APPENDIX A

EFFLUENT, ON-SITE, AND OFF-SITE RADIOLOGICAL MONITORING PROGRAM 1984 IMPLEMENTATION

Table A-1

EFFLUENT AND ON-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I. D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Main plant ventilation exhaust stack **ANSTACK**	Release point for airborne radioactive exhaust Required by: DOE 5484.1, Tech Spec 5.1.2, 5.1.4, 4.1.1 Reported: Internal Monthly Summary Annual Effluent Report Annual Environmental Report	Continuous off-line air particulate monitor[a]	Continuous measurement of fixed filter, replaced weekly	104	Real time alpha and beta monitoring Filters for gross alpha/ beta
		Continuous off-line air particulate and iodine sampler[a]	Weekly collection of filter paper and charcoal absorber	104	Quarterly composites: filters for Sr-90, gamma isotopic; Charcoal for I-129
Lagoon 3 discharge Weir **WNSP001**	Primary point of liquid effluent batch release Required by: DOE 5484.1 Tech Spec 5.1.1 5.1.4, 4.2 SPDES Reported: NYSDEC Monthly DMR Annual Effluent Report Annual Environmental Report	Grab Liquid	Daily, during Lagoon 3 discharge	40-80	Daily: Gross beta, pH. Every sixth daily sample: gross alpha/ beta, H-3, Sr-90, gamma isotopic; 24 hour composite for metals, NH_3 Weighted monthly composite of daily samples, and 24 hour composite: gross alpha/ beta, H-3, Sr-90, I-129, gamma isotopic Quarterly weighted composite of daily samples: U isotopic, Pu isotopic

[a]Isokinetic sampling probe placed at the 80-foot level within the stack.

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Table A-1 (Cont'd)

EFFLUENT AND ON-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Erdman Brook at security fence **WNSP006**	Combined facility liquid discharge Required by: DOE 5484.1	Continuous proportional sample liquid	Monthly* (Composite of biweekly collections)	12	Gross alpha/beta, H-3 (Total Fe biweekly) Quarterly composite: gamma isotopic, Sr-90
	Reported: Internal Monthly Summary NYSDEC Monthly DMR Annual Environmental Report	Grab liquid	biweekly	26	NH_3,pH
Plant Effluent Interceptors **WNINTER**	Untreated liquid to LLWT plant input lagoon Required by: Tech Spec 4.2 Reported: Internal Review	Grab Liquid	Once per transfer	150-250	Quarterly composite: gross alpha/beta, H-3, Sr-90
(33) Onsite Ground water (wells) **WNWNF-series** **WNW80-series** **WNW82-series**	Ground water monitoring wells around site facilities Required by: DOE 5484.1 Reported: Annual Environmental Report	Grab liquid	Semiannual*	66	Gross alpha/beta, H-3, pH

*Samples to be split (shared with NYSDOH)

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Table A-1 (Cont'd)

EFFLUENT AND ON-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I. D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Sanitary Waste Discharge **WNSP004**	Liquid effluent point for sewage treatment plant Required by: DOE 5484.1 SPDES Reported: NYSDEC Monthly DMR Annual Effluent Report Annual Environmental Report	Grab liquid	Weekly	52	Gross beta, pH, settleable solids Monthly composite: gross alpha/beta, H-3, and Sr-90 Quarterly composite: BOD, suspended solids Gross alpha/beta, H-3, gamma isotopic Sr-90, I-129
			Semiannually	2	
N.E. Swamp drainage **WNSWAMP**	Site surface drainage Required by: DOE 5484.1 Reported: Annual Effluent Report	Grab liquid	Weekly	52	H-3
			Monthly*		Gross alpha/beta, H-3

*Samples to be split (shared with NYSDOH)

Table A-1 (Cont'd)

EFFLUENT AND ON-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
French Drain **WNFRDRN**	Drains subsurface water from LLWT lagoon area	Grab liquid	Weekly	52	H-3
	Required by: DOE 5484.1				
	Reported: Annual Effluent Report		Monthly	12	Gross alpha/beta
Franks Creek E of NYSLLWB **WNFRC67**	Drains NYS Low Level Waste Burial area	Grab liquid	Monthly	12	Gross alpha/beta, H-3
	Required by: DOE 5484.1		Weekly*		
	Reported: Internal review NYSERDA				
Erdman Brook N of burial areas **WNERB53**	Drains NYS and WVDP disposal areas	Grab liquid	Weekly*	52	Gross alpha/beta, H-3
	Required by: DOE 5484.1				
	Reported: Internal Review NYSERDA				

*Samples to be split (shared with NYSDOH).

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Table A-1 (Cont'd)

EFFLUENT AND ON-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Ditch N of WVDP NDA **WNHULLB**	Drains WVDP disposal area Required by: DOE 5484.1 Reported: Internal Review	Grab liquid	Weekly (when flowing)	30	Gross beta and H-3
Cooling water pipe **WNSFILT**	Discharges sand filter backwash liquid Required by: DOE 5484.1 Reported by: Internal Review	Grab liquid	Monthly	12	Gross beta
Condensate Pipe **WNCONDP**	Discharges drainage water from utility ditch[b] Required by: DOE 5484.1 Reported: Internal Review	Grab liquid	Monthly	12	Gross beta

*Samples to be split (shared with NYSDOH)

[b]Utility ditch drains steam condensate from traps along the side of the utility room.

