

Appendix B
2005 Environmental Monitoring Program

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2005 Environmental Monitoring Program

The following schedule represents the West Valley Demonstration Project (WVDP) routine environmental monitoring program for 2005. This schedule met or exceeded the requirements of DOE Order 450.1, DOE Order 5400.5, and DOE/EH-0173T. Specific methods and recommended monitoring program elements are found in DOE/EP-0096, *A Guide for Effluent Radiological Measurements at DOE Installations*, and DOE/EP-0023, *A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations*, which were the bases for selecting most of the schedule specifics. Additional monitoring was mandated by air and water discharge permits (40 CFR 61 and SPDES), which also required formal reports. Specifics are identified in the schedule under Monitoring/Reporting Requirements.

A computerized environmental data-screening system identifies analytical data that exceed preset limits. All locations are checked monthly for trends or notable results in accordance with criteria established in *Documentation and Reporting of Environmental Monitoring Data* (West Valley Nuclear Services Co., February 23, 2005). Reportable results are then described in Monthly Trend Analysis Reports (MTARs) for radiological screening and isotopic parameters together with possible causes and corrective actions, if indicated. WVDP Effluent Summary Reports (ESRs) are transmitted with the MTAR. At the end of 2005, the MTARs for November and December were combined into a new report, the Quarterly Trend Analysis Report (QTAR). The WVDP groundwater monitoring radiological screening and chemical results are reported in the quarterly Groundwater Trend Analysis Reports (GTARs).

Schedule of Environmental Sampling

The index on pages B-xvii through B-xx is a list of the codes used to identify the various sampling locations, which are shown on Figures A-2 through A-15 in Appendix A. The schedule of environmental sampling at the WVDP is found in this appendix. Table headings in the schedule are as follows:

- ***Sample Location Code.*** Describes the physical location where the sample is collected. The code consists of seven or eight characters: The first character identifies the sample medium as **A**ir, **W**ater, **S**oil/Sediment, **B**iological, or **D**irect Measurement. The second character specifies **oN**-site or **oFf**-site. The remaining characters describe the specific location (e.g., **AFGRVAL** is **A**ir **oFf**-site at **G**reat **V**ALley). Distances noted at sampling locations are as measured in a straight line from the main stack on site.
- ***Monitoring/Reporting Requirements.*** Notes the bases for monitoring the location, any additional references to permits, and the reports that are generated from the sample data. Routine reports cited in this appendix are the Effluent Summary Report (ESR), the Monthly Trend Analysis Report (MTAR), the State Pollutant Discharge Elimination System Discharge Monitoring Report (SPDES DMR), the Air Emissions Report (NESHAP), the Annual Site Environmental Report (ASER), and the quarterly Groundwater Trend Analysis Report (GTAR).
- ***Sampling Type/Medium.*** Describes the collection method and the physical characteristics of the medium.
- ***Collection Frequency.*** Indicates how often the samples are collected or retrieved.
- ***Total Annual Sample Collections.*** Specifies the number of discrete physical samples collected annually for each group of analytes.
- ***Analyses Performed/Composite Frequency.*** Notes the type of analyses of the samples taken at each collection, the frequency of composite, and the analytes determined for the composite samples.

Summary of Monitoring Program Changes in 2005

Location Code	Description of Changes
ANSTACK ANSTSTK ANCSSTK ANSCRFK ANCSPFK ANVITSK ANRHWFK	As of April 2005, collection frequency was reduced from weekly to biweekly for particulate filters and charcoal cartridges at all on-site emission points and for desiccant columns at ANSTACK and ANSTSTK. Compositing frequency for all isotopic analyses was reduced from quarterly to semiannually.
OVES/PVUs	Since vitrification was completed, OVEs/PVUs have been used in an expanded role to monitor decontamination activities at the site and to support waste packaging activities. As of April 2005, compositing frequency for isotopic analyses was reduced from quarterly to semiannually.
ANLAGAM ANSDAT9	<p>As of April 2005, collection frequency for particulate filters, and charcoal cartridges and desiccant columns at ANSDAT9, was reduced from weekly to biweekly. Compositing frequency for isotopic analyses was reduced from quarterly to semiannually.</p> <p>In mid-December 2005, sample collection at ANSDAT9 was discontinued and the equipment was retained to be used for portable air monitoring during future demolition activities.</p>
ANNDAAAM	As of April 2005, sample collection was discontinued. Equipment was retained to be used for portable air monitoring during future demolition activities.
WNSP001	Sampling for organic compounds was modified to comply with requirements of the renewed SPDES permit, effective January 1, 2005. As of April 2005, sampling during lagoon discharges was modified to discontinue daily grab samples for gross beta and conductivity and midpoint grab samples for gross alpha/beta, tritium, strontium-90, and gamma isotopic analysis.
WNSP006	As of April 2005, weekly sampling for gross alpha/beta and tritium was retained when lagoon 3 is discharging. Sampling frequency was reduced to biweekly when lagoon 3 is not discharging. Weekly and biweekly samples are composited monthly for strontium-90 and gamma isotopic analysis. Quarterly compositing for all isotopic analyses was retained.
WNURRAW	As of the end of first quarter 2005, quarterly sampling for giardia, cryptosporidium, and heterotrophic bacteria was discontinued.

Summary of Monitoring Program Changes in 2005 (continued)

Location Code	Description of Changes
WNSP007	As of April 2005, the frequency of sampling for gross alpha/beta and tritium was reduced from three per month to two per month, coinciding with the first and third SPDES collection weeks. Compositing frequency for strontium-90 and gamma isotopic analyses was reduced from quarterly to semiannually. The pH measurement for the 24-hour composite sample was discontinued because it is not SPDES reportable.
Storm Water Outfalls (WNSO Series)	Twenty (20) storm water outfalls in eight groupings were added to the WVDP SPDES permit, effective January 1, 2005. Outfall location codes, collection frequencies, sampling specifics, and a full parameter list are presented on pp. B-11 through B-18.
WNSWR01	This storm water collection point was added near the on-site rain gauge for measurement of pH during each storm water sampling event.
WNSWAMP WNSW74A	As of April 2005, sampling frequency for gross alpha/beta, tritium, and flow (at WNSWAMP only) was reduced from weekly to biweekly. Measurement of pH was added. Biweekly samples are composited monthly for strontium-90 and gamma isotopic analysis. Compositing frequency for isotopic analyses was reduced from quarterly to semiannually.
WNSP005	As of April 2005, compositing frequency for strontium-90 and gamma isotopic analyses was reduced from quarterly to semiannually.
WNCOOLW	As of April 2005, sampling frequency was reduced from quarterly to annually.
WNFRC67	As of June 1, 2005, the collection frequency of grab samples for gross alpha/beta, tritium, and pH was reduced from monthly to quarterly, to be collected concurrently with the sample at WNNDADR as directed by NYSERDA. Strontium-90 and gamma isotopic analyses were added to the quarterly grab sample, and quarterly composite samples were discontinued.
WNERB53	As of June 1, 2005, the collection frequency of grab samples for gross alpha/beta, tritium, and pH was reduced from weekly to quarterly, to be collected concurrently with the sample at WNNDADR as directed by NYSERDA. Compositing frequency for strontium-90 and gamma isotopic analyses was reduced from quarterly to semiannually, and gross alpha/beta and tritium analyses were added.

Summary of Monitoring Program Changes in 2005 (continued)

Location Code	Description of Changes
WNNDADR	As of June 2005, the collection frequency of grab samples for pH, tritium, NPOC, and TOX was reduced from weekly to biweekly. A quarterly grab sample for gross alpha/beta and tritium was added, as directed by NYSERDA. Collection frequency for the timed continuous composite sample was reduced from weekly to biweekly, with biweekly samples composited for monthly analysis of gross alpha/beta and gamma isotopes and for semiannual analysis of strontium-90 and iodine-129.
WNDCELD	As of June 2005, the collection frequency of grab samples for gross alpha/beta and pH was reduced from monthly to once every two months and analysis of tritium was added. Four of the bimonthly grab samples are collected concurrently with the sample at WNNDADR, as directed by NYSERDA. The frequency of the composite for tritium, strontium-90, gamma isotopic, and iodine-129 analysis was reduced from quarterly to semiannually.
WNNDATR	As of April 2005, the compositing frequency for iodine-129 analysis was reduced from quarterly to semiannually.
WNSTAW4 WNSTAW5 WNSTAW6 WNSTAWB	Sampling was discontinued at these four (of five) standing water locations. No samples were collected in 2005. (Sampling was retained at WNSTAW9, the north reservoir near the site's potable water intake, because it is considered to be in the ingestion pathway via potable water.)
WNDNKMS WNDNKMP WNDNKEL	As of April 2005, sampling frequency was reduced from one grab sample at one location every three months to one every fourth month. At WNDNKEL, quarterly sampling for total haloacetic acids and total trihalomethanes was reduced to annual.
On-Site Groundwater Monitoring and Seeps	<p>A total of 17 monitoring locations were recommended for reductions in sampling frequency and/or the suites of analytical parameters. Sampling was discontinued for volatile organic compounds and semivolatile organic compounds at seven monitoring locations (wells 104, 105, 106, 201, 208, 403, and 8604). Reductions were approved by DOE and implemented.</p> <p>Annual sampling was discontinued for strontium-90 at two monitoring locations (wells 602A and 605).</p> <p>Sampling for pH, specific conductance, gross alpha, gross beta, and tritium was reduced from quarterly to semiannually at ten monitoring locations (wells 201, 205, 206, 208, 302, 402, 403, 605, 8604, and NB1S).</p>

Summary of Monitoring Program Changes in 2005 (continued)

Location Code	Description of Changes
On-Site Groundwater Monitoring and Seeps (<i>concluded</i>)	<p>These changes were effective with the start of the third-quarter 2005 (June 2005) groundwater sampling event.</p> <p>The detailed current program is described in the Groundwater Monitoring Plan (WVDP-239).</p>
WFBCTCB	As of April 2005, collection frequency for timed continuous composite samples was reduced from weekly to biweekly. Biweekly samples are composited monthly for gross alpha/beta and tritium analysis. Composite frequency for analysis of strontium-90 and gamma isotopic was reduced from quarterly to semiannually.
WFBIGBR	As of April 2005, the collection frequency of grab samples for gross alpha/beta, tritium, strontium-90, and gamma isotopic analyses was reduced from monthly to quarterly.
WFFELBR	As of April 2005, weekly sampling for gross alpha/beta, tritium, pH, and flow was retained during the full discharge cycle of lagoon 3. Sampling frequency was reduced to biweekly when lagoon 3 is not discharging. Weekly and biweekly samples are composited monthly (into a flow-weighted composite) for gross alpha/beta, tritium, strontium-90 and gamma isotopic analysis. Compositing frequency for analysis of technetium-99 was reduced from quarterly to semiannually.
WFWEL Series	As of April 2005, all off-site potable water wells will be sampled once every two years, with the exception of background well WFWEL06, which will continue to be sampled annually. All wells will be sampled in 2006.
AFFXVRD AFRT240 AFSPRVL AFWEVAL AFRSPRD AFGRVAL	<p>As of April 2005, the collection frequency for particulate filters at these off-site ambient air monitoring locations was reduced from weekly to biweekly.</p> <p>Compositing frequency was reduced from quarterly to semiannually. Collection of desiccant columns for tritium analysis at AFRSPRD and AFGRVAL was discontinued. The frequency for compositing monthly charcoal cartridges at AFRSPRD and AFGRVAL was reduced from quarterly to semiannually.</p>
AFTCORD AFBOEHN AFBLKST	As of April 2005, sampling at these off-site ambient air monitoring locations was discontinued.

