2.0 ENVIRONMENTAL MONITORING PROGRAM - DESCRIPTION AND RESULTS

The environmental monitoring program for the WVDP has been developed to detect any changes in the environment resulting from the Project activities. The monitoring network and sample collection schedule have been designed to accomodate specific biological and physical characteristics of the area surrounding the site.

The current monitoring program is a continuation of the environmental surveillance conducted by the WVNS since March of 1982. As new systems started up, additional monitoring points were selected and sampled. The present program, revised in 1987 for use in 1988, has three foci: effluent monitoring, on-site monitoring and off-site monitoring. Within these three areas samples are measured for radiological and non-radiological parameters. The monitoring schedule is included in Appendix A. Samples are designated by a coded abbreviation which includes sample type and location. A complete listing of the designations is provided in an index to the monitoring schedule.

The major pathways for movement of hazardous materials or radionuclides away from the site are by surface water drainage and airborne transport. For that reason, the environmental monitoring program emphasizes the collection of air and surface water samples. Another potentially significant pathway is the ingestion and assimilation of radionuclides by game animals and fish that include the WNYNSC in their range. Appropriate animal, soil and vegetation samples are gathered and analyzed for radionuclide content in order to reveal any long-term trends. To complete the picture, samples of meat, milk and produce are taken from nearby farms and analyzed. In addition, background sample points for all media have been selected well away from any possible influence of the plant. These samples provide control values for comparison with monitoring results.

The WVDP participates in the State Pollution Discharge Elimination System (SPDES) and operates under state-issued air discharge permits for non-radiological plant effluents. Radiological air discharges also must comply with the National Emission Standards for Hazardous Air Pollutants (NESHAP). The data gathering, analysis, and reporting to meet the requirements of all permits are an integral part of the WVDP monitoring program.

2.1 Radiological Monitoring

Air, water, and selected biological media were sampled and analyzed to meet DOE and plant Operational Safety Requirement (OSR) monitoring requirements. There were no abnormal radiological releases or special investigations of environmental radiological conditions in 1988.

2.1.1 Radioactivity in Air

In 1988 airborne particulate radioactivity was collected continuously at five locations around the perimeter of the site and at four remote locations at Great Valley, West Valley, Springville, and Dunkirk, as shown in Figure 2-1. Perimeter locations are on Fox Valley Road, Rock Springs Road, Route 240, Thomas Corners Road and Dutch Hill Road. These locations were chosen to provide data on the highest likely perimeter concentrations based on meteorological observations in the area. The remote locations were chosen to provide data from nearby communities and from natural background areas.

The air samples are collected by drawing air through a very fine filter with a vacuum pump. The total volume of air drawn through the sampler is measured and recorded by a meter. The filters trap any particles of dust which are then tested in the laboratory for radioactivity. Three of the perimeter air samplers, mounted on 4-m (13 ft.) high towers, maintain an average air flow of about 40 L/min (1.5 ft3/min) through a 47-mm glass fiber filter. The remaining perimeter samplers and the four remote samplers operate with the same air

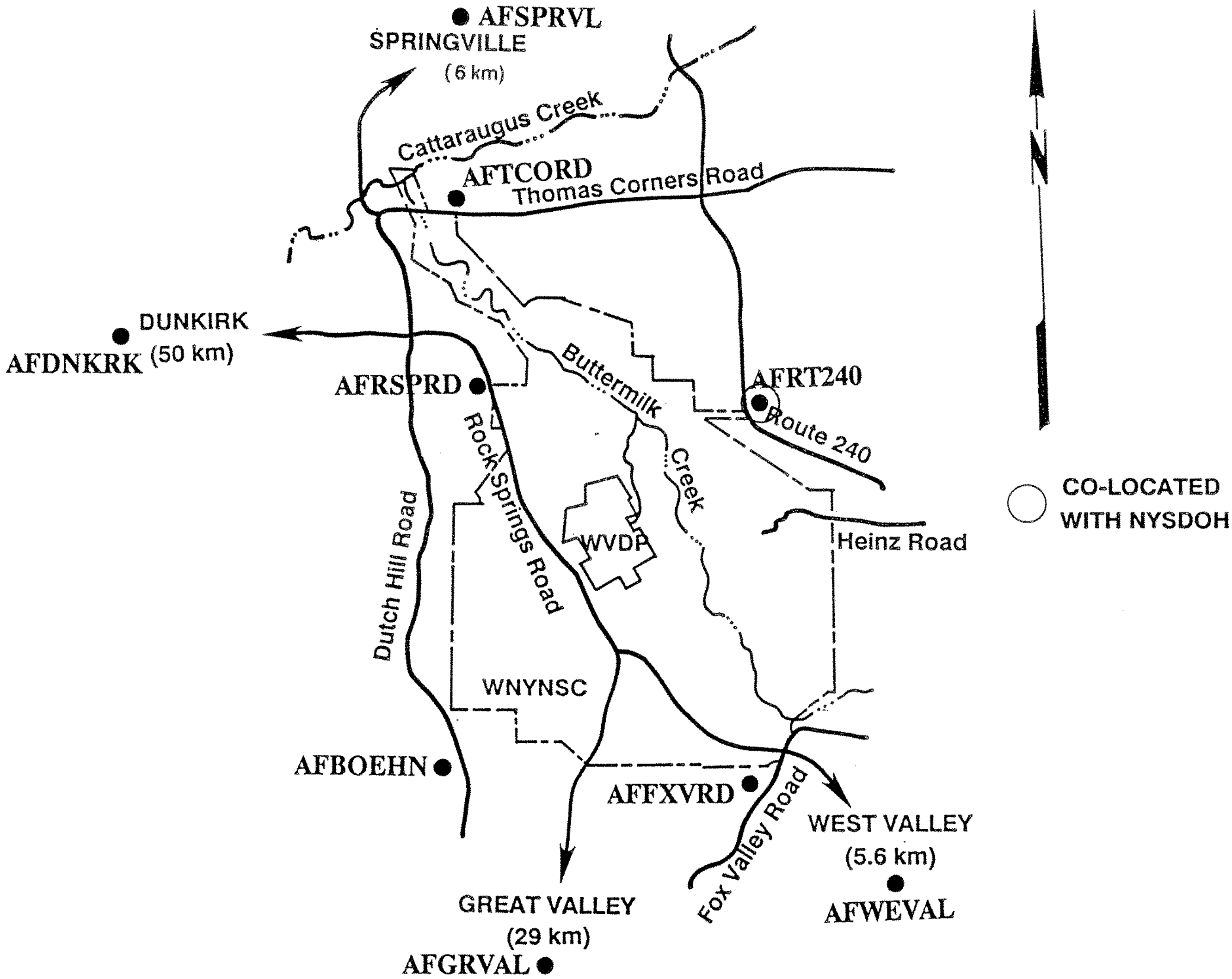

Figure 2-1. Off-site Air Sampler Locations.

flow rate as the three mounted on towers, but the sampler head is set at 1.7 m (5.6 ft.)above the ground (the height of the average human breathing zone).

Concentrations measured at Great Valley (AFGRVAL, 29 km south of the site) and Dunkirk (AFDNKRK, 50 km west of the site) are considered to be representative of natural background. Data from these samplers are provided in Appendix C-2, Tables C-2.2.7 and C-2.2.8.

Filters from all samplers were collected weekly and analyzed after a seven-day decay period to remove interference from short-lived naturally occurring radioactivity. Gross alpha and gross beta measurements of each filter were made using a low-background gas proportional counter. A complete tabulation of the concentrations measured at each of these stations is given in Tables C-2.2.1 through C-2.2.9.

The average monthly concentrations ranged from 8.9 E-15 to 4.2 E-14 μCi/mL (3.3 E-4 to 1.6 E-3 Bq/m3) of beta activity and 5.4 E-16 to 2.5 E-15 μCi/mL (2.0 E-5 to 9.3 E-5 Bq/m3) of alpha activity. In addition, quarterly composites consisting of 13 weekly filters from each sample station were analyzed for Sr-90 and gamma-emitting nuclides.

