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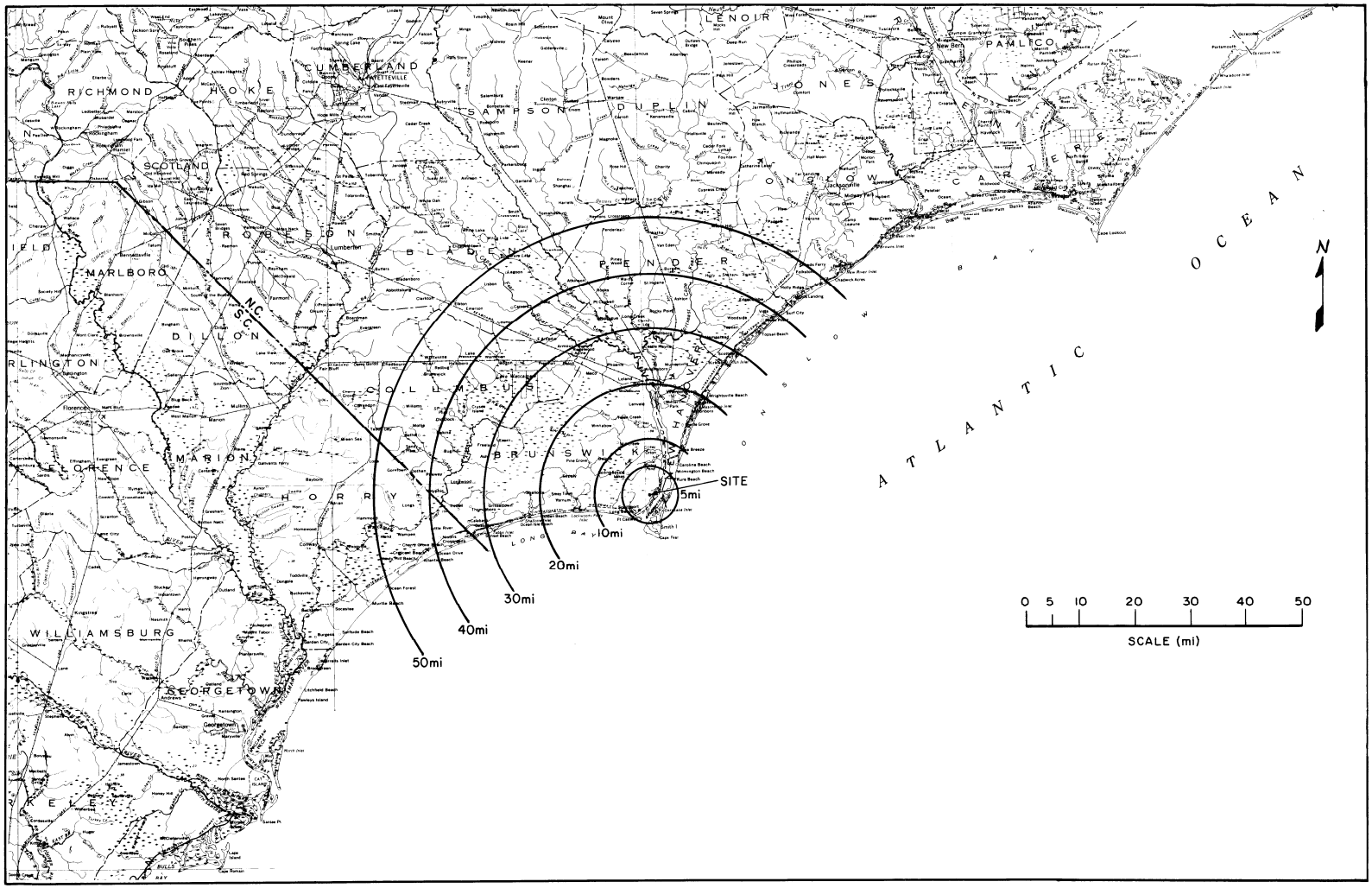
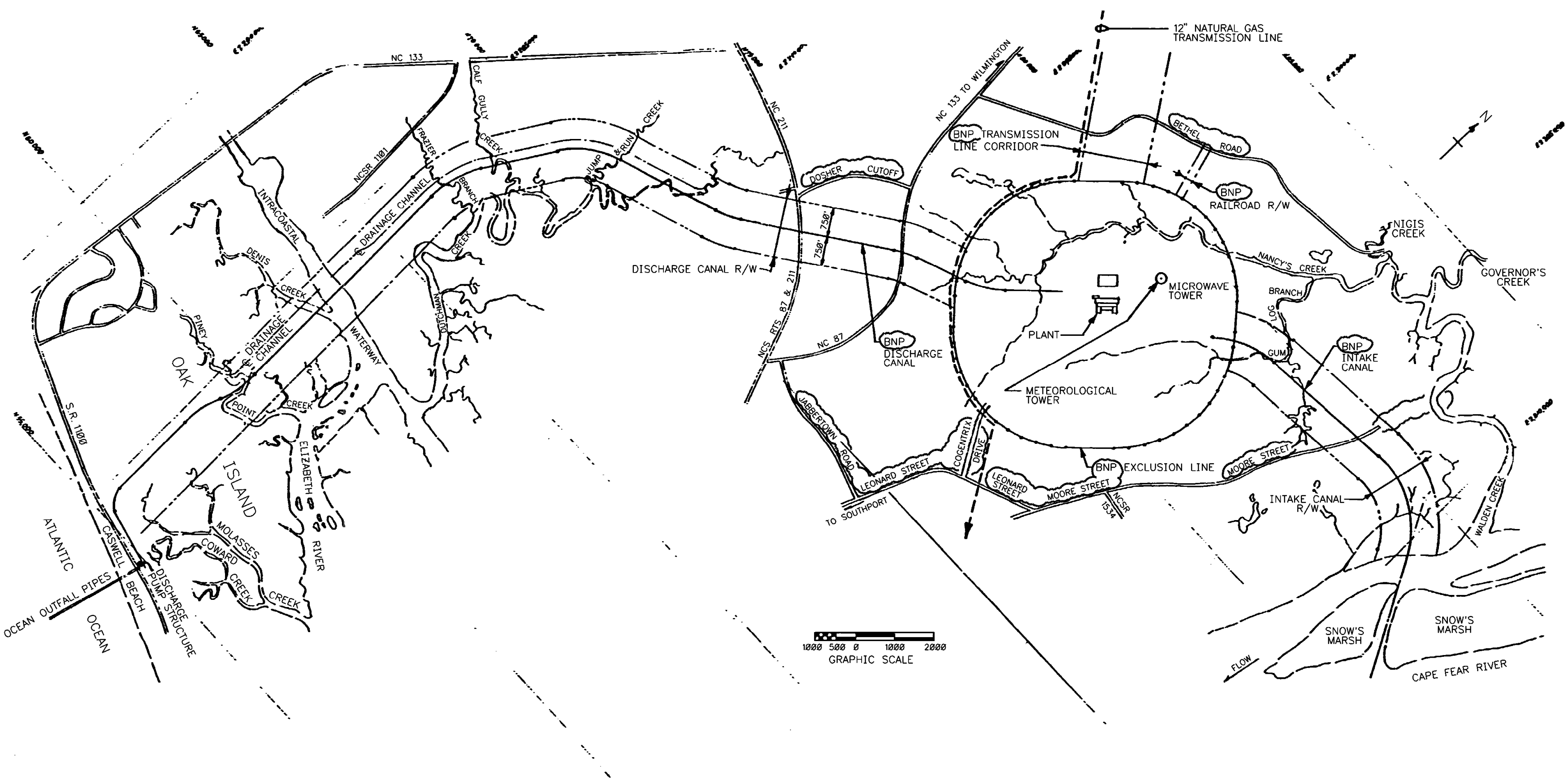
General Site Location Map

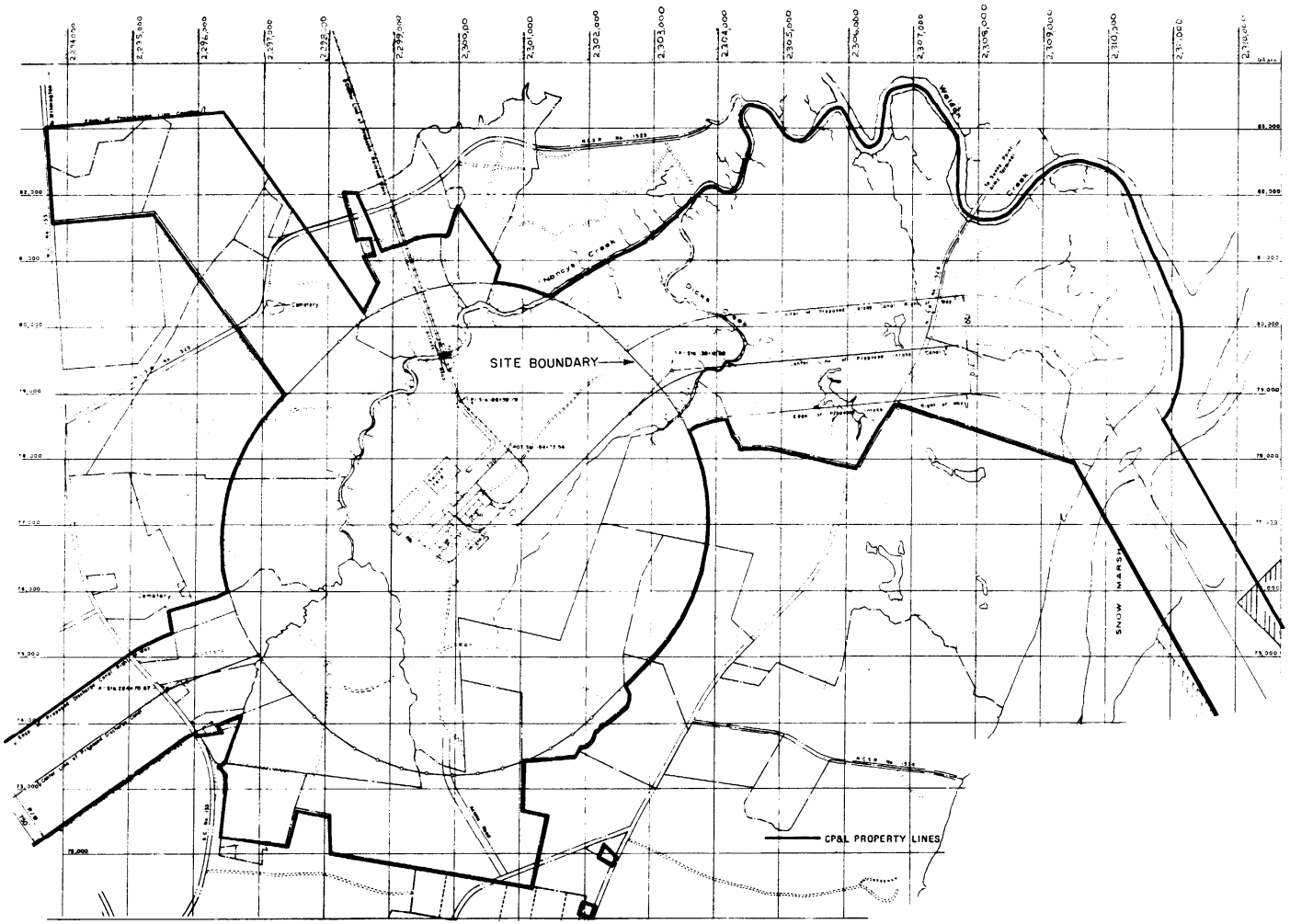


Site Plan

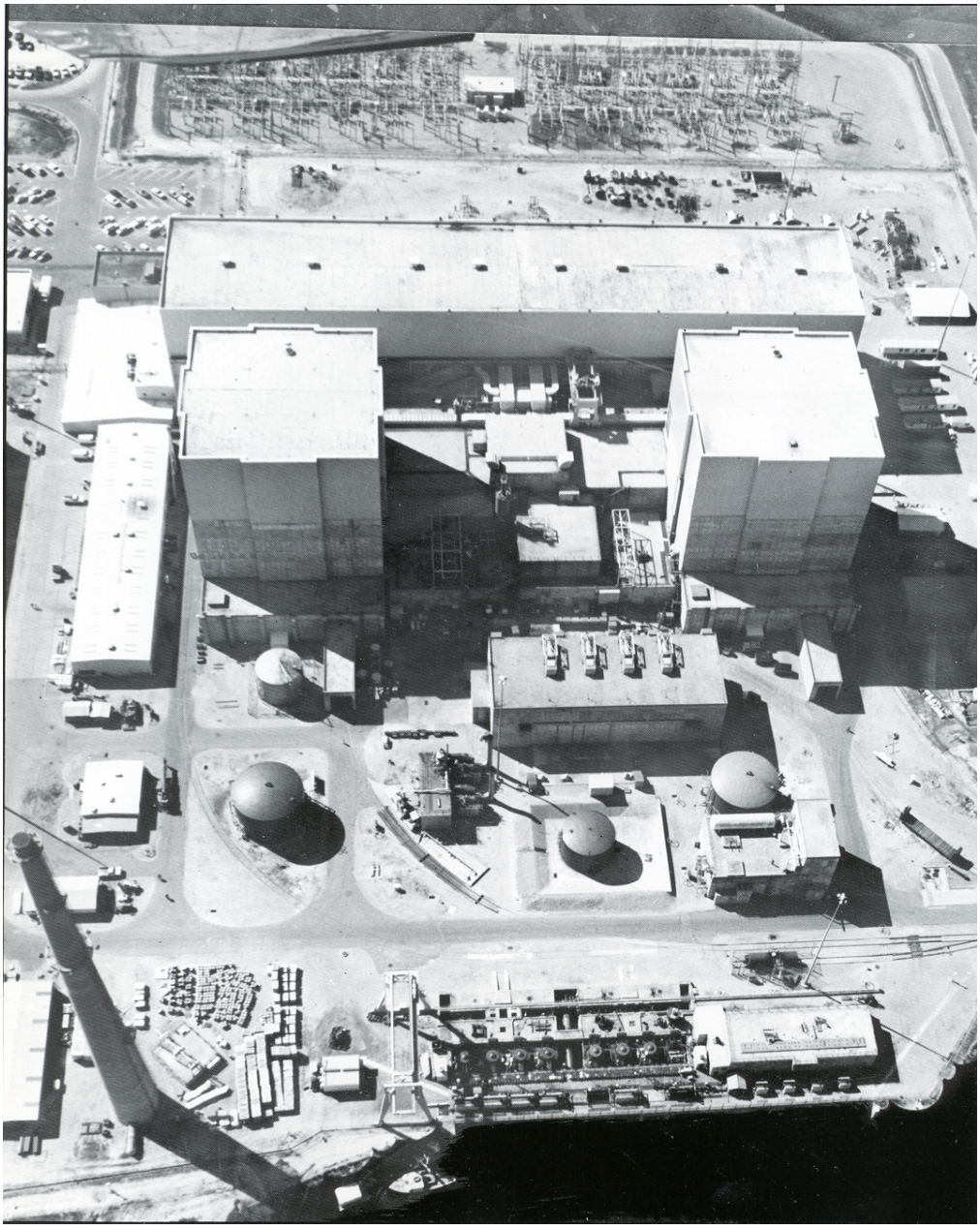


12" NATURAL GAS TRANSMISSION LINE
NC 133
NC 133 TO WILMINGTON
NC 211
NC 87
NCS RTS 87 & 211
BNP TRANSMISSION LINE CORRIDOR
BETHEL ROAD
BNP RAILROAD R/W
NIGIS CREEK
GOVERNOR'S CREEK
NANCY'S CREEK
BRANCH
LOG
GUM
BNP INTAKE CANAL
MICROWAVE TOWER
PLANT
METEOROLOGICAL TOWER
BNP DISCHARGE CANAL
DISCHARGE CANAL R/W
DOSHER CUTOFF
750'
JABBERTOWN ROAD
LEONARD STREET
COGENTRIX DRIVE
MOORE STREET
NCSR 1534
BNP EXCLUSION LINE
TO SOUTHPORT
INTAKE CANAL R/W
WALDEN CREEK
SNOW'S MARSH
CAPE FEAR RIVER
FLOW
1000 500 0 1000 2000
GRAPHIC SCALE
CALF GULLY CREEK
FRAZIER
NCSR 1101
DRAINAGE CHANNEL
JUMP & RUN CREEK
BRANCH
CREEK
DUTCHMAN
INTRACOASTAL WATERWAY
DENIS CREEK
PINEY POINT CREEK
OAK ISLAND
ELIZABETH RIVER
MOLASSES CREEK
COWARD CREEK
S.R. 1100
CASWELL BEACH
ATLANTIC OCEAN
OCEAN OUTFALL PIPES
DISCHARGE PUMP STRUCTURE
N

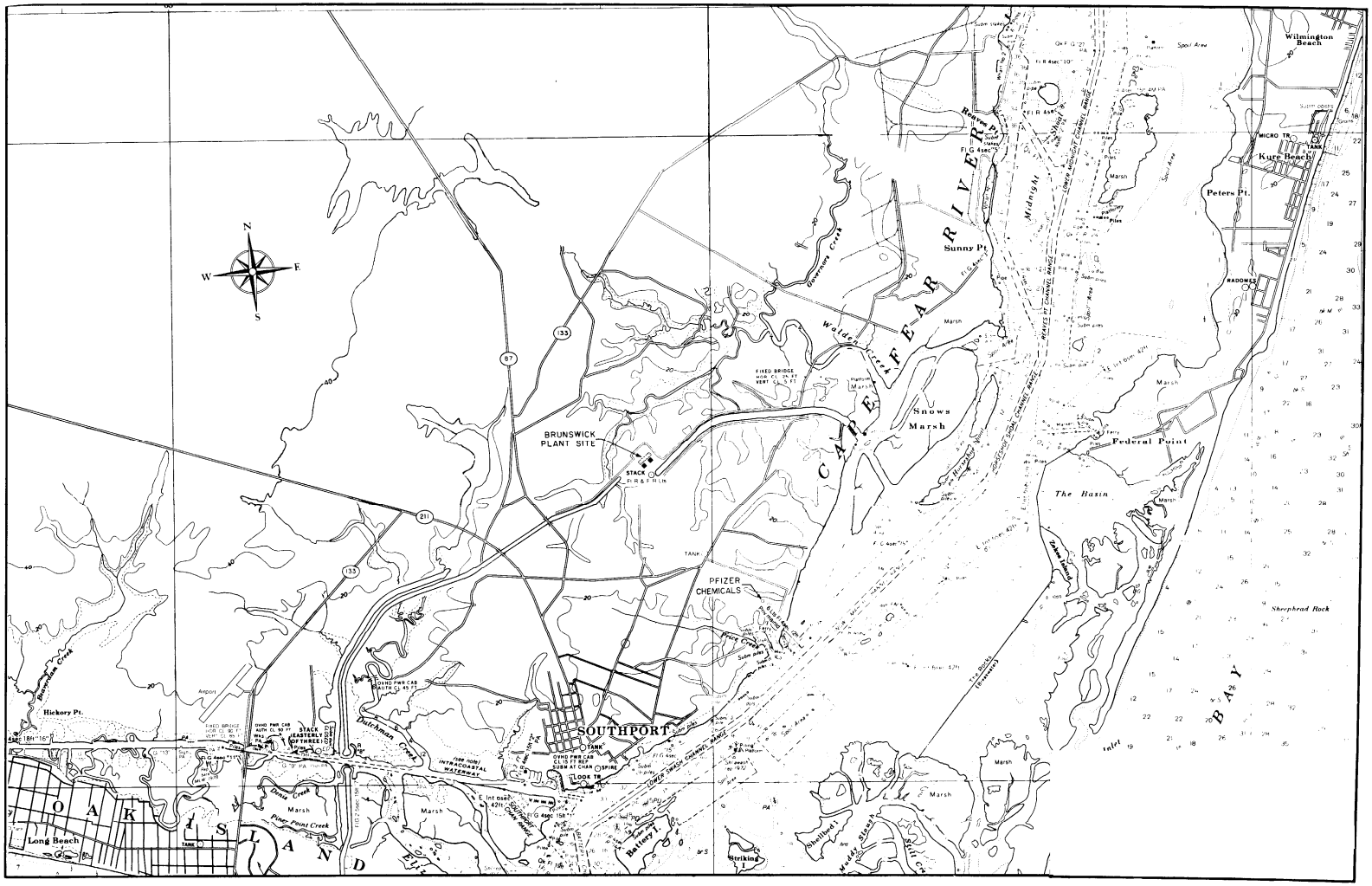
Site Map



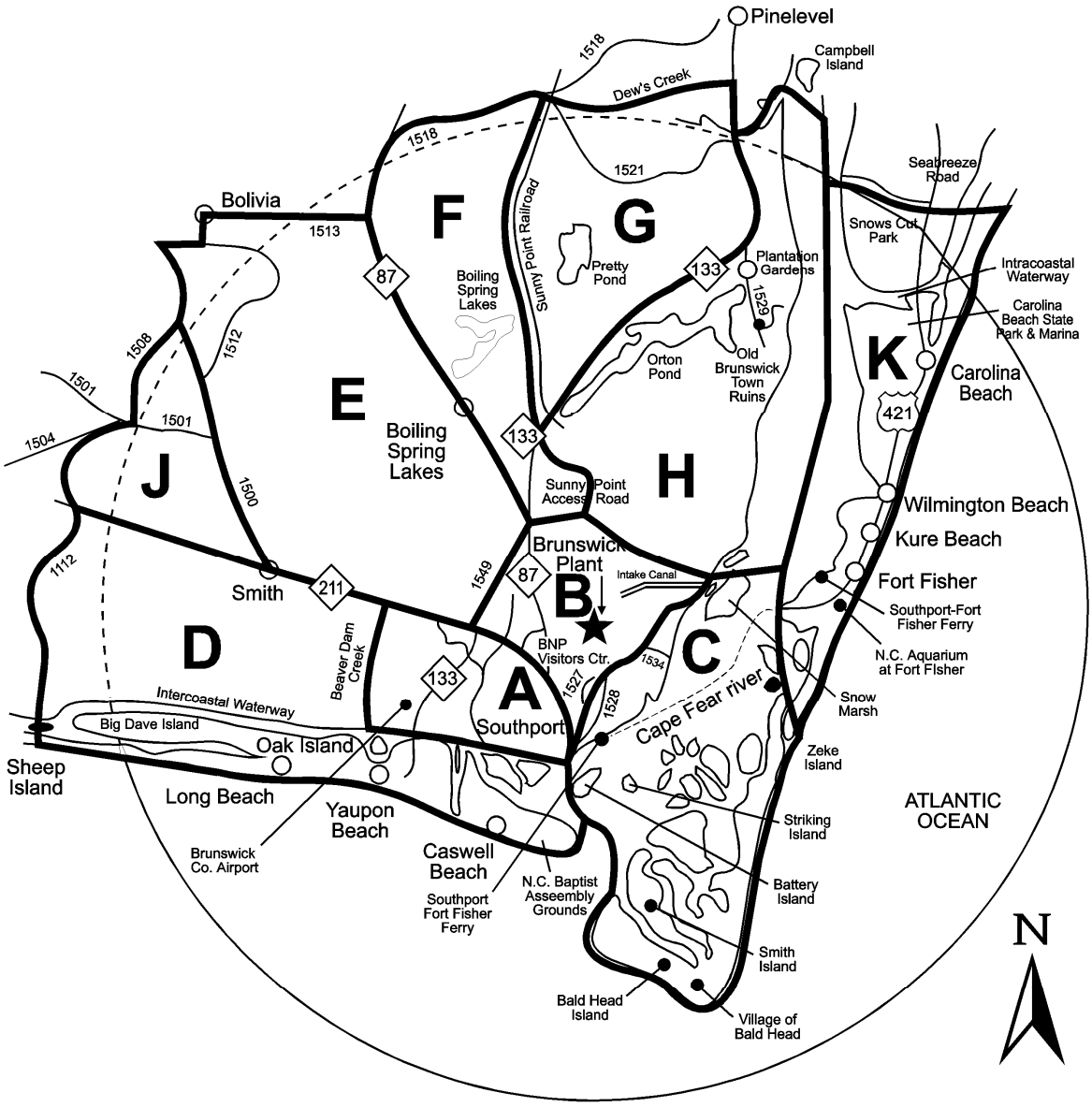
Aerial Photograph Of Site (1981)



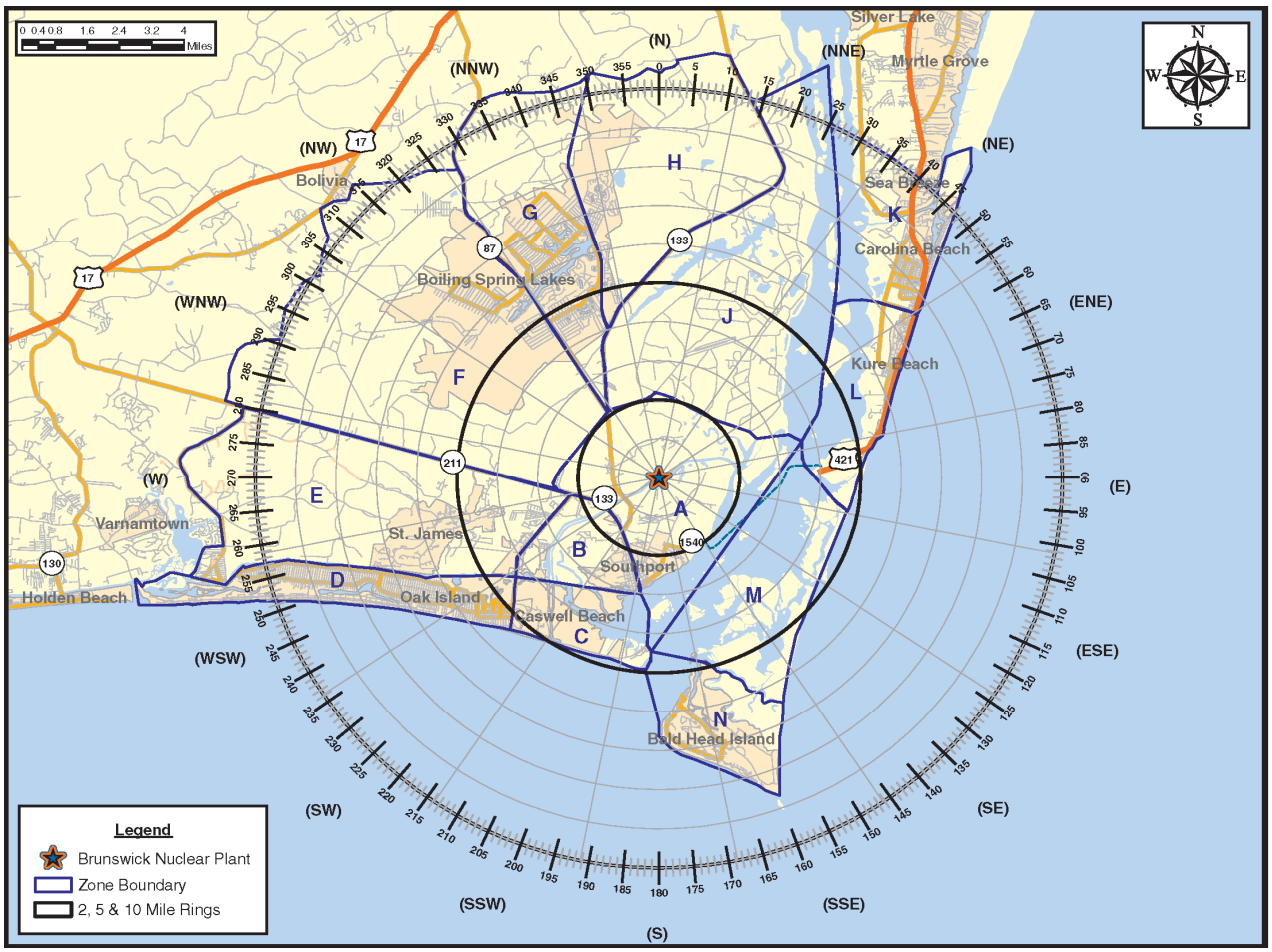
General Site Topography



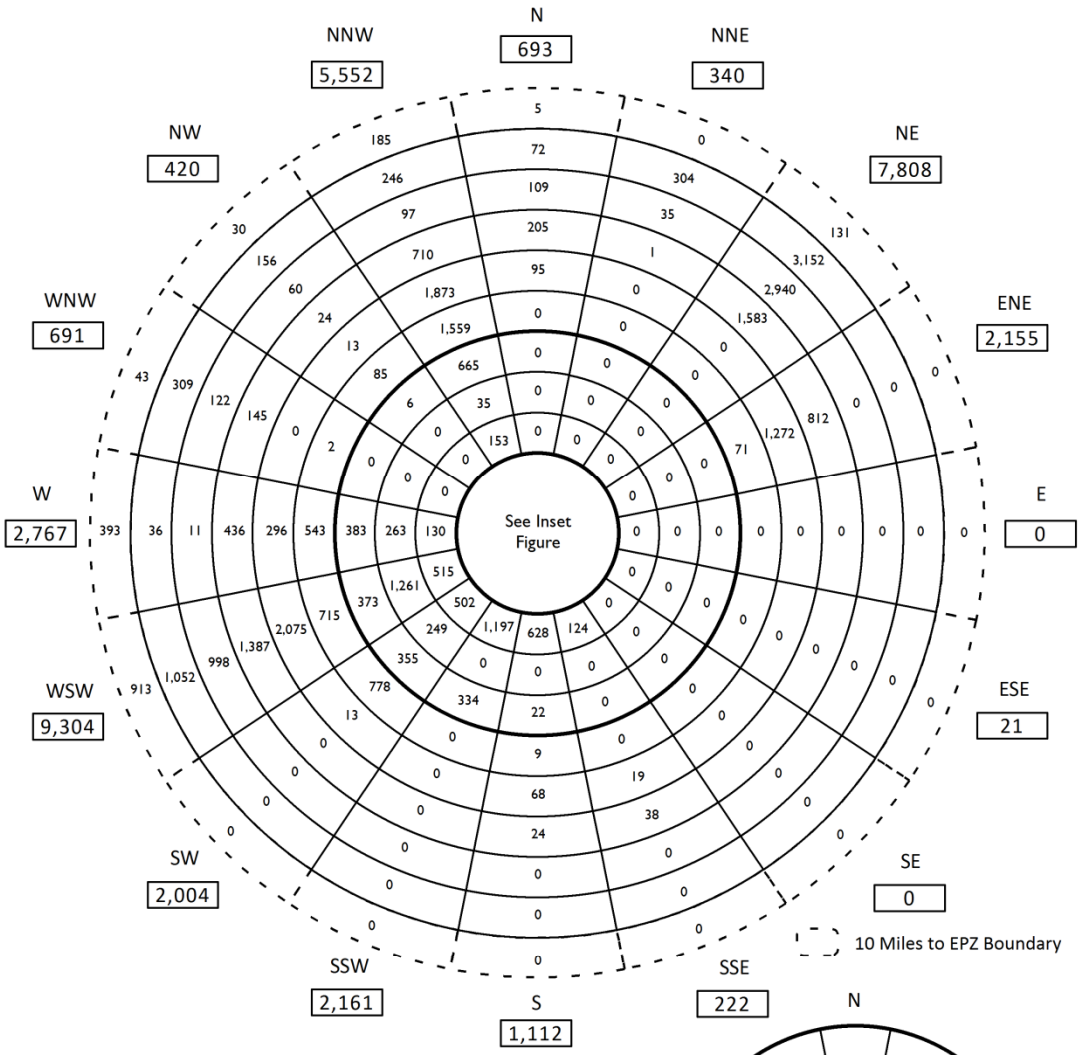
Evacuation Zones (10 Mile EPZ)



