VERMONT LOW-LEVEL RADIOACTIVE WASTE AUTHORITY

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WILLIAM F. NEWBERRY
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February 5, 1991

Mr. James Kennedy
Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Kennedy:

Vermont is preparing to characterize a potential site for the purpose of establishing a Low-Level Radioactive Waste Facility. The potential site is on the property of the Vermont Yankee Nuclear Power Corporation and is contiguous to the Vermont Yankee Nuclear Power Plant currently in operation. As part of writing the Site Characterization Plan for this site, several concerns and issues (list attached) have been identified which we would like to discuss.

We look forward to meeting with you and other NRC staff on February 14. We recommend beginning at 9:00 a.m. Please let me know if this is not acceptable.

If you have any questions, please feel free to contact me at (802) 229-2241.

Sincerely,

William F. Newberry
Executive Director
Vermont Low-Level Radioactive Waste Authority

WFN:ekt
Enlosure
cc: Ron Uleck, NRC
Chris Halladay, VTLLRW
Dean Weyman, Vermont Yankee

CONCERNS AND ISSUES

1) Many data have been acquired for the operating nuclear power plant site contiguous to the proposed LLRW site. With the exception of some stratigraphic, hydrologic and meteorology data, we intend to use the data gathered for the nuclear power plant as being data for the "site".

2) We intend to use the data from the Vermont Yankee Nuclear Power Corporation after it has been qualified; however, the Meteorology Tower at the power plant takes readings at different heights than cited in NUREG-0902. Specifically, rather than acquiring data at 2 and 10 meters, the plant acquires data at 6 and 60 feet. We intend not to re-acquire the data to meet the specific height requirements, but rather to use the data from the existing 140 foot met tower as the best historical comparison. Also, we intend to use Regional NOAA data and Vermont Department of Agriculture data for the following parameters (see matrix below).

Data Category	NUREG-0902 Guidance	Planned Activity
Meteorology and Climatology	On site depth of frost penetration	Regional NOAA data
	Soil Temperature	Regional data from Vermont Department of Agriculture
	Wind speed, direction at 2 and 10 meters	Wind speed, direction at 6 feet (1.82m) and 60 feet (18.29m)
	On site measurement of surface humidity, dew point, atmosphere pressure	Regional data for these parameters

3) It is anticipated that the LLW facility at the proposed Vermont Yankee Site will be above the water table, and the travel time to the environment is relatively "fast"; based on these assumptions we do not expect to need to acquire the following geochemical groundwater data (see matrix below).

Data Category	NUREG-0902 Guidance	Planned Activity
Groundwater Geochemistry	Age Dating tritium oxygen-18/oxygen-16 ratio carbon-13/carbon-12 ratio carbon-14, and chlorine-36	None

4) NUREG-0902 discusses the use of Parshall frames and sediment samples to determine the rate of erosion of the site soil. Some data have been acquired for the power plant site and we intend to model the site. (See matrix below.)

Data Category	NUREG-0902 Guidance	Planned Activity
Surface Water	Parshall flumes and sediment samples installed to determine rate of erosion of site soil deposits	No additional activities planned, assume existing data and modeling will provide adequate predictions of sedimentation rates

5) There are certain recommended types of ecological and cultural data defined in NUREG-0902 that we are not currently planning to acquire as new data; we intend to use existing data. What advice can you provide concerning these parameters? (See matrix below.)

Data Category	NUREG-0902 Guidance	Planned Activity
Threatened and Endangered Species	Surveys to a radius of 5 km from site	Surveys at site. Use of published data and available unpublished data for regional assessment.
Cultural Resources	Inventory of cultural resources within a 10 km radius	Site surveys, inventory of the immediate site vicinity

6) NUREG-0902 recommends that topographic mapping be at the scale of 1:2400 with a contour interval in the order of 1 foot. We intend to use existing mapping at other scales from the Vermont Yankee Site and Vermont State Agencies.

7) NUREG-0902 recommends that the disposal site be at least two kilometers from the property limits of the closest population center. The proposed site is close to the small community of Vernon. Our interpretation is this does not violate the guidance because (1) the community of Vernon has successfully coexisted with the Vermont Yankee Power Plant for decades, (2) the low-level waste disposal facility's potential to affect the health and safety of residents of Vernon is extremely small, and (3) a community of a few hundred is not a "population center".

8) NUREG-0902 discusses evaluating water retention in the unsaturated zone. Since the site appears to consist primarily of coarse soils, no retardation of significance is expected and we do not intend to evaluate unsaturated zone water retention.

9) The current groundwater travel time estimate is less than 100 years from facility to riverbank. Our interpretation is that this does not disqualify the site. Please provide some guidance and/or clarification about what the NRC considers to be an adequate flowtime.

10) Does the NRC have any hydrologic and pathway computer codes/models (both surface and groundwater) that have a preferred status or are there any codes or models that the NRC has approved for use?

11) If travel time must be demonstrated, will the performance of water balance calculations be sufficient or do we have to run a computer model including pathway analyses?

12) NUREG-0902 recommends that for colocated facilities, the monitoring programs should be able to identify the source and differentiate between the releases of the separate facilties. Our interpretation is that the two combined monitoring and mitigation programs should be capable of satisfying the preformance objectives of the two facilties.

13) Are there any expected changes in existing NRC requirements or guidance documents concerning LLW or any new documents pending that will be promulgated in near term (or to be specific in 2-3 years)?

14) Are there any changes expected in the NRC performance objectives or what constitutes demonstration of attainment of performance objectives?

VERMONT LOW-LEVEL RADIOACTIVE WASTE AUTHORITY
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FACSIMILE TRANSMITTAL

DATE: 02/05

TIME: 2:25

FROM: VERMONT LOW-LEVEL RADIOACTIVE WASTE AUTHORITY

NUMBER OF PAGES, INCLUDING COVER SHEET 5

TO: NRC

ATTN.: Mr. Ron Vleck 5-E-4

FAX NO.: 301-492-0259

FROM: William Newberry

RE:

****

Operator: Erica

TELEPHONE: (802) 229-1638 FAX NUMBER: (802) 229-1608

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SITE CHARACTERIZATION PLAN FOR THE VERNON/VERMONT YANKEE SITE

FEBRUARY 1991

FOR

VERMONT LOW-LEVEL RADIOACTIVE WASTE AUTHORITY

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PART I REQUIREMENTS AND PROCESS

PART II PLANNING INFORMATION AND PREPARATORY ACTIVITIES

PART III GEOLOGIC AND HYDROLOGIC INVESTIGATIONS

PART IV ENVIRONMENTAL AND SOCIOECONOMIC INVESTIGATIONS

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PART III GEOLOGIC AND HYDROLOGIC INVESTIGATIONS (CONTINUED)

PART III GEOLOGIC AND HYDROLOGIC INVESTIGATIONS (CONTINUED)

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PART IV ENVIRONMENTAL AND SOCIOECONOMIC INVESTIGATIONS

PART IV ENVIRONMENTAL AND SOCIOECONOMIC INVESTIGATIONS (CONTINUED)

PART IV ENVIRONMENTAL AND SOCIOECONOMIC INVESTIGATIONS (CONTINUED)

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PART IV ENVIRONMENTAL AND SOCIOECONOMIC INVESTIGATIONS (CONTINUED)

