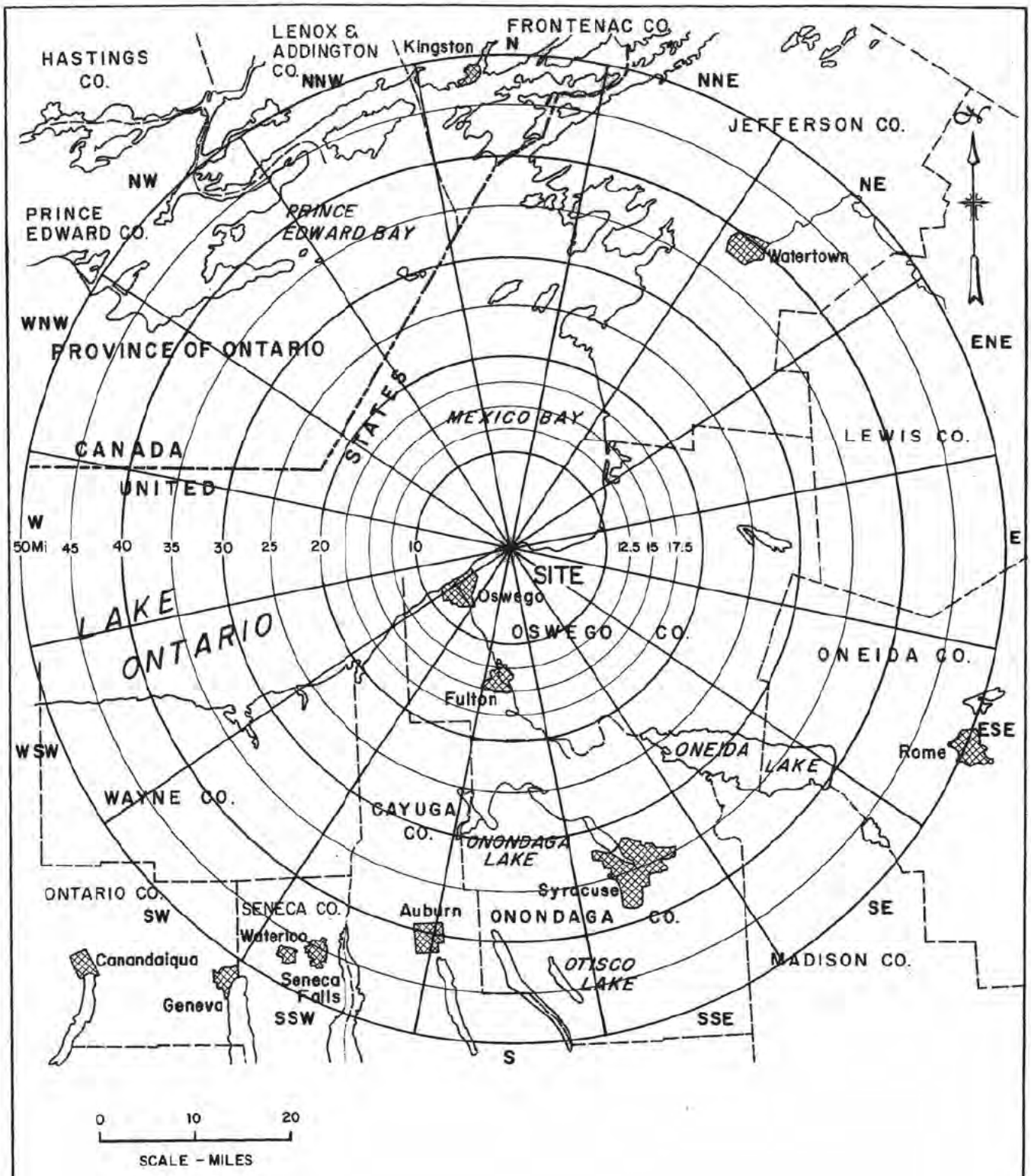
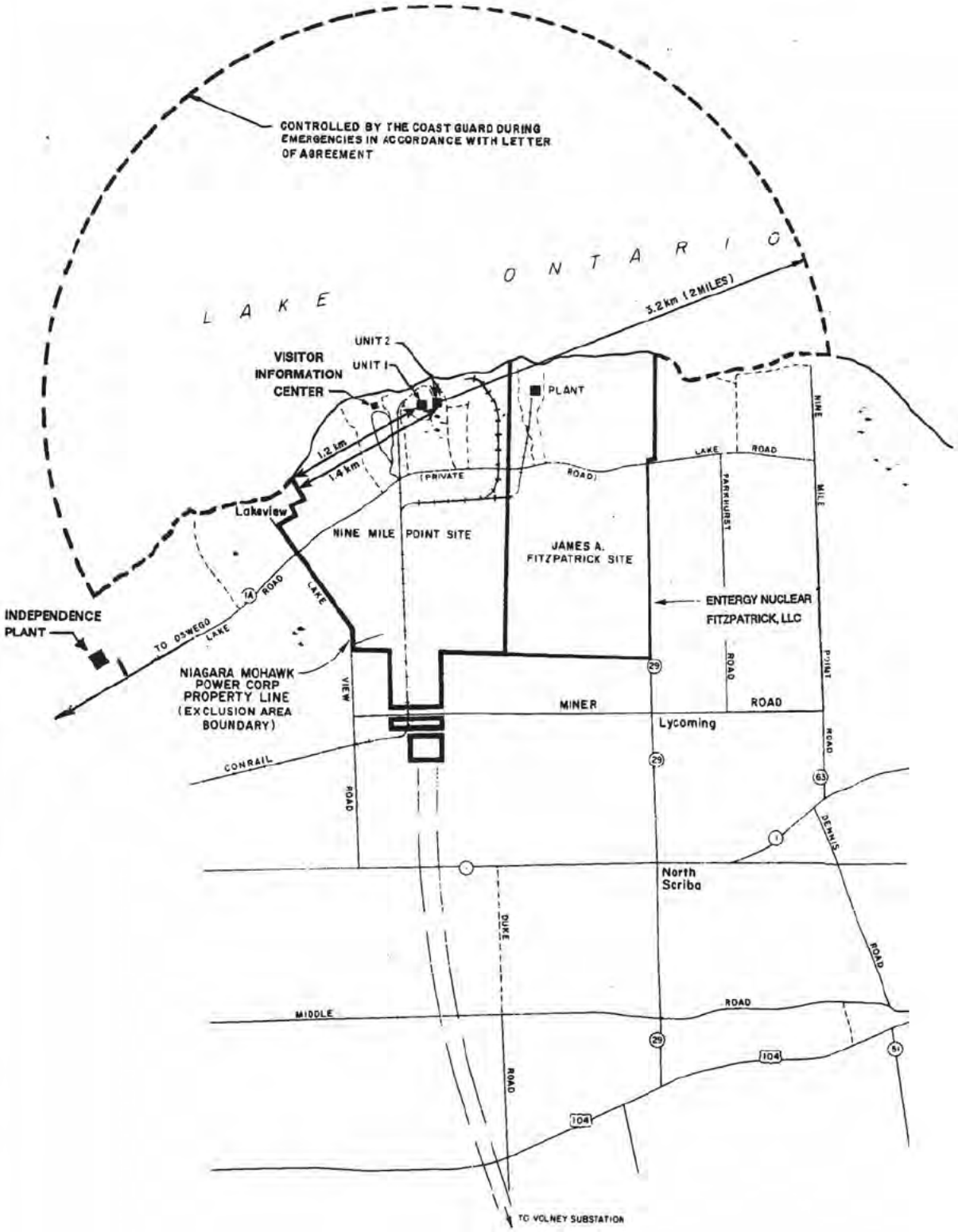


FIGURE 2.1-1

REGION WITHIN 80km OF SITE
NY STATE AND ONTARIO PROVINCE
CENSUS DISTRICTS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE: WM-B-007

FIGURE 2.1-2

SITE BOUNDARIES AND TRANSPORTATION ROUTES

NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

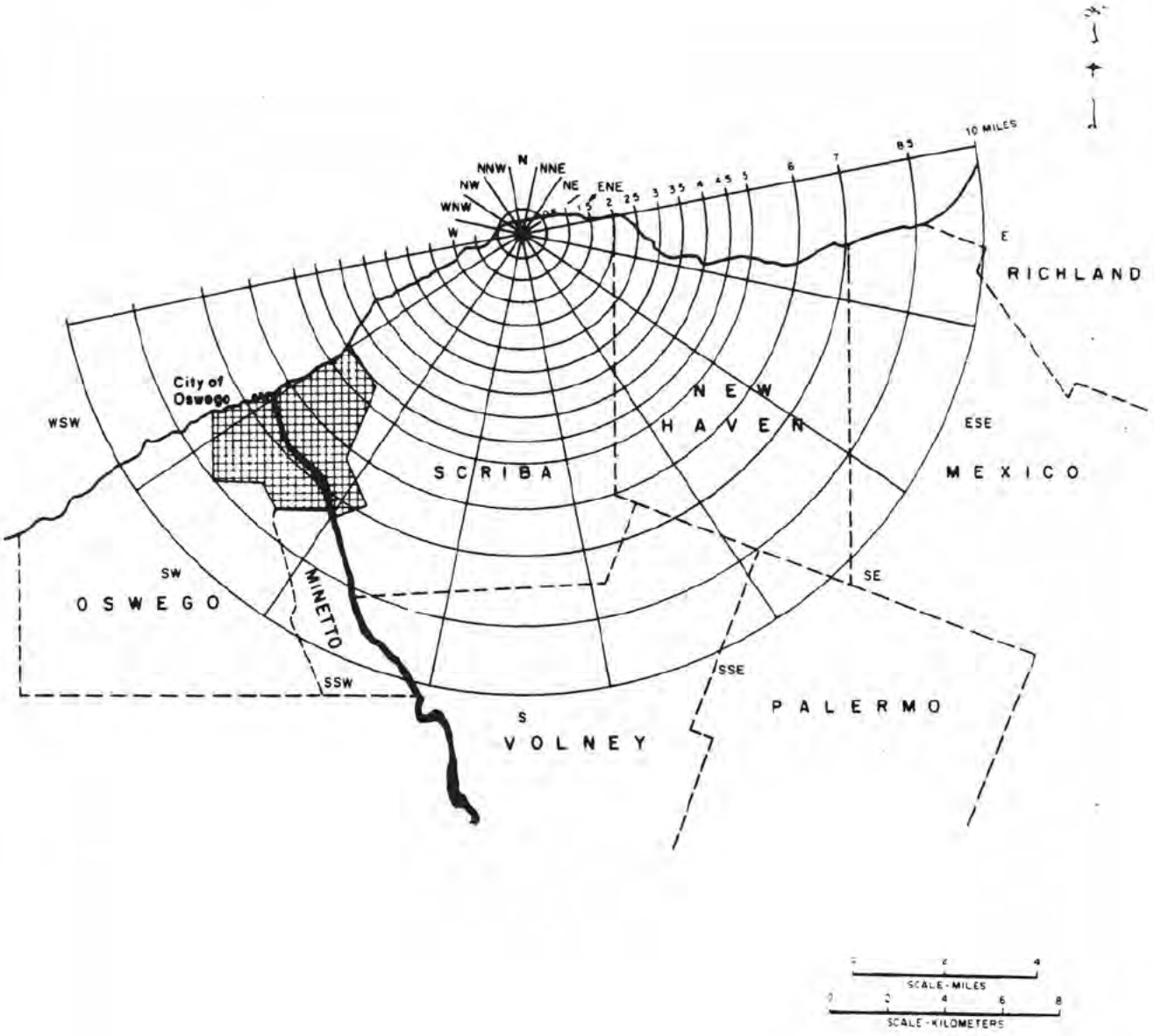


FIGURE 2.1-3

TOWNS OF OSWEGO COUNTY WITHIN 16 km OF SITE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

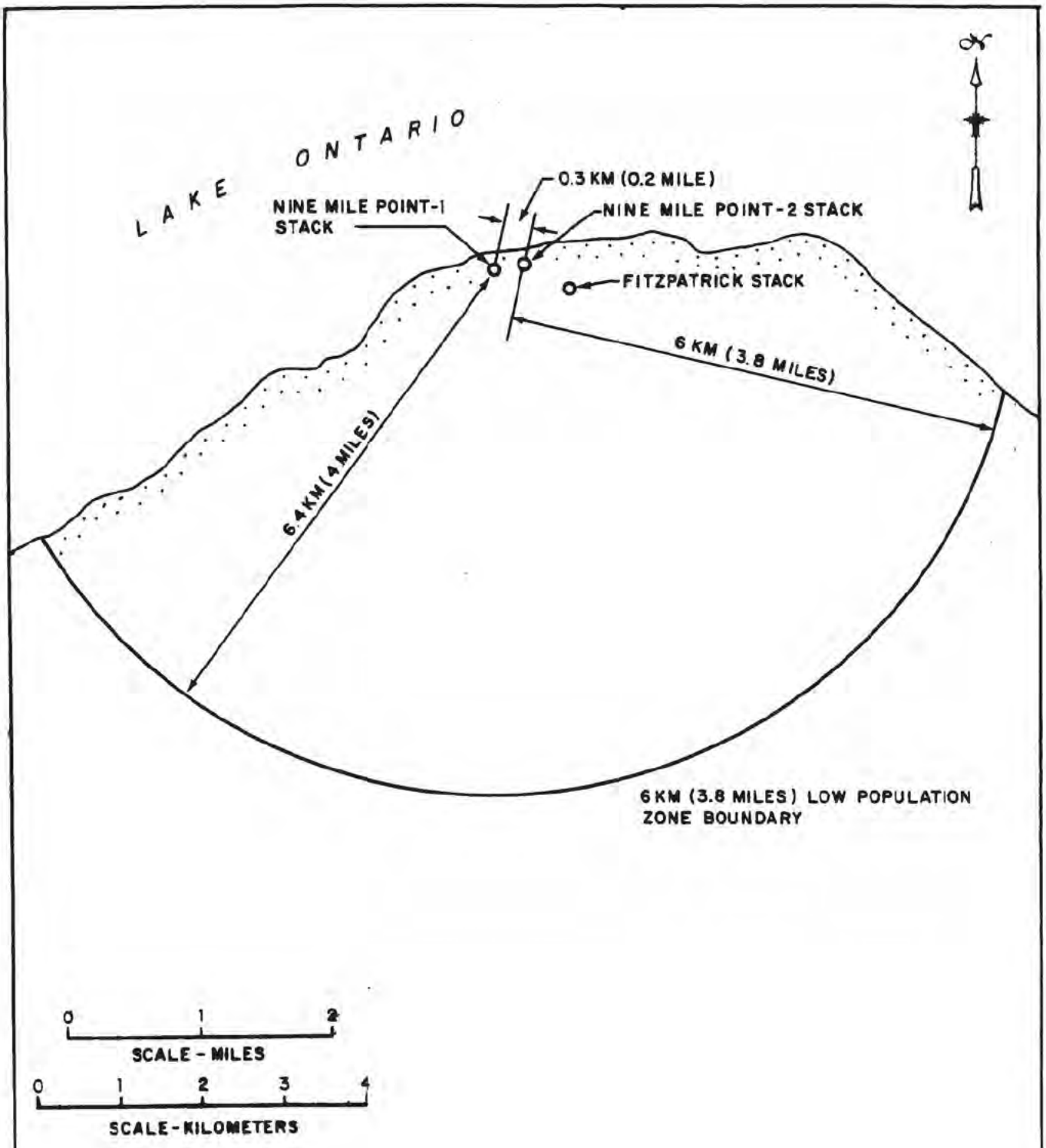


FIGURE 2.1-4

LOW POPULATION ZONE BOUNDARY

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

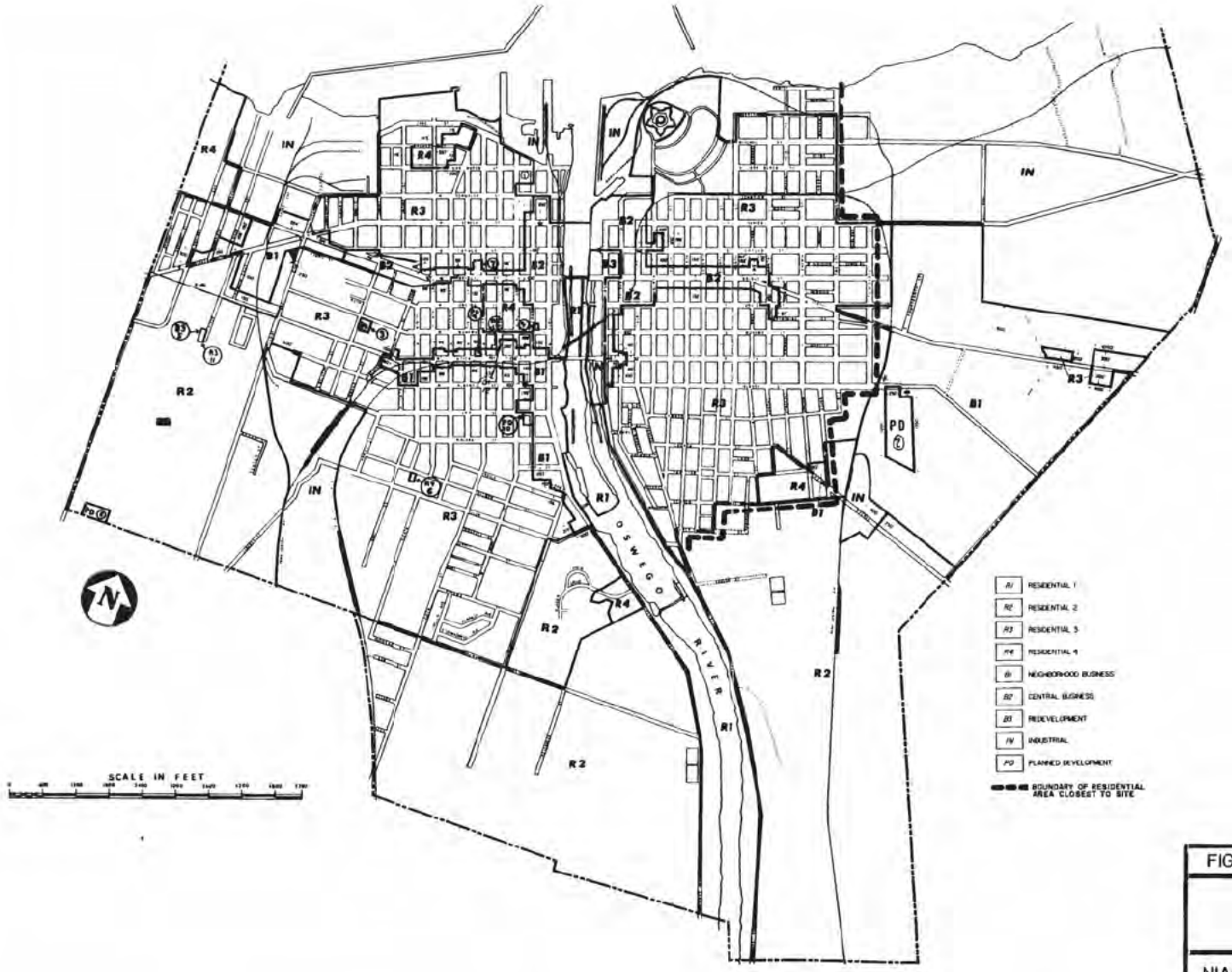


FIGURE 2.1-5

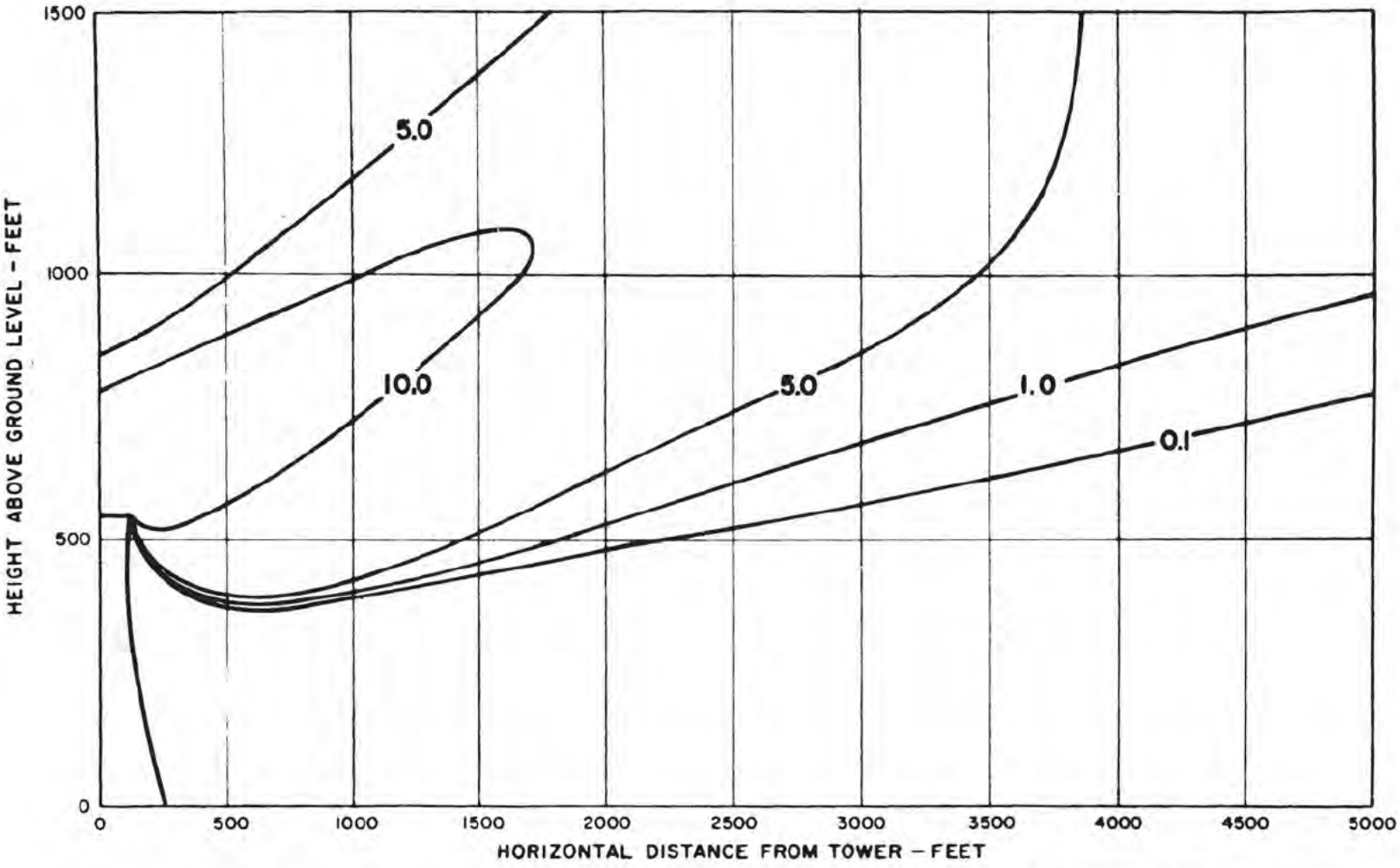
ZONING MAP
CITY OF OSWEGO, NEW YORK

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

FIGURE 2.2-1

TRANSPORTATION ROUTES WITHIN A 10-KM RADIUS OF UNIT 2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

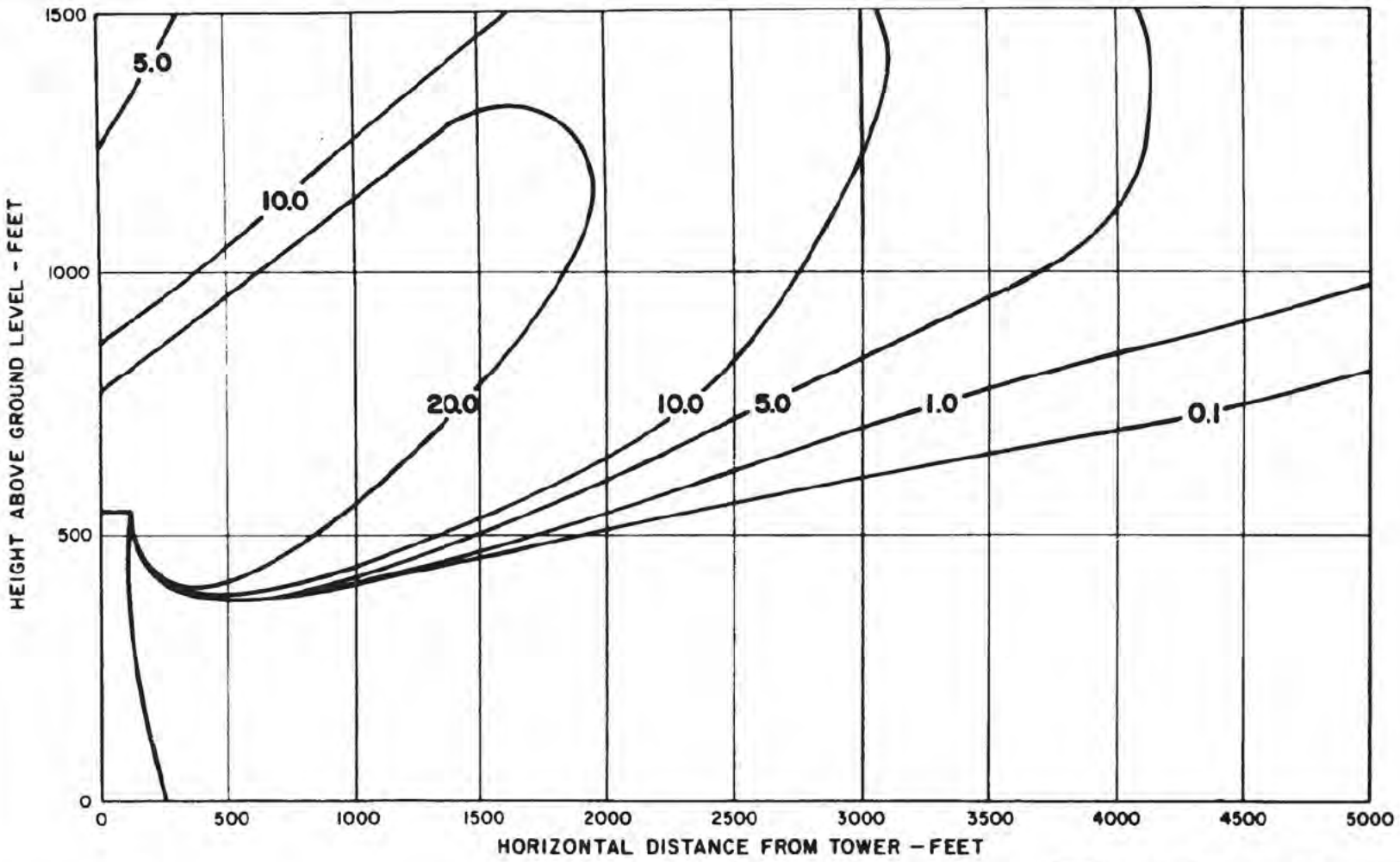


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-1

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR N, NNE, NE, ENE WIND DIRECTIONS - WINTER NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

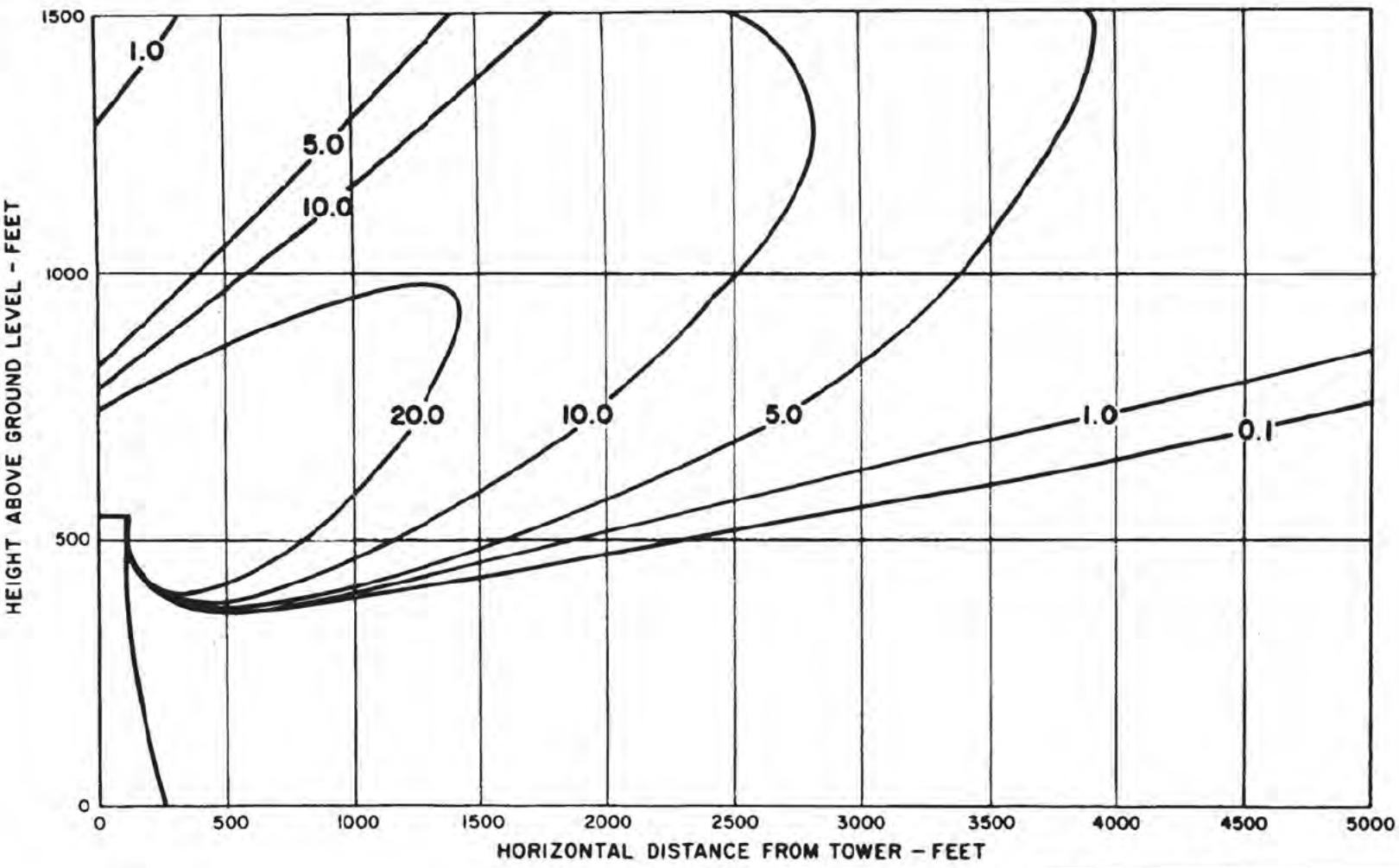


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2. 3-2

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR E, ESE, SE, SSE WIND DIRECTIONS - WINTER NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

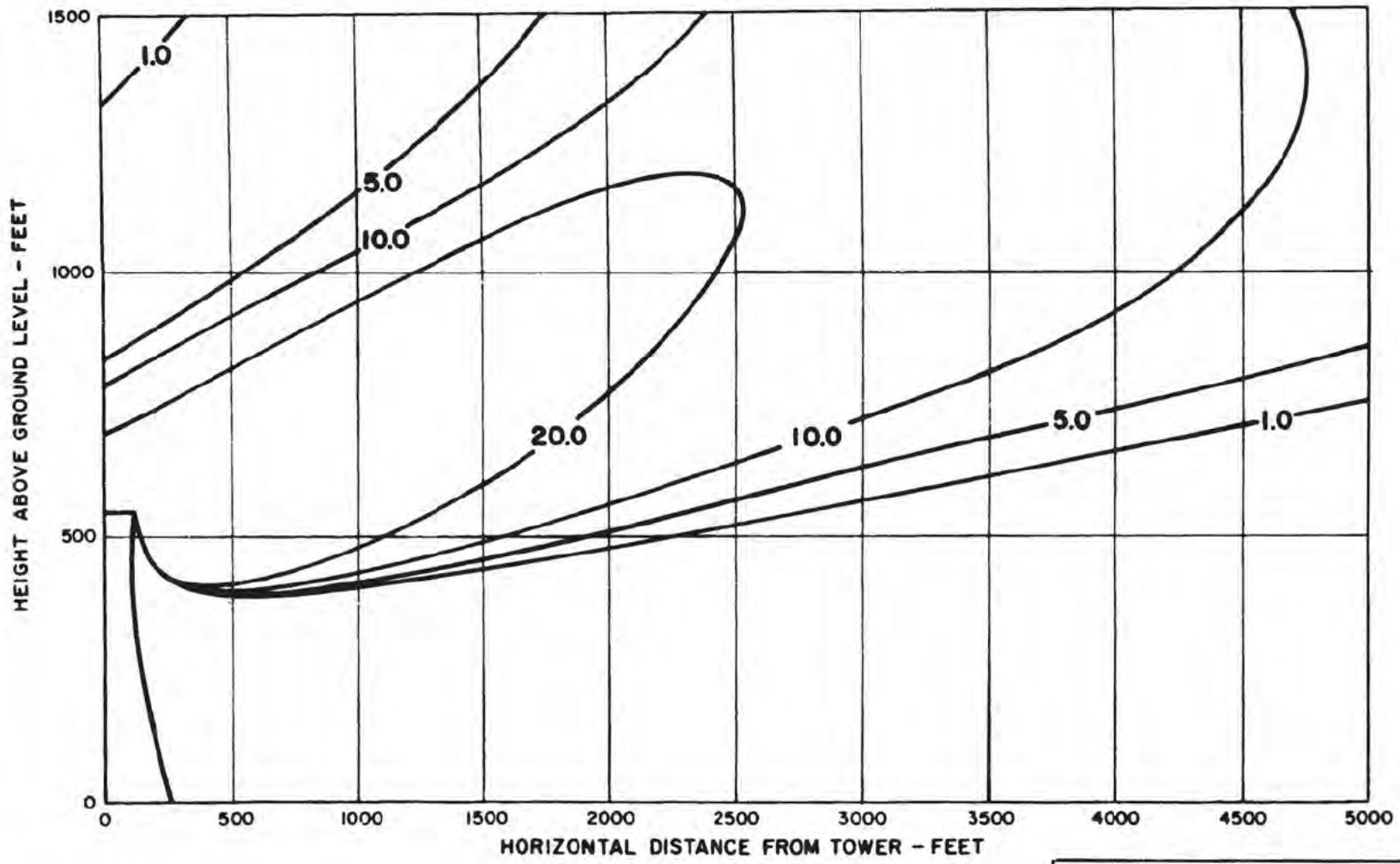


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-3

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR S, SSW, SW, WSW WIND DIRECTIONS - WINTER
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

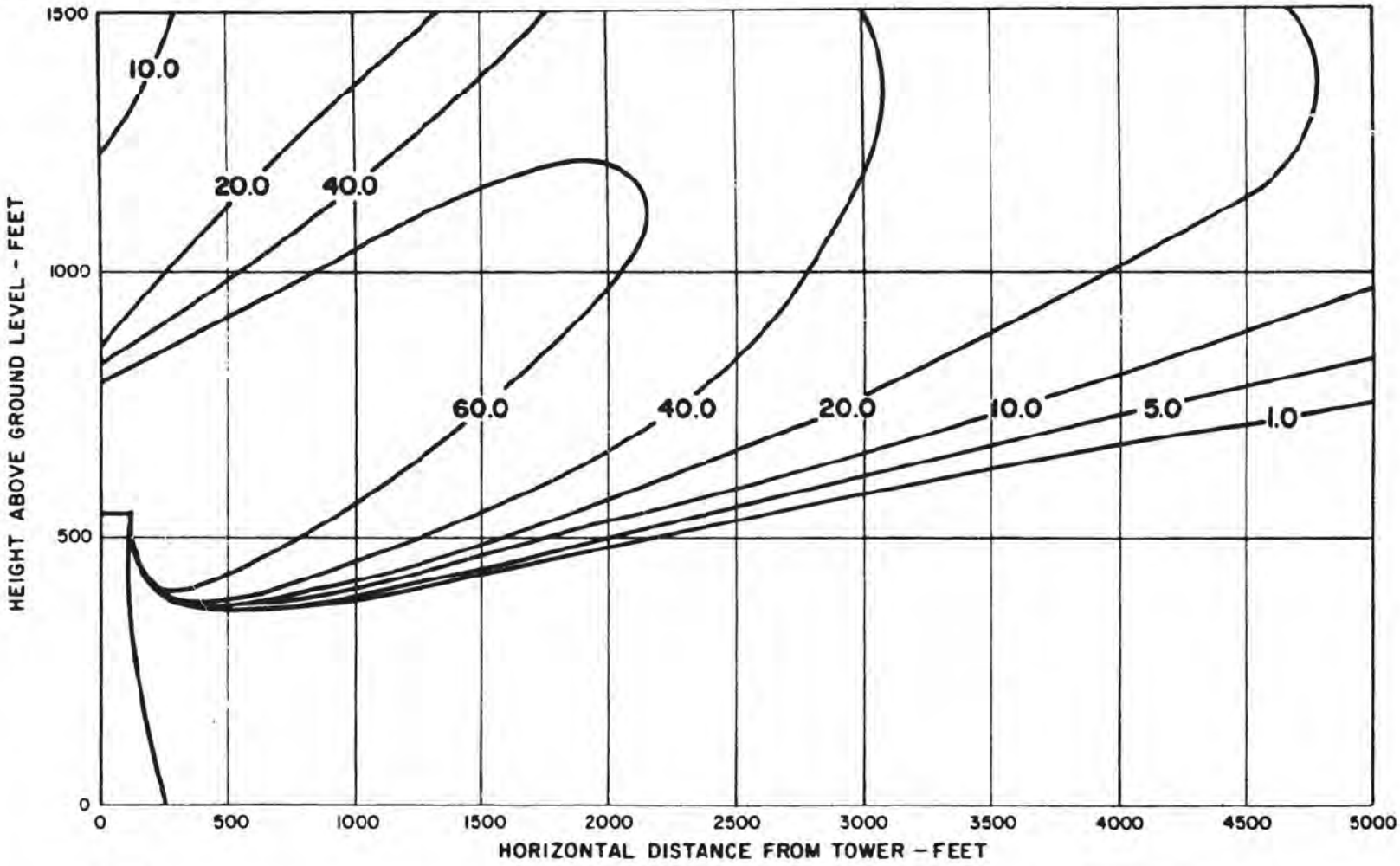


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2. 3-4

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR W, WNW, NW, NNW WIND DIRECTIONS - WINTER NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

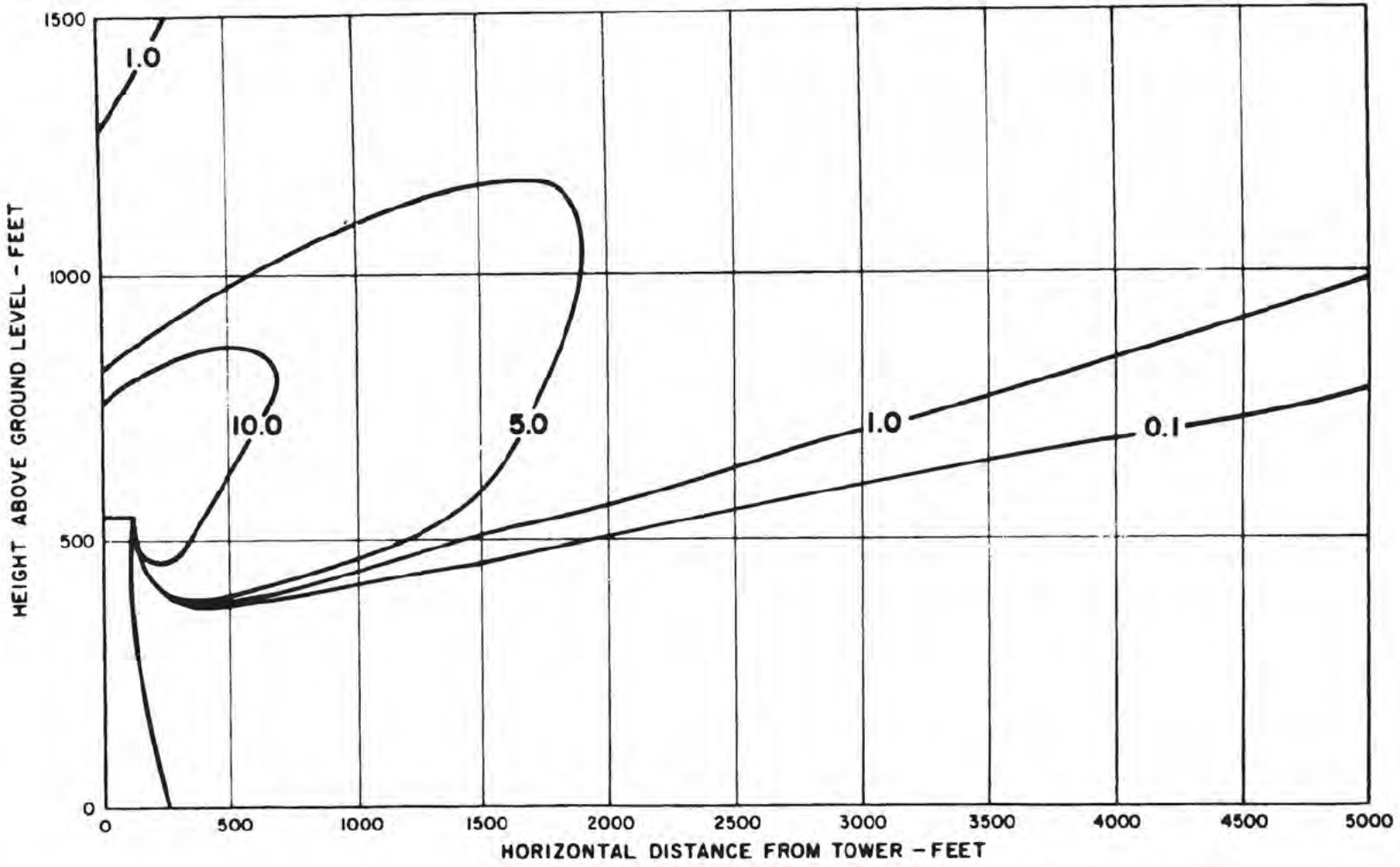


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2. 3-5

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR ALL WIND DIRECTIONS - WINTER NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

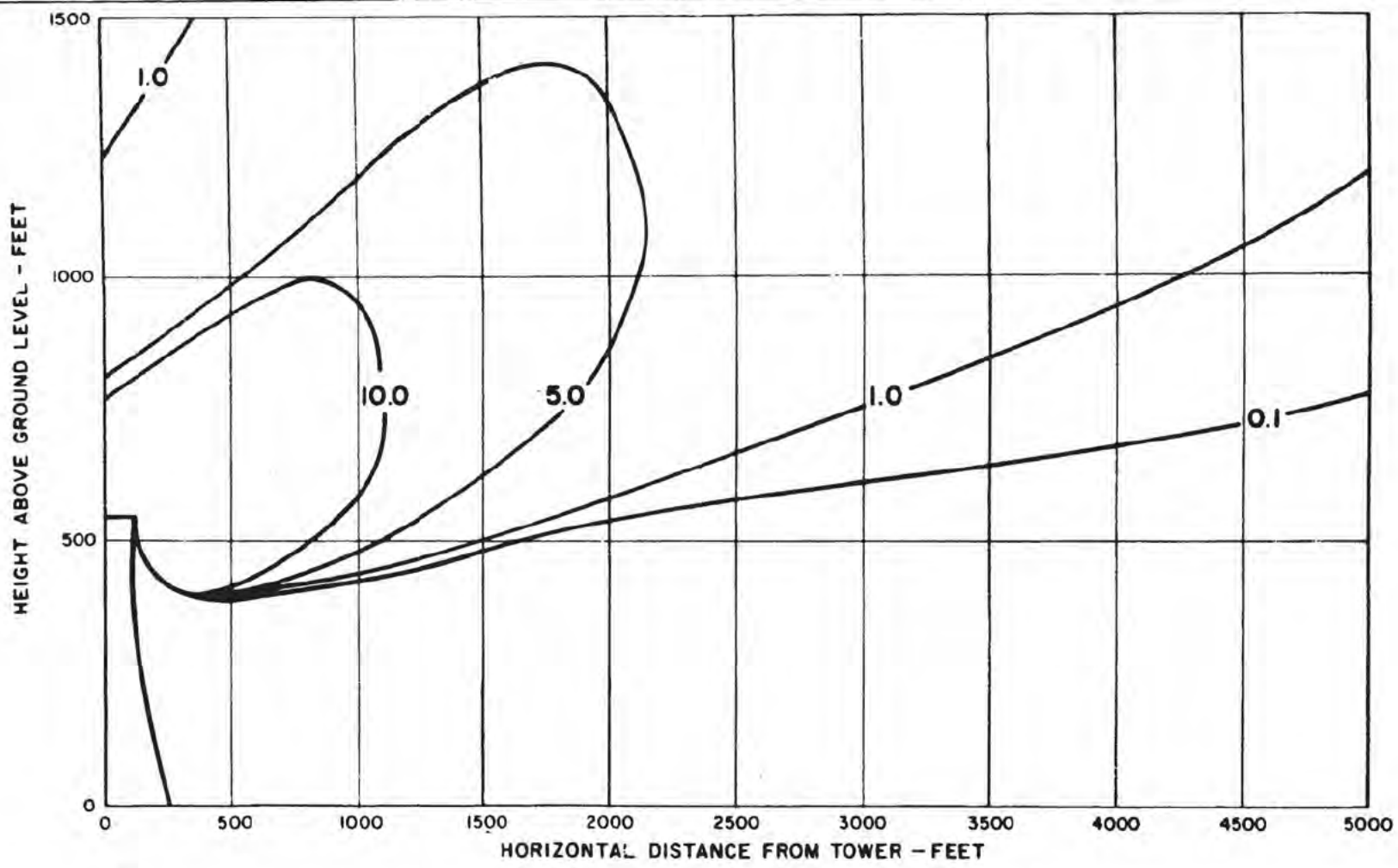


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-6

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR N, NNE, NE, ENE WIND DIRECTIONS-SPRING NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

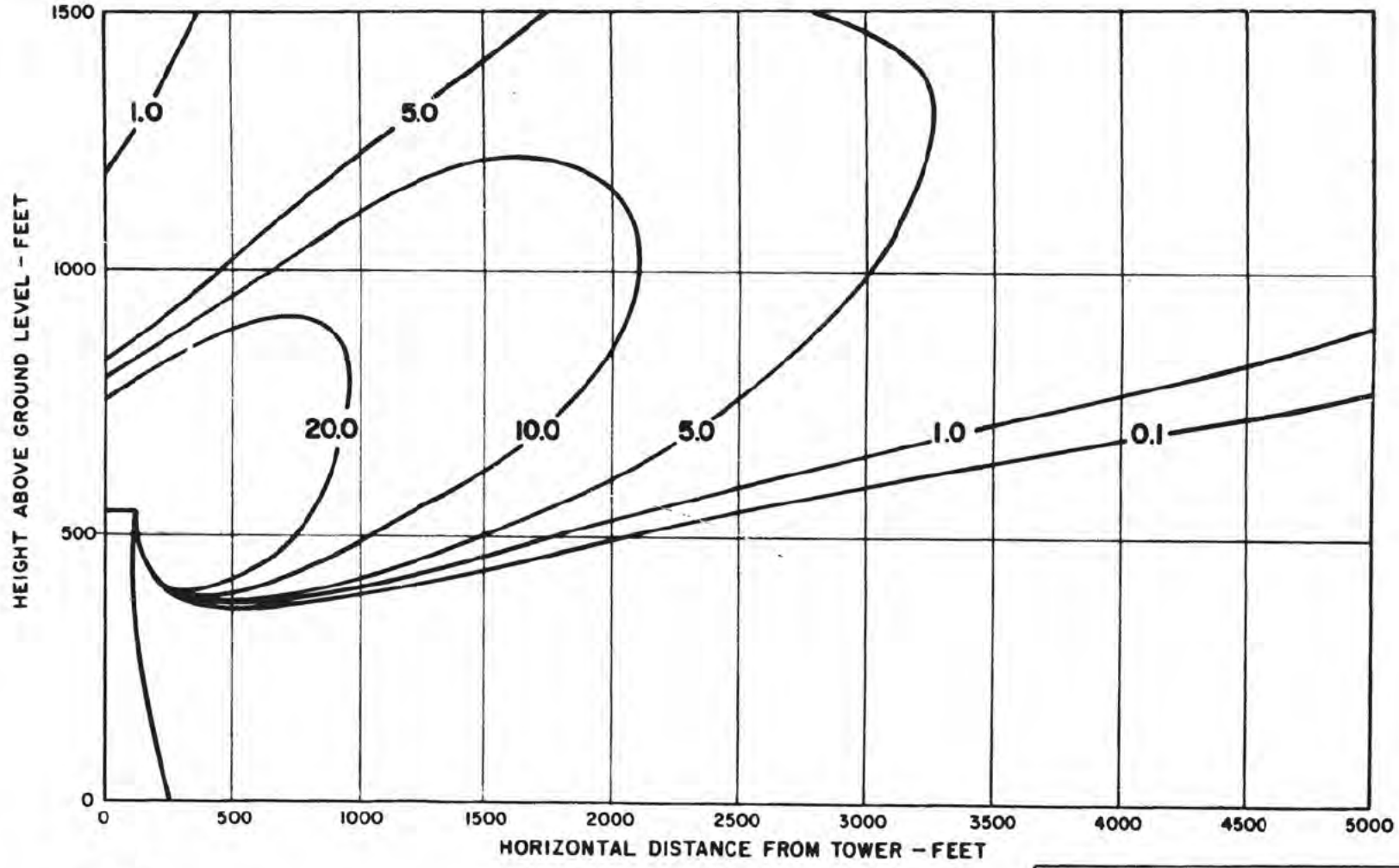


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-7

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR E, ESE, SE, SSE WIND DIRECTIONS - SPRING NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

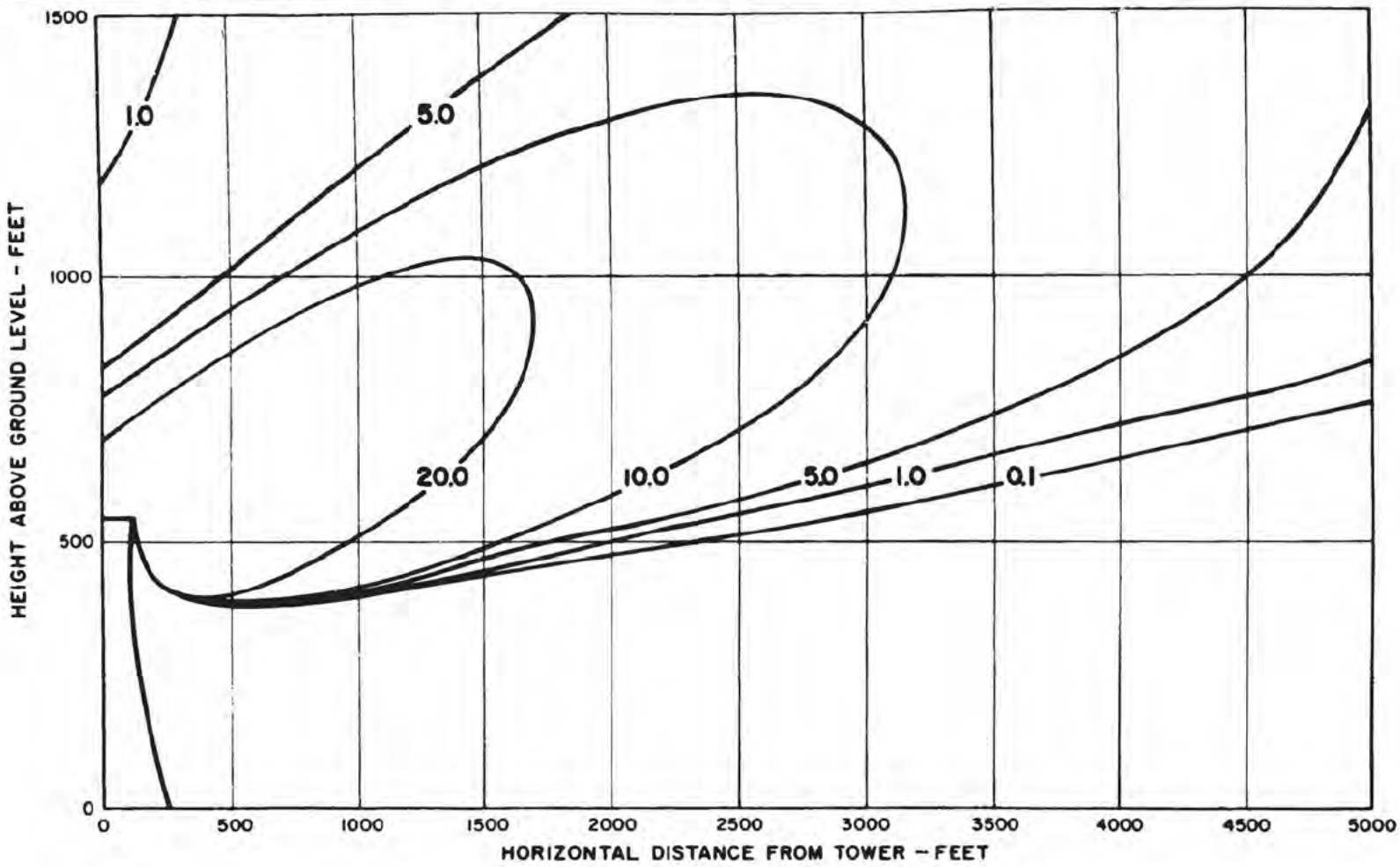


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-8

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR S, SSW, SW, WSW WIND DIRECTIONS - SPRING NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

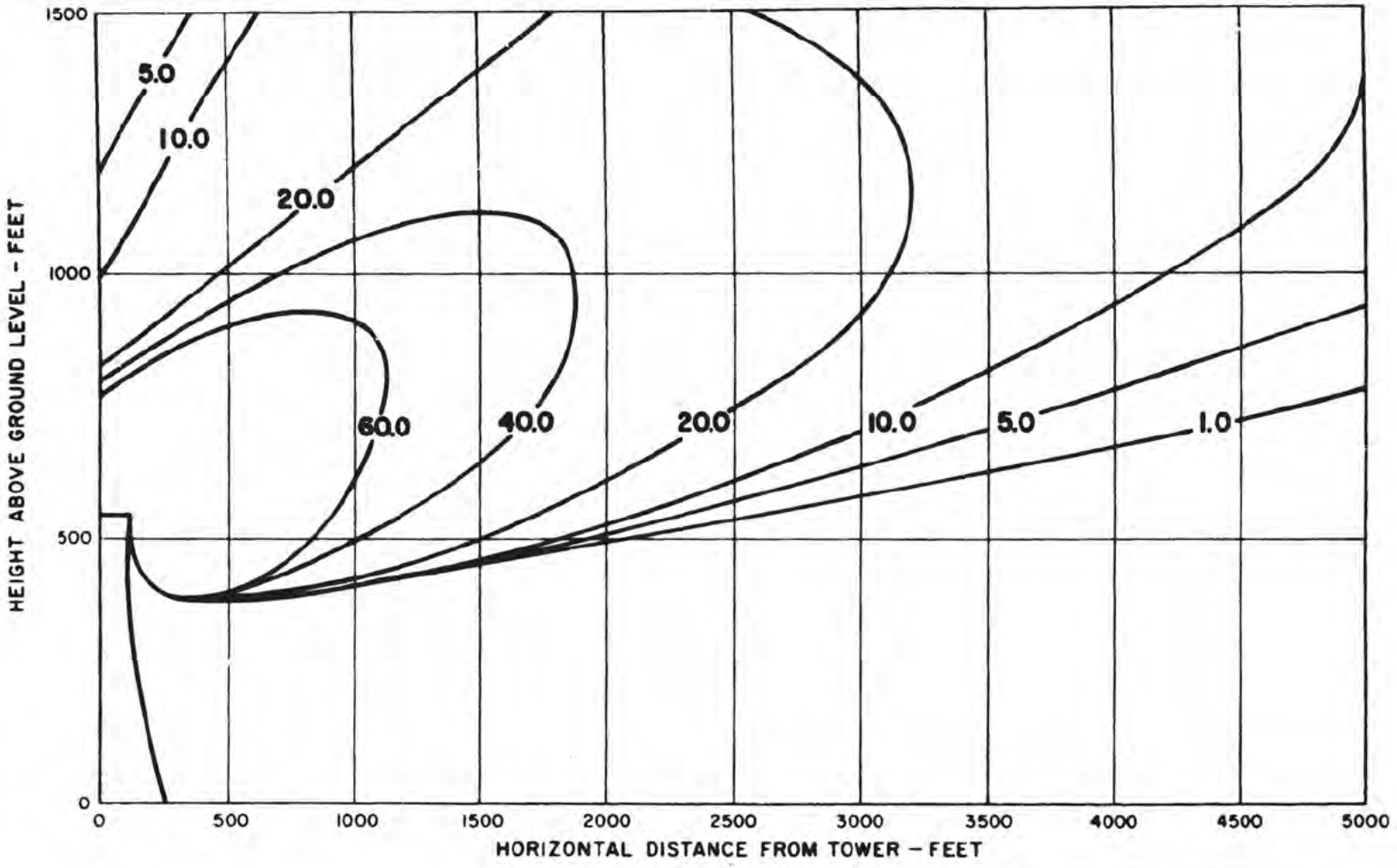


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2. 3 - 9

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR W, WNW, NW, NNW WIND DIRECTIONS - SPRING NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

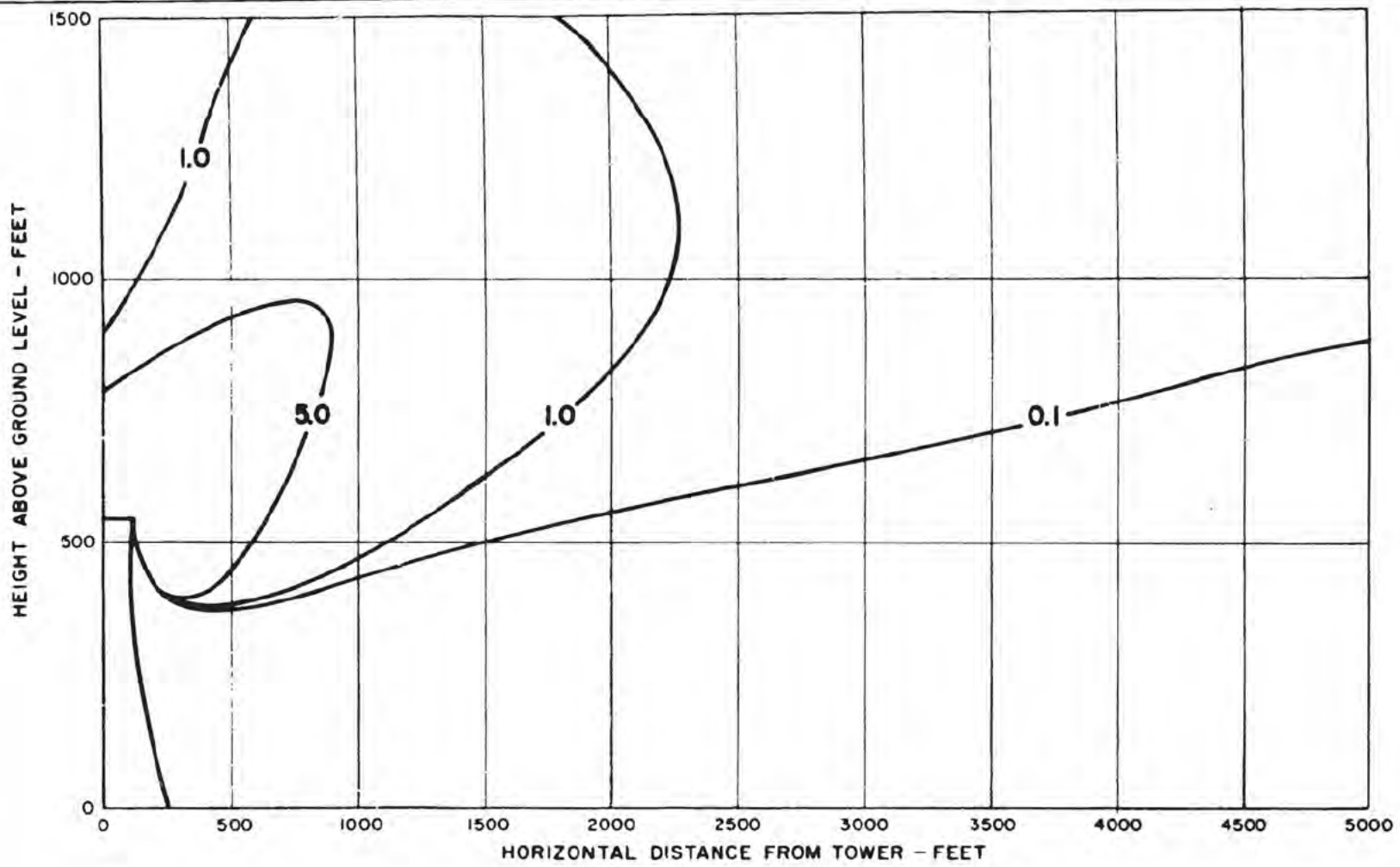


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-10

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR ALL WIND DIRECTIONS - SPRING
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

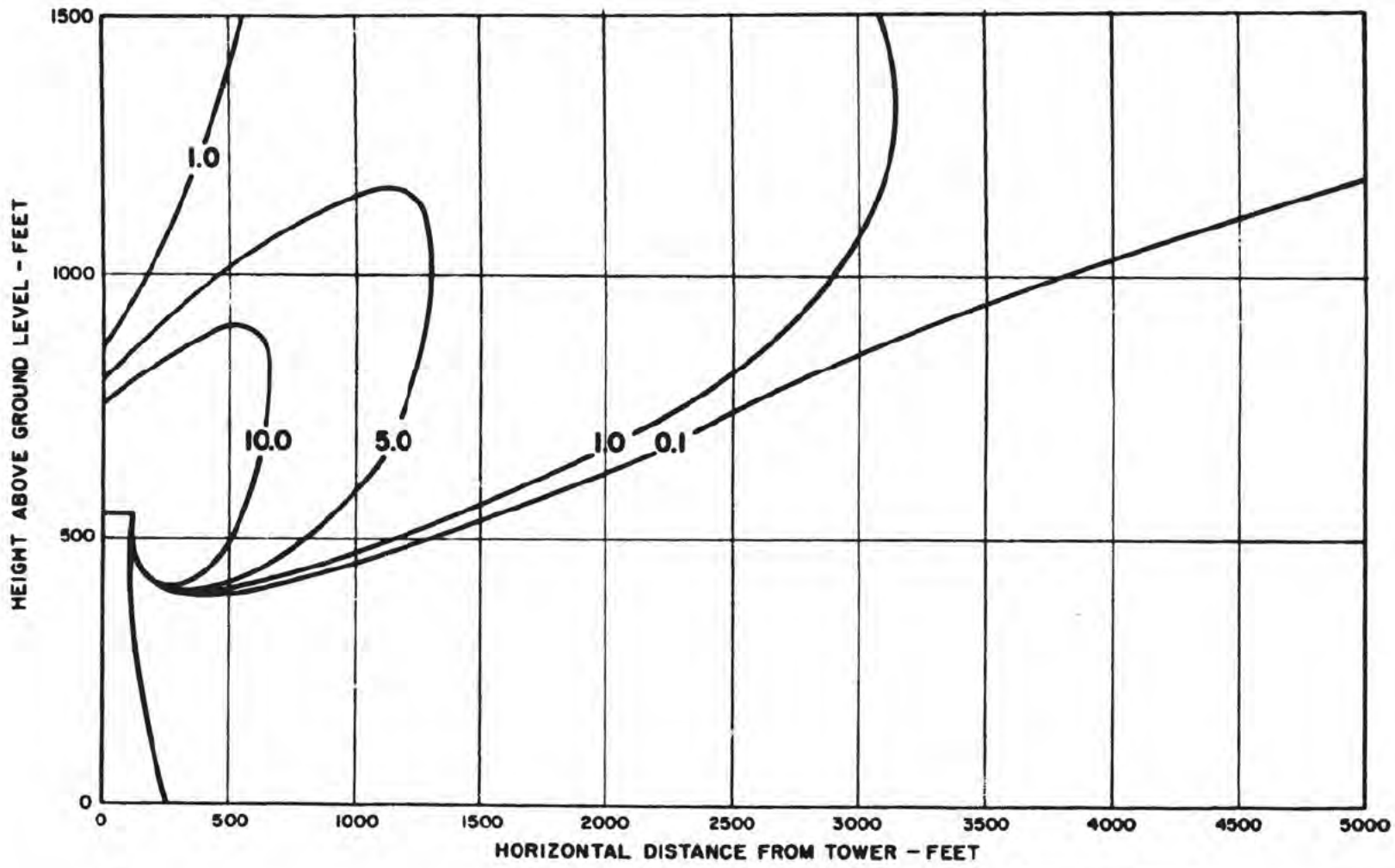


NOTE:
FIGURES DENOTE THE PERCENT OF TIME
THAT VISIBLE PLUME EXTENDS TO CONTOUR

FIGURE 2.3-11

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR N, NNE, NE, ENE WIND DIRECTIONS-SUMMER NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

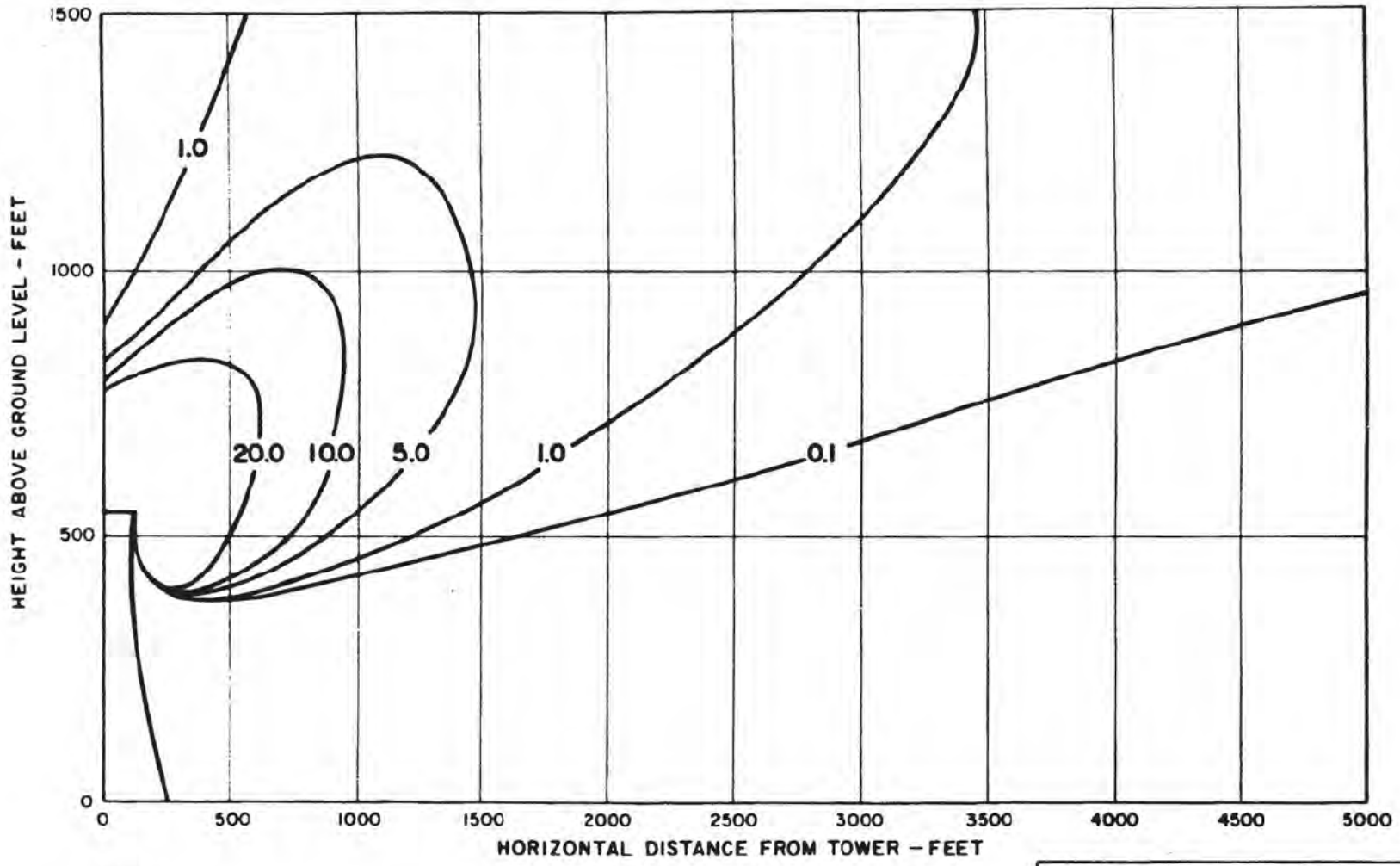


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2. 3-12

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR E, ESE, SE, SSE WIND DIRECTIONS - SUMMER NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

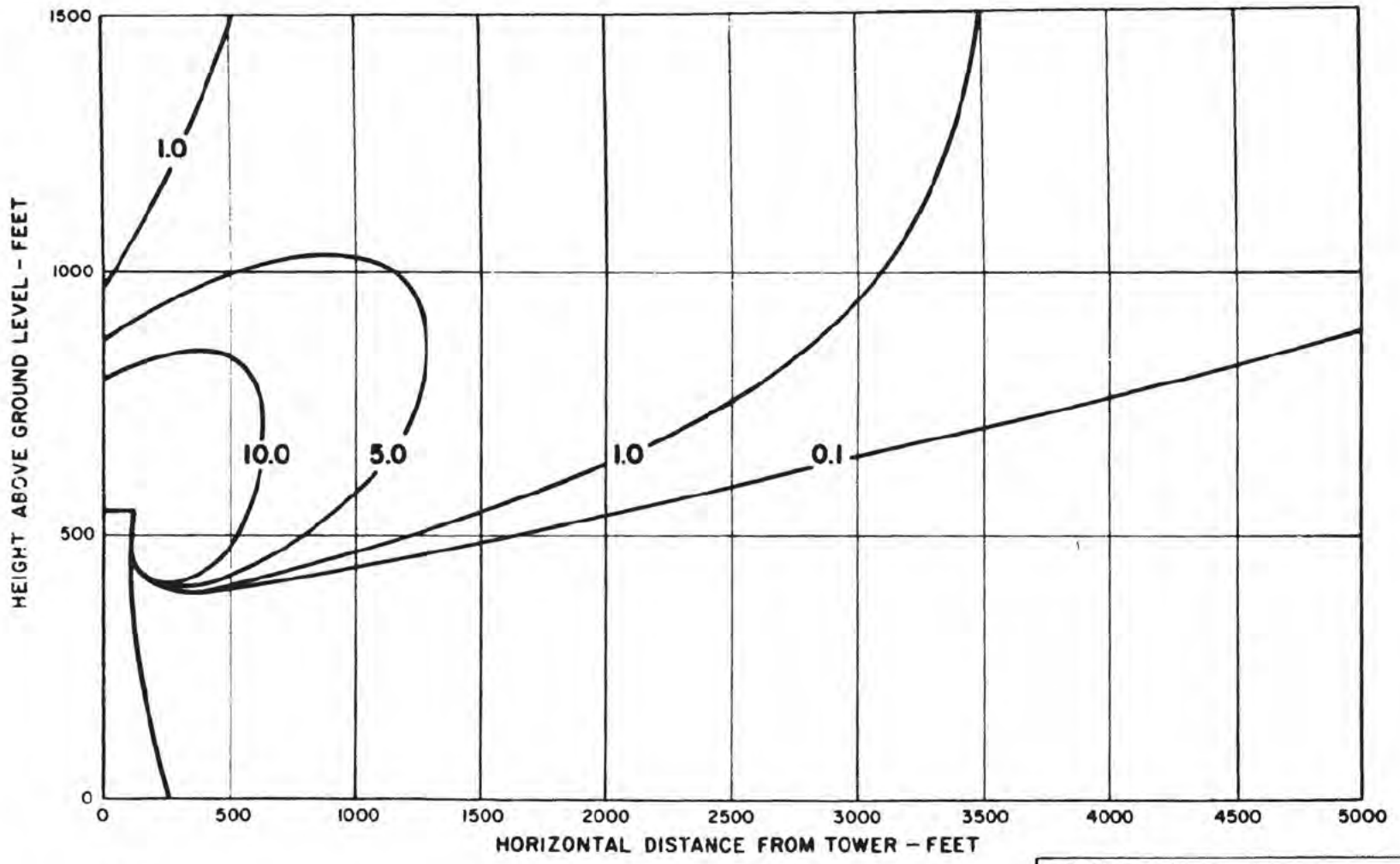


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-13

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR S, SSW, SW, WSW WIND DIRECTIONS-SUMMER NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

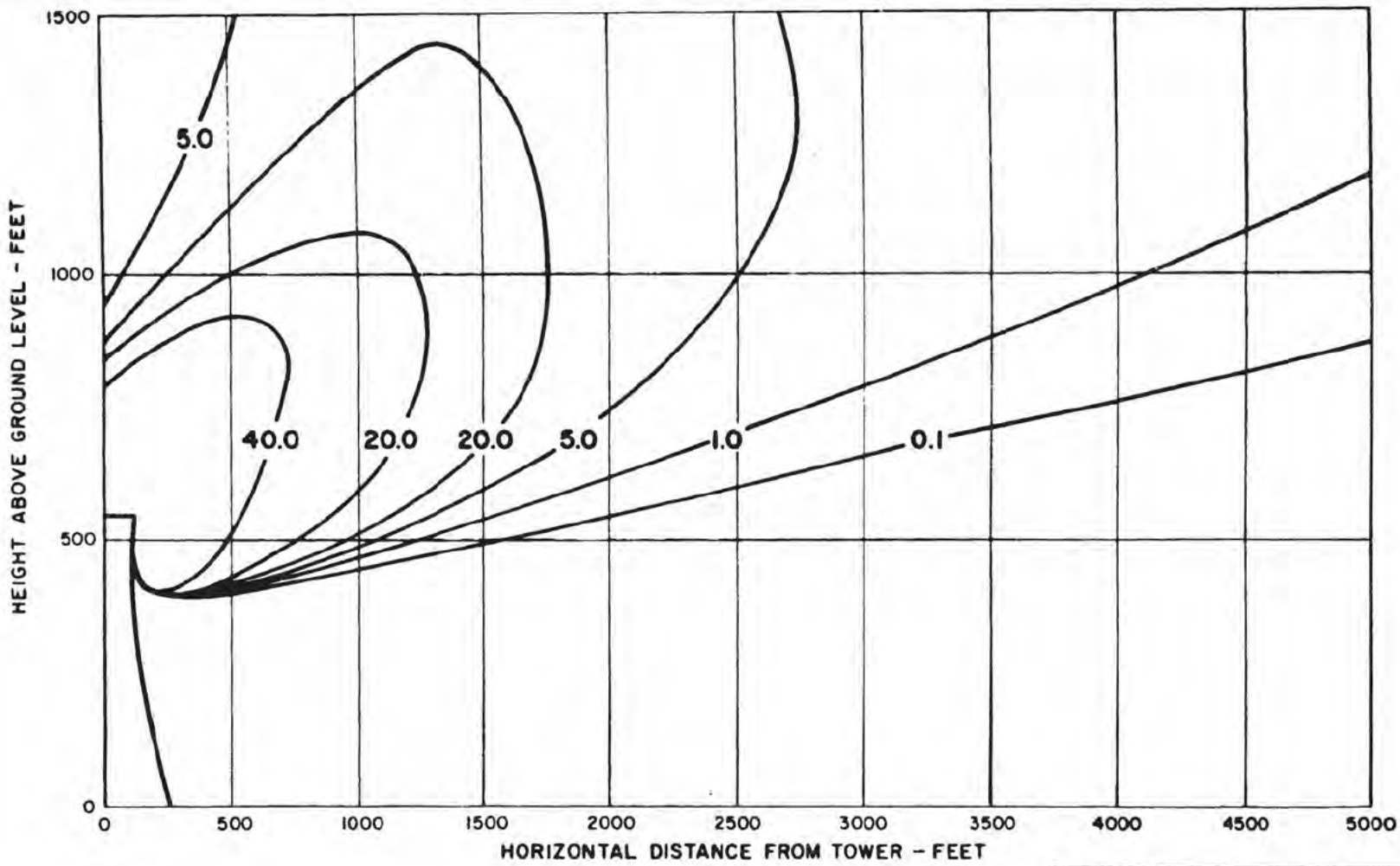


NOTE:
FIGURES DENOTE THE PERCENT OF TIME
THAT VISIBLE PLUME EXTENDS TO CONTOUR

FIGURE 2.3-14

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR W, WNW, NW, NNW WIND DIRECTIONS - SUMMER NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

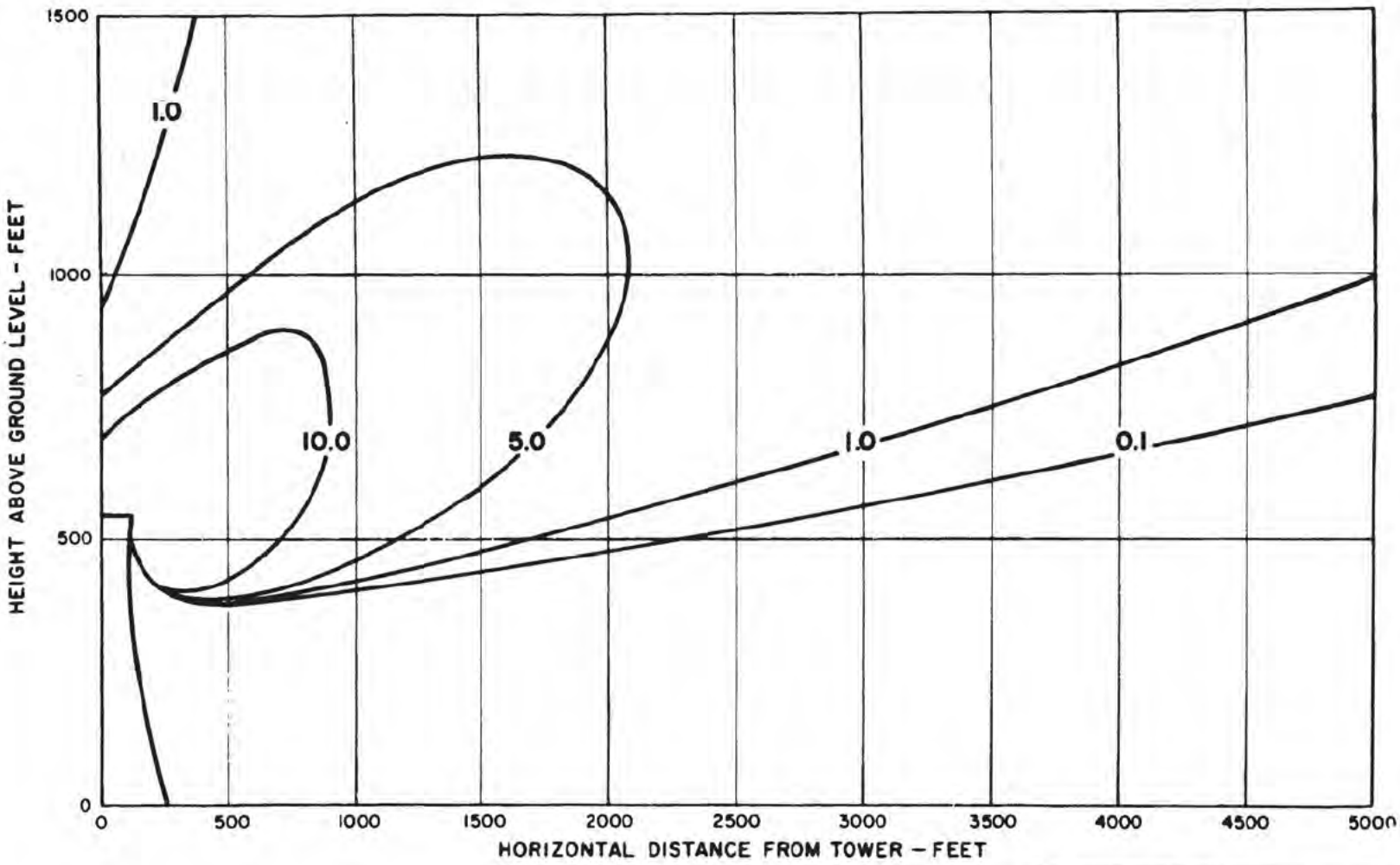


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR

FIGURE 2.3-15

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR ALL WIND DIRECTIONS - SUMMER
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

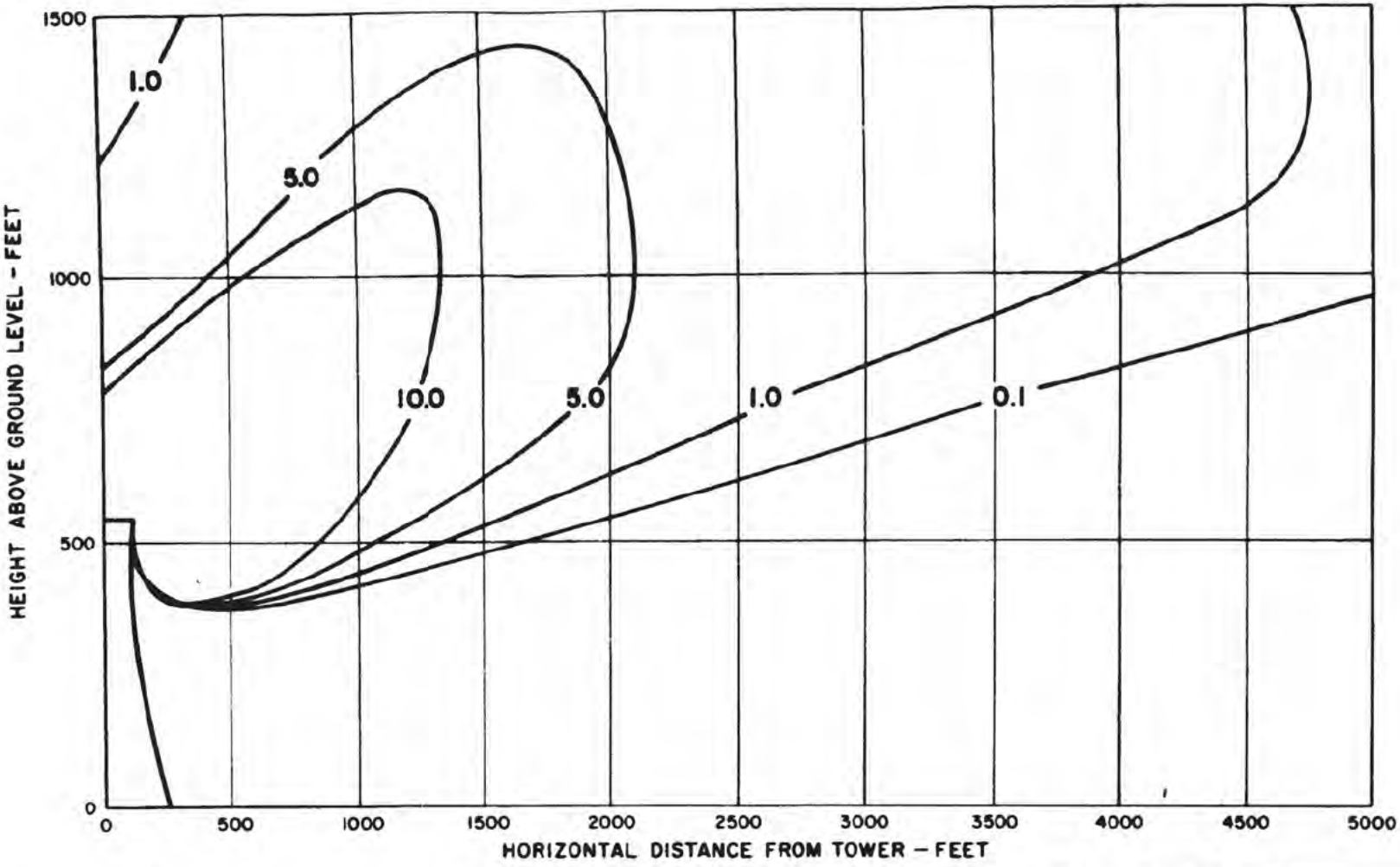


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-16

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR N, NNE, NE, ENE WIND DIRECTIONS - FALL
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

