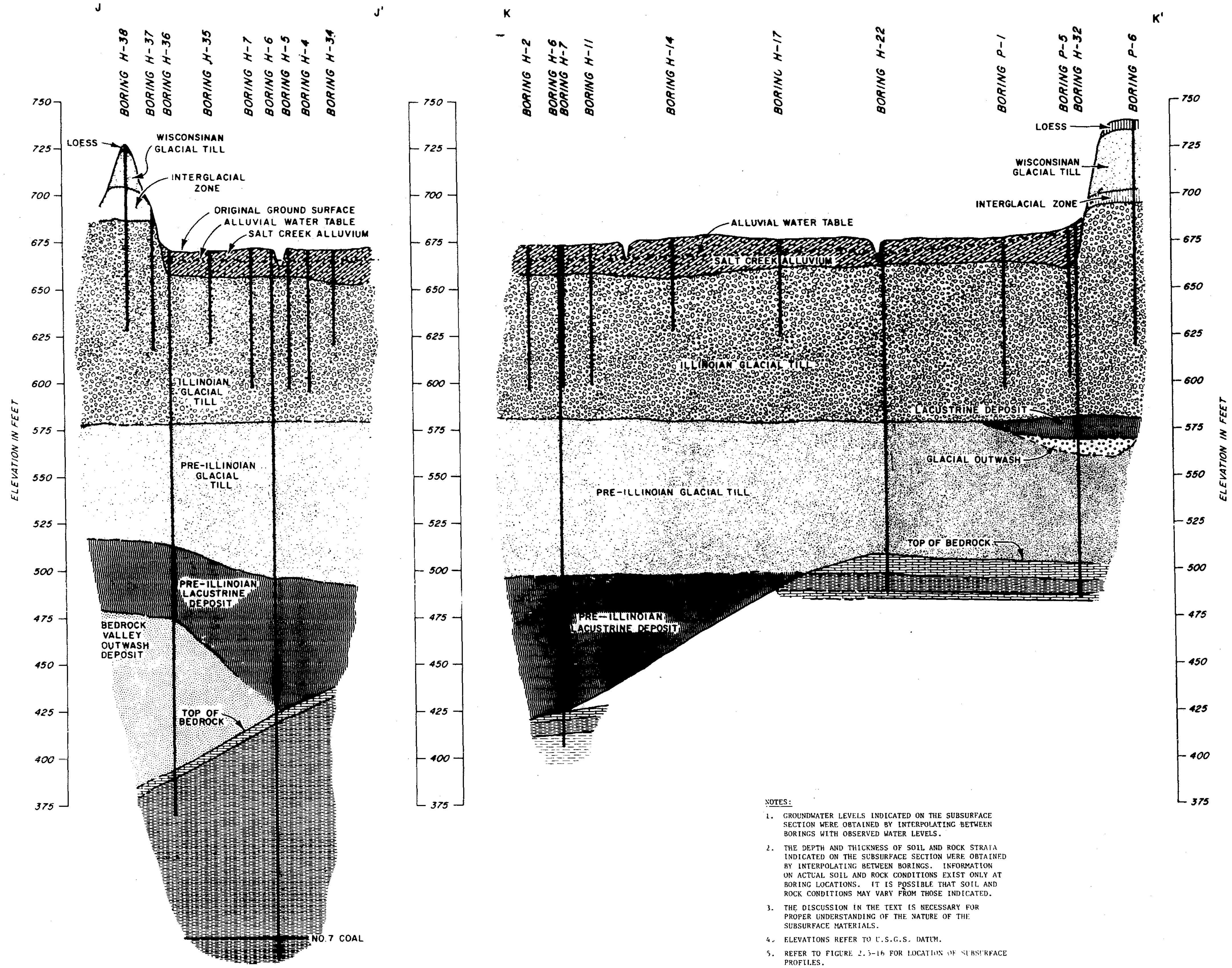
VERTICAL EXAGGERATION 100.0X

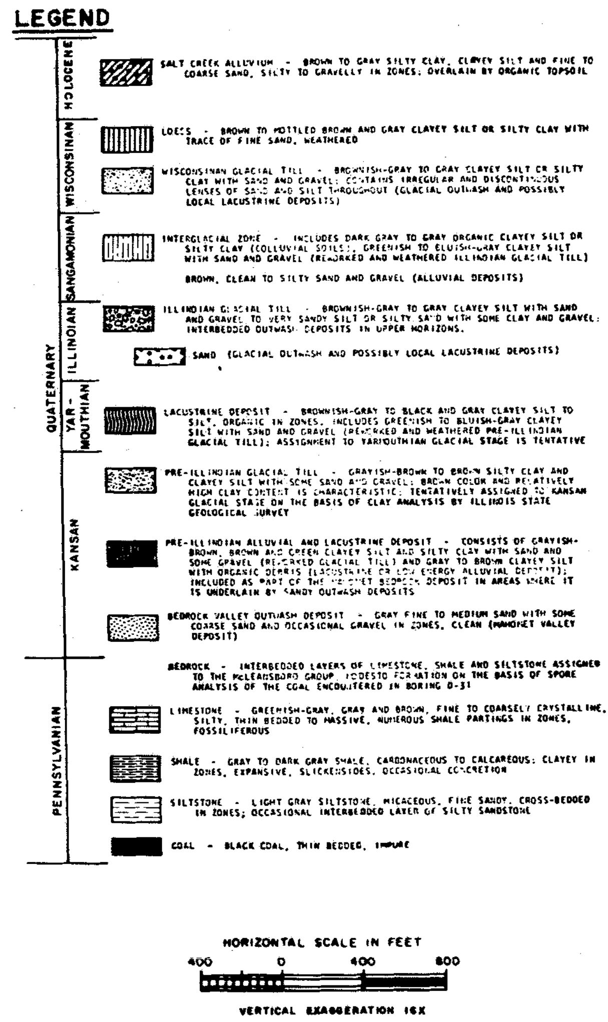
NOTE:
SEE FIGURE 2.5-285 FOR LOCATION OF THE CROSS SECTION

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-283

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



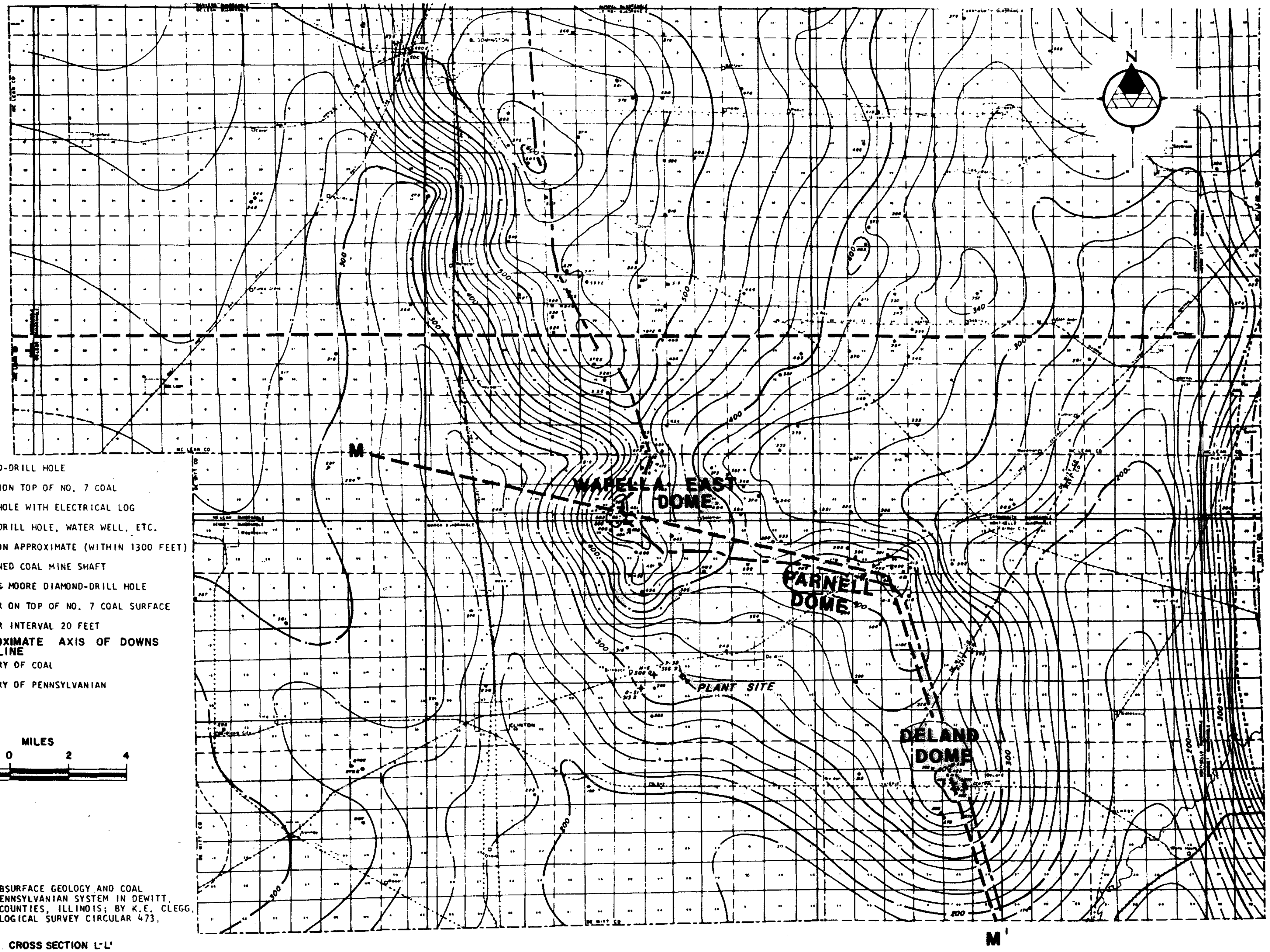


NOTES:

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 FSAR TEXT DIFFERS FROM THAT USED ON THIS FIGURE AND ON THE BORING LOGS, AND IS CROSS REFERENCED ON FIGURE 2.5-274.

FIGURE 2.5-284

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



LEGEND:

- DIAMOND-DRILL HOLE
- 3133 ELEVATION TOP OF NO. 7 COAL
- DRILL HOLE WITH ELECTRICAL LOG
- CHURN-DRILL HOLE, WATER WELL, ETC.
- LOCATION APPROXIMATE (WITHIN 1300 FEET)
- ABANDONED COAL MINE SHAFT
- DAMES & MOORE DIAMOND-DRILL HOLE
- 200 CONTOUR ON TOP OF NO. 7 COAL SURFACE
- CONTOUR INTERVAL 20 FEET
- **APPROXIMATE AXIS OF DOWNS ANTICLINE**
- BOUNDARY OF COAL
- BOUNDARY OF PENNSYLVANIAN

MILES

2 1 0 2 4

NOTE:

1. MODIFIED FROM: SUBSURFACE GEOLOGY AND COAL RESOURCES OF THE PENNSYLVANIAN SYSTEM IN DEWITT, MCLEAN, AND PIATT COUNTIES, ILLINOIS; BY K.E. CLEGG, ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 473, PLATE 1. 1972.
2. SEE FIGURE 2.5-286 CROSS SECTION L-L'
   SEE FIGURE 2.5-283 FOR CROSS SECTION M-M'.

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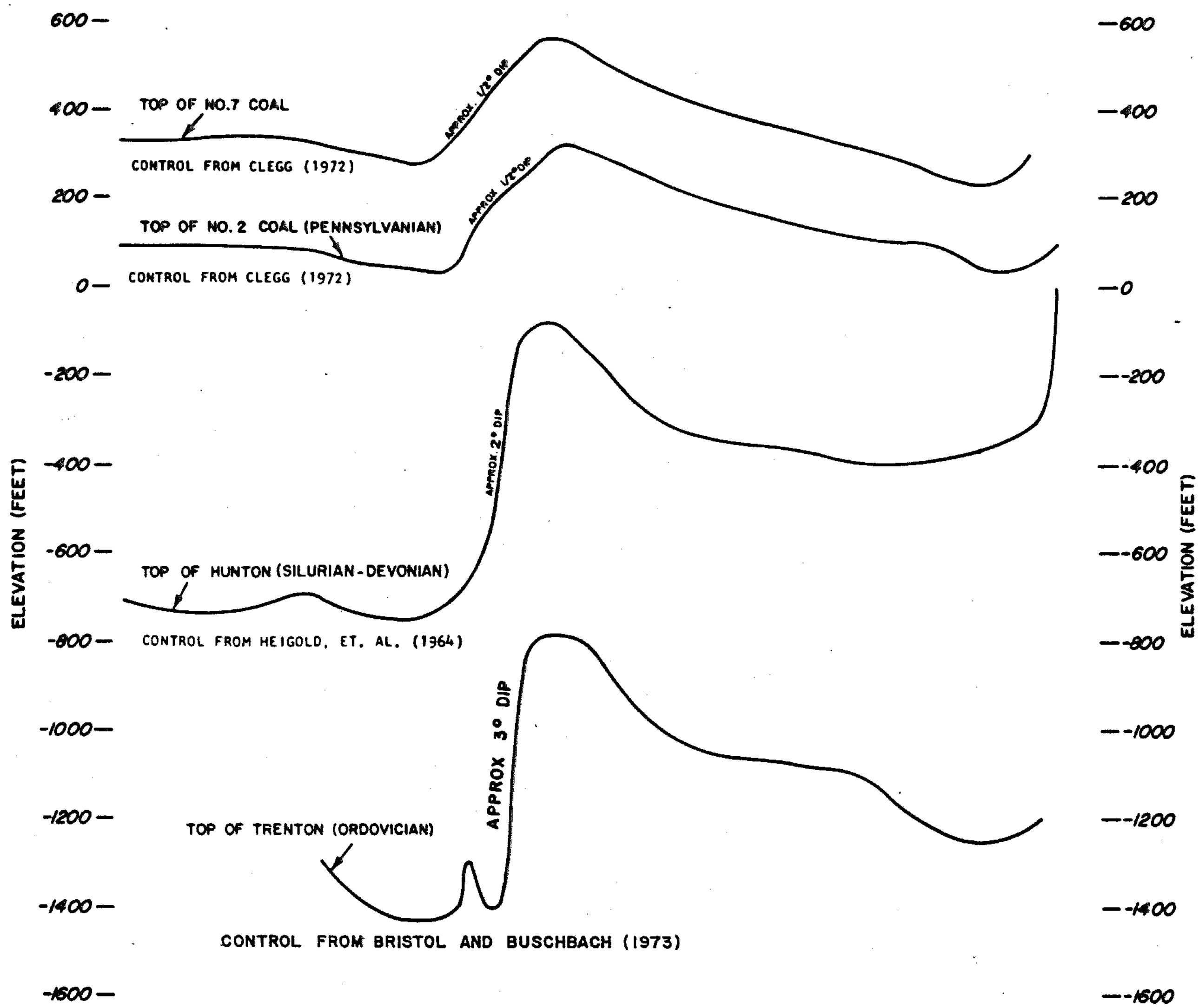
UPDATED SAFETY ANALYSIS REPORT

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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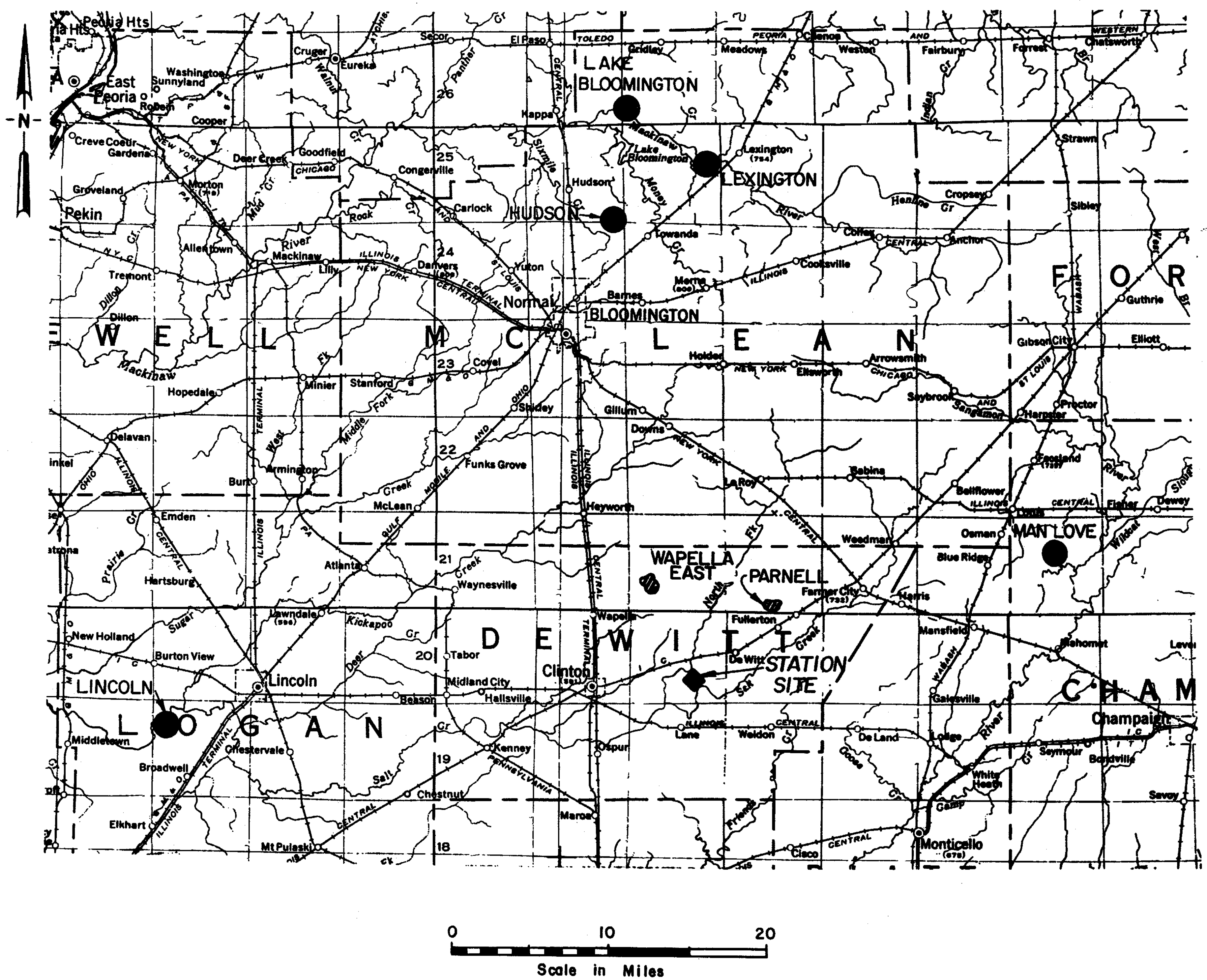
FIGURE 2.5-286

DOWNS ANTICLINE - CROSS SECTION L-L'



LEGEND

Gas Storage Project

Oil field

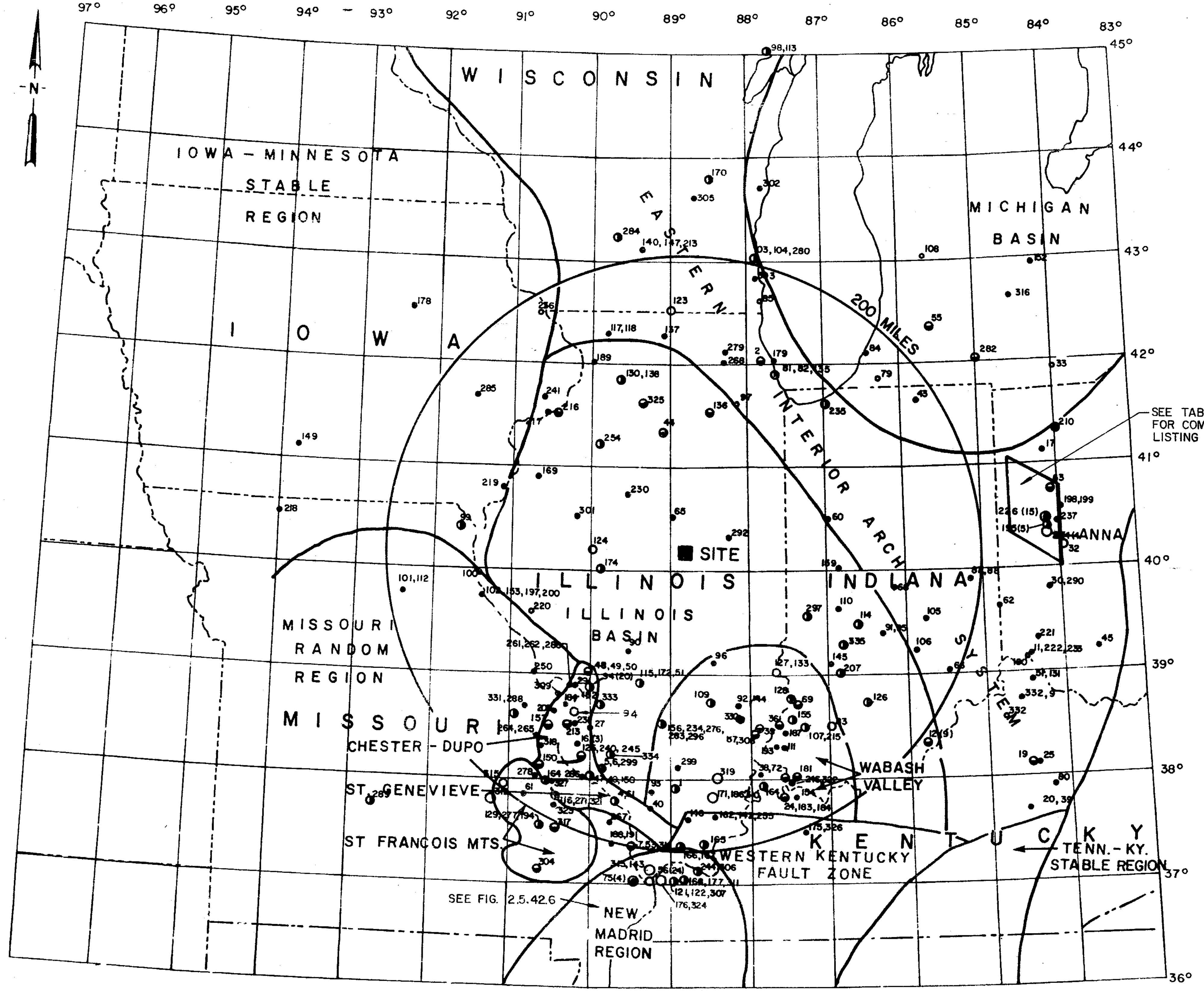
NOTES

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

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

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

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

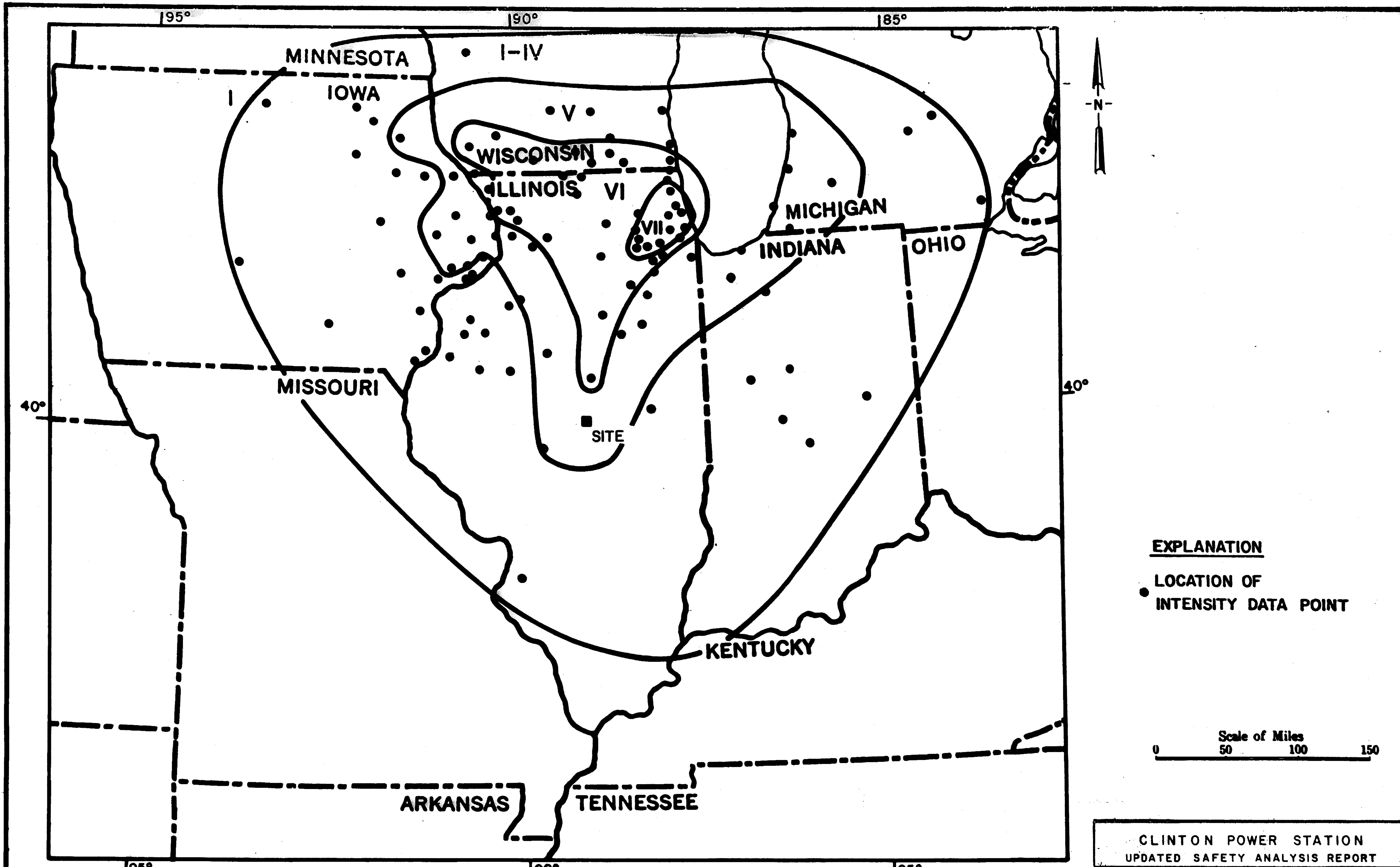
SCALE IN MILES

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-288

EARTHQUAKE EPICENTERS AND RELATIONSHIP TO SEISMOTECTONIC REGIONS



REFERENCE:

DOCEKAL, J., 1970, EARTHQUAKES OF THE STABLE INTERIOR, UNPUBLISHED PH.D. DISSERTATION, UNIVERSITY OF NEBRASKA

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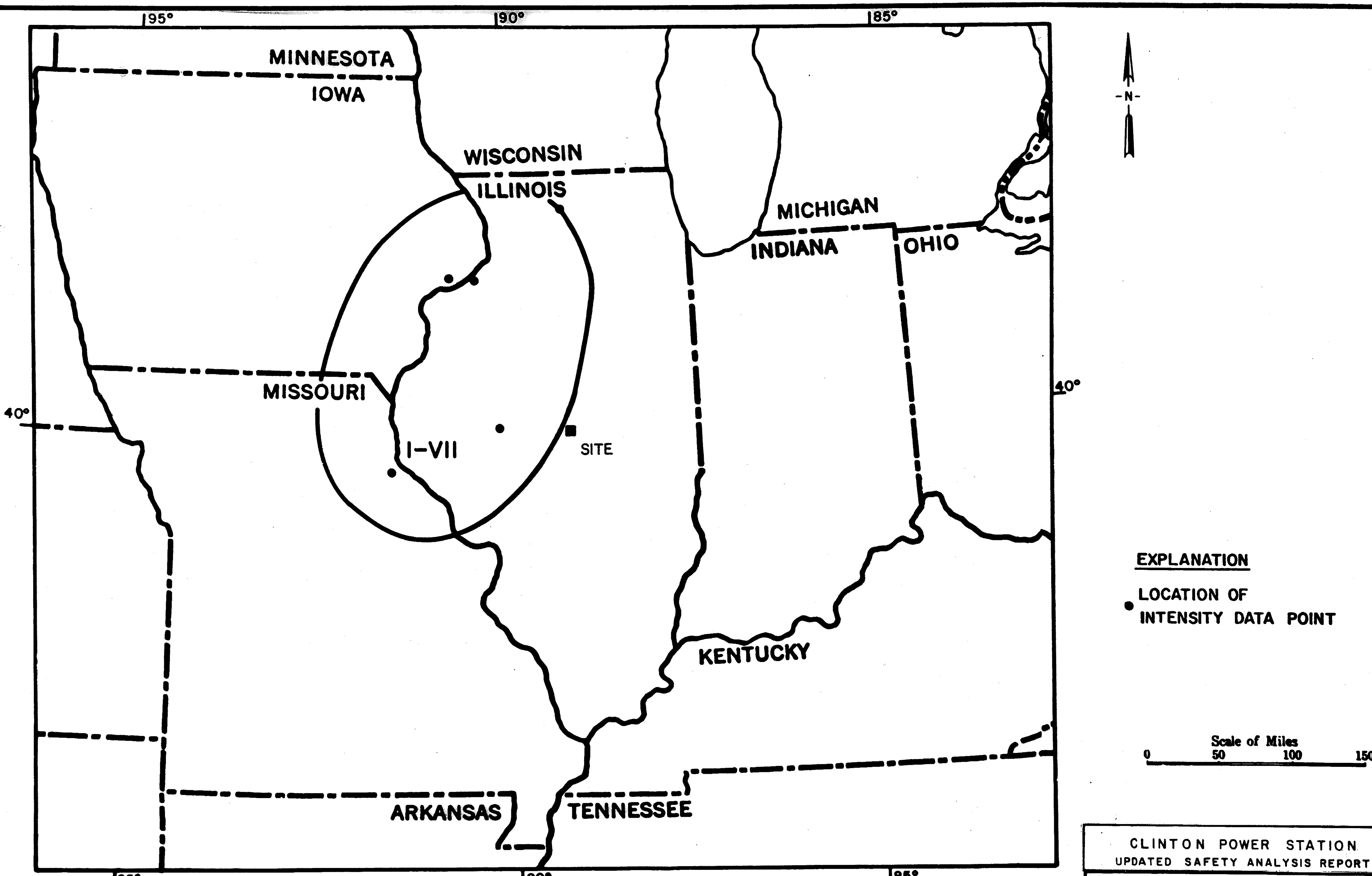
FIGURE 2.5-289

ISOSEISMAL MAP FOR THE NORTHERN ILLINOIS EARTHQUAKE OF MAY 26, 1909



REFERENCE:
DOCEKAL, J., 1970, EARTHQUAKES OF THE STABLE INTERIOR, UNPUBLISHED PH.D. DISSERTATION, UNIVERSITY OF NEBRASKA

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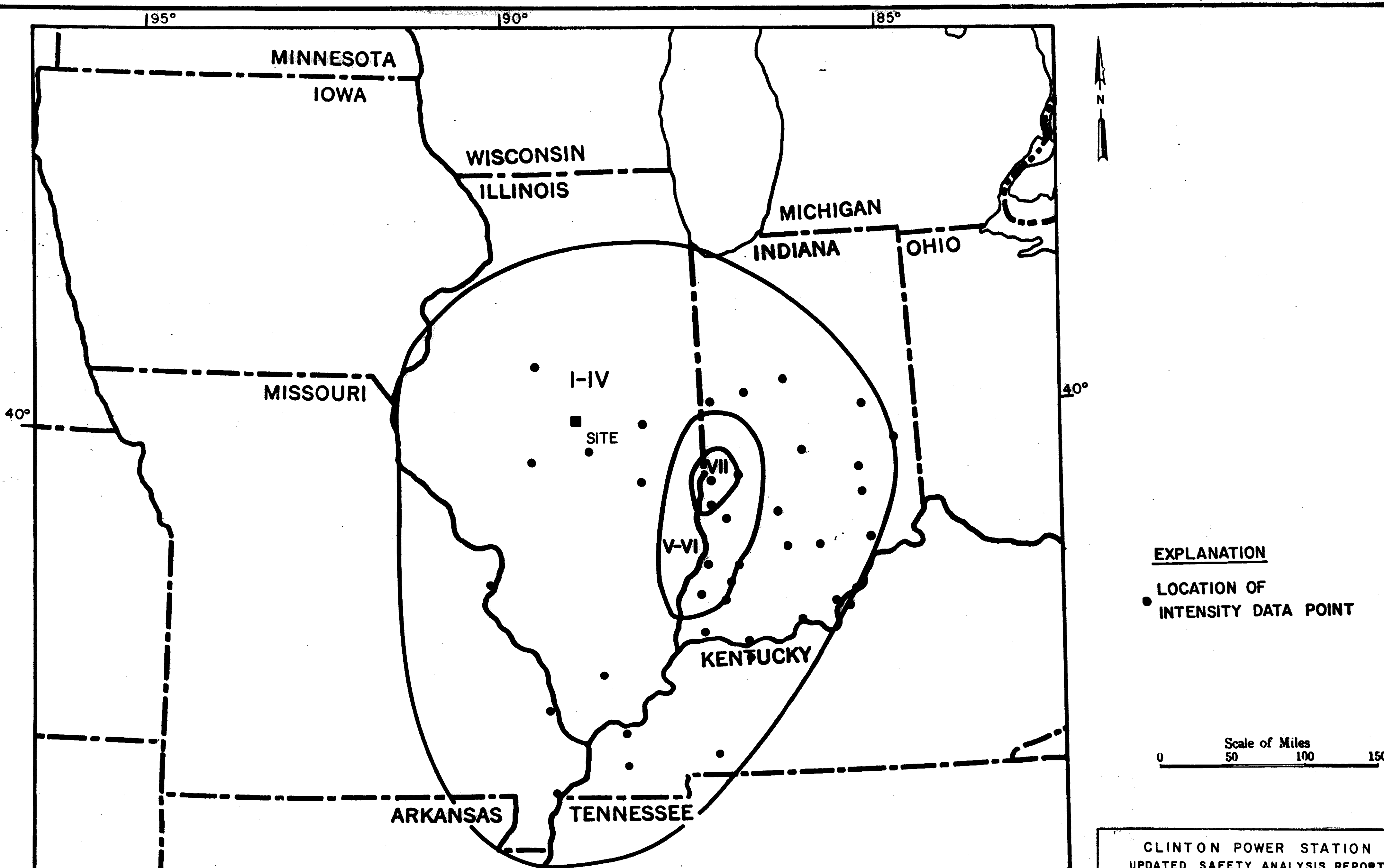
FIGURE 2.5-290

ISOSEISMAL MAP FOR THE WESTERN ILLINOIS EARTHQUAKE OF JULY 18, 1909



REFERENCE:

DOCEKAL, J., 1970, EARTHQUAKES OF THE STABLE INTERIOR, UNPUBLISHED PH.D. DISSERTATION, UNIVERSITY OF NEBRASKA

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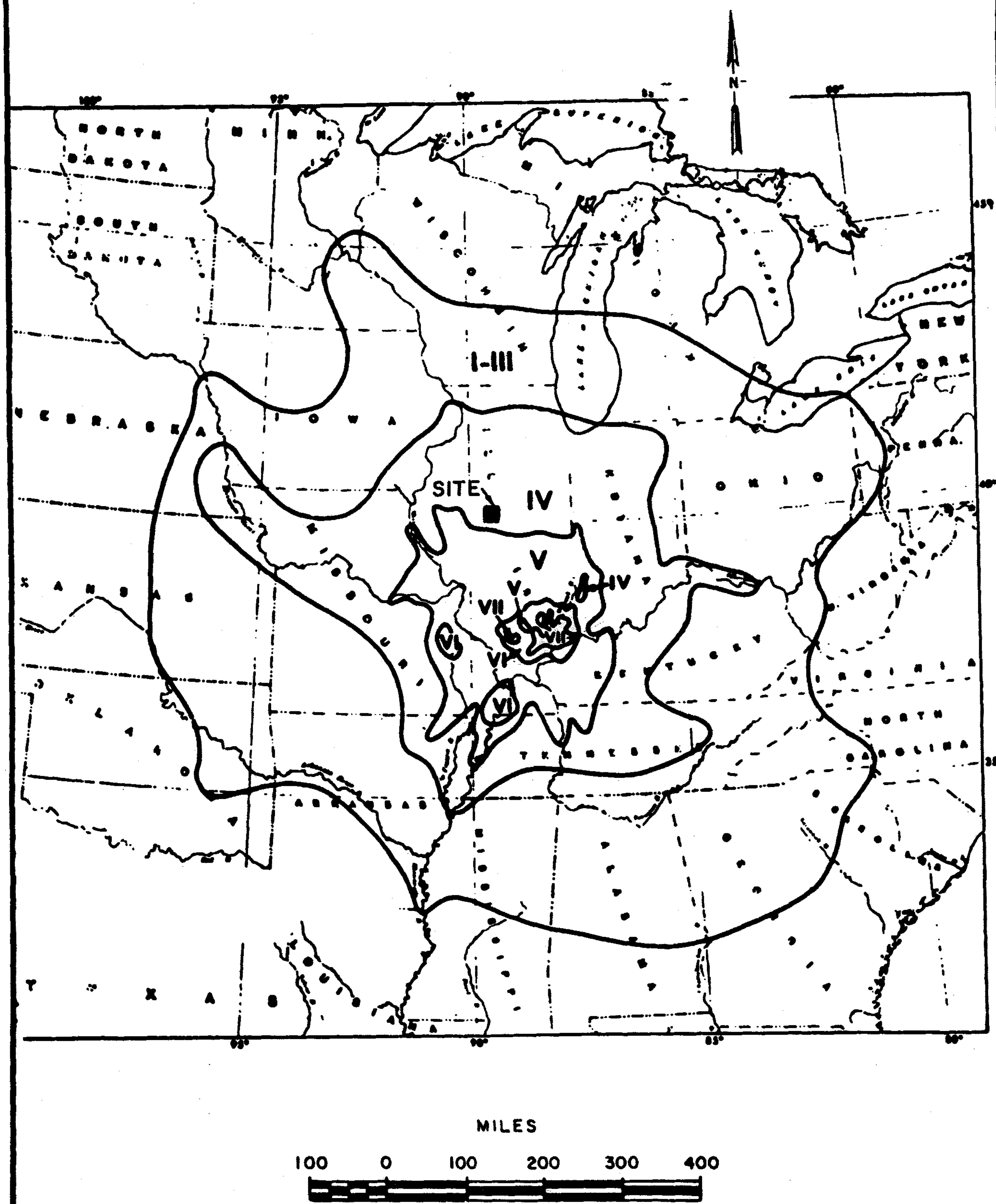
FIGURE 2.5-291

ISOSEISMAL MAP FOR THE WABASH VALLEY EARTHQUAKE OF SEPTEMBER 27, 1909



NOTE:
INTENSITIES REFER TO THE 1931 MODIFIED MERCALLI SCALE (SEE TABLE 2.5-61)

REFERENCE:
COMPILED FROM:

GORDON AND OTHERS, 1970, THE SOUTH-CENTRAL ILLINOIS EARTHQUAKE OF NOVEMBER 9,1968; MACROSEISMIC STUDIES; BULLETIN SEISMOLOGICAL SOCIETY OF AMERICA, VOL. 60, NO. 3, PP. 953-971.

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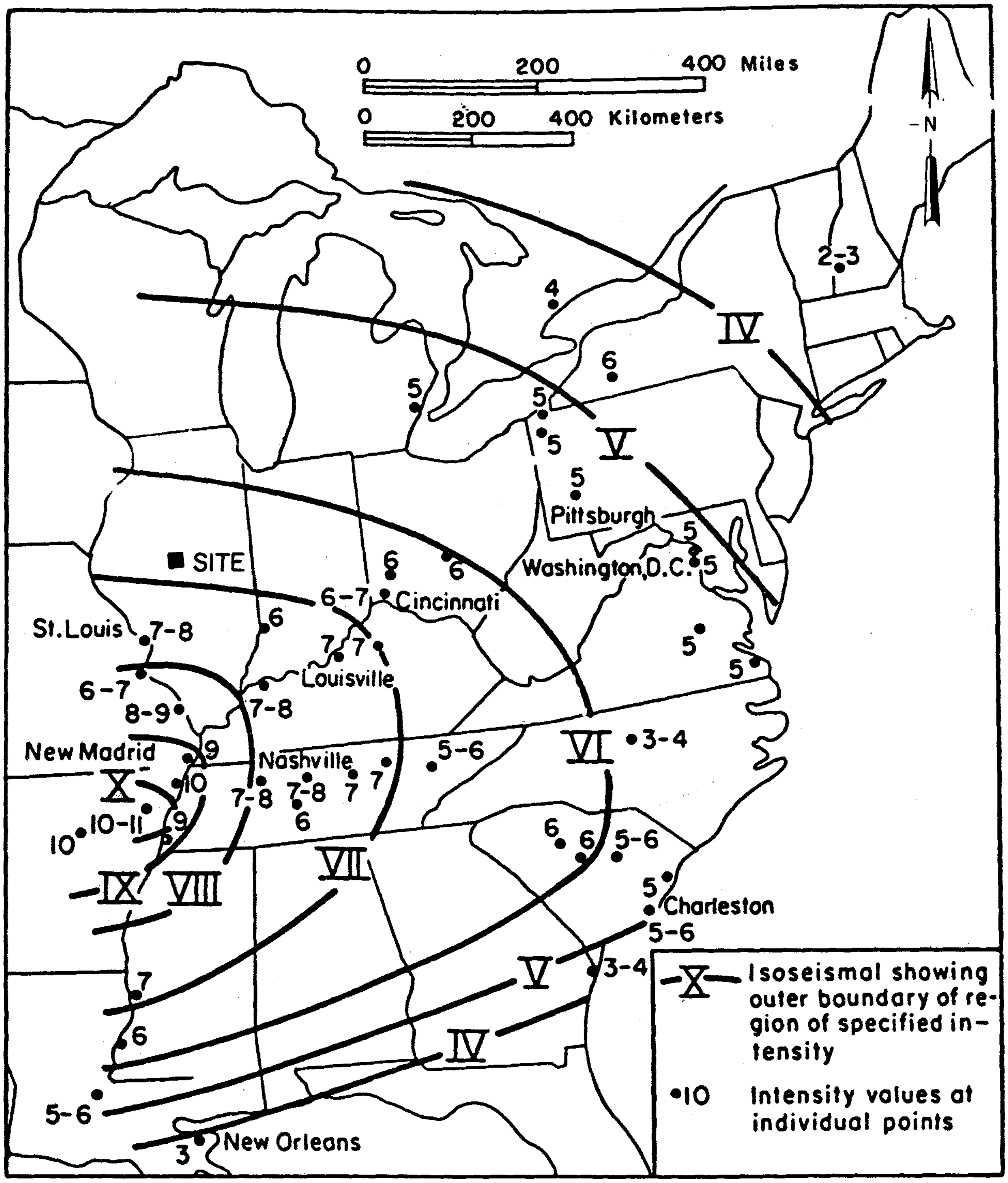
FIGURE 2.5-292

ISOSEISMAL MAP OF NOVEMBER 9, 1968
SOUTHERN ILLINOIS EARTHQUAKE



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, GROUNDMOTION, AND MAGNITUDES; SEISMOLOGICAL SOCIETY OF AMERICA, BULL. 63, NO. 1 P. 227-248.

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FIGURE 2.5-293

ISOSEISMAL MAP FOR NEW MADRID EARTHQUAKE OF DECEMBER 16, 1811

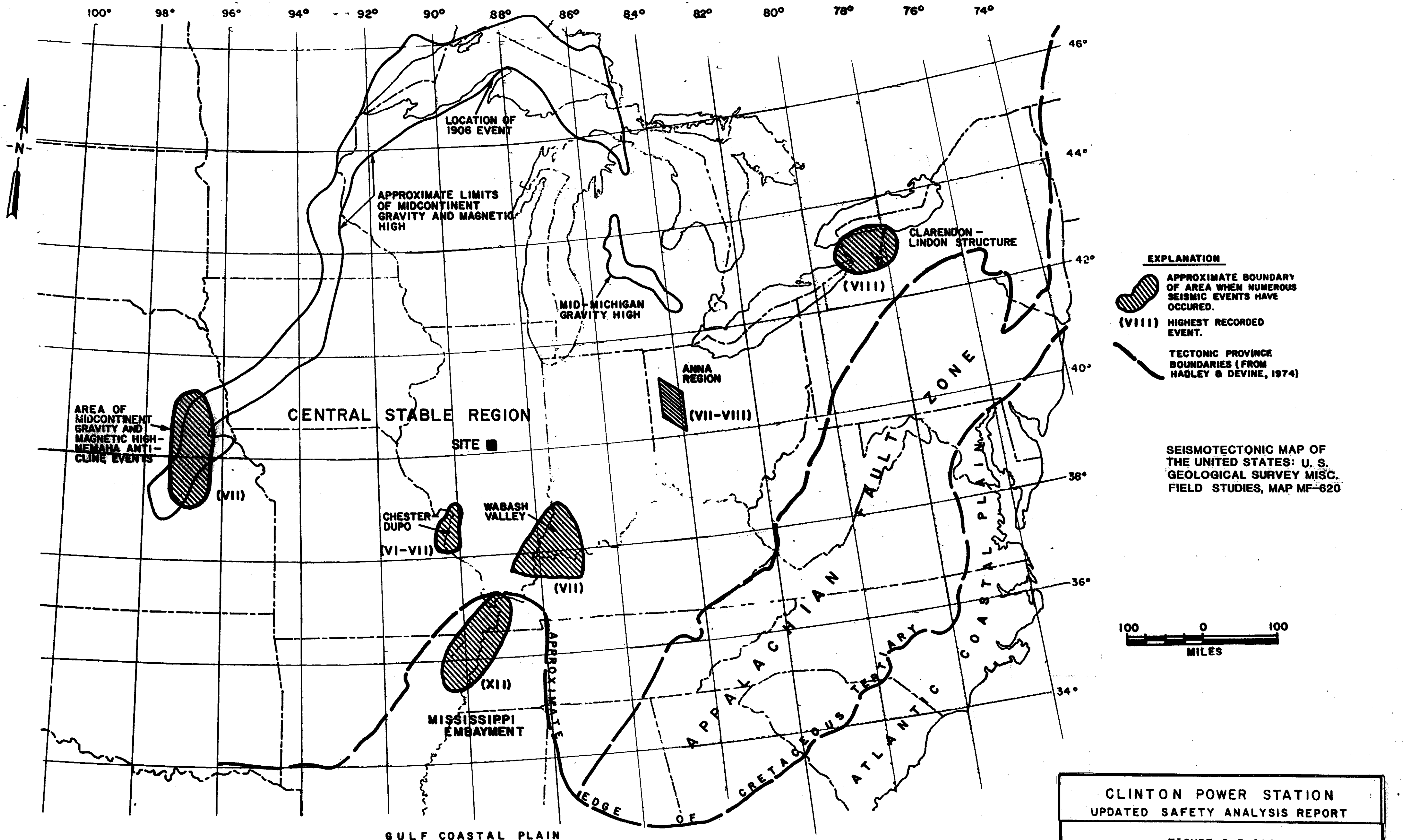

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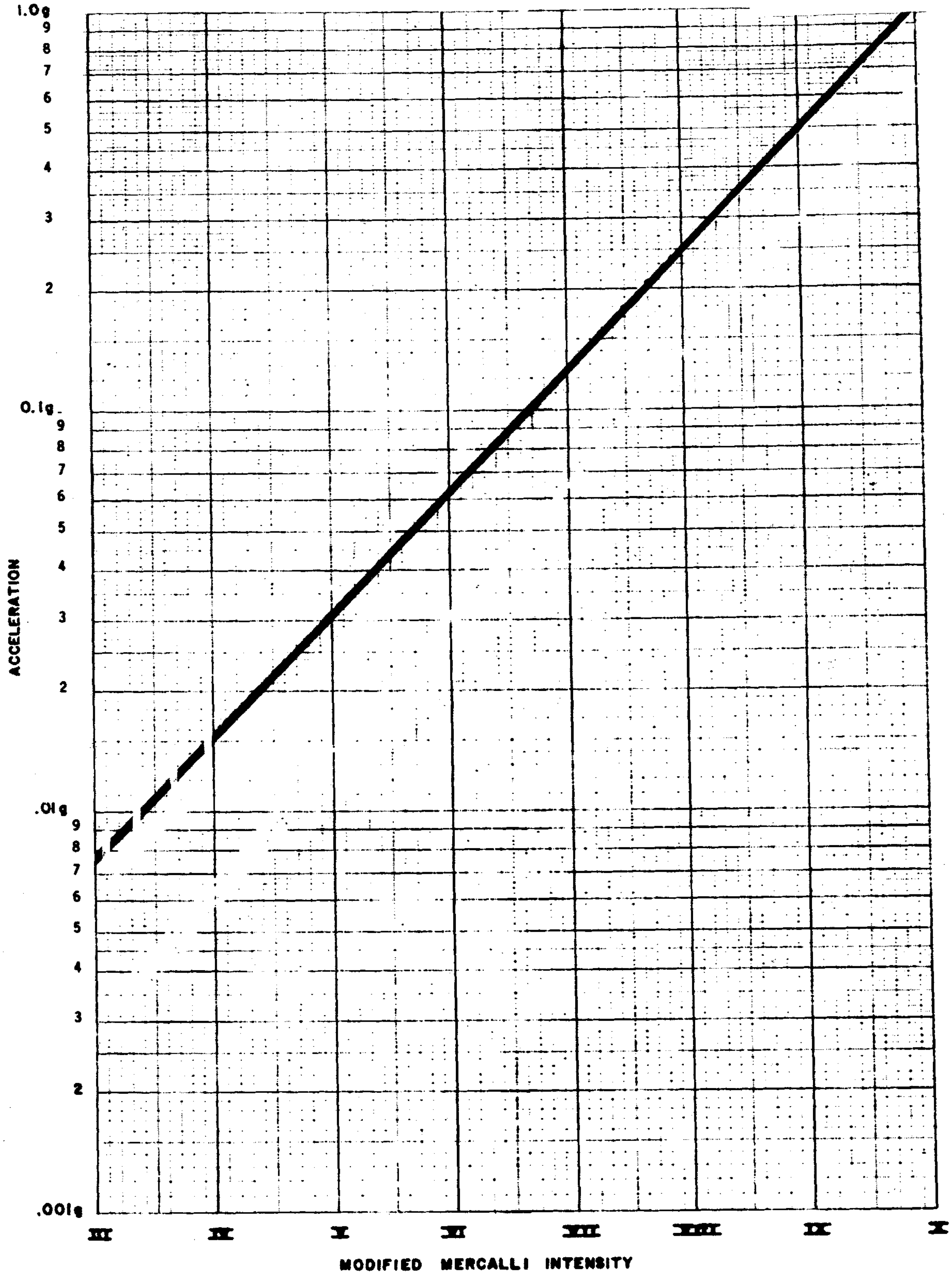
FIGURE 2.5-294

AREAS OF RELATIVELY HIGH SEISMICITY IN CENTRAL UNITED STATES



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.

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FIGURE 2.5-295

COMPARISON OF EARTHQUAKE INTENSITY AND AVERAGE HORIZONTAL ACCELERATION

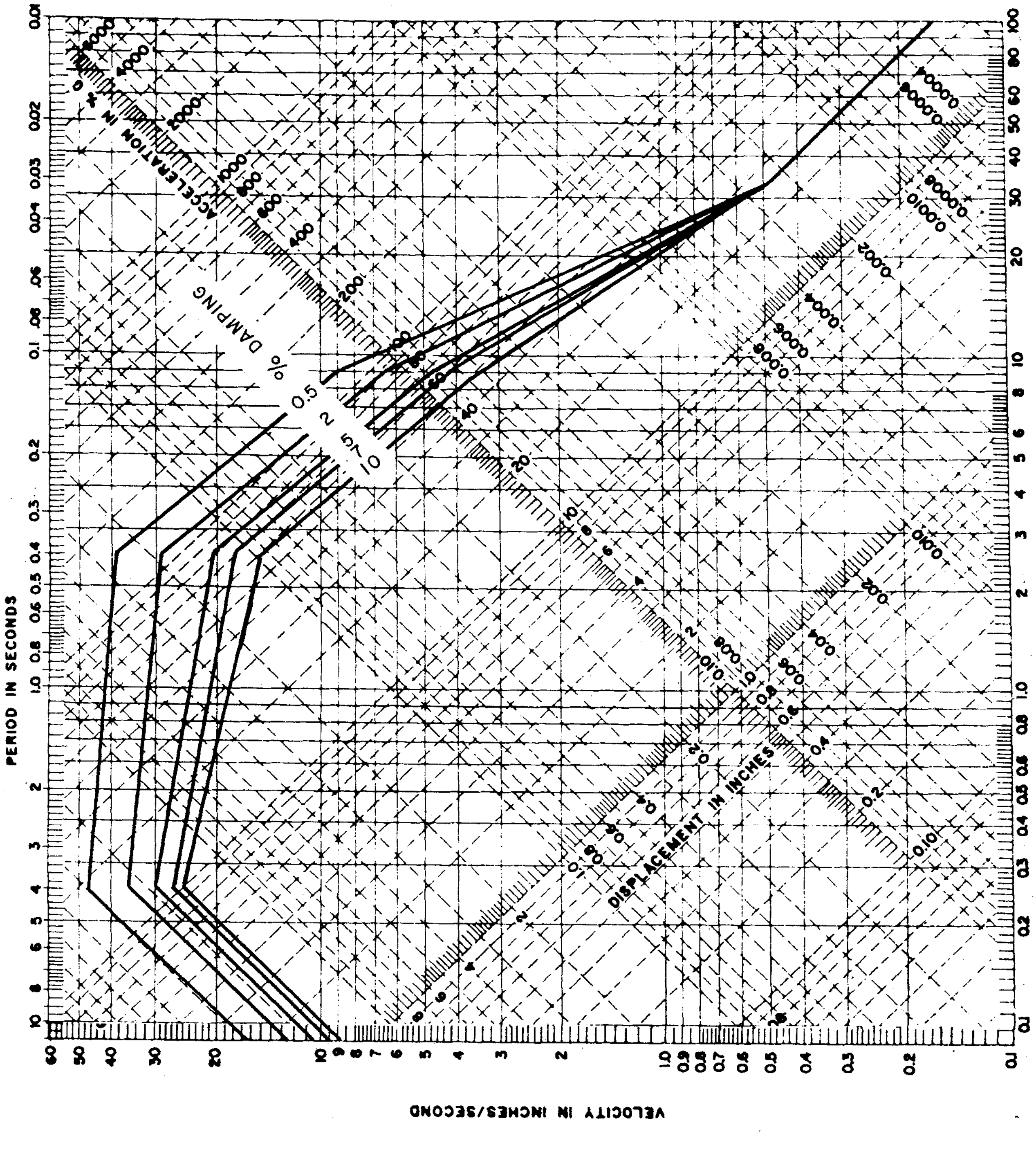

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FIGURE 2.5-296

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

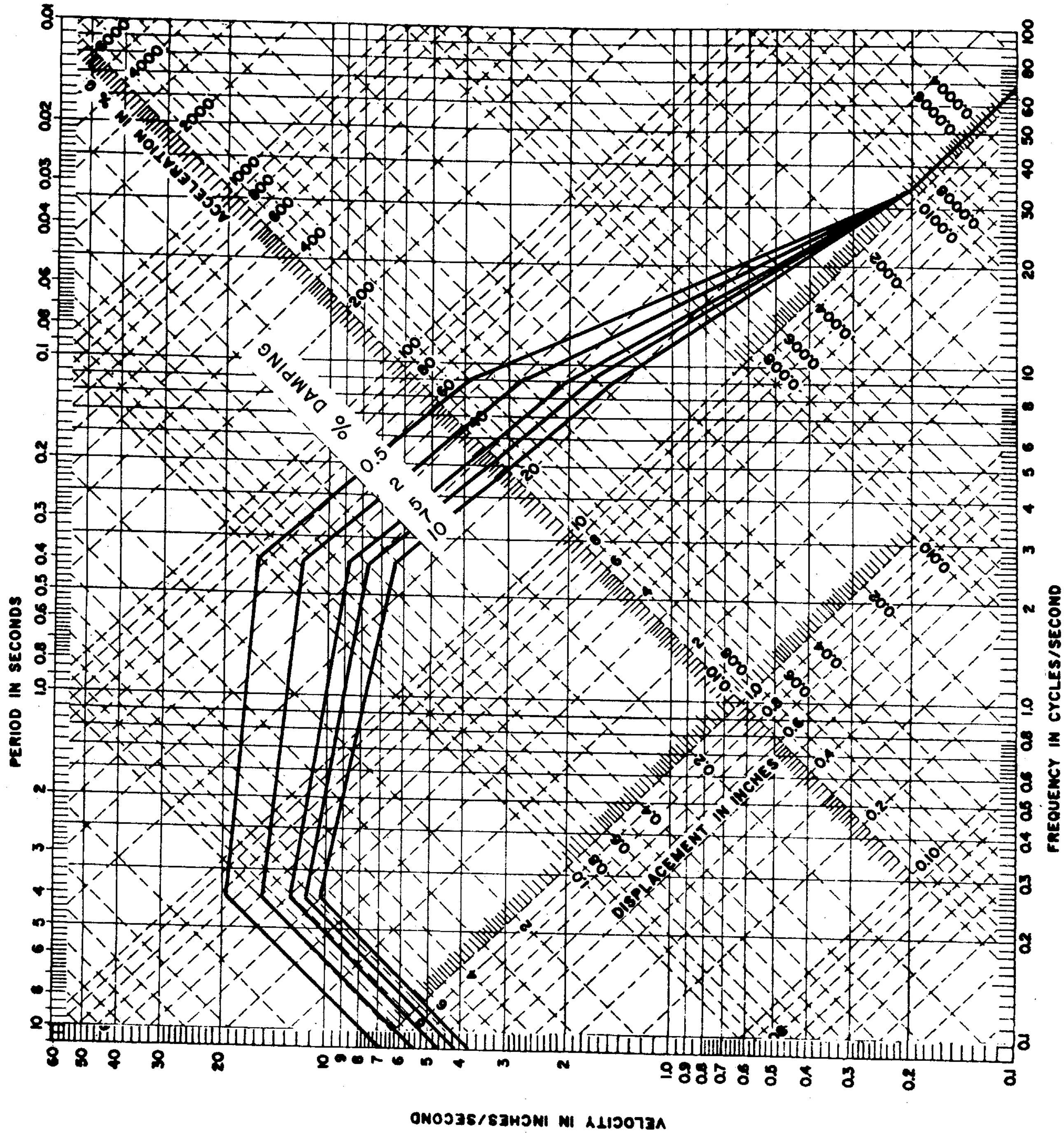

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FIGURE 2.5-297

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

KEY TO LOG OF BORINGS

KEY TO SAMPLES

BORINGS LOGGED BY: WOODWARD-CLYDE CONSULTANTS	DAMES & MOORE	SARGENT & LUNDY ENGINEERS	SAMPLE 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.
			INDICATES DEPTH OF RELATIVELY UNDISTURBED SAMPLE OBTAINED WITH A DAMES & MOORE TYPE U SAMPLER.
	P		INDICATES DAMES & MOORE TYPE U SAMPLER WAS HYDRAULICALLY PUSHED TO OBTAIN SAMPLE.
			INDICATES DEPTH OF DISTURBED SAMPLE OBTAINED WITH A DAMES & MOORE TYPE U SAMPLER.
			INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY USING A DAMES & MOORE TYPE U SAMPLER.
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).
			INDICATES DEPTH OF SAMPLE OBTAINED USING A SPLIT SPOON SAMPLER WITH AN OUTSIDE DIAMETER OF 2.0 INCHES.
			INDICATES DEPTH OF SPLIT SPOON SAMPLE WITH NO RECOVERY.
		AG	INDICATES AUGER BORING.
		BG	INDICATES DEPTH OF DISTURBED SAMPLE OBTAINED WITH CONTINUOUS FLIGHT AUGERS.
		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.
		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.
		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.
		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)
	95%		INDICATES DEPTH, LENGTH AND PERCENT OF CORE RUN RECOVERED FOR NX DIAMOND DRILL ROCK CORING.
	RQD		INDICATES PERCENT OF ROCK QUALITY DESIGNATION FOR NX DIAMOND DRILL ROCK CORING.

KEY TO TEST DATA

SHEAR STRENGTH DATA:

DAMES & MOORE	SARGENT & LUNDY ENGINEERS	TEST DESCRIPTION
		Triaxial Compression
a.	$\frac{\sigma_1-\sigma_3}{2}$	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.
b.	σ_3	CELL PRESSURE IN PSF FOR UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TESTS.
		Unconfined Compression
c.	Qu/2	SHEAR STRENGTH DEFINED AS ONE-HALF THE PEAK AXIAL COMPRESSIVE STRESS IN PSF.
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+.

TESTS REPORTED ELSEWHERE:

DAMES & MOORE/SARGENT & LUNDY ENGINEERS

C	CONSOLIDATION TEST
CHEM	CHEMICAL TEST ON GROUNDWATER SAMPLES
COMP	BULK COMPACTION TEST
D/CD	CONSOLIDATED - DRAINED DIRECT SHEAR TEST
IG	LOSS ON IGNITION
MA	MECHANICAL PARTICLE SIZE ANALYSIS (SIEVE AND HYDROMETER)
PERM	LABORATORY PERMEABILITY TEST
DR	RELATIVE DENSITY TEST
RES	RESONANT COLUMN TEST
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

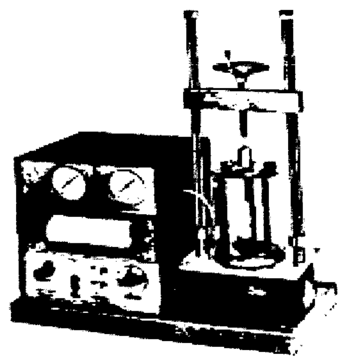

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Figure 2.5-299
Sheet 1 of 2
UNCONFINED COMPRESSION
AND TRIAXIAL COMPRESSION
TESTS (METHOD)

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 stesses.

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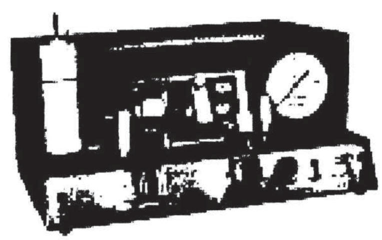
Figure 2.5-299
Sheet 2 of 2
UNCONFINED COMPRESSION
AND TRIAXIAL COMPRESSION
TESTS (METHOD)



DIRECT SHEAR TESTING
& RECORDING APPARATUS

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Figure 2.5-300
Sheet 1 of 2

DIRECT SHEAR AND FRICTION
TESTS (METHOD)

NOTES FOR FIGURE 2.5-300

Method of Performing Direct Shear and Friction Tests

Direct shear tests are performed to detemine the shearing strengths of soils. Friction tests are performed to determine the frictional resistances between soils and various other materials such as wood, steel, or concrete. The tests are performed in the laboratory to simulate anticipated field conditions.

Each sample is tested within three brass rings, two and one-half inches in diameter and one inch in length. Undisturbed samples of in-place soils are tested in rings taken from the sampling device in which the samples were obtained. Loose samples of soils to be used in constructing earth fills are compacted in rings to predetermined conditions and tested.

Direct Shear Tests

A three-inch length of the sample is tested in direct double shear. A constant pressure, appropriate to the conditions of the problem for which the test is being performed, is applied normal to the ends of the sample through porous stones. A shearing failure of the sample is caused by moving the center ring in a direction perpendicular to the axis of the sample. Transverse movement of the outer rings is prevented.

The shearing failure may be accomplished by applying to the center ring either a constant rate of load, a constant rate of deflection, or increments of load or deflection. In each case, the shearing load and the deflections in both the axial and transverse directions are recorded and plotted. The shearing strength of the soil is determined from the resulting load-deflection curves.

Friction Tests

In order to determine the frictional resistance between soil and the surfaces of various materials, the center ring of soil in the direct shear test is replaced by a disk of the material to be tested. The test is then performed in the same manner as the direct shear test by forcing the disk of material from the soil surfaces.

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Figure 2.5-300
Sheet 2 of 2
DIRECT SHEAR AND FRICTION TESTS (METHOD)

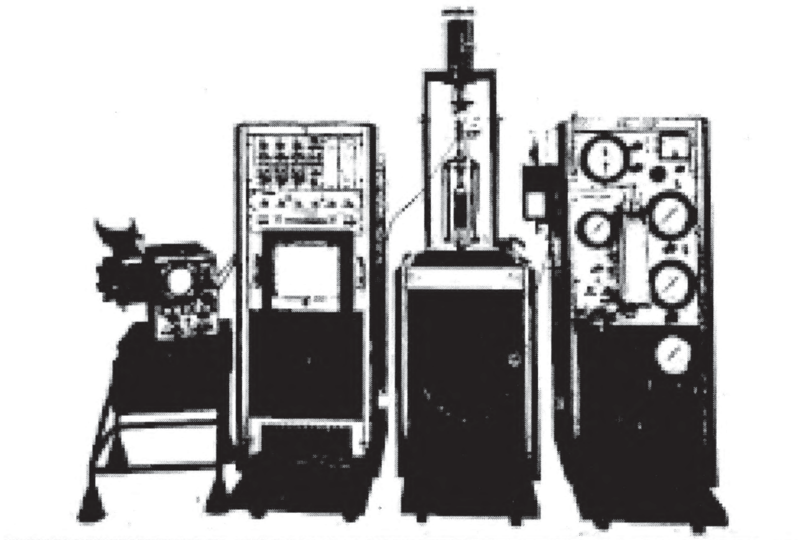

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Figure 2.5-301
Sheet 1 of 2

PULSATING LOAD TRIAXIAL
TEST (METHOD)

NOTES FOR FIGURE 2.5-301

Methods of Performing Pulsating Load Triaxial Tests

Pulsating axial load tests are performed to evaluate the dynamic properties and the liquefaction potential of the soils under simulated anticipated field loading conditions.

Pulsating load tests are stress controlled and are performed on undisturbed or reconstituted samples of soil approximately six inches in length and two and one-half inches in diameter. The samples are encased in a rubber membrane, placed in a test chamber, and subjected to confining pressure throughout the duration of the test. The tests may be run on soils at field moisture content or on artificially saturated samples. The triaxial equipment acting through a Bellofram system applies a pulsating axial load. The cycling speed of the load can be varied between one-half to five cycles per second to simulate the field loading frequency.

Dynamic Properties Determination

To evaluate the dynamic parameters, the soil sample is loaded in cyclic compression. The load and deflection are recorded on two channels of a recording oscillograph. By tapping the output of the load and deflection transducers and applying these to vertical and horizontal plates, respectively, of a cathode ray oscilloscope, a hysteresis loop is produced. This loop is photographed, and the photograph is used to evaluate the damping value present. The procedure is repeated at various strain amplitudes to evaluate the dynamic properties in the range of interest on a particular sample. The load and deflection values obtained from the oscillograph are used to evaluate the dynamic moduli of elasticity.

Liquefaction Potential

To evaluate the liquefaction potential, the soil sample is subjected to axial cyclic loading, the magnitude, frequency, duration and sequence of loading is determined on the basis of past earthquake records. The load deflection, and pore pressure are recorded on three channels of a recording oscillograph. These records are used to evaluate the liquefaction potential for that particular soil type under the test conditions.

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Figure 2.5-301
Sheet 2 of 2

PULSATING LOAD TRIAXIAL TEST (METHOD)

STRUCTURAL FILL BORROW

COMBINED BULK SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 80% RELATIVE DENSITY (123 PCF), AT THE 10TH CYCLE

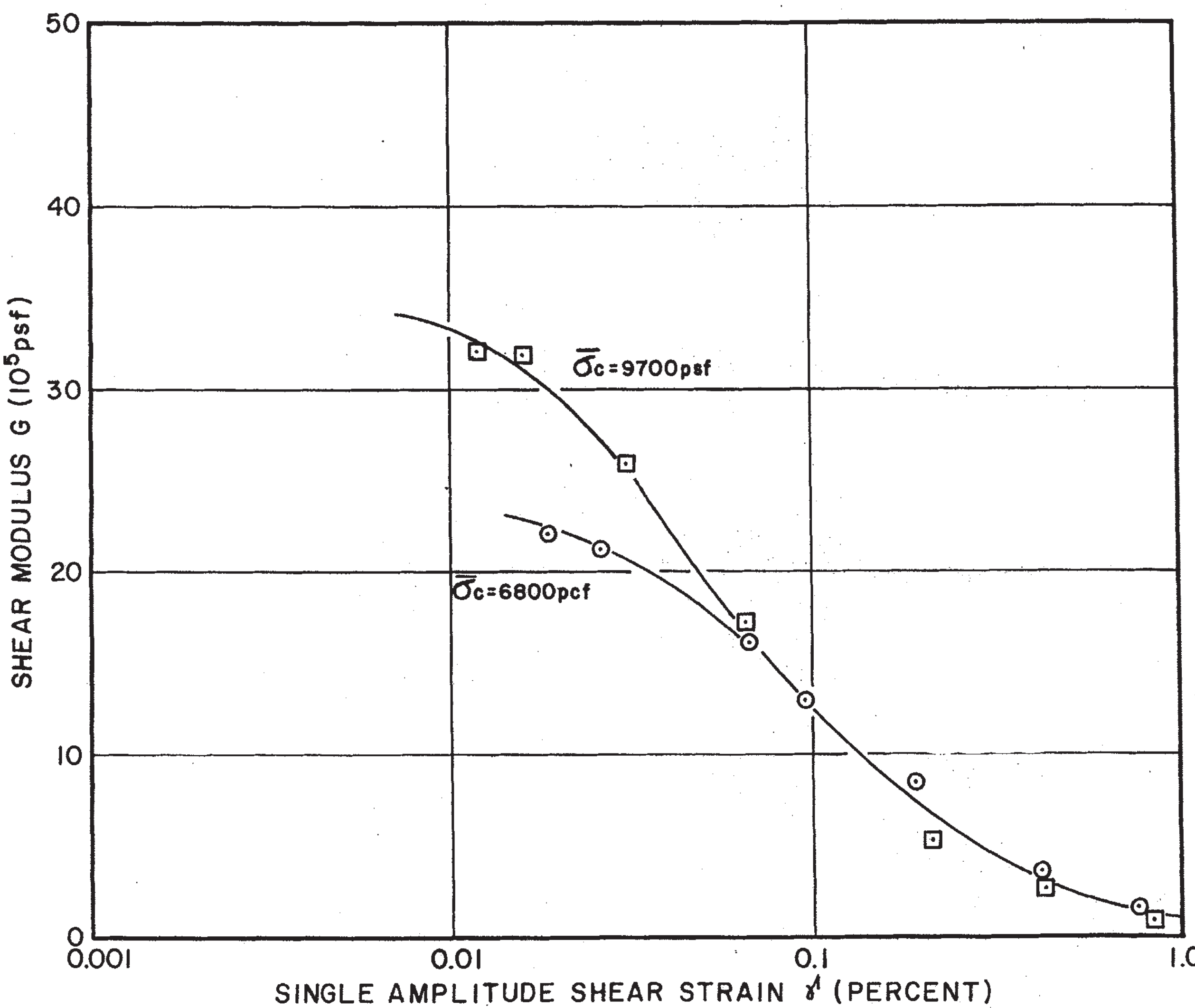

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FIGURE 2.5-302

DYNAMIC TRIAXIAL COMPRESSION TESTS

STRUCTURAL FILL BORROW

COMBINED BULK SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 80% RELATIVE DENSITY (123 PCF), AT THE 10TH CYCLE

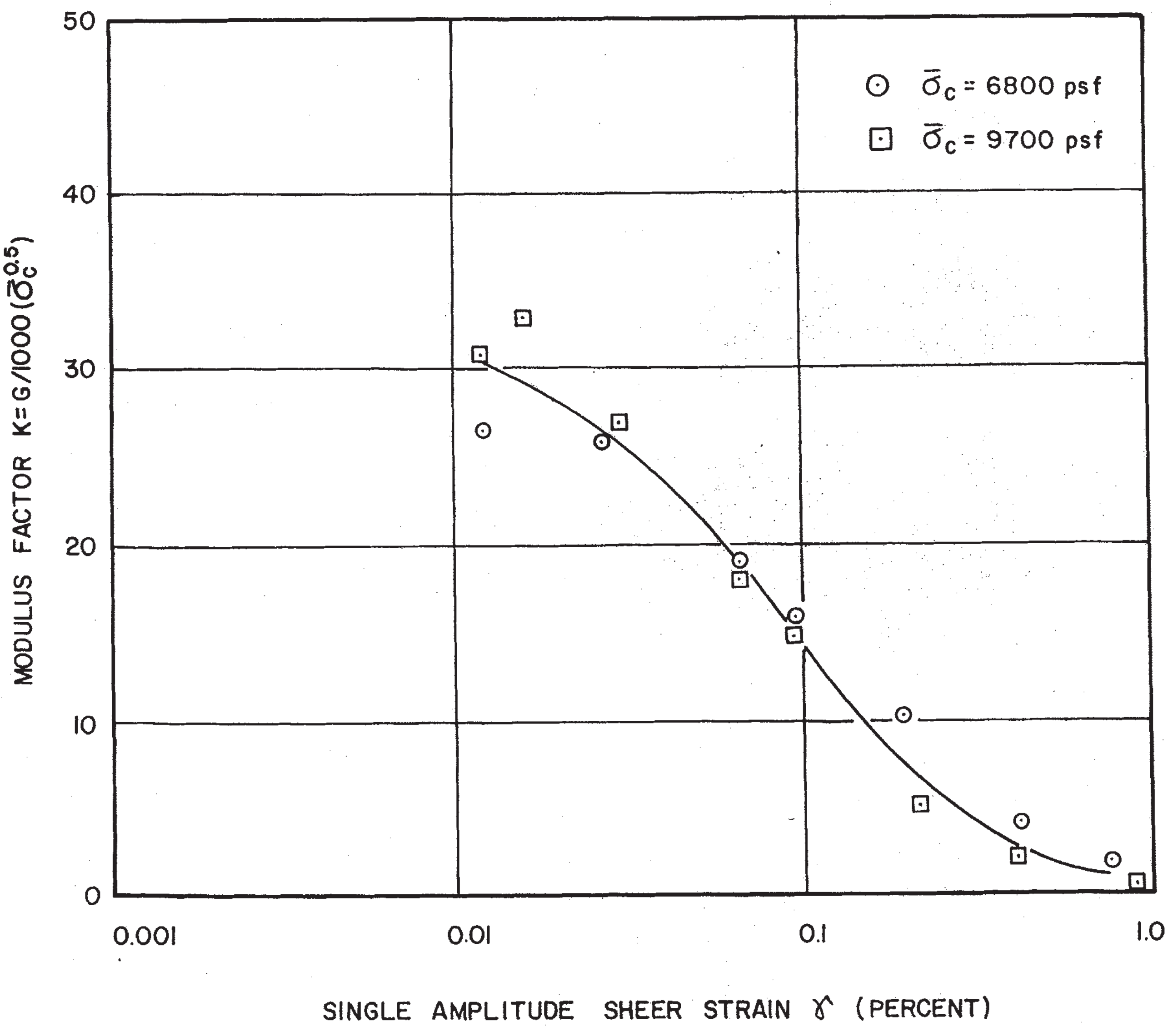

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FIGURE 2.5-303

DYNAMIC TRIAXIAL COMPRESSION TESTS

STRUCTURAL FILL BORROW

COMBINED BULK SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 80% RELATIVE DENSITY (123 PCF), AT THE 10TH CYCLE

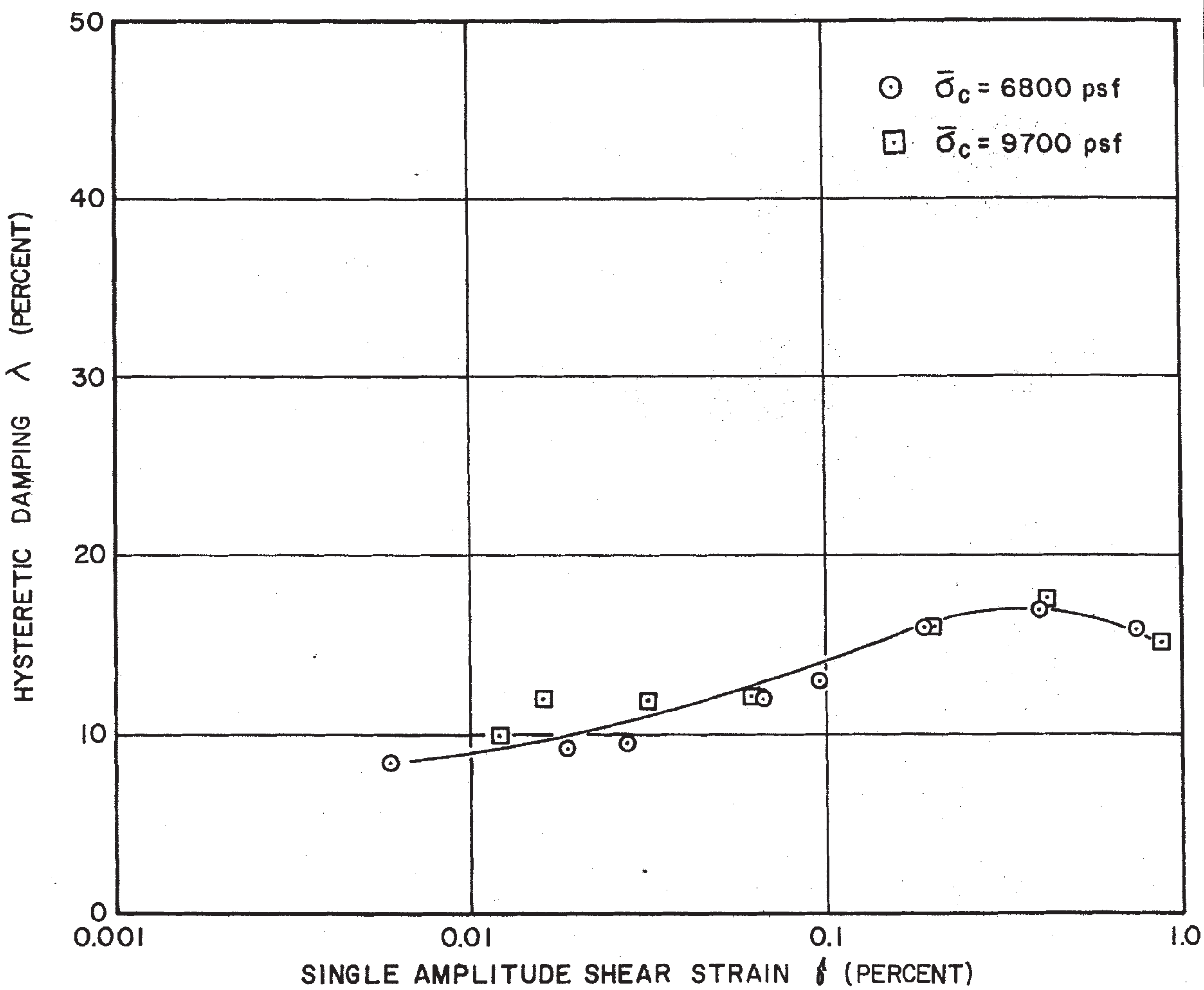

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FIGURE 2.5-304

DYNAMIC TRIAXIAL COMPRESSION TESTS

STRUCTURAL FILL BORROW

COMBINED BULK SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 80% RELATIVE DENSITY (123 PCF), AT THE 10TH CYCLE

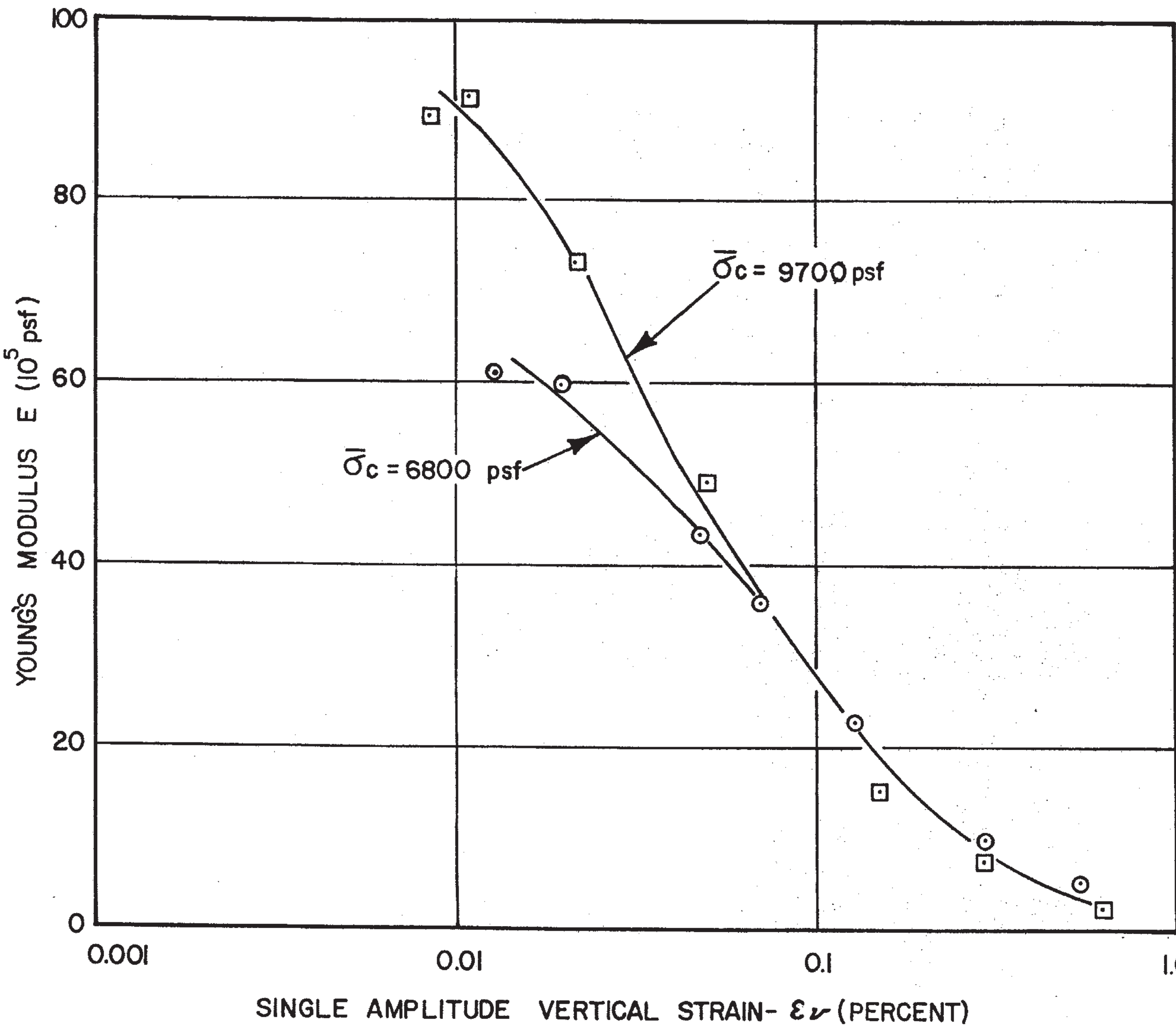

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FIGURE 2.5-305

DYNAMIC TRIAXIAL COMPRESSION TESTS

STRUCTURAL FILL BORROW

COMBINED BULK SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 80% RELATIVE DENSITY (123 PCF), AT THE 10TH CYCLE

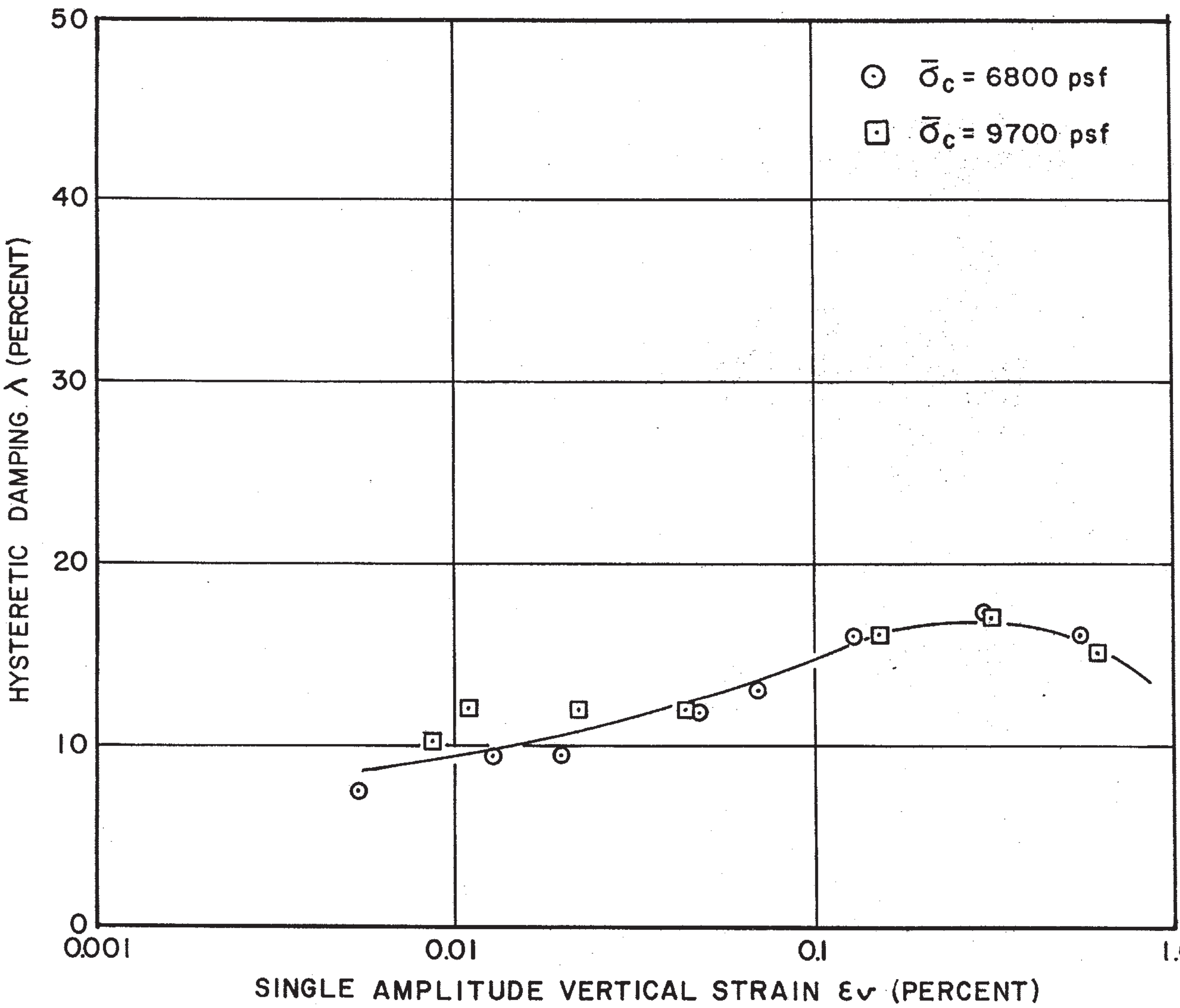

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FIGURE 2.5-306

DYNAMIC TRIAXIAL COMPRESSION TESTS

STRUCTURAL FILL BORROW

COMBINED BORROW SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 90% RELATIVE DENSITY (129 PCF), AT THE 10TH CYCLE

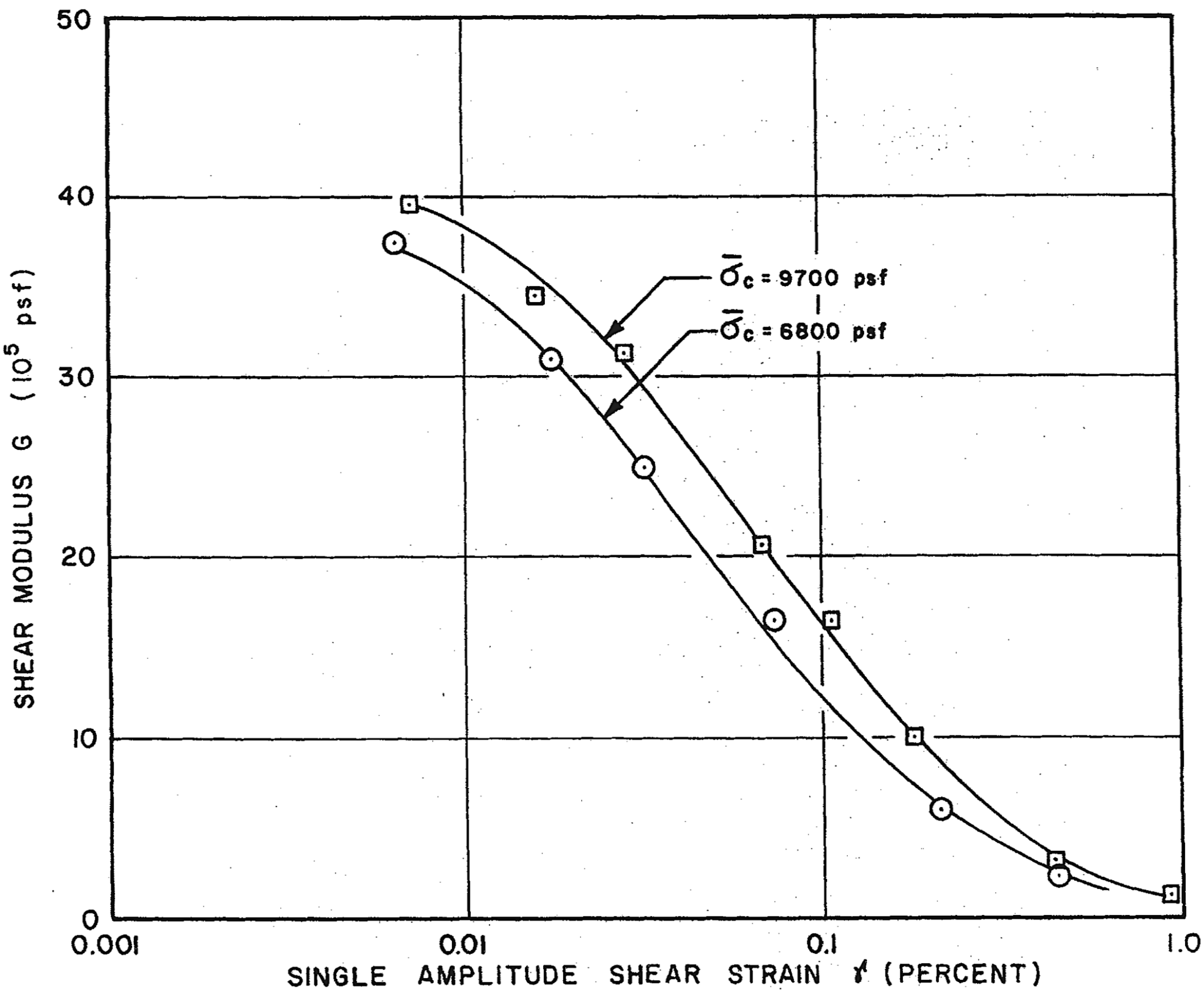

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FIGURE 2.5-307

DYNAMIC TRIAXIAL COMPRESSION TESTS

STRUCTURAL FILL BORROW

COMBINED BORROW SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 90% RELATIVE DENSITY (129 PCF), AT THE 10TH CYCLE

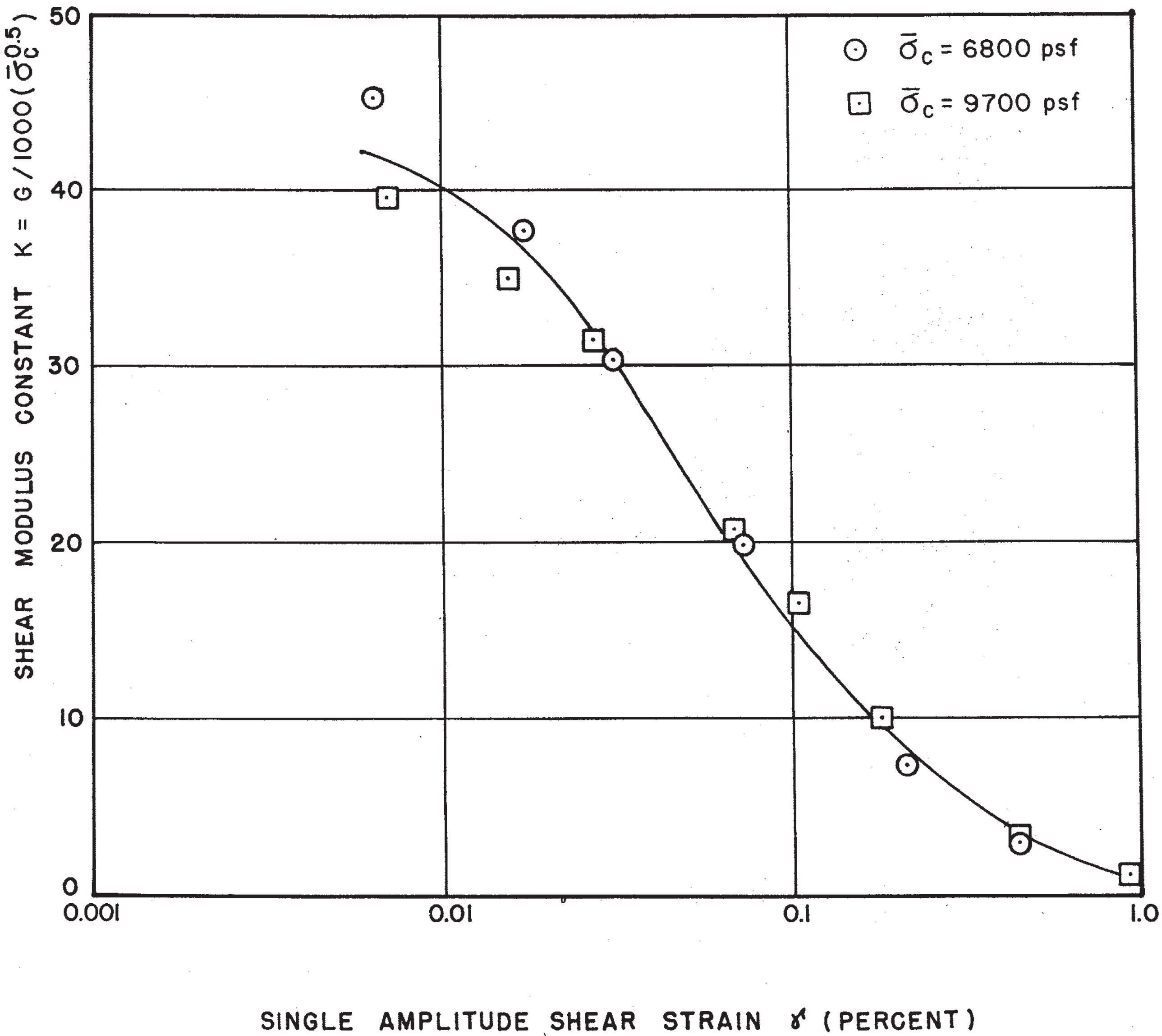

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FIGURE 2.5-308

DYNAMIC TRIAXIAL COMPRESSION TESTS

STRUCTURAL FILL BORROW

COMBINED BORROW SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 90% RELATIVE DENSITY (129 PCF), AT THE 10TH CYCLE

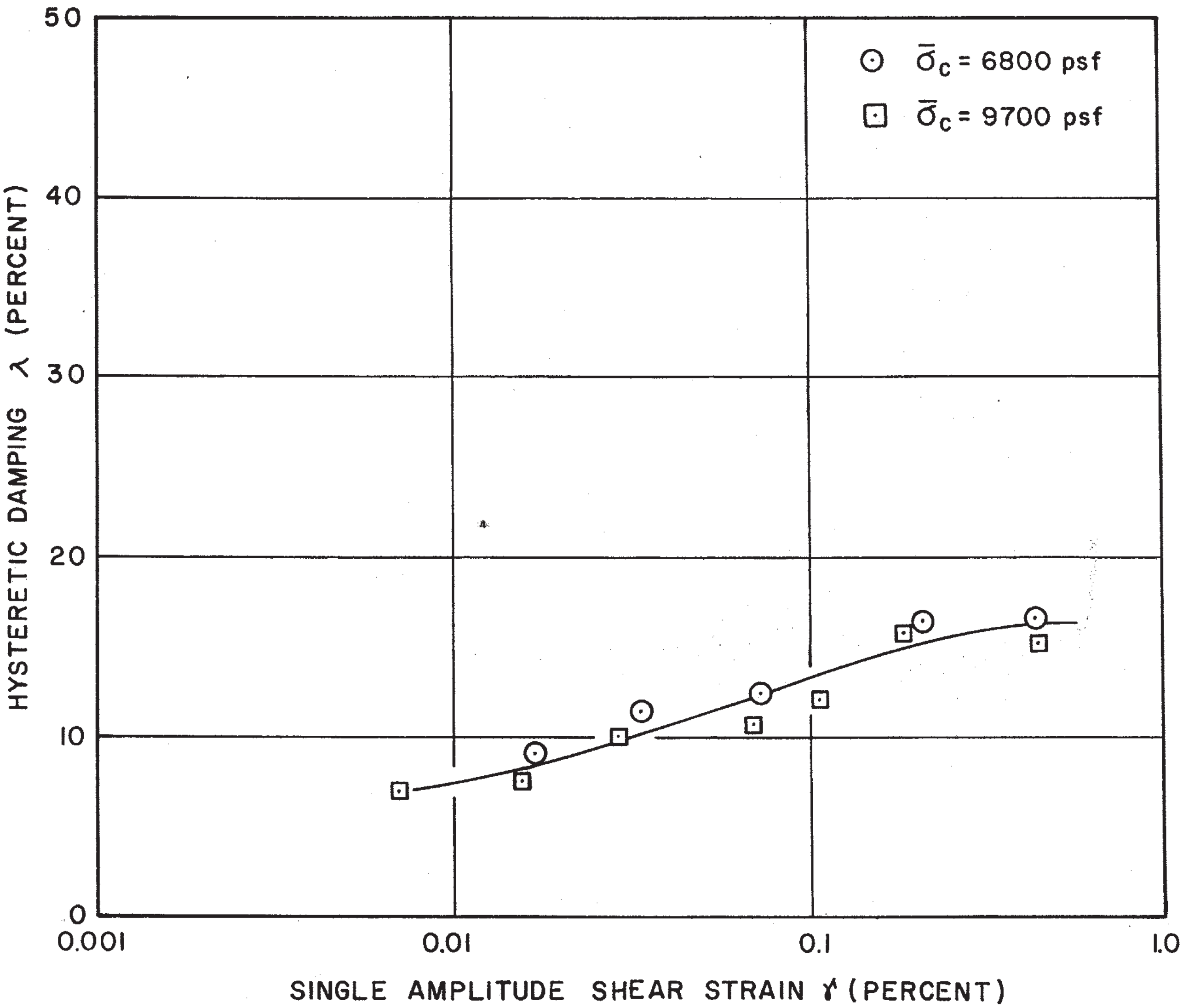

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FIGURE 2.5-309

DYNAMIC TRIAXIAL COMPRESSION TESTS

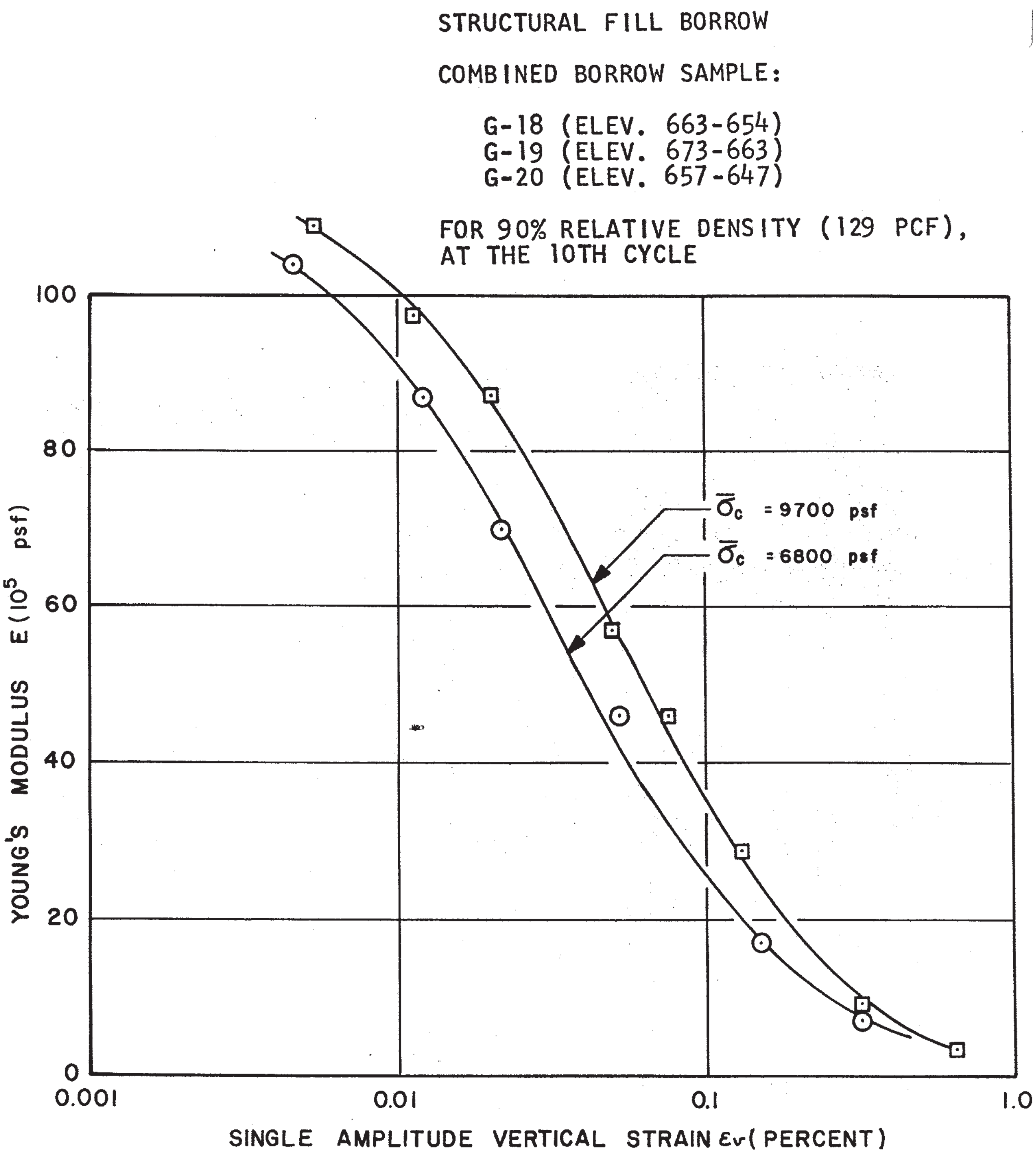

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FIGURE 2.5-310

DYNAMIC TRIAXIAL COMPRESSION TESTS

STRUCTURAL FILL BORROW

COMBINED BORROW SAMPLE:

G-18 (ELEV. 663-654)
G-19 (ELEV. 673-663)
G-20 (ELEV. 657-647)

FOR 90% RELATIVE DENSITY (129 PCF), AT THE 10TH CYCLE

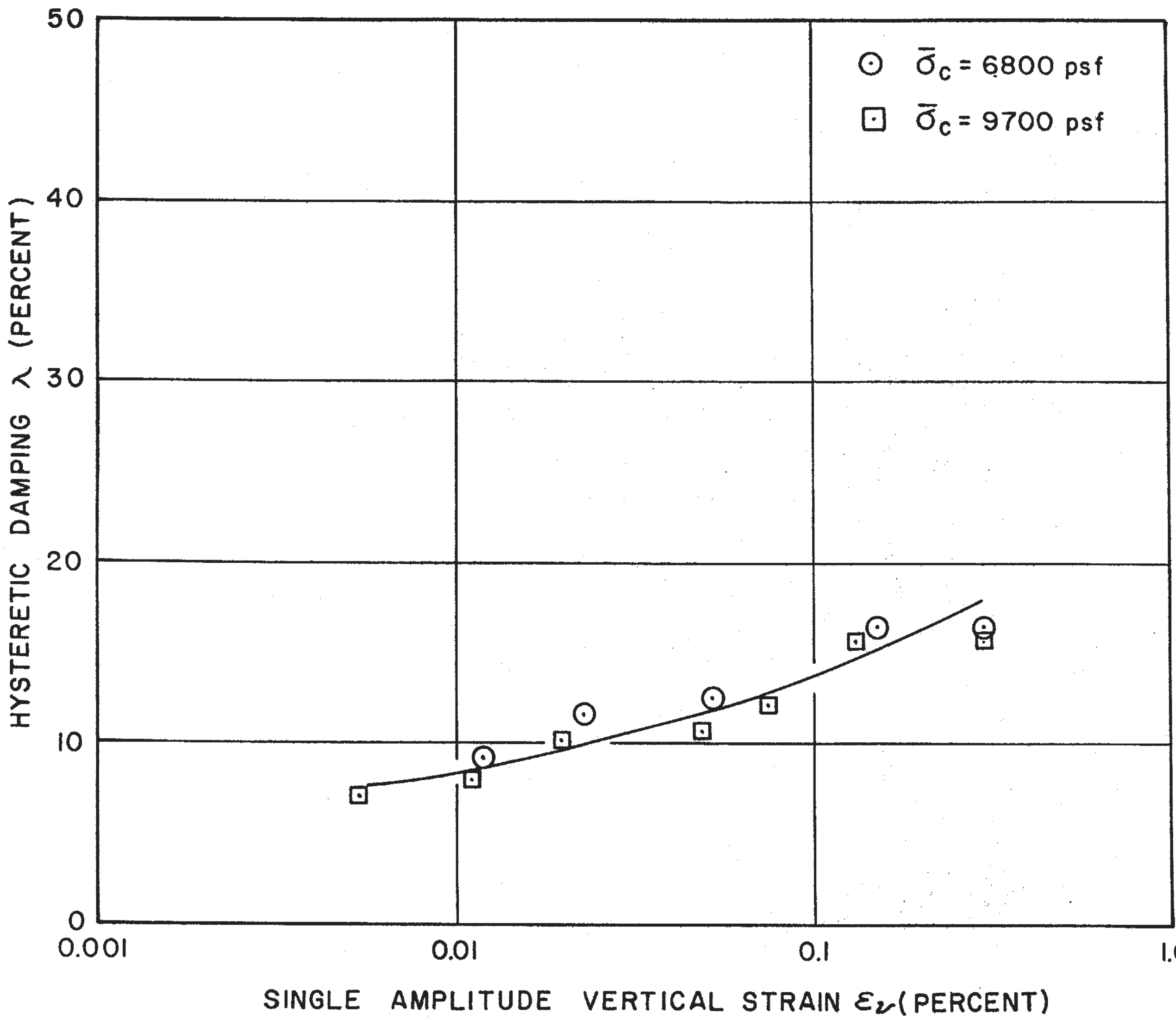

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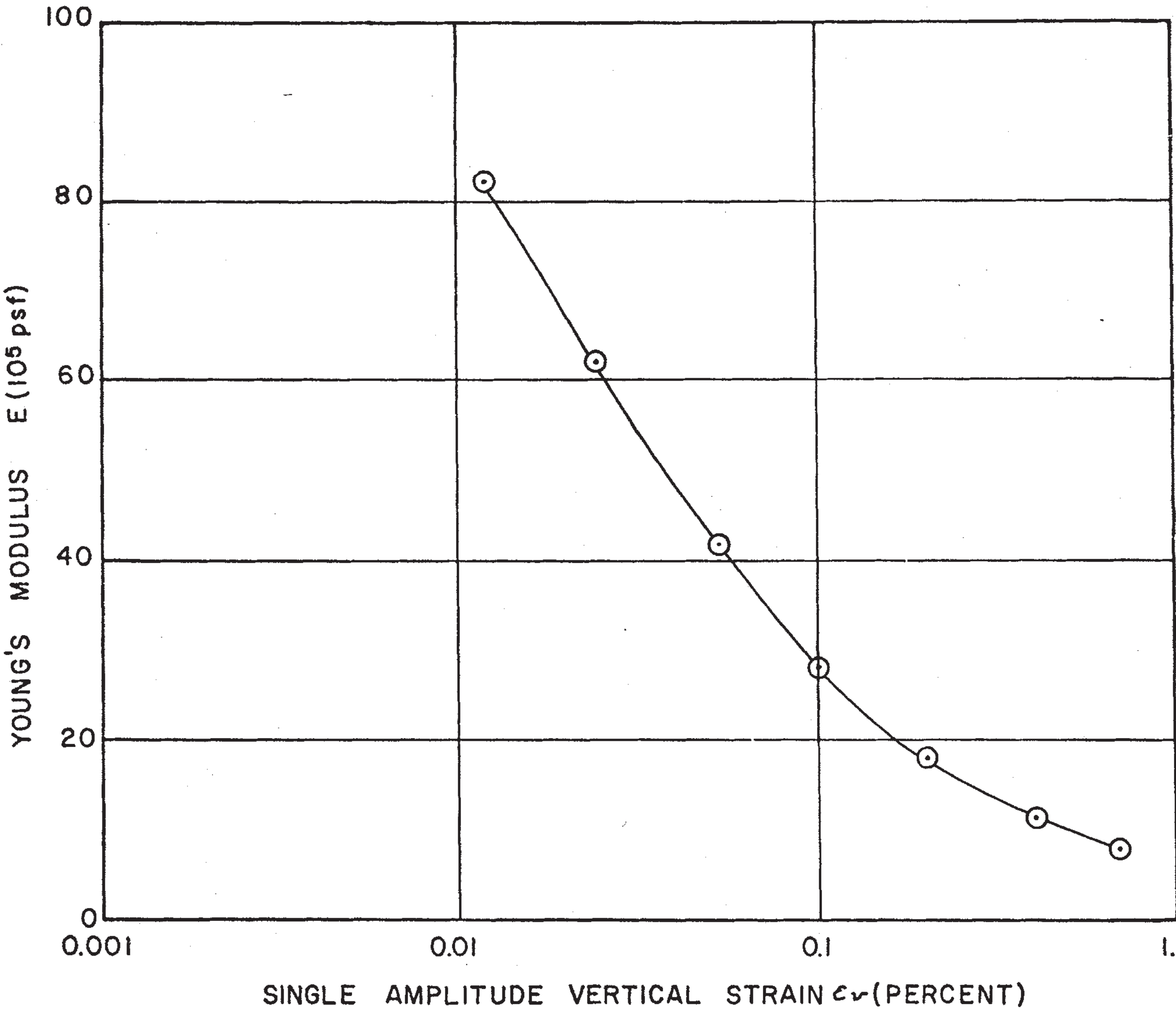
FIGURE 2.5-311

DYNAMIC TRIAXIAL COMPRESSION TESTS

BORING H-6 @ ELEVATION 619.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 8.6%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



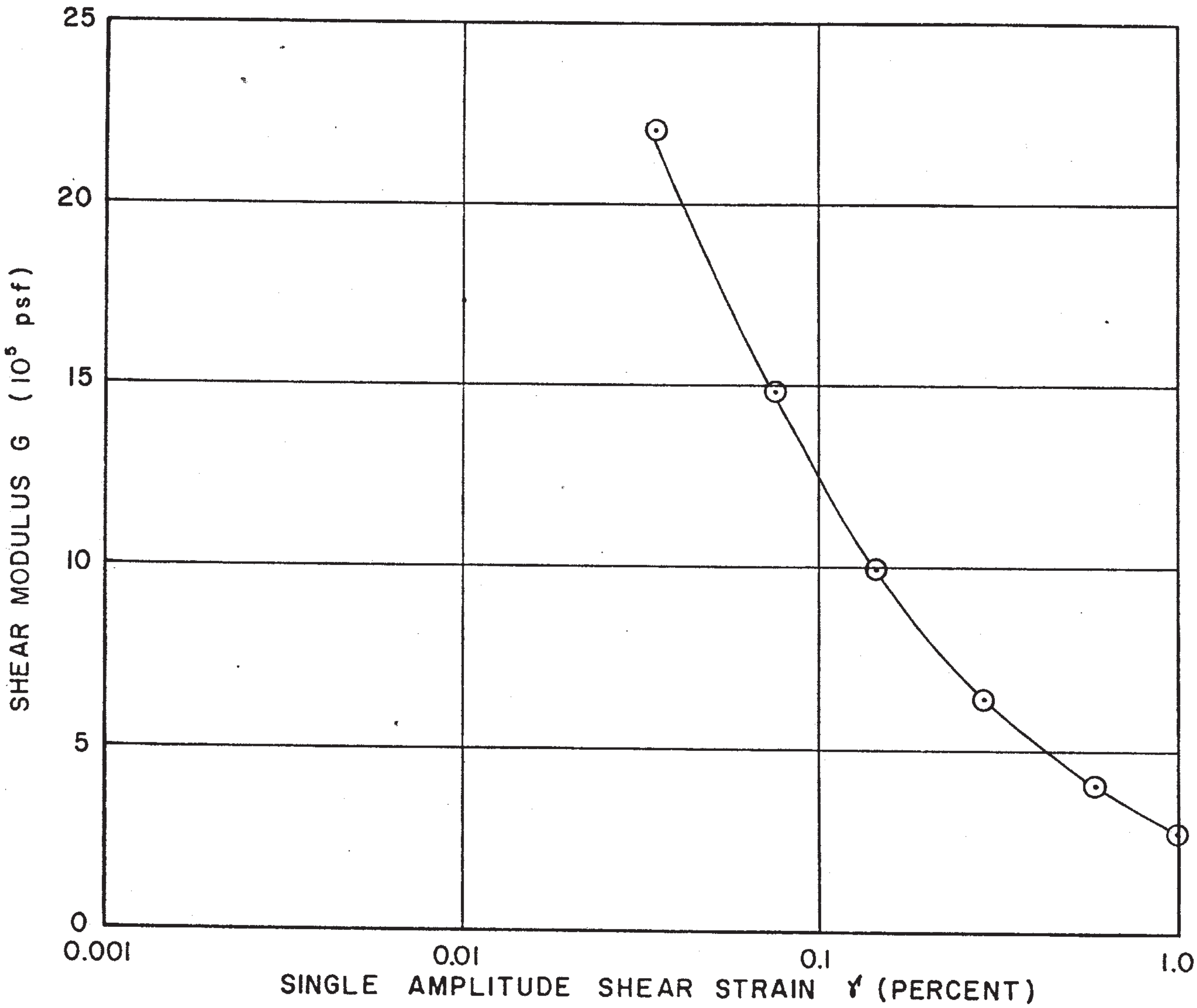
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-312

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-6)

(SHEET 1 of 4)

BORING H-6 @ ELEVATION 619.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 8.6%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



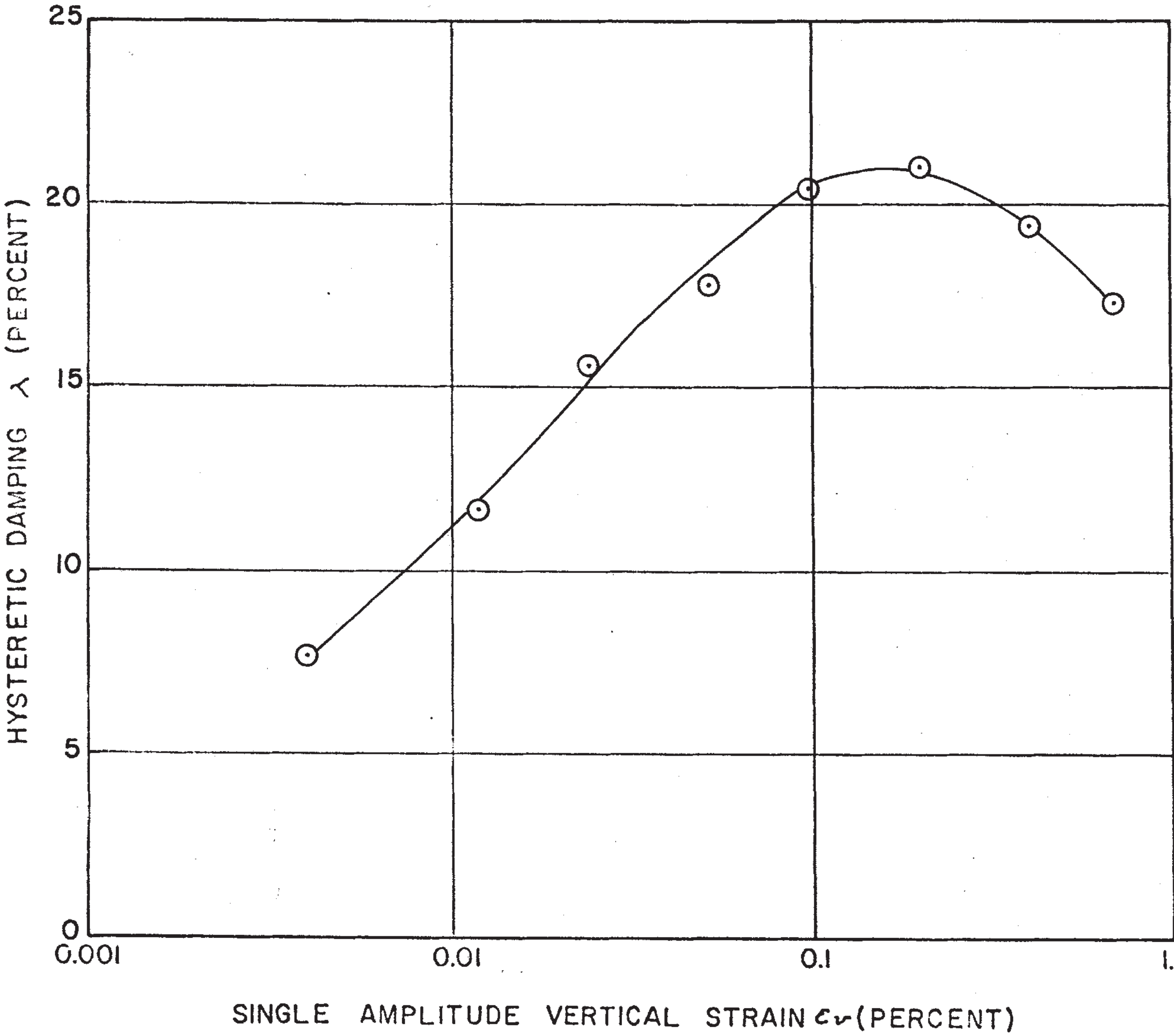
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-312

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-6)

(SHEET 2 of 4)

BORING H-6 @ ELEVATION 619.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 8.6%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE

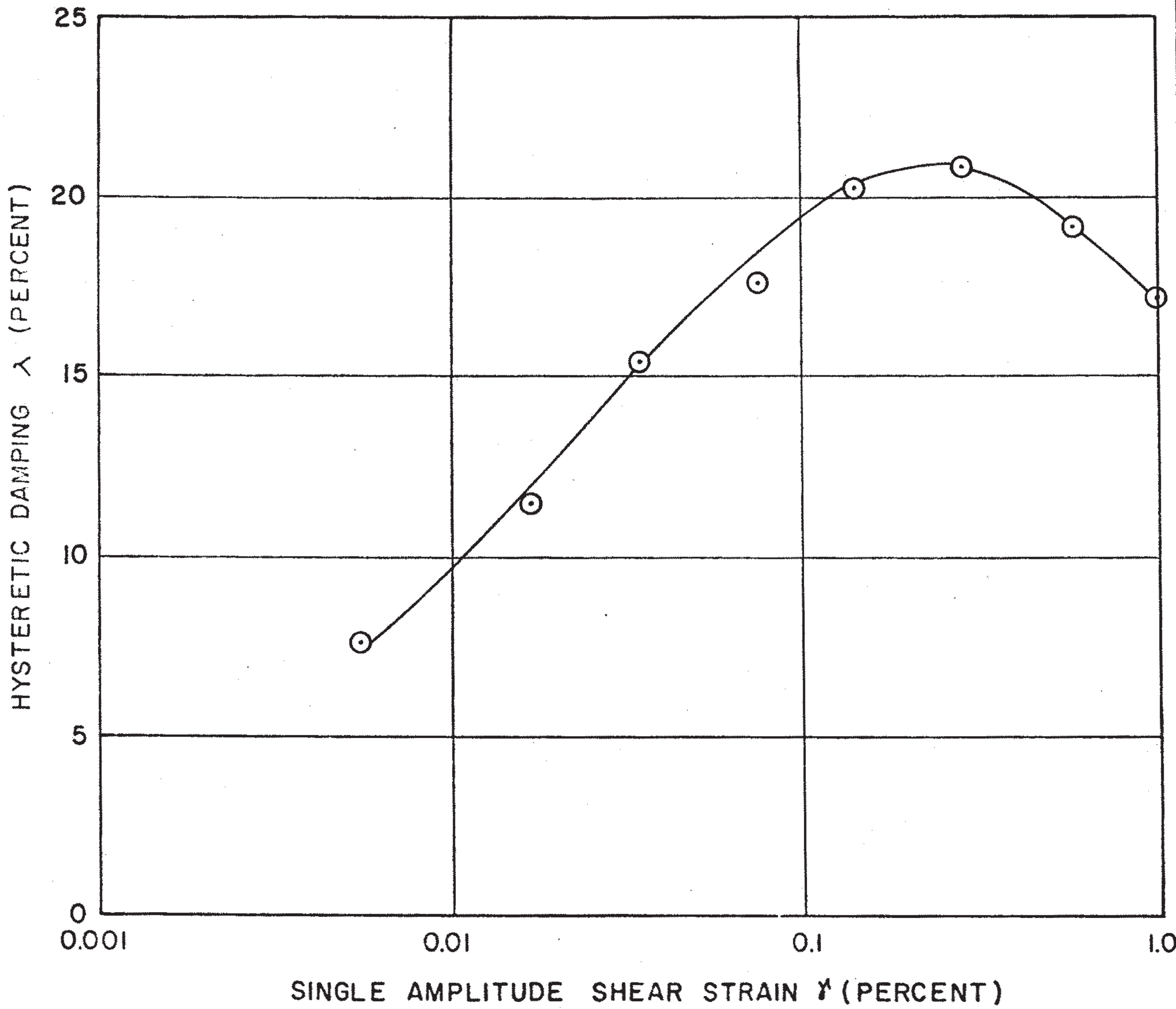


CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-312

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-6)
(SHEET 3 of 4)

BORING H-6 @ ELEVATION 619.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH SOME CLAY
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 8.6%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



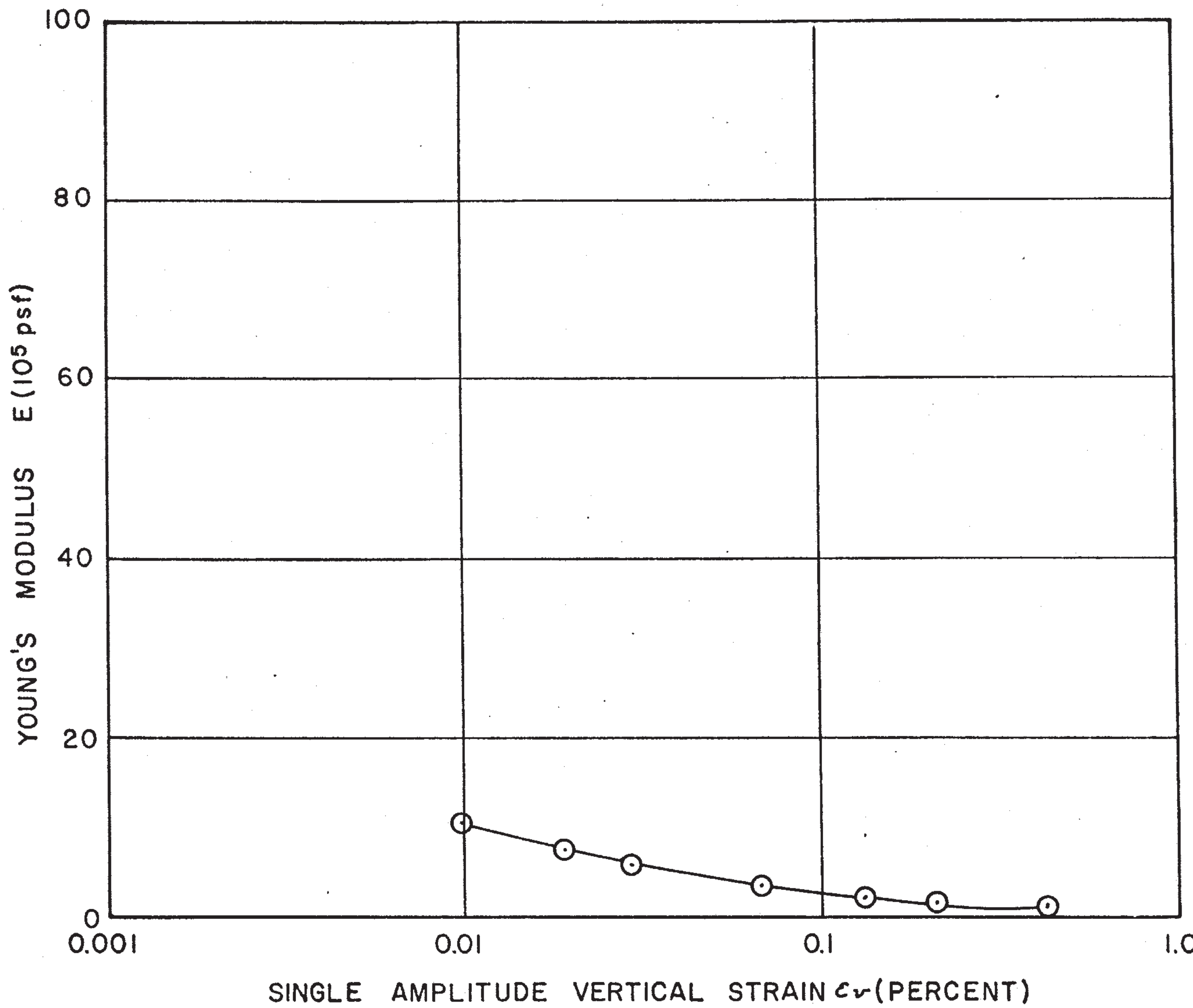
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-312

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-6)

(SHEET 4 of 4)

BORING H-14 @ ELEVATION 635.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND FINE GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.5%
FIELD DRY DENSITY: 140 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



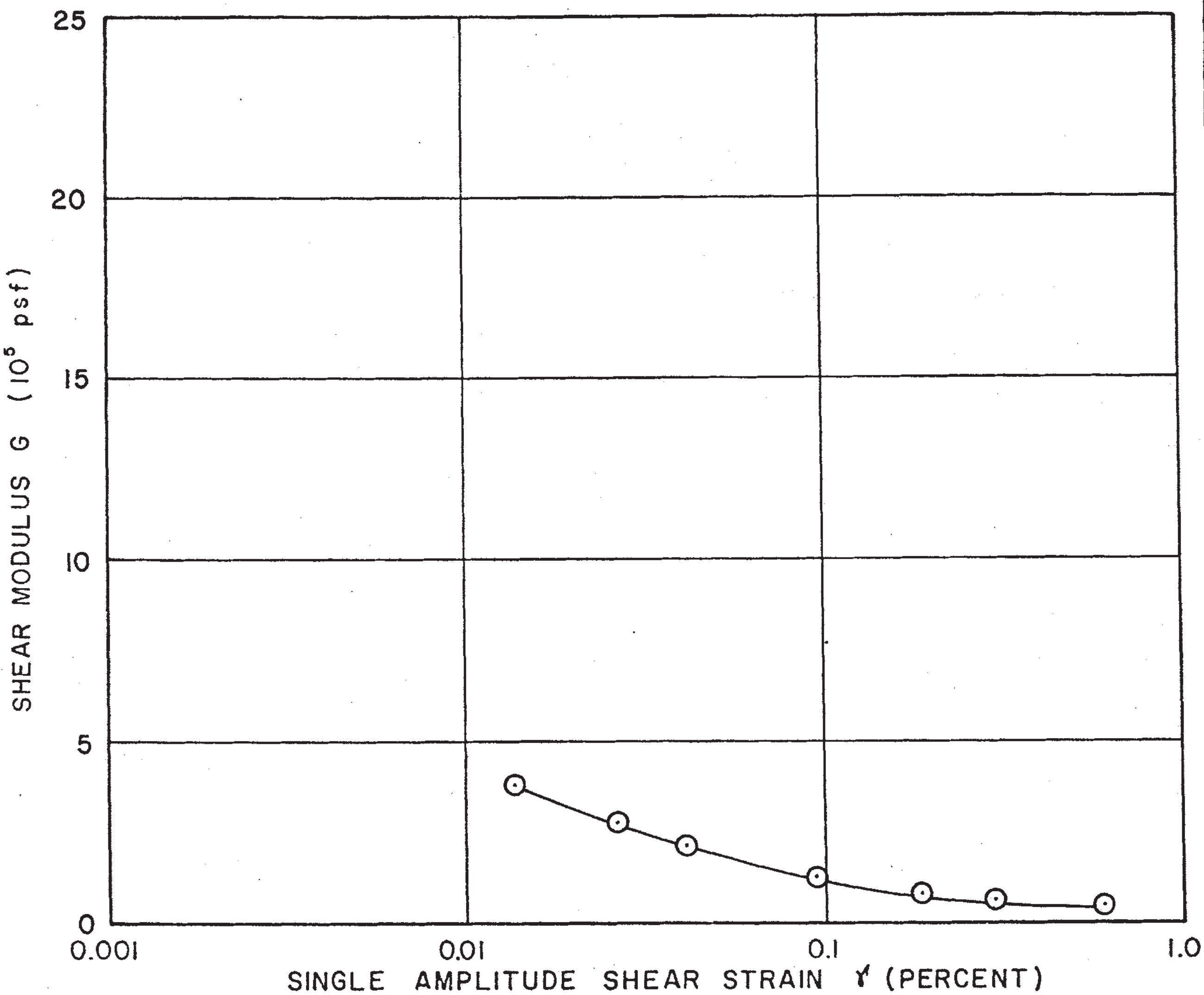
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-313

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-14)

(SHEET 1 of 4)

BORING H-14 @ ELEVATION 635.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND FINE GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.5%
FIELD DRY DENSITY: 140 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



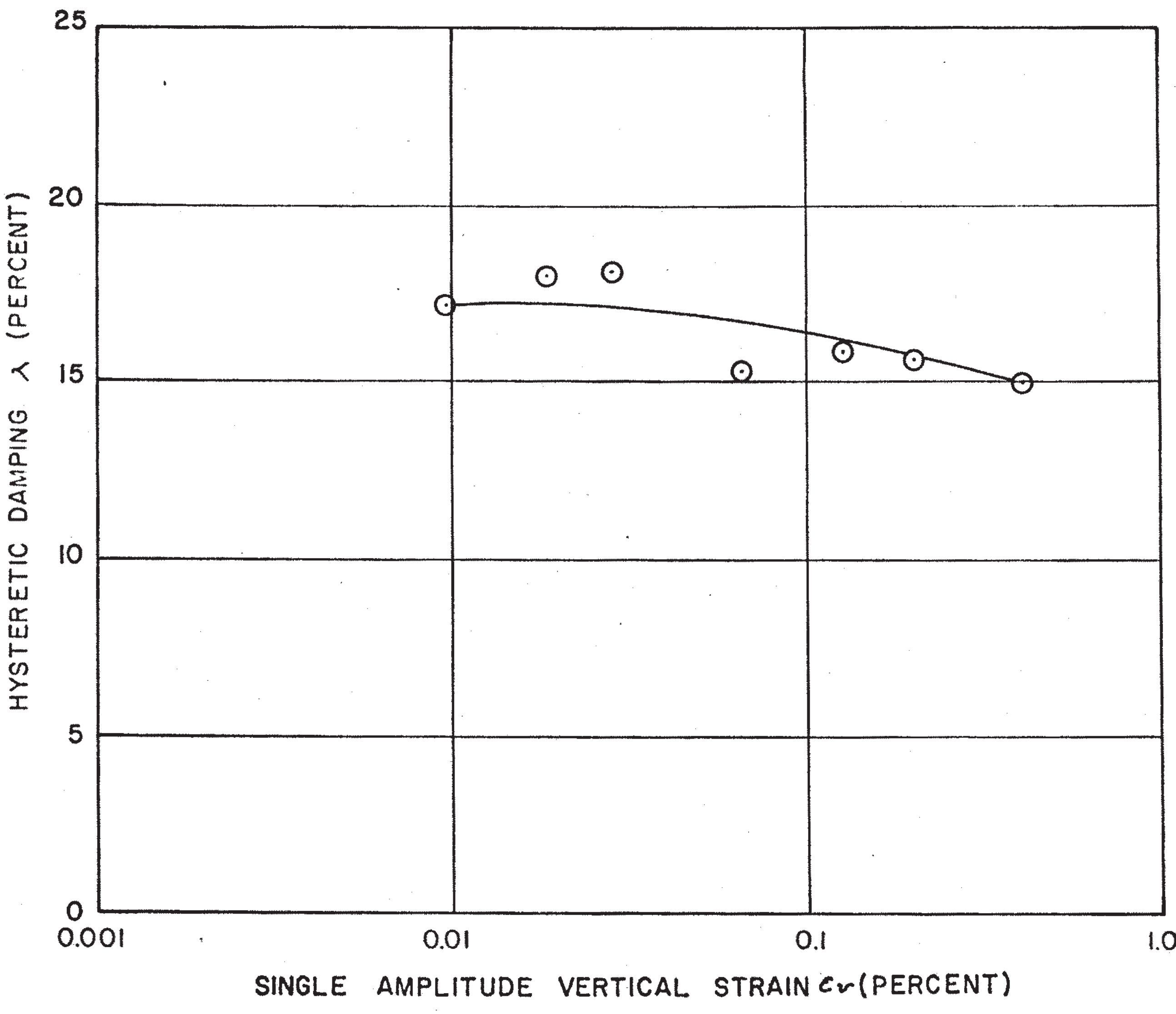
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-313

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-14)

(SHEET 2 of 4)

BORING H-14 @ ELEVATION 635.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND FINE GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.5%
FIELD DRY DENSITY: 140 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



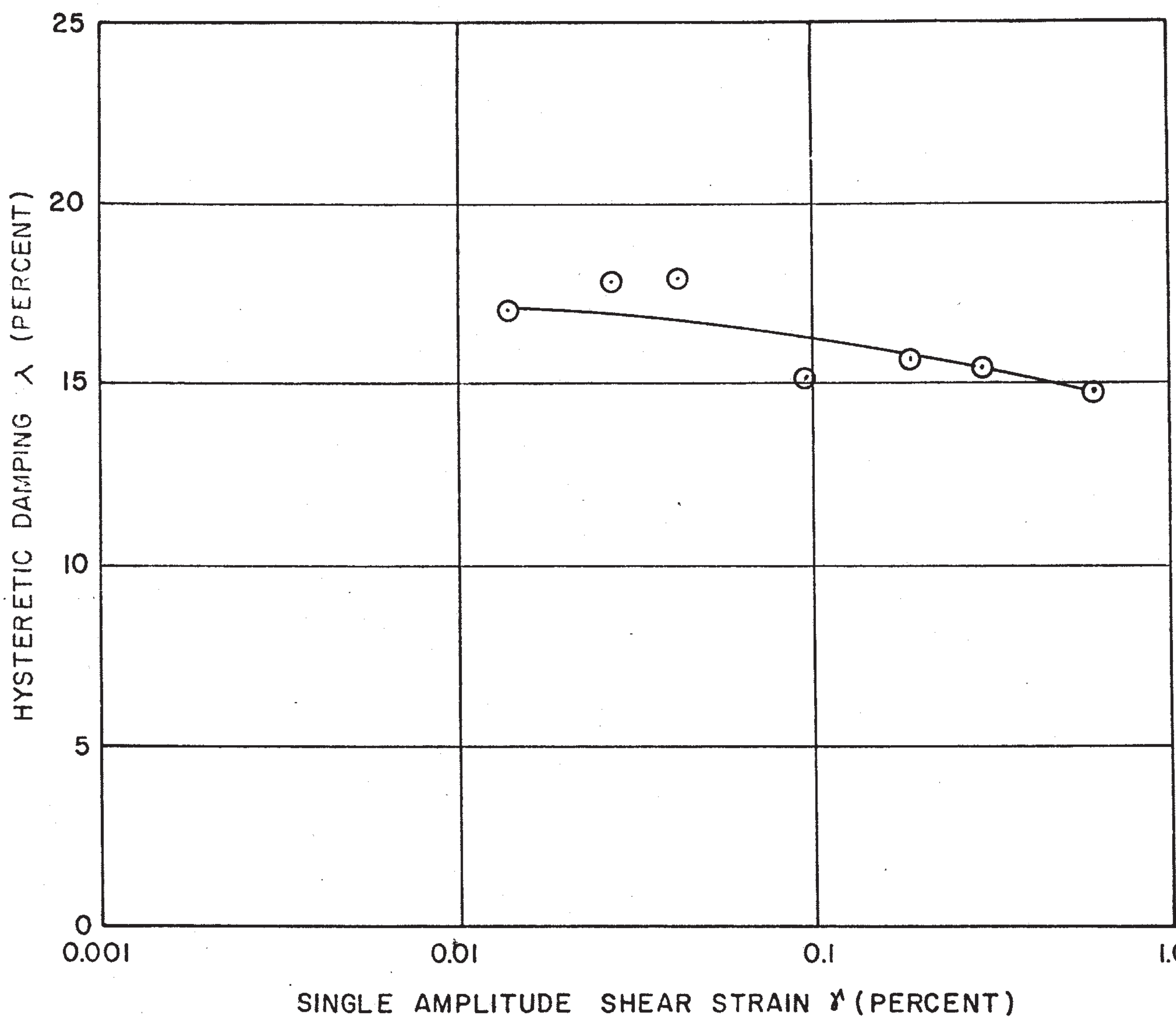
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-313

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-14)

(SHEET 3 of 4)

BORING H-14 @ ELEVATION 635.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND FINE GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.5%
FIELD DRY DENSITY: 140 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



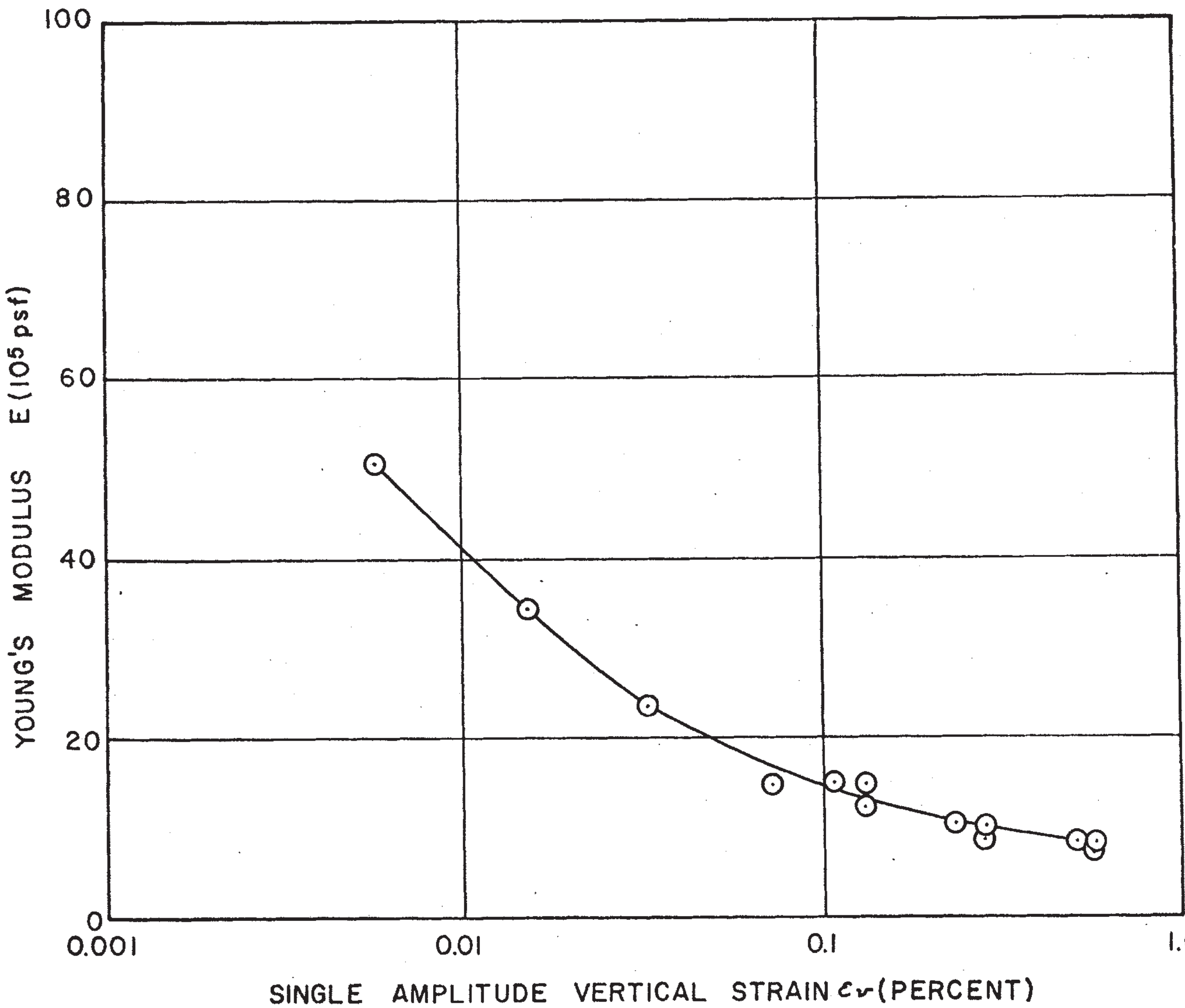
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-313

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-14)

(SHEET 4 of 4)

BORING H-20 @ ELEVATION 706.8 FEET
GRAY FINE SANDY SILT WITH SOME CLAY
AND MEDIUM TO COARSE SAND AND GRAVEL
(WISCONSINAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 8.6%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



CLINTON POWER STATION
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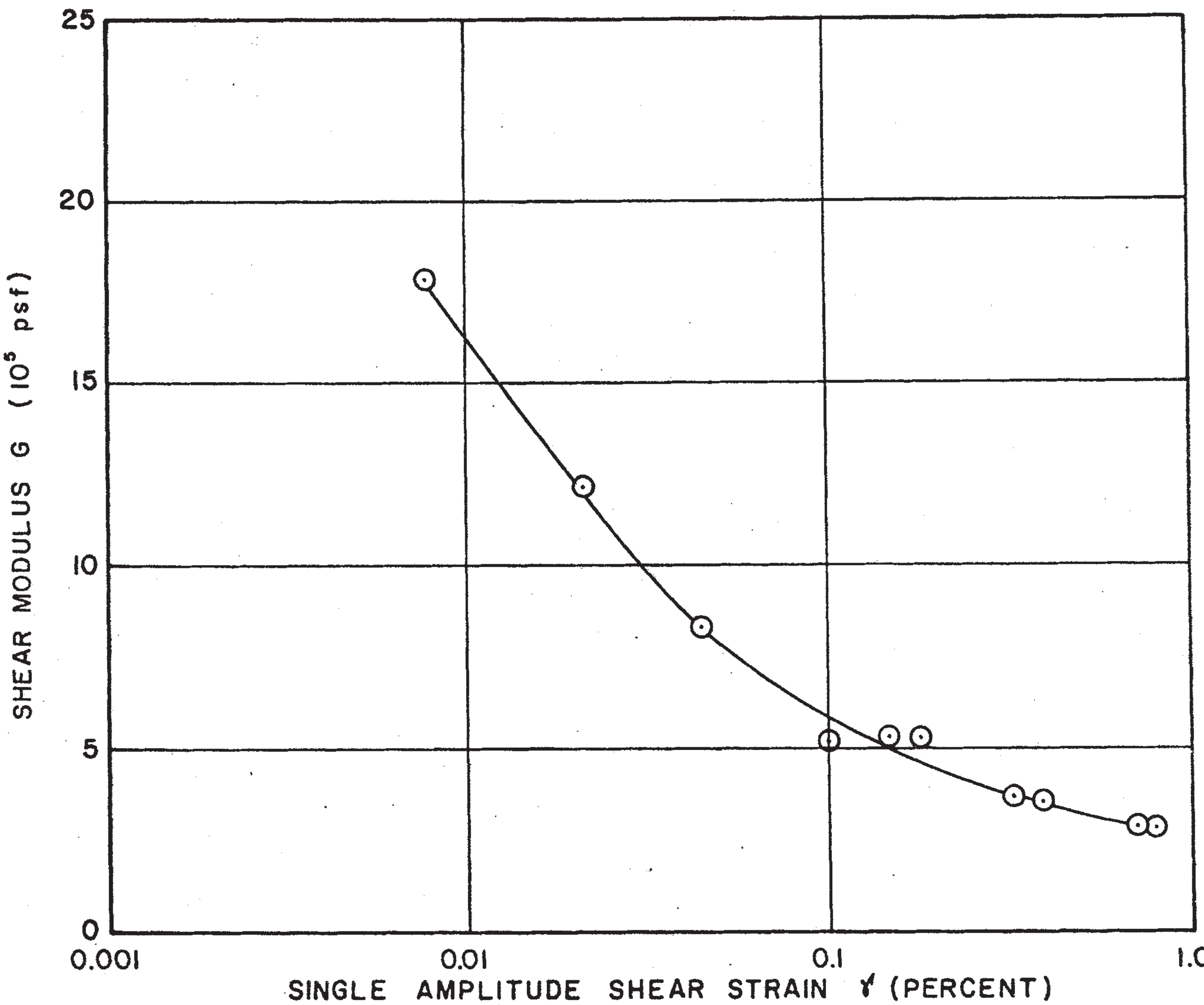
FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 1 of 12)

BORING H-20 @ ELEVATION 706.8 FEET
GRAY FINE SANDY SILT WITH SOME CLAY
AND MEDIUM TO COARSE SAND AND GRAVEL
(WISCONSINAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 8.6%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



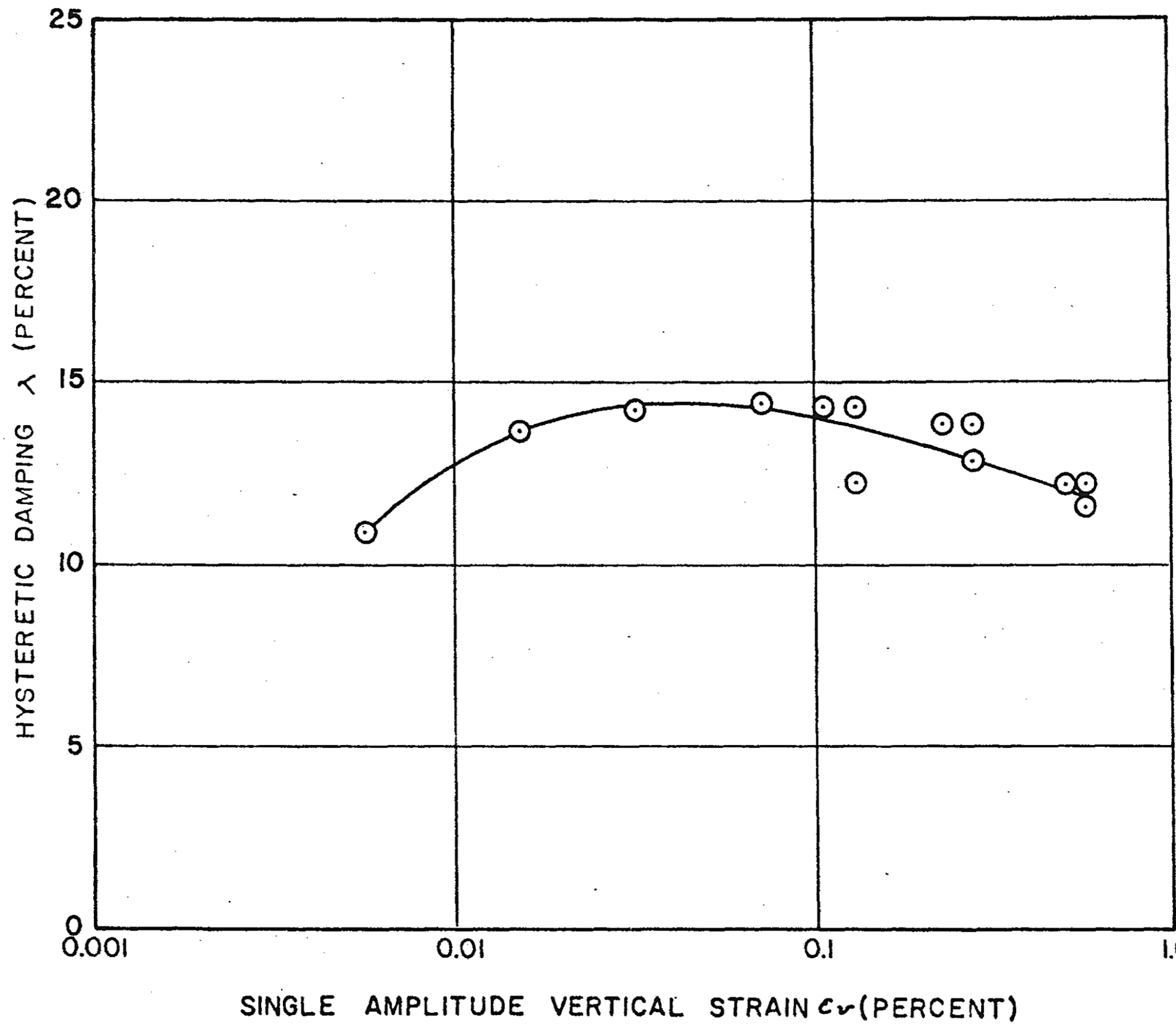
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 2 of 12)

BORING H-20 @ ELEVATION 706.8 FEET
GRAY FINE SANDY SILT WITH SOME CLAY
AND MEDIUM TO COARSE SAND AND GRAVEL
(WISCONSINAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 8.6%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



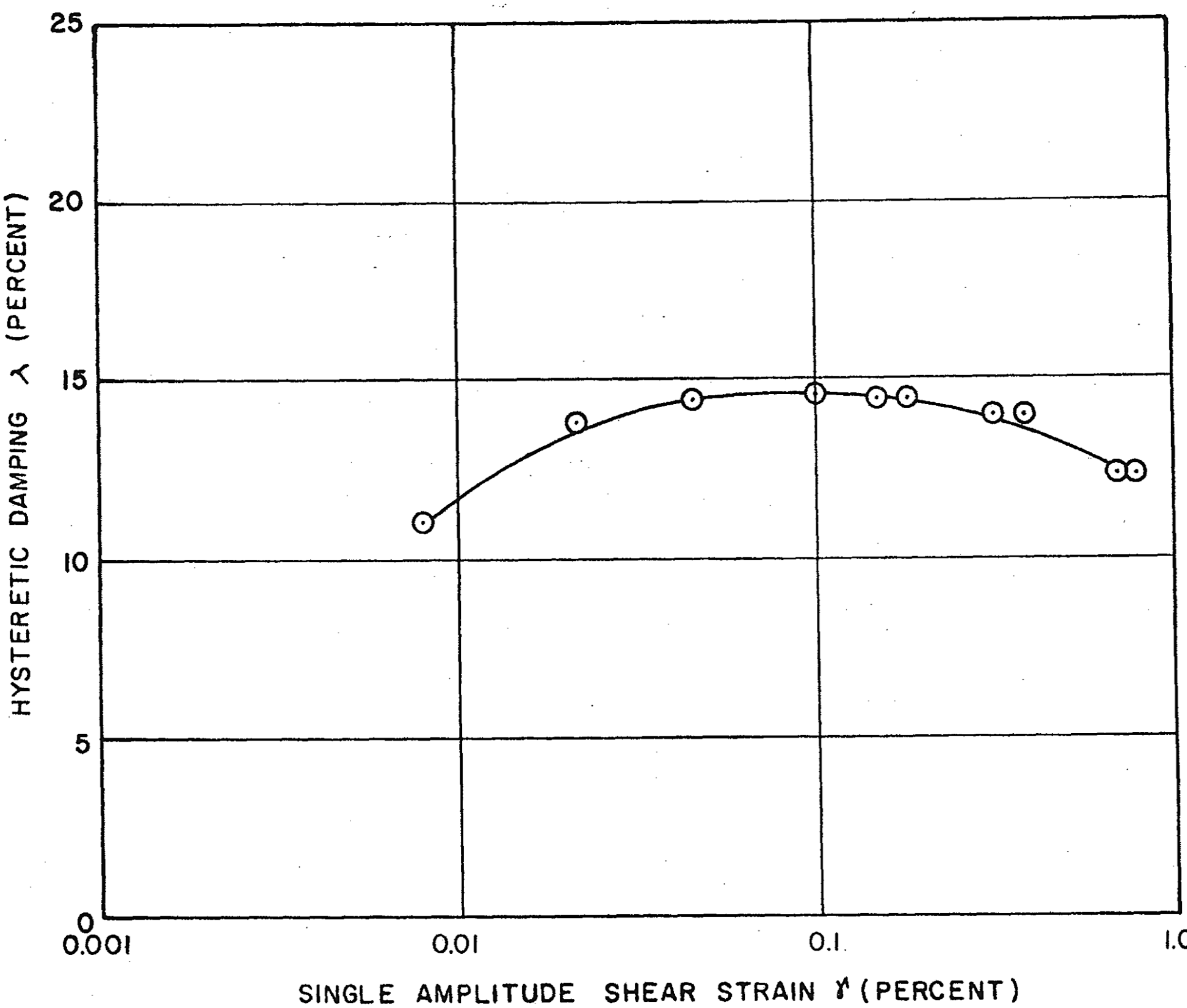
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 3 of 12)

BORING H-20 @ ELEVATION 706.8 FEET
GRAY FINE SANDY SILT WITH SOME CLAY
AND MEDIUM TO COARSE SAND AND GRAVEL
(WISCONSINAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 8.6%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