Evacuation Zones (10 Mile EPZ)

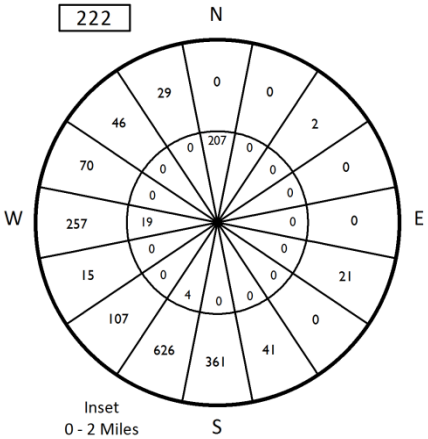


Permanent Resident Population by Sector

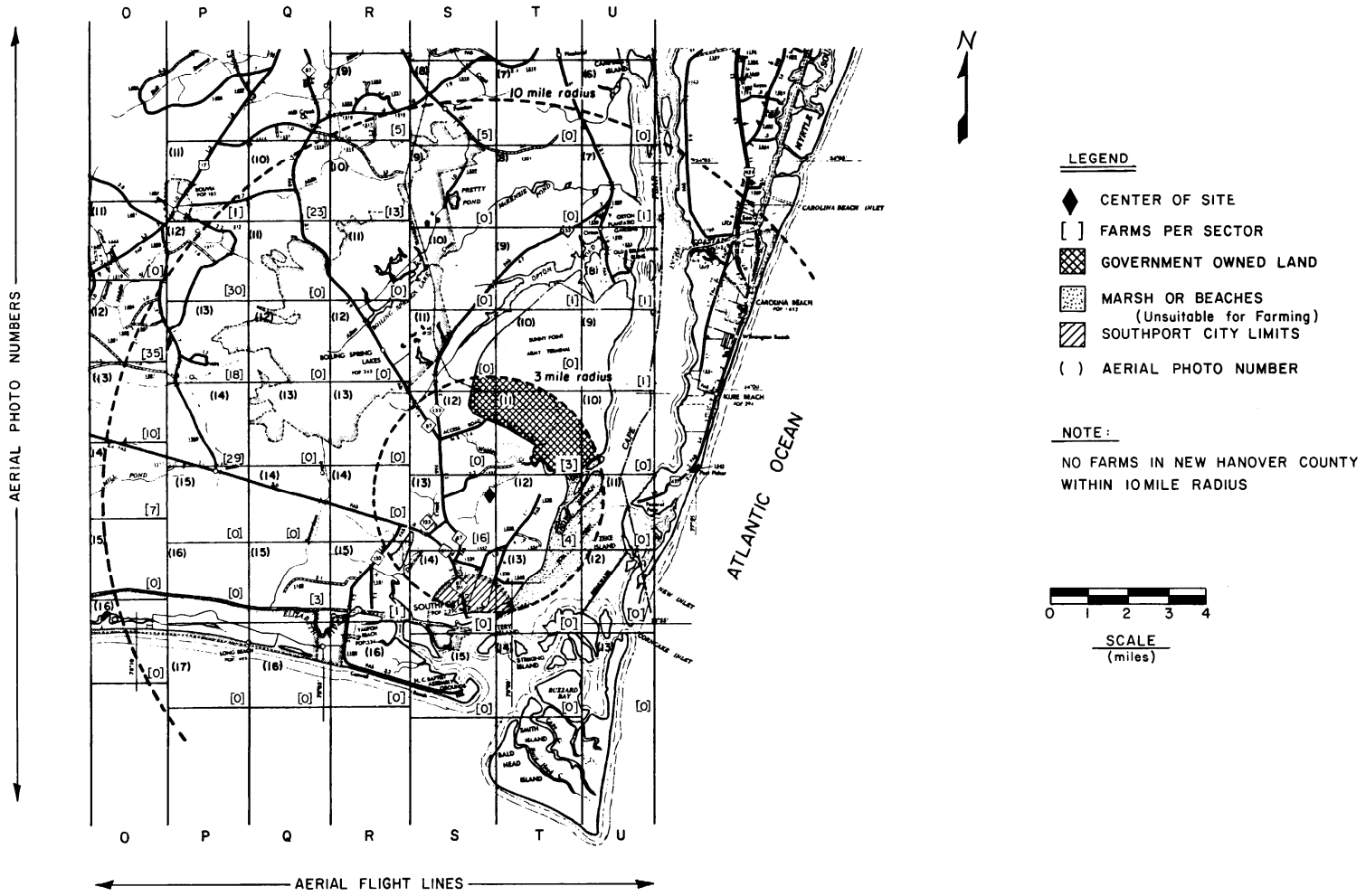


Resident Population

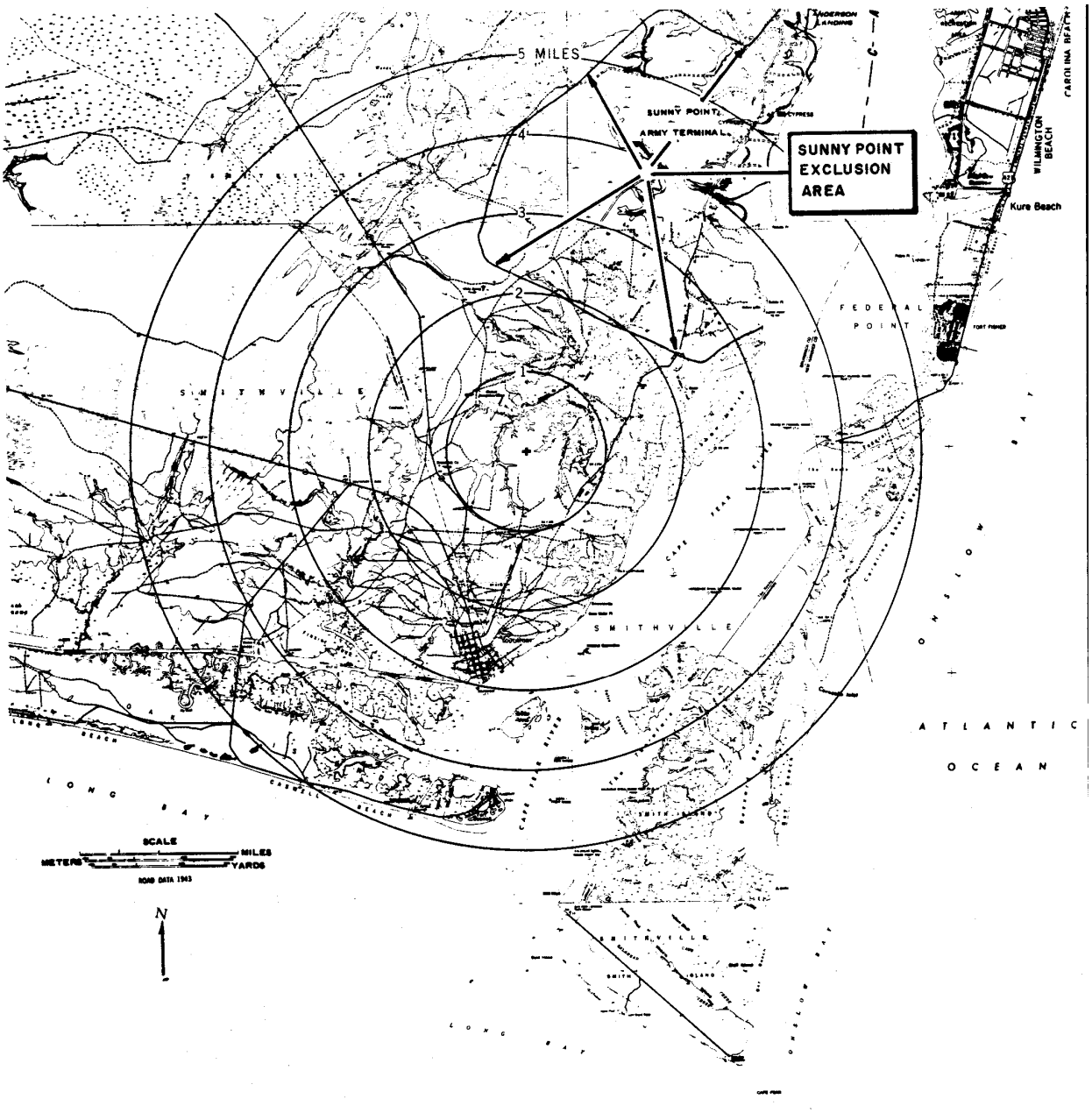
Miles	Subtotal by Ring	Cumulative Total
0 - 1	230	230
1 - 2	1,575	1,805
2 - 3	3,249	5,054
3 - 4	1,808	6,862
4 - 5	2,138	9,000
5 - 6	3,762	12,762
6 - 7	5,724	18,486
7 - 8	5,365	23,851
8 - 9	4,372	28,223
9 - 10	5,327	33,550
10 - EPZ	1,700	35,250
	Total:	35,250



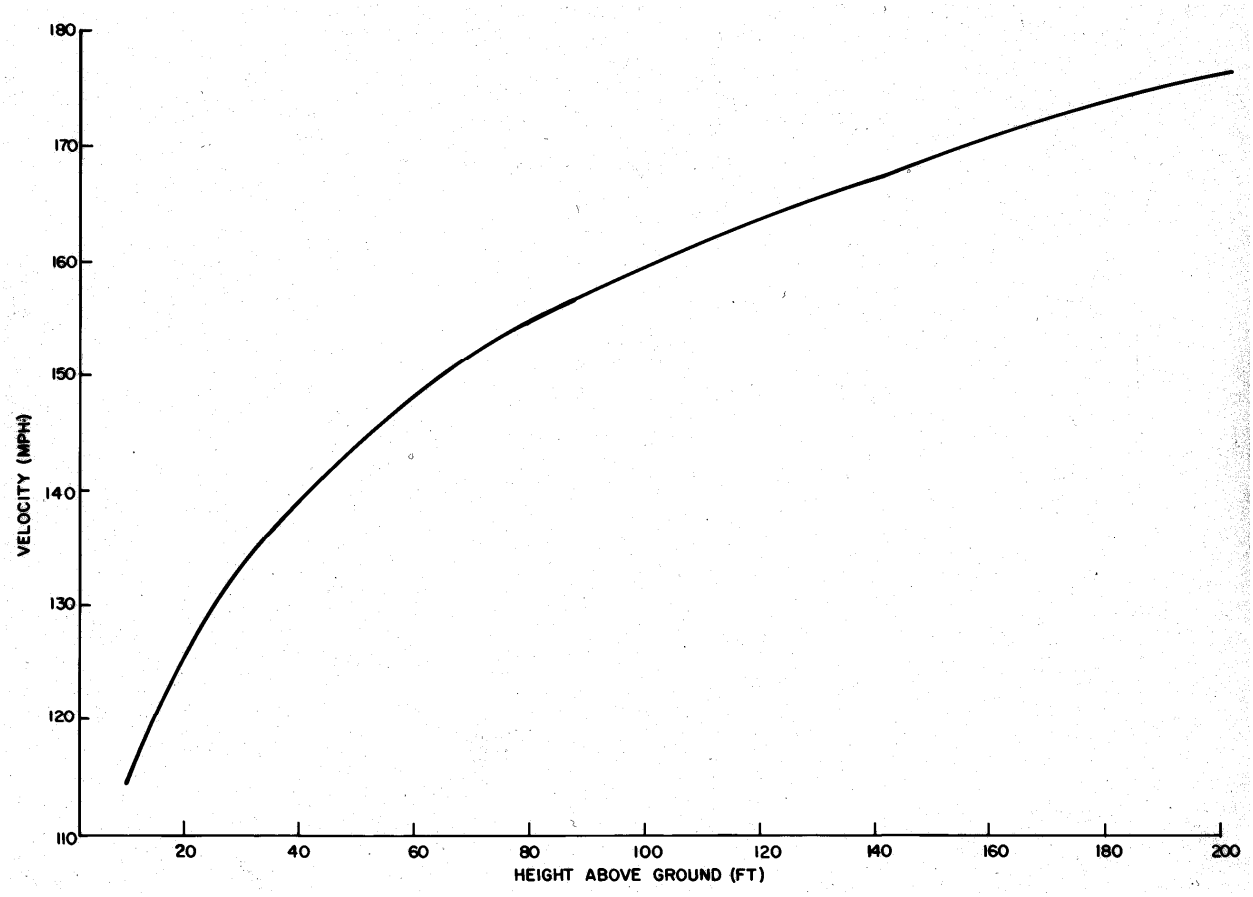
Location of Farms Within 10 Miles of the Site



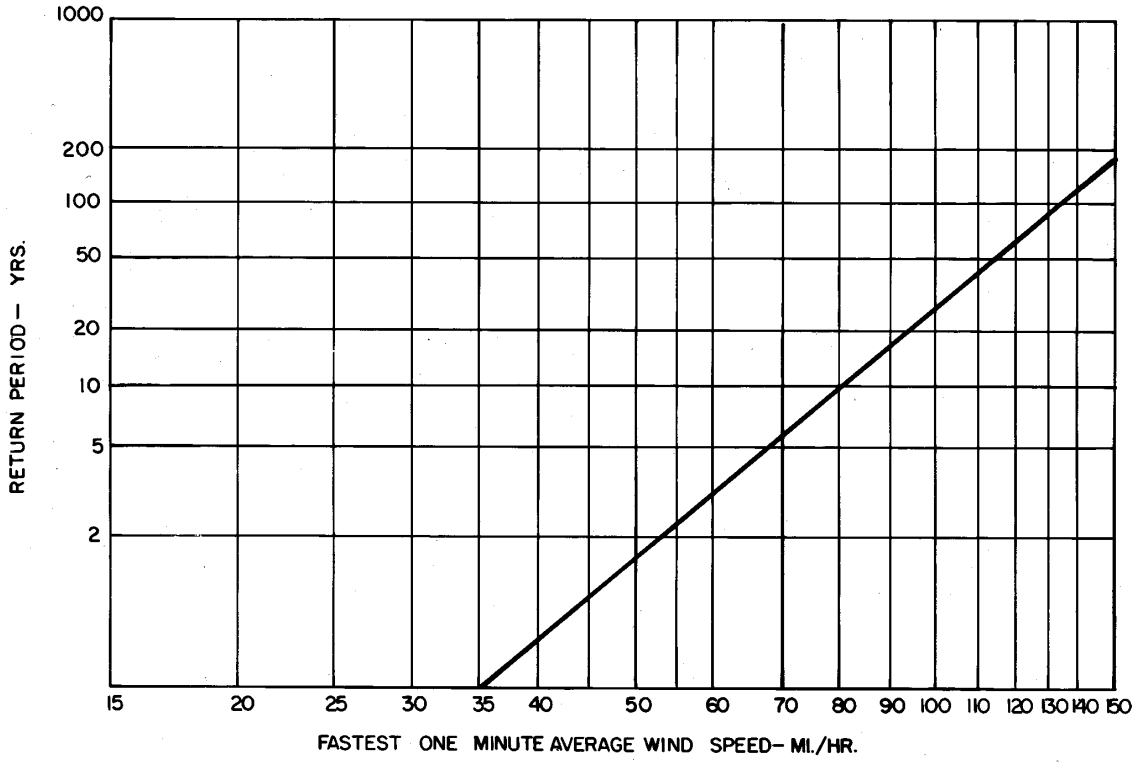
Local Site Topography



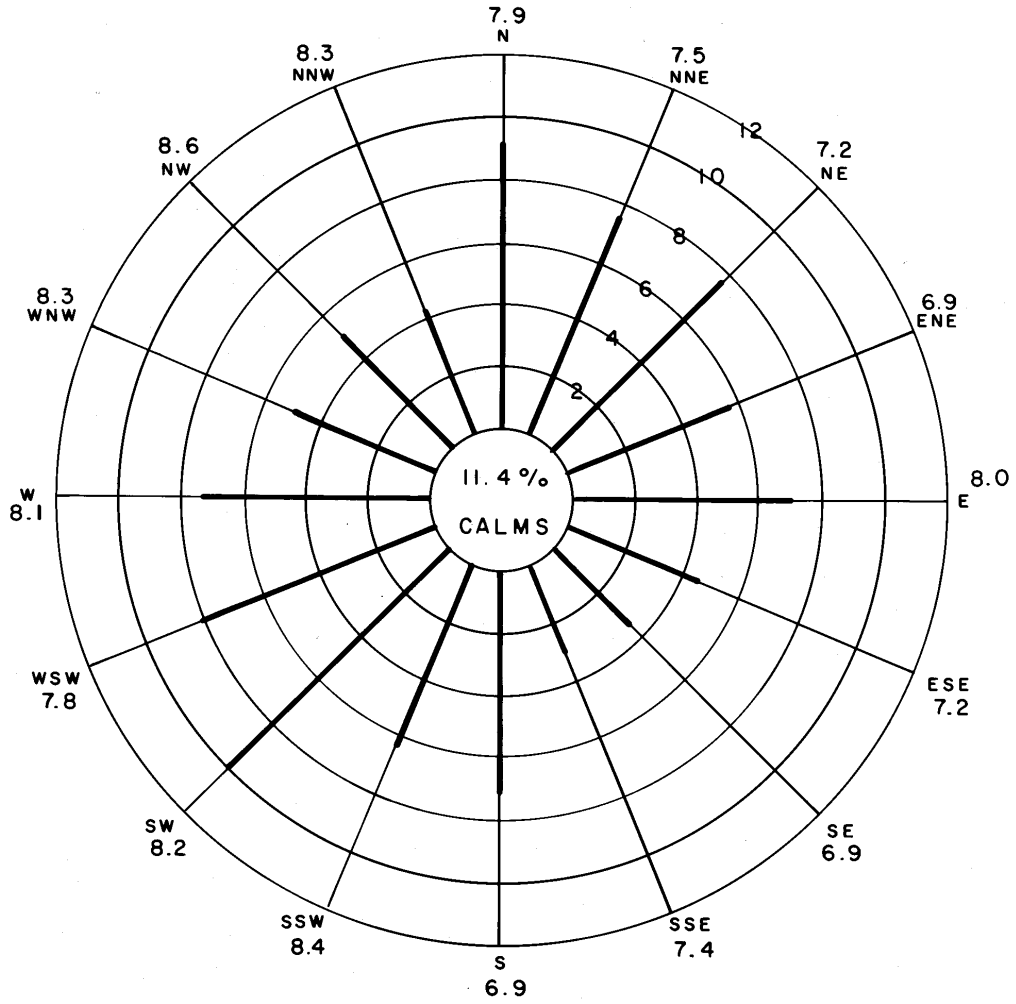
Vertical Profile At The Extreme Mile Wind



Recurrence Period of Fastest 1 Minute Extreme Wind for Site



Wilmington, N.C. Weather Service Wind Rose



$\bar{u}$ = 6.9 MPH

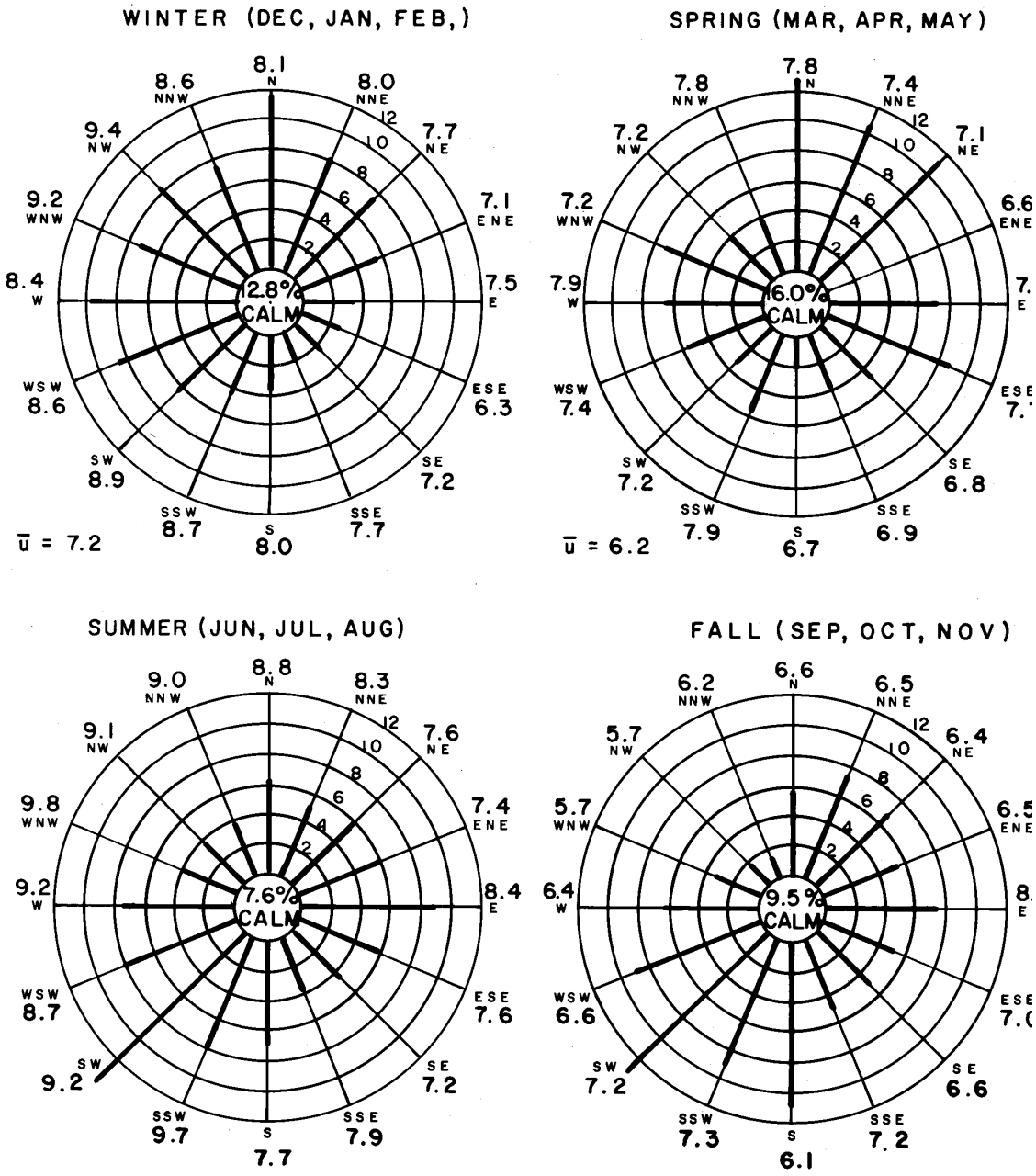
$\bar{u}$ = ALL DIRECTION AVERAGE WIND SPEED

NOTE: DIRECTIONAL AVERAGE WIND SPEEDS (MPH) ARE DISPLAYED RADIALLY

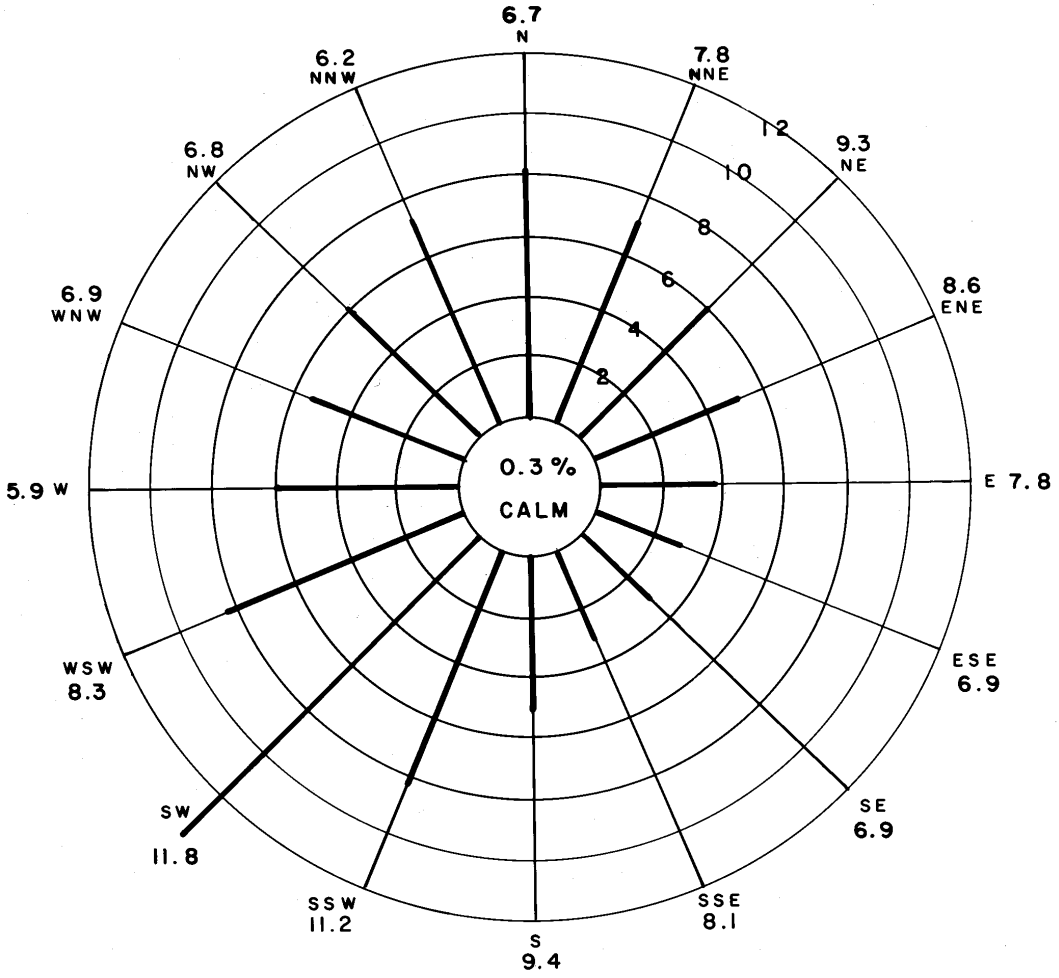
WIND DIRECTION (%)

1966-1970

Wilmington, N.C. Weather Service Seasonal Wind Rose



BSEP On-Site Lower Level Wind Rose



u = 8.5 MPH

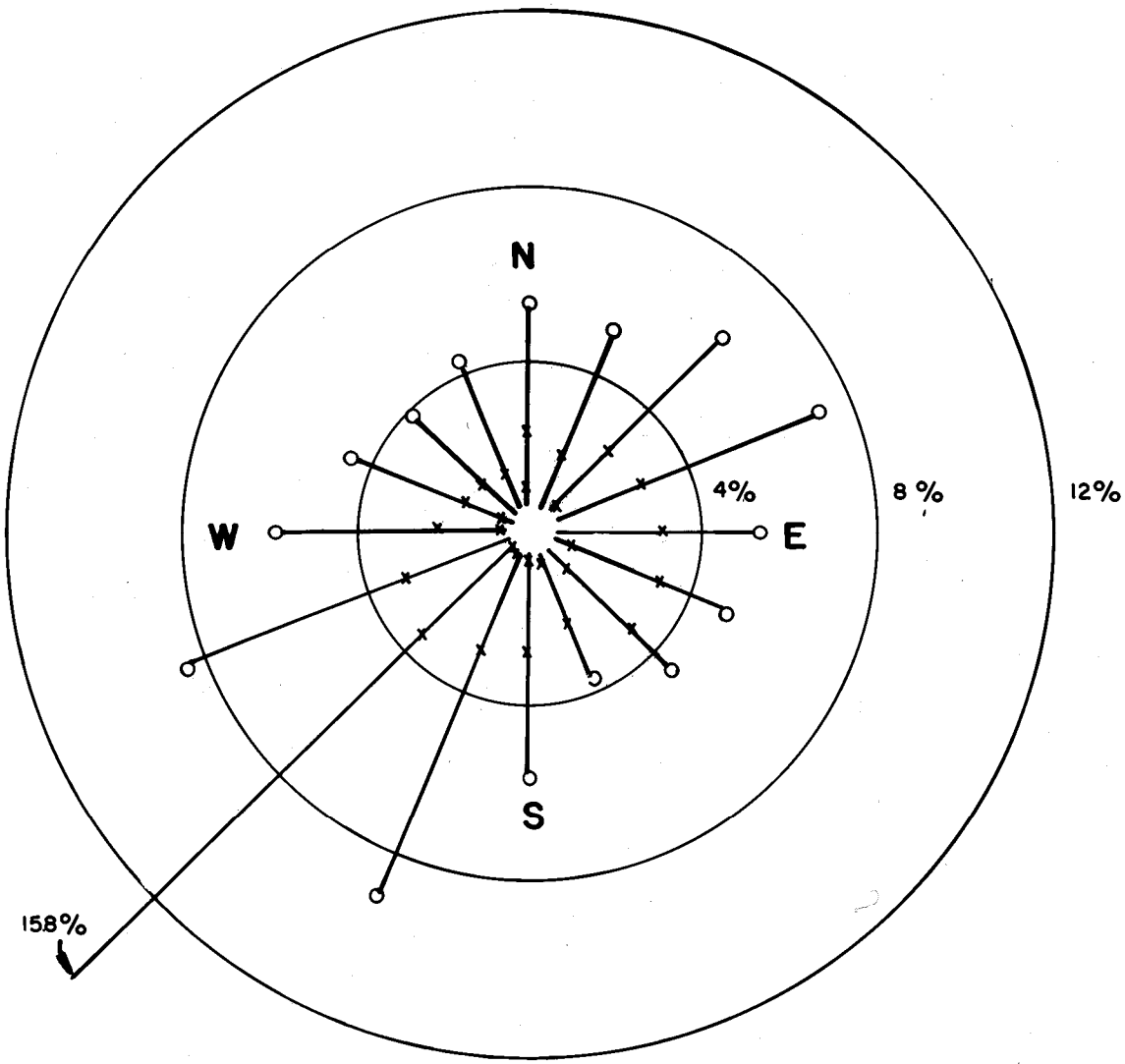
u = ALL DIRECTION AVERAGE WIND SPEED

NOTE: DIRECTIONAL AVERAGE WIND SPEEDS (MPH) ARE DISPLAYED RADIALLY

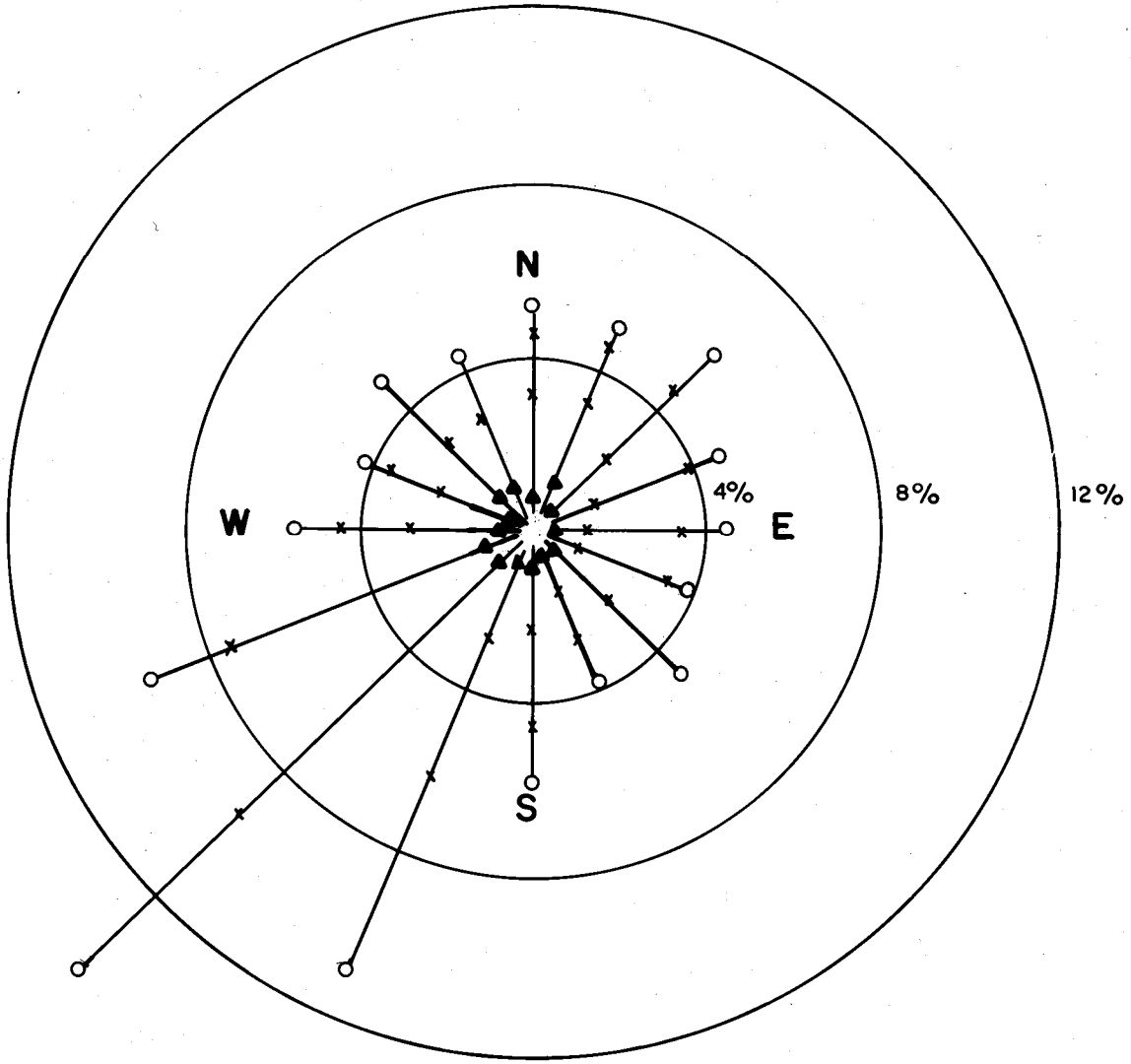
— WIND DIRECTION (%)

