Appendix A

Supporting Information for CERCLA Groundwater Operable Units

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Contents

Appendix A - Supporting Information for CERCLA Groundwater Operable Units A-1
References..... ..... A-1

Contents

Table A-1. Monitoring Wells and Constituents for the 100-BC-5 Operable Unit..... A-4
Table A-2. Monitoring Wells and Constituents for the 100-KR-4 Pump-and-Treat Systems. A-5
Table A-3. Monitoring Wells and Constituents for 100-KR-4 Operable Unit Long-Term Monitoring..... A-8
Table A-4. Monitoring Wells and Constituents for 100-NR-2 Interim Action. A-9
Table A-5. Monitoring Wells and Constituents for 100-NR-2 Shoreline Monitoring. A-10
Table A-6. Monitoring Wells and Constituents for the 100-NR-2 Apatite Treatability Test Plan. A-12
Table A-7. Monitoring Wells and Constituents for the 100-HR-3 Operable Unit In Situ Redox Manipulation System. . A-13
Table A-8. Monitoring Wells and Constituents for the 100-HR-3 Pump-and-Treat Systems..... A-14
Table A-9. Monitoring Wells and Constituents for 100-HR-3 Operable Unit Long-Term Monitoring. A-15
Table A-10. Monitoring Wells and Constituents for the 100-FR-3 Operable Unit. A-18
Table A-11. Monitoring Wells and Constituents for the 200-ZP-1 Operable Unit. A-19
Table A-12. Monitoring Wells and Constituents for the 200-UP-1 Operable Unit..... A-21
Table A-13. Monitoring Wells and Constituents for the 200-BP-5 Operable Unit. A-23
Table A-14. Monitoring Wells and Constituents for 200-PO-1 Operable Unit Near-Field Wells..... A-26
Table A-15. Monitoring Wells and Constituents for the 200-PO-1 Operable Unit Far-Field Wells. A-28
Table A-16. Monitoring Wells and Analytes/Analytical Methods for the 200-PO-1 Operable Unit Characterization Wells for FY 2009 (Wells Scheduled for Decommissioning. A-31
Table A-17. Monitoring Wells and Constituents for the 300-FF-5 Operable Unit, 300 Area..... A-33
Table A-18. Monitoring Wells and Constituents for the 300-FF-5 Operable Unit, 618-11 Subregion..... A-35
Table A-19. Monitoring Wells and Constituents for the 300-FF-5 Operable Unit, 618-10/316-4 Subregion. A-36
Table A-20. Monitoring Wells and Constituents for the Former 1100-EM-1 Operable Unit..... A-36

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Appendix A - Supporting Information for CERCLA Groundwater Operable Units

C. J. Martin

Under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), the groundwater and vadose zone beneath contaminated portions of the Hanford Site are divided into eleven groundwater operable units. Figure 3-1 in Chapter 1.0 (Volume 1) shows the locations of these units and related groundwater interest areas on the Hanford Site. The interest areas are defined informally to aid in planning, scheduling, and data interpretation.

The tables provided in this appendix list the constituents, monitoring wells, and the sampling frequency for each operable unit, as required by their respective sampling and analysis plans or other documentation. The tables also indicate whether the wells were sampled as scheduled during the reporting period (October 1, 2008, through December 31, 2009).

In many cases, wells are sampled for additional constituents not strictly required by the plans. Those constituents are not listed in the tables of this appendix, but data files accompanying this report include all of the required and supplemental data.

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Table A-1. Monitoring Wells and Constituents for the 100-BC-5 Operable Unit.

Well	Alkalinity	Alpha	Anions	Beta	Hexavalent Chromium	Metals	Strontium-90	Tritium	Technetium-99	Sampled as Scheduled in Reporting Period
199-B2-12	BO		BO		BO	BO	BO	BO		Yes
199-B2-13	BE		BE		BE	BE	BE	BE		Not scheduled
199-B3-1	BE		BE		A	BE	A	A		Yes
199-B3-46	BO		BO		A	BO	A	A		Yes
199-B3-47	BE		BE		A	BE	A	A		Yes
199-B4-1	BE		BE		A	BE	BE	A		Yes
199-B4-4							BE	BE		Yes
199-B4-7	BO		BO		BO	BO	BO	BO		Yes
199-B4-8	BE		BE		BE	BE	BE	BE		Not scheduled
199-B5-1	BE		BE		A	BE	BE	A		Yes
199-B5-2					A		BO	A		Yes
199-B8-6	BO	BO	BO	BO	A	BO	BO	A		Yes
199-B8-7	Q	Q	Q	Q	Q	Q		Q		Yes
199-B8-8	Q	Q	Q	Q	M/Q	Q		Q		Yes
199-B9-2		BE		BE	BE			BE		Not scheduled
199-B9-3	BO	BO	BO	BO	BO	BO		BO		Yes
699-63-90	BE	BE	BE	BE		BE		BE		Not scheduled
699-65-83								BE		Not scheduled
699-67-86								BO		Yes
699-68-105	BO		BO			BO		BO		Yes
699-71-77	BO		BO			BO		BO	BO	Yes
699-72-73	BE		BE			BE		BE	BE	Not scheduled
699-72-92	BO		BO			BO		BO		Yes
199-B2-14										
199-B3-50										New well to be sampled FY 2010; constituents to be determined
199-B5-5										
199-B5-6										
Seep 037-1		A		A	A			A		No*
Seep 039-2		A		A	A			A		Sampled September 2008 total chromium instead of hexavalent

Notes:
Requirements are from the following:
100-BC-5 Operable Unit Sampling and Analysis Plan (**DOE/RL**-2003-38, Rev. 1).
TPA-CN-240, *TPA Change Notice for Modifying 100-BC-5 Operable Unit Sampling and Analysis Plan, DOE/RL-2003-38, Rev. 1* (dated December 8, 2008).
TPA-CN-293, *TPA Change Notice for Modifying 100-BC-5 Operable Unit Sampling and Analysis Plan, DOE/RL-2003-38, Rev. 1* (dated October 6, 2009).

* Seep sampling depends on field conditions.

A = to be sampled annually
BE = to be sampled biennially, even fiscal years
BO = to be sampled biennially, odd fiscal years
FY = fiscal year

Table A-2. Monitoring Wells and Constituents for the 100-KR-4 Pump-and-Treat Systems.

Well	Monitoring Purpose	Hexavalent Chromium	Strontium-90	Tritium	Carbon-14	Sampled as Scheduled in 2009 (12 months)	Comment
116-K-2 Trench Wells							
199-K-18	Compliance	M	A	A	A	Hexavalent chromium monthly through FY 2009 by DOE request; quarterly in October per TPA-CN-273.	
199-K-20	Compliance	M	A	A	A	Hexavalent chromium monthly through FY 2009 by DOE request; quarterly in October per TPA-CN-273.	
199-K-113A	Extraction/ compliance	A	A	A	A	Yes	Pump-and-treat system offline in April, May, and August. Hexavalent chromium monthly field CY 2009, missed April, May, and August.
199-K-114A	Extraction/ compliance	A	S	S	A	Yes	Pump-and-treat system offline in April, May, and August. Hexavalent chromium monthly field CY 2009, missed April, May, and August.
199-K-115A	Extraction/ compliance	A	A	A	A	Yes	Pump-and-treat system offline in April, May, and August. Hexavalent chromium monthly field CY 2009, missed April, May, and August.
119-K-116A	Extraction/ compliance	A	A	A	A	Yes	Pump-and-treat system offline in April, May, and August. Hexavalent chromium monthly field CY 2009, missed April, May, and August.
199-K-117A	Compliance	A	A	A	A	Yes	
199-K-119A	Extraction	A	A	A	A	No; annual laboratory analysis for hexavalent chromium, tritium, carbon-14, strontium-90 missed in CY 2009. Scheduling error.	Well removed from service after 7/14/2009 due to low hexavalent chromium trend. Hexavalent chromium monthly field for CY 2009, missed May, August, and September.
199-K-120A	Extraction	A	A	A	A	No; annual laboratory analysis for hexavalent chromium, tritium, carbon-14, strontium-90 missed in CY 2009. Scheduling error.	Well offline after 8/10/2009. Hexavalent chromium monthly field for CY 2009, missed May, August, and September.
199-K-125A	Extraction	A	A	A	A	No; annual laboratory analysis for hexavalent chromium, tritium, carbon-14, strontium-90 missed in CY 2009. Scheduling error.	Well offline after 8/10/2009. Hexavalent chromium monthly field missed May, August, and September.
199-K-127	Extraction	A	A	A	A	No; annual laboratory analysis for hexavalent chromium, tritium, carbon-14, strontium-90 missed in CY 2009. Scheduling error.	Well removed from service after 7/14/2009 due to low hexavalent chromium trend. Hexavalent chromium monthly field missed May, August, and September.
199-K-129	Extraction/ compliance	A	A	A	A	Yes	Pump-and-treat system offline May and August. Hexavalent chromium monthly field missed April, May, and August.
199-K-130	Extraction/ compliance	S	S	S	S	Yes	Weekly field sampling for hexavalent chromium began in November 2008.
199-K-131	Extraction/ compliance	S	S	S	S	Yes	Weekly field sampling for hexavalent chromium began in November 2008.
199-K-141	Extraction	A	A	A	A	No; October 2009 sample taken in January 2010.	Extraction well active May through July and November through December 2009.

Table A-2. (Cont.)

Well	Monitoring Purpose	Hexavalent Chromium	Strontium-90	Tritium	Carbon-14	Sampled as Scheduled in 2009 (12 months)	Comment
199-K-142	Performance	Q	Q	Q	Q	Yes; more frequent tritium sampling with other programs.	
199-K-144	Extraction/ compliance	S	S	S	S	No; missed October 2009 sampling for all analytes.	High tritium concentrations; extraction not started.
199-K-145	Extraction/ compliance	S	S	S	S	No; tritium only in April 2009.	Weekly field sampling for hexavalent chromium beginning in November 2008 through August 2009.
199-K-146	Extraction/ compliance	S	S	S	S	Yes	Weekly field sampling for hexavalent chromium beginning November 2008.
199-K-147	Extraction/ compliance	S	S	S	S	Yes	Weekly field sampling for hexavalent chromium began in November 2008.
199-K-148	Extraction/ compliance	S	S	S	S	Yes	Weekly field sampling for hexavalent chromium began in November 2008.
199-K-149	Extraction/ compliance	S	S	S	S	Yes, but missed strontium-90 in May.	Weekly field sampling for hexavalent chromium began in November 2008.
199-K-150	Extraction/ compliance	S	S	S	S	Yes	Weekly field sampling for hexavalent chromium began in November 2008.
199-K-151	Performance	Q	A	A		Yes	
199-K-152	Performance	Q	A	A		Yes	
199-K-153	Performance	Q	A	A		No; hexavalent chromium only in February 2009.	Well realignment; well activated on 3/25/2010.
199-K-156	Injection						Injection started February 2009.
199-K-157	Performance	M	M	A	A	Yes; tritium and hexavalent chromium sampled monthly through October 2009, quarterly thereafter.	High tritium concentrations.
199-K-161	Extraction/ compliance	S	S	S	S	Yes	Weekly field analysis for hexavalent chromium beginning November 2008.
199-K-162	Extraction/ compliance	S	S	S	S	No; missed all laboratory sampling.	Weekly field analysis for hexavalent chromium beginning December 2008 through August 2009.
199-K-163	Extraction	S	S	S	S	No; missed strontium-90, tritium, and carbon-14.	Well not started until May 2009.
199-K-178	Extraction	M	A	A	A	Yes	Baseline sample, extraction pumping began 3/25/2010. Monthly hexavalent chromium sampling requested, not performed due to scheduling error.
199-K-181	Performance	M	S	S	S	Yes	Monthly hexavalent chromium sampling at EPA request.