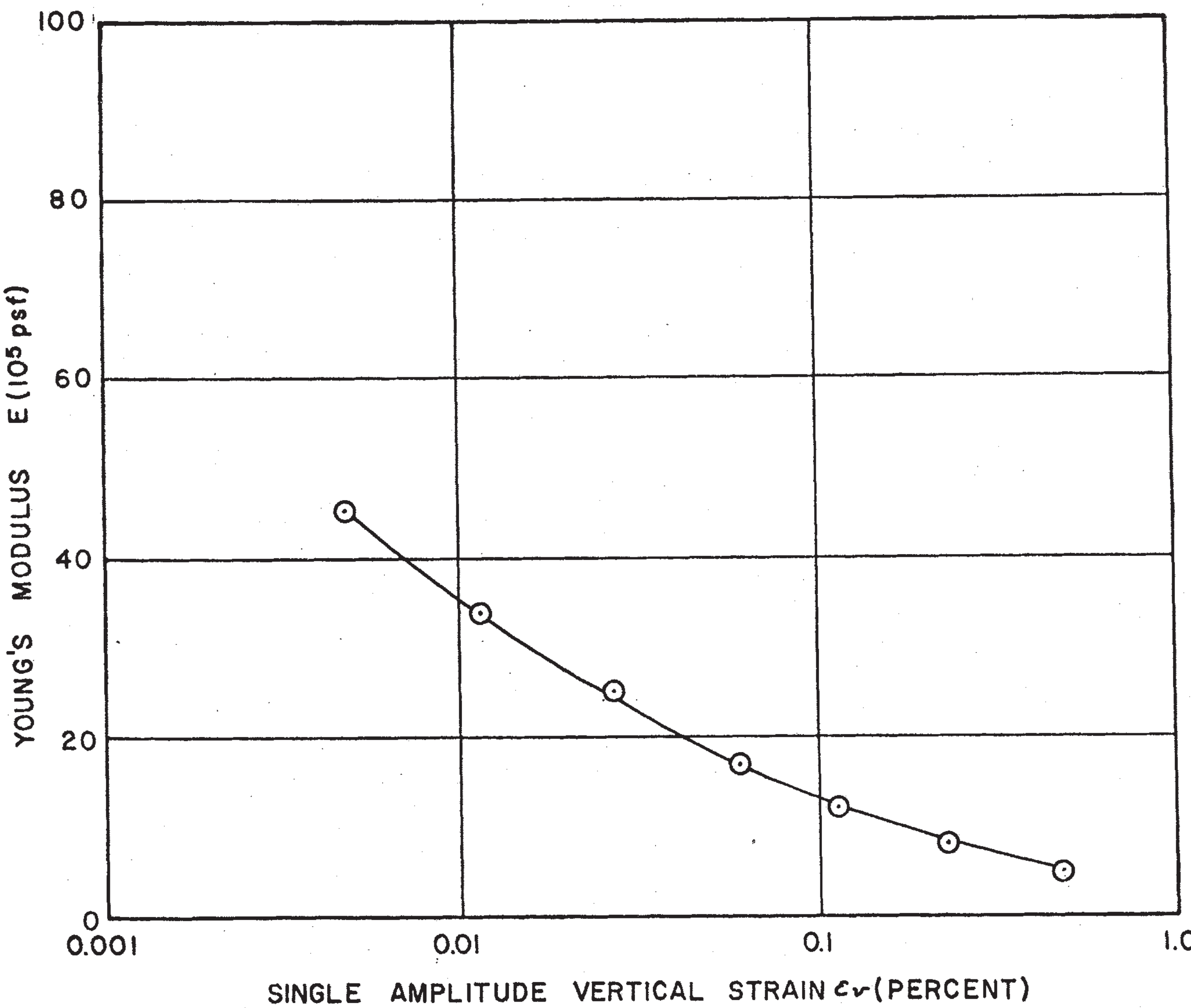
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 4 of 12)

BORING H-20 @ ELEVATION 686.8 FEET
DARK GRAY CLAYEY SILT WITH TRACES
OF FINE SAND
(INTERGLACIAL SOIL)
FIELD MOISTURE CONTENT:
FIELD DRY DENSITY:
TEST DATA OBTAINED FROM PITCHER SAMPLE



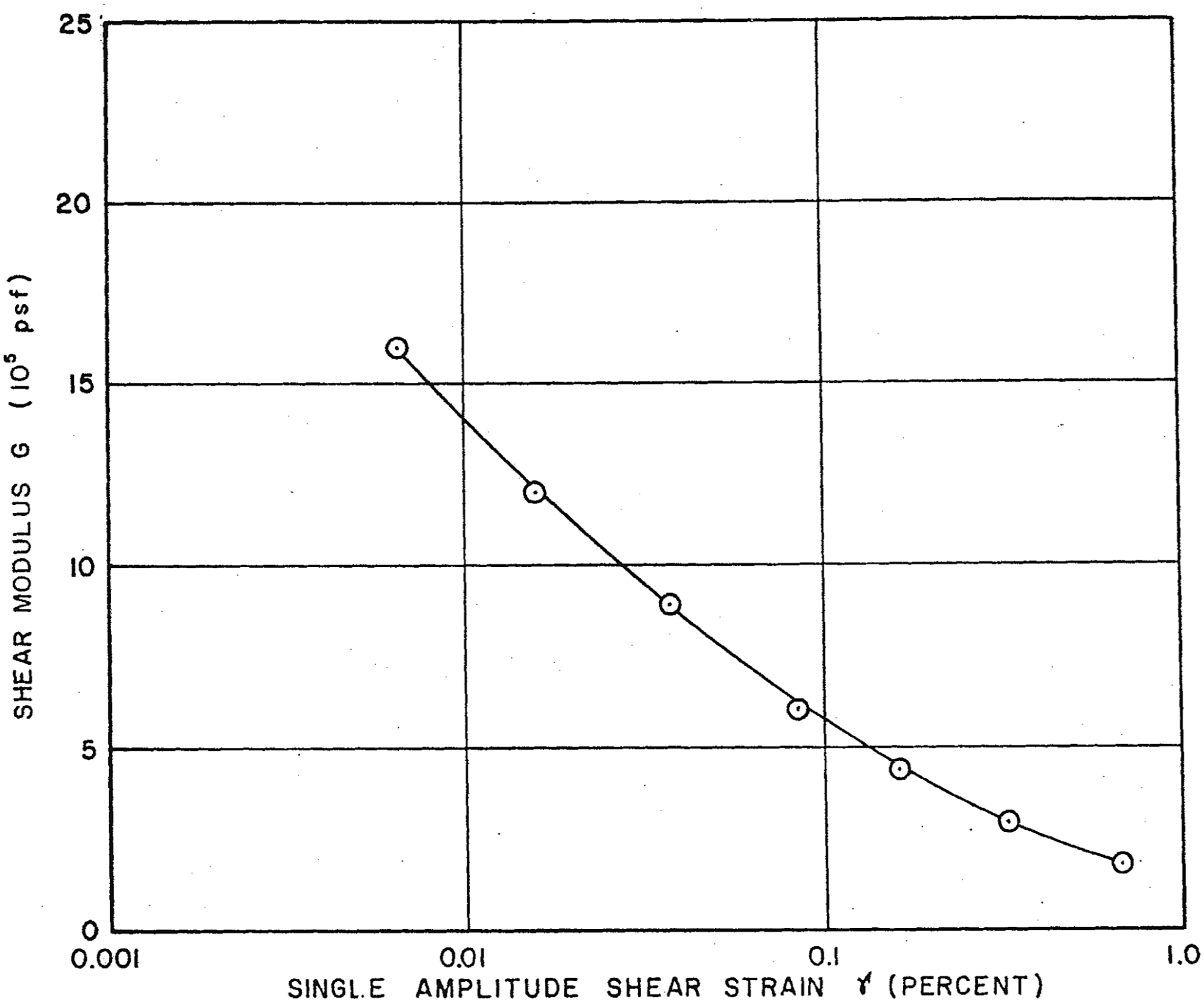
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 5 of 12)

BORING H-20 @ ELEVATION 686.8 FEET
DARK GRAY CLAYEY SILT WITH TRACES
OF FINE SAND
(INTERGLACIAL SOIL)
FIELD MOISTURE CONTENT:
FIELD DRY DENSITY:
TEST DATA OBTAINED FROM PITCHER SAMPLE



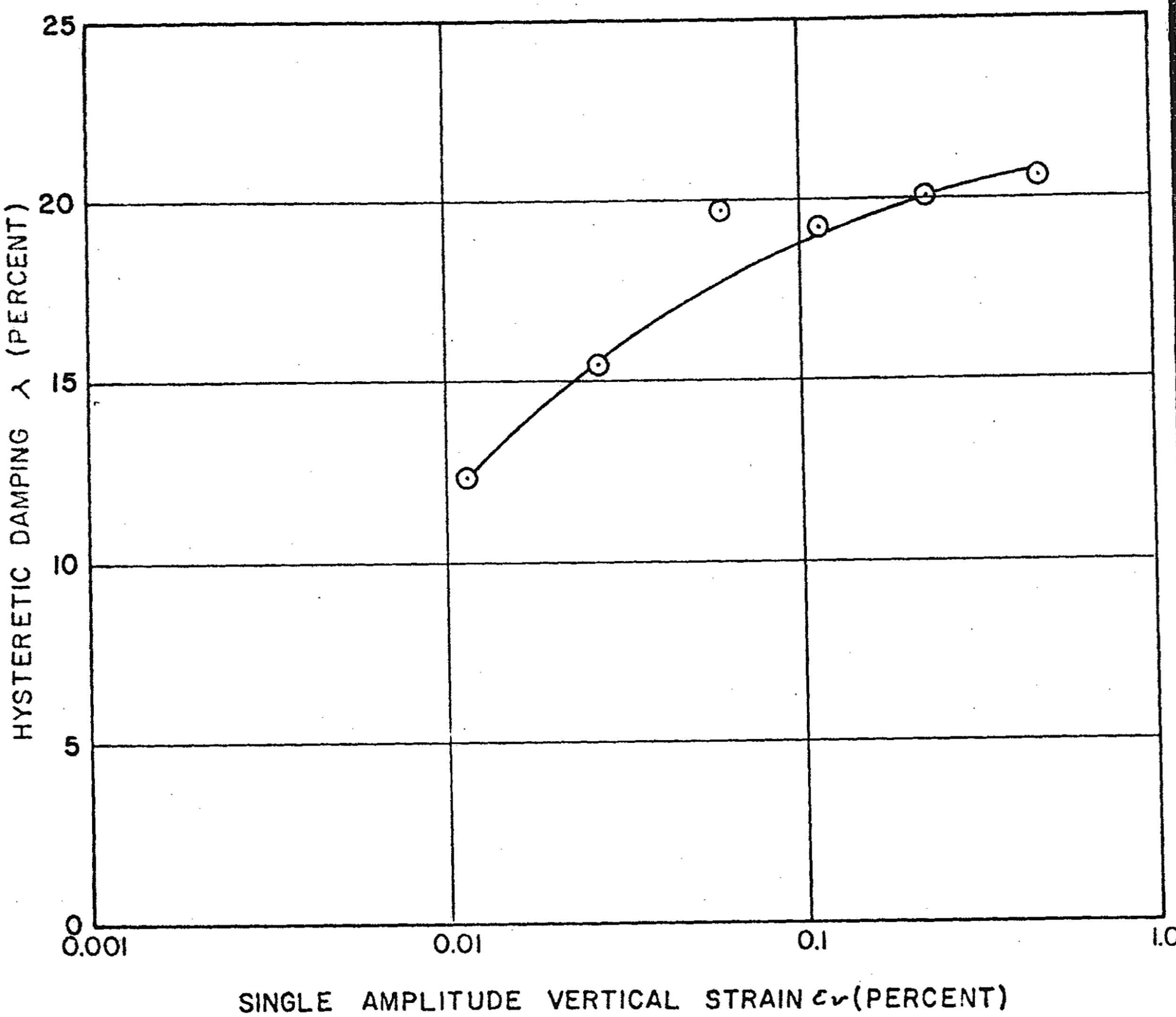
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 6 of 12)

BORING H-20 @ ELEVATION 686.8 FEET
DARK GRAY CLAYEY SILT WITH TRACES
OF FINE SAND
(INTERGLACIAL SOIL)
FIELD MOISTURE CONTENT:
FIELD DRY DENSITY:
TEST DATA OBTAINED FROM PITCHER SAMPLE

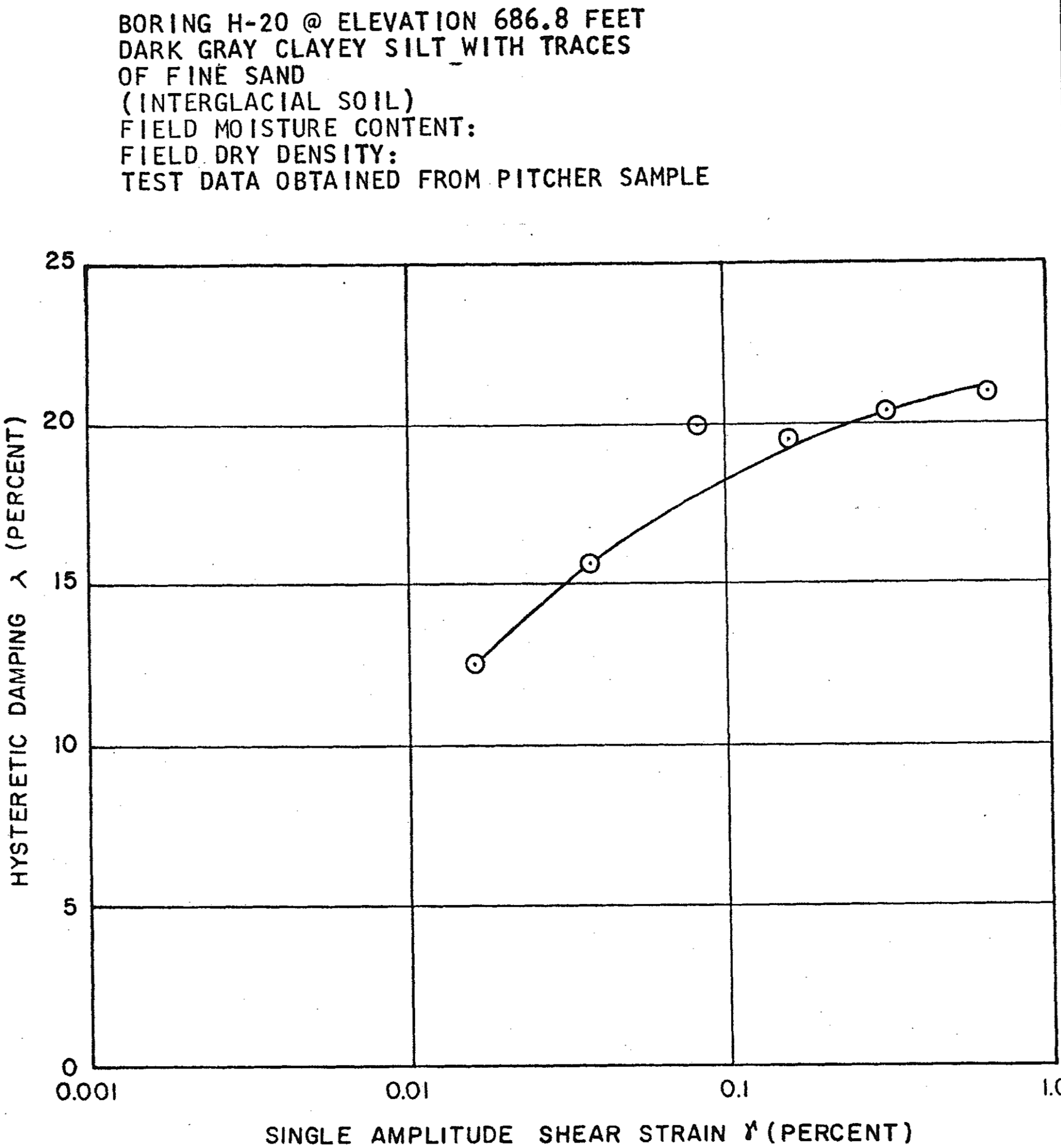


CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 7 of 12)

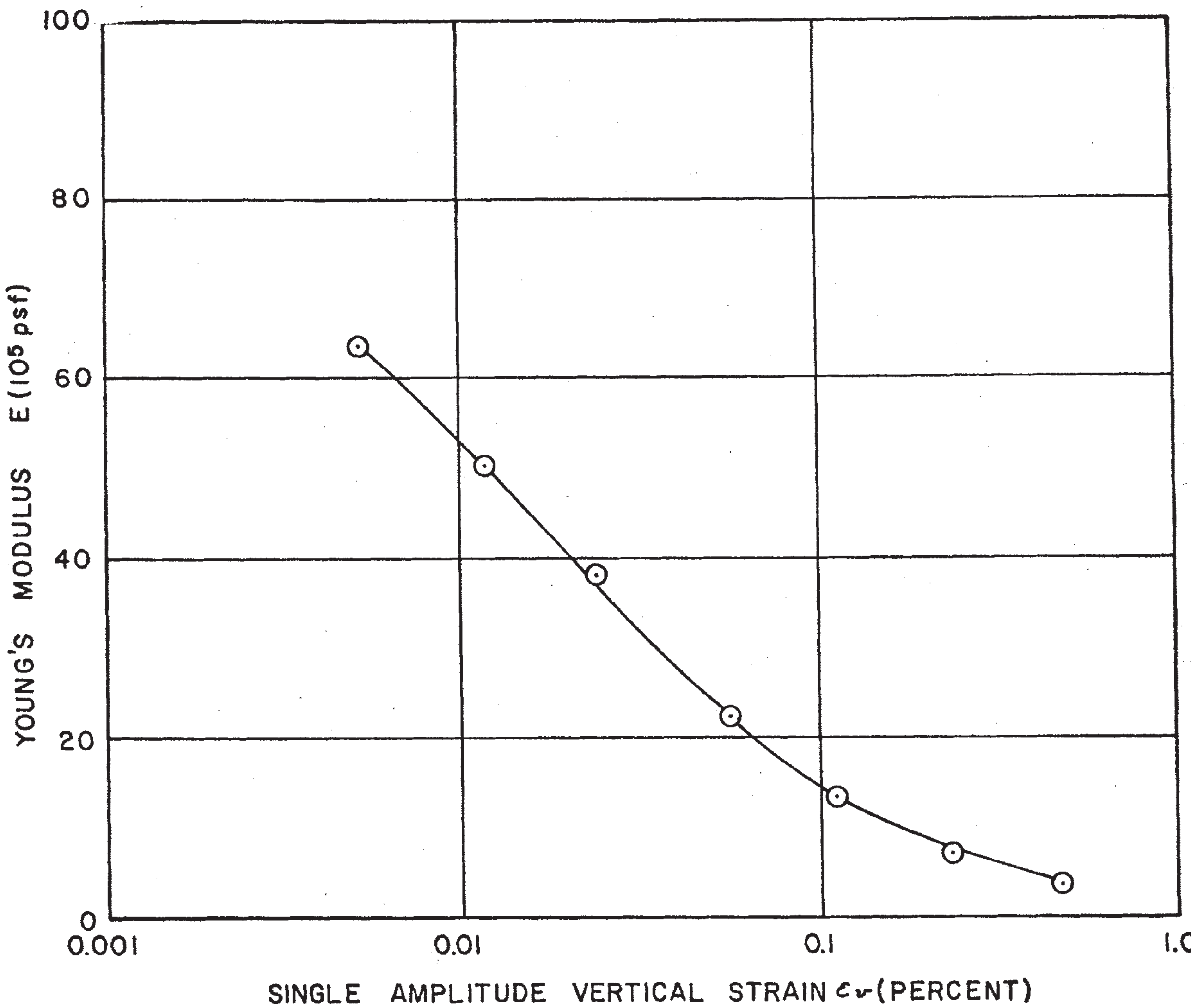


CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)
(SHEET 8 of 12)

BORING H-20 @ ELEVATION 672.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 10.5%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



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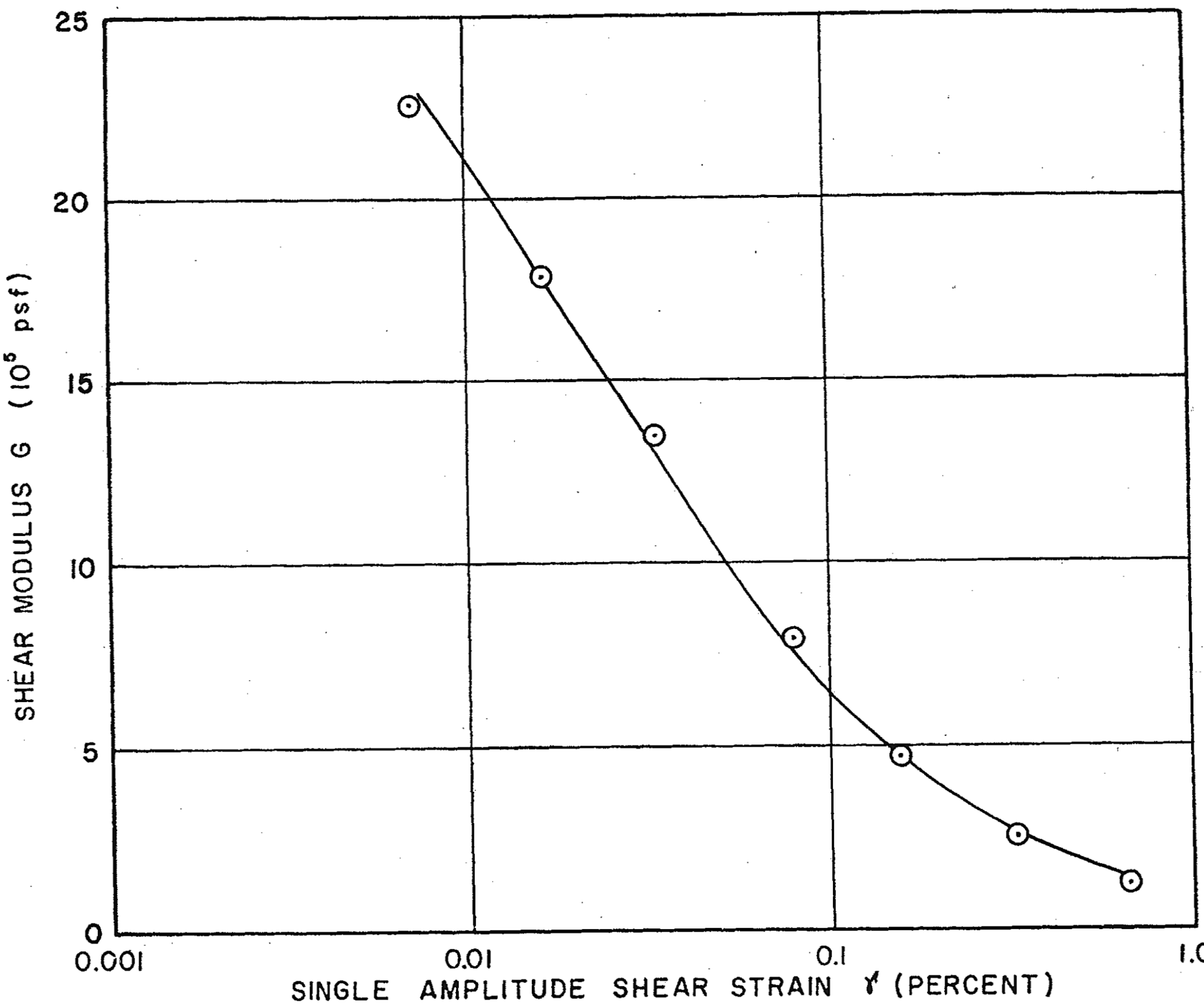
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 9 of 12)

BORING H-20 @ ELEVATION 672.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 10.5%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



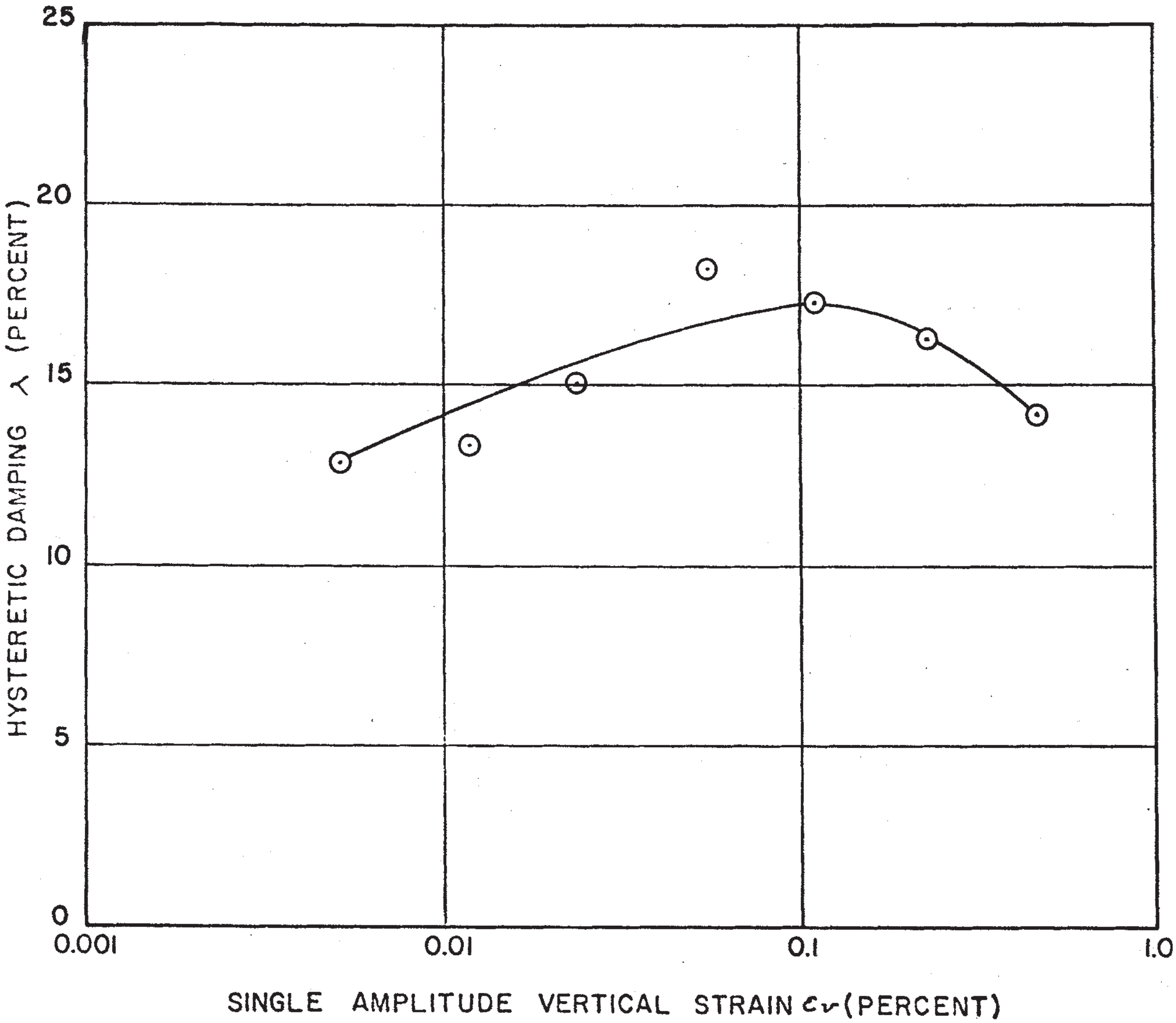
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 10 of 12)

BORING H-20 @ ELEVATION 672.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 10.5%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



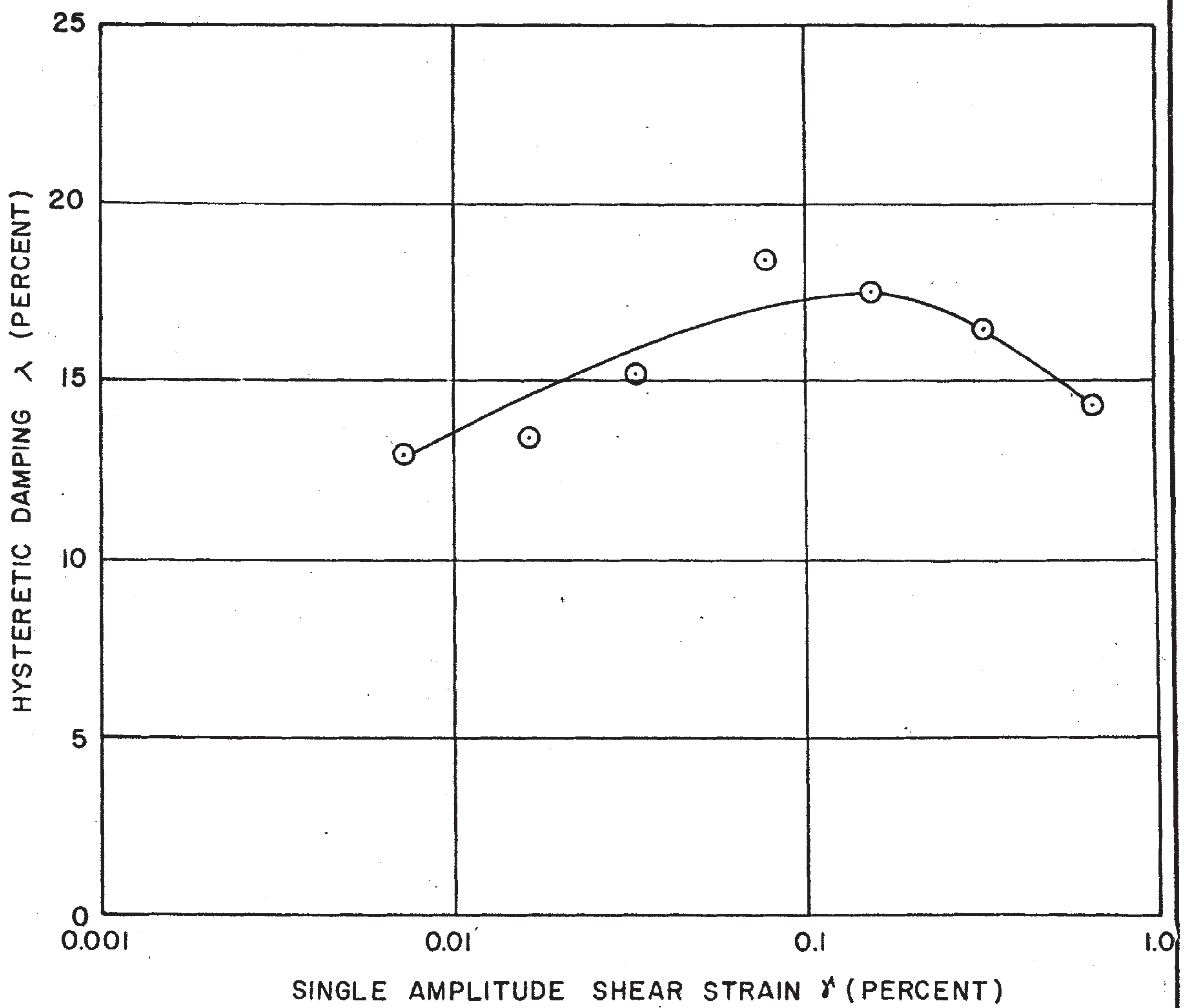
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 11 of 12)

BORING H-20 @ ELEVATION 672.3 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 10.5%
FIELD DRY DENSITY: 136 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



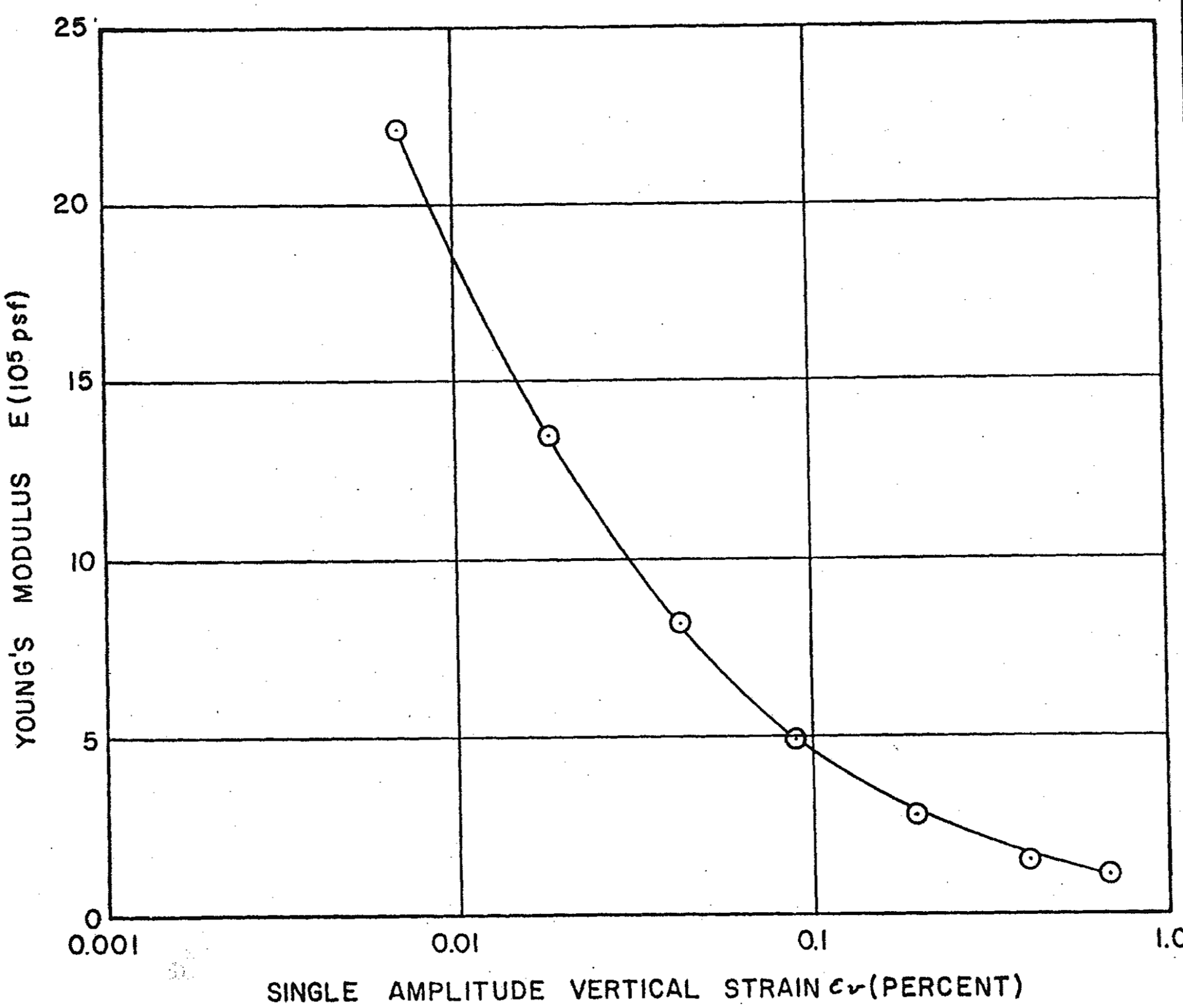
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-314

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-20)

(SHEET 12 of 12)

BORING H-23 @ ELEVATION 677.8 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND FINE GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.1%
FIELD DRY DENSITY: 138 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



CLINTON POWER STATION
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FIGURE 2.5-315

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-23)

(SHEET 1 of 4)

BORING H-23 @ ELEVATION 677.8 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND FINE GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.1%
FIELD DRY DENSITY: 138 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE

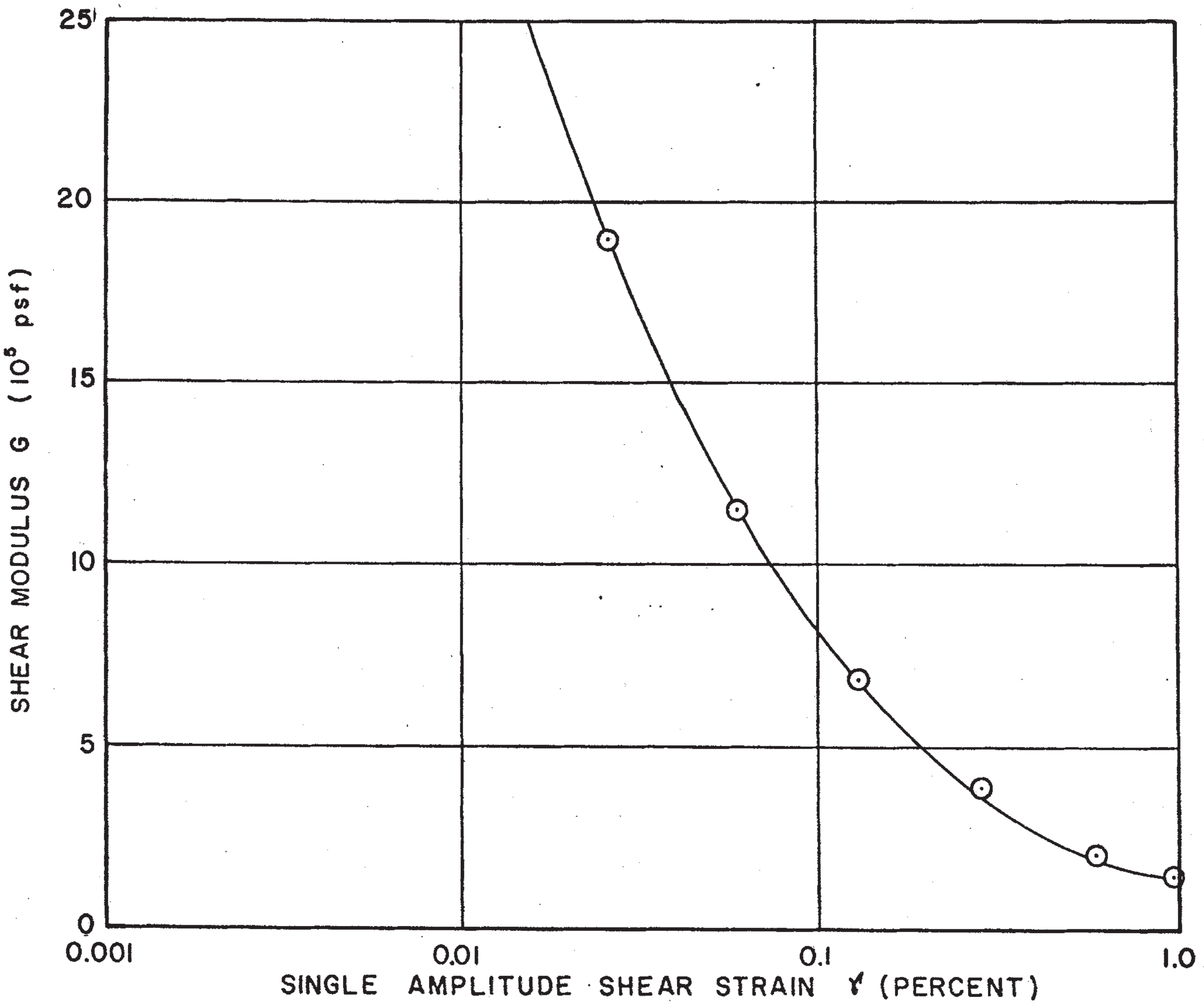

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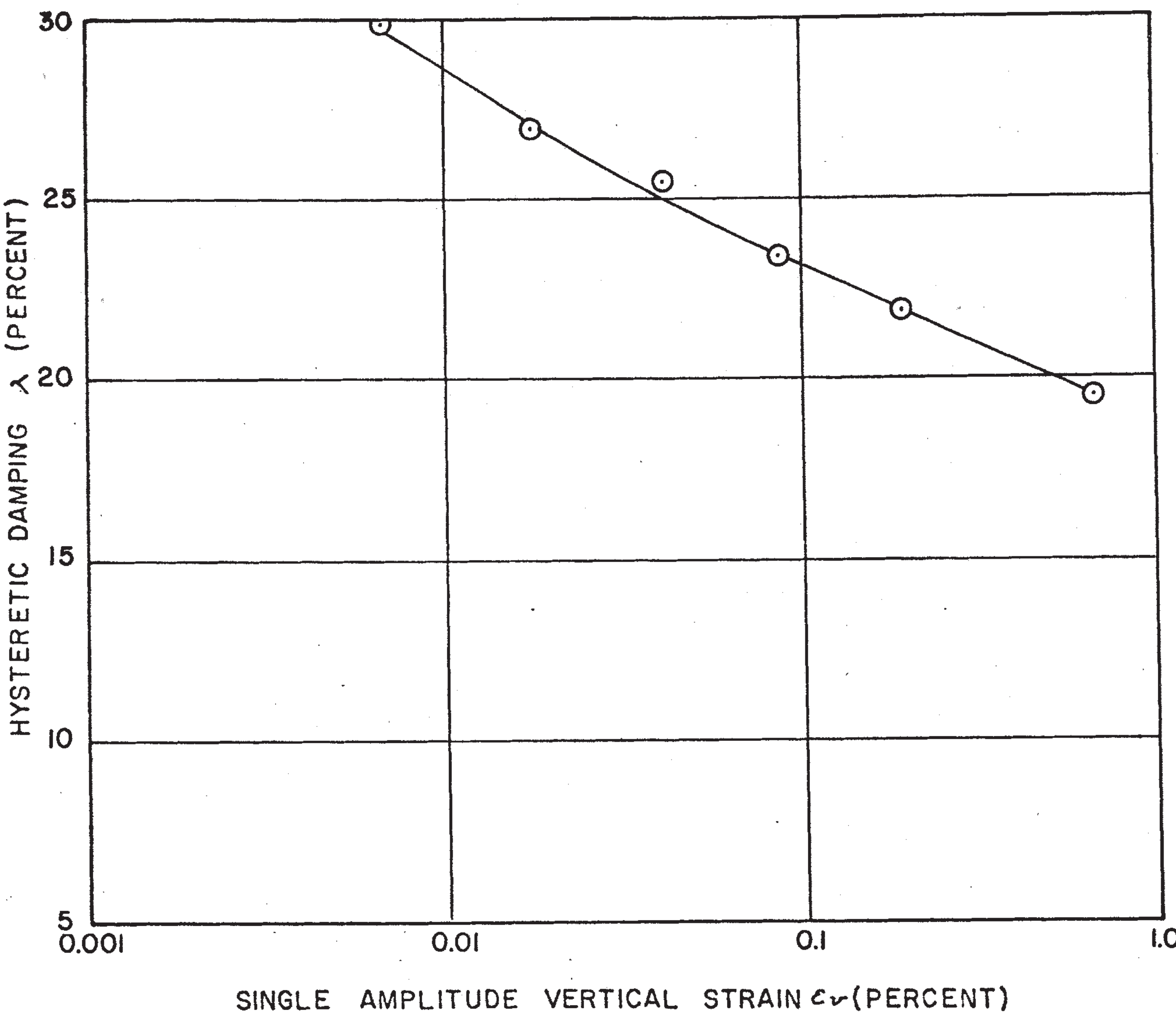
FIGURE 2.5-315

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-23)

(SHEET 2 of 4)

BORING H-23 @ ELEVATION 677.8 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND FINE GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.1%
FIELD DRY DENSITY: 138 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



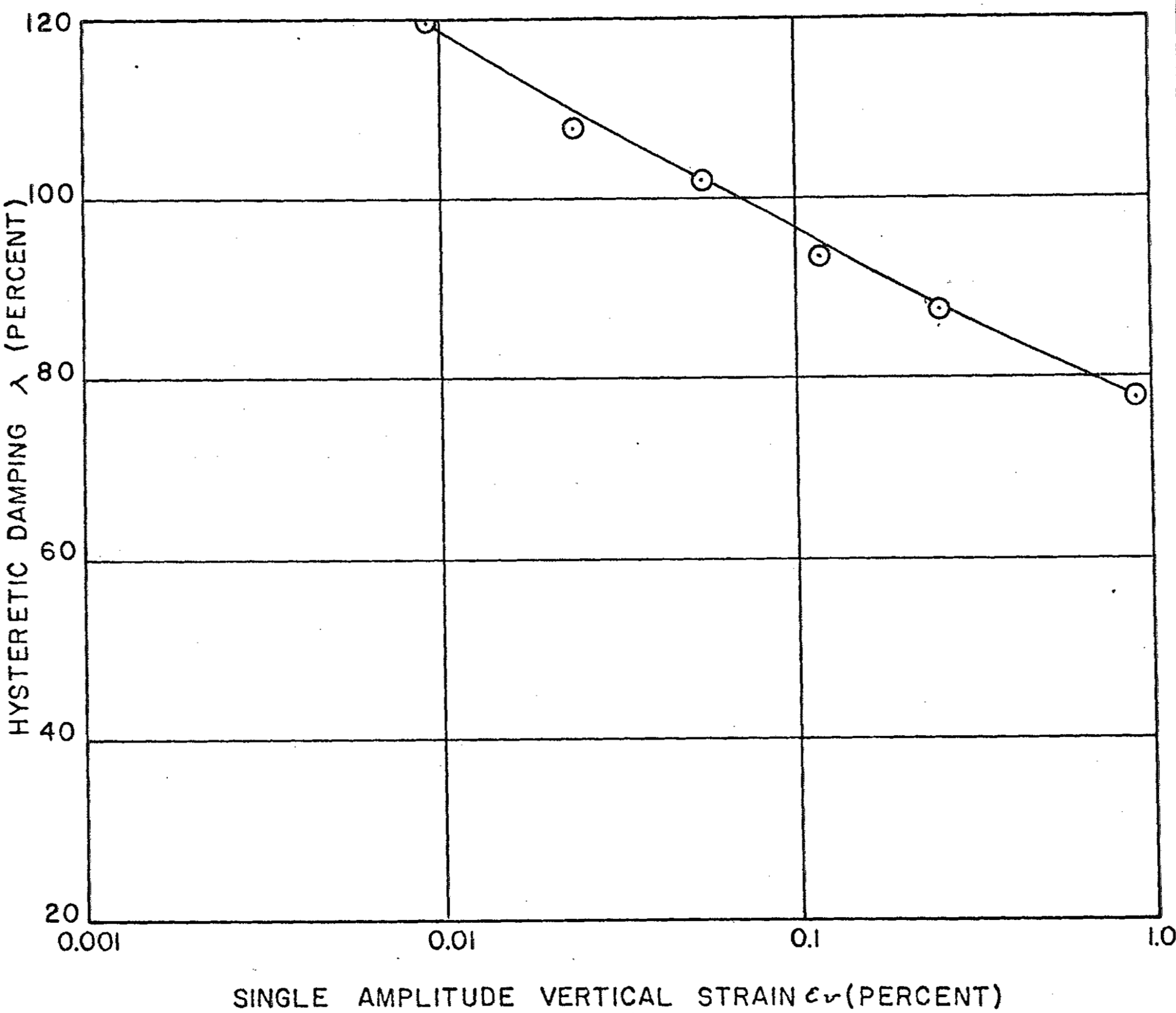
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-315

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-23)

(SHEET 3 of 4)

BORING H-23 @ ELEVATION 677.8 FEET
GRAY FINE TO COARSE SANDY SILT WITH
SOME CLAY AND FINE GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.1%
FIELD DRY DENSITY: 138 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-315

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-23)

(SHEET 4 of 4)

BORING H-30 @ ELEVATION 638.5 FEET
DARK GRAY FINE TO COARSE SANDY SILT
WITH SOME GRAVEL AND TRACES OF CLAY
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 6.8%
FIELD DRY DENSITY: 145 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE

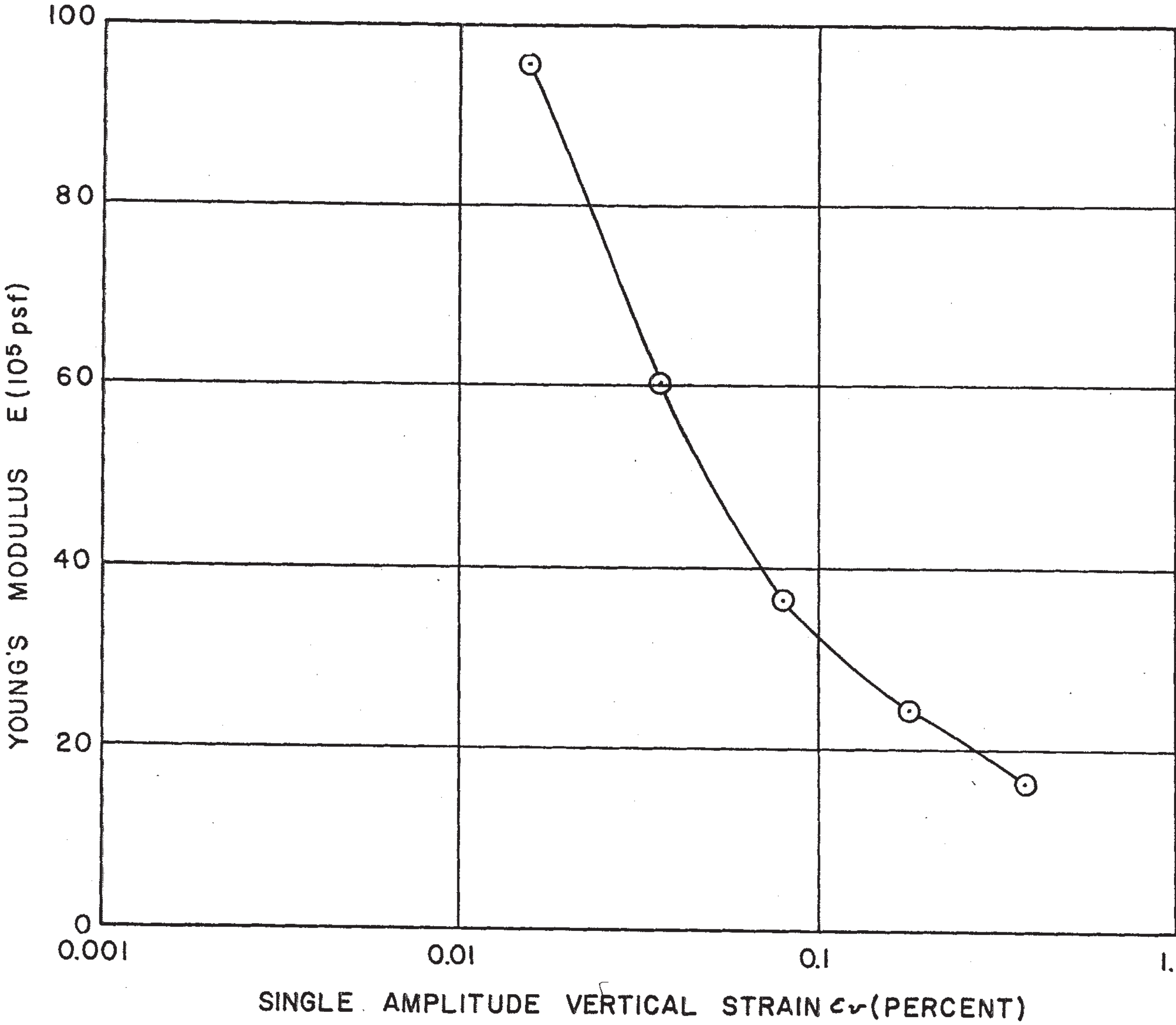


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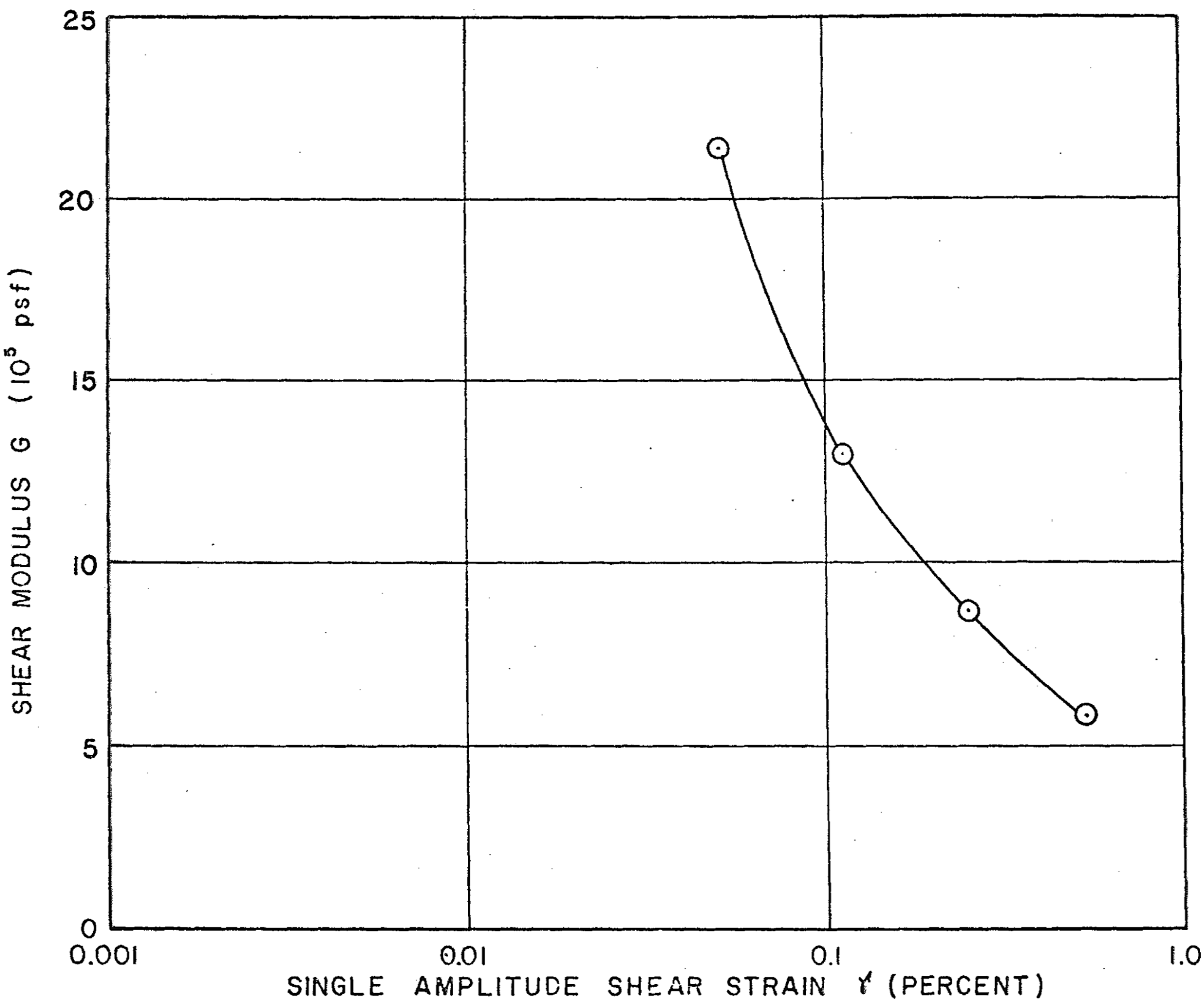
FIGURE 2.5-316

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-30)

(SHEET 1 of 4)

BORING H-30 @ ELEVATION 638.5 FEET
DARK GRAY FINE TO COARSE SANDY SILT
WITH SOME GRAVEL AND TRACES OF CLAY
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 6.8%
FIELD DRY DENSITY: 145 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



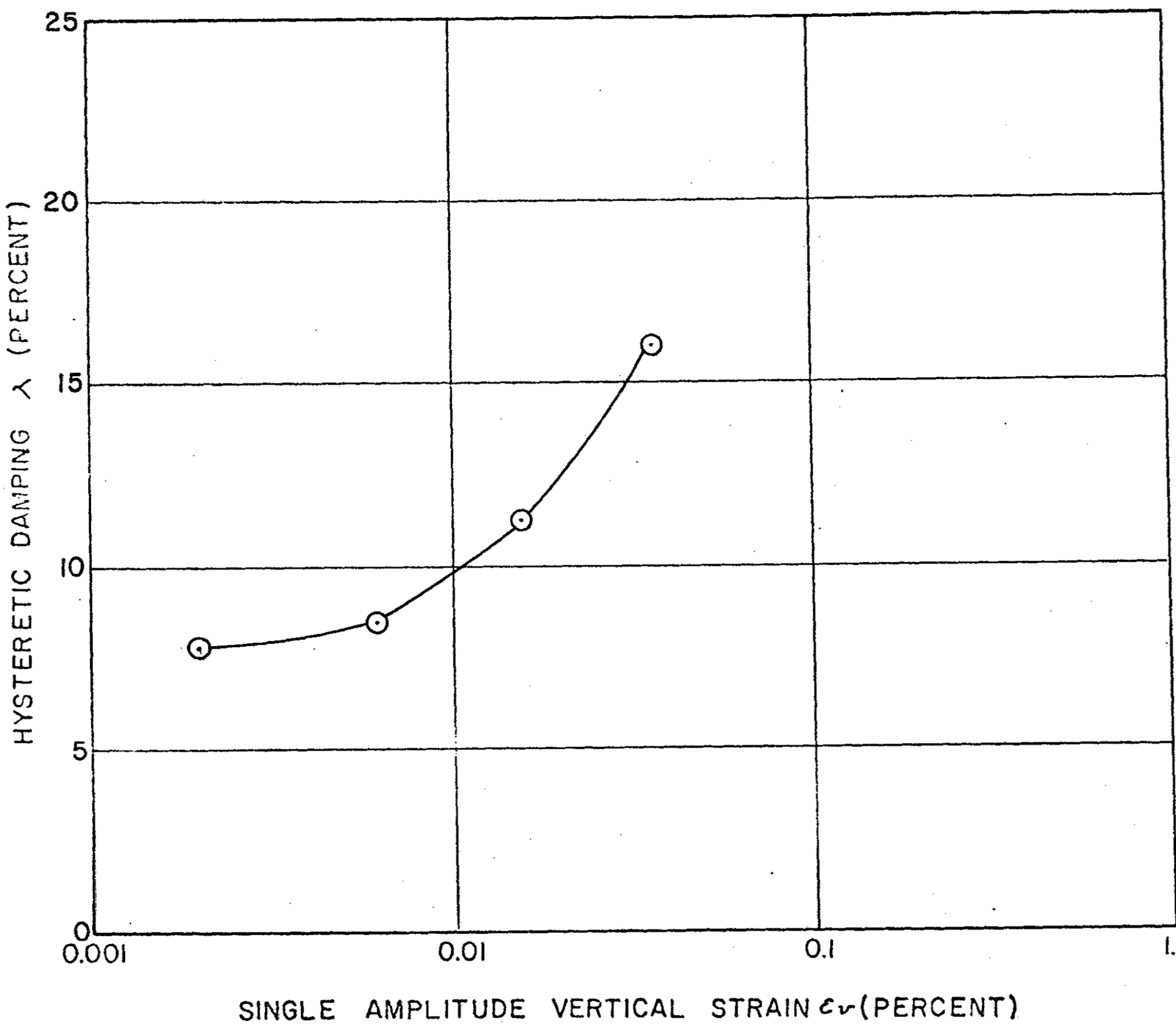
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-316

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-30)

(SHEET 2 of 4)

BORING H-30 @ ELEVATION 638.5 FEET
DARK GRAY FINE TO COARSE SANDY SILT
WITH SOME GRAVEL AND TRACES OF CLAY
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 6.8%
FIELD DRY DENSITY: 145 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



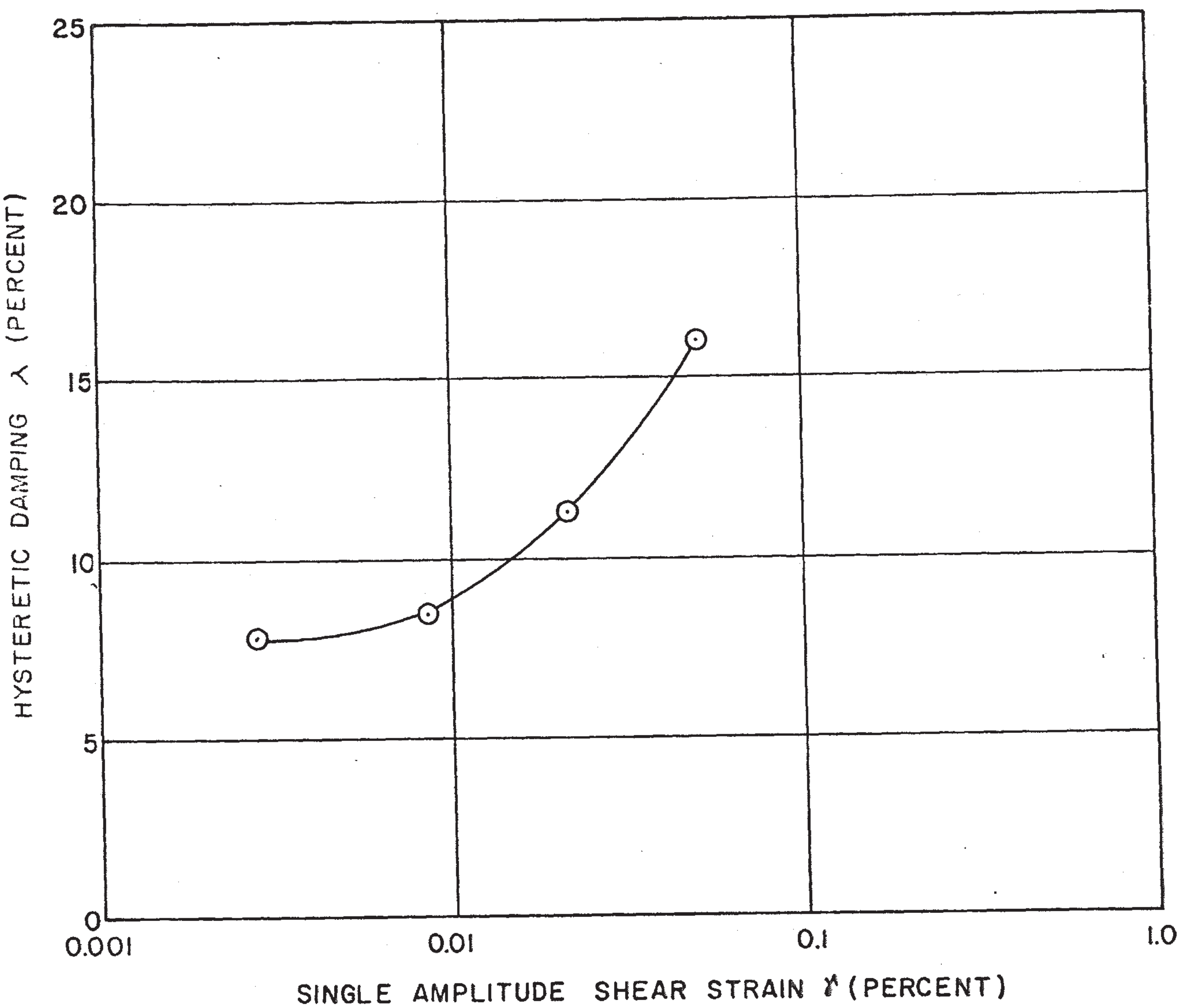
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-316

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-30)

(SHEET 3 of 4)

BORING H-30 @ ELEVATION 638.5 FEET
DARK GRAY FINE TO COARSE SANDY SILT
WITH SOME GRAVEL AND TRACES OF CLAY
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 6.8%
FIELD DRY DENSITY: 145 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



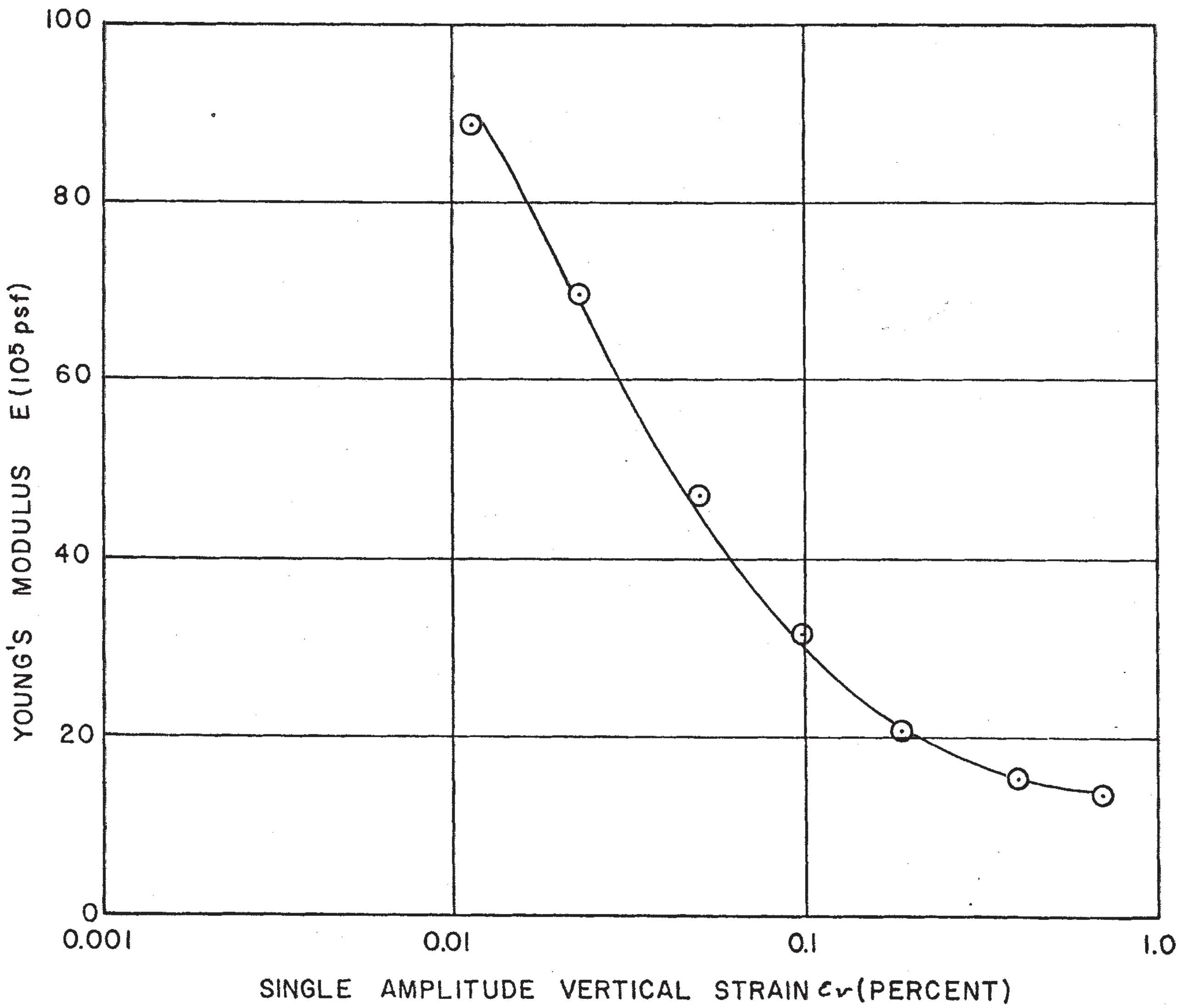
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-316

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-30)

(SHEET 4 of 4)

BORING H-36 @ ELEVATION 622.7 FEET
GRAY CLAYEY SILT WITH SOME FINE TO
COARSE SAND AND GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.4%
FIELD DRY DENSITY: 137 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



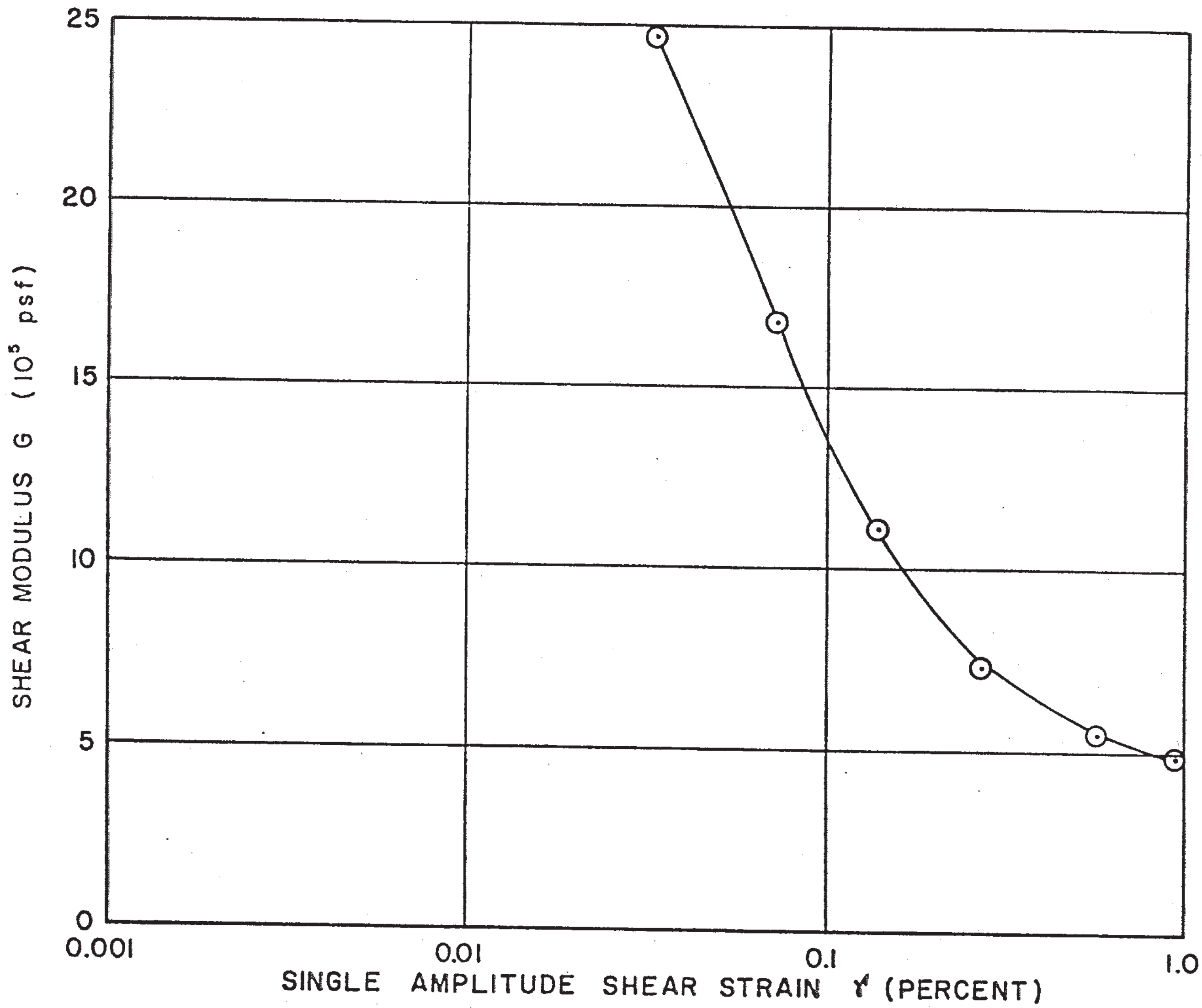
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-317

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-36)

(SHEET 1 of 4)

BORING H-36 @ ELEVATION 622.7 FEET
GRAY CLAYEY SILT WITH SOME FINE TO
COARSE SAND AND GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.4%
FIELD DRY DENSITY: 137 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



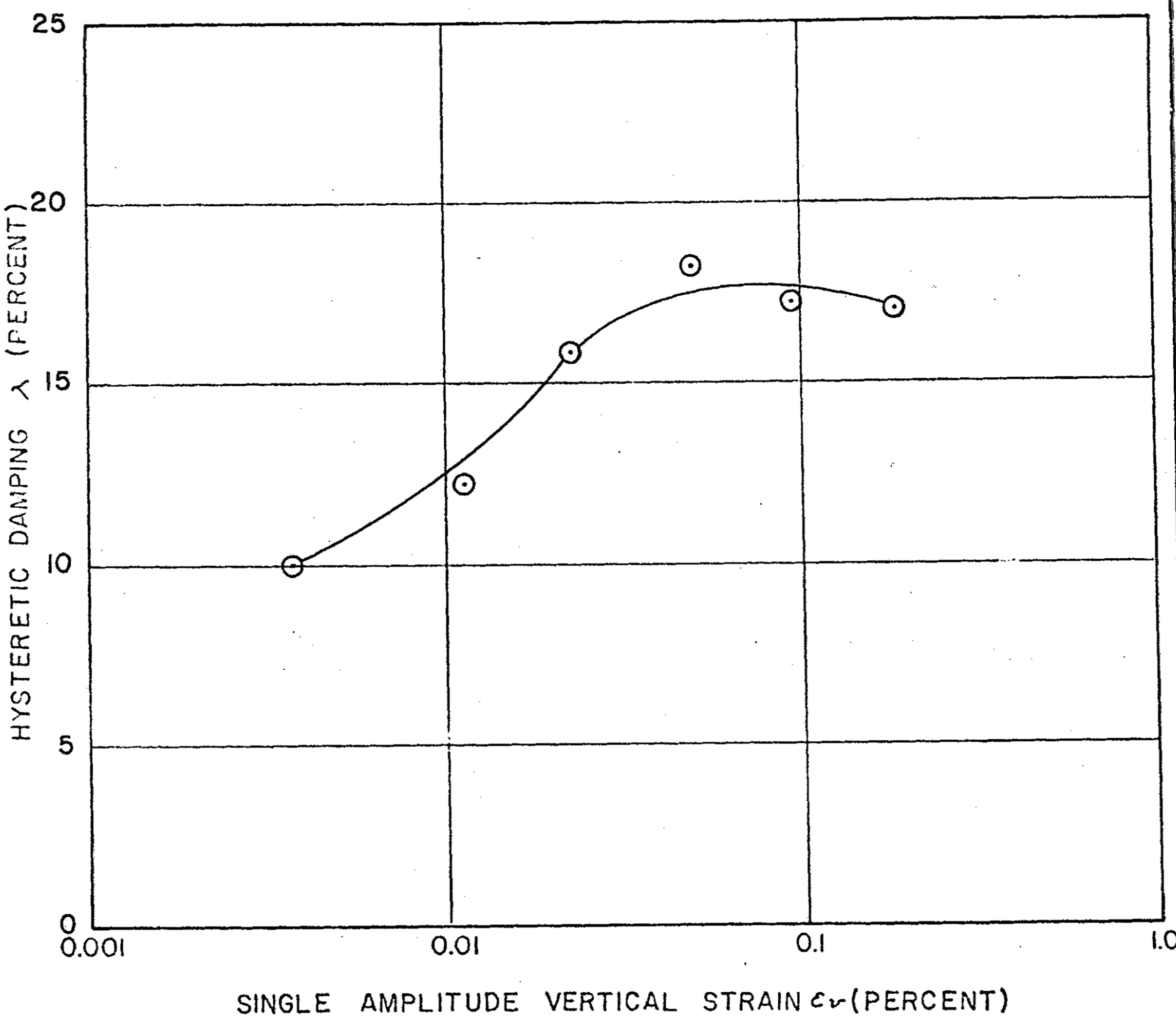
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-317

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-36)

(SHEET 2 of 4)

BORING H-36 @ ELEVATION 622.7 FEET
GRAY CLAYEY SILT WITH SOME FINE TO
COARSE SAND AND GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.4%
FIELD DRY DENSITY: 137 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE



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UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-317

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-36)
(SHEET 3 of 4)

BORING H-36 @ ELEVATION 622.7 FEET
GRAY CLAYEY SILT WITH SOME FINE TO
COARSE SAND AND GRAVEL
(ILLINOIAN GLACIAL TILL)
FIELD MOISTURE CONTENT: 9.4%
FIELD DRY DENSITY: 137 LBS./CU.FT.
TEST DATA OBTAINED FROM PITCHER SAMPLE

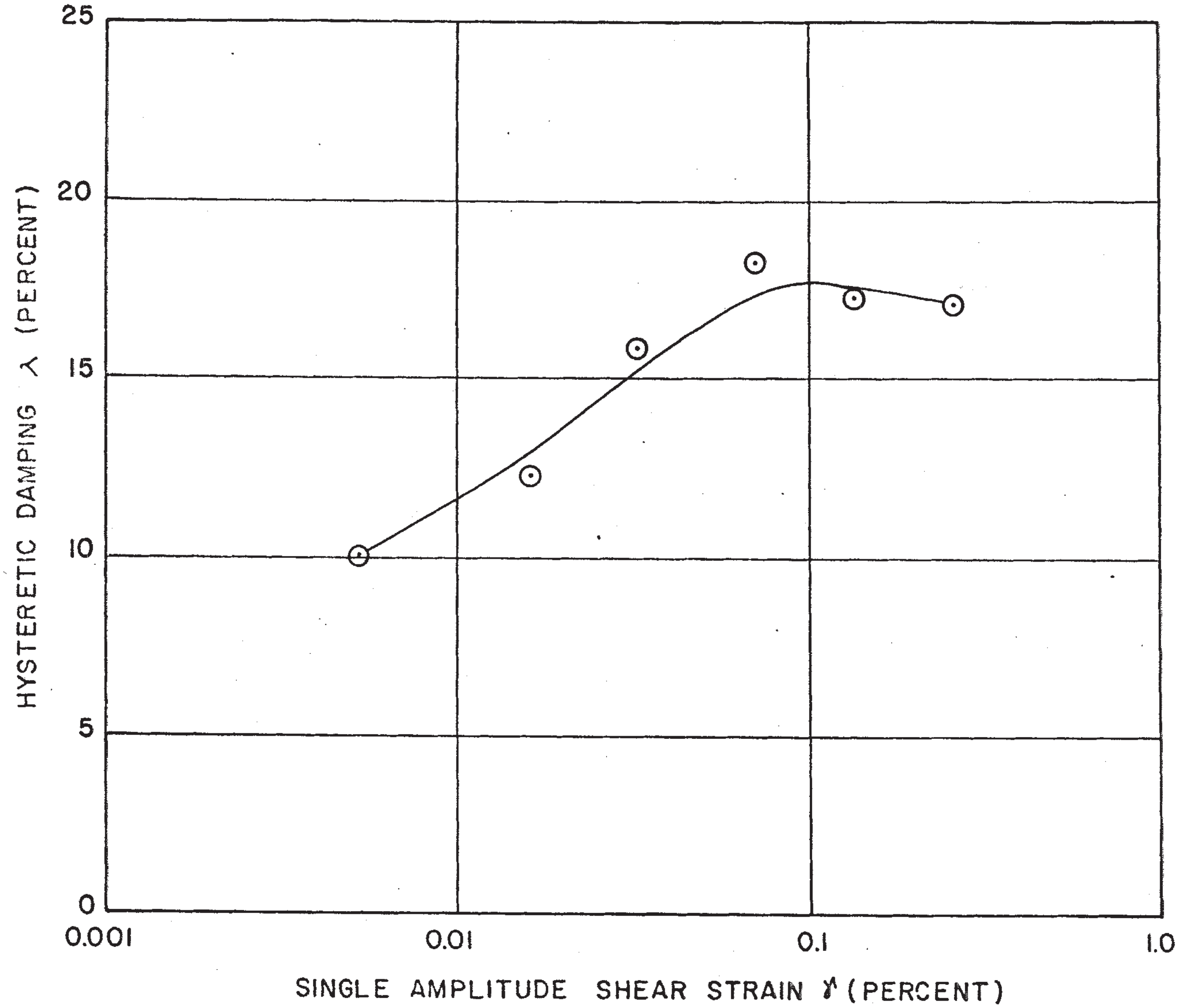

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FIGURE 2.5-317

DYNAMIC TRIAXIAL COMPRESSION TESTS
(BORING H-36)
(SHEET 4 of 4)

METHOD OF PERFORMING RESONANT COLUMN TESTS

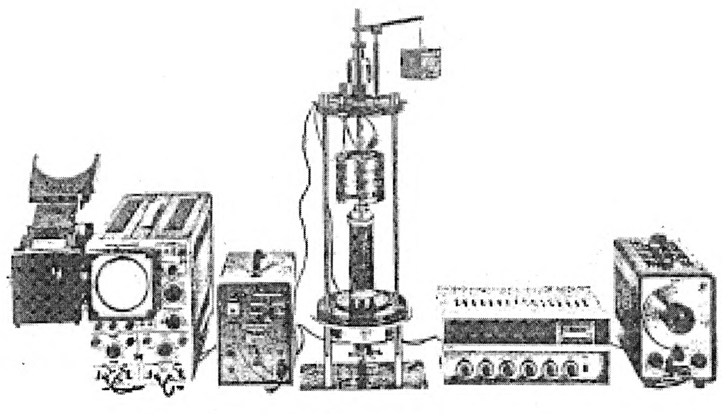

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Figure 2.5-318
Sheet 1 of 2

RESONANT COLUMN TESTS
(METHOD)

Method of Performing Resonant Column Tests

Resonant column tests are performed to determine the dynamic properties of soils under high frequency, small amplitude cyclic strains. The test is based on the fact that analytical solutions can relate the stiffness of the soil column to its resonant frequency. In the test the sample is excited by an oscillating device and the frequency is varied until the maximum response, or resonant frequency, is found.

The Dames and Moore resonant column apparatus subjects solid cylindrical samples to torsional oscillations. The sample base is fixed and the top of the sample is excited by a Hardin oscillator which is driven by a variable frequency sine wave generator. The response of the sample is measured by an accelerometer mounted in the oscillator and the output is displayed on an oscilloscope.

The equivalent linear shear modulus of the soil is obtained from the resonant frequency of the system after the manner suggested by Drnevich and Hardin ("Proposed Standard for Modulus and Damping of Soils by the Resonant Column Method", ASTM Committee D18.09, May 1974). The shear modulus of soils varies with the shear strain amplitude and thus actually varies along the radius of the sample but in calculating the shear modulus the average shear strain is taken to correspond to the cyclic shear strain developed two-thirds of the distance along the radius. The damping ratio at small strains may be computed from measurements of the logarithmic decrement which are obtained by subjecting the sample to a steady state oscillation and then shutting off the input voltage. The decay curve is retained on a recording oscilloscope and may be photographed to make a permanent record.

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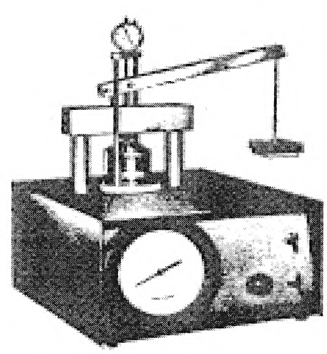
Figure 2.5-318 Sheet 2 of 2 RESONANT COLUMN TESTS (METHOD)



DEAD LOAD-PNEUMATIC
CONSOLIDOMETER

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Figure 2.5-319
Sheet 1 of 2

CONSOLIDATION TESTS
(METHOD)

Method of Performing Consolidation Tests

Consolidation tests are performed to evaluate the volume changes of soils subjected to increased loads. Time-consolidation and pressure-consolidation curves may be plotted from the data obtained in the tests. Engineering analyses based on these curves permit estimates to be made of the probable magnitude and rate of settlement of the tested soils under applied loads.

Each sample is tested within brass rings two and one-half inches in diameter and one inch is length. Undisturbed samples of in-place soils are tested in rings taken from the sampling device in which the samples were obtained. Loose samples of soils to be used in constructing earth fills are compacted in rings to predetermined conditions and tested.

In testing, the sample is rigidly confined laterally by the brass ring. Axial loads are transmitted to the ends of the sample by porous disks. The disks allow drainage of the loaded sample. The axial compression or expansion of the sample is measured by a micrometer dial indicator at appropriate time intervals after each load increment is applied. Each load is ordinarily twice the preceding load. The increments are selected to obtain consolidation data representing the field loading conditions for which the test is being performed. Each load increment is allowed to act over an interval of time dependent on the type and extent of the soil in the field.

Figure 2.5-319
Sheet 2 of 2

CONSOLIDATION TESTS
(METHOD)

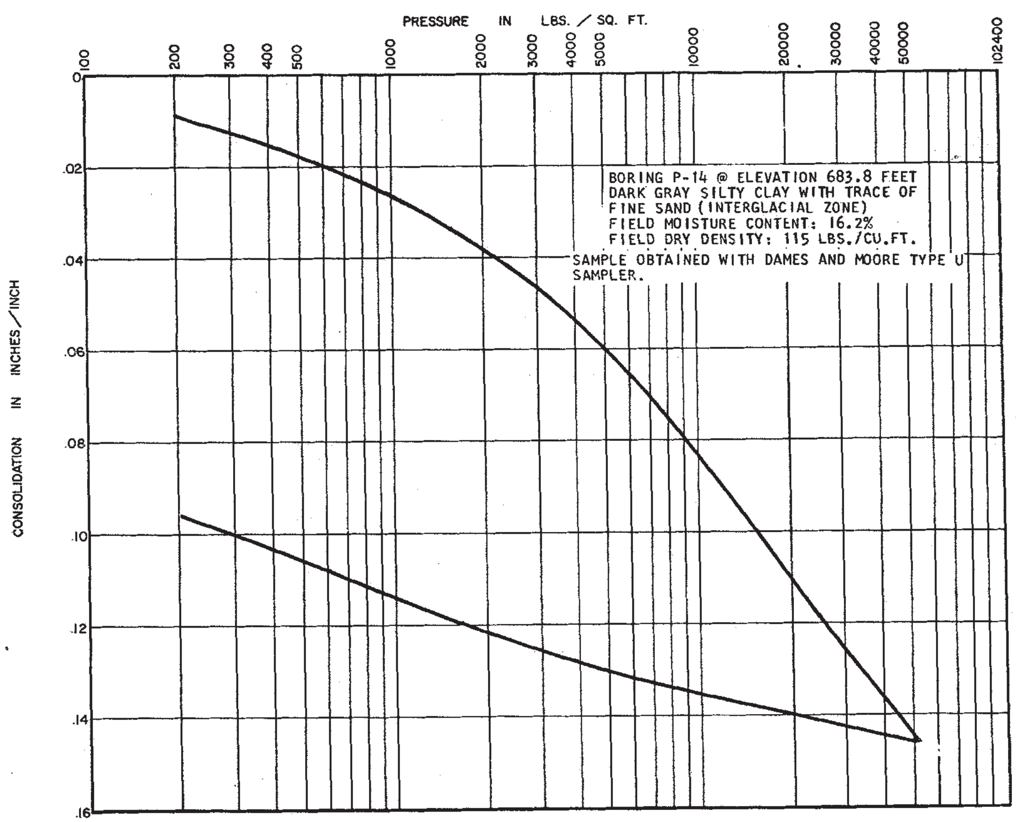

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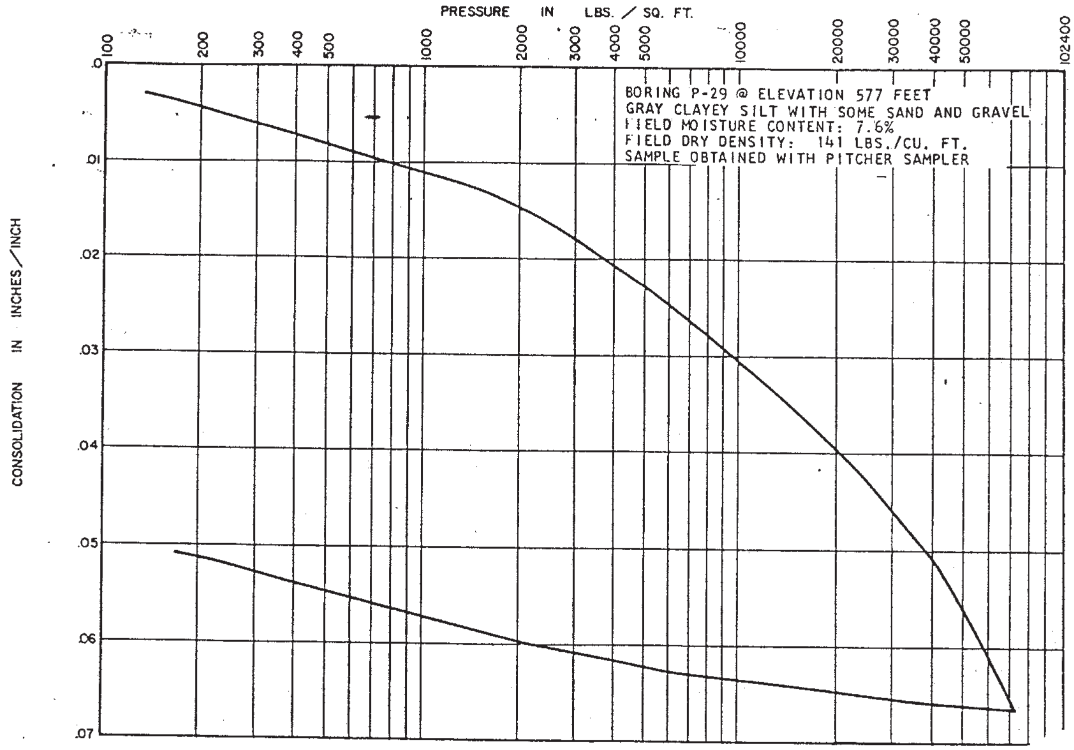
FIGURE 2.5-320

CONSOLIDATION TEST (BORING P-14)



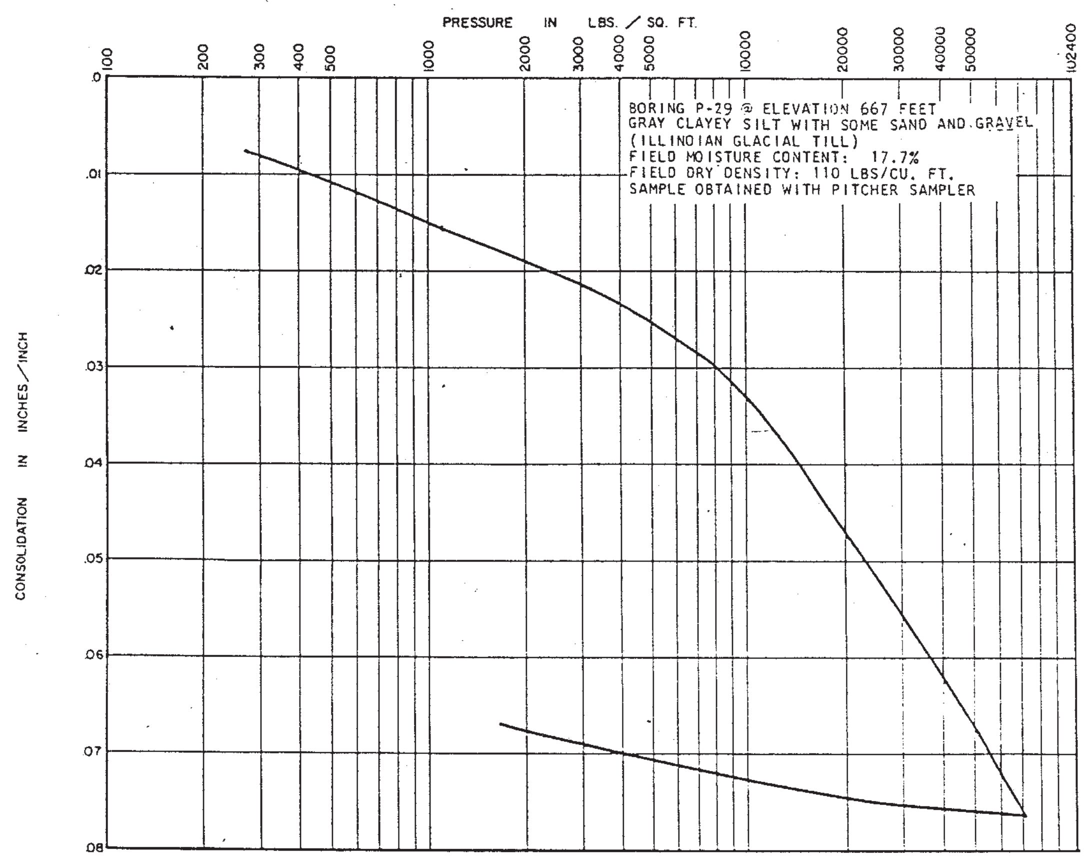


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FIGURE 2.5-321

CONSOLIDATION TEST (BORING P-29)

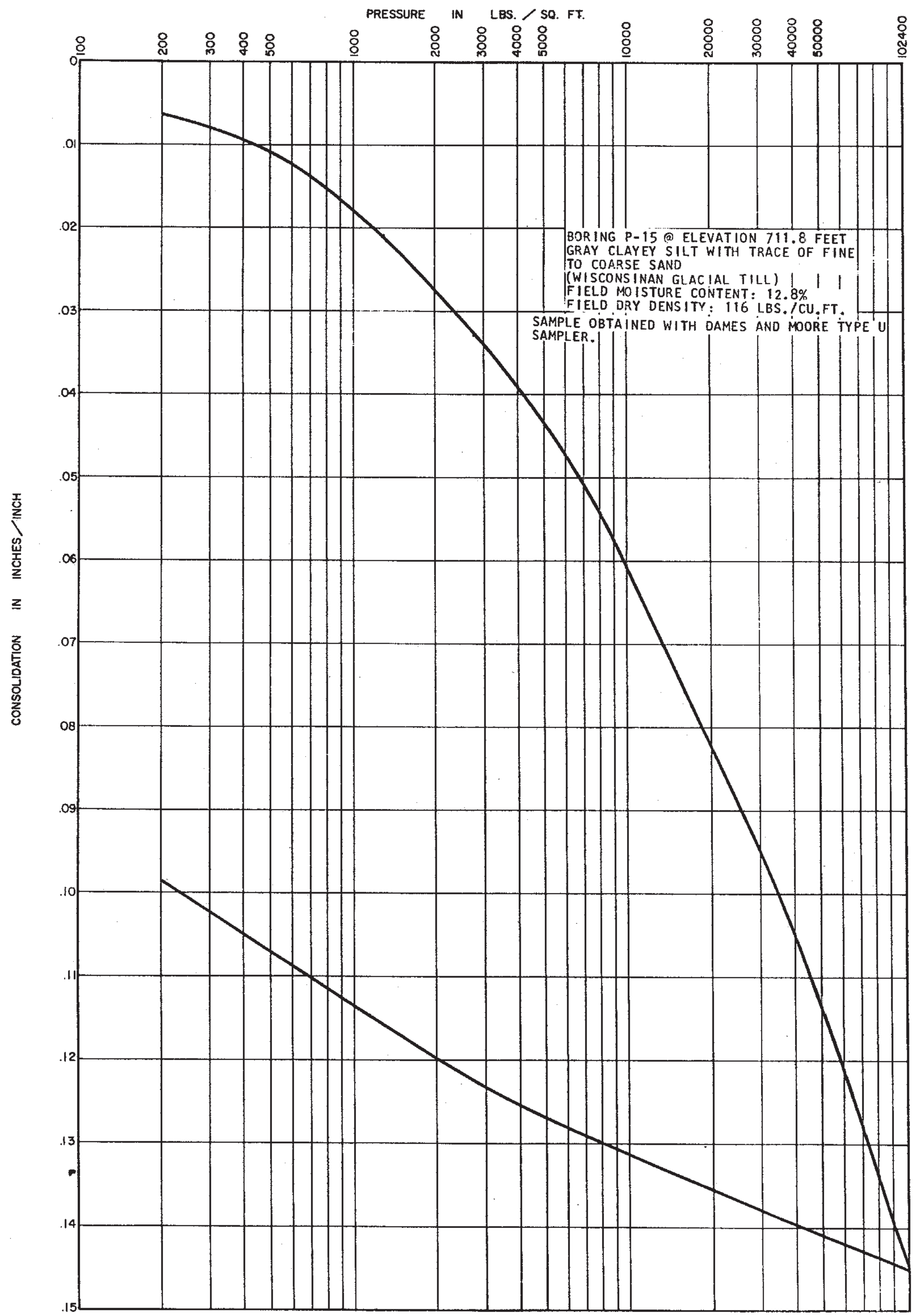

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FIGURE 2.5-322

CONSOLIDATION TEST (BORING P-15)

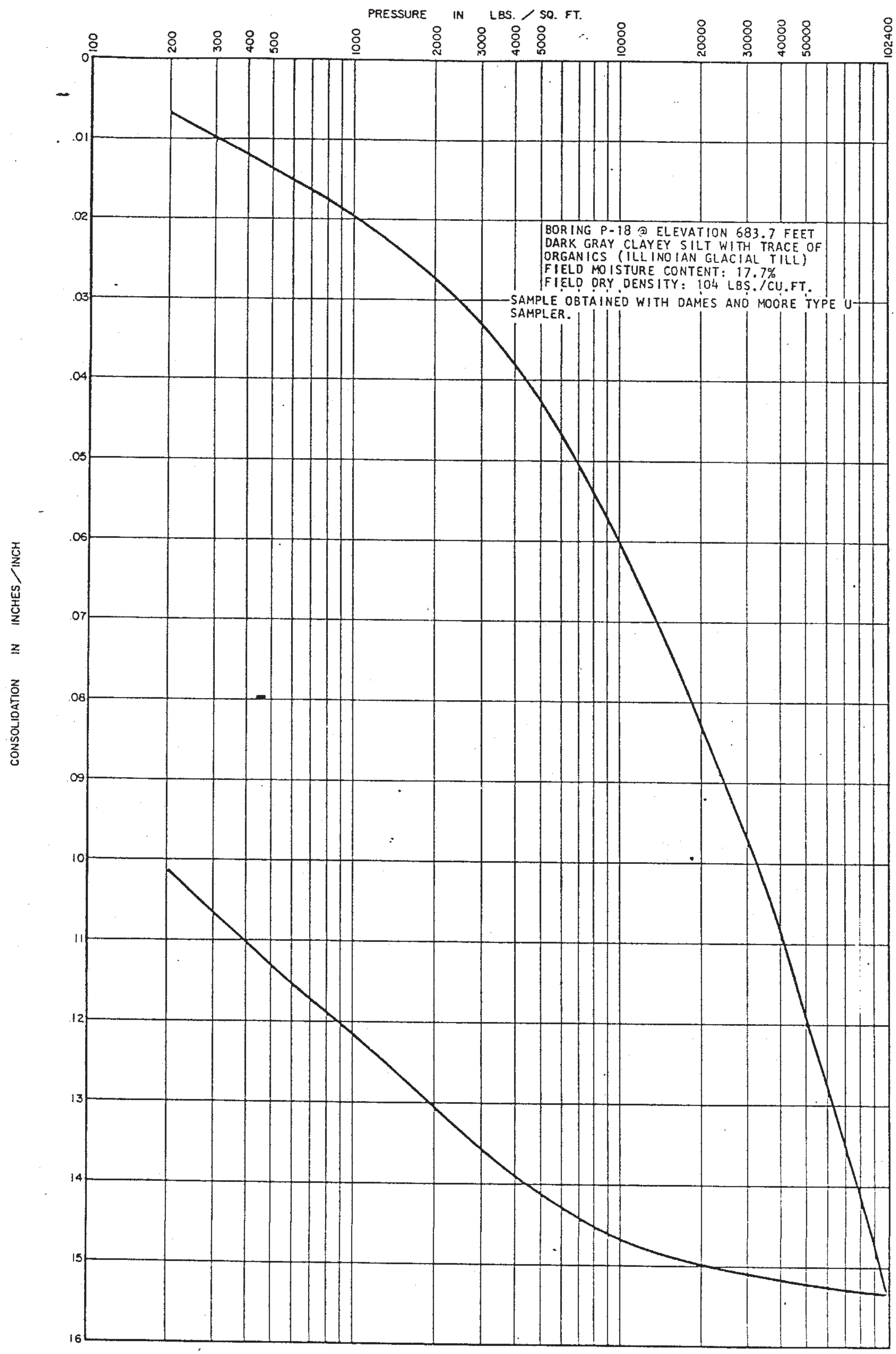

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FIGURE 2.5-323

CONSOLIDATION TEST (BORING P-18)

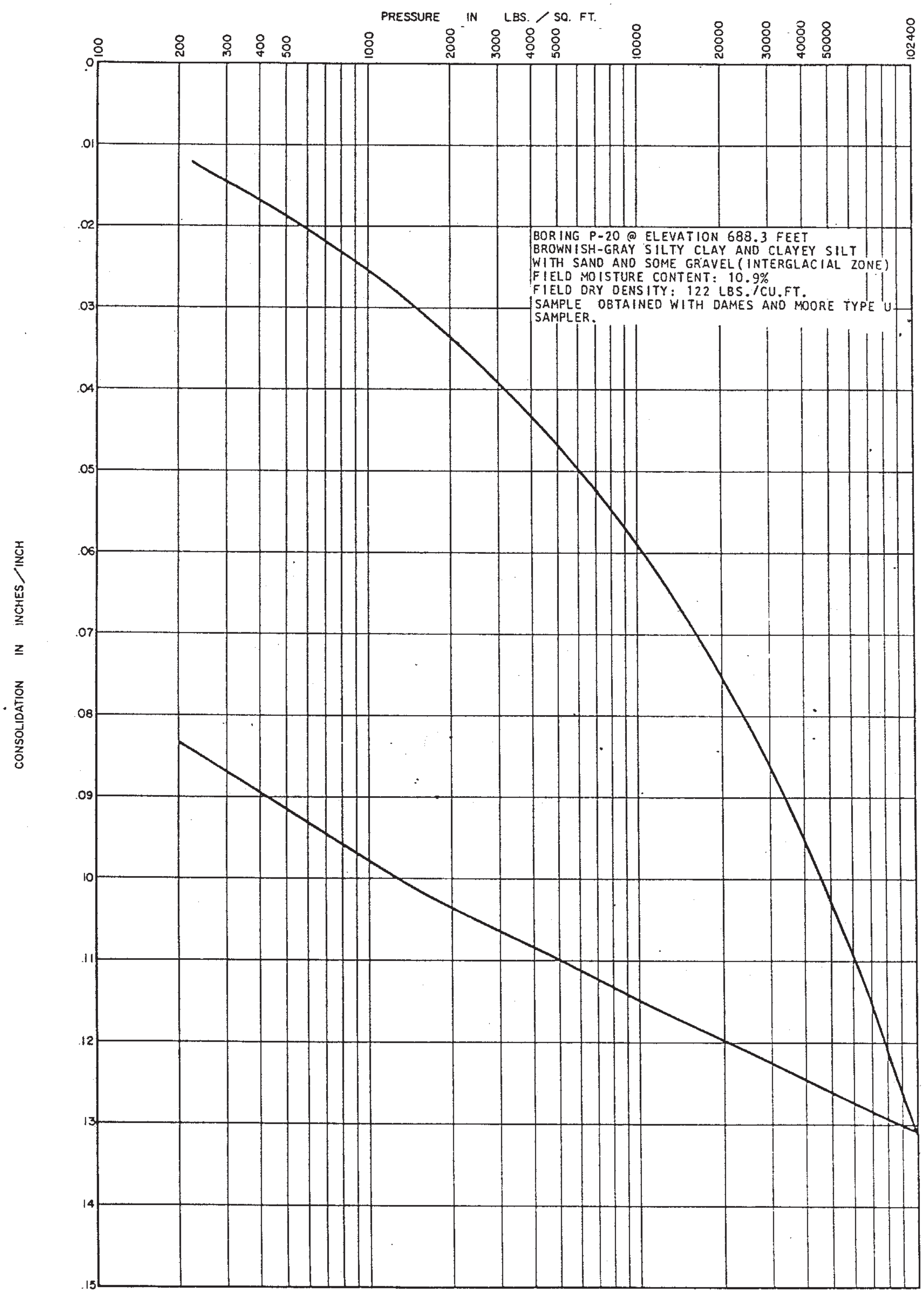

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FIGURE 2.5-324

CONSOLIDATION TEST (BORING P-20)

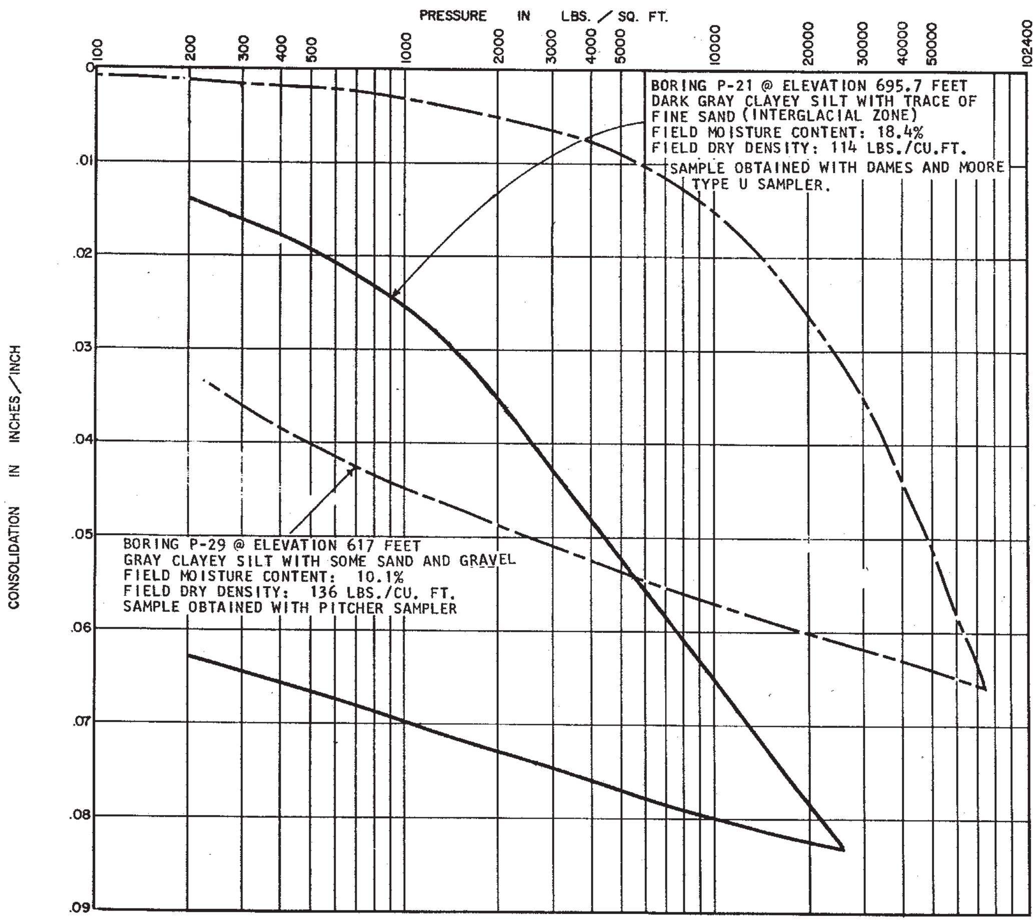

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FIGURE 2.5-325

CONSOLIDATION TEST (BORING P-21)

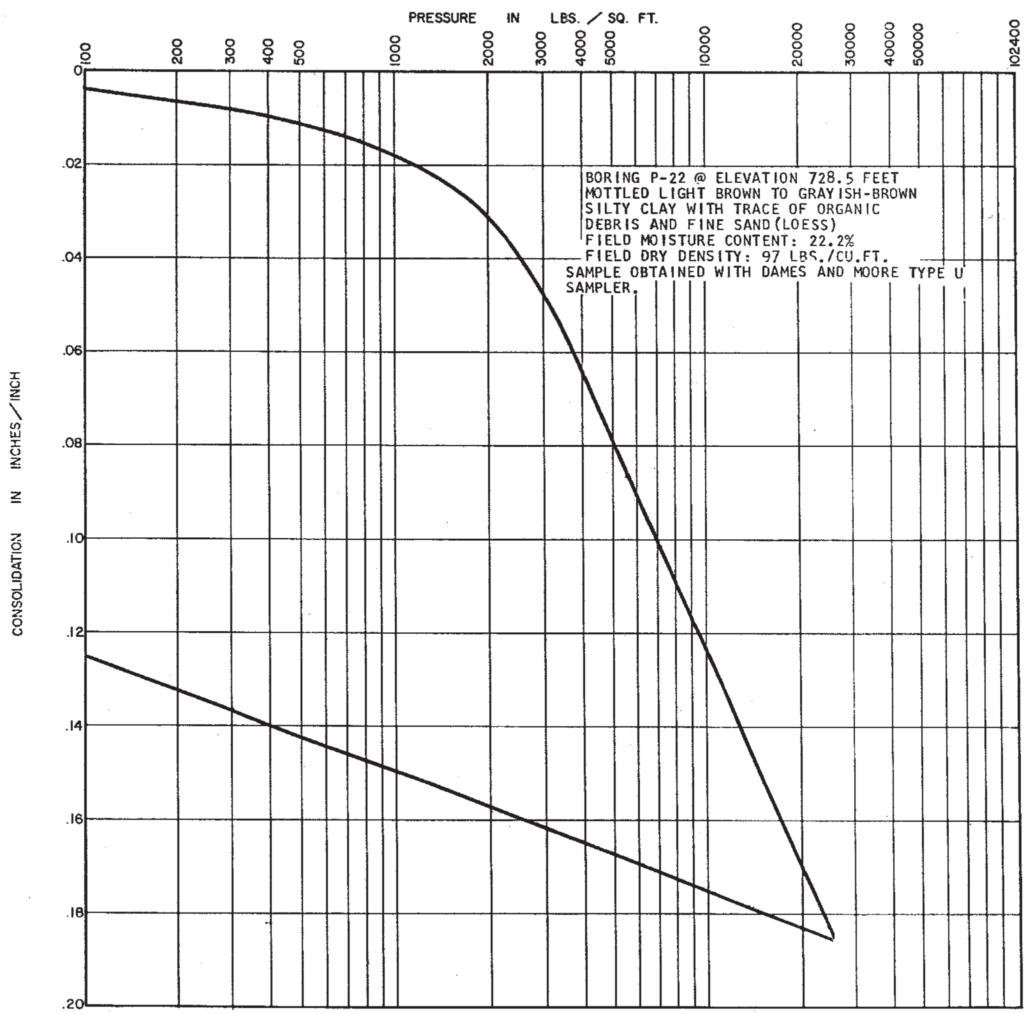

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FIGURE 2.5-326

CONSOLIDATION TEST (BORING P-22)

(SHEET 1 of 2)

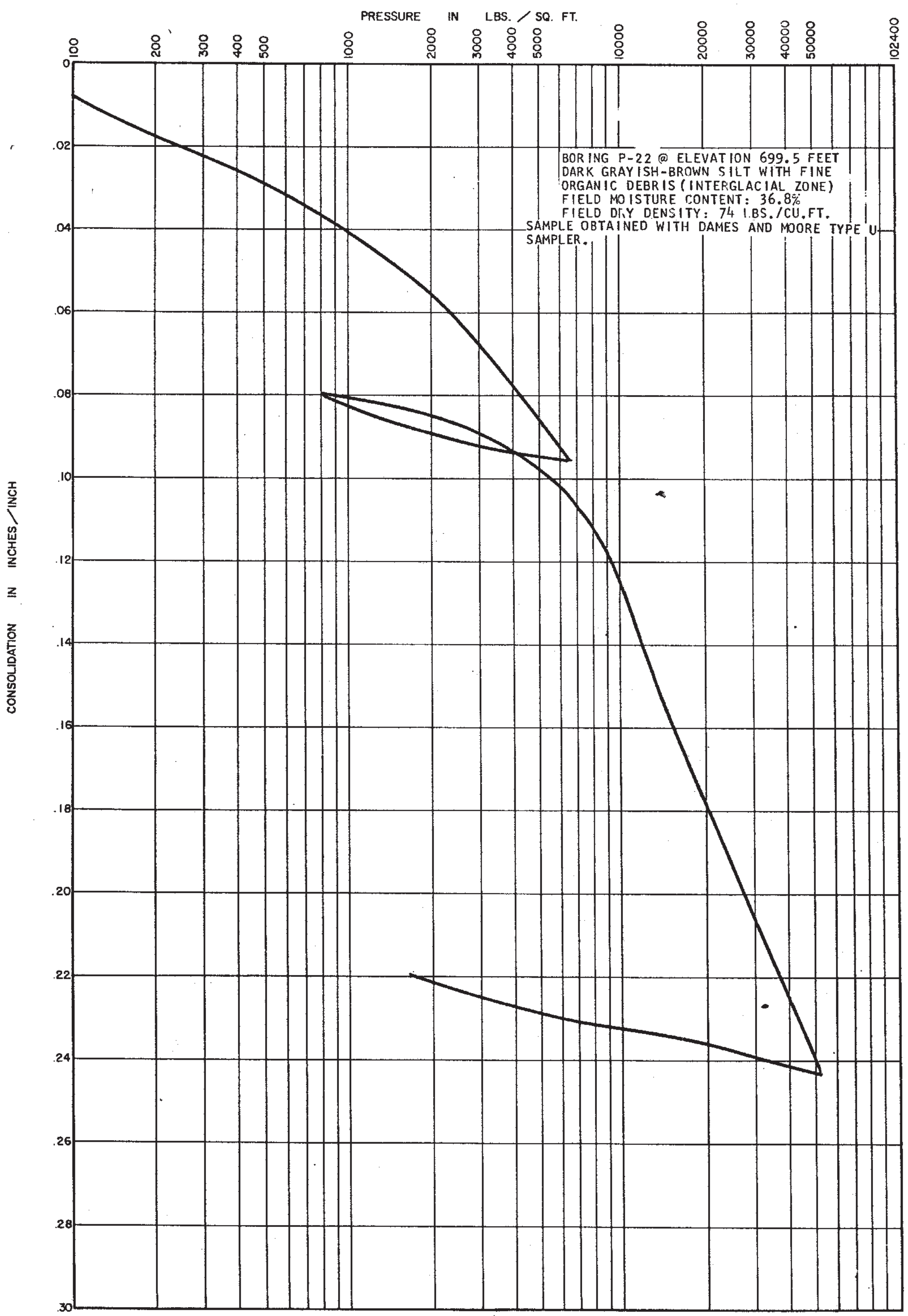

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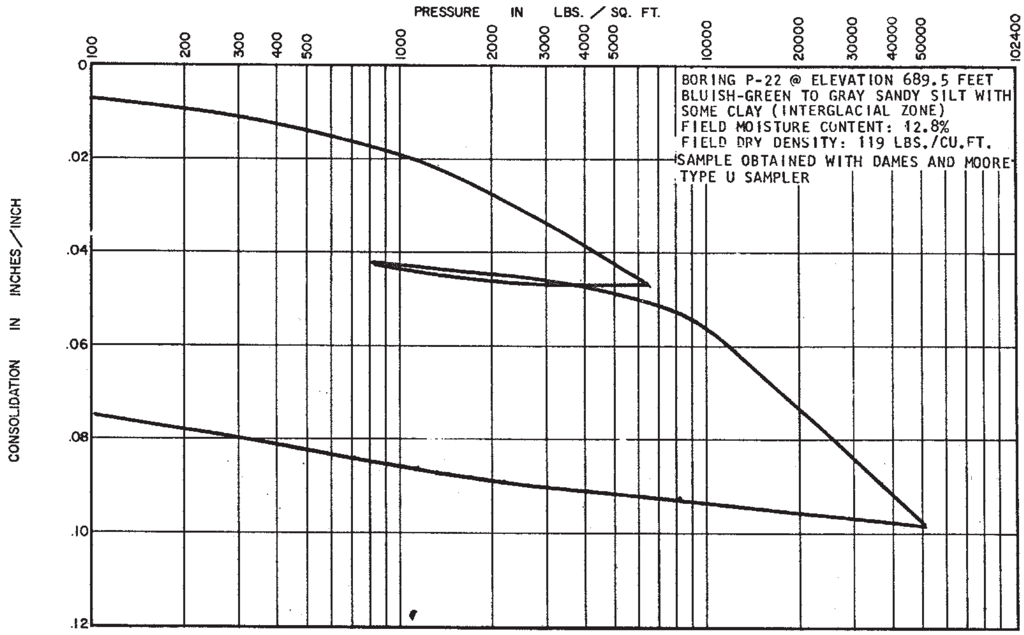
FIGURE 2.5-326

CONSOLIDATION TEST (BORING P-22)

(SHEET 2 of 2)



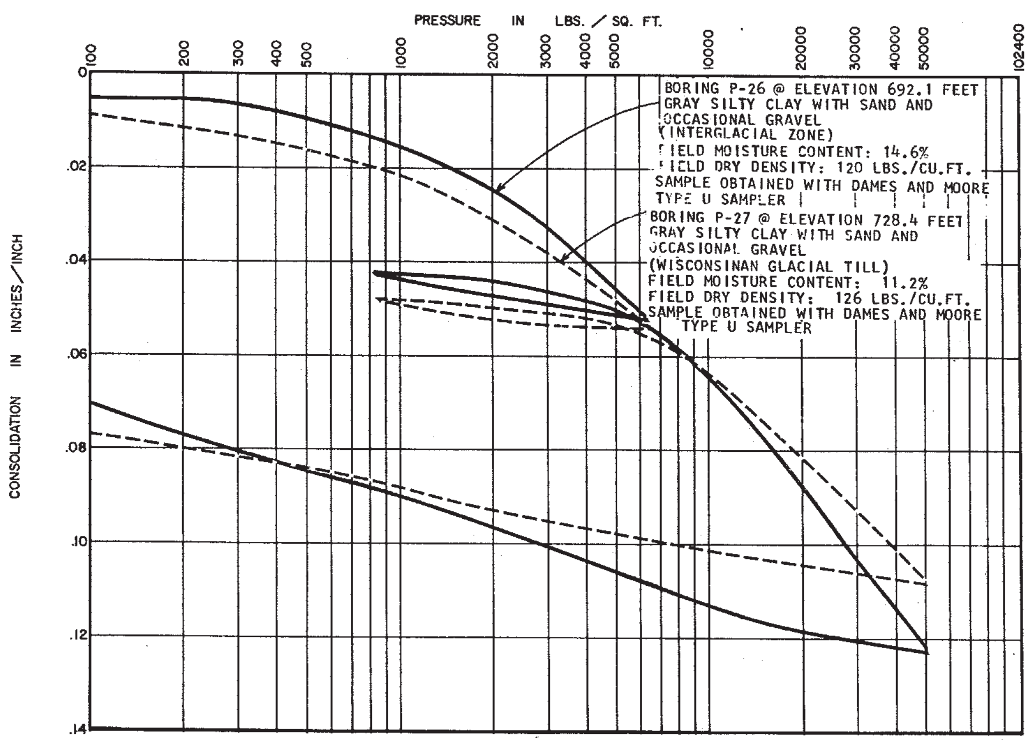


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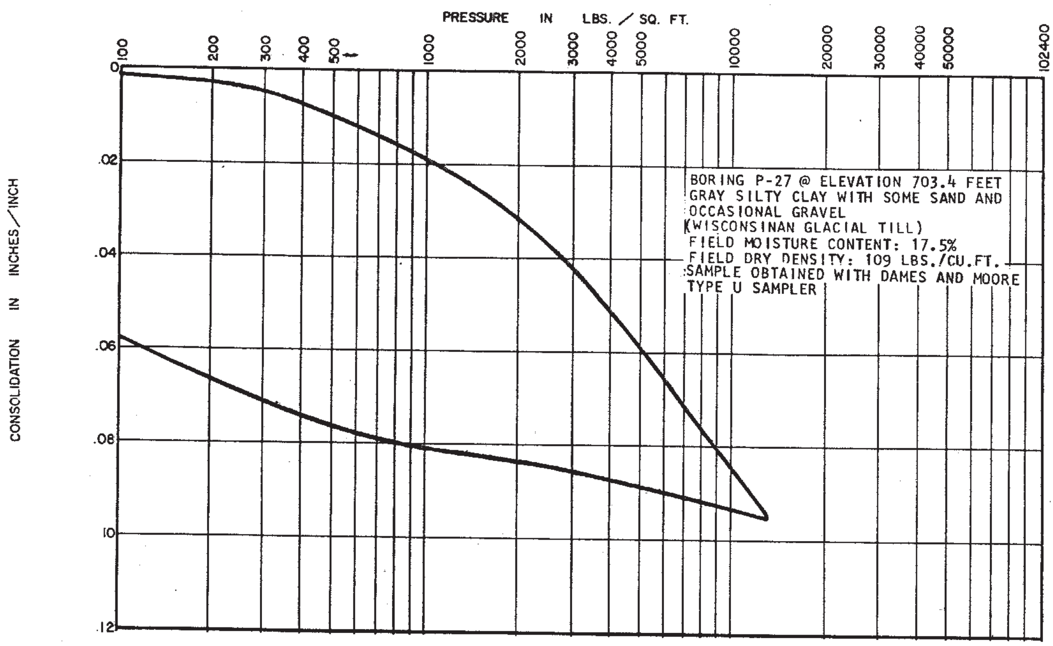
FIGURE 2.5-327

CONSOLIDATION TEST (BORINGS P-22, P-26 AND P-27)



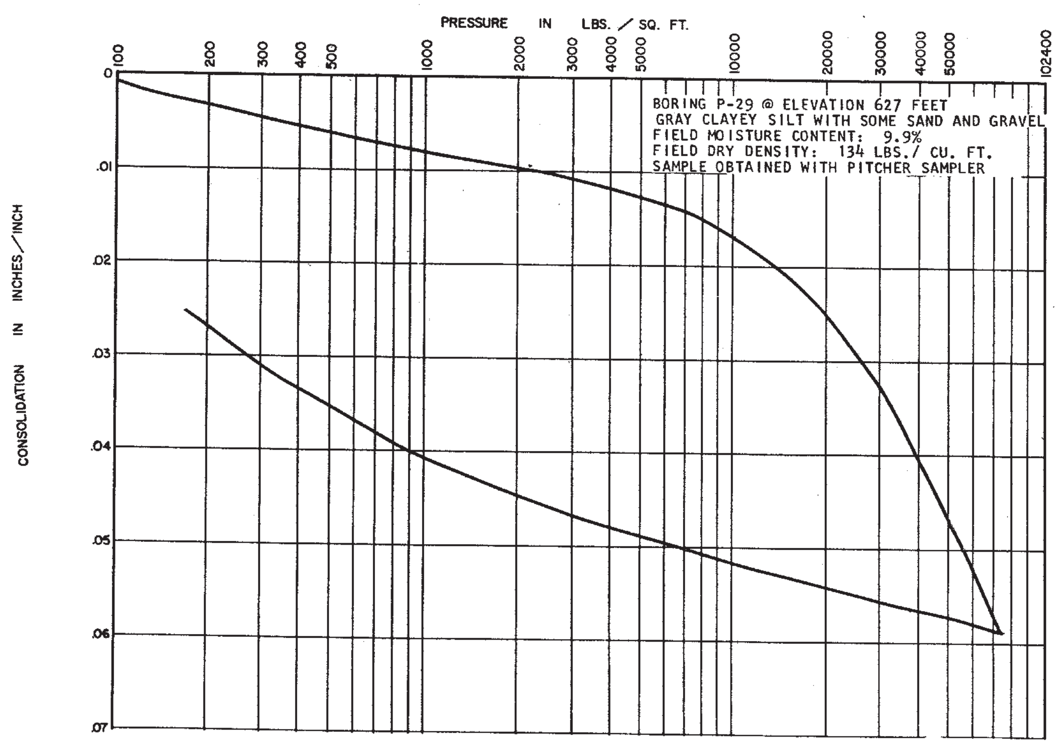


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FIGURE 2.5-328

CONSOLIDATION TEST (BORINGS P-27 AND P-29)

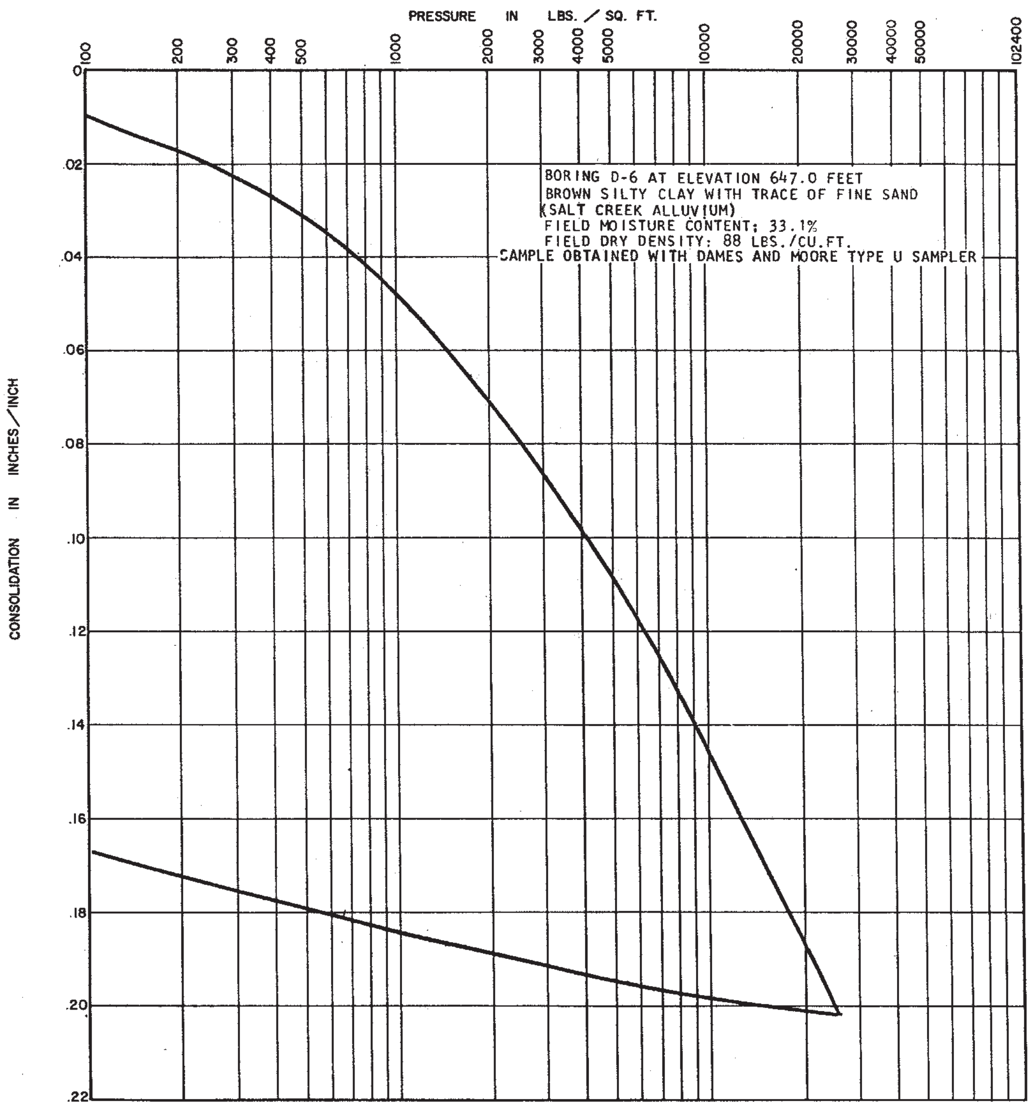

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FIGURE 2.5-329

CONSOLIDATION TEST (BORING D-6)

(SHEET 1 of 2)

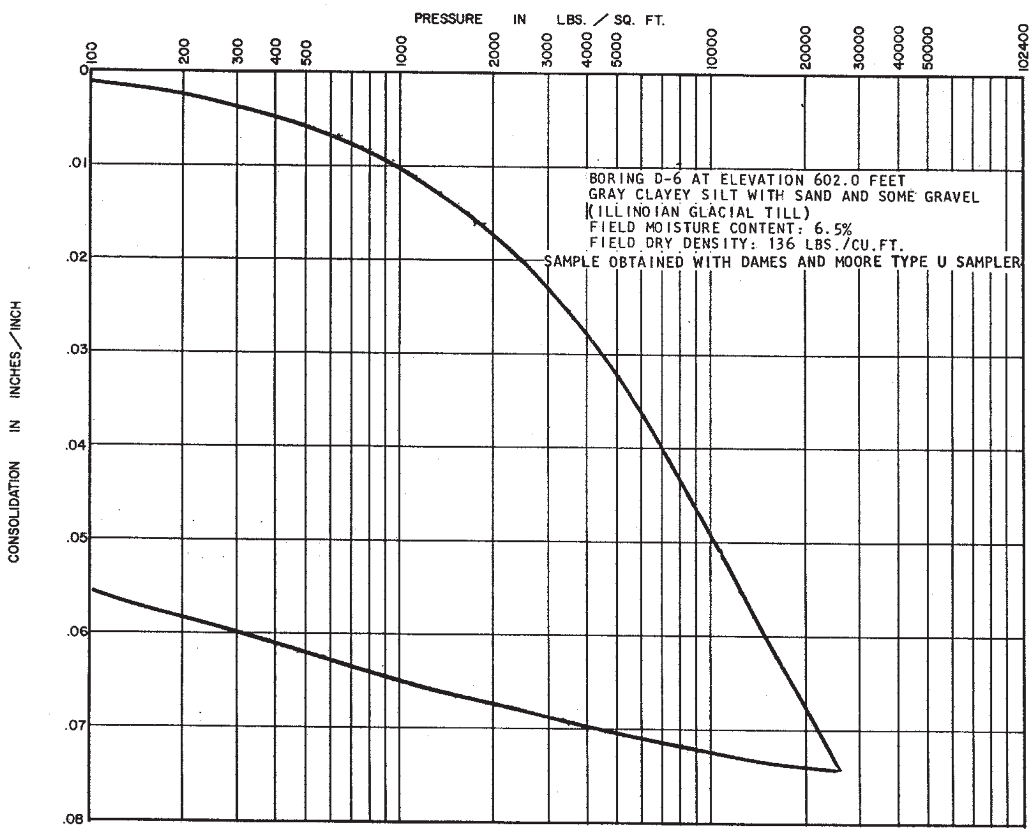

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FIGURE 2.5-329

CONSOLIDATION TEST (BORING D-6)
(SHEET 2 of 2)

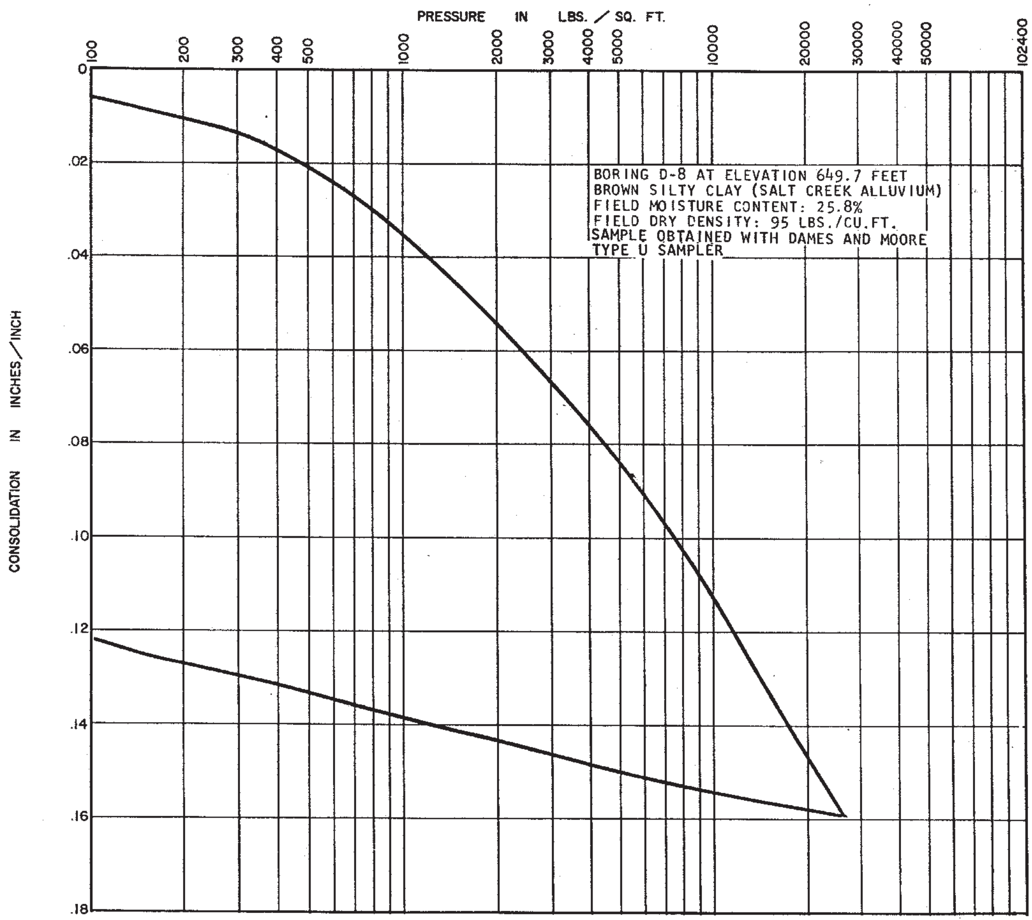

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FIGURE 2.5-330

CONSOLIDATION TEST (BORING D-8)

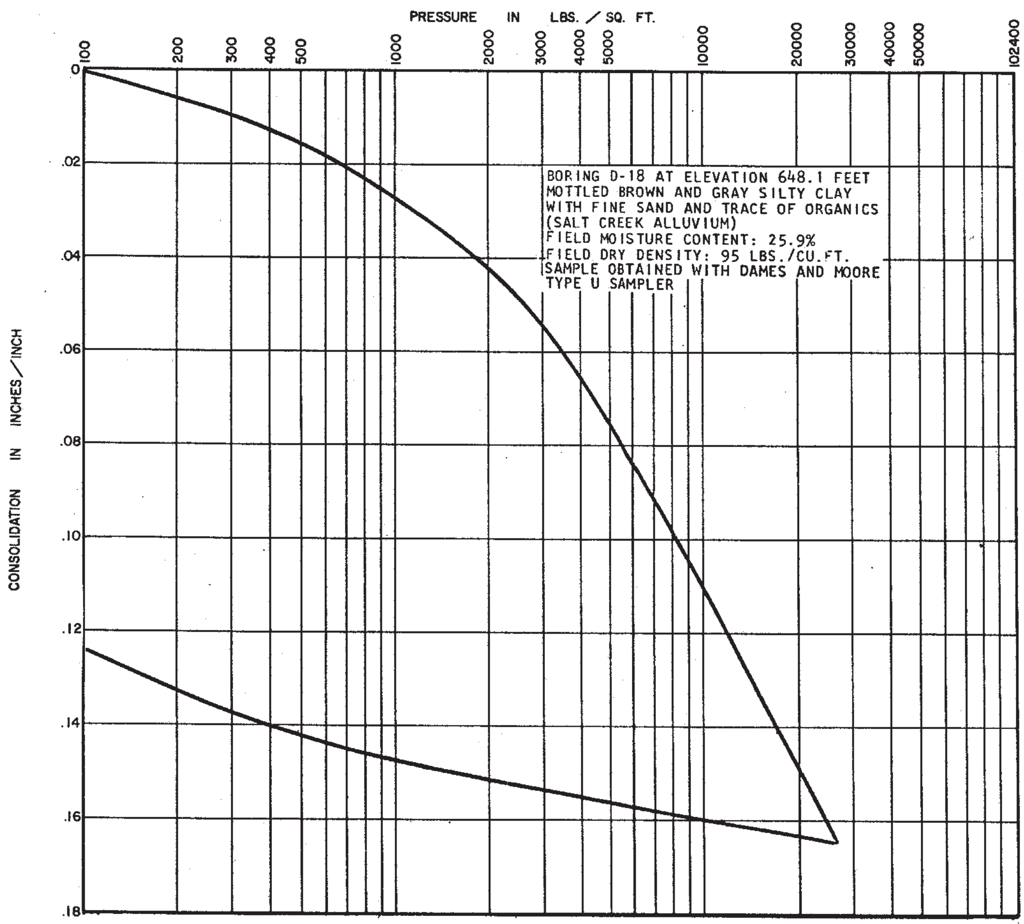

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FIGURE 2.5-331

CONSOLIDATION TEST (BORING D-18)
(SHEET 1 of 2)

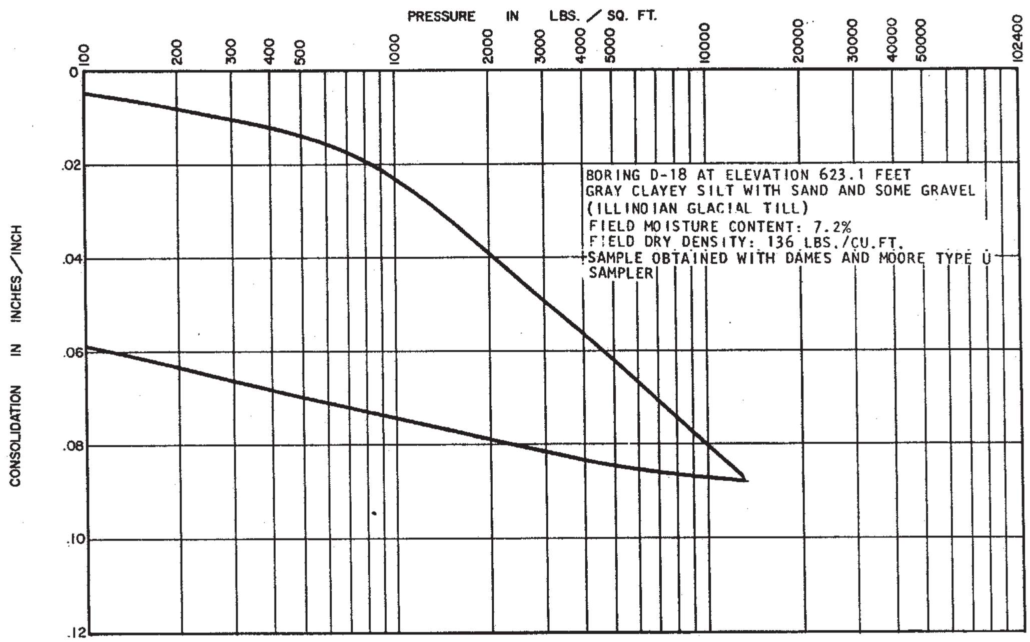

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FIGURE 2.5-331

CONSOLIDATION TEST (BORING D-18)
(SHEET 2 of 2)

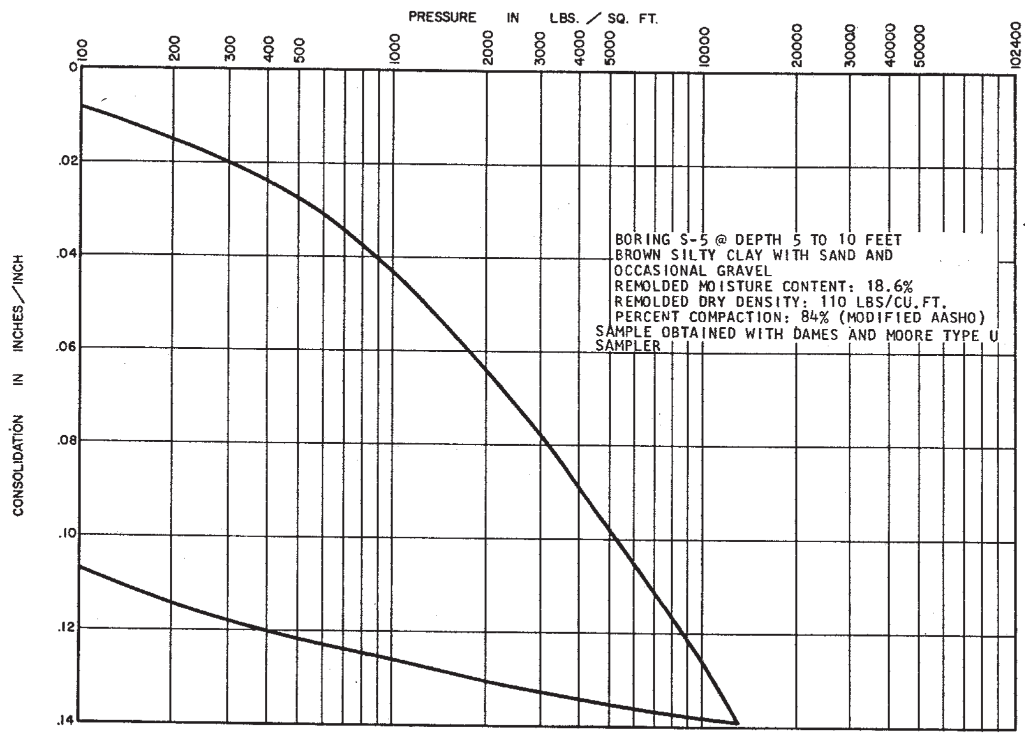

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FIGURE 2.5-332

CONSOLIDATION TEST (BORING S-5)
(SHEET 1 of 2)

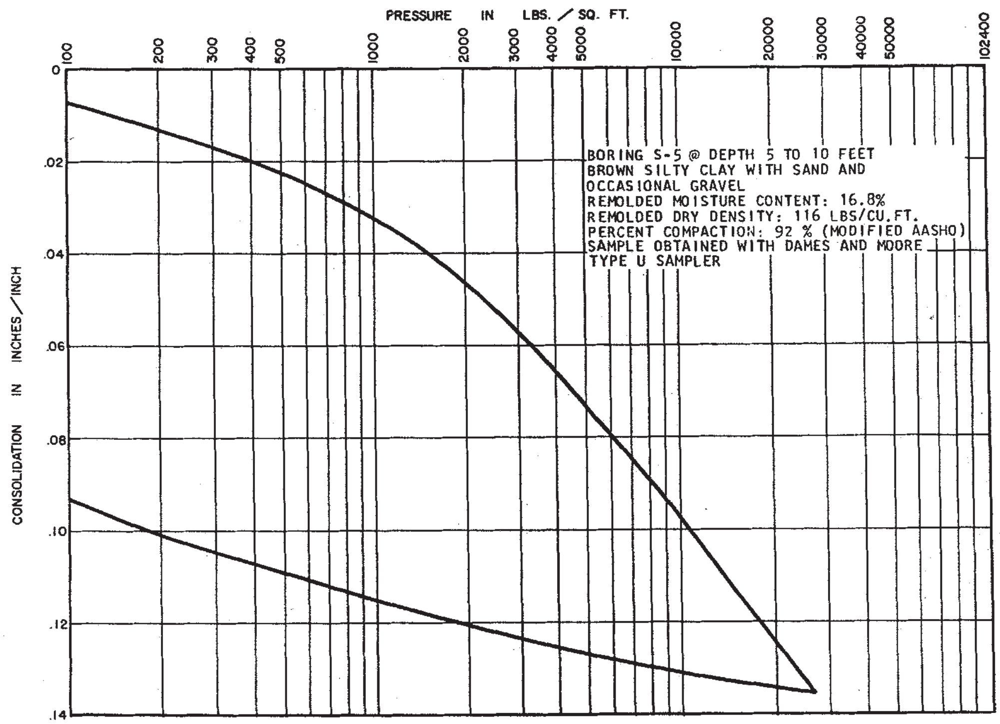

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FIGURE 2.5-332

CONSOLIDATION TEST (BORING S-5)

(SHEET 2 of 2)

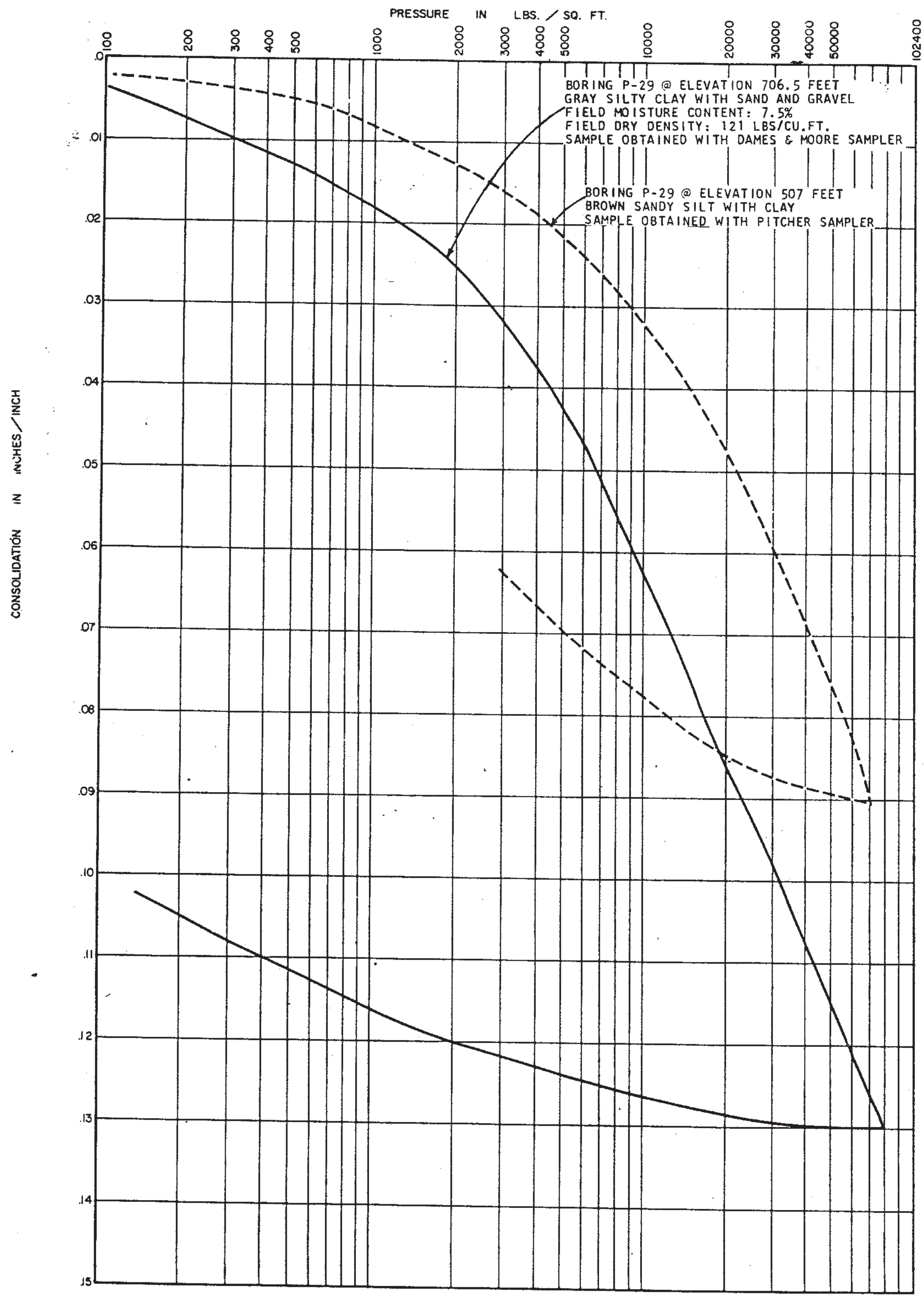

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FIGURE 2.5-333

CONSOLIDATION TEST (BORING P-29)

(SHEET 1 of 3)

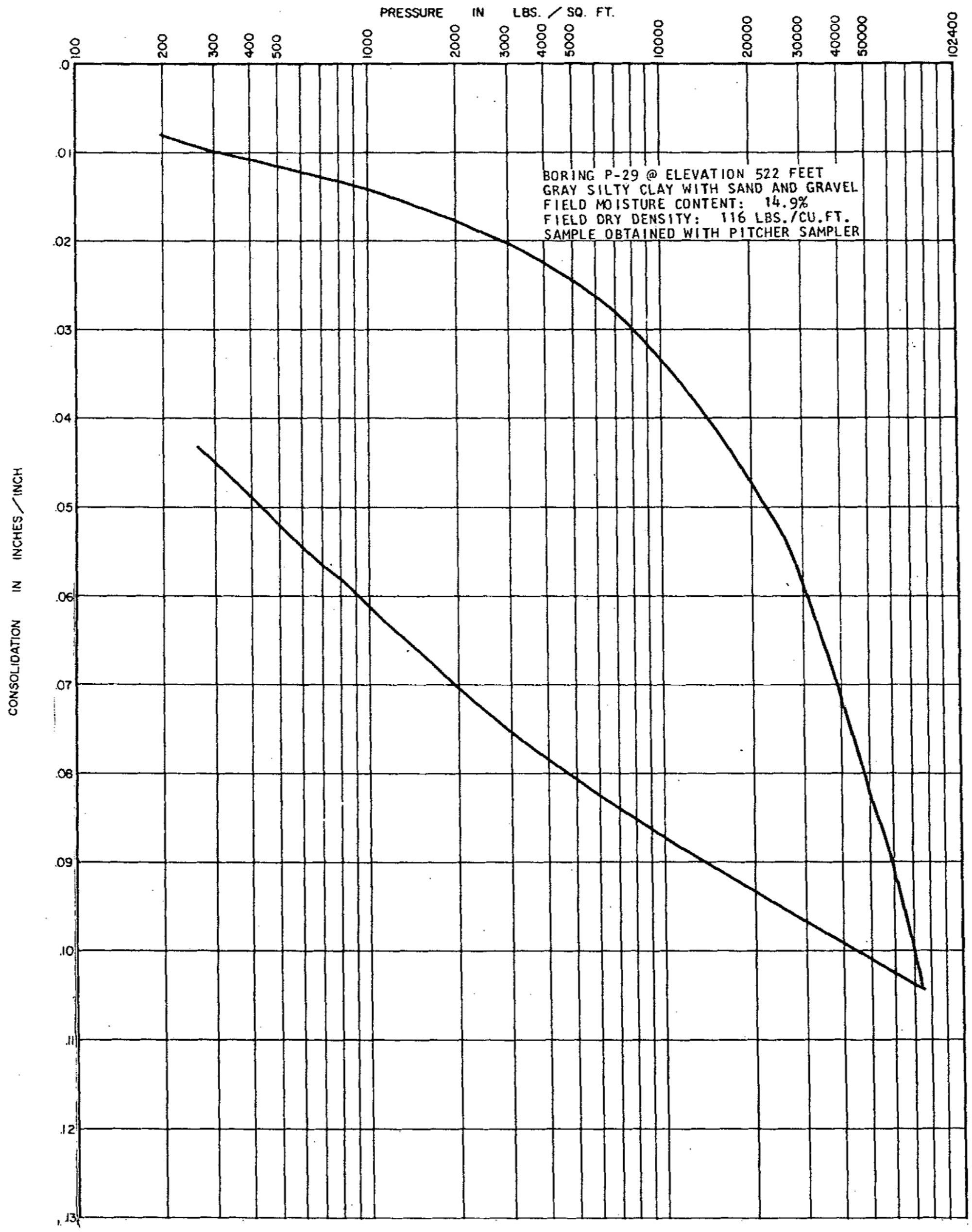

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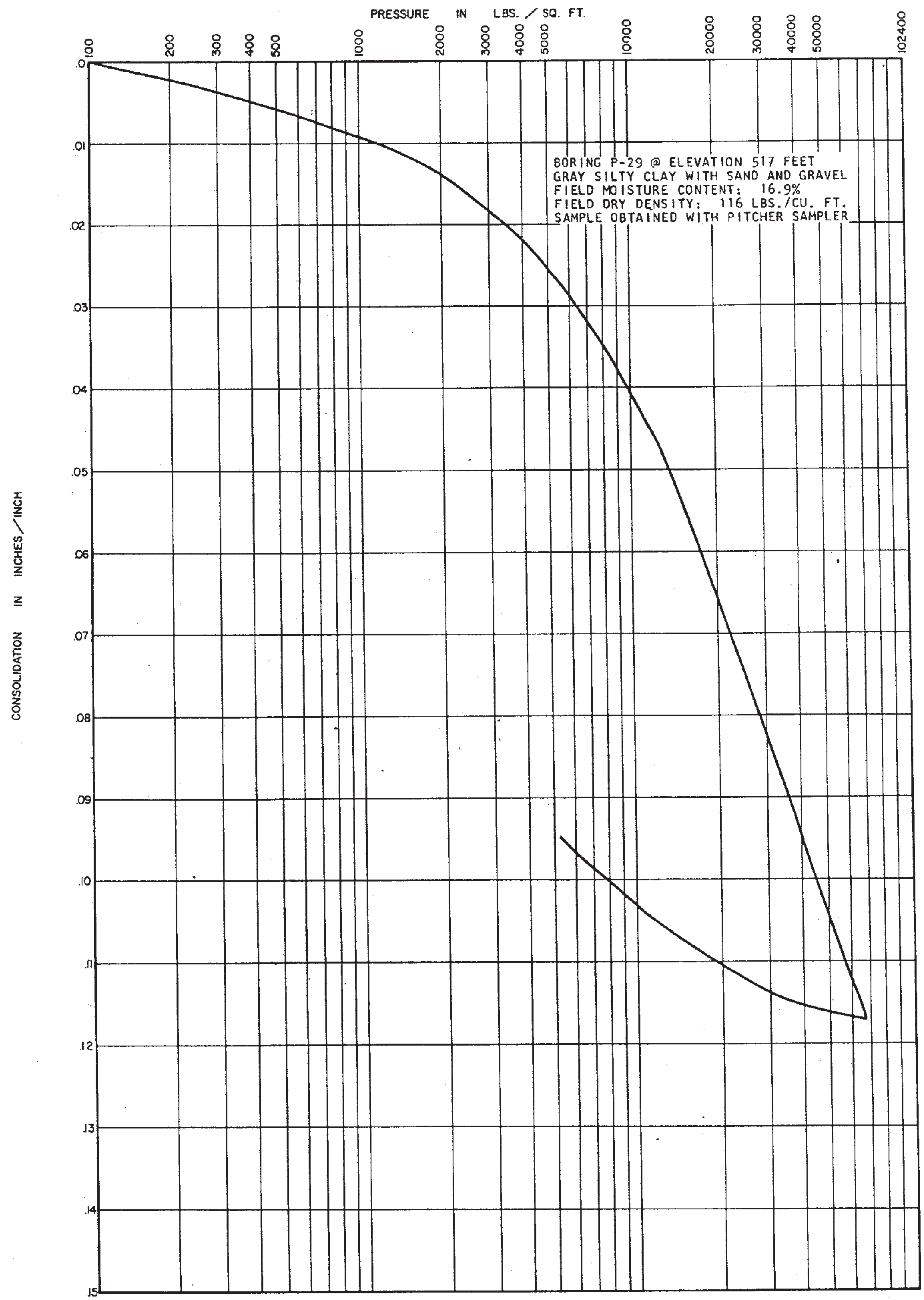
FIGURE 2.5-333

CONSOLIDATION TEST (BORING P-29)
(SHEET 2 of 3)



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UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-333

CONSOLIDATION TEST (BORING P-29)

(SHEET 3 of 3)

