APPENDIX A

EFFLUENT, ON-SITE AND OFF-SITE MONITORING PROGRAM FOR IMPLEMENTATION DURING 1986

FOR IMPLEMENTATION DURING 1986

| 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 AMSTACK | Release point for airborne radioactive exhaust | Continuous off- line air particulate monitor ^a | Continuous measurement of fixed filter, replaced weekly | 104 | Real time alpha and be monitoring Filters for gross alpr |
| | Required by: DOE 5484.1, Tech Spec 4.1.1 | Continuous off- line air particulate and | Weekly collection of filter paper, | 156 | beta, gamma isotopic upon collection, H-3 weekly. |
| | Reported: Internal Monthly Summary Annual Effluent Report Annual Environmental Report | continuous off- line tritium (as water vapor) sampler | charcoal absorber, and dessicant | | Quarterly composites: filters for Sr-90. Pu. isotopic, Am-241 gamm: isotopic; charcoal for I-129 |
| Cement Solidi- fication (CSS) system ventilation | Release point for airborne radioactive exhaust | Continuous off- line air particulate monitor ^a | Continuous measurement of fixed filter, replaced weekly | 104 | Real time alpha and be monitoring Filters for gross alph |
| exhaust. ANCSSTK | Required by: DOE 5484.1. Tech Spec 4.1.1 | | Weekly collection of | 104 | beta, gamma isotopic upon collection |
| | Reported: Internal Monthly Summary Annual Effluent Report Annual Environmental Report | | filter paper, charcoal absorber | | Quarterly composites: filters for Sr-90, Pu/ isotopic, Am-241 gamma isotopic; charcoal for I-129 |
| Lagoon 3 discharge weir WMSP001 | Primary point of liquid effluent batch release Required by: DOE 5484.1 Tech Spec 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, conductivity, pH. Eve sixth daily sample: gross alpha/ beta, H-1 Sr-90, gamma isotopic. Weighted monthly composite of daily samples: gross alpha/beta, H-3, Sr-90, I-12 gamma isotopic. Quarterly weighted composite of daily samples: U isotopic, |
| | | Composite Liquid | Twice during discharge, near start, and near end. | 8-10 | Pu isotopic, Am-241 Two 24 hour composites for Al, NH ₃ , As, BOD-5 Fe, Zn, pH, suspended solids; |
| | | Grab Liquid | Twice during discharge, same as composite. | 8-10 | Settleable solids, pH, cyanide, oil and greas |
| | | Composite Liquid | Annually | 1 | Annually, a 24 hour composite for: Cd, Cr Cu, Pb, Ni, Se |

Isokinetic sampling probes placed at 231' (plant elevation) within the main stack, at the 168' level within the CSS vent stack.

| SAMPLE LOCATION AND I.D. CODE Erdman Brook at security fence WMSP006 | MONITORING/REPORTING REQUIREMENTS Combined facility liquid discharge Required by: DOE 5484.1 Reported: Internal Monthly Summary Annual Environmental Report MH3 & Fe deleted from schedule | SAMPLING TYPE/MEDIUM Continuous proportional sample liquid | COLLECTION FREQUENCY Monthly* (Composite of biweekly collections) | TOTAL ANNUAL SAMPLES | ANALYSES PERFORMED/ COMPOSITE FREQUENCY Gross alpha/beta, H-3, pH, conductivity Quarterly composite: gamma isotopic, Sr-90, I-129 |
|---|--|---|---|----------------------|--|
| On-site ground water (wells) WMW80-series WMW83-series WMW83-series | Ground water monitoring wells around site facilities Required by: DOE 5484.1 | Grab Liquid | Quarterly* during 1st year, semiannum1/ annum1 thereafter (see Table 9) | 132 | Gross alpha/beta, H-3, gamma isotopic, pH, conductivity, chloride Fe, Mn, Na, sulfate, phenols, nitrate, TOC, TOH |

*Samples to be split (shared with NYSDOH)