Table A-2. (Cont.)

Well	Monitoring Purpose	Hexavalent Chromium	Strontium-90	Tritium	Carbon-14	Sampled as Scheduled in 2009 (12 months)	Comment
KW Wells							
199-K-34	Performance	Q	A	Q	A	Yes	
199-K-106A	Performance	Q	A	Q	S	Strontium-90[b] missed March and May.	
199-K-107A	Performance	Q	A	Q	A	Strontium-90 missed April 2009.	Weekly field analysis for hexavalent chromium beginning November 2008.
199-K-132	Extraction/ compliance	Q	S	S	S	Yes	KW pump-and-treat system offline late February to mid-April 2009 for KW expansion. Weekly field analysis for CY 2009.
199-K-138	Extraction/ compliance	S	S	S	S	Yes	Weekly field analysis for CY 2009.
199-K-139	Extraction/ compliance	S	S	S	S	Yes; April sample taken in September.	Out of pump-and-treat service, March through December 2009.
199-K-140	Extraction until 4/15/2009, monitoring after 4/15/2010	S	S	S	S	Yes	Out of service May through December 2009. Field analysis through 2009, except June through August.
199-K-137	Extraction	Q	S	S	S	Yes	Well started mid-April 2009 after KW expansion; weekly field analysis for remainder of CY 2009.
199-K-165	Extraction	Q	A	A	A	Yes	Well started mid-April 2009 after KW expansion; weekly field analysis for remainder of CY 2009.
199-K-166	Extraction	Q	A	A	A	Yes	Well started mid-April 2009 after KW expansion; weekly field analysis for remainder of CY 2009.
199-K-168	Extraction	Q	A	A	A	Yes	Well started mid-April 2009 after KW expansion; weekly field analysis for remainder of CY 2009.
199-K-173	Monitoring	Q	A	A	A	Yes	

Notes:
Requirements from *The KW Pump and Treat System Remedial Design and Remedial Action Work Plan, Supplement to the 100-KR-4 Groundwater Operable Unit Interim Action* (DOE/RL-2006-52) and *Supplement to the 100-HR-3 and 100-KR-4 Remedial Design Report and Remedial Action Workplan for the Expansion of the 100-KR-4 Pump and Treat System* (DOE/RL-2006-75). Wells 199-K-130 through 199-K-162 (116-K-2 Trench) monitored under "pre-startup" phase.
TPA-CN-273,dated 5/21/2009, revised DOE/RL-2006-75 by specifying semi-annual sampling at KR4 and KX pump-and-treat wells for hexavalent chromium, tritium, strontium-90, carbon-14, technetium-99, and nitrate.
A = to be sampled annually
CY = calendar year
DOE = U.S. Department of Energy
EPA = U.S. Environmental Protection Agency
FY = fiscal year
Q = to be sampled quarterly
S = to be sampled semiannually
W = to be sampled weekly (field analysis)
M = to be sampled monthly (field analysis)

Table A-3. Monitoring Wells and Constituents for 100-KR-4 Operable Unit Long-Term Monitoring.

Well or Seep	Alpha	Anions	Beta	Carbon-14	Gamma	Hexavalent Chromium	Mercury	Metals	Strontium-90	Technetium-99	Tritium	Sampled as Scheduled in 2009
199-K-11		A	A	A		A		A			A	Yes
199-K-18		A				M		A	A	A	A	Yes
199-K-19	A	A	A	A	A	S		A	A	A	A	Yes
199-K-20	A	A	A	A	A	M		A	A	A	A	Yes
199-K-21	A	A	A	A	A	S		A	A	A	A	Yes
199-K-22	A	A	A	A	A	A		A	A	A	A	Yes
199-K-23		BO	BO			A		BO			BO	No results; collapse hazard, wooden crib
199-K-30	Q	Q	Q	S		Q		Q	Q	S	Q	Yes
199-K-31	S	A	S	A		A		A	A	A	S	Yes
199-K-32A		A		A		Q		A	A	A	A	Yes
199-K-32B		A		A		A		A	A	A	A	Yes
199-K-34		Q		A		Q		Q	A	A	Q	Yes
199-K-35				W			W	W				Sampling started late-December 2009 and continued into CY 2010
199-K-36	A	S	A	A	A	Q	Q	Q	A	A	S	Yes
199-K-37		A		A		S		A	A	A	A	Yes
199-K-106A	Q	Q	Q	A		Q		Q	A	A	Q	Yes
199-K-107A	Q	Q	Q	A		Q		Q	A	A	Q	Yes
199-K-108A	S	S	S	Q		M		S	Q	A	Q	Yes
199-K-110A	S	S	S	A		A		S	A	A	S	Yes
199-K-111A	2M	2M	2M	Q		A		Q	A	A	2M	Yes; sampled every 2 months
699-70-68		A						A		A	A	Yes
699-72-73	BO	BO		BO		BO		BO	BO	BO	BO	Yes
699-73-61		BO				BO		BO			BO	Yes
699-78-62												Adjacent to active injection well 199-K-172; no useful data
Aquifer tubes (48 tubes sampled)												
SK-057-3	A	A	A		A			A			A	No
SK-077-1	A	A	A		A			A			A	Yes
SK-082-2	A	A	A		A			A			A	No

Notes:
Requirements from NPL Agreement/Change Control Form 108, *Modifications to the Groundwater Sampling and Analysis Schedules for the 100-KR-4 Groundwater Sampling Project* (dated November 20, 1996), as modified by *Sampling Changes to the 100-HR-3 and 100-KR-4 Operable Units* (Wanek 1998); further modified in subsequent years.

A = to be sampled annually
BE = to be sampled biennially, in even fiscal years
BO = to be sampled biennially, in odd fiscal years
M = to be sampled monthly
2M = to be sampled every other month
Q = to be sampled quarterly
S = to be sampled semiannually

Table A-4. Monitoring Wells and Constituents for 100-NR-2 Interim Action.

Well Name	Fieid Parameters	Alkalinity	Alpha	Anions	Beta	Gamma	Metals	Oil and Grease	Strontium-90	TPH	Tritium	Sampled as Scheduled in 2009
199-N-2	A	A		A	A		A		A		A	Yes
199-N-3	S	S		S	S		S		S	S	S	Yes
199-N-14	S	S		S	S		S		S		S	Yes
199-N-16	A			A	A		A	A	A	A		Yes
199-N-18	S	S		S			S	S		S		Yes
199-N-19	A									A		Yes
199-N-21	A			A			A			A		Yes
199-N-26	A	A		A			A			A		No; dig site, no access
199-N-27	A			A		A	A		A		A	Yes
199-N-28	A	A		A			A		A			Yes
199-N-32	S			S	S	S	S		S		S	Yes
199-N-34	A	A		A			A		A		A	Yes
199-N-41	A	A		A			A		A		A	Yes
199-N-50	A				A						A	Yes
199-N-51	A				A						A	Yes
199-N-56	A			A					A			Yes
199-N-57	A	A		A			A		A			Yes
199-N-64	A			A	A		A		A		A	Yes
199-N-67	S	S	S	S	S		S		S			Yes
199-N-70	A		A	A	A	A	A		A		A	Yes
199-N-73	A	A		A			A					Yes
199-N-74	A		A		A	A	A					Yes
199-N-75	S	S		S	S		S		S		S	Yes
199-N-76	S	S		S	S	S	S		S		S	Yes
199-N-80	A		A	A	A	A	A		A		A	Yes
199-N-81	A	A		A	A	A	A		A		A	Yes
199-N-92A	A			A	A		A		A		A	Yes
199-N-96A	A			A	A		A	A	A	A	A	Yes
199-N-99A	A			A	A		A		A		A	Yes

Notes:
Monitoring requirements have been modified (expanded) from *Remedial Design Report/Remedial Action Work Plan for the 100-NR-2 Operable Unit* (DOE/RL-2001-27).
TPA-CN-256 (*TPA Change Notice for Modifying Remedial Design Report/Remedial Action Work Plan for the 100-NR-2 Operable Unit, DOE/RL-2001-27 and Interim Action Waste Management Plan for the 100-NR-2 Operable Unit, DOE/RL-2000-41, Rev. 1*) modified the monitoring requirements, including updating analyses and removing decommissioned wells.
Field parameters include pH, temperature, conductivity, and turbidity; with dissolved oxygen and oxidation-reduction potential on some wells.

A = to be sampled annually
S = to be sampled semiannually
TPH = total petroleum hydrocarbons

Table A-5. Monitoring Wells and Constituents for 100-NR-2 Shoreline Monitoring.

Well or Tube Name	Alkalinity	Anions	Beta	Dissolved Oxygen	Gamma	Metals	Strontium-90	TOC, TPH	Tritium	Sampled as Scheduled in 2008
199-N-2				S			S			Yes
199-N-3				S			S			Yes
199-N-14				S			S			Yes
199-N-46	Q	Q	Q	Q	Q	Q	Q		Q	Yes
199-N-67	S	S	S	S	S	S	S		S	Yes
199-N-75	S	S	S	S	S	S	S		S	Yes
199-N-76				S			S			Yes
199-N-92A	S	S	S	S	S	S	S		S	Yes
199-N-96A	Q	Q	Q	Q	Q	Q	Q	Q	Q	Yes.
199-N-99A	Q	Q	Q	Q	Q	Q	Q		Q	Yes
199-N-103A	S	S	S	S	S	S	S		S	Yes
199-N-105A	S	S	S	S	S	S	S		S	Yes
199-N-106A	S	S	S	S	S	S	S		S	Yes
199-N-119	Q	Q	Q	Q	Q	Q	Q		Q	Yes
199-N-120	S	S	S	S	S	S	S		S	Yes
199-N-121	S	S	S	S	S	S	S		S	Yes
199-N-122	Q	Q	Q	Q	Q	Q	Q		Q	Yes
199-N-123	Q	Q	Q	Q	Q	Q	Q	Q	Q	Yes
199-N-146	Q	Q	Q	Q	Q	Q	Q		Q	Yes
199-N-147	Q	Q	Q	Q	Q	Q	Q		Q	Yes
NVP1-1			Q	Q						No
NVP1-2			Q	Q						March, June; missed in September and December
NVP1-3			Q	Q						March, June December; missed September
NVP1-4			Q	Q						March, June December; missed September
NVP1-5			Q	Q						March, June, October, December
NVP2-116.3			Q	Q						January, April, July, December
NVP2-116.0	Q	Q	M	M	Q	Q	Q		Q	January, February, March, April, May, June, July, December
NVP2-115.7			Q	Q						January, April, July, October, December
NVP2-115.4			Q	Q						April, July, October, December
NVP2-115.1			Q	Q						April, July, October, December
Array-0A	A	A	Q	Q	A	A	Q	Q	A	January, April, June, September, December
Array-1A	A	A	Q	Q	A	A	Q	Q	A	January, April, June, September, December
Array-2A	A	A	Q	Q	A	A	Q	Q	A	June, December; missed March and September

Table A-5. (Cont.)