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Table A-1 (Cont'd)

EFFLUENT AND ON-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I. D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Condensate and Cooling Water Ditch **WNSP005**	Combined drainage from pipes and settling ponds Required by: DOE 5484.1 SPDES Reported: Internal Review NYSDEC Monthly DMR	Grab liquid	Monthly	12 12	Gross beta Suspended solids, pH on 24 hr. composite
Settling Basin Outfall **WNSETLB**	Drains settling basins that receive discharge water from demineralizer backwash Required by: DOE5484.1 Reported: Internal Review	Grab liquid	Monthly	12	Gross alpha/beta, H-3
Cooling Tower Basin **WNCOOLW**	Cools plant utility steam system water Required by: DOE 5484.1 Reported: Internal Review	Grab liquid	Weekly	52	Gross beta

*Samples to be split (shared with NYSDOH)

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Table A-1 (Cont'd)

EFFLUENT AND ON-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
(9) Onsite Standing water (ponds not receiving effluent) **WNSTAW-series**	Water within vicinity of plant airborne or ground water effluents Required by: DOE 5484.1 Reported: Internal Review	Grab liquid	Annually	9	Gross alpha/beta, H-3, pH
Site Potable Water **WNDRNKW**	Source of water within site perimeter Required by: DOE 5484.1 Reported: Internal Review	Grab liquid	Monthly	12	Gross alpha/beta, H-3

Table A-2

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Cattaraugus Creek at Felton Bridge location **WFFELBR**	Unrestricted surface waters receiving plant effluents Required by: DOE 5484.1 Tech Spec 5.1.1, 5.1.4 Reported: Internal Monthly Summary Annual Environmental Report	Flow weighted continuous liquid	Weekly*	52	Weekly for gross alpha/beta, H-3; Monthly composite for gamma isotopic and Sr-90

*Samples to be split (shared with NYSDOH)

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Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Cattaraugus Creek upstream of Buttermilk Creek confluence at Bigelow Bridge **WFBIGBR**	Unrestricted surface water background Required by: DOE 5484.1 Reported: Annual Environmental Report	Grab liquid	Monthly	12	Gross alpha/beta, H-3
Buttermilk Creek, just upstream of Cattaraugus Creek confluence at Thomas Corners Road **WFBCTCB**	Restricted surface waters receiving plant effluents Required by: DOE 5484.1 Tech Spec 5.1.4 Reported: Annual Environmental Report	Composite continuous liquid	Biweeky	26	Monthly for gross alpha/beta, H-3; Quarterly composite for gamma isotopic and Sr-90
Buttermilk Creek control location near Fox Valley **WFBCBKG**	Restricted surface water background Required by: DOE 5484.1 Reported: Internal Monthly Summary Annual Environmental Report	Composite continuous liquid	Biweekly	26	Monthly for gross alpha/beta, H-3; Quarterly composite for gamma isotopic and SR-90

Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Wells near WVDP outside WNYNSC Perimeter 3.0 Km WNW **WFWEL01** 1.5 Km NW **WFWEL02** 4.0 Km NW **WFWEL03** 3.0 Km NW **WFWEL04** 2.5 Km SW **WFWEL05** 11.0 Km SSW **WFWEL06** 4.0 Km NNE **WFWEL07** 2.5 Km ENE **WFWEL08** 3.0 Km SE **WFWEL09** 7.0 Km N **WFWEL10**	Drinking supply ground water near facility. Required by: DOE 5484.1 Reported: Annual Environmental Report	Grab liquid	Biennially	10 (year of collection)	Gross alpha/beta, H-3, gamma isotopic

Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
3.0 Km SSE at Fox Valley **AFFXVRD** 3.7 Km NNW at Thomas Corners Road **AFTCORD** 2.0 Km NE of Route 240 **AFRT240** 1.5 Km NW on Rock Springs Road (added in 1984) **AFRSPRD** 29 Km S at Great Valley (background added in 1984) **AFGRVAL** 7 Km at Springville (added in 1984) **AFSPRVL** 6 Km SSE at West Valley (added in 1984) **AFWEVAL**	Particulate air samples around WNYNSC perimeter Required by: DOE 5484.1 Tech Spec 5.4.1 Reported: Annual Environmental Report	Continuous air particulate	Weekly	364	Weekly (each filter) gross alpha/beta Quarterly: (Each station) composite filters for Sr-90, gamma isotopic.

Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES RFORMED/ COMPOSITE FREQUENCY
2.5 Km Sw **AFDHFOP** 3.0 Km SSE **AFFXFOP** 3.7 Km NNW **AFTCFOP** 2.0 Km NE **AF24FOP**	Fallout particulate and fluid collection around WNYNSC perimeter Required by: DOE 5484.1 Reported: Annual Environmental Report	Integrating liquid	Monthly	48	Gross alpha/beta, H-3
(7) Surface soil (at each air particulate sampler) 47 Km W at Dunkirk 26 Km SSW at Little Valley **SF-series**	Long-term fallout accumulation Required by: DOE 5484.1 Reported: Annual Environmental Report	Surface plug composite soil	Triennially*	9 (year of collection)	Gamma isotopic, Sr-90, and Pu

*Samples to be split (shared with NYSDOH)

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Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Buttermilk Creek at Thomas Corners Road **SFTCSED** Buttermilk Creek at Fox Valley Road (background)* **SFBCSED** Cattaraugus Creek at Felton Bridge **SFCCSED** Cattaraugus Creek at Springville Dam* **SFSDSED** Cattaraugus Creek at Bigelow Bridge (background) **SFBISED**	Deposition in sediment downstream of facility effluents Required by: DOE 5484.1 Tech Spec 5.1.4 Reported: Annual Environmental Report	Grab steam sediment	Semiannually * (split two only)	10	Gross alpha/beta, isotopic gamma and Sr-90

*Samples to be split (shared with NYSDOH)

Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Cattaraugus Creek downstream of the Buttermilk Creek confluence **BFFCATC** Control sample from nearby stream not affected by WVDP (7 Km or more upstream of site effluent point) **BFFCTRL**	Fish in waters downstream of facility effluents Required by: DOE 5484.1 Tech Spec 5.1.4 Reported: Annual Environmental Report	Individual collection, biological	Semiannually*	36 (each sample point is 9 fish)	Isotopic gamma and Sr-90 in edible portions; Sr-90 in skeleton (down stream only)

*Samples to be split (shared with NYSDOH)

Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Dairy farm, 3.8* Km NNW **BFMREED**	Milk from animals foraging around facility perimeter	Grab biological	Monthly* (BFMREED)	12	Gamma isotopic, Sr-90, and I-129 on annual samples and quarterly composites of monthly samples
Dairy farm, 2.5* Km ENE **BFMZIMM**	Required by: DOE 5484.1 Tech Spec 5.1.4		Annual (others)* (split 2 only)	3	
Dairy farm, 1.9 Km WNW **BFMCOHO**	Reported: Annual Environmental Report				
Control location* (central NY State sample to be provided by NYSDOH) **BFMCTRL**					

*Samples to be split (shared with NYSDOH)

Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
(3) Nearby downwind location **BFVNEAR** (3) Remote locations (16 Km or more from facility) **BFVCTRL**	Fruit and vegetables grown near facility perimeter Required by: DOE 5484.1 Reported: Annual Environmental Report	Grab Biological	Annually,* at harvest	6	Gamma isotopic and Sr-90 analyses of edible portions
Beef animal from nearby farm in downwind direction **BFBNEAR** Beef animal from control location (16 Km or more from facility) **BFBCTRL**	Meet-Beef foraging near facility perimeter Required by: DOE 5484.1 Reported: Annual Environmental Report	Grab biological	Semiannually*	4	Gamma isotopic analysis of meat.

*Samples to be split (shared with NYSDOH)

Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
In vicinity of the site **BFDNEAR** Control animal (16 Km or more from facility) **BFDCTRL**	Meat-Deer foraging near facility perimeter Required by: DOE 5484.1 Tech Spec 5.1.4 Reported: Annual Environmental Report	Individual collection biological	Annually, during hunting season* During year as available*	2	Gamma isotopic analyses of meat

*Samples to be split (shared with NYSDOH)

Table A-2 (Cont'd)

OFF-SITE RADIOLOGICAL MONITORING PROGRAM
1984 IMPLEMENTATION

SAMPLE LOCATION AND I.D. CODE	MONITORING/REPORTING REQUIREMENTS	SAMPLING TYPE/MEDIUM	COLLECTION FREQUENCY	TOTAL ANNUAL SAMPLES	ANALYSES PERFORMED/ COMPOSITE FREQUENCY
Thermoluminescent Dosimetry (TLD) (16) at each of 16 compass sectors, at nearest accessible perimeter point (2) at corners of NYS LLW burial area 1500 m NW (nearest downwind receptor) "5 Points" landfill, 19 Km SW (background) Great Valley, 29 Km S (background added in 1984) Springville 7 Km N (added in 1984) West Valley 6 Km SSE (added in 1984) **DFTLD-series**	Direct Radiation around facility Required by: DOE 5484.1 Tech Spec 5.1.4 Reported: Annual Environmental Report	Integrating LiF TLD	Quarterly* (data shared from overlap locations)	92	Quarterly gamma dose

*Samples to be split (shared with NYSDOH)