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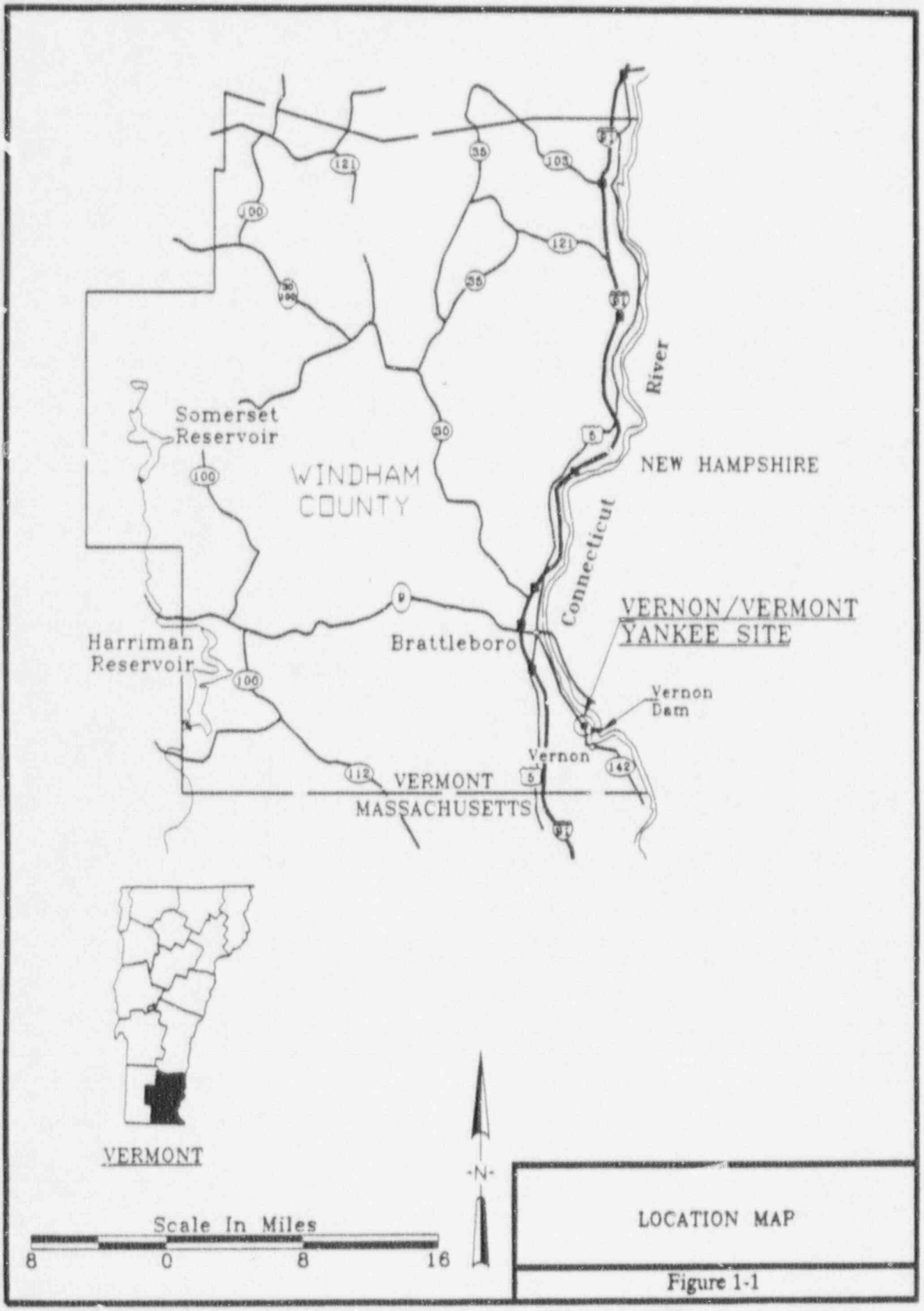
PART IV ENVIRONMENTAL AND SOCIOECONOMIC INVESTIGATIONS (CONTINUED)

PART V REPORTING AND REFERENCES



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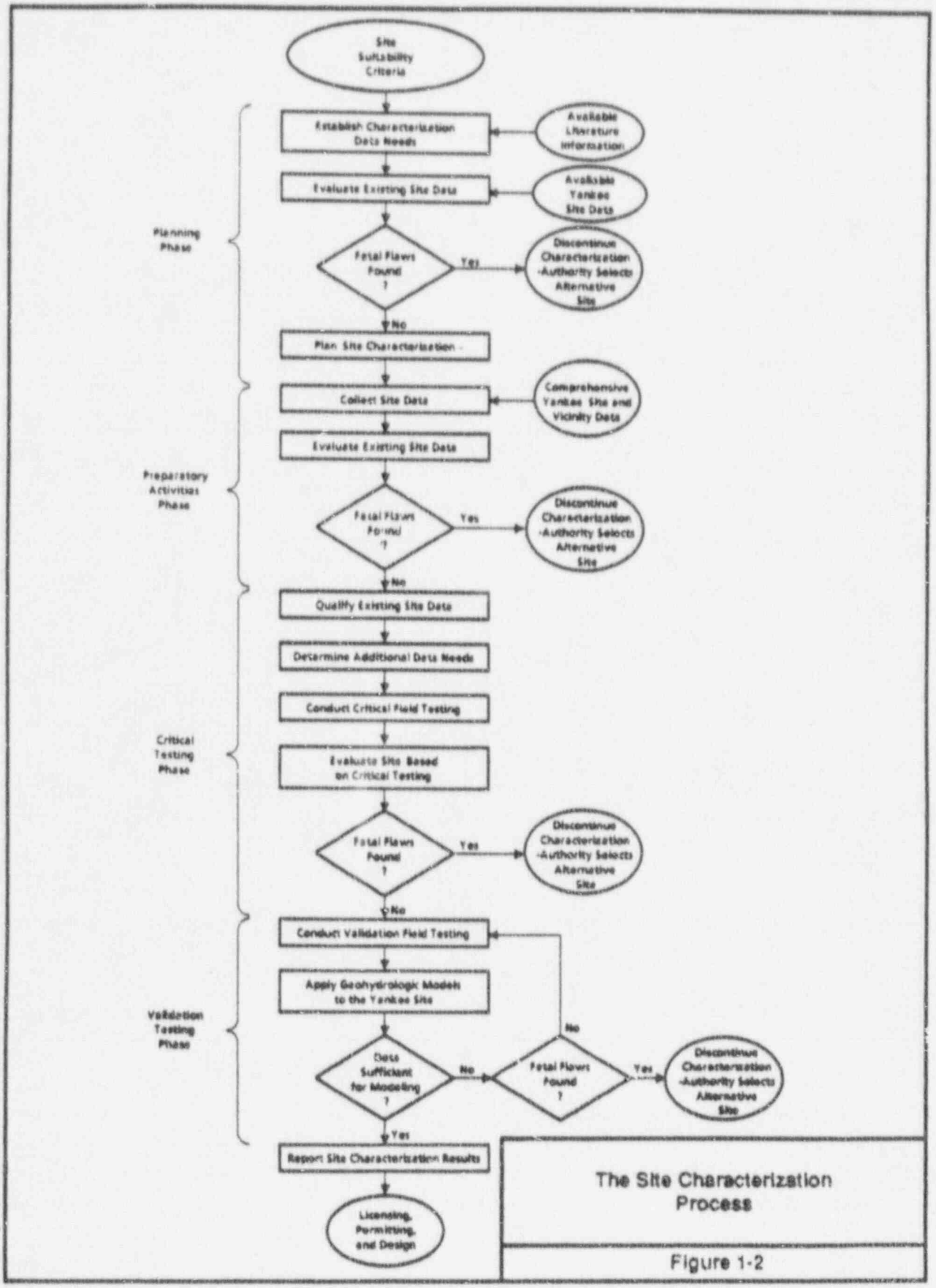