1976-1981

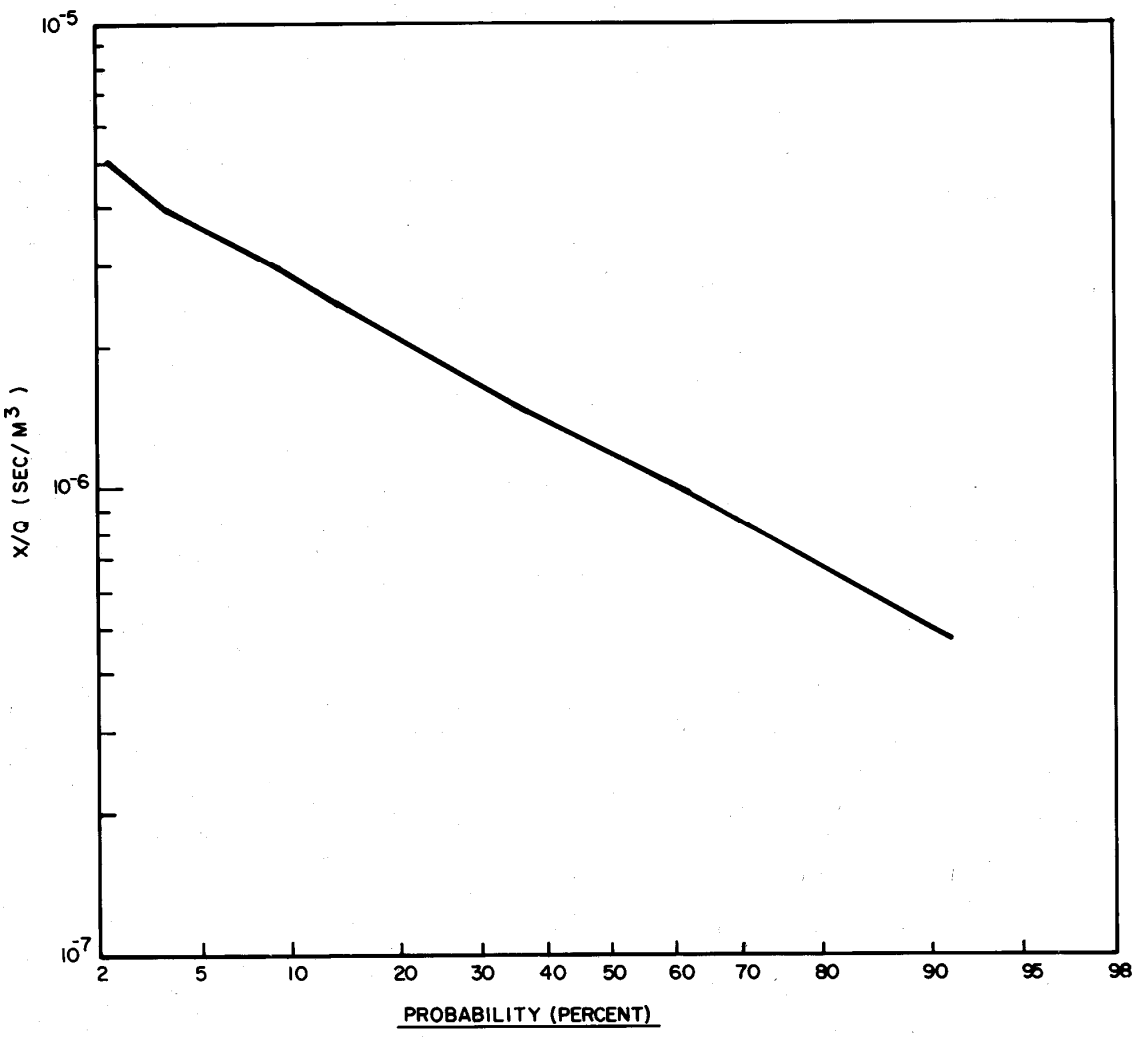
350 Foot Wind Rose



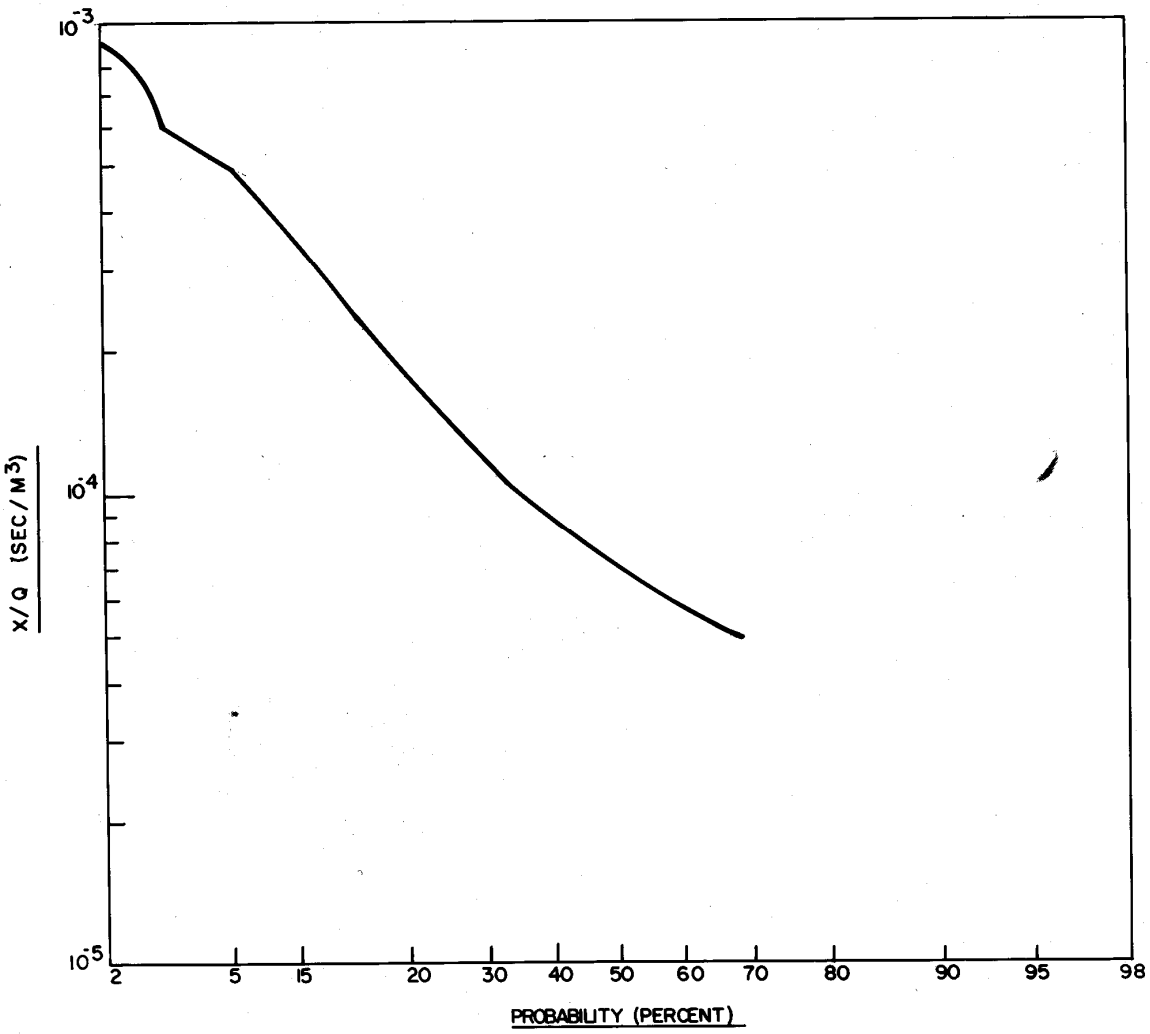
44 Foot Wind Rose



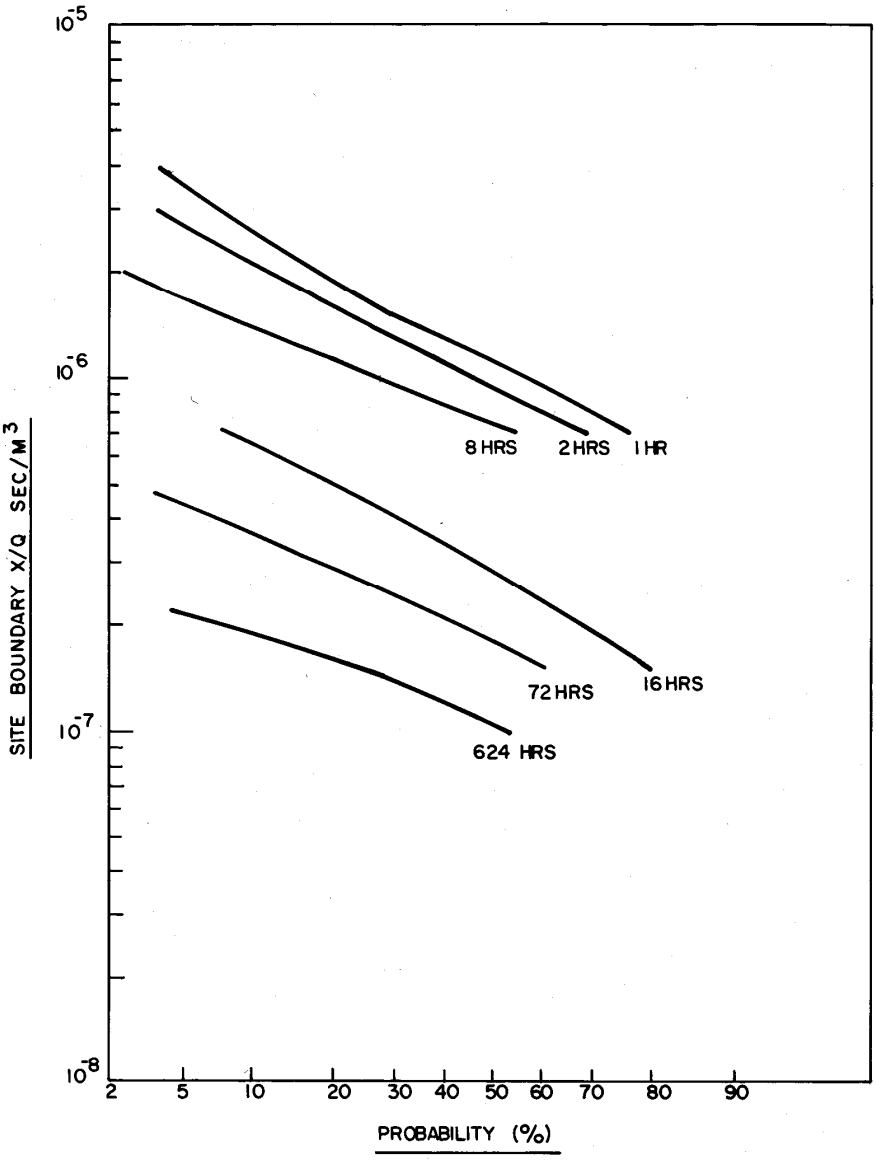
Brunswick Tower 350 Foot Cumulative Probability of X/Q Values from Ground Release



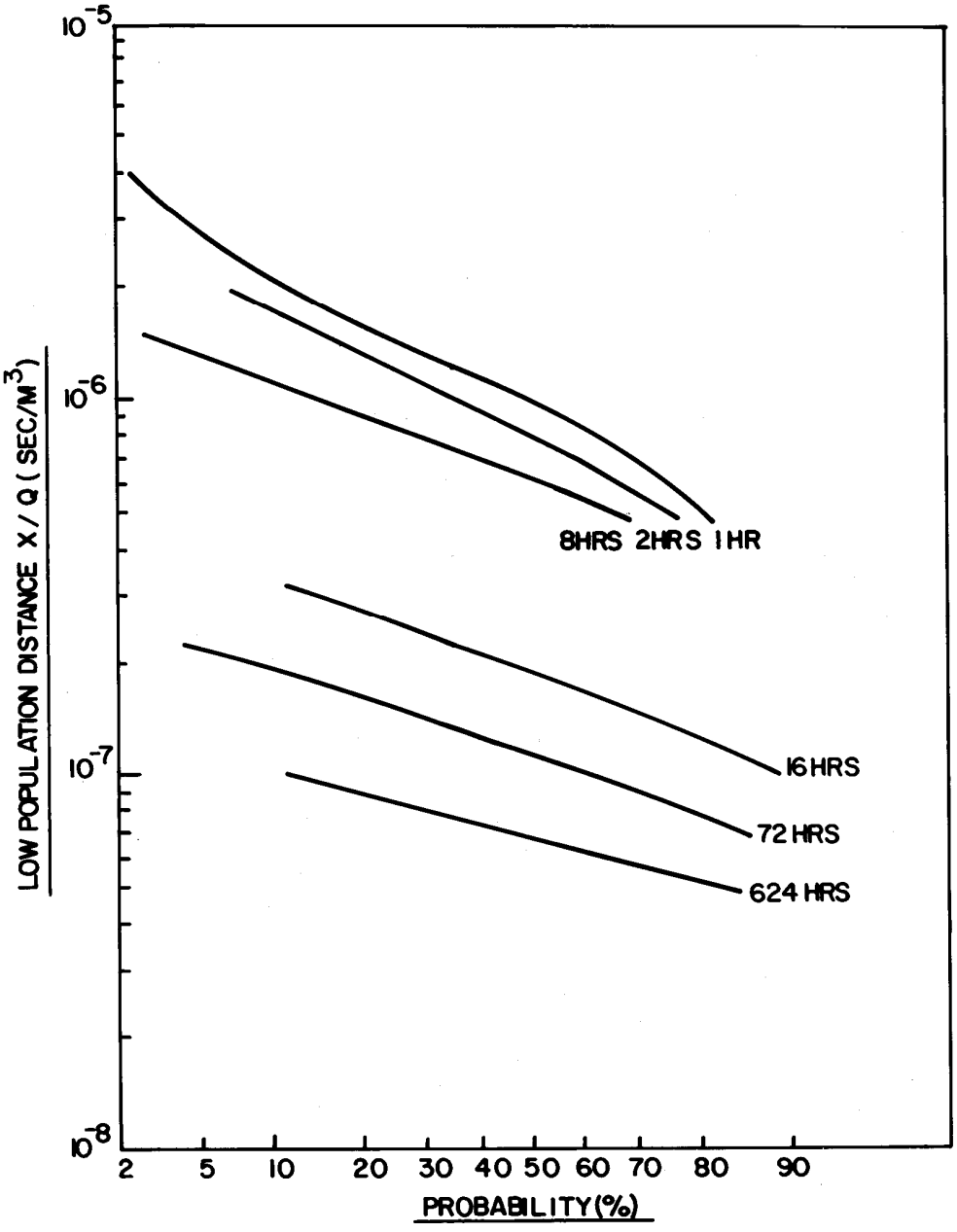
Brunswick Tower 44 Foot Cumulative Probability of X/Q Values from Ground Release



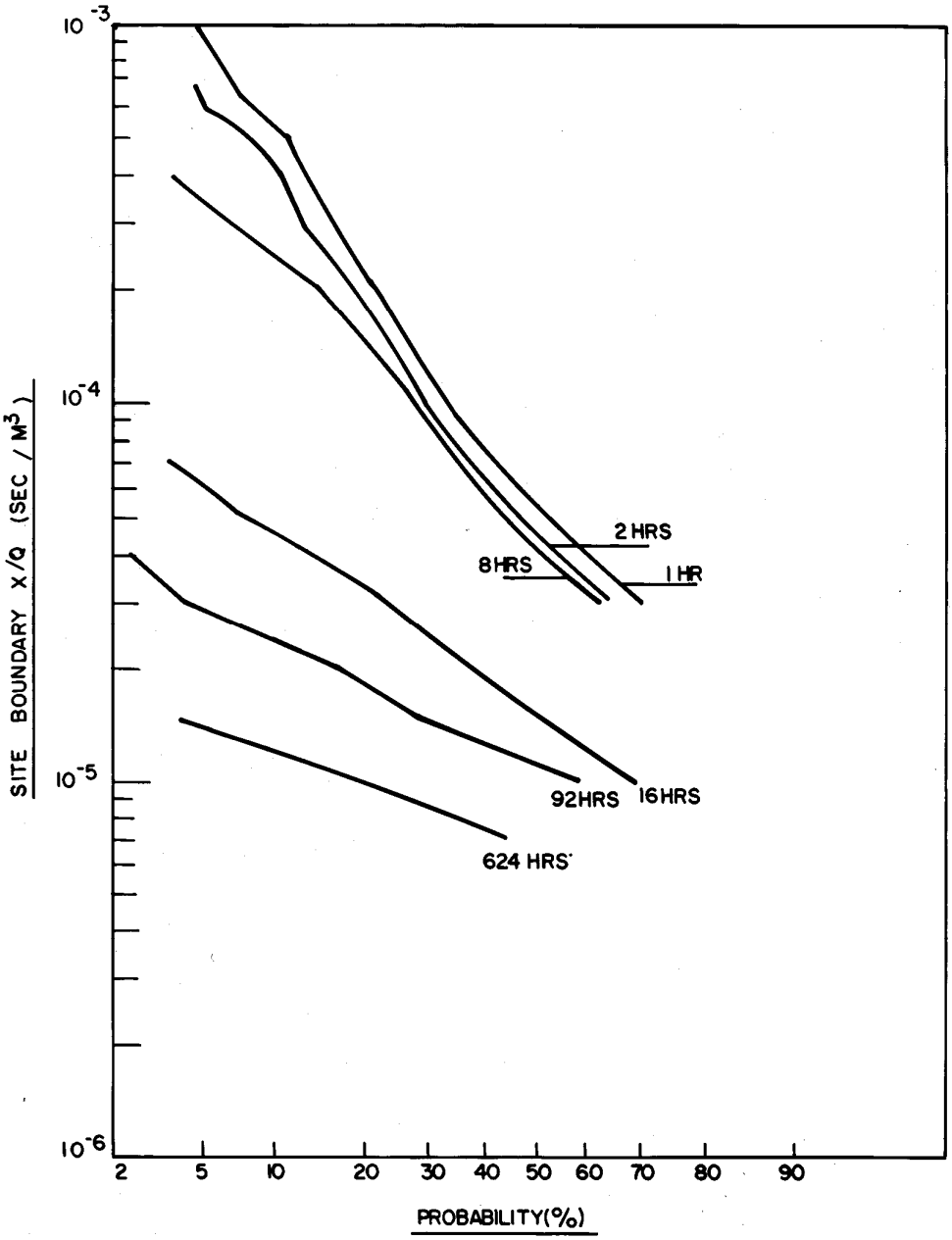
Cumulative Probability of Average X/Q Values for Stack Releases Based on 350 Foot Level Composite Year of Brunswick Data (Site Boundary)



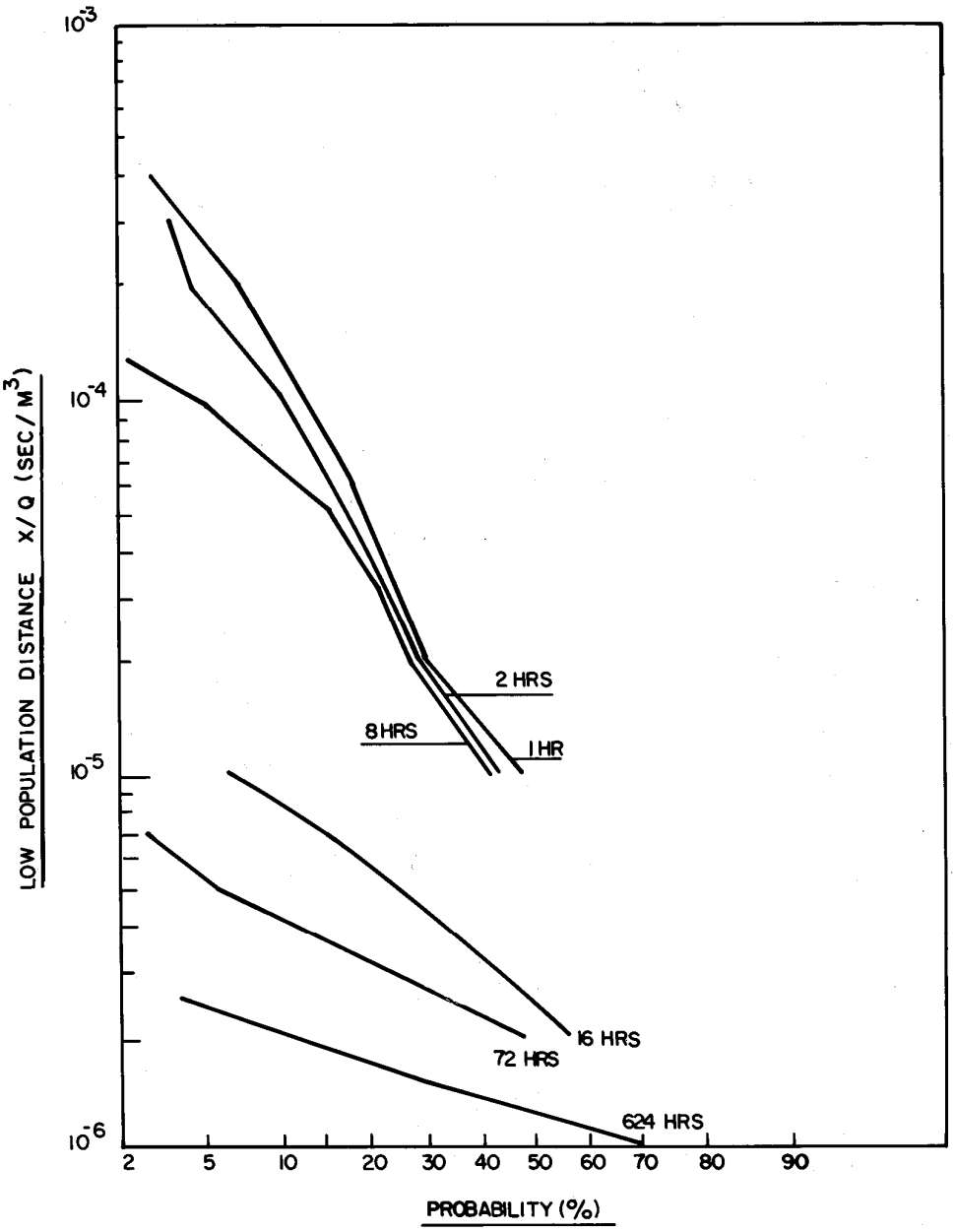
Cumulative Probability of Average X/Q Values for Stack Releases Based on 350 Foot Level Composite Year of Brunswick Data (Low Population Distance)



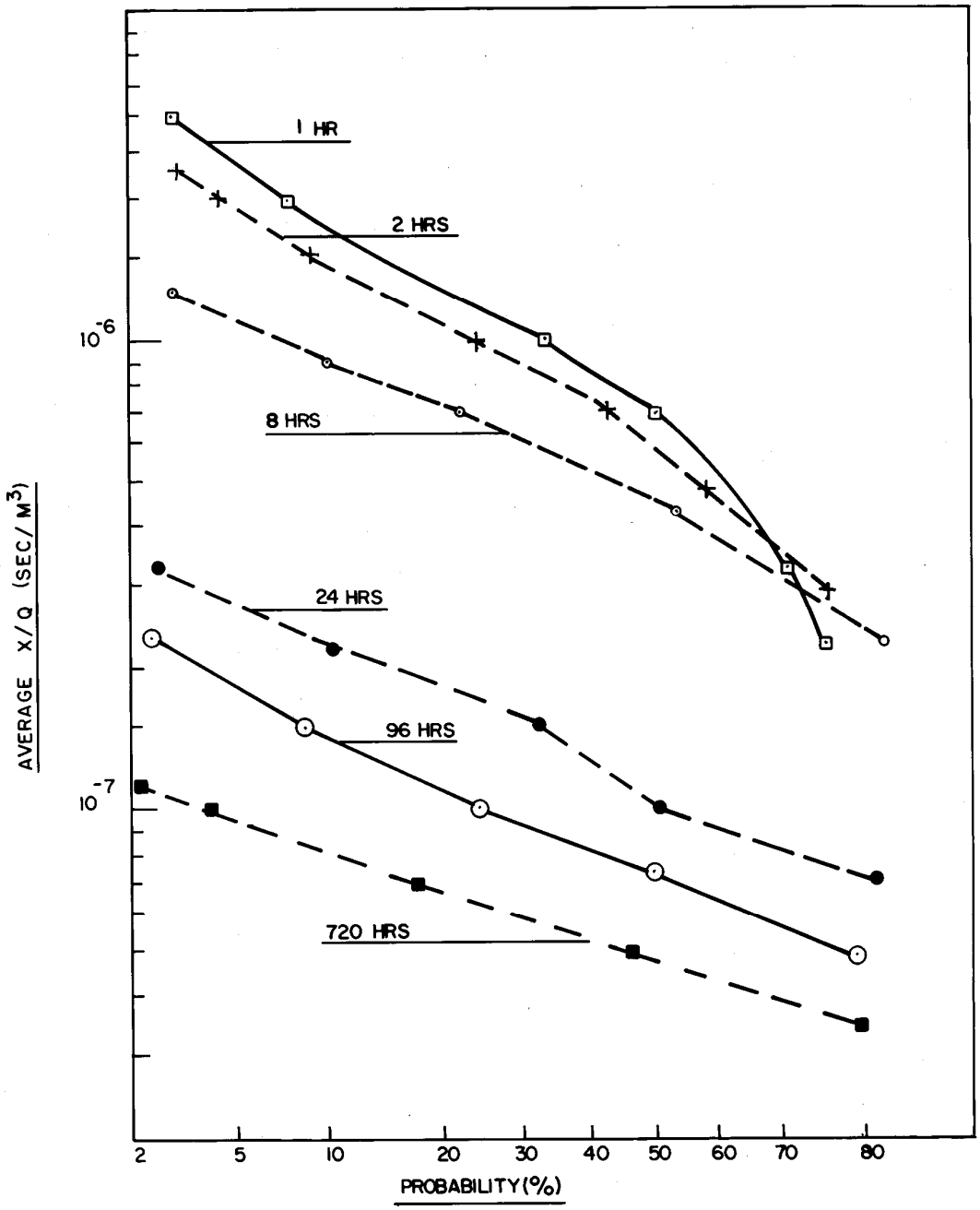
Cumulative Probability of Average X/Q Values for Stack Releases Based on 44 Foot Level Composite Year of Brunswick Data (Site Boundary)



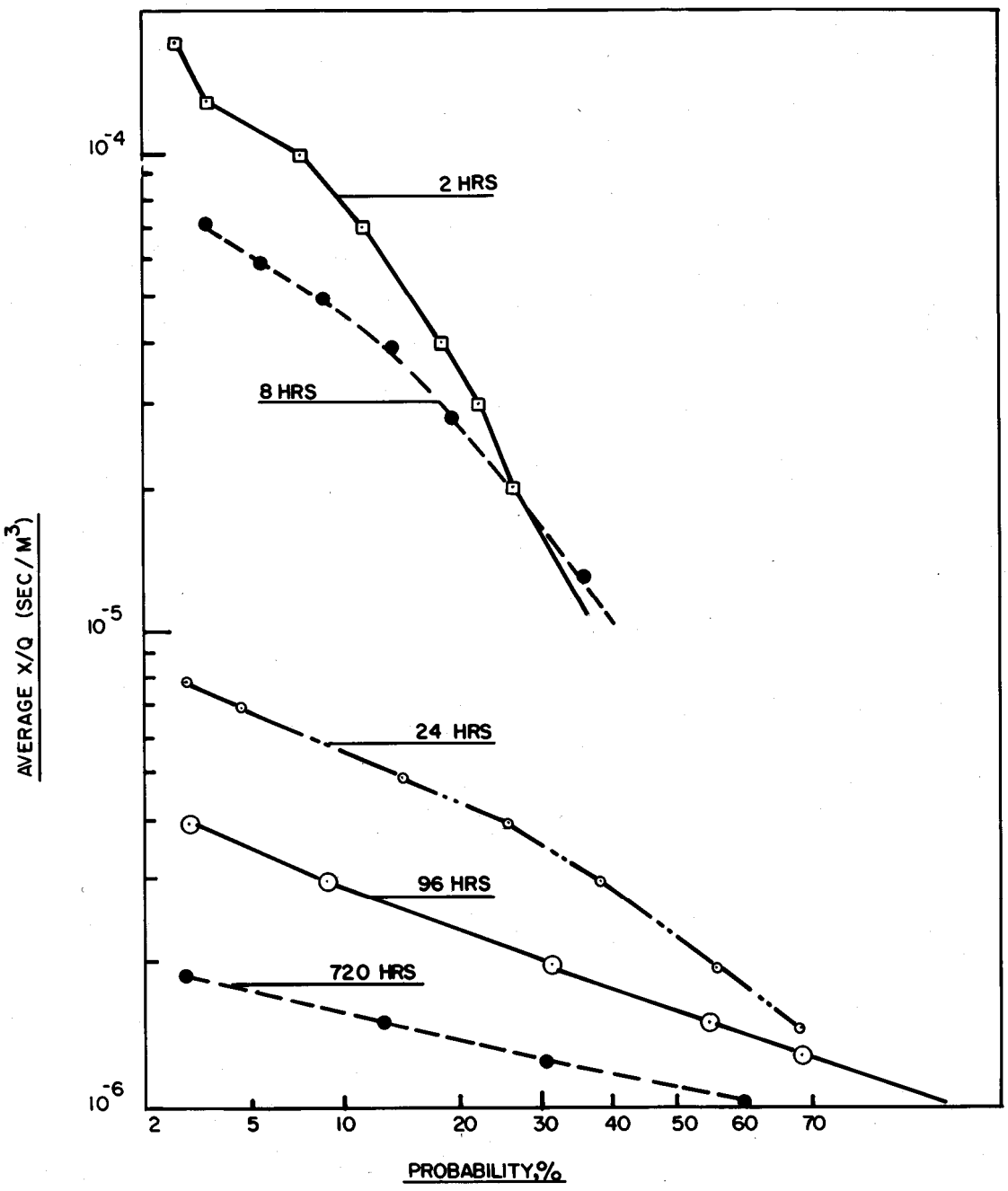
Cumulative Probability of Average X/Q Values for Ground Level Releases Based on 44 Foot Level Composite Year of Brunswick Data (Low Population Distance)



