SECTION

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Table A1-1. Analyses Performed on Split-Spoon Samples, 216-A-4 Crib (Boreholes C4560 and C5301)

HEIS Number	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analyses Performed
B195V9	7/19/2004	WSCF20041275	C4560	0.15–0.91 (0.5–3.0)	0.15–0.91 (0.5–3.0)	WSCF	Anions, Metals, PCBs, physical property, VOAs, SVOAs, Hydrocarbons, Rads
B19618	7/19/2004	WSCF20041244	C4560	0.15–0.91 (0.5–3.0)	0.15–0.91 (0.5–3.0)	WSCF	Rads
B197D7	7/19/2004	H2645	C4560	0.15–0.91 (0.5–3.0)	0.15–0.91 (0.5–3.0)	Eberline	Rads, Cr+6, Anions, Hydrocarbons
B195W0	7/20/2004	WSCF20041275	C4560	3.8–4.6 (12.5–15.0)	3.7–4.4 (12.0–14.5)	WSCF	Anions, Metals, PCBs, physical property, VOAs, SVOAs, Hydrocarbons, Rads
B19619	7/20/2004	WSCF20041260	C4560	3.8–4.6 (12.5–15.0)	3.7–4.4 (12.0–14.5)	WSCF	Rads
B197D8	7/20/2004	H2645	C4560	3.8–4.6 (12.5–15.0)	3.7–4.4 (12.0–14.5)	Eberline	Rads, Cr+6, Anions, Hydrocarbons
B195W2	7/21/2004	W04150	C4560	5.6–6.4 (18.5–21.0)	5.5–6.3 (18.0–20.5)	STLSL, Eberline	Anions, Metals, Cr+6, VOAs, PCBs, SVOAs, physical property, Hydrocarbons, Rads
B19620	7/21/2004	222S20040153	C4560	5.6–6.4 (18.5–21.0)	5.5–6.3 (18.0–20.5)	222-S	Rads
B197F0	7/21/2004	H2671	C4560	5.6–6.4 (18.5–21.0)	5.5–6.3 (18.0–20.5)	STLSL	Rads, Cr+6, Anions, Hydrocarbons
B19861	7/21/2004	H2671	C4560	5.6–6.4 (18.5–21.0)	5.5–6.3 (18.0–20.5)	Shaw	Physical property
B19CLN8	3/25/2005	222S20050070	C4560	7.0 (23.0)	NP	222-S	Rads
B19CLN9	3/25/2005	222S20050070	C4560	7.01 (23.0)	NP	222-S	Rads
B19CLN9-A	3/25/2005	222S20050070	C4560	7.0 (23.0)	NP	222-S	Rads
B19CLN9-B	3/25/2005	H3110	C4560	6.7–7.0 (22.0–23.0)	NP	Eberline	Rads
B1CLJ0	3/22/2005	222S20050064	C4560	6.7–7.0 (22.0–23.0)	NP	222-S	Rads
B1CLJ1	3/22/2005	222S20050064	C4560	6.7–7.0 (22.0–23.0)	NP	222-S	Rads
B1CLJ1-A	3/22/2005	222S20050064	C4560	6.7–7.0 (22.0–23.0)	NP	222-S	Rads
B1DLD8	10/3/2005	H3365, WSCF20051766	C4560	Drum	N/A	Eberline, WSCF	Metals, Cations, Rads
B1L4T3	11/29/2006	WSCF20061511	C5301	8.8–9.6 (29.0–31.5)	8.8–9.6 (29.0–31.5)	WSCF	Rads
B1L4T4	11/29/2006	WSCF20061572	C5301	8.8–9.6 (29.0 – 31.5)	8.8–9.6 (29.0 – 31.5)	WSCF	VOAs

Table A1-1. Analyses Performed on Split-Spoon Samples, 216-A-4 Crib (Boreholes C4560 and C5301)

HEIS Number	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analyses Performed
B1L5M8	11/29/2006	WSCF20061572	C5301	8.8–9.6 (29.0–31.5)	8.8– 9.6 (29.0–31.5)	WSCF	VOAs
B1L4T5	11/29/2006	WSCF20061572	C5301	8.8–9.6 (29.0–31.5)	8.8–9.6 (29.0–31.5)	WSCF	VOAs
B1L5M9	11/29/2006	WSCF20061572	C5301	8.8–9.6 (29.0–31.5)	8.8–9.6 (29.0–31.5)	WSCF	VOAs
B1L4T6	11/29/2006	WSCF20061572	C5301	8.8–9.6 (29.0–31.5)	8.8–9.6 (29.0–31.5)	WSCF	VOAs
B1L5N0	11/29/2006	WSCF20061572	C5301	8.8–9.6 (29.0–31.5)	8.8–9.6 (29.0–31.5)	WSCF	VOAs
B1L4T7	11/29/2006	H3477, WSCF20061572	C5301	8.8–9.6 (29.0–31.5)	8.8–9.6 (29.0–31.5)	Eberline, Shaw, WSCF	Anions, Metals, PCBs, physical property, SVOAs, Hydrocarbons, Rads
B1L5N2	11/29/2006	H3477, WSCF20061572	C5301	8.8–9.6 (29.0–31.5)	8.8–9.6 (29.0–31.5)	Eberline, WSCF	Anions, Metals, PCBs, SVOAs, Hydrocarbons, Rads
B1L5L3	11/29/2006	PNL0059	C5301	8.8–9.6 (29.0–31.5)	8.8–9.6 (29.0–31.5)	ESL	Cations, physical property, special studies
B1L4T8	11/30/2006	WSCF20061533	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	WSCF	Rads
B1L4T9	11/30/2006	WSCF20061572	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	WSCF	VOAs
B1L5N3	11/30/2006	W05077	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	STLSL	VOAs
B1L4V0	11/30/2006	WSCF20061572	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	WSCF	VOAs
B1L5N5	11/30/2006	W05077	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	STLSL	VOAs
B1L4V1	11/30/2006	WSCF20061572	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	WSCF	VOAs
B1L5N4	11/30/2006	W05077	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	STLSL	VOAs
B1L4V2	11/30/2006	H3477, WSCF20061572	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	Eberline, Shaw, WSCF	Anions, Metals, PCBs, physical property, SVOAs, Hydrocarbons, Rads
B1L5N6	11/30/2006	H3477, W05077	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	Eberline, STLSL	Anions, Hydrocarbons, Metals, Cr+6, PCBs, SVOAs, physical property, Rads
B1L5L4	11/30/2006	PNL0059	C5301	13.1–13.9 (43.0–45.5)	13.1–13.9 (43.0–45.5)	ESL	Cations, physical property special studies
B1L4V3	12/11/2006	WSCF20061576	C5301	37.3–38.1 (122.5–125.0)	37.2–37.8 (122.0–124.0)	WSCF	Rads

Table A1-1. Analyses Performed on Split-Spoon Samples, 216-A-4 Crib (Boreholes C4560 and C5301)

HEIS Number	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analyses Performed
B1L4V4	12/11/2006	WSCF20061608	C5301	37.3–38.1 (122.5–125.0)	37.2–37.8 (122.0–124.0)	WSCF	VOAs
B1L4V5	12/11/2006	WSCF20061608	C5301	37.3–38.1 (122.5–125.0)	37.2–37.8 (122.0–124.0)	WSCF	VOAs
B1L4V6	12/11/2006	WSCF20061608	C5301	37.3–38.1 (122.5–125.0)	37.2–37.8 (122.0–124.0)	WSCF	VOAs
B1L4V7	12/11/2006	H3477, WSCF20061608	C5301	37.3–38.1 (122.5–125.0)	37.2–37.8 (122.0–124.0)	Eberline, Shaw, WSCF	Anions, Metals, PCBs, physical property, SVOAs, Hydrocarbons, Rads
B1L5L5	12/11/2006	PNL0059	C5301	37.3–38.1 (122.5–125.0)	37.2–37.8 (122.0–124.0)	ESL	Cations, physical property, special studies
B1LNH0	12/14/2006	WSCF20061605, PNL0059	C5301	48.9–49.7 (160.5–163.0)	48.0–48.2 (157.5–158.0)	WSCF, ESL	Cations, Rads, physical property, special studies
B1L4V8	12/14/2006	WSCF20061657	C5301	79.2–80.0 (260.0–262.5)	79.2–79.9 (260.0–262.0)	WSCF	Rads
B1L4V9	12/14/2006	WSCF20070073	C5301	79.2–80.0 (260.0–262.5)	79.2–79.9 (260.0–262.0)	WSCF	VOAs
B1L4W0	12/14/2006	WSCF20070073	C5301	79.2–80.0 (260.0–262.5)	79.2–79.9 (260.0–262.0)	WSCF	VOAs
B1L4W1	12/14/2006	WSCF20070073	C5301	79.2–80.0 (260.0–262.5)	79.2–79.9 (260.0–262.0)	WSCF	VOAs
B1L4W2	12/14/2006	H3488, WSCF20070073	C5301	79.2–80.0 (260.0–262.5)	79.2–79.9 (260.0–262.0)	Eberline, Shaw, WSCF	Anions, Metals, PCBs, physical property, SVOAs, Hydrocarbons, Rads
B1L5L6	12/14/2006	No Record	C5301	79.2–80.0 (260.0–262.5)	79.2–79.9 (260.0–262.0)	ESL	Cations, physical property, special studies
B1L4W3	12/14/2006	WSCF20061666	C5301	86.1–86.9 (282.5–285.0)	86.3–86.9 (283.0–285.0)	WSCF	Rads
B1L4W4	12/14/2006	WSCF20070073	C5301	86.1–86.9 (282.5–285.0)	86.3–86.9 (283.0–285.0)	WSCF	VOAs
B1L4W5	12/14/2006	WSCF20070073	C5301	86.1–86.9 (282.5–285.0)	86.3–86.9 (283.0–285.0)	WSCF	VOAs
B1L5L7	12/14/2006	No Record	C5301	86.1–86.9 (282.5–285.0)	86.3–86.9 (283.0–285.0)	ESL	Cations, physical property, special studies
B1L4W6	12/27/2006	WSCF20070073	C5301	86.1–86.9 (282.5–285.0)	86.3–86.9 (283.0–285.0)	WSCF	VOAs
B1L4W7	12/27/2006	H3488, WSCF20070073	C5301	86.1–86.9 (282.5–285.0)	86.3–86.9 (283.0–285.0)	Eberline, Shaw, WSCF	Anions, Metals, PCBs, physical property, SVOAs, Hydrocarbons, Rads
B1L5N7	11/29/2006	WSCF20061573	C5301	QC Trip Blank	QC Trip Blank	WSCF	VOAs
B1L5N8	11/29/2006	WSCF20061501	C5301	QC Equipment Blank	QC Equipment Blank	WSCF	Anions, Metals, VOAs, SVOAs, Rads

Table A1-1. Analyses Performed on Split-Spoon Samples, 216-A-4 Crib (Boreholes C4560 and C5301)

HEIS Number	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analyses Performed

Notes:

The analyses were performed by Eberline Services, Richland, Washington; ES–Hanford Site, Richland Washington; Lionville Laboratory, Inc., Exton, Pennsylvania; Severn Trent Laboratories, Inc., St. Louis, Missouri & Richland, Washington; Shaw Group, Inc., Bear Creek, Tennessee; 222-S Laboratory Operations–Hanford Site, Richland, Washington; and WSCF–Hanford Site, Richland, Washington.

Cr+6 (hexavalent chromium) is analyzed by EPA method 7196.

General chemistry analysis is done by any or all of the following EPA methods: 150.1, 9040 or 9045 pH; 300.0 Anions; 300.7 Cations; 350.1 Ammonia; 335.2 or 9010 Cyanide; 353.1 or 353.2 Nitrate/Nitrite; 160.3 Total solids. Not all samples were analyzed for the same suite of general chemistry analyses.

Metals are analyzed by any or all of the following EPA methods: 200.8 Metals, 6010 Metals; 7196 Hexavalent chromium; 7471 Mercury. Not all samples were analyzed for the same suite of metals.

Oil/grease is analyzed by any or all of the following EPA methods: 413.1, 9071, and 1664.

Particle size is analyzed by ASTM method D422.

Polychlorinated biphenyls are analyzed under EPA method 8082.

Percent moisture is analyzed by ASTM method D2216.

Bulk density is analyzed by ASTM method D2937.

Radionuclides include alpha, beta, and gamma counts and specialized methods of analyses for some specific radionuclides. Not all samples were analyzed for the same suite of radionuclides.

Semivolatile organic analyses are performed under EPA method 8270. Not all samples were analyzed for the same suite of semivolatiles.

Total petroleum hydrocarbons analyses are performed for WTPH diesel and WTPH gasoline ranges.

Volatile organic analyses are performed by any or all of the following EPA Methods: 8260. Not all samples were analyzed for the same suite of volatiles.

Data packages validated were: W04150, H2671, WSCF20061572, W05077, and H3477.

1.1.1.1 All 4-digit EPA methods are found in SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B.*

Methods 150.1, 300.0, 335.2, 350.1, 353.1, and 413.1 are found in EPA/600/479020, *Methods for Chemical Analysis of Water and Wastes.*.

Method 300.7 is found in EPA/600/486/024, *Development of Standard Methods for the Collection and Analysis of Precipitation, …*

Method 200.8 is found in EPA/600/4-91/010, *Methods for the Determination of Metals in Environmental Samples.*

Method 353.2 is found in EPA/600/R-93/100, *Methods for the Determination of Inorganic Substances in Environmental Samples.*

Method 1664 is found in EPA-821-R-98-002, *Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material by Extraction and Gravimetry.*

ASTM D422-63, *Standard Test Method for Particle-Size Analysis of Soils.*

ASTM D2216-05, *Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.*

ASTM D2937-04, *Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method.*

ASTM = American Society for Testing and Materials
bgs = below ground surface
EPA = U.S. Environmental Protection Agency
HEIS = Hanford Environmental Information System database
N/A = not applicable
NP = not planned
PCB = polychlorinated biphenyl
QC = quality control
Rad = radionuclide
SVOA = semi-volatile organic analyte
WTPH = Washington total petroleum hydrocarbon
VOA = volatile organic analyte
WSCF = Waste Sampling and Characterization Facility

Table A1-2. Analyses Performed on Grab Samples, 216-A-4 Crib (Borehole C5301) and 200-E-102 Trench (Borehole C5302)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1L4Y7	11/28/2006	WSCF20061512, PNL0059	C5301	6.7–6.9 (22.0-22.5)	6.9–7.0 (22.5-23.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L4Y8	11/28/2006	WSCF20061512, PNL0059	C5301	7.6–7.8 (25.0-25.5)	7.6–7.8 (25.0-25.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L4Y9	11/28/2006	WSCF20061512, PNL0059	C5301	8.4–8.5 (27.5-28.0)	8.4–8.5 (27.5-28.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L500	11/29/2006	WSCF20061512, PNL0059	C5301	9.3–9.5 (30.5-31.0)	9.1–9.3 (30.0-30.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L501	11/29/2006	WSCF20061512, PNL0059	C5301	9.6–9.8 (31.5-32.0)	9.9–10.1 (32.5-33.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L502	11/29/2006	WSCF20061516, PNL0059	C5301	10.5–10.7 (34.5-35.0)	10.7–10.8 (35.0-35.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L503	11/29/2006	WSCF20061516, PNL0059	C5301	11.4–11.6 (37.5-38.0)	11.4–11.6 (37.5-38.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L504	11/29/2006	WSCF20061516, PNL0059	C5301	12.0–12.2 (39.5-40.0)	12.2–12.3 (40.0-40.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L505	11/29/2006	WSCF20061516, PNL0059	C5301	12.7–12.8 (41.5-42.0)	13.0–13.1 (42.5-43.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L506	11/30/2006	WSCF20061534, PNL0059	C5301	13.6–13.7 (44.5-45.0)	13.7–13.9 (45.0-45.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L507	11/30/2006	WSCF20061534, PNL0059	C5301	14.2–14.3 (46.5-47.0)	14.5–14.6 (47.5-48.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L508	11/30/2006	WSCF20061534, PNL0059	C5301	15.2–15.4 (50.0-50.5)	15.2–15.4 (50.0-50.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1M5X1*	1/18/2007	WSCF20070104, PNL0059	C5301	15.5 (51)	Not Planned	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1M5X1-A*	11/30/2006	WSCF20070262	C5301	15.5 (51)	Not Planned	WSCF	VOAs
B1L509	12/4/2006	WSCF20061529, PNL0059	C5301	15.9–16.0 (52.0-52.5)	16.0–16.2 (52.5-53.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L510	12/4/2006	WSCF20061529, PNL0059	C5301	16.6–16.8 (54.5-55.0)	16.8–16.9 (55.0-55.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L511	12/4/2006	WSCF20061529, PNL0059	C5301	17.4–17.5 (57.0-57.5)	17.5–17.7 (57.5-58.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L512	12/4/2006	WSCF20061529, PNL0059	C5301	18.0–18.1 (59.0-59.5)	18.3–18.4 (60.0-60.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L513	12/4/2006	WSCF20061529, PNL0059	C5301	19.0–19.1 (62.0-62.5)	19.1–19.2 (62.5-63.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads

Table A1-2. Analyses Performed on Grab Samples, 216-A-4 Crib (Borehole C5301) and 200-E-102 Trench (Borehole C5302)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1L514	12/4/2006	WSCF20061529, PNL0059	C5301	19.7–19.8 (64.5-65.0)	19.8–20.0 (65.0-65.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L515	12/5/2006	WSCF20061550, PNL0059	C5301	20.4–20.6 (67.0-67.5)	20.7–20.7 (67.5-68.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L516	12/5/2006	WSCF20061550, PNL0059	C5301	21.2–21.3 (69.5-70.0)	21.3–21.5 (70.0-70.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L517	12/5/2006	WSCF20061550, PNL0059	C5301	22.1–22.3 (72.5-73.0)	22.1–22.3 (72.5-73.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L518	12/5/2006	WSCF20061550, PNL0059	C5301	22.7–22.9 (74.5-75.0)	22.9–23.0 (75.0-75.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L519	12/5/2006	WSCF20061550, PNL0059	C5301	23.5–23.6 (77.0-77.5)	23.6–23.8 (77.5-78.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L520	12/5/2006	WSCF20061550, PNL0059	C5301	24.5–24.7 (80.5-81.0)	24.4–24.5 (80.0-80.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L521	12/5/2006	WSCF20061550, PNL0059	C5301	25.2–25.3 (82.5-83.0)	25.2–25.3 (82.5-83.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L522	12/5/2006	WSCF20061550, PNL0059	C5301	25.9–26.1 (85.0-85.5)	26.0–26.1 (85.0-85.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L523	12/7/2006	WSCF20061558, PNL0059	C5301	26.8–27.0 (88.0-88.5)	26.7–26.8 (87.5-88.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L524	12/7/2006	WSCF20061558, PNL0059	C5301	27.4-27.6 (90.0-90.5)	27.4-27.6 90.0-90.5	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L525	12/7/2006	WSCF20061562, PNL0059	C5301	28.0-28.2 (92.0-92.5)	27.4-27.6 (92.5-93.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L526	12/7/2006	WSCF20061562, PNL0059	C5301	28.8-29.4 (94.5-95.0)	28.2-28.3 (95.0-95.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L527	12/7/2006	WSCF20061562, PNL0059	C5301	29.6-29.7 (97.0-97.5)	29.0-29.1 (97.5-98.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L528	12/7/2006	WSCF20061562, PNL0059	C5301	30.3-30.5 (99.5-100.0)	29.7-29.9 (100.0-100.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L529	12/7/2006	WSCF20061562, PNL0059	C5301	31.2-31.4 (102.5-103.0)	31.2-31.4 102.5-103.0	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L530	12/7/2006	WSCF20061562, PNL0059	C5301	31.9-32.0 (104.5-105.0)	32.0 – 32.2 (105.0-105.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L531	12/11/2006	WSCF20061576, PNL0059	C5301	32.9-33.1 (108.0-180.5)	32.8-32.9 (107.5-108.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L532	12/11/2006	WSCF20061576, PNL0059	C5301	33.4-33.7 (109.5-110.0)	33.5-33.7 (110.0-110.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads

Table A1-2. Analyses Performed on Grab Samples, 216-A-4 Crib (Borehole C5301) and 200-E-102 Trench (Borehole C5302)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1L533	12/11/2006	WSCF20061576, PNL0059	C5301	34.1-34.3 (112.0-112.5)	34.3-34.4 (112.5-113.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L534	12/11/2006	WSCF20061576, PNL0059	C5301	35.1-35.2 (115.0-115.5)	35.1-35.2 (115.0-115.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L535	12/11/2006	WSCF20061576, PNL0059	C5301	35.8-36.0 (117.5-118.0)	35.8-36.0 (117.5-118.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L536	12/11/2006	WSCF20061576, PNL0059	C5301	36.4-36.6 (119.5-120.0)	36.6-36.7 (120.0-120.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L537	12/11/2006	WSCF20061576, PNL0059	C5301	37.0-37.2 (121.5-122.0)	37.3-37.5 (122.5-123.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L538	12/11/2006	WSCF20061576, PNL0059	C5301	38.0-38.1 (124.5-125.0)	38.1-38.3 (125.0-125.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L539	12/11/2006	WSCF20061576, PNL0059	C5301	38.7-38.9 (127.0-127.5)	38.9-39.0 (127.5-128.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L540	12/11/2006	WSCF20061576, PNL0059	C5301	39.8-39.9 (130.5-131.0)	39.6-39.8 (130.0-130.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L541	12/13/2006	WSCF20061595, PNL0059	C5301	40.4-40.5 (132.5-133.0)	40.4-40.5 (132.5-133.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L542	12/13/2006	WSCF20061595, PNL0059	C5301	41.2-41.3 (135.0-135.5)	41.1-41.3 (135.0-135.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L543	12/13/2006	WSCF20061595, PNL0059	C5301	41.8-41.9 (137.0-137.5)	41.9-42.1 (137.5-138.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L544	12/13/2006	WSCF20061595, PNL0059	C5301	42.8 – 43.0 (140.5-141.0)	42.7-42.8 (140.0-140.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L545	12/13/2006	WSCF20061595, PNL0059	C5301	43.3-43.4 (142.0-142.5)	43.4-43.6 (142.5-143.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L546	12/13/2006	WSCF20061595, PNL0059	C5301	44.2-44.3 (145.0-145.5)	44.2-44.3 (145.0-145.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L547	12/13/2006	WSCF20061595, PNL0059	C5301	44.8-45.0 (147.0-147.5)	45.0-45.1 (147.5-148.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L548	12/14/2006	WSCF20061605, PNL0059	C5301	45.6-45.7 (149.5-150.0)	45.7-45.9 (150.0-150.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L549	12/14/2006	WSCF20061605, PNL0059	C5301	46.3-46.5 (152.0-152.5)	46.5-46.6 (152.5-153.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L550	12/14/2006	WSCF20061605, PNL0059	C5301	46.9-47.1 (154.0-154.5)	47.2-47.4 (155.0-155.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L551	12/14/2006	WSCF20061605, PNL0059	C5301	48.0-48.2 (157.5-158.0)	48.0-48.2 (157.5-158.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads

Table A1-2. Analyses Performed on Grab Samples, 216-A-4 Crib (Borehole C5301) and 200-E-102 Trench (Borehole C5302)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1L552	12/14/2006	WSCF20061609, PNL0059	C5301	48.8-48.9 (160.0-160.5)	48.8-48.9 (160.0-160.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L553	12/14/2006	WSCF20061605, PNL0059	C5301	49.5-49.7 (162.5-163.0)	49.5-49.7 (162.5-163.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L554	12/14/2006	WSCF20061605, PNL0059	C5301	50.1-50.3 (164.5-165.0)	50.3-50.4 (165.0-165.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L555	12/14/2006	WSCF20061605, PNL0059	C5301	50.9-51.1 (167.0-167.5)	51.1-51.2 (167.5-168.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L556	12/14/2006	WSCF20061605, PNL0059	C5301	51.7-51.8 (169.5-170.0)	51.8-52.0 (170.0-170.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L557	12/14/2006	WSCF20061605, PNL0059	C5301	52.4-52.6 (172.0-172.5)	52.6-52.7 (172.5-173.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L558	12/14/2006	WSCF20061605, PNL0059	C5301	53.3-53.5 (175.0-175.5)	53.3-53.5 (175.0-175.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L559	12/14/2006	WSCF20061605, PNL0059	C5301	53.9-54.1 (177.0-177.5)	54.1-54.3 (177.5-178.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L560	12/14/2006	WSCF20061605, PNL0059	C5301	54.7-54.9 (179.5-180.0)	54.9-55.0 (180.0-180.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L561	12/14/2006	WSCF20061605, PNL0059	C5301	55.5-55.6 (182.0-182.5)	55.6-55.8 (182.5-183.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L562	12/18/2006	WSCF20061615, PNL0059	C5301	56.4-56.5 (185.0-185.5)	56.4-56.5 (185.0-185.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L563	12/18/2006	WSCF20061618, PNL0059	C5301	57.0-57.2 (187.0-187.5)	57.2-57.3 (187.5-188.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L564	12/18/2006	WSCF20061618, PNL0059	C5301	57.8-57.9 (189.5-190.0)	57.9-58.1 (190.0-190.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L565	12/18/2006	WSCF20061618, PNL0059	C5301	58.5-58.7 (192.0-192.5)	58.7-58.8 (192.5-193.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L566	12/18/2006	WSCF20061618, PNL0059	C5301	59.1-59.3 (194.0-194.5)	59.4-59.6 (195.0-195.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L567	12/19/2006	WSCF20061631, PNL0059	C5301	60.0-60.2 (197.0-197.5)	60.2-60.4 (197.5-198.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L568	12/19/2006	WSCF20061631, PNL0059	C5301	60.8-61.0 (199.5-200.0)	61.0-61.1 (200.0-200.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L569	12/19/2006	WSCF20061631, PNL0059	C5301	61.6-61.7 (202.0-202.5)	61.7-61.9 (202.5-203.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L570	12/19/2006	WSCF20061631, PNL0059	C5301	62.3-62.5 (204.5-205.0)	62.5-62.6 (205.0-205.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads

Table A1-2. Analyses Performed on Grab Samples, 216-A-4 Crib (Borehole C5301) and 200-E-102 Trench (Borehole C5302)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1L571	12/19/2006	WSCF20061631, PNL0059	C5301	63.1-63.2 (207.0-207.5)	63.2-63.4 (207.5-208.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L572	12/19/2006	WSCF20061631, PNL0059	C5301	63.9-64.0 (209.5-210.0)	64.0-64.2 (210.0-210.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L573	12/19/2006	WSCF20061631, PNL0059	C5301	64.6-64.8 (212.0-212.5)	64.8-64.9 (212.5-213.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L574	12/19/2006	WSCF20061631, PNL0059	C5301	65.4-65.5 (214.5-215.0)	65.5-65.7 (215.0-215.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L575	12/19/2006	WSCF20061631, PNL0059	C5301	66.1-66.3 (217.0-217.5)	66.3-66.4 (217.5-218.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L576	12/19/2006	WSCF20061631, PNL0059	C5301	66.9-67.1 (219.5-220.0)	67.1-67.2 (220.0-220.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L577	12/19/2006	WSCF20061631, PNL0059	C5301	67.7-67.8 (222.0-222.5)	67.8-68.0 (222.5-223.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L578	12/19/2006	WSCF20061631, PNL0059	C5301	68.6-68.7 (225.0-225.5)	68.6-68.7 (225.0-225.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L579	12/20/2006	WSCF20061645, PNL0059	C5301	69.2-69.3 (227.0-227.5)	69.3-69.5 (227.5-228.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L580	12/20/2006	WSCF20061645, PNL0059	C5301	69.8–70.0 (229.0-229.5)	70.1-70.3 (230.0-230.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L581	12/20/2006	WSCF20061645, PNL0059	C5301	71.2-71.3 (233.5-234.0)	70.7-71.0 (232.5-233.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L582	12/20/2006	WSCF20061645, PNL0059	C5301	71.5-71.6 (234.5-235.0)	71.6-71.8 (235.0-235.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L583	12/20/2006	WSCF20061645, PNL0059	C5301	72.1-72.2 (236.5-237.0)	72.4-72.5 (237.5-238.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L584	12/20/2006	WSCF20061645, PNL0059	C5301	73.2-73.3 (240.0-240.5)	73.2-73.3 (240.0-240.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L585	12/20/2006	WSCF20061645, PNL0059	C5301	73.8-73.9 (242.0-242.5)	73.9-74.1 (242.5-243.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L586	12/20/2006	WSCF20061645, PNL0059	C5301	74.5-74.7 (244.5-245.0)	74.7-74.8 (245.0-245.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L587	12/20/2006	WSCF20061645, PNL0059	C5301	75.3-75.4 (247.0-247.5)	75.4-75.6 (247.5-248.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L588	12/20/2006	WSCF20061645, PNL0059	C5301	76.0-76.2 (249.5-250.0)	76.2-76.4 (250.0-250.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L589	12/21/2006	WSCF20061654, PNL0059	C5301	76.8–77.0 (252.0-252.5)	77.0-77.1 (252.5-253.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads

Table A1-2. Analyses Performed on Grab Samples, 216-A-4 Crib (Borehole C5301) and 200-E-102 Trench (Borehole C5302)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1L590	12/21/2006	WSCF20061654, PNL0059	C5301	77.4-77.6 (254.0-254.5)	77.7-77.9 (255.0-255.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L591	12/21/2006	WSCF20061654, PNL0059	C5301	78.3-78.5 (257.0-257.5)	78.5-78.6 (257.5-258.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L592	12/20/2006	WSCF20061654, PNL0059	C5301	79.1-79.2 (259.5-260.0)	79.2-79.4 (260.0-260.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L593	12/21/2006	WSCF20061654, PNL0059	C5301	79.9-80.0 (262.0-262.5)	80.0-80.2 (262.5-263.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L594	12/21/2006	WSCF20061654, PNL0059	C5301	80.6-80.8 (264.5-265.0)	80.8-80.9 (265.0-265.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L595	12/21/2006	WSCF20061654, PNL0059	C5301	81.2-81.4 (266.5-267.0)	81.5-81.7 (267.5-268.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L596	12/21/2006	WSCF20061654, PNL0059	C5301	82.1-82.3 (269.5-270.0)	82.3-82.4 (270.0-270.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L597	12/27/2006	PNL0059	C5301	83.1-83.2 (272.5-273.0)	83.1-83.2 (272.5-273.0)	ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L598	12/27/2006	WSCF20061667, PNL0059	C5301	83.7-83.8 (274.5-275.0)	83.8-84.0 (275.0-275.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L599	12/27/2006	WSCF20061667, PNL0059	C5301	84.6-84.7 (277.5-278.0)	84.6-84.7 (277.5-278.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B0	12/27/2006	WSCF20061667, PNL0059	C5301	85.3-85.5 (280.0-280.5)	85.3-85.5 (280.0 -280.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B1	12/27/2006	WSCF20061667, PNL0059	C5301	86.1-86.3 (282.5-283.0)	86.1-86.3 (282.5-283.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B2	12/27/2006	WSCF20061667, PNL0059	C5301	87.0-87.2 (285.5-286.0)	86.9-87.0 (285.0-285.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B3	12/27/2006	WSCF20061667, PNL0059	C5301	87.5-87.6 (287.0-287.5)	87.6-87.8 (287.5-288.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B4	12/28/2006	WSCF20061673, PNL0059	C5301	88.2-88.4 (289.5-290.0)	88.4-88.5 (290.0-290.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B5	12/28/2006	WSCF20061673, PNL0059	C5301	89.0-89.2 (292.0-292.5)	89.2-89.3 (292.5-293.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B6	12/28/2006	WSCF20061673, PNL0059	C5301	89.8 – 90.0 (294.5-295.0)	89.9-90.1 (295.0-295.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B7	1/2/2007	WSCF20070007, PNL0059	C5301	90.5-90.7 (297.0-297.5)	90.7-90.8 (297.5-298.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5B8	1/2/2007	WSCF20070007, PNL0059	C5301	91.3-91.4 (299.5-300.0)	91.4-91.6 (300.0-300.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads

Table A1-2. Analyses Performed on Grab Samples, 216-A-4 Crib (Borehole C5301) and 200-E-102 Trench (Borehole C5302)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1L5B9	1/3/2007	WSCF20070016, PNL0059	C5301	92.4-92.5 (303.0-303.5)	92.2-92.4 (302.5-303.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5C0	1/3/2007	WSCF20070016, PNL0059	C5301	92.8-93.0 (304.5-305.0)	93.0-93.1 (305.0-305.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5C1	1/3/2007	WSCF20070016, PNL0059	C5301	93.6-93.7 (307.0-307.5)	93.7-93.9 (307.5-308.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5C2	1/3/2007	WSCF20070016, PNL0059	C5301	94.3-94.5 (309.5-310.0)	94.5-94.6 (310.0-310.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5C3	1/3/2007	WSCF20070016, PNL0059	C5301	95.1-95.3 (312.0-312.5)	95.3-95.4 (312.5-313.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L5C4	1/3/2007	WSCF20070016, PNL0059	C5301	95.9-96.0 (314.5-315.0)	96.0-96.2 (315.0-315.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX09	1/4/2007	WSCF20070033, PNL0059	C5301	96.8-96.9 (317.5-318.0)	96.8-96.9 (317.5-318.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX10	1/4/2007	WSCF20070033, PNL0059	C5301	97.4-97.5 (319.5-320.0)	97.5-97.7 (320.0-320.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX11	1/4/2007	WSCF20070033, PNL0059	C5301	98.3-98.5 (322.5-323.0)	98.3-98.5 (322.5-323.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX12	1/4/2007	WSCF20070033, PNL0059	C5301	98.9-99.1 (324.5-325.0)	99.1-99.2 (325.0-325.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX13	Not Collected	Not Collected	C5301	Not Collected	99.8 – 100.0 (327.5-328.0)	WSCF, ESL	Not Collected
B1LX14	1/8/2007	WSCF20070033, PNL0059	C5301	100.4-100.6 (329.5-330.0)	100.6-100.7 (330.0-330.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX15	1/8/2007	WSCF20070033, PNL0059	C5301	101.4-101.5 (332.5-333.0)	101.3-101.5 (332.5-333.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX16	1/8/2007	WSCF20070033, PNL0059	C5301	102.0-102.1 (334.5-335.0)	102.1-102.3 (335.0-335.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX17	1/8/2007	WSCF20070033, PNL0059	C5301	102.7-102.9 (337.0-337.5)	103.0-103.0 (337.5-338.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX18	1/8/2007	WSCF20070033, PNL0059	C5301	103.5-103.6 (339.5-340.0)	103.6-103.8 (340.0-340.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX19	1/8/2007	WSCF20070033, PNL0059	C5301	104.4-104.5 (342.5-343.0)	104.4-104.5 (342.5-343.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX20	1/8/2007	WSCF20070033, PNL0059	C5301	105.0-105.2 (344.5-345.0)	105.2-105.3 (345.0-345.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX21	1/8/2007	WSCF20070033, PNL0059	C5301	105.8-105.9 (347.0-347.5)	105.9-106.1 (347.5-348.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads

Table A1-2. Analyses Performed on Grab Samples, 216-A-4 Crib (Borehole C5301) and 200-E-102 Trench (Borehole C5302)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1LX22	1/9/2007	WSCF20070049, PNL0059	C5301	106.5-106.7 (349.5-350.0)	106.7-106.8 (350.0-350.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX23	1/9/2007	WSCF20070049, PNL0059	C5301	107.4-107.6 (352.5-353.0)	107.4-107.6 (352.5-353.0)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1LX24	1/9/2007	WSCF20070049, PNL0059	C5301	108.1-108.2 (354.5-355.0)	108.2-108.4 (355.0-355.5)	WSCF, ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L1L1	10/27/2006	PNL0059	C5302	16.6-16.7 (54.4-54.9)	18.1-18.3 (59.5-60.0)	ESL	Physical Property, Anions, Metals, Total Organics, Rads
B1L1L2	10/27/2006	WSCF20061354	C5302	16.6-16.7 (54.4-54.9)	18.1-18.3 (59.5-60.0)	WSCF	Rads

Notes:

The analyses were performed by ESL–Hanford Site, Richland, Washington and WSCF–Hanford Site, Richland, Washington.