The Site Characterization Process

Figure 1-2

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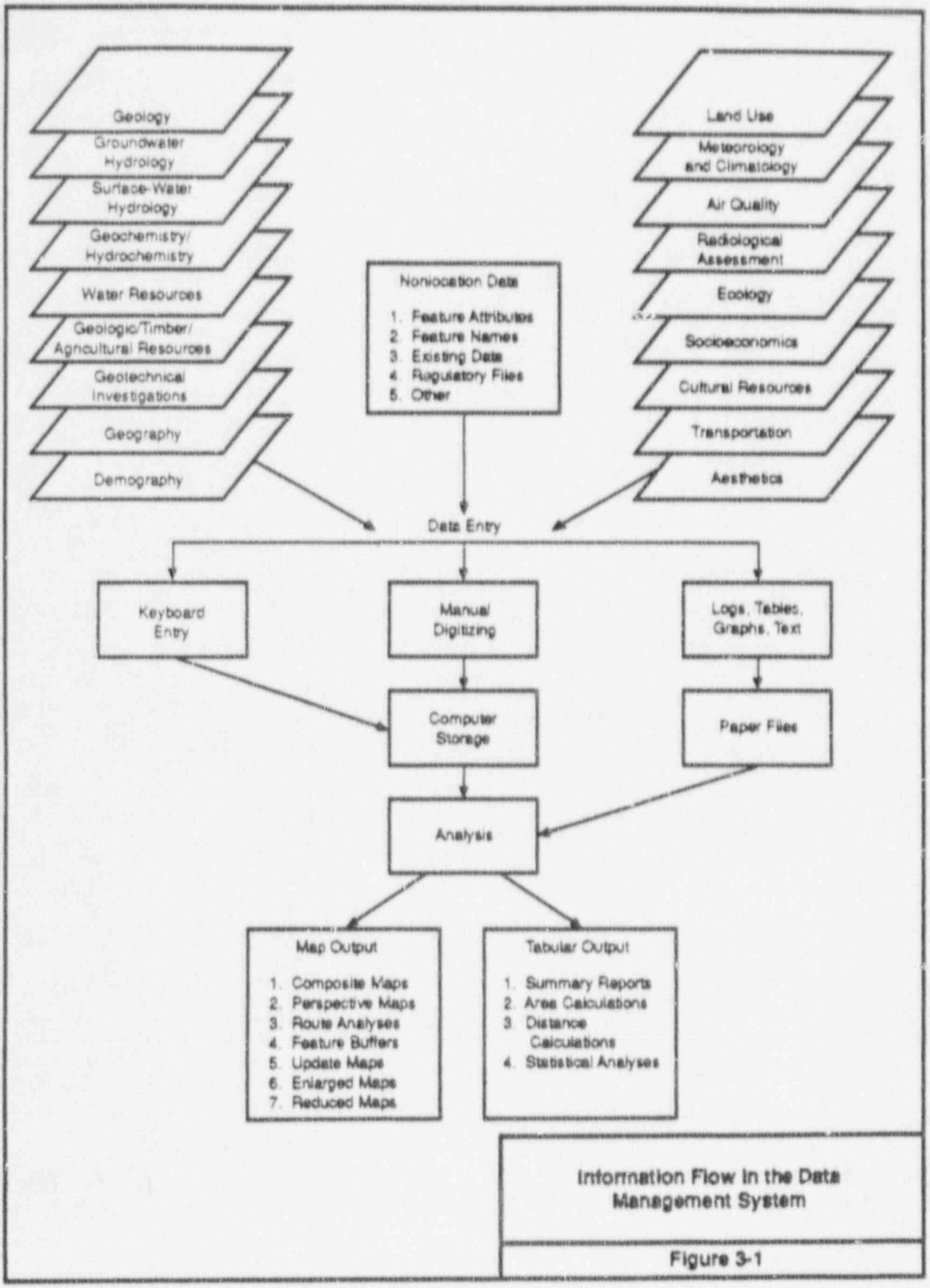

Information Flow in the Data Management System

Figure 3-1

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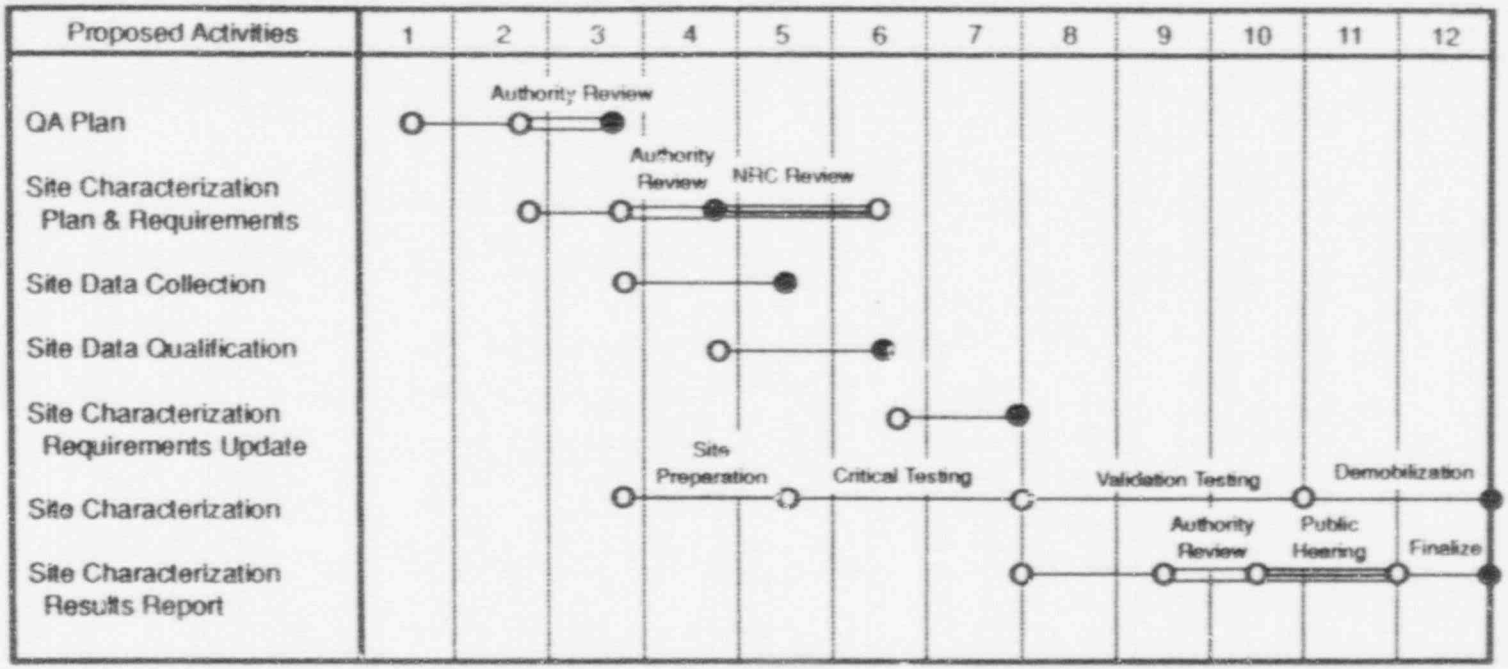