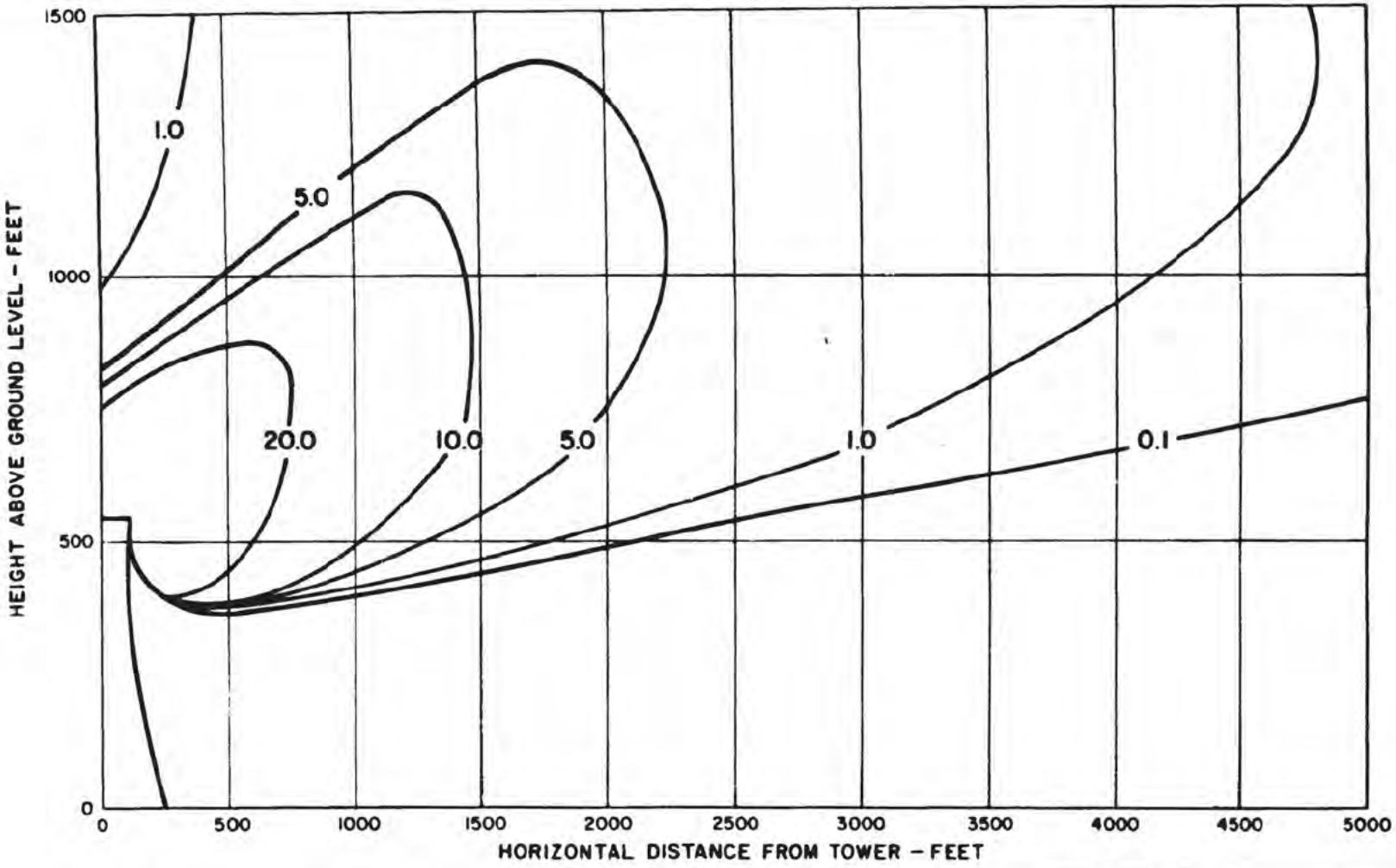


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-17

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR E, ESE, SE, SSE WIND DIRECTION-FALL NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

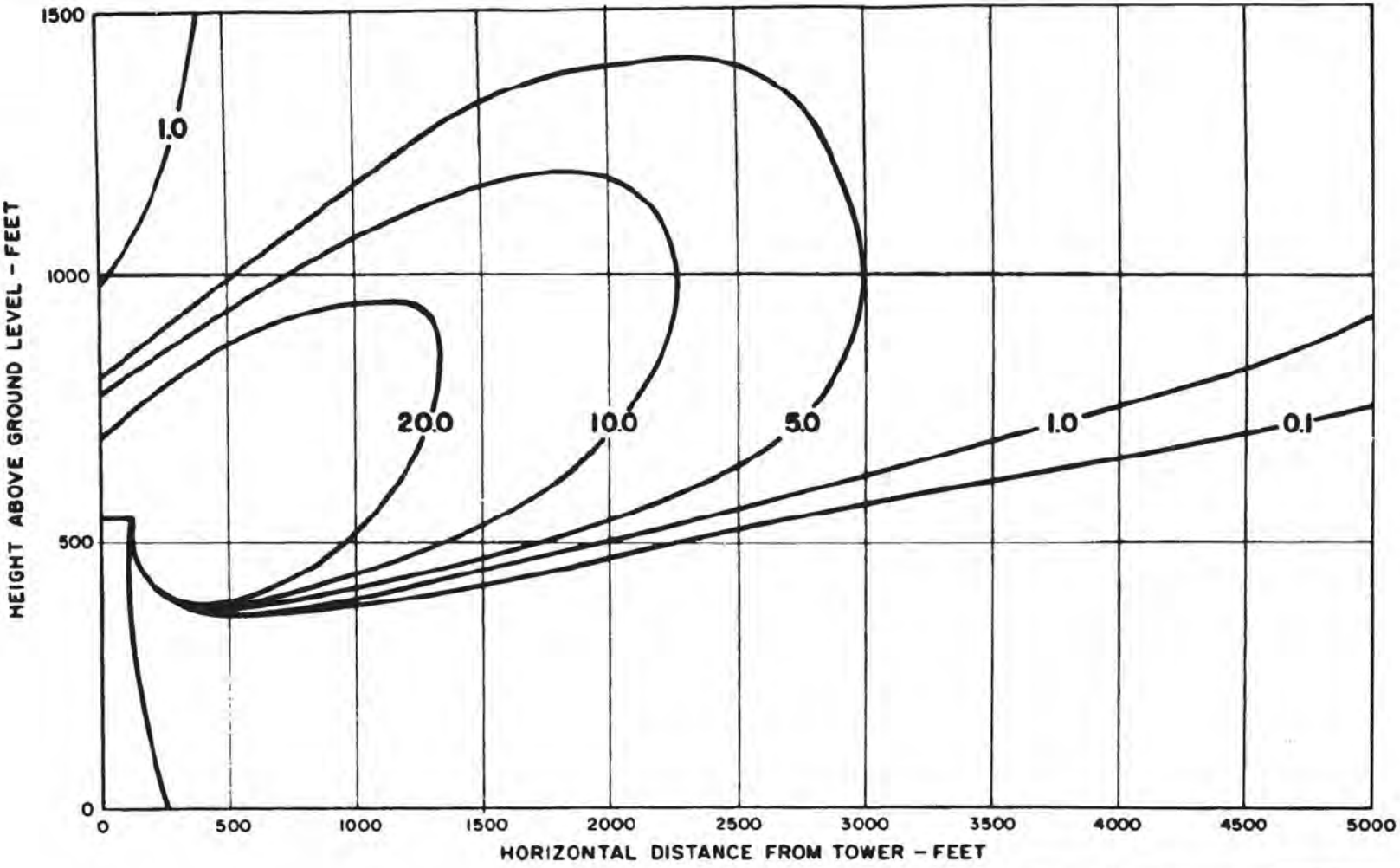


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-18

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR S, SSW, SW, WSW WIND DIRECTION - FALL
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

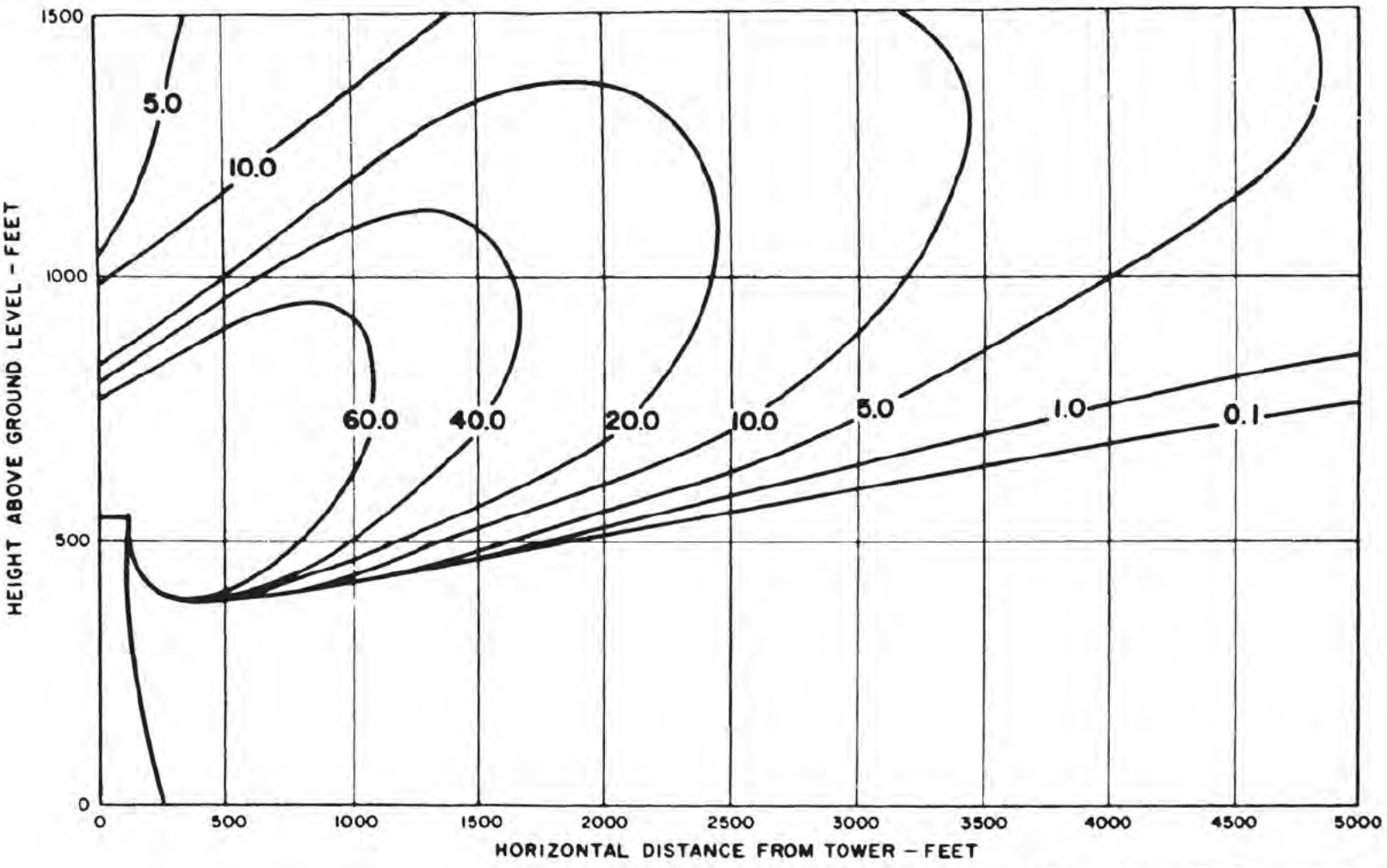


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-19

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR W, WNW, NW, NNW WIND DIRECTIONS - FALL NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

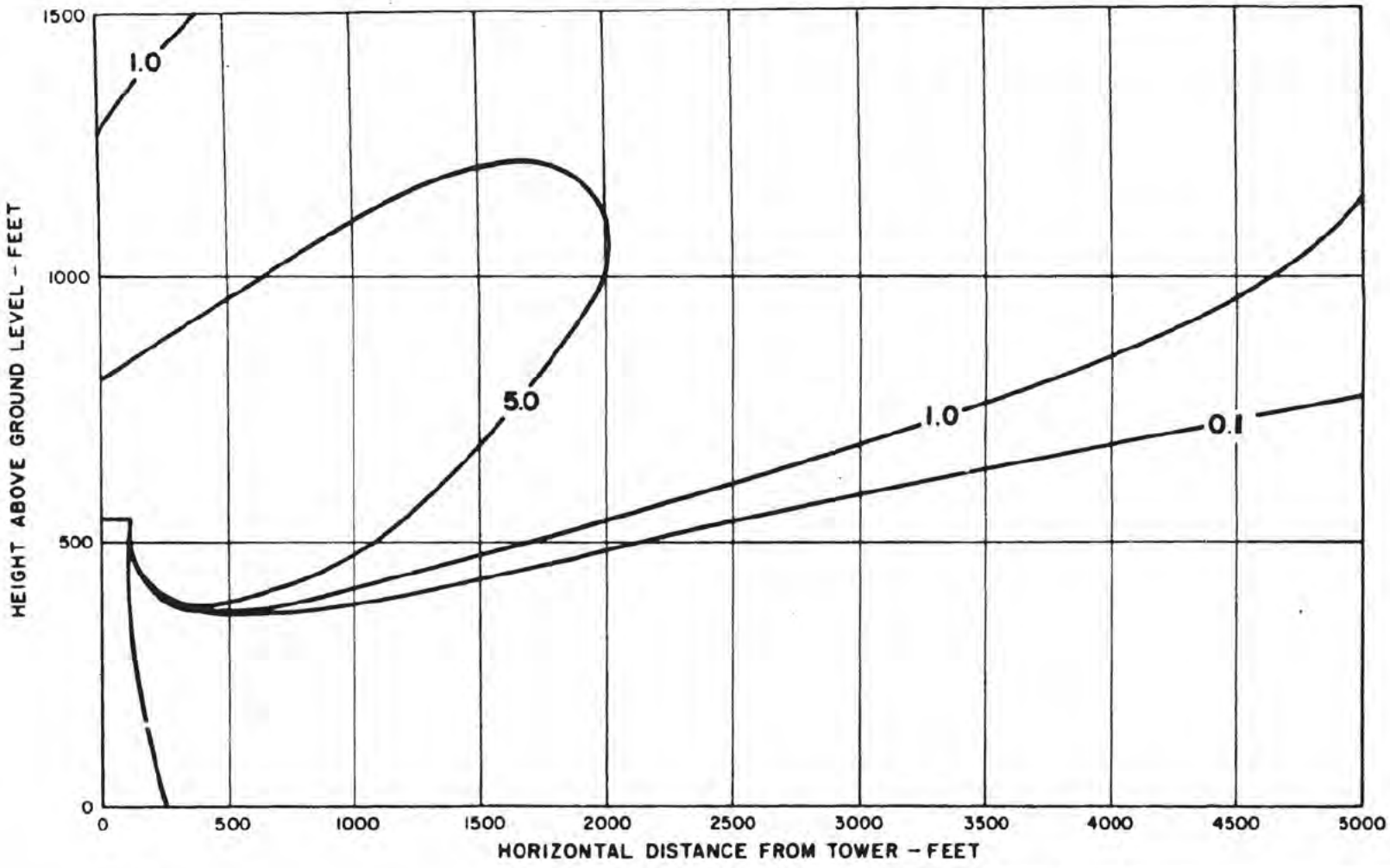


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-20

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR ALL WIND DIRECTIONS - FALL
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

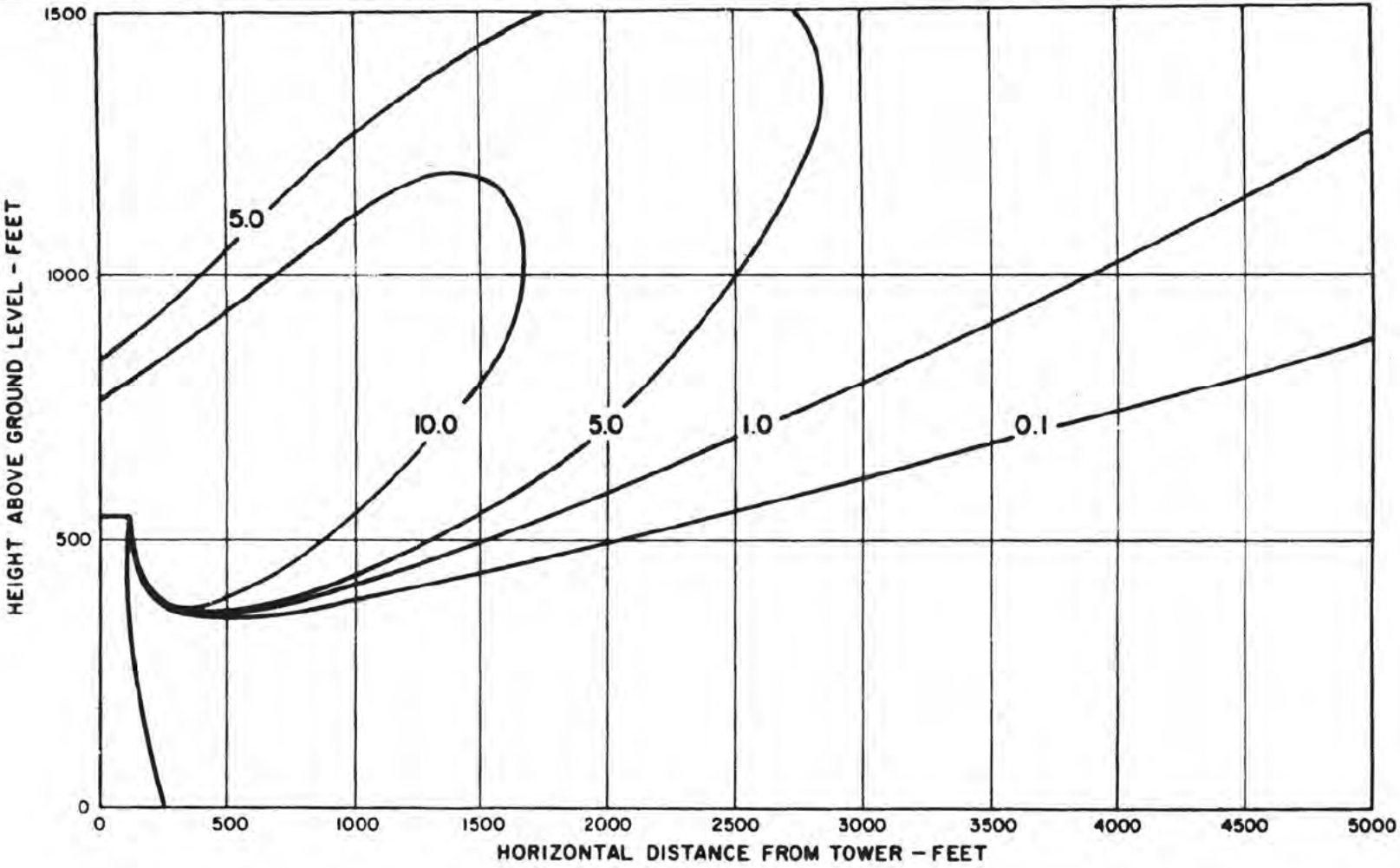


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-21

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR N, NNE, NE, ENE WIND DIRECTIONS - 3 YEARS NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

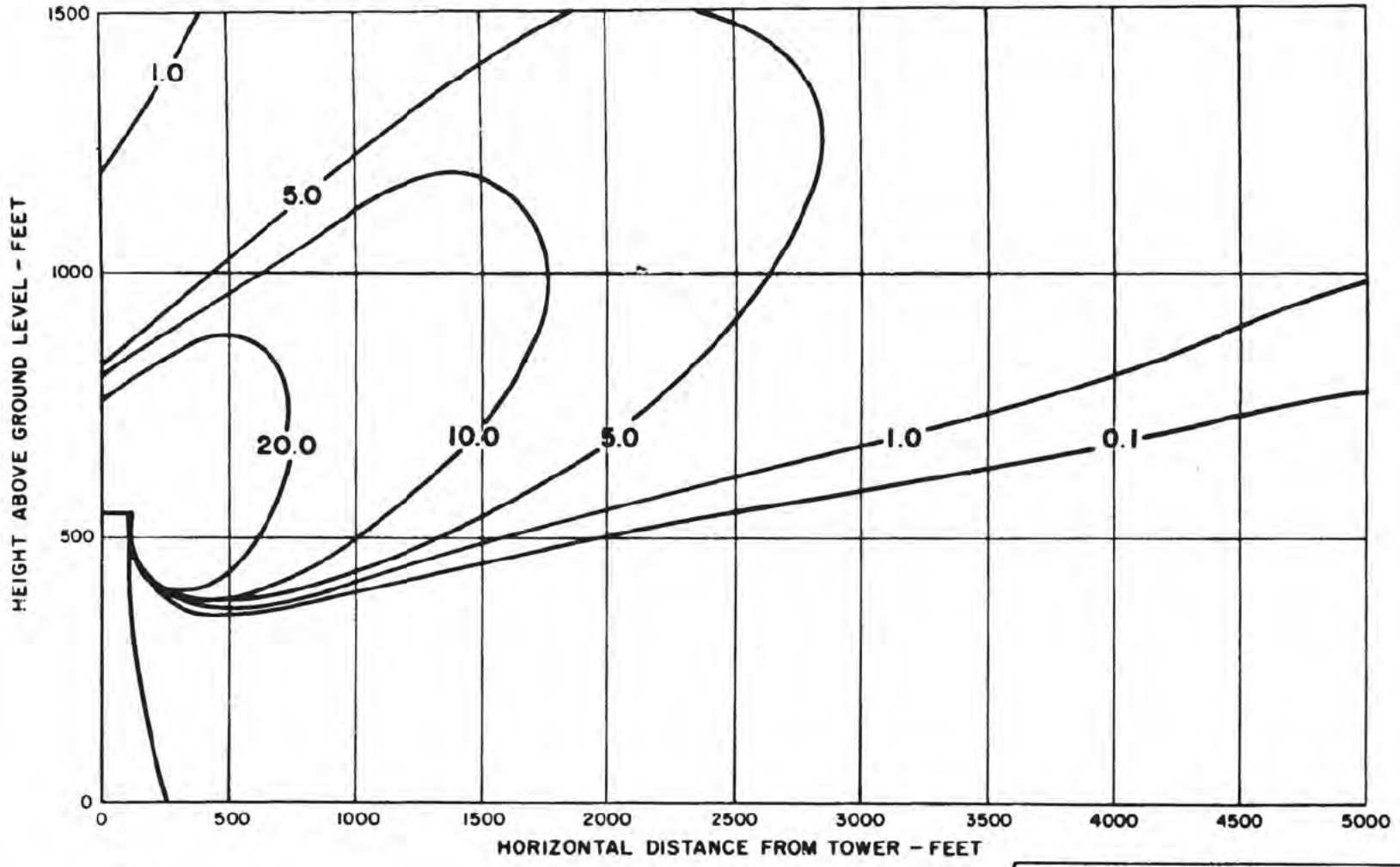


NOTE:
FIGURES DENOTE THE PERCENT OF TIME
THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2. 3-22

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR E, ESE, SE, SSE WIND DIRECTION 3 YEARS
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

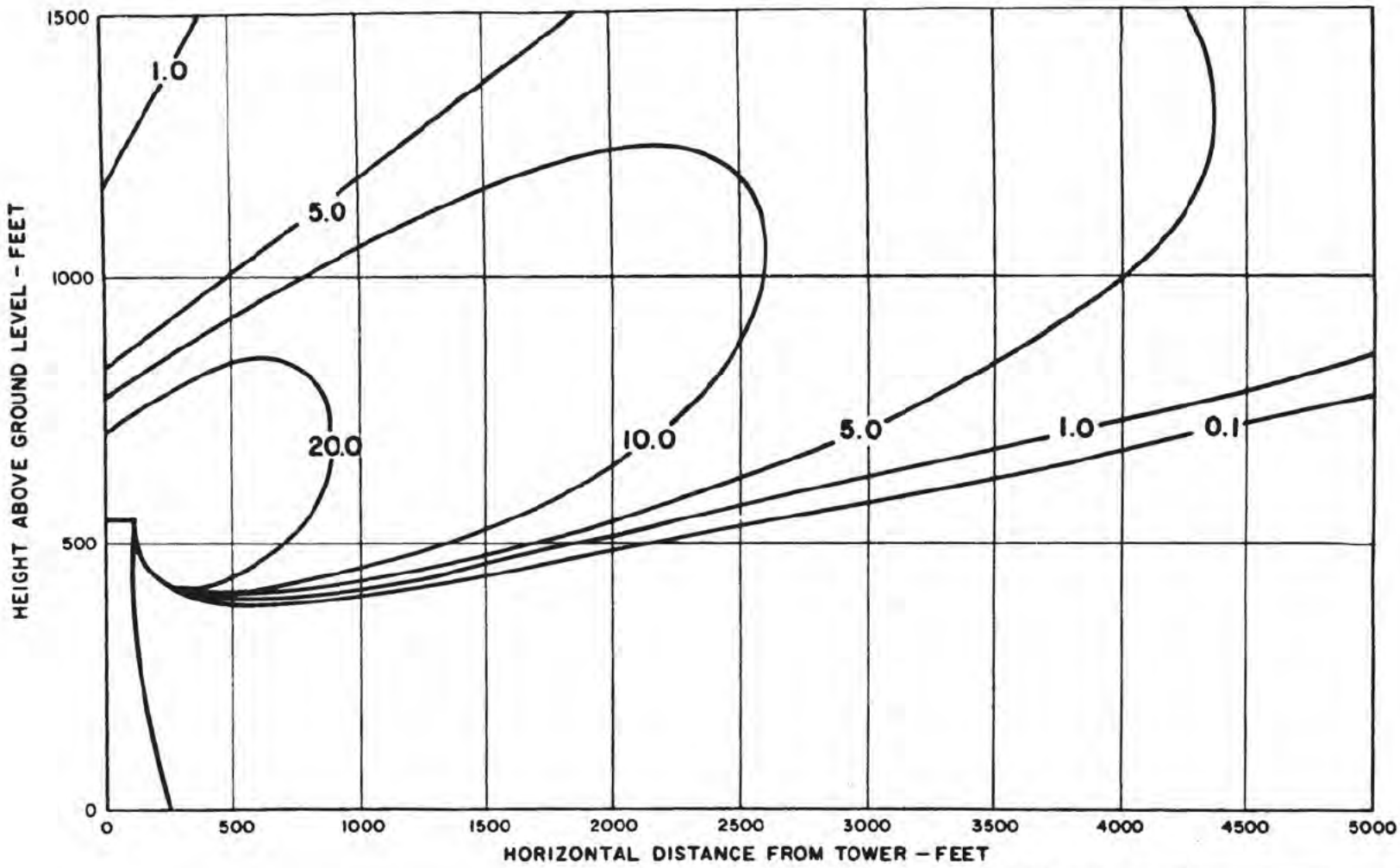


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2. 3-23

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR S, SSW, SW, WSW WIND DIRECTIONS - 3 YEARS NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

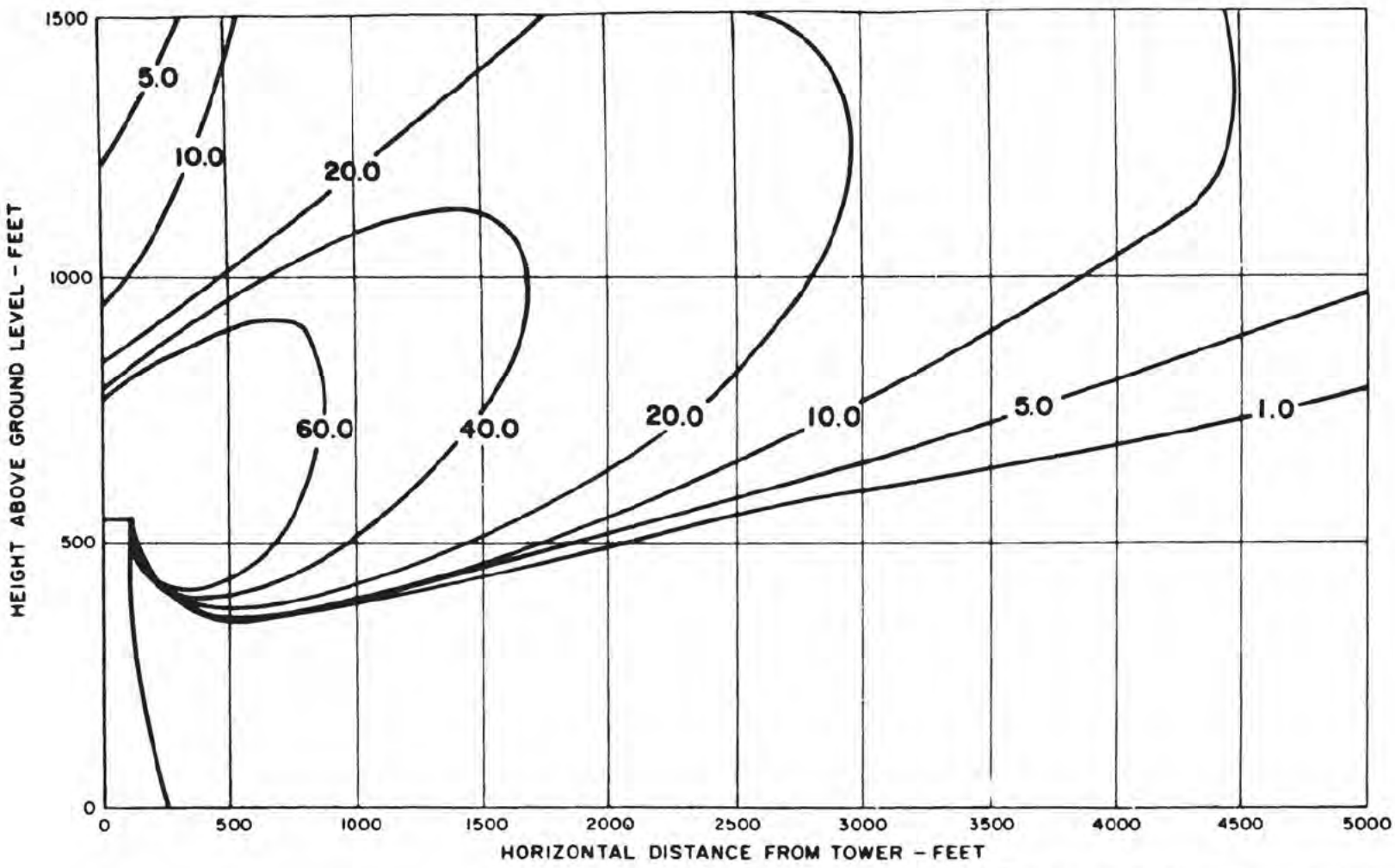


NOTE:
FIGURES DENOTE THE PERCENT OF TIME THAT VISIBLE PLUME EXTENDS TO CONTOUR.

FIGURE 2.3-24

PREDICTED FREQUENCY OF PLUME OCCURRENCE FOR W, WNW, NW, NNW WIND DIRECTIONS-3 YEARS
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE:
FIGURES DENOTE THE PERCENT OF TIME
THAT VISIBLE PLUME EXTENDS TO CONTOUR

FIGURE 2.3-25

PREDICTED FREQUENCY OF PLUME
OCCURRENCE FOR ALL WIND DIRECTIONS
3 YEARS
NATURAL DRAFT COOLING TOWER

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

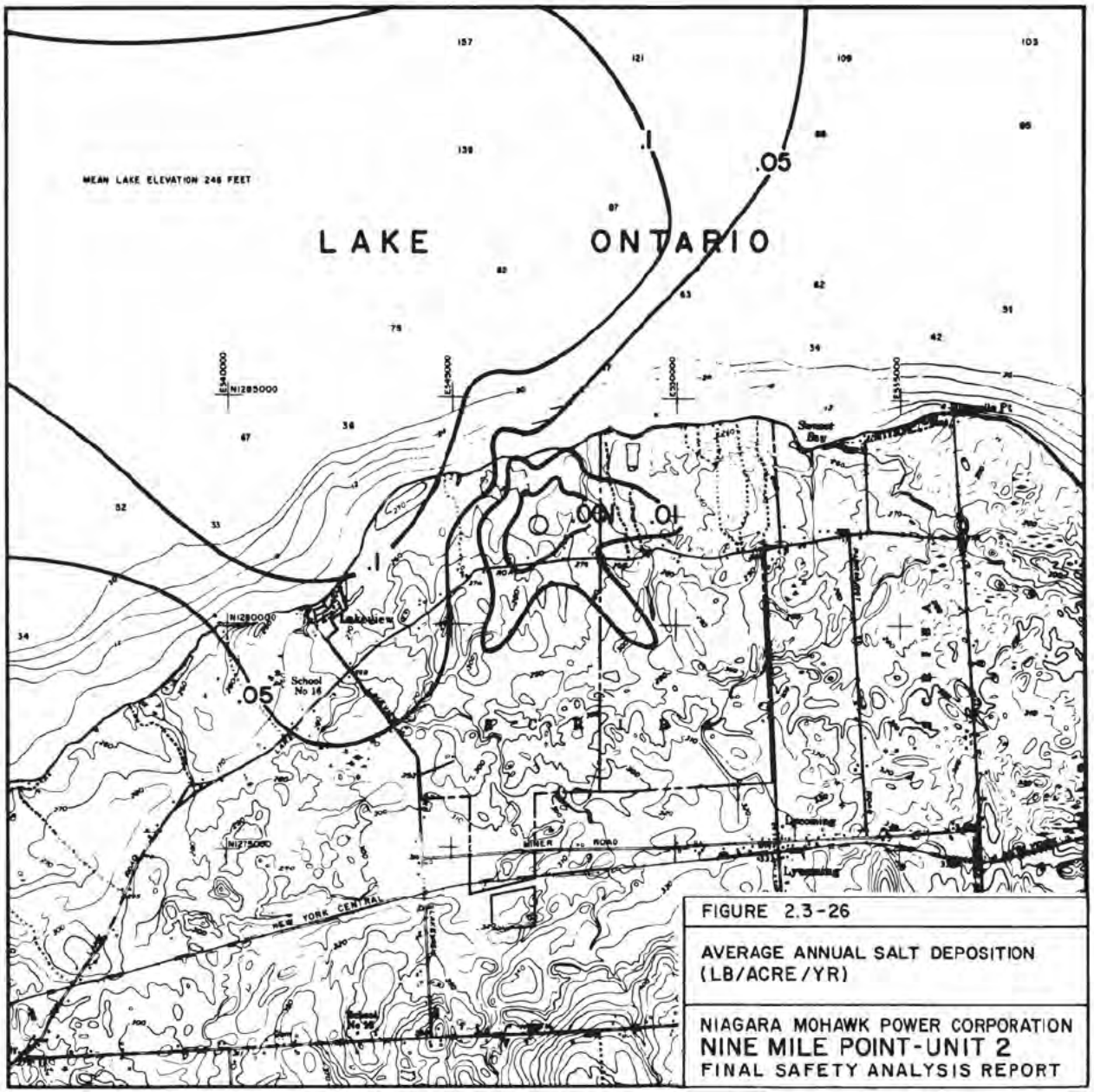


FIGURE 2.3-26

AVERAGE ANNUAL SALT DEPOSITION (LB/ACRE/YR)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

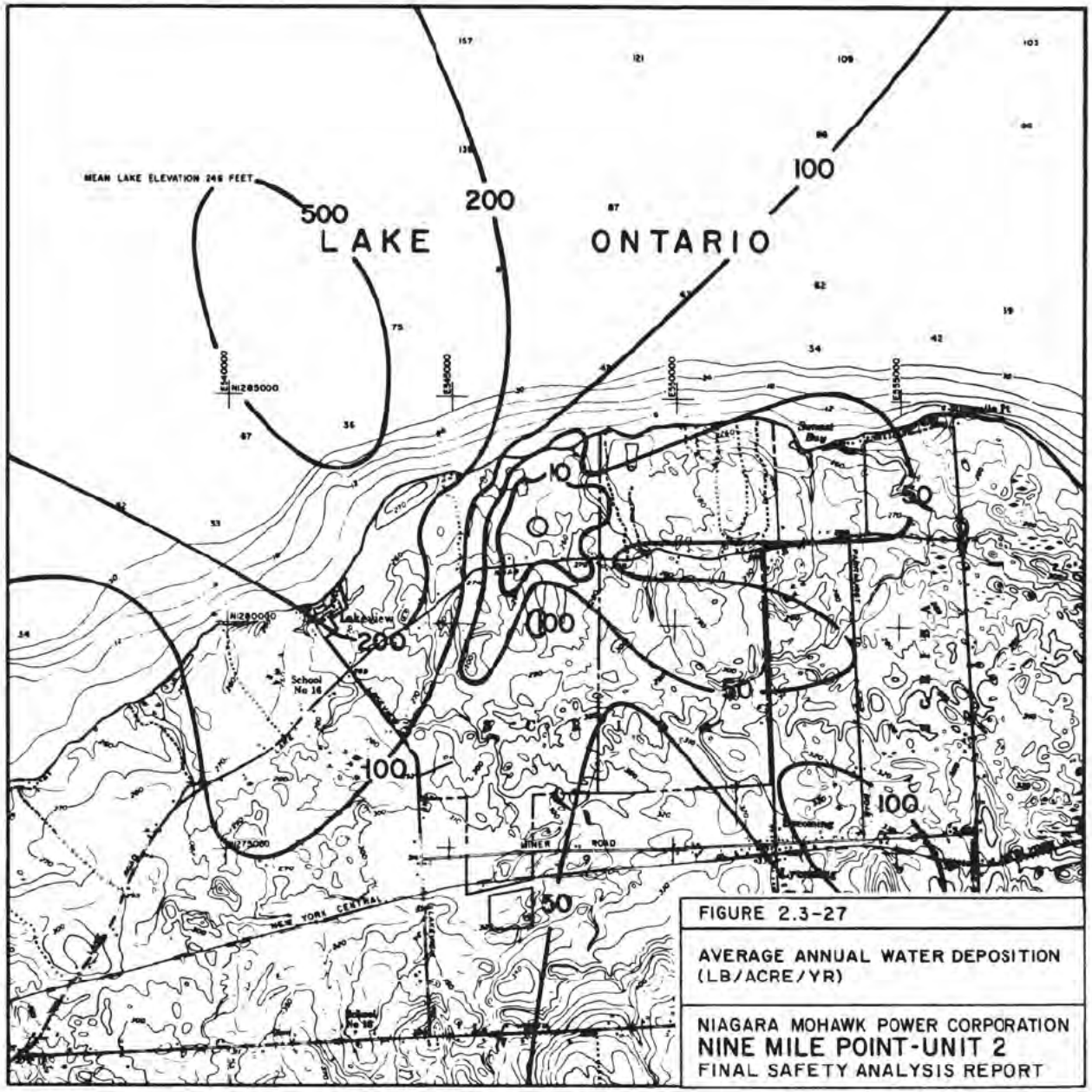


FIGURE 2.3-27

AVERAGE ANNUAL WATER DEPOSITION (LB/ACRE/YR)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-28

AVERAGE MONTHLY
SALT DEPOSITION-JANUARY
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

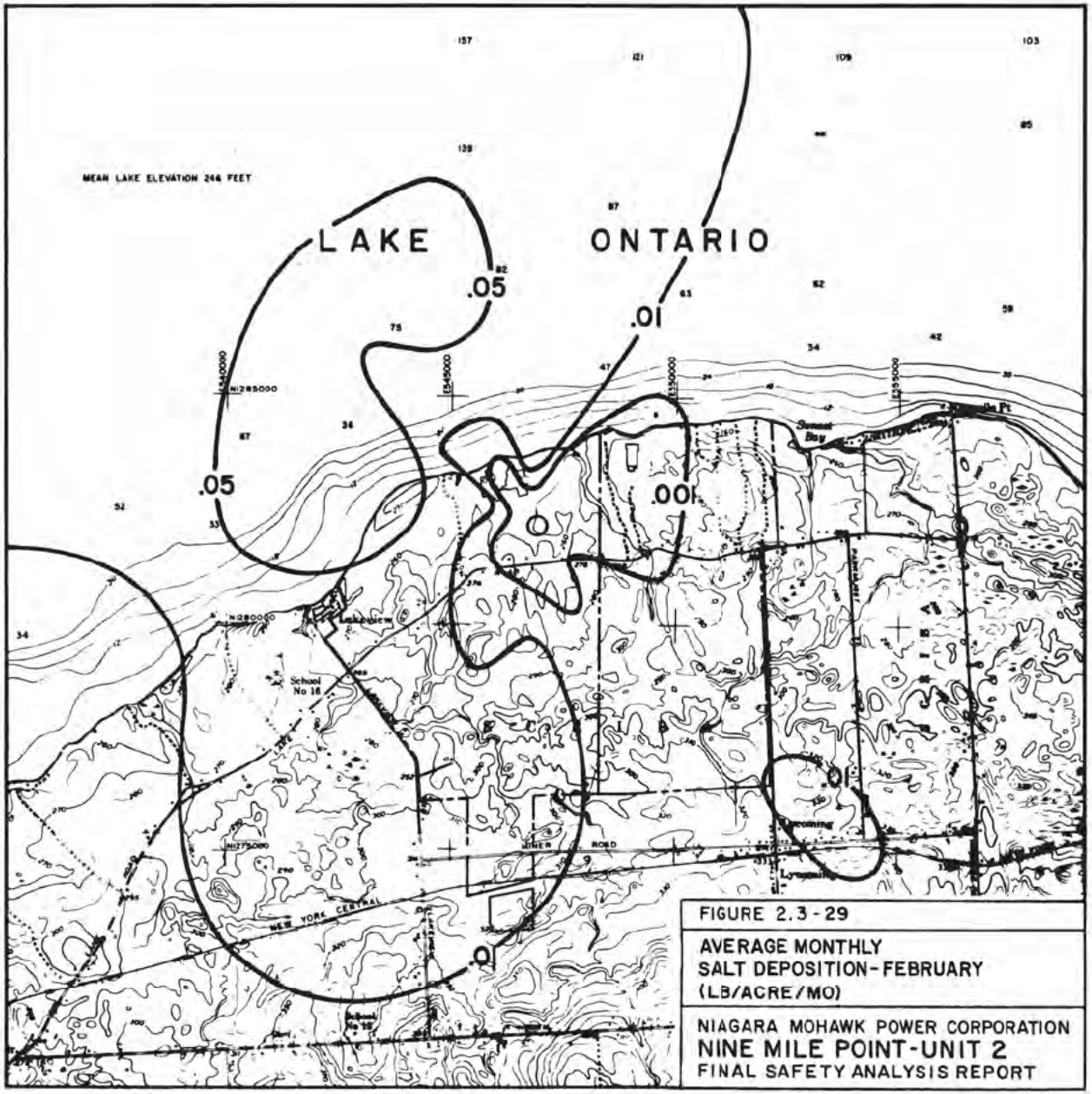

MEAN LAKE ELEVATION 246 FEET
LAKE ONTARIO
.05
.01
.05
.001
0
N1285000
E340000
E345000
E350000
E355000
N280000
N1275000
Lakeview
School No 18
School No 19
Oswego
Bay
Pt
NEW YORK CENTRAL
RIVER ROAD
FIGURE 2.3-29
AVERAGE MONTHLY
SALT DEPOSITION-FEBRUARY
(LB/ACRE/MO)
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-30

AVERAGE MONTHLY SALT DEPOSITION - MARCH (LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-31

AVERAGE MONTHLY
SALT DEPOSITION - APRIL
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-32

AVERAGE MONTHLY
SALT DEPOSITION-MAY
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-33

AVERAGE MONTHLY
SALT DEPOSITION-JUNE
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFTY ANALYSIS REPORT

FIGURE 2.3-34

AVERAGE MONTHLY
SALT DEPOSITION-JULY
(LB/ACRE/MO)

FIGURE 2.3-35

AVERAGE MONTHLY
SALT DEPOSITION-AUGUST
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-36

AVERAGE MONTHLY
SALT DEPOSITION-SEPTEMBER
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-37

AVERAGE MONTHLY
SALT DEPOSITION-OCTOBER
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-38

AVERAGE MONTHLY
SALT DEPOSITION-NOVEMBER
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

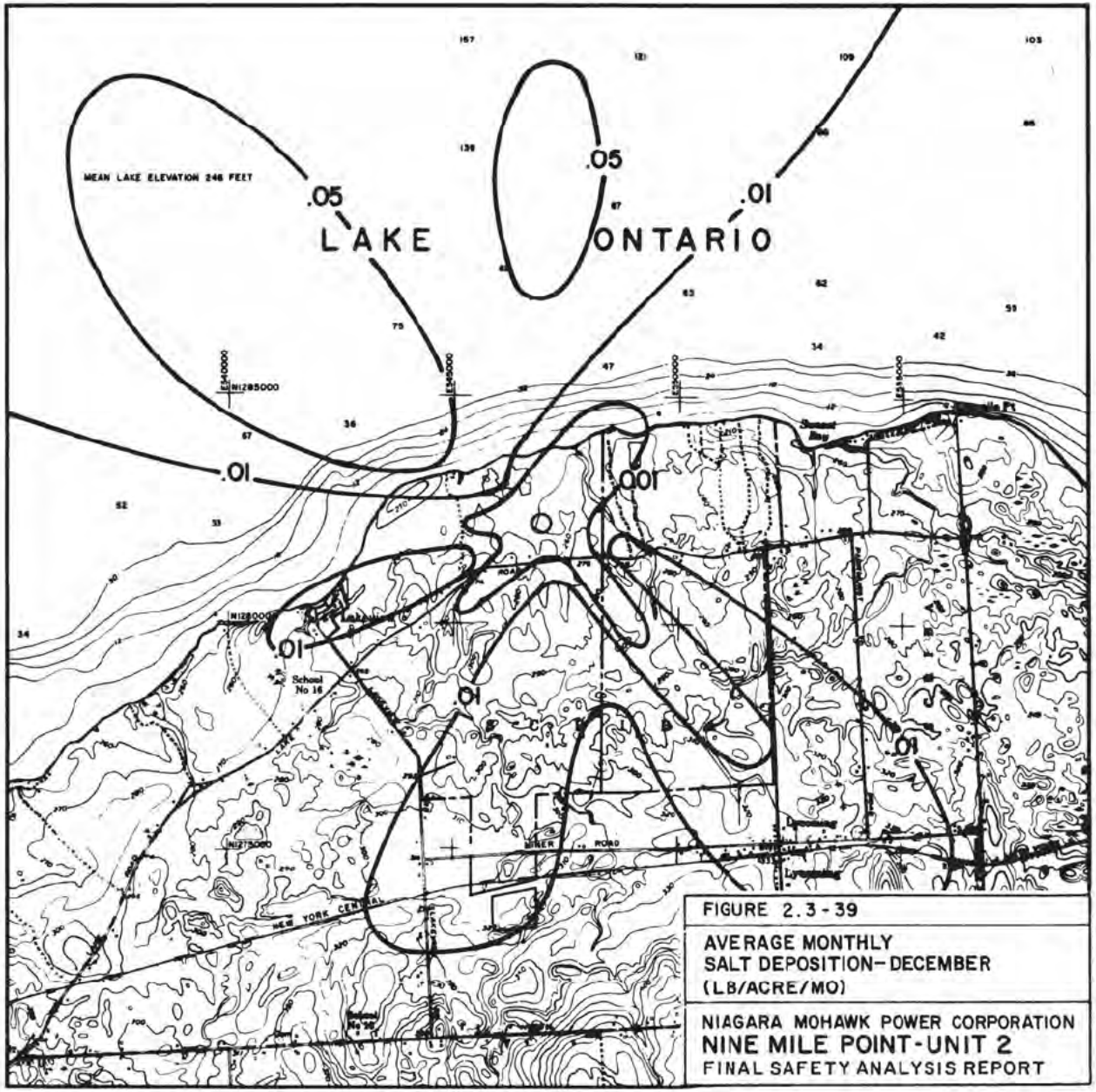


FIGURE 2.3-39

AVERAGE MONTHLY
SALT DEPOSITION- DECEMBER
(LB/ACRE/MO)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

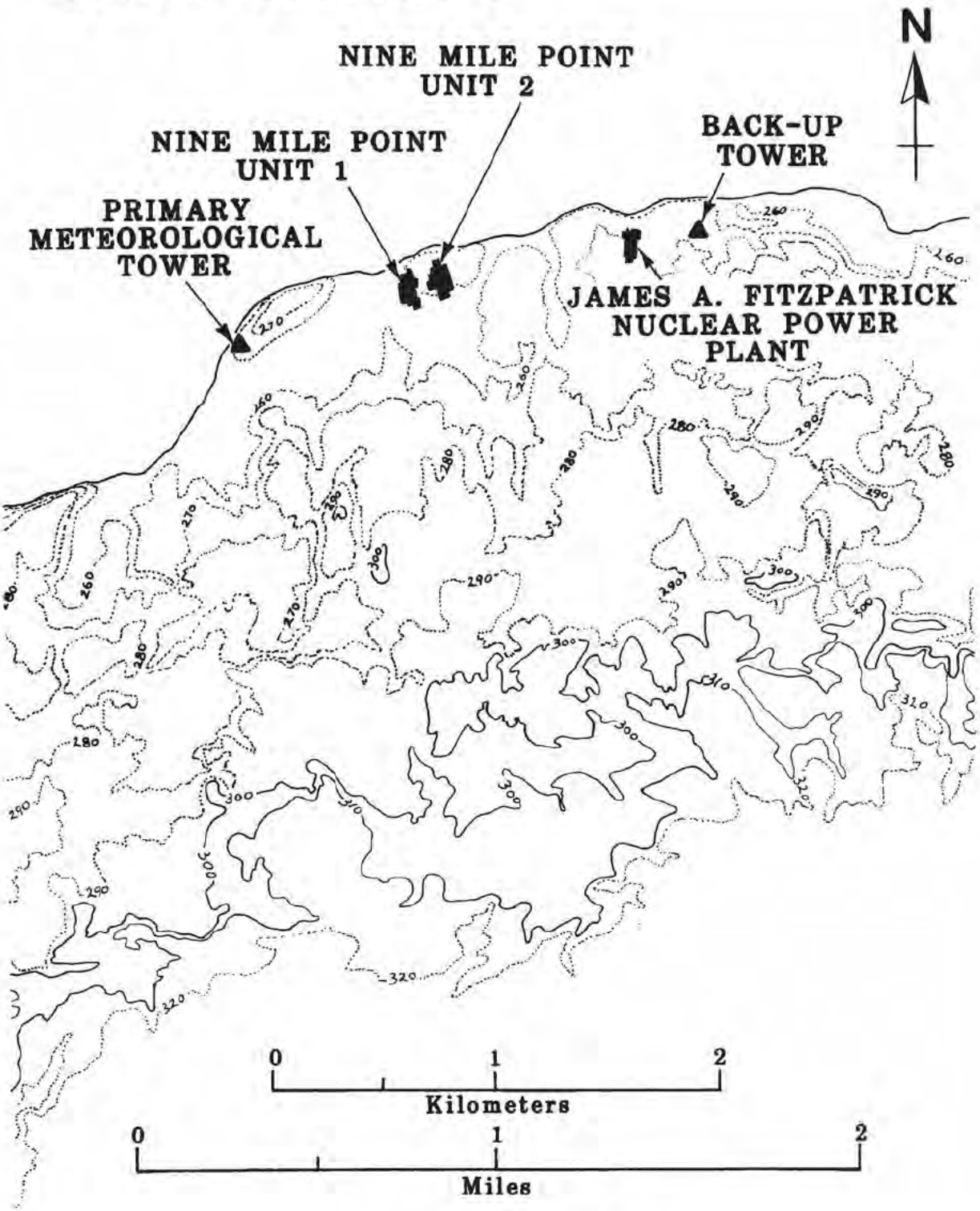


FIGURE 2.3-40

LOCATION OF PRIMARY AND BACK-UP METEOROLOGICAL TOWERS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

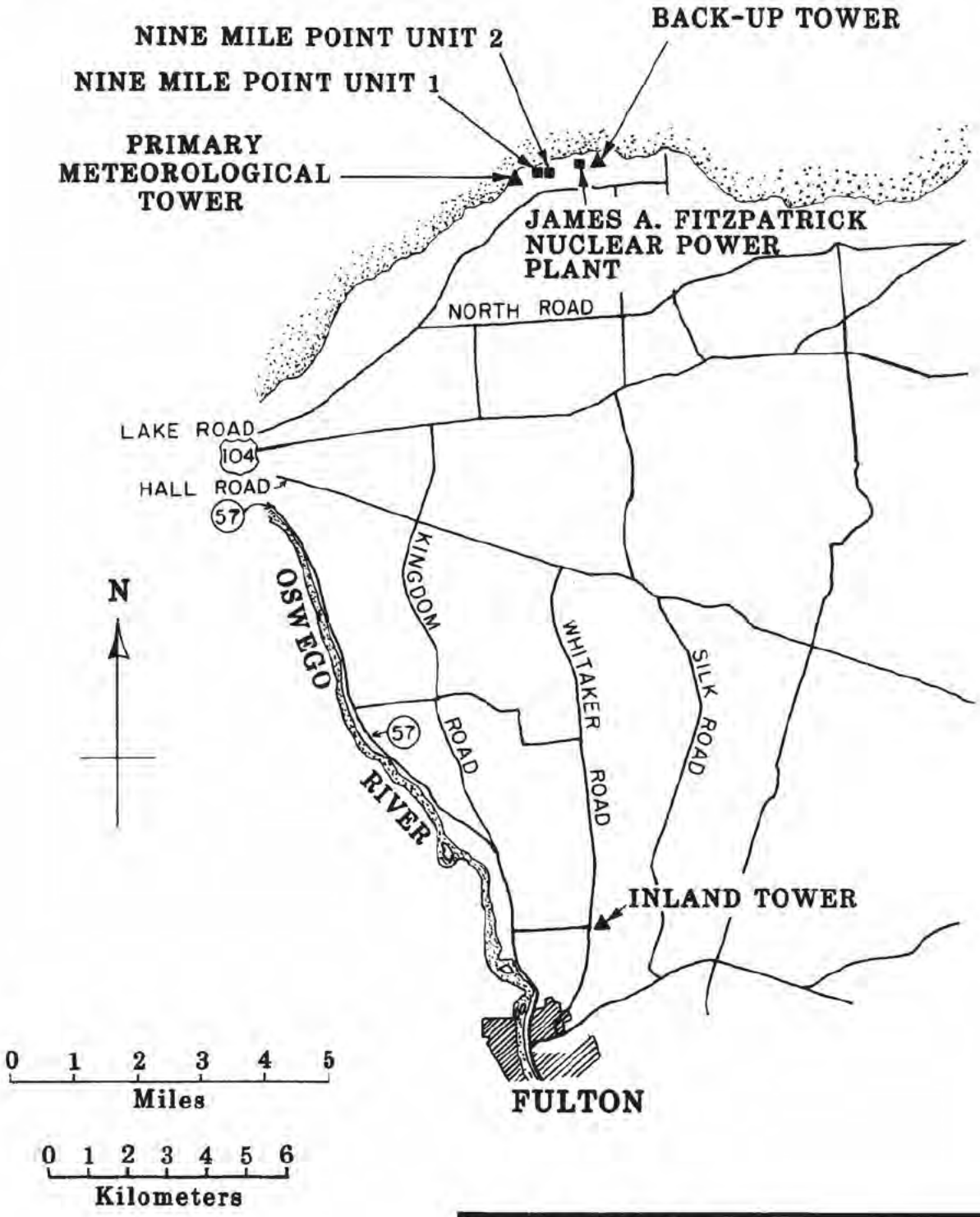
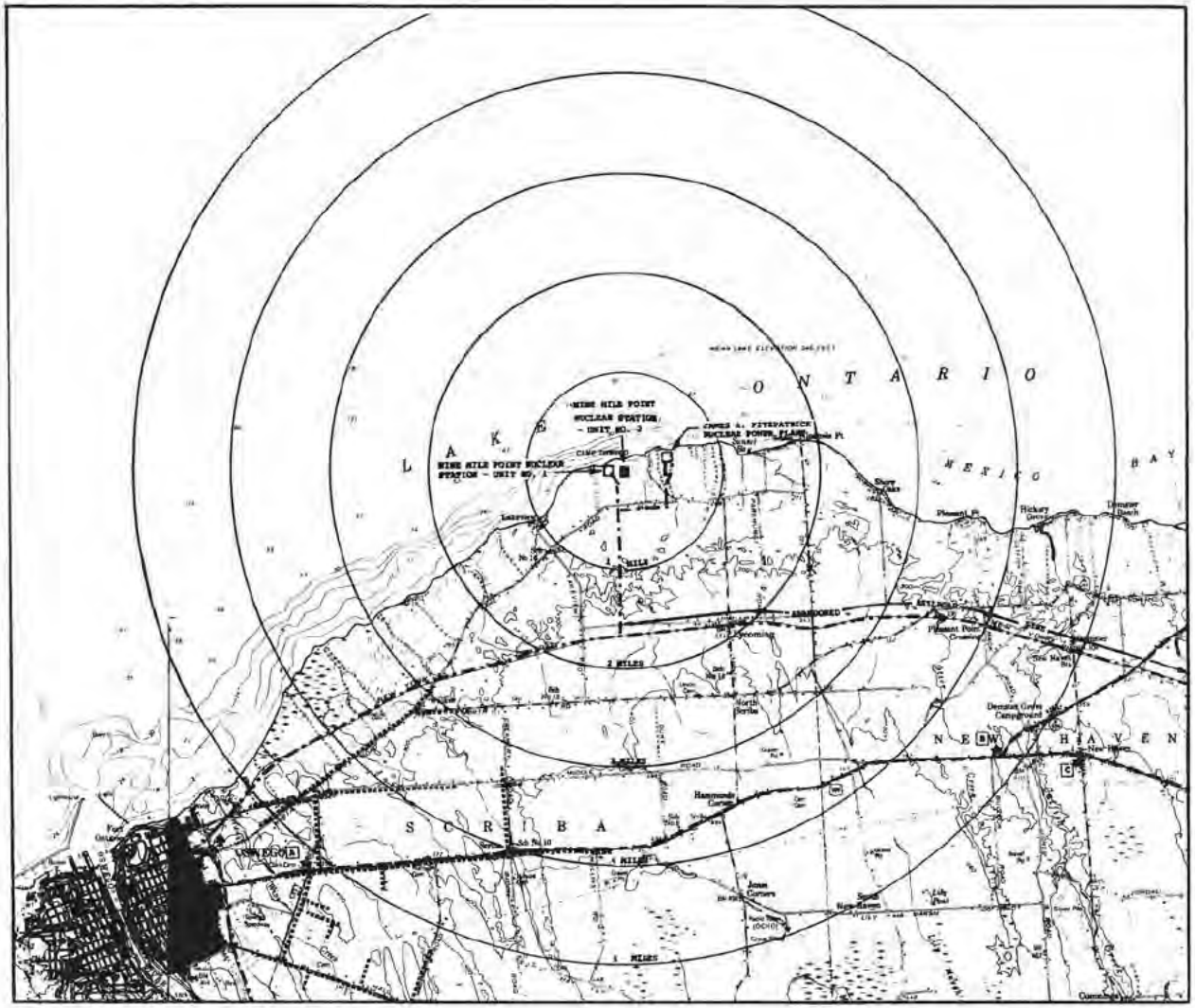


FIGURE 2.3-40A

LOCATION OF PRIMARY, INLAND AND BACK-UP METEOROLOGICAL TOWERS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



SITE VICINITY MAP

SHOWING PIPELINES, SHIPPING PATH AND TRANSPORTATION ROUTES WITHIN 5 MILES OF NINE MILE POINT NUCLEAR STATION UNIT NO.2

KEY:

- COMMONLY USED COMMERCIAL SHIPPING ROUTE FROM ST. LAWRENCE SEAWAY TO OSWEGO (NOTE: THERE ARE NO FIRMLY ESTABLISHED SHIPPING LANES ON LAKE ONTARIO)
- STATE HIGHWAYS
- INTERSECTIONS WITH STATISTICS ON
  - [A] 9,700
  - [B] 3,150
  - [C] 2,650

  ANNUAL AVERAGE DAILY TRAFFIC VOLUME 1970 NEW YORK STATE HIGHWAY STATISTICS
- EXISTING GAS FEEDER MAINS ARE 8" DIAMETER
- RAILROAD LINES (NOTE: RAIL SERVICE BETWEEN OSWEGO AND PULASKI HAS BEEN DISCONTINUED BY PENN CENTRAL. A NEW SPUR LINE TO NIAGARA MOHAWK'S NINE MILE POINT NUCLEAR STATION HAS BEEN CONSTRUCTED. CONSTRUCTION MATERIALS AND RELATED ITEMS BOUND FOR NINE MILE POINT ARE THE ONLY CARGO CURRENTLY CARRIED ON THIS RAILROAD LINE.)

REFERENCE:

THIS MAP WAS PREPARED FROM PORTIONS OF THE FOLLOWING USGS QUADRANGLE - FULTON, NEW YORK, DATED 1956 AND OSWEGO, NEW YORK, DATED 1954

FIGURE 2.3-41

SITE VICINITY MAP

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

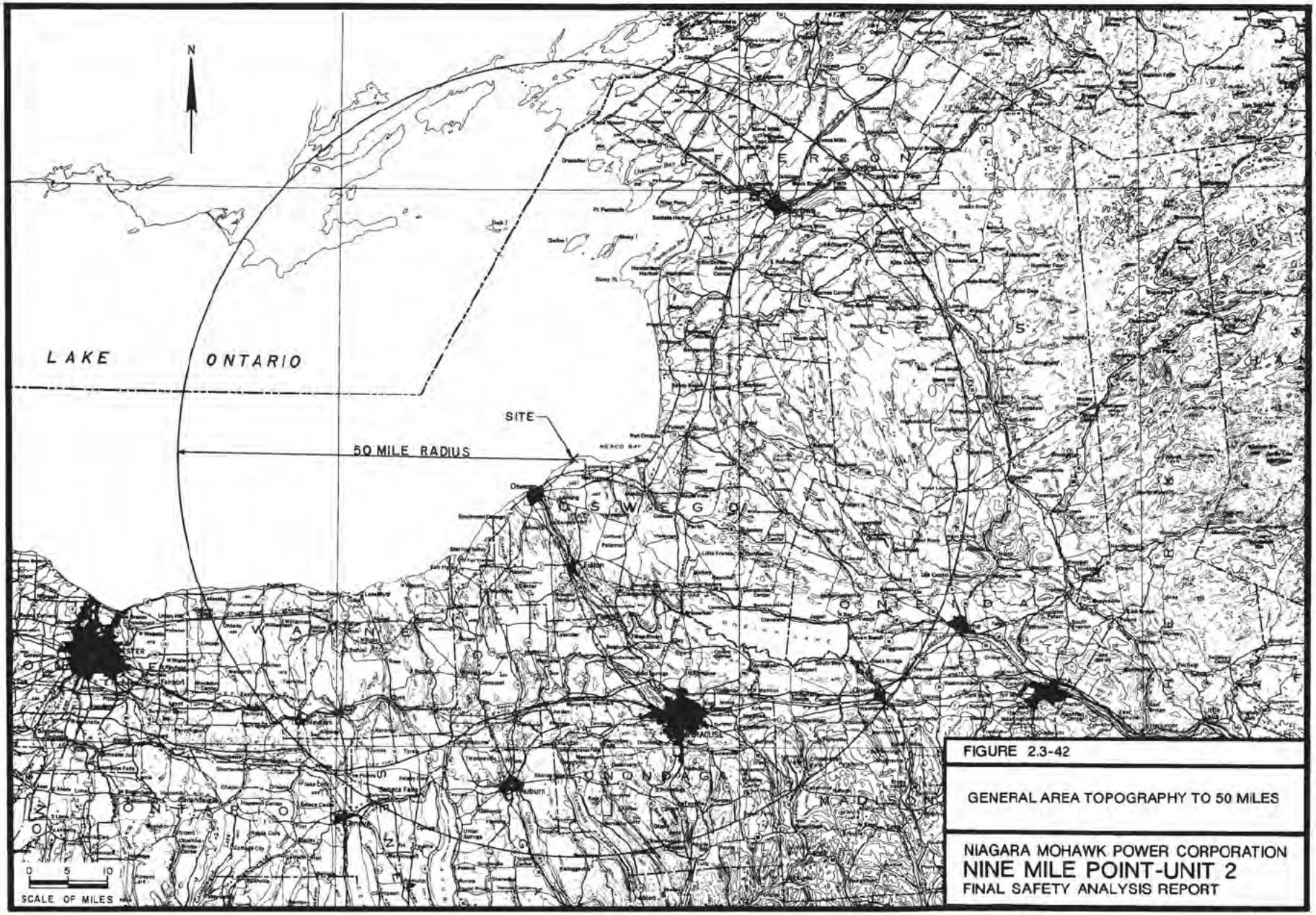


FIGURE 2.3-42

GENERAL AREA TOPOGRAPHY TO 50 MILES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

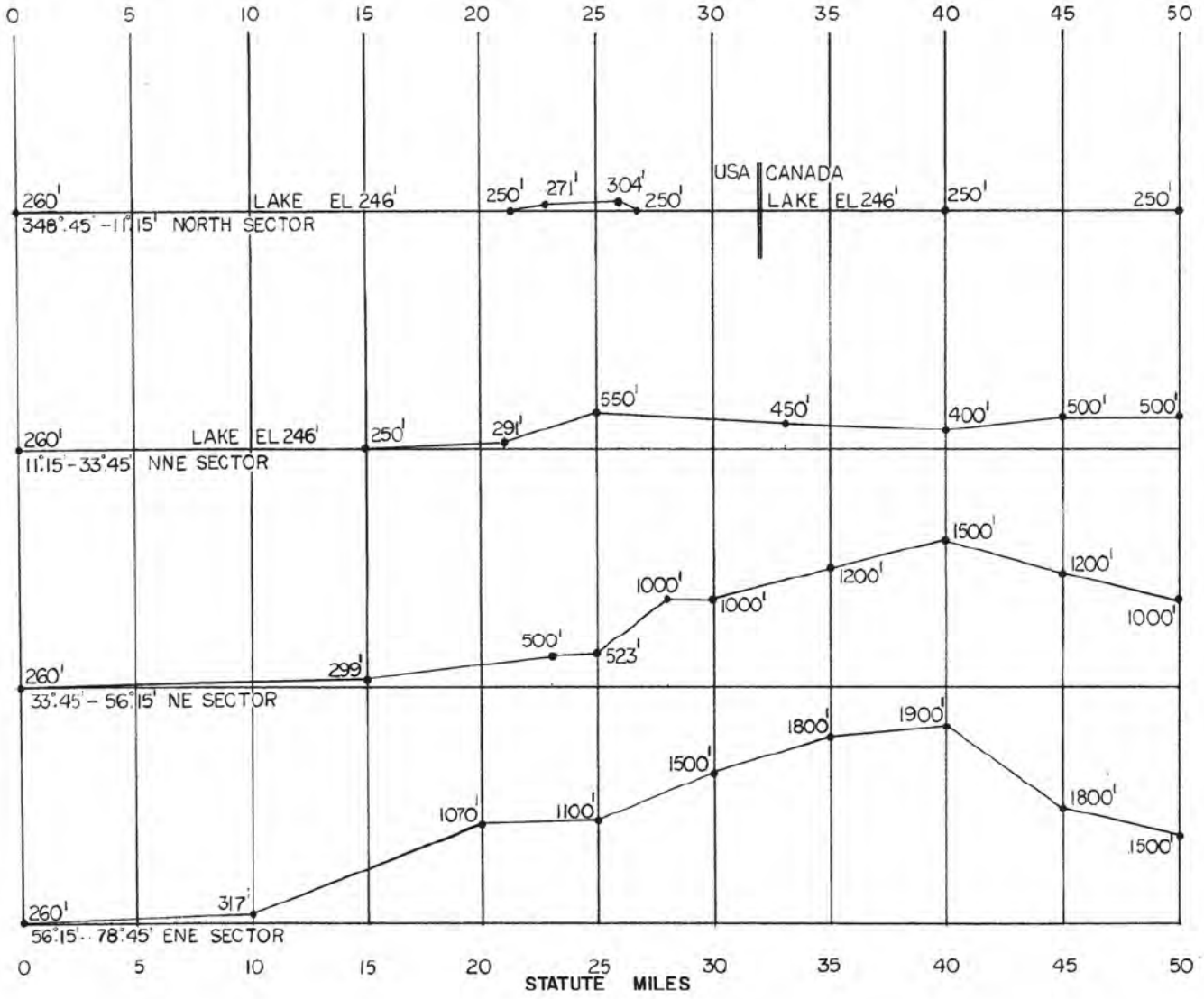


FIGURE 2.3-43

MAXIMUM TOPOGRAPHIC ELEVATIONS
(NORTHEAST QUADRANT)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

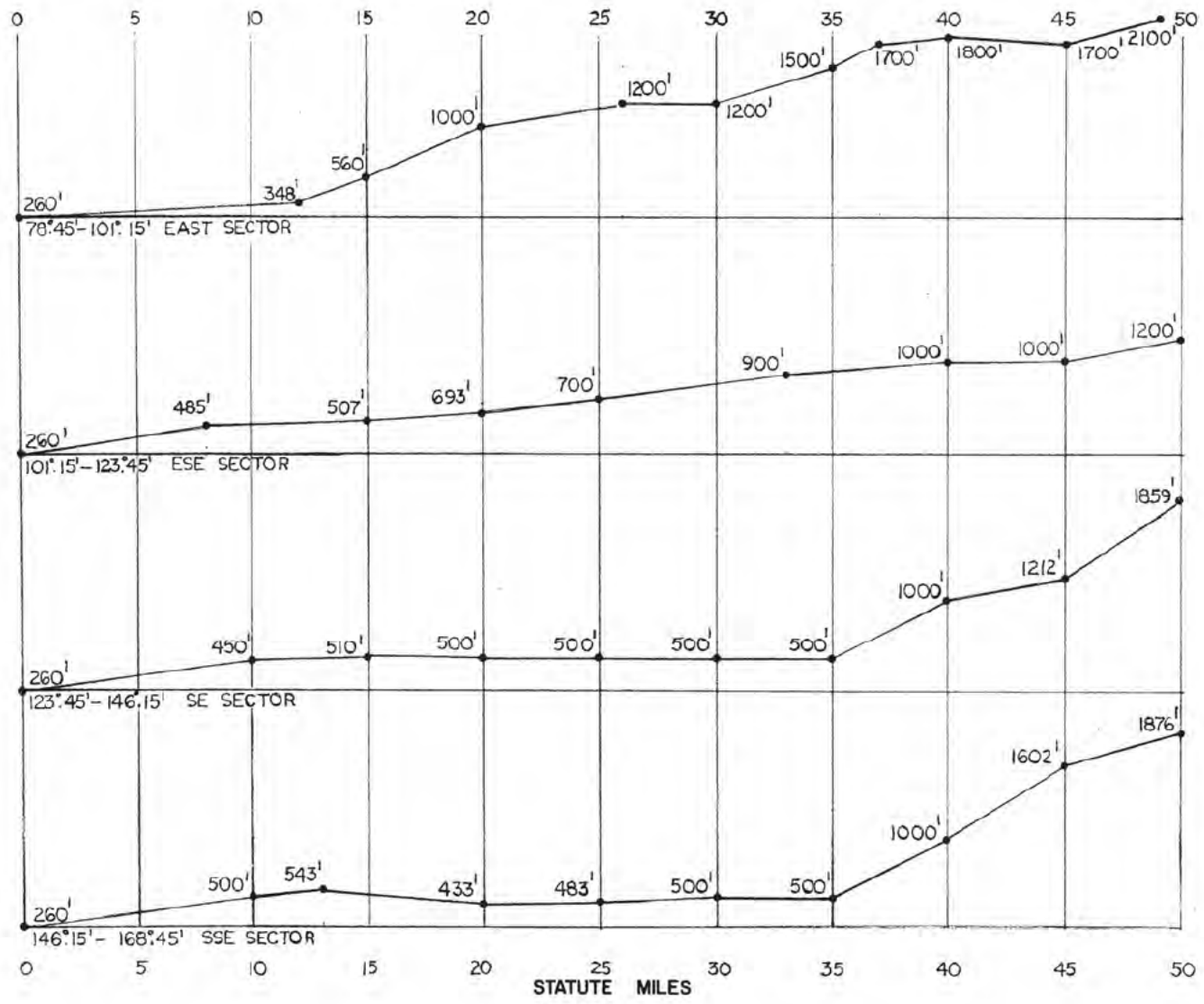


FIGURE 2.3-44

MAXIMUM TOPOGRAPHIC ELEVATIONS
(SOUTHEAST QUADRANT)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

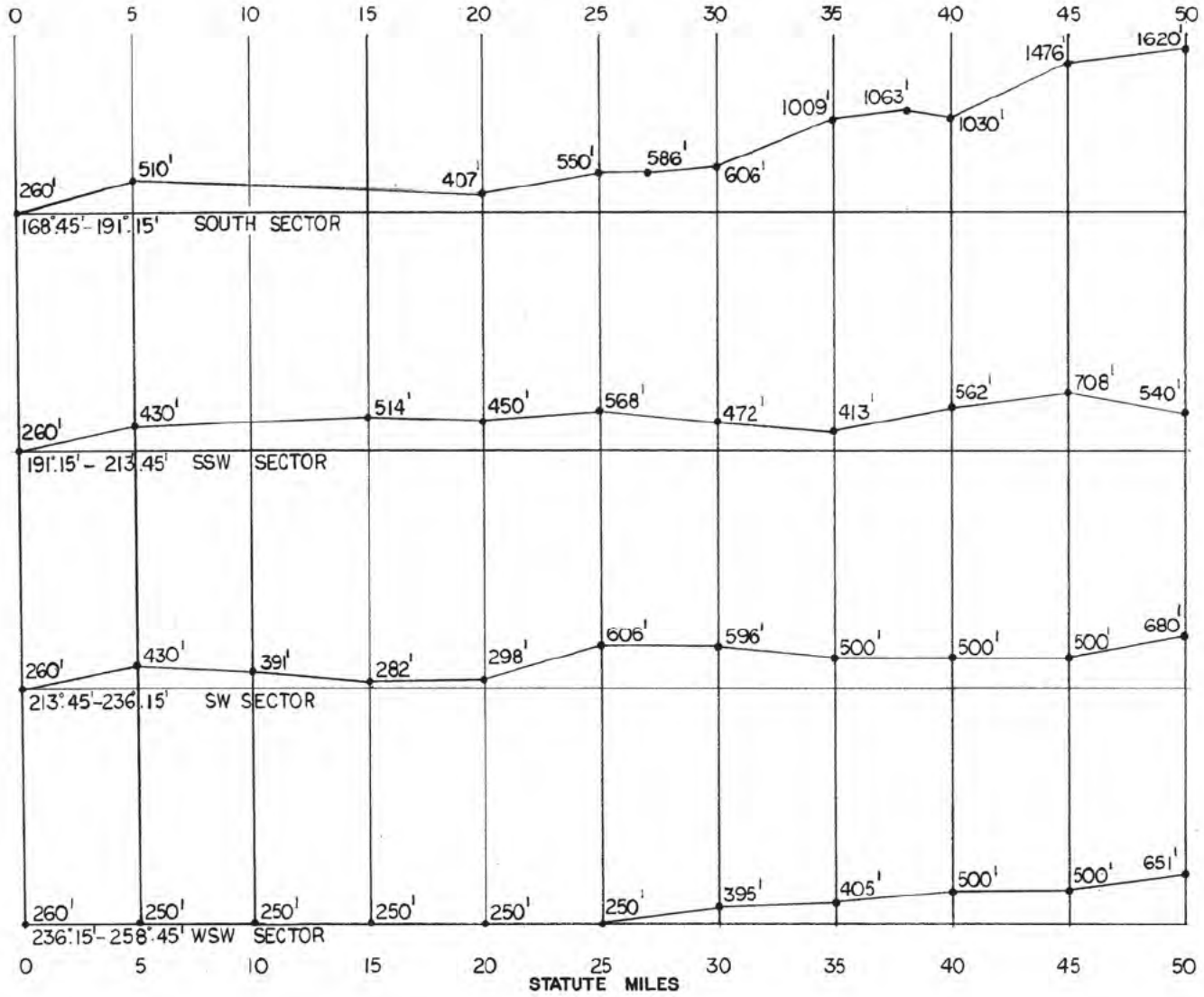


FIGURE 2.3-45

MAXIMUM TOPOGRAPHIC ELEVATIONS
(SOUTHWEST QUADRANT)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

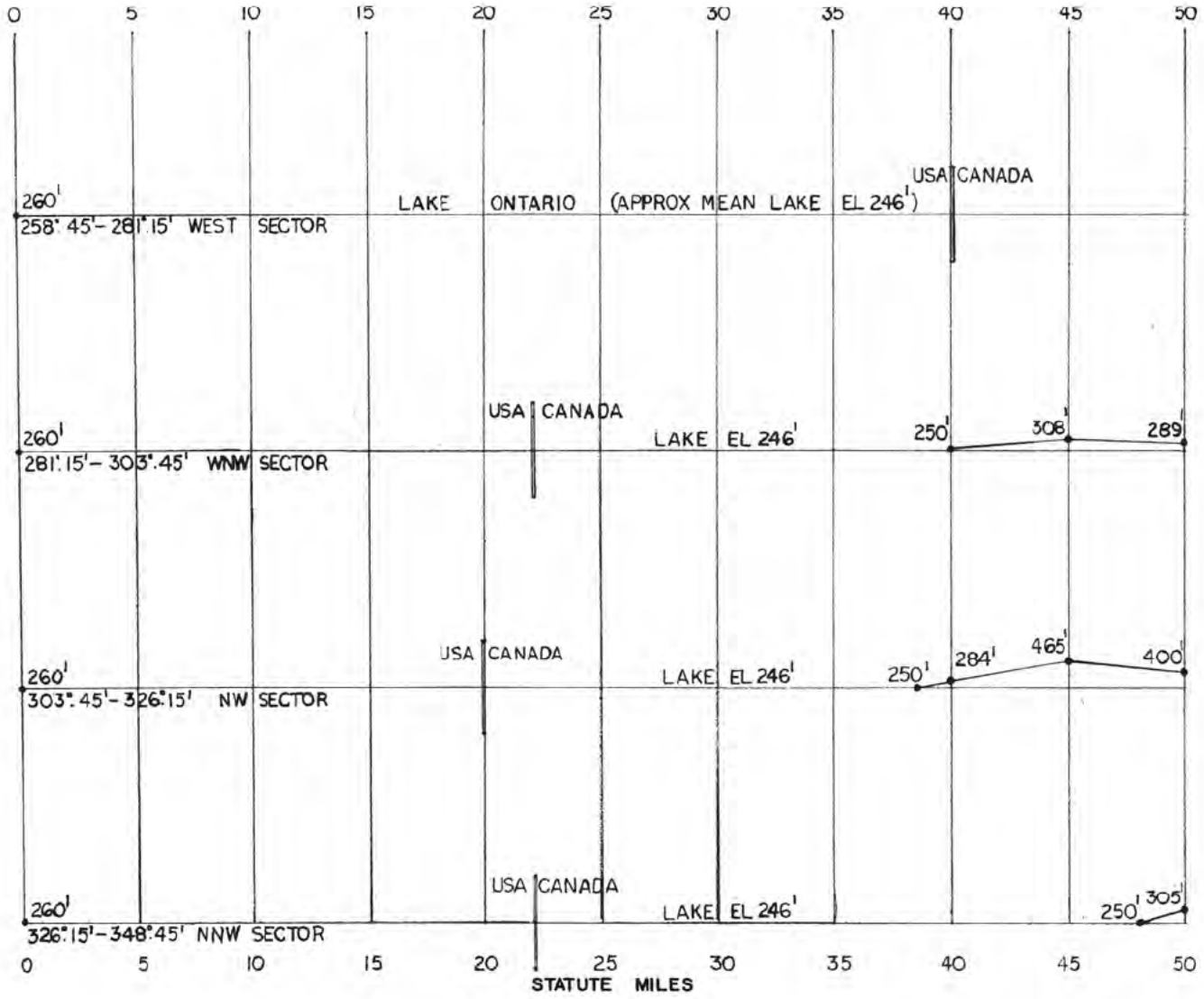


FIGURE 2.3-46

MAXIMUM TOPOGRAPHIC ELEVATIONS
(NORTHWEST QUADRANT)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

Security-Related Information Figure Withheld Under 10 CFR 2.390

FIGURE 2.4-1

PMF DRAINAGE

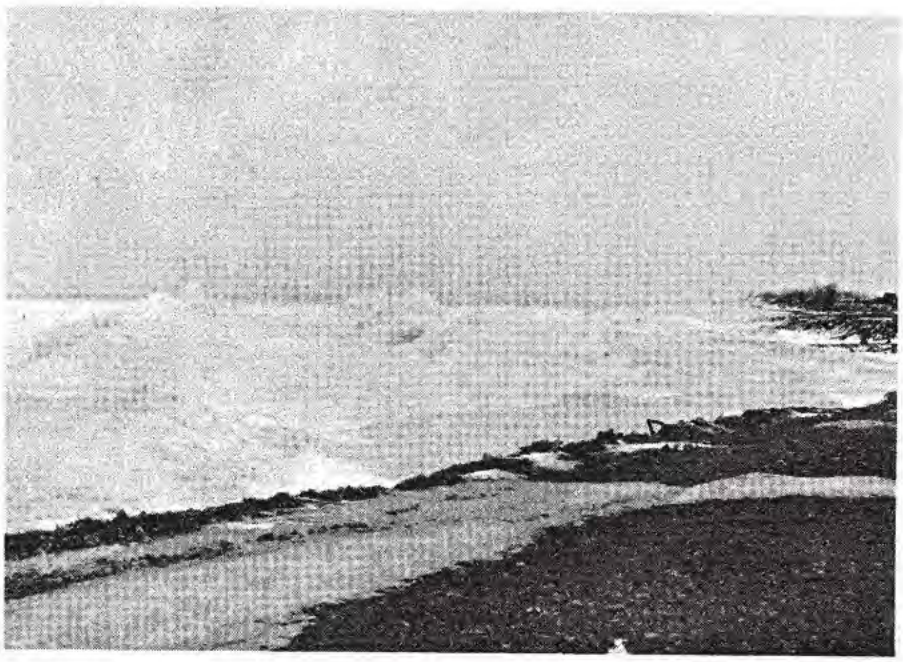
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

NOTE: CONTOURS AT SITE ARE PRE-CONSTRUCTION CONTOURS

FIGURE 2.4-2

DRAINAGE BASIN AND WATERSHED

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



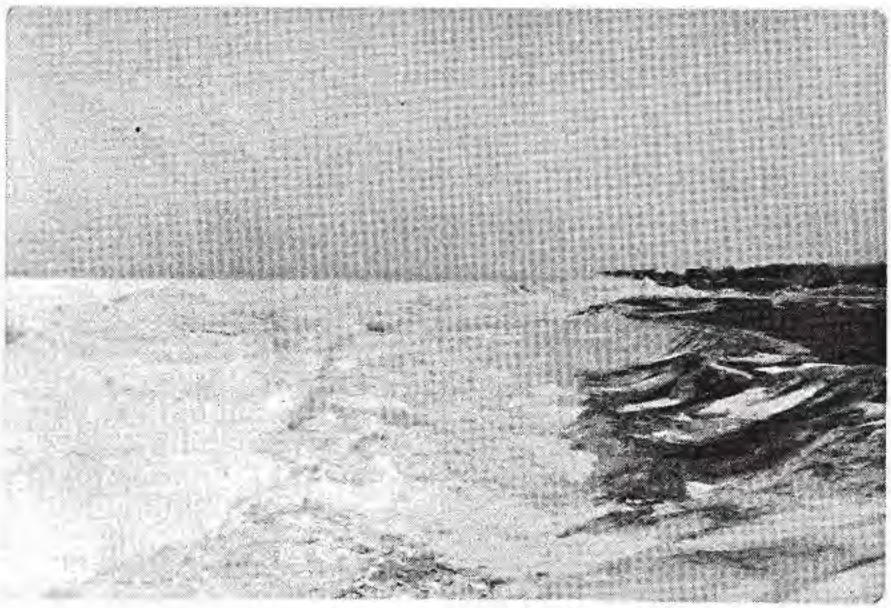
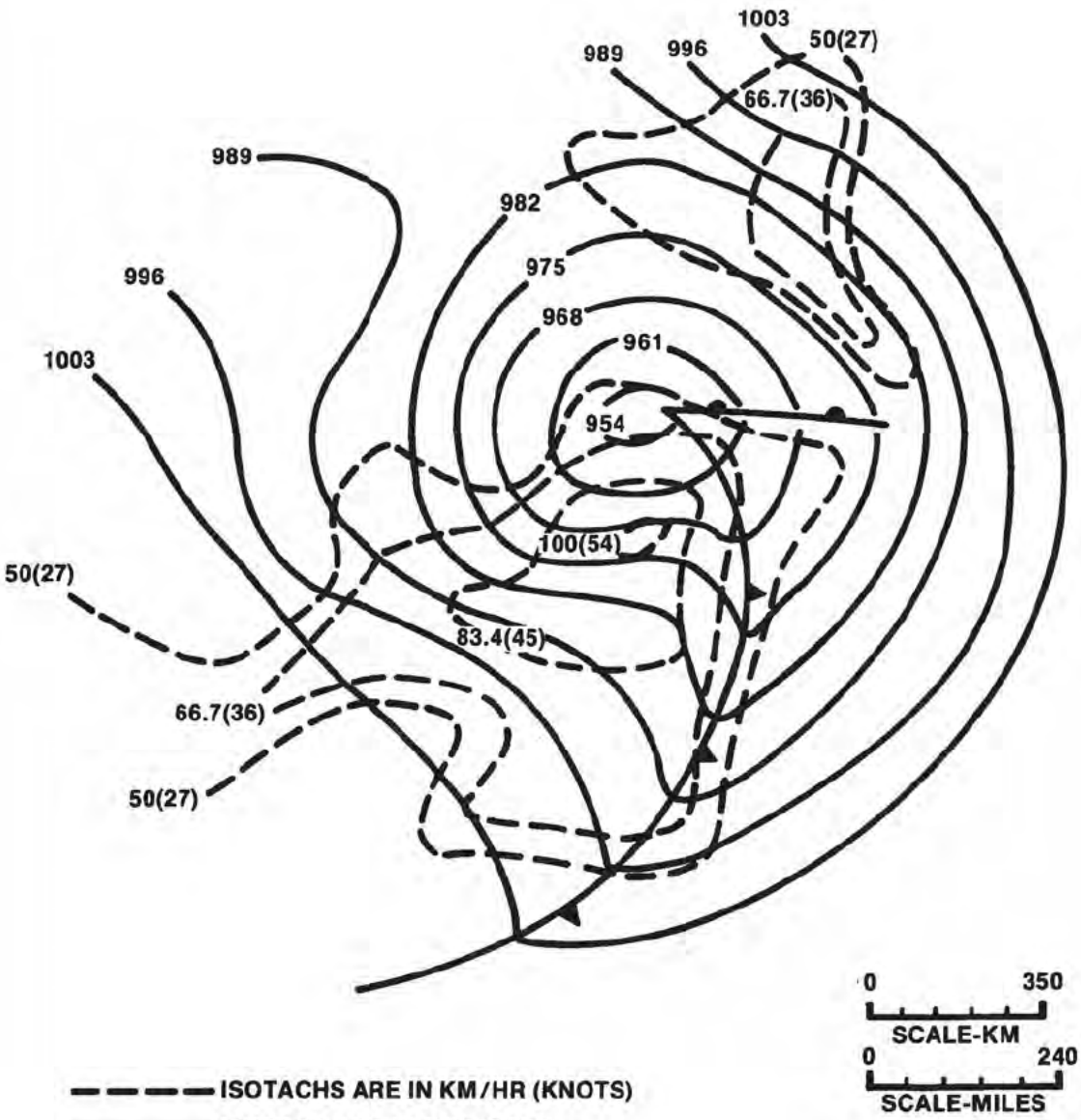


FIGURE 2.4-3

ICE RIDGES IN THE VICINITY
OF THE SITE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTES:

1) THE OVERLAND WIND SPEEDS WERE MULTILIED BY THE APPROPRIATE RATIO IN TABLE 2-2 OF REF. 7 TO OBTAIN THE OVERWATER WIND SPEEDS USED IN THE SURGE MODEL.
2) THE STORM CENTER WAS MOVED ALONG THE PATH SHOWN ON FIGURE 2-7 OF REF. 7.