In all cases, the measured monthly gross activities were well below 3 E-12 μCi/mL (1.1 E-1 Bq/m3) beta, and 2 E-14 μCi/mL (7.4 E-4 Bq/m3) alpha, the most limiting DOE Derived Concentration Guides (DCGs) for any of the isotopes present at the WVDP. (DOE standards and DCGs for radionuclides of interest at West Valley are provided in Appendix B.)

Annual data for the three samplers which have been in operation since 1983 average about 2.2 E-14 μCi/mL (8.1 E-4 Bq/m3) of gross beta activity in air. The annual average gross beta concentration at the Great Valley background station was 2.1 E-14 μCi/mL (7.8 E-4 Bq/m3) in 1987, and averaged 2.1 E-14 μCi/mL (7.8 E-4 Bq/m3) again in 1988.

Global fallout is also sampled at four of the perimeter air sampler locations. Material from open pots located near the samplers is collected and analyzed every month. The 1988 data from these analyses are presented in Appendix C-2, Tables C-2.3.1 and C-2.3.2. These collections represent an indication of short-term effects. Long-term deposition is measured by surface soil samples collected every three years near each air sampling station.

The exhaust air from each ventilation system serving the site facilities is continuously filtered, monitored, and sampled as it is released to the atmosphere. Specially designed "isokinetic" nozzles continuously remove a representative portion of the exhaust air which then is drawn through very fine, small, glass-fiber filters to trap any particles. Sensitive detectors continuously measure the radioactivity on these filters. The detection instruments provide remote readouts of alpha and beta radioactivity levels to control display panels. A separate stack monitoring sample unit on each system provides another air filter that is removed every week and subjected to additional laboratory testing.

Because these concentrations are quite low, the large weekly volume samples from the plant stack provide the only practical means of determining the amount of specific radionuclides released from the facility.

The main ventilation stack (ANSTACK) sampling system remained the most significant airborne effluent point in 1988. A high sample collection flow rate through multiple intake nozzles assures a representative sample for both the weekly filter and the online monitoring system. Variations in monthly concentrations of airborne radioactivity reflect the level of Project activities within the facility (Table C-2.1.1). However, at the point of discharge, average radioactivity levels were already below the concentration guides for airborne radioactivity in an unrestricted environment (see Table C-2.1.3). Further dilution from the stack to the site boundary reduces the concentration by an average factor of about 236,000.

The total quantity of gross alpha and beta radioactivity released each month from the main stack, based on the weekly filter measurements, is shown in Table C-2.1.1 of Appendix C-2. The results of analyses for specific radionuclides in the four quarterly composites of stack effluent samples are listed in Table C-2.1.2.

Sampling systems similar to the main stack system monitor airborne effluents from the Cement Solidification System ventilation stack (ANCSSTK), the Contact Size Reduction Facility ventilation stack (ANCSRFK), and the Supernatant Treatment System ventilation stack (ANSTSTK). The 1988 samples showed detectable gross radioactivity, including specific beta- and alpha-emitting isotopes, but did not approach any DOE effluent limitations (Tables C-2.1.4 through C-2.1.9).

Three other facilities are routinely monitored for airborne radioactivity releases: the Low-Level Waste Treatment Facility (LLWTF), the contaminated clothing laundry, and the Supercompaction Volume Reduction System (ANSUPCV). Results are presented in Tables C-2.1.10 and C-2.1.11.

The total amount of radioactivity discharged from facilities other than the main ventilation stack was less than 2 percent of the airborne radioactivity released from the site, and was not a significant factor in the airborne pathway in 1988.

2.1.2 Radioactivity in Surface Water and Sediment

Four automatic samplers collect surface water at points along the site drainage channels. Points for water collection were chosen at locations most likely to show any radioactivity released from the site. A background station was chosen upstream of the site. These samplers operate by drawing water through a tube extending to an intake below the stream surface. A battery-powered pump is electronically controlled to first blow air through the sample line to clear any debris. The pump then reverses to draw a measured sample from the stream into a large container. Finally the pump again reverses to blow air back into the tube to clear the sample line. The pump and container are housed in a small, insulated and heated shed to allow sampling throughout the year.

An off-site sampler is located on Cattaraugus Creek at Felton Bridge just downstream of the confluence with Buttermilk Creek, the major surface drainage from the WNYNSC (Figure 2-2). This sampler (WFFELBR) periodically collects an aliquot (a small volume of water, approximately 100 mL/hr) from the creek. A chart recorder keeps track of the stream depth over the sample period and provides a means of proportioning a flow-weighted weekly sample into a monthly composite based on relative stream depth. Gross alpha, beta, and tritium analyses are performed each week, and the composite is analyzed for strontium-90 and gamma-emitting isotopes.

In addition to the Cattaraugus Creek sampler, two surface water monitoring stations are located on Buttermilk Creek. Samplers collect water from a background location upstream of the Project (WFBCBKG) and from a location at Thomas Corners Road downstream of the plant and upstream of the confluence with Cattaraugus Creek (WFBCTCB). These samplers operate in a time composite mode, collecting a 25-mL aliquot every half-hour. Samples are collected biweekly, composited monthly, and analyzed for tritium, gross alpha, and gross beta radioactivity. A quarterly composite of the biweekly samples is analyzed for gamma-emitting isotopes and strontium-90.

The fourth station (WNSP006) is located on Frank's Creek where Project site drainage leaves the security area (Figure 2-3). This sampler operates in a time-composite mode, collecting a 50-mL aliquot every half hour. The sample is collected weekly, analyzed for tritium, gross alpha and gross beta radioactivity and composited quarterly. The quarterly composite is analyzed for strontium-90, iodine-129, alpha-emitting isotopes and gamma-emitting isotopes.

Tabulated data from surface water samplers are provided in Appendix C-1, Tables C-1.2 through C-1.5 .

Radiological concentration data from these sample points show that average gross radioactivity concentrations generally tend to be higher in Buttermilk Creek below the WVDP site, presumably because of the small amount of activity from the site which enters via Frank's Creek. The range of gross beta activity, for example, was 2.2 E-9 to 5.4 E-9 μCi/mL (8.1 E-2 to 1.0 E-1 Bq/L) upstream in Buttermilk Creek at Fox Valley (WFBCBKG), and