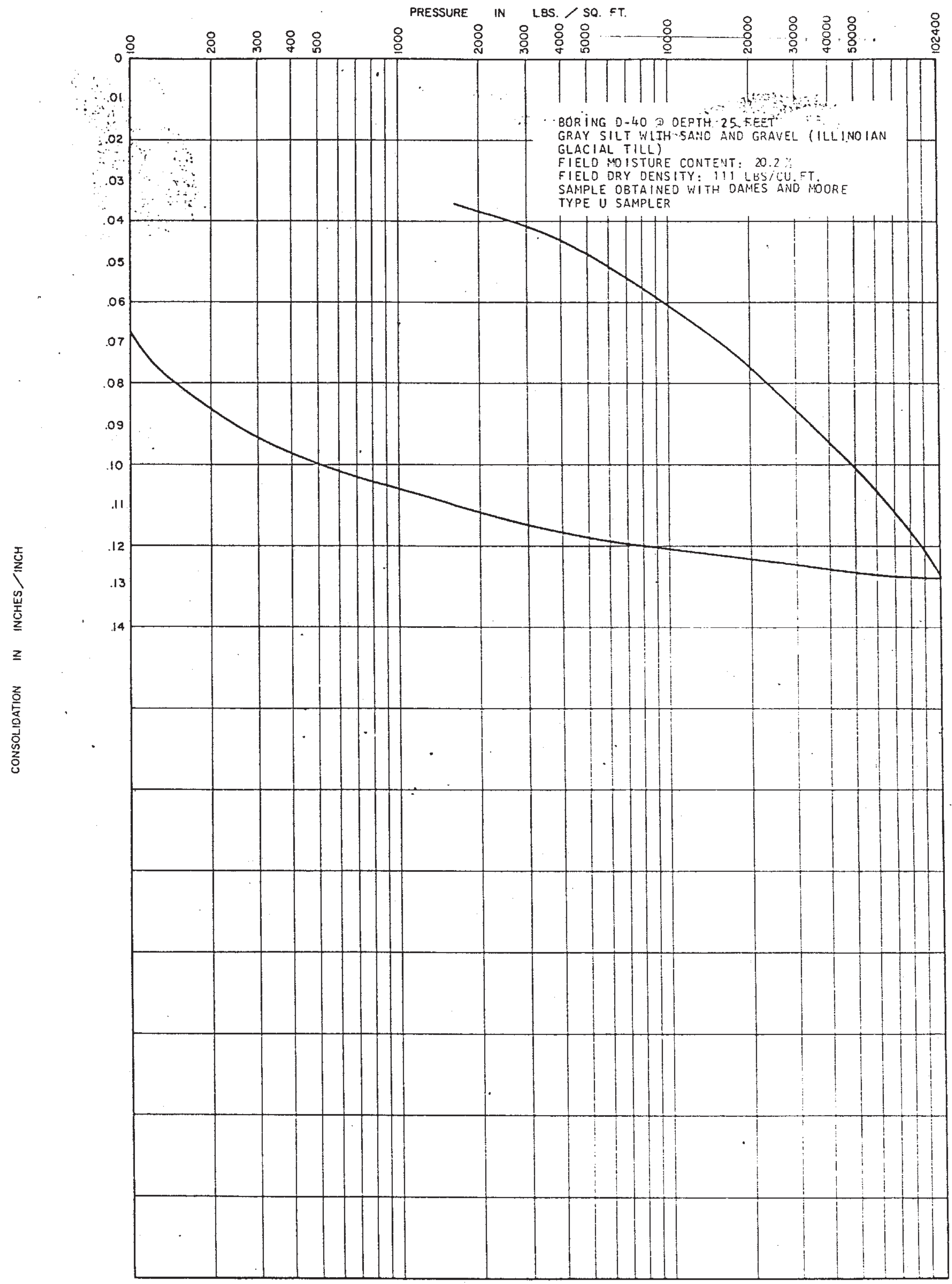

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FIGURE 2.5-334

CONSOLIDATION TEST (BORING D-40)

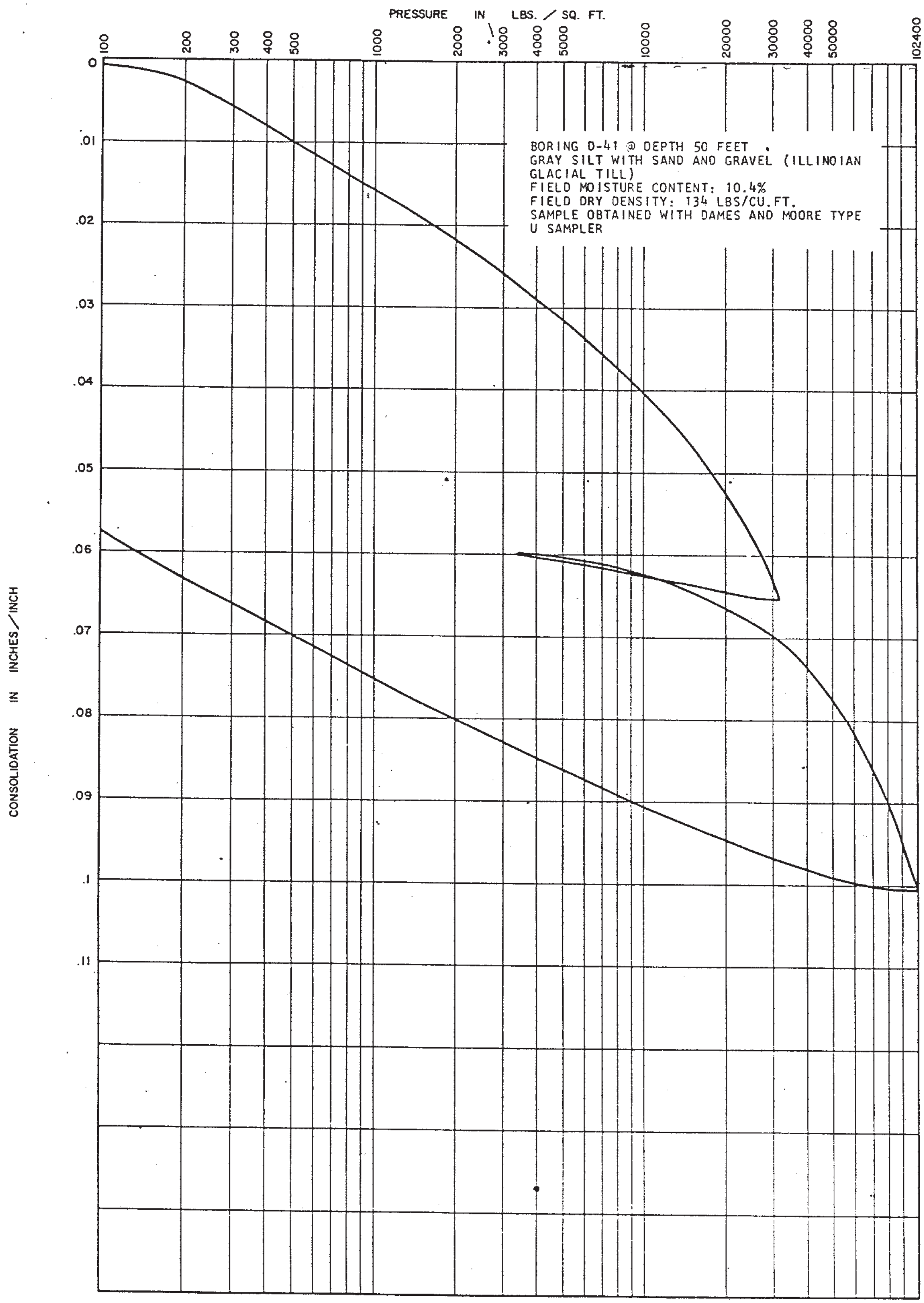

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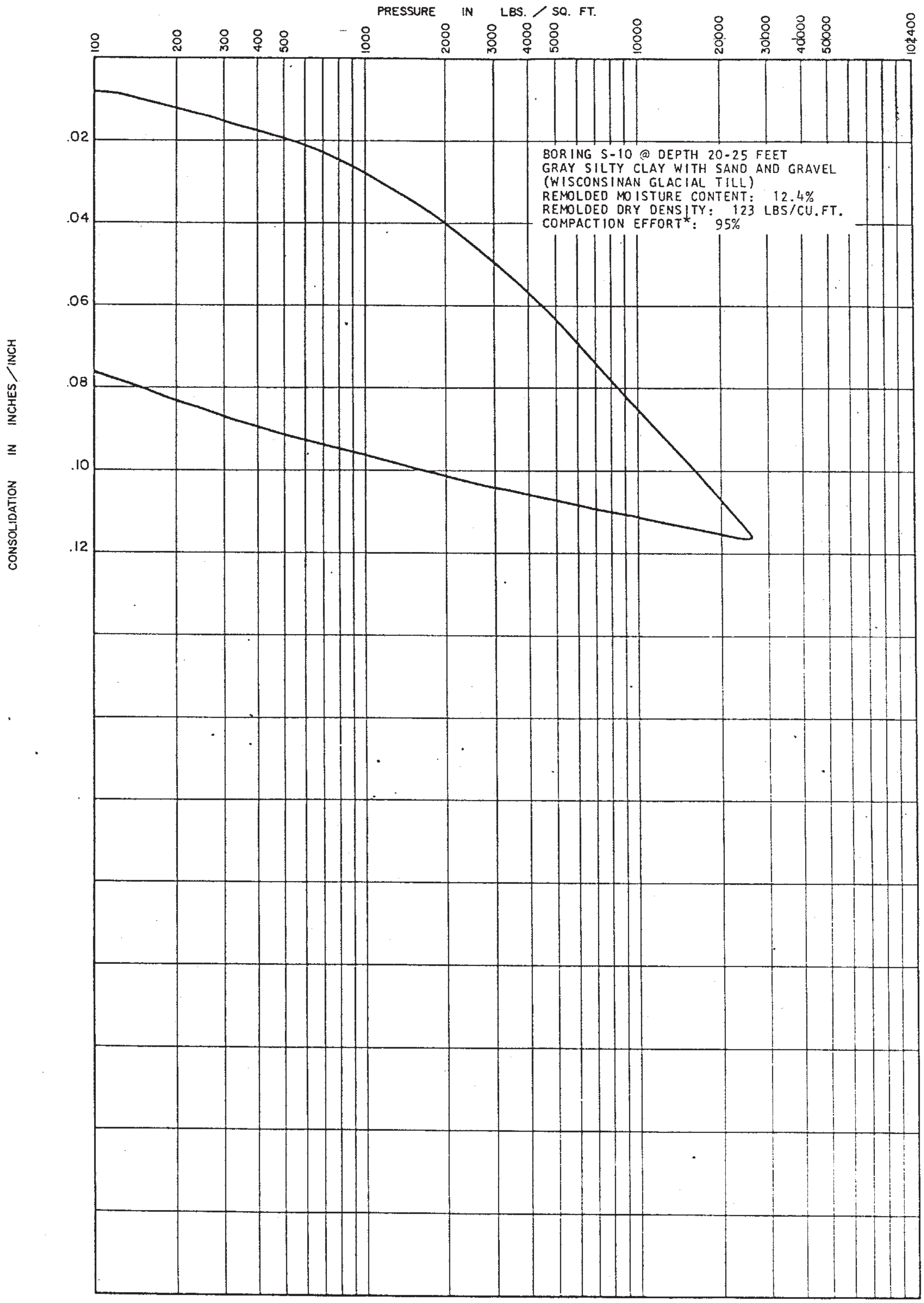
FIGURE 2.5-335

CONSOLIDATION TEST (BORING D-41)



* A.A.S.H.O. TEST DESIGNATION T-180

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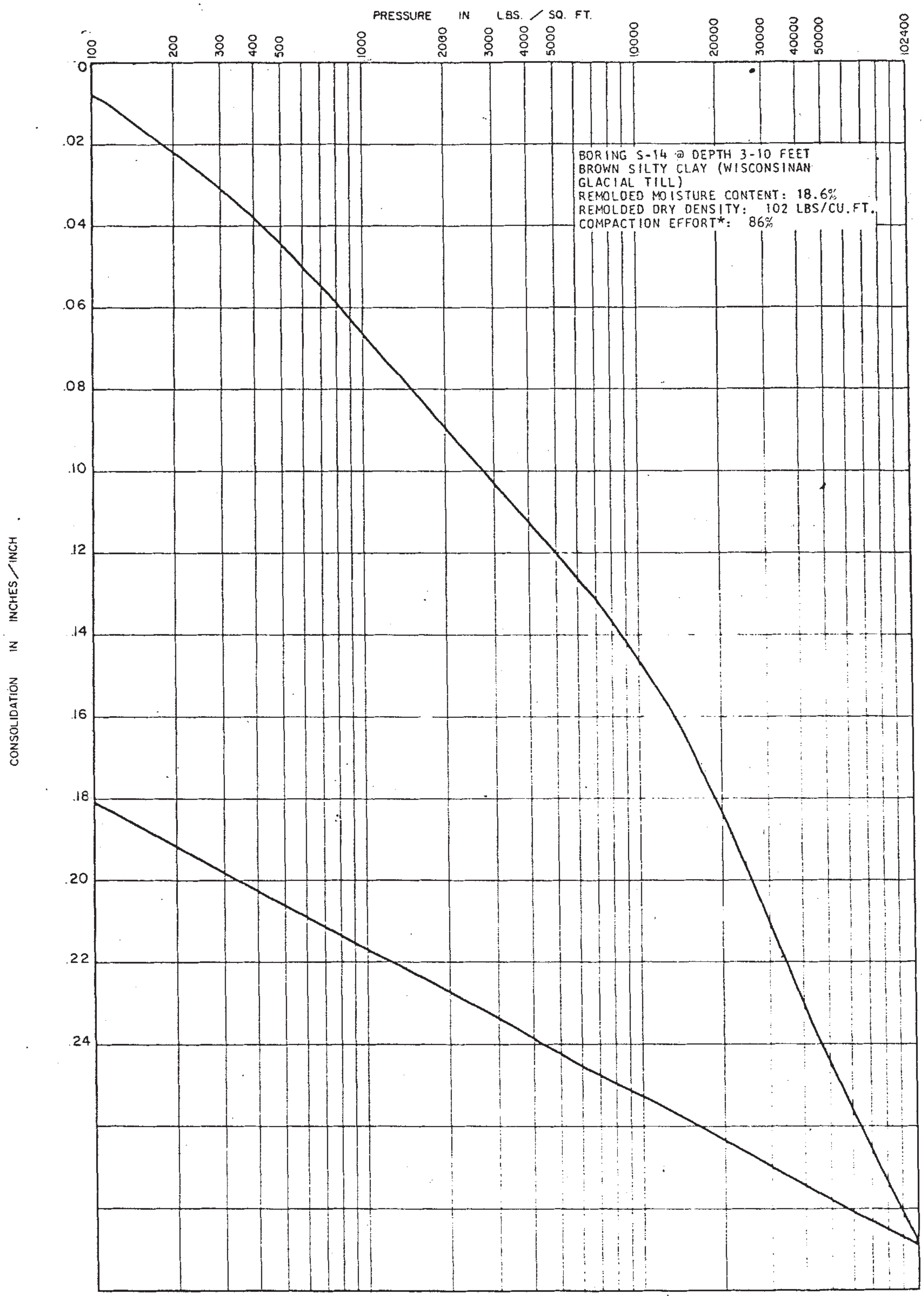
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-336

CONSOLIDATION TEST (BORING S-10)



* A.A.S.H.O. TEST DESIGNATION T-180

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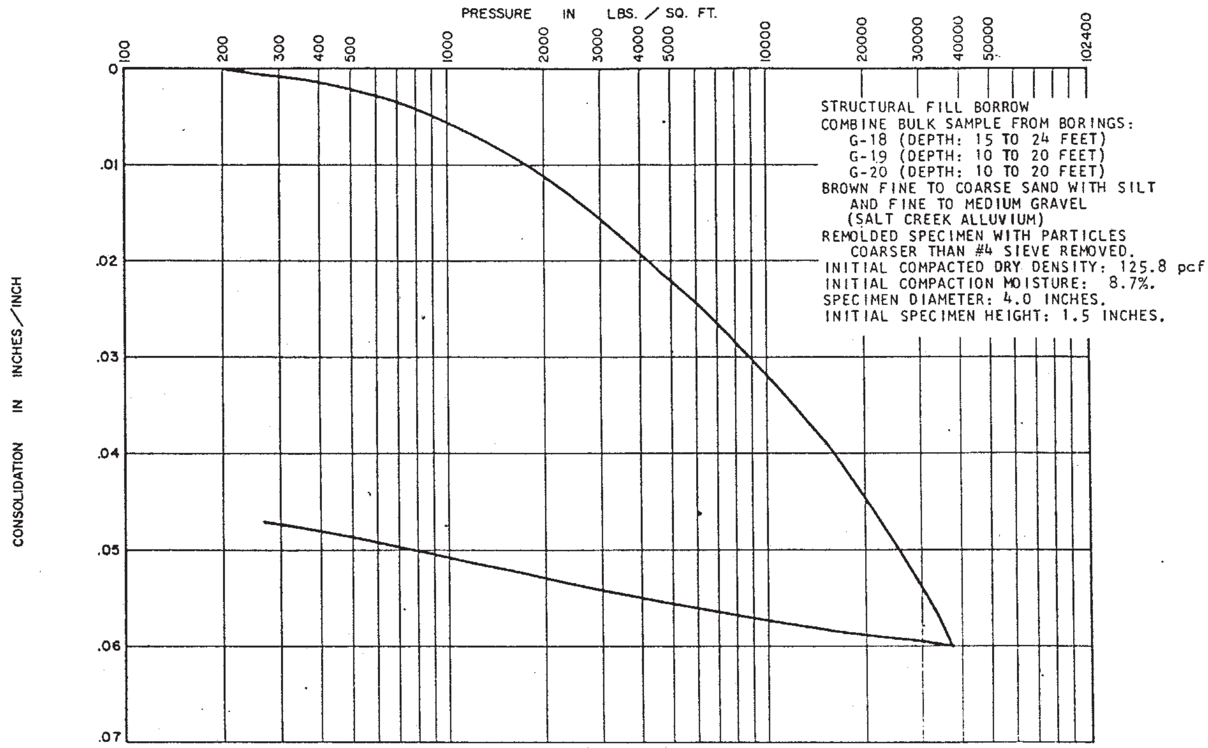
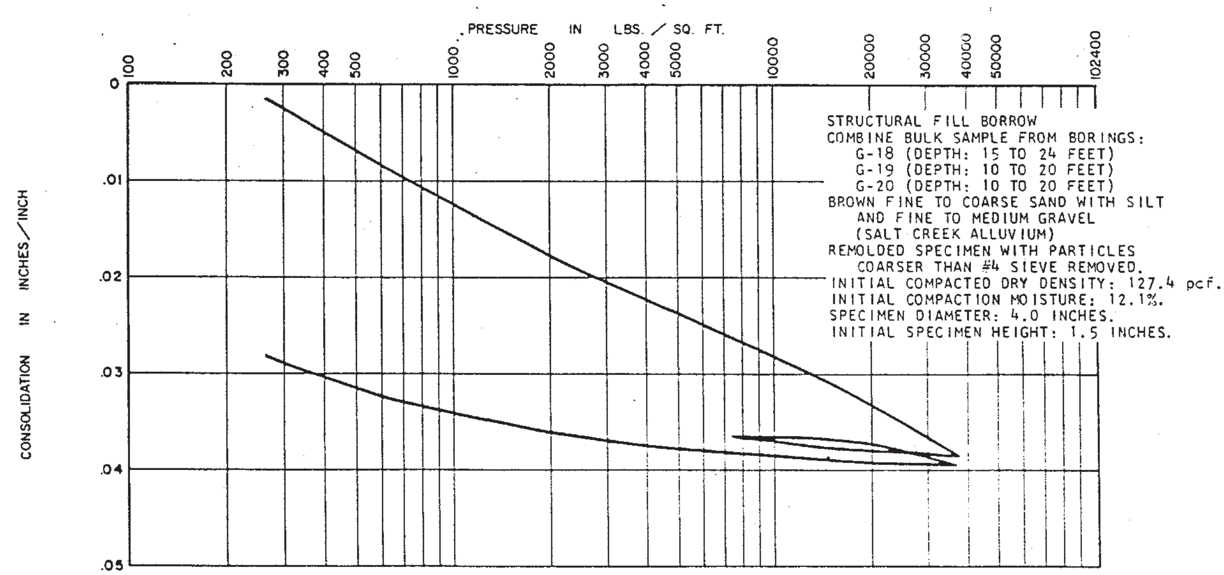
FIGURE 2.5-337

CONSOLIDATION TEST (BORING S-14)





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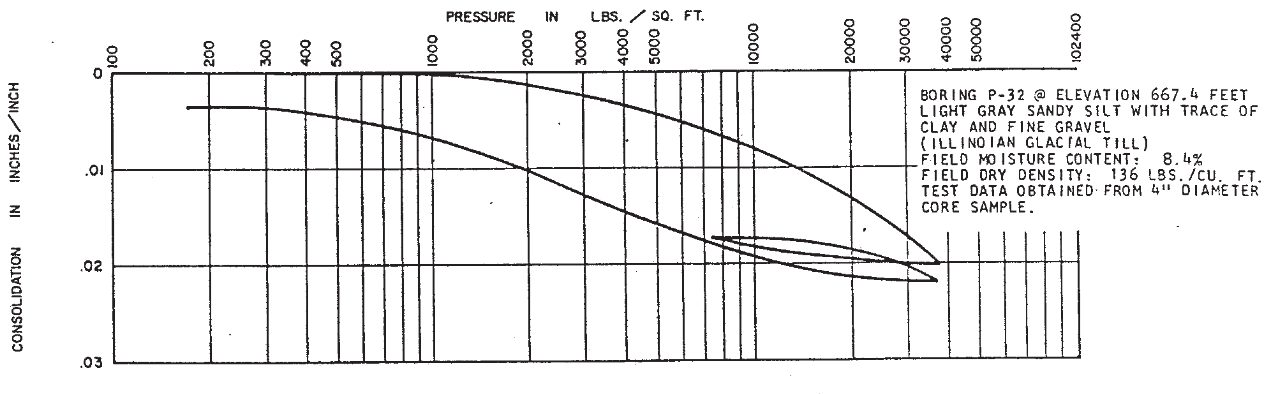
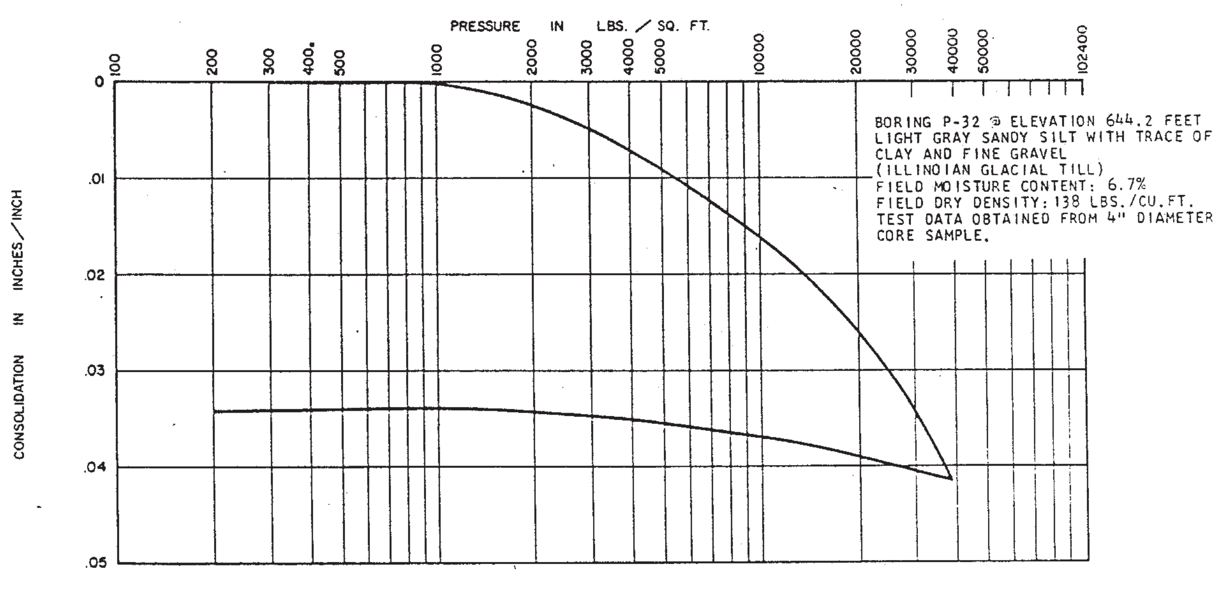
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-338

CONSOLIDATION TEST (BORINGS G-18, G-19 AND G-20)





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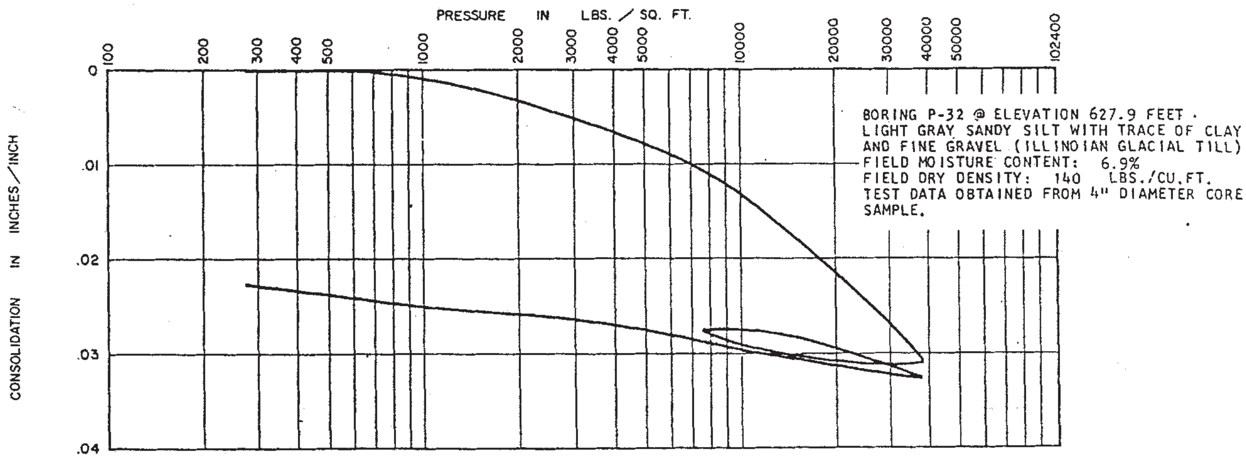
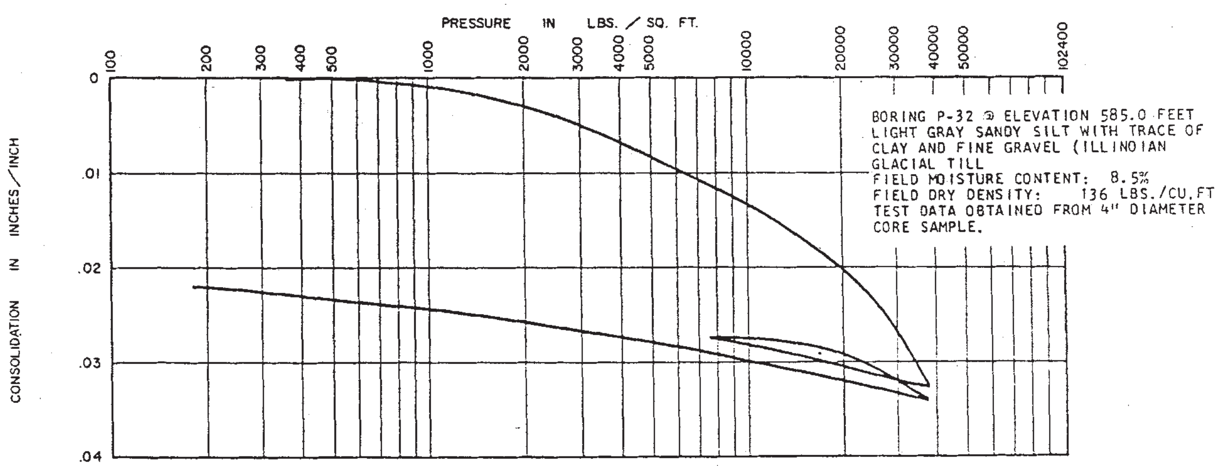
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-339

CONSOLIDATION TEST (BORING P-32)
(SHEET 1 of 2)





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UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-339

CONSOLIDATION TEST (BORING P-32)

(SHEET 2 of 2)

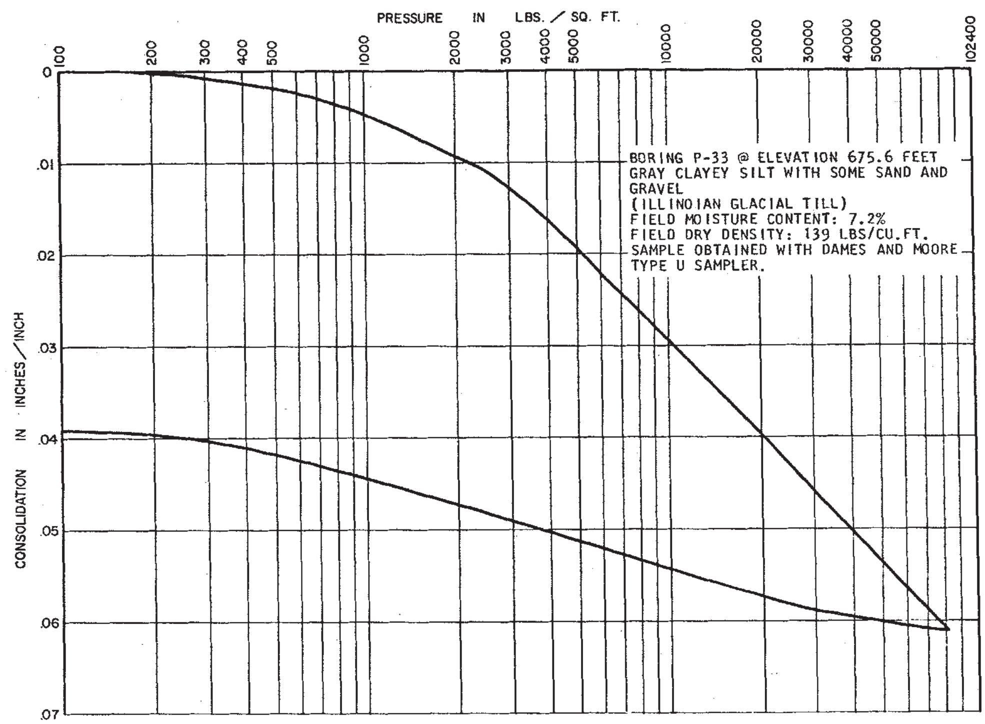

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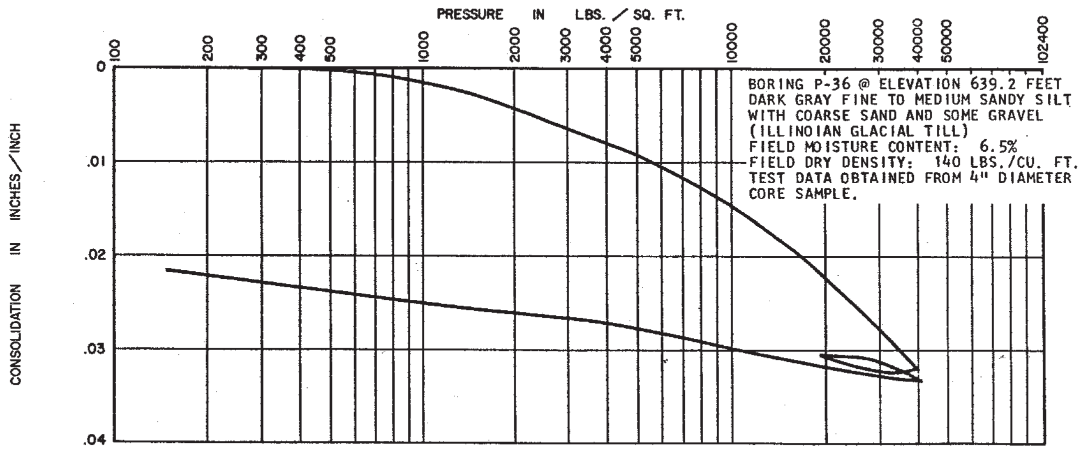
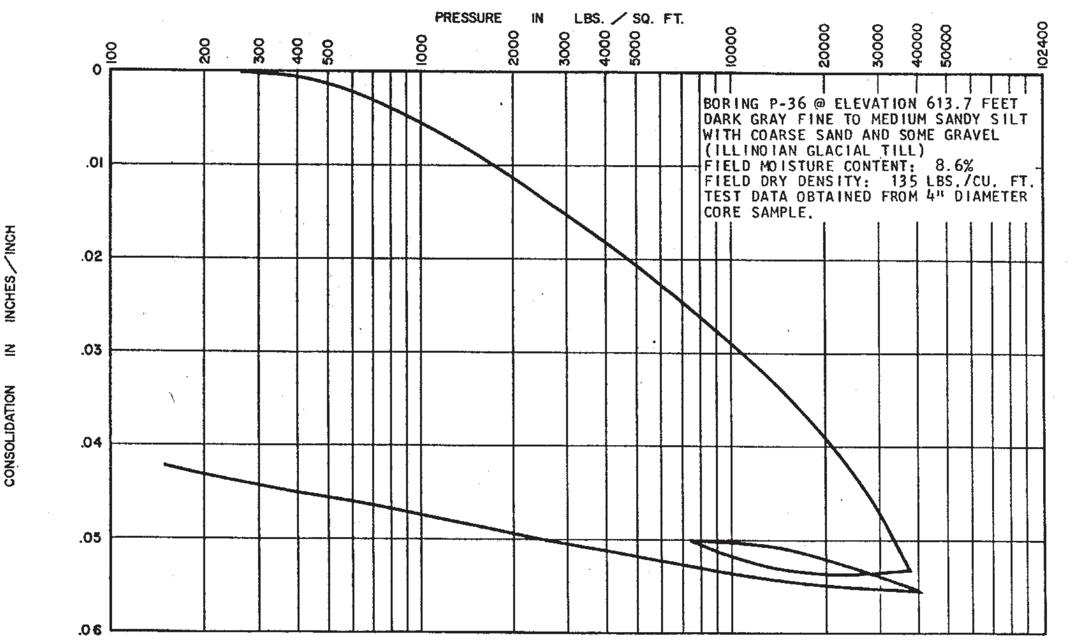
FIGURE 2.5-340

CONSOLIDATION TEST (BORING P-33)





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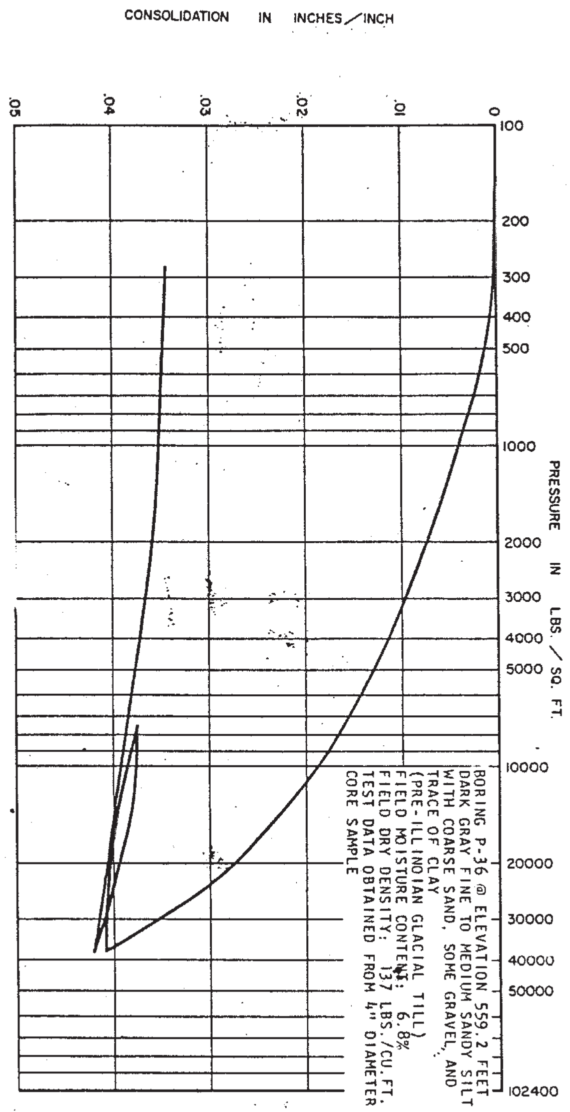
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-341

CONSOLIDATION TEST (BORING P-36)

(SHEET 1 of 3)



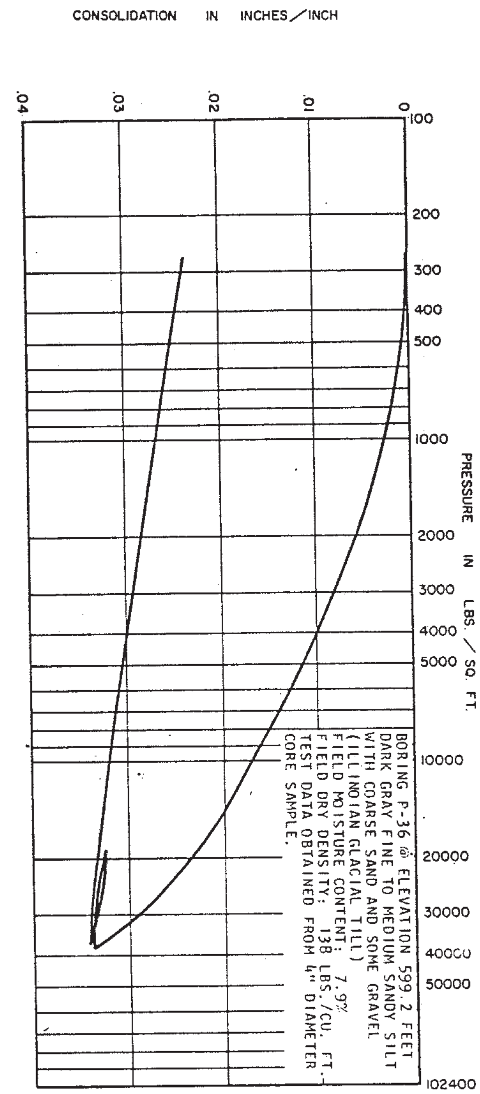


FIGURE 2.5-341

CONSOLIDATION TEST (BORING P-36)

(SHEET 2 of 3)

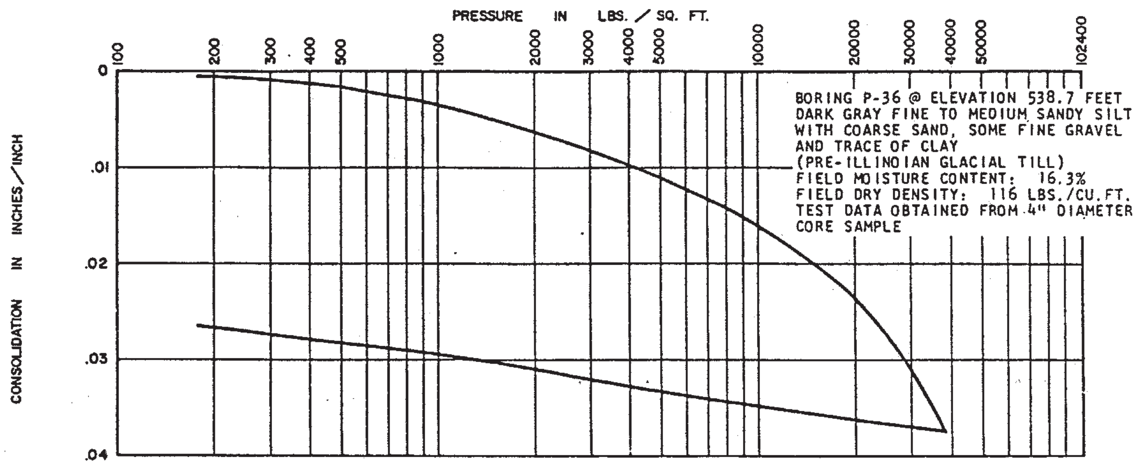


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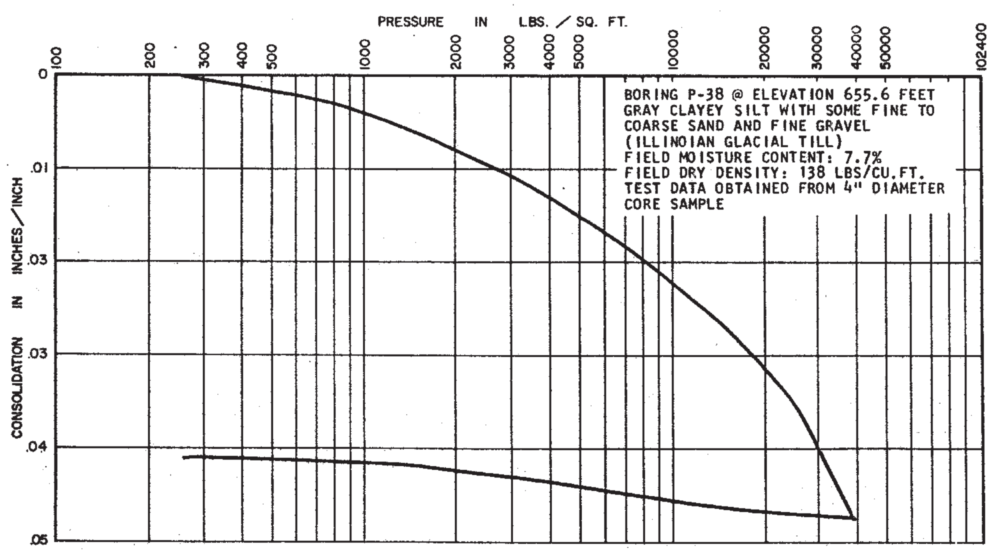
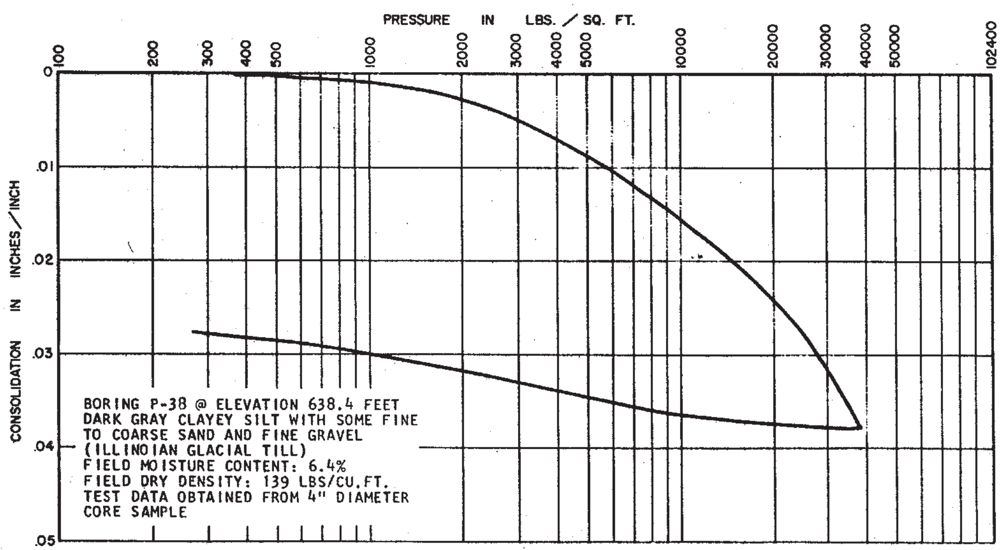
FIGURE 2.5-341

CONSOLIDATION TEST (BORING P-36)

(SHEET 3 of 3)





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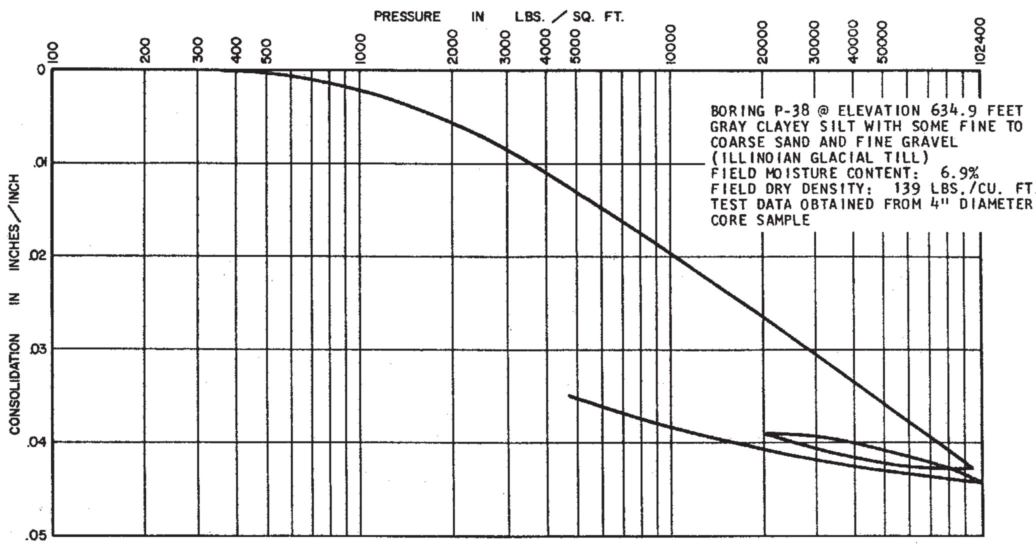
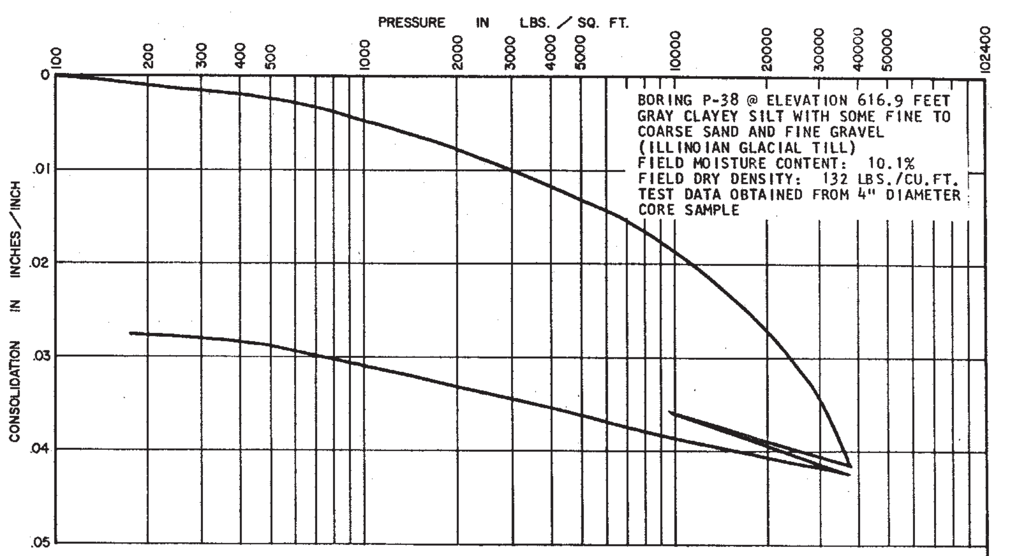
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-342

CONSOLIDATION TEST (BORING P-38)

(SHEET 1 of 5)





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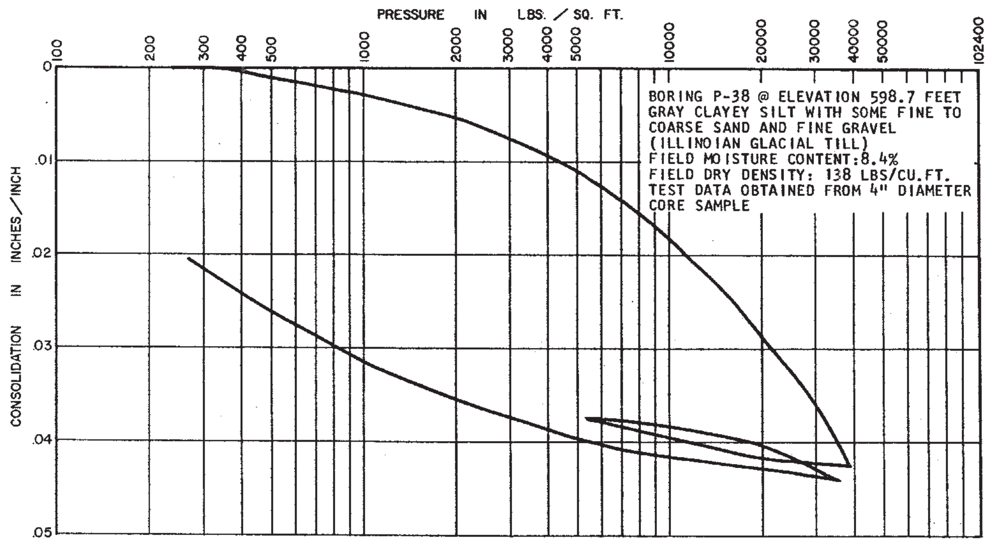
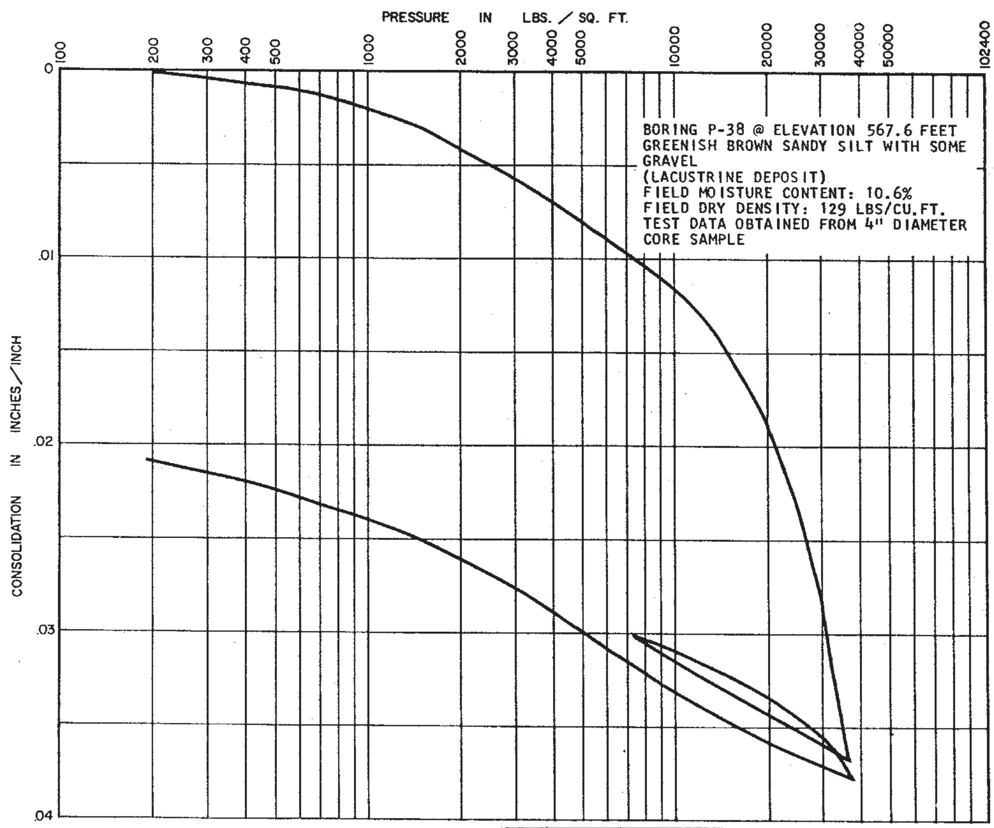
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-342

CONSOLIDATION TEST (BORING P-38)

(SHEET 2 of 5)





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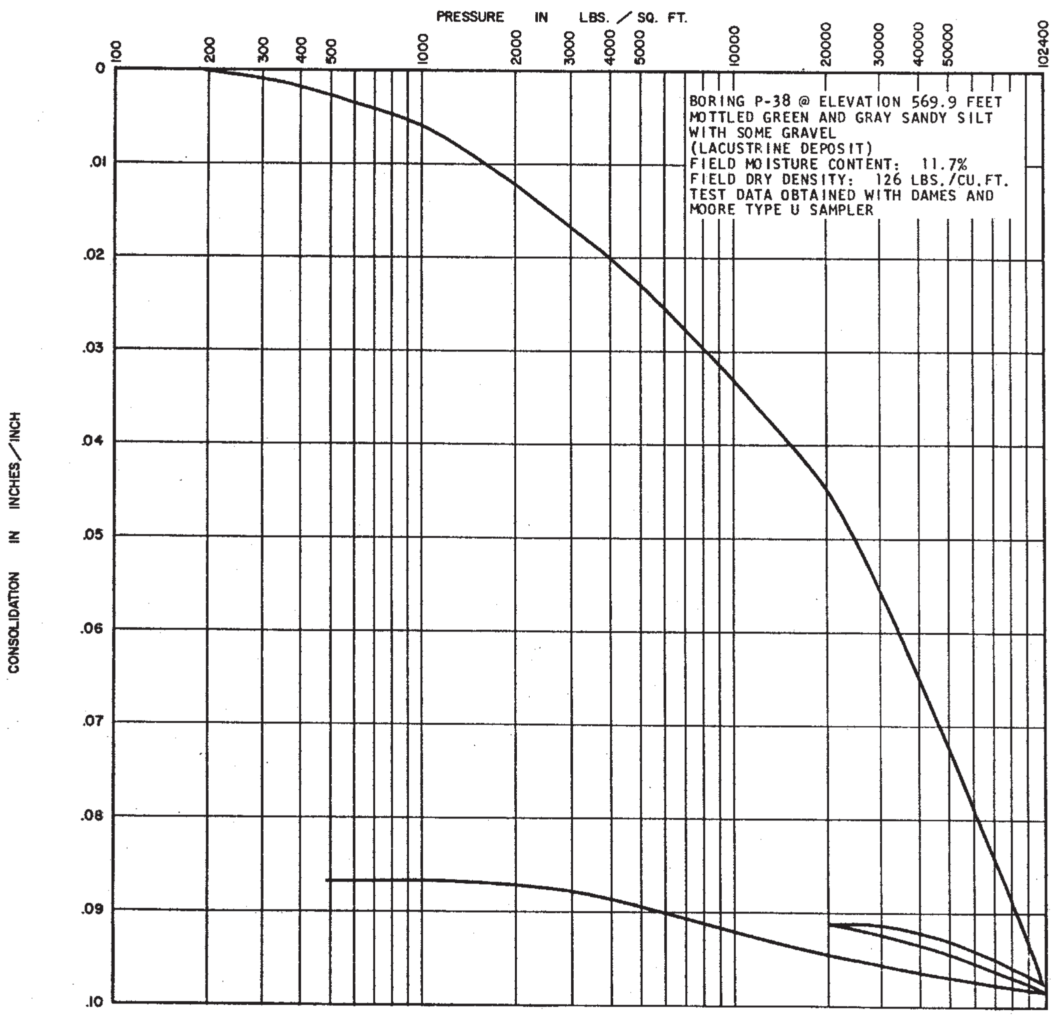
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-342

CONSOLIDATION TEST (BORING P-38)

(SHEET 3 of 5)



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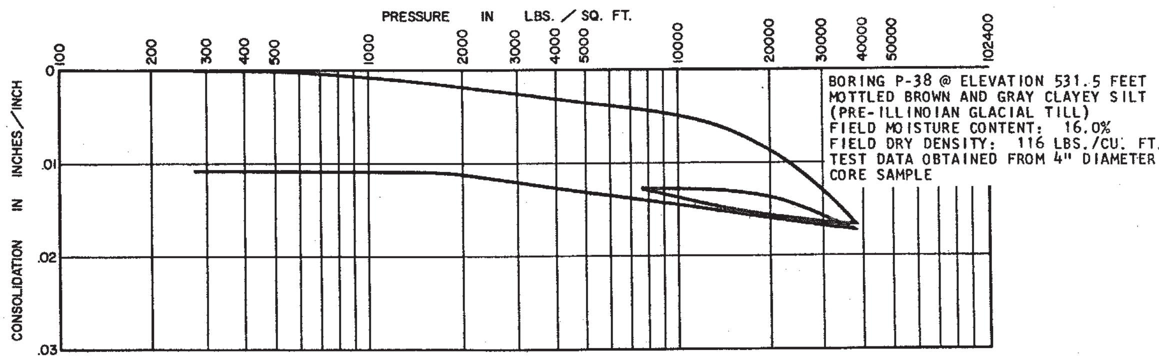
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-342

CONSOLIDATION TEST (BORING P-38)
(SHEET 4 of 5)



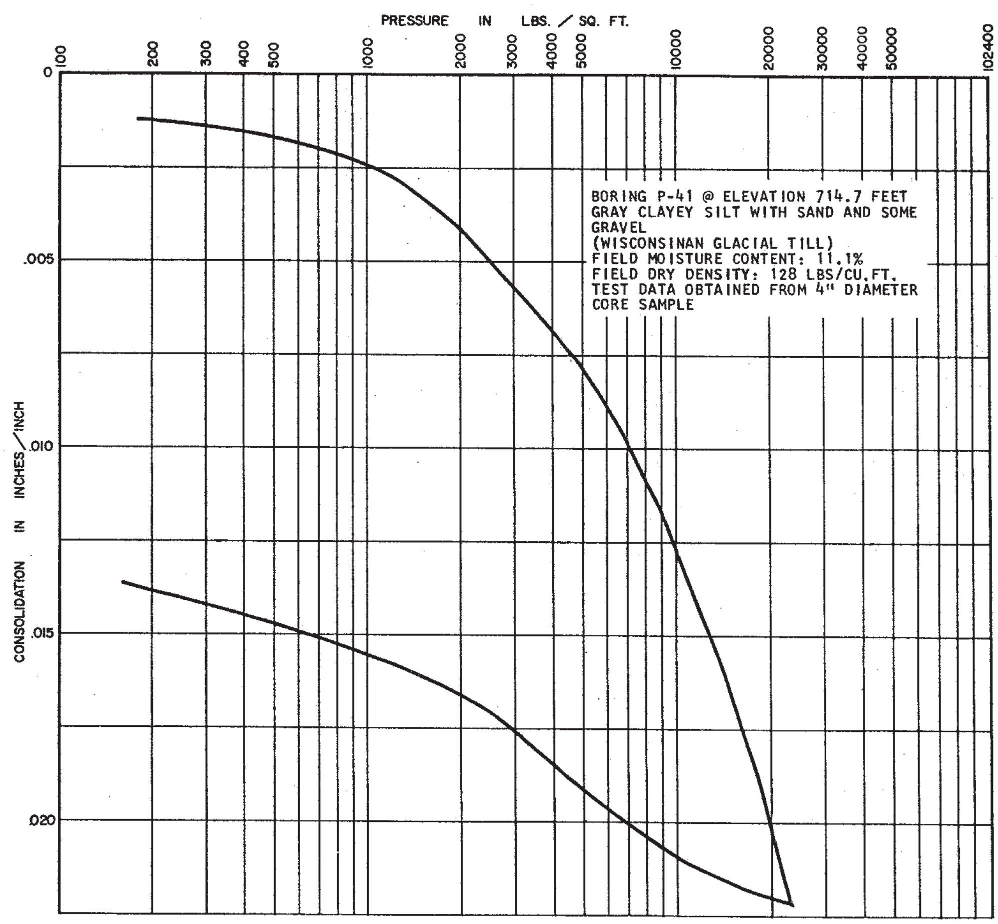
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-342

CONSOLIDATION TEST (BORING P-38)

(SHEET 5 of 5)

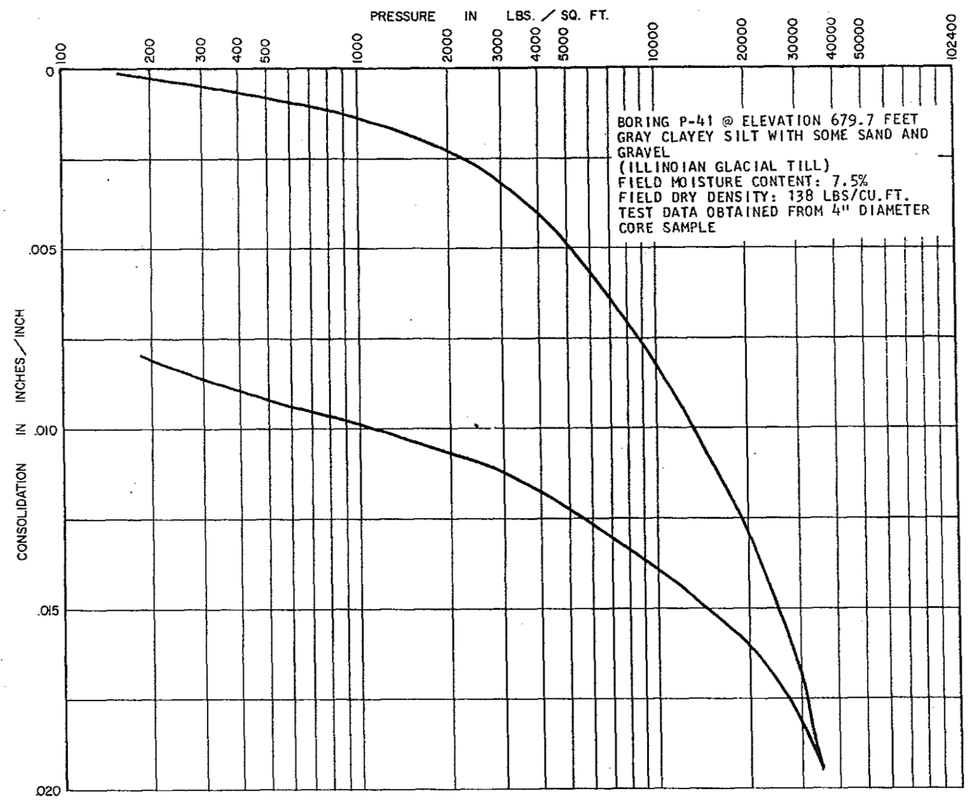


CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-343

CONSOLIDATION TEST (BORING P-41)

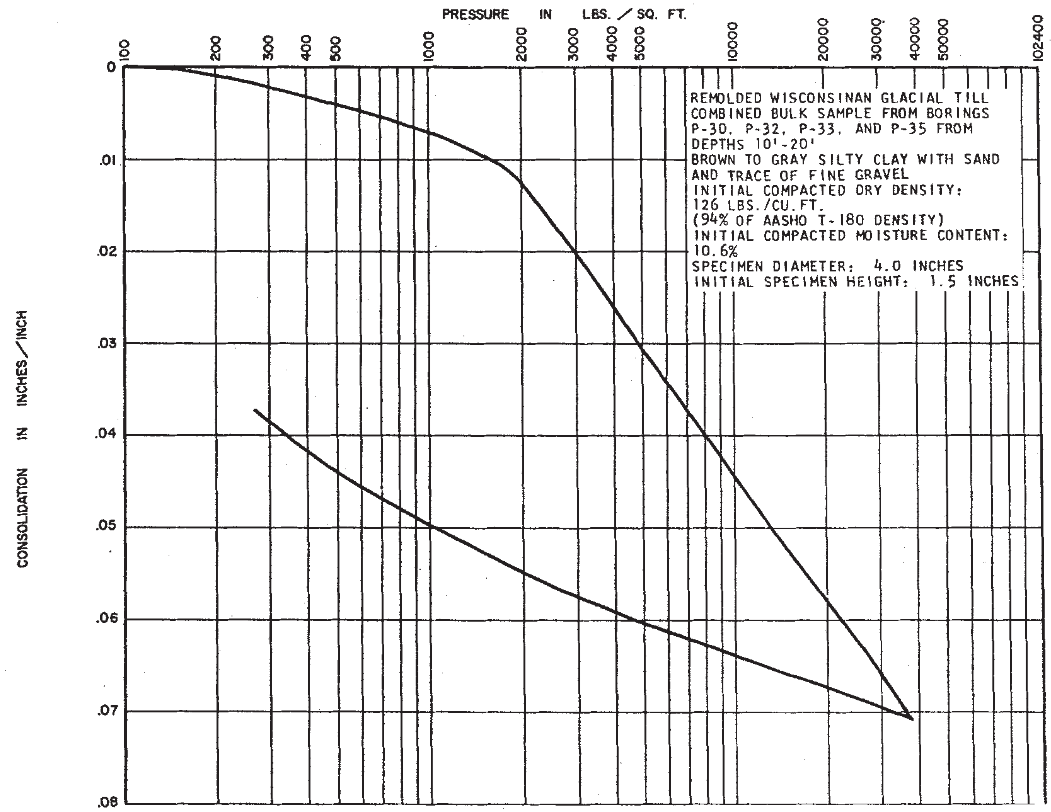
(SHEET 1 of 2)



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-343

CONSOLIDATION TEST (BORING P-41)
(SHEET 2 of 2)



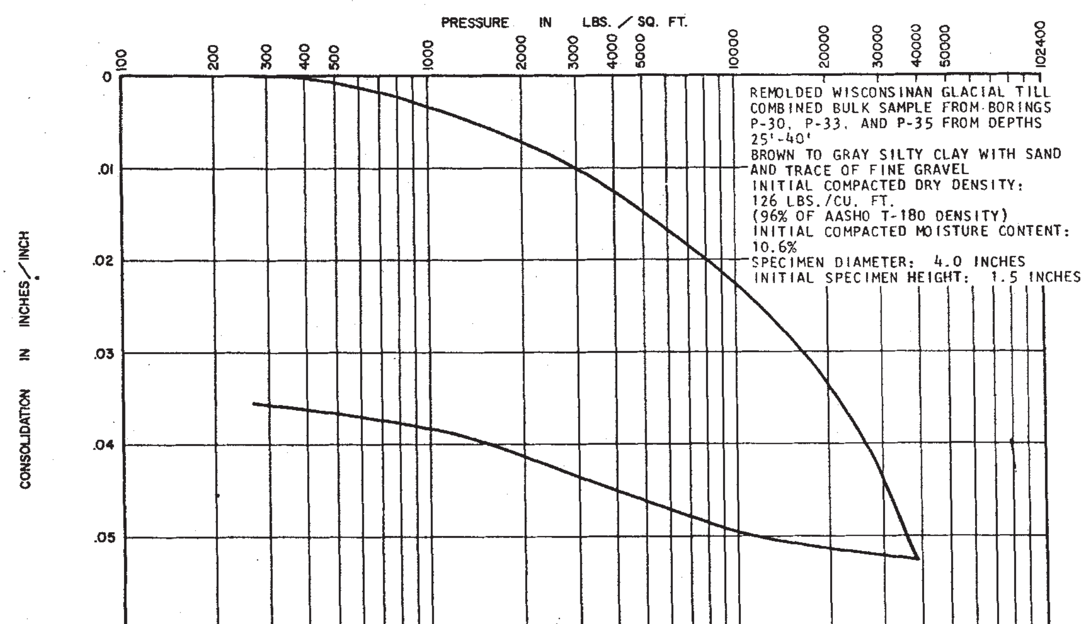


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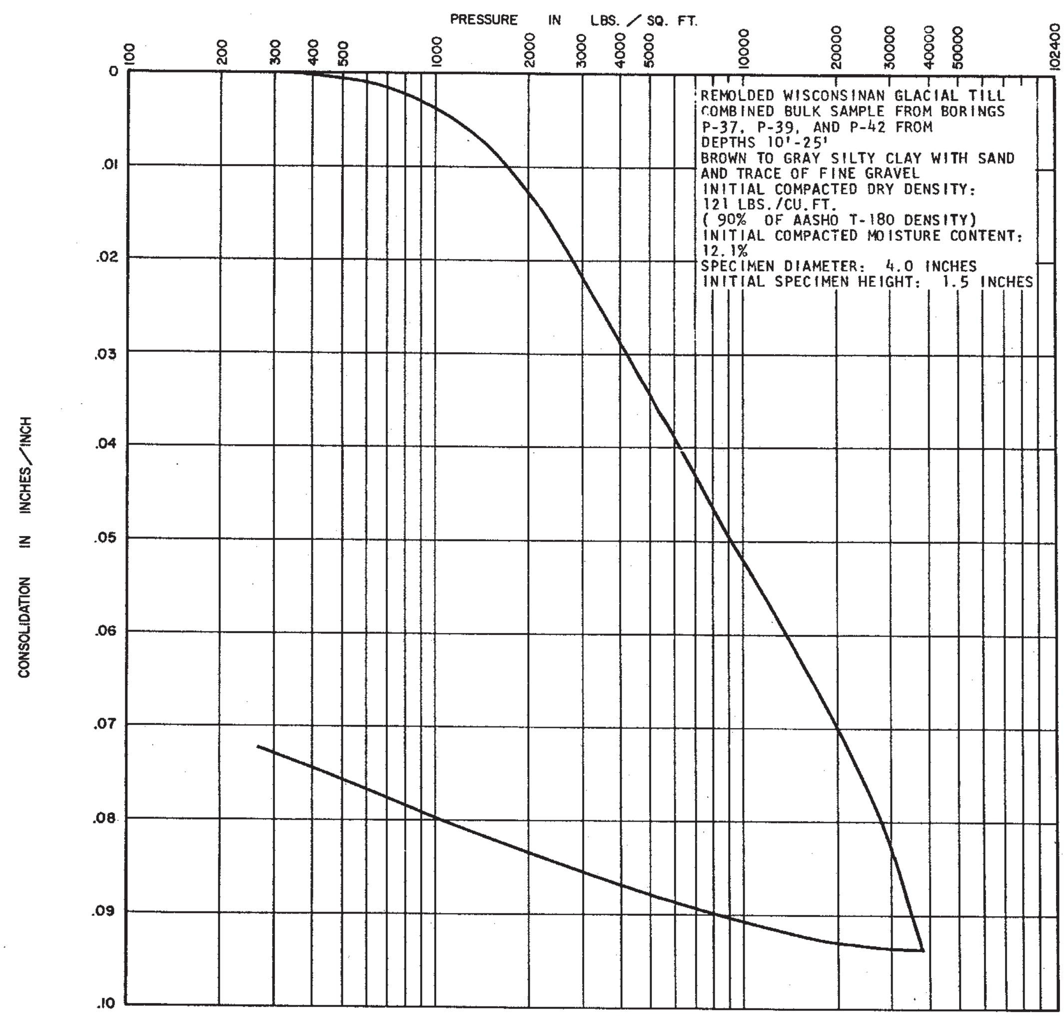
FIGURE 2.5-344

CONSOLIDATION TEST (COMBINED BULK SAMPLE)

(SHEET 1 of 3)



CLINTON POWER STATION

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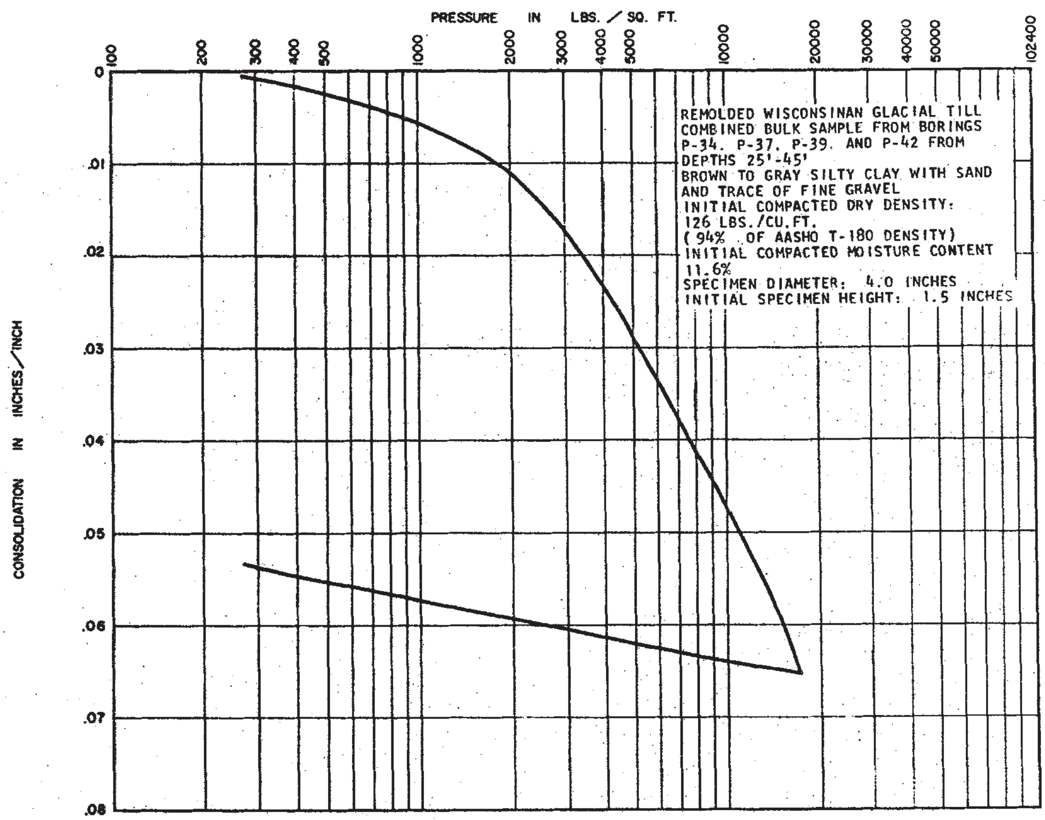
FIGURE 2.5-344

CONSOLIDATION TEST (COMBINED BULK SAMPLE)

(SHEET 2 of 3)



CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-344

CONSOLIDATION TEST (COMBINED BULK SAMPLE)

(SHEET 3 of 3)

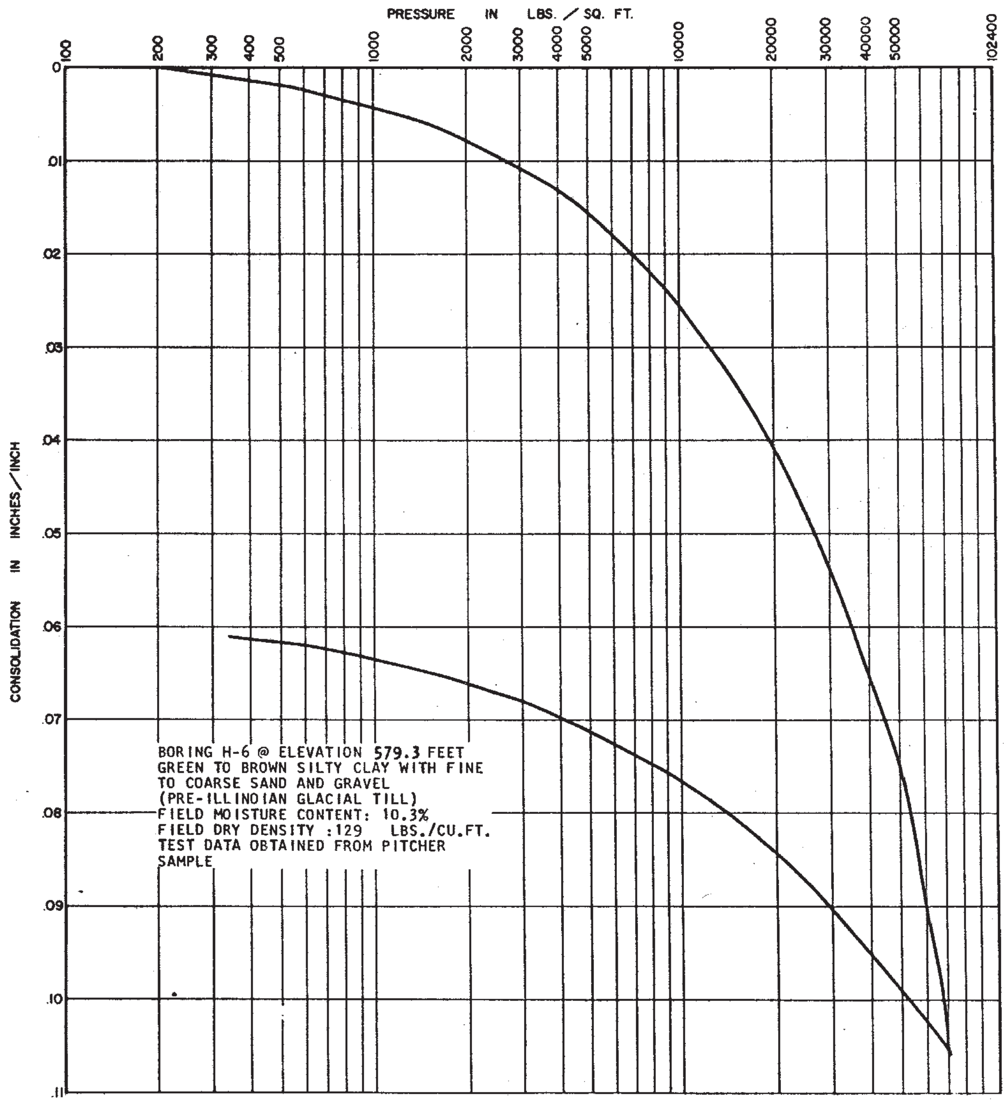


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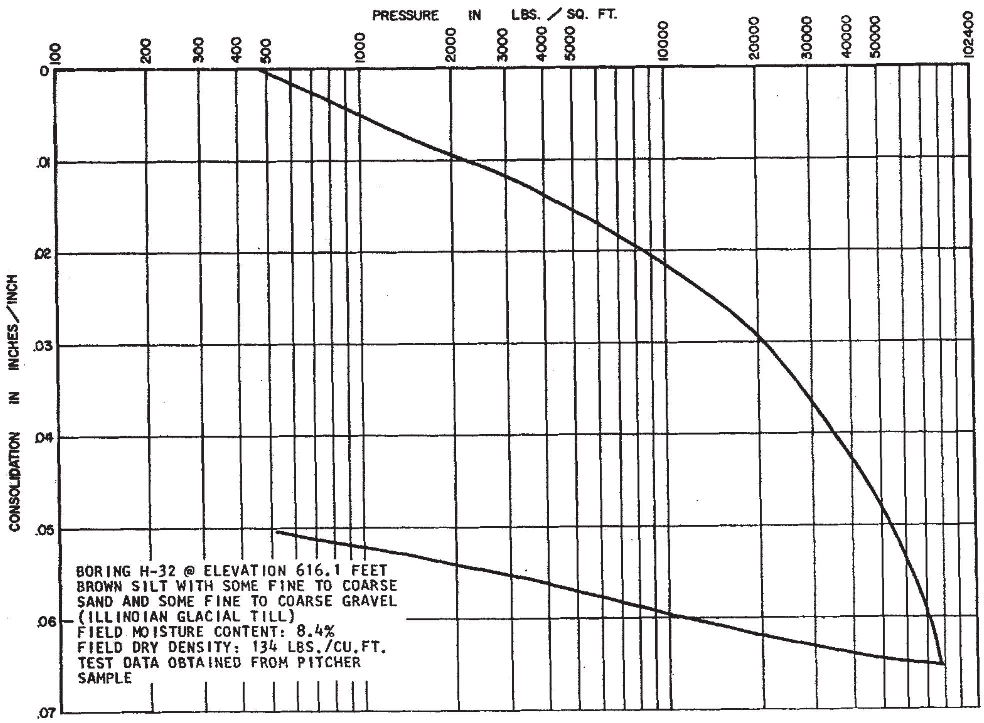
FIGURE 2.5-345

CONSOLIDATION TEST (BORING H-6)



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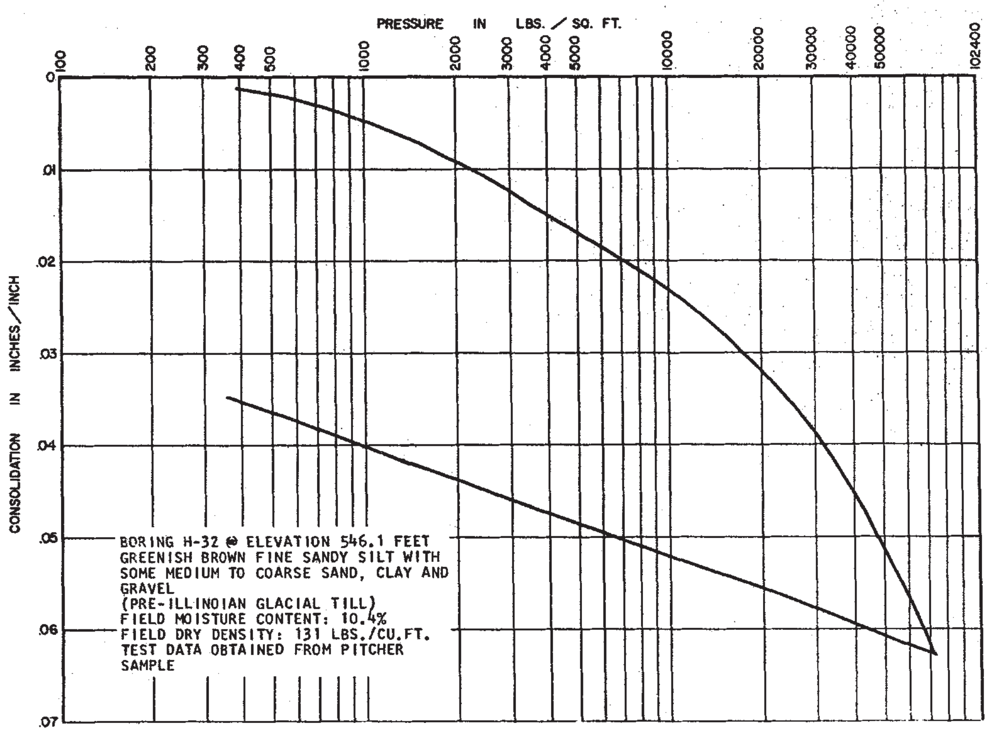
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-346

CONSOLIDATION TEST (BORING H-32)

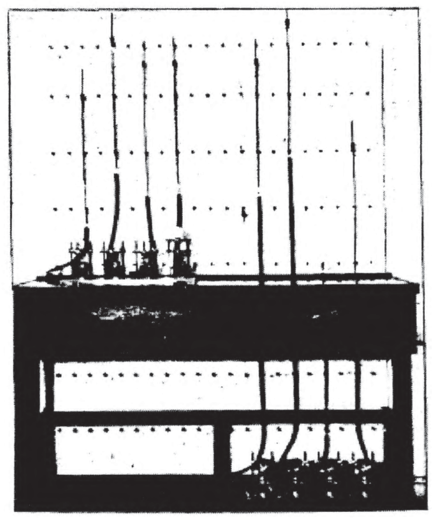
(SHEET 1 of 2)



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-346

CONSOLIDATION TEST (BORING H-32)
(SHEET 2 of 2)



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UPDATED SAFETY ANALYSIS REPORT

Figure 2.5-347
Sheet 1 of 2

PERCOLATION TEST (METHOD)

NOTES FOR FIGURE 2.5-347

Methods of Performing Percolation Tests

The quantity and the velocity of flow of water which will escape through an earth structure or percolate through soil are dependent upon the permeability of the earth structure or soil. The permeability of soil has often been calculated by empirical formulas but is best determined by laboratory tests, especially in the case of compacted soils.

A one inch length of the core sample is sealed in the percolation apparatus, placed under a confining load, or surcharge pressure, and subjected to the pressure of a known head of water. The percolation rate is computed from the measurements of the volume of water which flows through the sample in a series of time intervals. These rates are usually expressed as the velocity of flow in feet per year under a hydraulic gradient of one and at a temperature of 20 degrees Centigrade. The rate so expressed may be adjusted for any set of conditions involving the same soil by employing established physical laws. Generally, the percolation rate varies over a wide range at the beginning of the test and gradually approaches equilibrium as the test progresses.

During the performance of the test, continuous readings of the deflection of the sample are taken by means of micrometer dial gauges. The amount of compression or expansion, expressed as a percentage of the original length of the sample, is a valuable indication of the compression of the soil which will occur under the action of load or the expansion of the soil as saturation takes place.

Figure 2.5-347
Sheet 2 of 2

PERCOLATION TEST (METHOD)

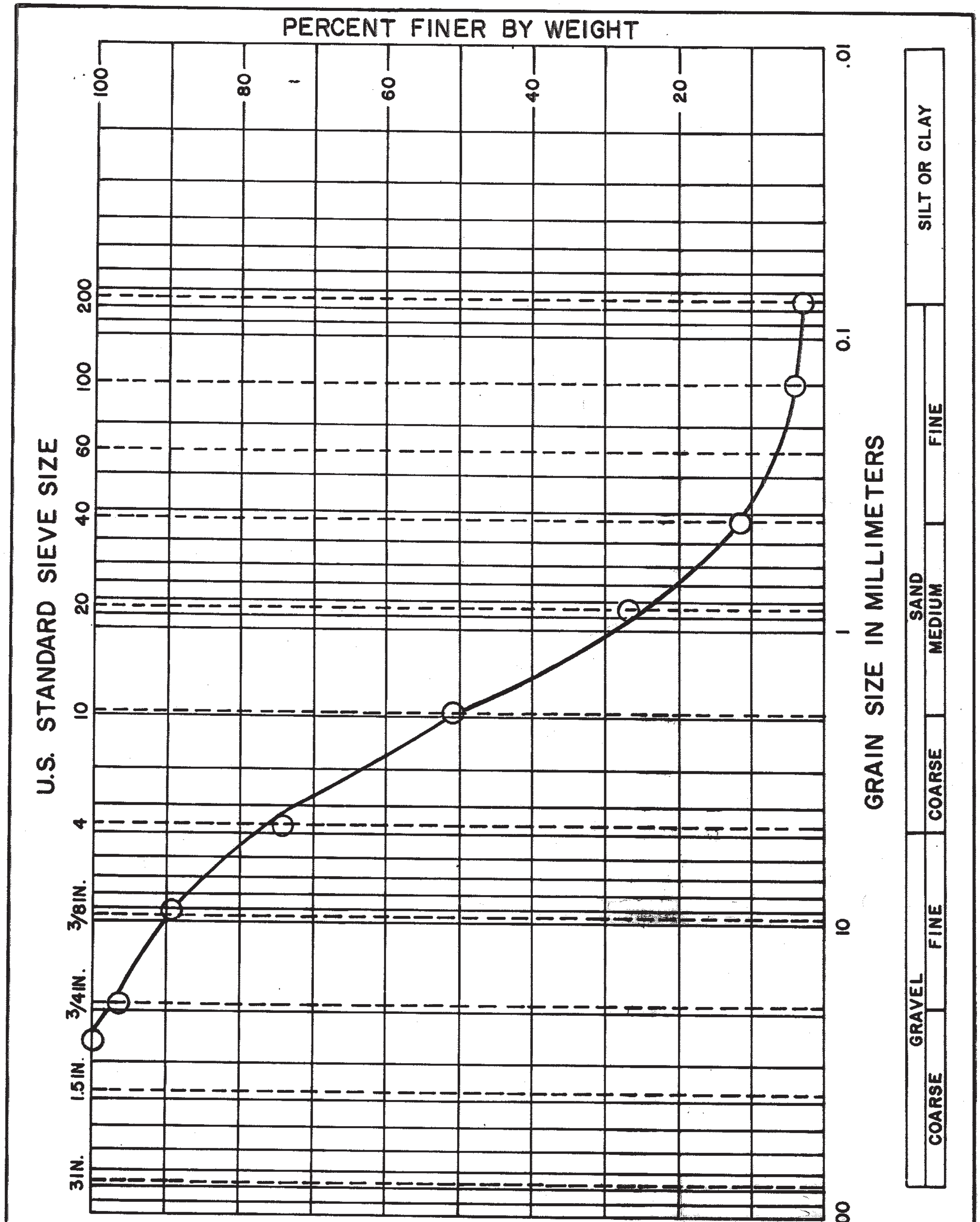

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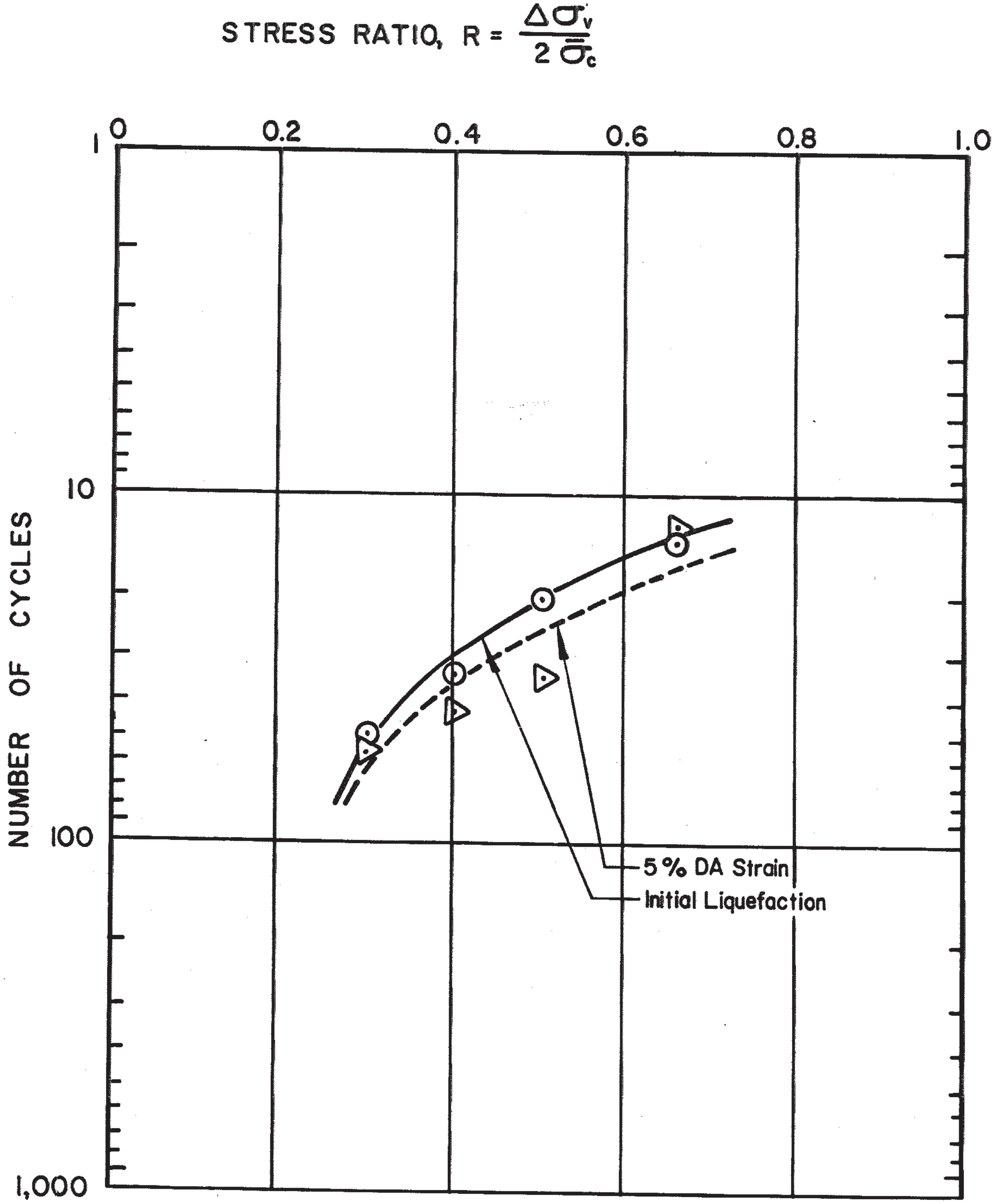
FIGURE 2.5-348

PARTICLE SIZE ANALYSIS - TYPE B
MATERIAL - LIQUEFACTION SAMPLE



⊙ Initial Liquefaction
△ 5 % Double Amplitude Strain

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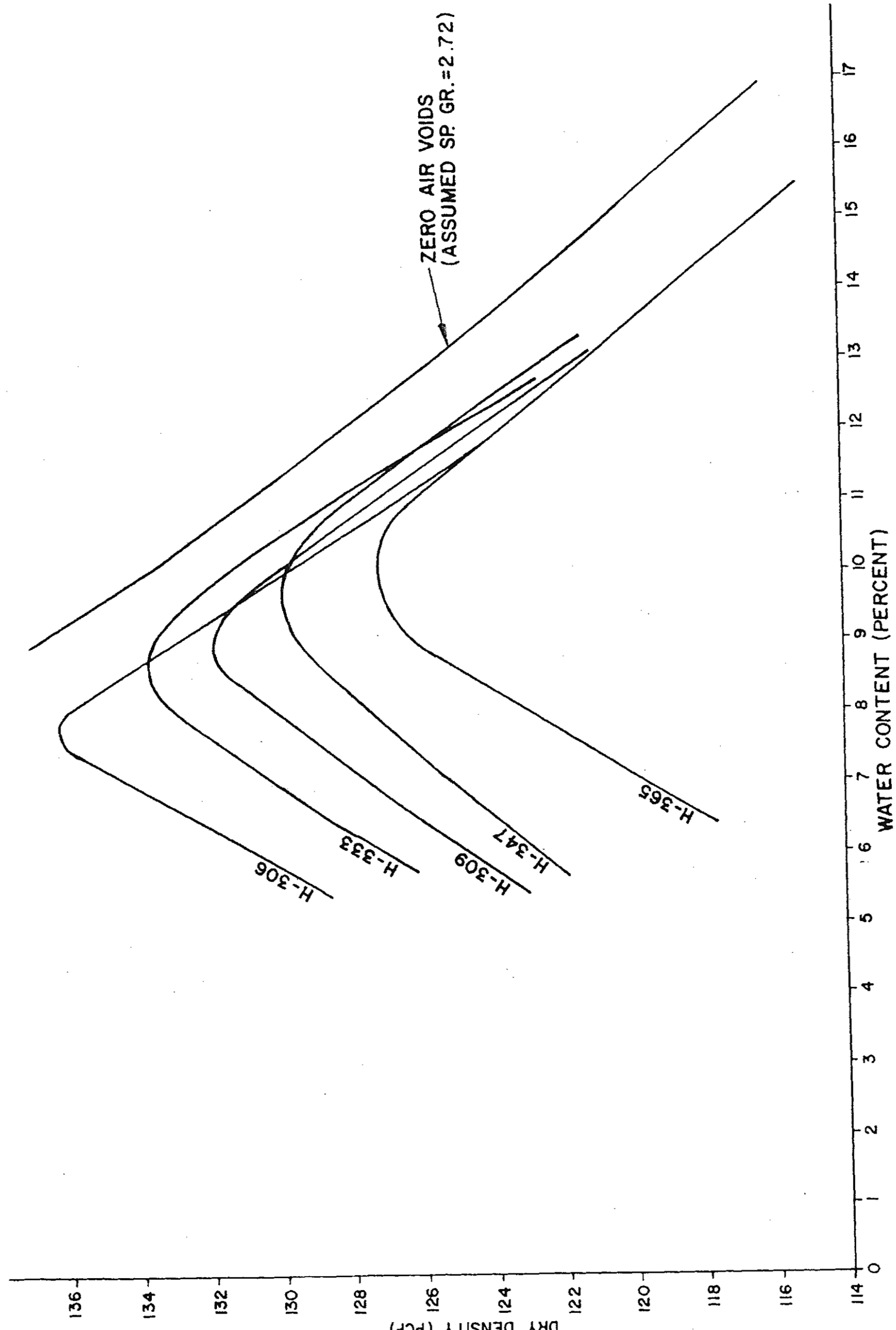
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-349

LIQUEFACTION TESTS OF TYPE B MATERIAL



NOTES

1. Moisture density relationships based on modified Proctor test ASTM D1557.
2. Data based on field laboratory testing of type A & C material used as backfill around the screenhouse and main plant.
3. H-306, H-333, H-309, H-347 and H-365 denote field sample number.

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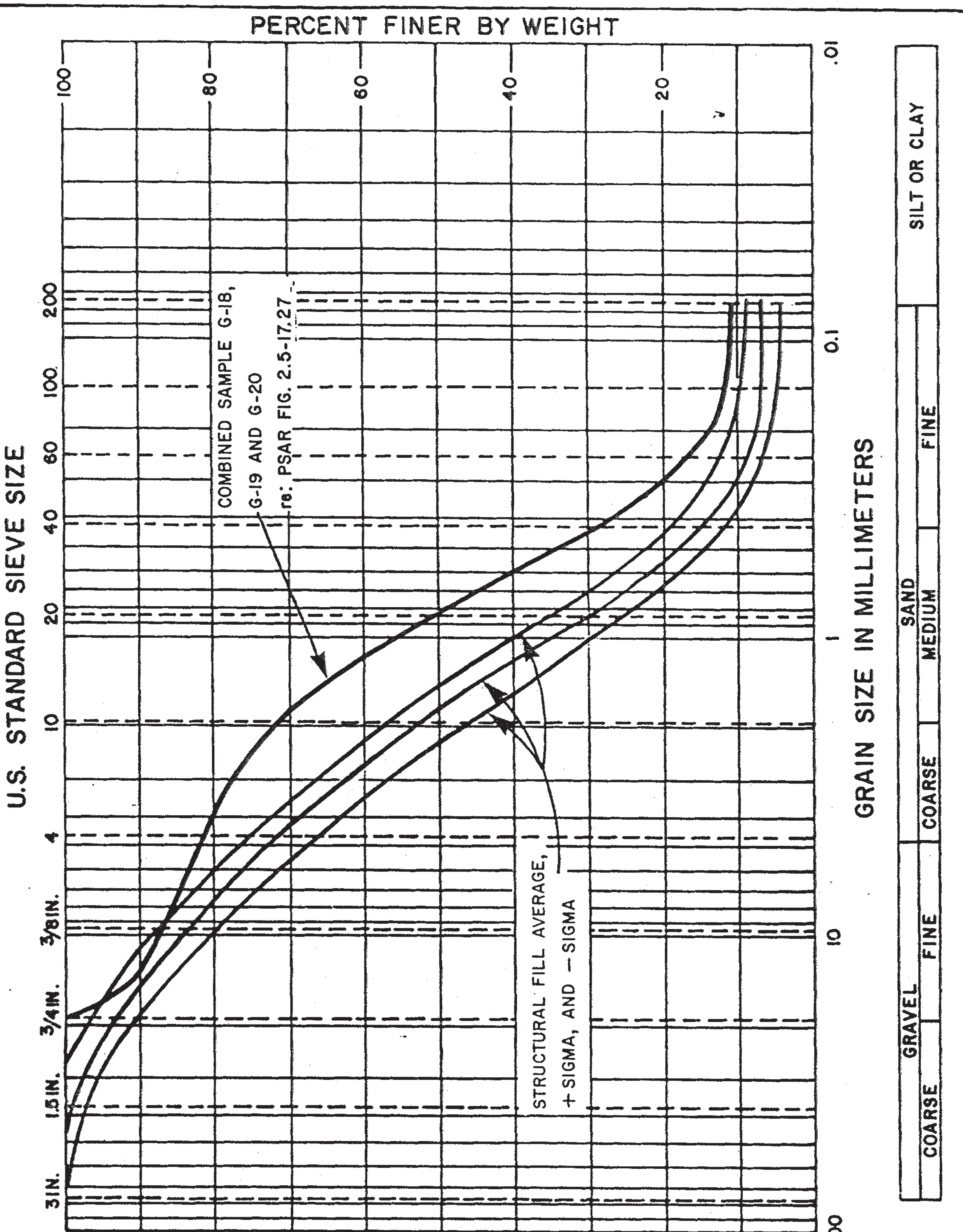
FIGURE 2.5-350

TYPICAL MOISTURE-DENSITY RELATIONSHIPS - SCREEN HOUSE AND MAIN PLANT AREAS



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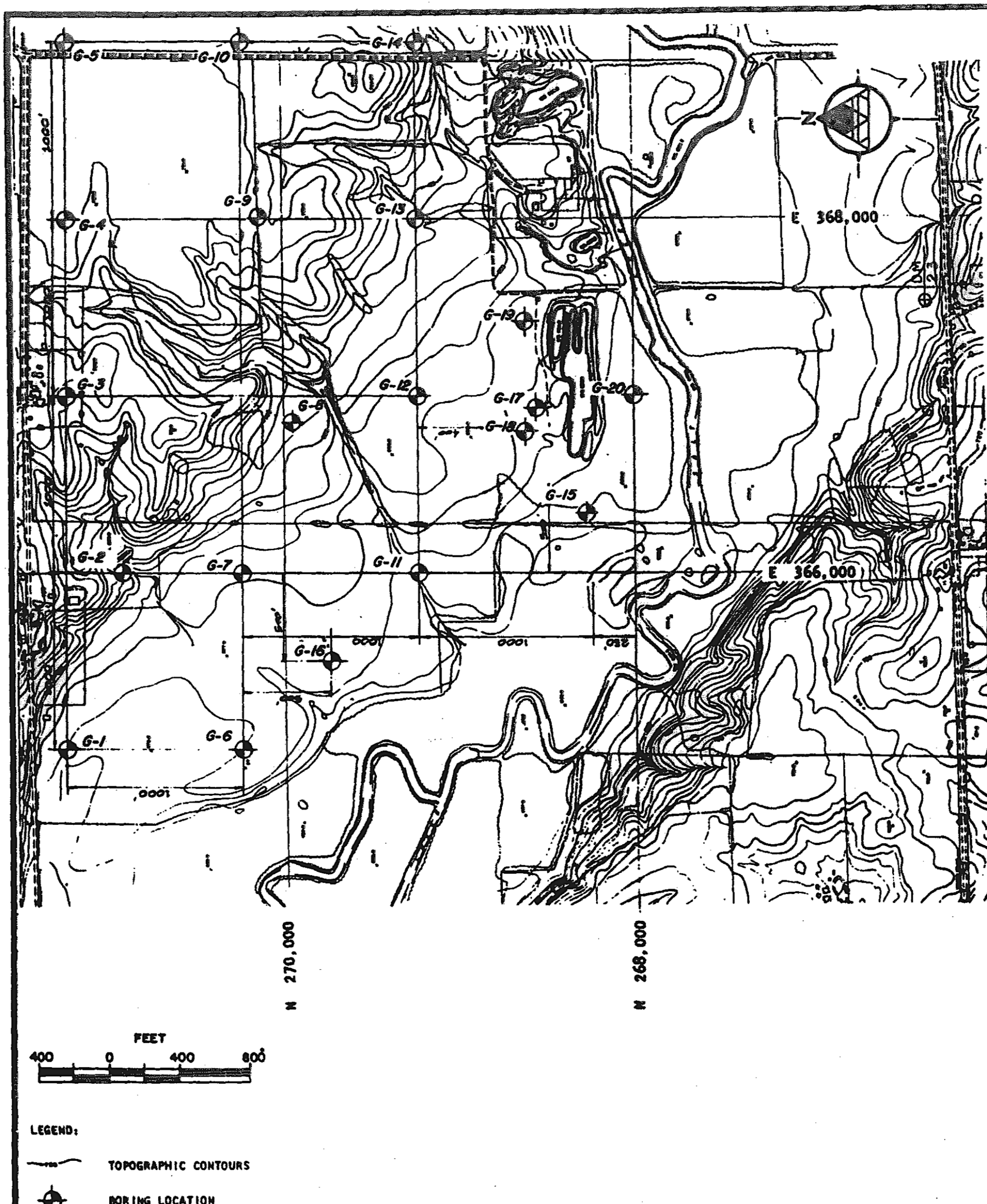
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-351

PARTICLE SIZE ANALYSIS - TYPE B
MATERIAL - STATISTICAL AVERAGE GRADATION



NOTES:

1. SEE FIGURE 2.5-14 FOR LOCATION OF BORROW AREA.
2. REFER TO FIGURES 2.5-152 THROUGH 2.5-161 FOR LOGS OF BORINGS.

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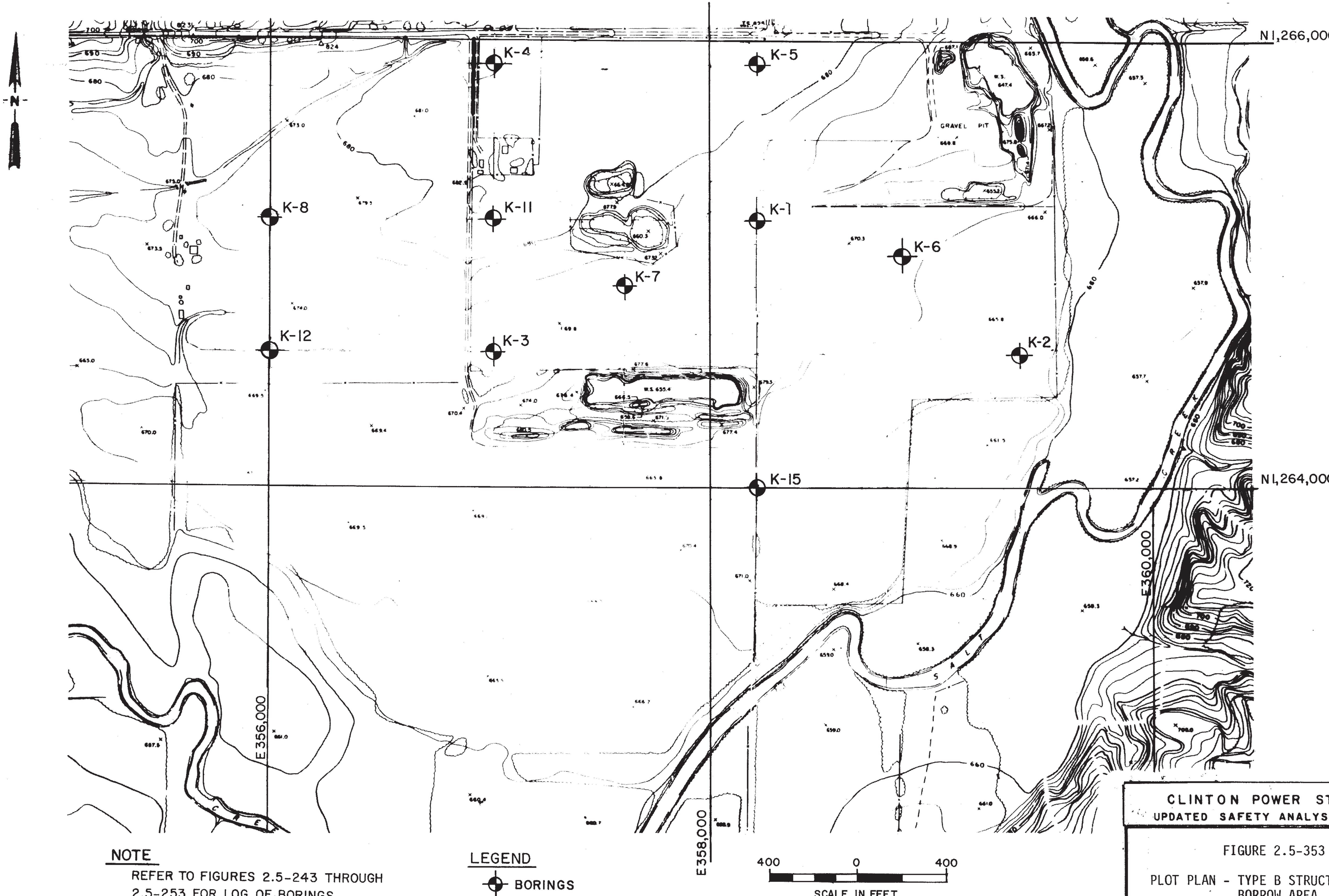
FIGURE 2.5-352

PLOT PLAN - PROPOSED BORROW AREA FOR STRUCTURAL FILL



NOTE

REFER TO FIGURES 2.5-243 THROUGH 2.5-253 FOR LOG OF BORINGS.

LEGEND

BORINGS

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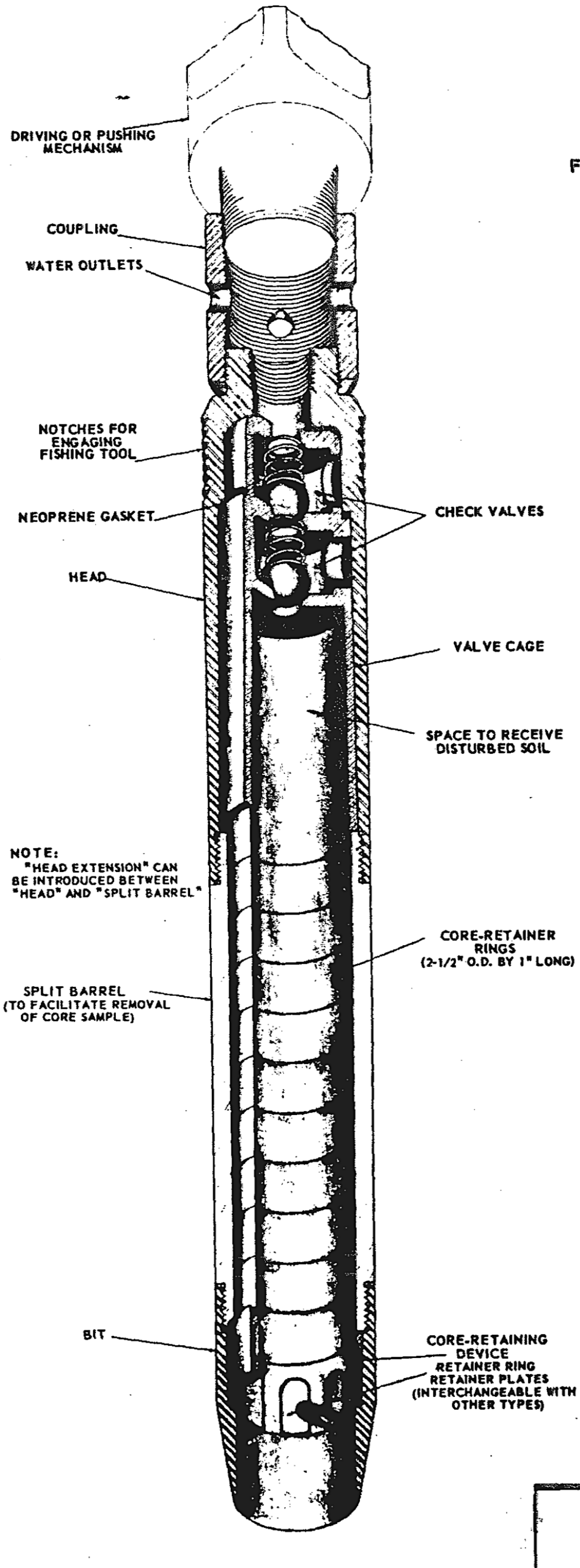
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-353

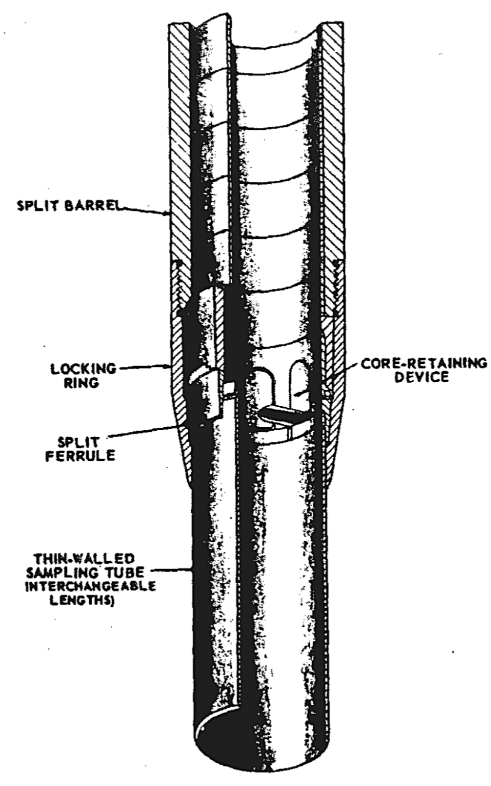
PLOT PLAN - TYPE B STRUCTURAL FILL BORROW AREA

SOIL SAMPLER TYPE U

FOR SOILS DIFFICULT TO RETAIN IN SAMPLER
U. S. PATENT NO. 2,318,062



ALTERNATE ATTACHMENTS



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UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-354

DAMES AND MOORE U-TYPE SAMPLER

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			WOODWARD-CLYDE CONSULTANTS LETTER SYMBOL	WOODWARD-CLYDE CONSULTANTS TYPICAL DESCRIPTION	DAMES AND MOORE LETTER SYMBOL	DAMES AND MOORE TYPICAL DESCRIPTION	SARGENT & LUNDY ENGINEERS LETTER SYMBOL	SARGENT & LUNDY ENGINEERS TYPICAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (little or no fines)			GW	Well-graded gravels, gravel - sand mixtures, little or no fines.	GW	Well-graded gravels, gravel - sand mixtures, little or no fines.
			SP-GP GP-SP GP	Gravelly sand, sandy gravel, poorly graded gravel.	GP	Poorly-graded gravels, gravel - sand mixtures, little or no fines.	GP	Poorly-graded gravels, gravel - sand mixtures, little or no fines.
	More than 50% of coarse fraction RETAINED on No. 4 sieve	GRAVELS WITH FINES (appreciable amount of fines)	GM GP-GM	Sandy GRAVEL, with trace or some silt, silty GRAVEL.	GM	Silty gravels, gravel-sand-silt mixtures.	GM	Silty gravels, gravel-sand-silt mixtures.
					GC	Clayey gravels, gravel-sand-clay mixtures.	GC	Clayey gravels, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS	CLEAN SAND (little or no fines)	SP SP-SM SW	Sand with trace silt.	SW	Well-graded sands, gravelly sands, little or no fines.	SW	Well-graded sands, gravelly sands, little or no fines.
More than 50% of material is LARGER than No. 200 sieve size					SP	Poorly-graded sands, gravelly sands, little or no fines.	SP	Poorly-graded sands, gravelly sands, little or no fines.
	More than 50% of coarse fraction PASSING No. 4 sieve	SANDS WITH FINES (appreciable amount of fines)	SM ML	Sand with some silt, silty sand, sandy silt.	SM	Silty sands, sand-silt mixtures.	SM	Silty sands, sand-silt mixtures.
			SC	Clayey SAND.	SC	Clayey sands, sand-clay mixtures.	SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS	SILTS AND CLAYS	Liquid limit LESS than 50	ML	SILT, Clayey SILT.	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL CL-ML	Silty clay.	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, clays, lean clays.	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays,
					OL	Organic silts and organic silty clays of low plasticity.	OL	Organic silts and organic silty clays of low plasticity.
More than 50% of material is SMALLER than No. 200 sieve size	SILTS AND CLAYS	Liquid limit GREATER than 50			MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils.	MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils.
			CH	CLAY (High plasticity)	CH	Inorganic clays of high plasticity, fat clays.	CH	Inorganic clays of high plasticity, fat clays.
					OH	Organic clays of medium to high plasticity, organic silts.	OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS					PT	Peat, humus swamp soils with high organic contents.	PT	Peat, humus, swamp soils with high organic contents.
				Topsoil				

NOTES:

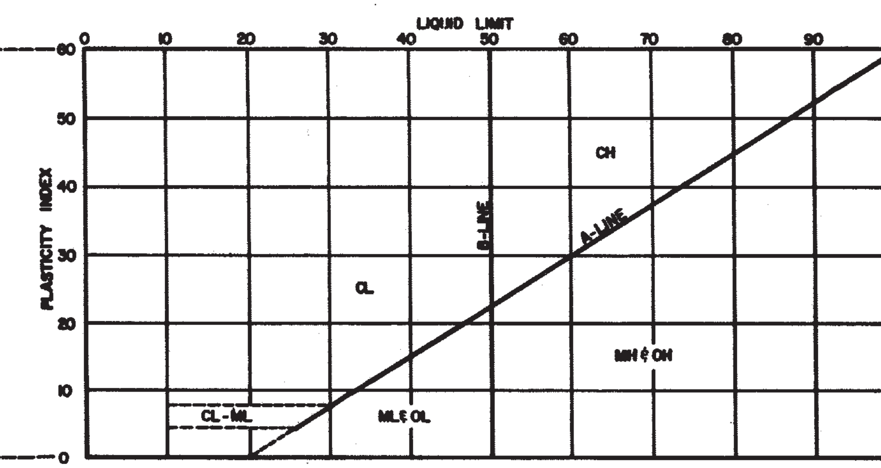
1. Woodward-Clyde Consultants presents only those materials encountered by their field study.
2. Dual symbols are used to indicate borderline classifications.
3. When shown on the boring logs, the following terms are used to describe the consistency of cohesive soils and the relative compactness of cohesionless soils.

CONSISTENCY OF COHESIVE SOILS			RELATIVE DENSITY OF GRANULAR SOILS	
NO. BLOWS/FT	UNCONFINED COMPRESSIVE STRENGTH (tsf)	CONSISTENCY	NO. OF BLOWS/FT	RELATIVE DENSITY
< 2	< 0.25	Very Soft	0-3	Very Loose
2-3	0.25-0.49	Soft	4-9	Loose
4-7	0.50-0.99	Medium	10-29	Medium
8-14	1.00-1.99	Stiff	30-49	Dense
15-30	2.00-4.00	Very stiff	50-80	Very Dense
>30	>4.00	Hard	>80	Extremely dense

MATERIAL SIZE	PARTICLE SIZE			
	LOWER LIMIT		UPPER LIMIT	
	MILLIMETERS	SIEVE SIZE	MILLIMETERS	SIEVE SIZE
SAND				
FINE	.074	#200*	0.42	#40*
MEDIUM	0.42	#40*	2.00	#10*
COARSE	2.00	#10*	4.76	#4*
GRAVEL				
FINE	4.76	#4*	19.1	3/4"•
COARSE	19.1	3/4"•	76.2	3"•
COBBLES	76.2	3"•	304.8	12"•
BOULDERS	304.8	12"•	914.4	36"•

* U.S. STANDARD • CLEAR SQUARE OPENINGS

GRADATION CHART



PLASTICITY CHART

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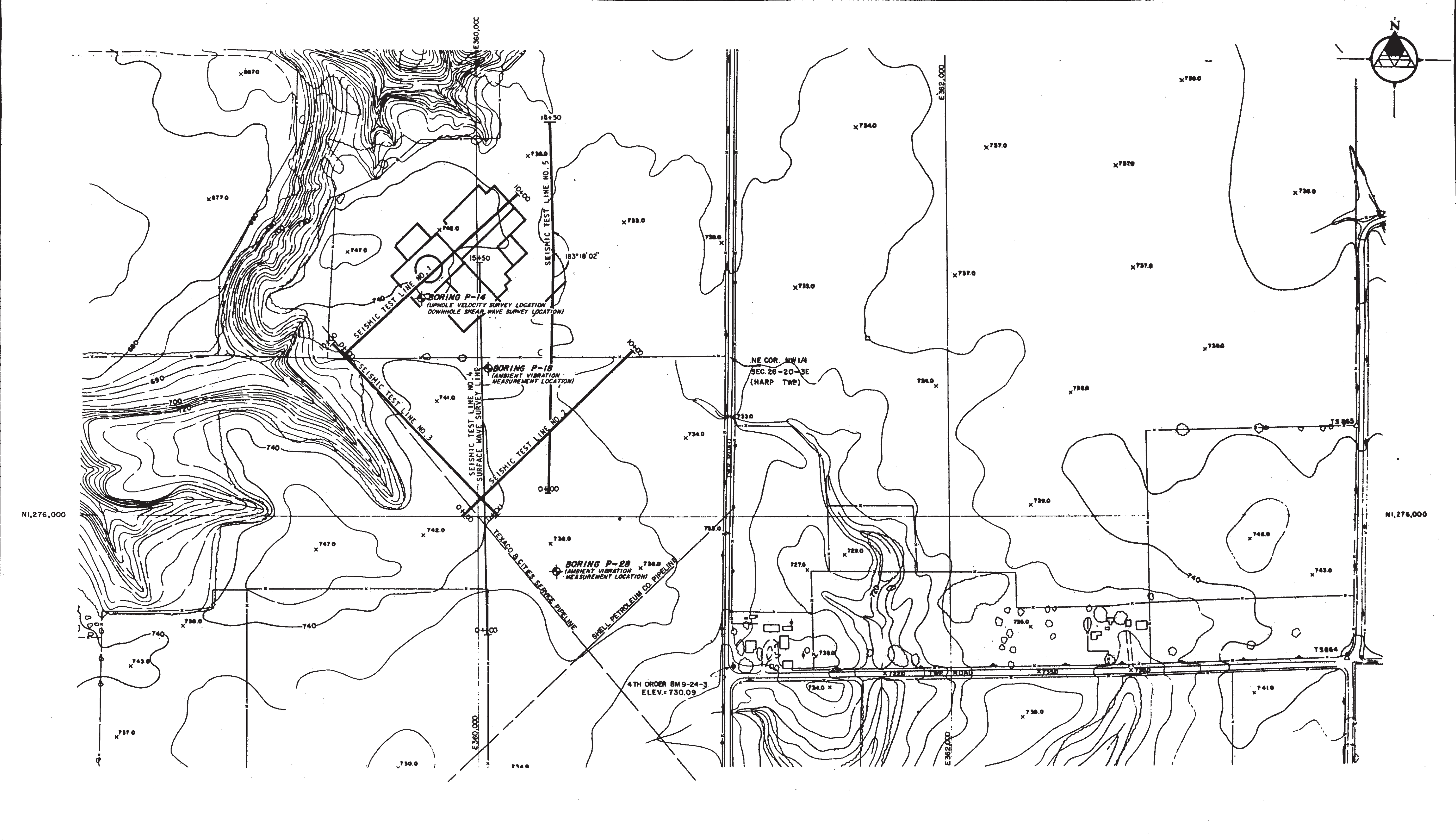
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-355

UNIFIED SOIL CLASSIFICATION SYSTEM



NOTES:

1. REFER TO FIGURES 2.5-359 THROUGH 2.5-363 FOR SEISMIC REFRACTION SURVEYS NO. 1 THROUGH NO. 5.
2. REFER TO FIGURE 2.5-366 FOR UPHOLE VELOCITY SURVEY IN BORING P-14.

LEGEND

740 TOPOGRAPHIC CONTOURS

BORING P-28 BORING LOCATION

FEET

100 0 100 200 300 400 500

CONTOUR INTERVAL 3 1/3 FEET

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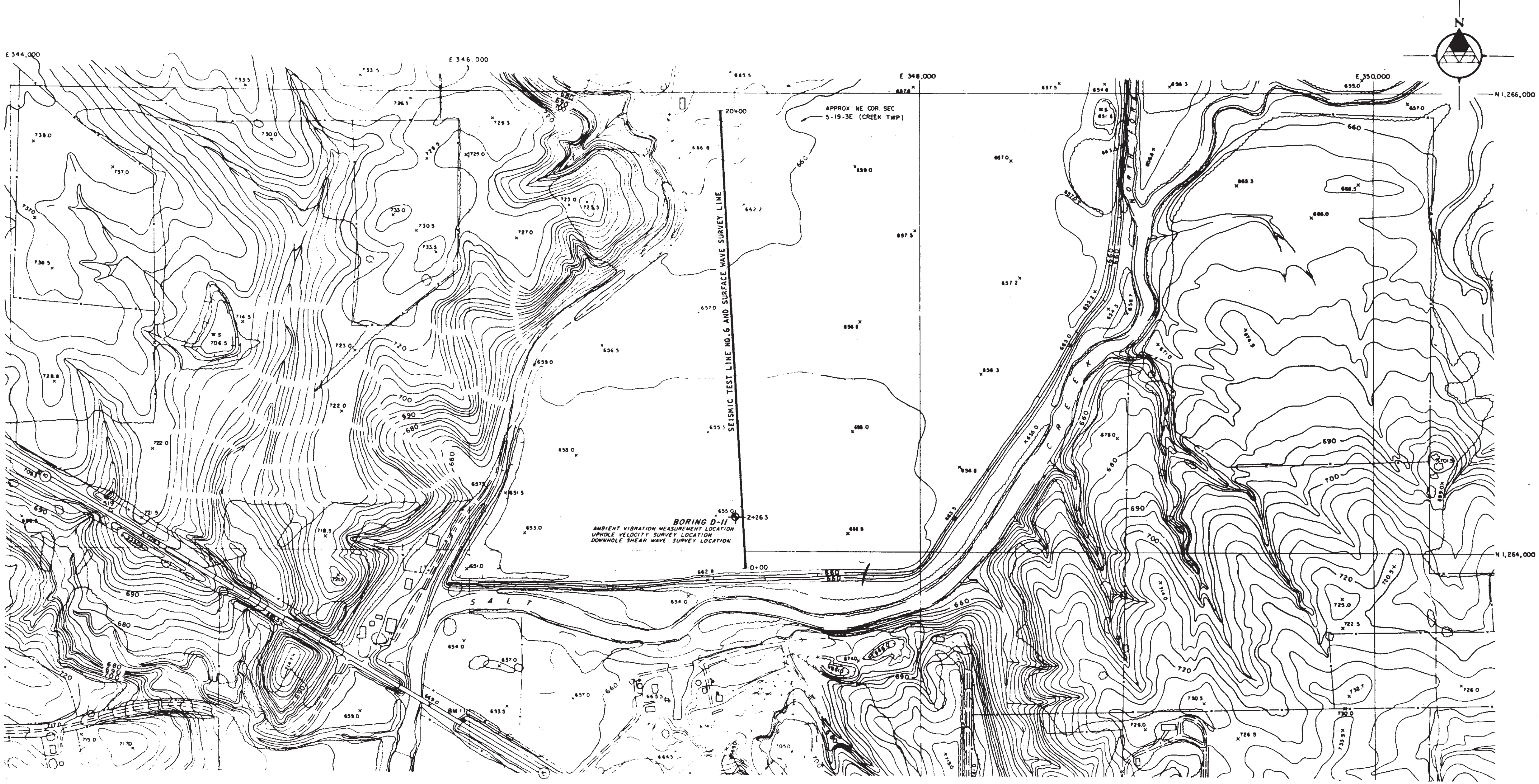
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-356

PLOT PLAN OF GEOPHYSICAL EXPLORATIONS STATION SITE



NOTES:

1. REFER TO FIGURE 2.5-364 FOR SEISMIC REFRACTION SURVEY LINE NO. 6.
2. REFER TO FIGURE 2.5-367 FOR UPHOLE VELOCITY SURVEY IN BORING D-11.

LEGEND

690 — TOPOGRAPHIC CONTOURS

BORING D-11 — BORING LOCATION

FEET

100 0 100 200 300 400 500

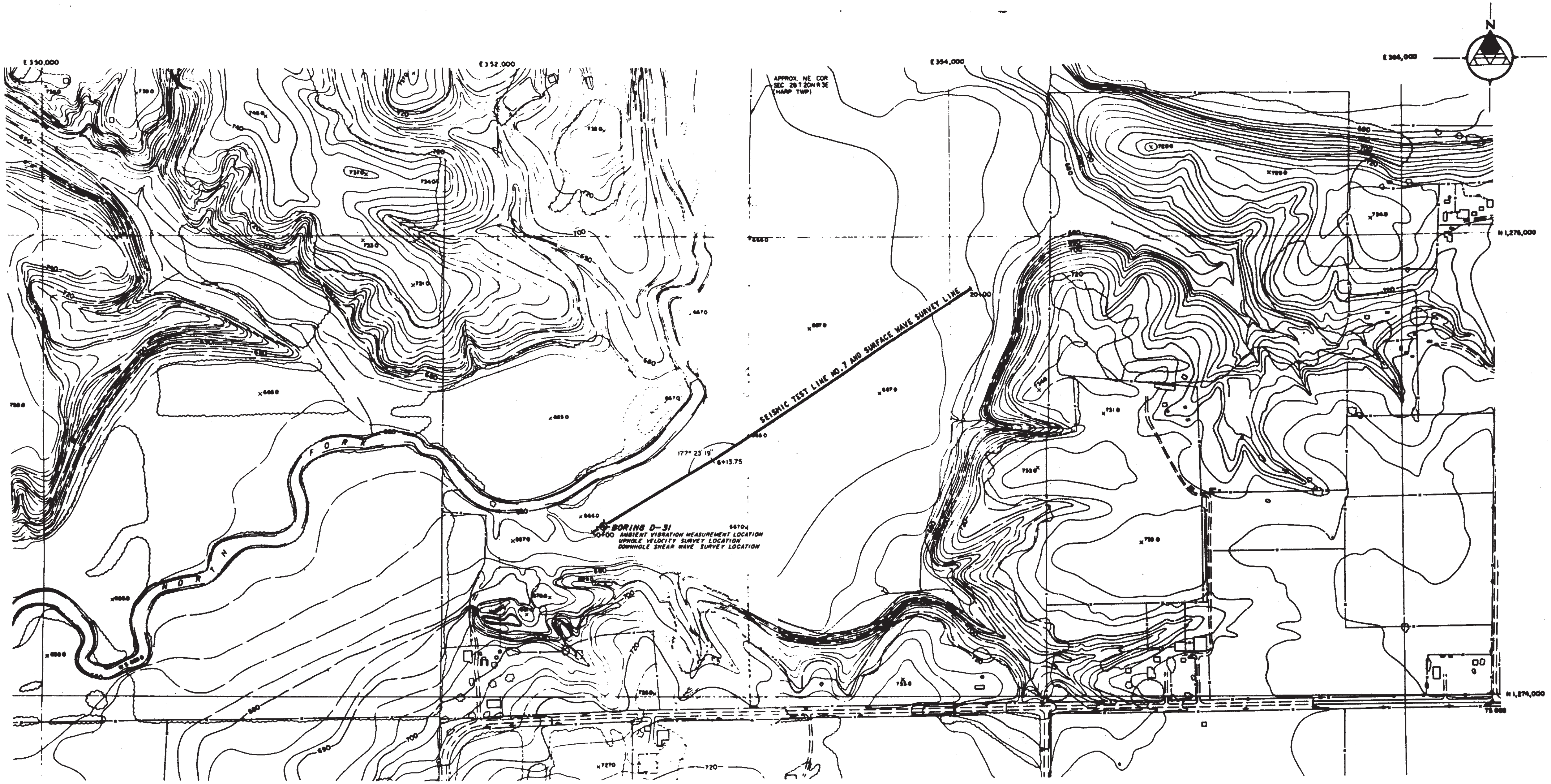
CONTOUR INTERVAL 3 1/3 FEET

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-357

PLOT PLAN OF GEOPHYSICAL EXPLORATIONS
DAM SITE



NOTES:

1. REFER TO FIGURE 2.5-364 FOR SEISMIC REFRACTION SURVEY LINE NO. 7.
2. REFER TO FIGURE 2.5-368 FOR UPHOLE VELOCITY SURVEY IN BORING D-31.

FEET

100 0 100 200 300 400 500

CONTOUR INTERVAL 3 1/3 FEET

LEGEND

690 TOPOGRAPHIC CONTOURS

BORING D-31 BORING LOCATION

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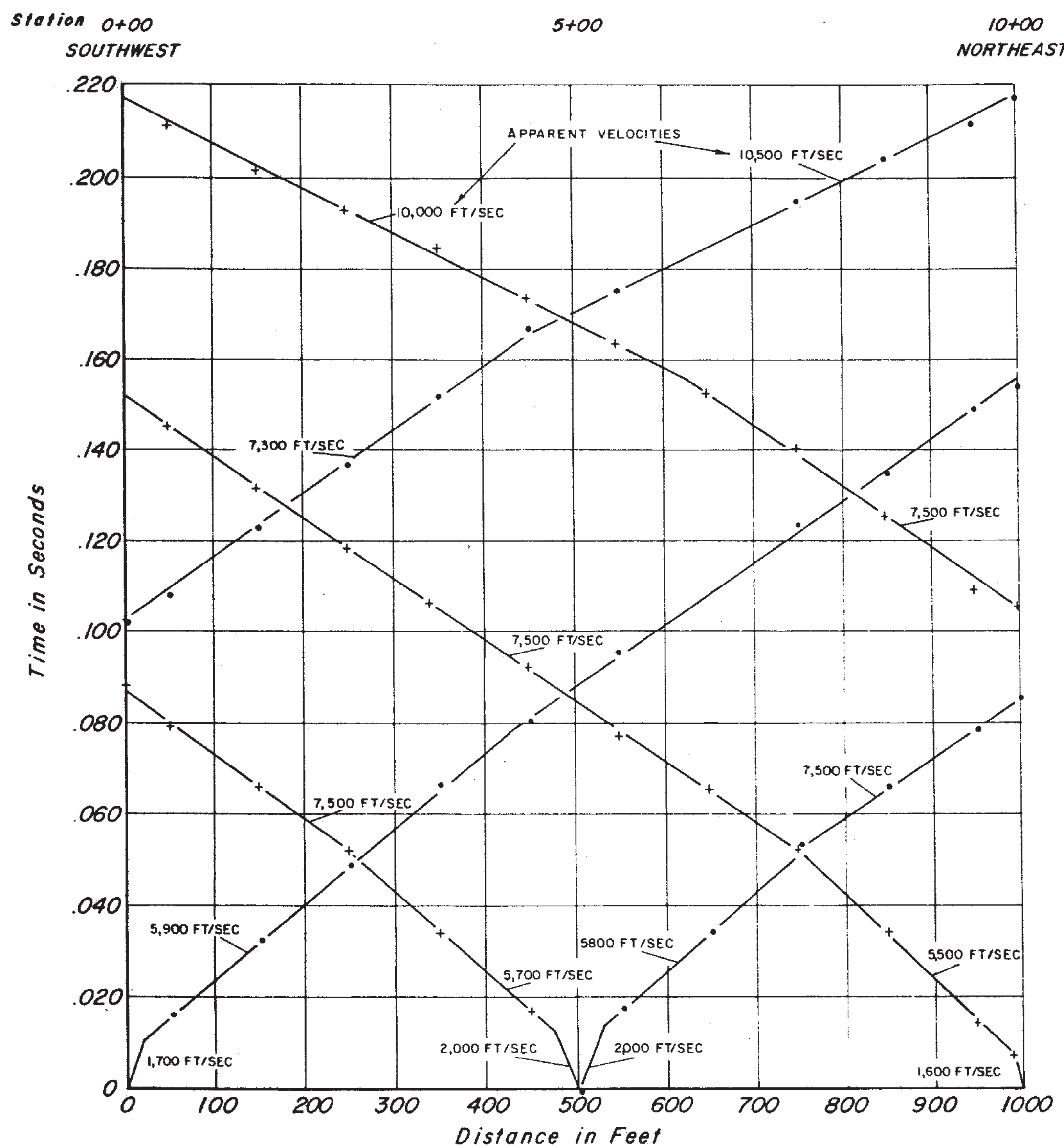
UPDATED SAFETY ANALYSIS REPORT

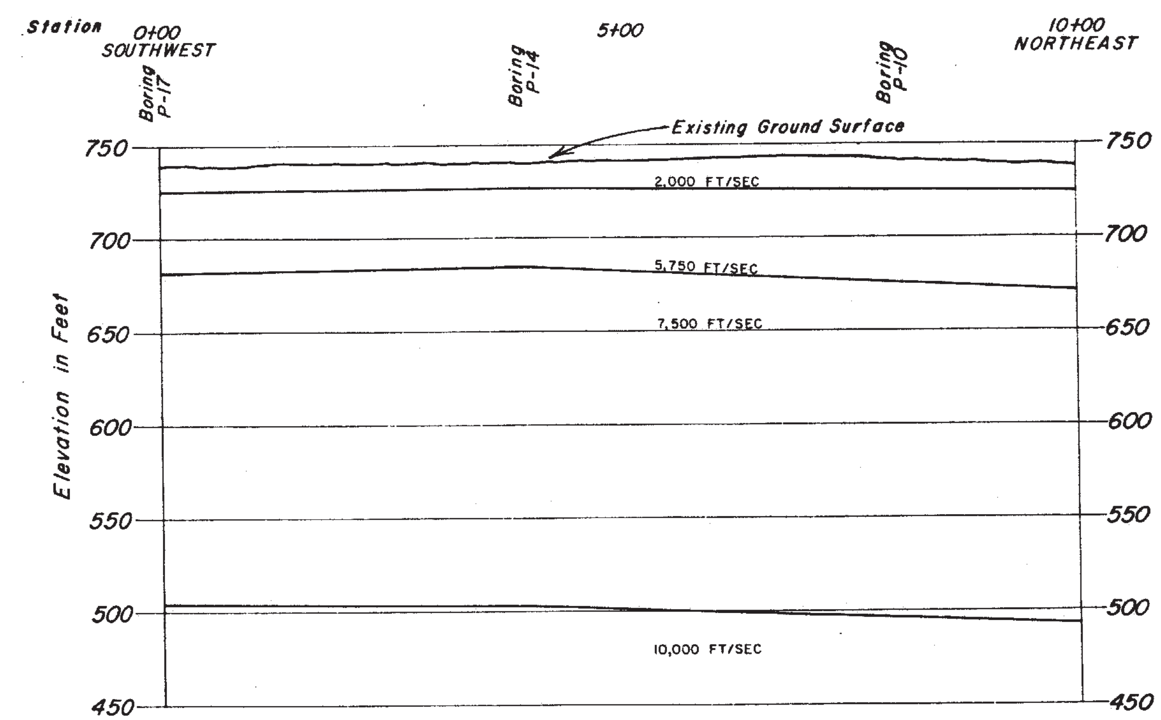
FIGURE 2.5-358

PLOT PLAN OF GEOPHYSICAL EXPLORATIONS ALONG NORTH FORK OF SALT CREEK

TIME-DISTANCE PLOT – SEISMIC LINE I



SUBSURFACE SECTION – SEISMIC LINE I



NOTES:

1. TIME DISTANCE PLOTS SHOW INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE, FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE ENERGY: FROM THE LEFT (.) FROM THE RIGHT (+).