FIGURE 2.4-4

RELATIONSHIP OF OVERLOAD ISOTACHS≥50 km/hr (27 KNOTS) TO ISOBARS FOR PROBABLE MAXIMUM WINDSTORM

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

KEY

—·—· **TRACK OF DESIGN STORM MOVING AT 64.4 KM/HR (40 MPH)**

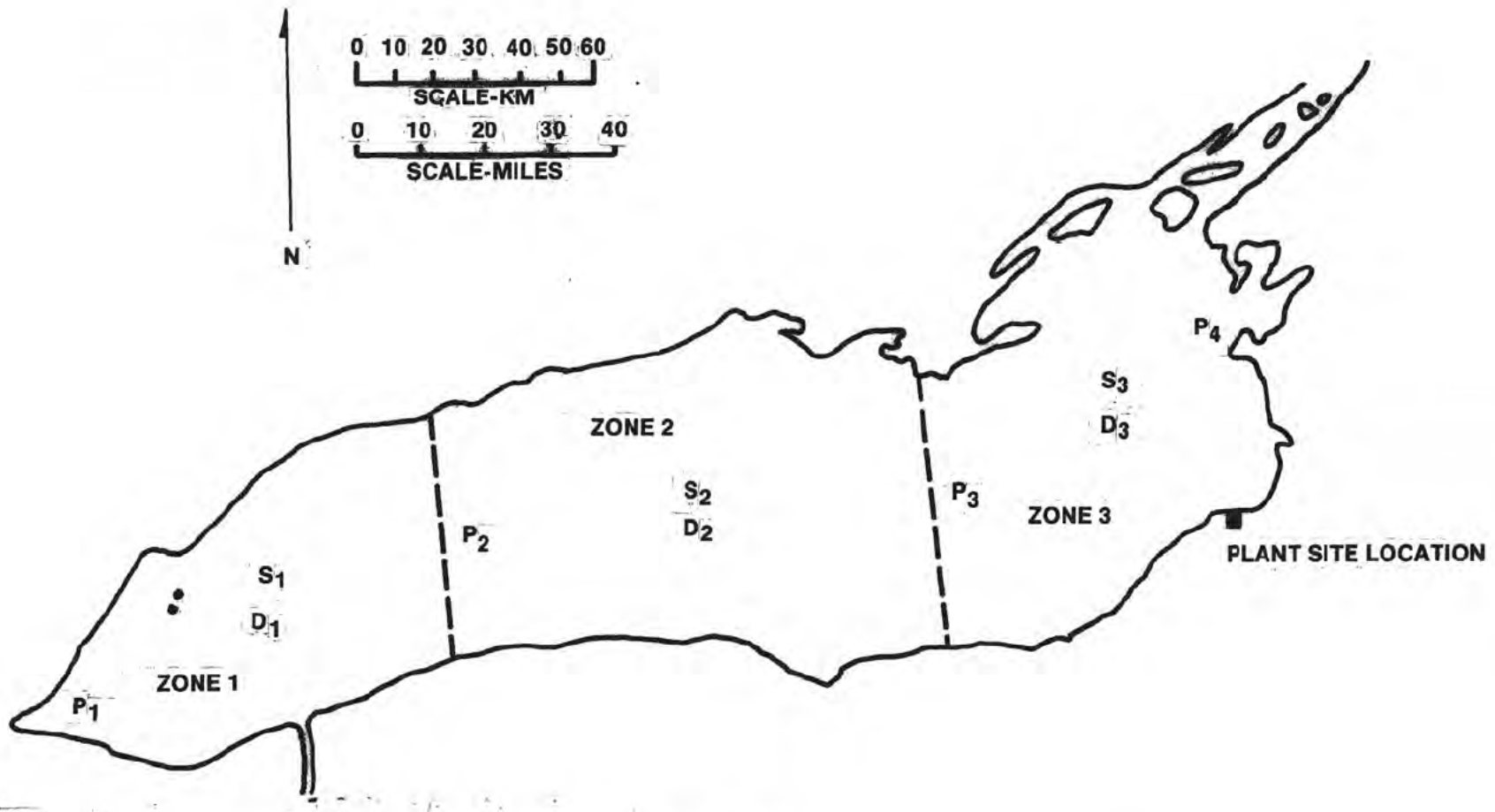
x **LOCATION OF STORM CENTER AT CORRESPONDING TIME**

t_3 **HOUR OF STORM (0 HOUR WAS SELECTED WHEN STORM WAS LOCATED SO AS TO HAVE LIMITED INFLUENCE ON LAKE ONTARIO)**

FIGURE 2.4-5

DESIGN PATH OF
PROBABLE MAXIMUM WINDSTORM

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTE:

METEOROLOGICAL PARAMETERS WERE MEASURED EACH HOUR AS THE STORM CENTER MOVED ALONG THE DESIGN PATH ON FIGURE 2-7 of REF. 7. WIND SPEED AND DIRECTION WERE MEASURED AS THE AVERAGE OF EACH ZONE AND THE PRESSURE GRADIENT WAS MEASURED BETWEEN ZONE BOUNDARIES.

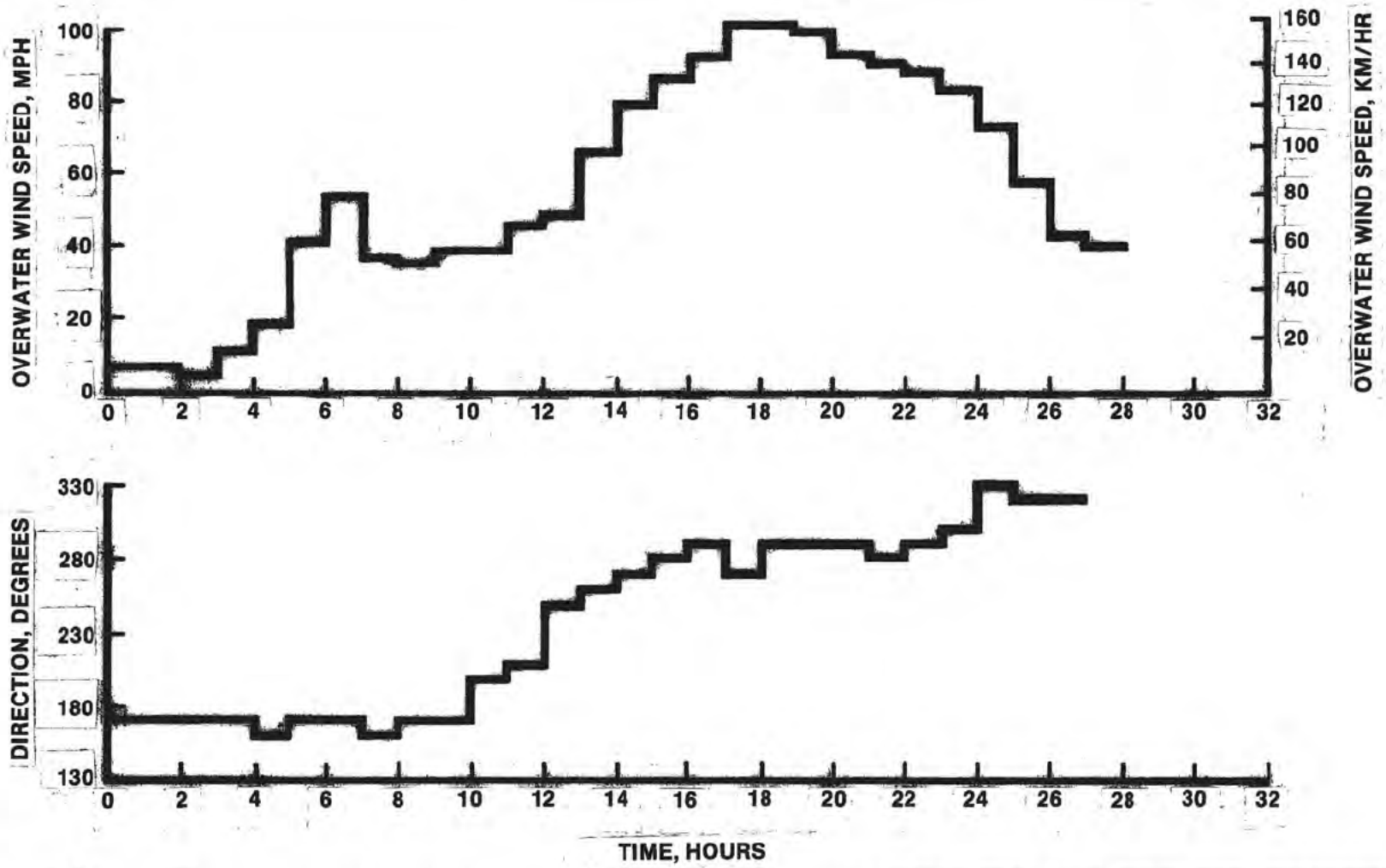
KEY

P-PRESSURE
S-WIND SPEED
D-WIND DIRECTION

FIGURE 2.4-6

ZONES FOR METEOROLOGICAL PARAMETERS ON LAKE ONTARIO

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



NOTES:

1) VALUES ARE FOR ZONE 3 ON FIGURE 2-8 OF REFERENCE 7 AND ARE LISTED FOR EACH HOUR IN TABLE 2-3 OF REFERENCE 7.

2) THE OVERWATER/OVERLAND WIND SPEED RATIOS (TABLE 2-2) OF REF. 7 HAVE BEEN APPLIED TO THE OVERLAND WIND SPEEDS SHOWN ON FIGURE 2-6 OF REF. 7.

FIGURE 2.4-7

PREDICTED WIND SPEED AND DIRECTION FOR EASTERN END OF LAKE ONTARIO DURING PROBABLE MAXIMUM WINDSTORM

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

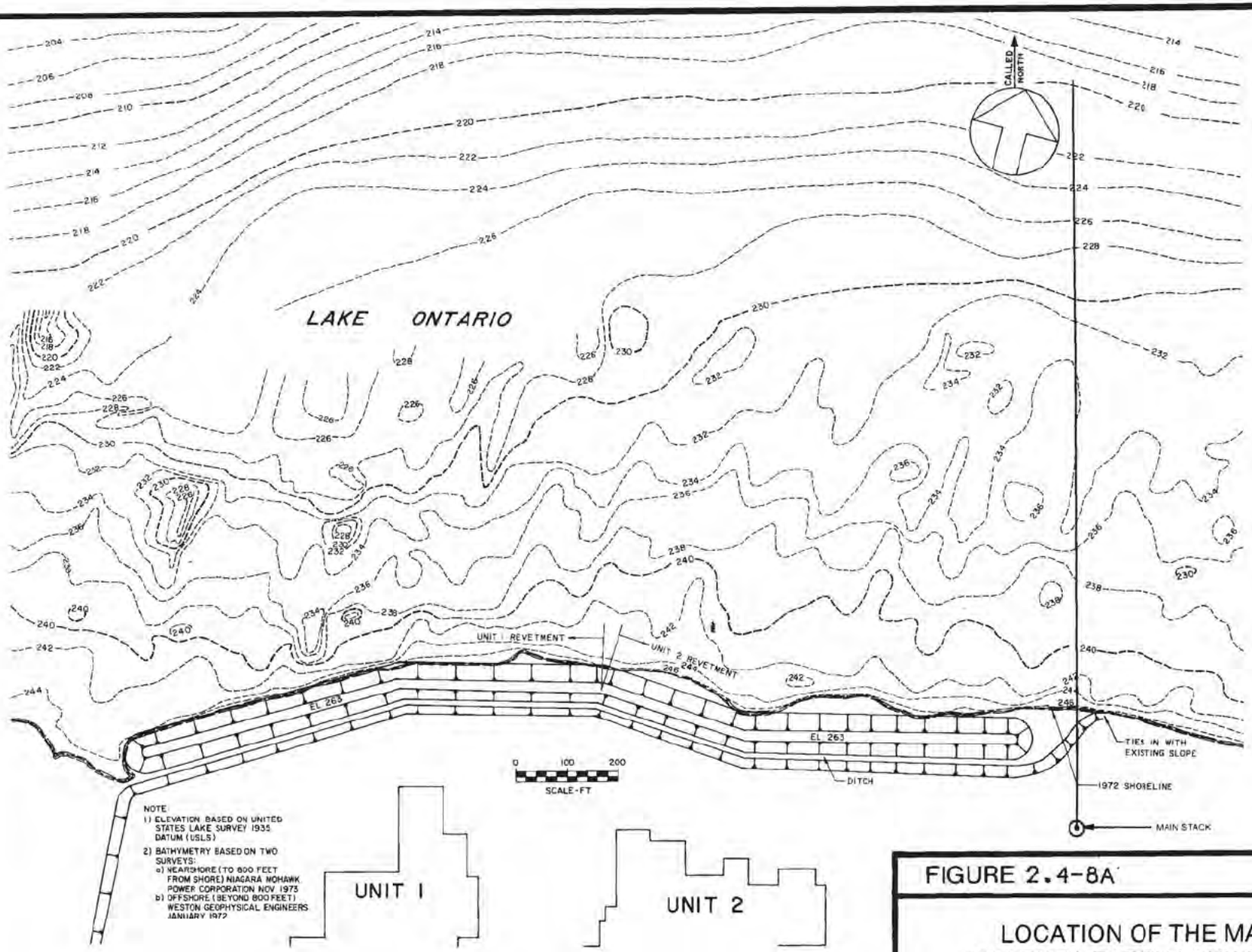


FIGURE 2.4-8A

LOCATION OF THE MAIN STACK AND THE NEARBY LAKE BATHYMETRY

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

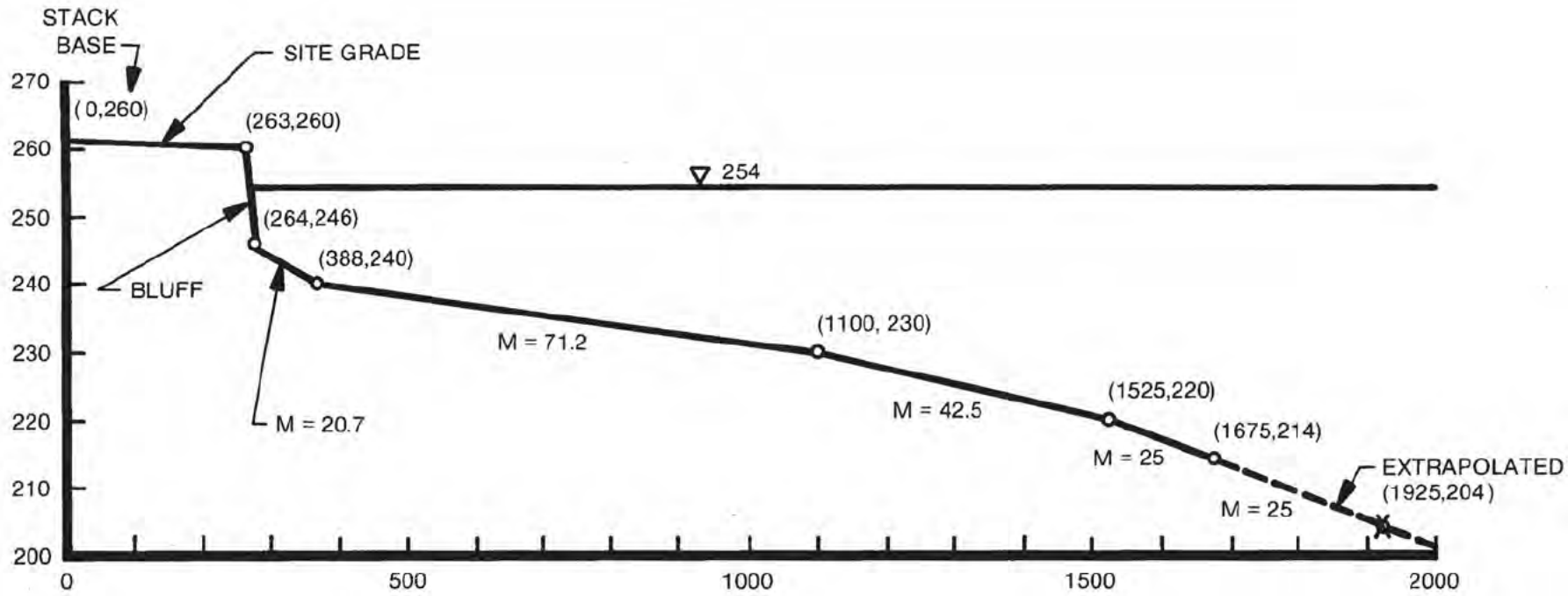


FIGURE 2.4-8B

TRANSECT PROFILE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
UPDATED SAFETY ANALYSIS REPORT

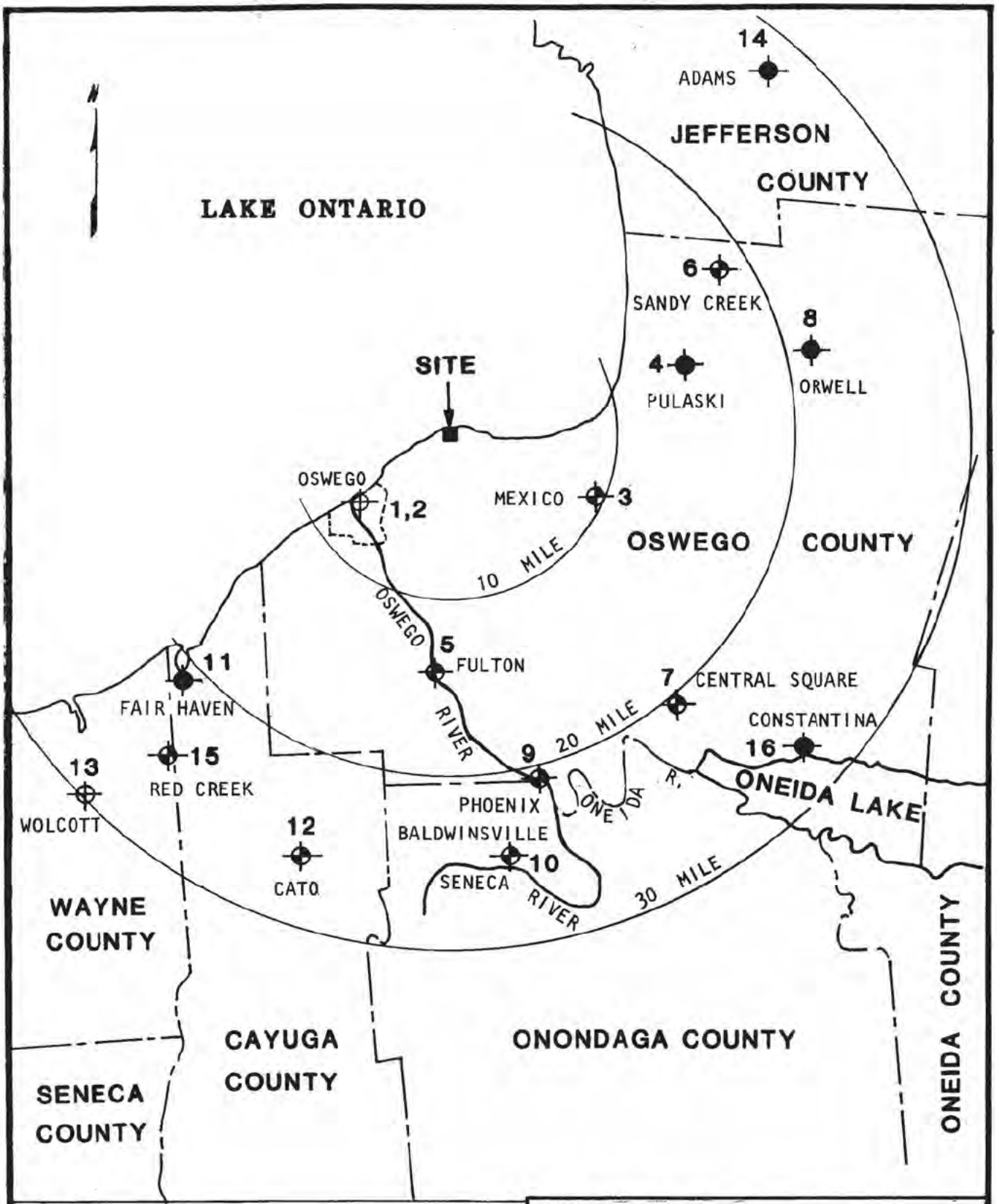
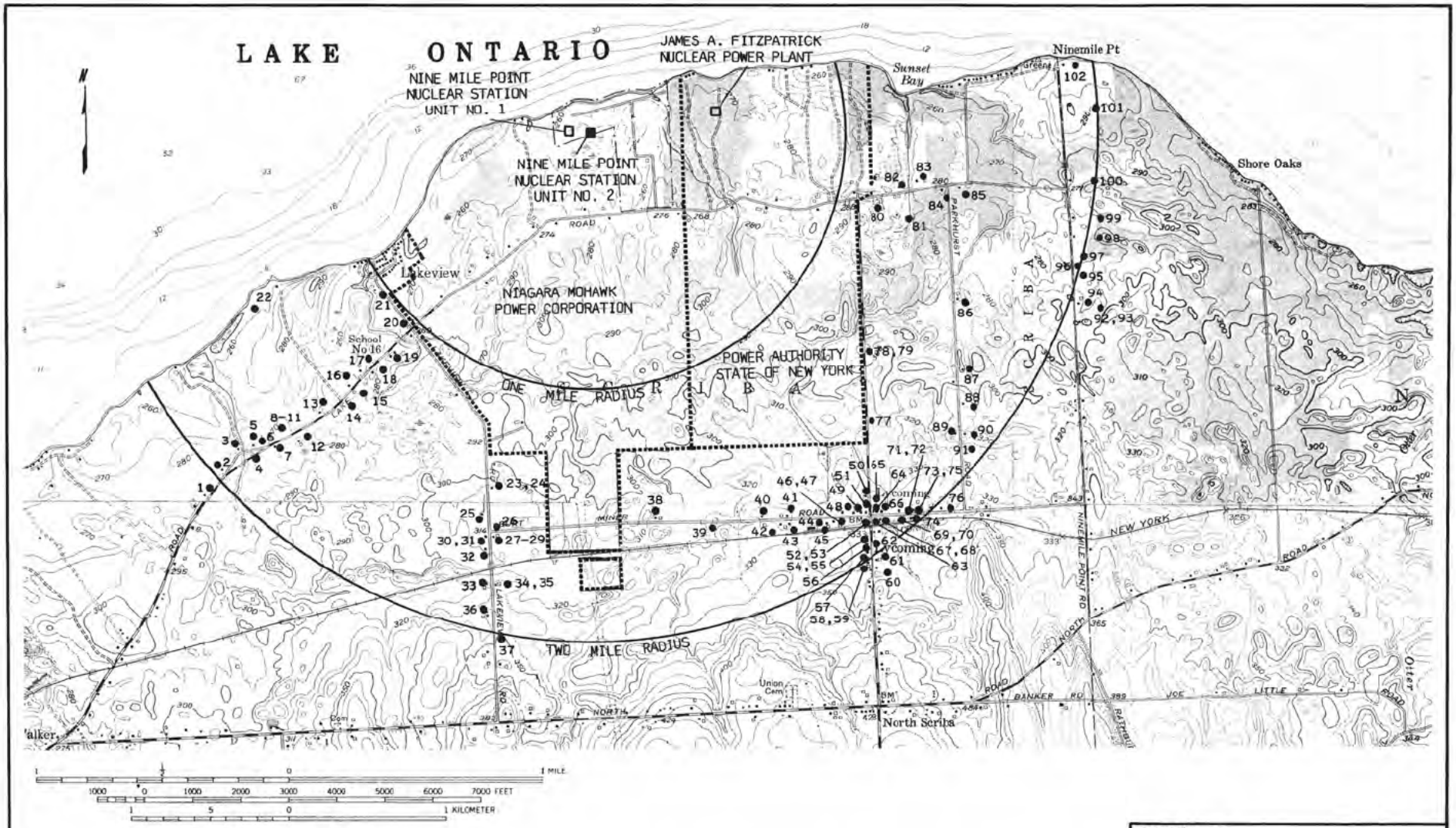


FIGURE 2.4-9

PUBLIC WATER SUPPLIES
IN VICINITY OF SITE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



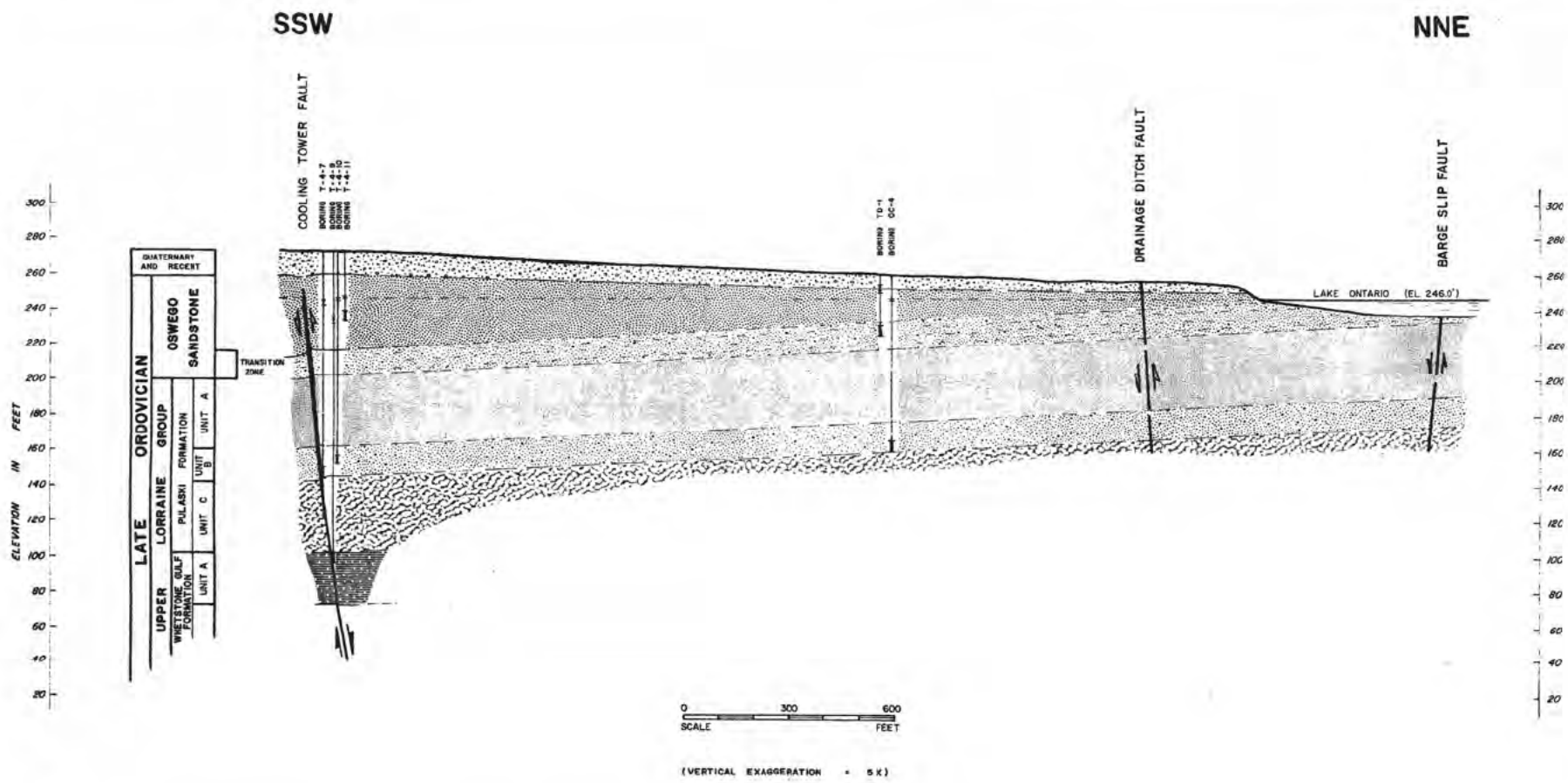
NOTE:
WELL DATA DESCRIBED IN TABLE

SOURCE:
Reference 34

FIGURE 2.4-10

PRIVATE WATER WELLS NEAR SITE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



EXPLANATION:

I RANGE OF WATER LEVELS RECORDED FROM STANDPIPES (MEASUREMENTS TAKEN BETWEEN SEPT. 30, 1977 AND JAN. 19, 1978)

I TEST SECTION OF STANDPIPE INSTALLATIONS

NORMAL FAULT DISPLACEMENT

REVERSE SLIP DISPLACEMENTS RELATED TO BUCKLING ALONG COOLING TOWER AND DRAINAGE DITCH FAULTS

NOTES:

1. Figure shows the relationship of the standpipe installations to the geologic structure and the stratigraphy in the vicinity of the Nine Mile Point Nuclear Generating Station.
2. Location of this Cross Section shown on Site Location Map (Section 2.5).

FIGURE 2.4-11

GENERALIZED GEOLOGIC CROSS SECTION

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

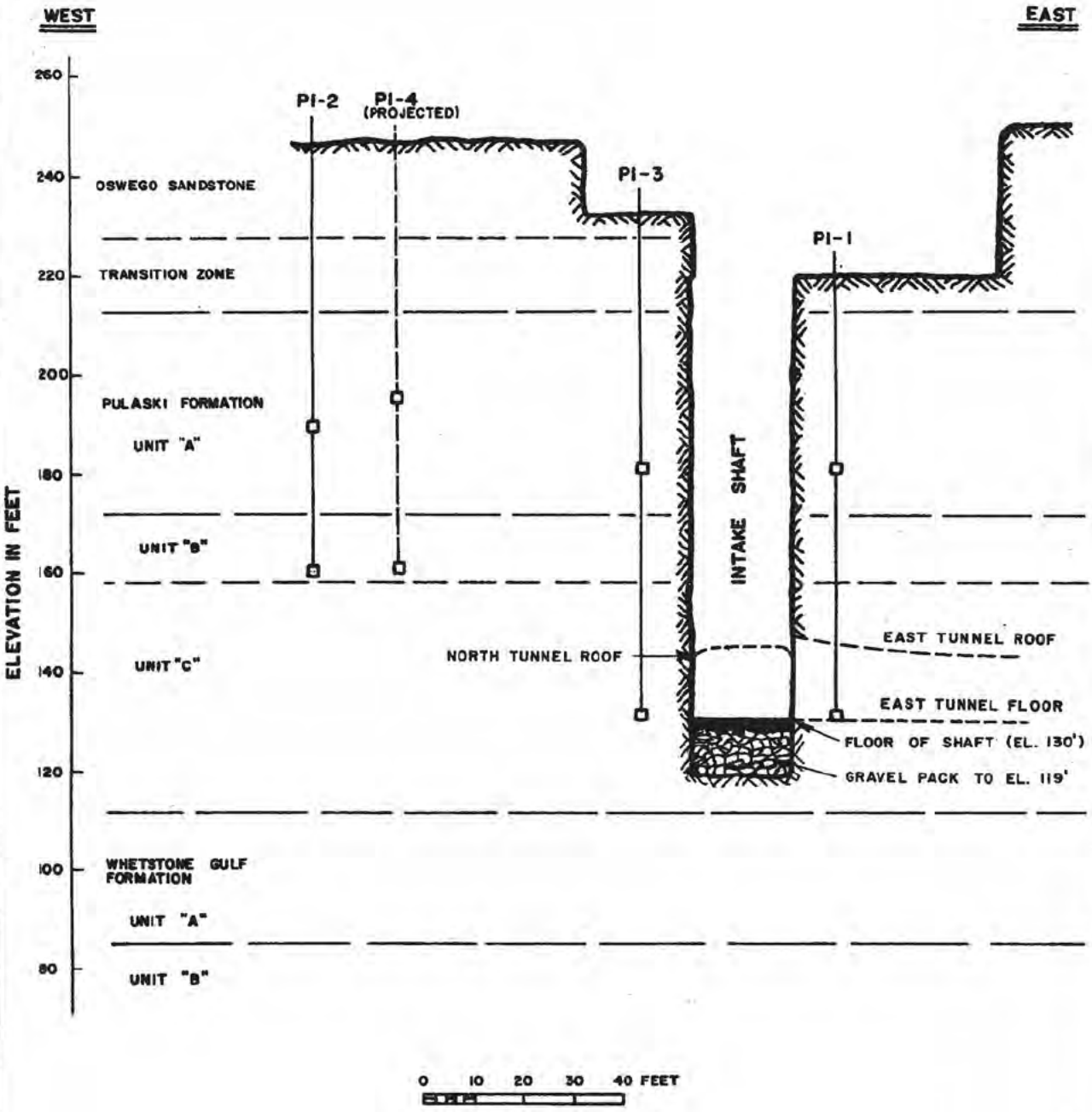


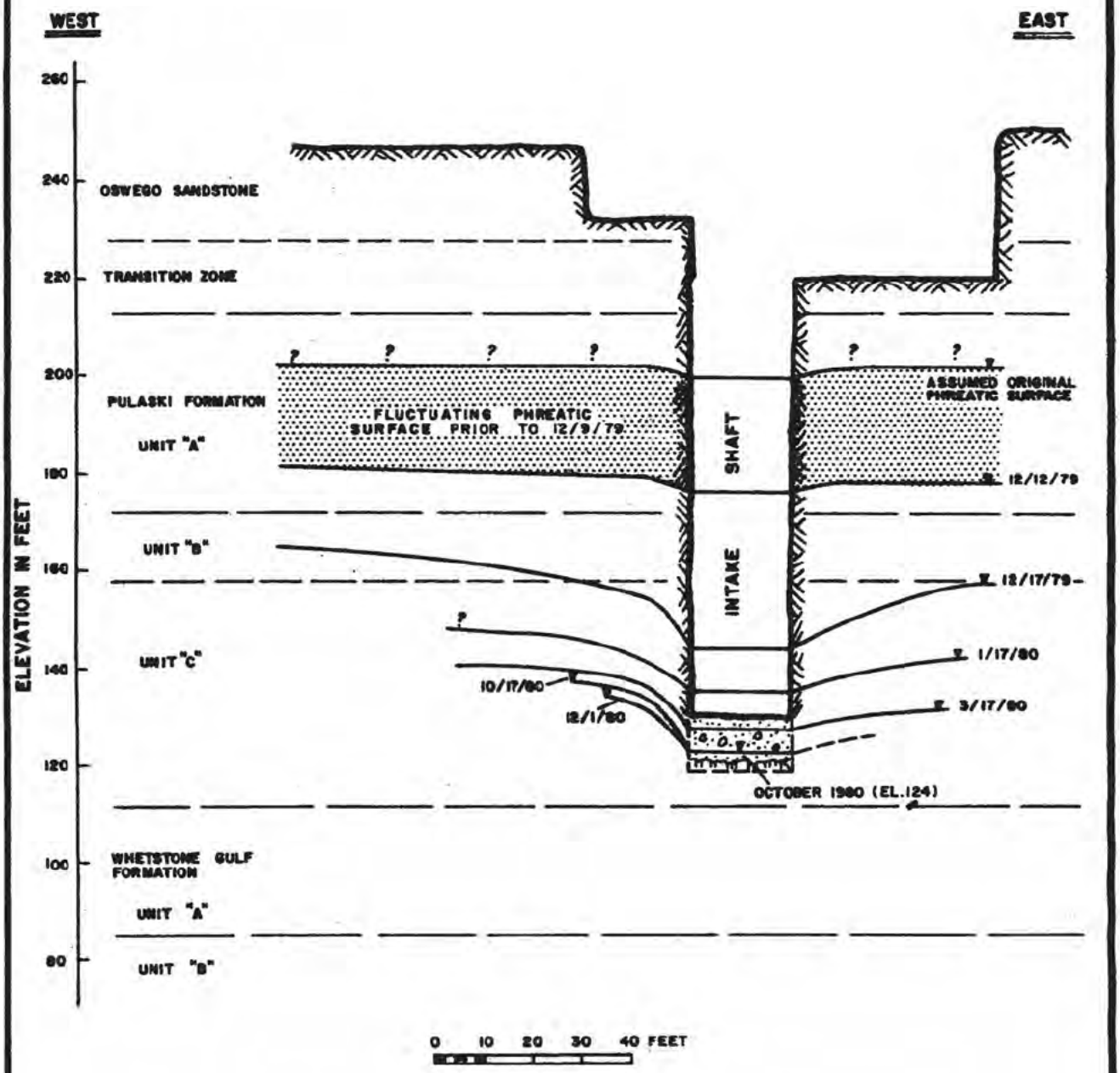
FIGURE 2.4-12

CROSS SECTION SHOWING LOCATION OF PIEZOMETERS IN THE VICINITY OF THE INTAKE SHAFT

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



EXPLANATION:

▽ 3/17/80 PHREATIC SURFACE AT DATE SHOWN

PRIOR TO DECEMBER 1981 BLAST SHATTERED ROCK LEFT IN PLACE

FIGURE 2.4-13

DRAWDOWN PROGRESSION

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

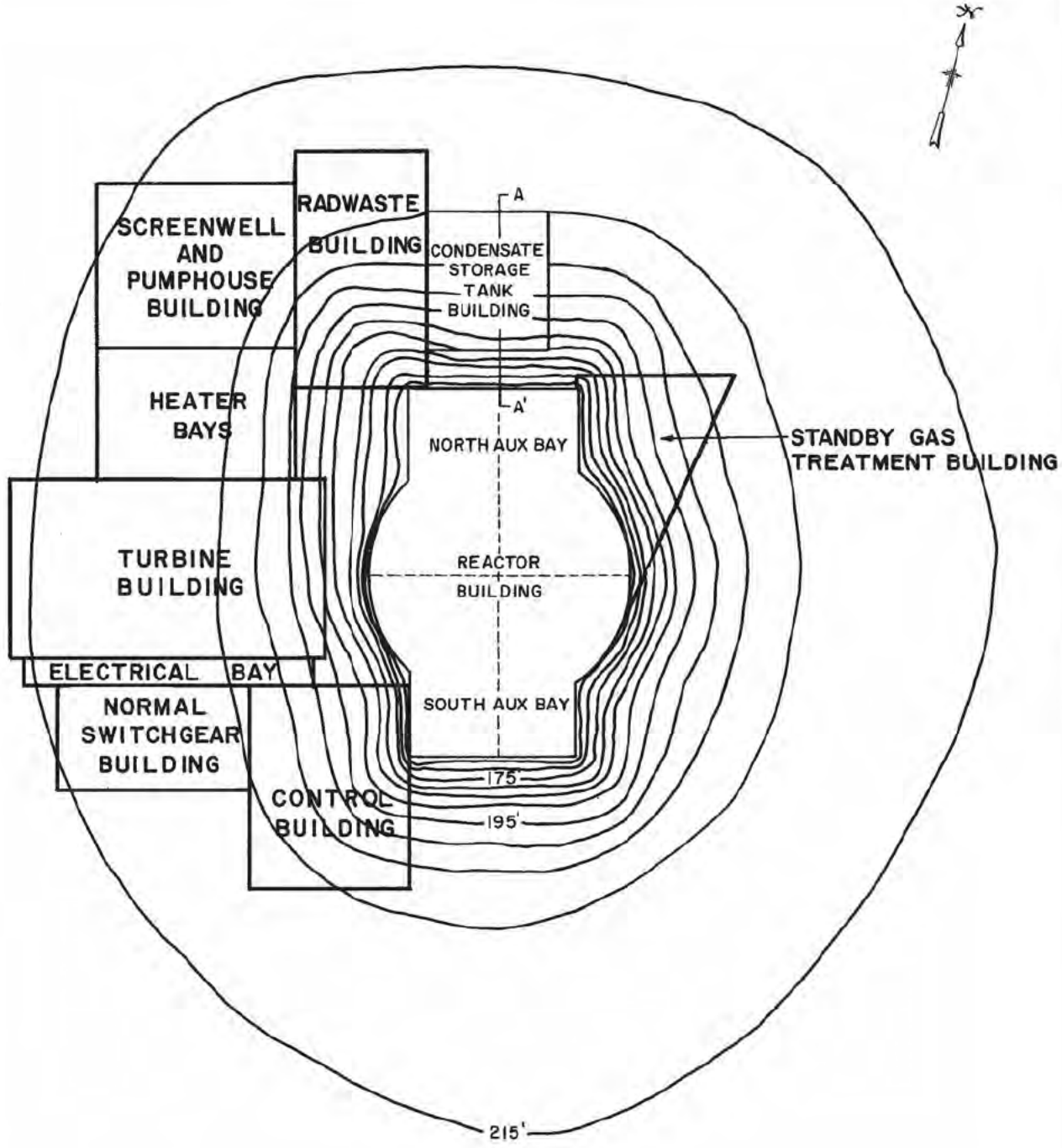


FIGURE 2.4-14

GROUNDWATER CONTOURS AROUND REACTOR BUILDING USED FOR DESIGN

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

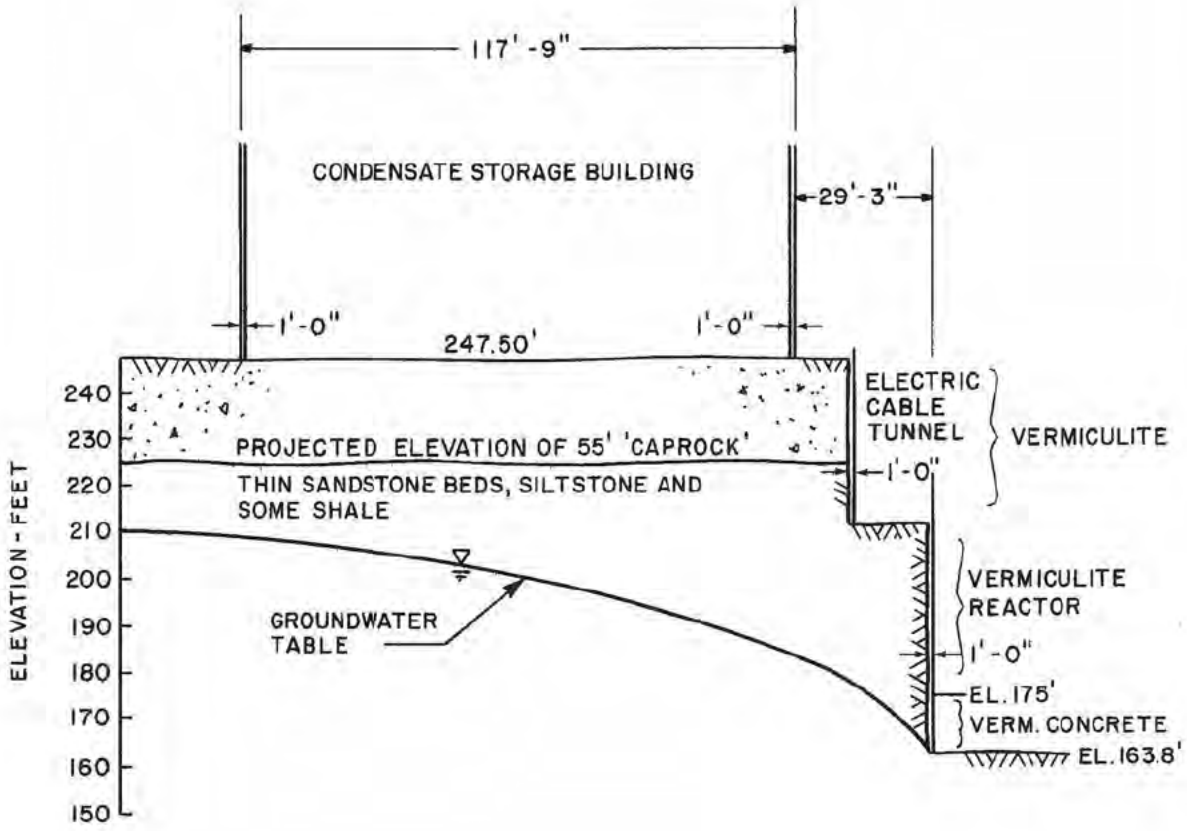


FIGURE 2.4-15

GROUNDWATER PROFILE UNDER THE CONDENSATE STORAGE TANK BUILDING

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

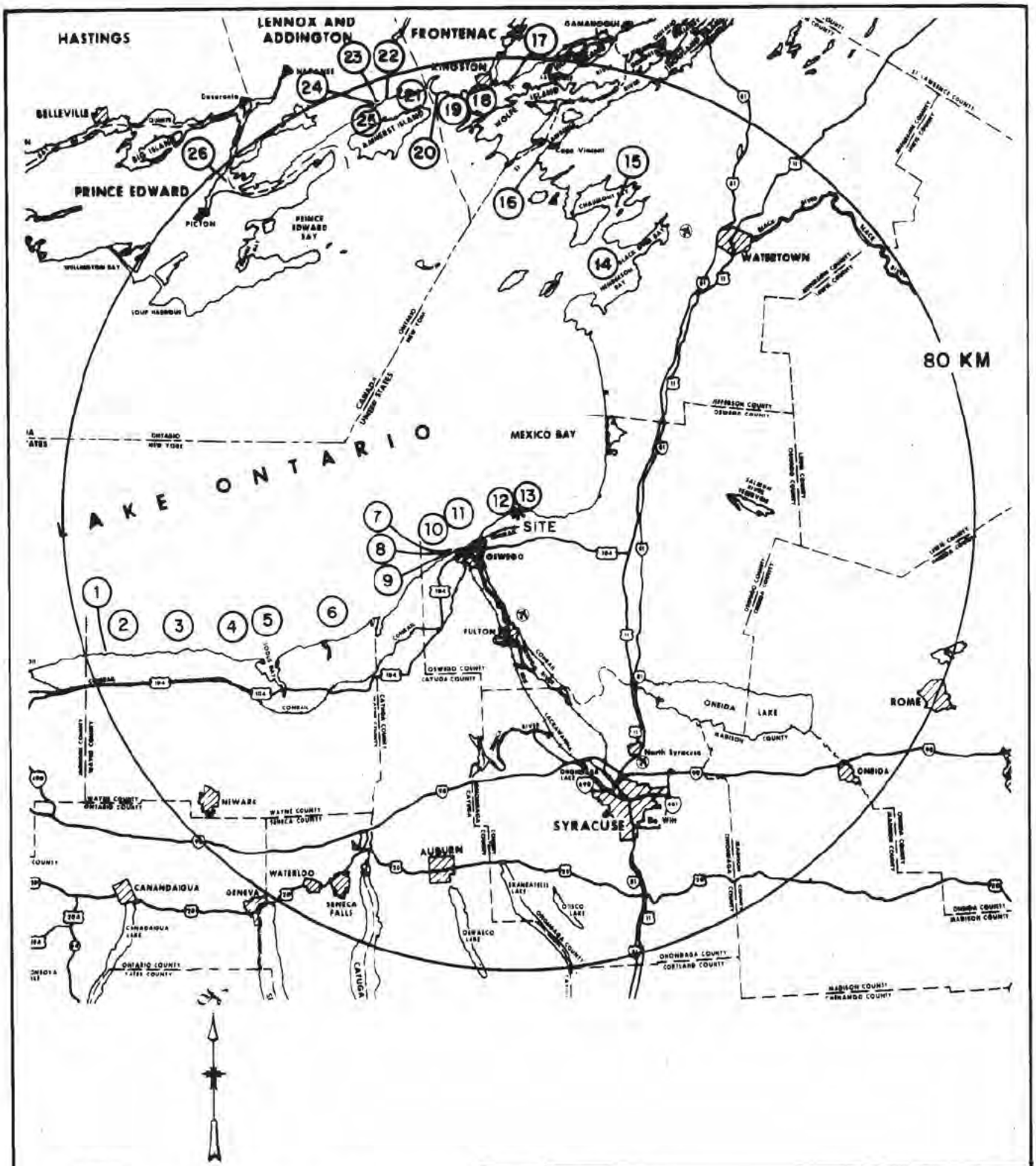


FIGURE 2.4-16

WATER SUPPLIES AND INDUSTRIAL USERS ON LAKE ONTARIO WITHIN 80-KM REGION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

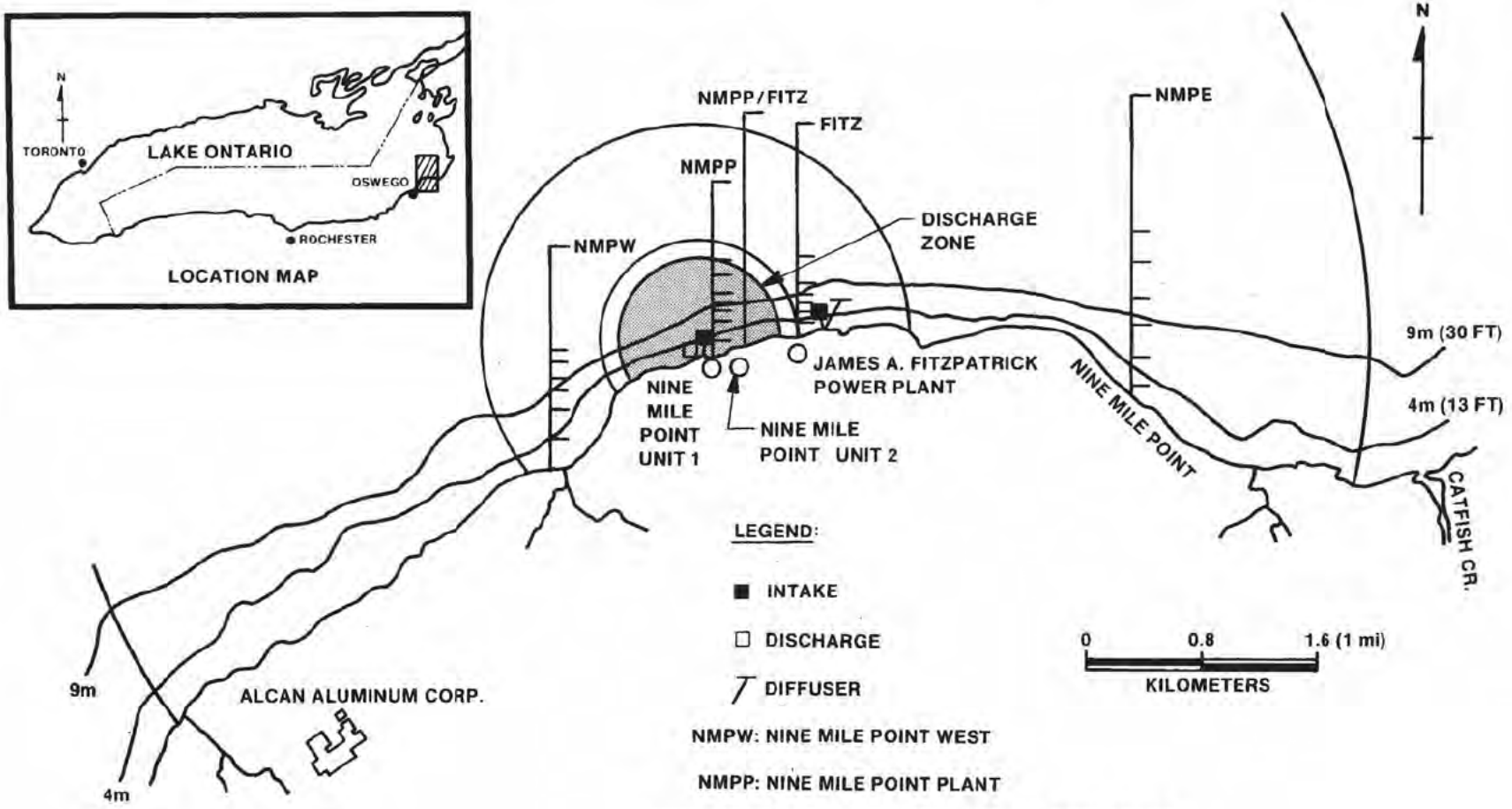


FIGURE 2.4-17

DISCHARGE ZONE AT NINE MILE POINT UNIT 1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

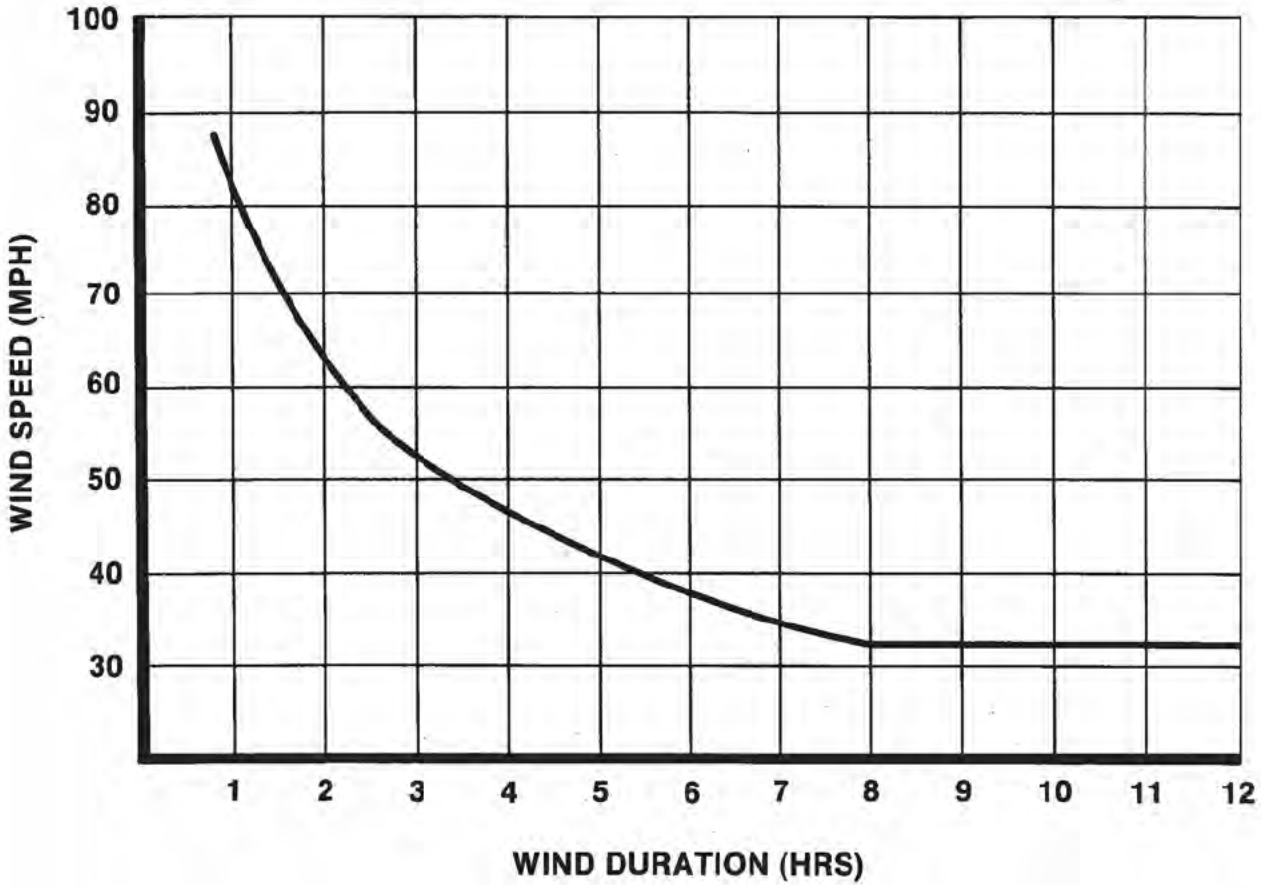


FIGURE 2.4-18

WIND SPEED AND DURATION FOR GENERATING A 10.5 FT WAVE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

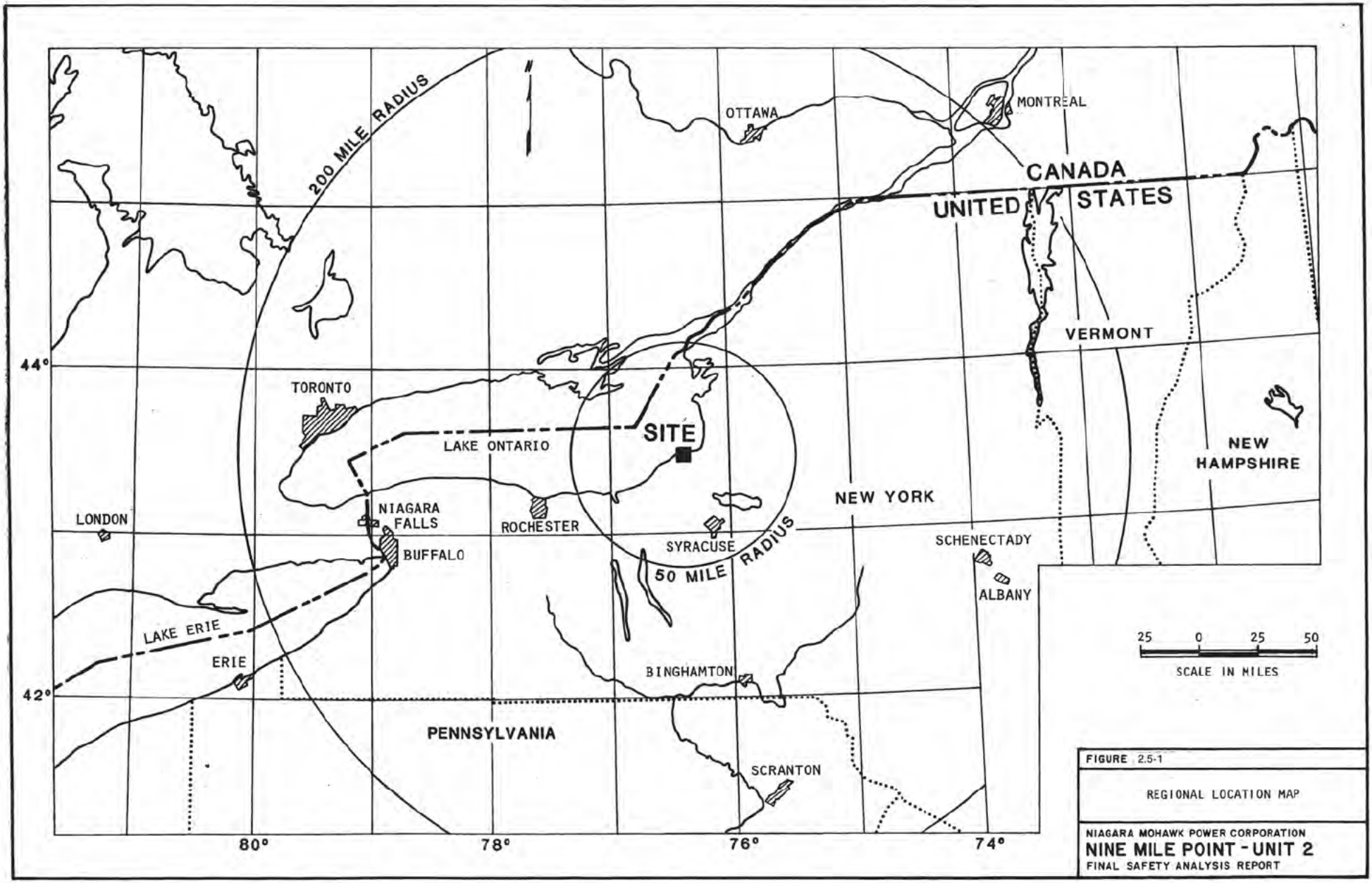
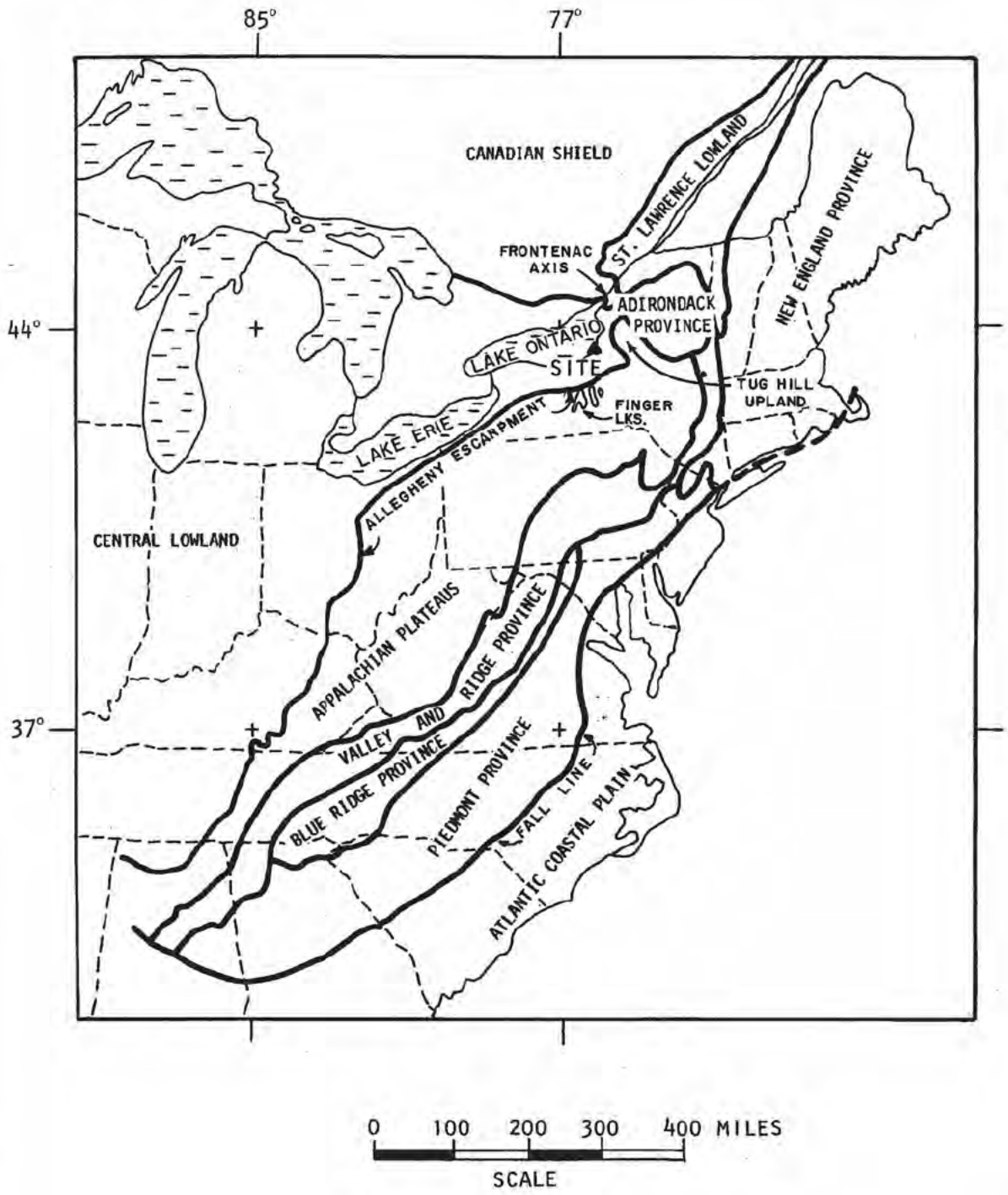


FIGURE 2.5-1

REGIONAL LOCATION MAP

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

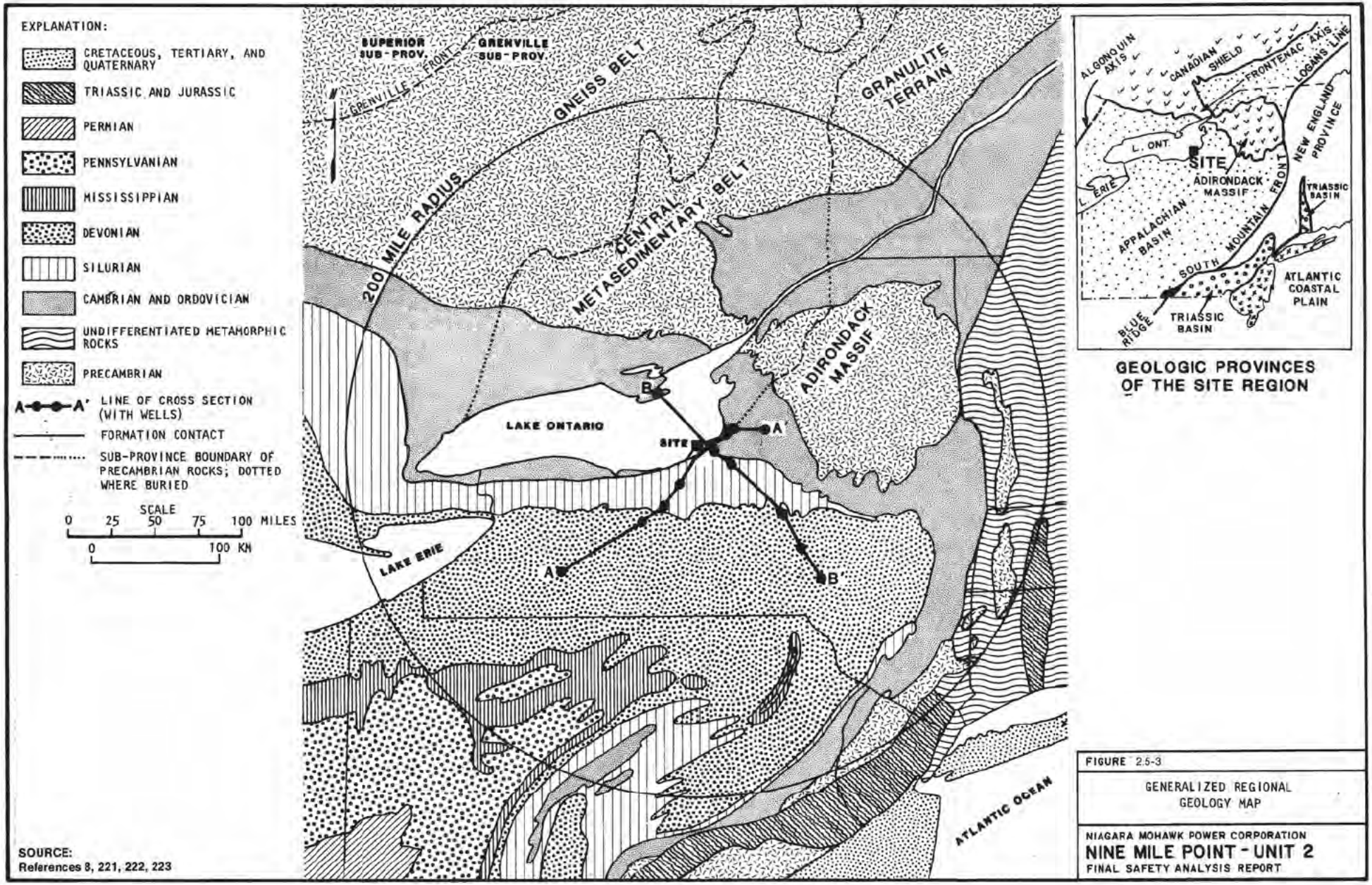


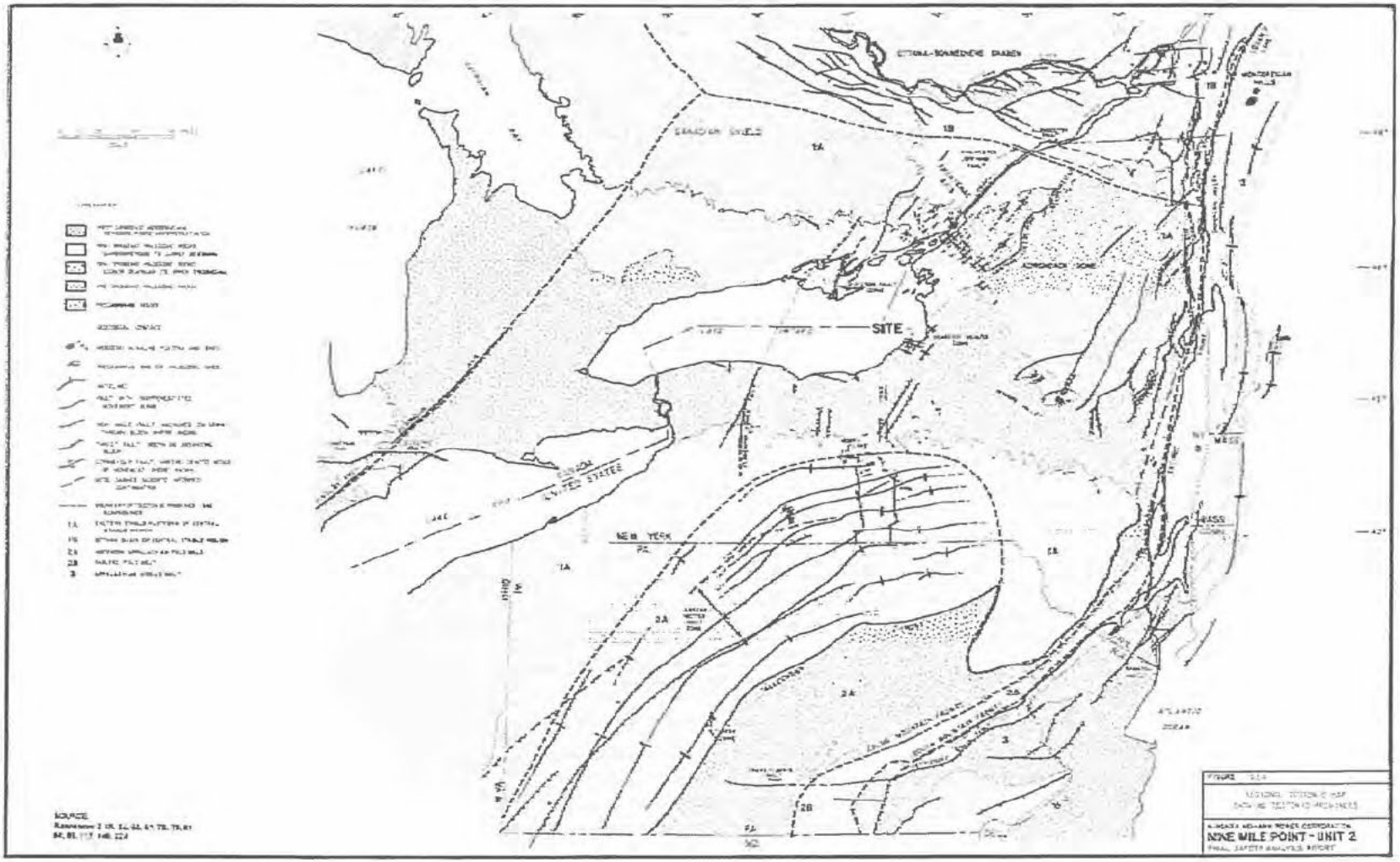
SOURCE:
Reference 1

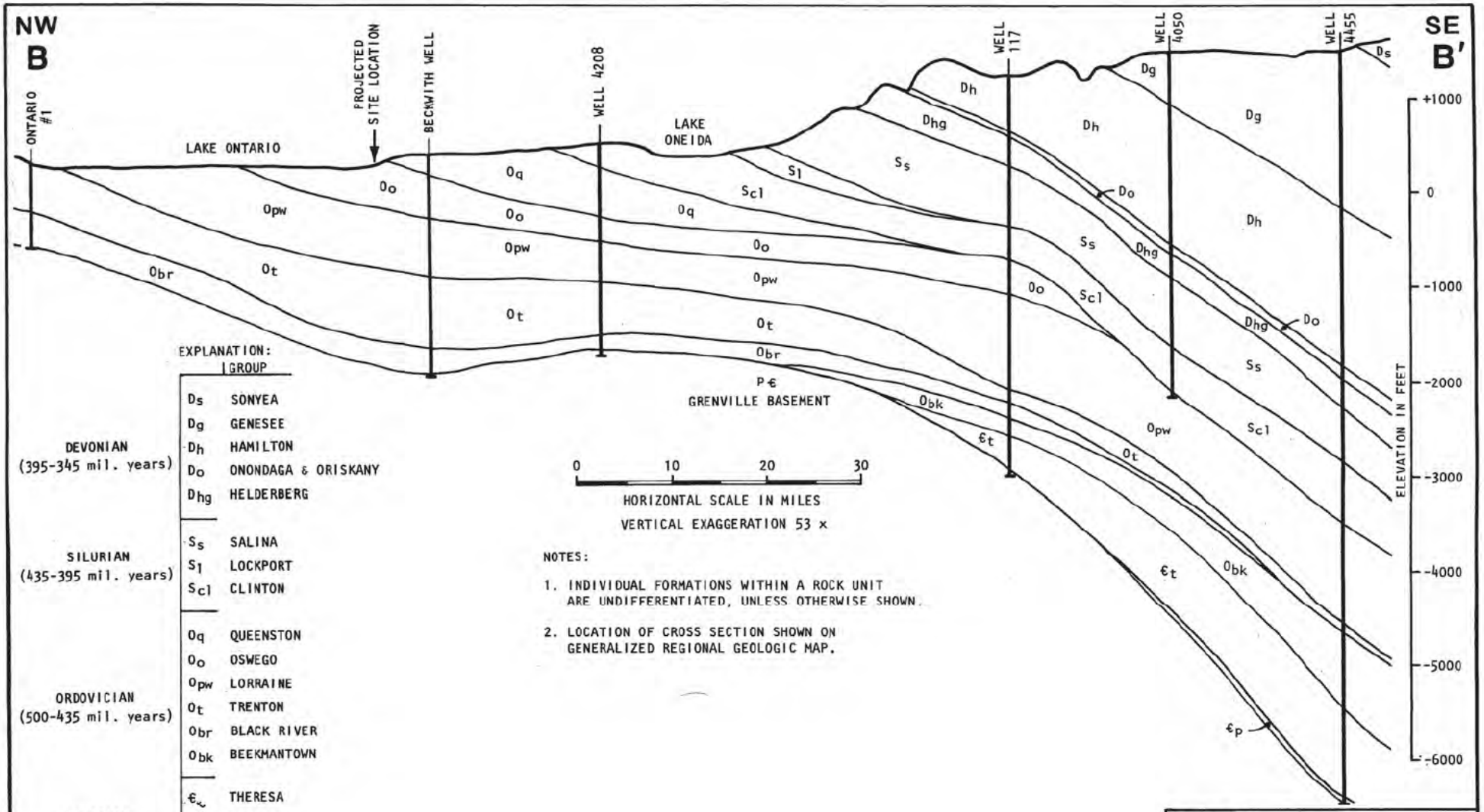
FIGURE 2.5-2

REGIONAL PHYSIOGRAPHIC MAP

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


EXPLANATION:
CRETACEOUS, TERTIARY, AND QUATERNARY
TRIASSIC AND JURASSIC
PERMIAN
PENNSYLVANIAN
MISSISSIPPIAN
DEVONIAN
SILURIAN
CAMBRIAN AND ORDOVICIAN
UNDIFFERENTIATED METAMORPHIC ROCKS
PRECAMBRIAN
A-A' LINE OF CROSS SECTION (WITH WELLS)
FORMATION CONTACT
SUB-PROVINCE BOUNDARY OF PRECAMBRIAN ROCKS; DOTTED WHERE BURIED
SCALE
0 25 50 75 100 MILES
0 100 KM
SOURCE:
References 8, 221, 222, 223
SUPERIOR SUB-PROV.
GRENVILLE SUB-PROV.
GRENVILLE FRONT
GNEISS BELT
GRANULITE TERRAIN
200 MILE RADIUS
CENTRAL METASEDIMENTARY BELT
ADIRONDACK MASSIF
LAKE ONTARIO
SITE
LAKE ERIE
ATLANTIC OCEAN
ALGONQUIN AXIS
CANADIAN SHIELD
FRONTENAC AXIS
LOGAN'S LINE
NEW ENGLAND PROVINCE
L. ONT.
L. ERIE
APPALACHIAN BASIN
MOUNTAIN FRONT
SOUTH
TRIASSIC BASIN
ATLANTIC COASTAL PLAIN
BLUE RIDGE
GEOLOGIC PROVINCES OF THE SITE REGION
FIGURE 2.5-3
GENERALIZED REGIONAL GEOLOGY MAP
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


SITE
NEW YORK
UNITED STATES
ATLANTIC OCEAN
NINE MILE POINT - UNIT 2



NOTES:

1. INDIVIDUAL FORMATIONS WITHIN A ROCK UNIT ARE UNDIFFERENTIATED, UNLESS OTHERWISE SHOWN.
2. LOCATION OF CROSS SECTION SHOWN ON GENERALIZED REGIONAL GEOLOGIC MAP.