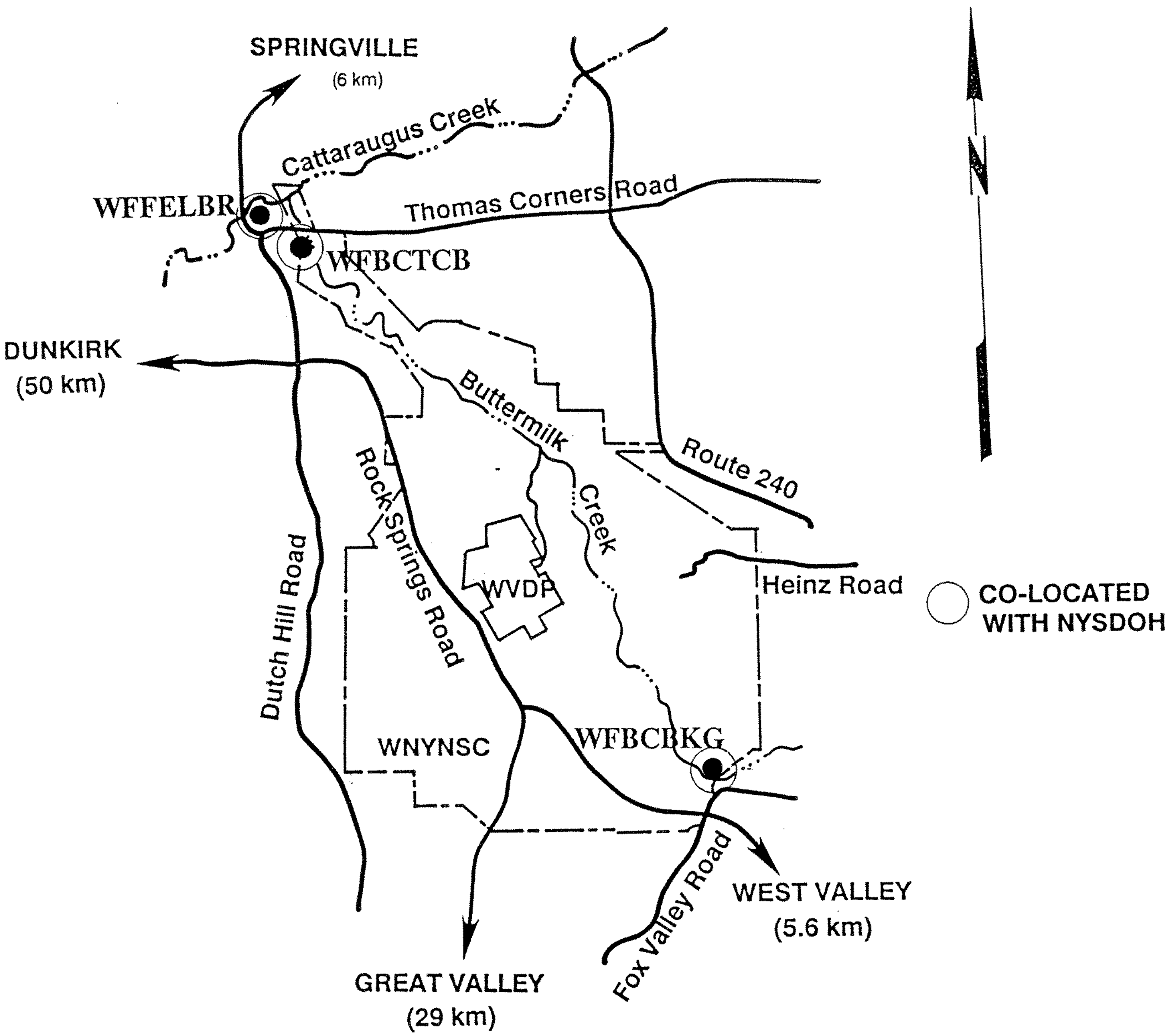

Figure 2-2. Sampling Locations for Off-Site Surface Water.

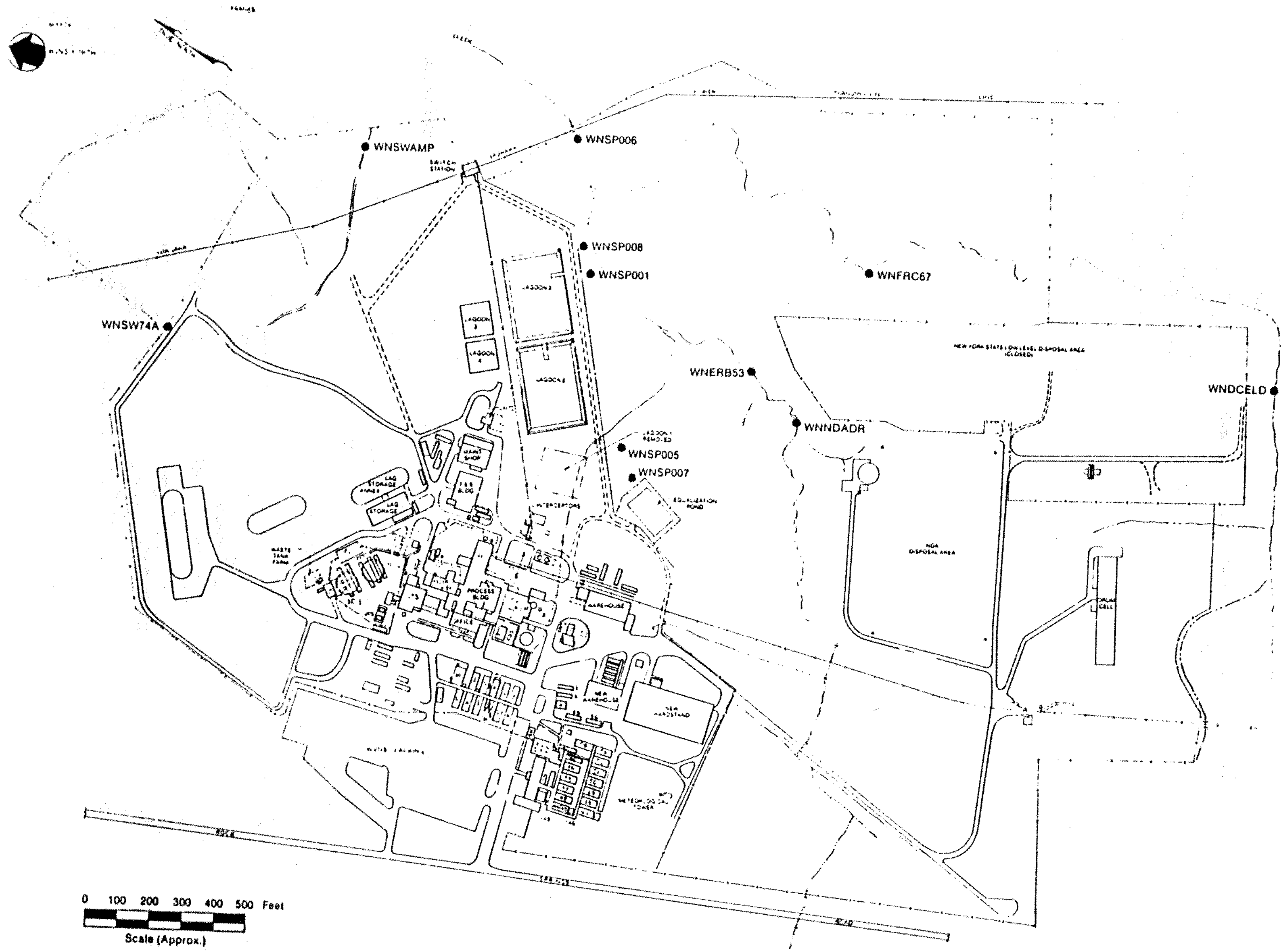

Figure 2-3. Sampling Locations for On-Site Surface Water.

from 3.8 E-9 to 8.2 E-9 μCi/mL (1.4 E-1 to 3.0 E-1 Bq/L) in Buttermilk Creek at Thomas Corners Bridge (WFBCTCB). (See Tables C-1.2 and C-1.3). However, the average concentrations below the site in Cattaraugus Creek are not significantly higher than the Buttermilk Creek background (upstream) concentrations.

In comparison, if the most restrictive beta-emitting radionuclide is used (iodine-129), the maximum concentration measured in Buttermilk Creek at Thomas Corners Bridge where dairy cattle have access is 1.6 percent of the DOE derived concentration guide (DCG) for unrestricted use (Appendix B). At the Project security fence over 4 km from the nearest public access point, the most significant beta-emitting radionuclides were measured at 1.6 E-7 μCi/mL (5.9 Bq/L) for cesium-137 and 2.2 E-8 μCi/mL (8.1 E-1 Bq/L) for strontium-90 during the period of highest concentration. This corresponds to 5.3 and 2.2 percent of the DCGs for cesium-137 and strontium-90, respectively. The annual average was 2.7 percent for cesium and 1.7 percent for strontium. Tritium, at an annual average of 6.6 E-7 μCi/mL (2.4 E1 Bq/L), was 0.03 percent of the DCG values. Except for two months of the year, the gross alpha was below the average detection limits of 1.5 E-9 μCi/mL (5.6 E-2 Bq/L), or less than 5 percent of the DCG for americium-241. The positive values were 20 and 9 percent of the DCGs in June and October, respectively, assuming that all alpha-emitting isotopes were americium-241.