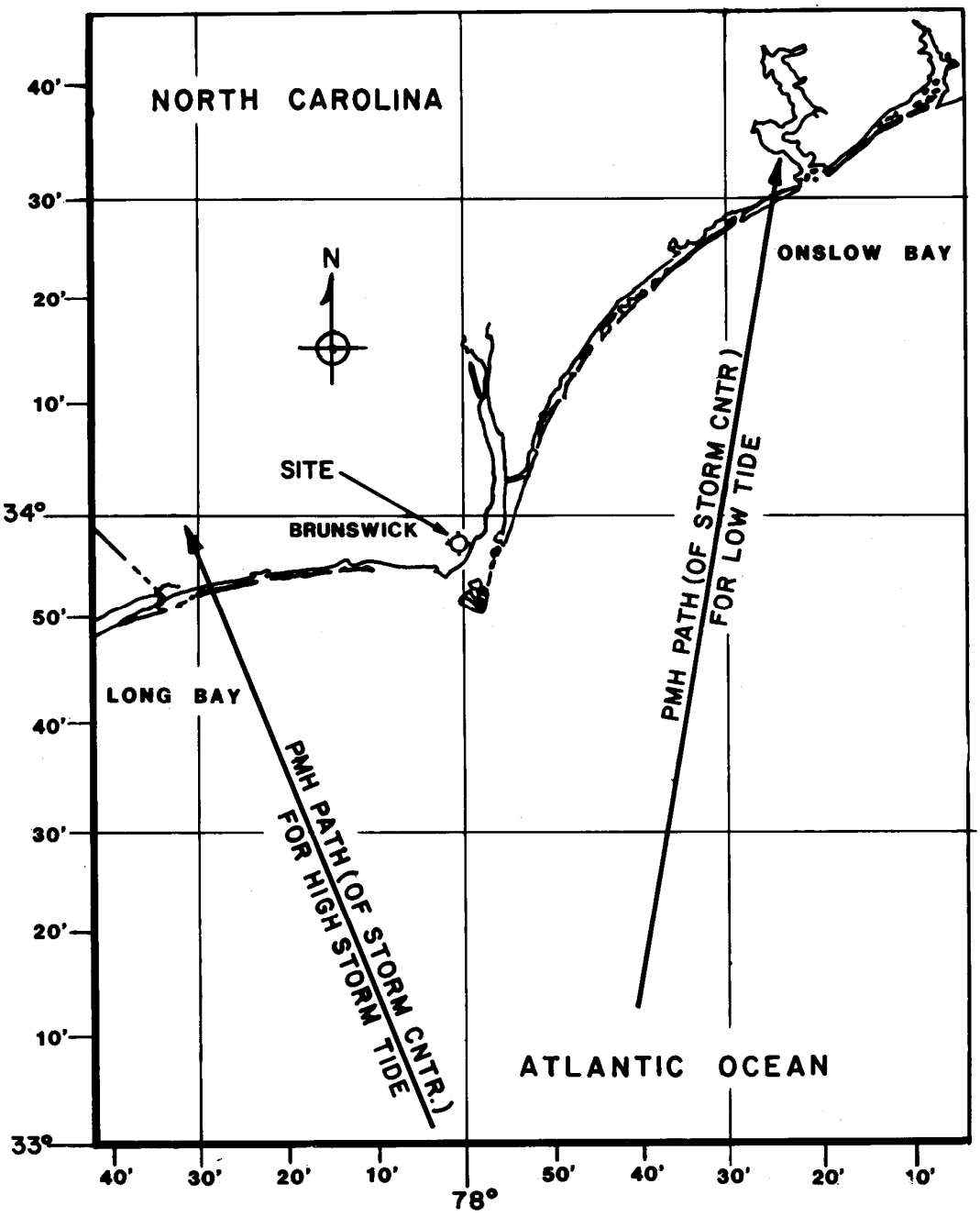
Cumulative Probability of Average X/Q Values (1970 – 1971 Brunswick Site Data – Stack Release)

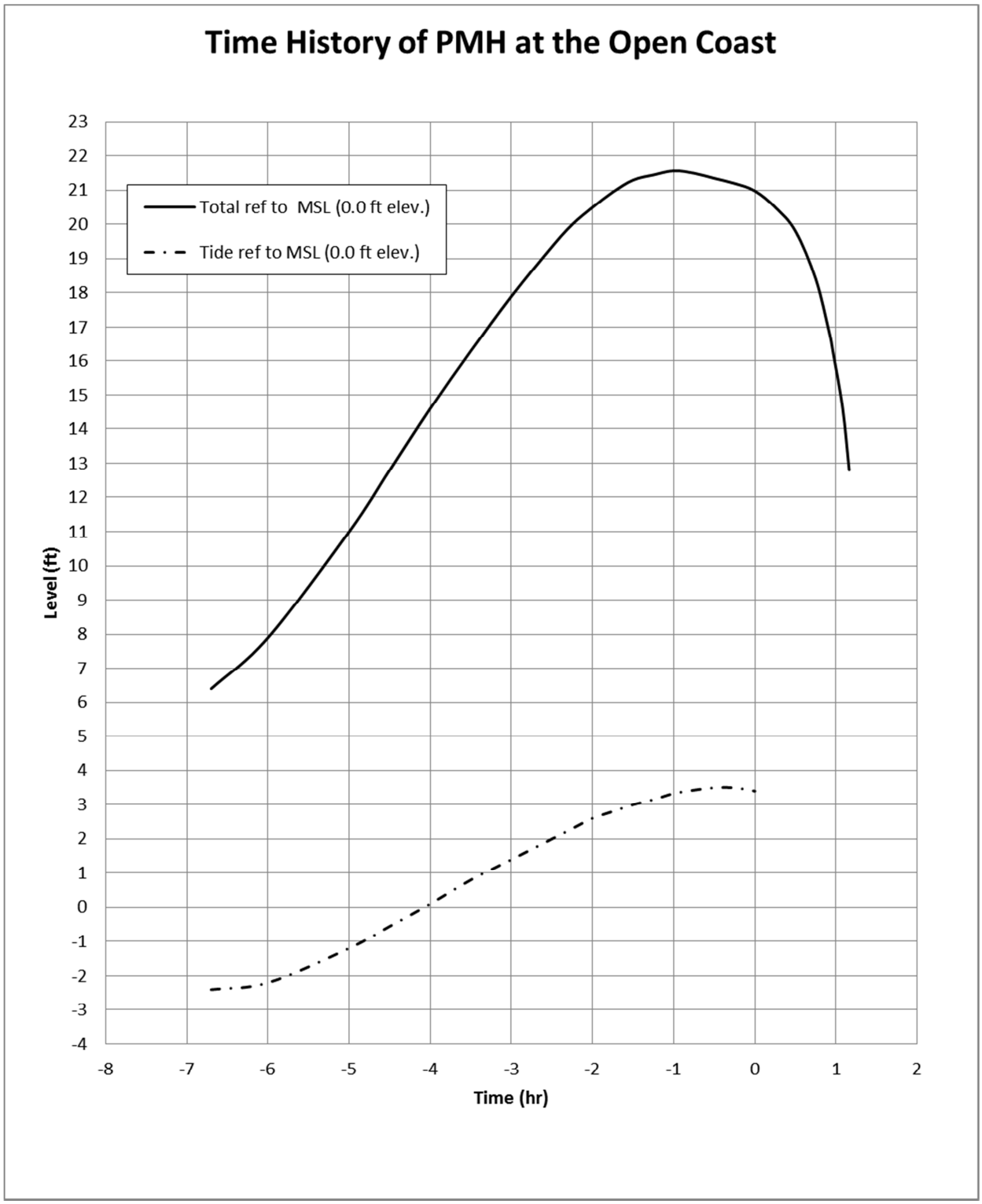


Cumulative Probability of Average X/Q Values (1970 – 1971 Brunswick Site Data – Ground Release)

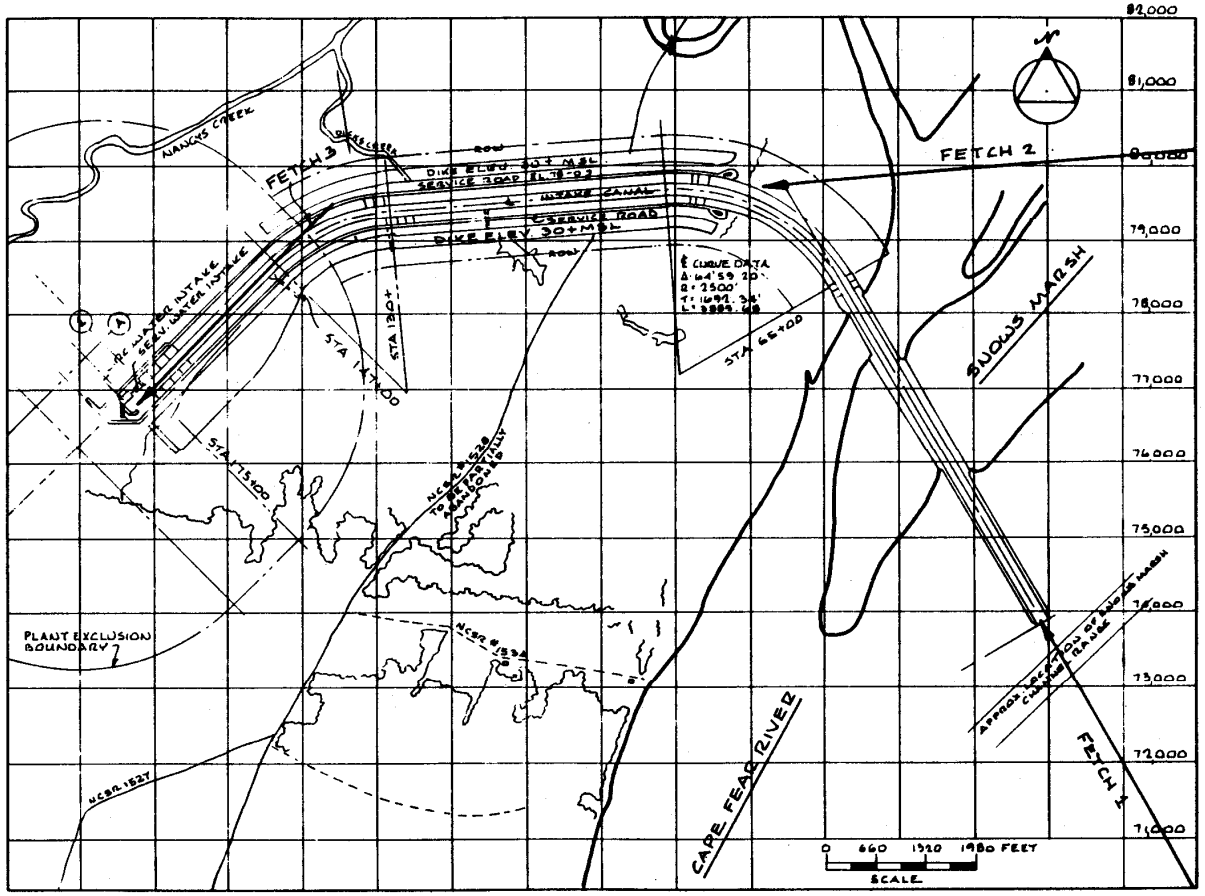


Storm Paths for High and Low Storm Tides

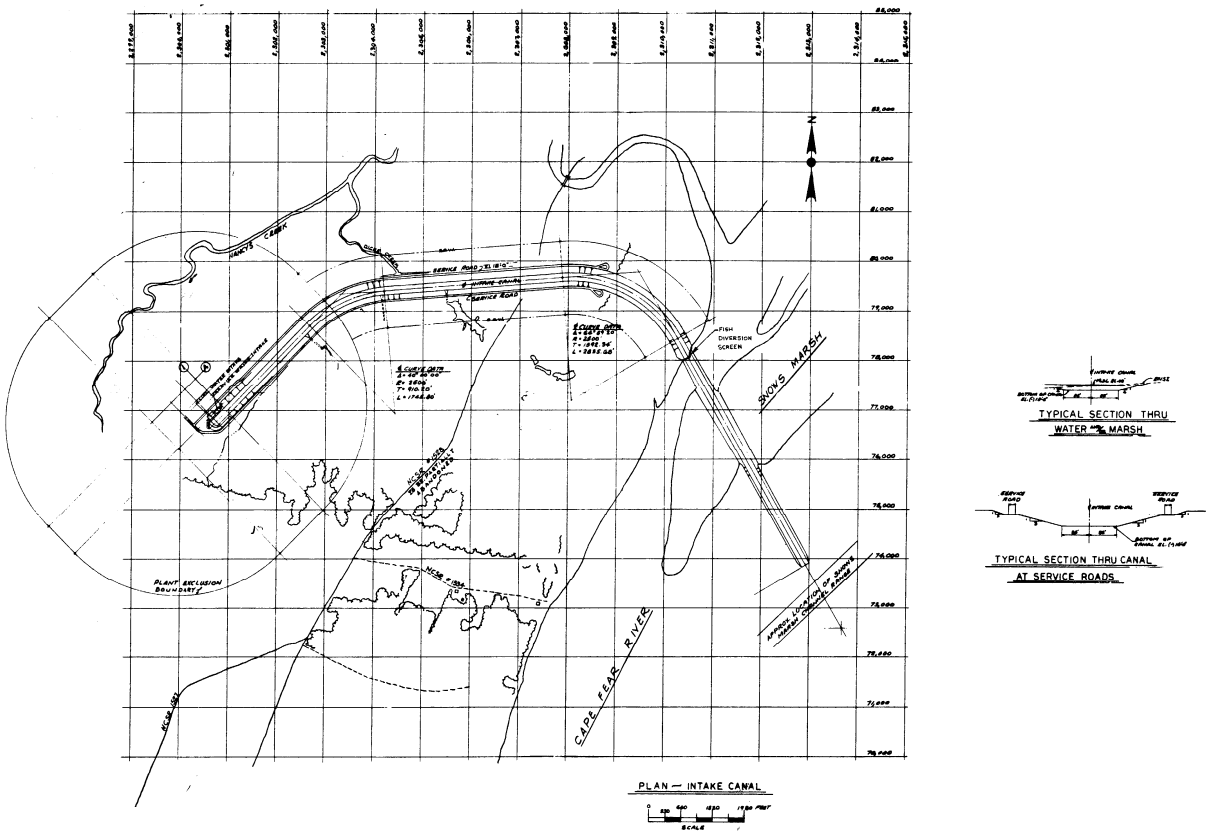



Time History of PMH at the Open Coast
Total ref to MSL (0.0 ft elev.)
Tide ref to MSL (0.0 ft elev.)
Level (ft)
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-8
-7
-6
-5
-4
-3
-2
-1
0
1
2
Time (hr)

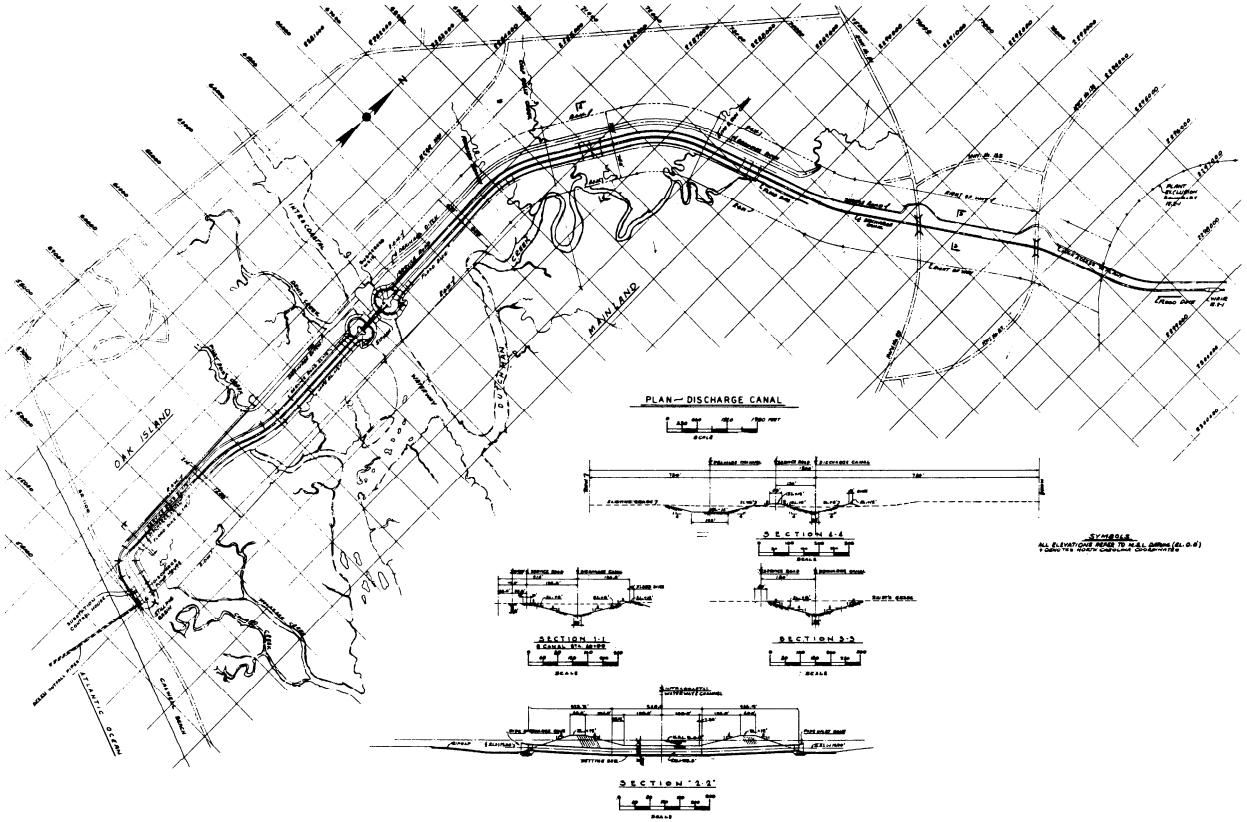
Storm Fetches for Maximum and Minimum Water Levels



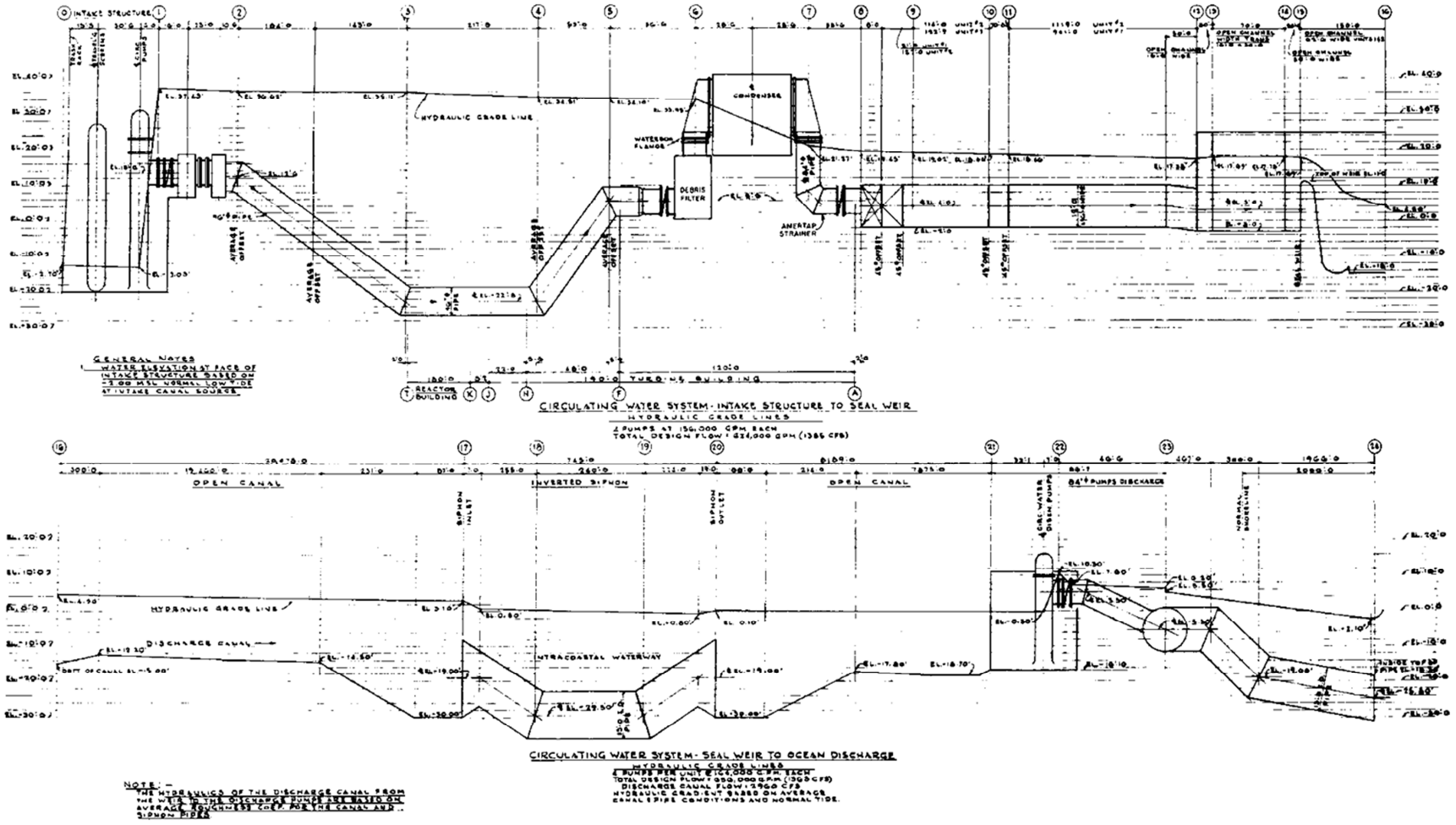
General Arrangement – Intake Canal



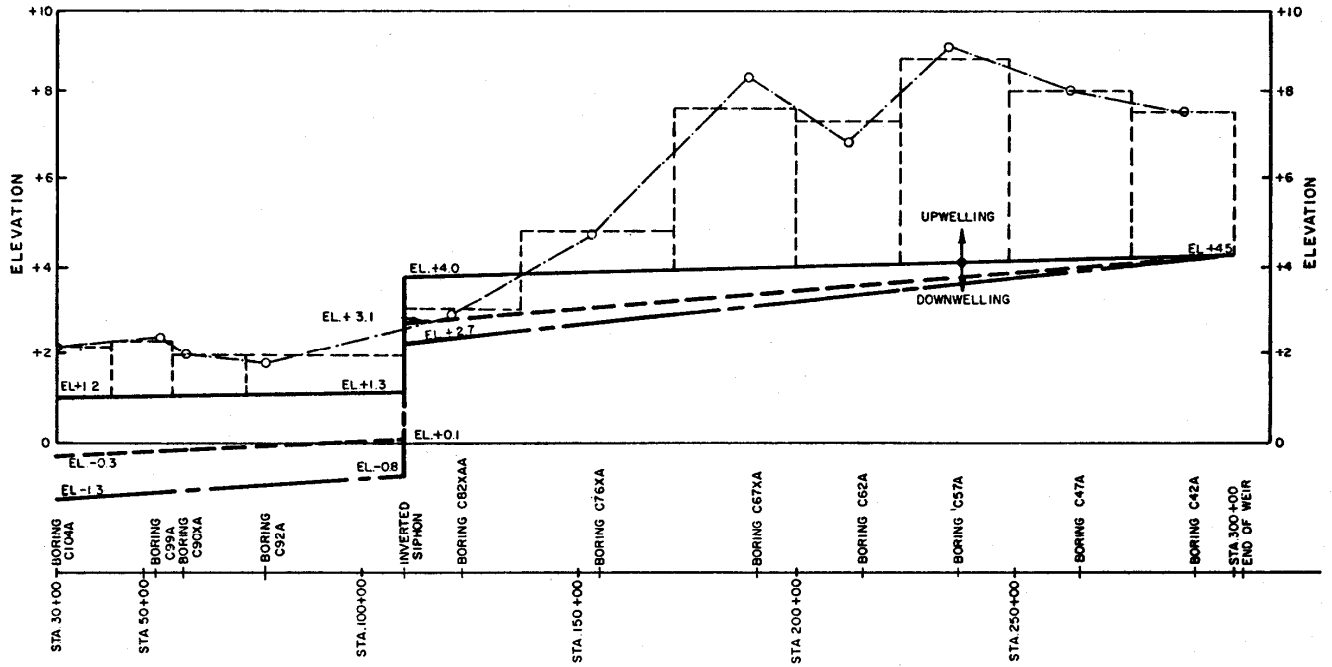
General Arrangement – Discharge Canal



Circulating Water System Hydraulic Gradient



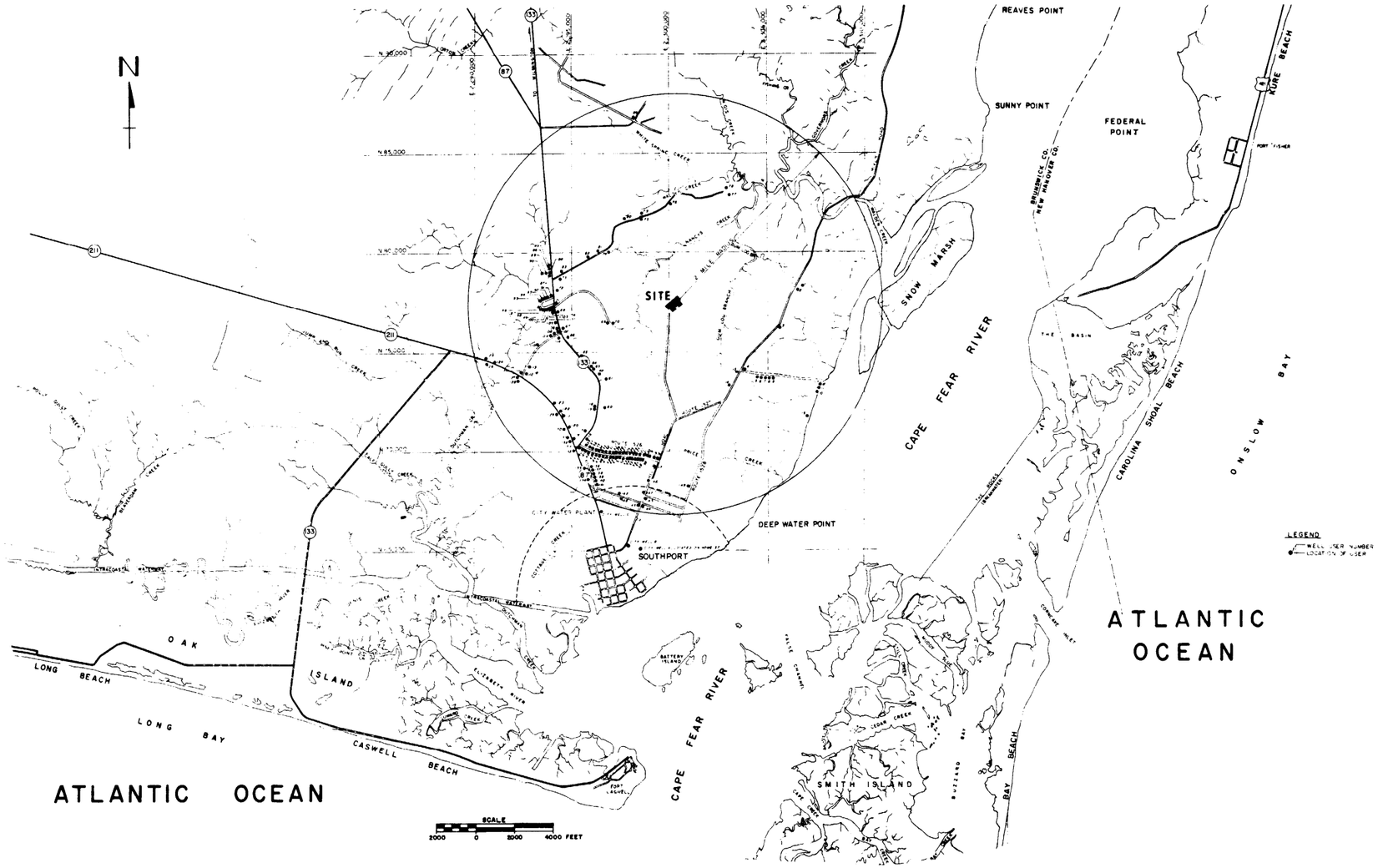
Artesian Head and Water Surface Along the Discharge Canal Route



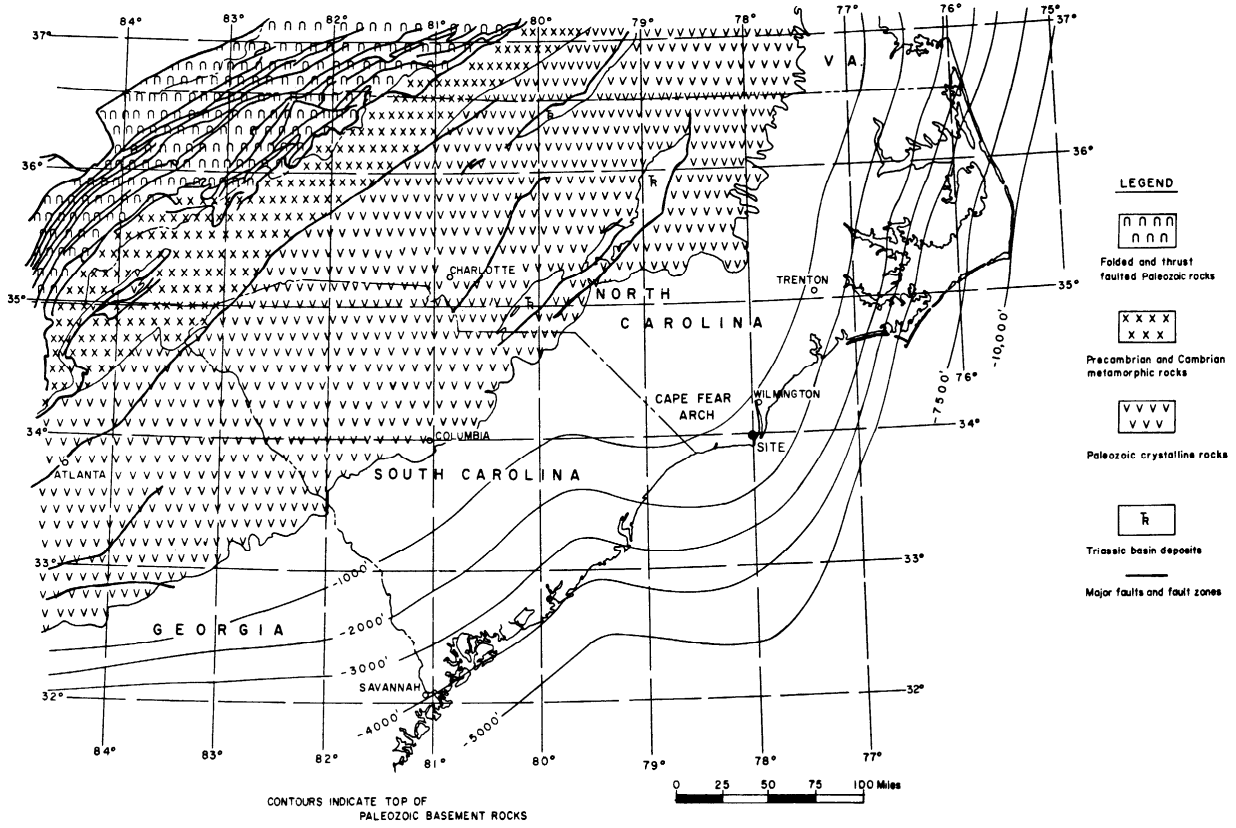
NOTE:
THE CANAL WATER SURFACES WERE ADJUSTED TO ACCOUNT FOR THE DIFFERENCE IN THE SPECIFIC GRAVITIES OF FRESH WATER AND SALT WATER IN COMPUTING THE QUANTITIES OF UPWELLING AND DOWNWELLING.