Cation Exchange Capacity was analyzed using the Cation Exchange Trace method.

General chemistry analysis is done by any or all of the following EPA methods: 2320 Alkalinity; 9040 pH; 9056 Anions; 9050 Specific Conductance. Not all samples were analyzed for the same suite of general chemistry analyses.

Metals are analyzed by any or all of the following EPA methods: 6010 and 6020 Metals. Not all samples were analyzed for the same suite of metals.

Percent moisture is analyzed by ASTM method D2216.

Bulk density is analyzed by ASTM method D2937.

Radionuclides include alpha, beta, and gamma counts and specialized methods of analyses for some specific radionuclides. Not all samples were analyzed for the same suite of radionuclides.

Total Organics were analyzed using EPA method 415.1 TOC.

No data packages were validated.

All 4-digit EPA methods are found in SW-846.

Method 415.1 is found in EPA/600/479020, Method 2320 is found in ASTM D1067-06, *Standard Test Methods for Acidity of Alkalinity of Water.*

ASTM D2216-05, *Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.*

* = Opportunistic sample was not called out in SAP HEIS number was assigned by the laboratory.
ASTM = American Society for Testing and Materials
bgs = below ground surface
EPA = U.S. Environmental Protection Agency
ESL = Environmental Sciences Laboratory
HEIS = Hanford Environmental Information System database
Rad = radionuclide
TOC = Total Organic Compound
WSCF = Waste Sampling and Characterization Facility

Table A1-3. Analyses Performed on Split-Spoon Samples, 216-A-2 Crib (Borehole C5515) and 216-A-21 Crib (Borehole C5571)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NRB4	6/12/2007	WSCF20070990	C5515	4.0-4.7 (13.0–15.5)	3.8-4.6 (12.5–15.0)	WSCF	RADs
B1NRC4	6/12/2007	WSCF20071075	C5515	4.0-4.7 (13.0–15.5)	3.8-4.6 (12.5–15.0)	WSCF	VOA
B1NRC5	6/12/2007	WSCF20071075	C5515	4.0-4.7 (13.0–15.5)	3.8-4.6 (12.5–15.0)	WSCF	VOA
B1NRH0	6/12/2007	H3542, WSCF20071075	C5515	4.0-4.7 (13.0–15.5)	3.8-4.6 (12.5–15.0)	Eberline, WSCF	Anions, Metals, PCBs, SVOAs, RADs, Hydrocarbons
B1NRJ2	6/18/2007	222S20070742	C5515	8.2-8.4 (27.0–27.5)	8.4-9.1 (27.5–30.0)	222-S	RADs
B1NRB5	6/27/2007	222S20070742	C5515	8.8-9.6 (29.0–31.5)	7.2-7.9 (23.5–26.0)	222-S	RADs
B1NRC6	6/27/2007	W05171	C5515	8.8-9.6 (29.0–31.5)	7.2-7.9 (23.5–26.0)	STLSL	VOA
B1NRC7	6/27/2007	W05171	C5515	8.8-9.6 (29.0–31.5)	7.2-7.9 (23.5–26.0)	STLSL	VOA
B1NRC8	6/27/2007	W05171	C5515	8.8-9.6 (29.0–31.5)	7.2-7.9 (23.5–26.0)	STLSL	VOA
B1NRC9	6/27/2007	W05171	C5515	8.8-9.6 (29.0–31.5)	7.2-7.9 (23.5–26.0)	STLSL	VOA
B1NRH1	6/27/2007	H3546, W05171	C5515	8.8-9.6 (29.0–31.5)	7.2-7.9 (23.5–26.0)	Eberline, Lionville, STLSL	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons
B1NT07	6/27/2007	H3546, W05171	C5515	8.8-9.6 (29.0 – 31.5)	7.2-7.9 (23.5 – 26.0)	Eberline, STLSL	Anions, Metals, PCBs, SVOAs, RADs, Hydrocarbons
B1NT08	6/27/2007	H3546	C5515	8.8-9.6 (29.0–31.5)	7.2-7.9 (23.5–26.0)	Lionville	Cr+6
B1NRB6	7/3/2007	WSCF20071136	C5515	9.8-10.5 (32.0–34.5)	9.1-9.9 (30.0–32.5)	WSCF	RADs
B1NRD0	7/3/2007	WSCF20071213	C5515	9.8-10.5 (32.0–34.5)	9.1-9.9 (30.0–32.5)	WSCF	VOA
B1NRD1	7/3/2007	WSCF20071213	C5515	9.8-10.5 (32.0 – 34.5)	9.1-9.9 (30.0–32.5)	WSCF	VOA
B1NRD2	7/3/2007	W05203	C5515	9.8-10.5 (32.0–34.5)	9.1-9.9 (30.0–32.5)	STLSL	VOA
B1NRD3	7/3/2007	W05203	C5515	9.8-10.5 (32.0–34.5)	9.1-9.9 (30.0–32.5)	STLSL	VOA
B1NRH2	7/3/2007	H3550, H3550, WSCF20071213	C5515	9.8-10.5 (32.0–34.5)	9.1-9.9 (30.0–32.5)	Eberline, Lionville, WSCF	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons

Table A1-3. Analyses Performed on Split-Spoon Samples, 216-A-2 Crib (Borehole C5515) and 216-A-21 Crib (Borehole C5571)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NRH3	7/3/2007	H3550, W05203	C5515	9.8-10.5 (32.0–34.5)	9.1-9.9 (30.0–32.5)	Eberline, STLSL	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons
B1NRB7	7/12/2007	WSCF20071191	C5515	14.5-15.1 (47.5–49.5)	14.5-15.2 (47.5–50.0)	WSCF	RADs
B1NRD4	7/12/2007	WSCF20071258	C5515	14.5-15.1 (47.5–49.5)	14.5-15.2 (47.5–50.0)	WSCF	VOA
B1NRD5	7/12/2007	WSCF20071258	C5515	14.5-15.1 (47.5–49.5)	14.5-15.2 (47.5–50.0)	WSCF	VOA
B1NRH4	7/12/2007	H3553, WSCF20071258	C5515	14.5-15.1 (47.5–49.5)	14.5-15.2 (47.5–50.0)	Eberline, WSCF	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons
B1P3K2	7/12/2007	H3554	C5515	14.5-15.1 (47.5–49.5)	14.5-15.2 (47.5–50.0)	Lionville	Cr+6
B1NRC0	7/24/2007	WSCF20071322	C5515	16.6-17.4 (54.5–57.0)	16.8-17.5 (55.0–57.5)	WSCF	RADs
B1NRF0	7/24/2007	WSCF20071366	C5515	16.6-17.4 (54.5–57.0)	16.8-17.5 (55.0–57.5)	WSCF	VOA
B1NRF1	7/24/2007	WSCF20071366	C5515	16.6-17.4 (54.5–57.0)	16.8-17.5 (55.0–57.5)	WSCF	VOA
B1NRH7	7/24/2007	H3553, WSCF20071366	C5515	16.6-17.4 (54.5–57.0)	16.8-17.5 (55.0–57.5)	Eberline, WSCF	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons
B1P3J7	7/24/2007	H3554	C5515	16.6-17.4 (54.5–57.0)	16.8-17.5 (55.0–57.5)	Lionville	Cr+6
B1NRC1	8/7/2007	WSCF20071643	C5515	40.4-41.1 (132.5–135.0)	40.2-41.3 (132.0–135.5)	WSCF	RADs
B1NRF2	8/7/2007	WSCF20071412	C5515	40.4-41.1 (132.5–135.0)	40.2-41.3 (132.0 – 135.5)	WSCF	VOA
B1NRF3	8/7/2007	WSCF20071412	C5515	40.4-41.1 (132.5–135.0)	40.2-41.3 (132.0–135.5)	WSCF	VOA
B1NRH8	8/7/2007	H3558, WSCF20071412	C5515	40.4-41.1 (132.5–135.0)	40.2-41.3 (132.0–135.5)	Eberline, WSCF	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons
B1P3J8	8/7/2007	H3560	C5515	40.4-41.1 (132.5–135.0)	40.2-41.3 (132.0–135.5)	Lionville	Cr+6
B1NRC2	8/15/2007	WSCF20071461	C5515	76.4-77.1 (250.5–253.0)	76.2–77.0 (250.0–252.5)	WSCF	RADs
B1NRF4	8/15/2007	WSCF20071462	C5515	76.4-77.1 (250.5–253.0)	76.2–77.0 (250.0–252.5)	WSCF	VOA
B1NRF5	8/15/2007	WSCF20071462	C5515	76.4-77.1 (250.5–253.0)	76.2–77.0 (250.0–252.5)	WSCF	VOA

Table A1-3. Analyses Performed on Split-Spoon Samples, 216-A-2 Crib (Borehole C5515) and 216-A-21 Crib (Borehole C5571)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NRH9	8/15/2007	H3566, WSCF20071462	C5515	76.4-77.1 (250.5–253.0)	76.2–77.0 (250.0–252.5)	Eberline, WSCF	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons
B1P3J9	8/15/2007	H3570	C5515	76.4-77.1 250.5–253.0)	76.2–77.0 (250.0–252.5)	Lionville	Cr+6
B1PCT6	8/20/2007	WSCF20071482	C5515	QC Equipment Blank	QC Equipment Blank	WSCF	Anions, Metals, VOAs SVOAs, RADs
B1NRF6	8/21/2007	WSCF20071485	C5515	86.9-87.5 (285.0–287.0)	(285.0 – 287.5)	WSCF	VOA
B1NRF7	8/21/2007	WSCF20071485	C5515	86.9-87.5 (285.0–287.0)	(285.0–287.5)	WSCF	VOA
B1NRJ0	8/21/2007	H3566, WSCF20071485	C5515	86.9-87.5 (285.0–287.0)	86.9-87.6 (285.0–287.5)	Eberline, WSCF	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons
B1NT09	8/21/2007	WSCF20071484	C5515	86.9-87.5 (285.0–287.0)	86.9-87.6 (285.0–287.5)	WSCF	RADs
B1P3K0	8/21/2007	H3570	C5515	86.9-87.5 (285.0–287.0)	86.9-87.6 (285.0–287.5)	Lionville	Cr+6
B1NRC3	8/22/2007	WSCF20071506	C5515	96.6-97.4 (317.0–319.5)	96.0-96.8 (315.0–317.5)	WSCF	RADs
B1NRF8	8/22/2007	WSCF20071507	C5515	96.6-97.4 (317.0–319.5)	96.0-96.8 (315.0–317.5)	WSCF	VOA
B1NRF9	8/22/2007	WSCF20071507	C5515	96.6-97.4 (317.0–319.5)	96.0-96.8 (315.0–317.5)	WSCF	VOA
B1NRJ1	8/22/2007	H3566, WSCF20071507	C5515	96.6-97.4 (317.0–319.5)	96.0-96.8 (315.0–317.5)	Eberline, WSCF	Anions, Metals, Cr+6, PCBs, SVOAs, RADs, Hydrocarbons
B1P3K1	8/22/2007	H3570	C5515	96.6-97.4 (317.0–319.5)	96.0-96.8 (315.0–317.5)	Lionville	Cr+6
B1P3K6	7/20/2007	222S20070846	C5571	5.8-6.3 (19.1–20.8)	NP	222-S	RADs
B1P3K3	7/17/2007	222S20070846	C5571	6.4-6.9 (21.0–22.5)	5.8-6.6 (19.0–21.5)	222-S	RADs
B1P3K7	7/17/2007	W05205	C5571	6.4-6.9 (21.0–22.5)	5.8-6.6 (19.0–21.5)	STLSL	VOA
B1P3L1	7/17/2007	Not Sent	C5571	6.4-6.9 (21.0–22.5)	5.8-6.6 (19.0–21.5)	WSCF	VOA
B1P3K4	7/19/2007	222S20070837	C5571	7.7-8.1 (25.1–26.6)	7.6-8.4 (25.0–27.5)	222-S	RADs
B1P3K8	7/19/2007	W05205	C5571	7.7-8.1 (25.1–26.6)	7.6-8.4 (25.0–27.5)	STLSL	VOA

Table A1-3. Analyses Performed on Split-Spoon Samples, 216-A-2 Crib (Borehole C5515) and 216-A-21 Crib (Borehole C5571)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1P3L2	7/19/2007	Not Sent	C5571	7.7-8.1 (25.1–26.6)	7.6-8.4 (25.0–27.5)	WSCF	VOA
B1P3K5	7/20/2007	WSCF20071262	C5571	11.9-12.3 (39.0–40.5)	11.7-12.5 (38.5–41.0)	WSCF	RADs
B1P3K9	7/20/2007	WSCF20071365	C5571	11.9-12.3 (39.0–40.5)	11.7-12.5 (38.5–41.0)	WSCF	VOA
B1P3M6	7/20/2007	WSCF20071367	C5571	11.9-12.3 (39.0–40.5)	11.7-12.5 (38.5–41.0)	WSCF	VOA
B1P3M1	7/20/2007	PNL0063	C5571	11.9-12.3 (39.0–40.5)	11.7-12.5 (38.5–41.0)	ESL	Anions, Metals, VOAs, Rads, Physical property
B1P3L3	7/20/2007	WSCF20071365	C5571	11.9-12.3 (39.0–40.5)	11.7-12.5 (38.5–41.0)	WSCF	VOA
B1P3L0	7/21/2007	WSCF20071365	C5571	17.7-18.3 (58.2–59.9)	17.5-18.3 (57.5–60.0)	WSCF	VOA
B1P3M7	7/21/2007	WSCF20071367	C5571	17.7-18.3 (58.2–59.9)	17.5-18.3 (57.5–60.0)	WSCF	VOA
B1P3M2	7/21/2007	PNL0063	C5571	17.7-18.3 (58.2–59.9)	17.5-18.3 (57.5–60.0)	ESL	Anions, Metals, VOAs, Rads, Physical property
B1P3L4	7/21/2007	WSCF20071365	C5571	17.7-18.3 (58.2–59.9)	17.5-18.3 (57.5–60.0)	WSCF	VOA
B1P7Y1	7/21/2007	WSCF20071322	C5571	17.7-18.3 (58.2–59.9)	17.5-18.3 (57.5–60.0)	WSCF	RADs
B1P3M8	7/13/2007	WSCF20071199	C5571	QC Equipment Blank	QC Equipment Blank	WSCF	Anions, Metals, VOAs SVOAs, RADs

Table A1-3. Analyses Performed on Split-Spoon Samples, 216-A-2 Crib (Borehole C5515) and 216-A-21 Crib (Borehole C5571)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed

Notes:

The analyses were performed by Eberline Services, Richland, Washington; ESL – Hanford Site, Richland Washington; Lionville Laboratory, Inc., Exton, Pennsylvania; Severn Trent Laboratories, Inc., St. Louis, Missouri and Richland, Washington; Shaw Group, Inc., Bear Creek, Tennessee; 222-S Laboratory Operations – Hanford Site, Richland, Washington; and WSCF – Hanford Site, Richland, Washington.

Cr+6 (hexavalent chromium) is analyzed by EPA method 7196.

General chemistry analysis is done by any or all of the following EPA methods: 300.0 Anions or 9056 Anions; 335.2 or 9012 Cyanide. Not all samples were analyzed for the same suite of general chemistry analyses.

Metals are analyzed by any or all of the following EPA methods: 200.8 Metals, 6010 Metals; 7196 Hexavalent chromium; 7471 Mercury. Not all samples were analyzed for the same suite of metals.

Polychlorinated biphenyls are analyzed under EPA method 8082.

Radionuclides include gamma counts and specialized methods of analyses for some specific radionuclides. Not all samples were analyzed for the same suite of radionuclides.

Semi-volatile organic analyses are performed under EPA method 8270. Not all samples were analyzed for the same suite of semi-volatiles.

Total petroleum hydrocarbons analyses are performed for WTPH diesel and WTPH gasoline ranges.

Volatile organic analyses are performed by EPA method: 8260. Not all samples were analyzed for the same suite of volatiles.

Data packages validated were: W05171, H3546, WSCF20071485, H3566, H3570, and 222S20070742.

All 4-digit EPA methods are found in SW-846.

Methods 300.0 and 335.2 are found in EPA/600/479020.

Method 200.8 is found in EPA/600/R-94/111, *Methods for the Determination of Metals in Environmental Samples, Supplement I*.

Method 353.2 is found in EPA/600/R-93/100.

bgs = below ground surface
EPA = U.S. Environmental Protection Agency
ESL = Environmental Sciences Laboratory
HEIS = *Hanford Environmental Information System* database
PCB = polychlorinated biphenyl
QC = quality control
Rad = radionuclide
SVOA = semi-volatile organic analyte
WTPH = Washington total petroleum hydrocarbon
VOA = volatile organic analyte
WSCF = Waste Sampling and Characterization Facility

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Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NR90	6/12/2007	PNL0063	C5515	4.0-4.7 (13.0-15.5)	3.8-4.6(12.5 – 5.0)	ESL	Physical Property, Cation Exchange, Special Studies
B1NPB4	6/12/2007	WSCF20070991	C5515	4.7-4.9 (15.5-16.0)	4.6-4.7 (15.0-15.5)	WSCF	Rads
B1NPB5	6/12/2007	WSCF20070991	C5515	5.3-5.5 (17.5-18.0)	5.3-5.5 (17.5-18.0)	WSCF	Rads
B1NPB6	6/13/2007	WSCF20070996	C5515	6.2-6.4 (20.5-21.0)	6.1-6.2 (20.0-20.5)	WSCF	Rads
B1NPB7	6/13/2007	WSCF20070996	C5515	7.6-7.8 (25.0-25.5)	6.9-7.0 (22.5-23.0)	WSCF	Rads
B1NPB8	6/13/2007	WSCF20070996	C5515	7.5-7.6 (24.5-25.0)	7.6-7.8 (25.0-25.5)	WSCF	Rads
B1NPB9	6/28/2007	222S20070740	C5515	9.1-9.3 (30.0-30.5)	9.1-9.3 (30.0-30.5)	222-S	Rads
B1NR91	6/27/2007	PNL0063	C5515	8.8-9.6 (29.0-31.5)	7.2-7.9 (23.5 – 26.0)	ESL	Physical Property, Cation Exchange, Special Studies
B1NPC0	7/2/2007	WSCF20071120	C5515	9.6-9.8 (31.5-32.0)	9.9-10.1 (32.5-33.0)	WSCF	Rads
B1NR92	7/3/2007	PNL0063	C5515	9.8-10.5 (32.0-34.5)	9.1-9.9 (30.0 – 32.5)	ESL	Physical Property, Cation Exchange, Special Studies
B1NPC1	7/3/2007	WSCF20071137	C5515	10.4-10.5 (34.0-34.5)	10.7-10.8 (35.0-35.5)	WSCF	Rads
B1NPC2	7/9/2007	WSCF20071157	C5515	11.3-11.4 (37.0-37.5)	11.4-11.6 (37.5-38.0)	WSCF	Rads
B1NPC3	7/9/2007	WSCF20071157	C5515	12.0-12.2 (39.5-40.0)	12.2-12.3 (40.0-40.5)	WSCF	Rads
B1NPC4	7/10/2007	WSCF20071174	C5515	13.0-13.1 (42.5-43.0)	13.0-13.1 (42.5-43.0)	WSCF	Rads
B1NPC5	7/10/2007	WSCF20071174	C5515	13.7-13.9 (45.0-45.5)	13.7-13.9 (45.0-45.5)	WSCF	Rads
B1NPC6	7/10/2007	WSCF20071410	C5515	14.3-14.5 (47.0-47.5)	14.5-14.6 (47.5-48.0)	WSCF	Rads
B1NR93	7/12/2007	PNL0063	C5515	14.5-15.1 (47.5-49.5)	14.5-15.2 (47.5 – 50.0)	ESL	Physical Property, Cation Exchange, Special Studies
B1NPC7	7/12/2007	WSCF20071190	C5515	14.9-15.1 (49.0-49.5)	15.2-15.4 (50.0-50.5)	WSCF	Rads
B1NPC8	7/12/2007	WSCF20071221	C5515	15.7-15.8 (51.5-52.0)	16.0-16.2 (52.5-53.0)	WSCF	Rads

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NPC9	7/23/2007	WSCF20071270	C5515	16.5-16.6 (54.0-54.5)	16.8-16.9 (55.0-55.5)	WSCF	Rads
B1NPD0	7/24/2007	WSCF20071286	C5515	17.4-17.5 (57.0-57.5)	17.5-17.7 (57.5-58.0)	WSCF	Rads
B1NPD1	7/24/2007	WSCF20071286	C5515	18.1-18.3 (59.5-60.0)	18.3-18.4 (60.0-60.5)	WSCF	Rads
B1NPD2	7/24/2007	WSCF20071286	C5515	19.0-19.1 (62.0-62.5)	19.1-19.2 (62.5-63.0)	WSCF	Rads
B1NPD3	7/24/2007	WSCF20071286	C5515	19.5-19.7 (64.0-64.5)	19.8 – 20.0 (65.0-65.5)	WSCF	Rads
B1NPD4	7/24/2007	WSCF20071286	C5515	20.3-20.4 (66.5-67.0)	20.6-20.7 (67.5-68.0)	WSCF	Rads
B1NPD5	7/24/2007	WSCF20071286	C5515	21.3-21.5 (70.0-70.5)	21.3-21.5 (70.0-70.5)	WSCF	Rads
B1NPD6	7/25/2007	WSCF20071294	C5515	21.9-22.1 (72.0-72.5)	22.1-22.3 (72.5-73.0)	WSCF	Rads
B1NPD7	7/25/2007	WSCF20071294	C5515	22.6-22.7 (74.0-74.5)	22.9-23.0 (75.0-75.5)	WSCF	Rads
B1NPD8	7/26/2007	WSCF20071301	C5515	23.6-23.8 (77.5-78.0)	23.6-23.8 (77.5-78.0)	WSCF	Rads
B1NPD9	7/26/2007	WSCF20071301	C5515	24.2-24.4 (79.5-80.0)	24.4-24.5 (80.0-80.5)	WSCF	Rads
B1NPF0	7/26/2007	WSCF20071301	C5515	25.0-25.1 (82.0-82.5)	25.1-25.3 (82.5-83.0)	WSCF	Rads
B1NPF1	7/26/2007	WSCF20071301	C5515	25.8-26.0 (84.5-85.0)	25.9-26.1 (85.0-85.5)	WSCF	Rads
B1NPF2	8/1/2007	WSCF20071344	C5515	26.4-26.5 (86.5-87.0)	26.7-26.8 (87.5-88.0)	WSCF	Rads
B1NPF3	8/1/2007	WSCF20071344	C5515	27.4-27.6 (90.0-90.5)	27.4-27.6 (90.0-90.5)	WSCF	Rads
B1NPF4	8/6/2005	WSCF20071380	C5515	28.2-28.3 (92.5-93.0)	28.2-28.3 (92.5-93.0)	WSCF	Rads
B1NPF5	8/6/2007	WSCF20071380	C5515	28.8 – 29.0 (94.5-95.0)	29.0-29.1 (95.0-95.5)	WSCF	Rads
B1NPF6	8/6/2007	WSCF20071380	C5515	29.4 – 30.0 (96.5-97.0)	29.7-29.9 (97.5-98.0)	WSCF	Rads
B1NPF7	8/6/2007	WSCF20071380	C5515	30.3-30.5 (99.5-100.0)	30.5-30.6 (100.0-100.5)	WSCF	Rads

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NPF8	8/6/2007	WSCF20071380	C5515	30.9-31.1 (101.5-102.0)	31.2-31.4 (102.5-103.0)	WSCF	Rads
B1NPF9	8/6/2007	WSCF20071380	C5515	31.9-32.0 (104.5-105.0)	32.0-32.2 (105.0-105.5)	WSCF	Rads
B1NPH0	8/6/2007	WSCF20071380	C5515	32.5-32.6 (106.5-107.0)	32.8-32.9 (107.5-108.0)	WSCF	Rads
B1NPH1	8/6/2007	WSCF20071380	C5515	33.4-33.5 (109.5-110.0)	33.5-33.7 (110.0-110.5)	WSCF	Rads
B1NPH2	8/6/2007	WSCF20071380	C5515	34.3-34.4 (112.5-113.0)	34.3-34.4 (112.5-113.0)	WSCF	Rads
B1NPH3	8/6/2007	WSCF20071380	C5515	34.7-34.9 (114.0-114.5)	35.1-35.2 (115.0-115.5)	WSCF	Rads
B1NPH4	8/6/2007	WSCF20071380	C5515	35.7-35.8 (117.0-117.5)	35.8 – 36.0 (117.5-118.0)	WSCF	Rads
B1NPH5	8/6/2007	WSCF20071380	C5515	36.6-36.7 (120.0-120.5)	36.6-36.7 (120.0-120.5)	WSCF	Rads
B1NPH6	8/6/2007	WSCF20071380	C5515	37.2-37.3 (122.0-122.5)	37.3-37.5 (122.5-123.0)	WSCF	Rads
B1NPH7	8/6/2007	WSCF20071380	C5515	37.9-38.1 (124.5-125.0)	38.1-38.3 (125.0-125.5)	WSCF	Rads
B1NPH8	8/6/2007	WSCF20071380	C5515	38.7-38.9 (127.0-127.5)	38.9-39.0 (127.5-128.0)	WSCF	Rads
B1NPH9	8/7/2007	WSCF20071380	C5515	39.5-39.6 (129.5-130.0)	39.6-39.8 (130.0-130.5)	WSCF	Rads
B1NPJ0	8/7/2007	WSCF20071380	C5515	40.4-41.3 (132.5-135.5)	40.2-40.4 (132.0-132.5)	WSCF	Rads
B1NPJ1	8/7/2007	WSCF20071380	C5515	40.2-40.4 (132.0-132.5)	40.4-40.5 (132.5-133.0)	WSCF	Rads
B1NPJ2	8/7/2007	WSCF20071380	C5515	41.0-41.1 (134.5-135.0)	41.1-41.3 (135.0-135.5)	WSCF	Rads
B1NPJ3	8/7/2007	WSCF20071380	C5515	41.8-41.9 (137.0-137.5)	41.9-42.1 (137.5-138.0)	WSCF	Rads
B1NPJ4	8/7/2007	WSCF20071380	C5515	42.5-42.7 (139.5-140.0)	42.7-42.8 (140.0-140.5)	WSCF	Rads
B1NPJ5	8/7/2007	WSCF20071380	C5515	43.3-43.4 (142.0-142.5)	43.4-43.6 (142.5-143.0)	WSCF	Rads
B1NPJ6	8/7/2007	WSCF20071380	C5515	44.0-44.2 (144.5-145.0)	44.2-44.3 (145.0-145.5)	WSCF	Rads