The highest concentrations in monthly composite water samples from Cattaraugus Creek during 1988 show strontium-90 to be less than 0.9 percent of the DCG for drinking water. No gamma-emitting fuel cycle isotopes were detected in Cattaraugus Creek water during 1988 (Table C-1.5).

The largest single source of radioactivity released to surface waters from the Project is the discharge from the LLWTF through the Lagoon 3 weir (WNSP001, Figure 2-3) into Erdman Brook, a tributary of Frank's Creek. There were five batch releases totalling about 30 million liters in 1988. The effluent was grab sampled daily during the 31 days of release and analyzed. The total amounts of activity in the effluent are listed in Table C-1.1.1. Of the activity released, 6.4 percent of the tritium and 2.6 percent of the other gross radioactivity originated in the New York State disposal area (based on measurements of water transferred in 1988 from the state area to the LLWTF) and not from previous or current Project operations (see Table C-1.8). The annual average concentrations from the Lagoon 3 effluent discharge weir, including all measured isotope fractions, was less than 40 percent of the DCGs (Table C-1.1.2).

Available results for sediment sampling from streams above and below the Project are shown in Table C-1.7. These results are similar to those obtained for gamma-emitting nuclides during 1987. A comparison of 1986-1988 cesium-137 data for the two upstream locations and the three downstream locations is presented in Figure 2-4. As indicated, cesium-137 concentrations are decreasing or staying constant with time for the locations downstream of the project (SFTCSED,SFCCSED, and SFSDSED). Concentrations of cesium-137 in upstream locations have remained consistant through the time period. A comparison of cesium-137 to naturally occurring potassium-40 is shown in Figure 2-5 for the

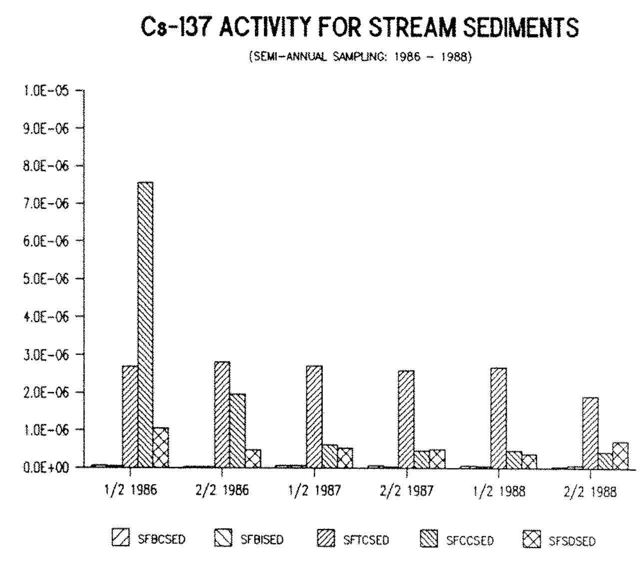

Figure 2-4. Cesium-137 concentrations (μCi/g dry) in stream sediment at two locations upstream and three locations downstream of the WVDP.

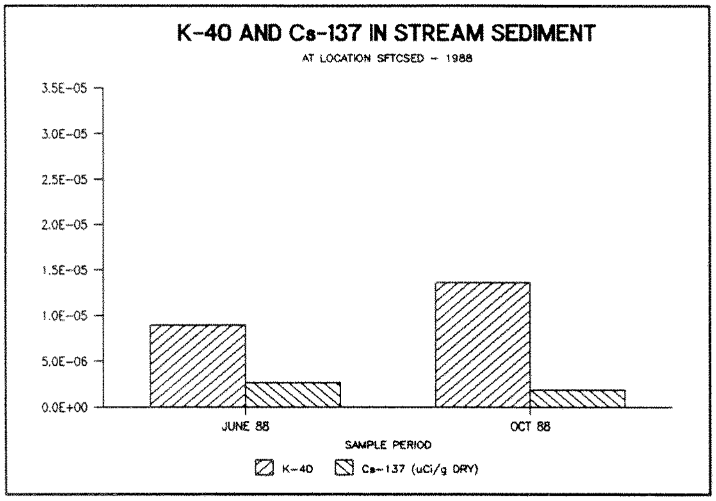

Figure 2-5
Comparison of naturally occuring potassium-40 and cesium-137 at downstream sampling location SFTCSED.

downstream location nearest the Project (SFTCSED) and indicates that cesium-137 is present at levels lower than naturally occurring gamma emitters.

2.1.3 Radioactivity in the Food Chain

Samples of fish and deer were collected near the site and from remote locations during periods when they would normally be taken by sportsmen for consumption. Milk and beef from cows grazing near the site and at remote locations as well as hay, corn, tomatoes, and apples were also collected and analyzed during 1988. Locations of remote background samples are shown on Figure 2-6. The results of these analyses are presented in Appendix C-3.

Fish samples were taken semiannually during 1988 above the Springville dam from the portion of Cattaraugus Creek which receives WNYNSC drainage (BFFCATC). Ten fish were collected from this section of the stream during each period. The strontium-90 content and gamma emitting isotopes in flesh were determined for each specimen. An equal number of fish samples (BFFCATD) were taken from Cattaraugus Creek below the dam, including species which migrate nearly 64 km (40) miles upstream from Lake Erie. These specimens were representative of sport fishing catches in the drainage downstream of the dam at Springville.

Control samples provide comparisons with the concentrations found in fish taken from site-influenced waters. A similar number of fish were taken from waters that are not influenced by site runoff (BFFCTRL), and their edible portions were analyzed for the same isotopes. These control (natural background) samples were representative of the species collected in Cattaraugus Creek downstream from the WVDP (Table C-3.4).

The concentrations of strontium-90 in the edible flesh of fish sampled above the Springville dam and at the background location during the 3rd quarter of 1988 show an increase from the levels detected in 1987 samples to the levels noted in 1986. The strontium-90 concentrations in edible flesh of fish sampled below the dam during this period remain at the lower 1987 levels. The log-normal statistical treatment of the fish data presented in Table C-3.4 is appropriate to the sample type being reported [Corley et al. 1981].

Portions of venison were analyzed from three deer taken from a resident herd on the southeast side of the WNYNSC. The average concentration of strontium-90 in venison was slightly higher than the concentration in the previous year's sample, while the average concentration of cesium-137 decreased slightly. Data from control, or background, deer samples collected in November 1988 near Olean 65 km (40 miles) southeast of the site indicated a slight increase in radioactivity from 1987 levels. Both sets of 1988 data are shown in Table C-3.2 for comparison.

With the exception of strontium-90 in the November 1988 local beef sample, the concentration of radioactivity in meat from semiannual samples of local beef animals was indistinguishable from the concentration in control samples (Table C-3.2).