2. THE SUBSURFACE SECTIONS SHOWN PRESENT OUR EVALUATION OF THE MOST PROBABLE SUBSURFACE CONDITIONS BASED UPON OUR INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

3. REFER TO FIGURE 2.5-356 FOR LOCATION OF SEISMIC TEST LINE NO. 1.

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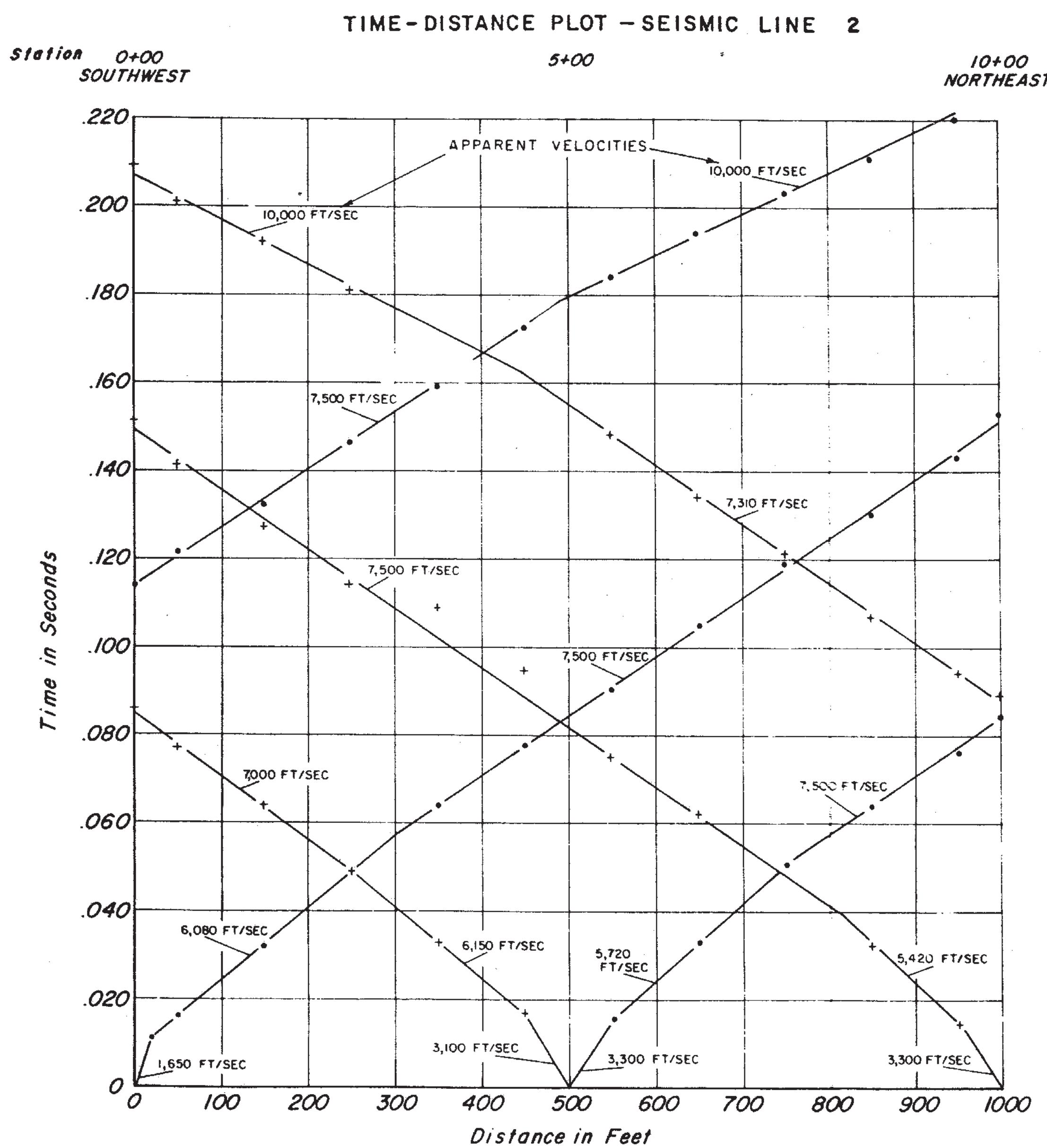
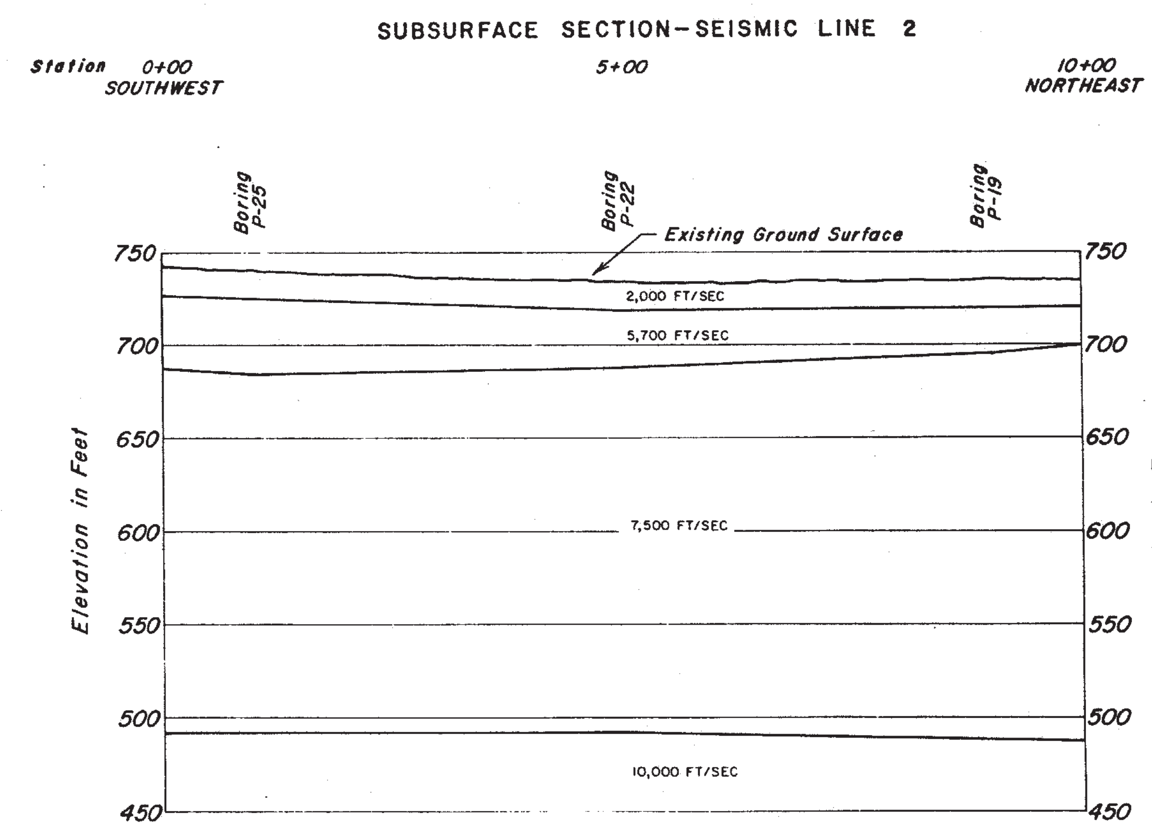
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-359

SEISMIC REFRACTION SURVEY LINE 1
STATION SITE





NOTES:

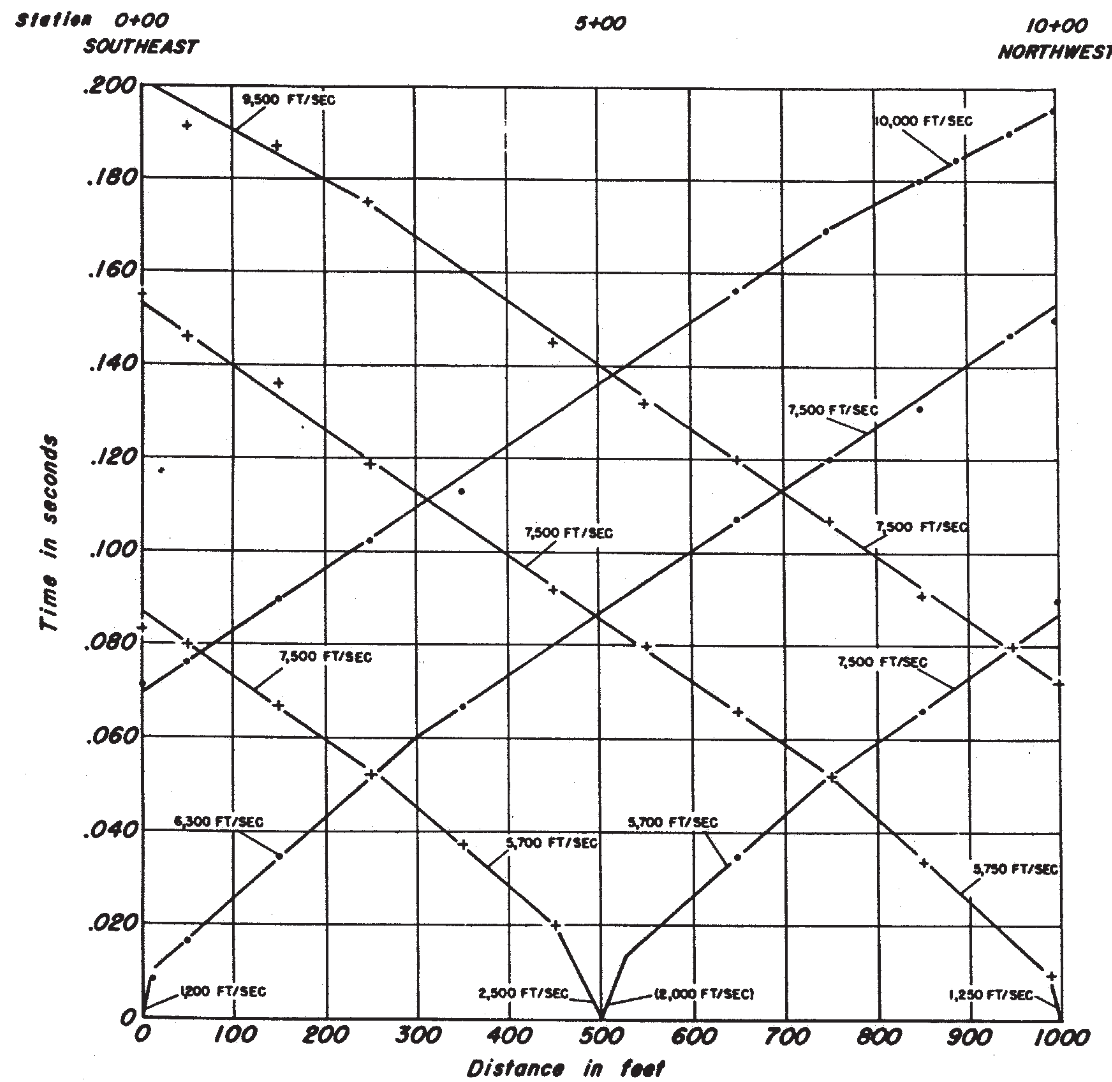
1. TIME DISTANCE PLOTS SHOW INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE, FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE ENERGY: FROM THE LEFT (.) FROM THE RIGHT (+).
2. THE SUBSURFACE SECTIONS SHOWN PRESENT OUR EVALUATION OF THE MOST PROBABLE SUBSURFACE CONDITIONS BASED UPON OUR INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3. REFER TO FIGURE 2.5-356 FOR LOCATION OF SEISMIC TEST LINE NO. 2.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

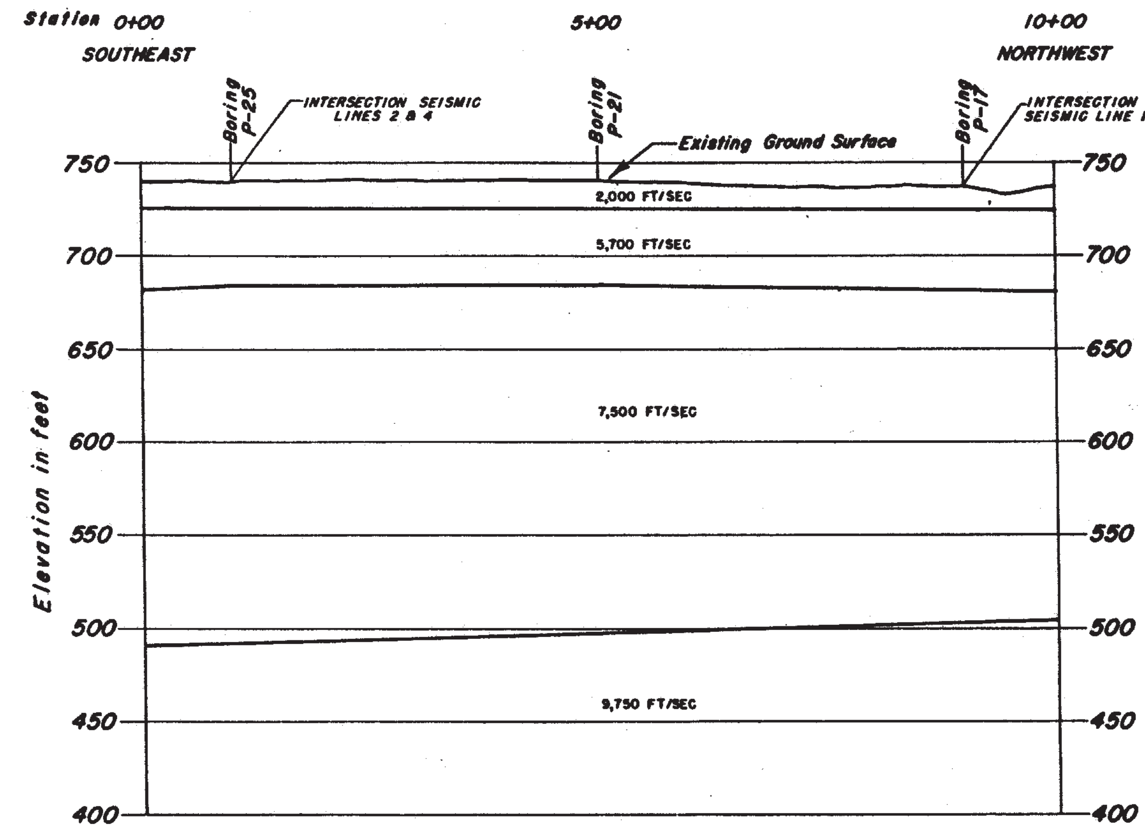
FIGURE 2.5-360

SEISMIC REFRACTION SURVEY LINE 2
STATION SITE

TIME-DISTANCE PLOT – SEISMIC LINE 3



SUBSURFACE SECTION – SEISMIC LINE 3



NOTES:

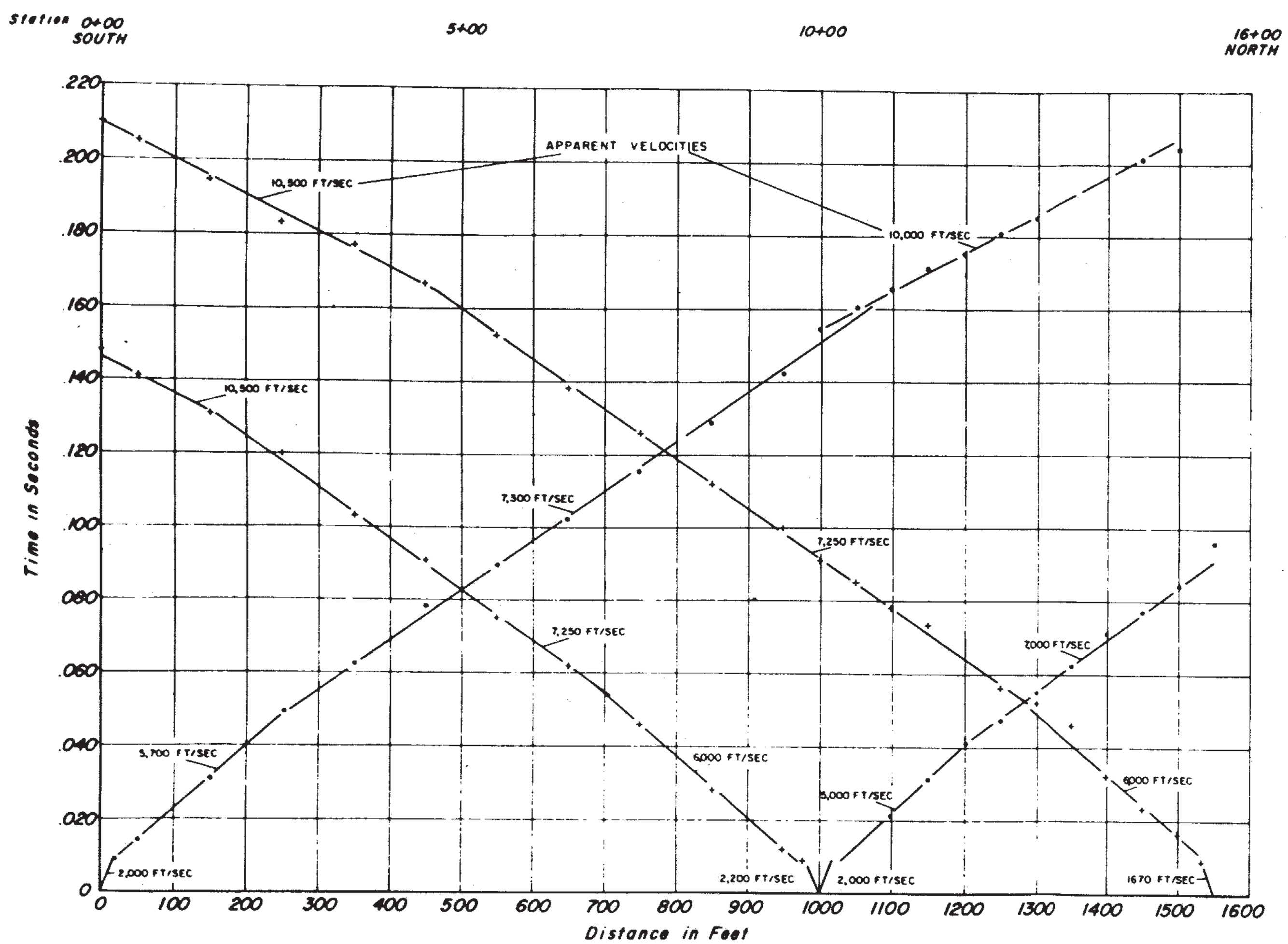
1. TIME DISTANCE PLOTS SHOW INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE, FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE ENERGY: FROM THE LEFT (.) FROM THE RIGHT (+).
2. THE SUBSURFACE SECTIONS SHOWN PRESENT OUR EVALUATION OF THE MOST PROBABLE SUBSURFACE CONDITIONS BASED UPON OUR INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3. REFER TO FIGURE 2.5-356 FOR LOCATION OF SEISMIC TEST LINE NO. 3.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

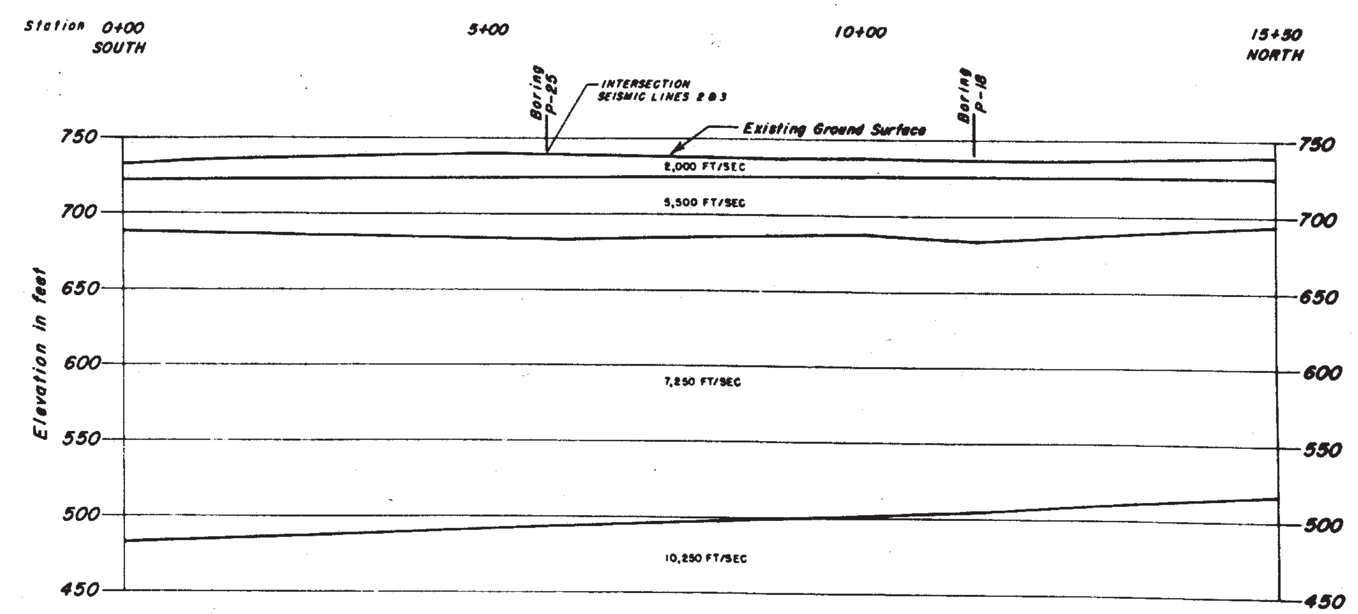
FIGURE 2.5-361

SEISMIC REFRACTION SURVEY LINE 3
STATION SITE

TIME-DISTANCE PLOT – SEISMIC LINE 4



SUBSURFACE SECTION–SEISMIC LINE 4



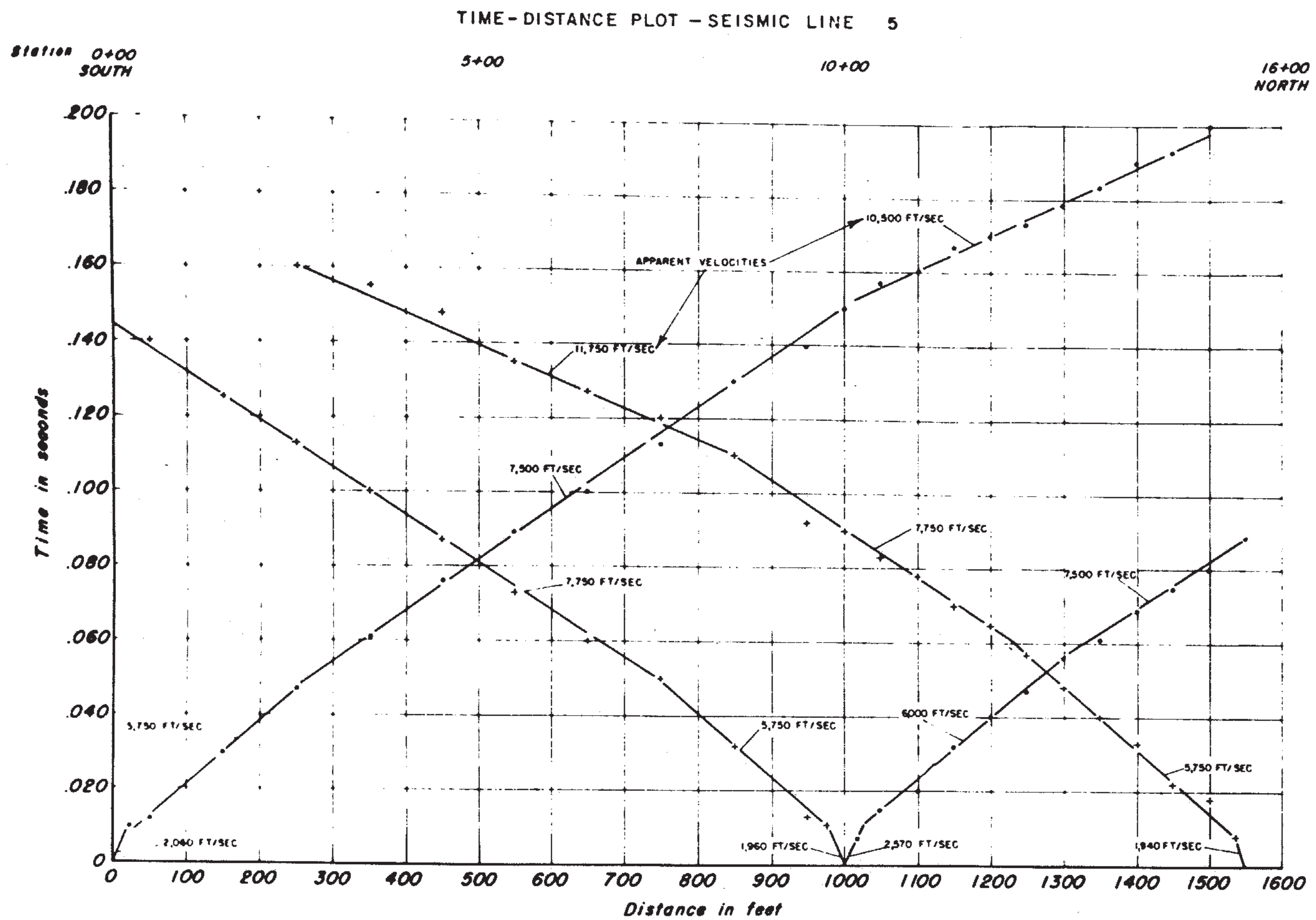
NOTES:

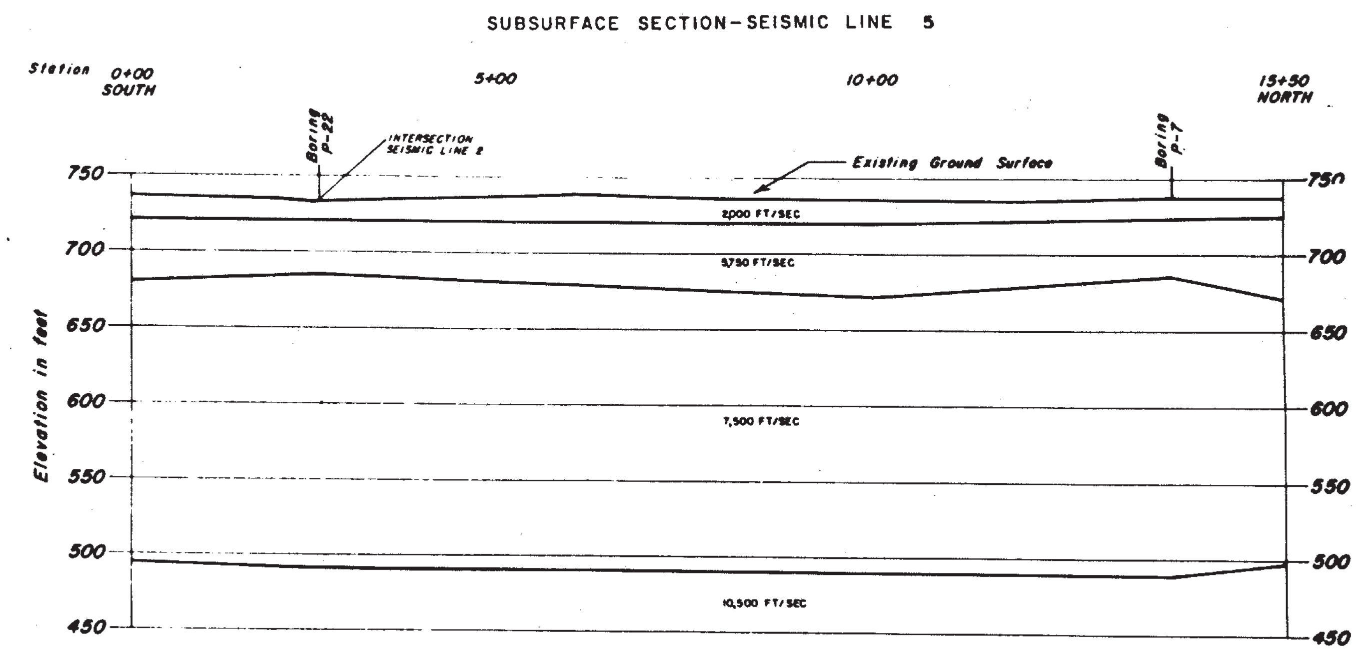
1. TIME DISTANCE PLOTS SHOW INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE, FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE ENERGY: FROM THE LEFT (.) FROM THE RIGHT (+).
2. THE SUBSURFACE SECTIONS SHOWN PRESENT OUR EVALUATION OF THE MOST PROBABLE SUBSURFACE CONDITIONS BASED UPON OUR INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3. REFER TO FIGURE 2.5-356 FOR LOCATION OF SEISMIC TEST LINE NO. 4.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-362

SEISMIC REFRACTION SURVEY LINE 4 - STATION SITE





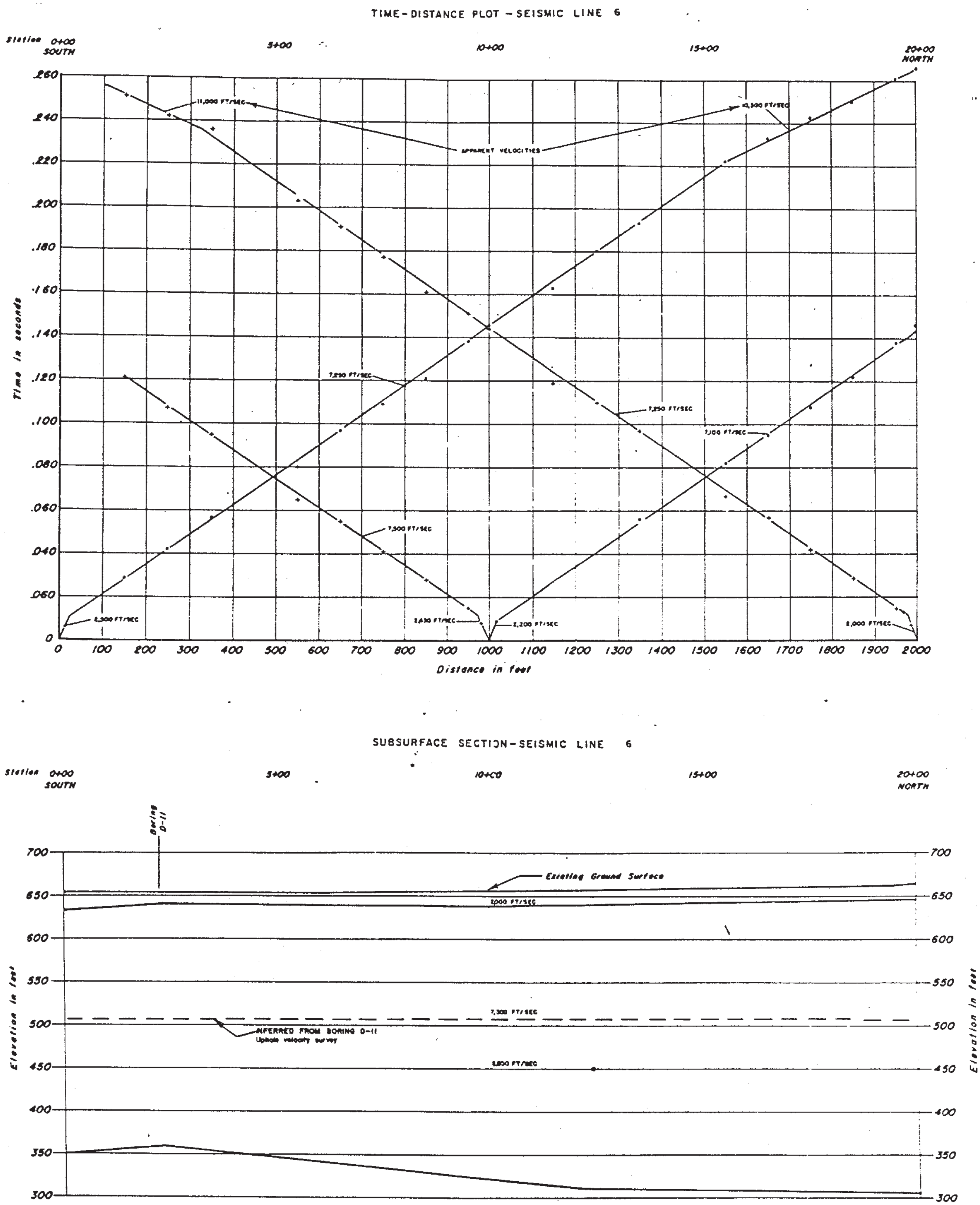
NOTES:

1. TIME DISTANCE PLOTS SHOW INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE, FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE ENERGY: FROM THE LEFT (.) FROM THE RIGHT (+).
2. THE SUBSURFACE SECTIONS SHOWN PRESENT OUR EVALUATION OF THE MOST PROBABLE SUBSURFACE CONDITIONS BASED UPON OUR INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3. REFER TO FIGURE 2.5-356 FOR LOCATION OF SEISMIC TEST LINE NO. 5.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-363

SEISMIC REFRACTION SURVEY LINE 5 - STATION SITE



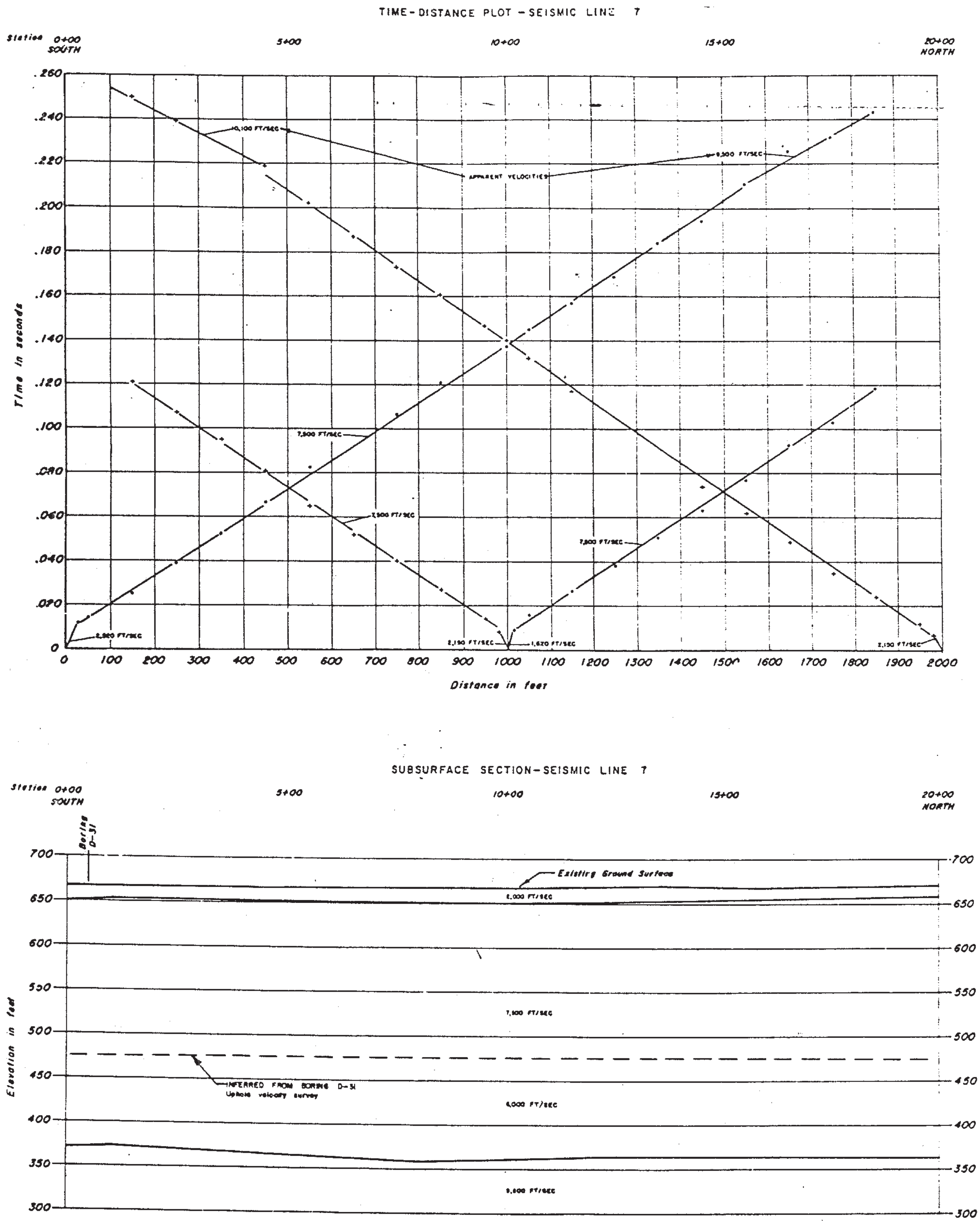
NOTES:

1. TIME DISTANCE PLOTS SHOW INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE, FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE ENERGY: FROM THE LEFT (.) FROM THE RIGHT (+).
2. THE SUBSURFACE SECTIONS SHOWN PRESENT OUR EVALUATION OF THE MOST PROBABLE SUBSURFACE CONDITIONS BASED UPON OUR INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3. REFER TO FIGURE 2.5-357 FOR LOCATION OF SEISMIC TEST LINE NO. 6.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-364

SEISMIC REFRACTION SURVEY LINE 6 - DAM SITE



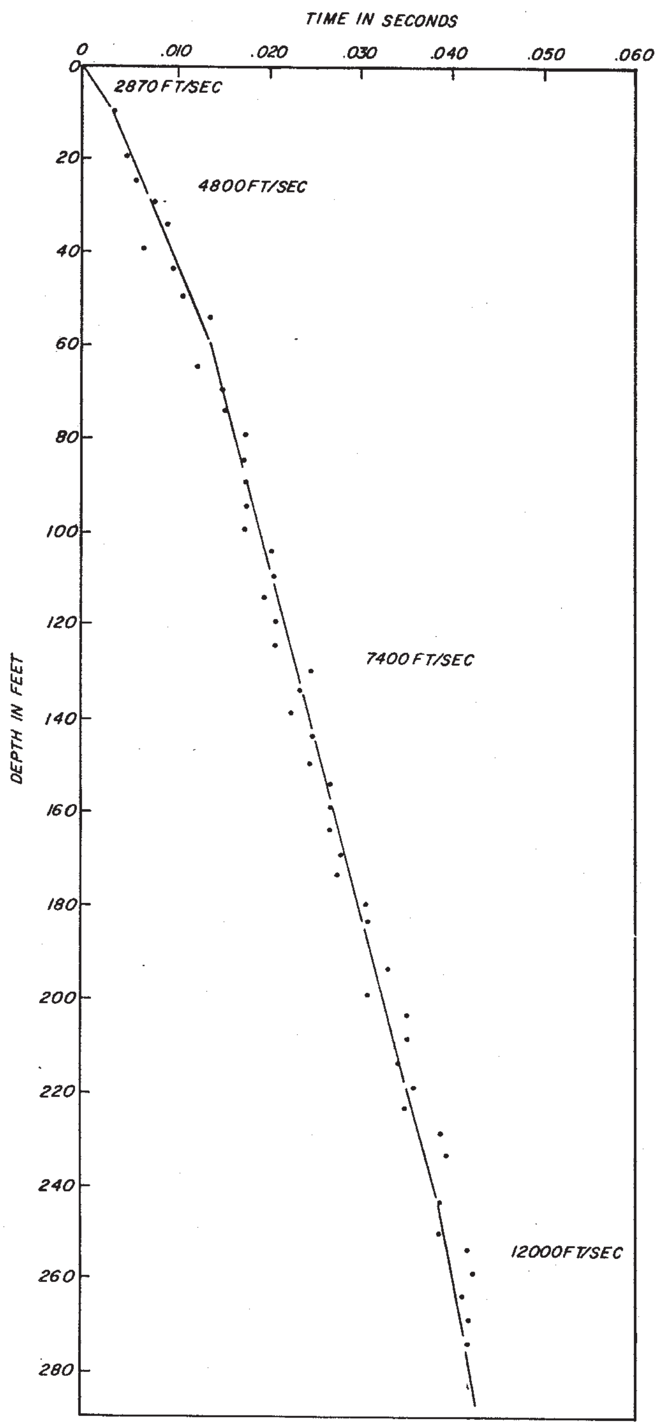
NOTES:

1. TIME DISTANCE PLOTS SHOW INFORMATION COLLECTED FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE, FOR CLARIFICATION, TWO PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE ENERGY: FROM THE LEFT (.) FROM THE RIGHT (+).
2. THE SUBSURFACE SECTIONS SHOWN PRESENT OUR EVALUATION OF THE MOST PROBABLE SUBSURFACE CONDITIONS BASED UPON OUR INTERPRETATION OF PRESENTLY AVAILABLE DATA, SOME VARIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.
3. REFER TO FIGURE 2.5-358 FOR LOCATION OF SEISMIC TEST LINE NO. 7.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-365

SEISMIC REFRACTION SURVEY LINE 7 - SECTION E-E' ALONG NORTH FORK OF SALT CREEK



NOTE:
REFER TO FIGURE 2.5-356 FOR LOCATION OF BORING P-14.

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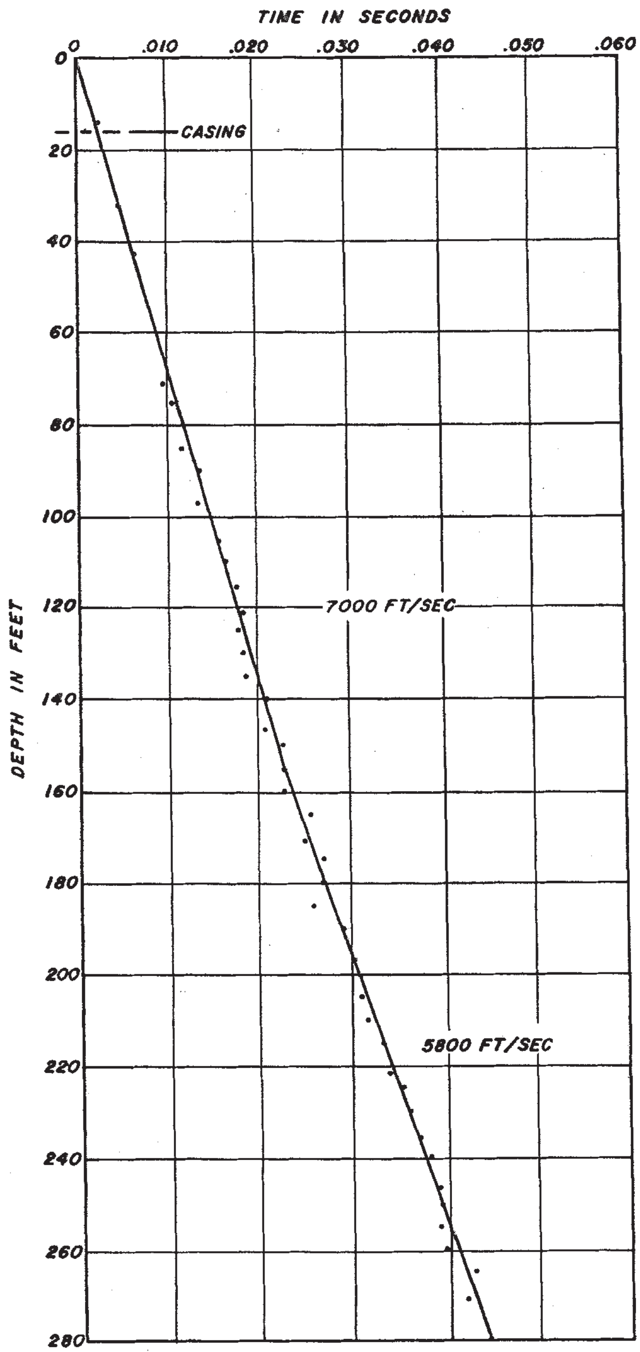
FIGURE 2.5-366

UPHOLE (COMPRESSIONAL) VELOCITY SURVEY - BORING P-14, STATION SITE



NOTE:
REFER TO FIGURE 2.5-357 FOR LOCATION OF BORING D-11.

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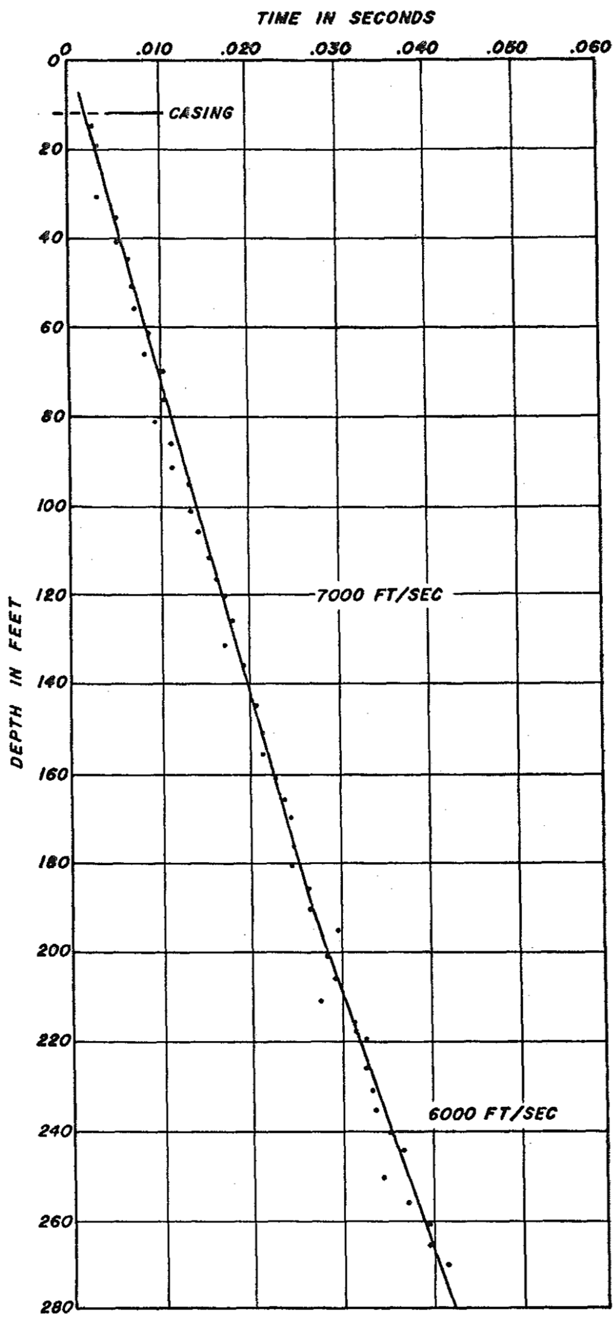
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-367

UPHOLE (COMPRESSIONAL) VELOCITY SURVEY - BORING D-11A, DAM SITE



NOTE:
REFER TO FIGURE 2.5-358 FOR LOCATION OF BORING D-31.

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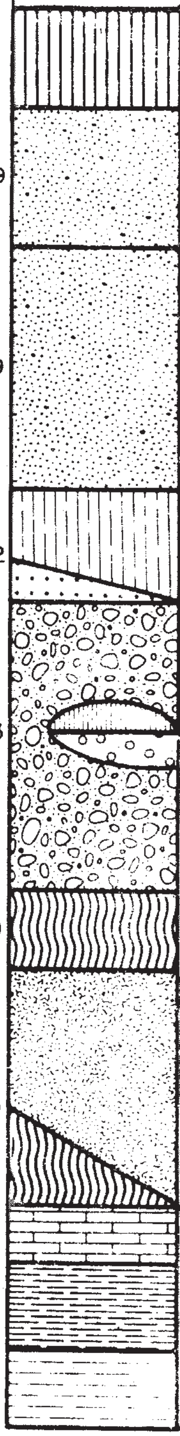
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-368

UPHOLE (COMPRESSIONAL) VELOCITY SURVEY - BORING D-31 SECTION E-E' ALONG NORTH FORK OF SALT CREEK



AVERAGE THICKNESS IN FEET (NOT TO SCALE)		UNIT DESCRIPTION	COMPRESSIONAL WAVE VELOCITY FT/SEC	POISSONS RATIO	SHEAR WAVE VELOCITY FT/SEC	UNIT WEIGHT (pcf) DRY	UNIT WEIGHT (pcf) WET
7	OVERBURDEN	LOESS, weathered; overlain by organic topsoil	2000	0.37	900	110	130
9	OVERBURDEN	WISCONSINAN GLACIAL TILL, weathered to brown, moist					
19	OVERBURDEN	WISCONSINAN GLACIAL TILL, unweathered	5700	0.48	1100	115	135
12	OVERBURDEN	INTERGLACIAL ZONE; local ALLUVIAL DEPOSITS					
113	OVERBURDEN	ILLINOIAN GLACIAL TILL; local OUTWASH AND LACUSTRINE DEPOSITS	7500	0.46	2100	135	147
10	OVERBURDEN	LACUSTRINE DEPOSIT (Yarmouthian)					
65	OVERBURDEN	PRE-ILLINOIAN GLACIAL TILL locally underlain by PRE-ILLINOIAN LACUSTRINE DEPOSIT					
5	BEDROCK	LIMESTONE	10,500	0.29	5700	155	160
15	BEDROCK	SHALE					
	BEDROCK	SILTSTONE					

NOTE:

REFER TO LEGEND ON FIGURES 2.5-275 AND 2.5-276 FOR DETAILED DESCRIPTION OF OVERBURDEN UNITS.

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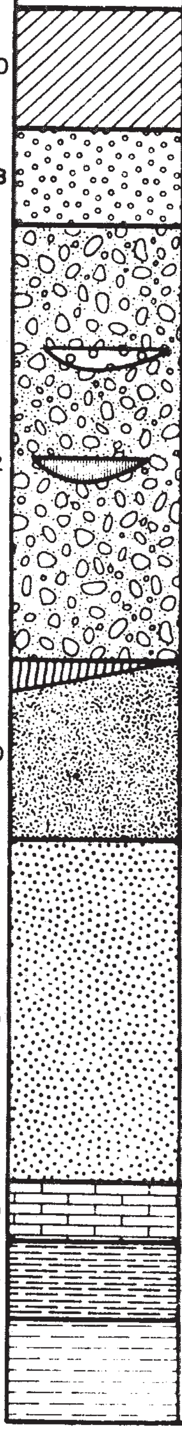
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-369

TYPICAL GEOLOGIC PROFILE SHOWING GEOPHYSICAL PROPERTIES - STATION SITE



AVERAGE THICKNESS IN FEET (NOT TO SCALE)

Average Thickness in Feet	Graphic Column		Unit Description	Compressional Wave Velocity FT/SEC	Poissons Ratio	Shear Wave Velocity FT/SEC	Unit Weight (pcf) Dry	Unit Weight (pcf) Wet
10		OVERBURDEN	SALT CREEK ALLUVIUM; overlain by organic topsoil	2000	0.37	900	100	122
8								
112			ILLINOIAN GLACIAL TILL; local OUTWASH AND LACUSTRINE DEPOSITS	7300	0.46	2000	135	145
20			PRE-ILLINOIAN LACUSTRINE AND GLACIAL TILL DEPOSITS present locally					
140			BEDROCK VALLEY OUTWASH DEPOSIT (Pre-Illinoian Mahomet Valley Deposit)	5800	0.45	1750	109	127
5		BEDROCK	LIMESTONE	10,500	0.29	5700	155	160
10			SHALE					
			SILTSTONE					

NOTE:

* VALUES ARE ESTIMATED

REFER TO BORING D-11 AND LEGEND ON FIGURE 2.5-277 FOR DETAILED DESCRIPTION OF OVERBURDEN UNITS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-370

TYPICAL GEOLOGIC PROFILE SHOWING GEOPHYSICAL PROPERTIES - DAM SITE

Average Thickness in Feet (Not to Scale)	Graphic Column		Unit Description	Compressional Wave Velocity FT/SEC	Poissons Ratio	Shear Wave Velocity FT/SEC	Unit Weight (pcf) Dry	Unit Weight (pcf) Wet
7		OVERBURDEN	SALT CREEK ALLUVIUM; overlain by organic topsoil	2000	0.37	900	105	125
7		OVERBURDEN						
81		OVERBURDEN	ILLINOIAN GLACIAL TILL local OUTWASH AND LACUSTRINE DEPOSITS	7500	0.46	2100	132	145
10		OVERBURDEN	LACUSTRINE DEPOSIT (Yarmouthian)					
65		OVERBURDEN	PRE-ILLINOIAN GLACIAL TILL; local OUTWASH DEPOSITS					
25		OVERBURDEN	PRE-ILLINOIAN OUTWASH AND ALLUVIAL DEPOSIT					
110		OVERBURDEN	BEDROCK VALLEY OUTWASH DEPOSIT (Pre-Illinoian Mahomet Valley Deposit)	6000	0.45	1800	106	124
20		BEDROCK	SILTSTONE	10,000	0.28 TO 0.30	5300 TO 5500	155	160
30		BEDROCK	SHALE					
		BEDROCK	COAL					

NOTE:

* VALUES ARE ESTIMATED

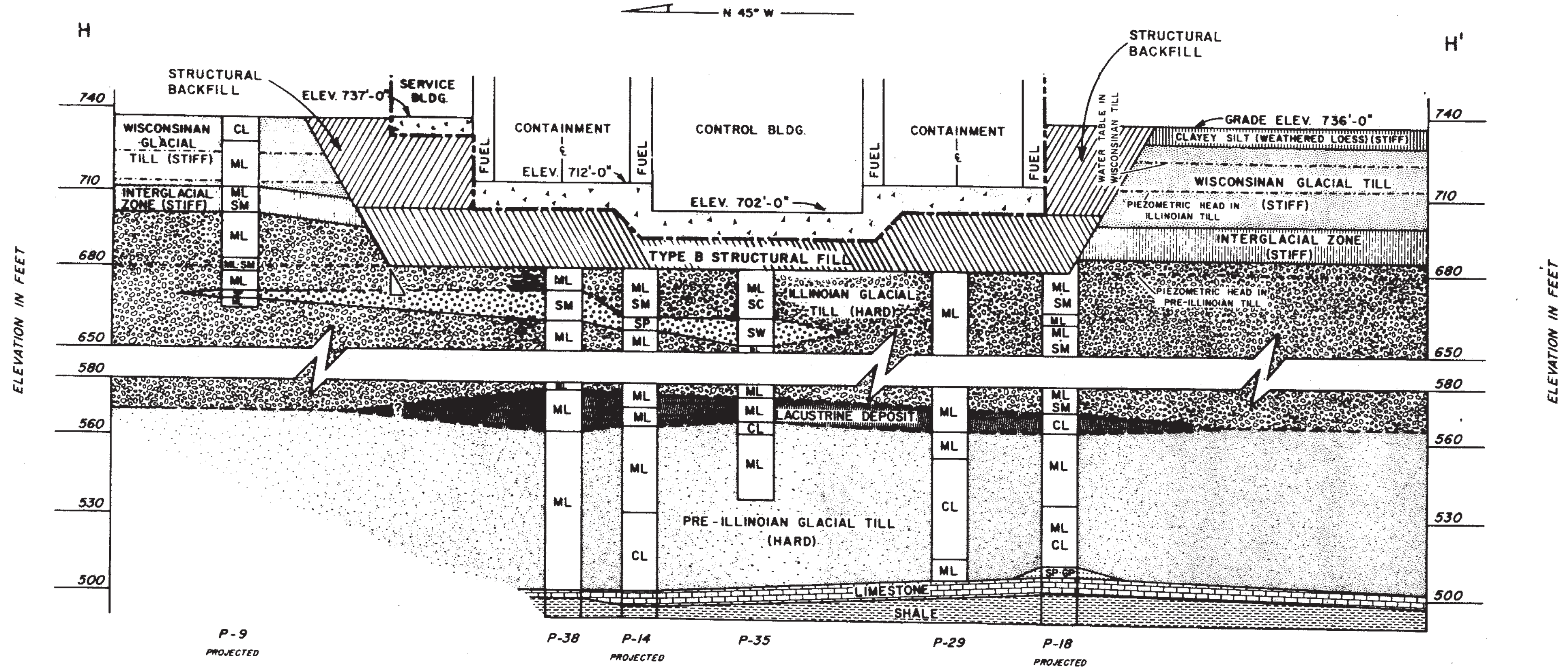
REFER TO LEGEND ON FIGURE 2.5-278 FOR DETAILED DESCRIPTION OF OVERBURDEN UNITS.

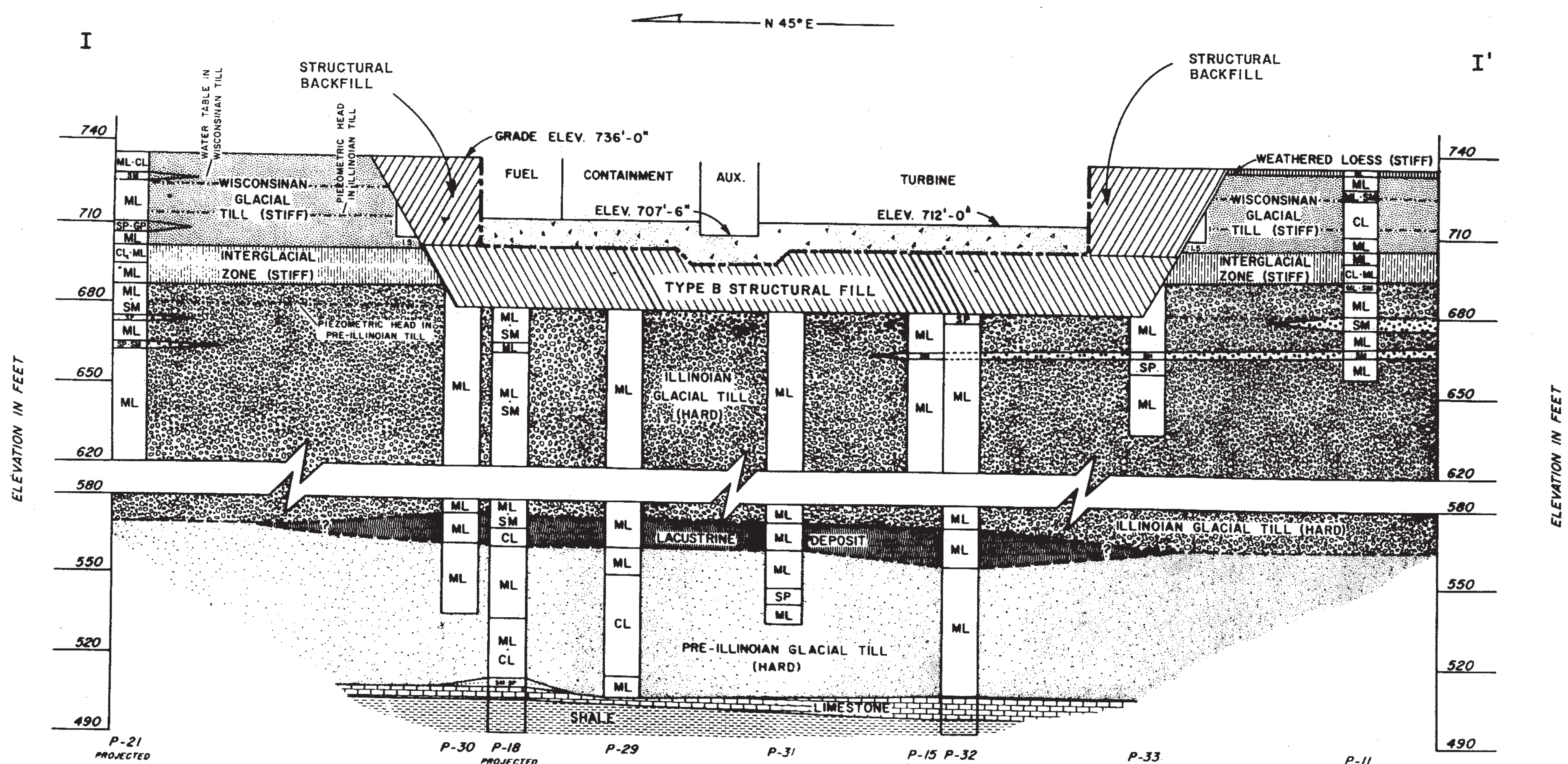
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-371

TYPICAL GEOLOGIC PROFILE SHOWING GEOPHYSICAL PROPERTIES - SECTION E-E' ALONG NORTH FORK OF SALT CREEK





LEGEND

- TYPE B GRANULAR STRUCTURAL BACKFILL
- TYPE B GRANULAR STRUCTURAL FILL
- CONCRETE

QUATERNARY

WISCONSINAN
- LOESS - BROWN TO MOTTLED BROWN AND GRAY CLAYEY SILT OR SILTY CLAY WITH TRACE OF FINE SAND; WEATHERED
- 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)

SANGAMONIAN
- 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.
- SAND - IRREGULAR, DISCONTINUOUS LAYERS OF ALLUVIAL SAND AND GRAVEL (GLACIAL OUTWASH AND DEPOSITS)

YARMOUTHIAN
- 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 YARMOUTHIAN GLACIAL STAGE IS TENTATIVE

KANSAN
- 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

PENNSYLVANIAN
- BEDROCK - INTERBEDDED LAYERS OF LIMESTONE, SHALE AND SILTSTONE ASSIGNED TO THE McLEANSBORO GROUP, MODESTO FORMATION ON THE BASIS OF SPORE ANALYSIS OF THE COAL ENCOUNTERED IN BORING D-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

NOTES:

1. REFER TO FIGURES 2.5-271 AND 2.5-374 FOR LOCATION OF SUBSURFACE SECTIONS.
2. REFER TO FIGURES 2.5-26, 2.5-27, 2.5-29, 2.5-30, 2.5-34, 2.5-37, 2.5-45 THROUGH 2.5-49, 2.5-51 AND 2.5-55 FOR LOG OF BORINGS.
3. FOR DETAILED WATER LEVEL DATA REFER TO FIGURE 2.4-36.
4. 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.
5. STRUCTURAL BACKFILL FOR THE MAIN PLANT CONSISTS OF TYPE B GRANULAR MATERIAL EXCEPT ON THE NORTH AND WEST SIDES OF UNIT 1. IN THESE AREAS, AND ABOVE APPROXIMATE ELEVATION 720 FEET, TYPES A & C COHESIVE MATERIAL WAS USED AS STRUCTURAL BACKFILL.

FEET
50 0 50 100
HORIZONTAL SCALE

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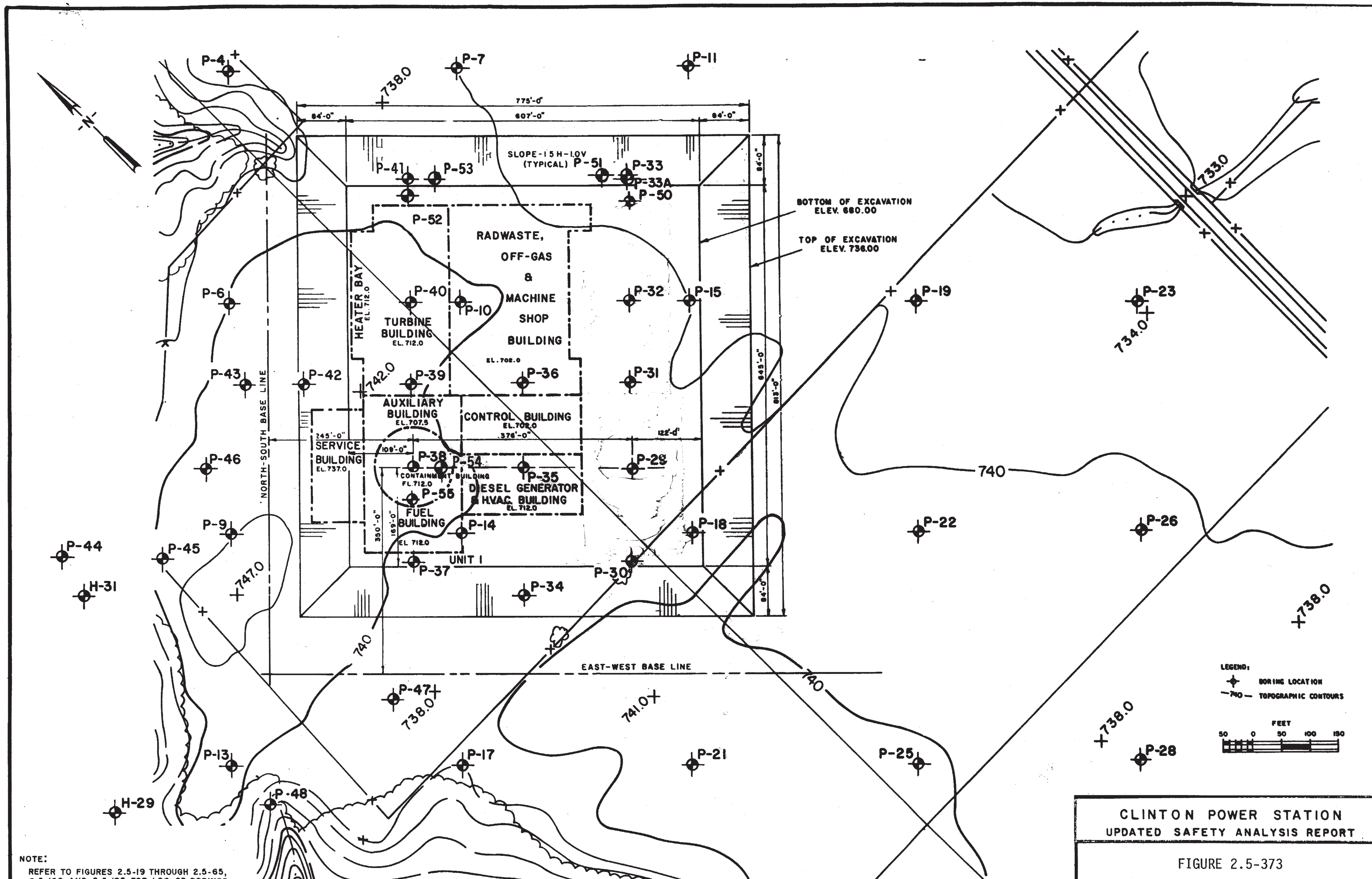
FIGURE 2.5-372

GEOLOGIC SECTIONS H-H' AND I-I' - STATION SITE



NOTE:
REFER TO FIGURES 2.5-19 THROUGH 2.5-65, 2.5-190 AND 2.5-192 FOR LOG OF BORINGS.

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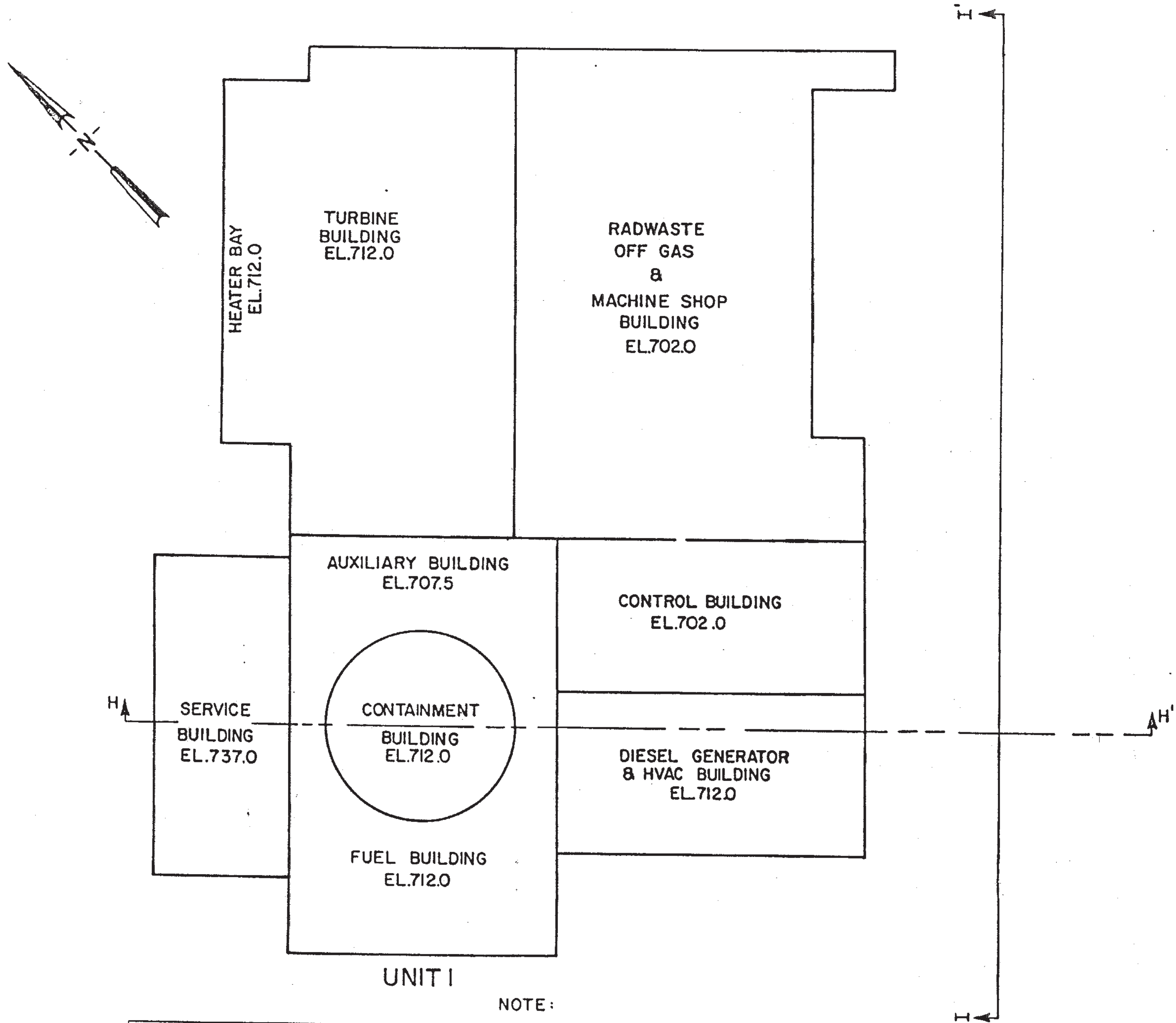
FIGURE 2.5-373

BORING LOCATION PLAN



LOADING AREA	STATIC FND. LOADING KSF.
SERVICE BUILDING	1.5
FUEL BUILDING	6.5
CONTAINMENT BLDG.	6.5
AUXILIARY BLDG.	6.5
TURBINE BLDG.	5.7
DIESEL GEN. & H.V.A.C. BLDG.	4.7
CONTROL BLDG.	4.7
RADWASTE BLDG.	4.8
MACHINE SHOP	4.8
OFF-GAS BLDG.	4.8

NOTE:

1. REFER TO FIGURE 2.5-372 FOR SUBSURFACE SECTIONS.

LEGEND:

---- INDICATES SUBSURFACE SECTION LOCATION.

0 25 50 75 100
Scale in Feet

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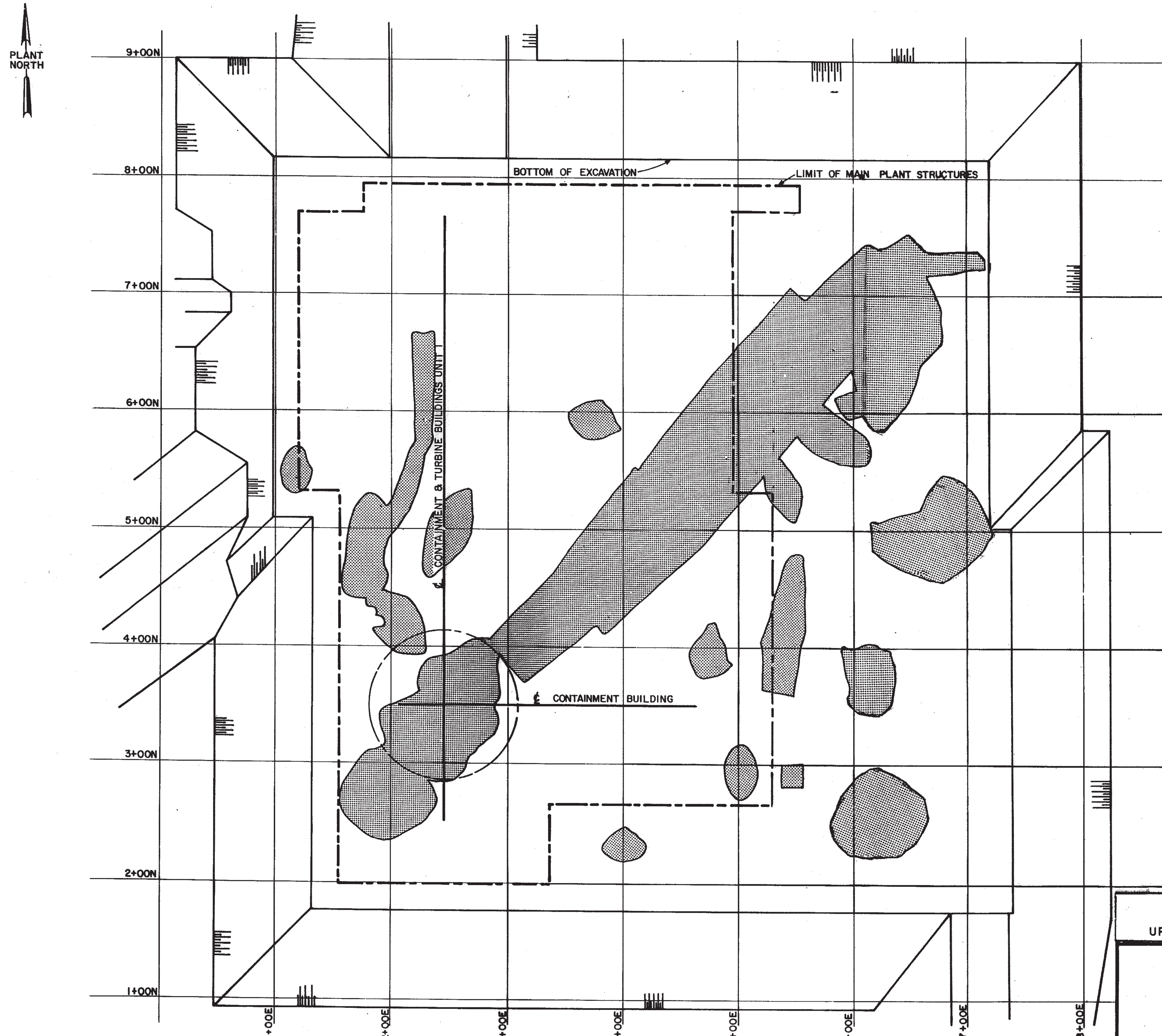
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-374

STATION PLOT PLAN - FOUNDATION LOADING

REV. 3 SEPT. 1991



LEGEND

AREAS OF FLYASH MIXTURE PLACEMENT

1+00N MAIN PLANT COORDINATES

NOTES

1. DRAWING PRODUCED FROM BALDWIN ASSOCIATES QUALITY CONTROL RECORDS FOR FLYASH MIXTURE PLACEMENT.
2. FLYASH MIXTURE, CONSISTING OF SAND, CEMENT AND FLYASH, PREPARED AND PLACED IN ACCORDANCE WITH S & L SPECIFICATION K-2942.

50 0 50
SCALE IN FEET

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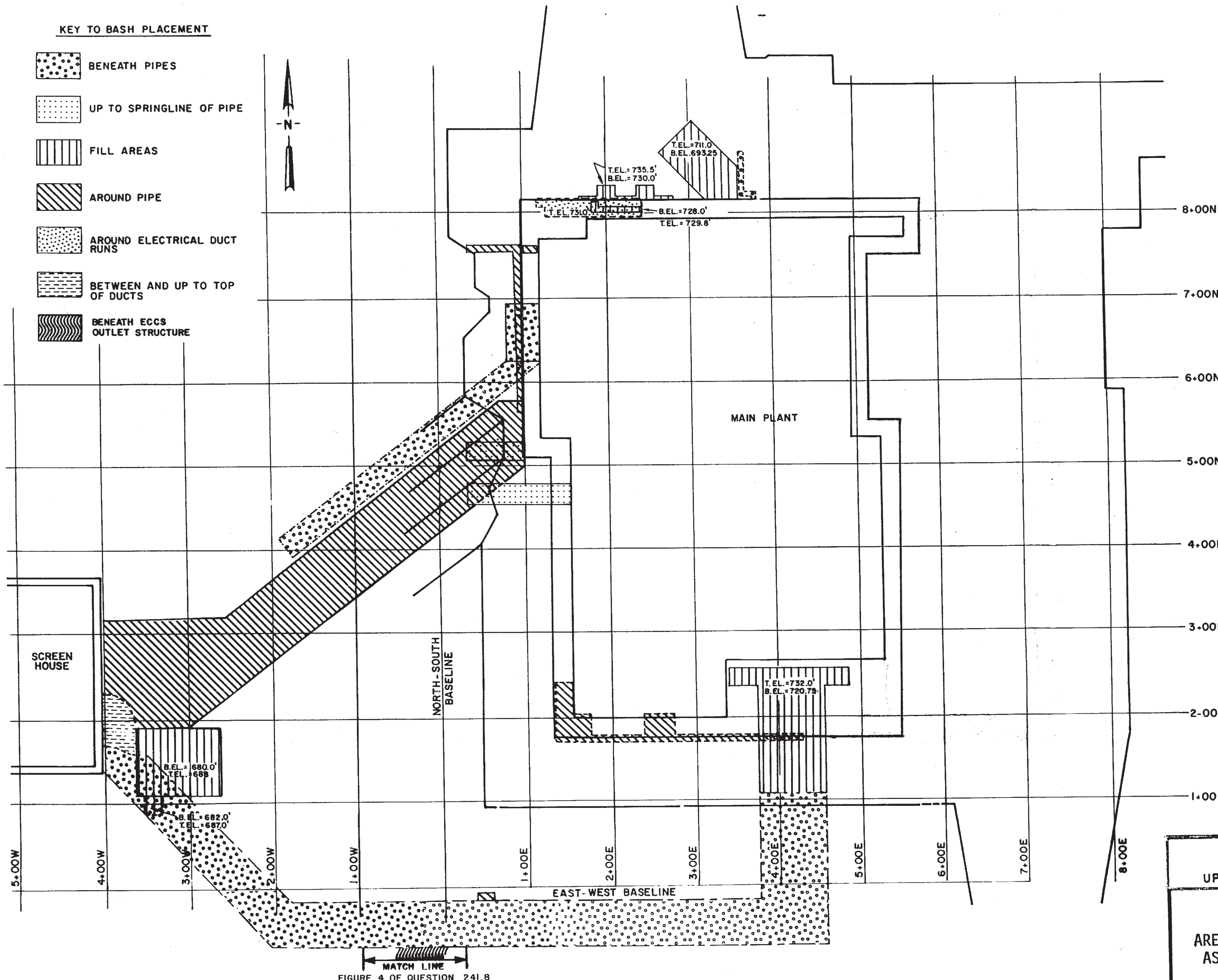
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-375

LOCATION OF FLY ASH MIXTURE IN MAIN PLANT SUBGRADE



NOTE
AREAS OF BASH PLACEMENT DETERMINED FROM BALDWIN ASSOCIATES CONSTRUCTION TRAVELERS.

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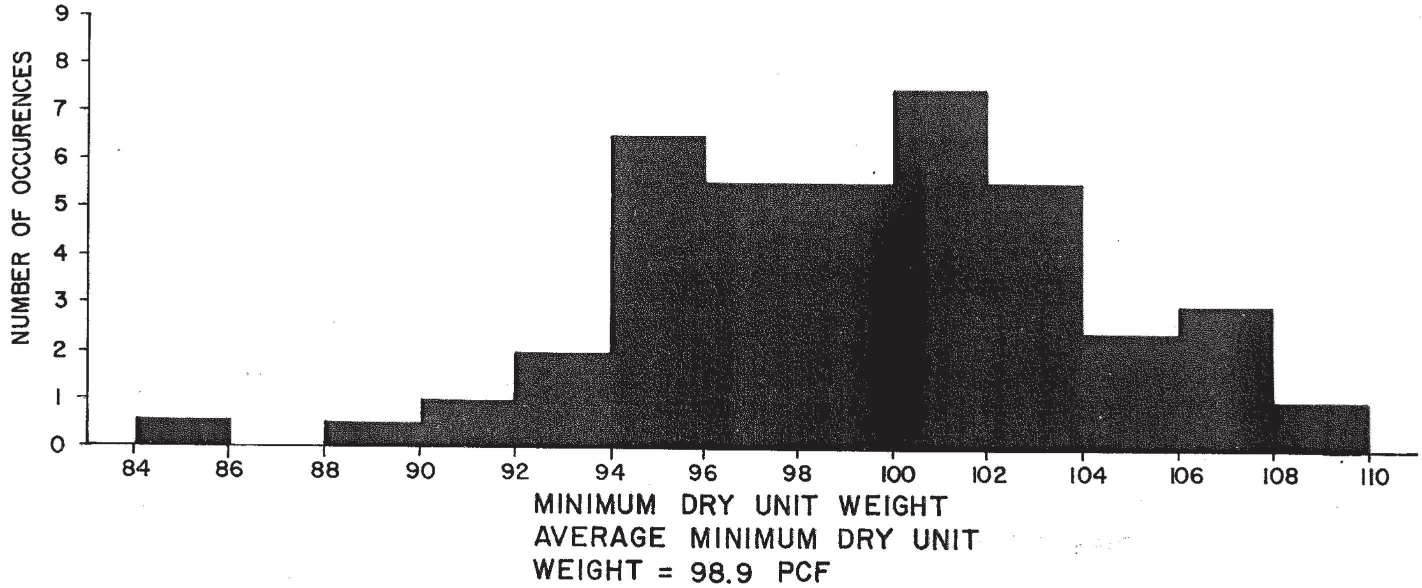
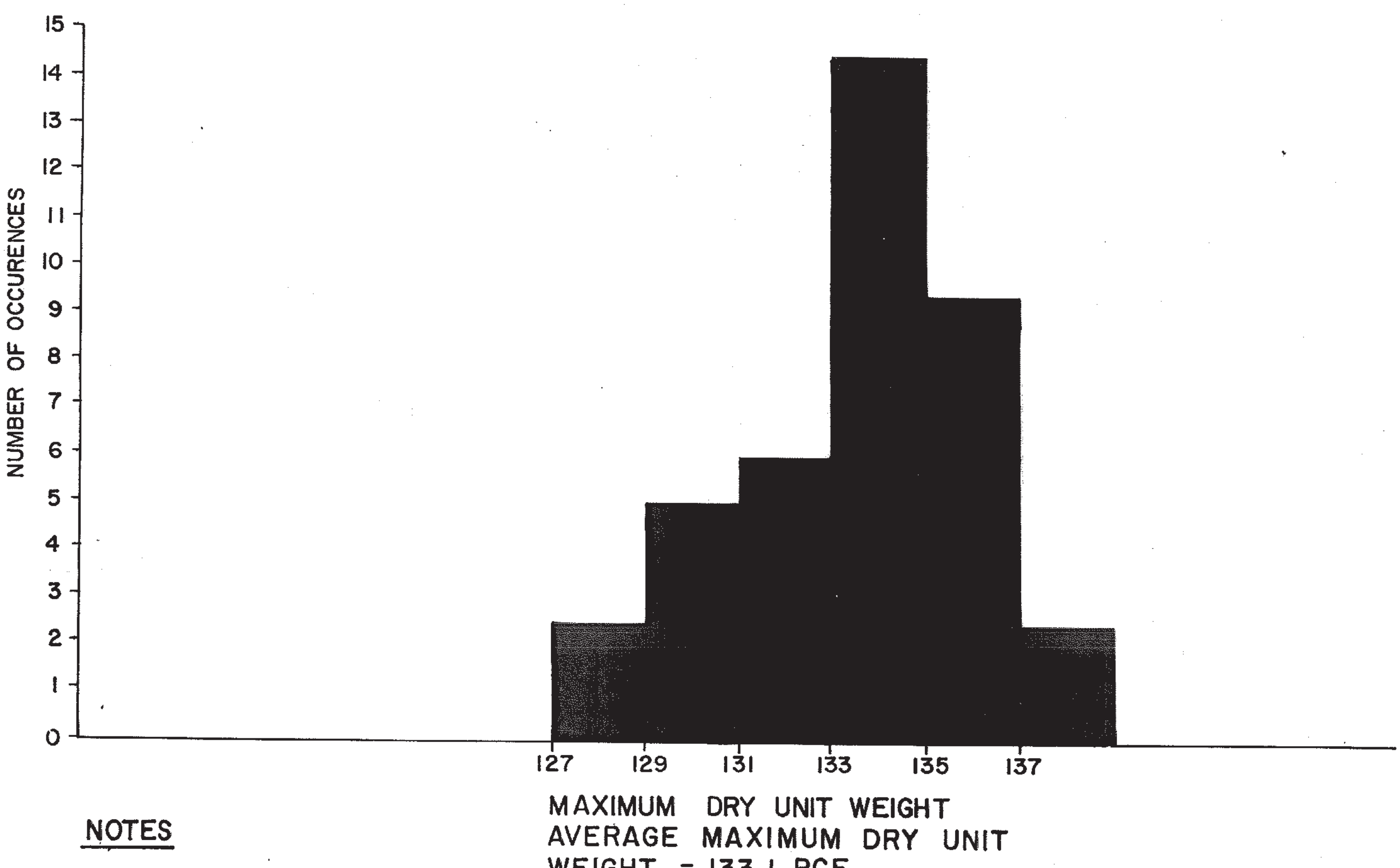
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-376

AREAS WHERE FLY ASH MIXTURE IS USED AS FILL AND BACKFILL IN THE MAIN PLANT AND SCREEN HOUSE AREAS





NOTES

1. Relative density test-data based on ASTM D2049.
2. Number of occurences based on average of two pounds per cubic foot range.

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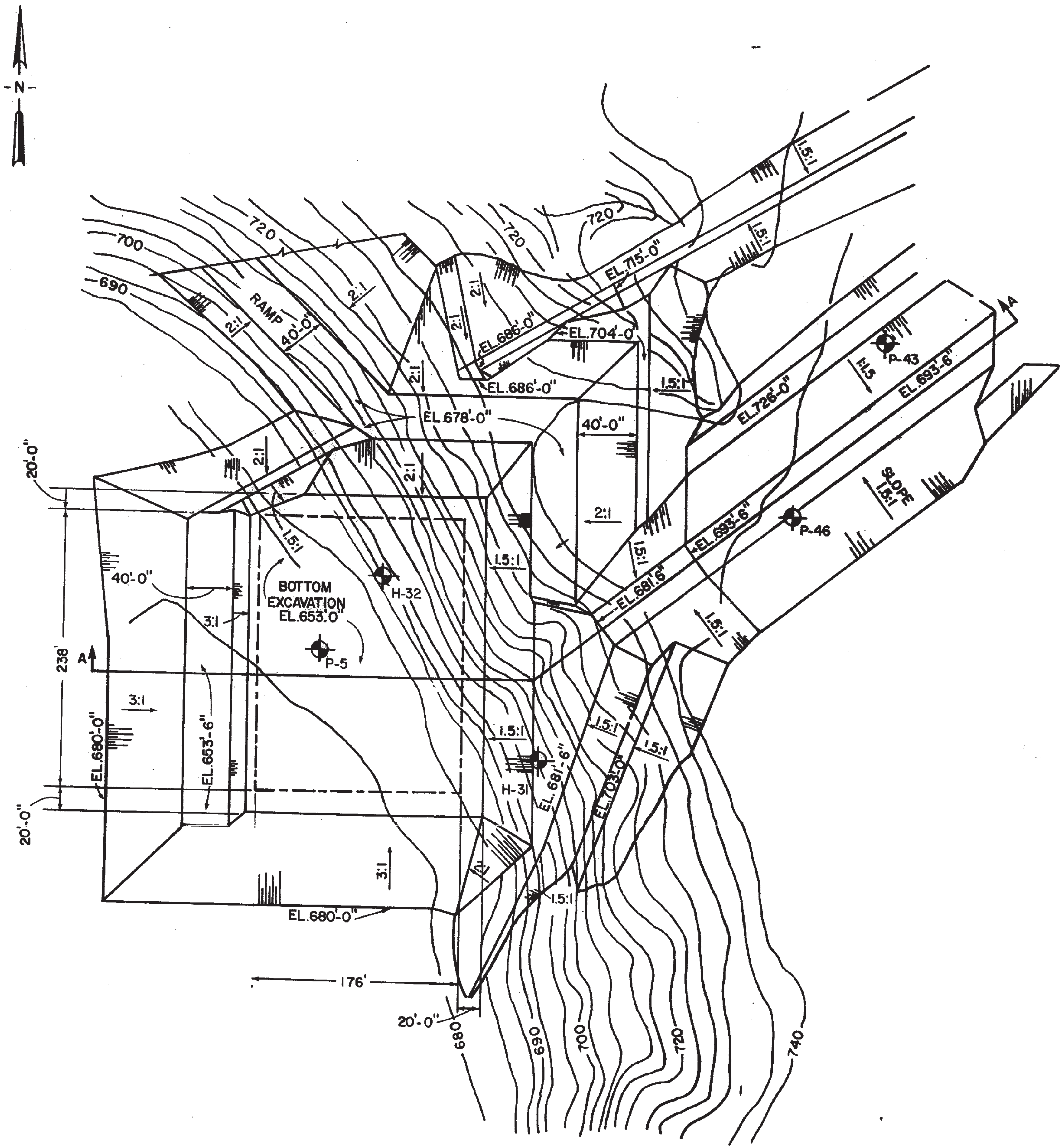
FIGURE 2.5-377

POWER BLOCK RELATIVE DENSITY TEST SUMMARY



NOTE

See Figure 2.5-379 for section through screen house.

LEGEND

Borings

0 100 200
Scale in Feet

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FIGURE 2.5-378

EXCAVATION PLAN FOR CIRCULATING WATER SCREEN HOUSE

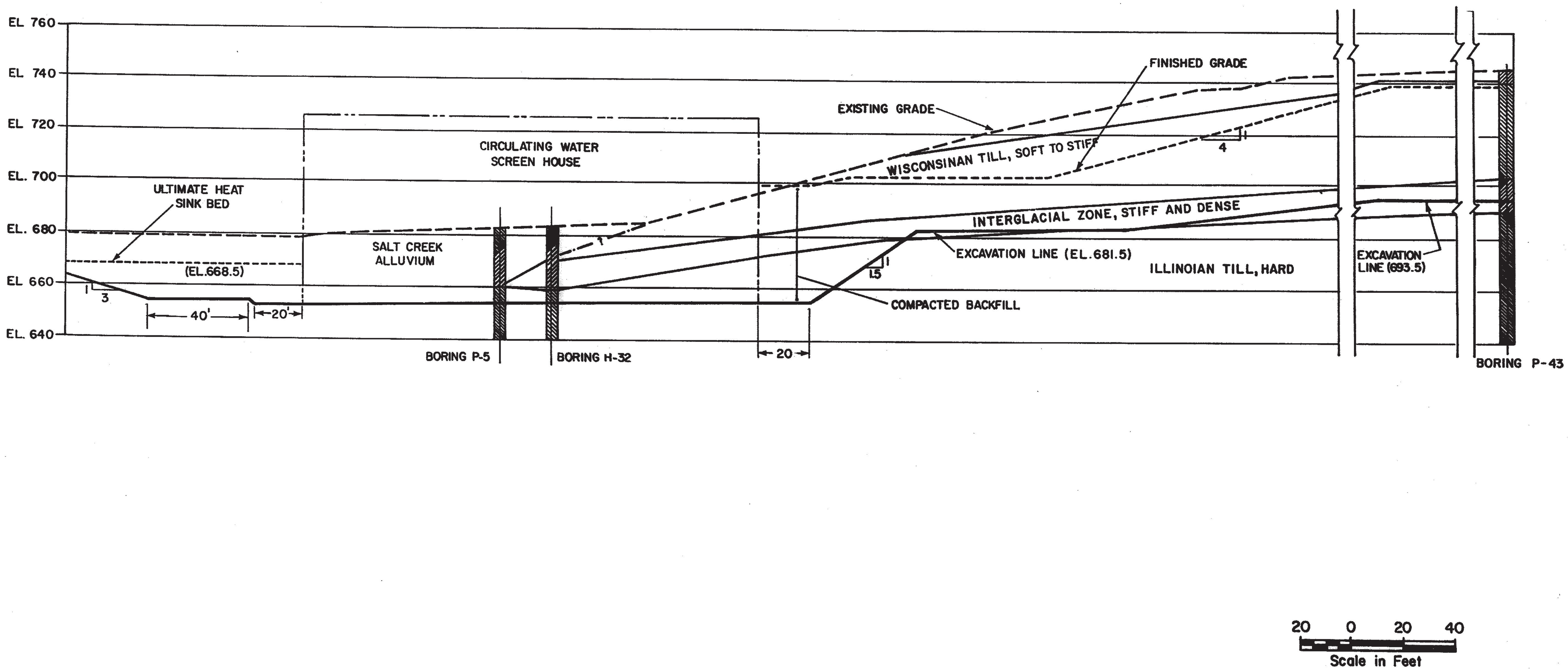

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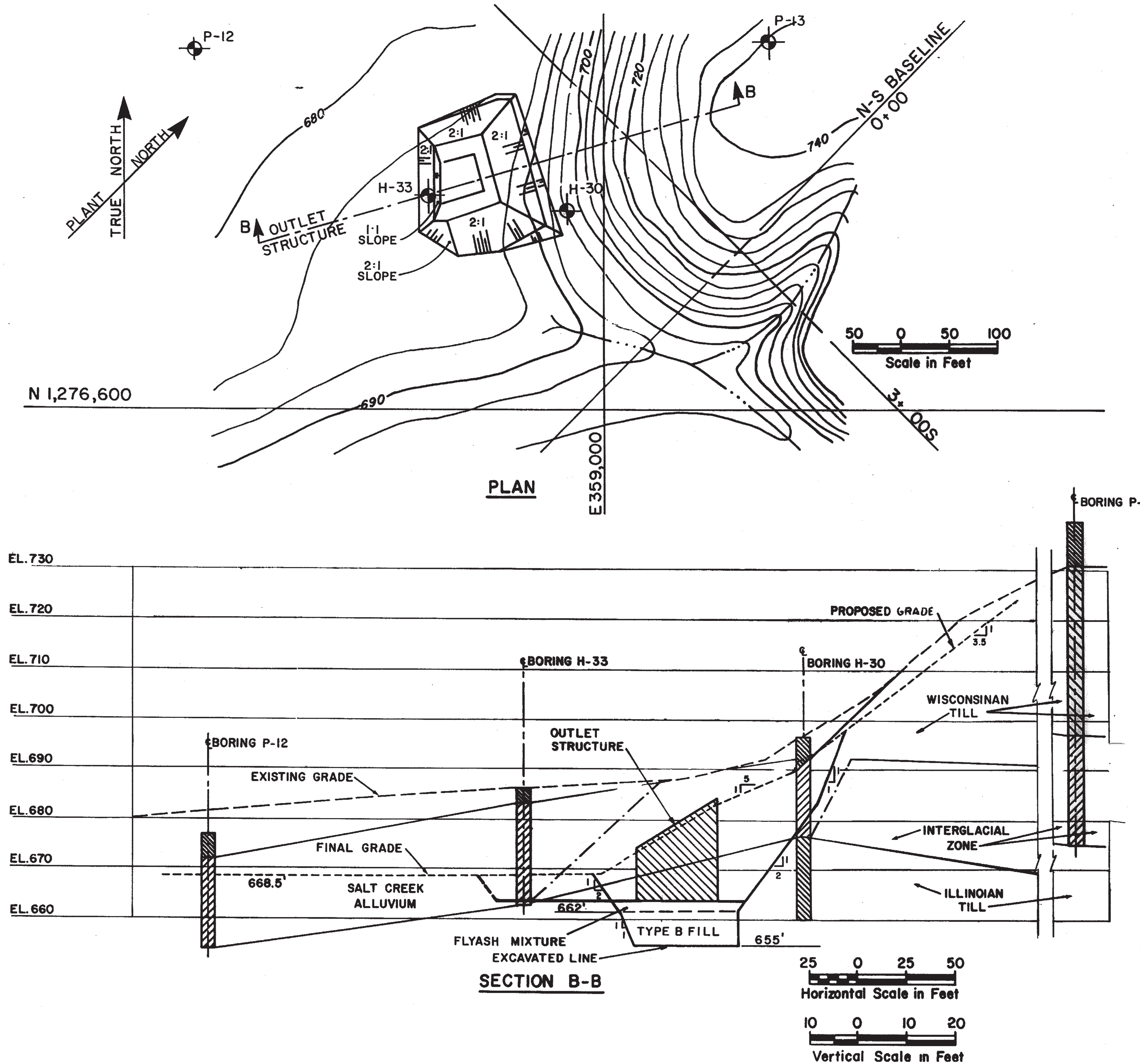
FIGURE 2.5-379

SECTION THROUGH CIRCULATING WATER SCREEN HOUSE SHOWING EXCAVATION LINE

FIGURE 2.5-380

HAS BEEN DELETED



LEGEND

Borings

NOTE

1. The soil profile shows the projection of Borings P-12, H-30 and P-13 along the center line of the outlet structure.

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FIGURE 2.5-381

EXCAVATION PLAN AND SECTION FOR OUTLET STRUCTURE

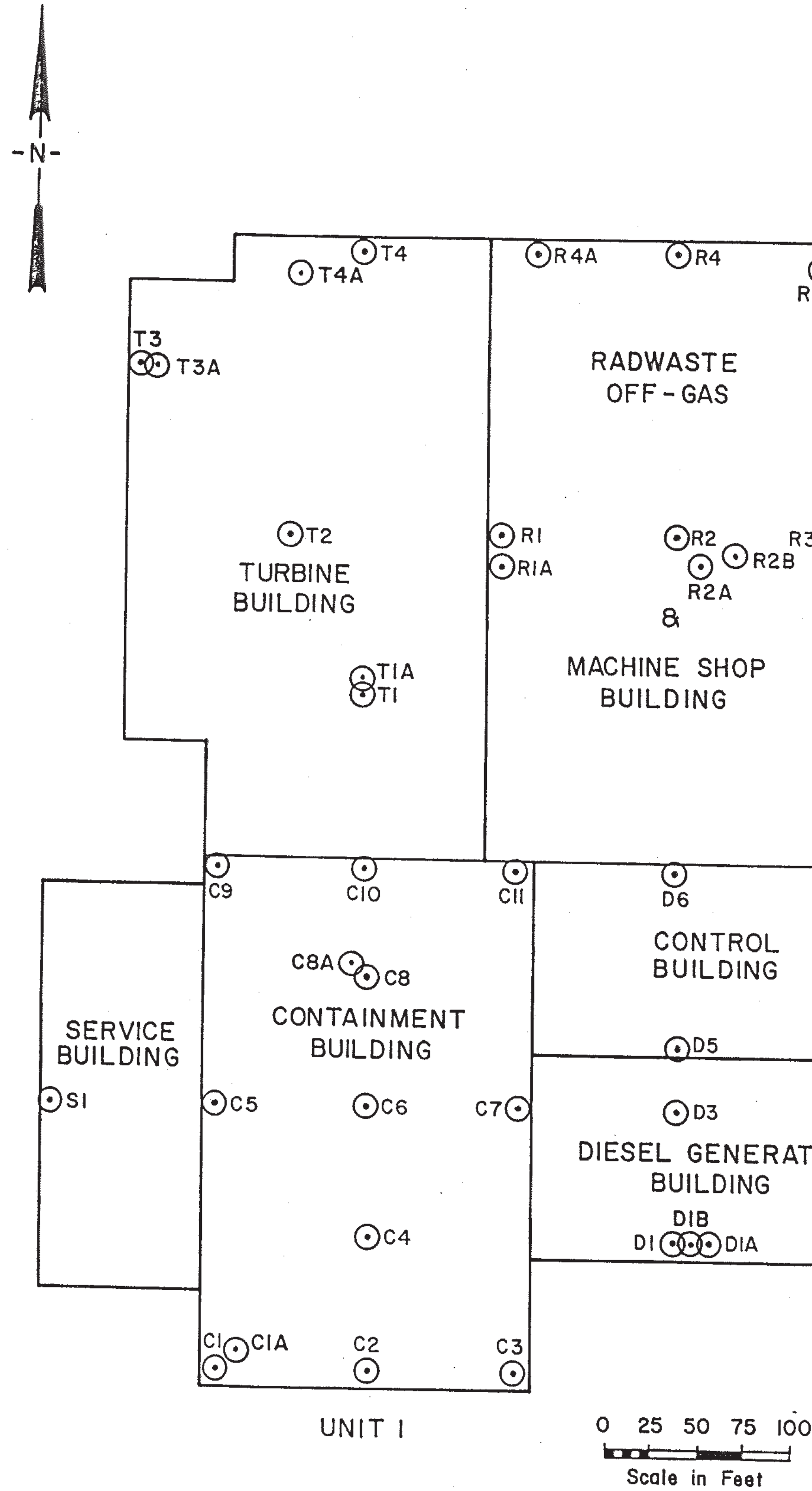

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FIGURE 2.5-382

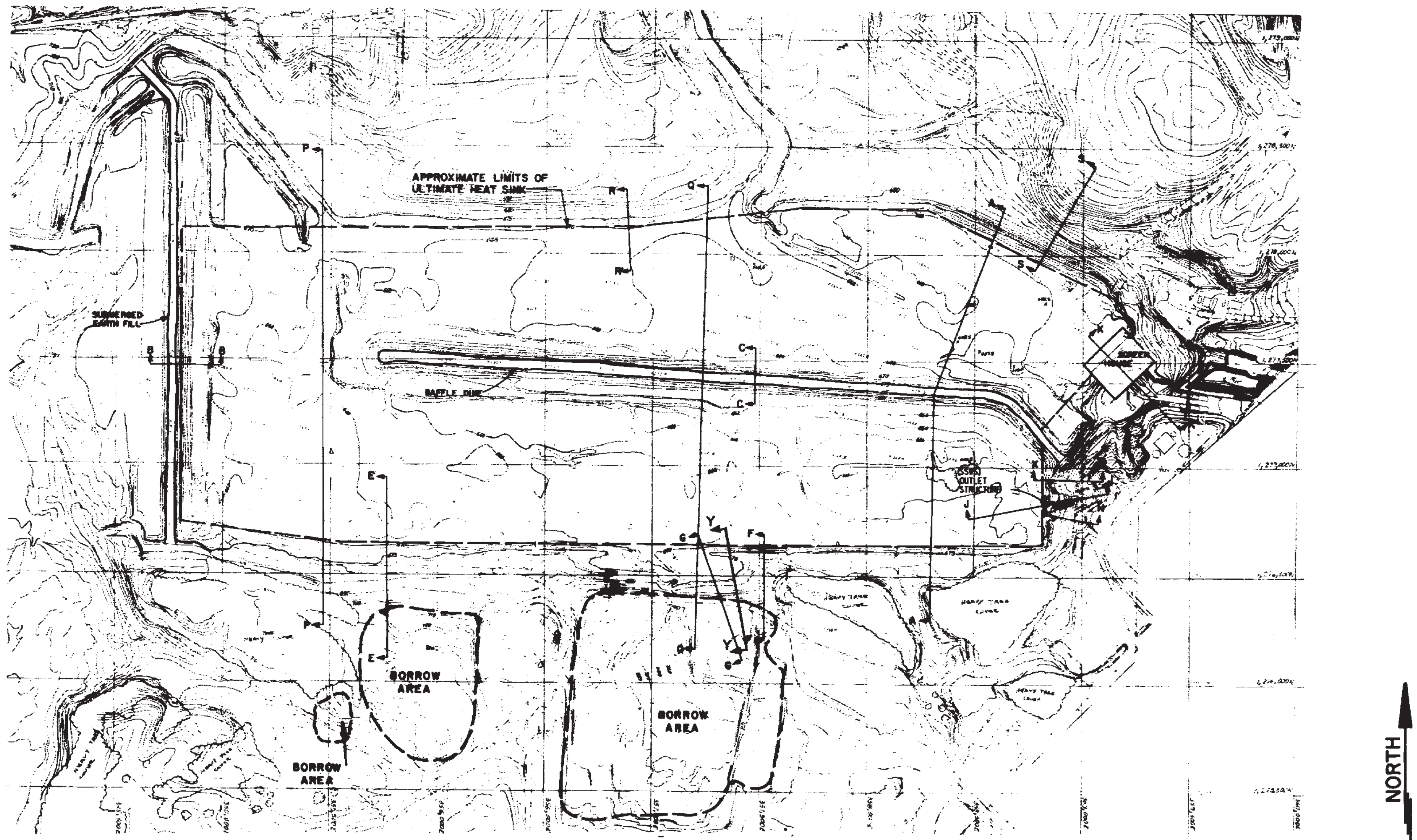
LOCATIONS OF SETTLEMENT MONUMENTS - MAIN PLANT

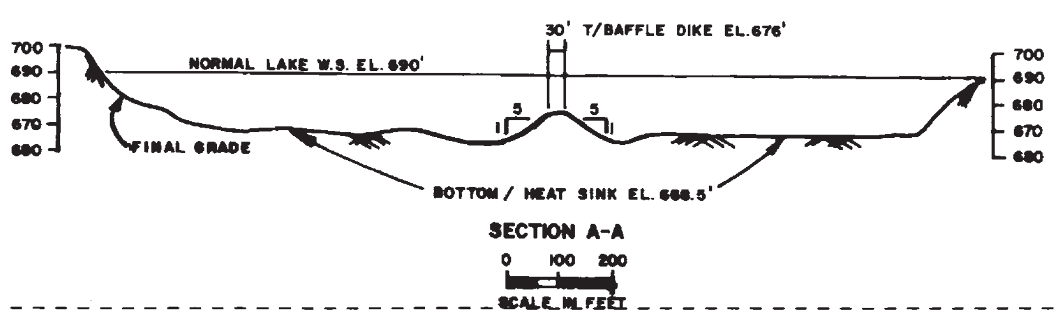
NOTE

1. ⊙C1 SETTLEMENT MONUMENT LOCATION.

Figure 2.5-383
Deleted

REVISION 9
JANUARY 2001





LEGEND

B — B SECTIONS

BORROW AREA

NOTE

1. FOR SECTIONS SEE FIGURE 2.5-385.

0 500
SCALE IN FEET

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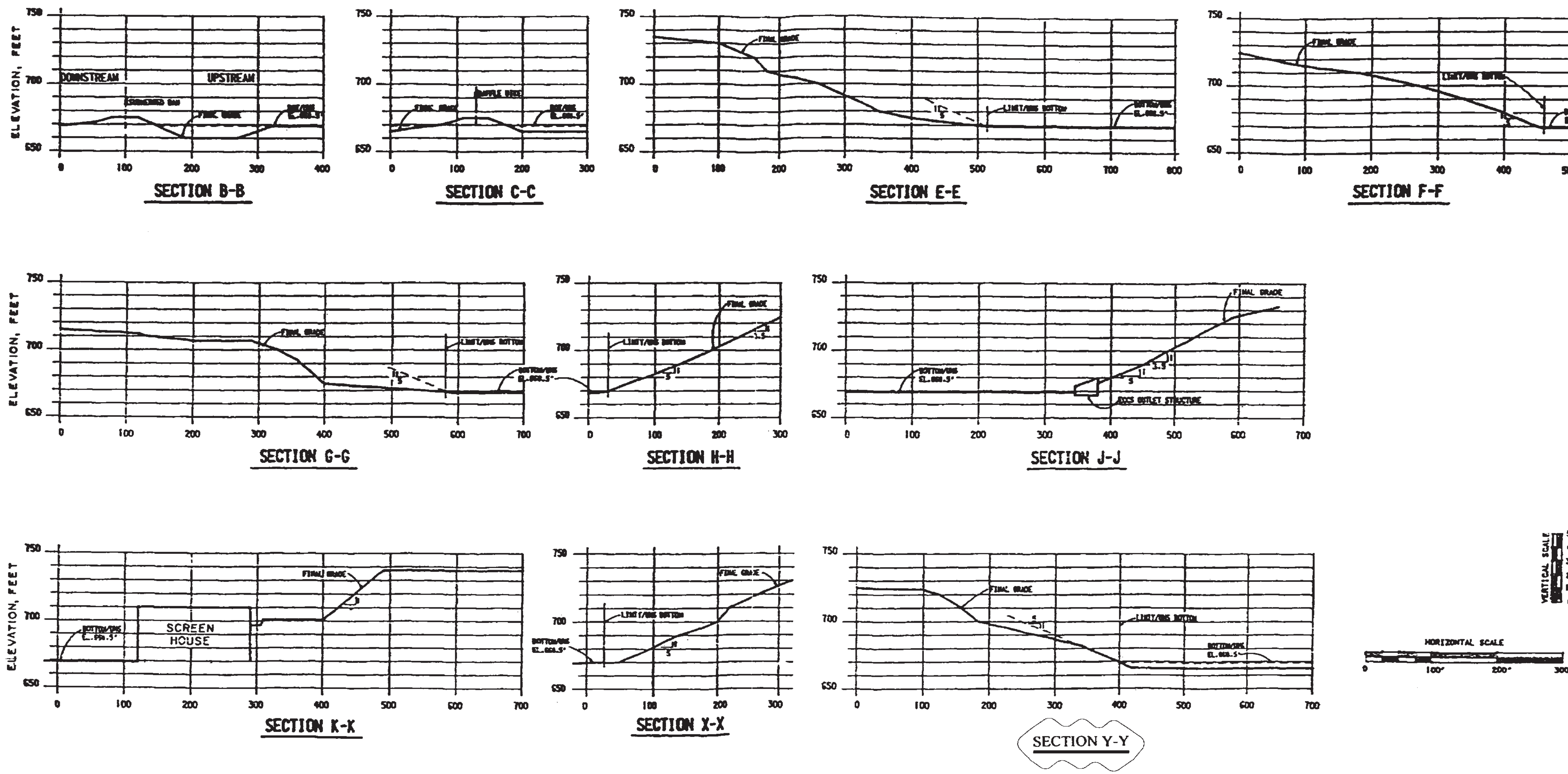
FIGURE 2.5-384

ULTIMATE HEAT SINK



FOR LOCATION OF SECTIONS,
SEE FIGURE 2.5-384.

NOTE:
HORIZONTAL AND VERTICAL SCALES
ARE DISTORTED

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FIGURE 2.5-385

SECTIONS - ULTIMATE HEAT SINK

REVISION 9
JANUARY 2001

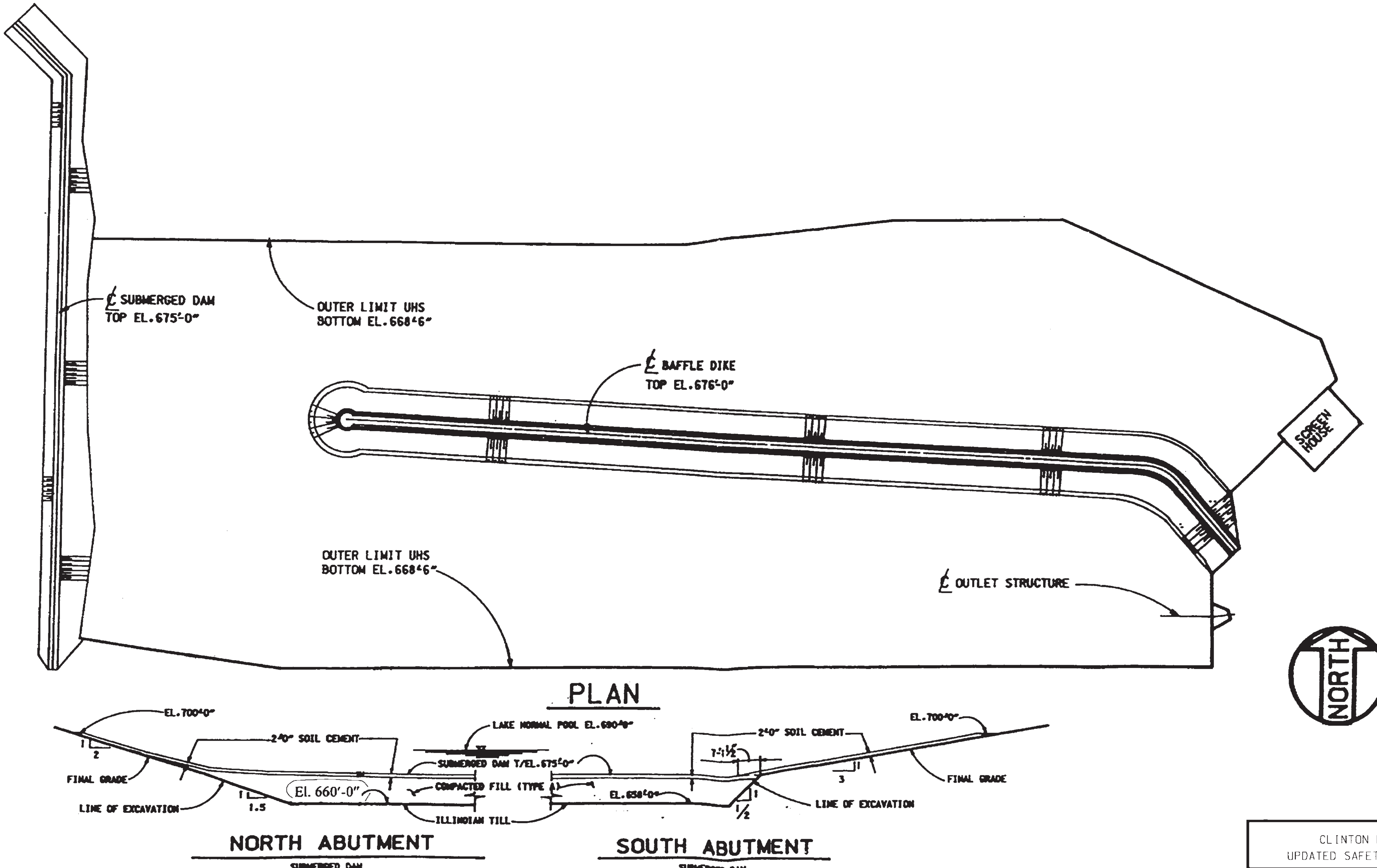

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FIGURE 2.5-386
PLAN AND SECTIONS FOR SUBMERGED EARTH FILL AND BAFFLE DIKE

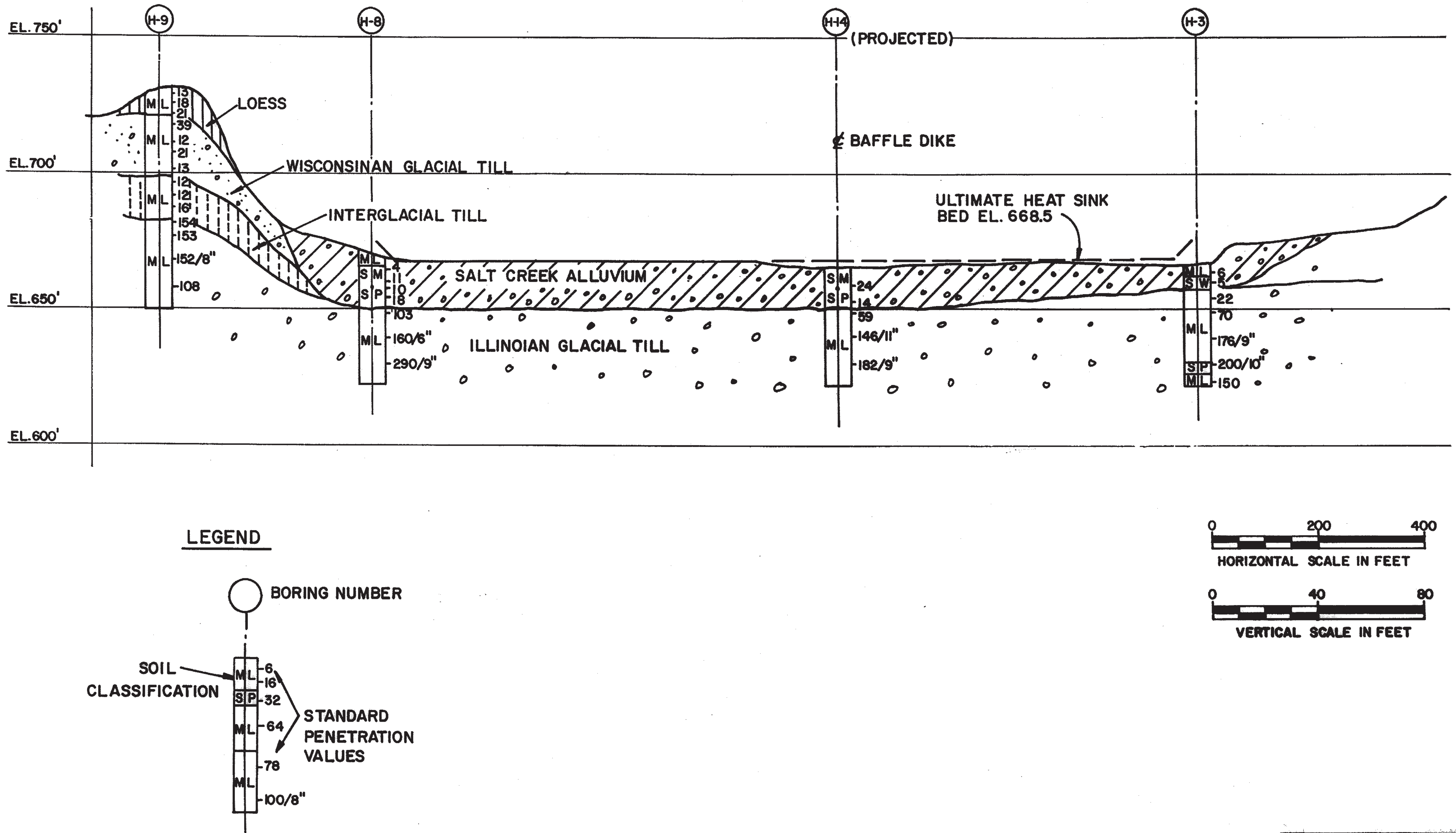

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FIGURE 2.5-387

SOIL PROFILE - ULTIMATE HEAT SINK
SECTION P-P

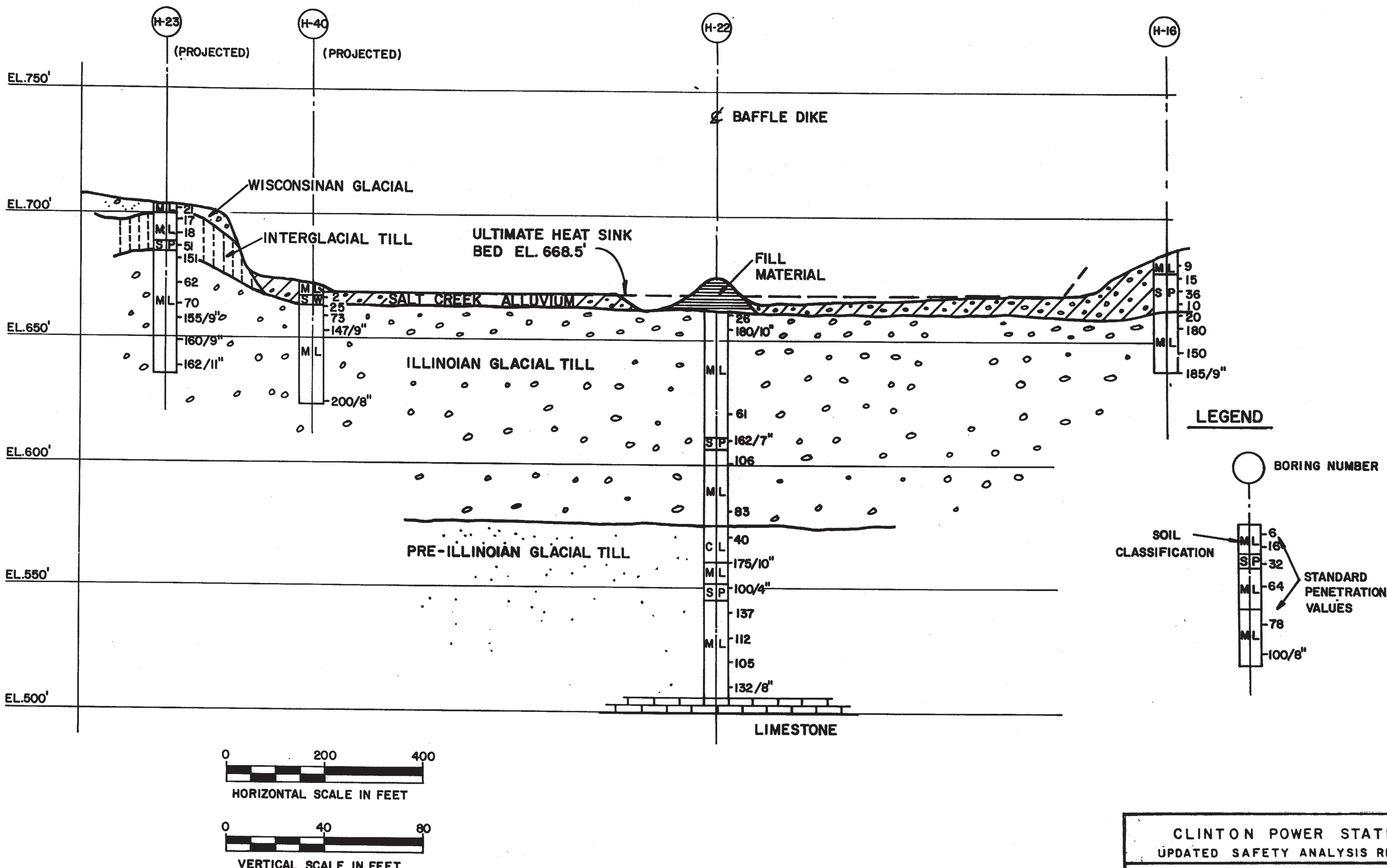

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FIGURE 2.5-388

SOIL PROFILE - ULTIMATE HEAT SINK
SECTION Q-Q

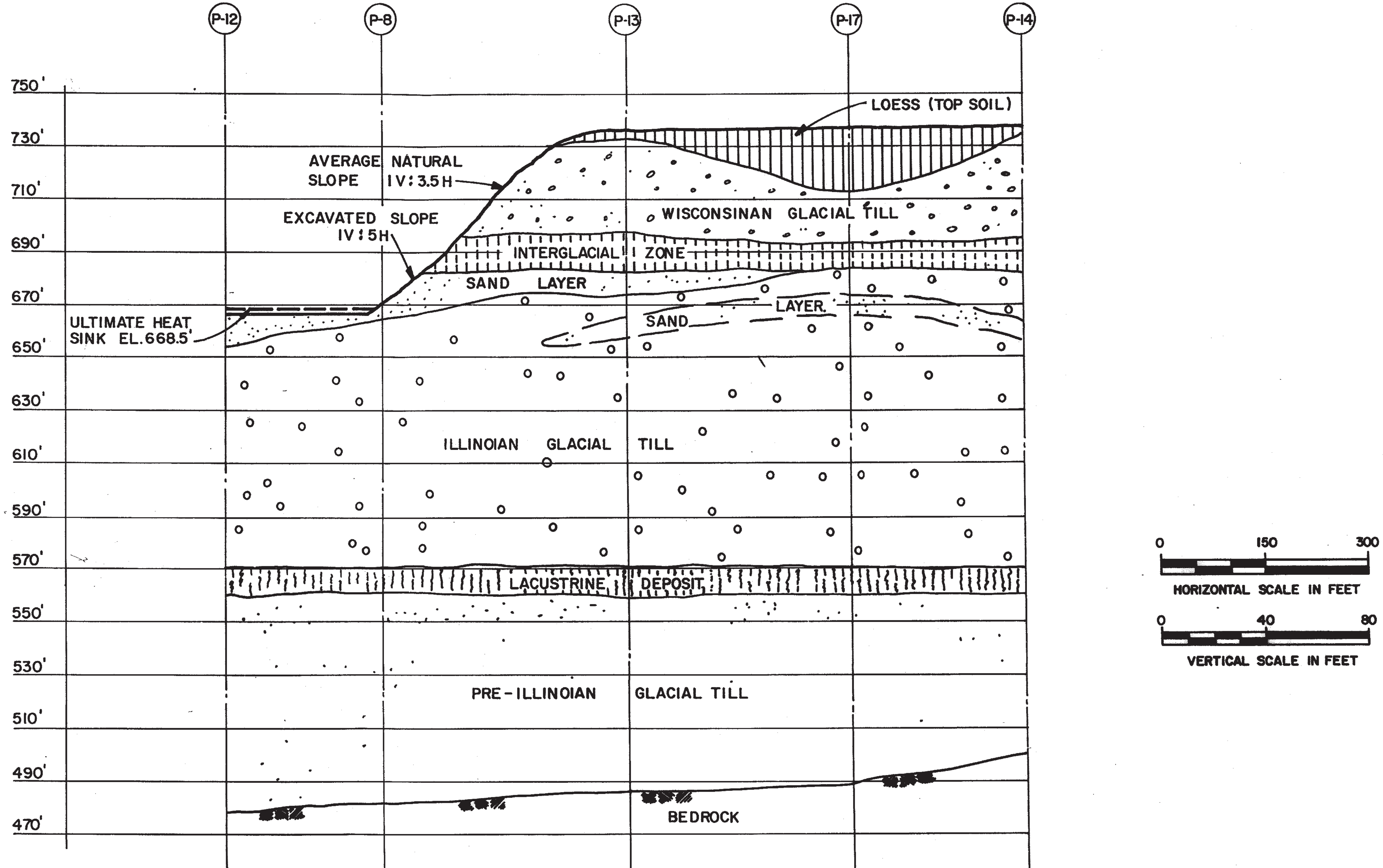

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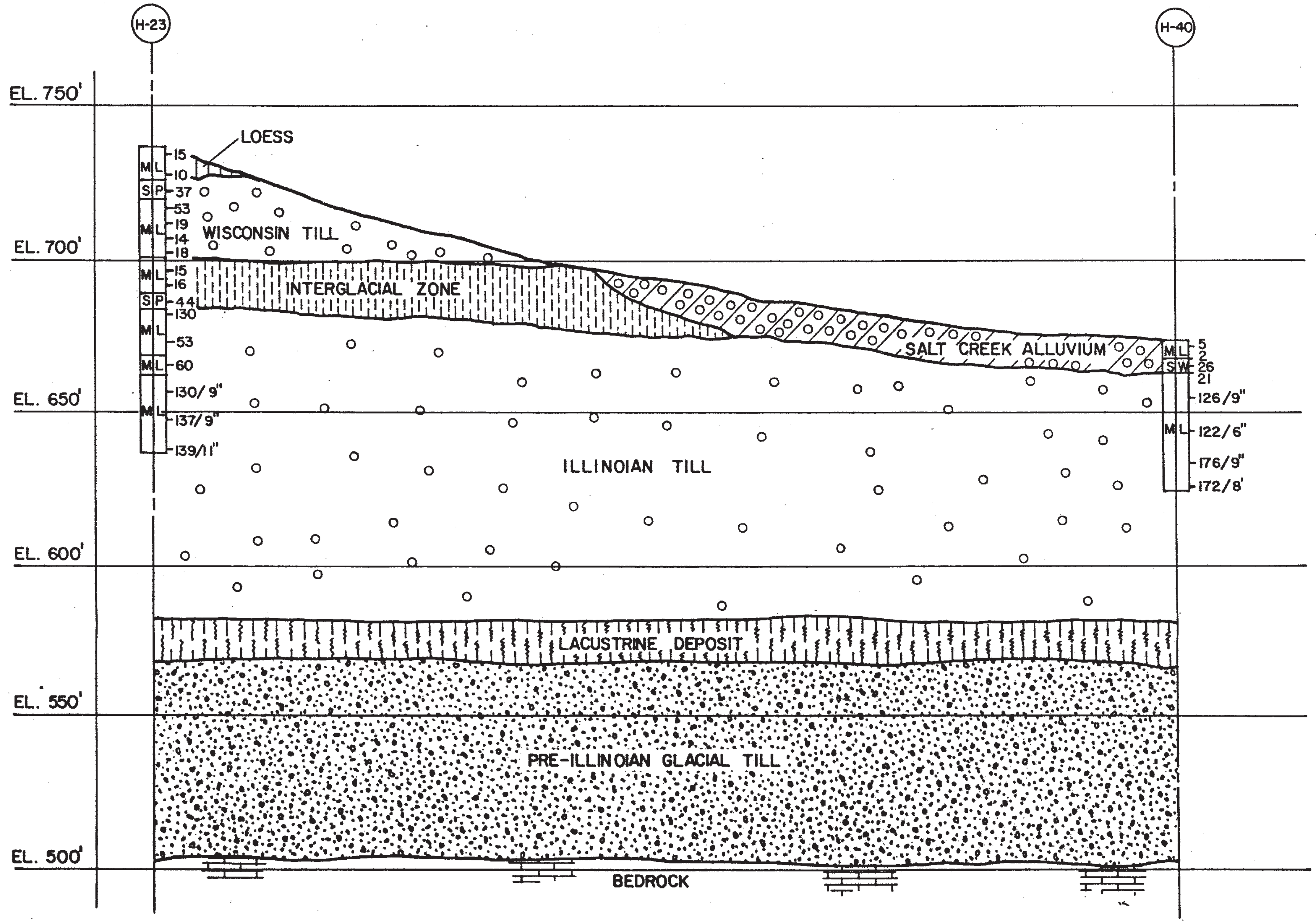
FIGURE 2.5-389

SOIL PROFILE - ULTIMATE HEAT SINK
SECTION X-X



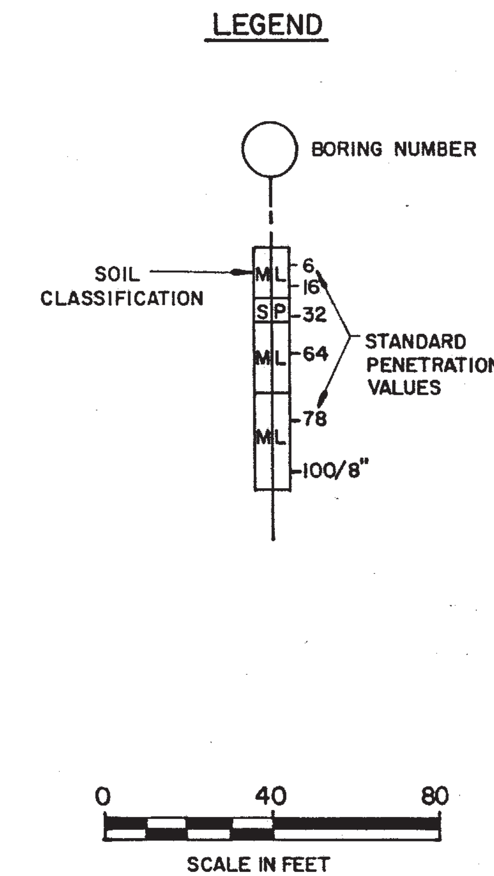


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FIGURE 2.5-390

SOIL PROFILE - ULTIMATE HEAT SINK SECTION Y-Y

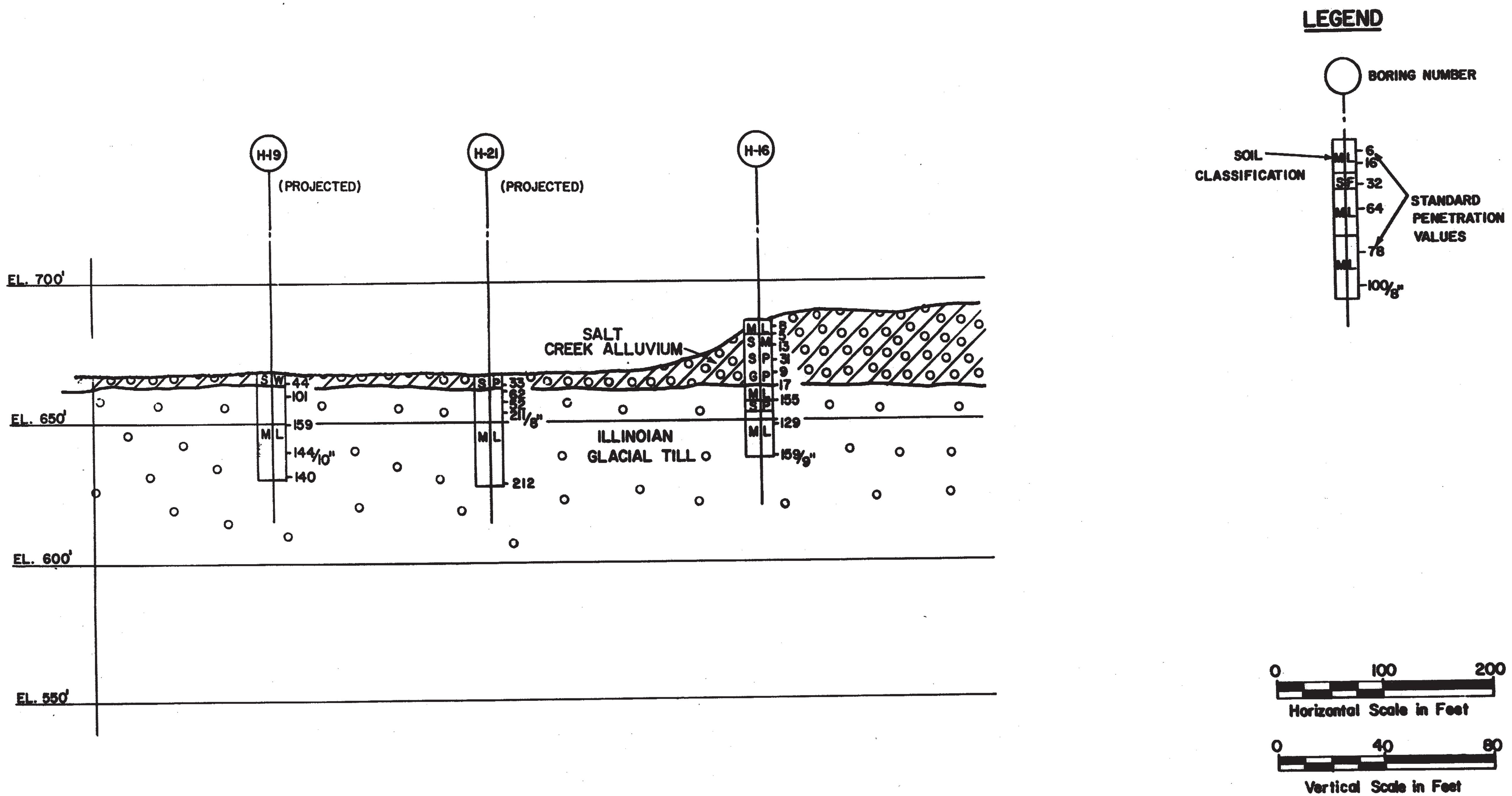

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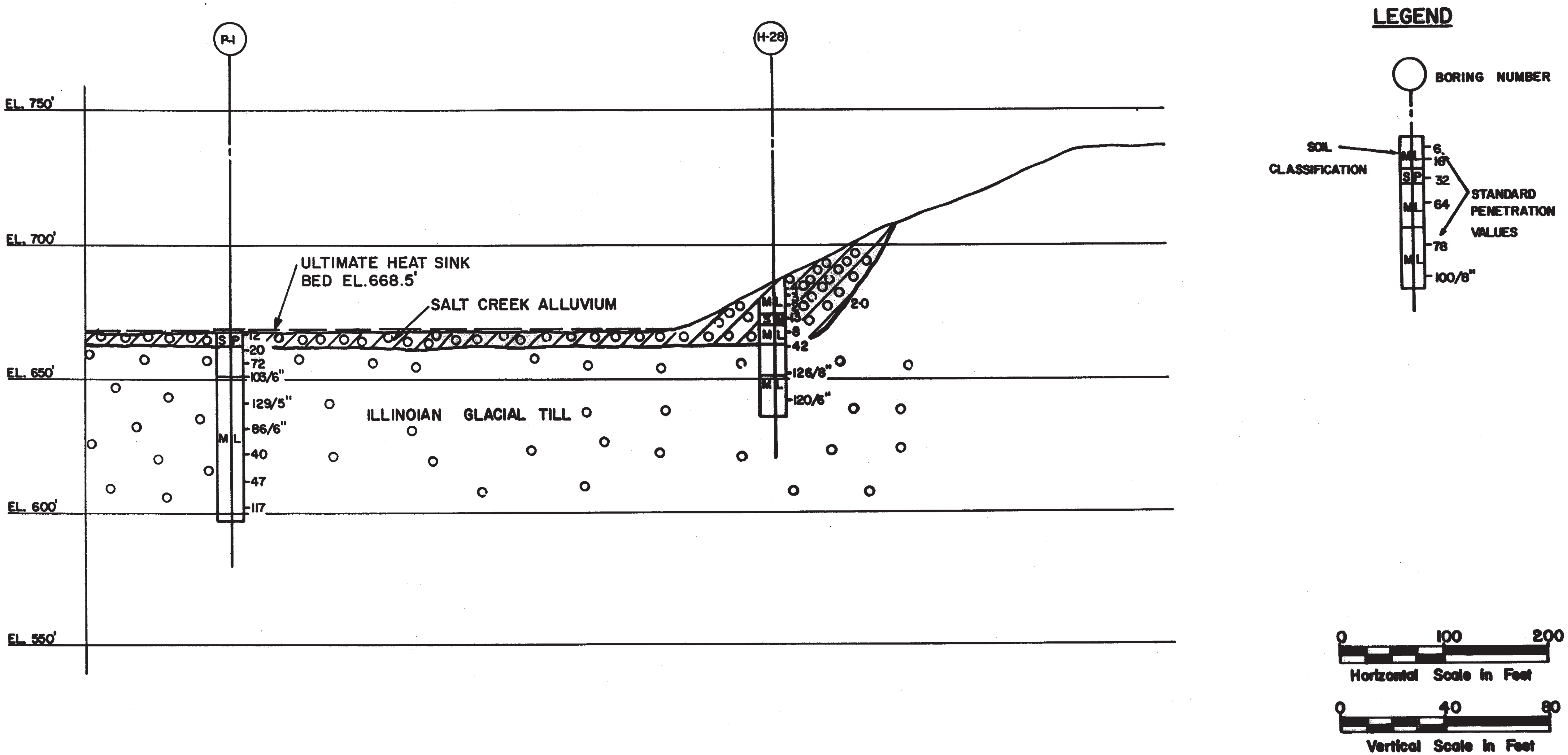
FIGURE 2.5-391

SOIL PROFILE - ULTIMATE HEAT SINK
SECTION R-R



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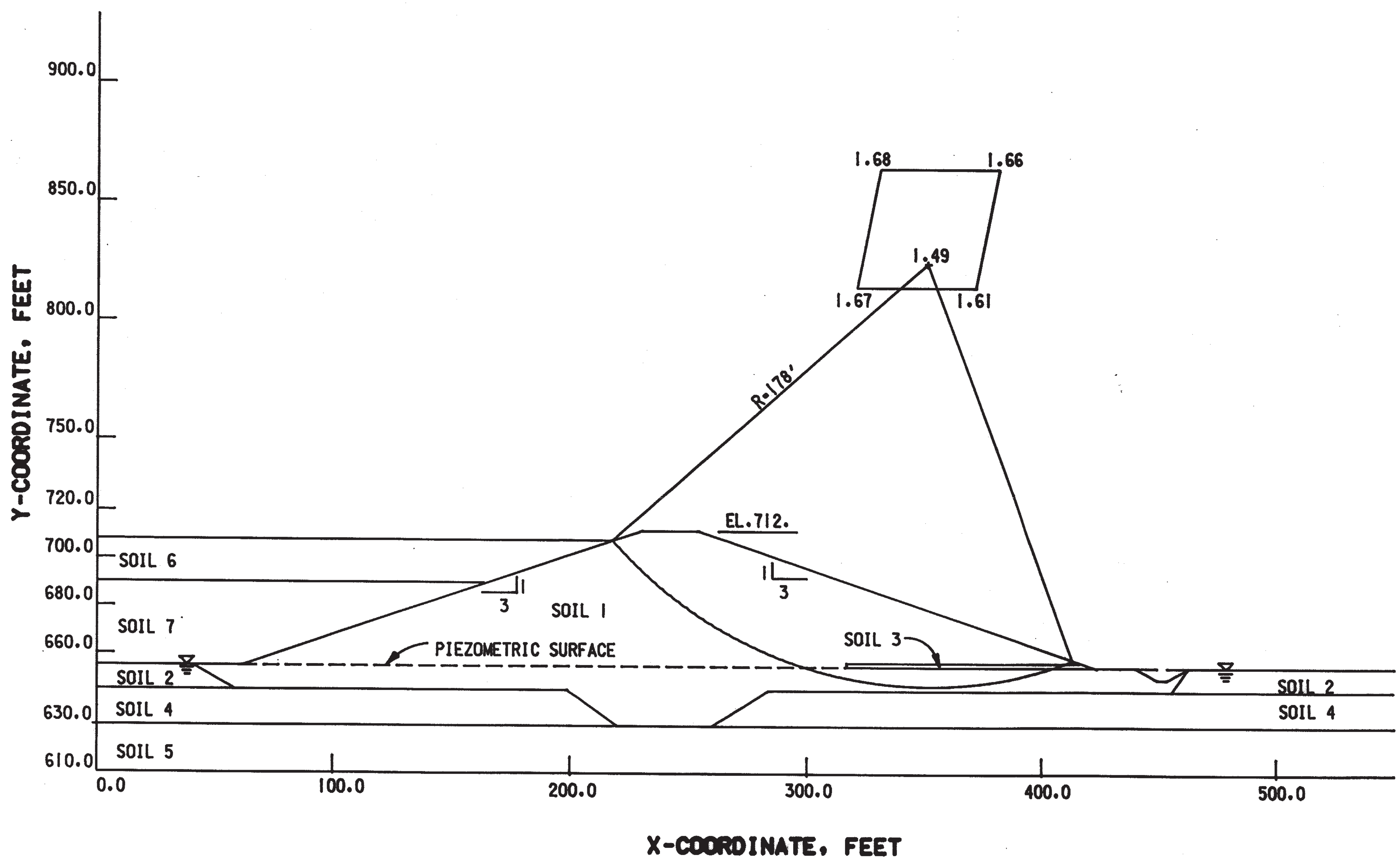
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-392

SOIL PROFILE - ULTIMATE HEAT SINK
SECTION S-S

#	DESCRIPTION	SOIL DATA		
		DENSITY (PCF)	C' (PSF)	Ø'
1	COMPACTED WISCONSINAN TILL	130	1300*	0*
2	SALT CREEK ALLUVIUM	120	400	0
3	SAND DRAINAGE BLANKET	125	0	30
4	SALT CREEK ALLUVIUM (SAND)	125	0	33
5	ILLINOIAN TILL	140	4000	0
6	DUMMY LAYER	0	0	0
7	DUMMY LAYER	0	0	0

* THESE VALUES ARE TOTAL STRENGTH PARAMETERS



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-393

STABILITY ANALYSIS - END OF CONSTRUCTION CONDITION - MAIN DAM

#	DESCRIPTION	SOIL DATA		
		DENSITY (PCF)	C' (PSF)	ø'
1	COMPACTED WISCONSINAN TILL	130	200	33
2	SALT CREEK ALLUVIUM	120	400	0
3	SAND DRAINAGE BLANKET	125	0	30
4	SALT CREEK ALLUVIUM (SAND)	125	0	33
5	ILLINOIAN TILL	140	4000	0
6	DUMMY LAYER	0	0	0
7	WATER	62.4	0	0

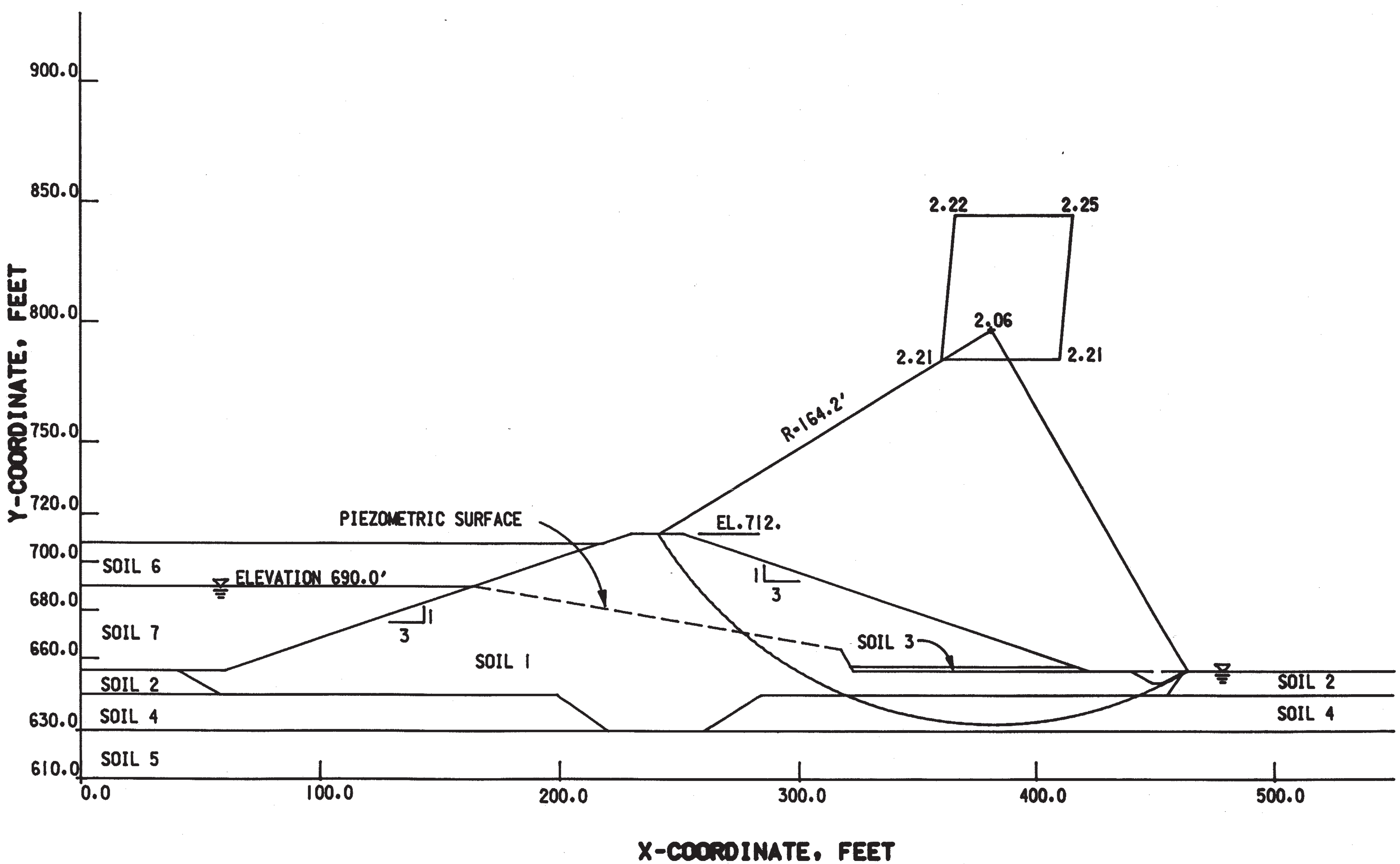


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FIGURE 2.5-394

STABILITY ANALYSIS - NORMAL POOL CONDITION - MAIN DAM

#	DESCRIPTION	SOIL DATA		
		DENSITY (PCF)	C' (PSF)	Ø'
1	COMPACTED WISCONSINAN TILL	130	200	33
2	SALT CREEK ALLUVIUM	120	400	0
3	SAND DRAINAGE BLANKET	125	0	30
4	SALT CREEK ALLUVIUM (SAND)	125	0	33
5	ILLINOIAN TILL	140	4000	0
6	DUMMY LAYER	0	0	0
7	WATER	62.4	0	0

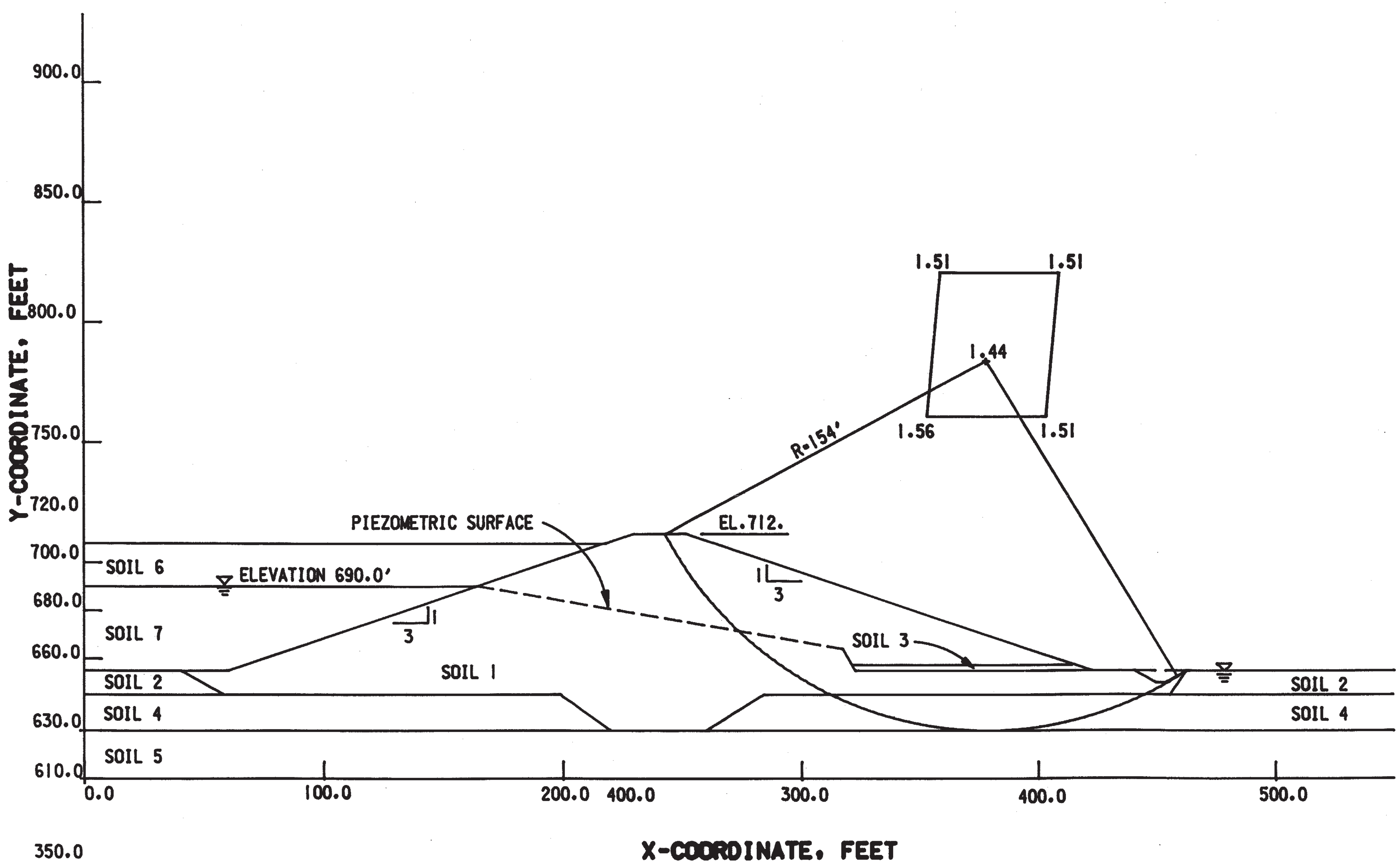

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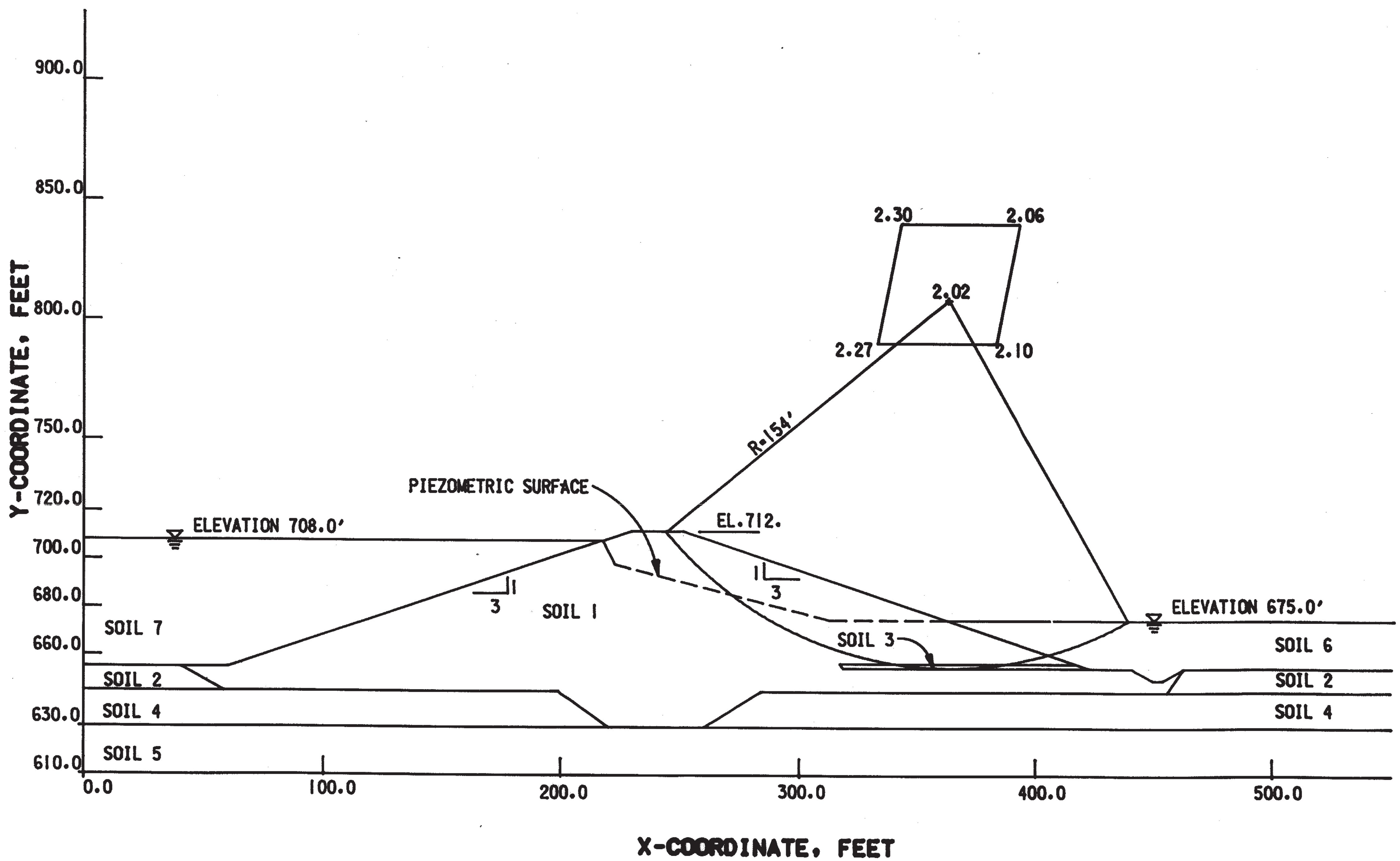
FIGURE 2.5-395

STABILITY ANALYSIS - NORMAL POOL WITH 0.1g EARTHQUAKE LOADING CONDITION - MAIN DAM

#	DESCRIPTION	SOIL DATA		
		DENSITY (PCF)	C' (PSF)	Ø'
1	COMPACTED WISCONSINAN TILL	130	200	33
2	SALT CREEK ALLUVIUM	120	400	0
3	SAND DRAINAGE BLANKET	125	0	30
4	SALT CREEK ALLUVIUM (SAND)	125	0	33
5	ILLINOIAN TILL	140	4000	0
6	WATER	62.4	0	0
7	WATER	62.4	0	0



CLINTON POWER STATION
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FIGURE 2.5-396

STABILITY ANALYSIS - MAXIMUM POOL CONDITION - MAIN DAM

#	DESCRIPTION	SOIL DATA		
		DENSITY (PCF)	C' (PSF)	Ø'
1	COMPACTED WISCONSINAN TILL	130	200	33
2	SALT CREEK ALLUVIUM	120	400	0
3	SAND DRAINAGE BLANKET	125	0	30
4	SALT CREEK ALLUVIUM (SAND)	125	0	33
5	ILLINOIAN TILL	140	4000	0
6	DUMMY LAYER	0	0	0
7	DUMMY LAYER	0	0	0

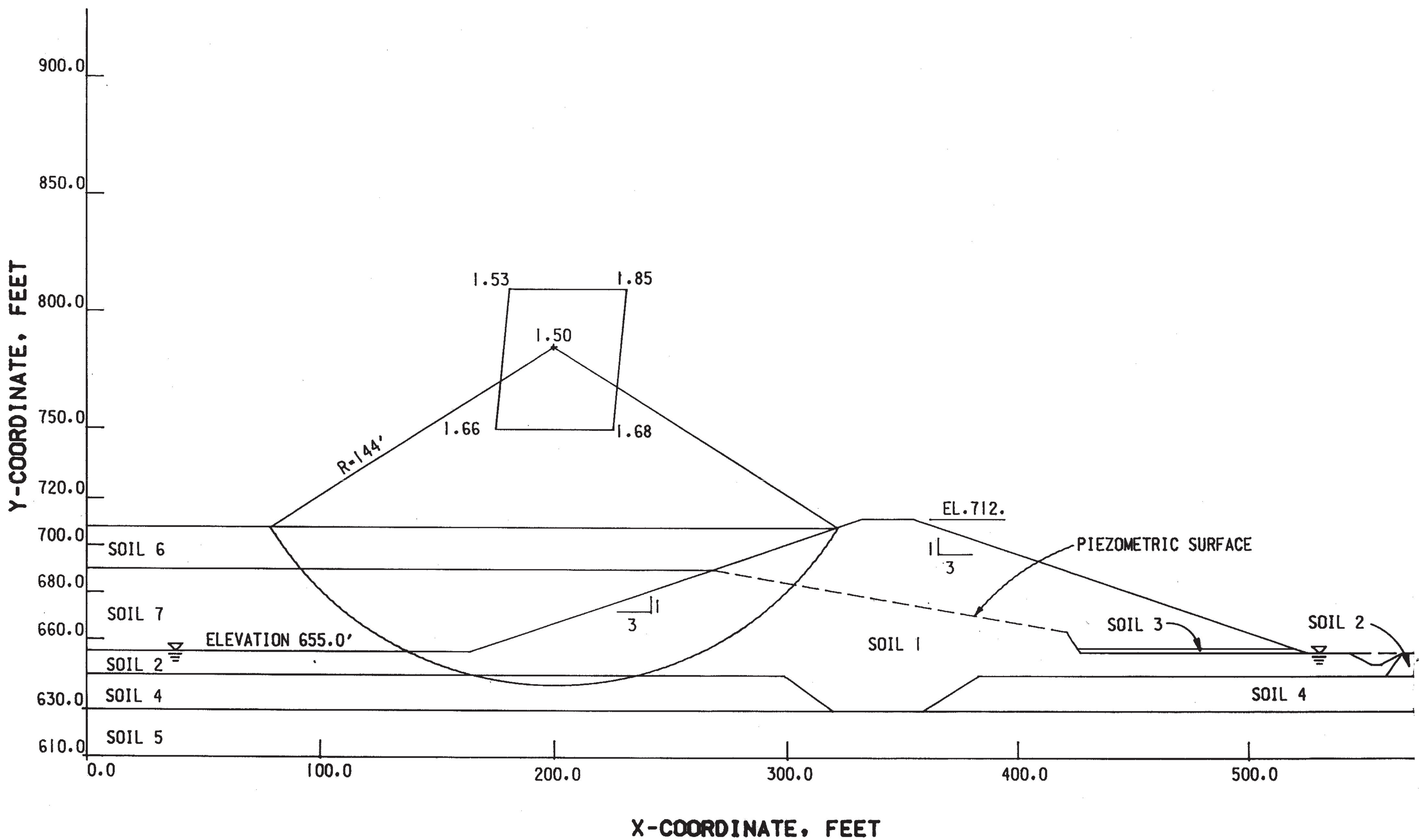

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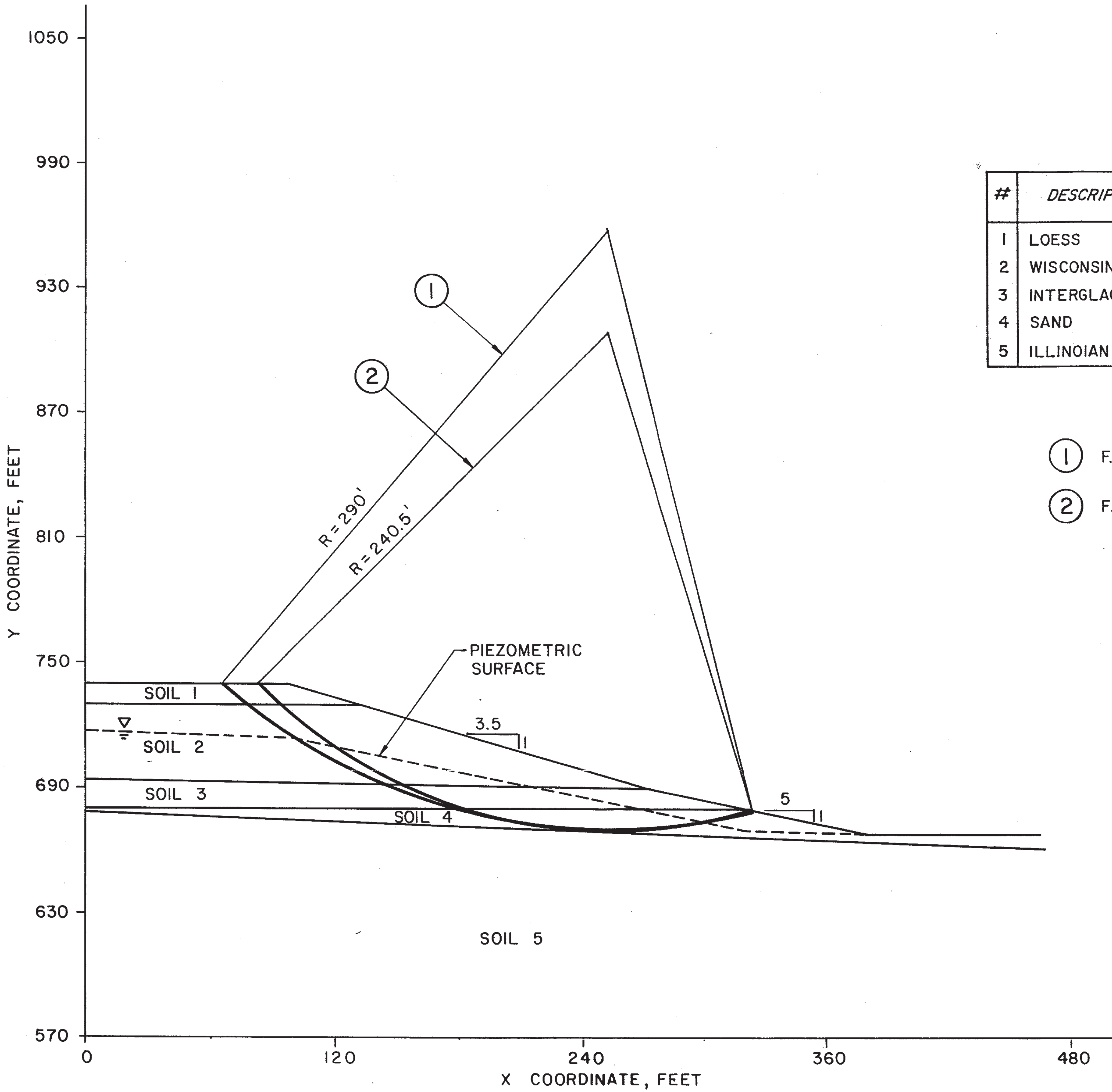
FIGURE 2.5-397

STABILITY ANALYSIS - RAPID DRAWDOWN CONDITION - MAIN DAM



#	DESCRIPTION	SOIL DATA		
		γ (PCF)	C' (PSF)	Φ'
1	LOESS	120.0	0	20
2	WISCONSIN TILL	137.0	600	30
3	INTERGLACIAL	131.0	600	30
4	SAND	125.0	0	38
5	ILLINOIAN TILL	150.0	0	47

1 F.S: 1.24 (PSEUDO)

2 F.S: 2.60 (STATIC)

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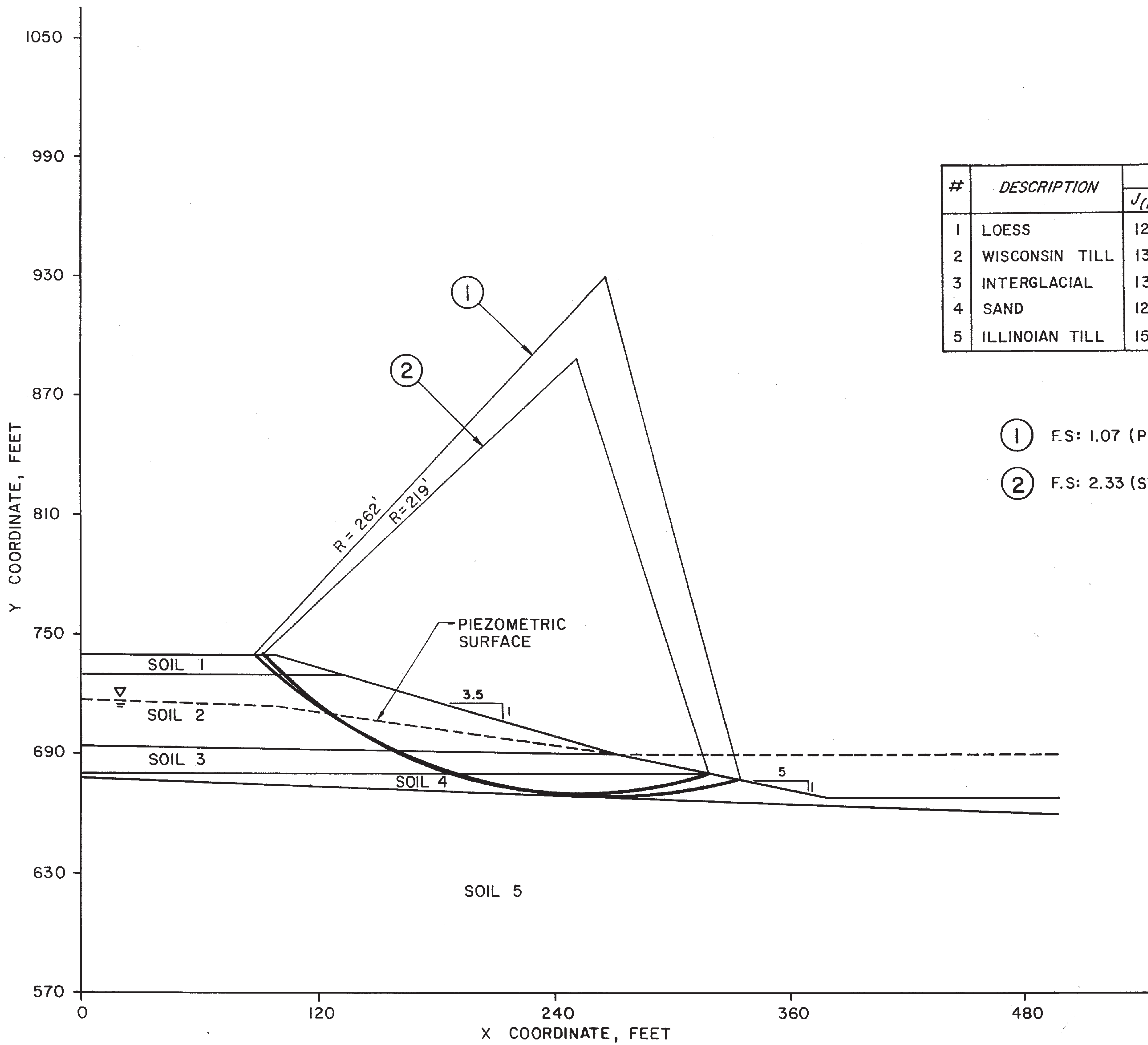
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-398

STABILITY ANALYSIS - END OF CONSTRUCTION CONDITION - SECTION X-X, ULTIMATE HEAT SINK



#	DESCRIPTION	SOIL DATA		
		γ (PCF)	C' (PSF)	ϕ'
1	LOESS	120.0	0	20
2	WISCONSIN TILL	137.0	600	30
3	INTERGLACIAL	131.0	600	30
4	SAND	125.0	0	38
5	ILLINOIAN TILL	150.0	0	47

1 F.S: 1.07 (PSEUDO)

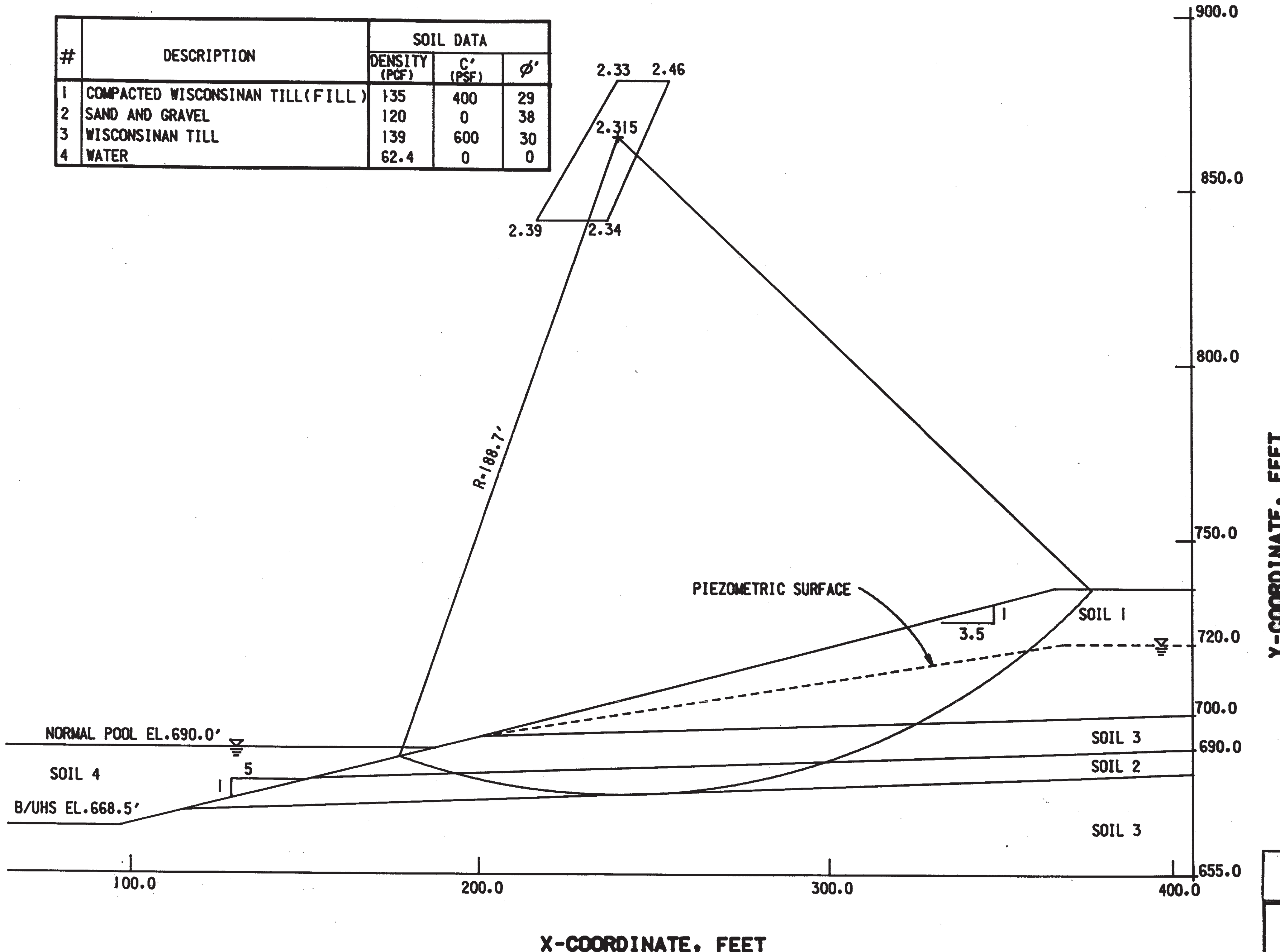
2 F.S: 2.33 (STATIC)

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-399

STABILITY ANALYSIS - FULL COOLING LAKE CONDITION - SECTION X-X, ULTIMATE HEAT SINK

#	DESCRIPTION	SOIL DATA		
		DENSITY (PCF)	C' (PSF)	Ø'
1	COMPACTED WISCONSINAN TILL (FILL)	135	400	29
2	SAND AND GRAVEL	120	0	38
3	WISCONSINAN TILL	139	600	30
4	WATER	62.4	0	0



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UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-400

STABILITY ANALYSIS - FULL COOLING LAKE CONDITION - SECTION H-H', ULTIMATE HEAT SINK

#	DESCRIPTION	SOIL DATA		
		DENSITY (PCF)	C' (PSF)	ø'
1	COMPACTED WISCONSINAN TILL(FILL)	.35	400	29
2	SAND AND GRAVEL	120	0	38
3	WISCONSINAN TILL	139	600	30
4	WATER	62.4	0	0