SOURCE:
References 11, 223, 225

FIGURE 2.5-6

GENERALIZED REGIONAL NW-SE GEOLOGIC CROSS-SECTION B-B'

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

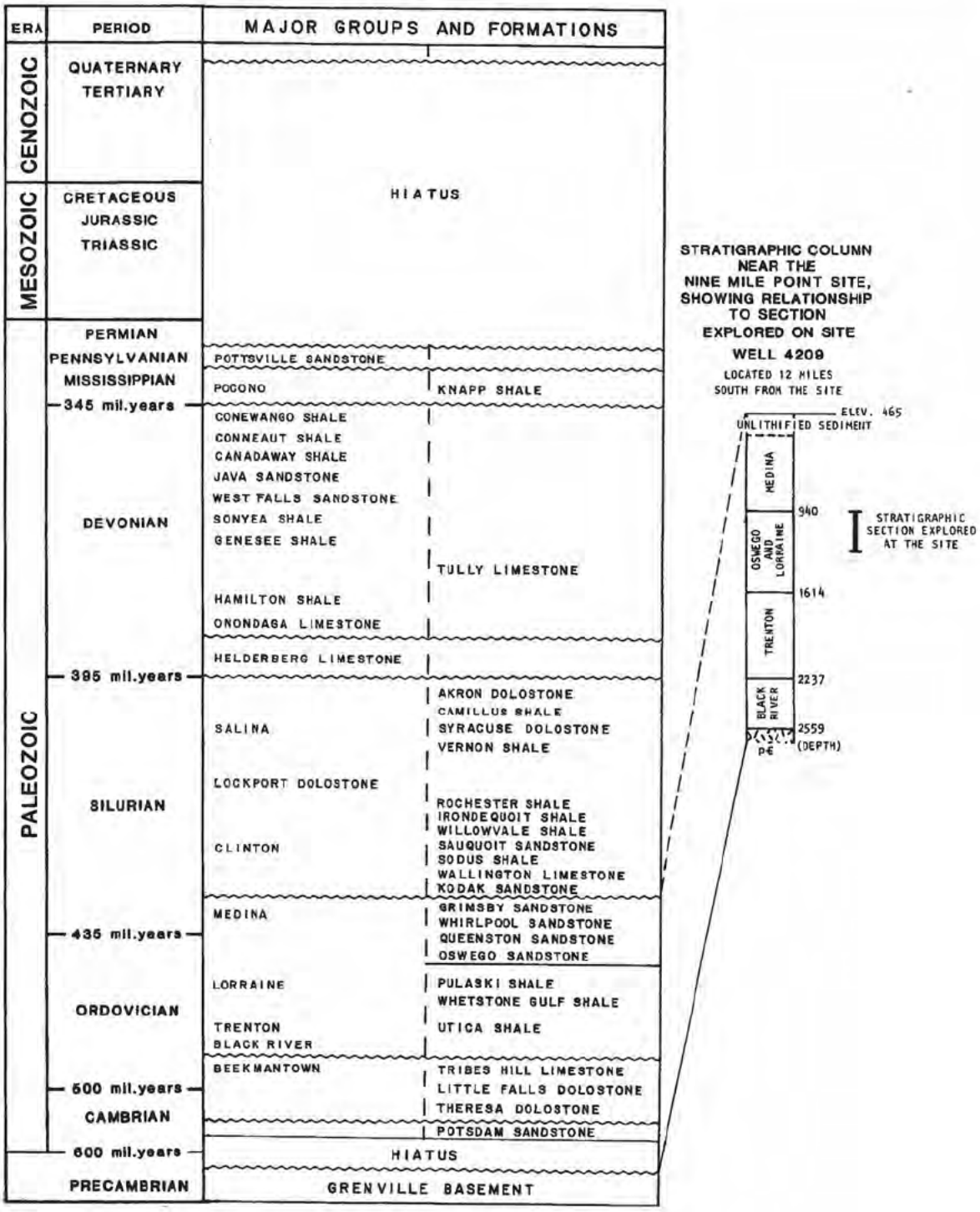
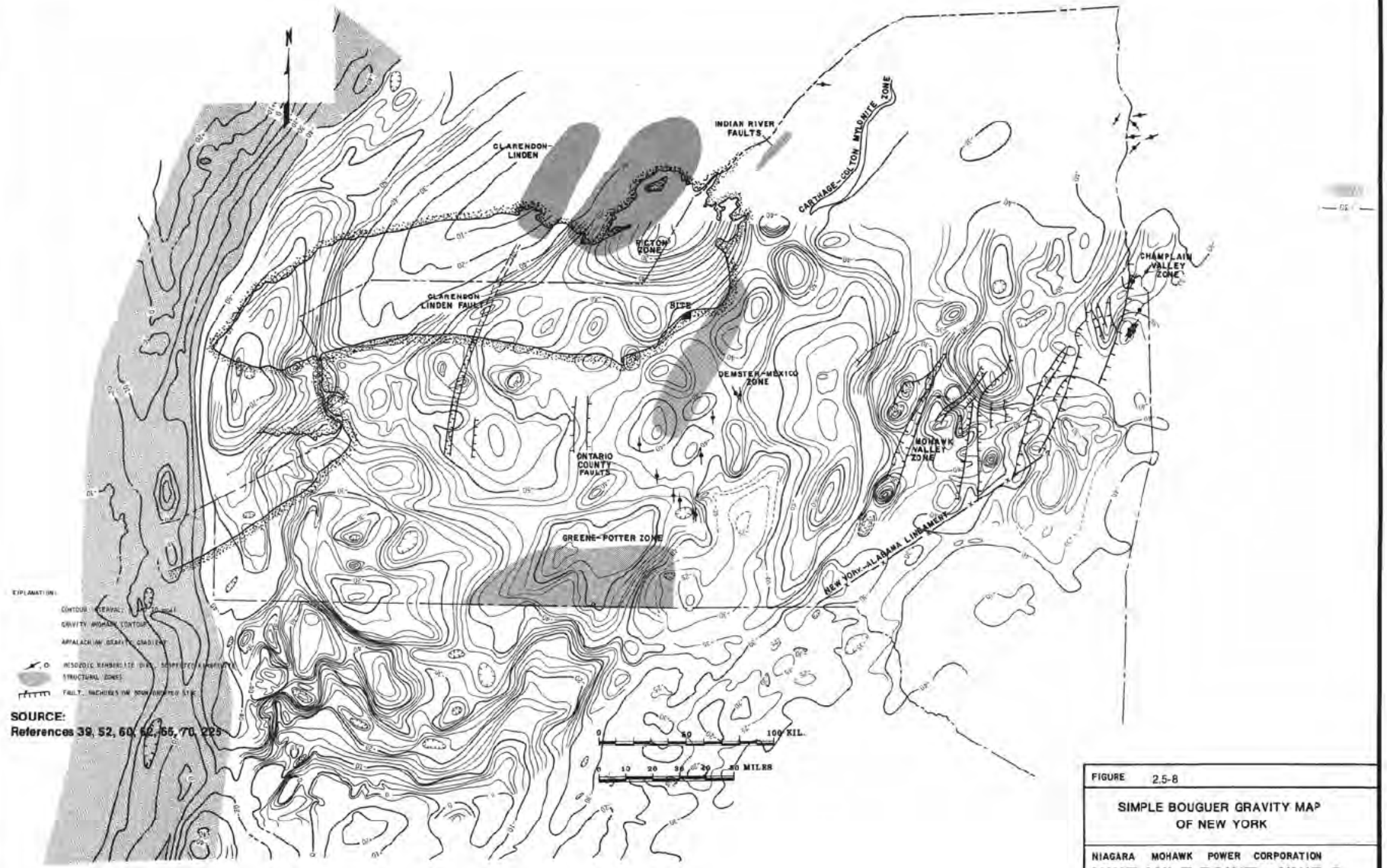


FIGURE 2.5-7

REGIONAL AND SITE STRATIGRAPHIC COLUMN
(NEW YORK STATE)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE:
References 39, 52, 60, 62, 65, 70, 225

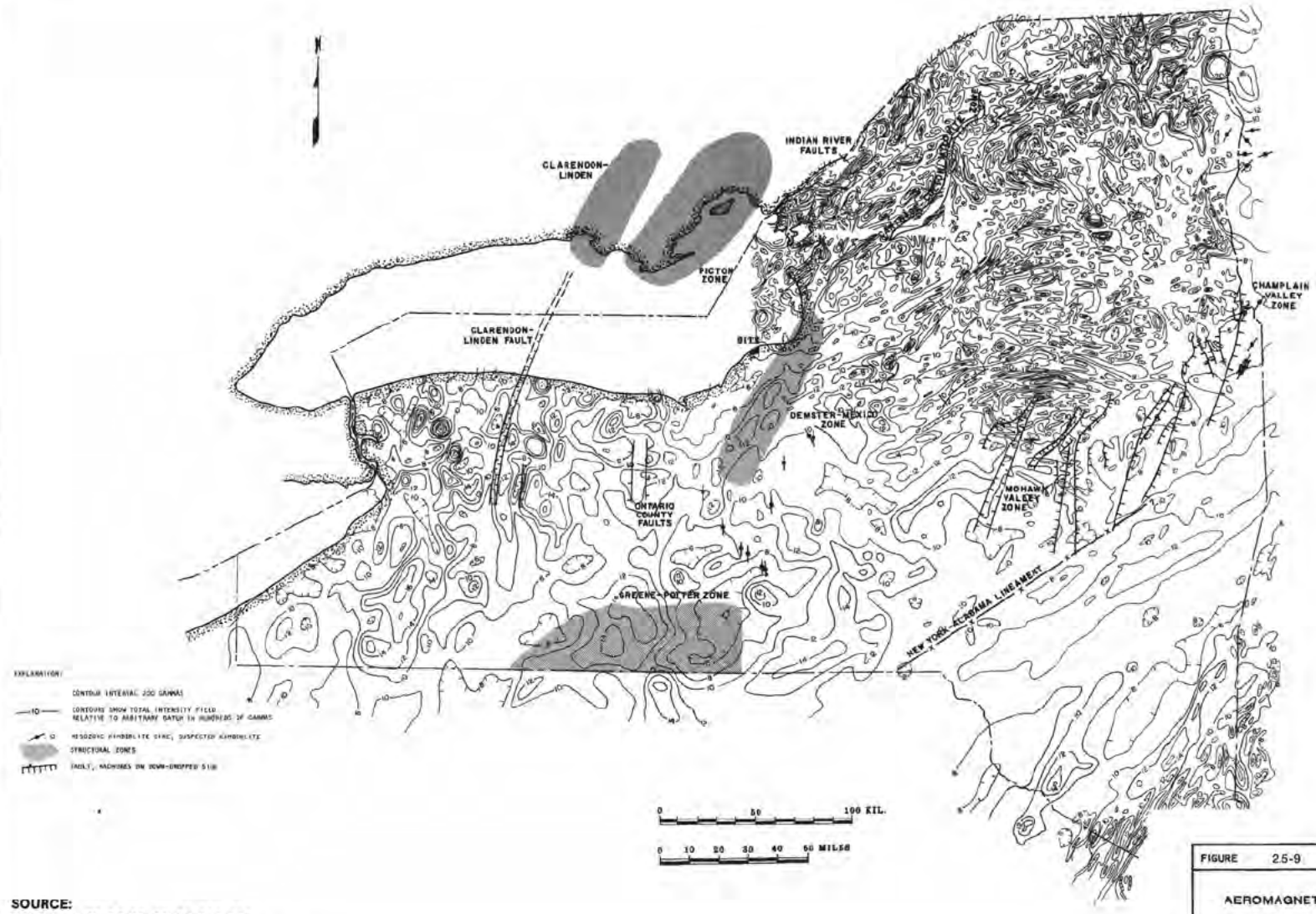
FIGURE 2.5-8

SIMPLE BOUGUER GRAVITY MAP OF NEW YORK

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



SOURCE:
References 52, 60, 62, 56, 70, 225, 228

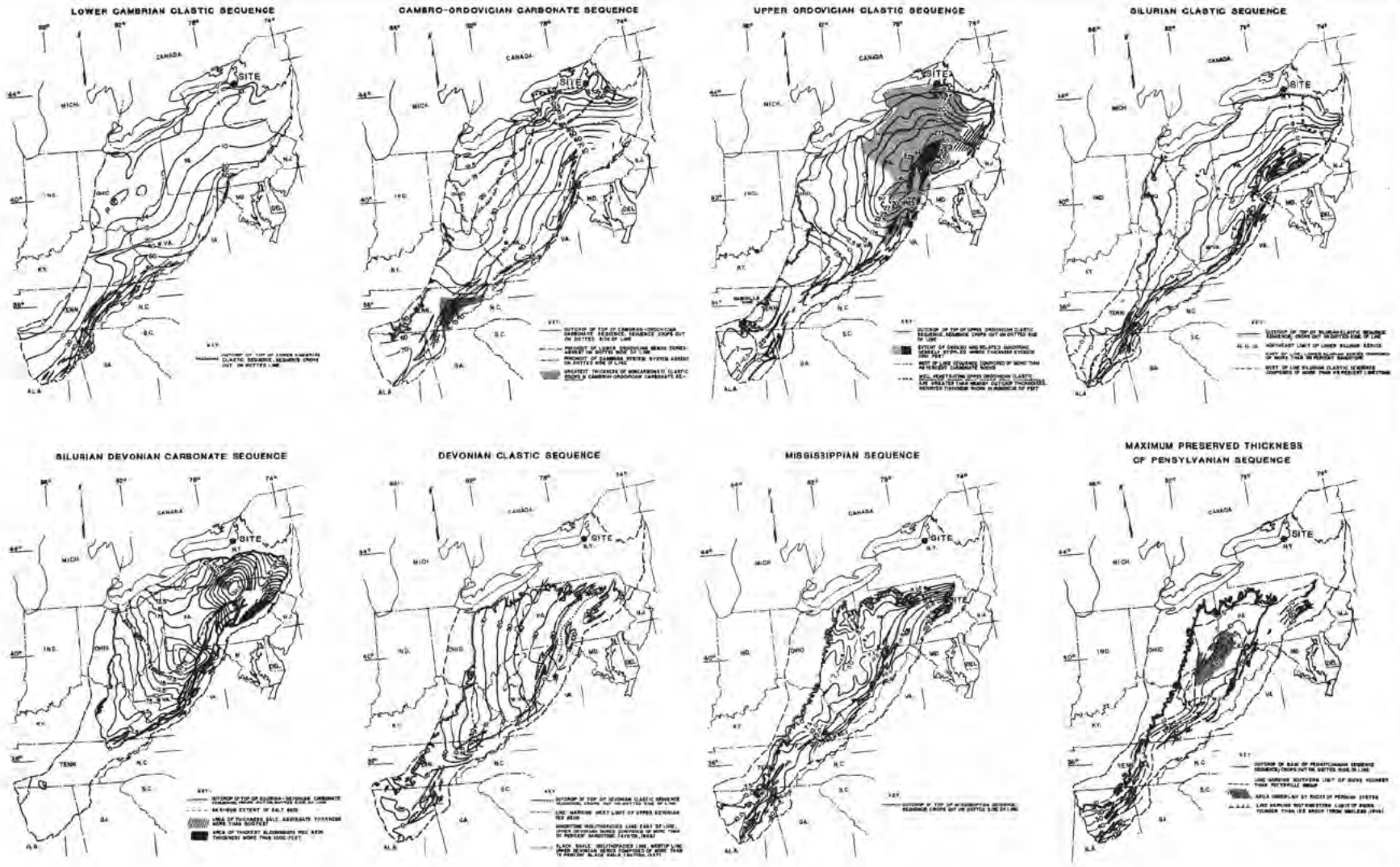
FIGURE 2.5-9

AEROMAGNETIC MAP OF NEW YORK

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



SOURCE:
Reference 3

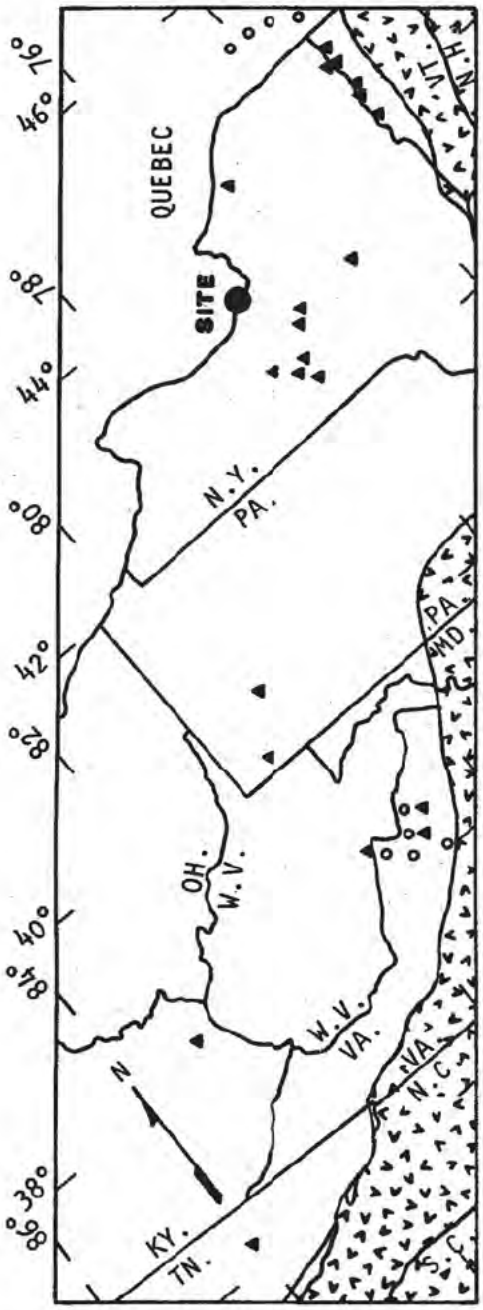
FIGURE 2.5-10

REGIONAL ISOPACH MAPS
OF PALEOZOIC APPALACHIAN BASIN

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



SCALE
0 100 200 300 KM

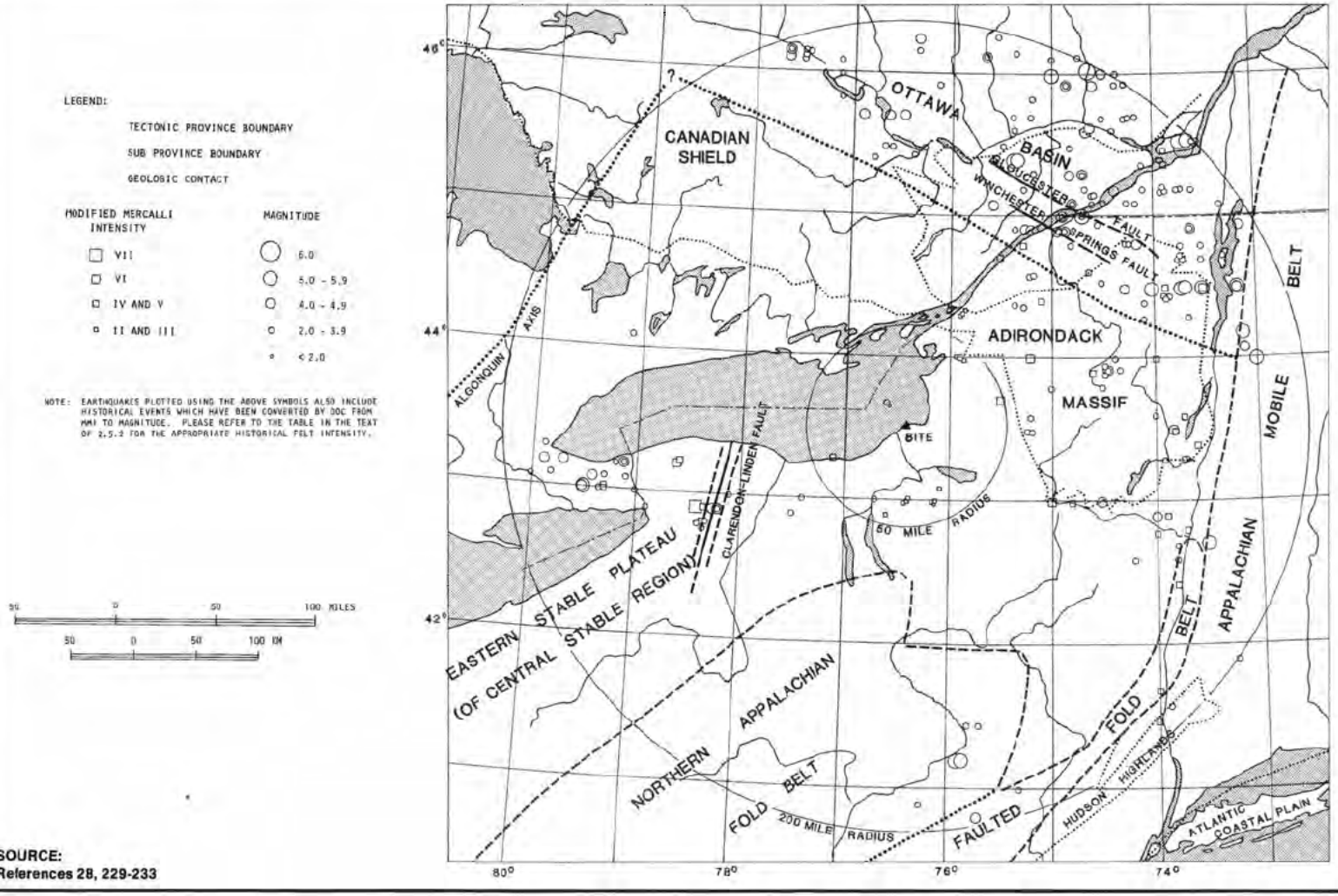
EXPLANATION:
METAMORPHIC ROCKS
MAFIC ROCKS
FELSIC ROCKS

SOURCE:
Reference 17

FIGURE 2.5-11

ALKALIC IGNEOUS ROCKS
OF WESTERN APPALACHIANS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

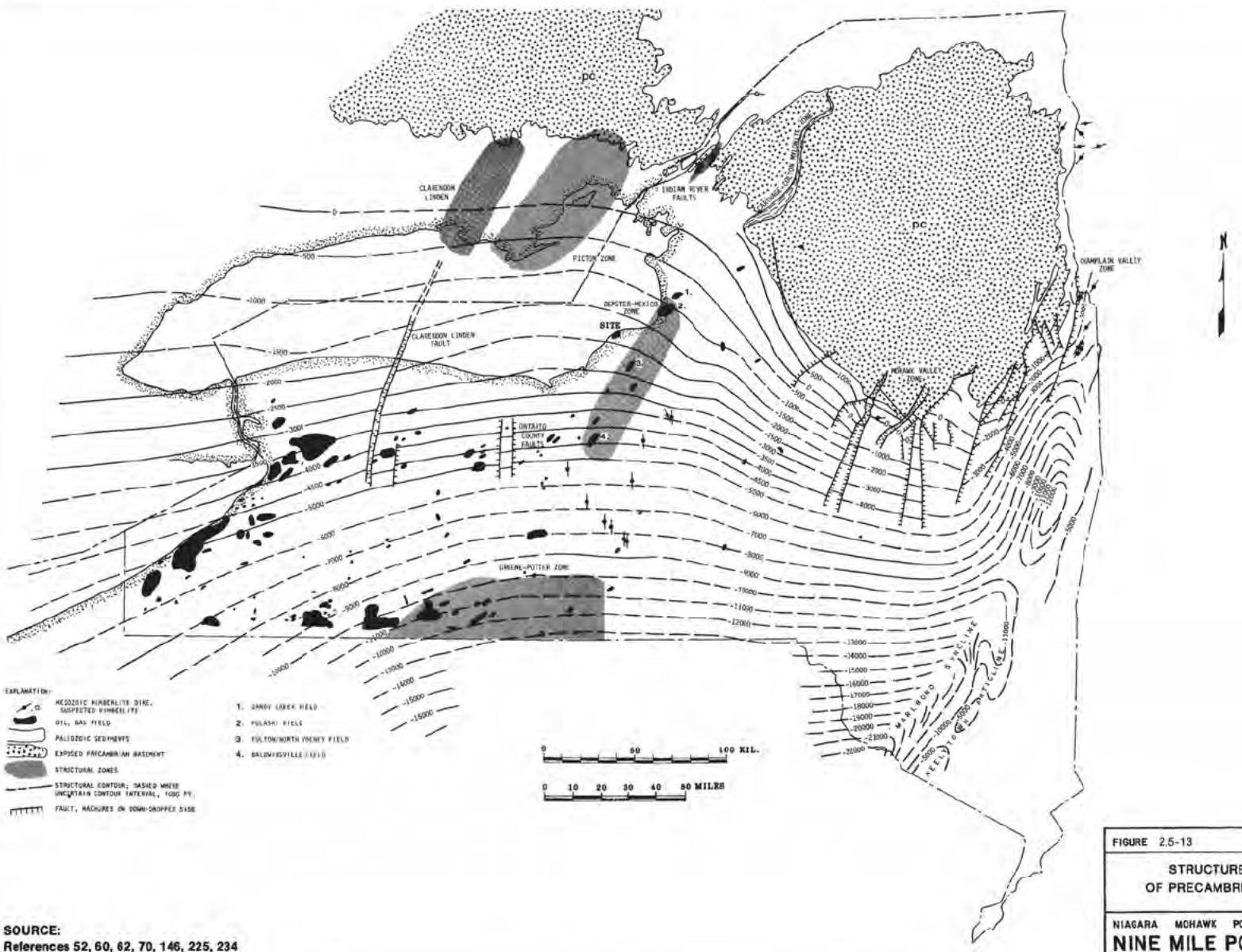


SOURCE:
References 28, 229-233

FIGURE 2.5-12

TECTONIC PROVINCES OF NORTHEASTERN UNITED STATES AND ADJACENT CANADA SHOWING HISTORIC SEISMICITY

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT – UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE:
References 52, 60, 62, 70, 146, 225, 234

FIGURE 2.5-13

STRUCTURE CONTOUR MAP
OF PRECAMBRIAN BASEMENT, N.Y.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

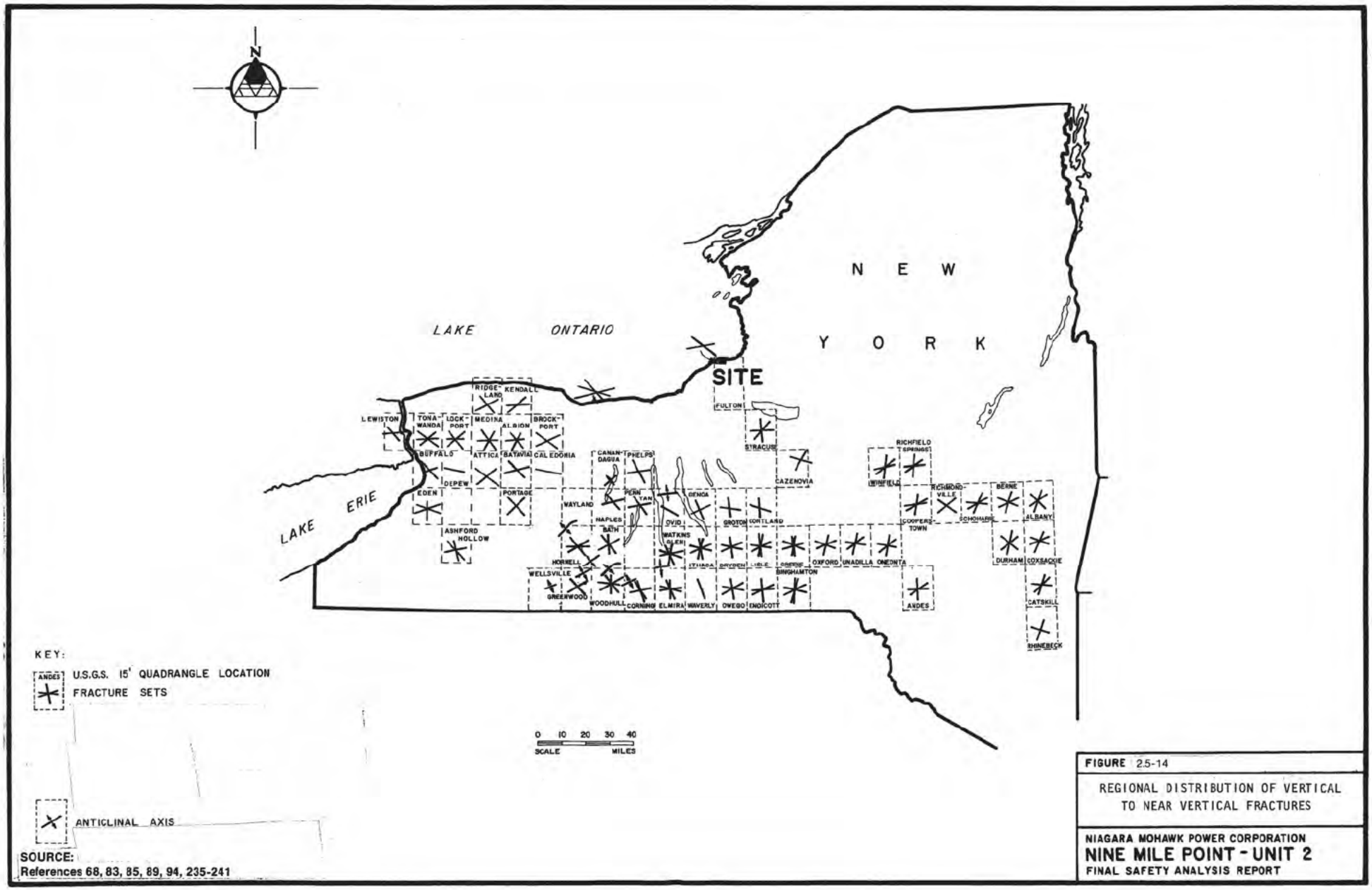
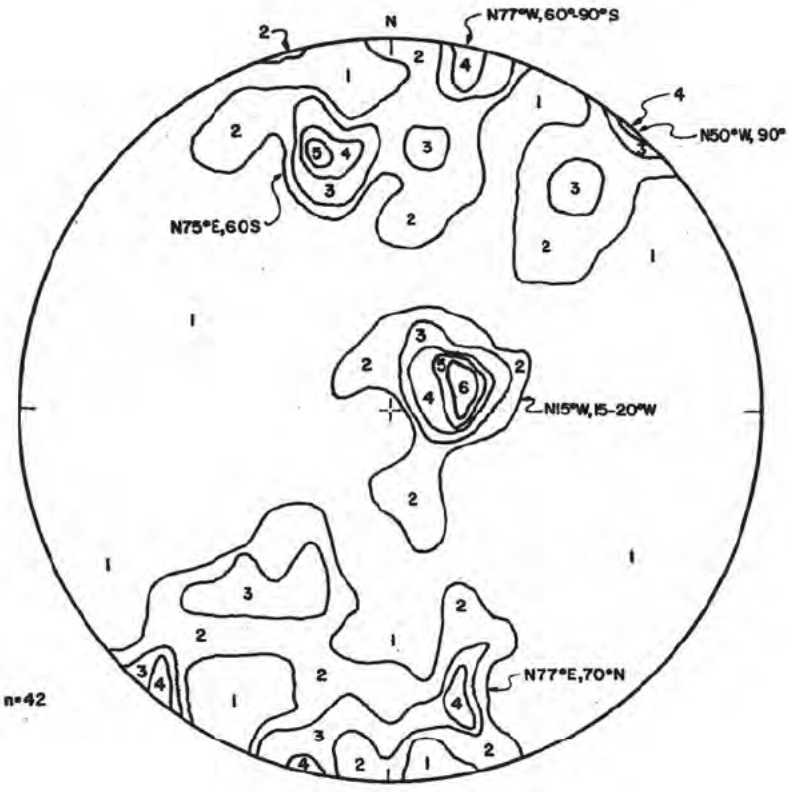


FIGURE 2.5-14

REGIONAL DISTRIBUTION OF VERTICAL TO NEAR VERTICAL FRACTURES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



KEY:		points / 1% area
	1	0-2
	2	2-4
	3	4-7
	4	7-9
	5	9-12
	6	> 12

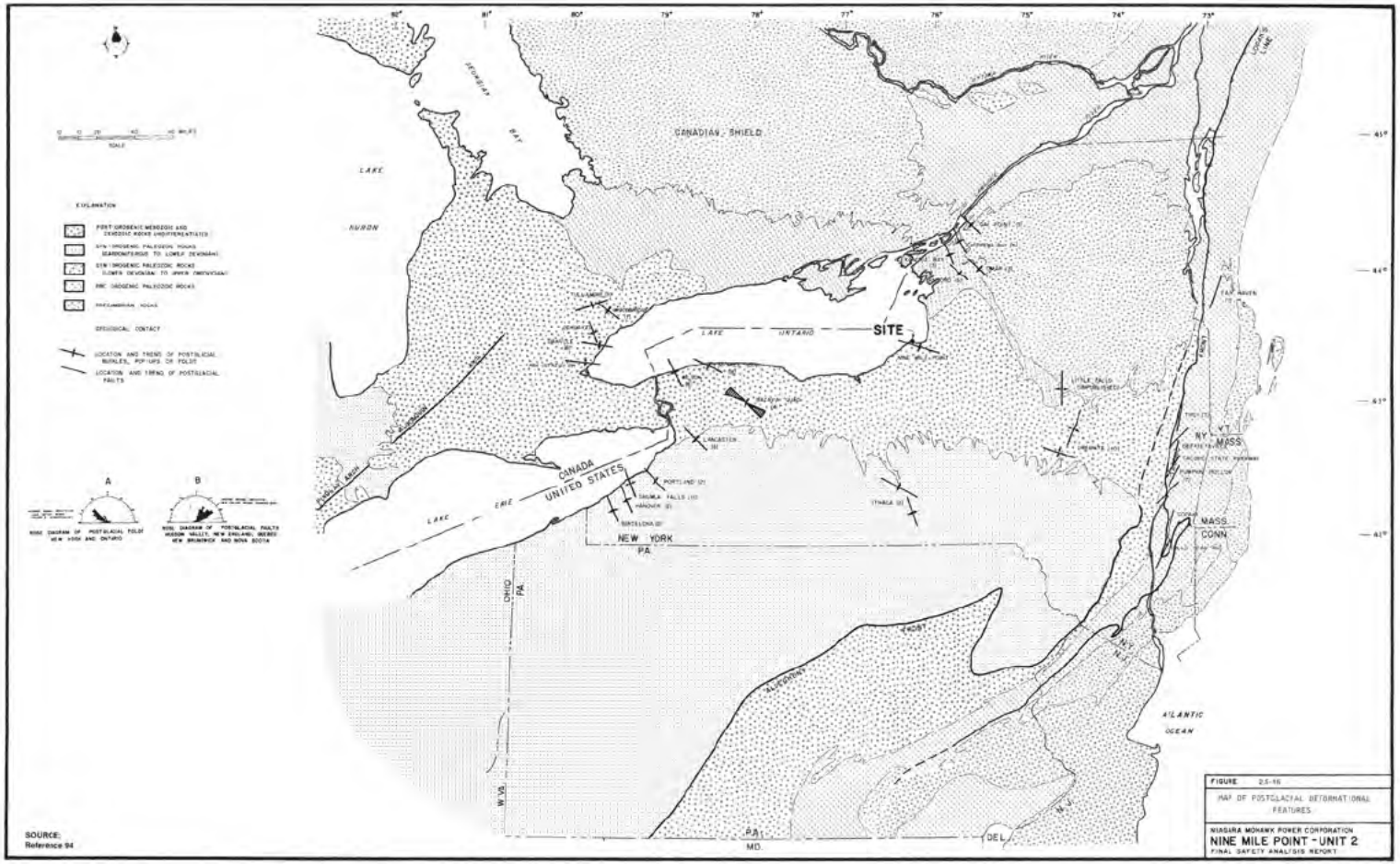
FIGURE 2.5-15

CONTOUR DIAGRAM OF POLES TO 42 SMALL FAULTS IN CENTRAL AND WESTERN UPSTATE NEW YORK

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

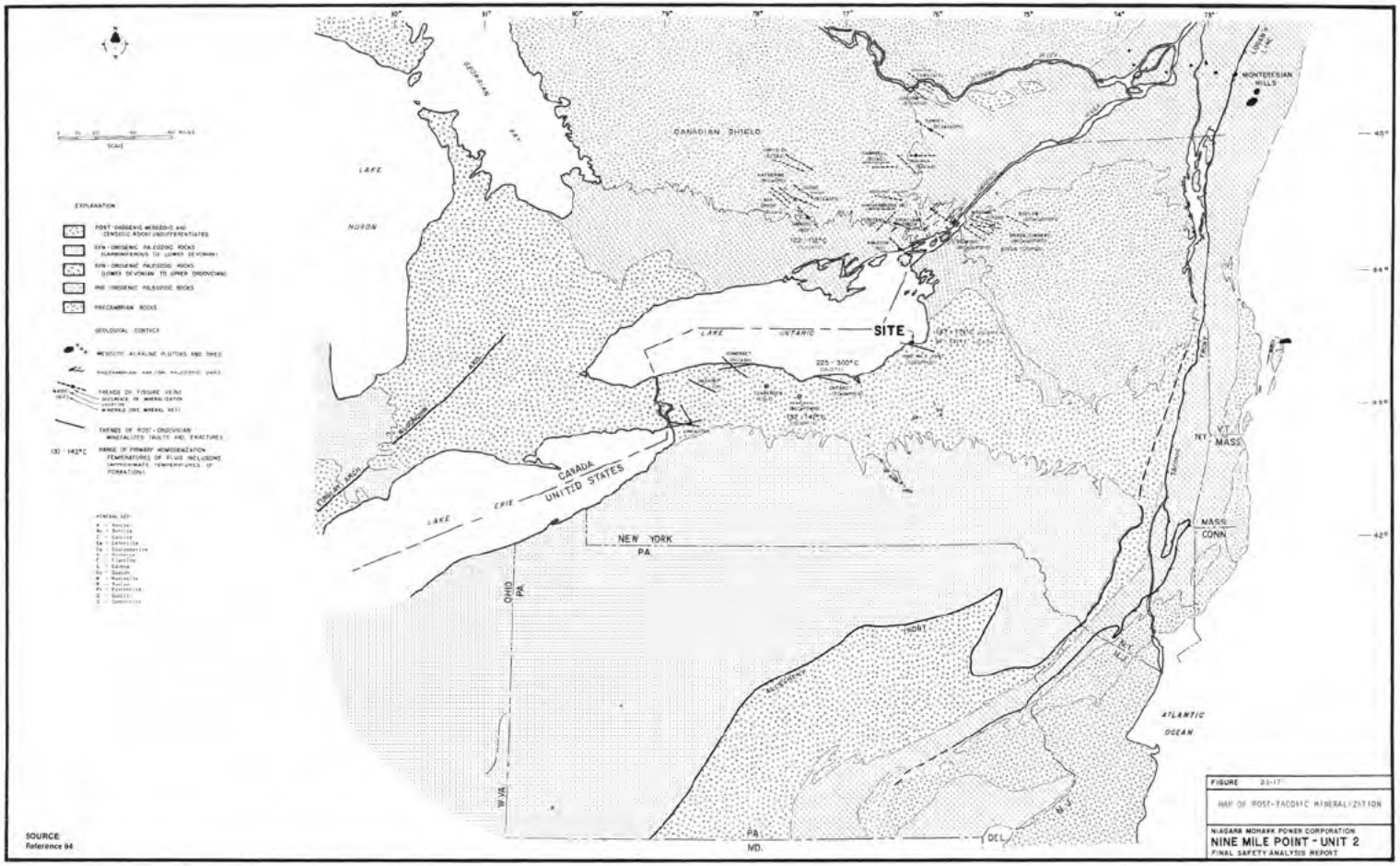


SOURCE:
Reference 94

FIGURE 2.5-16

MAP OF POSTGLACIAL DEFORMATIONAL FEATURES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

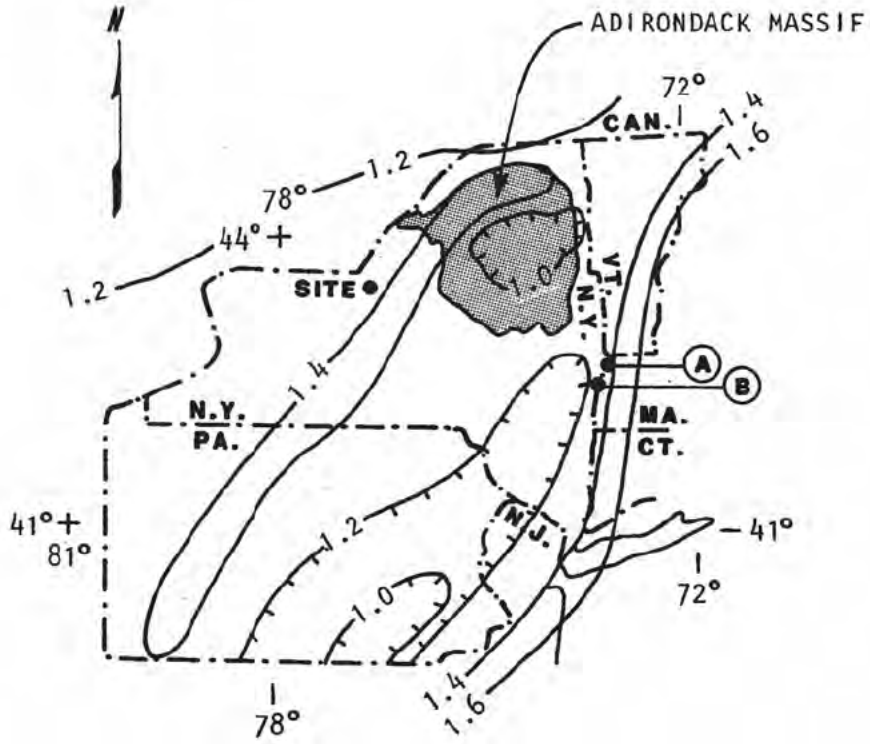


SOURCE
Reference 94

FIGURE 2.1-17

MAP OF POST-TACONIC MINERALIZATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



EXPLANATION :

(A) SAND SPRING, MA.

(B) LEBANON SPRING, N.Y.

SCALE

0 500 KM (310 MILES)

NOTES:

1. CONTOUR INTERVAL: 0.2 HEAT FLOW UNITS (1×10^{-6} CALORIES PER CM^2 PER SEC.)

2. 1 H.F.U. EQUALS APPROXIMATELY 42 MILLIWATTS PER SQUARE METER.

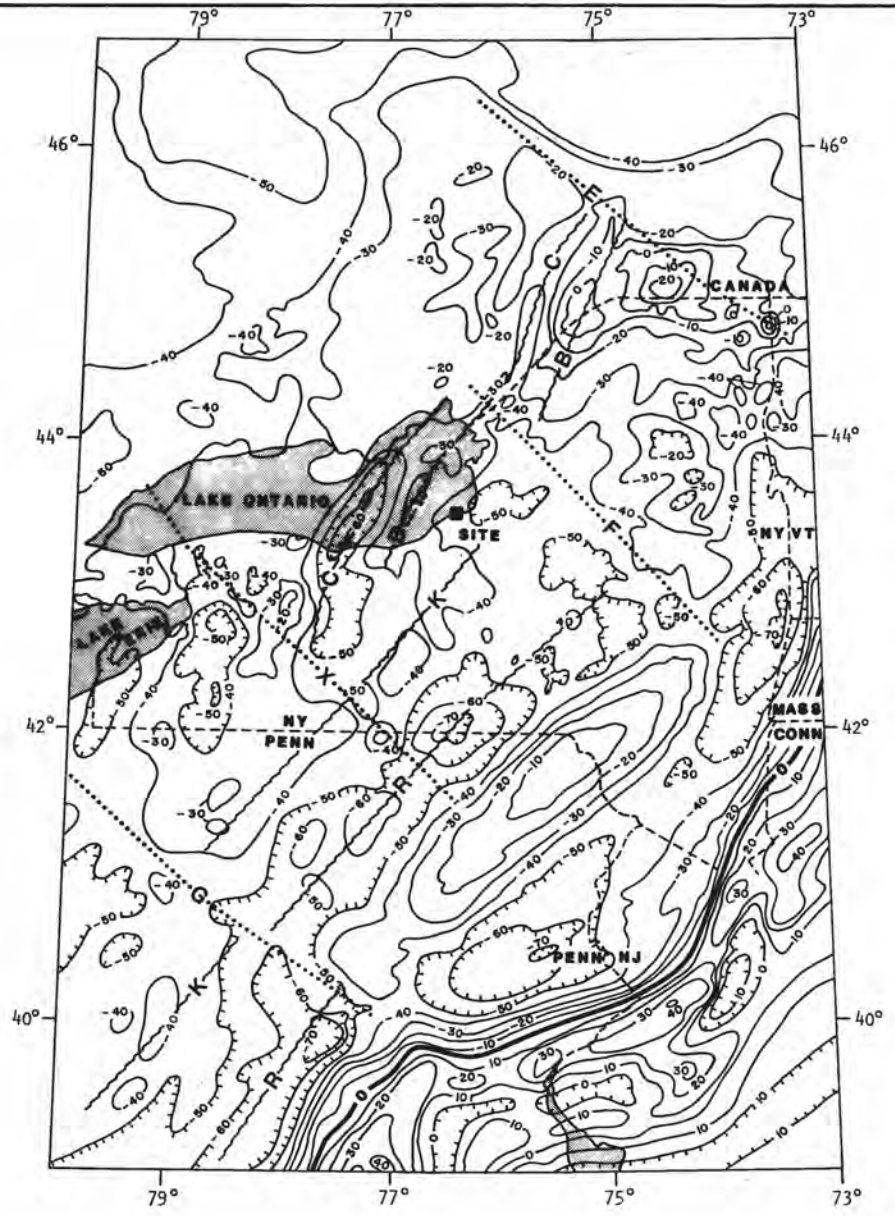
3. DATA CORRECTED FOR TERRAIN AND PLEISTOCENE CLIMATIC FLUCTUATIONS.

SOURCE:
Reference 96

FIGURE 2.5-18

HEAT FLOW IN NEW YORK
AND PENNSYLVANIA

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



EXPLANATION:

~~B~~ NE TRENDING LINEAMENT

·····G····· NW TRENDING LINEAMENT

REGIONAL BOUGUER GRAVITY ANOMALY MAP
CONTOUR INTERVAL = 10 mgal.

SCALE
0 100
KILOMETERS

SOURCE:
References 40, 72, 242

FIGURE 2.5-19

CROSS-STRIKE LINEAMENTS
OF PENNSYLVANIA AND NEW YORK

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

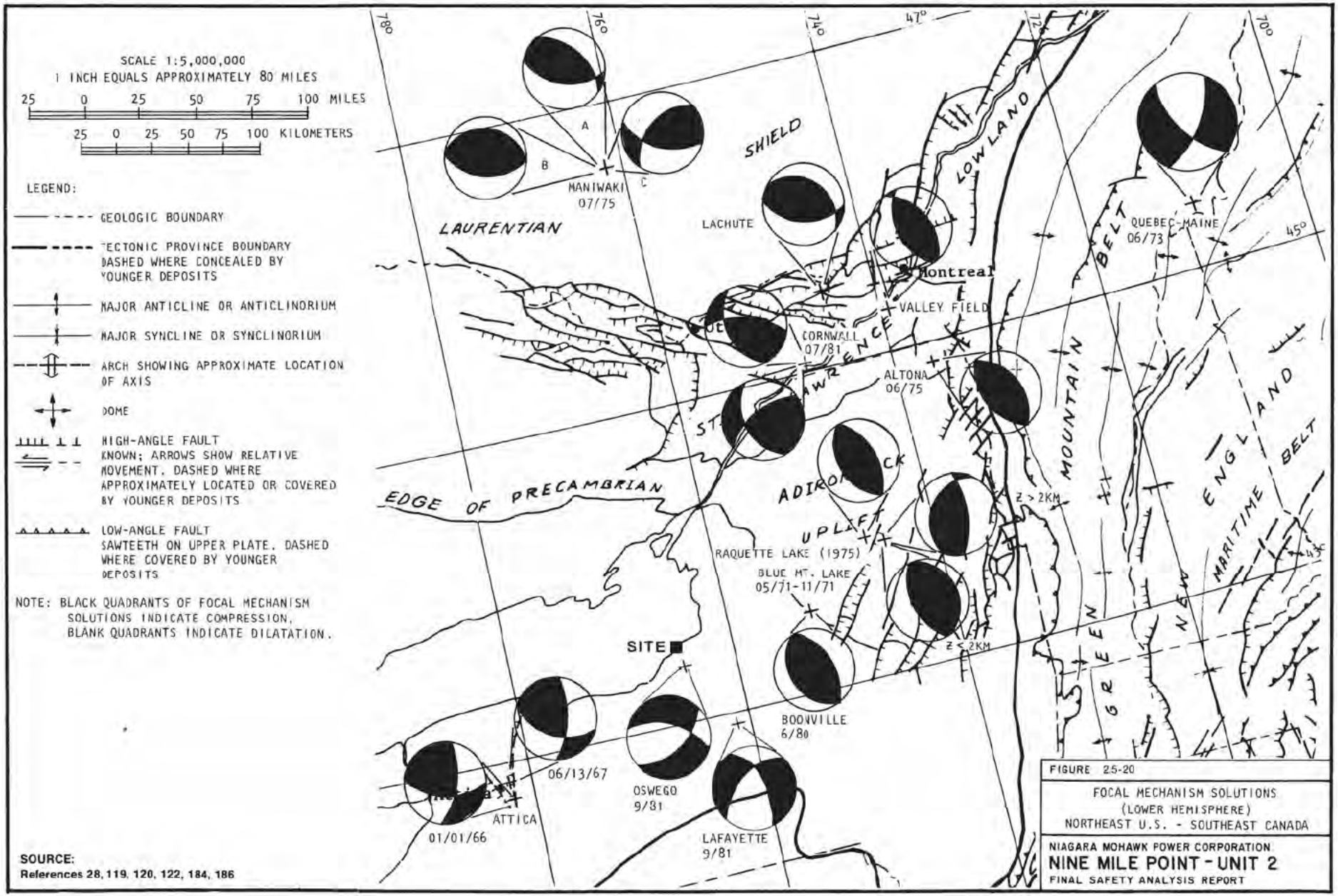
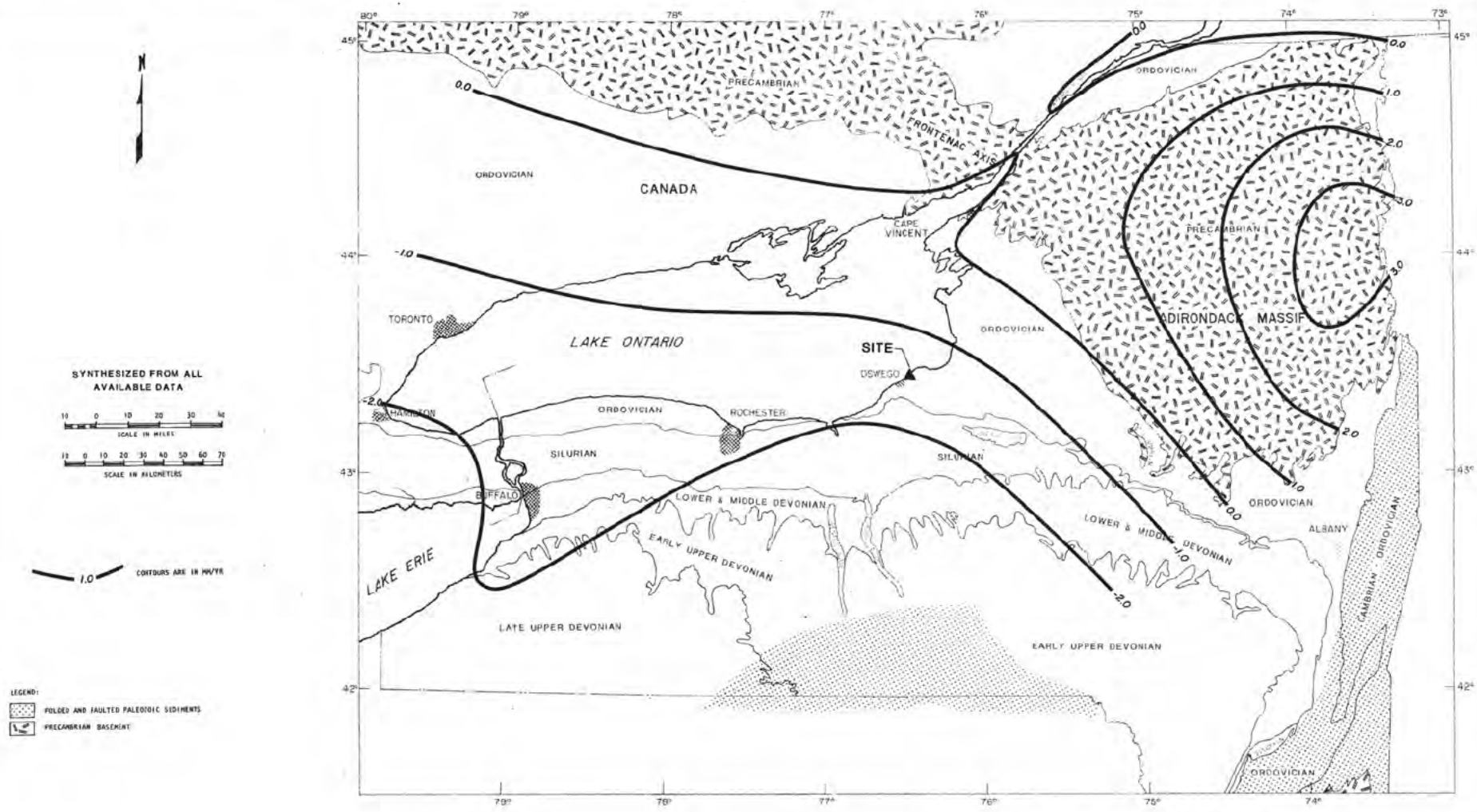


FIGURE 2.5-20

FOCAL MECHANISM SOLUTIONS
(LOWER HEMISPHERE)
NORTHEAST U.S. - SOUTHEAST CANADA

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

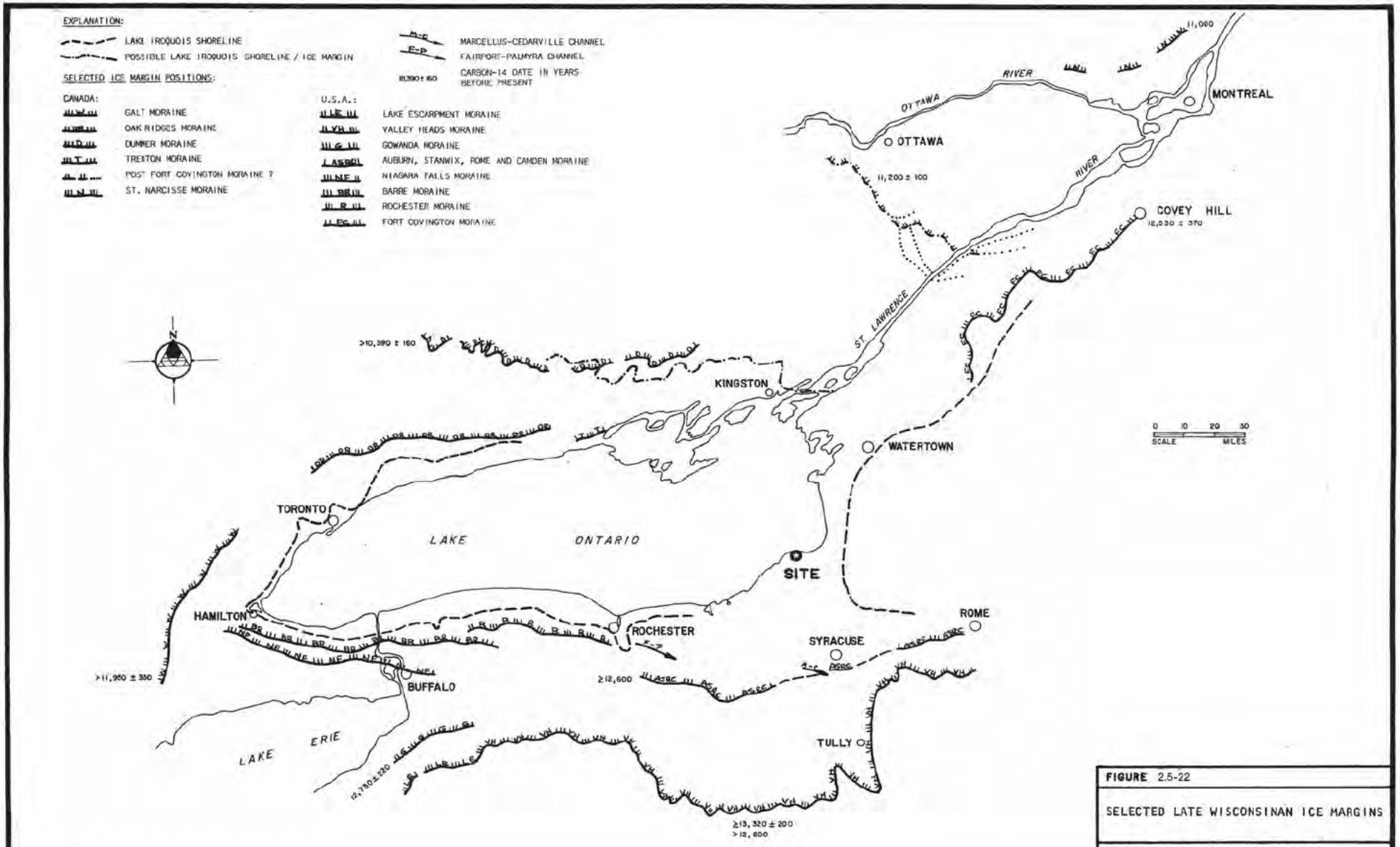


SOURCE:
References 243, 244

FIGURE 2.5-21

INTERPRETATION OF VERTICAL CRUSTAL VELOCITY FOR LAKE ONTARIO REGION RELATIVE TO CAPE VINCENT, N.Y.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE:
References 94, 134, 136, 137, 141, 149, 245-249, 257

FIGURE 2.5-22

SELECTED LATE WISCONSINAN ICE MARGINS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

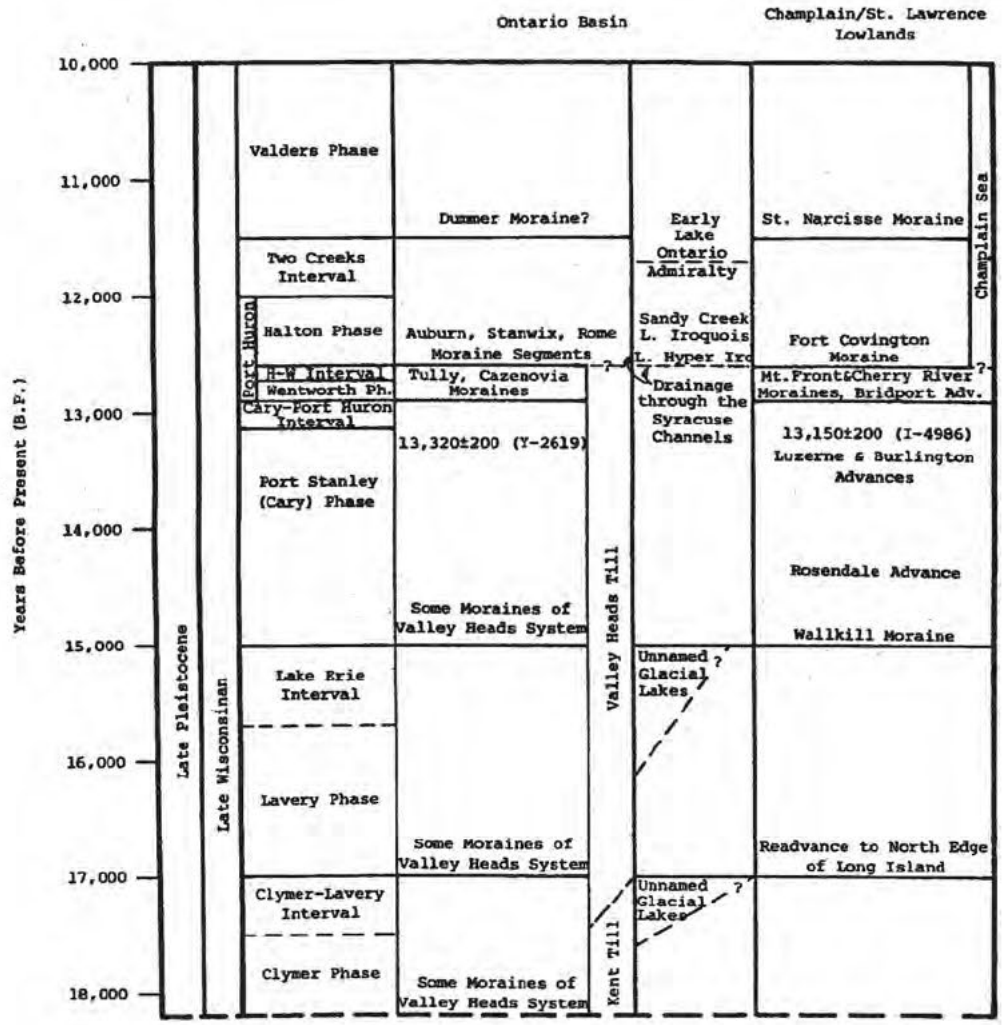
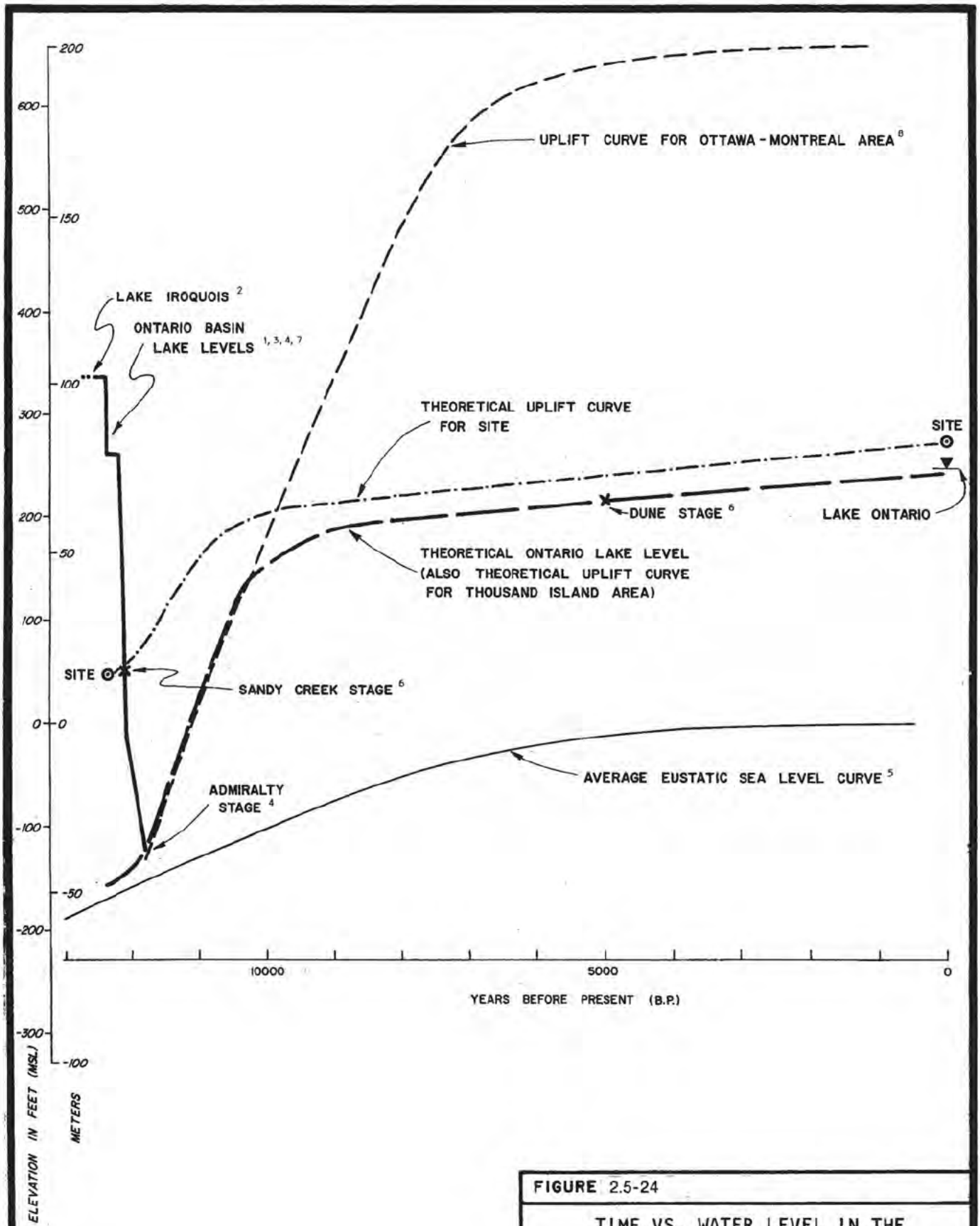


FIGURE 2.5-23

LATE WISCONSINAN EVENTS
IN THE ONTARIO BASIN

SOURCE:
Reference 136

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

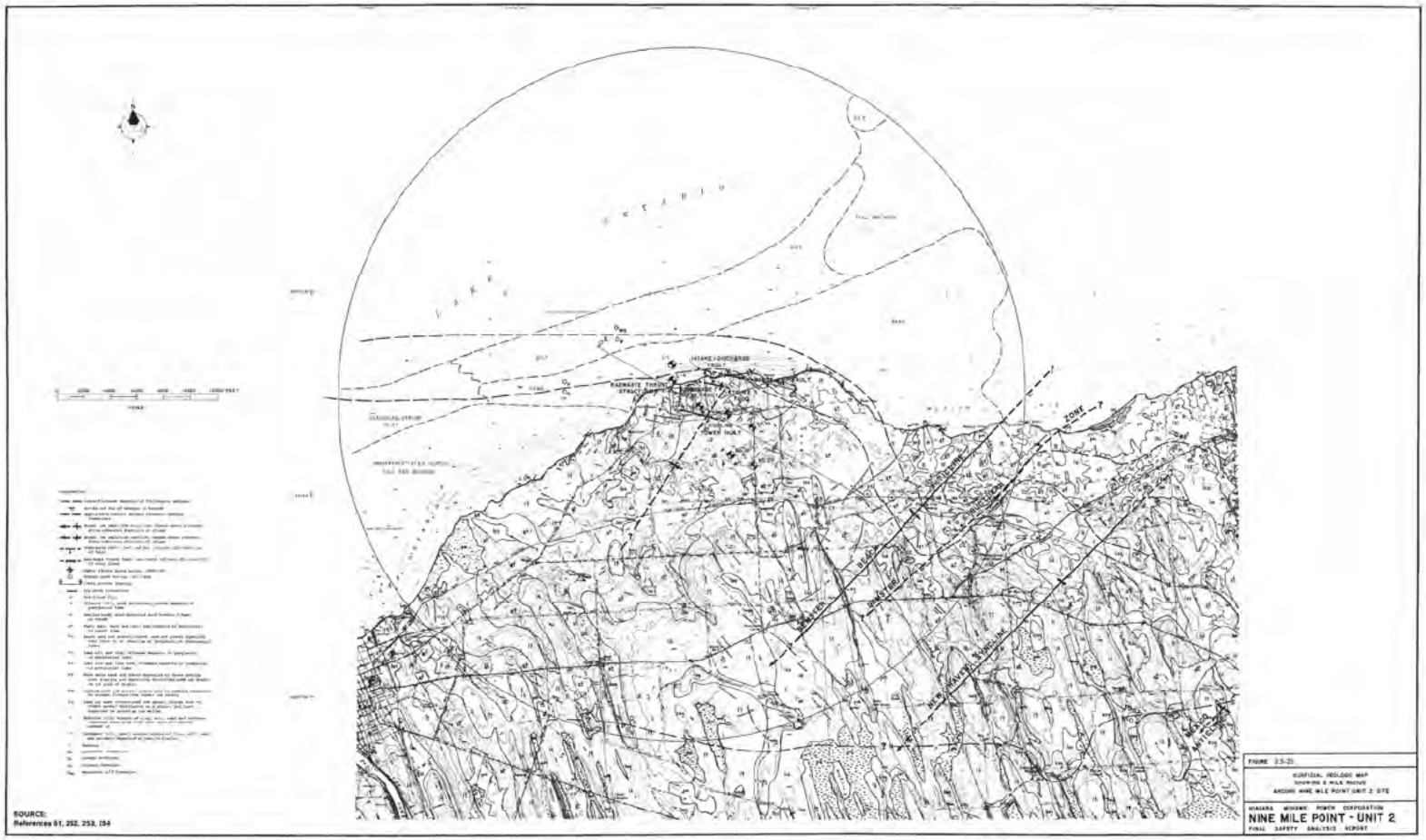


SOURCE:
References 140, 143, 149, 250, 251

FIGURE 2.5-24

TIME VS. WATER LEVEL IN THE
LAKE ONTARIO BASIN

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

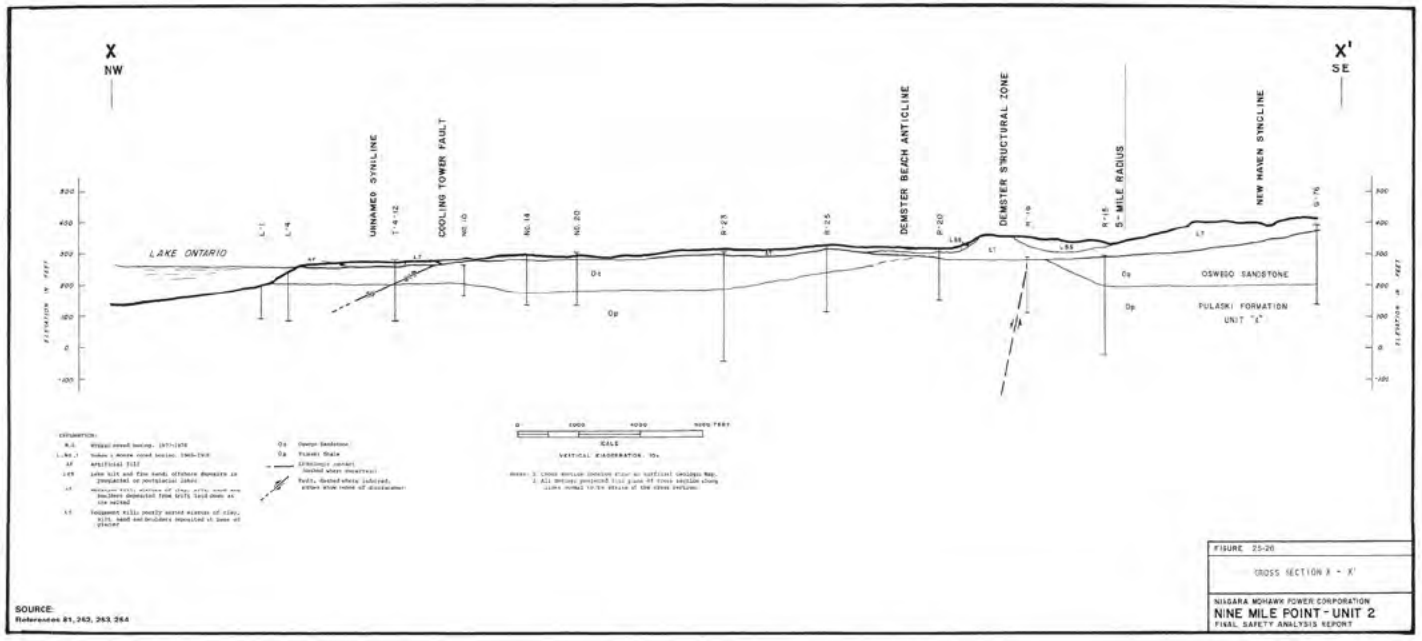


SOURCE:
References 81, 252, 253, 254

FIGURE 2.5-20

SURFICIAL GEOLOGIC MAP
SHOWING 5 MILE RADIUS
AROUND NINE MILE POINT UNIT 2 SITE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE:
References 81, 263, 263, 264

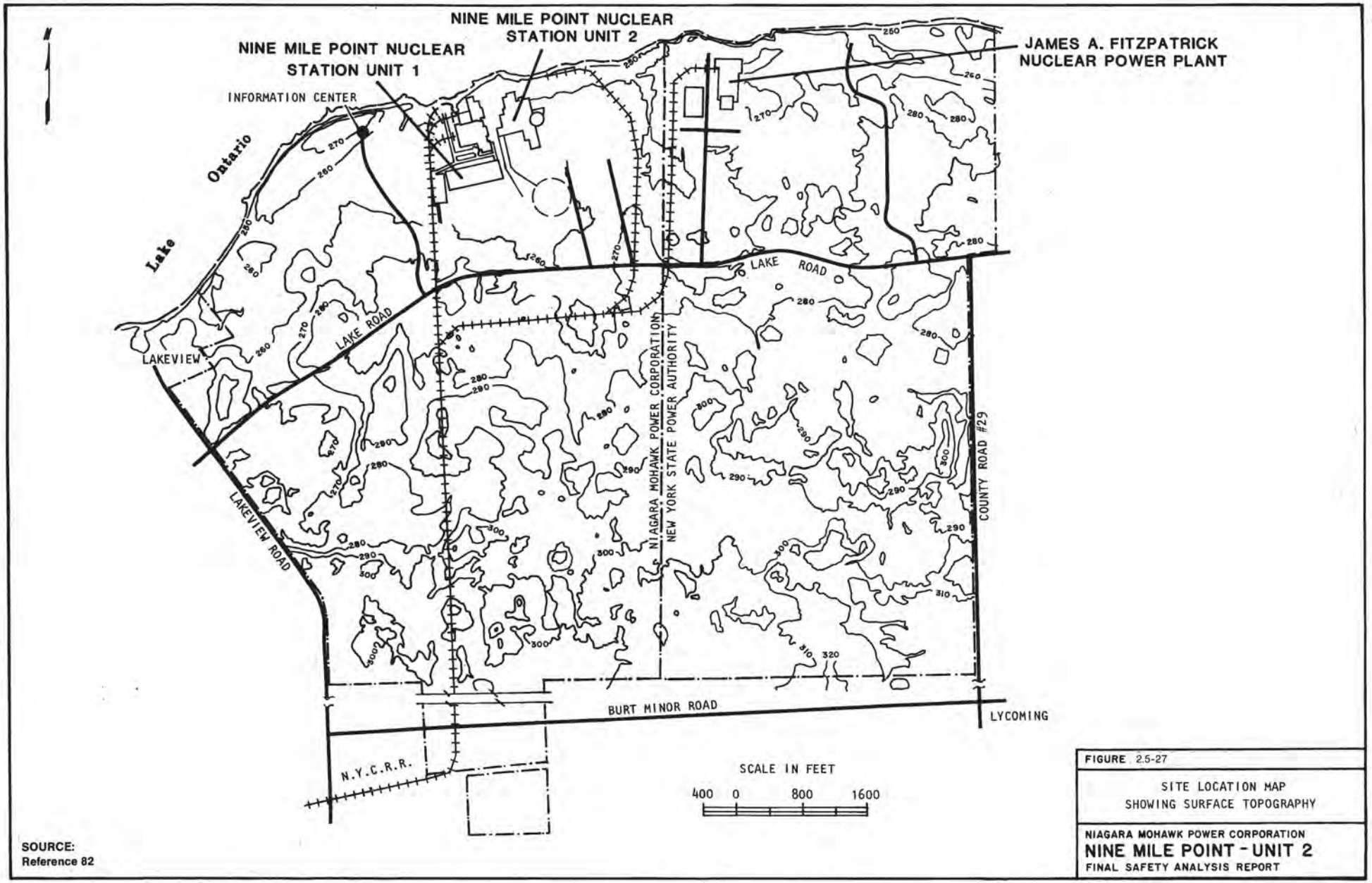
FIGURE 25-26

CROSS SECTION X - X'

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

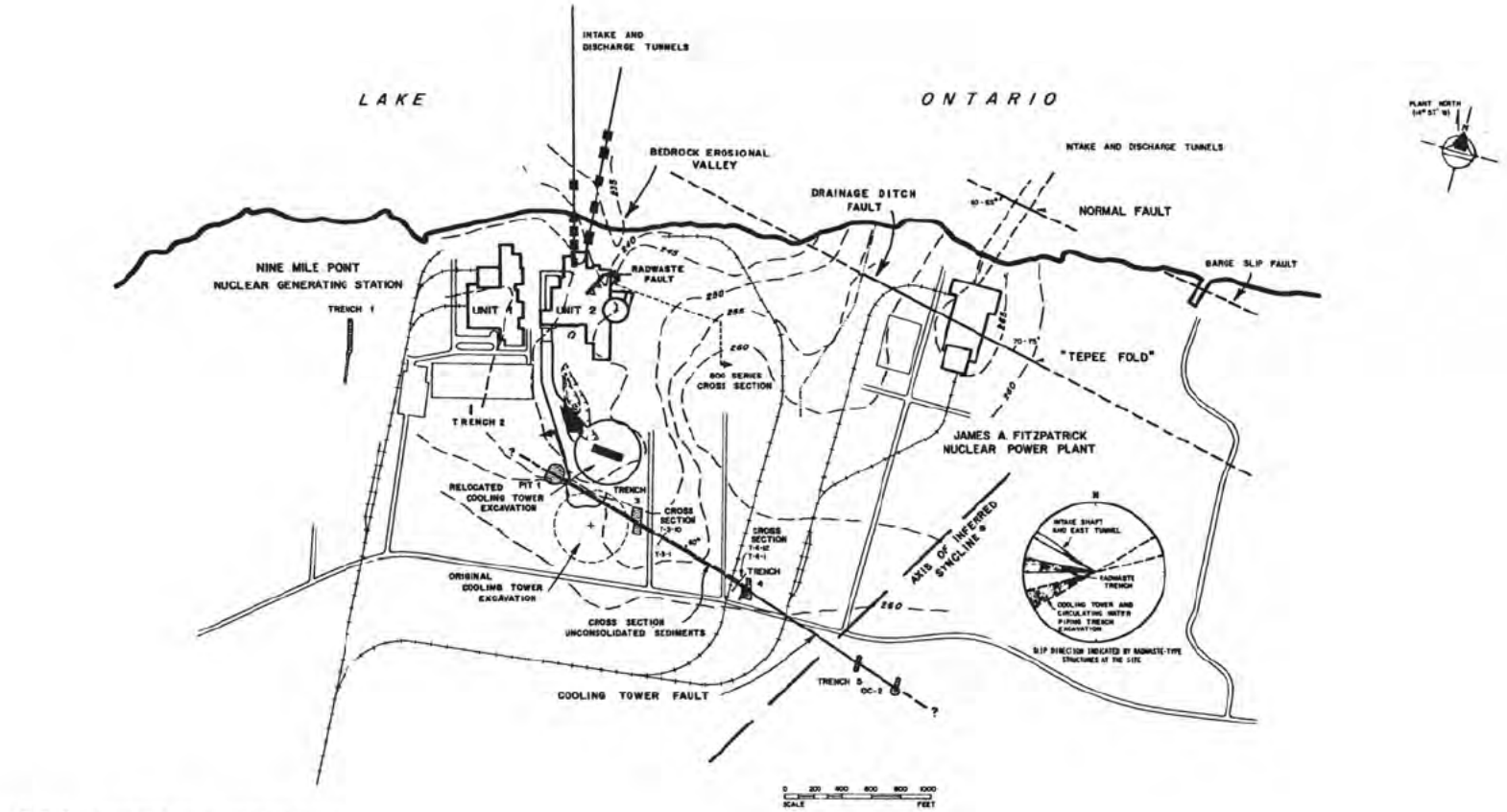


SOURCE:
Reference 82

FIGURE 2.5-27

SITE LOCATION MAP
SHOWING SURFACE TOPOGRAPHY

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



THRUST FAULT; TEETH INDICATE DIP DIRECTION

TRACE OF MODERATELY TO STEEPLY DIPPING STRUCTURE

BEDROCK SURFACE CONTOUR (EL. IN FEET)

LOCATIONS OF OBSERVED OCCURENCES OF STRUCTURES SIMILAR IN CHARACTER TO RADWASTE STRUCTURE

TRENCH EXCAVATED TO INVESTIGATE COOLING TOWER FAULT

TRACE OF CROSS SECTION

* POSITION OF INFERRED SYNCLINE FROM N.Y.S. ELECTRIC AND GAS CORP., 1978, NEW HAVEN UNITS 1 AND 2 PSAR, AMENDMENT 1, FIG. 2.8-9.

FIGURE 2.5-28

SITE LOCATION MAP SHOWING GENERAL CONFIGURATION OF BEDROCK AND LOCATIONS OF KNOWN GEOLOGIC STRUCTURES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

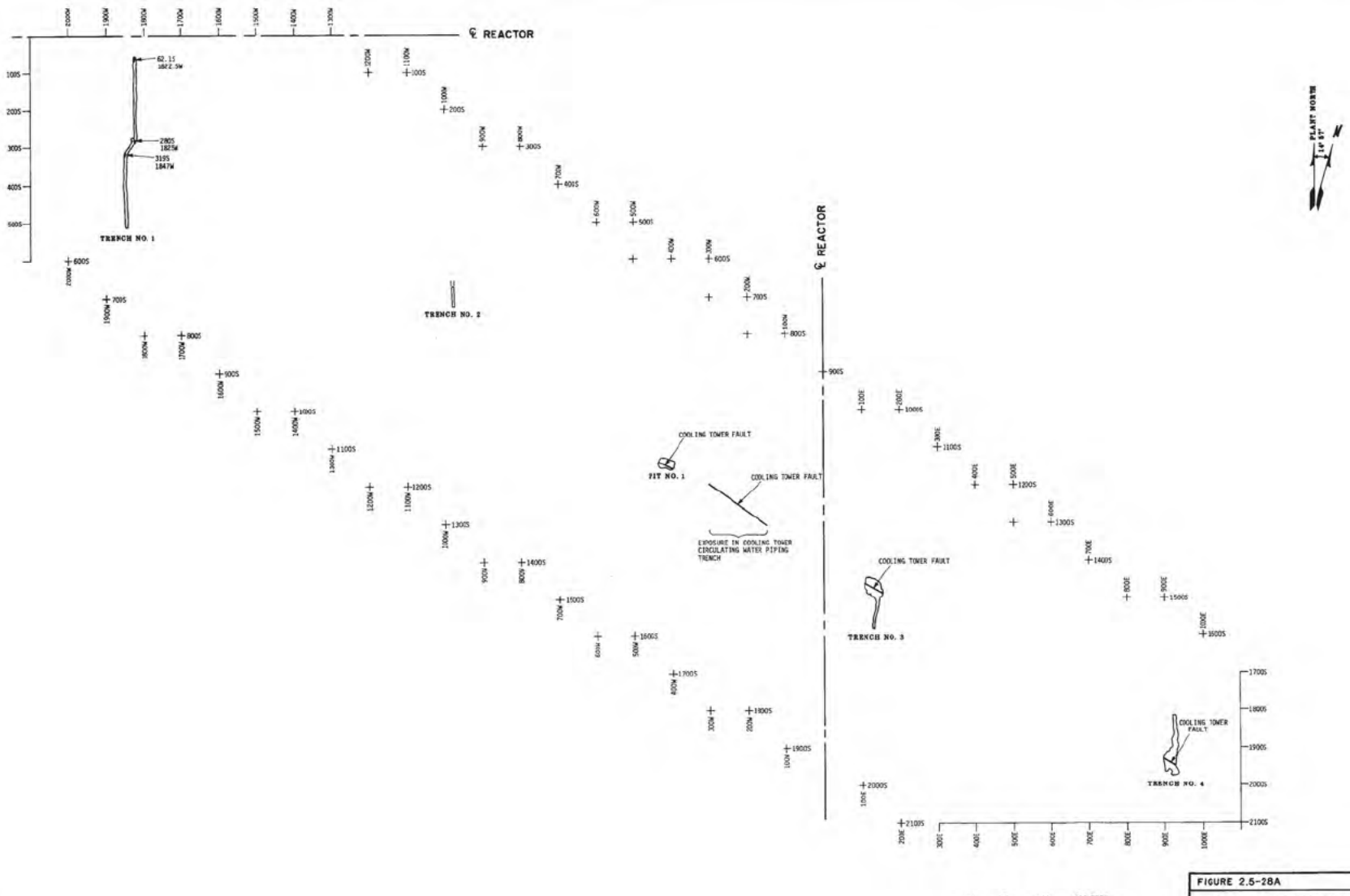
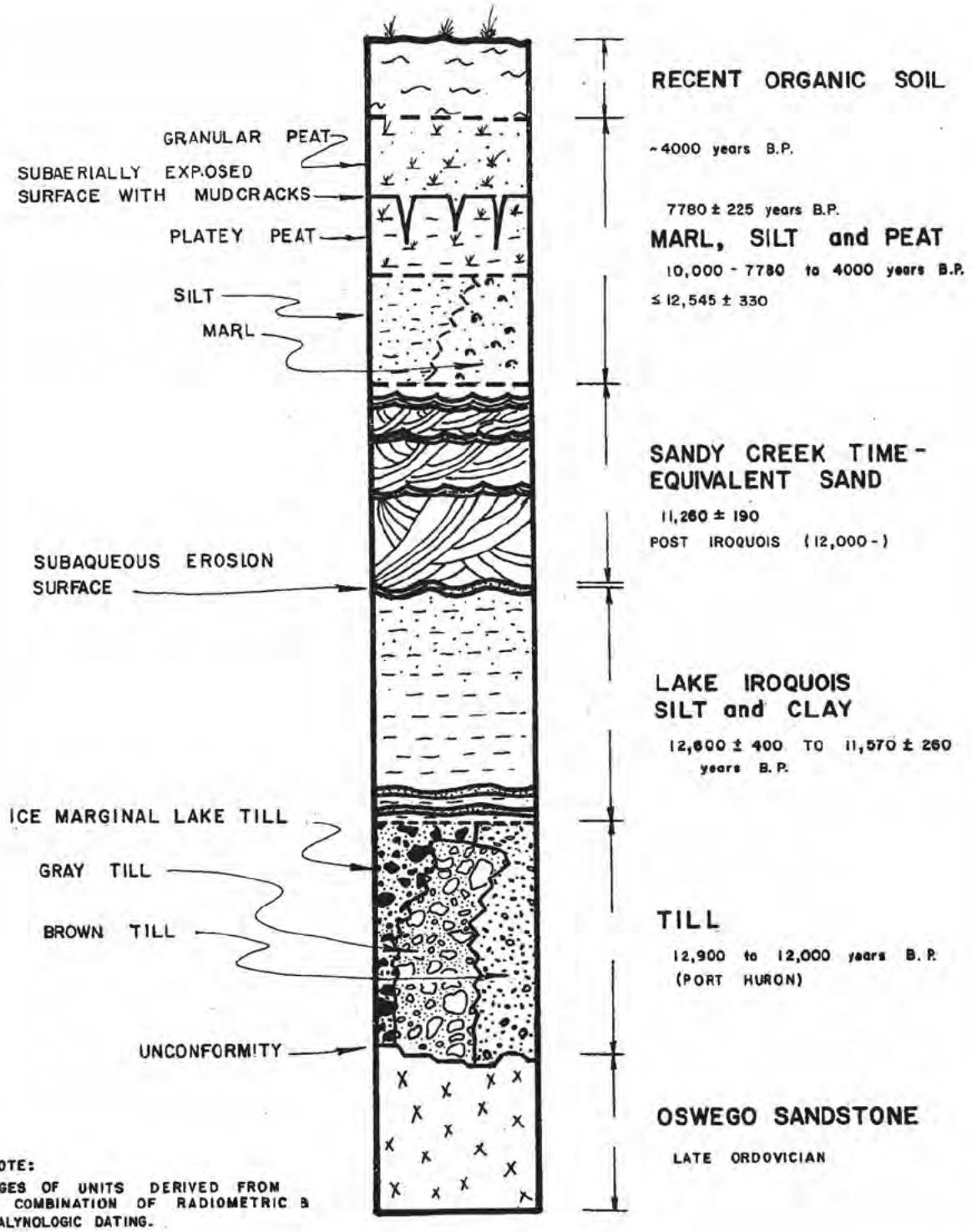


FIGURE 2.5-28A

TRENCH LOCATIONS AND EXPOSURES OF COOLING TOWER FAULT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



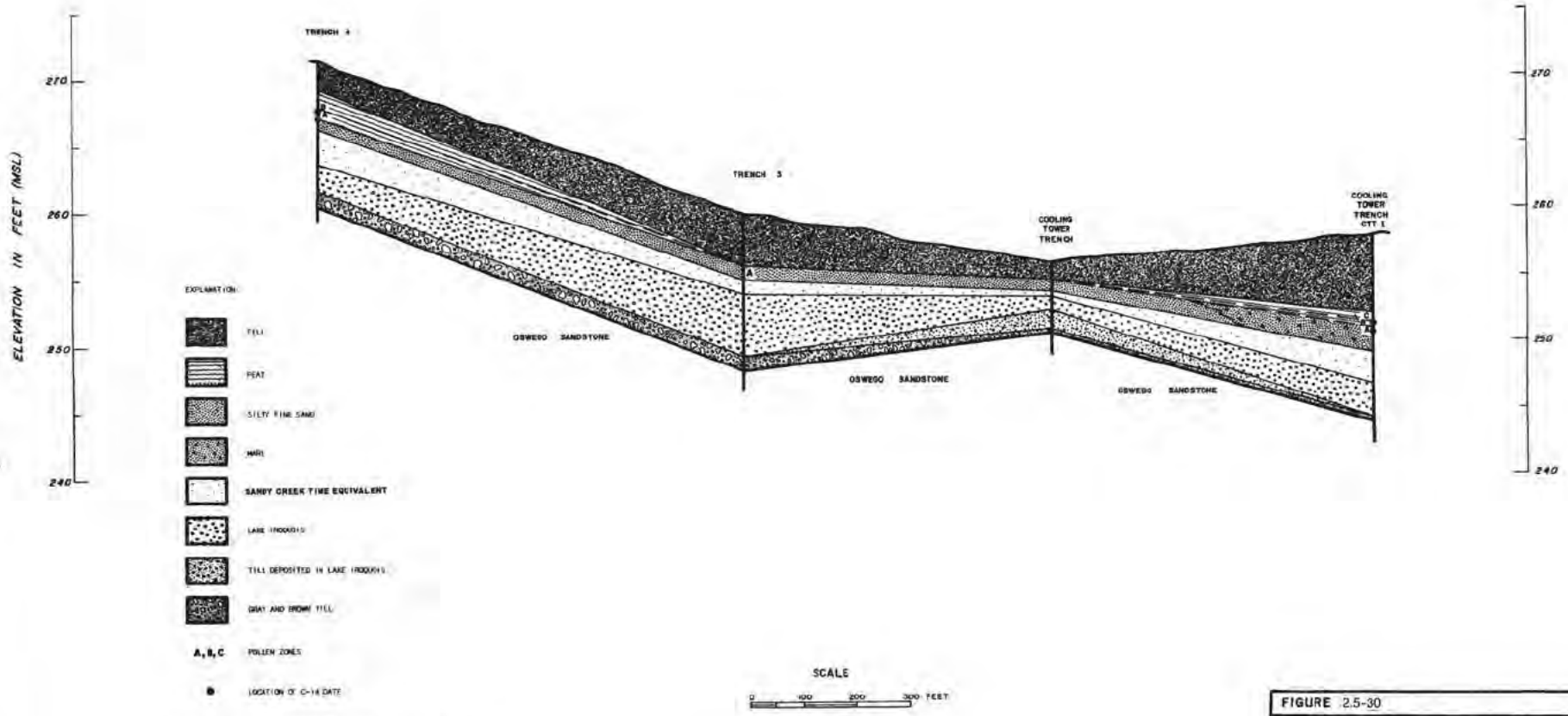
NOTE:
AGES OF UNITS DERIVED FROM A COMBINATION OF RADIOMETRIC & PALYNOLOGIC DATING.