Summary of Monitoring Program Changes in 2005 (continued)

Location Code	Description of Changes
AFDHFOP AFFXFOP AFTCFOP AF24FOP	As of April 2005, sampling was discontinued at these fallout pots.
ANRGFOP	As of April 2005, measurement of pH at the Environmental Laboratory rain gauge fallout pot was discontinued.
SFFXVRD SFRT240 SFSPRVL SFWEVAL SFRSPRD SFGRVAL	Collection frequency was reduced from annually to once every three years at these off-site soil sampling locations. The last samples were collected in 2004.
SFTCORD SFBOEHN SFBLKST	Sampling was discontinued at these three off-site surface soil sampling locations. The last samples were collected in 2004.
SFBISED	As of April 2005, sampling of off-site sediment at Bigelow Bridge, the upstream background location for Cattaraugus Creek, was discontinued.
BFMCTLS	As of April 2005, sampling frequency for milk at this background location was reduced from quarterly composites of monthly samples to one annual sample. Analysis of tritium was discontinued.
BFMREED BFMWIDR BFMSCHT	As of April 2005, analysis of tritium was discontinued in these near-site milk samples. The north near-site dairy herd was sold in May 2005. As of November 2005, sampling frequency for milk at the south near-site farm (BFMWIDR) was increased from one annual sample to quarterly composites of monthly samples.
BFMBLSY	As of November 2005, a nearby dairy farmer (west-northwest near-site) agreed to participate in the monthly sampling and analysis program by providing an annual sample as well as monthly samples to be shared with NYSDOH.
BFBNEAR BFBCTRL	In 2005, collection of beef samples was discontinued.

Summary of Monitoring Program Changes in 2005 (concluded)

Location Code	Description of Changes
DNTLD18 DNTLD31 DNTLD32 DNTLD34	As of April 2005, sampling was discontinued at these on-site TLD locations.

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Air Effluent and On-Site Ambient Air (Fig. A-6)

ANSTACK	Main Plant	B-1
ANSTSTK	Supernatant Treatment System	B-1
ANCSSTK	01-14 Building	B-1
ANCSRFK	Size-Reduction Facility	B-1
ANCSPFK	Container Sorting and Packaging Facility	B-1
ANVITSK	Vitrification Heating, Ventilation, and Air Conditioning	B-1
ANRHWFK	Remote-Handled Waste Facility	B-1
OVEs/PVUs ^a	Outdoor Ventilated Enclosures/Portable Ventilation Units	B-3
ANLAGAM	Lag Storage Area (ambient air)	B-3
ANNDAAM	NDA Area (ambient air)	B-3
ANSDAT9	SDA Trench 9 (ambient air)	B-3

Liquid Effluent, On-Site Water, and Storm Water Outfalls (Figs. A-2 through A-5)

WNSP001	Lagoon 3 Weir Point	B-5
WNSP01B ^a	Internal Process Monitoring Point	B-7
WNSP116	Pseudo-Monitoring Point Outfall 116	B-7
WNSP007	Sanitary Waste Discharge	B-7
WNSP006	Facility Main Drainage	B-9
WNURRAW ^a	Utility Room Raw Water	B-9

WNSO-Series Storm Water Outfalls

GROUP 1

WNSO02	CPC Waste Storage Area Swale	B-11
WNSO04	North Swamp Drainage (WNSW74A)	B-11

GROUP 2

WNSO06	Northeast Swamp Drainage (WNSWAMP)	B-11
WNSO33	LAG Storage Drainage	B-11

GROUP 3

WNSO09	Substation	B-11
WNSO12	South Facility Drainage (WNSP005)	B-11

GROUP 4

WNSO34	Rail Spur Culvert	B-13
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^a Not detailed on map.

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Liquid Effluent, On-Site Water, and Storm Water Outfalls (Figs. A-2 through A-5) (concluded)

GROUP 5

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GROUP 6

WNSO36	Firing Range Wetland Drainage	B-15
WNSO37	Pump House Roadway	B-15
WNSO38	Lake Two Roadway North	B-15
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WNSO41	Lake One Roadway	B-15
WNSO42	Pre-Railroad Spur Wetland Area (Near WFBCBKG)	B-15

GROUP 7

WNSO20	Disposal Area Drainage (WNNDADR)	B-15
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GROUP 8

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WNSWR01	Storm Water Precipitation pH Measurement Location Near the Site Rain Gauge	B-17
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WNSW74A	North Swamp Drainage Point	B-19
WNSDADR	SDA Runoff	B-21
WNSP008	French Drain LLWTF Area	B-21
WNSP005	South Facility Drainage	B-21
WNCoolW	Cooling Tower	B-21
WNFRC67	Frank's Creek East	B-23
WNERB53	Erdman Brook	B-23
WNNDADR	Disposal Area Drainage	B-23
WNDCELD	Drum Cell Drainage	B-23
WNNDATR	NDA Trench Interceptor Project	B-25
WNSTAW 9	Standing Water Near North Reservoir Intake	B-25
WNDNK Series ^a	Site Potable Water	B-27

^a Not detailed on map.

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On-Site Groundwater and Seeps (Figs. A-8 through A-10)

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SSWMU #2	Miscellaneous Small Units Wells	B-29
SSWMU #3	Liquid Waste Treatment System Wells	B-29
SSWMU #4	HLW Storage and Processing Tank Wells	B-31
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SSWMU #9	NDA Units Wells and NDATR	B-33
SSWMU #10	IRTS Drum Cell Wells	B-33
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North Plateau Seeps	Northeastern Edge of North Plateau	B-35
Well Points	Downgradient of Main Plant	B-35
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Off-Site Surface Water (Fig. A-5)

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WFBCTCB	Buttermilk Creek at Thomas Corners	B-37
WFBIGBR	Cattaraugus Creek at Bigelow Bridge, Background	B-39
WFELBR	Cattaraugus Creek at Felton Bridge	B-39

Off-Site Drinking Water (Figs. A-11, A-14, and A-15)

FWWEL Series	Private Local Wells	B-41
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Off-Site Ambient Air (Figs. A-7, A-14, and A-15)

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AFTCORD	Thomas Corners Sampler	B-43
AFRT240	Route 240 Sampler	B-43
AFSPRVL	Springville Sampler	B-43
AFWEVAL	West Valley Sampler	B-43
AFBOEHN	Dutch Hill Road Sampler	B-43
AFRSPRD	Rock Springs Road Sampler	B-43
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AFBLKST	Bulk Storage Warehouse Sampler	B-43

Index of Environmental Monitoring Program Sample Points (concluded)

Fallout, Sediment, and Soil (Figs. A-2, A-5 through A-7, A-14, and A-15)

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AF24FOP	Route 240 Fallout	B-45
ANRGFOP	Rain Gauge Fallout	B-45
SF Soil Series	Air Sampler Area Soil	B-45
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SNSP006		B-45

Off-Site Biological (Figs. A-11, A-14, and A-15)

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BFFCATD	Cattaraugus Creek Fish, Downstream of Springville Dam	B-47
BFFCTRL	Cattaraugus Creek Fish, Background	B-47
BFMREED	North-Northwest Milk, Near-Site	B-47
BFMWIDR	Southeast Milk, Near-Site	B-47
BFMCTLS	Milk, South, Background	B-47
BFMBLSY	West-Northwest Milk	B-47
BFMSCHT	South Milk, Near-Site	B-47
BFVNEAR ^a	Produce, Near-Site	B-49
BFVCTRL ^a	Produce, Background	B-49
BFDNEAR	Venison, Near-Site	B-49
BFDCTRL	Venison, Background	B-49

Direct Measurement Dosimetry (Figs. A-12 through A-15)

DFTLD Series	Off-Site Direct Radiation	B-51
DNTLD Series	On-Site Direct Radiation	B-53

^a Near-site and background produce samples (corn, apples, and beans) are identified specifically as follows:
 corn = **BFVNEAC** and **BFVCTRC**; apples = **BFVNEAAF** and **BFVCTRA**; beans = **BFVNEAB** and **BFVCTRB**.

2005 Monitoring Program On-Site Effluent Monitoring

Air Effluents

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
ANSTACK <i>Main Plant Ventilation Exhaust Stack</i>	Airborne radioac- tive effluent points, including the LWTS <u>Required by:</u> • 40 CFR 61 <u>Reported in:</u> • ESR • MTAR • ASER • Air Emissions Annual Report (NESHAP)	Continuous off-line air particulate monitors	→ Continuous measurement of fixed filter; replaced biweekly	NA	→ Real-time alpha and beta monitoring
ANSTSTK <i>Supernatant Treatment System (STS) Ventila- tion Exhaust</i>		Continuous off-line air particulate filters	→ Biweekly	→ 26 each location	→ Gross alpha/beta, gamma isotopic ^a upon collection, flow
ANCSSTK <i>01-14 Building Ventilation Exhaust</i>		Biweekly filters composited to 2 each location			→ Semiannual compos- ites for Sr-90, U-232, U-233/234, U-235/236, U-238, total U, Pu-238, Pu-239/240, Am-241, gamma isotopic, flow
ANCSRFK <i>Contact Size-Reduction Facility Exhaust</i>		Continuous off-line desiccant columns for water vapor collection	→ Biweekly	→ 26 at each of two locations	→ H-3 (ANSTACK and ANSTSTK only), flow
ANVITSK <i>Vitrification HVAC Exhaust</i>		Continuous off-line charcoal cartridges	→ Biweekly	→ Biweekly cartridges composited to 2 each location	→ Semiannual composite for I-129

NA - Not applicable.

^a Weekly gamma isotopic only if gross activity rises significantly.

Sampling Rationale

ANSTACK	DOE/EH-0173T, 3.0; DOE/EP-0096, 3.3 Monitors and samples HEPA-filtered ventilation from most process areas, including cell ventilation, vessel off-gas, fuel receiving and storage (FRS), head end ventilation, and an analytical aisle. Requires continuous effluent monitoring per 40 CFR Subpart H, Section 61.93(b) because potential emissions may exceed the 0.1 mrem limit.
ANSTSTK	DOE/EH-0173T, 3.0; DOE/EP-0096, 3.3 Monitors and samples HEPA-filtered ventilation (permanent ventilation system [PVS]) from building areas formerly involved in treatment of high-level waste supernatant. Requires continuous effluent monitoring per 40 CFR Subpart H, Section 61.93(b) because potential emissions may exceed the 0.1 mrem limit.
ANCSSTK	DOE/EH-0173T, 3.0; DOE-EP-0096, 3.3 Monitors and samples HEPA-filtered ventilation from the 01-14 building, which houses equipment formerly used to treat the ceramic melter off-gas. Requires effluent monitoring per 40 CFR Subpart H, Section 61.93(b) to confirm that emissions are less than the 0.1 mrem limit.
ANCSRFK	DOE/EH-0173T, 3.0; DOE-EP-0096, 3.3 Monitors and samples HEPA-filtered ventilation from a process area where radioactive tanks, pipes, and other equipment are size reduced.
ANCSPFK	DOE/EH-0173T, 3.0; DOE-EP-0096, 3.3 Monitors and samples ventilation from lag storage area 4, the container sorting and packaging facility.
ANVITSK	DOE/EH-0173T, 3.0; DOE-EP-0096, 3.3 Vitrification facility heating, ventilation, and air conditioning (HVAC) effluent exhaust stack. Monitors and samples HEPA-filtered ventilation from building areas formerly involved in treatment of high-level waste supernatant. Requires effluent monitoring per 40 CFR Subpart H, Section 61.93(b) because potential emissions may exceed the 0.1 mrem limit.
ANRHWFK	DOE/EH-0173T, 3.0; DOE-EP-0096, 3.3 Monitors and samples HEPA-filtered ventilation from the remote-handled waste facility (RHWF), where contaminated waste equipment (e.g., pumps, tanks, piping) are size reduced before being packaged for disposal. Construction of the RHWF was completed early in 2004 and radiological operations began in June 2004.