Milk samples were taken in 1988 from dairy farms near the site (Figure 2-7) and from control farms at some distance. Besides the quarterly composite sample from the maximally exposed herd to the north (BFMREED), an additional quarterly composite of milk was taken from a nearby herd to the northwest (BFMCOBO). Single samples were

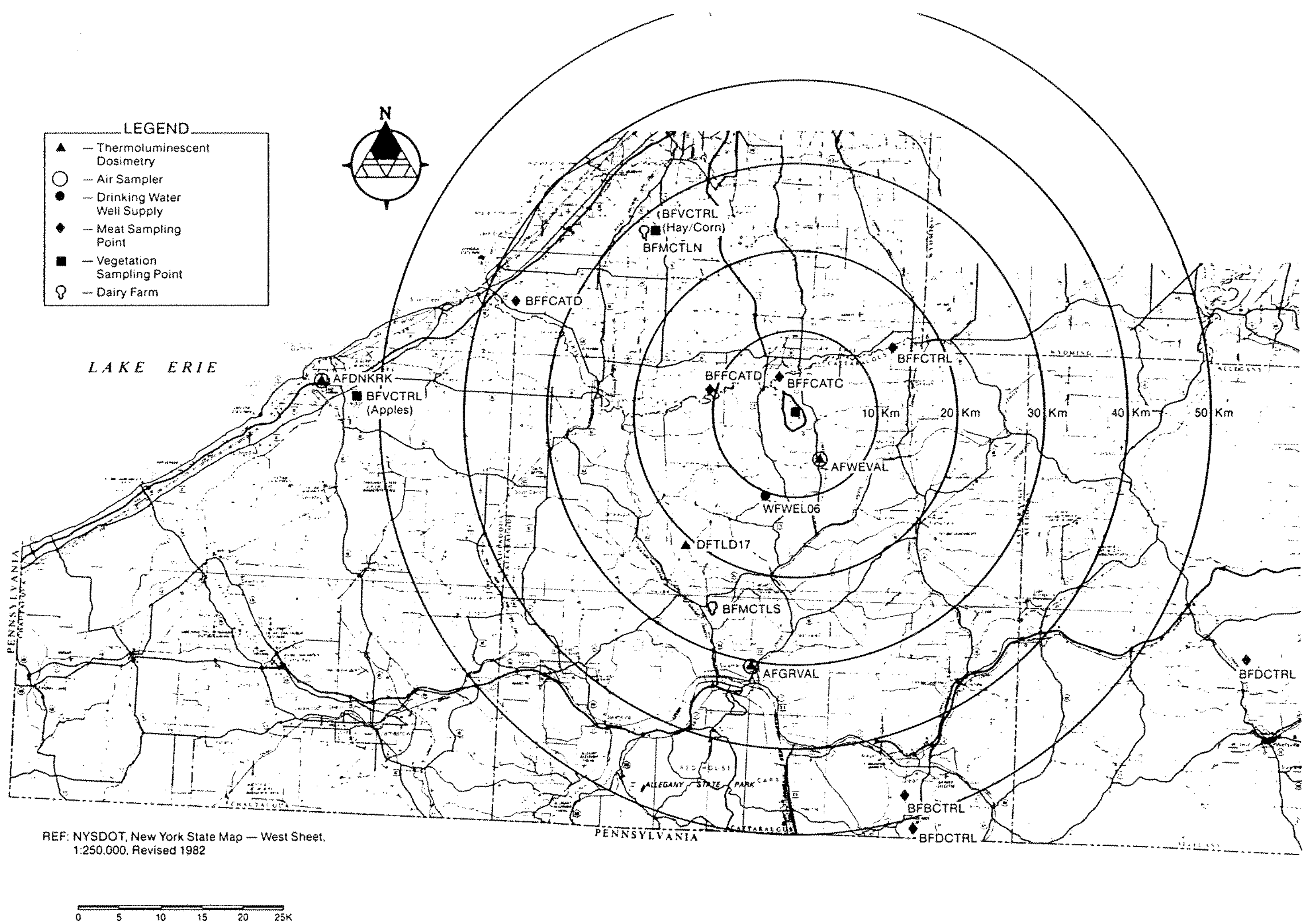

Figure 2-6. Sample Points in WVDP Environs.

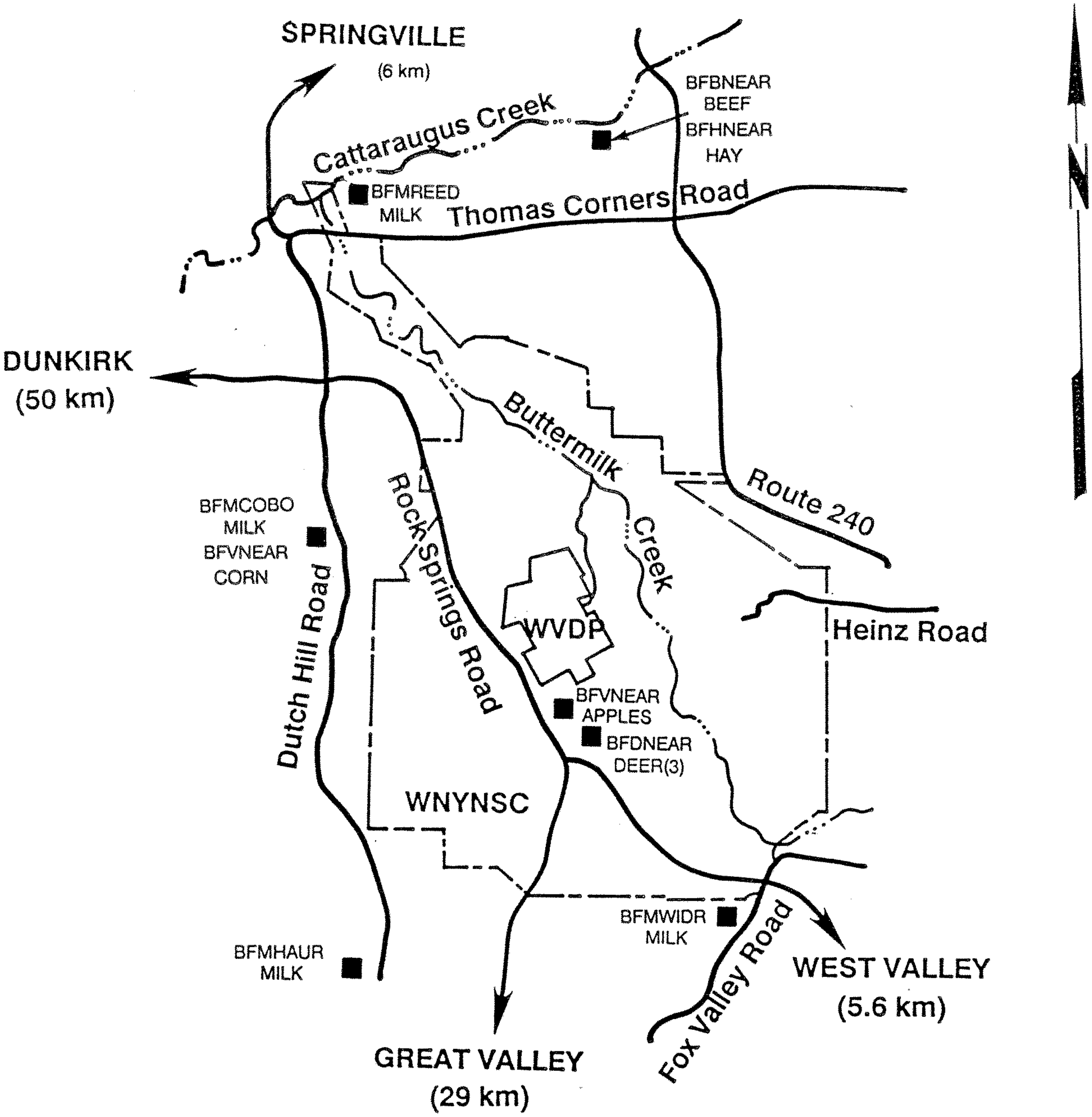

Figure 2-7. Biological Samples Taken Near the WVDP.

taken from herds to the south (BFMWIDR) and southwest (BFMHAUR). Two samples from control herds (BFMCTRLN and BFMCTRLS) were also collected as quarterly composites. Each sample or composite was analyzed for strontium-90, tritium, iodine-129, and gamma-emitting isotopes (Table C-3.1). Strontium-90 in samples from near the site ranged from 1.5 to 6.5 E-9 μCi/mL (5.6 E-2 to 2.4 E-1 Bq/L) compared to the control samples at 1.4 to 3.4 E-9 μCi/mL (5.2 E-2 Bq/L to 1.3 E-1 Bq/L). Iodine-129 was not detected in any samples to the lower limit of detection (LLD) of 7 E-10 μCi/mL (2.6 E-2 Bq/L). Due to a change in contract laboratories for the last half of 1988, the LLD for iodine-129 increased to 4.0 E-9. Cesium-137 and other gamma-emitting fuel cycle isotopes were also not detected. Tritium was added to the analyses performed, with all results below the detection limit of 3.5 E-7 μCi/mL (1.3 E1 Bq/L).