LEGEND
- ARTESIAN HEAD ALONG CANAL
- AVERAGE ARTESIAN HEAD OVER A REACH
- O PIEZOMETRIC DATA POINT
- CANAL LEVEL AT BEGINNING OF TWO UNIT OPERATION
- CANAL LEVEL AT AVERAGE, OR MIDDLE AGE, CONDITION
- CANAL LEVEL AT EXPECTED PLANT LIFE

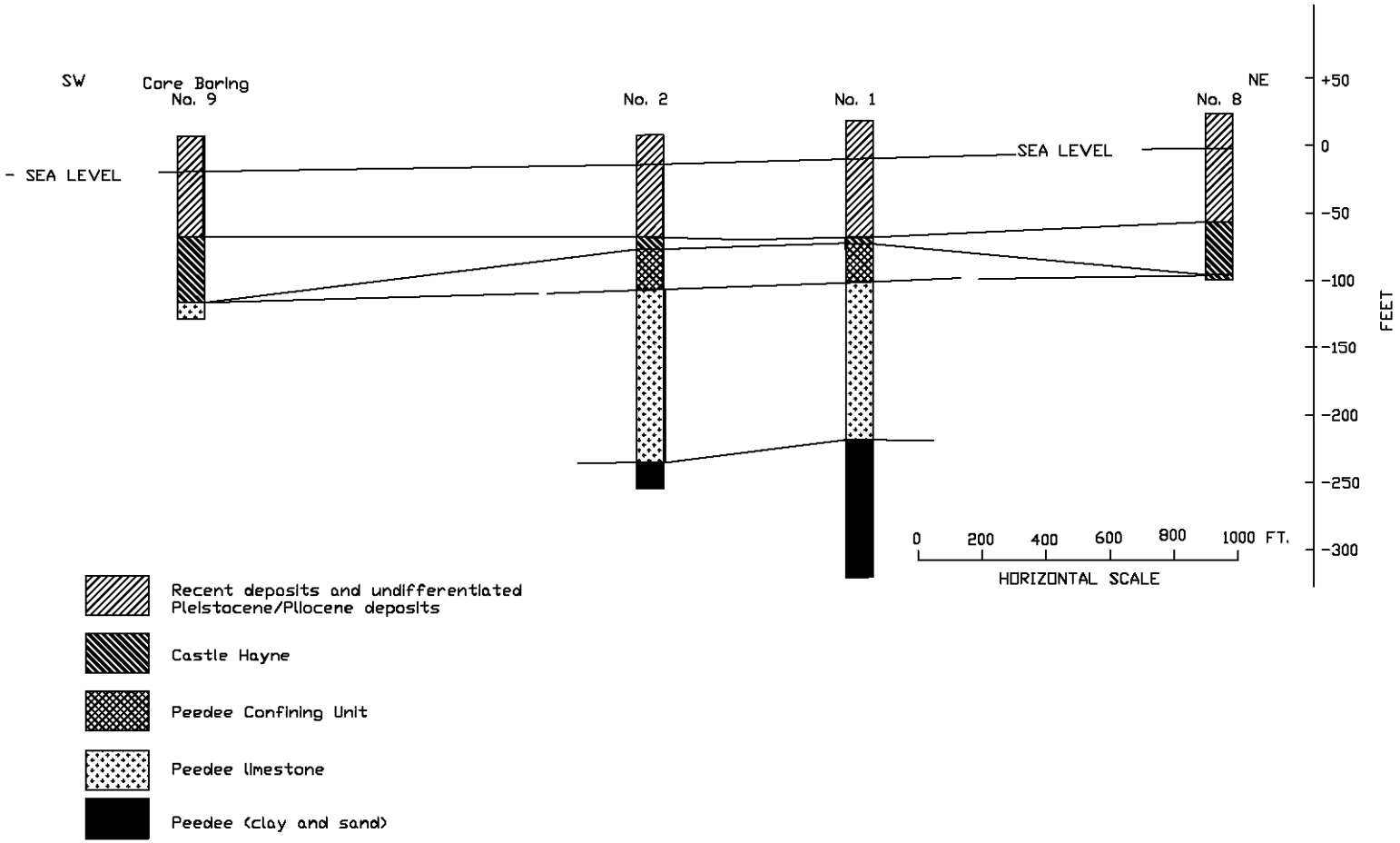
Location of Existing Wells Within a Two-Mile Radius of Plant Site [Historical Information]



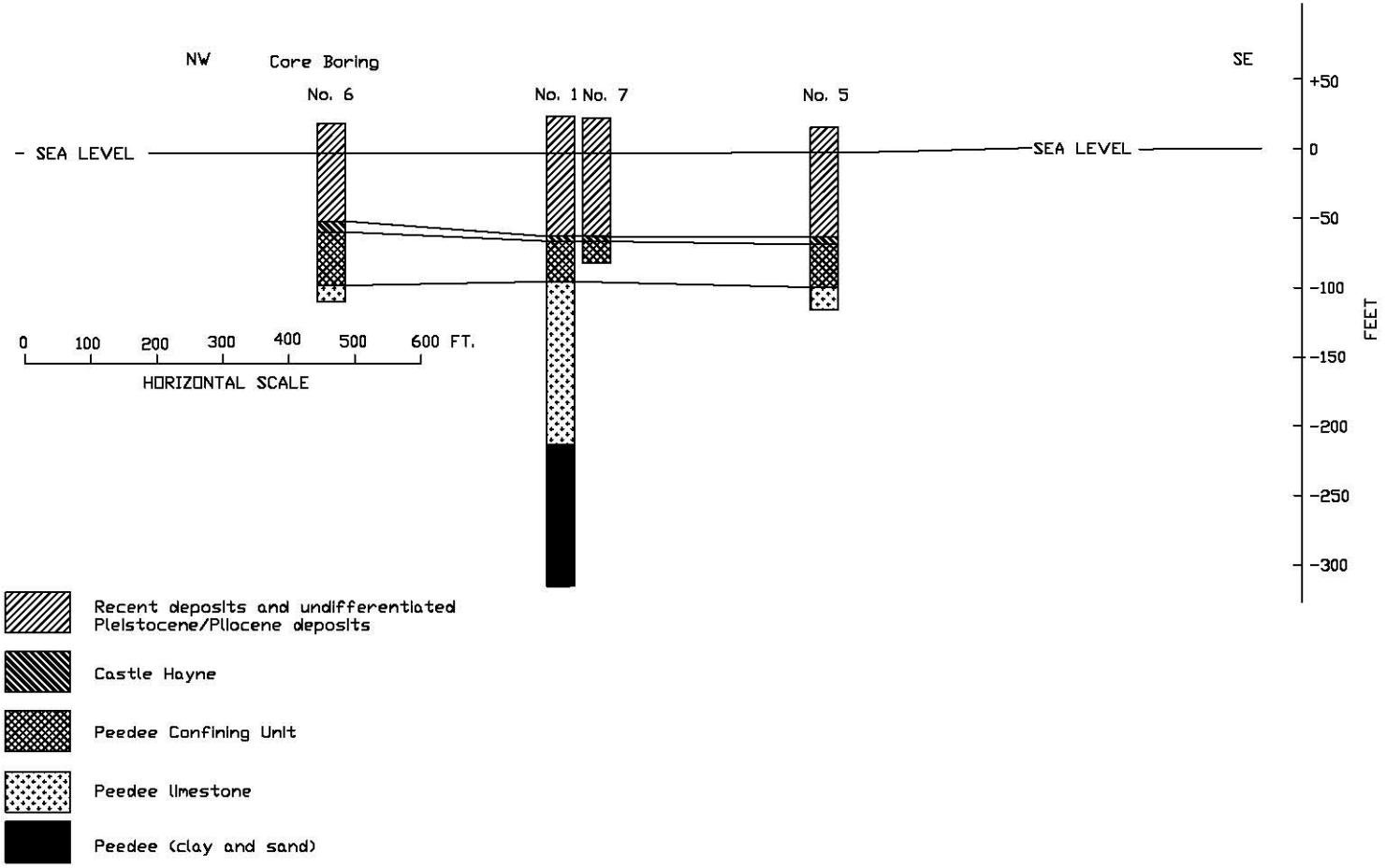
Tectonic Map
North and South Carolina



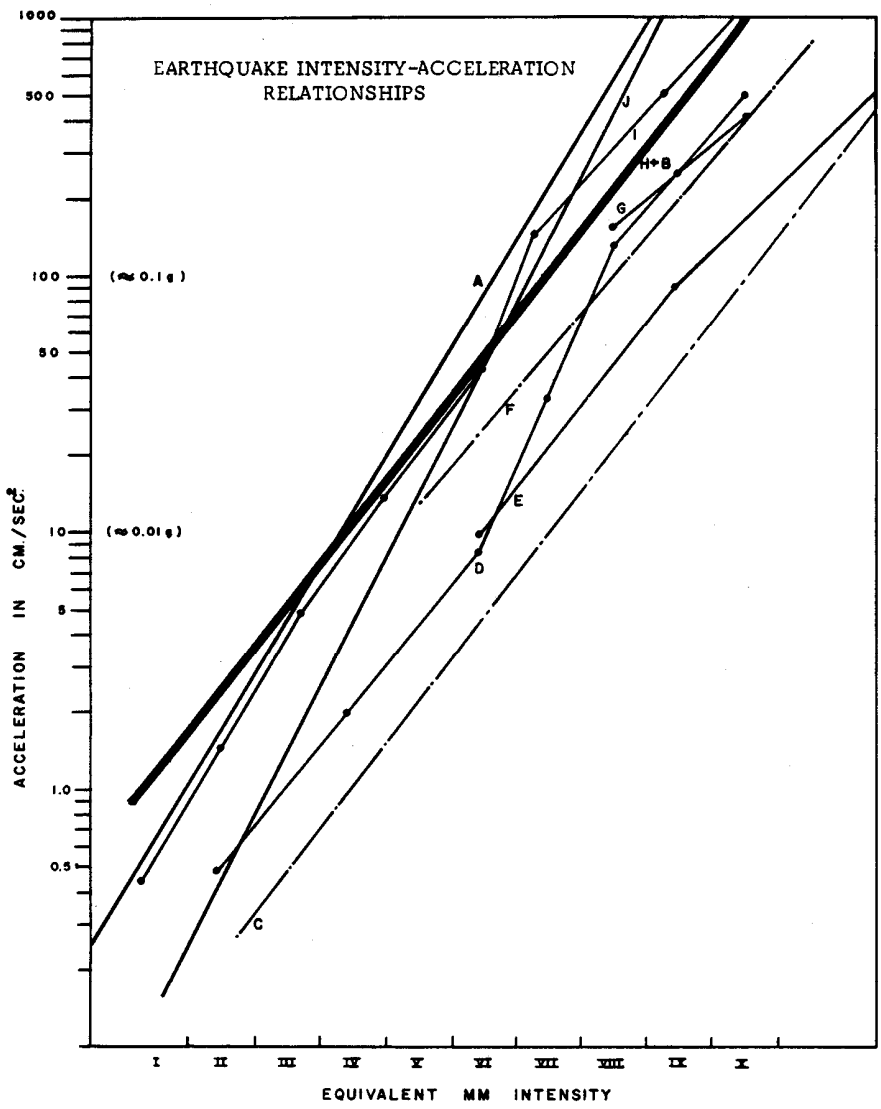
Geological Cross Section At Brunswick Site (Part 1)



Geological Cross Section At Brunswick Site (Part 2)



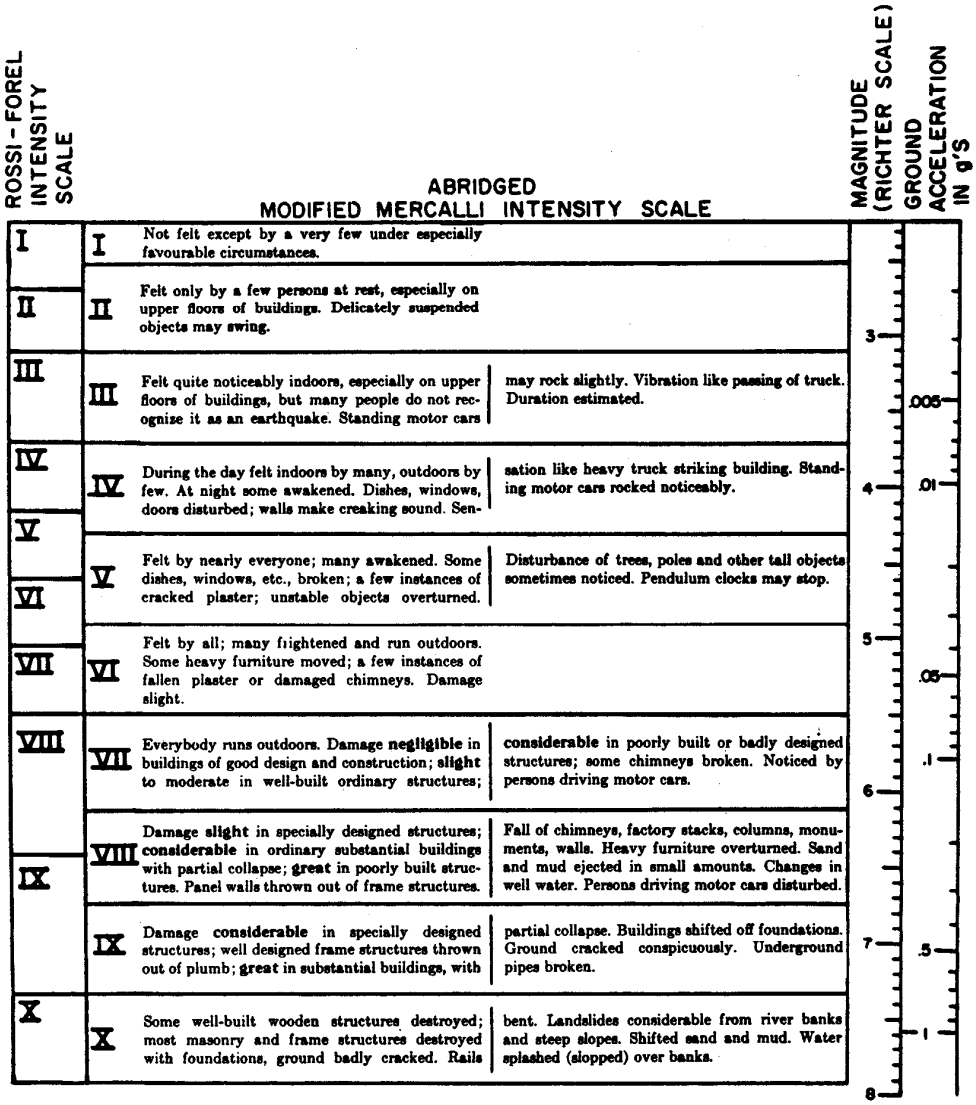
Earthquake Intensity - Acceleration Relationships



A- HERSHBERGER (1956)
B- GUTENBERG & RICHTER (1942)
* C- CANCANI (1904)
* D- ISHIMOTO (1932)
* E- SAVARENSKY & KIRNOS (1955)
* F- MEDVEDEV ET AL. (1963)
* G- N.Z. DRAFT BY-LAW
H- TID-7024 (1963)
* I- KAWASUMI (1951)
* J- PETERSCHMITT (1951)

*DATA FROM G.A. EIBY (1965)

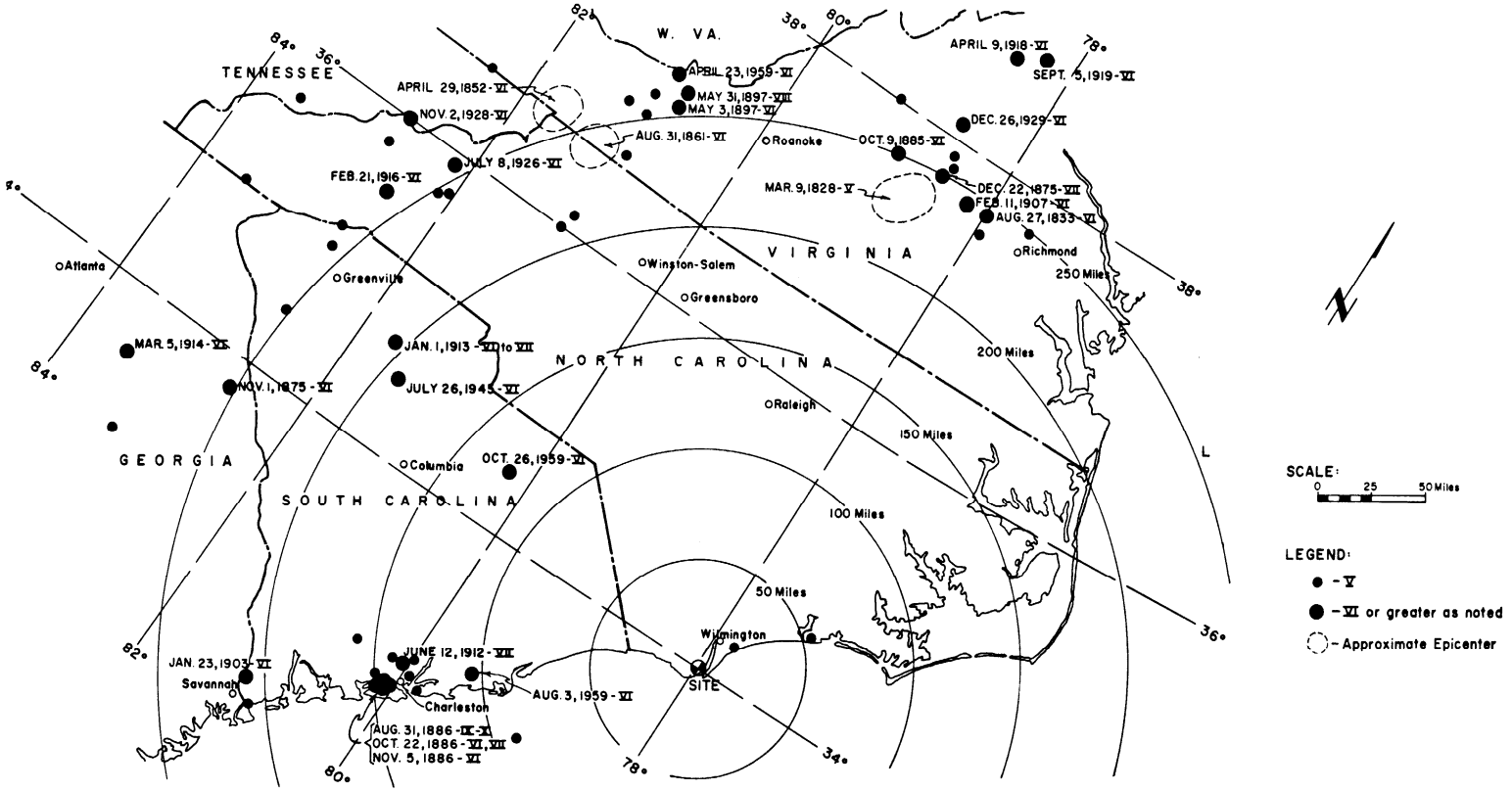
Modified Mercali Intensity Scale Approximate Relationship with Magnitude, Ground Acceleration and Rossi-Forel Intensity Scale



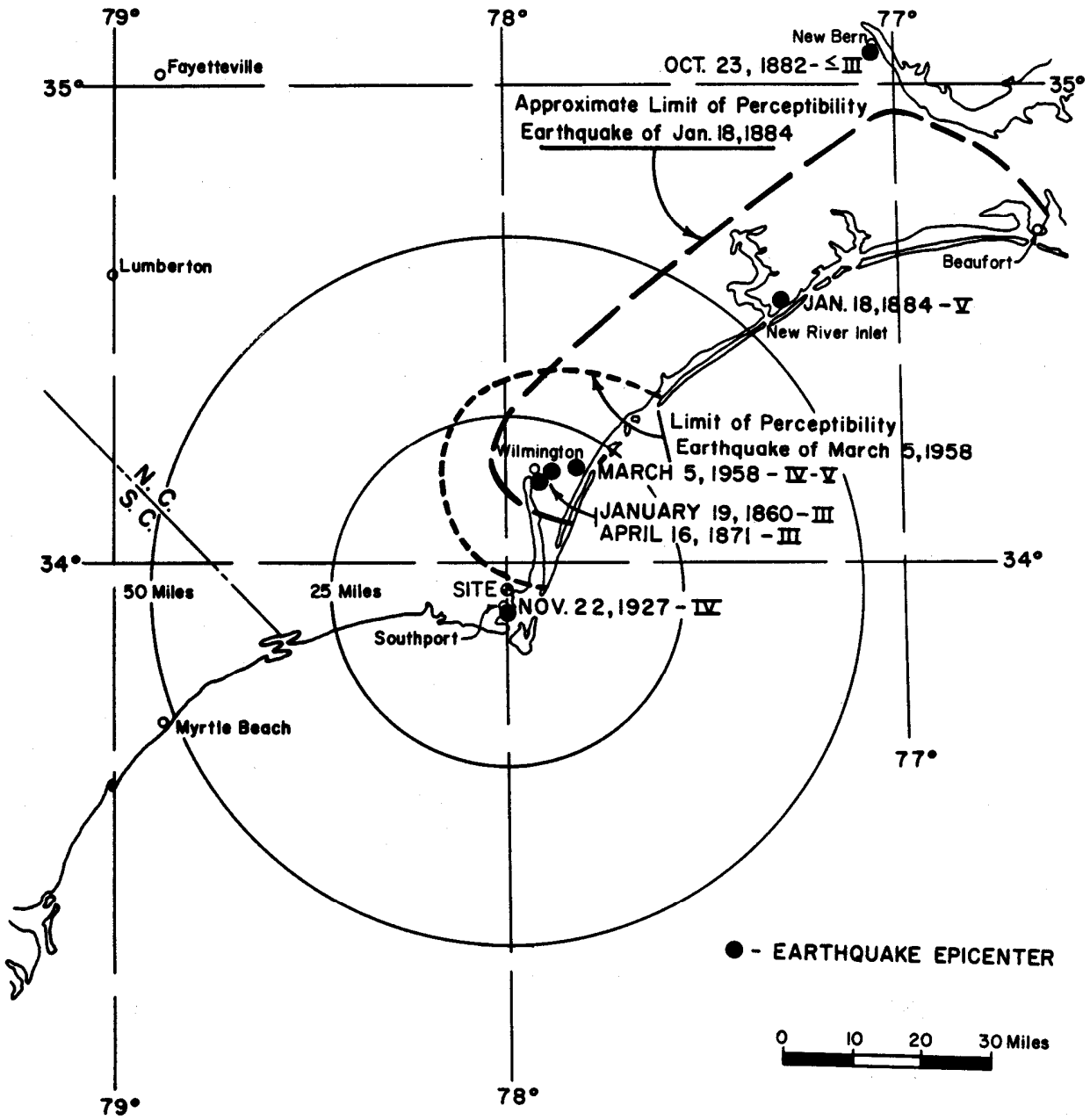
Modified Mercalli Intensity Scale and relationship with Rossi-Forel Scale after Wood and Neumann, 1931 (Modified Mercalli Intensities XI and XII not included).

Magnitude and acceleration values taken from Nuclear Reactors and Earthquakes, TID-7024, United States Atomic Energy Commission.

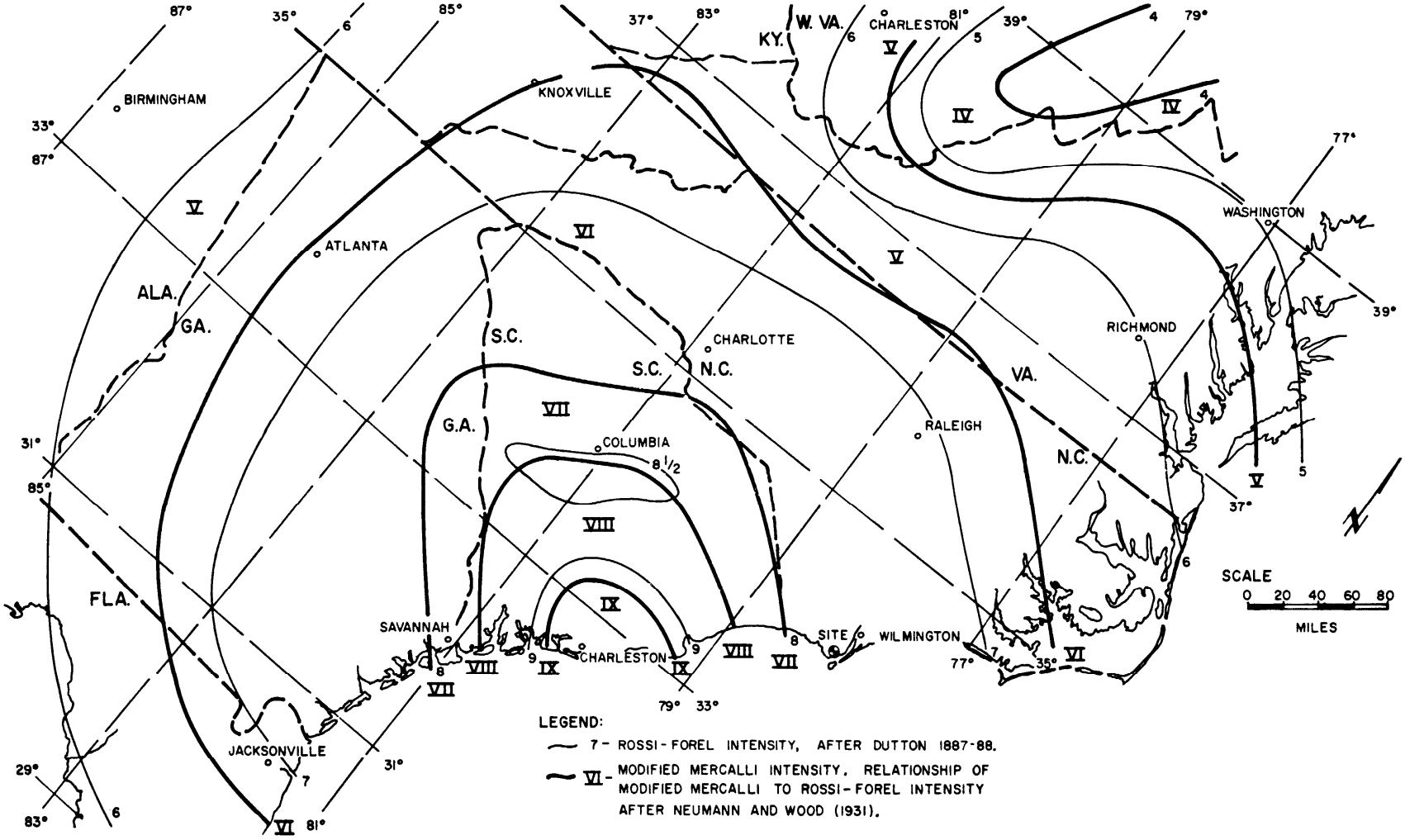
Compilation of Earthquakes
Virginia and the Carolinas



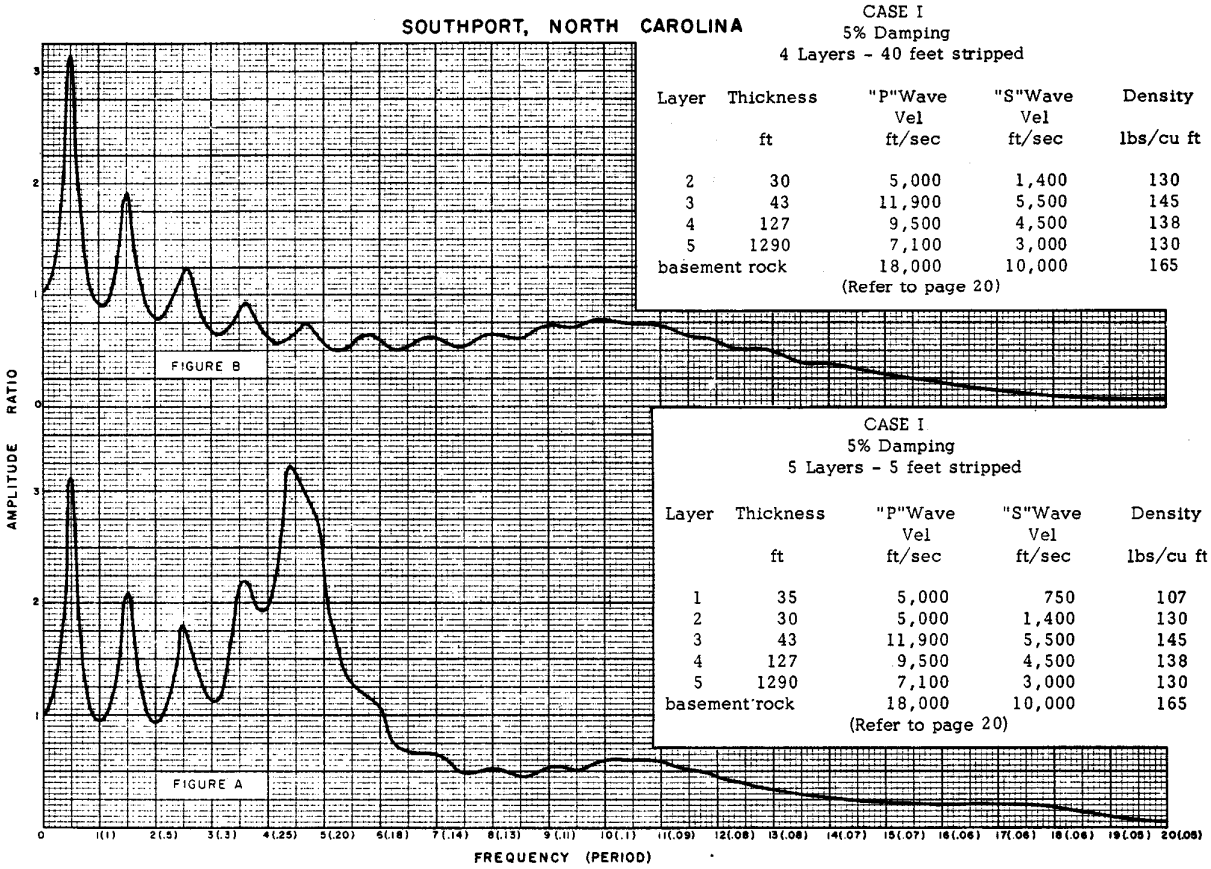
Compilation of Earthquakes
Southeastern North Carolina



