Statement of Work for Services Provided by the Waste Sampling and Characterization Facility for the Environmental Compliance Program During Calendar Year 2000

*Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management*

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

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WASTE SAMPLING AND CHARACTERIZATION FACILITY
FOR THE ENVIRONMENTAL COMPLIANCE PROGRAM
DURING CALENDAR YEAR 2000**

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**STATEMENT OF WORK FOR SERVICES PROVIDED BY THE
WASTE SAMPLING AND CHARACTERIZATION FACILITY
FOR THE ENVIRONMENTAL COMPLIANCE PROGRAM
DURING CALENDAR YEAR 2000**

1.0 SCOPE OF SERVICES

This document defines analytical services the Waste Sampling and Characterization Facility (WSCF) shall provide the Environmental Compliance Program (ECP) throughout calendar year (CY) 2000. Two organizations within ECP are responsible for monitoring liquid and gaseous effluents and the environment immediately around facilities that contain or may contain radioactive and hazardous materials. Monitoring & Reporting (M&R), of Fluor Hanford Environmental Services, is responsible for effluent monitoring data, and Environmental Monitoring & Investigations (EMI), of Waste Management Technical Services, Inc., for near-facility environmental monitoring data. These organizations serve numerous projects, some of which are managed by other companies such as CH2M HILL and Bechtel Hanford, Inc. Monitoring data are collected and evaluated to determine their state of compliance with applicable federal and state regulations and permits, and then published in various reports. M&R is also responsible for issuing this annual statement of work.

The Appendix identifies CY 2000 samples M&R and EMI plan to submit to WSCF for analysis. Analysis of effluent (i.e., liquid discharges and air emissions) and environmental (i.e., air, liquid, animal, and vegetative) samples is required using standard laboratory procedures, in accordance with regulatory and control requirements cited in *NESHAP Quality Assurance Project Plan for Radioactive Air Emissions Data* (HNF-EP-0528-3), *Near-Facility Environmental Monitoring Quality Assurance Project Plan* (HNF-EP-0538-4), and *Hanford Analytical Services Quality Assurance Requirements Documents* (DOE/RL-96-68). Should changes to this statement of work be necessary during CY 2000, WSCF or M&R may amend it at any time with a jointly approved internal memo.

2.0 REGULATORY REPORTING REQUIREMENTS

For ECP to fulfill certain regulatory commitments, WSCF must meet the due dates specified in this document. The analytical data WSCF is to provide by these critical dates are essential for maintaining compliance with environmental release reporting deadlines mandated by federal and state regulatory agencies and the U.S. Department of Energy (DOE). Variances to technical criteria or due dates stipulated in this document must be documented by WSCF and approved or acknowledged by M&R. The key reports are described in subsequent subsections.

2.1. RADIONUCLIDE AIR EMISSIONS REPORT FOR THE CLEAN AIR ACT

This report documents radionuclide air emissions from the Hanford Site and the resulting effective dose equivalent to any member of the public from those emissions. This report complies with the reporting requirements of Title 40, Code of Federal Regulations, "Protection of the Environment," Part 61, "National Emissions Standards for Hazardous Air Pollutants," Subpart H, "National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities" (40 CFR 61 Subpart H) and Chapter 246-247 of the Washington Administrative Code (WAC 246-247).

2.2. ENVIRONMENTAL RELEASES REPORT

This report fulfills the effluent discharge reporting requirements of DOE Order 5400.1, "General Environmental Protection Program," and summarizes the compliance status of effluent releases from facilities managed under the Project Hanford Management Contract (PHMC), the River Protection Project (RPP), and the and Environmental Restoration Contract (ERC).

2.3. HANFORD SITE ENVIRONMENTAL REPORT

Pacific Northwest National Laboratory (PNNL) annually compiles and publishes this report for DOE, in compliance with DOE Order 5400.1. M&R and EMI provide, respectively, the effluent and the near-facility monitoring sections of this report.

2.4. EFFLUENT INFORMATION SYSTEM-ONSITE DISCHARGE INFORMATION SYSTEM REPORT

For all Hanford contractors each year, ES compiles and transmits this report electronically to the Idaho National Engineering Laboratory in Idaho Falls for inclusion in the Effluent Information System-Onsite Discharge Information System (EIS-ODIS) database, in compliance with DOE Order 5400.1.

2.5. HANFORD SITE NEAR-FACILITY ENVIRONMENTAL MONITORING ANNUAL REPORT

EMI annually publishes this data report as an appendix to the PNNL Hanford Site Environmental Report. It has a calendar-year summary of analysis results of samples collected of soil, vegetation, ambient air, and other media near Hanford facilities. This monitoring is performed in accordance with 40 CFR 61 Subpart H, WAC 246-247, DOE Order 5400.1, and DOE Order 5820.2A requirements.

3.0 WSCF SERVICES AND DATA QUALITY OBJECTIVES

WSCF shall provide the following analytical services when analyzing low-level effluent and environmental samples.

3.1. SAMPLE AND ANALYSIS REQUIREMENTS

All services necessary shall be provided to complete the analytical requirements listed in Tables 1 through 4. Analyses shall be performed in accordance with applicable requirements and procedures contained in the references listed in section 1.0 above. Analytical results shall be expressed in the units shown in the tables for the respective minimum detectable concentrations (MDCs).

3.2. COMPOSITE SAMPLE REPORTING REQUIREMENTS

Air emission (or effluent) samples designated as composite samples shall be composited quarterly or monthly, with all analysis results expressed in units of concentration. Results from the first three quarters shall be reported via ABCASH to M&R by the following dates:

- first-quarter air emission composite sample results..... **June 30, 2000**
- second-quarter air emission composite sample results **September 30, 2000**
- third-quarter air emission composite sample results..... **December 31, 2000**

Ambient air (i.e., non-effluent) samples shall be combined into composite samples biannually and reported via ABCASH to EMI within 90 days of receiving all samples and the data needed to create the composite sample. All results shall be expressed in units of concentration, unless otherwise specified.

3.3. YEAR-END DATA REPORTING DUE DATES

The due date for WSCF to provide M&R year-end analysis results for all air emission samples collected up through December 31 is **February 24, 2001**.

The due date for WSCF to provide EMI with year-end analysis results for all environmental (ambient air; surface water; and pond vegetation and sediment) samples collected up through December 31 is **March 16, 2001**.

