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Hanford Site Near-Facility Environmental Monitoring Data Report for Calendar Year 1998

Prepared for the U.S. Department of Energy

FLUOR DANIEL HANFORD, INC.

Richland, Washington

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Hanford Management and Integration Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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Hanford Site Near-Facility Environmental Monitoring Data Report for Calendar Year 1998

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Document Title: Hanford Site Near-Facility Environmental Monitoring Data Report,
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ABSTRACT

This document summarizes the results of the U.S. Department of Energy's Near-Facility Environmental Monitoring program conducted by Waste Management Federal Services of Hanford, Inc. for Fluor Daniel Hanford, Inc. for 1998 in the 100, 200/600, and 300/400 Areas of the Hanford Site, in southcentral Washington State. Surveillance activities included sampling and analyses of ambient air, surface water, groundwater, soil, sediments, and biota. Also, external radiation measurements and radiological surveys were taken at waste disposal sites, radiologically controlled areas, and roads. These activities were conducted to assess and control the effects of nuclear facilities and waste sites on the local environment. In addition, diffuse sources were monitored to determine compliance with federal, state, and/or local regulations. In general, although effects from nuclear facilities can still be observed on the Hanford Site and radiation levels are slightly elevated when compared to offsite locations, the differences are less than in previous years.

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1.0 NEAR-FACILITY ENVIRONMENTAL MONITORING AT HANFORD

Near-facility environmental monitoring is defined as monitoring near facilities that have potential to discharge or have discharged, stored, or disposed of radioactive or hazardous materials. Monitoring locations are associated mostly with active nuclear facilities, such as Tank Farms and K-Basins, inactive nuclear facilities such as the Plutonium-Uranium Extraction Plant, Fast Flux Test Facility, and N Reactor, environmental restoration activities, and waste storage or disposal facilities, such as burial grounds, ponds, cribs, trenches, and ditches.

Much of the monitoring consists of collecting and analyzing environmental samples and methodically surveying areas near facilities releasing effluents and waste streams. The program is also designed to evaluate acquired analytical data, determine the effectiveness of facility effluent monitoring and controls, measure the adequacy of containment at waste disposal units, and detect and monitor unusual conditions. The monitoring implements applicable portions of U.S. Department of Energy (DOE) Orders 5400.1 (DOE 1988a), 5400.5 (DOE 1990), and 5820.2A (DOE 1988b); *Washington Administrative Code* (WAC) 246-247; Title 40, *Code of Federal Regulations* (CFR) Part 61, Subpart H; and 10 CFR 835.

Several types of environmental media are sampled near facilities to monitor waste management and restoration activities, and the effectiveness of effluent treatment and control practices. Routine sampling and monitoring includes ambient air, water from surface water disposal units, external radiation, soil, sediment, vegetation, and animals. Some of the parameters typically monitored are pH, radionuclide concentrations, and radiation fields. Sampling methods are discussed in detail in Waste Management Federal Services, Inc., Northwest Operations, *Operational Environmental Monitoring*, WMNW-CM-004.

Samples are collected from known or expected effluent pathways. These pathways are generally downwind of potential or actual airborne releases and down gradient of liquid discharges. Table 1-1 shows the type, quantity, and location of routine near-facility monitoring samples collected in 1998.

Waste disposal sites and the surrounding terrain are surveyed to detect and characterize any radioactive surface contamination. Routine survey locations include cribs, trenches, retention basin perimeters, pond perimeters, ditch banks, perimeters of active solid waste disposal sites, unplanned release sites, tank farm perimeters, stabilized waste disposal sites, roads, and firebreaks in and around the site operational areas.

Nonroutine, investigative samples are also collected as part of the near-facility environmental monitoring program to confirm the absence or presence of radioactive and/or hazardous contaminants.

The Noxious Weed Control program results have been added to this year's report. A detailed discussion can be found in PNNL-12088, Section 7.5, "Other Hanford Site Environmental Programs."

This Appendix volume contains brief discussions, specific sampling location information and complete analytical data results for the various near-facility environmental monitoring efforts for 1998. Detailed discussions and summarized analytical results are provided in Section 3.2, "Near-Facility Environmental Monitoring," of the *Hanford Site Environmental Report for Calendar Year 1998* (PNNL-12088).

Table 1-1 Near-Facility Routine Environmental Monitoring Samples and Locations, 1998

Sample Type	Number of Sample Locations	Operational Area								
		100-B,C	100-D,DR	100-K	100-F	100-N	ERDF ^(a)	200/600	300/400	TWRS ^(b)
Air	71	3	6	4	2	4	3	43 ^(c)	6	0
Water	12	0	0	0	0	10	0	2	0	0
External Radiation	139	4	5	11	0	22	3	63	21	10
Soil	78	0	0	0	0	7	1	55	15	0
Vegetation	72	0	0	0	0	9	0	48	15	0

^aEnvironmental Restoration Disposal Facility

^bTank Waste Remediation System

^cIncludes one station at the Wye Barricade

AIR MONITORING

Near-facility air sampling monitors the effectiveness of waste management and environmental remediation controls and effluent treatment systems in reducing effluents and emissions; these air samplers also monitor diffuse source emissions.

Ambient air monitoring is conducted to determine baseline concentrations of radionuclides in the operations areas, to assess the impact of operations on the local environment, and to monitor diffuse and fugitive emissions from sources located within the operations area. These measurements also provide an indication of the Project Hanford Management Contract- and Environmental Restoration Contractor-managed facilities' performance and are used to demonstrate compliance with environmental protection criteria

For 1998, radioactivity in air was sampled by a network of continuously operating samplers at 71 locations. Location-specific maps and monitoring results are provided in Section 2.0.

GROUNDWATER MONITORING

In 1998, two groundwater wells located adjacent to the 107-N Fuel Storage Basin Recirculation Facility in the 100-N Area were monitored and reported through the near-facility monitoring program. Trend analyses provide indications of the integrity of the underground

pipng associated with the 107-N Facility. Well locations and analysis results are provided in Section 3.0.

SOIL AND VEGETATION SAMPLING

Soil and vegetation samples were collected on or adjacent to waste disposal units, and from locations downwind and near or within the boundaries of the operating facilities. Samples were collected to detect potential migration and deposition of facility effluents. Special samples were also taken where physical or biological transport problems were identified. Migration of radionuclides can occur as the result of resuspension from radioactively contaminated surface areas, absorption by the roots of vegetation growing on or near underground and surface water disposal units, or intrusion by animals.

Radiological analyses of soil and vegetation samples included strontium-90, plutonium-239,240, uranium, and gamma-emitting radionuclides. Location-specific maps and the analytical results are presented in Section 4.0.

EXTERNAL RADIATION

External radiation fields were monitored near facilities and waste handling, storage, and disposal sites to measure, assess, and control the impacts of operations. Thermoluminescent dosimeters are used at numerous fixed locations to gather dose rate information over extended periods of time. Thermoluminescent dosimeter results can be used individually or averaged to determine dose rates in a given area for a particular sampling period.

These environmental dosimeters measure dose rates from all types of external radiation sources, including cosmic radiation, naturally occurring radioactivity in air and soil, and fallout from nuclear weapons testing, as well as any contribution from Hanford Site activities. These outside radiation sources cause an estimated 20% deviation in thermoluminescent dosimeter analyses. The results are reported in units of millirems per year (mrem/yr). Individual thermoluminescent dosimeter results and their locations are provided in Section 5.0.

SURFACE-WATER DISPOSAL UNITS AND RIVERBANK SPRINGS MONITORING

Surface water disposal units (open ponds and ditches) used by the operating facilities, and springs along the 100-N Area Columbia River shoreline (N-Springs) were monitored in 1998 to assess the effectiveness of effluent and contamination controls. Two surface water disposal units in the 200 Areas were sampled during 1998: the 200 East Area Powerhouse Ditch and the 216-B-3C Expansion Pond in 200 East Area. Ten shoreline seepage wells were sampled.

Water, sediment, and aquatic vegetation samples were collected and analyzed from the surface water disposal units. Only water samples were taken at the N-Springs. Radiological analyses of water samples from surface water disposal units were performed onsite at the Waste

Sampling and Characterization Facility (WSCF). Analyses included uranium, tritium, strontium-90, plutonium-238, plutonium-239,240, and gamma-emitting radionuclides. Radiological analyses of sediment and aquatic vegetation samples were performed for uranium, strontium-90, plutonium-238, plutonium-239,240, and gamma-emitting radionuclides. Nonradiological analyses were performed for pH, temperature, and nitrates. Analytes of interest were selected based on their presence in effluent discharges and their importance in verifying effluent control and determining compliance with applicable effluent discharge standards. Location-specific maps and the analytical results are presented in Section 6.0.

RADIOLOGICAL SURVEYS

In 1998, the Hanford Site had approximately 3,641 ha (8,997 acres) of posted outdoor surface contamination, and 587 ha (1,450 acres) of posted underground radioactive material, not including the production facilities (i.e., Plutonium-Uranium Extraction Plant, T-Plant, etc.). The total area of surface contamination was approximately six times larger than the area of underground radioactive material.

Beginning in 1996, a global positioning system was utilized to measure the surface areas more accurately than in previous years. This collected information was entered into the Hanford Geographical Information System (HGIS), a computer database maintained by the Environmental Restoration Contractor. Survey location maps are provided in Section 7.0.

INVESTIGATIVE SAMPLING

Investigative sampling was conducted in the operations areas to confirm the absence or presence of radioactive and/or hazardous contaminants. Investigative sampling took place near facilities such as storage and disposal sites for at least one of the following reasons:

- To follow up radiological surface surveys that had indicated radioactive contamination was present.
- To conduct preoperational surveys to characterize the radiological/hazardous conditions at a site before facility construction, operation or ultimate remediation.
- To determine if biotic intrusion (e.g., animal burrows or deep-rooted vegetation) has created a potential for contaminants to spread.
- To determine the integrity of waste containment systems.

Generally, the predominant radionuclides detected during these efforts were activation and fission products in the 100 Areas, fission products in the 200 Areas, and uranium in the 300 Area. Hazardous chemicals generally have not been identified above background levels in preoperational environmental monitoring samples and no special characterization samples were

collected in 1998. Complete results, including counting errors, for these investigations, including field instrument and dose rate readings, where appropriate, are provided in Section 8.0.

NOXIOUS WEED CONTROL PROGRAM

The Noxious Weed Control program on the Hanford Site has been developed in response to Federal, State, and local laws requiring eradication or control of noxious weeds. Noxious weed is defined as: any plant which when established is highly destructive, competitive, or difficult to control by cultural or chemical practices. Typically, noxious weeds are non-native (alien) species that invade and displace native species, reduce habitat for fish and wildlife, and contribute to the extinction of sensitive species.

Nine plant species are on a high priority list for control at Hanford. These species are Yellow Starthistle (*Centaurea solstitialis*), Rush Skeletonweed (*Chondrilla juncea*), Babysbreath (*Gypsophila paniculata*), Dalmatian Toadflax (*Linaria genistifolia* ssp. *Dalmatica*), Spotted Knapweed (*Centaurea maculosa*), Diffuse Knapweed (*Centaurea diffusa*), Russian Knapweed (*Acroptilon repens*), Saltcedar (*Tamarix spp.*), and Purple Loosestrife (*Lythrum salicaria*).

Maps generally depicting the spatial distribution of these species across the Hanford Site can be found in Section 9.0.

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2.0 AMBIENT AIR MONITORING

Air samplers are located primarily at or near (within approximately 500 m [1,500 ft]) sites and/or facilities having the potential for, or history of, environmental releases, with emphasis on potential source terms as well as prevailing wind direction. Meteorological conditions are monitored continuously by the Pacific Northwest National Laboratory meteorology stations, which are strategically positioned in and around the Hanford Site.

For 1998, radioactivity in air was sampled by a network of continuously operating samplers at 71 locations (Table 2-1). Location-specific maps are illustrated in Figures 2-1 through 2-10. Historical air sampling results for the 100-K, 100-N and 200 Areas are represented in graph form in Figures 2-11 through 2-20. The 1998 composited, sampler-specific monitoring results are provided in Table 2-2. A more detailed discussion of the 1998 results can be found in Section 3.2 of the *Hanford Site Environmental Report for Calendar Year 1998* (PNNL-12088).

Several Pacific Northwest National Laboratory ambient air monitoring stations were utilized to provide additional information for three Environmental Restoration Contractor projects. The projects and the associated Pacific Northwest National Laboratory stations are: the 100-B,C Remedial Action project (Pacific Northwest National Laboratory station #28, "Yakima Barricade"), the Environmental Restoration Disposal Facility project (Pacific Northwest National Laboratory station #11, "200 West SE") and the 300-FF-1 Remedial Action project (Pacific Northwest National Laboratory station #14, "300 Trench," and Pacific Northwest National Laboratory station #15, "300 NE"). The 1998 air monitoring data results for these locations can be found in Table 2-3.

Air monitoring within the 300 and 400 Areas is performed by the Pacific Northwest National Laboratory as part of the Site Surface Environmental Surveillance Project. Data acquired is reviewed by Near-Facility Monitoring personnel. A more detailed discussion of these results is provided in PNNL-12088, Section 4.1, "Air Surveillance."

Near-facility environmental air samplers operate at a flow rate of 0.056 m³/min (2 ft³/min), drawing a sample through a 47-mm (2-in.), open-faced filter about 2 m (6 ft) aboveground. All sample filters are exchanged biweekly, held one week (to allow for decay of the short-lived natural radioactivity), and then sent to the analytical laboratory for initial analysis of total alpha and total beta activity. These initial analyses serve as an indicator of potential environmental problems.

The filters were stored until the end of either a three- or six-month sample period, then segregated and composited by sample location for specific radionuclide analysis as shown in Table 2-1. Segregating and compositing air filters by site provides a larger sample size and, thus, a more sensitive and accurate measurement of the concentration of airborne radionuclides.

To help assess the impact of Site operations, monitoring results are compared to U.S. Department of Energy derived concentration guides and to the results obtained from the

distant communities of Yakima and Sunnyside as reported by the Pacific Northwest National Laboratory Site Environmental Surveillance Program. The data acquired from distant station N-981 is used to compare to the data from samples collected in the operating areas and to data from samples collected by Pacific Northwest National Laboratory, the Washington State Department of Health, and Washington Public Power Supply System (Supply System). A collocated sampling site is used for comparability and precision.

Table 2-1 Near-Facility Air Sampling Locations and Analyses, 1998.

Site	Number of Samplers	EDP Code ^a	Analyses	
			Bi-weekly	Composite
100-B/C Remedial Action Project	3	N464, N465, N466, PNNL #28	Total α, β	GEA, ^b Sr-90, Pu-iso, ^c U-iso ^d
100-K Spent Nuclear Fuels	4	N401, N402, N403, N404	Total α, β	GEA, Sr-90, Pu-iso, U-iso, Pu-241, Am-241
100-N Surveillance and Maintenance/Transition	4	N102, N103, N105, N106	Total α, β	GEA, Sr-90, Pu-iso, U-iso
100-D Remedial Action Project	4	N467, N468, N469, N470	Total α, β	GEA, Sr-90, Pu-iso, U-iso
100-DR Interim Safe Storage Project	2	N492, N493	Total α, β	GEA, Sr-90, Pu-iso, U-iso
100-F Interim Safe Storage Project	2	N494, N495	Total α, β	GEA, Sr-90, Pu-iso, U-iso
200 East Area	19	N019, N158, N498, N499, N950, N957, N967, N968, N969, N970, N972, N973, N976, N977, N978, N984, N985, N998, N999	Total α, β	GEA, Sr-90, Pu-iso, U-iso
Canister Storage Building (200 East Area)	2	N480, N481	Total α, β	GEA, Sr-90, Pu-iso, U-iso, Pu-241, Am-241
200 West Area	21	N155, N161, N165, N168, N200, N304, N433, N441, N442, N449, N456, N457, N956, N963, N964, N965, N966, N974, N975, N987, N994	Total α, β	GEA, Sr-90, Pu-iso, U-iso
600 Area	1	N981	Total α, β	GEA, Sr-90, Pu-iso, U-iso
Environmental Restoration Disposal Facility (ERDF)	3	N482, N483, N484, PNNL #11	Total α, β	GEA, Sr-90, Pu-iso, U-iso
300-FF-1 Remedial Action Project	6	N130, N485, N486, N487, N488, N489, PNNL #14, PNNL #15	Total α, β	GEA, U-iso

^aEDP Code – sampler location code.

^bGEA – gamma energy analysis

^cIsotopic plutonium-238 and plutonium-239/240

^dIsotopic uranium-234, -235, -238

Figure 2-1 100-B/C Area Air Sampler Locations

Figure 2-2 100-K Area Air Sampler Locations

Figure 2-3 100-N Area Air Sampler Locations

Figure 2-4 100-D/DR Area Air Sampler Locations

Figure 2-5 100-F Area Air Sampler Locations

Figure 2-6 200-East Area Air Sampler Locations

Figure 2-7 200 West Area Air Sampler Locations

Figure 2-8 600 Area Air Sampler Location

Figure 2-9 Environmental Restoration Disposal Facility Air Sampler Locations

Figure 2-10 300 Area Air Sampler Locations

Figure 2-11 Annual Average Strontium-90 Concentrations in Air, 100-K Area **Figure 2-12** Annual Average Cesium-137 Concentrations in Air, 100-K Area **Figure 2-13** Annual Average Plutonium-239/240 Concentrations in Air, 100-K Area

Figure 2-14 Annual Average Cobalt-60 Concentrations in Air, 100-N Area **Figure 2-15** Annual Average Strontium-90 Concentrations in Air, 100-N Area **Figure 2-16** Annual Average Cesium-137 Concentrations in Air, 100-N Area

Figure 2-17 Annual Average Plutonium-239/240 Concentrations in Air, 100-N Area **Figure 2-18** Annual Average Strontium-90 Concentrations in Air, 200 Areas

Figure 2-19 Annual Average Cesium-137 Concentrations in Air, 200 Areas **Figure 2-20 Annual Average Plutonium-239/240 Concentrations in Air, 200 Areas**

Table 2-2 Near-Facility Air Sampling Results, 1998

100-B/C Remedial Action Project, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-464	12/18/97 - 7/1/98	⁶⁰ Co	7.90E-05 ± 97%	7/1/98 - 12/29/98	⁶⁰ Co	1.80E-06 ± 1000%
		¹³⁴ Cs	1.40E-05 ± 500%		¹³⁴ Cs	-3.50E-05 ± 200%
		¹³⁷ Cs	3.70E-04 ± 30%		¹³⁷ Cs	1.20E-04 ± 65%
		¹⁵² Eu	1.80E-04 ± 100%		¹⁵² Eu	4.10E-05 ± 366%
		¹⁵⁴ Eu	5.40E-05 ± 389%		¹⁵⁴ Eu	1.40E-04 ± 129%
		¹⁵⁵ Eu	-6.90E-05 ± 275%		¹⁵⁵ Eu	-5.40E-05 ± 315%
		²³⁸ Pu	-6.30E-07 ± 778%		²³⁸ Pu	2.20E-06 ± 409%
		^{239,240} Pu	6.30E-06 ± 71%		^{239,240} Pu	6.40E-06 ± 92%
		¹⁰³ Ru	7.50E-07 ± 1000%		¹⁰³ Ru	1.20E-05 ± 558%
		¹⁰⁶ Ru	2.30E-04 ± 248%		¹⁰⁶ Ru	-3.30E-04 ± 161%
		¹²⁵ Sb	5.10E-05 ± 294%		¹²⁵ Sb	3.40E-06 ± 1000%
		¹¹³ Sn	3.40E-05 ± 229%		¹¹³ Sn	1.70E-05 ± 418%
		⁹⁰ Sr	7.90E-05 ± 120%		⁹⁰ Sr	-1.70E-04 ± 100%
		²³⁴ U	2.90E-05 ± 28%		²³⁴ U	2.50E-05 ± 35%
		²³⁵ U	1.80E-05 ± 38%		²³⁵ U	4.80E-06 ± 94%
		²³⁸ U	1.80E-05 ± 35%		²³⁸ U	2.90E-05 ± 30%
		⁶⁵ Zn	-1.80E-04 ± 100%		⁶⁵ Zn	-2.20E-05 ± 682%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-465	12/18/97 - 7/1/98	⁶⁰ Co	6.20E-05 ± 110%	7/1/98 - 12/29/98	⁶⁰ Co	7.40E-06 ± 1000%
		¹³⁴ Cs	-4.20E-05 ± 169%		¹³⁴ Cs	2.50E-05 ± 288%
		¹³⁷ Cs	1.70E-04 ± 55%		¹³⁷ Cs	1.20E-04 ± 59%
		¹⁵² Eu	4.00E-04 ± 58%		¹⁵² Eu	1.10E-04 ± 173%
		¹⁵⁴ Eu	4.80E-05 ± 438%		¹⁵⁴ Eu	-1.10E-04 ± 200%
		¹⁵⁵ Eu	-1.30E-04 ± 154%		¹⁵⁵ Eu	1.70E-04 ± 112%
		²³⁸ Pu	7.30E-07 ± 726%		²³⁸ Pu	-3.00E-05 ± 1000%
		^{239,240} Pu	4.90E-06 ± 78%		^{239,240} Pu	1.10E-06 ± 818%
		¹⁰³ Ru	-4.10E-06 ± 1000%		¹⁰³ Ru	1.60E-05 ± 500%
		¹⁰⁶ Ru	2.00E-04 ± 290%		¹⁰⁶ Ru	-8.40E-05 ± 762%
		¹²⁵ Sb	-3.60E-06 ± 1000%		¹²⁵ Sb	1.20E-04 ± 142%
		¹¹³ Sn	-4.40E-05 ± 180%		¹¹³ Sn	4.60E-05 ± 189%
		⁹⁰ Sr	1.30E-04 ± 77%		⁹⁰ Sr	1.40E-05 ± 1000%
		²³⁴ U	2.10E-05 ± 42%		²³⁴ U	3.10E-05 ± 42%
		²³⁵ U	6.70E-06 ± 72%		²³⁵ U	1.10E-05 ± 78%
		²³⁸ U	1.10E-05 ± 56%		²³⁸ U	3.60E-05 ± 33%
		⁶⁵ Zn	-8.40E-05 ± 226%		⁶⁵ Zn	-2.30E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-466	12/18/97 - 7/1/98	⁶⁰ Co	1.10E-05 ± 600%	7/1/98 - 12/29/98	⁶⁰ Co	-2.60E-05 ± 231%
		¹³⁴ Cs	-3.70E-06 ± 1000%		¹³⁴ Cs	-5.10E-05 ± 120%
		¹³⁷ Cs	1.50E-04 ± 60%		¹³⁷ Cs	5.00E-05 ± 130%
		¹⁵² Eu	8.80E-05 ± 148%		¹⁵² Eu	4.40E-06 ± 1000%
		¹⁵⁴ Eu	6.20E-06 ± 1000%		¹⁵⁴ Eu	1.40E-04 ± 129%
		¹⁵⁵ Eu	1.20E-04 ± 108%		¹⁵⁵ Eu	2.70E-05 ± 481%
		²³⁸ Pu	7.10E-07 ± 1000%		²³⁸ Pu	6.40E-06 ± 109%
		^{239,240} Pu	3.60E-06 ± 119%		^{239,240} Pu	2.90E-05 ± 33%
		¹⁰³ Ru	-5.10E-05 ± 120%		¹⁰³ Ru	-3.30E-05 ± 209%
		¹⁰⁶ Ru	1.60E-05 ± 1000%		¹⁰⁶ Ru	3.60E-04 ± 150%
		¹²⁵ Sb	5.20E-05 ± 250%		¹²⁵ Sb	-9.80E-05 ± 173%
		¹¹³ Sn	-2.80E-05 ± 211%		¹¹³ Sn	1.20E-05 ± 583%
		⁹⁰ Sr	9.70E-05 ± 100%		⁹⁰ Sr	3.70E-04 ± 57%
		²³⁴ U	3.10E-05 ± 26%		²³⁴ U	1.80E-05 ± 44%
		²³⁵ U	1.20E-05 ± 45%		²³⁵ U	2.30E-06 ± 148%
		²³⁸ U	1.60E-05 ± 38%		²³⁸ U	1.90E-05 ± 40%
		⁶⁵ Zn	-1.00E-04 ± 120%		⁶⁵ Zn	-1.70E-04 ± 100%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

100-K Spent Nuclear Fuels, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-401	12/18/97 - 7/1/98	²⁴¹ Am	4.10E-05 ± 39%	7/1/98 - 12/29/98	²⁴¹ Am	2.90E-05 ± 59%
		⁶⁰ Co	3.10E-05 ± 219%		⁶⁰ Co	-1.10E-06 ± 1000%
		¹³⁴ Cs	-4.00E-05 ± 170%		¹³⁴ Cs	-3.80E-05 ± 150%
		¹³⁷ Cs	3.60E-04 ± 36%		¹³⁷ Cs	9.70E-05 ± 73%
		¹⁵² Eu	3.20E-05 ± 531%		¹⁵² Eu	-6.30E-05 ± 206%
		¹⁵⁴ Eu	-6.50E-05 ± 277%		¹⁵⁴ Eu	-2.70E-07 ± 1000%
		¹⁵⁵ Eu	-4.30E-05 ± 442%		¹⁵⁵ Eu	-7.70E-05 ± 182%
		²³⁸ Pu	-2.30E-06 ± 478%		²³⁸ Pu	1.30E-05 ± 208%
		^{239,240} Pu	7.00E-06 ± 96%		^{239,240} Pu	3.80E-05 ± 55%
		²⁴¹ Pu	9.50E-04 ± 95%		²⁴¹ Pu	-3.60E-04 ± 100%
		¹⁰³ Ru	2.00E-05 ± 340%		¹⁰³ Ru	-1.20E-05 ± 458%
		¹⁰⁶ Ru	1.60E-04 ± 363%		¹⁰⁶ Ru	-6.90E-05 ± 754%
		¹²⁵ Sb	3.50E-05 ± 429%		¹²⁵ Sb	5.50E-04 ± 93%
		¹¹³ Sn	3.60E-06 ± 1000%		¹¹³ Sn	1.40E-05 ± 450%
		⁹⁰ Sr	1.30E-04 ± 60%		⁹⁰ Sr	-3.50E-05 ± 209%
		²³⁴ U	7.00E-05 ± 19%		²³⁴ U	2.80E-05 ± 43%
		²³⁵ U	4.10E-05 ± 27%		²³⁵ U	2.20E-05 ± 50%
		²³⁸ U	2.80E-05 ± 29%		²³⁸ U	1.50E-05 ± 50%
		⁶⁵ Zn	-1.40E-04 ± 100%		⁶⁵ Zn	-3.00E-05 ± 433%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-402	12/18/97 - 7/1/98	²⁴¹ Am	2.80E-05 ± 57%	7/1/98 - 12/29/98	²⁴¹ Am	3.10E-05 ± 55%
		⁶⁰ Co	5.00E-06 ± 1000%		⁶⁰ Co	4.40E-05 ± 141%
		¹³⁴ Cs	1.50E-05 ± 380%		¹³⁴ Cs	-1.80E-05 ± 289%
		¹³⁷ Cs	1.20E-04 ± 53%		¹³⁷ Cs	2.40E-05 ± 242%
		¹⁵² Eu	2.60E-05 ± 462%		¹⁵² Eu	-4.90E-05 ± 286%
		¹⁵⁴ Eu	1.70E-06 ± 1000%		¹⁵⁴ Eu	1.50E-04 ± 133%
		¹⁵⁵ Eu	-2.00E-05 ± 650%		¹⁵⁵ Eu	-7.60E-06 ± 1000%
		²³⁸ Pu	-2.50E-06 ± 320%		²³⁸ Pu	1.90E-06 ± 1000%
		^{239,240} Pu	4.90E-06 ± 120%		^{239,240} Pu	1.30E-05 ± 100%
		²⁴¹ Pu	9.50E-04 ± 126%		²⁴¹ Pu	-1.20E-03 ± 100%
		¹⁰³ Ru	-4.40E-05 ± 109%		¹⁰³ Ru	1.10E-05 ± 445%
		¹⁰⁶ Ru	5.90E-05 ± 814%		¹⁰⁶ Ru	3.10E-05 ± 1000%
		¹²⁵ Sb	6.60E-06 ± 1000%		¹²⁵ Sb	-1.00E-04 ± 130%
		¹¹³ Sn	1.80E-05 ± 328%		¹¹³ Sn	2.40E-05 ± 242%
		⁹⁰ Sr	2.00E-04 ± 45%		⁹⁰ Sr	4.90E-05 ± 169%
		²³⁴ U	4.30E-05 ± 26%		²³⁴ U	2.90E-05 ± 41%
		²³⁵ U	3.40E-05 ± 29%		²³⁵ U	1.20E-05 ± 56%
		²³⁸ U	1.60E-05 ± 40%		²³⁸ U	1.70E-05 ± 46%
		⁶⁵ Zn	-8.10E-05 ± 160%		⁶⁵ Zn	-3.00E-05 ± 433%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

100-K Spent Nuclear Fuels, Air Sampling Results (pCi/m3 $\pm$ Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-403	12/18/97 - 7/1/98	²⁴¹ Am	2.80E-05 $\pm$ 57%	7/1/98 - 12/29/98	²⁴¹ Am	2.70E-05 $\pm$ 67%
		⁶⁰ Co	1.30E-05 $\pm$ 462%		⁶⁰ Co	3.40E-05 $\pm$ 250%
		¹³⁴ Cs	7.90E-06 $\pm$ 684%		¹³⁴ Cs	1.50E-05 $\pm$ 500%
		¹³⁷ Cs	1.10E-04 $\pm$ 60%		¹³⁷ Cs	1.10E-05 $\pm$ 700%
		¹⁵² Eu	-1.80E-05 $\pm$ 778%		¹⁵² Eu	1.00E-04 $\pm$ 180%
		¹⁵⁴ Eu	-1.20E-04 $\pm$ 133%		¹⁵⁴ Eu	-1.60E-04 $\pm$ 138%
		¹⁵⁵ Eu	7.00E-05 $\pm$ 214%		¹⁵⁵ Eu	2.90E-05 $\pm$ 552%
		²³⁸ Pu	-2.20E-06 $\pm$ 450%		²³⁸ Pu	-1.70E-05 $\pm$ 200%
		^{239,240} Pu	3.40E-06 $\pm$ 150%		^{239,240} Pu	3.00E-05 $\pm$ 60%
		²⁴¹ Pu	7.60E-04 $\pm$ 120%		²⁴¹ Pu	-7.50E-04 $\pm$ 100%
		¹⁰³ Ru	-3.80E-06 $\pm$ 1000%		¹⁰³ Ru	-1.40E-05 $\pm$ 429%
		¹⁰⁶ Ru	3.20E-04 $\pm$ 159%		¹⁰⁶ Ru	4.30E-04 $\pm$ 140%
		¹²⁵ Sb	-5.30E-05 $\pm$ 245%		¹²⁵ Sb	2.40E-04 $\pm$ 96%
		¹¹³ Sn	-1.10E-06 $\pm$ 1000%		¹¹³ Sn	3.10E-05 $\pm$ 229%
		⁹⁰ Sr	2.20E-04 $\pm$ 45%		⁹⁰ Sr	4.10E-05 $\pm$ 210%
		²³⁴ U	5.20E-05 $\pm$ 21%		²³⁴ U	2.90E-05 $\pm$ 41%
		²³⁵ U	3.50E-05 $\pm$ 28%		²³⁵ U	1.90E-05 $\pm$ 47%
		²³⁸ U	3.10E-05 $\pm$ 27%		²³⁸ U	2.20E-05 $\pm$ 44%
		⁶⁵ Zn	-1.00E-04 $\pm$ 110%		⁶⁵ Zn	2.30E-05 $\pm$ 609%
EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-404	12/18/97 - 7/1/98	²⁴¹ Am	1.70E-05 $\pm$ 100%	7/1/98 - 12/29/98	²⁴¹ Am	1.90E-05 $\pm$ 63%
		⁶⁰ Co	8.70E-07 $\pm$ 1000%		⁶⁰ Co	7.80E-06 $\pm$ 821%
		¹³⁴ Cs	1.60E-05 $\pm$ 431%		¹³⁴ Cs	-1.80E-05 $\pm$ 350%
		¹³⁷ Cs	1.50E-05 $\pm$ 440%		¹³⁷ Cs	3.90E-05 $\pm$ 159%
		¹⁵² Eu	4.90E-05 $\pm$ 347%		¹⁵² Eu	8.20E-05 $\pm$ 159%
		¹⁵⁴ Eu	-2.30E-04 $\pm$ 100%		¹⁵⁴ Eu	1.40E-04 $\pm$ 121%
		¹⁵⁵ Eu	-7.50E-05 $\pm$ 213%		¹⁵⁵ Eu	-5.40E-05 $\pm$ 241%
		²³⁸ Pu	3.90E-06 $\pm$ 256%		²³⁸ Pu	3.80E-06 $\pm$ 789%
		^{239,240} Pu	2.60E-06 $\pm$ 138%		^{239,240} Pu	1.90E-05 $\pm$ 68%
		²⁴¹ Pu	1.20E-03 $\pm$ 117%		²⁴¹ Pu	-1.70E-03 $\pm$ 1000%
		¹⁰³ Ru	-1.70E-05 $\pm$ 329%		¹⁰³ Ru	1.80E-05 $\pm$ 278%
		¹⁰⁶ Ru	-4.40E-04 $\pm$ 130%		¹⁰⁶ Ru	-2.00E-04 $\pm$ 280%
		¹²⁵ Sb	-9.70E-07 $\pm$ 1000%		¹²⁵ Sb	-6.40E-05 $\pm$ 281%
		¹¹³ Sn	-1.10E-05 $\pm$ 564%		¹¹³ Sn	-1.30E-05 $\pm$ 438%
		⁹⁰ Sr	1.80E-04 $\pm$ 50%		⁹⁰ Sr	3.50E-05 $\pm$ 231%
		²³⁴ U	3.10E-05 $\pm$ 29%		²³⁴ U	1.90E-05 $\pm$ 46%
		²³⁵ U	1.60E-05 $\pm$ 45%		²³⁵ U	1.20E-05 $\pm$ 56%
		²³⁸ U	1.60E-05 $\pm$ 40%		²³⁸ U	1.50E-05 $\pm$ 49%
		⁶⁵ Zn	-1.20E-04 $\pm$ 117%		⁶⁵ Zn	2.40E-05 $\pm$ 583%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

100-N Surveillance and Maintenance Project, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-102	12/18/97 - 7/1/98	⁶⁰ Co	7.80E-05 ± 141%	7/1/98 - 12/29/98	⁶⁰ Co	1.80E-04 ± 56%
		¹³⁴ Cs	-4.40E-05 ± 200%		¹³⁴ Cs	-2.70E-05 ± 281%
		¹³⁷ Cs	1.00E-04 ± 85%		¹³⁷ Cs	4.70E-05 ± 160%
		¹⁵² Eu	-8.80E-05 ± 227%		¹⁵² Eu	2.40E-05 ± 750%
		¹⁵⁴ Eu	-7.80E-05 ± 359%		¹⁵⁴ Eu	1.00E-04 ± 240%
		¹⁵⁵ Eu	8.00E-05 ± 275%		¹⁵⁵ Eu	2.70E-04 ± 67%
		²³⁸ Pu	-3.30E-06 ± 300%		²³⁸ Pu	6.90E-07 ± 1000%
		^{239,240} Pu	3.30E-06 ± 100%		^{239,240} Pu	4.80E-06 ± 77%
		¹⁰³ Ru	-1.00E-04 ± 100%		¹⁰³ Ru	-5.50E-05 ± 140%
		¹⁰⁶ Ru	-6.50E-04 ± 109%		¹⁰⁶ Ru	1.10E-04 ± 582%
		¹²⁵ Sb	6.10E-05 ± 328%		¹²⁵ Sb	-1.80E-05 ± 889%
		¹¹³ Sn	1.00E-05 ± 930%		¹¹³ Sn	-4.40E-05 ± 200%
		⁹⁰ Sr	3.40E-04 ± 41%		⁹⁰ Sr	-8.00E-05 ± 213%
		²³⁴ U	3.20E-05 ± 38%		²³⁴ U	2.80E-05 ± 31%
		²³⁵ U	2.90E-05 ± 38%		²³⁵ U	6.90E-06 ± 61%
		²³⁸ U	1.70E-05 ± 48%		²³⁸ U	2.30E-05 ± 34%
		⁶⁵ Zn	1.90E-05 ± 1000%		⁶⁵ Zn	-3.20E-05 ± 563%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-103	12/18/97 - 7/1/98	⁶⁰ Co	2.40E-05 ± 221%	7/1/98 - 12/29/98	⁶⁰ Co	1.80E-05 ± 400%
		¹³⁴ Cs	-5.90E-06 ± 881%		¹³⁴ Cs	-2.10E-05 ± 290%
		¹³⁷ Cs	1.20E-05 ± 492%		¹³⁷ Cs	6.70E-05 ± 67%
		¹⁵² Eu	8.10E-06 ± 1000%		¹⁵² Eu	5.20E-05 ± 250%
		¹⁵⁴ Eu	7.20E-05 ± 236%		¹⁵⁴ Eu	-5.30E-05 ± 358%
		¹⁵⁵ Eu	-4.30E-05 ± 349%		¹⁵⁵ Eu	-1.00E-04 ± 130%
		²³⁸ Pu	9.60E-06 ± 93%		²³⁸ Pu	-2.00E-06 ± 200%
		^{239,240} Pu	2.60E-06 ± 119%		^{239,240} Pu	6.70E-07 ± 343%
		¹⁰³ Ru	-1.60E-05 ± 369%		¹⁰³ Ru	9.40E-05 ± 76%
		¹⁰⁶ Ru	1.40E-04 ± 329%		¹⁰⁶ Ru	-1.40E-04 ± 379%
		¹²⁵ Sb	-7.60E-05 ± 171%		¹²⁵ Sb	-8.60E-05 ± 198%
		¹¹³ Sn	4.20E-06 ± 1000%		¹¹³ Sn	-7.00E-05 ± 100%
		⁹⁰ Sr	2.10E-04 ± 90%		⁹⁰ Sr	1.00E-04 ± 160%
		²³⁴ U	5.30E-05 ± 32%		²³⁴ U	2.20E-05 ± 36%
		²³⁵ U	3.50E-05 ± 43%		²³⁵ U	3.90E-06 ± 82%
		²³⁸ U	3.70E-05 ± 35%		²³⁸ U	1.40E-05 ± 44%
		⁶⁵ Zn	-6.10E-05 ± 197%		⁶⁵ Zn	-1.70E-04 ± 100%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

100-N Surveillance and Maintenance Project, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-105	12/18/97 - 7/1/98	⁶⁰ Co	1.00E-03 ± 14%	7/1/98 - 12/29/98	⁶⁰ Co	5.20E-04 ± 19%
		¹³⁴ Cs	-3.70E-05 ± 170%		¹³⁴ Cs	-2.80E-05 ± 239%
		¹³⁷ Cs	1.00E-04 ± 100%		¹³⁷ Cs	1.90E-05 ± 358%
		¹⁵² Eu	4.20E-05 ± 310%		¹⁵² Eu	-3.00E-05 ± 467%
		¹⁵⁴ Eu	-2.50E-06 ± 1000%		¹⁵⁴ Eu	7.10E-05 ± 296%
		¹⁵⁵ Eu	4.90E-05 ± 265%		¹⁵⁵ Eu	-8.40E-05 ± 167%
		²³⁸ Pu	-2.40E-06 ± 342%		²³⁸ Pu	-2.30E-06 ± 239%
		^{239,240} Pu	8.20E-06 ± 56%		^{239,240} Pu	1.30E-05 ± 50%
		¹⁰³ Ru	2.00E-05 ± 310%		¹⁰³ Ru	4.70E-05 ± 149%
		¹⁰⁶ Ru	-2.90E-04 ± 169%		¹⁰⁶ Ru	3.00E-04 ± 200%
		¹²⁵ Sb	4.30E-05 ± 279%		¹²⁵ Sb	-1.60E-04 ± 113%
		¹¹³ Sn	-3.40E-05 ± 171%		¹¹³ Sn	-1.00E-05 ± 680%
		⁹⁰ Sr	4.80E-04 ± 23%		⁹⁰ Sr	3.60E-04 ± 64%
		²³⁴ U	1.30E-05 ± 47%		²³⁴ U	5.10E-05 ± 27%
		²³⁵ U	6.00E-06 ± 75%		²³⁵ U	1.30E-05 ± 53%
		²³⁸ U	1.00E-05 ± 55%		²³⁸ U	5.30E-05 ± 26%
		⁶⁵ Zn	-6.20E-05 ± 226%		⁶⁵ Zn	-2.40E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-106	12/18/97 - 7/1/98	⁶⁰ Co	2.10E-04 ± 57%	7/1/98 - 12/29/98	⁶⁰ Co	2.10E-04 ± 45%
		¹³⁴ Cs	2.20E-05 ± 282%		¹³⁴ Cs	-3.20E-05 ± 200%
		¹³⁷ Cs	9.60E-05 ± 70%		¹³⁷ Cs	4.80E-05 ± 150%
		¹⁵² Eu	7.50E-05 ± 200%		¹⁵² Eu	-1.60E-04 ± 100%
		¹⁵⁴ Eu	1.60E-04 ± 119%		¹⁵⁴ Eu	1.20E-05 ± 1000%
		¹⁵⁵ Eu	9.60E-05 ± 156%		¹⁵⁵ Eu	-5.90E-05 ± 305%
		²³⁸ Pu	-2.70E-06 ± 407%		²³⁸ Pu	2.10E-06 ± 281%
		^{239,240} Pu	1.80E-06 ± 200%		^{239,240} Pu	7.10E-07 ± 197%
		¹⁰³ Ru	-1.80E-05 ± 389%		¹⁰³ Ru	-4.30E-06 ± 1000%
		¹⁰⁶ Ru	-4.40E-04 ± 130%		¹⁰⁶ Ru	-3.50E-04 ± 169%
		¹²⁵ Sb	5.30E-05 ± 264%		¹²⁵ Sb	1.30E-04 ± 123%
		¹¹³ Sn	6.40E-05 ± 109%		¹¹³ Sn	-2.20E-05 ± 368%
		⁹⁰ Sr	5.70E-05 ± 140%		⁹⁰ Sr	8.30E-05 ± 241%
		²³⁴ U	2.40E-05 ± 46%		²³⁴ U	5.50E-05 ± 24%
		²³⁵ U	2.00E-05 ± 55%		²³⁵ U	7.10E-06 ± 68%
		²³⁸ U	3.10E-05 ± 42%		²³⁸ U	5.80E-05 ± 24%
		⁶⁵ Zn	-1.50E-04 ± 100%		⁶⁵ Zn	-2.10E-05 ± 762%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

100-D Remedial Action Project, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-467	12/18/97 - 7/1/98	⁶⁰ Co	3.00E-05 ± 180%	7/1/98 - 12/29/98	⁶⁰ Co	7.20E-05 ± 76%
		¹³⁴ Cs	-2.70E-05 ± 200%		¹³⁴ Cs	6.70E-05 ± 91%
		¹³⁷ Cs	1.60E-04 ± 50%		¹³⁷ Cs	1.50E-05 ± 380%
		¹⁵² Eu	7.50E-05 ± 173%		¹⁵² Eu	4.40E-04 ± 75%
		¹⁵⁴ Eu	8.50E-05 ± 188%		¹⁵⁴ Eu	3.60E-05 ± 472%
		¹⁵⁵ Eu	-2.20E-05 ± 682%		¹⁵⁵ Eu	-6.70E-05 ± 239%
		²³⁸ Pu	-1.80E-06 ± 278%		²³⁸ Pu	7.40E-06 ± 76%
		^{239,240} Pu	1.20E-06 ± 200%		^{239,240} Pu	2.00E-06 ± 150%
		¹⁰³ Ru	2.90E-05 ± 210%		¹⁰³ Ru	-3.70E-05 ± 170%
		¹⁰⁶ Ru	-1.80E-04 ± 261%		¹⁰⁶ Ru	-3.00E-04 ± 180%
		¹²⁵ Sb	-5.80E-05 ± 224%		¹²⁵ Sb	-8.10E-05 ± 148%
		¹¹³ Sn	1.10E-05 ± 645%		¹¹³ Sn	7.80E-06 ± 833%
		⁹⁰ Sr	1.30E-04 ± 77%		⁹⁰ Sr	-8.80E-05 ± 205%
		²³⁴ U	1.60E-05 ± 42%		²³⁴ U	2.40E-05 ± 41%
		²³⁵ U	8.20E-06 ± 56%		²³⁵ U	2.20E-05 ± 45%
		²³⁸ U	6.90E-06 ± 59%		²³⁸ U	2.20E-05 ± 43%
		⁶⁵ Zn	2.70E-05 ± 407%		⁶⁵ Zn	-8.80E-05 ± 193%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-468	12/18/97 - 7/1/98	⁶⁰ Co	1.30E-05 ± 546%	7/1/98 - 12/29/98	⁶⁰ Co	-4.00E-06 ± 1000%
		¹³⁴ Cs	7.00E-06 ± 914%		¹³⁴ Cs	3.20E-05 ± 200%
		¹³⁷ Cs	3.60E-05 ± 189%		¹³⁷ Cs	6.20E-05 ± 119%
		¹⁵² Eu	2.50E-04 ± 80%		¹⁵² Eu	1.10E-05 ± 1000%
		¹⁵⁴ Eu	-6.20E-06 ± 1000%		¹⁵⁴ Eu	-1.00E-04 ± 260%
		¹⁵⁵ Eu	-1.80E-05 ± 833%		¹⁵⁵ Eu	-5.10E-06 ± 1000%
		²³⁸ Pu	6.30E-06 ± 98%		²³⁸ Pu	-1.80E-06 ± 350%
		^{239,240} Pu	1.30E-06 ± 200%		^{239,240} Pu	1.60E-05 ± 55%
		¹⁰³ Ru	-3.00E-05 ± 230%		¹⁰³ Ru	1.40E-05 ± 557%
		¹⁰⁶ Ru	2.60E-04 ± 212%		¹⁰⁶ Ru	3.60E-04 ± 169%
		¹²⁵ Sb	-6.00E-05 ± 233%		¹²⁵ Sb	2.00E-05 ± 800%
		¹¹³ Sn	1.60E-04 ± 69%		¹¹³ Sn	2.40E-05 ± 321%
		⁹⁰ Sr	4.00E-04 ± 30%		⁹⁰ Sr	-1.20E-04 ± 142%
		²³⁴ U	1.70E-05 ± 38%		²³⁴ U	2.40E-05 ± 36%
		²³⁵ U	3.30E-06 ± 109%		²³⁵ U	8.10E-06 ± 60%
		²³⁸ U	1.80E-05 ± 39%		²³⁸ U	2.30E-05 ± 36%
		⁶⁵ Zn	-2.20E-05 ± 682%		⁶⁵ Zn	6.60E-05 ± 303%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

100-D Remedial Action Project, Air Sampling Results (pCi/m3 ± Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-469	12/18/97 - 7/1/98	⁶⁰ Co	3.00E-05 ± 260%	7/1/98 - 12/29/98	⁶⁰ Co	-3.90E-06 ± 1000%
		¹³⁴ Cs	-4.60E-05 ± 150%		¹³⁴ Cs	-1.40E-05 ± 457%
		¹³⁷ Cs	1.40E-04 ± 55%		¹³⁷ Cs	4.50E-05 ± 129%
		¹⁵² Eu	2.50E-04 ± 56%		¹⁵² Eu	7.00E-05 ± 186%
		¹⁵⁴ Eu	3.20E-05 ± 531%		¹⁵⁴ Eu	-1.10E-04 ± 173%
		¹⁵⁵ Eu	1.80E-04 ± 83%		¹⁵⁵ Eu	-5.80E-05 ± 259%
		²³⁸ Pu	-1.90E-06 ± 200%		²³⁸ Pu	6.60E-07 ± 1000%
		^{239,240} Pu	2.50E-06 ± 120%		^{239,240} Pu	7.50E-06 ± 61%
		¹⁰³ Ru	6.20E-06 ± 1000%		¹⁰³ Ru	2.70E-05 ± 259%
		¹⁰⁶ Ru	-4.30E-05 ± 1000%		¹⁰⁶ Ru	2.80E-04 ± 189%
		¹²⁵ Sb	-6.90E-05 ± 203%		¹²⁵ Sb	-1.00E-04 ± 160%
		¹¹³ Sn	-9.40E-06 ± 755%		¹¹³ Sn	-2.60E-05 ± 238%
		⁹⁰ Sr	8.20E-05 ± 110%		⁹⁰ Sr	8.90E-05 ± 202%
		²³⁴ U	2.30E-05 ± 37%		²³⁴ U	1.60E-05 ± 43%
		²³⁵ U	1.40E-05 ± 45%		²³⁵ U	7.50E-07 ± 347%
		²³⁸ U	1.20E-05 ± 49%		²³⁸ U	2.30E-05 ± 38%
		⁶⁵ Zn	-9.60E-05 ± 167%		⁶⁵ Zn	-1.70E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-470	12/18/97 - 7/1/98	⁶⁰ Co	9.00E-06 ± 589%	7/1/98 - 12/29/98	⁶⁰ Co	4.20E-05 ± 140%
		¹³⁴ Cs	2.40E-05 ± 242%		¹³⁴ Cs	1.20E-05 ± 483%
		¹³⁷ Cs	9.00E-05 ± 76%		¹³⁷ Cs	1.10E-04 ± 62%
		¹⁵² Eu	1.00E-04 ± 110%		¹⁵² Eu	9.80E-05 ± 143%
		¹⁵⁴ Eu	-1.50E-05 ± 1000%		¹⁵⁴ Eu	6.60E-05 ± 258%
		¹⁵⁵ Eu	-3.10E-05 ± 419%		¹⁵⁵ Eu	-1.90E-05 ± 842%
		²³⁸ Pu	3.60E-06 ± 231%		²³⁸ Pu	2.10E-06 ± 290%
		^{239,240} Pu	3.60E-06 ± 83%		^{239,240} Pu	2.10E-06 ± 181%
		¹⁰³ Ru	-1.20E-05 ± 700%		¹⁰³ Ru	-2.30E-05 ± 322%
		¹⁰⁶ Ru	-6.50E-04 ± 100%		¹⁰⁶ Ru	7.30E-05 ± 726%
		¹²⁵ Sb	-1.50E-04 ± 100%		¹²⁵ Sb	1.30E-05 ± 1000%
		¹¹³ Sn	3.60E-05 ± 161%		¹¹³ Sn	2.90E-07 ± 1000%
		⁹⁰ Sr	1.90E-04 ± 53%		⁹⁰ Sr	5.40E-05 ± 296%
		²³⁴ U	1.90E-05 ± 35%		²³⁴ U	2.60E-05 ± 34%
		²³⁵ U	1.30E-05 ± 41%		²³⁵ U	1.00E-05 ± 55%
		²³⁸ U	1.10E-05 ± 48%		²³⁸ U	2.00E-05 ± 38%
		⁶⁵ Zn	5.20E-05 ± 250%		⁶⁵ Zn	-6.80E-05 ± 176%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

100-F/DR Interim Safe Storage Project, Air Sampling Results (pCi/m3 ± Overall Analytical Error)				
EDP Code		Composite Period	Isotope	Result ± Error
N-492	Sampler on line: 11/06/98	11/6/98 - 12/29/98	¹⁴⁴ Ce	-2.00E-04 ± 700%
			⁶⁰ Co	-1.60E-04 ± 200%
			¹³⁴ Cs	8.40E-05 ± 369%
			¹³⁷ Cs	-3.60E-04 ± 100%
			¹⁵² Eu	3.10E-03 ± 100%
			¹⁵⁴ Eu	-1.40E-04 ± 657%
			¹⁵⁵ Eu	8.90E-05 ± 719%
			²³⁸ Pu	1.50E-05 ± 167%
			^{239,240} Pu	1.50E-05 ± 113%
			¹⁰³ Ru	-2.70E-04 ± 130%
			¹⁰⁶ Ru	-3.10E-04 ± 806%
			¹²⁵ Sb	2.20E-04 ± 282%
			¹¹³ Sn	3.70E-05 ± 811%
			⁹⁰ Sr	4.70E-04 ± 81%
			²³⁴ U	3.90E-05 ± 59%
			²³⁵ U	3.40E-05 ± 71%
			²³⁸ U	5.80E-05 ± 53%
			⁶⁵ Zn	2.70E-04 ± 259%
EDP Code		Composite Period	Isotope	Result ± Error
N-493	Sampler on line: 11/09/98	11/9/98 - 12/29/98	¹⁴⁴ Ce	-6.70E-05 ± 1000%
			⁶⁰ Co	6.40E-06 ± 1000%
			¹³⁴ Cs	-8.40E-05 ± 262%
			¹³⁷ Cs	-8.70E-05 ± 264%
			¹⁵² Eu	-3.10E-05 ± 1000%
			¹⁵⁴ Eu	3.80E-04 ± 179%
			¹⁵⁵ Eu	-4.30E-04 ± 130%
			²³⁸ Pu	2.40E-05 ± 100%
			^{239,240} Pu	8.90E-06 ± 146%
			¹⁰³ Ru	1.20E-04 ± 233%
			¹⁰⁶ Ru	-1.90E-04 ± 1000%
			¹²⁵ Sb	-8.90E-05 ± 573%
			¹¹³ Sn	1.10E-04 ± 218%
			⁹⁰ Sr	-1.60E-04 ± 200%
			²³⁴ U	3.90E-05 ± 59%
			²³⁵ U	2.40E-05 ± 75%
			²³⁸ U	4.70E-05 ± 53%
			⁶⁵ Zn	-2.50E-04 ± 220%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