Based on the samples analyzed in 1988 (Table C-3.3), there was no detectable difference in the concentration of tritium or gamma-emitting isotopes in corn, apples, or tomatoes grown near the site and at remote locations. Samples of tomatoes and corn from both near the site and remote locations showed no overall difference in strontium-90. However, apples from the WNYNSC contained strontium-90 at very low concentrations, but slightly above those grown in unrestricted locations (see Figure 2-7). There was no detectable difference in the concentration of gamma-emitting isotopes or strontium-90 in hay near the site and at remote locations.

Section 4 of this report discusses the radionuclides present in the human food chain and assesses their contribution to the potential for radiation exposure to the public. Although the maximum concentrations of radioactivity found in some biological samples were above background levels, the potential dose associated with consumption of these samples is far below the protection standards.

2.1.4 Direct Environmental Radiation

The current monitoring year, 1988, was the fifth full year in which direct penetrating radiation was monitored at WVDP using TL-700 lithium fluoride (LiF) thermoluminescent dosimeters (TLDs) located as shown on Figures 2-6, 2-8 and 2-9. The uncertainty of individual results and averages were acceptable and measured exposure rates were comparable to those of 1987. There were no significant differences in the data collected from the background TLDs (locations 17 and 23) and from those on the WNYNSC perimeter for the 1988 reporting period.

Dosimeters used to measure ambient penetrating radiation during 1988 were processed on-site. The system used Harshaw TL-700 LiF chips which are maintained solely for environmental monitoring apart from the occupational dosimetry TLDs. The environmental TLD package consists of five TLD chips laminated in a thick card bearing the location identification and other information. These cards are placed at each monitoring location for one calendar quarter (3 months) and then processed to obtain the integrated gamma radiation exposure.

Monitoring points are located around the site perimeter and access road, at the waste management units, at the inner facility fence, and at background locations remote from the WVDP site. Appendix C-4 provides a summary of the results for each of the environmental monitoring locations by calendar quarter along with averages for comparison.

The quarterly averages and individual location results show very slight differences due to seasonal variation. During the first quarter (January through March) of 1988, the average quarterly exposure was decreased due to spring snow cover. The second quarter (April through June), third quarter (July through September), and fourth quarter (October through December) with no snow cover had a higher quarterly average. The data obtained for all four quarters compared favorably to the respective quarterly data in 1987 with no unusual situations observed. A comparison of the 16 perimeter TLD quarterly averages since 1983 is shown in Figure 2-10. The perimeter TLD average was 21.3milli Roentgen/quarter (20.4 mrem/qtr.) for 1988.

Presumably because of their proximity to the LLW disposal area, the dosimeters at locations 18 and 19 showed a small elevation in radiation exposure

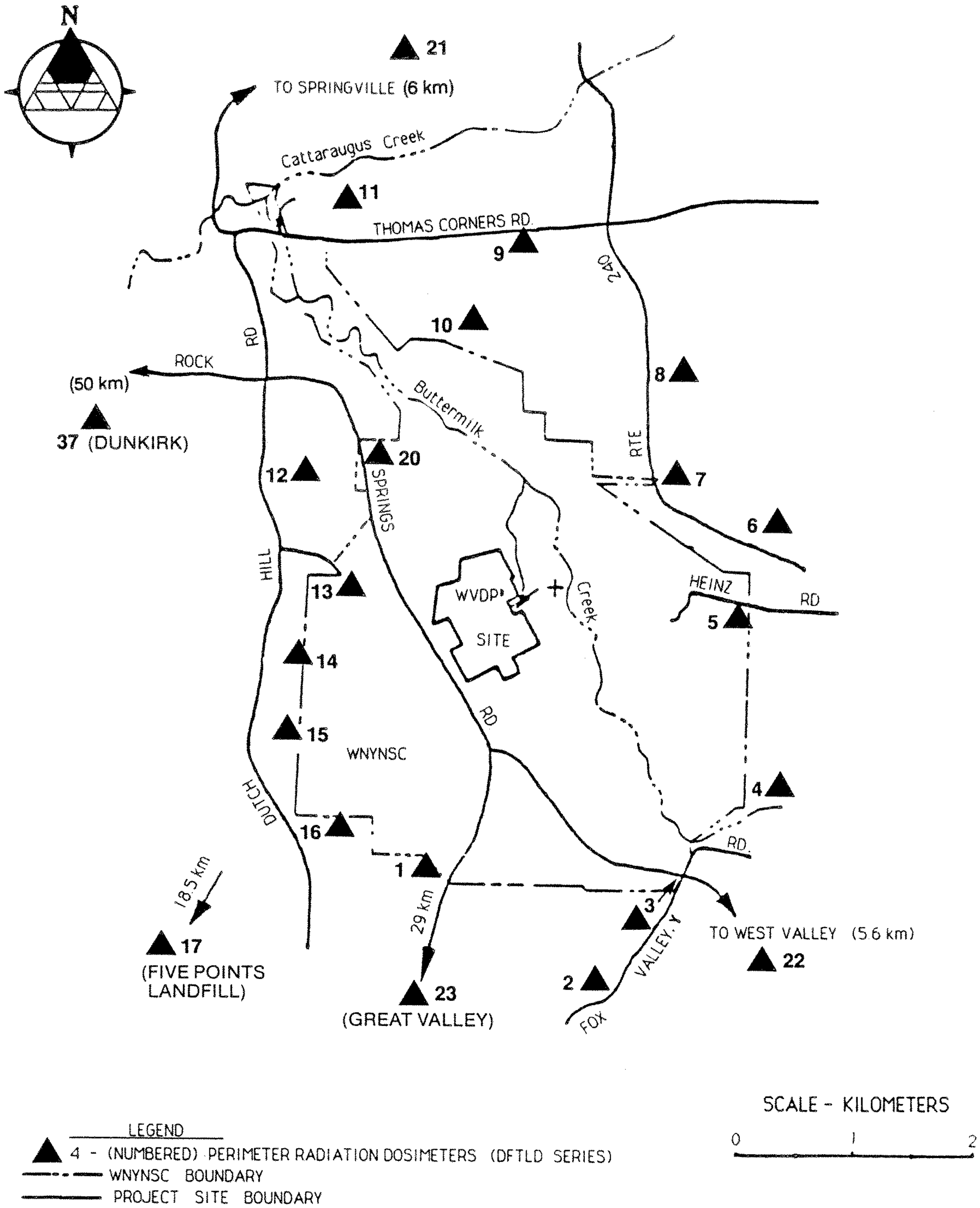

Figure 2-8. Locations of Perimeter Thermoluminescent Dosimetry (TLD).