- Sampling locations are shown on Figure A-6.

2005 Monitoring Program On-Site Effluent Monitoring

Air Effluents

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
OVES/PVUs <i>Outdoor Ventilated Enclosures/Portable Ventilation Units</i>	Airborne radioactive effluent points <u>Required by:</u> <ul style="list-style-type: none"> • 40 CFR 61 <u>Reported in:</u> <ul style="list-style-type: none"> • ESR • MTAR • ASER • Air Emissions Annual Report (NESHAP) 	Continuous off-line air particulate filter	→ As required	→ Variable Collected filters ^b composited to 2	→ Filters for gross alpha/beta, gamma isotopic ^a upon collection, flow → Semiannual composites for Sr-90, U-232, U-233/234, U-235/236, U-238, total U, Pu-238, Pu-239/240, Am-241, gamma isotopic, flow
	Ambient "diffuse source" air emissions <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 				
ANLAGAM <i>Lag Storage Area Ambient Air</i> ANNDAAM <i>NDA Ambient Air</i>	Ambient "diffuse source" air emissions <u>Reported in:</u> <ul style="list-style-type: none"> • ASER • Reported to NYSERDA 	Continuous air particulate filter	→ Biweekly	→ 26 Biweekly filters composited to 2	→ Gross alpha/beta, flow → Semiannual composite for gamma isotopic, flow
ANSDAT9^c <i>SDA Trench 9 Ambient Air</i>	Ambient "diffuse source" air emissions <u>Reported in:</u> <ul style="list-style-type: none"> • ASER • Reported to NYSERDA 	Continuous off-line desiccant columns for water vapor collection	→ Biweekly	→ 26	→ H-3, flow
		Continuous off-line charcoal cartridges	→ Monthly	→ Monthly cartridges composited to 2	→ Semiannual composite for I-129, flow

Note: Location ANNDAAM monitoring discontinued at end of 1st-quarter 2005. See p. B-iv.

^a Gamma isotopic only if gross activity rises significantly.

^b If gross determination of individual filter is significantly higher than background, the individual sample would be submitted immediately for isotopic analysis.

^c Sampling frequency and analytical parameters as directed by NYSERDA. Sampling at this location was discontinued in mid-December 2005.

Sampling Rationale

OVES/PVUs DOE/EH-0173T, 3.0; DOE/EP-0096, 3.3

Outdoor ventilated enclosures/portable ventilation units used for handling radioactive materials or for decontamination in areas not having containment ventilation. Emissions are monitored to confirm that they are below the 0.1 mrem limit.

■ Sampling locations are not shown on figures, as they are portable.

ANLAGAM DOE/EH-0173T, 3.3.2

Monitors ambient air in the lag storage area, a possible diffuse source of air emissions.

ANNDAAAM DOE/EH-0173T, 3.3.2

Monitors ambient air in the NDA area, a possible source of air emissions.

ANSDAT9 DOE/EH-0173T, 3.3.2

Monitors potential diffuse sources of air emissions at the SDA and south plateau area. WVDP support of NYSERDA.

■ Sampling locations are shown on Figure A-6.

**2005 Monitoring Program
On-Site Effluent Monitoring**

Liquid Effluents

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
WNSP001 <i>Lagoon 3 Discharge Weir</i>	Primary point of liquid effluent batch release <u>Required by:</u> <ul style="list-style-type: none"> • SPDES permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR • ESR • MTAR • ASER 	Grab liquid	Daily, during lagoon 3 discharge ^a	24-56	Daily flow, hold for flow-weighted composite
				8-16	Near the start and end of each discharge, a sample is analyzed for gross alpha/beta, H-3, Sr-90, gamma isotopic
				Composite of daily samples for each discharge, 4-8	Weighted composite for gross alpha/beta, H-3, C-14, Sr-90, Tc-99, I-129, gamma isotopic, U-232, U-233/234, U-235/236, U-238, total U, Pu-238, Pu-239/240, and Am-241 for each month of discharge
		Composite liquid	Twice during discharge, near start and near end	8-16	Two 24-hour composites for BOD ₅ , TSS, SO ₄ , NO ₃ -N, NO ₂ -N, NH ₃ , total Al, Fe, Hg, and Mn, total recoverable Cd, Cr, Cu, Ni, Pb, and Zn, dissolved As and Cu, dissolved sulfide
		Grab liquid	Twice during discharge, near start and near end	8-16	Settleable solids, TDS, pH, cyanide amenable to chlorination, oil & grease, surfactant (as LAS), total recoverable Co, Cr ⁺⁶ , Se, and V
		Composite liquid	Quarterly ^b	4	A 24-hour composite for bromide and total B
		Composite liquid	Semiannual ^b	2	A 24-hour composite for total Ti
		Composite liquid	Annual ^b	1	A 24-hour composite for total Ba and Sb
		Grab liquid	Semiannual ^b	2	Heptachlor
		Grab liquid	Annual ^b	1	Chloroform, dichlorodifluoromethane, trichlorofluoromethane, 3,3-dichlorobenzidine, tributyl phosphate, hexachlorobenzene, alpha-BHC, xylene, 2-butanone

^a Lagoon 3 is discharged four to eight times per year, as necessary, averaging six to seven days per discharge.

^b Two samples are collected, one near the start and one near the end of the discharge.

Sampling Rationale

WNSP001 DOE Order 5400.5; DOE/EH-0173T, 2.3.3; New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

By DOE Order all liquid effluent streams from DOE facilities shall be evaluated and their potential for release of radionuclides addressed. These requirements for radiological parameters are met by daily grab sampling during periods of lagoon 3 discharge.

Sampling for chemical constituents is performed near the beginning and end of each discharge period to meet the site SPDES Permit. Both grab samples and 24-hour composite samples are collected.

For permit requirements, total Hg is analyzed in accordance with U.S. EPA Method 245.1 and EPA Method 1631.

- Sampling location is shown on Figure A-2.

2005 Monitoring Program On-Site Effluent Monitoring

Liquid Effluents

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency	
WNSP01B <i>Internal Process Monitoring Point</i>	Internal point for monitoring Hg at effluent of the Hg pretreatment process <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR 	Continuous	→ Weekly	→ NA	→ Flow	
		Continuous	→ Monthly	→ NA	→ Elapsed flow time	
		Composite liquid	→ Twice per month when operating	→ 0-24	→ Total Hg	
WNSP116 <i>Pseudo-Monitoring Point Outfall 116</i>	Calculated concentration of dissolved solids <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR 	Calculated	→ Twice per discharge event	→ 8-16	→ TDS	
WNSP007 <i>Sanitary Waste Discharge</i>	Liquid effluent point for sanitary and utility plant combined discharge <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR • ESR • MTAR • ASER 	24-hour composite liquid	→ 2 each month	→ 24	→ Gross alpha/beta, H-3	
			→ 3 each month	→ 36	→ TSS, NH ₃ , NO ₂ -N, BOD ₅ , total Fe, flow	
					Monthly samples composited to 2	→ Semiannual composite for gamma isotopic and Sr-90
		Grab liquid	→ 3 each month	→ 36	→ Oil & grease	
		Grab liquid	→ Weekly	→ 52	→ pH, settleable solids, total residual chlorine	
Grab liquid	→ Annual	→ 1	→ Chloroform			
Grab liquid	→ Monthly	→ 12	→ Flow, flow time			

NA - Not applicable

Sampling Rationale

WNSP01B New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

This internal point is used to monitor mercury in effluent from the mercury pretreatment process. Effluent from this point is subsequently released to the LLWTF, which is monitored at point WNSP001.

For permit requirements, total mercury is analyzed in accordance with U.S. EPA Method 245.1. For mercury studies, samples are analyzed in accordance with EPA Method 1631.

WNSP116 New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

This “pseudo-monitoring point,” assumed to be in Frank’s Creek, is calculated from actual total dissolved solids (TDS) measurements and flow measurements from points WNSP001 and WNSP006 and from augmentation water.

WNSP007 DOE Order 5400.5; DOE/EH-0173T, 2.3.3; New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

Monitoring of treated effluent from the sanitary and industrial wastewater treatment facility is performed in accordance with the New York State SPDES Permit no. NY0000973 and DOE Order 5400.5 criteria.

- Sampling locations WNSP116 and WNSP007 are shown on Figure A-2. Sampling location WNSP01B is not shown on the figures.

2005 Monitoring Program On-Site Effluent Monitoring

Liquid Effluents

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency	
WNSP006 <i>Frank's Creek at the Security Fence</i>	Combined facility liquid discharge <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR • MTAR • ASER 	Timed continuous composite liquid	→ Weekly during Lagoon 3 discharge, otherwise biweekly	→ 26-34	→ Gross alpha/beta, H-3	
					Biweekly, weekly samples composited to 12	→ Monthly composite for gamma isotopic and Sr-90 (shared with NYSDOH)
					Weekly, biweekly samples composited to 4	→ Quarterly composite for C-14, Tc-99, I-129, U-232, U-233/234, U-235/236, U-238, total U, Pu-238, Pu-239/240, Am-241
		Grab liquid	→ Five per discharge; baseline, before start, near start, near end, and after end	→ 20-40	→ TDS	
		Grab liquid	→ Monthly	→ 12	→ Hardness (Ca and Mg)	
		Grab liquid	→ Semiannual ^a	→ 2	→ Temperature (field), pH (field), dissolved oxygen (field), TOX, oil & grease	
		24-hour timed continuous composite	→ Semiannual ^a	→ 2	→ TSS, NPOC, NH ₃ (as N), NO ₃ (as N), NO ₂ (as N), bromide, fluoride, chloride, sulfate, total sulfide, surfactant (as LAS), alpha-BHC, B, Ba, Co, Fe, Na, Mn, Sb, Ti, Tl, V, dissolved Al, As, Cd, Cr, Cu, Hg (method 1631), Ni, Pb, Se, Zn	
WNURRAW <i>Utility Room Raw Water</i>	Source water <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR 	Composite liquid	→ Weekly	→ 52	→ Total Fe	
		Grab liquid	→ Four per discharge, baseline, before start, near start, and near end	→ 16-32	→ TDS	
		Grab liquid ^b	→ Monthly	→ 12	→ TOC, alkalinity	

^a Semiannual samples collected when points WNSP001 and WNSP007 are discharging.

^b Cattaraugus County Department of Health

Sampling Rationale

- WNSP006** DOE/EH-0173T, 5.10.1.1; New York State SPDES Permit no. NY0000973; 6 NYCRR, Parts 702–704; NYSDOH ELAP (nonpotable water)
- By DOE Order all liquid effluent streams from DOE facilities shall be evaluated and their potential for release of radionuclides addressed.
- TDS is measured before the discharge begins, shortly after it begins, near the end, and after the end of each lagoon 3 discharge period to meet requirements of the site SPDES Permit. Measurements of TDS and flow are used to calculate TDS at pseudo-monitoring point outfall 116 in Frank’s Creek.
- Semiannual samples are collected when WNSP001 and WNSP007 are discharging.
- WNURRAW** New York State SPDES Permit no. NY0000973; 10 NYCRR, Part 5, Subpart 5-1; NYSDOH ELAP (nonpotable water)
- TDS is measured near the beginning and end of each lagoon 3 discharge. Results are used for outfall 116 calculations. (See **WNSP006** above.)