Well or Tube Name	Alkalinity	Anions	Beta	Dissolved Oxygen	Gamma	Metals	Strontium-90	TOC, TPH	Tritium	Sampled as Scheduled in 2008
Array-3A	Q	Q	M	M	Q	Q	Q		Q	April. May, June, July, December
Array-4A	Q	Q	M	M	Q	Q	Q		Q	February, March (early April), April, September, December
Array-6A	Q	Q	M	M	Q	Q	Q		Q	February, March (early April), April, May, June, July, September, December
Array-7A	A	A	Q	Q	A	A	A		A	April, June, September; missed December
Array-8A	A	A	Q	Q	A	A	A		A	January, April, June, September, December
Array-9A	A	A	Q	Q	A	A	A		A	January, April, June, September, December
Array-10A	A	A	Q	Q	A	A	A		A	January, April, June, September, December
Array-11A	A	A	Q	Q	A	A	A		A	January, April, June, September, December
Array-12A	A	A	Q	Q	A	A	A		A	January, April, June, December
Array-13A	A	A	Q	Q	A	A	A		A	January, April; missed June and December
Array-14A	A	A	Q	Q	A	A	A		A	January, April, June, September
Array-15A c	A	A	Q	Q	A	A	A		A	January, April, June, December
Array-16A c	A	A	Q	Q	A	A	A		A	No
C6132 c	A	A	Q	Q	A	A	Q	Q	A	April, June, September, December
C6135 c	A	A	Q	Q	A	A	Q	Q	A	April, June, September, December

Notes:
Requirements from *Sampling and Analysis Plan for Aquifer Sampling Tubes* (DOE/RL-2000-59, Rev. 1).

A = to be sampled annually
Q = to be sampled quarterly
S = to be sampled semiannually
TOC = total organic carbon
TPH = total petroleum hydrocarbon

Table A-6. Monitoring Wells and Constituents for the 100-NR-2 Apatite Treatability Test Plan.

Well Name	Well Type	Anions	Beta	Metals	Strontium-90	Sampled as Scheduled in 2009
199-N-122	Compliance	BM/Q	BM/Q	BM/Q	P	Yes
199-N-123	Compliance	BM/Q	BM/Q	BM/Q	P	Yes
199-N-126	Monitoring	BM	BM	BM	P	Yes, February bi-monthly only
199-N-127	Monitoring	BM	BM	BM	P	No, only sampled for February bi-monthly and no water in well
199-N-128	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-129	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-130	Monitoring	BM	BM	BM	P	Yes, February bi-monthly only
199-N-131	Monitoring	BM	BM	BM	P	No, only sampled for February bi-monthly and no water in well
199-N-132	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-133	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-136	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-137	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-138	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-139	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-140	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-141	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-142	Barrier	BM/Q	BM/Q	BM/Q	P	Yes
199-N-143	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-144	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-145	Barrier	BM/Q	BM/Q	BM/Q	P	Yes
199-N-146	Compliance	BM/Q	BM/Q	BM/Q	P	Yes
199-N-147	Compliance	BM/Q	BM/Q	BM/Q	P	Yes
199-N-148	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-149	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-150	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-151	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-152	Monitoring	BM	BM	BM	P	Yes, February bi-monthly only
199-N-153	Monitoring	BM	BM	BM	P	No, only sampled for February bi-monthly and no water in well
199-N-154	Monitoring	BM	BM	BM	P	Yes, February bi-monthly only
199-N-155	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-156	Monitoring	BM/Q	BM/Q	BM/Q	P	Yes
199-N-159	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-160	Barrier	BM/Q	BM/Q	BM/Q	P	Yes
199-N-161	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-162	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-163	Barrier	BM	BM	BM	P	Yes, February bi-monthly only
199-N-164	Barrier	BM/Q	BM/Q	BM/Q	P	Yes

Notes:

Requirements from *100/300 Area Unit Managers Meeting Minutes*, Attachment 2 (FH 2008). Additional requirements applied during injection.

BM = bi-monthly monitoring; end of bimonthly performance monitoring in February 2009

P = periodic splits for strontium-90 during performance monitoring period; full set at least once a year

Q = schedule changed to February, May, August, and November quarterly monitoring in accordance with TPA-CN-271 (*TPA Change Notice for Modifying Approved Documents/Workplans in Accordance with the Tri-Party Agreement Action Plan, Section 9.0, Documentation and Records Treatability Test Plan Addendum for the 100-NR-2 Groundwater Operable Unit DOE/RL-2005-96 Addendum*)

Table A-7. Monitoring Wells and Constituents for the 100-HR-3 Operable Unit In Situ Redox Manipulation System.

Well	Purpose	Anions	Cations	Arsenic	Hexavalent Chromium	Metals	Sulfate	Uranium	Tritium	Sampled as Scheduled in Reporting Period
199-D2-6	Monitoring	A		A	A	A	A	A	A	Yes
199-D2-8	Monitoring				M					Yes
199-D3-2	Monitoring	Q		A	Q	A	Q		A	Yes
199-D4-1	Monitoring	Q		A	Q	A	Q	A		Yes
199-D4-13	Barrier performance	Q		A	Q	A	Q		A	Yes
199-D4-14	Barrier performance	Q		A	Q	A	Q		A	Yes
199-D4-15	Monitoring	A		A	Q	A	A	A	A	Yes
199-D4-19	Barrier performance	Q		A	Q	A	A	A	A	Yes
199-D4-20	Monitoring	Q		A	Q	A	Q	A	A	Yes
199-D4-22	Monitoring	Q		A	Q	A	Q		A	Yes
199-D4-23	Compliance	Q		A	Q	A	Q	A	A	Yes
199-D4-26	Monitoring	Q		A	Q	A	Q	A		Yes
199-D4-31	Barrier performance	Q		A	Q	A	Q	A		Yes
199-D4-32	Barrier performance	Q		A	Q	A	Q	A		Yes
199-D4-38	Compliance	A	Q	A	Q	Q	Q	A		Yes
199-D4-39	Compliance	Q		A	Q	A	Q	A		Yes
199-D4-4	Monitoring	Q		A	Q	A	Q	A		Yes
199-D4-48	Barrier performance	Q		A	Q	A	Q	A		Yes
199-D4-5	Barrier performance	Q		A	Q	A	Q	A		Yes
199-D4-6	Barrier performance	Q		A	Q	A	Q	A		Yes
199-D4-62	Barrier performance	Q		A	Q	A	Q	A		Yes
199-D4-7	Barrier performance	Q		A	Q	A	Q	A		Yes
199-D4-78	Barrier performance								A	Yes
199-D4-83	Compliance	Q		A	Q	A	Q	A		Yes
199-D4-84	Compliance								A	Yes
199-D4-85	Compliance								A	Yes
199-D4-86	Compliance								A	Yes
199-D5-36	Monitoring	Q		A	Q	A	Q	A	A	Yes
199-D5-38	Monitoring	Q		A	Q	A	Q	A	A	Yes
199-D5-39	Monitoring	Q		A	Q	A	Q	A	A	Yes
199-D5-43	Monitoring	Q		A	Q	A	Q	A	A	Yes
DD-39	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
199-D4-25	Barrier performance	Q	Q	Q	Q	Q	Q	Q		Yes
199-D4-27	Barrier performance	Q	Q	Q	Q	Q	Q	Q		Yes
199-D4-92	Barrier performance	Q	Q	Q	Q	Q	Q	Q		Yes
199-D4-93	Barrier performance	Q	Q	Q	Q	Q	Q	Q		Yes
DD-41	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
DD-42	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
DD-43	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
DD-44	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
Redox-1	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
Redox-2	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
Redox-3	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
Redox-4	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		Yes
TD-39	Aquifer tube	Q	Q	Q	Q	Q	Q	Q		No longer in use

Notes: Requirements from *Remedial Design Report and Remedial Action Work Plan for the 100-HR-3 Groundwater Operable Unit In Situ Redox Manipulation* (DOE/RL-99-51).
A = to be sampled annually
M = to be sampled monthly
Q = to be sampled quarterly
S = to be sampled semiannually

Table A-8. Monitoring Wells and Constituents for the 100-HR-3 Pump-and-Treat Systems.

Well	Monitoring Purpose	Hexavalent Chromium	Nitrate	Strontium-90	Technetium-99	Tritium	Uranium	Sampled as Scheduled in Reporting Period
199-D8-53	Extraction	Q		S		S		Yes
199-D8-54A	Extraction	Q		S		S		Yes
199-D8-54B	Performance	S						Yes
199-D8-68	Extraction	Q		S		S		Yes
199-D8-69	Compliance	Q		A		A		Yes
199-D8-70	Compliance	Q	A	A	A	A	A	Yes
199-D8-71	Performance	S						Yes
199-D8-72	Extraction			S		S		Yes
199-D8-73		Q		A		A		Yes
199-D8-88		Q		A		A		Yes
199-H3-2A	Upgradient	A	S	S	S	S	S	Yes
199-H3-3	Former injection well	Q						Yes
199-H3-4	Former injection well	Q						Yes
199-H3-5	Former injection well	Q	A				A	Yes
199-H4-3	Extraction/ performance		A	A	A	A	A	Yes
199-H4-4	Extraction/ compliance		S	S	S	S	S	Yes
199-H4-5	Compliance	M	A	A	A	A	A	Yes
199-H4-6	Performance	S						Yes
199-H4-8	Performance	S						Yes
199-H4-10	Performance	S						Yes
199-H4-11	Performance	Q	S	S	S	S	S	Yes
199-H4-12A	Extraction	Q	S	S	S	S	S	Yes
199-H4-12B	Performance	S						Yes
199-H4-12C	Performance	S						Yes
199-H4-13	Performance	S						Yes
199-H4-15A	Extraction	Q	S	S	S	S	S	Yes
199-H4-15B	Performance	S						Yes
199-H4-15CS	Performance	S						Yes
199-H4-16	Performance	S						Yes
199-H4-45	Performance	S						Yes
199-H4-46	Performance	S						Yes
199-H4-48	Performance	S						Yes
199-H4-49	Performance	S						Yes
199-H4-63	Extraction/ compliance	M	A	A	A	A	A	Yes
199-H4-64	Extraction/ compliance	M	A	A	A	A	A	Yes
199-H4-65	Former extraction well	S						Yes
199-H5-1A	Performance	S						Yes

Notes:
Requirements from *Interim Action Monitoring Plan for the 100-HR-3 and 100-KR-4 Operable Units* (DOE/RL-96-90), as modified by the *Remedial Design and Remedial Action Work Plan for 100-HR-3 and 100-KR-4 Groundwater Operable Units' Interim Action* (DOE/RL-96-84), further modified in subsequent years.