All results shall be transmitted electronically and shall be expressed in units of concentration, unless otherwise specified. The analysis results from any weekly, biweekly, or monthly air samples collected on or after January 1 of the succeeding new year will be applied to that year.

3.4. LABORATORY PROCEDURES

Use laboratory analytical procedures that are:

- in compliance with U.S. Environmental Protection Agency (EPA) Method 114, Section 4.0, "Quality Assurance Methods," as found in 40 CFR Part 61, Appendix B (specifically, 4.4 and 4.5), and other applicable requirements and procedures contained in the references listed in Section 1.0 above.
- in compliance with Chapter 6.0 of the *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance* document (DOE-EH-0173T).
- in compliance with the requirements specified in the *Hanford Analytical Services Quality Assurance Requirements Documents* (DOE/RL-96-68).
- appropriate to the sample medium and size as well as the analysis requirements listed in Tables 1 through 4
- newly developed for special needs, such as destructive analysis of HEPA filters, and whose analysis requirements and methods are agreed upon by all parties involved, including M&R.

3.5. QUALITY CONTROL

WSCF shall assure the integrity and validity of analytical test results through implementation of an internal quality control program. Standard methods shall be used whenever possible. New methods that are developed or adapted shall be tested and completely documented.

WSCF shall perform calibration and quality control checks using methods consistent with the *Hanford Analytical Services Quality Assurance Requirements Documents* (DOE/RL-96-68). Biannually, WSCF shall provide data to M&R that demonstrate the data quality objectives for accuracy, precision, and completeness have been met. Auditable quality control (QC) test results shall be provided within two weeks of having received a request for specific records, without any additional charges. Other special data requests should be accommodated within two weeks of receiving each request. These special requests may necessitate additional resources, which could require further funding that the requestor is responsible to provide.

WSCF shall participate in the U.S. DOE Environmental Measurements Laboratory (EML) intercomparison program, as required by DOE/EH-0173T. WSCF shall also participate in EPA laboratory intercomparison programs, applicable to analyses it performs. EML and EPA laboratory intercomparison results shall be provided annually.

3.5.1. Water, Vegetation, and Soil Sample Analyses

QC tests shall be for accuracy, precision, and completeness; all results shall be documented. Analytical problems identified through analysis of QC samples shall be promptly corrected. WSCF shall produce a minimum of 90% usable and valid data for all ECP-related samples analyzed. WSCF shall biannually provide data to M&R that demonstrate whether or not the objectives for accuracy, precision, and completeness have been met.

WSCF shall prepare and analyze laboratory control standards (LCSs) as well as blank and duplicate samples to verify the accuracy and precision of all radiochemical methods. The total number of all QC samples shall be no less than 10% of all ordered sample analyses. The LCSs shall be included with each batch of samples processed and have, as possible, a matrix, volume, mass, and other relevant characteristics of the actual samples being analyzed. The LCSs shall have a range of activity from 5 times to no greater than 20 times the MDC values in Tables 1 through 4.

Accuracy requirements shall be met when 95% of the LCS results fall within $\pm 25\%$. Precision requirements shall be met when duplicate results fall within $\pm 30\%$ relative percent difference for samples ≥ 5 times the MDC values in Tables 1 through 4 or when the analytical uncertainty is $\leq 20\%$.

3.5.2. Air Sample Analyses

The QC tests shall be for accuracy, precision, and completeness. The results of all QC tests shall be documented. Analytical problems identified through analysis of QC samples shall be promptly corrected. WSCF shall produce a minimum of 90% usable data for all ECP-related samples analyzed. WSCF shall biannually provide data to M&R that demonstrate whether or not the objectives for accuracy, precision, and completeness have been met.

Accuracy requirements shall be met when 95% of the results from counting-instrument performance-check standards falls within $\pm 25\%$. Precision of air sample data shall be evaluated by recounting a portion of the samples analyzed, since the creation of duplicate samples is not feasible for air samples. M&R will identify the samples to be used for precision analysis on a quarterly basis. Of those samples whose analysis results are integral to calculated air emissions, 10% of them (approximately 70 samples normally) will be recounted to determine precision. Precision requirements shall be met when samples fall within $\pm 30\%$ -relative-percent difference for activities ≥ 5 times the MDC values in Tables 1 through 3 or when the analytical uncertainty is $\leq 20\%$.

The requirements of Section 3.5.1 apply to air sample analyses which involve radiochemical separations. The data quality objectives for air samples requiring radiochemical separations shall be met when the objectives in specified in Section 3.5.1 are met.

3.6. RETENTION OF AND ACCESS TO RAW DATA AND RESULTS

All raw data and analytical results shall be retained by WSCF as quality assurance documents for a minimum period of 5 years, as specified by 40 CFR 61 Subpart H.

M&R and EMI shall have access to all available raw data and results related to their samples. WSCF shall provide analysis printouts upon request. A list of GEA-identified peaks is an example of this type of printout.

3.7. ANALYTICAL ERROR AND MINIMUM DETECTABLE CONCENTRATIONS

WSCF shall provide the overall analytical error associated with each analytical result. Total analytical error shall be calculated at the 95%-confidence interval.

WSCF shall ensure that the MDC for a sample of nominal volume does not exceed the values specified in Tables 1 through 4. WSCF will not be accountable for maintaining MDC limits when analyzing samples of less-than-nominal volumes. When sample sizes are less than or greater than the nominal volumes specified in Tables 1 through 3, M&R may authorize WSCF to adjust the MDCs for samples by multiplying the specified MDC by the ratio of the actual sample size and the nominal sample size.

3.8. ROUTINE ELECTRONIC TRANSFER OF ANALYTICAL DATA

WSCF shall routinely have all analytical results available to M&R and EMI via the ABCASH (Automated Bar Coding of Air Samples at Hanford) database. WSCF shall have downloaded to ABCASH all calendar year 2000 data for M&R by **February 24, 2001**, and for EMI by **March 16, 2001**.

Owing to special analytical needs of the Spent Nuclear Fuels Project, total alpha and total beta results shall be available in ABCASH within 30 days of WSCF having received airborne effluent samples from the 105-KE and 105-KW Basins (i.e., EDP codes Y234, Y235, Y236, Y245, Y246, and Y248).