- Sampling location WNSP006 is shown on Figure A-2. Sampling location WNURRAW is not shown on the figures.

2005 Monitoring Program On-Site Effluent Monitoring

Storm Water Outfalls

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
GROUP 1 WNSO02 (S02) WNSO04 (S04)	Storm water runoff <u>Required by:</u> <ul style="list-style-type: none">• SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none">• Monthly SPDES DMR• ASER	First flush grab liquid	→ Semiannual	→ 2	→ pH, oil & grease, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, Cd, Cr, Se, V, Cr ⁺⁶ , TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, total nitrogen (as N)
		Flow-weighted composite liquid	→ Semiannual	→ 2	→ Total flow, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, Cd, Cr, Se, V, Cr ⁺⁶ , TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, total nitrogen
GROUP 2 WNSO06 (S06) WNSO33 (S33)	Storm water runoff <u>Required by:</u> <ul style="list-style-type: none">• SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none">• Monthly SPDES DMR• ASER	First flush grab liquid	→ Semiannual	→ 2	→ pH, oil & grease, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, surfactant (as LAS)
		Flow-weighted composite liquid	→ Semiannual	→ 2	→ Total flow, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, surfactant (as LAS)
GROUP 3 WNSO09 (S09) WNSO12 (S12)	Storm water runoff <u>Required by:</u> <ul style="list-style-type: none">• SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none">• Monthly SPDES DMR• ASER	First flush grab liquid	→ Semiannual	→ 2	→ pH, oil & grease, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, alpha-BHC, total nitrogen
		Flow-weighted composite liquid	→ Semiannual	→ 2	→ Total flow, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, alpha-BHC, total nitrogen

Sampling Rationale

Storm Water Outfalls

New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

The National Pollutant Discharge Elimination System Permit (NPDES) Application Regulations for Storm Water Discharges, Final Rule (40 CFR 122, 123, and 124 as amended), and as expressed in Section 403(p) of the Clean Water Act, require that specified facilities acquire NPDES permits for the discharge of storm water associated with industrial activities. Permitted or interim status Resource Conservation and Recovery Act (RCRA) hazardous waste treatment, storage, and disposal facilities are specifically defined as associated with industrial activity in the regulations (40 CFR 122.26 [a][14][iv]). Because the West Valley Demonstration Project (WVDP) is an interim status RCRA facility, the storm water discharges from the WVDP qualify as being associated with industrial activity. Five other groups of activities at the WVDP also are subject to storm water permitting: 1) aboveground container storage; 2) aboveground and underground tank storage; 3) underground waste burial; 4) haul roads and railway lines; 5) liquid waste treatment facilities and construction activities and industrial activities.

New York State is delegated by the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System under an equivalent state program, the State Pollutant Discharge Elimination System (SPDES).

GROUP 1 WNSO02 WNSO04

Runoff from areas associated with Remote-Handled Waste Facility (RHWF) operation, RCRA hazardous and radioactive waste storage, radioactive waste from the vitrification facility, nonradioactive process wastewater storage and transfer, equipment and material fabrication, oil storage, North Plateau groundwater infiltration reduction/storm water diversion, and service roads. The RHWF processes expended contaminated vitrification materials and equipment for shipment and disposal. Hazardous radioactive waste storage (except for the LSA-2 Hardstand), equipment/material fabrication, oil storage, and RHWF operations occur indoors.

GROUP 2 WNSO06 WNSO33

Runoff from areas associated with containerized radioactive waste, inactive burial area for construction and demolition debris, spent nuclear fuel receiving, storage, and shipping, high-level radioactive waste tanks, low-level radioactive wastewater evaporator and mercury abatement system, radiologically contaminated groundwater plume pumping operation, vehicle maintenance shop, and associated service roads. Vehicle maintenance, evaporator, mercury abatement, groundwater pumping operations, and spent nuclear fuel storage occur indoors. Industrial practices for the construction and demolition debris burial area include perpetual maintenance of the grass earthen cover.

GROUP 3 WNSO09 WNSO12

Runoff areas associated with wastewater/storm water treatment lagoons, fire and potable water production, oil storage, maintenance shop, cement silo storage, and service roads. Maintenance oil, and cement storage occur indoors.

- Sampling locations are shown on Figures A-3 and A-4.

**2005 Monitoring Program
On-Site Effluent Monitoring**

Storm Water Outfalls

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/ Composite Frequency</u>
GROUP 4 WNSO34 (S34)	Storm water runoff <u>Required by:</u> • SPDES Permit <u>Reported in:</u> • Monthly SPDES DMR • ASER	First flush grab liquid	→ Semiannual	→ 2	→ pH, oil & grease, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, surfactant (as LAS)
		Flow-weighted composite liquid	→ Semiannual	→ 2	→ Total flow, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, surfactant (as LAS)
GROUP 5 WNSO14 (S14) WNSO17 (S17) WNSO28 (S28)	Storm water runoff <u>Required by:</u> • SPDES Permit <u>Reported in:</u> • Monthly SPDES DMR • ASER	First flush grab liquid	→ Semiannual	→ 2	→ pH, oil & grease, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, V, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, surfactant (as LAS), sulfide, settleable solids, total nitrogen
		Flow-weighted composite liquid	→ Semiannual	→ 2	→ Total flow, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, V, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, surfactant (as LAS), sulfide, settleable solids, total nitrogen

Sampling Rationale

**Storm Water
Outfalls**

New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

The National Pollutant Discharge Elimination System Permit (NPDES) Application Regulations for Storm Water Discharges, Final Rule (40 CFR 122, 123, and 124 as amended), and as expressed in Section 403(p) of the Clean Water Act, require that specified facilities acquire NPDES permits for the discharge of storm water associated with industrial activities. Permitted or interim status Resource Conservation and Recovery Act (RCRA) hazardous waste treatment, storage, and disposal facilities are specifically defined as associated with industrial activity in the regulations (40 CFR 122.26 [a][14][iv]). Because the West Valley Demonstration Project (WVDP) is an interim status RCRA facility, the storm water discharges from the WVDP qualify as being associated with industrial activity. Five other groups of activities at the WVDP also are subject to storm water permitting: 1) aboveground container storage; 2) aboveground and underground tank storage; 3) underground waste burial; 4) haul roads and railway lines; 5) liquid waste treatment facilities and construction activities and industrial activities.

New York State is delegated by the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System under an equivalent state program, the State Pollutant Discharge Elimination System (SPDES).

**GROUP 4
WNSO34**

Runoff from areas associated with railroad spur within WVDP premises, industrial and sanitary wastewater treatment, sewage sludge storage and shipping, cooling tower, oil storage, warehousing, service roads, offices and parking, outdoor equipment staging and storage. Warehouse, oil storage, wastewater treatment, and sewage sludge storage occur indoors.

**GROUP 5
WNSO14
WNSO17
WNSO28**

Runoff from areas associated with service roads, railroad spur, and rail staging and loading depot within WVDP premises.



Sampling locations are shown on Figures A-3 and A-4.

**2005 Monitoring Program
On-Site Effluent Monitoring**

Storm Water Outfalls

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
GROUP 6 WNSO36 (S36) WNSO37 (S37) WNSO38 (S38) WNSO39 (S39) WNSO40 (S40) WNSO41 (S41) WNSO42 (S42)	Storm water runoff <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR • ASER 	First flush grab liquid	→ Semiannual	→ 2	→ pH, oil & grease, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, V, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, surfactant (as LAS), sulfide, settleable solids, total nitrogen
		Flow-weighted composite liquid	→ Semiannual	→ 2	→ Total flow, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, V, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, surfactant (as LAS), sulfide, settleable solids, total nitrogen
GROUP 7 WNSO20 (S20)	Storm water runoff <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR • ASER 	First flush grab liquid	→ Semiannual	→ 2	→ pH, oil & grease, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, surfactant (as LAS), sulfide, total nitrogen
		Flow-weighted composite liquid	→ Semiannual	→ 2	→ Total flow, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, surfactant (as LAS), sulfide, total nitrogen

Sampling Rationale

Storm Water Outfalls

New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

The National Pollutant Discharge Elimination System Permit (NPDES) Application Regulations for Storm Water Discharges, Final Rule (40 CFR 122, 123, and 124 as amended), and as expressed in Section 403(p) of the Clean Water Act, require that specified facilities acquire NPDES permits for the discharge of storm water associated with industrial activities. Permitted or interim status Resource Conservation and Recovery Act (RCRA) hazardous waste treatment, storage, and disposal facilities are specifically defined as associated with industrial activity in the regulations (40 CFR 122.26 [a][14][iv]). Because the West Valley Demonstration Project (WVDP) is an interim status RCRA facility, the storm water discharges from the WVDP qualify as being associated with industrial activity. Five other groups of activities at the WVDP also are subject to storm water permitting: 1) aboveground container storage; 2) aboveground and underground tank storage; 3) underground waste burial; 4) haul roads and railway lines; 5) liquid waste treatment facilities and construction activities and industrial activities.

New York State is delegated by the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System under an equivalent state program, the State Pollutant Discharge Elimination System (SPDES).

GROUP 6

WNSO36
WNSO37
WNSO38
WNSO39
WNSO40
WNSO41
WNSO42

Runoff from areas along the segment of the railroad spur and service road within the Western New York Nuclear Service Center (WNYNSC) outside the WVDP fenced area.

GROUP 7

WNSO20

Runoff from areas associated with inactive waste burial, groundwater/leachate storage and treatment and service roads. Groundwater/leachate storage and treatment occurs indoors. Management practices for the inactive radioactive waste burial areas include perpetual maintenance of the earthen cover.



Sampling locations are shown on Figures A-3 and A-4.

**2005 Monitoring Program
On-Site Effluent Monitoring**

Storm Water Outfalls

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
GROUP 8 WNSO27 (S27) WNSO35 (S35)	Storm water runoff <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit <u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR • ASER 	First flush grab liquid	→ Semiannual →	2	→ pH, oil & grease, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, surfactant (as LAS), total nitrogen
		Flow-weighted composite liquid	→ Semiannual →	2	→ Total flow, BOD ₅ , TSS, TDS, total P, Al, Fe, total recoverable Cu, Pb, Zn, TKN, ammonia (as NH ₃), NO ₃ -N, NO ₂ -N, surfactant (as LAS), total nitrogen
WNSWR01	Storm water precipitation	Precipitation	→ Field measurement →	1 each storm water event	→ pH measured in rainfall near Site Rain Gauge

Sampling Rationale

Storm Water Outfalls

New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

The National Pollutant Discharge Elimination System Permit (NPDES) Application Regulations for Storm Water Discharges, Final Rule (40 CFR 122, 123, and 124 as amended), and as expressed in Section 403(p) of the Clean Water Act, require that specified facilities acquire NPDES permits for the discharge of storm water associated with industrial activities. Permitted or interim status Resource Conservation and Recovery Act (RCRA) hazardous waste treatment, storage, and disposal facilities are specifically defined as associated with industrial activity in the regulations (40 CFR 122.26 [a][14][iv]). Because the West Valley Demonstration Project (WVDP) is an interim status RCRA facility, the storm water discharges from the WVDP qualify as being associated with industrial activity. Five other groups of activities at the WVDP also are subject to storm water permitting: 1) aboveground container storage; 2) aboveground and underground tank storage; 3) underground waste burial; 4) haul roads and railway lines; 5) liquid waste treatment facilities and construction activities and industrial activities.