Preliminary Master Schedule for Site Characterization

Figure 3-2

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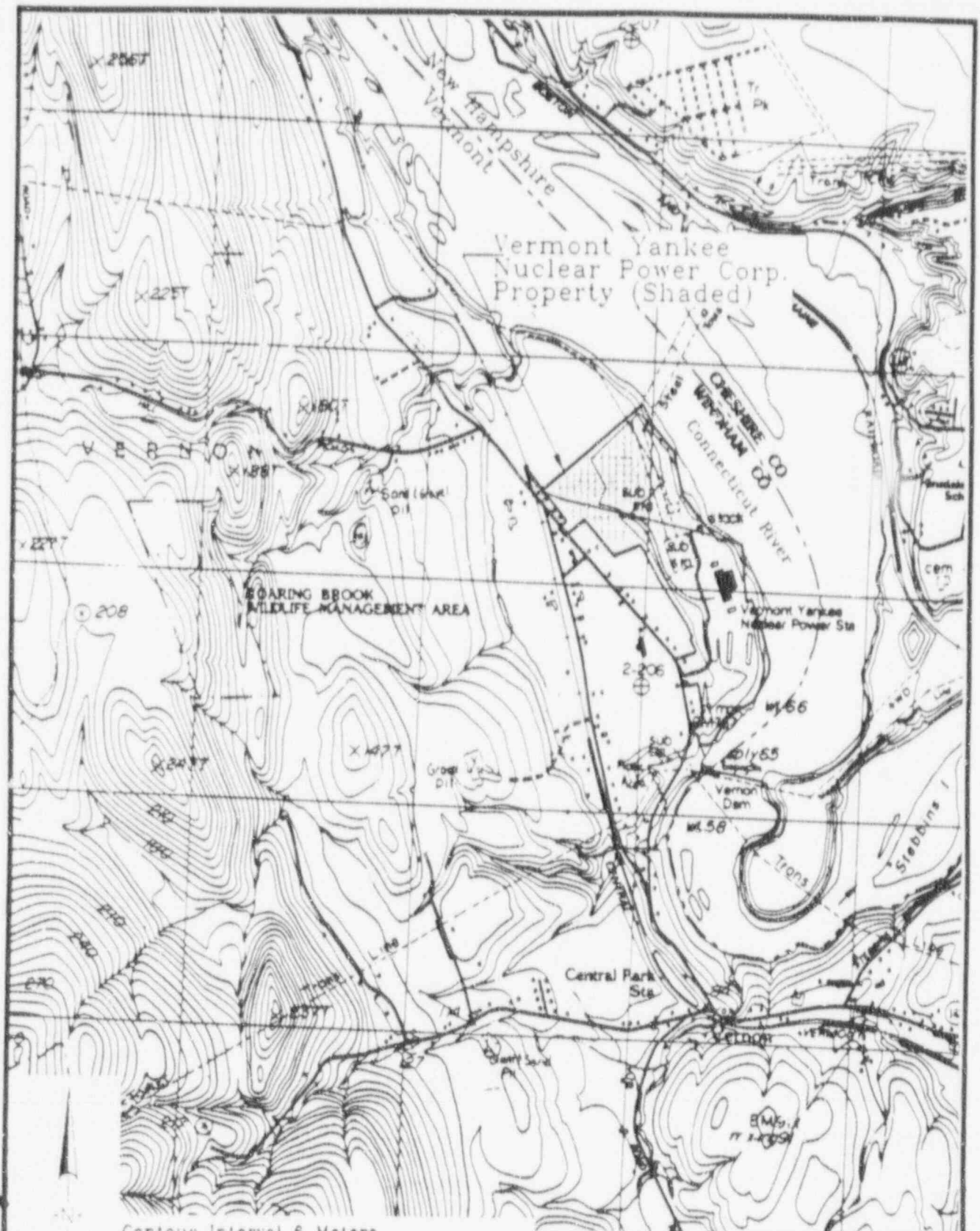

TOPOGRAPHIC MAP OF VYNPC PROPERTY AND SURROUNDING AREA

Figure 4-1

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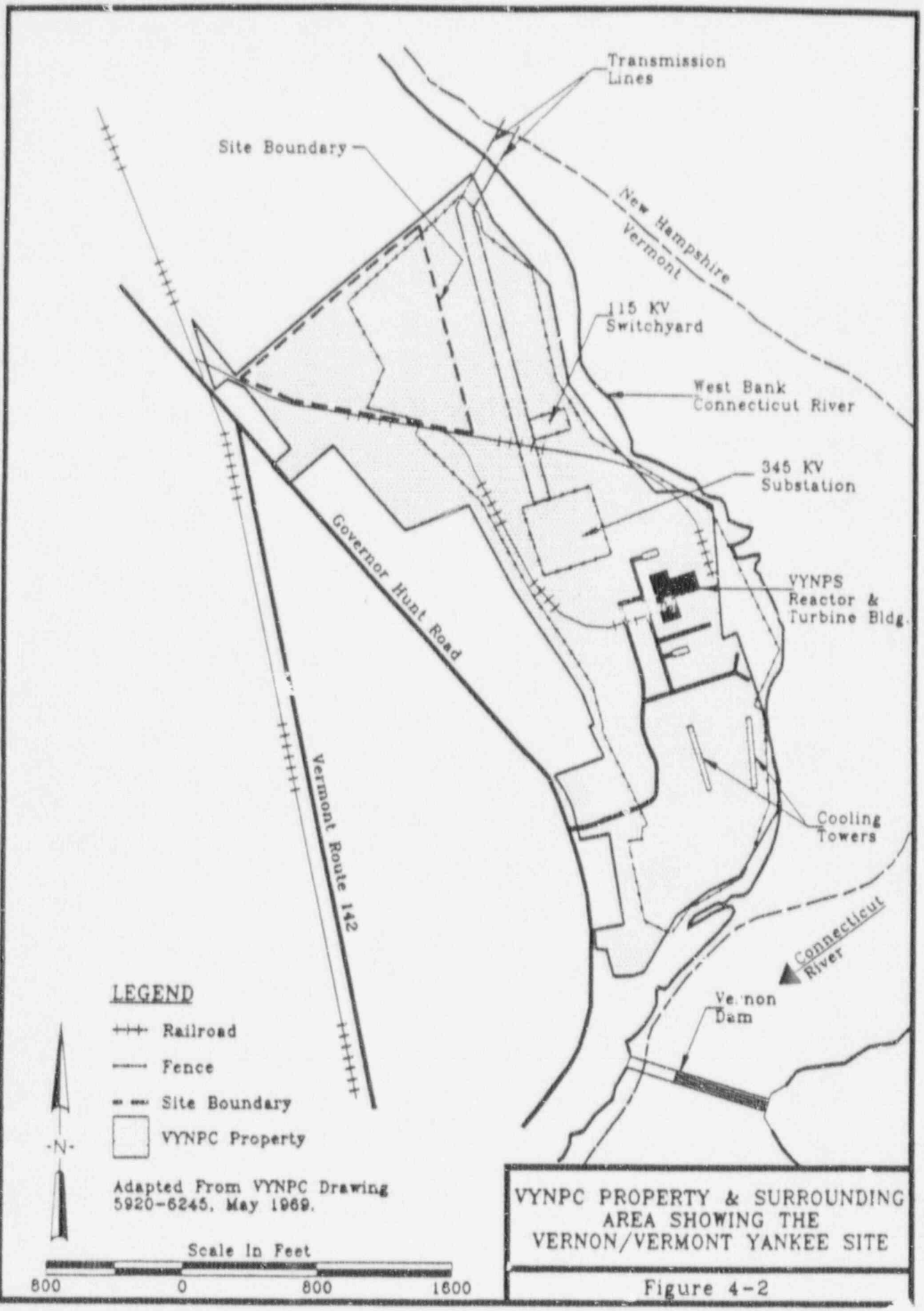

VYNPC PROPERTY & SURROUNDING AREA SHOWING THE VERNON/VERMONT YANKEE SITE

Figure 4-2

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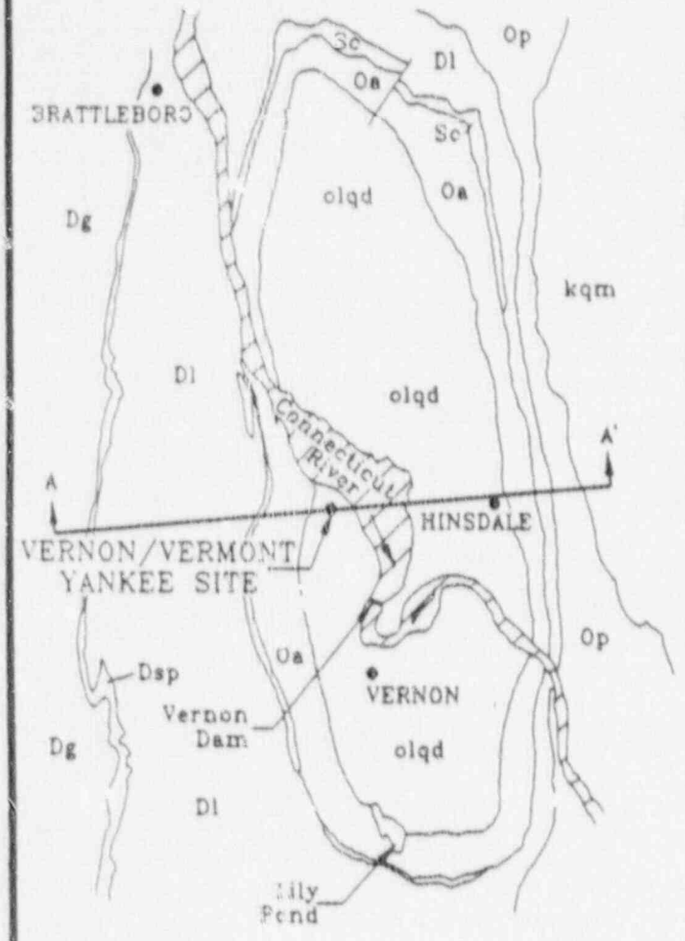
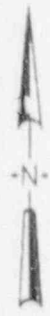


kqm	Kinsman Quartz Monzonite
olqd	Oliverian Plutonic Series Granodiorite, Quartz Diorite and Quartz Monzonite Gneiss
Dg	Gile Mountain Formation Phyllite and Quartzite
Dl	Littleton Formation Slate, Phyllite and Mica Schist. Includes Granodiorite
Dsp	Standing Pond Volcanics Amphibolite and Granulite
Sl	Fitch Formation Granulite and Granulitic Schist
Sc	Clough Quartzite
Op	Partridge Formation
Oa	Ammonoosuc Volcanics

See Figure 4-4 For Cross Section A-A'.