3.9. ARCHIVING OF SAMPLES

Ambient air samples in the Nxxx series of EDP codes shall be archived after total α and total β analyses are completed. The archived ambient air samples shall then be combined into composite samples and analyzed biannually.

All calendar year 2000 air emission samples not destroyed as a necessity of chemical-separation analysis for specific isotopes shall be archived at WSCF until October 1, 2001, after which they may be disposed of.

Backup record samples and continuous air monitor (CAM) samples of air emissions in calendar year 2000 shall not be analyzed (unless requested) but archived until October 1, 2001,

after which they may be disposed of. These types of samples can be identified as those received in white envelopes stamped "Archive Only," having EDP codes not listed in the Appendix.

3.10. ANALYSIS COSTS

Costs for analyzing samples are shown in Tables 1 through 3. These prices contain additional fees associated with services specific to ECP, which are explained in Table 4. These unit prices are effective through September 30, 2000. Unit prices are evaluated each fiscal year and are subject to change. The analysis costs in Tables 1 through 3 are estimates that may fluctuate because of changes in work scope, material, and/or labor costs. Adjustments made to sample analysis costs must have the concurrence of M&R.

4.0 REFERENCES

- 40 CFR 61 Subpart H, *Code of Federal Regulations*, Title 40, "Protection of the Environment," Part 61, "National Emissions Standards for Hazardous Air Pollutants," Subpart H, "National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities," as amended, U.S. Environmental Protection Agency, Washington, D.C.
- 40 CFR 61 Appendix B, *Code of Federal Regulations*, Title 40, "Protection of the Environment," Part 61, "National Emissions Standards for Hazardous Air Pollutants," Appendix B, "Quality Assurance Methods," as amended, Appendix B, U.S. Environmental Protection Agency, Washington, D.C.
- ASTM, 1991, *Establishing a Measurement System Quality Control Program for Analytical Chemistry Laboratories Within the Nuclear Industry*, ASTM C 1210, American Society for Testing and Materials.
- DOE, 1988a, *General Environmental Protection Program*, DOE Order 5400.1, U.S. Department of Energy, Washington, D.C.
- DOE, 1988b, *Radioactive Waste Management*, DOE Order 5820.2A, U.S. Department of Energy, Washington, D.C. [Note: This order has been superseded by DOE Order 435.1, *Radioactive Waste Management*, but is still recognized as in effect at the Hanford Site because it is cited in current contractual documents.]
- DOE, 1983, *Environmental Protection, Safety and Health Protection Information Reporting Requirements*, DOE Order 5484.1, U.S. Department of Energy, Washington D.C.
- DOE, 1991, *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance*, DOE/EH-0173T, U.S. Department of Energy, Washington D.C.

- DOE, 1996, *Hanford Analytical Services Quality Assurance Requirements Documents*, DOE/RL-96-68, U.S. Department of Energy, Richland, Washington.
- HPS, 1996, *Performance Criteria for Radiobioassay*, HPS N13.30, an American National Standard, Health Physics Society, McLean, Virginia.
- WAC 246-247, *Washington Administrative Code Chapter 246-247*, "Radiation Protection - Air Emissions," as amended, Washington Department of Health, Olympia, Washington.
- WHC, 1994, *Quality Assurance Project Plan for Facility Effluent Monitoring Plan Activities*, WHC-EP-0446-2, Westinghouse Hanford Company, Richland, Washington.
- WMH, 1998, *NESHAP Quality Assurance Project Plan for Radioactive Airborne Emissions*, HNF-0528-3, Waste Management Federal Services of Hanford, Inc., Richland, Washington.
- WMNW, 1999, *Near-Facility Environmental Monitoring Quality Assurance Project Plan*, HNF-EP-0538-4, Waste Management Federal Services, Inc. Northwest Operations, Richland, Washington.

Table 1. Air Emission and Ambient Air Sample Analysis Criteria for the Waste Sampling and Characterization Facility

Nominal sample volume	Type of analysis	MDC ^a ($\mu\text{Ci/ml}$)	MDA ^b (μCi)	TT (days)	Unit price ^c (\$)
20,000 ft ³ (5.66 E+08 ml)	total α and total β	2.0 E-15 (α) and 1.9 E-14 (β)	1.1 E-06 (α) and 1.1 E-05 (β)	14	176
	Ag zeolite	3.4 E-13 (as ¹⁰⁶ Ru)	1.9 E-04 (as ¹⁰⁶ Ru)	30	249
262,000 ft ³ (7.42 E+09 ml)	⁹⁰ Sr	1.9 E-14	1.4 E-04	90	402
	GEA ^d	1.9 E-14 (as ¹³⁷ Cs)	1.4 E-04 (as ¹³⁷ Cs)	90	192
	isotopic U (²³⁴ U, ²³⁵ U, ²³⁸ U)	7.1 E-15	5.3 E-05	90	471
	isotopic Pu (²³⁸ Pu, ^{239,240} Pu)	2.0 E-15	1.5 E-05	90	376
	²⁴¹ Pu	1.0 E-13	7.4 E-04	90	424
	²⁴¹ Am	1.9 E-15	1.4 E-05	90	376
	total α composite and total β composite	2.0 E-15 (α) and 1.9 E-14 (β)	1.5 E-05 (α) and 1.4 E-04 (β)	90	177
22 ft ³ (6.23 E+05 ml)	tritium (³ H)	1.5 E-09	9.3 E-04	90	177

MDC = minimum detectable concentration; MDA = minimum detectable activity; TT= turnaround time

^a MDCs shall be as low as reasonably attainable, and shall not exceed the values specified in the table.

MDCs are the maximum allowed by the EPA, obtained from 40 CFR 61, Appendix E, Table II.

^b MDAs shall be as low as reasonably achievable and shall not exceed the values specified in the table.

They are derived by multiplying the MDC by the minimum sample volumes expected. A minimum sample volume of 20,000 ft³ is expected for all total alpha and total beta analyses and 51,900 ft³ for all isotopic analyses, with the exception of tritium. A minimum sample volume of 22 ft³ is expected for tritium samples.

^c These prices contain additional fees associated with services specific to ECP. Table 4 contains a detailed list of the additional services factored into unit prices.

^d All positive GEA results shall be reported, with the exception of short-lived ²²²Rn and ²²⁰Rn progeny.

Table 2. Groundwater Monitoring and Liquid Effluent Sample Analysis Criteria for the Waste Sampling and Characterization Facility^a.