100-F/DR Interim Safe Storage Project, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-494	8/20/98 - 9/24/98	¹⁴⁴ Ce	-1.50E-03 ± 100%	9/24/98 - 12/29/98	¹⁴⁴ Ce	-1.80E-04 ± 261%
		⁶⁰ Co	-2.30E-04 ± 161%		⁶⁰ Co	2.00E-05 ± 550%
		¹³⁴ Cs	1.30E-04 ± 254%		¹³⁴ Cs	3.60E-05 ± 333%
		¹³⁷ Cs	1.70E-04 ± 171%		¹³⁷ Cs	1.30E-04 ± 100%
		¹⁵² Eu	-2.30E-04 ± 339%		¹⁵² Eu	4.80E-05 ± 500%
		¹⁵⁴ Eu	-5.50E-04 ± 149%		¹⁵⁴ Eu	6.10E-05 ± 623%
		¹⁵⁵ Eu	-6.30E-05 ± 1000%		¹⁵⁵ Eu	4.10E-05 ± 634%
		²³⁸ Pu	3.70E-06 ± 100%		²³⁸ Pu	1.20E-05 ± 142%
		^{239,240} Pu	3.00E-05 ± 93%		^{239,240} Pu	1.20E-05 ± 92%
		¹⁰³ Ru	1.20E-04 ± 308%		¹⁰³ Ru	9.20E-05 ± 163%
		¹⁰⁶ Ru	-9.70E-04 ± 299%		¹⁰⁶ Ru	-6.00E-04 ± 183%
		¹²⁵ Sb	-3.80E-05 ± 1000%		¹²⁵ Sb	4.20E-05 ± 690%
		¹¹³ Sn	-2.70E-04 ± 141%		¹¹³ Sn	5.30E-05 ± 226%
		⁹⁰ Sr	3.70E-04 ± 141%		⁹⁰ Sr	-2.60E-05 ± 615%
		²³⁴ U	5.20E-05 ± 63%		²³⁴ U	3.70E-05 ± 51%
		²³⁵ U	2.60E-05 ± 100%		²³⁵ U	1.20E-05 ± 117%
		²³⁸ U	8.60E-05 ± 53%		²³⁸ U	3.70E-05 ± 51%
		⁶⁵ Zn	-6.90E-04 ± 110%		⁶⁵ Zn	-3.20E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-495	8/20/98 - 9/24/98	¹⁴⁴ Ce	2.40E-04 ± 833%	9/24/98 - 12/29/98	¹⁴⁴ Ce	4.60E-04 ± 120%
		⁶⁰ Co	1.60E-04 ± 313%		⁶⁰ Co	-5.80E-05 ± 207%
		¹³⁴ Cs	3.90E-04 ± 121%		¹³⁴ Cs	6.10E-06 ± 1000%
		¹³⁷ Cs	-8.90E-05 ± 483%		¹³⁷ Cs	1.10E-05 ± 1000%
		¹⁵² Eu	3.60E-04 ± 269%		¹⁵² Eu	-1.70E-04 ± 159%
		¹⁵⁴ Eu	-8.60E-04 ± 174%		¹⁵⁴ Eu	-6.80E-06 ± 1000%
		¹⁵⁵ Eu	-7.10E-04 ± 139%		¹⁵⁵ Eu	1.70E-05 ± 1000%
		²³⁸ Pu	9.30E-06 ± 527%		²³⁸ Pu	1.40E-06 ± 714%
		^{239,240} Pu	4.20E-05 ± 74%		^{239,240} Pu	2.50E-05 ± 60%
		¹⁰³ Ru	4.00E-04 ± 130%		¹⁰³ Ru	8.50E-05 ± 165%
		¹⁰⁶ Ru	-4.60E-03 ± 100%		¹⁰⁶ Ru	4.40E-04 ± 250%
		¹²⁵ Sb	1.40E-04 ± 707%		¹²⁵ Sb	-1.90E-05 ± 1000%
		¹¹³ Sn	-7.70E-06 ± 1000%		¹¹³ Sn	-1.40E-04 ± 100%
		⁹⁰ Sr	8.90E-04 ± 66%		⁹⁰ Sr	1.70E-04 ± 100%
		²³⁴ U	5.10E-05 ± 90%		²³⁴ U	2.80E-05 ± 54%
		²³⁵ U	3.60E-05 ± 97%		²³⁵ U	5.70E-06 ± 130%
		²³⁸ U	8.90E-05 ± 56%		²³⁸ U	3.90E-05 ± 51%
		⁶⁵ Zn	1.50E-03 ± 65%		⁶⁵ Zn	-1.30E-04 ± 223%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 East Area, Air Sampling Results (pCi/m³ ± Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-019	12/31/97 - 6/30/98	⁶⁰ Co	-1.50E-05 ± 447%	6/30/98 - 12/29/98	⁶⁰ Co	2.70E-05 ± 230%
		¹³⁴ Cs	4.40E-05 ± 159%		¹³⁴ Cs	6.60E-05 ± 100%
		¹³⁷ Cs	6.90E-04 ± 25%		¹³⁷ Cs	2.60E-04 ± 46%
		¹⁵² Eu	-7.20E-05 ± 236%		¹⁵² Eu	3.80E-05 ± 395%
		¹⁵⁴ Eu	4.00E-05 ± 550%		¹⁵⁴ Eu	-6.10E-05 ± 295%
		¹⁵⁵ Eu	8.80E-05 ± 193%		¹⁵⁵ Eu	1.40E-05 ± 1000%
		²³⁸ Pu	2.00E-06 ± 260%		²³⁸ Pu	2.40E-06 ± 321%
		^{239,240} Pu	6.60E-07 ± 1000%		^{239,240} Pu	6.30E-06 ± 71%
		¹⁰³ Ru	2.30E-05 ± 278%		¹⁰³ Ru	-2.40E-05 ± 200%
		¹⁰⁶ Ru	-2.40E-04 ± 258%		¹⁰⁶ Ru	1.50E-04 ± 380%
		¹²⁵ Sb	1.40E-04 ± 121%		¹²⁵ Sb	-5.00E-05 ± 280%
		¹¹³ Sn	4.10E-05 ± 180%		¹¹³ Sn	3.30E-05 ± 200%
		⁹⁰ Sr	3.00E-04 ± 40%		⁹⁰ Sr	5.70E-04 ± 32%
		²³⁴ U	3.80E-05 ± 29%		²³⁴ U	2.40E-05 ± 36%
		²³⁵ U	2.70E-05 ± 36%		²³⁵ U	1.00E-05 ± 55%
		²³⁸ U	2.10E-05 ± 38%		²³⁸ U	1.30E-05 ± 50%
		⁶⁵ Zn	-8.70E-05 ± 207%		⁶⁵ Zn	4.10E-05 ± 366%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-158	12/31/97 - 6/30/98	⁶⁰ Co	8.90E-07 ± 1000%	6/30/98 - 12/29/98	⁶⁰ Co	2.50E-05 ± 260%
		¹³⁴ Cs	-2.50E-05 ± 272%		¹³⁴ Cs	5.90E-05 ± 110%
		¹³⁷ Cs	2.20E-04 ± 44%		¹³⁷ Cs	5.30E-04 ± 25%
		¹⁵² Eu	2.30E-05 ± 609%		¹⁵² Eu	-3.60E-05 ± 389%
		¹⁵⁴ Eu	1.30E-04 ± 154%		¹⁵⁴ Eu	9.90E-05 ± 182%
		¹⁵⁵ Eu	-6.70E-05 ± 194%		¹⁵⁵ Eu	9.60E-05 ± 135%
		²³⁸ Pu	-3.70E-06 ± 170%		²³⁸ Pu	-6.40E-07 ± 922%
		^{239,240} Pu	7.50E-07 ± 347%		^{239,240} Pu	4.50E-06 ± 87%
		¹⁰³ Ru	-6.70E-07 ± 1000%		¹⁰³ Ru	1.90E-05 ± 247%
		¹⁰⁶ Ru	2.60E-04 ± 200%		¹⁰⁶ Ru	-4.30E-04 ± 130%
		¹²⁵ Sb	-4.40E-05 ± 341%		¹²⁵ Sb	-5.30E-05 ± 264%
		¹¹³ Sn	-1.10E-05 ± 591%		¹¹³ Sn	5.50E-05 ± 109%
		⁹⁰ Sr	6.10E-05 ± 149%		⁹⁰ Sr	-1.40E-05 ± 1000%
		²³⁴ U	4.20E-05 ± 26%		²³⁴ U	1.40E-05 ± 51%
		²³⁵ U	3.00E-05 ± 33%		²³⁵ U	1.20E-05 ± 53%
		²³⁸ U	2.60E-05 ± 32%		²³⁸ U	2.40E-05 ± 35%
		⁶⁵ Zn	1.20E-04 ± 133%		⁶⁵ Zn	-1.60E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-480	Sampler on line: 11/05/98			11/5/98 - 12/29/98	²⁴¹ Am	7.40E-05 ± 73%
					⁶⁰ Co	8.50E-05 ± 247%
					¹³⁴ Cs	-3.20E-05 ± 625%
					¹³⁷ Cs	2.30E-04 ± 91%
					¹⁵² Eu	6.40E-04 ± 109%
					¹⁵⁴ Eu	4.60E-04 ± 111%
					¹⁵⁵ Eu	-3.40E-04 ± 150%
					²³⁸ Pu	-1.30E-05 ± 846%
					^{239,240} Pu	3.20E-05 ± 94%
					²⁴¹ Pu	-3.70E-03 ± 100%
					¹⁰³ Ru	-5.20E-05 ± 327%
					¹⁰⁶ Ru	5.10E-04 ± 333%
					¹²⁵ Sb	-2.00E-04 ± 230%
					¹¹³ Sn	-7.80E-05 ± 295%
					⁹⁰ Sr	6.90E-05 ± 377%
					²³⁴ U	4.60E-05 ± 59%
					²³⁵ U	5.30E-05 ± 53%
					²³⁸ U	3.20E-05 ± 66%
					⁶⁵ Zn	-3.60E-04 ± 119%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 East Area, Air Sampling Results (pCi/m3 $\pm$ Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result $\pm$ Error
N-481	Sampler on line: 11/09/98	11/9/98 - 12/29/98	
		²⁴¹ Am	1.20E-04 $\pm$ 56%
		⁶⁰ Co	-7.50E-05 $\pm$ 427%
		¹³⁴ Cs	1.60E-04 $\pm$ 163%
		¹³⁷ Cs	3.10E-05 $\pm$ 806%
		¹⁵² Eu	3.70E-04 $\pm$ 159%
		¹⁵⁴ Eu	-3.80E-04 $\pm$ 221%
		¹⁵⁵ Eu	3.20E-04 $\pm$ 191%
		²³⁸ Pu	-1.50E-05 $\pm$ 733%
		^{239,240} Pu	7.20E-06 $\pm$ 347%
		²⁴¹ Pu	-2.30E-03 $\pm$ 100%
		¹⁰³ Ru	-3.10E-04 $\pm$ 100%
		¹⁰⁶ Ru	5.20E-05 $\pm$ 4423%
		¹²⁵ Sb	-2.30E-04 $\pm$ 230%
		¹¹³ Sn	-3.90E-07 $\pm$ 1000%
		⁹⁰ Sr	3.60E-04 $\pm$ 94%
		²³⁴ U	3.60E-05 $\pm$ 64%
		²³⁵ U	2.20E-05 $\pm$ 77%
		²³⁸ U	2.50E-05 $\pm$ 72%
		⁶⁵ Zn	-6.50E-04 $\pm$ 109%
EDP Code	Composite Period	Isotope	Result $\pm$ Error
N-498	Sampler on line: 12/02/98	12/2/98 - 12/29/98	
		⁶⁰ Co	-4.40E-04 $\pm$ 100%
		¹³⁴ Cs	1.70E-04 $\pm$ 259%
		¹³⁷ Cs	-3.50E-04 $\pm$ 120%
		¹⁵² Eu	-4.10E-04 $\pm$ 200%
		¹⁵⁴ Eu	6.60E-05 $\pm$ 1970%
		¹⁵⁵ Eu	-1.80E-04 $\pm$ 500%
		²³⁸ Pu	3.80E-05 $\pm$ 161%
		^{239,240} Pu	8.60E-06 $\pm$ 198%
		¹⁰³ Ru	-6.70E-05 $\pm$ 552%
		¹⁰⁶ Ru	-1.10E-03 $\pm$ 309%
		¹²⁵ Sb	-5.70E-04 $\pm$ 151%
		¹¹³ Sn	-3.10E-04 $\pm$ 139%
		⁹⁰ Sr	3.60E-04 $\pm$ 306%
		²³⁴ U	8.60E-05 $\pm$ 56%
		²³⁵ U	4.10E-05 $\pm$ 85%
		²³⁸ U	1.00E-04 $\pm$ 58%
		⁶⁵ Zn	-1.20E-03 $\pm$ 100%
EDP Code	Composite Period	Isotope	Result $\pm$ Error
N-499	Sampler on line: 12/02/98	12/2/98 - 12/29/98	
		⁶⁰ Co	2.70E-04 $\pm$ 159%
		¹³⁴ Cs	-3.40E-04 $\pm$ 129%
		¹³⁷ Cs	1.50E-03 $\pm$ 41%
		¹⁵² Eu	1.20E-04 $\pm$ 792%
		¹⁵⁴ Eu	-3.10E-04 $\pm$ 387%
		¹⁵⁵ Eu	-1.20E-04 $\pm$ 833%
		²³⁸ Pu	1.70E-05 $\pm$ 259%
		^{239,240} Pu	2.10E-05 $\pm$ 90%
		¹⁰³ Ru	-1.00E-04 $\pm$ 350%
		¹⁰⁶ Ru	-2.60E-03 $\pm$ 138%
		¹²⁵ Sb	-8.80E-04 $\pm$ 100%
		¹¹³ Sn	-5.00E-04 $\pm$ 100%
		⁹⁰ Sr	4.60E-05 $\pm$ 1000%
		²³⁴ U	3.20E-05 $\pm$ 91%
		²³⁵ U	6.40E-06 $\pm$ 1000%
		²³⁸ U	1.90E-05 $\pm$ 121%
		⁶⁵ Zn	-9.90E-04 $\pm$ 100%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 East Area, Air Sampling Results (pCi/m³ ± Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-957	12/31/97 - 6/30/98	⁶⁰ Co	3.50E-05 ± 200%	6/30/98 - 12/29/98	⁶⁰ Co	-3.40E-05 ± 209%
		¹³⁴ Cs	-2.50E-05 ± 252%		¹³⁴ Cs	-5.30E-05 ± 130%
		¹³⁷ Cs	4.50E-05 ± 149%		¹³⁷ Cs	6.80E-05 ± 110%
		¹⁵² Eu	7.60E-05 ± 211%		¹⁵² Eu	-9.20E-05 ± 174%
		¹⁵⁴ Eu	-9.40E-05 ± 213%		¹⁵⁴ Eu	2.20E-05 ± 909%
		¹⁵⁵ Eu	1.80E-05 ± 944%		¹⁵⁵ Eu	-7.80E-05 ± 231%
		²³⁸ Pu	3.00E-05 ± 110%		²³⁸ Pu	-2.70E-06 ± 241%
		^{239,240} Pu	4.30E-06 ± 200%		^{239,240} Pu	2.70E-06 ± 181%
		¹⁰³ Ru	-3.30E-06 ± 1000%		¹⁰³ Ru	-1.20E-05 ± 542%
		¹⁰⁶ Ru	-6.20E-04 ± 100%		¹⁰⁶ Ru	1.60E-05 ± 1000%
		¹²⁵ Sb	-1.10E-04 ± 136%		¹²⁵ Sb	-3.10E-05 ± 484%
		¹¹³ Sn	1.10E-05 ± 682%		¹¹³ Sn	2.00E-05 ± 350%
		⁹⁰ Sr	4.80E-05 ± 179%		⁹⁰ Sr	5.50E-05 ± 382%
		²³⁴ U	1.70E-05 ± 48%		²³⁴ U	1.30E-05 ± 70%
		²³⁵ U	4.50E-06 ± 100%		²³⁵ U	4.50E-06 ± 120%
		²³⁸ U	1.10E-05 ± 48%		²³⁸ U	1.30E-05 ± 68%
		⁶⁵ Zn	-1.40E-04 ± 107%		⁶⁵ Zn	-8.50E-05 ± 165%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-967	12/31/97 - 6/30/98	⁶⁰ Co	8.20E-06 ± 732%	6/30/98 - 12/29/98	⁶⁰ Co	-8.80E-06 ± 955%
		¹³⁴ Cs	8.60E-06 ± 616%		¹³⁴ Cs	-1.60E-05 ± 463%
		¹³⁷ Cs	1.40E-04 ± 59%		¹³⁷ Cs	1.00E-04 ± 72%
		¹⁵² Eu	9.60E-06 ± 1000%		¹⁵² Eu	1.70E-04 ± 100%
		¹⁵⁴ Eu	5.50E-05 ± 327%		¹⁵⁴ Eu	1.90E-05 ± 1000%
		¹⁵⁵ Eu	-4.30E-05 ± 302%		¹⁵⁵ Eu	-7.10E-05 ± 239%
		²³⁸ Pu	6.50E-07 ± 785%		²³⁸ Pu	1.30E-06 ± 723%
		^{239,240} Pu	1.90E-06 ± 121%		^{239,240} Pu	2.00E-06 ± 200%
		¹⁰³ Ru	-3.10E-05 ± 181%		¹⁰³ Ru	3.70E-06 ± 1000%
		¹⁰⁶ Ru	6.30E-05 ± 841%		¹⁰⁶ Ru	-7.30E-04 ± 100%
		¹²⁵ Sb	-1.20E-04 ± 108%		¹²⁵ Sb	-9.70E-05 ± 165%
		¹¹³ Sn	7.90E-06 ± 785%		¹¹³ Sn	3.10E-05 ± 239%
		⁹⁰ Sr	1.10E-04 ± 80%		⁹⁰ Sr	2.00E-04 ± 85%
		²³⁴ U	1.70E-05 ± 42%		²³⁴ U	1.30E-05 ± 51%
		²³⁵ U	8.90E-06 ± 58%		²³⁵ U	5.70E-06 ± 88%
		²³⁸ U	1.20E-05 ± 52%		²³⁸ U	1.80E-05 ± 43%
		⁶⁵ Zn	-7.90E-05 ± 203%		⁶⁵ Zn	-1.00E-04 ± 170%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-968	12/31/97 - 6/30/98	⁶⁰ Co	-7.50E-05 ± 100%	6/30/98 - 12/29/98	⁶⁰ Co	-4.70E-05 ± 149%
		¹³⁴ Cs	2.40E-06 ± 1000%		¹³⁴ Cs	2.30E-05 ± 291%
		¹³⁷ Cs	5.30E-05 ± 121%		¹³⁷ Cs	2.70E-04 ± 48%
		¹⁵² Eu	-5.60E-05 ± 286%		¹⁵² Eu	9.20E-05 ± 163%
		¹⁵⁴ Eu	1.10E-04 ± 164%		¹⁵⁴ Eu	9.90E-04 ± 100%
		¹⁵⁵ Eu	3.30E-05 ± 515%		¹⁵⁵ Eu	-1.30E-04 ± 108%
		²³⁸ Pu	8.30E-11 ± 1000%		²³⁸ Pu	2.10E-06 ± 319%
		^{239,240} Pu	2.00E-06 ± 150%		^{239,240} Pu	-7.20E-07 ± 347%
		¹⁰³ Ru	-1.70E-05 ± 318%		¹⁰³ Ru	-8.40E-06 ± 690%
		¹⁰⁶ Ru	-1.40E-05 ± 1000%		¹⁰⁶ Ru	-1.20E-04 ± 492%
		¹²⁵ Sb	-3.00E-05 ± 467%		¹²⁵ Sb	-4.80E-05 ± 313%
		¹¹³ Sn	4.40E-05 ± 159%		¹¹³ Sn	-9.20E-06 ± 804%
		⁹⁰ Sr	1.10E-04 ± 90%		⁹⁰ Sr	3.60E-04 ± 50%
		²³⁴ U	2.70E-05 ± 35%		²³⁴ U	2.00E-05 ± 40%
		²³⁵ U	2.00E-05 ± 41%		²³⁵ U	4.80E-06 ± 83%
		²³⁸ U	1.70E-05 ± 43%		²³⁸ U	2.70E-05 ± 35%
		⁶⁵ Zn	-1.20E-04 ± 100%		⁶⁵ Zn	-1.20E-04 ± 133%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 East Area, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-969	12/31/97 - 6/30/98	⁶⁰ Co	2.30E-05 ± 322%	6/30/98 - 12/29/98	⁶⁰ Co	2.10E-05 ± 290%
		¹³⁴ Cs	1.40E-05 ± 493%		¹³⁴ Cs	5.80E-06 ± 1000%
		¹³⁷ Cs	1.20E-04 ± 63%		¹³⁷ Cs	2.50E-05 ± 232%
		¹⁵² Eu	4.80E-05 ± 375%		¹⁵² Eu	5.80E-04 ± 121%
		¹⁵⁴ Eu	-1.60E-04 ± 138%		¹⁵⁴ Eu	6.40E-05 ± 250%
		¹⁵⁵ Eu	8.40E-05 ± 202%		¹⁵⁵ Eu	1.00E-05 ± 1000%
		²³⁸ Pu	5.50E-06 ± 171%		²³⁸ Pu	-6.50E-06 ± 185%
		^{239,240} Pu	6.80E-07 ± 206%		^{239,240} Pu	6.50E-06 ± 89%
		¹⁰³ Ru	-1.90E-05 ± 279%		¹⁰³ Ru	-2.90E-05 ± 190%
		¹⁰⁶ Ru	-4.30E-04 ± 130%		¹⁰⁶ Ru	-5.30E-04 ± 100%
		¹²⁵ Sb	7.80E-06 ± 1000%		¹²⁵ Sb	-4.50E-05 ± 289%
		¹¹³ Sn	-3.10E-05 ± 229%		¹¹³ Sn	-3.50E-05 ± 180%
		⁹⁰ Sr	4.80E-05 ± 179%		⁹⁰ Sr	2.30E-04 ± 65%
		²³⁴ U	2.20E-05 ± 38%		²³⁴ U	1.80E-05 ± 43%
		²³⁵ U	1.60E-05 ± 46%		²³⁵ U	5.80E-06 ± 72%
		²³⁸ U	1.20E-05 ± 52%		²³⁸ U	1.90E-05 ± 39%
		⁶⁵ Zn	-6.60E-05 ± 242%		⁶⁵ Zn	-2.80E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-970	12/31/97 - 6/30/98	⁶⁰ Co	6.90E-06 ± 826%	6/30/98 - 12/29/98	⁶⁰ Co	-2.20E-05 ± 268%
		¹³⁴ Cs	2.50E-05 ± 252%		¹³⁴ Cs	3.10E-05 ± 181%
		¹³⁷ Cs	-4.30E-06 ± 1000%		¹³⁷ Cs	1.20E-04 ± 74%
		¹⁵² Eu	-9.10E-05 ± 143%		¹⁵² Eu	1.10E-04 ± 136%
		¹⁵⁴ Eu	-1.20E-04 ± 150%		¹⁵⁴ Eu	-1.30E-04 ± 131%
		¹⁵⁵ Eu	1.30E-05 ± 1000%		¹⁵⁵ Eu	4.60E-05 ± 348%
		²³⁸ Pu	-8.10E-06 ± 136%		²³⁸ Pu	7.50E-07 ± 867%
		^{239,240} Pu	2.10E-06 ± 119%		^{239,240} Pu	7.50E-06 ± 64%
		¹⁰³ Ru	-3.30E-06 ± 1000%		¹⁰³ Ru	-1.90E-05 ± 279%
		¹⁰⁶ Ru	-3.30E-04 ± 161%		¹⁰⁶ Ru	-6.40E-05 ± 750%
		¹²⁵ Sb	9.80E-05 ± 133%		¹²⁵ Sb	-4.20E-05 ± 333%
		¹¹³ Sn	-2.30E-05 ± 270%		¹¹³ Sn	7.90E-06 ± 797%
		⁹⁰ Sr	8.10E-05 ± 100%		⁹⁰ Sr	1.10E-04 ± 136%
		²³⁴ U	2.80E-05 ± 39%		²³⁴ U	1.90E-05 ± 42%
		²³⁵ U	1.60E-05 ± 45%		²³⁵ U	5.40E-06 ± 78%
		²³⁸ U	1.30E-05 ± 47%		²³⁸ U	1.40E-05 ± 48%
		⁶⁵ Zn	-2.30E-05 ± 609%		⁶⁵ Zn	-6.70E-05 ± 194%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-972	12/31/97 - 6/30/98	⁶⁰ Co	-3.90E-05 ± 169%	6/30/98 - 12/29/98	⁶⁰ Co	9.10E-06 ± 1000%
		¹³⁴ Cs	5.30E-05 ± 109%		¹³⁴ Cs	-8.70E-07 ± 1000%
		¹³⁷ Cs	2.00E-04 ± 40%		¹³⁷ Cs	9.10E-05 ± 89%
		¹⁵² Eu	-6.20E-05 ± 226%		¹⁵² Eu	-8.00E-05 ± 225%
		¹⁵⁴ Eu	-5.20E-06 ± 1000%		¹⁵⁴ Eu	-2.80E-04 ± 100%
		¹⁵⁵ Eu	-6.90E-05 ± 232%		¹⁵⁵ Eu	3.50E-06 ± 1000%
		²³⁸ Pu	4.70E-06 ± 189%		²³⁸ Pu	4.30E-06 ± 179%
		^{239,240} Pu	6.60E-06 ± 70%		^{239,240} Pu	5.10E-06 ± 82%
		¹⁰³ Ru	1.20E-05 ± 500%		¹⁰³ Ru	-5.10E-05 ± 139%
		¹⁰⁶ Ru	-4.80E-04 ± 110%		¹⁰⁶ Ru	-1.30E-04 ± 500%
		¹²⁵ Sb	-6.50E-05 ± 200%		¹²⁵ Sb	-3.40E-05 ± 471%
		¹¹³ Sn	-2.60E-05 ± 250%		¹¹³ Sn	4.40E-05 ± 180%
		⁹⁰ Sr	2.00E-04 ± 45%		⁹⁰ Sr	2.50E-04 ± 64%
		²³⁴ U	3.10E-05 ± 35%		²³⁴ U	2.10E-05 ± 42%
		²³⁵ U	1.00E-05 ± 56%		²³⁵ U	3.50E-06 ± 120%
		²³⁸ U	1.20E-05 ± 50%		²³⁸ U	2.10E-05 ± 41%
		⁶⁵ Zn	2.60E-05 ± 423%		⁶⁵ Zn	3.20E-05 ± 500%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 East Area, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-973	12/31/97 - 6/30/98	⁶⁰ Co	1.70E-05 ± 382%	6/30/98 - 12/29/98	⁶⁰ Co	2.90E-05 ± 221%
		¹³⁴ Cs	6.40E-05 ± 109%		¹³⁴ Cs	2.00E-05 ± 310%
		¹³⁷ Cs	1.60E-04 ± 51%		¹³⁷ Cs	1.90E-04 ± 49%
		¹⁵² Eu	1.10E-04 ± 173%		¹⁵² Eu	-5.70E-05 ± 246%
		¹⁵⁴ Eu	-1.50E-04 ± 160%		¹⁵⁴ Eu	-5.90E-05 ± 322%
		¹⁵⁵ Eu	1.50E-05 ± 1000%		¹⁵⁵ Eu	-8.50E-05 ± 165%
		²³⁸ Pu	1.80E-05 ± 61%		²³⁸ Pu	8.50E-07 ± 965%
		^{239,240} Pu	2.00E-06 ± 200%		^{239,240} Pu	4.20E-06 ± 90%
		¹⁰³ Ru	8.10E-06 ± 864%		¹⁰³ Ru	3.60E-05 ± 161%
		¹⁰⁶ Ru	3.70E-04 ± 159%		¹⁰⁶ Ru	2.50E-04 ± 212%
		¹²⁵ Sb	-2.90E-05 ± 483%		¹²⁵ Sb	3.60E-05 ± 389%
		¹¹³ Sn	-9.80E-05 ± 100%		¹¹³ Sn	-1.10E-05 ± 564%
		⁹⁰ Sr	-4.10E-05 ± 161%		⁹⁰ Sr	1.70E-04 ± 88%
		²³⁴ U	1.30E-05 ± 43%		²³⁴ U	1.60E-05 ± 44%
		²³⁵ U	9.50E-06 ± 52%		²³⁵ U	7.80E-06 ± 64%
		²³⁸ U	1.10E-05 ± 51%		²³⁸ U	2.40E-05 ± 36%
		⁶⁵ Zn	7.30E-06 ± 1000%		⁶⁵ Zn	-5.20E-05 ± 269%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-976	12/31/97 - 6/30/98	⁶⁰ Co	-6.00E-06 ± 1000%	6/30/98 - 12/29/98	⁶⁰ Co	-3.70E-05 ± 230%
		¹³⁴ Cs	-2.30E-05 ± 322%		¹³⁴ Cs	3.90E-06 ± 1000%
		¹³⁷ Cs	4.80E-05 ± 160%		¹³⁷ Cs	2.10E-04 ± 52%
		¹⁵² Eu	-3.60E-05 ± 444%		¹⁵² Eu	-1.20E-04 ± 192%
		¹⁵⁴ Eu	-1.50E-04 ± 153%		¹⁵⁴ Eu	-2.80E-05 ± 964%
		¹⁵⁵ Eu	1.00E-04 ± 170%		¹⁵⁵ Eu	3.60E-05 ± 528%
		²³⁸ Pu	1.40E-05 ± 93%		²³⁸ Pu	7.30E-07 ± 1000%
		^{239,240} Pu	7.90E-07 ± 1000%		^{239,240} Pu	6.50E-06 ± 92%
		¹⁰³ Ru	7.40E-07 ± 1000%		¹⁰³ Ru	5.10E-05 ± 171%
		¹⁰⁶ Ru	-4.90E-04 ± 131%		¹⁰⁶ Ru	1.90E-04 ± 347%
		¹²⁵ Sb	-1.50E-04 ± 113%		¹²⁵ Sb	-4.10E-05 ± 463%
		¹¹³ Sn	4.00E-05 ± 190%		¹¹³ Sn	8.90E-05 ± 100%
		⁹⁰ Sr	3.60E-05 ± 181%		⁹⁰ Sr	2.60E-04 ± 65%
		²³⁴ U	3.40E-05 ± 28%		²³⁴ U	2.60E-05 ± 42%
		²³⁵ U	9.40E-06 ± 57%		²³⁵ U	7.50E-06 ± 87%
		²³⁸ U	2.20E-05 ± 34%		²³⁸ U	3.10E-05 ± 35%
		⁶⁵ Zn	-1.40E-04 ± 121%		⁶⁵ Zn	-1.30E-04 ± 169%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-977	12/31/97 - 6/30/98	⁶⁰ Co	1.00E-05 ± 590%	6/30/98 - 12/29/98	⁶⁰ Co	-4.70E-05 ± 160%
		¹³⁴ Cs	1.40E-05 ± 443%		¹³⁴ Cs	-2.50E-05 ± 288%
		¹³⁷ Cs	9.00E-05 ± 78%		¹³⁷ Cs	4.10E-05 ± 161%
		¹⁵² Eu	1.80E-05 ± 778%		¹⁵² Eu	-1.20E-04 ± 150%
		¹⁵⁴ Eu	-9.80E-05 ± 194%		¹⁵⁴ Eu	1.80E-04 ± 128%
		¹⁵⁵ Eu	3.60E-05 ± 333%		¹⁵⁵ Eu	2.80E-04 ± 111%
		²³⁸ Pu	5.00E-06 ± 240%		²³⁸ Pu	-1.50E-06 ± 660%
		^{239,240} Pu	2.90E-06 ± 121%		^{239,240} Pu	2.90E-06 ± 159%
		¹⁰³ Ru	-2.60E-05 ± 231%		¹⁰³ Ru	5.80E-05 ± 121%
		¹⁰⁶ Ru	-2.80E-04 ± 179%		¹⁰⁶ Ru	-1.90E-04 ± 321%
		¹²⁵ Sb	8.80E-05 ± 159%		¹²⁵ Sb	4.20E-05 ± 357%
		¹¹³ Sn	2.70E-05 ± 230%		¹¹³ Sn	-4.60E-05 ± 180%
		⁹⁰ Sr	-2.00E-05 ± 460%		⁹⁰ Sr	6.70E-07 ± 1000%
		²³⁴ U	2.20E-05 ± 39%		²³⁴ U	1.50E-05 ± 58%
		²³⁵ U	8.20E-06 ± 76%		²³⁵ U	4.90E-06 ± 131%
		²³⁸ U	2.00E-05 ± 40%		²³⁸ U	1.80E-05 ± 44%
		⁶⁵ Zn	-7.40E-05 ± 189%		⁶⁵ Zn	-4.00E-05 ± 475%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 East Area, Air Sampling Results (pCi/m ³ ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-978	12/31/97 - 6/30/98	⁶⁰ Co	1.30E-05 ± 446%	6/30/98 - 12/29/98	⁶⁰ Co	6.70E-05 ± 93%
		¹³⁴ Cs	-1.20E-05 ± 442%		¹³⁴ Cs	1.70E-05 ± 359%
		¹³⁷ Cs	3.70E-05 ± 170%		¹³⁷ Cs	1.30E-04 ± 67%
		¹⁵² Eu	-8.30E-05 ± 169%		¹⁵² Eu	3.40E-05 ± 382%
		¹⁵⁴ Eu	2.30E-05 ± 652%		¹⁵⁴ Eu	-6.20E-05 ± 258%
		¹⁵⁵ Eu	5.70E-05 ± 281%		¹⁵⁵ Eu	4.10E-05 ± 390%
		²³⁸ Pu	-5.20E-06 ± 169%		²³⁸ Pu	1.90E-06 ± 321%
		^{239,240} Pu	7.70E-07 ± 1000%		^{239,240} Pu	1.40E-05 ± 48%
		¹⁰³ Ru	-2.10E-05 ± 281%		¹⁰³ Ru	-3.10E-06 ± 1000%
		¹⁰⁶ Ru	-2.00E-04 ± 270%		¹⁰⁶ Ru	-1.60E-04 ± 331%
		¹²⁵ Sb	-2.70E-06 ± 1000%		¹²⁵ Sb	-7.60E-05 ± 211%
		¹¹³ Sn	-3.70E-05 ± 181%		¹¹³ Sn	7.50E-06 ± 893%
		⁹⁰ Sr	-2.80E-05 ± 221%		⁹⁰ Sr	1.10E-04 ± 100%
		²³⁴ U	2.20E-05 ± 34%		²³⁴ U	2.00E-05 ± 43%
		²³⁵ U	1.40E-05 ± 47%		²³⁵ U	7.40E-06 ± 70%
		²³⁸ U	1.50E-05 ± 43%		²³⁸ U	2.00E-05 ± 38%
		⁶⁵ Zn	-7.50E-05 ± 187%		⁶⁵ Zn	-9.00E-05 ± 133%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-984	12/31/97 - 6/30/98	⁶⁰ Co	1.00E-05 ± 780%	6/30/98 - 12/29/98	⁶⁰ Co	-2.70E-06 ± 1000%
		¹³⁴ Cs	-2.50E-05 ± 272%		¹³⁴ Cs	2.70E-05 ± 219%
		¹³⁷ Cs	1.60E-04 ± 52%		¹³⁷ Cs	1.70E-04 ± 46%
		¹⁵² Eu	-2.40E-05 ± 750%		¹⁵² Eu	2.30E-05 ± 565%
		¹⁵⁴ Eu	1.50E-04 ± 153%		¹⁵⁴ Eu	-1.50E-04 ± 133%
		¹⁵⁵ Eu	2.90E-05 ± 655%		¹⁵⁵ Eu	4.60E-05 ± 304%
		²³⁸ Pu	4.80E-06 ± 229%		²³⁸ Pu	-6.80E-07 ± 779%
		^{239,240} Pu	6.90E-07 ± 203%		^{239,240} Pu	1.40E-06 ± 143%
		¹⁰³ Ru	-1.00E-05 ± 690%		¹⁰³ Ru	2.30E-05 ± 239%
		¹⁰⁶ Ru	3.20E-04 ± 200%		¹⁰⁶ Ru	6.20E-05 ± 806%
		¹²⁵ Sb	5.50E-05 ± 291%		¹²⁵ Sb	-1.10E-04 ± 145%
		¹¹³ Sn	-8.90E-06 ± 820%		¹¹³ Sn	7.70E-07 ± 1000%
		⁹⁰ Sr	2.00E-04 ± 45%		⁹⁰ Sr	9.60E-04 ± 20%
		²³⁴ U	2.90E-05 ± 32%		²³⁴ U	2.30E-05 ± 37%
		²³⁵ U	1.80E-05 ± 41%		²³⁵ U	4.40E-06 ± 84%
		²³⁸ U	1.70E-05 ± 41%		²³⁸ U	3.10E-05 ± 32%
		⁶⁵ Zn	-9.40E-05 ± 181%		⁶⁵ Zn	-8.10E-05 ± 160%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-985	12/31/97 - 6/30/98	⁶⁰ Co	1.00E-05 ± 610%	6/30/98 - 12/29/98	⁶⁰ Co	8.20E-06 ± 659%
		¹³⁴ Cs	-5.50E-05 ± 109%		¹³⁴ Cs	1.30E-05 ± 362%
		¹³⁷ Cs	1.30E-04 ± 61%		¹³⁷ Cs	1.30E-04 ± 50%
		¹⁵² Eu	1.80E-04 ± 72%		¹⁵² Eu	9.10E-05 ± 165%
		¹⁵⁴ Eu	-2.70E-05 ± 593%		¹⁵⁴ Eu	-6.10E-05 ± 311%
		¹⁵⁵ Eu	-7.60E-06 ± 1000%		¹⁵⁵ Eu	-1.90E-05 ± 789%
		²³⁸ Pu	-3.80E-06 ± 289%		²³⁸ Pu	5.30E-06 ± 121%
		^{239,240} Pu	6.30E-07 ± 206%		^{239,240} Pu	6.00E-06 ± 68%
		¹⁰³ Ru	3.90E-05 ± 159%		¹⁰³ Ru	-6.20E-05 ± 100%
		¹⁰⁶ Ru	5.40E-04 ± 94%		¹⁰⁶ Ru	-4.40E-04 ± 120%
		¹²⁵ Sb	1.40E-05 ± 1000%		¹²⁵ Sb	4.70E-05 ± 277%
		¹¹³ Sn	-1.00E-04 ± 100%		¹¹³ Sn	-1.10E-05 ± 582%
		⁹⁰ Sr	3.60E-04 ± 31%		⁹⁰ Sr	7.40E-05 ± 162%
		²³⁴ U	3.30E-05 ± 30%		²³⁴ U	2.30E-05 ± 35%
		²³⁵ U	1.90E-05 ± 37%		²³⁵ U	7.40E-06 ± 61%
		²³⁸ U	1.30E-05 ± 41%		²³⁸ U	1.60E-05 ± 45%
		⁶⁵ Zn	-8.20E-06 ± 1000%		⁶⁵ Zn	-5.90E-05 ± 203%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 East Area, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-998	12/31/97 - 6/30/98	⁶⁰ Co	-2.70E-05 ± 241%	6/30/98 - 11/18/98	⁶⁰ Co	-7.60E-05 ± 130%
		¹³⁴ Cs	3.20E-05 ± 219%		¹³⁴ Cs	-5.30E-05 ± 170%
		¹³⁷ Cs	9.10E-05 ± 100%		¹³⁷ Cs	3.80E-06 ± 1000%
		¹⁵² Eu	8.40E-06 ± 1000%		¹⁵² Eu	-5.20E-05 ± 442%
		¹⁵⁴ Eu	-1.70E-04 ± 100%		¹⁵⁴ Eu	-1.80E-04 ± 172%
		¹⁵⁵ Eu	-1.30E-04 ± 123%		¹⁵⁵ Eu	-3.50E-05 ± 600%
		²³⁸ Pu	-8.20E-06 ± 120%		²³⁸ Pu	3.30E-06 ± 424%
		^{239,240} Pu	9.00E-06 ± 62%		^{239,240} Pu	-3.30E-06 ± 148%
		¹⁰³ Ru	-2.40E-05 ± 250%		¹⁰³ Ru	-3.90E-05 ± 231%
		¹⁰⁶ Ru	6.10E-05 ± 984%		¹⁰⁶ Ru	1.70E-04 ± 429%
		¹²⁵ Sb	-5.60E-06 ± 1000%		¹²⁵ Sb	4.30E-05 ± 442%
		¹¹³ Sn	-2.10E-05 ± 348%		¹¹³ Sn	1.70E-05 ± 588%
		⁹⁰ Sr	1.30E-04 ± 77%		⁹⁰ Sr	5.50E-04 ± 31%
		²³⁴ U	2.50E-05 ± 37%		²³⁴ U	3.20E-05 ± 38%
		²³⁵ U	1.20E-05 ± 55%		²³⁵ U	1.30E-05 ± 65%
		²³⁸ U	1.20E-05 ± 54%		²³⁸ U	2.70E-05 ± 41%
		⁶⁵ Zn	-1.80E-05 ± 1000%		⁶⁵ Zn	-4.20E-05 ± 524%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-999	12/31/97 - 6/30/98	⁶⁰ Co	9.70E-06 ± 598%	6/30/98 - 12/29/98	⁶⁰ Co	-3.30E-05 ± 248%
		¹³⁴ Cs	2.30E-05 ± 239%		¹³⁴ Cs	6.50E-05 ± 109%
		¹³⁷ Cs	6.70E-05 ± 87%		¹³⁷ Cs	4.10E-05 ± 171%
		¹⁵² Eu	-4.00E-07 ± 1000%		¹⁵² Eu	-4.50E-05 ± 400%
		¹⁵⁴ Eu	8.90E-05 ± 191%		¹⁵⁴ Eu	2.30E-05 ± 1000%
		¹⁵⁵ Eu	-2.70E-05 ± 556%		¹⁵⁵ Eu	6.90E-05 ± 261%
		²³⁸ Pu	3.30E-06 ± 279%		²³⁸ Pu	-1.30E-05 ± 108%
		^{239,240} Pu	2.60E-06 ± 119%		^{239,240} Pu	-1.40E-06 ± 371%
		¹⁰³ Ru	-2.40E-05 ± 258%		¹⁰³ Ru	-2.90E-05 ± 248%
		¹⁰⁶ Ru	1.30E-04 ± 438%		¹⁰⁶ Ru	-3.10E-04 ± 190%
		¹²⁵ Sb	-1.20E-04 ± 117%		¹²⁵ Sb	-9.90E-05 ± 162%
		¹¹³ Sn	-2.80E-05 ± 250%		¹¹³ Sn	-7.20E-06 ± 1000%
		⁹⁰ Sr	2.60E-04 ± 42%		⁹⁰ Sr	9.30E-05 ± 129%
		²³⁴ U	1.10E-05 ± 54%		²³⁴ U	2.80E-05 ± 34%
		²³⁵ U	1.00E-05 ± 54%		²³⁵ U	9.30E-06 ± 68%
		²³⁸ U	1.10E-05 ± 54%		²³⁸ U	2.20E-05 ± 38%
		⁶⁵ Zn	2.10E-06 ± 1000%		⁶⁵ Zn	-3.40E-05 ± 471%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 West Area, Air Sampling Results (pCi/m³ ± Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-155	12/30/97 - 6/29/98	⁶⁰ Co	-2.20E-05 ± 318%	6/29/98 - 12/28/98	⁶⁰ Co	2.00E-05 ± 430%
		¹³⁴ Cs	2.40E-05 ± 279%		¹³⁴ Cs	-5.40E-05 ± 130%
		¹³⁷ Cs	2.10E-04 ± 46%		¹³⁷ Cs	1.50E-04 ± 80%
		¹⁵² Eu	-2.30E-05 ± 609%		¹⁵² Eu	1.30E-04 ± 131%
		¹⁵⁴ Eu	1.00E-04 ± 200%		¹⁵⁴ Eu	2.40E-04 ± 108%
		¹⁵⁵ Eu	2.80E-05 ± 607%		¹⁵⁵ Eu	-1.40E-04 ± 129%
		²³⁸ Pu	6.90E-07 ± 1000%		²³⁸ Pu	7.00E-07 ± 714%
		^{239,240} Pu	1.30E-05 ± 55%		^{239,240} Pu	1.00E-05 ± 56%
		¹⁰³ Ru	-2.50E-05 ± 280%		¹⁰³ Ru	-3.90E-05 ± 151%
		¹⁰⁶ Ru	3.30E-04 ± 170%		¹⁰⁶ Ru	3.20E-05 ± 1000%
		¹²⁵ Sb	1.00E-04 ± 140%		¹²⁵ Sb	-1.30E-04 ± 131%
		¹¹³ Sn	1.10E-05 ± 627%		¹¹³ Sn	4.20E-07 ± 1000%
		⁹⁰ Sr	2.00E-04 ± 50%		⁹⁰ Sr	1.00E-04 ± 130%
		²³⁴ U	4.40E-05 ± 27%		²³⁴ U	2.60E-05 ± 36%
		²³⁵ U	1.20E-05 ± 61%		²³⁵ U	4.80E-06 ± 83%
		²³⁸ U	1.10E-05 ± 54%		²³⁸ U	2.80E-05 ± 35%
		⁶⁵ Zn	-1.40E-04 ± 107%		⁶⁵ Zn	-1.30E-04 ± 138%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-161	12/30/97 - 6/29/98	⁶⁰ Co	-1.00E-05 ± 600%	6/29/98 - 12/28/98	⁶⁰ Co	2.30E-05 ± 261%
		¹³⁴ Cs	1.90E-05 ± 342%		¹³⁴ Cs	-5.30E-05 ± 121%
		¹³⁷ Cs	1.80E-04 ± 37%		¹³⁷ Cs	2.30E-05 ± 278%
		¹⁵² Eu	3.00E-05 ± 467%		¹⁵² Eu	4.20E-05 ± 357%
		¹⁵⁴ Eu	-7.30E-05 ± 205%		¹⁵⁴ Eu	6.90E-05 ± 246%
		¹⁵⁵ Eu	-1.10E-04 ± 136%		¹⁵⁵ Eu	-6.00E-05 ± 333%
		²³⁸ Pu	1.40E-06 ± 371%		²³⁸ Pu	1.30E-06 ± 469%
		^{239,240} Pu	5.60E-06 ± 71%		^{239,240} Pu	6.10E-06 ± 75%
		¹⁰³ Ru	-4.00E-05 ± 120%		¹⁰³ Ru	1.90E-05 ± 242%
		¹⁰⁶ Ru	-2.60E-04 ± 181%		¹⁰⁶ Ru	-1.20E-04 ± 442%
		¹²⁵ Sb	-4.20E-05 ± 310%		¹²⁵ Sb	-5.30E-06 ± 1000%
		¹¹³ Sn	-7.30E-06 ± 781%		¹¹³ Sn	2.70E-05 ± 230%
		⁹⁰ Sr	1.20E-04 ± 75%		⁹⁰ Sr	-1.40E-04 ± 100%
		²³⁴ U	3.80E-05 ± 29%		²³⁴ U	2.50E-05 ± 30%
		²³⁵ U	1.90E-05 ± 47%		²³⁵ U	9.20E-06 ± 50%
		²³⁸ U	6.40E-06 ± 70%		²³⁸ U	1.20E-05 ± 44%
		⁶⁵ Zn	-6.60E-06 ± 1000%		⁶⁵ Zn	4.10E-05 ± 317%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-165	12/30/97 - 6/29/98	²⁴¹ Am	2.90E-05 ± 66%	6/29/98 - 12/28/98	²⁴¹ Am	No Analysis
		⁶⁰ Co	1.20E-05 ± 633%		⁶⁰ Co	-8.30E-06 ± 988%
		¹³⁴ Cs	-7.60E-06 ± 895%		¹³⁴ Cs	-3.80E-05 ± 200%
		¹³⁷ Cs	-1.40E-05 ± 507%		¹³⁷ Cs	1.70E-04 ± 47%
		¹⁵² Eu	-6.00E-06 ± 1000%		¹⁵² Eu	-4.10E-05 ± 415%
		¹⁵⁴ Eu	-8.60E-05 ± 244%		¹⁵⁴ Eu	-4.60E-06 ± 1000%
		¹⁵⁵ Eu	2.10E-05 ± 857%		¹⁵⁵ Eu	7.20E-05 ± 236%
		²³⁸ Pu	5.30E-06 ± 208%		²³⁸ Pu	1.30E-06 ± 469%
		^{239,240} Pu	4.40E-05 ± 41%		^{239,240} Pu	4.00E-05 ± 30%
		²⁴¹ Pu	9.00E-04 ± 50%		²⁴¹ Pu	No Analysis
		¹⁰³ Ru	-5.40E-05 ± 120%		¹⁰³ Ru	6.80E-06 ± 882%
		¹⁰⁶ Ru	-2.90E-04 ± 210%		¹⁰⁶ Ru	8.20E-05 ± 805%
		¹²⁵ Sb	-6.30E-05 ± 222%		¹²⁵ Sb	-8.10E-05 ± 198%
		¹¹³ Sn	4.50E-05 ± 160%		¹¹³ Sn	-1.10E-05 ± 609%
		⁹⁰ Sr	1.10E-04 ± 80%		⁹⁰ Sr	-1.10E-04 ± 109%
		²³⁴ U	3.50E-05 ± 29%		²³⁴ U	1.90E-05 ± 40%
		²³⁵ U	2.60E-05 ± 38%		²³⁵ U	9.10E-06 ± 62%
		²³⁸ U	1.50E-05 ± 46%		²³⁸ U	2.20E-05 ± 38%
		⁶⁵ Zn	-2.90E-04 ± 100%		⁶⁵ Zn	-1.40E-04 ± 121%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 West Area, Air Sampling Results (pCi/m ³ ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-168	12/30/97 - 6/29/98	⁶⁰ Co	2.80E-05 ± 221%	6/29/98 - 12/28/98	⁶⁰ Co	-6.40E-06 ± 1000%
		¹³⁴ Cs	-1.20E-05 ± 533%		¹³⁴ Cs	-3.50E-05 ± 180%
		¹³⁷ Cs	1.20E-04 ± 68%		¹³⁷ Cs	1.10E-04 ± 90%
		¹⁵² Eu	1.20E-05 ± 1000%		¹⁵² Eu	-5.90E-05 ± 220%
		¹⁵⁴ Eu	-3.90E-05 ± 513%		¹⁵⁴ Eu	1.10E-04 ± 164%
		¹⁵⁵ Eu	1.10E-04 ± 118%		¹⁵⁵ Eu	-1.10E-04 ± 127%
		²³⁸ Pu	-1.30E-06 ± 354%		²³⁸ Pu	-1.30E-06 ± 708%
		^{239,240} Pu	8.20E-06 ± 59%		^{239,240} Pu	9.50E-06 ± 59%
		¹⁰³ Ru	-8.40E-06 ± 631%		¹⁰³ Ru	5.10E-06 ± 1000%
		¹⁰⁶ Ru	-3.70E-04 ± 141%		¹⁰⁶ Ru	-3.30E-04 ± 170%
		¹²⁵ Sb	-1.80E-05 ± 722%		¹²⁵ Sb	4.60E-05 ± 283%
		¹¹³ Sn	3.10E-05 ± 181%		¹¹³ Sn	8.40E-06 ± 714%
		⁹⁰ Sr	6.80E-05 ± 129%		⁹⁰ Sr	3.40E-05 ± 441%
		²³⁴ U	7.50E-05 ± 21%		²³⁴ U	3.00E-05 ± 29%
		²³⁵ U	3.90E-05 ± 31%		²³⁵ U	1.10E-05 ± 46%
		²³⁸ U	2.90E-05 ± 34%		²³⁸ U	2.30E-05 ± 33%
		⁶⁵ Zn	-1.50E-04 ± 100%		⁶⁵ Zn	-2.90E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-200	12/19/97 - 7/2/98	⁶⁰ Co	1.50E-05 ± 320%	7/2/98 - 12/30/98	⁶⁰ Co	2.60E-06 ± 1000%
		¹³⁴ Cs	-3.20E-05 ± 181%		¹³⁴ Cs	-4.00E-06 ± 1000%
		¹³⁷ Cs	1.90E-05 ± 300%		¹³⁷ Cs	9.10E-05 ± 73%
		¹⁵² Eu	8.80E-05 ± 148%		¹⁵² Eu	5.90E-04 ± 110%
		¹⁵⁴ Eu	-1.20E-04 ± 117%		¹⁵⁴ Eu	-7.40E-05 ± 243%
		¹⁵⁵ Eu	-1.70E-04 ± 88%		¹⁵⁵ Eu	-7.50E-05 ± 200%
		²³⁸ Pu	-8.50E-06 ± 109%		²³⁸ Pu	-8.40E-06 ± 110%
		^{239,240} Pu	6.50E-07 ± 1000%		^{239,240} Pu	7.00E-06 ± 70%
		¹⁰³ Ru	-6.60E-05 ± 100%		¹⁰³ Ru	-3.60E-05 ± 150%
		¹⁰⁶ Ru	-1.10E-05 ± 1000%		¹⁰⁶ Ru	2.10E-04 ± 238%
		¹²⁵ Sb	1.50E-04 ± 113%		¹²⁵ Sb	-1.50E-05 ± 1000%
		¹¹³ Sn	-3.40E-05 ± 171%		¹¹³ Sn	-1.70E-05 ± 371%
		⁹⁰ Sr	6.50E-06 ± 1000%		⁹⁰ Sr	-9.80E-05 ± 143%
		²³⁴ U	4.20E-05 ± 26%		²³⁴ U	1.90E-05 ± 38%
		²³⁵ U	1.40E-05 ± 55%		²³⁵ U	4.00E-06 ± 95%
		²³⁸ U	1.60E-05 ± 42%		²³⁸ U	1.50E-05 ± 44%
		⁶⁵ Zn	-3.50E-05 ± 371%		⁶⁵ Zn	-1.20E-04 ± 117%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-304	12/30/97 - 6/29/98	⁶⁰ Co	-3.80E-05 ± 200%	6/29/98 - 12/28/98	⁶⁰ Co	-3.80E-05 ± 221%
		¹³⁴ Cs	-4.90E-07 ± 1000%		¹³⁴ Cs	4.50E-05 ± 160%
		¹³⁷ Cs	9.30E-05 ± 72%		¹³⁷ Cs	9.20E-05 ± 83%
		¹⁵² Eu	-8.30E-05 ± 205%		¹⁵² Eu	6.90E-06 ± 1000%
		¹⁵⁴ Eu	8.40E-05 ± 250%		¹⁵⁴ Eu	6.20E-05 ± 355%
		¹⁵⁵ Eu	1.40E-04 ± 121%		¹⁵⁵ Eu	1.10E-04 ± 164%
		²³⁸ Pu	-4.80E-06 ± 200%		²³⁸ Pu	-1.60E-06 ± 431%
		^{239,240} Pu	3.20E-06 ± 141%		^{239,240} Pu	4.60E-06 ± 83%
		¹⁰³ Ru	2.90E-05 ± 231%		¹⁰³ Ru	5.50E-05 ± 120%
		¹⁰⁶ Ru	-4.00E-04 ± 150%		¹⁰⁶ Ru	3.10E-04 ± 200%
		¹²⁵ Sb	1.10E-04 ± 164%		¹²⁵ Sb	2.10E-05 ± 810%
		¹¹³ Sn	-9.80E-05 ± 100%		¹¹³ Sn	-1.70E-06 ± 1000%
		⁹⁰ Sr	1.40E-04 ± 70%		⁹⁰ Sr	1.90E-04 ± 100%
		²³⁴ U	3.30E-05 ± 30%		²³⁴ U	1.80E-05 ± 42%
		²³⁵ U	1.70E-05 ± 45%		²³⁵ U	8.60E-06 ± 60%
		²³⁸ U	1.60E-05 ± 42%		²³⁸ U	1.90E-05 ± 42%
		⁶⁵ Zn	-2.80E-05 ± 571%		⁶⁵ Zn	-1.60E-04 ± 119%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 West Area, Air Sampling Results (pCi/m³ ± Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-433	12/30/97 - 6/29/98	²⁴¹ Am	3.10E-05 ± 58%	6/29/98 - 12/28/98	²⁴¹ Am	No Analysis
		⁶⁰ Co	6.30E-05 ± 110%		⁶⁰ Co	4.80E-05 ± 129%
		¹³⁴ Cs	3.10E-05 ± 190%		¹³⁴ Cs	4.40E-06 ± 1000%
		¹³⁷ Cs	9.60E-05 ± 73%		¹³⁷ Cs	3.10E-04 ± 31%
		¹⁵² Eu	2.80E-05 ± 464%		¹⁵² Eu	1.30E-05 ± 1000%
		¹⁵⁴ Eu	-4.00E-05 ± 450%		¹⁵⁴ Eu	1.50E-04 ± 113%
		¹⁵⁵ Eu	4.20E-06 ± 1000%		¹⁵⁵ Eu	1.10E-05 ± 1000%
		²³⁸ Pu	-1.30E-06 ± 723%		²³⁸ Pu	8.80E-07 ± 784%
		^{239,240} Pu	5.20E-06 ± 100%		^{239,240} Pu	8.10E-06 ± 81%
		²⁴¹ Pu	9.50E-04 ± 147%		²⁴¹ Pu	No Analysis
		¹⁰³ Ru	-5.00E-06 ± 1000%		¹⁰³ Ru	7.50E-06 ± 693%
		¹⁰⁶ Ru	-1.50E-04 ± 360%		¹⁰⁶ Ru	2.90E-04 ± 169%
		¹²⁵ Sb	1.40E-05 ± 1000%		¹²⁵ Sb	-7.50E-05 ± 187%
		¹¹³ Sn	-1.40E-05 ± 450%		¹¹³ Sn	-5.10E-05 ± 120%
		⁹⁰ Sr	9.50E-05 ± 89%		⁹⁰ Sr	8.80E-05 ± 205%
		²³⁴ U	5.10E-05 ± 25%		²³⁴ U	2.00E-05 ± 35%
		²³⁵ U	5.20E-05 ± 27%		²³⁵ U	9.50E-06 ± 51%
		²³⁸ U	3.70E-05 ± 30%		²³⁸ U	1.20E-05 ± 44%
		⁶⁵ Zn	-6.40E-05 ± 203%		⁶⁵ Zn	5.40E-05 ± 204%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-441	12/30/97 - 6/29/98	⁶⁰ Co	-5.80E-05 ± 140%	6/29/98 - 12/28/98	⁶⁰ Co	3.60E-05 ± 200%
		¹³⁴ Cs	5.60E-05 ± 120%		¹³⁴ Cs	9.10E-07 ± 1000%
		¹³⁷ Cs	8.10E-05 ± 93%		¹³⁷ Cs	2.20E-04 ± 42%
		¹⁵² Eu	-9.50E-05 ± 200%		¹⁵² Eu	-6.70E-05 ± 224%
		¹⁵⁴ Eu	1.10E-04 ± 209%		¹⁵⁴ Eu	3.90E-05 ± 667%
		¹⁵⁵ Eu	-1.00E-04 ± 170%		¹⁵⁵ Eu	-4.30E-05 ± 395%
		²³⁸ Pu	2.40E-06 ± 292%		²³⁸ Pu	2.50E-06 ± 260%
		^{239,240} Pu	7.70E-07 ± 351%		^{239,240} Pu	9.20E-06 ± 67%
		¹⁰³ Ru	7.30E-06 ± 877%		¹⁰³ Ru	2.90E-05 ± 210%
		¹⁰⁶ Ru	8.30E-04 ± 75%		¹⁰⁶ Ru	-4.90E-04 ± 131%
		¹²⁵ Sb	3.60E-05 ± 472%		¹²⁵ Sb	8.00E-05 ± 188%
		¹¹³ Sn	-2.10E-05 ± 319%		¹¹³ Sn	1.70E-05 ± 447%
		⁹⁰ Sr	1.50E-04 ± 62%		⁹⁰ Sr	1.30E-04 ± 154%
		²³⁴ U	1.20E-05 ± 52%		²³⁴ U	3.00E-05 ± 32%
		²³⁵ U	7.70E-06 ± 71%		²³⁵ U	9.20E-06 ± 57%
		²³⁸ U	1.30E-05 ± 51%		²³⁸ U	2.20E-05 ± 36%
		⁶⁵ Zn	-2.10E-05 ± 857%		⁶⁵ Zn	-3.90E-05 ± 385%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-442	12/30/97 - 6/29/98	⁶⁰ Co	-1.60E-06 ± 1000%	6/29/98 - 12/28/98	⁶⁰ Co	-1.50E-05 ± 447%
		¹³⁴ Cs	1.50E-05 ± 460%		¹³⁴ Cs	4.50E-05 ± 160%
		¹³⁷ Cs	1.20E-04 ± 51%		¹³⁷ Cs	1.50E-04 ± 61%
		¹⁵² Eu	-1.10E-04 ± 136%		¹⁵² Eu	-4.60E-05 ± 304%
		¹⁵⁴ Eu	-5.00E-05 ± 400%		¹⁵⁴ Eu	5.70E-05 ± 316%
		¹⁵⁵ Eu	3.20E-05 ± 594%		¹⁵⁵ Eu	-6.50E-05 ± 215%
		²³⁸ Pu	5.20E-06 ± 110%		²³⁸ Pu	8.60E-07 ± 965%
		^{239,240} Pu	8.90E-06 ± 56%		^{239,240} Pu	4.30E-06 ± 109%
		¹⁰³ Ru	3.00E-05 ± 220%		¹⁰³ Ru	1.90E-05 ± 268%
		¹⁰⁶ Ru	-9.40E-05 ± 660%		¹⁰⁶ Ru	-2.10E-04 ± 248%
		¹²⁵ Sb	-5.80E-05 ± 276%		¹²⁵ Sb	-6.80E-06 ± 1000%
		¹¹³ Sn	-2.60E-05 ± 281%		¹¹³ Sn	1.80E-05 ± 339%
		⁹⁰ Sr	1.30E-04 ± 77%		⁹⁰ Sr	-3.60E-05 ± 472%
		²³⁴ U	5.60E-05 ± 27%		²³⁴ U	2.40E-05 ± 34%
		²³⁵ U	5.20E-05 ± 29%		²³⁵ U	5.20E-06 ± 81%
		²³⁸ U	3.40E-05 ± 32%		²³⁸ U	1.40E-05 ± 45%
		⁶⁵ Zn	-1.80E-04 ± 100%		⁶⁵ Zn	-1.60E-04 ± 100%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 West Area, Air Sampling Results (pCi/m3 $\pm$ Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-449	12/30/97 - 6/29/98	⁶⁰ Co	3.70E-06 $\pm$ 1000%	6/29/98 - 12/28/98	⁶⁰ Co	6.70E-05 $\pm$ 88%
		¹³⁴ Cs	1.10E-05 $\pm$ 545%		¹³⁴ Cs	9.90E-06 $\pm$ 556%
		¹³⁷ Cs	5.70E-05 $\pm$ 98%		¹³⁷ Cs	9.00E-06 $\pm$ 711%
		¹⁵² Eu	5.30E-05 $\pm$ 264%		¹⁵² Eu	4.30E-05 $\pm$ 326%
		¹⁵⁴ Eu	-8.70E-05 $\pm$ 184%		¹⁵⁴ Eu	-7.10E-05 $\pm$ 211%
		¹⁵⁵ Eu	2.20E-06 $\pm$ 1000%		¹⁵⁵ Eu	-6.80E-05 $\pm$ 221%
		²³⁸ Pu	-3.70E-06 $\pm$ 170%		²³⁸ Pu	-6.40E-07 $\pm$ 875%
		^{239,240} Pu	2.20E-06 $\pm$ 182%		^{239,240} Pu	1.30E-05 $\pm$ 48%
		¹⁰³ Ru	-2.70E-05 $\pm$ 200%		¹⁰³ Ru	-6.00E-05 $\pm$ 100%
		¹⁰⁶ Ru	-1.20E-04 $\pm$ 450%		¹⁰⁶ Ru	-1.40E-04 $\pm$ 350%
		¹²⁵ Sb	1.30E-04 $\pm$ 100%		¹²⁵ Sb	-6.40E-06 $\pm$ 1000%
		¹¹³ Sn	1.40E-05 $\pm$ 457%		¹¹³ Sn	2.10E-05 $\pm$ 300%
		⁹⁰ Sr	1.10E-04 $\pm$ 80%		⁹⁰ Sr	-1.40E-05 $\pm$ 1000%
		²³⁴ U	3.90E-05 $\pm$ 31%		²³⁴ U	1.60E-05 $\pm$ 43%
		²³⁵ U	2.50E-05 $\pm$ 37%		²³⁵ U	1.20E-05 $\pm$ 51%
		²³⁸ U	2.20E-05 $\pm$ 37%		²³⁸ U	2.30E-05 $\pm$ 35%
		⁶⁵ Zn	-1.10E-04 $\pm$ 109%		⁶⁵ Zn	-7.10E-05 $\pm$ 183%
EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-456	12/30/97 - 6/29/98	⁶⁰ Co	-1.00E-05 $\pm$ 780%	6/29/98 - 12/28/98	⁶⁰ Co	3.40E-06 $\pm$ 1000%
		¹³⁴ Cs	-5.50E-07 $\pm$ 1000%		¹³⁴ Cs	-6.70E-06 $\pm$ 1000%
		¹³⁷ Cs	6.60E-05 $\pm$ 100%		¹³⁷ Cs	2.80E-05 $\pm$ 279%
		¹⁵² Eu	9.30E-05 $\pm$ 194%		¹⁵² Eu	-1.50E-04 $\pm$ 140%
		¹⁵⁴ Eu	2.20E-05 $\pm$ 909%		¹⁵⁴ Eu	-3.90E-05 $\pm$ 590%
		¹⁵⁵ Eu	5.50E-05 $\pm$ 309%		¹⁵⁵ Eu	2.10E-04 $\pm$ 129%
		²³⁸ Pu	1.50E-06 $\pm$ 473%		²³⁸ Pu	-5.10E-06 $\pm$ 100%
		^{239,240} Pu	-7.60E-07 $\pm$ 197%		^{239,240} Pu	6.50E-06 $\pm$ 68%
		¹⁰³ Ru	-1.50E-05 $\pm$ 447%		¹⁰³ Ru	-3.80E-05 $\pm$ 161%
		¹⁰⁶ Ru	-1.80E-04 $\pm$ 350%		¹⁰⁶ Ru	6.60E-04 $\pm$ 89%
		¹²⁵ Sb	-1.20E-04 $\pm$ 117%		¹²⁵ Sb	1.80E-05 $\pm$ 944%
		¹¹³ Sn	2.20E-05 $\pm$ 359%		¹¹³ Sn	4.00E-05 $\pm$ 200%
		⁹⁰ Sr	1.20E-04 $\pm$ 80%		⁹⁰ Sr	1.90E-04 $\pm$ 100%
		²³⁴ U	1.70E-05 $\pm$ 44%		²³⁴ U	2.20E-05 $\pm$ 36%
		²³⁵ U	5.00E-06 $\pm$ 76%		²³⁵ U	5.50E-06 $\pm$ 80%
		²³⁸ U	1.40E-05 $\pm$ 46%		²³⁸ U	2.20E-05 $\pm$ 36%
		⁶⁵ Zn	1.00E-04 $\pm$ 160%		⁶⁵ Zn	-3.10E-04 $\pm$ 100%
EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-457	12/30/97 - 6/29/98	⁶⁰ Co	-2.20E-05 $\pm$ 300%	6/29/98 - 12/28/98	⁶⁰ Co	3.90E-06 $\pm$ 1000%
		¹³⁴ Cs	2.40E-05 $\pm$ 271%		¹³⁴ Cs	5.90E-05 $\pm$ 100%
		¹³⁷ Cs	-1.00E-05 $\pm$ 600%		¹³⁷ Cs	3.40E-05 $\pm$ 179%
		¹⁵² Eu	7.30E-05 $\pm$ 205%		¹⁵² Eu	-4.60E-05 $\pm$ 304%
		¹⁵⁴ Eu	2.20E-05 $\pm$ 773%		¹⁵⁴ Eu	-1.00E-04 $\pm$ 190%
		¹⁵⁵ Eu	2.10E-04 $\pm$ 81%		¹⁵⁵ Eu	2.50E-05 $\pm$ 600%
		²³⁸ Pu	1.70E-06 $\pm$ 400%		²³⁸ Pu	7.60E-07 $\pm$ 1000%
		^{239,240} Pu	8.30E-07 $\pm$ 349%		^{239,240} Pu	1.50E-06 $\pm$ 253%
		¹⁰³ Ru	2.90E-05 $\pm$ 190%		¹⁰³ Ru	1.90E-05 $\pm$ 279%
		¹⁰⁶ Ru	-1.60E-06 $\pm$ 1000%		¹⁰⁶ Ru	-3.00E-04 $\pm$ 170%
		¹²⁵ Sb	3.80E-05 $\pm$ 368%		¹²⁵ Sb	-4.40E-05 $\pm$ 318%
		¹¹³ Sn	-1.40E-05 $\pm$ 457%		¹¹³ Sn	4.30E-07 $\pm$ 1000%
		⁹⁰ Sr	-3.50E-05 $\pm$ 240%		⁹⁰ Sr	-1.30E-04 $\pm$ 123%
		²³⁴ U	1.50E-05 $\pm$ 45%		²³⁴ U	1.70E-05 $\pm$ 41%
		²³⁵ U	1.50E-05 $\pm$ 46%		²³⁵ U	7.60E-06 $\pm$ 67%
		²³⁸ U	2.20E-05 $\pm$ 38%		²³⁸ U	1.30E-05 $\pm$ 47%
		⁶⁵ Zn	-1.10E-04 $\pm$ 136%		⁶⁵ Zn	5.90E-07 $\pm$ 1000%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 West Area, Air Sampling Results (pCi/m3 ± Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-956	12/30/97 - 6/29/98	⁶⁰ Co	3.60E-05 ± 181%	6/29/98 - 12/28/98	⁶⁰ Co	3.40E-05 ± 221%
		¹³⁴ Cs	-1.70E-05 ± 347%		¹³⁴ Cs	9.90E-06 ± 596%
		¹³⁷ Cs	1.60E-04 ± 45%		¹³⁷ Cs	2.10E-04 ± 40%
		¹⁵² Eu	-6.90E-05 ± 217%		¹⁵² Eu	3.00E-04 ± 170%
		¹⁵⁴ Eu	5.10E-05 ± 333%		¹⁵⁴ Eu	1.40E-04 ± 143%
		¹⁵⁵ Eu	-9.80E-05 ± 173%		¹⁵⁵ Eu	4.70E-05 ± 298%
		²³⁸ Pu	-9.80E-06 ± 112%		²³⁸ Pu	2.30E-06 ± 239%
		^{239,240} Pu	2.90E-06 ± 121%		^{239,240} Pu	7.00E-06 ± 81%
		¹⁰³ Ru	-2.80E-05 ± 221%		¹⁰³ Ru	-3.50E-05 ± 160%
		¹⁰⁶ Ru	-4.30E-04 ± 140%		¹⁰⁶ Ru	1.20E-05 ± 1000%
		¹²⁵ Sb	5.00E-06 ± 1000%		¹²⁵ Sb	1.20E-04 ± 117%
		¹¹³ Sn	1.10E-05 ± 600%		¹¹³ Sn	2.10E-05 ± 429%
		⁹⁰ Sr	6.00E-05 ± 160%		⁹⁰ Sr	1.90E-04 ± 95%
		²³⁴ U	1.70E-05 ± 52%		²³⁴ U	1.50E-04 ± 20%
		²³⁵ U	9.80E-06 ± 72%		²³⁵ U	2.00E-05 ± 46%
		²³⁸ U	2.70E-06 ± 119%		²³⁸ U	1.80E-04 ± 19%
		⁶⁵ Zn	-9.80E-05 ± 143%		⁶⁵ Zn	2.00E-05 ± 750%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-963	12/30/97 - 6/29/98	⁶⁰ Co	2.50E-05 ± 252%	6/29/98 - 12/28/98	⁶⁰ Co	8.10E-05 ± 100%
		¹³⁴ Cs	4.00E-06 ± 1000%		¹³⁴ Cs	9.20E-05 ± 109%
		¹³⁷ Cs	1.40E-04 ± 71%		¹³⁷ Cs	6.60E-04 ± 26%
		¹⁵² Eu	-3.80E-05 ± 368%		¹⁵² Eu	1.50E-05 ± 1000%
		¹⁵⁴ Eu	1.10E-05 ± 1000%		¹⁵⁴ Eu	6.20E-05 ± 387%
		¹⁵⁵ Eu	-4.20E-05 ± 381%		¹⁵⁵ Eu	1.80E-04 ± 100%
		²³⁸ Pu	1.90E-06 ± 321%		²³⁸ Pu	4.60E-06 ± 180%
		^{239,240} Pu	5.70E-06 ± 75%		^{239,240} Pu	2.30E-06 ± 122%
		¹⁰³ Ru	-1.40E-05 ± 450%		¹⁰³ Ru	1.10E-05 ± 627%
		¹⁰⁶ Ru	-5.50E-04 ± 100%		¹⁰⁶ Ru	1.30E-04 ± 469%
		¹²⁵ Sb	-4.50E-06 ± 1000%		¹²⁵ Sb	-6.60E-05 ± 242%
		¹¹³ Sn	-6.50E-05 ± 100%		¹¹³ Sn	-4.20E-06 ± 1000%
		⁹⁰ Sr	7.10E-06 ± 831%		⁹⁰ Sr	9.40E-07 ± 1000%
		²³⁴ U	3.00E-05 ± 32%		²³⁴ U	1.80E-05 ± 43%
		²³⁵ U	1.80E-05 ± 42%		²³⁵ U	5.20E-06 ± 94%
		²³⁸ U	1.50E-05 ± 43%		²³⁸ U	1.60E-05 ± 46%
		⁶⁵ Zn	-2.70E-05 ± 407%		⁶⁵ Zn	-1.50E-04 ± 133%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-964	12/30/97 - 6/29/98	²⁴¹ Am	2.30E-05 ± 74%	6/29/98 - 12/28/98	²⁴¹ Am	No Analysis
		⁶⁰ Co	-2.10E-05 ± 281%		⁶⁰ Co	7.80E-06 ± 885%
		¹³⁴ Cs	-1.30E-05 ± 431%		¹³⁴ Cs	2.30E-05 ± 300%
		¹³⁷ Cs	3.90E-05 ± 151%		¹³⁷ Cs	5.40E-05 ± 141%
		¹⁵² Eu	-2.40E-05 ± 583%		¹⁵² Eu	-1.30E-04 ± 138%
		¹⁵⁴ Eu	-2.70E-05 ± 667%		¹⁵⁴ Eu	9.30E-05 ± 247%
		¹⁵⁵ Eu	4.90E-05 ± 327%		¹⁵⁵ Eu	-1.90E-04 ± 100%
		²³⁸ Pu	6.50E-06 ± 308%		²³⁸ Pu	6.60E-07 ± 1000%
		^{239,240} Pu	8.90E-05 ± 26%		^{239,240} Pu	3.90E-06 ± 82%
		²⁴¹ Pu	1.10E-03 ± 50%		²⁴¹ Pu	No Analysis
		¹⁰³ Ru	-9.80E-06 ± 745%		¹⁰³ Ru	-9.00E-06 ± 767%
		¹⁰⁶ Ru	1.30E-04 ± 400%		¹⁰⁶ Ru	3.50E-06 ± 1000%
		¹²⁵ Sb	1.70E-05 ± 824%		¹²⁵ Sb	2.50E-03 ± 64%
		¹¹³ Sn	-7.10E-06 ± 915%		¹¹³ Sn	-7.90E-06 ± 1000%
		⁹⁰ Sr	1.20E-04 ± 76%		⁹⁰ Sr	2.50E-04 ± 80%
		²³⁴ U	4.10E-05 ± 27%		²³⁴ U	1.20E-05 ± 53%
		²³⁵ U	3.60E-05 ± 31%		²³⁵ U	1.60E-05 ± 48%
		²³⁸ U	2.10E-05 ± 36%		²³⁸ U	1.90E-05 ± 42%
		⁶⁵ Zn	-1.20E-04 ± 100%		⁶⁵ Zn	-1.40E-06 ± 1000%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 West Area, Air Sampling Results (pCi/m³ ± Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-965	12/30/97 - 6/29/98	⁶⁰ Co	-1.60E-05 ± 550%	6/29/98 - 12/28/98	⁶⁰ Co	7.10E-06 ± 845%
		¹³⁴ Cs	-4.50E-06 ± 1000%		¹³⁴ Cs	-1.60E-05 ± 369%
		¹³⁷ Cs	8.90E-05 ± 110%		¹³⁷ Cs	-3.30E-05 ± 191%
		¹⁵² Eu	2.00E-05 ± 1000%		¹⁵² Eu	3.90E-05 ± 359%
		¹⁵⁴ Eu	-6.50E-05 ± 338%		¹⁵⁴ Eu	-9.80E-05 ± 173%
		¹⁵⁵ Eu	-2.10E-05 ± 952%		¹⁵⁵ Eu	8.00E-05 ± 213%
		²³⁸ Pu	2.60E-06 ± 319%		²³⁸ Pu	3.20E-06 ± 200%
		^{239,240} Pu	4.20E-06 ± 110%		^{239,240} Pu	3.20E-06 ± 100%
		¹⁰³ Ru	-9.60E-06 ± 719%		¹⁰³ Ru	-5.30E-05 ± 109%
		¹⁰⁶ Ru	1.60E-04 ± 431%		¹⁰⁶ Ru	9.40E-06 ± 1000%
		¹²⁵ Sb	1.40E-04 ± 129%		¹²⁵ Sb	4.90E-05 ± 306%
		¹¹³ Sn	-4.80E-05 ± 171%		¹¹³ Sn	1.70E-05 ± 400%
		⁹⁰ Sr	1.20E-04 ± 82%		⁹⁰ Sr	-1.00E-04 ± 150%
		²³⁴ U	2.70E-05 ± 37%		²³⁴ U	1.30E-05 ± 48%
		²³⁵ U	2.50E-05 ± 39%		²³⁵ U	3.60E-06 ± 89%
		²³⁸ U	1.60E-05 ± 50%		²³⁸ U	6.90E-06 ± 61%
		⁶⁵ Zn	1.20E-04 ± 142%		⁶⁵ Zn	-1.20E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-966	12/30/97 - 6/29/98	⁶⁰ Co	9.90E-05 ± 141%	6/29/98 - 12/28/98	⁶⁰ Co	4.20E-05 ± 200%
		¹³⁴ Cs	-3.80E-05 ± 342%		¹³⁴ Cs	-7.30E-06 ± 1000%
		¹³⁷ Cs	7.50E-06 ± 1000%		¹³⁷ Cs	4.50E-04 ± 31%
		¹⁵² Eu	-4.30E-04 ± 100%		¹⁵² Eu	-1.90E-05 ± 895%
		¹⁵⁴ Eu	-1.50E-05 ± 1000%		¹⁵⁴ Eu	5.30E-05 ± 434%
		¹⁵⁵ Eu	-4.40E-05 ± 455%		¹⁵⁵ Eu	-1.10E-05 ± 1000%
		²³⁸ Pu	2.80E-06 ± 221%		²³⁸ Pu	4.50E-06 ± 289%
		^{239,240} Pu	-7.10E-07 ± 225%		^{239,240} Pu	5.20E-06 ± 96%
		¹⁰³ Ru	5.30E-05 ± 179%		¹⁰³ Ru	2.50E-05 ± 272%
		¹⁰⁶ Ru	2.60E-04 ± 462%		¹⁰⁶ Ru	-3.70E-04 ± 170%
		¹²⁵ Sb	-2.90E-04 ± 100%		¹²⁵ Sb	-6.10E-05 ± 328%
		¹¹³ Sn	-7.10E-05 ± 155%		¹¹³ Sn	2.70E-05 ± 330%
		⁹⁰ Sr	1.80E-04 ± 55%		⁹⁰ Sr	1.40E-05 ± 1000%
		²³⁴ U	3.50E-05 ± 31%		²³⁴ U	1.70E-05 ± 49%
		²³⁵ U	1.10E-05 ± 52%		²³⁵ U	9.10E-06 ± 68%
		²³⁸ U	1.90E-05 ± 40%		²³⁸ U	1.50E-05 ± 54%
		⁶⁵ Zn	-2.20E-05 ± 1000%		⁶⁵ Zn	-1.90E-04 ± 100%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-974	12/30/97 - 6/29/98	⁶⁰ Co	-2.00E-05 ± 320%	6/29/98 - 12/28/98	⁶⁰ Co	1.70E-06 ± 1000%
		¹³⁴ Cs	-1.30E-05 ± 508%		¹³⁴ Cs	1.70E-05 ± 341%
		¹³⁷ Cs	3.30E-05 ± 179%		¹³⁷ Cs	7.20E-05 ± 82%
		¹⁵² Eu	-8.50E-05 ± 165%		¹⁵² Eu	-6.60E-05 ± 212%
		¹⁵⁴ Eu	2.80E-05 ± 679%		¹⁵⁴ Eu	2.40E-05 ± 667%
		¹⁵⁵ Eu	3.20E-05 ± 469%		¹⁵⁵ Eu	-2.30E-05 ± 696%
		²³⁸ Pu	3.60E-06 ± 278%		²³⁸ Pu	1.40E-06 ± 371%
		^{239,240} Pu	7.60E-07 ± 1000%		^{239,240} Pu	1.20E-05 ± 53%
		¹⁰³ Ru	-4.60E-05 ± 139%		¹⁰³ Ru	-3.90E-05 ± 141%
		¹⁰⁶ Ru	3.10E-04 ± 181%		¹⁰⁶ Ru	6.60E-05 ± 773%
		¹²⁵ Sb	-8.60E-05 ± 163%		¹²⁵ Sb	-2.60E-06 ± 1000%
		¹¹³ Sn	-2.30E-05 ± 278%		¹¹³ Sn	-3.60E-05 ± 181%
		⁹⁰ Sr	1.20E-04 ± 65%		⁹⁰ Sr	-8.90E-05 ± 135%
		²³⁴ U	2.60E-05 ± 31%		²³⁴ U	1.20E-05 ± 49%
		²³⁵ U	1.60E-05 ± 42%		²³⁵ U	4.50E-06 ± 82%
		²³⁸ U	1.60E-05 ± 40%		²³⁸ U	2.20E-05 ± 37%
		⁶⁵ Zn	-5.60E-05 ± 232%		⁶⁵ Zn	3.60E-06 ± 1000%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