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NPJ7	8/7/2007	WSCF20071398	C5515	44.8-45.0 (147.0-147.5)	45.0-45.1 (147.5-148.0)	WSCF	Rads
B1NPJ8	8/7/2007	WSCF20071398	C5515	45.6-45.7 (149.5-150.0)	45.7-45.9 (150.0-150.5)	WSCF	Rads
B1NPJ9	8/7/2007	WSCF20071398	C5515	46.3-46.5 (152.0-152.5)	46.5-46.6 (152.5-153.0)	WSCF	Rads
B1NPK0	8/7/2007	WSCF20071398	C5515	47.1-47.2 (154.5-155.0)	47.2-47.4 (155.0-155.5)	WSCF	Rads
B1NPK1	8/7/2007	WSCF20071398	C5515	47.9-48.0 (157.0-157.5)	48.0-48.2 (157.5-158.0)	WSCF	Rads
B1NPK2	8/7/2007	WSCF20071398	C5515	48.6-48.8 (159.5-160.0)	48.8-48.9 (160.0-160.5)	WSCF	Rads
B1NPK3	8/7/2007	WSCF20071398	C5515	49.4-49.5 (162.0-162.5)	49.5-49.7 (162.5-163.0)	WSCF	Rads
B1NPK4	8/8/2007	WSCF20071398	C5515	50.1-50.3 (164.5-165.0)	50.3-50.4 (165.0-165.5)	WSCF	Rads
B1NPV9	6/12/2007	PNL0063	C5515	4.7-4.9 (15.5-16.0)	4.6-4.7 (15.0-15.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW0	6/12/2007	PNL0063, WSCF20071958	C5515	5.3-5.5 (17.5-18.0)	5.3-5.5 (17.5-18.0)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW1	6/13/2007	PNL0063	C5515	6.2-6.4 (20.5-21.0)	6.1-6.2 (20.0-20.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW3	6/13/2007	PNL0063, WSCF20071958	C5515	7.5-7.6 (24.5-25.0)	7.6-7.8 (25.0-25.5)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW4	6/28/2007	PNL0063, W05290	C5515	9.1-9.3 (30.0-30.5)	9.1-9.3 (30.0-30.5)	ESL, STLSL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW5	7/2/2007	PNL0063	C5515	9.6-9.8 (31.5-32.0)	9.9-10.1 (32.5-33.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW6	7/3/2007	PNL0063	C5515	10.4-10.5 (34.0-34.5)	10.7-10.8 (35.0-35.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW7	7/9/2007	PNL0063	C5515	11.3-11.4 (37.0-37.5)	11.4-11.6 (37.5-38.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW8	7/9/2007	PNL0063, WSCF20071958	C5515	12.0-12.2 (39.5-40.0)	12.2-12.3 (40.0-40.5)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPW9	7/10/2007	PNL0063	C5515	13.0-13.1 (42.5-43.0)	13.0-13.1 (42.5-43.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPX0	7/10/2007	PNL0063, WSCF20071958	C5515	13.7-13.9 (45.0-45.5)	13.7-13.9 (45.0-45.5)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NPX1	7/10/2007	PNL0063, WSCF20071958	C5515	14.3-14.5 (47.0-47.5)	14.5-14.6 (47.5-48.0)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPX2	7/10/2007	PNL0063	C5515	14.9-15.1 (49.0-49.5)	15.2-15.4 (50.0-50.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPX3	7/10/2007	PNL0063, WSCF20071958	C5515	15.7-15.8 (51.5-52.0)	16.0-16.2 (52.5-53.0)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPX4	7/12/2007	PNL0063	C5515	16.5-16.6 (54.0-54.5)	16.8-16.9 (55.0-55.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NR96	7/24/2007	PNL0063	C5515	16.6-17.4 (54.5-57.0)	16.8-17.5 (55.0 – 57.5)	ESL	Physical Property, Cation Exchange, Special Studies
B1NPX5	7/12/2007	PNL0063	C5515	17.4-17.5 (57.0-57.5)	17.5-17.7 (57.5-58.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPX6	7/23/2007	PNL0063, WSCF20071958	C5515	18.1-18.3 (59.5-60.0)	18.3-18.4 (60.0-60.5)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPX7	7/24/2007	PNL0063	C5515	18.9-19.1 (62.0-62.5)	19.1-19.2 (62.5-63.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPX8	7/24/2007	PNL0063, WSCF20071958	C5515	19.5-19.7 (64.0-64.5)	19.8 – 20.0 (65.0-65.5)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPX9	7/24/2007	PNL0063	C5515	20.3-20.4 (66.5-67.0)	20.6-20.7 (67.5-68.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY0	7/24/2007	PNL0063, WSCF20071958	C5515	21.3-21.5 (70.0-70.5)	21.3-21.5 (70.0-70.5)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY1	7/24/2007	PNL0063, WSCF20071958	C5515	21.9-22.1 (72.0-72.5)	22.1-22.3 (72.5-73.0)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY2	7/24/2007	PNL0063	C5515	22.6-22.7 (74.0-74.5)	22.9-23.0 (75.0-75.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY3	7/25/2007	PNL0063	C5515	23.6-23.8 (77.5-78.0)	23.6-23.8 (77.5-78.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY4	7/25/2007	PNL0063, WSCF20071958	C5515	24.2-24.4 (79.5-80.0)	24.4-24.5 (80.0-80.5)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY5	7/26/2007	PNL0063	C5515	25.0-25.1 (82.0-82.5)	25.1-25.3 (82.5-83.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY6	7/26/2007	PNL0063	C5515	25.8-25.9 (84.5-85.0)	25.9-26.1 (85.0-85.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY7	7/26/2007	PNL0063, WSCF20071958	C5515	26.4-26.5 (86.5-87.0)	26.7-26.8 (87.5-88.0)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NPY8	7/26/2007	PNL0063	C5515	27.4-27.6 (90.0-90.5)	27.4-27.6 (90.0-90.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NPY9	8/1/2007	PNL0063, WSCF20071958	C5515	28.2-28.3 (92.5-93.0)	28.2-28.3 (92.5-93.0)	ESL, WSCF	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NR00	8/6/2005	PNL0063	C5515	28.8-29.0 (94.5-95.0)	29.0-29.1 (95.0-95.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NR01	8/6/2007	PNL0063	C5515	29.4-29.6 (96.5-97.0)	29.7-29.9 (97.5-98.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NR02	8/6/2007	PNL0063	C5515	30.3-30.5 (99.5-100.0)	30.5-30.6 (100.0-100.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NR03	8/6/2007	PNL0063	C5515	30.9-31.1 (101.5-102.0)	31.2-31.4 (102.5-103.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NR04	8/6/2007	PNL0063	C5515	31.9-32.0 (104.5-105.0)	32.0-32.2 (105.0-105.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads, Cation Exchange
B1NR05	8/6/2007	PNL0063, WSCF20071958	C5515	32.5-32.6 (106.5-107.0)	32.8-32.9 (107.5-108.0)	ESL, WSCF	Physical Property, Metals
B1NR06	8/6/2007	PNL0063	C5515	33.4-33.5 (109.5-110.0)	33.5-33.7 (110.0-110.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR07	8/6/2007	PNL0063	C5515	34.3-34.4 (112.5-113.0)	34.3-34.4 (112.5-113.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR08	8/6/2007	PNL0063	C5515	34.7-34.9 (114.0-114.5)	35.1-35.2 (115.0-115.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR09	8/6/2007	PNL0063	C5515	35.7-35.8 (117.0-117.5)	35.8-36.0 (117.5-118.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR10	8/6/2007	PNL0063	C5515	36.6-36.7 (120.0-120.5)	36.6-36.7 (120.0-120.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR11	8/6/2007	PNL0063	C5515	37.2-37.3 (122.0-122.5)	37.3-37.5 (122.5-123.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR12	8/6/2007	PNL0063	C5515	37.9-38.1 (124.5-125.0)	38.1-38.3 (125.0-125.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR14	8/6/2007	PNL0063	C5515	38.7-38.9 (129.5-130.0)	39.6-39.8 (130.0-130.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR15	8/7/2007	PNL0063	C5515	39.5-39.6 (132.5-135.5)	40.2-40.4 (132.0-132.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR16	8/7/2007	PNL0063, WSCF20071958	C5515	40.4-41.3 (132.0-132.5)	40.4-40.5 (132.5-133.0)	ESL, WSCF	Physical Property, Metals
B1NR97	8/7/2007	PNL0063	C5515	40.2-40.4 (132.5-135.0)	40.4-40.5 (132.5-133.0)	ESL	Physical Property, Cation Exchange, Special Studies
B1NR17	8/7/2007	PNL0063	C5515	41.0-41.1 (134.5-135.0)	41.1-41.3 (135.0-135.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NR18	8/7/2007	PNL0063	C5515	41.8-41.9 (137.0-137.5)	41.9-42.1 (137.5-138.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR19	8/7/2007	PNL0063	C5515	42.5-42.7 (139.5-140.0)	42.7-42.8 (140.0-140.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR20	8/7/2007	PNL0063	C5515	43.3-43.4 (142.0-142.5)	43.4-43.6 (142.5-143.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR21	8/7/2007	PNL0063	C5515	44.0-44.2 (144.5-145.0)	44.2-44.3 (145.0-145.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR22	8/7/2007	PNL0063	C5515	44.8-45.0 (147.0-147.5)	45.0-45.1 (147.5-148.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR23	8/7/2007	PNL0063	C5515	45.6-45.7 (149.5-150.0)	45.7-45.9 (150.0-150.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR24	8/7/2007	PNL0063, WSCF20071958	C5515	46.3-46.5 (152.0-152.5)	46.5-46.6 (152.5-153.0)	ESL, WSCF	Physical Property, Metals
B1NR25	8/7/2007	PNL0063	C5515	47.1-47.2 (154.5-155.0)	47.2-47.4 (155.0-155.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR26	8/7/2007	PNL0063	C5515	47.9-48.0 (157.0-157.5)	48.0-48.2 (157.5-158.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR27	8/7/2007	PNL0063	C5515	48.6-48.8 (159.5-160.0)	48.8-48.9 (160.0-160.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR28	8/7/2007	PNL0063	C5515	49.4-49.5 (162.0-162.5)	49.5-49.7 (162.5-163.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR29	8/8/2007	PNL0063	C5515	50.1-50.3 (164.5-165.0)	50.3-50.4 (165.0-165.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR30	8/9/2007	PNL0063, WSCF20071958	C5515	50.9-51.1 (167.0-167.5)	51.1-51.2 (167.5-168.0)	ESL, WSCF	Physical Property, Metals
B1NR31	8/9/2007	PNL0063	C5515	51.7-51.8 (169.5-170.0)	51.8-52.0 (170.0-170.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR32	8/9/2007	PNL0063	C5515	52.4-52.6 (172.0-172.5)	52.6-52.7 (172.5-173.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR33	8/9/2007	PNL0063	C5515	53.2-53.3 (174.5-175.0)	53.3-53.5 (175.0-175.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR34	8/9/2007	PNL0063	C5515	53.9-54.1 (177.0-177.5)	54.1-54.3 (177.5-178.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR35	8/9/2007	PNL0063	C5515	54.7-54.7 (179.5-180.0)	54.9-55.0 (180.0-180.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR36	8/9/2007	PNL0063, WSCF20071958	C5515	55.5-55.6 (182.0-182.5)	55.6-55.8 (182.5-183.0)	ESL, WSCF	Physical Property, Metals, Rads

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NR37	8/9/2007	PNL0063	C5515	56.2-56.4 (184.5-185.0)	56.4-56.5 (185.0-185.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR38	8/9/2007	PNL0063	C5515	57.0-57.2 (187.0-187.5)	57.2-57.3 (187.5-188.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR39	8/9/2007	PNL0063	C5515	57.8-57.9 (189.5-190.0)	57.9-58.1 (190.0-190.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR40	8/9/2007	PNL0063	C5515	58.5-58.7 (192.0-192.5)	58.7-58.8 (192.5-193.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR41	8/9/2007	PNL0063, WSCF20071958	C5515	59.3-59.4 (194.5-195.0)	59.4-59.6 (195.0-195.5)	ESL, WSCF	Physical Property, Metals
B1NR42	8/9/2007	PNL0063	C5515	60.0-60.2 (197.0-197.5)	60.2-60.4 (197.5-198.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR43	8/13/2007	PNL0063	C5515	60.8 – 61.0 (199.5-200.0)	61.0-61.1 (200.0-200.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR44	8/13/2007	PNL0063, WSCF20071958	C5515	61.6-61.7 (202.0-202.5)	61.7-61.9 (202.5-203.0)	ESL, WSCF	Physical Property, Metals
B1NR45	8/13/2007	PNL0063	C5515	62.3-62.5 (204.5-205.0)	62.5-62.6 (205.0-205.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR46	8/13/2007	PNL0063	C5515	63.1-63.2 (207.0-207.5)	63.2-63.4 (207.5-208.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR47	8/13/2007	PNL0063	C5515	64.0-64.2 (210.0-210.5)	64.0-64.2 (210.0-210.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR48	8/13/2007	PNL0063	C5515	64.6-64.8 (212.0-212.5)	64.8-64.9 (212.5-213.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR49	8/13/2007	PNL0063	C5515	65.4-65.5 (214.5-215.0)	65.5-65.7 (215.0-215.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR50	8/14/2007	PNL0063	C5515	66.1-65.7 (217.0-217.5)	66.3-66.4 (217.5-218.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR51	8/14/2007	PNL0063, WSCF20071958	C5515	66.9-67.1 (219.5-220.0)	67.1-67.2 (220.0-220.5)	ESL, WSCF	Physical Property, Metals
B1NR52	8/14/2007	PNL0063	C5515	67.1-67.8 (220.0-222.5)	67.8 – 68.0 (222.5-223.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR53	8/14/2007	PNL0063	C5515	68.4-68.6 (224.5-225.0)	68.6-68.7 (225.0-225.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR54	8/14/2007	PNL0063	C5515	69.2-69.3 (227.0-227.5)	69.3-69.5 (227.5-228.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR55	8/14/2007	PNL0063	C5515	69.8 – 70.0 (229.0-229.5)	70.1-70.3 (230.0-230.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NR56	8/14/2007	PNL0063	C5515	70.7-70.9 (232.0-232.5)	70.9-71.0 (232.5-233.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR57	8/14/2007	PNL0063	C5515	71.5-71.6 (234.5-235.0)	71.6-71.8 (235.0-235.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR58	8/14/2007	PNL0063, WSCF20071958	C5515	72.2-72.4 (237.0-237.5)	72.4-72.5 (237.5-238.0)	ESL, WSCF	Physical Property, Metals
B1NR59	8/14/2007	PNL0063	C5515	73.0-73.2 (239.5-240.0)	73.2-73.3 (240.0-240.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR60	8/14/2007	PNL0063	C5515	73.8-73.9 (242.0-242.5)	73.9-74.1 (242.5-243.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR61	8/15/2007	PNL0063	C5515	74.4-74.5 (244.0-244.5)	74.7-74.8 (245.0-245.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR62	8/16/2007	PNL0063	C5515	75.3-75.4 (247.0-247.5)	75.4-75.6 (247.5-248.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR63	8/16/2007	PNL0063, WSCF20071958	C5515	76.2-76.4 (250.0-250.5)	76.2-76.4 (250.0-250.5)	ESL, WSCF	Physical Property, Metals
B1NR98	8/15/2007	PNL0063	C5515	76.4-77.1 (250.5-253.0)	76.2 – 77.0 (250.0 – 252.5)	ESL	Physical Property, Cation Exchange, Special Studies
B1NR64	8/16/2007	PNL0063	C5515	76.8 – 77.0 (252.0-252.5)	77.0-77.1 (252.5-253.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR65	8/16/2007	PNL0063	C5515	77.6-77.7 (254.5-255.0)	77.7-77.9 (255.0-255.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR66	8/16/2007	PNL0063	C5515	78.3-78.5 (257.0-257.5)	78.5-78.6 (257.5-258.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR67	8/20/2007	PNL0063	C5515	79.1-79.2 (259.5-260.0)	79.2-79.4 (260.0-260.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR68	8/20/2007	PNL0063	C5515	80.0-80.0 (262.0-262.5)	80.0-80.2 (262.5-263.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR69	8/20/2007	PNL0063, WSCF20071958	C5515	80.9-81.1 (265.5-266.0)	80.8-80.9 (265.0-265.5)	ESL, WSCF	Physical Property, Metals
B1NR70	8/20/2007	PNL0063	C5515	81.4-81.5 (267.0-267.5)	81.5-81.7 (267.5-268.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR71	8/20/2007	PNL0063	C5515	82.0-82.1 (269.0-269.5)	82.3-82.4 (270.0-270.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR72	8/20/2007	PNL0063	C5515	82.9-83.1 (272.0-272.5)	83.1-83.2 (272.5-273.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR73	8/20/2007	PNL0063	C5515	83.7-83.8 (274.5-275.0)	83.8-84.0 (275.0-275.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed
B1NR74	8/20/2007	PNL0063	C5515	84.4-84.6 (277.0-277.5)	84.6-84.7 (277.5-278.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR75	8/20/2007	PNL0063	C5515	85.2-85.3 (279.5-280.0)	85.3-85.5 (280.0-280.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR76	8/21/2007	PNL0063, WSCF20071958	C5515	86.0-86.1 (282.0-282.5)	86.1-86.3 (282.5-283.0)	ESL, WSCF	Physical Property, Metals
B1NR77	8/21/2007	PNL0063, WSCF20071958	C5515	86.7-86.9 (284.5-285.0)	86.9-87.0 (285.0-285.5)	ESL, WSCF	Physical Property, Metals
B1NRB2	8/21/2007	PNL0063	C5515	86.9-87.5 (285.0-287.0)	86.9-87.6 (285.0 – 287.5)	ESL	Physical Property, Cation Exchange, Special Studies
B1NR78	8/21/2007	PNL0063	C5515	87.5-87.6 (287.0-287.5)	87.6-87.8 (287.5-288.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR79	8/21/2007	PNL0063	C5515	88.2-88.4 (289.5-290.0)	88.4-88.5 (290.0-290.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR80	8/21/2007	PNL0063	C5515	89.0-89.2 (292.0-292.5)	89.2-89.3 (292.5-293.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR81	8/21/2007	PNL0063	C5515	89.8-89.9 (294.5-295.0)	89.9-90.1 (295.0-295.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR82	8/22/2007	PNL0063, WSCF20071958	C5515	90.5-90.7 (297.0-297.5)	90.7-90.8 (297.5-298.0)	ESL, WSCF	Physical Property, Metals
B1NR83	8/22/2007	PNL0063	C5515	91.3-91.4 (299.5-300.0)	91.4-91.6 (300.0-300.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR84	8/22/2007	PNL0063, WSCF20071958	C5515	92.0-92.2 (302.0-302.5)	92.2-92.4 (302.5-303.0)	ESL, WSCF	Physical Property, Metals
B1NR85	8/22/2007	PNL0063	C5515	92.8-93.0 (304.5-305.0)	93.0-93.1 (305.0-305.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR86	8/22/2007	PNL0063	C5515	93.6-93.7 (307.0-307.5)	93.7-93.9 (307.5-308.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR87	8/22/2007	PNL0063	C5515	94.3-94.5 (309.5-310.0)	94.5-94.6 (310.0-310.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR88	8/22/2007	PNL0063	C5515	95.1-95.3 (312.0-312.5)	95.3-95.4 (312.5-313.0)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR89	8/22/2007	PNL0063	C5515	96.0-96.2 (315.0-315.5)	96.0-96.2 (315.0-315.5)	ESL	Physical Property, Anions, Total Organics, Metals, Rads
B1NR99	8/22/2007	PNL0063	C5515	96.6-97.4 (317.0-319.5)	96.0-96.8 (315.0 – 317.5)	ESL	Physical Property, Cation Exchange, Special Studies

Table A1-4. Analyses Performed on Grab Samples, 216-A-2 Crib (Borehole C5515)

HEIS #	Date Collected	Data Package	Site	Depth Collected m bgs (ft bgs)	Depth Planned m bgs (ft bgs)	Laboratory	Sample Analysis Performed

Notes:

The analyses were performed by ESL – Hanford Site, Richland, Washington; 222-S Laboratory Operations – Hanford Site, Richland, Washington; and WSCF – Hanford Site, Richland, Washington.

Cation Exchange Capacity was analyzed using the Cation Exchange Trace method.

General chemistry analysis is done by any or all of the following EPA methods: 2320 Alkalinity; 9040 pH; 9056 Anions; 9050 Specific Conductance. Not all samples were analyzed for the same suite of general chemistry analyses.

Metals are analyzed by any or all of the following EPA methods: 6010 and 6020 Metals. Not all samples were analyzed for the same suite of metals.

Percent moisture is analyzed by ASTM method D2216-05.

Bulk density is analyzed by ASTM method D2937.

Radionuclides include alpha, beta, and gamma counts and specialized methods of analyses for some specific radionuclides. Not all samples were analyzed for the same suite of radionuclides.

Total organics were analyzed using EPA method 415.1 TOC.

No data packages were validated.

All 4-digit EPA methods are found in SW-846.

Method 415.1 is found in EPA/600/4-79-020.

ASTM D2216-05.

ASTM = American Society for Testing and Materials
bgs = below ground surface
EPA = U.S. Environmental Protection Agency
ESL = Environmental Sciences Laboratory
HEIS = Hanford Environmental Information System database
Rad = radionuclide
TOC = total organic compound
WSCF = Waste Sampling and Characterization Facility

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A2 Data Evaluation

Samples from the 216-A-2 Crib, 216-A-4 Crib, and 216-A-21 Crib in the 200-MW-1 Operable Unit and associated field QC samples were obtained and analyzed in accordance with the DOE/RL-2006-47, *Sampling and Analysis Plan for Additional Remedial Investigation Activities at the 216-A-4 Crib and the 200-E-102 Trench*; DOE/RL-2006-77, *Sampling and Analysis Plan for Supplemental Remedial Investigation Activities at the 216-A-2 Crib and 216-A-21 Crib*; EPA/240/B-06/002 and EPA/240/B-06/003, *Guidance for Data Quality Assessment, Practical Methods for Data Analysis*. Also, as required by the plan, the analytical data from these samples were evaluated to ensure that the quality assurance (QA) objectives of the project were achieved. This evaluation is documented in D&D-36360, *216-A-4 Crib and 200-E-102 Trench Data Quality Assessment*, and D&D-37251, *216-A-2 Crib and 216-A-21 Crib Data Quality Assessment*. The evaluations consisted of three activities:

1. Formal validation of a portion of the data
2. Review of the complete data set to determine the degree to which detection limit requirements were achieved
3. Evaluation of the field QC sample data

The results of these activities are summarized in the following sections.

A2.1 Data Validation Results

Laboratory data from a total of 34 samples in 11 sample delivery groups (W04150, H2671, WSCF20061572, W05077, H3477, W05171, H3546, WSCF20071485, H3566, H3570, and 222S20070742) were validated to Level "C" as described in HNF-20433, *Data Validation Procedure for Chemical Analyses*, and HNF-20434, *Data Validation Procedure for Radiochemical Analyses*. The criteria established for qualification of analytical results are defined in these validation procedures.

Validation resulted in the rejection of undetected results for gasoline and cyanide from sample number B195W2 collected from borehole C4560 (216-A-4 Crib). Undetected results were also rejected for nitrate, nitrite, and phosphate from samples B1L4T7, B1L4V2, B1L5N2, and B1L5N6 collected from borehole C5301 (216-A-4 Crib). All of these results were rejected because of hold times exceeding the requirement by more than a factor of two. These results should be rejected for use in decision making.

In addition, several minor deficiencies were found, resulting in sample results being flagged with a "J" (estimate) and/or a "U" (not detected) qualifier. Deficiencies included hold time exceedances, samples not being properly preserved, blank contamination, insufficient detection limit in blank analysis, unsatisfactory blank or laboratory control sample or blank spike results, and instances of the matrix spike, surrogates or tracers not meeting laboratory acceptance criteria, or laboratory duplicate relative percent difference did not meet acceptance criteria. However, the majority of the data were obtained without any discrepancy.

The amount of laboratory analytical data obtained in the validated sample delivery groups was well above the normal 90 percent completeness criterion for site characterization studies.

A2.2 Data Completeness and Detection Limits

As a supplement to formal data validation, the data were examined with respect to completeness and detection limits. Reported analytical detection levels for non-detected analytes were compared to the target quantitation limits (TQLs) specified in the sampling and analysis plans (SAPs) (DOE/RL-2001-65, *200-MW-1 Miscellaneous Waste Group Operable Unit RI/FS Work Plan,* Appendix A; DOE/RL-2006-47; DOE/RL-2006-77).

A2.3 Data Completeness

The analytical data were reviewed to determine whether the goal of analyzing all COCs at each sampling location had been achieved. Complete sets of data, including results for each COC at each depth, were reported for borehole C5515 in the 216-A-2 Crib, borehole C5571 in the 216-A-21 Crib, and borehole C4560 in the 216-A-4 Crib.

Data for borehole C5301, drilled in proximity of the 216-A-4 Crib, were slightly incomplete. Because of an oversight within sample management, a primary lab was never scheduled to analyze for hexavalent chromium. However, analyses for hexavalent chromium were run at the lab designated for split samples. These missing results should represent only minor modeling difficulties, because all results reported from the split sample and from borehole C4560 for the missing analyte were below the lowest applicable preliminary action level (LAPAL).

A2.4 Detection Limits

Reported analytical detection levels for nondetected analytes were compared to the TQL and the preliminary action levels specified in the SAPs (DOE/RL-2006-47 and DOE/RL-2006-77). Although the detection limits for most determinations met both standards, exceedance of the TQLs was not uncommon. Exceedance of the LAPALs occurred with only nine analytes: 1-butanol, 1,2-dichloroethane, benzene, methylene chloride, polychlorinated biphenyls, tetrachloroethylene, trichloroethylene, selenium, and Pu-238. Table A2-1 summarizes the results for undetected analytes with detection limits greater than the LAPAL given in the SAPs (DOE/RL-2001-65, Appendix A; DOE/RL-2006-47; DOE/RL-2006-77).

Table A2-1. Summary of Results for Undetected Analytes over the LAPAL

Species or Analyte	Lowest Applicable Preliminary Action Limit (mg/kg)	Number of Results Exceeding the Lowest Applicable Preliminary Action Limit
1-Butanol	6.62	1
1, 2-Dichloroethane	0.005	4
Benzene	0.00448	4
Methylene chloride	0.022	4
Polychlorinated biphenyls	0.0165	24
Tetrachloroethylene	0.0086	4
Trichloroethylene	1.58	4
Selenium	0.3	4
Pu-238	470	1

A2.5 Field Quality Control Samples

A total of 32 field QC samples were collected and analyzed. These consisted of 4 field duplicate samples, 3 field split samples, 3 equipment rinsate blanks, 7 field blanks, and 15 trip blanks. The number of field duplicate samples and field split samples obtained for the four waste sites satisfies the SAPs (DOE/RL-2001-65, Appendix A; DOE/RL-2006-47; DOE/RL-2006-77) requirements of one field duplicate and field split for each waste site. One complete set of field duplicates and split samples (each set consisting of one main sample, one duplicate sample, and one split sample) was obtained for borehole C5515 within the 216-A-2 Crib waste site. A complete set of field duplicate and split samples was driven but not collected at borehole C5571 within the 216-A-21 Crib waste site, because of high radiological activity. Two sampling intervals were attempted, and at least one was completed for the two waste sites, which is more than sufficient to meet the minimum of one duplicate per waste site requirement. At the 216-A-4 Crib, one complete set of field duplicates and split samples (each set consisting of one main sample, one duplicate sample, and one split sample) was obtained for borehole C5301. A complete set of field duplicate and split samples were not taken at borehole C4560 because of the high levels of radiological contamination found at the location. These levels caused the borehole to be terminated before all scheduled sampling intervals were completed.

The number of equipment blanks and trip blanks obtained at the 216-A-4 Crib satisfies the SAP (DOE/RL-2001-65, Appendix A; DOE/RL-2006-47) requirement of obtaining equipment rinsate blanks at the same frequency that the duplicate samples were obtained and also the requirement that at least one trip blank be collected from each representative waste site.

The number of field blanks and trip blanks obtained at the 216-A-2 Crib satisfies the SAP (DOE/RL-2001-65, Appendix A; DOE/RL-2006-77) requirement. Equipment blanks were not taken within the 216-A-2 Crib borehole because of a sample scheduling oversight; however, equipment blanks were collected within the 216-A-21 Crib borehole. Because only one set of equipment blanks and one set of duplicate samples were collected for each waste site, the SAP requirement is not considered met but ultimately should not affect the overall outcome of the data in this assessment.

For both field duplicate samples and field split samples, the relative percent differences between field duplicates/splits and their corresponding primary field samples were calculated to determine whether they meet the relative precision requirement of the SAP. In more than 92 percent of the cases, the resulting relative percent difference was satisfactory. Roughly one third of the unsatisfactory matches were for radionuclides, one third were for metals, and one third were for inorganic anions. These results show that the overall precision of sampling and analysis generally is within the project requirements, even at the very low concentrations of COCs found in most samples.

Equipment blanks were analyzed for gross alpha, gross beta, metals (except hexavalent chromium and mercury), anions (except cyanide), and volatile organic analytes (VOAs) of interest. Out of the 149 equipment blank results reported, analytes were detected in 16 cases; among the non-detect results for equipment blanks, the detection limit never exceeded the TQL.

Field blanks were obtained to determine whether VOA results might be impacted by the presence of organic vapors present in the sampling environment or during shipping. Out of the 1258 field blank results reported, analytes were detected in 12 cases. All field blank results for undetected analytes were reported with detection limits less than the TQL.

The trip blanks were analyzed for VOAs as required in the SAP. There were no detections of analytes in trip blanks. All trip blank results for undetected analytes were reported with detection limits less than the TQL.

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A3 Conclusion

The conclusion of this evaluation is that the data are of the right type, quality, and quantity to support remedial action decisions related to the waste sites. Detection limits, precision, accuracy, and data completeness were analyzed to determine if any analytical data should be rejected as a result of QA/QC deficiencies. The analytical data were found to be acceptable for decision making purposes in the remedial investigation/feasibility study.

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A4 Analytical Results

Table A4-1 through Table A4-44 list all of the chemical and radiochemical results obtained in response to the SAPs (DOE/RL-2001-65, Appendix A; DOE/RL-2006-47; DOE/RL-2006-77).

The "Sample Top" and "Sample Bottom" columns in these tables indicate the upper and lower bounds of the sample interval in feet below ground surface at which the sample was taken. The "Sample Type" columns designate the field QC samples (field duplicate and field split samples).

Analyte names are given in the top row of each table. Below each analyte name is the U.S. Environmental Protection Agency method number(s) or brief descriptive name(s) of the analytical method(s) used for the analyte. Table A4-45 provides the analytical method numbers and term abbreviations used in the Appendix A tables.

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Table A4-1. Radiochemical Analysis Results for Borehole C4560 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Americium-241 (14596-10-2) GEA					Americium-241 (14596-10-2) IX/Plate/AEA					Americium-241 (14596-10-2) IX/Prec/AEA					Cesium-137 (10045-97-3) GEA					Cobalt-60 (10198-40-0) GEA					Europium-152 (14683-23-9) GEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
0.5	3	B195V9		WSCF											0.058	pCi/g			0.057	0.606	pCi/g			0.012	0	pCi/g	U		0.011	-0.029	pCi/g	U		0.033
0.5	3	B197D7		EBRLNE																													
12.5	15	B195W0		WSCF											0.088	pCi/g			0.055	-0.001	pCi/g	U		0.01	0.001	pCi/g	U		0.011	-0.003	pCi/g	U		0.029
12.5	15	B197D8		EBRLNE																													
18.5	21	B197F0		EBRLNE	2000	pCi/g	U		2000	3810	pCi/g			23						63600	pCi/g			38	14.3	pCi/g			4.6	71	pCi/g	U		71
Target Quantitation Limit					N/A					1					1					0.1					0.05					0.1				

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Europium-154 (15585-10-1) GEA					Europium-155 (14391-16-3) GEA					Iodine-129 (15046-84-1) Sep/LEPS					Plutonium-238 (13981-16-3) IX/Prec/AEA					Plutonium-238 (13981-16-3) Sep/Plate/AEA					Plutonium-239/240 (PU-239/240) IX/Prec/AEA					Plutonium-239/240 (PU-239/240) Sep/Plate/AEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
0.5	3	B195V9		WSCF	-0.015	pCi/g	U		0.034	0.04	pCi/g	U		0.047						-0.015	pCi/g	U		0.058						0.35	pCi/g			0.005					
0.5	3	B197D7		EBRLNE											-0.21	pCi/g	U		1.7																				
12.5	15	B195W0		WSCF	0.016	pCi/g	U		0.032	0.025	pCi/g	U		0.043						0.014	pCi/g	U		0.04						0.45	pCi/g			0.017					
12.5	15	B197D8		EBRLNE											0.301	pCi/g	U		2.1																				
18.5	21	B197F0		EBRLNE	179	pCi/g			20	85	pCi/g	U		85	3.28	pCi/g	U		40						209	pCi/g		J	150						21400	pCi/g			150
Target Quantitation Limit					0.1					0.1					2					1					1					1					1				

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Potassium-40 (13966-00-2) GEA					Radium-226 (13982-63-3) GEA					Radium-228 (15262-20-1) GEA					Technetium-99 (14133-76-7) Sep/GPC					Thorium-228 (14274-82-9) GEA					Thorium-232 (TH-232) GEA					Total beta radiostrontium (SR-RAD) Sep/GPC				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
0.5	3	B195V9		WSCF																															0.28	pCi/g	U		0.3
0.5	3	B197D7		EBRLNE																0.05	pCi/g	U		0.36															
12.5	15	B195W0		WSCF																															0.37	pCi/g			0.3
12.5	15	B197D8		EBRLNE																-0.029	pCi/g	U		0.45															
18.5	21	B197F0		EBRLNE	29	pCi/g	U		29	33	pCi/g	U		33	33	pCi/g	U		33	5.61	pCi/g	U		10	33	pCi/g	U		33	33	pCi/g	U		33	3860000	pCi/g			1200
Target Quantitation Limit					N/A					N/A					N/A					15					N/A					N/A					1				

Table A4-1. Radiochemical Analysis Results for Borehole C4560 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Tritium (10028-17-8) CombOx/LSC					Uranium-233/234 (U-233/234) IX/Prec/AEA					Uranium-233/234 (U-233/234) Sep/Plate/AEA					Uranium-235 (15117-96-1) GEA					Uranium-235 (15117-96-1) IX/Prec/AEA					Uranium-235 (15117-96-1) Sep/Plate/AEA					Uranium-238 (U-238) GEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
0.5	3	B195V9		WSCF						0.13	pCi/g			0.022											0.014	pCi/g	U		0.022										
0.5	3	B197D7		EBRLNE	-0.063	pCi/g	U		0.25																														
12.5	15	B195W0		WSCF						0.14	pCi/g			0.013											0.022	pCi/g			0.005										
12.5	15	B197D8		EBRLNE	-0.018	pCi/g	U		0.21																														
18.5	21	B197F0		EBRLNE	-0.801	pCi/g	U	J	2.4						478	pCi/g			75	100	pCi/g	U		100						35.4	pCi/g	U		90	980	pCi/g	U		980
Target Quantitation Limit					400					1					1					N/A					1					1					N/A				

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Uranium-238 (U-238) IX/Prec/AEA					Uranium-238 (U-238) Sep/Plate/AEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
0.5	3	B195V9		WSCF	0.16	pCi/g			0.005					
0.5	3	B197D7		EBRLNE										
12.5	15	B195W0		WSCF	0.12	pCi/g			0.017					
12.5	15	B197D8		EBRLNE										
18.5	21	B197F0		EBRLNE						683	pCi/g			75
Target Quantitation Limit					1					1				

Note:

No field QC samples were collected.

Table A4-2. Metals Analysis Results for Borehole C4560 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Antimony (7440-36-0) 6010				Arsenic (7440-38-2) 6010				Barium (7440-39-3) 6010				Beryllium (7440-41-7) 6010				Bismuth (7440-69-9) 6010				Boron (7440-42-8) 6010				Cadmium (7440-43-9) 200.8				Cadmium (7440-43-9) 6010				Chromium (7440-47-3) 200.8			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF																									204	ug/kg							4540	ug/kg		
0.5	3	B197D7		RLNP																																				
12.5	15	B195W0		WSCF																									20	ug/kg	U						3700	ug/kg		
12.5	15	B197D8		RLNP																																				
18.5	21	B195W2		STLSL	660	ug/kg	B	J	2300	ug/kg		J	68300	ug/kg		J	200	ug/kg	B	J	144000	ug/kg			6500	ug/kg	B	UJ					24	ug/kg	U	J				
18.5	21	B197F0		EBRLNE																																				
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				500				500				1000			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Chromium (7440-47-3) 6010				Copper (7440-50-8) 200.8				Copper (7440-50-8) 6010				Hexavalent Chromium (18540-29-9) 7196				Lead (7439-92-1) 200.8				Lead (7439-92-1) 6010				Mercury (7439-97-6) 200.8				Mercury (7439-97-6) 7471				Nickel (7440-02-0) 6010			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF					729	ug/kg											9240	ug/kg							10	ug/kg	U									
0.5	3	B197D7		RLNP													210	ug/kg	U																					
12.5	15	B195W0		WSCF					641	ug/kg	U										4560	ug/kg							10	ug/kg	U									
12.5	15	B197D8		RLNP													210	ug/kg	U																					
18.5	21	B195W2		STLSL	13500	ug/kg		J					15000	ug/kg		J	270	ug/kg	U	J					5500	ug/kg		J					920	ug/kg			8700	ug/kg		J
18.5	21	B197F0		EBRLNE																																				
Target Quantitation Limit					1000				2500				2500				500				1000				1000				200				200				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Selenium (7782-49-2) 6010				Silver (7440-22-4) 200.8				Silver (7440-22-4) 6010				Uranium (7440-61-1) 200.8				Uranium (7440-61-1) KPA			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF					10	ug/kg	U						161	ug/kg	U					
0.5	3	B197D7		RLNP																				
12.5	15	B195W0		WSCF					10	ug/kg	U						160	ug/kg	U					
12.5	15	B197D8		RLNP																				
18.5	21	B195W2		STLSL	320	ug/kg	U						2200	ug/kg		J								
18.5	21	B197F0		EBRLNE																	1970000	ug/kg		J
Target Quantitation Limit					N/A				500				500				N/A				1000			

Note:

No field QC Samples were collected.