Sample size	Type of analysis	MDC ^b ($\mu\text{Ci/mL}$) ^c	TT (days)	Unit price ^d (\$)
<i>Radiological analyses</i>				
1.0 L	total α and total β	1.2 E-09 (α) and 4.0 E-08 (β)	45	142
	^3H	8.0 E-05	45	142
	^{90}Sr	4.0 E-08	45	343
	GEA ^e	1.2 E-07 (as ^{137}Cs)	45	192
	isotopic U (^{234}U , ^{235}U , ^{238}U)	2.0 E-08	45	448
	isotopic Pu (^{238}Pu , $^{239/240}\text{Pu}$)	1.2 E-09	45	448
	^{241}Am	1.2 E-09	45	448
<i>Nonradiological analyses</i>				
1.0 L	pH	NA	60	36
	NO_3	1.0 E-06 g/mL	60	255

MDC = minimum detectable concentration; TT = turnaround time.

^a Liquid effluent samples shall be analyzed unfiltered, whereas groundwater samples shall be filtered and only the filtrate analyzed.

^b MDCs shall be as low as reasonably attainable, but shall not exceed the values specified in the table. MDC values obtained from 4% of the Derived Concentration Guidelines (DCG).

^c Unless other units of measure are indicated.

^d These prices contain additional fees associated with services specific to the Environmental Compliance Program. Table 4 contains a detailed list of the additional services factored into unit prices.

^e All positive GEA results shall be reported, with the exception of the short-lived ^{222}Rn and ^{220}Rn progeny.

Table 3. Vegetation and Soil Sample Analysis Criteria for the Waste Sampling and Characterization Facility.

Sample size	Type of analysis	MDC	TT ^a (days)	Unit price (\$)
<i>Radiological Analyses</i>				
500 g (dry wt)	⁹⁰ Sr	1.0 pCi/g	45	382
	GEA ^b	0.20 pCi/g (as ¹³⁷ Cs)	45	205
	Isotopic U (²³⁴ U, ²³⁵ U, ²³⁸ U)	0.040 pCi/g	45	486
	Isotopic Pu (²³⁸ Pu, ^{239/240} Pu)	1.0 pCi/g	45	486
	²⁴¹ Pu	1.0 pCi/g	45	425
	²⁴¹ Am	1.0 pCi/g	45	486 ^c
	²⁴⁴ Cm	1.0 pCi/g	45	486 ^c
<i>Nonradiological Analyses</i>				
NA	pH	NA	45	36
200 g	anions	1.0 ppm	45	255
	metals EPA Method 200.8 ^d	1.0 ppm	45	249
	cyanide	1.0 ppm	45	170
	PCBs		45	361

MDC = minimum detectable limit; g = grams; pCi/g = picocuries per gram; ppm = part per million; EPA = U.S. Environmental Protection Agency; PCB = polychlorinated biphenyls; TT = turnaround time; NA = not applicable; pH = potential of hydrogen.

a 30-day turnaround times are available for a higher price; for most sample analyses, the prices for 30-day turn-around times are approximately 1.5 times the 45-day turnaround prices.

b All positive GEA results shall be reported, with the exception of short-lived ²²²Rn and ²²⁰Rn progeny.

c When ²⁴¹Am and ²⁴⁴Cm are analyzed together, the combined price is \$486.

d The minimum list of metals for EPA Method 200.8 shall include Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Na, Ni, P, Pb, Sc, Se, Si, Sb, Sr, Th, Ti, U, V, Y, Zn, and Zr.

**Table 4. Additional Services Factored
into the Waste Sampling and Characterization Facility
Sample Analysis Prices for the Environmental Compliance Program.**

Sample category	Additional services provided
Air samples	Entering sample collection data into ABCASH, for facilities not equipped with barcoding equipment.
	Downloading all air sample results into ABCASH.
	Disposal of samples and wastes from chemical processing.
	Archiving near-field monitoring samples and effluent samples from major emission units that require composite analyses.
	Archiving samples from minor emission units that require quarterly analysis.
	Archiving effluent samples and backup effluent samples from minor emission units that do not get analyzed.
	Notifying effluent and environmental monitoring points of contact (POCs) about zero ABCASH results.
	Sorting effluent samples into two groups: 1) samples to be analyzed and 2) samples to be archived.
	Assembly and preparation of samples for composite analysis.
	Preparation and analysis of quality-control (QC) samples (e.g., control standards, blanks, duplicates, matrix spikes, etc.).
Liquid samples	Archiving samples until composite analysis is performed.
	Archiving unused samples until Environmental Compliance Program (ECP) reports are issued.
	Assembly and preparation of samples for composite analysis, which includes verifying receipt of all samples for composite, calculating effluent stream volumes, and determining aliquot sizes for composite.
	Disposal of samples and wastes from chemical processing.
	Preparation and analysis of QC samples (e.g., control standards, blanks, duplicates, matrix spikes, etc.).
Miscellaneous	Supporting audits of the ECP.
	Participate in prescribed laboratory intercomparison programs.
	Provide laboratory intercomparison results to Fluor Hanford Monitoring & Reporting.
	Perform rush and emergency sample analyses.

GLOSSARY

ABBREVIATIONS AND ACRONYMS

ABCASH	Automated Bar Coding of Air Samples at Hanford
CAM	continuous air monitor
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations
ECP	Environmental Compliance Program
EDP code	Electronic Data Processing code
EIS-ODIS	Effluent Information System-Onsite Discharge Information System
EMI	Waste Management Technical Services Environmental Monitoring & Investigations Organization
EML	Environmental Measurements Laboratory
EPA	U.S. Environmental Protection Agency
ES	Environmental Services
FH	Fluor Hanford
GEA	gamma energy analysis
LCS	laboratory control standards
MDA	minimum detectable activity
MDC	minimum detectable concentration
M&R	Monitoring & Reporting
NFM	near-facility monitoring
PHMC	Project Hanford Management Contractor
TT	turnaround time
TBD	to be determined
WAC	Washington Administrative Code
WMTS	Waste Management Technical Services
WSCF	Waste Sampling and Characterization Facility

DEFINITION OF TERMS

Accuracy The degree of agreement a measurement has with a true or known value.

Completeness A measure of the amount of valid and usable data obtained from a measurement system compared to that expected under correct normal conditions.