Reported: Annual Environmental

Report

| SAMPLE LOCATION AND I. D. CODE Sanitary Waste Discharge WMSP007 | MONITORING/REPORTING REQUIREMENTS Liquid effluent point for sanitary and utility plant combined discharge Required by: DOE 5484.1 SPDES | SAMPLING TYPE/MEDIUM 24 hr composite liquid | COLLECTION FREQUENCY 3/month | TOTAL ANNUAL SAMPLES 36 | ANALYSES PERFORMED/ COMPOSITE FREQUENCY Gross alpha/beta, pH, H-3, settleable solid: suspended solids, NH ₃ BOD-5, Fe |
|---|--|--|-------------------------------|-------------------------------|---|
| | Reported: NYSDEC Monthly DMR Internal Monthly Summary Annual Effluent Report Annual Environmental Report | Grab | Annually | 1 | Chioroform |
| N.E. Swamp drainage WNSWAMP North Swamp | Site surface drainage Required by: DOE 5484.1 Reported: Annual Effluent Report | Grab liquid | Monthly# | 24 | Gross alpha/beta, H-3 pH |
| drainage WNSW74A | | | | | |

*Samples to be split (WNSWAMP only) with NYSDOH

| SAMPLE LOCATION AND I.D. CODE | MONITORING/REPORTING REQUIREMENTS | SAMPLING TYPE/MEDIUM | COLLECTION T | OTAL ANNUAL SAMPLES | ANALYSES PERFORMED/ COMPOSITE FREQUENCY |
|--|--|-------------------------|--------------|---------------------|--|
| French Drain WMSP008 | Drains subsurface water from LLWT lagoon area | Grab liquid | 3/month | 36 | pH, conductivity, BOD-5 Fe |
| | Required by: DOE 5484.1 | | | | |
| | Reported: NYSDEC Monthly DMR | | Monthly | 12 | Gross alpha/beta, H-3 |
| | Annual Effluent Report | | Annually | 1 | Ag. 2n |
| Franks Creek E of NYSLLWB WNFRC67 | Drains NYS Low Level Waste Burial area | Grab liquid | Monthly | 12 | Gross alpha/beta, H-3, pH |
| was 1100; | 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 | | | | |

| 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 & LLWB WNNDADR | Drains WVDP disposal area | Composite continuous liquid | Weekly | 52 | Weekly gamma isotopic, pH, conductivity, monthly: gross alpha/beta. quarterly |
| | Required by: DOE 5484.1 Reported: | | | | composite: Sr=90, I-129 |
| | Internal Review | | | | |
| Condensate and Cooling Water Ditch | Combined drainage from facility yard area | Grab liquid | Monthly | 12 | Gross alpha/beta, H-3 pH |
| WISP005 | Required by: DOE 5484.1 SPDES | | | | |
| | Reported: Internal Review | | | | |
| Cooling Tower Basin WMCCOOLW | Cools plant utility steam system water | Grab liquid | Monthly | 12 | Gross alpha/beta, H-3 pH |
| | Required by: DOE 5484.1 | | | | |
| | Reported: Internal Review | | | | |

| SAMPLE LOCATION AND I.D. CODE | MONITORING/REPORTING REQUIREMENTS | SAMPLING TYPE/MEDIUM | COLLECTION FREQUENCY | TOTAL ANNUAL SAMPLES | ANALYSES PERFORMED/ COMPOSITE FREQUENCY |
|--|--|-------------------------|-------------------------|----------------------|---|
| (7) On-site standing water (ponds not receiving effluent) WMSTAW-series | Water within vicinity of plant airborne or ground water effluents Required by: DOE 5484.1 | Grab liquid | Annually | 7 | Gross alpha/beta, H-3, pH, conductivity, chloride, Fe, Mn, Na, phenols, sulfate |
| | Reported: Internal Review | | | | |
| Site potable water | Source of water within site perimeter | Grab liquid | Monthly | 12 | Gross alpha/beta, H-3, pH, conductivity |
| WN DRN KW | Required by: DOE 5484.1 | | Annually | 2 | Toxic metals, pesticide chemical pollutants |
| | Reported: Internal Review | | | | |

| 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 | Flow weighted continuous liquid | Weekly* | 52 | Weekly for gross alpha/beta, H-3, pH; Monthly composite for gamma isotopic and Sr- |