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LOCATION OF EFFLUENT
RADIOLOGICAL MONITORING POINTS ONSITE

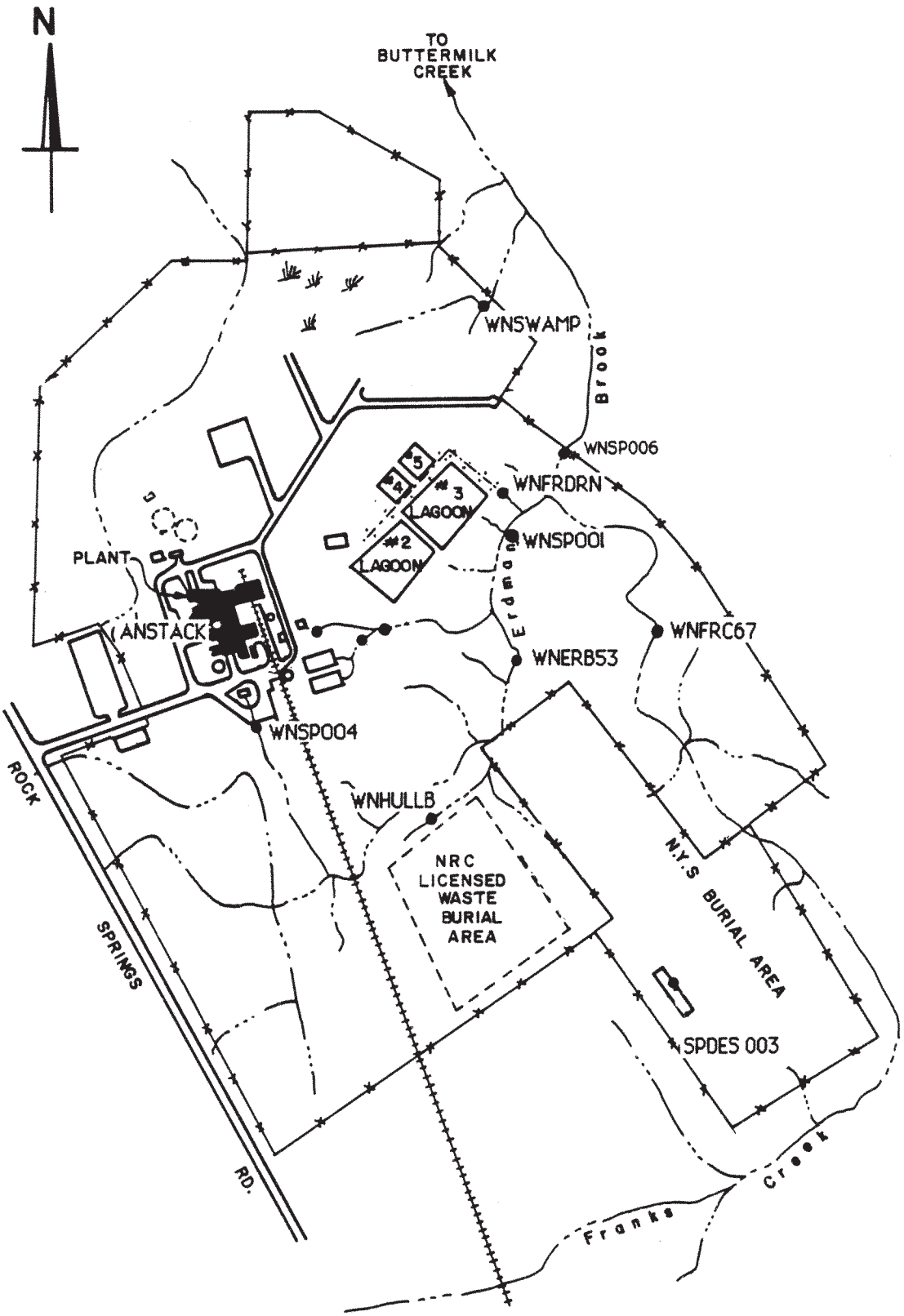


FIGURE A-1

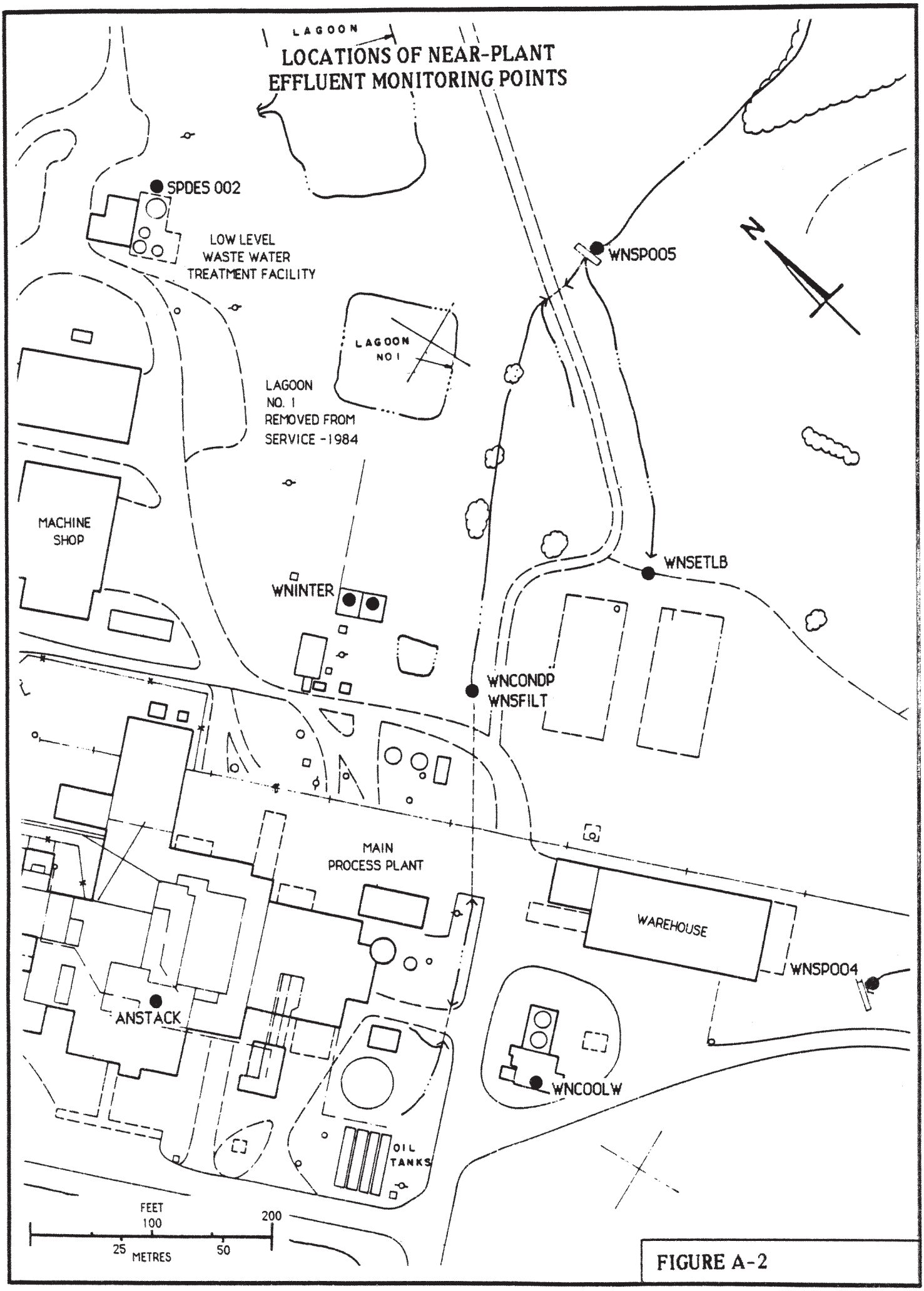