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Table A4-3. Wet Chemistry Analysis Results for Borehole C4560 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Ammonia (7664-41-7)				Cyanide (57-12-5)				Cyanide (57-12-5)				Fluoride (16984-48-8)				Nitrate (14797-55-8)				Nitrite (14797-65-0)				Nitrogen in Nitrite and Nitrate (NO2+NO3-N)				Nitrogen in Nitrite and Nitrate (NO2+NO3-N)				Phosphate (14265-44-2)				Sulfate (14808-79-8)			
					350.1				335.2				9010				300				300				300				353.1				353.2				300				300			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF					200	ug/kg	U						1130	ug/kg	U		4350	ug/kg			3060	ug/kg	U										8130	ug/kg	U		4900	ug/kg	U	
0.5	3	B197D7		RLNP																													840	ug/kg										
12.5	15	B195W0		WSCF					200	ug/kg	U						1130	ug/kg	U		2820	ug/kg	U		3060	ug/kg	U										8130	ug/kg	U		4900	ug/kg	U	
12.5	15	B197D8		RLNP																													560	ug/kg										
18.5	21	B195W2		STLSL	1010	ug/kg							130	ug/kg	U	R	100	ug/kg	U	J	8410	ug/kg	B		131	ug/kg	U		2100	ug/kg							500	ug/kg	U		8000	ug/kg	B	J
Target Quantitation Limit					N/A				500				500				5000				2500				2500				N/A				N/A				5000				5000			

Note:

No field QC samples were collected.

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Table A4-4. Volatile Organic Analysis Results for Borehole C4560 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	2-Butanone (78-93-3)				2-Hexanone (591-78-6)				2-Pentanone, 4-Methyl (108-10-1)				Acetone (67-64-1)				Benzene (71-43-2)				Bromodichloromethane (75-27-4)				Bromoform (75-25-2)				Bromomethane (74-83-9)				Carbon disulfide (75-15-0)				Carbon tetrachloride (56-23-5)			
					8260				8260				8260				8260				8260				8260				8260				8260				8260				8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF	1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U	
12.5	15	B195W0		WSCF	1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U	
18.5	21	B195W2		STLSL	1.2	ug/kg	U	J	1.4	ug/kg	U	J	0.97	ug/kg	U	J	22	ug/kg	JB	UJ	0.12	ug/kg	U	J	0.076	ug/kg	U	J	0.67	ug/kg	U	J	0.96	ug/kg	U	J	0.29	ug/kg	U	J	0.15	ug/kg	U	J
Target Quantitation Limit					10				N/A				10				20				5				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Chlorobenzene (108-90-7)				Chloroethane (75-00-3)				Chloroform (67-66-3)				Chloromethane (74-87-3)				cis-1,2-Dichloroethylene (156-59-2)				cis-1,3-Dichloropropene (10061-01-5)				Dibromochloromethane (124-48-1)				Ethylbenzene (100-41-4)				Methylene chloride (75-09-2)				n-Butylbenzene (104-51-8)			
					8260				8260				8260				8260				8260				8260				8260				8260				8260				8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF	1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U	
12.5	15	B195W0		WSCF	1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U	
18.5	21	B195W2		STLSL	0.13	ug/kg	U	J	0.6	ug/kg	U	J	0.13	ug/kg	U	J	0.25	ug/kg	U	J	0.22	ug/kg	U	J	0.16	ug/kg	U	J	0.64	ug/kg	U	J	0.41	ug/kg	U	J	11	ug/kg		J	0.81	ug/kg	U	J
Target Quantitation Limit					N/A				N/A				N/A				N/A				1				N/A				N/A				5				5				5			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Styrene (100-42-5)				Tetrachloroethene (127-18-4)				Toluene (108-88-3)				trans-1,2-Dichloroethylene (156-60-5)				trans-1,3-Dichloropropene (10061-02-6)				Trichloroethene (79-01-6)				Vinyl chloride (75-01-4)				Xylenes (total) (1330-20-7)			
					8260				8260				8260				8260				8260				8260				8260				8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF	1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U		1.7	ug/kg	U	
12.5	15	B195W0		WSCF	1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U		1.9	ug/kg	U	
18.5	21	B195W2		STLSL	0.41	ug/kg	J	J	0.22	ug/kg	U	J	0.64	ug/kg	U	J	0.33	ug/kg	U	J	0.57	ug/kg	U	J	0.065	ug/kg	U	J	0.69	ug/kg	U	J	0.88	ug/kg	U	J
Target Quantitation Limit					N/A				5				5				1				N/A				5				N/A				5			

Note:
No field QC samples were collected.

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Table A4-5. Semivolatile Organic Analysis Results for Borehole C4560 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	1,2,4-Trichlorobenzene (120-82-1)				1,4-Dichlorobenzene (106-46-7)				2,4-Dinitrotoluene (121-14-2)				2-Chlorophenol (95-57-8)				4-Chloro-3-methylphenol (59-50-7)				4-Nitrophenol (100-02-7)				Acenaphthene (83-32-9)				Diethylphthalate (84-66-2)			
					8270				8270				8270				8270				8270				8270				8270				8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF	310	ug/kg	U		330	ug/kg	U		69	ug/kg	U		150	ug/kg	U		69	ug/kg	U		670	ug/kg	U		69	ug/kg	U					
12.5	15	B195W0		WSCF	310	ug/kg	U		330	ug/kg	U		70	ug/kg	U		150	ug/kg	U		70	ug/kg	U		670	ug/kg	U		70	ug/kg	U					
18.5	21	B195W2		STLSL	19	ug/kg	U	J					19	ug/kg	U	J	15	ug/kg	U	J	29	ug/kg	U	J	46	ug/kg	U	J	18	ug/kg	U	J	44	ug/kg	U	J
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Di-n-butylphthalate (84-74-2)				n-Nitrosodi-n-dipropylamine (621-64-7)				Pentachlorophenol (87-86-5)				Phenol (108-95-2)				Pyrene (129-00-0)				Tributyl phosphate (126-73-8)			
					8270				8270				8270				8270				8270				8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF					69	ug/kg	U		310	ug/kg	U		100	ug/kg	U		69	ug/kg	U		69	ug/kg	U	
12.5	15	B195W0		WSCF					70	ug/kg	U		310	ug/kg	U		100	ug/kg	U		70	ug/kg	U		70	ug/kg	U	
18.5	21	B195W2		STLSL	30	ug/kg	U	J	21	ug/kg	U	J	130	ug/kg	U	J	94	ug/kg	U	J	24	ug/kg	U	J	360	ug/kg	U	J
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				3300			

Note:
No field QC samples were collected.

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Table A4-6. Miscellaneous Analysis Results for Borehole C4560 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Aroclor-1016 (12674-11-2) 8082				Aroclor-1221 (11104-28-2) 8082				Aroclor-1232 (11141-16-5) 8082				Aroclor-1242 (53469-21-9) 8082				Aroclor-1248 (12672-29-6) 8082				Aroclor-1254 (11097-69-1) 8082				Aroclor-1260 (11096-82-5) 8082				Aroclor-1262 (37324-23-5) 8082				Aroclor-1268 (11100-14-4) 8082			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF	51	ug/kg	U		100	ug/kg	U		51	ug/kg	U		51	ug/kg	U		51	ug/kg	U		51	ug/kg	U		51	ug/kg	U		51	ug/kg	U		51	ug/kg	U	
0.5	3	B197D7		RLNP																																				
12.5	15	B195W0		WSCF	52	ug/kg	U		100	ug/kg	U		52	ug/kg	U		52	ug/kg	U		52	ug/kg	U		52	ug/kg	U		52	ug/kg	U		52	ug/kg	U		52	ug/kg	U	
12.5	15	B197D8		RLNP																																				
18.5	21	B195W2		STLSL	6.9	ug/kg	U	J	7.6	ug/kg	U	J	8.7	ug/kg	U	J	8.1	ug/kg	U	J	10	ug/kg	U	J	56	ug/kg		J	47	ug/kg		J								
Target Quantitation Limit					16.5				16.5				16.5				16.5				16.5				16.5				16.5				16.5				16.5			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Oil and grease (OIL/GREASE) 9071				Total petroleum hydrocarbons - diesel range (TPHDIESEL) WDOE TPH				Total petroleum hydrocarbons - gasoline range (TPHGASOLINE) WDOE TPH				Total petroleum hydrocarbons - kerosene range (TPHKEROSENE) WDOE TPH			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF					3900	ug/kg	U						3900	ug/kg	U	
0.5	3	B197D7		RLNP	696,000	ug/kg	U						30	ug/kg	U					
12.5	15	B195W0		WSCF					3900	ug/kg	U						3900	ug/kg	U	
12.5	15	B197D8		RLNP	695,000	ug/kg	U						30	ug/kg	U					
18.5	21	B195W2		STLSL	197,000	ug/kg	B	J	2000	ug/kg	U	J	29	ug/kg	U	R	27000	ug/kg	U	J
Target Quantitation Limit					200,000				5000				5000				5000			

Note:
No field QC samples were collected.

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Table A4-7. Physical Properties Analysis Results for Borehole C4560 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Percent moisture (dry sample) (%MOISTURE-D)				Percent moisture (wet sample) (%MOISTURE)				Percent Solids (%SOLIDS)				pH Measurement (PH)				pH Measurement (PH)			
					D2216				D2216				Gravimetry				150.1				9045			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
0.5	3	B195V9		WSCF													9.24	pH						
12.5	15	B195W0		WSCF													9.44	pH						
18.5	21	B195W2		STLSL																	9.2	pH		J
18.5	21	B19861		SHAW	9.5	%			8.7	%			91.3	%										
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A			

Note:

No field QC samples were collected.

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Table A4-8. Radiochemical Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Americium-241 (14596-10-2) GEA					Americium-241 (14596-10-2) IX/Plate/AEA					Americium-241 (14596-10-2) IX/Prec/AEA					Antimony-125 (14234-35-6) GEA					Beryllium-7 (13966-02-4) GEA					Cesium-134 (13967-70-9) GEA					Cesium-137 (10045-97-3) GEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
29	31.5	B1L4T7		WSCF											-0.002	pCi/g	U		0.042																	0.003	pCi/g	U		0.012
29	31.5	B1L4T7		EBRLNE																																			
29	31.5	B1L5N2	duplicate	WSCF											0.002	pCi/g	U		0.033																	-0.005	pCi/g	U		0.011
29	31.5	B1L5N2	duplicate	EBRLNE																																			
43	45.5	B1L4V2		WSCF											-0.006	pCi/g	U		0.044																	-0.008	pCi/g	U		0.014
43	45.5	B1L4V2		EBRLNE																																			
43	45.5	B1L5N6	split	EBRLNE	0.047	pCi/g	U		0.047	0.05	pCi/g	U		0.19						0.086	pCi/g	U		0.086	0.05	pCi/g	U		0.57	0.075	pCi/g	U		0.075	0.051	pCi/g	U		0.051
43	45.5	B1L5N6	split	STLRL																																			
122	124	B1L4V7		WSCF											0.045	pCi/g			0.012																	-0.006	pCi/g	U		0.011
122	124	B1L4V7		EBRLNE																																			
260	262	B1L4W2		WSCF											0.033	pCi/g	U		0.042																	0.001	pCi/g	U		0.011
260	262	B1L4W2		EBRLNE																																			
283	285	B1L4W7		WSCF											0.011	pCi/g	U		0.037																	-0.003	pCi/g	U		0.012
283	285	B1L4W7		EBRLNE																																			
Equipment blank tied to B1L4T7		B1L5N8		WSCF																																1.37	pCi/L	U		9.8
Target Quantitation Limit					N/A					1					1					N/A					N/A					N/A					0.1				

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Cobalt-60 (10198-40-0) GEA					Europium-152 (14683-23-9) GEA					Europium-154 (15585-10-1) GEA					Europium-155 (14391-16-3) GEA					Gross alpha (12587-46-1) GPC					Gross beta (12587-47-2) GPC					Iodine-129 (15046-84-1) Sep/LEPS					Nickel-63 (13981-37-8) LSC				
				Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
29	31.5	B1L4T7		0.002	pCi/g	U		0.012	-0.012	pCi/g	U		0.035	-0.002	pCi/g	U		0.039	0.035	pCi/g	U		0.053																				
29	31.5	B1L4T7																																	-0.614	pCi/g	U		1.3	-0.487	pCi/g	U		2.8
29	31.5	B1L5N2	duplicate	0.001	pCi/g	U		0.01	-0.004	pCi/g	U		0.032	0.011	pCi/g	U		0.036	0.042	pCi/g	U		0.048																				
29	31.5	B1L5N2	duplicate																																1.84	pCi/g	U		2.6	-1.1	pCi/g	U		2.8
43	45.5	B1L4V2		-0.001	pCi/g	U		0.014	-0.011	pCi/g	U		0.037	-0.042	pCi/g	U		0.044	0.081	pCi/g	U		0.067																				
43	45.5	B1L4V2																																	-0.134	pCi/g	U		2.4	-0.696	pCi/g	U		2.8
43	45.5	B1L5N6	split	0.072	pCi/g	U		0.072	0.084	pCi/g	U		0.084	0.23	pCi/g	U		0.23	0.055	pCi/g	U		0.055																				
43	45.5	B1L5N6	split																																0.106	pCi/g	U		0.216	-1.84	pCi/g	U		6.99
122	124	B1L4V7		0	pCi/g	U		0.012	0.01	pCi/g	U		0.034	-0.019	pCi/g	U		0.037	0.031	pCi/g	U		0.057																				
122	124	B1L4V7																																	-0.231	pCi/g	U		1.5	-0.084	pCi/g	U		2.7
260	262	B1L4W2		0.001	pCi/g	U		0.011	-0.011	pCi/g	U		0.032	-0.015	pCi/g	U		0.033	0.021	pCi/g	U		0.047																				
260	262	B1L4W2																																	0.168	pCi/g	U		0.89	2.11	pCi/g	U		3.6
283	285	B1L4W7		0	pCi/g	U		0.011	0.002	pCi/g	U		0.035	0.004	pCi/g	U		0.034	0.03	pCi/g	U		0.059																				
283	285	B1L4W7																																	1.04	pCi/g			0.83	3.2	pCi/g	U		5
Equipment blank tied to B1L4T7		B1L5N8		-1.25	pCi/L	U		9.6	-1.38	pCi/L	U		27	-6.44	pCi/L	U		26	-2	pCi/L	U		32	0.009	pCi/L	U		0.67	-0.49	pCi/L	U		1.5										
Target Quantitation Limit				0.05					0.1					0.1					0.1					N/A					N/A					2					30				

Table A4-8. Radiochemical Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Plutonium-238 (13981-16-3) IX/Prec/AEA					Plutonium-238 (13981-16-3) Sep/Plate/AEA					Plutonium-239/240 (PU-239/240) IX/Prec/AEA					Plutonium-239/240 (PU-239/240) Sep/Plate/AEA					Potassium-40 (13966-00-2) GEA					Radium-226 (13982-63-3) GEA					Radium-228 (15262-20-1) GEA					Ruthenium-106 (13967-48-1) GEA				
				Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
29	31.5	B1L4T7		0.036	pCi/g	U		0.05						0.011	pCi/g	U		0.013																										
29	31.5	B1L4T7																																										
29	31.5	B1L5N2	duplicate	0.013	pCi/g	U		0.062						0.004	pCi/g	U		0.016																										
29	31.5	B1L5N2	duplicate																																									
43	45.5	B1L4V2		0.01	pCi/g	U		0.047						0.028	pCi/g			0.019																										
43	45.5	B1L4V2																																										
43	45.5	B1L5N6	split						0	pCi/g	U		0.23						0.037	pCi/g	U		0.14	17.1	pCi/g			0.78	0.357	pCi/g			0.11	0.512	pCi/g			0.26	0.43	pCi/g	U		0.43
43	45.5	B1L5N6	split																																									
122	124	B1L4V7		0.004	pCi/g	U		0.042						0.067	pCi/g			0.016																										
122	124	B1L4V7																																										
260	262	B1L4W2		-0.002	pCi/g	U		0.063						0.01	pCi/g			0.005																										
260	262	B1L4W2																																										
283	285	B1L4W7		0.004	pCi/g	U		0.051						0.002	pCi/g	U		0.005																										
283	285	B1L4W7																																										
Equipment blank tied to B1L4T7		B1L5N8																																										
Target Quantitation Limit				1					1					1					1					N/A					N/A					N/A					N/A				

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Technetium-99 (14133-76-7) Sep/GPC					Technetium-99 (14133-76-7) TEVA/LSC					Thorium-228 (14274-82-9) GEA					Thorium-232 (TH-232) GEA					Total beta radiostrontium (SR-RAD) Sep/GPC					Tritium (10028-17-8) 906					Tritium (10028-17-8) CombOx/LSC					Uranium-233/234 (U-233/234) IX/Prec/AEA				
				Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
29	31.5	B1L4T7																						0.14	pCi/g	U		0.38											0.24	pCi/g			0.005
29	31.5	B1L4T7		0.143	pCi/g	U		0.48																										0.064	pCi/g	U	J	2.6					
29	31.5	B1L5N2	duplicate																					-0.38	pCi/g	U		0.35											0.24	pCi/g			0.019
29	31.5	B1L5N2	duplicate	0.104	pCi/g	U		0.53																										-0.623	pCi/g	U	J	2.9					
43	45.5	B1L4V2																						0.44	pCi/g			0.41											0.14	pCi/g			0.005
43	45.5	B1L4V2		0.152	pCi/g	U		0.56																										0.643	pCi/g	U	J	2.8					
43	45.5	B1L5N6	split											0.347	pCi/g			0.045	0.512	pCi/g			0.26	-0.067	pCi/g	U		0.28															
43	45.5	B1L5N6	split						0.36	pCi/g	U		0.601																0.021	pCi/g	U	J	0.114										
122	124	B1L4V7																						-0.84	pCi/g	U		0.35											0.14	pCi/g			0.005
122	124	B1L4V7		0.055	pCi/g	U		0.55																										13.1	pCi/g		J	2.6					
260	262	B1L4W2																						-0.035	pCi/g	U		0.39											0.11	pCi/g			0.006
260	262	B1L4W2		0.145	pCi/g	U		0.61																										511	pCi/g			8.4					
283	285	B1L4W7																						-0.17	pCi/g	U		0.37											0.31	pCi/g			0.017
283	285	B1L4W7		0.061	pCi/g	U		0.42																										1100	pCi/g			12					
Equipment blank tied to B1L4T7		B1L5N8																																										
Target Quantitation Limit				15					15					N/A					N/A					1					N/A					400					1				

Table A4-9. Metal Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cadmium (7440-43-9) 200.8				Cadmium (7440-43-9) 6010				Chromium (7440-47-3) 200.8				Chromium (7440-47-3) 6010				Copper (7440-50-8) 200.8				Copper (7440-50-8) 6010				Hexavalent Chromium (18540-29-9) 7196				Lead (7439-92-1) 200.8				Lead (7439-92-1) 6010			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF	124	ug/kg							5970	ug/kg							8470	ug/kg											3460	ug/kg						
29	31.5	B1L5N2		WSCF	105	ug/kg							4940	ug/kg							8590	ug/kg											3260	ug/kg						
43	45.5	B1L4V2		WSCF	102	ug/kg	U						5480	ug/kg							6370	ug/kg											2850	ug/kg						
43	45.5	B1L5N6	split	EBRLNE																																				
43	45.5	B1L5N6	split	STLSL					140	ug/kg	U						6700	ug/kg							6600	ug/kg			150	ug/kg	U	J					2600	ug/kg		
122	124	B1L4V7		WSCF	100	ug/kg	U						7380	ug/kg							8510	ug/kg											3580	ug/kg						
260	262	B1L4W2		WSCF	101	ug/kg	U						13100	ug/kg							12000	ug/kg											4990	ug/kg						
283	285	B1L4W7		WSCF	168	ug/kg							25000	ug/kg							19800	ug/kg											7690	ug/kg						
Equipment blank tied to B1L4T7		B1L5N8		WSCF	0.1	ug/L	U						0.5	ug/L	U						4.89	ug/L											0.1	ug/L	U					
Target Quantitation Limit					500				500				1000				1000				2500				2500				500				1000				1000			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Mercury (7439-97-6) 200.8				Mercury (7439-97-6) 7471				Silver (7440-22-4) 200.8				Silver (7440-22-4) 6010				Uranium (7440-61-1) 200.8				Uranium (7440-61-1) KPA			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF	50	ug/kg	U						101	ug/kg	U						668	ug/kg						
29	31.5	B1L5N2		WSCF	51	ug/kg	U						101	ug/kg	U						555	ug/kg						
43	45.5	B1L4V2		WSCF	51	ug/kg	U						102	ug/kg	U						372	ug/kg						
43	45.5	B1L5N6	split	EBRLNE																					1030	ug/kg		J
43	45.5	B1L5N6	split	STLSL					7	ug/kg	U	J					200	ug/kg	U	J								
122	124	B1L4V7		WSCF	50	ug/kg	U						100	ug/kg	U						403	ug/kg						
260	262	B1L4W2		WSCF	51	ug/kg	U						101	ug/kg	U						529	ug/kg						
283	285	B1L4W7		WSCF	50	ug/kg	U						100	ug/kg	U						925	ug/kg						
Equipment blank tied to B1L4T7		B1L5N8		WSCF									0.1	ug/L	U						0.05	ug/L	U					
Target Quantitation Limit					200				200				500				500				N/A				1000			

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Table A4-10. Wet Chemistry Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Chloride (16887-00-6) 300				Cyanide (57-12-5) 335.2				Cyanide (57-12-5) 9012				Fluoride (16984-48-8) 300				Nitrate (14797-55-8) 300				Nitrite (14797-65-0) 300				Phosphate (14265-44-2) 300				Sulfate (14808-79-8) 300			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF	1670	ug/kg	DU	J	200	ug/kg	U	J					1960	ug/kg	DU	J	3900	ug/kg	DU	R	1580	ug/kg	DU	R	11700	ug/kg	DU	R	6370	ug/kg	DU	J
29	31.5	B1L5N2	duplicate	WSCF	1670	ug/kg	DU	J	890	ug/kg		J					1960	ug/kg	DU	J	3900	ug/kg	DU	R	1580	ug/kg	DU	R	11700	ug/kg	DU	R	6370	ug/kg	DU	J
43	45.5	B1L4V2		WSCF	1700	ug/kg	DU	J	200	ug/kg	U	J					2000	ug/kg	DU	J	3980	ug/kg	DU	R	1610	ug/kg	DU	R	12000	ug/kg	DU	R	6500	ug/kg	DU	J
43	45.5	B1L5N6	split	STLSL	500	ug/kg	BC	J					130	ug/kg	U	J	210	ug/kg	U	J	2570	ug/kg		J	427	ug/kg	B	J	4200	ug/kg	B	J	4300	ug/kg	B	J
122	124	B1L4V7		WSCF	6560	ug/kg	BD		200	ug/kg	U						2000	ug/kg	DU		4910	ug/kg	BD		1610	ug/kg	DU		12000	ug/kg	DU		13500	ug/kg	BD	
260	262	B1L4W2		WSCF	1810	ug/kg	BD		198	ug/kg	U						2000	ug/kg	DU		92500	ug/kg	D		1610	ug/kg	DU		12000	ug/kg	DU		6500	ug/kg	DU	
283	285	B1L4W7		WSCF	1670	ug/kg	DU		197	ug/kg	U						1960	ug/kg	DU		185000	ug/kg	D		1580	ug/kg	DU		11700	ug/kg	DU		18800	ug/kg	BD	
Equipment blank tied to B1L4T7		B1L5N8		WSCF	35	ug/L	B										29	ug/L	U		195	ug/L	U		72.3	ug/L	U		460	ug/L	U		170	ug/L	U	
Target Quantitation Limit					N/A				500				N/A				500				2500				2500				5000				5000			

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Table A4-11. Volatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	1,1,1-Trichloroethane (71-55-6)				1,1,2,2-Tetrachloroethane (79-34-5)				1,1,2-Trichloroethane (79-00-5)				1,1-Dichloroethane (75-34-3)				1,1-Dichloroethene (75-35-4)				1,2,4-Trimethylbenzene (95-63-6)				1,2,4-Trimethylbenzene (95-63-6)			
					8260				8260				8260				8260				8260				8260				8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T6		WSCF	1.3	ug/kg	U	J	1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U	J	1.3	ug/kg	U									
29	31.5	B1L5N0	duplicate	WSCF	1.2	ug/kg	U	J	1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	J	1.2	ug/kg	U									
43	45.5	B1L4V0		WSCF	1.2	ug/kg	U	J	1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	J	1.2	ug/kg	U									
43	45.5	B1L5N5	split	STLSL	0.15	ug/kg	U	J	0.14	ug/kg	U	J	0.29	ug/kg	U	J	0.97	ug/kg	U	J	0.56	ug/kg	U	J	0.22	ug/kg	U	J				
122	124	B1L4V5		WSCF	1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U									
122	124	B1L4V7		WSCF																									150	ug/kg	U	
260	262	B1L4W0		WSCF	1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U									
260	262	B1L4W2		WSCF																									190	ug/kg	U	
283	285	B1L4W5		WSCF	1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U									
Equipment blank tied to B1L4T6		B1L5N8		WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U									
Primary field blank tied to B1L4T6		B1L4T4		WSCF	100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	J	100	ug/kg	U									
Split field blank tied to B1L4T6		B1L4T9		WSCF	100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	J	100	ug/kg	U									
Field blank tied to B1L4V5		B1L4V4		WSCF	100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U									
Duplicate field blank tied to B1L4T6		B1L5M8		WSCF	100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	J	100	ug/kg	U									
Trip blank tied to B1L4T6		B1L5N7		WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U									
Target Quantitation Limit					5				N/A				N/A				10				N/A				N/A				N/A			

Table A4-11. Volatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	1,2-Dichloroethane (107-06-2)				1,2-Dichloroethene (Total) (540-59-0)				1,2-Dichloropropane (78-87-5)				1-Butanol (71-36-3)				2-Butanone (78-93-3)				2-Hexanone (591-78-6)				2-Pentanone, 4-Methyl (108-10-1)			
				8260				8260				8260				8260				8260				8260				8260			
				Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T6		1.3	ug/kg	U	J	1.3	ug/kg	U		1.3	ug/kg	U		26	ug/kg	U	J	1.3	ug/kg	U	J	1.3	ug/kg	U		1.3	ug/kg	U	J
29	31.5	B1L5N0	duplicate	1.2	ug/kg	U	J	1.2	ug/kg	U		1.2	ug/kg	U		25	ug/kg	U	J	1.2	ug/kg	U	J	1.2	ug/kg	U		1.2	ug/kg	U	J
43	45.5	B1L4V0		1.2	ug/kg	U	J	1.2	ug/kg	U		1.2	ug/kg	U		23	ug/kg	U	J	1.2	ug/kg	U	J	1.2	ug/kg	U		1.2	ug/kg	U	J
43	45.5	B1L5N5	split	0.45	ug/kg	U	J	0.56	ug/kg	U	J	0.38	ug/kg	U	J	3.5	ug/kg	U	J	1.4	ug/kg	U	J	0.29	ug/kg	U	J	1.6	ug/kg	U	J
122	124	B1L4V5		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		110	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
122	124	B1L4V7																													
260	262	B1L4W0		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		21	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
260	262	B1L4W2																													
283	285	B1L4W5		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		24	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
Equipment blank tied to B1L4T6		B1L5N8		1	ug/L	U		1	ug/L	U		1	ug/L	U		100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Primary field blank tied to B1L4T6		B1L4T4		100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U		2000	ug/kg	U	J	100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U	J
Split field blank tied to B1L4T6		B1L4T9		100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U		2000	ug/kg	U	J	100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U	J
Field blank tied to B1L4V5		B1L4V4		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		10000	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	
Duplicate field blank tied to B1L4T6		B1L5M8		100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U		2000	ug/kg	U	J	100	ug/kg	U	J	100	ug/kg	U		100	ug/kg	U	J
Trip blank tied to B1L4T6		B1L5N7		1	ug/L	U		1	ug/L	U		1	ug/L	U		20	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit				5				N/A				N/A				5000				10				N/A				10			

Table A4-11. Volatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Acetone (67-64-1) 8260				Acetonitrile (75-05-8) 8260				Benzene (71-43-2) 8260				Bromodichloromethane (75-27-4) 8260				Bromoform (75-25-2) 8260				Bromomethane (74-83-9) 8260				Carbon disulfide (75-15-0) 8260			
				Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T6		1.3	ug/kg	U	J					1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U	
29	31.5	B1L5N0	duplicate	1.2	ug/kg	U	J					1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
43	45.5	B1L4V0		1.2	ug/kg	U	J					1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
43	45.5	B1L5N5	split	3.9	ug/kg	U	J	2	ug/kg	U	J	0.17	ug/kg	U	J	0.34	ug/kg	U	J	0.25	ug/kg	U	J	0.32	ug/kg	U	J	0.56	ug/kg	U	J
122	124	B1L4V5		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
122	124	B1L4V7																													
260	262	B1L4W0		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
260	262	B1L4W2																													
283	285	B1L4W5		1.2	ug/kg	U						1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
Equipment blank tied to B1L4T6		B1L5N8		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Primary field blank tied to B1L4T6		B1L4T4		100	ug/kg	U	J					100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	
Split field blank tied to B1L4T6		B1L4T9		100	ug/kg	U	J					100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	
Field blank tied to B1L4V5		B1L4V4		100	ug/kg	U						100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	
Duplicate field blank tied to B1L4T6		B1L5M8		100	ug/kg	U	J					100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	
Trip blank tied to B1L4T6		B1L5N7		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit				20				N/A				5				N/A				N/A				N/A				N/A			

Table A4-11. Volatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Carbon tetrachloride (56-23-5) 8260				Chlorobenzene (108-90-7) 8260				Chloroethane (75-00-3) 8260				Chloroform (67-66-3) 8260				Chloromethane (74-87-3) 8260				cis-1,2-Dichloroethylene (156-59-2) 8260				cis-1,3-Dichloropropene (10061-01-5) 8260			
				Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T6		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U	J	1.3	ug/kg	U	
29	31.5	B1L5N0	duplicate	1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	J	1.2	ug/kg	U	
43	45.5	B1L4V0		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	J	1.2	ug/kg	U	
43	45.5	B1L5N5	split	0.93	ug/kg	U	J	0.13	ug/kg	U	J	0.36	ug/kg	U	J	0.15	ug/kg	U	J	0.45	ug/kg	U	J	0.44	ug/kg	U	J	0.75	ug/kg	U	J
122	124	B1L4V5		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
122	124	B1L4V7																													
260	262	B1L4W0		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
260	262	B1L4W2																													
283	285	B1L4W5		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
Equipment blank tied to B1L4T6		B1L5N8		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Primary field blank tied to B1L4T6		B1L4T4		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U						100	ug/kg	U	
Split field blank tied to B1L4T6		B1L4T9		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U						100	ug/kg	U	
Field blank tied to B1L4V5		B1L4V4		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U						100	ug/kg	U	
Duplicate field blank tied to B1L4T6		B1L5M8		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U						100	ug/kg	U	
Trip blank tied to B1L4T6		B1L5N7		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit				N/A				N/A				N/A				N/A				N/A				1				N/A			

Table A4-11. Volatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Cyclohexanone (108-94-1) 8260				Cyclohexanone (108-94-1) 8270				Dibromochloromethane (124-48-1) 8260				Ethylbenzene (100-41-4) 8260				Hexane (110-54-3) 8260				Methylene chloride (75-09-2) 8260				n-Butylbenzene (104-51-8) 8260			
				Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T6										1.3	ug/kg	U		1.3	ug/kg	U	J					1.3	ug/kg	U	J	1.3	ug/kg	U	J
29	31.5	B1L5N0	duplicate									1.2	ug/kg	U		1.2	ug/kg	U	J					1.2	ug/kg	U	J	1.2	ug/kg	U	J
43	45.5	B1L4V0										1.2	ug/kg	U		1.2	ug/kg	U	J					1.2	ug/kg	U	J	1.2	ug/kg	U	J
43	45.5	B1L5N5	split	14	ug/kg	U	J					0.29	ug/kg	U	J	0.19	ug/kg	U	J	0.46	ug/kg	U	J	2.6	ug/kg	U	J	0.54	ug/kg	U	J
122	124	B1L4V5										1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U	
122	124	B1L4V7						150	ug/kg	U																					
260	262	B1L4W0										1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U	
260	262	B1L4W2						140	ug/kg	U																					
283	285	B1L4W5										1.2	ug/kg	U		1.2	ug/kg	U						1.2	ug/kg	U		1.2	ug/kg	U	
Equipment blank tied to B1L4T6		B1L5N8										1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Primary field blank tied to B1L4T6		B1L4T4										100	ug/kg	U		100	ug/kg	U	J					100	ug/kg	U	J	100	ug/kg	U	J
Split field blank tied to B1L4T6		B1L4T9										100	ug/kg	U		100	ug/kg	U	J					100	ug/kg	U	J	100	ug/kg	U	J
Field blank tied to B1L4V5		B1L4V4										100	ug/kg	U		100	ug/kg	U						100	ug/kg	U		100	ug/kg	U	
Duplicate field blank tied to B1L4T6		B1L5M8										100	ug/kg	U		100	ug/kg	U	J					100	ug/kg	U	J	100	ug/kg	U	J
Trip blank tied to B1L4T6		B1L5N7										1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Target Quantitation Limit				N/A				N/A				N/A				5				N/A				5				5			