Reported: Internal Monthly Summary Annual Environmental

Report

| SAMPLE LOCATION AND I.D. CODE | MONITORING/REPORTING REQUIREMENTS | SAMPLING TYPE/MEDIUM | COLLECTION | TOTAL ANNUAL SAMPLES | ANALYSES PERFORMED/ COMPOSITE FREQUENCY |
|--|---|-----------------------------------|------------|----------------------|--|
| Buttermilk Creek, just upstream of Cattaraugus Creek confluence at Thomas Corners Road MFBCTCB | Restricted surface waters receiving plant effluents Required by: DOE 5484.1 Reported: Annual Environmental Report | Composite continuous liquid | Biweekly | 26 | Monthly for gross alpha/beta, H-3, pH; 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 | Composite continuous liquid | Biweekly | 26 | Monthly for gross alpha/beta, H-3; Quarterly composite for gamma isotopic and SR-90 |

Reported: Internal Monthly Summary Annual Environmental Report

ANALYSES PERFORMED/ COMPOSITE FREQUENCY

Gross alpha/beta, H-3, gamma isotopic, pH, conductivity

| SAMPLE LOCATION AND I.D. CODE | MONITORING/REPORTING REQUIREMENTS | SAMPLING TYPE/MEDIUM | COLLECTION FREQUENCY | TOTAL ANNUAL SAMPLES |
|--|---|-------------------------|-------------------------|-------------------------------|
| Wells near WVDP outside WNYNSC Perimeter | Drinking supply ground water near facility. | Grab liquid | Biennially | 10 (year of collection) |
| 3.0 Km WNW WPWELO1 | Required by: DOE 5484.1 | | | |
| 1.5 Km NW WFWELO2 | Reported: Annual Environmental Report | | | |
| 4.0 Km NW WFWELO3 | | | | |
| 3.0 Km NW WFWELO4 | | | | |
| 2.5 Km SW WFWELO5 | | | | |
| 11.0 Km SSW WFWELO6 | | | | |
| 4.0 Km NNE WFWELO7 | | | | |

2.5 Km ENE WFWELO8

3.0 Km SE WFWELO9

7.0 Km N WFWELIO

COLLECTION

SAMPLE LOCATION AND I.D. CODE

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) AFCRVAL*+

7 Km at Springville (added in 1984) AFSPRVL

6 Km SSE at West Valley (added in 1984)

50 Km W at Dunkirk AFDNKRK

2.3 Km SW on Dutch Hill Road AFBOEHN MONITORING/REPORTING REQUIREMENTS

Particulate air samples around WNYNSC perimeter

Required by:

Reported:
Annual Environmental
Report

*Monthly Internal Summery SAMPLING TYPE/MEDIUM

TYPE/MEDIUM FREQUENCY
Continuous air Weekly

particulate

Continuous H-3,
charcoal†

TOTAL ANNUAL ANALYSES PERFORMED/
SAMPLES COMPOSITE FREQUENCY

780

Weekly (each filter) gross alpha/beta, H-3 (on 3 stations)

Quarterly: (Each station) composite filters for Sr-90, gamma isotopic; I-129 (on 3 stations)

t see sample location

| SAMPLE LOCATION AND I.D. CODE | MONITORING/REPORTING REQUIREMENTS | SAMPLING TYPE/MEDIUM | COLLECTION FREQUENCY | TOTAL ANNUAL SAMPLES | ANALYSES PERFORMED/ COMPOSITE FREQUENCY |
|---|--|-----------------------------|-------------------------|-------------------------------|--|
| 2.5 Km SW AFDHFOP | Fallout particulate and fluid collection around WNYNSC perimeter | Integrating liquid | Monthly | 48 | Gross alpha/beta, H-3, pH |
| 3.0 Km SSE AFFXFOP | Required by: DOE 5484.1 | | | | |
| 3.7 Km NNW AFTCFOP | Reported: Annual Environmental | | | | |
| 2.0 Km NE AF24FOP | Report | | | | |
| (9) Surface soil (at each air particulate | Long-term fallout accumulation | Surface plug composite soil | Triennially* | 10 (year of collection) | Gamma isotopic, Sr-90, Pu, Am-241 |
| sampler) 26 Km SSW at | Required by: DOE 5484.1 | | | | |
| Little Valley SF-series | Reported: Annual Environmental Report | | | | |

| FOR THE EMERITATION DORING 1900 | | | | | | | |
|--|---|-------------------------|---------------------------------|----------------------|--|--|--|
| 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 | Deposition in sediment downstream of facility effluents | Grab stream sediment | Semiannually * (split two only) | 10 | Gross alpha/beta, isotopic gamma and Sr-90 | | |
| SFTCSEDT | Required by: | | Annuallyt | 2 | U/Pu isotopic, Am-241 | | |
| Buttermilk Creek at Fox Valley Road (back- | DOE 5484.1 | | | | | | |
| ground)#† SFBCSED | Annual Environmental Report | | | | | | |
| Cattaraugus | | | | | | | |