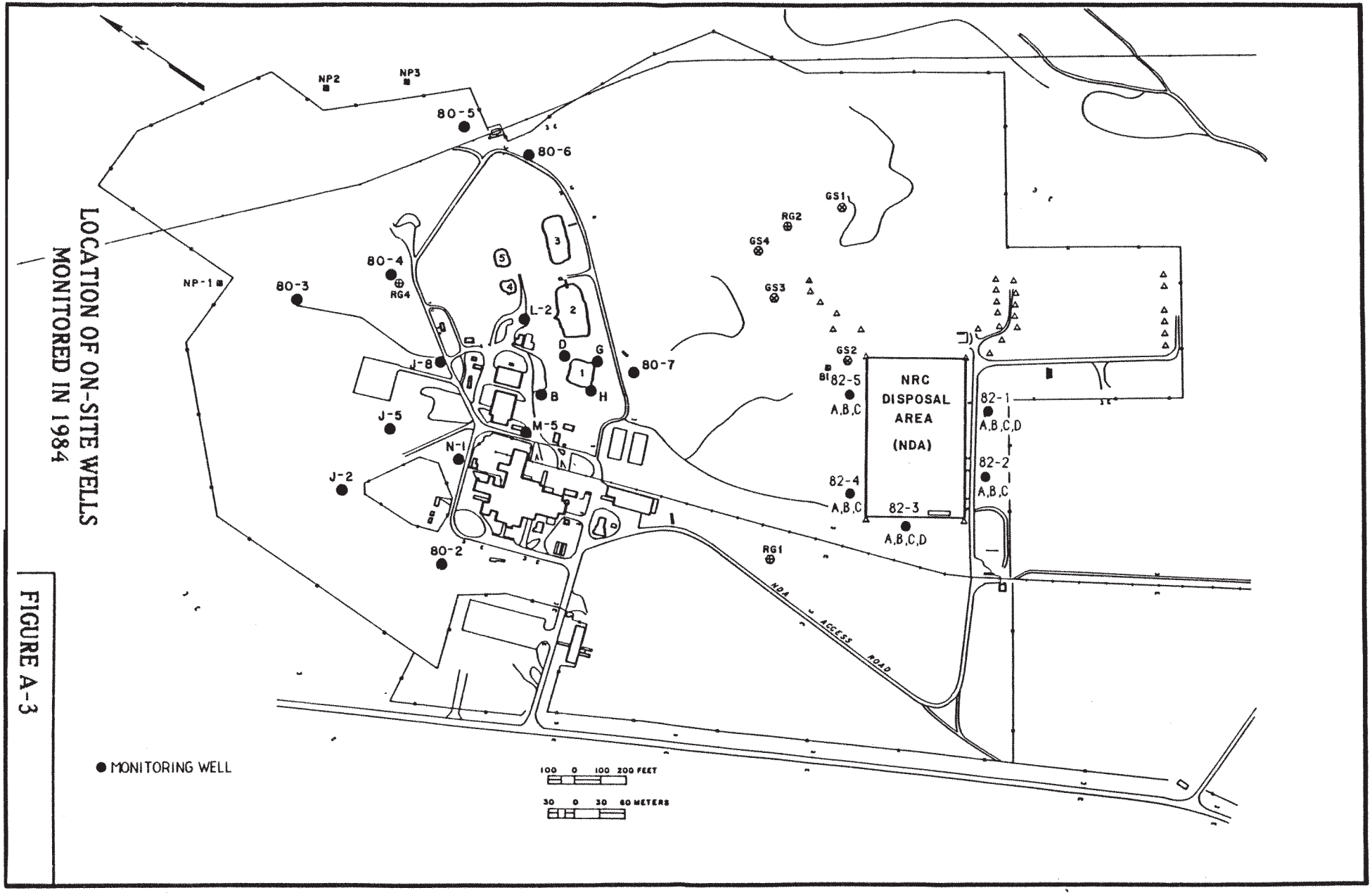
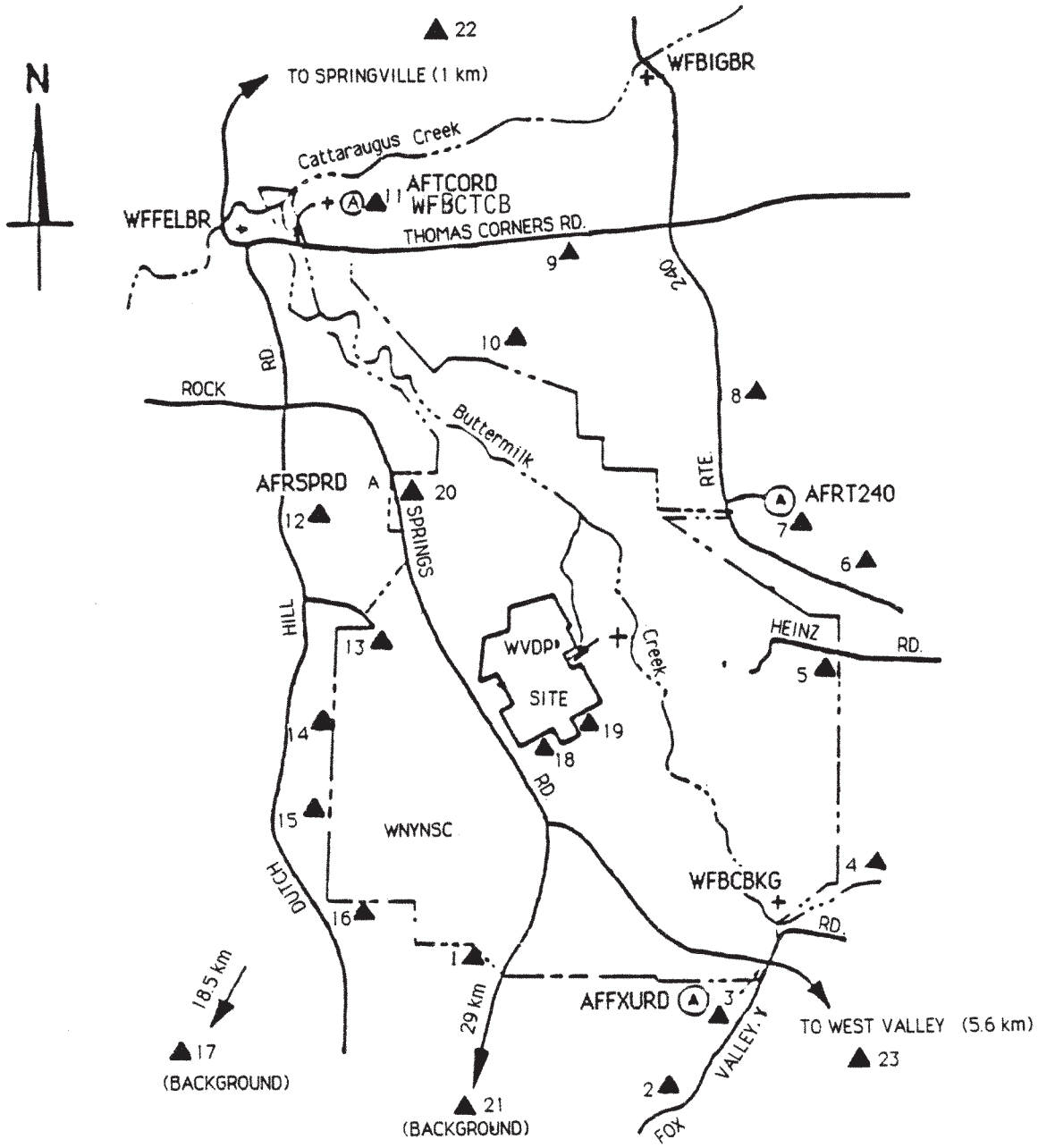