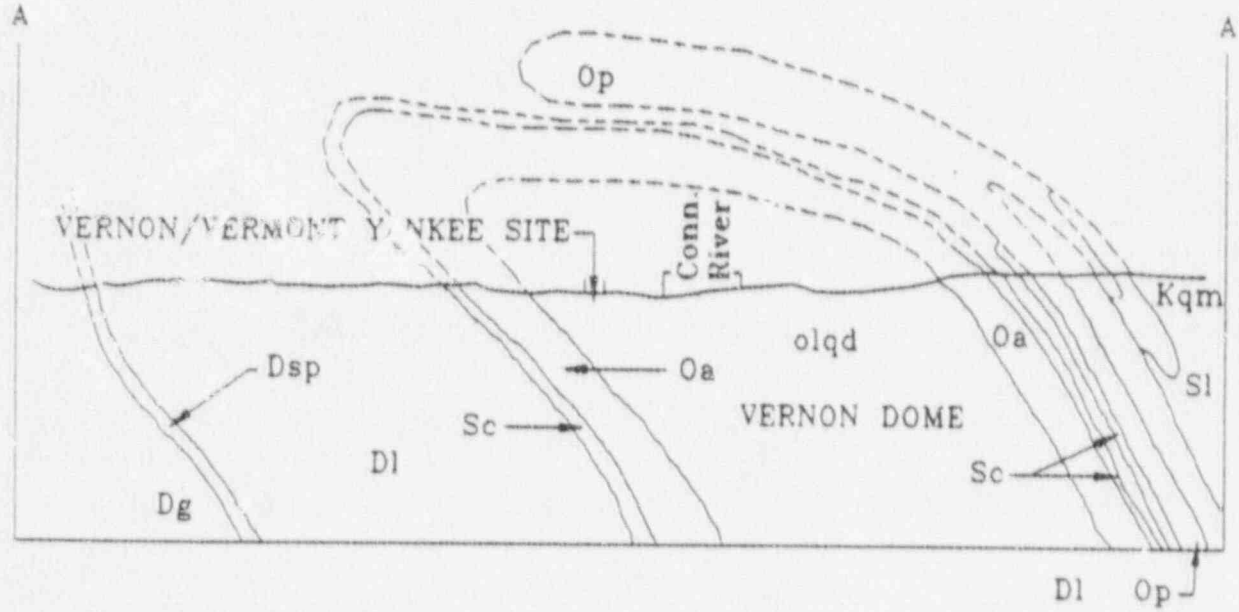
Scale In Miles

2 0 2 4

Adapted From VYNPC (1982).

MAP OF BEDROCK TYPES SURROUNDING THE SITE

Figure 4-3



See Figure 4-3 for explanation & location of cross section.

Vertical Scale In Feet

0 5000 10000

Horizontal Scale In Miles

0 1 2

Adapted from VYNPC (1982).

CROSS SECTION OF BEDROCK TYPES

Figure 4-4

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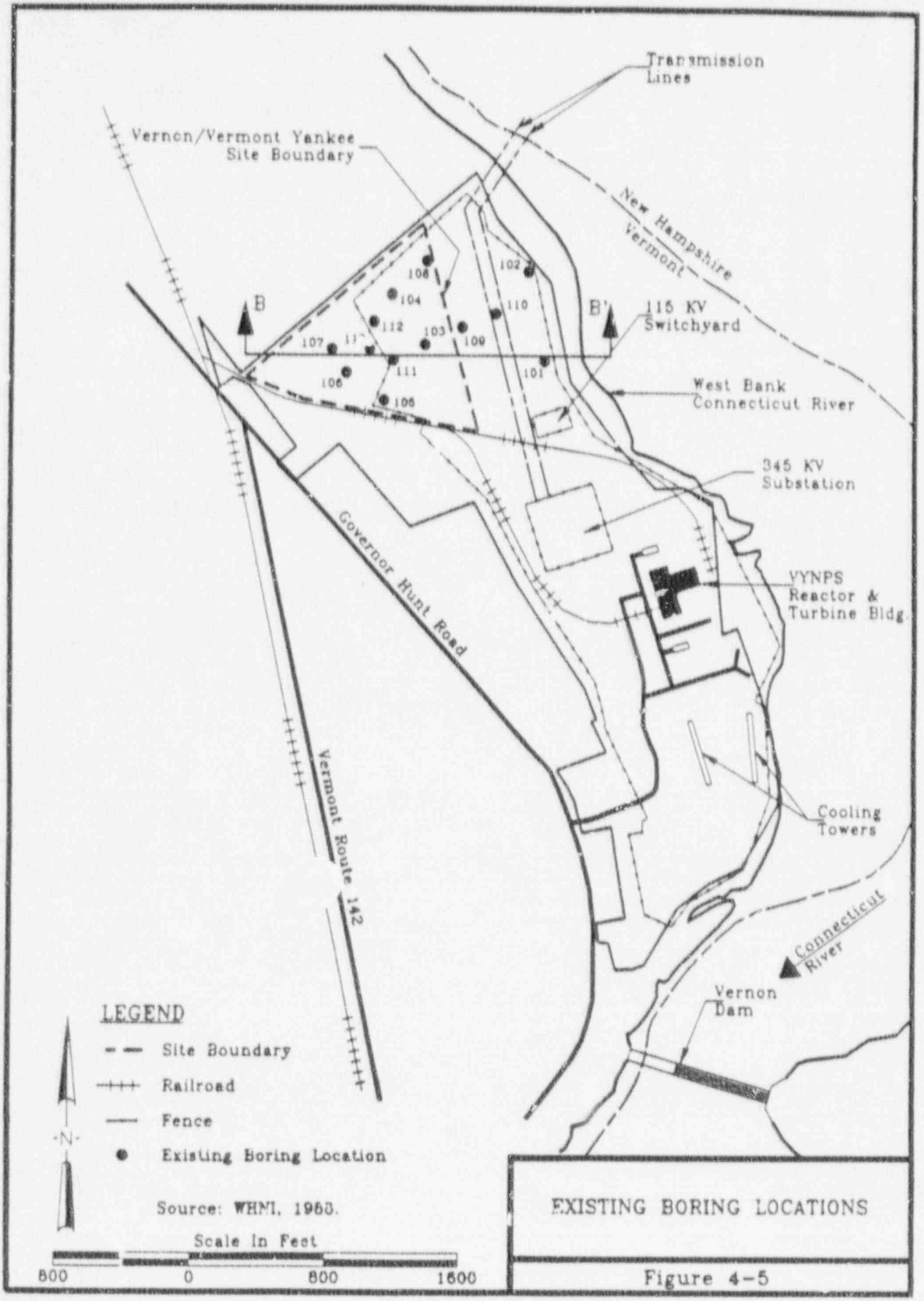