New York State is delegated by the U.S. Environmental Protection Agency (EPA) to administer the National Pollutant Discharge Elimination System under an equivalent state program, the State Pollutant Discharge Elimination System (SPDES).

GROUP 8 WNSO27 WNSO35

Runoff associated with equipment staging and indoor containerized storage of cement solidified low-level radioactive waste.

WNSWR01

New York State SPDES Permit no. NY0000973; NYSDOH ELAP (nonpotable water)

The pH of rainfall is measured near the site rain gauge fallout pot during each storm water discharge sampling event.

- Sampling locations are shown on Figures A-3 and A-4.

2005 Monitoring Program Environmental Surveillance

On-Site Surface Water

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
WNSWAMP <i>Northeast Swamp Drainage</i>	Site surface drainage <u>Reported in:</u> <ul style="list-style-type: none"> • ESR • MTAR • ASER 	Timed continuous composite liquid	→ Biweekly →	26	→ Gross alpha/beta, H-3, pH, flow
				Biweekly samples composited to 12	→ Monthly composite for gamma isotopic and Sr-90 (shared with NYSDOH)
				Biweekly samples composited to 2	→ Semiannual composite for C-14, I-129, U-232, U-233/234, U-235/236, U-238, total U, Pu-238, Pu-239/240, Am-241
		Grab liquid	→ Semiannual ^a →	2	→ Temperature (field), pH (field), TOX, oil & grease
		24-hour timed continuous composite	→ Semiannual ^a →	2	→ TSS, TDS, NPOC, NH ₃ (as N), NO ₃ (as N), NO ₂ (as N), bromide, fluoride, sulfate, total sulfide, surfactant (as LAS), alpha-BHC, hardness (Ca and Mg), total Al, B, Cd, Co, Cr, Cu, Fe, Hg (method 1631), Mn, Ni, Pb, Sb, Se, Ti, Tl, V, Zn, dissolved As, Cu
WNSW74A <i>North Swamp Drainage</i>	Site surface drainage <u>Reported in:</u> <ul style="list-style-type: none"> • ESR • MTAR • ASER 	Timed continuous composite liquid	→ Biweekly →	26	→ Gross alpha/beta, H-3, pH
				Biweekly samples composited to 12	→ Monthly composite for gamma isotopic and Sr-90
				Biweekly samples composited to 2	→ Semiannual composite for C-14, I-129, U-232, U-233/234, U-235/236, U-238, total U, Pu-238, Pu-239/240, Am-241
		Grab liquid	→ Semiannual ^a →	2	→ Temperature (field), pH (field), TOX, oil & grease
		24-hour timed continuous composite	→ Semiannual ^a →	2	→ TSS, TDS, NPOC, NH ₃ (as N), NO ₃ (as N), NO ₂ (as N), bromide, fluoride, sulfate, total sulfide, surfactant (as LAS), alpha-BHC, hardness (Ca and Mg), total Al, B, Cd, Co, Cr, Cu, Fe, Hg (method 1631), Mn, Ni, Pb, Sb, Se, Ti, Tl, V, Zn, dissolved As, Cu

^a Sampled during ambient (i.e., non-wet weather) conditions.

Sampling Rationale

WNSWAMP DOE/EH-0173T, 5.10.1.1; 40 CFR, Part 122.26; NYSDOH ELAP (nonpotable water)

Northeast site surface water drainage; provides for sampling of uncontrolled surface waters from this discrete drainage path just before they leave the site's controlled boundary. Waters represent surface and subsurface drainages from the construction and demolition debris landfill (CDDL), old hardstand areas, and other possible north plateau sources of radiological or nonradiological contamination on the north plateau.

Monitoring for nonradiological parameters is performed during ambient conditions to verify authorized non-storm water flows. Storm water monitoring is performed per WVDP-233, "Monitoring Plan for Storm Water Discharges at the West Valley Demonstration Project."

WNSW74A DOE/EH-0173T, 5.10.1.1; 40 CFR, Part 122.26; NYSDOH ELAP (nonpotable water)

North site surface water drainage; provides for sampling of uncontrolled surface waters from this discrete drainage path just before they leave the site's controlled boundary. Waters represent surface and subsurface drainages from lag storage areas and other possible sources of radiological or nonradiological contamination on the north plateau.

Monitoring for nonradiological parameters is performed during ambient conditions to verify authorized non-storm water flows. Storm water monitoring is performed per WVDP-233.

- Sampling locations are shown on Figure A-2.

2005 Monitoring Program Environmental Surveillance

On-Site Surface Water

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
WNSDADR <i>SDA Runoff</i>	Surface water runoff from south portion of SDA <u>Required by:</u> <ul style="list-style-type: none"> • Interim Measures Compliance <u>Reported in:</u> <ul style="list-style-type: none"> • ASER • Report to NYSERDA 	Grab liquid	→ Monthly	→ 12	→ pH, total suspended solids, oil & grease, flow, gross alpha/beta, H-3, gamma isotopic, rainfall
	This location is sampled by NYSERDA under a separate program. For information, see the NYSERDA website at www.nyserda.org.				
WNSP008^a <i>French Drain</i>	Drains subsurface water from LLWTF lagoon area <u>Required by:</u> <ul style="list-style-type: none"> • SPDES Permit 	Grab liquid	→ Monthly	→ 12	→ Gross alpha/beta, H-3
	<u>Reported in:</u> <ul style="list-style-type: none"> • Monthly SPDES DMR • ESR • MTAR • ASER 		→ 3 each month	→ 36	→ Conductivity, pH, BOD ₅ , total Fe, total recoverable Cd and Pb, flow
			→ Annual	→ 1	→ Total As, Cr, Ag, and Zn
WNSP005 <i>Facility Yard Drainage</i>	Combined drainage from facility yard area <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab liquid	→ Monthly	→ 12	→ Gross alpha/beta, H-3, pH
			Monthly samples composited to 2	→ Semiannual composite for gamma isotopic and Sr-90	
WNCoolW <i>Cooling Tower Basin</i>	Cools plant utility steam system water <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab liquid	→ Annual	→ 1	→ Gross alpha/beta, H-3, gamma isotopic, Sr-90, pH

^a Although WNSP008 is listed in the SPDES Permit, it was capped off in May 2001 and is no longer being sampled.

Sampling Rationale

- WNSDADR** NYSERDA interim measures compliance.
This location will no longer be reported by the DOE.
- WNSP008** DOE/EH-0173T, 5.10.1.3; New York State SPDES Permit no. NY0000973
- French drain of subsurface water from lagoon (LLWTF) area. The SPDES Permit also provides for sampling of uncontrolled subsurface water from this discrete drainage path before these waters flow into Erdman Brook. Waters represent subsurface drainages from downward infiltration around the LLWTF and lagoon systems. This point would also monitor any subsurface spillover from the overfilling of lagoons 2 and 3. Sampling is of significance for both radiological and nonradiological contamination. This point was capped off in May 2001 and is routinely checked to verify that there is no discharge.
- WNSP005** Generally in accordance with DOE/EH-0173T, 5.10.1.1 (previously in accordance with SPDES permit no. NY0000973); NYSDOH ELAP (nonpotable water)
- Provides for the sampling of uncontrolled surface waters from this discrete drainage path after outfall 007 discharge into the drainage and before these waters flow into Erdman Brook. Waters represent surface and subsurface drainages primarily from the main plant yard area. Historically, this point was used to monitor sludge pond and utility room discharges to the drainage. These two sources have been rerouted. Migration of residual site contamination around the main plant dictates surveillance of this point, primarily for radiological parameters.
- WNCOOLW** Generally in accordance with DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
- Operational sampling carried out to confirm that radiological contamination is not migrating into the primary coolant loop of the high-level waste treatment facility and/or plant utility steam systems. Migration from either source might indicate radiological control failure.

- Sampling locations are shown on Figure A-2.

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On-Site Surface Water

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
WNFRC67^a <i>Frank's Creek East of the SDA</i>	Drains NYS Low-level Waste Disposal Area <u>Reported in:</u> • MTAR • ASER • Reported to NYSERDA	Grab liquid	Quarterly	4	Gross alpha/beta, H-3, pH, gamma isotopic, and Sr-90
			<i>Collect concurrently with WNNADR</i>		
WNERB53^a <i>Erdman Brook North of Disposal Areas</i>	Drains NYS and WVDP disposal areas <u>Reported in:</u> • MTAR • ASER • Reported to NYSERDA	Grab liquid	Quarterly	4	Gross alpha/beta, H-3, pH
			Quarterly samples composited to 2		Semiannual compos- ites for gross alpha, beta, H-3, gamma isotopic and Sr-90
WNNADR <i>Drainage Between NDA and SDA</i>	Drains WVDP disposal and storage area <u>Reported in:</u> • MTAR • ASER • Reported to NYSERDA	Grab liquid	Biweekly	26	pH, H-3, NPOC, TOX
			Timed continuous composite liquid	Biweekly samples composited to 12	Monthly composite for gross alpha/beta, gamma isotopic
			Biweekly samples composited to 2		Semiannual composite for Sr-90, I-129
WNDCELD <i>Drainage South of Drum Cell</i>	Drains WVDP storage area <u>Reported in:</u> • MTAR • ASER • Reported to NYSERDA	Grab liquid	Quarterly	4	Gross alpha/beta, H-3
			Bimonthly	6	Gross alpha/beta, pH, H-3
			Bimonthly samples composited to 2		Semiannual composite for H-3, Sr-90, I-129, gamma isotopic
		<i>Collect concurrently with WNNADR</i>			

^a Monthly sample also collected by NYSDOH

Sampling Rationale

- WNFRC67** DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
Monitors the potential influence of both the SDA and drum cell drainage into Frank's Creek east of the SDA and upstream of its confluence with Erdman Brook.
- WNERB53** DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
Monitors the potential influence of the drainages from the SDA and the WVDP storage and disposal area into Erdman Brook upstream of its confluence with Frank's Creek.
- WNNDADR** DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
Monitors the potential influence of the drainages from the SDA and the WVDP storage and disposal area into Lagoon Road creek upstream of the creek's confluence with Erdman Brook.
- WNDCELD** DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
Monitors the potential influence of drum cell drainage into Frank's Creek south of the SDA and upstream of **WNFRC67**.

- Sampling locations are shown on Figure A-2.

**2005 Monitoring Program
Environmental Surveillance**

On-Site Surface Water

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/ Composite Frequency</u>
WNNDATR^a <i>NDA Trench Interceptor Project</i>	On-site groundwater interception <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab liquid	→ Monthly	→ 12 Monthly samples composited to 2	→ Gross alpha/beta, H-3, gamma isotopic, NPOC, TOX → Semiannual composite for I-129
WNSTAW9 <i>North Reservoir Near Intake</i>	Standing water near reservoir that provides site drinking water <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab liquid	→ Annual	→ 1	→ Gross alpha/beta, H-3, Sr-90, gamma isotopic, pH, conductivity, Cl, Fe, Mn, Na, NO ₃ +NO ₂ -N, SO ₄

Note: Monitoring at standing water locations WNSTAW4, WNSTAW5, WNSTAW6, and WNSTAWB discontinued. See p. B-vi.