Precision A measure of mutual agreement among individual measurements of the same property under similar conditions. Precision is best expressed in terms of standard deviation.

Turnaround time Elapsed time, in days, starting from the receipt at the laboratory of samples to be analyzed and all relevant sampling information and ending when the results, in units of concentration, are electronically accessible.

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HNH-EP-0835-6

ATTACHMENT

**ANALYTICAL REQUIREMENTS
FOR
ENVIRONMENTAL COMPLIANCE PROGRAM SAMPLES
DURING CY 2000**

Table A-1. Airborne Effluent Samples and Analyses.

Facility	Stack or building ID number	Location code (aka EDP code)	Sampling frequency	Analysis frequency	Analyses								CACN	
					Single	Composite					Single			
						Total alpha and total beta	GEA	%Sr	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am	Tritium (³ H)		Ag zeolite
100-N	RCF-1-EX	Y215	Q	I	4								112556	
	RCF-2-EX	Y216	Q	I	4									
100-K	105-KE	Y245	W	M	52	12	12	12	12	12	12			
		Y246	W	M	52	12	12	12	12	12	12			
		Y248	W	M	52	12	12	12	12	12	12			
		Y234	W	M	52	12	12	12	12	12	12			
	105-KW	Y235	W	M	52	12	12	12	12	12	12			
		Y236	W	M	52	12	12	12	12	12	12			
		Y201	M	Q	2	1	1	1	1	1	1			
		CSB	M	Q	2	1	1	1	1	1	1			
	105-KE Sparging Vent	Y249	Q	I	3	3	3	3	3	3	3			
		Y243	Q	I	4									
	PUREX	291-A-1	A552	M	Q	12	4	4	4	4	4			
			A007	M	Q								12	100019
296-A-10		A550	V	Q	1									
296-B-1		B001	M	Q	12	4	4	4	4		4		100019	
WESF	296-B-10	B748	BW	Q	26	4	4	4	4	4			100019	

Table A-1. Airborne Effluent Samples and Analyses.

Facility	Stack or building ID number	Location code (aka EDP code)	Sampling frequency	Analysis frequency	Analyses							CACN	
					Single Total alpha and total beta	Composite				Single			
						GEA	⁹⁰ Sr	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am	Tritium (³ H)		Ag zeolite
East Tank Farms	296-A-25	E080	BW	Q	26	4	4	4		4			100019
	296-A-27	E270	BW	I	26								
	296-A-40	E013	BW	Q	26	4	4	4		4			
		E028, E029	V	I									
	296-A-42	E147	BW	Q	26	4	4	4		4			
		E152	V	I								4	
	296-C-5	E069	BW	Q	26	4	4	4		4			
		E083	BW	Q	1	1	1	1		1			
	296-C-6	E084	V	I									
		E068	BW	Q	26	4	4	4		4			
	296-P-16	E401	V	I	4	1	1	1		1			
	296-A-27	E270	BW	Q	26								
	296-A-29	E901	BW	Q	26								
	296-P-43	E045	V	A	1	1	1	1		1			
	296-P-44	E046	V	A	1	1	1	1		1			
	296-A-18	E060	BW	Q	4								
	296-A-19	E061	BW	Q	4								
	296-A-20	E197	BW	Q	4								
	296-A-26	E297	BW	Q	4								
	296-A-28	E272	BW	Q	4								
	296-A-30	E903	BW	Q	4								
	296-A-41	E015	BW	Q	4								
	296-A-43	E148	BW	Q	4								
	296-P-31	E209	BW	Q	4								
RPP	296-P-33	E307	V	A	1	1	1	1		1			
Char. Project	296-P-34	E308	V	A	1	1	1	1		1		100019	
242-A Evaporator	296-A-21	E645	BW	IF	4	4	4	4	4	4		100019	
	296-A-22	E643	BW	IF	4	4	4	4	4	4		100019	
ETF	296-E-1	E036	Q	Q	4							100019	
222-S Lab	296-S-16	S264	BW	Q	4							100019	
	296-S-21	S289	BW	Q	4							100019	

Table A-1. Airborne Effluent Samples and Analyses.

Facility	Stack or building ID number	Location code (aka EDP code)	Sampling Frequency	Analysis Frequency	Analyses							CACN	
					Single Total alpha and total beta	Composite				Single			
						GEA	⁹⁰ Sr	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am	Tritium (³ H)		Ag zeolite
S Plant and U Plant	291-S-1	S006	BW	Q	4								100019
	296-S-2	S032	BW	Q	4								
	296-S-7E	S015	V	Q	1								
	296-S-7W	S016	W	Q	4								
	291-U-1	U771	BW	Q	4								
T Plant	291-T-1	T785	BW	I	26								100019
	296-T-7	T154	M	Q	4								
224-T	296-T-11	T783	Q	I	4								100019
	296-T-12	T784	Q	I	4								
West Tank Farms	296-B-28	E886	BW	Q	26	4	4	4		4			100019
	296-S-22	W880	BW	Q	26	4	4	4		4			
	296-P-23	W190	BW	I	26								
	296-P-28	W195	BW	I	26								
	296-S-15	W111	BW	I	26								
	296-S-25	W145	BW	I	1								
	296-T-18	W882	BW	Q	26	4	4	4		4			
	296-P-22	W191	BW	Q	4								
	296-S-18	W096	BW	Q	4								
	296-T-17	W117	BW	Q	4								
	296-W-3	W003	BW	Q	4								
	WRAP	296-W-4	W123	BW	Q	26	4	4	4	4	4		
WSCF	696-W-1	W010	M	Q	4							100019	
	696-W-2	W011	M	Q	4								
PFP	291-Z-1	Z810	BW	Q	26	4	4	4	4	4			100019
	296-Z-3	Z813	BW	Q	26								
	296-Z-5	Z913	BW	Q	4			4	4	4			
	296-Z-6	Z802	BW	Q	4								
	296-Z-14	Z814	BW	Q	4								
	296-Z-15	Z915	A	Q	1								

Table A-1. Airborne Effluent Samples and Analyses.