† see specific sample location

*Samples to be split (shared with NYSDOH)

Creek at Felton

Cattaraugus Creek at Bigelow

Bridge (background) SFBISED

Bridge SFCCSED

Cattaraugus Creek at Springville Dam* SFSDSED

AND I.D. CODE Cattaraugus Creek downstream of the Buttermilk Creek confluence

MONITORING/REPORTING REQUIREMENTS

SAMPLING TYPE/MEDIUM

COLLECTION FREQUENCY

TOTAL ANNUAL SAMPLES

ANALYSES PERFORMED/ COMPOSITE FREQUENCY

BFFCATC

SAMPLE LOCATION

Fish in waters downstream of facility effluents

Individual collection. biological

Semiannually* 60 (each sample point is 10 fish)

Isotopic gamma and Sr-90 in edible portions

Required by: DOE 5484.1 Reported: Annual Environmental Cattaraugus

Creek downstream of Springville Dam

BFFCATD

Control sample from nearby stream not affected by WVDP (7 Km or more upstream of site effluent point) BFFCTRL

Report

| 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, BFMCOBO, BFMCTLS, | 48 | Gamma isotopic, Sr-90 H-3 and I-129 on annua samples and quarterly composites of monthly |
| Dairy farm, 2.5* Km ENE | Required by: DOE 5484.1 | | BFMCTLN) | | samples |
| BFMZINM | Reported: | | Annual | 3 | |
| Dairy farm, 1.9 Km WNW BFMCOBO | Annual Environmental Report | | | | |
| Control location, 30 Km N and 25 Km S BFMCTLM, BFMCTLS | | | | | |
| Dairy farm 3 Km SE of site BFMMIDR | | | | | |

*Samples to be split (shared with NYSDOH)

Dairy farm 3.5 Km SSW BFMHAUR

| SAMPLE LOCATION AND I.D. CODE | MONITORING/REPORTING REQUIREMENT | SAMPLING TYPE/MEDIUM | COLLECTION FREQUENCY | TOTAL ANNUAL SAMPLES | ANALYSES PERFORMED/ COMPOSITE FREQUENCY |
|---|--|-------------------------|--------------------------|----------------------|--|
| (3) Nearby downwind location BFVMEAR (3) Remote location (16 Km or more from facility) BFVCTML | 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-9 analyses of edible portions, H-3 in free moisture |
| Beef animal from nearby farm in downwind direction BFBMEAR | Meat-Beef foraging near facility perimeter Required by: DOE 5484.1 Reported: Annual Environmental | Grab biological | Semaiannually* | ų | Gamma isotopic analysis of meat. |
| control location (16 Km or more from facility) BFBCTRL | Report | | | | |

| 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 BFDWEAR | Meat-Deer foraging near facility perimeter | Individual collection biological | Annually, during hunting season* | 2 | Gamma isotopic analyses of meat, Sr-90 in meat |
| Control animal | Required by: | • | During year as available* | | |
| from facility) BFDCTHL | Reported: Annual Environmental Report | | | | |

ANALYSES PERFORMED/ COMPOSITE FREQUENCY

Quarterly gamma dose

TOTAL ANNUAL SAMPLES

| SAMPLE LOCATION AND I.D. CODE | MONITORING/REPORTING REQUIREMENTS | SAMPLING TYPE/MEDIUM | COLLECTION FREQUENCY |
|---|---|-------------------------|---|
| Thermoluminescent Dosimetry (TLD) (16) at each of 16 compass sectors, at nearest accessible perimeter point | Direct Radiation around facility Required by: DOE 5484.1 | Integrating LiF TLD | Quarterly* (data shared from overlap locations) |
| (2) at corners of NYS LLW burial area | Reported: Annual Environmental Report | | |
| (5) at security fence around site. | | | |
| Rock Springs Road 500 m NNW of plant. | | | |
| 1500 m NW (nearest downwind receptor) | | | |
| "5 Points" landfill, 19 Km SW (background) | | | |
| Great Valley, 29 Km S (background) | | | |
| Springville 7 Km N | | | |
| West Valley 6 Km SSE | | | |
| Dunkirk, 50 Km W (background) | | | |