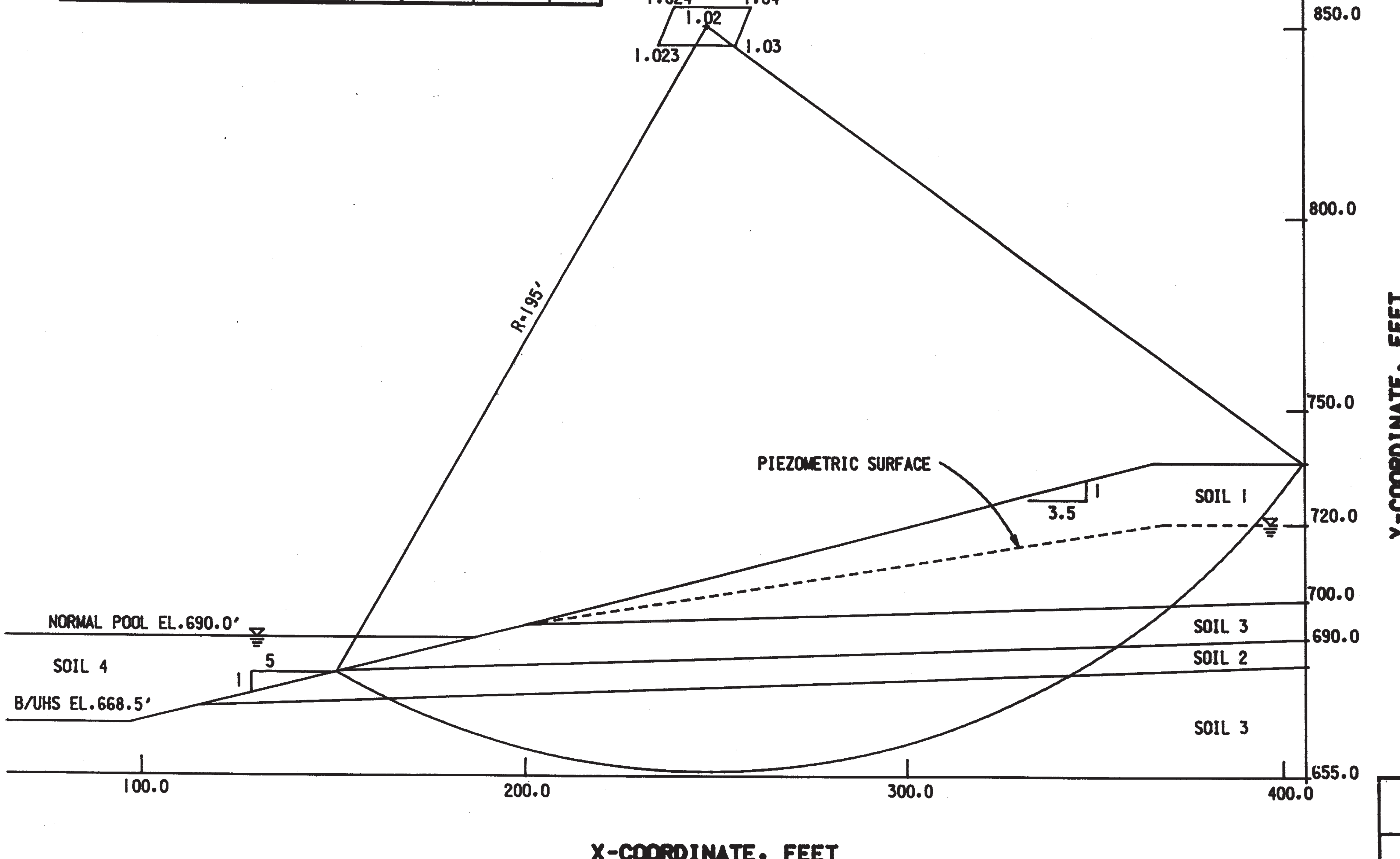

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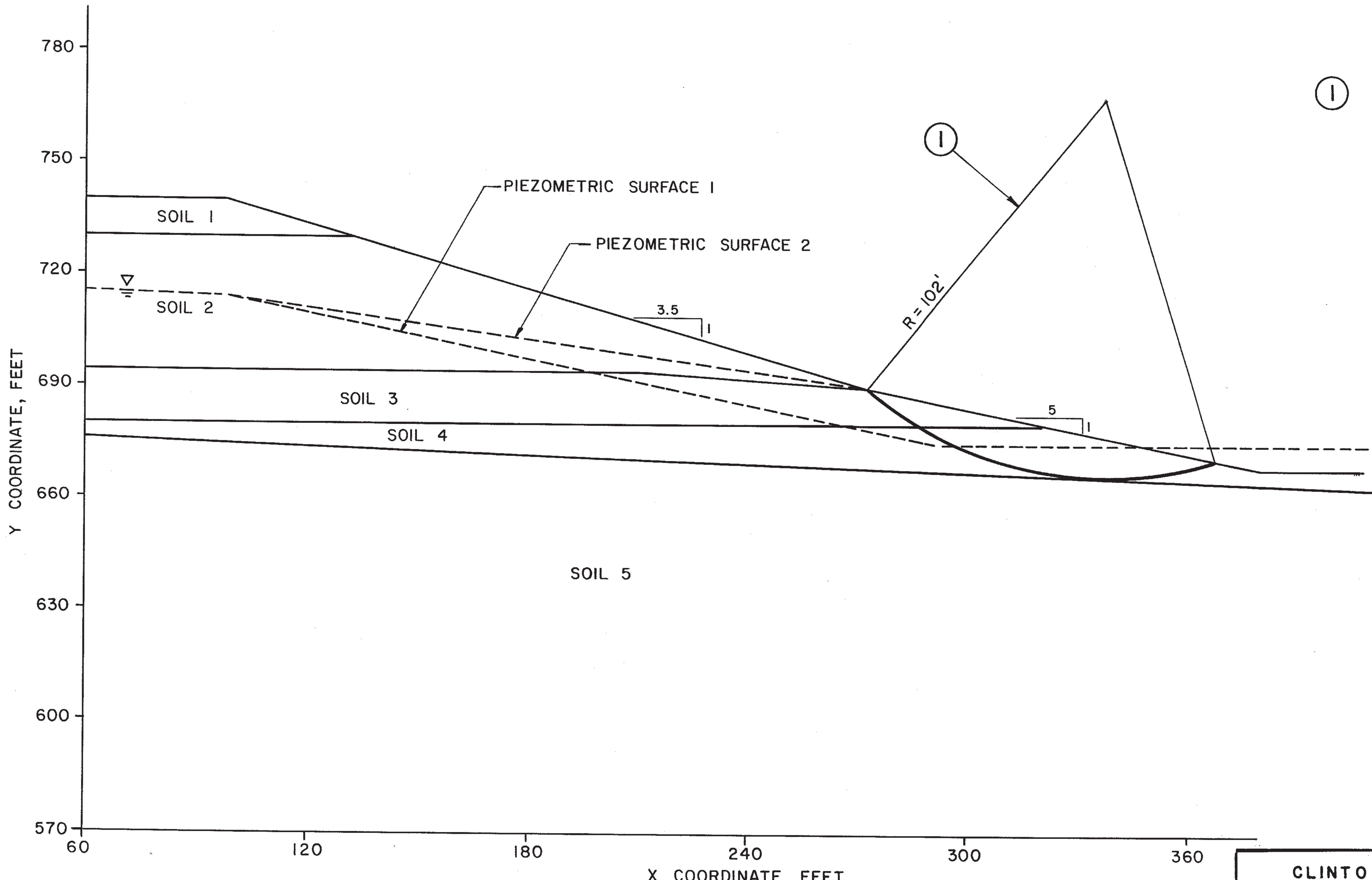
FIGURE 2.5-401

STABILITY ANALYSIS - FULL COOLING LAKE WITH 0.25g EARTHQUAKE LOADING CONDITION - SECTION H-H, ULTIMATE HEAT SINK



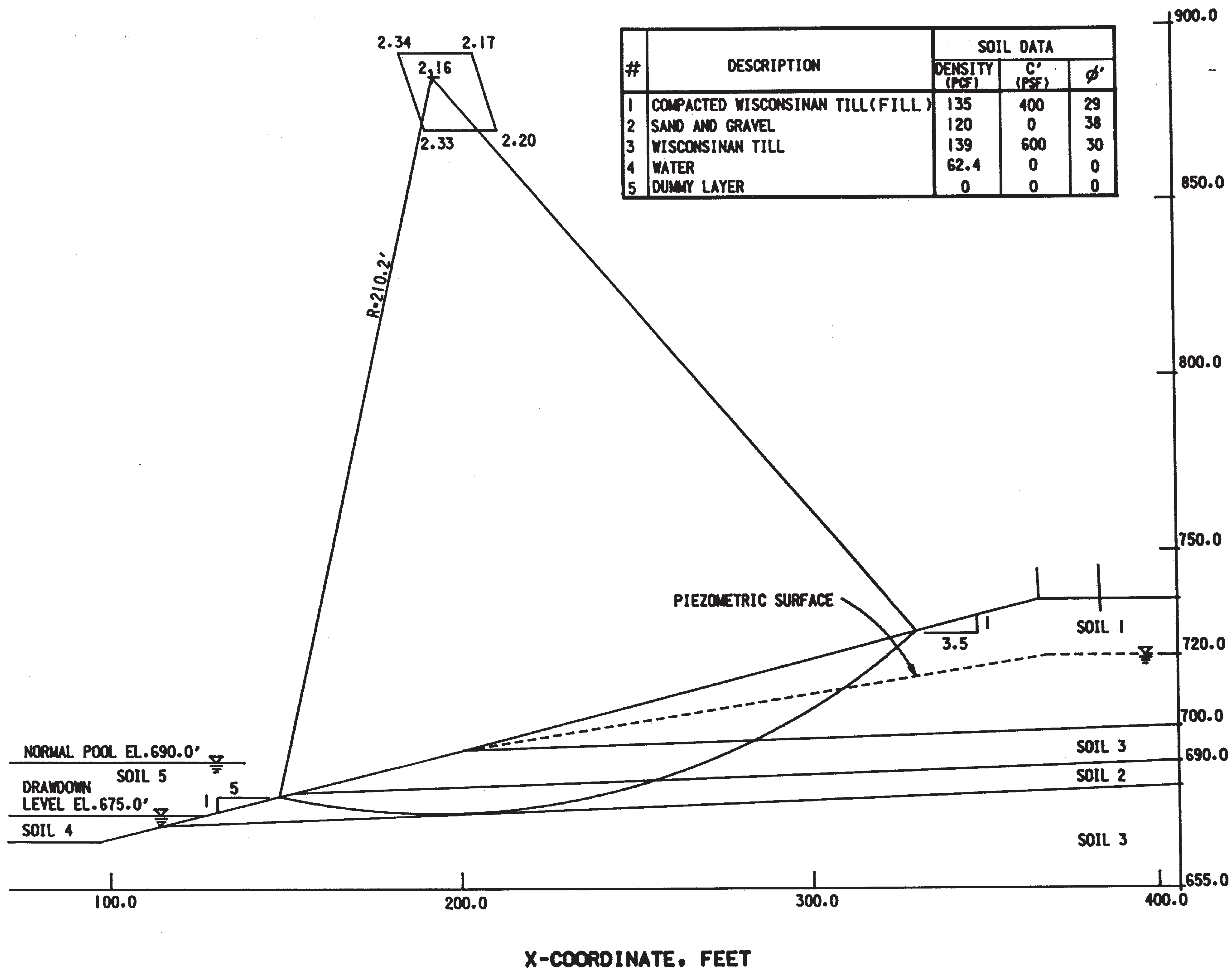
NOTE

SEE FIGURE 2.5-398
FOR SOIL DATA

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-402

STABILITY ANALYSIS - EMPTY COOLING LAKE CONDITION SECTION X-X, ULTIMATE HEAT SINK



CLINTON POWER STATION
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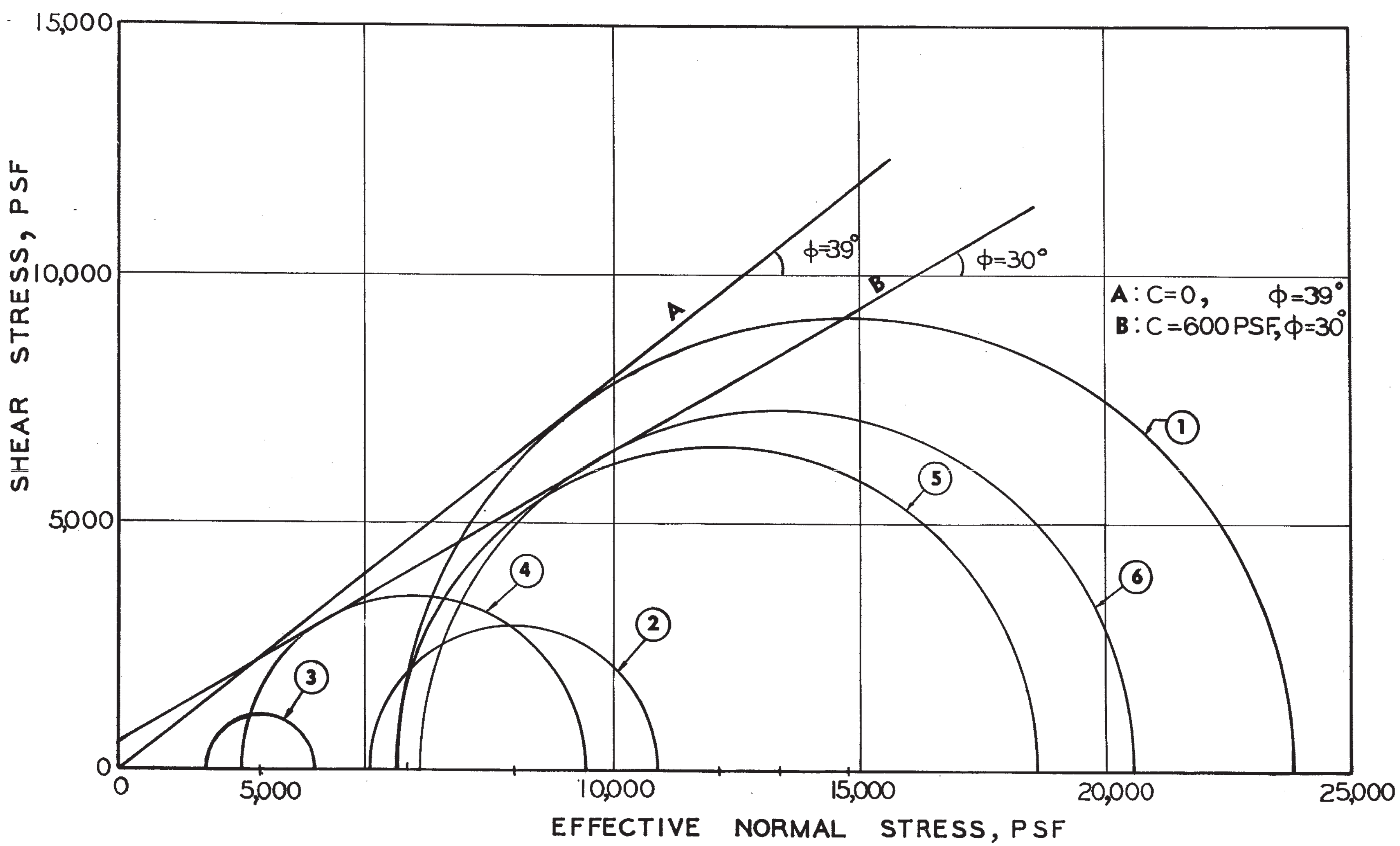
FIGURE 2.5-403

STABILITY ANALYSIS - EMPTY COOLING LAKE CONDITION SECTION H-H, ULTIMATE HEAT SINK

TRIAXIAL COMPRESSION TESTS

CONSOLIDATED UNDRAINED WITH PORE PRESSURE MEASUREMENTS

KEY	BORING	ELEVATION	SOIL TYPE	BLOW COUNTS/FT.	DRY DENSITY IN PCF
1	H-20	721.8	SP	85	130.3
2	H-38	712.9	ML	20	123.5
3	D-48	709.3	CL	9	123.0
4	H-23	707.3	ML	14	121.4
5	D-48	704.3	CL	21	123.8
6	D-48	689.3	CL	17	108.8



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

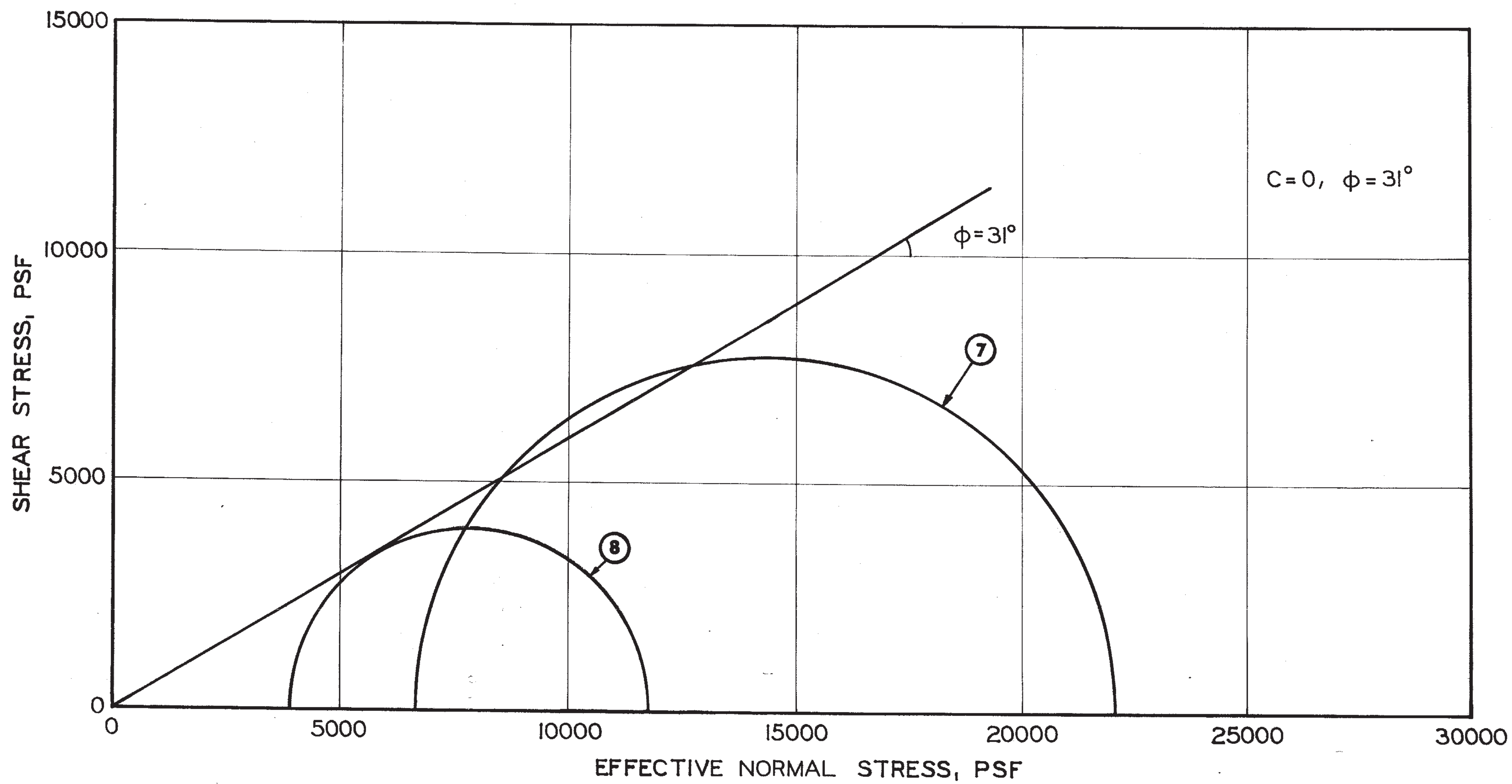
FIGURE 2.5-404

MOHR CIRCLES - WISCONSINAN GLACIAL TILL

TRIAXIAL COMPRESSION TESTS

CONSOLIDATED-UNDRAINED WITH PORE PRESSURE MEASUREMENTS

TEST NO.	BORING NO.	ELEVATION	SOIL TYPE	BLOW COUNT/FT.	DRY DENSITY IN PCF
7	H-23	692.3	ML	15	103
8	H-38	687.9	ML	8	–

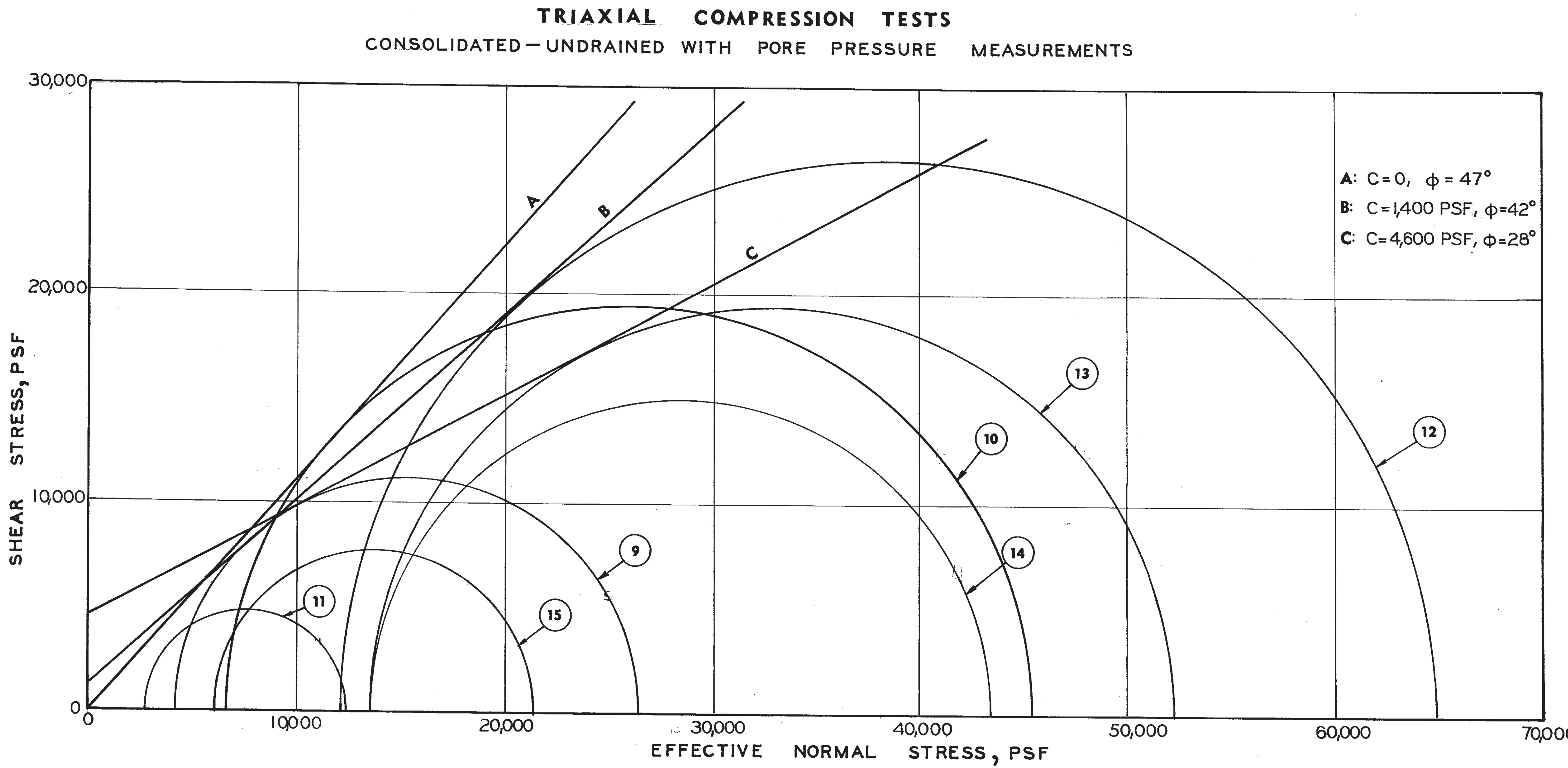


CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-405

MOHR CIRCLES - INTERGLACIAL TILL



KEY	BORING	ELEVATION	SOIL TYPE	BLOW COUNTS/FT	DRY DENSITY IN PCF
9	H-38	673.4	ML	154/11"	123.5
10	P-38	648.5	ML	100/6"	138
11	H-3	645.1	ML	60	139
12	H-25	633.7	ML	100/4"	146
13	D-8	631.7	ML	94	135.2
14	D-8	591.7	ML	83	132
15	H-6	504.3	ML	31	109

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UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-406

MOHR CIRCLES - ILLINOIAN GLACIAL TILL

TRIAXIAL COMPRESSION TEST

CONSOLIDATED-UNDRAINED WITH PORE PRESSURE MEASUREMENTS

KEY	BORING	ELEVATION	SOIL TYPE	BLOW COUNTS/FT.	DRY DENSITY IN PCF
16	P-38	572.9	ML	48	125.9

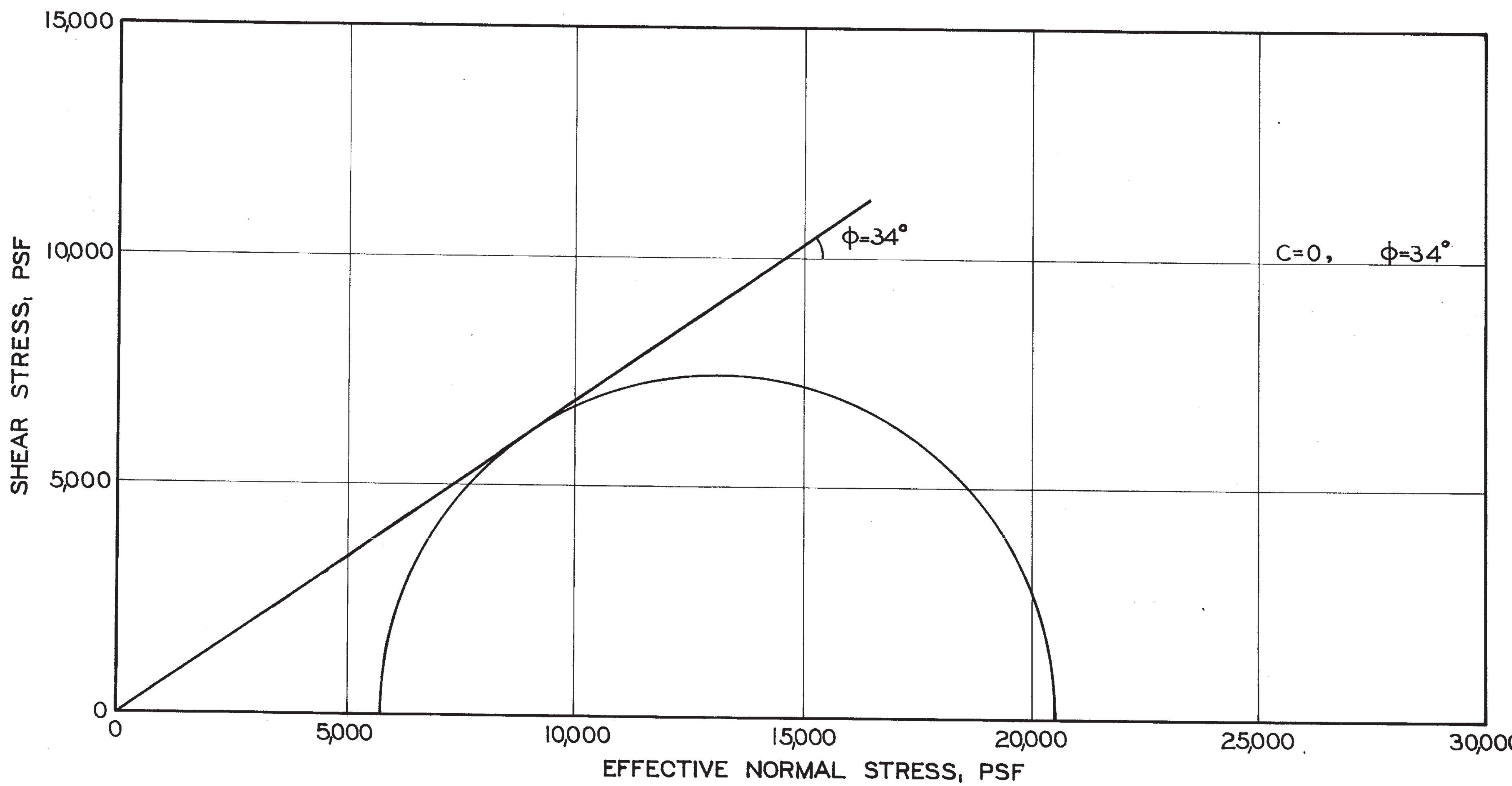

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FIGURE 2.5-407

MOHR CIRCLE - LACUSTRINE DEPOSITS

TRIAXIAL COMPRESSION TESTS

CONSOLIDATED-UNDRAINED WITH PORE PRESSURE MEASUREMENTS

KEY	BORING	ELEVATION	SOIL TYPE	BLOW COUNT/FT.	DRY DENSITY IN PCF
17	H-25	674.7	ML	3	–
18	H-13	673.6	ML	6	102
19	H-24	670.7	SM	2	–

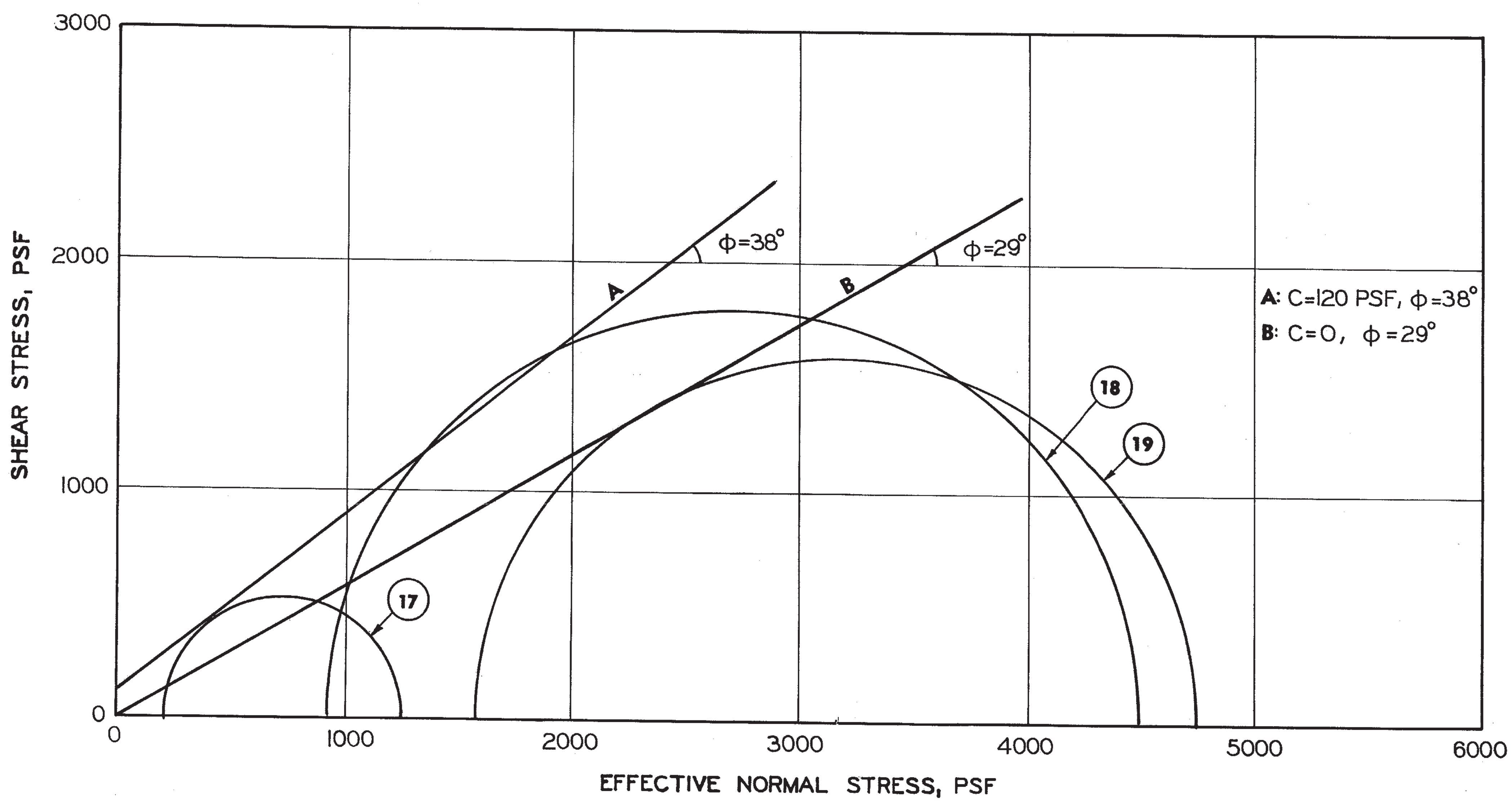

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FIGURE 2.5-408

MOHR CIRCLES - SALT CREEK ALLUVIUM

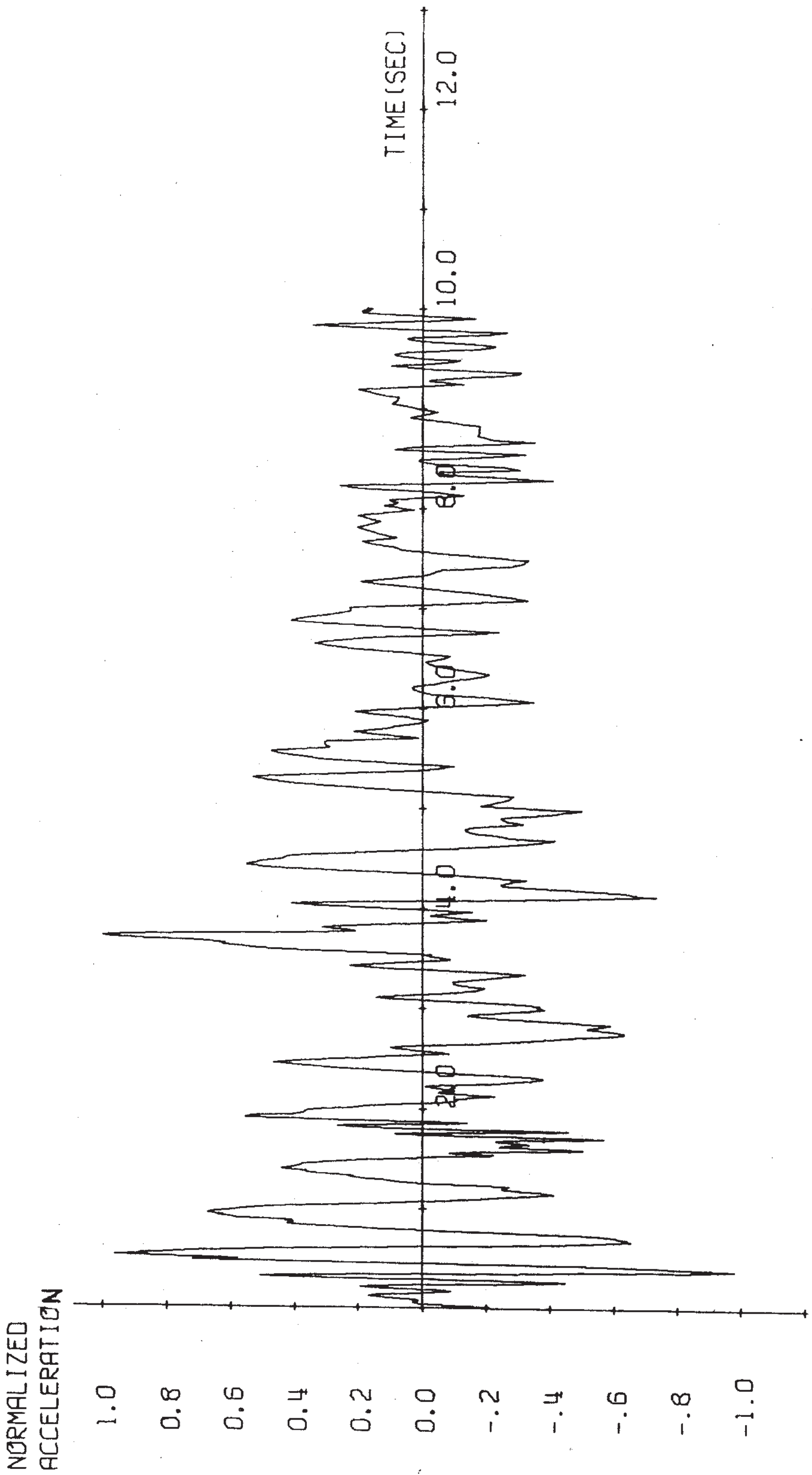

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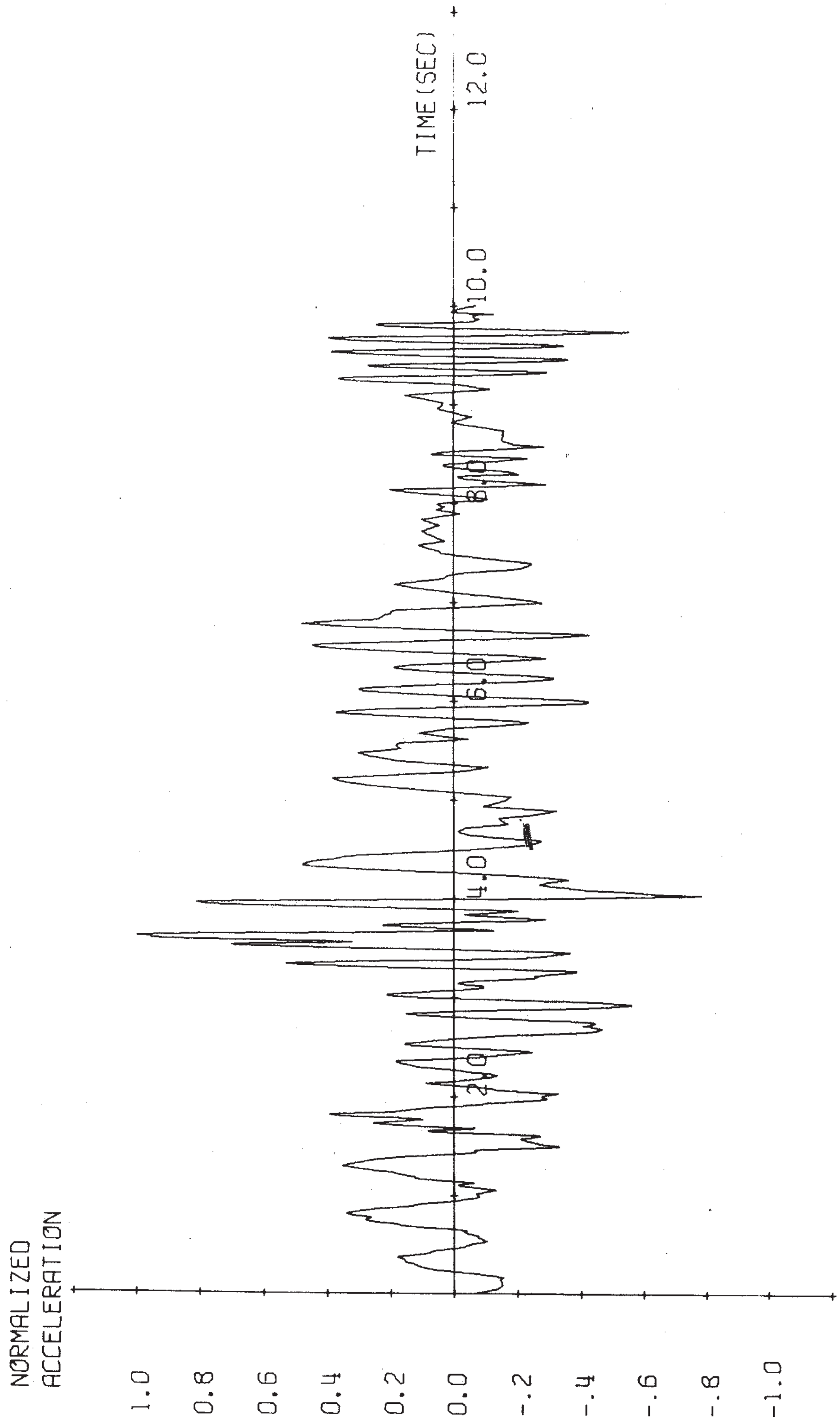
FIGURE 2.5-409

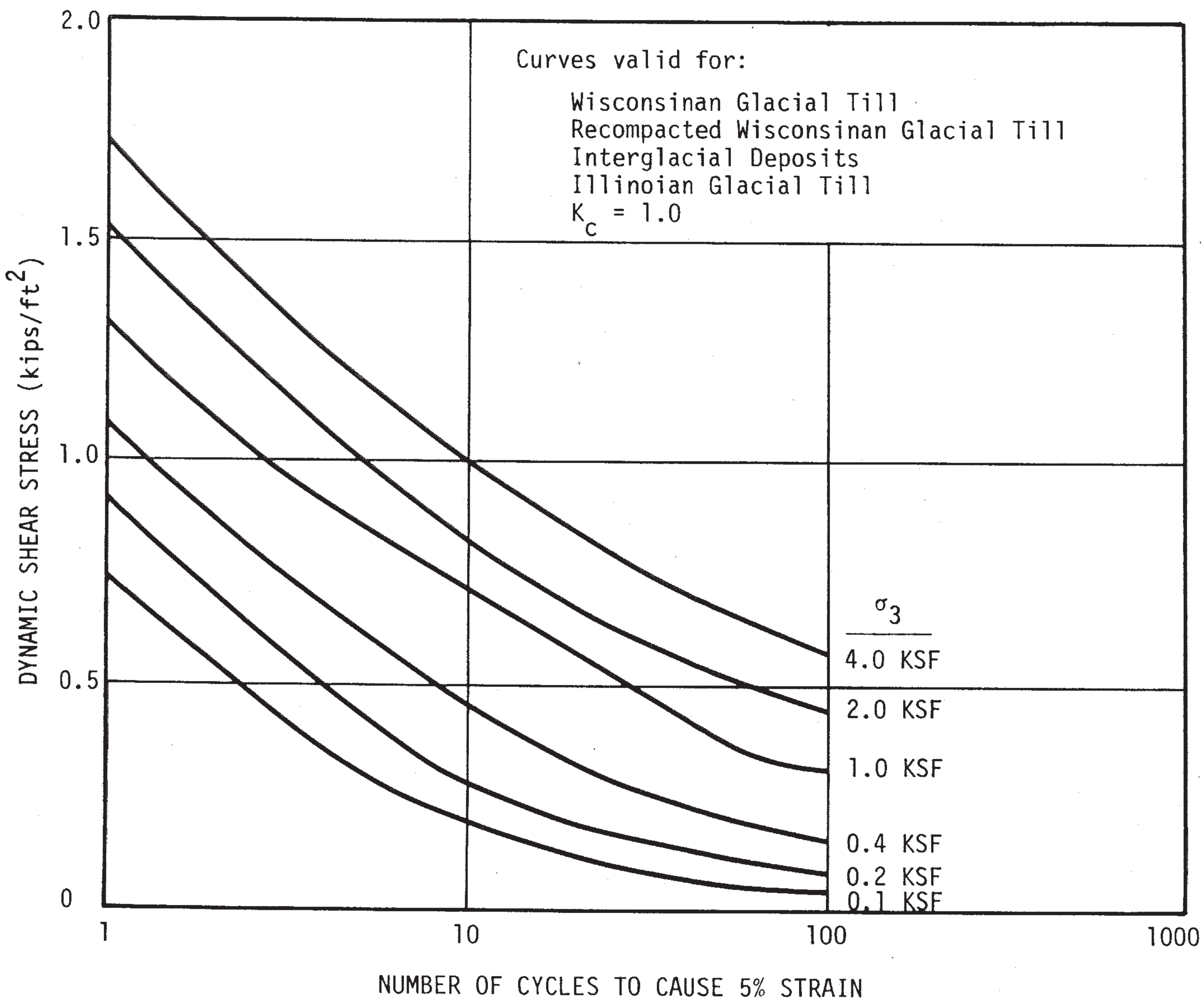
ARTIFICIAL ACCELEROGRAM FOR
HORIZONTAL GROUND MOTION



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-410

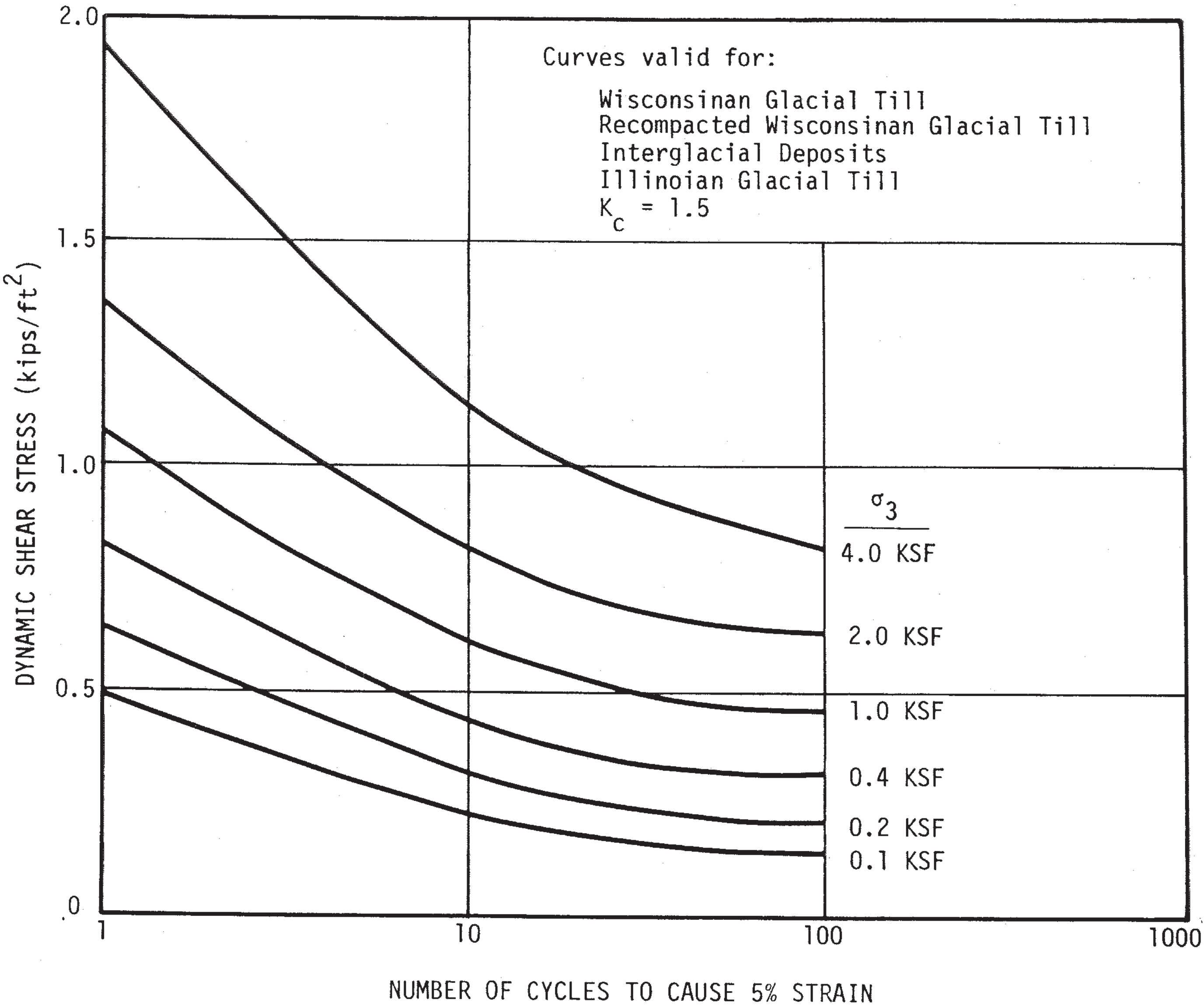
ARTIFICIAL ACCELEROGRAM FOR VERTICAL GROUND MOTION



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-411

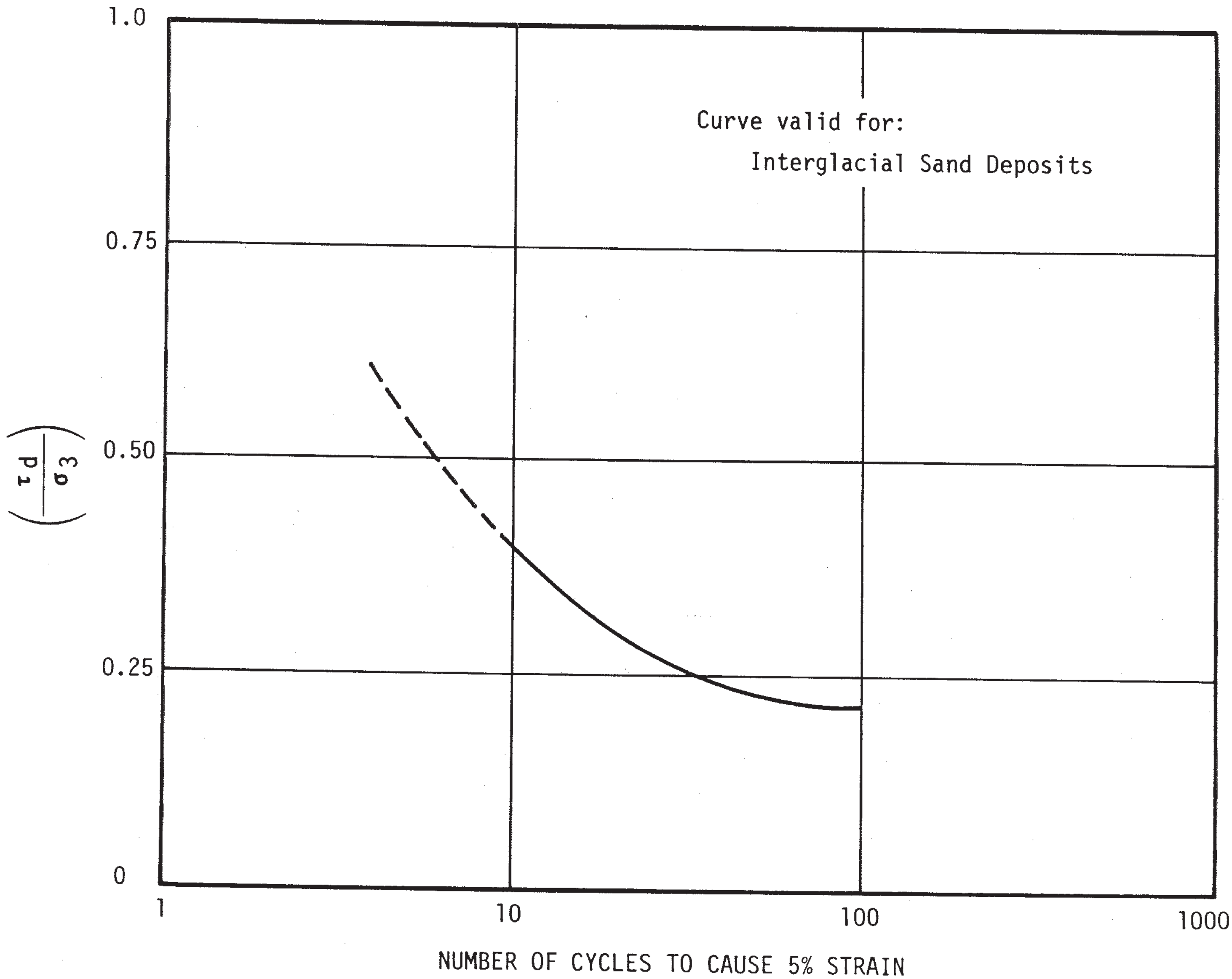
DYNAMIC SHEAR STRESS VS. NUMBER OF CYCLES TO CAUSE 5% STRAIN - K_c = 1.0



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-412

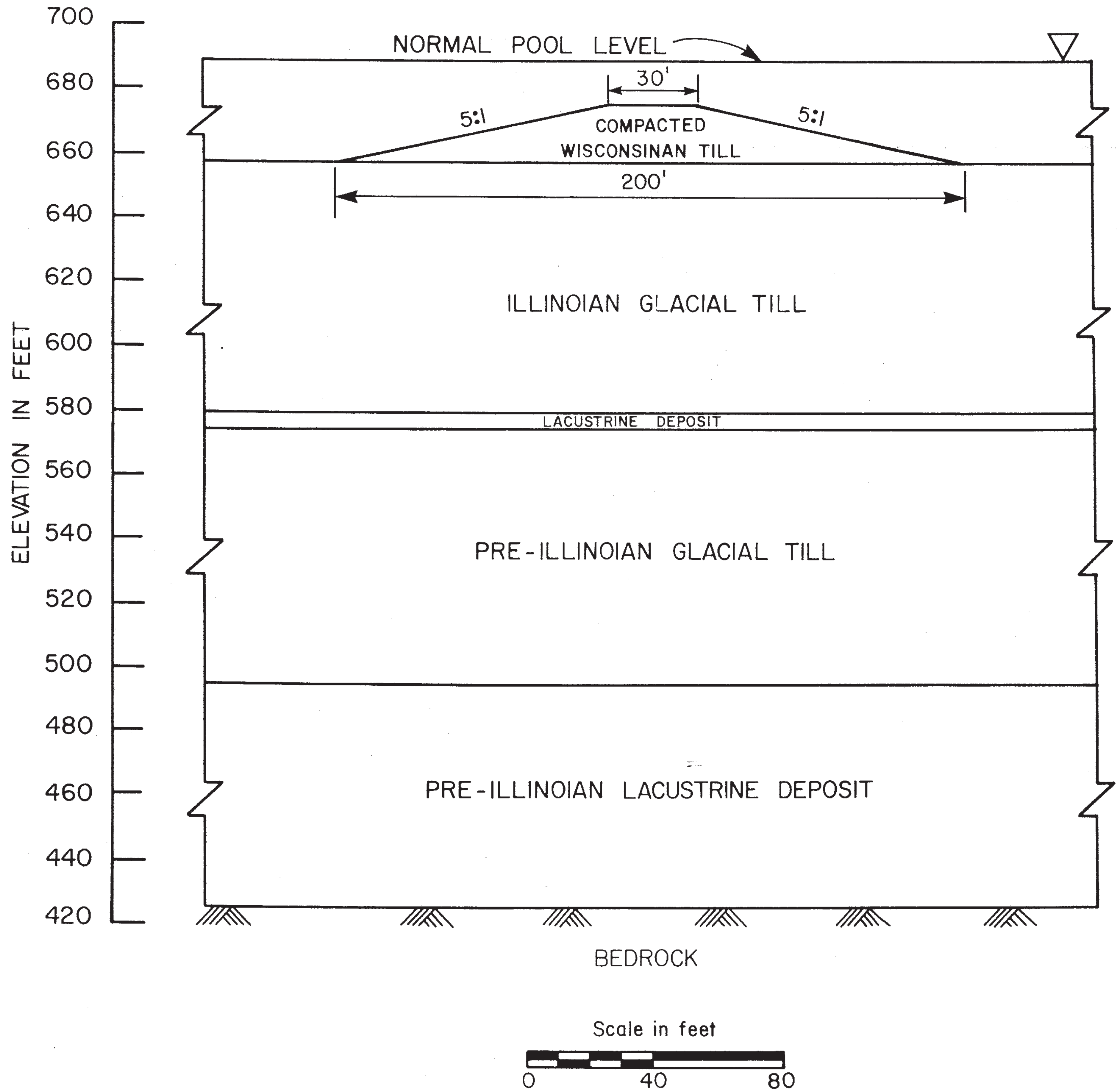
DYNAMIC SHEAR STRESS VS. NUMBER OF CYCLES TO CAUSE 5% STRAIN - K_c = 1.5



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-413

DYNAMIC SHEAR STRESS TO MINOR PRINCIPAL STRESS RATIO VS. NUMBER OF CYCLES TO CAUSE 5% STRAIN



CLINTON POWER STATION
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FIGURE 2.5-414

SUBMERGED DIKE - CROSS SECTION ANALYZED FOR SEISMIC STABILITY

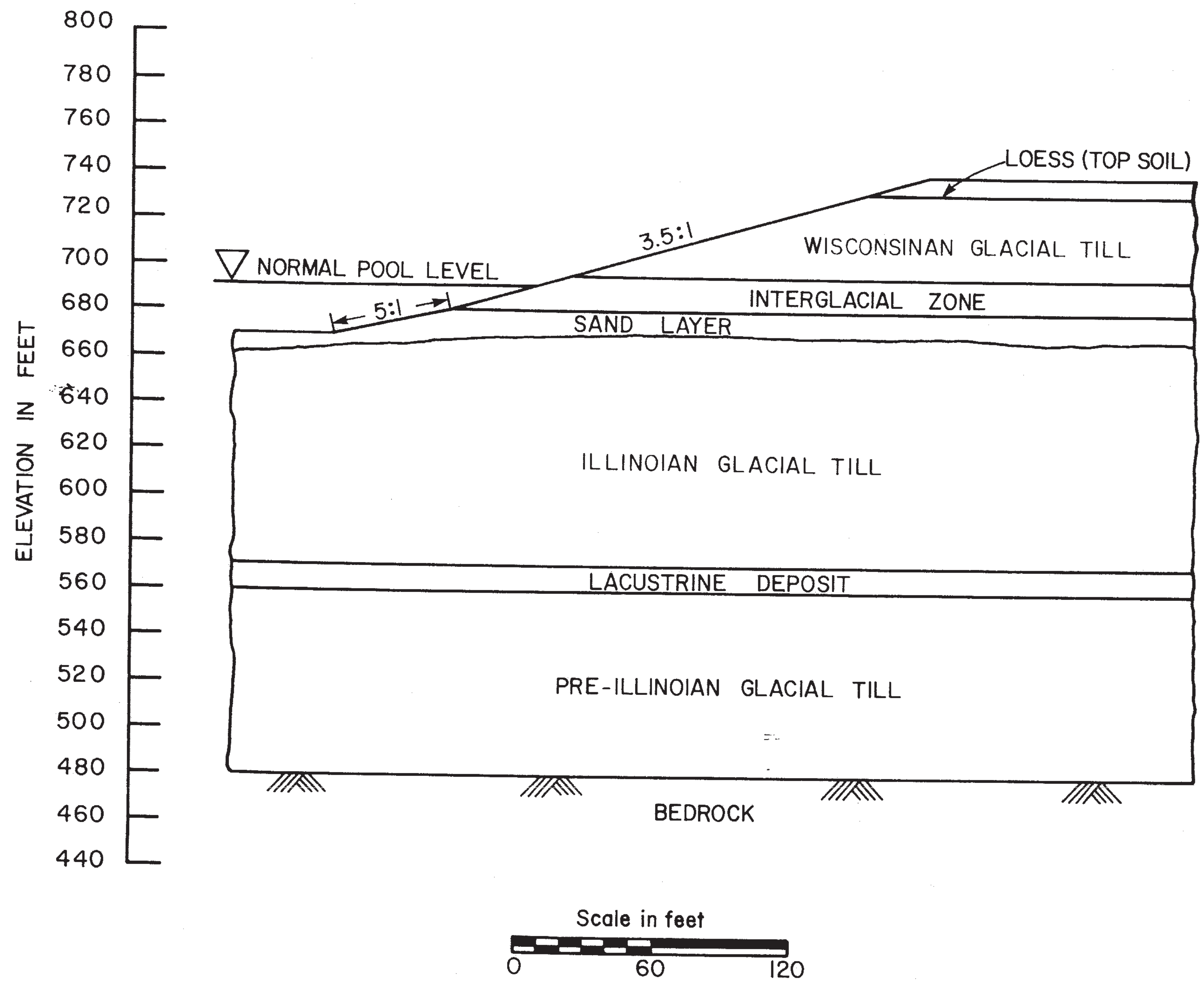

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FIGURE 2.5-415

NATURAL SLOPE - CROSS SECTION ANALYZED FOR SEISMIC STABILITY

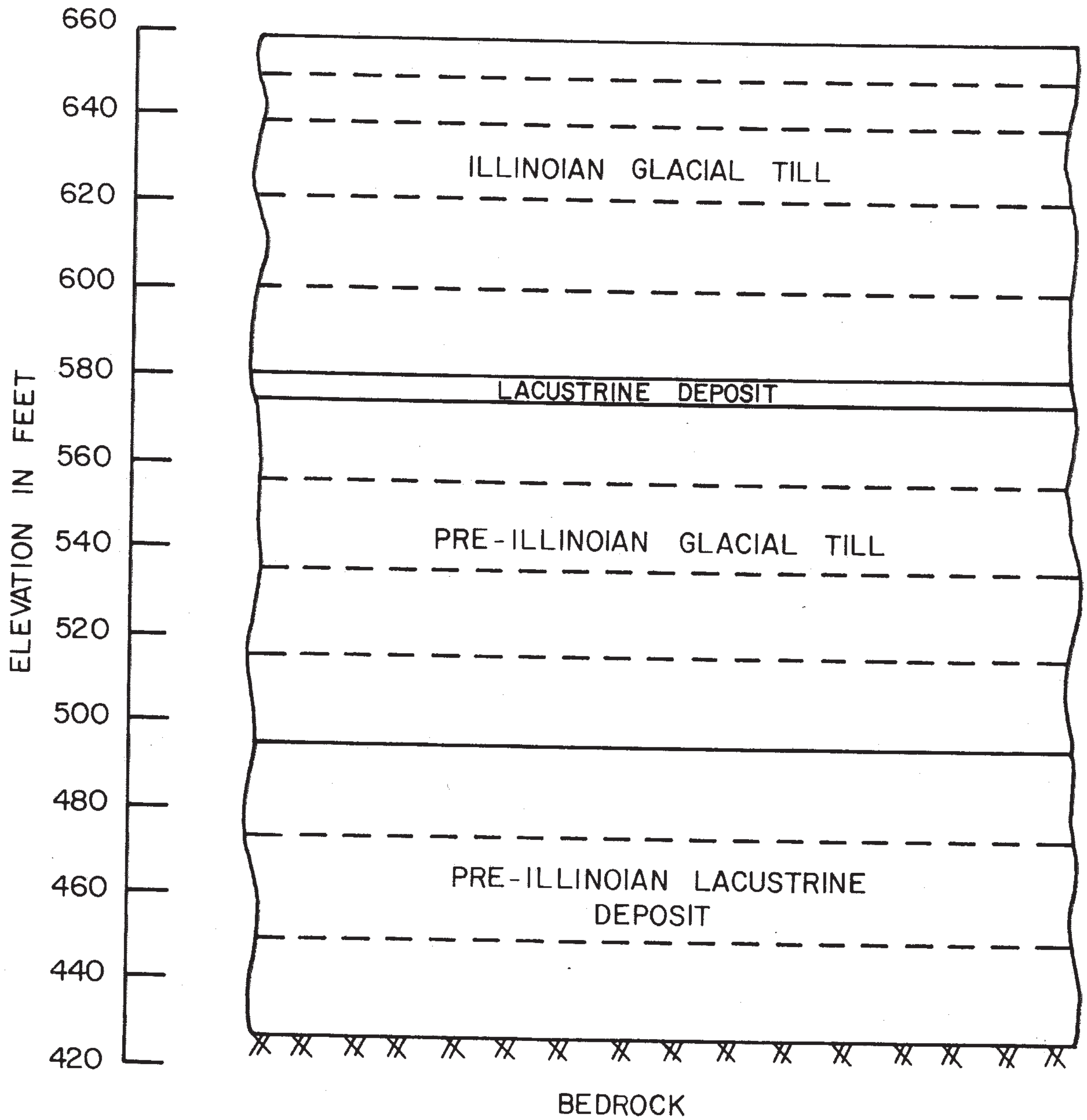

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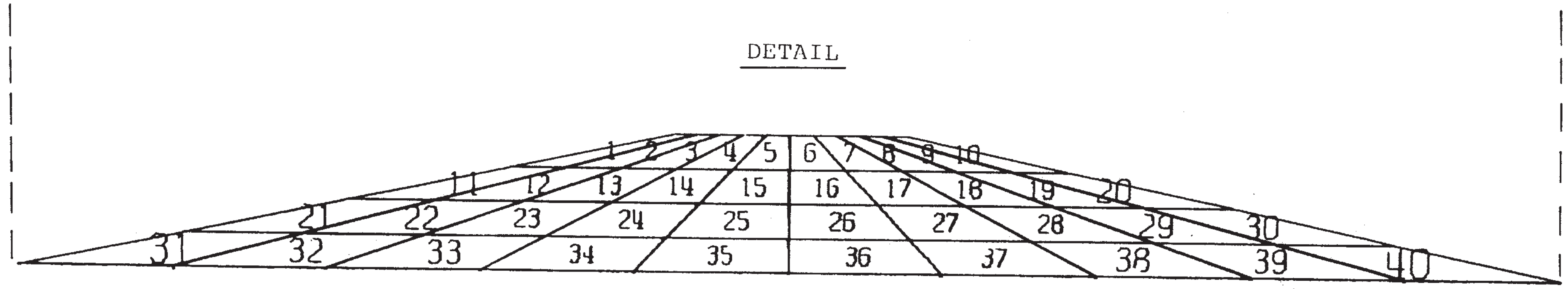
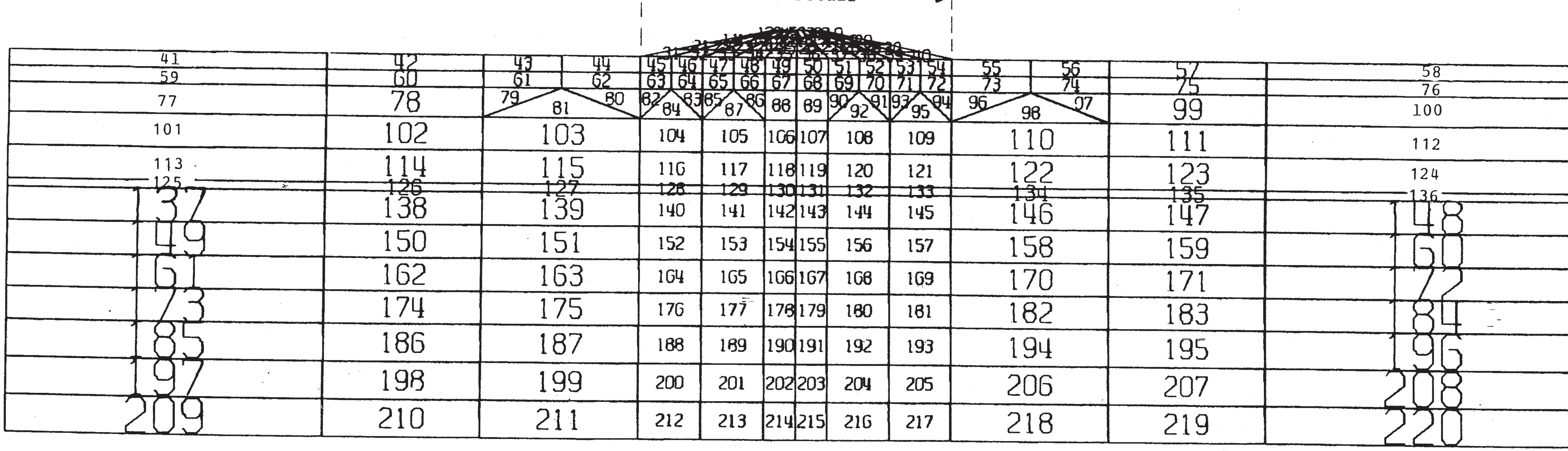
FIGURE 2.5-416

SHEAR LAYER MODEL FOR THE SUBMERGED DIKE FOUNDATION

DETAIL



See Detail



SCALE= 1./ 66.667

CLINTON POWER STATION
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FIGURE 2.5-417

FINITE ELEMENT MODEL FOR THE DIKE

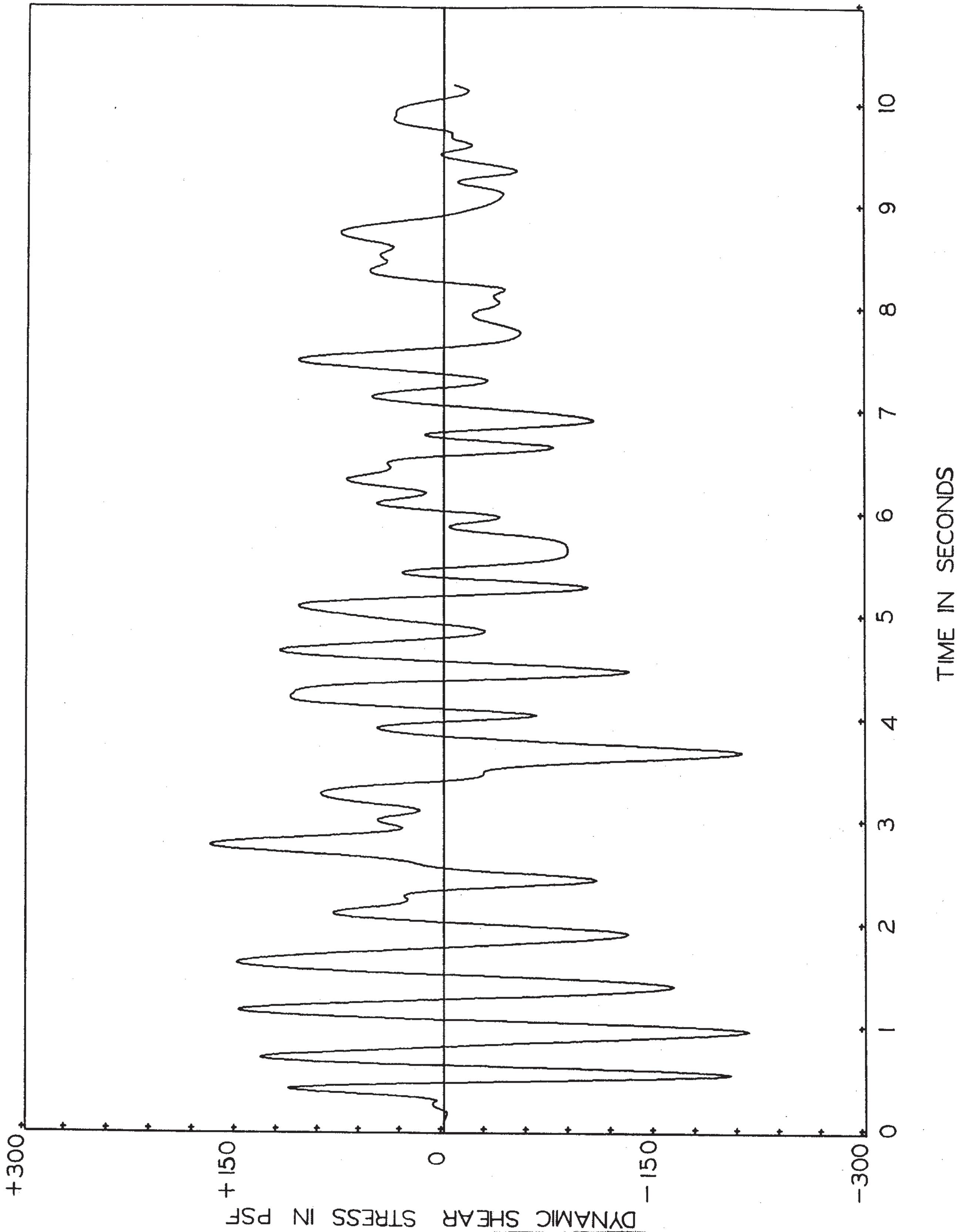

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FIGURE 2.5-418

TYPICAL SHEAR STRESS TIME HISTORY

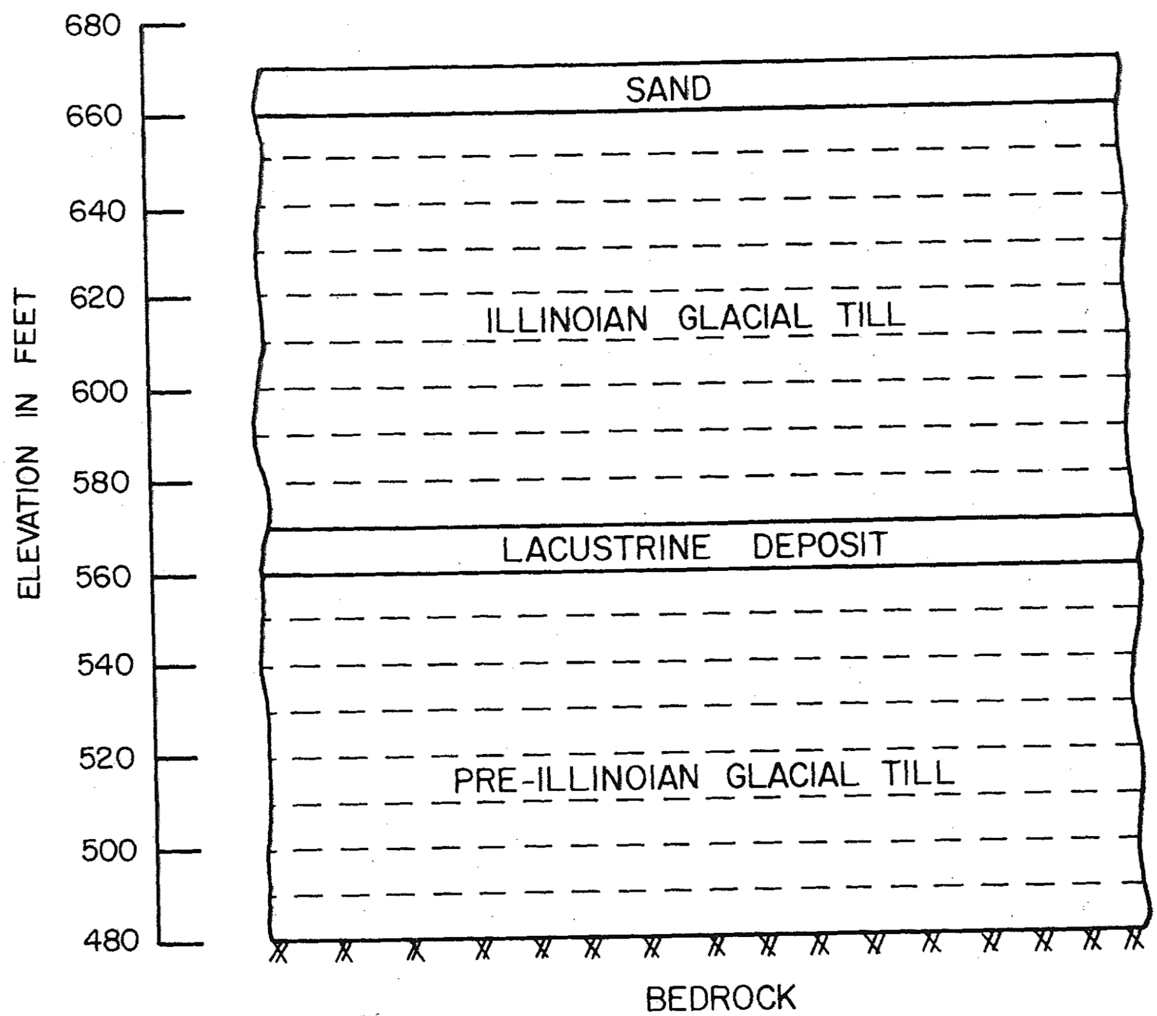

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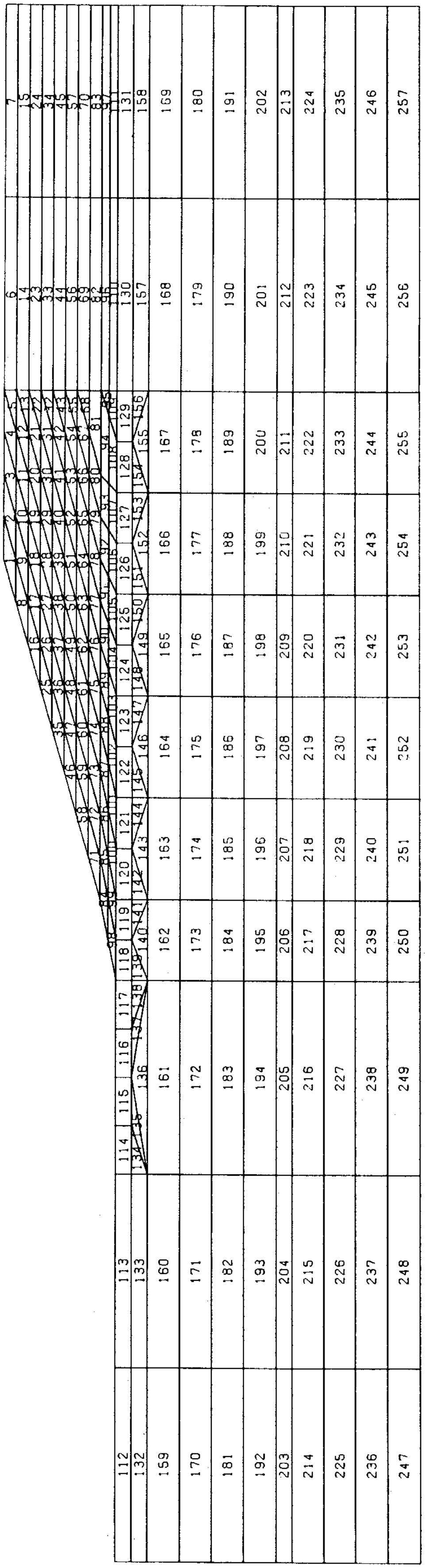
FIGURE 2.5-419

SHEAR LAYER MODEL FOR NATURAL SLOPE FOUNDATION



CLINTON POWER STATION

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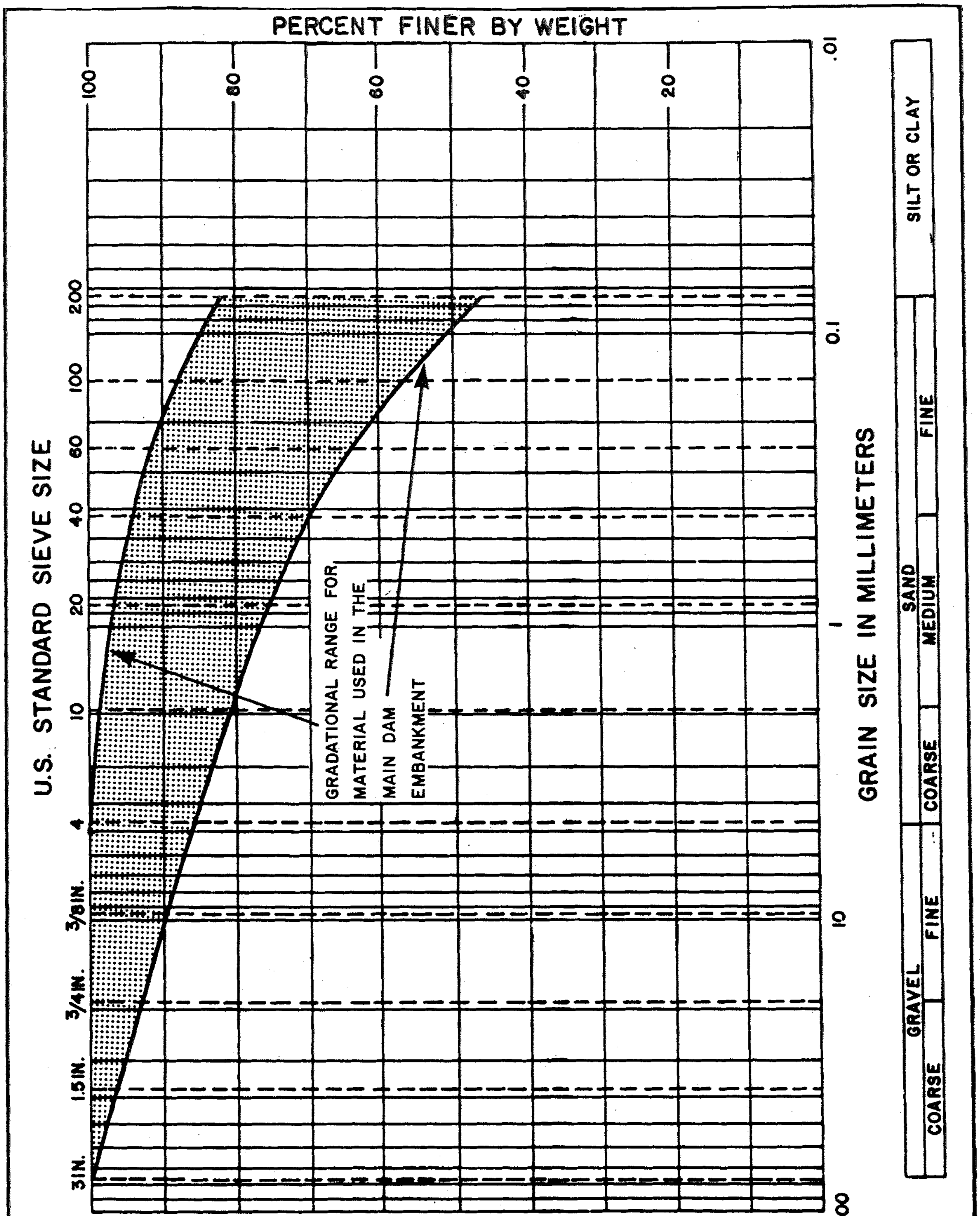
FIGURE 2.5-420

FINITE ELEMENT MODEL USED FOR NATURAL SLOPE STABILITY ANALYSIS

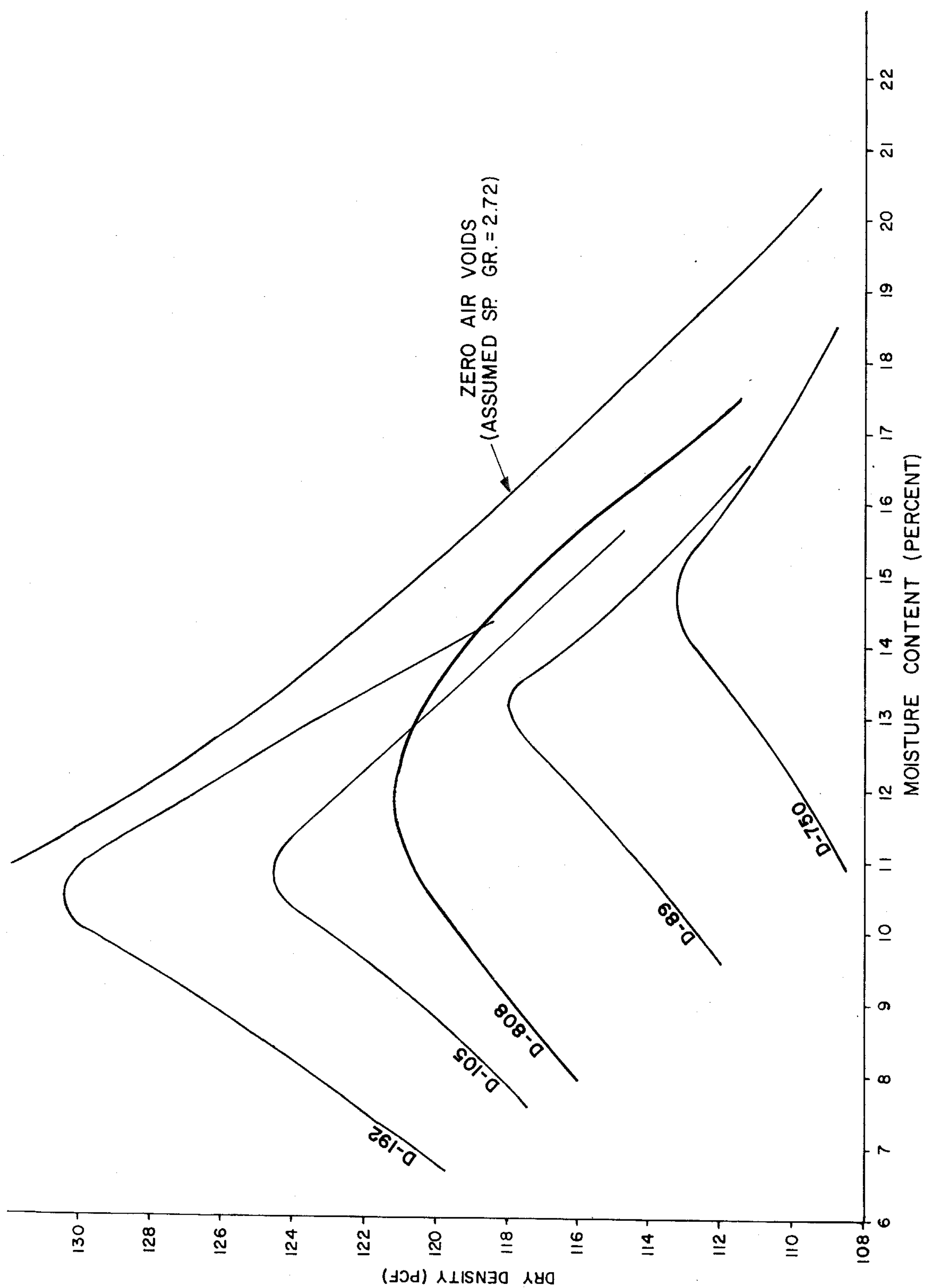


NOTE:
The gradational range for
the embankment materials is based on a
composite of grain size analyses performed.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-421

GRADATION OF EMBANKMENT MATERIALS - MAIN DAM



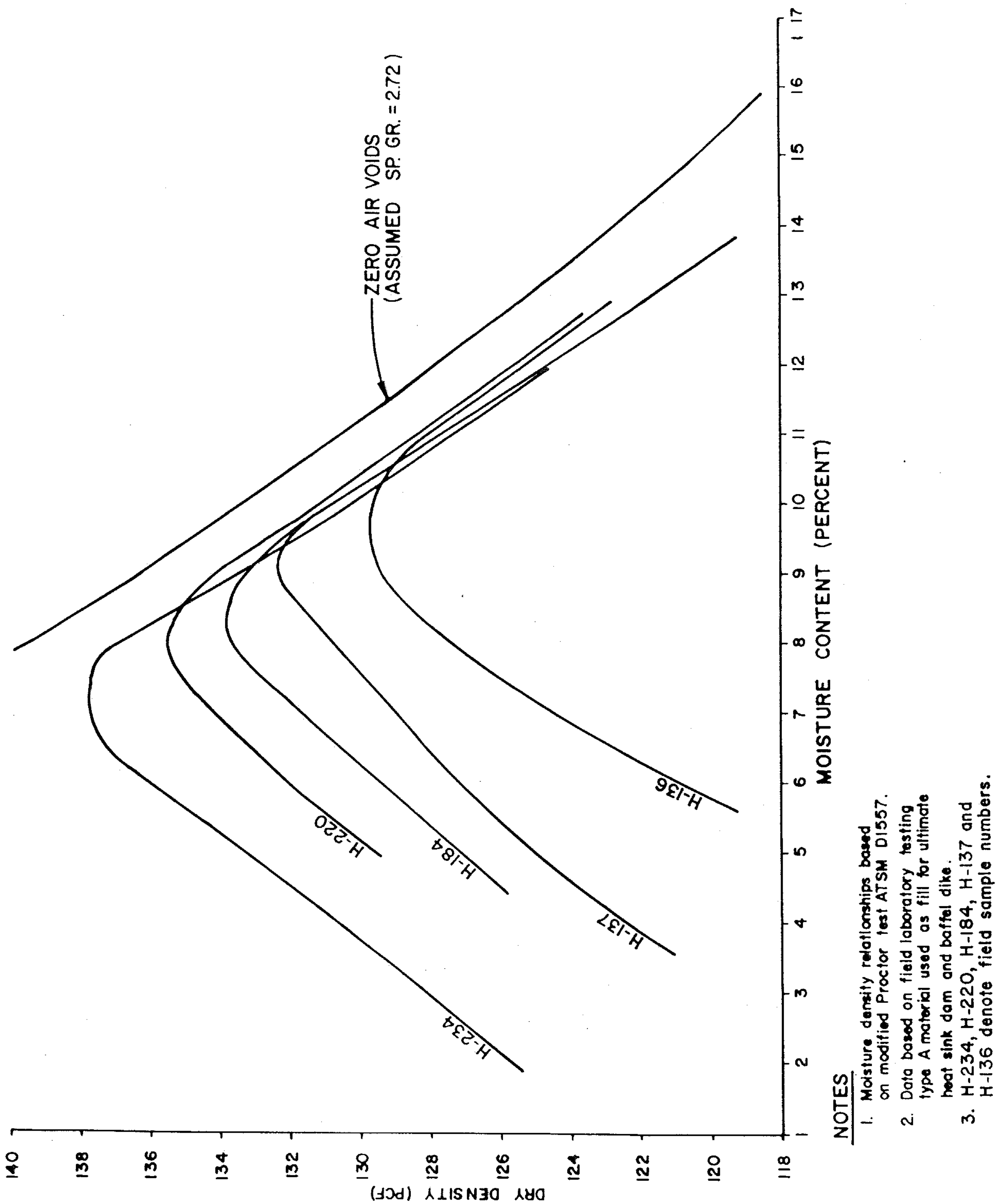
NOTES

1. Moisture density relationships based on standard Proctor test ASTM D698.
2. Data based on field laboratory testing of type A material used as fill for Main Dam.
3. D-192, D-105, D-808, D-89 and D-750 denote field sample numbers.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-422

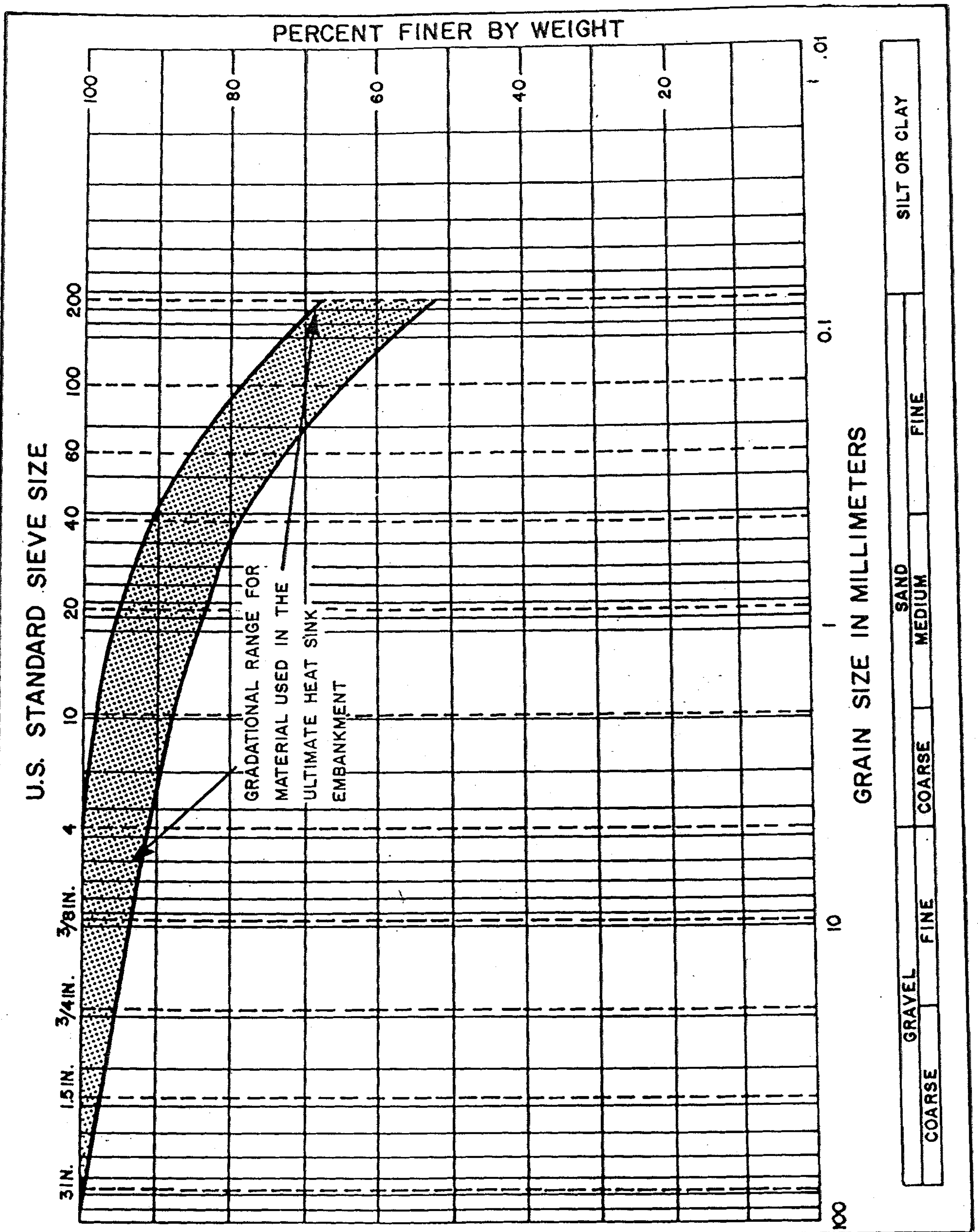
TYPICAL MOISTURE - DENSITY RELATIONSHIP - MAIN DAM



CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-423

TYPICAL MOISTURE-DENSITY RELATIONSHIPS - ULTIMATE HEAT SINK



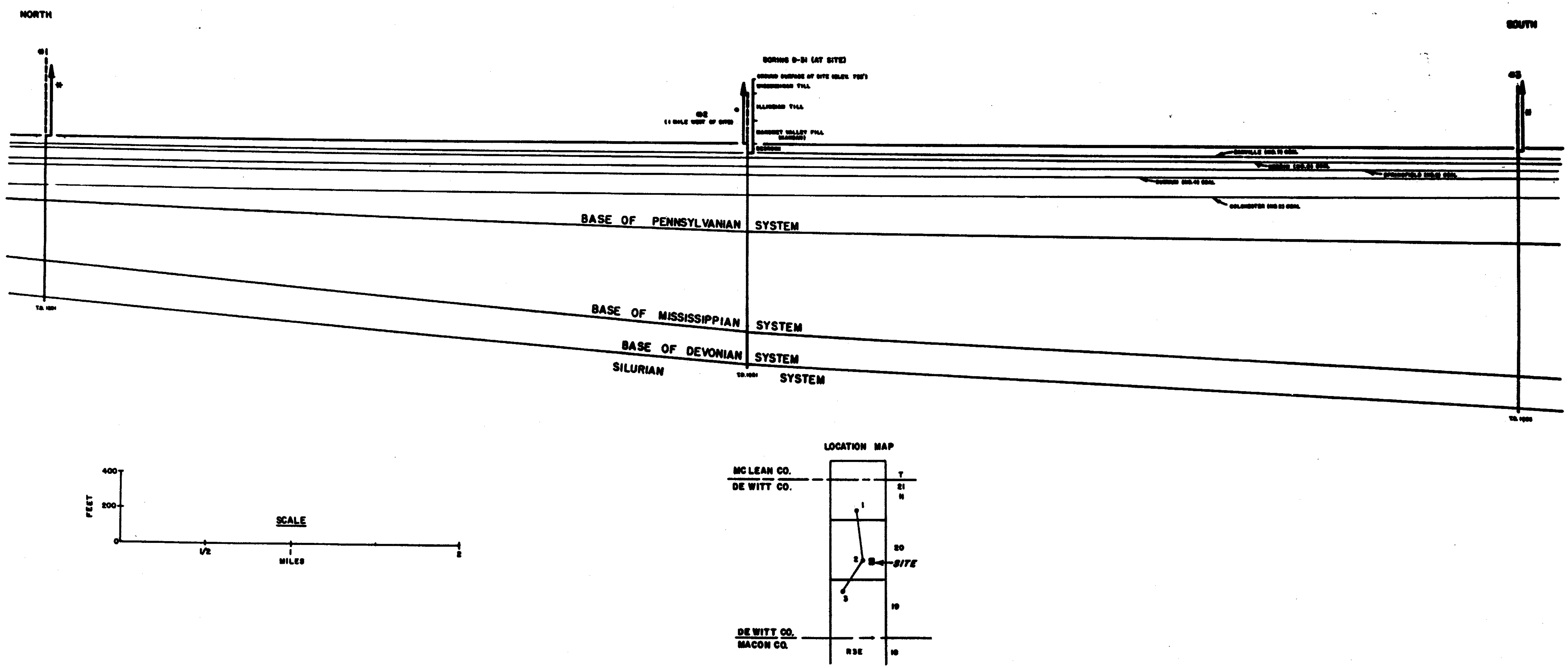
CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-424

GRADATION OF EMBANKMENT MATERIALS -
ULTIMATE HEAT SINK

NOTE:

The gradational range for the embankment materials is based on a composite of grain size analyses performed.



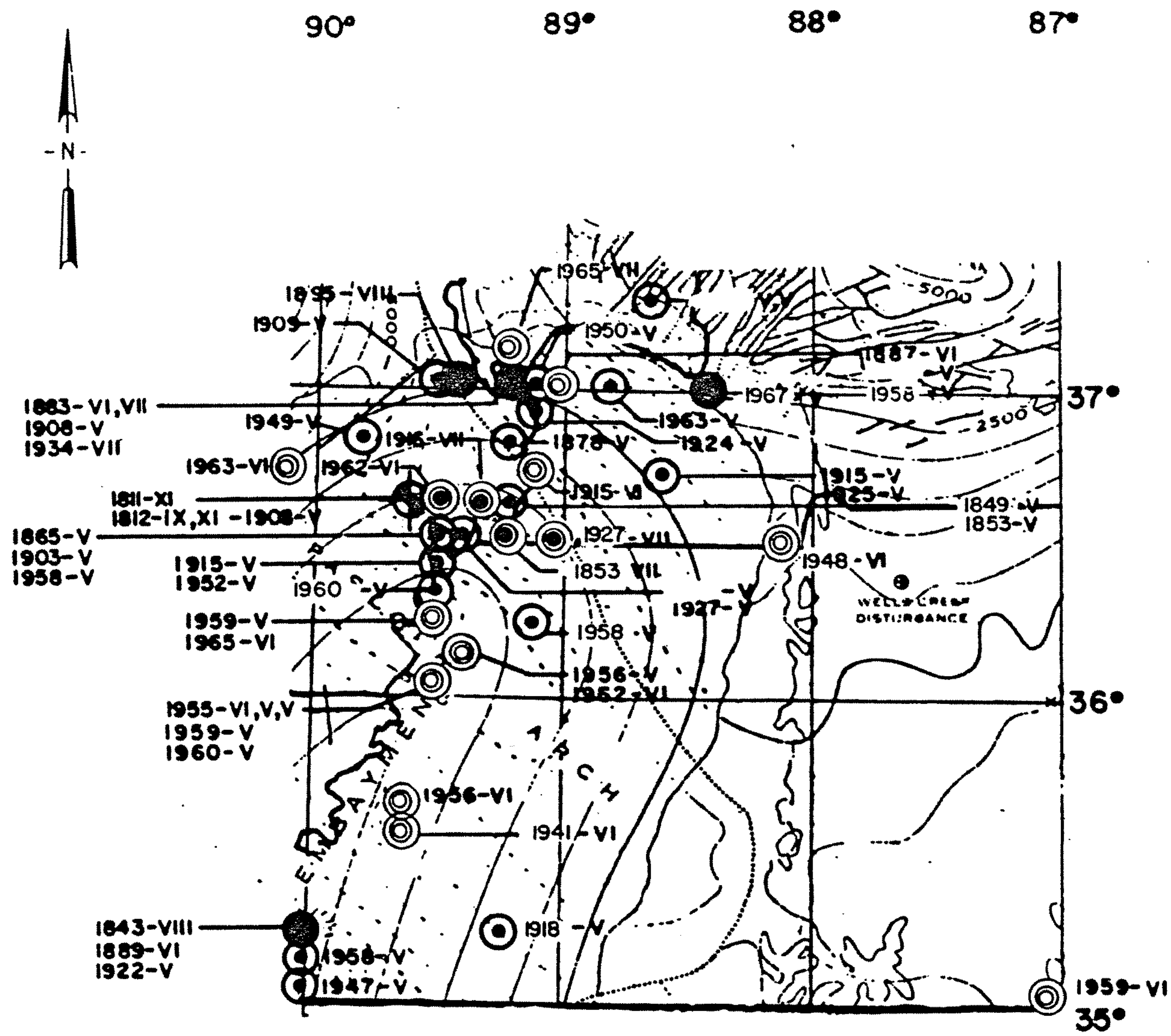
NOTE:

1. * NOT PROVIDED IN AVAILABLE LOG
2. COMPILED FROM DATA TABULATED IN: ILLINOIS GEOLOGICAL SURVEY CIRCULAR 377.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-425

REGIONAL CORRELATION BETWEEN DEEP BORINGS



LEGEND:

- IX - XI
- VIII
- VII
- VI
- V

NOTE:

FROM TECTONIC MAP OF THE UNITED STATES, UNITED STATES GEOLOGICAL SURVEY AND AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1962.

EARTHQUAKE DATA COMPILED FROM COFFMAN, J.L. AND VONHAKE, C.A. (1973) EARTHQUAKE HISTORY OF THE UNITED STATES, U.S. DEPT. COMMERCE, NOAA, PUBLICATION 41-1 AND FROM OTHER SOURCES

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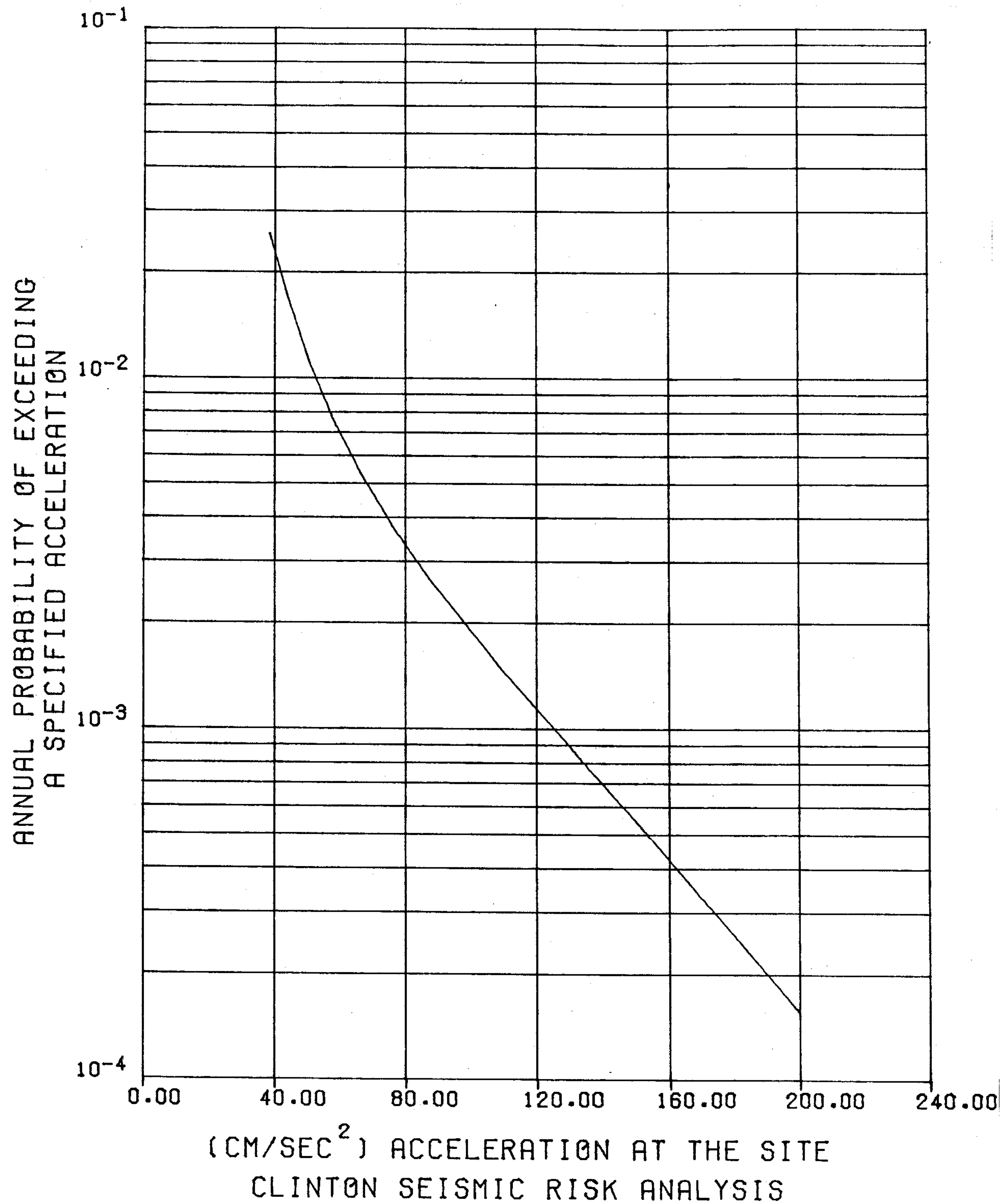
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-426

EARTHQUAKE EPICENTER MAP - BELOW 37°



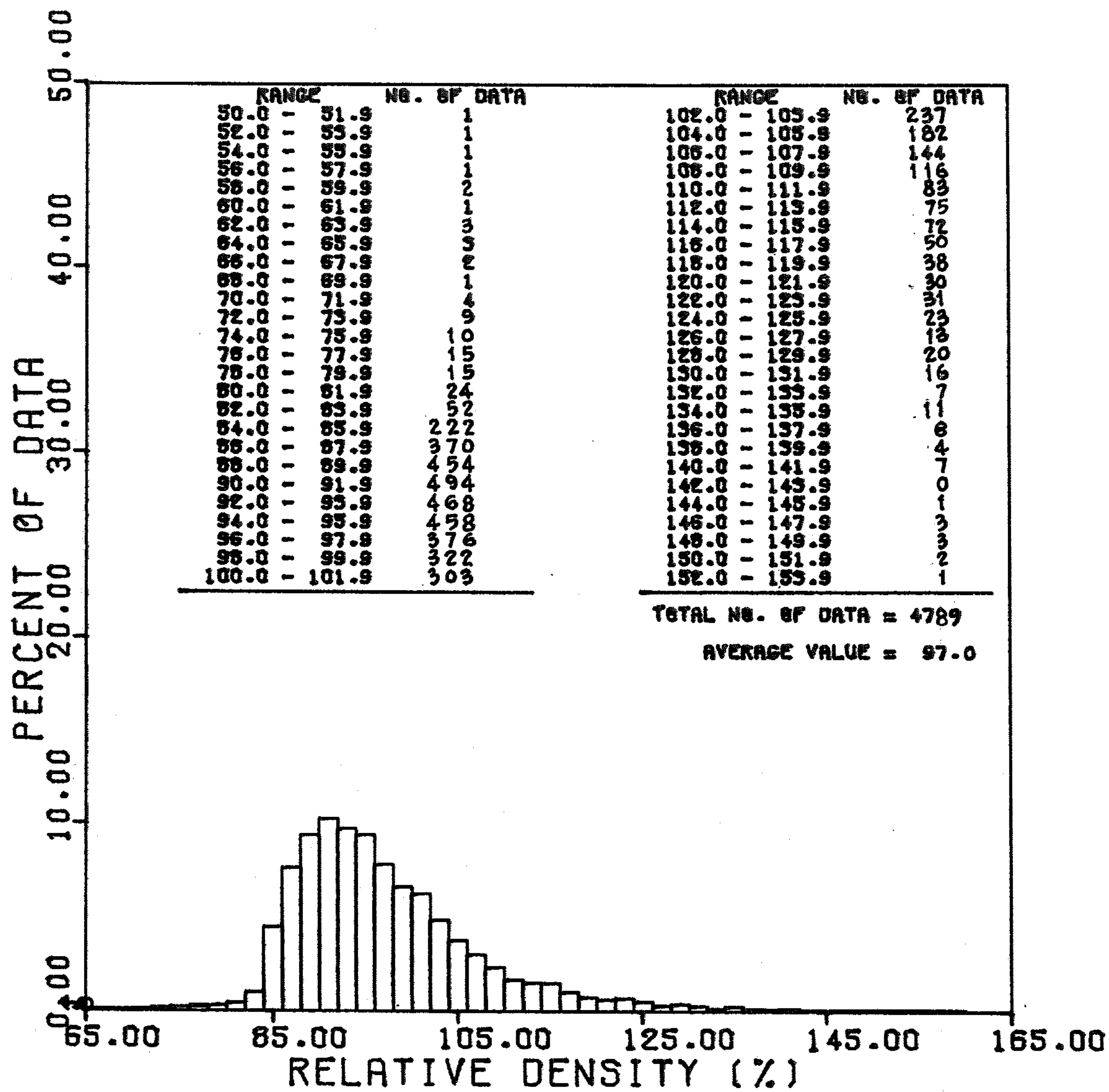
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-427

SEISMIC RISK CURVE

G-6249

DISTRIBUTION OF RELATIVE DENSITY



RANGE	NO. OF DATA
50.0 - 51.9	1
52.0 - 53.9	1
54.0 - 55.9	1
56.0 - 57.9	1
58.0 - 59.9	2
60.0 - 61.9	1
62.0 - 63.9	3
64.0 - 65.9	3
66.0 - 67.9	2
68.0 - 69.9	1
70.0 - 71.9	4
72.0 - 73.9	9
74.0 - 75.9	10
76.0 - 77.9	15
78.0 - 79.9	15
80.0 - 81.9	24
82.0 - 83.9	52
84.0 - 85.9	222
86.0 - 87.9	370
88.0 - 89.9	454
90.0 - 91.9	494
92.0 - 93.9	468
94.0 - 95.9	458
96.0 - 97.9	376
98.0 - 99.9	322
100.0 - 101.9	303

RANGE	NO. OF DATA
102.0 - 103.9	237
104.0 - 105.9	182
106.0 - 107.9	144
108.0 - 109.9	116
110.0 - 111.9	83
112.0 - 113.9	75
114.0 - 115.9	72
116.0 - 117.9	50
118.0 - 119.9	38
120.0 - 121.9	30
122.0 - 123.9	31
124.0 - 125.9	23
126.0 - 127.9	18
128.0 - 129.9	20
130.0 - 131.9	16
132.0 - 133.9	7
134.0 - 135.9	11
136.0 - 137.9	6
138.0 - 139.9	4
140.0 - 141.9	7
142.0 - 143.9	0
144.0 - 145.9	1
146.0 - 147.9	3
148.0 - 149.9	3
150.0 - 151.9	2
152.0 - 153.9	1

TOTAL NO. OF DATA = 4789

AVERAGE VALUE = 97.0

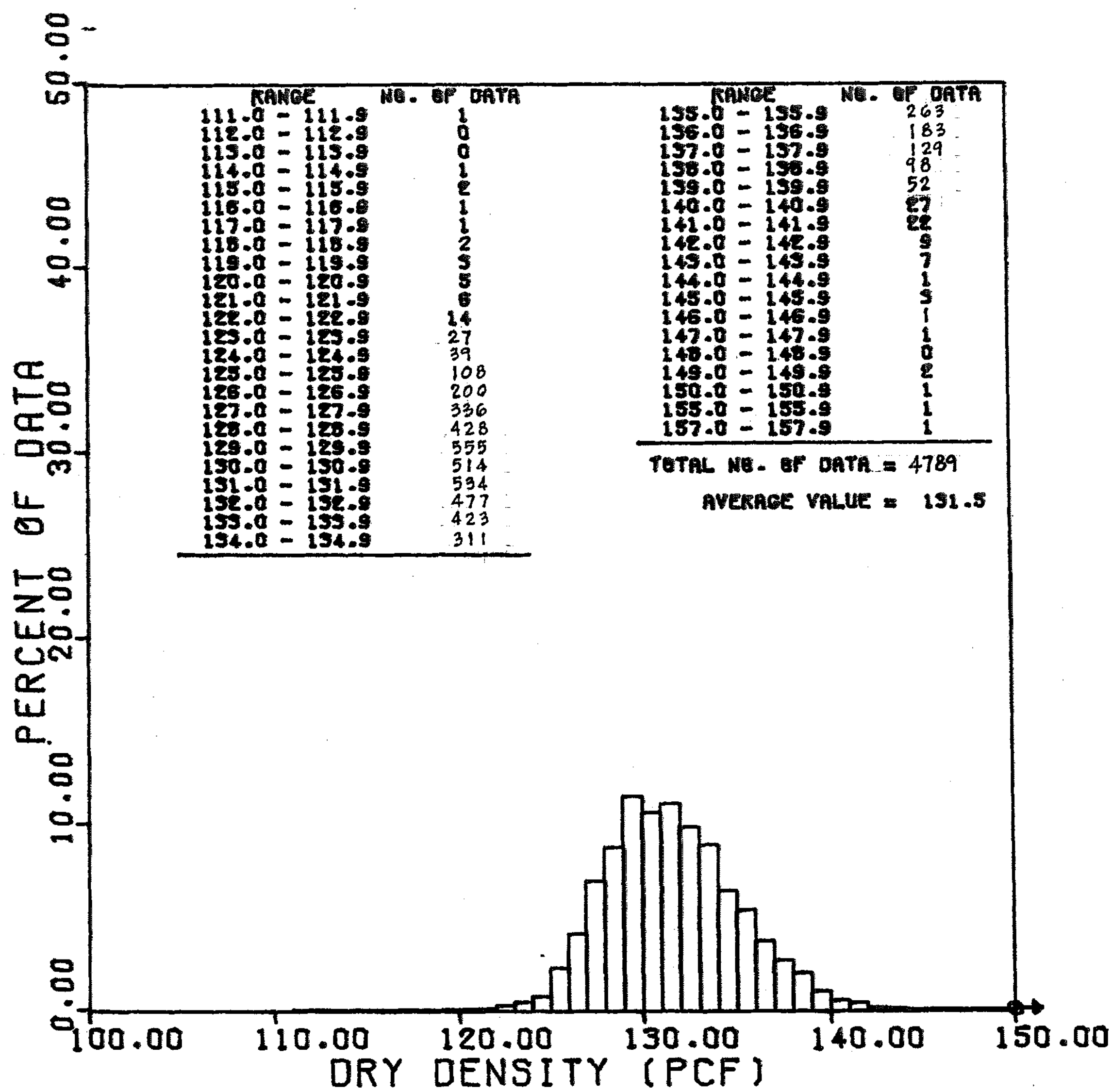
CLINTON STA. COMPACTION TESTS
ALL PASSING DATA
ELEVATIONS 671.00 TO 703.00

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-428

TYPE B GRANULAR FILL DISTRIBUTION OF RELATIVE DENSITY

DISTRIBUTION OF DRY DENSITY



RANGE	NO. OF DATA
111.0 - 111.9	1
112.0 - 112.9	0
113.0 - 113.9	0
114.0 - 114.9	1
115.0 - 115.9	2
116.0 - 116.9	1
117.0 - 117.9	1
118.0 - 118.9	2
119.0 - 119.9	3
120.0 - 120.9	5
121.0 - 121.9	6
122.0 - 122.9	14
123.0 - 123.9	27
124.0 - 124.9	39
125.0 - 125.9	108
126.0 - 126.9	200
127.0 - 127.9	336
128.0 - 128.9	428
129.0 - 129.9	555
130.0 - 130.9	514
131.0 - 131.9	534
132.0 - 132.9	477
133.0 - 133.9	423
134.0 - 134.9	311

RANGE	NO. OF DATA
135.0 - 135.9	263
136.0 - 136.9	183
137.0 - 137.9	129
138.0 - 138.9	98
139.0 - 139.9	52
140.0 - 140.9	27
141.0 - 141.9	22
142.0 - 142.9	9
143.0 - 143.9	7
144.0 - 144.9	1
145.0 - 145.9	3
146.0 - 146.9	1
147.0 - 147.9	1
148.0 - 148.9	0
149.0 - 149.9	2
150.0 - 150.9	1
155.0 - 155.9	1
157.0 - 157.9	1

TOTAL NO. OF DATA = 4789

AVERAGE VALUE = 131.5

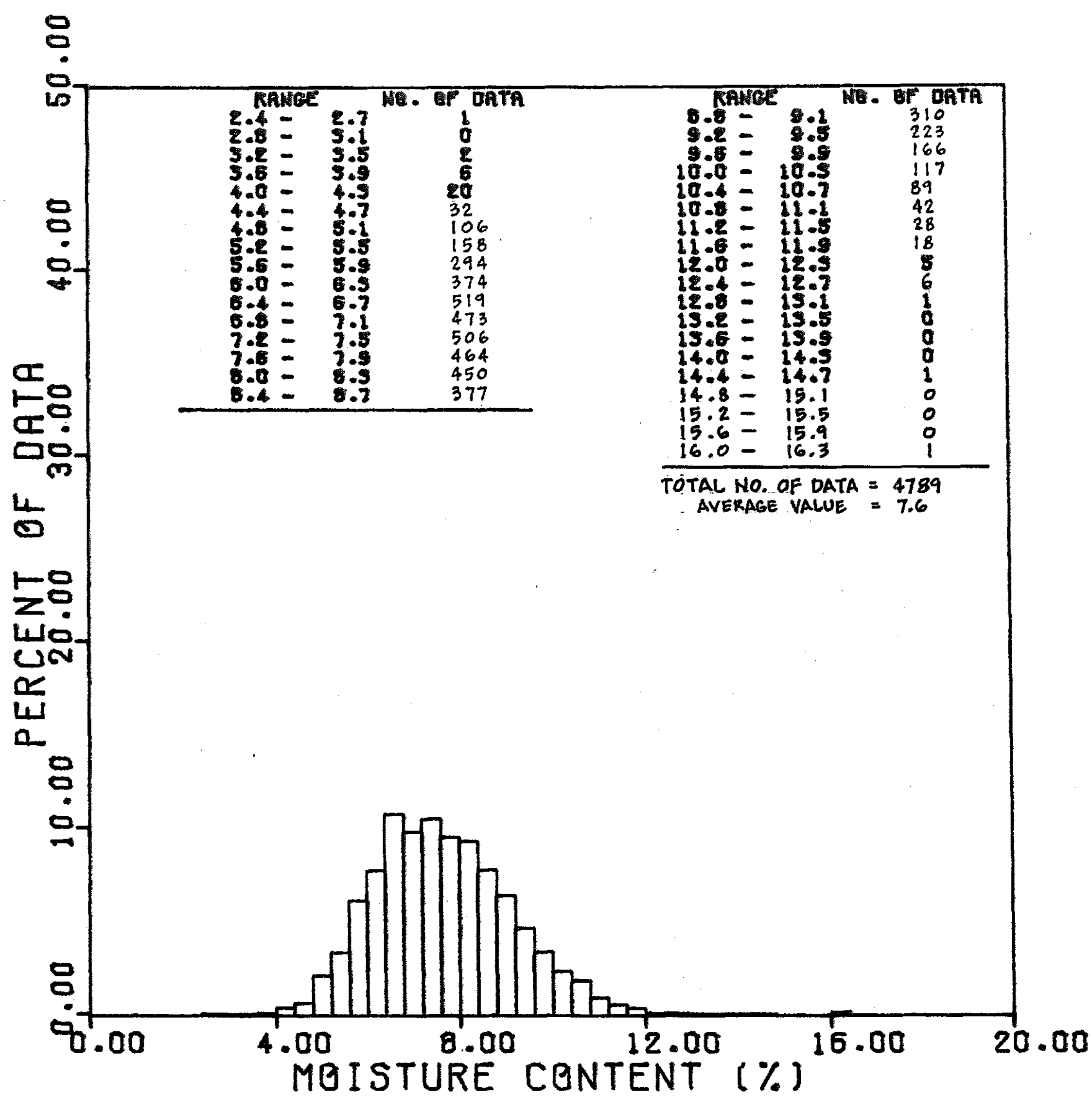
CLINTON STA. COMPACTION TESTS
ALL PASSING DATA
ELEVATIONS 671.00 TO 703.00

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-429

TYPE B GRANULAR FILL DISTRIBUTION OF DRY DENSITY

DISTRIBUTION OF MOISTURE CONTENT



RANGE		NO. OF DATA
2.4 –	2.7	1
2.8 –	3.1	0
3.2 –	3.5	2
3.6 –	3.9	6
4.0 –	4.3	20
4.4 –	4.7	32
4.8 –	5.1	106
5.2 –	5.5	158
5.6 –	5.9	294
6.0 –	6.3	374
6.4 –	6.7	519
6.8 –	7.1	473
7.2 –	7.5	506
7.6 –	7.9	464
8.0 –	8.3	450
8.4 –	8.7	377

RANGE		NO. OF DATA
8.8 –	9.1	310
9.2 –	9.5	223
9.6 –	9.9	166
10.0 –	10.3	117
10.4 –	10.7	89
10.8 –	11.1	42
11.2 –	11.5	28
11.6 –	11.9	18
12.0 –	12.3	5
12.4 –	12.7	6
12.8 –	13.1	1
13.2 –	13.5	0
13.6 –	13.9	0
14.0 –	14.3	0
14.4 –	14.7	1
14.8 –	15.1	0
15.2 –	15.5	0
15.6 –	15.9	0
16.0 –	16.3	1

TOTAL NO. OF DATA = 4789
AVERAGE VALUE = 7.6

CLINTON STA. COMPACTION TESTS
ALL PASSING DATA
ELEVATIONS 671.00 TO 703.00

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-430

TYPE B GRANULAR FILL DISTRIBUTION
OF MOISTURE CONTENT

LOW DENSITY TESTS BY LIFTS AND GRIDS

GRID

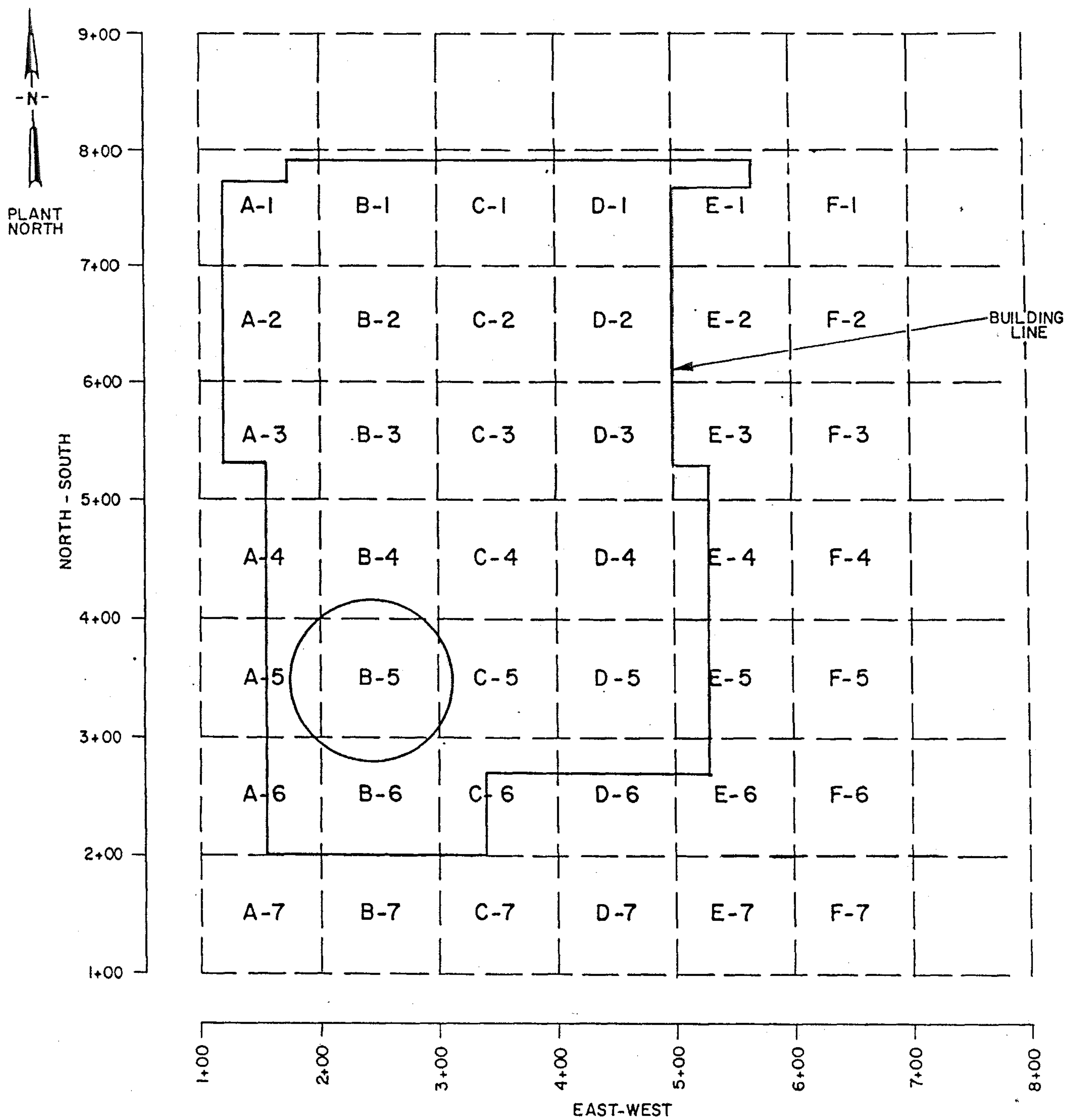
ELEVATION FEET (MSL)	A						B						C						D						E						F						
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7
671																																					
672																																					
673																																					
674																					1																
675																																					
676																																					
677																																					
678																																					
679																																					
680										3																	1										
681				1	2										1				3																		
682					1												1			1																2	
683					2	1		1												1	1				1						4				1		
684				1					1			1				1				2										2	1	1				4	1
685																												1					2				
686								1														1								1	3		1				
687																											1				2					2	
688	3		2											1				1	1						2				1		1						
689				4					2												1				1	1				1						1	
690	3			2		1					1							2		1			1							2	1			2			
691		3				1	1		2		3											2								2						1	
692						2	1						2												2						1				1		
693				2						2																		1							1		
694		1				1					1							5							1			1				1					
695						5		1				3						1																			
696		1				1		1	1															2													
697								1		1														1					2								2
698			3		1	1	1																	1													
699												1												1													
700					2		1																														
701																																					
702																								1													

NOTE: The numbers indicate the quantity of low density tests in a grid at a corresponding elevation.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-431

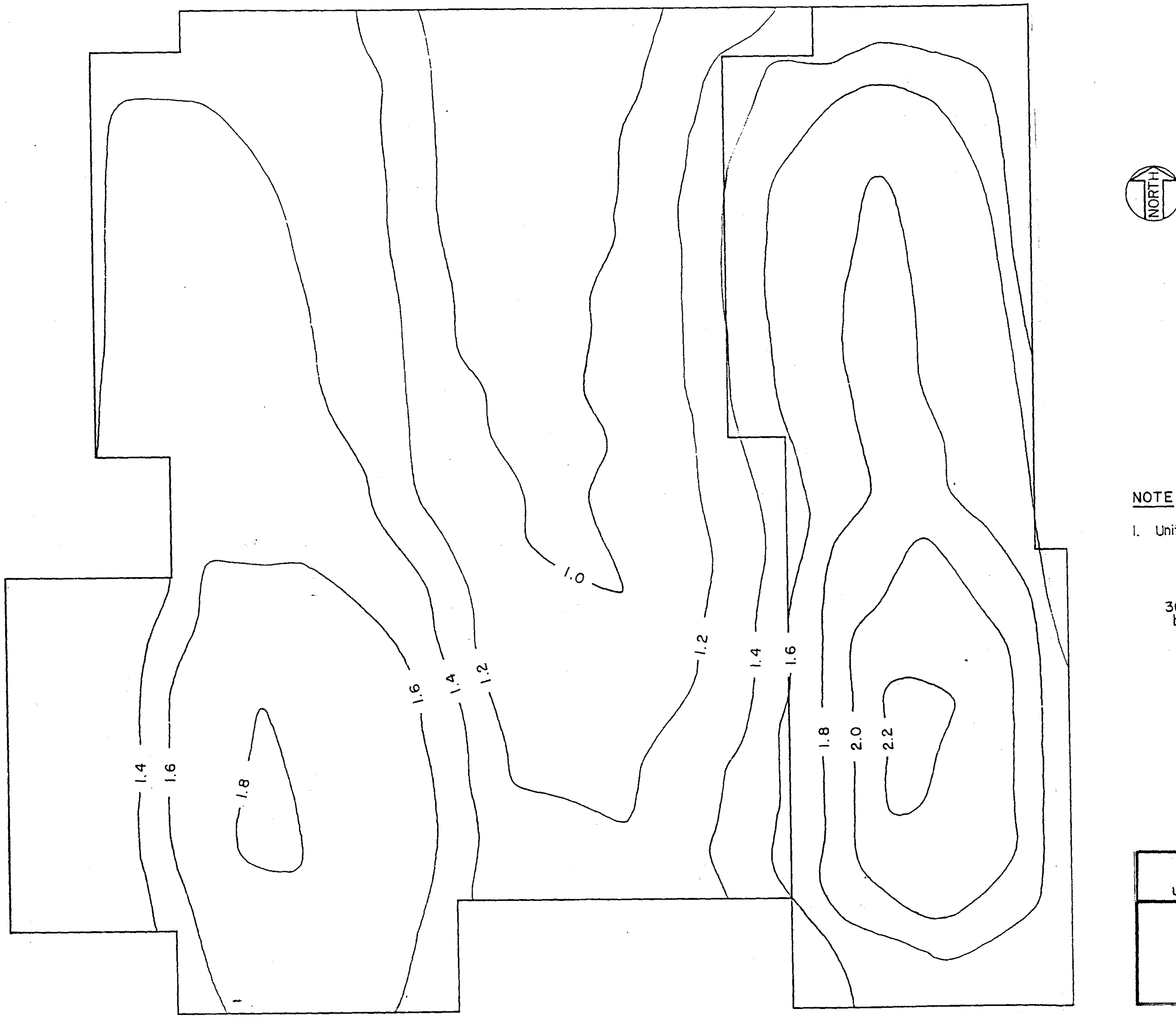
DISTRIBUTION OF IN-PLACE LOW DENSITY TESTS



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

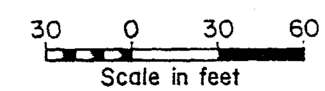
FIGURE 2.5-432

POWER BLOCK GRID SYSTEM



NOTE

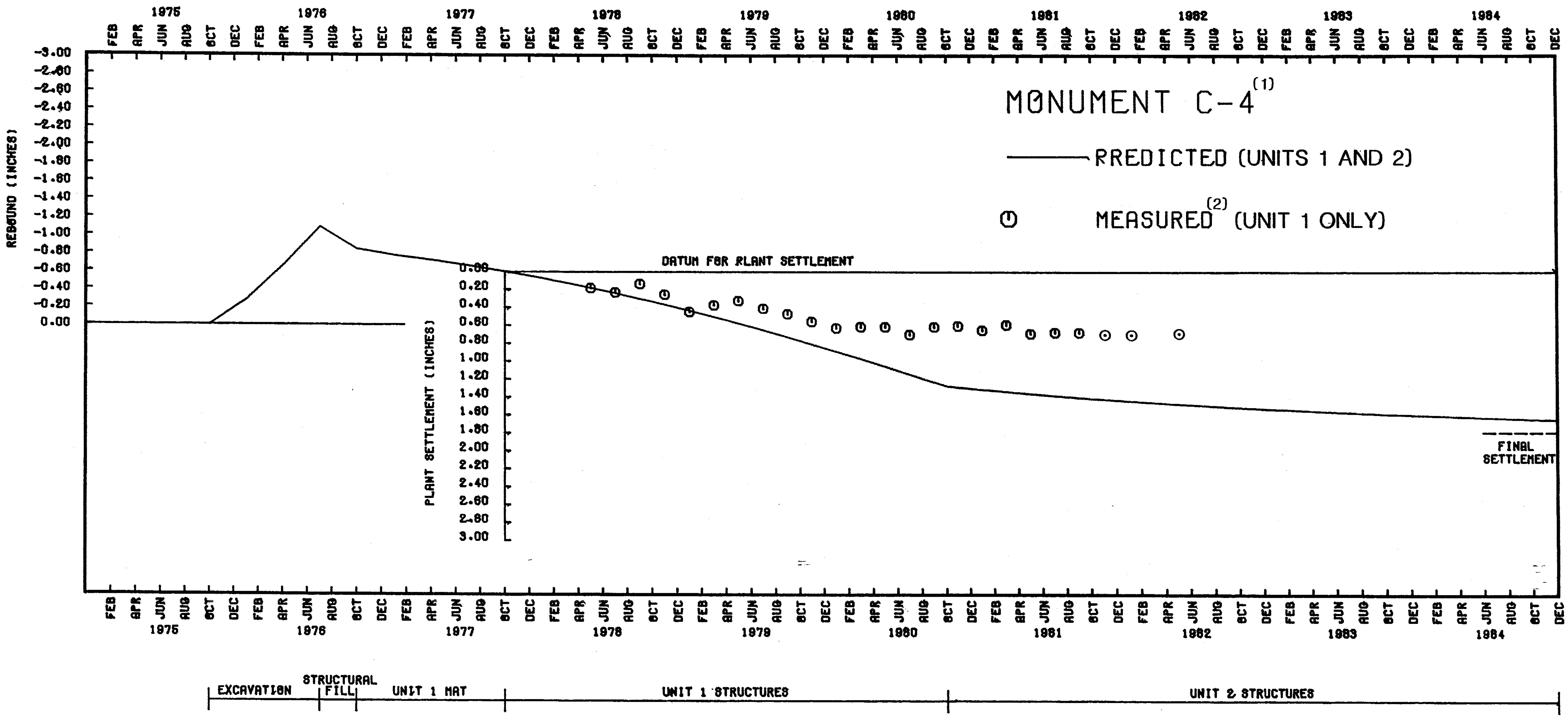
1. Units of settlements are inches



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-433

CONTOURS OF COMPUTED FINAL
SETTLEMENT FOR THE MAIN PLANT

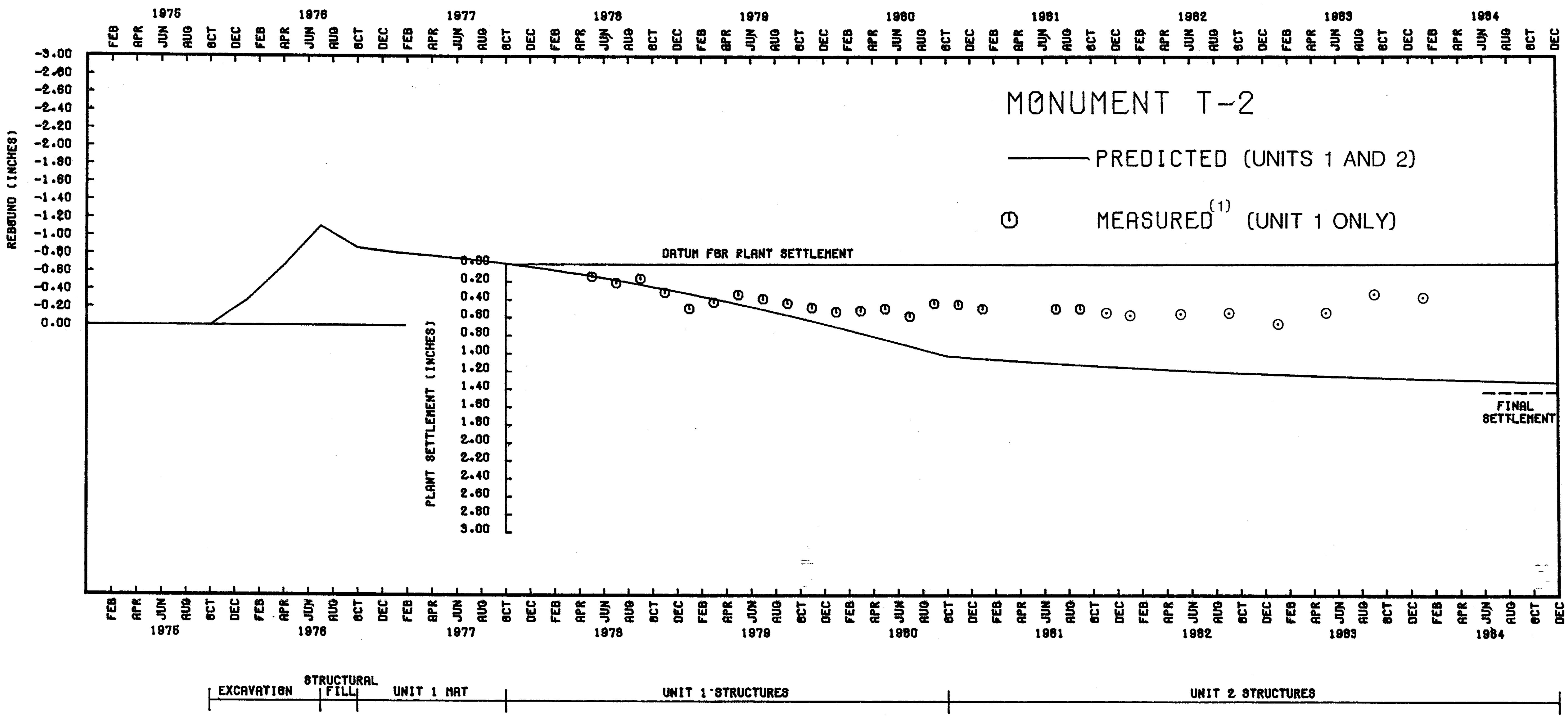


NOTES
1. THIS MONUMENT WAS REPLACED BY C-4A AFTER SEPTEMBER 1982.
2. UNIT 2 HAS BEEN CANCELLED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-434

COMPARISON OF PREDICTED AND MEASURED SETTLEMENT TIME HISTORIES AT SETTLEMENT MONUMENT C4 (CONTAINMENT BUILDING)

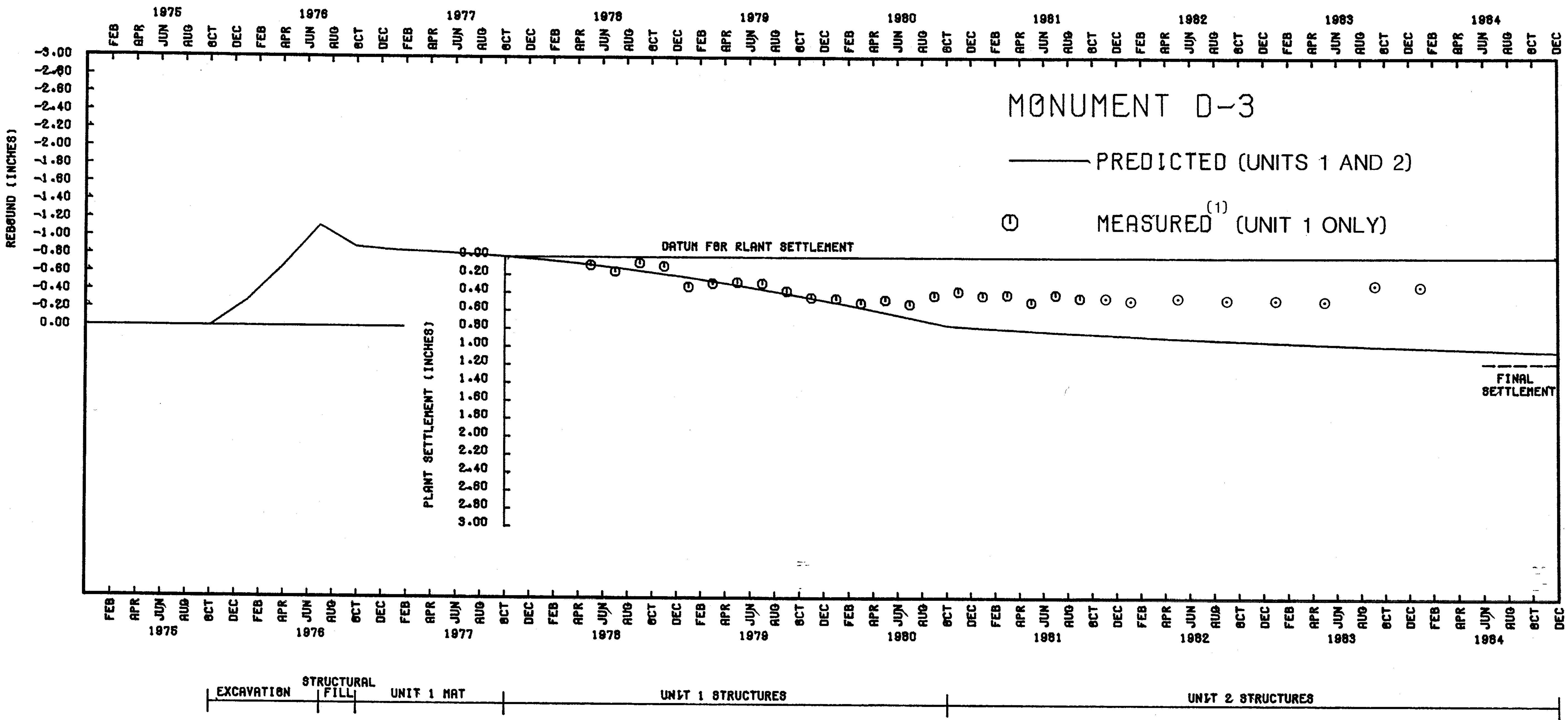


NOTES
1. UNIT 2 HAS BEEN CANCELLED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-435

COMPARISON OF PREDICTED AND MEASURED SETTLEMENT TIME HISTORIES AT SETTLEMENT MONUMENT T1 (TURBINE BUILDING)

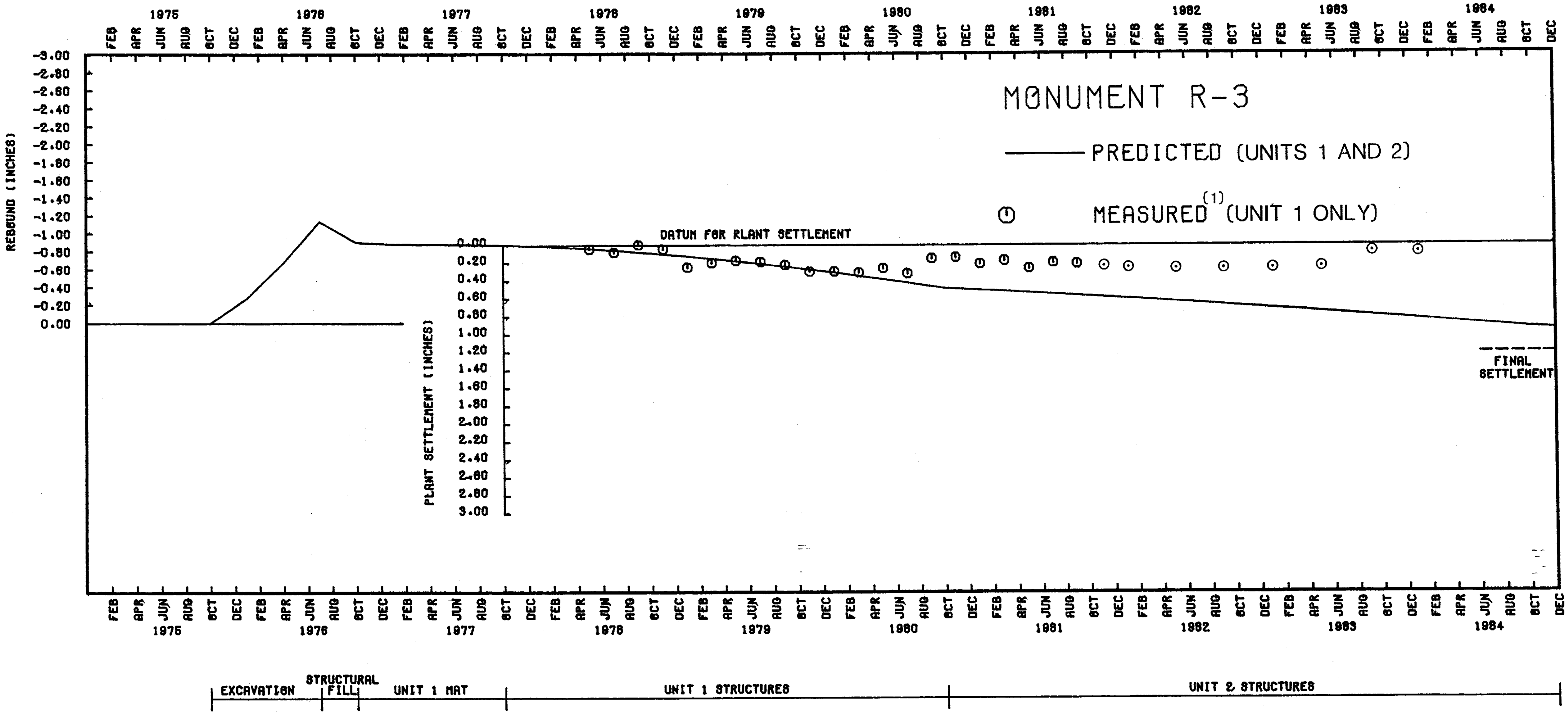


NOTES
1. UNIT 2 HAS BEEN CANCELLED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-436

COMPARISON OF PREDICTED AND MEASURED SETTLEMENT TIME HISTORIES AT SETTLEMENT MONUMENT D3 (DIESEL GENERATOR BUILDING)

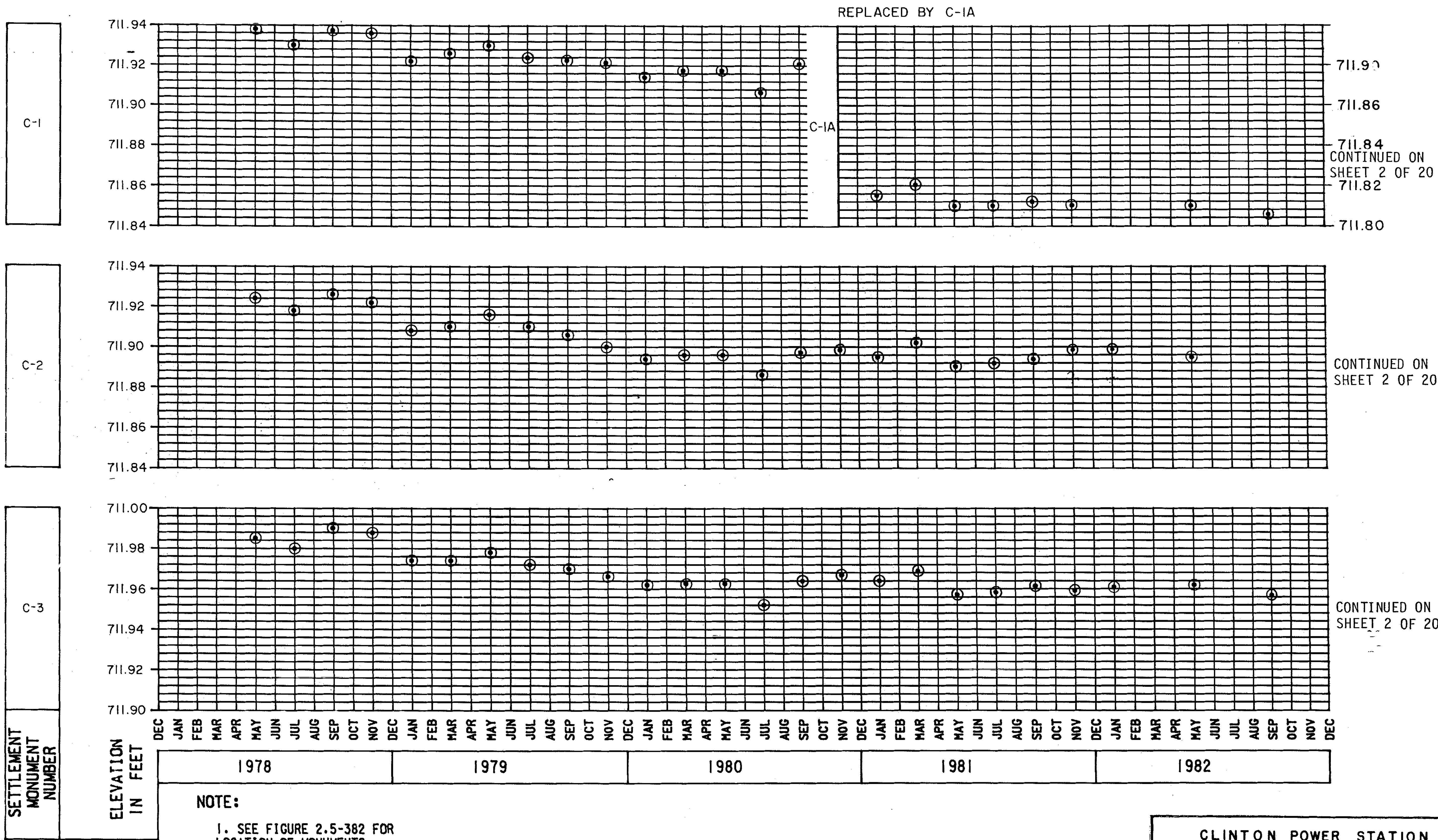


NOTES
1. UNIT 2 HAS BEEN CANCELLED.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-437

COMPARISON OF PREDICTED AND MEASURED SETTLEMENT TIME HISTORIES AT SETTLEMENT MONUMENT R3 (RADWASTE BUILDING)



NOTE:

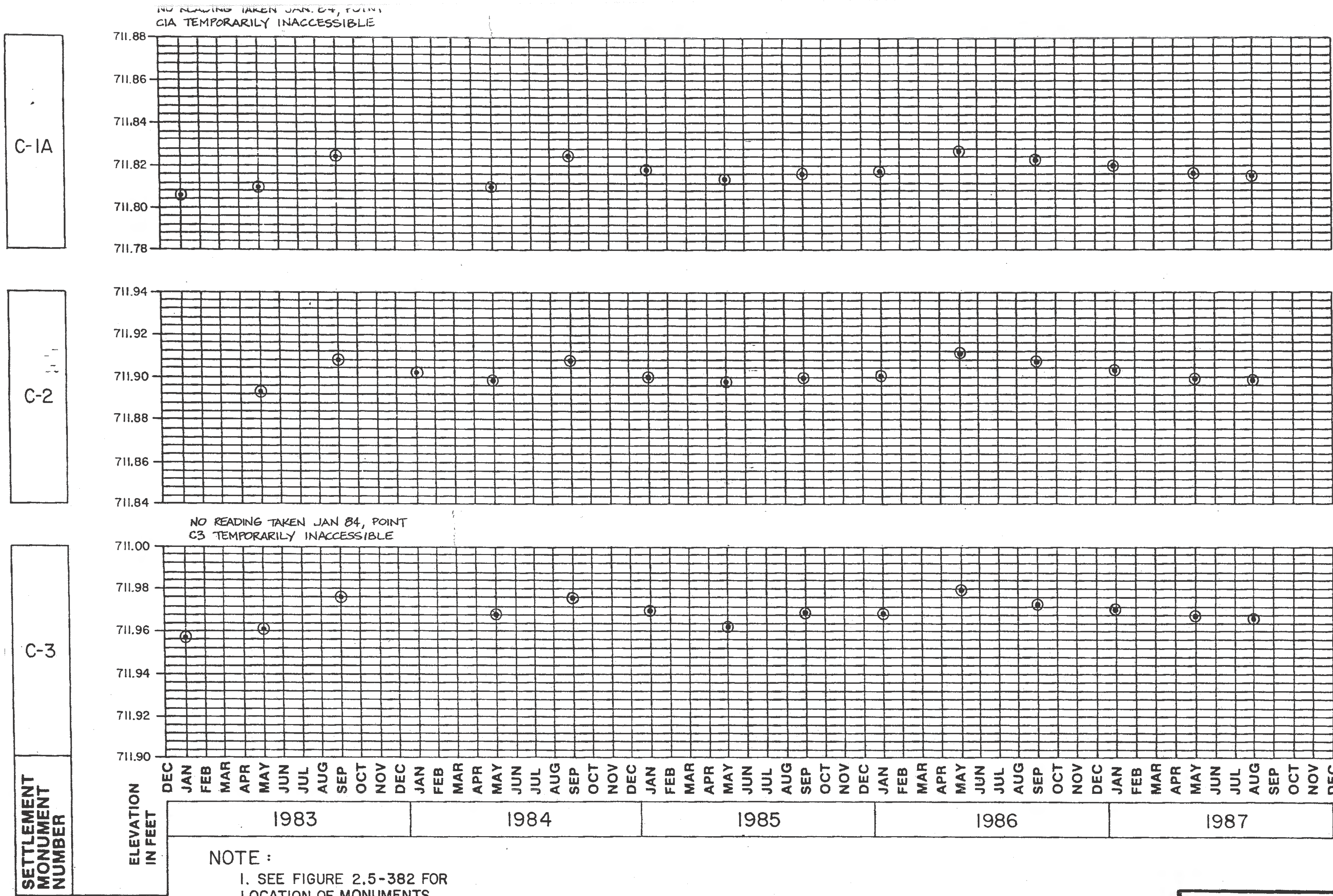
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT SETTLEMENT MEASUREMENTS

(SHEET 1 OF 20)



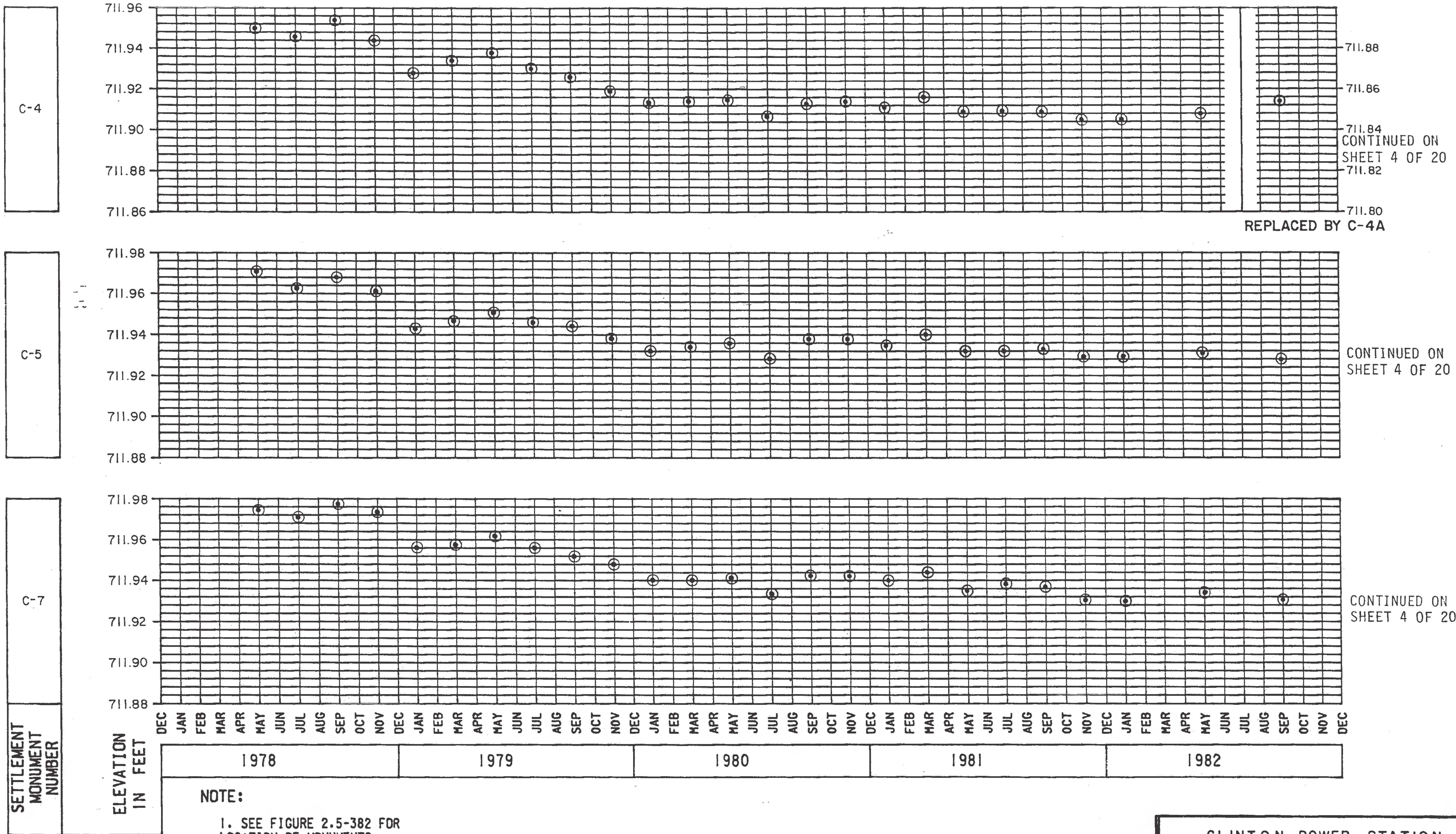
NOTE:
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 2 OF 20)