FIGURE 2.5-29

COMPOSITE TIME-STRATIGRAPHIC COLUMN OF OVERBURDEN AT NINE MILE POINT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

SOURCE:
Reference 94



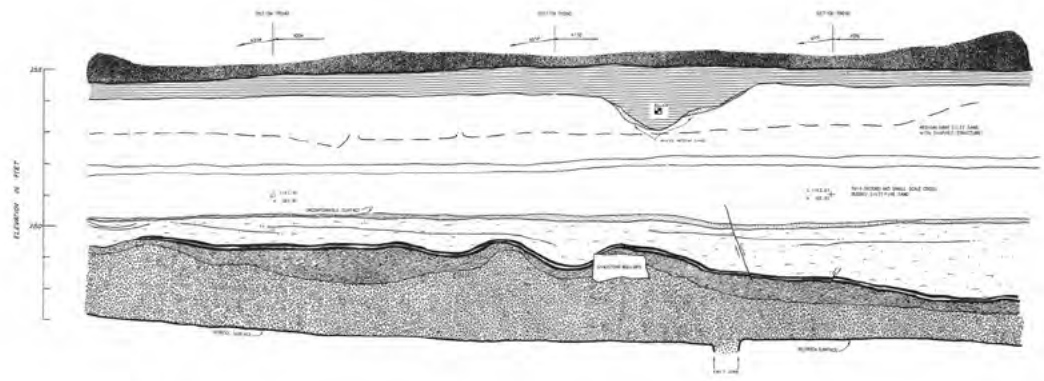
NOTE: LOCATION OF CROSS SECTION SHOWN ON SITE LOCATION MAP

SOURCE:
Reference 94

FIGURE 2.5-30

GENERALIZED SITE CROSS SECTION
UNCONSOLIDATED SEDIMENTS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

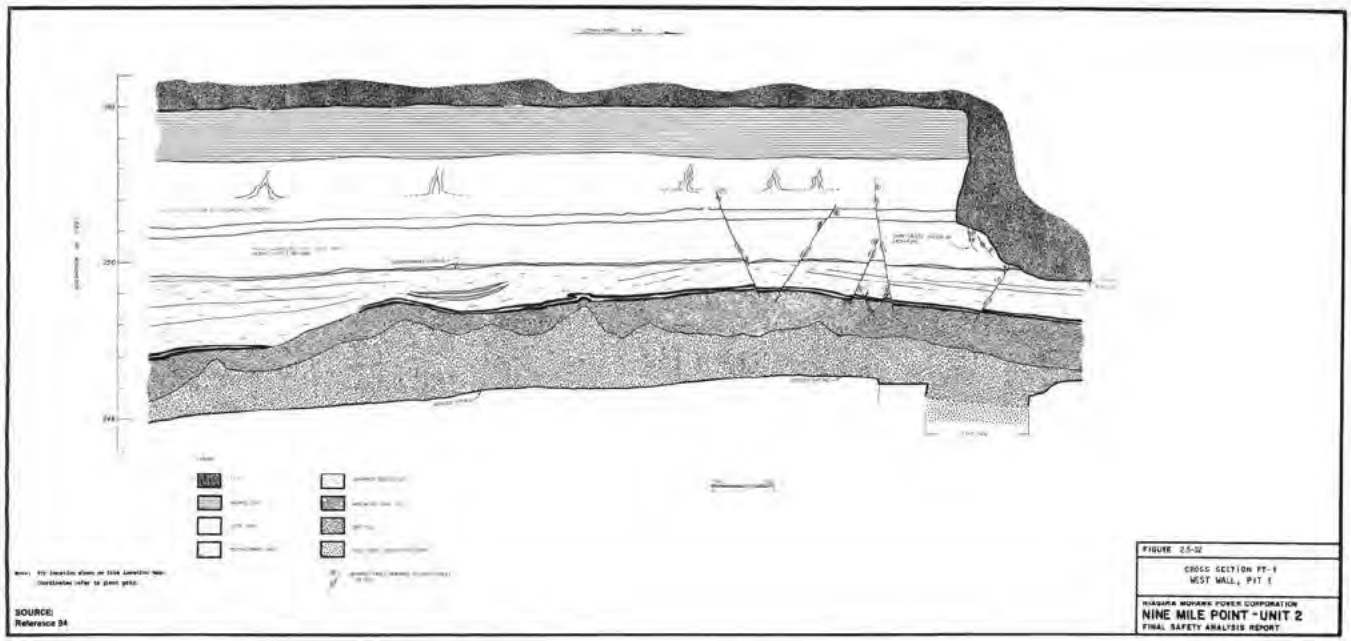


SOURCE:
Reference 94

FIGURE 2.5-31

CROSS SECTION PT-2 EAST WALL, PIT 1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

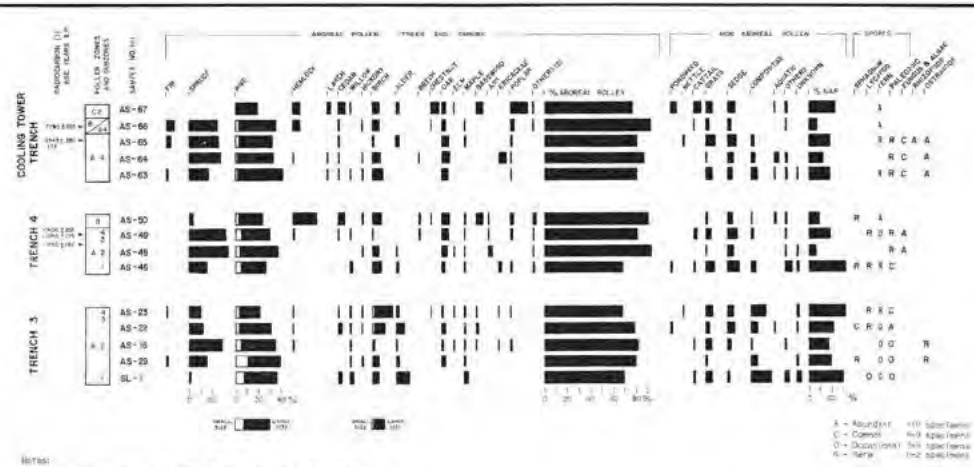


SOURCE:
Reference 24

FIGURE 2.5-32

CROSS SECTION PT-1
WEST WALL, PAT 1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



A - Abundant (>10 Specimens)
C - Common (4-9 Specimens)
O - Occasional (1-3 Specimens)
R - Rare (1-2 Specimens)

Notes:

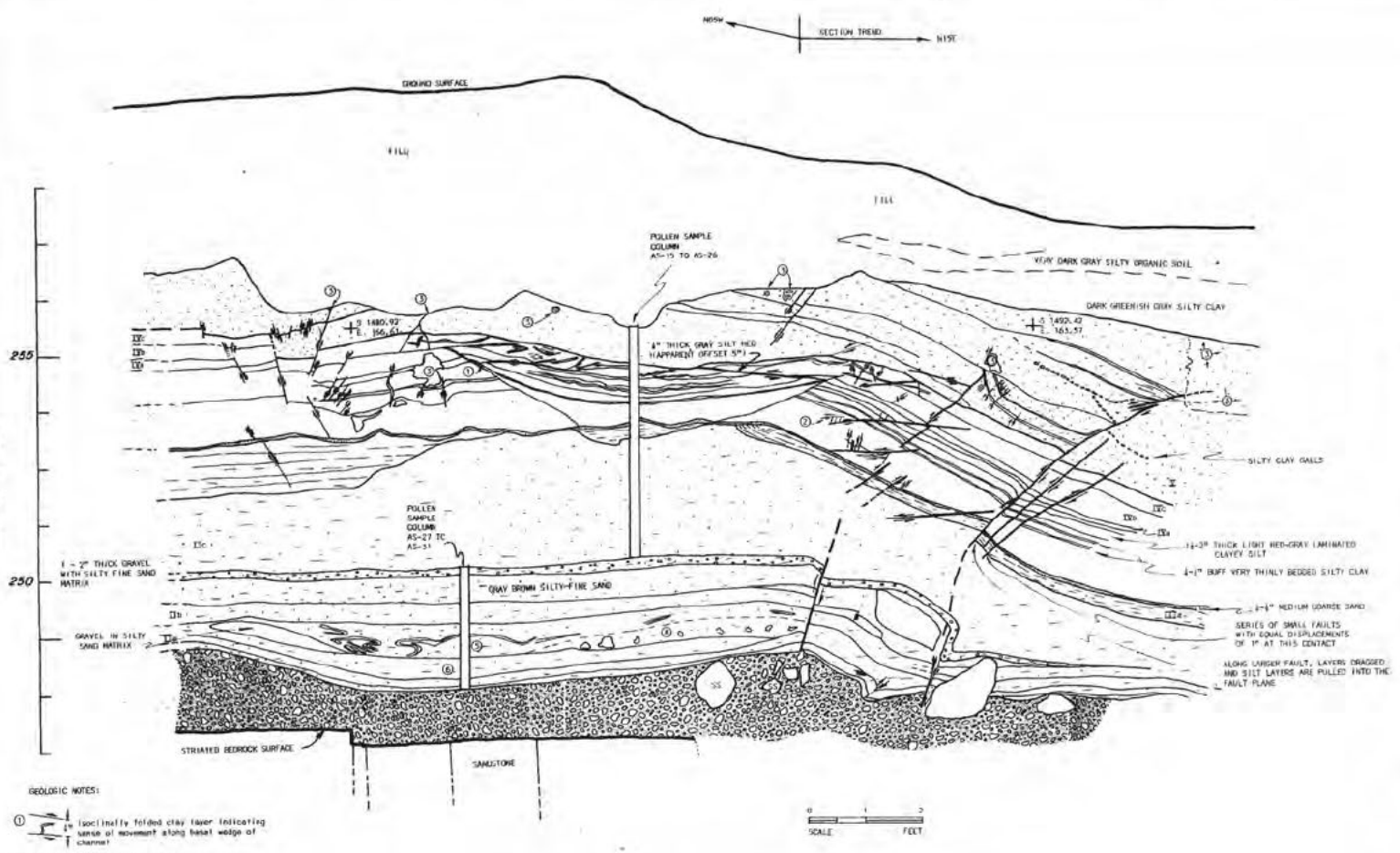
(1) A = Spruce Pollen Zone, B = Pine Pollen Zone, C = Oak Pollen Zone
(2) The Pollen Analysis was performed by Dr. Leslie A. Sirkin. Refer To Section 2.5.4.3.
(3) Others Included Tree Elm & Tree of Heaven, Red Maple, Black Gum, Shepherds, and Holly.
(4) Radiocarbon dating performed by Geochron and Teledyne Laboratories, (Section 2.5.4.3).
(5) For sample AS-50, pollen contents indicate the deep and radiocarbon date indicates B zone.

SOURCE:
Reference 94

FIGURE 2.5-10

RELATIVE POLLEN PERCENTAGES, STOKE AND MISC. MICROFOSSIL ABUNDANCE (SURFICIAL SEDIMENTS)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



GEOLOGIC NOTES:

① Isoclinally folded clay layer indicating sense of movement along basal wedge of channel

② Schematic of fault relationship

③ Diapiric structures interpreted to be caused by pore pressure changes

④ Well rounded cobbles and angular-subangular sandstone pebbles in light gray clay silt matrix

⑤ Laminated dark brown and gray clay with light gray contorted silt layer

⑥ Laminated tan and dark gray-brown clays and clayey silt

Note: Trench location shown on Site Location Map.

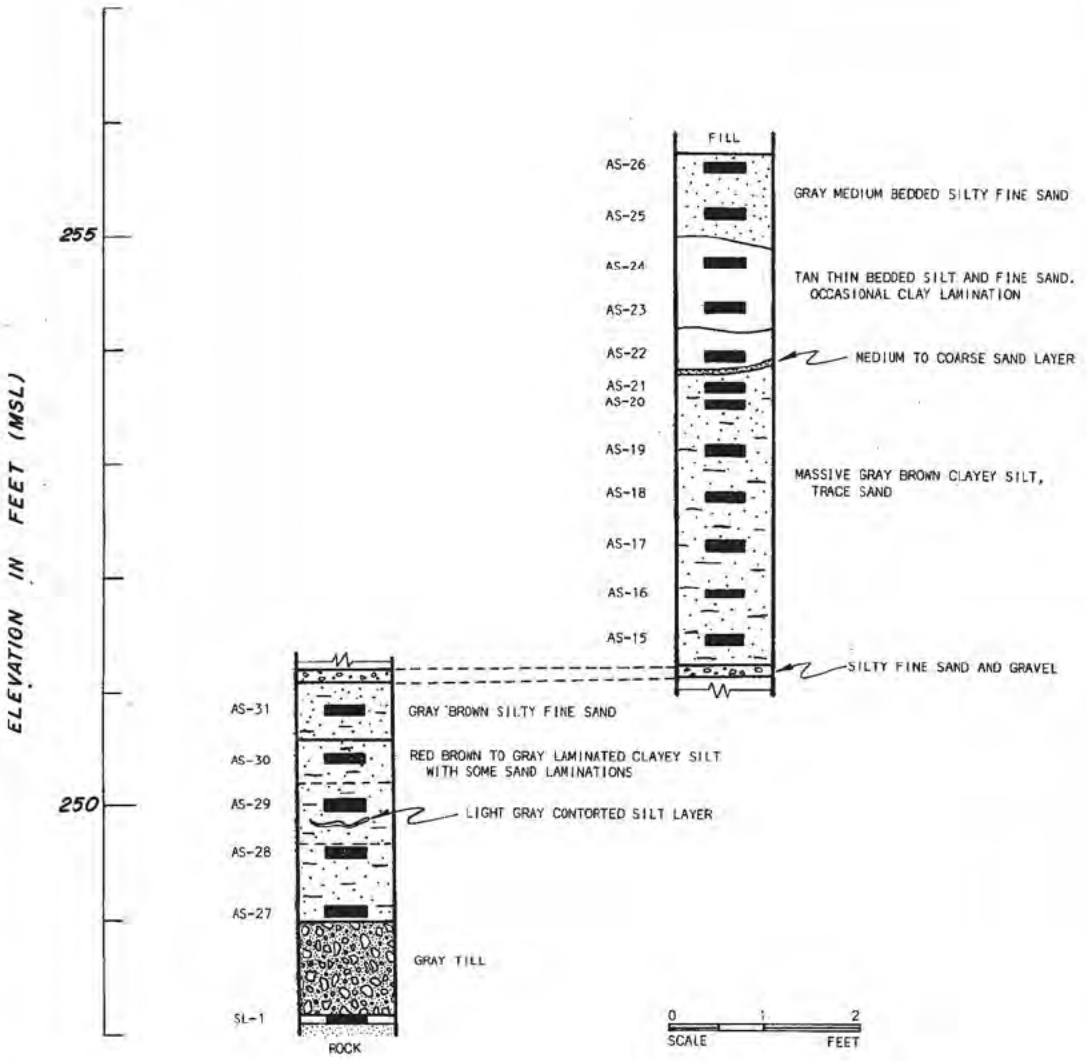
Coordinates refer to plant grid.

SOURCE: Reference 94

FIGURE 2.5-34

CROSS SECTION 3-1
EAST WALL, TRENCH 3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



EXPLANATION

AS-29 ■ POLLEN SAMPLE LOCATION

Note: Trench location shown on Site Location Map.

SOURCE:
Reference 94

FIGURE 2.5-35

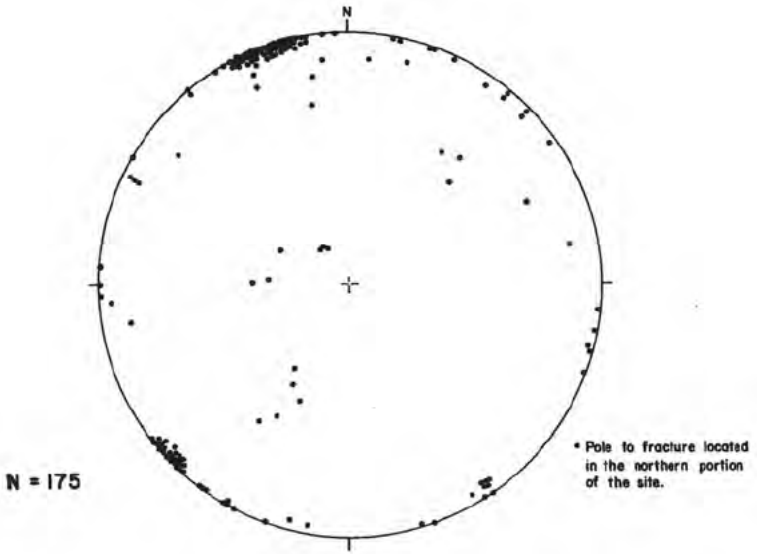
POLLEN SAMPLES EAST WALL - TRENCH 3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

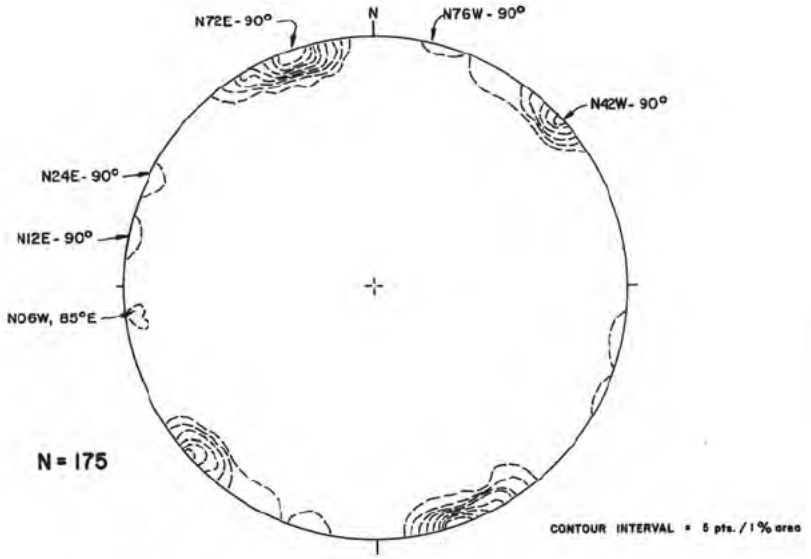
FIGURE 2.5-204

COMPOSITE SITE STRATIGRAPHIC COLUMN

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



EQUAL AREA NET, LOWER HEMISPHERE PROJECTION OF POLES TO FRACTURES - NORTHERN SECTION OF SITE



CONTOUR DIAGRAM OF POLES TO FRACTURES NORTHERN SECTION OF SITE

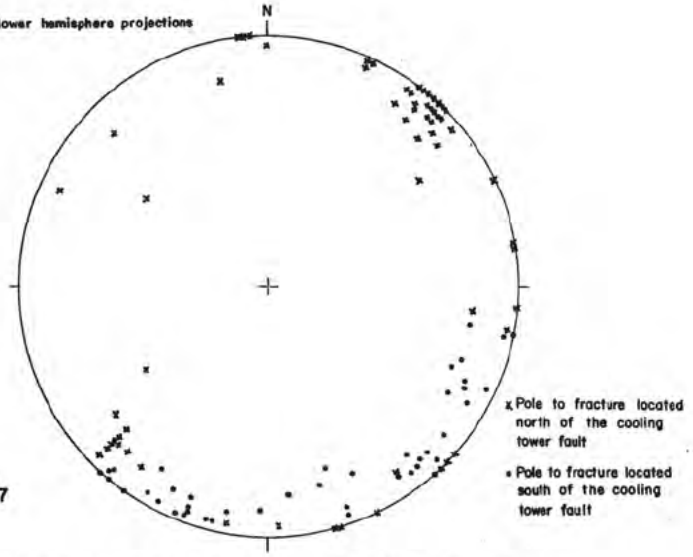
SOURCE:
Reference 94

FIGURE 2.5-37

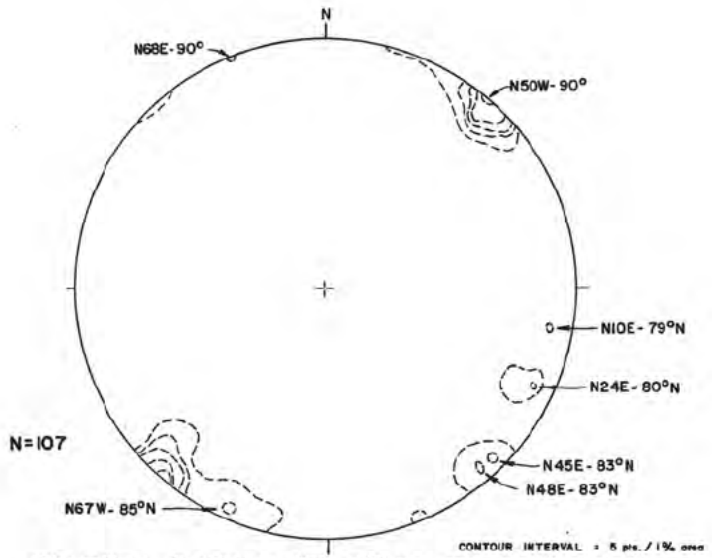
STEREOGRAMS OF POLES TO FRACTURES NORTHERN SECTION OF SITE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

Note: Diagrams are lower hemisphere projections



POLES TO FRACTURES NORTH AND SOUTH OF THE FAULT IN THE COOLING TOWER PIPING TRENCH



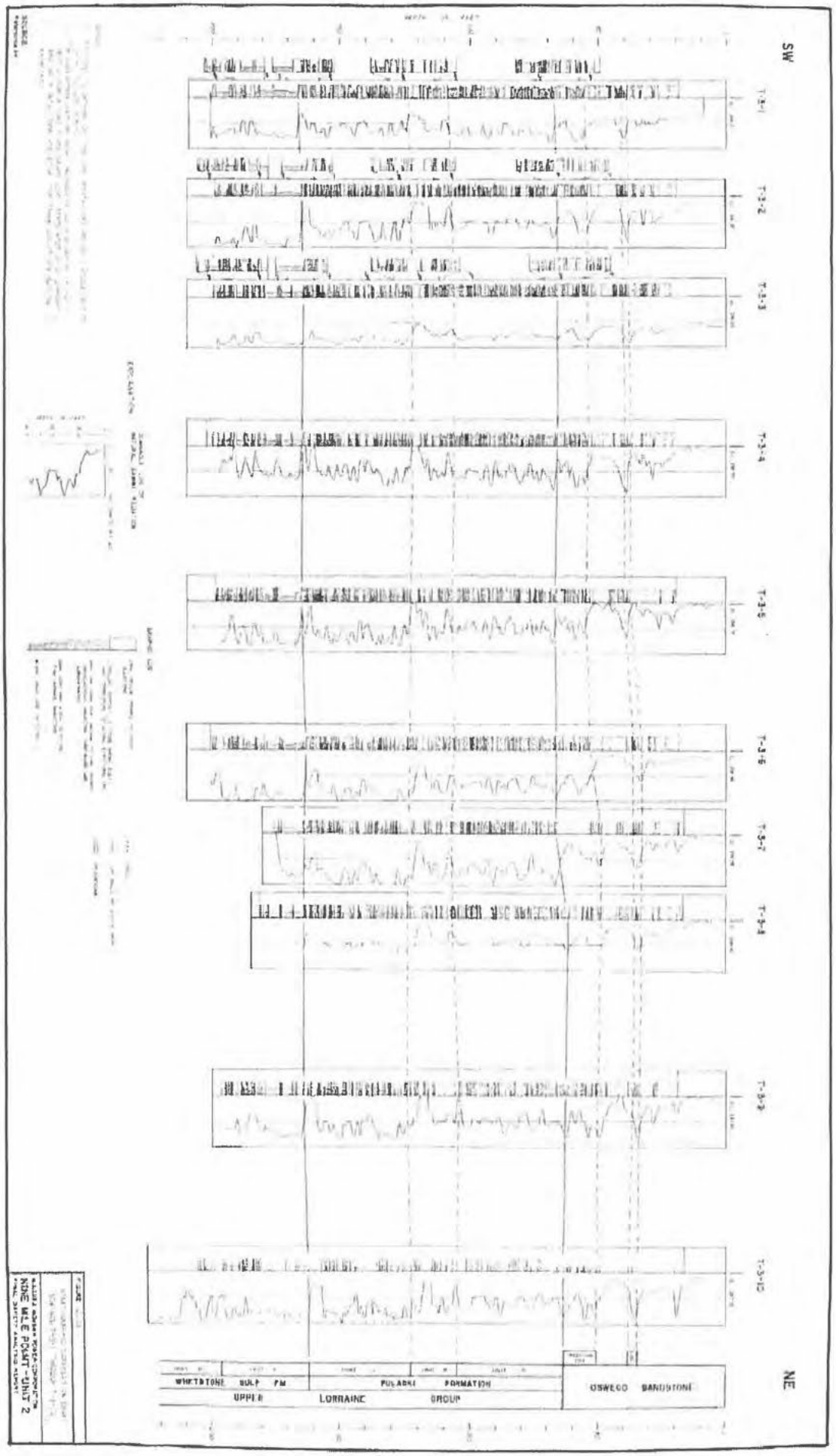
CONTOUR DIAGRAM OF POLES TO FRACTURES IN THE COOLING TOWER PIPING TRENCH OUTSIDE THE FAULT ZONE

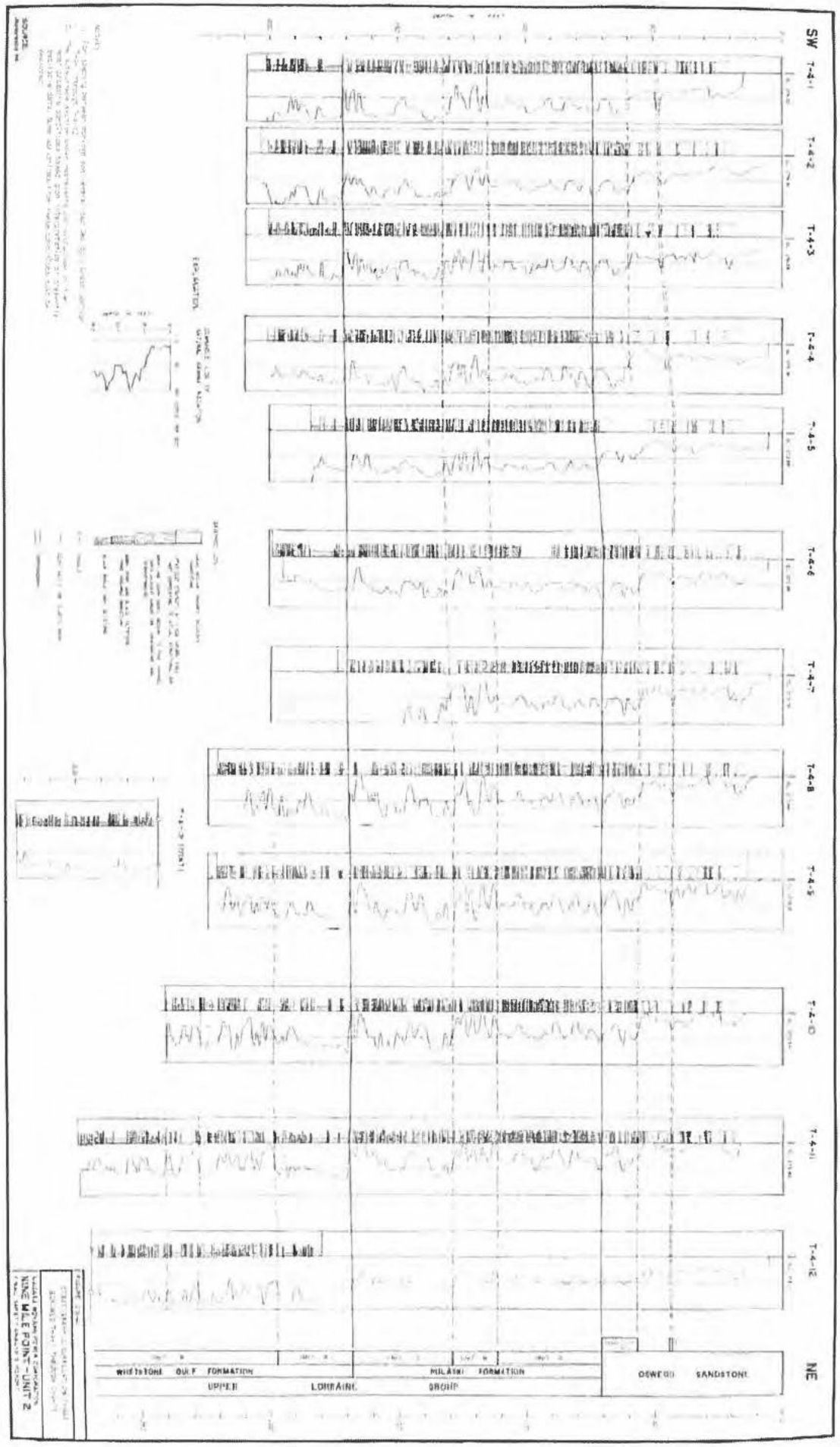
SOURCE:
Reference 94

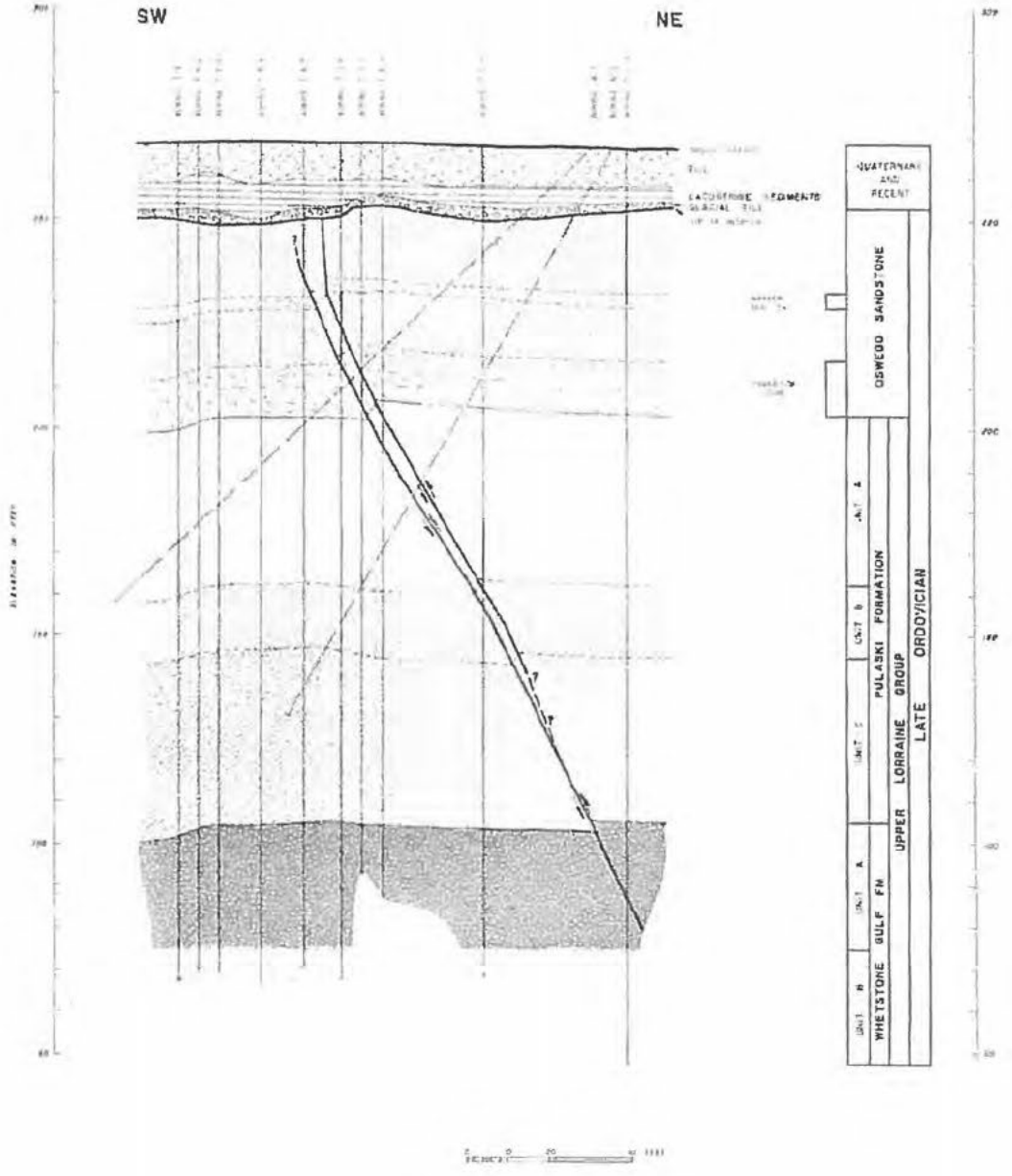
FIGURE 2.5-38

STEREOGRAMS OF POLES TO FRACTURES IN THE COOLING TOWER PIPING TRENCH OUTSIDE THE FAULT ZONE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


SW
NE
WHETSTONE GULF FM
UPPER
LORRAINE
PULASKI FORMATION
GROUP
OSWEGO SANDSTONE
NINE MILE POINT-UNIT 2


SW
T-4-1
T-4-2
T-4-3
T-4-4
T-4-5
T-4-6
T-4-7
T-4-8
T-4-9
T-4-10
T-4-11
T-4-12
NE
WHETSTONE GULF FORMATION
UPPER LORRAINE
QUEENSTON
MILAN FORMATION
GROUP
OSWEGO SANDSTONE
NINE MILE POINT - UNIT 2



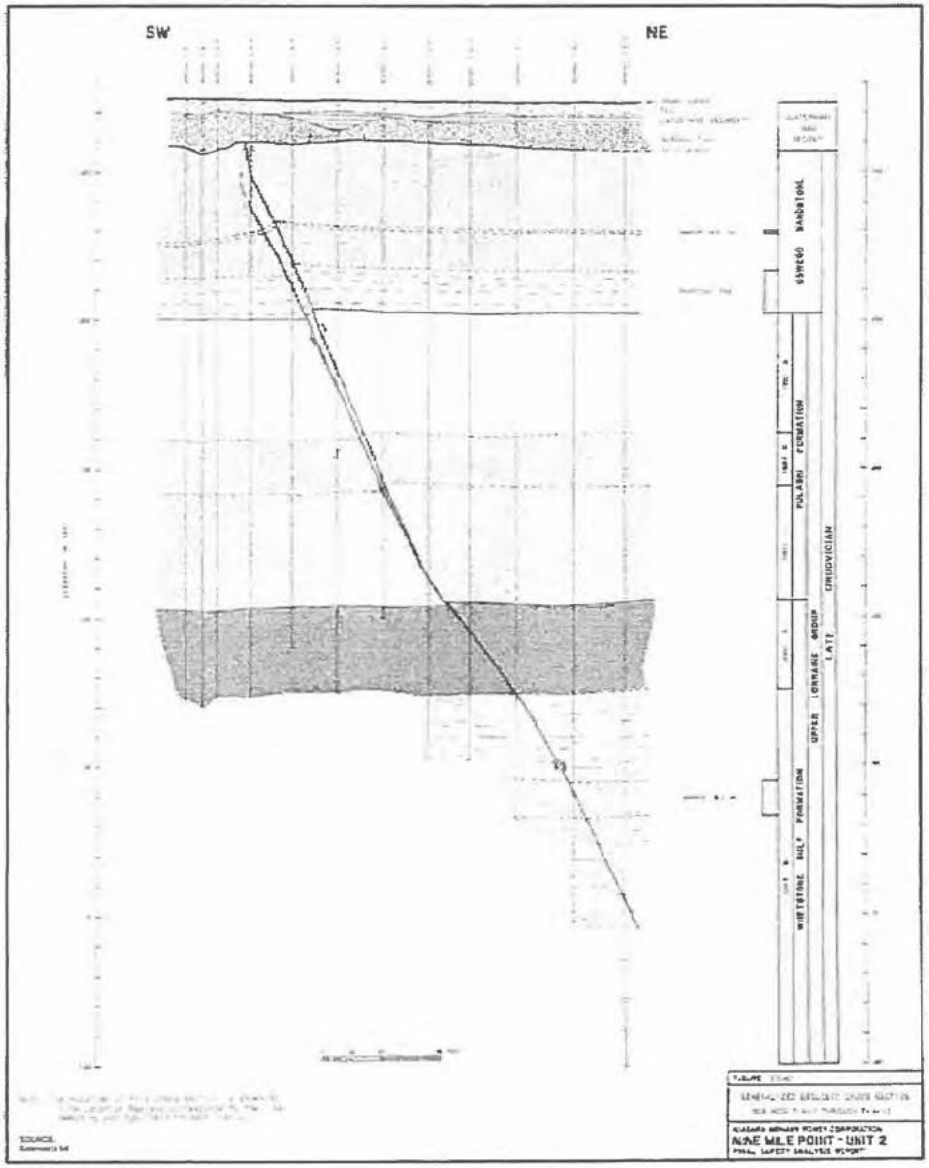
Note: The location of this cross section is shown on Site Location Map and corresponds to the line denoting Borings 1-3-1 through 1-3-10.

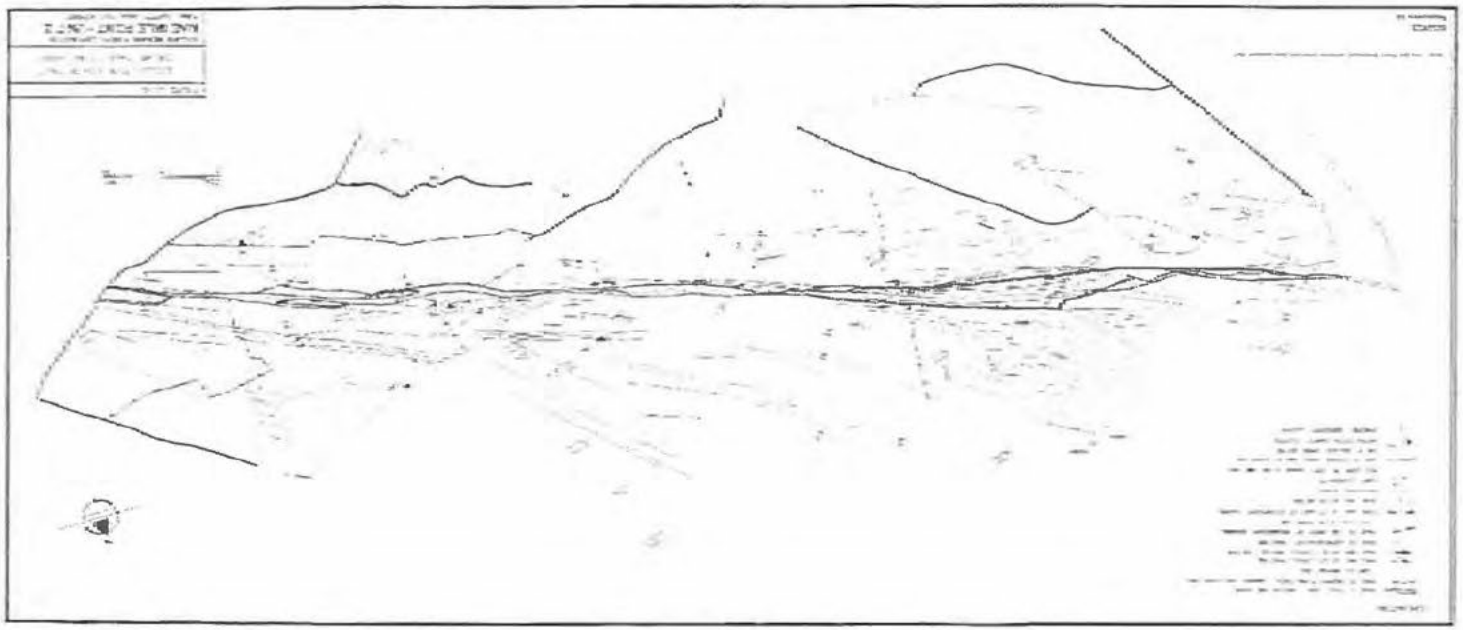
SOURCE:
Reference 84

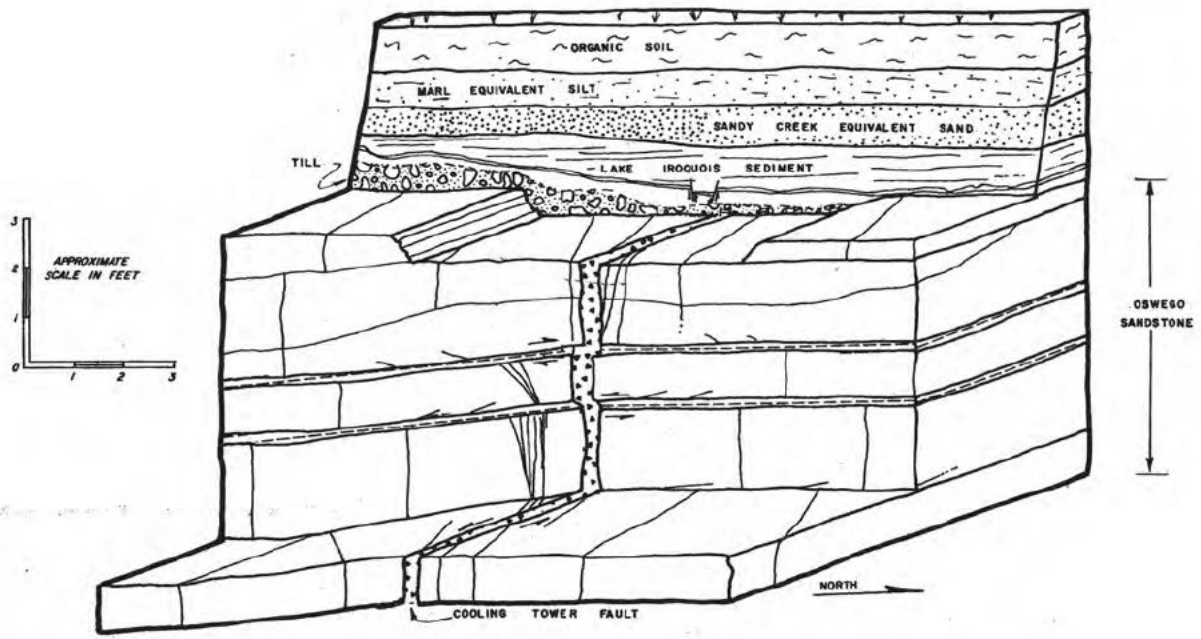
FIGURE 2.5-41

GENERALIZED GEOLOGIC CROSS SECTION
BORINGS 1-3-1 THROUGH 1-3-10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT


SW
NE
65NE60
BANDELIER
PUJARA
FORMATION
UPPER
ORDOVICIAN
LATE
WHITESTONE
FORMATION
NINE MILE POINT - UNIT 2





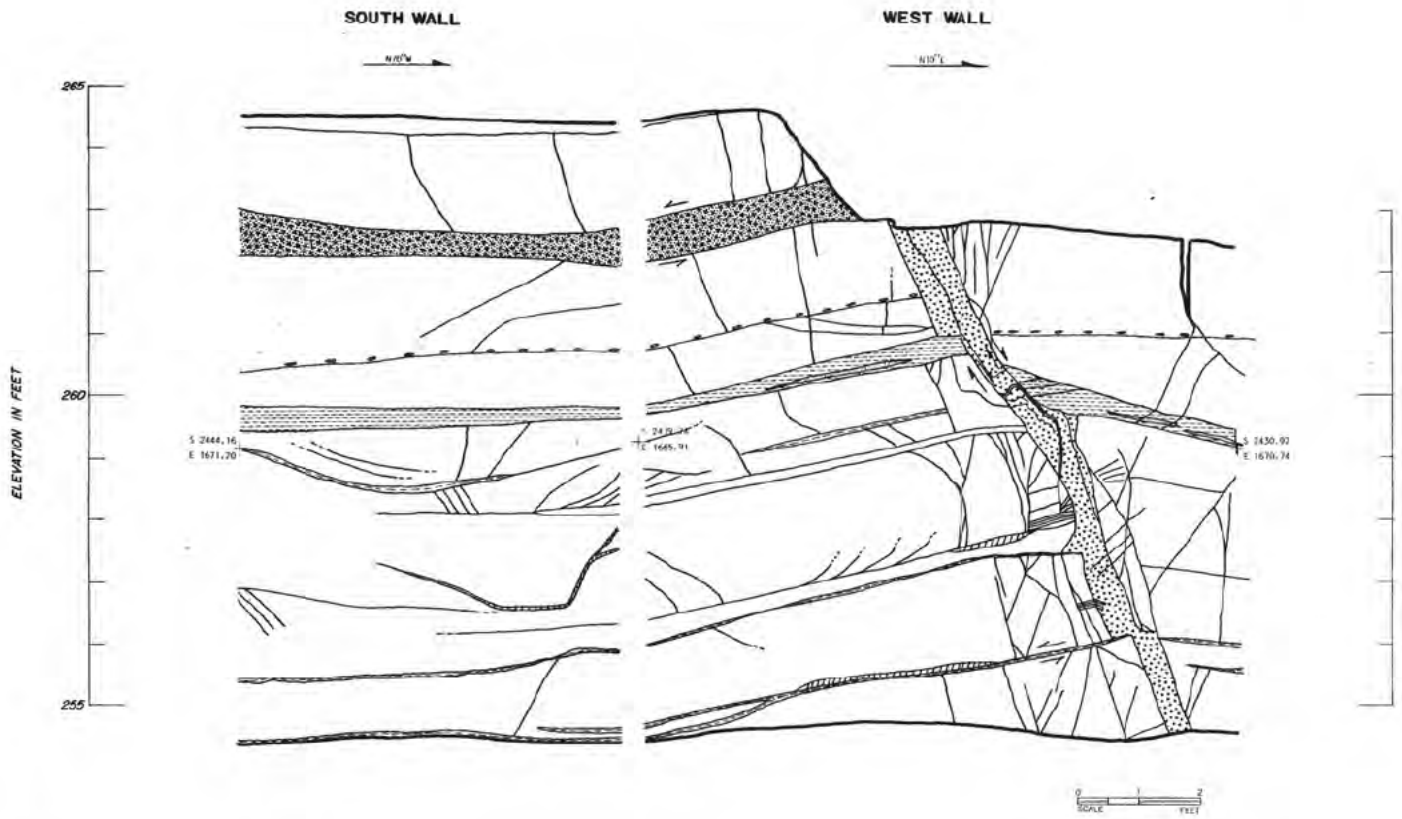
Note: Excavation location shown on Site Location Map

SOURCE:
Reference 94

FIGURE 2.5-44

GENERALIZED BLOCK DIAGRAM, WEST WALL COOLING TOWER PIPING TRENCH EXCAVATION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



LEGEND:

- BEDDING MARKED BY SHALE INTRACLASTS
- THIN LENS OR BED OF SHALE OR SILTSTONE
- SHALE WITH LENSES OF SANDSTONE
- BEDDING PLANE BRECCIA
- FAULT ZONE - BRECCIA AND GOUGE
- DILATED FRACTURE

Note: Trench location shown on Site Location Map.

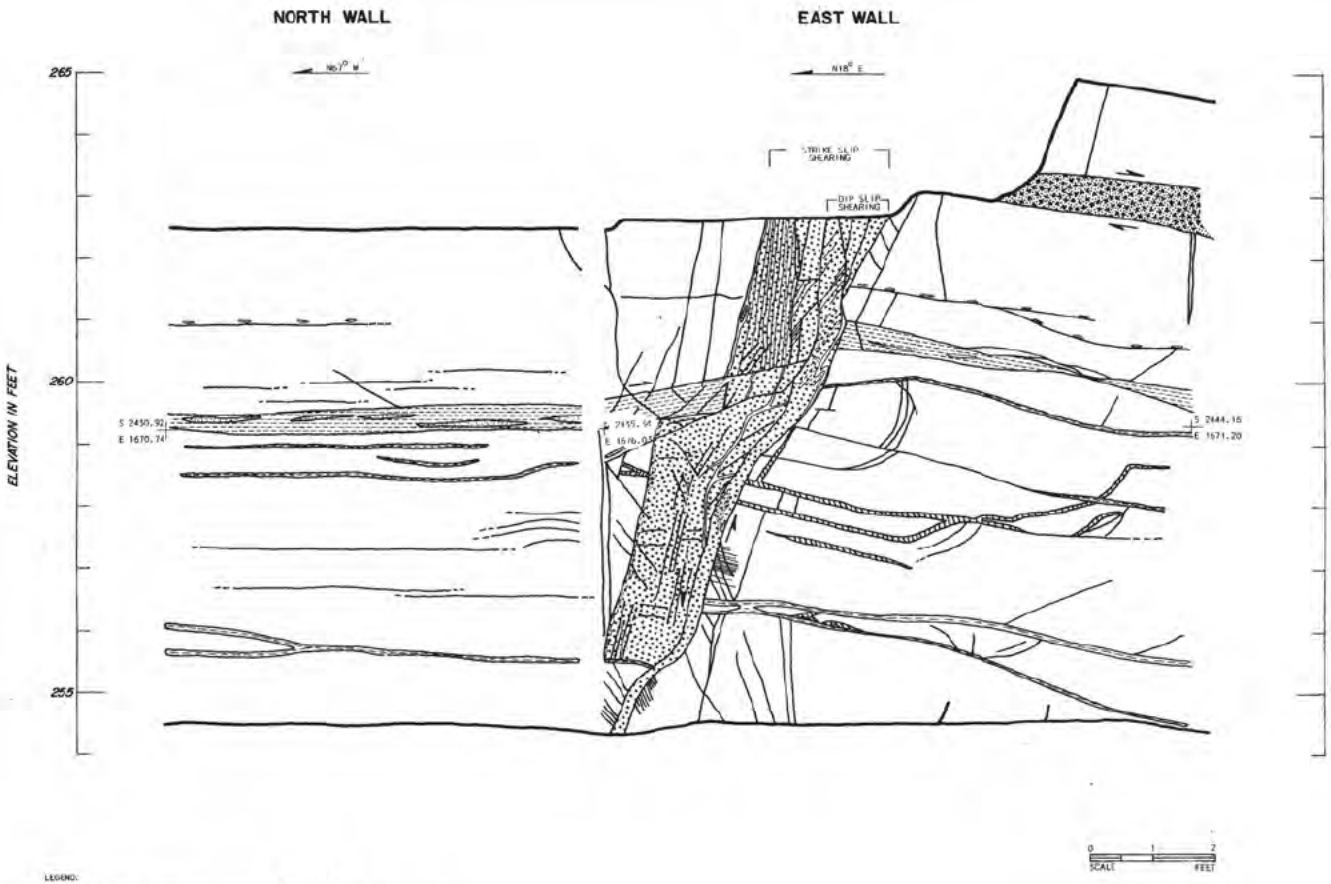
Coordinates refer to plant grid.

SOURCE:
Reference 94

FIGURE 2.5-45

CROSS SECTION 5-3B
ROCK SLOT TRENCH 5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



Note: Trench location shown on Site Location Map.

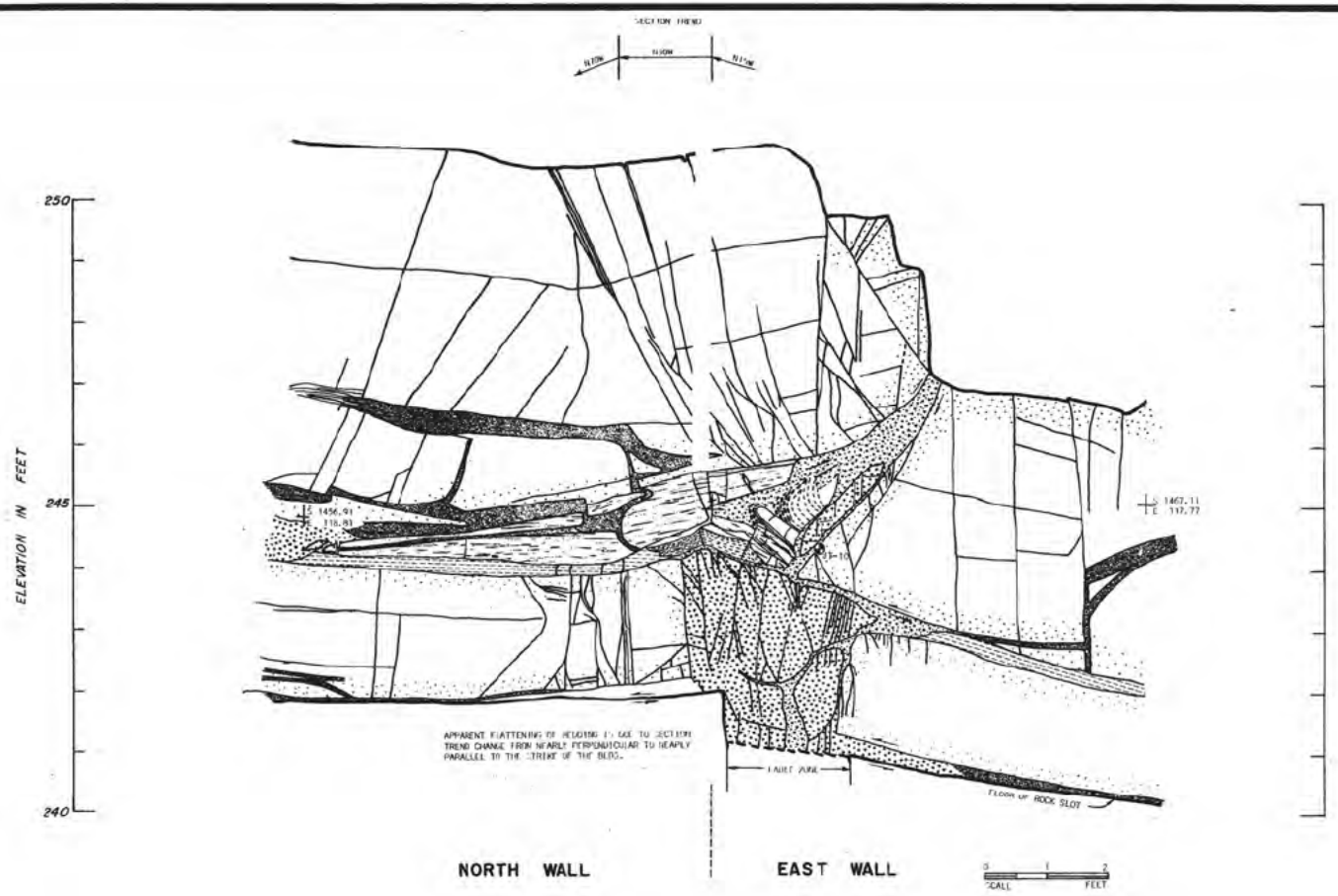
Coordinates refer to plant grid.

SOURCE:
Reference 94

FIGURE 2.5-46

CROSS SECTION 5-3A
ROCK SLOT TRENCH 5

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



LEGEND:

- LIGHT GRAY MEDIUM FINE GRAIN SANDSTONE (SIZE OF STIPPLING INDICATES CORRELATION ACROSS THE FAULT)
- MEDIUM TO LIGHT GRAY SHALE
- GRAYWACKE
- FAULT ZONE = BRECCIA AND HIGHLY FRACTURED ROCK
- NODULE = ANGULAR FRAGMENTS OF ROCK IN SOFT LIGHT GRAY SILTY SAND MATRIX WITH LITTLE OR NO FABRIC
- OPEN AND UNFILLED (DILATED) FRACTURE
- 77-10 SAMPLE LOCATION OF SPECIMEN FOR X-RAY ANALYSIS

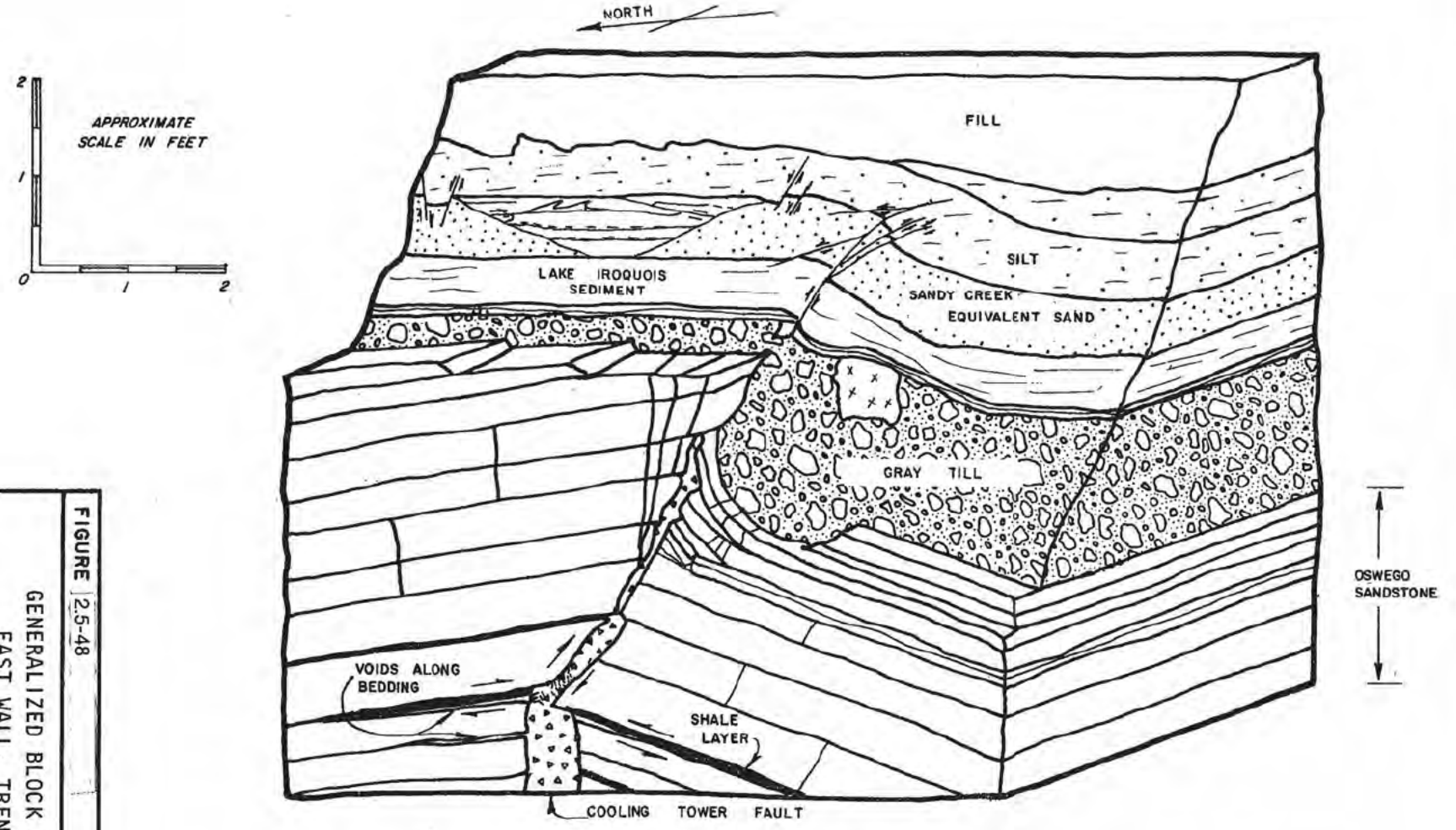
Note: Trench location shown on Site Location Map.
Coordinates refer to plant grid.

SOURCE:
Reference 94

FIGURE 2.5-47

CROSS SECTION 3-3A ROCK SLOT, TRENCH 3 NORTH AND EAST WALLS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



Note: Trench location shown on Site Location Map

SOURCE:
Reference 94

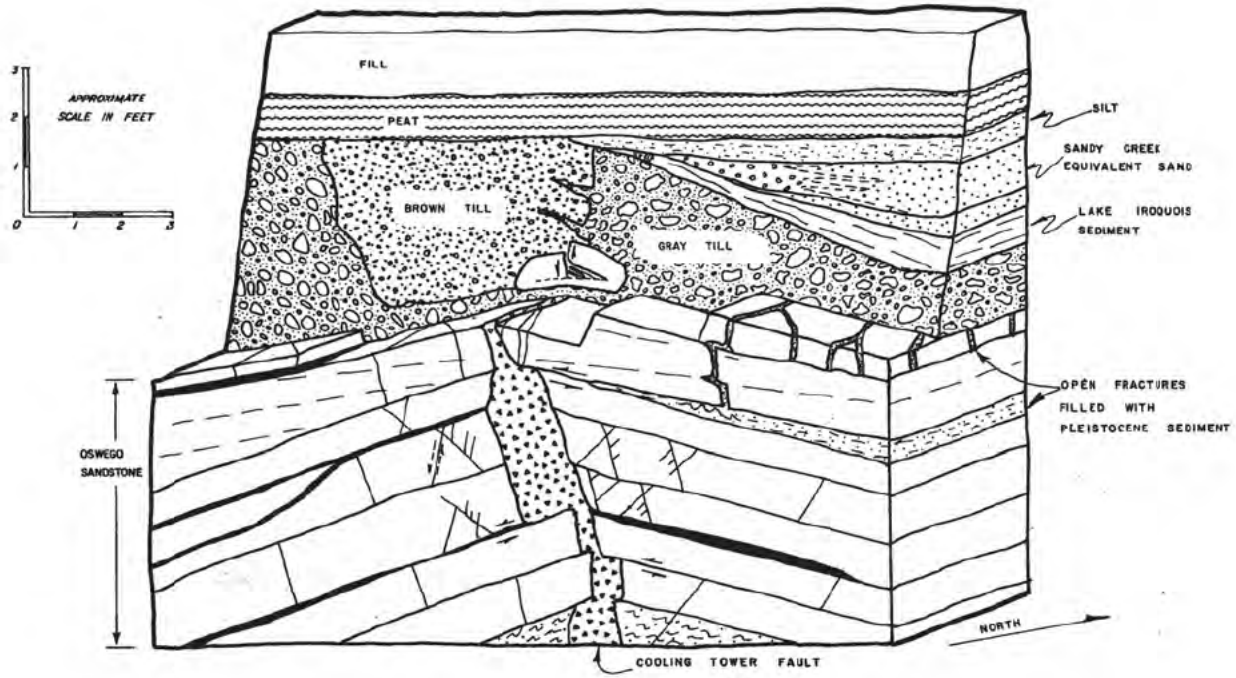
FIGURE 2.5-48

GENERALIZED BLOCK DIAGRAM, EAST WALL, TRENCH 3

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



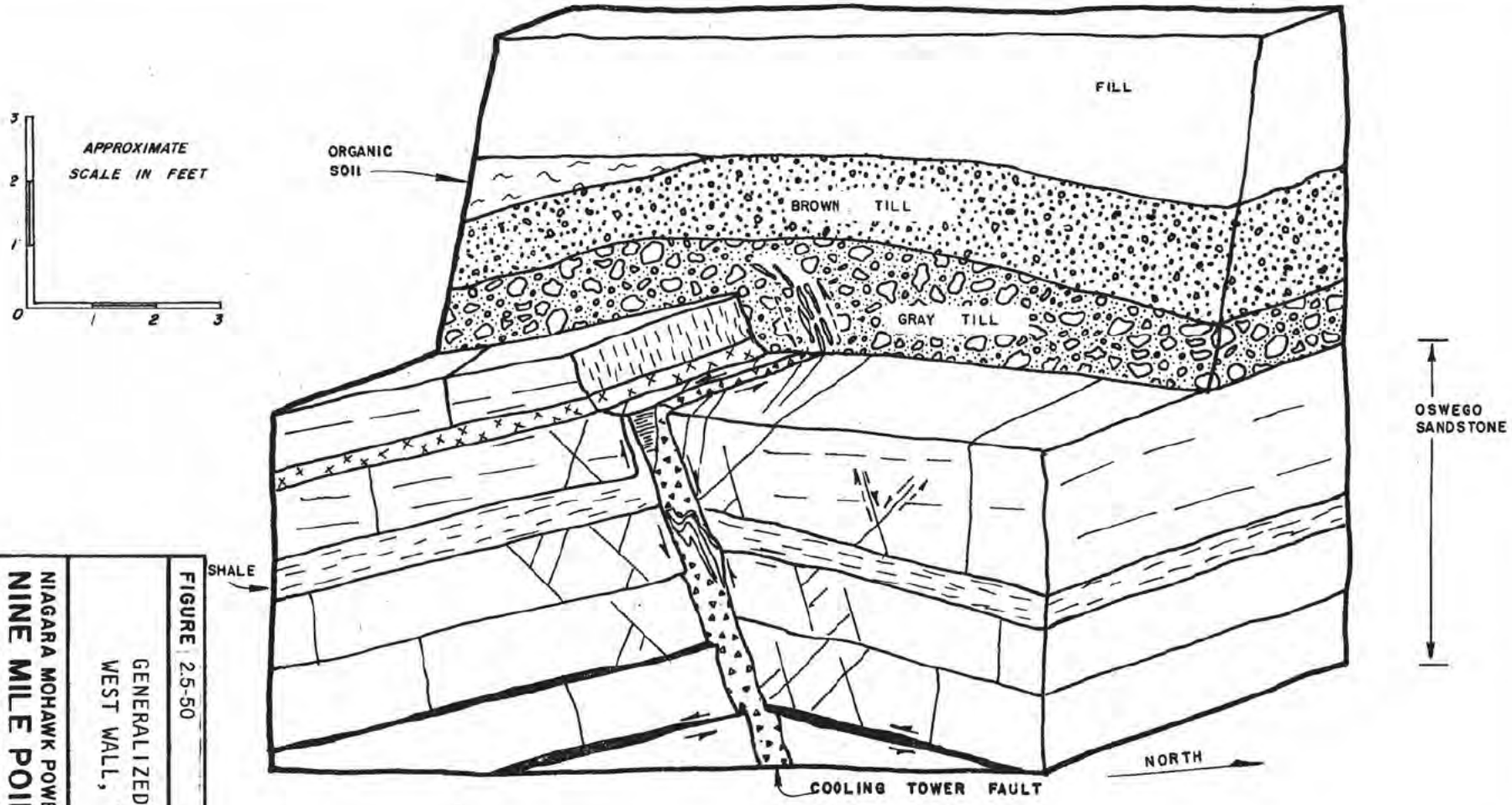
Note: Trench location shown on Site Location Map.

SOURCE:
Reference 94

FIGURE 2.5-49

GENERALIZED BLOCK DIAGRAM,
WEST WALL, TRENCH 4

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



Note: Trench location shown on Site Location Map

SOURCE:
Reference 94

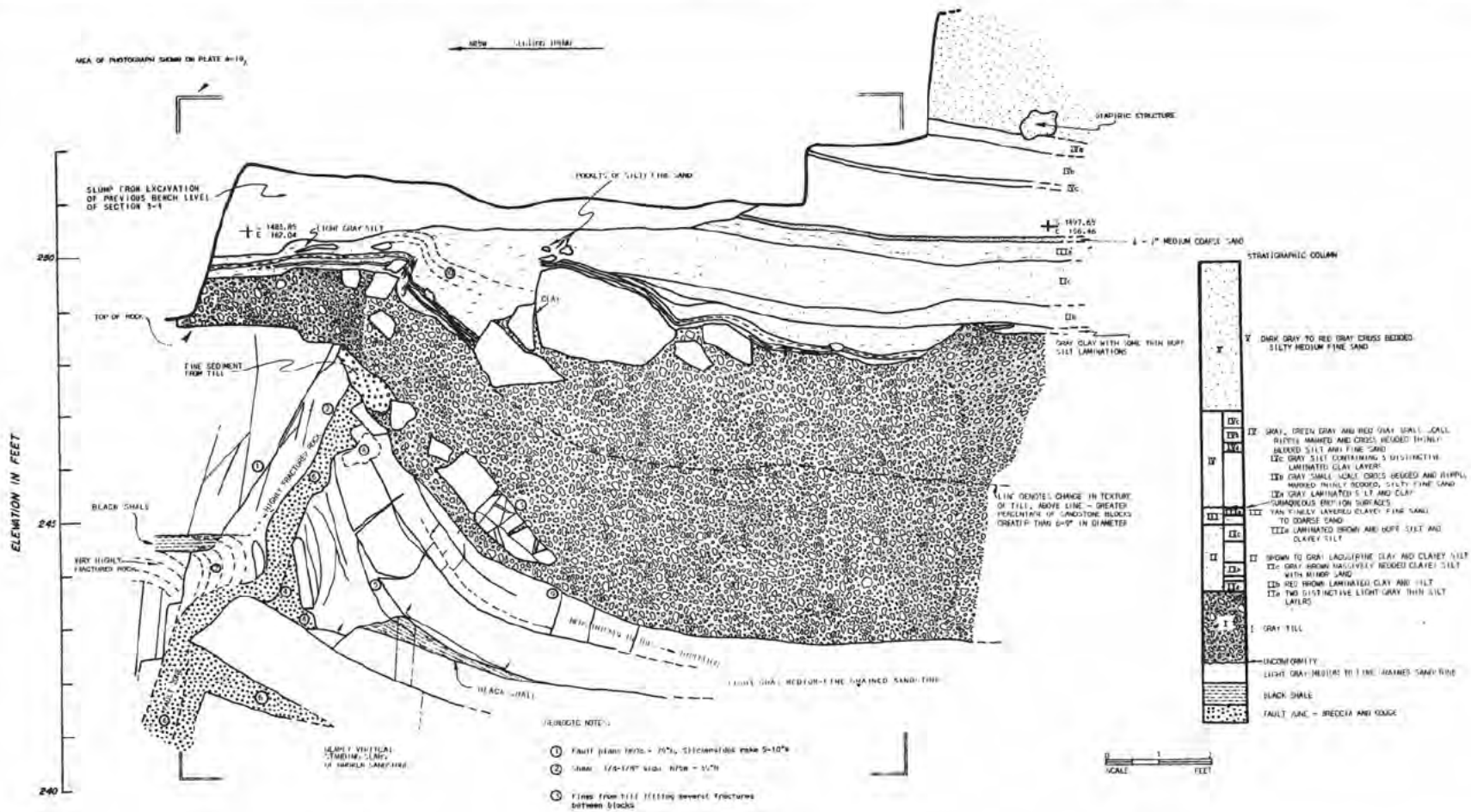
NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

GENERALIZED BLOCK DIAGRAM,
WEST WALL, TRENCH 5

FIGURE 2.5-50



GEOLOGIC NOTES:

1. Fault plane data: + 70°N, Slickensides rake 5-10°E
2. Shear: 1/8-1/4" wide; N70°W - 84°N
3. Fines from till filling several fractures between blocks
4. Angular fragments of rock in black clay matrix with poorly developed nearly vertical fabric
5. Angular broken rock
6. Angular fragments of sandstone in clayey sand matrix
7. Dashed lines represent fabric in the crush zone; not traceable beds
8. Very loose but in place bedrock, can be removed, varies further back in the outcrop
9. In the area of this bleep, the upper two major sandstone layers which show the most curvature are much more highly fractured than to either the east or west
10. Inferred to be gray and buff laminated clay and silt seen to the south in relatively non-stratigraphic position

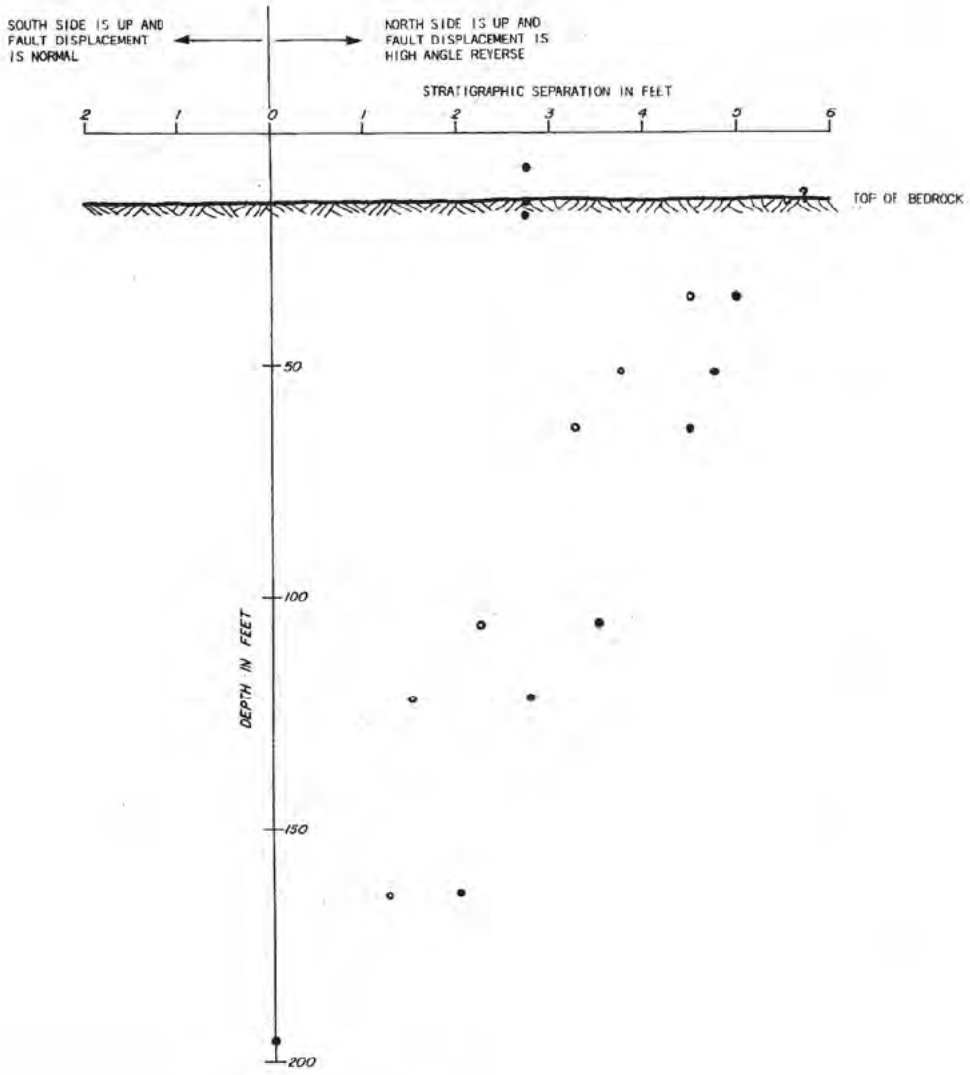
Note: Trench location shown on Site Location Map.
Coordinates refer to plant grid.

SOURCE:
Reference 94

FIGURE 2.5-51

CROSS SECTION 3-2
EAST WALL, TRENCH 3

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



EXPLANATION:

- ● Stratigraphic displacement measured adjacent to the fault plane
- ○ Stratigraphic displacement measured 20 feet away from the fault plane

Notes:

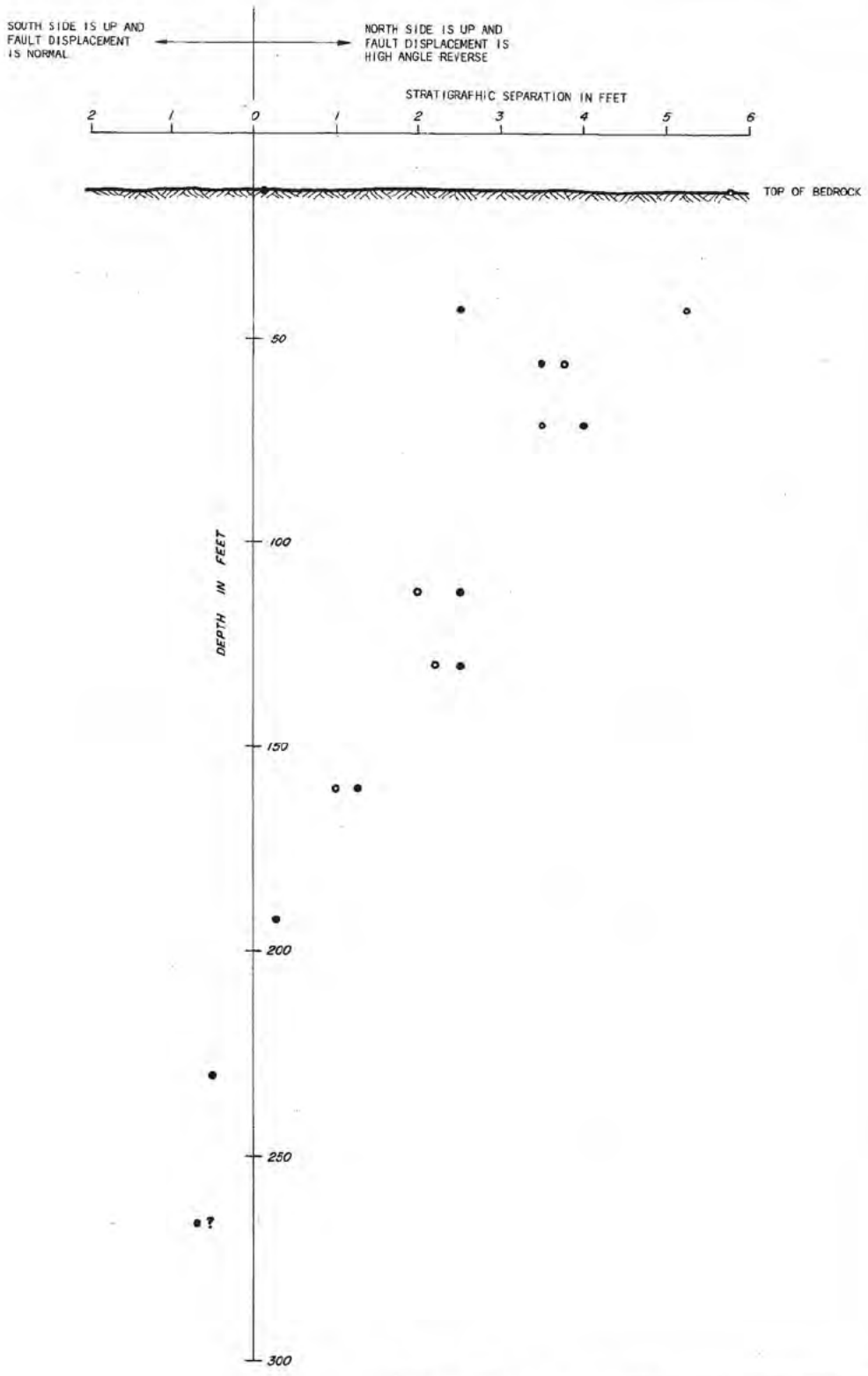
(1) Displacements shown near top of the bedrock are based on obeservations made in trench 3.
(2) Displacements shown in unconsolidated sediments includes monoclinal flexure over the fault.

SOURCE:
Reference 94

FIGURE 2.5-52

DIAGRAM SHOWING RELATIONSHIP BETWEEN STRATIGRAPHIC DISPLACEMENT AND DEPTH IN BORINGS T-3-1 THROUGH T-3-10

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



EXPLANATION:

- ● Stratigraphic displacement measured adjacent to the fault plane.
- o Stratigraphic displacement measured 20 feet away from the fault plane.

NOTE:

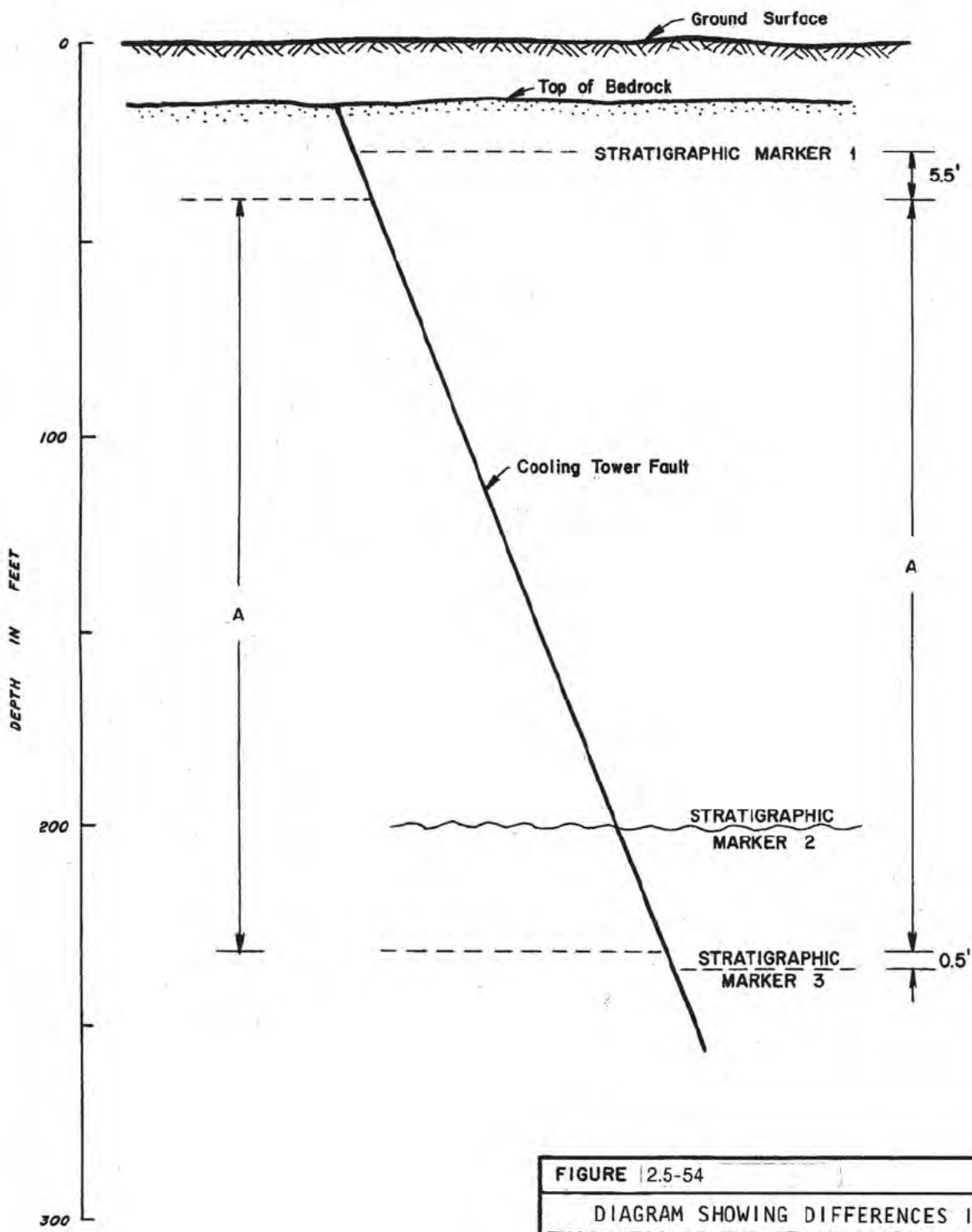
(1) Displacements shown near top of the bedrock are based on observations made in trench 4.