Table A4-11. Volatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Styrene (100-42-5) 8260				Tetrachloroethene (127-18-4) 8260				Toluene (108-88-3) 8260				trans-1,2-Dichloroethylene (156-60-5) 8260				trans-1,3-Dichloropropene (10061-02-6) 8260			
				Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T6		1.3	ug/kg	U		1.3	ug/kg	U	J	1.3	ug/kg	U		1.3	ug/kg	U	J	1.3	ug/kg	U	
29	31.5	B1L5N0	duplicate	1.2	ug/kg	U		1.2	ug/kg	U	J	1.2	ug/kg	U		1.2	ug/kg	U	J	1.2	ug/kg	U	
43	45.5	B1L4V0		1.2	ug/kg	U		1.2	ug/kg	U	J	1.2	ug/kg	U		1.2	ug/kg	U	J	1.2	ug/kg	U	
43	45.5	B1L5N5	split	1.2	ug/kg	U	J	0.28	ug/kg	U	J	0.13	ug/kg	U	J	0.23	ug/kg	U	J	0.21	ug/kg	U	J
122	124	B1L4V5		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
122	124	B1L4V7																					
260	262	B1L4W0		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
260	262	B1L4W2																					
283	285	B1L4W5		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
Equipment blank tied to B1L4T6		B1L5N8		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Primary field blank tied to B1L4T6		B1L4T4		100	ug/kg	U		100	ug/kg	U	J	100	ug/kg	U						100	ug/kg	U	
Split field blank tied to B1L4T6		B1L4T9		100	ug/kg	U		100	ug/kg	U	J	100	ug/kg	U						100	ug/kg	U	
Field blank tied to B1L4V5		B1L4V4		100	ug/kg	U		100	ug/kg	U		100	ug/kg	U						100	ug/kg	U	
Duplicate field blank tied to B1L4T6		B1L5M8		100	ug/kg	U		100	ug/kg	U	J	100	ug/kg	U						100	ug/kg	U	
Trip blank tied to B1L4T6		B1L5N7		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit				N/A				5				5				1				N/A			

Table A4-12. Volatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Trichloroethene (79-01-6) 8260				Vinyl chloride (75-01-4) 8260				Xylenes (total) (1330-20-7) 8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T6		WSCF	1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U	J
29	31.5	B1L5N0	duplicate	WSCF	1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	J
43	45.5	B1L4V0		WSCF	1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	J
43	45.5	B1L5N5	split	STLSL	0.37	ug/kg	U	J	0.24	ug/kg	U	J	0.88	ug/kg	U	J
122	124	B1L4V5		WSCF	1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
260	262	B1L4W0		WSCF	1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
283	285	B1L4W5		WSCF	1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
Equipment blank tied to B1L4T6		B1L5N8		WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U	
Primary field blank tied to B1L4T6		B1L4T4		WSCF	100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	J
Split field blank tied to B1L4T6		B1L4T9		WSCF	100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	J
Field blank tied to B1L4V5		B1L4V4		WSCF	100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	
Duplicate field blank tied to B1L4T6		B1L5M8		WSCF	100	ug/kg	U		100	ug/kg	U		100	ug/kg	U	
Trip blank tied to B1L4T6		B1L5N7		WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit					5				N/A				5			

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Table A4-13. Semivolatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	1,2,4-Trichlorobenzene (120-82-1) 8270				1,2-Dichlorobenzene (95-50-1) 8270				1,3-Dichlorobenzene (541-73-1) 8270				1,4-Dichlorobenzene (106-46-7) 8270				2,4,5-Trichlorophenol (95-95-4) 8270				2,4,6-Trichlorophenol (88-06-2) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF	150	ug/kg	U										260	ug/kg	U									
29	31.5	B1L5N2	duplicate	WSCF	160	ug/kg	U										260	ug/kg	U									
43	45.5	B1L4V2	*	WSCF	160	ug/kg	U										260	ug/kg	U									
122	124	B1L4V7		WSCF	150	ug/kg	U		230	ug/kg	U		280	ug/kg	U		260	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
260	262	B1L4W2		WSCF	140	ug/kg	U		250	ug/kg	U		270	ug/kg	U		250	ug/kg	U		140	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF	160	ug/kg	U										280	ug/kg	U									
Equipment blank tied to B1L4T7		B1L5N8		WSCF	2	ug/L	U										1.6	ug/L	U									
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	2,4-Dichlorophenol (120-83-2) 8270				2,4-Dimethylphenol (105-67-9) 8270				2,4-Dinitrophenol (51-28-5) 8270				2,4-Dinitrotoluene (121-14-2) 8270				2,6-Dinitrotoluene (606-20-2) 8270				2-Butoxyethanol (111-76-2) 8270				2-Chloronaphthalene (91-58-7) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF													150	ug/kg	U													
29	31.5	B1L5N2	duplicate	WSCF													160	ug/kg	U													
43	45.5	B1L4V2	*	WSCF													160	ug/kg	U													
122	124	B1L4V7		WSCF	180	ug/kg	U		230	ug/kg	U		640	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
260	262	B1L4W2		WSCF	140	ug/kg	U		230	ug/kg	U		620	ug/kg	U		140	ug/kg	U		140	ug/kg	U		210	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF													160	ug/kg	U													
Equipment blank tied to B1L4T7		B1L5N8		WSCF													0.5	ug/L	U						1.8	ug/L						
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	2-Chlorophenol (95-57-8) 8270				2-Methylnaphthalene (91-57-6) 8270				2-Methylphenol (cresol, o-) (95-48-7) 8270				2-Naphthylamine (91-59-8) 8270				2-Nitroaniline (88-74-4) 8270				2-Nitrophenol (88-75-5) 8270				2-Picoline (109-06-8) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF	150	ug/kg	U																									
29	31.5	B1L5N2	duplicate	WSCF	160	ug/kg	U																									
43	45.5	B1L4V2	*	WSCF	160	ug/kg	U																									
122	124	B1L4V7		WSCF	150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		310	ug/kg	U		150	ug/kg	U		180	ug/kg	U		1000	ug/kg	U	
260	262	B1L4W2		WSCF	140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		390	ug/kg	U		140	ug/kg	U		140	ug/kg	U		1000	ug/kg	U	
283	285	B1L4W7		WSCF	160	ug/kg	U																									
Equipment blank tied to B1L4T7		B1L5N8		WSCF	0.5	ug/L	U																									
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Table A4-13. Semivolatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	3,3'-Dichlorobenzidine (91-94-1) 8270				3+4 Methylphenol (cresol, m+p) (65794-96-9) 8270				3-Nitroaniline (99-09-2) 8270				4,6-Dinitro-2-methylphenol (534-52-1) 8270				4-Bromophenylphenyl ether (101-55-3) 8270				4-Chloro-3-methylphenol (59-50-7) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF																					150	ug/kg	U	
29	31.5	B1L5N2	duplicate	WSCF																					160	ug/kg	U	
43	45.5	B1L4V2	*	WSCF																					160	ug/kg	U	
122	124	B1L4V7		WSCF	340	ug/kg	U		150	ug/kg	U		190	ug/kg	U		340	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
260	262	B1L4W2		WSCF	270	ug/kg	U		140	ug/kg	U		140	ug/kg	U		230	ug/kg	U		140	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF																					160	ug/kg	U	
Equipment blank tied to B1L4T7		B1L5N8		WSCF																					0.5	ug/L	U	
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	4-Chloroaniline (106-47-8) 8270				4-Chlorophenylphenyl ether (7005-72-3) 8270				4-Nitroaniline (100-01-6) 8270				4-Nitrophenol (100-02-7) 8270				Acenaphthene (83-32-9) 8270				Acenaphthylene (208-96-8) 8270				Anthracene (120-12-7) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF													340	ug/kg	U		150	ug/kg	U									
29	31.5	B1L5N2	duplicate	WSCF													340	ug/kg	U		160	ug/kg	U									
43	45.5	B1L4V2	*	WSCF													340	ug/kg	U		160	ug/kg	U									
122	124	B1L4V7		WSCF	290	ug/kg	U		150	ug/kg	U		290	ug/kg	U		340	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
260	262	B1L4W2		WSCF	310	ug/kg	U		140	ug/kg	U		210	ug/kg	U		210	ug/kg	U		140	ug/kg	U		140	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF													230	ug/kg	U		160	ug/kg	U									
Equipment blank tied to B1L4T7		B1L5N8		WSCF													3	ug/L	U		2.7	ug/L	U									
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Benzo(a)anthracene (56-55-3) 8270				Benzo(a)pyrene (50-32-8) 8270				Benzo(b)fluoranthene (205-99-2) 8270				Benzo(ghi)perylene (191-24-2) 8270				Benzo(k)fluoranthene (207-08-9) 8270				Benzoic acid (65-85-0) 8270				Benzothiazole (95-16-9) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF																												
29	31.5	B1L5N2	duplicate	WSCF																												
43	45.5	B1L4V2	*	WSCF																												
122	124	B1L4V7		WSCF	150	ug/kg	U		230	ug/kg	U		210	ug/kg	U		330	ug/kg	U		210	ug/kg	U		1000	ug/kg	U		150	ug/kg	U	
260	262	B1L4W2		WSCF	140	ug/kg	U		210	ug/kg	U		170	ug/kg	U		230	ug/kg	U		170	ug/kg	U		410	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF																												
Equipment blank tied to B1L4T7		B1L5N8		WSCF																												
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Table A4-14. Semivolatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Benzyl alcohol (100-51-6)				Bis(2-chloro-1-methylethyl)ether (108-60-1)				Bis(2-Chloroethoxy)methane (111-91-1)				Bis(2-chloroethyl) ether (111-44-4)				Bis(2-ethylhexyl) phthalate (117-81-7)				Butylbenzylphthalate (85-68-7)				Carbazole (86-74-8)				Chrysene (218-01-9)			
					8270				8270				8270				8270				8270				8270				8270				8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF																																
29	31.5	B1L5N2	duplicate	WSCF																																
43	45.5	B1L4V2		WSCF																																
43	45.5	B1L5N6	split*	STLSL																																
122	124	B1L4V7		WSCF	150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
260	262	B1L4W2		WSCF	140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF																																
Equipment blank tied to B1L4T7		B1L5N8		WSCF																																
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Decane (124-18-5)				Dibenz[a,h]anthracene (53-70-3)				Dibenzofuran (132-64-9)				Dibutyl Butylphosphonate (78-46-6)				Diethylphthalate (84-66-2)				Dimethyl phthalate (131-11-3)				Di-n-butylphthalate (84-74-2)				Di-n-octylphthalate (117-84-0)				Dodecane (112-40-3)			
					8270				8270				8270				8270				8270				8270				8270				8270				8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF																																				
29	31.5	B1L5N2	duplicate	WSCF																									200	ug/kg										
43	45.5	B1L4V2		WSCF																																				
43	45.5	B1L5N6	split*	STLSL																																				
122	124	B1L4V7		WSCF	150	ug/kg	U		340	ug/kg	U		150	ug/kg	U		150	ug/kg	U		280	ug/kg	J		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		170	ug/kg	U	
260	262	B1L4W2		WSCF	210	ug/kg	U		270	ug/kg	U		140	ug/kg	U		140	ug/kg	U		210	ug/kg	U		140	ug/kg	U		140	ug/kg	U		210	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF																																				
Equipment blank tied to B1L4T7		B1L5N8		WSCF																																				
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Fluoranthene (206-44-0)				Fluorene (86-73-7)				Hexachlorobenzene (118-74-1)				Hexachlorobutadiene (87-68-3)				Hexachlorocyclopentadiene (77-47-4)				Hexachloroethane (67-72-1)				Hexadecanoic acid (9Cl) (57-10-3)				Indeno(1,2,3-cd)pyrene (193-39-5)			
					8270				8270				8270				8270				8270				8270				8270				8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF																																
29	31.5	B1L5N2	duplicate	WSCF																																
43	45.5	B1L4V2		WSCF																																
43	45.5	B1L5N6	split*	STLSL																																
122	124	B1L4V7		WSCF	150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		260	ug/kg	U						340	ug/kg	U	
260	262	B1L4W2		WSCF	140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		160	ug/kg	U		230	ug/kg	U						250	ug/kg	U	
283	285	B1L4W7		WSCF																																
Equipment blank tied to B1L4T7		B1L5N8		WSCF																									7.4	ug/L	J					
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Table A4-14. Semivolatile Organic Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Isophorone (78-59-1) 8270				Naphthalene (91-20-3) 8270				Nitrobenzene (98-95-3) 8270				n-Nitrosodi-n-dipropylamine (621-64-7) 8270				n-Nitrosodiphenylamine (86-30-6) 8270				Pentachlorophenol (87-86-5) 8270				Phenanthrene (85-01-8) 8270				Phenol (108-95-2) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF													150	ug/kg	U						410	ug/kg	U						150	ug/kg	U	
29	31.5	B1L5N2	duplicate	WSCF													160	ug/kg	U						410	ug/kg	U						160	ug/kg	U	
43	45.5	B1L4V2		WSCF													160	ug/kg	U						420	ug/kg	U						160	ug/kg	U	
43	45.5	B1L5N6	split*	STLSL																																
122	124	B1L4V7		WSCF	150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		150	ug/kg	U		170	ug/kg	U		410	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
260	262	B1L4W2		WSCF	140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		140	ug/kg	U		160	ug/kg	U		210	ug/kg	U		140	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF													160	ug/kg	U						230	ug/kg	U						160	ug/kg	U	
Equipment blank tied to B1L4T7		B1L5N8		WSCF													0.6	ug/L	U						1	ug/L	U						0.5	ug/L	U	
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Pyrene (129-00-0) 8270				Pyridine (110-86-1) 8270				Tetradecanoic acid (544-63-8) 8270				Total cresols (1319-77-3) 8270				Tributyl phosphate (126-73-8) 8270				Tris-2-chloroethyl phosphate (115-96-8) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF	150	ug/kg	U														150	ug/kg	U	J				
29	31.5	B1L5N2	duplicate	WSCF	160	ug/kg	U														160	ug/kg	U	J				
43	45.5	B1L4V2		WSCF	160	ug/kg	U														160	ug/kg	U	J				
43	45.5	B1L5N6	split*	STLSL																	35	ug/kg	U	J				
122	124	B1L4V7		WSCF	150	ug/kg	U		340	ug/kg	U						220	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
260	262	B1L4W2		WSCF	140	ug/kg	U		140	ug/kg	U						170	ug/kg	U		140	ug/kg	U		140	ug/kg	U	
283	285	B1L4W7		WSCF	160	ug/kg	U														160	ug/kg	U					
Equipment blank tied to B1L4T7		B1L5N8		WSCF	0.5	ug/L	U						12	ug/L	J						0.5	ug/L	U					
Target Quantitation Limit					N/A				N/A				N/A				N/A				3300				N/A			

*TBP required a split sample.

Table A4-15. Miscellaneous Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Aroclor-1016 (12674-11-2) 8082				Aroclor-1221 (11104-28-2) 8082				Aroclor-1232 (11141-16-5) 8082				Aroclor-1242 (53469-21-9) 8082				Aroclor-1248 (12672-29-6) 8082				Aroclor-1254 (11097-69-1) 8082				Aroclor-1260 (11096-82-5) 8082				Aroclor-1262 (37324-23-5) 8082				Aroclor-1268 (11100-14-4) 8082			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF	10	ug/kg	U		20	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
29	31.5	B1L5N2	duplicate	WSCF	10	ug/kg	U		20	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
43	45.5	B1L4V2		WSCF	10	ug/kg	U		21	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
43	45.5	B1L5N6	split	STLSL	6.4	ug/kg	U		6.4	ug/kg	U		6.4	ug/kg	U		6.4	ug/kg	U		6.4	ug/kg	U		3.9	ug/kg	U		3.9	ug/kg	U		3.9	ug/kg	U		3.9	ug/kg	U	
122	124	B1L4V7		WSCF	10	ug/kg	U		21	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
260	262	B1L4W2		WSCF	10	ug/kg	U		20	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
283	285	B1L4W7		WSCF	12	ug/kg	U		23	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U	
Target Quantitation Limit					16.5				16.5				16.5				16.5				16.5				16.5				16.5				16.5				16.5			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Oil and grease (OIL/GREASE) 1664A				Oil and grease (OIL/GREASE) 413.1				Total petroleum hydrocarbons - diesel range (TPHDIESEL) WDOE TPH				Total petroleum hydrocarbons - gasoline range (TPHGASOLINE) WDOE TPH				Total petroleum hydrocarbons - kerosene range (TPHKEROSENE) WDOE TPH			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF	250000	ug/kg	U						3100	ug/kg	U		250	ug/kg	U		3100	ug/kg	U	
29	31.5	B1L5N2	duplicate	WSCF	250000	ug/kg	U						3100	ug/kg	U		250	ug/kg	U		3100	ug/kg	U	
43	45.5	B1L4V2		WSCF	250000	ug/kg	U						3100	ug/kg	U		250	ug/kg	U		3100	ug/kg	U	
43	45.5	B1L5N6	split	STLSL					78400	ug/kg	U		1600	ug/kg	U	J	8	ug/kg	U	J	520	ug/kg	U	J
122	124	B1L4V7		WSCF	250000	ug/kg	U						3100	ug/kg	U		250	ug/kg	U		3100	ug/kg	U	
260	262	B1L4W2		WSCF	250000	ug/kg							3100	ug/kg	U		250	ug/kg	U		3100	ug/kg	U	
283	285	B1L4W7		WSCF	250000	ug/kg	U						3500	ug/kg	U		250	ug/kg	U		3500	ug/kg	U	
Target Quantitation Limit					N/A				200,000				5000				5000				5000			

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Table A4-16. Physical Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Bulk density - dry (BULKDENSITY-DRY) D2937				Bulk density - wet (BULKDENSITY-WET) D2937				Percent moisture (dry sample) (%MOISTURE-D) D2216				Percent moisture (wet sample) (%MOISTURE) D2216				Percent passing 1.5 inch sieve (PAS1.5IN) D422				Percent passing 3 inch sieve (PAS3IN) D422				Percent passing 3/4 inch sieve (PAS3/4IN) D422				Percent passing 3/8 inch sieve (PAS3/8IN) D422				Percent passing No.10 sieve (PAS#10) D422				Percent passing No.100 sieve (PAS#100) D422			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF																																								
29	31.5	B1L4T7		SHAW									4.2	%			4.1	%																										
29	31.5	B1L5N2	duplicate	WSCF																																								
43	45.5	B1L4V2		WSCF																																								
43	45.5	B1L4V2		SHAW	1740	kg/m3			1860	kg/m3			4.6	%			4.4	%			100	%			100	%			100	%			99.3	%			95.4	%			12.2	%		
43	45.5	B1L5N5	split	STLSL																																								
43	45.5	B1L5N6	split	STLSL																																								
122	124	B1L4V7		WSCF																																								
122	124	B1L4V7		FIELD																																								
122	124	B1L4V7		SHAW	1700	kg/m3			1756	kg/m3			3.5	%			3.3	%			100	%			100	%			100	%			100	%			99	%			12	%		
260	262	B1L4W2		WSCF																																								
260	262	B1L4W2		SHAW	1550	kg/m3			1613	kg/m3							4.1	%			100	%			100	%			100	%			100	%			99.9	%			16.5	%		
283	285	B1L4W7		WSCF																																								
283	285	B1L4W7		SHAW	1717	kg/m3			2007	kg/m3							14.3	%			100	%			100	%			100	%			100	%			99.3	%			98.1	%		
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Percent passing No.140 sieve (PAS#140) D422				Percent passing No.20 sieve (PAS#20) D422				Percent passing No.200 sieve (PAS#200) D422				Percent passing No.4 sieve (PAS#4) D422				Percent passing No.40 sieve (PAS#40) D422				Percent passing No.60 sieve (PAS#60) D422				Percent Solids (%SOLIDS) Gravimetry				pH Measurement (PH) 150.1				pH Measurement (PH) 9045				Total solids (TS) 160.3			
				Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7																														8.74	pH		J								
29	31.5	B1L4T7																										95.9	%														
29	31.5	B1L5N2	duplicate																													8.86	pH		J								
43	45.5	B1L4V2																														8.7	pH		J								
43	45.5	B1L4V2		9.8	%			79.2	%			8.1	%			98.9	%			35.3	%			18.4	%			95.6	%														
43	45.5	B1L5N5	split																																					2.3	%		
43	45.5	B1L5N6	split																																	8.3	pH		J	4	%		
122	124	B1L4V7																														8.72	pH										
122	124	B1L4V7																										96.7	%														
122	124	B1L4V7		9.2	%			85.6	%			7.2	%			100	%			38.2	%			19.4	%																		
260	262	B1L4W2																														8.43	pH										
260	262	B1L4W2		11.6	%			97	%			8.6	%			100	%			71.8	%			35.5	%																		
283	285	B1L4W7																														8.14	pH										
283	285	B1L4W7		96.5	%			98.9	%			85.2	%			99.8	%			98.7	%			98.5	%																		
Target Quantitation Limit				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Table A4-16. Physical Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Percent passing No.100 sieve (PAS#100) D422				Percent passing No.140 sieve (PAS#140) D422				Percent passing No.20 sieve (PAS#20) D422				Percent passing No.200 sieve (PAS#200) D422				Percent passing No.4 sieve (PAS#4) D422				Percent passing No.40 sieve (PAS#40) D422				Percent passing No.60 sieve (PAS#60) D422				Percent Solids (% SOLIDS) Gravimetry				pH Measurement (PH) 150.1			
				Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7																																		8.74	pH		J
29	31.5	B1L4T7																														95.9	%						
29	31.5	B1L5N2	duplicate																																	8.86	pH		J
43	45.5	B1L4V2																																		8.7	pH		J
43	45.5	B1L4V2		12.2	%			9.8	%			79.2	%			8.1	%			98.9	%			35.3	%			18.4	%			95.6	%						
43	45.5	B1L5N5	split																																				
43	45.5	B1L5N6	split																																				
122	124	B1L4V7																																		8.72	pH		
122	124	B1L4V7																														96.7	%						
122	124	B1L4V7		12	%			9.2	%			85.6	%			7.2	%			100	%			38.2	%			19.4	%										
260	262	B1L4W2																																		8.43	pH		
260	262	B1L4W2		16.5	%			11.6	%			97	%			8.6	%			100	%			71.8	%			35.5	%										
283	285	B1L4W7																																		8.14	pH		
283	285	B1L4W7		98.1	%			96.5	%			98.9	%			85.2	%			99.8	%			98.7	%			98.5	%										
Target Quantitation Limit				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	pH Measurement (PH) 9045				Total solids (TS) 160.3			
				Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
29	31.5	B1L4T7									
29	31.5	B1L4T7									
29	31.5	B1L5N2	duplicate								
43	45.5	B1L4V2									
43	45.5	B1L4V2									
43	45.5	B1L5N5	split					2.3	%		
43	45.5	B1L5N6	split	8.3	pH		J	4	%		
122	124	B1L4V7									
122	124	B1L4V7									
122	124	B1L4V7									
260	262	B1L4W2									
260	262	B1L4W2									
283	285	B1L4W7									
283	285	B1L4W7									
Target Quantitation Limit				N/A				N/A			

Table A4-17. Radiochemical Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Americium-241 (14596-10-2)					Bismuth-214 (14733-03-0)					Cesium-137 (10045-97-3)					Gross alpha (12587-46-1)					Gross beta (12587-47-2)					Lead-212 (15092-94-1)					Lead-214 (15067-28-4)				
					GEA					GEA					GEA					ALPHA_LSC_AE					BETA_LSC_AE					GEA					GEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
22	22.5	B1L4Y7		ESL											4.85	pCi/g			0.229	36.3	pCi/g	U			80.2	pCi/g	U			0.496	pCi/g			0.656					
30.5	31	B1L500		ESL																34.9	pCi/g	U			77.2	pCi/g	U			1.41	pCi/g			0.597					
39.5	40	B1L504		ESL																37.1	pCi/g	U			82.1	pCi/g	U			0.633	pCi/g			0.473	2.37	pCi/g			0.531
59	59.5	B1L512		ESL																35.2	pCi/g	U			77.9	pCi/g	U			0.955	pCi/g			0.5					
72.5	73	B1L517		ESL																38	pCi/g	U			84.1	pCi/g	U			0.82	pCi/g			0.354	1.04	pCi/g			0.401
77	77.5	B1L519		ESL																35.7	pCi/g	U			78.9	pCi/g	U			0.888	pCi/g			0.543					
90	90.5	B1L524		ESL																35	pCi/g	U			77.4	pCi/g	U			0.701	pCi/g			0.356	2.07	pCi/g			0.516
99.5	100	B1L528		ESL						0.811	pCi/g			0.329						35.4	pCi/g	U			78.3	pCi/g	U			1.1	pCi/g			0.363	1.64	pCi/g			0.518
108	108.5	B1L531		ESL																35.9	pCi/g	U			79.5	pCi/g	U			0.965	pCi/g			0.51					
119.5	120	B1L536		ESL																36.3	pCi/g	U			80.3	pCi/g	U			0.542	pCi/g			0.511	1.52	pCi/g			0.371
130.5	131	B1L540		ESL																36.8	pCi/g	U			81.3	pCi/g	U			0.726	pCi/g			0.375	0.967	pCi/g			0.363
137	137.5	B1L543		ESL																35.6	pCi/g	U			78.8	pCi/g	U			0.894	pCi/g			0.613					
147	147.5	B1L547		ESL																35.2	pCi/g	U			77.9	pCi/g	U			0.708	pCi/g			0.44					
162.5	163	B1L553		ESL						0.567	pCi/g			0.366						35.6	pCi/g	U			78.8	pCi/g	U			0.765	pCi/g			0.41	0.89	pCi/g			0.509
172	172.5	B1L557		ESL																36.4	pCi/g	U			80.4	pCi/g	U			0.923	pCi/g			0.459					
185	185.5	B1L562		ESL																47.4	pCi/g	U			105	pCi/g	U			0.782	pCi/g			0.54					
199.5	200	B1L568		ESL																35.7	pCi/g	U			79	pCi/g	U			0.312	pCi/g			0.426					
204.5	205	B1L570		ESL																35.9	pCi/g	U			79.5	pCi/g	U			0.644	pCi/g			0.543	0.906	pCi/g			0.429
222	222.5	B1L577		ESL																36.5	pCi/g	U			80.7	pCi/g	U			0.65	pCi/g			0.413					
234.5	235	B1L582		ESL																35.8	pCi/g	U			79.1	pCi/g	U			0.563	pCi/g			0.307	0.634	pCi/g			0.432
247	247.5	B1L587		ESL																35.9	pCi/g	U			79.5	pCi/g	U			0.653	pCi/g			0.374	1.24	pCi/g			0.455
259.5	260	B1L592		ESL																36.3	pCi/g	U			80.2	pCi/g	U												
269.5	270	B1L596		ESL																35.3	pCi/g	U			78.1	pCi/g	U			0.664	pCi/g			0.466					
282.5	283	B1L5B1		ESL						0.868	pCi/g			0.385						35	pCi/g	U			77.5	pCi/g	U			1.21	pCi/g			0.492	2.21	pCi/g			0.612
287	287.5	B1L5B3		ESL																36.6	pCi/g	U			80.8	pCi/g	U			1.66	pCi/g			0.687					
292	292.5	B1L5B5		ESL																37.3	pCi/g	U			82.5	pCi/g	U			1.12	pCi/g			0.487	2.88	pCi/g			0.718
297	297.5	B1L5B7		ESL																35.8	pCi/g	U			79.2	pCi/g	U												
304.5	305	B1L5C0		ESL						0.709	pCi/g			0.334						33.2	pCi/g	U			73.5	pCi/g	U			0.808	pCi/g			0.382	0.864	pCi/g			0.394
314.5	315	B1L5C4		ESL																33.9	pCi/g	U			75	pCi/g	U			0.492	pCi/g			0.521					
LAB	LAB	B1M5X1		ESL	15.7	pCi/g			5.06	1.11	pCi/g			0.868	8.48	pCi/g			0.445	101	pCi/g				145	pCi/g				0.992	pCi/g			1.01	7.79	pCi/g			1.11

Table A4-17. Radiochemical Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Potassium-40 (13966-00-2) GEA					Potassium-40 (13966-00-2) GAMMA_GS_AE					Radium-224 (13233-32-4) GEA					Radium-226 (13982-63-3) GEA					Technetium-99 (14133-76-7) RADISO_ICPMS_ASTM_AE					Uranium-238 (U-238) RADISO_ICPMS_ASTM_AE				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
22	22.5	B1L4Y7		ESL	16	pCi/g			2.48	65.5	pCi/g			7.19											45.8	pCi/g	U			0.13	pCi/g			
30.5	31	B1L500		ESL	17.2	pCi/g			1.9	59.4	pCi/g			9.48											44.1	pCi/g	U			0.256	pCi/g			
39.5	40	B1L504		ESL	19.2	pCi/g			2.06	61.6	pCi/g			9.49											46.9	pCi/g	U			0.133	pCi/g			
59	59.5	B1L512		ESL	18.4	pCi/g			1.84	60.6	pCi/g			7.77											44.7	pCi/g	U			0.125	pCi/g			
72.5	73	B1L517		ESL	17.2	pCi/g			1.82	73	pCi/g			8.62											48.1	pCi/g	U			0.165	pCi/g			
77	77.5	B1L519		ESL	19.1	pCi/g			1.71	69.5	pCi/g			5.9											45.2	pCi/g	U			0.145	pCi/g			
90	90.5	B1L524		ESL	21.6	pCi/g			1.71	56.6	pCi/g			8.52											44.3	pCi/g	U			0.134	pCi/g			
99.5	100	B1L528		ESL	21.4	pCi/g			2.02																44.8	pCi/g	U			0.121	pCi/g			
108	108.5	B1L531		ESL	20.1	pCi/g			2.3																45.5	pCi/g	U			0.142	pCi/g			
119.5	120	B1L536		ESL	18.7	pCi/g			1.82	64.8	pCi/g			8.88											46	pCi/g	U			0.106	pCi/g			
130.5	131	B1L540		ESL	20.1	pCi/g			1.39	84	pCi/g			5.04											46.5	pCi/g	U			0.107	pCi/g			
137	137.5	B1L543		ESL	21.4	pCi/g			2.23	31.9	pCi/g			9.48											45	pCi/g	U			0.135	pCi/g			
147	147.5	B1L547		ESL	17.4	pCi/g			2.24	51.6	pCi/g			8.83											44.7	pCi/g	U			0.132	pCi/g			
162.5	163	B1L553		ESL	18.9	pCi/g			1.66																45	pCi/g	U			0.117	pCi/g			
172	172.5	B1L557		ESL	15.3	pCi/g			1.7	67.4	pCi/g			9.65											46	pCi/g	U			0.123	pCi/g			
185	185.5	B1L562		ESL	15.7	pCi/g			1.85																59.9	pCi/g	U			0.155	pCi/g			
199.5	200	B1L568		ESL	17.1	pCi/g			1.77																45.2	pCi/g	U			0.131	pCi/g			
204.5	205	B1L570		ESL	20.2	pCi/g			1.98	66.4	pCi/g			8.95											45.5	pCi/g	U			0.109	pCi/g			
222	222.5	B1L577		ESL	16.5	pCi/g			1.73																46.2	pCi/g	U			0.111	pCi/g			
234.5	235	B1L582		ESL	18.6	pCi/g			1.42																45.2	pCi/g	U			0.139	pCi/g			
247	247.5	B1L587		ESL	19.9	pCi/g			1.46																45.5	pCi/g	U			0.144	pCi/g			
259.5	260	B1L592		ESL	19.4	pCi/g			1.75																45.8	pCi/g	U			0.13	pCi/g			
269.5	270	B1L596		ESL	18.4	pCi/g			1.93																44.7	pCi/g	U			0.11	pCi/g			
282.5	283	B1L5B1		ESL	22.4	pCi/g			1.92						5.9	pCi/g			4.57						44.3	pCi/g	U			0.27	pCi/g			
287	287.5	B1L5B3		ESL	21.3	pCi/g			2.18																46.2	pCi/g	U			0.331	pCi/g			
292	292.5	B1L5B5		ESL	23.7	pCi/g			3.06																47.2	pCi/g	U			0.434	pCi/g			
297	297.5	B1L5B7		ESL	21.1	pCi/g			2.83																45.3	pCi/g	U			0.282	pCi/g			
304.5	305	B1L5C0		ESL	17.3	pCi/g			1.72																42.1	pCi/g	U			0.161	pCi/g			
314.5	315	B1L5C4		ESL	14.1	pCi/g			2.28																42.9	pCi/g	U			0.187	pCi/g			
LAB	LAB	B1M5X1		ESL	17.7	pCi/g			1.83	61.9	pCi/g			4.67						32.2	pCi/g			11.8	45.3	pCi/g	U			30.8	pCi/g			

Note:

No field QC samples were collected.

LAB = Lab created sample.