A = to be sampled annually
M = to be sampled monthly
Q = to be sampled quarterly
S = to be sampled semiannually

Table A-9. Monitoring Wells and Constituents for 100-HR-3 Operable Unit Long-Term Monitoring.

Well	Alpha	Anions	Beta	Hexavalent Chromium	Metals	Sulfate	Tritium	Sampled as Scheduled in Reporting Period
199-D2-11		A		M	A	A		Chromium missed July 2009[a]
199-D2-6	A	Q	A	Q	A	Q	A	Yes
199-D2-8				M				Missed August, September, and October 2009[a]
199-D3-2	A	Q	A	Q	A	Q	A	Yes
199-D4-1	A	Q	A	Q	A	Q	A	Yes
199-D4-13	A	Q	A	Q	A	Q	A	Chromium missed August 2009[a]
199-D4-14	A	Q	A	Q	A	Q	A	Yes
199-D4-15	A	M	A	M	A	M	A	Yes
199-D4-19	A	Q	A	Q	A	Q	A	Yes
199-D4-20	A	Q	A	Q	A	Q	A	Yes
199-D4-22	A	Q	A	Q	A	Q	A	Yes
199-D4-23	A	Q	A	Q	A	Q	A	Yes
199-D5-102				M				Yes
199-D5-104				M				Yes
199-D5-13	A	A	A	Q	A	A	A	Yes
199-D5-14	A	A	A	Q	A	A	A	Yes
199-D5-15	A	A	A	Q	A	A	A	Yes
199-D5-16	A	A	A	Q	A	A	A	Yes
199-D5-17	BE	BE	BE	BE	BE	BE	BE	Yes
199-D5-18				A				Yes
199-D5-19				A				Yes
199-D5-20	A	A	A	W	A	A	A	Yes
199-D5-33				Q				Yes
199-D5-34				M				Yes
199-D5-36		Q		Q	A	Q	A	Yes
199-D5-37		Q		Q	A	Q	A	Yes
199-D5-38	A	Q	A	M	A	Q	A	Missed July 2009[a]
199-D5-39	A	A	A	A	A	A	S	Yes
199-D5-40	A	Q	A	Q	A	Q	A	Yes
199-D5-41	A	Q	A	Q	A	Q	A	Yes
199-D5-43	A	Q	A	M	A	Q	A	No alpha, beta
199-D5-44	A	Q	A	Q	A	Q	A	Yes
199-D5-93		A		A		A		Yes
199-D5-97				M				Yes
199-D5-98				M				Yes
199-D5-99				M				Yes
199-D8-4	A	A	A	Q	A	A	A	Yes
199-D8-5	A	A	A	Q	A	A	A	Yes
199-D8-54B	A	A	A	A	A	A	A	Yes
199-D8-55	A	A	A	Q	A	A	A	Yes
199-D8-6				Q				Yes
199-H4-10	A	A	A	S	A	A	A	Yes
199-H4-12C	A	A	A	M	A	A	A	Yes
199-H4-13	A	A	A	S	A	A	A	Yes
199-H4-45	A	A	A	S	A	A	A	Yes
199-H4-46	BO	BO	BO	A	BO	BO	BO	Yes

Table A-9. (Cont.)

Well	Alpha	Anions	Beta	Hexavalent Chromium	Metals	Sulfate	Tritium	Sampled as Scheduled in Reporting Period
199-H4-47	BE	BE	BE		BE		BE	Yes
199-H4-48	BE	BE	BE		BE		BE	Yes
199-H4-49	BE	BE	BE		BE		BE	Yes
199-H4-5	A	A	A		A	A	A	Yes
199-H4-6	A	A	A	A	A	A	A	Yes
199-H4-9	A	A	A	A	A	A	A	Missed nitrates November 2009[a]
199-H5-1A	BE	BE	BE	S	BE	BE	BE	Yes
199-H6-1	A	A	A		A	A	A	Yes
699-86-42				A				Yes
699-87-42A				A				Yes
699-88-41				A				Yes
699-90-45				A				Yes
699-91-46A	BE	BE	BE	A	BE		BE	Yes
699-93-48A	BE	BE	BE	A	BE		BE	Yes
699-94-41	A	A	A	A	A	A	A	Yes
699-94-43	A	A	A	A	A	A	A	Yes
699-95-45	A	A	A	A	A	A	A	Yes
699-95-48	A	A	A	A	A	A	A	Yes
699-95-51	A	A	A	A	A	A	A	Yes
699-96-43	A	A	A	A	A	A	A	Missed November 2009[a]
699-96-49	A	A	A	A	A	A	A	Yes
699-96-52B	A	A	A	A	A	A	A	Yes
699-97-41	A	A	A	A	A	A	A	Yes
699-97-43	BE	BE	BE	BE	BE		BE	Yes
699-97-43B	A	A	A	A	A	A	A	Yes
699-97-43C	A	A	A	A	A	A	A	Yes
699-97-45	A	A	A	A	A	A	A	Yes
699-97-45B	A	A	A	A	A	A	A	Yes
699-97-48B	A	A	A	A	A	A	A	Yes
699-97-48C	A	A	A	A	A	A	A	Yes
699-97-51A	A	A	A	A	A	A	A	Yes
699-98-43	A	A	A	A	A	A	A	Yes
699-98-46	A	A	A	A	A	A	A	Yes
699-98-49A				A				Yes
699-98-51	A	A	A	A	A	A	A	Yes
699-99-41	A	A	A	A	A	A	A	Yes
699-99-42B	A	A	A	A	A	A	A	Yes
699-99-44	A	A	A	A	A	A	A	Yes
699-100-43B	A	A	A	A	A	A	A	Yes
699-101-45	A	A	A	A	A	A	A	Yes
199-D4-38		Q		Q	A	Q		Yes
199-D5-32		A		W		A	S	Yes
199-D5-92		A		A		A	A	Yes
199-D5-103		A		M		A		Yes
199-D5-119				M				Yes
199-D5-120				M				Yes

Table A-9. (Cont.)

Well	Alpha	Anions	Beta	Hexavalent Chromium	Metals	Sulfate	Tritium	Sampled as Scheduled in Reporting Period
199-D5-121				M				Yes
199-D5-122				M				Yes
199-D5-123				M				Yes
199-D5-125				M				Yes
199-D5-126				M				Yes
199-H3-2B		A		A	A	A	A	Yes
199-H4-9	A	A	A	A	A	A	A	Yes
199-H4-14		A		A	A	A	A	Yes
199-H4-15CP				S				Yes
199-H4-15CQ				S				Yes
199-H4-15CR				S				Yes
199-H4-18		A		A	A	A	A	Yes
Seep SD-102-1	A	A	A		A		A	Yes
Seep SD-110-1	A	A	A		A		A	Yes
Seep SD-110-2	A	A	A		A		A	Not sampled[b]
Seep SD-098-1	A	A	A		A		A	Not sampled[b]
Seep SH-144-1	A	A	A		A		A	Not sampled[b]
Seep SH-145-1	A	A	A		A		A	Yes
Seep SH-150-1	A	A	A		A		A	Not sampled[b]
Seep SH-152-2	A	A	A		A		A	Not sampled[b]
Seep SH-153-1	A	A	A		A		A	Yes

Notes:
Monitoring requirements have been modified (expanded) from *Sampling Changes to the 100-HR-3 and 100-KR-4 Operable Units* (CCN 062039).
Added wells to monitor DR-5 pump-and-treat system, chromium source investigation, and chromium plume in the Horn area.
a. Some monthly and quarterly sample missed because of scheduling conflicts.
b. Sampling of springs depends on flow conditions.

A = to be sampled annually
BE = to be sampled biennially, even fiscal year
BO = to be sampled biennially, odd fiscal year
FY = fiscal year
Q = to be sampled quarterly

Table A-10. Monitoring Wells and Constituents for the 100-FR-3 Operable Unit.

Well	Alkalinity	Alpha	Anions	Hexavalent Chromium	Metals	Strontium-90	Tritium	TCE (VOA)	Uranium	Sampled as Scheduled in 2009[a]
199-F1-2	BO		BO		BO					Yes
199-F5-1	A	BE	A		A	BE	BE			Yes
199-F5-4	A/BO	BO	A/BO		A/BO		BO	BO		Yes
199-F5-6	A	BE	A		A	BE	BE			Yes
199-F5-42	BO	BO	BO		BO	BO	BO			Yes
199-F5-43A	BE	BE	BE		BE	BE	BE			Yes
199-F5-43B	BE	BE	BE		BE	BE				Yes
199-F5-44	BE	BE	BE		BE	BE	BE			Yes
199-F5-45	BO	BO	BO		BO	BO	BO	BO	BO	Yes
199-F5-46	BE	A	BE		BE	BE	A	BE	A	Yes
199-F5-47	A/BE	BE	A/BE		A/BE		A/BE	BE	A/BE	Yes
199-F5-48	BO	BO	BO		BO		BO		BO	Yes
199-F6-1	BO	BO	BO		BO	BO	BO			Yes
199-F7-1	BE		BE		BE			BE		Yes
199-F7-2	BE	BE	BE		BE		BE	BE		Yes
199-F7-3	BE	BE	BE		BE		BE	BE		Yes
199-F8-2	BO	BO	BO		BO		BO		BO	Yes
199-F8-3	BO/E	A/BE	BO/E		BO/E		A/BE	BO/E	A/BE	Yes
199-F8-4	BE	A/BE	BE		BE		BE		A/BE	Yes
199-F8-7[b]	Q/A		Q/A	Q/A	Q/A	Q/A	Q/A	Q/A	Q/A	Yes
699-58-24	BE		BE		BE					Yes
699-60-32	BO		BO		BO					Yes
699-62-31	BO		BO		BO					Yes
699-62-43F	A/BE		A/BE		A/BE		A/BE			Yes
699-63-25A	BO		BO		BO		BO			Yes
699-63-55	BO		BO		BO		A/BO			Yes
699-64-27	BE		BE		BE					Yes
699-66-23	BE		BE		BE		BE			Yes
699-67-51	BO		BO		BO		BO			Yes
699-71-30	BO	BO	BO		BO		BO			Yes
699-74-44	BO		BO		BO			BO		Yes
699-77-36	BE		BE		BE			BE		Yes
699-77-54	BO		BO		BO					Yes
699-81-38	BE		BE		BE					Yes
699-83-47	BE		BE		BE			BE		Yes
Seep SF-187-1	A		A	A	A		A			No[c]
Seep SF-190-4	A		A	A	A		A			No[c]
Seep SF-207-1	A		A	A	A		A			Yes; total Cr instead of hexavalent; no alkalinity

Notes: Requirements from *100-FR-3 Operable Unit Sampling and Analysis Plan* (DOE/RL-2003-49, Rev. 1), as modified by TPA-CN-241 (*TPA Change Notice for Modifying 100-FR-3 Operable Unit Sampling and Analysis Plan, DOE/RL-2003-49, Rev. 1*).

a. 100-FR-3 wells are typically sampled in October. The reporting period (October 2008 through December 2009) included two sampling events.
b. New well sampled quarterly through July 2009; annually thereafter.
c. Sampling of seeps depends on flow conditions.