200 West Area, Air Sampling Results (pCi/m³ ± Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-975	12/30/97 - 6/29/98	²⁴¹ Am	2.50E-05 ± 76%	6/29/98 - 12/28/98	²⁴¹ Am	No Analysis
		⁶⁰ Co	-4.60E-05 ± 139%		⁶⁰ Co	2.10E-05 ± 329%
		¹³⁴ Cs	7.30E-06 ± 877%		¹³⁴ Cs	7.90E-06 ± 899%
		¹³⁷ Cs	8.70E-05 ± 74%		¹³⁷ Cs	6.40E-05 ± 109%
		¹⁵² Eu	-4.10E-05 ± 366%		¹⁵² Eu	-3.40E-05 ± 471%
		¹⁵⁴ Eu	1.40E-04 ± 121%		¹⁵⁴ Eu	3.10E-04 ± 90%
		¹⁵⁵ Eu	1.00E-04 ± 170%		¹⁵⁵ Eu	-2.40E-05 ± 667%
		²³⁸ Pu	-9.60E-06 ± 229%		²³⁸ Pu	-7.40E-07 ± 865%
		^{239,240} Pu	4.80E-06 ± 229%		^{239,240} Pu	7.40E-06 ± 76%
		²⁴¹ Pu	1.40E-03 ± 243%		²⁴¹ Pu	No Analysis
		¹⁰³ Ru	-3.90E-06 ± 1000%		¹⁰³ Ru	-5.00E-05 ± 130%
		¹⁰⁶ Ru	-2.00E-04 ± 290%		¹⁰⁶ Ru	3.50E-04 ± 169%
		¹²⁵ Sb	4.60E-06 ± 1000%		¹²⁵ Sb	-9.80E-05 ± 214%
		¹¹³ Sn	6.60E-05 ± 111%		¹¹³ Sn	-5.00E-05 ± 150%
		⁹⁰ Sr	2.20E-04 ± 50%		⁹⁰ Sr	-1.60E-05 ± 1000%
		²³⁴ U	3.50E-05 ± 29%		²³⁴ U	2.20E-05 ± 37%
		²³⁵ U	2.90E-05 ± 34%		²³⁵ U	8.70E-06 ± 62%
		²³⁸ U	2.10E-05 ± 37%		²³⁸ U	2.10E-05 ± 38%
		⁶⁵ Zn	-2.50E-05 ± 600%		⁶⁵ Zn	1.30E-04 ± 123%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-987	12/30/97 - 6/29/98	⁶⁰ Co	1.40E-05 ± 650%	6/29/98 - 12/28/98	⁶⁰ Co	1.60E-05 ± 563%
		¹³⁴ Cs	1.20E-05 ± 692%		¹³⁴ Cs	1.50E-05 ± 513%
		¹³⁷ Cs	-3.00E-05 ± 290%		¹³⁷ Cs	2.10E-04 ± 52%
		¹⁵² Eu	-2.20E-04 ± 100%		¹⁵² Eu	8.80E-04 ± 56%
		¹⁵⁴ Eu	2.20E-04 ± 109%		¹⁵⁴ Eu	-5.20E-05 ± 481%
		¹⁵⁵ Eu	3.00E-05 ± 733%		¹⁵⁵ Eu	-8.00E-05 ± 250%
		²³⁸ Pu	-9.70E-07 ± 722%		²³⁸ Pu	-1.80E-06 ± 450%
		^{239,240} Pu	2.90E-06 ± 148%		^{239,240} Pu	3.00E-05 ± 37%
		¹⁰³ Ru	-7.30E-05 ± 110%		¹⁰³ Ru	2.30E-05 ± 339%
		¹⁰⁶ Ru	-2.40E-04 ± 300%		¹⁰⁶ Ru	3.50E-04 ± 189%
		¹²⁵ Sb	-2.00E-05 ± 950%		¹²⁵ Sb	1.40E-04 ± 150%
		¹¹³ Sn	8.20E-07 ± 1000%		¹¹³ Sn	-1.10E-04 ± 100%
		⁹⁰ Sr	1.70E-04 ± 82%		⁹⁰ Sr	-1.10E-04 ± 118%
		²³⁴ U	2.30E-05 ± 43%		²³⁴ U	2.40E-05 ± 50%
		²³⁵ U	1.80E-05 ± 51%		²³⁵ U	1.60E-06 ± 350%
		²³⁸ U	2.20E-05 ± 45%		²³⁸ U	2.50E-05 ± 39%
		⁶⁵ Zn	-1.20E-04 ± 158%		⁶⁵ Zn	4.30E-05 ± 465%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-994	12/30/97 - 6/29/98	⁶⁰ Co	5.50E-05 ± 200%	6/29/98 - 12/28/98	⁶⁰ Co	3.20E-05 ± 200%
		¹³⁴ Cs	2.80E-05 ± 311%		¹³⁴ Cs	-1.20E-05 ± 583%
		¹³⁷ Cs	4.10E-05 ± 220%		¹³⁷ Cs	2.10E-05 ± 319%
		¹⁵² Eu	-1.00E-04 ± 200%		¹⁵² Eu	-6.10E-05 ± 262%
		¹⁵⁴ Eu	1.10E-04 ± 309%		¹⁵⁴ Eu	-4.90E-05 ± 388%
		¹⁵⁵ Eu	1.00E-04 ± 220%		¹⁵⁵ Eu	1.30E-04 ± 131%
		²³⁸ Pu	3.40E-06 ± 200%		²³⁸ Pu	8.40E-06 ± 100%
		^{239,240} Pu	6.70E-06 ± 81%		^{239,240} Pu	3.70E-06 ± 119%
		¹⁰³ Ru	6.00E-05 ± 150%		¹⁰³ Ru	-4.70E-06 ± 1000%
		¹⁰⁶ Ru	4.10E-05 ± 1000%		¹⁰⁶ Ru	-5.10E-05 ± 1000%
		¹²⁵ Sb	-9.70E-06 ± 1000%		¹²⁵ Sb	3.80E-05 ± 395%
		¹¹³ Sn	3.10E-05 ± 319%		¹¹³ Sn	-5.80E-05 ± 129%
		⁹⁰ Sr	1.80E-05 ± 778%		⁹⁰ Sr	2.30E-05 ± 565%
		²³⁴ U	2.60E-05 ± 38%		²³⁴ U	2.10E-05 ± 40%
		²³⁵ U	1.00E-05 ± 65%		²³⁵ U	8.40E-06 ± 64%
		²³⁸ U	6.40E-06 ± 95%		²³⁸ U	2.20E-05 ± 39%
		⁶⁵ Zn	1.40E-04 ± 86%		⁶⁵ Zn	-1.10E-04 ± 127%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

600 Area, Air Sampling Results (pCi/m3 $\pm$ Overall Analytical Error)						
EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-981	12/19/97 - 7/2/98	⁶⁰ Co	1.10E-04 $\pm$ 68%	7/2/98 - 12/30/98	⁶⁰ Co	-2.40E-05 $\pm$ 342%
		¹³⁴ Cs	1.70E-05 $\pm$ 341%		¹³⁴ Cs	-1.00E-05 $\pm$ 730%
		¹³⁷ Cs	9.40E-05 $\pm$ 77%		¹³⁷ Cs	-2.40E-05 $\pm$ 292%
		¹⁵² Eu	-2.30E-04 $\pm$ 100%		¹⁵² Eu	-1.20E-04 $\pm$ 150%
		¹⁵⁴ Eu	-4.80E-07 $\pm$ 1000%		¹⁵⁴ Eu	5.80E-05 $\pm$ 397%
		¹⁵⁵ Eu	-1.10E-04 $\pm$ 136%		¹⁵⁵ Eu	5.20E-05 $\pm$ 327%
		²³⁸ Pu	5.80E-07 $\pm$ 1000%		²³⁸ Pu	-2.00E-06 $\pm$ 310%
		^{239,240} Pu	-5.80E-07 $\pm$ 534%		^{239,240} Pu	6.80E-06 $\pm$ 65%
		¹⁰³ Ru	9.70E-06 $\pm$ 608%		¹⁰³ Ru	-3.20E-06 $\pm$ 1000%
		¹⁰⁶ Ru	1.40E-05 $\pm$ 1000%		¹⁰⁶ Ru	-1.90E-04 $\pm$ 300%
		¹²⁵ Sb	-1.80E-04 $\pm$ 100%		¹²⁵ Sb	9.50E-05 $\pm$ 168%
		¹¹³ Sn	4.90E-05 $\pm$ 149%		¹¹³ Sn	-2.50E-05 $\pm$ 300%
		⁹⁰ Sr	5.70E-05 $\pm$ 119%		⁹⁰ Sr	6.80E-05 $\pm$ 176%
		²³⁴ U	2.60E-05 $\pm$ 38%		²³⁴ U	2.40E-04 $\pm$ 16%
		²³⁵ U	1.10E-05 $\pm$ 54%		²³⁵ U	1.20E-05 $\pm$ 50%
		²³⁸ U	2.50E-05 $\pm$ 40%		²³⁸ U	2.60E-04 $\pm$ 16%
		⁶⁵ Zn	-1.50E-04 $\pm$ 100%		⁶⁵ Zn	-4.90E-05 $\pm$ 347%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

Environmental Restoration Disposal Facility, Air Sampling Results (pCi/m³ ± Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-482	12/19/97 - 7/2/98	¹⁴⁴ Ce	1.30E-04 ± 223%	7/2/98 - 12/30/98	¹⁴⁴ Ce	-2.40E-04 ± 129%
		⁶⁰ Co	-1.80E-05 ± 311%		⁶⁰ Co	-5.80E-05 ± 129%
		¹³⁴ Cs	2.70E-05 ± 189%		¹³⁴ Cs	1.50E-05 ± 500%
		¹³⁷ Cs	1.30E-04 ± 57%		¹³⁷ Cs	1.80E-04 ± 61%
		¹⁵² Eu	3.40E-05 ± 353%		¹⁵² Eu	-1.30E-04 ± 138%
		¹⁵⁴ Eu	8.10E-05 ± 160%		¹⁵⁴ Eu	6.20E-05 ± 339%
		¹⁵⁵ Eu	9.30E-05 ± 161%		¹⁵⁵ Eu	-1.80E-04 ± 100%
		²³⁸ Pu	3.70E-06 ± 249%		²³⁸ Pu	1.50E-06 ± 367%
		^{239,240} Pu	1.30E-05 ± 46%		^{239,240} Pu	6.10E-06 ± 80%
		¹⁰³ Ru	3.30E-05 ± 191%		¹⁰³ Ru	-3.60E-05 ± 231%
		¹⁰⁶ Ru	-1.90E-04 ± 268%		¹⁰⁶ Ru	-3.60E-04 ± 169%
		¹²⁵ Sb	-5.10E-05 ± 255%		¹²⁵ Sb	6.60E-05 ± 227%
		¹¹³ Sn	1.90E-05 ± 321%		¹¹³ Sn	-1.80E-05 ± 422%
		⁹⁰ Sr	1.30E-04 ± 77%		⁹⁰ Sr	8.20E-05 ± 183%
		²³⁴ U	1.90E-05 ± 36%		²³⁴ U	4.70E-05 ± 28%
		²³⁵ U	5.30E-06 ± 87%		²³⁵ U	9.60E-06 ± 64%
		²³⁸ U	8.80E-06 ± 52%		²³⁸ U	4.60E-05 ± 28%
		⁶⁵ Zn	-7.80E-05 ± 154%		⁶⁵ Zn	-6.40E-05 ± 234%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-483	12/19/97 - 7/2/98	¹⁴⁴ Ce	-1.70E-05 ± 1000%	7/2/98 - 12/30/98	¹⁴⁴ Ce	-1.60E-05 ± 1000%
		⁶⁰ Co	-2.10E-05 ± 362%		⁶⁰ Co	2.20E-05 ± 241%
		¹³⁴ Cs	2.70E-05 ± 219%		¹³⁴ Cs	6.90E-05 ± 100%
		¹³⁷ Cs	-3.20E-06 ± 1000%		¹³⁷ Cs	1.00E-03 ± 20%
		¹⁵² Eu	-7.10E-05 ± 211%		¹⁵² Eu	5.60E-05 ± 268%
		¹⁵⁴ Eu	-8.20E-05 ± 268%		¹⁵⁴ Eu	-9.30E-05 ± 215%
		¹⁵⁵ Eu	1.10E-04 ± 145%		¹⁵⁵ Eu	1.60E-05 ± 1000%
		²³⁸ Pu	1.80E-06 ± 439%		²³⁸ Pu	-7.00E-07 ± 1000%
		^{239,240} Pu	6.10E-07 ± 525%		^{239,240} Pu	1.30E-05 ± 62%
		¹⁰³ Ru	-3.80E-05 ± 189%		¹⁰³ Ru	3.50E-05 ± 231%
		¹⁰⁶ Ru	-1.00E-04 ± 550%		¹⁰⁶ Ru	-3.90E-04 ± 149%
		¹²⁵ Sb	7.00E-05 ± 243%		¹²⁵ Sb	-8.30E-05 ± 181%
		¹¹³ Sn	-1.90E-05 ± 389%		¹¹³ Sn	2.10E-05 ± 371%
		⁹⁰ Sr	1.10E-04 ± 90%		⁹⁰ Sr	1.50E-05 ± 1000%
		²³⁴ U	3.30E-05 ± 33%		²³⁴ U	3.30E-05 ± 33%
		²³⁵ U	9.40E-06 ± 59%		²³⁵ U	1.10E-05 ± 75%
		²³⁸ U	2.70E-05 ± 35%		²³⁸ U	3.50E-05 ± 31%
		⁶⁵ Zn	-6.90E-05 ± 232%		⁶⁵ Zn	-1.10E-04 ± 136%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-484	12/19/97 - 7/2/98	¹⁴⁴ Ce	2.10E-05 ± 1000%	7/2/98 - 12/30/98	¹⁴⁴ Ce	-2.00E-04 ± 150%
		⁶⁰ Co	4.00E-05 ± 140%		⁶⁰ Co	5.40E-06 ± 1000%
		¹³⁴ Cs	-4.90E-06 ± 1000%		¹³⁴ Cs	1.10E-05 ± 627%
		¹³⁷ Cs	1.10E-05 ± 482%		¹³⁷ Cs	2.40E-05 ± 300%
		¹⁵² Eu	7.20E-05 ± 181%		¹⁵² Eu	3.70E-04 ± 95%
		¹⁵⁴ Eu	7.30E-05 ± 233%		¹⁵⁴ Eu	-1.60E-04 ± 119%
		¹⁵⁵ Eu	3.90E-05 ± 308%		¹⁵⁵ Eu	-2.70E-05 ± 556%
		²³⁸ Pu	2.00E-05 ± 70%		²³⁸ Pu	8.30E-06 ± 120%
		^{239,240} Pu	3.00E-05 ± 33%		^{239,240} Pu	1.50E-06 ± 347%
		¹⁰³ Ru	3.90E-05 ± 159%		¹⁰³ Ru	-1.30E-05 ± 562%
		¹⁰⁶ Ru	1.60E-04 ± 313%		¹⁰⁶ Ru	-5.00E-06 ± 1000%
		¹²⁵ Sb	1.20E-05 ± 1000%		¹²⁵ Sb	-3.50E-05 ± 486%
		¹¹³ Sn	7.40E-05 ± 92%		¹¹³ Sn	1.90E-05 ± 368%
		⁹⁰ Sr	3.50E-04 ± 31%		⁹⁰ Sr	1.90E-04 ± 100%
		²³⁴ U	2.30E-05 ± 36%		²³⁴ U	3.50E-05 ± 34%
		²³⁵ U	6.90E-06 ± 74%		²³⁵ U	5.50E-06 ± 96%
		²³⁸ U	2.90E-05 ± 33%		²³⁸ U	3.20E-05 ± 34%
		⁶⁵ Zn	3.20E-05 ± 406%		⁶⁵ Zn	-1.00E-04 ± 170%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

300-FF-1 Remedial Action Project, Air Sampling Results (pCi/m3 $\pm$ Overall Analytical Error)

EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-485	12/19/97 - 7/2/98	¹⁴⁴ Ce	1.10E-04 $\pm$ 227%	7/2/98 - 12/30/98	¹⁴⁴ Ce	-6.50E-05 $\pm$ 523%
		⁶⁰ Co	1.30E-05 $\pm$ 408%		⁶⁰ Co	-2.70E-05 $\pm$ 289%
		¹³⁴ Cs	1.20E-05 $\pm$ 458%		¹³⁴ Cs	-2.20E-05 $\pm$ 300%
		¹³⁷ Cs	7.80E-05 $\pm$ 94%		¹³⁷ Cs	1.90E-04 $\pm$ 45%
		¹⁵² Eu	4.10E-05 $\pm$ 293%		¹⁵² Eu	1.80E-04 $\pm$ 94%
		¹⁵⁴ Eu	3.30E-05 $\pm$ 455%		¹⁵⁴ Eu	6.40E-05 $\pm$ 344%
		¹⁵⁵ Eu	-1.50E-04 $\pm$ 100%		¹⁵⁵ Eu	3.60E-05 $\pm$ 472%
		¹⁰³ Ru	-3.80E-05 $\pm$ 171%		¹⁰³ Ru	1.70E-05 $\pm$ 471%
		¹⁰⁶ Ru	2.10E-04 $\pm$ 229%		¹⁰⁶ Ru	6.80E-05 $\pm$ 926%
		¹²⁵ Sb	5.80E-05 $\pm$ 207%		¹²⁵ Sb	6.20E-04 $\pm$ 110%
		¹¹³ Sn	-5.30E-05 $\pm$ 140%		¹¹³ Sn	4.70E-05 $\pm$ 170%
		²³⁴ U	6.30E-05 $\pm$ 21%		²³⁴ U	4.60E-05 $\pm$ 39%
		²³⁵ U	2.10E-05 $\pm$ 38%		²³⁵ U	4.50E-06 $\pm$ 100%
		²³⁸ U	5.30E-05 $\pm$ 23%		²³⁸ U	5.60E-05 $\pm$ 38%
		⁶⁵ Zn	-7.40E-05 $\pm$ 176%		⁶⁵ Zn	-1.60E-04 $\pm$ 119%
EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-486	12/19/97 - 7/2/98	¹⁴⁴ Ce	5.90E-06 $\pm$ 1000%	7/2/98 - 12/30/98	¹⁴⁴ Ce	1.00E-04 $\pm$ 260%
		⁶⁰ Co	-6.30E-06 $\pm$ 1000%		⁶⁰ Co	-5.30E-06 $\pm$ 1000%
		¹³⁴ Cs	1.20E-05 $\pm$ 617%		¹³⁴ Cs	-8.70E-06 $\pm$ 724%
		¹³⁷ Cs	3.00E-05 $\pm$ 230%		¹³⁷ Cs	3.20E-05 $\pm$ 209%
		¹⁵² Eu	-7.40E-05 $\pm$ 216%		¹⁵² Eu	-1.30E-04 $\pm$ 108%
		¹⁵⁴ Eu	-3.00E-06 $\pm$ 1000%		¹⁵⁴ Eu	-1.90E-05 $\pm$ 1000%
		¹⁵⁵ Eu	4.60E-05 $\pm$ 370%		¹⁵⁵ Eu	7.60E-05 $\pm$ 197%
		¹⁰³ Ru	5.40E-07 $\pm$ 1000%		¹⁰³ Ru	2.80E-05 $\pm$ 261%
		¹⁰⁶ Ru	1.40E-04 $\pm$ 407%		¹⁰⁶ Ru	-6.00E-04 $\pm$ 100%
		¹²⁵ Sb	7.40E-05 $\pm$ 203%		¹²⁵ Sb	-4.50E-05 $\pm$ 378%
		¹¹³ Sn	-6.60E-06 $\pm$ 1000%		¹¹³ Sn	2.30E-05 $\pm$ 378%
		²³⁴ U	1.20E-04 $\pm$ 15%		²³⁴ U	8.90E-05 $\pm$ 36%
		²³⁵ U	2.90E-05 $\pm$ 30%		²³⁵ U	3.30E-05 $\pm$ 45%
		²³⁸ U	7.40E-05 $\pm$ 19%		²³⁸ U	8.20E-05 $\pm$ 37%
		⁶⁵ Zn	-9.90E-05 $\pm$ 202%		⁶⁵ Zn	1.10E-04 $\pm$ 136%
EDP Code	Composite Period	Isotope	Result $\pm$ Error	Composite Period	Isotope	Result $\pm$ Error
N-487	12/19/97 - 7/2/98	¹⁴⁴ Ce	-2.10E-04 $\pm$ 110%	7/2/98 - 12/30/98	¹⁴⁴ Ce	-1.20E-04 $\pm$ 258%
		⁶⁰ Co	4.30E-05 $\pm$ 140%		⁶⁰ Co	-9.50E-06 $\pm$ 600%
		¹³⁴ Cs	-2.80E-05 $\pm$ 211%		¹³⁴ Cs	-6.80E-05 $\pm$ 100%
		¹³⁷ Cs	6.20E-05 $\pm$ 97%		¹³⁷ Cs	9.10E-05 $\pm$ 88%
		¹⁵² Eu	6.40E-05 $\pm$ 203%		¹⁵² Eu	8.90E-04 $\pm$ 38%
		¹⁵⁴ Eu	-1.10E-04 $\pm$ 145%		¹⁵⁴ Eu	8.60E-06 $\pm$ 1000%
		¹⁵⁵ Eu	4.60E-05 $\pm$ 261%		¹⁵⁵ Eu	8.60E-06 $\pm$ 1000%
		¹⁰³ Ru	-3.00E-05 $\pm$ 210%		¹⁰³ Ru	2.40E-05 $\pm$ 292%
		¹⁰⁶ Ru	1.50E-04 $\pm$ 340%		¹⁰⁶ Ru	9.80E-05 $\pm$ 551%
		¹²⁵ Sb	-1.70E-05 $\pm$ 706%		¹²⁵ Sb	9.80E-05 $\pm$ 153%
		¹¹³ Sn	1.10E-05 $\pm$ 509%		¹¹³ Sn	-1.30E-05 $\pm$ 531%
		²³⁴ U	1.10E-04 $\pm$ 22%		²³⁴ U	1.90E-04 $\pm$ 33%
		²³⁵ U	2.00E-05 $\pm$ 42%		²³⁵ U	2.00E-05 $\pm$ 49%
		²³⁸ U	1.10E-04 $\pm$ 22%		²³⁸ U	1.80E-04 $\pm$ 33%
		⁶⁵ Zn	-2.00E-04 $\pm$ 100%		⁶⁵ Zn	-8.90E-05 $\pm$ 180%

Table 2-2 Near-Facility Air Sampling Results, 1998 (cont)

300-FF-1 Remedial Action Project, Air Sampling Results (pCi/m ³ ± Overall Analytical Error)						
EDP Code	Composite Period			Isotope	Result ± Error	
N-488	Sampler on line: 12/04/98			12/4/98 - 12/30/98	¹⁴⁴ Ce	9.60E-04 ± 240%
					⁶⁰ Co	5.30E-06 ± 1000%
					¹³⁴ Cs	8.00E-05 ± 650%
					¹³⁷ Cs	-1.60E-04 ± 263%
					¹⁵² Eu	7.10E-04 ± 155%
					¹⁵⁴ Eu	-5.30E-05 ± 1000%
					¹⁵⁵ Eu	-4.60E-05 ± 1000%
					¹⁰³ Ru	4.00E-04 ± 150%
					¹⁰⁶ Ru	-8.10E-04 ± 543%
					¹²⁵ Sb	3.80E-04 ± 289%
					¹¹³ Sn	6.10E-05 ± 934%
					²³⁴ U	6.60E-05 ± 61%
					²³⁵ U	3.90E-05 ± 85%
					²³⁸ U	6.10E-05 ± 67%
					⁶⁵ Zn	-1.20E-03 ± 108%
EDP Code	Composite Period			Isotope	Result ± Error	
N-489	Sampler on line: 12/04/98			12/4/98 - 12/30/98	¹⁴⁴ Ce	-1.30E-03 ± 192%
					⁶⁰ Co	7.60E-05 ± 724%
					¹³⁴ Cs	-4.80E-04 ± 121%
					¹³⁷ Cs	-2.80E-04 ± 161%
					¹⁵² Eu	1.10E-03 ± 118%
					¹⁵⁴ Eu	-8.20E-04 ± 195%
					¹⁵⁵ Eu	-6.50E-04 ± 185%
					¹⁰³ Ru	1.00E-04 ± 610%
					¹⁰⁶ Ru	1.90E-03 ± 242%
					¹²⁵ Sb	-5.40E-04 ± 204%
					¹¹³ Sn	-4.00E-04 ± 150%
					²³⁴ U	1.10E-04 ± 43%
					²³⁵ U	3.40E-05 ± 88%
					²³⁸ U	1.10E-04 ± 47%
					⁶⁵ Zn	-3.50E-05 ± 1000%
EDP Code	Composite Period	Isotope	Result ± Error	Composite Period	Isotope	Result ± Error
N-130	12/19/97 - 7/2/98	⁶⁰ Co	2.10E-05 ± 319%	7/2/98 - 12/30/98	⁶⁰ Co	-1.10E-05 ± 491%
		¹³⁴ Cs	6.10E-05 ± 120%		¹³⁴ Cs	6.90E-06 ± 797%
		¹³⁷ Cs	4.80E-04 ± 25%		¹³⁷ Cs	5.70E-05 ± 111%
		¹⁵² Eu	1.30E-04 ± 131%		¹⁵² Eu	8.00E-05 ± 175%
		¹⁵⁴ Eu	-1.20E-06 ± 1000%		¹⁵⁴ Eu	-4.70E-05 ± 340%
		¹⁵⁵ Eu	1.90E-05 ± 895%		¹⁵⁵ Eu	-8.10E-05 ± 210%
		²³⁸ Pu	-1.40E-06 ± 471%		²³⁸ Pu	4.50E-06 ± 149%
		^{239,240} Pu	7.10E-07 ± 1000%		^{239,240} Pu	-7.50E-07 ± 347%
		¹⁰³ Ru	-5.30E-05 ± 100%		¹⁰³ Ru	-5.00E-06 ± 940%
		¹⁰⁶ Ru	-7.00E-05 ± 757%		¹⁰⁶ Ru	-1.40E-04 ± 393%
		¹²⁵ Sb	-1.70E-05 ± 882%		¹²⁵ Sb	4.70E-05 ± 298%
		¹¹³ Sn	9.70E-06 ± 722%		¹¹³ Sn	3.40E-05 ± 191%
		⁹⁰ Sr	2.60E-05 ± 281%		⁹⁰ Sr	2.30E-04 ± 70%
		²³⁴ U	7.10E-05 ± 20%		²³⁴ U	3.40E-05 ± 25%
		²³⁵ U	2.30E-05 ± 36%		²³⁵ U	1.60E-05 ± 37%
		²³⁸ U	3.10E-05 ± 30%		²³⁸ U	2.50E-05 ± 28%
		⁶⁵ Zn	1.30E-06 ± 1000%		⁶⁵ Zn	-7.30E-05 ± 178%

Table 2-3 Pacific Northwest National Laboratory Air Sampling Data, 1998

Station #28, YAKIMA BARRICADE, Air Sampling Results (pCi/m ³ ± Overall Analytical Error)					
Composite Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
12/30/97 - 4/7/98	⁶⁰ Co	-6.1E-04 ± 104%	4/7/98 - 6/29/98	⁶⁰ Co	-4.4E-04 ± 177%
	¹⁰⁶ Ru	4.8E-03 ± 108%		¹⁰⁶ Ru	-9.2E-04 ± 681%
	¹²⁵ Sb	-2.3E-05 ± 5236%		¹²⁵ Sb	-9.5E-04 ± 168%
	¹³⁴ Cs	-5.8E-04 ± 97%		¹³⁴ Cs	-1.6E-04 ± 386%
	¹³⁷ Cs	4.5E-04 ± 93%		¹³⁷ Cs	3.3E-04 ± 200%
	¹⁵⁴ Eu	1.7E-03 ± 85%		¹⁵⁴ Eu	-3.0E-03 ± 85%
	¹⁵⁵ Eu	1.1E-03 ± 83%		¹⁵⁵ Eu	2.9E-04 ± 399%
Composite Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
6/29/98 - 10/7/98	⁶⁰ Co	1.5E-04 ± 414%	10/7/98 - 12/30/98	⁶⁰ Co	1.4E-04 ± 379%
	¹⁰⁶ Ru	2.0E-04 ± 2315%		¹⁰⁶ Ru	-2.1E-03 ± 249%
	¹²⁵ Sb	-3.1E-04 ± 328%		¹²⁵ Sb	-2.5E-04 ± 482%
	¹³⁴ Cs	-4.1E-04 ± 107%		¹³⁴ Cs	-6.3E-04 ± 92%
	¹³⁷ Cs	4.0E-04 ± 118%		¹³⁷ Cs	-1.4E-05 ± 3669%
	¹⁵⁴ Eu	3.1E-04 ± 393%		¹⁵⁴ Eu	-7.8E-05 ± 2043%
	¹⁵⁵ Eu	4.6E-04 ± 153%		¹⁵⁵ Eu	-2.6E-04 ± 498%
Composite Period	Isotope	Result ± % Error			
12/30/97 - 12/30/98	²³⁸ Pu	-1.4E-07 ± 199%			
	^{239,240} Pu	6.7E-07 ± 80%			
	⁹⁰ Sr	2.2E-05 ± 59%			

Station #11, 200 West SE, Air Sampling Results (pCi/m ³ ± Overall Analytical Error)					
Composite Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
1/6/98 - 4/1/98	⁶⁰ Co	2.9E-04 ± 165%	4/1/98 - 7/7/98	⁶⁰ Co	-6.3E-04 ± 90%
	¹⁰⁶ Ru	2.3E-03 ± 212%		¹⁰⁶ Ru	-1.6E-03 ± 237%
	¹²⁵ Sb	-3.0E-04 ± 475%		¹²⁵ Sb	1.8E-04 ± 625%
	¹³⁴ Cs	5.7E-05 ± 916%		¹³⁴ Cs	-4.1E-04 ± 113%
	¹³⁷ Cs	3.3E-05 ± 1611%		¹³⁷ Cs	-3.7E-04 ± 134%
	¹⁵⁴ Eu	7.5E-04 ± 213%		¹⁵⁴ Eu	2.5E-04 ± 685%
	¹⁵⁵ Eu	1.3E-03 ± 81%		¹⁵⁵ Eu	2.3E-04 ± 388%
Composite Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
7/7/98 - 9/30/98	⁶⁰ Co	1.9E-04 ± 378%	9/30/98 - 1/5/99	⁶⁰ Co	3.8E-04 ± 136%
	¹⁰⁶ Ru	5.8E-04 ± 1233%		¹⁰⁶ Ru	-2.0E-03 ± 246%
	¹²⁵ Sb	3.1E-04 ± 511%		¹²⁵ Sb	-3.2E-04 ± 349%
	¹³⁴ Cs	-5.7E-05 ± 1287%		¹³⁴ Cs	-1.8E-04 ± 261%
	¹³⁷ Cs	-3.2E-04 ± 198%		¹³⁷ Cs	-1.1E-04 ± 415%
	¹⁵⁴ Eu	4.4E-04 ± 431%		¹⁵⁴ Eu	-2.4E-04 ± 638%
	¹⁵⁵ Eu	-3.7E-04 ± 266%		¹⁵⁵ Eu	3.2E-04 ± 240%
Composite Period	Isotope	Result ± % Error			
1/6/98 - 1/5/99	⁹⁰ Sr	1.0E-04 ± 30%			
	²³⁴ U	2.0E-05 ± 22%			
	²³⁵ U	1.2E-06 ± 98%			
	²³⁸ Pu	-2.0E-07 ± 109%			
	²³⁸ U	1.8E-05 ± 24%			
	^{239,240} Pu	2.0E-06 ± 64%			

Table 2-3 Pacific Northwest National Laboratory Air Sampling Data, 1998 (cont)

Station #14, 300 TRENCH, Air Sampling Results (pCi/m ³ ± Overall Analytical Error)					
Composite Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
12/30/97 - 4/8/98	⁶⁰ Co	4.5E-04 ± 115%	4/8/98 - 6/30/98	⁶⁰ Co	-3.2E-04 ± 187%
	¹⁰⁶ Ru	4.8E-03 ± 85%		¹⁰⁶ Ru	1.5E-03 ± 458%
	¹²⁵ Sb	-1.1E-03 ± 116%		¹²⁵ Sb	-8.8E-04 ± 208%
	¹³⁴ Cs	-3.8E-04 ± 129%		¹³⁴ Cs	4.9E-05 ± 1380%
	¹³⁷ Cs	1.5E-04 ± 323%		¹³⁷ Cs	-8.6E-04 ± 90%
	¹⁵⁴ Eu	4.7E-04 ± 331%		¹⁵⁴ Eu	-1.6E-03 ± 164%
	¹⁵⁵ Eu	2.7E-04 ± 335%		¹⁵⁵ Eu	6.4E-04 ± 157%
Composite Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
6/30/98 - 10/8/98	⁶⁰ Co	3.4E-04 ± 134%	10/8/98 - 12/30/98	⁶⁰ Co	3.0E-05 ± 2040%
	¹⁰⁶ Ru	-3.0E-03 ± 178%		¹⁰⁶ Ru	-3.3E-03 ± 153%
	¹²⁵ Sb	4.6E-04 ± 238%		¹²⁵ Sb	-6.3E-04 ± 190%
	¹³⁴ Cs	-3.9E-04 ± 128%		¹³⁴ Cs	5.4E-04 ± 74%
	¹³⁷ Cs	3.5E-05 ± 1301%		¹³⁷ Cs	2.2E-04 ± 226%
	¹⁵⁴ Eu	2.2E-04 ± 625%		¹⁵⁴ Eu	9.4E-05 ± 1923%
	¹⁵⁵ Eu	-3.8E-04 ± 211%		¹⁵⁵ Eu	-7.9E-04 ± 127%
Sample Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
12/30/97 - 2/3/98	³ H	2.5E-01 ± 272%	12/30/97 - 6/30/98	²³⁴ U	4.2E-05 ± 25%
2/3/98 - 2/25/98	³ H	1.1E+00 ± 83%		²³⁵ U	1.0E-06 ± 268%
2/25/98 - 3/27/98	³ H	9.1E-01 ± 65%		²³⁸ U	4.8E-05 ± 24%
3/27/98 - 4/22/98	³ H	5.3E+00 ± 20%			
4/22/98 - 5/20/98	³ H	3.6E+00 ± 34%			
5/20/98 - 6/16/98	³ H	1.3E+01 ± 17%			
6/16/98 - 7/15/98	³ H	4.0E+00 ± 34%			
7/15/98 - 8/13/98	³ H	4.3E+00 ± 55%			
8/13/98 - 8/28/98	³ H	1.4E+01 ± 15%			
8/28/98 - 9/9/98	³ H	7.0E+00 ± 31%			
9/9/98 - 10/08/98	³ H	4.6E+00 ± 32%			
10/8/98 - 11/4/98	³ H	1.6E+00 ± 61%			
11/4/98 - 12/3/98	³ H	2.3E+00 ± 43%			
12/3/98 - 12/30/98	³ H	1.4E+00 ± 54%			

Table 2-3 Pacific Northwest National Laboratory Air Sampling Data, 1998 (cont)

Station #15, 300 NE, Air Sampling Results (pCi/m ³ ± Overall Analytical Error)					
Composite Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
12/30/97 - 4/8/98	⁶⁰ Co	-3.2E-05 ± 1522%	4/8/98 - 6/30/98	⁶⁰ Co	2.0E-04 ± 246%
	¹³⁴ Cs	-1.4E-04 ± 365%		¹³⁴ Cs	-9.3E-05 ± 631%
	¹³⁷ Cs	-4.2E-04 ± 121%		¹³⁷ Cs	-1.4E-04 ± 370%
	¹⁵⁴ Eu	7.8E-04 ± 197%		¹⁵⁴ Eu	1.2E-03 ± 129%
	¹⁵⁵ Eu	2.1E-04 ± 465%		¹⁵⁵ Eu	8.0E-04 ± 126%
	¹⁰⁶ Ru	3.8E-03 ± 95%		¹⁰⁶ Ru	-3.0E-03 ± 168%
	¹²⁵ Sb	-4.1E-04 ± 273%		¹²⁵ Sb	-3.4E-04 ± 409%
Composite Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
6/30/98 - 10/8/98	⁶⁰ Co	2.1E-04 ± 234%	10/8/98 - 12/30/98	⁶⁰ Co	2.2E-04 ± 233%
	¹³⁴ Cs	-3.7E-04 ± 163%		¹³⁴ Cs	-4.8E-04 ± 128%
	¹³⁷ Cs	7.1E-04 ± 75%		¹³⁷ Cs	2.9E-04 ± 197%
	¹⁵⁴ Eu	-1.5E-03 ± 103%		¹⁵⁴ Eu	-7.5E-04 ± 227%
	¹⁵⁵ Eu	5.4E-04 ± 164%		¹⁵⁵ Eu	1.1E-04 ± 1204%
	¹⁰⁶ Ru	1.4E-03 ± 391%		¹⁰⁶ Ru	-2.4E-03 ± 207%
	¹²⁵ Sb	1.1E-03 ± 105%		¹²⁵ Sb	-5.5E-05 ± 2202%
Sample Period	Isotope	Result ± % Error	Composite Period	Isotope	Result ± % Error
12/30/97 - 2/3/98	³ H	5.1E-01 ± 152%	12/30/97 - 6/30/98	⁹⁰ Sr	2.4E-06 ± 725%
2/3/98 - 2/25/98	³ H	3.1E+00 ± 39%		²³⁴ U	5.2E-05 ± 25%
2/25/98 - 3/27/98	³ H	1.8E+00 ± 47%		²³⁵ U	3.5E-06 ± 97%
3/27/98 - 4/22/98	³ H	7.3E+00 ± 19%		²³⁸ U	3.1E-05 ± 32%
4/22/98 - 5/20/98	³ H	5.0E+00 ± 31%		²³⁸ Pu	-1.4E-07 ± 301%
5/20/98 - 6/16/98	³ H	1.1E+00 ± 111%		^{239,240} Pu	3.2E-07 ± 137%
7/15/98 - 8/13/98	³ H	3.9E+00 ± 40%	Composite Period	Isotope	Result ± % Error
8/13/98 - 8/28/98	³ H	2.5E+01 ± 12%	6/30/98 - 12/30/98	⁹⁰ Sr	5.1E-05 ± 41%
8/28/98 - 9/9/98	³ H	5.4E+00 ± 47%		²³⁴ U	4.9E-05 ± 17%
9/9/98 - 10/8/98	³ H	8.0E+00 ± 25%		²³⁵ U	2.5E-06 ± 65%
10/8/98 - 11/4/98	³ H	1.7E+00 ± 48%		²³⁸ U	5.0E-05 ± 17%
11/4/98 - 12/3/98	³ H	4.8E+00 ± 27%		²³⁸ Pu	1.3E-07 ± 306%
12/3/98 - 12/30/98	³ H	2.7E+00 ± 29%		^{239,240} Pu	1.7E-07 ± 241%

3.0 GROUNDWATER MONITORING

Through March 1998, samples of groundwater (1.0 L) were collected monthly from wells 199-N-47 and 199-N-48 (Figure 3-1) by Environmental Restoration Contractor personnel and submitted to Quanterra Environmental Services laboratory for gamma-emitting radionuclide analyses. The 107-N Fuel Storage Basin Recirculation Facility deactivation activities were completed in April 1998 and as a result, this sampling effort was permanently discontinued.

The analytical results for all samples collected in 1998 are provided in Table 3-1. All were below analytical detection limits, and well below U.S. Department of Energy derived concentration guides and U.S. Environmental Protection Agency Interim Drinking Water Standards.

Table 3-1 Groundwater Monitoring Results, 100-N Area, 1998 (pCi/L $\pm$ overall analytical error)

Location	Sample Date	^{60}Co	^{137}Cs	^{152}Eu	^{154}Eu	^{155}Eu
199-N-47	01/20/98	6.1E-1 $\pm$ 657%	-2.0E+0 $\pm$ 209%	-5.0E+0 $\pm$ 221%	1.2E+1 $\pm$ 148%	4.7E+0 $\pm$ 214%
	02/10/98	-1.6E+0 $\pm$ 269%	1.3E+0 $\pm$ 320%	6.9E+0 $\pm$ 141%	3.3E+0 $\pm$ 142%	-2.5E+0 $\pm$ 339%
	03/16/98	2.3E+0 $\pm$ 184%	-2.4E+0 $\pm$ 210%	-4.1E+0 $\pm$ 229%	1.4E+1 $\pm$ 67%	8.6E+0 $\pm$ 111%
199-N-48	01/20/98	6.4E+0 $\pm$ 81%	5.2E+0 $\pm$ 76%	4.4E+0 $\pm$ 222%	7.2E+0 $\pm$ 237%	-7.7E+0 $\pm$ 118%
	02/10/98	2.4E+0 $\pm$ 100%	-7.8E+0 $\pm$ 68%	-2.8E+0 $\pm$ 469%	-4.1E+0 $\pm$ 369%	-5.3E-1 $\pm$ 999%
	03/16/98	3.3E+0 $\pm$ 81%	0.0E+0 $\pm$ 999%	1.8E+0 $\pm$ 66%	-1.6E+1 $\pm$ 104%	6.8E+0 $\pm$ 130%

Groundwater monitoring at the Hanford Site is integrated through the Groundwater/Vadose Zone Integration project as described in the *Hanford Site Groundwater Protection Management Plan* (RL 1994). This plan integrates monitoring at active waste disposal facilities to comply with monitoring requirements of the *Resources Conservation and Recovery Act of 1976* (RCRA) and Washington State regulations, as well as requirements for operational monitoring around reactor and chemical processing facilities, and environmental surveillance monitoring. Pacific Northwest National Laboratory manages these monitoring efforts through the Groundwater Monitoring Project. This project is responsible for assessing the distribution and movement of existing groundwater contamination, identifying potential and emerging groundwater contamination problems, and integrating the various groundwater projects to minimize redundancy. Summary results for 1998 are discussed in PNNL-12088, Section 6.1, "Hanford Groundwater Monitoring Project."

Information on groundwater contaminant distribution and transport are integrated into a site-wide evaluation of groundwater quality, which is documented in an annual groundwater monitoring report (Hartman 1998). Groundwater monitoring is also carried out during cleanup investigations under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA). These investigations are managed by the Environmental Restoration Contractor.

Figure 3-1 100-N Groundwater Wells

4.0 SOIL AND VEGETATION MONITORING

The radionuclide content of soil and vegetation was measured to evaluate long-term trends in environmental accumulation of radioactivity in the 100, 200/600, and 300/400 Areas. Soil and vegetation samples were collected on or near facilities that store, handle, or dispose of radioactive waste.

In 1998, soil samples were collected from 78 locations: 7 in the 100-N Area; 55 in the 200/600 Areas; 15 in the 300/400 Areas; and 1 at the Environmental Restoration Disposal Facility. Sampling locations are illustrated in Figures 4-1 through 4-6. Historical results for 100-N Area soil sampling are displayed in Tables 4-1 and 4-2. The 1998 soil sampling results for all areas are provided in Tables 4-3 through 4-5.

Vegetation samples were collected from 72 locations: 9 in the 100-N Area; 48 in the 200/600 Areas; and 15 in the 300/400 Areas. Sampling locations are illustrated in Figures 4-7 through 4-12. Historical results for 100-N Area and N-Springs shoreline vegetation sampling are displayed in Tables 4-6 through 4-8. The 1998 vegetation sampling results for all areas are provided in Tables 4-9 through 4-11.

Radionuclide analyses indicated that cobalt-60, strontium-90, cesium-137, plutonium-239,240, and uranium were consistently detectable in both soil and vegetation samples in 1998. Generally, the predominant radionuclides observed in soil samples were activation products and strontium-90 in the 100-N Area, fission products in the 200 Areas, and uranium in the 300 Area. For vegetation samples, the predominant radionuclides were generally activation and fission products in the 100 Areas, fission products in the 200 Areas, and uranium in the 300 Area.

A more detailed discussion of the 1998 results can be found in Section 3.2 of the *Hanford Site Environmental Report for Calendar Year 1998* (PNNL-12088).

Figure 4-1 1998 Soil Sampling Locations, 100-N Area

Figure 4-2 1998 Soil Sampling Locations, 200 East Area

Figure 4-3 1998 Soil Sampling Locations, 200 West Area

WMNW/EMI/8-98/FIGE-3

Figure 4-4 1998 Soil Sampling Locations, 600 Area

WANNWEM/7-98/FIG-4

Figure 4-5 1998 Soil Sampling Locations, 300 Area

Figure 4-6 1998 Soil Sampling Locations, 400 Area

WMW/EM/IS-98/FIG-6

Table 4-1 Historical Average Radionuclide Concentrations Detected in Soil Samples
Near the 1301-N Liquid Waste Disposal Facility (pCi/g)

Year	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	²³⁸ Pu	^{239,240} Pu
1980	1.3 E+01	3.5 E-01	4.1 E+00	NR	2.5 E-02
1981	4.0 E+00	7.0 E-01	6.1 E+00	NR	4.4 E-02
1982	6.3 E+00	2.7 E-01	2.7 E+00	NR	1.8 E-02
1983	5.4 E+00	1.3 E+00	3.8 E+00	NR	4.3 E-02
1984	2.8 E+00	2.1 E-01	1.1 E+00	NR	1.7 E-02
1985	1.3 E+01	6.5 E-01	3.9 E+00	NR	3.2 E-02
1986	4.5 E+00	2.2 E-01	2.5 E+00	NR	1.7 E-02
1987	5.1 E+00	3.4 E-01	1.6 E+00	5.4 E-03	2.2 E-02
1988	7.8 E+00	3.5 E-01	2.0 E+00	2.3 E-03	1.7 E-02
1989	2.3 E+00	1.5 E-01	5.0 E-01	6.4 E-03	4.0 E-02
1990	4.7 E+00	3.2 E-01	1.7 E+00	4.6 E-03	3.5 E-02
1991	1.3 E+01	2.7 E-01	1.3 E+00	7.7 E-03	5.3 E-02
1992	6.7 E+00	2.2 E-01	1.1 E+00	3.5 E-03	2.3 E-02
1993	1.0 E+00	8.7 E-01	6.2 E+00	1.3 E-02	6.9 E-02
1994	3.7 E+00	3.3 E-01	1.5 E+00	9.3 E-03	2.8 E-02
1995	2.1 E+00	1.5 E-01	7.7 E-01	2.0 E-03	1.0 E-02
1996	2.5 E+00	2.3 E-01	9.8 E-01	5.4 E-02	4.8 E-02
1997	4.3 E+00	5.8 E+00	1.5 E+00	2.2 E-01	9.8 E-01
1998	8.5 E+00	1.6 E+00	5.2 E+00	5.7 E-02	1.9E-01

NR = Not Reported.

Table 4-2 Historical Average Radionuclide Concentrations Detected in Soil Samples in the 100-N Area (pCi/g)

Year	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	²³⁸ Pu	^{239,240} Pu
1980	8.5 E-01	1.8 E-01	5.0 E-01	NR	1.8 E-02
1981	1.3 E+00	2.1 E-01	1.0 E+00	NR	1.1 E-02
1982	1.6 E+00	9.9 E-02	3.4 E-01	NR	5.0 E-03
1983	2.7 E+00	2.9 E-01	4.4 E-01	NR	8.5 E-03
1984	8.8 E-01	2.8 E-01	6.2 E-01	NR	1.4 E-02
1985	1.2 E+00	1.3 E-01	5.2 E-01	NR	1.3 E-02
1986	4.1 E-01	8.3 E-02	5.0 E-01	NR	8.2 E-03
1987	4.1 E-01	1.1 E-01	3.9 E-01	1.1 E-03	6.7 E-03
1988	3.4 E-01	1.6 E-01	3.9 E-01	4.5 E-04	9.5 E-03
1989	1.4 E-01	2.1 E-01	1.3 E-01	1.1 E-03	1.3 E-02
1990	3.0 E-01	1.2 E-01	4.4 E-01	6.7 E-04	1.0 E-02
1991	4.3 E-01	1.1 E-01	4.5 E-01	6.2 E-04	7.8 E-03
1992	8.6 E-02	9.5 E-02	3.6 E-01	5.1 E-04	7.6 E-03
1993	3.0 E-02	1.2 E-01	1.6 E-01	1.8 E-04	3.4 E-03
1994	1.6 E+00	1.9 E-01	8.1 E-01	4.2 E-03	1.6 E-02
1995	9.4 E-01	1.3 E-01	5.1 E-01	1.9 E-03	1.4 E-02
1996	1.5 E+00	2.0 E-01	7.7 E-01	1.2 E-02	4.3 E-02
1997	2.5 E+00	3.9 E+00	8.9 E-01	7.8 E-01	9.1 E-01
1998	4.9 E+00	1.2 E+00	3.1 E+00	5.7 E-02	1.5 E-01

NR = Not Reported

Table 4-3 1998 Soil Sampling Results, 100-N Area (pCi/g $\pm$ overall analytical error)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
Y602	⁶⁰ Co	3.0E+01 $\pm$ 8%	Y603	⁶⁰ Co	6.4E-01 $\pm$ 8%
	⁶⁵ Zn	-7.7E-02 $\pm$ 100%		⁶⁵ Zn	5.0E-03 $\pm$ 290%
	⁹⁰ Sr	1.4E+00 $\pm$ 20%		⁹⁰ Sr	5.6E-01 $\pm$ 30%
	¹⁰³ Ru	4.2E-03 $\pm$ 470%		¹⁰³ Ru	-3.2E-03 $\pm$ 160%
	¹⁰⁶ Ru	9.3E-02 $\pm$ 210%		¹⁰⁶ Ru	1.2E-02 $\pm$ 370%
	¹¹³ Sn	1.4E-02 $\pm$ 180%		¹¹³ Sn	-1.6E-03 $\pm$ 420%
	¹²⁵ Sb	6.5E-03 $\pm$ 840%		¹²⁵ Sb	1.9E-03 $\pm$ 730%
	¹³⁴ Cs	5.6E-02 $\pm$ 52%		¹³⁴ Cs	2.1E-02 $\pm$ 36%
	¹³⁷ Cs	4.0E+00 $\pm$ 15%		¹³⁷ Cs	1.6E-01 $\pm$ 15%
	¹⁴⁴ Ce	5.7E-02 $\pm$ 210%		¹⁴⁴ Ce	3.2E-02 $\pm$ 140%
	¹⁵² Eu	-2.2E-02 $\pm$ 260%		¹⁵² Eu	-1.7E-02 $\pm$ 100%
	¹⁵⁴ Eu	1.5E-01 $\pm$ 37%		¹⁵⁴ Eu	1.4E-02 $\pm$ 110%
	¹⁵⁵ Eu	3.6E-02 $\pm$ 180%		¹⁵⁵ Eu	2.0E-02 $\pm$ 110%
	²³⁴ U	3.9E-01 $\pm$ 19%		²³⁴ U	1.6E-01 $\pm$ 17%
	²³⁵ U	4.7E-02 $\pm$ 36%		²³⁵ U	4.4E-02 $\pm$ 34%
	²³⁸ U	2.2E-01 $\pm$ 20%		²³⁸ U	1.3E-01 $\pm$ 19%
	²³⁸ Pu	4.7E-02 $\pm$ 78%		²³⁸ Pu	-1.3E-02 $\pm$ 120%
	^{239,240} Pu	2.9E-01 $\pm$ 17%		^{239,240} Pu	1.2E-02 $\pm$ 66%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
Y604	⁶⁰ Co	2.2E+00 $\pm$ 8%	Y605	⁶⁰ Co	9.9E-01 $\pm$ 8%
	⁶⁵ Zn	7.2E-03 $\pm$ 470%		⁶⁵ Zn	-2.4E-03 $\pm$ 660%
	⁹⁰ Sr	4.0E+00 $\pm$ 15%		⁹⁰ Sr	5.0E-01 $\pm$ 35%
	¹⁰³ Ru	-1.7E-02 $\pm$ 140%		¹⁰³ Ru	4.8E-03 $\pm$ 120%
	¹⁰⁶ Ru	8.6E-02 $\pm$ 190%		¹⁰⁶ Ru	3.9E-02 $\pm$ 130%
	¹¹³ Sn	-5.7E-03 $\pm$ 530%		¹¹³ Sn	-9.3E-04 $\pm$ 810%
	¹²⁵ Sb	-4.4E-02 $\pm$ 150%		¹²⁵ Sb	4.8E-03 $\pm$ 340%
	¹³⁴ Cs	3.5E-02 $\pm$ 42%		¹³⁴ Cs	2.1E-02 $\pm$ 39%
	¹³⁷ Cs	1.6E+01 $\pm$ 14%		¹³⁷ Cs	7.9E-01 $\pm$ 13%
	¹⁴⁴ Ce	-7.4E-02 $\pm$ 200%		¹⁴⁴ Ce	1.2E-02 $\pm$ 400%
	¹⁵² Eu	-2.4E-02 $\pm$ 270%		¹⁵² Eu	-6.3E-03 $\pm$ 270%
	¹⁵⁴ Eu	4.2E-02 $\pm$ 72%		¹⁵⁴ Eu	5.4E-03 $\pm$ 290%
	¹⁵⁵ Eu	9.5E-03 $\pm$ 820%		¹⁵⁵ Eu	5.6E-02 $\pm$ 44%
	²³⁴ U	1.8E-01 $\pm$ 16%		²³⁴ U	1.6E-01 $\pm$ 17%
	²³⁵ U	3.5E-02 $\pm$ 38%		²³⁵ U	3.1E-02 $\pm$ 39%
	²³⁸ U	1.4E-01 $\pm$ 18%		²³⁸ U	1.5E-01 $\pm$ 18%
	²³⁸ Pu	-1.1E-03 $\pm$ >999%		²³⁸ Pu	5.7E-02 $\pm$ 39%
	^{239,240} Pu	5.2E-02 $\pm$ 29%		^{239,240} Pu	4.2E-01 $\pm$ 11%

Table 4-3 1998 Soil Sampling Results, 100-N Area (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
Y608	⁶⁰ Co	5.9E-01 $\pm$ 9%	Y610	⁶⁰ Co	8.1E-02 $\pm$ 17%
	⁶⁵ Zn	-2.1E-02 $\pm$ 170%		⁶⁵ Zn	-1.1E-02 $\pm$ 220%
	⁹⁰ Sr	3.1E-01 $\pm$ 45%		⁹⁰ Sr	1.2E-01 $\pm$ 100%
	¹⁰³ Ru	5.5E-03 $\pm$ 260%		¹⁰³ Ru	5.4E-03 $\pm$ 170%
	¹⁰⁶ Ru	-6.0E-02 $\pm$ 190%		¹⁰⁶ Ru	6.9E-03 $\pm$ >999%
	¹¹³ Sn	1.6E-03 $\pm$ >999%		¹¹³ Sn	1.2E-02 $\pm$ 100%
	¹²⁵ Sb	-2.7E-02 $\pm$ 130%		¹²⁵ Sb	-4.3E-03 $\pm$ 590%
	¹³⁴ Cs	2.1E-02 $\pm$ 85%		¹³⁴ Cs	1.0E-02 $\pm$ 65%
	¹³⁷ Cs	5.9E-01 $\pm$ 16%		¹³⁷ Cs	1.4E-01 $\pm$ 20%
	¹⁴⁴ Ce	-4.5E-02 $\pm$ 210%		¹⁴⁴ Ce	-1.6E-02 $\pm$ 450%
	¹⁵² Eu	5.9E-03 $\pm$ 650%		¹⁵² Eu	5.3E-03 $\pm$ 520%
	¹⁵⁴ Eu	-4.5E-02 $\pm$ 100%		¹⁵⁴ Eu	-3.2E-02 $\pm$ 100%
	¹⁵⁵ Eu	1.1E-02 $\pm$ 460%		¹⁵⁵ Eu	4.8E-02 $\pm$ 82%
	²³⁴ U	1.7E-01 $\pm$ 16%		²³⁴ U	2.5E-01 $\pm$ 13%
	²³⁵ U	2.1E-02 $\pm$ 46%		²³⁵ U	2.2E-02 $\pm$ 49%
	²³⁸ U	1.6E-01 $\pm$ 17%		²³⁸ U	2.1E-01 $\pm$ 15%
	²³⁸ Pu	-1.3E-02 $\pm$ 140%		²³⁸ Pu	-3.1E-03 $\pm$ 480%
	^{239,240} Pu	1.3E-02 $\pm$ 64%		^{239,240} Pu	1.0E-01 $\pm$ 22%
Location	Isotope	Result $\pm$ Error			
Y611	⁶⁰ Co	1.1E-01 $\pm$ 13%			
	⁶⁵ Zn	-1.7E-02 $\pm$ 130%			
	⁹⁰ Sr	2.0E-01 $\pm$ 70%			
	¹⁰³ Ru	-8.3E-04 $\pm$ >999%			
	¹⁰⁶ Ru	-8.2E-03 $\pm$ 840%			
	¹¹³ Sn	5.3E-03 $\pm$ 210%			
	¹²⁵ Sb	2.0E-02 $\pm$ 110%			
	¹³⁴ Cs	3.0E-02 $\pm$ 52%			
	¹³⁷ Cs	7.9E-02 $\pm$ 26%			
	¹⁴⁴ Ce	2.0E-02 $\pm$ 420%			
	¹⁵² Eu	-1.7E-03 $\pm$ >999%			
	¹⁵⁴ Eu	-5.2E-03 $\pm$ 460%			
	¹⁵⁵ Eu	2.1E-02 $\pm$ 190%			
	²³⁴ U	1.9E-01 $\pm$ 16%			
	²³⁵ U	3.0E-02 $\pm$ 38%			
	²³⁸ U	1.5E-01 $\pm$ 17%			
	²³⁸ Pu	8.5E-03 $\pm$ 190%			
	^{239,240} Pu	6.4E-03 $\pm$ 130%			

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D002	⁶⁰ Co	3.8E-03 $\pm$ 200%	D004	⁶⁰ Co	2.4E-04 $\pm$ >999%
	⁶⁵ Zn	-5.5E-03 $\pm$ 410%		⁶⁵ Zn	4.6E-03 $\pm$ 270%
	⁹⁰ Sr	5.5E-03 $\pm$ >999%		⁹⁰ Sr	3.2E-02 $\pm$ 320%
	¹⁰³ Ru	-1.8E-03 $\pm$ 430%		¹⁰³ Ru	3.6E-03 $\pm$ 140%
	¹⁰⁶ Ru	-2.5E-02 $\pm$ 280%		¹⁰⁶ Ru	-3.2E-02 $\pm$ 140%
	¹¹³ Sn	-2.8E-03 $\pm$ 350%		¹¹³ Sn	-7.0E-03 $\pm$ 120%
	¹²⁵ Sb	3.6E-03 $\pm$ 600%		¹²⁵ Sb	1.3E-02 $\pm$ 120%
	¹³⁴ Cs	3.4E-02 $\pm$ 45%		¹³⁴ Cs	3.0E-02 $\pm$ 26%
	¹³⁷ Cs	1.4E-01 $\pm$ 18%		¹³⁷ Cs	6.2E-01 $\pm$ 13%
	¹⁴⁴ Ce	-4.4E-02 $\pm$ 150%		¹⁴⁴ Ce	3.2E-02 $\pm$ 140%
	¹⁵² Eu	-1.6E-02 $\pm$ 160%		¹⁵² Eu	-1.5E-02 $\pm$ 110%
	¹⁵⁴ Eu	-9.5E-03 $\pm$ 270%		¹⁵⁴ Eu	-3.1E-03 $\pm$ 510%
	¹⁵⁵ Eu	5.1E-02 $\pm$ 69%		¹⁵⁵ Eu	2.1E-02 $\pm$ 110%
	²³⁴ U	2.0E-01 $\pm$ 15%		²³⁴ U	1.9E-01 $\pm$ 15%
	²³⁵ U	2.0E-02 $\pm$ 51%		²³⁵ U	1.3E-02 $\pm$ 56%
	²³⁸ U	2.1E-01 $\pm$ 15%		²³⁸ U	2.4E-01 $\pm$ 14%
	²³⁸ Pu	4.0E-03 $\pm$ 170%		²³⁸ Pu	9.7E-04 $\pm$ 600%
	^{239,240} Pu	1.0E-02 $\pm$ 82%		^{239,240} Pu	2.2E-02 $\pm$ 44%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D006	⁶⁰ Co	2.9E-03 $\pm$ 300%	D008	⁶⁰ Co	-2.0E-03 $\pm$ 390%
	⁶⁵ Zn	-7.0E-03 $\pm$ 320%		⁶⁵ Zn	-3.7E-03 $\pm$ 600%
	⁹⁰ Sr	-4.4E-02 $\pm$ 220%		⁹⁰ Sr	-1.0E-01 $\pm$ 100%
	¹⁰³ Ru	2.1E-03 $\pm$ 380%		¹⁰³ Ru	-4.6E-03 $\pm$ 160%
	¹⁰⁶ Ru	4.0E-02 $\pm$ 170%		¹⁰⁶ Ru	-7.8E-04 $\pm$ >999%
	¹¹³ Sn	-2.0E-03 $\pm$ 500%		¹¹³ Sn	2.5E-03 $\pm$ 380%
	¹²⁵ Sb	2.6E-04 $\pm$ >999%		¹²⁵ Sb	9.7E-03 $\pm$ 210%
	¹³⁴ Cs	2.1E-02 $\pm$ 61%		¹³⁴ Cs	3.9E-02 $\pm$ 33%
	¹³⁷ Cs	1.3E-01 $\pm$ 19%		¹³⁷ Cs	5.0E-02 $\pm$ 28%
	¹⁴⁴ Ce	1.4E-02 $\pm$ 460%		¹⁴⁴ Ce	-1.6E-02 $\pm$ 360%
	¹⁵² Eu	1.3E-02 $\pm$ 220%		¹⁵² Eu	-5.2E-03 $\pm$ 430%
	¹⁵⁴ Eu	2.4E-03 $\pm$ >999%		¹⁵⁴ Eu	4.5E-03 $\pm$ 560%
	¹⁵⁵ Eu	4.2E-02 $\pm$ 86%		¹⁵⁵ Eu	4.0E-02 $\pm$ 82%
	²³⁴ U	2.2E-01 $\pm$ 15%		²³⁴ U	1.3E-01 $\pm$ 18%
	²³⁵ U	1.8E-02 $\pm$ 52%		²³⁵ U	1.3E-02 $\pm$ 60%
	²³⁸ U	1.8E-01 $\pm$ 16%		²³⁸ U	1.5E-01 $\pm$ 17%
	²³⁸ Pu	1.8E-03 $\pm$ 400%		²³⁸ Pu	2.0E-02 $\pm$ 85%
	^{239,240} Pu	5.5E-02 $\pm$ 30%		^{239,240} Pu	1.4E+00 $\pm$ 7.60%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D010	⁶⁰ Co	7.7E-04 $\pm$ 990%	D012	⁶⁰ Co	3.4E-03 $\pm$ 210%
	⁶⁵ Zn	-2.5E-02 $\pm$ 100%		⁶⁵ Zn	-6.3E-03 $\pm$ 340%
	⁹⁰ Sr	3.2E-02 $\pm$ 350%		⁹⁰ Sr	2.3E-03 $\pm$ >999%
	¹⁰³ Ru	-3.6E-03 $\pm$ 230%		¹⁰³ Ru	-2.8E-03 $\pm$ 300%
	¹⁰⁶ Ru	-2.9E-02 $\pm$ 240%		¹⁰⁶ Ru	-4.4E-03 $\pm$ >999%
	¹¹³ Sn	-2.5E-03 $\pm$ 460%		¹¹³ Sn	3.7E-03 $\pm$ 300%
	¹²⁵ Sb	4.1E-02 $\pm$ 70%		¹²⁵ Sb	-1.0E-04 $\pm$ >999%
	¹³⁴ Cs	2.3E-02 $\pm$ 49%		¹³⁴ Cs	2.9E-02 $\pm$ 43%
	¹³⁷ Cs	8.4E-01 $\pm$ 15%		¹³⁷ Cs	1.2E+00 $\pm$ 16%
	¹⁴⁴ Ce	-3.2E-03 $\pm$ >999%		¹⁴⁴ Ce	1.1E-03 $\pm$ 210%
	¹⁵² Eu	-7.0E-03 $\pm$ 400%		¹⁵² Eu	-3.3E-02 $\pm$ 340%
	¹⁵⁴ Eu	-1.4E-03 $\pm$ >999%		¹⁵⁴ Eu	-1.3E-02 $\pm$ >999%
	¹⁵⁵ Eu	1.0E-02 $\pm$ 420%		¹⁵⁵ Eu	1.7E-02 $\pm$ 300%
	²³⁴ U	2.4E-01 $\pm$ 14%		²³⁴ U	1.9E-01 $\pm$ >999%
	²³⁵ U	1.7E-02 $\pm$ 53%		²³⁵ U	1.0E-02 $\pm$ 300%
	²³⁸ U	2.6E-01 $\pm$ 14%		²³⁸ U	2.0E-01 $\pm$ >999%
	²³⁸ Pu	4.0E-03 $\pm$ 140%		²³⁸ Pu	-2.0E-03 $\pm$ 43%
	^{239,240} Pu	9.8E-02 $\pm$ 24%		^{239,240} Pu	2.2E-02 $\pm$ 16%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D014	⁶⁰ Co	3.2E-03 $\pm$ 140%	D016	⁶⁰ Co	2.2E-03 $\pm$ 360%
	⁶⁵ Zn	-7.3E-03 $\pm$ 170%		⁶⁵ Zn	-3.7E-03 $\pm$ 570%
	⁹⁰ Sr	2.5E-01 $\pm$ 50%		⁹⁰ Sr	-8.1E-04 $\pm$ >999%
	¹⁰³ Ru	3.9E-04 $\pm$ >999%		¹⁰³ Ru	-1.8E-03 $\pm$ 500%
	¹⁰⁶ Ru	-3.0E-02 $\pm$ 170%		¹⁰⁶ Ru	-4.1E-02 $\pm$ 190%
	¹¹³ Sn	-8.8E-03 $\pm$ 100%		¹¹³ Sn	-9.3E-06 $\pm$ >999%
	¹²⁵ Sb	-1.0E-02 $\pm$ 190%		¹²⁵ Sb	1.2E-02 $\pm$ 230%
	¹³⁴ Cs	2.4E-02 $\pm$ 35%		¹³⁴ Cs	2.7E-02 $\pm$ 49%
	¹³⁷ Cs	3.4E+00 $\pm$ 13%		¹³⁷ Cs	1.3E+00 $\pm$ 14%
	¹⁴⁴ Ce	-1.6E-02 $\pm$ 310%		¹⁴⁴ Ce	-2.6E-02 $\pm$ 350%
	¹⁵² Eu	-9.3E-03 $\pm$ 220%		¹⁵² Eu	1.9E-03 $\pm$ >999%
	¹⁵⁴ Eu	-7.5E-03 $\pm$ 220%		¹⁵⁴ Eu	5.4E-04 $\pm$ >999%
	¹⁵⁵ Eu	5.4E-02 $\pm$ 51%		¹⁵⁵ Eu	1.5E-02 $\pm$ 280%
	²³⁴ U	2.1E-01 $\pm$ 17%		²³⁴ U	2.2E-01 $\pm$ 16%
	²³⁵ U	1.4E-02 $\pm$ 70%		²³⁵ U	1.6E-02 $\pm$ 60%
	²³⁸ U	2.4E-01 $\pm$ 16%		²³⁸ U	2.0E-01 $\pm$ 16%
	²³⁸ Pu	-5.9E-03 $\pm$ 120%		²³⁸ Pu	2.9E-03 $\pm$ 220%
	^{239,240} Pu	4.9E-03 $\pm$ 110%		^{239,240} Pu	1.1E-02 $\pm$ 77%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D018	⁶⁰ Co	2.1E-04 $\pm$ >999%	D020	⁶⁰ Co	4.9E-03 $\pm$ 110%
	⁶⁵ Zn	-1.3E-02 $\pm$ 180%		⁶⁵ Zn	-1.3E-02 $\pm$ 120%
	⁹⁰ Sr	6.6E-01 $\pm$ 25%		⁹⁰ Sr	1.9E-02 $\pm$ 620%
	¹⁰³ Ru	3.5E-04 $\pm$ >999%		¹⁰³ Ru	-6.6E-03 $\pm$ 100%
	¹⁰⁶ Ru	5.1E-03 $\pm$ >999%		¹⁰⁶ Ru	-1.5E-02 $\pm$ 340%
	¹¹³ Sn	-1.6E-02 $\pm$ 100%		¹¹³ Sn	2.1E-03 $\pm$ 360%
	¹²⁵ Sb	-2.9E-02 $\pm$ 130%		¹²⁵ Sb	1.2E-02 $\pm$ 140%
	¹³⁴ Cs	2.6E-02 $\pm$ 46%		¹³⁴ Cs	3.3E-02 $\pm$ 27%
	¹³⁷ Cs	3.8E+00 $\pm$ 15%		¹³⁷ Cs	1.4E-01 $\pm$ 15%
	¹⁴⁴ Ce	-3.9E-02 $\pm$ 230%		¹⁴⁴ Ce	-5.5E-03 $\pm$ 970%
	¹⁵² Eu	2.0E-02 $\pm$ 200%		¹⁵² Eu	-4.1E-03 $\pm$ 420%
	¹⁵⁴ Eu	-2.6E-03 $\pm$ >999%		¹⁵⁴ Eu	-8.9E-04 $\pm$ >999%
	¹⁵⁵ Eu	2.6E-02 $\pm$ 180%		¹⁵⁵ Eu	7.2E-02 $\pm$ 62%
	²³⁴ U	2.1E-01 $\pm$ 17%		²³⁴ U	2.1E-01 $\pm$ 15%
	²³⁵ U	2.2E-02 $\pm$ 52%		²³⁵ U	4.2E-02 $\pm$ 35%
	²³⁸ U	2.0E-01 $\pm$ 17%		²³⁸ U	2.7E-01 $\pm$ 14%
	²³⁸ Pu	3.4E-03 $\pm$ 170%		²³⁸ Pu	-8.9E-04 $\pm$ 720%
	^{239,240} Pu	4.0E-02 $\pm$ 33%		^{239,240} Pu	9.8E-03 $\pm$ 62%