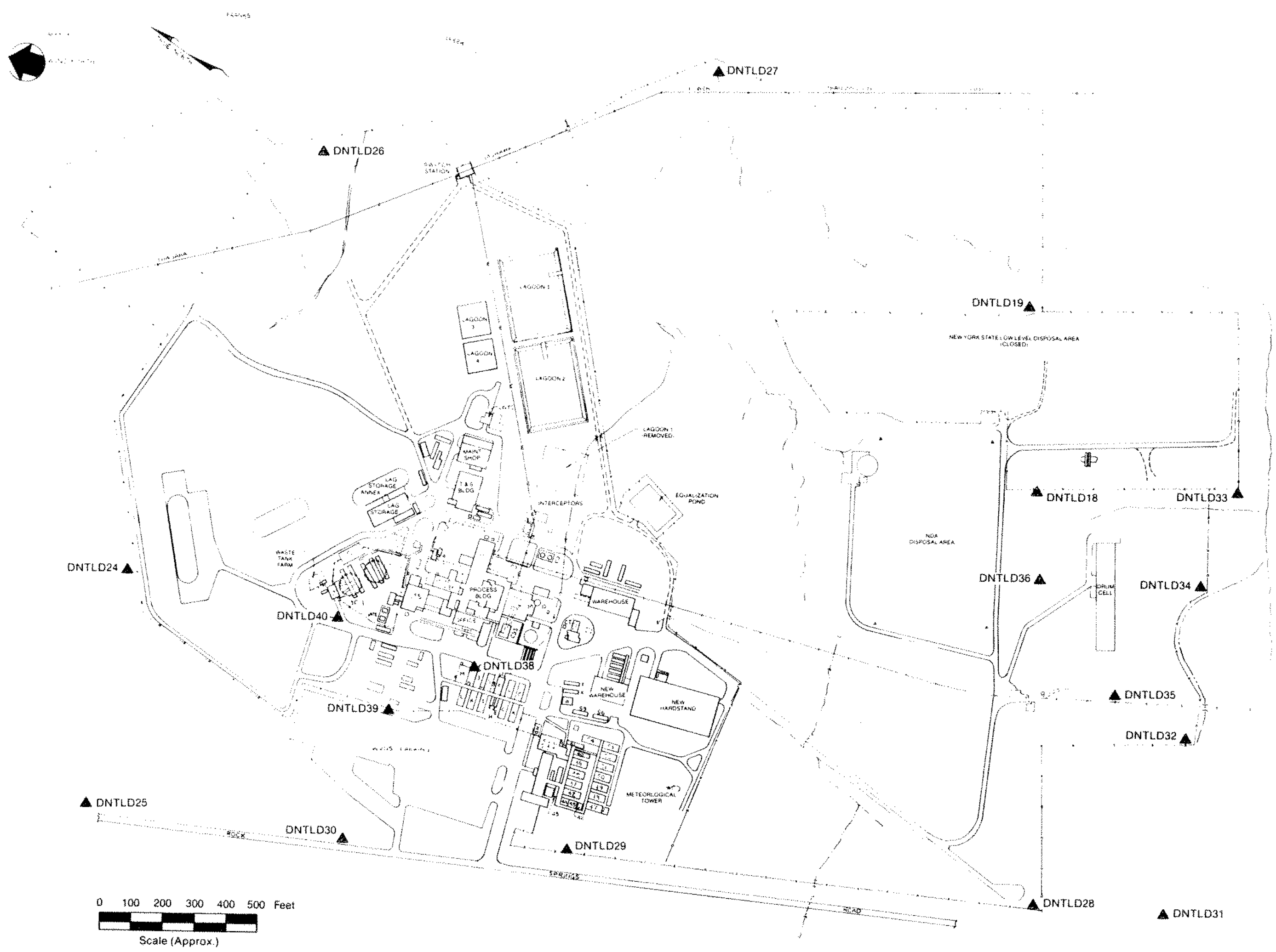

Figure 2-9. Locations of On-Site Thermoluminescent Dosimetry (TLD).

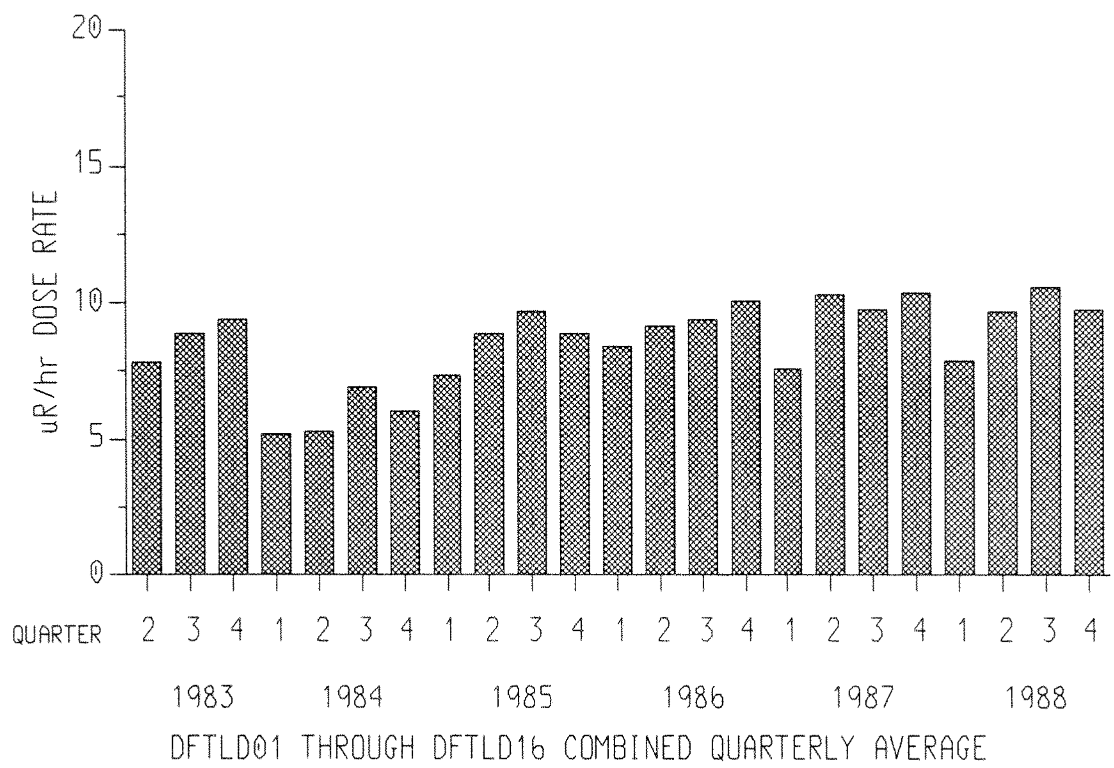

Figure 2-10
Average quarterly gamma exposure rates around the WVDP

compared to the WNYNSC perimeter locations. Although above background, the readings are relatively stable from year to year. Location 25, on the public access road through the site north of the facility, also showed a small elevation above background due to the storage of decontamination wastes near location 24 within the site security area.

Location 24 on the north security fence, like locations 18 and 19, is not included in the off-site environmental monitoring program; however, it is a co-location site for the NRC TLD (Table D-1.7). This point received an average exposure of 0.79 mR per hour during 1988. This exposure is primarily attributable to the nearby storage of sealed containers of radioactive components and debris from plant decontamination efforts. The storage area is well within the WNYNSC boundary and not readily accessible to the public. TLD locations 26 through 36 are located along the Project security fence, forming an inner ring of monitoring around the facility area. TLDs 37 through 40 were added in 1987 to monitor a third background location and to improve coverage of waste management units and on-site sources.

2.2 NONRADIOLOGICAL MONITORING

West Valley Demonstration Project effluents are regulated for nonradiological parameters by NYSDEC. Stationary sources of atmospheric pollutants are authorized by either a permit to construct or a certificate to operate. Liquid effluents are monitored as a requirement of the State Pollution Discharge Elimination System (SPDES) permit issued and enforced by the NYSDEC. A summary of nonradiological monitoring is provided in Appendix C-5.

2.2.1 Air Discharges

The WVDP presently holds six certificates to operate stationary sources and one permit to construct a new source of airborne effluents. These permits are for minor sources of regulated pollutants such as particulates, nitric acid mist, and oxides of nitrogen. Monitoring these parameters is not required because of their insignificant concentrations and small mass discharge.

The individual air permits held by the WVDP are identified and described in Table C-5.1.

2.2.2 Liquid Discharges

The WVDP holds a SPDES permit which identifies the outfalls where liquid effluents are released to Erdman Brook (shown in Figure 2-11) and which specifies the sampling and analytical requirements for each outfall. This permit was modified in 1988 to include additional monitoring requirements at outfall 001.

Three outfalls are identified on the permit: outfall 001, discharge from the LLWTF; outfall 007, discharge from the sanitary and utility effluent mixing basin; and outfall 008, effluent from the perimeter of the low-level waste treatment facility storage lagoons. The conditions and requirements of the current SPDES permit are summarized in Table C-5.2.