NOTE:

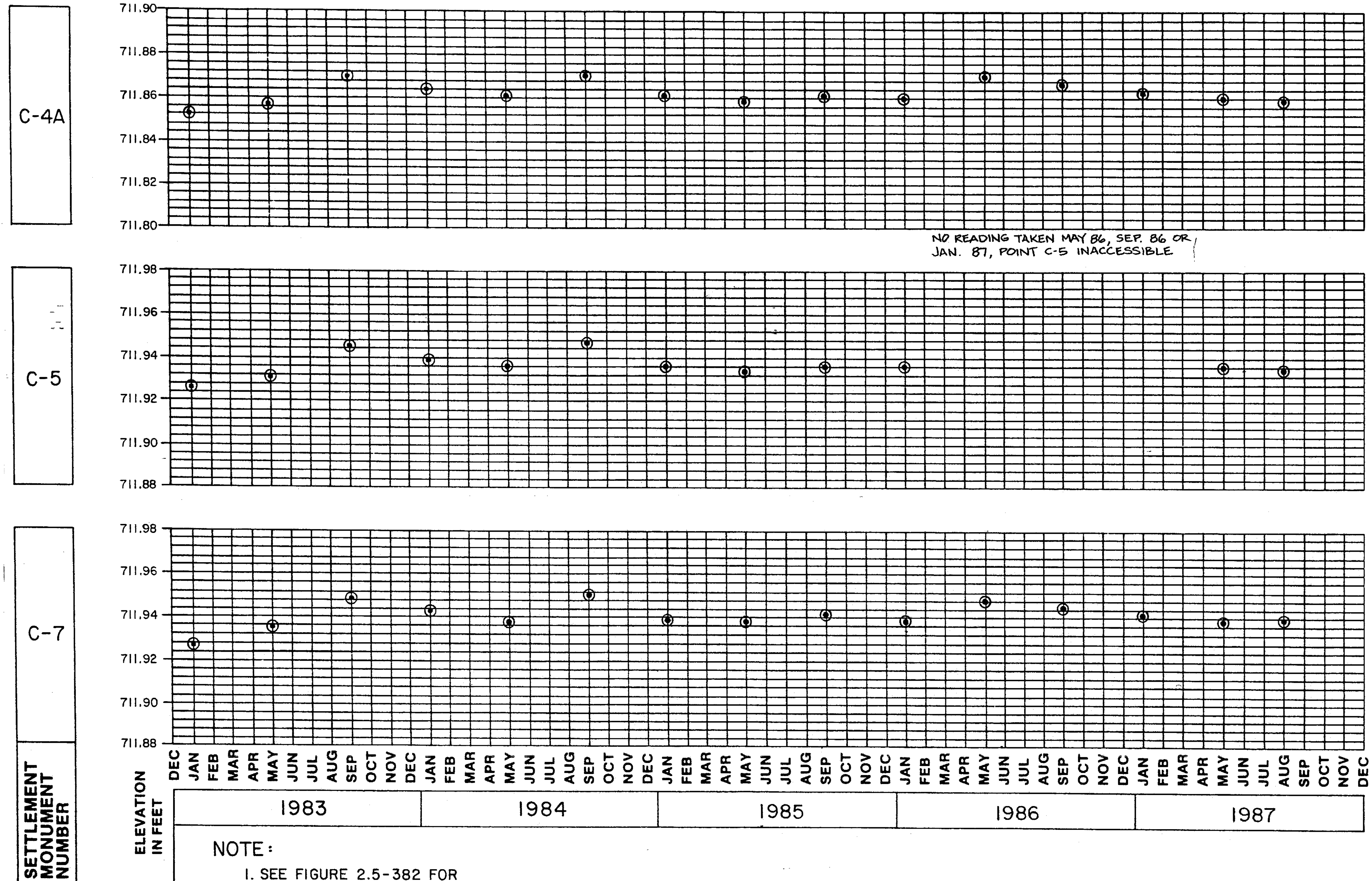
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 3 OF 20)



NOTE:

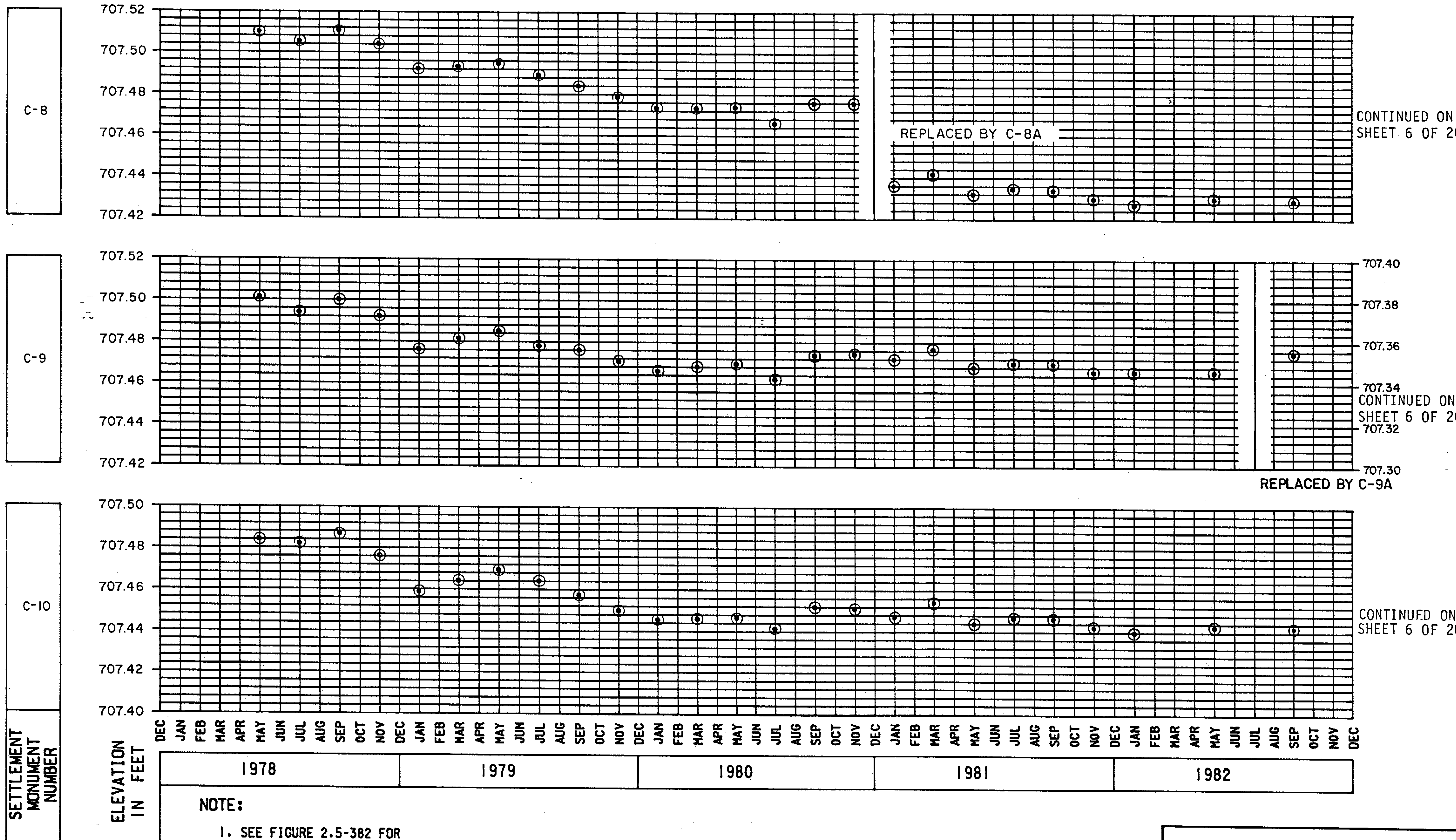
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 4 OF 20)



NOTE:

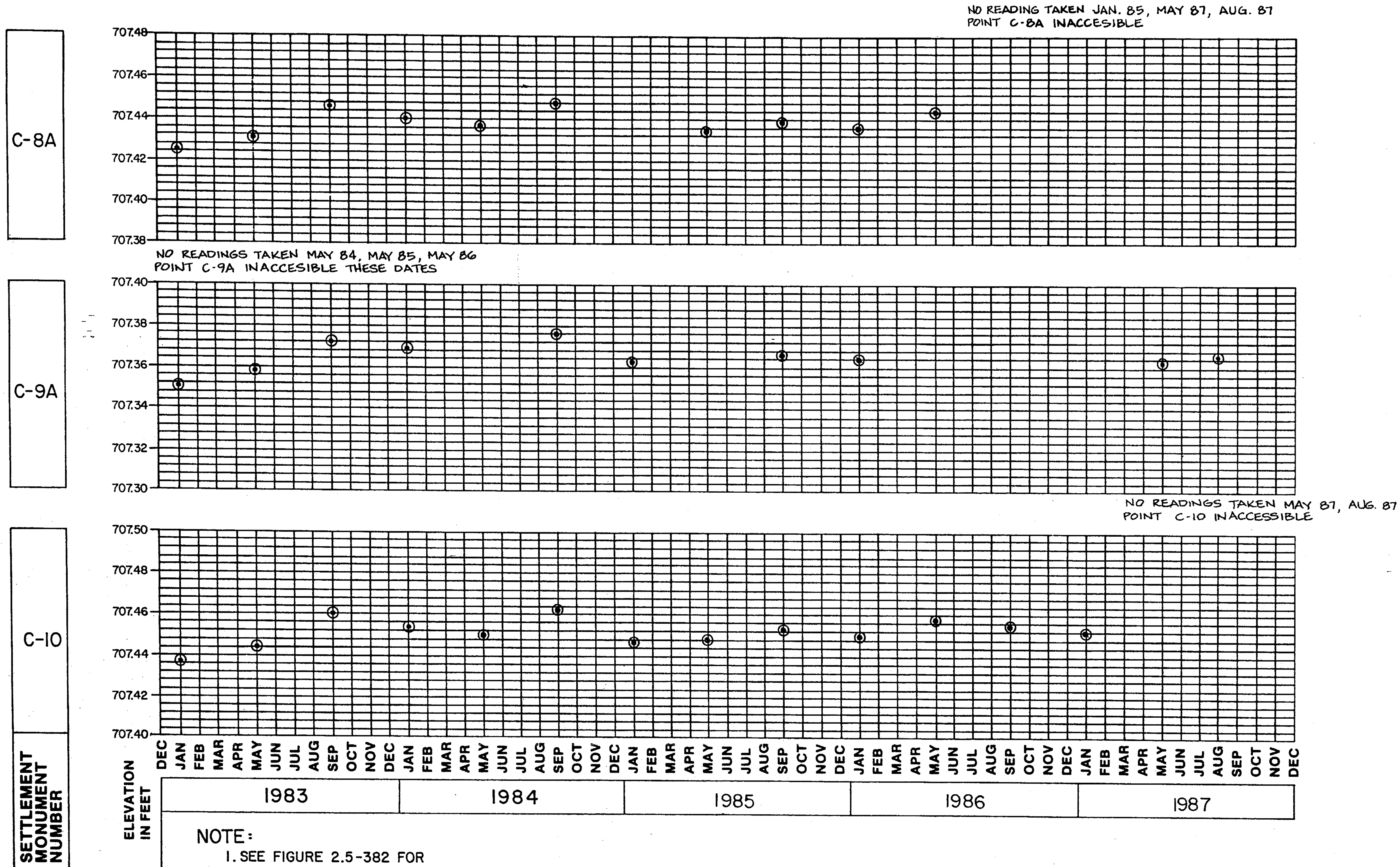
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 5 OF 20)



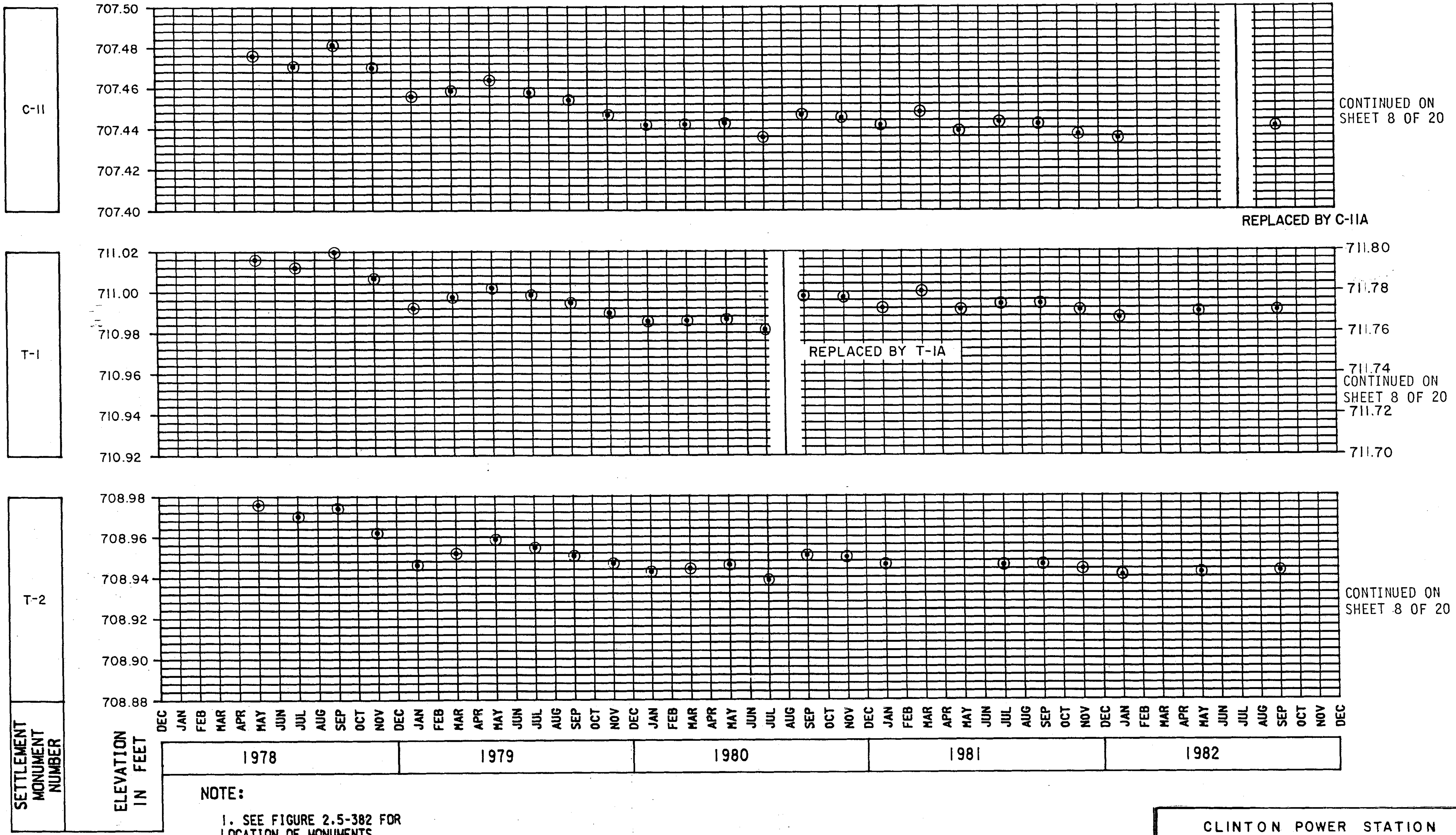
NOTE:
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 6 OF 20)



NOTE:

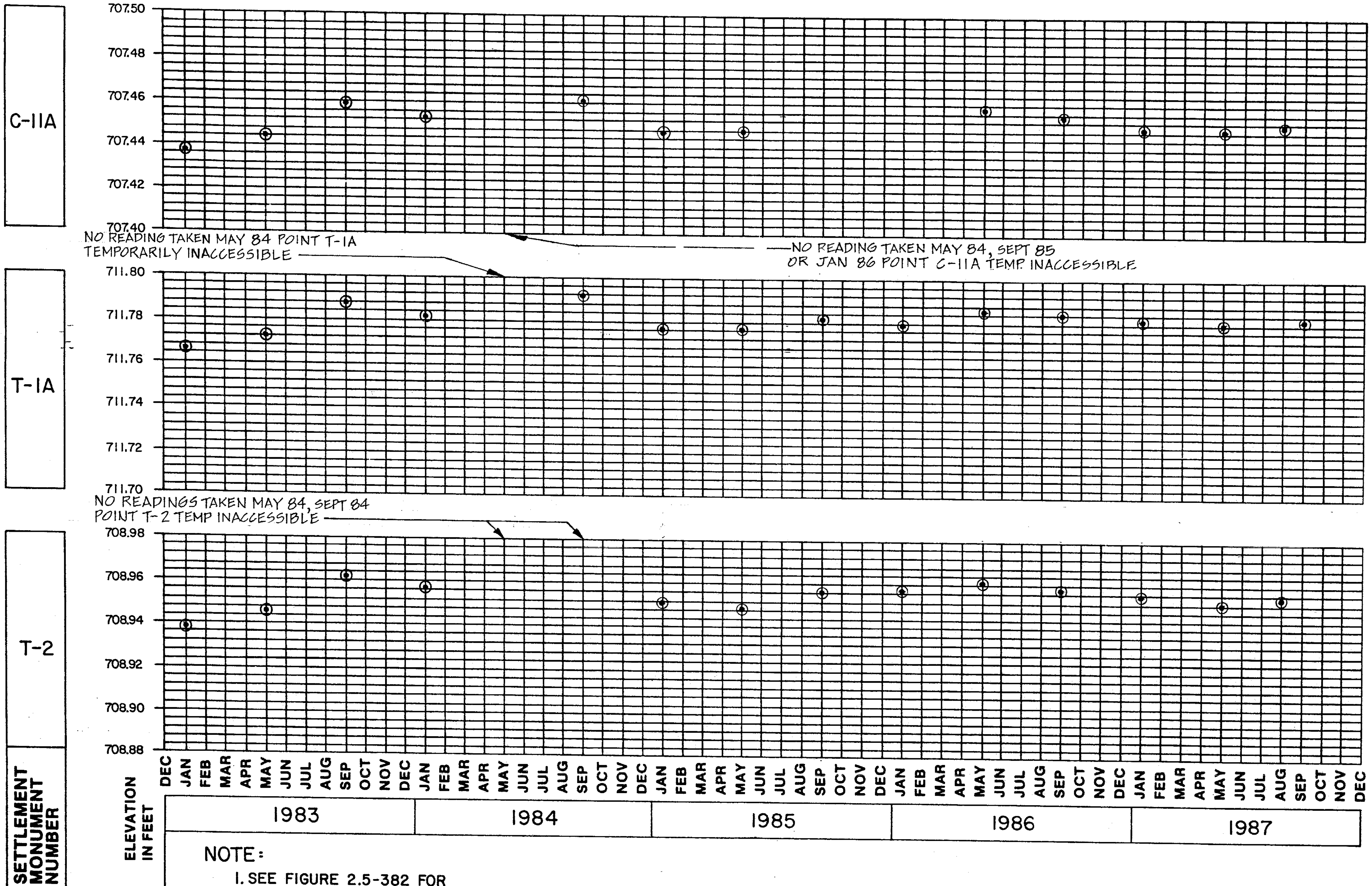
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 7 OF 20)



NOTE:

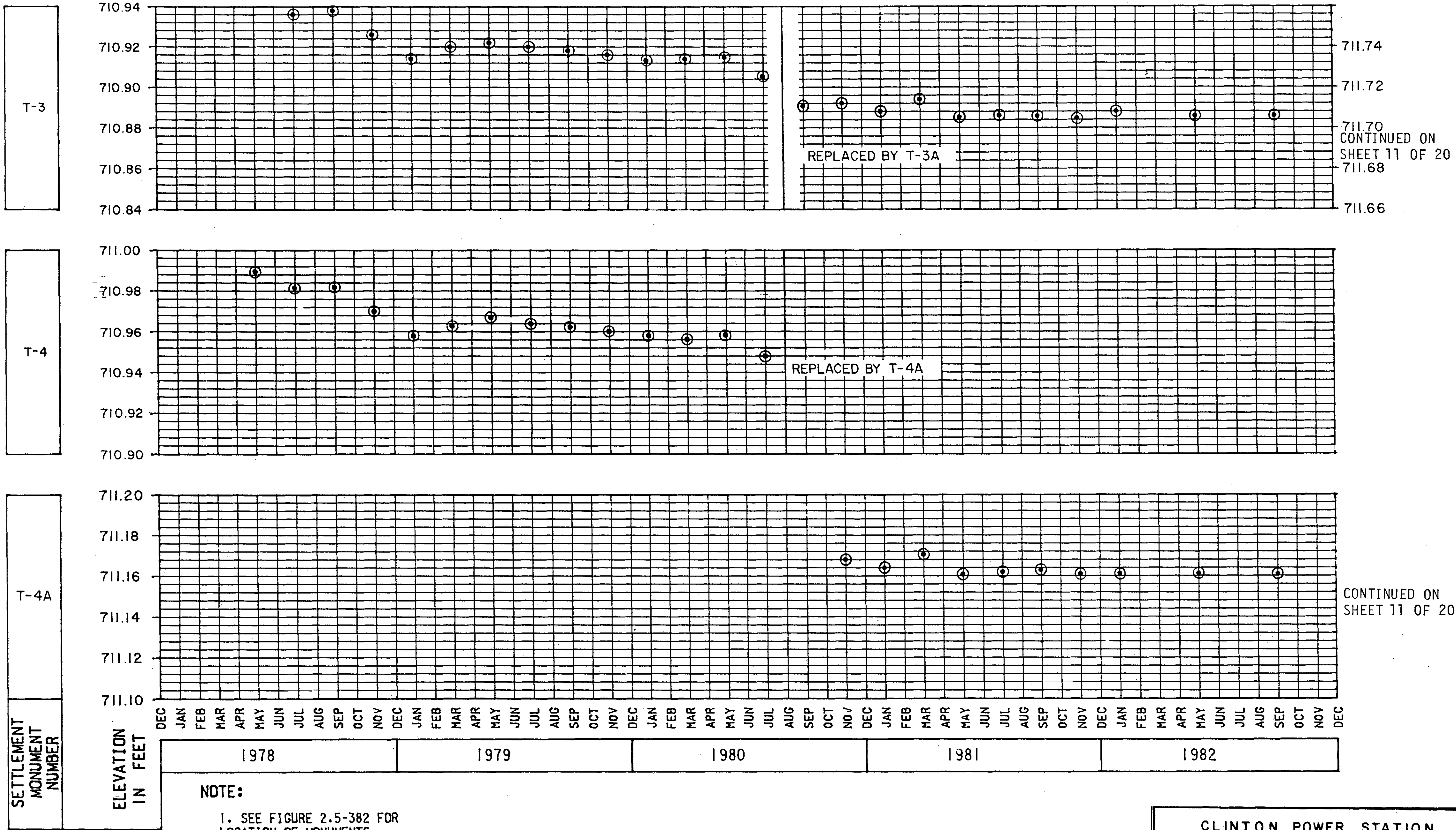
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 8 OF 20)



NOTE:

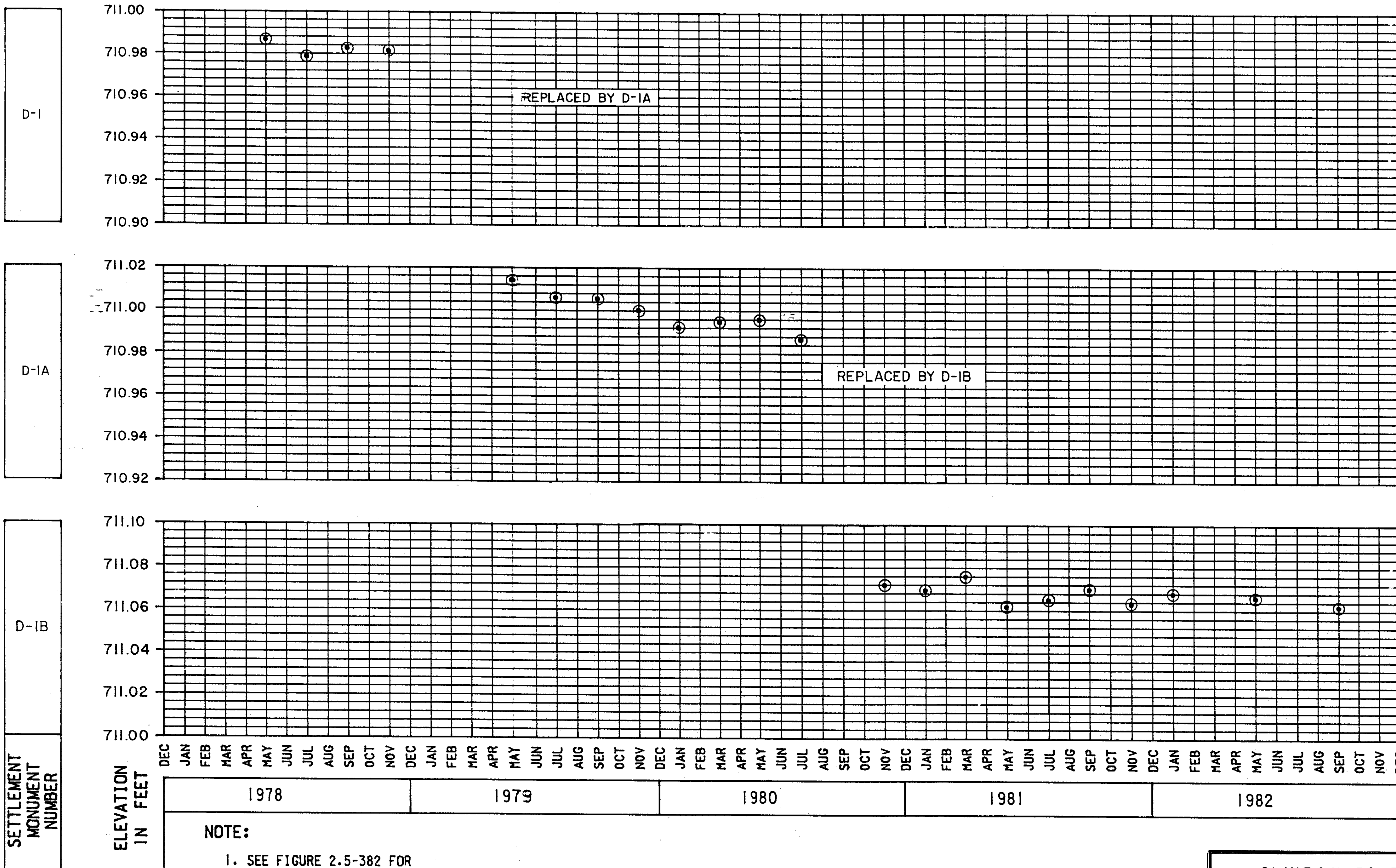
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 9 OF 20)



CONTINUED ON SHEET 11 OF 20

NOTE:

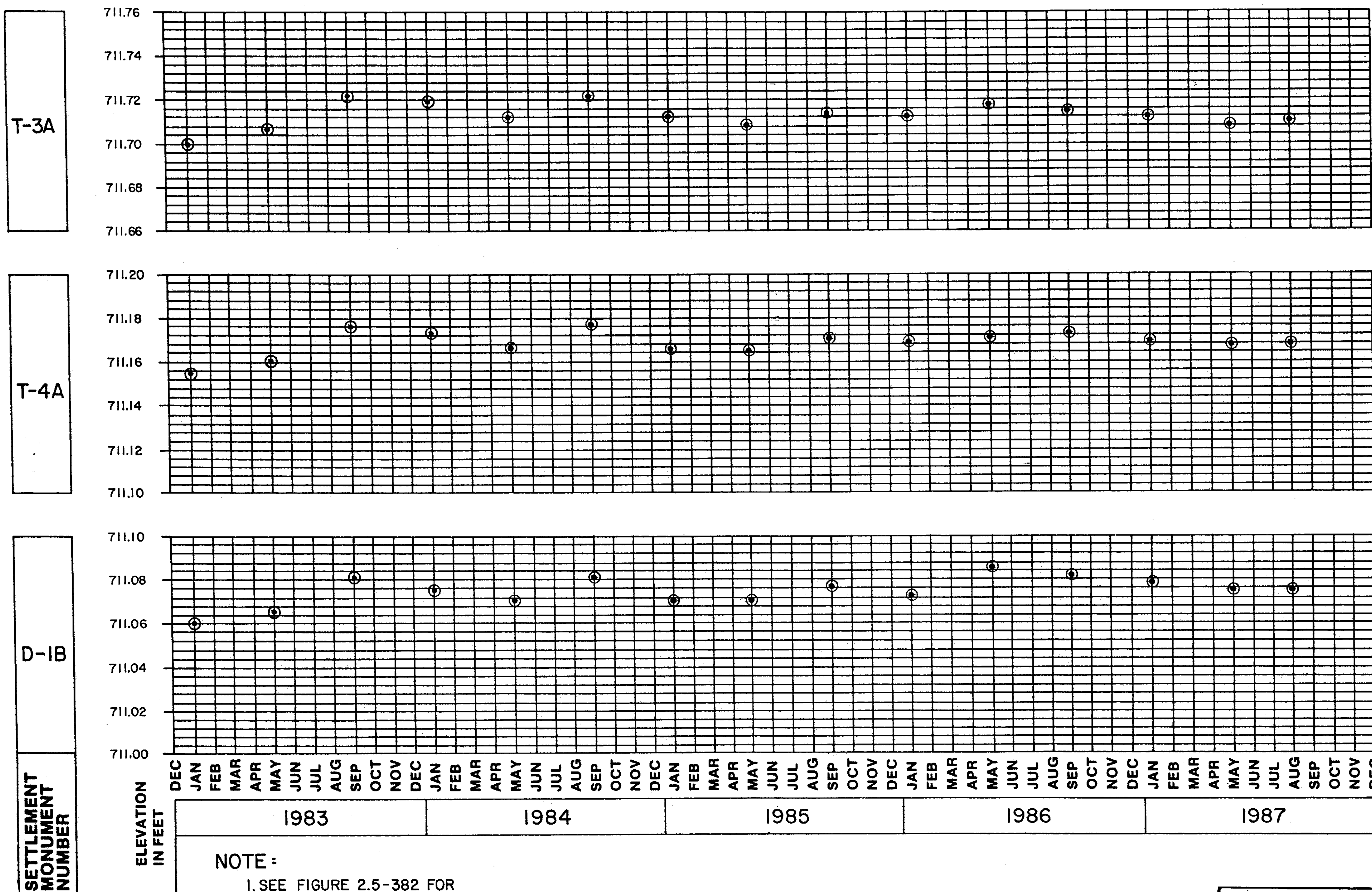
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 10 OF 20)



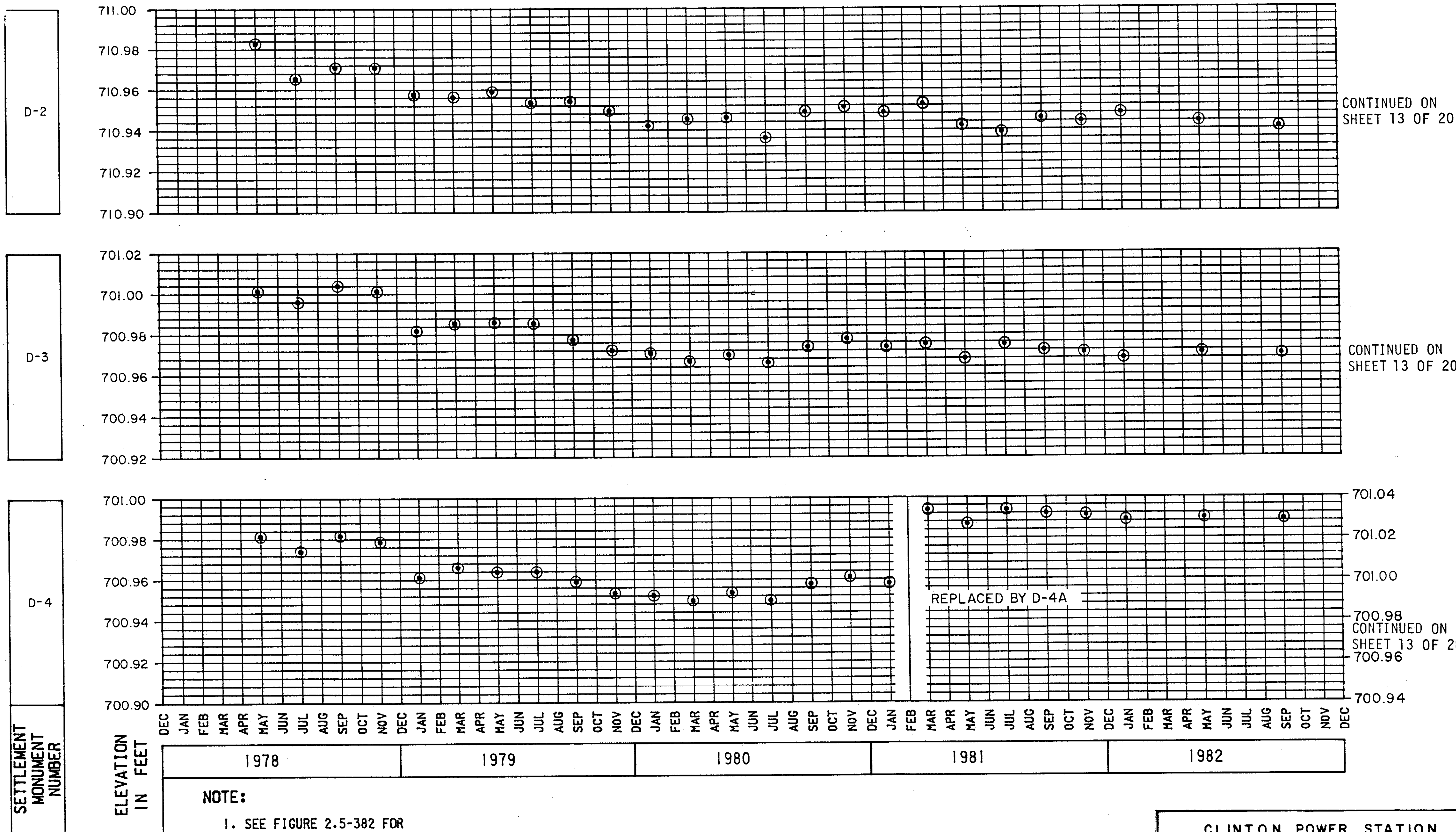
NOTE:
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 11 OF 20)



NOTE:

1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

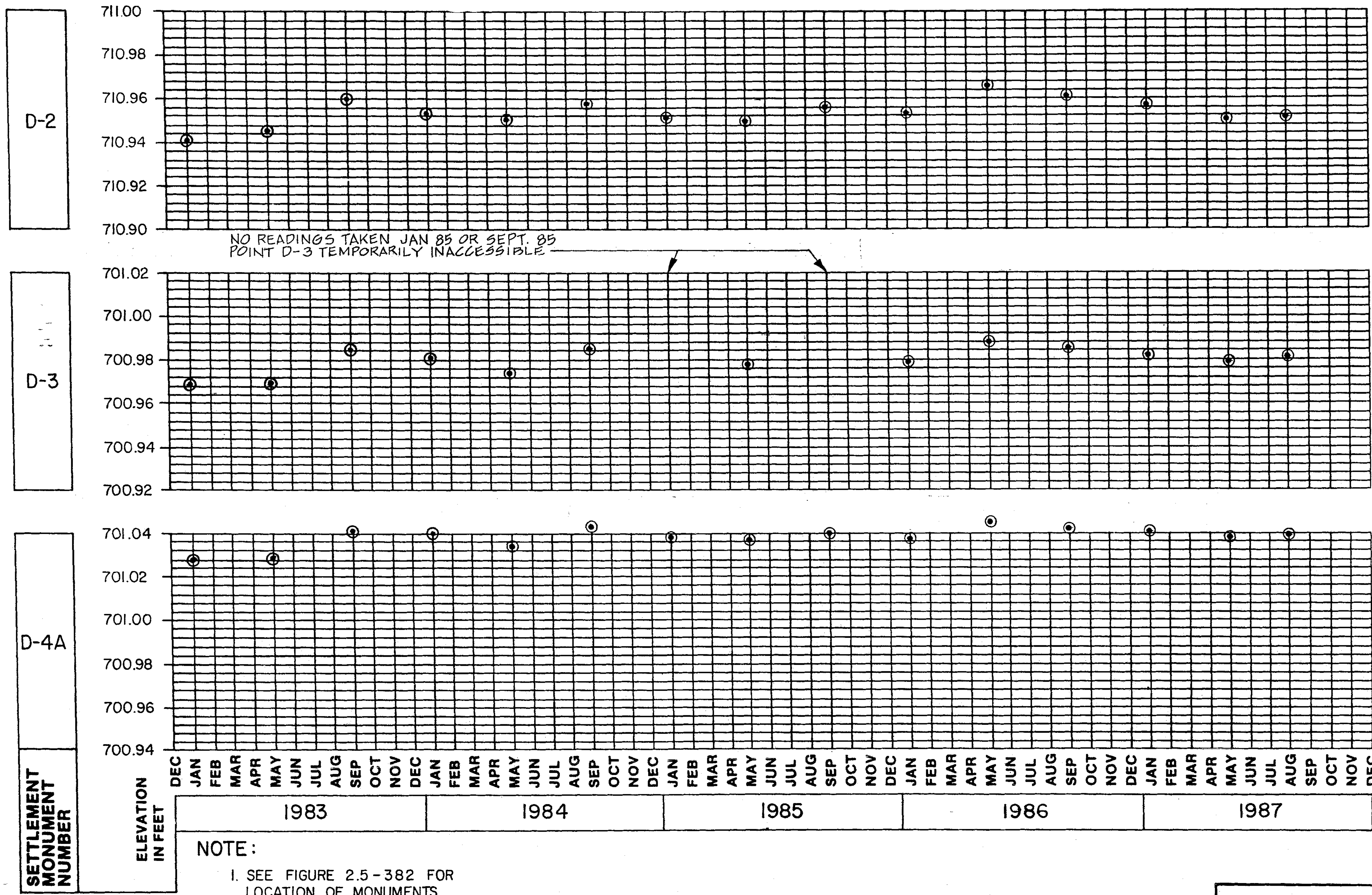
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT SETTLEMENT MEASUREMENTS

(SHEET 12 OF 20)



NOTE:

1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

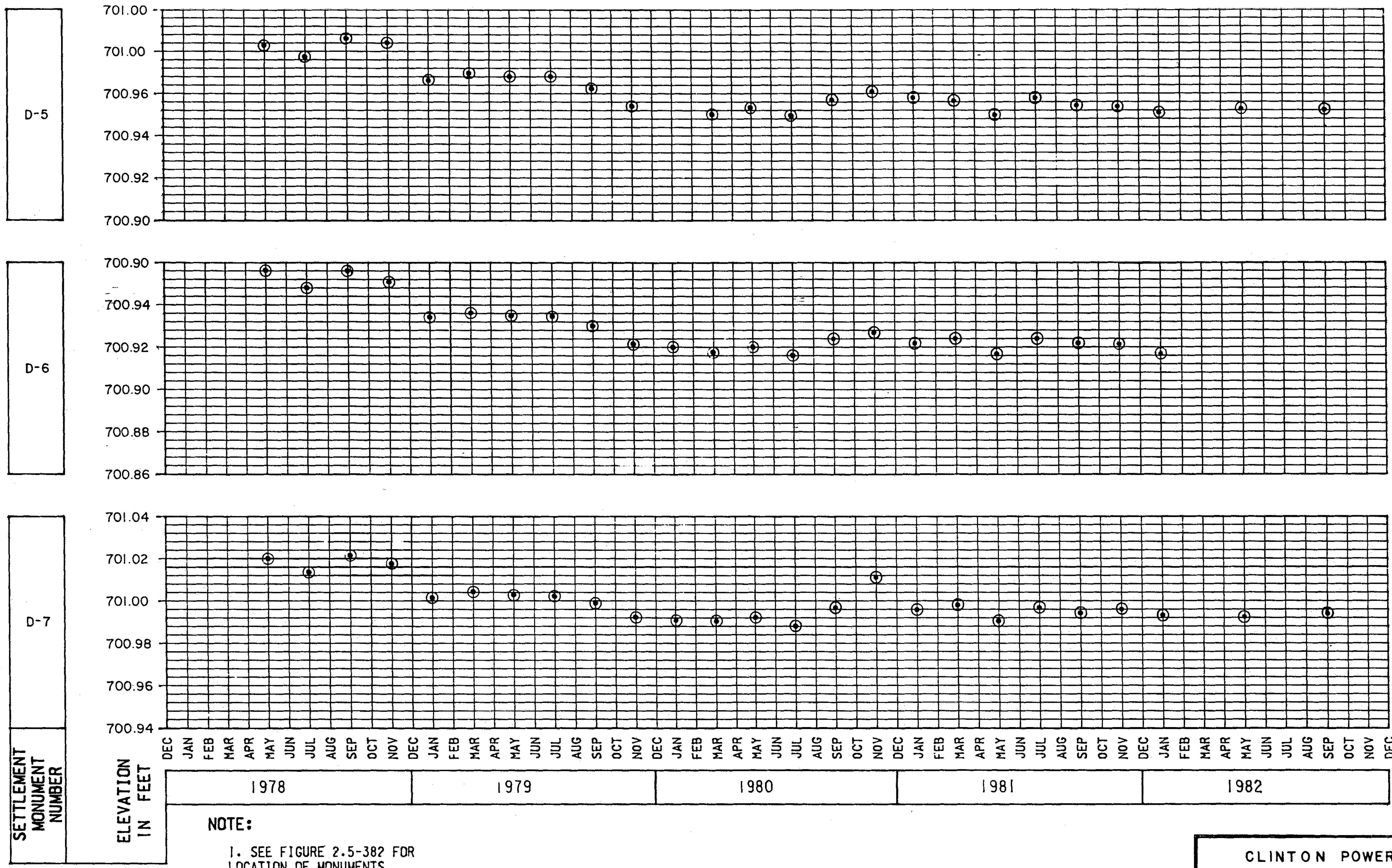
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT SETTLEMENT MEASUREMENTS

(SHEET 13 OF 20)



CONTINUED ON SHEET 15 OF 20

CONTINUED ON SHEET 15 OF 20

CONTINUED ON SHEET 15 OF 20

NOTE:

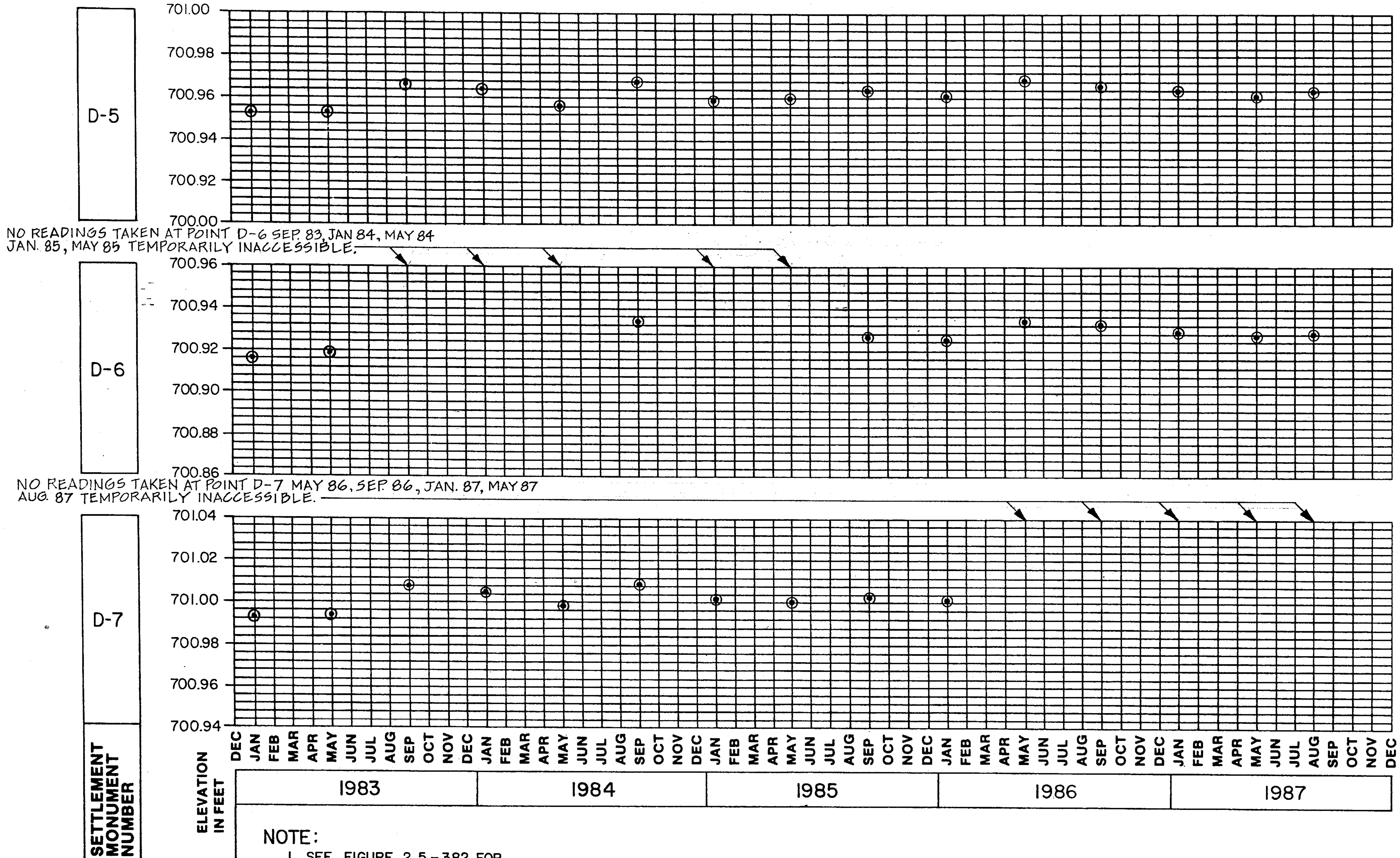
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT SETTLEMENT MEASUREMENTS

(SHEET 14 OF 20)



NOTE:

1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

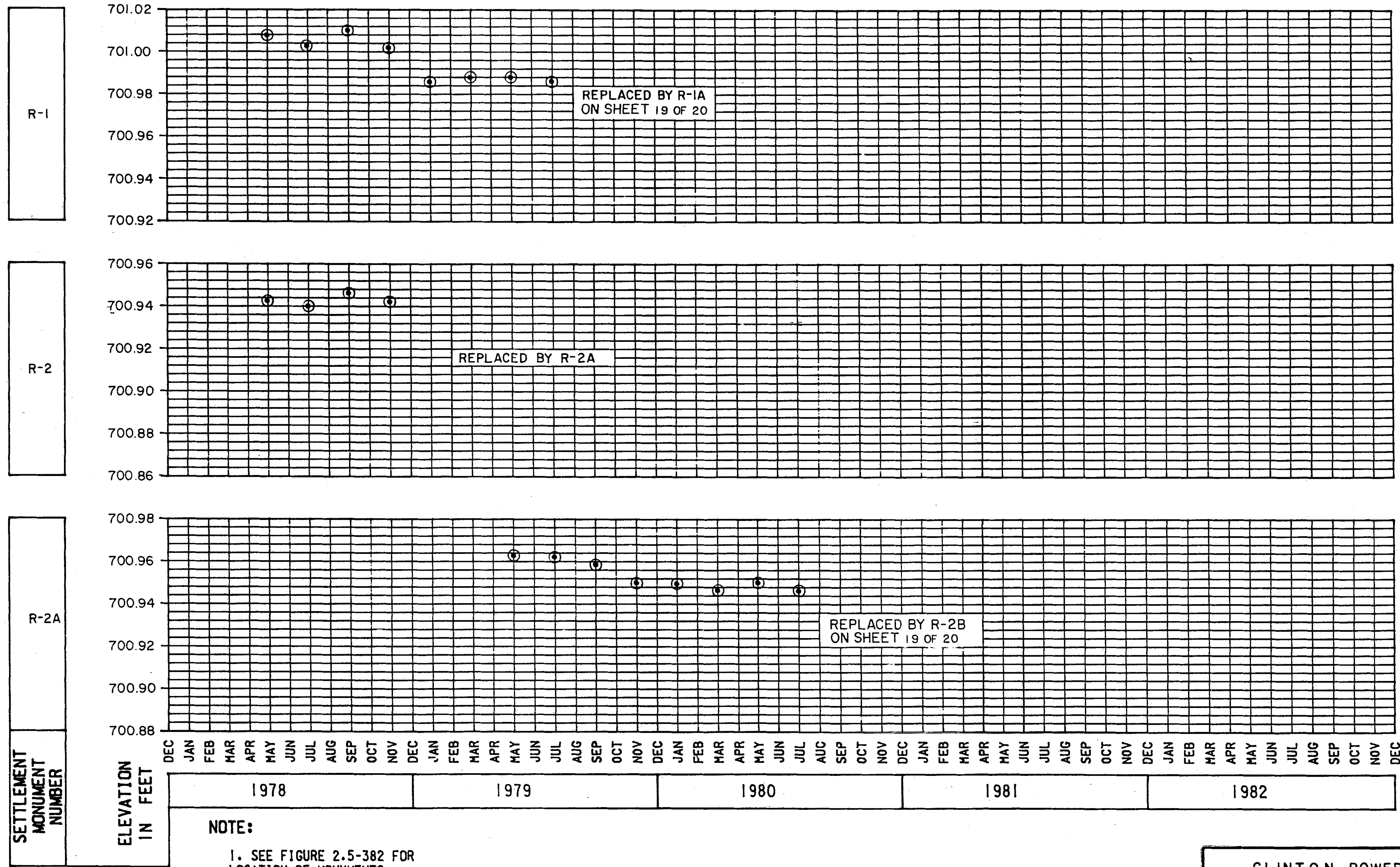
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT SETTLEMENT MEASUREMENTS

(SHEET 15 OF 20)



NOTE:

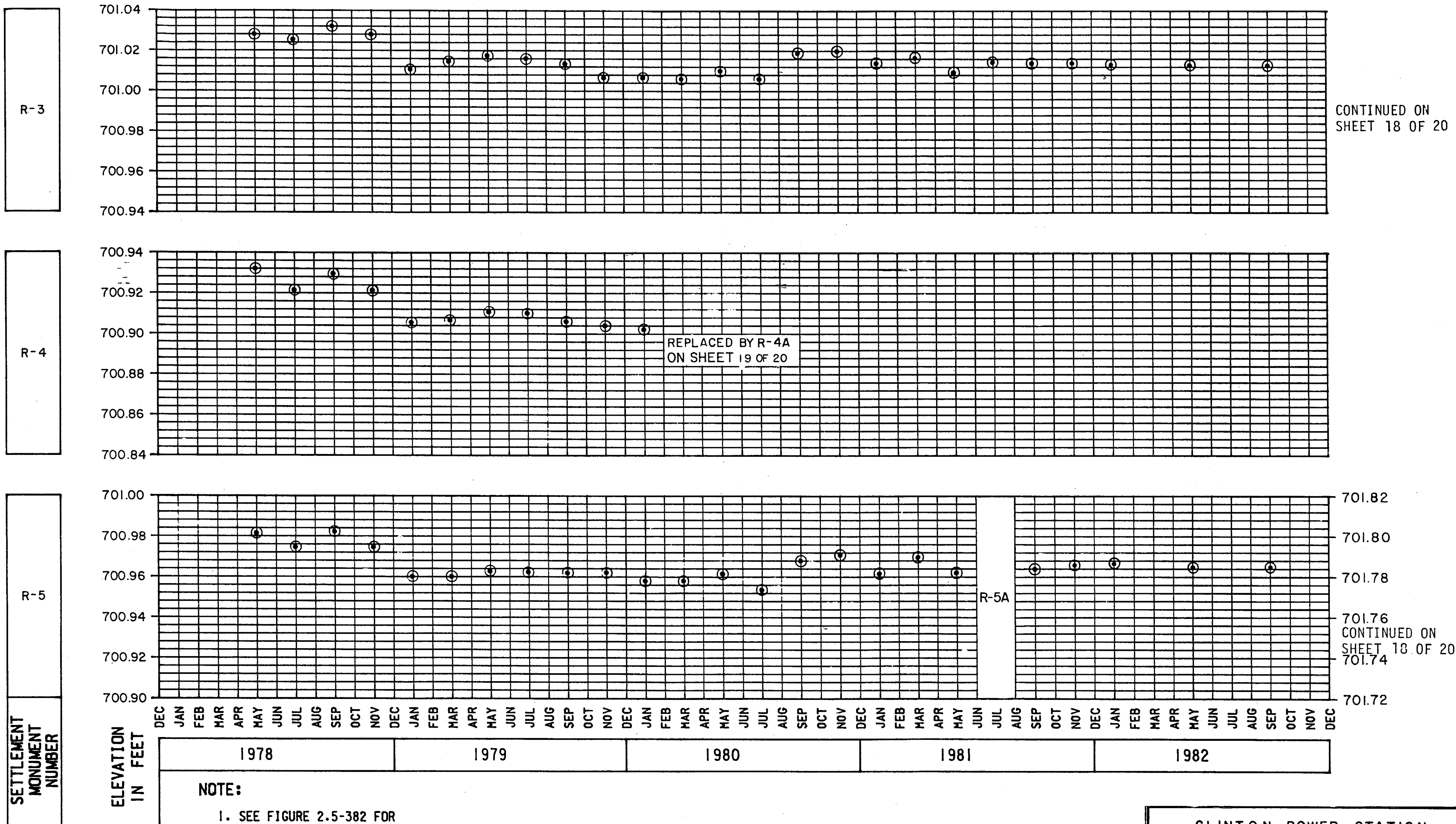
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 16 OF 20)



NOTE:

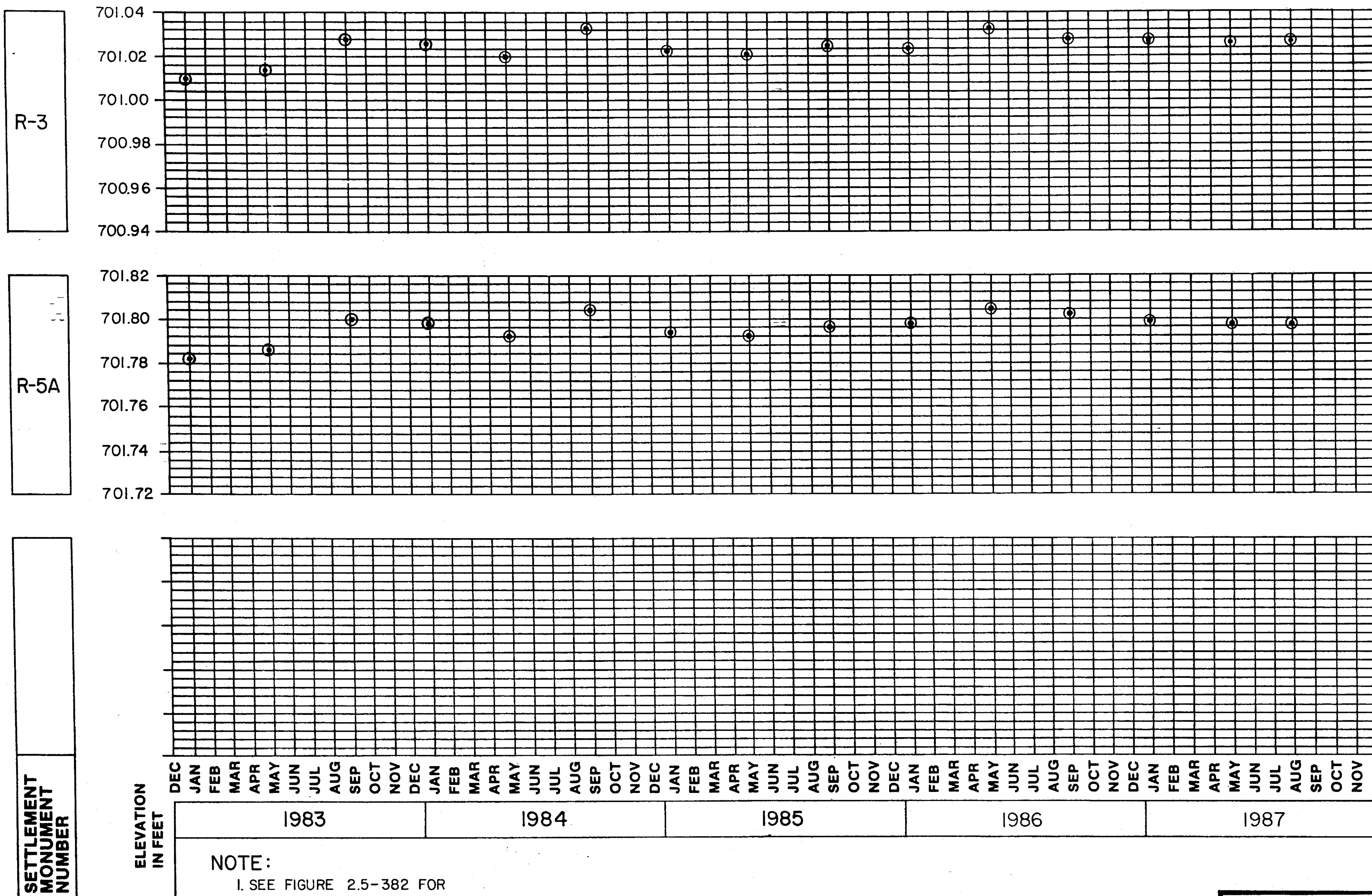
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT SETTLEMENT MEASUREMENTS

(SHEET 17 OF 20)



NOTE:

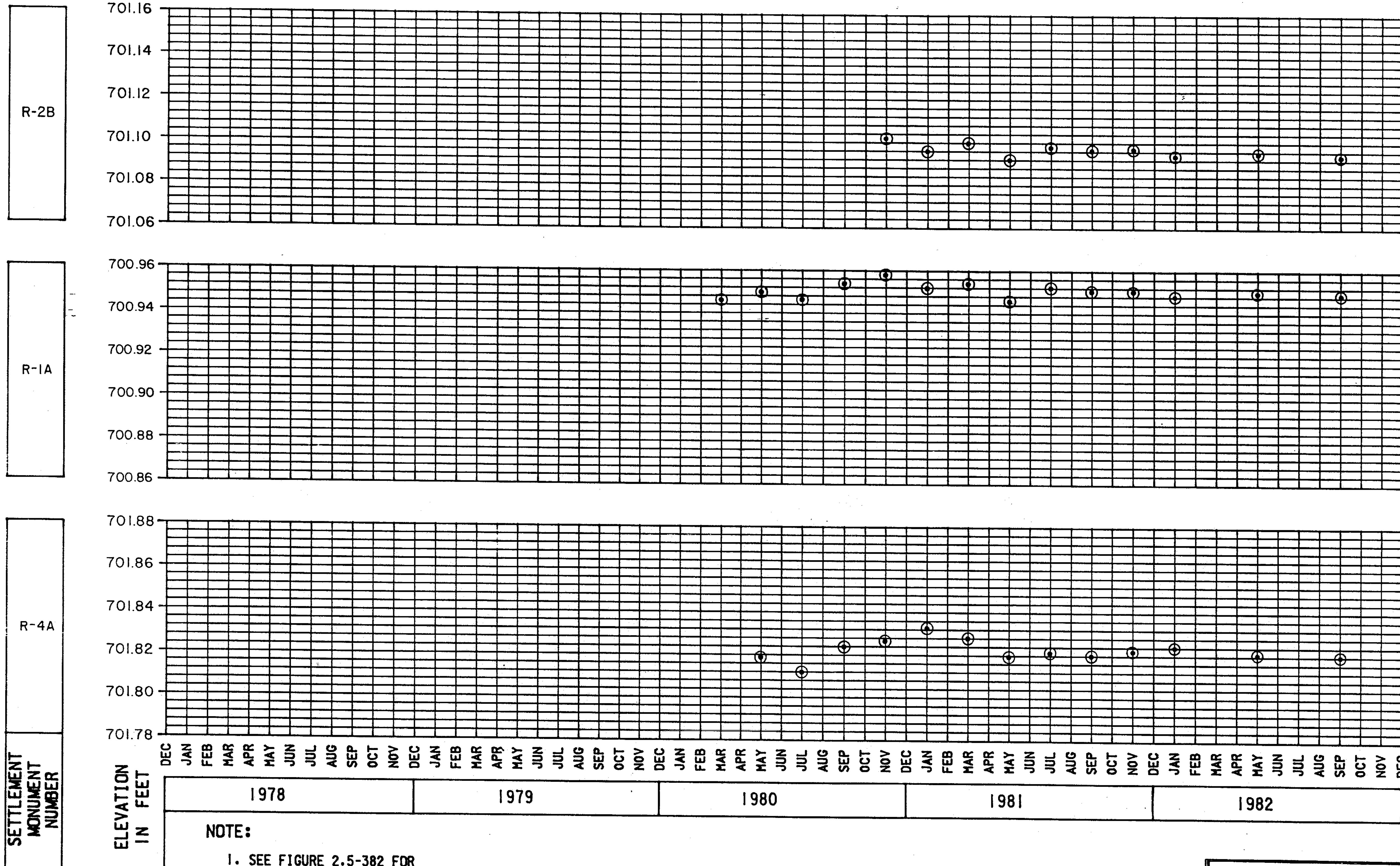
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 18 OF 20)



CONTINUED ON SHEET 20 OF 20

CONTINUED ON SHEET 20 OF 20

CONTINUED ON SHEET 20 OF 20

NOTE:

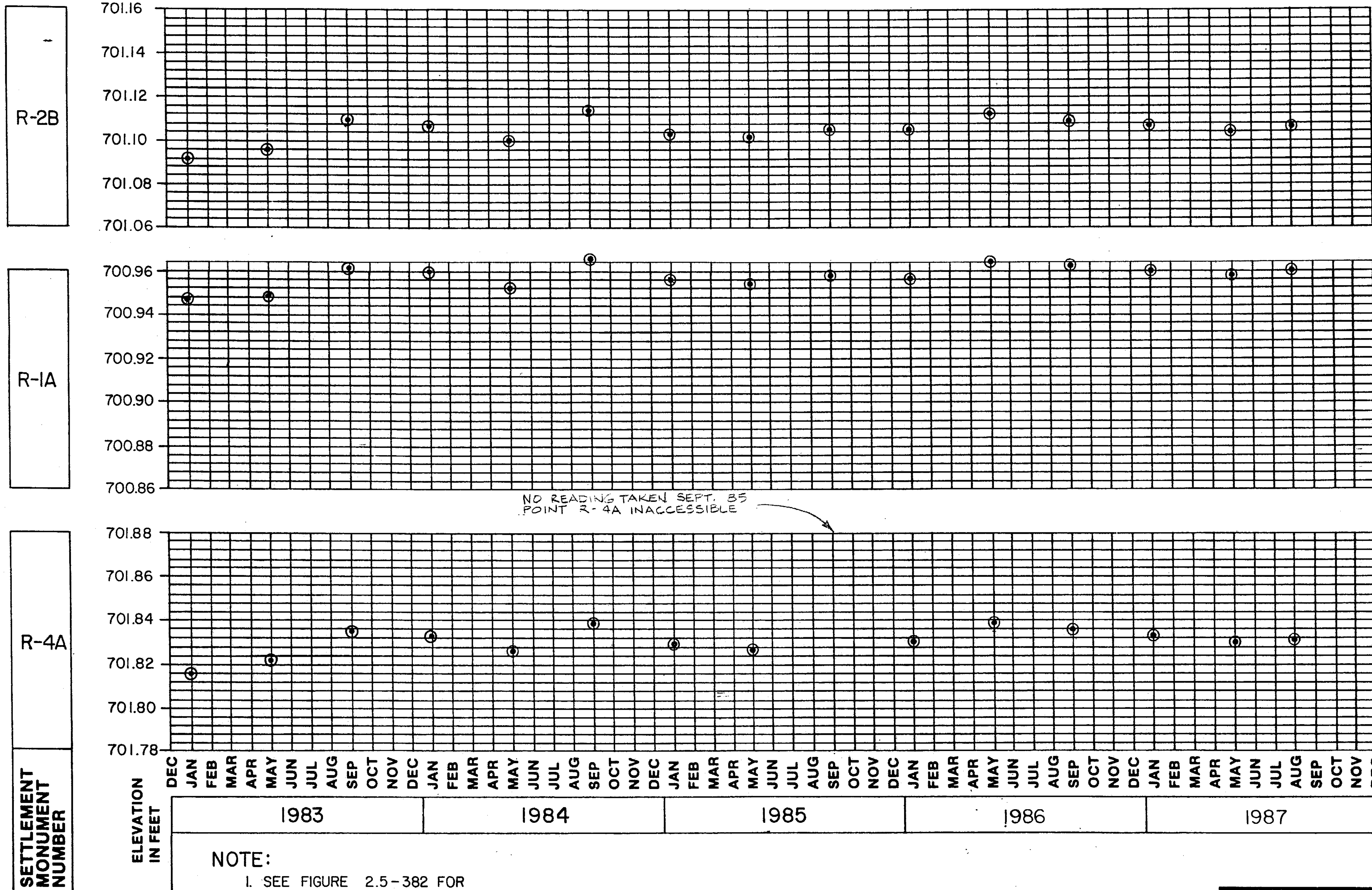
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 19 OF 20)



NOTE:
1. SEE FIGURE 2.5-382 FOR LOCATION OF MONUMENTS

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-438

MAIN PLANT
SETTLEMENT MEASUREMENTS

(SHEET 20 OF 20)

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
5										10	SS
										6	SS
10											
15										37	SS
20											
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											

BORING OW-18

SURFACE ELEVATION 656.5

ELEVATION (FEET)

SYMBOLS	DESCRIPTIONS
SM	<u>SLOPEWASH.</u> Brown, fine sand and silt.
CL	<u>FILL.</u> Brown, silty clay, some fine to coarse sand, trace silt.
SW SM	<u>SALT CREEK ALLUVIUM.</u> Gray, fine to medium sand, trace silt.
ML	<u>ILLINOIAN TILL.</u> Gray, clayey silt and fine to medium sand, trace coarse sand and fine gravel.

BORING COMPLETED AT 15.0 FT.
ON 7/16/79.
WATER LEVEL AT 9.5 FT.
ON 7/16/79.

PIEZOMETER INSTALLED 7/16/79.
PRESLOTTED SECTION 10.5 TO 14.5 FT.
BENTONITE SEAL AT 5.0 TO 7.0 FT.

LOGGED BY: SARGENT & LUNDY

DRILLED BY: RAYMOND INTERNATIONAL

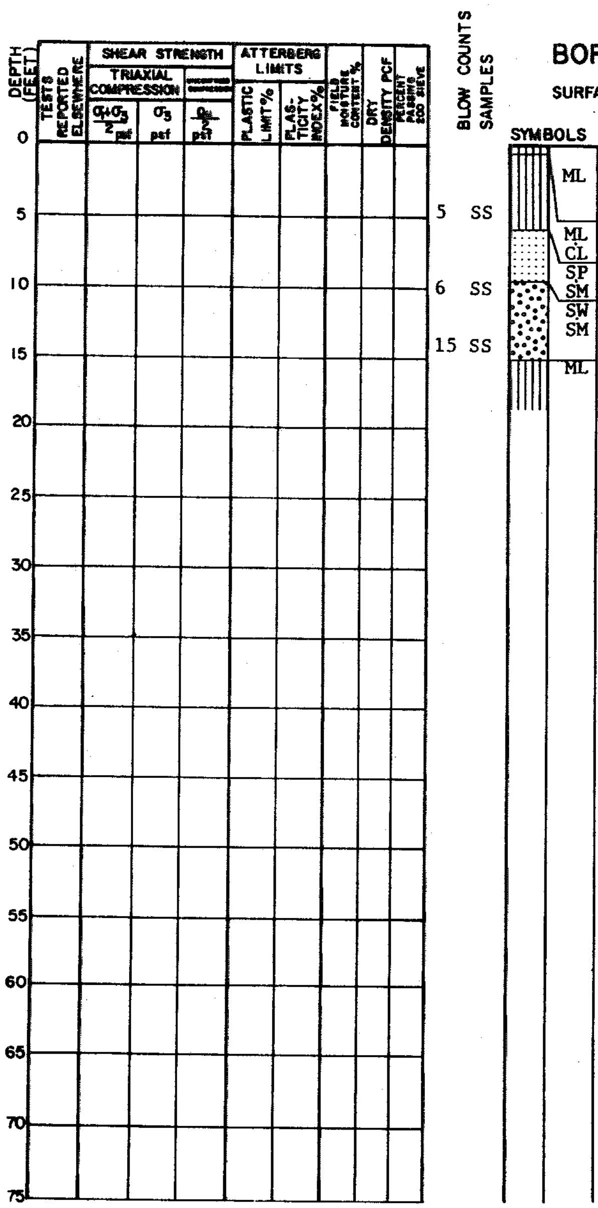
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-439

LOG OF BORING OW-18

BORING OW-19

SURFACE ELEVATION 654.4



ELEVATION (FEET)

DESCRIPTIONS

SLOPEWASH.
Brown, clay silt and fine to medium sand.

SALT CREEK ALLUVIUM.
Black, clayey silt, trace fine sand.
6.0 ft., gray, fine to medium sand, trace silt.
9.5 ft., gray, fine to coarse sand, little fine gravel, trace silt.

ILLINOIAN TILL.
Gray, clayey silt, some fine to coarse sand, trace fine gravel.

BORING COMPLETED AT 18.5 FT. ON 7/16/79.
WATER LEVEL AT 6.0 FT. ON 7/16/79.

PIEZOMETER INSTALLED 7/16/79.
PRESLOTTED SECTION 8.0 TO 12.0 FT.
BENTONITE SEAL FROM 4.0 TO 6.0 FT.

LOGGED BY: SARGENT & LUNDY

DRILLED BY: RAYMOND INTERNATIONAL

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-440

LOG OF BORING OW-19

BORING OW-20

SURFACE ELEVATION 658.4

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	$\frac{q_u}{2}$ psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
5										16 SS
10										12 SS
15										17 SS
20										19 SS
25	GSD						14.1		0.39	44 SS
30										116 SS
35										100/5"

SYMBOLS	DESCRIPTIONS
SM	SLOPEWASH. Light brown, fine sand and silt.
CL	FILL. Brown, silty clay, some fine to coarse sand, trace fine gravel. 3.5 ft., grades to gray.
ML	ILLINOIAN TILL. Gray, clayey silt and fine to medium sand, trace coarse sand and fine gravel.
SP	24.0 ft., gray, fine to medium sand, trace silt.
SW	24.5 ft., gray, fine to coarse sand, little fine gravel, trace silt.
ML	26.0 ft., gray, clayey silt and fine to medium sand, trace coarse sand and fine gravel.

BORING COMPLETED AT 34.4 FT. ON 7/17/79.
WATER TABLE ENCOUNTERED AT 24.0 FT. ON 7/17/79. ONE HOUR LATER WATER LEVEL AT 2.3 FT.

PIEZOMETER INSTALLED 7/17/79.
PRE-SLOTTED SECTION 22.5 TO 26.5 FT.
BENTONITE SEAL FROM 5.0 TO 10.0 FT.

LOGGED BY: SARGENT & LUNDY
DRILLED BY: RAYMOND INTERNATIONAL
TESTED BY: SOIL TESTING SERVICES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-441

LOG OF BORING OW-20

BORING OW-21

SURFACE ELEVATION 670.0

Depth (feet) (approx.)	Unconfined compression $\frac{q_u}{2}$ psf	Blow counts	Samples
5	4500+*	15	SS
10	4500+*	14	SS
15	3000*	15	SS
20	4500*	13	SS
25	4500+*	11	SS
30	4500+*	28	SS
35	4500+*	101	SS
		144	SS
40		104/4"	SS
45	4500+*	118	SS
50		100/6"	SS
55		100/8"	SS
		124	SS

Column headings: DEPTH (FEET); TESTS REPORTED ELSEWHERE; SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf, σ_3 psf; UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf; ATTERBERG LIMITS – PLASTIC LIMIT %, PLASTICITY INDEX %; FIELD MOISTURE CONTENT %; DRY DENSITY PCF; PERCENT PASSING 200 SIEVE; BLOW COUNTS; SAMPLES; SYMBOLS; DESCRIPTIONS; ELEVATION (FEET)

CL — FILL (TYPE A)

Gray, silty clay, little fine to medium sand, trace coarse sand and fine gravel.

ML — ILLINOIAN TILL — 641.5

Gray, clayey silt, some fine to medium sand, trace coarse sand and fine gravel.

35.0 feet, grades to clayey silt and fine to medium sand.

35.7 to 36.3 feet, gray, fine to medium sand, trace silt.

36.3 to 36.5 feet, gray, fine sand and silt.

36.5 to 37.2 feet, gray, fine to medium sand, little coarse sand, trace fine gravel and silt.

37.2 to 38.3 feet, gray, fine to coarse sand, trace silt and fine gravel.

38.3 to 38.5 feet, driller notes hard drilling.

38.5 to 38.7 feet, gray fine to medium sand, little silt.

38.7 to 39.0 feet, gray, fine sand and silt.

39.0 feet, dark gray, clayey silt and fine to medium sand, trace coarse sand and fine gravel.

43.5 feet, light gray, clayey silt, some fine to medium sand, trace coarse sand and fine gravel.

52.5 to 54.0 feet, gray, fine to coarse sand, trace silt and fine gravel.

54.0 feet, gray, clayey silt, some fine to medium sand, trace coarse sand and fine gravel.

BORING COMPLETED AT 56.5 FEET ON 10/8/79.

WATER LEVEL ENCOUNTERED AT 35.7 FEET ON 10/8/79.

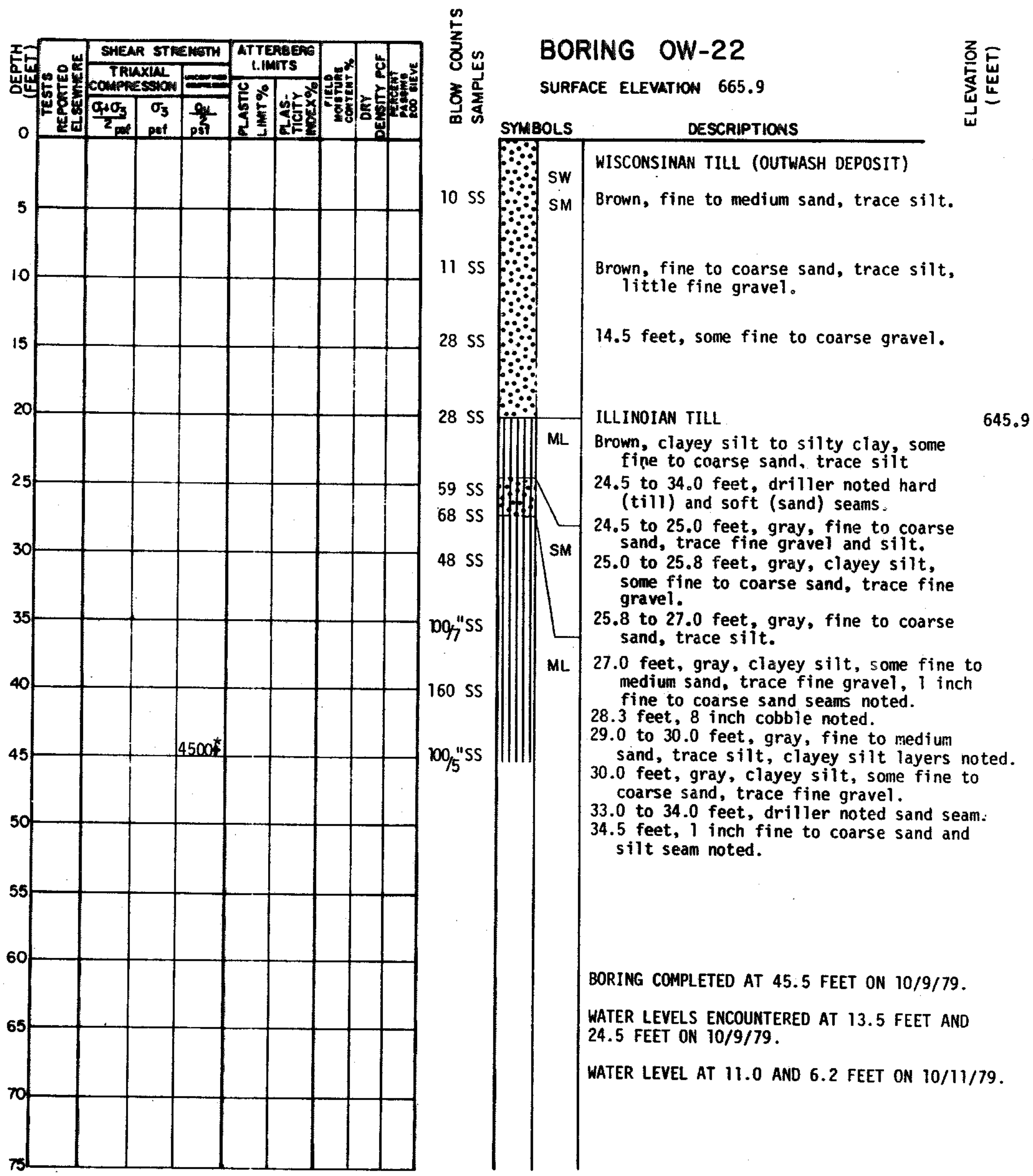
WATER LEVEL AT 6.2 FEET ON 10/11/79.

PIEZOMETER INSTALLED ON 10/8/79. A 2 INCH PVC PIPE WITH A 2 FOOT PRE-SLOTTED SCREEN ATTACHED TO A 7 FOOT PERFORATED LOWER SECTION WITH THE END PLUGGED WAS PLACED AT ELEVATION 615; GRANULAR FILL WAS PLACED FROM ELEVATION 615 TO 665; BENTONITE SEAL FROM ELEVATION 665 TO 657; AND GROUT FROM ELEVATION 667 TO 670.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-442

LOG OF BORING OW-21



TWO PIEZOMETERS (OW-22A AND 22B) WERE INSTALLED IN BORE HOLE ON 10/9/79. OW-22A CONSISTED OF A 2 INCH PVC PIPE WITH A 2 FOOT PRE-SLOTTED SECTION ATTACHED TO A 7 FOOT PERFORATED LOWER SECTION WITH THE END OF THE LOWER SECTION PLUGGED WAS PLACED AT ELEVATION 621.4; GRANULAR FILL WAS PLACED FROM ELEVATION 621.4 TO 642.9; AND A BENTONITE SEAL FROM ELEVATION 642.9 TO 645.9. OW-22B CONSISTED OF A 2 INCH PVC PIPE WITH THE LOWER 7 FEET PERFORATED AND THE LOWER END PLUGGED WAS PLACED AT ELEVATION 645.9; GRANULAR FILL WAS PLACED FROM ELEVATION 645.9 TO 660.4; BENTONITE SEAL FROM ELEVATION 660.4 TO 663.9; AND GROUT FROM ELEVATION 663.9 TO 665.9.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-443

LOG OF BORING OW-22

BORING OW-23

SURFACE ELEVATION 654.5

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH – TRIAXIAL COMPRESSION $\frac{\sigma_1 - \sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS – PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				2750*						9	SS
10				2500*						14	SS
15				4000*						10	SS
20										—	SS
25										92	SS
30				4500+*						100/3"	SS
35				4500+*						120/6"	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	FILL (TYPE A) Brown, silty clay, little fine to medium sand, trace fine gravel and coarse sand. 8.5 feet, grades to brown and gray. 13.5 feet, grades to gray.	
SW - SM	ILLINOIAN TILL Gray, fine to coarse sand and fine gravel, coarse gravel noted, trace silt. 19.5 feet, rock wedged in split spoon. 19.5 to 22.5 feet, driller notes 2 to 6 inch sand seams.	637.5
ML	Dark gray, clayey silt, some fine to medium sand, trace coarse sand and fine gravel. 30.2 feet, coarse gravel in split spoon tip.	

BORING COMPLETED AT 35.0 FEET ON 10/10/79.

WATER LEVEL ENCOUNTERED AT 17.0 FEET ON 10/10/79.

WATER LEVEL AT 3.9 FEET AFTER APPROXIMATELY 10 MINUTES

WATER LEVEL AT 1.0 FOOT ON 10/11/79.

PIEZOMETER INSTALLED ON 10/10/79. A 2 INCH PVC PIPE WITH A 2-FOOT PRE-SLOTTED SECTION ATTACHED TO A 7 FOOT PERFORATED LOWER SECTION WITH THE END PLUGGED WAS PLACED AT ELEVATION 620.0; GRANULAR FILL WAS PLACED FROM ELEVATION 620.0 TO 649.5; BENTONITE SEAL FROM ELEVATION 649.5 TO 651.5; AND GROUT FROM ELEVATION 651.5 TO 654.5.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-444

LOG OF BORING OW-23

BORING OW-24

SURFACE ELEVATION 654.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNT	SAMPLES
5				1500*						4	SS
10				2750*						8	SS
15				1000*						5	SS
				4500+*						19	SS
20										72	SS
										66	SS
25										100/5"	SS
30										85/6"	SS
35										100/6"	SS

SYMBOLS / DESCRIPTIONS / ELEVATION (FEET)

CL — FILL (TYPE A)

Gray, silty clay, little fine to medium sand, trace coarse sand and fine gravel.

8.5 feet, grades to brown.

13.5 feet, pockets of organics noted in tip of spoon.

ML — ILLINOIAN TILL — 643.4

Gray, clayey silt, some fine to medium sand, trace coarse sand and fine gravel.

19.5 feet, gravel noted in spoon.

20.5 to 22.0 feet, gray, fine to medium sand, coarse sand seams noted, trace silt.

22.0 to 22.3 feet, gray, silt.

22.3 to 22.9 feet, gray, clayey silt, some fine to medium sand, trace coarse sand and fine gravel.

SW / SM — 22.9 to 23.1 feet, driller noted sand lense.

24.0 to 24.3 feet, gray, fine to coarse sand, trace silt.

ML — 29.0 to 29.3 feet, gray, fine to coarse sand, some fine gravel, trace coarse gravel and silt.

29.3 to 29.4 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel.

29.4 to 29.6 feet, gray, silt.

29.6 to 30.0 feet, gray, clayey silt, some fine to medium sand.

30.0 to 30.1 feet, gray, fine to coarse sand, trace silt and fine gravel.

30.1 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel.

BORING COMPLETED AT 34.5 FEET ON 10/11/79.

WATER LEVEL ENCOUNTERED AT 20.5 FEET. WATER LEVEL AT 2.4 FEET AFTER APPROXIMATELY 30 MINUTES AND AT 3.2 FEET ABOVE GROUND SURFACE AFTER APPROXIMATELY 4.5 HOURS.

PIEZOMETER INSTALLED ON 10/11/79. A 2 INCH PVC PIPE WITH THE LOWER 13.5 FEET PERFORATED AND THE LOWER END PLUGGED WAS PLACED AT ELEVATION 620.9; GRANULAR FILL WAS PLACED FROM ELEVATION 620.9 TO 649.9; BENTONITE SEAL FROM ELEVATION 649.9 TO 651.9; AND GROUT FROM ELEVATION 651.9 TO 654.9.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-445

LOG OF BORING OW-24

BORING RW-1

SURFACE ELEVATION 658.2

Depth (feet)	Unconfined compression q_u psf	Blow counts / Samples
~4	4500+*	
5		20 SS
10		10 SS
15		17 SS
20	4000*	15 SS
~22.5		53 SS
~24.5		80 SS
25		100/9"SS
~26	4250*	
~29	4500+*	
30		167/11"SS
~34	4500+*	
35		75/½"SS
~39	4500+*	
40		100/7"SS
~44	4500+*	
45		100/6"SS

Column headings: DEPTH (FEET); TESTS REPORTED ELSEWHERE; SHEAR STRENGTH — TRIAXIAL COMPRESSION ($\frac{\sigma_1+\sigma_3}{2}$ psf, σ_3 psf), UNCONFINED COMPRESSION (q_u psf); ATTERBERG LIMITS (PLASTIC LIMIT %, PLASTICITY INDEX %); FIELD MOISTURE CONTENT %; DRY DENSITY PCF; PERCENT PASSING 200 SIEVE; BLOW COUNTS SAMPLES; SYMBOLS; DESCRIPTIONS; ELEVATION (FEET)

Symbol	Descriptions	Elevation (feet)
SM	SLOPEWASH Brown, fine sand and silt, very loose, dry.	
CL	FILL (TYPE A) Gray, silty clay, some fine to coarse sand, trace fine gravel. 12.5 feet, 4 inch cobble noted. 13.5 feet, grades to brown. 18.5 feet, grades to gray.	656.7
ML	ILLINOIAN TILL Gray, clayey silt and fine to medium sand, trace coarse sand and fine gravel.	636.7
SW SM	Gray, fine to medium sand, little coarse sand, trace silt. 25.0 to 25.4 feet, gray fine to coarse sand, trace silt.	
ML	25.4 feet, 4 inch, silt and fine sand seam. 25.7 feet, 4 inch seam of gray clayey silt and fine to medium sand, trace fine gravel. 26.0 feet, 2 inch seam of gray, fine sand, some silt. 26.2 feet, cobble noted. Gray, clayey silt, some fine to medium sand, trace fine gravel and coarse sand. 34.0 feet, cobble noted.	

BORING COMPLETED AT 44.0 FEET

ON 10/1/79.

WATER LEVEL ENCOUNTERED AT 24.0 FEET ON 10/1/79.

WATER LEVEL AT 1.3 FEET ABOVE GROUND SURFACE

ON 10/11/79.

PIEZOMETER INSTALLED ON 10/2/79. A 2 INCH PVC PIPE WITH A 4 FOOT WIRE-WOUND SCREENED SECTION ATTACHED 10 FEET ABOVE THE BOTTOM AND THE LOWER END OF THE PIPE PLUGGED WAS PLACED AT ELEVATION 614.7; GRANULAR BACKFILL WAS PLACED FROM ELEVATION 614.7 TO 655.2; BENTONITE SEAL FROM ELEVATION 655.2 TO 657.2; AND GROUT FROM ELEVATION 657.2 TO 658.2.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-446

LOG OF BORING RW-1

BORING RW-2

SURFACE ELEVATION 656.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
				1500*							
				3500*						9	SS
				3500*						12	SS
				4500+*						14	SS
				4500+*						18	SS
										14	SS
										156	SS
				4500+*						100	SS
										150/10"	SS
				4500+*						100/10"	SS
										100/9"	SS

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	FILL (TYPE A)	
CL	Gray, silty clay, some fine to coarse sand, trace fine gravel.	
ML	Brown, clayey silt and fine to medium sand, trace coarse sand and fine gravel.	
	18.0 feet, 2 inches of coarse gravel noted.	
	18.5 feet, grades to gray.	
	20.0 feet, driller notes easy drilling.	
	ILLINOIAN TILL	635.4
ML	Light gray, clayey silt and fine to coarse sand, trace fine gravel.	
	22.3 feet, 3 inch gravel layer noted.	
	22.5 feet, gray fine to medium sand, trace silt.	
SW	23.3 feet, gray fine sand and silt.	
SM	23.7 feet, 1 inch seam, gray, fine to medium sand.	
to	23.8 feet. gray fine sand and silt.	
SM	24.0 feet, gray clayey silt and fine to medium sand, trace coarse sand and fine gravel	
ML	28.5 feet, dark gray, clayey silt, some fine to medium sand, trace coarse sand and fine gravel.	

BORING COMPLETED AT 44.8 FEET. ON 10/2/79.
WATER LEVEL ENCOUNTERED AT 22.3 FEET ON 10/2/79.
WATER LEVEL AT 2.4 FEET ABOVE GROUND SURFACE ON 10/11/79.

PIEZOMETER INSTALLED ON 10/2/79. A 2 INCH PVC PIPE WITH A 4 FOOT WIRE-WOUND SCREENED SECTION ATTACHED 1o FEET ABOVE THE BOTTOM AND THE LOWER END OF THE PIPE PLUGGED AT ELEVATION 613.4; GRANULAR BACKFILL WAS PLACED FROM ELEVATION 613.4 TO 653.9; BENTONITE SEAL FROM ELEVATION 653.9 TO 655.9; AND GROUT FROM ELEVATION 655.9 TO 656.9.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-447

LOG OF BORING RW-2

BORING RW-3

SURFACE ELEVATION 655.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5				2500*						7	SS
10										12	SS
15				2750* 2000*						9	SS
20				4500*+						15	SS
										101	SS
25				4500*+						172	SS
30				4500*+						125	SS
35				4500*+						100/6"	SS
40				4500*+						100/7"	SS
45				4500*+						141	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
ML CL	Dark gray, clayey silt to silt.	
	8.5 feet, brown, silty clay mixed with dark gray, clayey silt.	
CL	Gray, silty clay, some fine to medium sand, trace coarse sand and fine gravel.	
SC	Brown, clayey fine to medium sand, trace coarse sand.	
ML	ILLINOIAN TILL	637.0
	Gray, fine to medium sand and clayey silt.	
SM	19.8 feet, gray, clayey silt, some fine to medium sand, trace coarse sand and fine gravel.	
ML	21.0 to 21.3 feet, fine to coarse gravel noted by driller.	
SM to SW - SM	21.3 feet, gray, fine sand and silt.	
	22.0 feet, gray, fine to medium sand, little silt.	
	22.5 feet, gray, fine sand and silt.	
	22.7 feet, gray, fine to medium sand and silt, little coarse sand, trace fine gravel.	
	23.9 feet, gray, fine to medium sand, little coarse sand, trace fine gravel and silt.	
	24.5 feet, gray, fine sand and silt.	
	24.8 feet, gray, clayey silt, some fine to medium sand, trace fine gravel and coarse sand.	
ML	32.0 feet, driller noted 6 inch sand seam.	

BORING COMPLETED AT 45.0 FEET ON 10/3/79.
WATER LEVEL ENCOUNTERED AT 21.0 FEET ON 10/3/79.
WATER LEVEL AT 2.8 FEET ABOVE SURFACE ON 10/11/79.

PIEZOMETER INSTALLED ON 10/3/79. A 2 INCH PVC PIPE WITH A 4 FOOT WIRE-WOUND SCREENED SECTION ATTACHED 10 FEET ABOVE THE BOTTOM AND THE LOWER END OF THE PIPE PLUGGED WAS PLACED AT ELEVATION 612.3.; GRANULAR BACKFILL WAS PLACED FROM ELEVATION 612.3 TO 652.8; BENTONITE SEAL FROM ELEVATION 652.8 TO 654.8; AND GROUT FROM ELEVATION 654.8 TO 655.8.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-448

LOG OF BORING RW-3

BORING RW-4

SURFACE ELEVATION 659.9

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5										15	SS
10				3500*						12	SS
15										13	SS
20				4000 / 4500 $\frac{*}{+}$						25	SS
25				4500 $\frac{*}{+}$						69	SS
27										180	SS
35										115	SS
40										107/6"	SS
45										100/6"	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	Gray, silty clay, some fine to medium sand, trace fine gravel and coarse sand.	
	9.8 feet, sandy seam noted.	
	14.0 feet, grades to brown.	
	18.5 feet, grades to gray. ILLINOIAN TILL	640.4
ML	24.5 feet, coarse gravel fragment noted.	
	26.0 feet, driller notes easier drilling.	
	27.0 feet, gray, silt and fine sand.	
SM	27.5 feet, gray, fine to coarse sand, trace fine gravel and silt.	
	28.0 feet, gray, clayey silt and fine to coarse sand, trace fine gravel.	
ML	33.5 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel.	
	36.0 feet, 6 inch sand seam noted by driller.	

BORING COMPLETED AT 44.0 FEET ON 10/4/79.

WATER LEVEL ENCOUNTERED AT 26.0 FEET ON 10/4/79.

WATER LEVEL AT 0.4 FEET ON 10/11/79.

PIEZOMETER INSTALLED ON 10/4/79. A 2 INCH PVC PIPE WITH A 4 FOOT WIRE-WOUND SCREENED SECTION ATTACHED 10 FEET ABOVE THE BOTTOM AND THE LOWER END OF THE PIPE PLUGGED WAS PLACED AT ELEVATION 616.4; GRANULAR BACK-FILL WAS PLACED FROM ELEVATION 616.4 TO 656.9; BENTONITE SEAL FROM ELEVATION 658.9 TO 658.9; AND GROUT FROM ELEVATION 658.9 TO 659.9.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-449

LOG OF BORING RW-4

BORING RW-5

SURFACE ELEVATION 662.8

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
5										17	SS
10				3000 *						11	SS
15										12	SS
20				1500 *						9	SS
25				4500+ *						28	SS
30										108	SS
30				4500+ *						110/6"	SS
35				4500+ *						152	
40				4500+ *						100/8"	SS
45				4500+ *						100/7"	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	FILL (TYPE A)	
	Gray and brown, silty clay, some fine to medium sand, trace coarse sand and fine gravel.	
	17.0 feet, driller noted easy drilling.	
ML	ILLINOIAN TILL	641.3
	Light gray, clayey silt to silty clay, some fine to coarse sand, trace fine gravel.	
SM	28.0 feet, gray, fine to medium sand, trace silt, driller noted gravel just above sample.	
	29.0 to 29.2 feet, gray, silt and fine sand.	
	29.2 to 30.3 feet, gray, fine to medium sand, trace silt.	
	30.3 to 30.8 feet, gray, fine to coarse sand trace silt.	
ML	30.8 feet, gray, clayey silt, some fine to coarse sand, trace fine gravel.	
	33.5 feet, grades to trace coarse sand and fine gravel.	

BORING COMPLETED AT 44.1 FEET ON 10/5/79.

WATER LEVEL ENCOUNTERED AT 28.0 FEET ON 10/5/79.

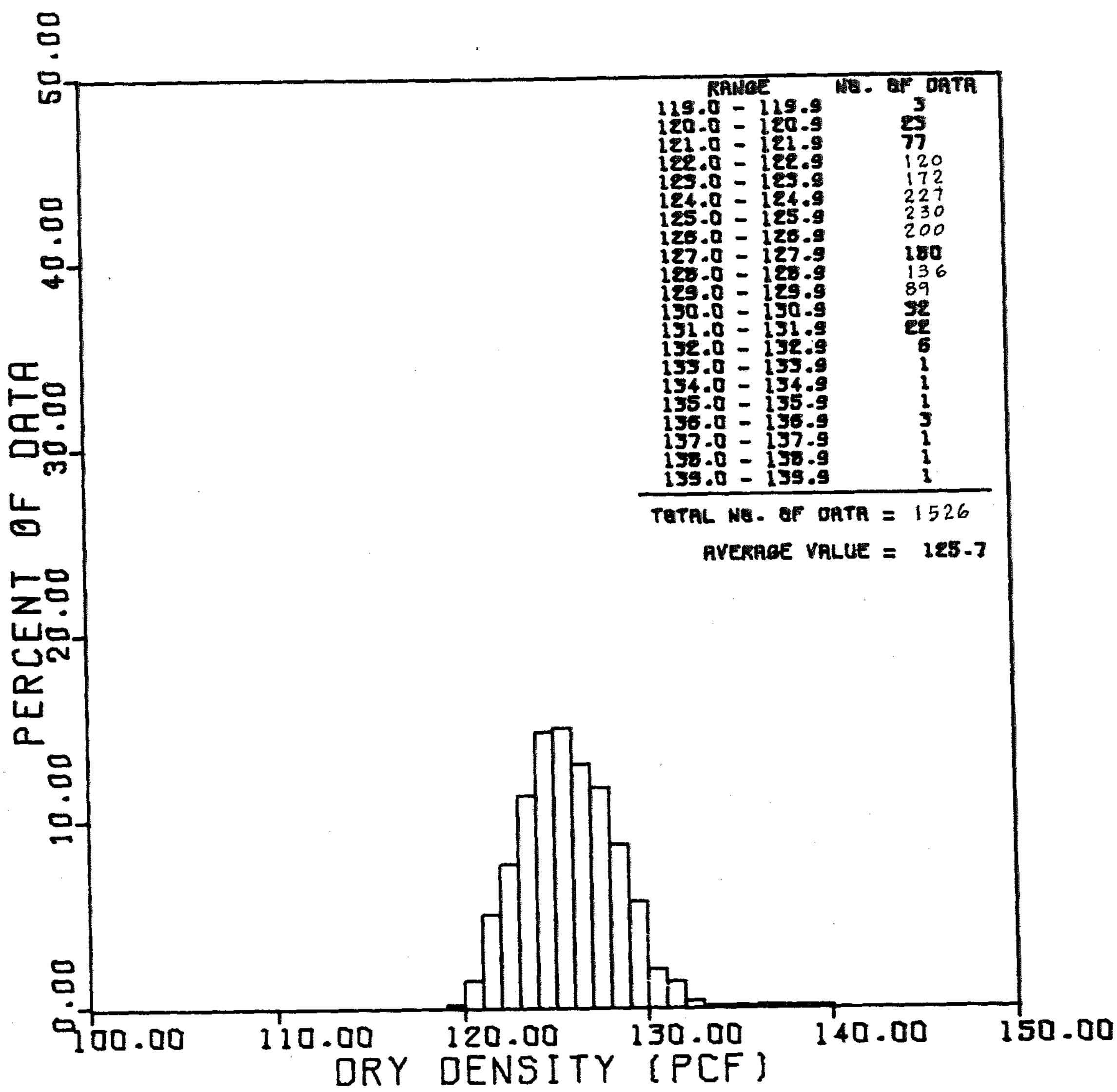
WATER LEVEL AT 3.2 FEET ON 10/11/79.

PIEZOMETER INSTALLED ON 10/5/79. A 2 INCH PVC PIPE WITH A 4 FOOT WIRE-WOUND SCREENED SECTION ATTACHED 10 FEET ABOVE THE BOTTOM AND THE LOWER END OF THE PIPE PLUGGED WAS PLACED AT ELEVATION 619.3; GRANULAR BACK-FILL WAS PLACED FROM ELEVATION 619.3 TO 659.8; BENTONITE SEAL FROM ELEVATION 659.8 TO 661.8; AND GROUT FROM ELEVATION 661.8 TO 662.8.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

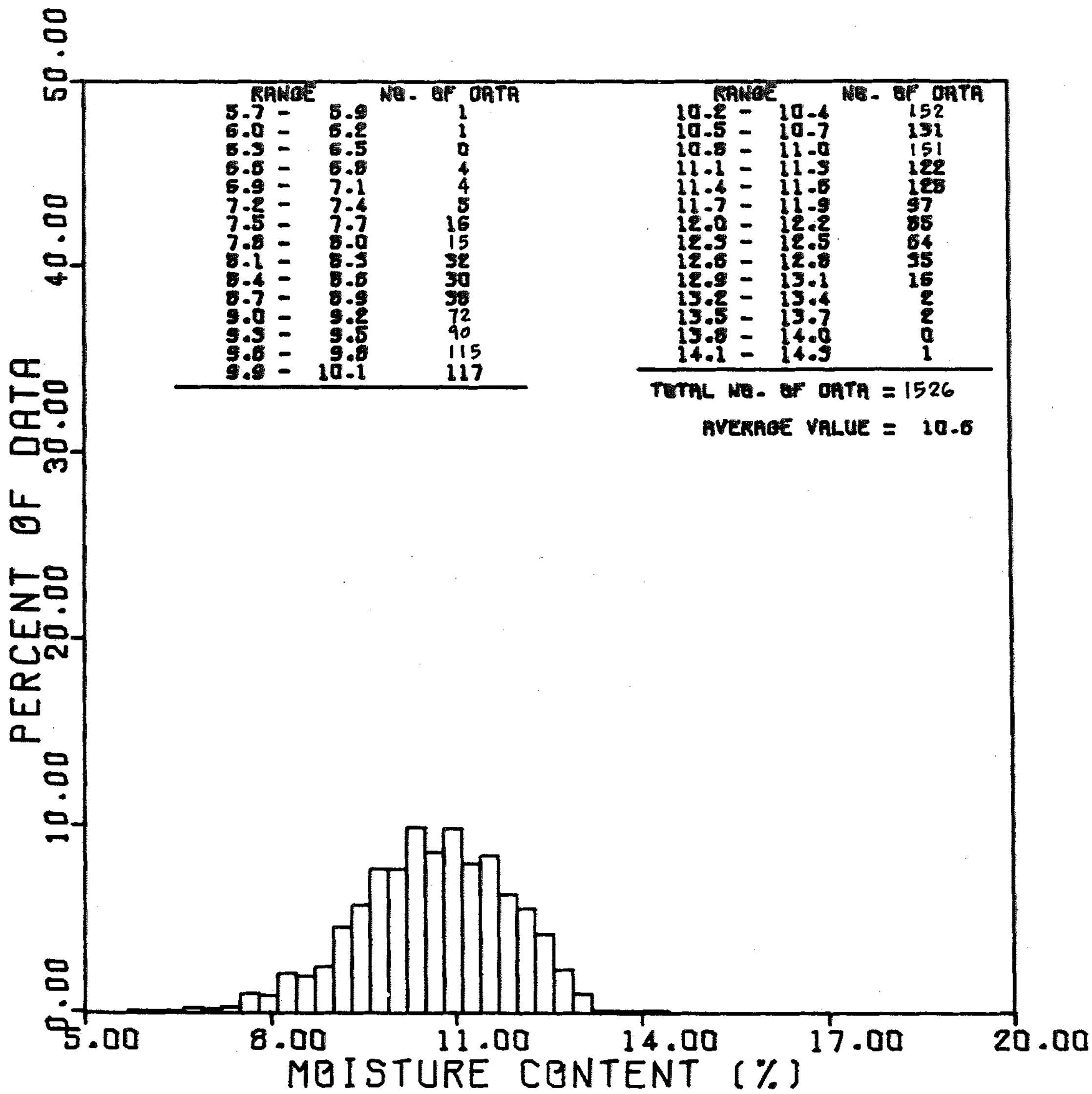
FIGURE 2.5-450

LOG OF BORING RW-5



CLINTON STATION IN-PLACE TEST
SUBMERGED DAM
ELEVATION FROM 645.0 TO 673.99

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-451 UHS DAM TYPE A COHESIVE FILL DISTRIBUTION OF DRY DENSITY

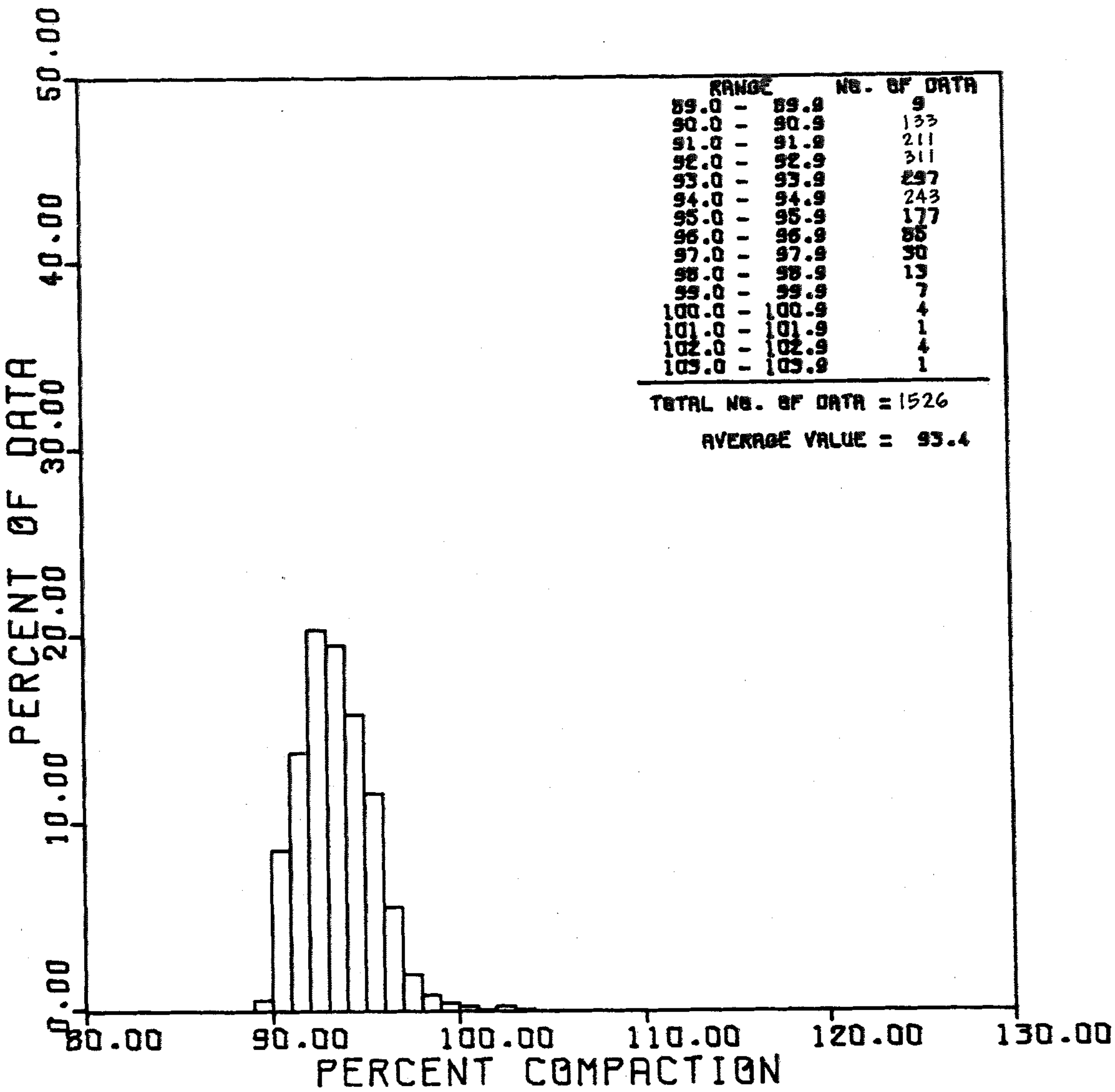


CLINTON STATION IN-PLACE TEST
SUBMERGED DAM
ELEVATION FROM 645.0 TO 673.99

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-452

UHS DAM TYPE A COHESIVE FILL
DISTRIBUTION OF MOISTURE CONTENT

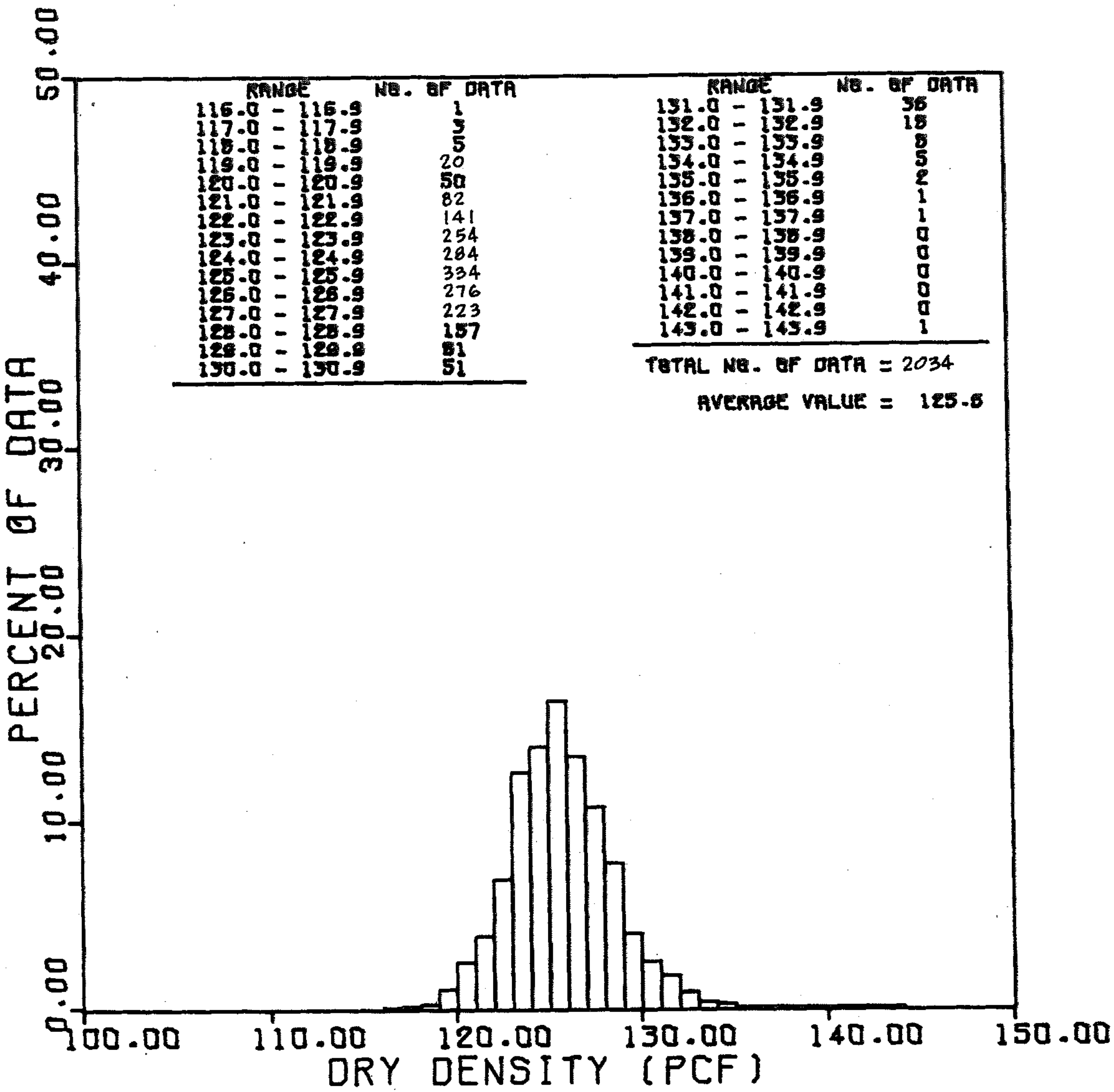


CLINTON STATION IN-PLACE TEST
SUBMERGED DAM
ELEVATION FROM 645.0 TO 673.99

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

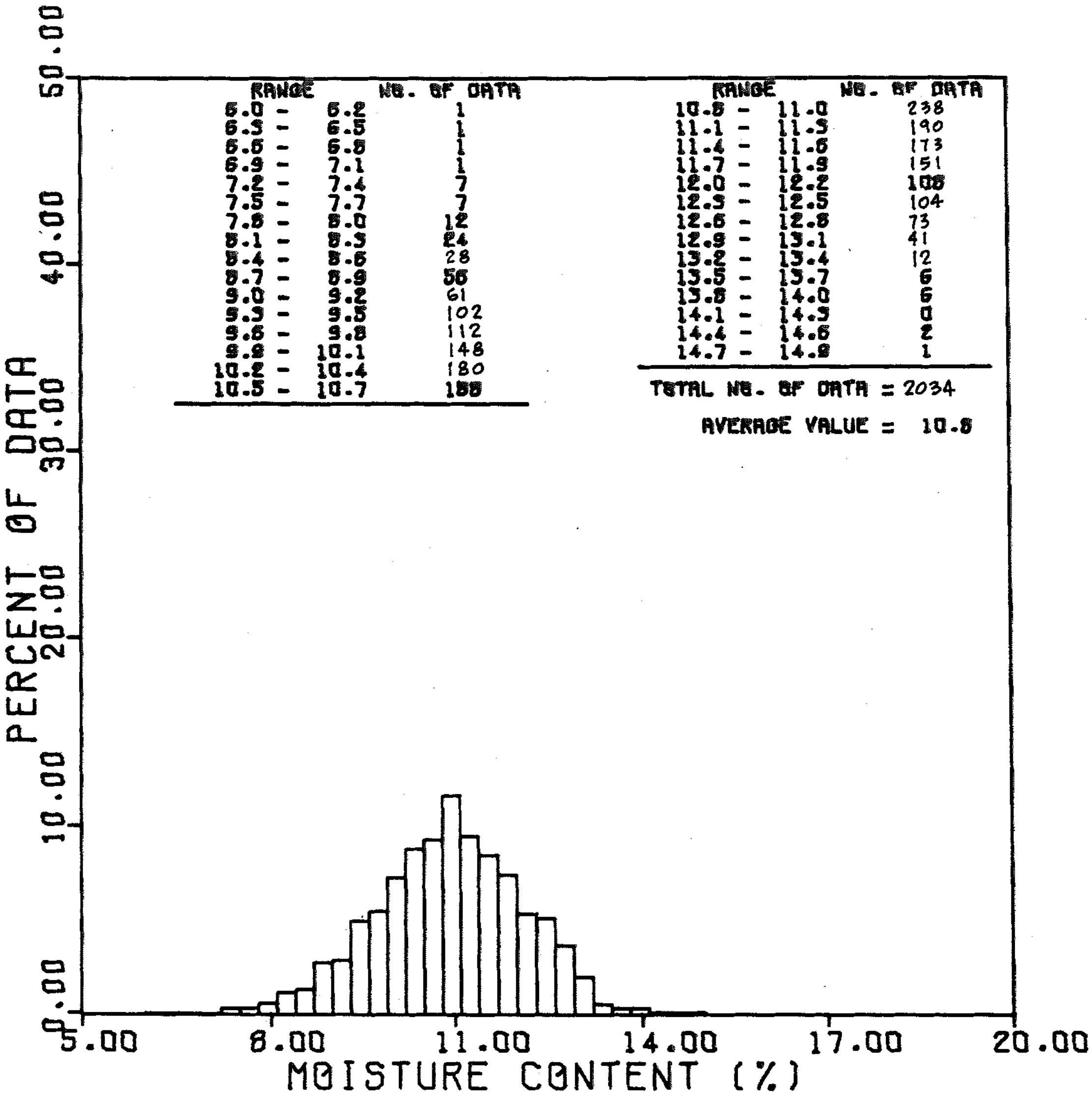
FIGURE 2.5-453

UHS DAM TYPE A COHESIVE FILL
DISTRIBUTION OF PERCENT COMPACTION



CLINTON STATION IN-PLACE TEST
BAFFLE DIKE
ELEVATION FROM 649.0 TO 699.99

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-454 UHS BAFFLE DIKE TYPE A COHESIVE FILL DISTRIBUTION OF DRY DENSITY



RANGE	NO. OF DATA
6.0 - 6.2	1
6.3 - 6.5	1
6.6 - 6.8	1
6.9 - 7.1	1
7.2 - 7.4	7
7.5 - 7.7	7
7.8 - 8.0	12
8.1 - 8.3	24
8.4 - 8.6	28
8.7 - 8.9	56
9.0 - 9.2	61
9.3 - 9.5	102
9.6 - 9.8	112
9.9 - 10.1	148
10.2 - 10.4	180
10.5 - 10.7	188

RANGE	NO. OF DATA
10.8 - 11.0	238
11.1 - 11.3	190
11.4 - 11.6	173
11.7 - 11.9	151
12.0 - 12.2	108
12.3 - 12.5	104
12.6 - 12.8	73
12.9 - 13.1	41
13.2 - 13.4	12
13.5 - 13.7	6
13.8 - 14.0	6
14.1 - 14.3	0
14.4 - 14.6	2
14.7 - 14.9	1

TOTAL NO. OF DATA = 2034

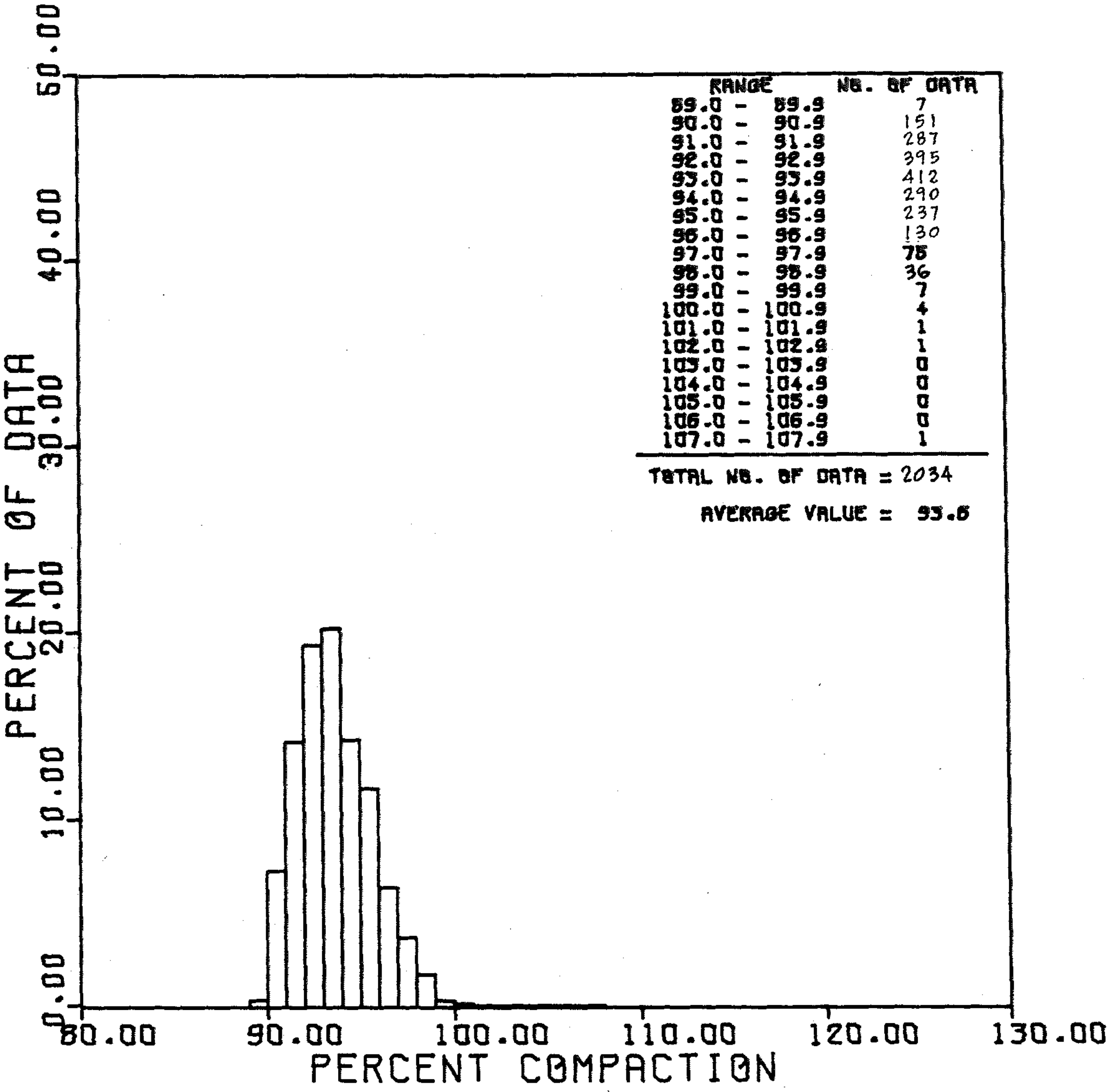
AVERAGE VALUE = 10.8

CLINTON STATION IN-PLACE TEST
BAFFLE DIKE
ELEVATION FROM 649.0 TO 699.99

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-455

UHS BAFFLE DIKE TYPE A
COHESIVE FILL DISTRIBUTION
OF MOISTURE CONTENT

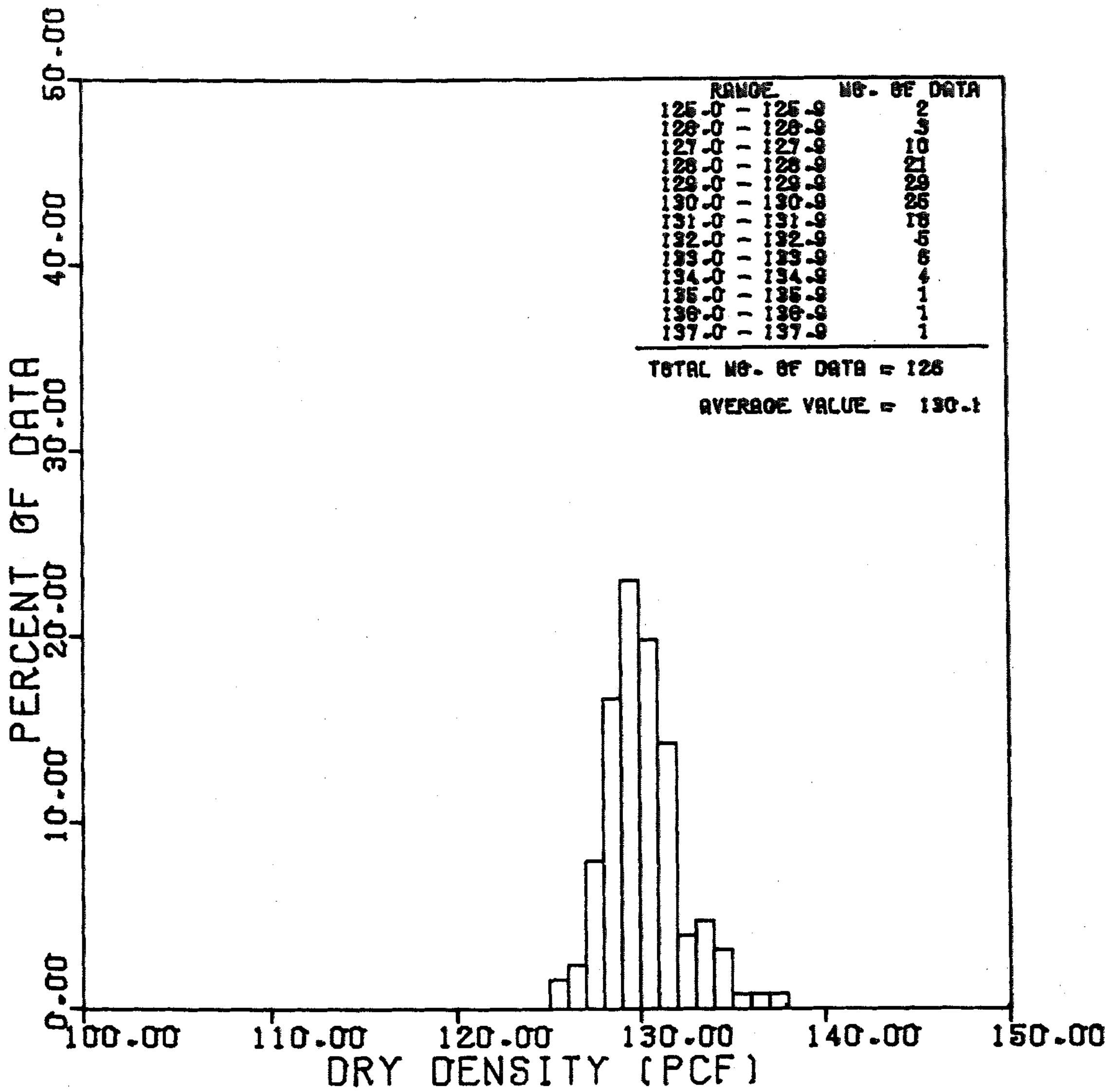


CLINTON STATION IN-PLACE TEST
BAFFLE DIKE
ELEVATION FROM 649.0 TO 699.99

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

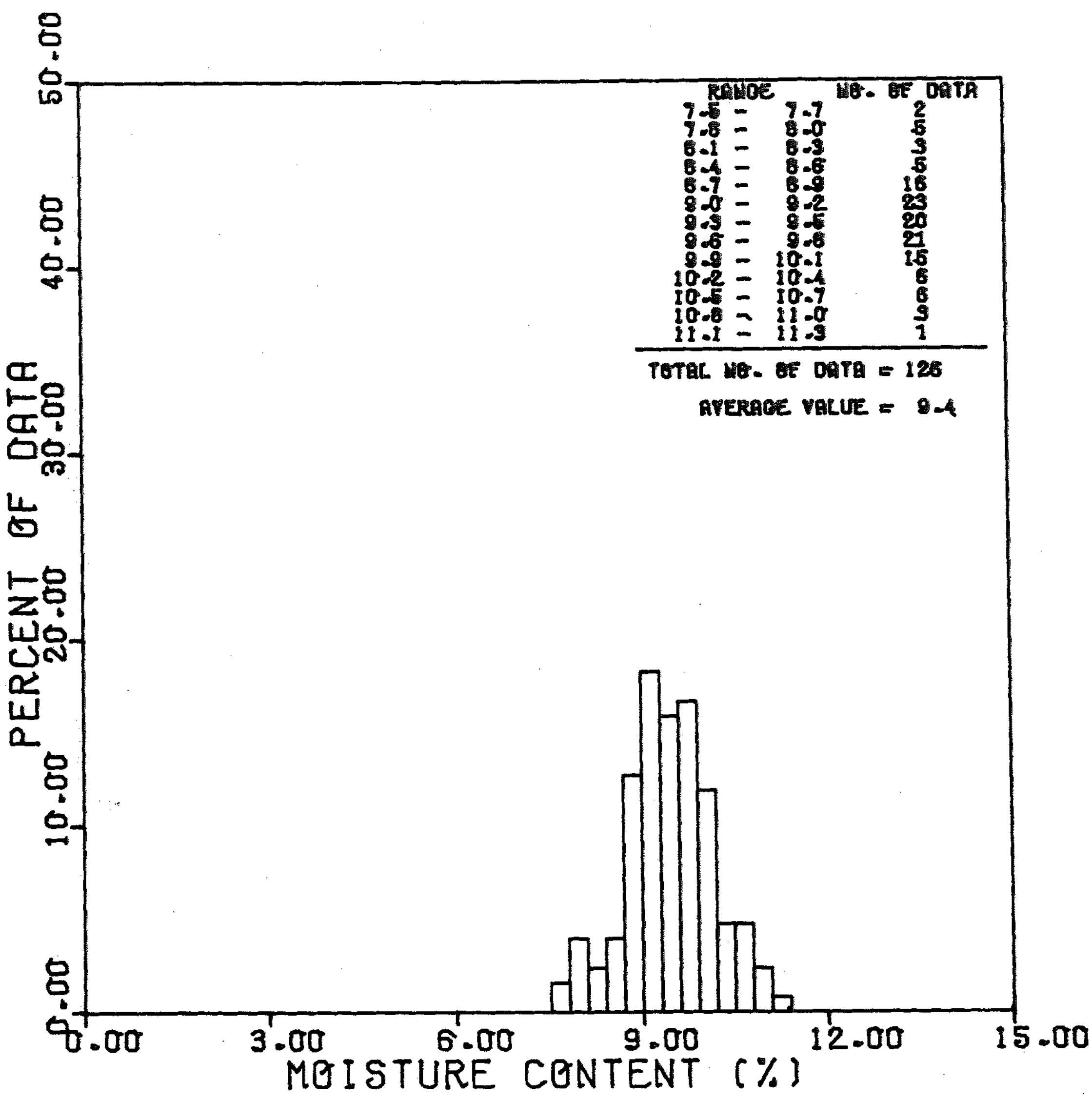
FIGURE 2.5-456

UHS BAFFLE DIKE TYPE A
COHESIVE FILL DISTRIBUTION
OF PERCENT COMPACTION



CLINTON STATION IN-PLACE TEST
BAFFLE DIKE - SOIL CEMENT
ELEVATION FROM 673.0 TO 676.99

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-457 UHS BAFFLE DIKE SOIL CEMENT SLOPE PROTECTION DISTRIBUTION OF DRY DENSITY

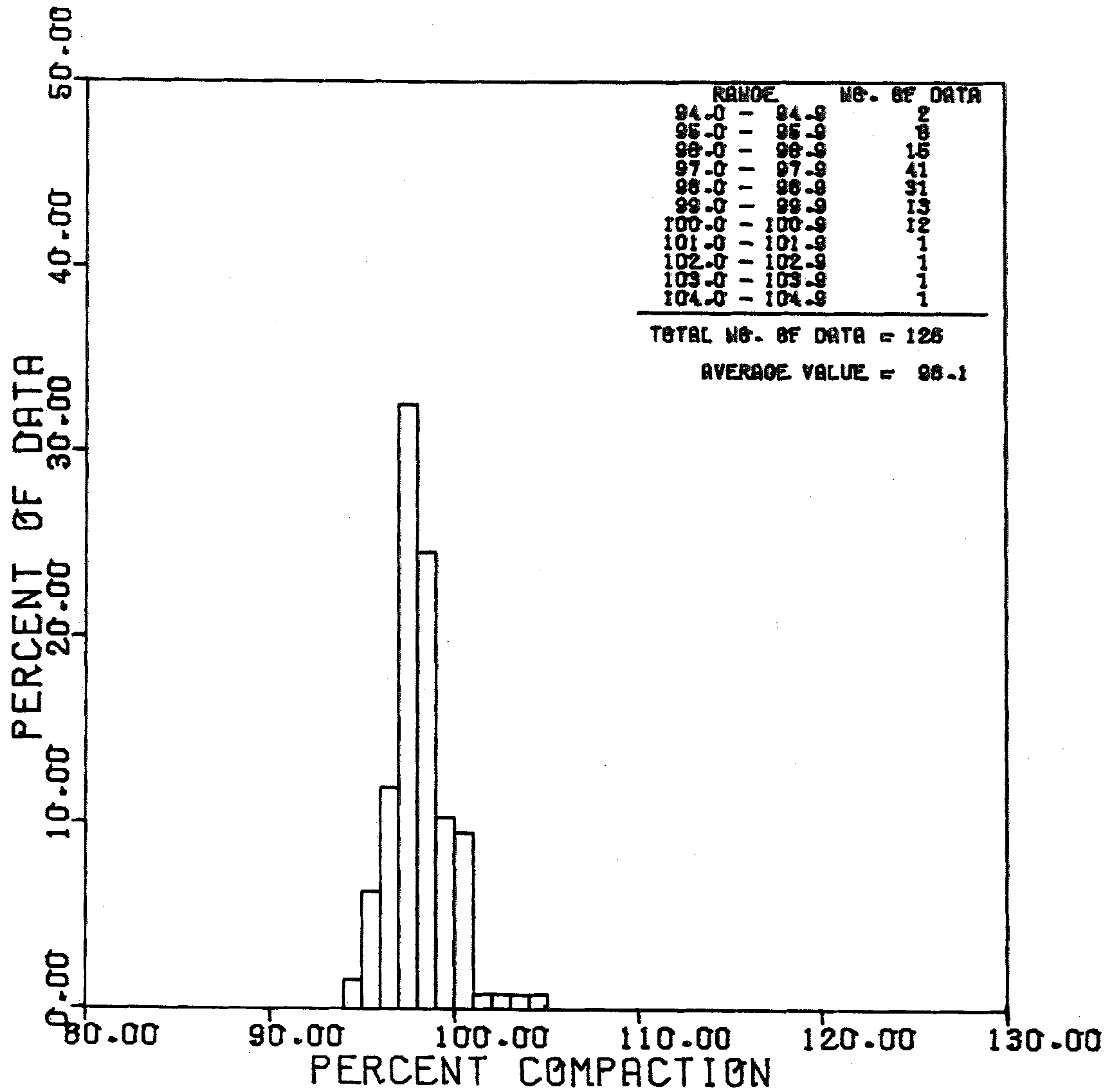


CLINTON STATION IN-PLACE TEST
BAFFLE DIKE - SOIL CEMENT
ELEVATION FROM 673.0 TO 676.99

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

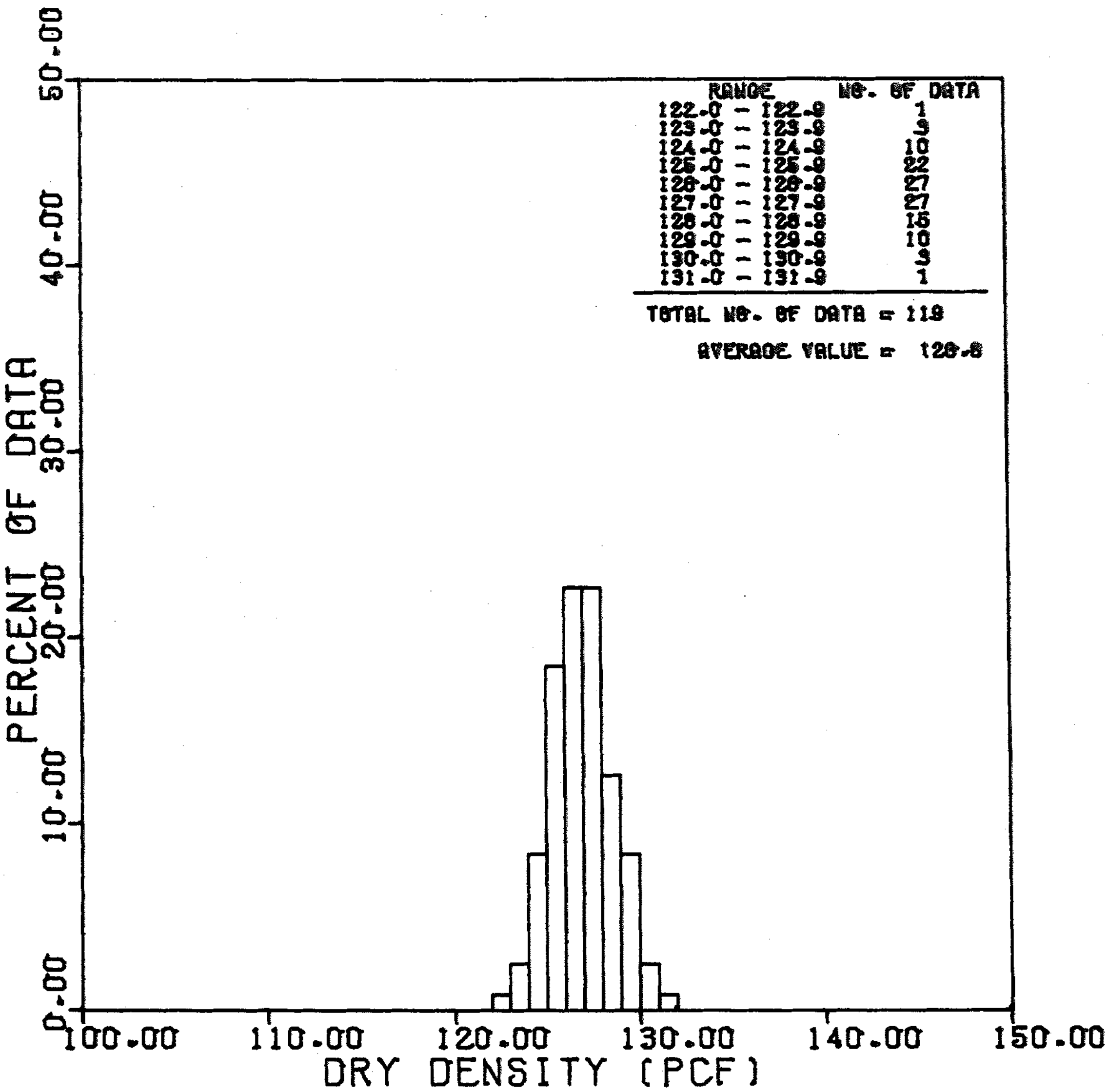
FIGURE 2.5-458

UHS BAFFLE DIKE SOIL CEMENT
SLOPE PROTECTION DISTRIBUTION
OF MOISTURE CONTENT



CLINTON STATION IN-PLACE TEST
BAFFLE DIKE - SOIL CEMENT
ELEVATION FROM 673.0 TO 676.99

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-459 UHS BAFFLE DIKE SOIL CEMENT SLOPE PROTECTION DISTRIBUTION OF PERCENT COMPACTION



CLINTON STATION IN-PLACE TEST
SOUTH DAM USDSCR-SOIL CEMENT
ELEVATION FROM 649.0 TO 697.99

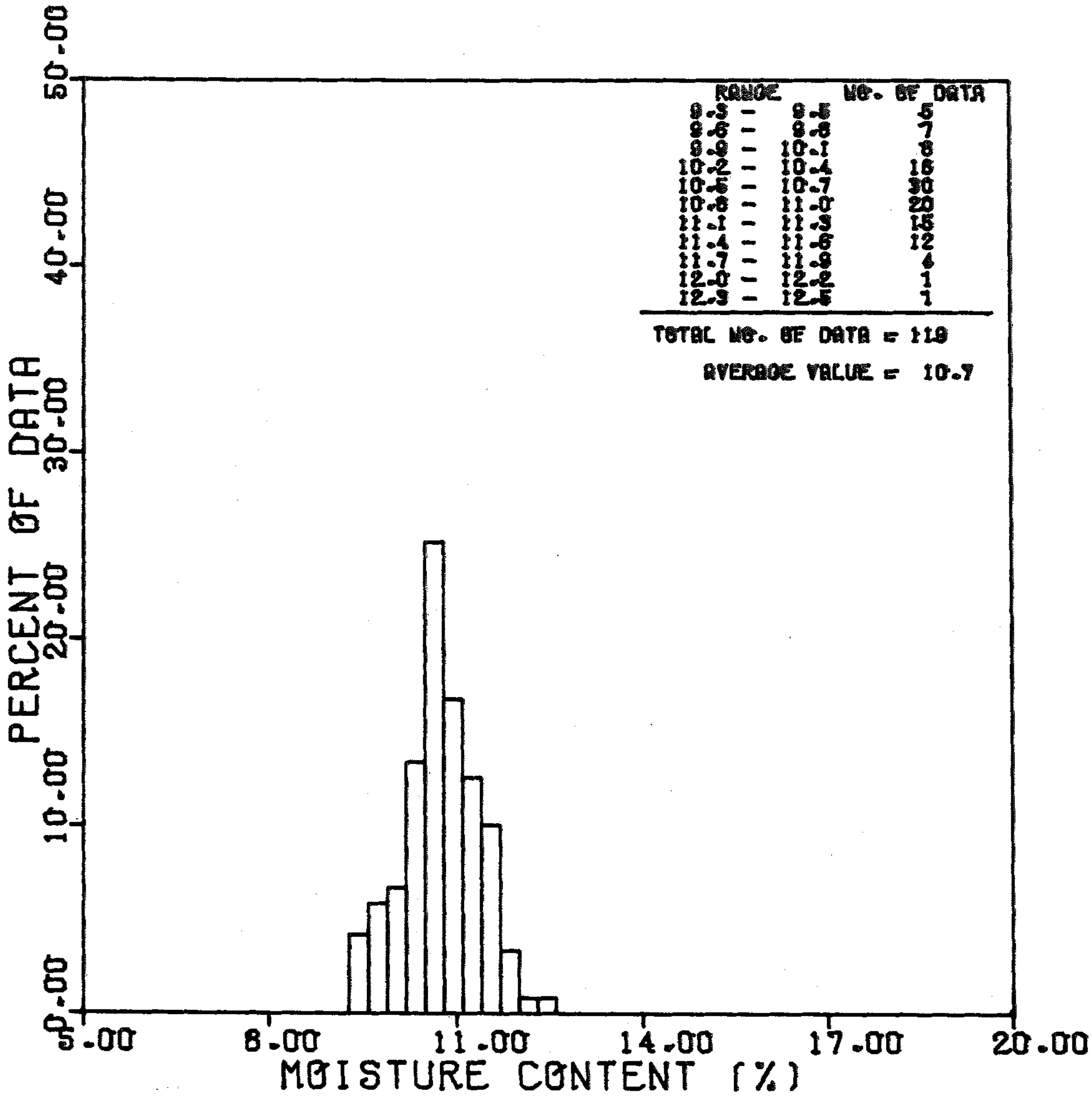
NOTE:

ONLY TESTS FOR THE UPSTREAM FACE, CREST AND DOWNSTREAM SLOPE ARE INCLUDED IN THIS ANALYSIS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-460

UHS DAM SOIL CEMENT SLOPE PROTECTION DISTRIBUTION OF DRY DENSITY

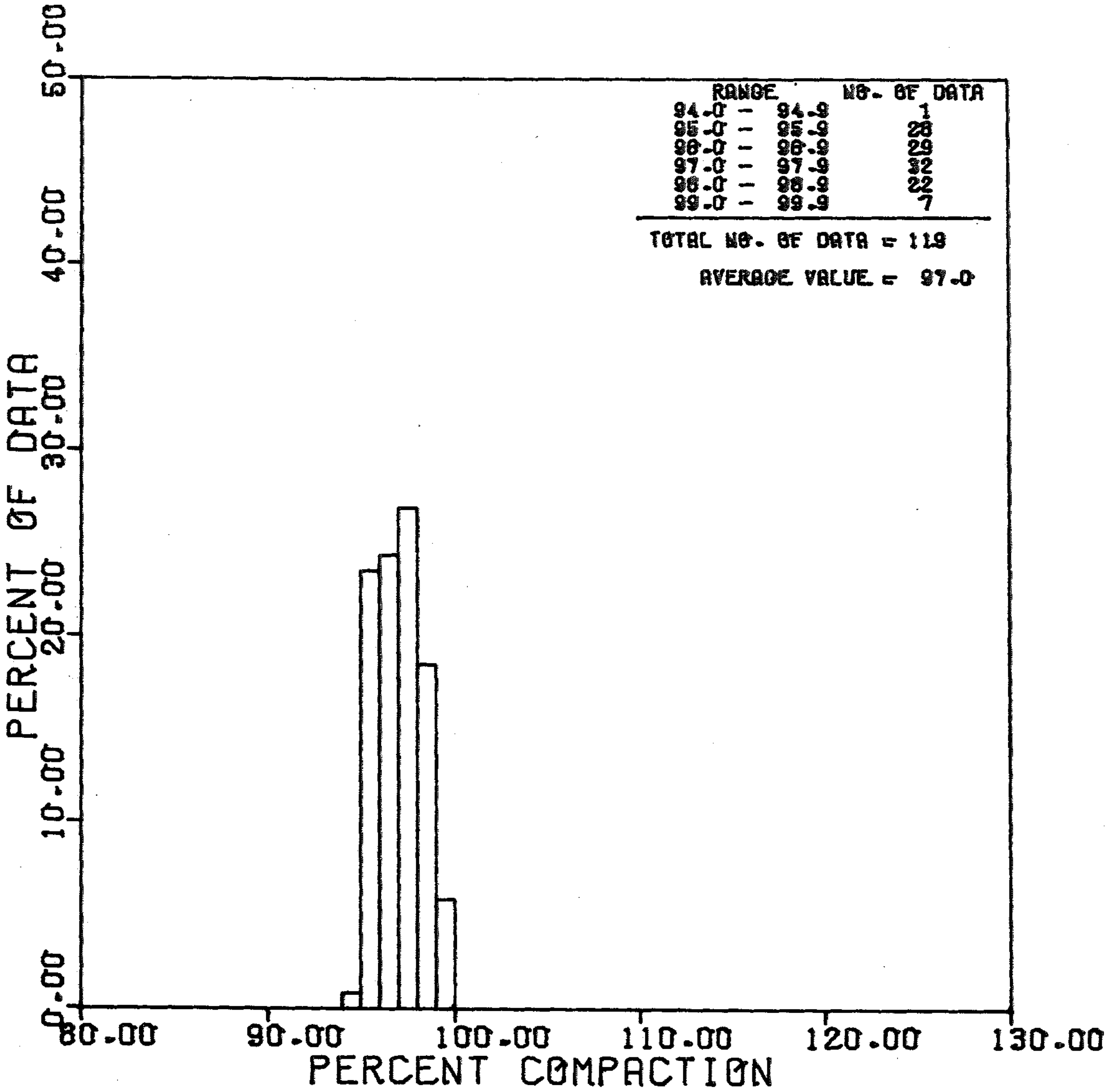


CLINTON STATION IN-PLACE TEST
SOUTH DAM USDSCR-SOIL CEMENT
ELEVATION FROM 649.0 TO 697.99

NOTE:

ONLY TESTS FOR THE UPSTREAM FACE, CREST AND DOWNSTREAM SLOPE ARE INCLUDED IN THIS ANALYSIS.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-461 UHS DAM SOIL CEMENT SLOPE PROTECTION DISTRIBUTION OF MOISTURE CONTENT

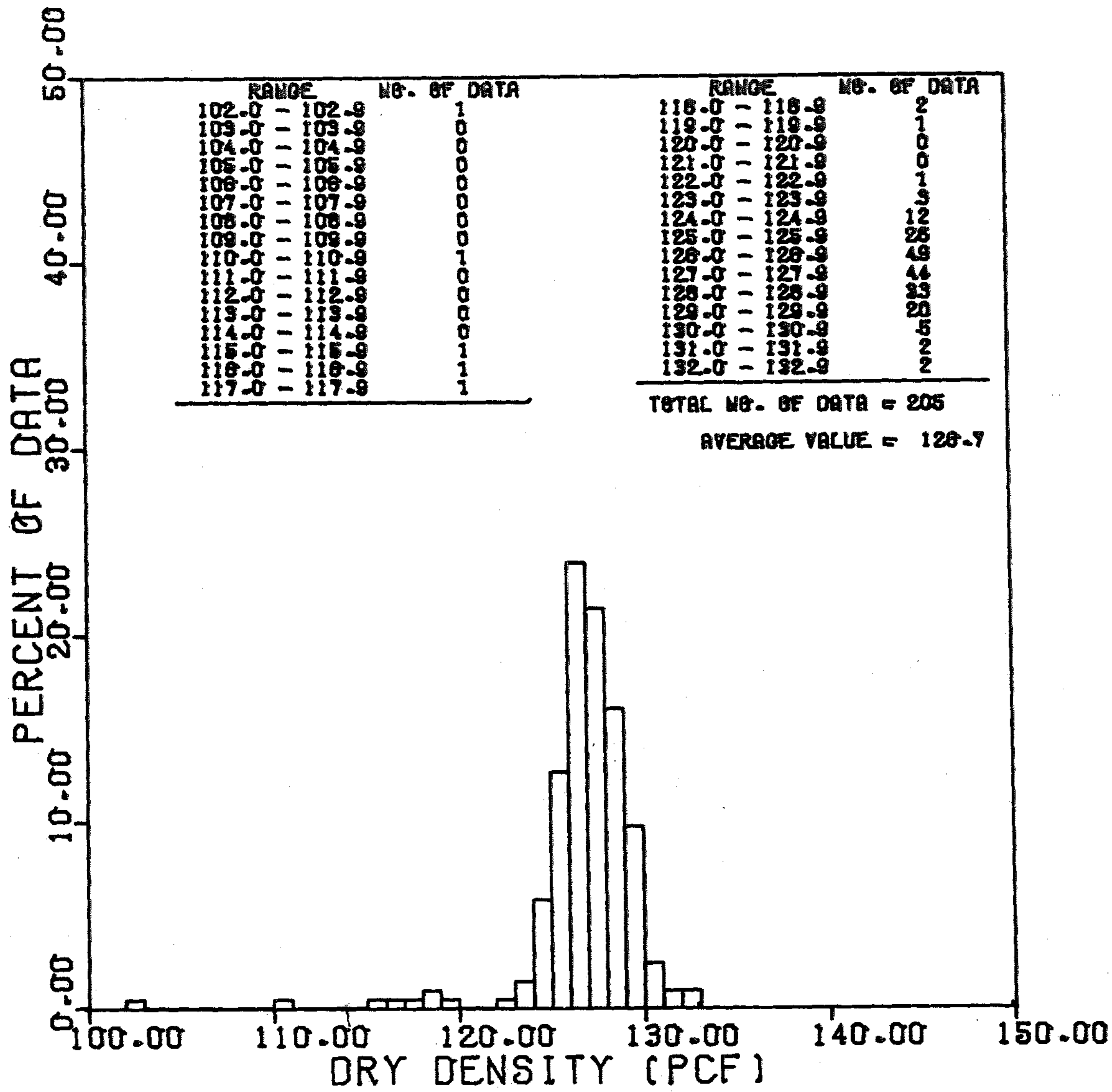


CLINTON STATION IN-PLACE TEST
SOUTH DAM USDSCR-SOIL CEMENT
ELEVATION FROM 649.0 TO 697.99

NOTE:

ONLY TESTS FOR THE UPSTREAM FACE, CREST AND DOWNSTREAM SLOPE ARE INCLUDED IN THIS ANALYSIS.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-462 UHS DAM SOIL CEMENT SLOPE PROTECTION DISTRIBUTION OF PERCENT COMPACTION



CLINTON STATION IN-PLACE TEST
SOUTH DAM - SOIL CEMENT
ELEVATION FROM 649.0 TO 697.99

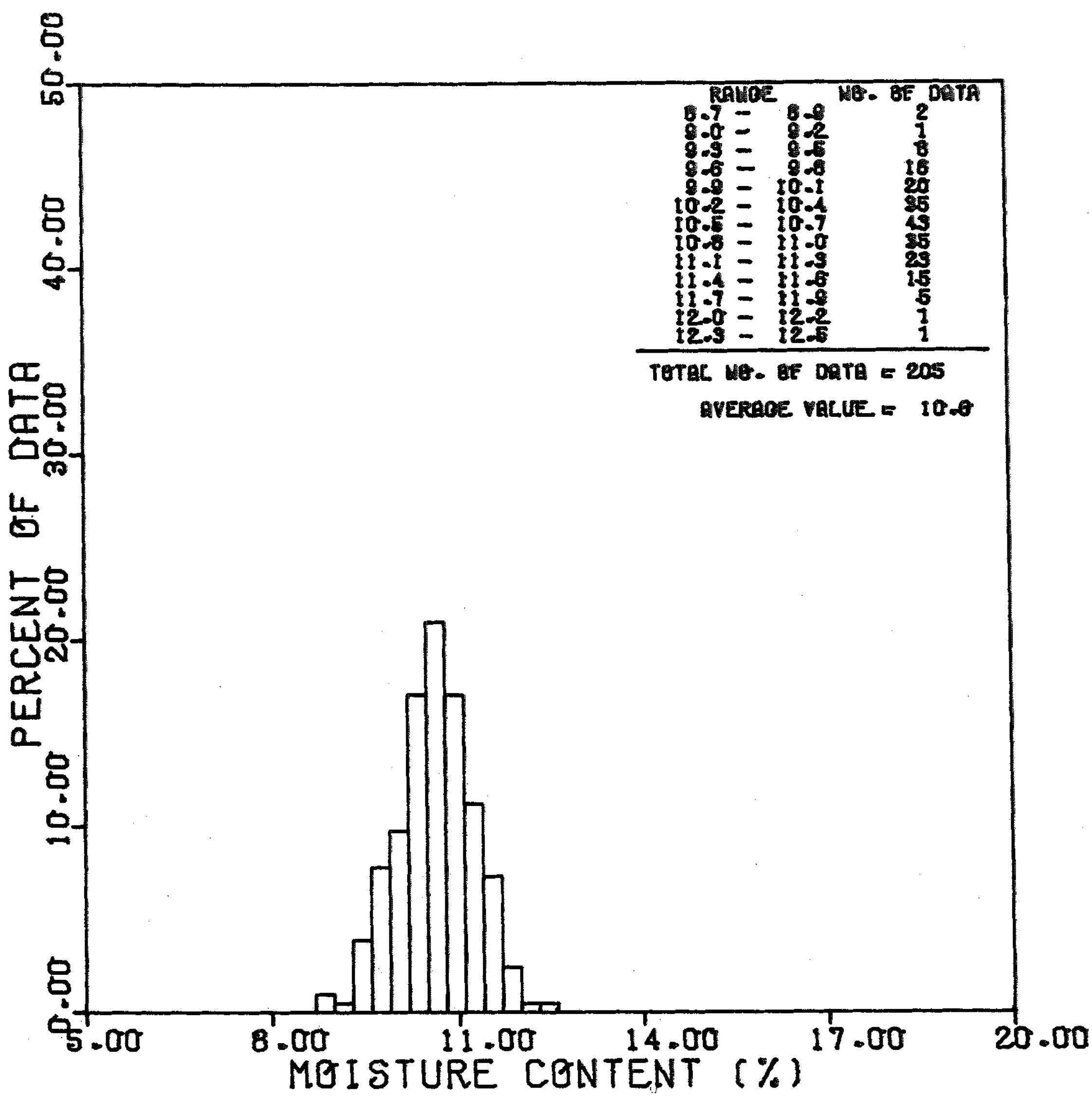
NOTE:

TESTS FOR ALL AREAS, INCLUDING THE ABUTMENTS AND DOWNSTREAM FLAT AREA, ARE INCLUDED IN THIS ANALYSIS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-463

UHS DAM SOIL CEMENT SLOPE PROTECTION DISTRIBUTION OF DRY DENSITY

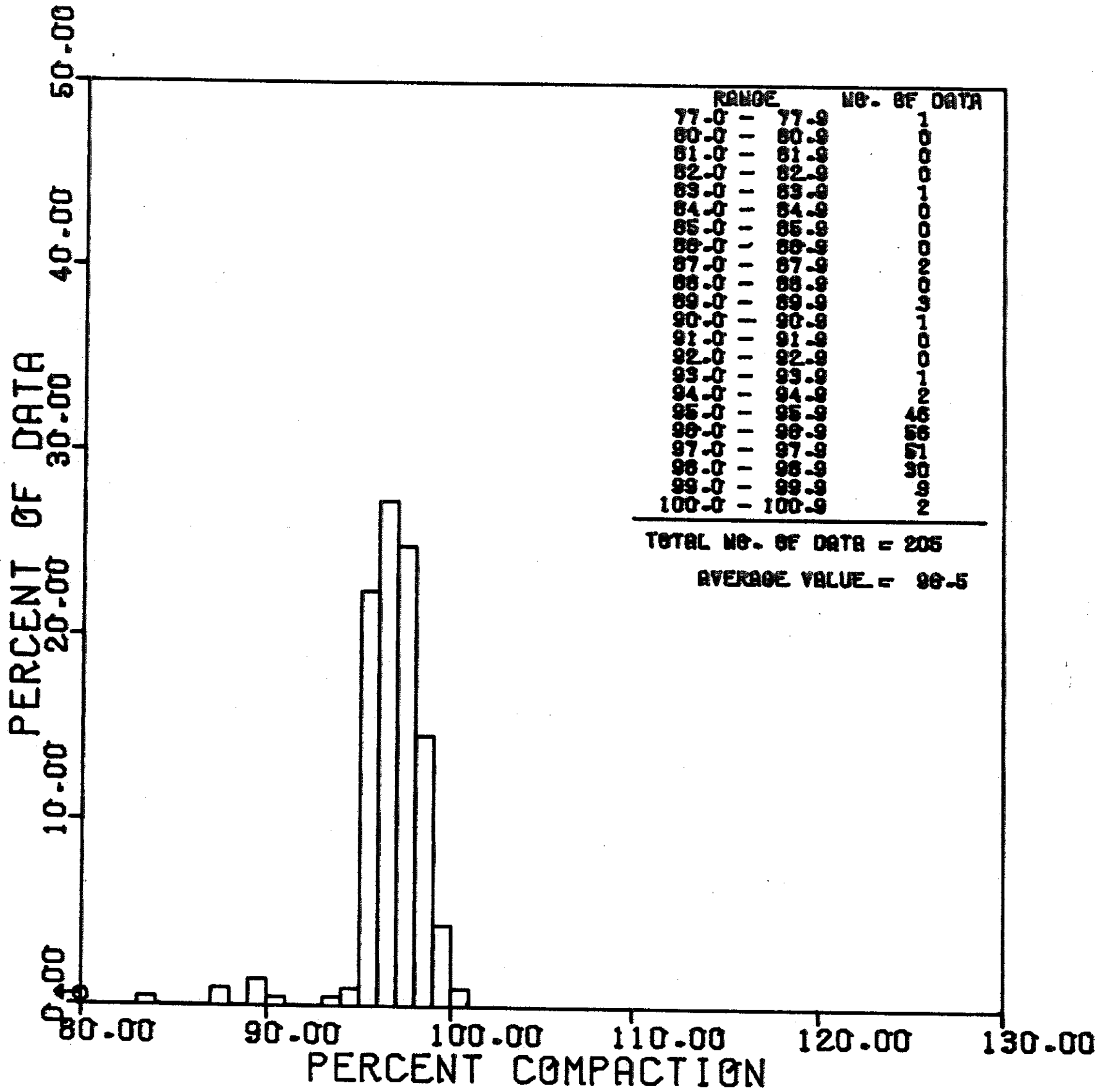


CLINTON STATION IN-PLACE TEST
SOUTH DAM - SOIL CEMENT
ELEVATION FROM 649.0 TO 697.99

NOTE:

TESTS FOR ALL AREAS, INCLUDING THE ABUTMENTS AND DOWNSTREAM FLAT AREA, ARE INCLUDED IN THIS ANALYSIS.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-464 UHS DAM SOIL CEMENT SLOPE PROTECTION DISTRIBUTION OF MOISTURE CONTENT

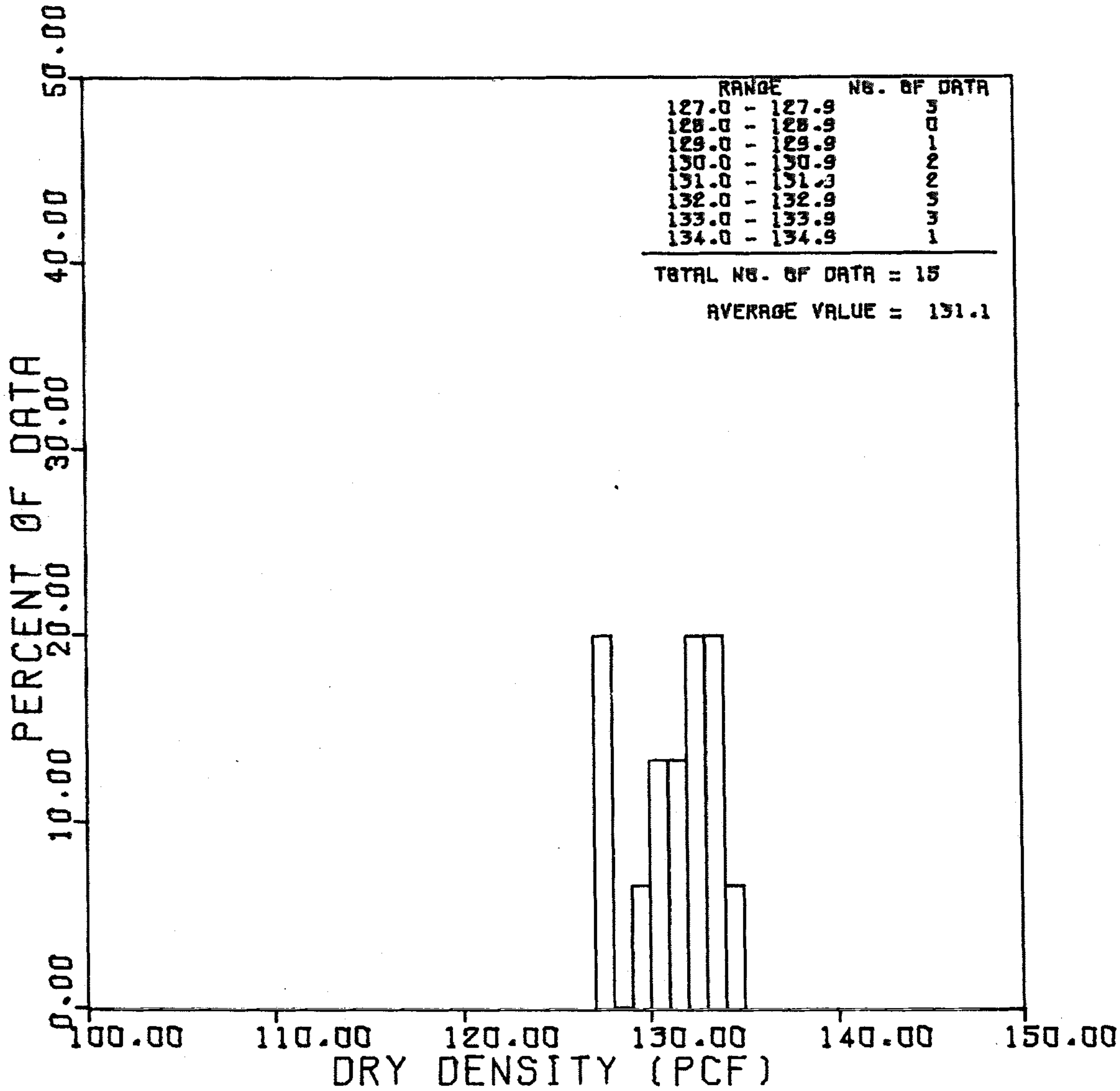


CLINTON STATION IN-PLACE TEST
SOUTH DAM - SOIL CEMENT
ELEVATION FROM 649.0 TO 697.99

NOTE:

Tests for all areas, including the abutments and the downstream flat area are included in this analysis.