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D022	⁶⁰ Co	-4.1E-03 $\pm$ 200%	D024	⁶⁰ Co	5.9E-03 $\pm$ 150%
	⁶⁵ Zn	-1.4E-02 $\pm$ 160%		⁶⁵ Zn	3.3E-03 $\pm$ 620%
	⁹⁰ Sr	-8.5E-03 $\pm$ >999%		⁹⁰ Sr	1.4E-01 $\pm$ 70%
	¹⁰³ Ru	-8.3E-03 $\pm$ 100%		¹⁰³ Ru	4.9E-04 $\pm$ >999%
	¹⁰⁶ Ru	-1.6E-02 $\pm$ 480%		¹⁰⁶ Ru	-1.3E-02 $\pm$ 550%
	¹¹³ Sn	-4.1E-03 $\pm$ 270%		¹¹³ Sn	3.9E-03 $\pm$ 270%
	¹²⁵ Sb	2.2E-02 $\pm$ 110%		¹²⁵ Sb	8.7E-03 $\pm$ 260%
	¹³⁴ Cs	2.8E-02 $\pm$ 47%		¹³⁴ Cs	2.5E-02 $\pm$ 54%
	¹³⁷ Cs	3.2E-01 $\pm$ 17%		¹³⁷ Cs	2.8E-01 $\pm$ 16%
	¹⁴⁴ Ce	-1.7E-02 $\pm$ 430%		¹⁴⁴ Ce	1.0E-02 $\pm$ 660%
	¹⁵² Eu	1.6E-02 $\pm$ 180%		¹⁵² Eu	3.2E-02 $\pm$ 120%
	¹⁵⁴ Eu	9.1E-04 $\pm$ >999%		¹⁵⁴ Eu	-1.9E-02 $\pm$ 150%
	¹⁵⁵ Eu	3.5E-02 $\pm$ 120%		¹⁵⁵ Eu	4.8E-02 $\pm$ 74%
	²³⁴ U	1.9E-01 $\pm$ 16%		²³⁴ U	1.9E-01 $\pm$ 16%
	²³⁵ U	2.0E-02 $\pm$ 50%		²³⁵ U	2.1E-02 $\pm$ 53%
	²³⁸ U	1.6E-01 $\pm$ 18%		²³⁸ U	1.7E-01 $\pm$ 17%
	²³⁸ Pu	-3.5E-03 $\pm$ 360%		²³⁸ Pu	9.3E-03 $\pm$ 170%
	^{239,240} Pu	7.0E-03 $\pm$ 100%		^{239,240} Pu	3.5E-02 $\pm$ 39%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D026	⁶⁰ Co	-6.8E-04 $\pm$ 680%	D028	⁶⁰ Co	2.2E-03 $\pm$ 330%
	⁶⁵ Zn	5.4E-03 $\pm$ 240%		⁶⁵ Zn	8.5E-03 $\pm$ 220%
	⁹⁰ Sr	1.9E-01 $\pm$ 50%		⁹⁰ Sr	1.6E-01 $\pm$ 60%
	¹⁰³ Ru	-2.0E-03 $\pm$ 270%		¹⁰³ Ru	9.8E-05 $\pm$ >999%
	¹⁰⁶ Ru	-6.2E-03 $\pm$ 740%		¹⁰⁶ Ru	3.0E-02 $\pm$ 230%
	¹¹³ Sn	-8.0E-03 $\pm$ 100%		¹¹³ Sn	2.1E-04 $\pm$ >999%
	¹²⁵ Sb	4.9E-03 $\pm$ 320%		¹²⁵ Sb	-6.6E-03 $\pm$ 350%
	¹³⁴ Cs	2.1E-02 $\pm$ 34%		¹³⁴ Cs	2.0E-02 $\pm$ 59%
	¹³⁷ Cs	9.9E-01 $\pm$ 13%		¹³⁷ Cs	8.3E-01 $\pm$ 15%
	¹⁴⁴ Ce	6.4E-02 $\pm$ 74%		¹⁴⁴ Ce	4.3E-02 $\pm$ 180%
	¹⁵² Eu	-4.1E-03 $\pm$ 410%		¹⁵² Eu	-2.0E-02 $\pm$ 130%
	¹⁵⁴ Eu	-9.0E-03 $\pm$ 180%		¹⁵⁴ Eu	-4.8E-03 $\pm$ 480%
	¹⁵⁵ Eu	2.2E-02 $\pm$ 110%		¹⁵⁵ Eu	6.2E-02 $\pm$ 59%
	²³⁴ U	1.4E-01 $\pm$ 23%		²³⁴ U	1.6E-01 $\pm$ 21%
	²³⁵ U	1.3E-02 $\pm$ 82%		²³⁵ U	1.4E-02 $\pm$ 54%
	²³⁸ U	1.5E-01 $\pm$ 22%		²³⁸ U	1.6E-01 $\pm$ 21%
	²³⁸ Pu	2.7E-03 $\pm$ 220%		²³⁸ Pu	-5.1E-03 $\pm$ 160%
	^{239,240} Pu	3.3E-01 $\pm$ 19%		^{239,240} Pu	3.4E-02 $\pm$ 38%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D030	⁶⁰ Co	-2.4E-04 $\pm$ >999%	D032	⁶⁰ Co	3.6E-03 $\pm$ 240%
	⁶⁵ Zn	-2.4E-03 $\pm$ 560%		⁶⁵ Zn	-1.0E-02 $\pm$ 230%
	⁹⁰ Sr	-2.7E-02 $\pm$ 300%		⁹⁰ Sr	3.3E-01 $\pm$ 35%
	¹⁰³ Ru	-5.3E-03 $\pm$ 100%		¹⁰³ Ru	6.8E-04 $\pm$ >999%
	¹⁰⁶ Ru	-6.5E-03 $\pm$ 680%		¹⁰⁶ Ru	-5.6E-02 $\pm$ 170%
	¹¹³ Sn	-4.7E-03 $\pm$ 150%		¹¹³ Sn	-2.3E-03 $\pm$ 680%
	¹²⁵ Sb	1.5E-04 $\pm$ >999%		¹²⁵ Sb	2.9E-02 $\pm$ 120%
	¹³⁴ Cs	2.9E-02 $\pm$ 28%		¹³⁴ Cs	5.1E-02 $\pm$ 30%
	¹³⁷ Cs	3.0E-01 $\pm$ 14%		¹³⁷ Cs	2.7E+00 $\pm$ 15%
	¹⁴⁴ Ce	1.1E-02 $\pm$ 430%		¹⁴⁴ Ce	1.6E-02 $\pm$ 520%
	¹⁵² Eu	-1.6E-02 $\pm$ 100%		¹⁵² Eu	2.4E-03 $\pm$ >999%
	¹⁵⁴ Eu	-3.5E-03 $\pm$ 470%		¹⁵⁴ Eu	-3.6E-03 $\pm$ 710%
	¹⁵⁵ Eu	1.9E-02 $\pm$ 130%		¹⁵⁵ Eu	3.7E-02 $\pm$ 120%
	²³⁴ U	1.9E-01 $\pm$ 20%		²³⁴ U	1.5E-01 $\pm$ 22%
	²³⁵ U	2.1E-02 $\pm$ 47%		²³⁵ U	1.5E-02 $\pm$ 56%
	²³⁸ U	2.2E-01 $\pm$ 20%		²³⁸ U	1.5E-01 $\pm$ 23%
	²³⁸ Pu	4.0E-03 $\pm$ 200%		²³⁸ Pu	2.0E-02 $\pm$ 57%
	^{239,240} Pu	1.9E-02 $\pm$ 48%		^{239,240} Pu	1.2E+00 $\pm$ 16%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D034	⁶⁰ Co	2.0E-03 $\pm$ 380%	D036	⁶⁰ Co	-2.0E-03 $\pm$ 400%
	⁶⁵ Zn	-1.1E-02 $\pm$ 190%		⁶⁵ Zn	-1.2E-02 $\pm$ 180%
	⁹⁰ Sr	1.3E+00 $\pm$ 20%		⁹⁰ Sr	-5.6E-02 $\pm$ 160%
	¹⁰³ Ru	1.1E-02 $\pm$ 140%		¹⁰³ Ru	-7.1E-04 $\pm$ >999%
	¹⁰⁶ Ru	5.0E-02 $\pm$ 220%		¹⁰⁶ Ru	1.1E-03 $\pm$ >999%
	¹¹³ Sn	-1.1E-03 $\pm$ >999%		¹¹³ Sn	6.0E-03 $\pm$ 170%
	¹²⁵ Sb	-1.1E-02 $\pm$ 410%		¹²⁵ Sb	-1.9E-02 $\pm$ 120%
	¹³⁴ Cs	2.7E-02 $\pm$ 45%		¹³⁴ Cs	2.6E-02 $\pm$ 48%
	¹³⁷ Cs	1.0E+01 $\pm$ 14%		¹³⁷ Cs	2.8E-01 $\pm$ 17%
	¹⁴⁴ Ce	-1.1E-02 $\pm$ 920%		¹⁴⁴ Ce	-6.2E-02 $\pm$ 100%
	¹⁵² Eu	-5.0E-02 $\pm$ 100%		¹⁵² Eu	-1.7E-02 $\pm$ 130%
	¹⁵⁴ Eu	-8.3E-03 $\pm$ 290%		¹⁵⁴ Eu	-4.9E-03 $\pm$ 510%
	¹⁵⁵ Eu	3.6E-02 $\pm$ 140%		¹⁵⁵ Eu	3.7E-02 $\pm$ 91%
	²³⁴ U	1.7E-01 $\pm$ 21%		²³⁴ U	1.7E-01 $\pm$ 22%
	²³⁵ U	1.8E-02 $\pm$ 50%		²³⁵ U	1.7E-02 $\pm$ 73%
	²³⁸ U	1.8E-01 $\pm$ 21%		²³⁸ U	1.7E-01 $\pm$ 21%
	²³⁸ Pu	5.2E-03 $\pm$ 130%		²³⁸ Pu	-4.8E-03 $\pm$ 150%
	^{239,240} Pu	7.4E-02 $\pm$ 27%		^{239,240} Pu	7.6E-03 $\pm$ 72%

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D038	⁶⁰ Co	2.9E-03 $\pm$ 250%	D040	⁶⁰ Co	4.7E-03 $\pm$ 100%
	⁶⁵ Zn	-1.5E-02 $\pm$ 140%		⁶⁵ Zn	-4.2E-03 $\pm$ 330%
	⁹⁰ Sr	6.9E-01 $\pm$ 20%		⁹⁰ Sr	-1.7E-02 $\pm$ 470%
	¹⁰³ Ru	-5.2E-03 $\pm$ 210%		¹⁰³ Ru	3.6E-03 $\pm$ 150%
	¹⁰⁶ Ru	-3.4E-02 $\pm$ 290%		¹⁰⁶ Ru	5.6E-03 $\pm$ 830%
	¹¹³ Sn	-9.6E-03 $\pm$ 160%		¹¹³ Sn	-1.3E-02 $\pm$ 100%
	¹²⁵ Sb	-6.4E-03 $\pm$ 520%		¹²⁵ Sb	7.1E-03 $\pm$ 220%
	¹³⁴ Cs	3.4E-02 $\pm$ 35%		¹³⁴ Cs	2.6E-02 $\pm$ 35%
	¹³⁷ Cs	3.3E+00 $\pm$ 14%		¹³⁷ Cs	8.5E-01 $\pm$ 13%
	¹⁴⁴ Ce	5.1E-02 $\pm$ 180%		¹⁴⁴ Ce	3.9E-03 $\pm$ >999%
	¹⁵² Eu	-1.6E-02 $\pm$ 220%		¹⁵² Eu	4.9E-03 $\pm$ 350%
	¹⁵⁴ Eu	1.7E-03 $\pm$ >999%		¹⁵⁴ Eu	-2.3E-03 $\pm$ 680%
	¹⁵⁵ Eu	3.7E-02 $\pm$ 130%		¹⁵⁵ Eu	3.7E-02 $\pm$ 67%
	²³⁴ U	1.6E-01 $\pm$ 16%		²³⁴ U	1.7E-01 $\pm$ 17%
	²³⁵ U	2.3E-02 $\pm$ 41%		²³⁵ U	1.8E-02 $\pm$ 50%
	²³⁸ U	1.5E-01 $\pm$ 16%		²³⁸ U	1.9E-01 $\pm$ 16%
	²³⁸ Pu	5.7E-03 $\pm$ 170%		²³⁸ Pu	-1.1E-03 $\pm$ 660%
	^{239,240} Pu	1.2E-01 $\pm$ 23%		^{239,240} Pu	6.2E-02 $\pm$ 31%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D042	⁶⁰ Co	1.6E-03 $\pm$ 500%	D044	⁶⁰ Co	5.8E-03 $\pm$ 130%
	⁶⁵ Zn	-1.1E-03 $\pm$ >999%		⁶⁵ Zn	-1.1E-02 $\pm$ 200%
	⁹⁰ Sr	9.5E-04 $\pm$ >999%		⁹⁰ Sr	4.7E-02 $\pm$ 230%
	¹⁰³ Ru	9.3E-04 $\pm$ >999%		¹⁰³ Ru	-1.6E-03 $\pm$ 460%
	¹⁰⁶ Ru	-3.3E-02 $\pm$ 220%		¹⁰⁶ Ru	1.0E-02 $\pm$ 640%
	¹¹³ Sn	-1.1E-03 $\pm$ 950%		¹¹³ Sn	3.6E-05 $\pm$ >999%
	¹²⁵ Sb	5.5E-03 $\pm$ 410%		¹²⁵ Sb	-1.6E-02 $\pm$ 130%
	¹³⁴ Cs	2.2E-02 $\pm$ 79%		¹³⁴ Cs	2.9E-02 $\pm$ 60%
	¹³⁷ Cs	9.1E-02 $\pm$ 22%		¹³⁷ Cs	1.1E-01 $\pm$ 19%
	¹⁴⁴ Ce	-3.9E-02 $\pm$ 180%		¹⁴⁴ Ce	-1.1E-02 $\pm$ 590%
	¹⁵² Eu	9.7E-03 $\pm$ 300%		¹⁵² Eu	-1.1E-02 $\pm$ 210%
	¹⁵⁴ Eu	-2.4E-02 $\pm$ 110%		¹⁵⁴ Eu	-1.3E-02 $\pm$ 190%
	¹⁵⁵ Eu	-2.7E-03 $\pm$ >999%		¹⁵⁵ Eu	2.6E-02 $\pm$ 130%
	²³⁴ U	2.2E-01 $\pm$ 14%		²³⁴ U	1.7E-01 $\pm$ 16%
	²³⁵ U	2.0E-02 $\pm$ 45%		²³⁵ U	2.0E-02 $\pm$ 46%
	²³⁸ U	2.0E-01 $\pm$ 14%		²³⁸ U	1.8E-01 $\pm$ 16%
	²³⁸ Pu	9.3E-04 $\pm$ >999%		²³⁸ Pu	4.7E-03 $\pm$ 150%
	^{239,240} Pu	1.6E-02 $\pm$ 51%		^{239,240} Pu	7.5E-03 $\pm$ 72%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D046	⁶⁰ Co	3.8E-03 $\pm$ 220%	D048	⁶⁰ Co	-1.1E-03 $\pm$ 600%
	⁶⁵ Zn	-1.8E-02 $\pm$ 130%		⁶⁵ Zn	-1.8E-02 $\pm$ 110%
	⁹⁰ Sr	-2.1E-02 $\pm$ 440%		⁹⁰ Sr	-8.0E-02 $\pm$ 100%
	¹⁰³ Ru	2.2E-03 $\pm$ 320%		¹⁰³ Ru	4.8E-03 $\pm$ 160%
	¹⁰⁶ Ru	2.4E-02 $\pm$ 280%		¹⁰⁶ Ru	4.2E-03 $\pm$ >999%
	¹¹³ Sn	-3.8E-03 $\pm$ 270%		¹¹³ Sn	-2.6E-03 $\pm$ 420%
	¹²⁵ Sb	2.9E-02 $\pm$ 75%		¹²⁵ Sb	6.7E-03 $\pm$ 330%
	¹³⁴ Cs	3.4E-02 $\pm$ 37%		¹³⁴ Cs	2.7E-02 $\pm$ 51%
	¹³⁷ Cs	1.5E-01 $\pm$ 20%		¹³⁷ Cs	7.0E-01 $\pm$ 15%
	¹⁴⁴ Ce	-1.5E-02 $\pm$ 420%		¹⁴⁴ Ce	-5.9E-02 $\pm$ 120%
	¹⁵² Eu	-1.7E-02 $\pm$ 140%		¹⁵² Eu	1.9E-02 $\pm$ 140%
	¹⁵⁴ Eu	4.4E-03 $\pm$ 590%		¹⁵⁴ Eu	-3.7E-03 $\pm$ 580%
	¹⁵⁵ Eu	5.5E-02 $\pm$ 62%		¹⁵⁵ Eu	-9.1E-03 $\pm$ 420%
	²³⁴ U	2.2E-01 $\pm$ 14%		²³⁴ U	2.2E-01 $\pm$ 15%
	²³⁵ U	2.1E-02 $\pm$ 45%		²³⁵ U	3.2E-02 $\pm$ 40%
	²³⁸ U	2.2E-01 $\pm$ 14%		²³⁸ U	1.8E-01 $\pm$ 17%
	²³⁸ Pu	-1.1E-03 $\pm$ 830%		²³⁸ Pu	-2.1E-03 $\pm$ 280%
	^{239,240} Pu	1.3E-02 $\pm$ 60%		^{239,240} Pu	1.9E-02 $\pm$ 50%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D050	⁶⁰ Co	1.9E-02 $\pm$ 30%	D052	⁶⁰ Co	3.9E-03 $\pm$ 180%
	⁶⁵ Zn	-1.1E-02 $\pm$ 120%		⁶⁵ Zn	-2.2E-03 $\pm$ 920%
	⁹⁰ Sr	4.0E-03 $\pm$ >999%		⁹⁰ Sr	2.9E-01 $\pm$ 45%
	¹⁰³ Ru	-3.1E-04 $\pm$ >999%		¹⁰³ Ru	-1.1E-03 $\pm$ 780%
	¹⁰⁶ Ru	3.0E-02 $\pm$ 140%		¹⁰⁶ Ru	3.4E-02 $\pm$ 220%
	¹¹³ Sn	-6.0E-03 $\pm$ 110%		¹¹³ Sn	1.6E-02 $\pm$ 120%
	¹²⁵ Sb	7.1E-03 $\pm$ 200%		¹²⁵ Sb	1.4E-02 $\pm$ 180%
	¹³⁴ Cs	2.9E-02 $\pm$ 31%		¹³⁴ Cs	2.5E-02 $\pm$ 51%
	¹³⁷ Cs	2.0E-01 $\pm$ 14%		¹³⁷ Cs	7.5E-01 $\pm$ 15%
	¹⁴⁴ Ce	-1.3E-02 $\pm$ 330%		¹⁴⁴ Ce	-1.8E-02 $\pm$ 370%
	¹⁵² Eu	-4.5E-03 $\pm$ 360%		¹⁵² Eu	-3.5E-02 $\pm$ 100%
	¹⁵⁴ Eu	-3.2E-04 $\pm$ >999%		¹⁵⁴ Eu	-9.4E-03 $\pm$ 270%
	¹⁵⁵ Eu	2.8E-02 $\pm$ 86%		¹⁵⁵ Eu	1.2E-02 $\pm$ 320%
	²³⁴ U	1.3E-01 $\pm$ 21%		²³⁴ U	1.6E-01 $\pm$ 22%
	²³⁵ U	1.5E-02 $\pm$ 71%		²³⁵ U	1.4E-02 $\pm$ 56%
	²³⁸ U	1.3E-01 $\pm$ 21%		²³⁸ U	1.7E-01 $\pm$ 21%
	²³⁸ Pu	-4.2E-03 $\pm$ 280%		²³⁸ Pu	-1.5E-02 $\pm$ 110%
	^{239,240} Pu	5.3E-02 $\pm$ 30%		^{239,240} Pu	9.4E-02 $\pm$ 22%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D054	⁶⁰ Co	4.2E-03 $\pm$ 220%	D056	⁶⁰ Co	-3.2E-03 $\pm$ 240%
	⁶⁵ Zn	-8.0E-03 $\pm$ 280%		⁶⁵ Zn	-1.4E-03 $\pm$ >999%
	⁹⁰ Sr	-5.1E-02 $\pm$ 180%		⁹⁰ Sr	4.2E-02 $\pm$ 260%
	¹⁰³ Ru	-6.4E-03 $\pm$ 140%		¹⁰³ Ru	-7.7E-04 $\pm$ >999%
	¹⁰⁶ Ru	-2.9E-04 $\pm$ >999%		¹⁰⁶ Ru	2.1E-02 $\pm$ 400%
	¹¹³ Sn	-1.9E-02 $\pm$ 100%		¹¹³ Sn	-6.3E-03 $\pm$ 220%
	¹²⁵ Sb	-3.8E-03 $\pm$ 690%		¹²⁵ Sb	2.3E-02 $\pm$ 130%
	¹³⁴ Cs	3.4E-02 $\pm$ 36%		¹³⁴ Cs	2.9E-02 $\pm$ 51%
	¹³⁷ Cs	7.5E-01 $\pm$ 16%		¹³⁷ Cs	1.9E+00 $\pm$ 14%
	¹⁴⁴ Ce	-1.8E-02 $\pm$ 380%		¹⁴⁴ Ce	6.7E-02 $\pm$ 130%
	¹⁵² Eu	-7.2E-03 $\pm$ 420%		¹⁵² Eu	8.6E-03 $\pm$ 360%
	¹⁵⁴ Eu	-1.2E-02 $\pm$ 230%		¹⁵⁴ Eu	-8.7E-03 $\pm$ 280%
	¹⁵⁵ Eu	9.7E-02 $\pm$ 40%		¹⁵⁵ Eu	1.5E-02 $\pm$ 310%
	²³⁴ U	1.8E-01 $\pm$ 18%		²³⁴ U	1.8E-01 $\pm$ 17%
	²³⁵ U	2.2E-02 $\pm$ 50%		²³⁵ U	1.7E-02 $\pm$ 60%
	²³⁸ U	1.9E-01 $\pm$ 18%		²³⁸ U	1.7E-01 $\pm$ 18%
	²³⁸ Pu	-8.4E-03 $\pm$ 210%		²³⁸ Pu	2.2E-02 $\pm$ 100%
	^{239,240} Pu	7.2E-03 $\pm$ 94%		^{239,240} Pu	4.4E-03 $\pm$ 180%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D058	⁶⁰ Co	4.3E-03 $\pm$ 180%	D060	⁶⁰ Co	6.7E-03 $\pm$ 130%
	⁶⁵ Zn	-1.1E-02 $\pm$ 200%		⁶⁵ Zn	-1.7E-02 $\pm$ 140%
	⁹⁰ Sr	7.6E-01 $\pm$ 20%		⁹⁰ Sr	3.5E-01 $\pm$ 40%
	¹⁰³ Ru	-1.3E-02 $\pm$ 100%		¹⁰³ Ru	-9.9E-03 $\pm$ 100%
	¹⁰⁶ Ru	-6.3E-02 $\pm$ 150%		¹⁰⁶ Ru	-3.1E-02 $\pm$ 270%
	¹¹³ Sn	-1.4E-03 $\pm$ >999%		¹¹³ Sn	-2.1E-03 $\pm$ 630%
	¹²⁵ Sb	4.0E-03 $\pm$ 860%		¹²⁵ Sb	3.7E-02 $\pm$ 79%
	¹³⁴ Cs	3.6E-02 $\pm$ 44%		¹³⁴ Cs	2.2E-02 $\pm$ 63%
	¹³⁷ Cs	3.3E+00 $\pm$ 15%		¹³⁷ Cs	1.3E+00 $\pm$ 14%
	¹⁴⁴ Ce	-5.2E-02 $\pm$ 170%		¹⁴⁴ Ce	-8.0E-03 $\pm$ 950%
	¹⁵² Eu	-2.5E-02 $\pm$ 140%		¹⁵² Eu	-2.7E-02 $\pm$ 110%
	¹⁵⁴ Eu	-1.2E-02 $\pm$ 220%		¹⁵⁴ Eu	-2.4E-02 $\pm$ 120%
	¹⁵⁵ Eu	3.3E-02 $\pm$ 140%		¹⁵⁵ Eu	3.6E-02 $\pm$ 110%
	²³⁴ U	1.7E-01 $\pm$ 17%		²³⁴ U	1.8E-01 $\pm$ 18%
	²³⁵ U	2.2E-02 $\pm$ 45%		²³⁵ U	8.9E-03 $\pm$ 86%
	²³⁸ U	1.7E-01 $\pm$ 16%		²³⁸ U	1.7E-01 $\pm$ 18%
	²³⁸ Pu	1.0E-02 $\pm$ 150%		²³⁸ Pu	2.1E-02 $\pm$ 77%
	^{239,240} Pu	4.6E-02 $\pm$ 34%		^{239,240} Pu	1.7E-02 $\pm$ 58%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D062	⁶⁰ Co	5.1E-03 $\pm$ 150%	D064	⁶⁰ Co	-4.7E-03 $\pm$ 160%
	⁶⁵ Zn	-1.4E-02 $\pm$ 140%		⁶⁵ Zn	-2.5E-02 $\pm$ 100%
	⁹⁰ Sr	1.3E-01 $\pm$ 80%		⁹⁰ Sr	1.5E+00 $\pm$ 20%
	¹⁰³ Ru	-9.8E-03 $\pm$ 100%		¹⁰³ Ru	-5.8E-03 $\pm$ 170%
	¹⁰⁶ Ru	4.7E-02 $\pm$ 150%		¹⁰⁶ Ru	-1.3E-02 $\pm$ 600%
	¹¹³ Sn	7.9E-03 $\pm$ 140%		¹¹³ Sn	-7.6E-04 $\pm$ >999%
	¹²⁵ Sb	1.7E-02 $\pm$ 140%		¹²⁵ Sb	1.2E-02 $\pm$ 250%
	¹³⁴ Cs	3.4E-02 $\pm$ 45%		¹³⁴ Cs	3.1E-02 $\pm$ 48%
	¹³⁷ Cs	9.7E-01 $\pm$ 16%		¹³⁷ Cs	2.2E+00 $\pm$ 14%
	¹⁴⁴ Ce	2.0E-02 $\pm$ 320%		¹⁴⁴ Ce	-1.5E-03 $\pm$ >999%
	¹⁵² Eu	-2.5E-02 $\pm$ 100%		¹⁵² Eu	-1.1E-02 $\pm$ 310%
	¹⁵⁴ Eu	-6.8E-04 $\pm$ >999%		¹⁵⁴ Eu	8.5E-03 $\pm$ 280%
	¹⁵⁵ Eu	1.4E-02 $\pm$ 230%		¹⁵⁵ Eu	2.9E-02 $\pm$ 160%
	²³⁴ U	1.8E-01 $\pm$ 17%		²³⁴ U	1.7E-01 $\pm$ 22%
	²³⁵ U	2.0E-02 $\pm$ 50%		²³⁵ U	1.8E-02 $\pm$ 54%
	²³⁸ U	1.8E-01 $\pm$ 17%		²³⁸ U	1.9E-01 $\pm$ 22%
	²³⁸ Pu	2.0E-03 $\pm$ 650%		²³⁸ Pu	3.8E-03 $\pm$ 200%
	^{239,240} Pu	7.0E-03 $\pm$ 86%		^{239,240} Pu	1.6E-02 $\pm$ 54%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D066	⁶⁰ Co	-2.5E-03 $\pm$ 330%	D068	⁶⁰ Co	-5.9E-04 $\pm$ >999%
	⁶⁵ Zn	-1.0E-02 $\pm$ 220%		⁶⁵ Zn	1.5E-02 $\pm$ 150%
	⁹⁰ Sr	2.4E-01 $\pm$ 50%		⁹⁰ Sr	1.8E-02 $\pm$ 520%
	¹⁰³ Ru	1.0E-02 $\pm$ 110%		¹⁰³ Ru	4.1E-03 $\pm$ 210%
	¹⁰⁶ Ru	2.9E-02 $\pm$ 310%		¹⁰⁶ Ru	5.8E-02 $\pm$ 130%
	¹¹³ Sn	-4.7E-04 $\pm$ >999%		¹¹³ Sn	-9.7E-04 $\pm$ >999%
	¹²⁵ Sb	-1.0E-03 $\pm$ >999%		¹²⁵ Sb	1.9E-03 $\pm$ >999%
	¹³⁴ Cs	4.2E-02 $\pm$ 34%		¹³⁴ Cs	4.5E-02 $\pm$ 38%
	¹³⁷ Cs	2.5E+00 $\pm$ 15%		¹³⁷ Cs	1.0E-01 $\pm$ 21%
	¹⁴⁴ Ce	-1.9E-02 $\pm$ 420%		¹⁴⁴ Ce	-1.1E-02 $\pm$ 650%
	¹⁵² Eu	1.7E-02 $\pm$ 210%		¹⁵² Eu	-1.5E-02 $\pm$ 200%
	¹⁵⁴ Eu	-6.2E-03 $\pm$ 450%		¹⁵⁴ Eu	-7.3E-03 $\pm$ 350%
	¹⁵⁵ Eu	-1.6E-02 $\pm$ 290%		¹⁵⁵ Eu	8.4E-03 $\pm$ 460%
	²³⁴ U	1.6E-01 $\pm$ 18%		²³⁴ U	2.9E-01 $\pm$ 19%
	²³⁵ U	2.3E-02 $\pm$ 48%		²³⁵ U	4.4E-02 $\pm$ 34%
	²³⁸ U	1.9E-01 $\pm$ 17%		²³⁸ U	2.9E-01 $\pm$ 19%
	²³⁸ Pu	7.7E-02 $\pm$ 28%		²³⁸ Pu	9.1E-04 $\pm$ 720%
	^{239,240} Pu	5.9E-03 $\pm$ 96%		^{239,240} Pu	3.6E-03 $\pm$ 100%

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D070	⁶⁰ Co	-3.0E-03 $\pm$ 260%	D072	⁶⁰ Co	-1.4E-03 $\pm$ 500%
	⁶⁵ Zn	-1.6E-02 $\pm$ 140%		⁶⁵ Zn	-7.2E-03 $\pm$ 270%
	⁹⁰ Sr	2.6E-01 $\pm$ 40%		⁹⁰ Sr	7.3E-02 $\pm$ 140%
	¹⁰³ Ru	-4.3E-04 $\pm$ >999%		¹⁰³ Ru	3.9E-03 $\pm$ 180%
	¹⁰⁶ Ru	4.9E-02 $\pm$ 140%		¹⁰⁶ Ru	8.9E-03 $\pm$ 710%
	¹¹³ Sn	-8.9E-03 $\pm$ 110%		¹¹³ Sn	-6.3E-03 $\pm$ 160%
	¹²⁵ Sb	-1.3E-03 $\pm$ >999%		¹²⁵ Sb	2.9E-02 $\pm$ 74%
	¹³⁴ Cs	2.8E-02 $\pm$ 57%		¹³⁴ Cs	2.8E-02 $\pm$ 45%
	¹³⁷ Cs	2.2E-01 $\pm$ 18%		¹³⁷ Cs	3.2E-01 $\pm$ 16%
	¹⁴⁴ Ce	-6.8E-02 $\pm$ 110%		¹⁴⁴ Ce	3.4E-02 $\pm$ 200%
	¹⁵² Eu	8.4E-03 $\pm$ 270%		¹⁵² Eu	-7.4E-03 $\pm$ 310%
	¹⁵⁴ Eu	-1.1E-03 $\pm$ >999%		¹⁵⁴ Eu	1.3E-02 $\pm$ 180%
	¹⁵⁵ Eu	3.1E-02 $\pm$ 110%		¹⁵⁵ Eu	3.1E-02 $\pm$ 120%
	²³⁴ U	1.8E-01 $\pm$ 21%		²³⁴ U	1.4E-01 $\pm$ 17%
	²³⁵ U	2.7E-02 $\pm$ 43%		²³⁵ U	1.4E-02 $\pm$ 54%
	²³⁸ U	1.8E-01 $\pm$ 21%		²³⁸ U	1.6E-01 $\pm$ 16%
	²³⁸ Pu	9.9E-04 $\pm$ 450%		²³⁸ Pu	1.1E-01 $\pm$ 26%
	^{239,240} Pu	2.0E-03 $\pm$ 200%		^{239,240} Pu	1.3E-02 $\pm$ 58%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D074	⁶⁰ Co	-1.0E-04 $\pm$ >999%	D076	⁶⁰ Co	-2.9E-03 $\pm$ 260%
	⁶⁵ Zn	-8.3E-03 $\pm$ 310%		⁶⁵ Zn	-1.4E-03 $\pm$ >999%
	⁹⁰ Sr	7.3E-03 $\pm$ >999%		⁹⁰ Sr	1.7E-01 $\pm$ 65%
	¹⁰³ Ru	4.2E-03 $\pm$ 220%		¹⁰³ Ru	-1.4E-03 $\pm$ 560%
	¹⁰⁶ Ru	-1.9E-03 $\pm$ >999%		¹⁰⁶ Ru	7.3E-02 $\pm$ 100%
	¹¹³ Sn	2.5E-04 $\pm$ >999%		¹¹³ Sn	1.7E-03 $\pm$ 590%
	¹²⁵ Sb	1.4E-03 $\pm$ >999%		¹²⁵ Sb	1.9E-02 $\pm$ 120%
	¹³⁴ Cs	4.3E-02 $\pm$ 42%		¹³⁴ Cs	2.9E-02 $\pm$ 45%
	¹³⁷ Cs	6.2E-01 $\pm$ 15%		¹³⁷ Cs	1.7E-01 $\pm$ 19%
	¹⁴⁴ Ce	-1.0E-02 $\pm$ 730%		¹⁴⁴ Ce	-8.2E-02 $\pm$ 100%
	¹⁵² Eu	6.0E-03 $\pm$ 510%		¹⁵² Eu	-1.7E-03 $\pm$ >999%
	¹⁵⁴ Eu	-8.9E-04 $\pm$ >999%		¹⁵⁴ Eu	-3.8E-02 $\pm$ 100%
	¹⁵⁵ Eu	3.1E-02 $\pm$ 140%		¹⁵⁵ Eu	4.9E-02 $\pm$ 69%
	²³⁴ U	1.6E-01 $\pm$ 18%		²³⁴ U	1.4E-01 $\pm$ 18%
	²³⁵ U	2.3E-02 $\pm$ 53%		²³⁵ U	2.1E-02 $\pm$ 47%
	²³⁸ U	2.0E-01 $\pm$ 17%		²³⁸ U	1.3E-01 $\pm$ 18%
	²³⁸ Pu	6.3E-03 $\pm$ 140%		²³⁸ Pu	5.1E-03 $\pm$ 180%
	^{239,240} Pu	3.1E-03 $\pm$ 120%		^{239,240} Pu	1.3E-02 $\pm$ 62%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D078	⁶⁰ Co	1.8E-03 $\pm$ 430%	D080	⁶⁰ Co	4.2E-03 $\pm$ 120%
	⁶⁵ Zn	-2.3E-03 $\pm$ 920%		⁶⁵ Zn	-2.3E-03 $\pm$ 550%
	⁹⁰ Sr	1.1E-01 $\pm$ 100%		⁹⁰ Sr	5.9E-03 $\pm$ >999%
	¹⁰³ Ru	-1.1E-02 $\pm$ 100%		¹⁰³ Ru	9.9E-04 $\pm$ 480%
	¹⁰⁶ Ru	3.0E-03 $\pm$ >999%		¹⁰⁶ Ru	4.5E-02 $\pm$ 96%
	¹¹³ Sn	-6.2E-03 $\pm$ 180%		¹¹³ Sn	-3.3E-03 $\pm$ 200%
	¹²⁵ Sb	1.1E-02 $\pm$ 210%		¹²⁵ Sb	1.0E-02 $\pm$ 130%
	¹³⁴ Cs	3.0E-02 $\pm$ 42%		¹³⁴ Cs	3.3E-02 $\pm$ 28%
	¹³⁷ Cs	5.2E-01 $\pm$ 15%		¹³⁷ Cs	2.4E-02 $\pm$ 35%
	¹⁴⁴ Ce	2.7E-02 $\pm$ 290%		¹⁴⁴ Ce	-4.4E-02 $\pm$ 100%
	¹⁵² Eu	8.2E-03 $\pm$ 350%		¹⁵² Eu	-6.2E-03 $\pm$ 260%
	¹⁵⁴ Eu	3.7E-02 $\pm$ 72%		¹⁵⁴ Eu	3.3E-03 $\pm$ 540%
	¹⁵⁵ Eu	-7.3E-04 $\pm$ >999%		¹⁵⁵ Eu	5.1E-02 $\pm$ 64%
	²³⁴ U	2.2E-01 $\pm$ 21%		²³⁴ U	2.3E-01 $\pm$ 15%
	²³⁵ U	2.5E-02 $\pm$ 53%		²³⁵ U	1.6E-02 $\pm$ 57%
	²³⁸ U	2.0E-01 $\pm$ 22%		²³⁸ U	2.2E-01 $\pm$ 15%
	²³⁸ Pu	3.9E-03 $\pm$ 190%		²³⁸ Pu	-5.0E-03 $\pm$ 150%
	^{239,240} Pu	1.8E-02 $\pm$ 48%		^{239,240} Pu	7.0E-03 $\pm$ 100%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D082	⁶⁰ Co	-4.7E-03 $\pm$ 170%	D084	⁶⁰ Co	1.4E-02 $\pm$ 120%
	⁶⁵ Zn	-5.1E-03 $\pm$ 410%		⁶⁵ Zn	-1.4E-02 $\pm$ 200%
	⁹⁰ Sr	2.2E-02 $\pm$ 420%		⁹⁰ Sr	1.9E-01 $\pm$ 60%
	¹⁰³ Ru	-2.6E-03 $\pm$ 320%		¹⁰³ Ru	6.4E-03 $\pm$ 180%
	¹⁰⁶ Ru	6.0E-02 $\pm$ 120%		¹⁰⁶ Ru	8.1E-02 $\pm$ 120%
	¹¹³ Sn	-2.3E-04 $\pm$ >999%		¹¹³ Sn	-2.0E-03 $\pm$ 820%
	¹²⁵ Sb	-3.6E-03 $\pm$ 590%		¹²⁵ Sb	-1.3E-02 $\pm$ 260%
	¹³⁴ Cs	3.0E-02 $\pm$ 44%		¹³⁴ Cs	2.4E-02 $\pm$ 69%
	¹³⁷ Cs	2.8E-02 $\pm$ 46%		¹³⁷ Cs	2.3E+00 $\pm$ 15%
	¹⁴⁴ Ce	2.2E-02 $\pm$ 330%		¹⁴⁴ Ce	4.1E-02 $\pm$ 230%
	¹⁵² Eu	-1.6E-02 $\pm$ 160%		¹⁵² Eu	1.7E-02 $\pm$ 230%
	¹⁵⁴ Eu	-4.6E-03 $\pm$ 610%		¹⁵⁴ Eu	2.2E-02 $\pm$ 130%
	¹⁵⁵ Eu	6.9E-03 $\pm$ 540%		¹⁵⁵ Eu	-1.3E-02 $\pm$ 360%
	²³⁴ U	1.5E-01 $\pm$ 16%		²³⁴ U	2.0E-01 $\pm$ 14%
	²³⁵ U	1.5E-02 $\pm$ 52%		²³⁵ U	3.3E-02 $\pm$ 35%
	²³⁸ U	1.5E-01 $\pm$ 16%		²³⁸ U	1.7E-01 $\pm$ 15%
	²³⁸ Pu	9.2E-04 $\pm$ 830%		²³⁸ Pu	1.1E-03 $\pm$ >999%
	^{239,240} Pu	-1.8E-03 $\pm$ 200%		^{239,240} Pu	2.8E-02 $\pm$ 42%

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D086	⁶⁰ Co	-2.1E-03 $\pm$ 240%	D088	⁶⁰ Co	-5.2E-03 $\pm$ 160%
	⁶⁵ Zn	5.8E-04 $\pm$ >999%		⁶⁵ Zn	-7.7E-03 $\pm$ 280%
	⁹⁰ Sr	7.3E-01 $\pm$ 25%		⁹⁰ Sr	-6.5E-02 $\pm$ 160%
	¹⁰³ Ru	-5.4E-03 $\pm$ 120%		¹⁰³ Ru	-2.6E-03 $\pm$ 290%
	¹⁰⁶ Ru	-1.7E-02 $\pm$ 300%		¹⁰⁶ Ru	-2.4E-04 $\pm$ >999%
	¹¹³ Sn	-4.5E-03 $\pm$ 190%		¹¹³ Sn	-8.6E-03 $\pm$ 120%
	¹²⁵ Sb	3.3E-04 $\pm$ >999%		¹²⁵ Sb	1.1E-02 $\pm$ 180%
	¹³⁴ Cs	3.2E-02 $\pm$ 28%		¹³⁴ Cs	3.4E-02 $\pm$ 43%
	¹³⁷ Cs	1.4E+00 $\pm$ 13%		¹³⁷ Cs	5.2E-03 $\pm$ 170%
	¹⁴⁴ Ce	2.4E-02 $\pm$ 220%		¹⁴⁴ Ce	-2.8E-02 $\pm$ 230%
	¹⁵² Eu	3.7E-03 $\pm$ 530%		¹⁵² Eu	5.8E-04 $\pm$ >999%
	¹⁵⁴ Eu	-4.4E-03 $\pm$ 400%		¹⁵⁴ Eu	-1.5E-02 $\pm$ 180%
	¹⁵⁵ Eu	4.7E-02 $\pm$ 60%		¹⁵⁵ Eu	4.2E-02 $\pm$ 82%
	²³⁴ U	1.9E-01 $\pm$ 15%		²³⁴ U	2.5E-01 $\pm$ 13%
	²³⁵ U	3.7E-02 $\pm$ 33%		²³⁵ U	3.0E-02 $\pm$ 38%
	²³⁸ U	1.9E-01 $\pm$ 15%		²³⁸ U	2.2E-01 $\pm$ 14%
	²³⁸ Pu	1.7E-03 $\pm$ 320%		²³⁸ Pu	-5.0E-03 $\pm$ 270%
	^{239,240} Pu	6.1E-03 $\pm$ 96%		^{239,240} Pu	3.0E-03 $\pm$ 200%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D090	⁶⁰ Co	-6.9E-03 $\pm$ 120%	D092	⁶⁰ Co	-3.4E-05 $\pm$ >999%
	⁶⁵ Zn	-6.6E-03 $\pm$ 340%		⁶⁵ Zn	-1.2E-02 $\pm$ 170%
	⁹⁰ Sr	-1.1E-01 $\pm$ 100%		⁹⁰ Sr	-3.9E-02 $\pm$ 260%
	¹⁰³ Ru	9.6E-04 $\pm$ 800%		¹⁰³ Ru	-5.0E-03 $\pm$ 160%
	¹⁰⁶ Ru	3.4E-02 $\pm$ 200%		¹⁰⁶ Ru	2.7E-02 $\pm$ 260%
	¹¹³ Sn	-1.1E-02 $\pm$ 100%		¹¹³ Sn	-7.8E-04 $\pm$ >999%
	¹²⁵ Sb	-1.1E-02 $\pm$ 190%		¹²⁵ Sb	3.1E-03 $\pm$ 700%
	¹³⁴ Cs	3.4E-02 $\pm$ 44%		¹³⁴ Cs	1.7E-02 $\pm$ 63%
	¹³⁷ Cs	1.2E-01 $\pm$ 20%		¹³⁷ Cs	2.7E-01 $\pm$ 16%
	¹⁴⁴ Ce	-1.6E-02 $\pm$ 390%		¹⁴⁴ Ce	-1.1E-02 $\pm$ 670%
	¹⁵² Eu	-2.7E-02 $\pm$ 100%		¹⁵² Eu	-1.5E-03 $\pm$ >999%
	¹⁵⁴ Eu	-2.1E-02 $\pm$ 120%		¹⁵⁴ Eu	-5.5E-03 $\pm$ 430%
	¹⁵⁵ Eu	3.3E-02 $\pm$ 100%		¹⁵⁵ Eu	5.7E-02 $\pm$ 72%
	²³⁴ U	2.3E-01 $\pm$ 20%		²³⁴ U	1.7E-01 $\pm$ 22%
	²³⁵ U	1.9E-02 $\pm$ 48%		²³⁵ U	2.6E-02 $\pm$ 44%
	²³⁸ U	2.1E-01 $\pm$ 20%		²³⁸ U	1.6E-01 $\pm$ 22%
	²³⁸ Pu	-2.4E-03 $\pm$ 690%		²³⁸ Pu	1.0E-02 $\pm$ 140%
	^{239,240} Pu	1.2E-03 $\pm$ 450%		^{239,240} Pu	8.2E-02 $\pm$ 23%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D094	⁶⁰ Co	2.6E-03 $\pm$ 330%	D096	⁶⁰ Co	1.8E-03 $\pm$ 250%
	⁶⁵ Zn	-7.5E-05 $\pm$ >999%		⁶⁵ Zn	-8.6E-03 $\pm$ 140%
	⁹⁰ Sr	2.1E-01 $\pm$ 55%		⁹⁰ Sr	1.5E-01 $\pm$ 80%
	¹⁰³ Ru	-3.3E-03 $\pm$ 280%		¹⁰³ Ru	-4.3E-03 $\pm$ 120%
	¹⁰⁶ Ru	-8.4E-02 $\pm$ 100%		¹⁰⁶ Ru	5.9E-03 $\pm$ 720%
	¹¹³ Sn	-8.7E-03 $\pm$ 130%		¹¹³ Sn	-5.5E-03 $\pm$ 120%
	¹²⁵ Sb	4.5E-03 $\pm$ 580%		¹²⁵ Sb	-5.4E-03 $\pm$ 270%
	¹³⁴ Cs	2.4E-02 $\pm$ 63%		¹³⁴ Cs	3.0E-02 $\pm$ 25%
	¹³⁷ Cs	1.0E+00 $\pm$ 16%		¹³⁷ Cs	4.7E-01 $\pm$ 13%
	¹⁴⁴ Ce	-1.6E-02 $\pm$ 430%		¹⁴⁴ Ce	-7.8E-03 $\pm$ 590%
	¹⁵² Eu	-1.0E-02 $\pm$ 270%		¹⁵² Eu	-9.6E-04 $\pm$ >999%
	¹⁵⁴ Eu	-5.4E-03 $\pm$ 510%		¹⁵⁴ Eu	-5.0E-03 $\pm$ 320%
	¹⁵⁵ Eu	1.7E-03 $\pm$ >999%		¹⁵⁵ Eu	3.9E-02 $\pm$ 68%
	²³⁴ U	1.9E-01 $\pm$ 21%		²³⁴ U	2.6E-01 $\pm$ 19%
	²³⁵ U	2.1E-02 $\pm$ 46%		²³⁵ U	2.9E-02 $\pm$ 40%
	²³⁸ U	1.9E-01 $\pm$ 21%		²³⁸ U	2.4E-01 $\pm$ 20%
	²³⁸ Pu	5.7E-03 $\pm$ 300%		²³⁸ Pu	-5.1E-03 $\pm$ 270%
	^{239,240} Pu	1.8E-01 $\pm$ 17%		^{239,240} Pu	7.9E-02 $\pm$ 24%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D098	⁶⁰ Co	-3.3E-03 $\pm$ 240%	D100	⁶⁰ Co	6.1E-03 $\pm$ 140%
	⁶⁵ Zn	-1.6E-03 $\pm$ >999%		⁶⁵ Zn	-3.9E-03 $\pm$ 560%
	⁹⁰ Sr	-9.3E-02 $\pm$ 100%		⁹⁰ Sr	4.4E-01 $\pm$ 30%
	¹⁰³ Ru	-7.5E-04 $\pm$ >999%		¹⁰³ Ru	-2.6E-03 $\pm$ 310%
	¹⁰⁶ Ru	-2.9E-02 $\pm$ 290%		¹⁰⁶ Ru	-7.1E-03 $\pm$ 980%
	¹¹³ Sn	6.0E-03 $\pm$ 200%		¹¹³ Sn	-6.6E-05 $\pm$ >999%
	¹²⁵ Sb	3.0E-03 $\pm$ 830%		¹²⁵ Sb	1.6E-03 $\pm$ >999%
	¹³⁴ Cs	3.1E-02 $\pm$ 53%		¹³⁴ Cs	3.9E-02 $\pm$ 39%
	¹³⁷ Cs	3.5E-02 $\pm$ 42%		¹³⁷ Cs	3.4E-02 $\pm$ 43%
	¹⁴⁴ Ce	-4.4E-02 $\pm$ 170%		¹⁴⁴ Ce	-6.2E-02 $\pm$ 110%
	¹⁵² Eu	-2.2E-03 $\pm$ >999%		¹⁵² Eu	-3.3E-03 $\pm$ 790%
	¹⁵⁴ Eu	-1.8E-02 $\pm$ 160%		¹⁵⁴ Eu	-3.3E-02 $\pm$ 100%
	¹⁵⁵ Eu	2.2E-02 $\pm$ 180%		¹⁵⁵ Eu	-1.4E-02 $\pm$ 240%
	²³⁴ U	1.8E-01 $\pm$ 22%		²³⁴ U	1.5E-01 $\pm$ 18%
	²³⁵ U	1.5E-02 $\pm$ 72%		²³⁵ U	1.6E-02 $\pm$ 58%
	²³⁸ U	1.6E-01 $\pm$ 22%		²³⁸ U	1.4E-01 $\pm$ 18%
	²³⁸ Pu	-3.2E-03 $\pm$ 460%		²³⁸ Pu	1.0E-02 $\pm$ 190%
	^{239,240} Pu	-1.1E-03 $\pm$ 450%		^{239,240} Pu	7.7E-03 $\pm$ 82%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D102	⁶⁰ Co	8.1E-04 $\pm$ >999%	D104	⁶⁰ Co	1.6E-03 $\pm$ 400%
	⁶⁵ Zn	-2.4E-02 $\pm$ 110%		⁶⁵ Zn	-8.7E-03 $\pm$ 220%
	⁹⁰ Sr	8.2E-01 $\pm$ 25%		⁹⁰ Sr	6.0E-01 $\pm$ 25%
	¹⁰³ Ru	-2.6E-04 $\pm$ >999%		¹⁰³ Ru	-2.0E-03 $\pm$ 370%
	¹⁰⁶ Ru	2.7E-02 $\pm$ 300%		¹⁰⁶ Ru	-1.7E-02 $\pm$ 360%
	¹¹³ Sn	-1.3E-03 $\pm$ >999%		¹¹³ Sn	-6.5E-03 $\pm$ 150%
	¹²⁵ Sb	-1.1E-02 $\pm$ 280%		¹²⁵ Sb	6.0E-03 $\pm$ 320%
	¹³⁴ Cs	3.1E-02 $\pm$ 46%		¹³⁴ Cs	2.7E-02 $\pm$ 46%
	¹³⁷ Cs	1.5E+00 $\pm$ 16%		¹³⁷ Cs	1.2E-02 $\pm$ 66%
	¹⁴⁴ Ce	-2.3E-02 $\pm$ 320%		¹⁴⁴ Ce	4.0E-03 $\pm$ >999%
	¹⁵² Eu	5.5E-03 $\pm$ 540%		¹⁵² Eu	-3.3E-03 $\pm$ 680%
	¹⁵⁴ Eu	1.6E-02 $\pm$ 170%		¹⁵⁴ Eu	-2.1E-02 $\pm$ 110%
	¹⁵⁵ Eu	1.2E-02 $\pm$ 310%		¹⁵⁵ Eu	2.2E-02 $\pm$ 170%
	²³⁴ U	2.7E-01 $\pm$ 15%		²³⁴ U	2.1E-01 $\pm$ 15%
	²³⁵ U	1.5E-02 $\pm$ 71%		²³⁵ U	1.2E-02 $\pm$ 58%
	²³⁸ U	2.6E-01 $\pm$ 15%		²³⁸ U	1.5E-01 $\pm$ 17%
	²³⁸ Pu	1.5E-02 $\pm$ 120%		²³⁸ Pu	-4.3E-03 $\pm$ 410%
	^{239,240} Pu	1.2E-01 $\pm$ 21%		^{239,240} Pu	4.3E-03 $\pm$ 120%

Table 4-4 1998 Soil Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D106	⁶⁰ Co	1.8E-04 $\pm$ >999%	D108	⁶⁰ Co	-6.1E-04 $\pm$ >999%
	⁶⁵ Zn	-3.3E-03 $\pm$ 400%		⁶⁵ Zn	6.7E-03 $\pm$ 320%
	⁹⁰ Sr	4.5E-01 $\pm$ 30%		⁹⁰ Sr	5.0E-01 $\pm$ 30%
	¹⁰³ Ru	-5.2E-03 $\pm$ 100%		¹⁰³ Ru	6.6E-03 $\pm$ 130%
	¹⁰⁶ Ru	-2.8E-02 $\pm$ 160%		¹⁰⁶ Ru	2.4E-02 $\pm$ 300%
	¹¹³ Sn	-3.9E-04 $\pm$ >999%		¹¹³ Sn	-8.6E-03 $\pm$ 130%
	¹²⁵ Sb	-8.6E-03 $\pm$ 160%		¹²⁵ Sb	2.1E-02 $\pm$ 110%
	¹³⁴ Cs	3.1E-02 $\pm$ 33%		¹³⁴ Cs	2.2E-02 $\pm$ 72%
	¹³⁷ Cs	5.1E-02 $\pm$ 21%		¹³⁷ Cs	3.2E-01 $\pm$ 16%
	¹⁴⁴ Ce	1.1E-02 $\pm$ 400%		¹⁴⁴ Ce	-4.1E-02 $\pm$ 160%
	¹⁵² Eu	-3.7E-03 $\pm$ 420%		¹⁵² Eu	-4.3E-03 $\pm$ 640%
	¹⁵⁴ Eu	3.3E-03 $\pm$ 480%		¹⁵⁴ Eu	-1.4E-02 $\pm$ 200%
	¹⁵⁵ Eu	3.3E-03 $\pm$ 720%		¹⁵⁵ Eu	5.1E-02 $\pm$ 76%
	²³⁴ U	1.5E-01 $\pm$ 16%		²³⁴ U	1.8E-01 $\pm$ 15%
	²³⁵ U	1.3E-02 $\pm$ 61%		²³⁵ U	1.8E-02 $\pm$ 48%
	²³⁸ U	2.1E-01 $\pm$ 14%		²³⁸ U	1.8E-01 $\pm$ 15%
	²³⁸ Pu	1.1E-03 $\pm$ 100%		²³⁸ Pu	6.5E-03 $\pm$ 170%
	^{239,240} Pu	5.4E-03 $\pm$ 120%		^{239,240} Pu	1.5E-01 $\pm$ 23%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D110	⁶⁰ Co	1.3E-04 $\pm$ >999%	D146 (ERDF)	⁶⁰ Co	-6.9E-03 $\pm$ 140%
	⁶⁵ Zn	-3.0E-03 $\pm$ 740%		⁶⁵ Zn	6.0E-03 $\pm$ 450%
	⁹⁰ Sr	3.4E-01 $\pm$ 35%		⁹⁰ Sr	4.0E-01 $\pm$ 30%
	¹⁰³ Ru	-1.6E-03 $\pm$ 500%		¹⁰³ Ru	-4.0E-04 $\pm$ >999%
	¹⁰⁶ Ru	7.4E-02 $\pm$ 98%		¹⁰⁶ Ru	3.1E-02 $\pm$ 260%
	¹¹³ Sn	1.1E-03 $\pm$ 970%		¹¹³ Sn	6.9E-03 $\pm$ 180%
	¹²⁵ Sb	3.5E-03 $\pm$ 630%		¹²⁵ Sb	1.5E-02 $\pm$ 180%
	¹³⁴ Cs	4.4E-02 $\pm$ 37%		¹³⁴ Cs	3.5E-02 $\pm$ 49%
	¹³⁷ Cs	6.0E-03 $\pm$ 140%		¹³⁷ Cs	1.1E-01 $\pm$ 24%
	¹⁴⁴ Ce	4.4E-02 $\pm$ 150%		¹⁴⁴ Ce	-4.9E-02 $\pm$ 150%
	¹⁵² Eu	5.9E-03 $\pm$ 410%		¹⁵² Eu	-1.5E-02 $\pm$ 180%
	¹⁵⁴ Eu	-6.9E-03 $\pm$ 440%		¹⁵⁴ Eu	8.6E-04 $\pm$ >999%
	¹⁵⁵ Eu	3.8E-02 $\pm$ 93%		¹⁵⁵ Eu	6.9E-02 $\pm$ 79%
	²³⁴ U	1.6E-01 $\pm$ 18%		²³⁴ U	2.0E-01 $\pm$ 15%
	²³⁵ U	2.7E-02 $\pm$ 41%		²³⁵ U	1.9E-02 $\pm$ 48%
	²³⁸ U	1.4E-01 $\pm$ 18%		²³⁸ U	1.8E-01 $\pm$ 16%
	²³⁸ Pu	2.3E-03 $\pm$ 420%		²³⁸ Pu	1.1E-02 $\pm$ 91%
	^{239,240} Pu	2.3E-03 $\pm$ 200%		^{239,240} Pu	9.7E-03 $\pm$ 68%

Table 4-5 1998 Soil Sampling Results, 300/400 Areas (pCi/g $\pm$ overall analytical error)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D116	⁶⁰ Co	2.8E-03 $\pm$ 190%	D117	⁶⁰ Co	-5.5E-04 $\pm$ >999%
	⁶⁵ Zn	2.9E-03 $\pm$ 500%		⁶⁵ Zn	1.0E-02 $\pm$ 140%
	⁹⁰ Sr	3.1E-02 $\pm$ 320%		⁹⁰ Sr	7.5E-02 $\pm$ 150%
	¹⁰³ Ru	-2.2E-03 $\pm$ 220%		¹⁰³ Ru	1.8E-04 $\pm$ >999%
	¹⁰⁶ Ru	1.1E-02 $\pm$ 430%		¹⁰⁶ Ru	-2.7E-03 $\pm$ >999%
	¹¹³ Sn	-6.9E-03 $\pm$ 100%		¹¹³ Sn	2.6E-04 $\pm$ >999%
	¹²⁵ Sb	1.7E-02 $\pm$ 120%		¹²⁵ Sb	9.1E-04 $\pm$ >999%
	¹³⁴ Cs	2.3E-02 $\pm$ 38%		¹³⁴ Cs	2.5E-02 $\pm$ 37%
	¹³⁷ Cs	4.2E-02 $\pm$ 23%		¹³⁷ Cs	1.2E-02 $\pm$ 73%
	¹⁴⁴ Ce	1.1E-02 $\pm$ 390%		¹⁴⁴ Ce	-1.7E-02 $\pm$ 230%
	¹⁵² Eu	-1.5E-02 $\pm$ 110%		¹⁵² Eu	6.2E-03 $\pm$ 240%
	¹⁵⁴ Eu	-5.4E-03 $\pm$ 310%		¹⁵⁴ Eu	-1.5E-02 $\pm$ 120%
	¹⁵⁵ Eu	1.5E-02 $\pm$ 140%		¹⁵⁵ Eu	1.9E-02 $\pm$ 110%
	²³⁴ U	2.2E-01 $\pm$ 21%		²³⁴ U	2.2E-01 $\pm$ 20%
	²³⁵ U	1.5E-02 $\pm$ 63%		²³⁵ U	3.1E-02 $\pm$ 41%
	²³⁸ U	2.2E-01 $\pm$ 20%		²³⁸ U	2.2E-01 $\pm$ 20%
	²³⁸ Pu	-4.5E-03 $\pm$ 140%		²³⁸ Pu	9.3E-04 $\pm$ 660%
	^{239,240} Pu	1.4E-03 $\pm$ 230%		^{239,240} Pu	1.9E-03 $\pm$ 140%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D118	⁶⁰ Co	3.6E-03 $\pm$ 120%	D119	⁶⁰ Co	-1.1E-03 $\pm$ 460%
	⁶⁵ Zn	-1.9E-03 $\pm$ 660%		⁶⁵ Zn	-1.0E-02 $\pm$ 140%
	⁹⁰ Sr	-4.7E-02 $\pm$ 230%		⁹⁰ Sr	1.2E-01 $\pm$ 90%
	¹⁰³ Ru	3.0E-03 $\pm$ 140%		¹⁰³ Ru	6.2E-04 $\pm$ 810%
	¹⁰⁶ Ru	1.2E-02 $\pm$ 340%		¹⁰⁶ Ru	-1.3E-02 $\pm$ 350%
	¹¹³ Sn	-2.4E-03 $\pm$ 250%		¹¹³ Sn	-3.0E-03 $\pm$ 230%
	¹²⁵ Sb	5.8E-03 $\pm$ 220%		¹²⁵ Sb	-1.8E-02 $\pm$ 100%
	¹³⁴ Cs	2.8E-02 $\pm$ 29%		¹³⁴ Cs	2.2E-02 $\pm$ 39%
	¹³⁷ Cs	6.1E-02 $\pm$ 20%		¹³⁷ Cs	1.3E-01 $\pm$ 18%
	¹⁴⁴ Ce	1.2E-02 $\pm$ 360%		¹⁴⁴ Ce	-3.5E-02 $\pm$ 150%
	¹⁵² Eu	-7.0E-03 $\pm$ 210%		¹⁵² Eu	-8.0E-03 $\pm$ 200%
	¹⁵⁴ Eu	2.3E-03 $\pm$ 640%		¹⁵⁴ Eu	-9.8E-03 $\pm$ 170%
	¹⁵⁵ Eu	-9.9E-03 $\pm$ 240%		¹⁵⁵ Eu	4.4E-02 $\pm$ 67%
	²³⁴ U	5.8E-01 $\pm$ 17%		²³⁴ U	7.9E+00 $\pm$ 16%
	²³⁵ U	4.6E-02 $\pm$ 34%		²³⁵ U	4.9E-01 $\pm$ 20%
	²³⁸ U	5.0E-01 $\pm$ 18%		²³⁸ U	7.9E+00 $\pm$ 16%
	²³⁸ Pu	-5.9E-03 $\pm$ 110%		²³⁸ Pu	1.0E-03 $\pm$ 100%
	^{239,240} Pu	4.9E-03 $\pm$ 91%		^{239,240} Pu	2.3E-01 $\pm$ 20%

Table 4-5 1998 Soil Sampling Results, 300/400 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D120	⁶⁰ Co	2.7E-03 $\pm$ 330%	D121	⁶⁰ Co	4.8E-03 $\pm$ 160%
	⁶⁵ Zn	1.2E-02 $\pm$ 190%		⁶⁵ Zn	-3.7E-03 $\pm$ 600%
	⁹⁰ Sr	-2.7E-01 $\pm$ 100%		⁹⁰ Sr	1.7E-01 $\pm$ 70%
	¹⁰³ Ru	-8.8E-03 $\pm$ 100%		¹⁰³ Ru	2.9E-03 $\pm$ 250%
	¹⁰⁶ Ru	-2.6E-02 $\pm$ 290%		¹⁰⁶ Ru	-7.9E-03 $\pm$ 860%
	¹¹³ Sn	3.0E-04 $\pm$ >999%		¹¹³ Sn	5.1E-04 $\pm$ >999%
	¹²⁵ Sb	5.7E-03 $\pm$ 440%		¹²⁵ Sb	-4.6E-03 $\pm$ 420%
	¹³⁴ Cs	2.5E-02 $\pm$ 62%		¹³⁴ Cs	2.2E-02 $\pm$ 54%
	¹³⁷ Cs	2.3E-02 $\pm$ 66%		¹³⁷ Cs	4.3E-02 $\pm$ 39%
	¹⁴⁴ Ce	-5.9E-02 $\pm$ 110%		¹⁴⁴ Ce	-1.5E-03 $\pm$ >999%
	¹⁵² Eu	2.0E-03 $\pm$ >999%		¹⁵² Eu	-5.3E-03 $\pm$ 420%
	¹⁵⁴ Eu	1.1E-02 $\pm$ 260%		¹⁵⁴ Eu	1.2E-02 $\pm$ 230%
	¹⁵⁵ Eu	4.9E-02 $\pm$ 83%		¹⁵⁵ Eu	1.6E-02 $\pm$ 180%
	²³⁴ U	4.4E-01 $\pm$ 19%		²³⁴ U	5.1E-01 $\pm$ 18%
	²³⁵ U	5.5E-02 $\pm$ 37%		²³⁵ U	3.9E-02 $\pm$ 36%
	²³⁸ U	3.8E-01 $\pm$ 19%		²³⁸ U	5.4E-01 $\pm$ 17%
	²³⁸ Pu	2.8E-03 $\pm$ 220%		²³⁸ Pu	9.5E-04 $\pm$ 530%
	^{239,240} Pu	9.3E-04 $\pm$ 350%		^{239,240} Pu	1.2E-02 $\pm$ 62%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D122	⁶⁰ Co	8.5E-03 $\pm$ 93%	D123	⁶⁰ Co	3.8E-03 $\pm$ 220%
	⁶⁵ Zn	-8.4E-03 $\pm$ 260%		⁶⁵ Zn	3.9E-03 $\pm$ 530%
	⁹⁰ Sr	-1.4E-02 $\pm$ 800%		⁹⁰ Sr	7.0E-02 $\pm$ 140%
	¹⁰³ Ru	-1.6E-03 $\pm$ 510%		¹⁰³ Ru	-2.0E-03 $\pm$ 380%
	¹⁰⁶ Ru	-1.6E-02 $\pm$ 430%		¹⁰⁶ Ru	-4.0E-02 $\pm$ 180%
	¹¹³ Sn	-3.0E-03 $\pm$ 350%		¹¹³ Sn	-1.2E-03 $\pm$ 850%
	¹²⁵ Sb	9.5E-03 $\pm$ 270%		¹²⁵ Sb	-2.0E-02 $\pm$ 110%
	¹³⁴ Cs	3.0E-02 $\pm$ 51%		¹³⁴ Cs	3.0E-02 $\pm$ 44%
	¹³⁷ Cs	2.6E-02 $\pm$ 47%		¹³⁷ Cs	8.4E-02 $\pm$ 24%
	¹⁴⁴ Ce	1.7E-02 $\pm$ 460%		¹⁴⁴ Ce	1.4E-02 $\pm$ 530%
	¹⁵² Eu	-1.7E-03 $\pm$ >999%		¹⁵² Eu	2.4E-02 $\pm$ 120%
	¹⁵⁴ Eu	6.1E-03 $\pm$ 410%		¹⁵⁴ Eu	-8.0E-03 $\pm$ 350%
	¹⁵⁵ Eu	2.2E-02 $\pm$ 180%		¹⁵⁵ Eu	2.2E-02 $\pm$ 170%
	²³⁴ U	3.6E-01 $\pm$ 12%		²³⁴ U	2.0E-01 $\pm$ 14%
	²³⁵ U	2.2E-02 $\pm$ 45%		²³⁵ U	2.2E-02 $\pm$ 43%
	²³⁸ U	3.7E-01 $\pm$ 12%		²³⁸ U	1.9E-01 $\pm$ 15%
	²³⁸ Pu	4.0E-03 $\pm$ 330%		²³⁸ Pu	1.3E-02 $\pm$ 86%
	^{239,240} Pu	1.1E-02 $\pm$ 71%		^{239,240} Pu	4.0E-03 $\pm$ 100%

Table 4-5 1998 Soil Sampling Results, 300/400 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D124	⁶⁰ Co	-6.3E-04 $\pm$ >999%	D125	⁶⁰ Co	-1.9E-04 $\pm$ >999%
	⁶⁵ Zn	1.4E-02 $\pm$ 280%		⁶⁵ Zn	-1.0E-02 $\pm$ 230%
	⁹⁰ Sr	-1.1E-01 $\pm$ 100%		⁹⁰ Sr	-2.6E-02 $\pm$ 500%
	¹⁰³ Ru	1.1E-03 $\pm$ 770%		¹⁰³ Ru	1.0E-02 $\pm$ 82%
	¹⁰⁶ Ru	-1.6E-02 $\pm$ 430%		¹⁰⁶ Ru	-7.4E-02 $\pm$ 100%
	¹¹³ Sn	-6.6E-03 $\pm$ 140%		¹¹³ Sn	-7.3E-03 $\pm$ 130%
	¹²⁵ Sb	3.8E-03 $\pm$ 540%		¹²⁵ Sb	-2.4E-02 $\pm$ 100%
	¹³⁴ Cs	2.1E-02 $\pm$ 64%		¹³⁴ Cs	1.1E-02 $\pm$ 120%
	¹³⁷ Cs	5.5E-02 $\pm$ 28%		¹³⁷ Cs	2.8E-02 $\pm$ 42%
	¹⁴⁴ Ce	-3.9E-02 $\pm$ 160%		¹⁴⁴ Ce	3.7E-03 $\pm$ >999%
	¹⁵² Eu	-5.8E-03 $\pm$ 410%		¹⁵² Eu	1.1E-02 $\pm$ 240%
	¹⁵⁴ Eu	-7.5E-03 $\pm$ 350%		¹⁵⁴ Eu	-1.0E-03 $\pm$ >999%
	¹⁵⁵ Eu	2.0E-02 $\pm$ 170%		¹⁵⁵ Eu	1.5E-02 $\pm$ 220%
	²³⁴ U	3.5E-01 $\pm$ 20%		²³⁴ U	2.8E-01 $\pm$ 19%
	²³⁵ U	1.6E-02 $\pm$ 72%		²³⁵ U	3.1E-02 $\pm$ 41%
	²³⁸ U	3.3E-01 $\pm$ 20%		²³⁸ U	2.6E-01 $\pm$ 20%
	²³⁸ Pu	-3.8E-02 $\pm$ 60%		²³⁸ Pu	-9.8E-03 $\pm$ 210%
	^{239,240} Pu	3.4E-02 $\pm$ 40%		^{239,240} Pu	1.1E-03 $\pm$ 350%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D126	⁶⁰ Co	-3.6E-03 $\pm$ 210%	D127	⁶⁰ Co	6.1E-03 $\pm$ 110%
	⁶⁵ Zn	-4.2E-03 $\pm$ 520%		⁶⁵ Zn	2.3E-02 $\pm$ 95%
	⁹⁰ Sr	1.5E-02 $\pm$ 800%		⁹⁰ Sr	2.4E-01 $\pm$ 50%
	¹⁰³ Ru	-2.6E-03 $\pm$ 300%		¹⁰³ Ru	-4.1E-03 $\pm$ 170%
	¹⁰⁶ Ru	-1.2E-02 $\pm$ 540%		¹⁰⁶ Ru	2.4E-02 $\pm$ 250%
	¹¹³ Sn	-6.5E-03 $\pm$ 150%		¹¹³ Sn	-8.3E-03 $\pm$ 120%
	¹²⁵ Sb	3.3E-03 $\pm$ 640%		¹²⁵ Sb	2.1E-02 $\pm$ 100%
	¹³⁴ Cs	2.0E-02 $\pm$ 53%		¹³⁴ Cs	6.0E-02 $\pm$ 28%
	¹³⁷ Cs	5.9E-02 $\pm$ 28%		¹³⁷ Cs	5.8E-01 $\pm$ 13%
	¹⁴⁴ Ce	-4.6E-02 $\pm$ 160%		¹⁴⁴ Ce	1.4E-02 $\pm$ 460%
	¹⁵² Eu	-1.6E-02 $\pm$ 140%		¹⁵² Eu	-1.1E-02 $\pm$ 200%
	¹⁵⁴ Eu	1.3E-02 $\pm$ 200%		¹⁵⁴ Eu	5.8E-03 $\pm$ 420%
	¹⁵⁵ Eu	6.2E-02 $\pm$ 62%		¹⁵⁵ Eu	8.1E-03 $\pm$ 390%
	²³⁴ U	6.9E-01 $\pm$ 17%		²³⁴ U	4.7E-01 $\pm$ 19%
	²³⁵ U	9.5E-02 $\pm$ 26%		²³⁵ U	5.9E-02 $\pm$ 38%
	²³⁸ U	5.4E-01 $\pm$ 18%		²³⁸ U	4.2E-01 $\pm$ 19%
	²³⁸ Pu	4.0E-03 $\pm$ 450%		²³⁸ Pu	-9.8E-04 $\pm$ >999%
	^{239,240} Pu	4.0E-03 $\pm$ 120%		^{239,240} Pu	1.9E-02 $\pm$ 57%

Table 4-5 1998 Soil Sampling Results, 300/400 Areas (pCi/g $\pm$ overall analytical error) (cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
D128	⁶⁰ Co	-7.0E-03 $\pm$ 110%	D129	⁶⁰ Co	6.9E-03 $\pm$ 110%
	⁶⁵ Zn	1.0E-05 $\pm$ >999%		⁶⁵ Zn	-2.3E-02 $\pm$ 100%
	⁹⁰ Sr	8.7E-02 $\pm$ 130%		⁹⁰ Sr	-1.9E-01 $\pm$ 100%
	¹⁰³ Ru	-5.9E-05 $\pm$ >999%		¹⁰³ Ru	7.0E-05 $\pm$ >999%
	¹⁰⁶ Ru	-5.2E-03 $\pm$ >999%		¹⁰⁶ Ru	9.4E-03 $\pm$ 700%
	¹¹³ Sn	-8.0E-04 $\pm$ >999%		¹¹³ Sn	2.2E-03 $\pm$ 440%
	¹²⁵ Sb	1.3E-03 $\pm$ >999%		¹²⁵ Sb	-2.0E-02 $\pm$ 100%
	¹³⁴ Cs	2.4E-02 $\pm$ 54%		¹³⁴ Cs	3.0E-02 $\pm$ 45%
	¹³⁷ Cs	3.6E-02 $\pm$ 43%		¹³⁷ Cs	9.7E-03 $\pm$ 92%
	¹⁴⁴ Ce	-1.2E-02 $\pm$ 560%		¹⁴⁴ Ce	-1.1E-02 $\pm$ 550%
	¹⁵² Eu	-1.6E-02 $\pm$ 150%		¹⁵² Eu	-1.3E-02 $\pm$ 170%
	¹⁵⁴ Eu	-6.6E-03 $\pm$ 400%		¹⁵⁴ Eu	-5.7E-03 $\pm$ 430%
	¹⁵⁵ Eu	1.4E-03 $\pm$ >999%		¹⁵⁵ Eu	2.2E-02 $\pm$ 150%
	²³⁴ U	1.8E-01 $\pm$ 21%		²³⁴ U	1.5E-01 $\pm$ 22%
	²³⁵ U	2.8E-02 $\pm$ 42%		²³⁵ U	1.1E-02 $\pm$ 67%
	²³⁸ U	1.5E-01 $\pm$ 22%		²³⁸ U	1.4E-01 $\pm$ 22%
	²³⁸ Pu	-2.0E-03 $\pm$ 880%		²³⁸ Pu	-9.5E-03 $\pm$ 150%
	^{239,240} Pu	2.9E-03 $\pm$ 350%		^{239,240} Pu	2.1E-03 $\pm$ 140%

Location	Isotope	Result $\pm$ Error
D130	⁶⁰ Co	4.2E-03 $\pm$ 220%
	⁶⁵ Zn	8.6E-03 $\pm$ 270%
	⁹⁰ Sr	-1.2E-01 $\pm$ 100%
	¹⁰³ Ru	4.1E-03 $\pm$ 190%
	¹⁰⁶ Ru	-3.9E-02 $\pm$ 180%
	¹¹³ Sn	-6.3E-03 $\pm$ 160%
	¹²⁵ Sb	1.2E-02 $\pm$ 180%
	¹³⁴ Cs	3.0E-02 $\pm$ 38%
	¹³⁷ Cs	2.3E-02 $\pm$ 55%
	¹⁴⁴ Ce	-1.1E-02 $\pm$ 590%
	¹⁵² Eu	-2.9E-02 $\pm$ 100%
	¹⁵⁴ Eu	-2.0E-02 $\pm$ 140%
	¹⁵⁵ Eu	1.3E-02 $\pm$ 260%
	²³⁴ U	1.5E-01 $\pm$ 22%
	²³⁵ U	1.6E-02 $\pm$ 54%
	²³⁸ U	1.4E-01 $\pm$ 22%
	²³⁸ Pu	-1.0E-03 $\pm$ >999%
	^{239,240} Pu	5.1E-03 $\pm$ 90%

Figure 4-7 1998 Vegetation Sampling Locations, 100-N Area

Figure 4-8 1998 Vegetation Sampling Locations, 200 East Area

WMNW/EMI/8-99/FIGE-8

Figure 4-9 1998 Vegetation Sampling Locations, 200 West Area

WMNW/EM/8-99/FIGE-9

Figure 4-10 1998 Vegetation Sampling Locations, 600 Area

WMW/EM/8-99/FIG-10

Figure 4-11 1998 Vegetation Sampling Locations, 300 Area

Figure 4-12 1998 Vegetation Sampling Locations, 400 Area

WMN/EM/0-98/FIG-12

Table 4-6 Historical Average Radionuclide Concentrations Detected in Vegetation Samples Collected Near the 1301-N Liquid Waste Disposal Facility (pCi/g)

Year	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	²³⁸ Pu	^{239,240} Pu
1980	4.0 E+00	NR	1.1 E+00	NR	NR
1981	1.2 E+01	1.8 E+00	1.8 E+00	NR	7.1 E-03
1982	1.6 E+00	1.2 E-01	2.6 E-01	NR	2.6 E-03
1983	1.9 E+00	6.0 E-01	3.9 E-01	NR	3.2 E-03
1984	1.0 E+00	1.2 E-01	8.3 E-02	NR	8.5 E-04
1985	1.7 E+00	1.9 E+00	1.0 E-01	NR	1.5 E-03
1986	3.5 E+00	7.3 E-02	6.5 E-01	NR	2.6 E-03
1987	2.8 E+00	6.3 E-02	2.0 E-01	1.2 E-03	5.6 E-03
1988	2.0 E+00	1.2 E-01	1.3 E-01	4.3 E-04	1.7 E-03
1989	1.3 E+00	3.8 E-02	1.5 E-01	2.8 E-04	2.0 E-03
1990	1.3 E+00	3.1 E-02	1.2 E-01	2.7 E-04	1.1 E-03
1991	6.3 E-01	1.5 E-02	6.0 E-01	8.1 E-05	1.2 E-03
1992	2.0 E-01	6.5 E-03	2.0 E-01	-2.8 E-05	1.6 E-04
1993	2.2 E-01	5.7 E-02	2.1 E-01	-7.8 E-04	4.1 E-04
1994	2.5 E+01	4.8 E+00	1.8 E+00	3.3 E-02	2.0 E-01
1995	5.4 E-02	6.4 E-02	1.2 E-01	1.3 E-03	8.6 E-03
1996	6.1 E+01	5.8 E+02	2.8 E+03	-1.8 E-02	-9.6 E-03
1997	4.2 E-01	4.9 E-01	1.4 E-01	8.3 E-03	ND
1998	5.3 E-01	1.4 E-01	5.0 E+01	ND	7.1 E-03

ND = Not detected.