LAGOON
LOCATIONS OF NEAR-PLANT
EFFLUENT MONITORING POINTS
SPDES 002
LOW LEVEL
WASTE WATER
TREATMENT FACILITY
LAGOON
NO 1
LAGOON
NO. 1
REMOVED FROM
SERVICE -1984
WNSP005
N
MACHINE
SHOP
WNINTER
WNSETLB
WNCONDP
WNSFILT
MAIN
PROCESS PLANT
WAREHOUSE
WNSP004
ANSTACK
WNCOOLW
OIL
TANKS
FEET
100
200
25
METRES
50

FIGURE A-2


LOCATION OF ON-SITE WELLS
MONITORED IN 1984
FIGURE A-3
NP2
NP3
NP-1
80-5
80-6
80-7
80-4
RG4
80-3
L-2
J-8
J-5
J-2
M-5
N-1
80-2
B
D
G
H
GS1
RG2
GS4
GS3
GS2
B1
82-5
A,B,C
NRC
DISPOSAL
AREA
(NDA)
82-1
A,B,C,D
82-2
A,B,C
82-4
A,B,C
82-3
A,B,C,D
RG1
NDA ACCESS ROAD
MONITORING WELL
100 0 100 200 FEET
30 0 30 60 METERS

LOCATIONS OF PERIMETER ENVIRONMENTAL MONITORING STATIONS



LEGEND

- (A) - AIR SAMPLER
- \+ - CREEK SAMPLE POINT
- ▲4 - (NUMBERED) PERIMETER RADIATION DOSIMETERS. (DFTLD SERIES)
- WNYNSC BOUNDARY
- PROJECT SITE BOUNDARY