^a *Coordinated with Main Plant Operations*

Sampling Rationale

- WNNDATR** Generally in accordance with DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
- Monitors groundwater in the vicinity of the NDA interceptor trench project. The grab sample is taken directly from the trench collection system.
- WNSTAW9** DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
- Monitoring of on-site standing water. Although no standing water locations received effluent directly, the potential for contamination was present except at the background location. Former collecting sites 1,2,3,7, and 8 were deleted from the monitoring program because they were either built over or were dry. Sampling at former collecting sites 4, 5, 6, and "B" (background) was discontinued in 2005.
- Sampling of standing water by north reservoir near intake is retained to provide radiological data in standing water near the source of the site potable water supply south of main plant facilities, as part of the "ingestion" pathway.

- Sampling locations are shown on Figures A-2 and A-5.

**2005 Monitoring Program
Environmental Surveillance**

On-Site Potable Water

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/ Composite Frequency</u>	
WNDNK Series <i>Site Potable Water</i>	Sources of potable water within site perimeter <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER • Also reported to Cattaraugus County 	Grab liquid	→ Every fourth month (rotate sampling at	→ 1 each location	→ Gross alpha/beta, H-3, pH, conductivity	
WNDNKMS <i>Maintenance Shop Drinking Water</i>			WNDNKMS, WNDNKMP, WNDNKEL)			
WNDNKMP <i>Main Plant Drinking Water</i>		Sources of potable water within site perimeter <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER • Also reported to Cattaraugus County 	Grab liquid	→ Annual (WNDNKEL only)	→ 1	→ Total haloacetic acids, total trihalomethanes
WNDNKEL <i>Environmental Laboratory Drinking Water</i>						
WNDNKUR <i>Utility Room (EP-1) Potable Water Storage Tank</i>	Sources of potable water within site perimeter <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER • Also reported to Cattaraugus County 	Grab liquid	→ Monthly	→ 12	→ Gross alpha/beta, H-3, pH, conductivity	
			→ Annual			→ 1

^a Sample for NO₃ (as total nitrate) is collected by the Cattaraugus County Health Department. Pb and Cu also are sampled at this site based upon Cattaraugus County Health Department guidance.

Sampling Rationale

WNDNK Series	Site drinking water; generally according to DOE/EH-0173T, 5.10.1.2; 10 NYCRR, Part 5, Subpart 5-1; NYSDOH ELAP (potable water) Potable water sampling to confirm no migration of radiological and/or nonradiological contamination into the site's drinking water supply.
WNDNKMS	Potable water sampled at the maintenance shop in order to monitor a point that is at an intermediate distance from the point of potable water generation and that is used heavily by site personnel.
WNDNKMP	Same rationale as WNDNKMS but sampled at the break room sink in the main plant.
WNDNKEL	Potable water sampled at the Environmental Laboratory. Disinfectant by-products are sampled at WNDNKEL , the furthest location from the entry point (WNDNKUR).
WNDNKUR	Sampled at the utility room potable water storage tank before the site drinking water distribution system. Sample location is entry point EP-1.

- Sampling locations are within the site facilities and are not detailed on figures.

**2005 Monitoring Program
Environmental Surveillance**

On-Site Groundwater

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/ Composite Frequency</u>
Low-Level Waste Treatment Facility <i>(SSWMU #1)</i> 103 104 C 105 C 106 107 108 110 111 116 U 8604 C 8605	Groundwater monitoring points around site super solid waste management units (SSWMUs) <u>Reported in:</u> <ul style="list-style-type: none"> • ASER • GTAR 	Grab liquid →	4 times per year (generally) ^a →	4 each well (generally)*	→ Gross alpha, gross beta, H-3*
Miscellaneous Small Units <i>(SSWMU #2)</i> 201 U 204 205 206 C 208 Liquid Waste Treatment System <i>(SSWMU #3)</i> 301 B 302 U		Direct field measurement of sampled water →	Each sampling event ^a →	Twice each sampling event	→ Conductivity, pH

Note: "U" designates upgradient, "B" designates background, and "C" designates crossgradient wells. The remainder are downgradient.
^a Sampling frequency and analytes vary from point to point. See Appendix E^{6a} for a summary listing of all monitored analytes, a listing of analytes monitored at each location, and results from each location.

Sampling Rationale

On-Site Groundwater	DOE/EH-0173T, 5.10.1.3; 40 CFR, Parts 264 and 265, Subpart F; NYSDOH ELAP (nonpotable water) The on-site WVDP groundwater monitoring program provides for the determination of water quality, focusing on radiological and chemical surveillance of both active and inactive super solid waste management units (SSWMUs). In addition, using wells situated hydraulically upgradient (background) and downgradient of SSWMUs allows both detection of groundwater contamination and evaluation of the effects associated with the individual SSWMUs. Groundwater protection is addressed in the “Groundwater Protection Management Program Plan,” WVDP-091. Groundwater monitoring is detailed in the “Groundwater Monitoring Plan,” WVDP-239.
SSWMU #1	Low-level waste treatment facilities, including four active lagoons – lagoons 2, 3, 4, and 5 – and an inactive, filled-in lagoon – lagoon 1.
SSWMU #2	Miscellaneous small units, including the sludge pond, the solvent dike, the paper incinerator, the equalization basin, and the kerosene tank.
SSWMU #3	Liquid waste treatment system containing effluent from the supernatant treatment system.

- Sampling locations are shown on Figures A-8 and A-9.

**2005 Monitoring Program
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On-Site Groundwater

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/ Composite Frequency</u>
HLW Storage and Processing Tank (SSWMU #4) 401 B 402 U 403 U 405 C 406 408 409	Groundwater monitoring points around site super solid waste management units (SSWMUs) <u>Reported in:</u> <ul style="list-style-type: none"> • ASER • GTAR 	Grab liquid Direct field measurement of sampled water	→ 4 times per year (generally) ^a → Each sampling event ^a	→ 4 each well (generally) ^a → Twice each sampling event	→ Gross alpha, gross beta, H-3 ^a → Conductivity, pH
Maintenance Shop Leach Field (SSWMU #5) 501 U 502					
Low-Level Waste Storage Area (SSWMU #6) 602A 604 605 8607 U 8609 U					
Chemical Process Cell Waste Storage Area (SSWMU #7) 704 706 B 707 C					

Note: "U" designates upgradient, "B" designates background, and "C" designates crossgradient wells. The remainder are downgradient.
^a Sampling frequency and analytes vary from point to point. See Appendix E^{6a} for a summary listing of all monitored analytes, a listing of analytes monitored at each location, and results from each location.

Sampling Rationale

On-Site Groundwater	DOE/EH-0173T, 5.10.1.3; 40 CFR, Parts 264 and 265, Subpart F; NYSDOH ELAP (nonpotable water) The on-site WVDP groundwater monitoring program provides for the determination of water quality, focusing on radiological and chemical surveillance of both active and inactive super solid waste management units (SSWMUs). In addition, using wells situated hydraulically upgradient (background) and downgradient of SSWMUs allows both detection of groundwater contamination and evaluation of the effects associated with the individual SSWMUs. Groundwater protection is addressed in the "Groundwater Protection Management Program Plan," WVDP-091. Groundwater monitoring is detailed in the "Groundwater Monitoring Plan," WVDP-239.
SSWMU #4	High-level waste storage and processing area, including the high-level radioactive waste tanks, the supernatant treatment system, and the vitrification facility.
SSWMU #5	Maintenance shop sanitary leach field, formerly used by Nuclear Fuel Services and the WVDP to process domestic sewage generated by the maintenance shop.
SSWMU #6	Low-level waste storage area; includes metal and fabric structures housing low-level radioactive waste being stored for future disposal.
SSWMU #7	Chemical process cell (CPC) waste storage area, which contains packages of pipes, vessels, and debris from decontamination and cleanup of the chemical process cell in the former reprocessing plant.

- Sampling locations are shown on Figures A-8 and A-9.

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On-Site Groundwater

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency					
Construction and Demolition Debris Landfill (CDDL) (SSWMU #8)										
801 U 802 803 804 8603 U 8612	Groundwater monitoring points around site super solid waste management units (SSWMUs)	Grab liquid	→ 4 times per year (generally) ^a	→ 4 each well (generally) ^a	→ Gross alpha, gross beta, H-3 ^a					
NRC-Licensed Disposal Area (NDA) (SSWMU #9)										
901 U 902 U 903 906 908 U 909 910 8610 8611 NDATR						<u>Reported in:</u> • ASER • GTAR	Direct field measurement of sampled water	→ Each sampling event ^a	→ Twice each sampling event	→ Conductivity, pH
IRTS Drum Cell (SSWMU #10)										
1005 U 1006 1007 1008b B 1008c B	Groundwater monitoring points around the new RHWF	Grab liquid	→ 4 times per year	→ 4 each well	→ Gross alpha, gross beta, H-3 ^a					
Remote-Handled Waste Facility (Not in a SSWMU)										
1301 U 1302 U 1303 1304						<u>Reported in:</u> • ASER • GTAR	Direct field measurement of sampled water	→ Each sampling event	→ Twice each sampling event	→ Conductivity, pH

NOTE: "U" designates upgradient, "B" designates background, and "C" designates crossgradient wells. The remainder are downgradient.
^a Sampling frequency and analytes vary from point to point. See Appendix E for a summary listing of all monitored analytes, a listing of analytes monitored at each location, and results from each location.

Sampling Rationale

On-Site Groundwater	DOE/EH-0173T, 5.10.1.3; 40 CFR, Parts 264 and 265, Subpart F; NYSDOH ELAP (nonpotable water) The on-site WVDP groundwater monitoring program provides for the determination of water quality, focusing on radiological and chemical surveillance of both active and inactive super solid waste management units (SSWMUs). In addition, using wells situated hydraulically upgradient (background) and downgradient of SSWMUs allows both detection of groundwater contamination and evaluation of the effects associated with the individual SSWMUs. Groundwater protection is addressed in the "Groundwater Protection Management Program Plan," WVDP-091. Groundwater monitoring is detailed in the "Groundwater Monitoring Plan," WVDP-239.
SSWMU #8	The construction and demolition debris landfill (CDDL); used by Nuclear Fuel Services and the WVDP to dispose of nonhazardous and nonradioactive materials.
SSWMU #9	The NRC-licensed disposal area (NDA); contains radioactive wastes generated by NFS and the WVDP. The NDA is bounded on its downgradient (northwest and northeast) perimeters by the interceptor trench, which is sampled at monitoring point NDATR.
SSWMU #10	The integrated radioactive waste system (IRTS) treatment drum cell; stores cement-stabilized low-level radioactive waste.
Remote-Handled Waste Facility	Establish pre-operational baseline groundwater conditions in the area of the newly constructed remote-handled waste facility (RHWF). Monitor groundwater in the vicinity of the RHWF.

- Sampling locations are shown on Figures A-8 through A-10.