NR = Not reported.

Negative value indicates results at or below background levels of radioactivity.

Table 4-7 Historical Average Radionuclide Concentrations Detected in Vegetation Samples at the 100-N Area (pCi/g)

Year	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	²³⁸ Pu	^{239,240} Pu
1980	1.0 E+00	NR	2.8 E-01	NR	NR
1981	2.5 E+01	5.8 E-01	7.1 E-01	NR	2.1 E-02
1982	1.5 E+00	2.0 E-01	1.3 E-01	NR	7.8 E-03
1983	1.0 E+00	2.9 E-01	9.0 E-02	NR	8.6 E-03
1984	4.6 E-01	8.1 E-02	9.0 E-02	NR	1.3 E-03
1985	1.4 E+00	5.1 E-02	1.6 E-01	NR	8.7 E-04
1986	9.5 E-01	2.2 E-01	7.9 E-01	NR	1.1 E-03
1987	7.0 E-01	2.6 E-01	9.4 E-02	1.3 E-04	5.7 E-04
1988	8.0 E-01	2.5 E-01	1.6 E-01	1.7 E-04	6.6 E-04
1989	3.2 E-01	6.8 E-02	1.5 E-01	1.1 E-04	8.7 E-04
1990	1.1 E-01	9.3 E-03	3.6 E-02	-9.6 E-05	1.7 E-04
1991	1.3 E-01	9.4 E-03	3.4 E-03	1.6 E-04	2.5 E-03
1992	5.6 E-02	5.6 E-02	7.8 E-02	-5.2 E-06	1.3 E-04
1993	1.0 E-01	3.6 E-02	6.5 E-02	-5.2 E-05	3.3 E-04
1994	6.5 E+00	2.5 E+01	5.8 E-01	8.6 E-03	5.3 E-02
1995	3.0 E-02	5.4 E+00	8.1 E-02	6.8 E-04	3.3 E-03
1996	2.4 E+00	2.3 E+02	1.1 E+03	-7.6 E-03	-5.1 E-03
1997	4.2 E-01	3.6 E+00	1.6 E-01	4.8 E-03	ND
1998	6.2 E-01	1.2 E+01	3.8 E+01	8.7 E-03	4.2 E-03

ND = Not detected.

NR = Not reported.

Negative value indicates results at or below background levels of radioactivity.

Table 4-8 Average Radionuclide Concentrations Detected in Vegetation Samples at N-Springs (pCi/g)

Year	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	²³⁸ Pu	^{239,240} Pu
1980	5.6 E+00	NR	4.4 E-01	NR	NR
1981	3.3 E+00	2.0 E+02	NR	NR	3.7 E-03
1982	2.8 E+00	4.8 E+02	NR	NR	8.3 E-03
1983	3.0 E+00	3.3 E+02	4.0 E-02	NR	8.0 E-03
1984	NS	NS	NS	NS	NS
1985	1.2 E+00	4.2 E+02	1.7 E-01	NR	4.4 E-04
1986	1.1 E+00	2.2 E+02	2.1 E-01	NR	4.2 E-04
1987	9.0 E-01	2.9 E+02	1.1 E-01	-1.3 E-04	7.6 E-04
1988	1.4 E+00	1.2 E+02	2.0 E-01	8.5 E-05	2.0 E-04
1989	4.3 E-01	8.0 E+01	1.5 E-01	1.1 E-03	4.5 E-04
1990	NS	NS	NS	NS	NS
1991	1.5 E-01	3.1 E+01	1.6 E-01	1.2 E-04	2.9 E-03
1992	4.2 E-02	7.8 E+01	3.0 E-01	1.5 E-04	2.9 E-04
1993	4.5 E-01	2.6 E+02	2.0 E-01	2.3 E-03	-8.5 E-04
1994	1.4 E-01	6.0 E+01	1.5 E-01	3.6 E-04	2.0 E-03
1995	1.4 E-02	1.3 E+01	9.4 E-02	5.9 E-04	2.8 E-03
1996	1.0 E-02	1.8 E+01	3.8 E-02	1.7 E-03	-1.5 E-03
1997	ND	6.2 E+00	1.8 E-01	4.8 E-03	ND
1998	6.8 E-02	2.1 E+01	ND	ND	2.8 E-03

ND = Not detected.

NR = Not reported.

NS = No sample results.

Negative value indicates results at or below background levels of radioactivity.

Table 4-9 1998 Vegetation Sampling Results, 100-N Area (pCi/g $\pm$ overall analytical error)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
Y702	⁶⁰ Co	9.9E-01 $\pm$ 9%	Y703	⁶⁰ Co	3.8E-02 $\pm$ 67%
	⁶⁵ Zn	-7.1E-02 $\pm$ 100%		⁶⁵ Zn	-6.8E-02 $\pm$ 100%
	⁹⁰ Sr	4.5E-01 $\pm$ 21%		⁹⁰ Sr	4.4E-01 $\pm$ 20%
	¹⁰³ Ru	-1.7E-02 $\pm$ 160%		¹⁰³ Ru	-9.2E-03 $\pm$ 250%
	¹⁰⁶ Ru	4.8E-02 $\pm$ 450%		¹⁰⁶ Ru	7.4E-02 $\pm$ 290%
	¹¹³ Sn	-4.4E-03 $\pm$ 680%		¹¹³ Sn	-2.7E-02 $\pm$ 120%
	¹²⁵ Sb	-2.5E-02 $\pm$ 260%		¹²⁵ Sb	-3.7E-02 $\pm$ 180%
	¹³⁴ Cs	3.2E-03 $\pm$ 820%		¹³⁴ Cs	2.8E-03 $\pm$ 880%
	¹³⁷ Cs	2.4E-01 $\pm$ 25%		¹³⁷ Cs	1.7E-01 $\pm$ 34%
	¹⁴⁴ Ce	-7.0E-02 $\pm$ 220%		¹⁴⁴ Ce	-3.4E-02 $\pm$ 460%
	¹⁵² Eu	1.0E-01 $\pm$ 120%		¹⁵² Eu	-8.4E-03 $\pm$ 850%
	¹⁵⁴ Eu	8.5E-02 $\pm$ 85%		¹⁵⁴ Eu	1.9E-02 $\pm$ 350%
	¹⁵⁵ Eu	-2.1E-02 $\pm$ 360%		¹⁵⁵ Eu	2.0E-02 $\pm$ 410%
	²³⁴ U	1.6E-02 $\pm$ 38%		²³⁴ U	1.2E-02 $\pm$ 41%
	²³⁵ U	1.0E-02 $\pm$ 54%		²³⁵ U	3.3E-03 $\pm$ 82%
	²³⁸ U	6.1E-03 $\pm$ 66%		²³⁸ U	5.1E-03 $\pm$ 64%
	²³⁸ Pu	-7.1E-03 $\pm$ 120%		²³⁸ Pu	8.3E-03 $\pm$ 92%
	^{239,240} Pu	7.1E-03 $\pm$ 62%		^{239,240} Pu	1.2E-03 $\pm$ 140%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
Y704	⁶⁰ Co	7.2E-02 $\pm$ 18%	Y708	⁶⁰ Co	8.3E-02 $\pm$ 83%
	⁶⁵ Zn	9.1E-03 $\pm$ 250%		⁶⁵ Zn	2.8E-02 $\pm$ 290%
	⁹⁰ Sr	4.0E+01 $\pm$ 12%		⁹⁰ Sr	4.5E-01 $\pm$ 20%
	¹⁰³ Ru	-2.5E-02 $\pm$ 240%		¹⁰³ Ru	1.5E-02 $\pm$ 220%
	¹⁰⁶ Ru	-7.0E-02 $\pm$ 560%		¹⁰⁶ Ru	-1.6E-01 $\pm$ 210%
	¹¹³ Sn	2.7E-02 $\pm$ 300%		¹¹³ Sn	2.6E-02 $\pm$ 170%
	¹²⁵ Sb	-2.4E-01 $\pm$ 100%		¹²⁵ Sb	3.7E-02 $\pm$ 280%
	¹³⁴ Cs	3.6E-02 $\pm$ 52%		¹³⁴ Cs	6.1E-03 $\pm$ 590%
	¹³⁷ Cs	1.5E+02 $\pm$ 13%		¹³⁷ Cs	1.9E-02 $\pm$ 190%
	¹⁴⁴ Ce	-6.9E-02 $\pm$ 480%		¹⁴⁴ Ce	5.3E-02 $\pm$ 400%
	¹⁵² Eu	-1.1E-01 $\pm$ 160%		¹⁵² Eu	-3.4E-02 $\pm$ 300%
	¹⁵⁴ Eu	-2.0E-03 $\pm$ >999%		¹⁵⁴ Eu	7.3E-02 $\pm$ 190%
	¹⁵⁵ Eu	-8.2E-02 $\pm$ 190%		¹⁵⁵ Eu	-4.0E-02 $\pm$ 290%
	²³⁴ U	2.0E-03 $\pm$ 51%		²³⁴ U	1.3E-02 $\pm$ 43%
	²³⁵ U	6.4E-04 $\pm$ 110%		²³⁵ U	4.8E-03 $\pm$ 80%
	²³⁸ U	1.1E-03 $\pm$ 68%		²³⁸ U	1.1E-02 $\pm$ 42%
	²³⁸ Pu	-7.5E-04 $\pm$ 430%		²³⁸ Pu	-5.0E-03 $\pm$ 130%
	^{239,240} Pu	7.5E-04 $\pm$ 200%		^{239,240} Pu	2.7E-03 $\pm$ 83%

Table 4-9 1998 Vegetation Sampling Results, 100-N Area (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
Y710	⁶⁰ Co	-3.1E-02 $\pm$ 140%	Y711	⁶⁰ Co	1.9E+00 $\pm$ 9%
	⁶⁵ Zn	4.1E-02 $\pm$ 200%		⁶⁵ Zn	-6.5E-02 $\pm$ 130%
	⁹⁰ Sr	5.0E-01 $\pm$ 20%		⁹⁰ Sr	5.0E-01 $\pm$ 20%
	¹⁰³ Ru	-2.4E-02 $\pm$ 140%		¹⁰³ Ru	5.8E-04 $\pm$ >999%
	¹⁰⁶ Ru	1.8E-01 $\pm$ 200%		¹⁰⁶ Ru	2.1E-01 $\pm$ 150%
	¹¹³ Sn	-3.3E-03 $\pm$ >999%		¹¹³ Sn	-4.8E-02 $\pm$ 100%
	¹²⁵ Sb	2.1E-02 $\pm$ 480%		¹²⁵ Sb	-2.0E-02 $\pm$ 440%
	¹³⁴ Cs	-1.4E-02 $\pm$ 260%		¹³⁴ Cs	-3.5E-02 $\pm$ 110%
	¹³⁷ Cs	6.1E-03 $\pm$ 550%		¹³⁷ Cs	1.4E-01 $\pm$ 39%
	¹⁴⁴ Ce	-2.7E-02 $\pm$ 790%		¹⁴⁴ Ce	1.4E-01 $\pm$ 160%
	¹⁵² Eu	-2.9E-02 $\pm$ 330%		¹⁵² Eu	-4.9E-04 $\pm$ >999%
	¹⁵⁴ Eu	-8.2E-02 $\pm$ 130%		¹⁵⁴ Eu	-4.1E-02 $\pm$ 250%
	¹⁵⁵ Eu	-5.2E-03 $\pm$ >999%		¹⁵⁵ Eu	4.1E-03 $\pm$ >999%
	²³⁴ U	1.1E-02 $\pm$ 43%		²³⁴ U	1.3E-02 $\pm$ 38%
	²³⁵ U	6.0E-03 $\pm$ 71%		²³⁵ U	4.9E-03 $\pm$ 75%
	²³⁸ U	9.5E-03 $\pm$ 46%		²³⁸ U	5.4E-03 $\pm$ 58%
	²³⁸ Pu	-9.8E-04 $\pm$ 710%		²³⁸ Pu	3.4E-03 $\pm$ 180%
	^{239,240} Pu	-9.8E-04 $\pm$ 200%		^{239,240} Pu	4.3E-04 $\pm$ 200%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
Y718	⁶⁰ Co	-9.0E-03 $\pm$ 100%	Y719	⁶⁰ Co	1.1E-02 $\pm$ 160%
	⁶⁵ Zn	3.4E-03 $\pm$ 590%		⁶⁵ Zn	-8.2E-02 $\pm$ 100%
	⁹⁰ Sr	1.2E+01 $\pm$ 12%		⁹⁰ Sr	1.1E+01 $\pm$ 12%
	¹⁰³ Ru	-4.3E-03 $\pm$ 220%		¹⁰³ Ru	-1.9E-03 $\pm$ 920%
	¹⁰⁶ Ru	4.8E-03 $\pm$ >999%		¹⁰⁶ Ru	3.8E-02 $\pm$ 420%
	¹¹³ Sn	1.7E-02 $\pm$ 81%		¹¹³ Sn	-1.1E-03 $\pm$ >999%
	¹²⁵ Sb	-1.1E-02 $\pm$ 240%		¹²⁵ Sb	2.1E-02 $\pm$ 230%
	¹³⁴ Cs	-5.9E-03 $\pm$ 170%		¹³⁴ Cs	-1.1E-02 $\pm$ 170%
	¹³⁷ Cs	7.1E-03 $\pm$ 150%		¹³⁷ Cs	1.9E-02 $\pm$ 110%
	¹⁴⁴ Ce	4.6E-02 $\pm$ 160%		¹⁴⁴ Ce	-1.1E-01 $\pm$ 110%
	¹⁵² Eu	-1.5E-02 $\pm$ 200%		¹⁵² Eu	-3.1E-02 $\pm$ 180%
	¹⁵⁴ Eu	-1.1E-02 $\pm$ 230%		¹⁵⁴ Eu	-2.6E-02 $\pm$ 200%
	¹⁵⁵ Eu	2.1E-02 $\pm$ 170%		¹⁵⁵ Eu	6.8E-02 $\pm$ 95%
	²³⁴ U	3.1E-03 $\pm$ 42%		²³⁴ U	3.3E-02 $\pm$ 26%
	²³⁵ U	1.4E-03 $\pm$ 67%		²³⁵ U	7.5E-03 $\pm$ 61%
	²³⁸ U	2.7E-03 $\pm$ 44%		²³⁸ U	2.4E-02 $\pm$ 30%
	²³⁸ Pu	-1.6E-04 $\pm$ 770%		²³⁸ Pu	-6.7E-03 $\pm$ 130%
	^{239,240} Pu	6.2E-04 $\pm$ 120%		^{239,240} Pu	1.5E-03 $\pm$ 180%

Table 4-9 1998 Vegetation Sampling Results, 100-N Area (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error
Y724	⁶⁰ Co	6.8E-02 $\pm$ 68%
	⁶⁵ Zn	-1.6E-01 $\pm$ 100%
	⁹⁰ Sr	4.0E+01 $\pm$ 12%
	¹⁰³ Ru	-3.3E-03 $\pm$ 860%
	¹⁰⁶ Ru	-3.4E-01 $\pm$ 100%
	¹¹³ Sn	2.5E-02 $\pm$ 150%
	¹²⁵ Sb	-4.2E-02 $\pm$ 200%
	¹³¹ Cs	-6.8E-03 $\pm$ 420%
	¹³⁷ Cs	4.5E-02 $\pm$ 79%
	¹⁴⁴ Ce	1.2E-01 $\pm$ 170%
	¹⁵² Eu	-7.7E-02 $\pm$ 110%
	¹⁵⁴ Eu	4.4E-02 $\pm$ 170%
	¹⁵⁵ Eu	1.9E-02 $\pm$ 580%
	²³⁴ U	2.1E-02 $\pm$ 32%
	²³⁵ U	5.6E-03 $\pm$ 80%
	²³⁸ U	1.3E-02 $\pm$ 40%
	²³⁸ Pu	-1.9E-03 $\pm$ 360%
	^{239,240} Pu	2.8E-03 $\pm$ 83%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V002	⁶⁰ Co	-1.5E-02 $\pm$ 400%	V004	⁶⁰ Co	-1.7E-02 $\pm$ 320%
	⁶⁵ Zn	1.1E-01 $\pm$ 120%		⁶⁵ Zn	1.1E-01 $\pm$ 110%
	⁹⁰ Sr	4.8E-01 $\pm$ 20%		⁹⁰ Sr	-3.5E-02 $\pm$ 120%
	¹⁰³ Ru	-3.4E-02 $\pm$ 170%		¹⁰³ Ru	-2.2E-02 $\pm$ 250%
	¹⁰⁶ Ru	-2.5E-02 $\pm$ >999%		¹⁰⁶ Ru	-1.5E-01 $\pm$ 310%
	¹¹³ Sn	-2.9E-02 $\pm$ 240%		¹¹³ Sn	-4.2E-02 $\pm$ 150%
	¹²⁵ Sb	2.3E-02 $\pm$ 620%		¹²⁵ Sb	-1.2E-01 $\pm$ 120%
	¹³⁴ Cs	1.8E-02 $\pm$ 320%		¹³⁴ Cs	5.2E-02 $\pm$ 110%
	¹³⁷ Cs	2.5E-01 $\pm$ 40%		¹³⁷ Cs	5.8E-02 $\pm$ 97%
	¹⁴⁴ Ce	4.7E-02 $\pm$ 750%		¹⁴⁴ Ce	-1.7E-01 $\pm$ 190%
	¹⁵² Eu	1.1E-01 $\pm$ 140%		¹⁵² Eu	5.3E-02 $\pm$ 270%
	¹⁵⁴ Eu	-3.3E-02 $\pm$ 470%		¹⁵⁴ Eu	-1.4E-01 $\pm$ 110%
	¹⁵⁵ Eu	6.2E-02 $\pm$ 280%		¹⁵⁵ Eu	-3.6E-02 $\pm$ 480%
	²³⁴ U	4.2E-02 $\pm$ 26%		²³⁴ U	1.1E-02 $\pm$ 46%
	²³⁵ U	1.3E-02 $\pm$ 46%		²³⁵ U	6.0E-03 $\pm$ 80%
	²³⁸ U	1.1E-02 $\pm$ 48%		²³⁸ U	8.7E-03 $\pm$ 53%
	²³⁸ Pu	-5.7E-04 $\pm$ 660%		²³⁸ Pu	6.2E-03 $\pm$ 81%
	^{239,240} Pu	1.1E-03 $\pm$ 140%		^{239,240} Pu	3.4E-03 $\pm$ 96%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V006	⁶⁰ Co	6.0E-03 $\pm$ 650%	V008	⁶⁰ Co	-1.4E-02 $\pm$ 380%
	⁶⁵ Zn	-1.7E-02 $\pm$ 580%		⁶⁵ Zn	-3.1E-02 $\pm$ 420%
	⁹⁰ Sr	-1.9E-02 $\pm$ 220%		⁹⁰ Sr	-3.3E-02 $\pm$ 140%
	¹⁰³ Ru	-3.6E-02 $\pm$ 120%		¹⁰³ Ru	-2.1E-02 $\pm$ 240%
	¹⁰⁶ Ru	1.0E-01 $\pm$ 370%		¹⁰⁶ Ru	2.1E-01 $\pm$ 220%
	¹¹³ Sn	-1.7E-02 $\pm$ 280%		¹¹³ Sn	-3.4E-02 $\pm$ 200%
	¹²⁵ Sb	6.5E-02 $\pm$ 160%		¹²⁵ Sb	2.6E-02 $\pm$ 510%
	¹³⁴ Cs	1.2E-02 $\pm$ 300%		¹³⁴ Cs	1.5E-02 $\pm$ 370%
	¹³⁷ Cs	-2.5E-02 $\pm$ 160%		¹³⁷ Cs	-1.4E-03 $\pm$ >999%
	¹⁴⁴ Ce	-1.3E-01 $\pm$ 210%		¹⁴⁴ Ce	-2.4E-01 $\pm$ 120%
	¹⁵² Eu	2.2E-03 $\pm$ >999%		¹⁵² Eu	4.3E-02 $\pm$ 300%
	¹⁵⁴ Eu	-3.8E-02 $\pm$ 310%		¹⁵⁴ Eu	3.5E-02 $\pm$ 500%
	¹⁵⁵ Eu	7.0E-02 $\pm$ 180%		¹⁵⁵ Eu	1.1E-01 $\pm$ 150%
	²³⁴ U	1.7E-02 $\pm$ 36%		²³⁴ U	9.4E-03 $\pm$ 50%
	²³⁵ U	5.0E-03 $\pm$ 74%		²³⁵ U	5.7E-03 $\pm$ 70%
	²³⁸ U	1.2E-02 $\pm$ 42%		²³⁸ U	7.3E-03 $\pm$ 58%
	²³⁸ Pu	-2.6E-03 $\pm$ 140%		²³⁸ Pu	5.5E-03 $\pm$ 90%
	^{239,240} Pu	5.7E-03 $\pm$ 76%		^{239,240} Pu	6.1E-02 $\pm$ 23%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V010	⁶⁰ Co	5.1E-03 $\pm$ 430%	V012	⁶⁰ Co	6.9E-02 $\pm$ 120%
	⁶⁵ Zn	-4.0E-03 $\pm$ >999%		⁶⁵ Zn	-6.6E-02 $\pm$ 130%
	⁹⁰ Sr	3.1E-02 $\pm$ 150%		⁹⁰ Sr	3.9E-02 $\pm$ 130%
	¹⁰³ Ru	2.3E-03 $\pm$ >999%		¹⁰³ Ru	1.4E-02 $\pm$ 300%
	¹⁰⁶ Ru	3.8E-02 $\pm$ 540%		¹⁰⁶ Ru	-1.2E-01 $\pm$ 290%
	¹¹³ Sn	-1.4E-02 $\pm$ 240%		¹¹³ Sn	-2.3E-02 $\pm$ 210%
	¹²⁵ Sb	-1.1E-02 $\pm$ 520%		¹²⁵ Sb	-4.6E-02 $\pm$ 220%
	¹³⁴ Cs	9.3E-03 $\pm$ 260%		¹³⁴ Cs	2.8E-02 $\pm$ 140%
	¹³⁷ Cs	3.3E-02 $\pm$ 87%		¹³⁷ Cs	2.5E-02 $\pm$ 160%
	¹⁴⁴ Ce	-1.2E-01 $\pm$ 160%		¹⁴⁴ Ce	2.0E-01 $\pm$ 140%
	¹⁵² Eu	2.2E-03 $\pm$ >999%		¹⁵² Eu	-5.0E-03 $\pm$ >999%
	¹⁵⁴ Eu	-5.7E-02 $\pm$ 120%		¹⁵⁴ Eu	2.6E-03 $\pm$ >999%
	¹⁵⁵ Eu	-4.0E-02 $\pm$ 200%		¹⁵⁵ Eu	7.7E-02 $\pm$ 180%
	²³⁴ U	8.3E-03 $\pm$ 50%		²³⁴ U	1.3E-02 $\pm$ 42%
	²³⁵ U	6.0E-03 $\pm$ 63%		²³⁵ U	2.7E-03 $\pm$ 140%
	²³⁸ U	7.4E-03 $\pm$ 53%		²³⁸ U	7.9E-03 $\pm$ 56%
	²³⁸ Pu	5.0E-03 $\pm$ 90%		²³⁸ Pu	3.1E-03 $\pm$ 110%
	^{239,240} Pu	2.9E-03 $\pm$ 77%		^{239,240} Pu	4.4E-04 $\pm$ 450%

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V016	⁶⁰ Co	-1.4E-03 $\pm$ >999%	V018	⁶⁰ Co	4.3E-03 $\pm$ >999%
	⁶⁵ Zn	3.5E-02 $\pm$ 340%		⁶⁵ Zn	-4.5E-02 $\pm$ 380%
	⁹⁰ Sr	4.0E-03 $\pm$ >999%		⁹⁰ Sr	6.8E-02 $\pm$ 70%
	¹⁰³ Ru	2.3E-02 $\pm$ 210%		¹⁰³ Ru	-2.6E-02 $\pm$ 270%
	¹⁰⁶ Ru	8.4E-02 $\pm$ 500%		¹⁰⁶ Ru	3.0E-01 $\pm$ 200%
	¹¹³ Sn	2.0E-02 $\pm$ 260%		¹¹³ Sn	4.6E-02 $\pm$ 180%
	¹²⁵ Sb	-4.9E-02 $\pm$ 230%		¹²⁵ Sb	2.1E-02 $\pm$ 770%
	¹³⁴ Cs	3.5E-02 $\pm$ 140%		¹³⁴ Cs	-4.1E-02 $\pm$ 170%
	¹³⁷ Cs	1.1E-02 $\pm$ 410%		¹³⁷ Cs	-2.1E-02 $\pm$ 330%
	¹⁴⁴ Ce	1.1E-02 $\pm$ >999%		¹⁴⁴ Ce	-5.0E-02 $\pm$ 830%
	¹⁵² Eu	-4.2E-02 $\pm$ 280%		¹⁵² Eu	7.1E-02 $\pm$ 240%
	¹⁵⁴ Eu	-4.6E-02 $\pm$ 290%		¹⁵⁴ Eu	-6.4E-02 $\pm$ 320%
	¹⁵⁵ Eu	-4.9E-02 $\pm$ 300%		¹⁵⁵ Eu	1.8E-01 $\pm$ 120%
	²³⁴ U	1.2E-02 $\pm$ 41%		²³⁴ U	2.1E-02 $\pm$ 36%
	²³⁵ U	4.3E-03 $\pm$ 94%		²³⁵ U	1.2E-02 $\pm$ 52%
	²³⁸ U	5.9E-03 $\pm$ 63%		²³⁸ U	1.3E-02 $\pm$ 48%
	²³⁸ Pu	-3.2E-03 $\pm$ 190%		²³⁸ Pu	-3.0E-03 $\pm$ 200%
	^{239,240} Pu	3.2E-02 $\pm$ 25%		^{239,240} Pu	7.0E-04 $\pm$ 100%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V022	⁶⁰ Co	1.7E-02 $\pm$ 100%	V024	⁶⁰ Co	-2.2E-02 $\pm$ 100%
	⁶⁵ Zn	-2.2E-02 $\pm$ 230%		⁶⁵ Zn	-7.7E-02 $\pm$ 100%
	⁹⁰ Sr	5.6E-02 $\pm$ 90%		⁹⁰ Sr	7.8E-02 $\pm$ 60%
	¹⁰³ Ru	-5.4E-03 $\pm$ 340%		¹⁰³ Ru	4.3E-03 $\pm$ 500%
	¹⁰⁶ Ru	2.4E-02 $\pm$ 670%		¹⁰⁶ Ru	8.2E-02 $\pm$ 250%
	¹¹³ Sn	9.6E-04 $\pm$ >999%		¹¹³ Sn	-8.1E-04 $\pm$ >999%
	¹²⁵ Sb	-3.4E-02 $\pm$ 150%		¹²⁵ Sb	-1.0E-02 $\pm$ 630%
	¹³⁴ Cs	3.8E-04 $\pm$ >999%		¹³⁴ Cs	2.1E-02 $\pm$ 110%
	¹³⁷ Cs	4.7E-02 $\pm$ 65%		¹³⁷ Cs	5.3E-03 $\pm$ 440%
	¹⁴⁴ Ce	-3.0E-02 $\pm$ 430%		¹⁴⁴ Ce	5.6E-03 $\pm$ >999%
	¹⁵² Eu	-2.2E-02 $\pm$ 250%		¹⁵² Eu	-3.2E-02 $\pm$ 200%
	¹⁵⁴ Eu	-2.9E-02 $\pm$ 200%		¹⁵⁴ Eu	3.0E-02 $\pm$ 230%
	¹⁵⁵ Eu	6.0E-02 $\pm$ 100%		¹⁵⁵ Eu	-1.9E-02 $\pm$ 400%
	²³⁴ U	3.6E-02 $\pm$ 26%		²³⁴ U	2.9E-02 $\pm$ 28%
	²³⁵ U	2.0E-02 $\pm$ 36%		²³⁵ U	1.3E-02 $\pm$ 43%
	²³⁸ U	2.1E-02 $\pm$ 34%		²³⁸ U	6.3E-03 $\pm$ 67%
	²³⁸ Pu	1.6E-03 $\pm$ 280%		²³⁸ Pu	-4.8E-04 $\pm$ 530%
	^{239,240} Pu	7.0E-03 $\pm$ 58%		^{239,240} Pu	9.6E-04 $\pm$ 140%

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V026	⁶⁰ Co	-1.3E-02 $\pm$ 350%	V030	⁶⁰ Co	2.1E-02 $\pm$ 180%
	⁶⁵ Zn	-5.0E-02 $\pm$ 210%		⁶⁵ Zn	-1.7E-02 $\pm$ 690%
	⁹⁰ Sr	5.8E-02 $\pm$ 85%		⁹⁰ Sr	1.0E-02 $\pm$ 400%
	¹⁰³ Ru	3.9E-02 $\pm$ 110%		¹⁰³ Ru	4.3E-02 $\pm$ 91%
	¹⁰⁶ Ru	-3.8E-01 $\pm$ 110%		¹⁰⁶ Ru	-3.0E-02 $\pm$ >999%
	¹¹³ Sn	2.3E-02 $\pm$ 230%		¹¹³ Sn	3.2E-03 $\pm$ >999%
	¹²⁵ Sb	-6.2E-02 $\pm$ 190%		¹²⁵ Sb	6.9E-03 $\pm$ >999%
	¹³⁴ Cs	-2.8E-02 $\pm$ 180%		¹³⁴ Cs	-9.3E-04 $\pm$ >999%
	¹³⁷ Cs	-9.8E-03 $\pm$ 490%		¹³⁷ Cs	2.9E-02 $\pm$ 140%
	¹⁴⁴ Ce	7.0E-01 $\pm$ 73%		¹⁴⁴ Ce	1.8E-01 $\pm$ 140%
	¹⁵² Eu	-5.3E-02 $\pm$ 220%		¹⁵² Eu	-2.6E-02 $\pm$ 420%
	¹⁵⁴ Eu	-7.9E-02 $\pm$ 180%		¹⁵⁴ Eu	4.7E-02 $\pm$ 230%
	¹⁵⁵ Eu	-1.5E-02 $\pm$ 820%		¹⁵⁵ Eu	-9.3E-02 $\pm$ 140%
	²³⁴ U	2.1E-02 $\pm$ 37%		²³⁴ U	3.2E-02 $\pm$ 31%
	²³⁵ U	1.0E-02 $\pm$ 49%		²³⁵ U	9.0E-03 $\pm$ 71%
	²³⁸ U	1.1E-02 $\pm$ 50%		²³⁸ U	2.1E-02 $\pm$ 37%
	²³⁸ Pu	-5.2E-04 $\pm$ 830%		²³⁸ Pu	1.3E-03 $\pm$ 350%
	^{239,240} Pu	4.2E-03 $\pm$ 72%		^{239,240} Pu	5.3E-03 $\pm$ 72%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V032	⁶⁰ Co	1.8E-02 $\pm$ 230%	V034	⁶⁰ Co	-3.1E-03 $\pm$ 800%
	⁶⁵ Zn	-9.3E-02 $\pm$ 130%		⁶⁵ Zn	-1.2E-01 $\pm$ 100%
	⁹⁰ Sr	-2.0E-02 $\pm$ 240%		⁹⁰ Sr	7.5E-01 $\pm$ 17%
	¹⁰³ Ru	-2.0E-02 $\pm$ 210%		¹⁰³ Ru	-7.3E-03 $\pm$ 390%
	¹⁰⁶ Ru	-3.3E-01 $\pm$ 120%		¹⁰⁶ Ru	-4.1E-02 $\pm$ 560%
	¹¹³ Sn	4.9E-03 $\pm$ >999%		¹¹³ Sn	6.7E-03 $\pm$ 510%
	¹²⁵ Sb	8.1E-02 $\pm$ 130%		¹²⁵ Sb	-2.1E-02 $\pm$ 330%
	¹³⁴ Cs	2.1E-02 $\pm$ 210%		¹³⁴ Cs	-1.9E-02 $\pm$ 140%
	¹³⁷ Cs	6.1E-02 $\pm$ 68%		¹³⁷ Cs	4.9E-01 $\pm$ 17%
	¹⁴⁴ Ce	-6.7E-02 $\pm$ 390%		¹⁴⁴ Ce	-7.7E-02 $\pm$ 280%
	¹⁵² Eu	5.1E-02 $\pm$ 220%		¹⁵² Eu	3.7E-02 $\pm$ 220%
	¹⁵⁴ Eu	-1.2E-01 $\pm$ 110%		¹⁵⁴ Eu	-2.7E-03 $\pm$ >999%
	¹⁵⁵ Eu	-8.0E-02 $\pm$ 180%		¹⁵⁵ Eu	-2.2E-02 $\pm$ 400%
	²³⁴ U	2.3E-02 $\pm$ 36%		²³⁴ U	1.5E-02 $\pm$ 40%
	²³⁵ U	8.3E-03 $\pm$ 56%		²³⁵ U	5.8E-03 $\pm$ 65%
	²³⁸ U	8.8E-03 $\pm$ 61%		²³⁸ U	1.6E-02 $\pm$ 40%
²³⁸ Pu	²³⁸ Pu	5.4E-03 $\pm$ 140%		²³⁸ Pu	4.7E-04 $\pm$ 660%
	^{239,240} Pu	1.8E-02 $\pm$ 37%		^{239,240} Pu	2.4E-02 $\pm$ 32%

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V036	⁶⁰ Co	2.8E-03 $\pm$ >999%	V038	⁶⁰ Co	1.2E-02 $\pm$ 410%
	⁶⁵ Zn	9.1E-02 $\pm$ 140%		⁶⁵ Zn	-6.5E-02 $\pm$ 180%
	⁹⁰ Sr	2.5E-02 $\pm$ 180%		⁹⁰ Sr	-3.6E-03 $\pm$ >999%
	¹⁰³ Ru	1.8E-02 $\pm$ 280%		¹⁰³ Ru	-2.1E-02 $\pm$ 240%
	¹⁰⁶ Ru	-4.7E-01 $\pm$ 100%		¹⁰⁶ Ru	-1.3E-01 $\pm$ 320%
	¹¹³ Sn	-7.4E-03 $\pm$ 850%		¹¹³ Sn	6.6E-03 $\pm$ 820%
	¹²⁵ Sb	-2.7E-02 $\pm$ 450%		¹²⁵ Sb	-5.0E-02 $\pm$ 260%
	¹³⁴ Cs	-4.4E-02 $\pm$ 120%		¹³⁴ Cs	-1.7E-02 $\pm$ 280%
	¹³⁷ Cs	3.4E-02 $\pm$ 150%		¹³⁷ Cs	7.2E-02 $\pm$ 66%
	¹⁴⁴ Ce	1.2E-01 $\pm$ 250%		¹⁴⁴ Ce	-1.9E-02 $\pm$ >999%
	¹⁵² Eu	3.4E-02 $\pm$ 400%		¹⁵² Eu	1.2E-01 $\pm$ 110%
	¹⁵⁴ Eu	-1.0E-02 $\pm$ >999%		¹⁵⁴ Eu	1.3E-01 $\pm$ 120%
	¹⁵⁵ Eu	1.1E-02 $\pm$ >999%		¹⁵⁵ Eu	2.5E-02 $\pm$ 610%
	²³⁴ U	1.3E-02 $\pm$ 44%		²³⁴ U	1.3E-02 $\pm$ 42%
	²³⁵ U	2.4E-03 $\pm$ 120%		²³⁵ U	5.9E-03 $\pm$ 62%
	²³⁸ U	7.3E-03 $\pm$ 56%		²³⁸ U	1.0E-02 $\pm$ 48%
²³⁸ Pu	²³⁸ Pu	5.0E-04 $\pm$ 100%		²³⁸ Pu	2.0E-03 $\pm$ 170%
	^{239,240} Pu	5.2E-04 $\pm$ 350%		^{239,240} Pu	1.5E-03 $\pm$ 180%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V040	⁶⁰ Co	-2.0E-02 $\pm$ 270%	V042	⁶⁰ Co	4.2E-02 $\pm$ 120%
	⁶⁵ Zn	-1.5E-02 $\pm$ 860%		⁶⁵ Zn	-7.6E-02 $\pm$ 130%
	⁹⁰ Sr	1.0E-02 $\pm$ 500%		⁹⁰ Sr	1.1E-02 $\pm$ 460%
	¹⁰³ Ru	1.5E-01 $\pm$ 120%		¹⁰³ Ru	-2.1E-02 $\pm$ 220%
	¹⁰⁶ Ru	-5.2E-01 $\pm$ 100%		¹⁰⁶ Ru	1.8E-02 $\pm$ >999%
	¹¹³ Sn	-8.4E-02 $\pm$ 100%		¹¹³ Sn	-7.2E-02 $\pm$ 100%
	¹²⁵ Sb	4.0E-02 $\pm$ 350%		¹²⁵ Sb	-4.6E-02 $\pm$ 240%
	¹³⁴ Cs	9.6E-03 $\pm$ 540%		¹³⁴ Cs	3.9E-02 $\pm$ 120%
	¹³⁷ Cs	-1.7E-03 $\pm$ >999%		¹³⁷ Cs	6.2E-02 $\pm$ 77%
	¹⁴⁴ Ce	-1.5E-01 $\pm$ 200%		¹⁴⁴ Ce	2.9E-01 $\pm$ 97%
	¹⁵² Eu	3.5E-02 $\pm$ 360%		¹⁵² Eu	3.5E-02 $\pm$ 350%
	¹⁵⁴ Eu	8.3E-03 $\pm$ >999%		¹⁵⁴ Eu	1.5E-02 $\pm$ 880%
	¹⁵⁵ Eu	-2.6E-02 $\pm$ 620%		¹⁵⁵ Eu	-1.3E-01 $\pm$ 140%
	²³⁴ U	1.5E-02 $\pm$ 52%		²³⁴ U	1.4E-02 $\pm$ 41%
	²³⁵ U	6.4E-03 $\pm$ 68%		²³⁵ U	4.1E-03 $\pm$ 86%
	²³⁸ U	1.8E-02 $\pm$ 36%		²³⁸ U	8.6E-03 $\pm$ 53%
	²³⁸ Pu	1.0E-03 $\pm$ 740%		²³⁸ Pu	5.6E-04 $\pm$ 780%
	^{239,240} Pu	3.6E-02 $\pm$ 26%		^{239,240} Pu	6.0E-04 $\pm$ >999%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V044	⁶⁰ Co	-1.3E-02 $\pm$ 430%	V046	⁶⁰ Co	2.0E-02 $\pm$ 140%
	⁶⁵ Zn	-2.1E-01 $\pm$ 100%		⁶⁵ Zn	4.6E-03 $\pm$ >999%
	⁹⁰ Sr	-1.2E-02 $\pm$ 400%		⁹⁰ Sr	1.4E-01 $\pm$ 45%
	¹⁰³ Ru	-1.4E-02 $\pm$ 400%		¹⁰³ Ru	2.2E-02 $\pm$ 150%
	¹⁰⁶ Ru	2.8E-01 $\pm$ 190%		¹⁰⁶ Ru	-6.7E-04 $\pm$ >999%
	¹¹³ Sn	-5.5E-02 $\pm$ 130%		¹¹³ Sn	1.9E-02 $\pm$ 200%
	¹²⁵ Sb	-1.5E-02 $\pm$ 920%		¹²⁵ Sb	1.7E-02 $\pm$ 500%
	¹³⁴ Cs	5.9E-02 $\pm$ 97%		¹³⁴ Cs	3.1E-03 $\pm$ >999%
	¹³⁷ Cs	5.3E-02 $\pm$ 110%		¹³⁷ Cs	4.0E-02 $\pm$ 86%
	¹⁴⁴ Ce	2.7E-01 $\pm$ 130%		¹⁴⁴ Ce	3.7E-02 $\pm$ 560%
	¹⁵² Eu	-2.0E-02 $\pm$ 830%		¹⁵² Eu	-6.5E-03 $\pm$ >999%
	¹⁵⁴ Eu	6.7E-02 $\pm$ 210%		¹⁵⁴ Eu	-4.0E-02 $\pm$ 220%
	¹⁵⁵ Eu	4.2E-02 $\pm$ 450%		¹⁵⁵ Eu	-1.3E-02 $\pm$ 740%
	²³⁴ U	1.0E-02 $\pm$ 49%		²³⁴ U	2.3E-02 $\pm$ 31%
	²³⁵ U	1.2E-03 $\pm$ 280%		²³⁵ U	5.1E-03 $\pm$ 74%
	²³⁸ U	5.9E-03 $\pm$ 66%		²³⁸ U	1.9E-02 $\pm$ 33%
	²³⁸ Pu	2.7E-03 $\pm$ 160%		²³⁸ Pu	-1.5E-03 $\pm$ 260%
	^{239,240} Pu	3.3E-03 $\pm$ 96%		^{239,240} Pu	1.5E-03 $\pm$ 200%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V048	⁶⁰ Co	8.3E-03 $\pm$ 650%	V050	⁶⁰ Co	1.2E-02 $\pm$ 470%
	⁶⁵ Zn	-1.6E-01 $\pm$ 100%		⁶⁵ Zn	-1.7E-01 $\pm$ 100%
	⁹⁰ Sr	7.2E-02 $\pm$ 80%		⁹⁰ Sr	5.1E-02 $\pm$ 110%
	¹⁰³ Ru	-3.6E-02 $\pm$ 160%		¹⁰³ Ru	-3.3E-02 $\pm$ 140%
	¹⁰⁶ Ru	-6.4E-02 $\pm$ 730%		¹⁰⁶ Ru	-3.1E-02 $\pm$ >999%
	¹¹³ Sn	-6.5E-03 $\pm$ 940%		¹¹³ Sn	-3.5E-02 $\pm$ 160%
	¹²⁵ Sb	9.6E-03 $\pm$ >999%		¹²⁵ Sb	-4.8E-02 $\pm$ 220%
	¹³⁴ Cs	-1.1E-02 $\pm$ 510%		¹³⁴ Cs	6.4E-03 $\pm$ 820%
	¹³⁷ Cs	6.5E-02 $\pm$ 88%		¹³⁷ Cs	-1.4E-03 $\pm$ >999%
	¹⁴⁴ Ce	6.4E-02 $\pm$ 480%		¹⁴⁴ Ce	-2.2E-02 $\pm$ >999%
	¹⁵² Eu	1.7E-02 $\pm$ 870%		¹⁵² Eu	3.5E-02 $\pm$ 320%
	¹⁵⁴ Eu	3.3E-03 $\pm$ >999%		¹⁵⁴ Eu	3.7E-02 $\pm$ 420%
	¹⁵⁵ Eu	7.0E-02 $\pm$ 230%		¹⁵⁵ Eu	-1.1E-02 $\pm$ >999%
	²³⁴ U	7.7E-03 $\pm$ 53%		²³⁴ U	1.2E-02 $\pm$ 42%
	²³⁵ U	3.7E-03 $\pm$ 86%		²³⁵ U	3.1E-03 $\pm$ 94%
	²³⁸ U	8.7E-03 $\pm$ 50%		²³⁸ U	7.5E-03 $\pm$ 53%
	²³⁸ Pu	-2.3E-03 $\pm$ 130%		²³⁸ Pu	1.1E-03 $\pm$ 420%
	^{239,240} Pu	2.3E-03 $\pm$ 130%		^{239,240} Pu	1.6E-03 $\pm$ 120%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V052	⁶⁰ Co	1.6E-02 $\pm$ 300%	V054	⁶⁰ Co	4.8E-03 $\pm$ 950%
	⁶⁵ Zn	-1.4E-01 $\pm$ 100%		⁶⁵ Zn	-9.8E-02 $\pm$ 110%
	⁹⁰ Sr	2.2E-02 $\pm$ 240%		⁹⁰ Sr	-5.0E-02 $\pm$ 110%
	¹⁰³ Ru	-1.9E-02 $\pm$ 240%		¹⁰³ Ru	-6.6E-03 $\pm$ 730%
	¹⁰⁶ Ru	-1.5E-01 $\pm$ 300%		¹⁰⁶ Ru	-1.9E-01 $\pm$ 210%
	¹¹³ Sn	-3.2E-02 $\pm$ 220%		¹¹³ Sn	-6.1E-03 $\pm$ 890%
	¹²⁵ Sb	1.7E-01 $\pm$ 56%		¹²⁵ Sb	5.1E-02 $\pm$ 220%
	¹³⁴ Cs	-1.1E-02 $\pm$ 410%		¹³⁴ Cs	1.9E-02 $\pm$ 230%
	¹³⁷ Cs	9.8E-02 $\pm$ 54%		¹³⁷ Cs	1.1E-01 $\pm$ 51%
	¹⁴⁴ Ce	-2.0E-01 $\pm$ 130%		¹⁴⁴ Ce	1.3E-03 $\pm$ >999%
	¹⁵² Eu	1.2E-01 $\pm$ 99%		¹⁵² Eu	1.3E-02 $\pm$ 970%
	¹⁵⁴ Eu	2.4E-03 $\pm$ >999%		¹⁵⁴ Eu	-2.1E-02 $\pm$ 650%
	¹⁵⁵ Eu	4.4E-02 $\pm$ 320%		¹⁵⁵ Eu	-8.2E-02 $\pm$ 190%
	²³⁴ U	8.5E-03 $\pm$ 54%		²³⁴ U	8.4E-03 $\pm$ 54%
	²³⁵ U	2.2E-03 $\pm$ 170%		²³⁵ U	2.0E-03 $\pm$ 200%
	²³⁸ U	4.5E-03 $\pm$ 80%		²³⁸ U	4.2E-03 $\pm$ 86%
	²³⁸ Pu	1.0E-03 $\pm$ 320%		²³⁸ Pu	4.8E-03 $\pm$ 30%
	^{239,240} Pu	1.5E-03 $\pm$ 180%		^{239,240} Pu	2.8E-02 $\pm$ 31%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V056	⁶⁰ Co	1.4E-02 $\pm$ 340%	V058	⁶⁰ Co	5.9E-03 $\pm$ 770%
	⁶⁵ Zn	-3.5E-02 $\pm$ 340%		⁶⁵ Zn	-2.3E-01 $\pm$ 100%
	⁹⁰ Sr	9.0E-02 $\pm$ 65%		⁹⁰ Sr	1.2E+00 $\pm$ 16%
	¹⁰³ Ru	5.9E-03 $\pm$ 850%		¹⁰³ Ru	1.8E-02 $\pm$ 270%
	¹⁰⁶ Ru	-1.3E-01 $\pm$ 330%		¹⁰⁶ Ru	-7.3E-02 $\pm$ 570%
	¹¹³ Sn	1.3E-02 $\pm$ 470%		¹¹³ Sn	-2.6E-02 $\pm$ 200%
	¹²⁵ Sb	-1.1E-01 $\pm$ 110%		¹²⁵ Sb	-2.0E-02 $\pm$ 670%
	¹³⁴ Cs	2.0E-02 $\pm$ 230%		¹³⁴ Cs	2.5E-03 $\pm$ >999%
	¹³⁷ Cs	3.0E-01 $\pm$ 31%		¹³⁷ Cs	2.1E-01 $\pm$ 42%
	¹⁴⁴ Ce	-2.3E-01 $\pm$ 120%		¹⁴⁴ Ce	-8.3E-02 $\pm$ 350%
	¹⁵² Eu	3.3E-02 $\pm$ 370%		¹⁵² Eu	4.1E-02 $\pm$ 320%
	¹⁵⁴ Eu	-1.3E-01 $\pm$ 100%		¹⁵⁴ Eu	-2.9E-02 $\pm$ 460%
	¹⁵⁵ Eu	5.8E-02 $\pm$ 270%		¹⁵⁵ Eu	-4.3E-02 $\pm$ 330%
	²³⁴ U	6.6E-03 $\pm$ 70%		²³⁴ U	8.2E-03 $\pm$ 53%
	²³⁵ U	2.9E-03 $\pm$ 120%		²³⁵ U	5.6E-03 $\pm$ 80%
	²³⁸ U	6.6E-03 $\pm$ 70%		²³⁸ U	6.1E-03 $\pm$ 63%
	²³⁸ Pu	7.0E-04 $\pm$ 100%		²³⁸ Pu	9.0E-03 $\pm$ 85%
	^{239,240} Pu	3.3E-03 $\pm$ 90%		^{239,240} Pu	2.0E-03 $\pm$ 100%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V060	⁶⁰ Co	1.5E-02 $\pm$ 260%	V062	⁶⁰ Co	1.2E-02 $\pm$ 330%
	⁶⁵ Zn	-1.0E-01 $\pm$ 100%		⁶⁵ Zn	-8.2E-02 $\pm$ 130%
	⁹⁰ Sr	1.3E-01 $\pm$ 52%		⁹⁰ Sr	-7.2E-02 $\pm$ 100%
	¹⁰³ Ru	-1.5E-02 $\pm$ 260%		¹⁰³ Ru	-2.5E-02 $\pm$ 190%
	¹⁰⁶ Ru	8.5E-02 $\pm$ 410%		¹⁰⁶ Ru	3.8E-01 $\pm$ 110%
	¹¹³ Sn	-3.0E-02 $\pm$ 170%		¹¹³ Sn	1.5E-02 $\pm$ 390%
	¹²⁵ Sb	3.3E-02 $\pm$ 260%		¹²⁵ Sb	-1.3E-02 $\pm$ 830%
	¹³⁴ Cs	-9.3E-03 $\pm$ 410%		¹³⁴ Cs	1.2E-02 $\pm$ 350%
	¹³⁷ Cs	4.8E-02 $\pm$ 79%		¹³⁷ Cs	6.6E-02 $\pm$ 76%
	¹⁴⁴ Ce	-3.6E-02 $\pm$ 560%		¹⁴⁴ Ce	-2.0E-01 $\pm$ 150%
	¹⁵² Eu	-6.9E-02 $\pm$ 140%		¹⁵² Eu	5.4E-02 $\pm$ 230%
	¹⁵⁴ Eu	-7.7E-03 $\pm$ >999%		¹⁵⁴ Eu	5.6E-02 $\pm$ 210%
	¹⁵⁵ Eu	-1.9E-02 $\pm$ 540%		¹⁵⁵ Eu	5.4E-02 $\pm$ 300%
	²³⁴ U	1.1E-02 $\pm$ 47%		²³⁴ U	1.3E-02 $\pm$ 41%
	²³⁵ U	4.3E-03 $\pm$ 86%		²³⁵ U	2.7E-03 $\pm$ 110%
	²³⁸ U	9.5E-03 $\pm$ 49%		²³⁸ U	1.2E-02 $\pm$ 43%
	²³⁸ Pu	-2.2E-03 $\pm$ 410%		²³⁸ Pu	-1.8E-03 $\pm$ 380%
	^{239,240} Pu	5.6E-04 $\pm$ 350%		^{239,240} Pu	-4.6E-04 $\pm$ 350%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V064	⁶⁰ Co	1.1E-02 $\pm$ 310%	V066	⁶⁰ Co	4.2E-02 $\pm$ 120%
	⁶⁵ Zn	-7.4E-02 $\pm$ 120%		⁶⁵ Zn	-5.6E-04 $\pm$ >999%
	⁹⁰ Sr	2.7E-01 $\pm$ 30%		⁹⁰ Sr	3.8E-02 $\pm$ 140%
	¹⁰³ Ru	3.8E-02 $\pm$ 110%		¹⁰³ Ru	-4.4E-02 $\pm$ 120%
	¹⁰⁶ Ru	-1.0E-01 $\pm$ 310%		¹⁰⁶ Ru	1.4E-01 $\pm$ 360%
	¹¹³ Sn	-3.2E-02 $\pm$ 150%		¹¹³ Sn	4.2E-04 $\pm$ >999%
	¹²⁵ Sb	9.3E-02 $\pm$ 100%		¹²⁵ Sb	-1.2E-01 $\pm$ 140%
	¹³⁴ Cs	2.5E-02 $\pm$ 150%		¹³⁴ Cs	4.0E-02 $\pm$ 140%
	¹³⁷ Cs	8.3E-03 $\pm$ 480%		¹³⁷ Cs	1.2E-02 $\pm$ 470%
	¹⁴⁴ Ce	1.1E-01 $\pm$ 200%		¹⁴⁴ Ce	-1.1E-01 $\pm$ 300%
	¹⁵² Eu	-3.5E-03 $\pm$ >999%		¹⁵² Eu	6.3E-02 $\pm$ 240%
	¹⁵⁴ Eu	-1.2E-02 $\pm$ 890%		¹⁵⁴ Eu	-4.6E-02 $\pm$ 340%
	¹⁵⁵ Eu	-2.5E-02 $\pm$ 500%		¹⁵⁵ Eu	2.5E-02 $\pm$ 750%
	²³⁴ U	9.2E-03 $\pm$ 50%		²³⁴ U	1.1E-02 $\pm$ 49%
	²³⁵ U	7.3E-03 $\pm$ 60%		²³⁵ U	3.4E-03 $\pm$ 130%
	²³⁸ U	6.2E-03 $\pm$ 63%		²³⁸ U	8.4E-03 $\pm$ 56%
	²³⁸ Pu	1.1E-03 $\pm$ 680%		²³⁸ Pu	6.3E-03 $\pm$ 120%
	^{239,240} Pu	1.1E-03 $\pm$ 140%		^{239,240} Pu	3.3E-02 $\pm$ 26%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V068	⁶⁰ Co	-9.8E-03 $\pm$ 520%	V074	⁶⁰ Co	2.2E-02 $\pm$ 180%
	⁶⁵ Zn	-1.2E-01 $\pm$ 100%		⁶⁵ Zn	2.6E-02 $\pm$ 360%
	⁹⁰ Sr	4.8E-02 $\pm$ 110%		⁹⁰ Sr	4.5E-01 $\pm$ 20%
	¹⁰³ Ru	2.5E-02 $\pm$ 230%		¹⁰³ Ru	2.8E-02 $\pm$ 120%
	¹⁰⁶ Ru	6.3E-02 $\pm$ 730%		¹⁰⁶ Ru	-1.3E-01 $\pm$ 270%
	¹¹³ Sn	-1.9E-02 $\pm$ 340%		¹¹³ Sn	-5.3E-03 $\pm$ 820%
	¹²⁵ Sb	7.6E-03 $\pm$ >999%		¹²⁵ Sb	-1.6E-02 $\pm$ 630%
	¹³⁴ Cs	2.6E-02 $\pm$ 190%		¹³⁴ Cs	-1.1E-02 $\pm$ 410%
	¹³⁷ Cs	2.7E-02 $\pm$ 180%		¹³⁷ Cs	1.5E-01 $\pm$ 41%
	¹⁴⁴ Ce	2.0E-01 $\pm$ 170%		¹⁴⁴ Ce	2.0E-01 $\pm$ 100%
	¹⁵² Eu	-2.4E-02 $\pm$ 560%		¹⁵² Eu	-7.4E-02 $\pm$ 140%
	¹⁵⁴ Eu	-4.8E-02 $\pm$ 340%		¹⁵⁴ Eu	6.6E-02 $\pm$ 180%
	¹⁵⁵ Eu	-9.1E-02 $\pm$ 190%		¹⁵⁵ Eu	8.8E-02 $\pm$ 130%
	²³⁴ U	1.1E-02 $\pm$ 46%		²³⁴ U	1.1E-02 $\pm$ 46%
	²³⁵ U	6.1E-04 $\pm$ 530%		²³⁵ U	2.2E-03 $\pm$ 120%
	²³⁸ U	5.6E-03 $\pm$ 70%		²³⁸ U	9.5E-03 $\pm$ 49%
	²³⁸ Pu	-4.4E-03 $\pm$ 200%		²³⁸ Pu	3.9E-03 $\pm$ 120%
	^{239,240} Pu	1.9E-03 $\pm$ 150%		^{239,240} Pu	2.0E-03 $\pm$ 120%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V076	⁶⁰ Co	-1.4E-03 $\pm$ >999%	V078	⁶⁰ Co	8.4E-03 $\pm$ 360%
	⁶⁵ Zn	-1.0E-01 $\pm$ 100%		⁶⁵ Zn	-7.3E-02 $\pm$ 100%
	⁹⁰ Sr	3.4E-01 $\pm$ 25%		⁹⁰ Sr	8.2E-02 $\pm$ 75%
	¹⁰³ Ru	-2.4E-02 $\pm$ 140%		¹⁰³ Ru	-1.4E-02 $\pm$ 190%
	¹⁰⁶ Ru	2.5E-02 $\pm$ >999%		¹⁰⁶ Ru	-1.3E-01 $\pm$ 250%
	¹¹³ Sn	-1.0E-02 $\pm$ 500%		¹¹³ Sn	7.6E-03 $\pm$ 450%
	¹²⁵ Sb	6.2E-02 $\pm$ 150%		¹²⁵ Sb	8.6E-03 $\pm$ 920%
	¹³⁴ Cs	1.1E-02 $\pm$ 350%		¹³⁴ Cs	-3.1E-02 $\pm$ 100%
	¹³⁷ Cs	4.8E-04 $\pm$ >999%		¹³⁷ Cs	1.8E-02 $\pm$ 170%
	¹⁴⁴ Ce	-9.8E-02 $\pm$ 190%		¹⁴⁴ Ce	-1.2E-01 $\pm$ 150%
	¹⁵² Eu	3.1E-02 $\pm$ 320%		¹⁵² Eu	-3.6E-02 $\pm$ 240%
	¹⁵⁴ Eu	-9.5E-02 $\pm$ 130%		¹⁵⁴ Eu	9.8E-02 $\pm$ 89%
	¹⁵⁵ Eu	1.1E-01 $\pm$ 100%		¹⁵⁵ Eu	3.8E-02 $\pm$ 260%
	²³⁴ U	7.1E-03 $\pm$ 58%		²³⁴ U	1.1E-02 $\pm$ 45%
	²³⁵ U	7.2E-03 $\pm$ 67%		²³⁵ U	1.0E-02 $\pm$ 49%
	²³⁸ U	9.1E-03 $\pm$ 50%		²³⁸ U	1.1E-02 $\pm$ 42%
	²³⁸ Pu	5.9E-04 $\pm$ >999%		²³⁸ Pu	2.6E-03 $\pm$ 190%
	^{239,240} Pu	5.9E-04 $\pm$ 200%		^{239,240} Pu	1.1E-03 $\pm$ 280%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V082	⁶⁰ Co	6.8E-03 $\pm$ >999%	V084	⁶⁰ Co	4.5E-03 $\pm$ 450%
	⁶⁵ Zn	-5.8E-02 $\pm$ 280%		⁶⁵ Zn	6.1E-02 $\pm$ 82%
	⁹⁰ Sr	3.4E-02 $\pm$ 180%		⁹⁰ Sr	4.3E-01 $\pm$ 20%
	¹⁰³ Ru	-6.9E-02 $\pm$ 100%		¹⁰³ Ru	2.2E-03 $\pm$ >999%
	¹⁰⁶ Ru	2.8E-01 $\pm$ 250%		¹⁰⁶ Ru	9.8E-02 $\pm$ 190%
	¹¹³ Sn	1.6E-02 $\pm$ 540%		¹¹³ Sn	-1.7E-02 $\pm$ 170%
	¹²⁵ Sb	4.1E-02 $\pm$ 430%		¹²⁵ Sb	2.8E-02 $\pm$ 220%
	¹³⁴ Cs	-1.1E-02 $\pm$ 700%		¹³⁴ Cs	1.0E-02 $\pm$ 210%
	¹³⁷ Cs	5.1E-02 $\pm$ 130%		¹³⁷ Cs	9.9E-02 $\pm$ 31%
	¹⁴⁴ Ce	2.3E-01 $\pm$ 190%		¹⁴⁴ Ce	-3.8E-02 $\pm$ 360%
	¹⁵² Eu	-1.5E-02 $\pm$ >999%		¹⁵² Eu	9.9E-04 $\pm$ >999%
	¹⁵⁴ Eu	-1.7E-02 $\pm$ >999%		¹⁵⁴ Eu	-4.9E-03 $\pm$ >999%
	¹⁵⁵ Eu	-1.4E-01 $\pm$ 180%		¹⁵⁵ Eu	-3.7E-03 $\pm$ >999%
	²³⁴ U	8.2E-03 $\pm$ 58%		²³⁴ U	1.4E-02 $\pm$ 38%
	²³⁵ U	7.0E-03 $\pm$ 66%		²³⁵ U	5.0E-03 $\pm$ 70%
	²³⁸ U	5.9E-03 $\pm$ 70%		²³⁸ U	9.1E-03 $\pm$ 47%
	²³⁸ Pu	-1.7E-03 $\pm$ 240%		²³⁸ Pu	2.0E-03 $\pm$ 220%
	^{239,240} Pu	-1.1E-03 $\pm$ 200%		^{239,240} Pu	9.7E-04 $\pm$ 140%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V086	⁶⁰ Co	7.0E-03 $\pm$ 530%	V088	⁶⁰ Co	4.2E-02 $\pm$ 100%
	⁶⁵ Zn	-3.6E-02 $\pm$ 240%		⁶⁵ Zn	-6.7E-03 $\pm$ >999%
	⁹⁰ Sr	1.7E-01 $\pm$ 30%		⁹⁰ Sr	1.3E-01 $\pm$ 45%
	¹⁰³ Ru	-1.4E-02 $\pm$ 240%		¹⁰³ Ru	-5.9E-03 $\pm$ 810%
	¹⁰⁶ Ru	-2.6E-02 $\pm$ >999%		¹⁰⁶ Ru	-2.4E-01 $\pm$ 170%
	¹¹³ Sn	-5.1E-02 $\pm$ 110%		¹¹³ Sn	1.1E-02 $\pm$ 500%
	¹²⁵ Sb	-3.9E-03 $\pm$ >999%		¹²⁵ Sb	1.2E-01 $\pm$ 99%
	¹³⁴ Cs	-2.5E-03 $\pm$ >999%		¹³⁴ Cs	-2.6E-02 $\pm$ 200%
	¹³⁷ Cs	9.8E-03 $\pm$ 360%		¹³⁷ Cs	5.1E-02 $\pm$ 95%
	¹⁴⁴ Ce	1.3E-01 $\pm$ 140%		¹⁴⁴ Ce	5.2E-02 $\pm$ 610%
	¹⁵² Eu	2.8E-02 $\pm$ 290%		¹⁵² Eu	4.9E-02 $\pm$ 260%
	¹⁵⁴ Eu	7.3E-02 $\pm$ 150%		¹⁵⁴ Eu	5.8E-02 $\pm$ 230%
	¹⁵⁵ Eu	7.5E-02 $\pm$ 140%		¹⁵⁵ Eu	4.9E-03 $\pm$ >999%
	²³⁴ U	1.4E-02 $\pm$ 41%		²³⁴ U	8.4E-03 $\pm$ 63%
	²³⁵ U	5.0E-03 $\pm$ 65%		²³⁵ U	6.6E-03 $\pm$ 75%
	²³⁸ U	1.7E-02 $\pm$ 36%		²³⁸ U	5.1E-03 $\pm$ 72%
	²³⁸ Pu	9.6E-04 $\pm$ 320%		²³⁸ Pu	-1.5E-03 $\pm$ 470%
	^{239,240} Pu	-4.8E-04 $\pm$ 350%		^{239,240} Pu	1.6E-02 $\pm$ 38%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V090	⁶⁰ Co	8.3E-03 $\pm$ 590%	V092	⁶⁰ Co	1.7E-03 $\pm$ >999%
	⁶⁵ Zn	-1.0E-01 $\pm$ 110%		⁶⁵ Zn	5.8E-04 $\pm$ >999%
	⁹⁰ Sr	1.2E-01 $\pm$ 50%		⁹⁰ Sr	8.2E-01 $\pm$ 15%
	¹⁰³ Ru	-2.8E-02 $\pm$ 190%		¹⁰³ Ru	-1.3E-02 $\pm$ 190%
	¹⁰⁶ Ru	5.7E-02 $\pm$ 730%		¹⁰⁶ Ru	-1.3E-01 $\pm$ 170%
	¹¹³ Sn	4.3E-02 $\pm$ 150%		¹¹³ Sn	2.2E-03 $\pm$ >999%
	¹²⁵ Sb	-1.0E-01 $\pm$ 120%		¹²⁵ Sb	2.0E-02 $\pm$ 320%
	¹³⁴ Cs	3.2E-02 $\pm$ 170%		¹³⁴ Cs	-8.0E-03 $\pm$ 290%
	¹³⁷ Cs	1.5E-02 $\pm$ 340%		¹³⁷ Cs	3.1E-02 $\pm$ 100%
	¹⁴⁴ Ce	-5.2E-02 $\pm$ 610%		¹⁴⁴ Ce	-8.0E-02 $\pm$ 210%
	¹⁵² Eu	-3.3E-02 $\pm$ 410%		¹⁵² Eu	-2.6E-02 $\pm$ 280%
	¹⁵⁴ Eu	1.2E-01 $\pm$ 130%		¹⁵⁴ Eu	-1.3E-02 $\pm$ 540%
	¹⁵⁵ Eu	1.3E-01 $\pm$ 120%		¹⁵⁵ Eu	3.4E-03 $\pm$ >999%
	²³⁴ U	1.4E-02 $\pm$ 41%		²³⁴ U	7.8E-03 $\pm$ 61%
	²³⁵ U	7.0E-03 $\pm$ 61%		²³⁵ U	6.7E-03 $\pm$ 66%
	²³⁸ U	4.7E-03 $\pm$ 71%		²³⁸ U	6.1E-03 $\pm$ 61%
	²³⁸ Pu	5.0E-04 $\pm$ 100%		²³⁸ Pu	2.9E-03 $\pm$ 260%
	^{239,240} Pu	1.6E-02 $\pm$ 40%		^{239,240} Pu	5.4E-03 $\pm$ 61%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V096	⁶⁰ Co	-9.2E-03 $\pm$ 320%	V098	⁶⁰ Co	1.8E-02 $\pm$ 210%
	⁶⁵ Zn	1.3E-02 $\pm$ 600%		⁶⁵ Zn	-1.0E-01 $\pm$ 100%
	⁹⁰ Sr	3.3E-02 $\pm$ 160%		⁹⁰ Sr	5.2E-02 $\pm$ 100%
	¹⁰³ Ru	1.1E-03 $\pm$ >999%		¹⁰³ Ru	-1.6E-02 $\pm$ 210%
	¹⁰⁶ Ru	7.3E-02 $\pm$ 340%		¹⁰⁶ Ru	1.1E-01 $\pm$ 290%
	¹¹³ Sn	-5.8E-02 $\pm$ 100%		¹¹³ Sn	1.3E-02 $\pm$ 310%
	¹²⁵ Sb	7.9E-02 $\pm$ 94%		¹²⁵ Sb	2.4E-03 $\pm$ >999%
	¹³⁴ Cs	-1.6E-02 $\pm$ 180%		¹³⁴ Cs	7.7E-03 $\pm$ 420%
	¹³⁷ Cs	-1.1E-02 $\pm$ 270%		¹³⁷ Cs	-1.3E-02 $\pm$ 250%
	¹⁴⁴ Ce	-8.3E-02 $\pm$ 200%		¹⁴⁴ Ce	-1.5E-01 $\pm$ 140%
	¹⁵² Eu	1.4E-02 $\pm$ 510%		¹⁵² Eu	-3.6E-02 $\pm$ 270%
	¹⁵⁴ Eu	9.3E-03 $\pm$ >999%		¹⁵⁴ Eu	5.2E-02 $\pm$ 200%
	¹⁵⁵ Eu	2.7E-02 $\pm$ 320%		¹⁵⁵ Eu	-2.1E-02 $\pm$ 550%
	²³⁴ U	1.6E-02 $\pm$ 37%		²³⁴ U	6.7E-03 $\pm$ 54%
	²³⁵ U	4.7E-03 $\pm$ 71%		²³⁵ U	4.2E-03 $\pm$ 71%
	²³⁸ U	3.3E-03 $\pm$ 82%		²³⁸ U	4.8E-03 $\pm$ 70%
	²³⁸ Pu	-9.0E-03 $\pm$ 120%		²³⁸ Pu	5.9E-03 $\pm$ 220%
	^{239,240} Pu	6.9E-04 $\pm$ 450%		^{239,240} Pu	2.4E-03 $\pm$ 140%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V100	⁶⁰ Co	2.9E-03 $\pm$ 970%	V102	⁶⁰ Co	2.1E-02 $\pm$ 110%
	⁶⁵ Zn	-8.1E-02 $\pm$ 100%		⁶⁵ Zn	2.0E-02 $\pm$ 320%
	⁹⁰ Sr	1.1E-02 $\pm$ 500%		⁹⁰ Sr	1.4E-01 $\pm$ 50%
	¹⁰³ Ru	2.4E-02 $\pm$ 140%		¹⁰³ Ru	5.4E-03 $\pm$ 430%
	¹⁰⁶ Ru	2.3E-01 $\pm$ 120%		¹⁰⁶ Ru	-2.0E-02 $\pm$ >999%
	¹¹³ Sn	-3.3E-03 $\pm$ >999%		¹¹³ Sn	4.0E-04 $\pm$ >999%
	¹²⁵ Sb	-2.0E-02 $\pm$ 390%		¹²⁵ Sb	8.3E-03 $\pm$ 820%
	¹³⁴ Cs	4.9E-02 $\pm$ 64%		¹³⁴ Cs	-3.2E-02 $\pm$ 100%
	¹³⁷ Cs	-2.2E-03 $\pm$ >999%		¹³⁷ Cs	-4.7E-04 $\pm$ >999%
	¹⁴⁴ Ce	8.3E-03 $\pm$ >999%		¹⁴⁴ Ce	7.4E-02 $\pm$ 220%
	¹⁵² Eu	2.2E-02 $\pm$ 410%		¹⁵² Eu	1.3E-02 $\pm$ 520%
	¹⁵⁴ Eu	-1.1E-01 $\pm$ 100%		¹⁵⁴ Eu	-5.1E-02 $\pm$ 160%
	¹⁵⁵ Eu	-1.2E-01 $\pm$ 100%		¹⁵⁵ Eu	-6.0E-03 $\pm$ >999%
	²³⁴ U	1.6E-02 $\pm$ 39%		²³⁴ U	1.1E-02 $\pm$ 44%
	²³⁵ U	4.4E-03 $\pm$ 79%		²³⁵ U	5.1E-03 $\pm$ 64%
	²³⁸ U	9.6E-03 $\pm$ 51%		²³⁸ U	9.3E-03 $\pm$ 47%
	²³⁸ Pu	-6.3E-03 $\pm$ 110%		²³⁸ Pu	5.0E-04 $\pm$ 100%
	^{239,240} Pu	9.7E-04 $\pm$ 250%		^{239,240} Pu	4.9E-04 $\pm$ 720%