Table A4-18. Metal Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Aluminum (7429-90-5)				Antimony-121 (14265-72-6)				Arsenic (7440-38-2)				Barium (7440-39-3)				Beryllium (7440-41-7)				Bismuth (7440-69-9)				Boron (7440-42-8)				Cadmium-111 (14336-64-2)				Calcium (7440-70-2)			
					6010M_ICP_ASTM_AE				6020M_ICPMS_ASTM_AE				6020M_ICPMS_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6020M_ICPMS_ASTM_AE				6010M_ICP_ASTM_AE			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
22	22.5	B1L4Y7		ESL	5140000	ug/kg			13.4	ug/kg	U		1060	ug/kg			59000	ug/kg			2680	ug/kg	U		26800	ug/kg	U		53600	ug/kg	U		53.6	ug/kg	U		4780000	ug/kg		
30.5	31	B1L500		ESL	6350000	ug/kg			12.9	ug/kg	U		2600	ug/kg			57600	ug/kg			2580	ug/kg	U		25800	ug/kg	U		51600	ug/kg	U		51.6	ug/kg	U		10400000	ug/kg		
39.5	40	B1L504		ESL	6180000	ug/kg			13.7	ug/kg	U		2710	ug/kg			58100	ug/kg			2740	ug/kg	U		27400	ug/kg	U		54900	ug/kg	U		54.9	ug/kg	U		9490000	ug/kg		
59	59.5	B1L512		ESL	5200000	ug/kg			13	ug/kg	U		1850	ug/kg			55500	ug/kg			2610	ug/kg	U		26100	ug/kg	U		52100	ug/kg	U		52.1	ug/kg	U		8960000	ug/kg		
72.5	73	B1L517		ESL	7100000	ug/kg			14.1	ug/kg	U		3150	ug/kg			65200	ug/kg			2810	ug/kg	U		28100	ug/kg	U		56200	ug/kg	U		60.2	ug/kg			9800000	ug/kg		
77	77.5	B1L519		ESL	6860000	ug/kg			13.2	ug/kg	U		2800	ug/kg			67000	ug/kg			2640	ug/kg	U		26400	ug/kg	U		52800	ug/kg	U		52.8	ug/kg	U		10100000	ug/kg		
90	90.5	B1L524		ESL	5270000	ug/kg			12.9	ug/kg	U		1640	ug/kg			63200	ug/kg			2590	ug/kg	U		25900	ug/kg	U		51700	ug/kg	U		51.7	ug/kg	U		7700000	ug/kg		
99.5	100	B1L528		ESL	5350000	ug/kg			13.1	ug/kg	U		2050	ug/kg			59500	ug/kg			2620	ug/kg	U		26200	ug/kg	U		52300	ug/kg	U		52.3	ug/kg	U		9040000	ug/kg		
108	108.5	B1L531		ESL	6730000	ug/kg			13.3	ug/kg	U		2990	ug/kg			67000	ug/kg			2660	ug/kg	U		26600	ug/kg	U		53200	ug/kg	U		53.2	ug/kg	U		8800000	ug/kg		
119.5	120	B1L536		ESL	4490000	ug/kg			13.4	ug/kg	U		1800	ug/kg			56900	ug/kg			2690	ug/kg	U		26900	ug/kg	U		53700	ug/kg	U		53.7	ug/kg	U		8510000	ug/kg		
130.5	131	B1L540		ESL	4120000	ug/kg			13.6	ug/kg	U		1280	ug/kg			54500	ug/kg			2720	ug/kg	U		27200	ug/kg	U		54400	ug/kg	U		54.4	ug/kg	U		7790000	ug/kg		
137	137.5	B1L543		ESL	6900000	ug/kg			13.2	ug/kg	U		2440	ug/kg			73900	ug/kg			2630	ug/kg	U		26300	ug/kg	U		52700	ug/kg	U		59.3	ug/kg			9500000	ug/kg		
147	147.5	B1L547		ESL	6480000	ug/kg			13	ug/kg	U		2450	ug/kg			73000	ug/kg			2610	ug/kg	U		26100	ug/kg	U		52100	ug/kg	U		68	ug/kg			10000000	ug/kg		
162.5	163	B1L553		ESL	4230000	ug/kg			13.2	ug/kg	U		1570	ug/kg			53300	ug/kg			2630	ug/kg	U		26300	ug/kg	U		52700	ug/kg	U		52.7	ug/kg	U		6610000	ug/kg		
172	172.5	B1L557		ESL	6150000	ug/kg			13.4	ug/kg	U		1720	ug/kg			60700	ug/kg			2690	ug/kg	U		26900	ug/kg	U		53800	ug/kg	U		53.8	ug/kg	U		6890000	ug/kg		
185	185.5	B1L562		ESL	6020000	ug/kg			17.5	ug/kg	U		2200	ug/kg			58200	ug/kg			3500	ug/kg	U		35000	ug/kg	U		70000	ug/kg	U		70	ug/kg	U		6350000	ug/kg		
199.5	200	B1L568		ESL	6150000	ug/kg			13.2	ug/kg	U		1630	ug/kg			58900	ug/kg			2640	ug/kg	U		26400	ug/kg	U		52800	ug/kg	U		52.8	ug/kg	U		6930000	ug/kg		
204.5	205	B1L570		ESL	5420000	ug/kg			13.3	ug/kg	U		1580	ug/kg			52900	ug/kg			2660	ug/kg	U		26600	ug/kg	U		53100	ug/kg	U		53.1	ug/kg	U		6270000	ug/kg		
222	222.5	B1L577		ESL	5560000	ug/kg			13.5	ug/kg	U		1580	ug/kg			61800	ug/kg			2700	ug/kg	U		27000	ug/kg	U		53900	ug/kg	U		53.9	ug/kg	U		6570000	ug/kg		
234.5	235	B1L582		ESL	8160000	ug/kg			13.2	ug/kg	U		2730	ug/kg			71000	ug/kg			2640	ug/kg	U		26400	ug/kg	U		52900	ug/kg	U		68.9	ug/kg			8300000	ug/kg		
247	247.5	B1L587		ESL	7670000	ug/kg			13.3	ug/kg	U		2300	ug/kg			67200	ug/kg			2660	ug/kg	U		26600	ug/kg	U		53100	ug/kg	U		57.2	ug/kg			7840000	ug/kg		
259.5	260	B1L592		ESL	6300000	ug/kg			13.4	ug/kg	U		1780	ug/kg			68800	ug/kg			2680	ug/kg	U		26800	ug/kg	U		53600	ug/kg	U		64.9	ug/kg			6840000	ug/kg		
269.5	270	B1L596		ESL	5480000	ug/kg			13.1	ug/kg	U		1280	ug/kg			61700	ug/kg			2610	ug/kg	U		26100	ug/kg	U		52200	ug/kg	U		52.2	ug/kg	U		6930000	ug/kg		
282.5	283	B1L5B1		ESL	12800000	ug/kg			12.9	ug/kg	U		6970	ug/kg			104000	ug/kg			2590	ug/kg	U		25900	ug/kg	U		51800	ug/kg	U		151	ug/kg			13100000	ug/kg		
287	287.5	B1L5B3		ESL	15300000	ug/kg			13.5	ug/kg	U		2700	ug/kg			150000	ug/kg			2700	ug/kg	U		27000	ug/kg	U		54100	ug/kg	U		236	ug/kg			15400000	ug/kg		
292	292.5	B1L5B5		ESL	13400000	ug/kg			54.7	ug/kg			2830	ug/kg			187000	ug/kg			2760	ug/kg	U		27600	ug/kg	U		55200	ug/kg	U		480	ug/kg			21800000	ug/kg		
297	297.5	B1L5B7		ESL	22900000	ug/kg			13.2	ug/kg	U		4200	ug/kg			197000	ug/kg			2650	ug/kg	U		26500	ug/kg	U		53000	ug/kg	U		200	ug/kg			12400000	ug/kg		
304.5	305	B1L5C0		ESL	6530000	ug/kg			12.3	ug/kg	U		1340	ug/kg			90100	ug/kg			2460	ug/kg	U		24600	ug/kg	U		49100	ug/kg	U		60	ug/kg			4470000	ug/kg		
314.5	315	B1L5C4		ESL	6940000	ug/kg			12.5	ug/kg	U		1180	ug/kg			97100	ug/kg			2510	ug/kg	U		25100	ug/kg	U		50100	ug/kg	U		73.6	ug/kg			5500000	ug/kg		
LAB	LAB	B1M5X1		ESL	6640000	ug/kg			15.1	ug/kg			1280	ug/kg			60900	ug/kg			2650	ug/kg	U		26500	ug/kg	U		53000	ug/kg	U		58.5	ug/kg			8660000	ug/kg		

Table A4-18. Metal Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Chromium (7440-47-3)				Cobalt (7440-48-4)				Copper (7440-50-8)				Iron (7439-89-6)				Lead-208 (13966-28-4)				Lithium (7439-93-2)				Magnesium (7439-95-4)				Manganese (7439-96-5)				Molybdenum (7439-98-7)			
					6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6020M_ICPMS_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
22	22.5	B1L4Y7		ESL	7020	ug/kg			13400	ug/kg	U		8600	ug/kg			10800000	ug/kg			2870	ug/kg			26800	ug/kg	U		3970000	ug/kg			282000	ug/kg			13400	ug/kg	U	
30.5	31	B1L500		ESL	10400	ug/kg			12900	ug/kg	U		9350	ug/kg			13400000	ug/kg			3250	ug/kg			25800	ug/kg	U		5090000	ug/kg			269000	ug/kg			12900	ug/kg	U	
39.5	40	B1L504		ESL	9430	ug/kg			13700	ug/kg	U		8690	ug/kg			13000000	ug/kg			3560	ug/kg			27400	ug/kg	U		5190000	ug/kg			278000	ug/kg			13700	ug/kg	U	
59	59.5	B1L512		ESL	7300	ug/kg			13000	ug/kg	U		7680	ug/kg			11100000	ug/kg			2770	ug/kg			26100	ug/kg	U		4270000	ug/kg			247000	ug/kg			13000	ug/kg	U	
72.5	73	B1L517		ESL	12100	ug/kg			14100	ug/kg	U		9430	ug/kg			15000000	ug/kg			3310	ug/kg			28100	ug/kg	U		5730000	ug/kg			311000	ug/kg			14100	ug/kg	U	
77	77.5	B1L519		ESL	11100	ug/kg			13200	ug/kg	U		10100	ug/kg			14000000	ug/kg			3520	ug/kg			26400	ug/kg	U		5450000	ug/kg			287000	ug/kg			13200	ug/kg	U	
90	90.5	B1L524		ESL	7990	ug/kg			12900	ug/kg	U		6820	ug/kg			10200000	ug/kg			3270	ug/kg			25900	ug/kg	U		4210000	ug/kg			258000	ug/kg			12900	ug/kg	U	
99.5	100	B1L528		ESL	8710	ug/kg			13100	ug/kg	U		8910	ug/kg			11900000	ug/kg			3250	ug/kg			26200	ug/kg	U		4610000	ug/kg			266000	ug/kg			13100	ug/kg	U	
108	108.5	B1L531		ESL	9680	ug/kg			13300	ug/kg	U		7790	ug/kg			14100000	ug/kg			3320	ug/kg			26600	ug/kg	U		4980000	ug/kg			277000	ug/kg			13300	ug/kg	U	
119.5	120	B1L536		ESL	6160	ug/kg			13400	ug/kg	U		7160	ug/kg			10100000	ug/kg			2860	ug/kg			26900	ug/kg	U		3800000	ug/kg			224000	ug/kg			13400	ug/kg	U	
130.5	131	B1L540		ESL	6370	ug/kg			13600	ug/kg	U		7090	ug/kg			9010000	ug/kg			2730	ug/kg			27200	ug/kg	U		3570000	ug/kg			231000	ug/kg			13600	ug/kg	U	
137	137.5	B1L543		ESL	10300	ug/kg			13200	ug/kg	U		8090	ug/kg			13600000	ug/kg			4200	ug/kg			26300	ug/kg	U		5470000	ug/kg			328000	ug/kg			13200	ug/kg	U	
147	147.5	B1L547		ESL	9790	ug/kg			13000	ug/kg	U		9090	ug/kg			13200000	ug/kg			3730	ug/kg			26100	ug/kg	U		5140000	ug/kg			332000	ug/kg			13000	ug/kg	U	
162.5	163	B1L553		ESL	8670	ug/kg			13200	ug/kg	U		8160	ug/kg			8580000	ug/kg			3420	ug/kg			26300	ug/kg	U		3670000	ug/kg			230000	ug/kg			13200	ug/kg	U	
172	172.5	B1L557		ESL	11900	ug/kg			13400	ug/kg	U		9600	ug/kg			12800000	ug/kg			2550	ug/kg			26900	ug/kg	U		5020000	ug/kg			254000	ug/kg			13400	ug/kg	U	
185	185.5	B1L562		ESL	12000	ug/kg			17500	ug/kg	U		9730	ug/kg			13200000	ug/kg			2640	ug/kg			35000	ug/kg	U		4840000	ug/kg			267000	ug/kg			17500	ug/kg	U	
199.5	200	B1L568		ESL	11600	ug/kg			13200	ug/kg	U		10100	ug/kg			13900000	ug/kg			2370	ug/kg			26400	ug/kg	U		4910000	ug/kg			256000	ug/kg			13200	ug/kg	U	
204.5	205	B1L570		ESL	10900	ug/kg			13300	ug/kg	U		9060	ug/kg			11100000	ug/kg			2520	ug/kg			26600	ug/kg	U		4470000	ug/kg			253000	ug/kg			13300	ug/kg	U	
222	222.5	B1L577		ESL	11700	ug/kg			13500	ug/kg	U		10100	ug/kg			12700000	ug/kg			2350	ug/kg			27000	ug/kg	U		4570000	ug/kg			250000	ug/kg			13500	ug/kg	U	
234.5	235	B1L582		ESL	17200	ug/kg			13200	ug/kg	U		9970	ug/kg			15300000	ug/kg			2720	ug/kg			26400	ug/kg	U		6020000	ug/kg			311000	ug/kg			13200	ug/kg	U	
247	247.5	B1L587		ESL	17200	ug/kg			13300	ug/kg	U		9920	ug/kg			14800000	ug/kg			2750	ug/kg			26600	ug/kg	U		5820000	ug/kg			295000	ug/kg			13300	ug/kg	U	
259.5	260	B1L592		ESL	12900	ug/kg			13400	ug/kg	U		9200	ug/kg			12000000	ug/kg			2470	ug/kg			26800	ug/kg	U		5120000	ug/kg			271000	ug/kg			13400	ug/kg	U	
269.5	270	B1L596		ESL	11700	ug/kg			13100	ug/kg	U		10700	ug/kg			13100000	ug/kg			2470	ug/kg			26100	ug/kg	U		4150000	ug/kg			262000	ug/kg			13100	ug/kg	U	
282.5	283	B1L5B1		ESL	23100	ug/kg			12900	ug/kg	U		18800	ug/kg			19800000	ug/kg			5500	ug/kg			25900	ug/kg	U		7590000	ug/kg			497000	ug/kg			12900	ug/kg	U	
287	287.5	B1L5B3		ESL	30600	ug/kg			13500	ug/kg	U		28300	ug/kg			23600000	ug/kg			7460	ug/kg			27000	ug/kg	U		10000000	ug/kg			507000	ug/kg			13500	ug/kg	U	
292	292.5	B1L5B5		ESL	29400	ug/kg			14400	ug/kg			32600	ug/kg			25900000	ug/kg			10900	ug/kg			27600	ug/kg	U		10200000	ug/kg			726000	ug/kg			13800	ug/kg	U	
297	297.5	B1L5B7		ESL	50600	ug/kg			17400	ug/kg			40200	ug/kg			34600000	ug/kg			7290	ug/kg			26500	ug/kg	U		13600000	ug/kg			589000	ug/kg			13200	ug/kg	U	
304.5	305	B1L5C0		ESL	22300	ug/kg			12300	ug/kg	U		15800	ug/kg			16500000	ug/kg			3230	ug/kg			24600	ug/kg	U		4210000	ug/kg			305000	ug/kg			12300	ug/kg	U	
314.5	315	B1L5C4		ESL	23500	ug/kg			12500	ug/kg	U		17200	ug/kg			17900000	ug/kg			2780	ug/kg			25100	ug/kg	U		4400000	ug/kg			291000	ug/kg			12500	ug/kg	U	
LAB	LAB	B1M5X1		ESL	11800	ug/kg			13300	ug/kg	U		11800	ug/kg			12700000	ug/kg			4140	ug/kg			26500	ug/kg	U		5150000	ug/kg			273000	ug/kg			13300	ug/kg	U	

Table A4-18. Metal Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Nickel (7440-02-0)				Phosphorus (7723-14-0)				Potassium (7440-09-7)				Rhenium (7440-15-5)				Ruthenium-101 (14914-61-5)				Selenium-82 (14687-58-2)				Silicon (7440-21-3)				Silver-109 metastable (14378-38-2)				Sodium (7440-23-5)			
					6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6020M_ICPMS_ASTM_AE				6020M_ICPMS_ASTM_AE				6010M_ICP_ASTM_AE				6020M_ICPMS_ASTM_AE				6010M_ICP_ASTM_AE			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
22	22.5	B1L4Y7		ESL	8910	ug/kg			546000	ug/kg			1340000	ug/kg	U		13400	ug/kg	U		26.8	ug/kg	U		536	ug/kg	U		268000	ug/kg	U		39.1	ug/kg			268000	ug/kg	U	
30.5	31	B1L500		ESL	11600	ug/kg			497000	ug/kg			1290000	ug/kg	U		12900	ug/kg	U		25.8	ug/kg	U		516	ug/kg	U		258000	ug/kg	U		26.9	ug/kg			258000	ug/kg	U	
39.5	40	B1L504		ESL	10400	ug/kg			507000	ug/kg			1370000	ug/kg	U		13700	ug/kg	U		27.4	ug/kg	U		549	ug/kg	U		274000	ug/kg	U		30.1	ug/kg			274000	ug/kg	U	
59	59.5	B1L512		ESL	9290	ug/kg			469000	ug/kg			1300000	ug/kg	U		13000	ug/kg	U		26.1	ug/kg	U		521	ug/kg	U		261000	ug/kg	U		24	ug/kg			261000	ug/kg	U	
72.5	73	B1L517		ESL	14600	ug/kg			498000	ug/kg			1410000	ug/kg	U		14100	ug/kg	U		28.1	ug/kg	U		562	ug/kg	U		281000	ug/kg	U		29.1	ug/kg			281000	ug/kg	U	
77	77.5	B1L519		ESL	12700	ug/kg			481000	ug/kg			1320000	ug/kg	U		13200	ug/kg	U		26.4	ug/kg	U		528	ug/kg	U		264000	ug/kg	U		31.8	ug/kg			264000	ug/kg	U	
90	90.5	B1L524		ESL	9400	ug/kg			360000	ug/kg			1290000	ug/kg	U		12900	ug/kg	U		25.9	ug/kg	U		517	ug/kg	U		259000	ug/kg	U		25.1	ug/kg			259000	ug/kg	U	
99.5	100	B1L528		ESL	10800	ug/kg			537000	ug/kg			1310000	ug/kg	U		13100	ug/kg	U		26.2	ug/kg	U		523	ug/kg	U		262000	ug/kg	U		33.1	ug/kg			262000	ug/kg	U	
108	108.5	B1L531		ESL	8690	ug/kg			459000	ug/kg			1330000	ug/kg	U		13300	ug/kg	U		26.6	ug/kg	U		532	ug/kg	U		266000	ug/kg	U		25.3	ug/kg			266000	ug/kg	U	
119.5	120	B1L536		ESL	8150	ug/kg			446000	ug/kg			1340000	ug/kg	U		13400	ug/kg	U		26.9	ug/kg	U		537	ug/kg	U		269000	ug/kg	U		24.7	ug/kg			269000	ug/kg	U	
130.5	131	B1L540		ESL	8980	ug/kg			461000	ug/kg			1360000	ug/kg	U		13600	ug/kg	U		27.2	ug/kg	U		544	ug/kg	U		272000	ug/kg	U		20.4	ug/kg			272000	ug/kg	U	
137	137.5	B1L543		ESL	11000	ug/kg			443000	ug/kg			1740000	ug/kg			13200	ug/kg	U		26.3	ug/kg	U		527	ug/kg	U		263000	ug/kg	U		36	ug/kg			263000	ug/kg	U	
147	147.5	B1L547		ESL	11200	ug/kg			512000	ug/kg			1330000	ug/kg			13000	ug/kg	U		26.1	ug/kg	U		521	ug/kg	U		261000	ug/kg	U		27.8	ug/kg			261000	ug/kg	U	
162.5	163	B1L553		ESL	12400	ug/kg			463000	ug/kg			1320000	ug/kg	U		13200	ug/kg	U		26.3	ug/kg	U		527	ug/kg	U		263000	ug/kg	U		33.7	ug/kg			263000	ug/kg	U	
172	172.5	B1L557		ESL	15300	ug/kg			557000	ug/kg			1340000	ug/kg	U		13400	ug/kg	U		26.9	ug/kg	U		538	ug/kg	U		269000	ug/kg	U		30.9	ug/kg			269000	ug/kg	U	
185	185.5	B1L562		ESL	14600	ug/kg			537000	ug/kg			1750000	ug/kg	U		17500	ug/kg	U		35	ug/kg	U		700	ug/kg	U		350000	ug/kg	U		48.6	ug/kg			350000	ug/kg	U	
199.5	200	B1L568		ESL	13900	ug/kg			573000	ug/kg			1320000	ug/kg	U		13200	ug/kg	U		26.4	ug/kg	U		528	ug/kg	U		264000	ug/kg	U		29.6	ug/kg			264000	ug/kg	U	
204.5	205	B1L570		ESL	14400	ug/kg			521000	ug/kg			1330000	ug/kg	U		13300	ug/kg	U		26.6	ug/kg	U		531	ug/kg	U		266000	ug/kg	U		31.9	ug/kg			266000	ug/kg	U	
222	222.5	B1L577		ESL	13300	ug/kg			603000	ug/kg			1350000	ug/kg	U		13500	ug/kg	U		27	ug/kg	U		539	ug/kg	U		270000	ug/kg	U		31.1	ug/kg			270000	ug/kg	U	
234.5	235	B1L582		ESL	18000	ug/kg			491000	ug/kg			1320000	ug/kg	U		13200	ug/kg	U		26.4	ug/kg	U		529	ug/kg	U		264000	ug/kg	U		32.3	ug/kg			264000	ug/kg	U	
247	247.5	B1L587		ESL	18200	ug/kg			511000	ug/kg			1330000	ug/kg	U		13300	ug/kg	U		26.6	ug/kg	U		531	ug/kg	U		266000	ug/kg	U		29.1	ug/kg			266000	ug/kg	U	
259.5	260	B1L592		ESL	16600	ug/kg			479000	ug/kg			1340000	ug/kg	U		13400	ug/kg	U		26.8	ug/kg	U		536	ug/kg	U		268000	ug/kg	U		29.8	ug/kg			268000	ug/kg	U	
269.5	270	B1L596		ESL	11200	ug/kg			610000	ug/kg			1310000	ug/kg	U		13100	ug/kg	U		26.1	ug/kg	U		522	ug/kg	U		261000	ug/kg	U		32.1	ug/kg			261000	ug/kg	U	
282.5	283	B1L5B1		ESL	25100	ug/kg			952000	ug/kg			2260000	ug/kg			12900	ug/kg	U		25.9	ug/kg	U		518	ug/kg	U		259000	ug/kg	U		52.1	ug/kg			259000	ug/kg	U	
287	287.5	B1L5B3		ESL	31400	ug/kg			908000	ug/kg			2870000	ug/kg			13500	ug/kg	U		27	ug/kg	U		541	ug/kg	U		270000	ug/kg	U		87.4	ug/kg			270000	ug/kg	U	
292	292.5	B1L5B5		ESL	30500	ug/kg			969000	ug/kg			2230000	ug/kg			13800	ug/kg	U		27.6	ug/kg	U		552	ug/kg	U		276000	ug/kg	U		131	ug/kg			276000	ug/kg	U	
297	297.5	B1L5B7		ESL	43100	ug/kg			834000	ug/kg			3650000	ug/kg			13200	ug/kg	U		26.5	ug/kg	U		530	ug/kg	U		265000	ug/kg	U		84	ug/kg			456000	ug/kg		
304.5	305	B1L5C0		ESL	11900	ug/kg			604000	ug/kg			1230000	ug/kg	U		12300	ug/kg	U		24.6	ug/kg	U		491	ug/kg	U		246000	ug/kg	U		27.3	ug/kg			352000	ug/kg		
314.5	315	B1L5C4		ESL	14900	ug/kg			781000	ug/kg			1250000	ug/kg	U		12500	ug/kg	U		25.1	ug/kg	U		501	ug/kg	U		251000	ug/kg	U		32.7	ug/kg			402000	ug/kg		
LAB	LAB	B1M5X1		ESL	14100	ug/kg			878000	ug/kg			1500000	ug/kg			13300	ug/kg	U		26.5	ug/kg	U		530	ug/kg	U		265000	ug/kg	U		30.8	ug/kg			265000	ug/kg	U	

Table A4-18. Metal Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Strontium (7440-24-6)				Sulfur (7704-34-9)				Thallium (7440-28-0)				Titanium (7440-32-6)				Vanadium (7440-62-2)				Zinc (7440-66-6)				Zirconium (7440-67-7)			
					6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
22	22.5	B1L4Y7		ESL	24900	ug/kg			536000	ug/kg	U		53600	ug/kg	U		297000	ug/kg			26800	ug/kg	U		27000	ug/kg			6690	ug/kg		
30.5	31	B1L500		ESL	35000	ug/kg			516000	ug/kg	U		51600	ug/kg	U		524000	ug/kg			25800	ug/kg	U		32000	ug/kg			6680	ug/kg		
39.5	40	B1L504		ESL	27400	ug/kg			549000	ug/kg	U		54900	ug/kg	U		491000	ug/kg			27400	ug/kg	U		30200	ug/kg			5640	ug/kg		
59	59.5	B1L512		ESL	28100	ug/kg			521000	ug/kg	U		52100	ug/kg	U		380000	ug/kg			26100	ug/kg	U		26600	ug/kg			5370	ug/kg		
72.5	73	B1L517		ESL	32600	ug/kg			562000	ug/kg	U		56200	ug/kg	U		644000	ug/kg			28100	ug/kg	U		33900	ug/kg			6760	ug/kg		
77	77.5	B1L519		ESL	33100	ug/kg			528000	ug/kg	U		52800	ug/kg	U		581000	ug/kg			26400	ug/kg	U		32400	ug/kg			6110	ug/kg		
90	90.5	B1L524		ESL	28300	ug/kg			517000	ug/kg	U		51700	ug/kg	U		316000	ug/kg			25900	ug/kg	U		26600	ug/kg			4370	ug/kg		
99.5	100	B1L528		ESL	26700	ug/kg			523000	ug/kg	U		52300	ug/kg	U		322000	ug/kg			26200	ug/kg	U		28400	ug/kg			6040	ug/kg		
108	108.5	B1L531		ESL	30400	ug/kg			532000	ug/kg	U		53200	ug/kg	U		682000	ug/kg			26600	ug/kg	U		33400	ug/kg			7470	ug/kg		
119.5	120	B1L536		ESL	30500	ug/kg			537000	ug/kg	U		53700	ug/kg	U		290000	ug/kg			26900	ug/kg	U		23200	ug/kg			5640	ug/kg		
130.5	131	B1L540		ESL	26900	ug/kg			544000	ug/kg	U		54400	ug/kg	U		213000	ug/kg			27200	ug/kg	U		20900	ug/kg			5610	ug/kg		
137	137.5	B1L543		ESL	33200	ug/kg			527000	ug/kg	U		52700	ug/kg	U		477000	ug/kg			26300	ug/kg	U		34700	ug/kg			5750	ug/kg		
147	147.5	B1L547		ESL	32500	ug/kg			521000	ug/kg	U		52100	ug/kg	U		446000	ug/kg			26100	ug/kg	U		32400	ug/kg			7030	ug/kg		
162.5	163	B1L553		ESL	25000	ug/kg			527000	ug/kg	U		52700	ug/kg	U		184000	ug/kg			26300	ug/kg	U		21900	ug/kg			3770	ug/kg		
172	172.5	B1L557		ESL	29300	ug/kg			538000	ug/kg	U		53800	ug/kg	U		528000	ug/kg			26900	ug/kg	U		28000	ug/kg			6680	ug/kg		
185	185.5	B1L562		ESL	27300	ug/kg			700000	ug/kg	U		70000	ug/kg	U		617000	ug/kg			35000	ug/kg	U		28000	ug/kg			6890	ug/kg		
199.5	200	B1L568		ESL	30100	ug/kg			528000	ug/kg	U		52800	ug/kg	U		678000	ug/kg			26400	ug/kg	U		28900	ug/kg			9300	ug/kg		
204.5	205	B1L570		ESL	26900	ug/kg			531000	ug/kg	U		53100	ug/kg	U		325000	ug/kg			26600	ug/kg	U		26100	ug/kg			5420	ug/kg		
222	222.5	B1L577		ESL	26500	ug/kg			539000	ug/kg	U		53900	ug/kg	U		470000	ug/kg			27000	ug/kg	U		27000	ug/kg			7430	ug/kg		
234.5	235	B1L582		ESL	39300	ug/kg			529000	ug/kg	U		52900	ug/kg	U		826000	ug/kg			26400	ug/kg	U		33700	ug/kg			6670	ug/kg		
247	247.5	B1L587		ESL	38800	ug/kg			531000	ug/kg	U		53100	ug/kg	U		768000	ug/kg			26600	ug/kg	U		32300	ug/kg			6510	ug/kg		
259.5	260	B1L592		ESL	34500	ug/kg			536000	ug/kg	U		53600	ug/kg	U		412000	ug/kg			26800	ug/kg	U		29700	ug/kg			4950	ug/kg		
269.5	270	B1L596		ESL	30400	ug/kg			522000	ug/kg	U		52200	ug/kg	U		451000	ug/kg			26100	ug/kg	U		28300	ug/kg			8730	ug/kg		
282.5	283	B1L5B1		ESL	57300	ug/kg			518000	ug/kg	U		51800	ug/kg	U		735000	ug/kg			25900	ug/kg	U		53300	ug/kg			8130	ug/kg		
287	287.5	B1L5B3		ESL	70700	ug/kg			541000	ug/kg	U		54100	ug/kg	U		543000	ug/kg			27000	ug/kg	U		72900	ug/kg			7900	ug/kg		
292	292.5	B1L5B5		ESL	81000	ug/kg			552000	ug/kg	U		55200	ug/kg	U		348000	ug/kg			27600	ug/kg	U		78300	ug/kg			8600	ug/kg		
297	297.5	B1L5B7		ESL	72800	ug/kg			530000	ug/kg	U		53000	ug/kg	U		1120000	ug/kg			33200	ug/kg			92000	ug/kg			11000	ug/kg		
304.5	305	B1L5C0		ESL	24700	ug/kg			491000	ug/kg	U		49100	ug/kg	U		941000	ug/kg			24600	ug/kg	U		40100	ug/kg			12600	ug/kg		
314.5	315	B1L5C4		ESL	30000	ug/kg			501000	ug/kg	U		50100	ug/kg	U		1160000	ug/kg			25100	ug/kg	U		40300	ug/kg			18600	ug/kg		
LAB	LAB	B1M5X1		ESL	34500	ug/kg			530000	ug/kg	U		53000	ug/kg	U		341000	ug/kg			26500	ug/kg	U		36000	ug/kg			3800	ug/kg		

Note:
No field QC samples were collected.
LAB = Lab created sample.

Table A4-19. Wet Chemistry Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Nitrate (14797-55-8) 9056				Nitrite (14797-65-0) 9056				Alkalinity (ALKALINITY) 2320				Chloride (16887-00-6) 9056				Fluoride (16984-48-8) 9056				Phosphate (14265-44-2) 9056				Sulfate (14808-79-8) 9056			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
22	22.5	B1L4Y7		ESL	2890	ug/kg			1000	ug/kg	U		50900	ug/kg			500	ug/kg	U		652	ug/kg			1500	ug/kg	U		2380	ug/kg		
30.5	31	B1L500		ESL	1130	ug/kg			1000	ug/kg	U		46400	ug/kg			469	ug/kg							1500	ug/kg	U		3580	ug/kg		
39.5	40	B1L504		ESL	1000	ug/kg	U		1000	ug/kg	U		41000	ug/kg			500	ug/kg	U		200	ug/kg	U		3490	ug/kg	U		1470	ug/kg		
59	59.5	B1L512		ESL	1000	ug/kg	U		1000	ug/kg	U		36500	ug/kg			482	ug/kg							1500	ug/kg	U		3630	ug/kg		
72.5	73	B1L517		ESL	1000	ug/kg	U		1000	ug/kg	U		44800	ug/kg			500	ug/kg	U		228	ug/kg			1500	ug/kg	U		7060	ug/kg		
77	77.5	B1L519		ESL	1000	ug/kg	U		1000	ug/kg	U		45600	ug/kg			500	ug/kg	U						1500	ug/kg	U		8600	ug/kg		
90	90.5	B1L524		ESL	13200	ug/kg			1000	ug/kg	U		44800	ug/kg			500	ug/kg	U		323	ug/kg			1500	ug/kg	U		8520	ug/kg		
99.5	100	B1L528		ESL	12000	ug/kg			1000	ug/kg	U		37400	ug/kg			9290	ug/kg							1510	ug/kg	U		32500	ug/kg		
108	108.5	B1L531		ESL	8460	ug/kg			1000	ug/kg	U		38000	ug/kg			8450	ug/kg							1500	ug/kg	U		23000	ug/kg		
119.5	120	B1L536		ESL	3310	ug/kg			1000	ug/kg	U		36500	ug/kg			5260	ug/kg							1500	ug/kg	U		15400	ug/kg		
130.5	131	B1L540		ESL	3070	ug/kg			1000	ug/kg	U		41800	ug/kg			6810	ug/kg			253	ug/kg			1500	ug/kg	U		9500	ug/kg		
137	137.5	B1L543		ESL	2320	ug/kg			1000	ug/kg	U		46400	ug/kg			6790	ug/kg			285	ug/kg			1500	ug/kg	U		7200	ug/kg		
147	147.5	B1L547		ESL	1620	ug/kg			1000	ug/kg	U		51700	ug/kg			2280	ug/kg			245	ug/kg			1500	ug/kg	U		15800	ug/kg		
162.5	163	B1L553		ESL	1660	ug/kg			1000	ug/kg	U		51700	ug/kg			1150	ug/kg							1500	ug/kg	U		5150	ug/kg		
172	172.5	B1L557		ESL	3290	ug/kg			1090	ug/kg	U		53900	ug/kg			557	ug/kg							1640	ug/kg	U		2830	ug/kg		
185	185.5	B1L562		ESL	1520	ug/kg	U		1520	ug/kg	U		59100	ug/kg			762	ug/kg	U						2290	ug/kg	U		2370	ug/kg		
199.5	200	B1L568		ESL	20100	ug/kg			1000	ug/kg	U		42600	ug/kg			730	ug/kg							1500	ug/kg	U		2390	ug/kg		
204.5	205	B1L570		ESL	35700	ug/kg			1000	ug/kg	U		43400	ug/kg			354	ug/kg							1500	ug/kg	U		1780	ug/kg		
222	222.5	B1L577		ESL	45400	ug/kg			1000	ug/kg	U		38800	ug/kg			501	ug/kg							1500	ug/kg	U		2150	ug/kg		
234.5	235	B1L582		ESL	51400	ug/kg			1000	ug/kg	U		38800	ug/kg			500	ug/kg	U						1500	ug/kg	U		2760	ug/kg		
247	247.5	B1L587		ESL	55700	ug/kg			1000	ug/kg	U		42600	ug/kg			500	ug/kg	U						1500	ug/kg	U		2510	ug/kg		
259.5	260	B1L592		ESL	55700	ug/kg			1000	ug/kg	U		44100	ug/kg			500	ug/kg	U						1500	ug/kg	U		2510	ug/kg		
269.5	270	B1L596		ESL	26700	ug/kg			1000	ug/kg	U		44800	ug/kg			552	ug/kg			279	ug/kg			1500	ug/kg	U		3180	ug/kg		
282.5	283	B1L5B1		ESL	204000	ug/kg			1000	ug/kg	U		62300	ug/kg			864	ug/kg							1500	ug/kg	U		12000	ug/kg		
287	287.5	B1L5B3		ESL	205000	ug/kg			1000	ug/kg	U		65400	ug/kg			1020	ug/kg			356	ug/kg			1500	ug/kg	U		18600	ug/kg		
292	292.5	B1L5B5		ESL	233000	ug/kg			1000	ug/kg	U		66100	ug/kg			845	ug/kg			423	ug/kg			1500	ug/kg	U		30900	ug/kg		
297	297.5	B1L5B7		ESL	219000	ug/kg			1010	ug/kg	U						628	ug/kg							1510	ug/kg	U		28700	ug/kg		
304.5	305	B1L5C0		ESL	25200	ug/kg			1000	ug/kg	U		52400	ug/kg			1170	ug/kg							1500	ug/kg	U		17500	ug/kg		
314.5	315	B1L5C4		ESL	26700	ug/kg			1000	ug/kg	U		41800	ug/kg			1130	ug/kg							1500	ug/kg	U		10600	ug/kg		
LAB	LAB	B1M5X1		ESL	1290	ug/kg			1000	ug/kg	U		66100	ug/kg			788	ug/kg							1500	ug/kg	U		74100	ug/kg		

Note:

No field QC samples were collected.