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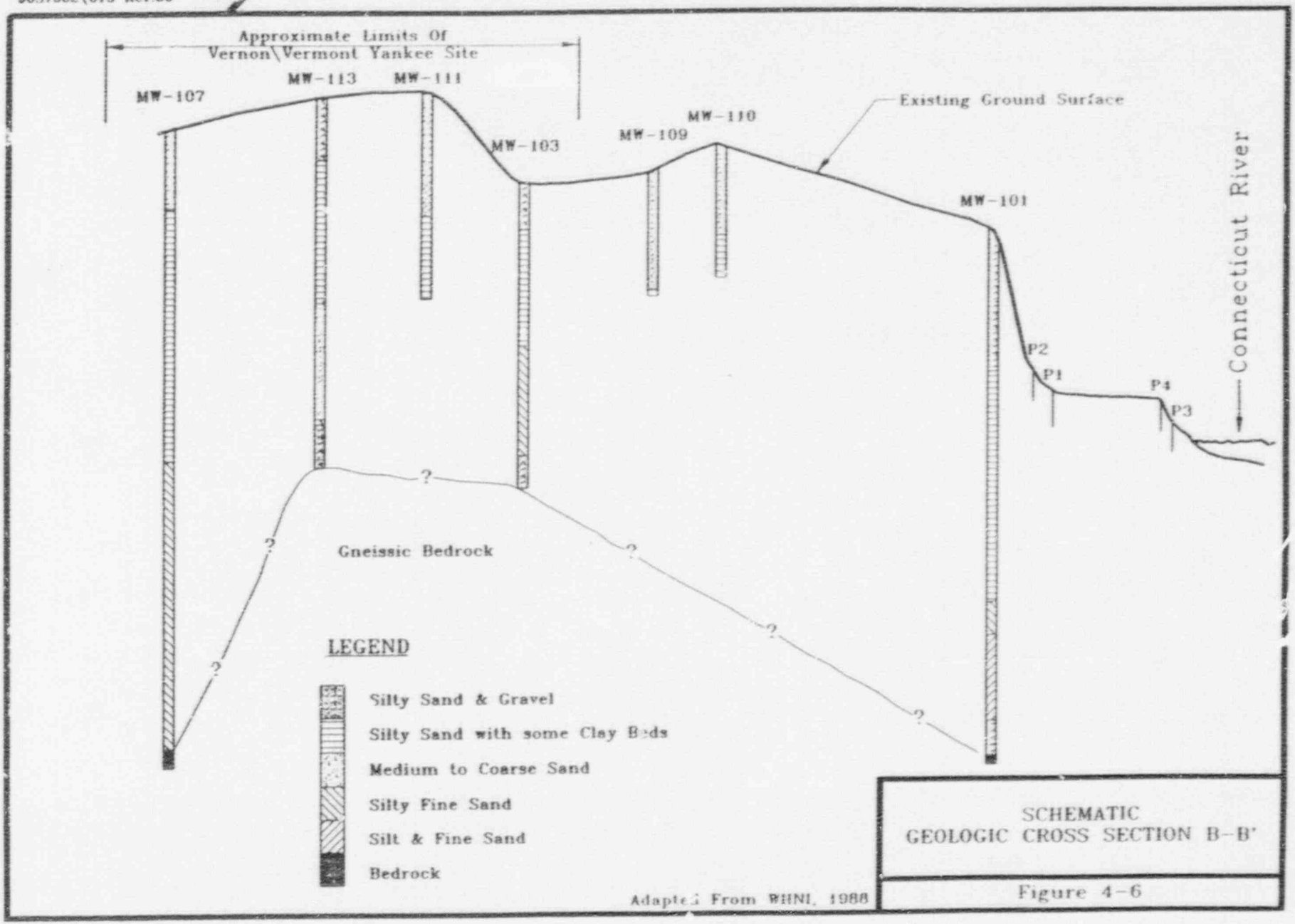
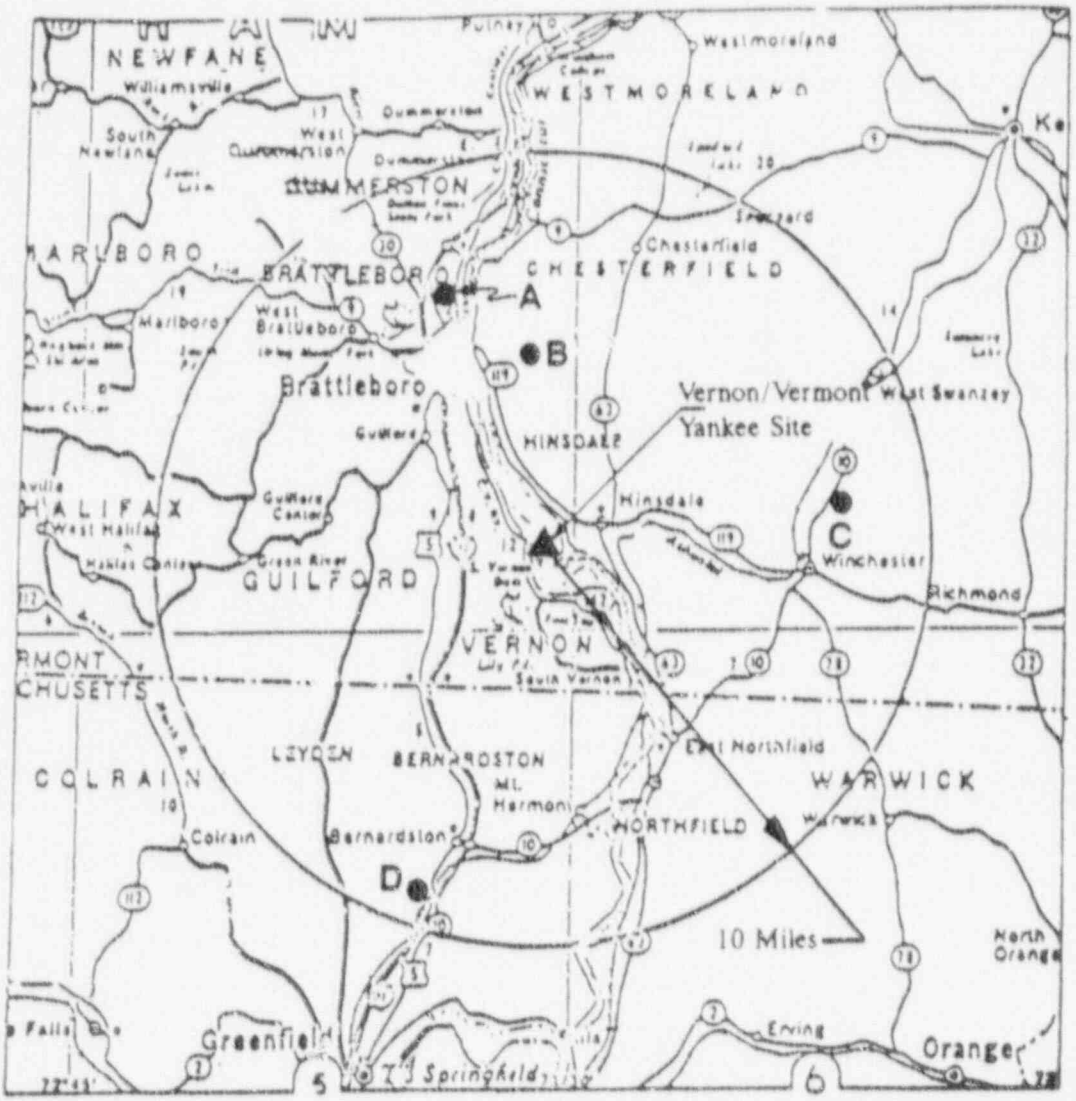


Adapted From WHNI, 1988

SCHEMATIC
GEOLOGIC CROSS SECTION B-B'