**2005 Monitoring Program
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On-Site Groundwater and Seeps

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/Composite Frequency</u>
State-Licensed Disposal Area (SSWMU #11)	Groundwater monitoring points around site super solid waste management units (SSWMUs)	SSWMU #11 is sampled by NYSERDA under a separate program. For information, see the NYSERDA website at www.nyserda.org.			
North Plateau Seeps (Not in an SSWMU)	Groundwater seepage points along the northeastern edge of the north plateau	Grab liquid	→ Semiannual (Quarterly at GSEEP)	→ 2 each seep (4 at GSEEP)	→ Gross alpha/beta, H-3, and (VOCs at GSEEP and SP12)
GSEEP SP04 SP06 SP11 SP12	<u>Reported in:</u> • ASER • GTAR	Direct field measurement of sampled water	→ Semiannual at SP12 (Quarterly at GSEEP)	→ 2 at SP12 (4 at GSEEP)	→ pH, conductivity
Miscellaneous Monitoring Locations (Not in an SSWMU)	Well points down-gradient of main plant and the former sand and gravel unit background well	Grab liquid	→ Annual (Quarterly at NB1S)	→ 1 each well (4 at NB1S)	→ Gross alpha/beta, H-3
Well Point WP-A Well Point WP-C Well Point WP-H NB1S	<u>Reported in:</u> • ASER • GTAR	Direct field measurement of sampled water	→ Annual (Quarterly at NB1S)	→ 1 each well (4 at NB1S)	→ pH, conductivity

Sampling Rationale

On-Site Groundwater	DOE/EH-0173T, 5.10.1.3; 40 CFR, Parts 264 and 265, Subpart F; NYSDOH ELAP (nonpotable water) The on-site WVDP groundwater monitoring program provides for the determination of water quality, focusing on radiological and chemical surveillance of both active and inactive super solid waste management units (SSWMUs). In addition, using wells situated hydraulically upgradient (background) and downgradient of SSWMUs allows both detection of groundwater contamination and evaluation of the effects associated with the individual SSWMUs. Groundwater protection is addressed in the "Groundwater Protection Management Program Plan," WVDP-091. Groundwater monitoring is detailed in the "Groundwater Monitoring Plan," WVDP-239.
SSWMU #11	The New York State-licensed disposal area (SDA) was operated by Nuclear Fuel Services as a commercial low-level disposal facility; it also received wastes from NFS reprocessing operations.
North Plateau Seeps	Monitor groundwater emanating from the ground surface along the edge of the site's north plateau.
Well Points	Monitor groundwater of known subsurface contamination in the north plateau area. All well points are downgradient of the main plant.
NB1S	Former background well on the north plateau.

- Sampling locations are shown on Figures A-8 through A-10.

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Off-Site Surface Water

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
WFBCBKG^a <i>Buttermilk Creek Near Fox Valley (Background)</i>	Unrestricted surface water, background <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER • Reported to NYSERDA 	Timed continuous composite liquid	→ Weekly	→ 52 weekly samples composited to 12	→ Monthly composite for gross alpha/beta, H-3
		Grab liquid	→ Monthly	→ 12	→ Hardness (Ca and Mg)
		Grab liquid	→ Semiannual ^b	→ 2	→ Temperature (field), pH (field), dissolved oxygen (field), TOX, oil & grease
		24-hour timed continuous composite	→ Semiannual ^b	→ 2	→ TSS, TDS, NPOC, NH ₃ (as N), NO ₃ (as N), NO ₂ (as N), bromide, fluoride, chloride, sulfate, total sulfide, surfactant (as LAS), alpha-BHC, B, Ba, Co, Fe, Na, Mn, Sb, Ti, Tl, V, dissolved Al, As, Cd, Cr, Cu, Hg (method 1631), Ni, Pb, Se, Zn
WFBCTCB^a <i>Buttermilk Creek Upstream of Confluence With Cattaraugus Creek at Thomas Corners Road</i>	Restricted surface waters receiving plant effluents <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Timed continuous composite liquid	→ Biweekly	→ 26 biweekly samples composited to 12	→ Monthly composite for gross alpha/beta, H-3
		Grab liquid	→ Monthly	→ 12	→ Hardness (Ca and Mg)
		Grab liquid	→ Semiannual ^b	→ 2	→ Temperature (field), pH (field), dissolved oxygen (field), TOX, oil & grease
		24-hour timed continuous composite	→ Semiannual ^b	→ 2	→ TSS, TDS, NPOC, NH ₃ (as N), NO ₃ (as N), NO ₂ (as N), bromide, fluoride, chloride, sulfate, total sulfide, surfactant (as LAS), alpha-BHC, B, Ba, Co, Fe, Na, Mn, Sb, Ti, Tl, V, dissolved Al, As, Cd, Cr, Cu, Hg (method 1631), Ni, Pb, Se, Zn

^a Monthly composites are also sent to NYSDOH.

^b Semiannual samples collected when points WNSP001 and WNSP007 are discharging.

Sampling Rationale

WFBCBKG DOE/EH-0173T, 5.10.1.1; 6 NYCRR, Part 702–704; NYSDOH ELAP (nonpotable water)

Monitors background conditions of Buttermilk Creek upstream of the WVDP; allows for comparison to downstream conditions. Monitoring for nonradiological parameters performed during discharges from WNSP001 and WNSP007 for comparison with downstream conditions.

WFBCTCB DOE/EH-0173T, 5.10.1.1; 6 NYCRR, Part 702–704; NYSDOH ELAP (nonpotable water)

Buttermilk Creek is the surface water that receives all WVDP liquid effluents. **WFBCTCB** monitors the potential influence of WVDP drainage into Buttermilk Creek upstream of Buttermilk Creek's confluence with Cattaraugus Creek. Monitoring for nonradiological parameters performed during discharges from WNSP001 and WNSP007 for comparison with New York State ambient water quality standards (6 NYCRR, Part 702–704).

- Sampling locations are shown on Figure A-5.

**2005 Monitoring Program
Environmental Surveillance**

Off-Site Surface Water

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/ Composite Frequency</u>
WFBIGBR <i>Cattaraugus Creek at Bigelow Bridge (Background)</i>	Unrestricted surface water, background <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab liquid	→ Quarterly	→ 4	→ Gross alpha/beta, H-3, Sr-90, gamma isotopic, pH

^a Monthly composites are also sent to NYSDOH.

Sampling Rationale

WFBIGBR DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
Monitors background conditions of Cattaraugus Creek at Bigelow Bridge, upstream of the WVDP; allows for comparison to downstream conditions.

WFFELBR DOE/EH-0173T, 5.10.1.1; NYSDOH ELAP (nonpotable water)
Because Buttermilk Creek empties into Cattaraugus Creek, **WFFELBR** monitors the potential influence of WVDP drainage into Cattaraugus Creek directly downstream of the Cattaraugus Creek confluence with Buttermilk Creek.

■ Sampling locations are shown on Figure A-5.

**2005 Monitoring Program
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Off-Site Drinking Water

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/Composite Frequency</u>
WFWEL06 <i>(Background)</i> 29 km South	Background drinking water supply <u>Reported in:</u> • MTAR • ASER	Grab liquid	→ Annual	→ 1	→ Gross alpha/beta, H-3, Sr-90, gamma isotopic, pH, conductivity
WFWEL Series: <i>Wells Outside the WNYNSC Perimeter But Near the WVDP</i>					
WFWEL01 3.0 km West-Northwest	Drinking water supply; groundwater near facility ^a <u>Reported in:</u> • MTAR • ASER	Grab liquid	→ Biennial ^b	→ 1 each location every other year	→ Gross alpha/beta, H-3, Sr-90, gamma isotopic, pH, conductivity
WFWEL02 1.5 km Northwest					
WFWEL03 3.5 km Northwest					
WFWEL04 3.0 km Northwest					
WFWEL05 2.5 km Southwest					
WFWEL07 4.4 km North-Northeast					
WFWEL08 2.5 km East-Northeast					
WFWEL09 3.0 km Southeast					
WFWEL10 7.0 km North					

^a No drinking water wells are located in hydrogeological units affected by site activity.

^b Wells were last sampled in 2004.

Sampling Rationale

Off-Site DOE/EH-0173T, 5.10.1.2; NYSDOH ELAP (potable water)

Drinking Water

WFWEL Series Eight of the ten listed off-site private residential drinking water wells represent the nearest unrestricted uses of groundwater close to the WVDP. The ninth sample (**WFWEL10**) is taken from a public water supply from deep wells. The tenth drinking water well, **WFWEL06**, is located 29 kilometers south of the Project and is considered a background drinking water source.

- Sampling locations are shown on Figures A-11, A-14, and A-15.

Sampling Rationale

AFFXVRD	DOE/EH-0173T, 5.7.4
AFTCORD	
AFRT240	Air samplers put into service by NFS as part of the site's original monitoring program at perimeter locations chosen to obtain data from places most likely to provide highest concentrations. Choice of location based on meteorological data.
AFSPRVL	DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3
	Off-site (remote) sampler located on private property in a nearby community within 15 kilometers of the site (north).
AFWEVAL	DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3
	Off-site (remote) sampler located in a nearby community within 15 kilometers of the site (southeast).
AFBOEHN	DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3
	Perimeter location chosen to obtain data from the place most likely to provide the highest elevated release concentrations. AFBOEHN is located on NYSERDA property at the perimeter. Choice of location based on meteorological data.
AFRSPRD	DOE/EH-0173T, 5.7.4
	Perimeter location chosen to obtain data from the place most likely to provide the highest ground-level release concentrations. AFRSPRD is on WNYNSC property outside the main plant operations fenceline. I-129 is sampled here because the sampling train was easy to incorporate and the location was most likely to receive effluent releases. Choice of location based on meteorological data.
AFGRVAL	DOE/EH-0173T, 5.7.4; DOE/EP-0023, 4.2.3
	Off-site (remote) sampler considered representative of natural background radiation. Located on privately owned property 29 kilometers south of the site (typically upwind). I-129 sampled here also.
AFBLKST	DOE/EH-0173T, 5.7.4
	Off-site monitoring of bulk storage warehouse, near the site perimeter.

- Sampling locations are shown on Figures A-7, A-14, and A-15.

2005 Monitoring Program Environmental Surveillance

Fallout, Sediment, and Soil

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
AFDHFOP 2.3 km Southwest AFFXFOP 3.0 km South-Southeast AFTCFOP 3.7 km North-Northwest AF24FOP 2.0 km Northeast ANRGFOP Rain Gauge On-Site	Collection of fallout particulates and precipitation around the WNYNSC perimeter <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Integrated precipitation	→ Monthly	→ 12 each location	→ Gross alpha/beta, H-3, gamma isotopic, volume
SF Soil Series Surface Soil at Each of 6 Air Samplers	Long-term fallout accumulation <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Surface plug composite soil	→ Triennial	→ 1 each location every third year	→ Gross alpha/beta, gamma isotopic, Sr-90, Pu-238, Pu-239/240, Am-241 In addition at SFRSPRD and SFGRVAL : U-232, U-233/234, U-235/236, U-238, and total U
SFCCSED Cattaraugus Creek at Felton Bridge SFSDSED Cattaraugus Creek at Springville Dam SFTCSED Buttermilk Creek at Thomas Corners Road SFBCSED Buttermilk Creek at Fox Valley Road (Background)	Deposition in sediment downstream of facility effluents <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab stream sediment	→ Annual (Split SFSDSED and SFBCSED with NYSDOH)	→ 1 each location	→ Gross alpha/beta, gamma isotopic, Sr-90, U-232, U-233/234, U-235/236, U-238, total U, Pu-238, Pu-239/240, Am-241
SN On-Site Soil Series: SNSW74A (Near WNSW74A) SNSWAMP (Near WNSWAMP) SNSP006 (Near WNSP006)	Surface soil corresponding to site drainage paths may be partially composed of sediments. <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Surface plug or grab	→ Annual	→ 1 each location	→ Gross alpha/beta, gamma isotopic, Sr-90, U-232, U-233/234, U-235/236, U-238, total U, Pu-238, Pu-239/240, and Am-241, Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn

Note: Monitoring at fallout pot locations AFDHFOP, AFFXFOP, AFTCFOP, and AF24FOP was discontinued at the end of 1st quarter 2005. Off-site soil monitoring at SFTCORD, SFBOEHN, SFBLKST, and off-site sediment at SFBISED was discontinued and no samples were collected in 2005. See p. B-viii.