Table 4-10 1998 Vegetation Sampling Results, 200 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V104	⁶⁰ Co	8.2E-03 $\pm$ 380%	V106	⁶⁰ Co	-3.8E-02 $\pm$ 170%
	⁶⁵ Zn	-5.9E-02 $\pm$ 110%		⁶⁵ Zn	-3.8E-02 $\pm$ 390%
	⁹⁰ Sr	4.4E-04 $\pm$ >999%		⁹⁰ Sr	1.5E-01 $\pm$ 40%
	¹⁰³ Ru	9.5E-03 $\pm$ 390%		¹⁰³ Ru	-1.7E-02 $\pm$ 440%
	¹⁰⁶ Ru	-1.5E-01 $\pm$ 180%		¹⁰⁶ Ru	-6.5E-01 $\pm$ 100%
	¹¹³ Sn	3.8E-03 $\pm$ >999%		¹¹³ Sn	1.0E-01 $\pm$ 85%
	¹²⁵ Sb	-3.0E-02 $\pm$ 260%		¹²⁵ Sb	2.0E-02 $\pm$ 850%
	¹³⁴ Cs	2.9E-03 $\pm$ >999%		¹³⁴ Cs	2.3E-02 $\pm$ 300%
	¹³⁷ Cs	-7.7E-03 $\pm$ 390%		¹³⁷ Cs	3.3E-04 $\pm$ >999%
	¹⁴⁴ Ce	-6.7E-02 $\pm$ 300%		¹⁴⁴ Ce	-1.4E-01 $\pm$ 320%
	¹⁵² Eu	1.5E-02 $\pm$ 630%		¹⁵² Eu	3.4E-03 $\pm$ >999%
	¹⁵⁴ Eu	-9.4E-03 $\pm$ 890%		¹⁵⁴ Eu	-4.2E-02 $\pm$ 500%
	¹⁵⁵ Eu	2.4E-02 $\pm$ 390%		¹⁵⁵ Eu	2.2E-01 $\pm$ 110%
	²³⁴ U	3.5E-02 $\pm$ 28%		²³⁴ U	3.4E-02 $\pm$ 27%
	²³⁵ U	2.1E-02 $\pm$ 37%		²³⁵ U	1.6E-02 $\pm$ 41%
	²³⁸ U	8.9E-03 $\pm$ 54%		²³⁸ U	1.4E-02 $\pm$ 40%
	²³⁸ Pu	3.7E-03 $\pm$ 240%		²³⁸ Pu	-1.1E-03 $\pm$ 680%
	^{239,240} Pu	-2.5E-03 $\pm$ 190%		^{239,240} Pu	1.1E-03 $\pm$ 250%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V108	⁶⁰ Co	2.2E-02 $\pm$ 160%	V110	⁶⁰ Co	-9.1E-03 $\pm$ 570%
	⁶⁵ Zn	-1.5E-01 $\pm$ 100%		⁶⁵ Zn	1.3E-01 $\pm$ 95%
	⁹⁰ Sr	6.0E-01 $\pm$ 20%		⁹⁰ Sr	1.3E-02 $\pm$ 380%
	¹⁰³ Ru	-2.0E-02 $\pm$ 190%		¹⁰³ Ru	-1.1E-02 $\pm$ 500%
	¹⁰⁶ Ru	-3.1E-01 $\pm$ 110%		¹⁰⁶ Ru	-7.6E-02 $\pm$ 610%
	¹¹³ Sn	4.0E-03 $\pm$ >999%		¹¹³ Sn	-1.8E-02 $\pm$ 380%
	¹²⁵ Sb	1.8E-02 $\pm$ 530%		¹²⁵ Sb	-5.7E-02 $\pm$ 250%
	¹³⁴ Cs	4.0E-02 $\pm$ 94%		¹³⁴ Cs	-1.7E-02 $\pm$ 310%
	¹³⁷ Cs	-4.2E-03 $\pm$ 890%		¹³⁷ Cs	-2.0E-02 $\pm$ 250%
	¹⁴⁴ Ce	2.2E-01 $\pm$ 90%		¹⁴⁴ Ce	3.5E-02 $\pm$ 860%
	¹⁵² Eu	3.1E-02 $\pm$ 320%		¹⁵² Eu	-9.1E-03 $\pm$ >999%
	¹⁵⁴ Eu	-8.7E-02 $\pm$ 160%		¹⁵⁴ Eu	-3.7E-02 $\pm$ 430%
	¹⁵⁵ Eu	2.4E-02 $\pm$ 510%		¹⁵⁵ Eu	8.2E-02 $\pm$ 190%
	²³⁴ U	3.9E-02 $\pm$ 24%		²³⁴ U	3.0E-02 $\pm$ 32%
	²³⁵ U	7.4E-03 $\pm$ 64%		²³⁵ U	1.5E-02 $\pm$ 46%
	²³⁸ U	1.3E-02 $\pm$ 40%		²³⁸ U	7.3E-03 $\pm$ 64%
	²³⁸ Pu	-1.4E-03 $\pm$ 200%		²³⁸ Pu	3.0E-03 $\pm$ 110%
	^{239,240} Pu	1.9E-03 $\pm$ 100%		^{239,240} Pu	1.0E-02 $\pm$ 49%

Table 4-11. 1998 Vegetation Sampling Results, 300/400 Areas (pCi/g $\pm$ overall analytical error)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V116	⁶⁰ Co	9.2E-03 $\pm$ >999%	V117	⁶⁰ Co	-2.7E-03 $\pm$ 790%
	⁶⁵ Zn	5.4E-02 $\pm$ 430%		⁶⁵ Zn	4.7E-02 $\pm$ 120%
	⁹⁰ Sr	2.2E-02 $\pm$ 230%		⁹⁰ Sr	2.6E-02 $\pm$ 180%
	¹⁰³ Ru	1.3E-01 $\pm$ 100%		¹⁰³ Ru	1.2E-02 $\pm$ 150%
	¹⁰⁶ Ru	-6.8E-01 $\pm$ 120%		¹⁰⁶ Ru	-3.4E-02 $\pm$ 530%
	¹¹³ Sn	7.6E-03 $\pm$ >999%		¹¹³ Sn	-2.5E-02 $\pm$ 110%
	¹²⁵ Sb	6.0E-03 $\pm$ >999%		¹²⁵ Sb	-2.7E-02 $\pm$ 200%
	¹³⁴ Cs	4.2E-02 $\pm$ 210%		¹³⁴ Cs	1.3E-02 $\pm$ 170%
	¹³⁷ Cs	6.6E-02 $\pm$ 140%		¹³⁷ Cs	5.6E-04 $\pm$ >999%
	¹⁴⁴ Ce	1.4E-01 $\pm$ 280%		¹⁴⁴ Ce	-6.4E-02 $\pm$ 180%
	¹⁵² Eu	1.0E-01 $\pm$ 200%		¹⁵² Eu	1.7E-02 $\pm$ 370%
	¹⁵⁴ Eu	-2.1E-02 $\pm$ >999%		¹⁵⁴ Eu	-1.8E-02 $\pm$ 380%
	¹⁵⁵ Eu	-1.5E-01 $\pm$ 150%		¹⁵⁵ Eu	-1.6E-02 $\pm$ 400%
	²³⁴ U	3.8E-02 $\pm$ 40%		²³⁴ U	7.3E-02 $\pm$ 25%
	²³⁵ U	1.2E-02 $\pm$ 64%		²³⁵ U	1.7E-02 $\pm$ 53%
	²³⁸ U	4.1E-02 $\pm$ 34%		²³⁸ U	4.3E-02 $\pm$ 29%
	²³⁸ Pu	-3.6E-03 $\pm$ 200%		²³⁸ Pu	1.1E-03 $\pm$ 240%
	^{239,240} Pu	9.0E-04 $\pm$ 200%		^{239,240} Pu	1.8E-02 $\pm$ 100%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V118	⁶⁰ Co	4.3E-03 $\pm$ 650%	V119	⁶⁰ Co	1.9E-02 $\pm$ 170%
	⁶⁵ Zn	-4.1E-02 $\pm$ 180%		⁶⁵ Zn	-9.5E-02 $\pm$ 100%
	⁹⁰ Sr	-4.4E-02 $\pm$ 110%		⁹⁰ Sr	-6.2E-02 $\pm$ 100%
	¹⁰³ Ru	-3.0E-03 $\pm$ 840%		¹⁰³ Ru	-1.5E-02 $\pm$ 240%
	¹⁰⁶ Ru	-4.3E-02 $\pm$ 580%		¹⁰⁶ Ru	4.0E-02 $\pm$ 730%
	¹¹³ Sn	-1.2E-02 $\pm$ 350%		¹¹³ Sn	-3.3E-02 $\pm$ 130%
	¹²⁵ Sb	3.4E-02 $\pm$ 210%		¹²⁵ Sb	-2.7E-03 $\pm$ >999%
	¹³⁴ Cs	1.1E-02 $\pm$ 240%		¹³⁴ Cs	2.6E-02 $\pm$ 140%
	¹³⁷ Cs	-1.9E-02 $\pm$ 150%		¹³⁷ Cs	8.1E-04 $\pm$ >999%
	¹⁴⁴ Ce	-1.8E-01 $\pm$ 100%		¹⁴⁴ Ce	1.0E-01 $\pm$ 210%
	¹⁵² Eu	8.0E-02 $\pm$ 100%		¹⁵² Eu	-3.1E-02 $\pm$ 360%
	¹⁵⁴ Eu	2.7E-03 $\pm$ >999%		¹⁵⁴ Eu	3.0E-02 $\pm$ 300%
	¹⁵⁵ Eu	2.2E-02 $\pm$ 480%		¹⁵⁵ Eu	5.2E-02 $\pm$ 220%
	²³⁴ U	3.0E-02 $\pm$ 34%		²³⁴ U	2.8E-01 $\pm$ 18%
	²³⁵ U	7.5E-03 $\pm$ 72%		²³⁵ U	1.5E-02 $\pm$ 42%
	²³⁸ U	2.4E-02 $\pm$ 36%		²³⁸ U	2.8E-01 $\pm$ 18%
	²³⁸ Pu	2.8E-03 $\pm$ 140%		²³⁸ Pu	9.0E-04 $\pm$ 350%
	^{239,240} Pu	8.4E-03 $\pm$ 54%		^{239,240} Pu	4.5E-04 $\pm$ 200%

Table 4-11 1998 Vegetation Sampling Results, 300/400 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V120	⁶⁰ Co	9.1E-03 $\pm$ 300%	V121	⁶⁰ Co	-7.0E-03 $\pm$ 340%
	⁶⁵ Zn	2.4E-03 $\pm$ >999%		⁶⁵ Zn	3.4E-02 $\pm$ 170%
	⁹⁰ Sr	7.1E-03 $\pm$ 750%		⁹⁰ Sr	6.5E-02 $\pm$ 90%
	¹⁰³ Ru	-1.4E-03 $\pm$ >999%		¹⁰³ Ru	3.5E-03 $\pm$ 590%
	¹⁰⁶ Ru	-8.4E-02 $\pm$ 280%		¹⁰⁶ Ru	-5.7E-02 $\pm$ 360%
	¹¹³ Sn	4.6E-04 $\pm$ >999%		¹¹³ Sn	-8.0E-03 $\pm$ 360%
	¹²⁵ Sb	2.1E-02 $\pm$ 330%		¹²⁵ Sb	3.3E-02 $\pm$ 180%
	¹³⁴ Cs	2.7E-03 $\pm$ >999%		¹³⁴ Cs	2.1E-02 $\pm$ 120%
	¹³⁷ Cs	1.8E-03 $\pm$ >999%		¹³⁷ Cs	-6.7E-03 $\pm$ 350%
	¹⁴⁴ Ce	-1.2E-01 $\pm$ 140%		¹⁴⁴ Ce	4.7E-03 $\pm$ >999%
	¹⁵² Eu	-4.0E-04 $\pm$ >999%		¹⁵² Eu	-2.5E-04 $\pm$ >999%
	¹⁵⁴ Eu	-3.7E-02 $\pm$ 230%		¹⁵⁴ Eu	-2.1E-02 $\pm$ 360%
	¹⁵⁵ Eu	9.9E-02 $\pm$ 86%		¹⁵⁵ Eu	-4.9E-02 $\pm$ 140%
	²³⁴ U	3.0E-02 $\pm$ 30%		²³⁴ U	3.1E-02 $\pm$ 30%
	²³⁵ U	5.8E-03 $\pm$ 67%		²³⁵ U	5.2E-03 $\pm$ 68%
	²³⁸ U	2.7E-02 $\pm$ 32%		²³⁸ U	3.2E-02 $\pm$ 30%
	²³⁸ Pu	-9.5E-04 $\pm$ 350%		²³⁸ Pu	5.6E-03 $\pm$ 72%
	^{239,240} Pu	4.7E-04 $\pm$ 200%		^{239,240} Pu	1.9E-03 $\pm$ 100%
Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V122	⁶⁰ Co	-2.0E-02 $\pm$ 150%	V123	⁶⁰ Co	5.7E-03 $\pm$ 250%
	⁶⁵ Zn	-2.5E-02 $\pm$ 300%		⁶⁵ Zn	8.1E-03 $\pm$ 460%
	⁹⁰ Sr	-6.2E-02 $\pm$ 100%		⁹⁰ Sr	-1.7E-02 $\pm$ 290%
	¹⁰³ Ru	-4.4E-03 $\pm$ 610%		¹⁰³ Ru	1.9E-02 $\pm$ 75%
	¹⁰⁶ Ru	1.6E-02 $\pm$ >999%		¹⁰⁶ Ru	4.6E-03 $\pm$ >999%
	¹¹³ Sn	-8.2E-03 $\pm$ 520%		¹¹³ Sn	8.5E-03 $\pm$ 230%
	¹²⁵ Sb	-5.2E-02 $\pm$ 170%		¹²⁵ Sb	-1.5E-02 $\pm$ 270%
	¹³⁴ Cs	9.6E-03 $\pm$ 320%		¹³⁴ Cs	1.0E-02 $\pm$ 150%
	¹³⁷ Cs	-2.8E-03 $\pm$ >999%		¹³⁷ Cs	-5.0E-03 $\pm$ 310%
	¹⁴⁴ Ce	4.9E-02 $\pm$ 380%		¹⁴⁴ Ce	-6.5E-02 $\pm$ 150%
	¹⁵² Eu	-5.9E-02 $\pm$ 140%		¹⁵² Eu	-1.9E-02 $\pm$ 230%
	¹⁵⁴ Eu	-3.2E-02 $\pm$ 270%		¹⁵⁴ Eu	-2.6E-02 $\pm$ 170%
	¹⁵⁵ Eu	-6.8E-02 $\pm$ 160%		¹⁵⁵ Eu	-4.6E-02 $\pm$ 110%
	²³⁴ U	5.5E-02 $\pm$ 25%		²³⁴ U	2.2E-02 $\pm$ 40%
	²³⁵ U	7.0E-03 $\pm$ 74%		²³⁵ U	8.0E-03 $\pm$ 59%
	²³⁸ U	4.8E-02 $\pm$ 25%		²³⁸ U	2.1E-02 $\pm$ 37%
	²³⁸ Pu	1.4E-03 $\pm$ 280%		²³⁸ Pu	-1.8E-03 $\pm$ 260%
	^{239,240} Pu	1.4E-03 $\pm$ 120%		^{239,240} Pu	-1.2E-03 $\pm$ 140%

Table 4-11 1998 Vegetation Sampling Results, 300/400 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V124	⁶⁰ Co	1.2E-02 $\pm$ 170%	V125	⁶⁰ Co	3.7E-02 $\pm$ 120%
	⁶⁵ Zn	4.8E-02 $\pm$ 110%		⁶⁵ Zn	6.2E-02 $\pm$ 140%
	⁹⁰ Sr	6.9E-02 $\pm$ 80%		⁹⁰ Sr	4.0E-02 $\pm$ 120%
	¹⁰³ Ru	-2.7E-02 $\pm$ 100%		¹⁰³ Ru	-5.8E-03 $\pm$ 630%
	¹⁰⁶ Ru	-2.0E-01 $\pm$ 100%		¹⁰⁶ Ru	-2.7E-01 $\pm$ 140%
	¹¹³ Sn	-2.8E-03 $\pm$ 900%		¹¹³ Sn	-2.6E-02 $\pm$ 190%
	¹²⁵ Sb	4.8E-03 $\pm$ >999%		¹²⁵ Sb	4.1E-03 $\pm$ >999%
	¹³⁴ Cs	-1.9E-03 $\pm$ >999%		¹³⁴ Cs	8.6E-03 $\pm$ 470%
	¹³⁷ Cs	-2.3E-02 $\pm$ 100%		¹³⁷ Cs	-1.0E-02 $\pm$ 390%
	¹⁴⁴ Ce	-1.5E-01 $\pm$ 100%		¹⁴⁴ Ce	2.3E-01 $\pm$ 110%
	¹⁵² Eu	3.0E-02 $\pm$ 180%		¹⁵² Eu	7.3E-02 $\pm$ 160%
	¹⁵⁴ Eu	2.1E-03 $\pm$ >999%		¹⁵⁴ Eu	-9.7E-02 $\pm$ 150%
	¹⁵⁵ Eu	9.2E-04 $\pm$ >999%		¹⁵⁵ Eu	-4.4E-02 $\pm$ 310%
	²³⁴ U	3.2E-02 $\pm$ 33%		²³⁴ U	4.1E-02 $\pm$ 30%
	²³⁵ U	5.0E-03 $\pm$ 120%		²³⁵ U	4.0E-03 $\pm$ 110%
	²³⁸ U	2.5E-02 $\pm$ 35%		²³⁸ U	3.0E-02 $\pm$ 32%
	²³⁸ Pu	9.3E-04 $\pm$ 320%		²³⁸ Pu	-5.0E-04 $\pm$ 820%
	^{239,240} Pu	4.7E-04 $\pm$ 450%		^{239,240} Pu	1.5E-03 $\pm$ 150%

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V126	⁶⁰ Co	-2.9E-02 $\pm$ 190%	V127	⁶⁰ Co	8.1E-02 $\pm$ 91%
	⁶⁵ Zn	-1.9E-01 $\pm$ 100%		⁶⁵ Zn	-1.6E-01 $\pm$ 100%
	⁹⁰ Sr	-2.1E-02 $\pm$ 240%		⁹⁰ Sr	3.0E-02 $\pm$ 180%
	¹⁰³ Ru	-7.3E-03 $\pm$ 630%		¹⁰³ Ru	4.5E-02 $\pm$ 120%
	¹⁰⁶ Ru	1.8E-01 $\pm$ 230%		¹⁰⁶ Ru	-3.0E-01 $\pm$ 180%
	¹¹³ Sn	1.8E-04 $\pm$ >999%		¹¹³ Sn	-2.3E-02 $\pm$ 320%
	¹²⁵ Sb	8.0E-02 $\pm$ 130%		¹²⁵ Sb	-7.7E-02 $\pm$ 220%
	¹³⁴ Cs	-2.3E-03 $\pm$ >999%		¹³⁴ Cs	-5.3E-02 $\pm$ 120%
	¹³⁷ Cs	1.0E-02 $\pm$ 430%		¹³⁷ Cs	3.7E-02 $\pm$ 170%
	¹⁴⁴ Ce	-9.7E-02 $\pm$ 220%		¹⁴⁴ Ce	-1.9E-01 $\pm$ 140%
	¹⁵² Eu	-4.7E-03 $\pm$ >999%		¹⁵² Eu	-1.9E-01 $\pm$ 100%
	¹⁵⁴ Eu	-8.3E-02 $\pm$ 200%		¹⁵⁴ Eu	1.6E-03 $\pm$ >999%
	¹⁵⁵ Eu	5.9E-02 $\pm$ 190%		¹⁵⁵ Eu	4.1E-02 $\pm$ 370%
	²³⁴ U	1.6E-02 $\pm$ 42%		²³⁴ U	1.2E-02 $\pm$ 44%
	²³⁵ U	3.4E-03 $\pm$ 96%		²³⁵ U	3.0E-03 $\pm$ 95%
	²³⁸ U	1.6E-02 $\pm$ 40%		²³⁸ U	8.3E-03 $\pm$ 54%
	²³⁸ Pu	-1.6E-03 $\pm$ 150%		²³⁸ Pu	-4.6E-04 $\pm$ 530%
	^{239,240} Pu	-1.1E-03 $\pm$ 200%		^{239,240} Pu	4.6E-04 $\pm$ 200%

Table 4-11 1998 Vegetation Sampling Results, 300/400 Areas (pCi/g $\pm$ overall analytical error)
(cont)

Location	Isotope	Result $\pm$ Error	Location	Isotope	Result $\pm$ Error
V128	⁶⁰ Co	3.3E-02 $\pm$ 69%	V129	⁶⁰ Co	1.9E-02 $\pm$ 150%
	⁶⁵ Zn	-9.7E-03 $\pm$ 620%		⁶⁵ Zn	-2.8E-02 $\pm$ 280%
	⁹⁰ Sr	2.4E-02 $\pm$ 240%		⁹⁰ Sr	1.7E-02 $\pm$ 320%
	¹⁰³ Ru	6.5E-03 $\pm$ 330%		¹⁰³ Ru	-7.5E-03 $\pm$ 370%
	¹⁰⁶ Ru	-1.1E-01 $\pm$ 200%		¹⁰⁶ Ru	1.4E-01 $\pm$ 180%
	¹¹³ Sn	1.4E-02 $\pm$ 230%		¹¹³ Sn	1.9E-02 $\pm$ 190%
	¹²⁵ Sb	-3.4E-02 $\pm$ 180%		¹²⁵ Sb	6.7E-02 $\pm$ 110%
	¹³⁴ Cs	1.5E-02 $\pm$ 160%		¹³⁴ Cs	-2.0E-02 $\pm$ 160%
	¹³⁷ Cs	7.7E-03 $\pm$ 300%		¹³⁷ Cs	-9.7E-03 $\pm$ 310%
	¹⁴⁴ Ce	5.8E-03 $\pm$ >999%		¹⁴⁴ Ce	1.0E-01 $\pm$ 170%
	¹⁵² Eu	1.1E-02 $\pm$ 630%		¹⁵² Eu	3.1E-02 $\pm$ 250%
	¹⁵⁴ Eu	3.5E-02 $\pm$ 200%		¹⁵⁴ Eu	9.0E-03 $\pm$ >999%
	¹⁵⁵ Eu	7.3E-02 $\pm$ 120%		¹⁵⁵ Eu	1.2E-02 $\pm$ 790%
	²³⁴ U	8.3E-03 $\pm$ 51%		²³⁴ U	1.1E-02 $\pm$ 66%
	²³⁵ U	7.0E-03 $\pm$ 58%		²³⁵ U	2.9E-03 $\pm$ 150%
	²³⁸ U	8.3E-03 $\pm$ 51%		²³⁸ U	4.9E-03 $\pm$ 89%
	²³⁸ Pu	-1.9E-03 $\pm$ 160%		²³⁸ Pu	-1.9E-03 $\pm$ 370%
	^{239,240} Pu	9.3E-04 $\pm$ 140%		^{239,240} Pu	-9.5E-04 $\pm$ 140%

Location	Isotope	Result $\pm$ Error
V130	⁶⁰ Co	-2.6E-02 $\pm$ 100%
	⁶⁵ Zn	-3.9E-02 $\pm$ 150%
	⁹⁰ Sr	1.0E-01 $\pm$ 65%
	¹⁰³ Ru	-2.0E-03 $\pm$ >999%
	¹⁰⁶ Ru	3.0E-02 $\pm$ 660%
	¹¹³ Sn	-6.3E-03 $\pm$ 450%
	¹²⁵ Sb	1.3E-02 $\pm$ 400%
	¹³⁴ Cs	3.5E-03 $\pm$ 710%
	¹³⁷ Cs	1.9E-02 $\pm$ 130%
	¹⁴⁴ Ce	-9.2E-03 $\pm$ >999%
	¹⁵² Eu	-1.8E-02 $\pm$ 360%
	¹⁵⁴ Eu	-8.6E-02 $\pm$ 100%
	¹⁵⁵ Eu	3.8E-03 $\pm$ >999%
	²³⁴ U	1.4E-02 $\pm$ 42%
	²³⁵ U	5.4E-03 $\pm$ 74%
	²³⁸ U	6.7E-03 $\pm$ 67%
	²³⁸ Pu	-9.8E-04 $\pm$ 320%
	^{239,240} Pu	5.0E-04 $\pm$ 100%

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5.0 EXTERNAL RADIATION

External radiation fields were monitored near facilities and waste handling, storage, and disposal sites to measure, assess, and control the impacts of operations. Thermoluminescent dosimeters were used at numerous fixed locations to gather dose rate information over longer periods of time, typically three months. Maps illustrating thermoluminescent dosimeter locations in 1998 are provided in Figures 5-1 through 5-10. A comparison summary of the 1997 and 1998 thermoluminescent dosimeter results for each of the operational areas is provided in Table 5-1. Individual thermoluminescent dosimeter results for 1998 are provided in Tables 5-2 through 5-12.

Table 5-1 Thermoluminescent Dosimeter Results, 1997 vs. 1998 (mrem/yr)

Area	Number of Locations, 1998	1997		1998		% Change
		Maximum	Mean	Maximum	Mean	
100-B	4	96	93	110	97	4
100-D	5	93	88	125	96	9
100-K	11	2250	470	720	180	-61
100-N	18	7700	1300	7000	1600	19
200/600	63	350	110	320	100	-10
TWRS	10	81	78	88	86	10
ERDF	3	100	95	100	95	0
300	8	200	110	210	110	0
300 TEDF	6	87	82	89	83	1
400	7	88	86	87	84	-2

ERDF = Environmental Restoration Disposal Facility.
TEDF = Treated Effluent Disposal Facility.

TWRS = Tank Waste Remediation System.

100-B,C Area. Dose rates measured in 1998 were elevated 4% compared to the extrapolated data collected from 27 days of data collection during the fourth quarter of 1997. The 1998 average was 97 mrem/yr, comparable to offsite ambient background levels.

100-D,DR Area. Dose rates measured in 1998 were 9% higher than the levels measured in 1997, with an average of 96 mrem/yr, comparable to offsite ambient background levels.

100-K Area. Dose rates measured in 1998 were 61% lower than the 1997 levels, with an average of 180 mrem/yr. This was due to the removal of radioactive waste stored in the proximity of three thermoluminescent dosimeter locations.

100-N Area. The 1998 results indicate that direct radiation levels continue to be highest near the 1301-N and 1325-N Liquid Waste Disposal Facilities. While the results for these two facilities were noticeably higher than those for other 100-N Area thermoluminescent dosimeter locations, they were approximately 17% lower than dose levels measured at these locations in 1997.

(Text continued on page 5-36)

Figure 5-1 1998 Thermoluminescent Dosimeter Locations, 100-B,C Area

WMNWM/18-98FIG.1

Figure 5-2 1998 Thermoluminescent Dosimeter Locations, 100-D,DR Area

Figure 5-3 1998 Thermoluminescent Dosimeter Locations, 100-K Area

Figure 5-4 1998 Thermoluminescent Dosimeter Locations, 100-N Area

Figure 5-5 1998 Thermoluminescent Dosimeter Locations, 200 East Area

WMW/EM/IS-88/FIG-5

Figure 5-6 1998 Thermoluminescent Dosimeter Locations, 200 West Area

Figure 5-7 1998 Thermoluminescent Dosimeter Locations, Tank Waste Remediation System

**Figure 5-8 1998 Thermoluminescent Dosimeter Locations,
Environmental Restoration Disposal Facility**

Figure 5-9 1998 Thermoluminescent Dosimeter Locations, 300 Area

Figure 5-10 1998 Thermoluminescent Dosimeter Locations, 400 Area

Table 5-2 1998 Thermoluminescent Dosimeter Results, 100-B,C Area

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	116B11 NE 001	0.010	0.30	28	94
2	116B11 NE 002	0.010	0.26	25	94
3	116B11 NW	0.010	0.29	27	94
4	116C1 N	0.010	0.26	25	94

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	116B11 NE 001	0.012	0.30	32	106
2	116B11 NE 002	0.010	0.25	26	106
3	116B11 NW	0.012	0.29	30	106
4	116C1 N	0.010	0.24	25	106

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	116B11 NE 001	0.011	0.27	23	84
2	116B11 NE 002	0.010	0.24	21	84
3	116B11 NW	0.010	0.25	21	84
4	116C1 N	0.009	0.21	18	84

4th Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	116B11 NE 001	0.012	0.29	26	93
2	116B11 NE 002	0.011	0.27	24	93
3	116B11 NW	0.011	0.26	24	93
4	116C1 N	0.011	0.27	24	93

Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)					
TLD ID	Site	mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM	
1	116B11 NE 001	0.011 $\pm$ 0.0011	0.29 $\pm$ 0.01	105 $\pm$ 4	
2	116B11 NE 002	0.010 $\pm$ 0.0005	0.26 $\pm$ 0.01	93 $\pm$ 4	
3	116B11 NW	0.011 $\pm$ 0.0008	0.27 $\pm$ 0.02	100 $\pm$ 7	
4	116C1 N	0.010 $\pm$ 0.0009	0.24 $\pm$ 0.02	89 $\pm$ 9	

Table 5-3 1998 Thermoluminescent Dosimeter Results, 100-D,DR Area

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	WOF116-D7	0.011	0.27	26	96
2	NWOF116-D7	0.010	0.24	23	96
3	SOFEXTWELL	0.012	0.29	28	96
4	NOF116-DR9	0.011	0.26	25	96
5	NE116-DR9	0.010	0.25	24	96

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	WOF116-D7	0.010	0.24	25	106
2	NWOF116-D7	0.009	0.23	24	106
3	SOFEXTWELL	0.011	0.26	27	106
4	NOF116-DR9	0.011	0.26	27	106
5	NE116-DR9	0.011	0.25	27	106

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	WOF116-D7	0.009	0.22	19	87
2	NWOF116-D7	0.009	0.21	18	87
3	SOFEXTWELL	0.016	0.38	33	87
4	NOF116-DR9	0.009	0.22	19	87
5	NE116-DR9	0.009	0.23	20	87

4th Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	WOF116-D7	0.010	0.24	22	96
2	NWOF116-D7	0.010	0.23	21	96
3	SOFEXTWELL	0.018	0.42	39	96
4	NOF116-DR9	0.012	0.29	26	96
5	NE116-DR9	0.011	0.27	25	96

Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)					
TLD ID	Site	mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM	
1	WOF116-D7	0.010 $\pm$ 0.001	0.24 $\pm$ 0.02	88 $\pm$ 7	
2	NWOF116-D7	0.009 $\pm$ 0.001	0.23 $\pm$ 0.01	82 $\pm$ 5	
3	SOFEXTWELL	0.014 $\pm$ 0.003	0.34 $\pm$ 0.08	123 $\pm$ 29	
4	NOF116-DR9	0.011 $\pm$ 0.001	0.26 $\pm$ 0.03	94 $\pm$ 10	
5	NE116-DR9	0.010 $\pm$ 0.001	0.25 $\pm$ 0.02	91 $\pm$ 7	

Table 5-4 1998 Thermoluminescent Dosimeter Results, 100-K Area

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	100-K SOUTH GATE	0.009	0.22	20	93
2	105-KW S	0.009	0.23	21	93
3	105-KW SW	0.009	0.23	21	93
4	105-KW NW	0.009	0.22	21	93
5	105-KW N	0.010	0.25	23	93
6	105-KW E	0.010	0.24	22	93
7	105-KE S	0.010	0.25	23	93
8	105-KE SW	0.056	1.35	125	93
9	105-KE NW	0.155	3.72	346	93
10	105-KE N	0.020	0.48	45	93
11	105-KE E	0.010	0.24	23	93

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	100-K SOUTH GATE	0.009	0.21	22	105
2	105-KW S	0.009	0.22	24	105
3	105-KW SW	0.009	0.23	24	105
4	105-KW NW	0.009	0.22	23	105
5	105-KW N	0.010	0.24	26	105
6	105-KW E	0.010	0.24	25	105
7	105-KE S	0.011	0.26	27	105
8	105-KE SW	0.055	1.32	138	105
9	105-KE NW	0.147	3.54	371	105
10	105-KE N	0.020	0.49	51	105
11	105-KE E	0.010	0.24	25	105

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	100-K SOUTH GATE	0.008	0.20	16	82
2	105-KW S	0.009	0.21	17	82
3	105-KW SW	0.009	0.21	17	82
4	105-KW NW	0.009	0.21	18	82
5	105-KW N	0.009	0.22	18	82
6	105-KW E	0.008	0.20	16	82
7	105-KE S	0.009	0.22	18	82
8	105-KE SW	0.036	0.87	71	82
9	105-KE NW	0.013	0.32	27	82
10	105-KE N	0.020	0.48	39	82
11	105-KE E	0.010	0.24	20	82

Table 5-4 1998 Thermoluminescent Dosimeter Results, 100-K Area (cont)

TLD ID	Site	4th Qtr '98			
		mrem/hr	mrem/day	mrem/qtr	days in field
1	100-K SOUTH GATE	0.009	0.22	19	89
2	105-KW S	0.009	0.23	20	89
3	105-KW SW	0.009	0.22	20	89
4	105-KW NW	0.010	0.23	21	89
5	105-KW N	0.010	0.25	22	89
6	105-KW E	0.009	0.22	19	89
7	105-KE S	0.010	0.25	22	89
8	105-KE SW	0.042	1.00	89	89
9	105-KE NW	0.012	0.28	25	89
10	105-KE N	0.021	0.51	45	89
11	105-KE E	0.011	0.25	23	89

TLD ID	Site	Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)		
		mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM
1	100-K SOUTH GATE	0.009 $\pm$ 0.0004	0.21 $\pm$ 0.01	77 $\pm$ 3
2	105-KW S	0.009 $\pm$ 0.0004	0.22 $\pm$ 0.01	81 $\pm$ 3
3	105-KW SW	0.009 $\pm$ 0.0003	0.22 $\pm$ 0.01	81 $\pm$ 3
4	105-KW NW	0.009 $\pm$ 0.0003	0.22 $\pm$ 0.01	81 $\pm$ 3
5	105-KW N	0.010 $\pm$ 0.0005	0.24 $\pm$ 0.01	87 $\pm$ 4
6	105-KW E	0.009 $\pm$ 0.0008	0.22 $\pm$ 0.02	81 $\pm$ 7
7	105-KE S	0.010 $\pm$ 0.0006	0.24 $\pm$ 0.01	89 $\pm$ 5
8	105-KE SW	0.047 $\pm$ 0.0098	1.13 $\pm$ 0.23	414 $\pm$ 86
9	105-KE NW	0.082 $\pm$ 0.0801	1.97 $\pm$ 1.92	717 $\pm$ 701
10	105-KE N	0.020 $\pm$ 0.0006	0.49 $\pm$ 0.02	178 $\pm$ 6
11	105-KE E	0.010 $\pm$ 0.0002	0.25 $\pm$ 0.00	90 $\pm$ 2

Table 5-5 1998 Thermoluminescent Dosimeter Results, 100-N Area

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	1301-N E FENCELINE	0.075	1.80	174	97
3	1301-N NE	0.034	0.82	79	97
6	1314-N FENCE	0.022	0.54	52	97
7	1908-N FENCE	0.036	0.86	83	97
14	MO-536 FENCELINE	0.193	4.63	449	97
17	163-N WASTEPAD	0.010	0.23	22	97
22	1301-N W	0.039	0.95	92	97
26	N SPRINGS	0.020	0.49	48	97
29	107-N SOUTH	0.084	2.02	196	97
30	1325-N EAST	0.490	11.75	1140	97
31	1301-N FENCELINE	0.036	0.87	84	97
32	1723-N NE	0.029	0.71	69	97
34	1325-N SW	0.826	19.81	1922	97
35	1325-N NW	0.819	19.65	1906	97

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	1301-N E FENCELINE	0.074	1.78	192	108
3	1301-N NE	0.033	0.79	86	108
6	1314-N FENCE	0.023	0.54	58	108
7	1908-N FENCE	0.032	0.77	83	108
14	MO-536 FENCELINE	0.060	1.45	157	108
17	163-N WASTEPAD	0.009	0.21	23	108
22	1301-N W	0.035	0.85	92	108
26	N SPRINGS	0.020	0.48	52	108
29	107-N SOUTH	0.068	1.63	176	108
30	1325-N EAST	0.450	10.80	1166	108
31	1301-N FENCELINE	0.036	0.87	94	108
32	1723-N NE	0.029	0.70	75	108
34	1325-N SW	0.794	19.06	2058	108
35	1325-N NW	0.776	18.62	2011	108

Table 5-5 1998 Thermoluminescent Dosimeter Results, 100-N Area (cont)

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	1301-N E FENCELINE	0.079	1.90	147	77
3	1301-N NE	0.035	0.85	65	77
6	1314-N FENCE	0.022	0.53	40	77
7	1908-N FENCE	0.034	0.82	63	77
14	MO-536 FENCELINE	0.036	0.87	67	77
17	163-N WASTEPAD	0.009	0.22	17	77
22	1301-N W	0.039	0.94	72	77
26	N SPRINGS	0.021	0.50	39	77
29	107-N SOUTH	0.043	1.03	79	77
30	1325-N EAST	0.451	10.82	833	77
31	1301-N FENCELINE	0.039	0.93	72	77
32	1723-N NE	0.031	0.75	58	77
34	1325-N SW	0.802	19.26	1483	77
35	1325-N NW	0.801	19.23	1481	77

4th Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	1301-N E FENCELINE	0.073	1.75	159	96
3	1301-N NE	0.035	0.84	76	96
6	1314-N FENCE	0.020	0.49	44	96
7	1908-N FENCE	0.033	0.79	71	96
14	MO-536 FENCELINE	0.036	0.86	77	96
17	163-N WASTEPAD	0.009	0.23	20	96
22	1301-N W	0.037	0.88	80	96
26	N SPRINGS	0.020	0.48	43	96
29	107-N SOUTH	0.049	1.19	107	96
30	1325-N EAST	0.445	10.69	962	96
31	1301-N FENCELINE	0.035	0.84	75	96
32	1723-N NE	0.029	0.69	62	96
34	1325-N SW	0.774	18.57	1690	96
35	1325-N NW	0.752	18.06	1643	96

Table 5-5 1998 Thermoluminescent Dosimeter Results, 100-N Area (cont)

TLD ID	Site	Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)		
		mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM
1	1301-N E FENCELINE	0.075 $\pm$ 0.003	1.81 $\pm$ 0.07	660 $\pm$ 24
3	1301-N NE	0.034 $\pm$ 0.001	0.82 $\pm$ 0.02	301 $\pm$ 9
6	1314-N FENCE	0.022 $\pm$ 0.001	0.52 $\pm$ 0.02	191 $\pm$ 9
7	1908-N FENCE	0.034 $\pm$ 0.002	0.81 $\pm$ 0.04	296 $\pm$ 14
14	MO-536 FENCELINE	0.081 $\pm$ 0.075	1.95 $\pm$ 1.81	712 $\pm$ 659
17	163-N WASTEPAD	0.009 $\pm$ 0.000	0.22 $\pm$ 0.01	81 $\pm$ 2
22	1301-N W	0.038 $\pm$ 0.002	0.90 $\pm$ 0.05	329 $\pm$ 17
26	N SPRINGS	0.020 $\pm$ 0.000	0.49 $\pm$ 0.01	178 $\pm$ 4
29	107-N SOUTH	0.061 $\pm$ 0.019	1.47 $\pm$ 0.45	535 $\pm$ 164
30	1325-N EAST	0.459 $\pm$ 0.021	11.01 $\pm$ 0.50	4020 $\pm$ 181
31	1301-N FENCELINE	0.036 $\pm$ 0.002	0.88 $\pm$ 0.04	320 $\pm$ 15
32	1723-N NE	0.030 $\pm$ 0.001	0.71 $\pm$ 0.03	259 $\pm$ 10
34	1325-N SW	0.799 $\pm$ 0.021	19.18 $\pm$ 0.51	6999 $\pm$ 188
35	1325-N NW	0.787 $\pm$ 0.029	18.89 $\pm$ 0.70	6895 $\pm$ 255

Table 5-6 1998 Thermoluminescent Dosimeter Results, 200 East Area

TLD ID	Site	1st Qtr '98		mrem/qtr	days in field
		mrem/hr	mrem/day		
217	HWVP SOUTHWEST	0.011	0.25	24	95
218	HWVP NORTHWEST	0.009	0.21	20	95
219	218-E-16 (GROUT) SOUTH	0.011	0.26	25	96
220	218-E-16 (GROUT) NORTHWEST	0.010	0.25	24	96
221	218-E-16 (GROUT) NORTH	0.010	0.25	24	96
222	241-BX/BY NORTH	0.014	0.33	31	96
223	241-B EAST	0.016	0.39	37	95
224	HWVP SOUTHEAST (GATE 814)	0.009	0.23	22	95
229	218-E-10 EAST	0.010	0.24	23	96
230	241-BX SOUTH	0.013	0.32	31	96
231	218-E-12	0.010	0.25	24	96
232	216-B-12 SOUTHEAST	0.015	0.35	34	96
233	221-B NORTHEAST	0.010	0.25	24	96
234	241-C WEST	0.012	0.29	28	96
237	HWVP EAST	0.009	0.22	21	96
238	221-B SOUTHWEST	0.010	0.25	24	96
239	221-B NORTH	0.010	0.24	23	96
240	HWVP NORTHEAST	0.009	0.22	21	96
241	216-B-63	0.011	0.26	25	96
242	202-A SOUTHWEST	0.010	0.25	24	96
243	202-A SOUTH	0.009	0.22	21	96
244	202-S NORTHWEST	0.011	0.26	25	96
245	200E SOUTH	0.010	0.23	22	96
246	200E NORTHEAST	0.010	0.24	23	96
247	202-A SOUTHEAST	0.010	0.23	22	96
249	241-C SOUTHWEST	0.012	0.29	28	96
250	241-AY WEST	0.028	0.67	64	96
251	241-C NORTH	0.015	0.37	35	96
252	241-AN WEST	0.012	0.29	28	96
253	241-AN NORTH	0.011	0.27	26	96
254	241-C SOUTHEAST	0.015	0.36	35	97
255	241-AZ EAST	0.018	0.43	42	97
256	241-AX EAST	0.021	0.51	49	97
258	241-A SOUTH	0.040	0.95	92	97
259	241-AW NORTHWEST	0.013	0.30	29	97
261	241-AW SOUTHEAST	0.012	0.28	27	97
262	241-AP NORTHEAST	0.009	0.22	21	97
263	LERF SOUTHEAST	0.009	0.22	21	97
264	LERF NORTHWEST	0.01	0.22	21	97

Table 5-6 1998 Thermoluminescent Dosimeter Results, 200 East Area (cont)

TLD ID	Site	2nd Qtr '98			
		mrem/hr	mrem/day	mrem/qtr	days in field
217	HWVP SOUTHWEST	0.009	0.22	23	106
218	HWVP NORTHWEST	0.009	0.21	22	106
219	218-E-16 (GROUT) SOUTH	0.010	0.25	27	106
220	218-E-16 (GROUT) NORTHWEST	0.011	0.26	27	106
221	218-E-16 (GROUT) NORTH	0.010	0.24	25	106
222	241-BX/BY NORTH	0.013	0.32	34	105
223	241-B EAST	0.015	0.37	39	107
224	HWVP SOUTHEAST (GATE 814)	0.009	0.23	24	106
229	218-E-10 EAST	0.010	0.24	26	106
230	241-BX SOUTH	0.013	0.32	34	106
231	218-E-12	0.010	0.24	25	106
232	216-B-12 SOUTHEAST	0.014	0.35	36	105
233	221-B NORTHEAST	0.011	0.26	27	106
234	241-C WEST	0.012	0.29	31	105
237	HWVP EAST	0.009	0.21	22	107
238	221-B SOUTHWEST	0.010	0.23	25	107
239	221-B NORTH	0.010	0.24	25	106
240	HWVP NORTHEAST	0.009	0.21	23	107
241	216-B-63	0.010	0.25	26	106
242	202-A SOUTHWEST	0.010	0.23	25	106
243	202-A SOUTH	0.009	0.22	23	106
244	202-S NORTHWEST	0.011	0.26	27	106
245	200E SOUTH	0.010	0.23	24	106
246	200E NORTHEAST	0.010	0.23	25	106
247	202-A SOUTHEAST	0.009	0.22	24	106
249	241-C SOUTHWEST	0.012	0.29	31	106
250	241-AY WEST	0.026	0.63	67	106
251	241-C NORTH	0.015	0.37	39	106
252	241-AN WEST	0.012	0.29	31	106
253	241-AN NORTH	0.011	0.27	28	106
254	241-C SOUTHEAST	0.015	0.36	38	105
255	241-AZ EAST	0.014	0.33	35	105
256	241-AX EAST	0.020	0.49	51	105
258	241-A SOUTH	0.038	0.91	95	105
259	241-AW NORTHWEST	0.013	0.30	32	105
261	241-AW SOUTHEAST	0.012	0.28	30	107
262	241-AP NORTHEAST	0.009	0.21	22	107
263	LERF SOUTHEAST	0.009	0.21	23	107
264	LERF NORTHWEST	0.010	0.23	25	107

Table 5-6 1998 Thermoluminescent Dosimeter Results, 200 East Area (cont)

TLD ID	Site	3rd Qtr '98			days in field
		mrem/hr	mrem/day	mrem/qtr	
217	HWVP SOUTHWEST	0.009	0.23	17	74
218	HWVP NORTHWEST	0.009	0.21	15	74
219	218-E-16 (GROUT) SOUTH	0.010	0.24	18	75
220	218-E-16 (GROUT) NORTHWEST	0.011	0.26	19	75
221	218-E-16 (GROUT) NORTH	0.010	0.25	19	75
222	241-BX/BY NORTH	0.014	0.34	24	71
223	241-B EAST	0.017	0.40	29	71
224	HWVP SOUTHEAST (GATE 814)	0.010	0.23	17	72
229	218-E-10 EAST	0.010	0.25	18	72
230	241-BX SOUTH	0.013	0.32	23	72
231	218-E-12	0.010	0.24	18	75
232	216-B-12 SOUTHEAST	0.016	0.37	26	71
233	221-B NORTHEAST	0.010	0.24	18	75
234	241-C WEST	0.011	0.27	21	77
237	HWVP EAST	0.009	0.22	16	71
238	221-B SOUTHWEST	0.010	0.25	17	71
239	221-B NORTH	0.010	0.25	18	72
240	HWVP NORTHEAST	0.009	0.21	15	71
241	216-B-63	0.010	0.25	18	72
242	202-A SOUTHWEST	0.010	0.23	17	75
243	202-A SOUTH	0.009	0.22	16	75
244	202-S NORTHWEST	0.010	0.23	17	75
245	200E SOUTH	0.009	0.22	16	75
246	200E NORTHEAST	0.009	0.22	16	75
247	202-A SOUTHEAST	0.009	0.22	16	75
249	241-C SOUTHWEST	0.012	0.28	21	75
250	241-AY WEST	0.024	0.59	44	75
251	241-C NORTH	0.016	0.38	28	75
252	241-AN WEST	0.014	0.34	26	75
253	241-AN NORTH	0.012	0.28	21	75
254	241-C SOUTHEAST	0.016	0.38	29	75
255	241-AZ EAST	0.013	0.32	24	75
256	241-AX EAST	0.021	0.50	38	75
258	241-A SOUTH	0.038	0.92	69	75
259	241-AW NORTHWEST	0.013	0.31	23	75
261	241-AW SOUTHEAST	0.012	0.29	22	75
262	241-AP NORTHEAST	0.009	0.22	16	75
263	LERF SOUTHEAST	0.009	0.22	16	71
264	LERF NORTHWEST	0.010	0.24	17	71

Table 5-6 1998 Thermoluminescent Dosimeter Results, 200 East Area (cont)

TLD ID	Site	4th Qtr '98			
		mrem/hr	mrem/day	mrem/qtr	days in field
217	HWVP SOUTHWEST	0.010	0.24	22	90
218	HWVP NORTHWEST	0.010	0.23	21	90
219	218-E-16 (GROUT) SOUTH	0.011	0.27	24	90
220	218-E-16 (GROUT) NORTHWEST	0.012	0.29	26	90
221	218-E-16 (GROUT) NORTH	0.011	0.27	24	90
222	241-BX/BY NORTH	0.013	0.32	30	95
223	241-B EAST	0.017	0.42	40	96
224	HWVP SOUTHEAST (GATE 814)	0.010	0.24	23	96
229	218-E-10 EAST	0.011	0.27	26	95
230	241-BX SOUTH	0.013	0.32	30	95
231	218-E-12	0.012	0.28	25	90
232	216-B-12 SOUTHEAST	0.016	0.39	37	95
233	221-B NORTHEAST	0.011	0.27	24	90
234	241-C WEST	0.012	0.29	27	95
237	HWVP EAST	0.010	0.23	22	95
238	221-B SOUTHWEST	0.011	0.25	24	95
239	221-B NORTH	0.011	0.27	25	95
240	HWVP NORTHEAST	0.009	0.22	21	95
241	216-B-63	0.011	0.26	25	95
242	202-A SOUTHWEST	0.011	0.26	23	90
243	202-A SOUTH	0.010	0.25	23	90
244	202-S NORTHWEST	0.012	0.28	25	90
245	200E SOUTH	0.010	0.25	22	90
246	200E NORTHEAST	0.010	0.24	22	90
247	202-A SOUTHEAST	0.010	0.25	22	90
249	241-C SOUTHWEST	0.013	0.32	29	90
250	241-AY WEST	0.026	0.62	55	90
251	241-C NORTH	0.016	0.38	34	90
252	241-AN WEST	0.015	0.35	32	90
253	241-AN NORTH	0.013	0.30	27	90
254	241-C SOUTHEAST	0.016	0.39	35	90
255	241-AZ EAST	0.014	0.34	31	90
256	241-AX EAST	0.022	0.53	47	90
258	241-A SOUTH	0.032	0.77	70	90
259	241-AW NORTHWEST	0.013	0.32	29	90
261	241-AW SOUTHEAST	0.013	0.31	28	90
262	241-AP NORTHEAST	0.010	0.24	22	92
263	LERF SOUTHEAST	0.011	0.25	23	90
264	LERF NORTHWEST	0.010	0.24	22	90

Table 5-6 1998 Thermoluminescent Dosimeter Results, 200 East Area (cont)

TLD ID	Site	Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)		
		mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM
217	HWVP SOUTHWEST	0.010 $\pm$ 0.0007	0.23 $\pm$ 0.02	86 $\pm$ 6
218	HWVP NORTHWEST	0.009 $\pm$ 0.0004	0.21 $\pm$ 0.01	78 $\pm$ 4
219	218-E-16 (GROUT) SOUTH	0.011 $\pm$ 0.0005	0.25 $\pm$ 0.01	93 $\pm$ 5
220	218-E-16 (GROUT) NORTHWEST	0.011 $\pm$ 0.0006	0.26 $\pm$ 0.02	96 $\pm$ 6
221	218-E-16 (GROUT) NORTH	0.010 $\pm$ 0.0005	0.25 $\pm$ 0.01	91 $\pm$ 5
222	241-BX/BY NORTH	0.014 $\pm$ 0.0004	0.33 $\pm$ 0.01	120 $\pm$ 4
223	241-B EAST	0.016 $\pm$ 0.0009	0.39 $\pm$ 0.02	144 $\pm$ 8
224	HWVP SOUTHEAST (GATE 814)	0.010 $\pm$ 0.0003	0.23 $\pm$ 0.01	85 $\pm$ 3
229	218-E-10 EAST	0.010 $\pm$ 0.0006	0.25 $\pm$ 0.01	91 $\pm$ 5
230	241-BX SOUTH	0.013 $\pm$ 0.0001	0.32 $\pm$ 0.00	116 $\pm$ 1
231	218-E-12	0.010 $\pm$ 0.0008	0.25 $\pm$ 0.02	91 $\pm$ 7
232	216-B-12 SOUTHEAST	0.015 $\pm$ 0.0009	0.37 $\pm$ 0.02	134 $\pm$ 8
233	221-B NORTHEAST	0.011 $\pm$ 0.0005	0.25 $\pm$ 0.01	92 $\pm$ 5
234	241-C WEST	0.012 $\pm$ 0.0004	0.28 $\pm$ 0.01	104 $\pm$ 4
237	HWVP EAST	0.009 $\pm$ 0.0004	0.22 $\pm$ 0.01	81 $\pm$ 4
238	221-B SOUTHWEST	0.010 $\pm$ 0.0003	0.24 $\pm$ 0.01	89 $\pm$ 3
239	221-B NORTH	0.010 $\pm$ 0.0005	0.25 $\pm$ 0.01	90 $\pm$ 5
240	HWVP NORTHEAST	0.009 $\pm$ 0.0002	0.22 $\pm$ 0.00	79 $\pm$ 2
241	216-B-63	0.011 $\pm$ 0.0003	0.25 $\pm$ 0.01	92 $\pm$ 3
242	202-A SOUTHWEST	0.010 $\pm$ 0.0006	0.24 $\pm$ 0.01	88 $\pm$ 5
243	202-A SOUTH	0.009 $\pm$ 0.0007	0.23 $\pm$ 0.02	83 $\pm$ 6
244	202-S NORTHWEST	0.011 $\pm$ 0.0009	0.26 $\pm$ 0.02	94 $\pm$ 8
245	200E SOUTH	0.010 $\pm$ 0.0005	0.23 $\pm$ 0.01	85 $\pm$ 5
246	200E NORTHEAST	0.010 $\pm$ 0.0005	0.23 $\pm$ 0.01	84 $\pm$ 4
247	202-A SOUTHEAST	0.010 $\pm$ 0.0006	0.23 $\pm$ 0.01	84 $\pm$ 5
249	241-C SOUTHWEST	0.012 $\pm$ 0.0006	0.30 $\pm$ 0.01	108 $\pm$ 5
250	241-AY WEST	0.026 $\pm$ 0.0014	0.62 $\pm$ 0.03	228 $\pm$ 12
251	241-C NORTH	0.016 $\pm$ 0.0003	0.37 $\pm$ 0.01	136 $\pm$ 2
252	241-AN WEST	0.013 $\pm$ 0.0014	0.32 $\pm$ 0.03	116 $\pm$ 12
253	241-AN NORTH	0.012 $\pm$ 0.0008	0.28 $\pm$ 0.02	102 $\pm$ 7
254	241-C SOUTHEAST	0.016 $\pm$ 0.0005	0.37 $\pm$ 0.01	137 $\pm$ 5
255	241-AZ EAST	0.015 $\pm$ 0.0021	0.36 $\pm$ 0.05	131 $\pm$ 19
256	241-AX EAST	0.021 $\pm$ 0.0007	0.50 $\pm$ 0.02	184 $\pm$ 6
258	241-A SOUTH	0.037 $\pm$ 0.0033	0.89 $\pm$ 0.08	324 $\pm$ 29
259	241-AW NORTHWEST	0.013 $\pm$ 0.0004	0.31 $\pm$ 0.01	113 $\pm$ 4
261	241-AW SOUTHEAST	0.012 $\pm$ 0.0006	0.29 $\pm$ 0.01	106 $\pm$ 5
262	241-AP NORTHEAST	0.009 $\pm$ 0.0006	0.22 $\pm$ 0.01	81 $\pm$ 5
263	LERF SOUTHEAST	0.009 $\pm$ 0.0007	0.23 $\pm$ 0.02	83 $\pm$ 6
264	LERF NORTHWEST	0.010 $\pm$ 0.0004	0.24 $\pm$ 0.01	86 $\pm$ 4

Table 5-7 1998 Thermoluminescent Dosimeter Results, 200 West Area

TLD ID	Site	1st Qtr '98		mrem/qtr	days in field
		mrem/hr	mrem/day		
202	218-W-2A	0.011	0.26	25	95
203	221-T EAST	0.014	0.34	32	95
204	241-TX EAST	0.015	0.37	35	95
205	216-Z-20	0.010	0.24	23	95
206	241-TX NORTH	0.013	0.32	31	95
207	241-U-WEST	0.011	0.26	25	95
208	241-U EAST	0.012	0.29	28	95
209	221-U SOUTHEAST	0.010	0.25	23	95
210	241-SY	0.011	0.27	26	95
211	202-S SOUTHEAST	0.021	0.49	47	95
212	241-SY NORTH	0.014	0.32	31	95
213	241-S SOUTH	0.021	0.51	48	95
214	200W NORTHWEST (GATE 609)	0.009	0.22	21	95
215	234-5Z NORTH	0.010	0.25	23	95
216	234-5Z WEST	0.010	0.25	24	95
226	218-W-5 WEST	0.010	0.24	23	95
227	WSCF SOUTH	0.010	0.23	22	95
228	WSCF NORTH	0.010	0.23	22	95
235	218-W-5 SOUTH	0.011	0.27	25	95
236	241-T EAST	0.011	0.26	25	95
260	234-5Z EAST	0.009	0.22	21	97
267	SWOC-NE	0.010	0.23	22	97
268	SWOC-W	0.011	0.27	26	97
269	SWOC-SW	0.011	0.26	25	97

Table 5-7 1998 Thermoluminescent Dosimeter Results, 200 West Area (cont)

TLD ID	Site	2nd Qtr '98			days in field
		mrem/hr	mrem/day	mrem/qtr	
202	218-W-2A	0.010	0.24	25	106
203	221-T EAST	0.014	0.33	35	106
204	241-TX EAST	0.015	0.37	39	106
205	216-Z-20	0.009	0.23	24	106
206	241-TX NORTH	0.013	0.31	32	106
207	241-U-WEST	0.011	0.26	27	106
208	241-U EAST	0.012	0.28	30	106
209	221-U SOUTHEAST	0.010	0.23	25	106
210	241-SY	0.011	0.26	28	106
211	202-S SOUTHEAST	0.012	0.30	31	106
212	241-SY NORTH	0.013	0.32	33	106
213	241-S SOUTH	0.020	0.47	50	106
214	200W NORTHWEST (GATE 609)	0.009	0.22	24	106
215	234-5Z NORTH	0.010	0.24	25	106
216	234-5Z WEST	0.010	0.25	26	106
226	218-W-5 WEST	0.009	0.23	24	106
227	WSCF SOUTH	0.009	0.21	22	106
228	WSCF NORTH	0.009	0.22	23	106
235	218-W-5 SOUTH	0.011	0.25	27	105
236	241-T EAST	0.011	0.26	28	107
260	234-5Z EAST	0.009	0.22	24	108
267	SWOC-NE	0.009	0.23	24	108
268	SWOC-W	0.011	0.27	29	108
269	SWOC-SW	0.011	0.27	29	108

Table 5-7 1998 Thermoluminescent Dosimeter Results, 200 West Area (cont)

TLD ID	Site	3rd Qtr '98			
		mrem/hr	mrem/day	mrem/qtr	days in field
202	218-W-2A	0.011	0.26	18	71
203	221-T EAST	0.014	0.32	23	71
204	241-TX EAST	0.015	0.37	26	71
205	216-Z-20	0.010	0.23	16	71
206	241-TX NORTH	0.013	0.31	22	71
207	241-U-WEST	0.011	0.26	19	71
208	241-U EAST	0.012	0.29	21	71
209	221-U SOUTHEAST	0.010	0.24	17	71
210	241-SY	0.011	0.26	19	71
211	202-S SOUTHEAST	0.013	0.32	22	71
212	241-SY NORTH	0.014	0.33	24	71
213	241-S SOUTH	0.021	0.49	35	71
214	200W NORTHWEST (GATE 609)	0.009	0.22	15	71
215	234-5Z NORTH	0.010	0.25	18	71
216	234-5Z WEST	0.010	0.24	17	71
226	218-W-5 WEST	0.010	0.23	17	71
227	WSCF SOUTH	0.009	0.22	16	74
228	WSCF NORTH	0.009	0.23	17	74
235	218-W-5 SOUTH	0.011	0.27	19	71
236	241-T EAST	0.011	0.26	19	71
260	234-5Z EAST	0.010	0.23	16	71
267	SWOC-NE	0.010	0.24	17	71
268	SWOC-W	0.011	0.28	20	71
269	SWOC-SW	0.012	0.29	21	71