Isoseismal Map Charleston Earthquake of August 31, 1886



Seismic Amplification Curves
5 Percent Damping



CASE I
5% Damping
4 Layers - 40 feet stripped

Layer	Thickness ft	"P"Wave Vel ft/sec	"S"Wave Vel ft/sec	Density lbs/cu ft
2	30	5,000	1,400	130
3	43	11,900	5,500	145
4	127	9,500	4,500	138
5	1290	7,100	3,000	130
basement rock		18,000	10,000	165

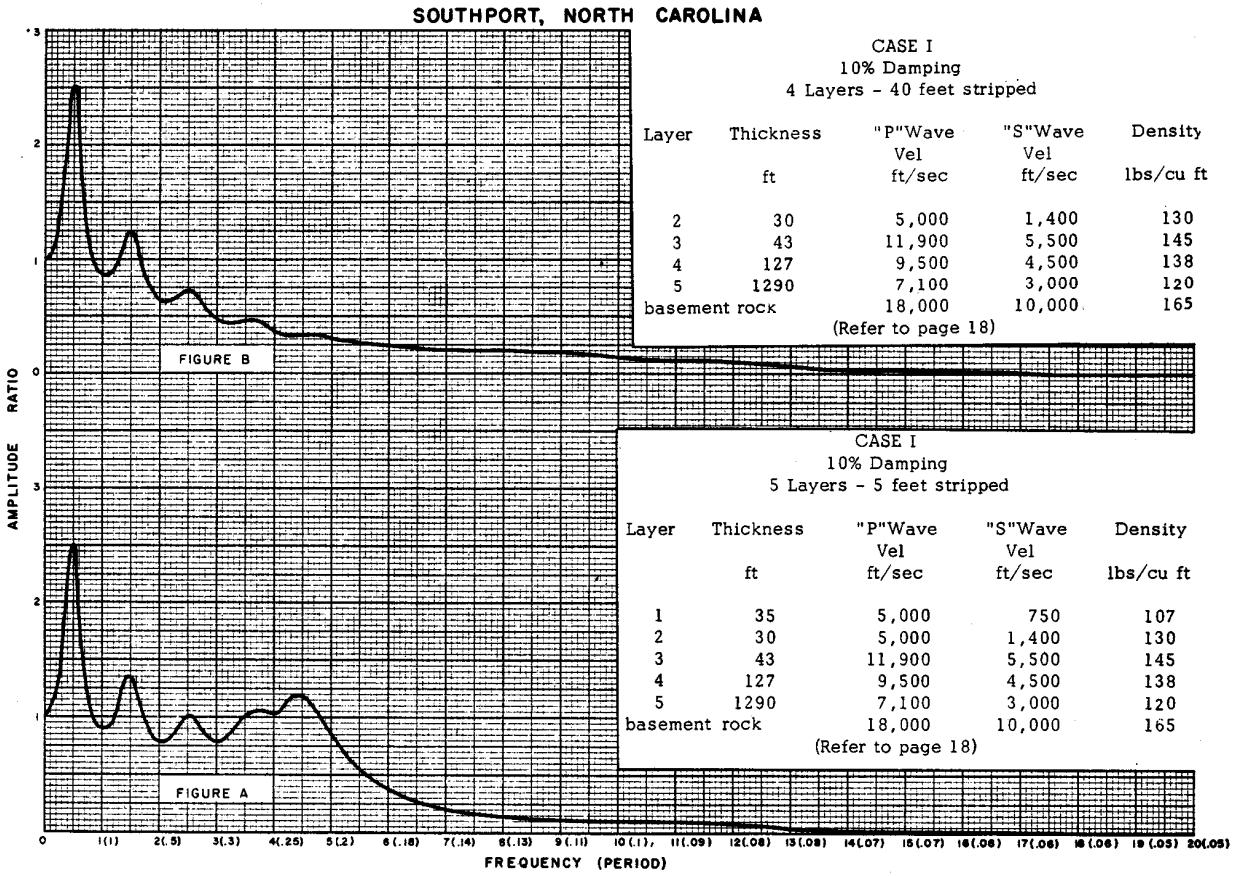
(Refer to page 20)

CASE I
5% Damping
5 Layers - 5 feet stripped

Layer	Thickness ft	"P"Wave Vel ft/sec	"S"Wave Vel ft/sec	Density lbs/cu ft
1	35	5,000	750	107
2	30	5,000	1,400	130
3	43	11,900	5,500	145
4	127	9,500	4,500	138
5	1290	7,100	3,000	130
basement rock		18,000	10,000	165

(Refer to page 20)

Seismic Amplification Curves
10 Percent Damping



CASE I
10% Damping
4 Layers - 40 feet stripped

Layer	Thickness ft	"P"Wave Vel ft/sec	"S"Wave Vel ft/sec	Density lbs/cu ft
2	30	5,000	1,400	130
3	43	11,900	5,500	145
4	127	9,500	4,500	138
5	1290	7,100	3,000	120
basement rock		18,000	10,000	165

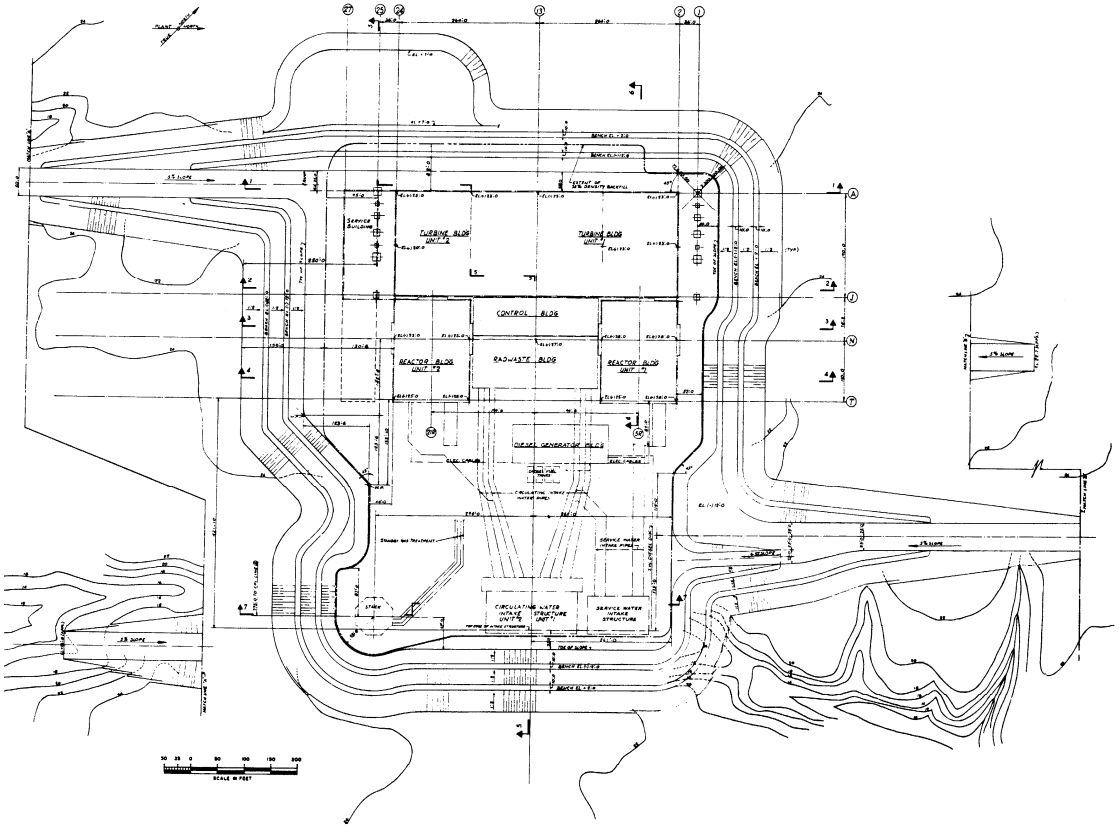
(Refer to page 18)

CASE I
10% Damping
5 Layers - 5 feet stripped

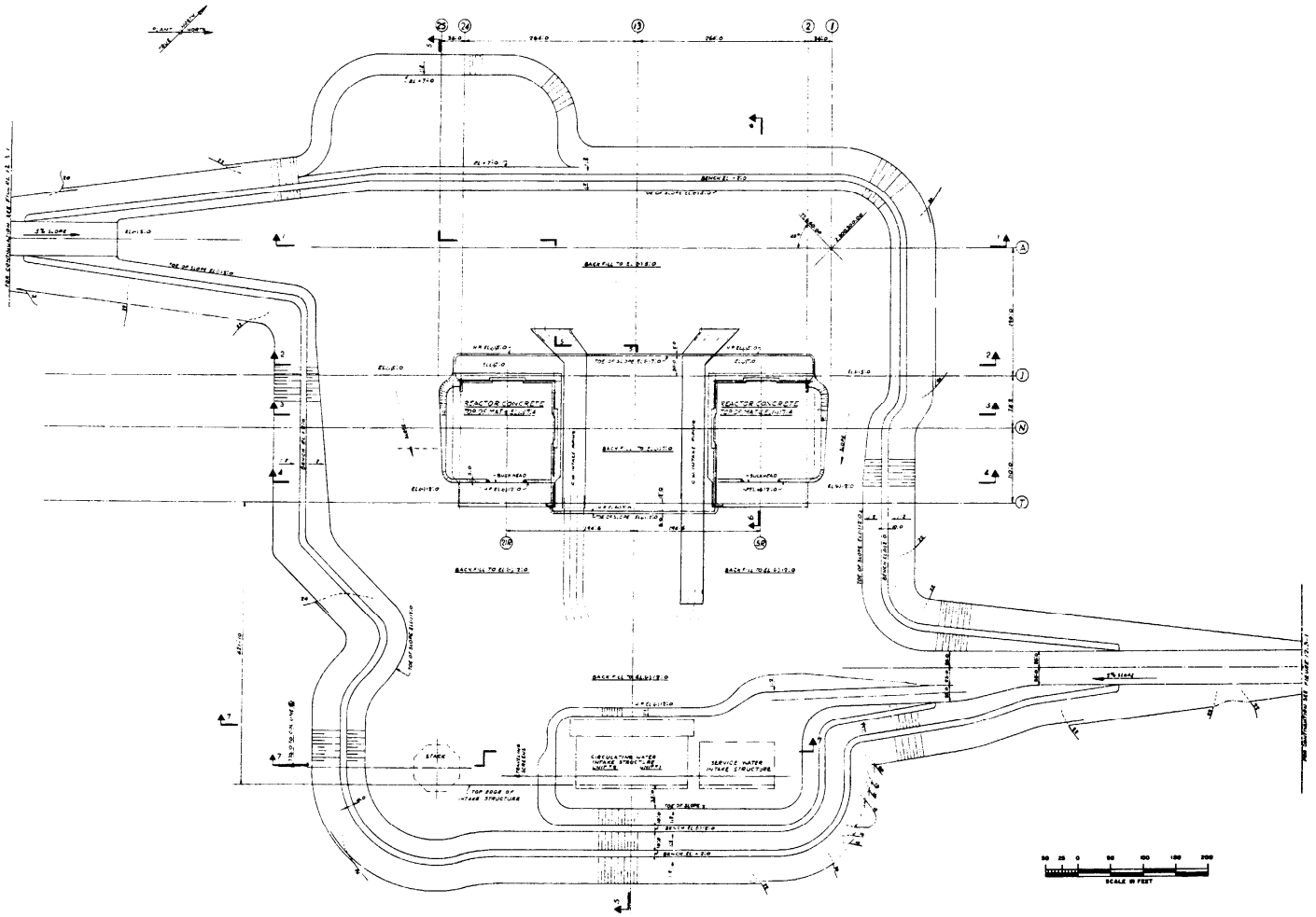
Layer	Thickness ft	"P"Wave Vel ft/sec	"S"Wave Vel ft/sec	Density lbs/cu ft
1	35	5,000	750	107
2	30	5,000	1,400	130
3	43	11,900	5,500	145
4	127	9,500	4,500	138
5	1290	7,100	3,000	120
basement rock		18,000	10,000	165

(Refer to page 18)

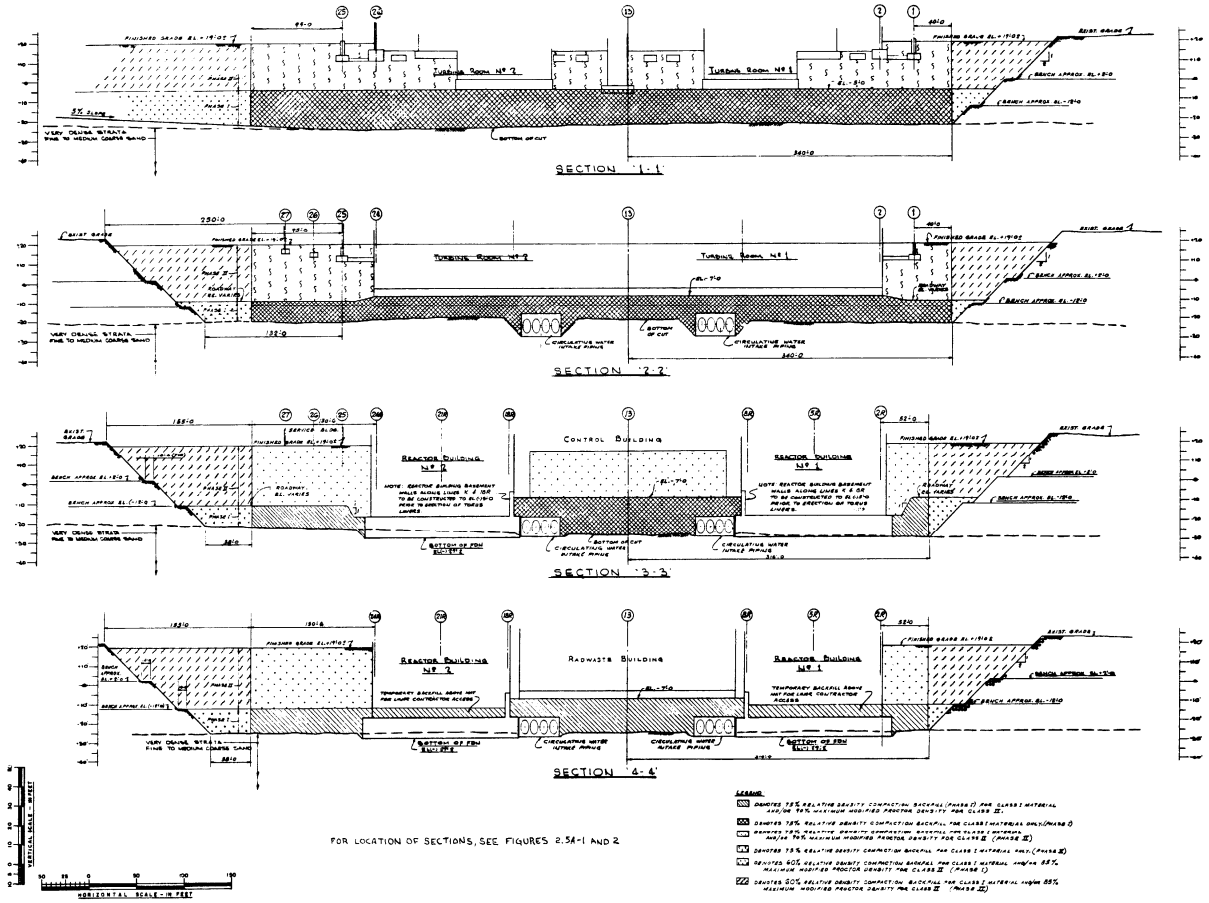
General Plant Excavation - Plan



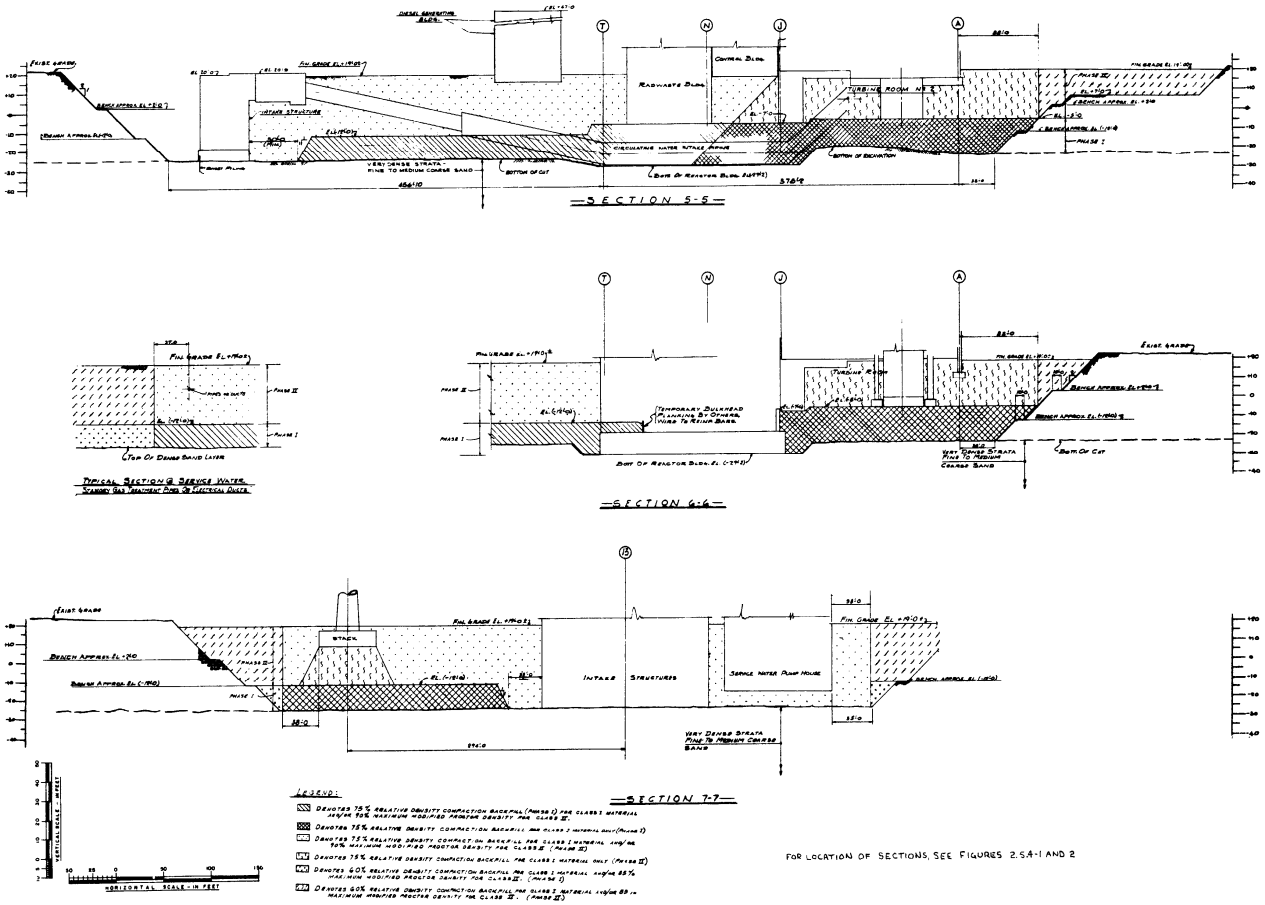
General Plant Backfill – Plan Phase I



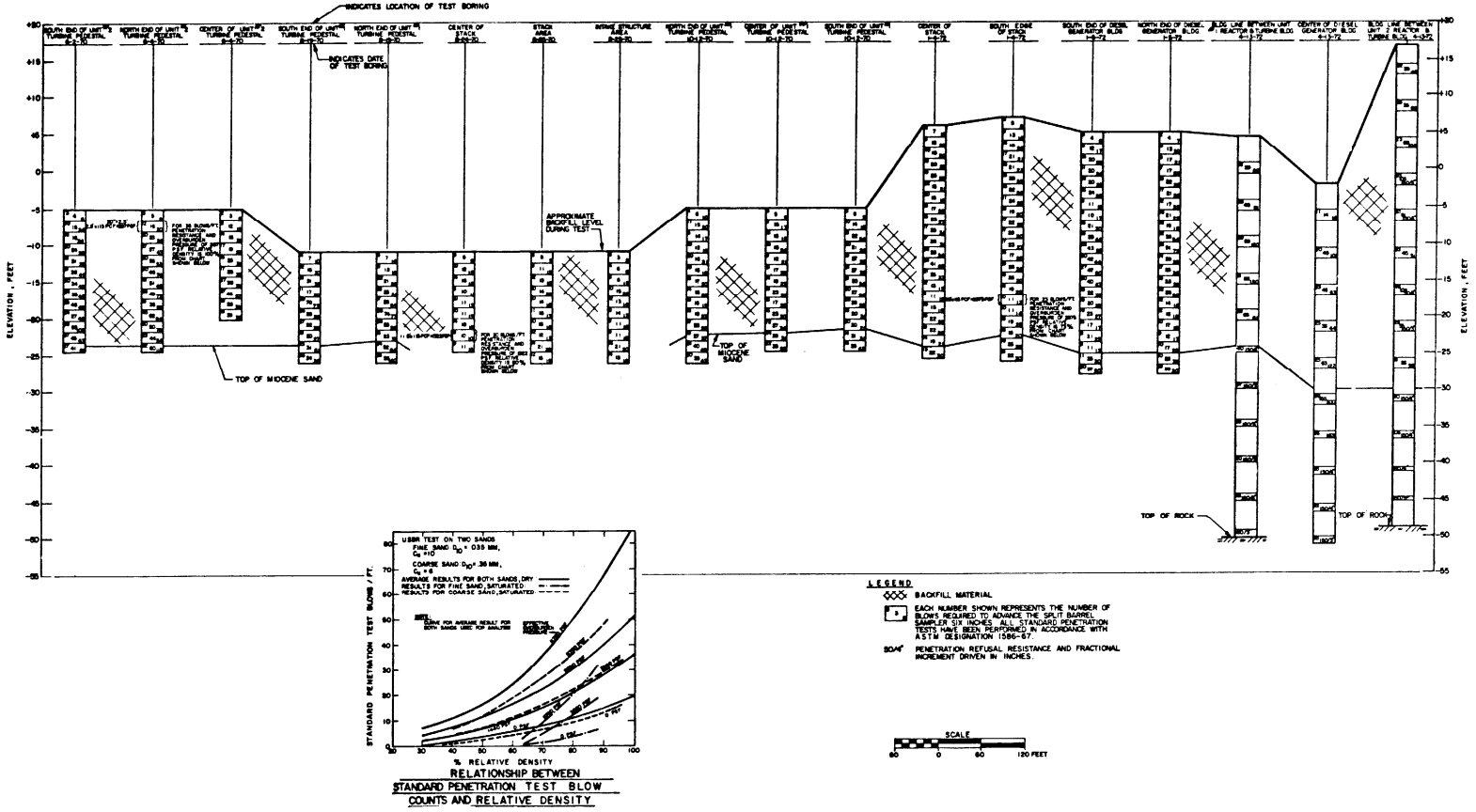
General Plant Excavation Sections (Part 1 of 2)



General Plant Excavation Sections (Part 2 of 2)



Test Data for All Standard Penetration Tests Performed at BSEP Site as Part of Quality Assurance Program



Permeability Test In Insitu Soil

A) FALLING HEAD METHOD

$$K = \frac{r^2}{2L(t_2 - t_1)} \ln\left(\frac{L}{R}\right) \ln\left(\frac{H_1}{H_2}\right)$$

WHERE

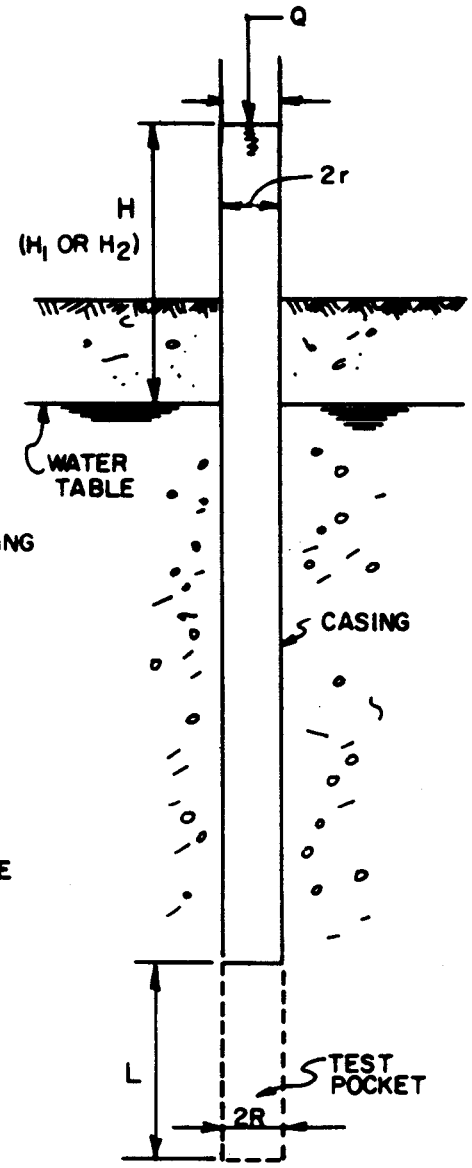
K = PERMEABILITY
r = RADIUS OF STANDPIPE
L = LENGTH OF TEST POCKET
R = RADIUS OF TEST POCKET = RADIUS OF CASING
H_1 AND H_2 = WATER HEADS AT TIME T_1 AND T_2
$\ln$ = NATURAL LOGARITHM

B) CONSTANT HEAD METHOD

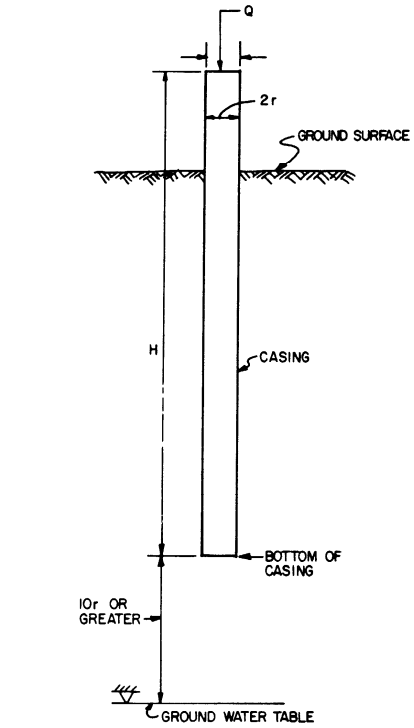
$$K = \frac{Q}{CH}$$

WHERE

Q = FLOW OF WATER TO KEEP H CONSTANT
H = HEAD DIFFERENCE BETWEEN WATER INSIDE CASING AND GROUNDWATER LEVEL (TEST ZONE BELOW GROUNDWATER LEVEL).
C = TEST FACTOR, DEPENDING ON L AND R



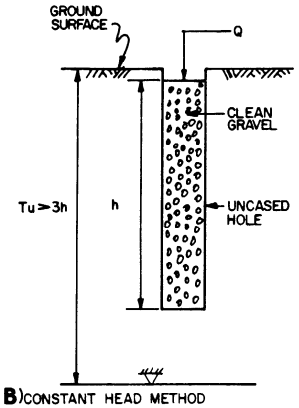
Permeability Test in Soil



A) CONSTANT HEAD METHOD

$$K = \frac{Q}{5.5rH}$$

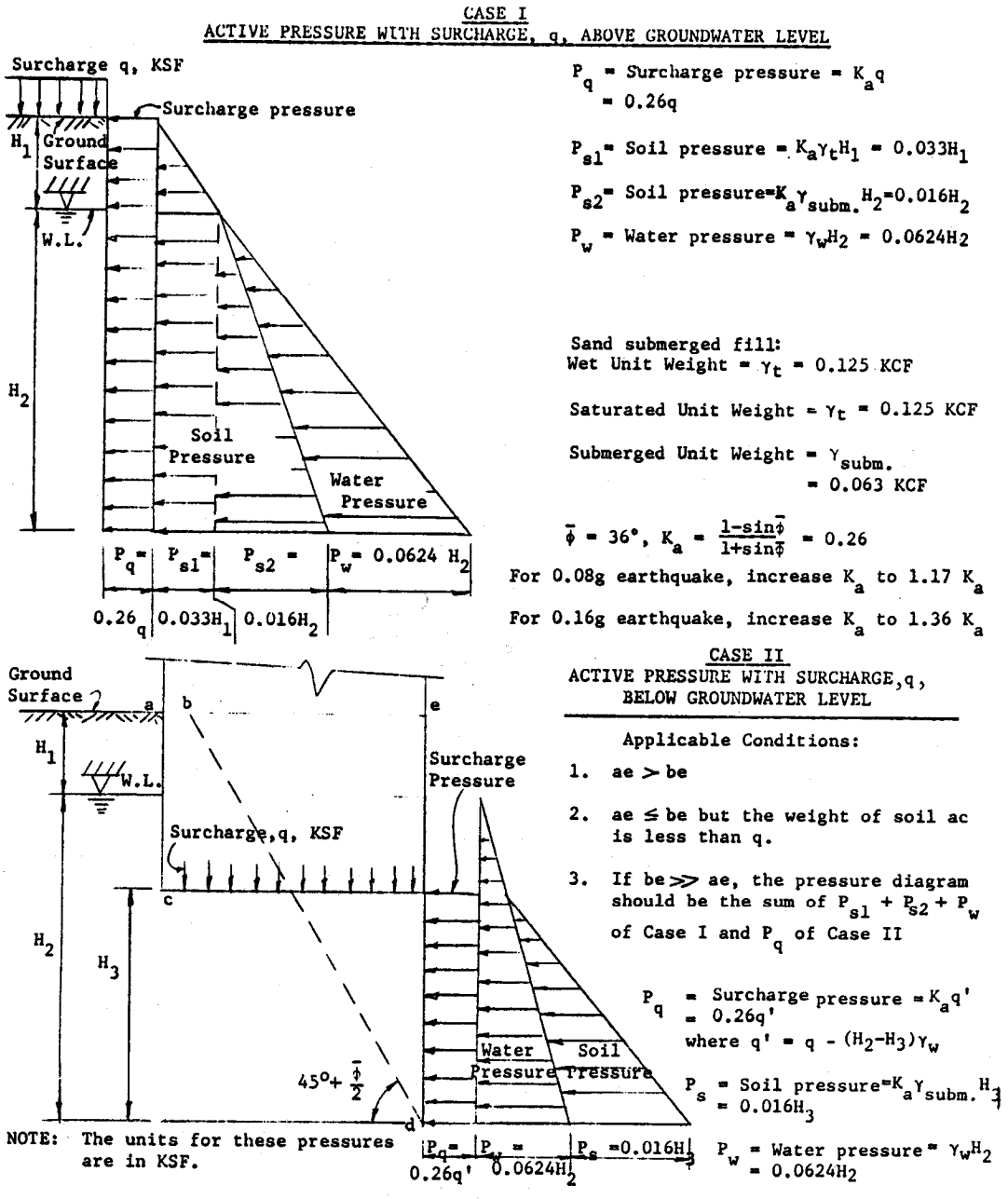
WHERE
Q = FLOW OF WATER TO KEEP H CONSTANT
H = DIFFERENTIAL HEAD OF WATER (DISTANCE BETWEEN WATER LEVEL IN CASING AND BOTTOM OF CASING).
r = INTERNAL RADIUS OF CASING