A = to be sampled annually
A/BO or A/BE = changed from annual to biennial sampling
BO/E = changed from odd to even years
BE = to be sampled biennially, even fiscal years
BO = to be sampled biennially, odd fiscal years
Q/A = new well; sampled quarterly first year after installation and annually thereafter
TCE = trichloroethene
VOA = volatile organic analyte

Table A-11. Monitoring Wells and Constituents for the 200-ZP-1 Operable Unit.

Well	Anions	Arsenic	Iodine-129	Metals	Strontium-90	Technetium-99	Tritium	Uranium	VOA	Sampled as Scheduled in 2009
299-W10-1	A	A		A			A		A	Yes
299-W10-22	S		S	S		S	S	S	S	Yes
299-W10-23	A	A	A	A		A	A	A	A	Yes
299-W10-24	Q		Q	Q		Q	Q		Q	Yes
299-W10-33	Q	Q		Q		Q	Q		Q	Yes
299-W10-4	S	S	S	S		S	S		S	Yes
299-W10-5	S			S		S	S		S	Yes
299-W11-10	S								S	Yes
299-W11-13	S	S	S	S		S	S		S	December 2009 sample unsuccessful
299-W11-18	A		A	A		A	A		A	Yes
299-W11-3	S		S				S	S	S	November 2009 sample unsuccessful
299-W11-34P	Q		Q	Q		Q	Q		Q	Yes
299-W11-37	S		S	S			S		S	Yes
299-W11-39	Q		Q	Q		Q	Q		Q	Yes
299-W11-40	Q		Q	Q		Q	Q		Q	Yes
299-W11-42	Q		Q	Q		Q	Q		Q	Yes
299-W11-43	Q		Q	Q			Q		Q	Yes
299-W11-45	Q		Q	Q		Q	Q		Q	Yes
299-W11-46	Q		Q	Q		Q	Q		Q	Yes
299-W11-47	Q	Q	Q	Q		Q	Q	Q	Q	Yes
299-W11-48	Q		Q	Q		Q	Q		Q	Yes
299-W11-6	S		S					S	S	Yes
299-W11-7	A	A	A	A		A	A	A	A	Yes
299-W11-87	Q		Q	Q		Q	Q	Q	Q	Yes
299-W11-88	Q		Q			Q	Q	Q	Q	Yes
299-W12-1	A		A	A			A		A	Yes
299-W13-1	Q		Q			Q	Q		Q	Yes
299-W14-14	A		A	A		A	A		A	Yes
299-W14-16	A		A	A		A	A		A	Yes
299-W14-71	Q		Q	Q		Q	Q		Q	Yes
299-W14-72	Q			Q		Q			Q	Yes
299-W15-1	A					A			A	Yes
299-W15-11	S					S	S		S	Yes
299-W15-152	A								A	Yes
299-W15-17	S			S		S			S	Yes
299-W15-2	A					A	A		A	Yes
299-W15-30	S			S		S			S	Yes
299-W15-31A	S					S			S	Yes
299-W15-34	S					S			S	Yes
299-W15-35	S			S		S			S	Yes
299-W15-36	A					A			A	Yes
299-W15-40	Q		Q	Q		Q	Q		Q	Yes
299-W15-41	S			S		S	S		S	Yes
299-W15-42	A			A		A			A	Yes
299-W15-43	Q		Q	Q		Q	Q		Q	Yes

Table A-11. (Cont.)

Well	Anions	Arsenic	Iodine-129	Metals	Strontium-90	Technetium-99	Tritium	Uranium	VOA	Sampled as Scheduled in 2009
299-W15-44	Q		Q	Q		Q	Q		Q	Yes
299-W15-45	S					S			S	Yes
299-W15-46	Q					Q			Q	Yes
299-W15-47	Q					Q			Q	Yes
299-W15-49	Q					Q			Q	Yes
299-W15-50	Q			Q		Q			Q	Yes
299-W15-7	Q					Q			Q	Yes
299-W15-763	Q		Q			Q	Q		Q	Yes
299-W15-765	Q		Q	Q		Q	Q		Q	Yes
299-W17-1	S		S	S	S	S	S		S	Yes
299-W18-1	A			A					A	Yes
299-W18-16	Q								Q	Yes
299-W8-1	A						A		A	Yes
699-43-69	S					S			S	Yes
699-43-89	BO	BO	BO	BO	BO	BO	BO	BO	BO	Yes
699-44-64	A		A	A		A			A	Yes
699-45-69A	BO		BO						BO	Yes
699-45-69C	Q			Q		Q	Q	Q	Q	Yes
699-47-60	BO		BO	BO		BO	BO	BO	BO	Yes
699-48-71	S	S		S		S	S		S	Yes
699-50-74	S		S	S		S	S	S	S	Yes
699-55-60A	A		A	A		A	A	A	A	Yes

Notes:
A = to be sampled annually
BO = to be sampled biennially, odd fiscal years
Q = to be sampled quarterly
S = to be sampled semiannually
VOA = volatile organic analyte

Table A-12. Monitoring Wells and Constituents for the 200-UP-1 Operable Unit.

Well	Arsenic	Cadmium	Carbon-14	Chromium	Iodine-129	Iron	Manganese	Nitrate and Fluoride	Selenium-79	Strontium-90	Technetium-99	Tritium	Uranium	VOA	Sampled as Scheduled in 2009
299-W15-37	A	A						A					A	A	Yes
299-W18-15	S							S					S	S	Yes
299-W18-21[a]	A							A			A		A	SA	Yes
299-W18-22[a]	A							A			A		A	SA	Yes
299-W18-30	A				A			A					A	A	Yes
299-W19-4					BO			BO			BO		BO	BO	Yes
299-W19-18[b]					A			A			A		A	A	Yes
299-W19-101[c]					Q			Q			Q	Q	Q	Q	Yes
299-W19-105[g]					S			S			S	S	S	S	Yes
299-W19-107[g]					S			S			S		S	S	Yes
299-W19-34A	A				A			A			A		A	A	Yes
299-W19-34B	BE				BE			BE			BE		BE	BE	Not scheduled
299-W19-35		S			S			S			S		S	S	Yes
299-W19-36[d]					A			Q			Q		Q	Q	November 2009 sample missed due to pump-and-treat system outage
299-W19-43[e]					S			Q			Q		Q	Q	November 2009 sample missed due to pump-and-treat system outage
299-W19-46		S			S		S	S			S	S	S	S	Yes
299-W19-48					Q			Q			Q	Q	Q	Q	Yes
299-W19-49[f,g]					S			S			S	S	S	S	Yes
299-W21-2[g]					S			S		S	S	S	S	S	Yes
299-W22-20					A			A		A	A	A	A	A	Missed iodine-129 and strontium-90 due to lack of water; well now dry
299-W22-26		A			A			A	A		A	A	A	A	Yes
299-W22-45		A			A			A		A		A	A	A	Yes
299-W22-48	S	S			S		S	S		S		S	S	S	Yes
299-W22-49		S			S	S	S	S		S	S	S	S	S	Yes
299-W22-69[g]					A			A			A	A		A	Yes
299-W22-72[g]			S		S			S		S	S	S	S	S	Yes
299-W22-83		Q			Q			Q	Q	Q	Q	Q	Q	Q	Yes
299-W22-86[g]				S	S			S	S			S		S	Yes
299-W22-87[g]					S			S			S	S	S	S	Yes
299-W22-88[g]					S			S			S	S	S		Yes
299-W23-4	S							S				S	S	S	Yes
299-W23-15						S		S			S	S	S	S	Yes
299-W23-21								Q			Q	Q	Q	Q	December 2009 sample delayed until CY 2010
299-W26-13					BO			BO				BO	BO	BO	Yes
299-W26-14					BE		BE	BE			BE	BE	BE	BE	Not scheduled
699-30-66[g]				S	S			S				S	S	S	Yes
699-32-62				BO	BO			BO				BO			Yes
699-32-72A					BO			BO				BO		BO	Yes

Table A-12. (Cont.)

Well	Arsenic	Cadmium	Carbon-14	Chromium	Iodine-129	Iron	Manganese	Nitrate and Fluoride	Selenium-79	Strontium-90	Technetium-99	Tritium	Uranium	VOA	Sampled as Scheduled in 2009
699-32-76[g]				BO	BO			BO						BO	Yes
699-33-74[g]				A	A			A			A	A	A	A	Yes
699-33-75[g]				S	S			S				S	S	S	Yes
699-33-76[g]				A	A			A						A	Yes
699-34-72[g]			S		S			S		S	S	S	S	S	Yes
699-35-66A				BO	BO			BO				BO		BO	Yes
699-35-70			BE		BE			BE				BE		BE	Not scheduled
699-35-78A	A							A					A	A	Yes
699-36-61A				BE	BE			BE				BE			Not scheduled
699-36-70A					A			A			A	A	A	A	Yes
699-36-70B[g]					S			S			S	S	S	S	Yes
699-38-65					A			A				A			Yes
699-38-68A					BO			BO			BO	BO	BO	BO	Yes
699-38-70B					S			S			S	S	S	S	Yes
699-38-70C					S			S			S	S	S	S	Yes
699-40-62					BO			BO			BO	BO	BO	BO	Yes
699-40-65[g]					S			S				S		S	Yes

Notes:
Requirements modified from *Remedial Investigation/Feasibility Study Work Plan for the 200-UP-1 Groundwater Operable Unit* (DOE/RL-92-76).

Wells listed DOE/RL-92-76 that are now dry include the following: 299-W18-33, 299-W19-37, 299-W19-40, 299-W22-9, 299-W23-9, 299-W23-10, 299-W23-14 (replaced with well 299-W23-21), 699-38-70, and 299-W22-20.

Well 299-W19-39 is included in the DOE/RL-92-76 but is no longer sampled; the well is configured as an extraction well but is not operating and cannot be sampled.

a. The VOAs listed as annual in DOE/RL-92-76; sampled semiannually to support the 200-ZP-1 pump-and-treat system.
b. Not listed in DOE/RL-92-76 but sampled annually to support the 200-UP-1 pump-and-treat system.
c. Listed as "299-W19-50 (new well 'L')" in DOE/RL-92-76; was abandoned during drilling and replaced by 299-W19-101.
d. Frequency specified as annual in DOE/RL-92-76; now a pump-and-treat system extraction well sampled quarterly.
e. Frequency specified as semiannual in DOE/RL-92-76; now a pump-and-treat system extraction well sampled quarterly.
f. Listed as "299-W19-47 (new well 'M')" in DOE/RL-92-76; assumed to be a typographical error. New well "M" is 299-W19-49.
g. Frequency reduced from quarterly after first year of sampling.