Table 5-7 1998 Thermoluminescent Dosimeter Results, 200 West Area (cont)

TLD ID	Site	4th Qtr '98			
		mrem/hr	mrem/day	mrem/qtr	days in field
202	218-W-2A	0.011	0.27	25	92
203	221-T EAST	0.014	0.34	31	92
204	241-TX EAST	0.017	0.40	37	92
205	216-Z-20	0.010	0.23	22	92
206	241-TX NORTH	0.013	0.32	30	92
207	241-U-WEST	0.011	0.27	25	92
208	241-U EAST	0.013	0.30	28	92
209	221-U SOUTHEAST	0.011	0.26	24	92
210	241-SY	0.012	0.28	26	92
211	202-S SOUTHEAST	0.013	0.32	29	92
212	241-SY NORTH	0.014	0.35	32	92
213	241-S SOUTH	0.021	0.52	47	92
214	200W NORTHWEST (GATE 609)	0.010	0.25	23	92
215	234-5Z NORTH	0.011	0.26	24	92
216	234-5Z WEST	0.010	0.25	23	92
226	218-W-5 WEST	0.011	0.26	24	92
227	WSCF SOUTH	0.010	0.25	22	90
228	WSCF NORTH	0.010	0.25	22	90
235	218-W-5 SOUTH	0.012	0.28	26	92
236	241-T EAST	0.012	0.28	26	92
260	234-5Z EAST	0.010	0.25	22	90
267	SWOC-NE	0.011	0.26	24	92
268	SWOC-W	0.014	0.33	31	92
269	SWOC-SW	0.012	0.29	27	92

Table 5-7 1998 Thermoluminescent Dosimeter Results, 200 West Area (cont)

TLD ID	Site	Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)		
		mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM
202	218-W-2A	0.011 $\pm$ 0.0005	0.26 $\pm$ 0.01	93 $\pm$ 5
203	221-T EAST	0.014 $\pm$ 0.0003	0.33 $\pm$ 0.01	121 $\pm$ 2
204	241-TX EAST	0.016 $\pm$ 0.0006	0.38 $\pm$ 0.01	137 $\pm$ 5
205	216-Z-20	0.010 $\pm$ 0.0002	0.23 $\pm$ 0.01	85 $\pm$ 2
206	241-TX NORTH	0.013 $\pm$ 0.0004	0.31 $\pm$ 0.01	115 $\pm$ 3
207	241-U-WEST	0.011 $\pm$ 0.0002	0.26 $\pm$ 0.01	96 $\pm$ 2
208	241-U EAST	0.012 $\pm$ 0.0003	0.29 $\pm$ 0.01	107 $\pm$ 3
209	221-U SOUTHEAST	0.010 $\pm$ 0.0005	0.25 $\pm$ 0.01	90 $\pm$ 4
210	241-SY	0.011 $\pm$ 0.0004	0.27 $\pm$ 0.01	98 $\pm$ 4
211	202-S SOUTHEAST	0.015 $\pm$ 0.0039	0.36 $\pm$ 0.09	130 $\pm$ 34
212	241-SY NORTH	0.014 $\pm$ 0.0005	0.33 $\pm$ 0.01	120 $\pm$ 5
213	241-S SOUTH	0.021 $\pm$ 0.0008	0.50 $\pm$ 0.02	181 $\pm$ 7
214	200W NORTHWEST (GATE 609)	0.009 $\pm$ 0.0005	0.23 $\pm$ 0.01	83 $\pm$ 5
215	234-5Z NORTH	0.010 $\pm$ 0.0004	0.25 $\pm$ 0.01	91 $\pm$ 4
216	234-5Z WEST	0.010 $\pm$ 0.0001	0.25 $\pm$ 0.00	90 $\pm$ 1
226	218-W-5 WEST	0.010 $\pm$ 0.0006	0.24 $\pm$ 0.02	88 $\pm$ 6
227	WSCF SOUTH	0.009 $\pm$ 0.0007	0.23 $\pm$ 0.02	83 $\pm$ 6
228	WSCF NORTH	0.010 $\pm$ 0.0006	0.23 $\pm$ 0.01	84 $\pm$ 5
235	218-W-5 SOUTH	0.011 $\pm$ 0.0005	0.27 $\pm$ 0.01	98 $\pm$ 4
236	241-T EAST	0.011 $\pm$ 0.0004	0.27 $\pm$ 0.01	97 $\pm$ 4
260	234-5Z EAST	0.009 $\pm$ 0.0006	0.23 $\pm$ 0.01	83 $\pm$ 5
267	SWOC-NE	0.010 $\pm$ 0.0007	0.24 $\pm$ 0.02	87 $\pm$ 6
268	SWOC-W	0.012 $\pm$ 0.0013	0.29 $\pm$ 0.03	105 $\pm$ 11
269	SWOC-SW	0.012 $\pm$ 0.0007	0.28 $\pm$ 0.02	101 $\pm$ 6

Table 5-8 1998 Thermoluminescent Dosimeter Results, Tank Waste Remediation System

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
300	TWRS S 001	0.010	0.23	22	97
301	TWRS S 002	0.009	0.22	22	97
302	TWRS S 003	0.009	0.22	22	97
303	TWRS S 004	0.009	0.22	21	97
304	TWRS N 001	0.009	0.22	22	97
305	TWRS N 002	0.010	0.24	23	97
306	TWRS N 003	0.010	0.23	23	97
307	TWRS E 001	0.010	0.23	22	97
308	TWRS E 002	0.010	0.23	23	97
309	TWRS E 003	0.009	0.23	22	97

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
300	TWRS S 001	0.010	0.24	25	107
301	TWRS S 002	0.009	0.22	24	107
302	TWRS S 003	0.010	0.23	25	107
303	TWRS S 004	0.009	0.21	23	107
304	TWRS N 001	0.010	0.24	26	107
305	TWRS N 002	0.010	0.24	26	107
306	TWRS N 003	0.010	0.23	25	107
307	TWRS E 001	0.010	0.23	25	107
308	TWRS E 002	0.010	0.23	25	107
309	TWRS E 003	0.009	0.23	24	107

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
300	TWRS S 001	0.010	0.24	18	75
301	TWRS S 002	0.010	0.23	17	75
302	TWRS S 003	0.010	0.24	18	75
303	TWRS S 004	0.009	0.22	17	75
304	TWRS N 001	0.010	0.23	17	75
305	TWRS N 002	0.010	0.23	17	75
306	TWRS N 003	0.010	0.24	18	75
307	TWRS E 001	0.010	0.23	17	75
308	TWRS E 002	0.010	0.23	17	75
309	TWRS E 003	0.010	0.23	17	75

**Table 5-8 1998 Thermoluminescent Dosimeter Results,
Tank Waste Remediation System (cont)**

4th Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
300	TWRS S 001	0.011	0.25	23	90
301	TWRS S 002	0.010	0.25	22	90
302	TWRS S 003	0.010	0.24	21	90
303	TWRS S 004	0.010	0.24	22	90
304	TWRS N 001	0.011	0.26	24	90
305	TWRS N 002	0.010	0.25	23	90
306	TWRS N 003	0.011	0.25	23	90
307	TWRS E 001	0.010	0.24	22	90
308	TWRS E 002	0.010	0.25	22	90
309	TWRS E 003	0.011	0.25	23	90

Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)			
TLD ID	Site	mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM
300	TWRS S 001	0.010 $\pm$ 0.0004	0.24 $\pm$ 0.01
301	TWRS S 002	0.010 $\pm$ 0.0004	0.23 $\pm$ 0.01
302	TWRS S 003	0.010 $\pm$ 0.0002	0.23 $\pm$ 0.01
303	TWRS S 004	0.009 $\pm$ 0.0005	0.23 $\pm$ 0.01
304	TWRS N 001	0.010 $\pm$ 0.0007	0.24 $\pm$ 0.02
305	TWRS N 002	0.010 $\pm$ 0.0004	0.24 $\pm$ 0.01
306	TWRS N 003	0.010 $\pm$ 0.0005	0.24 $\pm$ 0.01
307	TWRS E 001	0.010 $\pm$ 0.0002	0.23 $\pm$ 0.00
308	TWRS E 002	0.010 $\pm$ 0.0003	0.24 $\pm$ 0.01
309	TWRS E 003	0.010 $\pm$ 0.0005	0.23 $\pm$ 0.01

**Table 5-9 1998 Thermoluminescent Dosimeter Results,
Environmental Restoration Disposal Facility**

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	ERDF-1	0.011	0.27	26	97
2	ERDF-2	0.011	0.26	25	97
3	ERDF-3	0.011	0.27	26	97

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	ERDF-1	0.011	0.27	29	106
2	ERDF-2	0.009	0.22	23	106
3	ERDF-3	0.010	0.23	25	106

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	ERDF-1	0.010	0.25	27	84
2	ERDF-2	0.009	0.23	25	84
3	ERDF-3	0.010	0.25	27	84

4th Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	ERDF-1	0.011	0.26	25	93
2	ERDF-2	0.011	0.26	25	93
3	ERDF-3	0.011	0.27	26	93

Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)					
TLD ID	Site	mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM	
1	ERDF-1	0.011 $\pm$ 0.001	0.26 $\pm$ 0.01	94.99 $\pm$ 4.46	
2	ERDF-2	0.010 $\pm$ 0.001	0.24 $\pm$ 0.02	88.24 $\pm$ 8.84	
3	ERDF-3	0.011 $\pm$ 0.001	0.25 $\pm$ 0.02	92.25 $\pm$ 6.31	

Table 5-10 1998 Thermoluminescent Dosimeter Results, 300 Area

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	PROCESS TRENCH (N)	0.010	0.23	22	95
2	NORTH PROCESS POND	0.010	0.25	24	95
3	SOUTH PROCESS POND	0.010	0.24	23	95
4	316-3 TRENCH	0.023	0.54	52	95
5	PROCESS TRENCH (S)	0.010	0.23	22	95
6	303-K MIXED TSDF	0.012	0.28	26	95
7	340 FACILITY GATE	0.019	0.44	42	95
8	3701-U GATE	0.011	0.25	24	95

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	PROCESS TRENCH (N)	0.010	0.23	24	105
2	NORTH PROCESS POND	0.010	0.24	25	105
3	SOUTH PROCESS POND	0.009	0.22	24	105
4	316-3 TRENCH	0.022	0.54	56	105
5	PROCESS TRENCH (S)	0.009	0.22	23	105
6	303-K MIXED TSDF	0.011	0.26	28	108
7	340 FACILITY GATE	0.015	0.37	39	105
8	3701-U GATE	0.011	0.25	27	105

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	PROCESS TRENCH (N)	0.009	0.21	17	81
2	NORTH PROCESS POND	0.010	0.24	19	81
3	SOUTH PROCESS POND	0.009	0.23	18	81
4	316-3 TRENCH	0.026	0.61	50	82
5	PROCESS TRENCH (S)	0.009	0.22	18	81
6	303-K MIXED TSDF	0.010	0.25	21	82
7	340 FACILITY GATE	0.015	0.37	30	82
8	3701-U GATE	0.011	0.25	21	82

Table 5-10 1998 Thermoluminescent Dosimeter Results, 300 Area (cont)

4th Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
1	PROCESS TRENCH (N)	0.010	0.24	21	86
2	NORTH PROCESS POND	0.011	0.25	22	86
3	SOUTH PROCESS POND	0.011	0.26	22	86
4	316-3 TRENCH	0.027	0.64	55	85
5	PROCESS TRENCH (S)	0.010	0.24	20	86
6	303-K MIXED TSDF	0.009	0.21	18	85
7	340 FACILITY GATE	0.017	0.41	35	85
8	3701-U GATE	0.011	0.26	22	86

Annual Average ± 2 Standard Error of the Mean (2SEM)				
TLD ID	Site	mrem/hr ± 2SEM	mrem/day ± 2SEM	mrem/yr ± 2SEM
1	PROCESS TRENCH (N)	0.010 ± 0.0005	0.23 ± 0.01	84 ± 4
2	NORTH PROCESS POND	0.010 ± 0.0003	0.24 ± 0.01	89 ± 3
3	SOUTH PROCESS POND	0.010 ± 0.0006	0.24 ± 0.02	87 ± 6
4	316-3 TRENCH	0.024 ± 0.0022	0.58 ± 0.05	213 ± 19
5	PROCESS TRENCH (S)	0.010 ± 0.0004	0.23 ± 0.01	83 ± 3
6	303-K MIXED TSDF	0.010 ± 0.0012	0.25 ± 0.03	91 ± 11
7	340 FACILITY GATE	0.017 ± 0.0015	0.40 ± 0.04	146 ± 13
8	3701-U GATE	0.011 ± 0.0000	0.25 ± 0.001	93 ± 0.4

Table 5-11 1998 Thermoluminescent Dosimeter Results, Treated Effluent Disposal Facility

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
301	NE PERIM TEDF	0.010	0.23	22	95
302	SE PERIM TEDF	0.009	0.23	21	95
303	SW PERIM TEDF	0.010	0.24	23	95
304	NW PERIM TEDF	0.010	0.23	22	95
305	TEDF IN-LINE 1	0.009	0.22	21	95
306	TEDF IN-LINE 2	0.009	0.23	22	95

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
301	NE PERIM TEDF	0.009	0.22	23	107
302	SE PERIM TEDF	0.009	0.22	23	105
303	SW PERIM TEDF	0.010	0.24	25	105
304	NW PERIM TEDF	0.009	0.22	23	105
305	TEDF IN-LINE 1	0.009	0.22	23	105
306	TEDF IN-LINE 2	0.010	0.23	24	105

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
301	NE PERIM TEDF	0.009	0.22	18	81
302	SE PERIM TEDF	0.009	0.21	17	83
303	SW PERIM TEDF	0.009	0.22	18	81
304	NW PERIM TEDF	0.009	0.22	18	81
305	TEDF IN-LINE 1	0.009	0.21	17	82
306	TEDF IN-LINE 2	0.009	0.23	18	81

4th Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
301	NE PERIM TEDF	0.010	0.25	21	85
302	SE PERIM TEDF	0.011	0.26	22	85
303	SW PERIM TEDF	0.010	0.25	22	86
304	NW PERIM TEDF	0.010	0.25	21	86
305	TEDF IN-LINE 1	0.010	0.25	21	85
306	TEDF IN-LINE 2	0.010	0.24	21	86

Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)					
TLD ID	Site	mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM	
301	NE PERIM TEDF	0.010 $\pm$ 0.0006	0.23 $\pm$ 0.01	83 $\pm$ 5	
302	SE PERIM TEDF	0.009 $\pm$ 0.0009	0.23 $\pm$ 0.02	83 $\pm$ 7	
303	SW PERIM TEDF	0.010 $\pm$ 0.0005	0.24 $\pm$ 0.01	87 $\pm$ 4	
304	NW PERIM TEDF	0.010 $\pm$ 0.0005	0.23 $\pm$ 0.01	85 $\pm$ 4	
305	TEDF IN-LINE 1	0.009 $\pm$ 0.0008	0.22 $\pm$ 0.02	82 $\pm$ 7	
306	TEDF IN-LINE 2	0.010 $\pm$ 0.0003	0.23 $\pm$ 0.01	84 $\pm$ 3	

Table 5-12 1998 Thermoluminescent Dosimeter Results, 400 Area

1st Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
9	PROCESS PONDS	0.010	0.23	22	95
10	4717 NORTH END	0.009	0.22	21	95
11	CASK LAYDOWN PAD	0.011	0.26	25	95
12	427 NORTH END	0.010	0.23	22	95
13	FMEF MAIN GATE	0.009	0.23	22	95
14	FFTF MAIN GATE	0.010	0.24	23	95
15	4843 SODIUM TSDF	0.009	0.22	21	95

2nd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
9	PROCESS PONDS	0.009	0.22	23	105
10	4717 NORTH END	0.009	0.22	24	105
11	CASK LAYDOWN PAD	0.010	0.23	24	105
12	427 NORTH END	0.009	0.21	22	105
13	FMEF MAIN GATE	0.009	0.21	22	105
14	FFTF MAIN GATE	0.009	0.21	23	105
15	4843 SODIUM TSDF	0.009	0.21	22	105

3rd Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
9	PROCESS PONDS	0.009	0.21	18	82
10	4717 NORTH END	0.009	0.21	17	82
11	CASK LAYDOWN PAD	0.009	0.22	18	82
12	427 NORTH END	0.009	0.21	17	82
13	FMEF MAIN GATE	0.009	0.20	17	82
14	FFTF MAIN GATE	0.009	0.21	17	81
15	4843 SODIUM TSDF	0.008	0.20	16	82

4th Qtr '98					
TLD ID	Site	mrem/hr	mrem/day	mrem/qtr	days in field
9	PROCESS PONDS	0.010	0.25	21	85
10	4717 NORTH END	0.010	0.24	20	85
11	CASK LAYDOWN PAD	0.011	0.26	22	85
12	427 NORTH END	0.010	0.24	21	85
13	FMEF MAIN GATE	0.010	0.24	20	85
14	FFTF MAIN GATE	0.010	0.24	20	86
15	4843 SODIUM TSDF	0.010	0.25	21	85

Annual Average $\pm$ 2 Standard Error of the Mean (2SEM)					
TLD ID	Site	mrem/hr $\pm$ 2SEM	mrem/day $\pm$ 2SEM	mrem/yr $\pm$ 2SEM	
9	PROCESS PONDS	0.009 $\pm$ 0.0006	0.23 $\pm$ 0.01	83 $\pm$ 5	
10	4717 NORTH END	0.009 $\pm$ 0.0005	0.22 $\pm$ 0.01	82 $\pm$ 5	
11	CASK LAYDOWN PAD	0.010 $\pm$ 0.0010	0.24 $\pm$ 0.02	89 $\pm$ 8	
12	427 NORTH END	0.009 $\pm$ 0.0007	0.22 $\pm$ 0.02	82 $\pm$ 6	
13	FMEF MAIN GATE	0.009 $\pm$ 0.0006	0.22 $\pm$ 0.01	80 $\pm$ 5	
14	FFTF MAIN GATE	0.009 $\pm$ 0.0007	0.22 $\pm$ 0.02	82 $\pm$ 6	
15	4843 SODIUM TSDF	0.009 $\pm$ 0.0008	0.22 $\pm$ 0.02	80 $\pm$ 7	

Overall, dose rates measured at all locations in the 100-N Area in 1998 were approximately 22% higher than those measured in 1997, due to the removal of eight thermoluminescent dosimeters in low background areas.

Because of the "skyshine" effect from the 1301-N Liquid Waste Disposal Facility, dose rates measured at the N Springs in 1998 were again elevated above 100 mrem/year, the U.S. Department of Energy annual external dose limit to members of the public. However, neither a member of the public nor a Hanford worker would conceivably spend an entire year at the N Springs.

200/600 Areas. The highest dose rates were measured near waste handling facilities such as tank farms in the 200 Areas. The highest dose rate was measured at the A Tank Farm in the 200 East Area. The average annual dose rate measured in 1998 (104 mrem/yr) was 5% lower than the 1997 measurement.

Tank Waste Remediation System Phase I Demonstration Project. Dose rates measured in 1998 were 10% higher than the levels measured in 1997, with an average of 86 mrem/yr, comparable to offsite ambient background levels.

Environmental Restoration Disposal Facility. Dose rates measured in 1998 were similar to the results observed in 1997, with an average of 95 mrem/yr, comparable to offsite ambient background levels.

300 Area/300 Area Treated Effluent Disposal Facility/400 Area. The highest dose rates in the 300 Area were measured near the 340 Waste Handling Facility. The average dose rate measured in the 300 Area in 1998 was 110 mrem/yr, equal to the average dose rate measured in 1997. The average dose rate at the 300 Area Treated Effluent Disposal Facility in 1998 was 83 mrem/yr, a 1% increase compared to 1997. The average dose rate measured in the 400 Area in 1998 was 84 mrem/yr, a 2% decrease compared to 1997.

6.0 SURFACE-WATER DISPOSAL UNITS AND 100-N RIVERBANK SPRINGS MONITORING

Two surface-water disposal units (the 200 East Area Powerhouse Ditch and the 216-B-3C Expansion Pond) and springs along the 100-N Area Columbia River shoreline were monitored in 1998 to assess the effectiveness of effluent and contamination controls. Samples collected from the surface-water disposal units included water, sediment, and aquatic vegetation. Only water samples were taken at the riverbank springs. Sampling locations are illustrated in Figures 6-1 and 6-2.

The 200 East Area Powerhouse was placed in "stand-by" status in 1998. As a result, routine liquid effluent discharges ceased and all routine sampling at this facility was discontinued in July 1998.

Liquid effluent associated with the 216-B-3C Expansion Pond was re-routed to the 200 Area Treated Effluent Disposal Facility in 1997. As a result, only aquatic vegetation and sediment samples were collected from this facility in 1998.

Radiological results for liquid samples from the 200 East Area Powerhouse Ditch are summarized in Table 6-1. Radiological results for aquatic vegetation and sediment samples collected from both surface-water disposal units are summarized in Tables 6-2 and 6-3, respectively.

Nonradiological results for water samples taken from the 200 East Area Powerhouse Ditch are summarized in Table 6-4. The results for pH were well within the standard of 2.0 to 12.5 for liquid effluent discharges based on the limits given in the Resource Conservation and Recovery Act. The analytical results for nitrates were all less than the 45-mg/L state and federal drinking water standard for public water supplies (WAC 246-249 and 40 CFR 141, respectively).

Ten shoreline seepage well samples were collected along the 100-N riverbank on September 24, 1998. The highest concentrations of tritium and strontium-90 were seen in samples collected from location Y303, the shoreline well nearest the effluent monitoring well 199-N-46. The strontium-90 concentration exceeded the U.S. Department of Energy derived concentration guide value at Y303, and the highest tritium concentration was also measured at this location, although it was well below its derived concentration guide value. All of the riverbank springs concentrations were lower than those measured in well 199-N-46. The 1998 data results from riverbank springs sampling are summarized in Table 6-5. Historical tritium and strontium-90 sampling results are provided in Tables 6-6 and 6-7.

Figure 6-1 200 East Area Surface Water Disposal Units Sampling Locations

Figure 6-2 100-N Area Shoreline Seepage Well Locations

**Table 6-1 1998 Radiological Results for Water Samples
from 200 East Area Powerhouse Ditch (H054)
(pCi/L $\pm$ overall analytical error)**

Sample Date	^{60}Co	^{90}Sr	^{137}Cs	^{234}U
2/3/98	6.4E-01 $\pm$ 600%	-2.4E-01 $\pm$ 310%	-6.1E+00 $\pm$ 100%	2.0E-01 $\pm$ 35%
3/11/98	-4.0E-01 $\pm$ >999%	-1.2E+00 $\pm$ 120%	-1.9E+00 $\pm$ 200%	1.4E-01 $\pm$ 38%
3/30/98	-2.7E+00 $\pm$ 150%	2.5E+00 $\pm$ 84%	5.3E+00 $\pm$ 81%	1.1E-01 $\pm$ 43%
4/28/98	-3.8E+00 $\pm$ 110%	-9.5E-01 $\pm$ 130%	-4.3E+00 $\pm$ 110%	1.4E-01 $\pm$ 43%
6/3/98	-3.1E+00 $\pm$ 120%	-1.1E+00 $\pm$ 100%	4.3E-01 $\pm$ 950%	1.9E-01 $\pm$ 36%
7/13/98	-2.8E+00 $\pm$ 200%	-1.7E+00 $\pm$ 100%	-1.2E+00 $\pm$ 460%	4.6E-01 $\pm$ 23%
<hr/>				
	Average $\pm$ 2SEM ^(a)	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM
	-2.0E+00 $\pm$ 1.8E+00	-4.5E-01 $\pm$ 6.9E-01	-1.3E+00 $\pm$ 2.8E+00	2.1E-01 $\pm$ 6.0E-02

Sample Date	^{235}U	^{238}U	^{238}Pu	$^{239,240}\text{Pu}$
2/3/98	3.5E-02 $\pm$ 120%	1.2E-01 $\pm$ 44%	2.4E-02 $\pm$ 190%	5.9E-03 $\pm$ 200%
3/11/98	2.7E-02 $\pm$ 90%	6.9E-02 $\pm$ 54%	3.6E-01 $\pm$ 29%	1.5E-02 $\pm$ 150%
3/30/98	3.6E-02 $\pm$ 76%	1.1E-01 $\pm$ 42%	5.5E-02 $\pm$ 130%	1.5E-02 $\pm$ 120%
4/28/98	1.7E-02 $\pm$ 220%	1.0E-01 $\pm$ 47%	1.1E-02 $\pm$ 370%	2.1E-02 $\pm$ 120%
6/3/98	5.6E-02 $\pm$ 76%	1.2E-01 $\pm$ 46%	-4.6E-02 $\pm$ 160%	1.0E-02 $\pm$ 200%
7/13/98	1.4E-01 $\pm$ 43%	1.3E-01 $\pm$ 42%	-1.6E-02 $\pm$ 280%	1.6E-02 $\pm$ 150%
<hr/>				
	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM
	5.2E-02 $\pm$ 5.1E-01	1.1E-01 $\pm$ 3.7E-02	6.5E-02 $\pm$ 9.7E-01	1.4E-02 $\pm$ 3.0E-01

a - 2 Standard Error of the Mean

Table 6-2 1998 Radiological Results for Aquatic Vegetation Samples
from Surface Waste Disposal Units
(pCi/g $\pm$ overall analytical error)

Site	⁶⁰ Co	⁶⁵ Zn	⁹⁰ Sr	¹⁰³ Ru	¹⁰⁶ Ru	¹¹³ Sn
V134 ^a	2.5E-02 $\pm$ 160%	5.2E-02 $\pm$ 190%	2.5E-02 $\pm$ 240%	8.6E-03 $\pm$ 530%	7.5E-02 $\pm$ 470%	9.9E-03 $\pm$ 490%
V136 ^b	1.2E-02 $\pm$ 220%	6.1E-03 $\pm$ >999%	-2.6E-02 $\pm$ 220%	1.1E-03 $\pm$ >999%	6.0E-02 $\pm$ 430%	-1.7E-02 $\pm$ 220%

Site	¹²⁵ Sb	¹³⁴ Cs	¹³⁷ Cs	¹⁴⁴ Ce	¹⁵² Eu	¹⁵⁴ Eu
V134	1.8E-02 $\pm$ 540%	1.9E-02 $\pm$ 210%	2.3E-01 $\pm$ 38%	4.5E-02 $\pm$ 550%	-9.5E-02 $\pm$ 110%	6.1E-03 $\pm$ >999%
V136	-5.9E-02 $\pm$ 130%	-1.0E-02 $\pm$ 300%	7.2E-03 $\pm$ 400%	2.1E-01 $\pm$ 92%	7.4E-02 $\pm$ 110%	-3.3E-03 $\pm$ >999%

Site	¹⁵⁵ Eu	²³⁴ U	²³⁵ U	²³⁸ U	²³⁸ Pu	^{239,240} Pu
V134	1.8E-01 $\pm$ 72%	5.8E-03 $\pm$ 75%	6.4E-03 $\pm$ 68%	2.6E-03 $\pm$ 100%	1.3E-03 $\pm$ 420%	6.2E-04 $\pm$ >999%
V136	-1.2E-02 $\pm$ 780%	9.6E-03 $\pm$ 46%	3.0E-03 $\pm$ 83%	4.1E-03 $\pm$ 75%	5.4E-03 $\pm$ 90%	4.0E-04 $\pm$ >999%

a = 216-B-3C Pond

b = 200 East Area Powerhouse Ditch

Table 6-3 1998 Radiological Results for Sediment Samples
from Surface Water Disposal Units
(pCi/g $\pm$ overall analytical error)

Site	⁶⁰ Co	⁶⁵ Zn	⁹⁰ Sr	¹⁰³ Ru	¹⁰⁶ Ru	¹¹³ Sn
D134 ^a	3.3E-03 $\pm$ 400%	9.7E-03 $\pm$ 350%	2.4E-01 $\pm$ 50%	7.7E-04 $\pm$ >999%	-1.6E-02 $\pm$ >999%	-1.4E-02 $\pm$ 310%
D136 ^b	-6.3E-03 $\pm$ 270%	-2.0E-02 $\pm$ 220%	3.8E-01 $\pm$ 40%	2.6E-03 $\pm$ 760%	-2.8E-02 $\pm$ 600%	-9.2E-03 $\pm$ 300%

Site	¹²⁵ Sb	¹³⁴ Cs	¹³⁷ Cs	¹⁴⁴ Ce	¹⁵² Eu	¹⁵⁴ Eu
D134	9.1E-02 $\pm$ 120%	2.6E-02 $\pm$ 70%	3.6E+01 $\pm$ 16%	1.0E-01 $\pm$ 180%	2.9E-02 $\pm$ 330%	6.9E-01 $\pm$ 8.50%
D136	5.9E-02 $\pm$ 95%	8.1E-02 $\pm$ 36%	8.1E-03 $\pm$ 300%	6.0E-02 $\pm$ 300%	1.1E-02 $\pm$ 600%	3.0E-03 $\pm$ >999%

Site	¹⁵⁵ Eu	²³⁴ U	²³⁵ U	²³⁸ U	²³⁸ Pu	^{239,240} Pu
D134	8.9E-01 $\pm$ 26%	4.4E-01 $\pm$ 18%	2.7E-02 $\pm$ 45%	3.6E-01 $\pm$ 19%	2.2E-02 $\pm$ 56%	3.5E-01 $\pm$ 18%
D136	6.6E-02 $\pm$ 140%	8.1E-01 $\pm$ 17%	6.3E-02 $\pm$ 31%	7.2E-01 $\pm$ 17%	1.0E-03 $\pm$ >999%	1.0E-03 $\pm$ >999%

a = 216-B-3C Pond

b = 200 East Area Powerhouse Ditch

Table 6-4 1998 Non-Radiological Results for Water Samples from
200 East Area Powerhouse Ditch

Date	pH	Nitrate (mg/L)	pH	
			Average $\pm$ 2SEM ^(a)	Maximum
01/05/98	7.8	0.24	7.2 $\pm$ 0.3	9.1
01/12/98	7.0			
01/19/98	7.1			
01/26/98	8.5			
02/02/98	9.1	0.17 $\pm$ 0.14	0.17 $\pm$ 0.14	0.24
02/09/98	7.0			
02/17/98	7.9			
02/23/98	7.6			
03/02/98	7.0			
03/09/98	7.6			
03/16/98	6.8			
03/23/98	7.4			
03/30/98	6.5			
04/06/98	6.8			
04/13/98	7.2	0.10		
04/20/98	6.9			
04/27/98	7.5			
05/04/98	7.2			
05/11/98	6.9			
05/18/98	6.6			
05/25/98	8.3			
06/01/98	6.0	Not Measured		
06/15/98	6.0			
06/22/98	6.3			
07/06/98	Not Measured	0.10		

a - 2 Standard Error of the Mean

Table 6-5 1998 Radiological Results for N-Springs Water Samples
(pCi/g $\pm$ overall analytical error)

Site	^3H	^{60}Co	^{65}Zn	^{90}Sr	^{103}Ru	^{106}Ru	^{113}Sn
Y302	4.6E+02 $\pm$ 45%	-4.6E-01 $\pm$ 850%	2.1E+00 $\pm$ 450%	1.1E+02 $\pm$ 12%	-1.0E+00 $\pm$ 420%	2.5E+01 $\pm$ 160%	-2.1E+00 $\pm$ 250%
Y303	1.4E+03 $\pm$ 26%	1.5E+00 $\pm$ 250%	-1.5E+01 $\pm$ 100%	1.9E+03 $\pm$ 12%	-1.6E+00 $\pm$ 260%	2.1E+00 $\pm$ >999%	2.6E+00 $\pm$ 220%
Y305	3.7E+02 $\pm$ 70%	-2.6E+00 $\pm$ 180%	-1.4E+01 $\pm$ 100%	1.7E+01 $\pm$ 15%	-4.0E-02 $\pm$ >999%	-2.7E+01 $\pm$ 190%	2.2E+00 $\pm$ 280%
Y306	4.3E+02 $\pm$ 51%	8.1E-01 $\pm$ 440%	-1.4E+01 $\pm$ 100%	7.7E+00 $\pm$ 20%	-2.9E+00 $\pm$ 160%	7.3E-01 $\pm$ >999%	2.3E-01 $\pm$ >999%
Y307	3.5E+02 $\pm$ 75%	3.1E+00 $\pm$ 160%	-1.3E+01 $\pm$ 100%	1.5E+01 $\pm$ 15%	1.5E-02 $\pm$ >999%	-1.8E+01 $\pm$ 260%	-3.9E-01 $\pm$ >999%
Y309	3.5E+02 $\pm$ 76%	-3.8E+00 $\pm$ 120%	2.6E+00 $\pm$ 410%	5.1E+00 $\pm$ 20%	1.1E-01 $\pm$ >999%	6.7E+00 $\pm$ 680%	2.4E+00 $\pm$ 240%
Y310	3.0E+02 $\pm$ 70%	-2.0E+00 $\pm$ 200%	-2.1E+00 $\pm$ 470%	2.9E+00 $\pm$ 30%	3.3E+00 $\pm$ 170%	-1.2E+01 $\pm$ 340%	-8.0E+00 $\pm$ 100%
Y311	5.6E+02 $\pm$ 45%	1.9E+00 $\pm$ 260%	-9.6E+00 $\pm$ 120%	1.1E+02 $\pm$ 13%	7.8E-01 $\pm$ 770%	4.3E+00 $\pm$ >999%	7.1E-01 $\pm$ 930%
Y312	6.2E+02 $\pm$ 40%	3.1E+00 $\pm$ 150%	5.9E+00 $\pm$ 200%	1.8E+01 $\pm$ 13%	3.5E+00 $\pm$ 150%	-7.7E+00 $\pm$ 570%	-1.9E+00 $\pm$ 300%
Y313	5.2E+02 $\pm$ 50%	5.3E+00 $\pm$ 86%	6.5E+00 $\pm$ 150%	3.6E+00 $\pm$ 30%	4.0E-01 $\pm$ >999%	2.7E+01 $\pm$ 170%	3.2E+00 $\pm$ 200%
<hr/>							
	Average $\pm$ 2SEM ^(a)	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM
	5.3E+02 $\pm$ 2.0E+02	-5.0E+00 $\pm$ 1.8E+00	-1.1E+01 $\pm$ 5.6E+00	2.1E+02 $\pm$ 3.7E+02	-5.4E+00 $\pm$ 1.3E+00	-5.6E+00 $\pm$ 1.1E+01	-5.8E+00 $\pm$ 2.1E+00
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Site	^{125}Sb	^{134}Cs	^{137}Cs	^{144}Ce	^{152}Eu	^{154}Eu	^{155}Eu
Y302	-4.2E+00 $\pm$ 290%	-2.0E+00 $\pm$ 210%	-3.7E+00 $\pm$ 110%	7.2E-01 $\pm$ >999%	-4.1E+00 $\pm$ 360%	-2.8E+00 $\pm$ 340%	-4.3E-01 $\pm$ >999%
Y303	-2.0E+01 $\pm$ 100%	-4.5E+00 $\pm$ 100%	-4.9E+00 $\pm$ 100%	-1.3E+01 $\pm$ 210%	-5.4E+00 $\pm$ 250%	5.8E+00 $\pm$ 190%	-6.6E+00 $\pm$ 230%
Y305	-1.2E+01 $\pm$ 120%	-2.8E+00 $\pm$ 200%	8.4E-01 $\pm$ 620%	-2.9E+01 $\pm$ 120%	4.2E+00 $\pm$ 340%	-6.6E+00 $\pm$ 250%	7.4E+00 $\pm$ 240%
Y306	-4.0E+00 $\pm$ 290%	2.2E+00 $\pm$ 180%	-1.7E+00 $\pm$ 240%	3.2E+00 $\pm$ 830%	-2.9E-01 $\pm$ >999%	8.0E-01 $\pm$ >999%	-5.3E+00 $\pm$ 250%
Y307	7.1E+00 $\pm$ 210%	1.9E+00 $\pm$ 250%	4.0E-01 $\pm$ >999%	-1.2E+01 $\pm$ 230%	-2.7E+00 $\pm$ 530%	-6.2E+00 $\pm$ 200%	-5.5E+00 $\pm$ 270%
Y309	-2.3E+00 $\pm$ 680%	3.0E+00 $\pm$ 150%	1.7E+00 $\pm$ 300%	-2.2E+01 $\pm$ 190%	-3.6E+00 $\pm$ 410%	4.0E+00 $\pm$ 320%	-9.4E+00 $\pm$ 170%
Y310	1.4E+01 $\pm$ 86%	4.7E-01 $\pm$ 890%	-2.7E+00 $\pm$ 170%	2.2E+00 $\pm$ >999%	-2.1E+00 $\pm$ 630%	-6.3E+00 $\pm$ 160%	-7.0E+00 $\pm$ 200%
Y311	-3.6E+00 $\pm$ 400%	-1.1E+00 $\pm$ 490%	-1.2E+00 $\pm$ 490%	-1.6E+01 $\pm$ 210%	4.7E+00 $\pm$ 330%	4.3E+00 $\pm$ 360%	1.8E+00 $\pm$ >999%
Y312	5.5E+00 $\pm$ 280%	-6.7E-01 $\pm$ 710%	2.8E+00 $\pm$ 170%	2.6E+01 $\pm$ 110%	-2.2E-01 $\pm$ >999%	1.1E+01 $\pm$ 130%	6.1E+00 $\pm$ 250%
Y313	-1.7E+01 $\pm$ 100%	2.7E+00 $\pm$ 180%	9.4E-01 $\pm$ 530%	-2.2E+01 $\pm$ 180%	-8.3E+00 $\pm$ 170%	-1.3E+00 $\pm$ 970%	9.7E+00 $\pm$ 180%
<hr/>							
	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM	Average $\pm$ 2SEM
	-9.4E+00 $\pm$ 6.8E+00	-5.8E+00 $\pm$ 1.6E+00	-6.5E+00 $\pm$ 1.6E+00	-1.4E+01 $\pm$ 1.0E+01	-7.5E+00 $\pm$ 2.6E+00	-5.4E+00 $\pm$ 3.8E+00	-6.6E+00 $\pm$ 4.3E+00

a - 2 Standard Error of the Mean

Table 6-6 Historical N-Springs Shoreline Tritium Concentration
(pCi/L $\pm$ overall analytical error)

Year	Y301	Y302	Effluent monitoring well	Y303	Y304	Y305	Y306
1987	6.8 E+04	7.6 E+04	9.5 E+04	9.2 E+04	9.4 E+04	8.8 E+04	7.9 E+04
1988	5.7 E+03	2.8 E+04	7.5 E+04	6.9 E+04	7.4 E+04	NS	NS
1989	2.5 E+04	2.8 E+04	3.9 E+04	3.6 E+04	5.0 E+04	NS	6.8 E+04
1990	2.9 E+04	3.2 E+04	3.8 E+04	3.6 E+04	NS	NS	3.4 E+03
1991	2.2 E+02	8.4 E+01	3.7 E+04	2.6 E+03	3.4 E+04	NS	4.0 E+02
1992	7.2 E+02	NS	5.0 E+04	9.5 E-01	NS	NS	1.5 E+02
1993	2.8 E+02	1.3 E+02	2.7 E+04 $\pm$ 7.90%	1.4 E+02	5.6 E+02	1.0 E+02	1.8 E+02
1994	NS	<4.0E+01 $\pm$ 471%	2.6 E+04 $\pm$ 8.10%	4.0 E+01	NS	NS	<1.2 E+02 $\pm$ 163%
1995	NS	NS	5.2 E+03	<-1.2 E+01 $\pm$ >999%	NS	NS	<4.4 E+01 $\pm$ 331%
1996	2.5 E+02	8.5 E+02 $\pm$ 29%	2.0 E+04 $\pm$ 8.20%	1.6 E+04 $\pm$ 8.00%	4.2 E+03 $\pm$ 12%	1.6 E+02 $\pm$ 135%	2.2 E+02 $\pm$ 95%
1997	-4.3E+01 $\pm$ 130%	<3.6E+01 $\pm$ 90%	1.6 E+04 $\pm$ 8.00%	3.0 E+03 $\pm$ 20%	-6.3E+02 $\pm$ 180%	-5.7E+01 $\pm$ 160%	-1.1E+02 $\pm$ 490%
1998	NS	4.6E+02 $\pm$ 45%	1.6 E+04 $\pm$ 32%	1.4E+02 $\pm$ 26%	NS	3.7E+02 $\pm$ 70%	4.3E+02 $\pm$ 51%

Year	Y307	Y308	Y309	Y310	Y311	Y312	Y313
1987	7.3 E+04	4.6 E+04	7.5 E+04	4.0 E+03	5.8 E+04	2.1 E+04	1.3 E+03
1988	1.1 E+04	3.0 E+04	1.0 E+04	NS	2.9 E+04	1.9 E+04	3.0 E+03
1989	NS	7.7 E+04	7.0 E+04	3.5 E+04	4.2 E+04	NS	NS
1990	NS	1.4 E+04	3.5 E+03	9.7 E+03	3.8 E+04	2.0 E+04	NS
1991	8.1 E+02	2.1 E+03	6.5 E+03	7.9 E+02	7.1 E+02	2.4 E+03	9.3 E+00
1992	NS	E27NS	3.0 E+02	4.3 E+02	6.5 E+02	1.7 E+02	NS
1993	NS	NS	NS	NS	NS	NS	NS
1994	<8.5 E+01 $\pm$ 225%	<1.3 E+02 $\pm$ 154%	8.4 E+01 $\pm$ 230%	4.0 E+02 $\pm$ 52%	4.5 E+02 $\pm$ 46%	2.9 E+02 $\pm$ 70%	NS
1995	<-2.1 E+00 $\pm$ >999%	<-2.3 E+01 $\pm$ 630%	<-3.1 E+01 $\pm$ 462%	<-1.2 E+01 $\pm$ >999%	3.2 E+02 $\pm$ 50%	5.0 E+02 $\pm$ 35%	NS
1996	1.9 E+02 $\pm$ 113%	2.4 E+02 $\pm$ 86%	NS	NS	2.2 E+02 $\pm$ 95%	NS	NS
1997	-1.4E+02 $\pm$ >999%	-1.2E+02 $\pm$ 680%	-6.4E+01 $\pm$ 160%	-1.1E+02 $\pm$ 490%	<2.6E+01 $\pm$ 80%	NS	NS
1998	3.5E+02 $\pm$ 75%	NS	3.5E+02 $\pm$ 76%	3.0E+02 $\pm$ 70%	5.6E+02 $\pm$ 45%	6.2E+02 $\pm$ 40%	5.2E+02 $\pm$ 50%

Table 6-7 Historical N-Springs Shoreline Strontium-90 Concentration
(pCi/L $\pm$ overall analytical error)

Year	Y301	Y302	Effluent monitoring well	Y303	Y304	Y305	Y306
1987	1.7 E+03	2.7 E+03	6.1 E+03	8.3 E+03	4.1 E+03	9.5 E+02	7.2 E+02
1988	8.7 E+02	3.0 E+03	7.9 E+03	9.1 E+03	3.5 E+03	NS	NS
1989	9.8 E+02	2.1 E+03	6.5 E+03	5.4 E+03	3.8 E+03	NS	8.9 E+02
1990	2.4 E+03	2.9 E+03	4.9 E+03	7.1 E+03	NS	NS	1.5 E+02
1991	1.6 E+01	2.4 E+01	6.9 E+03	1.4 E+03	3.2 E+03	NS	8.6 E+01
1992	NS	NS	6.3 E+03	1.5 E+02	NS	NS	9.6 E+00
1993	1.2 E+01	8.3 E+01	7.4 E+03 $\pm$ 18%	1.2 E+02	4.1 E+03	4.1 E+01	1.3 E+01
1994	NS	1.1E-07 $\pm$ 24%	6.6 E+03 $\pm$ 21%	1.2 E+02	NS	NS	6.4 E+00 $\pm$ 26%
1995	NS	NS	5.7 E+03 $\pm$ 25%	3.0 E+02 $\pm$ 17%	NS	NS	7.0 E+00 $\pm$ 20%
1996	5.8 E+01	2.6E-07 $\pm$ 25%	1.4 E+04 $\pm$ 29%	5.8 E+03 $\pm$ 28%	9.5 E+02 $\pm$ 27%	3.7 E+01 $\pm$ 27%	1.6 E+01 $\pm$ 26%
1997	3.1 E+01 $\pm$ 15%	2.0E-07 $\pm$ 14%	1.1 E+04 $\pm$ 35%	3.2 E+03 $\pm$ 12%	1.7 E+02 $\pm$ 13%	2.6 E+01 $\pm$ 18%	3.1 E+00 $\pm$ 50%
1998	NS	1.1E-07 $\pm$ 12%	1.4E+04 $\pm$ 15%	1.9E+02 $\pm$ 12%	NS	1.7E+01 $\pm$ 15%	7.7E+00 $\pm$ 20%

Year	Y307	Y308	Y309	Y310	Y311	Y312	Y313
1987	1.3 E+01	4.2 E+01	2.4 E+02	5.7 E+01	6.6 E+02	5.8 E+01	5.0 E+01
1988	1.5 E+01	3.2 E+01	4.1 E+01	NR	3.4 E+02	4.0 E+01	5.8 E+01
1989	NS	7.8 E+01	2.9 E+02	1.6 E+02	9.5 E+02	NS	NS
1990	NS	9.0 E+01	4.4 E+01	3.1 E+01	5.8 E+02	5.4 E+01	NS
1991	1.4 E+01	2.8 E+01	1.0 E+02	1.5 E+01	4.0 E+02	8.9 E+00	8.1 E+00
1992	NS	NS	8.1 E+00	6.7 E+00	1.1 E+02	7.1 E+00	NS
1993	NS	NS	NS	NS	NS	NS	NS
1994	3.8 E+00 $\pm$ 23%	1.2 E+01 $\pm$ 21%	3.4 E+00 $\pm$ 27%	3.8 E+00 $\pm$ 27%	5.1 E+01 $\pm$ 22%	1.8 E+01 $\pm$ 24%	NS
1995	3.8 E+00 $\pm$ 21%	1.4 E+01 $\pm$ 19%	5.5 E+00 $\pm$ 21%	7.0 E+00 $\pm$ 20%	7.1 E+01 $\pm$ 19%	1.9 E+01 $\pm$ 19%	NS
1996	6.5 E+00 $\pm$ 28%	2.2 E+01 $\pm$ 26%	NS	NS	1.7 E+02 $\pm$ 29%	NS	NS
1997	<3.6E-01 $\pm$ 540%	1.1 E+01 $\pm$ 20%	5.6 E+00 $\pm$ 30%	<7.6E-01 $\pm$ 260%	1.5 E+02 $\pm$ 13%	NS	NS
1998	1.5E+01 $\pm$ 15%	NS	5.1E+00 $\pm$ 20%	2.9E+00 $\pm$ 30%	1.1E+02 $\pm$ 13%	1.8 E+01 $\pm$ 13%	3.6E+00 $\pm$ 30%

7.0 RADIOLOGICAL SURVEYS

In 1998, there were approximately 3,641 ha (8,997 acres) of posted outdoor contamination areas and 587 ha (1,450 acres) of posted underground radioactive materials areas at the Hanford Site. Survey locations are illustrated in Figures 7-1 through 7-10. These areas were typically associated with cribs, ponds, trenches, burial grounds, tank farms, and covered ditches.

The posted contamination areas vary in number and size between years because of an ongoing effort to clean, stabilize, and remediate areas of known contamination. During this time, new areas of contamination are also being identified. Approximately 5.2 ha (12.8 acres) were reclassified from contamination/soil contamination areas to underground radioactive materials areas, and 2.5 ha (6.2 acres) were posted as radiological buffer areas. Newly identified areas may have resulted from contaminant migration or an increased effort to investigate outdoor areas for radiological contamination. Vehicles equipped with radiation detection devices and an ultrasonic ranging and data system have identified areas of contamination that were previously undetected.

It was estimated that the external dose rate at 80% of the identified outdoor contamination areas was estimated at less than 1 mrem/h, although direct dose rate readings from isolated radioactive specks (a diameter less than 0.6 cm [0.25 in.]) could have been considerably higher. Contamination levels of this magnitude did not significantly add to dose rates for the public or Hanford Site workers in 1998.

Figure 7-1 1998 Radiological Survey Locations, 100-B,C Area

Figure 7-2 1998 Radiological Survey Locations, 100-D,DR Area

Figure 7-3 1998 Radiological Survey Locations, 100-F Area

Figure 7-4 1998 Radiological Survey Locations, 100-H Area

WMWEM14-89EMPHRAD

Figure 7-5 1998 Radiological Survey Locations, 100-K Area

Figure 7-6 1998 Radiological Survey Locations, 100-N Area

Figure 7-7 1998 Radiological Survey Locations, 200 East Area

Figure 7-8 1998 Radiological Survey Locations, 200 West Area

Figure 7-9 1998 Radiological Survey Locations, 300 Area

Figure 7-10 1998 Radiological Survey Locations, 600 Area

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8.0 INVESTIGATIVE SAMPLING

Examples of investigative samples collected in 1998 included: soil, vegetation, animals, insects and animal nests. Investigative samples were collected where known or suspected radioactive contamination was present, or to verify radiological conditions at project sites. In 1998, 51 samples were analyzed for radionuclides at the 222-S Laboratory. Analytical results are provided in Tables 8-1 through 8-5. Another 133 contaminated environmental samples were reported and disposed without isotopic analyses (although field instrument readings were recorded) during clean-up operations. These results are provided in Table 8-6. Only radionuclide concentrations above analytical detection limits are provided in this report. A more detailed discussion of the 1998 results can be found in PNNL-12088, Section 3.2, "Near-Facility Environmental Monitoring."

Soil

In 1998, there were 41 instances of radiological contamination in which soil was identified as the carrier of contamination. Seven samples were submitted for radioisotopic analysis. External radioactivity levels ranged from slightly above background (approximately 9,250 disintegrations per minute [dpm]/100 cm²) to greater than 1 million dpm/100 cm². The number of contamination incidents, the range of radiation dose levels, and radionuclide concentrations observed in 1998 were generally within historical ranges.

Vegetation

In 1998, there were 51 instances of radiological contamination in which vegetation was identified as the carrier of contamination. Ten samples were submitted for radioisotopic analysis. Three of the samples that were analyzed showed field readings in excess of one million dpm. Analyses of contaminated tumbleweeds showed strontium-90 levels as high as 7.36E+06 pCi/g, and cesium-137 levels as high as 1.41E+06 pCi/g. The number of contaminated vegetation incidents in 1998 was comparable to those observed in 1997 (46). The radioactivity levels and range of radionuclide concentrations were all within historical ranges.

Animals

Animals were collected either as part of an integrated pest management program or as a result of finding radiologically contaminated wildlife-related material (e.g., feces, nests, etc.). Animals were collected directly from or near, facilities in an effort to monitor and track effectiveness of preventive measures designed to deter animal intrusion.

In 1998, 34 animal and animal-related samples were submitted for analysis. As a result of the spread of radioactive contamination in the fall of 1998, 15 fruit fly samples were submitted for radioanalyses. A detailed discussion of this event can be found in PNNL-12088, Section 2.4, "Environmental Occurrences."

The maximum radionuclide concentrations in 1998 were in mouse feces collected in the 200 East Area. The numbers of animals found to be contaminated with radioactivity, the radioactivity levels, and the range of radionuclide concentrations were within historical ranges. There were 21 cases of contaminated animal or animal-related samples found during cleanup operations that were not analyzed.

Special Characterization Sampling

One special characterization project was initiated during 1998 -- the Project W-314 Pipeline. A Sample and Analysis Plan (Mitchell 1999) was prepared and issued.

Table 8-1 Investigative Sample Results – Soil, 1998 (pCi/g)

Sample #	Location	Sample Matrix	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	¹⁵⁴ Eu	¹⁵⁵ Eu	total U	²³⁸ Pu	^{239,240} Pu	Field Reading ^(a)
6757	200 East Area	Soil & Tumbleweed	ND ^(b)	8.7E-07	2.9E-07	ND	ND	1.3E-01	ND	ND	30,000dpm
6758	200 West Area	Soil Speck	ND	3.0E-05	2.5E-06	ND	ND	3.3E-01	ND	ND	350,000dpm
6759	200 East Area	Soil Speck	ND	1.6E-04	3.7E-06	ND	ND	2.1E-01	ND	ND	>1,000,000dpm
6760	200 West Area	Soil	ND	8.7E-06	3.5E-05	ND	ND	3.0E-01	ND	ND	19,250dpm
6761 ^(c)	200 East Area	Soil									14,000dpm
6766	200 East Area	Soil Speck	ND	5.2E-05	1.3E-05	ND	ND	2.7E-01	ND	ND	26,000dpm
6784	200 East Area	Soil Speck	ND	2.2E-05	9.2E-05	6.1E-07	ND	2.6E-01	ND	ND	400,000dpm/100cm ²
6786	200 East Area	Soil	ND	3.5E-05	8.9E-07	3.4E-07	3.0E-07	3.6E-01	ND	3.2E-07	>1,000,000dpm

^aField monitoring results are expressed as disintegrations per minute per probe area (dpm) when a Geiger-Müller detector is used and the geometry of the source is not considered; or as millirad per hour (mrads/h) when an ion chamber is used.

To obtain field instrument readings expressed as dpm/100cm², the measured background radioactivity is subtracted from the Geiger-Müller reading (in counts per minute) and converted to dpm by multiplying x 10 (an average conversion), and further converted to dpm per 100 cm² by multiplying x 6 (approximate number of probe areas in 100 cm²).

^bNot Detected (result less than zero, or less than its overall analytical error, or no peak detected).

^cLaboratory analysis not performed.

Table 8-2 Investigative Sample Results – Vegetation, 1998 (pCi/g)

Sample #	Location	Sample Matrix	60Co	90Sr	137Cs	154Eu	155Eu	totalU	238Pu	239,240Pt	Field Reading(a)
6757	200 East Area	Soil & Tumbleweed	ND ^(b)	8.7E-07	2.9E-07	ND	ND	1.3E-01	ND	ND	30,000dpm
6762	200 East Area	Tumbleweed	ND	7.4E-01	1.6E-04	ND	ND	2.7E-02			>1,000,000dpm
6767	200 East Area	Tumbleweed	ND	7.3E-03	2.9E-04	ND	ND	5.9E-02	ND	ND	>1,000,000dpm
6782	200 East Area	Tumbleweed ^(c)									15,000dpm/100cm ²
6783	200 East Area	Tumbleweed	ND	1.3E-05	1.4E-01	ND	ND	1.8E-01	2.5E-06	2.1E-05	25,000dpm/100cm ²
6790	200 East Area	Tumbleweed ^(c)									250,000dpm/100cm ²
6791	200 East Area	Tumbleweed	ND	4.3E-01	ND	ND	ND	4.1E-02	ND	ND	>1,000,000dpm
6792	200 West Area	Tumbleweed	1.6E-04	7.7E-03	1.7E-02	ND	ND	7.5E-01	6.4E-05	8.0E-05	44,000dpm/100cm ²
6793	200 West Area	Tumbleweed	ND	9.1E-03	ND	ND	ND	1.1E-01	ND	ND	25,000dpm/100cm ²
6794	200 West Area	Sage/Rabbitbrush	ND	ND	ND	ND	ND	4.0E-03	ND	ND	<D ^(d)

^aField monitoring results are expressed as disintegrations per minute per probe area (dpm) when a Geiger-Müller detector is used and the geometry of the source is not considered; or as millirad per hour (mrads/h) when an ion chamber is used.

To obtain field instrument readings expressed as dpm/100cm², the measured background radioactivity is subtracted from the Geiger-Müller reading (in counts per minute) and converted to dpm by multiplying x 10 (an average conversion), and further converted to dpm per 100 cm² by multiplying x 6 (approximate number of probe areas in 100 cm²).

^bNot Detected (result less than zero, or less than its overall analytical error, or no peak detected).

^cLaboratory analysis not performed.

^dInstrument reading for sample was not distinguishable from ambient background radioactivity level.

Table 8-3 Investigative Sample Results – Animals, 1998 (pCi/g)

Sample #	Location	Sample Matrix	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	¹⁵⁴ Eu	¹⁵⁵ Eu	Total U	²³⁸ Pu	^{239,240} Pu	Field Reading ^(a)
6755	200 West Area	Mice (3)	ND ^(b)	6.2E-05	ND	ND	ND	7.0E-03	ND	ND	6,000dpm/100cm ²
6756	200 East Area	Mice (3)	ND	1.3E-04	3.0E-06	ND	ND	5.0E-03	ND	ND	5,500dpm
6768	200 East Area	Mouse	ND	5.0E-04	2.0E-02	ND	ND	3.0E-02	ND	ND	29,500dpm/100cm ²
6785	200 East Area	Rabbit Feces	ND	2.3E-05	2.8E-05	ND	ND	1.2E-01	ND	ND	10,500dpm/100cm ²
6787	200 West Area	Mouse	ND	1.0E-04	1.9E-04	ND	ND	2.9E-02	ND	ND	4,000dpm
6788	200 East Area	Mice (6)	ND	3.3E-07	ND	ND	ND	7.4E-03	ND	ND	<D ^(c)
6789	100-K Area	Bat	ND	6.4E-05	1.3E-03	ND	ND	2.2E-02	ND	ND	2,000dpm/100cm ²
6795 ^(d)	200 East Area	Mice (3)									15,000dpm
6797 ^(d)	200 East Area	Mice (2)									15,000dpm
6798	200 East Area	Mouse	ND	5.7E-04	1.5E-03	ND	ND	4.6E-03	ND	ND	2,000dpm/100cm ²
6799	100-N Area	Mouse	1.1E-02	2.4E-04	2.0E-03	1.7E-05	ND	2.6E-01	2.8E-05	1.6E-04	49,250dpm/100cm ²
6804	100-N Area	Mouse	1.3E-02	5.5E-04	1.6E-03	ND	ND	1.2E-01	2.4E-05	1.1E-04	19,250dpm/100cm ²
6805	100-N Area	Mouse	6.8E-04	1.7E-04	2.7E-04	3.6E-06	ND	7.4E-03	1.9E-06	6.7E-06	19,250dpm/100cm ²
6827 ^(d)	200 East Area	Fruit Fly									>1,000,000dpm
6829 ^(d)	200 East Area	Fruit Fly									100,000dpm/100cm ²
6830 ^(d)	200 East Area	Fruit Fly									100,000dpm/100cm ²
6831 ^(d)	200 East Area	Fruit Fly									200,000dpm/100cm ²
6832 ^(d)	200 East Area	Fruit Fly									20,000dpm/100cm ²
6833	200 East Area	Fruit Fly	ND	7.3E-03	ND	ND	ND	ND	ND	ND	15,000dpm/100cm ²
6834	200 East Area	Mouse	ND	1.3E-06	ND	ND	ND	4.3E-03	ND	ND	50,000dpm/100cm ²
6835 ^(d)	200 East Area	Fruit Fly									400,000dpm/100cm ²
6837 ^(d)	200 East Area	Fruit Fly									400,000dpm/100cm ²
6840 ^(d)	200 East Area	Fruit Fly									100,000dpm/100cm ²
6841 ^(d)	200 East Area	Fruit Fly									100,000dpm/100cm ²
6845 ^(d)	200 East Area	Fruit Fly									200,000dpm/100cm ²
6846-A	US Ecology	Fruit Fly	ND	3.0E-04	ND	ND	ND	ND	ND	ND	100,000dpm/100cm ²
6846-B	US Ecology	Fruit Fly	ND	2.1E-02	ND	ND	ND	ND	ND	ND	100,000dpm/100cm ²
6847	200 East Area	Mouse Feces	ND	4.5E-01	4.6E-01	5.6E-04	ND	4.7E+00	4.5E-05	1.7E-04	5 mrad/h
6848	200 East Area	Fruit Fly	ND	2.3E-03	4.6E-02	ND	ND	4.0E-02	ND	ND	90,000dpm/100cm ²
6850 ^(d)	400 Area	Fruit Fly									130,000dpm/100cm ²

^aField monitoring results are expressed as disintegrations per minute per probe area (dpm) when a Geiger-Müller detector is used and the geometry of the source is not considered; or as millirad per hour (mrads/h) when an ion chamber is used.

To obtain field instrument readings expressed as dpm/100cm², the measured background radioactivity is subtracted from the Geiger-Müller reading (in counts per minute) and converted to dpm by multiplying x 10 (an average conversion), and further converted to dpm per 100 cm² by multiplying x 6 (approximate number of probe areas in 100 cm²).

^bNot Detected (result less than zero, or less than its overall analytical error, or no peak detected).

^cInstrument reading for sample was not distinguishable from ambient background radioactivity level.

^dLaboratory analysis not performed.

Table 8-4 Investigative Sample Results – Animal Nests, 1998 (pCi/g)

Sample #	Location	Sample Matrix	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	¹⁵⁴ Eu	¹⁵⁵ Eu	total U	²³⁸ Pu	^{239,240} Pu	Field Reading ^(a)
6763	200 West Area	Ant Hill	ND ^(b)	1.7E-05	3.5E-05	ND	ND	3.2E-01	ND	7.7E-07	118,500dpm/100cm ²
6764	200 West Area	Bird Nest	ND	1.8E-01	7.2E-03	ND	ND	ND	ND	ND	60,000dpm
6765	200 East Area	Wasp Nest	1.7E-04	1.9E-04	1.6E-03	ND	ND	9.4E-02	ND	8.6E-07	20,000dpm

^aField monitoring results are expressed as disintegrations per minute per probe area (dpm) when a Geiger-Müller detector is used and the geometry of the source is not considered; or as millirad per hour (mrads/h) when an ion chamber is used.

To obtain field instrument readings expressed as dpm/100cm², the measured background radioactivity is subtracted from the Geiger-Müller reading (in counts per minute) and converted to dpm by multiplying x 10 (an average conversion), and further converted to dpm per 100 cm² by multiplying x 6 (approximate number of probe areas in 100 cm²).

^bNot Detected (result less than zero, or less than its overall analytical error, or no peak detected).

Table 8-5 Investigative Sample Results – Miscellaneous, 1998 (pCi/g)

Sample #	Location	Sample Matrix	⁶⁰ Co	⁹⁰ Sr	¹³⁷ Cs	¹⁵⁴ Eu	¹⁵⁵ Eu	total U	²³⁸ Pu	^{239,240} Pu	Field Reading ^(a)
6849	200 East Area	Crystalline Material	ND ^(b)	ND	ND	ND	ND	ND	ND	ND	18,000dpm/100cm ²

^aField monitoring results are expressed as disintegrations per minute per probe area (dpm) when a Geiger-Müller detector is used and the geometry of the source is not considered; or as millirad per hour (mrads/h) when an ion chamber is used.

To obtain field instrument readings expressed as dpm/100cm², the measured background radioactivity is subtracted from the Geiger-Müller reading (in counts per minute) and converted to dpm by multiplying x 10 (an average conversion), and further converted to dpm per 100 cm² by multiplying x 6 (approximate number of probe areas in 100 cm²).

^bNot Detected (result less than zero, or less than its overall analytical error, or no peak detected).