Facility	Stack or building ID number	Location code (aka EDP code)	Sampling frequency	Analysis frequency	Analyses								CACN	
					Single Total alpha and total beta	Composite				Single				
						GEA	⁹⁰ Sr	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am	Tritium (³ H)	Ag zeolite		
300 Area Facilities	303A	F101	V	A	1									
	304B	F102	V	A	1									
	303E	F103	V	A	1									
	303F, 311	F104	V	A	1									101333
	303G	F105	V	A	1									
	303K, 3707G	F106	V	A	1									
	309 PRTR	F030	V	A	1									101547
	313	F107	V	A	1									
	333	F108	V	A	1									
	334/334A	F109	V	A	1									101333
	3712	F110	V	A	1									
	3716	F111	V	A	1									
WTPS	F112	V	A	1										
340 Facility	340-NT-EX	F002	BW	Q	26	4		4		4				
	340-B	F008	Q	I	4									101734
	340-DECON	F009	Q	I	4									
324 Building	EP-324-01-S	F025	M	Q	12	4	4	4		4	4			101021
327 Building	EP-327-01-S	F026	M	Q	12	4	4	4		4				
	EP-327-02-V	F027	A	I	1									101161
	FFTF-CB-EX	F011	V	I	4									
FFTF		F024	V	I										
	FFTF-RE-SB	F012	V	I	4									
	FFTF-HT-TR	F013	V	I	4									101572
	437-MN&ST	F014	V	I	4									
	437-1-61	F019	V	I	4									
Totals					1,074	155	151	159	101	155	4	16		

Explanatory notes for Table A-1, on preceding page

- Sampling frequencies: A = annually; BW = biweekly (i.e., of two-week duration); M = monthly; V = variable (dependent on activities); W = weekly.
- Analysis frequencies: A = annually; I = individual sample analysis (not a composite sample); IF = sample for individual analysis selected by facility; M = monthly; Q = quarterly (for many locations [generally, "minor" stacks or vents] only four individual, noncomposited samples shall be analyzed annually for total alpha and total beta; as a rule, select the first sample within each quarter that meets the minimum criteria for an acceptable analytical result, and analyze as soon as practical; those samples not selected for single analysis shall be archived until October 1 of the following calendar year). Samples composited for analysis of isotopic constituents have already been counted for total alpha and total beta.
- Minimum gamma-energy analysis shall include recognition of peaks for Co-60, Ru-106, Sb-125, Cs-134, Cs-137, Eu-152, Eu-154, and Eu-155. All positive gamma-energy analysis results shall be reported.
- Minimum isotopic Pu analysis shall include Pu-238 and Pu-239,240.
- Minimum silver-zeolite analysis shall include Ru-106, Sb-125, and I-129.

Table A-2. Liquid Effluent Samples and Analyses for Calendar Year 2000.

Facility	Stream Code	Location Code (aka EDP code)	Sampling frequency	Compositing frequency	Analyses							CACN	
					Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)
100-K	1908-K	Y130		M	12	12	12		12				111456

Table A-3. Near-Facility Monitoring Air Samples and Analyses for Calendar Year 2000.

Operating Area or Facility	Location Code	Sampling Frequency	Compositing Frequency	Analyses							CACN
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am	Tritium (³ H)
100-D RA	N467	BW	S	26	2	2	2	2			111952
	N468	BW	S	26	2	2	2	2			
	N469	BW	S	26	2	2	2	2			
	N470	BW	S	26	2	2	2	2			
	N512	BW	S	26	2	2	2	2			
	N513	BW	S	26	2	2	2	2			
	N514	BW	S	26	2	2	2	2			
	N515	BW	S	26	2	2	2	2			
100-DR ISS	N492	BW	Q	26	4	4	4	4			111736
	N493	BW	Q	26	4	4	4	4			
100-F ISS	N494	BW	Q	26	4	4	4	4			111737
	N495	BW	Q	26	4	4	4	4			
100-F RA	N519	BW	S	26	2	2	2	2			112627
	N520	BW	S	26	2	2	2	2			
	N521	BW	S	26	2	2	2	2			
	N522	BW	S	26	2	2	2	2			
100-H	N494	BW	S	26	2	2	2	2			111954
	N495	BW	S	26	2	2	2	2			
	N494	BW	S	26	2	2	2	2			
	N495	BW	S	26	2	2	2	2			
100-K	N401	BW	S	26	2	2	2	2	2	2	100019
	N402	BW	S	26	2	2	2	2	2	2	
	N403	BW	S	26	2	2	2	2	2	2	
	N404	BW	S	26	2	2	2	2	2	2	
	N476	BW	S	26	2	2	2	2	2	2	
	N477	BW	S	26	2	2	2	2	2	2	
106789	N478	BW	S	26	2	2	2	2	2	2	106789
	N479	BW	S	26	2	2	2	2	2	2	

Table A-3. Near-Facility Monitoring Air Samples and Analyses for Calendar Year 2000.

Operating Area or Facility	Location Code	Sampling Frequency	Compositing Frequency	Analyses							CACN
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am	
100-N	N102	BW	S	26	2	2	2	2			111897
	N103	BW	S	26	2	2	2	2			
	N105	BW	S	26	2	2	2	2			
	N106	BW	S	26	2	2	2	2			
200-E	N019	BW	S	26	2	2	2	2			100019
	N158	BW	S	26	2	2	2	2			
	N498	BW	S	26	2	2	2	2			
	N499	BW	S	26	2	2	2	2			
	N957	BW	S	26	2	2	2	2			
	N967	BW	S	26	2	2	2	2			
	N968	BW	S	26	2	2	2	2			
	N969	BW	S	26	2	2	2	2			
	N970	BW	S	26	2	2	2	2			
	N972	BW	S	26	2	2	2	2			
	N973	BW	S	26	2	2	2	2			
	N976	BW	S	26	2	2	2	2			
	N977	BW	S	26	2	2	2	2			
	N978	BW	S	26	2	2	2	2			
	N984	BW	S	26	2	2	2	2			
	N985	BW	S	26	2	2	2	2			
	N999	BW	S	26	2	2	2	2			
SNF and CSB	N480	BW	S	26	2	2	2	2	2	2	105650
	N481	BW	S	26	2	2	2	2	2	2	

Table A-3. Near-Facility Monitoring Air Samples and Analyses for Calendar Year 2000.