*Samples to be split (shared with NYSDOH) tDFTLD Series

DFTLD-series

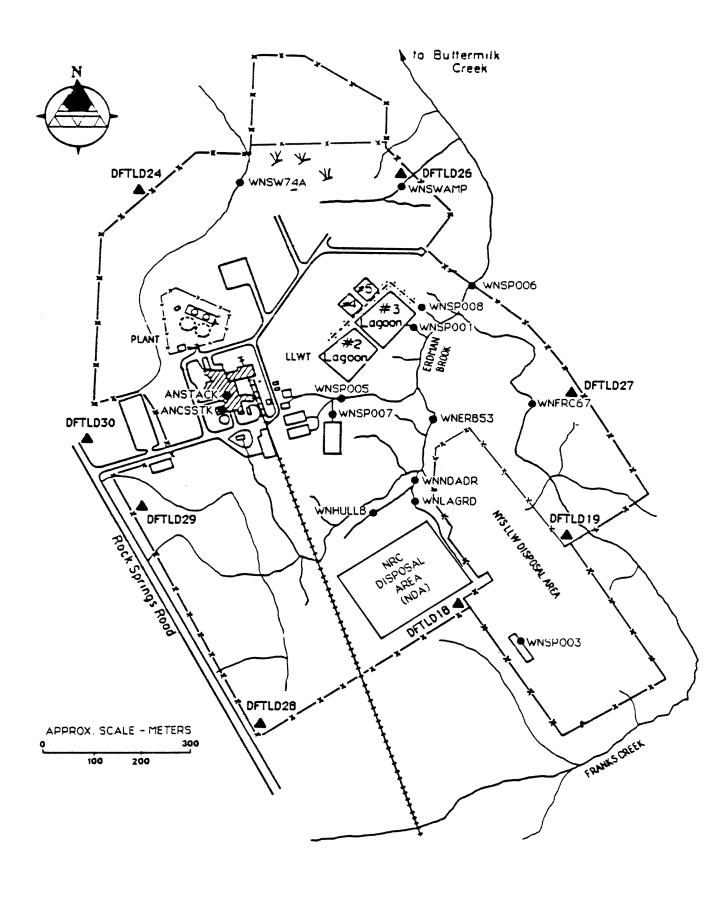


FIGURE A-1 Location of Radiological Monitoring Points On-site

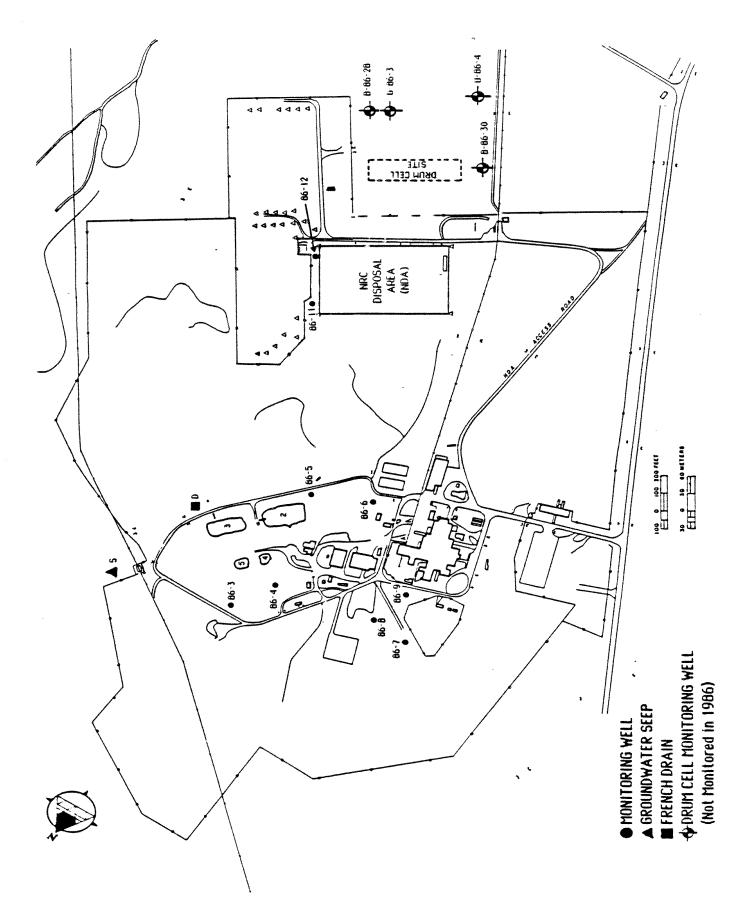


FIGURE A-2 Location of Groundwater Monitoring Stations Added in 1986

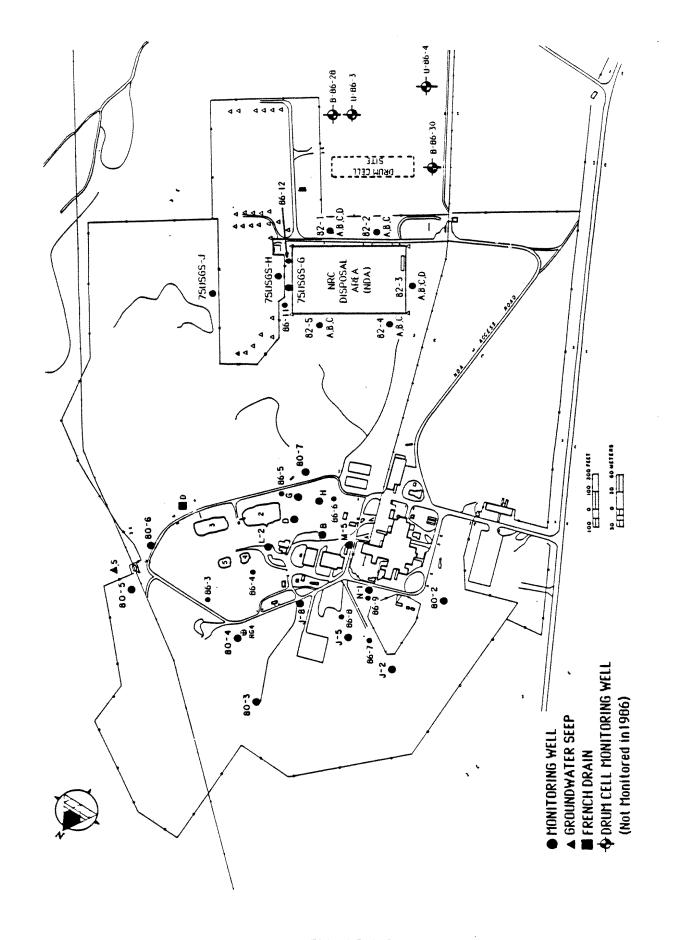


FIGURE A-3 Location of Groundwater Stations Monitored in 1986

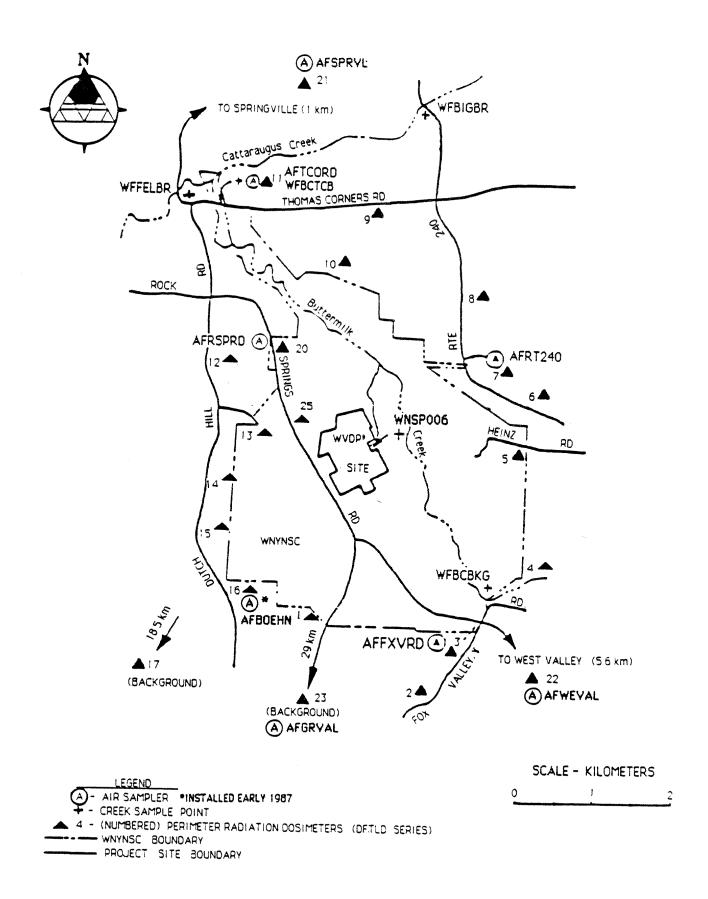


FIGURE A-4 Locations of Perimeter Environmental Monitoring Stations

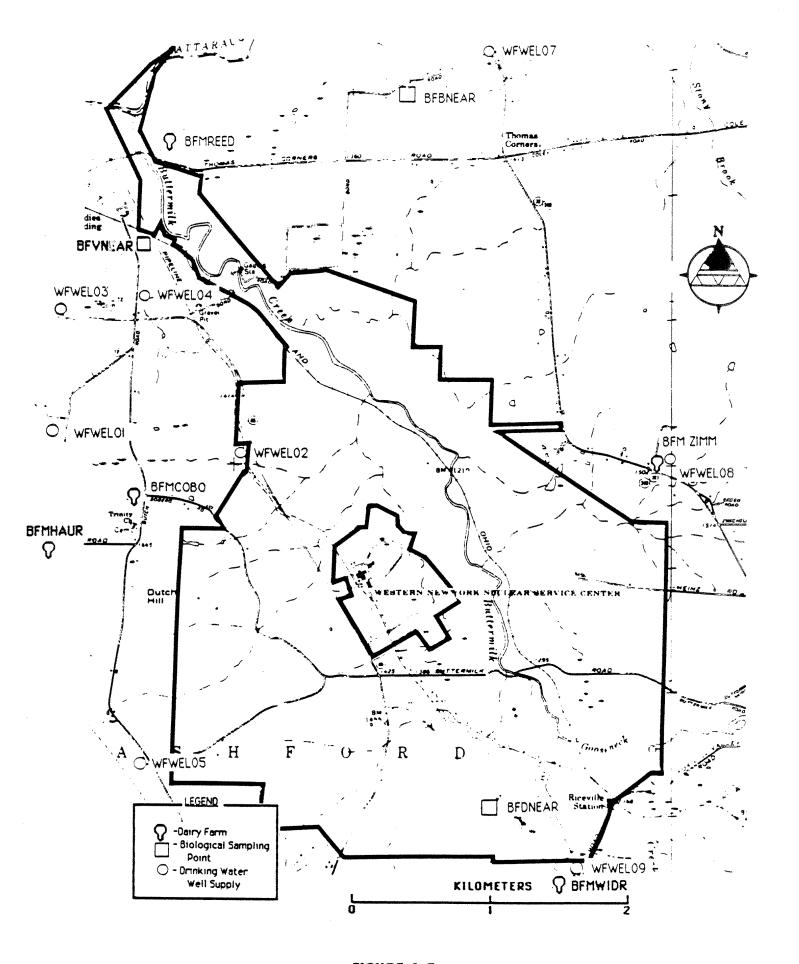


FIGURE A-5
Nearsite Drinking Water
and Biological Sample Points - 1986-

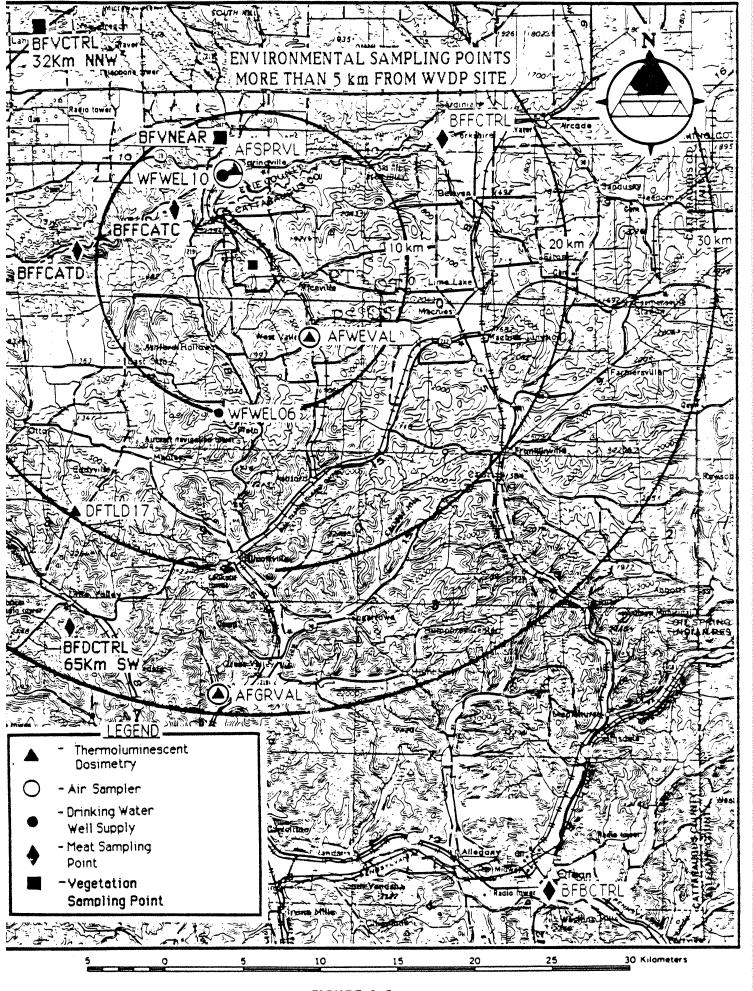


FIGURE A-6

SUMMARY OF MONITORING PROGRAM CHANGES IMPLEMENTED IN 1986

The following is a summary of the significant environmental monitoring program modifications which were implemented in 1986. Some of the changes reflect readjustments due to plant process