B) CONSTANT HEAD METHOD

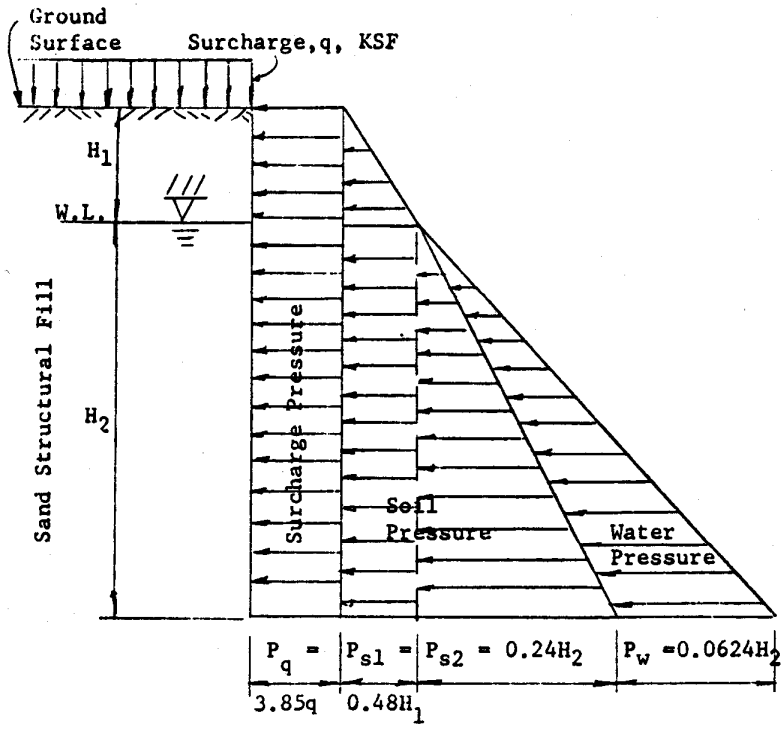
WHERE
k_{20} = COEFFICIENT OF PERMEABILITY, FEET PER YEAR
h = HEIGHT OF WATER IN THE WELL, FEET
r = RADIUS OF WELL, FEET
Q = DISCHARGE RATE OF WATER FROM THE WELL FOR STEADY STATE CONDITION, CUBIC FEET PER MINUTE
μ_T = VISCOSITY OF WATER AT TEMPERATURE T
μ_{20} = VISCOSITY OF WATER AT 20°C
Tu = UNSATURATED DISTANCE BETWEEN THE WATER SURFACE IN THE WELL AND THE WATER TABLE, FEET

Soil Pressure Diagrams for Foundation Design – Cases I and II



Soil Pressure Diagrams for Foundation Design – Case III

CASE III
PASSIVE PRESSURE WITH SURCHARGE, q, AT GROUND SURFACE



For Soil Properties, See Fig. 12.3-5

$$K_p = \frac{1+\sin\bar{\phi}}{1-\sin\bar{\phi}} = 3.85$$

P_q = Surcharge pressure
= $K_p q = 3.85q$

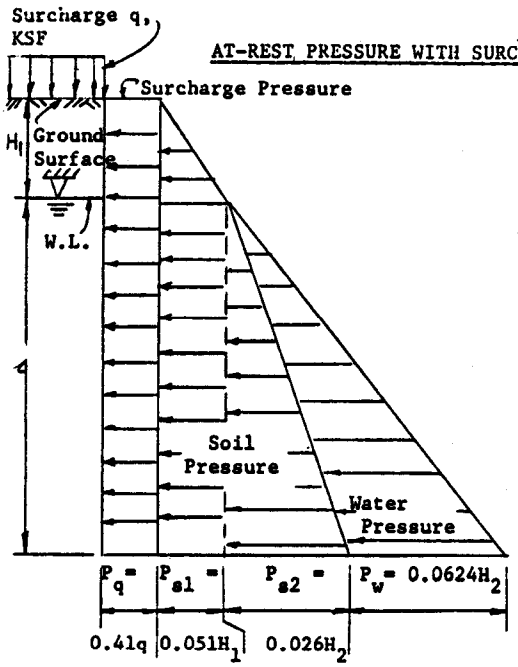
P_{s1} = Soil pressure = $K_p \gamma_t H_1$
= $0.48H_1$

P_{s2} = Soil pressure = $K_p \gamma_{subm.} H_2$
= $0.24H_2$

P_w = Water pressure = $\gamma_w H_2$
= $0.0624H_2$

NOTE: The units for these pressures are in KSF.

Soil Pressure Diagrams for Foundation Design – Cases IV and V



CASE IV
AT-REST PRESSURE WITH SURCHARGE, q, ABOVE GROUNDWATER LEVEL

For Soil Properties, See Fig. 12.3-5

$\bar{\phi} = 36^{\circ}$, $K_o = 1-\sin\bar{\phi} = 0.41$

Pq = Surcharge pressure = $K_o q = 0.41q$

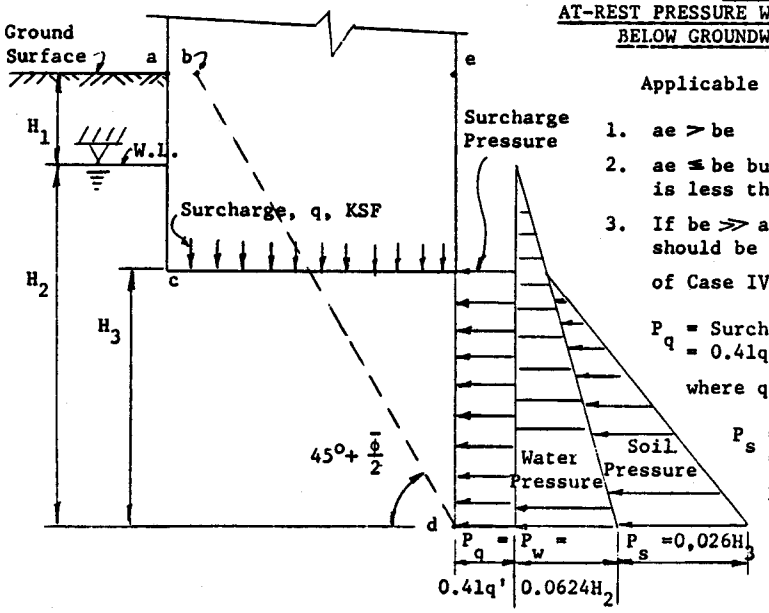
P_{s1} = Soil pressure = $K_o \gamma_t H_1 = 0.051H_1$

P_{s2} = Soil pressure = $K_o \gamma_{subm.} H_2 = 0.026H_2$

P_w = Water pressure = $\gamma_w H_2 = 0.0624H_2$

For 0.08g earthquake, increase K_o to 1.17 K_o

For 0.16g earthquake, increase K_o to 1.36 K_o



CASE V
AT-REST PRESSURE WITH SURCHARGE, q, BELOW GROUNDWATER LEVEL

Applicable Conditions:

1. ae > be
2. ae ≤ be but the weight of soil ac is less than q.
3. If be ≫ ae, the pressure diagram should be the sum of $P_{s1} + P_{s2} + P_w$ of Case IV and P_q of Case V

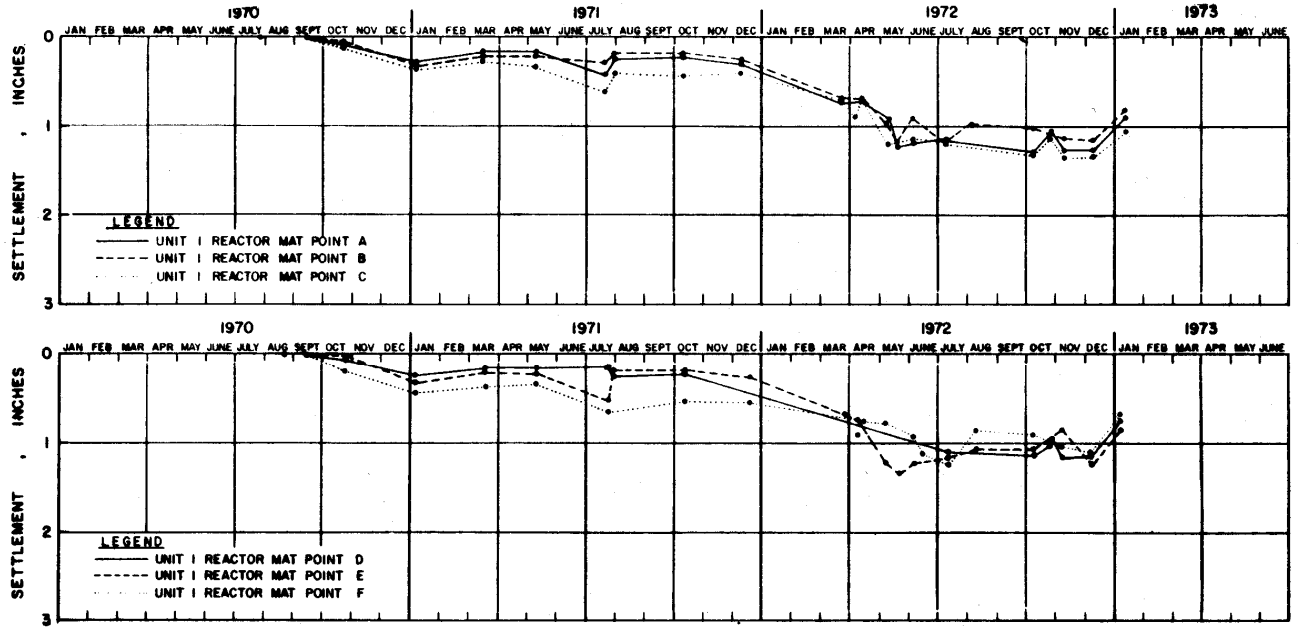
P_q = Surcharge pressure = $K_o q'$
$= 0.41q'$

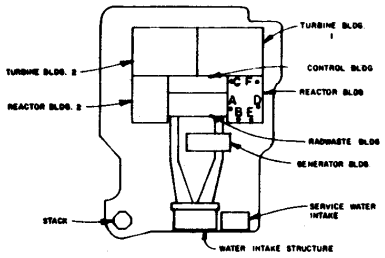
where $q' = q - (H_2 - H_3)\gamma_w$

P_s = Soil pressure = $K_o \gamma_{subm} H_3$
$= 0.026H_2$

P_w = Water pressure = $\gamma_w H_2$
$= 0.0624H_2$

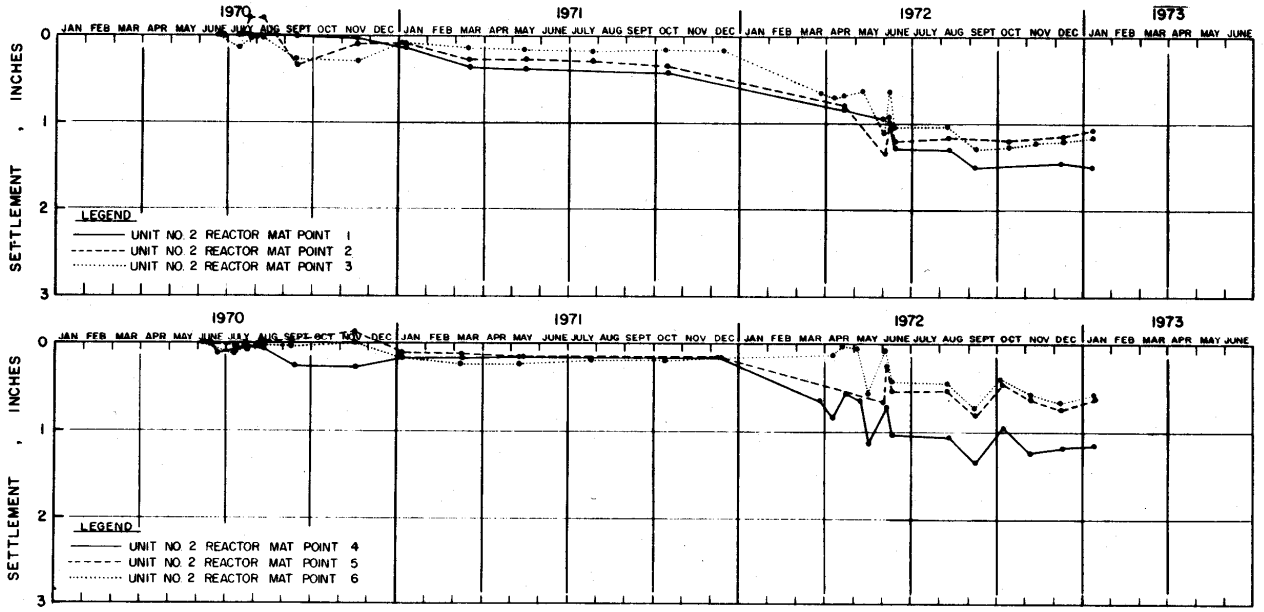
Settlement of Unit 1 Reactor Mat

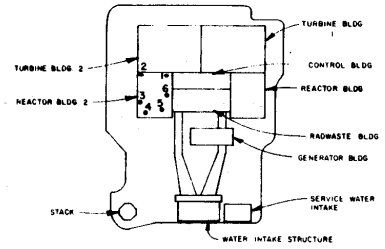




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO. 10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO. 10.

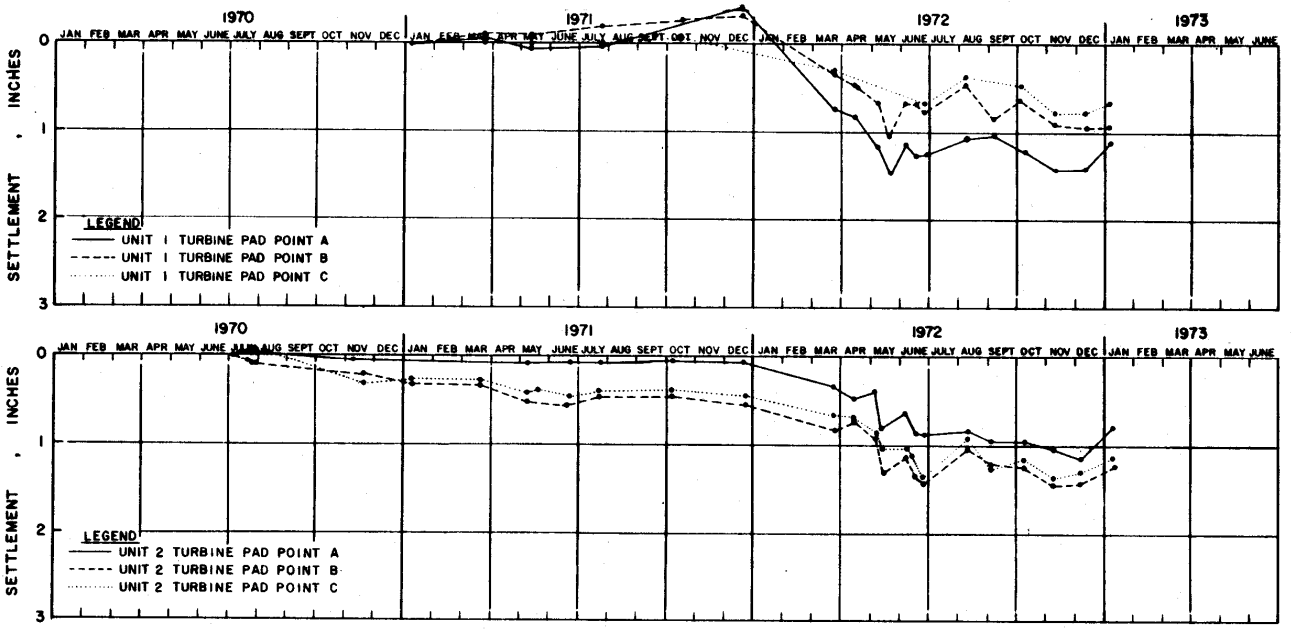
Settlement of Unit 2 Reactor Mat

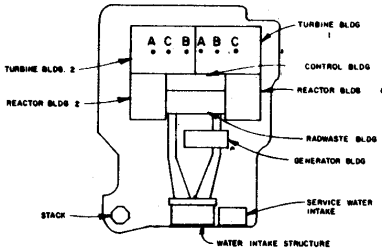




NOTE
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO 10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO 10.

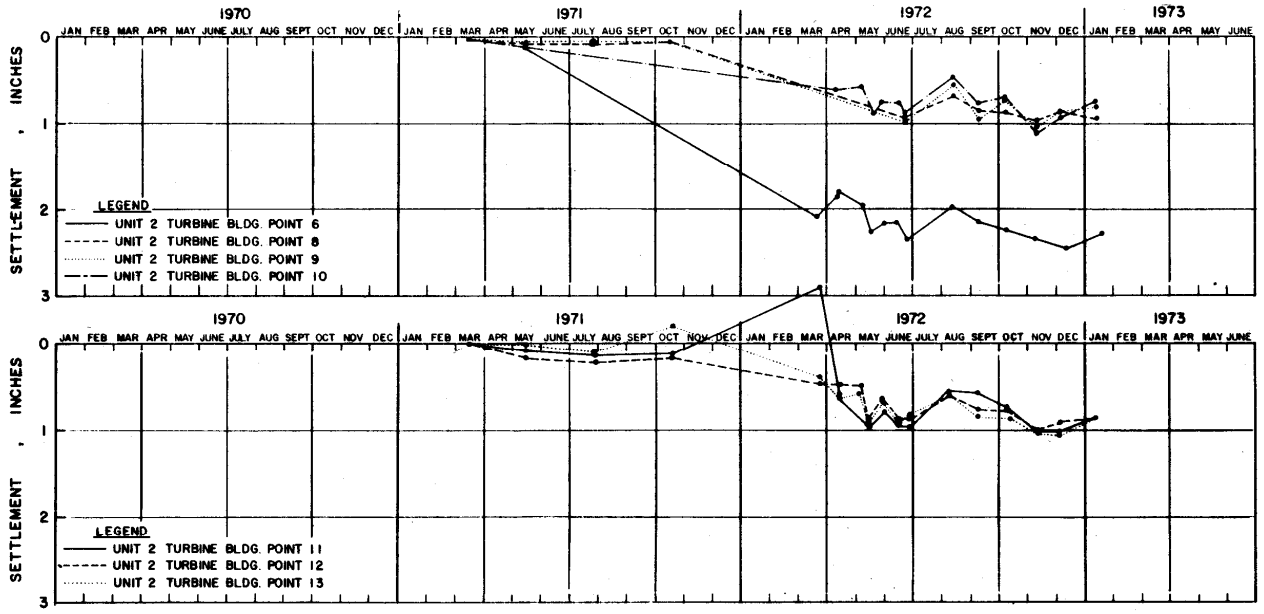
Settlement of Unit 1 & Unit 2 Turbine Pads

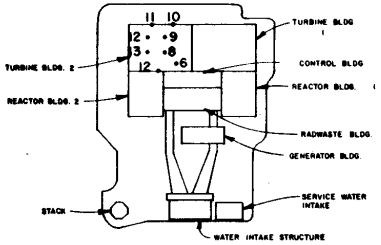




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO 10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO. 10

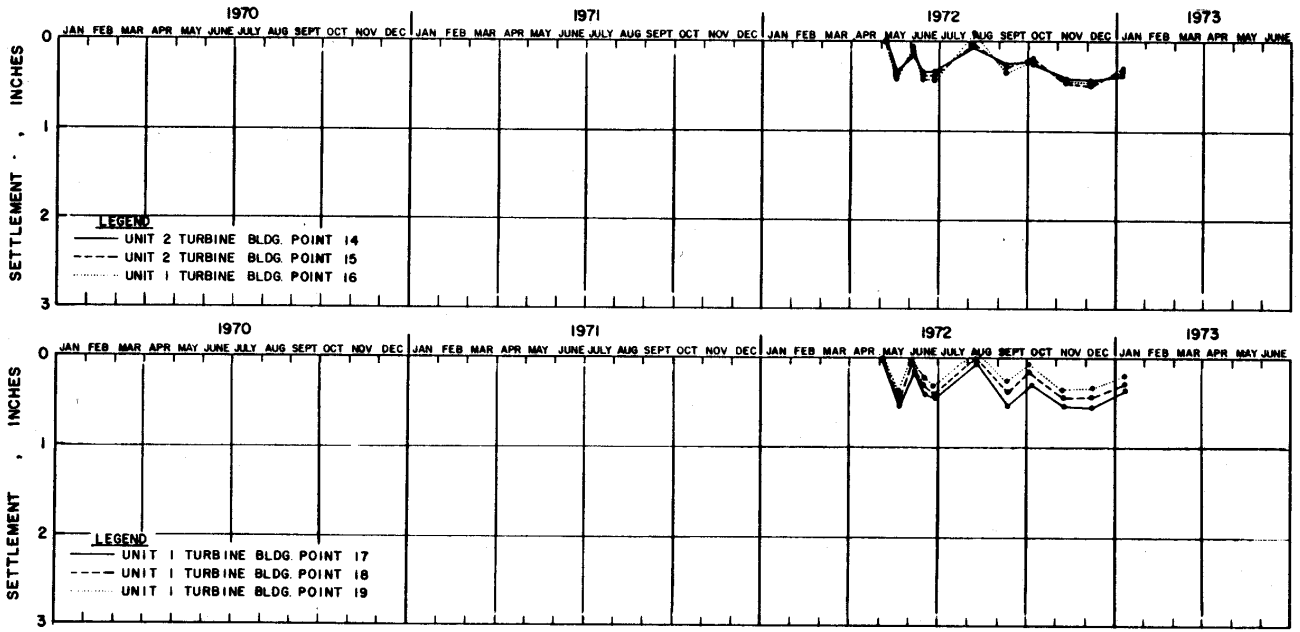
Settlement of Unit 2 Turbine Building

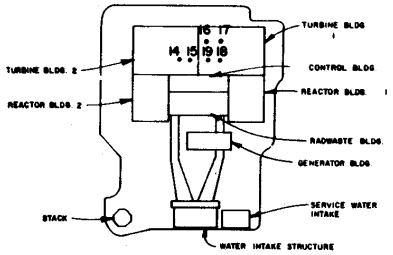




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO. 10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO. 10.

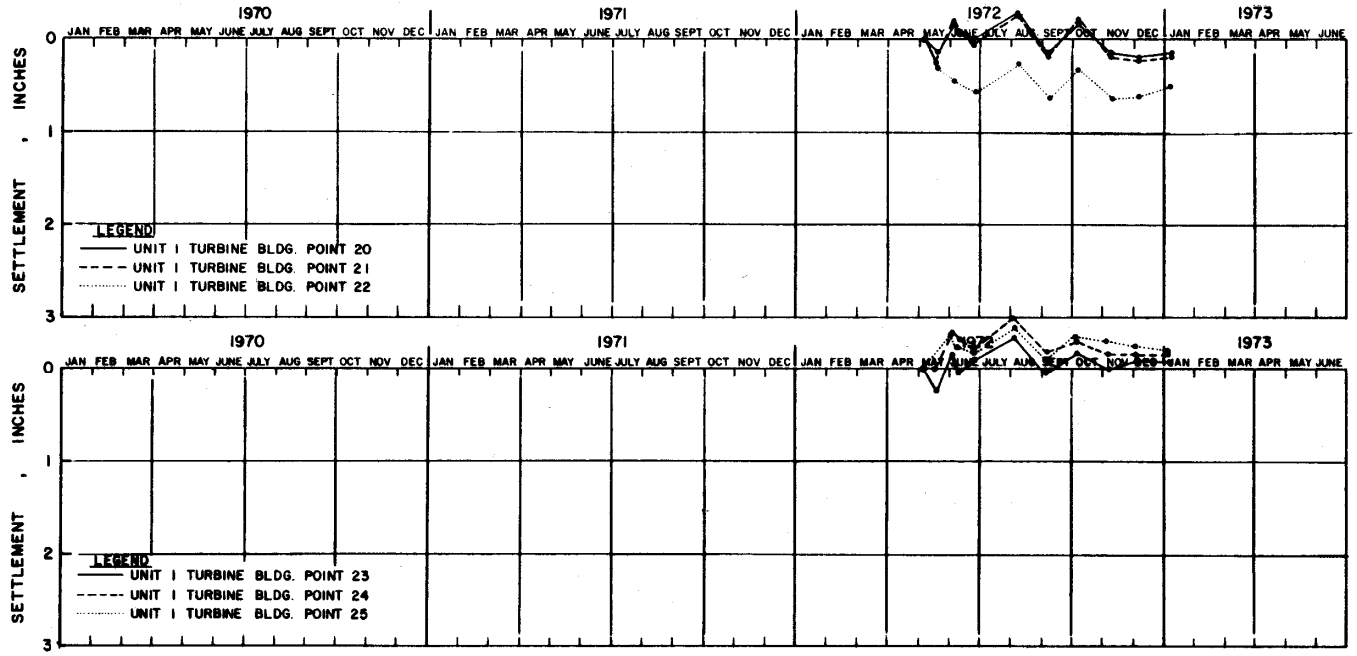
Settlement of Unit 1 & Unit 2 Turbine Buildings

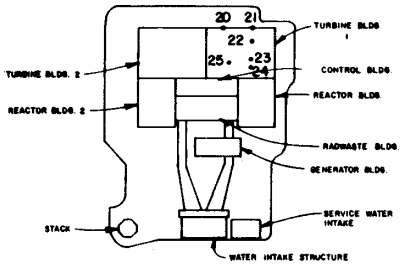




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO.10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO.10.

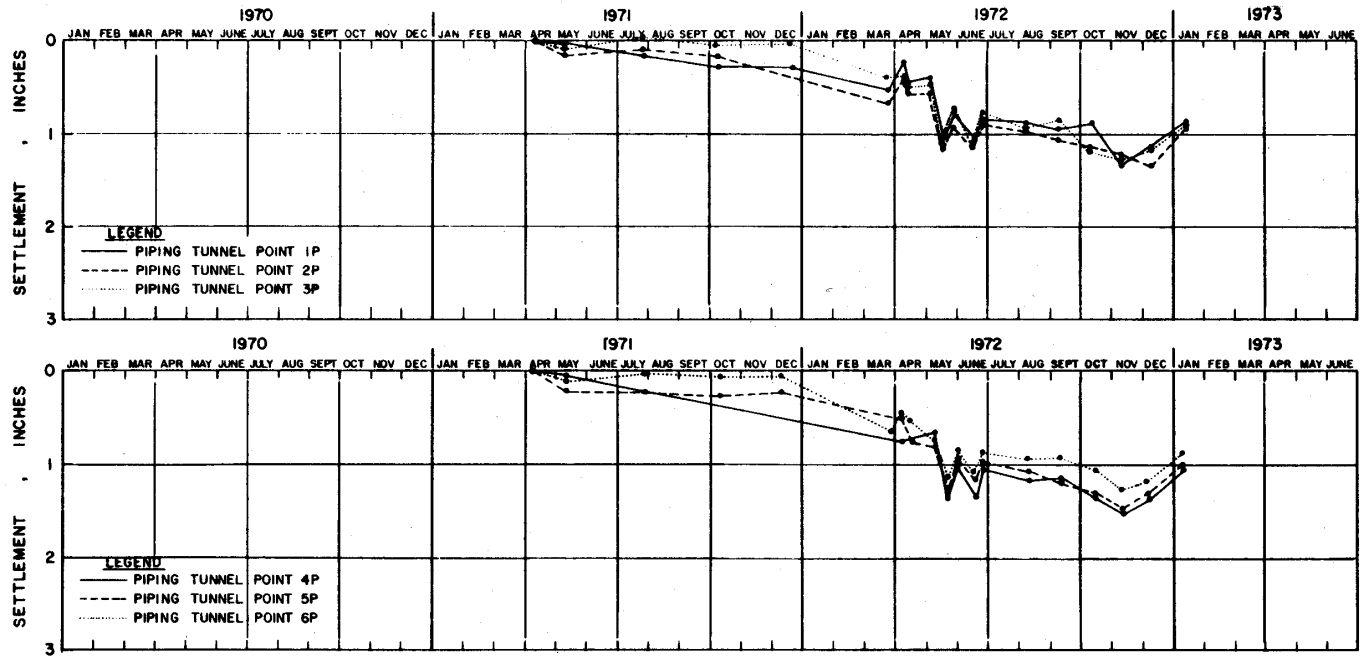
Settlement of Unit 1 Turbine Building

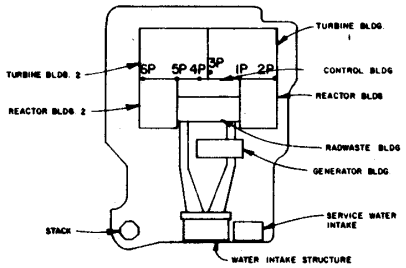




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO.10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO.10.

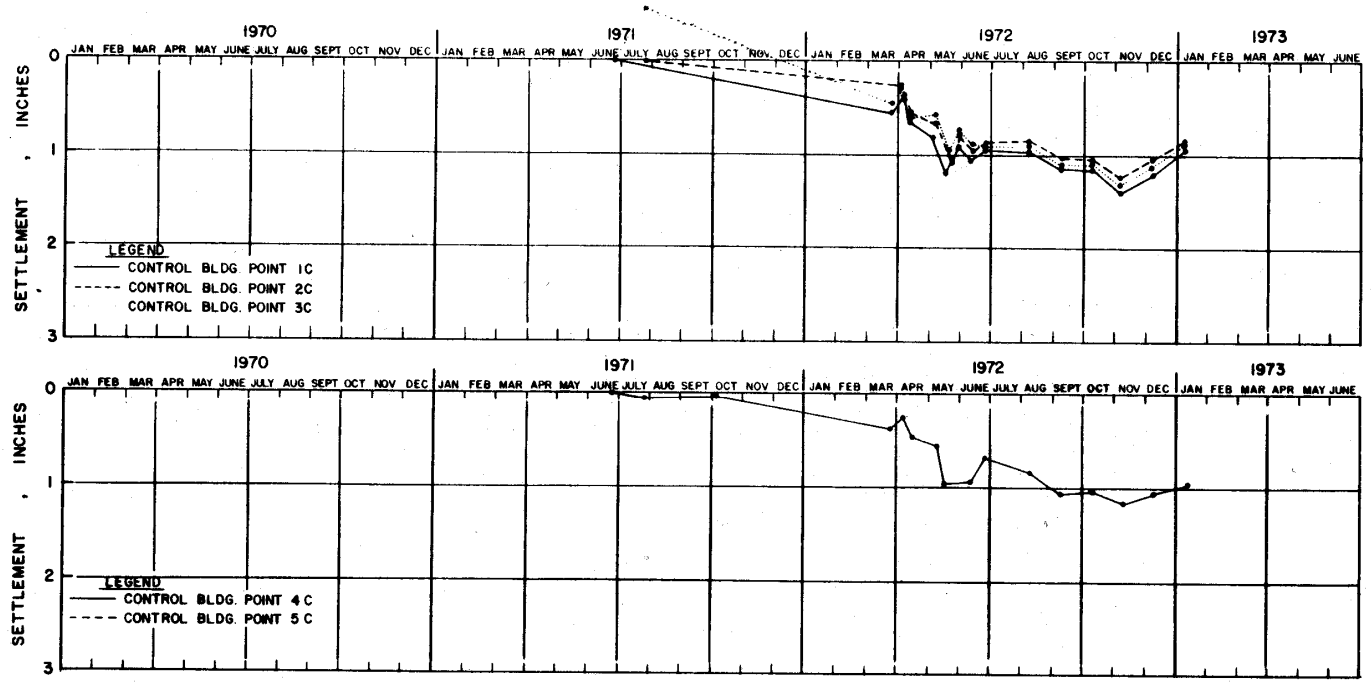
Settlement of Piping Tunnel

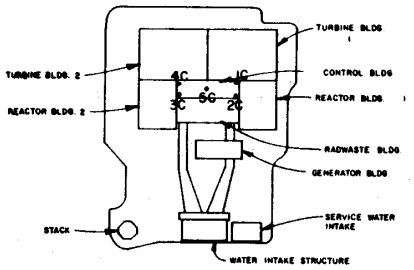




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO 10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO 10.