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-465 UHS DAM SOIL CEMENT SLOPE PROTECTION DISTRIBUTION OF PERCENT COMPACTION

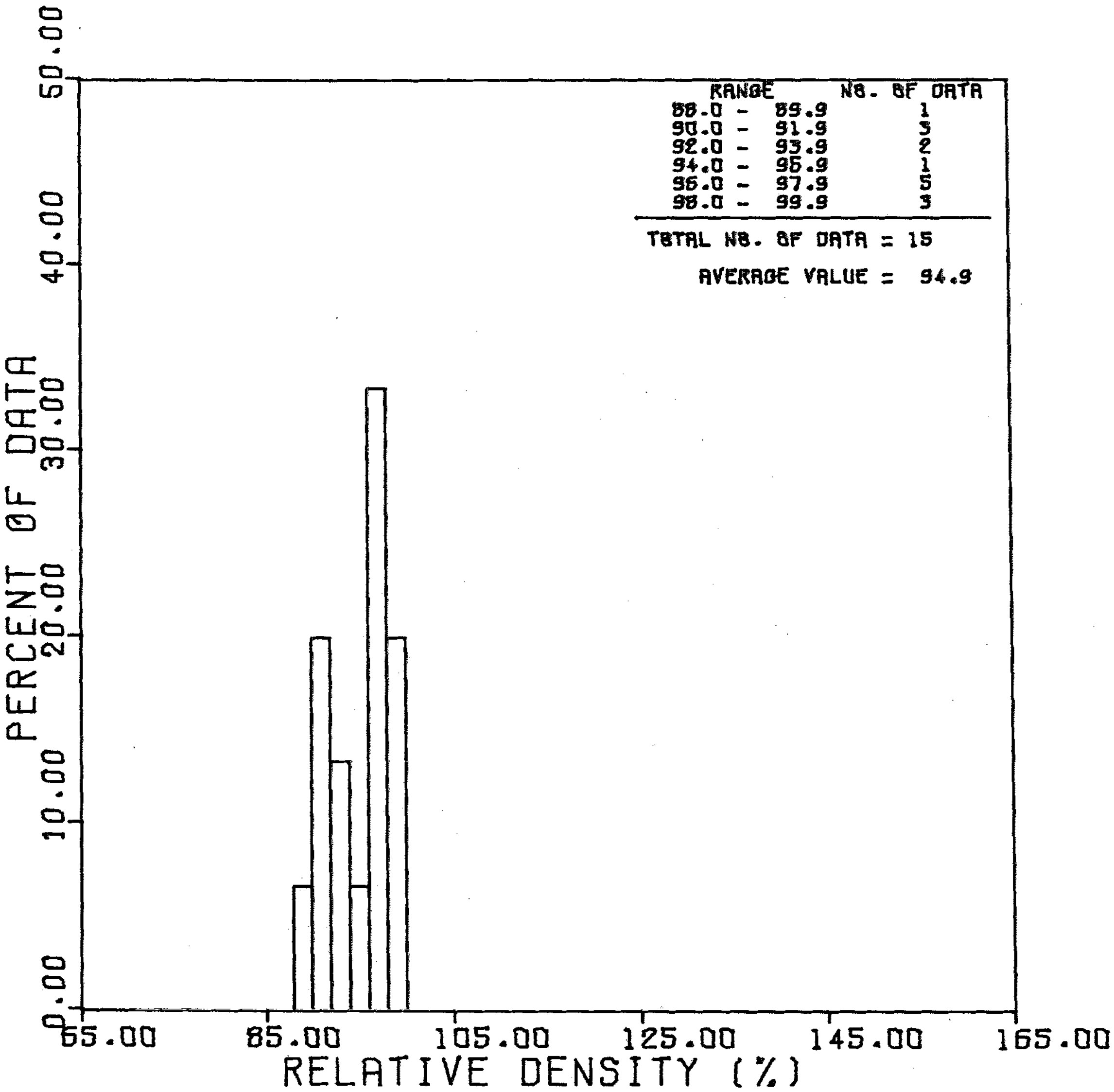


CLINTON POWER STATION
ALL DATA
OUTLET - P & R SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

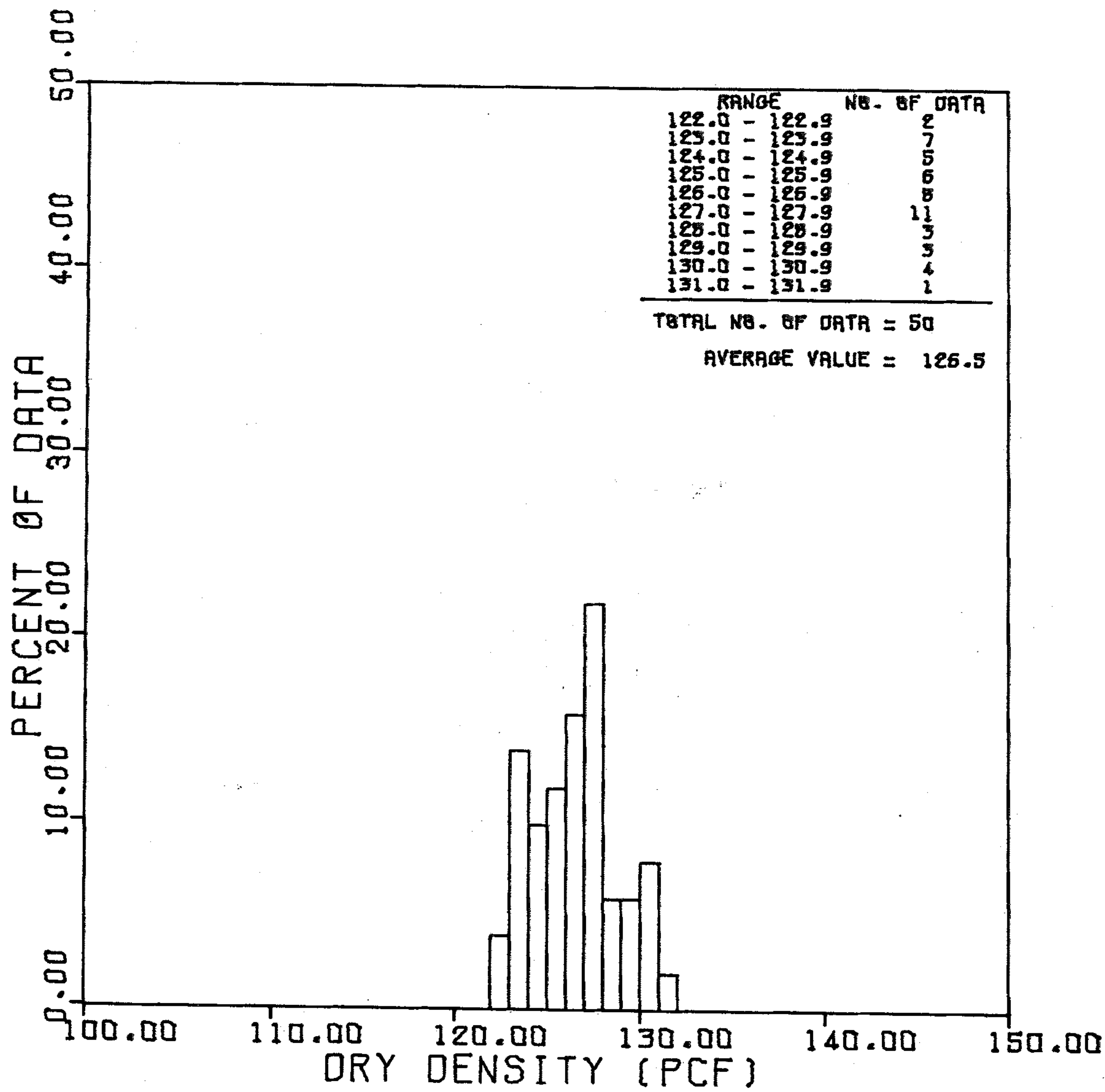
FIGURE 2.5-466

SSWS OUTLET STRUCTURE
GRANULAR FILL - DISTRIBUTION OF
DRY DENSITY



CLINTON POWER STATION
ALL DATA
OUTLET - P & R SERIES

CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-467 SSWS OUTLET STRUCTURE GRANULAR FILL - DISTRIBUTION OF RELATIVE DENSITY

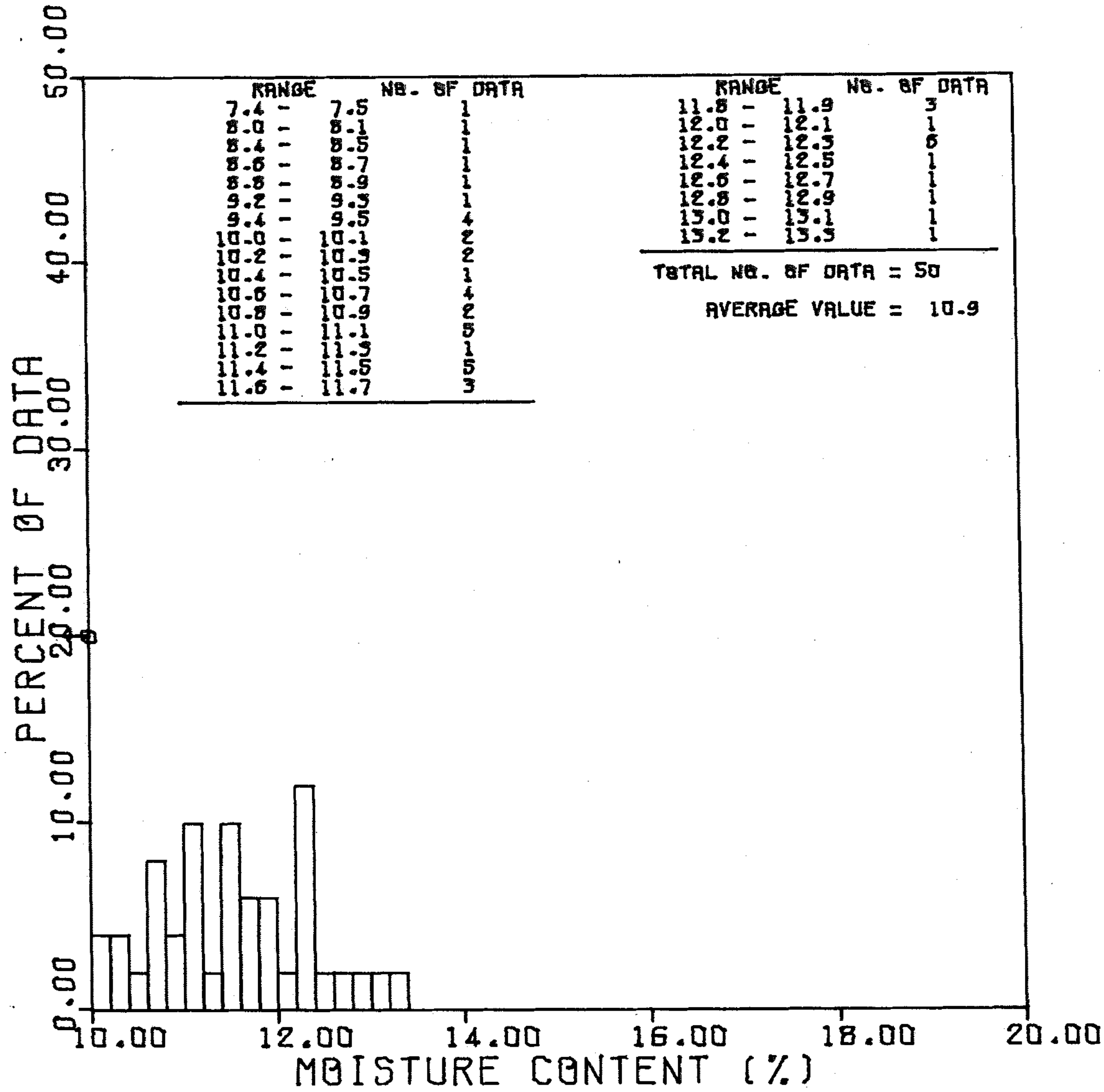


CLINTON POWER STATION
ALL DATA
PIPELINE - PB SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

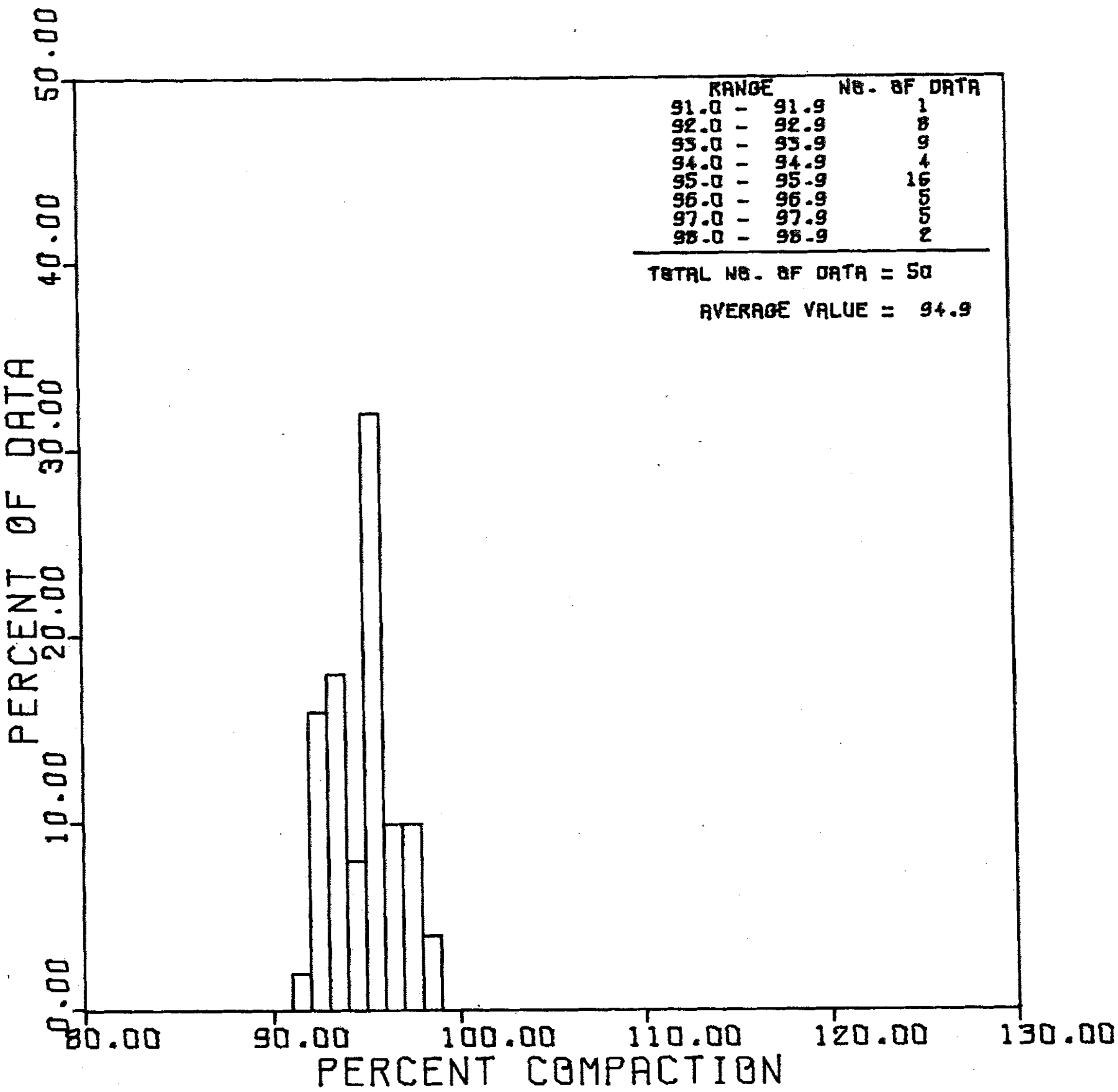
FIGURE 2.5-468

SSWS OUTLET STRUCTURE
COHESIVE BACKFILL - DISTRIBUTION OF
DRY DENSITY



CLINTON POWER STATION
ALL DATA
PIPELINE - PB SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT
FIGURE 2.5-469 SSWS OUTLET STRUCTURE COHESIVE BACKFILL - DISTRIBUTION OF MOISTURE CONTENT

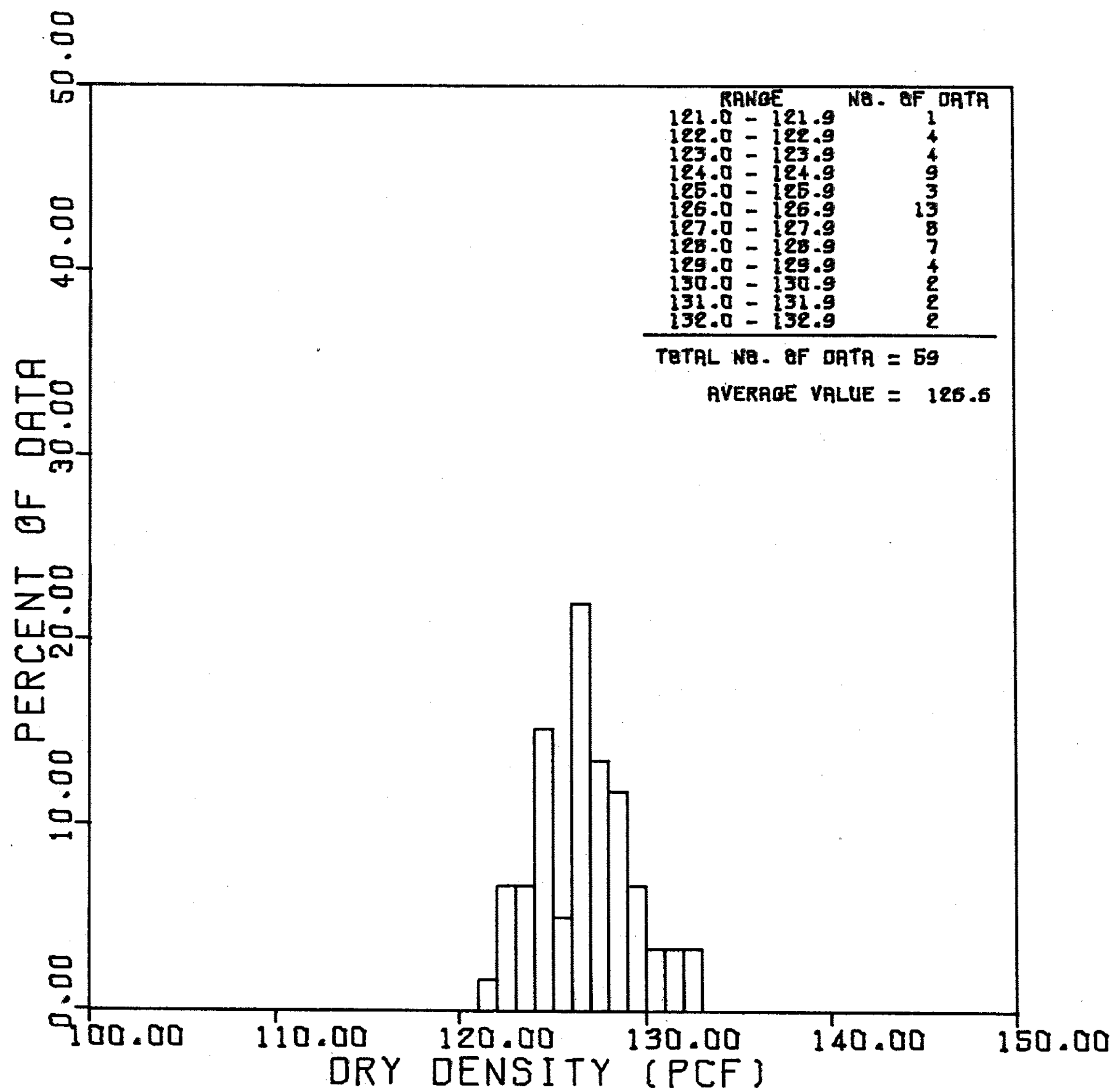


CLINTON POWER STATION
ALL DATA
PIPELINE - PB SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-470

SSWS OUTLET STRUCTURE
COHESIVE BACKFILL - DISTRIBUTION OF
PERCENT COMPACTION

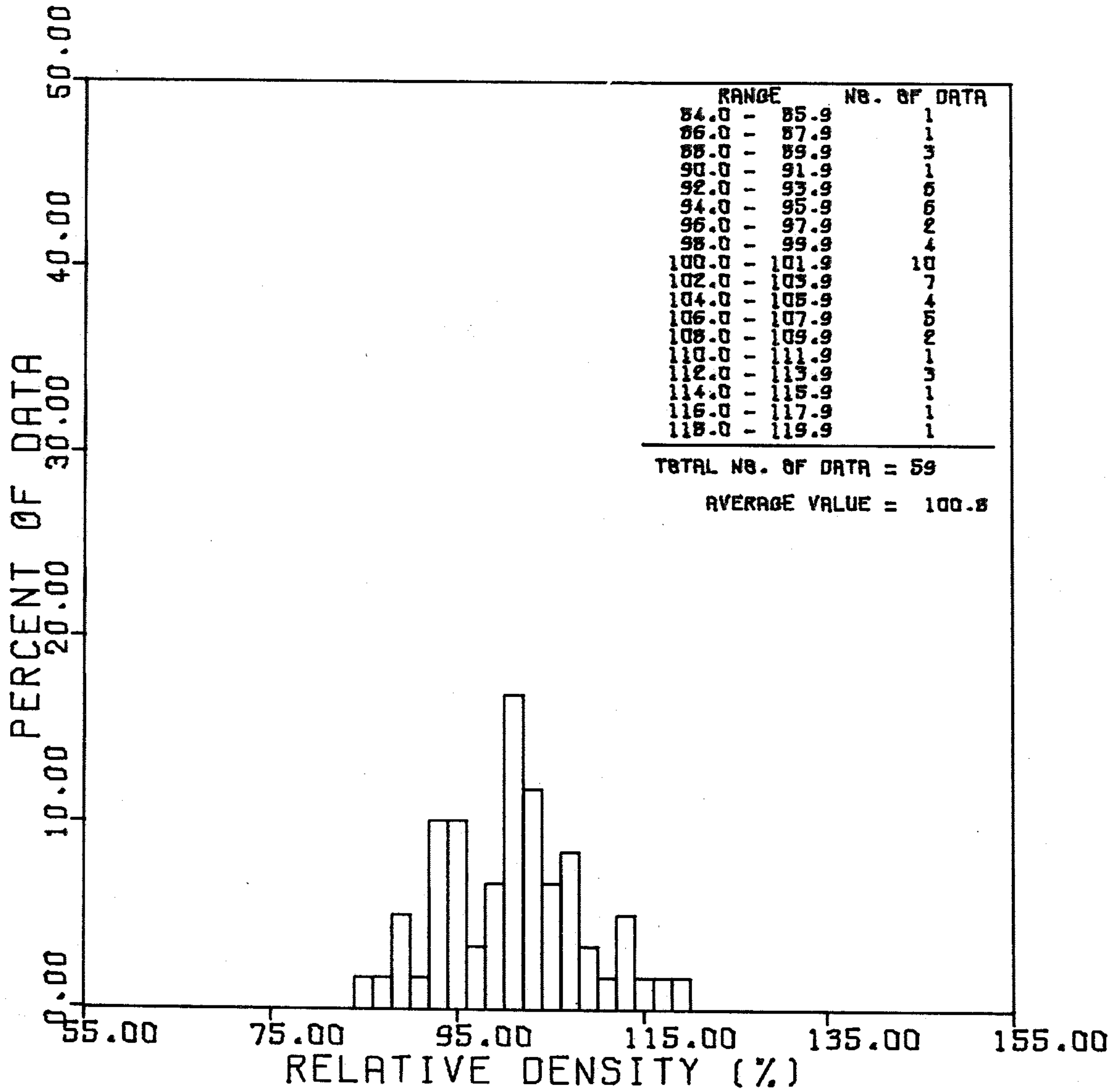


CLINTON POWER STATION
ALL DATA
PIPELINE - P SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-471

SSWS PIPELINE GRANULAR FILL
DISTRIBUTION OF DRY DENSITY

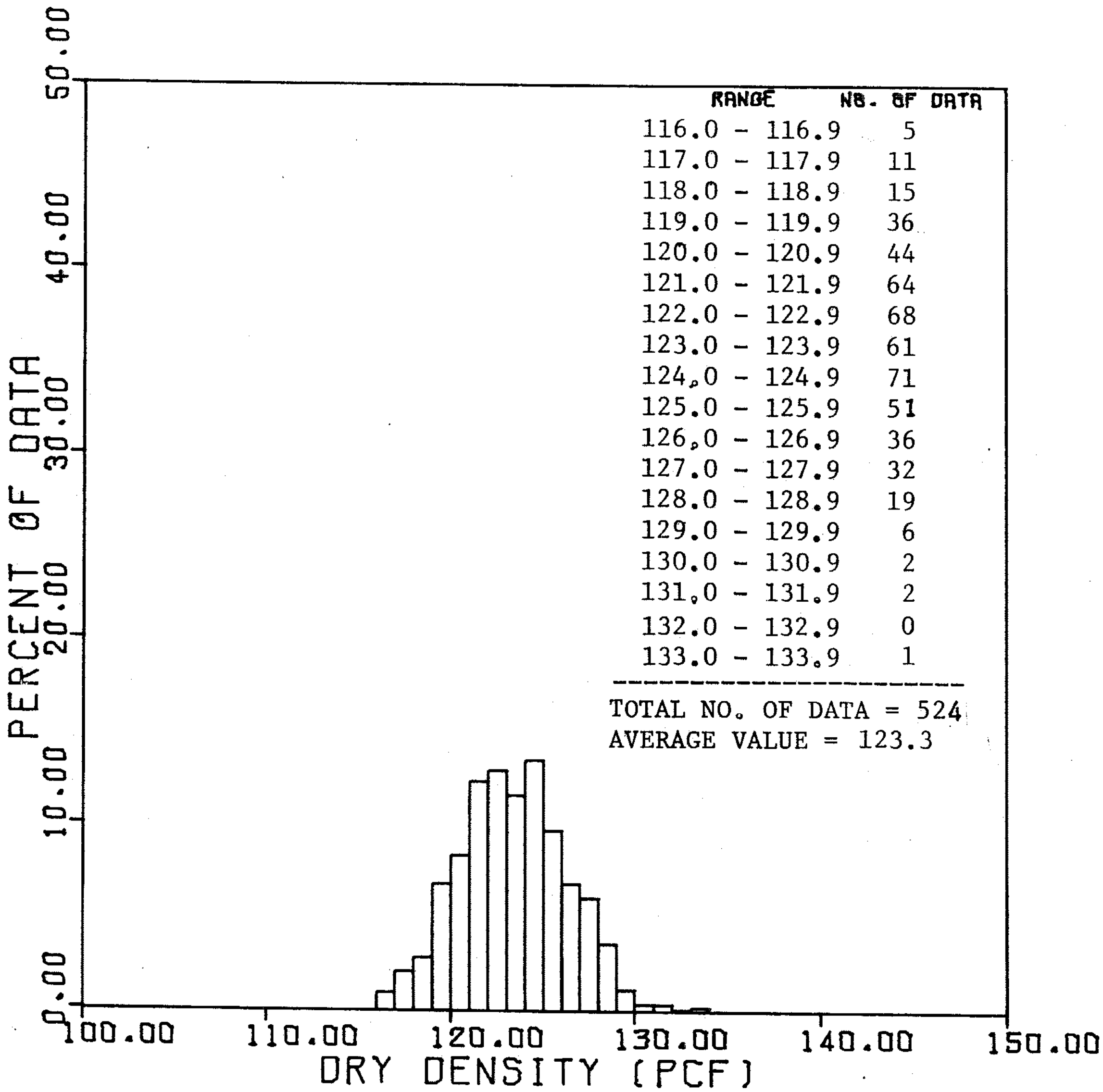


CLINTON POWER STATION
ALL DATA
PIPELINE - P SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-472

SSWS PIPELINE GRANULAR FILL -
DISTRIBUTION OF RELATIVE DENSITY

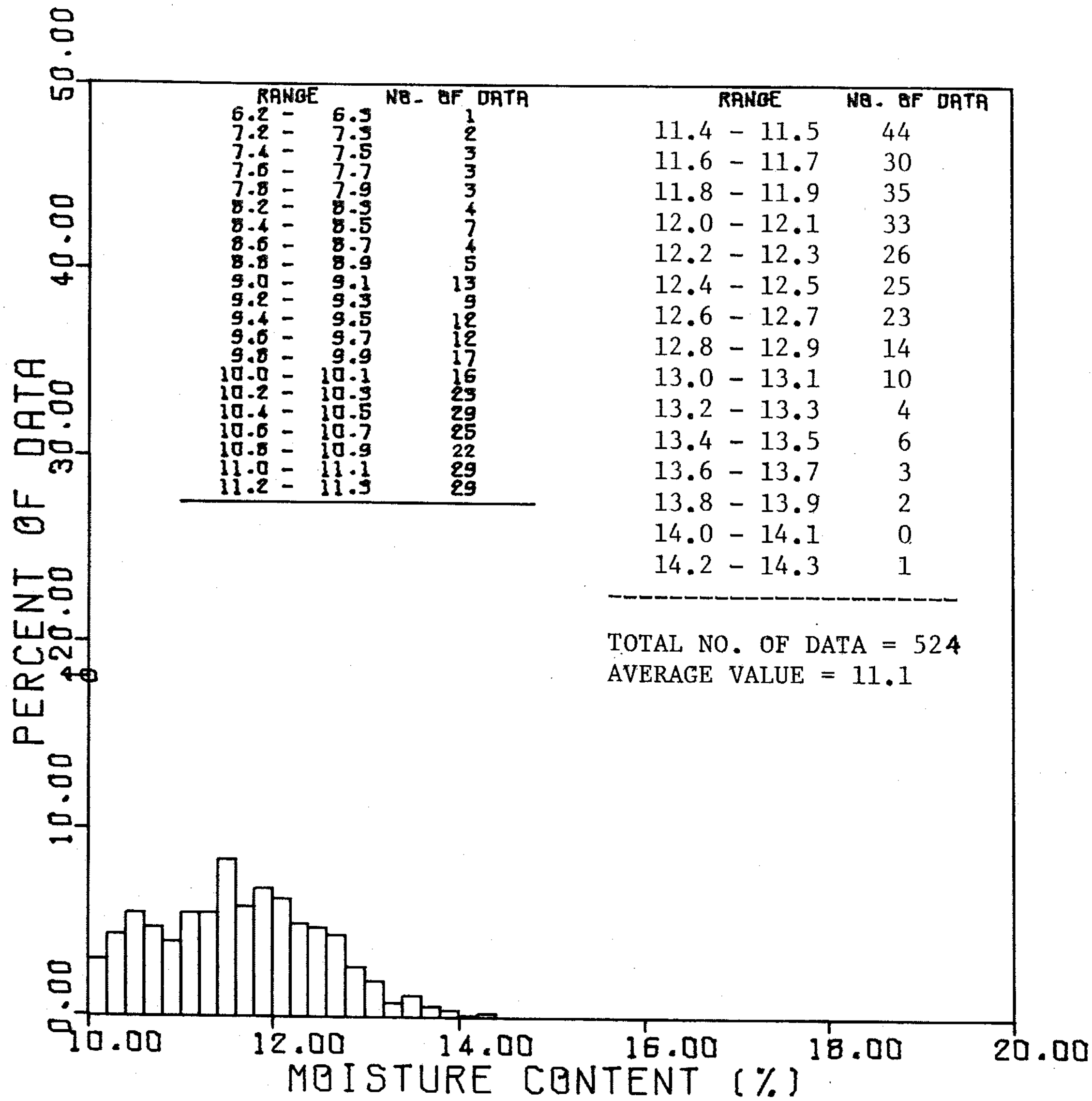


CLINTON POWER STATION
ALL DATA
PIPELINE - PB SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-473

SSWS PIPELINE COHESIVE FILL - DISTRIBUTION OF DRY DENSITY



RANGE	NO. OF DATA
6.2 - 6.3	1
7.2 - 7.3	2
7.4 - 7.5	3
7.6 - 7.7	3
7.8 - 7.9	3
8.2 - 8.3	4
8.4 - 8.5	7
8.6 - 8.7	4
8.8 - 8.9	5
9.0 - 9.1	13
9.2 - 9.3	9
9.4 - 9.5	12
9.6 - 9.7	12
9.8 - 9.9	17
10.0 - 10.1	16
10.2 - 10.3	23
10.4 - 10.5	29
10.6 - 10.7	25
10.8 - 10.9	22
11.0 - 11.1	29
11.2 - 11.3	29

RANGE	NO. OF DATA
11.4 - 11.5	44
11.6 - 11.7	30
11.8 - 11.9	35
12.0 - 12.1	33
12.2 - 12.3	26
12.4 - 12.5	25
12.6 - 12.7	23
12.8 - 12.9	14
13.0 - 13.1	10
13.2 - 13.3	4
13.4 - 13.5	6
13.6 - 13.7	3
13.8 - 13.9	2
14.0 - 14.1	0
14.2 - 14.3	1

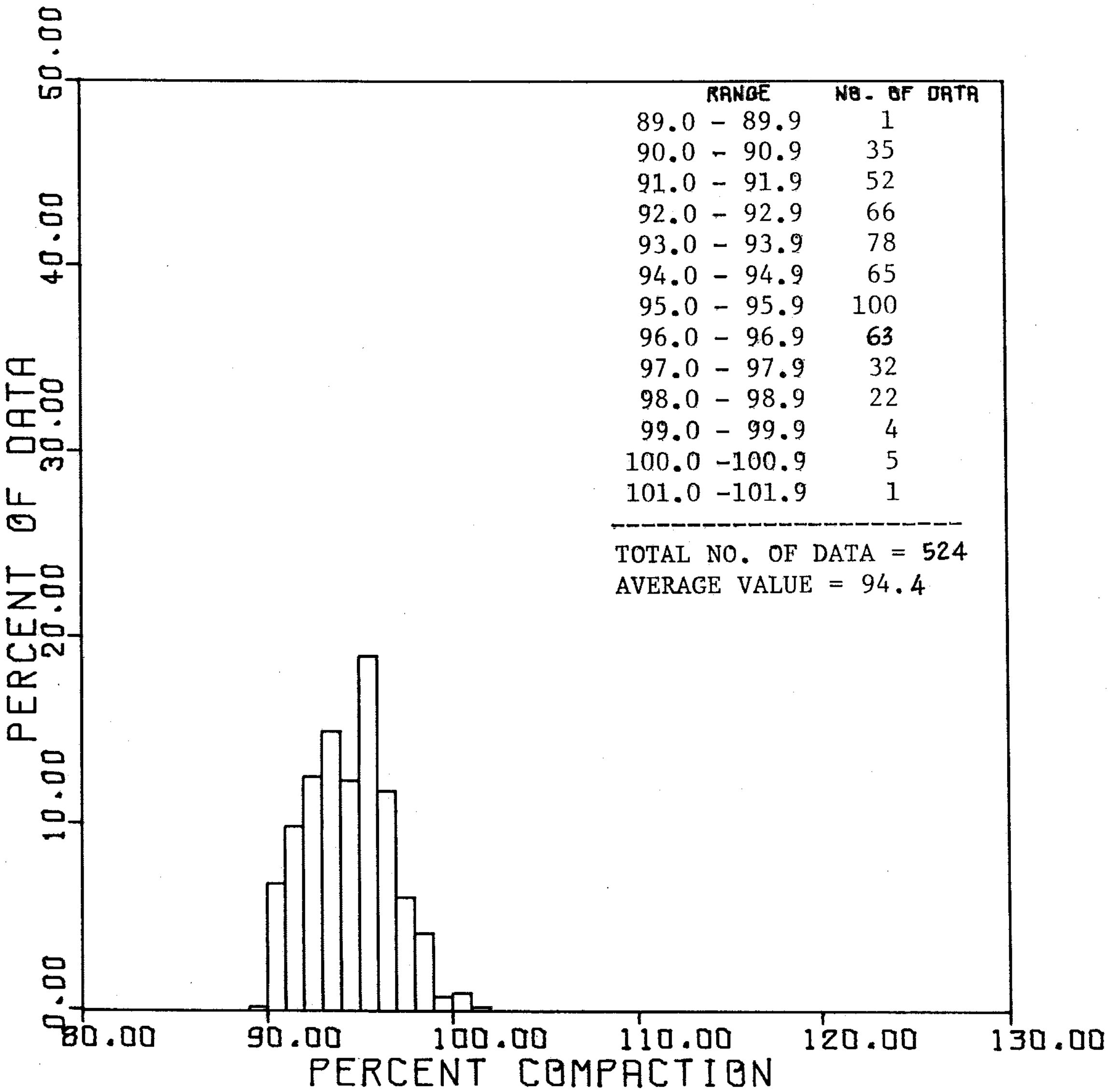
TOTAL NO. OF DATA = 524
AVERAGE VALUE = 11.1

CLINTON POWER STATION
ALL DATA
PIPELINE - PB SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-474

SSWS PIPELINE COHESIVE FILL -
DISTRIBUTION OF MOISTURE CONTENT

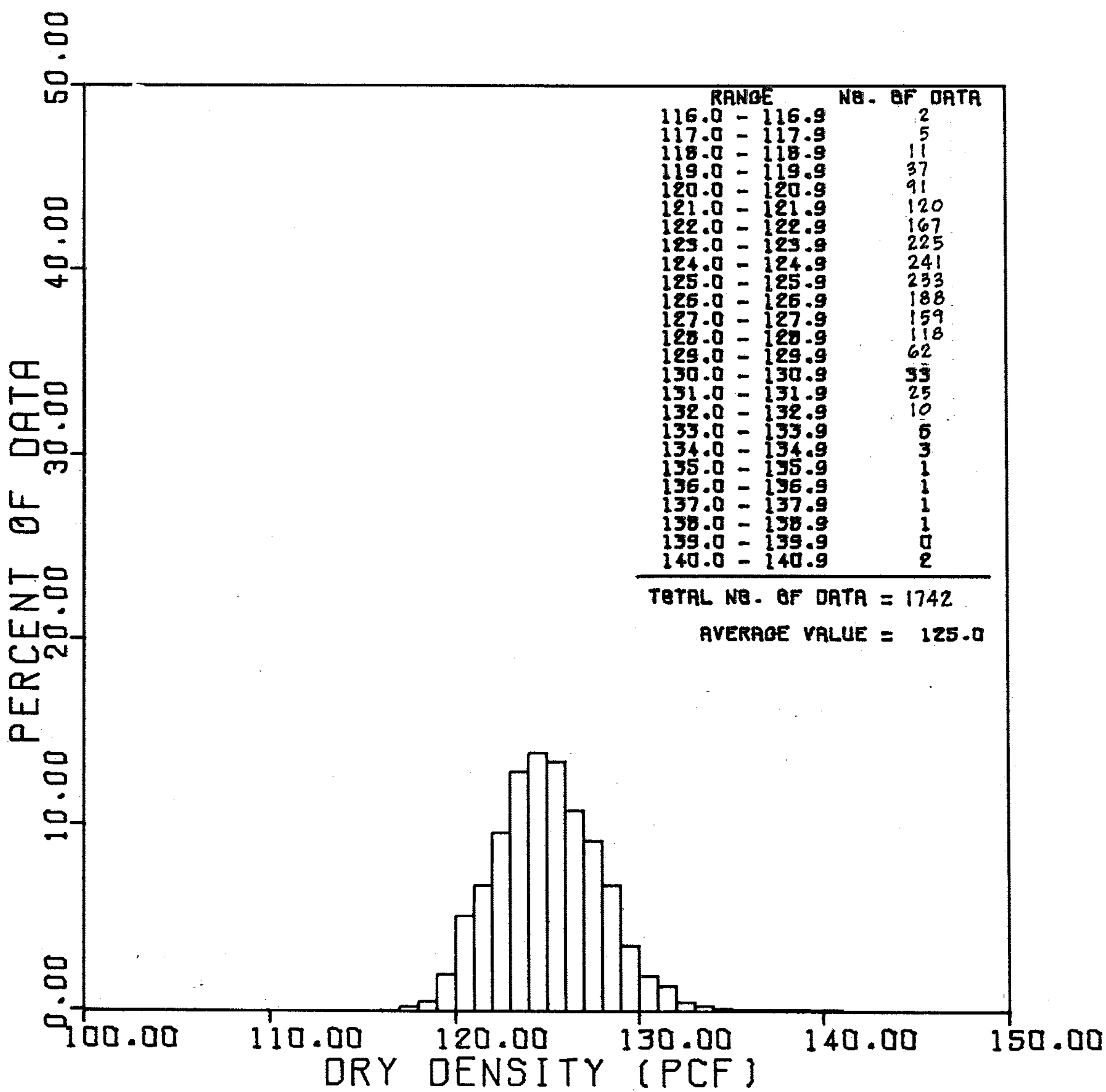


CLINTON POWER STATION
ALL DATA
PIPELINE - PB SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-475

SSWS PIPELINE COHESIVE FILL -
DISTRIBUTION OF PERCENT COMPACTION



RANGE	NO. OF DATA
116.0 - 116.9	2
117.0 - 117.9	5
118.0 - 118.9	11
119.0 - 119.9	37
120.0 - 120.9	91
121.0 - 121.9	120
122.0 - 122.9	167
123.0 - 123.9	225
124.0 - 124.9	241
125.0 - 125.9	233
126.0 - 126.9	188
127.0 - 127.9	159
128.0 - 128.9	118
129.0 - 129.9	62
130.0 - 130.9	33
131.0 - 131.9	25
132.0 - 132.9	10
133.0 - 133.9	6
134.0 - 134.9	3
135.0 - 135.9	1
136.0 - 136.9	1
137.0 - 137.9	1
138.0 - 138.9	1
139.0 - 139.9	0
140.0 - 140.9	2

TOTAL NO. OF DATA = 1742

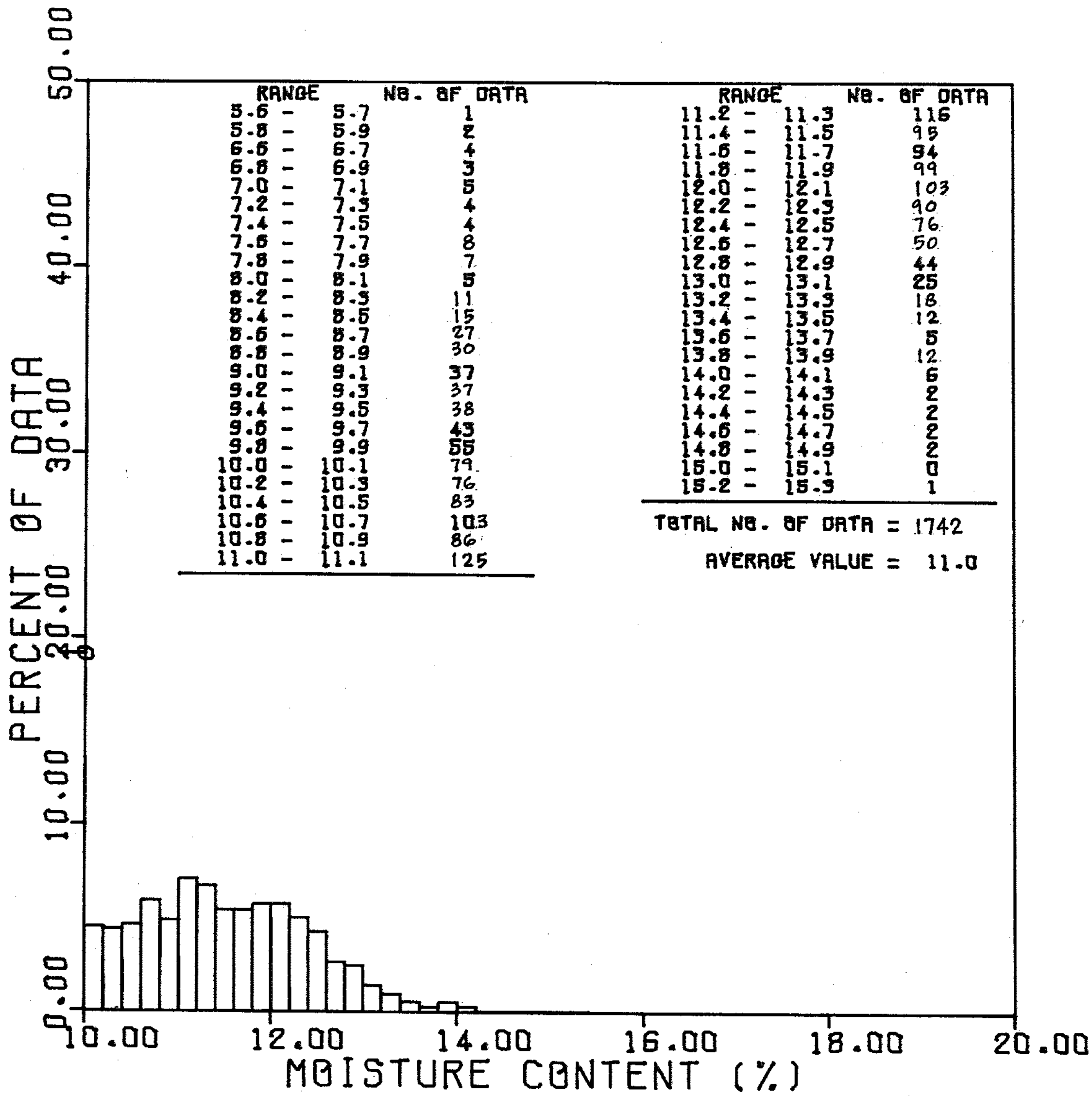
AVERAGE VALUE = 125.0

CLINTON POWER STATION
ALL DATA
SCREEN HOUSE

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-476

SCREEN HOUSE COHESIVE BACKFILL - DISTRIBUTION OF DRY DENSITY

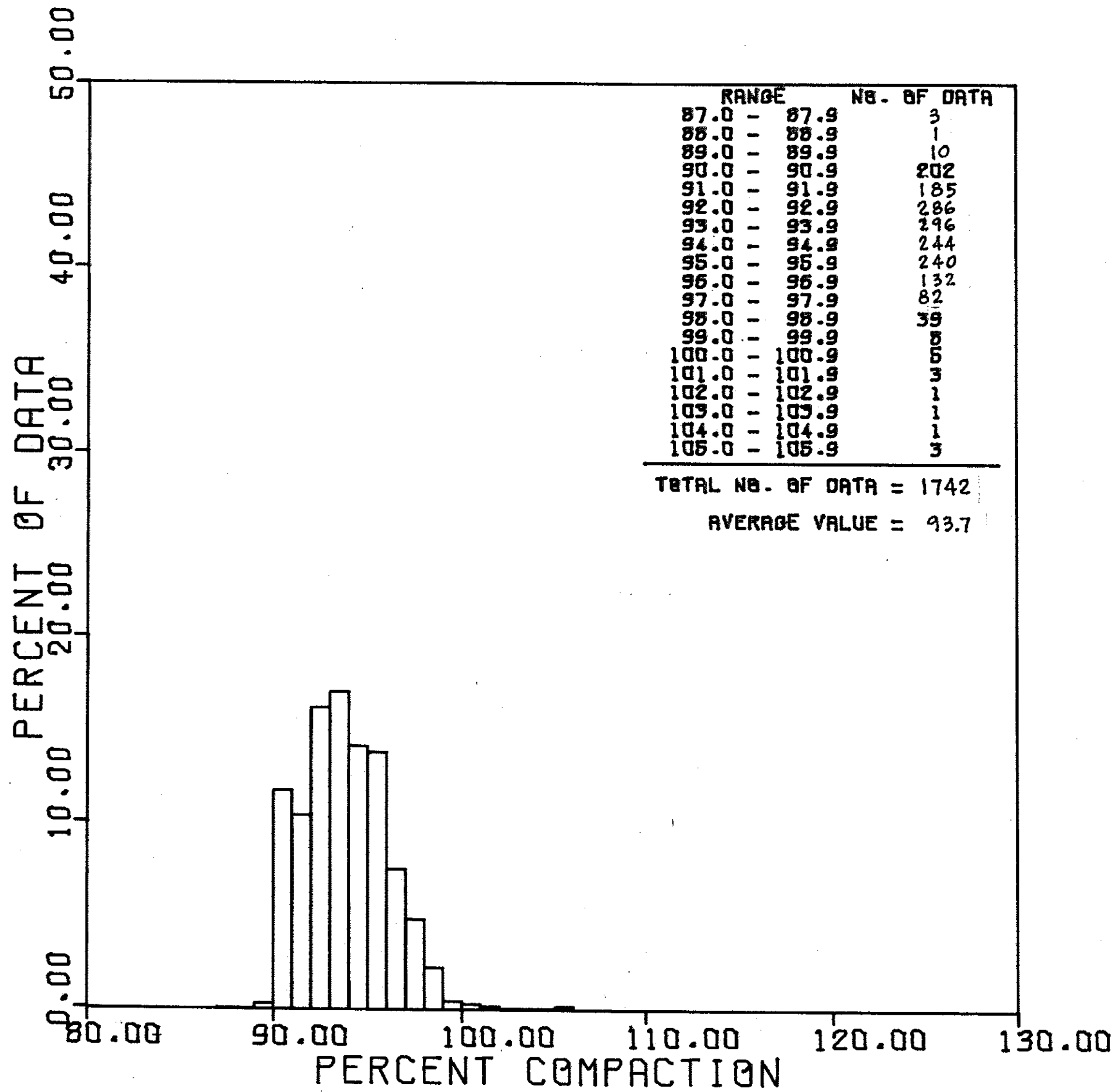


CLINTON POWER STATION
ALL DATA
SCREEN HOUSE

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-477

SCREEN HOUSE COHESIVE BACKFILL - DISTRIBUTION OF MOISTURE CONTENT

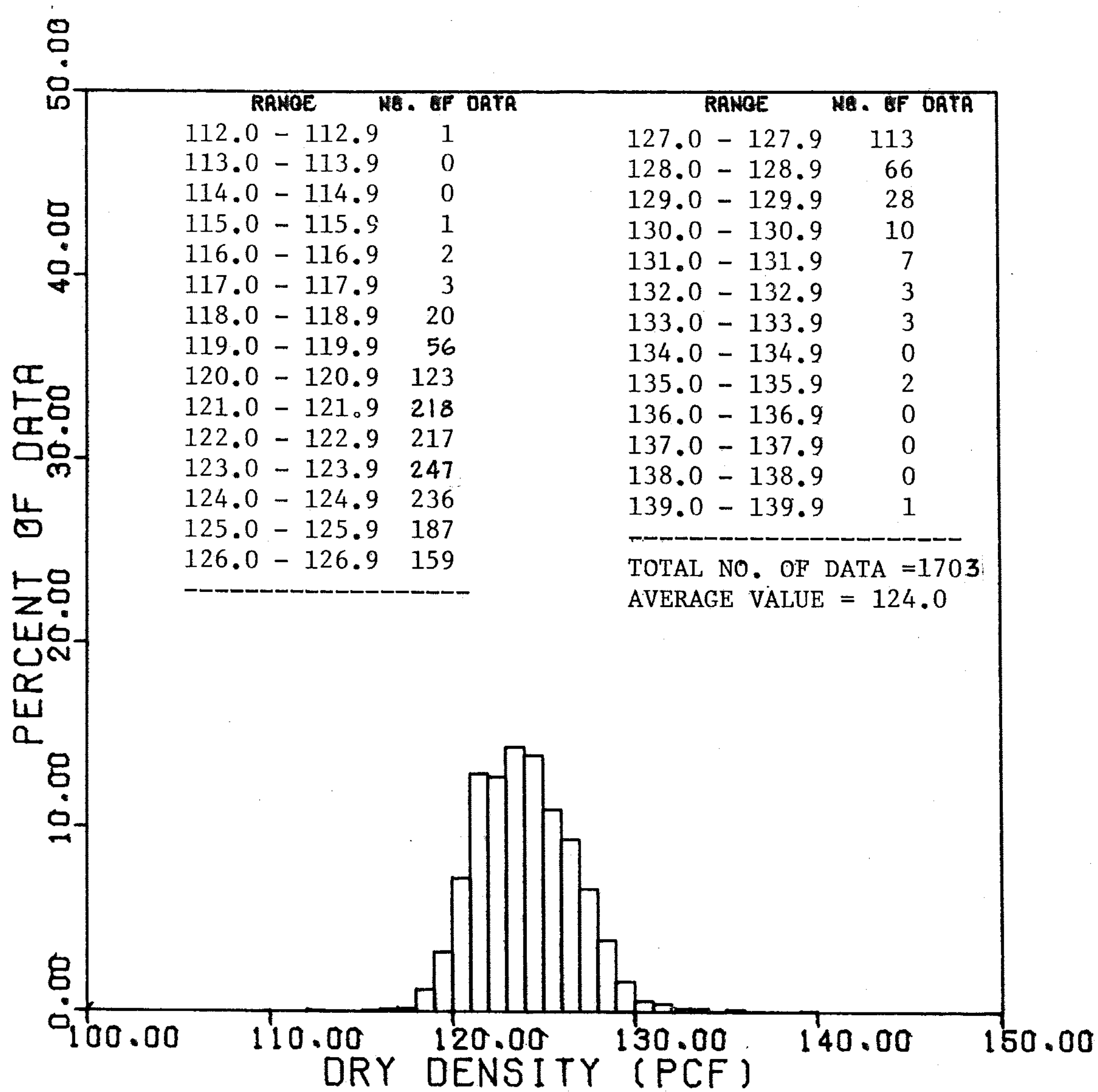


CLINTON POWER STATION
ALL DATA
SCREEN HOUSE

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-478

SCREEN HOUSE COHESIVE BACKFILL -
DISTRIBUTION OF PERCENT COMPACTION

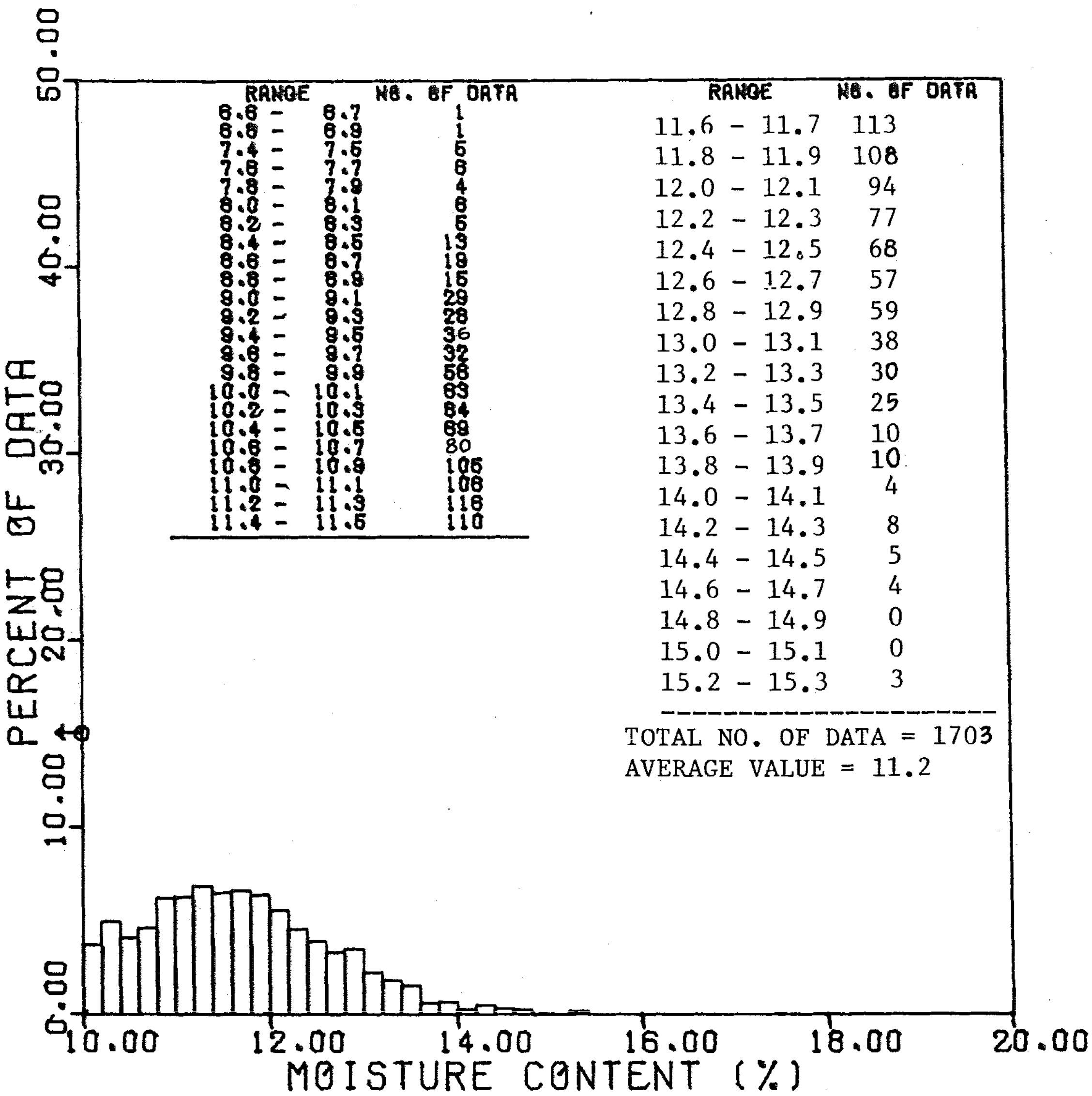


CLINTON POWER STATION
ALL DATA
POWER - PBT SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-479

MAIN PLANT COHESIVE BACKFILL -
DISTRIBUTION OF DRY DENSITY

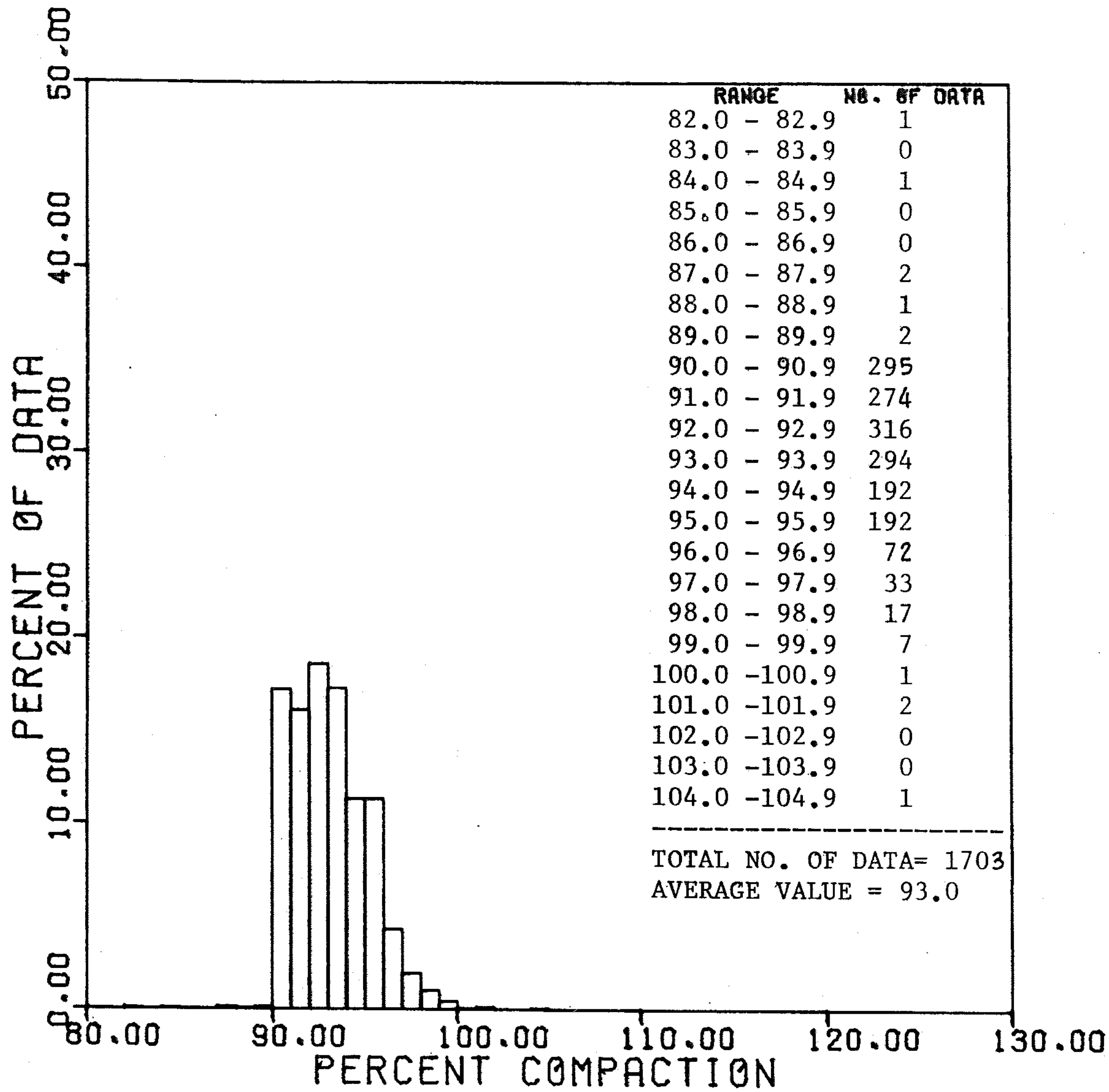


CLINTON POWER STATION
ALL DATA
POWER - PBT SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-480

MAIN PLANT COHESIVE BACKFILL - DISTRIBUTION OF MOISTURE CONTENT

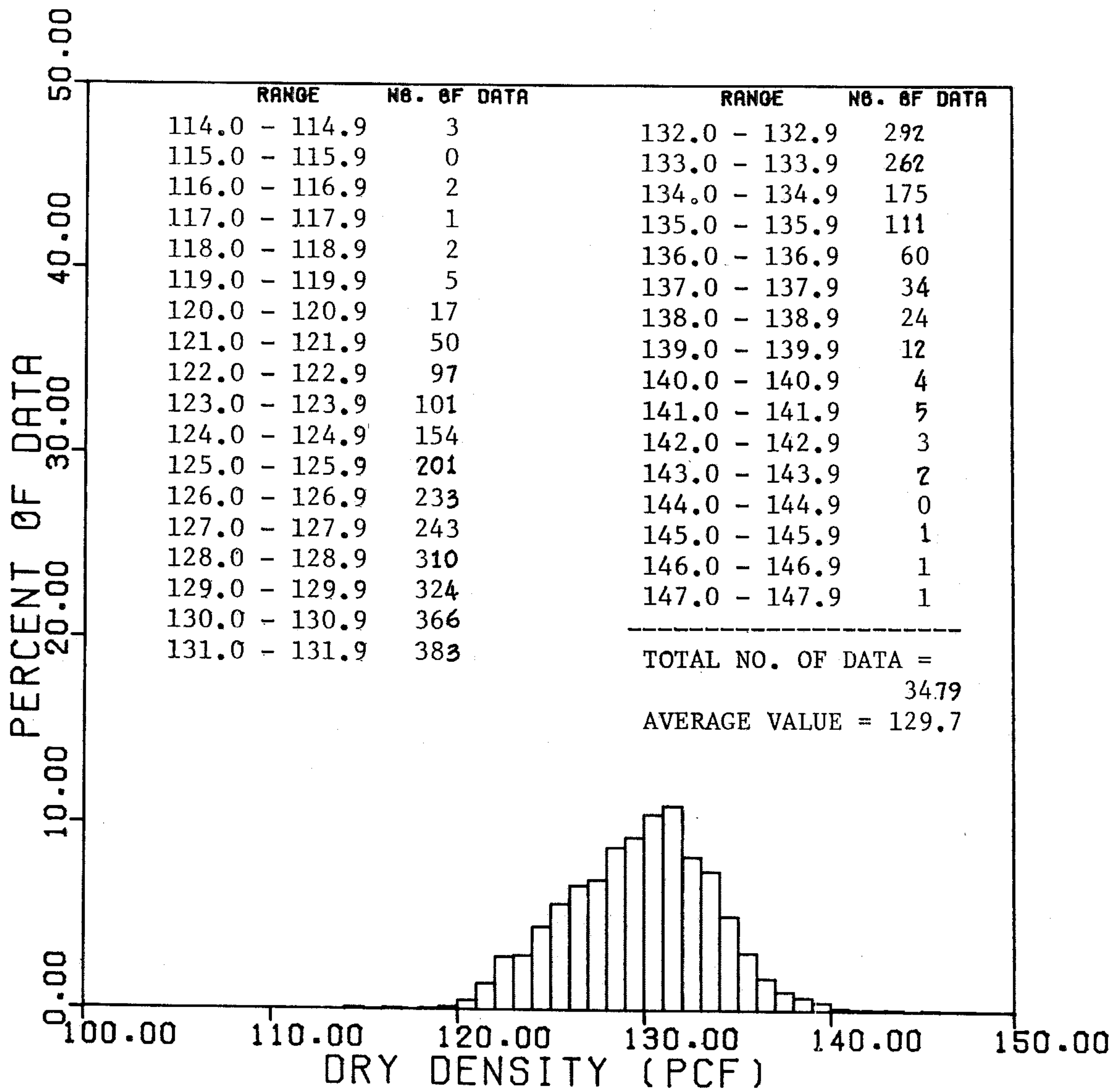


CLINTON POWER STATION
ALL DATA
POWER - PBT SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-481

MAIN PLANT COHESIVE BACKFILL -
DISTRIBUTION OF PERCENT COMPACTION



RANGE	NO. OF DATA	RANGE	NO. OF DATA
114.0 - 114.9	3	132.0 - 132.9	292
115.0 - 115.9	0	133.0 - 133.9	262
116.0 - 116.9	2	134.0 - 134.9	175
117.0 - 117.9	1	135.0 - 135.9	111
118.0 - 118.9	2	136.0 - 136.9	60
119.0 - 119.9	5	137.0 - 137.9	34
120.0 - 120.9	17	138.0 - 138.9	24
121.0 - 121.9	50	139.0 - 139.9	12
122.0 - 122.9	97	140.0 - 140.9	4
123.0 - 123.9	101	141.0 - 141.9	5
124.0 - 124.9	154	142.0 - 142.9	3
125.0 - 125.9	201	143.0 - 143.9	2
126.0 - 126.9	233	144.0 - 144.9	0
127.0 - 127.9	243	145.0 - 145.9	1
128.0 - 128.9	310	146.0 - 146.9	1
129.0 - 129.9	324	147.0 - 147.9	1
130.0 - 130.9	366		
131.0 - 131.9	383		

TOTAL NO. OF DATA = 3479

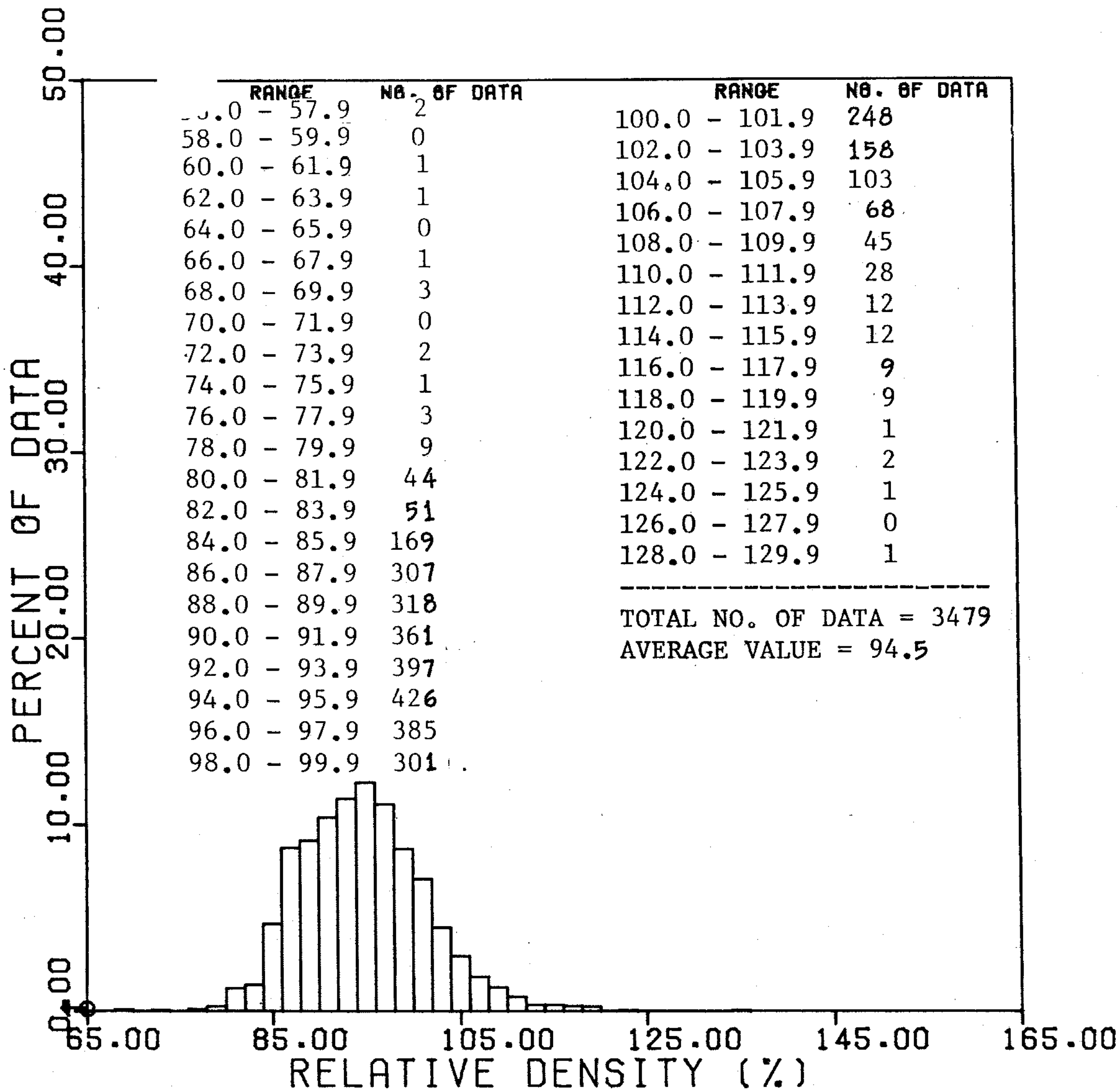
AVERAGE VALUE = 129.7

CLINTON POWER STATION
ALL DATA
POWER-P SERIES

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-482

MAIN PLANT GRANULAR BACKFILL - DISTRIBUTION OF DRY DENSITY



RANGE	NO. OF DATA
[illegible].0 - 57.9	2
58.0 - 59.9	0
60.0 - 61.9	1
62.0 - 63.9	1
64.0 - 65.9	0
66.0 - 67.9	1
68.0 - 69.9	3
70.0 - 71.9	0
72.0 - 73.9	2
74.0 - 75.9	1
76.0 - 77.9	3
78.0 - 79.9	9
80.0 - 81.9	44
82.0 - 83.9	51
84.0 - 85.9	169
86.0 - 87.9	307
88.0 - 89.9	318
90.0 - 91.9	361
92.0 - 93.9	397
94.0 - 95.9	426
96.0 - 97.9	385
98.0 - 99.9	301

RANGE	NO. OF DATA
100.0 - 101.9	248
102.0 - 103.9	158
104.0 - 105.9	103
106.0 - 107.9	68
108.0 - 109.9	45
110.0 - 111.9	28
112.0 - 113.9	12
114.0 - 115.9	12
116.0 - 117.9	9
118.0 - 119.9	9
120.0 - 121.9	1
122.0 - 123.9	2
124.0 - 125.9	1
126.0 - 127.9	0
128.0 - 129.9	1

TOTAL NO. OF DATA = 3479
AVERAGE VALUE = 94.5

CLINTON POWER STATION
ALL DATA
POWER-P SERIES

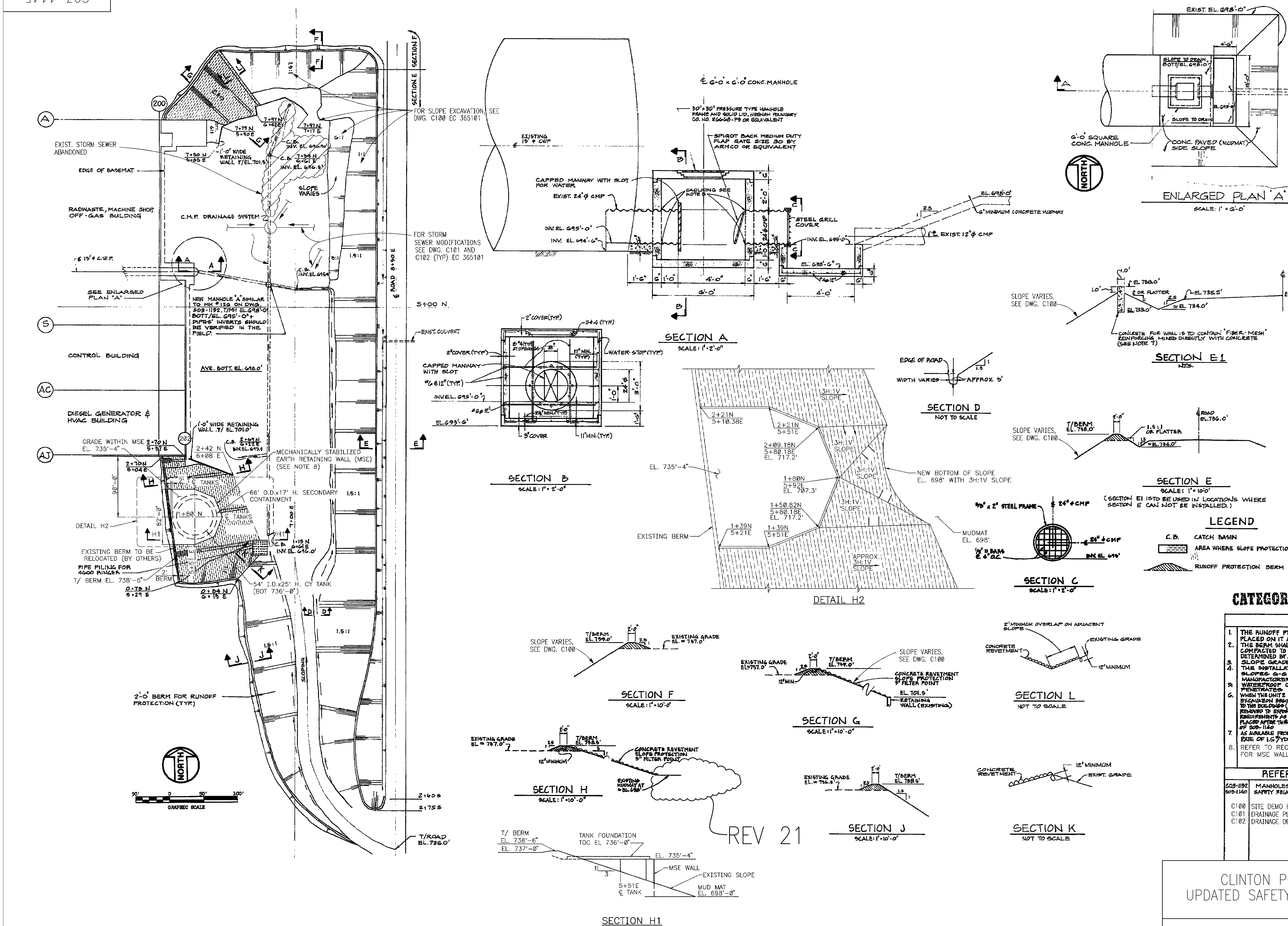
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-483

MAIN PLANT GRANULAR BACKFILL -
DISTRIBUTION OF RELATIVE DENSITY

FIGURE 2.5-484
HAS BEEN DELETED

REVISION 21
MARCH 2020



CATEGORY I AS NOTED

NOTES

1. THE RUNOFF PROTECTION BERM SHALL HAVE 4" OF TOPSOIL PLACED ON IT AND SEEDED.
2. THE BERM SHALL CONSIST OF TYPE A COHESIVE MATERIAL COMPACTED TO 90% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557.
3. SLOPE GRADES SHOWN ARE APPROXIMATE.
4. THE INSTALLATION OF THE CONCRETE REVETMENT ON SLOPES G-G AND H-H SHALL BE PER MANUFACTURER'S INSTRUCTIONS.
5. WATERPROOF CAULKING SHALL BE USED WHERE CMP PENETRATES CONCRETE.
6. WHEN THE UNIT 2 BACKFILLING OR THE BACKFILLING OF THE UNIT 2 EXCAVATION BEGINS, THE MATERIAL PLACED ON THE SLOPES ADJACENT TO THE BUILDINGS (REPRESENTED BY SECTIONS G-G AND H-H) SHALL BE REMOVED TO EXPOSE MATERIAL MEETING THE FILL PLACEMENT REQUIREMENTS AS STATED ON S&L DRAWING S03-1140. ALL BACKFILL PLACED AFTER THIS VERIFICATION SHALL MEET THE REQUIREMENTS OF S03-1140
7. AS AVAILABLE FROM FIBERMESH COMPANY, CHICKAMAUGA, GA. RATE OF 1.5#/YD³ OF CONCRETE
8. REFER TO RECO DRAWING RE-14963, SHEETS 1-5 FOR MSE WALL DETAILS.

REFERENCE DRAWINGS

S03-1132	MANHOLES AND PIPES SCHEDULE.
S03-1140	SAFETY RELATED BACKFILL
C100	SITE DEMO PLAN (BY ARCHITECTURAL EXPRESSIONS, LLP)
C101	DRAINAGE PLAN (BY ARCHITECTURAL EXPRESSIONS, LLP)
C102	DRAINAGE DETAILS (BY ARCHITECTURAL EXPRESSIONS, LLP)

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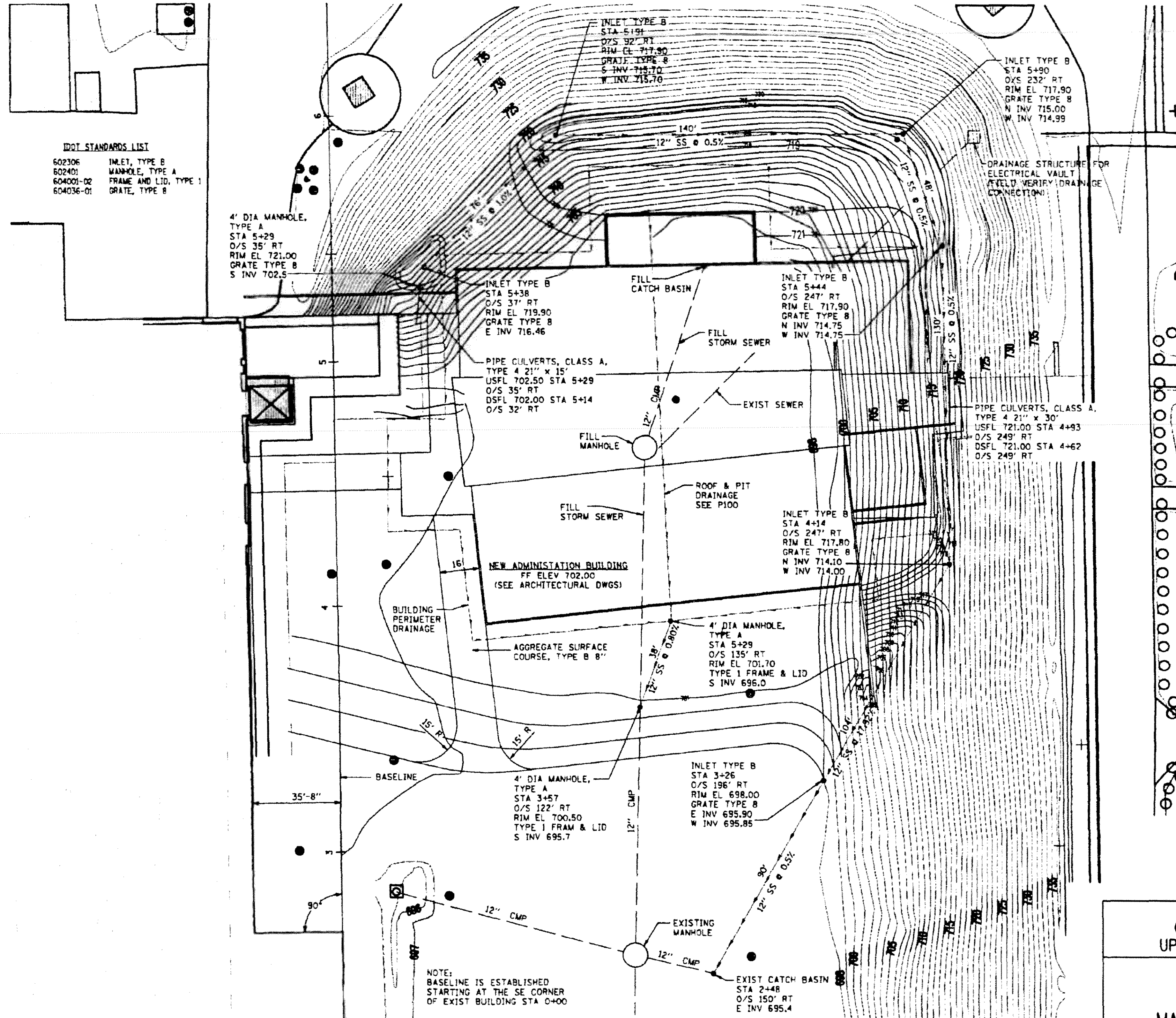
FIGURE 2.5-484A

MAIN PLANT EXCAVATION FINAL GRADING AND SECTIONS FOR UNIT 2 AREA

REVISION 13
JANUARY 2009



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-484B

MAIN PLANT EXCAVATION FINAL GRADING AND SECTIONS FOR UNIT 2 AREA

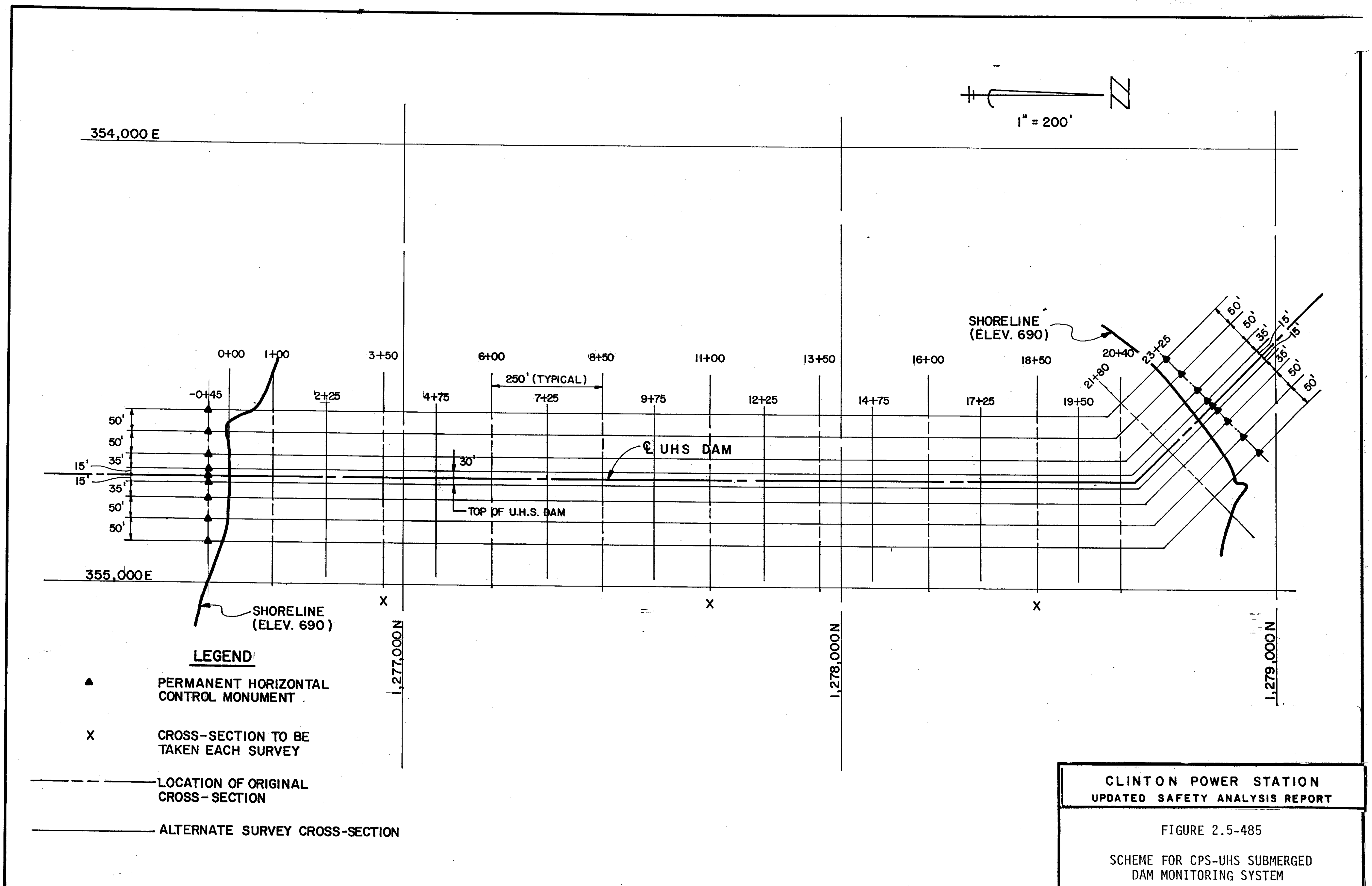


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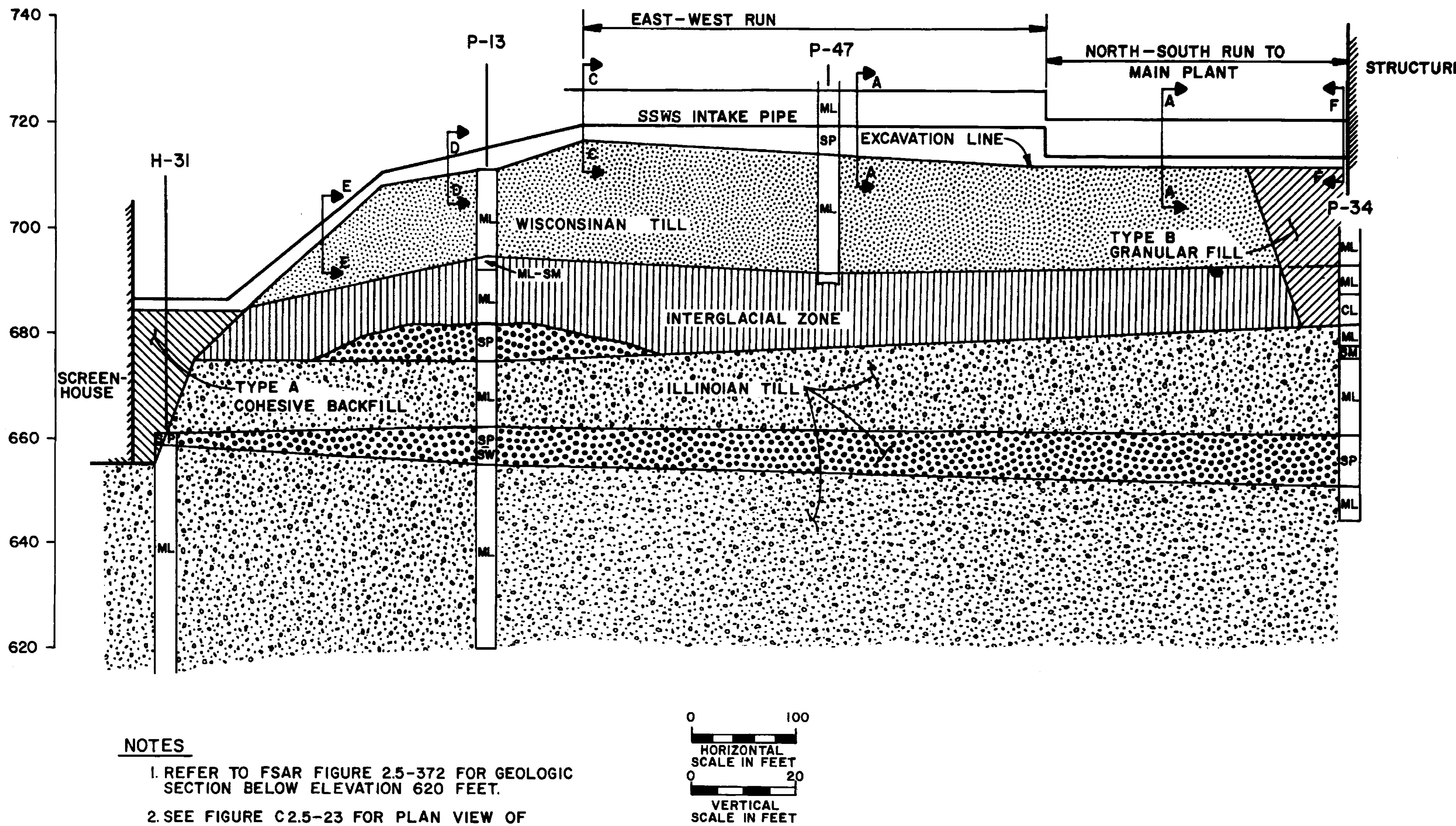
FIGURE 2.5-485

SCHEME FOR CPS-UHS SUBMERGED DAM MONITORING SYSTEM

REVISION 9
JANUARY 2001



NOTES

1. REFER TO FSAR FIGURE 2.5-372 FOR GEOLOGIC SECTION BELOW ELEVATION 620 FEET.
2. SEE FIGURE C2.5-23 FOR PLAN VIEW OF ECCS PIPELINE EXCAVATION.
3. SECTIONS SHOWN ON FIGURE 2.5-488.

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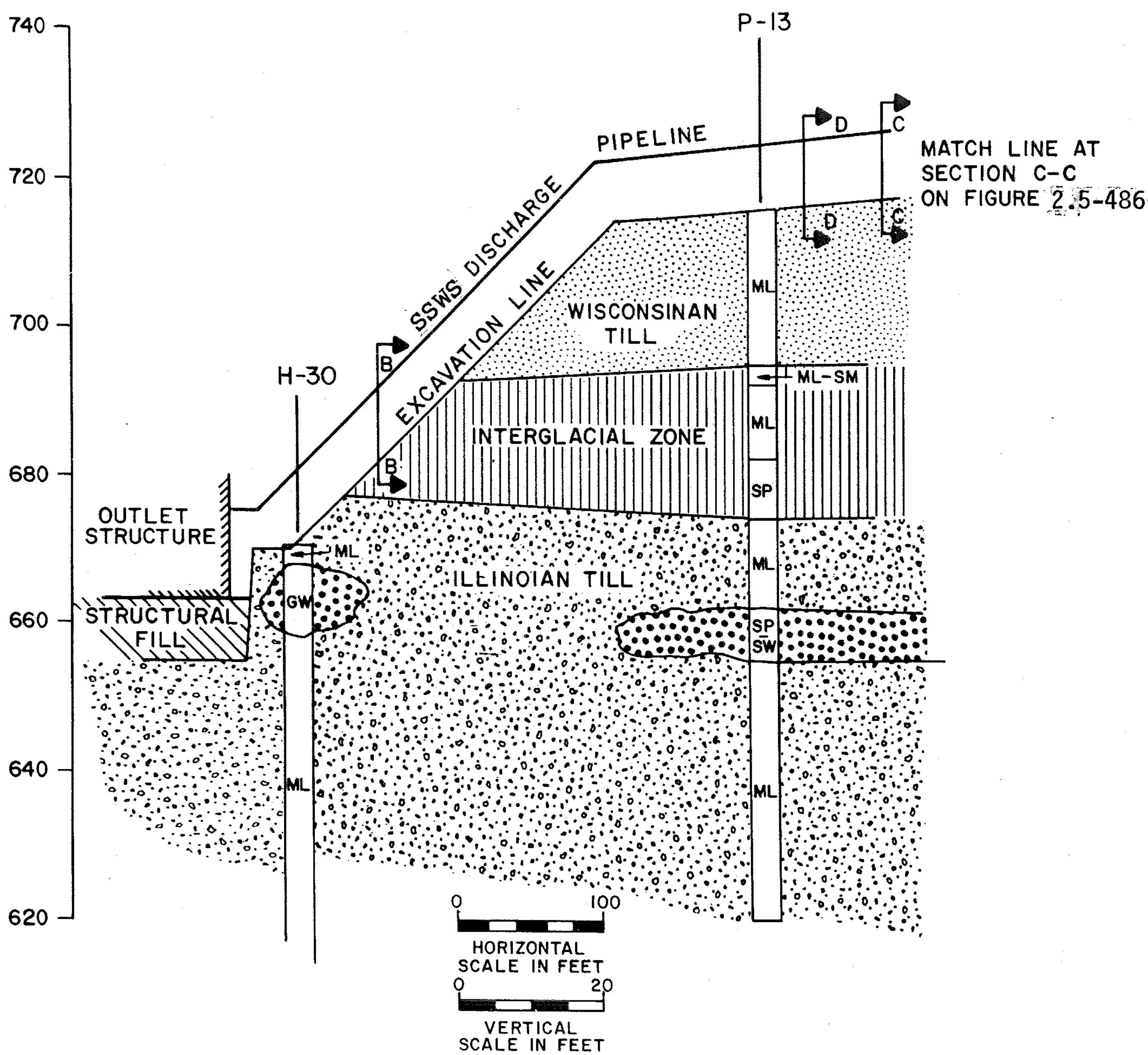
FIGURE 2.5-486

GEOLOGIC PROFILE ALONG SSWS
PIPELINE - SCREENHOUSE
TO MAIN PLANT

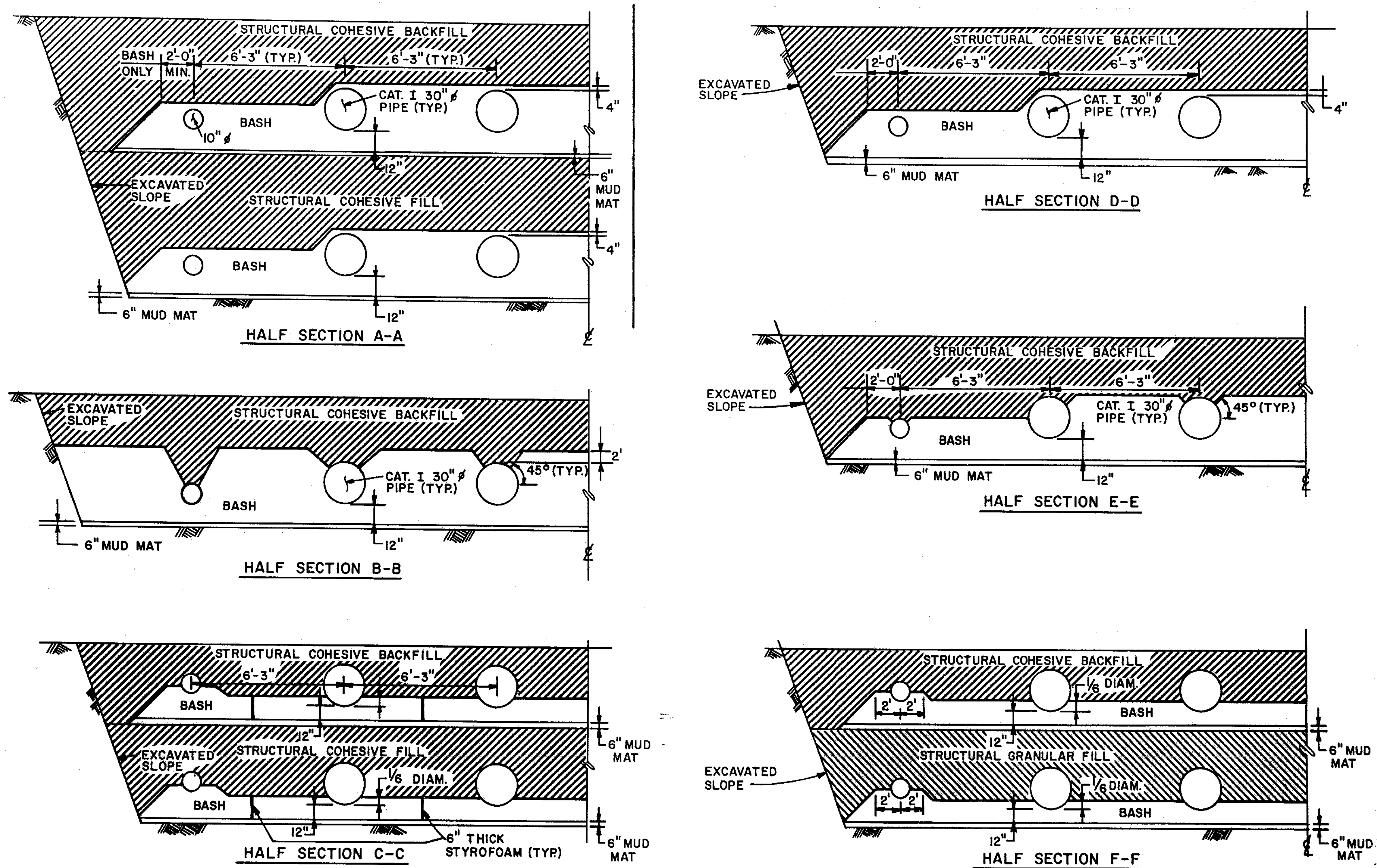


SEE NOTES ON FIGURE 2.5-486
FOR REFERENCE FIGURES.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-487

GEOLOGIC PROFILE ALONG SSWS
PIPELINE - OUTLET STRUCTURE
TO MAIN PLANT



NOTES:

1. SECTIONS GIVEN ARE HALF SECTIONS AND ARE SYMMETRICAL ABOUT THE CENTERLINE.
2. SECTION C-C IS TYPICAL FOR ALL BEND LOCATIONS ALONG PIPELINE.
3. SECTION F-F IS FOR AREA IMMEDIATELY ADJACENT TO MAIN PLANT STRUCTURE ONLY.
4. LOCATION OF SECTIONS SHOWN ON FIGURES 2.5-486 AND 2.5-487.

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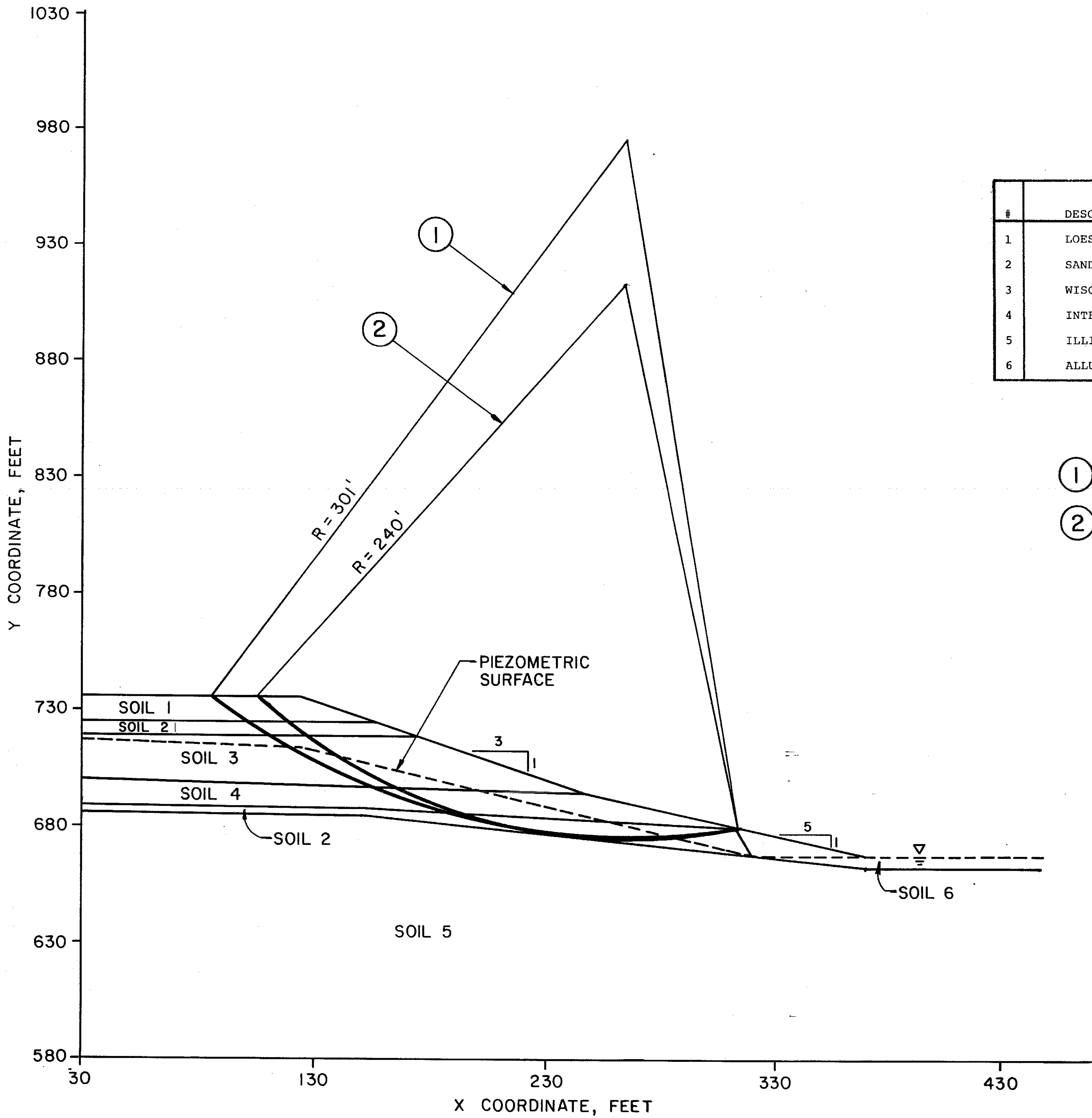
FIGURE 2.5-488

TYPICAL CROSS SECTIONS
SSWS PIPELINE



#	DESCRIPTION	SOIL DATA		
		γ' (PCF)	C' (PSF)	ø
1	LOESS	120.0	0	20
2	SAND	125.0	0	38
3	WISCONSIN TILL	137.0	600	30
4	INTERGLACIAL	131.0	600	30
5	ILLINOIAN TILL	150.0	0	47
6	ALLUVIUM	120.0	120	38

1 F.S : 1.21 (PSEUDO)

2 F.S : 2.42 (STATIC)

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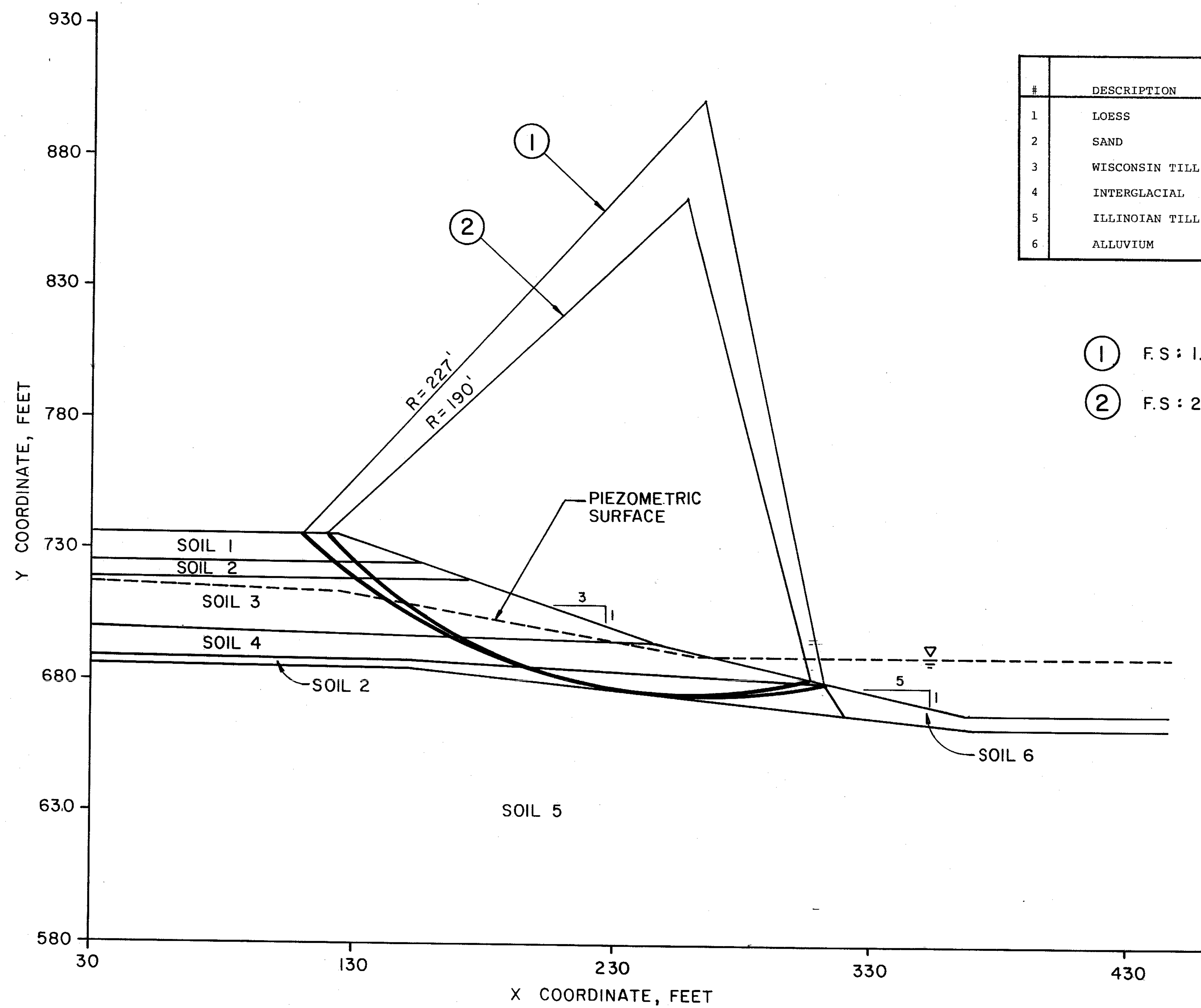
FIGURE 2.5-489

STABILITY ANALYSIS - END OF CONSTRUCTION CONDITION - SECTION Y-Y, ULTIMATE HEAT SINK



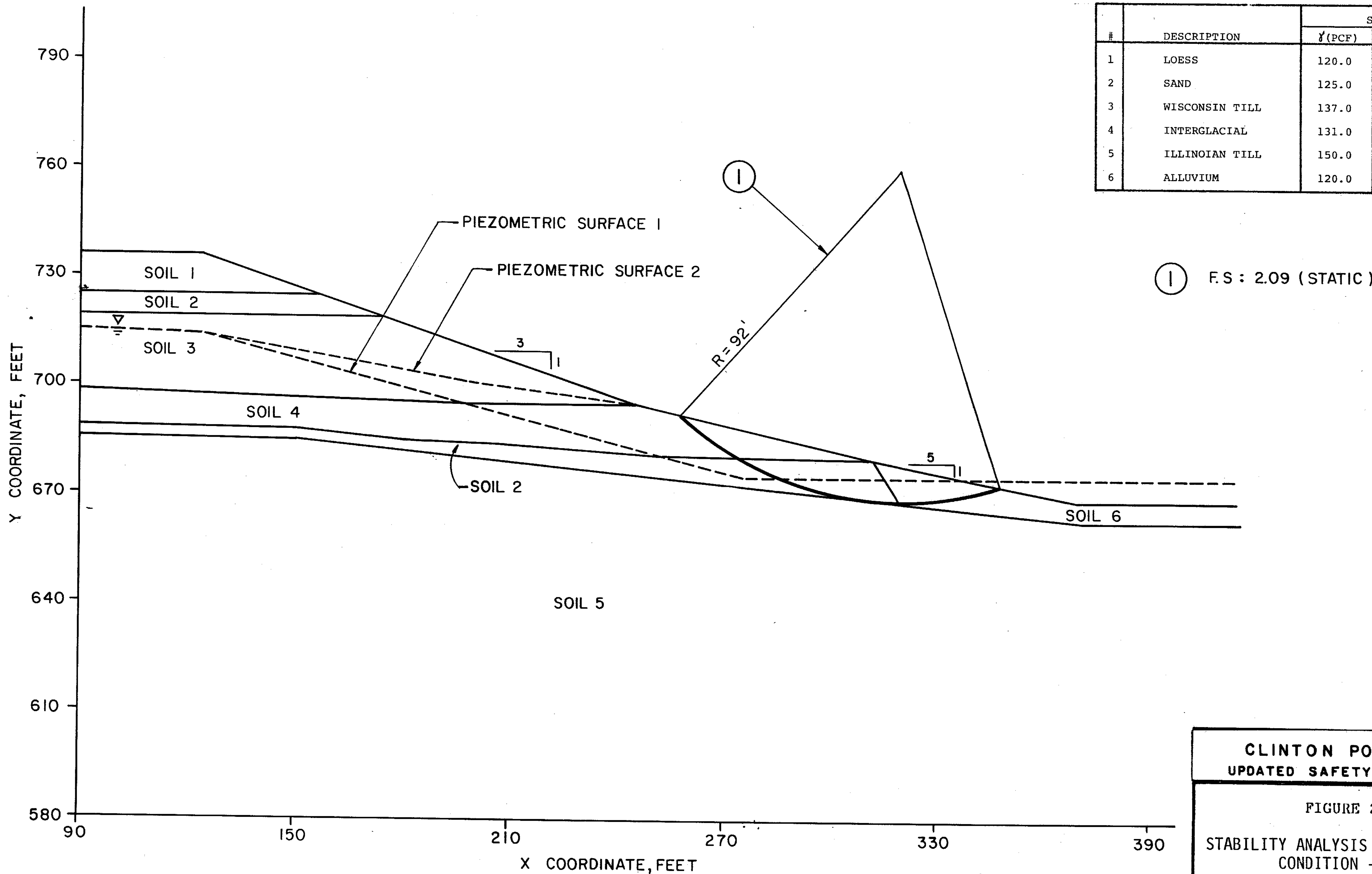
#	DESCRIPTION	SOIL DATA γ(PCF)	C' (PSF)	ø
1	LOESS	120.0	0	20
2	SAND	125.0	0	38
3	WISCONSIN TILL	137.0	600	30
4	INTERGLACIAL	131.0	600	30
5	ILLINOIAN TILL	150.0	0	47
6	ALLUVIUM	120.0	120	38

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-490

STABILITY ANALYSIS - FULL COOLING LAKE CONDITION - SECTION Y-Y, ULTIMATE HEAT SINK



#	DESCRIPTION	SOIL DATA		
		γ (PCF)	C' (PSF)	Ø
1	LOESS	120.0	0	20
2	SAND	125.0	0	38
3	WISCONSIN TILL	137.0	600	30
4	INTERGLACIAL	131.0	600	30
5	ILLINOIAN TILL	150.0	0	47
6	ALLUVIUM	120.0	120	38

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.5-491

STABILITY ANALYSIS - EMPTY COOLING LAKE CONDITION - SECTION Y-Y, ULTIMATE HEAT SINK

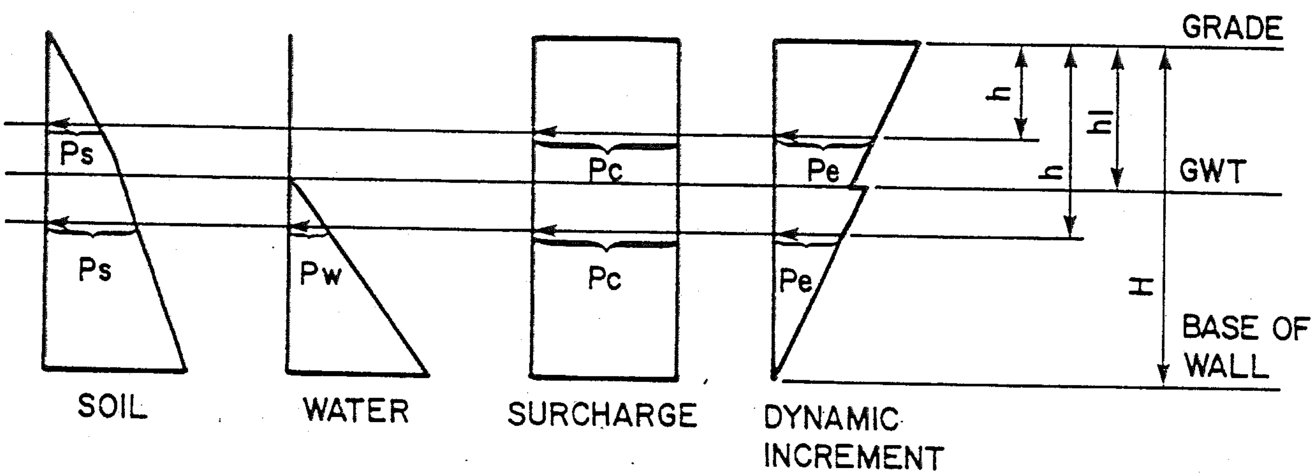


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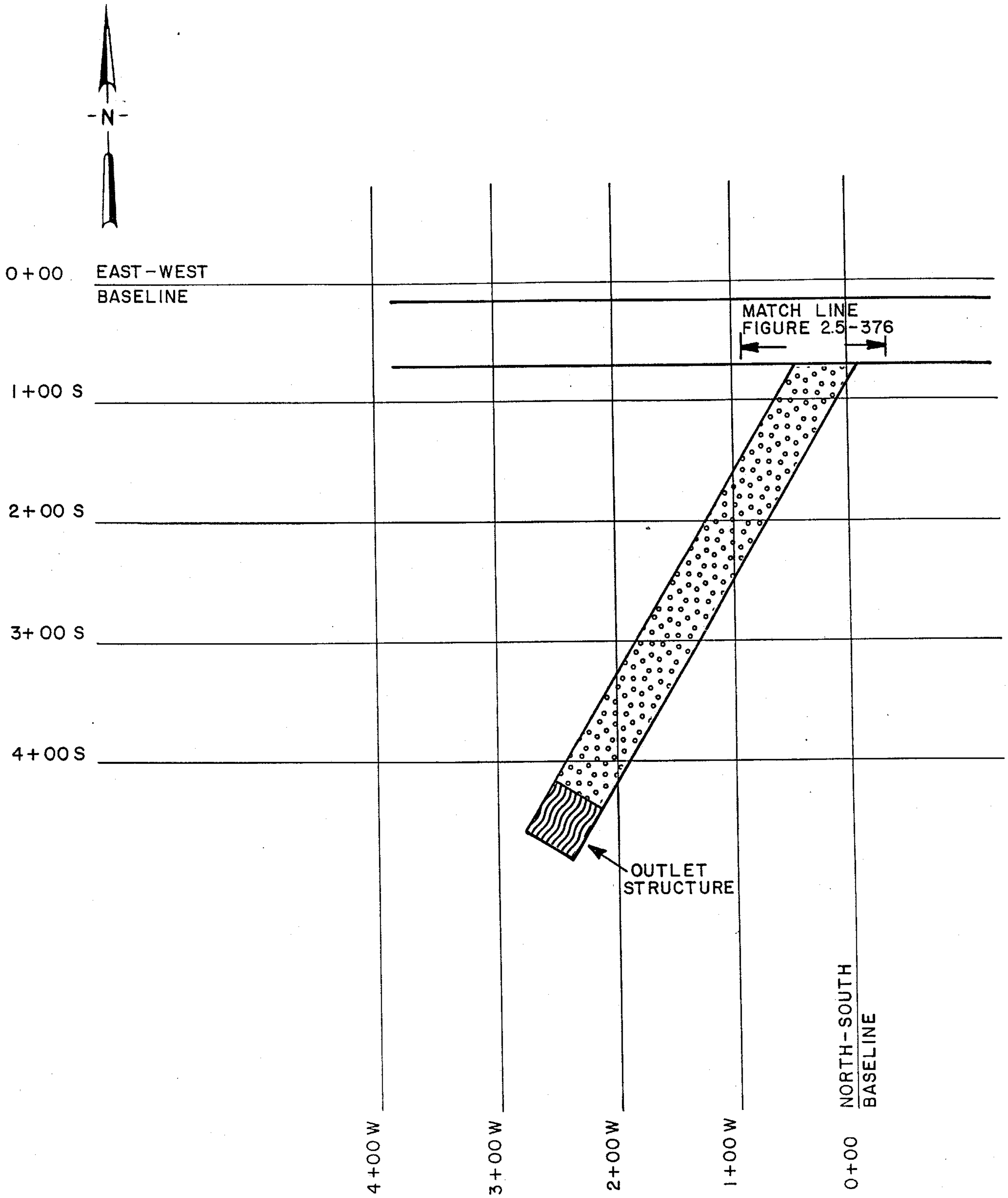
Figure 2.5-492
(Q & R 241.7)

LATERAL SOIL PRESSURES

Figures 2.5-493 through 2.5-495
Deleted



NOTE

SEE FIGURE 2.5-376 FOR KEY.

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Figure 2.5-496
(Q & R 241.8)
FLY ASH MIXTURE AS FILL
AND BACKFILL FOR THE
SSWS DISCHARGE PIPELINE

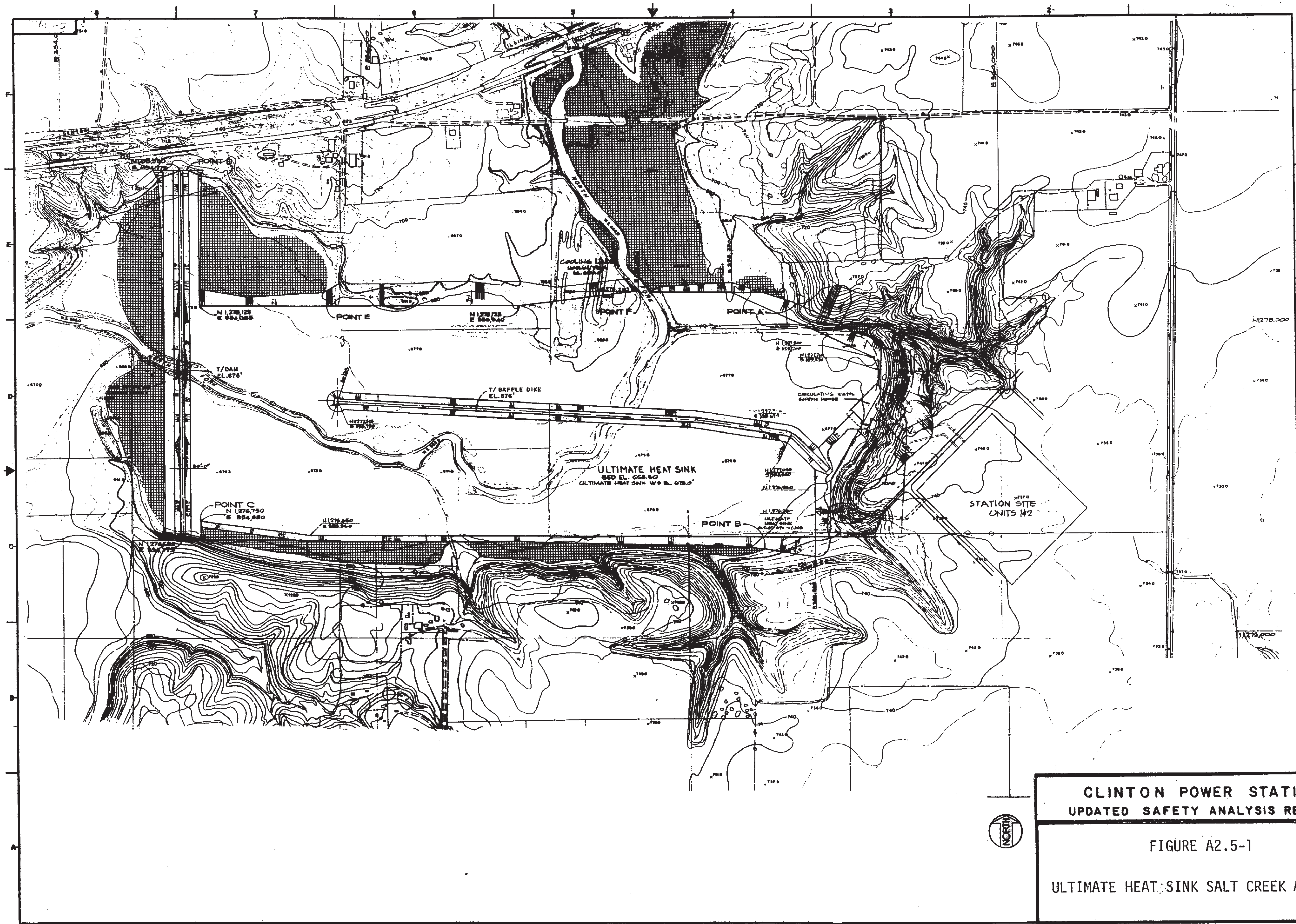

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FIGURE A2.5-1

ULTIMATE HEAT SINK SALT CREEK ALLUVIUM

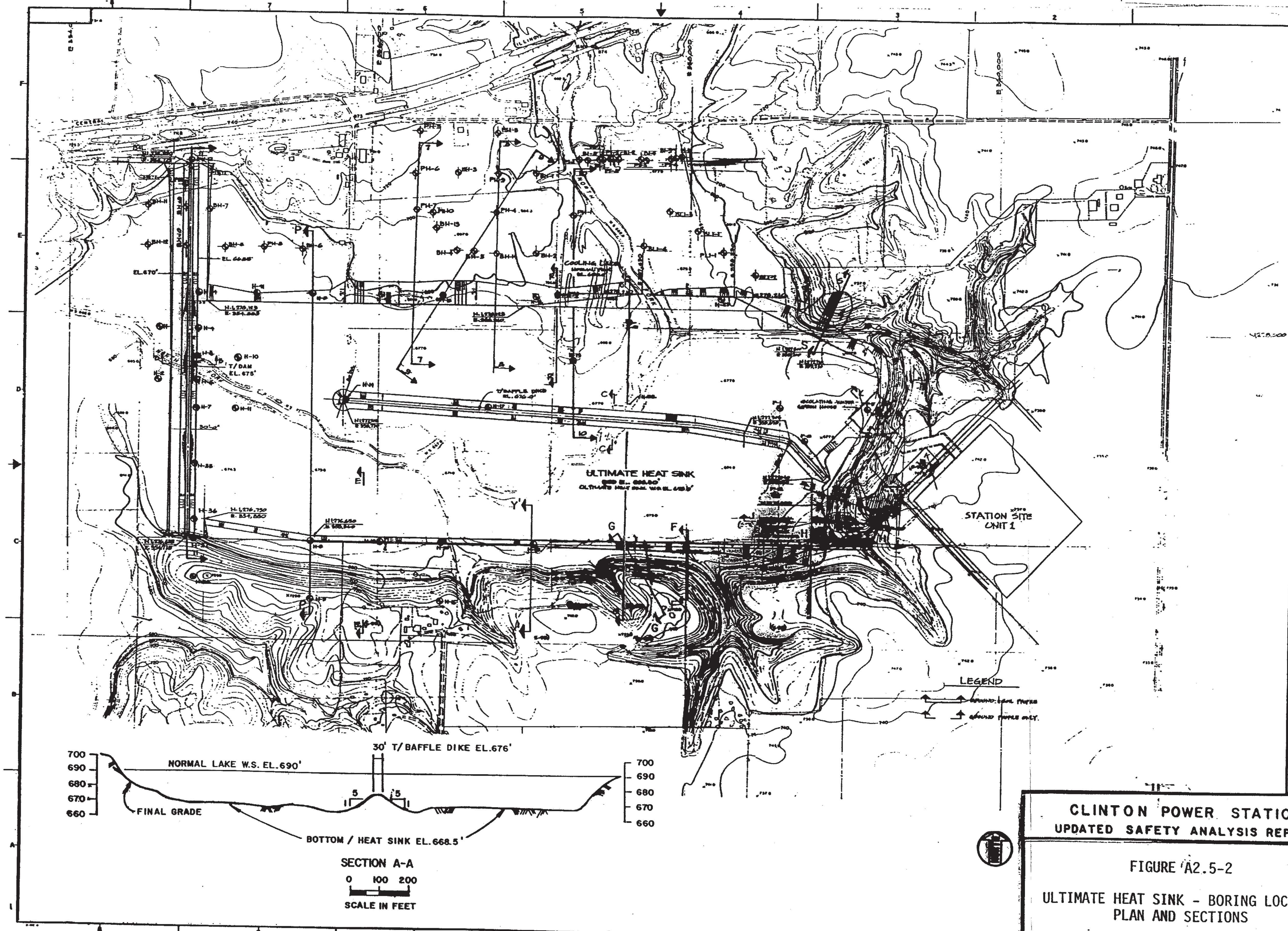

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FIGURE A2.5-2

ULTIMATE HEAT SINK - BORING LOCATION PLAN AND SECTIONS

BORING BH-1

SURFACE ELEVATION 690.3 ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Qu}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0												TOP OF OUTWASH	
				1500*			19.4			6 SS	SM	Brown, sandy silt, some fine gravel	
							20.5					-large boulder noticed at 4.0'	
5										44 SS			
	MA						13.0		29.8	17 SS			
10										30 SS		-some thin sand seams	
										27 SS		-mottled	
							10.0	127				TOP OF ILLINOIAN TILL	676.3
15	MA						7.3	137	56.5	100/5"SS	ML	Gray, silt, some fine sand, trace fine gravel	
							8.0	131		52 SS			
										94 SS		Gray, silt, trace fine to coarse sand, trace fine gravel	
20													

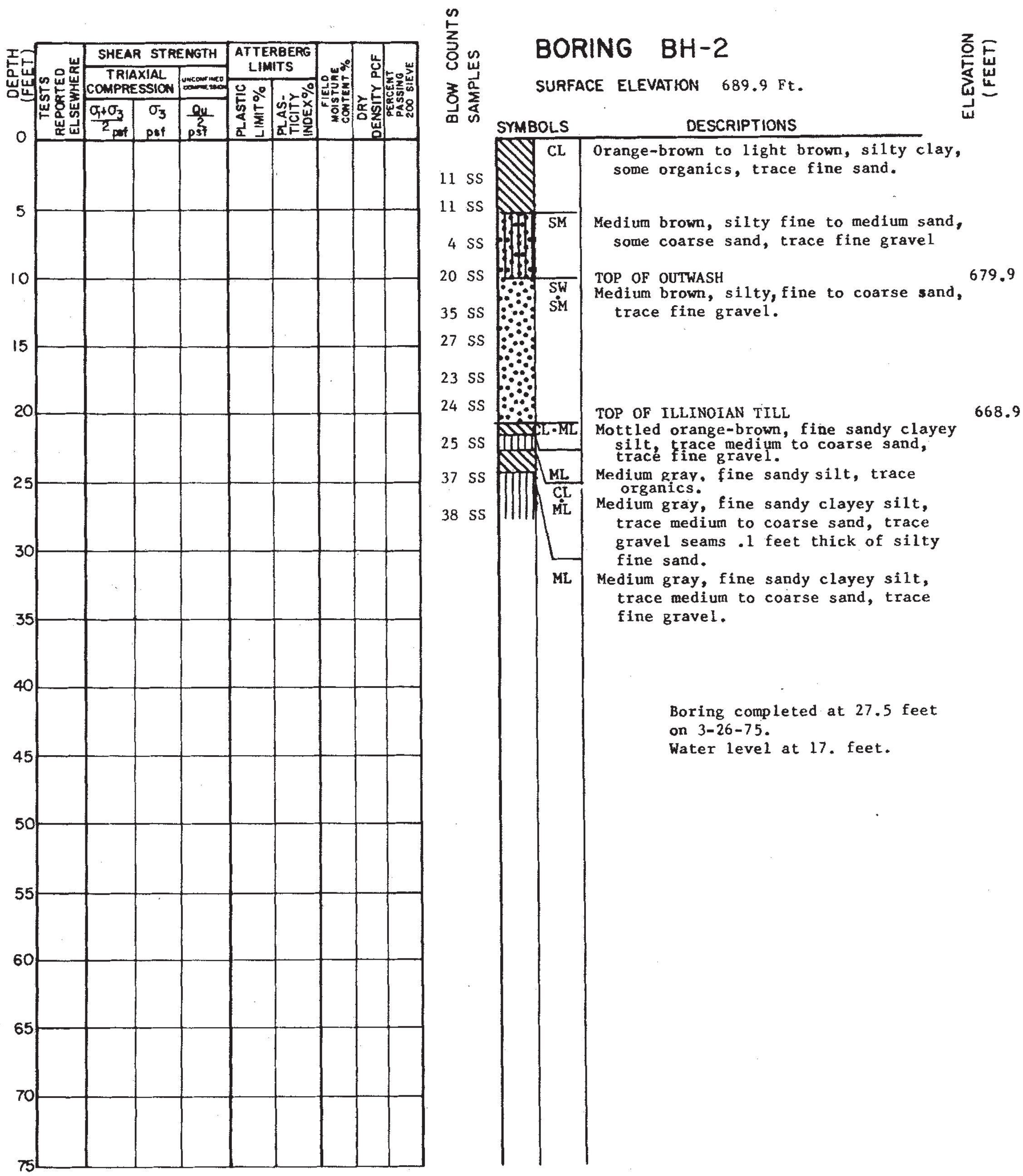
Boring completed at 20. feet on 4-1-75

Water level not recorded.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-3

LOG OF BORING BH-1



CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-4

LOG OF BORING BH-2

BORING BH-3

SURFACE ELEVATION 700.6 Ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Qu}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
0				2000*	19.2	28.7	24.2		
				1100*			28.4	94	
5	MA			3000*			17.0		37.3
10	MA						30.5		15.6
				2200*	13.3	10.7	14.5	123	
15	MA			6370			11.6	127	61.3
							14.5		
20				1700*			14.1	128	
							10.2		
30	MA						17.6		25.3
							22.9		
40							19.3		
45	SA								9.7
							20.6		
55				11930			7.8	139	
60									
65									
70									
75									

BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
8 SS	CL	Mottled brown to light brown, fine sandy clay, some silt.	
11 SS			
11 SS		TOP OF OUTWASH	693.1
4 SS	SM	Reddish brown, silty fine sand, some medium sand.	
4 SS	SM-GP	-some medium to coarse sand, trace fine gravel. -some fine to coarse gravel.	
19 SS	CL	Medium dark brown, fine sandy clay, some silt, trace medium to coarse sand, trace gravel.	
100 SS	SW-SM	Medium dark brown, silty fine to coarse sand, trace fine gravel.	
163 SS	SP-SM	Medium dark brown, silty fine to medium sand.	
37 SS	ML	Medium dark brown, fine sandy silt, some clay, trace medium to coarse sand, trace fine gravel.	
129 SS	SM	Medium dark brown silty fine to coarse sand, trace fine gravel.	
117 SS	ML	Medium dark brown, fine sandy silt, some clay, trace medium to coarse sand.	
192 SS	SM	Medium dark brown, silty fine to coarse sand, trace fine gravel.	
96 SS	SP	Medium dark brown, fine sand, some silt, trace medium to coarse sand.	
98 SS			
67 SS	SP	Medium brown, fine to medium sand.	
41 SS		Medium brown, fine to medium sand, trace coarse sand.	
54 SS		Reddish brown, fine to medium sand, some silt, trace coarse sand.	
68 SS			
91 SS			
162 SS		TOP OF ILLINOIAN TILL	652.1
206 SS	ML	Medium gray, fine sandy silt, some clay, trace fine gravel.	
173 SS			

Boring completed at 55.0 feet on 4-2-75.

Water level at 11. feet.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-5

LOG OF BORING BH-3

BORING BH-4

SURFACE ELEVATION 694.0 Ft.

Tests Reported Elsewhere	Triaxial Compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Triaxial Compression σ_3 psf	Unconfined Compr. Str. $\frac{q_u}{2}$ psf	Plastic Limit %	Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts / Samples	Symbols	Descriptions	Elevation (Feet)
									11 SS	CL	Medium brown, silty clay, some fine sand.	
			1600*			22.0	105					
			1300*	18.8	26.1	25.1	102		10 SS		Mottled light brown to medium dark brown, clayey silt, some fine to medium sand.	
MA						16.3		16.0	4 SS		TOP OF OUTWASH	
SA						19.3		12.8	2 SS	SW - SM	Reddish brown, silty, fine to medium sand, some coarse sand, trace fine gravel.	686.5
									1/18"SS			
SA						27.8		14.9	1/18"SS		TOP OF ILLINOIAN TILL	677.0
									19 SS	ML CL	Medium brown, silt, some clay, trace medium to coarse sand, trace fine gravel.	
						14.5						
			4690	13.3	6.1	12.1	128		56 SS			
									137 SS			
						11.5						
			9360			9.8	143		94 SS			
									70 SS	ML	Medium gray, silt, some clay, some medium to coarse sand, trace fine gravel.	

Boring completed at 27.5 feet on 3-3-75.
Water level not recorded.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-6

LOG OF BORING BH-4

BORING BH-5

SURFACE ELEVATION 691.8

Tests Reported Elsewhere	Shear Strength: Triaxial Compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression σ_3 psf	Shear Strength: Unconfined Compression $\frac{q_u}{2}$ psf	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Field Moisture Content %	Dry Density PCF	Percent Passing 200 Sieve	Blow Counts / Samples	Symbols	Descriptions	Elevation (Feet)
			2330	19.6	27.9	24.1	102		14 SS	CL	Medium to light brown, silty clay, some fine sand.	
MA						17.6		17.8	9 SS		TOP OF OUTWASH	687.8
SA						20.7		11.9	4 SS	SW • SM	Reddish-brown, fine to coarse sand, little fine gravel, trace silt.	
									3 SS			
MA						27.4	103	26.0	2 SS	ML • SM		
MA						23.4	107	48.3	4 SS		Reddish-brown, silt and fine to coarse sand.	
									4 SS			
SA						14.6		7.6	21 SS	SW	Reddish-brown, fine to coarse sand, trace silt, trace fine to medium gravel.	
									14 SS			
SA						16.5		5.9	21 SS			
									38 SS			
SA						14.2		5.6	51 SS			
									60 SS		-grades gray	
SA						15.6		6.9	48 SS		-grades light brown	
									47 SS			
									34 SS		-grades medium brown	
			4500+*	10.6	10.0	9.5			162 SS		TOP OF ILLINOIAN TILL	651.8
			4500+*			10.2	136		153/6" SS	ML	Medium gray, silt, some fine to coarse sand, some clay, trace fine gravel.	

Depth (feet): 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

Boring completed at 44.0 feet
on 4-1-75.
Water level not recorded.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-7

LOG OF BORING BH-5

BORING BH-6

SURFACE ELEVATION 685.0 Ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT%	PLASTICITY INDEX%	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
										5 SS
5				1000*	20.5	15.1	28.7	100		4 SS
				660			23.5	105		9 SS
10				1410	15.7	30.7	31.6	98		7 SS
				300*			35.7			3 SS
15	SA						23.8		29.6	8 SS
										28 SS
20				4790			9.0	139		41 SS
							8.8			53 SS
25							9.3	137		116 SS
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF SALT CREEK ALLUVIUM Grayish brown to brown mottled, silty clay, trace fine sand.	
	Light grayish brown mottled, silty clay.	
GC • GM	TOP OF OUTWASH Gray, clayey gravel, some silt.	671.0
ML	TOP OF ILLINOIAN TILL Gray, silt, trace fine to coarse sand, trace fine gravel.	669.0

Boring completed at 25. feet on 4-1-75.
Water level at 6.5 feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-8

LOG OF BORING BH-6

BORING BH-7

SURFACE ELEVATION 681.8 Ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0											
										13	SS
5				1800*			23.3	104		15	SS
					15.7	30.7				6	SS
				700*			31.3			3	SS
10											
										17	SS
15	SA						12.9		8.3	15	SS
										43	SS
20							8.7			105	SS
										129	SS
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF SALT CREEK ALLUVIUM Black, silty clay - topsoil.	
CL	Mottled dark to light brown, silty clay, trace fine sand.	
GW · GM	TOP OF OUTWASH Mottled brownish orange to medium gray, silty, fine to coarse gravel and fine to coarse sand. Medium brown, fine to coarse gravel, trace fine to coarse sand, some silt.	669.8
ML	TOP OF ILLINOIAN TILL Medium gray, silt, some fine to coarse sand, trace fine gravel.	663.3

Boring completed at 22.5 feet on 4-2-75.
Water level at 7. feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-9

LOG OF BORING BH-7

BORING BH-8

SURFACE ELEVATION 681.7 Ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Qu}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT%	PLASTICITY INDEX%	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES
0										
										8 SS
5				500*	17.6	22.8	27.4	106		3 SS
					15.2	9.5	28.1			2 SS
10										4 SS
	MA						12.6		9.7	19 SS
15										30 SS
										23 SS
20				4000*			11.4	141		33 SS
							10.6	136		123 SS
							11.8	137		100/2" SS
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL	TOP OF SALT CREEK ALLUVIUM Mottled grayish black to brown, silty clay, trace fine sand.	
ML	Brown, silt, trace fine sand.	
	TOP OF OUTWASH	673.7
SP	Brown, fine sand, some silt.	
SM	Brown, fine to coarse sand, some gravel, trace silt.	
GP	Brown, fine to medium gravel.	
	TOP OF ILLINOIAN TILL	663.7
ML	Gray silt, trace fine to coarse sand, trace fine gravel.	

Boring completed at 25. feet on 3-31-75.
Water level at 3. feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-10

LOG OF BORING BH-8

BORING BH-9

SURFACE ELEVATION 682.1 Ft.

Depth (feet)	Tests reported elsewhere	Shear strength – Triaxial compression $\frac{\sigma_1+\sigma_3}{2}$ psf	Shear strength – Triaxial compression σ_3 psf	Shear strength – Unconfined compression $\frac{Q_u}{2}$ psf	Atterberg limits – Plastic limit %	Atterberg limits – Plasticity index %	Field moisture content %	Dry density pcf	Percent passing 200 sieve	Blow counts	Samples
										5	SS
5				1000*			23.5			5	SS
										2	SS
10	MA						23.9		64.4	2	SS
										2	SS
15	SA						10.4		96	21	SS
										49	SS
20					10.5	9.3	11.0	142		52	SS
							10.0			154	SS
25							13.3	132		133	SS
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											

Symbols	Descriptions	Elevation (feet)
CL ML	TOP OF SALT CREEK ALLUVIUM Blackish-to-brownish gray, silty clay, trace organics.	
ML	Brown, silt, some fine sand, trace clay.	
GP	TOP OF OUTWASH Brownish gray, fine to coarse gravel, some fine to coarse sand.	668.1
ML	TOP OF ILLINOIAN TILL Gray, clayey silt, trace fine to coarse sand, trace fine gravel.	665.6

Boring completed at 25. feet on 3-31-75.
Water level at 4. feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-11

LOG OF BORING BH-9

BORING BH-10

SURFACE ELEVATION 680.9 Ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Qu}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0										9	SS
5					16.5	23.3	25.4	106		3	SS
										2	SS
10							24.7			2	SS
	SA						22.6		34.9	4	SS
15										16	SS
							10.6	134		32	SS
20										34	SS
							11.3	138		70	SS
25											
30											
35											
40											
45											
50											
55											
60											
65											
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF SALT CREEK ALLUVIUM	
CL	Blackish-to-brownish gray, silty clay, trace fine sand.	
ML	Gray, silt, some fine sand.	
SM	Gray, silty fine sand.	
	TOP OF ILLINOIAN TILL	666.9
ML	Gray, sandy silt, some fine gravel.	

Boring completed at 22.5 feet on 3-31-75.

Water level at 3.5 feet.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-12

LOG OF BORING BH-10

BORING BH-11

SURFACE ELEVATION 685.5 Ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{Qu}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
5					14.4	19.2	19.2	115	
							22.5		
					15.2	17.6	26.6		
15				500*			22.6	114	
							14.3		

BLOW COUNTS / SAMPLES: 7 SS, 6 SS, 4 SS, 4 SS, 4 SS, 4 SS, 22 SS, 43 SS, 99 SS, 57 SS, 119 SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TOP OF SALT CREEK ALLUVIUM	
CL	Grayish brown to brown, silty clay, trace fine sand, trace organics.	
CL • ML	Brown, silty clay, some fine to medium sand, trace fine to medium gravel.	
	TOP OF OUTWASH	670.5
SP SM	Gray, fine to coarse sand, little silt, trace fine to medium gravel.	
	TOP OF ILLINOIAN TILL	668.5
ML	Gray, clayey silt, trace fine to coarse sand, trace fine gravel.	

Boring completed at 27.5 feet on 3-26-75.

Water level not recorded.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-13

LOG OF BORING BH-11

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{Qu}{2}$ psf	ATTERBERG LIMITS PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0										7 SS 9 SS	CL ML	TOP OF SALT CREEK ALLUVIUM Grayish black to brownish gray, silty clay, trace fine sand.	
5										2 SS 2 SS	SM	TOP OF OUTWASH Reddish brown, silty fine sand, trace clay.	675.0
10										21 SS 23 SS	GP	Reddish brown to dark brown, silty fine gravel, trace fine to coarse sand.	
15										41 SS 37 SS 237 SS 150/2"SS	ML	TOP OF ILLINOIAN TILL Gray, clayey silt, some fine to coarse sand, trace fine gravel.	664.0
20													
25													
30													
35													
40													
45													
50													
55													
60													
65													
70													
75													

BORING BH-12

SURFACE ELEVATION 681.0 Ft.

Boring completed at 24. feet on 3-26-75.

Water level at 6.5 feet.

CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT

FIGURE A2.5-14

LOG OF BORING BH-12

BORING BH-13

SURFACE ELEVATION 695.3 Ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES
0–5				2000*						10	SS
					185	254	259	101		13	SS
5–10										9	SS
	MA						162		134	7	SS
10–15										39	SS
	SA						46		104	53	SS
15–20										34	SS
				4500*			120			63	SS
20–25				4500*			116	133		116	SS
							186			31	SS
25–30	SA						144		92	80	SS
							309			142	SS
30–35										127	SS
							179			91	SS
35–40				8250			100	141		115	SS
										133	SS

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
CL-ML	Mottled medium brown to dark brown, silty clay, trace fine sand.	
	TOP OF OUTWASH	689.3
SP	Reddish-brown, medium sand, trace silt, some medium to coarse sand.	
SW	Medium brown, fine to coarse sand, some fine gravel, trace silt.	
ML	Medium brown, silt, some clay, little fine to coarse sand, trace fine gravel.	
SW	Medium brown, fine to coarse sand, trace fine gravel, trace silt.	
ML	Laminated brown to gray, silt, trace fine sand.	
SM	Medium brown, silty fine to coarse sand.	
ML	Laminated black to gray, silt, trace fine sand.	
	TOP OF ILLINOIAN TILL	659.3
ML	Medium gray, silt, some clay, some fine to coarse sand, trace gravel.	

Boring completed at 40. feet on 4-3-75.

Water level not recorded.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-15

LOG OF BORING BH-13

BORING BH-14

SURFACE ELEVATION 694.1 Ft.

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE
0–5				2300*			26.0	101	
					17.1	20.2	24.2		
5–10	MA						18.0		18.9
10–15	SA						5.6		10.4
							4.5		
20–25	SA						8.2		10.8
25–30							17.4		
							28.6		
30–35							13.8		
35				6480			10.3	135	
35–40							8.3		

BLOW COUNTS	SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
10	SS	CL	Mottled medium to dark brown, silty clay, trace fine sand, trace organics.	
8	SS			
			TOP OF OUTWASH	688.1
7	SS	SM	Reddish-brown, silty, fine to coarse sand, trace fine to medium gravel.	
14	SS	SW	Medium brown, fine to coarse sand, some fine to medium gravel, trace silt.	
64	SS			
77	SS			
47	SS			
48	SS			
25	SS	GP	Medium brown, fine to medium gravel, some fine to coarse sand, trace silt.	
18	SS			
57	SS	SP	Medium gray, fine to coarse sand, some fine gravel.	
23	SS	ML	Mottled medium to dark gray, silt.	
			TOP OF ILLINOIAN TILL	665.1
28	SS	ML	Medium gray, silt, some fine to coarse sand, trace fine gravel.	
75	SS			
168	SS			

Boring completed at 37.5 feet on 4-4-75.
Water level at 22.0 feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-16

LOG OF BORING BH-14

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

BORING PH-1

SURFACE ELEVATION 689.2 Ft.

BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL-ML	Brown mottled, silty clay.	
		Brown, silty clay, trace fine gravel.	
		TOP OF OUTWASH	680.2
BG	SP-SM	Brown, silty fine to coarse sand, trace fine gravel.	
	CL-ML	Gray, silty clay, trace fine gravel.	
	ML	Grayish brown, silt, trace organics.	
		TOP OF ILLINOIAN TILL	666.7
	ML	Gray, silt, some fine to coarse sand, some fine gravel.	

Boring completed at 25. feet on 3-25-75.

Water level not recorded.

CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT

FIGURE A2.5-17

LOG OF BORING PH-1

BORING PH-2

SURFACE ELEVATION 687.7 Ft.

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

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL • ML	Brown mottled, silty clay.	
		TOP OF OUTWASH	683.2
	SC • SM	Brown, clayey, fine to coarse sand, some silt, little fine gravel.	
BG	SP • SM	Brown, silty, fine to coarse sand, some fine gravel.	
	ML	Gray, silt, some fine to medium sand, trace fine gravel.	
	ML	Gray, silt, trace organics.	
		TOP OF ILLINOIAN TILL	664.2
	ML	Gray, clayey, silt, trace fine to coarse sand, trace fine gravel.	

Boring completed at 35. feet
on 3-25-75.
Water level at 16.5 feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-18

LOG OF BORING PH-2

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

BORING PH-3

SURFACE ELEVATION 697.3 Ft.

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL-ML	Grayish black, silty clay, some fine to coarse sand.	
	SC	Brown, clayey, fine to medium sand, some silt, trace fine gravel.	
	CL-ML	Brownish gray, silty clay, trace fine to coarse sand, trace fine gravel.	
		TOP OF OUTWASH	
	SP	Brown, medium sand, trace gravel, trace silt.	682.3
	ML	Gray, silt, some fine sand.	
	SP	Reddish brown, silty coarse sand.	
		-grades with silt.	
		TOP OF ILLINOIAN TILL	655.8
	ML	Gray, silty, clay, trace fine to coarse sand, trace fine gravel.	

Boring completed at 42.5 feet
on 3-24-75.
Water level 16.0 feet.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-19

LOG OF BORING PH-3

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	SHEAR STRENGTH: TRIAXIAL COMPRESSION σ_3 psf	SHEAR STRENGTH: UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE

The depth scale beside the table runs from 0 to 75 feet in 5-foot steps (0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75). All cells of the table are blank.

BLOW COUNTS

SAMPLES

BORING PH-4

SURFACE ELEVATION 694.5 Ft.

SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL-ML	Orange-brown, mottled, silty, clay.	
		TOP OF OUTWASH	
	SP-SM	Brown, silty fine to coarse sand, trace fine gravel.	689.5
	SW	-silt and gravel grade out.	
		TOP OF ILLINOIAN TILL	677.5
	ML	Gray,silt, trace clay, trace fine to coarse sand, trace gravel.	

Boring completed at 25. feet
on 3-24-75.
Water level not recorded.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-20

LOG OF BORING PH-4

BORING PH-5

SURFACE ELEVATION 722.6 Ft.

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

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL-ML	TOP OF WISCONSINAN TILL Medium brown, silty clay, some fine sand.	
	ML-CL	Mottled brown to orange brown, clayey silt, some fine sand, trace fine gravel. -grades dark brown.	
	ML	TOP OF INTERGLACIAL ZONE Mottled green-to-blueish gray, clayey silt, some fine sand.	695.6
	ML	TOP OF ILLINOIAN TILL Medium gray, clayey silt, some fine sand, trace fine gravel.	691.6

Boring completed at 37. feet on 3-25-75.

Water level at 35.5 feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-21

LOG OF BORING PH-5

BORING PH-6

SURFACE ELEVATION 713.0 Ft.

Depth (Feet)	Samples	Symbols	Descriptions	Elevation (Feet)
0	AG	CL	Dark brown to brown, silty clay, trace organics.	
			TOP OF OUTWASH	
		SM	Medium brown, silty fine sand.	707.0
		SW-SM	Medium brown, silty, fine to coarse sand, some fine gravel.	
		ML-CL	Mottled orange brown to gray, clayey silt, some fine sand.	
			-trace fine gravel.	
25			TOP OF ILLINOIAN TILL	688.0
		ML	Medium gray, clayey silt, some fine sand, trace fine gravel.	

Boring completed at 42. feet on 3-25-75.

Water level at 26. feet.