A = to be sampled annually
BE = to be sampled biennially, even fiscal years
BO = to be sampled biennially, odd fiscal years
CY = calendar year
Q = to be sampled quarterly
S = to be sampled semiannually
VOA = volatile organic analyte

Table A-13. Monitoring Wells and Constituents for the 200-BP-5 Operable Unit.

Well	Contaminants of Concern										Supporting Constituents							Sampled as Scheduled in 2009
	Cesium-137	Cobalt-60	Cyanide	Iodine-129	Nitrate	Plutonium-239/240	Strontium-90	Technetium-99	Tritium	Uranium	Alkalinity	Alpha/Beta	Americium-241	Arsenic	Metals (Filtered)	Neptunium-237	TOC/TOX	
299-E24-8	3-07	3-07		3-07	3-07				3-07			3-07		3-07				Not scheduled
299-E26-10				A	A				A									Yes
299-E26-11				3-07	3-07				3-07					3-07				Not scheduled
299-E27-10				3-07	3-07				3-07					3-07				Not scheduled
299-E27-14				A	A			A	A									Yes
299-E27-15					A			A			A				A			Yes
299-E27-17				3-07	3-07				3-07					3-07				Not scheduled
299-E27-18				3-07	3-07				3-07					3-07				Not scheduled
299-E27-7				A	A			A	A					A				Yes
299-E27-155*	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA		Yes
299-E28-13				3-07	3-07		3-07		3-07	3-07		3-07						Not scheduled
299-E28-17	A				A	A	A			A								Yes
299-E28-18				A	A				A	A		A		A				Yes
299-E28-2	A			A	A	A	A	A	A		A	A			A			Yes
299-E28-21										A								Yes
299-E28-23	A					A	A			A		A	A			A		Yes
299-E28-24	A					A	A		A	A		A	A			A		Yes
299-E28-25	A			A	A	A	A		A	A		A	A	A		A		Yes
299-E28-26				3-07	A			A	3-07	A				3-07				Yes
299-E28-27	A			A	A	A	A	A	3-07	A								Yes
299-E28-28				3-07	3-07				3-07									Not scheduled
299-E28-5	A			3-07	3-07	A	A		3-07	A		3-07		3-07				Yes
299-E28-6	A	A		3-07	3-07	A	A		3-07	A		3-07		3-07				Yes
299-E28-8	A					A	A	A		A								Yes
299-E32-10		A	A	3-07	3-07			A	3-07	A				3-07				Yes
299-E32-2				3-07	3-07				3-07									Not scheduled
299-E32-4				A	A			A	A									Yes
299-E32-5				3-07	3-07				3-07	3-07								Not scheduled
299-E32-6				3-07	A			A	3-07	3-07								Yes
299-E32-7				3-07	3-07				3-07									Not scheduled
299-E32-8				3-07	3-07				3-07									Not scheduled
299-E32-9			3-07	A	A				3-07									Yes
299-E33-12								3-07										Not scheduled
299-E33-13			A							A								Yes
299-E33-15					A			A										Yes
299-E33-16				A	A			A		A								Yes
299-E33-18				A	A			A		A								Yes
299-E33-205*	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		Yes
299-E33-26		A	A	3-07	3-07			A	3-07	A		3-07						Yes
299-E33-28					A			A										Yes
299-E33-29				3-07	3-07			3-07	3-07									Not scheduled
299-E33-30					A			A										Yes
299-E33-32				3-07	3-07			3-07	3-07									Not scheduled

Table A-13. (Cont.)

Well	Contaminants of Concern										Supporting Constituents							Sampled as Scheduled in 2009
	Cesium-137	Cobalt-60	Cyanide	Iodine-129	Nitrate	Plutonium-239/240	Strontium-90	Technetium-99	Tritium	Uranium	Alkalinity	Alpha/Beta	Americium-241	Arsenic	Metals (Filtered)	Neptunium-237	TOC/TOX	
299-E33-33				3-07	3-07				3-07	3-07				3-07				Not scheduled
299-E33-334					A			A		A								Yes
299-E33-335						A		A										Yes
299-E33-338								A		A								Yes
299-E33-34		A	A	A	A			A	A	A								Yes
299-E33-340*	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		Yes
299-E33-341*	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		Yes
299-E33-342*	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		Yes
299-E33-343*	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		Yes
299-E33-344*	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA		Yes
299-E33-345*	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q		Yes
299-E33-35	3-07	3-07	A	3-07	A			A	3-07	A								Yes
299-E33-37				3-07	3-07				3-07									Not scheduled
299-E33-38		A	A	A	A	A	A	A	A	A		A		A				Yes
299-E33-39			A	A	A			A	A	A								Yes
299-E33-41	3-07	3-07	3-07	3-07	3-07			A	3-07	A								Yes
299-E33-42				A				A		A								Yes
299-E33-43				A				A		A								Yes
299-E33-44		A						A		A								Yes
299-E33-50*	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA		Yes
299-E33-7	A	A	A	A	A			A	A	A		A						Yes
299-E34-2				A	A				A									Yes
299-E34-9				3-07	3-07				3-07									Not scheduled
699-44-39B				3-07	3-07				3-07									Not scheduled
699-45-42				3-07	3-07				3-07									Not scheduled
699-47-60				A	A			A	A									Yes
699-48-50B*	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA		Yes
699-49-55A	A	A	A	A	A	A	A	A	A	A		A						Yes
699-49-57A	A	A	A	A	A			A	A	A				A				Yes
699-49-57B	A	A	A	A	A			A	A									Yes
699-50-56*	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		Yes
699-50-59*		3-09	3-09	3-09	3-09			3-09	3-09	3-09	3-09	3-09			3-09			Yes
699-52-55*	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		Yes
699-52-55B*	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		Yes
699-53-47A					A		A		A			A						Yes
699-53-47B					3-09		3-09											Yes
699-53-48A				A	A		A		A			A			A			Yes
699-53-55A		A	A		A			A	A									Yes
699-53-55B		A	A		A			A	A									Yes
699-53-55C		A	A	A	A			A	A									Yes
699-54-45A					3-09													Yes
699-54-45B					3-09													Dry

Table A-13. (Cont.)

Well	Contaminants of Concern										Supporting Constituents							Sampled as Scheduled in 2009
	Cesium-137	Cobalt-60	Cyanide	Iodine-129	Nitrate	Plutonium-239/240	Strontium-90	Technetium-99	Tritium	Uranium	Alkalinity	Alpha/Beta	Americium-241	Arsenic	Metals (Filtered)	Neptunium-237	TOC/TOX	
699-54-48							3-09											Not sampled due to inaccessibility and maintenance
699-54-49					A		A		A			A						Yes
699-55-50C				A	A		A	A	A									Yes
699-55-57		A	A	A	A			A	A									Yes
699-55-60A		A	A	A	A			A	A									Yes
699-57-59	A	A	A	A	A	A	A	A	A	A	A	A			A		A	No Sr-90, Pu
699-59-58	A	A	A	A	A	A	A	A	A	A	A	A			A		A	No Sr-90, Pu
699-60-60	A	A	A	A	A	A	A	A	A	A	A	A			A		A	No Sr-90, Pu
699-61-62	A	A	A	A	A	A	A	A	A	A	A	A			A		A	No Sr-90, Pu
699-61-66	A	A	A	A	A	A	A	A	A	A	A	A			A		A	No Sr-90, Pu
699-64-62	A	A	A	A	A	A	A	A	A	A	A	A			A		A	No Sr-90, Pu
699-65-50								3-07										Not scheduled
699-65-72									3-07									Not scheduled
699-66-58								3-07	3-07									Not scheduled
699-66-64								3-07	3-07									Not scheduled
699-70-68								3-07	3-07									Not scheduled
699-72-73					3-07			3-07	3-07									Not scheduled
699-73-61									3-07									Not scheduled

Notes:
Requirements from *Groundwater Sampling and Analysis Plan for the 200-BP-5 Operable Unit* (DOE/RL-2001-49).
* Well not listed in DOE/RL-2001-49 but added to sampling schedule.

3-xx = to be sampled triennially (every 3 years); xx indicates the fiscal year of sampling for specified analyte
A = to be sampled annually
Q = to be sampled quarterly
SA = to be sampled semiannually
TOC = total organic carbon
TOX = total organic halides

Table A-14. Monitoring Wells and Constituents for 200-PO-1 Operable Unit Near-Field Wells.

Well Number[a]	Contaminants of Concern							Supporting Constituents					Sampled as Scheduled in 2009
	Arsenic	Chromium, Manganese,, and Vanadium (Filtered)	Iodine-129	Nitrate	Strontium-90	Technetium-99	Tritium	Alpha	Anions[b]	Beta	Metals[c]	Uranium	
299-E16-2	A	A	A	A	A		A	A	A	A	A		Yes
299-E17-1	A	A	A	A	A	A	A	A	A	A	A	A	Yes
299-E17-12	A	A	A	A	A		A	A	A	A	A		Yes
299-E17-13	A	A	A	A	A		A	A	A	A	A		Yes
299-E17-14	A	A	A	A	A	A	A	A	A	A	A	A	Yes
299-E17-16	A	A	A	A	A	A	A	A	A	A	A	A	Yes
299-E17-18	A	A	A	A	A	A	A	A	A	A	A	A	Yes
299-E17-19	A	A	A	A	A	A	A	A	A	A	A	A	Yes
299-E17-23	A	A	A	A			A	A	A	A	A		Yes
299-E17-25	A	A	A	A			A	A	A	A	A		Yes
299-E18-1	A	A	A	A			A	A	A	A	A		Yes
299-E23-1	A	A	A	A			A	A	A	A	A		Yes
299-E24-16	A	A	A	A	A	A	A	A	A	A	A	A	Yes
299-E24-18	A	A	A	A	A	A	A	A	A	A	A	A	Yes
299-E24-20	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E24-22	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E24-23	A	A	A	A	A	A	A	A	A	A	A	A	Yes
299-E24-33	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E24-5	A	A	A	A			A	A	A	A	A		Yes
299-E25-17	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E25-18	A	A	A	A	A		A	A	A	A	A		Yes
299-E25-19	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E25-2	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E25-20	A	A	A	A	A		A	A	A	A	A		Yes
299-E25-22	A	A	A	A	A		A	A	A	A	A		Yes
299-E25-28	A	A	A	A			A	A	A	A	A		Yes
299-E25-29P	A	A	A	A			A	A	A	A	A		Yes
299-E25-29Q	A	A	A	A			A			A	A		Yes
299-E25-236	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E25-3	A	A	A	A	A		A	A	A	A	A		Yes
299-E25-32P	A	A	A	A			A	A	A	A	A		Yes
299-E25-32Q	A	A	A	A			A	A	A	A	A		Yes
299-E25-34	A	A	A	A			A	A	A	A	A		Yes
299-E25-35	A	A	A	A			A	A	A	A	A		Yes
299-E25-36	A	A	A	A	A		A	A	A	A	A	A	Yes
299-E25-37	A	A	A	A			A	A	A	A	A		Yes
299-E25-40	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E25-41	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E25-42	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E25-43	A	A	A	A			A	A	A	A	A		Yes
299-E25-44	A	A	A	A			A	A	A	A	A		Yes
299-E25-47	A	A	A	A			A	A	A	A	A		Yes

Table A-14. (Cont.)