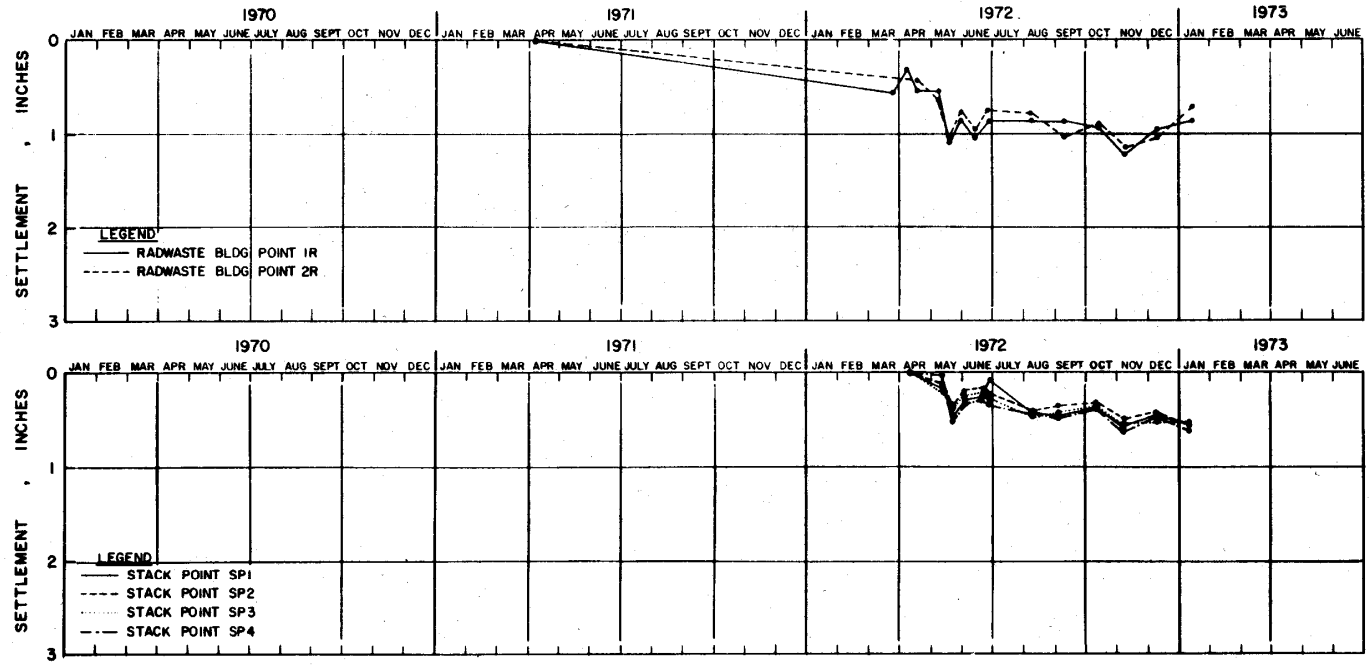
Settlement of Control Building

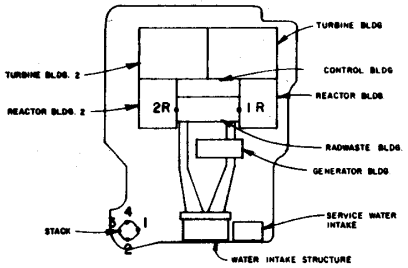




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO.10 ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO.10.

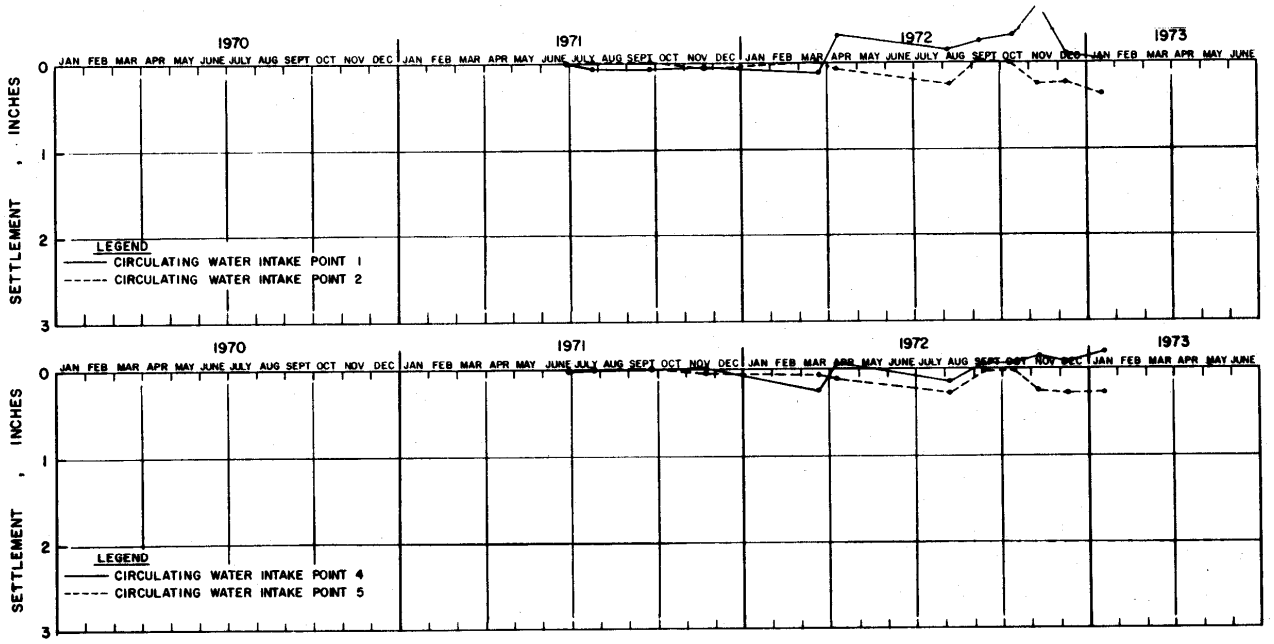
Settlement of Radwaste Building and Stack

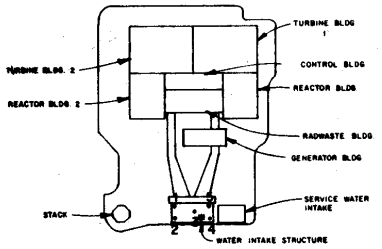




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO 10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO 10

Settlement of Circulating Water Intake

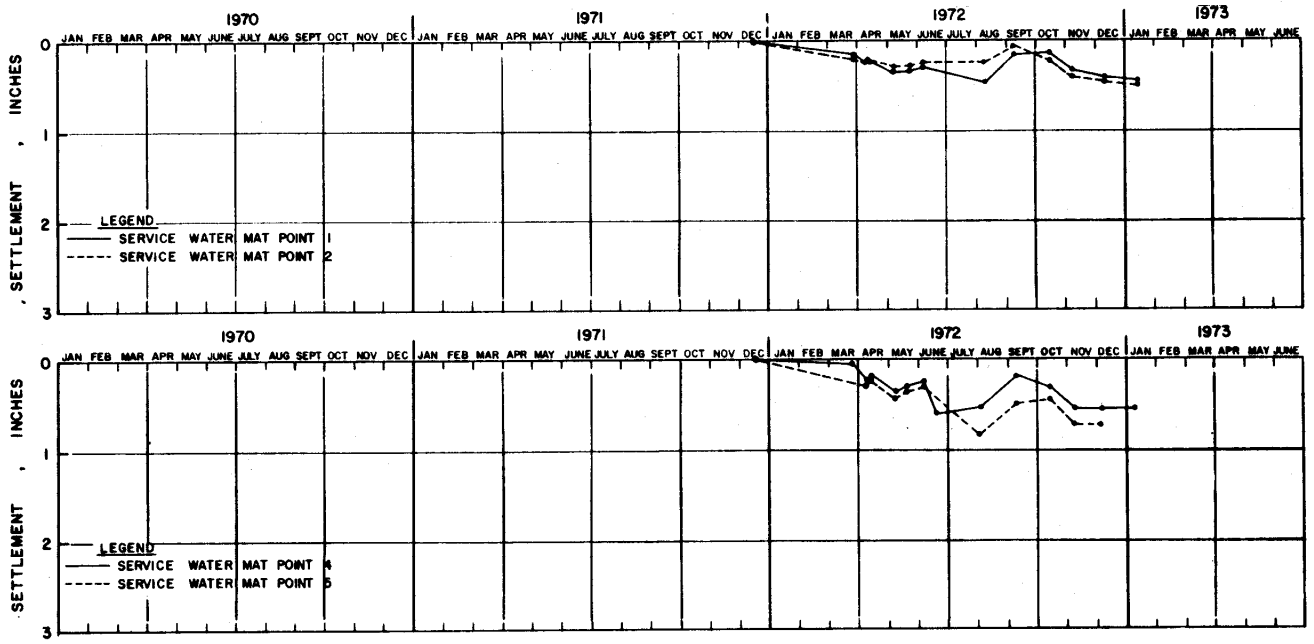


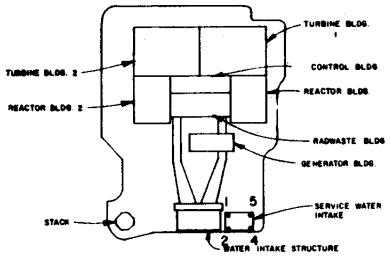


NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO 10 ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO. 10.

* POINT 3 DESTROYED

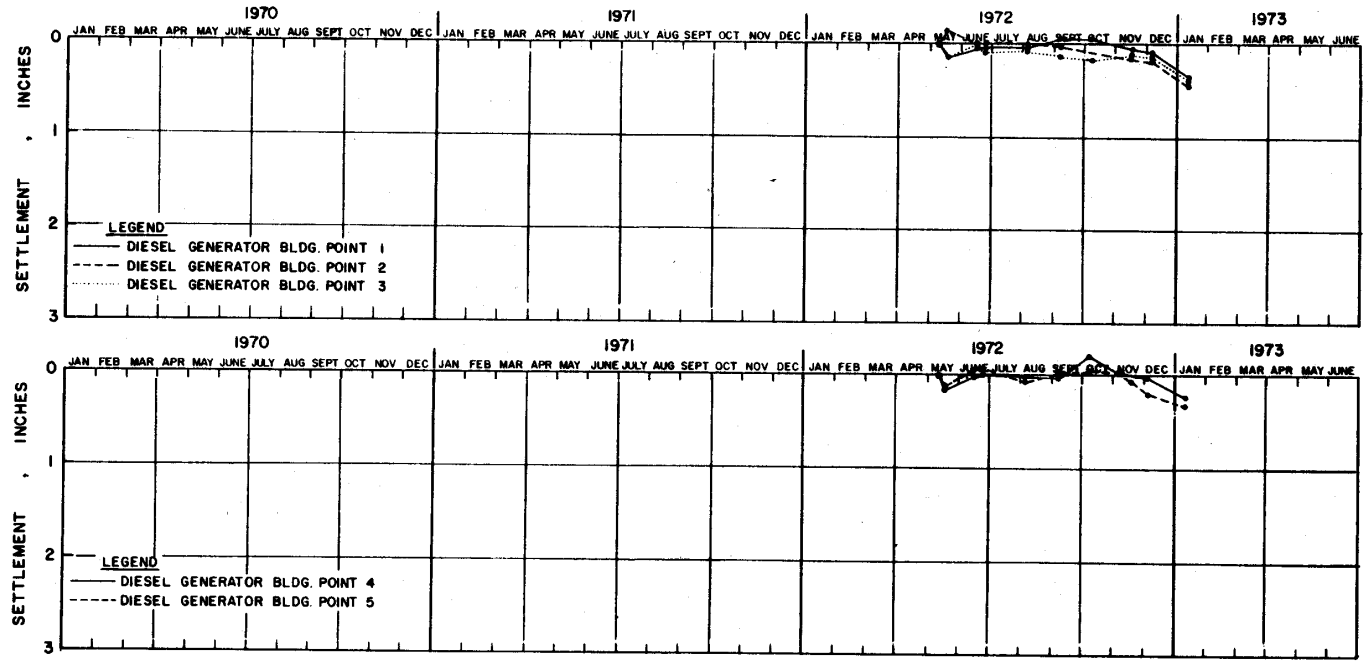
Settlement of Service Water Intake

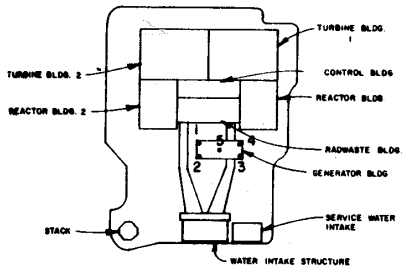




NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO.10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO.10.

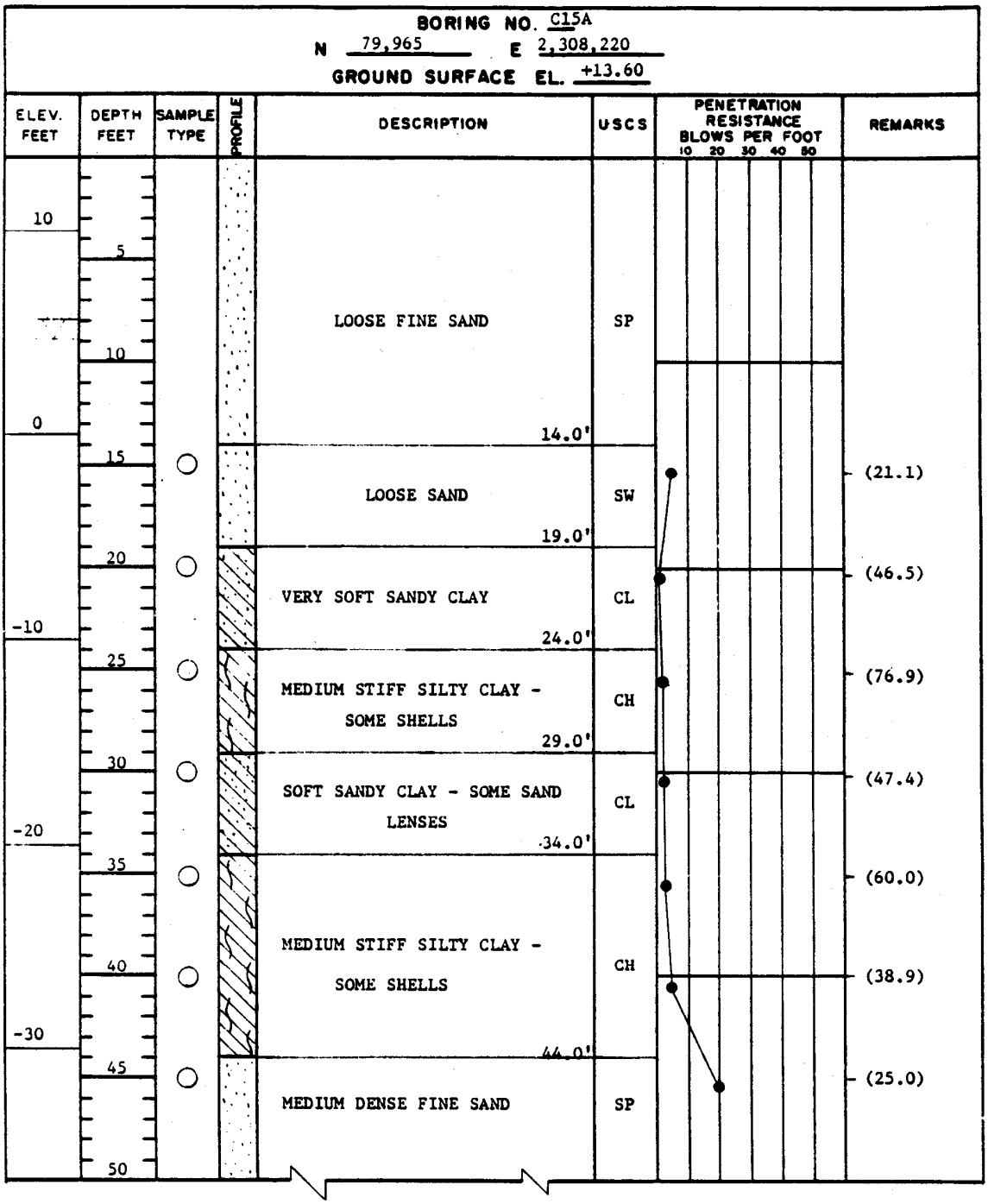
Settlement of Diesel Generator Building



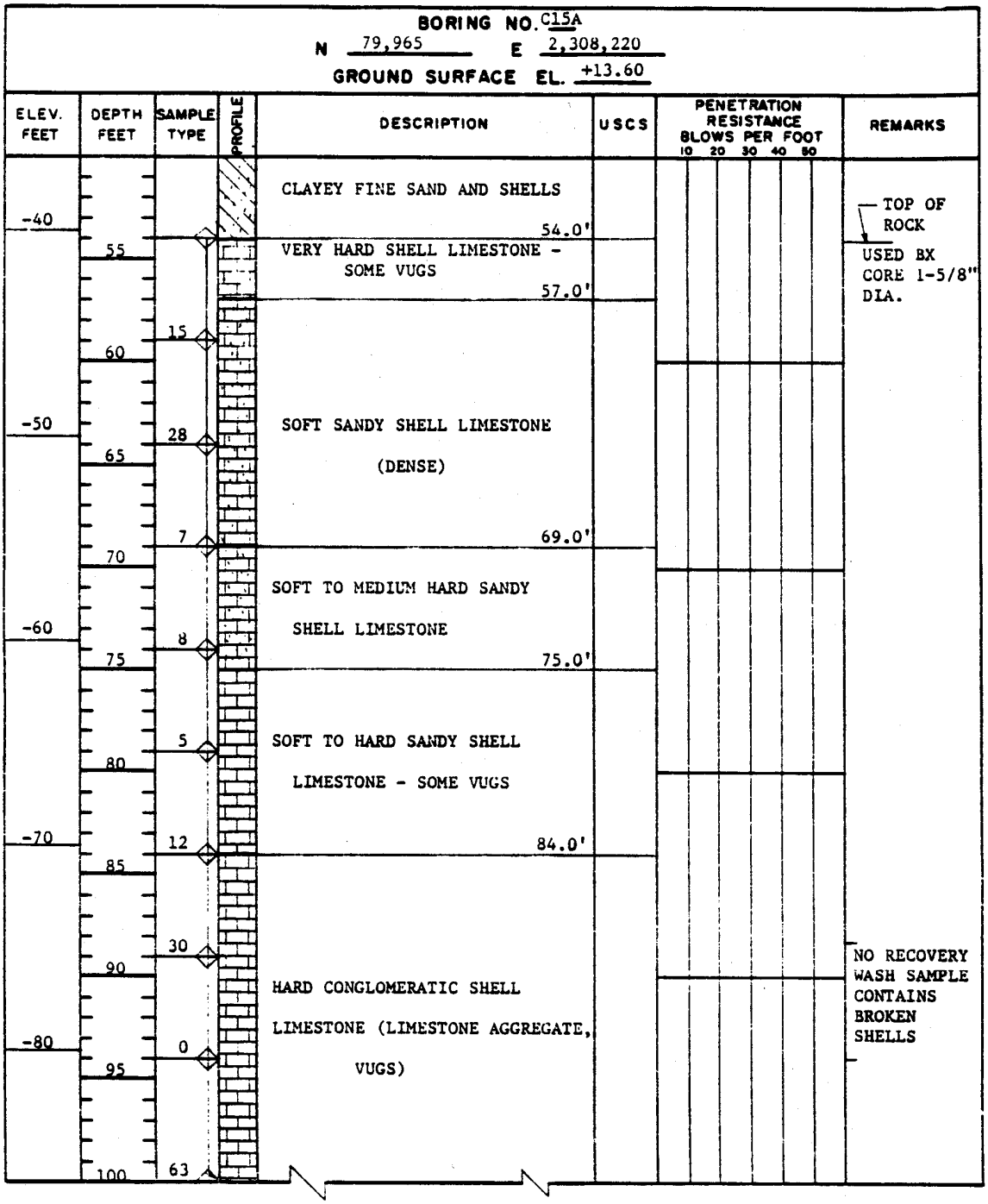


NOTE:
PERMANENT BENCH MARK FOR THIS SURVEY IS DEEP WELL CASING NO 10. ALL DATA SHOWN IS RAW SURVEY DATA REFERENCED FROM AND TIED-IN TO WELL CASING NO. 10.

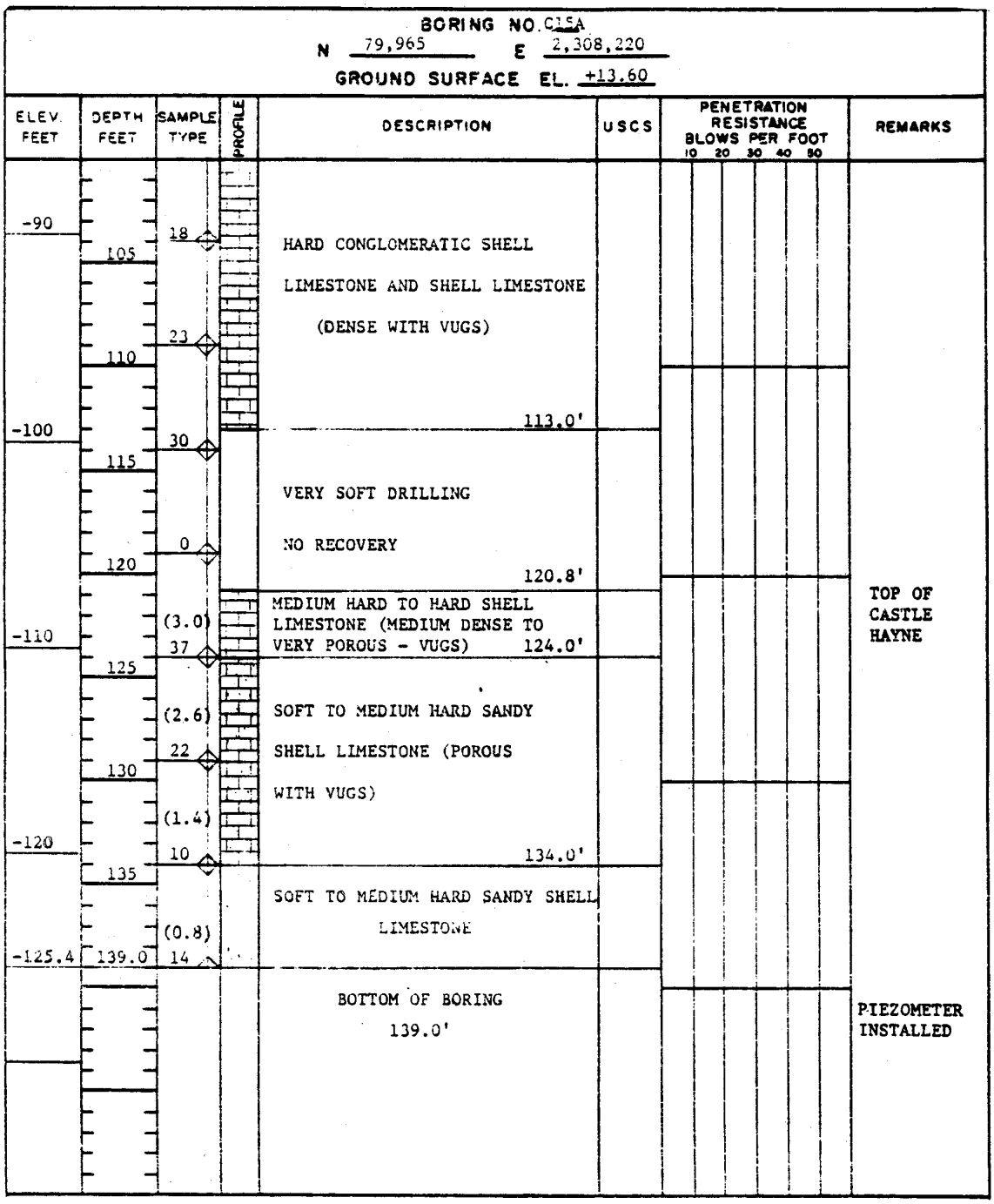
Intake Canal Boring Log C15A – Sheet 1 of 3



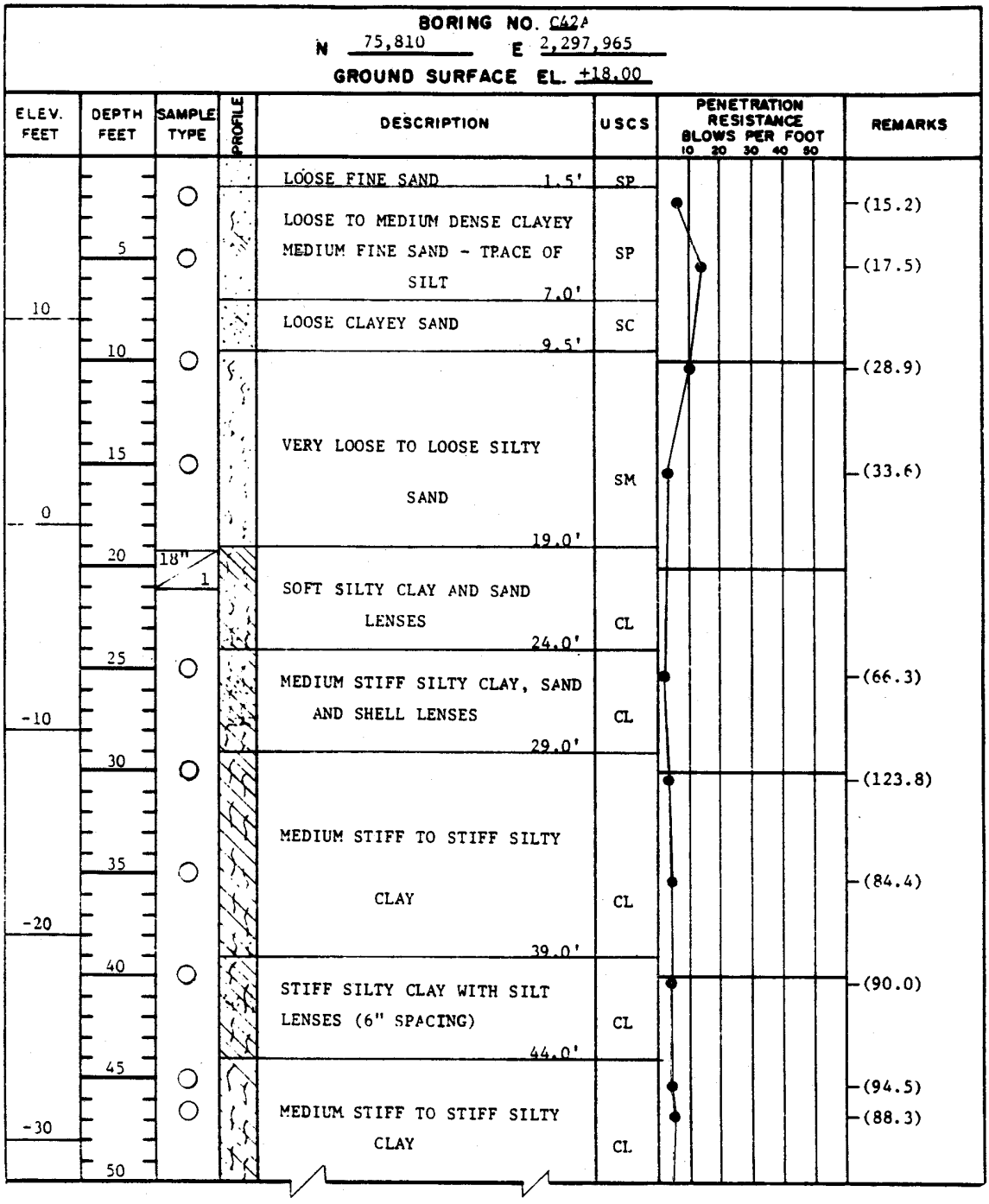
Intake Canal Boring Log C15A – Sheet 2 of 3



Intake Canal Boring Log C15A – Sheet 3 of 3



Discharge Canal Boring Log C42A – Sheet 1 of 3



Discharge Canal Boring Log C42A – Sheet 2 of 3

BORING NO. C42A
N 75,810 E 2,297,965
GROUND SURFACE EL. +18.00

ELEV. FEET	DEPTH FEET	SAMPLE TYPE	PROFILE	DESCRIPTION	USCS	PENETRATION RESISTANCE BLOWS PER FOOT (10 20 30 40 50)	REMARKS
				MEDIUM STIFF SILTY CLAY - SOME FINE SAND 54.0'			(47.3)
	55			LOOSE MEDIUM FINE SAND - TRACE OF SILT AND SHELLS			(36.8) TOP OF POCK
-40	60			VERY DENSE FINE SAND 59.9'			
				SOFT TO MEDIUM HARD MEDIUM DENSE SHELL LIMESTONE 62.6'			(33.0) STARTED NX CORING (2-1/8" DIA. CORE)
	65	100		HARD MASSIVE TO SLIGHTLY BROKEN DENSE SHELL LIMESTONE (VUGGIE) 67.6'			
-50	70	100		MEDIUM HARD SLIGHTLY BROKEN SHELL LIMESTONE - VERY POROUS 70.6'			
	75	60		SOFT TO MEDIUM HARD BROKEN SHELL LIMESTONE (VUGGIE) 75.8'			
-60				HARD MASSIVE SHELL LIMESTONE - DENSE 78.3'			
	80	96		SOFT TO MEDIUM HARD BROKEN TO SLIGHTLY BROKEN SHELL LIMESTONE - POROUS 85.0'			
	85	100		HARD BROKEN TO SLIGHTLY BROKEN CONGLOMERATIC SHELL LIMESTONE (VUGGIE) 88.2'			
-70	90	100		SOFT BROKEN SHELL LIMESTONE - POROUS, FRIABLE 93.7'			
	95	100		VERY BROKEN TO BROKEN CONGLOMERATIC MEDIUM HARD TO SHELL LIMESTONE			
-80	100	40					
		76					

Intake Canal Boring Log C42A – Sheet 3 of 3