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

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-22

LOG OF BORING PH-6

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

BORING PH-7

SURFACE ELEVATION 699.6 Ft.

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	CL ML	Brown, mottled, silty clay.	
		TOP OF OUTWASH	693.6
	SC	Brown, clayey, fine to medium sand.	
	CL ML	Brownish-gray to brown, silty clay, trace fine to coarse sand, trace fine gravel.	
		TOP OF ILLINOIAN TILL	677.1
	ML CL	Gray, clayey silt, trace fine sand, trace fine gravel.	

Boring completed at 25. feet on 3-24-75.

Water level at 16. feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-23

LOG OF BORING PH-7

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

BLOW COUNTS
SAMPLES

BORING PH-8

SURFACE ELEVATION 682.3 Ft.

SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	ML-CL	TOP OF SALT CREEK ALLUVIUM Blackish gray, clayey silt, trace fine sand.	
	SC-SM	TOP OF OUTWASH Brown, silty fine sand, some clay. -sand grades more coarse.	675.3
	ML-CL	Gray, clayey silt, trace fine to coarse sand, trace fine gravel.	
	ML	Gray silt, trace organics.	
	ML	TOP OF ILLINOIAN TILL Gray, clayey silt, trace fine to coarse sand, trace fine gravel.	666.3

Boring completed at 20. feet
on 3-25-75.
Water level at 8. feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-24

LOG OF BORING PH-8

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

BORING PH-9

SURFACE ELEVATION 691.0 Ft.

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	ML	Dark brownish-black, clayey silt.	
		TOP OF OUTWASH	
	ML	Medium dark brown, silt, some fine to coarse sand.	687.0
	GM SM	-grades with fine to medium gravel silt grades out.	
BG	SM	-gravel grades out.	
		TOP OF ILLINOIAN TILL	677.0
	ML	Medium gray, silt, some fine to coarse sand, trace fine to medium gravel.	

Boring completed at 18.5 feet on 4-2-75.

Water level 8. feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-25

LOG OF BORING PH-9

BORING PH-10

SURFACE ELEVATION 697.5

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

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
AG	ML • CL	TOP OF SALT CREEK ALLUVIUM Light to medium brown, silty clay, trace medium to coarse sand, trace fine gravel.	
	ML	TOP OF OUTWASH Light, orangish-brown, silt, some clay, trace fine to medium gravel, some fine to medium sand.	885.5
BG	SW	Medium brown, fine to coarse sand, some fine gravel, trace silt.	
	SP • SM	Medium brown, silty, fine to medium sand.	
	ML	TOP OF ILLINOIAN TILL Medium gray, silt, trace medium to coarse sand, trace fine to medium gravel.	651.5

Boring completed at 50.0 feet on 4-8-75.
Water level at 15.0 feet.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-26

LOG OF BORING PH-10

BORING PH-11

SURFACE ELEVATION 679.2

DEPTH (FEET)	TESTS REPORTED ELSEWHERE	SHEAR STRENGTH: TRIAXIAL COMPRESSION $\frac{\sigma_1+\sigma_3}{2}$ psf	σ_3 psf	UNCONFINED COMPRESSION $\frac{q_u}{2}$ psf	ATTERBERG LIMITS: PLASTIC LIMIT%	PLASTICITY INDEX%	FIELD MOISTURE CONTENT%	DRY DENSITY PCF	PERCENT PASSING 200 SIEVE	BLOW COUNTS	SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0													TOP OF SALT CREEK ALLUVIUM	
											AG	CL • ML	Dark brown, silty clay, trace fine to medium sand, trace fine gravel.	
15													TOP OF OUTWASH	664.2
												SP • SM	Grayish brown, silty, fine sand. -grades to gray.	
22													TOP OF ILLINOIAN TILL	657.2
												ML	Gray, silt, trace fine gravel, some fine to medium sand.	

Boring completed at 24.5 feet on 4-11-75.
Water level at 18.0 feet.

Depth scale: 0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-27

LOG OF BORING PH-11

BORING PH-12

SURFACE ELEVATION 690.3

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

BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		TOP OF SALT CREEK ALLUVIUM	
AG	CL • ML	Dark brown silty clay, trace fine to coarse sand, trace fine gravel.	
		TOP OF OUTWASH	680.3
	GM	Brown, silty, fine to medium gravel, some fine to medium sand.	
		TOP OF ILLINOIAN TILL	678.3
	ML • CL	Gray, clayey silt, trace fine to medium gravel, some fine to medium sand.	

Boring completed at 19.5 feet
on 4-11-75.
Water level not recorded.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-28

LOG OF BORING PH-12

Key to Boring Logs

Samples

23	Indicates Standard Penetration Test Value
SS	Indicates Sample Obtained Using a Standard Split Spoon
ST	Indicates Shelby Tube Sample Obtained Using a 3.0 inch diameter Shelby Tube
PR	Indicates Sample Obtained Using a Pitcher Sampler (3.0 inch outer diameter)
CR	Indicates Sample Obtained with 4.0 inch outer diameter Core Sampler
OB	Indicates Sample Obtained Using an Osterberg Sampler (3.0 inch sample diameter)
AG	Indicates Auger Boring; No Standard Penetration Values or Samples Obtained Unless Specially Noted
BG	Indicates Bag Sample Obtained
HR	Indicates Sample Obtained with High Recovery Barrel

Test Data

Qu/2	Indicates ½ Unconfined Compressive Strength (Equal to Shear Strength) in P.S.F.
0.50	Value with no Asterisk is Obtained From RIMAC Test
0.50*	Value with Asterisk is Obtained from Pocket Penetrometer

Test Reported Elsewhere

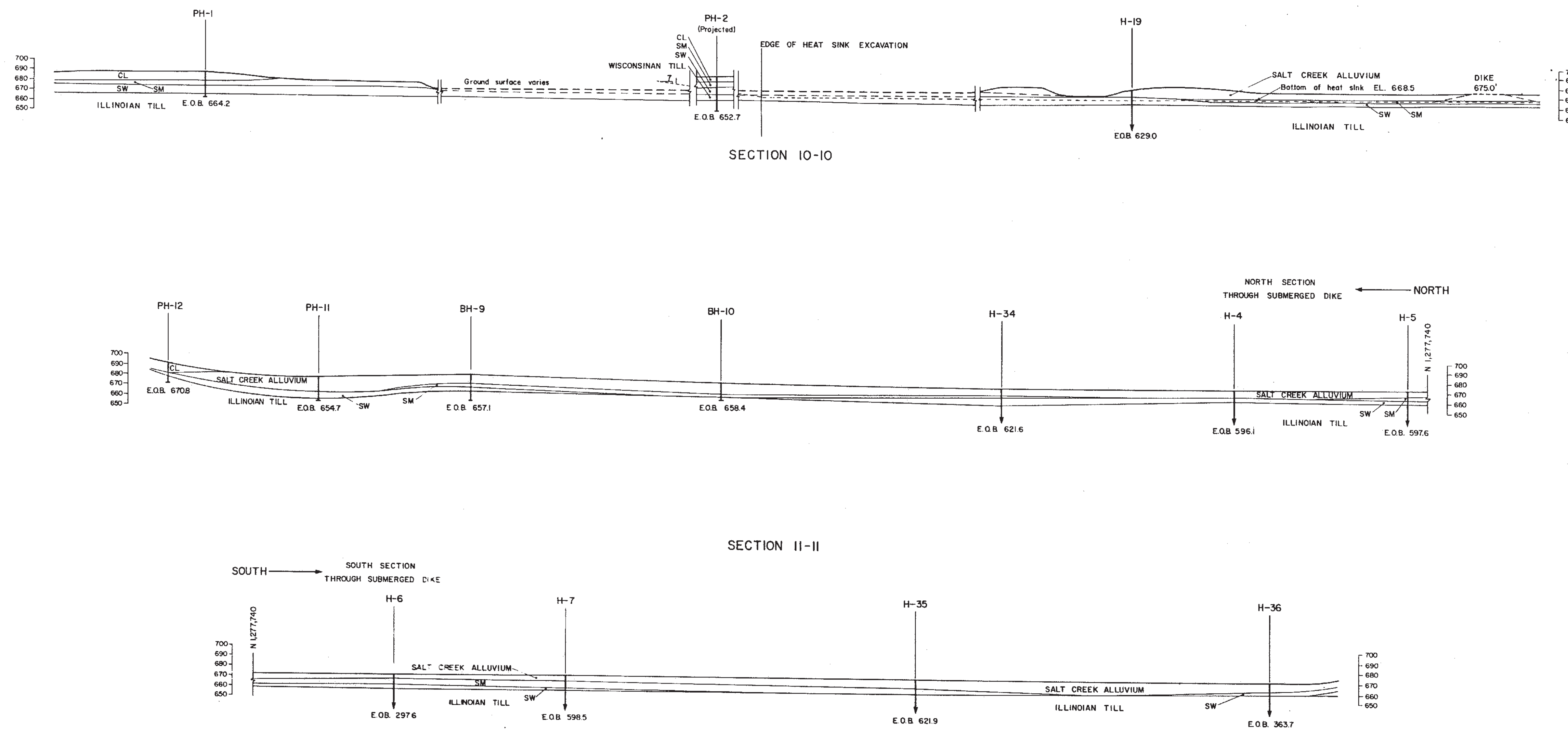
C	Consolidation Test
COMP	Bulk Compaction Test
MA	Mechanical Particle Size Analysis (Sieve and Hydrometer)
PERM	Laboratory Permeability Test
SA	Sieve Analysis
TX/CU/PP	Consolidate-Undrained Triaxial Compression Test with Pore Pressure Measurement
TX/UU/R	Unconsolidated-Undrained Triaxial Compression Test on Remolded Samples
DR	Relative Density Test
UC/R	Remolded Samples

All Elevations Refer to Feet Above Mean Sea Level (MSL)

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

Figure A2.5-29

KEY TO BORING LOGS



NOTES

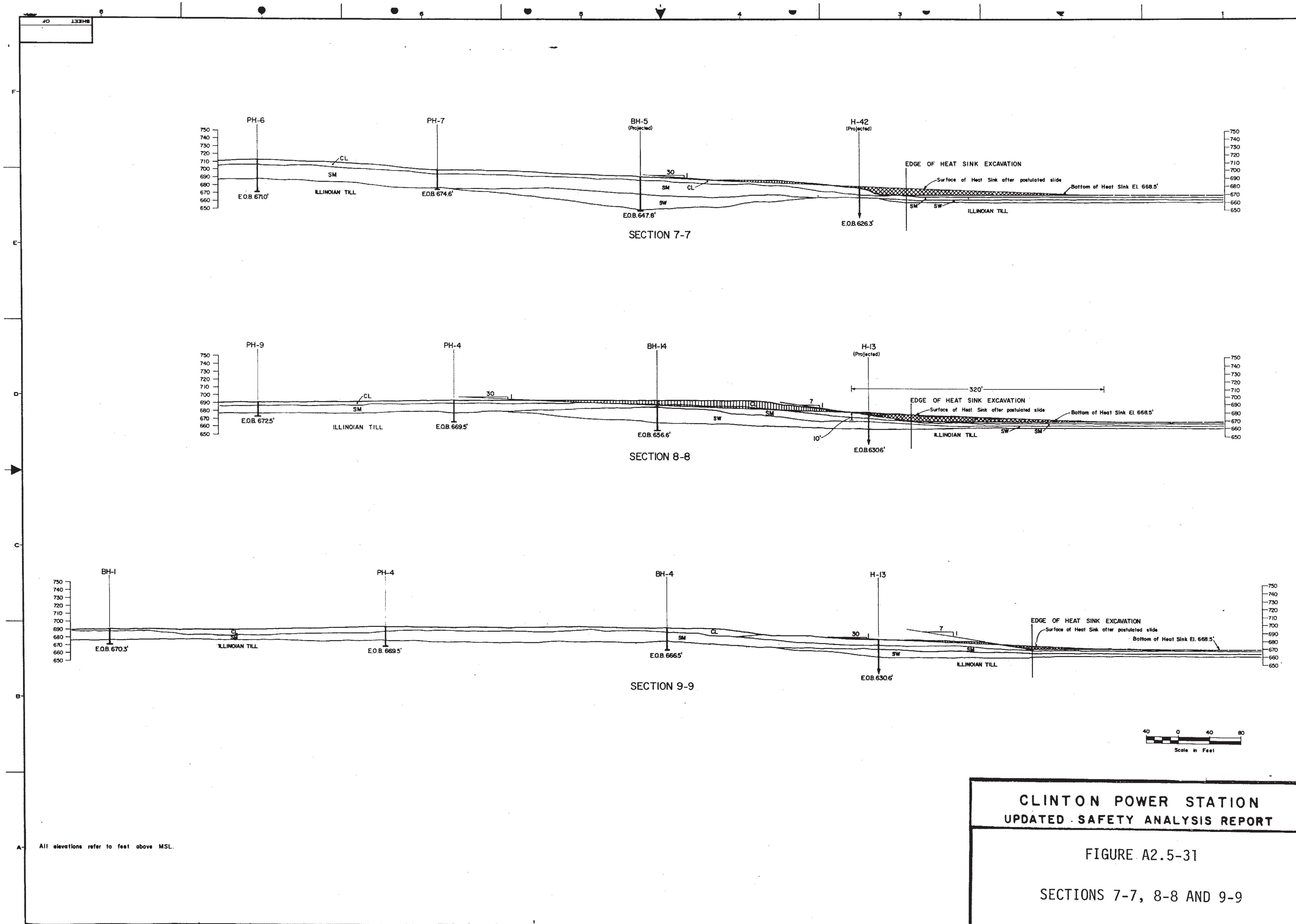
1. Section 10-10: no slide postulated due to quarry beyond the excavated slope.
2. Section 11-11: Salt Creek alluvium excavated due to construction of submerged dike.

All elevations refer to feet above MSL.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-30

SECTIONS 10-10 AND 11-11

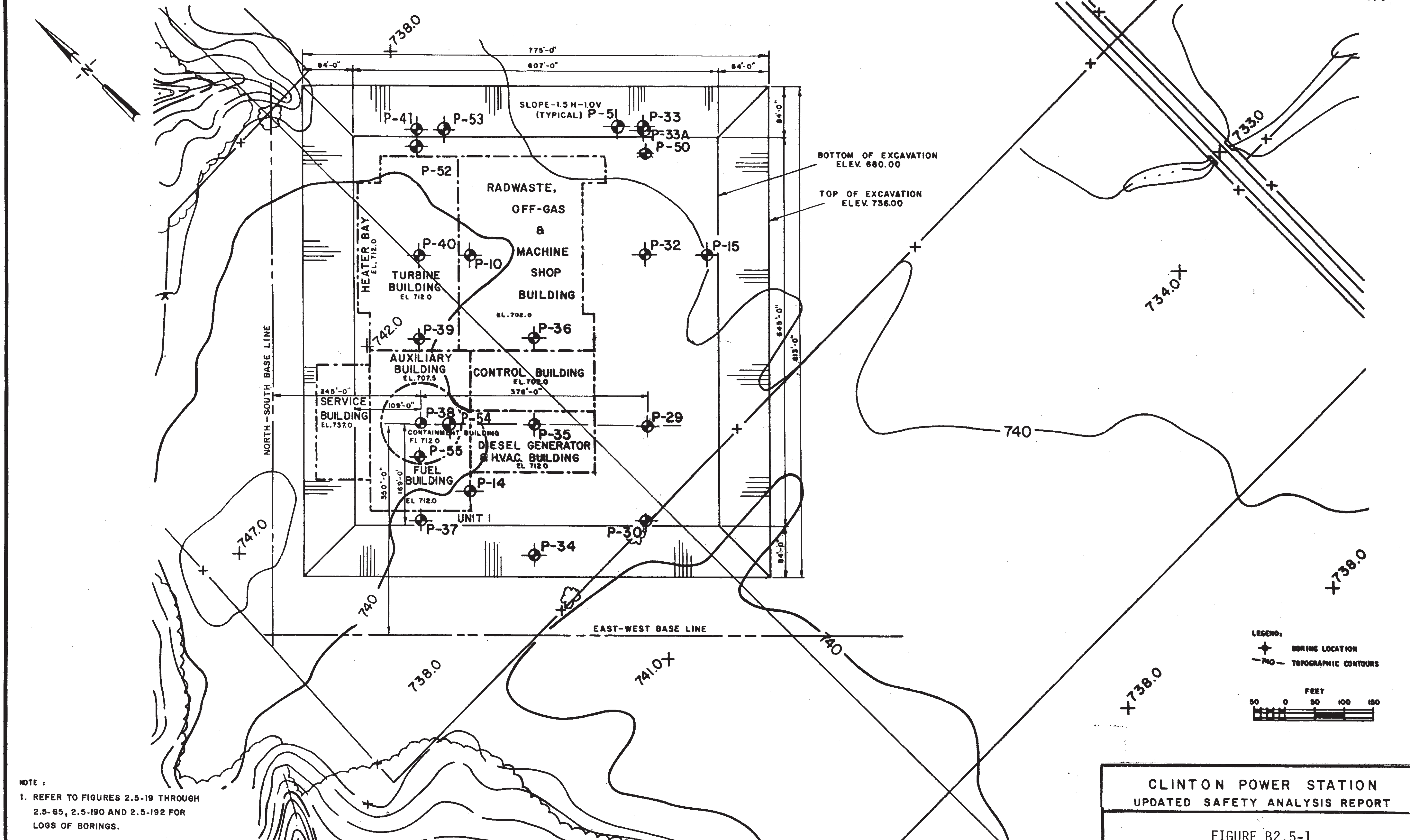


CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE A2.5-31

SECTIONS 7-7, 8-8 AND 9-9

REVISION 3
SEPTEMBER 1991

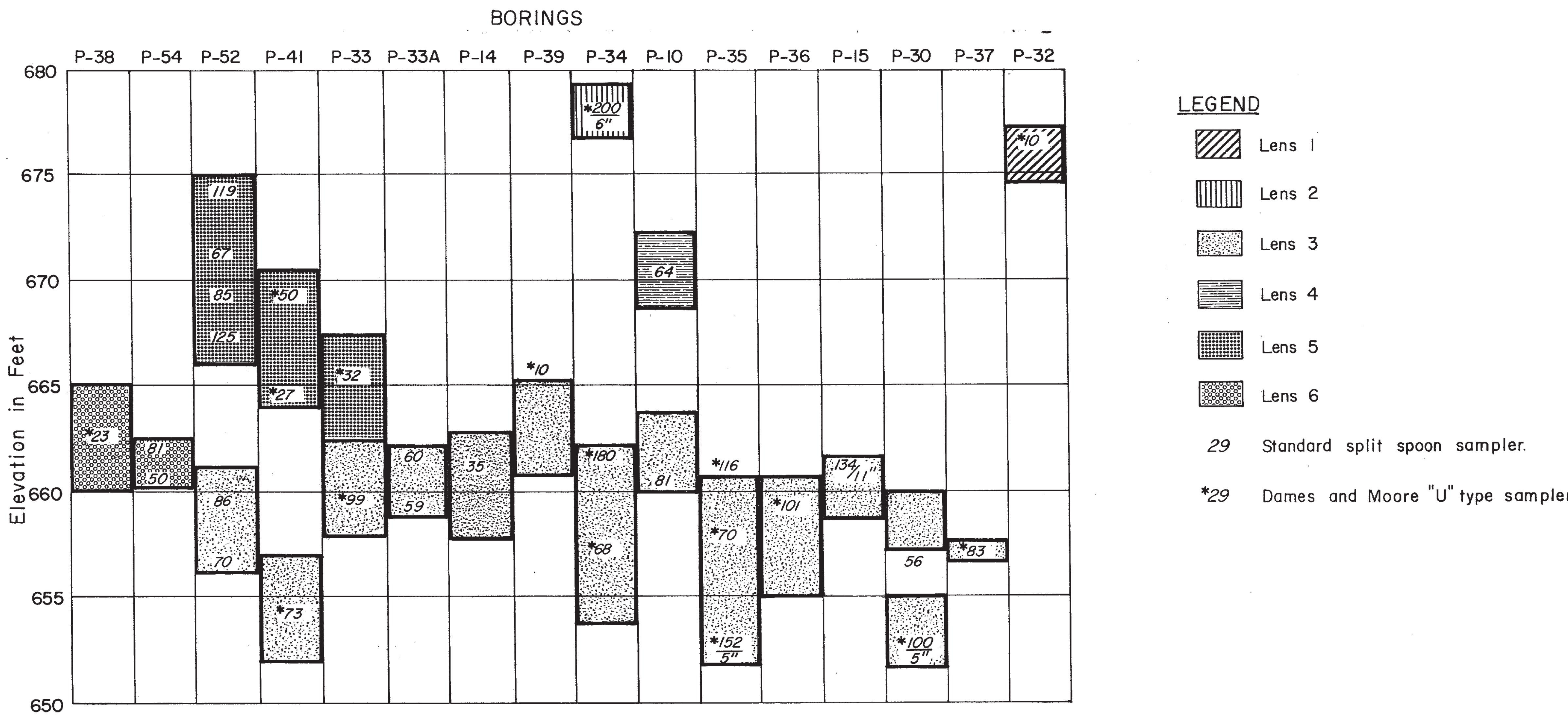


NOTE:
1. REFER TO FIGURES 2.5-19 THROUGH 2.5-65, 2.5-190 AND 2.5-192 FOR LOGS OF BORINGS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-1

FOUNDATION EXCAVATION PLAN



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UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-2

SUMMARY OF BORING LOGS

LABORATORY TEST DATA

Tests Reported Elsewhere	Atterberg Limits: Plastic Limit %	Atterberg Limits: Plasticity Index %	Shear Strength: Triaxial Compression (a) $\frac{\sigma_1-\sigma_3}{2}$ psf	Shear Strength: Triaxial Compression (b) σ_3 psf	Shear Strength: Unconfined Compression (c) $\frac{q_u}{2}$ psf	Shear Strength: Pocket Penetrometer (d) $\frac{q_u}{2}$ psf	Moisture Content %	Dry Density pcf
MA							12.3	
MA							10.8	
MA							11.5	

ELEVATION IN FEET: 740, 730, 720, 710, 700, 690, 680, 670, 660, 650

BORING P-33 A

SURFACE ELEVATION 734.7

BLOW COUNTS / SAMPLES — *SYMBOLS* — *DESCRIPTIONS*

NO SAMPLES TAKEN ABOVE ELEVATION 680 FEET

129 — ML — GRAY CLAYEY SILT WITH SOME SAND AND TRACE OF FINE GRAVEL (HARD)

151/11" — SM — GRAY SILTY FINE TO COARSE SAND, WITH TRACE FINE GRAVEL (VERY DENSE)

56, 47, 27 — ML — GRAY CLAYEY SILT WITH SOME SAND AND TRACE FINE GRAVEL (HARD)
GRADES WITH MORE SAND

60 — SM — GRAY SILTY FINE TO COARSE SAND WITH SOME FINE GRAVEL (DENSE)

59 — ML — GRAY SILTY FINE TO COARSE SAND TO SANDY SILT (DENSE)

101, 121 — SM

100/6" — ML — GRAY CLAYEY SILT WITH SOME SAND AND TRACE OF FINE GRAVEL (HARD)
GRAY CLAYEY SILT WITH SOME SAND (HARD)

BORING COMPLETED AT 82.5 FEET ON 8-6-75.
CASING USED TO A DEPTH OF 5.0 FEET.
GROUNDWATER LEVEL MEASURED AT 4.3 FEET ON 8-7-75.

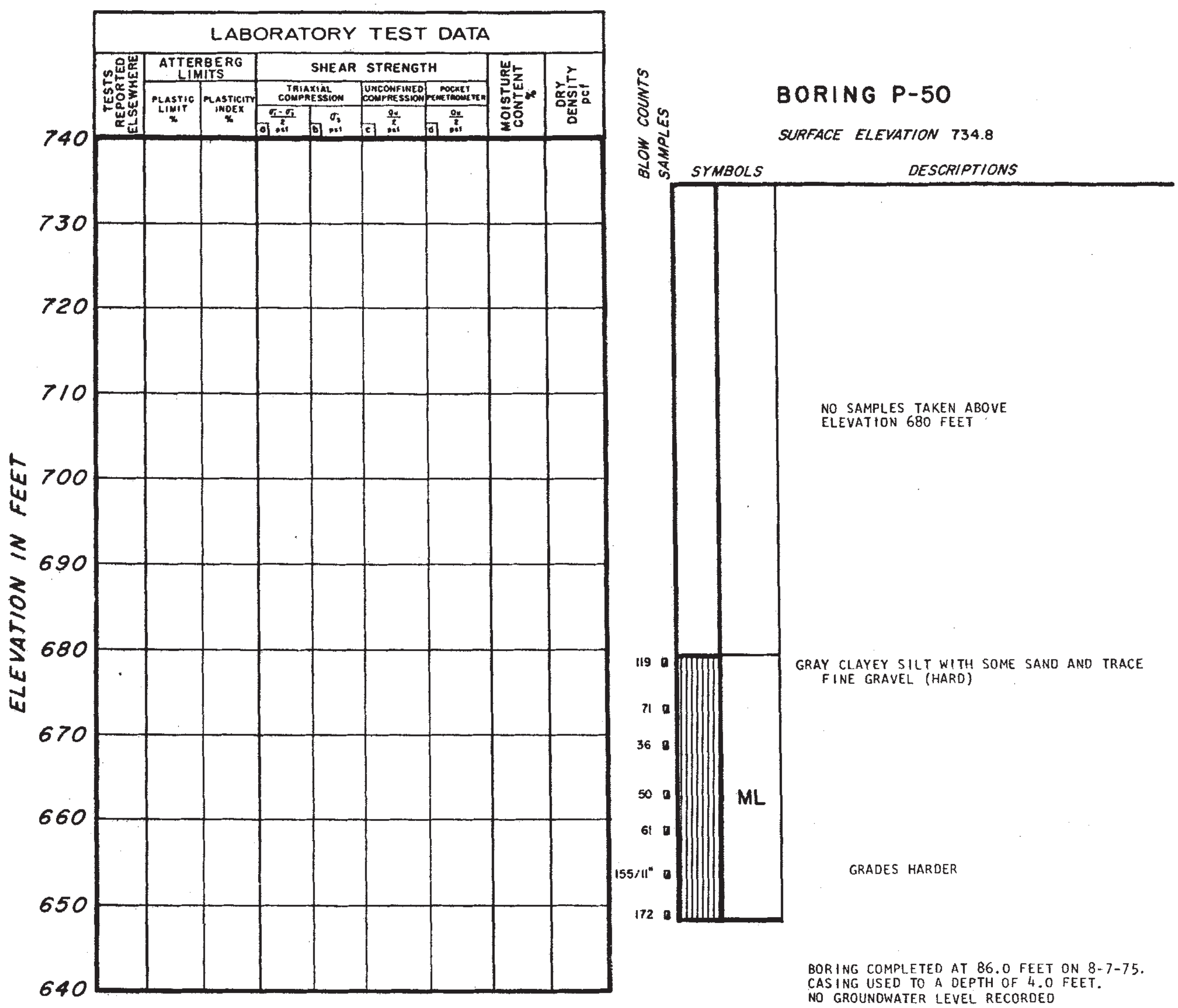
NOTE:

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 B2.5-3

LOG OF BORING P-33A



NOTE:

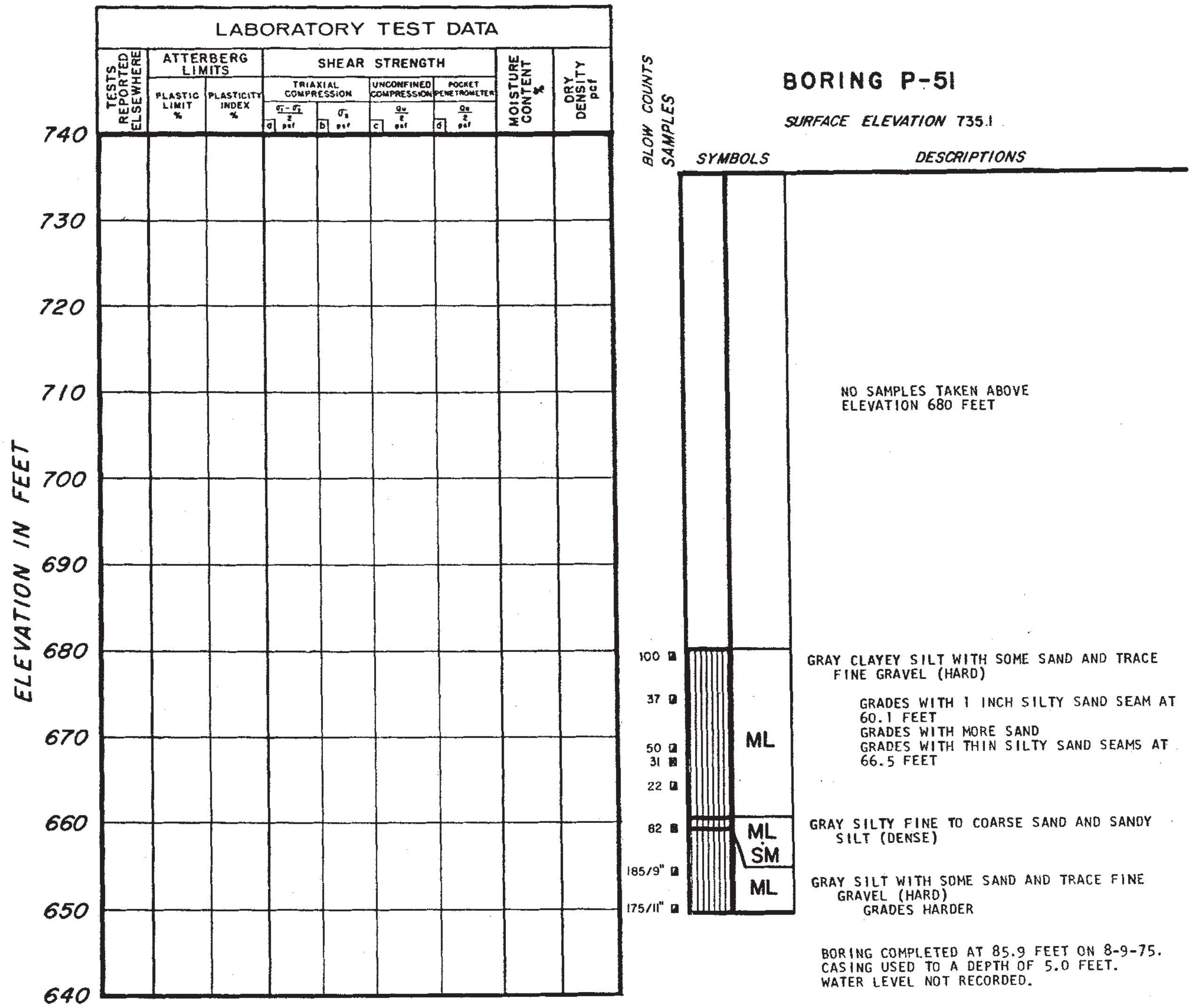
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-4

LOG OF BORING P-50

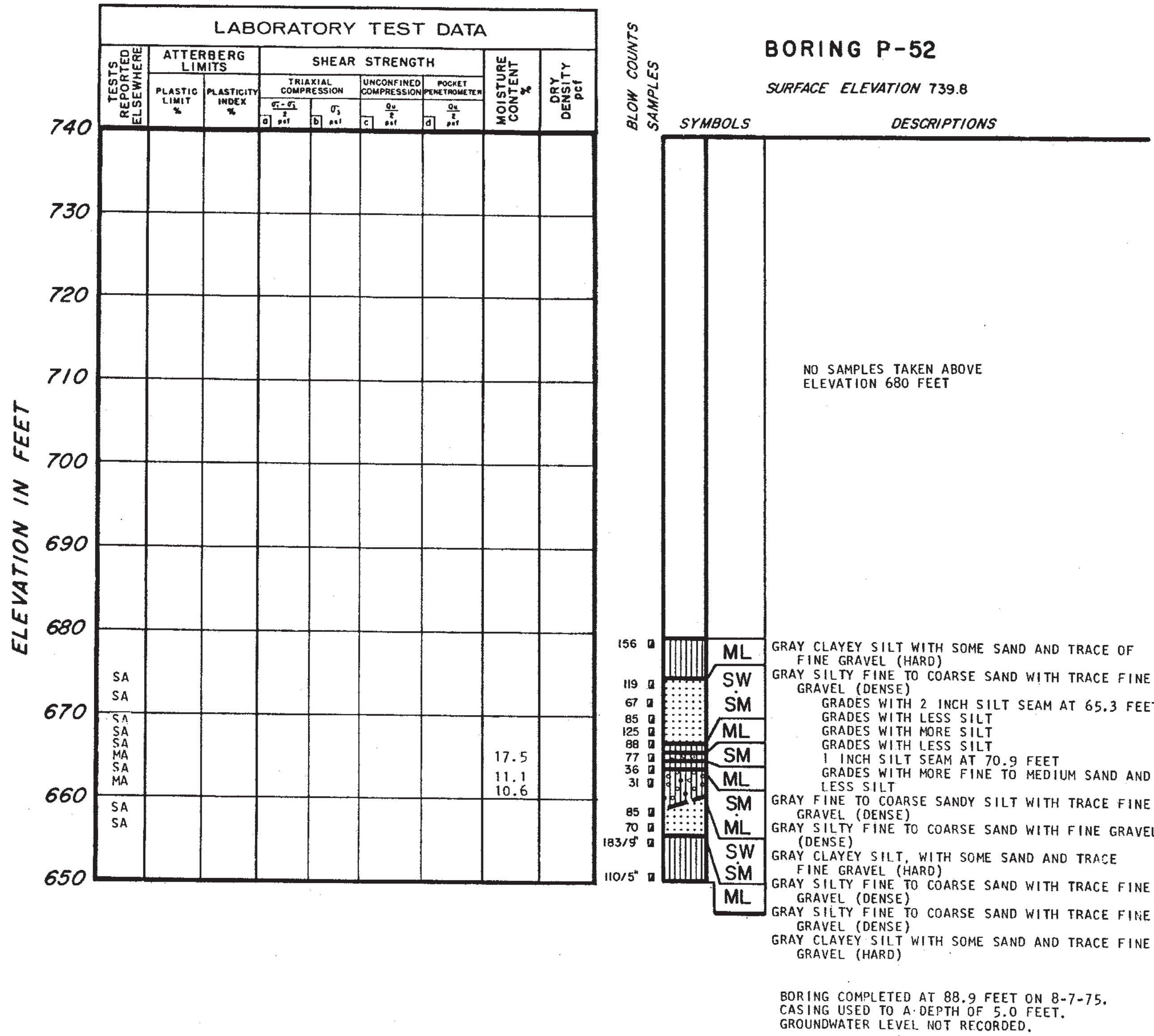


NOTE:
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-5

LOG OF BORING P-51



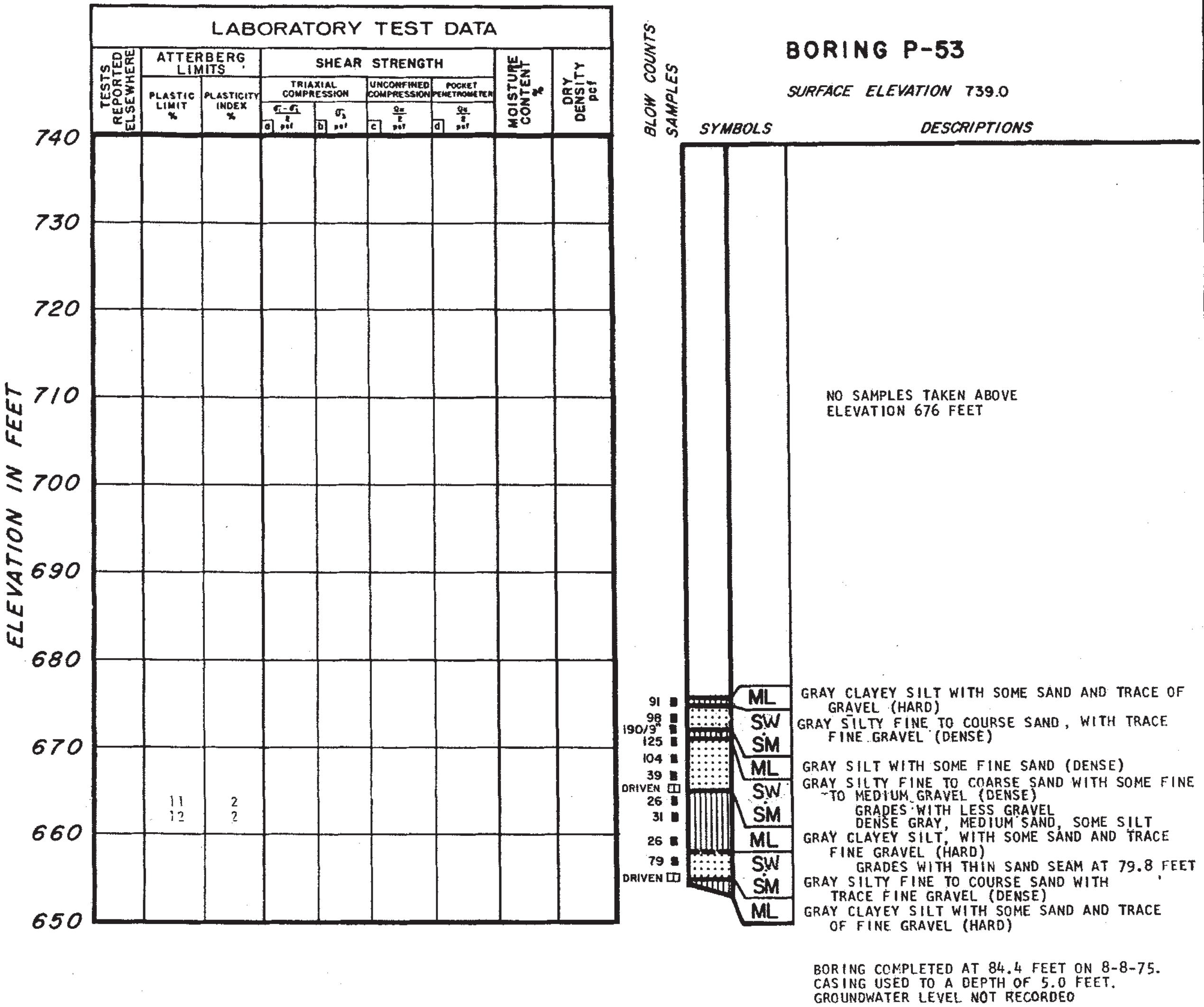
NOTE:

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 B2.5-6

LOG OF BORING P-52



NOTE:

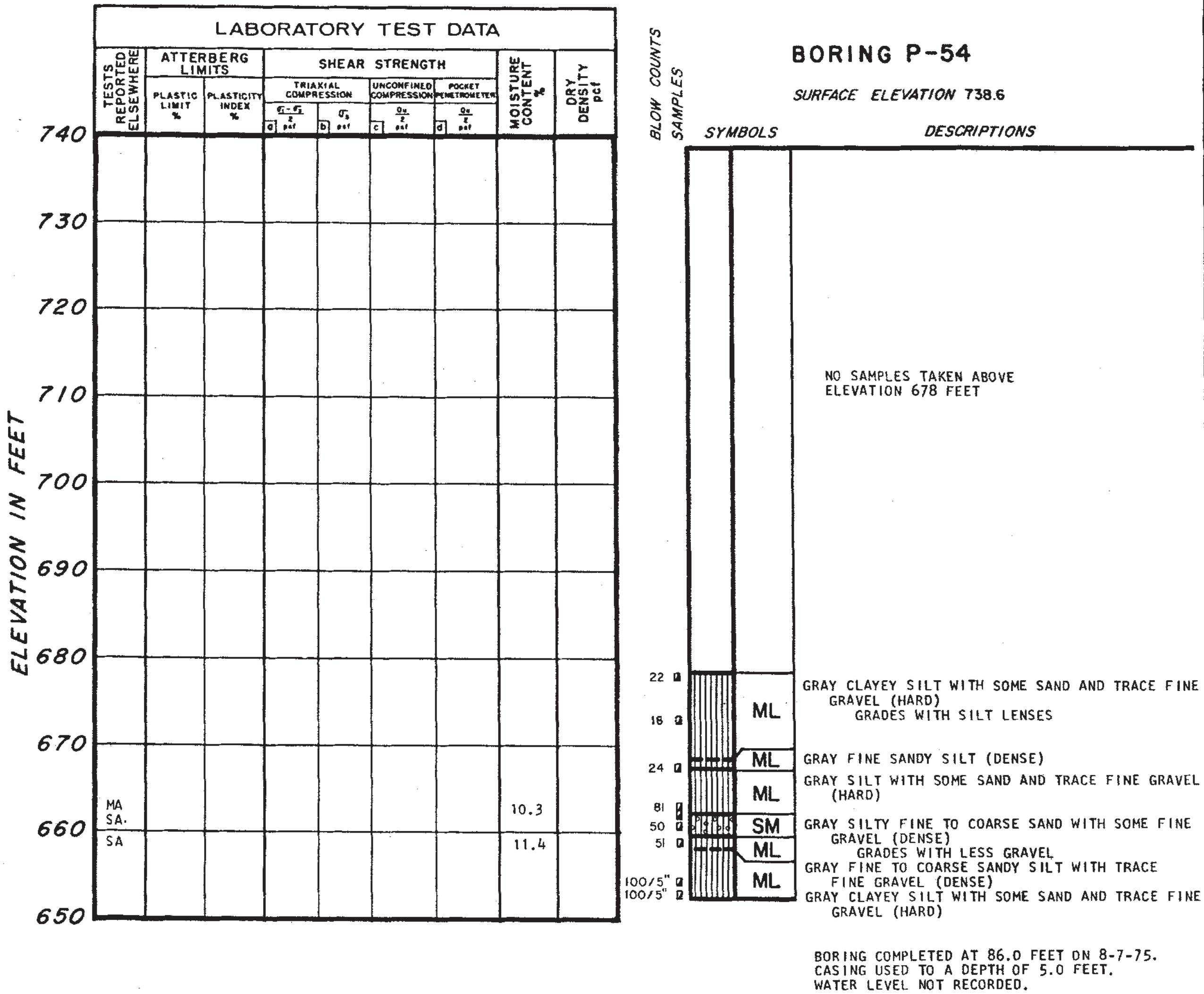
SEE FIGURE 2.5-298 AND FIGURE 2.5-355 FOR EXPLANATION OF SYMBOLS USED ON BORING LOGS.

CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-7

LOG OF BORING P-53



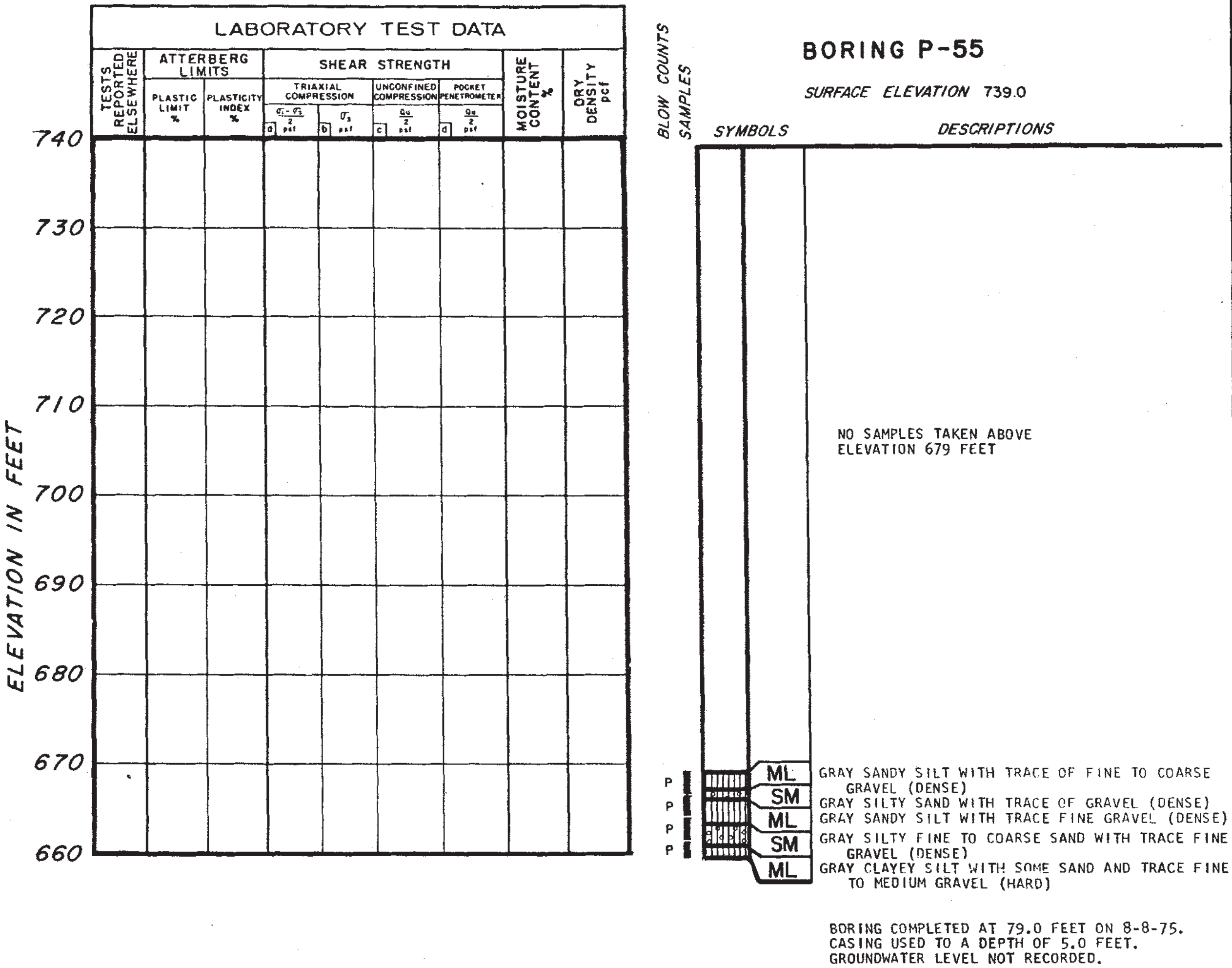
NOTE:

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 B2.5-8

LOG OF BORING P-54



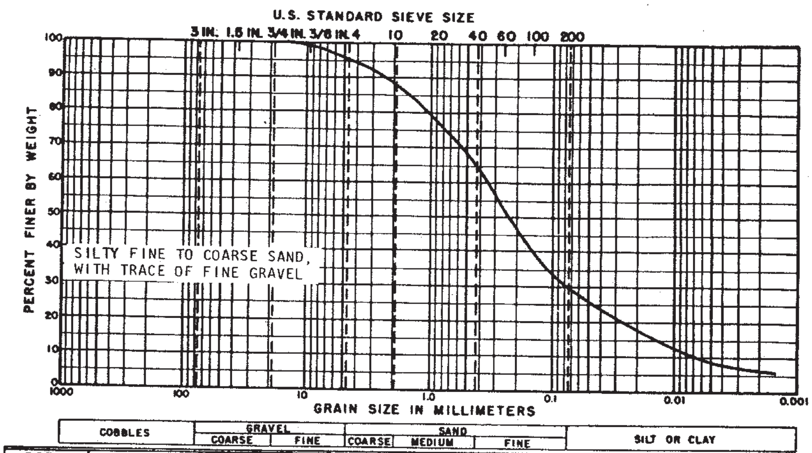
NOTE:

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

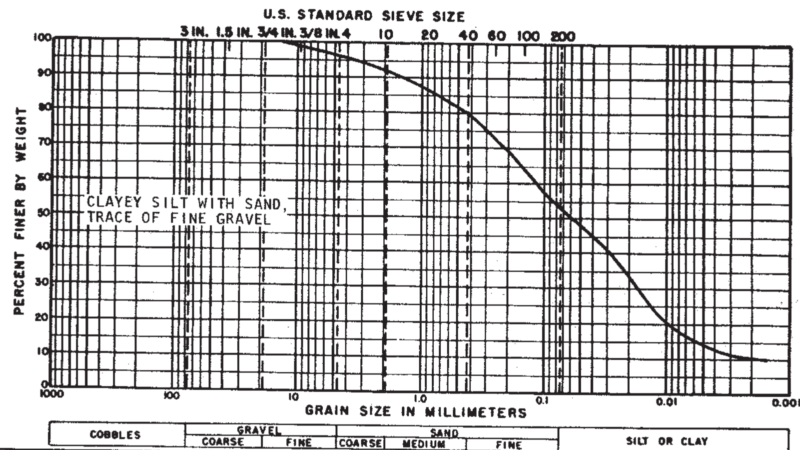
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-9

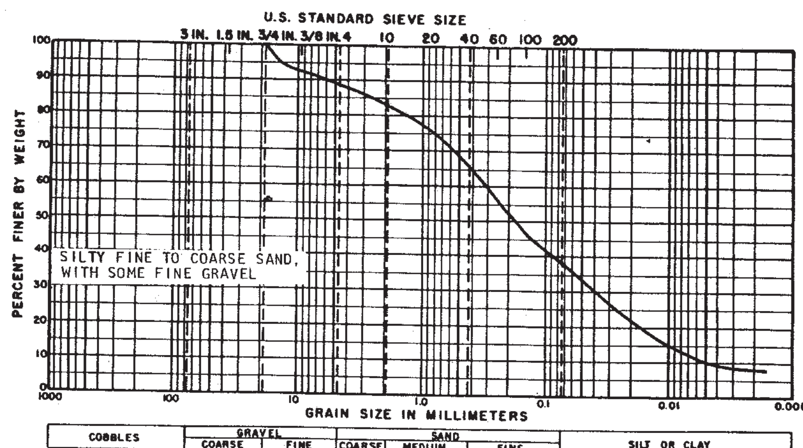
LOG OF BORING P-55



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-33A	60.0'-60.9'	SM	12.3				



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-33A	67.5'-69.0'	ML	10.8				

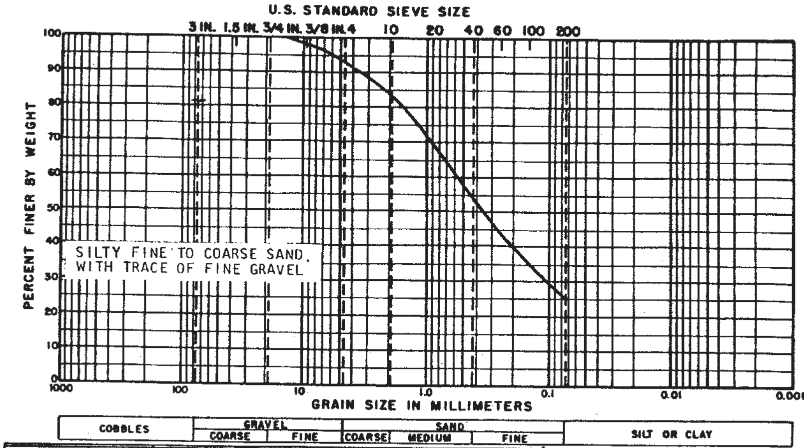


BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-33A	72.5'-74.0'	SM	11.5				

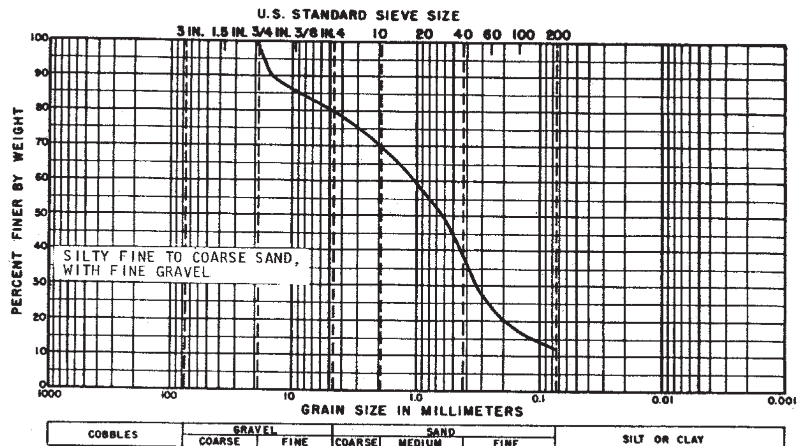
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-10

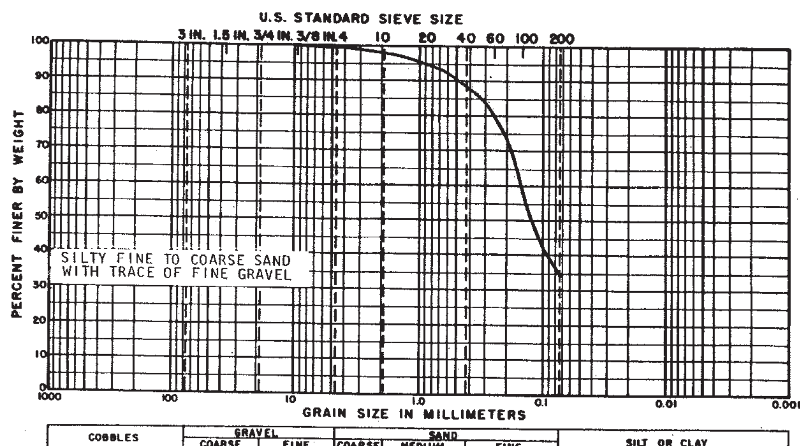
PARTICLE SIZE ANALYSES (BORING P-33A)



BORING	DEPTH		CLASSIFICATION	NAT. WC	LL	PL	PI	
P-52	65.0'-66.5'		SM					



BORING	DEPTH		CLASSIFICATION	NAT. WC	LL	PL	PI	
P-52	66.5'-68.0'		SM					

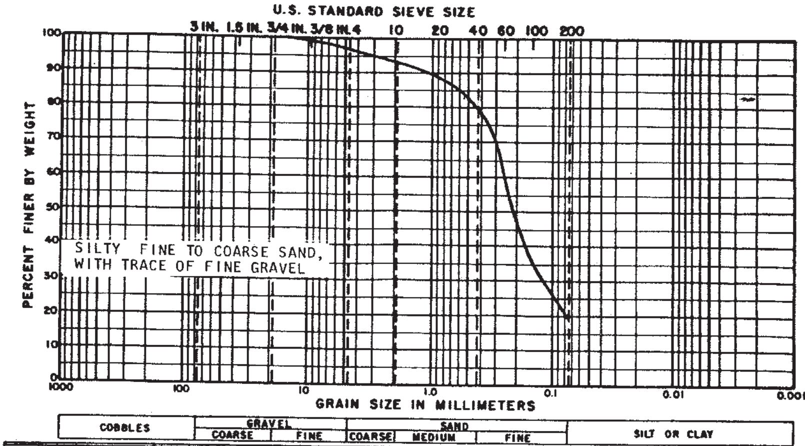


BORING	DEPTH		CLASSIFICATION	NAT. WC	LL	PL	PI	
P-52	68.0'-69.5'		SM					

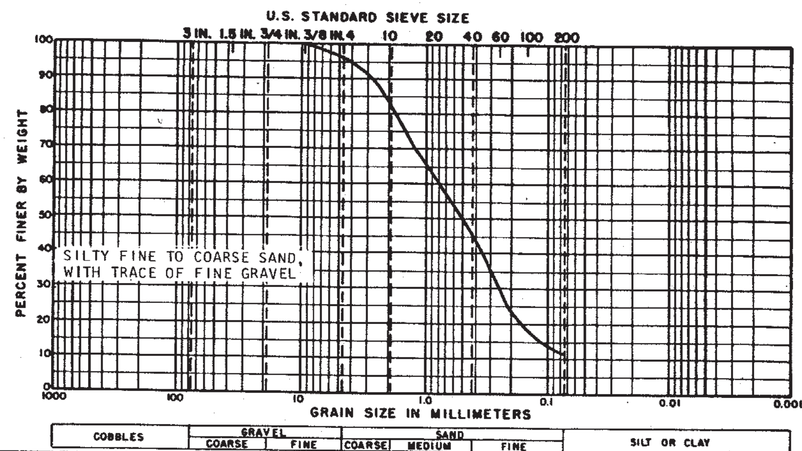
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-11

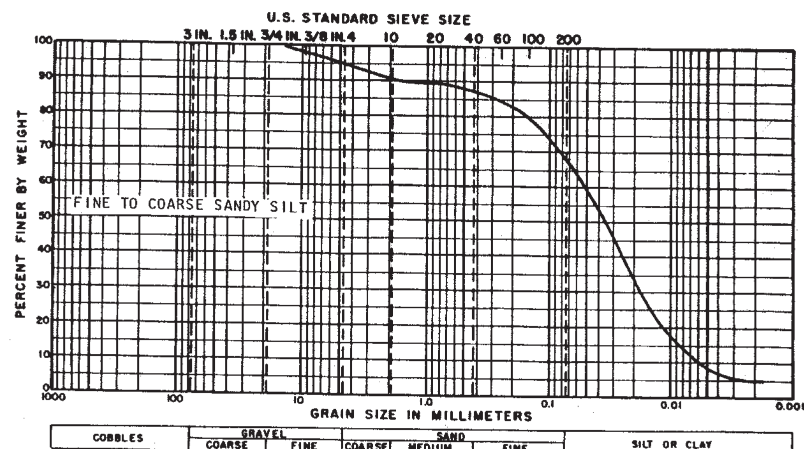
PARTICLE SIZE ANALYSES (BORING P-52)



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-52	69.5'-71.0'	SM					



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-52	71.0'-72.5'	SW-SM					

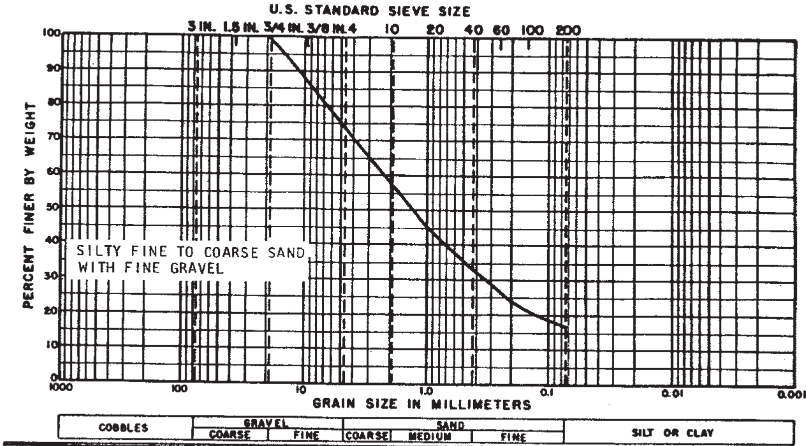


BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-52	72.5'-74.0'	ML	17.6				

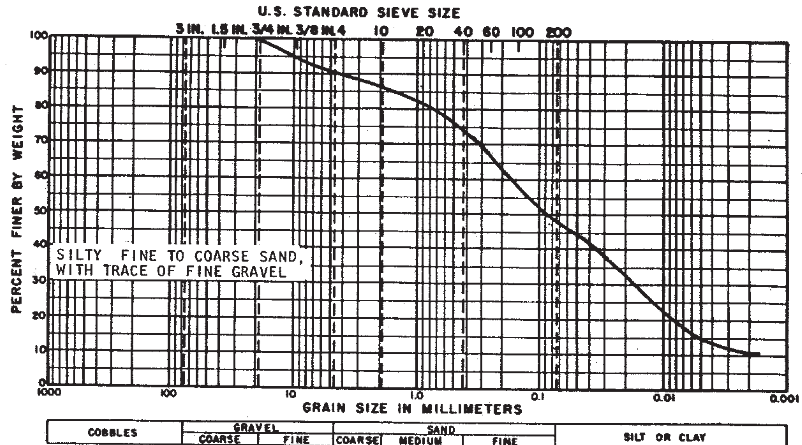
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-12

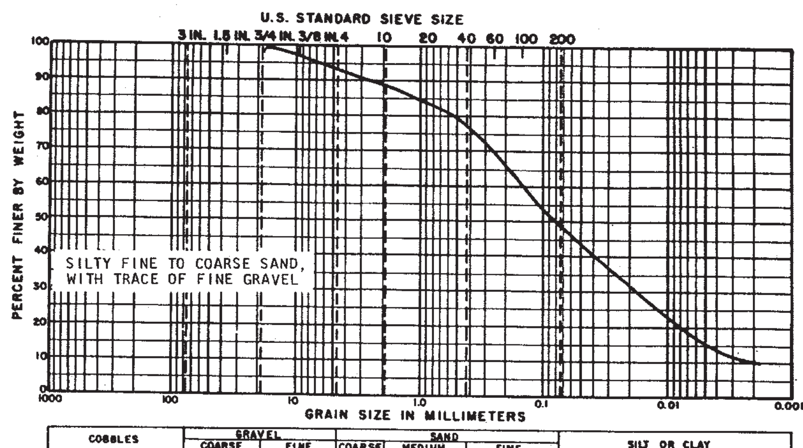
PARTICLE SIZE ANALYSES (BORING P-52)



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI
P-52	72.5'-74.0'	SM				



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI
P-52	75.5'-77.0'	SM	11.1			

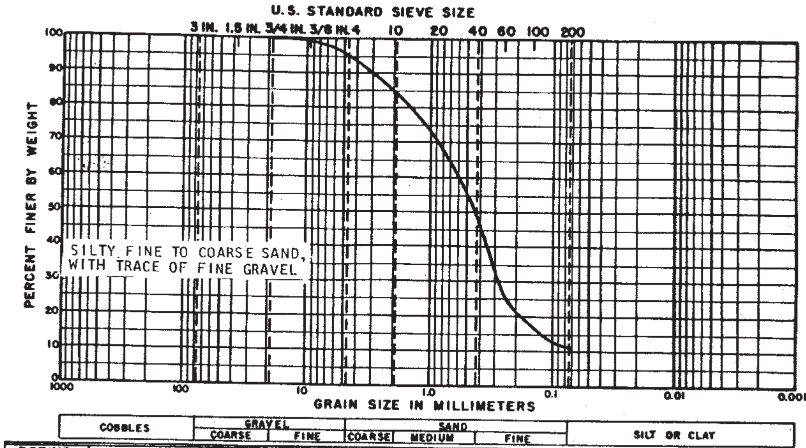


BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI
P-52	75.5'-77.0'	SM	10.6			

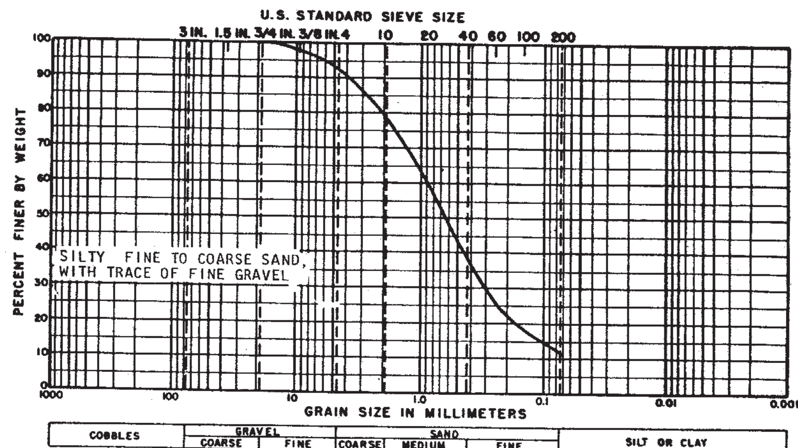
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-13

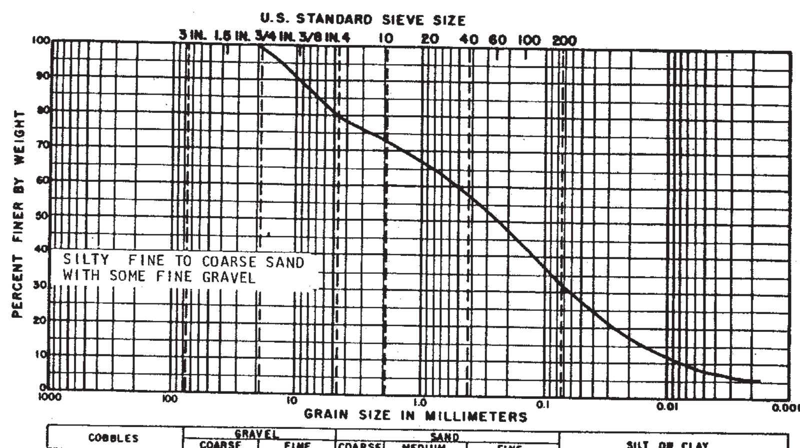
PARTICLE SIZE ANALYSES (BORING P-52)



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-52	80.0'-81.5	SM-SW					



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-52	81.5'-83.0'	SM-SW					

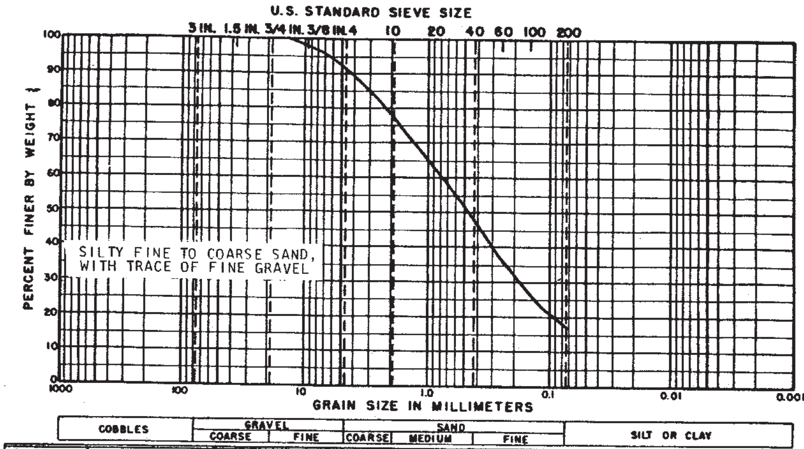


BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-54	76.0'	SM	10.3				

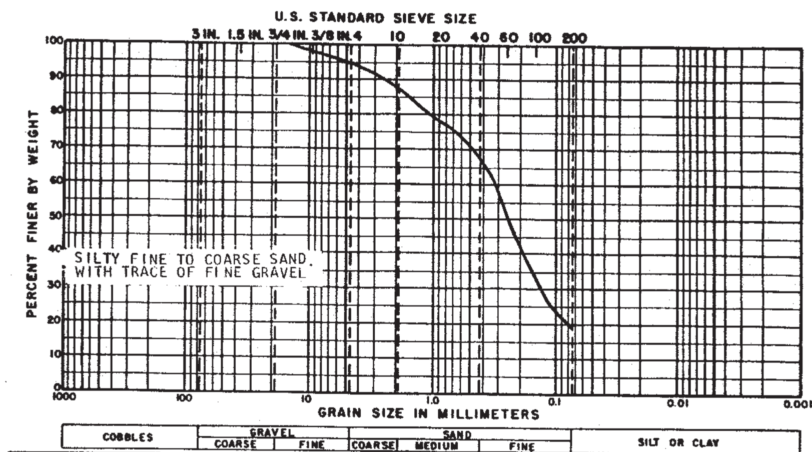
CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-14

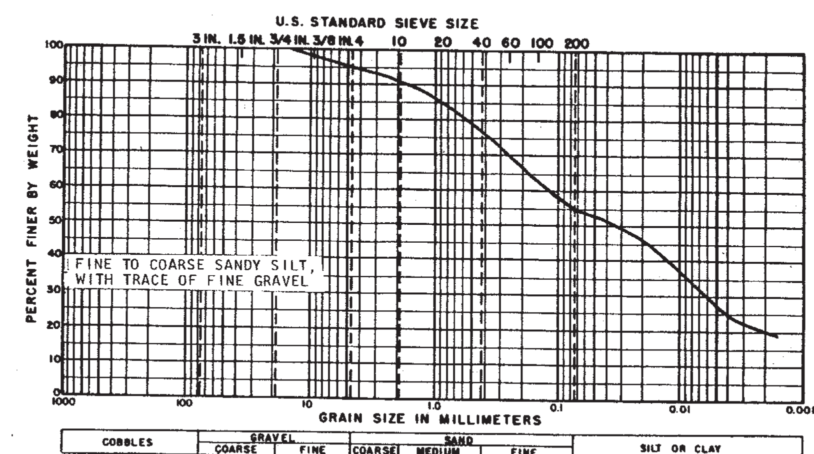
PARTICLE SIZE ANALYSES
(BORINGS P-52 AND P-54)



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-54	76.5	SM					



BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-54	76.5'-78.0'	SM					

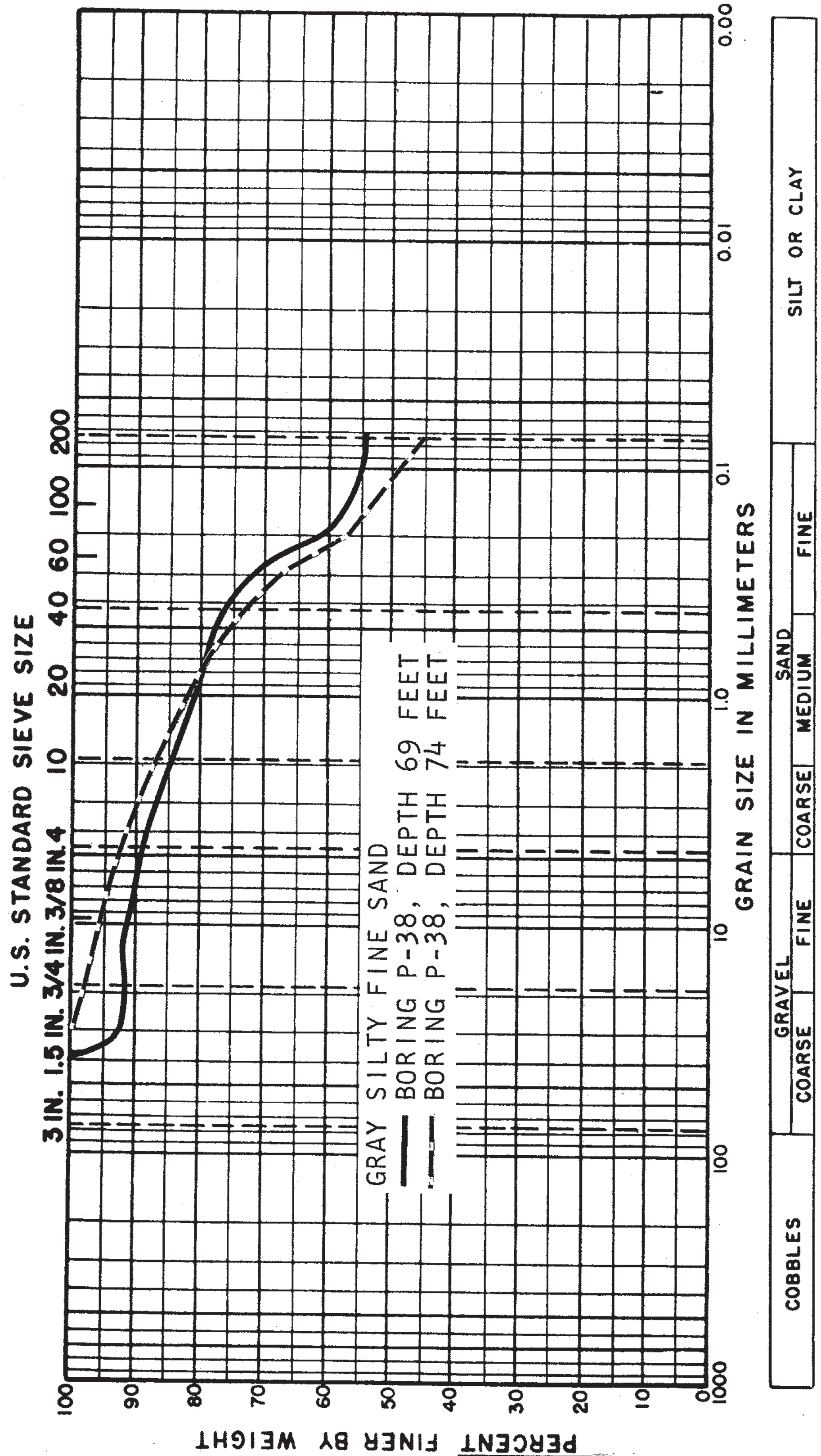


BORING	DEPTH	CLASSIFICATION	NAT. WC	LL	PL	PI	
P-54	78.0'-79.5'	ML	11.4				

CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT

FIGURE B2.5-15

PARTICLE SIZE ANALYSES (BORING P-54)



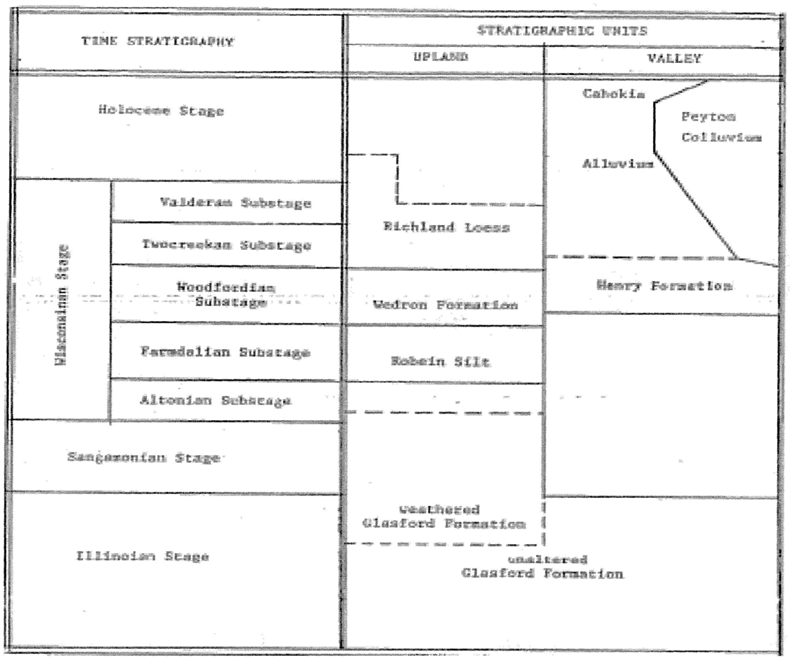
CLINTON POWER STATION

UPDATED SAFETY ANALYSIS REPORT

FIGURE B2.5-16

PARTICLE SIZE ANALYSES (BORING P-38)

Site Stratigraphic Column



CLINTON POWER STATION UPDATED SAFETY ANALYSIS REPORT
Figure C2.5-1 Page 1 of 2 SITE STRATIGRAGHIC COLUMN

Site Stratigraphic Column

Stratigraphic Description		
Stratigraphic Unit	Approximate Thickness	General Description
Cahokia Alluvium	0-35 feet	Alluvium: Poorly sorted silt, clay, and silty sand with lenses of sand and gravel. (CL to SM)
Peyton Colluvium	0-10 feet	Colluvium: Brown clayey silt with minor amounts of gravel. (ML to CL)
Richland Loess	0-10 feet	Loess: Brown clayey silt, trace fine sand. (ML to CL)
Henry Formation	0-33 feet	Glacial outwash: Yellow-brown fine to coarse sand and gravel, with pockets of gray-brown silt, sandy silt, and silty clay. A lag gravel is often present at the base. (SM, SW, SP, SM-SW, SP-SW)
Wedron Formation	20-55 feet	Till: Brown silty clay to clayey silt, some interspersed fine to coarse sand, trace fine to coarse gravel, with pockets of brown fine sand, sometimes silty, trace fine gravel. Grades to gray clayey silt, some fine to coarse sand, trace fine gravel with pockets of fine to coarse gray sand, trace fine gravel. (ML to CL)
Robein Silt	0-2 feet	Loess (deposited in water): Dark brown organic silt, trace clay, trace fine sand. Locally consists of peat. (ML to CL)
Weathered Glasford Formation	10-15 feet	Till: Gray silt grading to clayey silt, trace fine sand. Grades to gray-green silty clay or clayey silt, some fine to coarse sand, trace fine to coarse gravel. More sand and gravel with depth. Slightly to highly calcareous. (ML to CL)
Unaltered Glasford Formation	90-140+ feet	Till: Dark gray clayey silt, some interspersed fine to coarse sand, highly calcareous, trace fine to coarse gravel with pockets of gray sand, fine to coarse. (ML-CL to SM)

Notes

1. Vertical scale does not represent either relative thickness or stratigraphic units or relative duration of time interval.
2. Excavations for the Clinton Power Station did not extend below the unaltered Glasford Formation.
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; reported approximate thicknesses of each unit represents a combined thickness for both deposits.
5. The Holocene Stage is represented by a significant period of weathering and development of agricultural soil profiles.
6. The Cahokia Alluvium and Henry Formation were mapped as a single unit. 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.
7. Locally, the Peyton Colluvium rests directly on the Glasford Formation.

Comparison of Terminology Used For The FSAR and PSAR

Time Stratigraphy		Stratigraphic Units: FSAR		Stratigraphic Units: PSAR
Holocene Stage		Cahokia Alluvium	Peyton Colluvium	Salt Creek Alluvium or Flood Plain Alluvium and Recent Channel Deposits
Wisconsinan Stage	Valderan Substage	Richland Loess		Loess
	Twocreekan Substage		Henry Formation	
	Woodfordian Substage	Wedron Formation		Wisconsinan Till or Wisconsinan Glacial Till
	Farmdalian Substage	Robein Silt		
	Altonian Substage	Weathered Glasford Formation		Interglacial Zone or Sangamon Interglacial Zone or Sangamon Soil Interval
Sangamonian Stage				
Illinoian Stage		Unaltered Glasford Formation		Illinoian Till or Illinoian Glacial Till

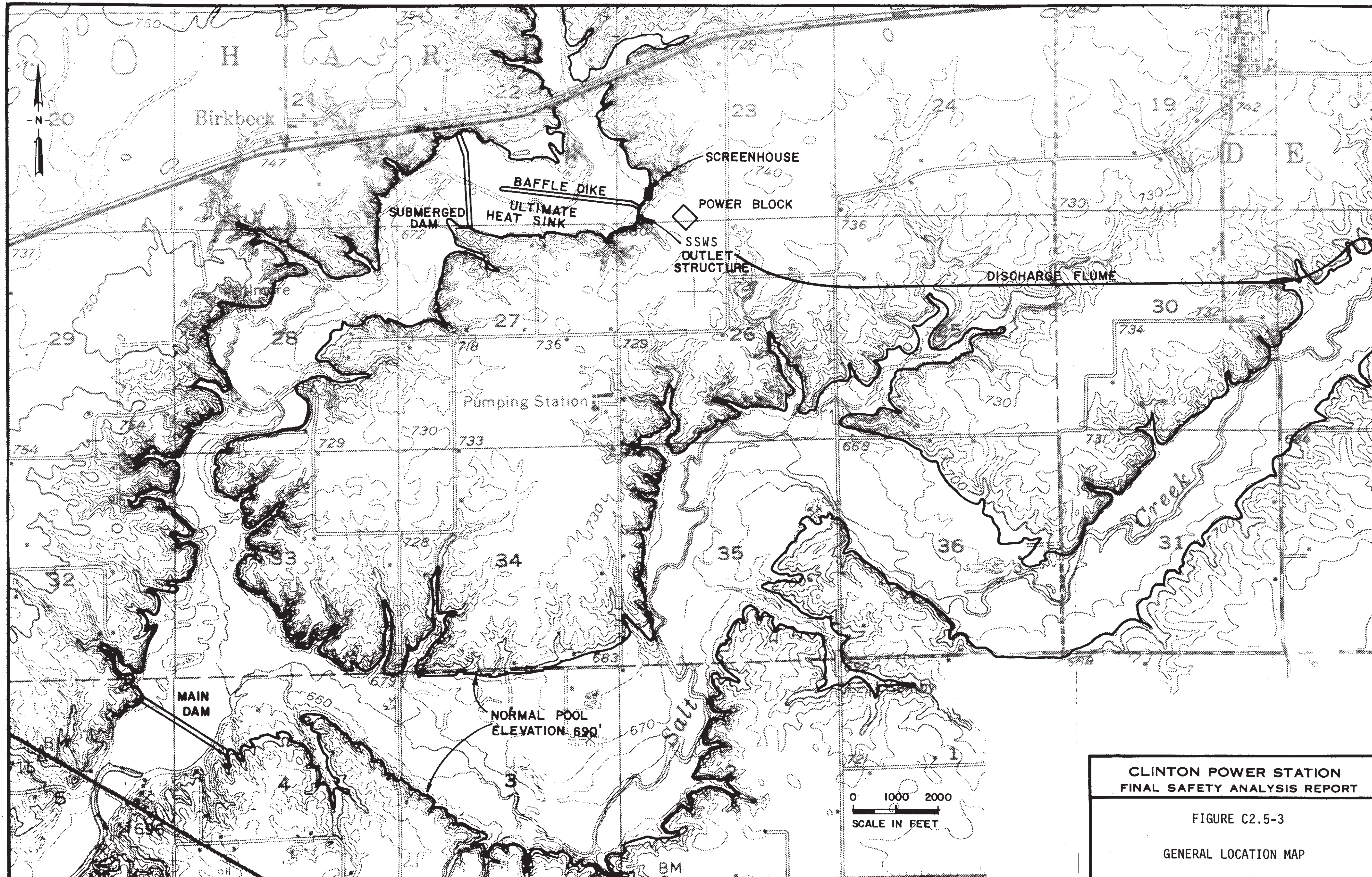
Notes

1. The Cahokia Alluvium, Peyton Colluvium, and Henry Formation consist of alluvial and outwash deposits and are confined to the valley of the North Fork of Salt Creek.
2. Vertical scale does not represent either relative thickness of stratigraphic units or relative duration of time interval.

CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

Figure C2.5-2

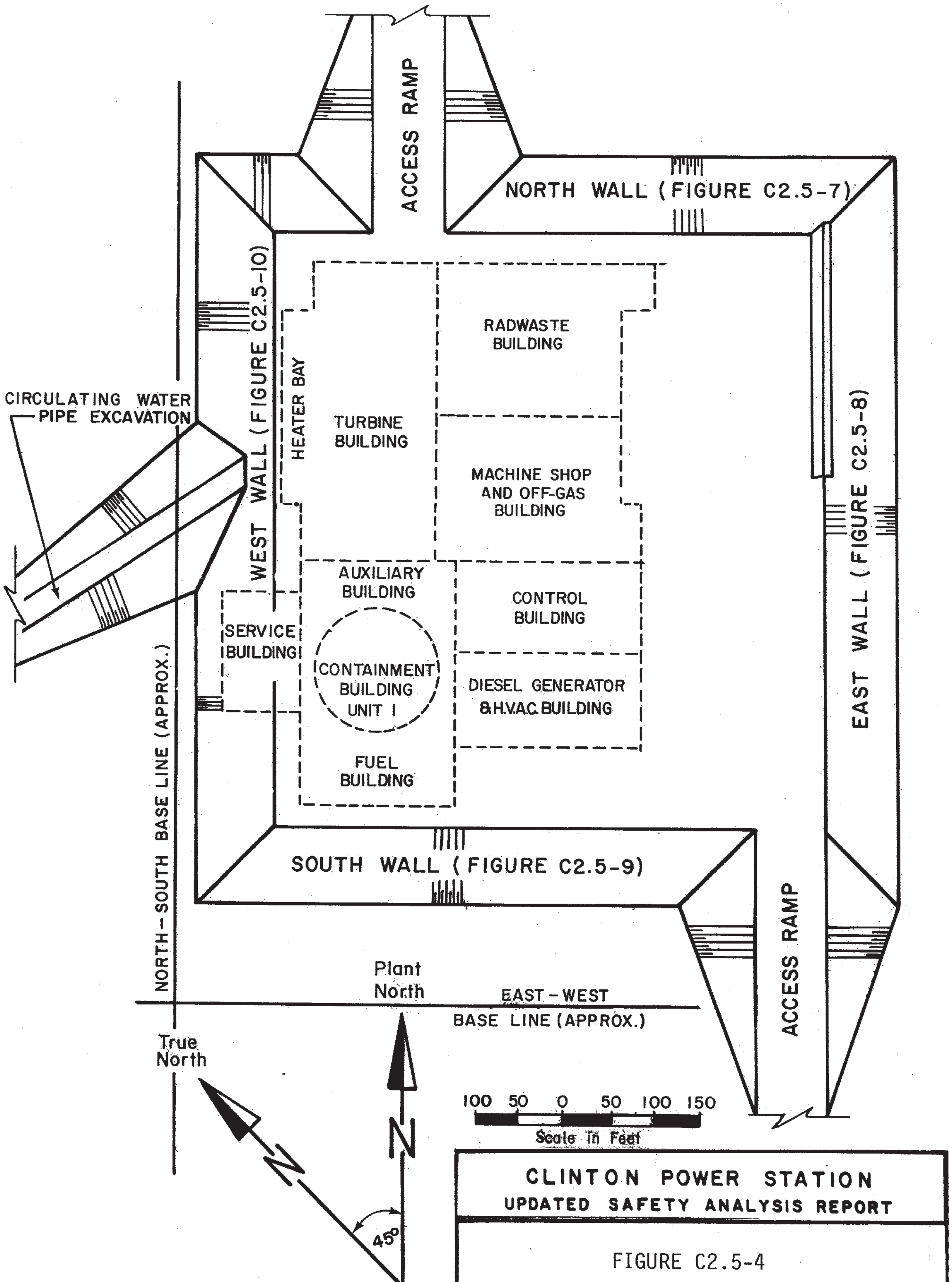
COMPARISON OF TERMINOLOGY USED FOR THE FSAR AND PSAR



CLINTON POWER STATION
FINAL SAFETY ANALYSIS REPORT

FIGURE C2.5-3

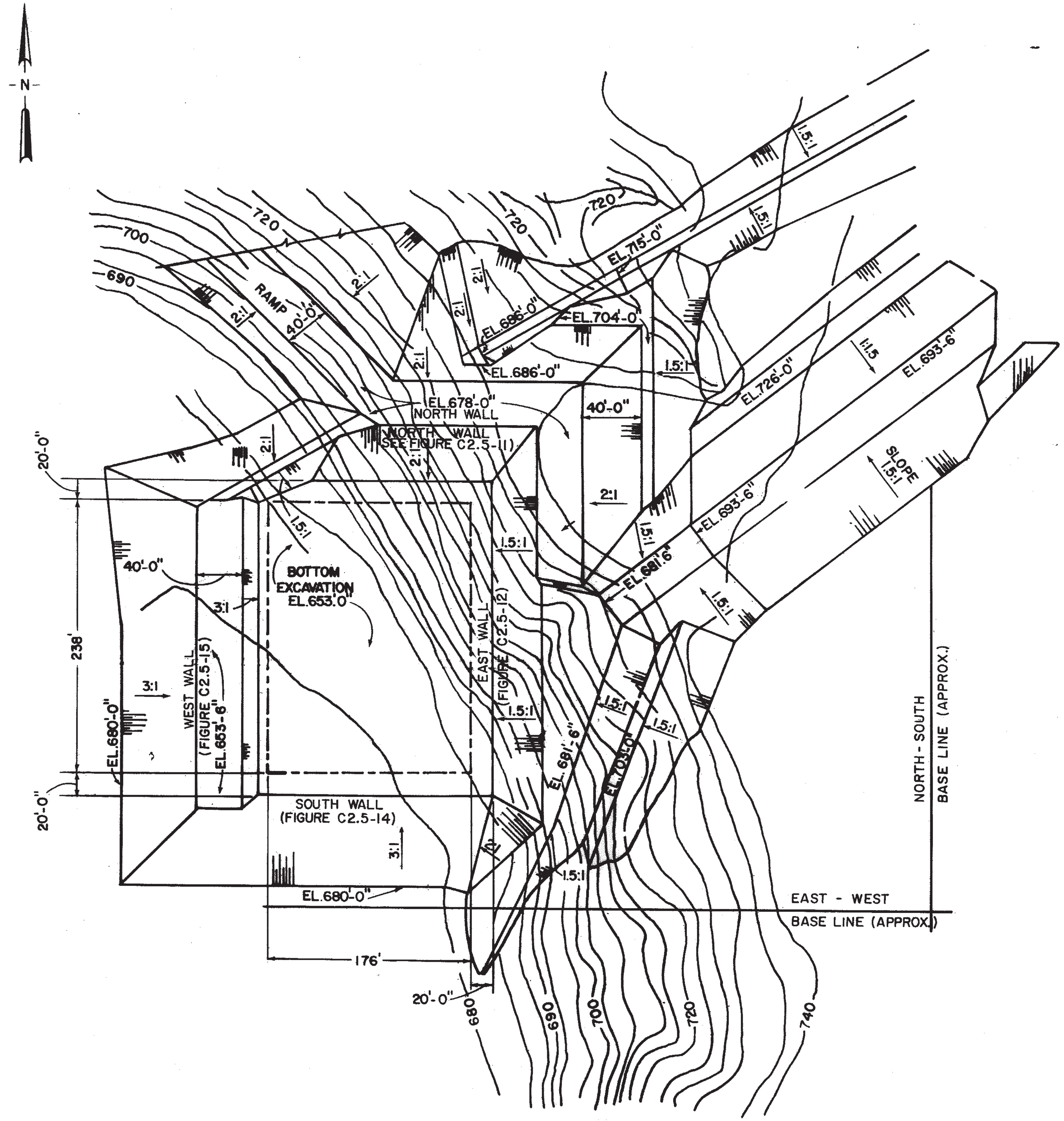
GENERAL LOCATION MAP



CLINTON POWER STATION
UPDATED SAFETY ANALYSIS REPORT

FIGURE C2.5-4

EXCAVATION PLAN OF THE POWER BLOCK AND LOCATIONS OF GEOLOGIC SECTIONS



NOTE

See Figures C2.5-11, C2.5-12, C2.5-14 and C2.5-15 for geologic sections.

0 100 200
Scale in Feet

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FIGURE C2.5-5

EXCAVATION PLAN FOR THE CIRCULATING WATER SCREEN HOUSE

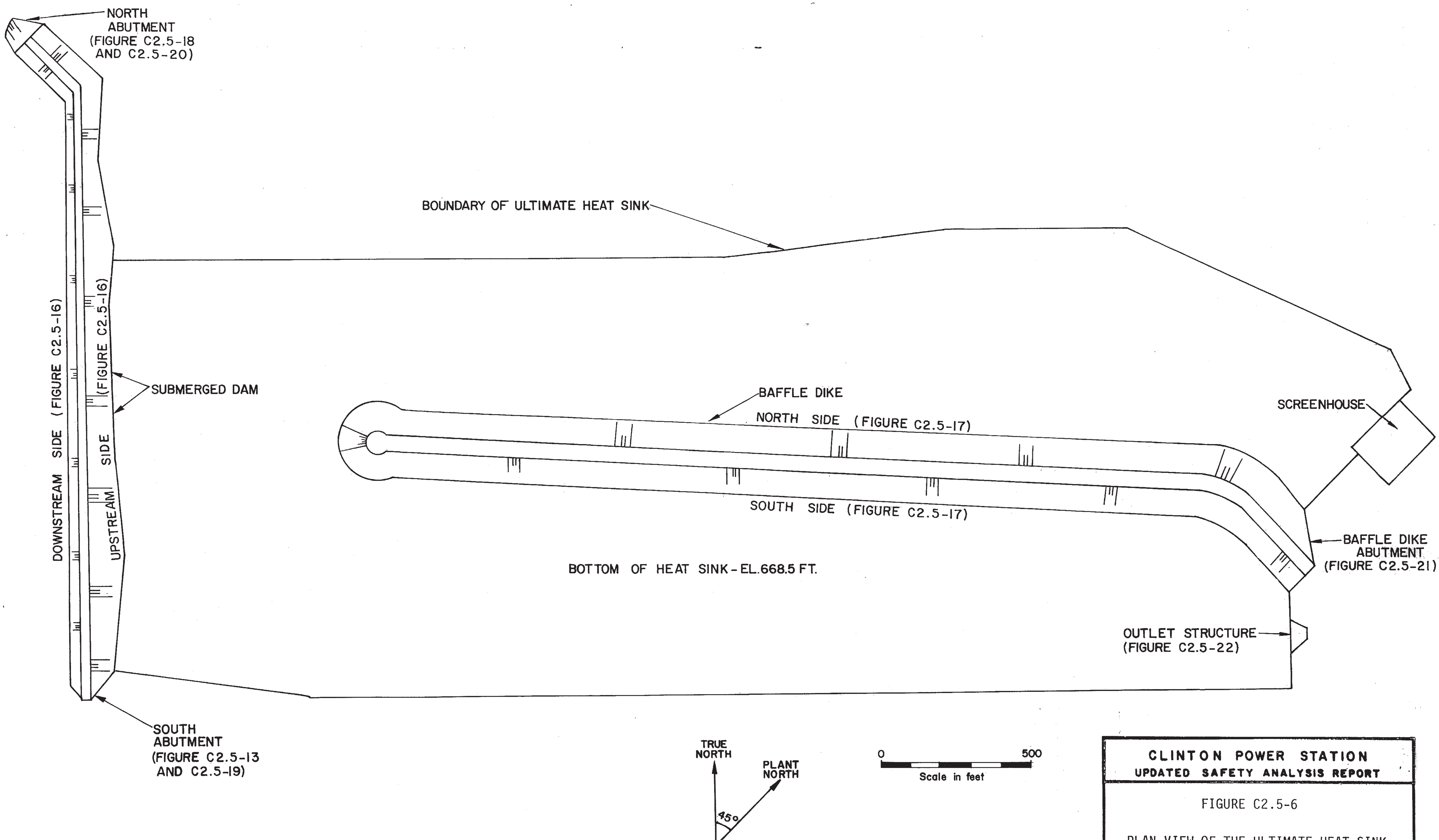

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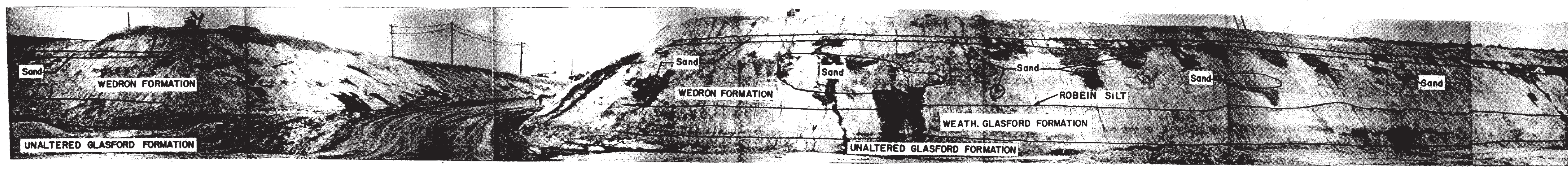
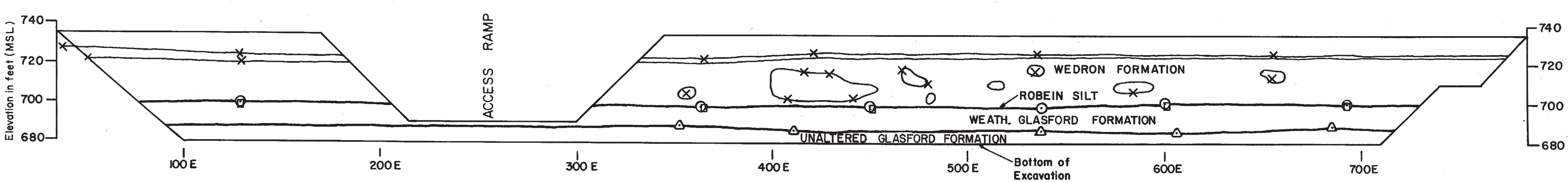
FIGURE C2.5-6

PLAN VIEW OF THE ULTIMATE HEAT SINK



NORTH WALL



East and West Plant Coordinates (Feet)
See Figure No. C2.5-4

LEGEND

STRATIGRAPHIC CONTACTS

- Contacts between formations
- Outline of sand deposit

REFERENCE POINTS

- ⊙ Wedron Fm./Robein Silt contact
- ⊡ Robein Silt/Weath. Glasford Fm. contact
- △ Weath. Glasford Fm./Unalt. Glasford Fm. contact
- × Sand location

NOTES

1. Location of this figure is shown in Figure C2.5-4, see also Figure No. C2.5-3.
2. Descriptions and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in geologic section are approximations.
4. Due to radial photography from center of excavation, photo mosaic is not to scale.
5. Contacts between stratigraphic units and limits of sand deposits are approximated between control points.
6. The Robein Silt is a generally 2 to 4 foot thick layer of organic silt between the tills of the Wedron and Glasford Formations.

20 0 20 40 60
Scale in Feet
(See Note 4)

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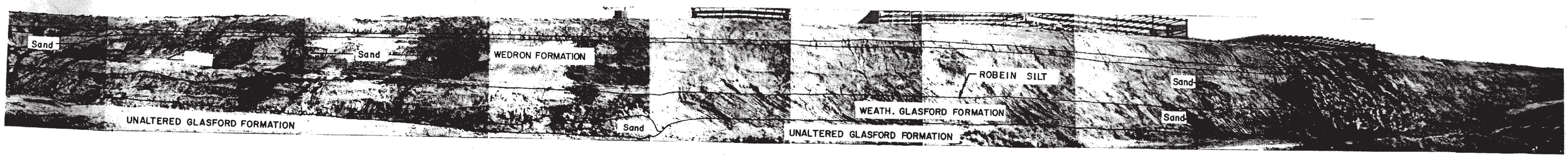
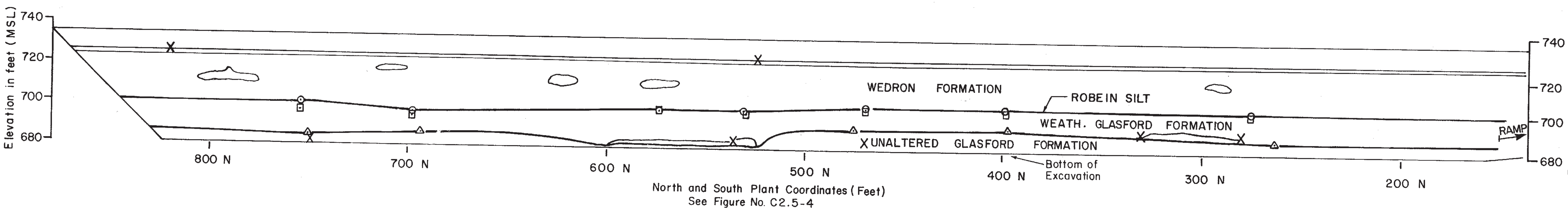
FIGURE C2.5-7

GEOLOGIC SECTION AND PHOTO MOSAIC OF THE NORTH WALL OF THE POWER BLOCK EXCAVATION



EAST WALL



LEGEND

STRATIGRAPHIC CONTACTS

- Contacts between formations
- Outline of sand deposit

REFERENCE POINTS

- ⊙ Wedron Fm./Robein Silt. contact
- ⊡ Robein Silt/ Weath. Glasford Fm contact.
- ⚠ Weath. Glasford Fm./Unalt. Glasford Fm. contact.
- X Sand location

NOTES

1. Location of this figure is shown in Figure C2.5-4, see also Figure No. C2.5-3.
2. Descriptions and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in geologic section are approximations.
4. Due to radial photography from center of excavation, photo mosaic is not to scale.
5. Contacts between stratigraphic units and limits of sand deposits are approximated between control points.
6. The Robein Silt is a generally 2 to 4 foot thick layer of organic silt between the tills of the Wedron and Glasford Formations.

20 0 20 40 60
Scale in Feet
(See Note 4)

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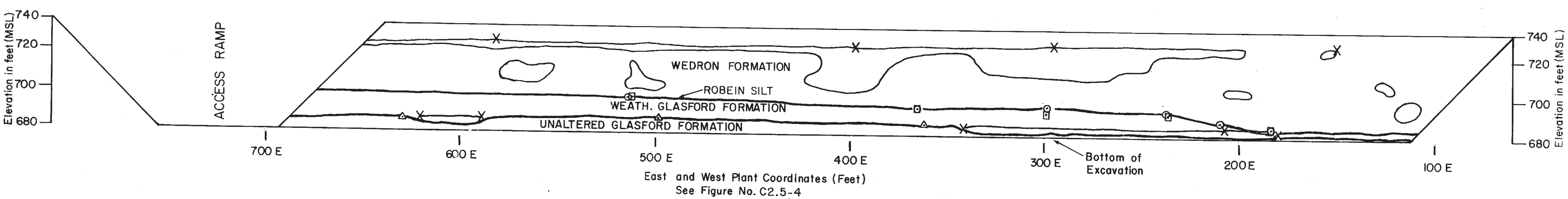
FIGURE C2.5-8

GEOLOGIC SECTION AND PHOTO MOSAIC OF THE EAST WALL OF THE POWER BLOCK EXCAVATION

SOUTH WALL



LEGEND

STRATIGRAPHIC CONTACTS

——— Contacts between formations

——— Outline of sand deposit

REFERENCE POINTS

⊙ Wedron Fm./Robein Silt contact

⊡ Robein Silt/Weath. Glasford Fm. contact.

Δ Weath. Glasford Fm./Unalt. Glasford Fm. contact

× Sand location

NOTES

1. Location of excavation shown in Figure C2.5-4, see also Figure No. C2.5-3.
2. Descriptions and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in geologic section are approximations.
4. Due to radial photography from center of excavation, photo mosaic is not to scale.
5. Contacts between stratigraphic units and outlines of sand deposits are approximated between control points.
6. The Robein Silt is a generally 2 to 4 foot thick layer of organic silt between the tills of the Wedron and Glasford Formations.

20 0 20 40 60

Scale in Feet
(See Note 4)

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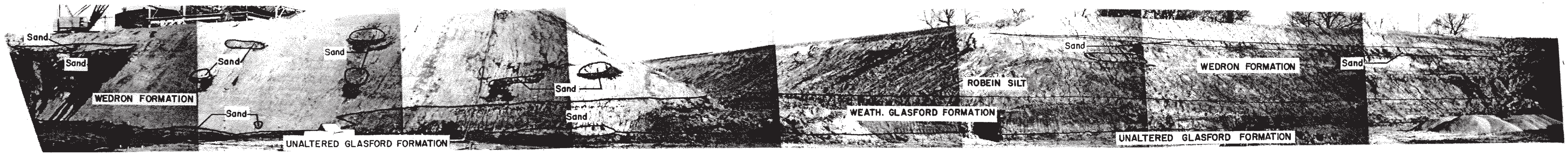
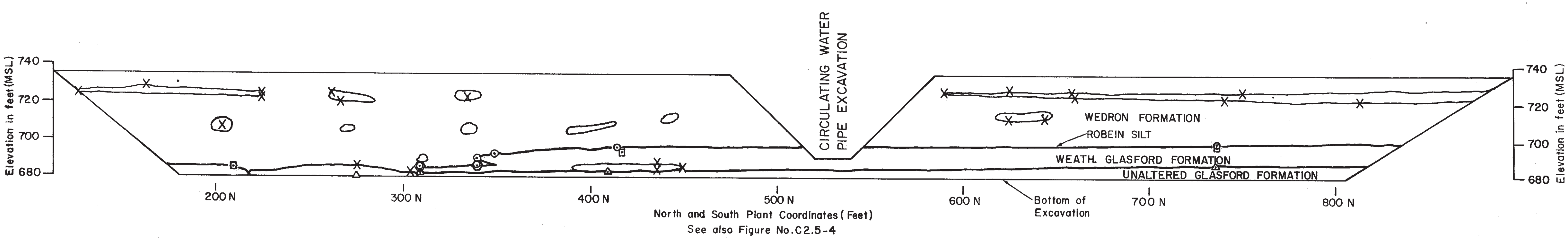
FIGURE C2.5-9

GEOLOGIC SECTION AND PHOTO MOSAIC OF THE SOUTH WALL OF THE POWER BLOCK EXCAVATION



WEST WALL



LEGEND

STRATIGRAPHIC CONTACTS

—— Contacts between formations

—— Outline of sand deposit

REFERENCE POINTS

⊚ Wedron Fm./Robein Silt contact

⊡ Robein Silt/Weath. Glasford Fm. contact.

⊙ Wedron Fm./Weath. Glasford Fm. contact.

△ Weath. Glasford Fm./Unalt. Glasford Fm. contact.

NOTES

1. Location of excavation shown in Figure C2.5-4, see also Figure No. C2.5-3.
2. Descriptions and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in geologic section are approximations.
4. Due to radial photography from center of excavation, photo mosaic is not to scale.
5. Contacts between stratigraphic units and outlines of sand deposits are approximated between control points.
6. The Robein Silt is a generally 2 to 4 foot thick layer of organic silt between tills of the Wedron and Glasford Formations.
7. The Robein Silt has been locally removed by erosion between approximately 220N to 300N.

20 0 20 40 60

Scale in Feet
(See Note 4)

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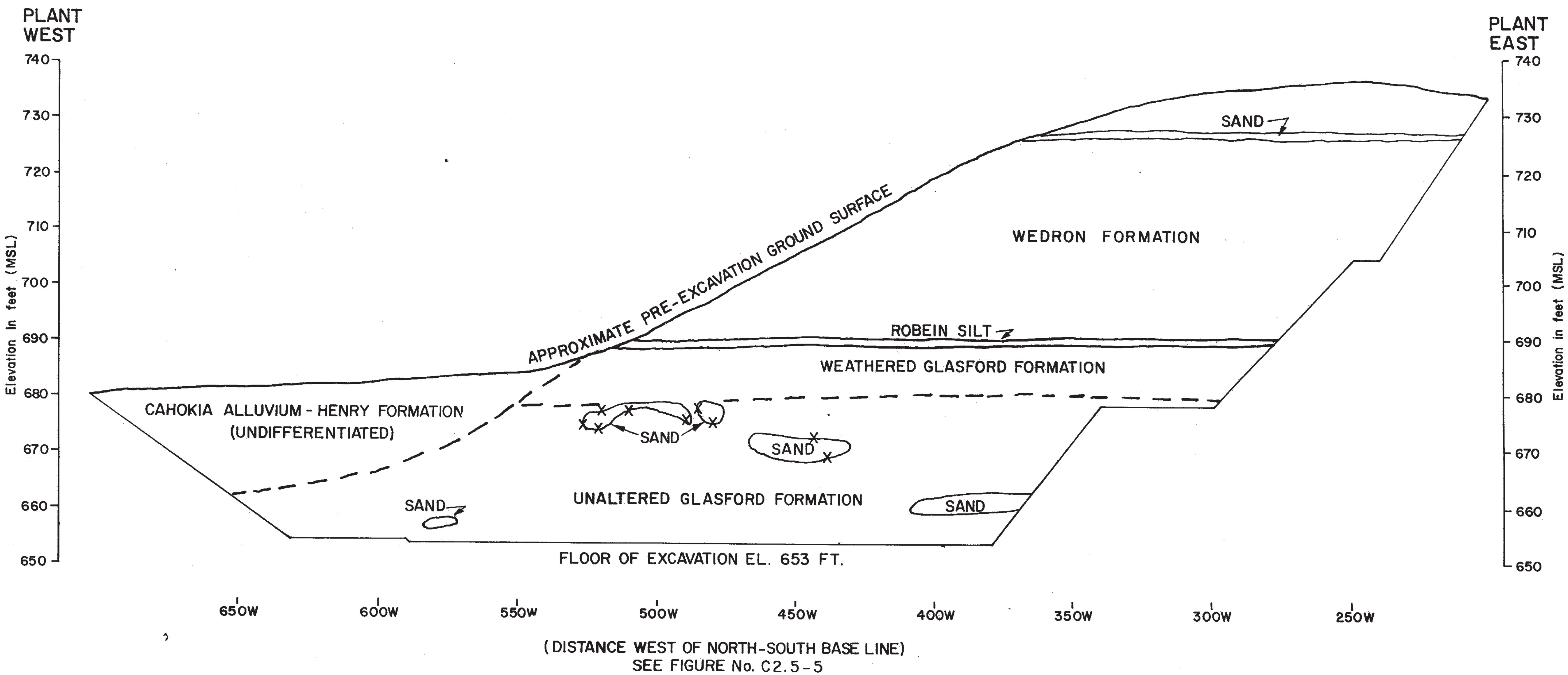
FIGURE C2.5-10

GEOLOGIC SECTION AND PHOTO MOSAIC OF THE WEST WALL OF THE POWER BLOCK EXCAVATION



LEGEND

- Contact between stratigraphic units.
- Inferred contact between stratigraphic units.
- Contact between sand or silt deposits.
- X Survey point

NOTES

1. Location of this geologic section is shown in Figure C2.5-5, see also Figure No. C2.5-3.
2. Description and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in geologic section are approximations.
4. Some ramps and cuts in the excavation have been omitted for clarity
5. View is to plant north.

0 50
Scale in Feet
Vertical Exaggeration = 2X

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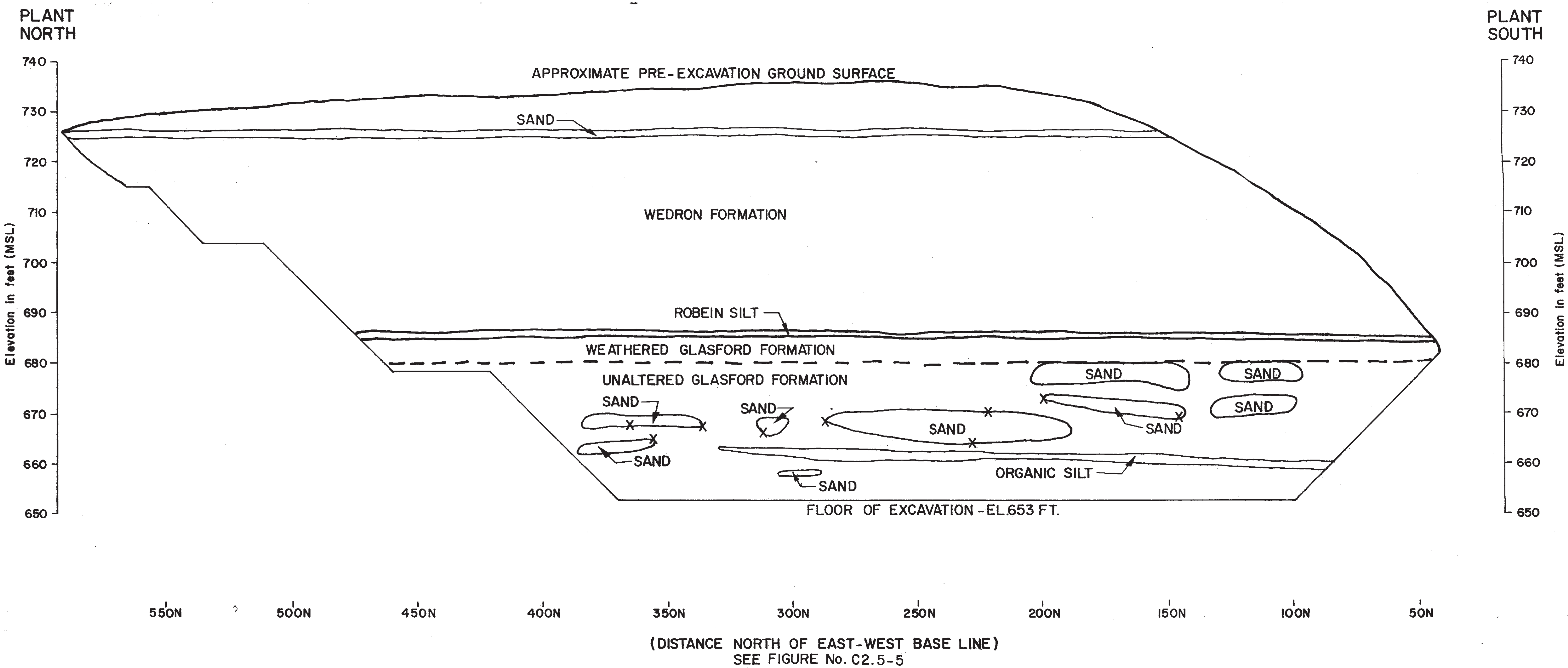
FIGURE C2.5-11

GEOLOGIC SECTION OF THE NORTH WALL OF THE SCREEN HOUSE EXCAVATION



LEGEND

- Contact between stratigraphic units
- Inferred contact between stratigraphic unit.
- Contact between sand or silt deposits.
- X Survey point

NOTES

1. Location of this geologic section is shown in Figure C2.5-5, see also Figure No. C2.5-3.
2. Description and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in geologic section are approximations.
4. Some ramps and cuts in the excavation have been omitted for clarity.
5. View is to plant east.

0 50
Scale in feet
Vertical Exaggeration=2X

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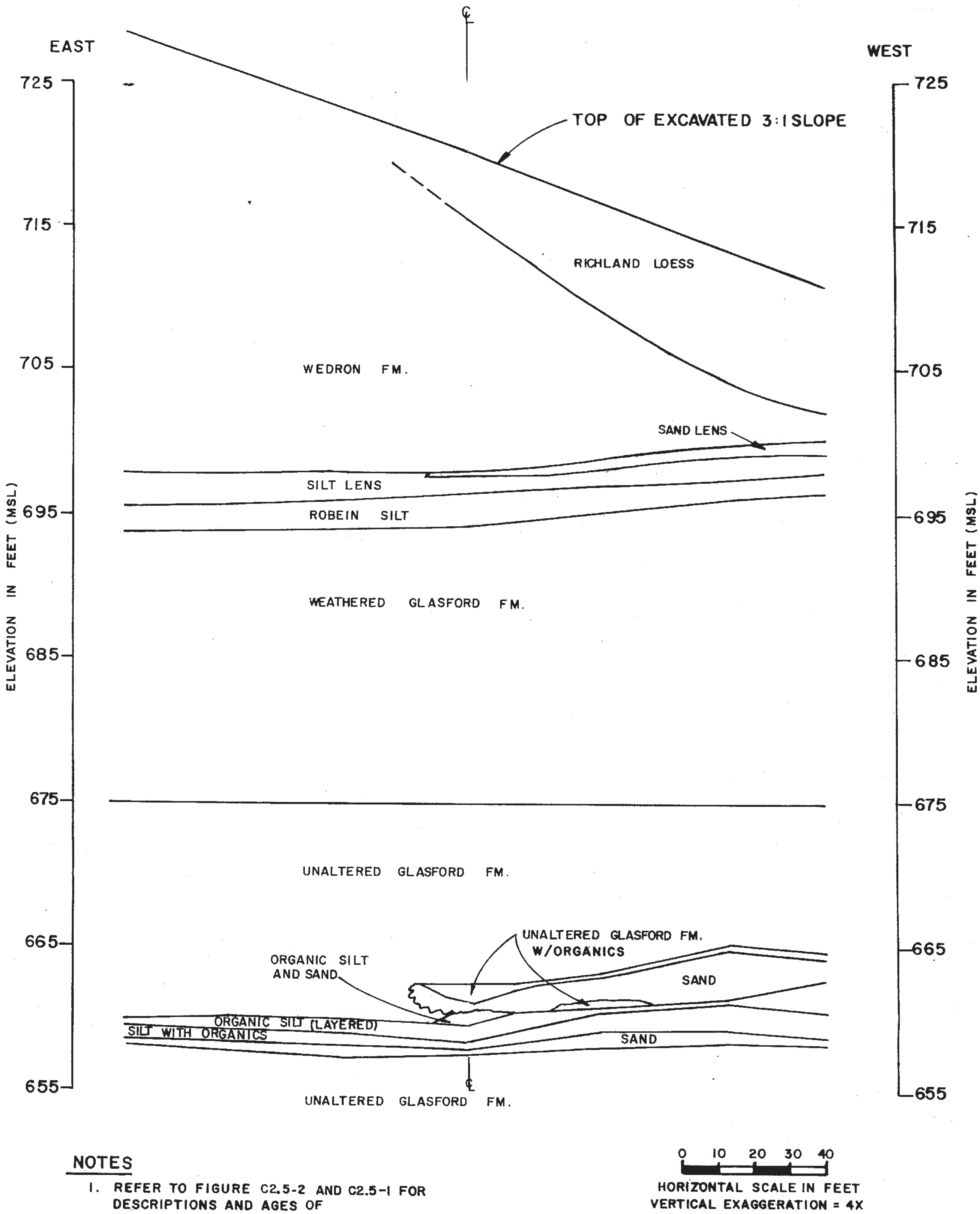
FIGURE C2.5-12

GEOLOGIC SECTION OF THE EAST WALL OF THE SCREEN HOUSE EXCAVATION



NOTES

1. REFER TO FIGURE C2.5-2 AND C2.5-1 FOR DESCRIPTIONS AND AGES OF STRATIGRAPHIC UNITS.
2. REFER TO FIGURES C2.5-3, C2.5-6 AND C2.5-19 FOR LOCATION OF GEOLOGIC SECTION.

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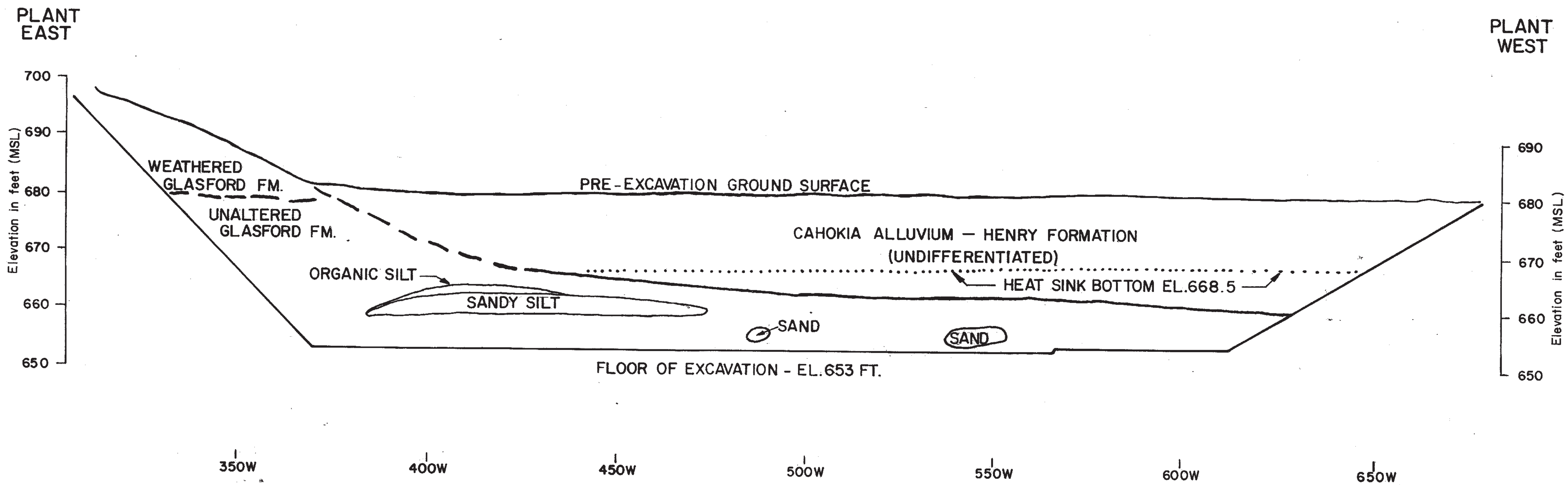
FIGURE C2.5-13

GEOLOGIC SECTION OF THE SOUTH ABUTMENT OF THE ULTIMATE HEAT SINK DAM EXCAVATION



LEGEND

- Contact between stratigraphic units.
- Inferred contact between stratigraphic units.
- Contact between sand or silt deposits.

NOTES

1. Location of this geologic section is shown in Figure C2.5-5, see also Figure No. C2.5-3.
2. Desription and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in geologic section are approximations.
4. View is to plant south.

0 50
Scale in feet
Vertical Exaggeration = 1.5X

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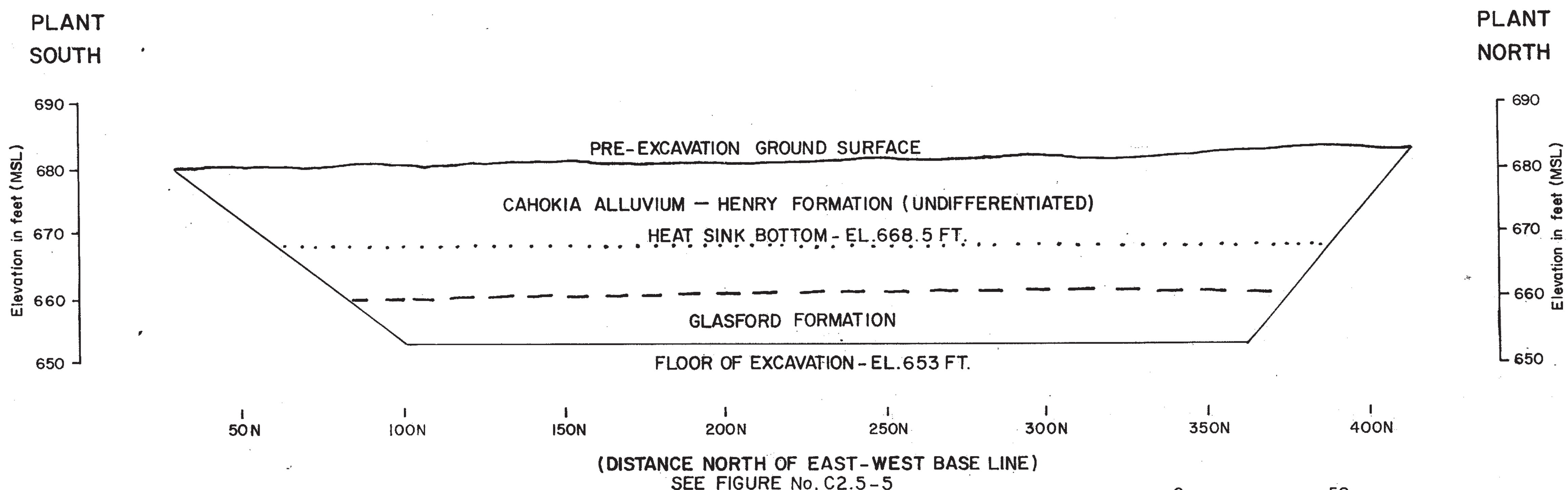
FIGURE C2.5-14

GEOLOGIC SECTION OF THE SOUTH WALL OF THE SCREEN HOUSE EXCAVATION



0 50
Scale in feet
Vertical Exaggeration=2X

LEGEND

— — Inferred contact between stratigraphic units.

NOTES

1. Location of this geologic section is shown in Figure C2.5-5, see also Figure No. C2.5-3.
2. Descrption and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in geologic section are approximations.
4. View is to plant west

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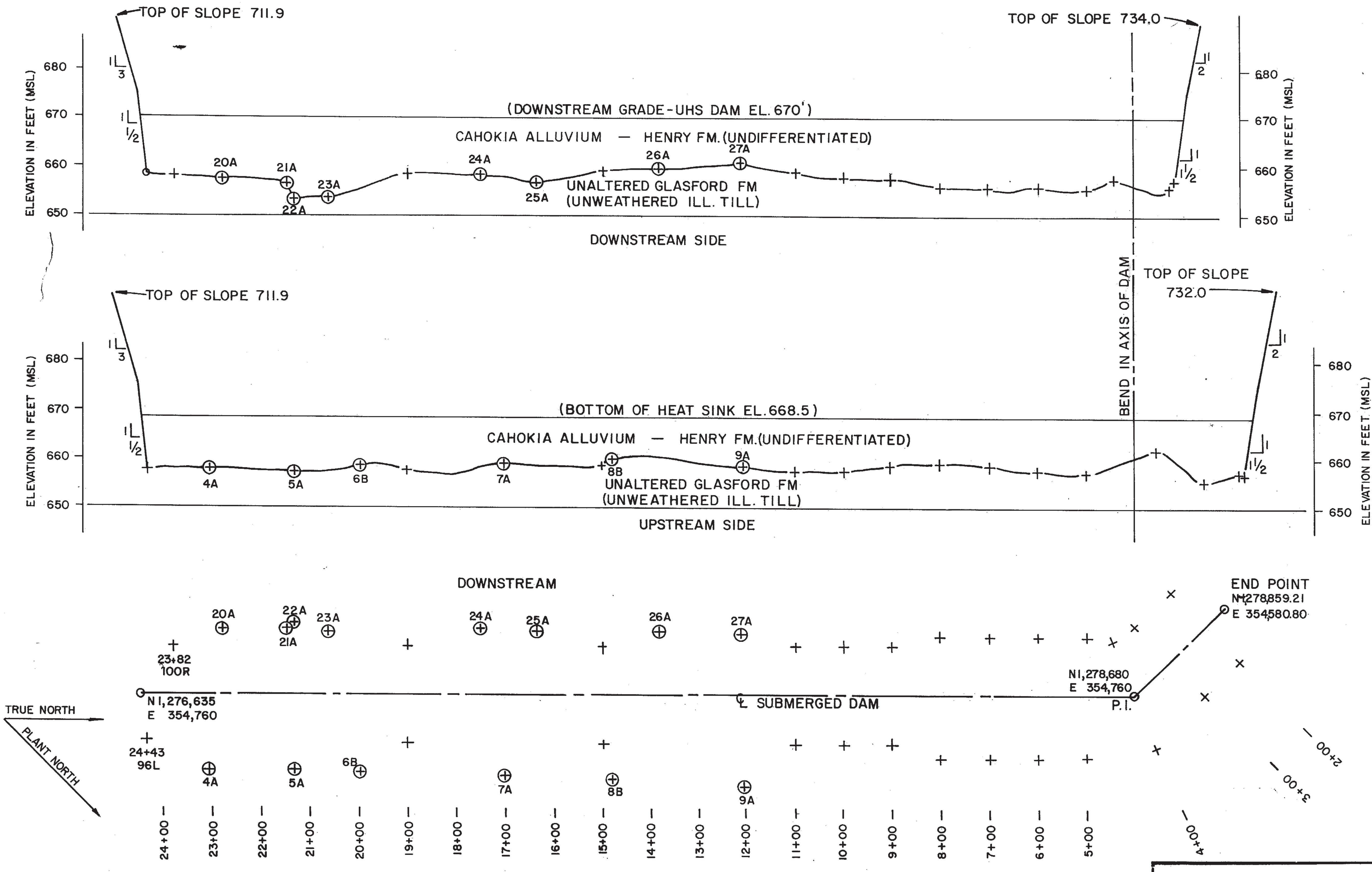
FIGURE C2.5-15

GEOLOGIC SECTION OF THE WEST WALL OF THE SCREEN HOUSE EXCAVATION



LEGEND

+ POINTS TAKEN FROM SUBGRADE PROFILES

⊕ POINTS FROM GEOLOGIC MAPPING

—+—⊕— SUBGRADE EXCAVATION LINE

2+00 STATIONING ALONG CENTER LINE OF DAM

NOTES

1. Descriptions and ages of stratigraphic units are presented in Figure C2.5-1.
2. See Figure Nos. C2.5-3 and C2.5-6 for location.

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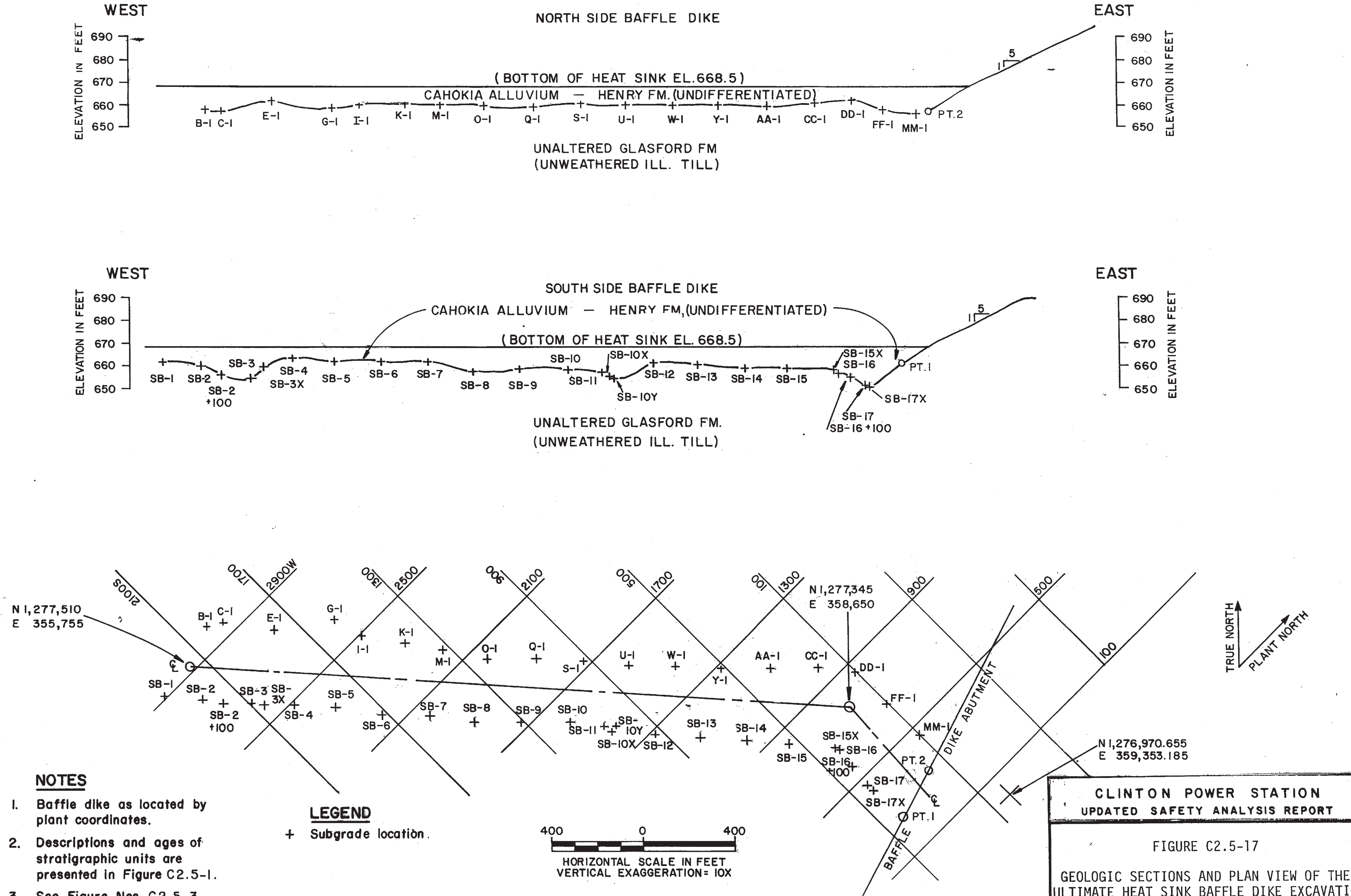
FIGURE C2.5-16

GEOLOGIC SECTIONS AND PLAN VIEW OF THE ULTIMATE HEAT SINK DAM EXCAVATION



NOTES

1. Baffle dike as located by plant coordinates.
2. Descriptions and ages of stratigraphic units are presented in Figure C2.5-1.
3. See Figure Nos. C2.5-3 and C2.5-6 for locations.
4. 2900W Plant coordinates (feet).

LEGEND

+ Subgrade location.

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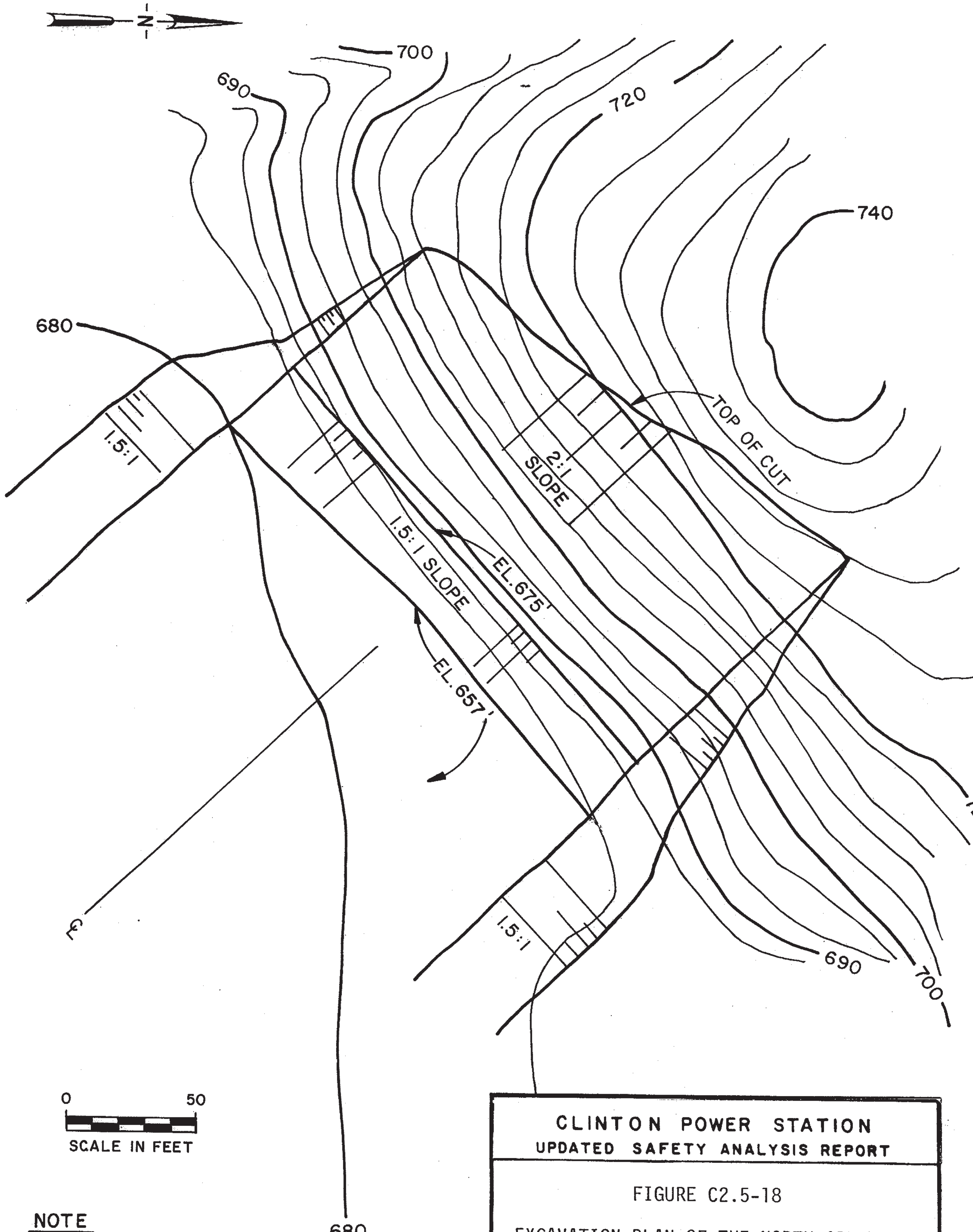
FIGURE C2.5-17

GEOLOGIC SECTIONS AND PLAN VIEW OF THE ULTIMATE HEAT SINK BAFFLE DIKE EXCAVATION



NOTE

See figure numbers C2.5-3 and C2.5-6 for location.

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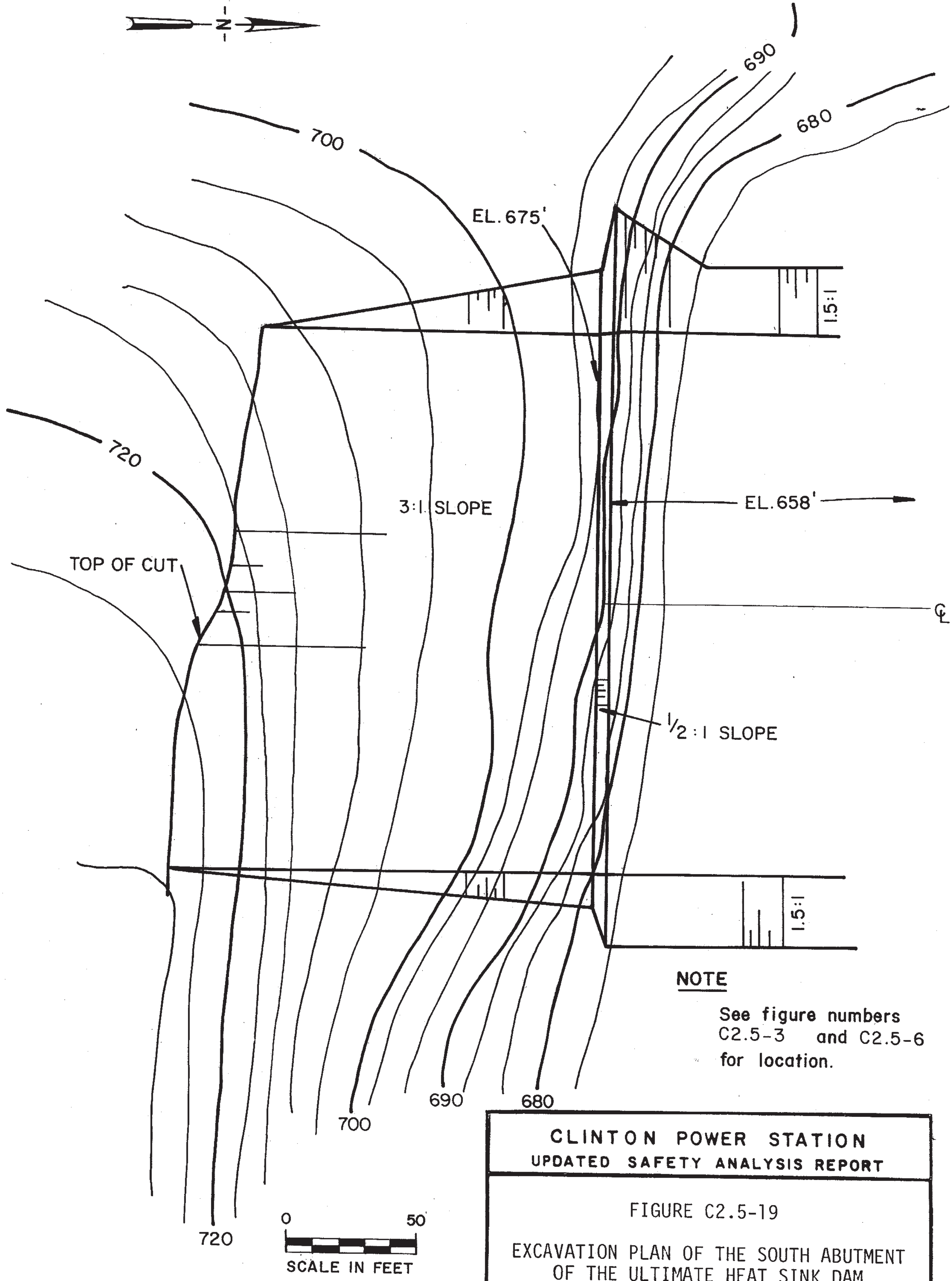
FIGURE C2.5-18

EXCAVATION PLAN OF THE NORTH ABUTMENT OF THE ULTIMATE HEAT SINK DAM



NOTE

See figure numbers C2.5-3 and C2.5-6 for location.

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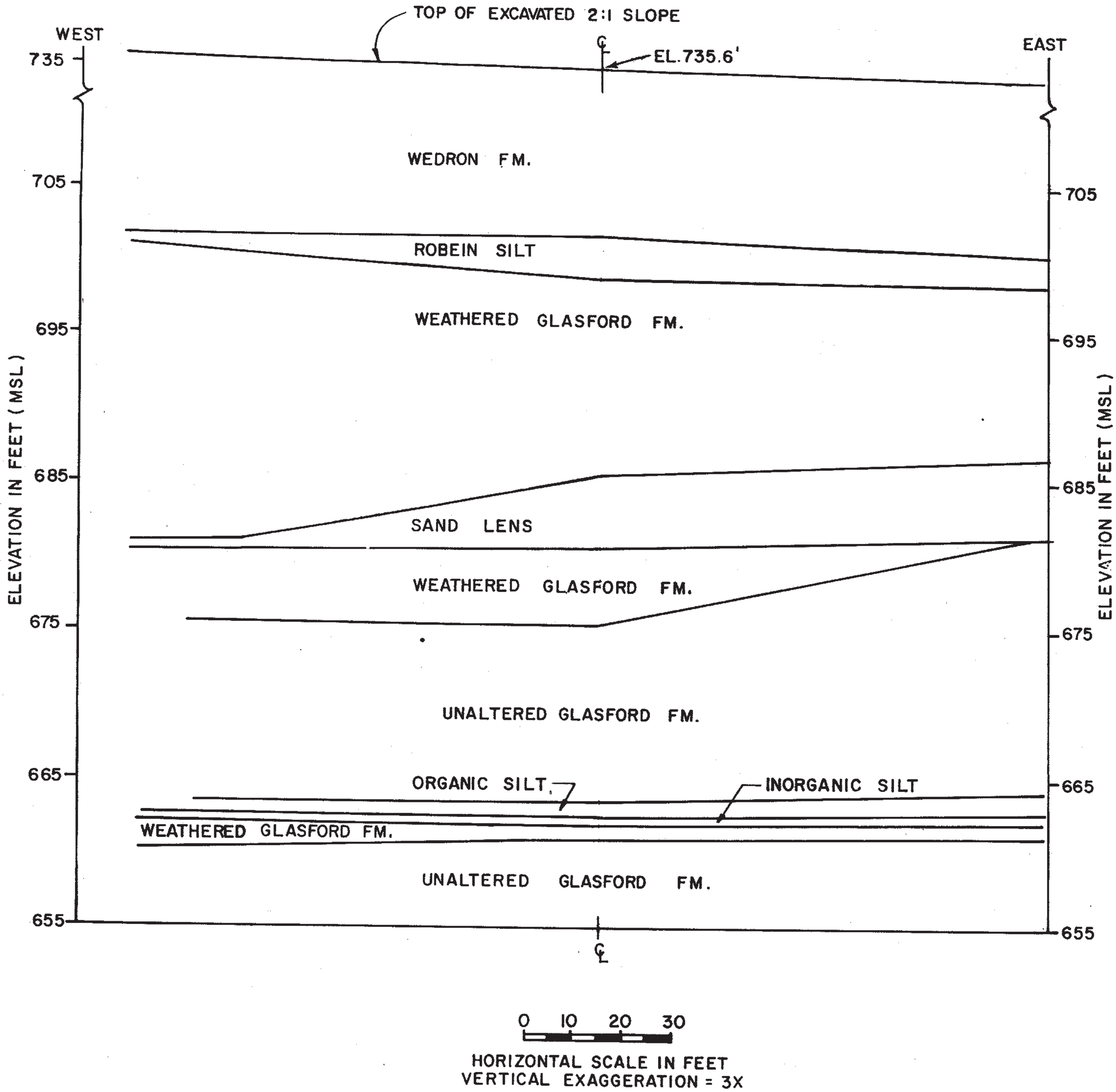
FIGURE C2.5-19

EXCAVATION PLAN OF THE SOUTH ABUTMENT OF THE ULTIMATE HEAT SINK DAM



NOTES

1. REFER TO FIGURE C2.5-1 FOR DESCRIPTIONS AND AGES OF STRATIGRAPHIC UNITS.
2. REFER TO FIGURES C2.5-3, C2.5-6 AND C2.5-18 FOR LOCATION OF GEOLOGIC SECTION.

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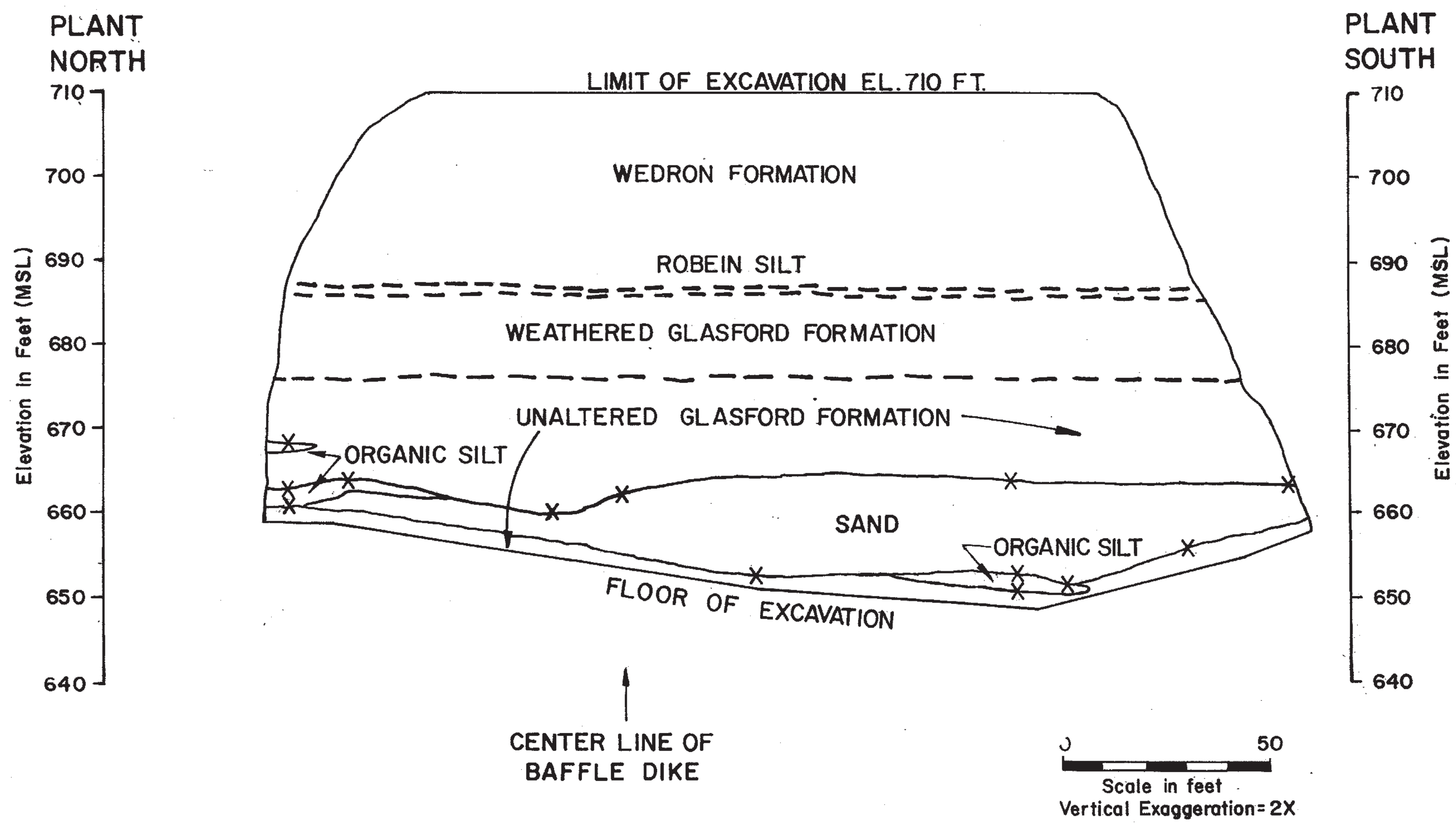
UPDATED SAFETY ANALYSIS REPORT

FIGURE C2.5-20

GEOLOGIC SECTION OF THE NORTH ABUTMENT OF THE ULTIMATE HEAT SINK DAM EXCAVATION



LEGEND

- - - Inferred contact between stratigraphic units.
—— Contact between sand or silt units.
X Survey point

NOTES

1. Location of this geologic section is shown in Figure C2.5-6, see also Figure No. C2.5-3.
2. Description and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in this geologic section are approximations.
4. View is to plant west.

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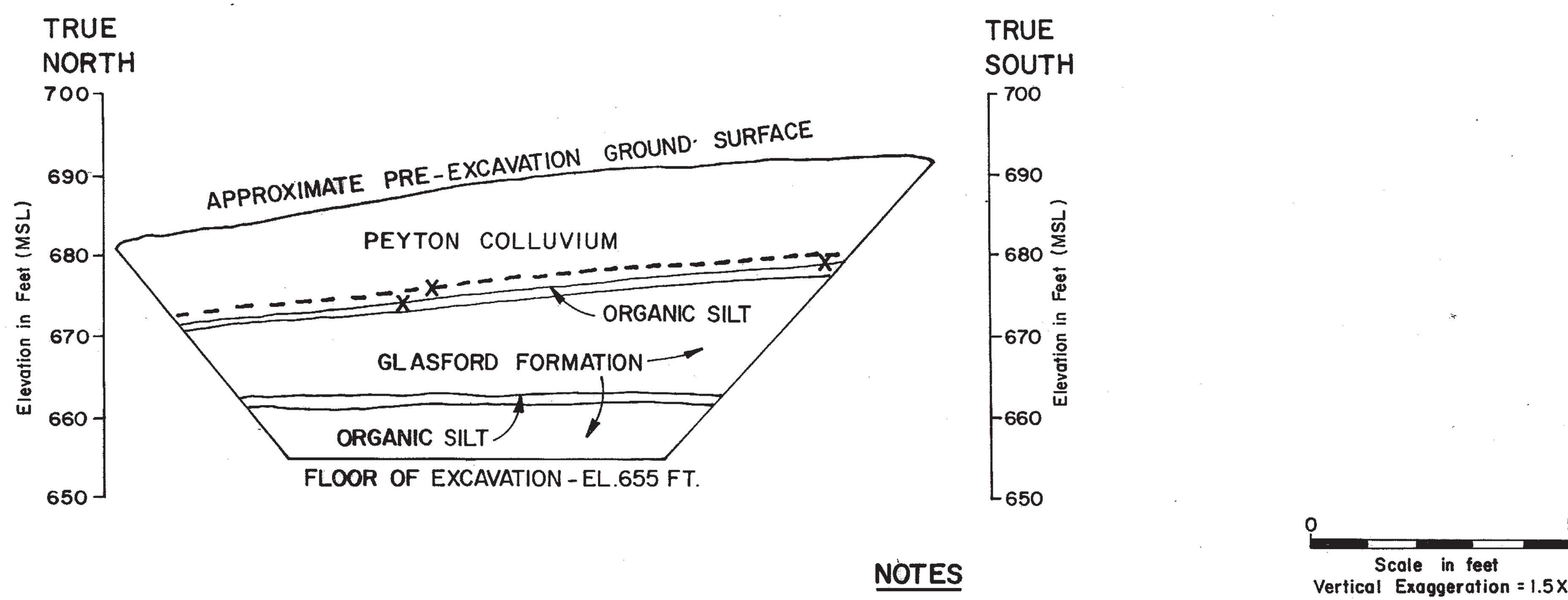
FIGURE C2.5-21

GEOLOGIC SECTION OF THE BAFFLE DIKE ABUTMENT EXCAVATION



LEGEND

- - - Inferred contact between stratigraphic units
—— Contact between silt units
X Survey point

NOTES

1. Location of this geologic section is shown in Figure C2.5-6, see also Figure No. C2.5-7
2. Description and ages of stratigraphic units are presented in Figure C2.5-1.
3. Limits of excavation and slopes shown in this geologic section are approximations.
4. View is to true east.

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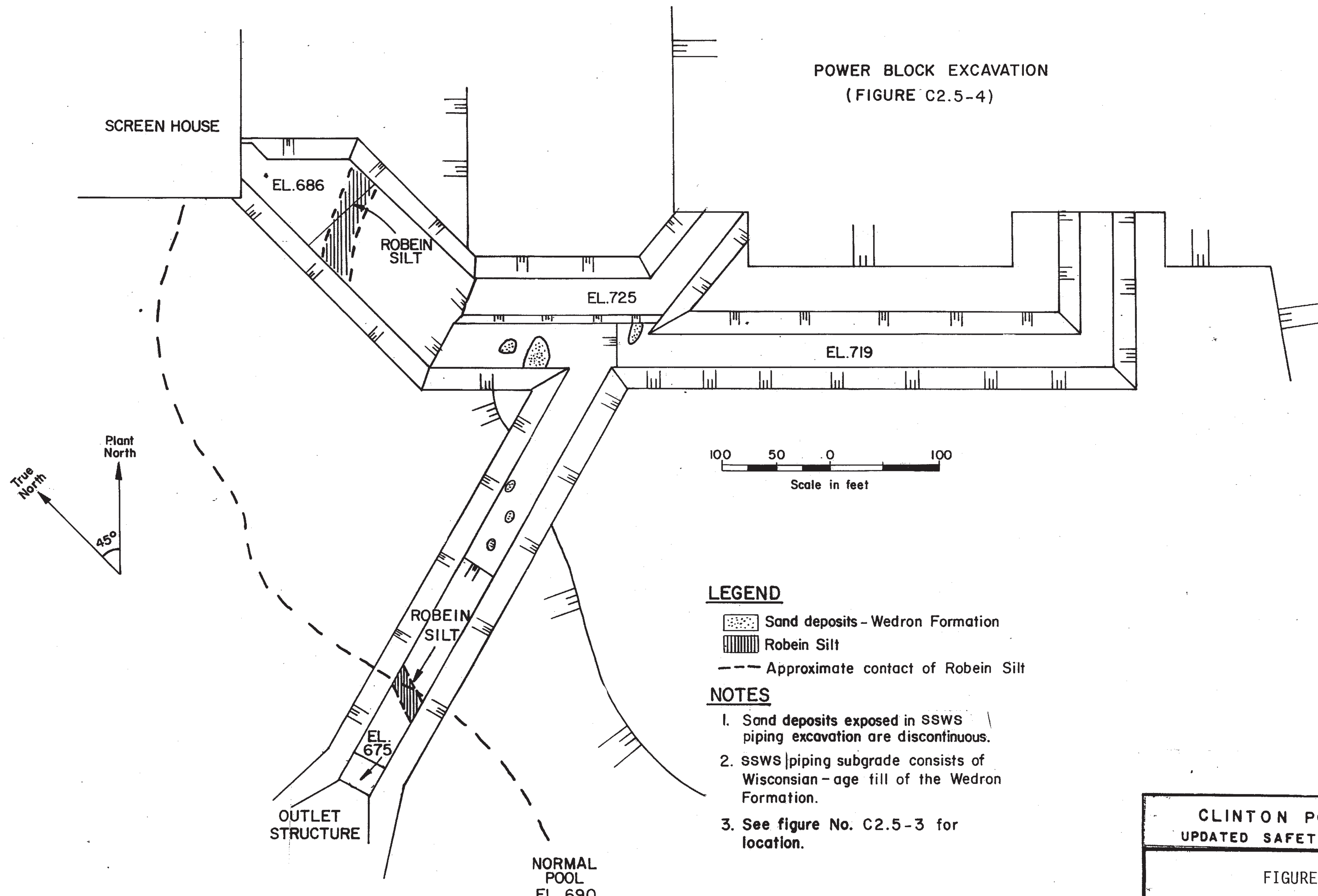
UPDATED SAFETY ANALYSIS REPORT

FIGURE C2.5-22

GEOLOGIC SECTION OF THE SSWS OUTLET STRUCTURE EXCAVATION



LEGEND

Sand deposits - Wedron Formation

Robein Silt

Approximate contact of Robein Silt

NOTES

1. Sand deposits exposed in SSWS piping excavation are discontinuous.
2. SSWS piping subgrade consists of Wisconsian - age till of the Wedron Formation.
3. See figure No. C2.5-3 for location.

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FIGURE C2.5-23

EXCAVATION PLAN FOR THE SSWS BUILDING