Operating Area or Facility	Location Code	Sampling Frequency	Compositing Frequency	Analyses							CACN		
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)	
200-W	N155	BW	S	26	2	2	2	2	2				100019
	N161	BW	S	26	2	2	2	2	2				
	N165	BW	S	26	2	2	2	2	2				
	N168	BW	S	26	2	2	2	2	2				
	N304	BW	S	26	2	2	2	2	2				
	N411	BW	S	26	2	2	2	2	2				
	N433	BW	S	26	2	2	2	2	2				
	N441	BW	S	26	2	2	2	2	2				
	N442	BW	S	26	2	2	2	2	2				
	N449	BW	S	26	2	2	2	2	2				
	N456	BW	S	26	2	2	2	2	2				
	N457	BW	S	26	2	2	2	2	2				
	N956	BW	S	26	2	2	2	2	2				
	N962	BW	S	26	2	2	2	2	2				
	N963	BW	S	26	2	2	2	2	2				
	N964	BW	S	26	2	2	2	2	2				
	N965	BW	S	26	2	2	2	2	2				
	N987	BW	S	26	2	2	2	2	2				
	N974	BW	S	26	2	2	2	2	2				
	N975	BW	S	26	2	2	2	2	2				
N994	BW	S	26	2	2	2	2	2					
N200	BW	S	26	2	2	2	2	2					
TEDF	N130	BW	S	26	2	2	2	2	2				
Wye	N981	BW	S	26	2	2	2	2	2				
300-FF-1	N485	BW	S	26	2		2						111900
	N486	BW	S	26	2		2						
	N487	BW	S	26	2		2						
	N488	BW	S	26	2		2						
	N489	BW	S	26	2		2						

Table A-3. Near-Facility Monitoring Air Samples and Analyses for Calendar Year 2000.

Operating Area or Facility	Location Code	Sampling frequency	Compositing frequency	Analyses							CACN
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am	
ERDF	N482	BW	S	26	2	2	2	2			111898
	N483	BW	S	26	2	2	2	2			
	N484	BW	S	26	2	2	2	2			
Totals				2,158	174	164	174	164	20	20	0

Table A-4. Near-Field Monitoring Soil Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling frequency	Compositing frequency	Analyses							CACN
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am	
100-B/C	D149	A	I		I	I	I	I			111953
	D153	A	I		I	I	I	I			
100-D RA	D147	BA	I		I	I	I	I			111952
	D148	BA	I		I	I	I	I			
100-F RA	D154	A	I		I	I	I	I			112627
	D155	A	I		I	I	I	I			
100-H RA	D151	BA	I		I	I	I	I			111954
	D152	BA	I		I	I	I	I			
100-N	Y602	A	I		I	I	I	I			111897
	Y603	A	I		I	I	I	I			
	Y604	A	I		I	I	I	I			
	Y605	A	I		I	I	I	I			
	Y608	A	I		I	I	I	I			
	Y610	A	I		I	I	I	I			
	Y611	A	I		I	I	I	I			

Table A-4. Near-Field Monitoring Soil Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling frequency	Compositing frequency	Analyses							CACN	
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)
200-E	D053	BA	I									100019
	D054	BA	I	I	I	I	I					
	D055	BA	I									
	D056	BA	I	I	I	I	I					
	D057	BA	I									
	D058	BA	I	I	I	I	I					
	D059	BA	I									
	D060	BA	I	I	I	I	I					
	D061	BA	I									
	D062	BA	I	I	I	I	I					
	D063	BA	I									
	D064	BA	I	I	I	I	I					
	D065	BA	I									
	D066	BA	I	I	I	I	I					
	D067	BA	I									
	D068	BA	I	I	I	I	I					
	D069	BA	I									
	D070	BA	I	I	I	I	I					
	D071	BA	I									
	D072	BA	I	I	I	I	I					
	D073	BA	I									
	D074	BA	I	I	I	I	I					
	D075	BA	I									
	D076	BA	I	I	I	I	I					
	D077	BA	I									
	D078	BA	I	I	I	I	I					
	D079	BA	I									
	D080	BA	I	I	I	I	I					

Table A-4. Near-Field Monitoring Soil Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling frequency	Compositing frequency	Analyses							CACN	
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)
200-W	D001	BA	I									100019
	D002	BA	I		I	I	I	I				
	D003	BA	I									
	D004	BA	I		I	I	I	I				
	D005	BA	I									
	D006	BA	I		I	I	I	I				
	D007	BA	I									
	D008	BA	I		I	I	I	I				
	D009	BA	I									
	D010	BA	I		I	I	I	I				
	D011	BA	I									
	D012	BA	I		I	I	I	I				
	D013	BA	I									
	D014	BA	I		I	I	I	I				
	D015	BA	I									
	D016	BA	I		I	I	I	I				
	D017	BA	I									
	D018	BA	I		I	I	I	I				
	D019	BA	I									
	D020	BA	I		I	I	I	I				
	D021	BA	I									
	D022	BA	I		I	I	I	I				
	D023	BA	I									
	D024	BA	I		I	I	I	I				
	D025	BA	I									
	D026	BA	I		I	I	I	I				
	D027	BA	I									
	D028	BA	I		I	I	I	I				
	D029	BA	I									
	D030	BA	I		I	I	I	I				
	D031	BA	I									
	D032	BA	I		I	I	I	I				
	D033	BA	I									
	D034	BA	I		I	I	I	I				
	D035	BA	I									
	D036	BA	I		I	I	I	I				

Table A-4. Near-Field Monitoring Soil Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling frequency	Compositing frequency	Analyses							CACN	
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)
200-W	D037	BA	I									100019
	D038	BA	I		I	I	I	I				
	D039	BA	I									
	D040	BA	I		I	I	I	I				
	D041	BA	I									
	D042	BA	I		I	I	I	I				
	D043	BA	I									
	D044	BA	I		I	I	I	I				
	D045	BA	I									
	D046	BA	I		I	I	I	I				
	D047	BA	I									
	D048	BA	I		I	I	I	I				
	D049	BA	I									
	D050	BA	I		I	I	I	I				
D051	BA	I										
D052	BA	I		I	I	I	I					
300	D116	A	I		I	I	I	I				100019
	D117	A	I		I	I	I	I				
	D118	A	I		I	I	I	I				
	D119	A	I		I	I	I	I				
	D120	A	I		I	I	I	I				
	D121	A	I		I	I	I	I				
	D122	A	I		I	I	I	I				
	D123	A	I		I	I	I	I				
	D124	A	I		I	I	I	I				
	D125	A	I		I	I	I	I				
	D126	A	I		I	I	I	I				
	D127	A	I		I	I	I	I				
	D128	A	I		I	I	I	I				
	D129	A	I		I	I	I	I				