Figure 4-6



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A - Brattleboro, VT

B - Hinsdale, NH

C - Winchester, NH

D - Bernardston, MA

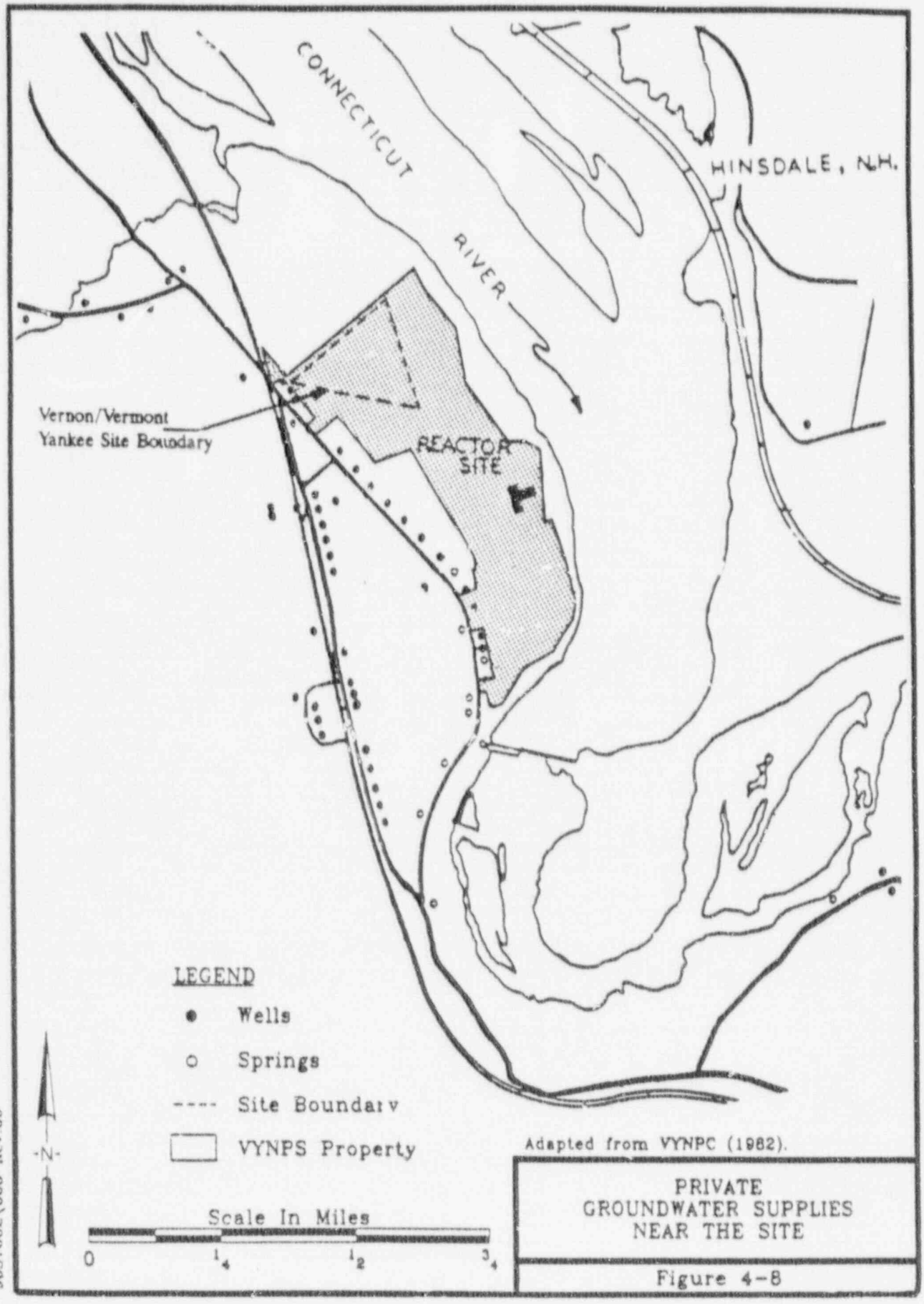
Scale In Miles

5 0 5 10

Adapted from VYNPC (1982)

PUBLIC
GROUNDWATER SUPPLIES
WITHIN A 10 MILE RADIUS

Figure 4-7



Adapted from VYNPC (1982).

PRIVATE
GROUNDWATER SUPPLIES
NEAR THE SITE

Figure 4-8

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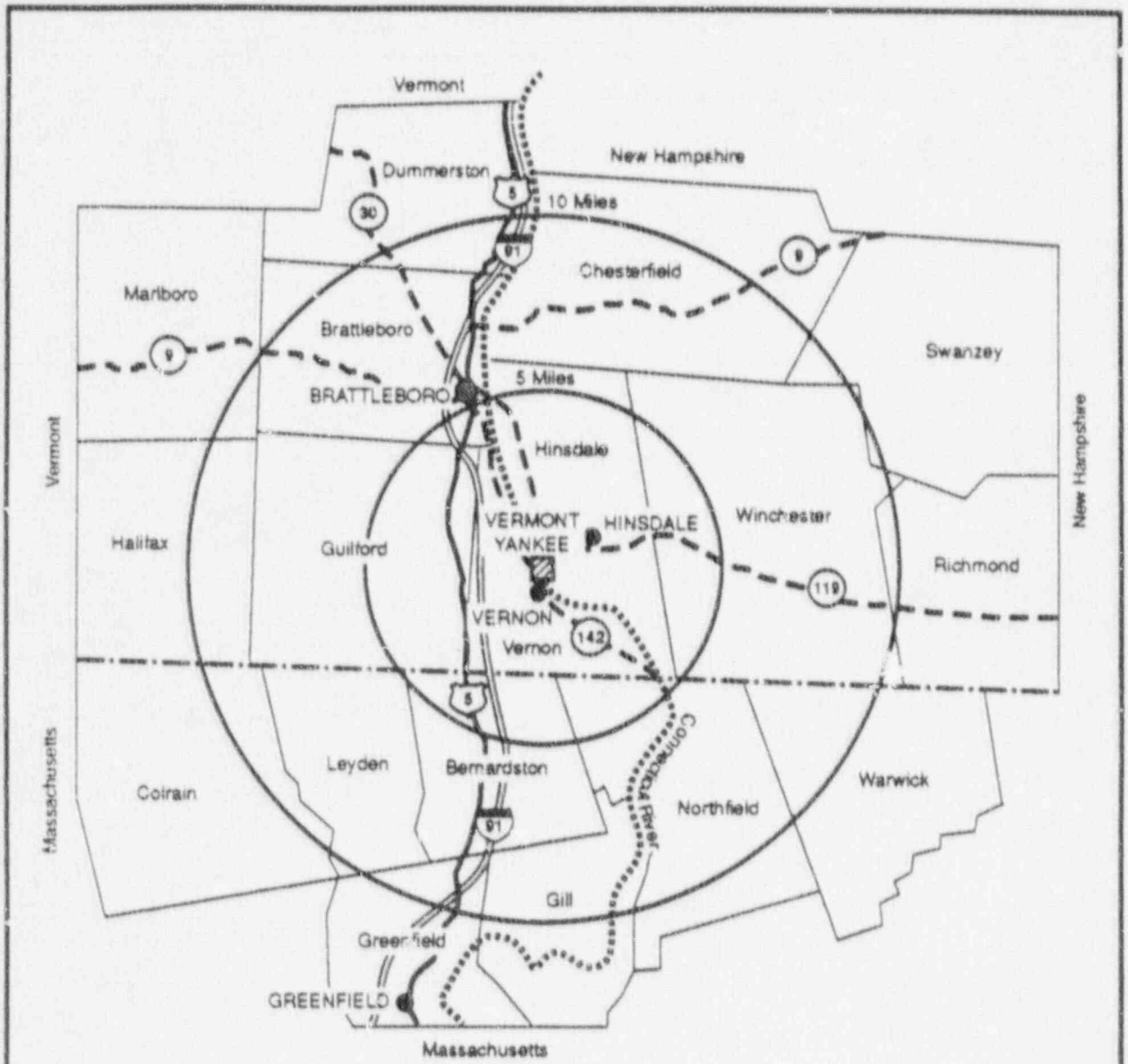