Sampling Rationale

AFDHFOP	DOE/EP-0023, 4.7
AFFXFOP	
AFTCFOP	Collection of fallout particles and precipitation around the site perimeter at established air sampling locations:
AF24FOP	AFDHFOP (Dutch Hill at Boehn Road), AFFXFOP (Fox Valley Road), AFTCFOP (Thomas Corners), AF24FOP (Route 240). Indicates short-term effects.
ANRGFOP	DOE/EP-0023, 4.7
	Fallout particles and precipitation collected on site by the Environmental Laboratory at the rain gauge. Indicates short-term effects.
SF Soil Series	DOE/EH-0173T, 5.9.1
	Off-site soils collected at air sampling locations: SFWEVAL (West Valley), SFFXVRD (Fox Valley Road), SFSPRVL (Springville), SFRT240 (Route 240), SFGRVAL (Great Valley), and SFRSPRD (Rock Springs Road): Collection of long-term fallout data at established air sampler locations via soil sampling.
SFCCSED	DOE/EH-0173T, 5.12.1
	Sediment deposition in Cattaraugus Creek at Felton Bridge. Location is the first point of public access to Cattaraugus Creek downstream of its confluence with Buttermilk Creek.
SFSDSED	DOE/EH-0173T, 5.12.1
	Sediment deposition in Cattaraugus Creek at Springville Dam. Reservoir provides ideal settling and collection location for sediments downstream of the Buttermilk Creek confluence with Cattaraugus Creek. Located downstream of SFCCSED .
SFTCED	DOE/EH-0173T, 5.12.1
	Sediment deposition in Buttermilk Creek at Thomas Corners immediately downstream of all facility liquid effluents.
SFBCSED	DOE/EH-0173T, 5.12.1
	Sediment deposition in Buttermilk Creek upsteam of facility effluents (background).
SN Soil Series	DOE/EH-0173T, 5.9.1.
	On-site soil. (Samples may be partially composed of sediments.) SNSW74A (surface soil near WNSW74A), SNSWAMP (surface soil near WNSWAMP), and SNSP006 (surface soil near WNSP006): Locations to be specifically defined by geographic coordinates. Correspond to site drainage pattern flows (i.e., most likely area of radiological deposition/accumulation).

- Sampling locations are shown on Figures A-2, A-5 through A-7, A-14, and A-15.

2005 Monitoring Program Environmental Surveillance

Off-Site Biological

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
BFFCATC <i>Fish From Cattaraugus Creek Downstream of Its Confluence With Buttermilk Creek</i>	Fish in waters upstream and downstream of facility effluents <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Individual collection, biological	→ Annual (samples at BFFCATC and BFFCTRL shared with NYSDOH)	→ 10 fish each location	→ Gamma isotopic and Sr-90 in edible portions of each individual fish, % moisture
BFFCATD <i>Fish From Cattaraugus Creek Downstream of the Springville Dam</i>					
BFFCTRL <i>Control Fish Sample From Nearby Stream Not Affected by the WDP (7 km or More Upstream of Site Effluent Point; Background)</i>					
BFMREED^a <i>Dairy Farm 3.8 km North-Northwest</i>	Milk from animals foraging at locations near the facility perimeter <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab biological	→ Monthly	→ 12 monthly samples composited to 4 each location	→ Quarterly composite for gamma isotopic, Sr-90, and I-129
BFMWIDR^a <i>Dairy Farm 3.0 km Southeast</i>					
BFMCTLS <i>Control Location 25 km South (Background)</i>	Milk from animals foraging near the site perimeter and at background sites <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab biological	→ Annual (samples at BFMBLSY shared with NYSDOH)	→ 1 each location	→ Gamma isotopic, Sr-90, and I-129
BFMBLSY^a <i>Dairy Farm 5.5 km West-Northwest</i>					
BFMSCHT <i>Dairy Farm 4.8 km South</i>					

^a BFMREED dairy cattle herd was dispersed in May 2005 and sample collection was discontinued. Sampling milk from BFMWIDR was changed from annually to monthly. Sampling of milk from BFMBLSY was added to the program in the fall of 2005. See p. B-viii.

Sampling Rationale

BFFCATC BFTCATD	DOE/EH-0173T, 5.11.1.1 Radioactivity may enter a food chain in which fish are a major component and are consumed by the local population.
BFFCTRL	Control fish sample; provides background data for comparison with data from fish caught downstream of facility effluents.
BFMREED BFMWIDR BFMCTLS BFMBLSY BFMSCHT	DOE/EH-0173T, 5.8.2.1 Milk is consumed by all age groups and is frequently the most important food that could contribute to the radiation dose. Dairy animals pastured near the site allow adequate monitoring. Control milk samples are collected far from the site to provide background data for comparison with data from near-site milk samples.

- Sampling locations are shown on Figures A-11, A-14, and A-15.

2005 Monitoring Program Environmental Surveillance

Off-Site Biological

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
BFVNEAR^a <i>Nearby Locations</i> BFVCTRL^a <i>Remote Locations (16 km or More From Facility; Background)</i>	Fruit and vegetables grown near facility perimeter, downwind if possible, and at background locations <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Grab biological (fruits and vegetables)	→ Annual (at harvest)	→ 3 each (split with NYSDOH)	→ Gamma isotopic and Sr-90 analysis of edible portions, H-3 in free moisture, % moisture
BFDNEAR <i>Deer in Vicinity of the Site</i> BFDCTRL <i>Control Deer 16 km or More From the Facility (Background)</i>	Venison (deer foraging near facility perimeter and at background locations) <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Individual collection, biological	→ Annual, during hunting season (BFDNEAR sample split with NYSDOH) During year as available (BFDCTRL sample split with NYSDOH)	→ 3 → 3	→ Gamma isotopic and Sr-90 analysis of meat, H-3 in free moisture, % moisture → Gamma isotopic and Sr-90 analysis of meat, H-3 in free moisture, % moisture

Note: Beef sample collections BFBNEAR and BFBCTRL were discontinued, none were collected during 2005. See p. B-viii.

^a Near-site and control corn, apple, and bean samples are identified specifically as follows: corn = **BFVNEAC** and **BFVCTRC**; apples = **BFVNEAAF** and **BFVCTRA**; beans = **BFVNEAB** and **BFVCTRB**.

Sampling Rationale

BFVNEAR DOE/EH-0173T, 5.8.2.2

Fruits and vegetables (corn, apples, and beans or leafy vegetables, if available) collected from areas near the site. These samples are collected, if possible, from areas near the site predicted to have worst-case downwind concentrations of radionuclides in air and soil. Sample analysis reflects steady state/chronic uptake or contamination of foodstuffs as a result of site activities. Possible pathway directly to humans or indirectly through animals.

BFVCTRL DOE/EH-0173T, 5.8.2.2

Fruits and vegetables collected from an area remote from the site. Background fruits and vegetables collected for comparison with near-site samples. Collected in area(s) of no possible site effects.

BFDNEAR DOE/EH-0173T, 5.8.3

Venison from near-site deer. Samples are taken from deer killed in collisions with vehicles. Edible portion is analyzed to determine possible radionuclide content passable directly to humans.

BFDCTRL DOE/EH-0173T, 5.8.3

Venison from deer living far from the site. Background deer meat collected for comparison with near-site samples. Collected in area(s) of no possible site effects.

■ Sampling locations are shown on Figures A-11, A-14, and A-15.

**2005 Monitoring Program
Environmental Surveillance**

Off-Site Direct Radiation

<u>Sample Location Code</u>	<u>Monitoring/Reporting Requirements</u>	<u>Sampling Type/Medium</u>	<u>Collection Frequency</u>	<u>Total Annual Sample Collections</u>	<u>Analyses Performed/ Composite Frequency</u>
DFTLD Series <i>Thermoluminescent Dosimetry (TLD)</i> <i>Off-Site:</i> #1-#16 <i>Each of 16 Compass Sectors at Nearest Accessible Perimeter Point</i> #20 <i>1,500 m Northwest (Downwind Receptor)</i> #21 <i>Springville 9.4 km North</i> #22 <i>West Valley 6.2 km South-Southeast</i> #23 <i>Great Valley 29 km South (Background)</i>	Direct radiation around facility <u>Reported in:</u> <ul style="list-style-type: none"> • MTAR • ASER 	Integrating TLD	→ Quarterly	→ TLD cards at each location collected 4 times per year	→ Quarterly gamma radiation exposure

Sampling Rationale

Direct Radiation DOE/EH-0173T, 5.5; DOE/EP-0023, 4.6.3

Off-Site

TLDs offer continuous integrated environmental gamma-ray monitoring and have been deployed systematically about the site. Off-site TLDs are used to verify that site activities have not adversely affected the surrounding environs.

A high-pressure ion chamber (HPIC) gamma radiation measurement was completed at all locations in order to confirm TLD measurements.

- Sampling locations are shown on Figures A-13 through A-15.

2005 Monitoring Program Environmental Surveillance

On-Site Direct Radiation

Sample Location Code	Monitoring/Reporting Requirements	Sampling Type/Medium	Collection Frequency	Total Annual Sample Collections	Analyses Performed/ Composite Frequency
<p>DNTLD Series <i>Thermoluminescent Dosimetry (TLD) On-Site:</i></p> <p>#18, #19, #33 <i>Corners of the SDA</i></p> <p>#24, #26-#32, #34 <i>TLDS at the Security Fence Around the Site</i></p> <p>#35, #36, #38-#40 <i>TLDS On-Site Near Operational Areas</i></p> <p>#25 <i>Rock Springs Road 500 m North-Northwest of the Plant</i></p> <p>#42 <i>SDA T-1 Building</i></p> <p>#43 <i>SDA west Perimeter Fence</i></p>	<p>Direct radiation around facility</p> <p><u>Reported in:</u></p> <ul style="list-style-type: none"> • MTAR • ASER 	<p>Integrating TLD</p>	<p>→ Quarterly</p>	<p>→ TLD cards at each location collected 4 times per year</p>	<p>→ Quarterly gamma radiation exposure</p>
		<p>SDA T-1 Building is sampled by NYSERDA under a separate program. For information, see the NYSERDA website at www.nyserda.org.</p>			

Note: TLDs were discontinued at locations DNTLD18, DNTLD31, DNTLD32, and DNTLD 34 at the end of 1st quarter 2005. See p. B-ix.

Sampling Rationale

Direct Radiation DOE/EH-0173T, 5.4 and 5.5

On-Site

On-site TLDs monitor waste management units and verify that the potential dose rate to the general public (i.e., at Rock Springs Road) is below 100 mrem/year (1 mSv/year) from site activities.

A high-pressure ion chamber (HPIC) gamma radiation measurement is completed at all locations in order to confirm TLD measurements.

Potential TLD sampling locations are continually evaluated with respect to site activities.

Sampling at TLD location #42 will no longer be monitored by the DOE.

- Sampling locations are shown on Figure A-12.

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