SCALE - KILOMETERS

0 1 2

FIGURE A-4

NEARSITE DRINKING WATER AND BIOLOGICAL SAMPLE POINTS-1984

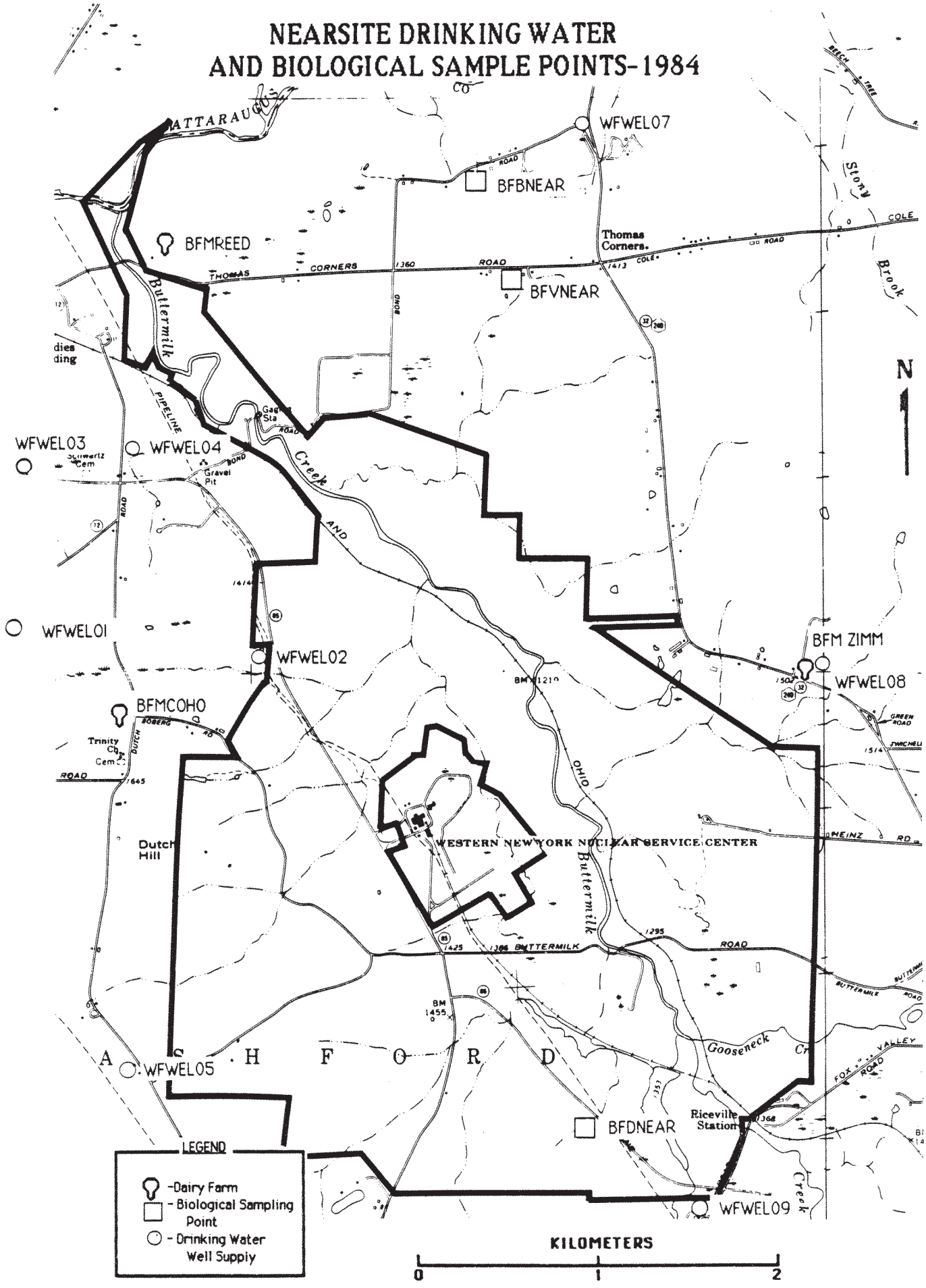


FIGURE A-5

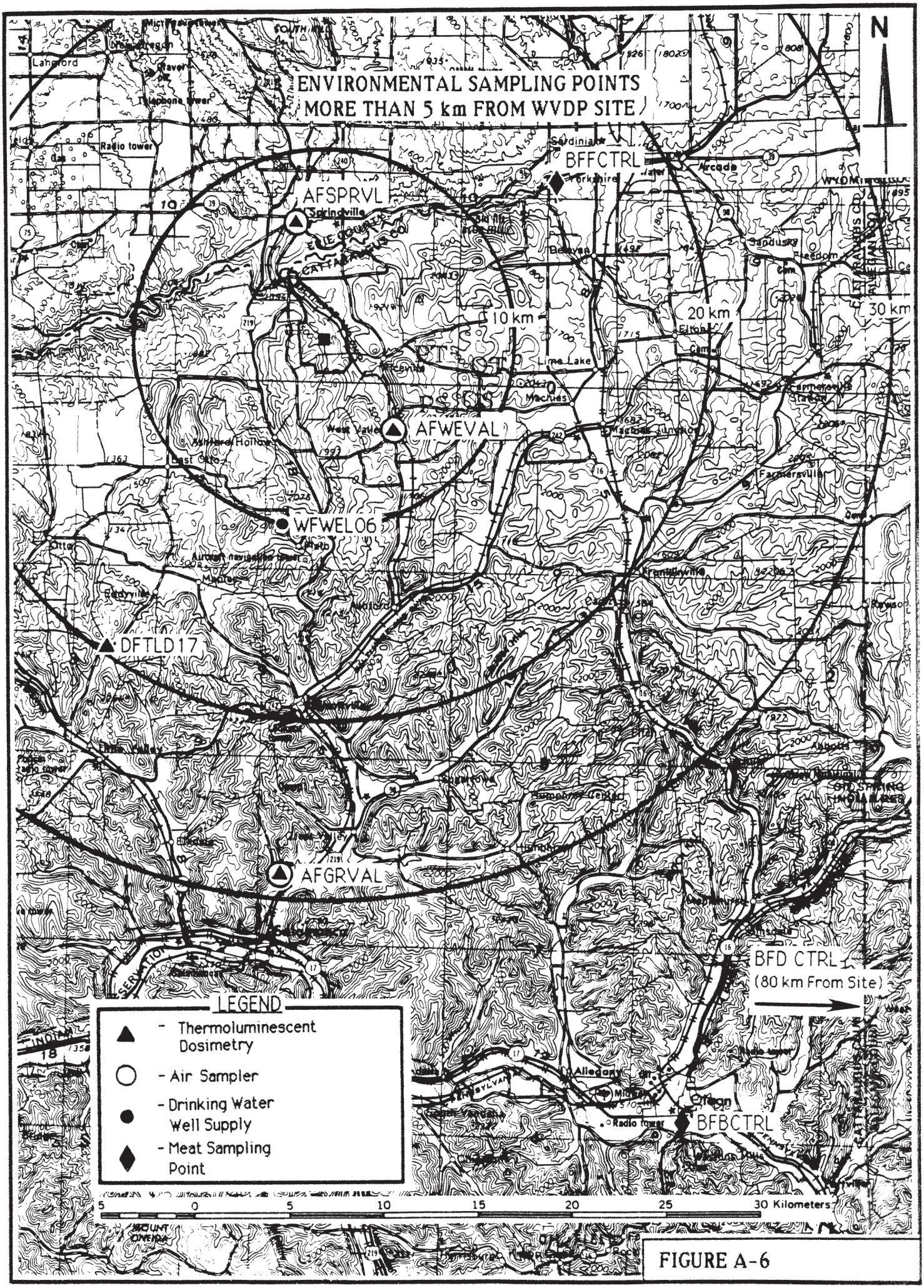

ENVIRONMENTAL SAMPLING POINTS
MORE THAN 5 km FROM WVDP SITE
N
BFFCTRL
AFSPRVL
AFWEVAL
WFWEL06
DFTLD17
AFGRVAL
BFD CTRL
(80 km From Site)
BFBCTRL
10 km
20 km
30 km
LEGEND
- Thermoluminescent Dosimetry
- Air Sampler
- Drinking Water Well Supply
- Meat Sampling Point
5 0 5 10 15 20 25 30 Kilometers

FIGURE A-6