Towns in the 10-Mile Radius Surrounding the Vernon/Vermont Yankee Site

Figure 4-9

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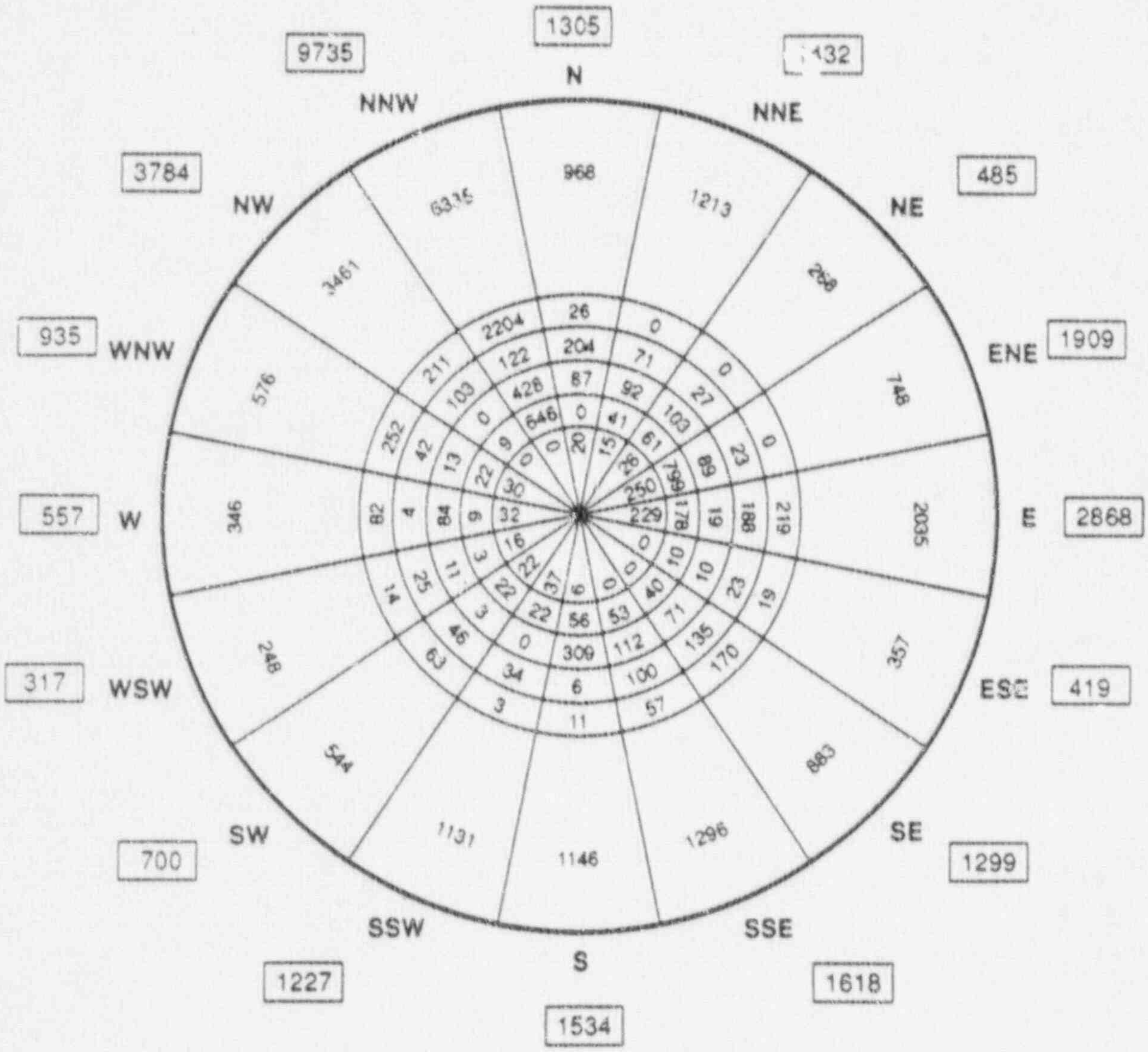

Ring Population Totals	
0 - 1 Mile	683
1 - 2 Miles	1971
2 - 3 Miles	1431
3 - 4 Miles	1153
4 - 5 Miles	3331
5 - 10 Miles	21,555

Cumulative Population Totals	
0 - 1 Mile	683
0 - 2 Miles	2654
0 - 3 Miles	4085
0 - 4 Miles	5238
0 - 5 Miles	8569
0 - 10 Miles	30,124

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1980 Resident Population Distribution Within 10 Miles of the Vernon/Vermont Yankee Site

Figure 4-10

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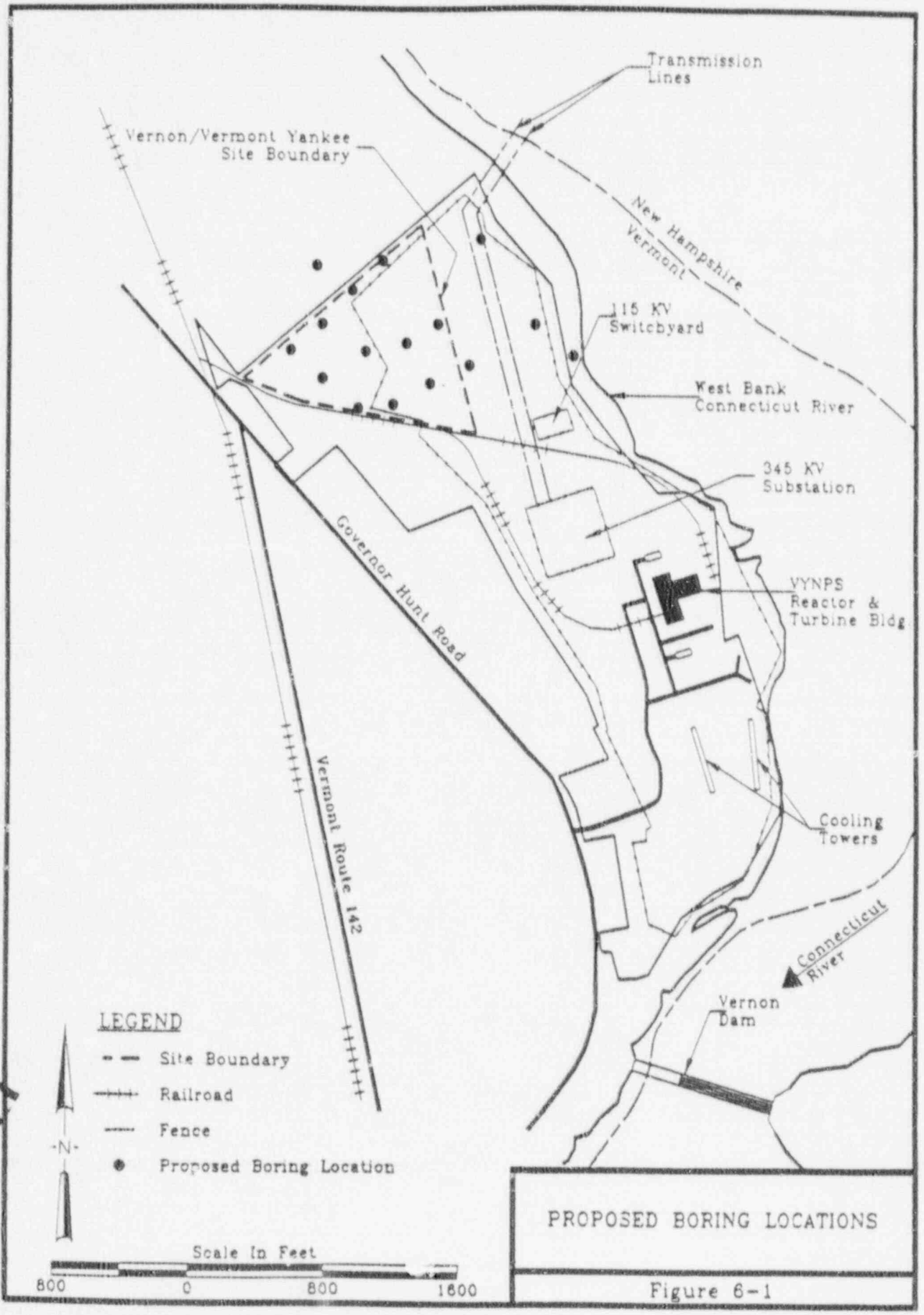

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PROPOSED BORING LOCATIONS

Figure 6-1