Well Number[a]	Contaminants of Concern							Supporting Constituents					Sampled as Scheduled in 2009
	Arsenic	Chromium, Manganese,, and Vanadium (Filtered)	Iodine-129	Nitrate	Strontium-90	Technetium-99	Tritium	Alpha	Anions[b]	Beta	Metals[c]	Uranium	
299-E25-6	A	A	A	A	A		A	A	A	A	A		Yes
299-E25-93	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E25-94	A	A	A	A	A	A	A	A	A	A	A		Yes
299-E26-4	A	A	A	A	A		A	A	A	A	A		Yes
699-37-47A	A	A	A	A	A	A	A	A	A	A	A	A	Yes
699-39-39	A	A	A	A			A	A	A	A	A		Yes
699-41-42	A	A	A	A			A	A	A	A	A		Yes
699-42-40A	A	A	A	A			A	A	A	A	A		Yes
699-42-42B	A	A	A	A			A	A	A	A	A		Yes
699-43-45	A	A	A	A			A	A	A	A	A		Yes
699-44-39B	A	A	A	A			A	A	A	A	A		Yes

Notes:
Requirements from *Sampling and Analysis Plan for the 200-PO-1 Groundwater Operable Unit* (DOE/RL-2003-04).
a. Some wells added in anticipation of revision of DOE/RL-2003-04.
b. Anions; analytes include, but are not limited to, nitrate.
c. Metals; analytes include, but are not limited to, chromium, manganese, and vanadium.

A = to be sampled annually

Table A-15. Monitoring Wells and Constituents for the 200-PO-1 Operable Unit Far-Field Wells.

Well or Aquifer Tube Name	Contaminant of Concern			Supporting Constituents										Sampled as Scheduled in 2009
	Iodine-129	Nitrate	Tritium	Alpha	Anions[b]	Beta	Cyanide	Gamma	Metals[c]	Strontium-90	Technetium-99	Uranium	VOAs	
BC Cribs														
299-E13-14		A	A	A	A	A	A	A	A	A	A	A		No, dry
299-E13-5		A	A	A	A	A	A	A	A	A	A	A		Yes
299-E13-11		A	A	A	A	A	A	A	A	A	A	A		Yes
299-E13-19		A	A	A	A	A	A	A	A	A	A	A		Yes
Southeast Transect														
699-10-54A		A	A	A	A	A		A	A	A			A	Yes
699-24-46	A	A	A	A	A	A		A	A	A			A	Yes
699-26-33	A	A	A	A	A	A		A	A	A			A	Yes
699-31-31	A	A	A	A	A	A		A	A	A			A	Yes
699-32-22A	A	A	A	A	A	A		A	A	A			A	Yes
699-32-43	A	A	A	A	A	A		A	A	A			A	Yes
699-41-23	A	A	A	A	A	A		A	A	A			A	Yes
699-46-21B	A	A	A	A	A	A		A	A	A			A	Yes
River Transect														
699-10-E12		A	A	A	A	A		A	A	A			A	Yes
699-20-E12O	A	A	A	A	A	A		A	A	A			A	Yes
699-41-1A	A	A	A	A	A	A		A	A	A			A	Yes
699-46-4	A	A	A	A	A	A		A	A	A			A	Yes
699-S3-E12		A	A	A	A	A		A	A	A			A	Yes
699-S19-E13		A	A	A	A	A		A	A	A			A	Yes
Basalt-Confined Aquifer														
299-E16-1	3-09	3-09	3-09	3-09	3-09	3-09			3-09					Yes
699-13-1C		3-09	3-09	3-09	3-09	3-09			3-09					Yes
699-24-1P		3-09	3-09	3-09	3-09	3-09			3-09					Yes
699-32-22B	3-09	3-09	3-09	3-09	3-09	3-09			3-09					Yes
699-42-40C	3-09	3-09	3-09	3-09	3-09	3-09			3-09					Yes
699-S2-34B		3-09	3-09	3-09	3-09	3-09			3-09					Yes
699-S11-E12AP		3-09	3-09	3-09	3-09	3-09			3-09					Yes
Far-Field General														
499-S0-7	A	A	A	A	A	A		A	A	A	A	A	A	Yes
499-S0-8 a	A	A	A	A	A	A		A	A	A	A	A	A	Yes
499-S1-8J a	A	A	A	A	A	A		A	A	A	A	A	A	Yes
699-12-4D	3-10	3-10	3-10		3-10									Not scheduled
699-13-1A	3-10	3-10	3-10		3-10									Not scheduled
699-13-3A		3-10	3-10		3-10									Not scheduled
699-14-38		3-10	3-10		3-10									Not scheduled
699-17-5	3-10	3-10	3-10		3-10									Not scheduled
699-19-43	3-10	3-10	3-10		3-10									Not scheduled
699-20-20	3-10	3-10	3-10		3-10									Not scheduled
699-20-E12S		3-10	3-10		3-10									Not scheduled

Table A-15. (Cont.)

Well or Aquifer Tube Name	Contaminant of Concern			Supporting Constituents										Sampled as Scheduled in 2009
	Iodine-129	Nitrate	Tritium	Alpha	Anions[b]	Beta	Cyanide	Gamma	Metals[c]	Strontium-90	Technetium-99	Uranium	VOAs	
699-20-E5A		3-10	3-10		3-10									Not scheduled
699-21-6	3-10	3-10	3-10		3-10									Not scheduled
699-2-3	3-10	3-10	3-10		3-10									Not scheduled
699-22-35	3-10	3-10	3-10		3-10									Not scheduled
699-24-34C	3-10	3-10	3-10		3-10									Not scheduled
699-26-15A	3-10	3-10	3-10		3-10									Not scheduled
699-26-35A	3-10	3-10	3-10		3-10									Not scheduled
699-2-6A a		A	A		A									Yes
699-2-7 a		A	A		A									Yes
699-28-40	3-10	3-10	3-10		3-10									Not scheduled
699-29-4	3-10	3-10	3-10		3-10									Not scheduled
699-31-11	3-10	3-10	3-10		3-10									Not scheduled
699-33-42	3-10	3-10	3-10		3-10									Not scheduled
699-33-56		3-10	3-10		3-10									Not scheduled
699-34-41B	3-10	3-10	3-10		3-10									Not scheduled
699-34-42	3-10	3-10	3-10		3-10									Not scheduled
699-35-9	3-10	3-10	3-10		3-10									Not scheduled
699-37-43	3-10	3-10	3-10		3-10									Not scheduled
699-37-E4	3-10	3-10	3-10		3-10									Not scheduled
699-38-15	3-10	3-10	3-10		3-10									Not scheduled
699-40-1	3-10	3-10	3-10		3-10									Not scheduled
699-40-33A	3-10	3-10	3-10		3-10									Not scheduled
699-40-36	3-10	3-10	3-10		3-10									Not scheduled
699-41-40	3-10	3-10	3-10		3-10									Not scheduled
699-41-42 a	3-10	3-10	3-10		3-10									Not scheduled
699-42-12A	3-10	3-10	3-10		3-10									Not scheduled
699-42-39A	3-10	3-10	3-10		3-10									Not scheduled
699-42-39B	3-10	3-10	3-10		3-10									Not scheduled
699-42-40A a	3-10	3-10	3-10		3-10									Not scheduled
699-43-3	3-10	3-10	3-10		3-10									Not scheduled
699-45-42	3-10	3-10	3-10		3-10									Not scheduled
699-47-5	3-10	3-10	3-10		3-10									Not scheduled
699-48-7A		3-10	3-10		3-10									Not scheduled
699-49-13E	3-10	3-10	3-10		3-10									Not scheduled
699-50-28B	3-10	3-10	3-10		3-10									Not scheduled
699-52-19		3-10	3-10		3-10									Not scheduled
699-8-17	3-10	3-10	3-10		3-10									Not scheduled
699-8-25	3-10	3-10	3-10		3-10									Not scheduled
699-9-E2	3-10	3-10	3-10		3-10									Not scheduled
699-S12-3		3-10	3-10		3-10									Not scheduled
699-S19-E14		3-10	3-10		3-10									Not scheduled
699-S3-25		3-10	3-10		3-10									Not scheduled

Table A-15. (Cont.)

Well or Aquifer Tube Name	Contaminant of Concern			Supporting Constituents										Sampled as Scheduled in 2009
	Iodine-129	Nitrate	Tritium	Alpha	Anions[b]	Beta	Cyanide	Gamma	Metals[c]	Strontium-90	Technetium-99	Uranium	VOAs	
699-S6-E14A		3-10	3-10		3-10									Not scheduled
699-S6-E4A		3-10	3-10		3-10									Not scheduled
699-S6-E4B		3-10	3-10		3-10									Not scheduled
699-S8-19		3-10	3-10		3-10									Not scheduled

Notes:
Requirements from *Sampling and Analysis Plan for the 200-PO-1 Groundwater Operable Unit* (DOE/RL-2003-04).
a. Some wells added in anticipation of revision of DOE/RL-2003-04.
b. Anions; analytes include, but are not limited to, nitrate.
c. Metals; analytes include, but are not limited to, chromium, manganese, and vanadium.

3-xx = to be sampled triennially (every three years); xx indicates the fiscal year of sampling for specified analyte
A = to be sampled annually
VOA = volatile organic analyte

Table A-16. Monitoring Wells and Analytes/Analytical Methods for the 200-PO-1 Operable Unit Characterization Wells for FY 2009 (Wells Scheduled for Decommissioning.

Well Number	Analytical Methods or Analytes														Sampled as Scheduled in FY 2009
	Volatile Organics	Semivolatile Organics	Metals	Pesticides	Anions	Gross Alpha/Beta	Iodine-129	Neptunium-237	Protactiinium-231	Selenium-79	Strontium-90	Technetium-99	Tritium	Isotopic Uranium	
299-E24-6	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Admin. decommissioned
299-E25-21	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
299-E25-23	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Dry
299-E25-24	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-10-30B	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Dry
699-10-3A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-11-E10	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Dry
699-12-1B	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Not located
699-13-26	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Dry
699-13-E14	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Admin. decommissioned
699-15-E13	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-16-E3A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-17-24	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Admin. decommissioned
699-18-21	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Dry
699-18-25A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-19-23	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-20-E8	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Not located
699-23-33	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-25-20	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-2-E14	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-31-17	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-31-8	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-32-18	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Dry
699-33-14	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-35-16	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-35-19B	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-36-17	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-37-E1	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-38-19	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-39-23	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-40-28	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Admin. decommissioned
699-41-25	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-42-21	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-43-18	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-4-E16	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-7-6	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Not located
699-S5-E16A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	No,difficult access (island)
699-S5-E16B	O	O	O	O	O	O	O	O	O	O	O	O	O	O	No, difficult access (island)

Table A-16. (Cont.)