SOURCE:
Reference 94

FIGURE 2.5-53

DIAGRAM SHOWING RELATIONSHIP BETWEEN STRATIGRAPHIC DISPLACEMENT AND DEPTH IN BORINGS T-4-1 THROUGH T-4-12

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE:
Reference 94

FIGURE 2.5-54

DIAGRAM SHOWING DIFFERENCES IN THICKNESS OF THE STRATIGRAPHIC SECTION ON BOTH SIDES OF THE FAULT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

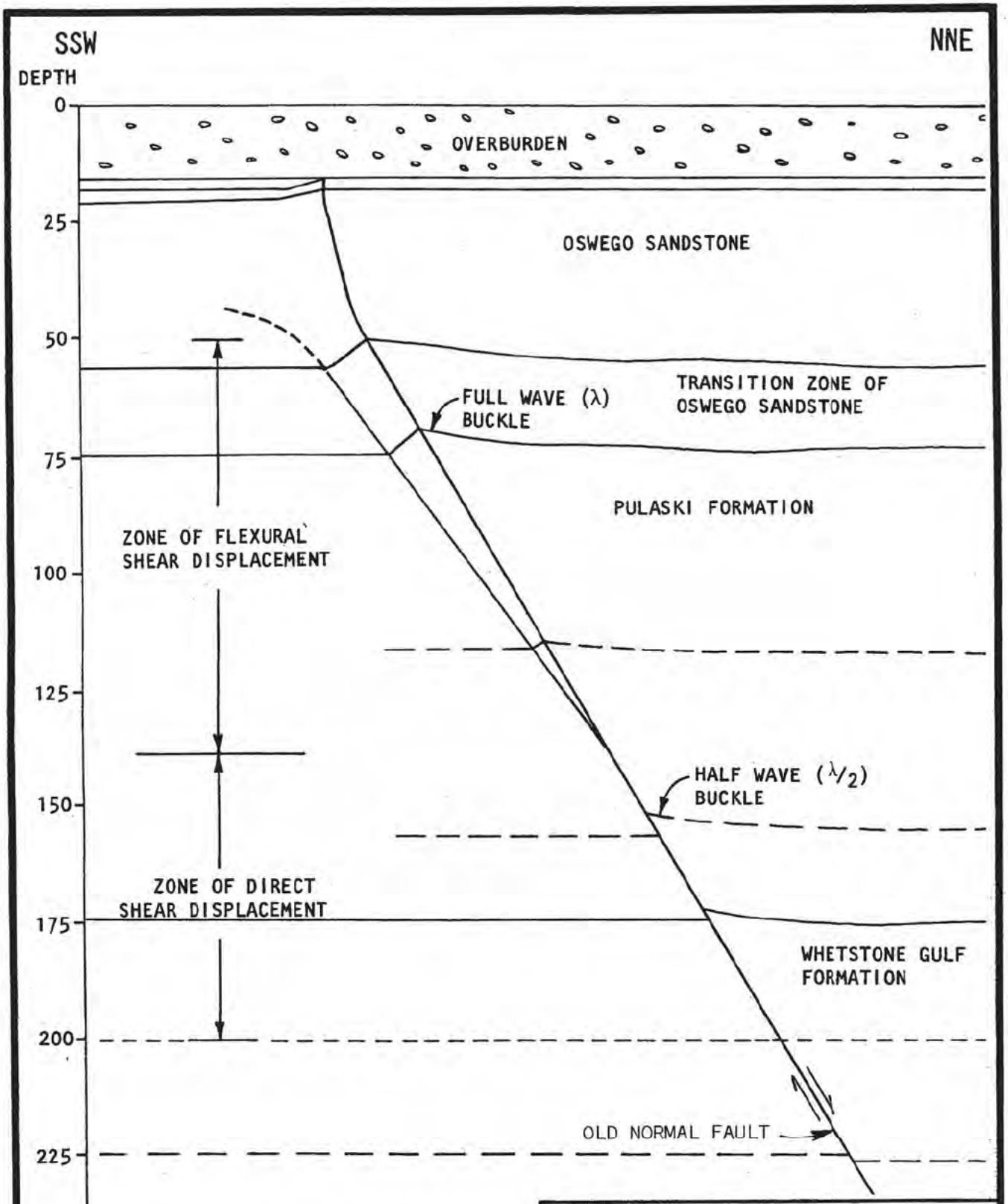
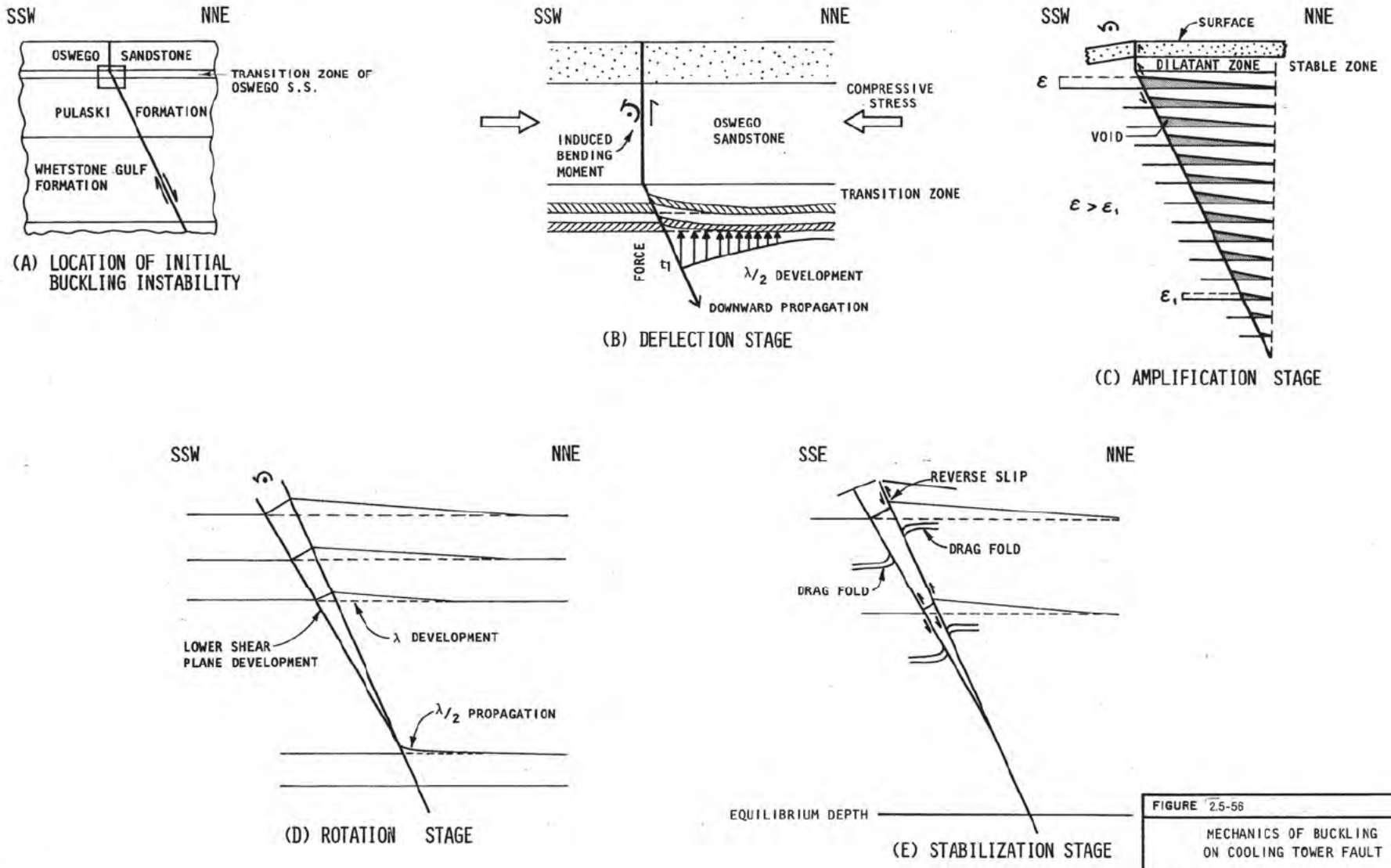


FIGURE 2.5-55

REVERSE SLIP DISPLACEMENTS
DUE TO BUCKLING ON COOLING TOWER FAULT

SOURCE:
Reference 94

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

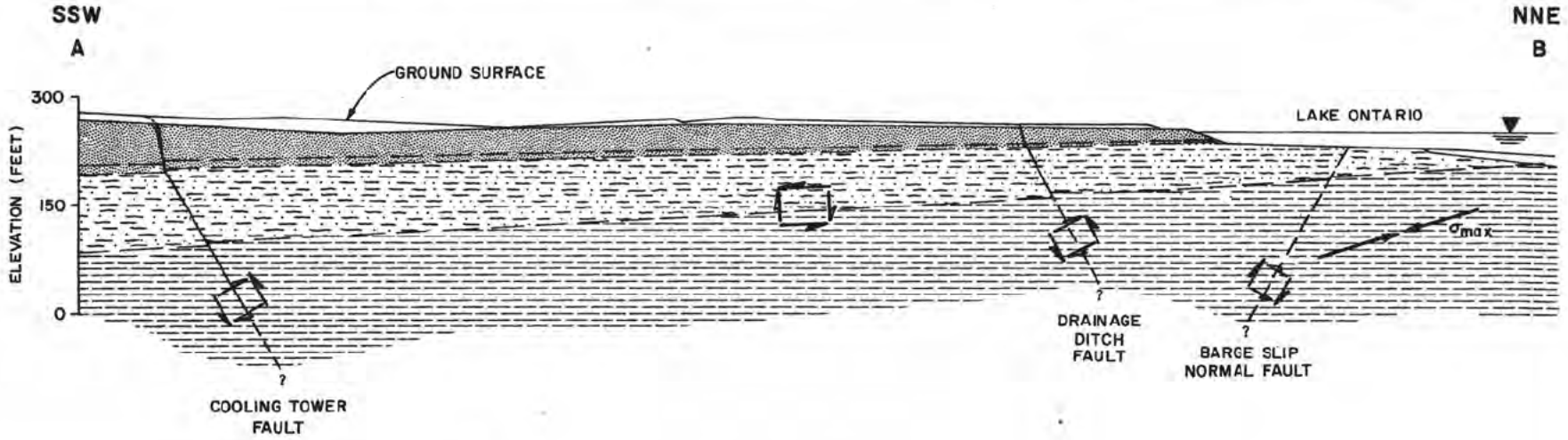


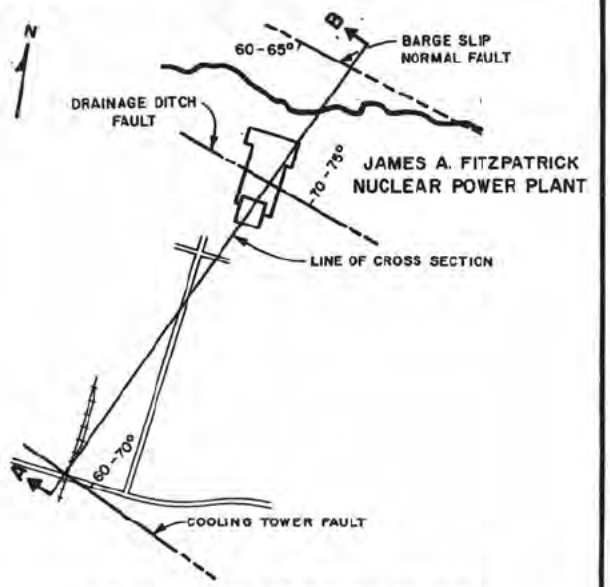
SOURCE:
Reference 94

FIGURE 2.5-56

MECHANICS OF BUCKLING ON COOLING TOWER FAULT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT





LOCATION MAP OF CROSS SECTION

0 150 300 FEET
HORIZONTAL SCALE

0 75 150 FEET
VERTICAL SCALE

KEY:

- OVERBURDEN
- OSWEGO SANDSTONE
- PULASKI FORMATION
- WHETSTONE GULF FORMATION
- SENSE OF SHEAR STRESS ACTING IN PLANES PARALLEL TO FAULT AND BEDDING IF σ_{max} PLUNGES SOUTHWARD

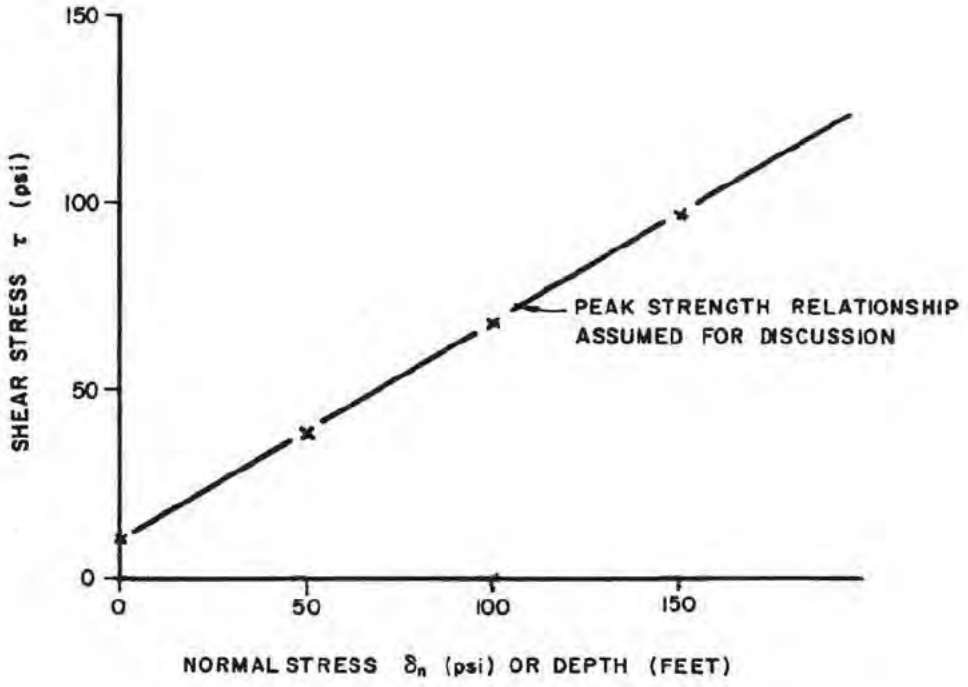
SOURCE:
Reference 94

FIGURE 2.5-57

SIMPLIFIED GEOLOGIC CROSS SECTION AT THE NINE MILE POINT SITE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

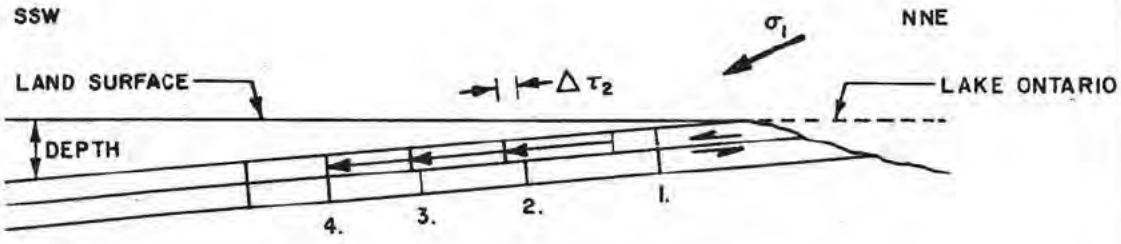
A



$\tau = C + \tan\phi(\delta_n)$

where C = 10 psi $\phi = 30°$

B



$\Delta\tau_2$ — DIFFERENCE BETWEEN LAYER PARALLEL SHEAR STRESS AND PEAK STRENGTH OF BEDDING AT POINT 2

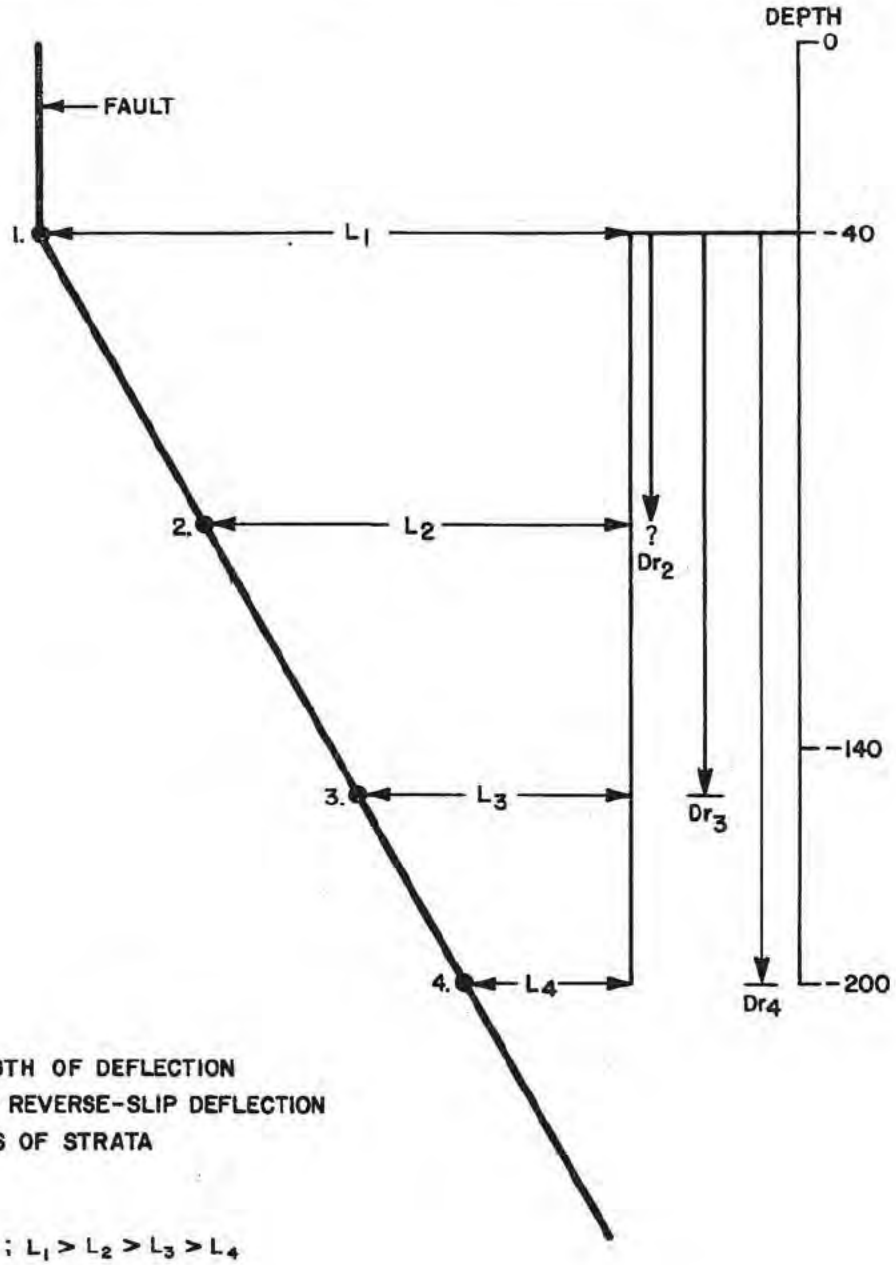
FIGURE 2.5-58

PEAK SHEAR STRENGTH OF BEDDING AND ACCUMULATION OF SHEAR STRESS ON BEDDING PLANES AS σ_1, TRAJECTORY PLUNGES PROGRESSIVELY AWAY FROM FREE BOUNDARY

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



L = WAVELENGTH OF DEFLECTION
Dr = DEPTH OF REVERSE-SLIP DEFLECTION
t = THICKNESS OF STRATA

ASSUMING:
$t_1 = t_2 = t_3 = t_4$; $L_1 > L_2 > L_3 > L_4$
HENCE:
$L_1/t_1 > L_2/t_2 > L_3/t_3 > L_4/t_4$

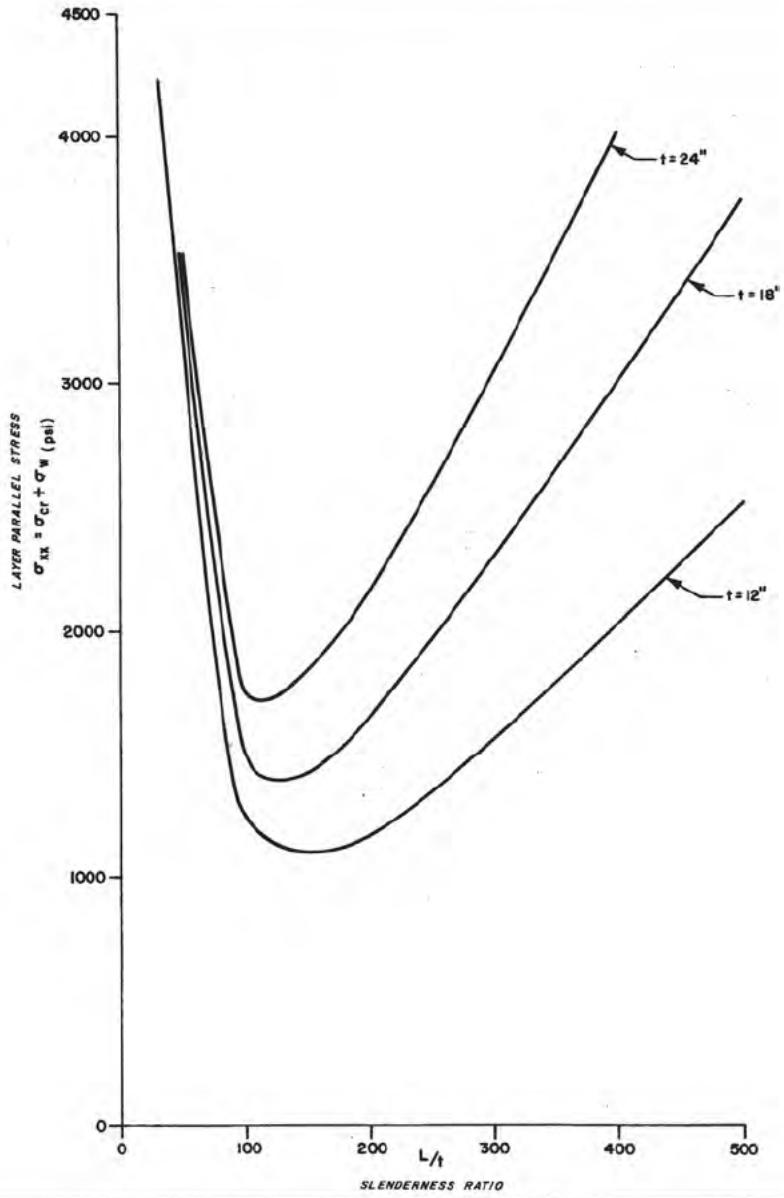
Dr_4 = MAXIMUM POTENTIAL DEPTH OF REVERSE-SLIP DEFLECTION. (DEPENDS UPON L_1, AND IS CONSTANT FOR A SPECIFIC SYSTEM.)

FIGURE 2.5-59

DEVELOPMENT OF MAXIMUM POTENTIAL DEPTH OF REVERSE-SLIP DEFLECTION

SOURCE:
Reference 94

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE:
Reference 94

FIGURE 2.5-60

RELATIONSHIP OF LAYER-PARALLEL STRESS TO SLENDERNESS RATIO FOR BEDS 12, 18 AND 24 INCHES THICK

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

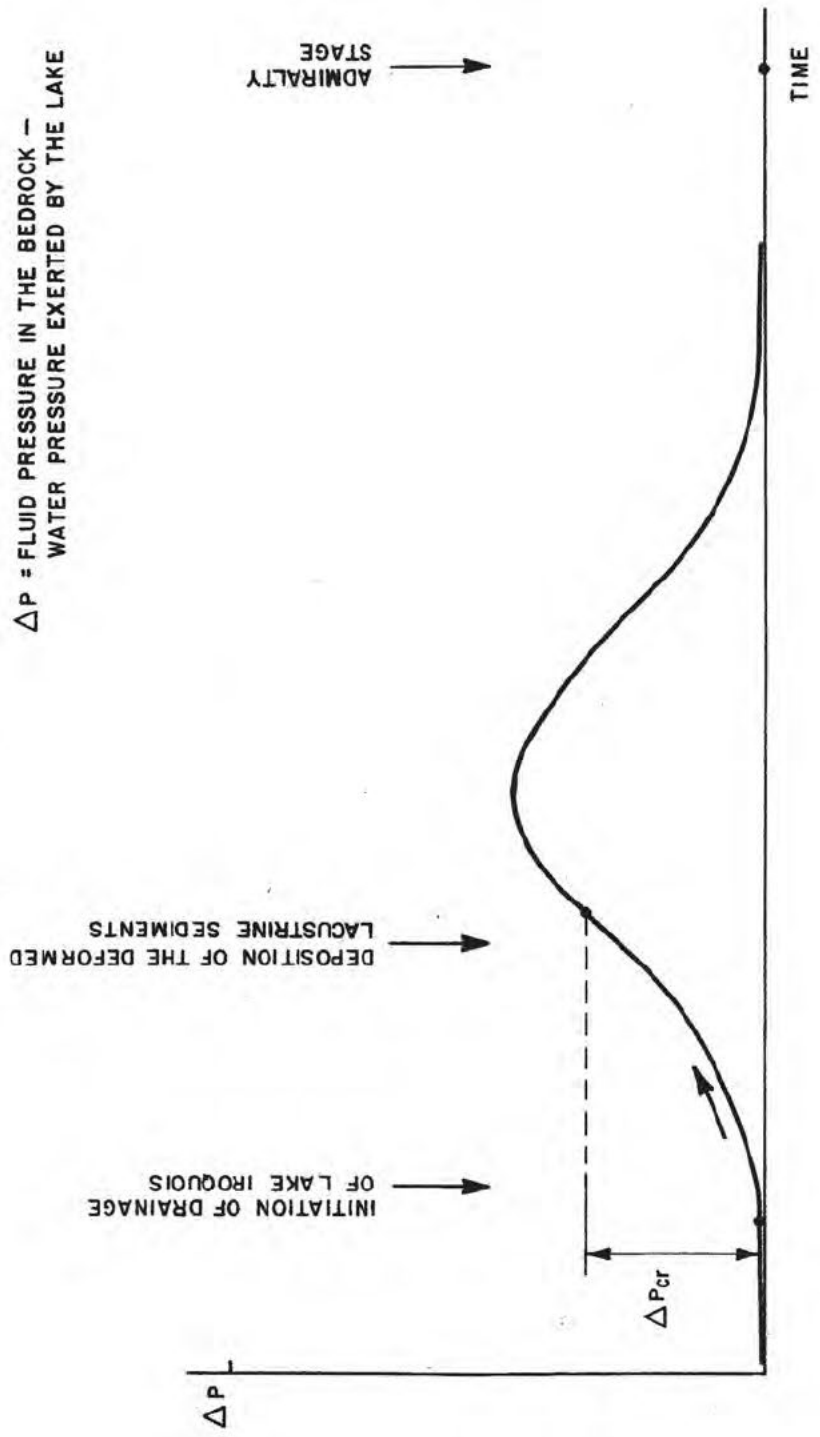
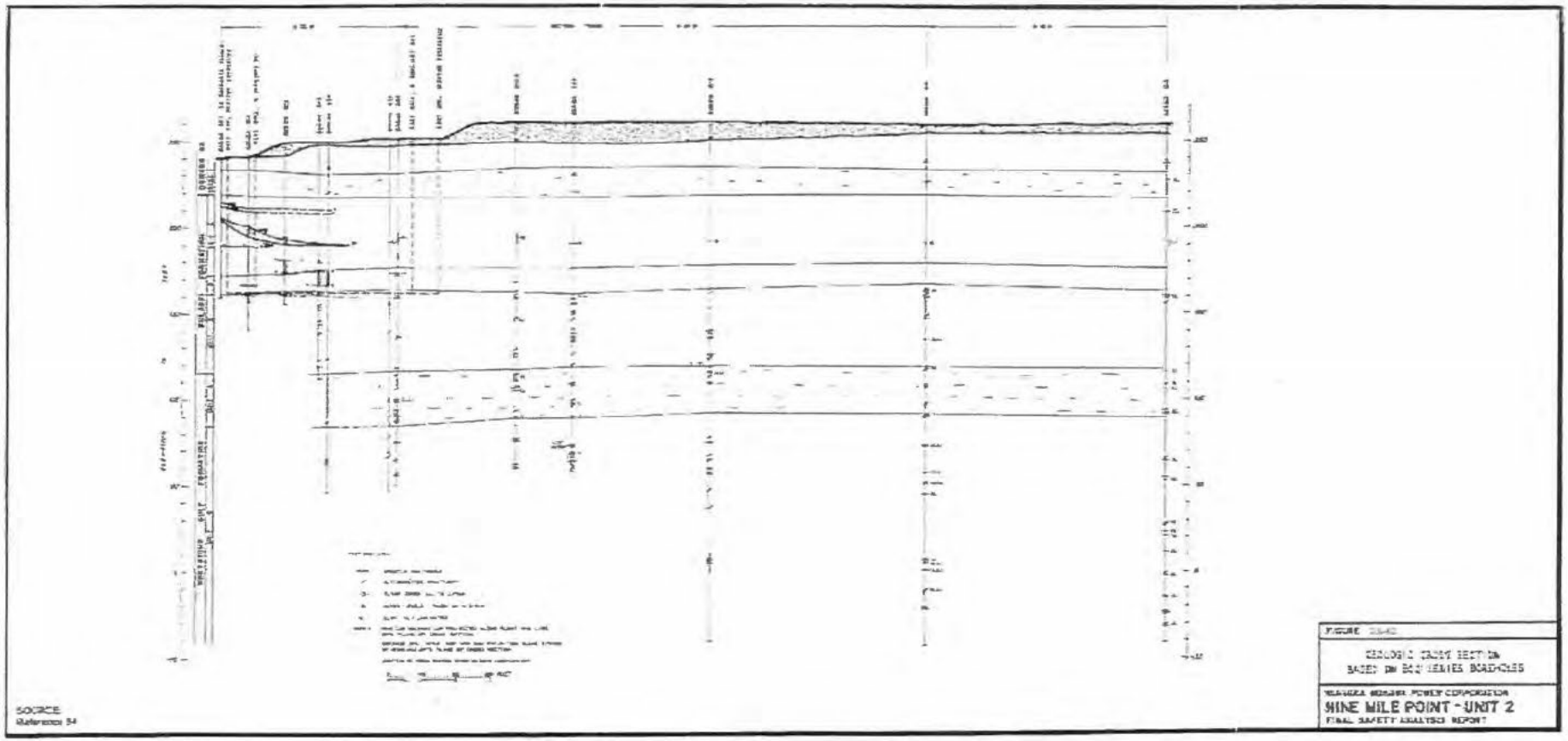


FIGURE 2.5-61

DIAGRAM OF POSSIBLE CHANGES IN THE FLUID PRESSURE IN BEDROCK WITH TIME

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

SOURCE:
Reference 94



SOURCE
Reference 54

FIGURE [illegible]

[illegible] SECTION
BASED ON BAT [illegible] BOREHOLES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

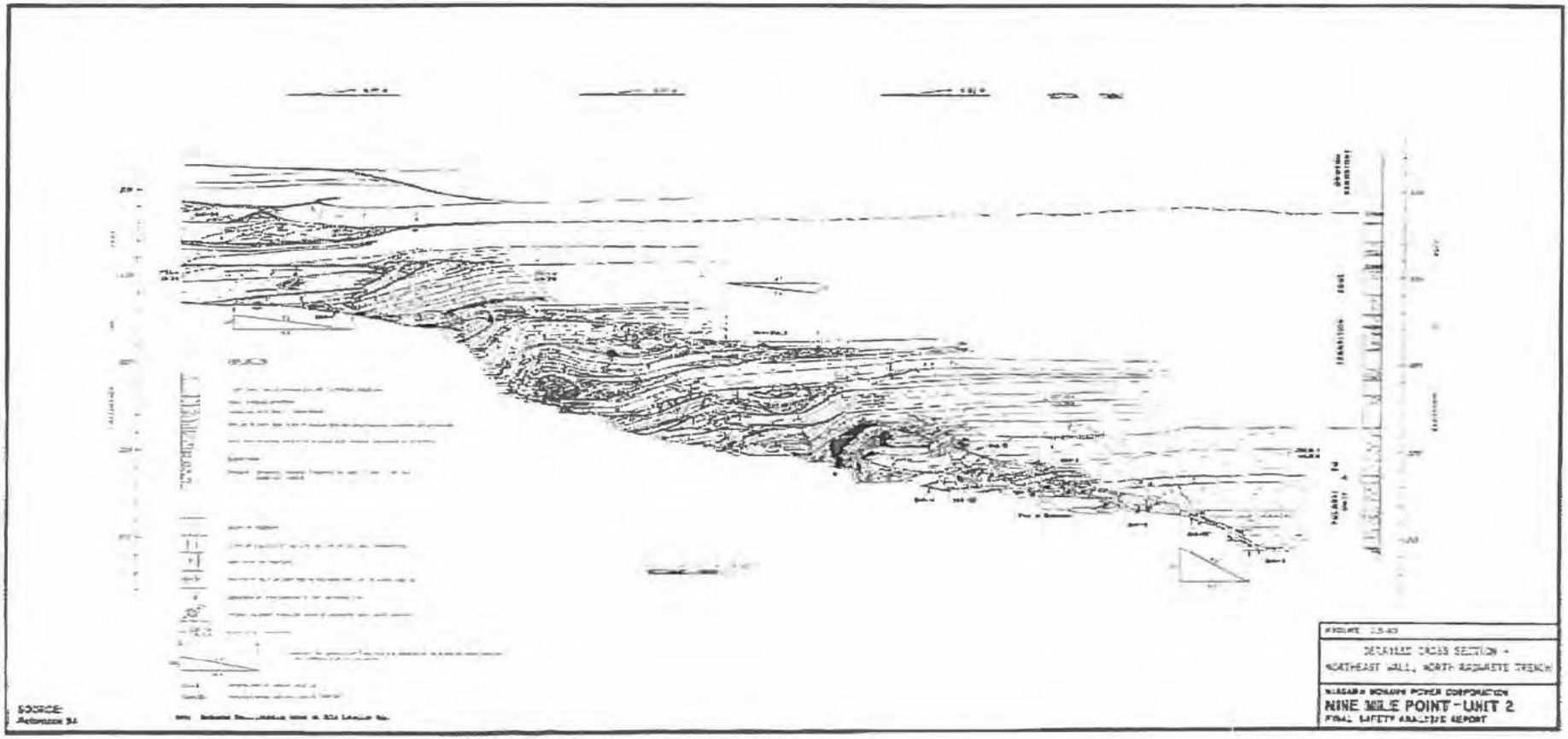
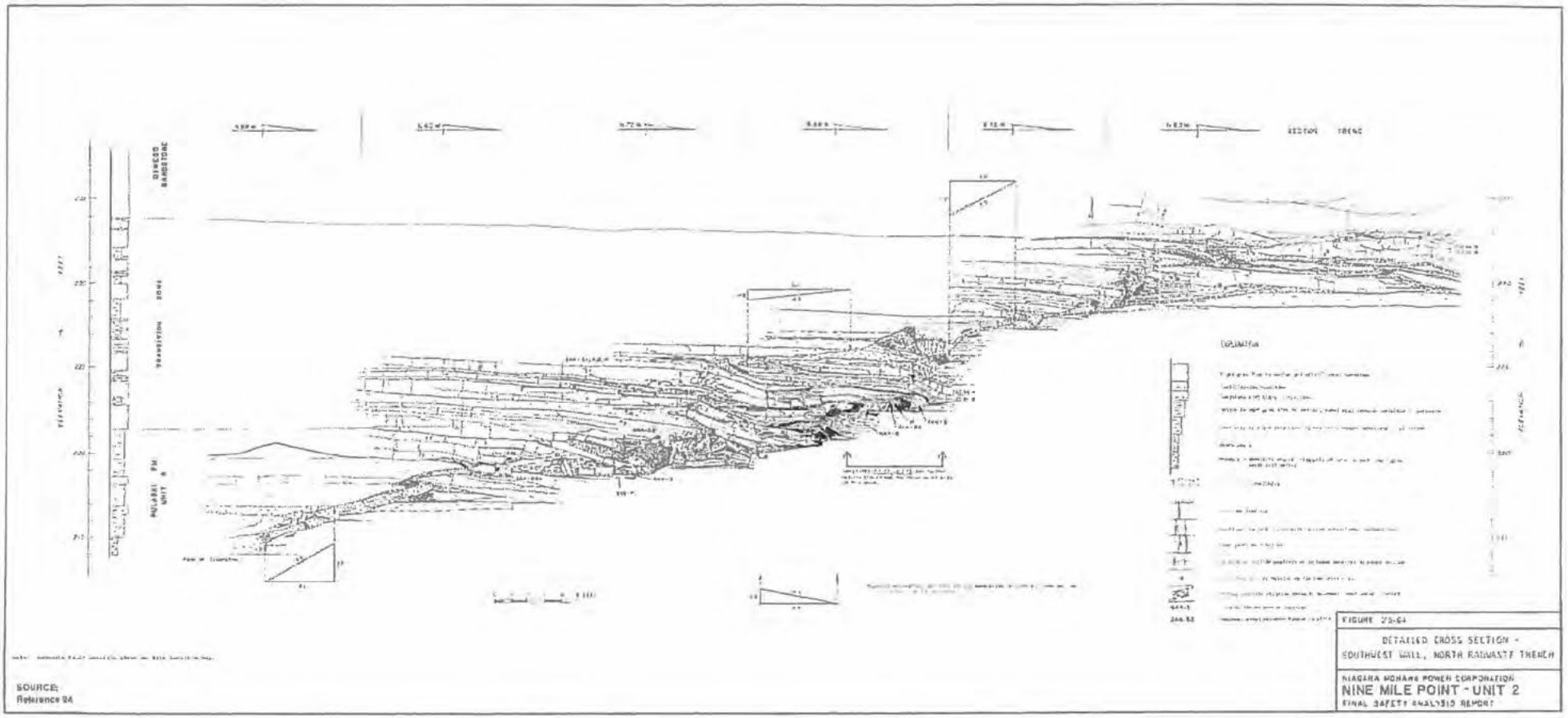


FIGURE 2.5-43

DETAILED CROSS SECTION -
NORTHEAST WALL, NORTH RADWASTE TRENCH

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

SOURCE:
Reference 34

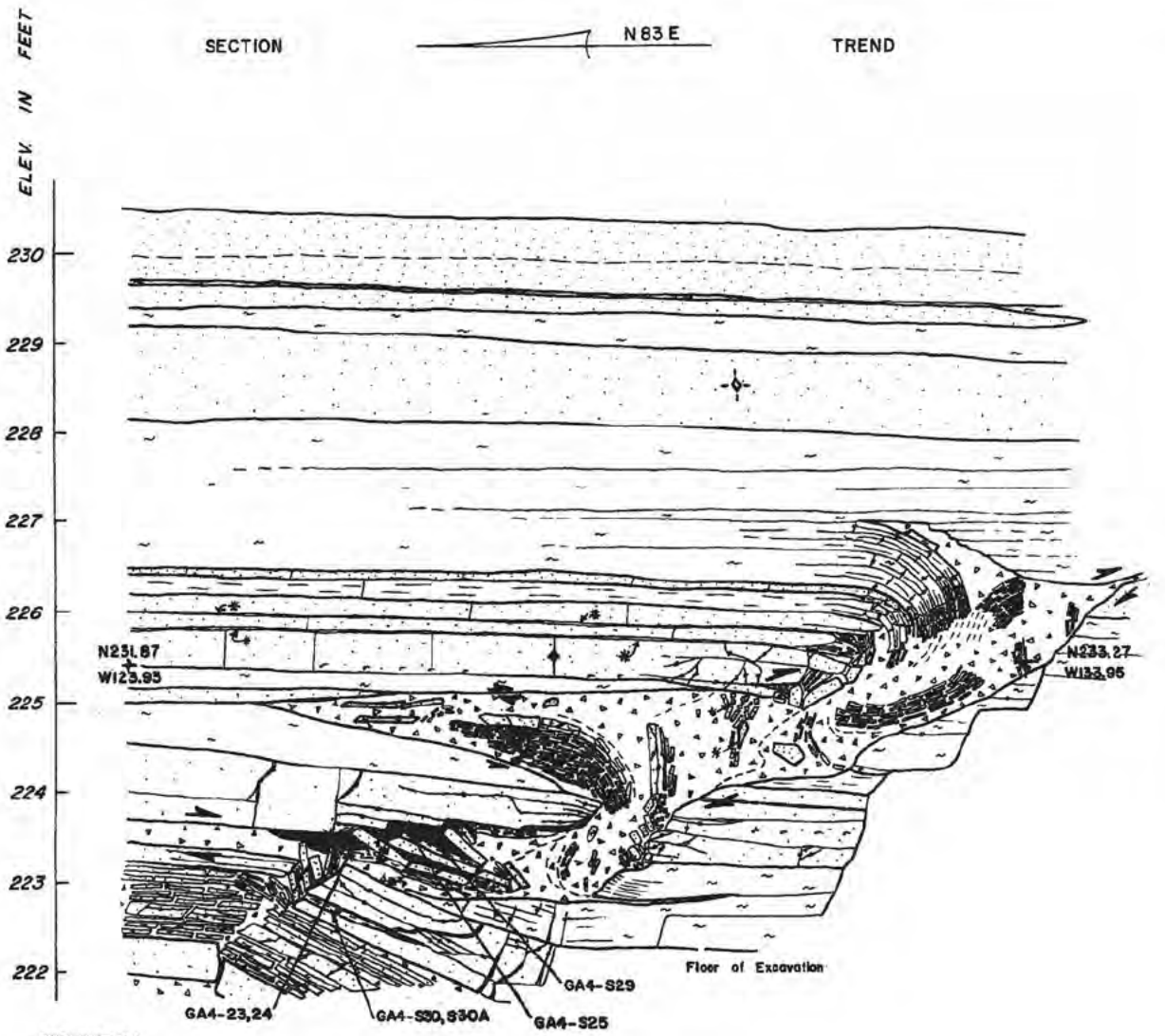


SOURCE:
Reference 24

FIGURE 2.5-64

DETAILED CROSS SECTION -
SOUTHWEST WALL, NORTH RADWASTE TRENCH

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



EXPLANATION:

Light gray fine to medium grained siliceous sandstone
Fossiliferous sandstone
Sandstone with shaley interclasts
Medium dark gray fine to medium grained argillaceous sandstone or graywacke
Dark gray to black very fine grained argillaceous sandstone or siltstone
Black shale
Breccia - generally angular fragments of rock in soft light gray sandy silt matrix

0 1 2 FEET

Joint or fracture
Joint or fracture filled with calcite or sulfides, respectively
Open joint or fracture
Calcite or sulfide coatings on surfaces parallel to cross section
Arrows indicate relative sense of movement

GA4-23 Sample location

Void
Tan to gray clayey silt - often displaying distinct laminations

N23L87
W123.93
Plant Grid Coordinates

Note: Radwaste Fault location shown on Site Location Map.

SOURCE:
Reference 94

FIGURE 2.5-65

DETAILED CROSS SECTION OF EXPLORATORY EXCAVATION INTO SOUTH WALL OF NORTH RADWASTE TRENCH (SOUTH WALL)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

FILE

BY DATE

CHECKED BY DATE

ISSUE NO.

ISSUE DATE

P.I. Date

A

B

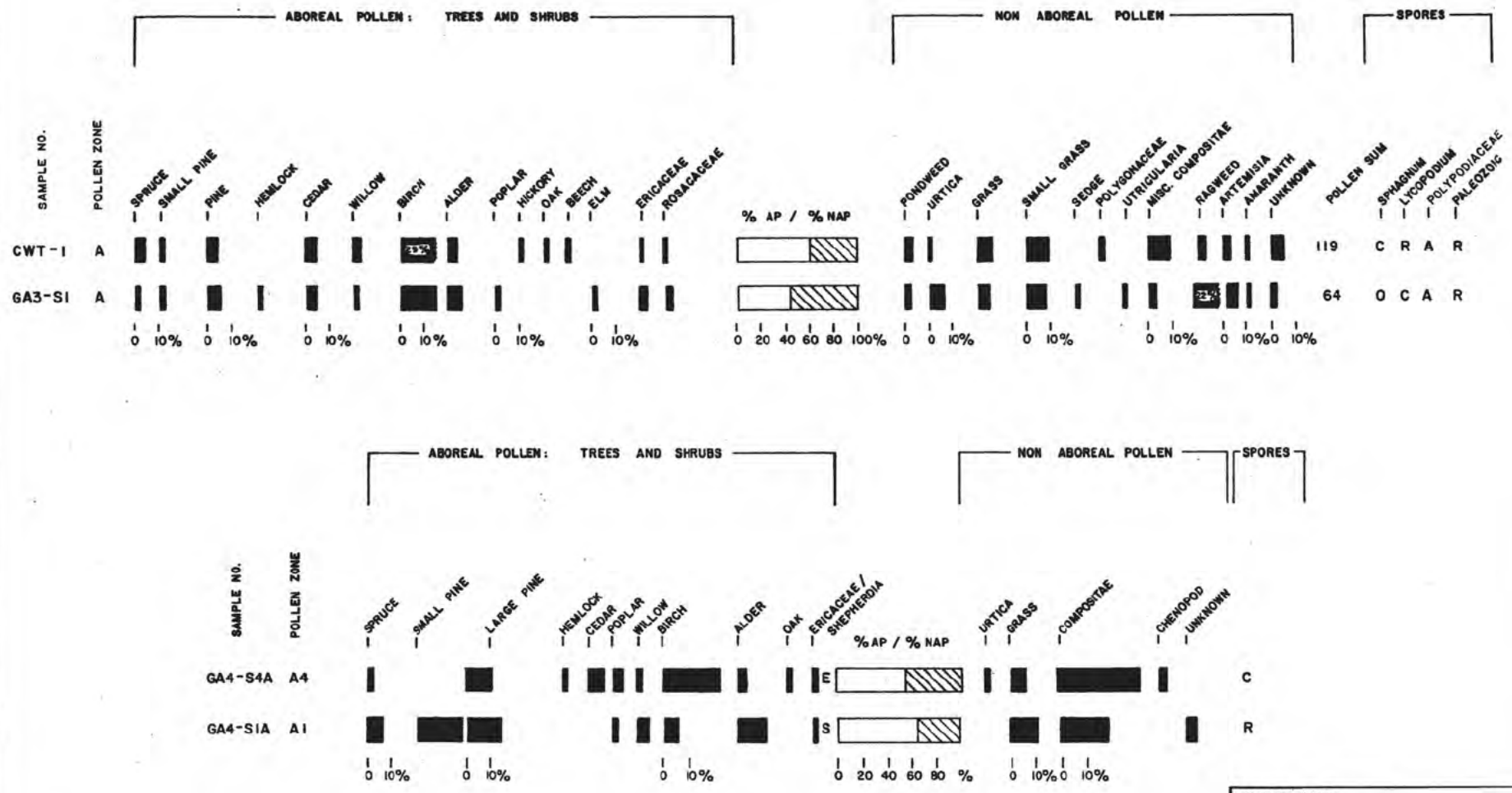
Note: Plate shows clay laminae with 70° dip equal to that of short limb kink fold along Radwaste Fault Zone.

SOURCE:
Reference 94

FIGURE 2.5-66

PHOTOGRAPHS OF LATE PLEISTOCENE CLAY

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



KEY:

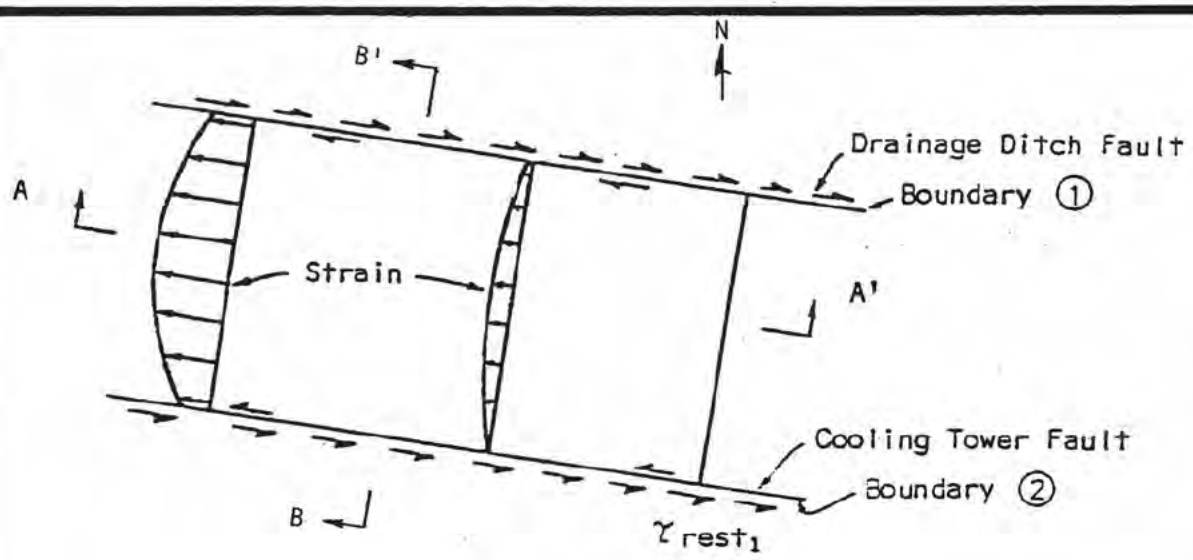
A - ABUNDANT	+10 SPECIMENS
C - COMMON	6-9 SPECIMENS
O - OCCASIONAL	3-5 SPECIMENS
R - RARE	0-2 SPECIMENS

SOURCE:
Reference 94

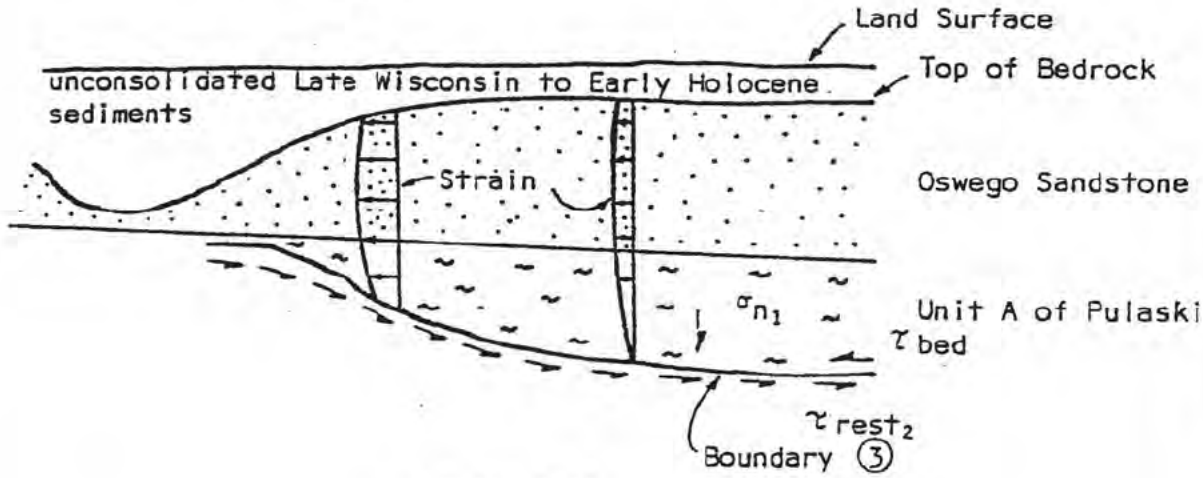
FIGURE 2.5-67

RELATIVE POLLEN PERCENTAGES, SPORE AND MISC. MICROFOSSIL ABUNDANCE (INTERSTITIAL SEDIMENT)

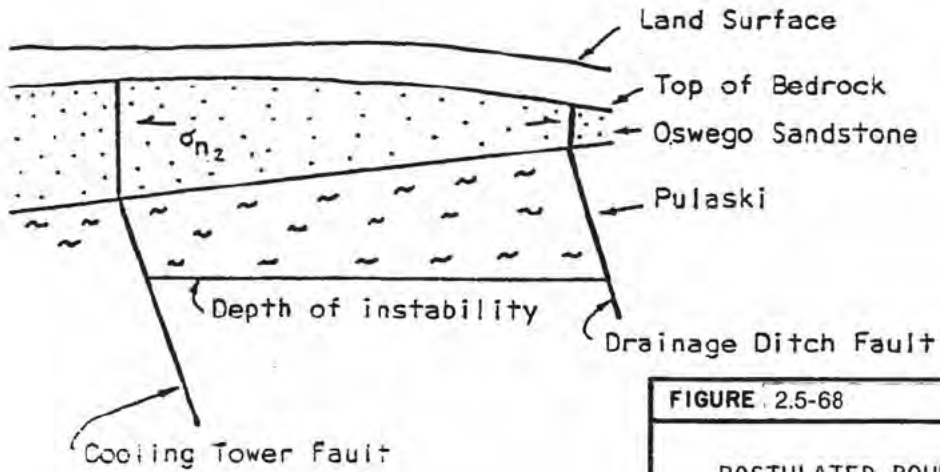
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



PLAN



SECTION A-A'



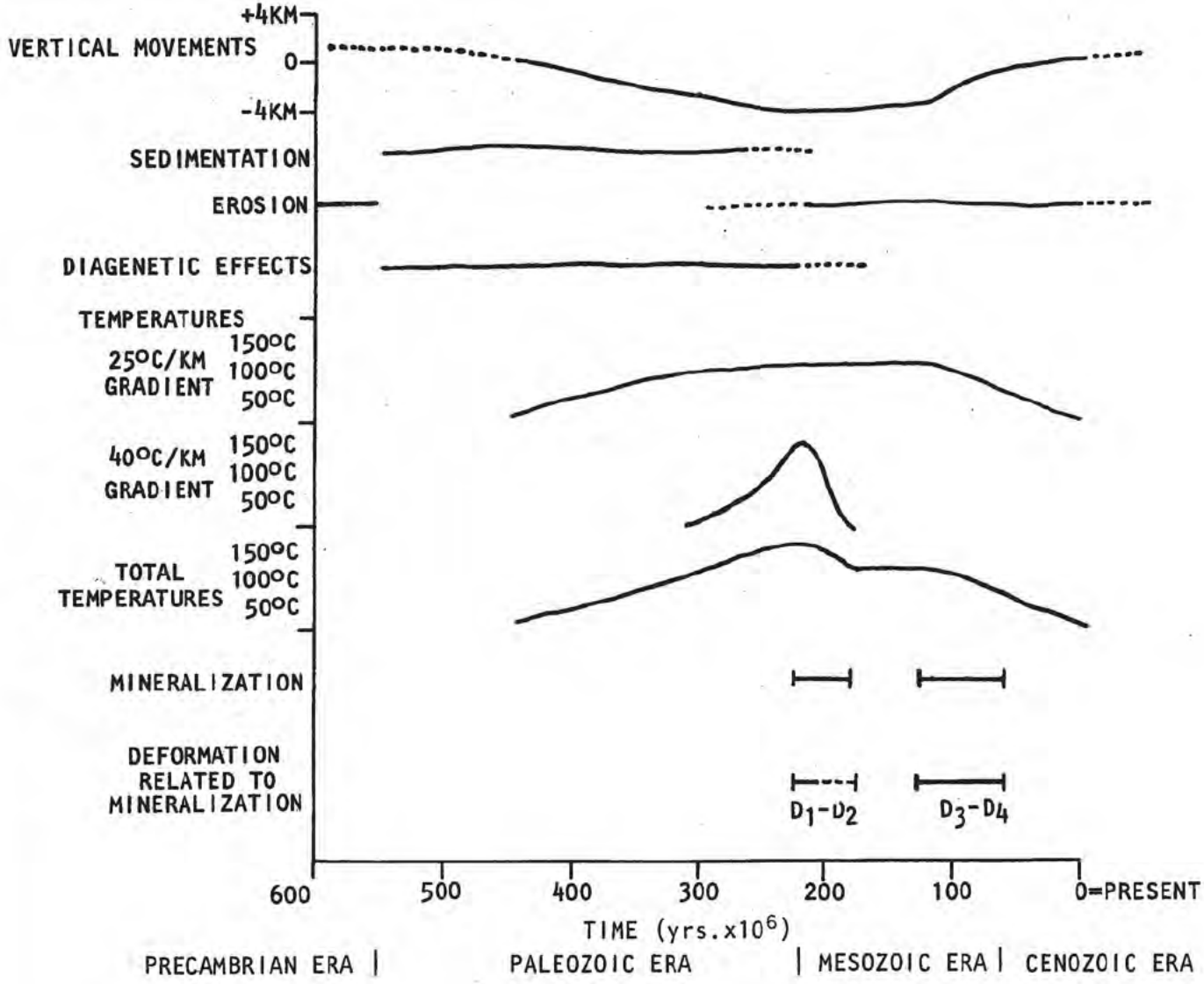
SECTION B-B'

SOURCE:
Reference 94

FIGURE 2.5-68

POSTULATED BOUNDARY CONDITIONS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE: Reference 94

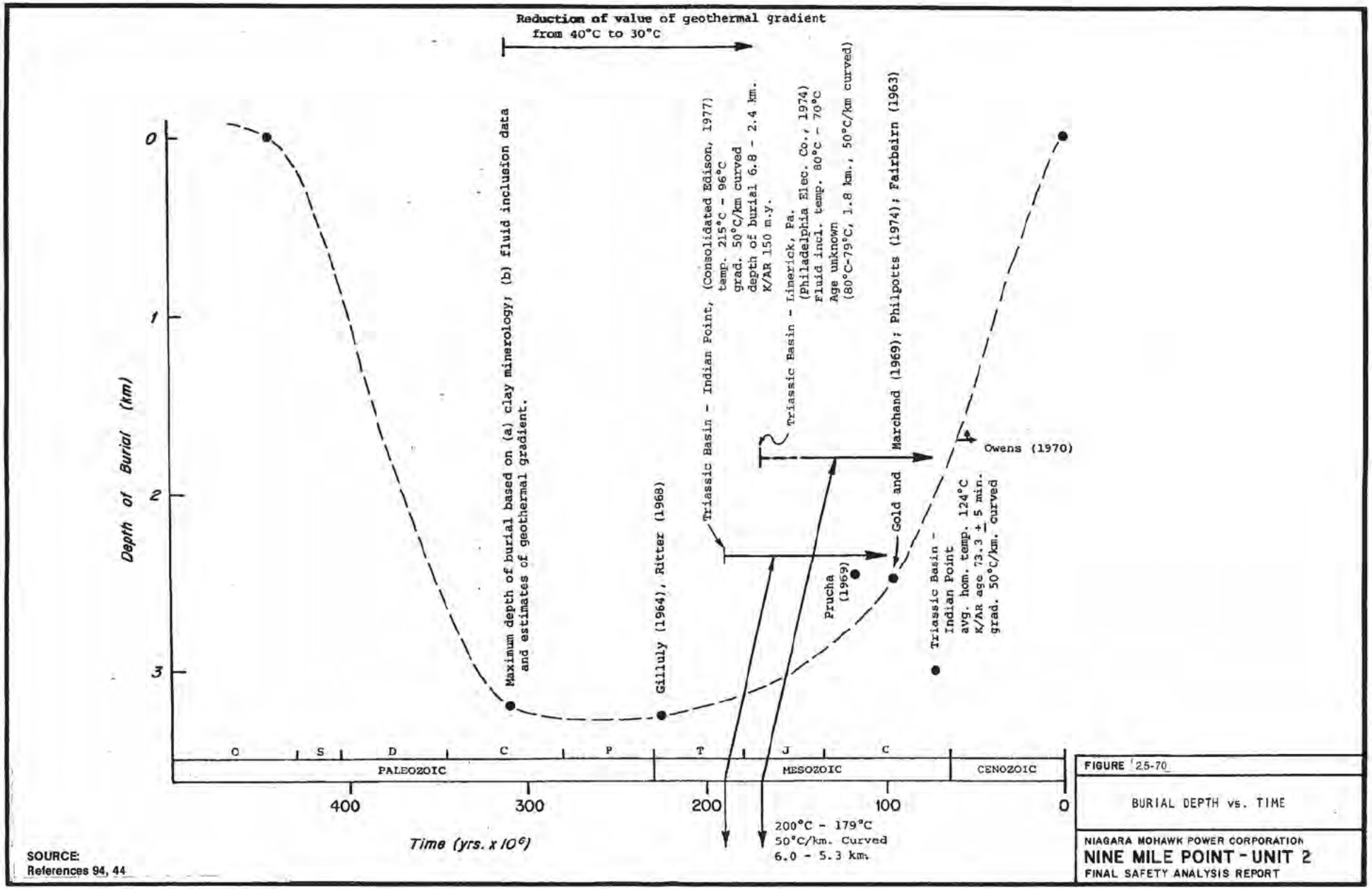
FIGURE 2.5-69

INTERPRETED GEOLOGIC HISTORY OF THE PALEOZOIC SEDIMENTARY ROCKS IN THE VICINITY OF NINE MILE POINT, N.Y.

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT



SOURCE:
References 94, 44

FIGURE 2.5-70

BURIAL DEPTH vs. TIME

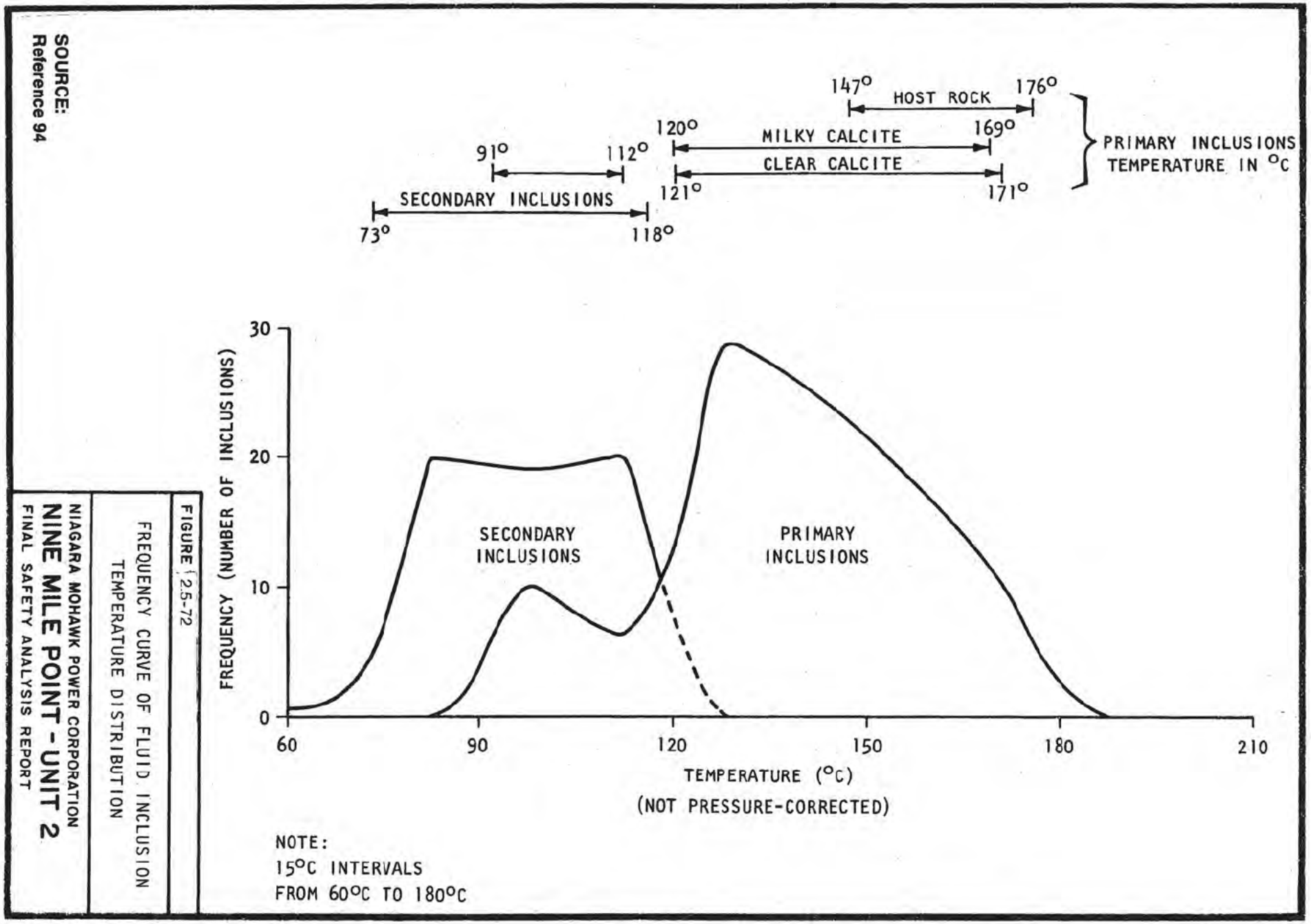
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

REFERENCE: 94

FIGURE 2.5-71

FLUID INCLUSION TEMPERATURE DISTRIBUTION

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



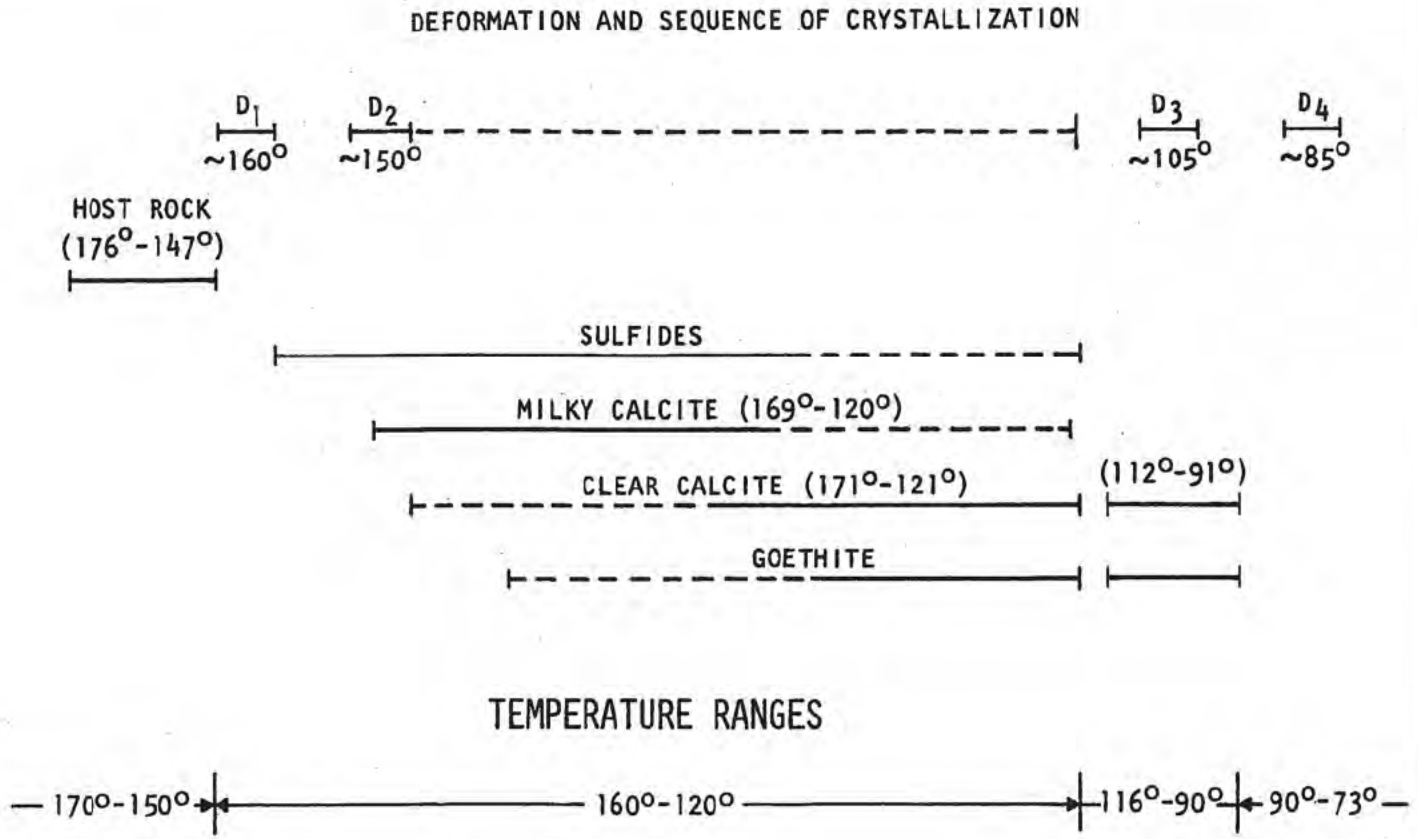
SOURCE:
Reference 94

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

FREQUENCY CURVE OF FLUID INCLUSION
TEMPERATURE DISTRIBUTION

FIGURE 2.5-72

SOURCE:
Reference 94



NOTE:

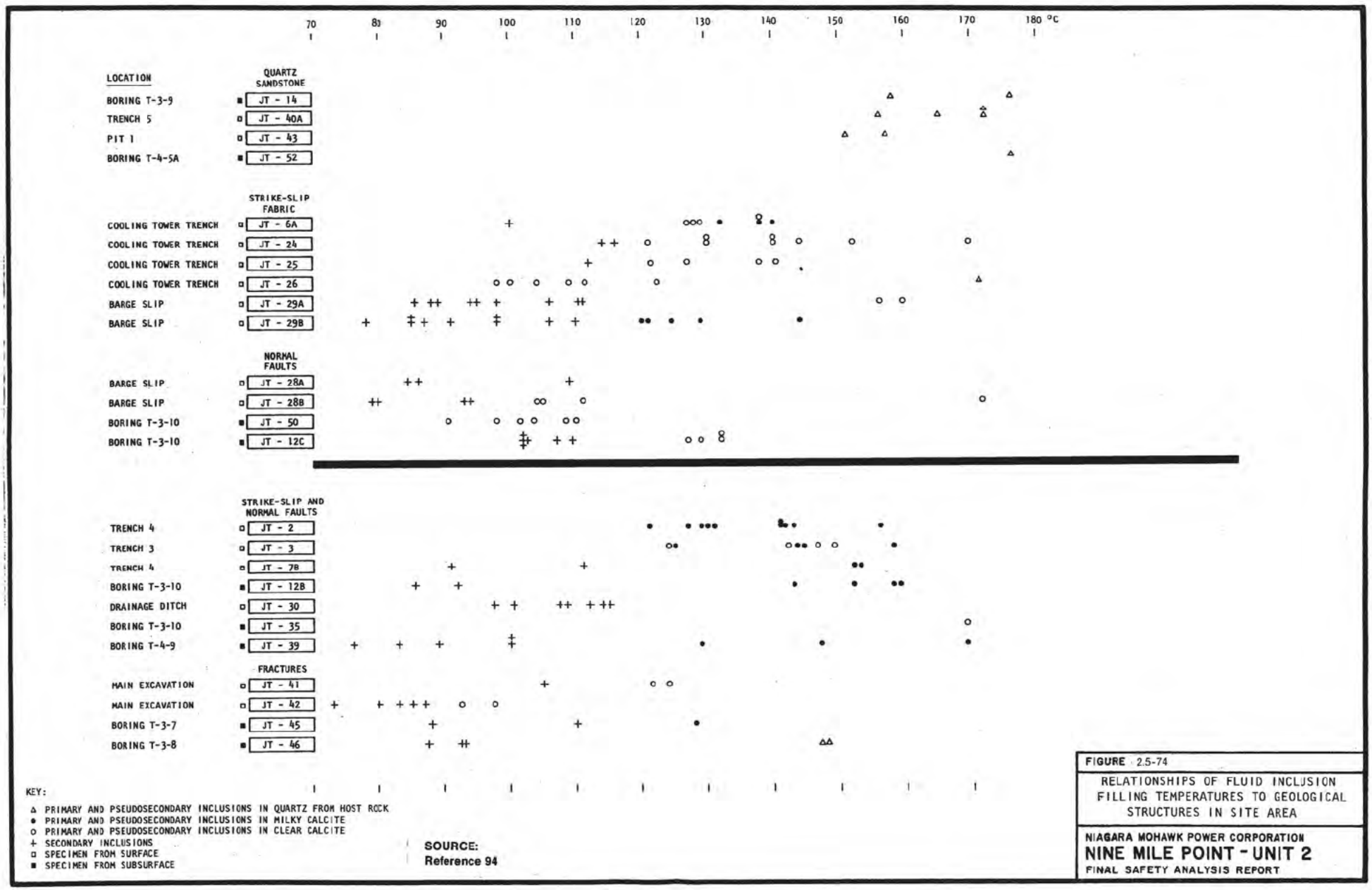
ALL TEMPERATURES GIVEN IN DEGREES CENTIGRADE

HORIZONTAL AXIS REPRESENTS ORDER OF CRYSTALLIZATION. TEMPERATURES WHICH APPLY TO SPECIFIC MINERALS ARE GIVEN, BUT NOT REPRESENTED GRAPHICALLY ON THIS PLATE.

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

SITE PARAGENETIC RELATIONSHIPS

FIGURE 2.5-73

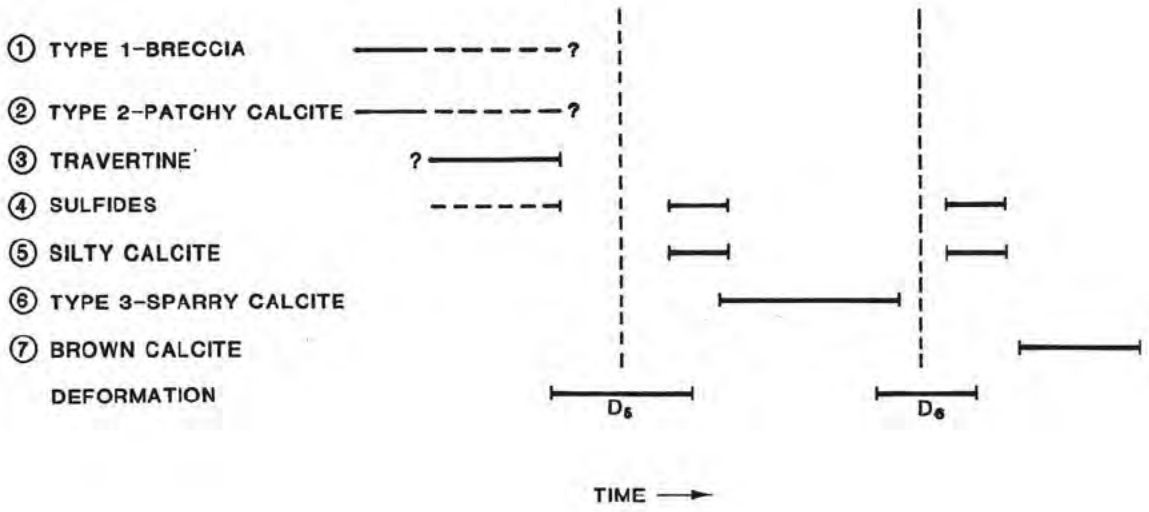


SOURCE:
Reference 94

FIGURE 2.5-74

RELATIONSHIPS OF FLUID INCLUSION FILLING TEMPERATURES TO GEOLOGICAL STRUCTURES IN SITE AREA

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

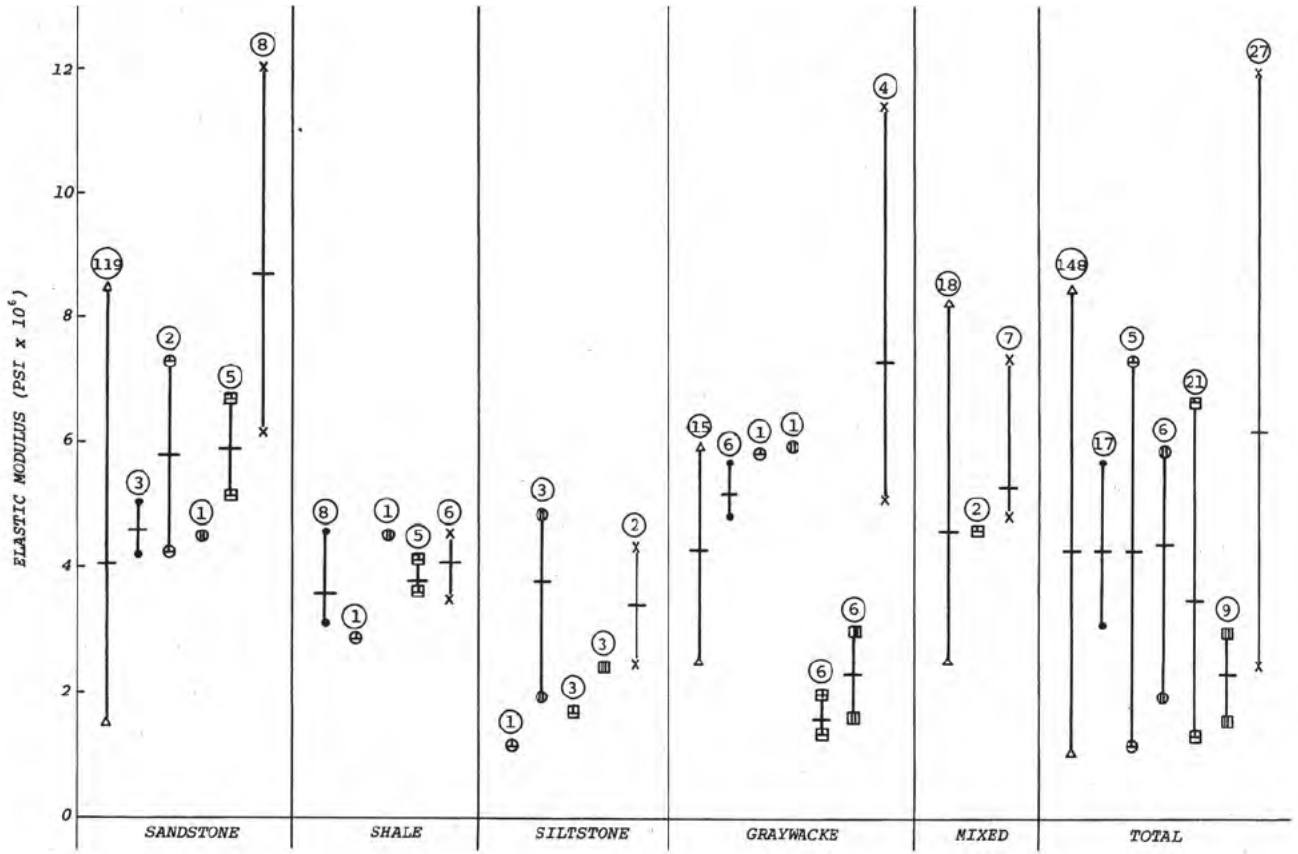


SOURCE:
Reference 94

FIGURE 2.5-75

PARAGENETIC RELATIONSHIPS OF GROUNDWATER CALCITE MINERALIZATION AT NINE MILE POINT UNIT 2 SITE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



KEY:

Test	Symbol
Biaxial	△
Uniaxial (tangent)	●
Uniaxial (secant)	⊖ (90°) ◐ (0°)
Triaxial (average)	⊟ (90°) ▥ (0°)
Shock scope	×
Number of samples	(3)

FIGURE 2.5-76

COMPARISON OF ELASTIC MODULII VS. ROCK TYPE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

EXPLANATION:

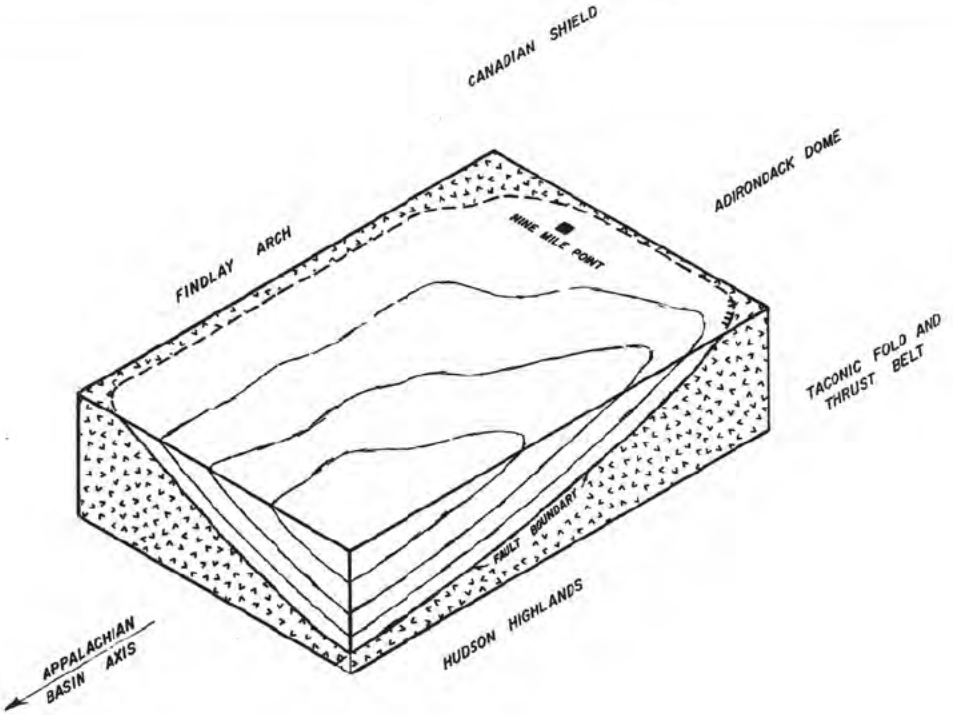
- Boundary of Appalachian Basin (Hachured where coincident with faults)
- -10 Contours on Precambrian-basement complex (Values in thousands of feet below sea level)
- D High angle fault or fault zone (D indicates downthrown side)
- Area of Taconic klippe
- Late Precambrian metasedimentary and metavolcanic rocks along east boundary of study area
- Precambrian rocks (undifferentiated) along east boundary of study area

SOURCE:
Reference 3

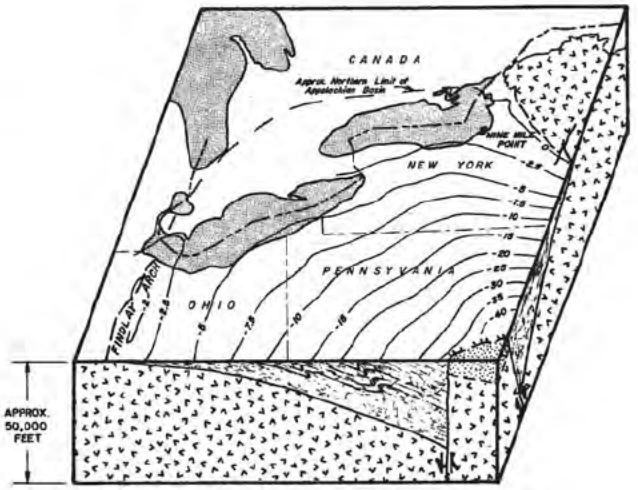
FIGURE 2.5-77

MAP OF APPALACHIAN BASIN SHOWING DEPTH TO PRECAMBRIAN BASEMENT ROCKS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



A. SCHEMATIC BLOCK DIAGRAM SHOWING THE LOCATION OF THE SITE AND THE APPALACHIAN BASIN RELATIVE TO THE SURROUNDING LARGE SCALE STRUCTURAL FEATURES



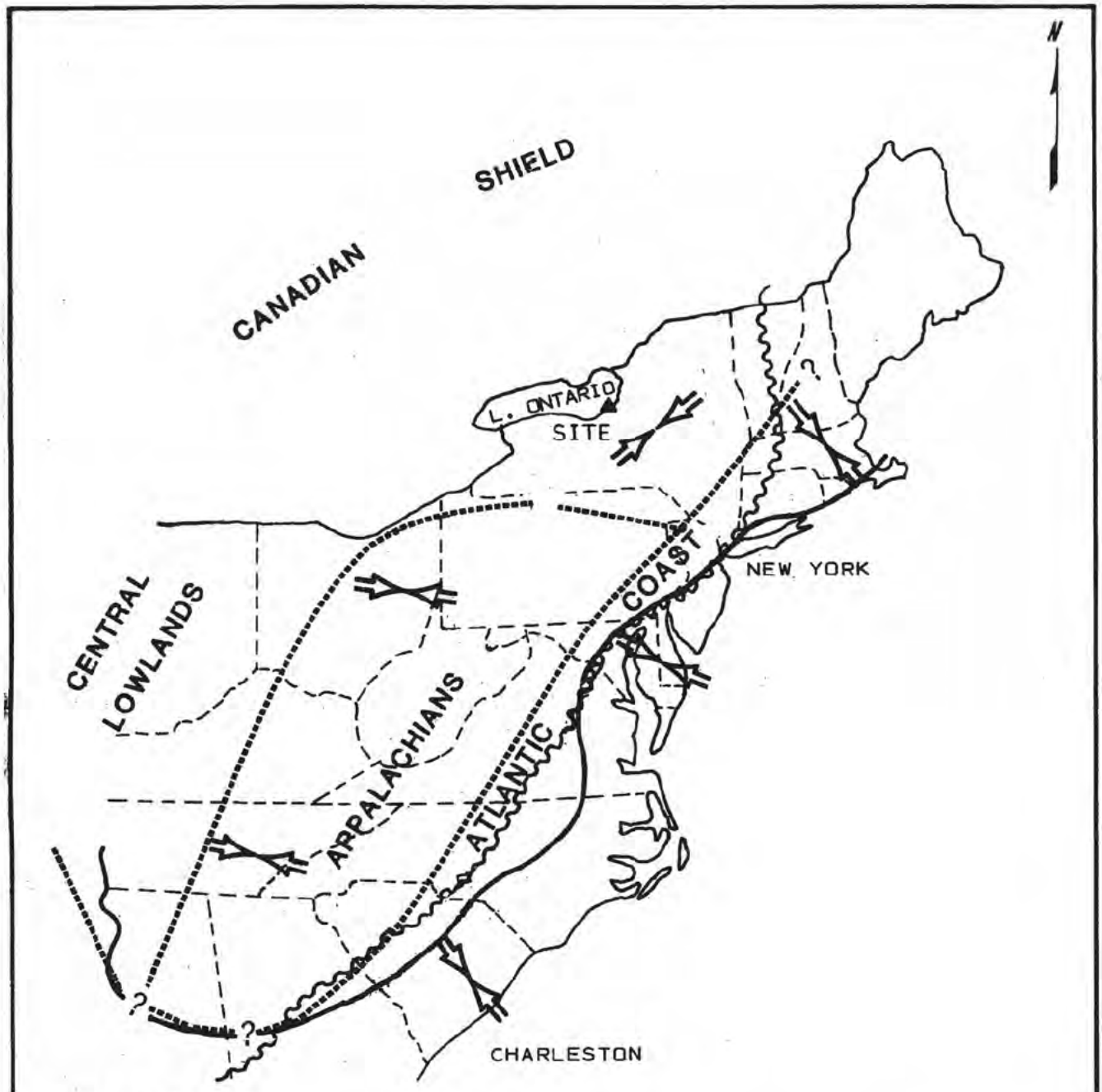
B. IDEALIZED BLOCK DIAGRAM SHOWING THE THICKNESS OF PALEOZOIC SEDIMENTS WITHIN THE NORTHERN APPALACHIAN BASIN

SOURCE:
Reference 3, 94

FIGURE 2.5-78

BLOCK DIAGRAMS REPRESENTING THE APPALACHIAN BASIN

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

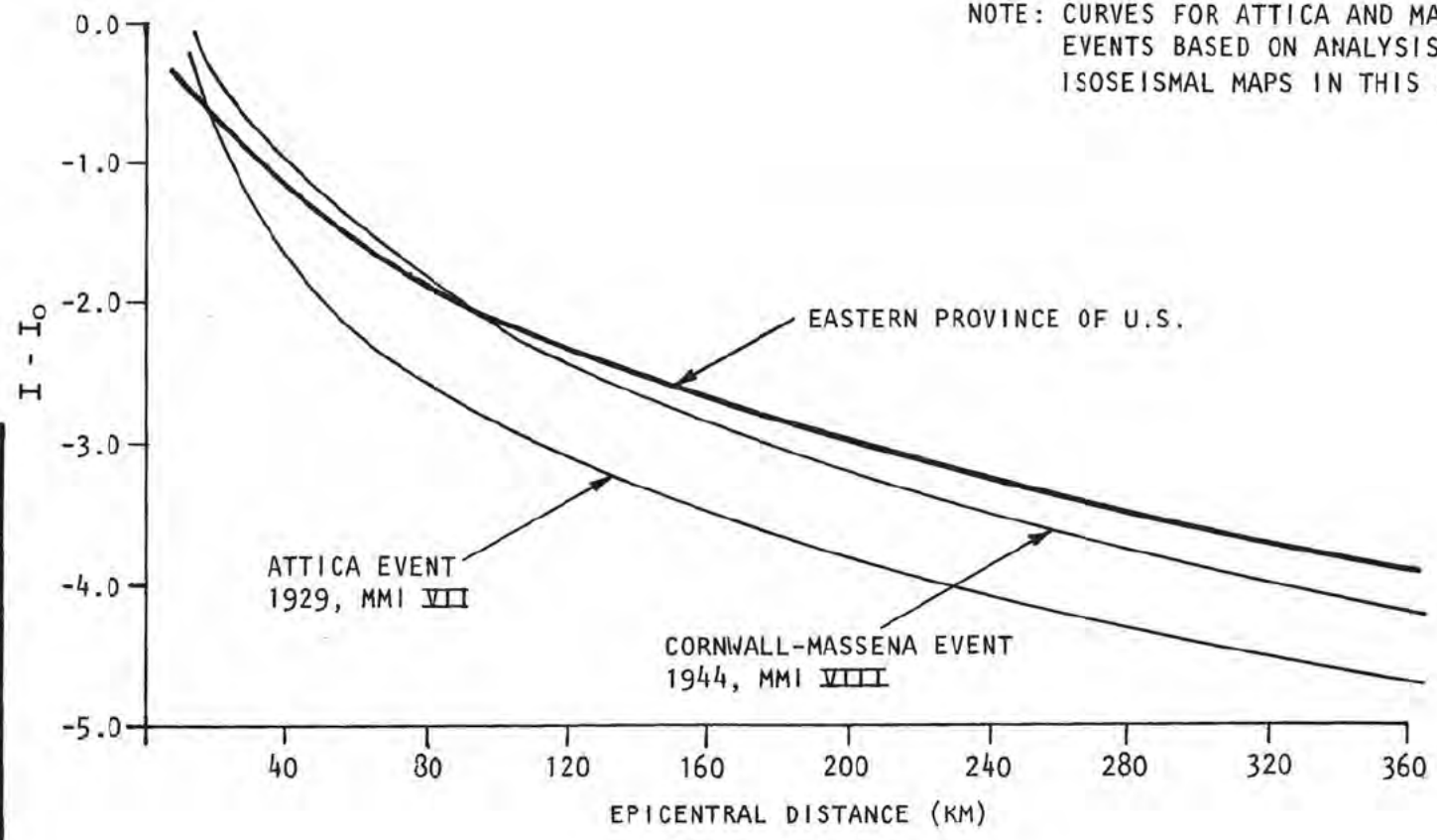


SOURCE:
Reference 121

FIGURE 2.5-79

STRESS PROVINCES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE:
Reference 195