Table A-4. Near-Field Monitoring Soil Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling Frequency	Compositing Frequency	Analyses							CACN	
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)
400	D095	BA	I									100019
	D096	BA	I		I	I	I	I				
	D097	BA	I									
	D098	BA	I		I	I	I	I				
	D099	BA	I									
	D100	BA	I		I	I	I	I				
	D101	BA	I									
	D102	BA	I		I	I	I	I				
	D103	BA	I									
	D104	BA	I		I	I	I	I				
	D105	BA	I									
	D106	BA	I		I	I	I	I				
	D107	BA	I									
	D108	BA	I		I	I	I	I				
D109	BA	I										
D110	BA	I		I	I	I	I					
D130	A	I		I	I	I	I					
ERDF	D146	A	I	I	I	I	I	I			111898	
Totals				0	79	79	79	79	0	0	0	

Table A-5. Near-Field Monitoring Vegetation Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling frequency	Compositing frequency	Analyses							CACN	
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)
100-N	Y703	A	I		I		I					111897
	Y704	A	I		I		I					
	Y705	A	I		I		I					
	Y708	A	I		I		I					
	Y710	A	I		I		I					
	Y711	A	I		I		I					
	Y718	A	I		I		I					
	Y719	A	I		I		I					
Y724	A	I		I		I						
200-E	V053	BA	I									100019
	V054	BA	I		I		I					
	V055	BA	I									
	V056	BA	I		I		I					
	V057	BA	I									
	V058	BA	I		I		I					
	V059	BA	I									
	V060	BA	I		I		I					
	V061	BA	I									
	V062	BA	I		I		I					
	V063	BA	I									
	V064	BA	I		I		I					
	V065	BA	I									
	V066	BA	I		I		I					
	V067	BA	I									
	V068	BA	I		I		I					
V069	BA	I										
V070	BA	I		I		I						
V071	BA	I										
V072	BA	I		I		I						
V073	BA	I										
V074	BA	I		I		I						
V075	BA	I										
V076	BA	I		I		I						
V077	BA	I										
V078	BA	I		I		I						
V079	BA	I										
V080	BA	I		I		I						

Table A-5. Near-Field Monitoring Vegetation Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling frequency	Compositing frequency	Analyses							CACN	
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)
200-W	V001	BA	I									100019
	V002	BA	I		I	I	I	I				
	V003	BA	I									
	V004	BA	I		I	I	I	I				
	V005	BA	I									
	V006	BA	I		I	I	I	I				
	V007	BA	I									
	V008	BA	I		I	I	I	I				
	V009	BA	I									
	V010	BA	I		I	I	I	I				
	V011	BA	I									
	V012	BA	I		I	I	I	I				
	V013	BA	I									
	V014	BA	I		I	I	I	I				
	V015	BA	I									
	V016	BA	I		I	I	I	I				
	V017	BA	I									
	V018	BA	I		I	I	I	I				
	V019	BA	I									
	V020	BA	I		I	I	I	I				
	V021	BA	I									
	V022	BA	I		I	I	I	I				
	V023	BA	I									
	V024	BA	I		I	I	I	I				
	V025	BA	I									
	V026	BA	I		I	I	I	I				
	V027	BA	I									
	V028	BA	I		I	I	I	I				
	V029	BA	I									
	V030	BA	I		I	I	I	I				
	V031	BA	I									
	V032	BA	I		I	I	I	I				
	V033	BA	I									
	V034	BA	I		I	I	I	I				
	V035	BA	I									
	V036	BA	I		I	I	I	I				
	V037	BA	I									
	V038	BA				I	I	I	I			

Table A-5. Near-Field Monitoring Vegetation Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling Frequency	Compositing Frequency	Analyses							CACN	
				Total alpha and total beta	GEA	⁹⁰ Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)
200-W	V039	BA	I									100019
	V040	BA	I		I	I	I	I				
	V041	BA	I									
	V042	BA	I		I	I	I	I				
	V043	BA	I									
	V044	BA	I		I	I	I	I				
	V045	BA	I									
	V046	BA	I		I	I	I	I				
	V047	BA	I									
	V048	BA	I		I	I	I	I				
	V049	BA	I									
	V050	BA	I		I	I	I	I				
	V051	BA	I									
	V052	BA	I		I	I	I	I				
300	V116	A	I		I	I	I	I				100019
	V117	A	I									
	V118	A	I		I	I	I	I				
	V119	A	I									
	V120	A	I		I	I	I	I				
	V121	A	I									
	V122	A	I		I	I	I	I				
	V123	A	I									
	V124	A	I		I	I	I	I				
	V125	A	I									
	V126	A	I		I	I	I	I				
	V127	A	I									
	V128	A	I		I	I	I	I				
	V129	A	I									
400	V130	A	I		I	I	I	I			100019	

Table A-5. Near-Field Monitoring Vegetation Samples and Analyses for Calendar Year 2000.

Operating Area	Location Code	Sampling Frequency	Compositing Frequency	Analyses							CACN		
				Total alpha and total beta	GEA	%Sr	Isotopic U	Isotopic Pu	²⁴¹ Pu	²⁴¹ Am		Tritium (³ H)	
600	V081	BA	I										
	V082	BA	I		I	I	I	I					
	V083	BA	I										
	V084	BA	I		I	I	I	I					
	V085	BA	I										
	V086	BA	I		I	I	I	I					
	V087	BA	I										
	V088	BA	I		I	I	I	I					
	V089	BA	I										
	V090	BA	I		I	I	I	I					
	V091	BA	I										
	V092	BA	I		I	I	I	I					
	V093	BA	I										
	V094	BA	I		I	I	I	I					
	V095	BA	I										
	V096	BA	I		I	I	I	I					
	V097	BA	I										
	V098	BA	I		I	I	I	I					
	V099	BA	I										
	V100	BA	I		I	I	I	I					
V101	BA	I											
V102	BA	I		I	I	I	I						
V103	BA	I											
V104	BA	I		I	I	I	I						
V105	BA	I											
V106	BA	I		I	I	I	I						
V107	BA	I											
V108	BA	I		I	I	I	I						
V109	BA	I											
V110	BA	I		I	I	I	I						
100019													
Totals				0	72	72	72	72	0	0	0	0	

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