Table 8-6 Investigative Samples Not Analyzed, 1998

Date	Sample Matrix	Location	Field Reading ^(a)
1/5/98	Tumbleweeds	Inside 200-E perimeter fence @ 8th & Canton Ave.	1,500,000dpm
1/7/98	Gravel and Asphalt	Outside roll-up doors @ 105-N Building	30,000dpm
1/7/98	Soil (Coyote Urine)	2904-S-160 Diversion Box	10,200dpm
1/8/98	Tumbleweed	216-U-11 Stabilized Trench	4,200dpm
1/21/98	Speck	216-U-10 Pond	72,000dpm
1/23/98	Soil Speck	Just south of the 3734 concrete slab, 300 Area	15,000dpm
1/27/98	Speck	216-U-5	>1,000,000dpm
2/2/98	Soil	216-T-21 through 24	20,000dpm
2/3/98	Speck	216-T-5	120,000dpm
2/6/98	~15 Tumbleweeds	Cross Site Transfer Line East of Fuel Station	180,000dpm
2/9/98	Tumbleweed	Cross Site Transfer Line East of Fuel Station	30,000dpm
2/17/98	Tumbleweed	216-E-12B	400,000dpm
2/24/98	Specks	241-TX-155 Diversion Box	60,000dpm
2/27/98	Two Specks	Adjacent to BX-302-C Underground Storage Tank	30,000dpm
3/16/98	Sample Valve #59A-204	291 Load in Station @the 200 LWDF	15,000dpm
3/18/98	Fork Lift Radiator	2711-E Garage	60,000dpm
3/24/98	Portable Diesel fuel Tank	1163 Excess Yard	35,000dpm
3/25/98	Brick	UPR-200-E-98 (UN-216-E-26)	230,000dpm
4/6/98	Speck	100-F Exclusion Area & 116-F-4	1,200,000dpm/100cm ²
4/7/98	Soil	100-F Exclusion Area & SCA	174,000dpm/100cm ²
4/13/98	2 Pipe Gaskets	WMNW Borehole Gamma Ray Calibration Site	30,000dpm
4/13/98	Tumbleweeds	200-E East fence line	350,000dpm
4/14/98	Tumbleweeds	200-E East fence line near Gate 809	177,000dpm
4/15/98	Soil	On road near 241-TX/TY	>1,000,000dpm
4/16/98	Speck	MO-930 and B-Plant Stack	14,000dpm/100cm ²
4/17/98	Soil & Vegetation	216-U-14 Ditch	9,000dpm
4/22/98	Shelving Unit	3718-N Building	12,000dpm/100cm ²
4/24/98	Soil	West of 241-EW-151 Vent Station	207,000dpm/100cm ²
5/1/98	Tumbleweed Fragments	NE Corner 200-W Fence line	20,000dpm/100cm ²
5/4/98	Speck	241-T	79,250dpm/100cm ²
5/4/98	Tumbleweed	NW Side of 241-S Complex	8,000dpm/100cm ²
5/5/98	Rabbit Feces/Soil Specks	241-BX/BY	597,000dpm/100cm ²
5/11/98	Tumbleweed Fragments	241-A Tank Farm Complex	39,000dpm/100cm ²
5/12/98	Rust Stains	3730 Building	30,000dpm/100cm ²
5/15/98	Tumbleweed	2706-T RMA	100,000dpm/100cm ²
5/15/98	Boron Balls	105-C Ball 3X Hopper Elevator area	175,000dpm/100cm ²
5/28/98	Rust Scale	105-C	75,000dpm
6/1/98	Wall	221-T Plant	32,000dpm/100cm ²
6/9/98	Speck	118-KE-2	75,000dpm/100cm ²
6/10/98	Asbestos fragments	PUREX fence line	100,000dpm/100cm ²
6/10/98	Fixed spot	116-KW-1	600,000dpm/100cm ²
6/17/98	Tumbleweeds	200-E fence line north of 8th St. off Canton Ave.	15,000dpm/100cm ²
6/19/98	Specks	South of 241-B Tank Farm	160,000dpm/100cm ²
6/19/98	Speck	241-AX Perimeter	80,000dpm/100cm ²
6/25/98	Rabbit feces	NE of 241-BY tank farm change trailer	60,000dpm/100cm ²
6/26/98	Tumbleweed	218-W-4B Burial Ground	75,000dpm/100cm ²

Table 8-6 Investigative Samples Not Analyzed, 1998 (cont)

Date	Sample Matrix	Location	Field Reading ^(a)
7/6/98	6'X 3/4" Channel iron	Excess Material Storage NE of 306-E	1,800dpm/100cm ²
7/14/98	Vegetation, soil, & feces	On URM pipeline between Semi Works and Baltimore Ave.	355,500dpm/100cm ²
7/14/98	Metal Storage Cabinet	306-E NE Excess Yard	15,000dpm/100cm ²
7/17/98	Water Leak	Leak from Tanker #3859 @ ERDF	4,500dpm/100cm ²
7/28/98	Soil	200-E Railroad Tracks	18,000dpm/100cm ²
7/28/98	5' Step Ladder	306-E NE Excess Yard	28,000dpm/100cm ²
8/3/98	Tumbleweed Fragments	15' X 5' area NE of the 241-TX-155 Diversion Box	400,000dpm/100cm ²
8/3/98	Tumbleweed Fragments	South side of 225-B by the burial box filter.	200,000dpm/100cm ²
8/4/98	Tumbleweed Fragments & Soil	Transfer line between T-Plant and 241-TX-155	120,000dpm/100cm ²
8/4/98	Tumbleweed Fragments & Soil	216-B-64 Basin	57,000dpm/100cm ²
8/5/98	Specks/rodent feces	311-ER	1,000,000dpm/100cm ²
8/5/98	Photometer	1167 Bldg.	40,000dpm/100cm ²
8/6/98	Soil	244-A lift station perimeter	108,500dpm/100cm ²
8/6/98	Canvas SWP glove	216-W-LWC	14,250dpm/100cm ²
8/7/98	Metal covers	216-W-LWC	4,000dpm/100cm ²
8/14/98	Tumbleweeds	Transfer Line NE of 241-TY	600,000dpm/100cm ²
8/18/98	Rabbit Brush & Soil	200-W URM Pipelines	800,000dpm/100cm ²
8/18/98	Tumbleweed Fragments	URM Pipeline south of 241-T (6'x15' mound)	120,000dpm/100cm ²
8/18/98	2-Mice	225-BB, K-3 Filter Building	1,000dpm
8/18/98	Darkling Beetle/Shoe	WESF SWP Lobby	1.5mrad/h
8/18/98	Ant Mounds	241-ER-151	800,000dpm/100cm ²
8/20/98	Hat	241-BY-105, Sample Truck #3	4,000dpm/100cm ²
8/24/98	Mouse	225-BB, K-3 Filter Building	2,000dpm
8/25/98	Tumbleweed Fragments	216-A-37-2	65,000dpm/100cm ²
8/25/98	Soil	NE of 241-C	>1,000,000dpm/100cm ²
8/26/98	Pipe	216-A-8	16,000dpm/100cm ²
8/28/98	Risers	216-A-8	65,000dpm/100cm ²
8/28/98	Soil	South side of 221-B	60,000dpm/100cm ²
9/1/98	Tumbleweed	314-- Pipeline Project URM Line from 241-A to A-Cribs	18,000dpm/100cm ²
9/2/98	Tumbleweed	241-BX-155 Diversion Box	4,000dpm/100cm ²
9/2/98	Tape	241-BX-155 Diversion Box	>1,000,000dpm/100cm ²
9/8/98	Mouse	225-BB, K-3 Filter Building	900,000dpm
9/9/98	Cardboard Box	UPR-200-E-43 (SE of 244-A Lift Station)	30,500dpm/100cm ²
9/10/98	8-Ant Hills	Area around 241-ER-151	>1,000,000dpm/100cm ²
9/11/98	Soil Speck	UPR-200-E-144	95,000dpm/100cm ²
9/14/98	Soil	UPR-200-E-144 (Area NE of 241-B)	23,500dpm/100cm ²
9/14/98	Soil	241-ER-151	>1,000,000dpm/100cm ²
9/14/98	7-Ant Hills and Soil	241-ER-151	>1,000,000dpm/100cm ²
9/15/98	Rail Cars	At Siding Vitrification Test Site across from 300 Area	30,000dpm/100cm ²
9/15/98	Tumbleweeds	UPR-200-E-77 (Area around 241-B-155)	34,500dpm/100cm ²
9/16/98	Fence Post	UPR-200-E-144	90,500dpm/100cm ²
9/17/98	Speck	NE Corner of MO-972 @ 241-ER-151	100,000dpm/100cm ²
9/17/98	Mouse	255-BB, K-3 Filter Building	2,000dpm
9/18/98	Ant Hills & Soil	216-B-55 (UPR-200-E-64)	>1,000,000dpm/100cm ²
9/22/98	Vegetation	200-W URM Pipelines	75,000dpm/100cm ²
9/24/98	Specks	241-BX Tank Farm perimeter	56,500dpm/100cm ²
9/24/98	Continuous Air Monitor	MO-306	8,000dpm/100cm ²
9/28/98	Tumbleweeds	2715-W RMA	400,000dpm/100cm ²
9/28/98	Mouse feces, kitchen counter, etc.	MO-967 south of B-Plant	400,000dpm/100cm ²

Table 8-6 Investigative Samples Not Analyzed, 1998 (cont)

Date	Sample Matrix	Location	Field Reading ^(a)
9/29/98	Window Sill	MO-958	200,000dpm/100cm ²
9/29/98	Tumbleweeds	216-B-59	7,500dpm/100cm ²
10/1/98	Boot	100-KE Basin	10,000dpm/100cm ²
10/1/98	Specks	275-E Carpenter's Shop	350,000dpm/100cm ²
10/1/98	Soil & Construction Materials	WESF	59,000dpm/100cm ²
10/4/98	Trash & Garbage	WESF	40,000dpm/100cm ²
10/23/98	Soil	UPR-200-W-162	60,500dpm/100cm ²
10/23/98	Tumbleweeds	Interior fence line at LERF near retention basins	200,000dpm/100cm ²
10/26/98	Tumbleweeds	Cross-Site Transfer Line between Beloit and Albany Ave.	12,000dpm/100cm ²
10/27/98	Deer Mouse	West across 7th St. from 241-ER-151	2,000dpm/100cm ²
10/27/98	Dumpster	2101-M	30,000dpm/100cm ²
10/29/98	Mouse	241-AN	20,000dpm/100cm ²
11/10/98	Tumbleweed	241-TX/TY Tank Farm	16,500dpm/100cm ²
11/10/98	Rabbit Feces/Tumbleweeds	241-SX/SY Tank Farm	>1,000,000dpm/100cm ²
11/10/98	Roadway	Roadway east of the 3722 Building	23,000dpm/100cm ²
11/12/98	Soil Speck	241-C Tank Farm	9,250dpm/100cm ²
11/13/98	Tumbleweed Fragments	200-E NE Fenceline (East side of Canton Ave.)	900,000dpm/100cm ²
11/17/98	Sandwich Bag	2247-B Iron Workers Facility	360,000dpm/100cm ²
11/17/98	Mouse	MO-844 in 200-E	5,500dpm
11/17/98	Tumbleweed Fragments	241-S Tank Farm Perimeter	50,000dpm/100cm ²
11/17/98	Rabbit Feces	241-S Tank Farm Perimeter	>1,000,000dpm/100cm ²
11/17/98	Ant Hills	241-S Tank Farm Perimeter	50,000dpm/100cm ²
11/18/98	Speck	244-A Lift Station	8,000dpm/100cm ²
11/21/98	Speck	241-ANSX/AY/AZ	1,000,000dpm/100cm ²
11/22/98	Speck	241-SX/SY	150,000dpm/100cm ²
11/25/98	Tumbleweeds	241-B	800,000dpm/100cm ²
11/25/98	Tumbleweed Fragments	241-A Evaporator Building	12,000dpm/100cm ²
11/25/98	Floor	Building 2247-B (Building in transition status)	70,000dpm/100cm ²
12/4/98	Vinegar (Fruit) Flies	2247-B Iron Workers Shop	>1,000,000dpm/100cm ²
12/8/98	Mouse	6290-E Riggers Loft	1,000dpm/100cm ²
12/8/98	Tumbleweed Fragments	Outside LERF Buffer Area on the West side	1,800,000dpm/100cm ²
12/10/98	Soil	207-B	21,000dpm/100cm ²
12/14/98	Tumbleweed Fragments	West side of Canton Ave. 200-E	>1,000,000dpm/100cm ²
12/16/98	Tumbleweed Fragments	200-E fence line at intersection of Canton and Rd. to 2025E	800,000dpm/100cm ²
12/21/98	Tumbleweed Fragments	West side of Canton Ave. 200-E	200,000dpm/100cm ²
12/22/98	Speck	241-BY Tank Farm Perimeter	68,000dpm/100cm ²
12/28/98	Tumbleweed	Outside of RBA off Canton Ave.	600,000dpm/100cm ²
12/30/98	Tumbleweed Fragments	Emergency Survey Plot #21 North of 241-AN	35,000dpm/100cm ²

^aField monitoring results are expressed as disintegrations per minute per probe area (dpm) when a Geiger-Müller detector is used and the geometry of the source is not considered; or as millirad per hour (mrads/h) when an ion chamber is used. To obtain field instrument readings expressed as dpm/100cm², the measured background radioactivity is subtracted from the Geiger-Müller reading (in counts per minute) and converted to dpm by multiplying x 10 (an average conversion), and further converted to dpm per 100 cm² by multiplying x 6 (approximate number of probe areas in 100 cm²).

9.0 NOXIOUS WEED CONTROL PROGRAM

Nine plant species are on a high priority list for control at the Hanford Site. These species are listed below, with a summary of the 1998 control activities. Major populations of noxious weeds on the Hanford Site are illustrated in Figure 9-1.

Yellow Starthistle (*Centaurea solstitialis*). Yellow starthistle represents the most rapidly expanding weed infestation in the Western United States. Hanford is at a critical point in the infestation cycle. Over 2,000 acres have been heavily infested, and a large seed bank has been established in the soil. Many additional acres have scattered starthistle infestation. Efforts to control yellow starthistle were concentrated in three major areas in 1998: spot treatment of pioneer populations, control and maintenance of starthistle on roadways, and aerial application of herbicide to approximately 800 acres - approximately one third of the area of major infestation.

Rush Skeletonweed (*Chondrilla juncea*). Rush skeletonweed is widely scattered over several thousand acres on the Hanford Site. Included are four populations of one or more acres where skeletonweed is either the dominant or co-dominant species. Each of the four large populations of skeletonweed were treated in 1998, and as in most other years, some populations were highly affected by the bio-controls, and flowering was eliminated. Other populations were less affected, and some were not significantly impacted by the bio-control agents.

Babysbreath (*Gypsophila paniculata*). A new treatment tried in 1998 was very successful in killing the aerial portions of the plant. After positive results in trial plots, this treatment was implemented on approximately 80% of the Hanford population before the plants matured to the point that controls were no longer effective. Flowering and seed set was prevented in virtually 100% of plants treated. However, mortality of the perennial root was only 10-20%. The babysbreath invasion is relatively small, and control by attrition is a practical alternative.

Dalmatian Toadflax (*Linaria genistifolia ssp. Dalmatica*). Three small populations of dalmatian toadflax have been found on the Hanford Site. All sites were treated in 1998.

Spotted Knapweed (*Centaurea maculosa*). Five populations of spotted knapweed were identified on the Hanford Site in 1998 and all known individuals were treated. Follow-up monitoring has identified resprouting from seeds and roots that were not completely killed. Populations were inconsistent in response to treatment

Diffuse Knapweed (*Centaurea diffusa*). Diffuse knapweed has become established in several locations on the Hanford Site and is rapidly invading and expanding in many areas. Approximately 20% of the known diffuse knapweed population was treated in 1998. Vehicle traffic is a major vector for dispersal of diffuse knapweed and a special effort was made to treat roadways to prevent seed production.

Russian Knapweed (*Acroptilon repens*). Treatment of Russian knapweed was delayed until 1999 in order to focus attention on more invasive species.

Saltcedar (*Tamarix spp.*). Several individual plants of saltcedar are found on the Hanford Site, south and west of the Columbia River. Most are remaining from ornamental plantings around homes in the early part of this century, and a few populations are the result of natural seed dispersal. All individuals were treated in 1998 to prevent seed dispersal to sensitive habitats.

Purple Loosestrife (*Lythrum salicaria*). Portions of Hanford's riparian areas were monitored in 1998. A single loosestrife plant was identified and destroyed.

Figure 9-1 Major Populations of Noxious Weeds, 1998

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10.0 QUALITY ASSURANCE

Quality assurance may be defined as the actions necessary to ensure the accuracy of a program. The near-facility environmental monitoring quality assurance program consists of procedures and guides to demonstrate that environmental monitoring techniques and analyses are performed within established limits of acceptance. This is documented in the *Near-Facility Environmental Monitoring QA Project Plan* (McKinney 1999).

Written operating procedures are an integral part of near-facility environmental monitoring quality assurance. Procedures for field operations are provided in an internal Waste Management Federal Services, Inc., Northwest Operations manual. This appendix briefly describes the essential components of the near-facility environmental monitoring quality assurance program.

DOCUMENTATION

Record keeping is a vital part of any environmental monitoring program. Maintenance of environmental data is important from a quality assurance standpoint, from a regulatory standpoint, and for trend analyses and optimization of environmental monitoring procedures. Each phase of near-facility environmental monitoring is documented. This documentation includes sampling logs, annual reports, and occurrence reports.

SAMPLE REPLICATION

Replicate sampling and subsequent analyses are the primary means of assessing sample variability. Duplicate samples of air, water, soil, sediment, and vegetation are collected.

DATA ANALYSIS

Environmental data are reviewed to determine compliance with applicable federal and company guides. The data are analyzed both graphically and by standard statistical tests to determine trends and impacts on the environment. Newly acquired data are compared with historical data and natural background levels. Routine environmental data are stored on both magnetic media (i.e., in a computer environment) and hard-copy printouts.

TRAINING

To ensure quality and consistency in sample collection and handling, all personnel performing such work received formal training. All radiological control technicians are required to complete a certification program. In addition, those radiological control technicians assigned

to environmental monitoring receive special classroom orientation and on-the-job training by experienced personnel. Waste Management Federal Services, Inc., Northwest Operations Environmental Monitoring and Investigations personnel, in addition to their formal training received while obtaining professional degrees, received training in such courses as "Radiation in the Environment," taught through the Washington State University, courses taught at the Harvard School of Public Health, and various short courses.

SAMPLE FREQUENCY

1. Ambient air sample filters are collected biweekly.
2. Water samples from active ponds and ditches are collected weekly.
3. Radiological surveys of roads are performed quarterly, bimonthly, or annually.
4. The thermoluminescent dosimeters are exchanged quarterly.
5. Radiological surveys of waste sites are performed quarterly, semiannually, or annually depending on the operating status, condition, and history of the site.
6. Soil, vegetation, surface water, fecal samples and sediment and vegetation samples from active ponds and ditches are collected annually.

ANALYTICAL PROCEDURES

Three laboratories provided analytical support to the near-facility environmental monitoring: Quanterra Environmental Services; the Waste Sampling and Characterization Facility; and the 222-S Analytical Laboratory. Samples are analyzed in accordance with prescribed procedures and quality control guides that are described briefly in the following paragraphs.

Quanterra Environmental Services

Environmental samples that require measurements at a very low detection limit and special samples in support of pre-operational environmental monitoring may be performed at Quanterra Environmental Services. The analytical laboratory may analyze soil, vegetation, animal feces, groundwater and air samples. Analyses are performed according to procedures and quality control guides described by the Environmental Measurements Laboratory (EML 1972), the U.S. Atomic Energy Commission (AEC 1974), and the National Council on Radiation Protection and Measurements (NCRPM 1976).

1. Soil Samples

- a. Gamma energy analysis - Gamma-emitting radionuclides are measured using a Marinelli beaker and counting with a germanium-lithium Ge(Li) detector equipped with a multichannel pulse-height analyzer.
- b. Strontium-90 - The strontium-90 is removed from the soil sample by leaching the dried sample with nitric acid. The strontium in solution is converted to an oxalate followed by precipitation as strontium carbonate. The carbonate is deposited on a planchet and counted in the same manner as the strontium-90 water samples.
- c. Technetium-99 - The technetium-99 is isolated from other elements using hydroxide carbonate coprecipitation, leaving it in solution as the pertechnetate ion (TcO_4^-). Further purification is achieved by an anion-exchange column path, followed by liquid scintillation spectrometry.

2. Vegetation Samples

- a. Gamma energy analysis - Gamma-emitting radionuclides are measured by direct counting of the sample with a Ge(Li) detector equipped with a multichannel pulse height analyzer.
- b. Strontium-90 - The strontium-90 is removed from the vegetation sample by leaching the dried sample with nitric acid. The strontium in solution is converted to an oxalate followed by precipitation as strontium carbonate. The carbonate is deposited on a planchet and counted in the same manner as the strontium-90 water samples.
- c. Technetium-99 - The technetium-99 is isolated from other elements using hydroxide carbonate coprecipitation, leaving it in solution as the pertechnetate ion (TcO_4^-). Further purification is achieved by an anion-exchange column path, followed by liquid scintillation spectrometry.

3. Groundwater Samples

- a. Strontium-90 - The strontium is removed from the water sample by precipitating it as a nitrate using nitric acid. Repeated scavenging with barium chromate and precipitating with barium carbonate purifies the sample. The strontium carbonate then is counted with a low-background gas-flow proportional counter.
- b. Gamma energy analysis - Gamma-emitting radionuclides are analyzed by directly counting the water sample with a Ge(Li) detector equipped with a multi-channel pulse-height analyzer.

- c. Tritium - Water samples are analyzed for tritium with a liquid scintillation spectrometer.
- d. Total uranium - The water samples are analyzed for uranium first by treating them with sodium and lithium fluoride and then analyzing them with a fluorometer.

Pacific Northwest National Laboratory Radiation Standards and Engineering

Thermoluminescent Dosimeters. External radiation levels are measured using thermoluminescent dosimeters. The Hanford Site uses the Harshaw 8807 dosimeter and the Harshaw 8800 reader. The thermoluminescent dosimeters are calibrated, packaged, and read by the Pacific Northwest National Laboratory Radiation Calibration Laboratory, Radiation Standards and Engineering Department. All thermoluminescent dosimeter work is performed in accordance with the procedures and specific guides from the American National Standards Institute (ANSI 1975) and Pacific Northwest National Laboratory.

222-S and Waste Sampling and Characterization Facility Analytical Laboratories

The 222-S and Waste Sampling and Characterization Facility laboratories also provide analytical support to near-facility environmental monitoring. Waste Sampling and Characterization Facility is used for the samples containing typical environmental levels of radioactivity. The 222-S Laboratory is normally used for samples containing higher than normal environmental levels of radioactivity. Analytical procedures and quality control guides are described by the Environmental Measurements Laboratory (EML 1972), the American Society for Testing and Materials (ASTM 1976), the American Public Health Association (APHA 1980), and the U.S. Environmental Protection Agency (EPA 1979).

1. Air Samples

- a. Gamma energy analysis - Gamma-emitting radionuclides are measured by direct counting of the air sample filter with a germanium detector. The gamma spectra are analyzed using a Nuclear Data 7700 software system.
- b. Strontium - Airborne strontium-89 and strontium-90 are determined by leaching the composited air sample filters with nitric acid and initially precipitating them as a nitrate. The sample is purified by iron and barium scavenging. The final precipitate, strontium carbonate, then is counted for total beta (needed to set the strontium-89 value) with a low-background beta proportional counter. Both strontium-89 and strontium-90 are calculated from the resulting count data using a computer.

- c. Plutonium - The various plutonium isotopes are leached from the air sample filter with nitric acid and passed through an ion-exchange resin. Further decontamination from lead, bismuth, and other transuranics by washing with nitric and hydrochloric acids is done. The plutonium then is eluted from the resin and electrodeposited on a stainless-steel disk, where it is counted using a surface barrier alpha spectrometer, and data are collected on a Nuclear Data system.
- d. Uranium - The uranium is leached from the air sample filter and extracted as tetrapropyl ammonium uranyltrinitrate followed by back extraction into water. Following treatment with sodium and LiF, the aqueous sample is analyzed with a fluorometer to determine the mass of uranium.

2. Pond and Ditch Water

- a. Total alpha and beta activity - An aliquot of the sample is evaporated to dryness and the total alpha and beta activities are measured by direct counting with a gas flow proportional counter.
- b. Gamma energy analysis - The liquid sample is sealed inside a geometrically approved container. The gamma-emitting radionuclides are measured by direct counting with a Ge(Li) detector equipped with a multichannel analyzer.
- c. Strontium-90 - The strontium-90 is removed from the aqueous sample by precipitating it out with barium carbonate. The strontium carbonate is purified by redissolving with nitric acid, precipitating as a nitrate, and precipitating again as a carbonate. The strontium-90 activity is determined by beta counting with a gas flow proportional counter.
- d. Plutonium - Actinides are removed from the aqueous sample by precipitation with iron. The precipitate is redissolved in hydrochloric acid and the plutonium is separated from the other actinides by ion exchange. The plutonium is electrodeposited on a planchet and counted using alpha spectrometry.

3. Groundwater Samples

- a. Strontium-90 - The strontium is removed from the water sample by precipitating it as a nitrate using nitric acid. Repeated scavenging with barium chromate and precipitating with barium carbonate purifies the sample. The strontium carbonate then is counted with a low-background gas-flow proportional counter.

- b. Gamma energy analysis - Gamma-emitting radionuclides are analyzed by directly counting the water sample with a germanium-lithium Ge(Li) detector equipped with a multi-channel pulse-height analyzer.
 - c. Tritium - Water samples are analyzed for tritium with a liquid scintillation spectrometer.
 - d. Total uranium - The water samples are analyzed for uranium first by treating them with sodium and lithium fluoride and then analyzing them with a fluorometer.
4. Pond and Ditch Mud and Sediment
- a. Gamma energy analysis - The gamma-emitting radionuclides are measured by direct counting of the dried sediment sample using a Ge(Li) detector equipped with a multichannel analyzer.
 - b. Soil leach - Strontium, plutonium, americium, and other elements are leached from the soil sample using a mixture of hydrochloric and nitric acids. The leachate is then analyzed for specific radionuclides.
5. Pond and Ditch Vegetation
- a. Gamma energy analysis - The sample is sealed inside a geometrically approved container. The gamma-emitting radionuclides are measured by direct counting with a Ge(Li) detector equipped with a multichannel analyzer.
 - b. Vegetation leach - The vegetation samples are dry-ashed in a furnace and then leached with a mixture of hydrochloric and nitric acids. The leachate is analyzed for specific radionuclides.
6. Soil Samples
- a. Gamma energy analysis - Gamma-emitting radionuclides are measured using a Marinelli beaker and counting with a Ge(Li) detector equipped with a multichannel pulse-height analyzer.
 - b. Strontium-90 - The strontium-90 is removed from the soil sample by leaching the dried sample with nitric acid. The strontium in solution is converted to an oxalate followed by precipitation as strontium carbonate. The carbonate is deposited on a planchet and counted in the same manner as the strontium-90 water samples.

- c. Technetium-99 - The technetium-99 is isolated from other elements using hydroxide carbonate coprecipitation, leaving it in solution as the pertechnetate ion (TcO_4^-). Further purification is achieved by an anion-exchange column path, followed by liquid scintillation spectrometry.

7. Vegetation Samples

- a. Gamma energy analysis - Gamma-emitting radionuclides are measured by direct counting of the sample with a Ge(Li) detector equipped with a multichannel pulse height analyzer.
- b. Strontium-90 - The strontium-90 is removed from the vegetation by leaching the dried sample with nitric acid. The strontium in solution is converted to an oxalate followed by precipitation as strontium carbonate. The carbonate is deposited on a planchet and counted in the same manner as the strontium-90 water samples.
- c. Technetium-99 - The technetium-99 is isolated from other elements using hydroxide carbonate coprecipitation, leaving it in solution as the pertechnetate ion (TcO_4^-). Further purification is achieved by an anion-exchange column path, followed by liquid scintillation spectrometry.

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11.0 GLOSSARY

Aboveground Tank - A tank situated so that its entire surface area is completely above the plane of the adjacent surrounding surface and the entire surface area of the tank (including the tank bottom) can be visually inspected (WAC 173-303-040).

Accessible Soils - Hanford soils that are not behind security fences must meet the Table 1 values found in the Fluor Daniel Hanford, Inc. *Inactive Waste Sites*, HNF-PRO-454. The values reflect a 10-mrem/yr effective dose equivalent limit from Hanford Site operations to the most exposed member of the public.

Administrative Control Value (ACV) - Operating contractor's internally imposed release limit for an airborne or liquid effluent. The ACV is usually expressed as a fraction or multiple of the derived concentration guide-public but may also be expressed as a total release value (curies per year for ^{85}Kr and tritium). In applying the ACV, the "Unity Rule" applies; the sum of the fractions of the ACV in an effluent shall not exceed 1.

Airborne Radioactive Effluents - Radioactive particles, mists, vapors, fumes, and/or gases contained or entrained in airborne effluents.

Aquifer - A subsurface formation consisting of sufficient saturated permeable material to yield significant quantities of water.

Areal Contamination - Contamination generally confined to less than the first centimeter of soil. Numerically, the radioactivity content averaged over a suitable area.

As Low As Reasonably Achievable (ALARA) - The implementation of ALARA is described in HNF-PRO-159, *ALARA Program Description*. This concept applies to maintaining releases at or below prescribed regulatory limits.

Assure - To remove any doubt, to promise.

Audit - An announced examination of a facility or operation to determine compliance with the specific requirements.

Average Soil Contamination - Contamination generally dispersed through the soil. Numerically, the radioactivity content averaged over a suitable mass of soil.

Backfill Soil - The soil used as a plant growth medium between the depths of 30-120 cm as measured at the restabilization site.

Background Radiation - Refers to regional levels of radioactivity produced by sources other than those of specific interest (e.g., the nuclear activities at the Hanford Site).

Barrier or Engineered Barrier - At a disposal site, a manufactured addition designed to retard or preclude radionuclide or other contaminant transport and/or preserve the integrity of the disposal site.

Becquerel (Bq) - The standard international unit of radioactivity. One Becquerel is one disintegration per second or: $Bq = 2.7 \text{ E} - 11 \text{ Ci}$

Biological Transport - Means of biological transport may include one or more of the following processes:

- Movement of subsurface radioactivity to the surface by physiological vegetative processes.
- Dispersion of such vegetation by the wind.
- Contaminated urine and feces deposited by animals that have gained access to and ingested radioactive materials.
- Contaminated animals themselves that have ingested radioactive materials directly or ingested other contaminated animals or plants.
- Physical displacement of radioactive materials by burrowing animals.
- Nests built using contaminated materials.

Biota - The plant and animal life of a specific region.

Building - A structure created to shelter any form of human activity, such as a house, barn, church, hotel, or similar structure; it also may refer to a historically related complex, such as a courthouse and jail; or, on the Hanford Site, buildings to include: old reactor buildings, office buildings; e.g., 2750 Building, 222-S Laboratory Building, etc.

Burial Ground - A land area specifically designated to receive contaminated solid or solidified liquid waste packages and equipment. The contaminated articles are usually placed in trenches and covered with overburden.

Byproduct - A material that is not one of the primary products of a production process and is not solely or separately produced by the production process. Examples are process residues such as slag or distillation column bottoms. The term does not include a coproduct that is produced for the general public's use and is ordinarily used in the form in which it is produced by the process.

Calibration - Determining the deviation of an instrument from a standard traceable to the National Bureau of Standards or other recognized agency and reporting the deviations and/or eliminating them by adjustment.

Central Landfill - The U.S. Department of Energy-owned disposal site once used for the disposal of trash and other nonhazardous nonradioactive wastes. Landfill operations were discontinued in March 1996.

Chemical Processing - Chemical treatment of material to separate desired components selectively. At the Hanford Site, plutonium, uranium, and fission products were chemically separated from irradiated fuels.

Chemical Trench - The central landfill trench that was used for the disposal of chemicals, hazardous wastes, and hazardous substances.

Committed Dose Equivalent - The predicted total dose equivalent to a tissue or organ over a 50-year period after a known intake of a radionuclide into the body. It does not include contributions from external dose. Committed dose equivalent is expressed in units of rem (or sievert).

Committed Effective Dose Equivalent - The sum of the committed dose equivalents to various tissues in the body, each multiplied by the appropriate weighing factor. Committed effective dose equivalent is expressed in units of rem (or sievert).

Composite Sample - A number of random samples initially collected from a waste and combined into a single sample; this sample is analyzed for the contaminants of concern.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) - Commonly known as "Superfund," CERCLA was enacted to respond to uncontrolled releases of hazardous substances to the environment, primarily at inactive sites that were not adequately addressed by the *Resource Conservation and Recovery Act of 1976 (RCRA)*. CERCLA also applies to actively managed facilities and any onshore or offshore facility.

Confined Aquifer - A subsurface water-bearing region having defined and relatively impermeable upper and lower boundaries.

Conserve - Use methods and procedures necessary to protect any endangered or threatened species. Such methods and procedures include, but are not limited to, activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation. In the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, methods and procedures may include regulated taking.

Controlled Area - An area where access is controlled to protect individuals from exposure to radiation and/or radioactive materials.

Construction - Addition, enlargement, modification, replacement, alteration, or restart (after a period of five years of nonoperation) of any process or stationary source that may increase emissions or ambient air concentrations of any contaminant for which federal or state ambient or emission standards have been established.

Contamination Area - Any area where contamination levels are greater than the values specified in Chapter 2, Table 2-2, *Hanford Site Radiological Control Manual*, HSCRM-1, but less than or equal to 100 times those values.

Contamination Limit - That concentration limit or activity limit for radioactive materials below which posting restrictions and environmental controls to protect personnel or the environment are not necessary.

Crib - An underground structure designed to receive liquid waste that percolates into the soil directly or percolates into the soil after having traveled through a connected tile field.

Decommissioning - Actions taken to reduce the potential health and safety impacts of U.S. Department of Energy-controlled contaminated facilities. Actions could include stabilizing, reducing, or removing radioactivity or demolishing the contaminated facilities.

Decontamination - The removal of radioactive or hazardous contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical treating, mechanical cleaning, or other techniques.

Demolition Waste - Solid waste, made up largely of inert waste resulting from the demolition or razing of buildings, roads, and other manufactured structures. Demolition waste consists of, but is not limited to, concrete, brick, bituminous concrete, wood and masonry, composition roofing and roofing paper, steel, and minor amounts of other metals such as copper. [Plaster (sheet rock or plasterboard), asbestos, or any material other than wood that is likely to produce gases or a leachate during the decomposition process is not considered to be demolition waste.]

Derived Concentration Guide for Occupational Exposure (DCG-Occupational) - Those concentrations in air or water that an occupationally exposed individual would have to inhale/ingest in a year to result in 5,000-mrem/50 year dose commitment.

Derived Concentration Guide for Public Exposure (DCG-Public) - The concentration of radioactive materials in air or water specified in Appendix J, "Derived Concentration Guides for Controlling Exposure to Members of the Public," of this manual. The DCG-Public are those concentrations of radionuclides in air or water that would result in a maximum effective committed dose equivalent of up to 100 mrem per year using ICRP-30 dose methodology under conditions of continuous exposure or use (i.e., continuously breathing or being in contact with contaminated air or exclusively drinking contaminated water).

Diffuse Source - A source or sources of radioactive or chemical contaminants released into the environment that do not have a defined point or origin of release (a nonpoint source). Such sources are also known as area sources.

Dispersible - Capable of being widely spread.

Disposal - Discharging, discarding, or abandoning dangerous waste, or the treatment, decontamination, or recycling of such waste once it has been discarded or abandoned. This includes the discharge of any dangerous waste into or on any land, air, or water (WAC 173-303-040). This definition also includes radioactive materials.

Disposal Facility - Any facility or part of a facility where hazardous and/or radioactive waste is intentionally placed or where any land or water wastes will remain after closure.

District - A geographically definable area (urban or rural) with a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united either by past events or aesthetically by planned physical development. A district may also be individual elements that are separated geographically but linked by association or history.

Disturbance - Includes, but is not limited to, the following: leveling; firebreak, road, or utility line construction; excavation of pits, foundations and trenches; quarrying and borrowing of rock and soils; seismic testing; and stockpiling of earth.

Ditch - An open surface site for transport of liquid wastes to a pond or trench structure designed for percolation.

Ecology - The Washington State Department of Ecology.

Effective Dose Equivalent (EDE) - The summation of the products of the dose equivalent received by specified tissues of the body and a tissue-specific weighing factor. This sum is a risk-equivalent value and can be used to estimate the health-effects risk of the exposed individual. The tissue-specific weighing factor represents the fraction of the total health risk resulting from uniform whole-body irradiation that would be contributed by that particular tissue. The EDE includes the committed EDE from internal deposition of radionuclides and the EDE caused by penetrating radiation from sources outside the body. EDE is expressed in units of rem (or sievert).

Effluent - An airborne or liquid discharge from a facility after all engineered waste treatment and effluent controls have been performed. The term includes onsite discharges to the atmosphere, lagoons, ponds, cribs, injection wells, French drains, or ditches. The term does not include solid waste stored or removed for disposal or waste that is contained in retention basins or tanks before treatment and/or disposal.

Emissions Unit - Regarding air pollutant emissions, any part of a stationary source that emits or would have the potential to emit any pollutant subject to regulation.

Ensure - To make certain, make sure, make safe.

Environmental Monitoring Plan (EMP) - A two-part document prepared for each site, facility, or process that uses, generates, releases, or manages significant pollutants or hazardous materials.

Environmental Sites Database (ESD) - A database of environmental Sites which is administered by the Environmental Restoration Contractor.

Exhaust System - A stack, gaseous effluent system, building ventilation system, or any system that vents air or gaseous material to the atmosphere.

Expedited Response Action - An interim response action (IRA) or interim measure (IM) process. This includes any onsite response action (under CERCLA or RCRA authority) to mitigate site contamination conducted before initiation of remedial action or corrective action in accordance with final record of decision (ROD) or permit modifications.

Facility - A processing plant, tank farm, shop, laboratory, powerhouse, or laundry. Including all contiguous land and structures, other appurtenances, and improvements on land used for recycling, reusing, reclaiming, transferring, storing, and treating of dangerous waste (including treatment, storage, and disposal sites as well as groundwater wells). (40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities," and WAC 173-303-040.)

Facility-Specific Environmental Monitoring - Routine environmental monitoring of all environmental media (air, biota, etc.) around facility parameters.

Field Blank - Aliquots of analyte-free water or solvents brought to the field in sealed containers and transported to the laboratory with the sample container. Field blanks include trip blanks and equipment blanks.

Field Duplicate - Field duplicates are collected at specified frequencies and are used to document precision. The field duplicate precision depends on the variance of waste composition, sampling techniques, and analytical technique.

Fish or Wildlife - Any member of the animal kingdom including (without limitation) any mammal, fish, bird, amphibian, reptile, mollusk, crustacean, arthropod, or other invertebrate--including any part, product, egg, offspring, or the dead body or parts of the offspring.

French Drain - A covered or rock-filled encasement with the bottom end open to allow liquids to seep into the ground.

Fugitive Emissions - Material that is generated incidental to an operation, process, or activity and that is released or dispersed into the open air. Fugitive emissions occur via pathways that do not allow routine measurement at the point of release.

Grab Sample - A single sample removed from a stream over a short time interval.

Groundwater - Water that exists below the water table, also referred to as the zone of saturation. However, the capillary fringe directly above can be completely saturated if the sediment is fine enough. To avoid this ambiguous term, the use of phreatic water, which is water that enters freely into wells under both confined and unconfined conditions is suggested. Phreatic water is a term originally applied only to water that occurs in the upper part of the zone of saturation under water table conditions (unconfined groundwater or well water), but has come to be applied to all water in the zone of saturation, thus making it an exact synonym of groundwater. Above the water table is the vadose zone, where water pressures are less than atmospheric pressure. This zone still contains water, but the water is held to the soil particles or other groundwater material by capillary force. Thus, while this water still can move within the vadose zone, it cannot move out of the zone into a well or other place is exposed to atmospheric pressure. The dividing line between water in the vadose zone and phreatic water is the atmospheric pressure between the two, with the pressure of vadose water being below atmospheric pressure and that of phreatic water (i.e., groundwater) above atmospheric pressure.

High-Efficiency Particulate Air (HEPA) Filter - To qualify as a HEPA filter, a filter must achieve an efficiency of 99.97% under laboratory conditions and 99.95% after installation for the removal of airborne particulates greater than 3×10^{-5} cm (0.3 microns).

High-Level Nuclear Waste - Spent nuclear fuel or radioactive waste resulting directly from the dissolution and reprocessing of spent nuclear fuel. Secondary waste streams resulting from the dissolution and reprocessing of spent nuclear fuel are not considered high-level waste.

Immobile Radionuclides - All those radionuclides that are sorbed onto Hanford Site soils and usually would not migrate through the vadose zone or the groundwater below the future control zone.

Inaccessible Soils - Areas from which the general public is excluded (by fences, posting, patrols, or distance), but that are still subject to meteorological effects, are subject to a 10-mrem/yr operational EDE limit, as reflected in Table 1, *Inactive Waste Sites*, HNF-PRO-454.

Inactive Crib - A crib that has been designated as permanently out of service.

Inactive Radioactive Waste Site - Any waste site that is no longer needed for current operational programs and that is not currently an active waste disposal site.

Inactive Waste Sites - Inactive waste sites include units such as burial grounds, unplanned release sites, cribs, ditches, ponds, trenches, and basins, abandoned storage areas, drains, single-shell tank piping, transfer pits, and jumper boxes.

Injection Well - A well used for mixing liquid waste with groundwater.

Inert Waste - Noncombustible, nondangerous solid waste that is likely to retain its physical and chemical structure under expected conditions of disposal, including resistance to biological attack and chemical attack from acidic rainwater.

Insure - To cover by insurance against loss.

Less Than Detectable - An analytical term for a concentration in a sample that is lower than the minimum detection capabilities of that analytical equipment or process.

Low-Level Waste - Any gaseous, liquid, or solid radioactive waste not classified as high-level waste, transuranic waste, or spent nuclear fuel, as defined by U.S. Department of Energy Order 5820.2.

Maximum Contaminant Level (MCL) - The drinking water standards specified in 40 CFR 141, "National Primary Drinking Water Regulations." See Appendix C, "Maximum Contaminant Levels."

Minimum Detection Limit - Smallest amount or concentration of a radionuclide or nonradioactive element that can be reliably detected in a sample.

Mixed Waste - Dangerous waste that also contains enough radioactivity to be classified as radioactive waste.

Modification - Any physical or operational change to a stationary source that results in an increase in the rate of emission to the atmosphere of an air pollutant to which a standard applies.

Monitored Sample - A sample collected in a monitoring system and used to alert operations to nonroutine releases and to provide process control.

Monitoring System - Instrumentation that provides measurement of an airborne or liquid waste stream parameters. The system includes a detector and associated readout components. A continuous monitoring system measures the stream parameters on a near-real-time basis or as specified in applicable

Environmental Protection Agency regulations, 40 CFR 52, "Approval and Promulgation of Implementation Plans," Appendix E; 40 CFR 51, "Requirements for Preparation, Adoption, and Submittal of Implementation Plans," Appendix P, or as defined in applicable American National Standards Institute Standards. A radiation monitoring system is a system in which radiation or radioactivity is the measured parameter. An integrating monitoring system totals the instantaneously measured parameter over some time period. A sampling system does not measure or read out an instantaneous stream parameter.

Near Facility Environmental Monitoring - The collection and analysis of samples of air, water, soil, biota, and other media near nuclear facilities on U.S. Department of Energy sites and their environs and the measurement of external radiation to demonstrate compliance with applicable

standards and assess radiation exposures to employees and members of the public, and the near-field environment.

Nonroutine Activities - Any actions on a large-scale (>5 acres), including stabilization, soil removal, fixative or sealant application, other surface treatments, or other activities that could affect future remediation activities in an inactive waste site.

Normally Contaminated Airborne or Liquid Effluent - An airborne or liquid effluent from a facility or area that contains dispersible or unsealed radioactive materials in quantities sufficient to cause releases of radioactive materials in excess of 10% of the administrative control limit (ACL) averaged over 1 year (i.e., the total activity present times an appropriate suspendable or immiscible fraction divided by the total annual flow exceeds 10% of the ACL).

Not Detected - A reporting term which describes any or all of the following: the overall analytical error was greater than the radionuclide concentration itself; or, after allowing for the subtraction of the background level of the radionuclide, the resulting concentration was less than zero; or, no radio analytical peak was detected during the analysis.

Operate - As used in this section with respect to the activities of the Project Hanford Management Contract, the term "operate" (and other forms of the term) will refer to the performance by the Project Hanford Management Contract of its day-to-day activities in connection with the tanks and tank systems. Such activities shall be subject to the overall management, control, and oversight by U.S. Department of Energy.

Operations - In this report this term loosely refers to Project Hanford Management Contract activities including chemical processing, waste management, and decommissioning.

Operations - The contractor organization responsible for operating plants and facilities.

Overall Error - In this report, this term means the overall analytical error supplied by the laboratory performing the analysis.

Percolation - Downward movement of water through the interstices of unsaturated rock or soil because of gravity or hydrostatic pressure.

Pesticide - As defined in 40 CFR 162, the term pesticide covers all pest-control chemicals such as herbicides, rodenticides, and insecticides.

Plutonium Processing and Handling Facility - Any facility constructed primarily to process plutonium (including ^{238}Pu) and that handles in-process plutonium.

Plutonium Storage Facility - Any facility constructed to store strategic (category I) quantities of plutonium.

Point of Release - The point at which a material is released to the environment such as the top of a stack or the end of a pipe.

Point Source - A single defined point (origin) of an airborne release, such as a vent or stack.

Pond - A surface impoundment used to contain or percolate low-level liquid radioactive waste, mixed waste, or hazardous waste.

Potentially Contaminated Airborne or Liquid Effluent - An airborne or liquid effluent from a facility or area that contains radioactive materials in quantities sufficient to cause releases of radioactive materials in excess of 10% of the ACV averaged over 1 year (the total activity present times a reasonable suspendable or immersible fraction divided by the annual flow equals more than 10% of the ACV).

Potentially Corrosive Liquid Waste Stream - Any liquid waste stream that has been identified as having the potential, during upset conditions, to discharge liquid with a pH value of less than or equal to 2, or greater than or equal to 12.5.

Previously Disturbed Ground - Ground that has had its contours altered by leveling, filling, or excavation or that has been contaminated by radiation or dangerous chemicals to the extent that an individual cannot enter the area without wearing protective clothing. Disturbance is determined by observation, aerial photographs, and topographic maps.

Quality Assurance - A process designed to maintain the quality of the results of a program within established limits of acceptance.

Quality Assurance - All those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service.

Radiation Survey - Evaluation of an area or object with portable instruments to identify radioactive materials and radiation fields present.

Radioactive Byproduct - Any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or using special nuclear material (*Atomic Energy Act of 1954*, as amended). The nonradioactive hazardous component of the waste material will be subject to regulation under the RCRA.

Radioactive Liquid Effluent - A liquid effluent that has a reasonable potential for containing radioactive materials in quantities such that the annual average concentration is equal to or greater than the MCL.

Radiological Control Area - An area where access is controlled to protect individuals from exposure to radiation and/or radioactive materials. Radiological control areas include, but are not limited to, areas posted as Radiation Area, Surface Contamination, and Underground Radioactive Materials, to describe the radiological condition of the area within.

Radiological Posting - Information in the form of signs and barriers to inform people of radiological conditions that warrant avoidance or special precautions for entry.

Release From Radiological Posting - Removal of signs and barriers when access to an area no longer needs to be restricted for radiological protection purposes.

Representative Sample - The average stream parameter being measured occurs in the sample in the same average proportion that it occurs in the environmental discharge.

Retired Waste Site - A waste site that is isolated and no longer available to receive waste in any form.

Reverse Well - Same as injection well.

Routine Activities - Any actions on a small-scale (<5 acres), including radioactive hot-spot removal, vegetation removal, fencing, posting, herbicide spraying, stabilization, or immediate spill response) in an inactive waste site. In general, these routine actions shall not interfere with RCRA/CERCLA response or site investigations.

Routine Emissions - Air emissions of pollutants or releases from accidents are not considered routine. However, releases of air pollutants to the atmosphere that result from normal operations and releases that are not routine, but are more likely than not to occur, are included as routine emissions.

Sampling System - Instrumentation and equipment that remove a part of a liquid or airborne waste stream for subsequent quantitative determination of stream parameters. The system generally employs such devices as filters, other sample collection media, or effluent traps of some kind. A continuous sampling system removes a part of the stream continuously except during sample change, maintenance, repair, or other necessary outages. A grab sampling system removes an instantaneous part of the stream or removes a part of the stream over a time period.

Sealed - A container having a cover bonded with the container or a cover strong enough to prevent contact with and dispersion of the contents of the container under conditions of use and wear for which it was designed.

Sediment Column - The sediment beneath a crib. It can mean either all the sediment beneath the bottom of the crib extending to the water table or all sediment beneath a crib contaminated by radioactive materials.

Separations Area - The primary area on the Hanford Site where chemical processing and most waste management activities are performed. It includes the 200 Areas and nearby 600 Area sites.

Site - The location of a significant event, a prehistoric or historic occupation or activity, or a building or structure (whether standing, ruined, or vanished) where the location itself maintains historical or archeological value, regardless of the value of any existing structure.

Soil at depth - Soil below 36 in.

Soil Contamination - Contaminated soil not releasable in accordance with U.S. Department of Energy Order 5400.5.

Solid Waste - Any discarded material that is not excluded by WAC 173-303-017(2) or that is not excluded by a variance granted under WAC 173-303-017(5). Materials are solid waste if they are: (1) abandoned by being disposed of, burned, or incinerated, or (2) accumulated, stored, or treated (but not recycled) before (or in lieu of) being abandoned by being disposed of, burned, or incinerated. In addition, a solid waste includes any material considered to be inherently waste-like.

Speck Contamination - Single grains of soil, rust particles, feces, or pieces of vegetation.

Spent Materials - Used materials that are no longer usable without being regenerated, reclaimed, or reprocessed. Examples are spent solvents, spent activated carbon, spent catalysts, and spent acids. Does not include spent fuel from reactors.

Spot Contamination - A spot or quantity of contamination less than 1 cm³ in volume, or areal contamination less than 15 cm² in area.

Stabilization - The process of covering surface contaminated areas with clean backfill or topsoil.

Standard - A specified set of rules or conditions concerned with the classification of components; delineation of procedures; definition of terms; designation of materials, performance, design, or operations; or measurements of quality in describing materials, products, systems, services, or practices. A standard is more general than a procedure or specification and more specific than a criterion.

Standard Error of the Mean - A measure of the uncertainty in the estimated averages of data because of random variations.

Stationary Source - Any building, structure, facility, or installation that emits or may emit any air pollutant.

Structure - A work constructed by humans that consists of interdependent and interrelated parts in a definite pattern of organization. It is often a large-scale engineering project.

Suitable Surface Area - Area no more than 15 cm² over which spot contamination may be averaged in determining areal contamination.

Sump - Any stationary pit or reservoir, including those troughs/trenches connected to it, that serve to collect oil products, hazardous substances, low-level radioactive material, dangerous waste, mixed waste, high-level radioactive materials, or transuranic materials.

Surface Soil - Soil from 0 in. to 2 in. deep.

Surface Stabilization - A remedial action program on waste disposal sites that includes the addition of at least 46 to 50 cm (18 to 20 in.) of clean soil followed by revegetation. It is designed to cover surface contamination and inhibit biological and wind transport.

Surplus Facilities - Surplus facilities include all facilities that have been accepted into a decommissioning program.

Survey - A method to detect the release, disposal, or presence of radioactive materials or hazardous substances under a specific set of conditions to determine actual or potential hazards. Such an evaluation may include, but is not limited to, tests, physical examinations, and measurements of radiation or concentrations of materials.

Suspect Waste Site - A site, believed to have been previously unknown or undocumented, that, because of characteristics present at the site or historical information about the site, is suspected of containing waste (i.e., non-dangerous, hazardous, dangerous, mixed, and radioactive).

Suspendable Fraction - The fraction of a material that may become airborne.

Taking of Any Animal - To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any animal or attempt to engage in any such activity.

Tank - A stationary device designed to contain an accumulation of oil products, hazardous substances, low-level radioactive material, dangerous waste, mixed waste, high-level radioactive materials, or transuranic materials, that is constructed primarily of nonearthen materials (e.g., wood, concrete, steel, plastic) that provide structural support.

Tank Farm - An area of large underground tanks designed to store up to 1 Mgal each of high-level liquid waste.

Technologically Enhanced Naturally Occurring Radioactivity - Refined or processed ores or other materials containing naturally occurring radioactive materials, such that radiation exposure or potential radiation exposure is increased.

Thermoluminescent Dosimeter - A chip or series of chips used for measuring external gamma radiation. It consists of a material capable of absorbing energy imparted by ionizing radiation, then emitting light as a result of thermal stimulation. A measure of that light is proportional to the radioactivity absorbed.

Topsoil - The soil used as a plant growth medium at the surface to a depth of 30 cm as measured at the restabilization site. Topsoil is added soil to support the stabilization of a retired disposal facility with the objective of controlling erosion, establishing the growth of perennial grasses, and preventing the growth of deep-rooted vegetation.

Transuranic (TRU) Radionuclide - Any radionuclide having an atomic number greater than 92 (U.S. Department of Energy Order 5820.2).

Transuranic Waste - Without regard to source or form, radioactive waste that at the end of institutional control periods is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g (3700 Bq/g). The Waste Isolation Pilot Plant, high-level waste, and spent nuclear fuel as defined by U.S. Department of Energy Order 5820.2 are specifically excluded from this definition.

Trip Blank - A type of field blank used to accompany sample containers to and from the field and to detect contamination or cross-contamination that occurs during sample handling and transportation.

Uncontaminated Soil - A soil or a land area that requires no controls or restrictions in any way for radiation protection purposes and/or meets the contamination limit specifications.

Underground Radioactive Material - A radiological posting status where subsurface radioactivity is present but where surface contamination does not exceed the soil standards.

Underground Storage Tank - Any one or any combination of tanks (including underground connection pipes) used to contain an accumulation of regulated substances. At least 10% of the volume of the tanks (including the volume of underground pipes) is beneath the surface of the ground (WAC 173-360-120). A tank situated in an underground area (such as a basement, cellar, etc.) is not considered to be underground if the tank is situated on or above the surface of the floor (WAC 173-360-110). Surface impoundments, pits, ponds, lagoons, storm water collection systems, or septic tanks are not considered to be underground storage tanks, and are not subject to the underground storage tank requirements (WAC 173-360-110).

Unity Rule - If more than one radionuclide is present, the sum of the fractions represented by each radionuclide concentration divided by its respective limiting concentration (ACV) shall not exceed unity. This rule could also apply to parameters other than radionuclide concentration.

Unplanned Release Site - An area that was contaminated by an unplanned release of radioactive contamination, making it a radiological control area.

Unrestricted Release - Values below which unrestricted release of soils will occur will be defined in an applicable record of decision.

Unsampled Liquid Disposal Site - A liquid waste disposal site that is currently receiving an effluent stream that does not require sampling.

U.S. Environmental Protection Agency (EPA) - The federal agency chartered with carrying out and monitoring the environmental regulations.

Vector - A vertebrate or invertebrate that can transmit toxic, radioactive, or infectious material from a disposal or storage site to uncontrolled areas. Vectors include flies, birds, and mice.

Waste Information Data System (WIDS) - A database that identifies waste management units on the Hanford Site. It is a subset of the ESD.

Waste Management - The activity involved with storing, disposing of, shipping, handling, and monitoring all radioactive waste.

Waste Sites - Any facility used for the planned disposal of hazardous, radioactive, toxic, or nonradioactive/nontoxic waste.

Water Table - The upper boundary of an unconfined aquifer below which saturated groundwater occurs.

Table 11-1 Radionuclide Nomenclature

Radionuclide	Symbol	Half-Life	Radionuclide	Symbol	Half-Life
tritium	³ H	12.3 yr	cesium-137	¹³⁷ Cs	30.3 yr
beryllium-7	⁷ Be	53.28 d	cerium-144	¹⁴⁴ Ce	284.6 d
carbon-14	¹⁴ C	5,715 yr	promethium-147	¹⁴⁷ Pm	13.4 m
sodium-22	²² Na	2.6 yr	europium-152	¹⁵² Eu	13.5 y
potassium-40	⁴⁰ K	1.26 x 10 ⁹ yr	europium-154	¹⁵⁴ Eu	8.6 y
argon-41	⁴¹ Ar	1.8 h	europium-155	¹⁵⁵ Eu	4.7 yr
chromium-51	⁵¹ Cr	27.7 d	thallium-208	²⁰⁸ Tl	3.1 min
manganese-54	⁵⁴ Mn	312 d	bismuth-212	²¹² Bi	60.6 min
cobalt-57	⁵⁷ Co	271.8 d	lead-212	²¹² Pb	10.6 h
cobalt-60	⁶⁰ Co	5.3 yr	polonium-212	²¹² Po	0.3 x 10 ⁻⁶ s
nickel-63	⁶³ Ni	100 yr	polonium-216	²¹⁶ Po	0.15 s
zinc-65	⁶⁵ Zn	243.8 d	radon-220	²²⁰ Rn	55.6 s
krypton-85	⁸⁵ Kr	10.7 yr	radium-226	²²⁶ Ra	1,600 yr
strontium-89	⁸⁹ Sr	50.5 d	radium-228	²²⁸ Ra	5.75 yr
strontium-90	⁹⁰ Sr	29.1 yr	thorium-232	²³² Th	1.4 x 10 ¹⁰ yr
niobium-95	⁹⁵ Nb	35.0 d	uranium total	U or	--
zirconium-95	⁹⁵ Zr	64.0 d	uranium		
molybdenum-99	⁹⁹ Mo	2.7 d	uranium-234	²³⁴ U	2.4 x 10 ⁵ yr
technetium-99	⁹⁹ Tc	2.12 x 10 ⁵ yr	uranium-235	²³⁵ U	7 x 10 ⁸ yr
ruthenium-103	¹⁰³ Ru	39.4 d	uranium-236	²³⁶ U	2.3 x 10 ⁷ yr
ruthenium-106	¹⁰⁶ Ru	1.0 yr	uranium-238	²³⁸ U	4.5 x 10 ⁹ yr
tin-113	¹¹³ Sn	115 d	plutonium-238	²³⁸ Pu	87.7 yr
antimony-125	¹²⁵ Sb	2.7 yr	neptunium-239	²³⁹ Np	2.4 d
iodine-129	¹²⁹ I	1.7 x 10 ⁷ yr	plutonium-239	²³⁹ Pu	2.4 x 10 ⁴ yr
iodine-131	¹³¹ I	8.0 d	plutonium-240	²⁴⁰ Pu	6537 yr
barium-133	¹³³ Ba	10.53 yr	plutonium-241	²⁴¹ Pu	14.4 yr
cesium-134	¹³⁴ Cs	2.1 yr	americium-241	²⁴¹ Am	433 yr

12.0 STANDARDS

Table 12-1 U.S. Department of Energy Derived Concentration Guides^(a)

Radionuclide	DCG		Half-life	Radionuclide	DCG		Half-life
	Air (pCi/m ³)	Liquid (pCi/L)			Air (pCi/m ³)	Liquid (pCi/L)	
³ H	1.0E+05	2.0E+06	12.3 Years	¹⁴⁷ Pm	3.0E+02	1.0E+05	2.6 Years
¹⁴ C	6.0E+03	7.0E+04	5,700 Years	¹⁵² Eu	5.0E+01	2.0E+04	13.3 Years
⁴⁰ K	9.0E+02	7.0E+03	1.3E+8 Years	¹⁵⁴ Eu	5.0E+01	2.0E+04	8.8 Years
⁴¹ Ar	1.0E+04	0.0E+00	1.8 Hours	¹⁵⁵ Eu	3.0E+02	1.0E+05	4.96 Years
⁵¹ Cr	5.0E+04	1.0E+06	28 Days	²⁰⁸ Tl	5.0E+03	0.0E+00	3.1 Minutes
⁵⁴ Mn	2.0E+03	5.0E+04	313 Days	²¹² Bi	6.0E+02	1.0E+05	60.55 Minutes
⁵⁹ Fe	8.0E+02	2.0E+04	45 Days	²¹⁴ Bi	2.0E+03	6.0E+05	19.9 Minutes
⁵⁸ Co	2.0E+03	4.0E+04	71 Days	²¹² Pb	8.0E+01	3.0E+03	10.64 Hours
⁶⁰ Co	8.0E+01	5.0E+03	5.27 Years	²¹⁴ Pb	2.0E+03	2.0E+05	26.8 Minutes
⁶⁵ Zn	6.0E+02	9.0E+03	244 Days	²¹² Po	1.0E+00	8.0E+01	3.1E-7 Seconds
⁸⁵ Kr	3.0E+06	0.0E+00	10.72 Years	²¹⁶ Po	1.0E+00	8.0E+01	0.15 Seconds
⁸⁹ Sr	3.0E+02	2.0E+04	51 Days	²²⁰ Rn	3.0E+03	0.0E+00	55.6 Seconds
⁹⁰ Sr	9.0E+00	1.0E+03	29.12 Years	²²⁴ Ra	4.0E+00	4.0E+02	3.66 Days
⁹⁵ Zr	6.0E+02	4.0E+04	64 Days	²²⁶ Ra	1.0E+00	1.0E+02	1,600 Years
⁹⁵ Nb	3.0E+03	6.0E+04	35 Days	²²⁸ Ac	4.0E+01	6.0E+04	6.13 Hours
⁹⁹ Tc	2.0E+03	1.0E+05	2.13E+5 Years	²³² Th	7.0E-03	5.0E+01	1.41E+10 Years
¹⁰³ Ru	2.0E+03	5.0E+04	39 Days	Total U	1.0E-01	6.0E+02	4.5E+9 Years ^(b)
¹⁰⁶ Ru	3.0E+01	6.0E+03	368 Days	²³⁴ U	9.0E-02	5.0E+02	2.45E+5 Years
¹¹³ Sn	1.0E+03	5.0E+04	115 Days	²³⁵ U	1.0E-01	6.0E+02	7.04E+8 Years
¹²⁴ Sb	6.0E+02	1.0E+04	60 Days	²³⁶ U	1.0E-01	5.0E+02	2.34E+7 Years
¹²⁵ Sb	1.0E+03	5.0E+04	2.8 Years	²³⁸ U	1.0E-01	6.0E+02	4.47E+9 Years
¹²⁹ I	7.0E+01	5.0E+02	1.57E+7 Years	²³⁸ Pu	3.0E-02	4.0E+01	87.8 Years
¹³¹ I	4.0E+02	3.0E+03	8.04 Days	^{239,240} Pu	2.0E-02	3.0E+01	24,131 Years ^(c)
¹³⁴ Cs	2.0E+02	2.0E+03	2.1 Years	²⁴¹ Pu	1.0E+00	2.0E+03	14.4 Years
¹³⁷ Cs	4.0E+02	3.0E+03	30 Years	²⁴¹ Am	2.0E-02	3.0E+01	432 Years
¹⁴¹ Ce	1.0E+03	5.0E+04	32.5 Days	Total	2.0E-02	3.0E+01	N/A
¹⁴⁴ Ce	3.0E+01	7.0E+03	284 Days	Total	9.0E+00	1.0E+03	N/A

a - From DOE Order 5400.5

b - The half-life used for ²³⁸U is the half-life of ²³⁸U.c - The half-life used for mixed ^{239,240}Pu is the half-life of ²³⁹Pu.

Table 12-2 Inaccessible Soil Concentration Limits ^(a)(pCi/g)

Radionuclide	100 BDKN	100 F, H	200 W	200 E	300 Area	400 Area
³ H	1.4 E+08	7.4 E+07	3.7 E+08	2.0 E+08	9.5 E+06	1.4 E+07
¹⁴ C	6.2 E+05	6.2 E+05	6.2 E+05	6.2 E+05	6.2 E+05	6.2 E+05
⁵⁵ Fe	9.7 E+06	9.7 E+06	3.6 E+10	1.9 E+10	1.0 E+07	1.4 E+09
⁵⁸ Co	9.8 E+06	9.8 E+06	8.1 E+09	4.3 E+09	1.2 E+07	3.1 E+08
⁶⁰ Co	9.9 E+05	9.9 E+05	5.7 E+08	3.0 E+08	1.0 E+06	9.9 E+06
⁶³ Ni	1.5 E+08	1.5 E+08	6.9 E+09	6.9 E+09	1.5 E+08	2.2 E+08
⁹⁰ Sr*	8.3 E+05	8.3 E+05	2.2 E+08	1.2 E+08	8.3 E+05	8.4 E+06
⁹⁹ Tc	1.3 E+07	1.3 E+07	1.3 E+07	1.3 E+07	1.3 E+07	1.3 E+07
¹⁰⁶ Ru*	2.0 E+07	2.0 E+07	5.7 E+08	3.0 E+08	1.5 E+07	2.2 E+07
¹²⁵ Sb*	9.1 E+06	9.1 E+06	5.7 E+09	3.0 E+09	9.2 E+06	1.1 E+08
¹²⁹ I	2.8 E+05	2.8 E+05	2.8 E+05	2.8 E+05	2.2 E+05	2.8 E+05
¹³⁴ Cs	1.7 E+04	1.7 E+04	2.5 E+08	1.4 E+08	2.4 E+04	9.7 E+06
¹³⁷ Ce*	1.7 E+04	1.7 E+04	3.5 E+08	1.8 E+08	1.7 E+04	1.3 E+07
¹⁴⁴ Cs*	1.4 E+06	1.4 E+06	7.4 E+08	4.0 E+08	1.9 E+06	2.8 E+07
¹⁴⁷ Pm	3.4 E+07	3.4 E+07	7.4 E+09	4.0 E+09	3.5 E+07	2.8 E+08
¹⁵² Eu	4.5 E+06	4.5 E+06	1.2 E+09	6.2 E+08	4.6 E+06	4.5 E+07
¹⁵⁴ Eu	3.3 E+06	3.3 E+06	8.8 E+08	4.7 E+08	3.3 E+06	3.4 E+07
¹⁵⁵ Eu	2.3 E+07	2.3 E+07	6.9 E+09	3.7 E+09	2.4 E+07	2.6 E+08
²²⁶ Ra*	1.3 E+05	1.3 E+05	2.1 E+05	2.1 E+05	1.3 E+05	1.4 E+05
²²⁷ Ac*	2.4 E+03	2.4 E+03	5.4 E+04	2.9 E+04	1.4 E+03	2.1 E+03
²³² Th*	2.0 E+04	2.0 E+04	2.0 E+04	2.0 E+04	4.7 E+03	7.1 E+03
²³² U*	5.5 E+04	5.5 E+04	1.4 E+05	1.4 E+05	9.9 E+03	1.5 E+04
²³³ U	4.5 E+05	4.5 E+05	4.5 E+05	4.5 E+05	6.7 E+04	1.0 E+05
²³⁴ U	4.6 E+05	4.6 E+05	4.6 E+05	4.6 E+05	6.9 E+04	1.0 E+05
²³⁵ U*	4.9 E+05	4.9 E+05	4.9 E+05	4.9 E+05	7.3 E+04	1.1 E+05
²³⁶ U	4.9 E+05	4.9 E+05	4.9 E+05	4.9 E+05	7.1 E+04	1.1 E+05
²³⁷ U*	4.7 E+05	4.7 E+05	4.7 E+05	4.7 E+05	7.7 E+04	1.2 E+05
²³⁷ Np*	8.9 E+02	8.9 E+02	8.9 E+02	8.9 E+02	8.9 E+02	8.9 E+02
²³⁸ Pu	1.3 E+04	1.3 E+04	8.8 E+05	4.7 E+05	1.3 E+04	3.4 E+04
²³⁹ Pu	1.2 E+04	1.2 E+04	1.2 E+04	1.2 E+04	1.2 E+04	1.2 E+04
²⁴⁰ Pu	1.2 E+04	1.2 E+04	1.4 E+04	1.4 E+04	1.2 E+04	1.2 E+04
²⁴¹ Pu	6.1 E+05	6.1 E+05	4.2 E+07	2.2 E+07	6.1 E+05	1.2 E+06
²⁴¹ Am	2.5 E+04	2.5 E+04	7.4 E+05	4.0 E+05	1.9 E+04	2.8 E+04

a - From HNF-PRO-454

Note: Asterisks mark nuclides with progeny that are assumed to be present in equilibrium amounts. However, ²³⁴U was not included in the ²³⁸U limits. For supporting references see WHC-SD-EN-TI-070.

Table 12-3 Accessible Soil Concentration Limits^(a) (pCi/g)

Radionuclide	100 BDKN	100 F, H	200 W	200 E	300 Area	400 Area
³ H	1.4 E+08	7.4 E+07	3.7 E+08	2.0 E+08	9.5 E+06	1.4 E+07
¹⁴ C	6.2 E+05	6.2 E+05	6.2 E+05	6.2 E+05	6.2 E+05	6.2 E+05
⁵⁵ Fe	5.3 E+05	5.3 E+05	5.3 E+05	5.3 E+05	5.3 E+05	5.3 E+05
⁵⁸ Co	1.8 E+01	1.8 E+01	1.8 E+01	1.8 E+01	1.8 E+01	1.8 E+01
⁶⁰ Co	7.1 E+00	7.1 E+00	7.1 E+00	7.1 E+00	7.1 E+00	7.1 E+00
⁶³ Ni	2.5 E+07	2.5 E+07	2.5 E+07	2.5 E+07	2.5 E+07	2.5 E+07
⁹⁰ Sr*	2.8 E+03	2.8 E+03	2.8 E+03	2.8 E+03	2.8 E+03	2.8 E+03
⁹⁹ Tc	1.0 E+06	1.0 E+06	1.0 E+06	1.0 E+06	1.0 E+06	1.0 E+06
¹⁰⁶ Ru*	7.7 E+01	7.7 E+01	7.7 E+01	7.7 E+01	7.7 E+01	7.7 E+01
¹²⁵ Sb*	3.7 E+01	3.7 E+01	3.7 E+01	3.7 E+01	3.7 E+01	3.7 E+01
¹²⁹ I	1.0 E+04	1.0 E+04	1.0 E+04	1.0 E+04	1.0 E+04	1.0 E+04
¹³⁴ Cs	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01
¹³⁷ Cs*	3.0 E+01	3.0 E+01	3.0 E+01	3.0 E+01	3.0 E+01	3.0 E+01
¹⁴⁴ Ce*	3.3 E+02	3.3 E+02	3.3 E+02	3.3 E+02	3.3 E+02	3.3 E+02
¹⁴⁷ Pm	1.1 E+06	1.1 E+06	1.1 E+06	1.1 E+06	1.1 E+06	1.1 E+06
¹⁵² Eu	1.5 E+01	1.5 E+01	1.5 E+01	1.5 E+01	1.5 E+01	1.5 E+01
¹⁵⁴ Eu	1.4 E+01	1.4 E+01	1.4 E+01	1.4 E+01	1.4 E+01	1.4 E+01
¹⁵⁵ Eu	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02
²²⁶ Ra*	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01
²²⁷ Ac*	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01
²³² Th*	5.9 E+00	5.9 E+00	5.9 E+00	5.9 E+00	5.9 E+00	5.9 E+00
²³² U*	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01	1.0 E+01
²³³ U	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02
²³⁴ U	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02	6.3 E+02
²³⁵ U*	1.7 E+02	1.7 E+02	1.7 E+02	1.7 E+02	1.7 E+02	1.7 E+02
²³⁶ U	6.7 E+02	6.7 E+02	6.7 E+02	6.7 E+02	6.7 E+02	6.7 E+02
²³⁸ U*	3.7 E+02	3.7 E+02	3.7 E+02	3.7 E+02	3.7 E+02	3.7 E+02
²³⁷ Np*	4.8 E+01	4.8 E+01	4.8 E+01	4.8 E+01	4.8 E+01	4.8 E+01
²³⁸ Pu	2.1 E+02	2.1 E+02	2.1 E+02	2.1 E+02	2.1 E+02	2.1 E+02
²³⁹ Pu	1.9 E+02	1.9 E+02	1.9 E+02	1.9 E+02	1.9 E+02	1.9 E+02
²⁴⁰ Pu	1.9 E+02	1.9 E+02	1.9 E+02	1.9 E+02	1.9 E+02	1.9 E+02
²⁴¹ Pu	1.0 E+04	1.0 E+04	1.0 E+04	1.0 E+04	1.0 E+04	1.0 E+04
²⁴¹ Am	1.8 E+02	1.8 E+02	1.8 E+02	1.8 E+02	1.8 E+02	1.8 E+02

a - From HNF-PRO-454

Note: Asterisks mark nuclides with progeny that are assumed to be present in equilibrium amounts. However, ²³⁴U was not included in the ²³⁸U limits. For supporting references see WHC-SD-EN-TI-070.

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13.0 DATA SUMMARY METHODS

Measuring any physical quantity has some degree of inherent uncertainty. This uncertainty results from the combination of all possible inaccuracies in the measurements process, including such factors as the reading of the result, the calibration of the measuring device, and numerical rounding errors. In this report, individual radioactive measurements are accompanied by a plus or minus ($\pm$) value, which is the uncertainty term known as a two-sigma counting error.

The two-sigma counting error gives information on what the measurement might be if the same sample were counted again under identical conditions. The two-sigma counting error implies that approximately 95% of the time, a recount of the same sample would give a value within plus or minus the two-sigma counting error at the value reported.

Values in the tables that are less than the minimum detectable activity indicate that the reported result might have come from a sample with no radioactivity. Such values are considered below the detection limits of the measuring instrument. Also note that each radioactive measurement must have the random background radioactivity of the measuring instrument subtracted; therefore, negative results are possible, especially when the sample has very little radioactivity.

Reported averages also are accompanied by two standard errors of the mean. If the data fluctuate randomly, the standard error is a measure of the uncertainty in the estimated average of the data because of this randomness. If trends of periodic fluctuation are present, the standard error is primarily a measure of the variability in the trends and fluctuations about the average of the data, rather than a measure of the uncertainty of the estimated average because of random fluctuations in the data.

The mean, $\bar{X}$, is computed as:

$$\bar{X} = \frac{1}{n} \sum_{i=1}^n X_i$$

where X_i is the i th measurement and n is the number of measurements.

The standard error of the mean was computed as:

$$SE = \sqrt{\frac{S^2}{n}}$$

where S^2 , the variance of the n measurements, was computed as:

$$S_M^2 = \frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X})^2$$

This estimator, S^2 , includes the variance among the samples and the counting variance. The estimated S^2 occasionally may be less than the average counting variance.

14.0 REFERENCES

- 10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.
- 40 CFR 51, Appendix E, "Requirements for Preparation, Adoption, and Submittal of Implementation Plans, *Code of Federal Regulations*, as amended.
- 40 CFR 52, "Approval and Promulgation of Implementation Plans, *Code of Federal Regulations*, as amended.
- 40 CFR 61, Subpart H, "National Emissions Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, as amended.
- 40 CFR 141, "National Primary Drinking Water Regulations," *Code of Federal Regulations*, as amended.
- 40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment Storage and Disposal Facilities," *Code of Federal Regulations*, as amended.
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