FIGURE 2.5-80

COMPARISON OF GENERAL EASTERN UNITED STATES ATTENUATION WITH ACTUAL EXPERIENCE IN SITE REGION

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

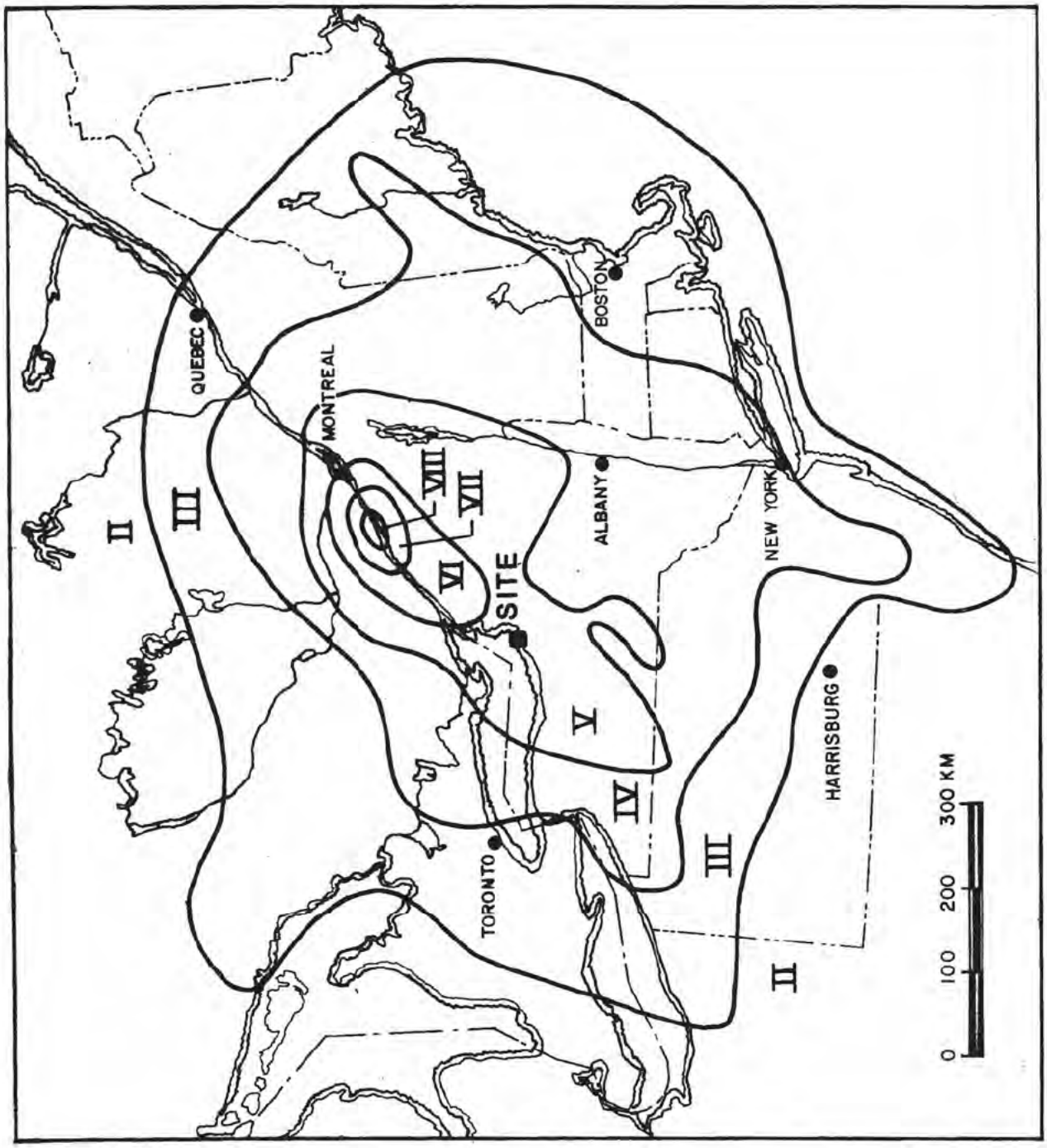


FIGURE 2.5-81

ISOSEISMAL MAP OF THE CORNWALL-MASSENA EARTHQUAKE SEPT. 5, 1944, MMI VIII

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

SOURCE:
Reference 255

FIGURE 2.5-82

ISOSEISMAL MAP OF THE ATTICA EARTHQUAKE OF AUG. 12, 1929, MMI VII

SOURCE:
Reference 256

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

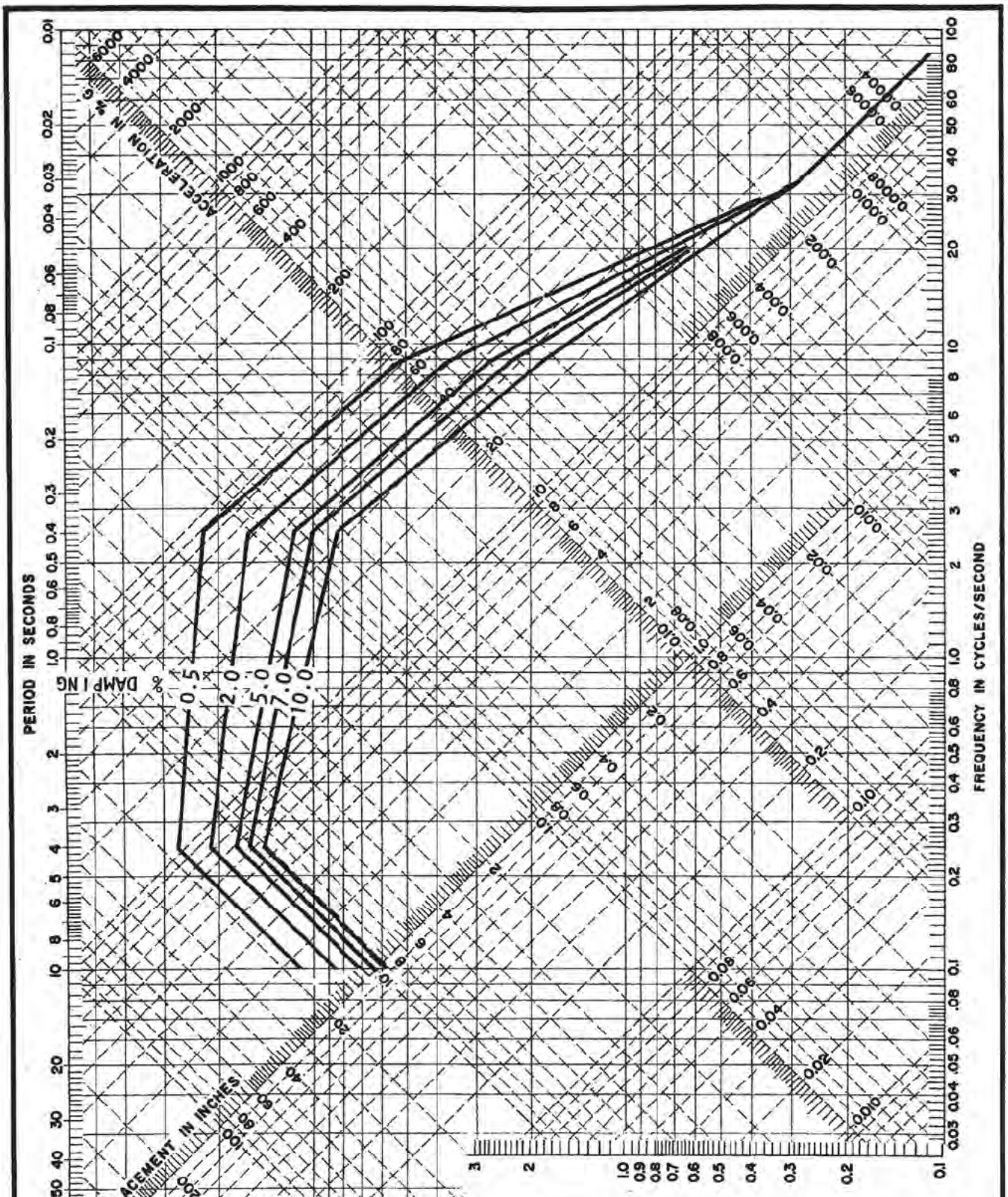


FIGURE 2.5-83

HORIZONTAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE (0.15g)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

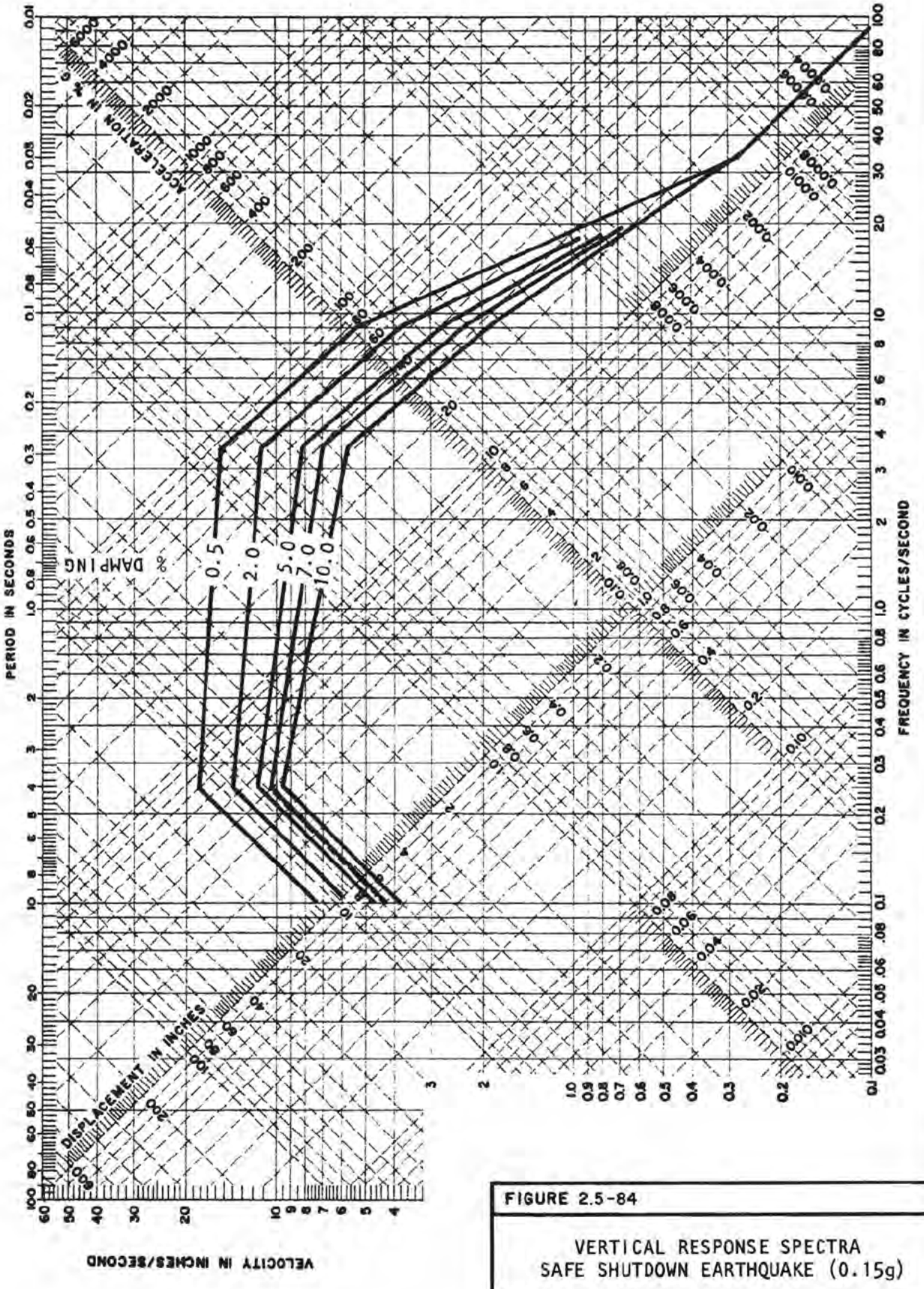


FIGURE 2.5-84

VERTICAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE (0.15g)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

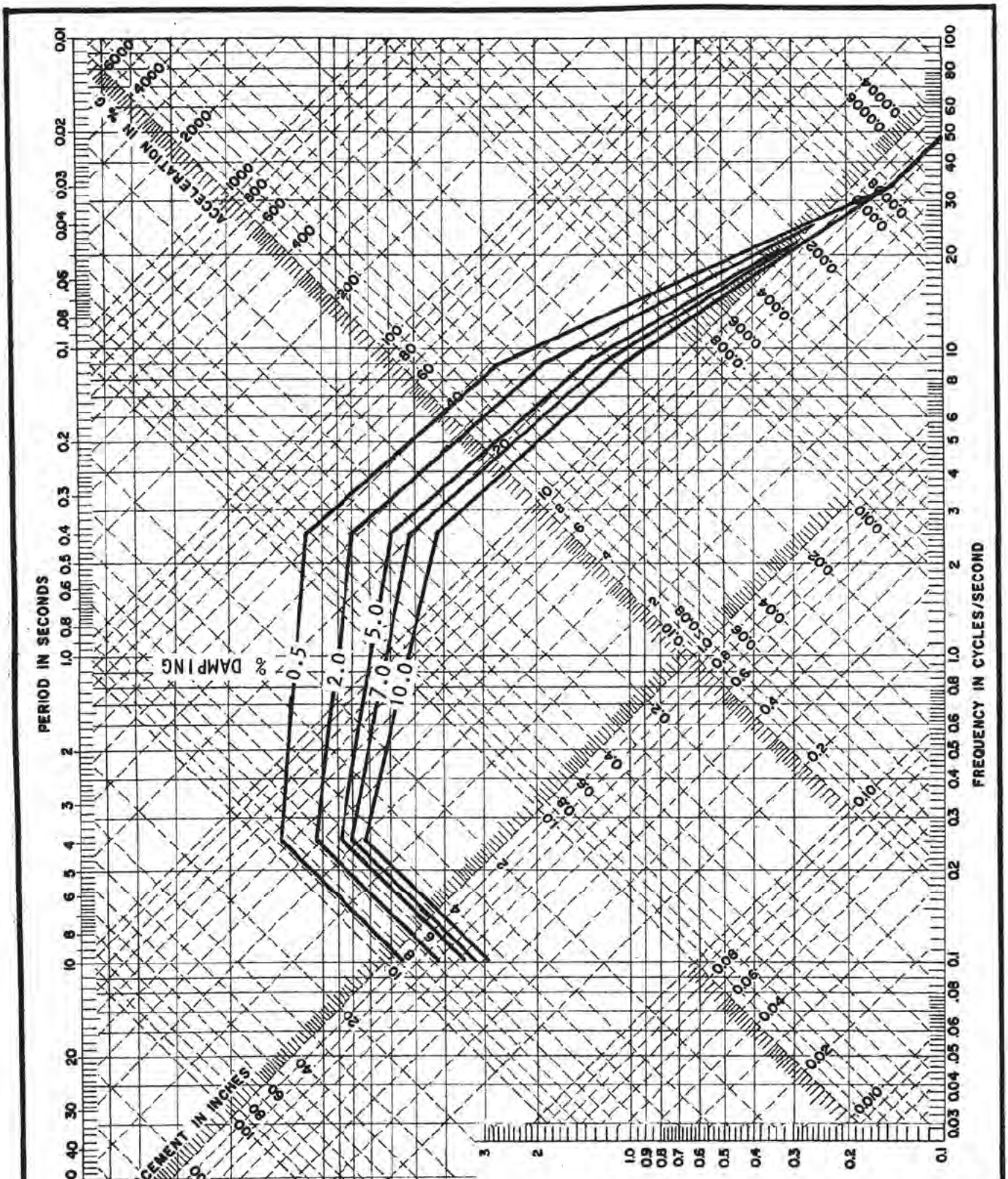


FIGURE 2.5-85

HORIZONTAL RESPONSE SPECTRA
OPERATING BASIS EARTHQUAKE (0.075g)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

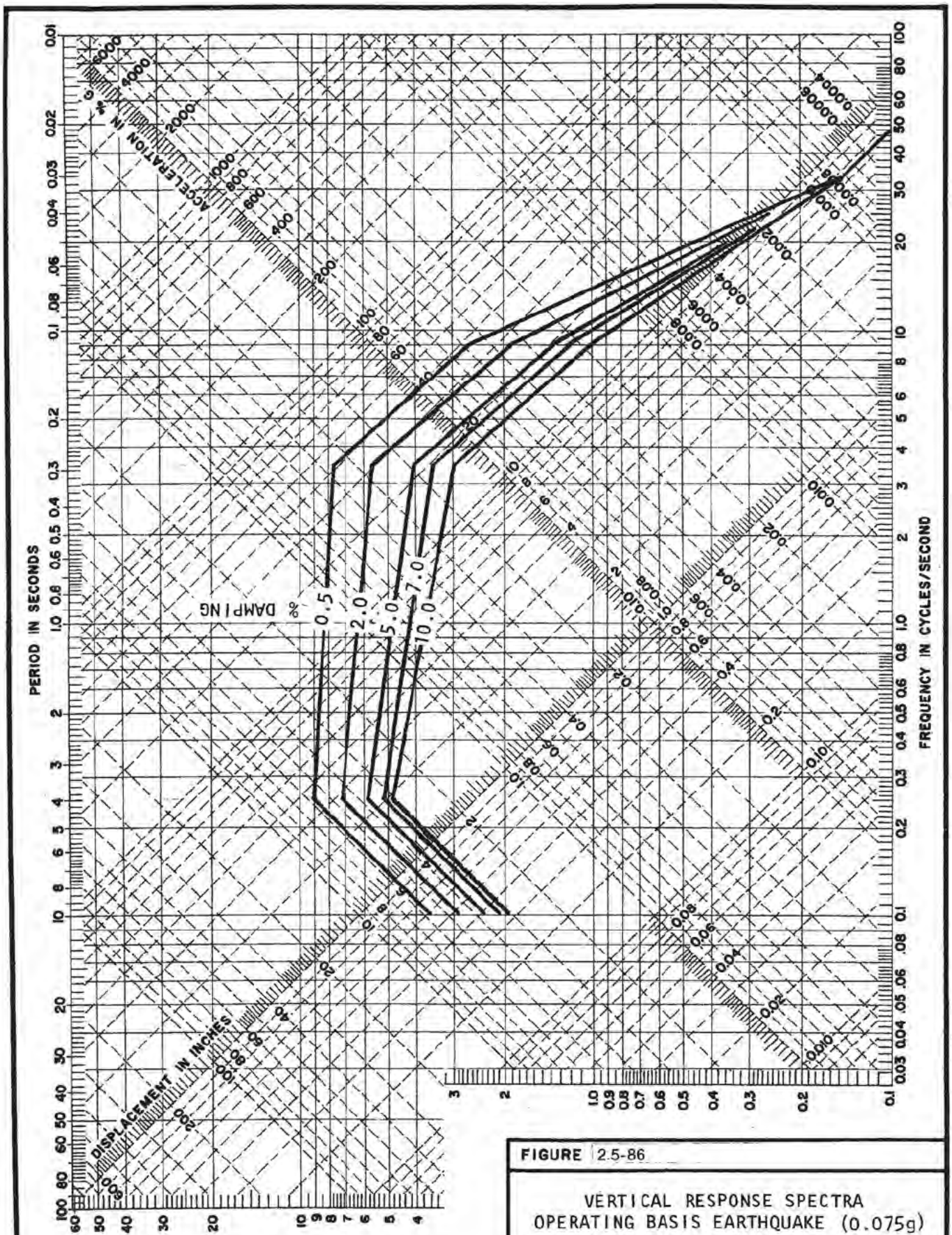
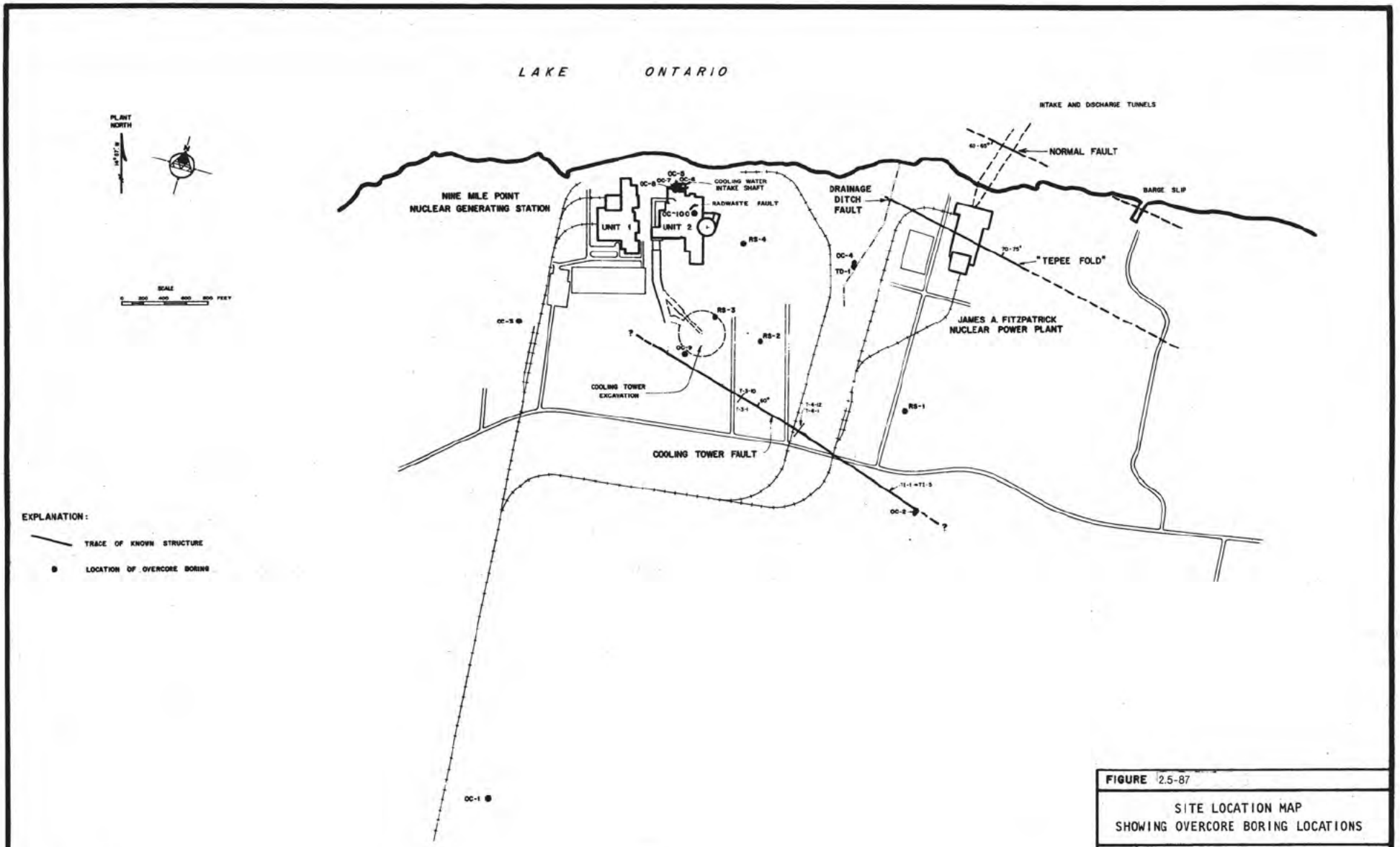


FIGURE 2.5-86

VERTICAL RESPONSE SPECTRA
OPERATING BASIS EARTHQUAKE (0.075g)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

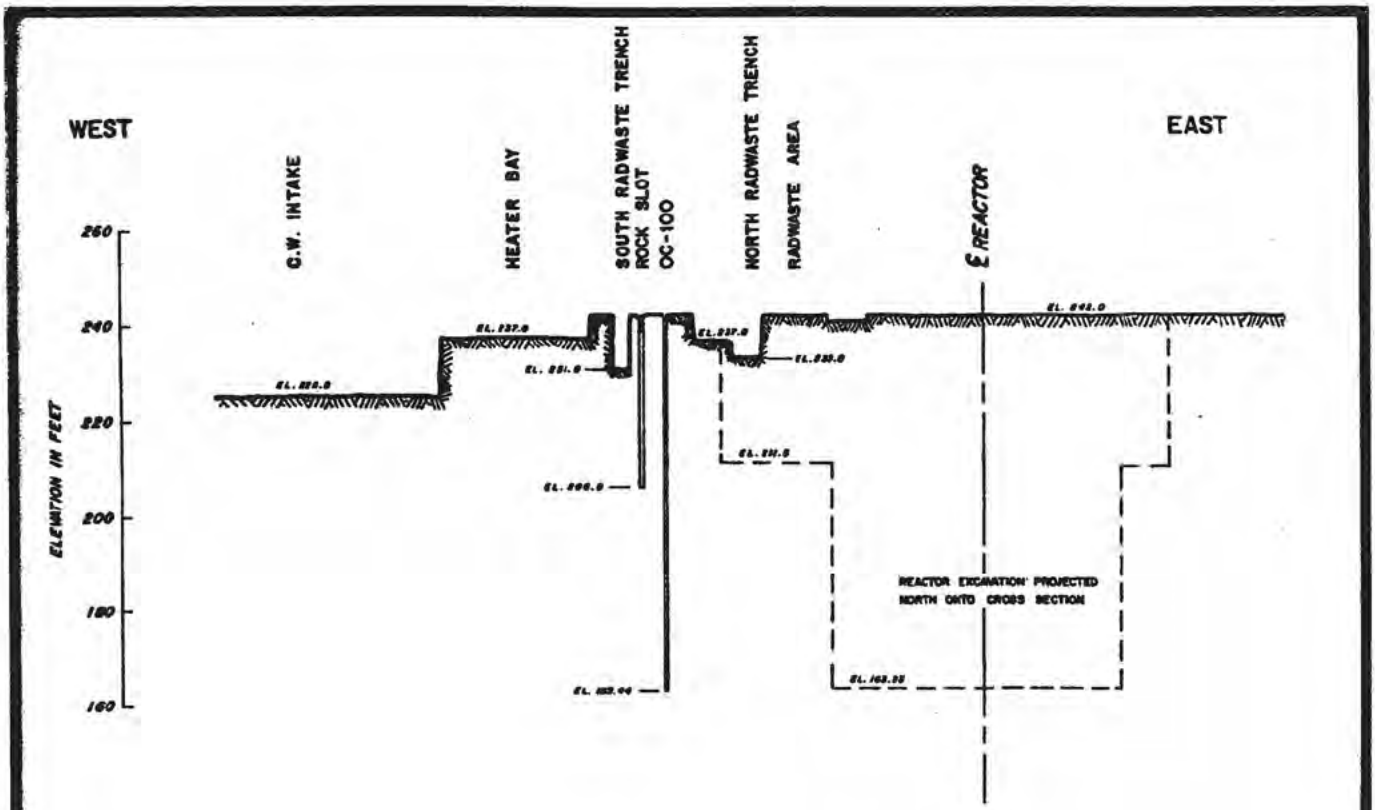


SOURCE:
Reference 94

FIGURE 2.5-87

SITE LOCATION MAP
SHOWING OVERCORE BORING LOCATIONS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



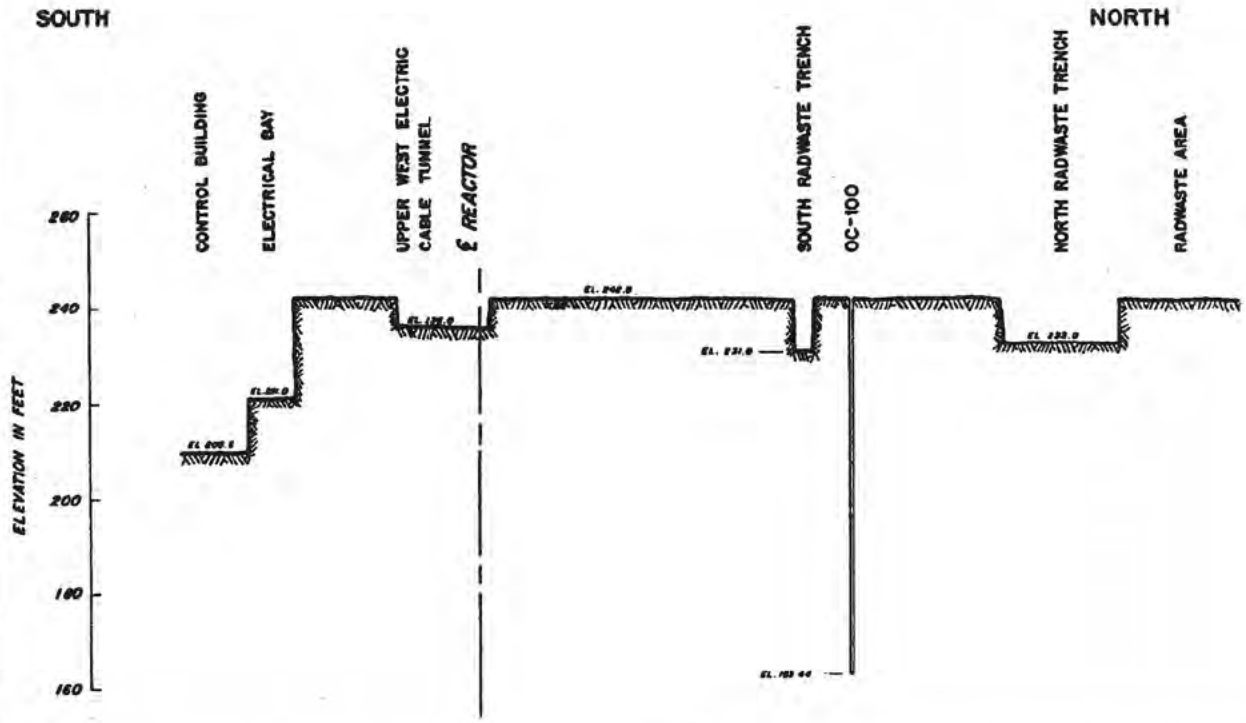


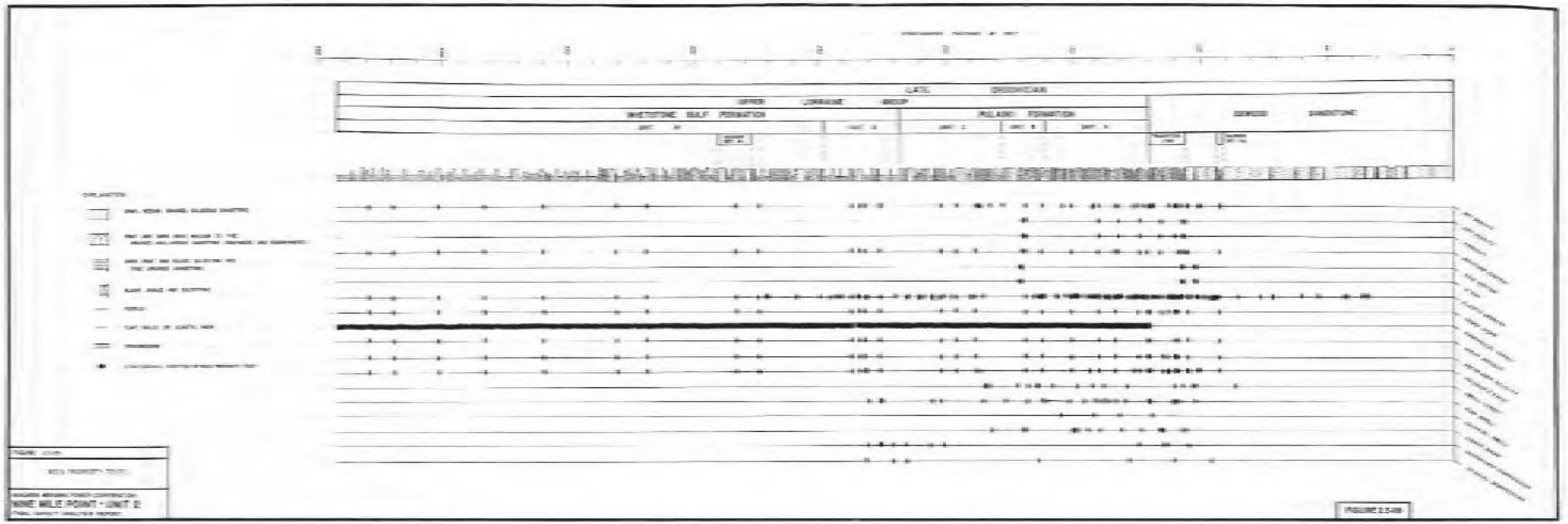
FIGURE 2.5-88

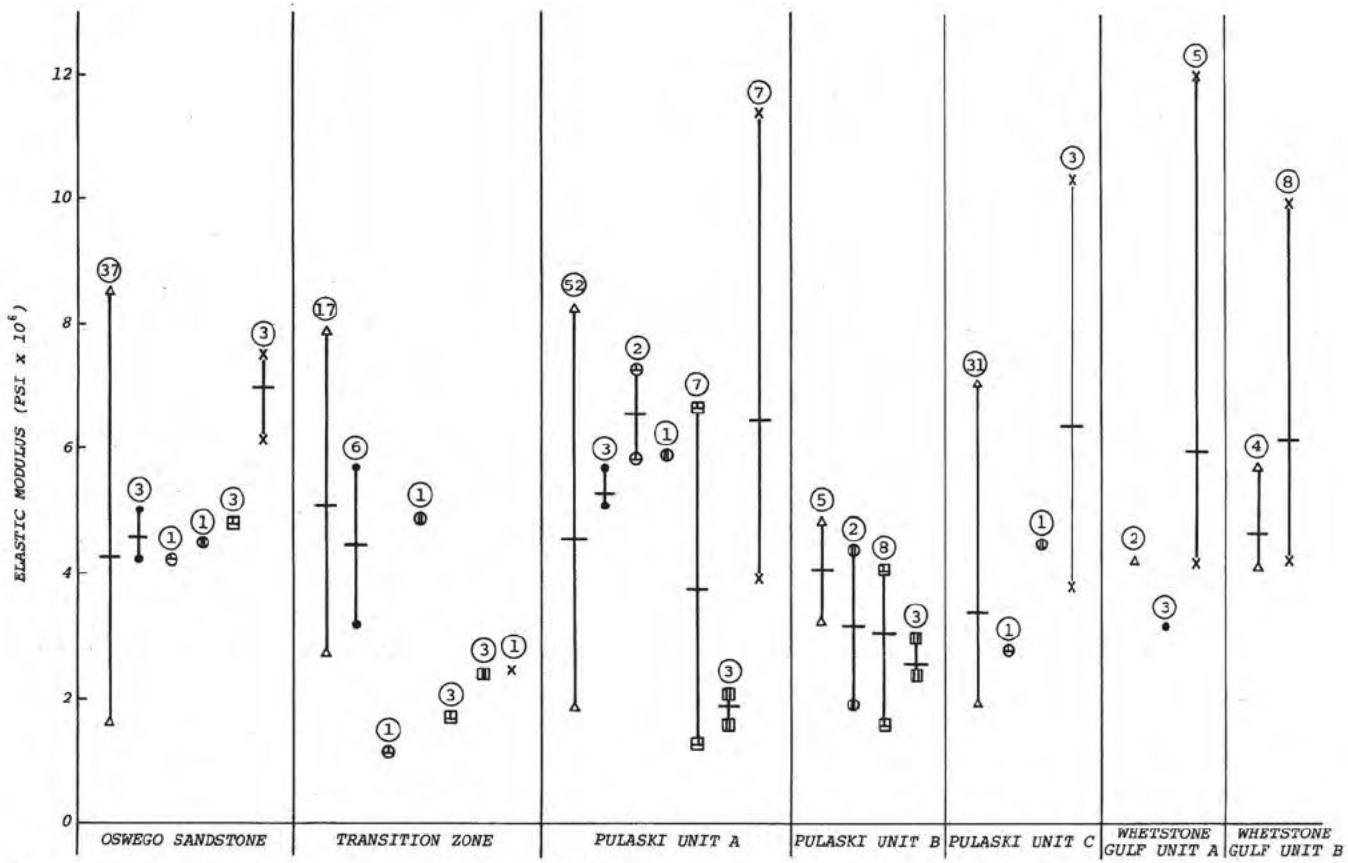
OC-100 PROFILES

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT


LATE ORDOVICIAN
UPPER LOWVILLE GROUP
WHETSTONE GULF FORMATION
PULASKI FORMATION
UNIT 4
UNIT 3
UNIT 2
UNIT 1
UNIT 0
SALINA GROUP
NINE MILE POINT - UNIT 2



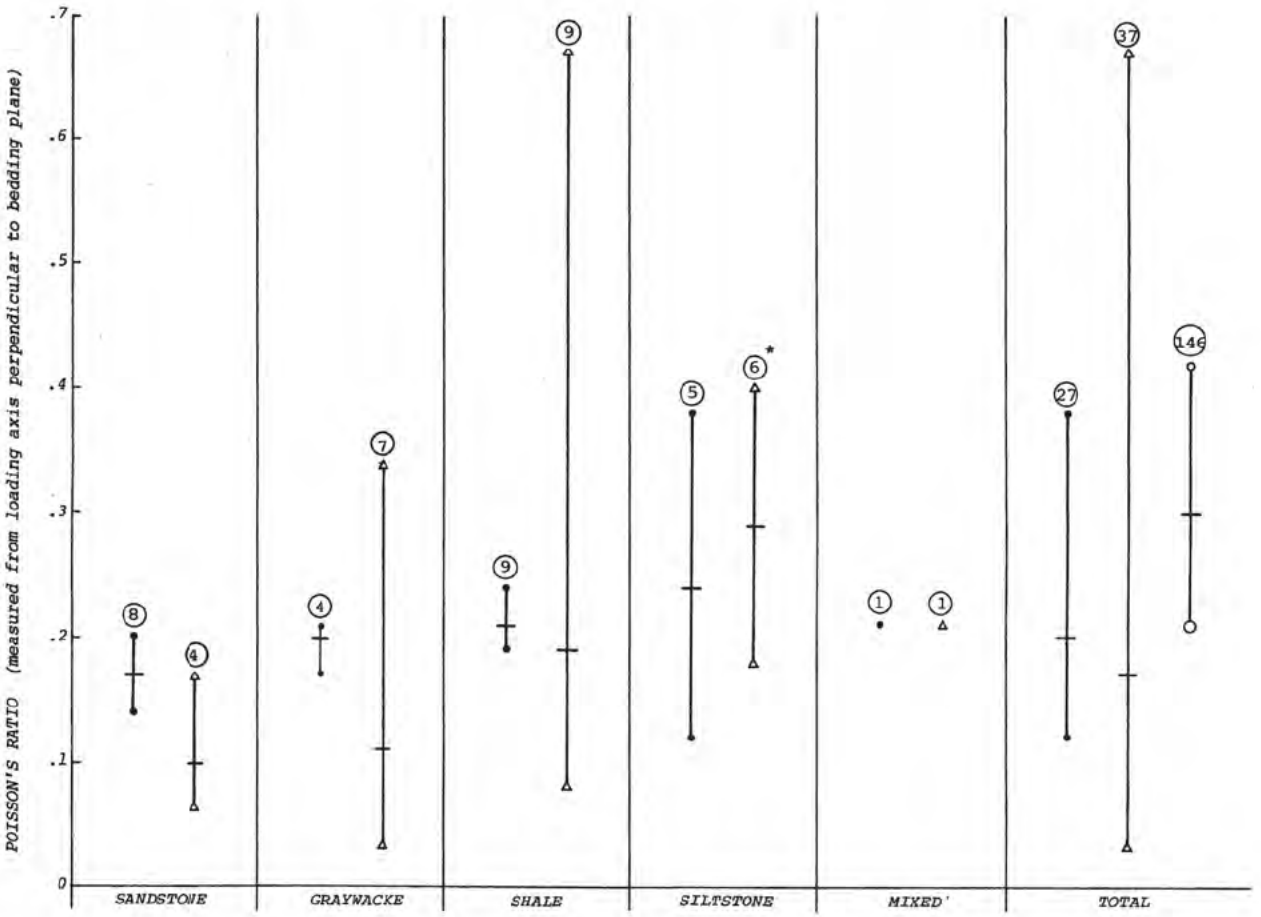
KEY:

Test	Symbol
Biaxial	△
Uniaxial (tangent)	•
Uniaxial (secant)	⊕ (90°) ◐ (0°)
Triaxial (average)	⊞ (90°) ▥ (0°)
Shock scope	X
Number of samples	(3)

FIGURE 2.5-90

COMPARISON OF ELASTIC MODULII VS. STRATIGRAPHIC UNIT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



KEY:

Test	Symbol
Shock scope	•
Uniaxial compression	△
3D Velocity survey	○
Number of samples	(3)
Average value	—

* Samples loaded parallel to bedding

FIGURE 2.5-91

COMPARISON OF POISSON'S RATIO VS. ROCK TYPE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

KEY:

A: τ(psi) = 7800 Δs (in.)
B: τ(psi) = 4100 Δs (in.)
C: τ(psi) = 2200 Δs (in.)
5 Specimen number

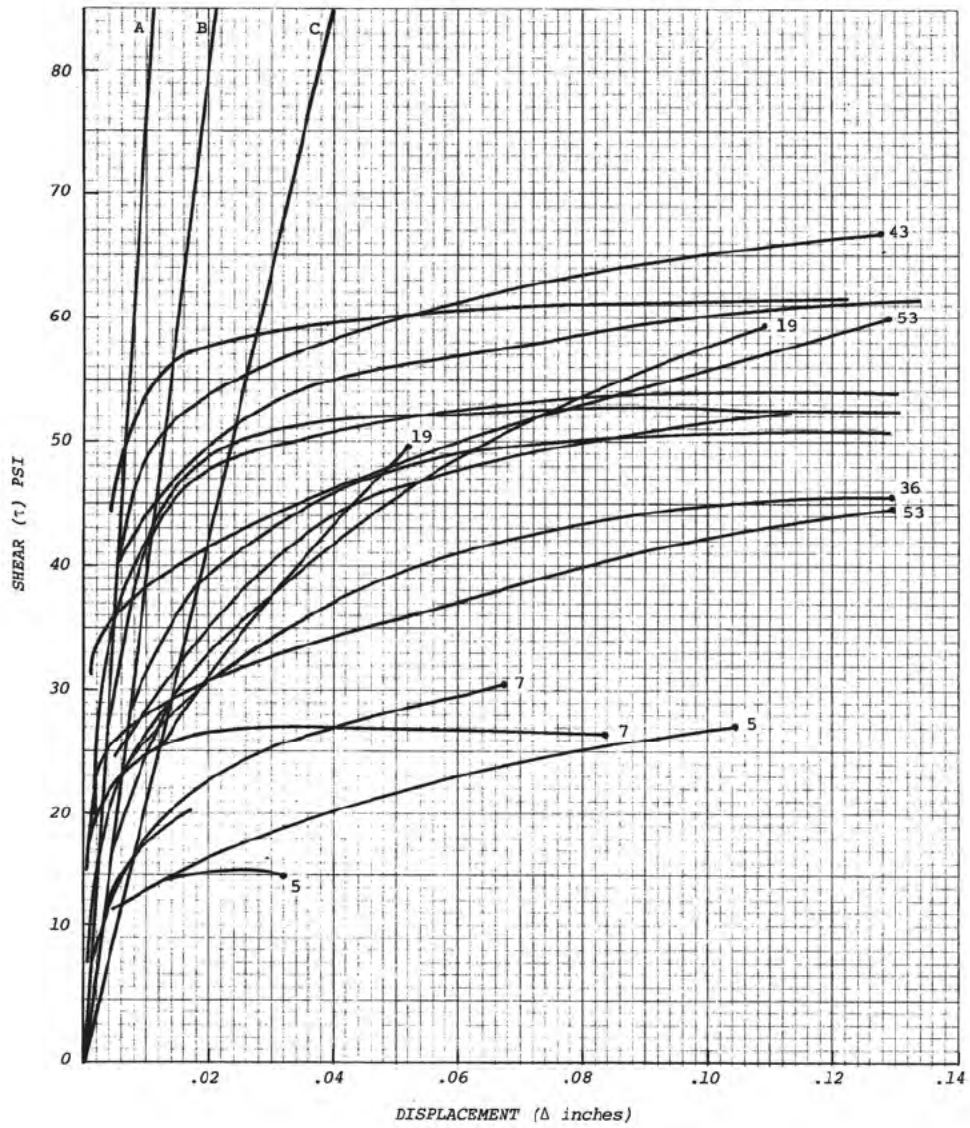


FIGURE 2.5-92

DIRECT SHEAR TESTS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

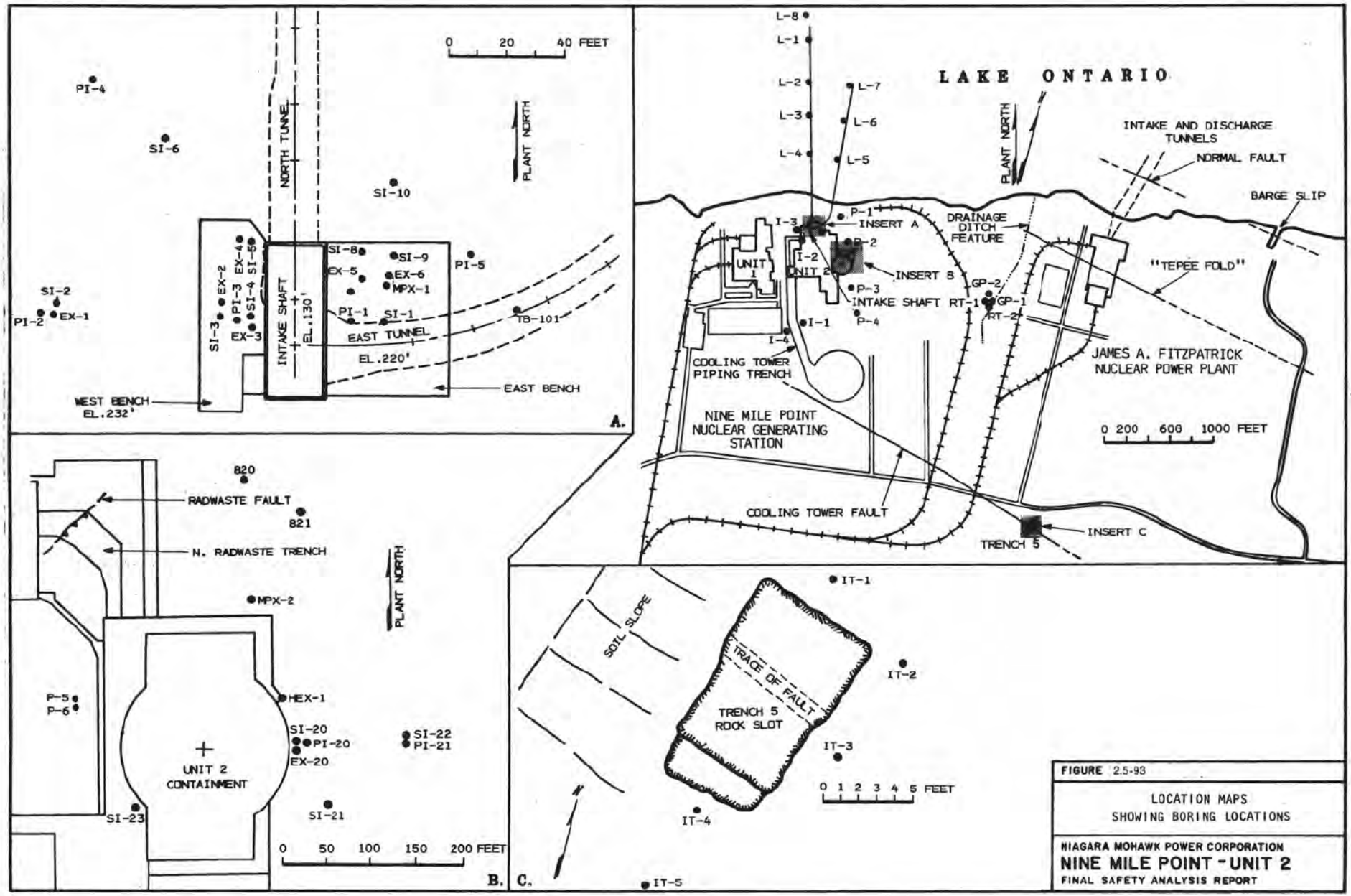
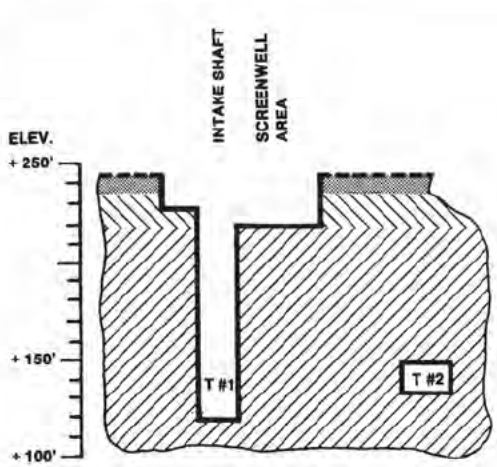


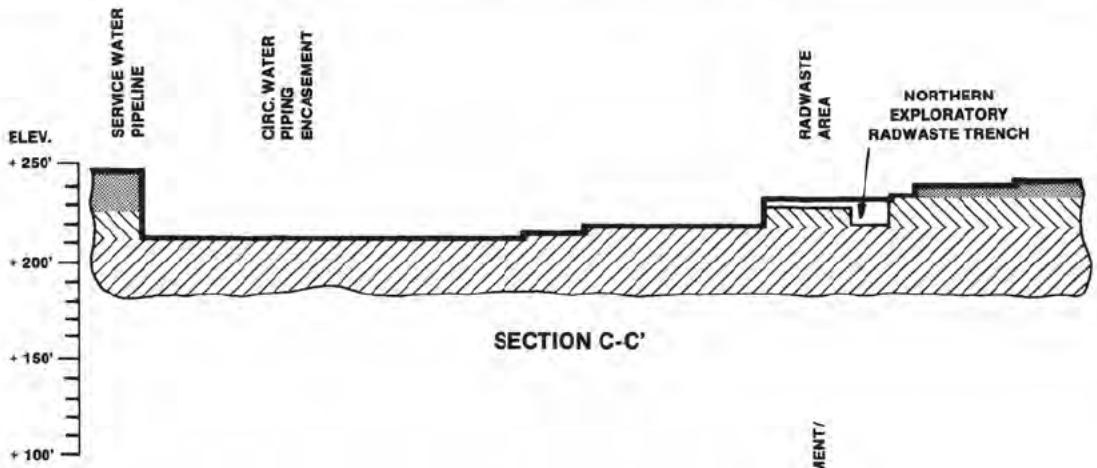
FIGURE 2.5-93

LOCATION MAPS
SHOWING BORING LOCATIONS

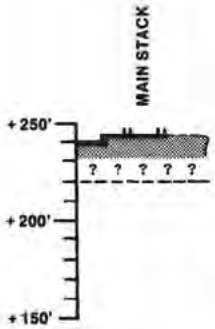
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT



SECTION A-A'



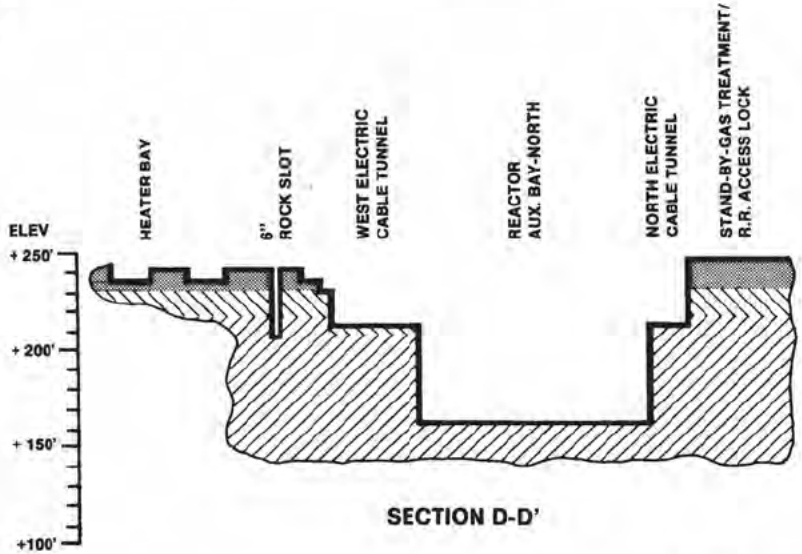
SECTION C-C'



THIS AREA SCHEDULED FOR FUTURE EXCAVATION AND GEOLOGIC MAPPING

NOTE:
GEOLOGIC INFORMATION WILL BE PROVODED UPON COMPLETION OF EXCAVATION AND MAPPING

SECTION B-B'



SECTION D-D'

LEGEND

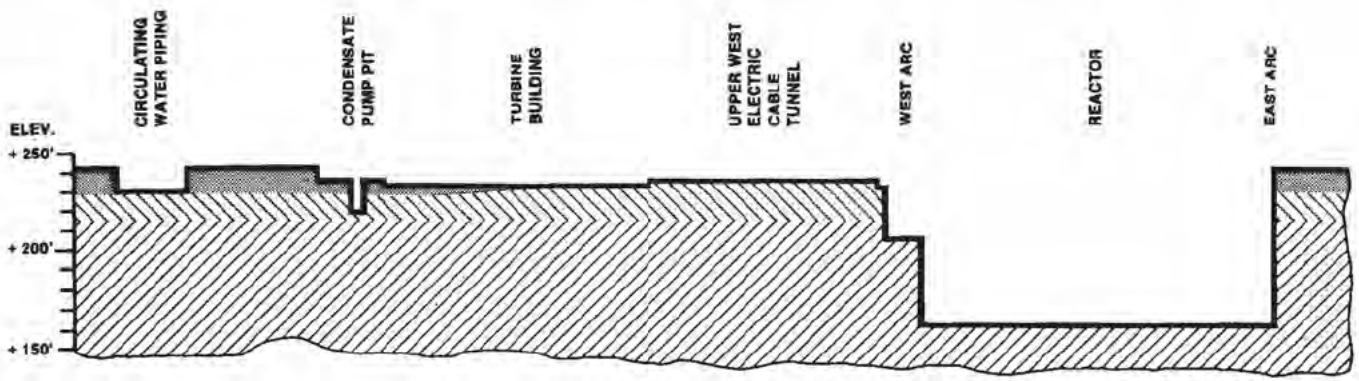
- OSWEGO FORMATION
- TRANSITION ZONE
- PULASKI FORMATION

HORIZONTAL SCALE

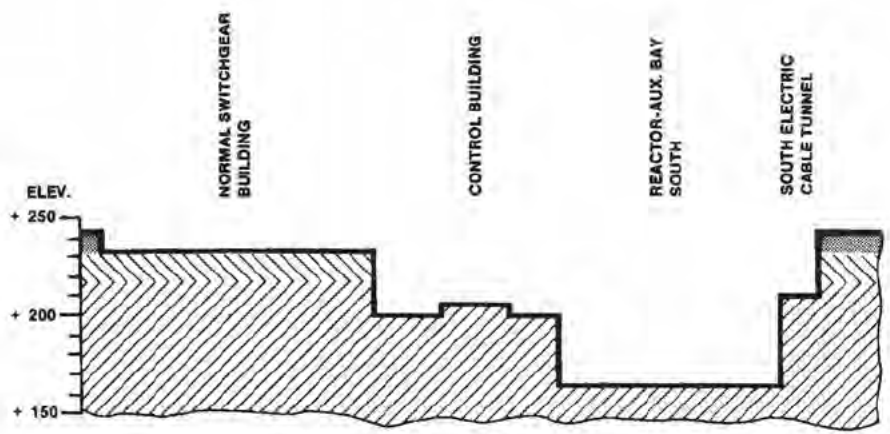
FIGURE 2.5-94

GEOLOGIC AND EXCAVATION PROFILES
A-A', B-B', C-C' AND D-D'-MAIN PLANT AREA

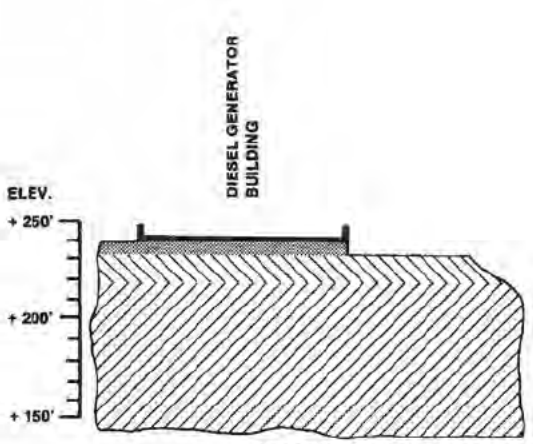
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



SECTION E-E'



SECTION F-F'



SECTION G-G'

FIGURE 2.5-95

GEOLOGIC AND EXCAVATION PROFILES
E-E', F-F', AND G-G'-MAIN PLANT AREA

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

Security-Related Information Figure Withheld Under 10 CFR 2.390

FIGURE 2.5-96

LOCATION OF CROSS-SECTIONS OF ROCK EXCAVATIONS AND FOUNDATION GRADES FOR CAT. I STRUCTURES

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

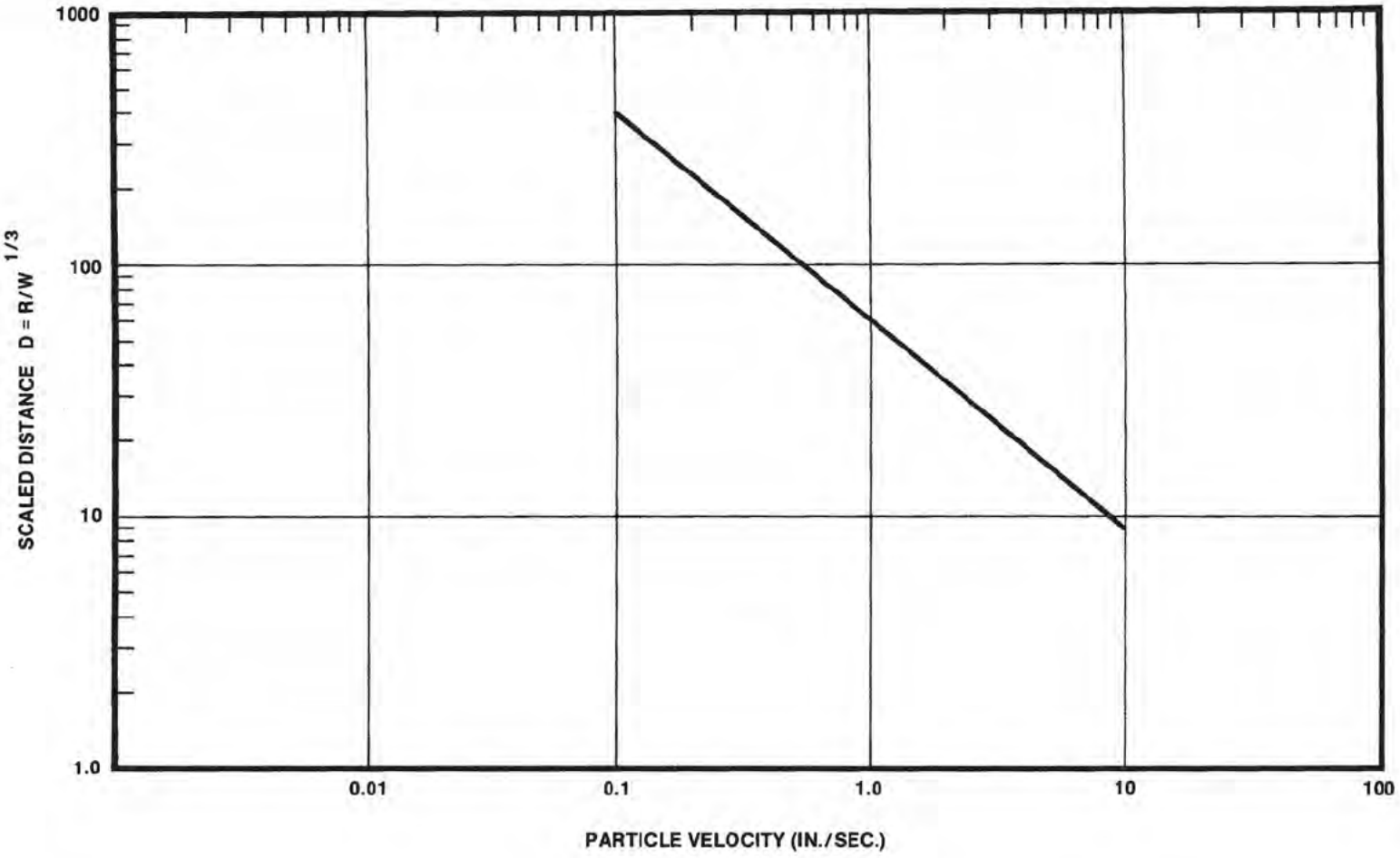


FIGURE 2.5-96A

SCALED DISTANCE VERSUS PARTICLE VELOCITY–CONFINED PRESPLIT BLASTING GUIDELINE BLASTING ENVELOPE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

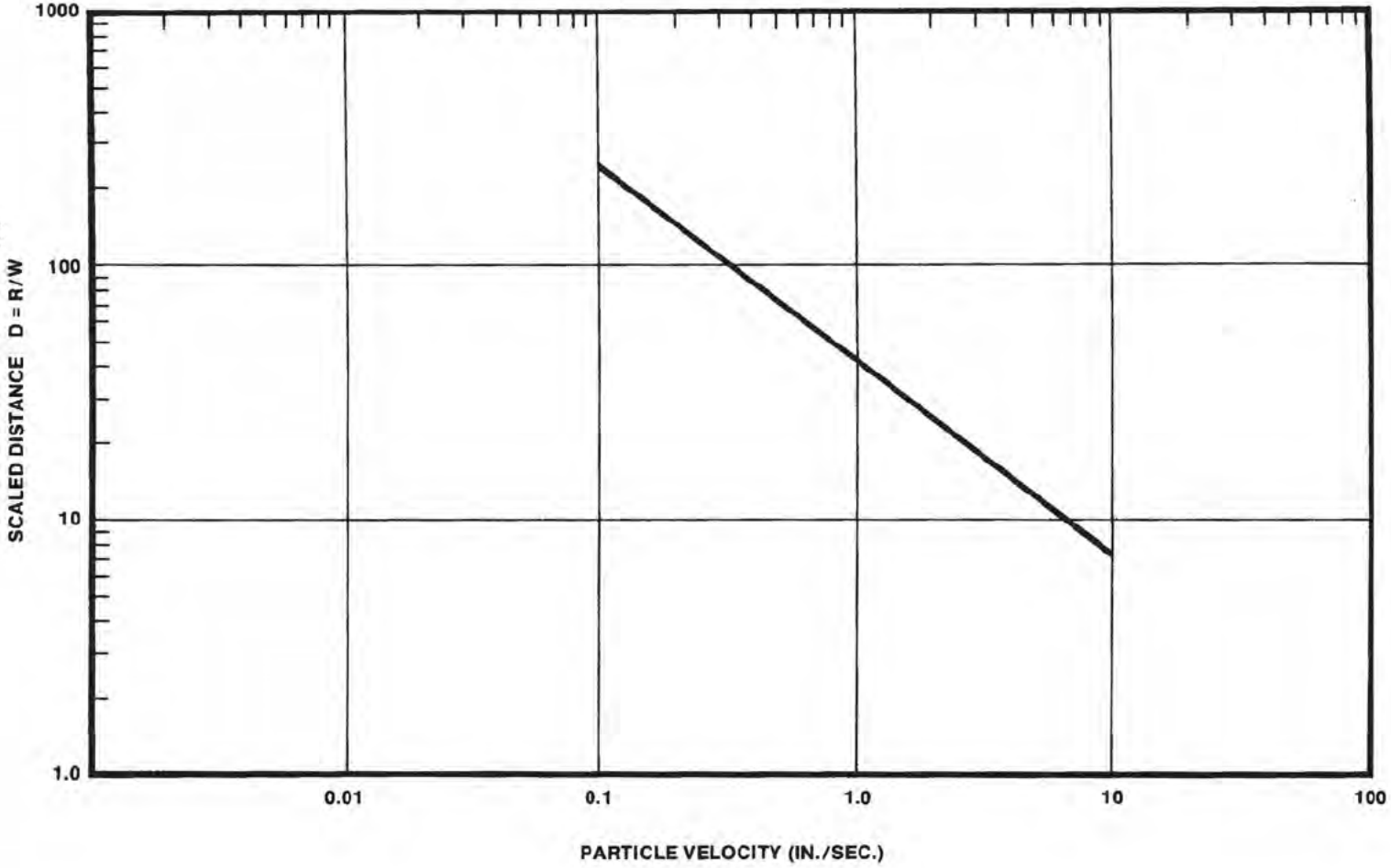


FIGURE 2.5-96B

SCALED DISTANCE VERSUS PARTICLE VELOCITY-CONFINED PRODUCTION BLASTING GUIDELINE BLASTING ENVELOPE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

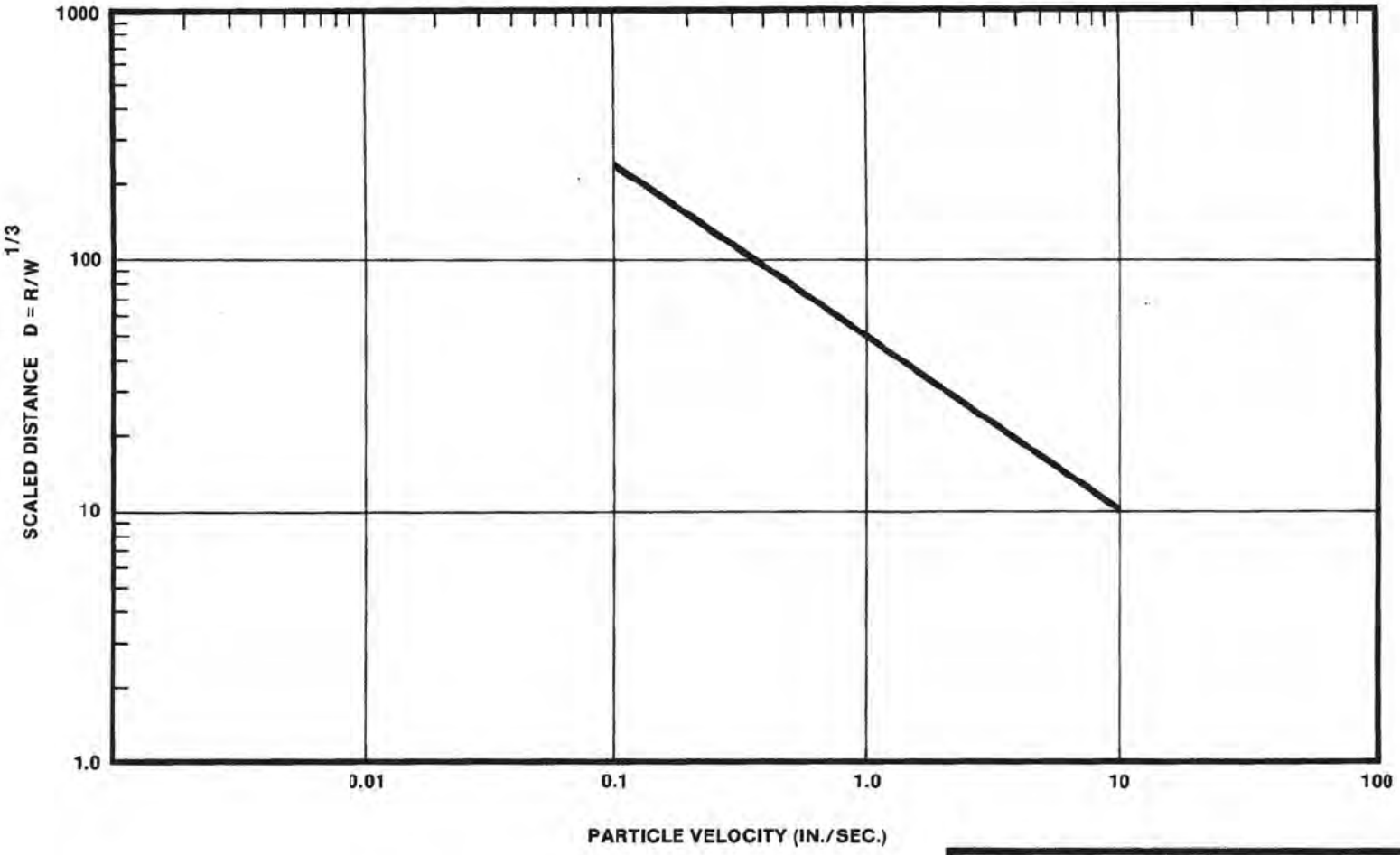


FIGURE 2.5-96C

SCALED DISTANCE VERSUS PARTICLE VELOCITY-BLASTING TO AN OPEN FACE GUIDELINE BLASTING ENVELOPE

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

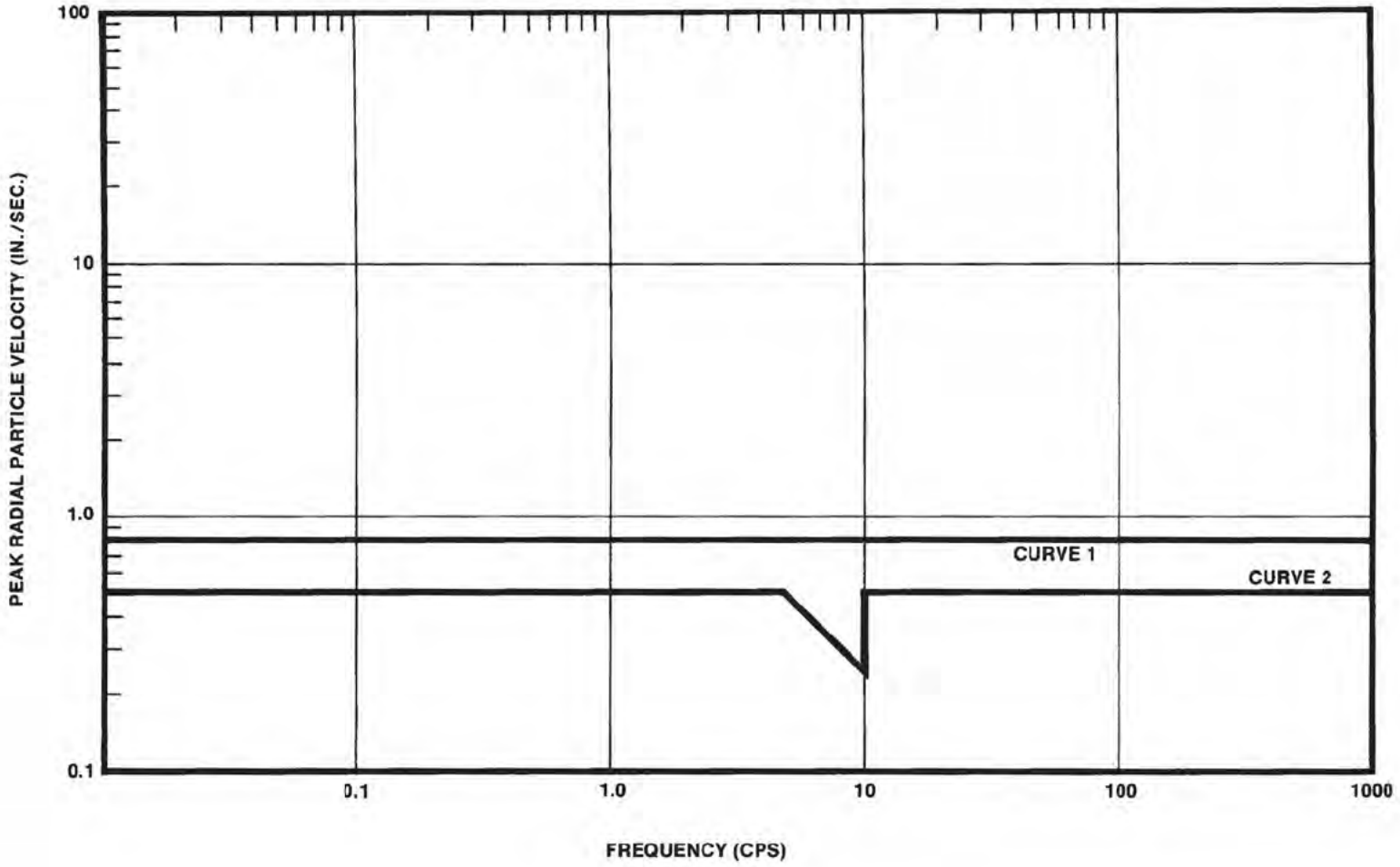


FIGURE 2.5-96D

PEAK RADIAL PARTICLE VELOCITY
VERSUS FREQUENCY — UNIT 1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

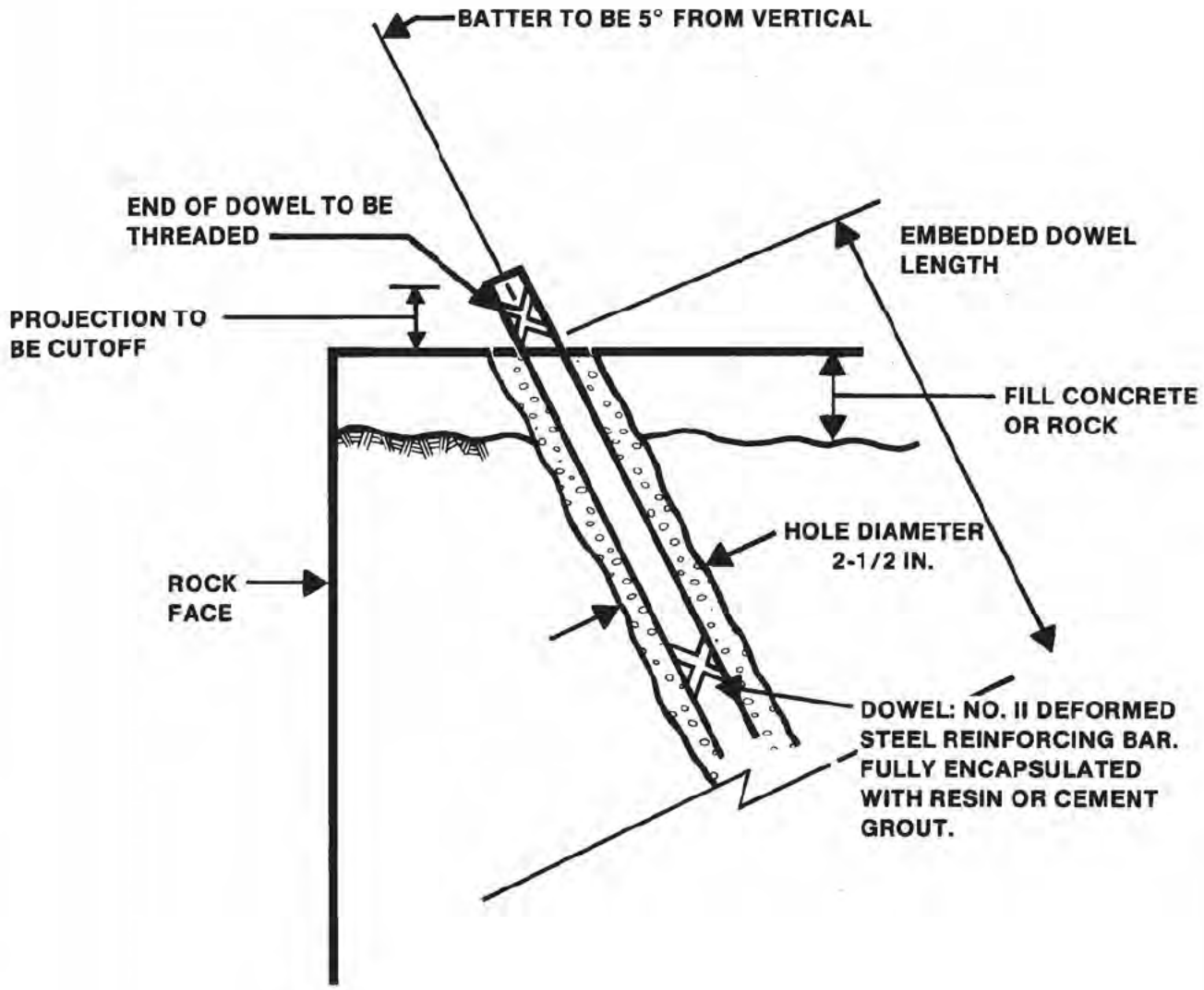
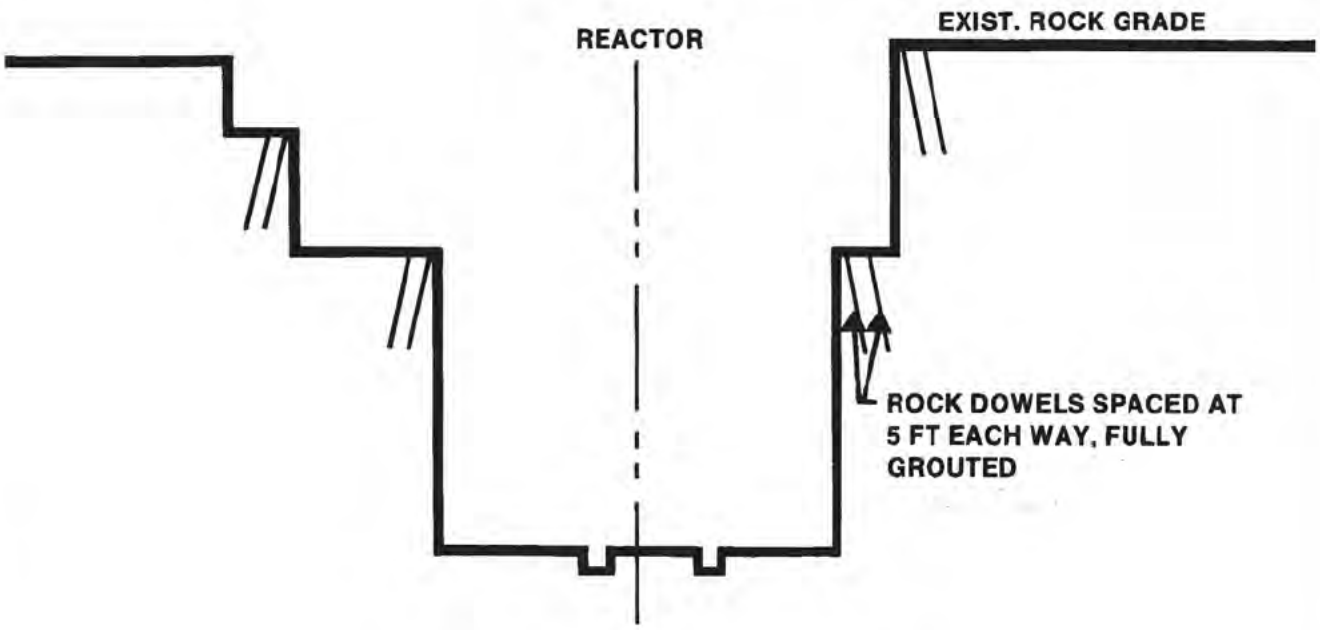