improvements, and others are a result of program evaluation and long-term planning adjustments. The description and results of most of the near plant monitoring is not included in the scope of this report, but a summary schedule (Appendix A) is provided for information.

| Location I.D. | Description of Changes Implemented |
|--------------------|---|
| ANSTACK | added tritium, quarterly U/Pu and Am-241 |
| WNSP001 | added cyanide, oil and grease to SPDES parameters |
| WNSP006 | removed SPDES parameters (new permit) |
| WNINTER | removed from Environmental to Operations as a process control point |
| WNWNF Series | removed because more recently drilled wells are now available nearby |
| WNW80,82,83 Series | added a list of parameters to reflect expanded program requirements |
| WNSP007 | changed to reflect new SPDES permit |
| WNSW74A | added to monitor additional on-site North Plateau drainage |
| WNSP008 | changed (from WNFRDRN) to reflect new SPDES permit |
| WNNDA DR | changed (from WNHULLB) location 10 metres downstream, and upgraded to automatic composite sampler |
| WNSFILT | removed to reflect new combined drainage at WNS0007 |
| WNCONDP | removed to reflect new combined drainage at WNSP007 |
| WNSTAW | added chemical parameters |
| WN DRN KW | added chemical parameters to routine schedule |
| WFBIGBR | removed water grab sample |

SUMMARY OF MONITORING PROGRAM CHANGES IMPLEMENTED IN 1986 (continued)

| Location I.D. | Description of Changes Implemented |
|--------------------|---|
| WFWEL01 through 10 | added chemical indicator parameters |
| AFRSPRD | added tritium in air and charcoal media nearsite |
| AFGRVAL | added tritium in air and charcoal media background |
| AFDNKRK | added location: sited but not placed in operation |
| AFBOEHN | added location: sited but not placed in operation |
| SF Series Soil | added Am-241 |
| SFTCSED | added annual U/Pu isotopic and Am-241 |
| SFBCSED | added annual U/Pu isotopic and Am-241 |
| BFFCATD | added sample point for fish downstream of Springville dam; all fish now 10 specimens per sample point from 9 previously |
| BFMCTRL | added a North and South location quarterly, removed annual Albany location |
| BFMWIDR | added a Southeast nearsite annual sample |
| BFMHAUR | added a Southwest nearsite annual sample |
| ВЕМСОВО | changed West annual nearsite sample point to quarterly composite |

SUMMARY OF MONITORING PROGRAM CHANGES IMPLEMENTED IN 1986 (continued)

| Location I.D. | Description of Changes Implemented |
|---------------|--|
| BFVNEAR | added tritium |
| BFVCTRL | added tritium |
| BFDNEAR | changed requirement for bone analysis: will not be required under modification of technical specifications |
| DFTLD Series | added inner security fence monitoring points, and at AFDNKRK location when operable |