The most significant features on the SPDES permit are requirements to report data as flow-weighted concentrations and to apply a "net" discharge limit for iron. The net limit allows for subtraction of incoming naturally present amounts of iron in the project's effluent. The flow-weighted limits apply to the total discharge of project effluents but allow maximum credit for dilute waste streams in determining compliance with effluent concentration limits specified in the permit.

2.2.3 Results

The SPDES monitoring data are displayed in Figures C-5.2 through C-5.31. Project effluents were, for the most part, within permit limits. However, the WVDP reported a total of 24 non-compliance episodes in 1988. These are listed on Table C-5.3.

2.3 POLLUTION ABATEMENT PROJECTS

As 1988 began, there were four ongoing pollution control and abatement projects carried over from 1987. Two of these projects were directed toward RCRA compliance and site characterization, and are continuing into 1989. A third project, revision and up-dating of the WVDP Spill Prevention, Control and Countermeasures Plan, was completed in 1988. The modified plan was issued in January 1989 as an addendum to the WVDP Emergency Plan and Procedures Manual (WVDP-022). The fourth project, upgrades to the sewage treatment plant, was completed on June 2, 1988.

One new project was undertaken during 1988. An asbestos survey of the plant was completed and asbestos-containing materials were identified. The results were reported in an Asbestos Inspection Report and Management Plan, which evaluated the hazards and assigned priorities for corrective action. The final report was issued in February 1989.

2.4 SPECIAL MONITORING

2.4.1 Closed Landfill Maintenance

Closure of the on-site nonradioactive construction and demolition debris landfill was accomplished in August 1986, although this facility had been removed from active service in 1985. The site was closed in accordance with NYSDEC requirements for construction and demolition debris landfills following a closure plan [Standish 1985] approved by NYSDEC. Routine inspection and maintenance of the closed facility was performed in 1988 as specified by the closure requirements. These activities included checking areas for proper drainage (i.e., no obvious ponding or soil erosion) and cutting the grass planted on the soil and clay cap.

2.4.2 STS System Air Monitoring

The Permanent Ventilation System (PVS) began operation in April 1988 to support the IRTS proces-

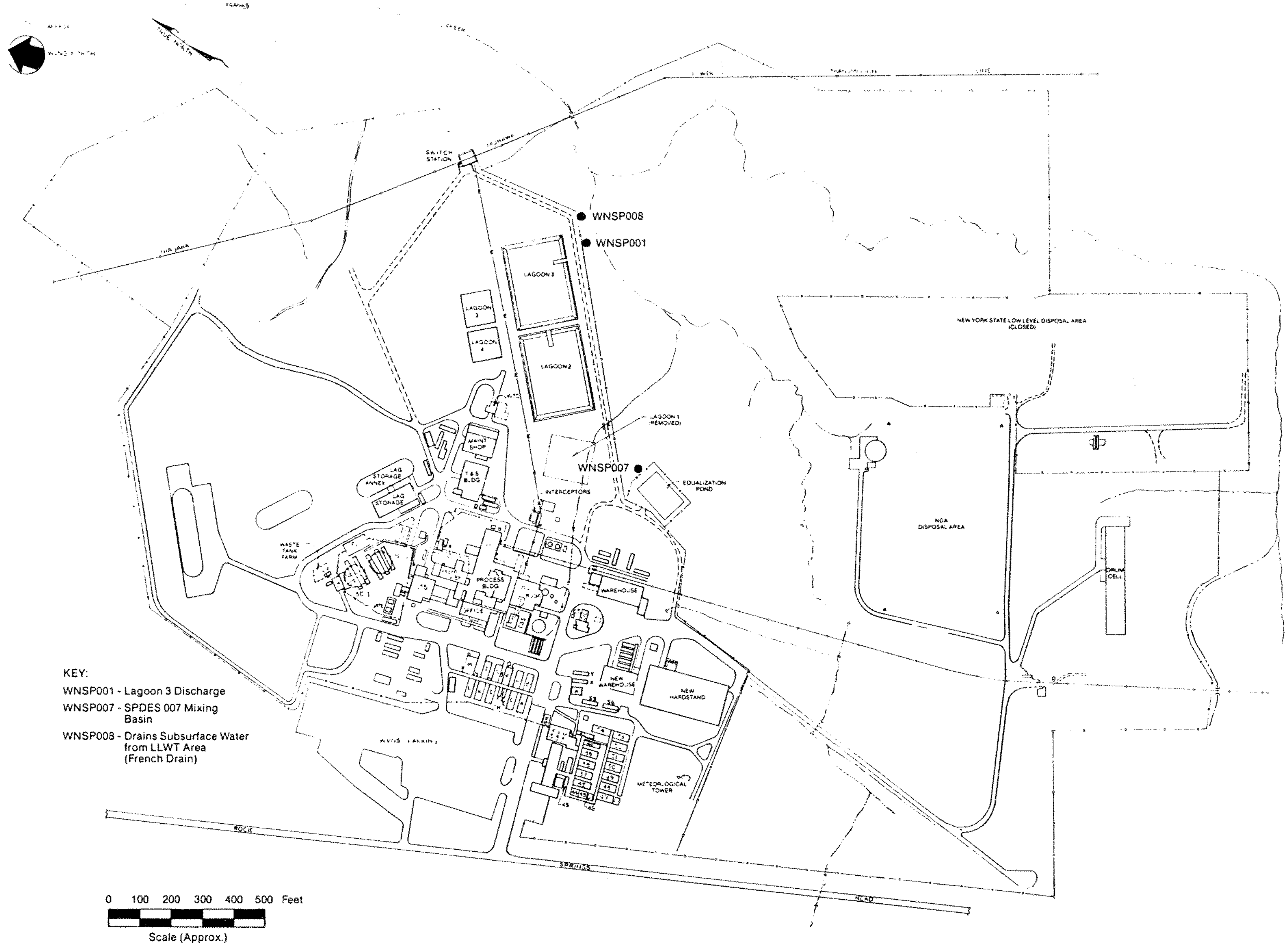

Figure 2-11. SPDES Monitoring Points.

ses. Located on the northeast corner of the high-level waste tank farm, the PVS consists of two redundant air monitoring systems, a sampling system, and special air flow regulating units designed to maintain isokinetic flow through all the components. Integrating air flow totalizers were also installed to record the total volume of air sampled and the total air volume released from the facility.

The PVS is designed to ventilate the STS building which houses process piping and the STS control room. However, the system also provides ventilation for the high-level waste tank farm. During the 1988 waste tank modifications for STS processing, the PVS ran a total of 46.4 hours, drawing from both the waste tanks and the STS building. For the remainder of the time, it has monitored only STS building air.

Each monitoring system detects gross alpha and gross beta activity using separate flow channels for each detector. A digital readout of filter activity is displayed in both the PVS building and the STS control room. Alarms are located both in the PVS and STS buildings to indicate monitor or system trouble, detector failure, and high radiation conditions. Radiation alarms are set to activate at one tenth the maximum allowable limits for air effluents, as stipulated in the Operational Safety Requirements. A second alarm will activate, if the allowable limit is reached. All data are permanently recorded on an attached six-pin chart recorder. The backup monitoring system is maintained in operating condition for use in the event of trouble or failure with the on-line system. The sampling system will operate continually, regardless of alarms or conditions associated with the monitoring system. Samples can be removed as needed to evaluate conditions, but the normal schedule for particulate and iodine filter change is weekly.

Operations of the STS require continuous routine monitoring of the PVS. After six process runs and waste tank modification work, the routine analysis of particulate air filters, charcoal cartridges, and tritium samplers indicated that activity levels were less than 1 percent of the DCGs for all measurable activities of each sampling medium. The monitoring and sampling schedule for this new system is provided in Appendix A (ANSTSTK). Results for 1988 are presented in Tables C-2.1.8 and C-2.1.9.