FIGURE 2.5-96E

TYPICAL ROCK DOWEL DETAILS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



TYPICAL EXCAVATION PROFILE —
NO SCALE

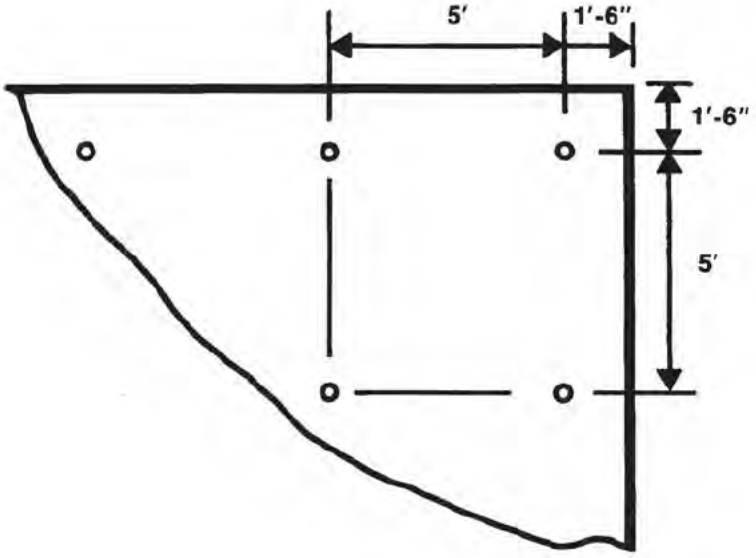


FIGURE 2.5-96F

TYPICAL PLANS OF ROCK DOWEL

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

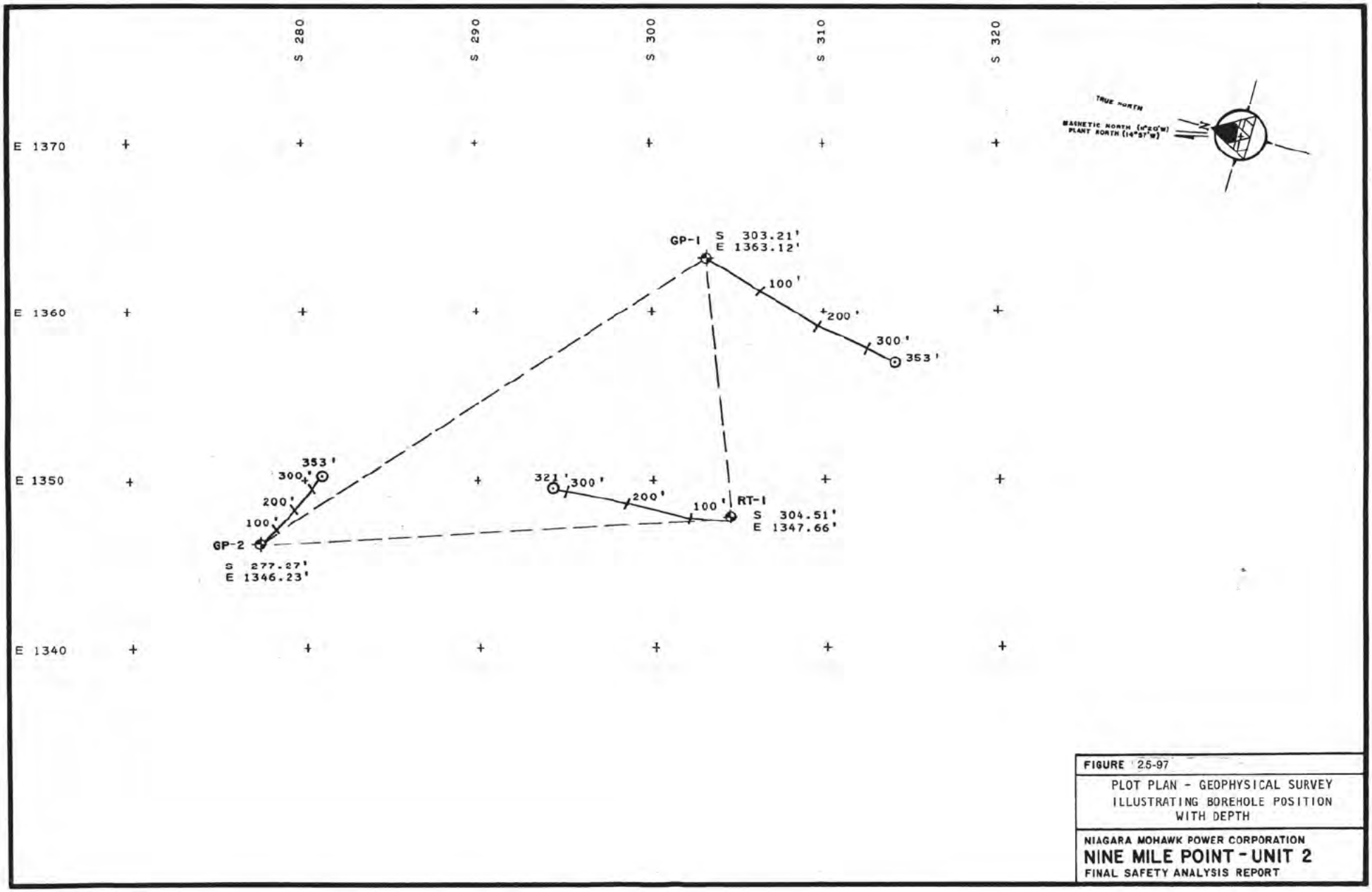


FIGURE 2.5-97

PLOT PLAN - GEOPHYSICAL SURVEY ILLUSTRATING BOREHOLE POSITION WITH DEPTH

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT - UNIT 2

FINAL SAFETY ANALYSIS REPORT

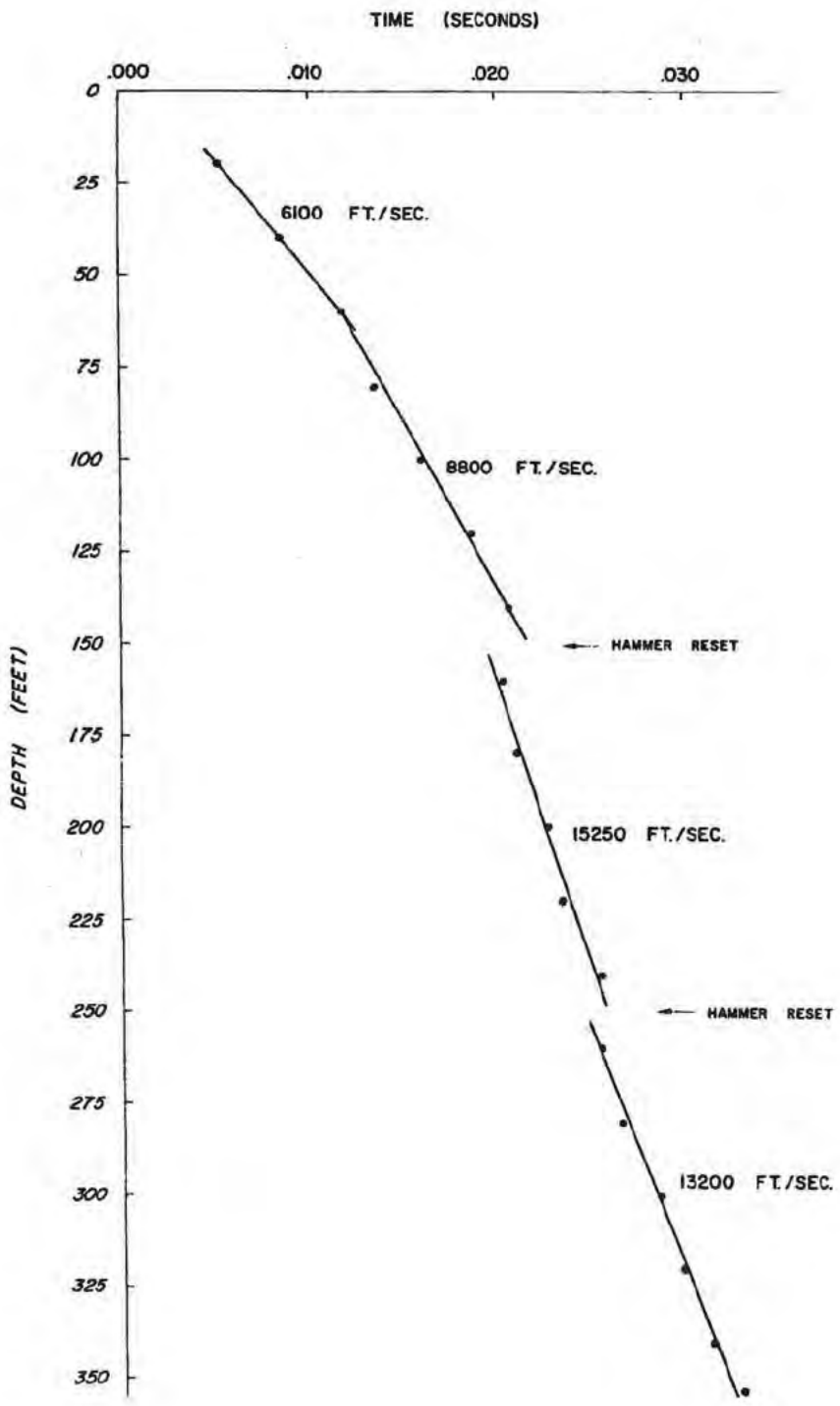


FIGURE 2.5-98

UPHOLE COMPRESSIONAL WAVE VELOCITY SURVEY
BORING GP-1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

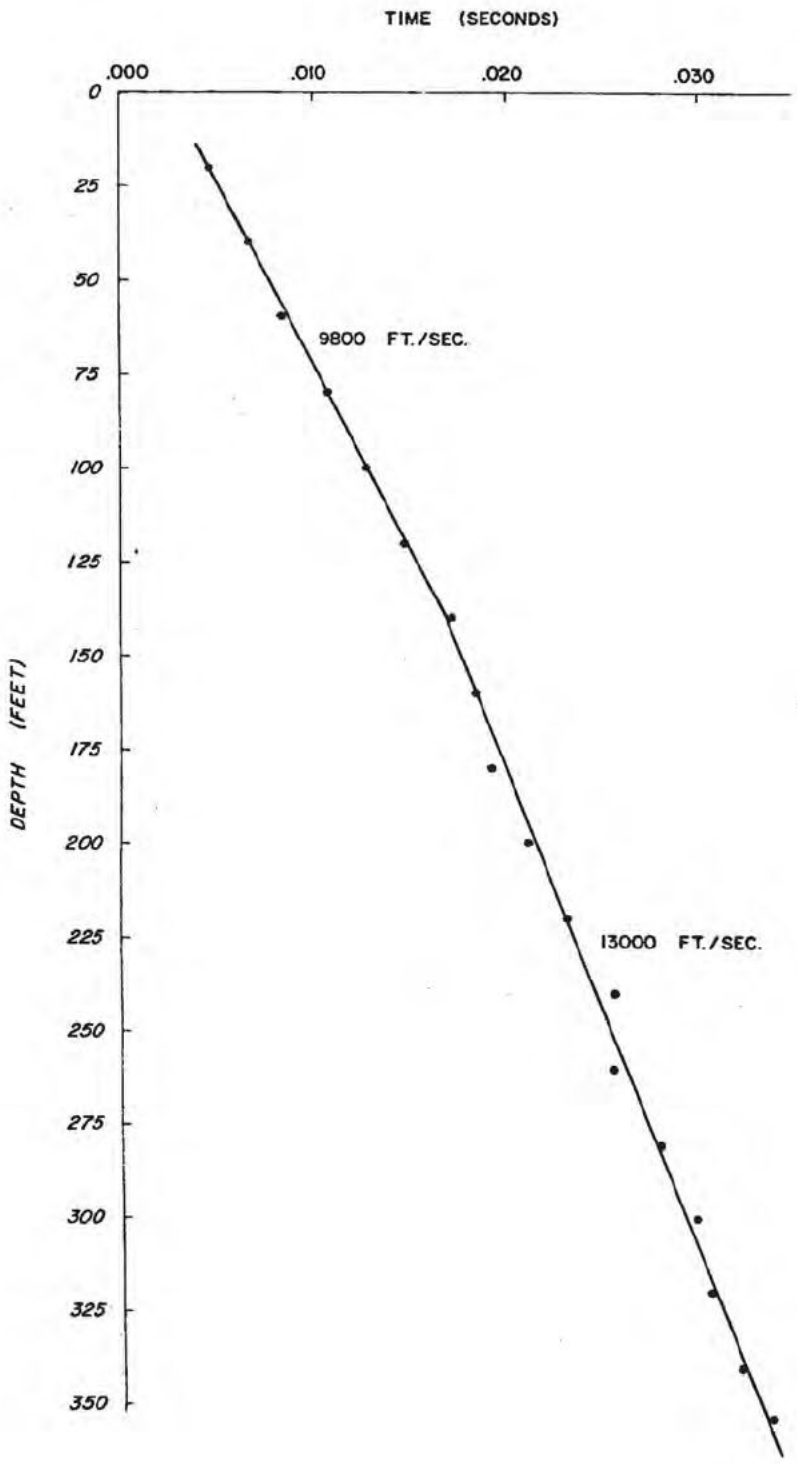


FIGURE 2.5-99

UPHOLE COMPRESSIONAL WAVE VELOCITY SURVEY
BORING GP-2

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

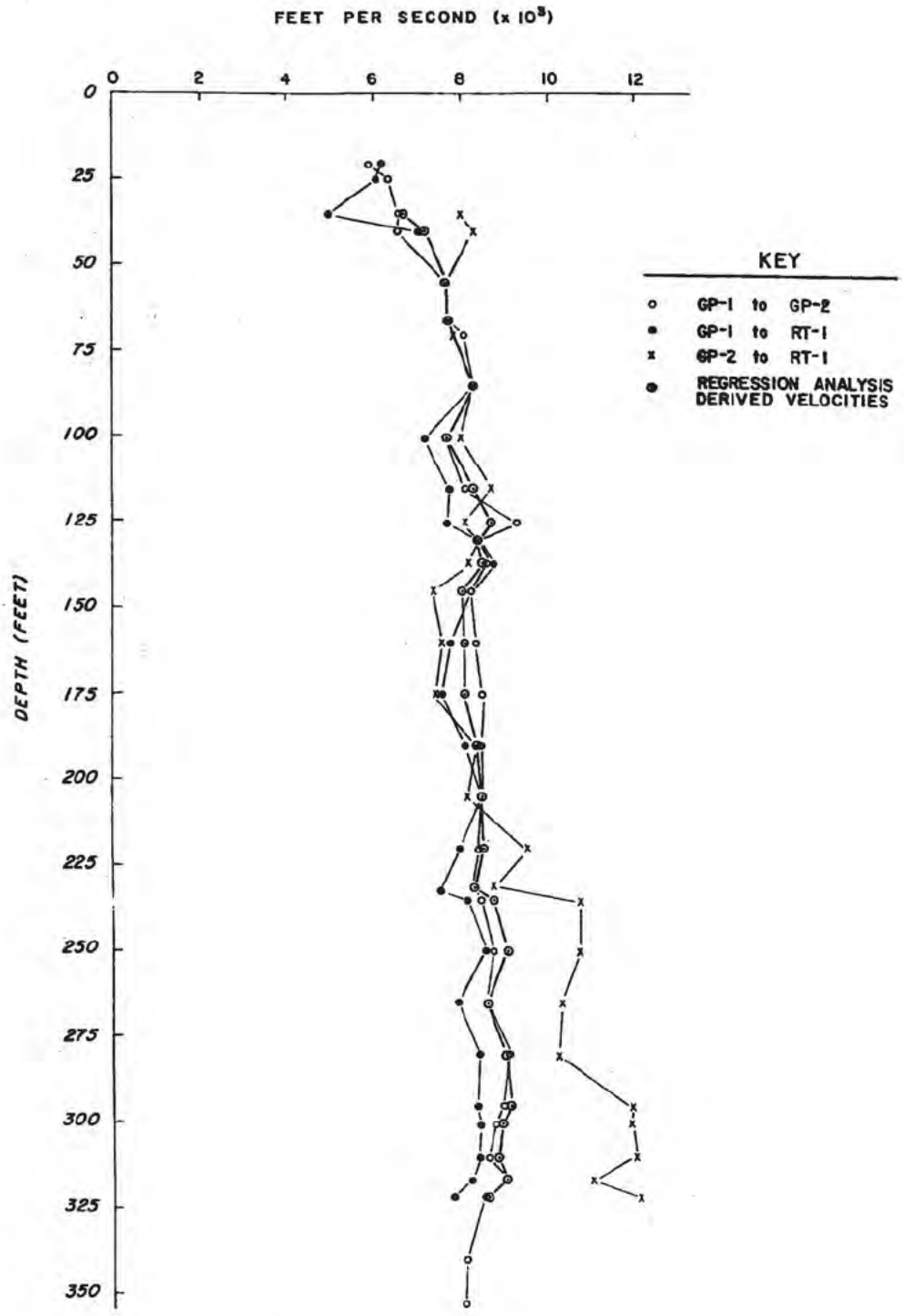


FIGURE 2.5-100

SHEAR WAVE VELOCITY RESULTS
CROSSHOLE SURVEY

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

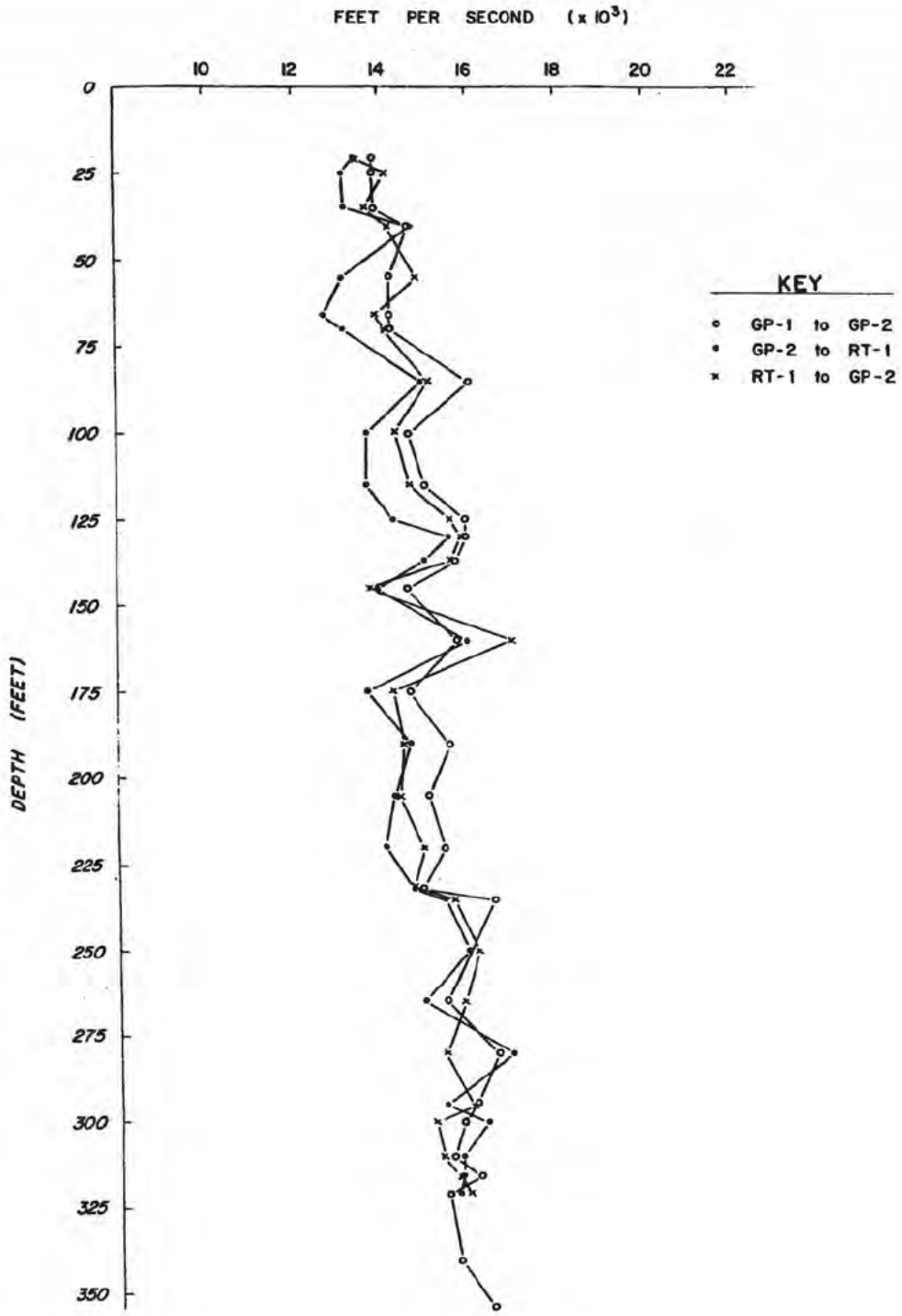


FIGURE 2.5-101

COMPRESSIONAL WAVE VELOCITY RESULTS
CROSSHOLE SURVEY

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT - UNIT 2
FINAL SAFETY ANALYSIS REPORT

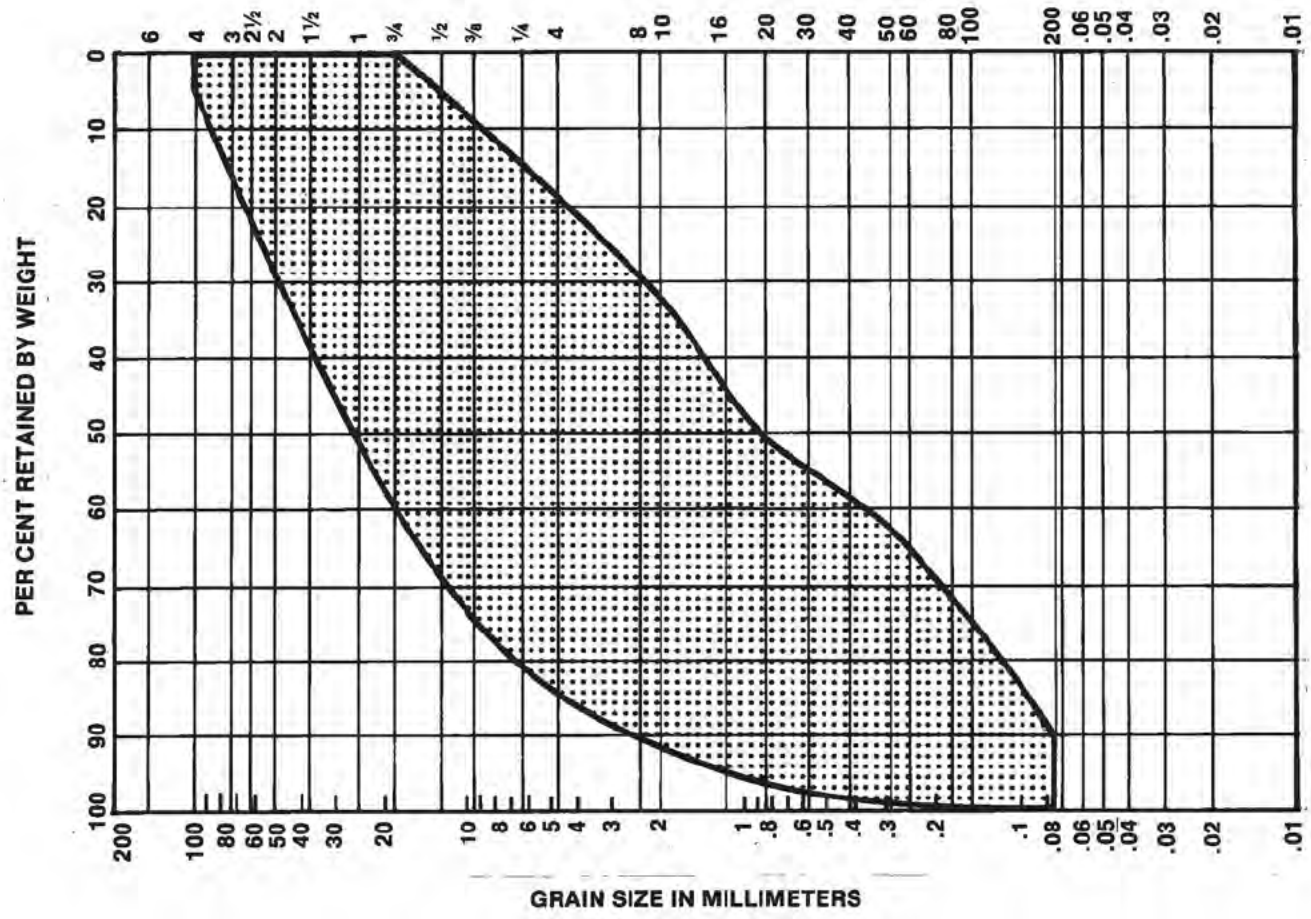


FIGURE 2.5-102

GRADATION REQUIREMENTS OF STRUCTURAL FILL

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT UNIT 2
FINAL SAFETY ANALYSIS REPORT

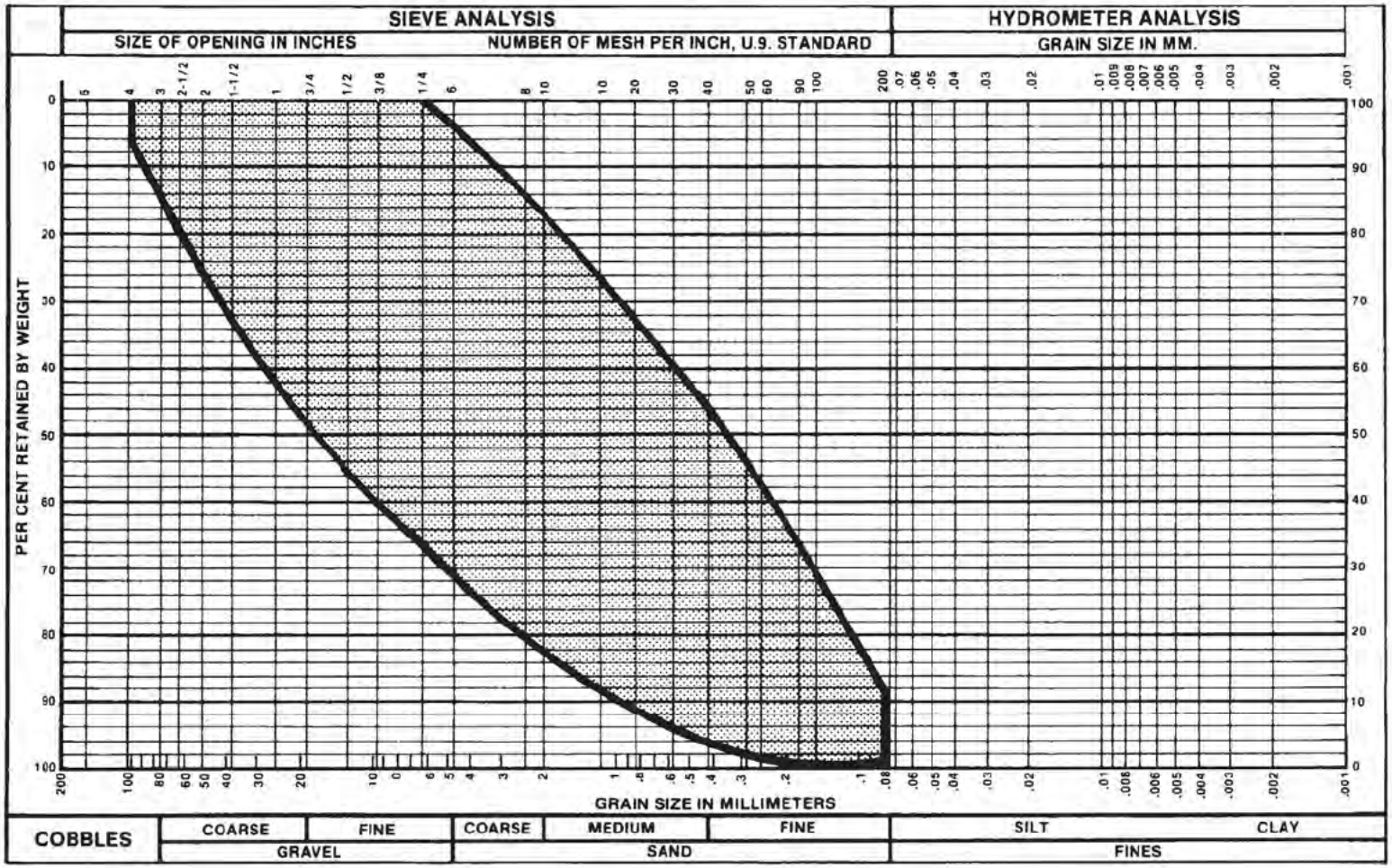


FIGURE 2.5-102A

GRADATION REQUIREMENTS OF GRANULAR FILL

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

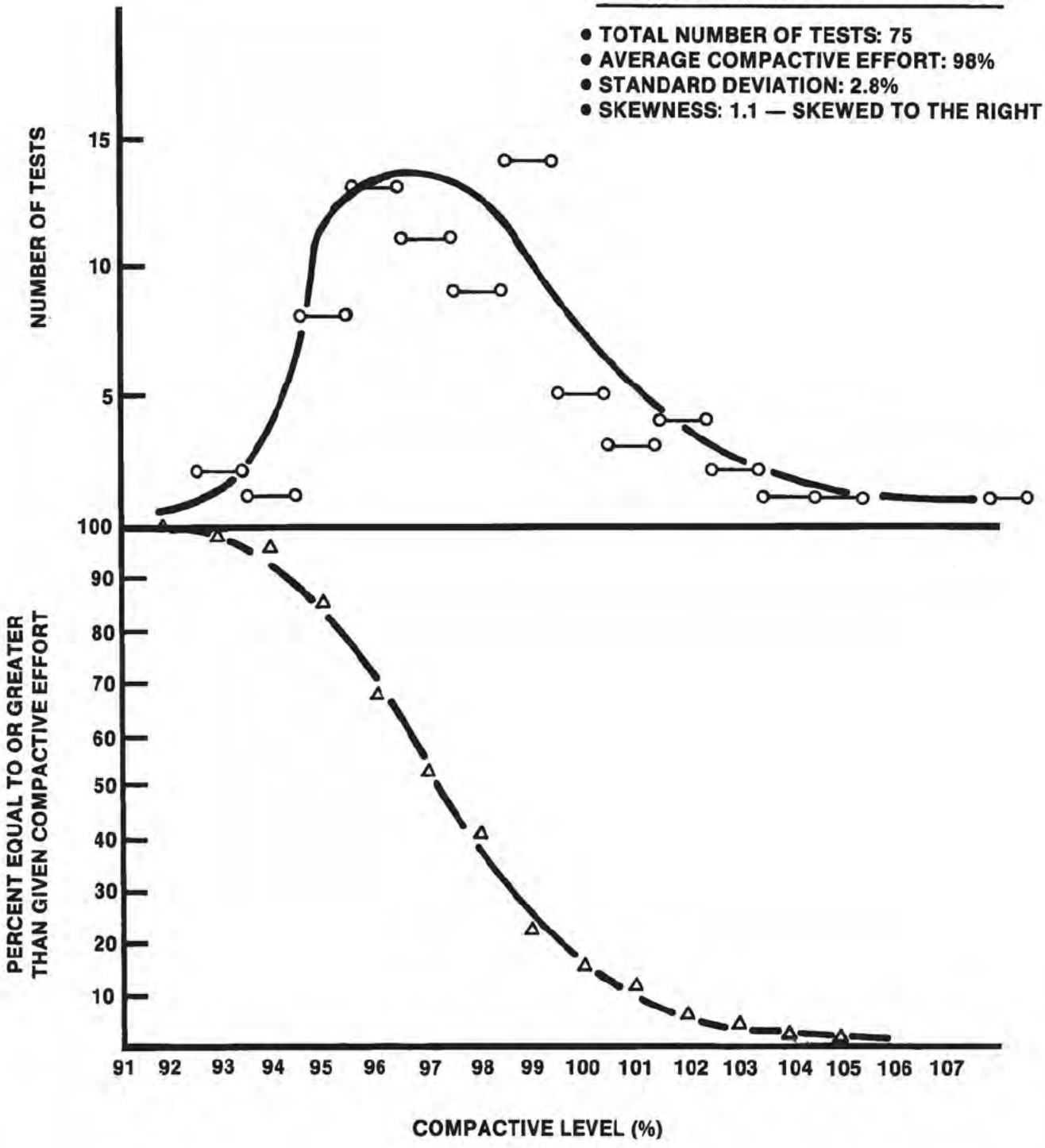


FIGURE 2.5-102B

RESULTS OF IN-PLACE DENSITY TESTS ON CATEGORY I STRUCTURAL FILL

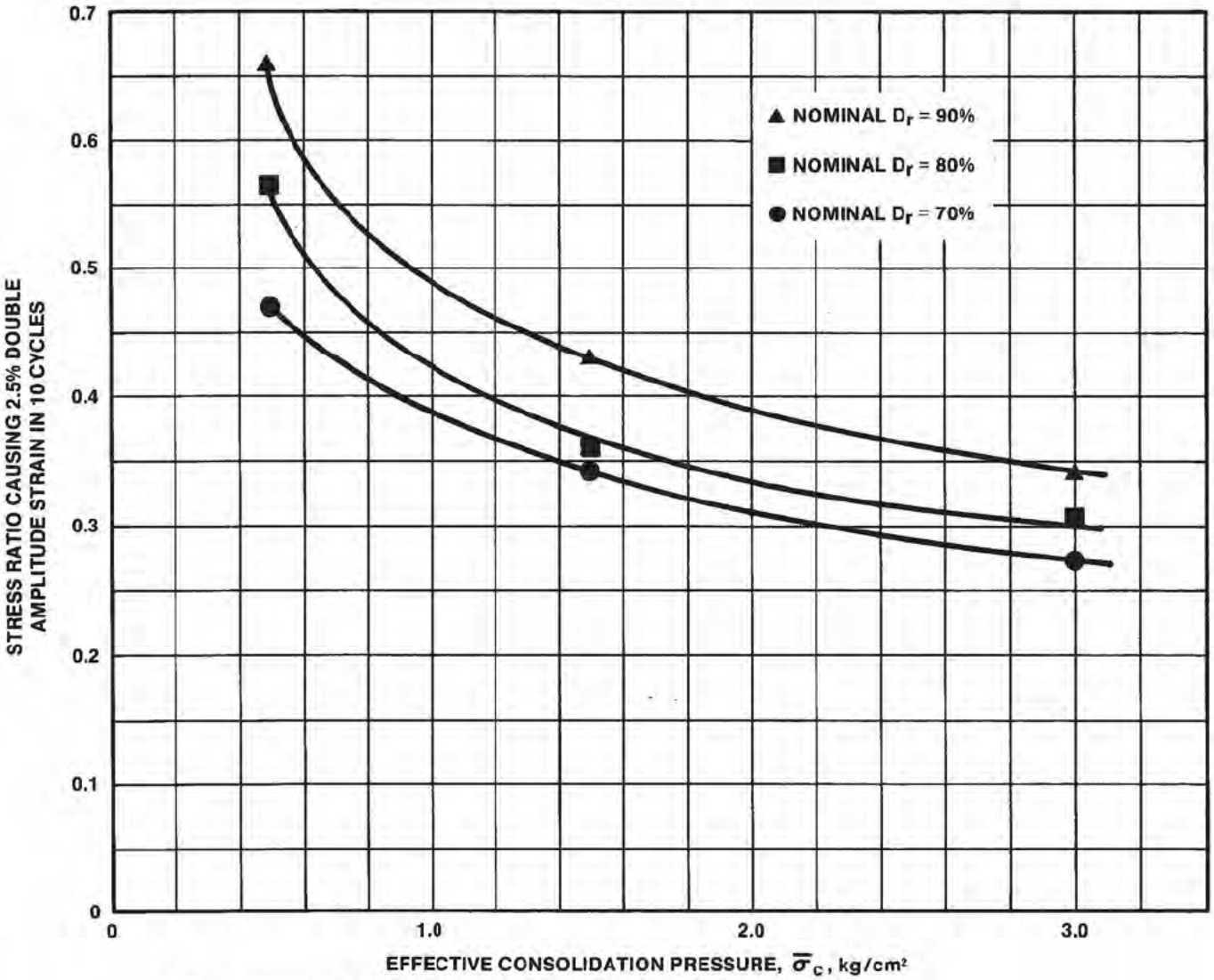
NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

Security-Related Information Figure Withheld Under 10 CFR 2.390

FIGURE 2.5-103

PIEZOMETER LOCATIONS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



$\bar{\sigma}_c$ = EFFECTIVE CONSOLIDATION PRESSURE

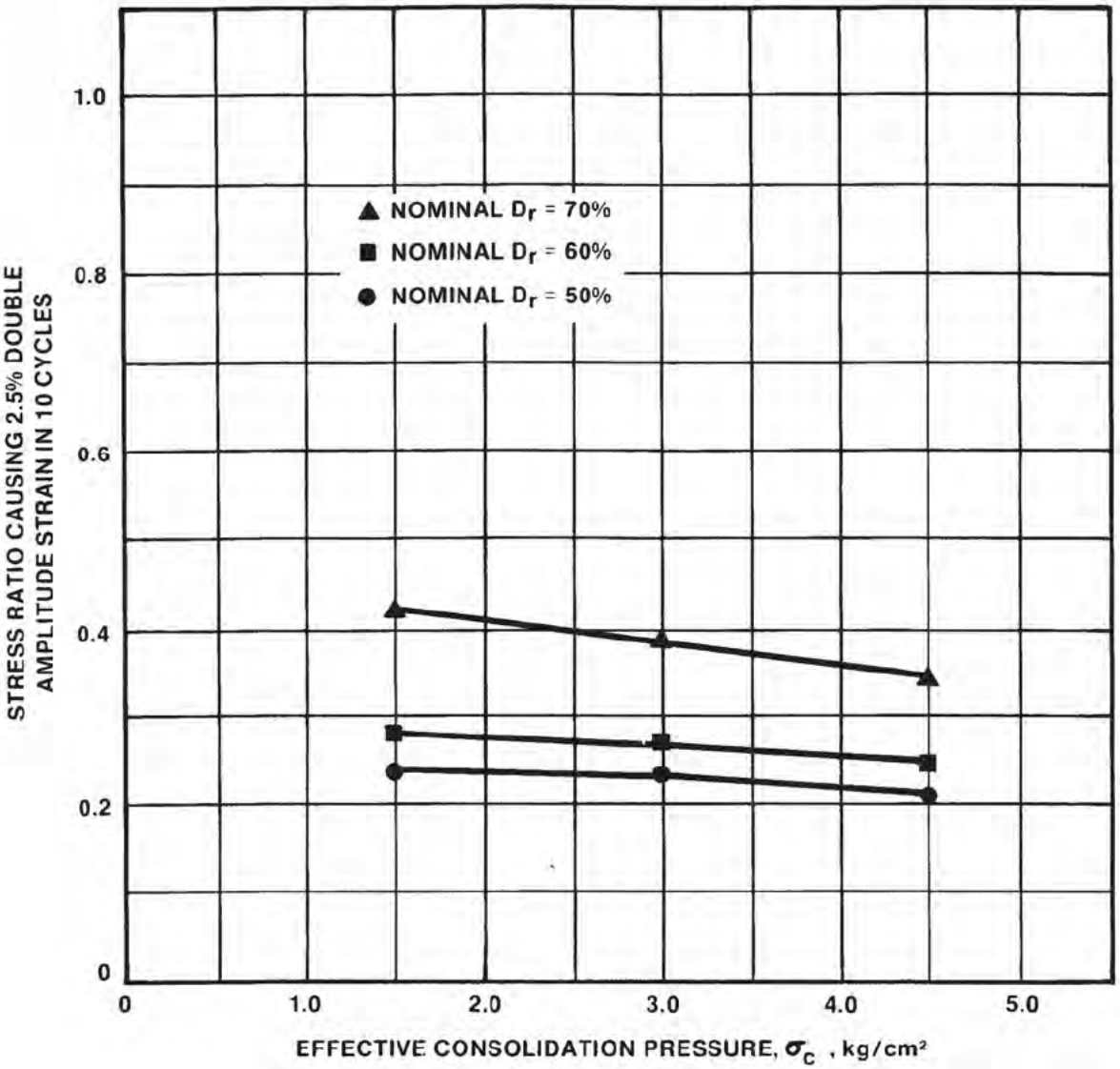
σ_d = CYCLIC DEVIATOR STRESS

$\sigma_d/2\bar{\sigma}_c$ = STRESS RATIO

FIGURE 2.5-104

DESIGN DATA FOR
SOIL LIQUEFACTION ANALYSES
BORROW SOURCE: CHAUVIN PIT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



$\bar{\sigma}_c$ = EFFECTIVE CONSOLIDATION PRESSURE

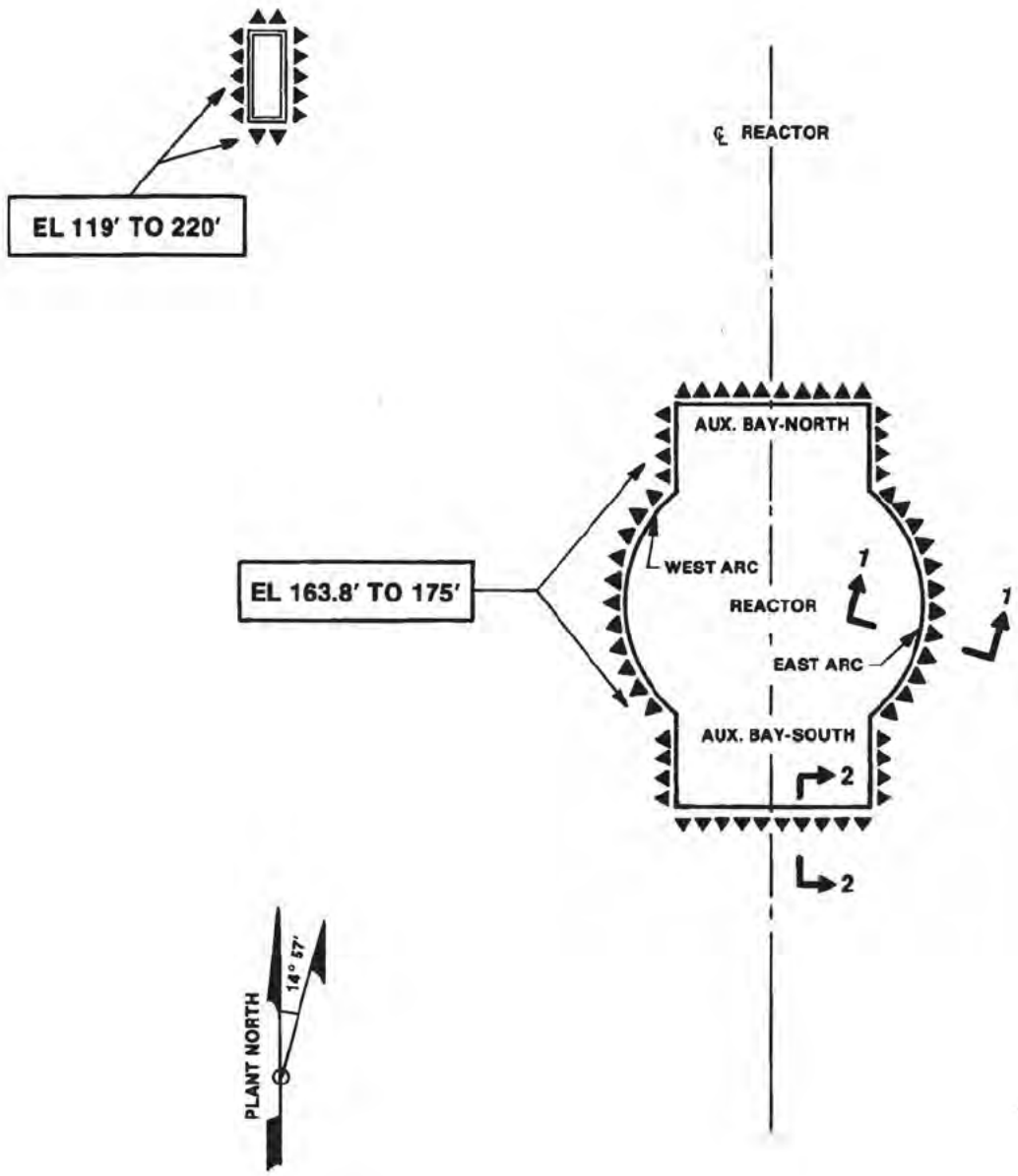
σ_d = CYCLIC DEVIATOR STRESS

$\sigma_d / 2\bar{\sigma}_c$ = STRESS RATIO

FIGURE 2.5-105

DESIGN DATA FOR
SOIL LIQUEFACTION ANALYSES
BORROW SOURCE: MEANY ENGLES ROAD PIT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



VERMICULITE CONCRETE ▲▲▲▲▲▲

VERMICULITE BACKFILL ●●●●●●

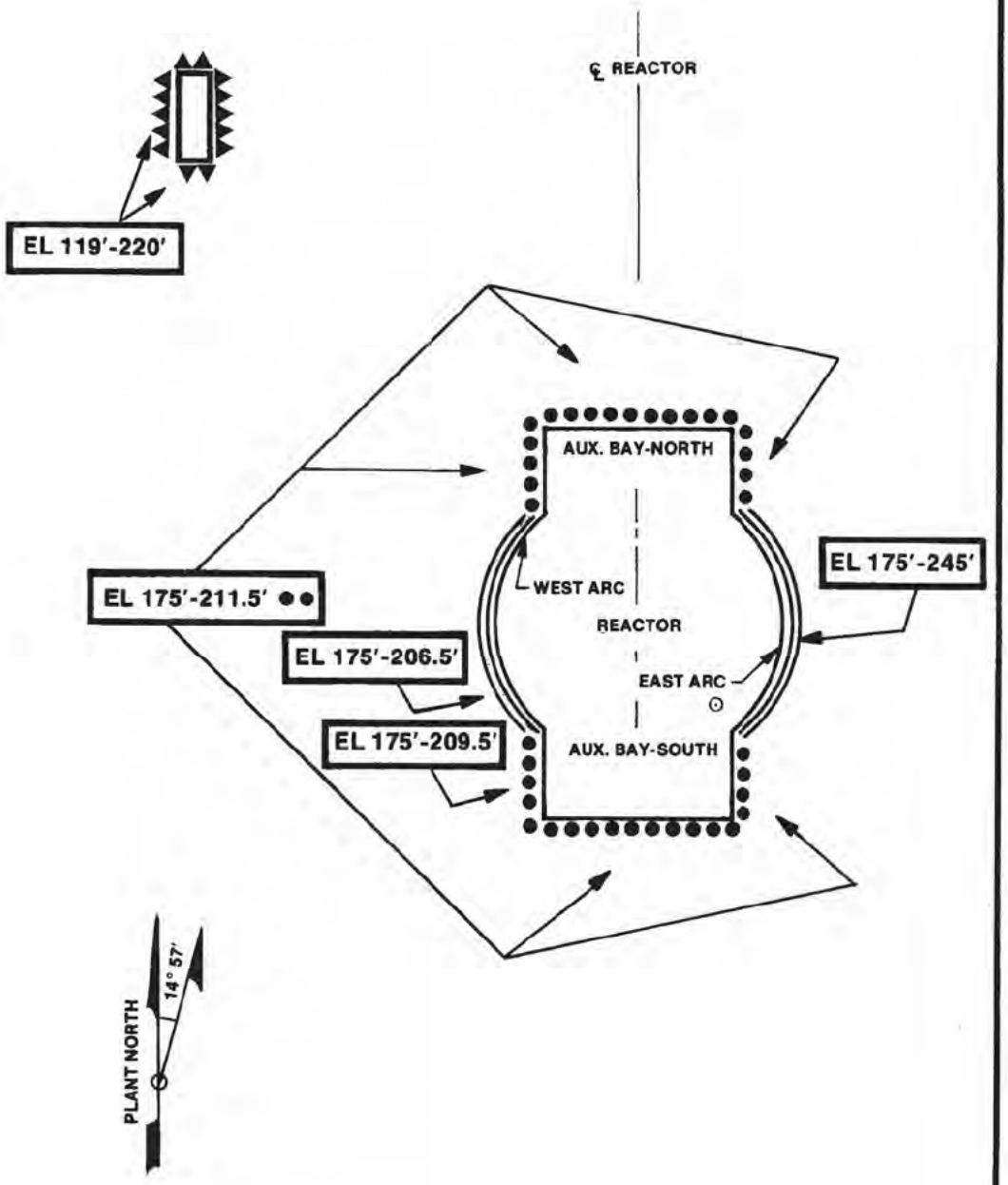
VERMICULITE SAND ■■■■■■

NUFOAM/RODOFOAM ═══

FIGURE 2.5-105 A

LOCATION OF COMPRESSIBLE MATERIALS BETWEEN ROCK AND CATEGORY I STRUCTURES AT ELEVATION 170'

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



VERMICULITE CONCRETE ▲▲▲▲▲▲

VERMICULITE BACKFILL ●●●●●●

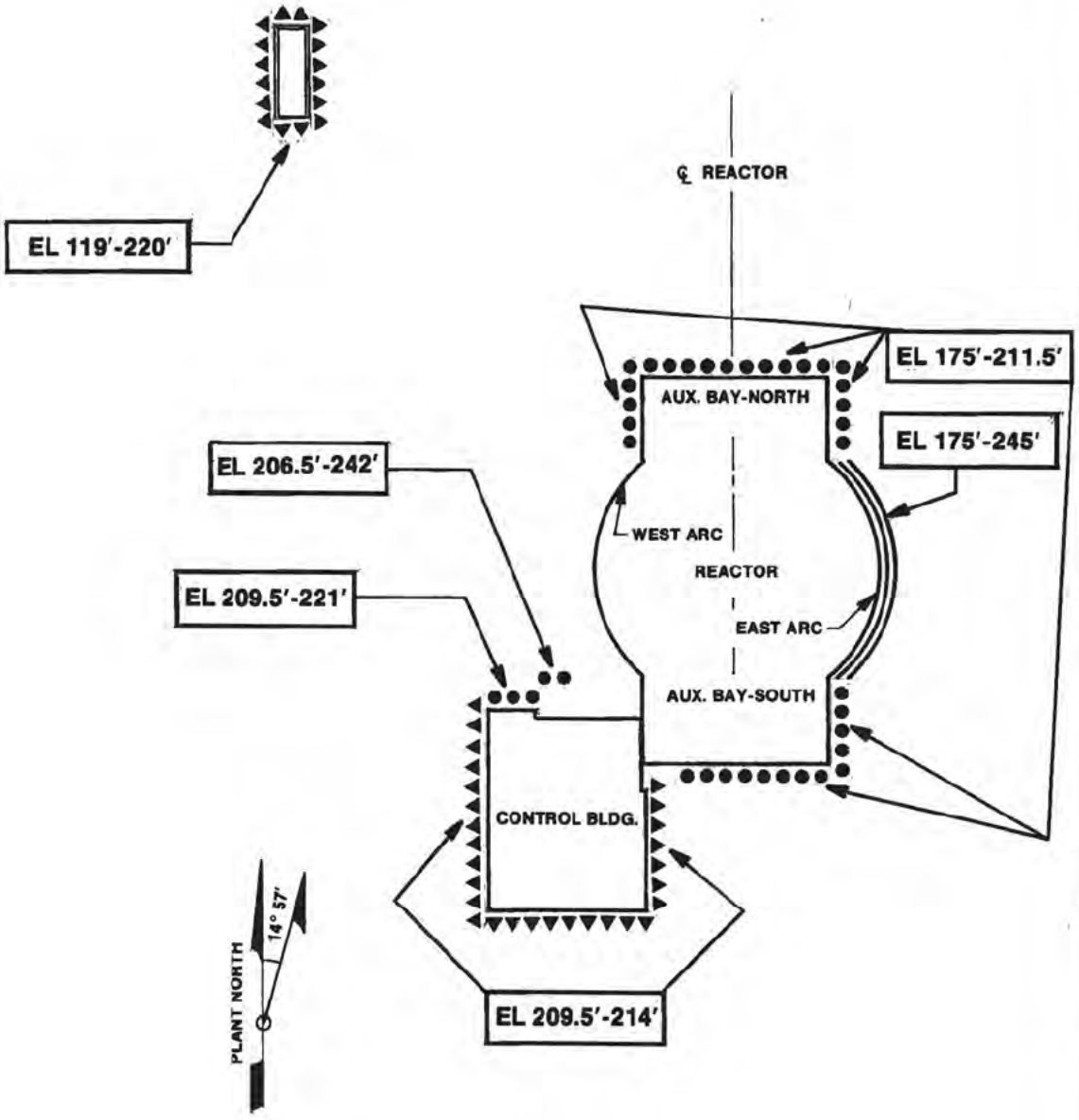
VERMICULITE SAND ■■■■■■

NUFOAM/RODOFOAM ═══

FIGURE 2.5-105B

LOCATION OF COMPRESSIBLE MATERIALS BETWEEN ROCK AND CATEGORY I STRUCTURES AT ELEVATION 190'

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



VERMICULITE CONCRETE ▲▲▲▲▲▲

VERMICULITE BACKFILL ●●●●●●

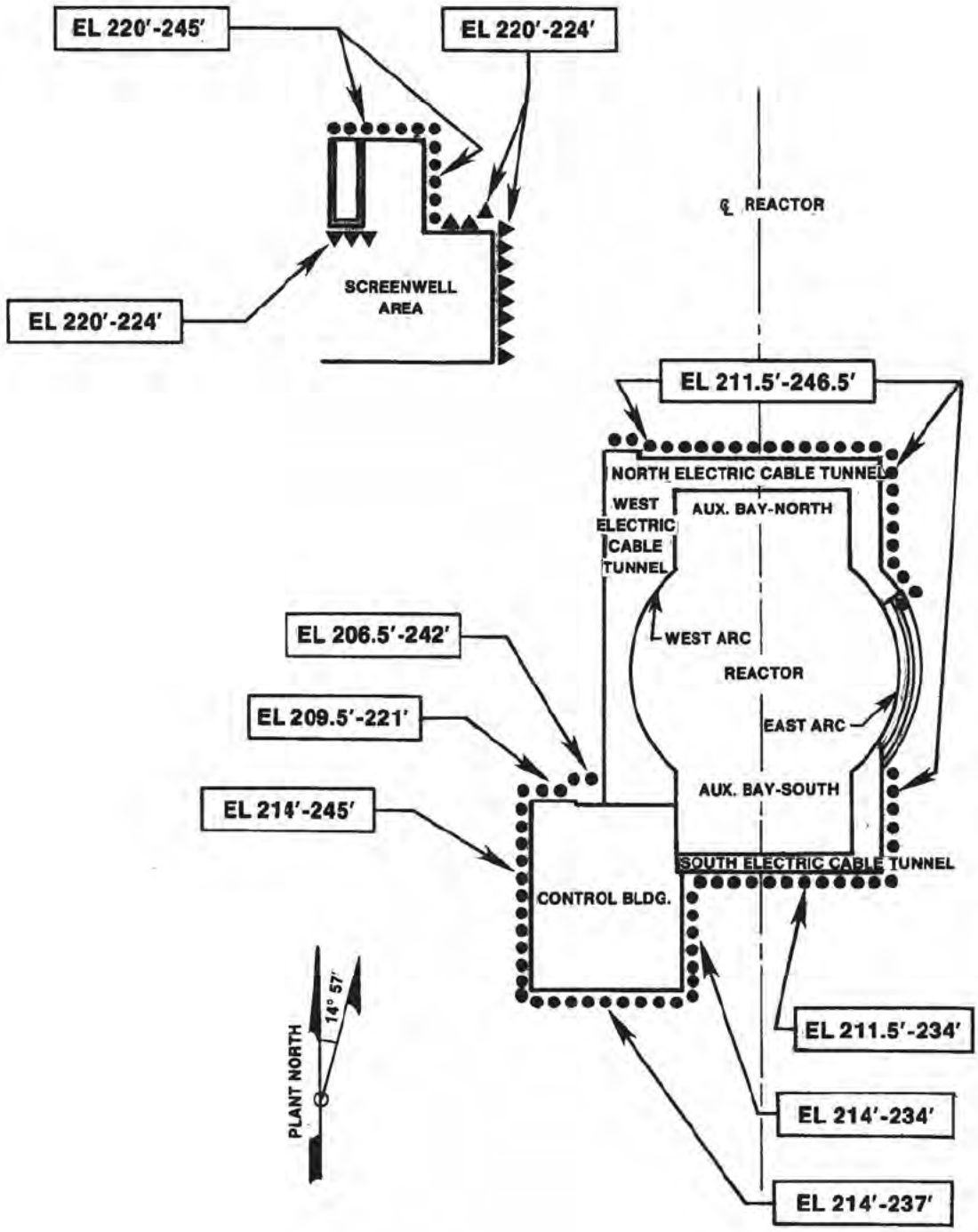
VERMICULITE SAND ■■■■■■

NUFOAM/RODOFOAM ═══

FIGURE 2.5-105 C

LOCATION OF COMPRESSIBLE MATERIALS BETWEEN ROCK AND CATEGORY I STRUCTURES AT ELEVATION 210'

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



VERMICULITE CONCRETE ▲▲▲▲▲▲

VERMICULITE BACKFILL ●●●●●●

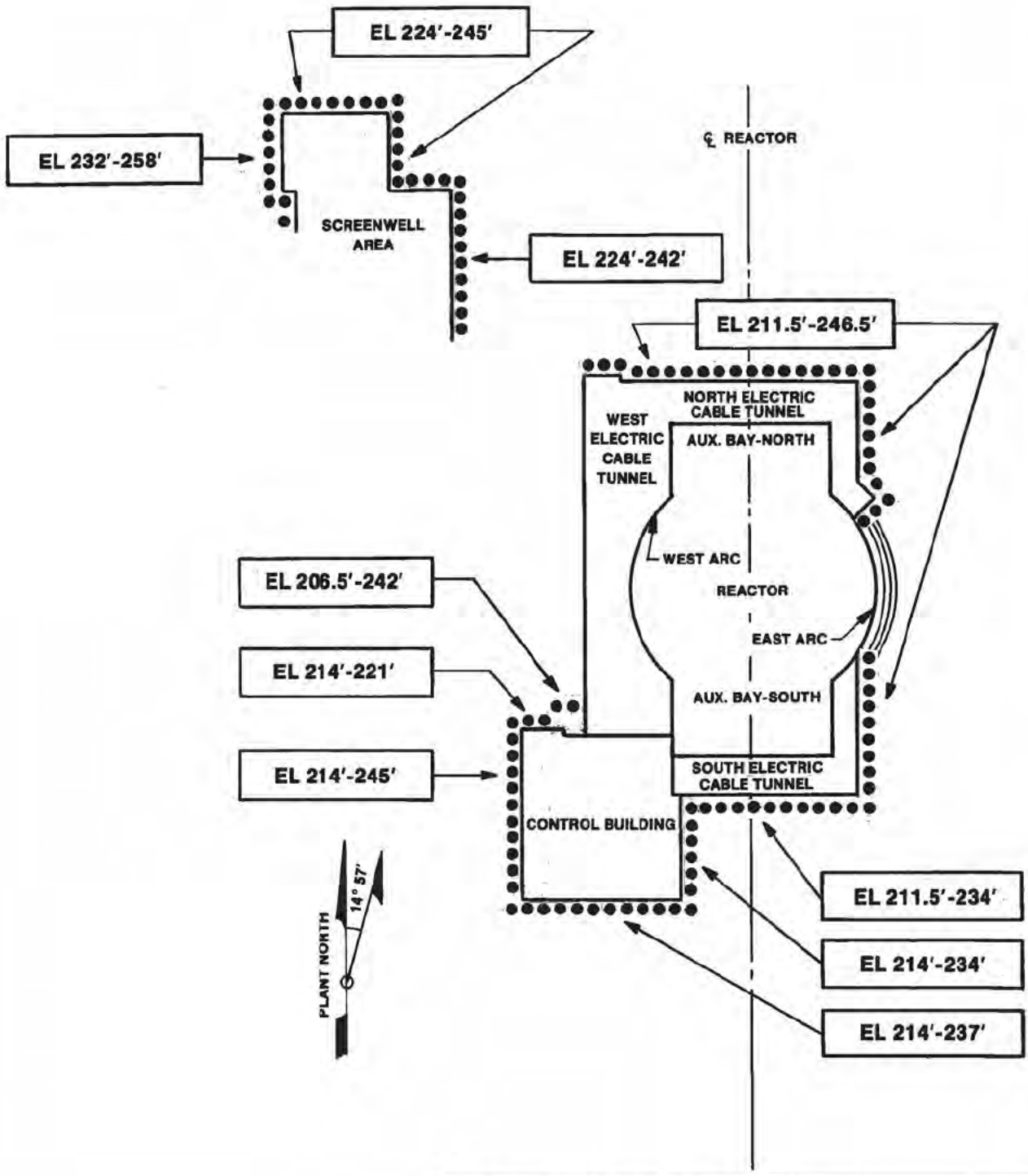
VERMICULITE SAND ■■■■■■

NUFOAM/RODOFOAM ═══

FIGURE 2.5-105 D

LOCATION OF COMPRESSIBLE MATERIALS BETWEEN ROCK AND CATEGORY I STRUCTURES AT ELEVATION 220'

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



VERMICULITE CONCRETE ▲▲▲▲▲▲

VERMICULITE BACKFILL ●●●●●●

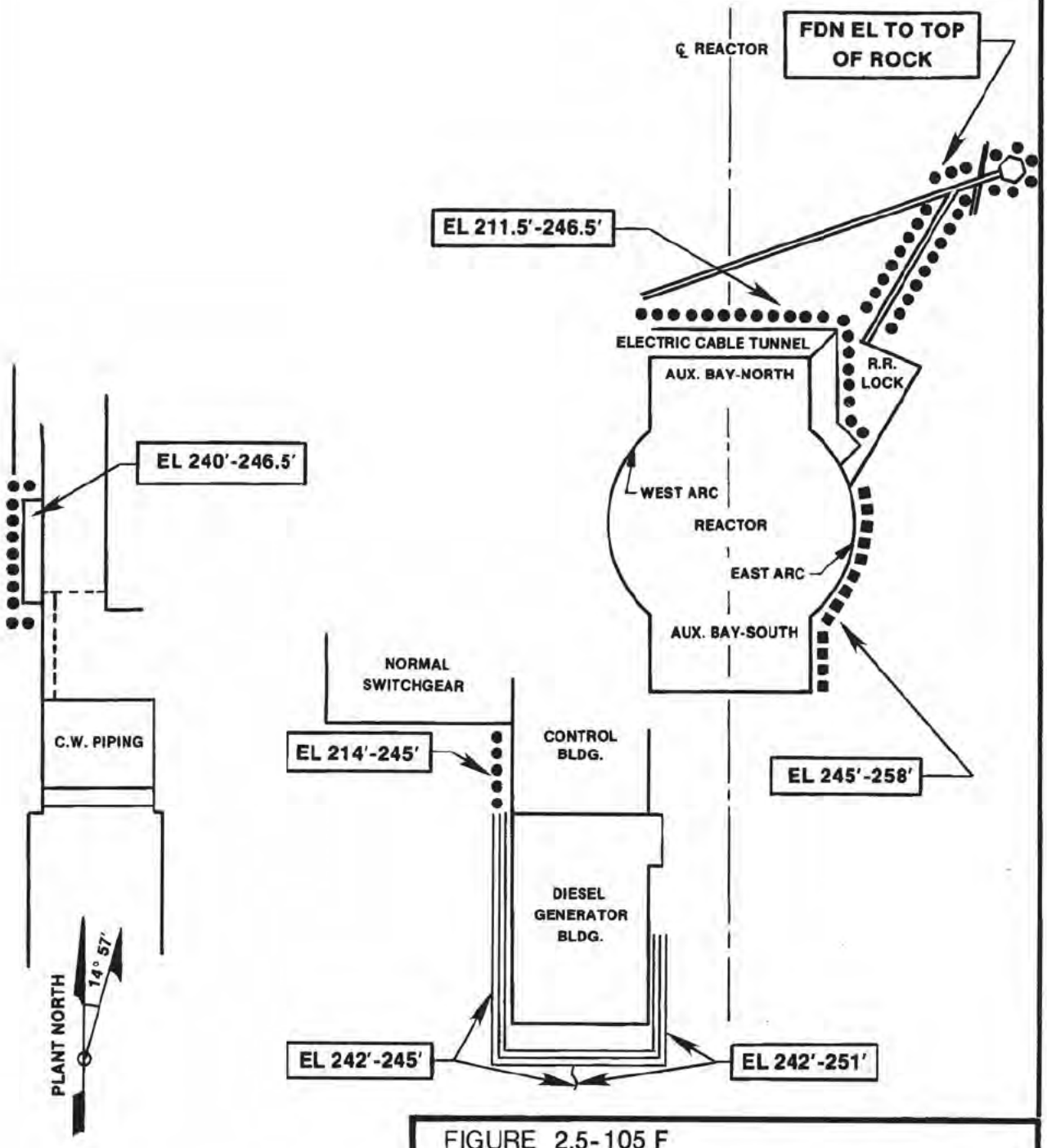
VERMICULITE SAND ■■■■■■

NUFOAM/RODOFOAM ═══

FIGURE 2.5-105 E

LOCATION OF COMPRESSIBLE MATERIALS BETWEEN ROCK AND CATEGORY I STRUCTURES AT ELEVATION 232'

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

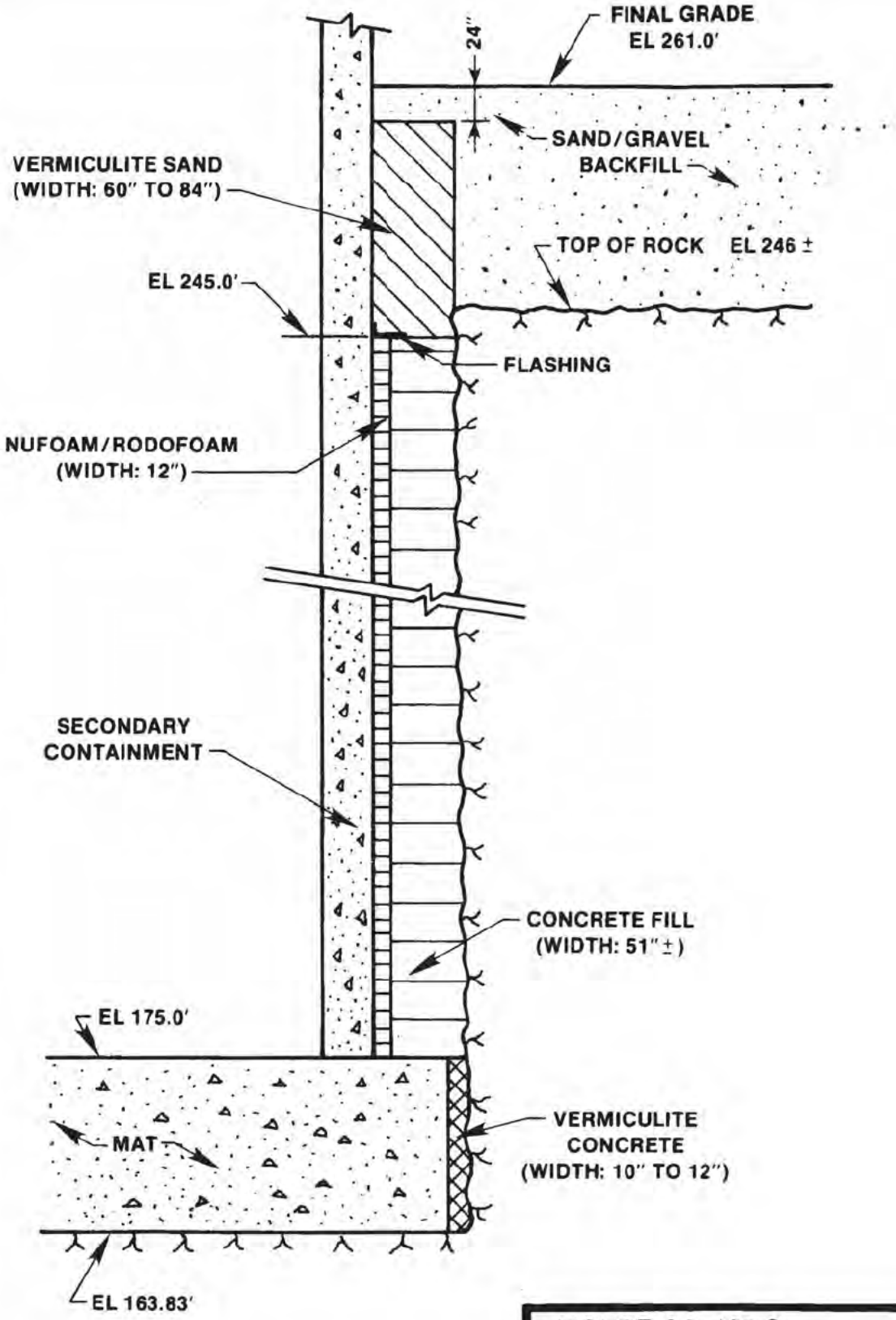


VERMICULITE CONCRETE
VERMICULITE BACKFILL
VERMICULITE SAND
NUFOAM/RODOFOAM

FIGURE 2.5-105 F

LOCATION OF COMPRESSIBLE MATERIALS BETWEEN ROCK AND CATEGORY I STRUCTURES AT ELEVATION 245'

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



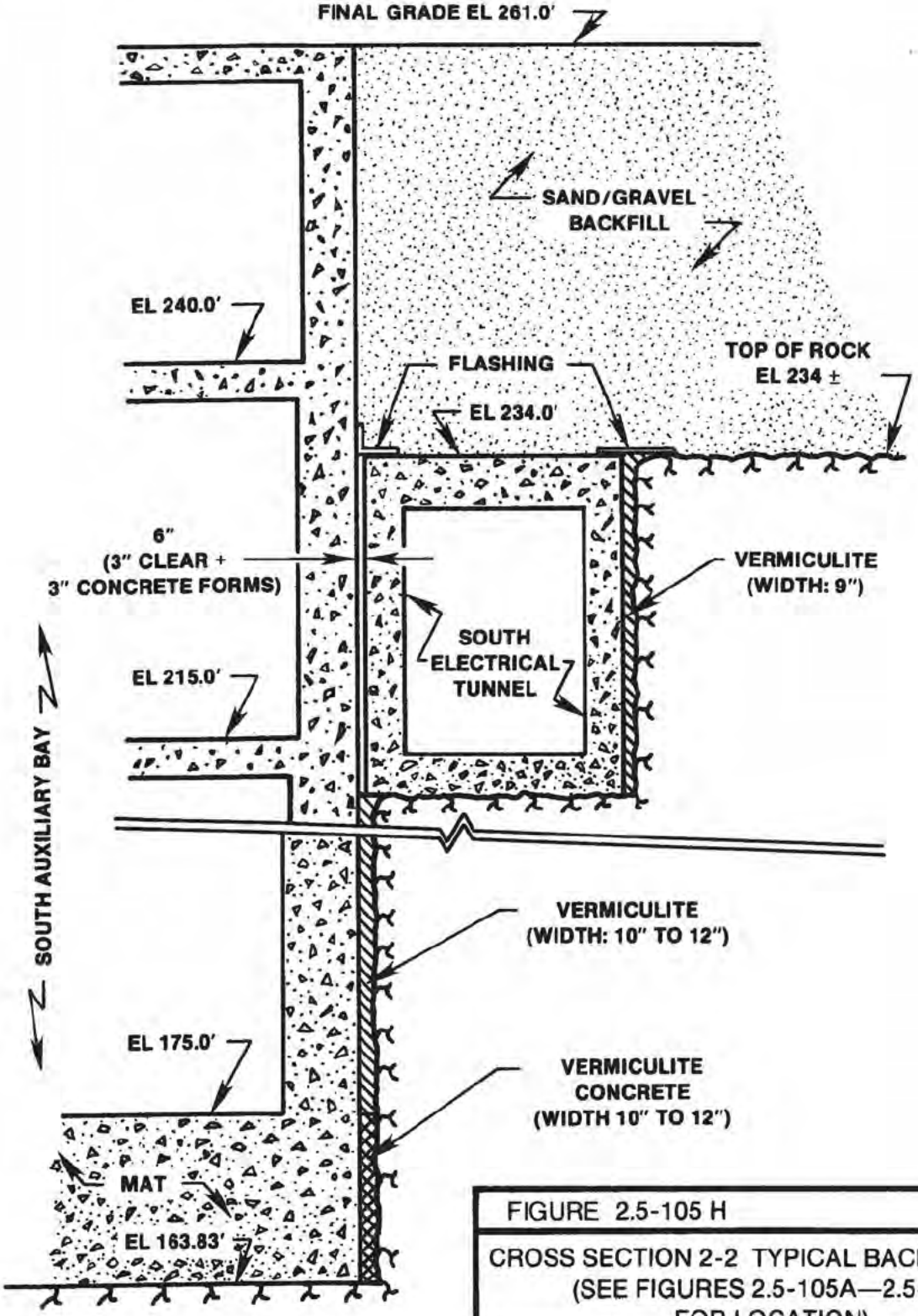
SECTION 1-1

SCALE: 1" = 10'-0"

FIGURE 2.5-105 G

CROSS SECTION 1-1 TYPICAL BACKFILL DETAIL
(SEE FIGURES 2.5-105A—2.5-105F
FOR LOCATION)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



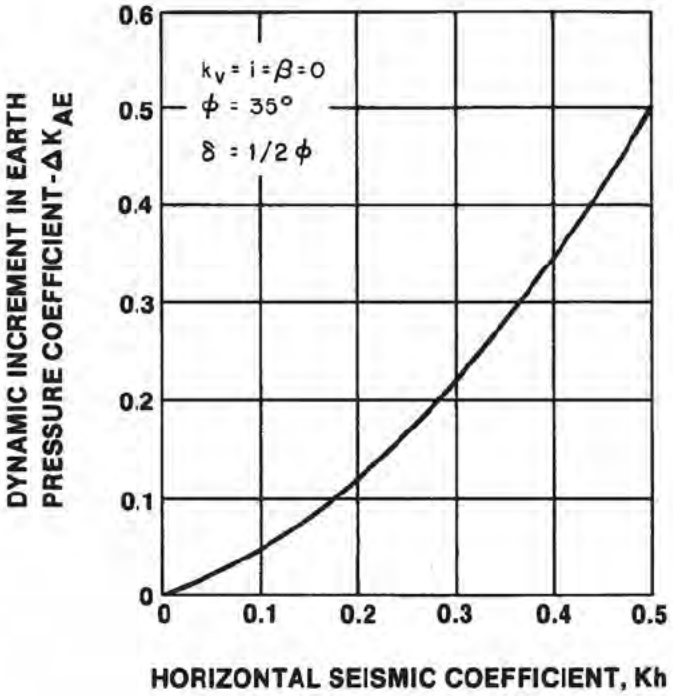
SECTION 2-2

SCALE: 1" = 10'-0"

FIGURE 2.5-105 H

CROSS SECTION 2-2 TYPICAL BACKFILL DETAIL (SEE FIGURES 2.5-105A—2.5-105F FOR LOCATION)

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT



SOURCE:

SEED, H.B. AND WHITMAN, R.V. DESIGN OF EARTH RETAINING STRUCTURES FOR DYNAMIC LOADS, ASCE SPECIALTY CONFERENCE ON LATERAL STRESSES IN THE GROUND AND DESIGN OF EARTH RETAINING STRUCTURES, p. 103-147, 1970

FIGURE 2.5-105 I

DYNAMIC INCREMENT COEFFICIENT
VS HORIZONTAL SEISMIC COEFFICIENT

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

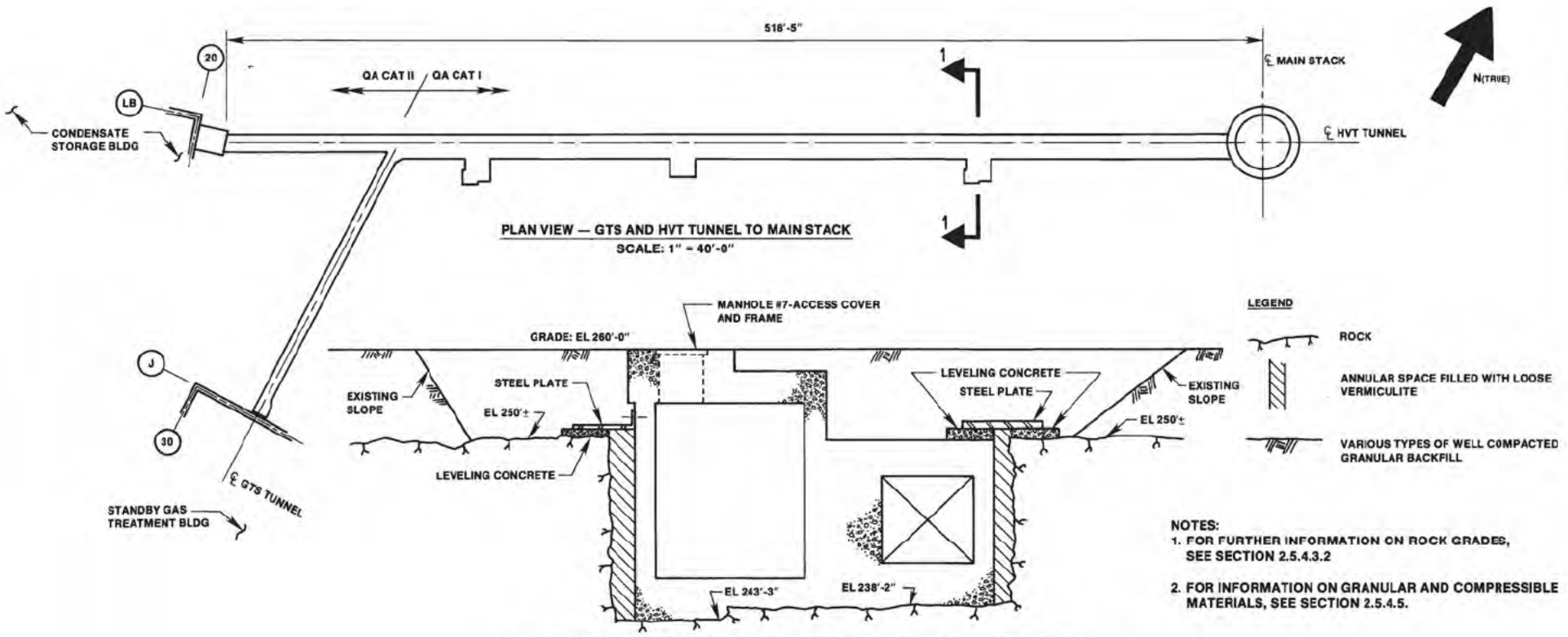


FIGURE 2.5-105 J

PLAN AND TYPICAL CROSS-SECTION OF HVT TUNNEL

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

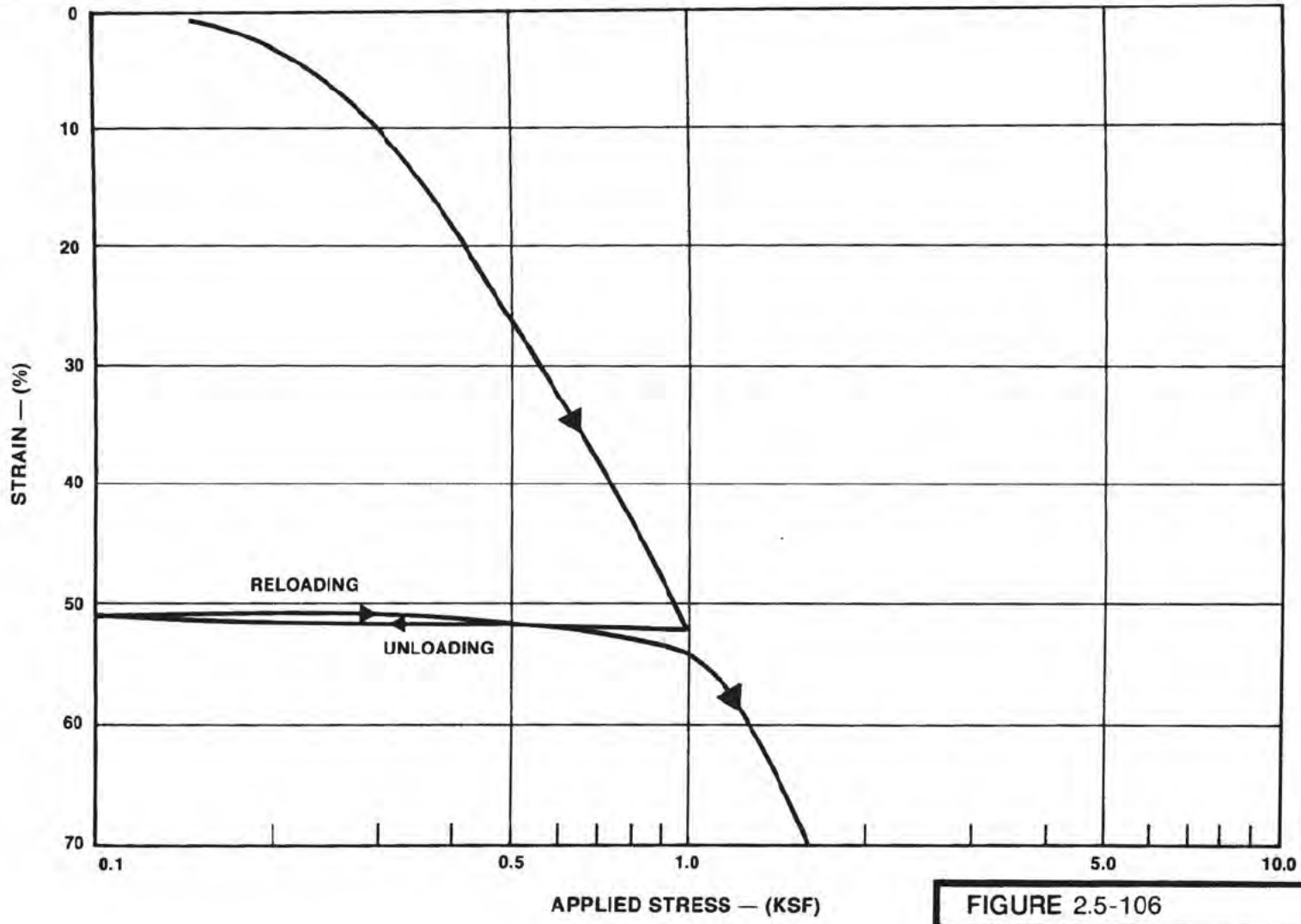


FIGURE 2.5-106

VERMICULITE
TYPICAL CONSOLIDATION
TEST RESULTS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

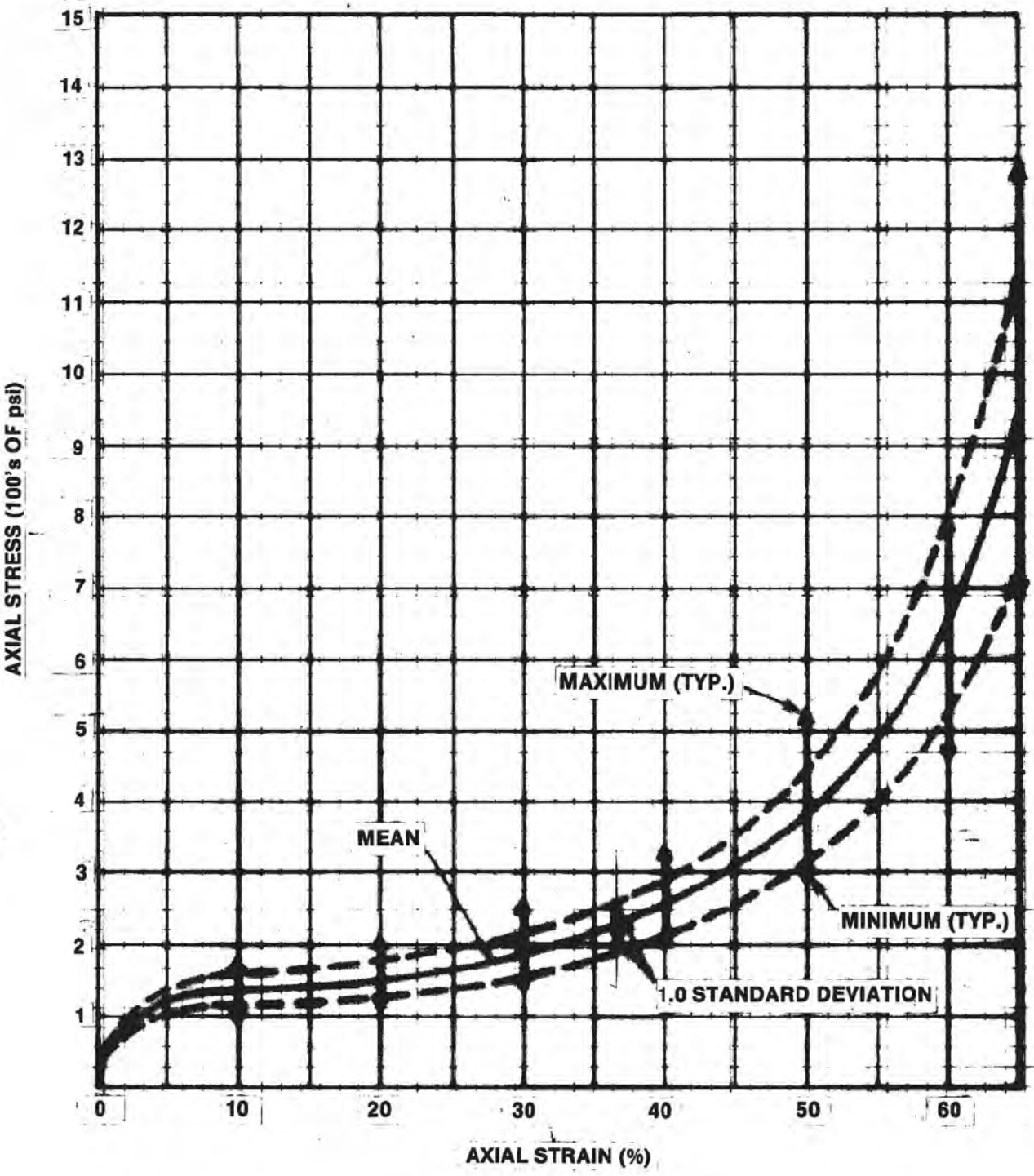


FIGURE 2.5-107

VERMICULITE CONCRETE COMPOSITE CURVE
CONFINED COMPRESSION TESTS

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

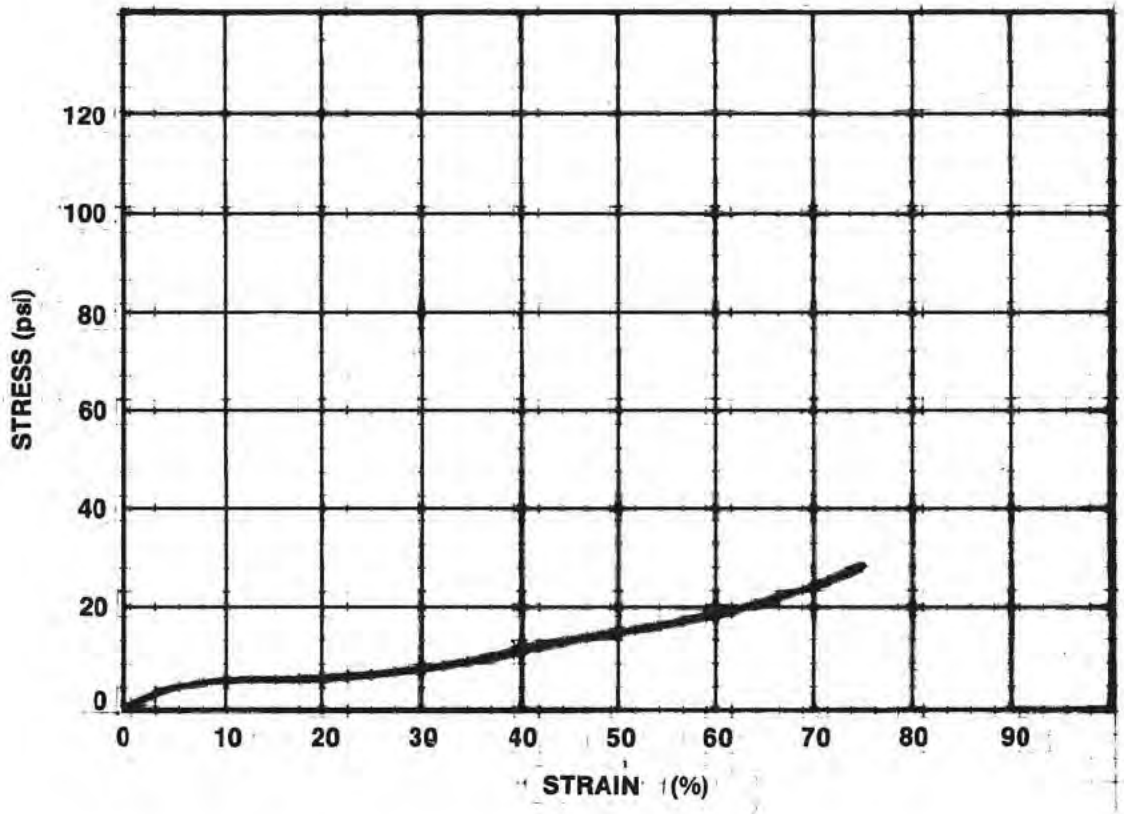


FIGURE 2.5-108

COMPREHENSIVE STRESS-STRAIN
FOR NUFOAM TYPE 1

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT

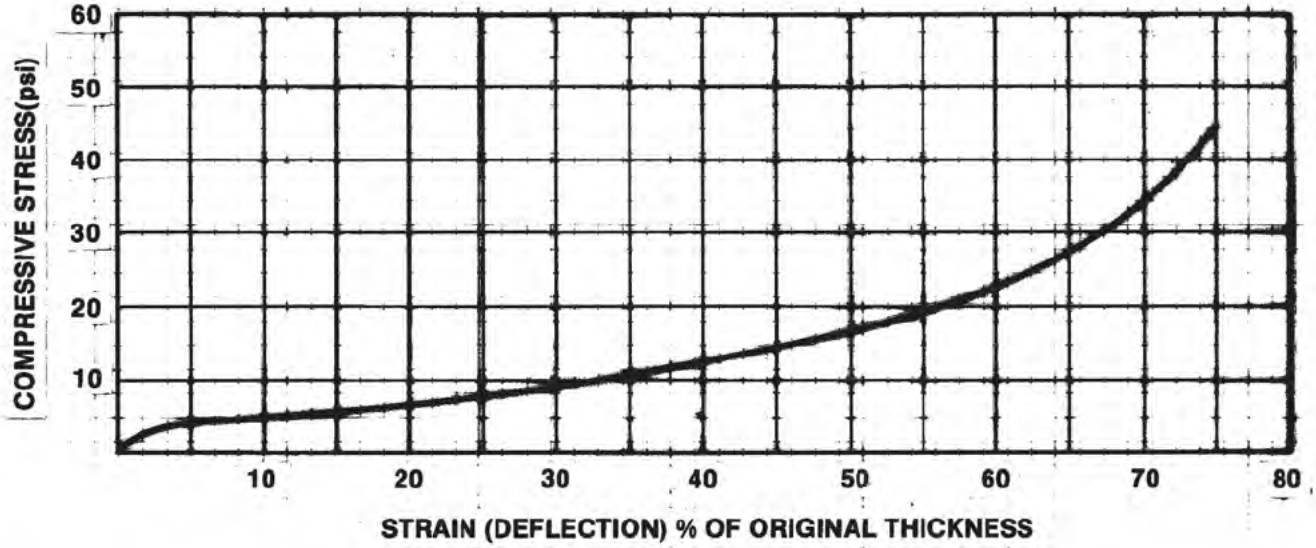


FIGURE 2.5-109

COMPREHENSIVE STRESS-STRAIN
FOR RODOFOAM II

NIAGARA MOHAWK POWER CORPORATION
NINE MILE POINT-UNIT 2
FINAL SAFETY ANALYSIS REPORT