LAB = Lab created sample.

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Table A4-20. Miscellaneous Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Total carbon (TC) 415.1				Total Inorganic Carbon (TINC) 415.1				Total organic carbon (TOC) 415.1			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
22	22.5	B1L4Y7		ESL	1260	ug/kg			571	ug/kg			688	ug/kg		
30.5	31	B1L500		ESL	4130	ug/kg			4250	ug/kg			29	ug/kg	U	
39.5	40	B1L504		ESL	2740	ug/kg			2550	ug/kg			270	ug/kg	U	
59	59.5	B1L512		ESL	3260	ug/kg			2540	ug/kg			721	ug/kg		
72.5	73	B1L517		ESL	2700	ug/kg			2100	ug/kg			606	ug/kg		
77	77.5	B1L519		ESL	3140	ug/kg			2660	ug/kg			480	ug/kg	U	
90	90.5	B1L524		ESL	2720	ug/kg			2120	ug/kg			600	ug/kg		
99.5	100	B1L528		ESL	3040	ug/kg			2300	ug/kg			743	ug/kg		
108	108.5	B1L531		ESL	2260	ug/kg			1900	ug/kg			351	ug/kg	U	
119.5	120	B1L536		ESL	3040	ug/kg			2500	ug/kg			537	ug/kg	U	
130.5	131	B1L540		ESL	2410	ug/kg			2060	ug/kg			411	ug/kg	U	
137	137.5	B1L543		ESL	2790	ug/kg			2240	ug/kg			553	ug/kg	U	
147	147.5	B1L547		ESL	2880	ug/kg			2430	ug/kg			449	ug/kg	U	
162.5	163	B1L553		ESL	2210	ug/kg			1800	ug/kg			401	ug/kg	U	
172	172.5	B1L557		ESL	1620	ug/kg			1130	ug/kg			483	ug/kg		
185	185.5	B1L562		ESL	2290	ug/kg			1350	ug/kg			948	ug/kg		
199.5	200	B1L568		ESL	1410	ug/kg			1040	ug/kg			370	ug/kg		
204.5	205	B1L570		ESL	1720	ug/kg			1210	ug/kg			513	ug/kg		
222	222.5	B1L577		ESL	1610	ug/kg			1200	ug/kg			410	ug/kg		
234.5	235	B1L582		ESL	1760	ug/kg			1500	ug/kg			258	ug/kg	U	
247	247.5	B1L587		ESL	1600	ug/kg			1100	ug/kg			497	ug/kg		
259.5	260	B1L592		ESL	1720	ug/kg			1420	ug/kg			302	ug/kg	U	
269.5	270	B1L596		ESL	1770	ug/kg			1400	ug/kg			368	ug/kg		
282.5	283	B1L5B1		ESL	2930	ug/kg			2620	ug/kg			314	ug/kg	U	
287	287.5	B1L5B3		ESL	3780	ug/kg			3190	ug/kg			521	ug/kg		
292	292.5	B1L5B5		ESL	6350	ug/kg			6200	ug/kg			204	ug/kg	U	
297	297.5	B1L5B7		ESL	2400	ug/kg			1730	ug/kg			675	ug/kg		
304.5	305	B1L5C0		ESL	620	ug/kg			106	ug/kg			514	ug/kg		
314.5	315	B1L5C4		ESL	627	ug/kg			277	ug/kg			350	ug/kg		
LAB	LAB	B1M5X1		ESL	8900	ug/kg			1870	ug/kg			6860	ug/kg		

Note:

No field QC samples were collected.

LAB = Lab created sample.

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Table A4-21. Physical Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Science Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cation Exchange Capacity (CEC) CATIONEXCH_TR				Percent moisture (dry sample) (%MOISTURE-D) D2216				Percent moisture (wet sample) (%MOISTURE) D2216				pH Measurement (PH) 9040				Specific Conductance (CONDUCT) 9050			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
22	22.5	B1L4Y7		ESL	1.44	mEQ/100g							7.04	%			7.54	pH			119	uS/cm		
25	25.5	B1L4Y8		ESL									4.52	%										
27.5	28	B1L4Y9		ESL									4.47	%										
30.5	31	B1L500		ESL									3.81	%			7.46	pH			110	uS/cm		
31.5	32	B1L501		ESL									3.31	%										
34.5	35	B1L502		ESL									3.35	%										
37.5	38	B1L503		ESL									3.53	%										
39.5	40	B1L504		ESL									5.27	%			7.46	pH			90	uS/cm		
41.5	42	B1L505		ESL									4.4	%										
44.5	45	B1L506		ESL									4.77	%										
46.5	47	B1L507		ESL									5.38	%										
50	50.5	B1L508		ESL									4.38	%										
52	52.5	B1L509		ESL									5.89	%										
54.5	55	B1L510		ESL									4.28	%										
57	57.5	B1L511		ESL									3.1	%										
59	59.5	B1L512		ESL									2.23	%			7.57	pH			93	uS/cm		
62	62.5	B1L513		ESL									2.89	%										
64.5	65	B1L514		ESL									3.41	%										
67	67.5	B1L515		ESL									2.13	%										
69.5	70	B1L516		ESL									3.15	%										
72.5	73	B1L517		ESL									2.1	%			7.22	pH			112	uS/cm		
74.5	75	B1L518		ESL									2.23	%										
77	77.5	B1L519		ESL									2.11	%			7.34	pH			123	uS/cm		
80.5	81	B1L520		ESL									2.47	%										
82.5	83	B1L521		ESL									2.29	%										
85	85.5	B1L522		ESL									2.29	%										
88	88.5	B1L523		ESL									2.66	%										
90	90.5	B1L524		ESL	1.51	mEQ/100g							2.97	%			7.36	pH			150	uS/cm		

Table A4-21. Physical Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Science Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cation Exchange Capacity (CEC) CATIONEXCH_TR				Percent moisture (dry sample) (%MOISTURE-D) D2216				Percent moisture (wet sample) (%MOISTURE) D2216				pH Measurement (PH) 9040				Specific Conductance (CONDUCT) 9050			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
92	92.5	B1L525		ESL									3.78	%										
94.5	95	B1L526		ESL									3.24	%										
97	97.5	B1L527		ESL									5.58	%										
99.5	100	B1L528		ESL									5.88	%			7.3	pH			227	uS/cm		
102.5	103	B1L529		ESL									3.1	%										
104.5	105	B1L530		ESL									3.68	%										
108	108.5	B1L531		ESL									3.92	%			7.3	pH			196	uS/cm		
109.5	110	B1L532		ESL									3.16	%										
112	112.5	B1L533		ESL									3.93	%										
115	115.5	B1L534		ESL									3.91	%										
117.5	118	B1L535		ESL									3.66	%										
119.5	120	B1L536		ESL									2.88	%			7.07	pH			148	uS/cm		
121.5	122	B1L537		ESL									3.82	%										
124.5	125	B1L538		ESL									3.42	%										
127	127.5	B1L539		ESL									3.46	%										
130.5	131	B1L540		ESL									3.57	%			7.27	pH			147	uS/cm		
132.5	133	B1L541		ESL									3.98	%										
135	135.5	B1L542		ESL									3.57	%										
137	137.5	B1L543		ESL									4.6	%			7.29	pH			144	uS/cm		
140.5	141	B1L544		ESL									4.99	%										
142	142.5	B1L545		ESL									4.34	%										
145	145.5	B1L546		ESL									4.68	%										
147	147.5	B1L547		ESL									5.66	%			7.44	pH			146	uS/cm		
149.5	150	B1L548		ESL									4.68	%										
152	152.5	B1L549		ESL									3.77	%										
154	154.5	B1L550		ESL									2.68	%										
157.5	158	B1L551		ESL									3.63	%										
160	160.5	B1L552		ESL									3.47	%										
162.5	163	B1L553		ESL	1.09	mEQ/100g							4.24	%			7.32	pH			113	uS/cm		

Table A4-21. Physical Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Science Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cation Exchange Capacity (CEC) CATIONEXCH_TR				Percent moisture (dry sample) (%MOISTURE-D) D2216				Percent moisture (wet sample) (%MOISTURE) D2216				pH Measurement (PH) 9040				Specific Conductance (CONDUCT) 9050			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
164.5	165	B1L554		ESL									3	%										
167	167.5	B1L555		ESL									2.78	%										
169.5	170	B1L556		ESL									2.75	%										
172	172.5	B1L557		ESL									3.26	%			7.06	pH			90	uS/cm		
175	175.5	B1L558		ESL									2.82	%										
177	177.5	B1L559		ESL									3.05	%										
179.5	180	B1L560		ESL									3.25	%										
182	182.5	B1L561		ESL									3.04	%										
185	185.5	B1L562		ESL									3.76	%			7.36	pH			80	uS/cm		
187	187.5	B1L563		ESL									2.99	%										
189.5	190	B1L564		ESL									3.06	%										
192	192.5	B1L565		ESL									4.81	%										
194	194.5	B1L566		ESL									3.09	%										
197	197.5	B1L567		ESL									4.22	%										
199.5	200	B1L568		ESL									3.16	%			7	pH			119	uS/cm		
202	202.5	B1L569		ESL									2.99	%										
204.5	205	B1L570		ESL	1.1	mEQ/100g							3.81	%			7.18	pH			135	uS/cm		
207	207.5	B1L571		ESL									3.35	%										
209.5	210	B1L572		ESL									3.21	%										
212	212.5	B1L573		ESL									3.21	%										
214.5	215	B1L574		ESL									3.46	%										
217	217.5	B1L575		ESL									3.29	%										
219.5	220	B1L576		ESL									3.55	%										
222	222.5	B1L577		ESL									3.14	%			7.1	pH			155	uS/cm		
225	225.5	B1L578		ESL									3.66	%										
227	227.5	B1L579		ESL									3.75	%										
229	229.5	B1L580		ESL									3.56	%										
233.5	234	B1L581		ESL									3.55	%										
234.5	235	B1L582		ESL									3.93	%			7.13	pH			179	uS/cm		

Table A4-21. Physical Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Science Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cation Exchange Capacity (CEC) CATIONEXCH_TR				Percent moisture (dry sample) (%MOISTURE-D) D2216				Percent moisture (wet sample) (%MOISTURE) D2216				pH Measurement (PH) 9040				Specific Conductance (CONDUCT) 9050			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
236.5	237	B1L583		ESL									3.38	%										
240	240.5	B1L584		ESL									3.55	%										
242	242.5	B1L585		ESL									3.6	%										
244.5	245	B1L586		ESL									3.83	%										
247	247.5	B1L587		ESL									3.67	%			7.18	pH			197	uS/cm		
249.5	250	B1L588		ESL									4.01	%										
252	252.5	B1L589		ESL									4.06	%										
254	254.5	B1L590		ESL									3.77	%										
257	257.5	B1L591		ESL									3.84	%										
259.5	260	B1L592		ESL									4.05	%			7.22	pH			203	uS/cm		
262	262.5	B1L593		ESL									4.09	%										
264.5	265	B1L594		ESL									3.93	%										
266.5	267	B1L595		ESL									3.41	%										
269.5	270	B1L596		ESL									3.13	%			7.18	pH			158	uS/cm		
272.5	273	B1L597		ESL									4.44	%										
274.5	275	B1L598		ESL									2.62	%										
277.5	278	B1L599		ESL									2.41	%										
280	280.5	B1L5B0		ESL									2.31	%										
282.5	283	B1L5B1		ESL	2.74	mEQ/100g							19.7	%			7.26	pH			582	uS/cm		
285.5	286	B1L5B2		ESL									18.5	%										
287	287.5	B1L5B3		ESL									20.1	%			7.48	pH			552	uS/cm		
289.5	290	B1L5B4		ESL									20	%										
292	292.5	B1L5B5		ESL									24.3	%			7.4	pH			701	uS/cm		
294.5	295	B1L5B6		ESL									20.3	%										
297	297.5	B1L5B7		ESL	4.41	mEQ/100g							23.2	%			7.27	pH			609	uS/cm		
299.5	300	B1L5B8		ESL									3.78	%										
303	303.5	B1L5B9		ESL									3.12	%										
304.5	305	B1L5C0		ESL									3.38	%			7.64	pH			202	uS/cm		

Table A4-21. Physical Analysis Results for Borehole C5301 (216-A-4) Samples from PNNL's Environmental Science Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cation Exchange Capacity (CEC) CATIONEXCH_TR				Percent moisture (dry sample) (%MOISTURE-D) D2216				Percent moisture (wet sample) (%MOISTURE) D2216				pH Measurement (PH) 9040				Specific Conductance (CONDUCT) 9050			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
307	307.5	B1L5C1		ESL									3.78	%										
309.5	310	B1L5C2		ESL									4.7	%										
312	312.5	B1L5C3		ESL									4.42	%										
314.5	315	B1L5C4		ESL	1.87	mEQ/100g							4	%			7.43	pH			173	uS/cm		
LAB	LAB	B1M5X1		ESL	1.77	mEQ/100g							12.6	%			7.52	pH			452	uS/cm		

Note:
No field QC samples were collected.
LAB = Lab created sample.

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Table A4-22. Radiochemical Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Americium-241 (14596-10-2) GEA					Americium-241 (14596-10-2) IX/Plate/AEA					Americium-241 (14596-10-2) IX/Prec/AEA					Carbon-14 (14762-75-5) CombOx/LSC					Cesium-137 (10045-97-3) GEA					Cobalt-60 (10198-40-0) GEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
13	15.5	B1NRH0		EBRLNE																1.66	pCi/g	U		3.54										
13	15.5	B1NRH0		WSCF											0.019	pCi/g	U		0.035						-0.003	pCi/g	U		0.011	0.001	pCi/g	U		0.01
29	31.5	B1NRH1		EBRLNE	607	pCi/g			607	1140	pCi/g			23.6						12.4	pCi/g	U		31	3700	pCi/g			1.64	0.382	pCi/g			0.14
29	31.5	B1NT07	duplicate	EBRLNE	246	pCi/g			246	418	pCi/g			8.38						1.1	pCi/g	U		23.2	1510	pCi/g			1.07	0.294	pCi/g			0.135
32	34.5	B1NRH2		WSCF											820	pCi/g			2.3						130	pCi/g			0.16	0.356	pCi/g			0.044
32	34.5	B1NRH2		EBRLNE																-0.457	pCi/g	U		3.19										
32	34.5	B1NRH3	split	EBRLNE	414	pCi/g	U		0.618	1420	pCi/g	B		9.46											90	pCi/g			0.241	0.199	pCi/g			0.092
47.5	49.5	B1NRH4		WSCF											0.12	pCi/g			0.064						14.5	pCi/g			0.016	-0.005	pCi/g	U		0.011
47.5	49.5	B1NRH4		EBRLNE																-0.359	pCi/g	U		3.02										
54.5	57	B1NRH7		EBRLNE																-0.565	pCi/g	U		2.94										
54.5	57	B1NRH7		WSCF											0.37	pCi/g			0.028						5.31	pCi/g			0.013	-0.004	pCi/g	U		0.01
132.5	135	B1NRH8		WSCF											0.041	pCi/g			0.024						0.002	pCi/g	U		0.014	0.003	pCi/g	U		0.014
132.5	135	B1NRH8		EBRLNE																-0.4	pCi/g	U		3.62										
250.5	253	B1NRH9		WSCF											0.012	pCi/g	U		0.021						-0.007	pCi/g	U		0.011	-0.004	pCi/g	U		0.011
250.5	253	B1NRH9		EBRLNE																0.816	pCi/g	U		3.12										
285	287	B1NRJ0		WSCF											0.021	pCi/g			0.004						0.008	pCi/g	U		0.014	0.003	pCi/g	U		0.014
285	287	B1NRJ0		EBRLNE																1.14	pCi/g	U		3.08										
317	319.5	B1NRJ1		EBRLNE																1.48	pCi/g	U		3.06										
317	319.5	B1NRJ1		WSCF											0.013	pCi/g	U		0.017						-0.008	pCi/g	U		0.009	0.002	pCi/g	U		0.009
Target Quantitation Limit (pCi/g)					N/A					1					1					2					0.1					0.05				

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Europium-152 (14683-23-9) GEA					Europium-154 (15585-10-1) GEA					Europium-155 (14391-16-3) GEA					Iodine-129 (15046-84-1) Sep/LEPS					Nickel-63 (13981-37-8) LSC					Plutonium-238 (13981-16-3) IX/Prec/AEA					Plutonium-238 (13981-16-3) Sep/Plate/AEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
13	15.5	B1NRH0		EBRLNE																-0.195	pCi/g	U		0.751	-2.8	pCi/g	U		4.6										
13	15.5	B1NRH0		WSCF	0.01	pCi/g	U		0.032	-0.015	pCi/g	U		0.033	0.037	pCi/g	U		0.046											-0.006	pCi/g	U		0.064					
29	31.5	B1NRH1		EBRLNE		pCi/g	U		4.75		pCi/g	U		3.09		pCi/g	U		3.85	4.3	pCi/g	U		11.8	27.2	pCi/g	U		73.4						78.1	pCi/g			5.74
29	31.5	B1NT07	duplicate	EBRLNE	4.02	pCi/g	U		4.02	1.12	pCi/g	U		1.12	3.63	pCi/g	U		3.63	-0.911	pCi/g	U		8.6	4.3	pCi/g	U		29.4						31.7	pCi/g			2.29
32	34.5	B1NRH2		WSCF	0.189	pCi/g	U		0.65	1.28	pCi/g			0.14	0.587	pCi/g	U		1											61	pCi/g			2.7					
32	34.5	B1NRH2		EBRLNE																0.122	pCi/g	U		1.35	10.6	pCi/g			2.28										
32	34.5	B1NRH3	split	EBRLNE	0.77	pCi/g	U		0.77	0.898	pCi/g	U		0.898	1.12	pCi/g	U		1.12																120	pCi/g	B		8.66
47.5	49.5	B1NRH4		WSCF	-0.022	pCi/g	U		0.068	0.029	pCi/g	U		0.039	0.025	pCi/g	U		0.089											0.022	pCi/g	U		0.087					
47.5	49.5	B1NRH4		EBRLNE																-0.211	pCi/g	U		0.966	0.2	pCi/g	U		3.53										
54.5	57	B1NRH7		EBRLNE																-0.101	pCi/g	U		1.18	2.14	pCi/g	U		4.39										
54.5	57	B1NRH7		WSCF	-0.027	pCi/g	U		0.045	-0.006	pCi/g	U		0.032	0.022	pCi/g	U		0.065											0.005	pCi/g	U		0.073					
132.5	135	B1NRH8		WSCF	-0.009	pCi/g	U		0.038	-0.016	pCi/g	U		0.044	0.057	pCi/g	U		0.054											-0.012	pCi/g	U		0.072					
132.5	135	B1NRH8		EBRLNE																0.362	pCi/g	U		1	-0.568	pCi/g	U		5.64										
250.5	253	B1NRH9		WSCF	-0.012	pCi/g	U		0.032	0.004	pCi/g	U		0.037	0.034	pCi/g	U		0.046											-0.015	pCi/g	U		0.06					
250.5	253	B1NRH9		EBRLNE																-0.4	pCi/g	U		1.24	1.1	pCi/g	U		3.07										
285	287	B1NRJ0		WSCF	0.034	pCi/g	U		0.041	-0.001	pCi/g	U		0.045	0.073	pCi/g	U		0.056											-0.01	pCi/g	U		0.057					
285	287	B1NRJ0		EBRLNE																0.508	pCi/g	U		1.47	-1.02	pCi/g	U		3.17										
317	319.5	B1NRJ1		EBRLNE																-0.296	pCi/g	U		1.43	1.14	pCi/g	U		3.19										
317	319.5	B1NRJ1		WSCF	0.01	pCi/g	U		0.026	0.001	pCi/g	U		0.028	0.025	pCi/g	U		0.043											-0.006	pCi/g	U		0.058					
Target Quantitation Limit (pCi/g)					0.1					0.1					0.1					2					30					1					1				

Table A4-22. Radiochemical Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Plutonium-239/240 (PU-239/240) IX/Prec/AEA					Plutonium-239/240 (PU-239/240) Sep/Plate/AEA					Potassium-40 (13966-00-2) GEA					Radium-226 (13982-63-3) GEA					Radium-228 (15262-20-1) GEA					Technetium-99 (14133-76-7) Sep/GPC					Thorium-228 (14274-82-9) GEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
13	15.5	B1NRH0		EBRLNE																										0.068	pCi/g	U		0.52					
13	15.5	B1NRH0		WSCF	0.006	pCi/g	U		0.014																														
29	31.5	B1NRH1		EBRLNE						5350	pCi/g			5.74	14.3	pCi/g			1.18		pCi/g	U		1.93		pCi/g	U		2.04	6.27	pCi/g			4.66	2.37	pCi/g	U		2.37
29	31.5	B1NT07	duplicate	EBRLNE						1970	pCi/g			2.29	12.4	pCi/g			1.15	1.7	pCi/g	U		1.7	0.963	pCi/g	U		3	4.7	pCi/g			2.75	2.42	pCi/g	U		2.42
32	34.5	B1NRH2		WSCF	3900	pCi/g			0.74																														
32	34.5	B1NRH2		EBRLNE																										4.56	pCi/g			6					
32	34.5	B1NRH3	split	EBRLNE						6360	pCi/g			8.64	11.7	pCi/g			8	0.402	pCi/g			8	0.83	pCi/g			0.34						0.709	pCi/g			0.52
47.5	49.5	B1NRH4		WSCF	0.56	pCi/g			0.023																														
47.5	49.5	B1NRH4		EBRLNE																										-0.204	pCi/g	U		2					
54.5	57	B1NRH7		EBRLNE																										-0.017	pCi/g	U		4					
54.5	57	B1NRH7		WSCF	1.8	pCi/g			0.013																														
132.5	135	B1NRH8		WSCF	0.009	pCi/g	U		0.016																														
132.5	135	B1NRH8		EBRLNE																										0.033	pCi/g	U		6					
250.5	253	B1NRH9		WSCF	0.009	pCi/g	U		0.013																														
250.5	253	B1NRH9		EBRLNE																										0.084	pCi/g	U		7					
285	287	B1NRJ0		WSCF	0.003	pCi/g	U		0.012																														
285	287	B1NRJ0		EBRLNE																										0.176	pCi/g	U		0.73					
317	319.5	B1NRJ1		EBRLNE																										-0.088	pCi/g	U		0.54					
317	319.5	B1NRJ1		WSCF	-0.004	pCi/g	U		0.018																														
Target Quantitation Limit (pCi/g)					1					1					N/A					N/A					N/A					15					N/A				

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Thorium-232 (TH-232) GEA					Total beta radiostrontium (SR-RAD) Sep/GPC					Tritium (10028-17-8) CombOx/LSC					Uranium-233/234 (U-233/234) IX/Prec/AEA					Uranium-233/234 (U-233/234) Sep/Plate/AEA					Uranium-235 (15117-96-1) GEA					Uranium-235 (15117-96-1) IX/Prec/AEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
13	15.5	B1NRH0		EBRLNE											-1.02	pCi/g	U		4.49																				
13	15.5	B1NRH0		WSCF						0.32	pCi/g	U		0.42						0.15	pCi/g			0.005											0.016	pCi/g			0.013
29	31.5	B1NRH1		EBRLNE	2.04	pCi/g	U		2.04	18700	pCi/g			19.4	-11.6	pCi/g	U		37.5						35	pCi/g			5.7	5.56	pCi/g	U		5.56					
29	31.5	B1NT07	duplicate	EBRLNE	0.963	pCi/g	U		3	11800	pCi/g			6.92	-0.394	pCi/g	U		27.9						42.1	pCi/g			2.25	5.28	pCi/g	U		5.28					
32	34.5	B1NRH2		WSCF						1000	pCi/g			5.5						40	pCi/g			0.7											3.9	pCi/g			0.28
32	34.5	B1NRH2		EBRLNE											2.09	pCi/g	U		4.37																				
32	34.5	B1NRH3	split	EBRLNE	0.83	pCi/g			0.34	1700	pCi/g			26.9											43.2	pCi/g			5.7	2	pCi/g	U		2					
47.5	49.5	B1NRH4		WSCF						2.2	pCi/g			0.37						0.18	pCi/g			0.017											0.012	pCi/g	U		0.014
47.5	49.5	B1NRH4		EBRLNE											-1.4	pCi/g	U		4.2																				
54.5	57	B1NRH7		EBRLNE											-0.114	pCi/g	U		3.95																				
54.5	57	B1NRH7		WSCF						3.5	pCi/g			0.35						0.12	pCi/g			0.013											0.012	pCi/g			0.005
132.5	135	B1NRH8		WSCF						-0.64	pCi/g	U		0.37						0.18	pCi/g			0.013											0.013	pCi/g			0.005
132.5	135	B1NRH8		EBRLNE											14.4	pCi/g			3.94																				
250.5	253	B1NRH9		WSCF						-0.99	pCi/g	U		0.43						0.17	pCi/g			0.004											0.004	pCi/g	U		0.005
250.5	253	B1NRH9		EBRLNE											196	pCi/g			3.94																				
285	287	B1NRJ0		WSCF						-0.053	pCi/g	U		0.39						0.31	pCi/g			0.004											0.011	pCi/g			0.005
285	287	B1NRJ0		EBRLNE											2860	pCi/g			4.01																				
317	319.5	B1NRJ1		EBRLNE											73	pCi/g			3.93																				
317	319.5	B1NRJ1		WSCF						0.14	pCi/g	U		0.33						0.11	pCi/g			0.004											0.012	pCi/g			0.005
Target Quantitation Limit (pCi/g)					N/A					1					400					1					1					N/A					1				

Table A4-22. Radiochemical Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Uranium-235 (15117-96-1) Sep/Plate/AEA					Uranium-238 (U-238) GEA					Uranium-238 (U-238) IX/Prec/AEA					Uranium-238 (U-238) Sep/Plate/AEA				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
13	15.5	B1NRH0		EBRLNE																				
13	15.5	B1NRH0		WSCF											0.13	pCi/g			0.005					
29	31.5	B1NRH1		EBRLNE	2.7	pCi/g	U		6.9	40.3	pCi/g	U		40.3						38	pCi/g			5.7
29	31.5	B1NT07	duplicate	EBRLNE	4.28	pCi/g			2.18	98.1	pCi/g	U		98.1						49.7	pCi/g			2.25
32	34.5	B1NRH2		WSCF											41	pCi/g			0.26					
32	34.5	B1NRH2		EBRLNE																				
32	34.5	B1NRH3	split	EBRLNE	3.61	pCi/g	U		6.9	15	pCi/g	U		15						56.6	pCi/g			5.7
47.5	49.5	B1NRH4		WSCF											0.17	pCi/g			0.013					
47.5	49.5	B1NRH4		EBRLNE																				
54.5	57	B1NRH7		EBRLNE																				
54.5	57	B1NRH7		WSCF											0.11	pCi/g			0.005					
132.5	135	B1NRH8		WSCF											0.17	pCi/g			0.013					
132.5	135	B1NRH8		EBRLNE																				
250.5	253	B1NRH9		WSCF											0.14	pCi/g			0.012					
250.5	253	B1NRH9		EBRLNE																				
285	287	B1NRJ0		WSCF											0.23	pCi/g			0.004					
285	287	B1NRJ0		EBRLNE																				
317	319.5	B1NRJ1		EBRLNE																				
317	319.5	B1NRJ1		WSCF											0.11	pCi/g			0.004					
Target Quantitation Limit (pCi/g)					1					N/A					1					1				

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Table A4-23. Metal Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Arsenic (7440-38-2) 200.8				Arsenic (7440-38-2) 6010				Barium (7440-39-3) 200.8				Barium (7440-39-3) 6010				Cadmium (7440-43-9) 6010				Chromium (7440-47-3) 200.8				Chromium (7440-47-3) 6010				Copper (7440-50-8) 200.8				Copper (7440-50-8) 6010			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF	3320	ug/kg							50000	ug/kg											6020	ug/kg							7910	ug/kg						
29	31.5	B1NRH1		EBRLNE																																				
29	31.5	B1NRH1		RLNP																																				
29	31.5	B1NRH1		STLSL					2700	ug/kg							46200	ug/kg			120	ug/kg	U						9300	ug/kg							11800	ug/kg		
29	31.5	B1NT07	duplicate	EBRLNE																																				
29	31.5	B1NT07	duplicate	STLSL					2500	ug/kg							51000	ug/kg			130	ug/kg	U						8800	ug/kg							7200	ug/kg		
29	31.5	B1NT08	duplicate	RLNP																																				
32	34.5	B1NRH2		RLNP																																				
32	34.5	B1NRH2		WSCF	2170	ug/kg							63600	ug/kg	E										10300	ug/kg							12700	ug/kg						
32	34.5	B1NRH3	split	STLSL					3800	ug/kg	D						55200	ug/kg	D		130	ug/kg	D						10200	ug/kg	D						8900	ug/kg	D	
47.5	49.5	B1NRH4		WSCF	3890	ug/kg							52300	ug/kg											7940	ug/kg							8490	ug/kg	C					
47.5	49.5	B1P3K2		RLNP																																				
54.5	57	B1NRH7		WSCF	2980	ug/kg							79400	ug/kg											8290	ug/kg							7810	ug/kg						
54.5	57	B1P3J7		RLNP																																				
132.5	135	B1NRH8		WSCF	2760	ug/kg							61400	ug/kg											8210	ug/kg							9330	ug/kg						
132.5	135	B1P3J8		RLNP																																				
250.5	253	B1NRH9		WSCF	2380	ug/kg							45500	ug/kg											12300	ug/kg							9500	ug/kg						
250.5	253	B1P3J9		RLNP																																				
285	287	B1NRJ0		WSCF	6370	ug/kg							117000	ug/kg											23600	ug/kg							23300	ug/kg						
285	287	B1P3K0		RLNP																																				
317	319.5	B1NRJ1		WSCF	716	ug/kg							42200	ug/kg											12400	ug/kg							9620	ug/kg						
317	319.5	B1P3K1		RLNP																																				
Target Quantitation Limit (ug/kg)					10000 (trace: 1,000)				10,000 (trace: 1000)				20,000 (trace: 5,000)				20,000 (trace: 5,000)				500				1,000				1,000				2,500				2,500			