Well Number	Analytical Methods or Analytes														Sampled as Scheduled in FY 2009
	Volatile Organics	Semivolatile Organics	Metals	Pesticides	Anions	Gross Alpha/Beta	Iodine-129	Neptunium-237	Protactiinium-231	Selenium-79	Strontium-90	Technetium-99	Tritium	Isotopic Uranium	
699-S6-E14A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes
699-S6-E16B	O	O	O	O	O	O	O	O	O	O	O	O	O	O	No, piezometers obstructing access
699-S6-E4C	O	O	O	O	O	O	O	O	O	O	O	O	O	O	No, piezometers obstructing access
699-S6-E4J	O	O	O	O	O	O	O	O	O	O	O	O	O	O	Yes

Notes:
Requirements from *Remedial Investigation/Feasibility Study Work Plan for the 200-PO-1 Groundwater Operable Unit* (DOE/RL-2007-31), Appendix A, Table A3-3.

Admin. decommissioned = not sampled
FY = fiscal year
O = scheduled for sampling once

Table A-17. Monitoring Wells and Constituents for the 300-FF-5 Operable Unit, 300 Area.

Well Name	Hydrologic Unit Monitored	Contaminants of Concern			Contaminants of Potential Concern				Supporting Measurements						Sampled as Scheduled in 2009
		cis-1,2-Dichloroethene	Trichloroethene	Uranium, Total (Unfiltered)	Tetrachloroethene	Strontium-90	Tritium	Nitrate	Anions	Alkalinity	Metals	VOCs	Alpha/Beta	Uranium, Isotopic	
Near-River Well Group															
399-1-1	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-1-10A [a]	TU	S	S	Q/M	S		A	Q	Q/M	Q/M	S	S	S	A	Yes
399-1-10B	LU	S	S	S	S			S	S	S	S	S			Yes
399-1-16A [a]	TU	S	S	Q/M	S		A	Q	Q/M	Q/M	S	S	S	A	Yes
399-1-16B	LU	S	S	S	S			S	S	S	S	S			Yes
399-1-16C	C	A	A	A	A			A	A	A	A	A			Yes
399-2-1	TU	S	S	Q	S		A	Q	Q	Q	S	S	S	A	Yes
399-2-2	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-3-1	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-3-9	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-3-10	TU	S	S	Q	S		A	Q	Q	Q	S	S	S	A	Yes
399-3-18 [b]	TU	S	S	Q/M	S		A	Q	Q/M	Q/M	S	S	S	A	Yes
399-4-7	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-4-9	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-4-10	TU	S	S	S	S			S	S	S	S	S	S		Yes
Central Region – Uranium Plume Transport Corridor Well Group															
399-1-2 [c]	TU	S	S	S/M	S			S	S/M	S/M	S	S	S/M		Yes
399-1-6	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-1-7	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-1-8	LU	S	S	S	S			S	S	S	S	S	S		Yes
399-1-9	C	A	A	A	A			A	A	A	A	A			Yes
399-1-11	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-1-12	TU	S	S	S	S			S	S	S	S	S	S		No; missed first sampling event
399-1-17A [a]	TU	S	S	Q/M	S		A	Q	Q/M	Q/M	S	S	S	A	Yes
399-1-17B	LU	S	S	S	S			S	S	S	S	S	S		Yes
399-1-17C	C	A	A	A	A			A	A	A	A	A			Yes
399-1-21A [c]	TU	S	S	Q/M	S		A	Q	Q/M	Q/M	S	S	S/M	A	Yes
399-1-21B	LU	S	S	S	S			S	S	S	S	S	S		Yes
399-1-23	TU	S	S	Q	S		A	Q	Q	Q	S	S	S	A	Yes
399-2-5	TU	Q	Q	Q	Q		A	Q	Q	Q	Q	Q	Q	A	Yes
399-3-11	TU	S	S	Q	S	A	A	Q	Q	Q	S	S	S	A	Yes
399-3-12	TU	S	S	S	S			S	S	S	S	S			Yes
399-3-20	TU	S	S	Q	S	A	A	Q	Q	Q	S	S	S	A	No; missed one quarterly event
399-3-21	LU	Q	Q	Q	Q		A	Q	Q	Q	Q	Q	Q		Yes
399-3-22	LU	Q	Q	Q	Q		A	Q	Q	Q	Q	Q	Q		Yes
Northwest Region – Upgradient Conditions Well Group															
399-1-15	TU	S	S	S	S			S	S	S	S	S	S		Yes
399-1-18A	TU			S			S	S	S	S	S				No; missed one tritium analysis

Table A-17. (Cont.)

Well Name	Hydrologic Unit Monitored	Contaminants of Concern			Contaminants of Potential Concern				Supporting Measurements						Sampled as Scheduled in 2009
		cis-1,2-Dichloroethene	Trichloroethene	Uranium, Total (Unfiltered)	Tetrachloroethene	Strontium-90	Tritium	Nitrate	Anions	Alkalinity	Metals	VOCs	Alpha/Beta	Uranium, Isotopic	
399-1-18B	LU			S			S	S	S	S	S				No; missed one tritium analysis
399-1-18C	C			A				A	A	A	A				Yes
399-8-1 [d]	TU	Q	Q	Q	Q			Q	Q	Q	Q	Q	Q		Yes
399-8-3 [d]	TU	Q	Q	Q	Q			Q	Q	Q	Q	Q	Q		Yes
399-8-5A [d]	TU	S	S	S	S			S	S	S	S	S	S		Yes
699-S20-E10	TU			S			S	S	S	S	S				No; missed tritium for both sampling events
Southwest Region – Upgradient Conditions Well Group															
399-3-2	TU	S	S	S	S			S	S	S	S	S			Yes
399-3-6	TU	S	S	S	S			S	S	S	S	S			Yes
399-3-19	TU	S	S	Q	S		A	Q	Q	Q	S	S	S	A	Yes
399-4-1	TU	S	S	S	S			S	S	S	S	S			Yes
399-4-12	TU	S	S	S	S			S	S	S	S	S			Yes
399-4-14	LU	Q	Q	Q	Q		A	Q	Q	Q	Q	Q	Q		No; missed annual tritium
399-5-4B	TU	S	S	S	S			S	S	S	S	S			Yes
699-S27-E14	TU	A	A	A	A			A	A	A	A	A			Yes

Notes:
Requirements from *300-FF-5 Operable Unit Sampling and Analysis Plan* (DOE/RL-2002-11, Rev. 2).
a. CERCLA supplements RCRA sampling to provide a full year of monthly monitoring for uranium.
b. Special sampling frequency at near-river well to provide more detailed record of seasonal fluctuations in uranium.
c. Frequency increased to monthly during remedial action at 618-1 Burial Ground.
d. Additional well coverage and sampling frequency to monitor plume that developed downgradient of 618-7 Burial Ground remedial action.

A = to be sampled annually
C = uppermost confined aquifer
CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
LU = lower portion of unconfined aquifer
Q = to be sampled quarterly
RCRA = *Resource Conservation and Recovery Act of 1980*
S = to be sampled semiannually
TU = upper portion of unconfined aquifer that includes the water table
VOC = volatile organic compound

Table A-18. Monitoring Wells and Constituents for the 300-FF-5 Operable Unit, 618-11 Subregion.

Well	Contaminants of Potential Concern						Supporting Measurements			Sampled as Scheduled in 2009
	Tritium	Gross Beta	Uranium, Total (Unfiltered)	Technetium-99	Gross Alpha	Nitrate	Anions	Alkalinity	Metals	
Downgradient of 618-11 Burial Ground (Near-Field)										
699-12-2C	Q	Q	S	S	Q	S	S	S	S	Yes
699-13-2D	Q	Q	S	S	Q	S	S	S	S	Yes
699-13-3A	Q	Q	S	S	Q	S	S	S	S	Yes
Upgradient Conditions (Near-Field)										
699-12-4D	A	A	A	A	A	A	A	A	A	Yes
Downgradient of 618-11 Burial Ground (Far-Field)										
699-13-0A	S	S			S	S	S	S	S	Yes
699-13-1E	S	S			S	S	S	S	S	Yes

Notes:
Requirements from *300-FF-5 Operable Unit Sampling and Analysis Plan* (DOE/RL-2002-11, Rev. 2).

A = to be sampled annually
Q = to be sampled quarterly
S = to be sampled semiannually

Table A-19. Monitoring Wells and Constituents for the 300-FF-5 Operable Unit, 618-10/316-4 Subregion.

Well	Contaminants of Potential Concern					Supporting Measurements						Sampled as Scheduled in 2009
	Uranium, Total (Unfiltered)	Tributyl Phosphate	Gross Alpha	Gross Beta	Nitrate	Alkalinity	Metals	VOCs	Tritium	Technetium-99	Uranium, isotopic	
Downgradient of 618-10 Burial Ground (Near-Field)												
699-S6-E4K	S	S	S	S	S	S	S	S	S	S	A	Yes
699-S6-E4L	Q	S	Q	Q	Q	S	S	S	S	S	A	Yes
Downgradient of 618-10 Burial Ground, Within 316-4 Crib Footprint (Near-Field)												
699-S6-E4A	Q	S	Q	Q	Q	S	S	S	S	S	A	Yes
Background, 618-10 Burial Ground/316-4 Cribs												
699-S6-E4D	A		A	A	A	A	A		A	A		Yes
Downgradient of 618-10 Burial Ground/316-4 Crib												
699-S6-E4B	S		S	S	S	S	S		S			Yes
699-S6-E4E	S		S	S	S	S	S		S			Yes

Notes:
Requirements from *300-FF-5 Operable Unit Sampling and Analysis Plan* (DOE/RL-2002-11, Rev. 2).
Wells completed at the top of the unconfined aquifer.

A = to be sampled annually
Q = to be sampled quarterly
S = to be sampled semiannually
VOC = volatile organic compound

Table A-20. Monitoring Wells and Constituents for the Former 1100-EM-1 Operable Unit.

Well	1,1-Dichloroethene	Trichloroethane	Vinyl Chloride	Anions*	Sampled as Scheduled in 2009
699-S28-E12	A	A	A	A	Yes
699-S31-E10A	A	A	A	A	Yes
699-S31-E10C	A	A	A	A	Yes

Notes:
Requirements from TPA-CN-163, *Change Notice for Modifying Approved Documents/Work Plans in Accordance with TPA Action Plan Section 9.0, Documentation and Records, PNNL-12220, Sampling and Analysis Plan Update for Groundwater Monitoring 1100-EM-1 OU*.
* Supplemental analyses.

A = to be sampled annually