Table A4-23. Metal Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Hexavalent Chromium (18540-29-9) 7196				Lead (7439-92-1) 200.8				Lead (7439-92-1) 6010				Mercury (7439-97-6) 200.8				Mercury (7439-97-6) 7471				Selenium (7782-49-2) 200.8				Selenium (7782-49-2) 6010				Silver (7440-22-4) 200.8				Silver (7440-22-4) 6010			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF					3410	ug/kg							50	ug/kg	U						298	ug/kg	U						99	ug/kg	U					
29	31.5	B1NRH1		EBRLNE																																				
29	31.5	B1NRH1		RLNP	220	ug/kg																																		
29	31.5	B1NRH1		STLSL									3100	ug/kg							112	ug/kg							890	ug/kg	U						630	ug/kg	B	
29	31.5	B1NT07	duplicate	EBRLNE																																				
29	31.5	B1NT07	duplicate	STLSL									3800	ug/kg							80	ug/kg							910	ug/kg	U						380	ug/kg	U	
29	31.5	B1NT08	duplicate	RLNP	200	ug/kg	U																																	
32	34.5	B1NRH2		RLNP	210	ug/kg	U																																	
32	34.5	B1NRH2		WSCF					3780	ug/kg							154	ug/kg							260	ug/kg	U						265	ug/kg						
32	34.5	B1NRH3	split	STLSL	100	ug/kg	N						4500	ug/kg	D						95.2	ug/kg							910	ug/kg	D						750	ug/kg	N	
47.5	49.5	B1NRH4		WSCF					4310	ug/kg							50	ug/kg	U						300	ug/kg	U						100	ug/kg	U					
47.5	49.5	B1P3K2		RLNP	210	ug/kg	U																																	
54.5	57	B1NRH7		WSCF					5870	ug/kg							50	ug/kg	U						419	ug/kg							100	ug/kg	U					
54.5	57	B1P3J7		RLNP	200	ug/kg	U																																	
132.5	135	B1NRH8		WSCF					5070	ug/kg							50	ug/kg	U						581	ug/kg							101	ug/kg	U					
132.5	135	B1P3J8		RLNP	247	ug/kg																																		
250.5	253	B1NRH9		WSCF					2850	ug/kg							51	ug/kg	U						304	ug/kg	U						101	ug/kg	U					
250.5	253	B1P3J9		RLNP	240	ug/kg																																		
285	287	B1NRJ0		WSCF					10300	ug/kg							51	ug/kg	U						786	ug/kg							127	ug/kg						
285	287	B1P3K0		RLNP	240	ug/kg	U																																	
317	319.5	B1NRJ1		WSCF					1520	ug/kg							49	ug/kg	U						394	ug/kg							98	ug/kg	U					
317	319.5	B1P3K1		RLNP	210	ug/kg	U																																	
Target Quantitation Limit (ug/kg)					500				1,000				1,000				N/A				200				10,000 (trace: 1,000)				1,000				500				500			

Table A4-23. Metal Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Uranium (7440-61-1) 200.8				Uranium (7440-61-1) KPA			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF	364	ug/kg						
29	31.5	B1NRH1		EBRLNE					103000	ug/kg		
29	31.5	B1NRH1		RLNP								
29	31.5	B1NRH1		STLSL								
29	31.5	B1NT07	duplicate	EBRLNE					147000	ug/kg		
29	31.5	B1NT07	duplicate	STLSL								
29	31.5	B1NT08	duplicate	RLNP								
32	34.5	B1NRH2		RLNP								
32	34.5	B1NRH2		WSCF	106000	ug/kg	E					
32	34.5	B1NRH3	split	STLSL								
47.5	49.5	B1NRH4		WSCF	250	ug/kg	X					
47.5	49.5	B1P3K2		RLNP								
54.5	57	B1NRH7		WSCF	465	ug/kg						
54.5	57	B1P3J7		RLNP								
132.5	135	B1NRH8		WSCF	505	ug/kg						
132.5	135	B1P3J8		RLNP								
250.5	253	B1NRH9		WSCF	336	ug/kg						
250.5	253	B1P3J9		RLNP								
285	287	B1NRJ0		WSCF	1190	ug/kg						
285	287	B1P3K0		RLNP								
317	319.5	B1NRJ1		WSCF	286	ug/kg						
317	319.5	B1P3K1		RLNP								
Target Quantitation Limit (ug/kg)					1,000				1,000			

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Table A4-24. Wet Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cyanide (57-12-5) 335.2				Cyanide (57-12-5) 9012				Fluoride (16984-48-8) 300				Fluoride (16984-48-8) 9056				Nitrate (14797-55-8) 300				Nitrate (14797-55-8) 9056				Nitrite (14797-65-0) 300				Nitrite (14797-65-0) 9056			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF	195	ug/kg	U						294	ug/kg	DU	J					2650	ug/kg	BD						1610	ug/kg	DU					
29	31.5	B1NRH1		STLSL		ug/kg			120	ug/kg	C					J	250	ug/kg	U						1640	ug/kg							2560	ug/kg		
29	31.5	B1NT07	duplicate	STLSL		ug/kg			230	ug/kg	C					J	260	ug/kg	U						974	ug/kg							1180	ug/kg		
32	34.5	B1NRH2		WSCF	152		U					J	288	ug/kg	DU	J					2840	ug/kg	BD						1580	ug/kg	DU					
32	34.5	B1NRH3	split	STLSL		ug/kg			210	ug/kg	B						260	ug/kg	U						2260	ug/kg							1510	ug/kg	N	
47.5	49.5	B1NRH4		WSCF	199	ug/kg	U						300	ug/kg	DU						3220	ug/kg	BD						1640	ug/kg	DU					
54.5	57	B1NRH7		WSCF	199		U						300	ug/kg	DU						3520	ug/kg	BD						1640	ug/kg	DU					
132.5	135	B1NRH8		WSCF	200		U						300	ug/kg	DU						5400	ug/kg	BD						1640	ug/kg	DU					
250.5	253	B1NRH9		WSCF	200		U						294	ug/kg	DU						11100	ug/kg	BD						1610	ug/kg	DU					
285	287	B1NRJ0		WSCF	200		U						300	ug/kg	DU						57100	ug/kg	D						1640	ug/kg	DU					
317	319.5	B1NRJ1		WSCF	200	ug/kg	U						294	ug/kg	DU						12400	ug/kg	BD						1610	ug/kg	DU					
Target Quantitation Limit (ug/kg)					500				N/A				5,000				N/A				2,500				N/A				2,500				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Phosphate (14265-44-2) 300				Phosphate (14265-44-2) 9056				Sulfate (14808-79-8) 300				Sulfate (14808-79-8) 9056			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF	6010	ug/kg	DU						12700	ug/kg	BD					
29	31.5	B1NRH1		STLSL					257000	ug/kg	CN						1900	ug/kg	B	
29	31.5	B1NT07	duplicate	STLSL					313000	ug/kg	CN						1600	ug/kg	B	
32	34.5	B1NRH2		WSCF	31000	ug/kg	BD						3360	ug/kg	DU					
32	34.5	B1NRH3	split	STLSL					197000	ug/kg	N						1800	ug/kg	B	
47.5	49.5	B1NRH4		WSCF	6130	ug/kg	DU						5980	ug/kg	BD					
54.5	57	B1NRH7		WSCF	6130	ug/kg	DU						6460	ug/kg	BD					
132.5	135	B1NRH8		WSCF	6130	ug/kg	DU						3500	ug/kg	DU					
250.5	253	B1NRH9		WSCF	6010	ug/kg	DU						8860	ug/kg	BD					
285	287	B1NRJ0		WSCF	6130	ug/kg	DU						35300	ug/kg	BD					
317	319.5	B1NRJ1		WSCF	6010	ug/kg	DU						12000	ug/kg	BD					
Target Quantitation Limit (ug/kg)					5,000				5,000				5,000				N/A			

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Table A4-25. Volatile Organic Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	(m+p)-Xylene (179601-23-1)				1,1,1-Trichloroethane (71-55-6)				1,1,2,2-Tetrachloroethane (79-34-5)				1,1,2-Trichloroethane (79-00-5)				1,1-Dichloroethane (75-34-3)				1,1-Dichloroethene (75-35-4)				1,2,4-Trimethylbenzene (95-63-6)				1,2-Dichloroethane (107-06-2)				1,2-Dichloroethene (Total) (540-59-0)			
					8260				8260				8260				8260				8260				8260				8260				8260				8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRC4		WSCF					1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U	
29	31.5	B1NRC6		STLSL					0.15	ug/kg	U		0.14	ug/kg	U		0.29	ug/kg	U		0.97	ug/kg	U		0.56	ug/kg	U		0.22	ug/kg	U		0.45	ug/kg	U		0.55	ug/kg	U	
29	31.5	B1NRC8	duplicate	STLSL					0.15	ug/kg	U		0.14	ug/kg	U		0.29	ug/kg	U		0.97	ug/kg	U		0.56	ug/kg	U		0.22	ug/kg	U		0.45	ug/kg	U		0.56	ug/kg	U	
32	34.5	B1NRD0		WSCF					1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U						1.2	ug/kg	U		1.2	ug/kg	U	
32	34.5	B1NRD2	split	STLSL	0.58	ug/kg	U		0.15	ug/kg	U		0.14	ug/kg	U		0.29	ug/kg	U		0.97	ug/kg	U		0.56	ug/kg	U		0.43	ug/kg	J		0.45	ug/kg	U		0.55	ug/kg	U	
32	34.5	B1NRH3	split	STLSL					0.15	ug/kg	U		0.15	ug/kg	U		0.29	ug/kg	U		0.99	ug/kg	U		0.57	ug/kg	U		0.55	ug/kg	J		0.45	ug/kg	U		0.56	ug/kg	U	
47.5	49.5	B1NRD4		WSCF					1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U	
54.5	57	B1NRF0		WSCF					1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U	
132.5	135	B1NRF2		WSCF					1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U	
250.5	253	B1NRF4		WSCF					1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U	
285	287	B1NRF6		WSCF					1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U	
317	319.5	B1NRF8		WSCF					1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U						1.3	ug/kg	U		1.3	ug/kg	U	
Split field blank tied to B1NRC4		B1NRP8	Field Blank	WSCF					1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRD4		B1NRR1	Field Blank	WSCF					1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF0		B1NRR4	Field Blank	WSCF					1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF2		B1NRR5	Field Blank	WSCF					1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF4		B1NRR6	Field Blank	WSCF					1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1N RF6		B1NRR7	Field Blank	WSCF					1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF8		B1NRR8	Field Blank	WSCF					1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					N/A				5				N/A				N/A				10				N/A				N/A				5				N/A			

Table A4-25. Volatile Organic Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	1,2-Dichloropropane (78-87-5)				1-Butanol (71-36-3)				2-Butanone (78-93-3)				2-Hexanone (591-78-6)				2-Pentanone, 4-Methyl (108-10-1)				Acetone (67-64-1)				Acetonitrile (75-05-8)				Benzene (71-43-2)			
					8260				8260				8260				8260				8260				8260				8260				8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRC4		WSCF	1	ug/kg	U		100	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U						1	ug/kg	U	
29	31.5	B1NRC6		STLSL	0.38	ug/kg	U		3.5	ug/kg	U		1.4	ug/kg	U		0.29	ug/kg	U		1.6	ug/kg	U		3.9	ug/kg	U		2	ug/kg	U		0.17	ug/kg	U	
29	31.5	B1NRC8	duplicate	STLSL	0.38	ug/kg	U		3.5	ug/kg	U		1.4	ug/kg	U		0.29	ug/kg	U		1.6	ug/kg	U		3.9	ug/kg	U		2	ug/kg	U		0.17	ug/kg	U	
32	34.5	B1NRD0		WSCF	1.2	ug/kg	U		120	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		8.2	ug/kg	B						1.2	ug/kg	U	
32	34.5	B1NRD2	split	STLSL	0.38	ug/kg	U		3.5	ug/kg	U		1.4	ug/kg	U		0.29	ug/kg	U		1.6	ug/kg	U		3.9	ug/kg	U		2	ug/kg	U		0.17	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	0.39	ug/kg	U		3.5	ug/kg	U		1.4	ug/kg	U		0.29	ug/kg	U		1.7	ug/kg	U		3.9	ug/kg	U		2	ug/kg	U		0.17	ug/kg	U	
47.5	49.5	B1NRD4		WSCF	1.1	ug/kg	U		110	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U	
54.5	57	B1NRF0		WSCF	1.1	ug/kg	U		110	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		7	ug/kg	B						1.1	ug/kg	U	
132.5	135	B1NRF2		WSCF	1	ug/kg	U		100	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		6.4	ug/kg							1	ug/kg	U	
250.5	253	B1NRF4		WSCF	1	ug/kg	U		100	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U						1	ug/kg	U	
285	287	B1NRF6		WSCF	1	ug/kg	U		100	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U						1	ug/kg	U	
317	319.5	B1NRF8		WSCF	1.3	ug/kg	U		130	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U						1.3	ug/kg	U	
Split field blank tied to B1NRC4		B1NRP8	Field Blank	WSCF	1	ug/L	U		100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U	
Field blank tied to B1NRD4		B1NRR1	Field Blank	WSCF	1	ug/L	U		100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		7.9	ug/L	B						1	ug/L	U	
Field blank tied to B1NRF0		B1NRR4	Field Blank	WSCF	1	ug/L	U		100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U	
Field blank tied to B1NRF2		B1NRR5	Field Blank	WSCF	1	ug/L	U		100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		7.5	ug/L							1	ug/L	U	
Field blank tied to B1NRF4		B1NRR6	Field Blank	WSCF	1	ug/L	U		100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U	
Field blank tied to B1N RF6		B1NRR7	Field Blank	WSCF	1	ug/L	U		100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U	
Field blank tied to B1NRF8		B1NRR8	Field Blank	WSCF	1	ug/L	U		100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U	
Target Quantitation Limit (ug/kg)					N/A				5,000				N/A				N/A				N/A				20				N/A				5			

Table A4-25. Volatile Organic Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Bromodichloromethane (75-27-4) 8260				Bromoform (75-25-2) 8260				Bromomethane (74-83-9) 8260				Carbon disulfide (75-15-0) 8260				Carbon tetrachloride (56-23-5) 8260				Chlorobenzene (108-90-7) 8260				Chloroethane (75-00-3) 8260				Chloroform (67-66-3) 8260				Chloromethane (74-87-3) 8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRC4		WSCF	1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
29	31.5	B1NRC6		STLSL	0.34	ug/kg	U		0.25	ug/kg	U		0.32	ug/kg	U		0.56	ug/kg	U		0.92	ug/kg	U		0.13	ug/kg	U		0.36	ug/kg	U		0.15	ug/kg	U		0.45	ug/kg	U	
29	31.5	B1NRC8	duplicate	STLSL	0.34	ug/kg	U		0.25	ug/kg	U		0.32	ug/kg	U		0.56	ug/kg	U		0.92	ug/kg	U		0.13	ug/kg	U		0.36	ug/kg	U		0.15	ug/kg	U		0.45	ug/kg	U	
32	34.5	B1NRD0		WSCF	1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
32	34.5	B1NRD2	split	STLSL	0.34	ug/kg	U		0.25	ug/kg	U		0.32	ug/kg	U		0.56	ug/kg	U		0.92	ug/kg	U		0.13	ug/kg	U		0.36	ug/kg	U		0.14	ug/kg	U		0.45	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	0.35	ug/kg	U		0.25	ug/kg	U		0.32	ug/kg	U		0.57	ug/kg	U		0.94	ug/kg	U		0.13	ug/kg	U		0.36	ug/kg	U		0.15	ug/kg	U		0.46	ug/kg	U	
47.5	49.5	B1NRD4		WSCF	1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
54.5	57	B1NRF0		WSCF	1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
132.5	135	B1NRF2		WSCF	1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
250.5	253	B1NRF4		WSCF	1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
285	287	B1NRF6		WSCF	1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
317	319.5	B1NRF8		WSCF	1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U	
Split field blank tied to B1NRC4		B1NRP8	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		8.2	ug/L			1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRD4		B1NRR1	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF0		B1NRR4	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF2		B1NRR5	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF4		B1NRR6	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1N RF6		B1NRR7	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF8		B1NRR8	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Table A4-25. Volatile Organic Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	cis-1,2-Dichloroethylene (156-59-2) 8260				cis-1,3-Dichloropropene (10061-01-5) 8260				Cyclohexanone (108-94-1) 8260				Dibromochloromethane (124-48-1) 8260				Ethylbenzene (100-41-4) 8260				Hexane (110-54-3) 8260				Methylene chloride (75-09-2) 8260				n-Butylbenzene (104-51-8) 8260				Styrene (100-42-5) 8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRC4		WSCF	1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
29	31.5	B1NRC6		STLSL	0.44	ug/kg	U		0.74	ug/kg	U		14	ug/kg	U		0.29	ug/kg	U		0.19	ug/kg	U		0.46	ug/kg	U		2.6	ug/kg	U		0.54	ug/kg	U		1.2	ug/kg	U	
29	31.5	B1NRC8	duplicate	STLSL	0.44	ug/kg	U		0.74	ug/kg	U		14	ug/kg	U		0.29	ug/kg	U		0.19	ug/kg	U		0.46	ug/kg	U		2.6	ug/kg	U		0.54	ug/kg	U		1.2	ug/kg	U	
32	34.5	B1NRD0		WSCF	1.2	ug/kg	U		1.2	ug/kg	U						1.2	ug/kg	U		1.2	ug/kg	U						1.2	ug/kg	U		1.2	ug/kg	U		9	ug/kg		
32	34.5	B1NRD2	split	STLSL	0.44	ug/kg	U		0.74	ug/kg	U		14	ug/kg	U		0.29	ug/kg	U		0.19	ug/kg	U		0.46	ug/kg	U		2.6	ug/kg	U		0.54	ug/kg	U		1.2	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	0.44	ug/kg	U		0.75	ug/kg	U		14	ug/kg	U		0.3	ug/kg	U		0.19	ug/kg	U		0.47	ug/kg	U		3.7	ug/kg	J		0.55	ug/kg	U		1.2	ug/kg	U	
47.5	49.5	B1NRD4		WSCF	1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
54.5	57	B1NRF0		WSCF	1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
132.5	135	B1NRF2		WSCF	1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
250.5	253	B1NRF4		WSCF	1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
285	287	B1NRF6		WSCF	1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U						1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
317	319.5	B1NRF8		WSCF	1.3	ug/kg	U		1.3	ug/kg	U						1.3	ug/kg	U		1.3	ug/kg	U						1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U	
Split field blank tied to B1NRC4		B1NRP8	Field Blank	WSCF	1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRD4		B1NRR1	Field Blank	WSCF	1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF0		B1NRR4	Field Blank	WSCF	1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF2		B1NRR5	Field Blank	WSCF	1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF4		B1NRR6	Field Blank	WSCF	1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1N RF6		B1NRR7	Field Blank	WSCF	1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF8		B1NRR8	Field Blank	WSCF	1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				5				N/A				16.5				5				N/A			

Table A4-25. Volatile Organic Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Tetrachloroethene (127-18-4) 8260				Tetrahydrofuran (109-99-9) 8260				Toluene (108-88-3) 8260				trans-1,2-Dichloroethylene (156-60-5) 8260				trans-1,3-Dichloropropene (10061-02-6) 8260				Trichloroethene (79-01-6) 8260				Vinyl chloride (75-01-4) 8260				Xylenes (total) (1330-20-7) 8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRC4		WSCF	1	ug/kg	U						1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
29	31.5	B1NRC6		STLSL	0.28	ug/kg	U						0.13	ug/kg	U		0.23	ug/kg	U		0.21	ug/kg	U		0.37	ug/kg	U		0.24	ug/kg	U		0.88	ug/kg	U	
29	31.5	B1NRC8	duplicate	STLSL	0.28	ug/kg	U						0.13	ug/kg	U		0.23	ug/kg	U		0.21	ug/kg	U		0.37	ug/kg	U		0.24	ug/kg	U		0.88	ug/kg	U	
32	34.5	B1NRD0		WSCF	1.2	ug/kg	U						1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U		1.2	ug/kg	U	
32	34.5	B1NRD2	split	STLSL	0.28	ug/kg	U		6.8	ug/kg	U		0.54	ug/kg	B		0.23	ug/kg	U		0.21	ug/kg	U		0.37	ug/kg	U		0.24	ug/kg	U		0.87	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	0.28	ug/kg	U						0.57	ug/kg	B		0.23	ug/kg	U		0.21	ug/kg	U		0.37	ug/kg	U		0.25	ug/kg	U		0.89	ug/kg	U	
47.5	49.5	B1NRD4		WSCF	1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
54.5	57	B1NRF0		WSCF	1.1	ug/kg	U						1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U		1.1	ug/kg	U	
132.5	135	B1NRF2		WSCF	1	ug/kg	U						1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
250.5	253	B1NRF4		WSCF	1	ug/kg	U						1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
285	287	B1NRF6		WSCF	1	ug/kg	U						1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U		1	ug/kg	U	
317	319.5	B1NRF8		WSCF	1.3	ug/kg	U						1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U		1.3	ug/kg	U	
Split field blank tied to B1NRC4		B1NRP8	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRD4		B1NRR1	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF0		B1NRR4	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF2		B1NRR5	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF4		B1NRR6	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1N RF6		B1NRR7	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Field blank tied to B1NRF8		B1NRR8	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					5				N/A				5				N/A				N/A				5				N/A				10			

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Table A4-26. Semivolatile Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	1,2,4-Trichlorobenzene (120-82-1) 8270				1,2-Dichlorobenzene (95-50-1) 8270				1,3-Dichlorobenzene (541-73-1) 8270				1,4-Dichlorobenzene (106-46-7) 8270				2,4,5-Trichlorophenol (95-95-4) 8270				2,4,6-Trichlorophenol (88-06-2) 8270				2,4-Dichlorophenol (120-83-2) 8270				2,4-Dimethylheptane (2213-23-2) 8270				2,4-Dimethylphenol (105-67-9) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF	150	ug/kg	U										260	ug/kg	U																					
29	31.5	B1NRH1		STLSL																													240	ug/kg						
29	31.5	B1NT07	duplicate	STLSL																													210	ug/kg						
32	34.5	B1NRH2		RLNP	350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		870	ug/kg	U		350	ug/kg	U		350	ug/kg	U						350	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U						34	ug/kg	U	
47.5	49.5	B1NRH4		WSCF	140	ug/kg	U										250	ug/kg	U																					
54.5	57	B1NRH7		WSCF	150	ug/kg	U										260	ug/kg	U																					
132.5	135	B1NRH8		WSCF	150	ug/kg	U										260	ug/kg	U																					
250.5	253	B1NRH9		WSCF	150	ug/kg	U										260	ug/kg	U																					
285	287	B1NRJ0		WSCF	170	ug/kg	U										290	ug/kg	U																					
317	319.5	B1NRJ1		WSCF	150	ug/kg	U										260	ug/kg	U																					
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	2,4-Dinitrophenol (51-28-5) 8270				2,4-Dinitrotoluene (121-14-2) 8270				2,6-Dinitrotoluene (606-20-2) 8270				2,6-Dimethylheptane (1072-05-5) 8270				2-Chloronaphthalene (91-58-7) 8270				2-Chlorophenol (95-57-8) 8270				2-Methylnaphthalene (91-57-6) 8270				2-Methylphenol (cresol, o-) (95-48-7) 8270				2-Nitroaniline (88-74-4) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF					150	ug/kg	U														150	ug/kg	U													
29	31.5	B1NRH1		STLSL																																				
29	31.5	B1NT07	duplicate	STLSL																																				
32	34.5	B1NRH2		RLNP	870	ug/kg	U		350	ug/kg	U		350	ug/kg	U						350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		870	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	340	ug/kg	U		34	ug/kg	U		34	ug/kg	U		150	ug/kg			34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U	
47.5	49.5	B1NRH4		WSCF					140	ug/kg	U														140	ug/kg	U													
54.5	57	B1NRH7		WSCF					150	ug/kg	U														150	ug/kg	U													
132.5	135	B1NRH8		WSCF					150	ug/kg	U														150	ug/kg	U													
250.5	253	B1NRH9		WSCF					150	ug/kg	U														150	ug/kg	U													
285	287	B1NRJ0		WSCF					170	ug/kg	U														170	ug/kg	U													
317	319.5	B1NRJ1		WSCF					150	ug/kg	U														150	ug/kg	U													
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Table A4-26. Semivolatile Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	4-Methylphenol (cresol, p-) (106-44-5) 8270				4-Nitroaniline (100-01-6) 8270				4-Nitrophenol (100-02-7) 8270				Acenaphthene (83-32-9) 8270				Acenaphthylene (208-96-8) 8270				Anthracene (120-12-7) 8270				Benzo(a)anthracene (56-55-3) 8270				Benzo(a)pyrene (50-32-8) 8270				Benzo(b)fluoranthene (205-99-2) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF									210	ug/kg	U		150	ug/kg	U																					
29	31.5	B1NRH1		STLSL																																				
29	31.5	B1NT07	duplicate	STLSL																																				
32	34.5	B1NRH2		RLNP	350	ug/kg	U		870	ug/kg	U		870	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U	
32	34.5	B1NRH3	split	STLSL					340	ug/kg	U		340	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U	
47.5	49.5	B1NRH4		WSCF									210	ug/kg	U		140	ug/kg	U																					
54.5	57	B1NRH7		WSCF									340	ug/kg	U		150	ug/kg	U																					
132.5	135	B1NRH8		WSCF									340	ug/kg	U		150	ug/kg	U																					
250.5	253	B1NRH9		WSCF									340	ug/kg	U		150	ug/kg	U																					
285	287	B1NRJ0		WSCF									240	ug/kg	U		170	ug/kg	U																					
317	319.5	B1NRJ1		WSCF									220	ug/kg	U		150	ug/kg	U																					
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Benzo(ghi)perylene (191-24-2) 8270				Benzo(k)fluoranthene (207-08-9) 8270				Bis(2-chloro-1-methylethyl)ether (108-60-1) 8270				Bis(2-Chloroethoxy)methane (111-91-1) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF																
29	31.5	B1NRH1		STLSL																
29	31.5	B1NT07	duplicate	STLSL																
32	34.5	B1NRH2		RLNP	350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U	
47.5	49.5	B1NRH4		WSCF																
54.5	57	B1NRH7		WSCF																
132.5	135	B1NRH8		WSCF																
250.5	253	B1NRH9		WSCF																
285	287	B1NRJ0		WSCF																
317	319.5	B1NRJ1		WSCF																
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A			

Table A4-27. Semivolatile Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Bis(2-chloroethyl) ether (111-44-4) 8270				Bis(2-ethylhexyl) phthalate (117-81-7) 8270				Butylbenzylphthalate (85-68-7) 8270				Carbazole (86-74-8) 8270				Chrysene (218-01-9) 8270				Dibenz[a,h]anthracene (53-70-3) 8270				Dibenzofuran (132-64-9) 8270				Diethylphthalate (84-66-2) 8270				Dimethyl phthalate (131-11-3) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF																																				
29	31.5	B1NRH1		STLSL																																				
29	31.5	B1NT07	duplicate	STLSL																																				
32	34.5	B1NRH2		RLNP	350	ug/kg	U		47	ug/kg	B		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U	
47.5	49.5	B1NRH4		WSCF																																				
54.5	57	B1NRH7		WSCF																																				
132.5	135	B1NRH8		WSCF																																				
250.5	253	B1NRH9		WSCF																																				
285	287	B1NRJ0		WSCF																																				
317	319.5	B1NRJ1		WSCF																																				
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Di-n-butylphthalate (84-74-2) 8270				Di-n-octylphthalate (117-84-0) 8270				Fluoranthene (206-44-0) 8270				Fluorene (86-73-7) 8270				Heptane, 2,5-dimethyl (2216-30-0) 8270				Hexachlorobenzene (118-74-1) 8270				Hexachlorobutadiene (87-68-3) 8270				Hexachlorocyclopentadiene (77-47-4) 8270				Hexachloroethane (67-72-1) 8270				Indeno(1,2,3-cd)pyrene (193-39-5) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF																																				
29	31.5	B1NRH1		STLSL																																				
29	31.5	B1NT07	duplicate	STLSL																																				
32	34.5	B1NRH2		RLNP	38	ug/kg	B		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U						350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	34	ug/kg	U		15	ug/kg	U		34	ug/kg	U		34	ug/kg	U		180	ug/kg			34	ug/kg	U		34	ug/kg	U		340	ug/kg	U		34	ug/kg	U	
47.5	49.5	B1NRH4		WSCF																																				
54.5	57	B1NRH7		WSCF																																				
132.5	135	B1NRH8		WSCF																																				
250.5	253	B1NRH9		WSCF																																				
285	287	B1NRJ0		WSCF																																				
317	319.5	B1NRJ1		WSCF																																				
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Table A4-27. Semivolatile Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Isophorone (78-59-1) 8270				Naphthalene (91-20-3) 8270				Nitrobenzene (98-95-3) 8270				n-Nitrosodi-n-dipropylamine (621-64-7) 8270				n-Nitrosodiphenylamine (86-30-6) 8270				Pentachlorophenol (87-86-5) 8270				Phenanthrene (85-01-8) 8270				Phenol (108-95-2) 8270				Pyrene (129-00-0) 8270				Tributyl phosphate (126-73-8) 8270			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF													150	ug/kg	U						210	ug/kg	U						150	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
29	31.5	B1NRH1		STLSL																																					120	ug/kg	J	
29	31.5	B1NT07	duplicate	STLSL																																					70	ug/kg	J	
32	34.5	B1NRH2		RLNP	350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		870	ug/kg	U		350	ug/kg	U		350	ug/kg	U		350	ug/kg	U		20	ug/kg	J	
32	34.5	B1NRH3	split	STLSL	34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		340	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U		34	ug/kg	U	
47.5	49.5	B1NRH4		WSCF													140	ug/kg	U						210	ug/kg	U						140	ug/kg	U		140	ug/kg	U		140	ug/kg	U	
54.5	57	B1NRH7		WSCF													150	ug/kg	U						410	ug/kg	U						150	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
132.5	135	B1NRH8		WSCF													150	ug/kg	U						410	ug/kg	U						150	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
250.5	253	B1NRH9		WSCF													150	ug/kg	U						410	ug/kg	U						150	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
285	287	B1NRJ0		WSCF													170	ug/kg	U						240	ug/kg	U						170	ug/kg	U		170	ug/kg	U		170	ug/kg	U	
317	319.5	B1NRJ1		WSCF													150	ug/kg	U						220	ug/kg	U						150	ug/kg	U		150	ug/kg	U		150	ug/kg	U	
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				3,300			

Table A4-28. Miscellaneous Analysis Results for Borehole C5515 (216-A-2) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Aroclor-1016 (12674-11-2) 8082				Aroclor-1221 (11104-28-2) 8082				Aroclor-1232 (11141-16-5) 8082				Aroclor-1242 (53469-21-9) 8082				Aroclor-1248 (12672-29-6) 8082				Aroclor-1254 (11097-69-1) 8082				Aroclor-1260 (11096-82-5) 8082				Aroclor-1262 (37324-23-5) 8082				Aroclor-1268 (11100-14-4) 8082			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF	11	ug/kg	U		21	ug/kg	U		11	ug/kg	U		11	ug/kg	U		11	ug/kg	U		11	ug/kg	U		11	ug/kg	U		11	ug/kg	U		11	ug/kg	U	
29	31.5	B1NRH1		STLSL	6.1	ug/kg	U		6.1	ug/kg	U		6.1	ug/kg	U		6.1	ug/kg	U		6.1	ug/kg	U		6.7	ug/kg	U		6.7	ug/kg	U		6.7	ug/kg	U		6.7	ug/kg	U	
29	31.5	B1NT07	duplicate	STLSL	6.2	ug/kg	U		6.2	ug/kg	U		6.2	ug/kg	U		6.2	ug/kg	U		6.2	ug/kg	U		52	ug/kg			6.8	ug/kg	U		6.8	ug/kg	U		6.8	ug/kg	U	
32	34.5	B1NRH2		RLNP																																				
32	34.5	B1NRH2		WSCF	10	ug/kg	U		21	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		34	ug/kg			10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
32	34.5	B1NRH3	split	STLSL	6.2	ug/kg	U		6.2	ug/kg	U		6.2	ug/kg	U		6.2	ug/kg	U		6.2	ug/kg	U		49	ug/kg			6.8	ug/kg	U		6.8	ug/kg	U		6.8	ug/kg	U	
47.5	49.5	B1NRH4		WSCF	10	ug/kg	U		21	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
54.5	57	B1NRH7		WSCF	10	ug/kg	U		20	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
132.5	135	B1NRH8		WSCF	10	ug/kg	U		20	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
250.5	253	B1NRH9		WSCF	10	ug/kg	U		20	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
285	287	B1NRJ0		WSCF	12	ug/kg	U		24	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U		12	ug/kg	U	
317	319.5	B1NRJ1		WSCF	10	ug/kg	U		20	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U		10	ug/kg	U	
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Total petroleum hydrocarbons - diesel range (TPHDIESEL) WDOE TPH				Total petroleum hydrocarbons - gasoline range (TPHGASOLINE) WDOE TPH				Total petroleum hydrocarbons - kerosene range (TPHKEROSENE) WDOE TPH			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
13	15.5	B1NRH0		WSCF	3200	ug/kg	U		250	ug/kg	U		3200	ug/kg	U	
29	31.5	B1NRH1		STLSL	1500	ug/kg	U		18	ug/kg	U		630	ug/kg	U	
29	31.5	B1NT07	duplicate	STLSL	1600	ug/kg	U		18	ug/kg	U		640	ug/kg	U	
32	34.5	B1NRH2		RLNP	3500	ug/kg	U						3500	ug/kg	U	
32	34.5	B1NRH2		WSCF												
32	34.5	B1NRH3	split	STLSL	1600	ug/kg	U		18	ug/kg	U		640	ug/kg	U	
47.5	49.5	B1NRH4		WSCF	5100	ug/kg	U		250	ug/kg	U		5100	ug/kg	U	
54.5	57	B1NRH7		WSCF	3100	ug/kg	U		250	ug/kg	U		3100	ug/kg	U	
132.5	135	B1NRH8		WSCF	3100	ug/kg	U		250	ug/kg	U		3100	ug/kg	U	
250.5	253	B1NRH9		WSCF	3100	ug/kg	U		250	ug/kg	U		3100	ug/kg	U	
285	287	B1NRJ0		WSCF	3700	ug/kg	U		250	ug/kg	U		3700	ug/kg	U	
317	319.5	B1NRJ1		WSCF	3300	ug/kg	U		250	ug/kg	U		3300	ug/kg	U	
Target Quantitation Limit (ug/kg)					5000				5000				5000			

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Table A4-29. Radiochemical Analysis Results for Borehole C5515 (216-A-2) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cesium-137 (10045-97-3) GAMMA_GS_AE					Cesium-137 (10045-97-3) GEA					Cobalt-60 (10198-40-0) GEA					Gross alpha (12587-46-1) ALPHA_LSC_AE					Gross beta (12587-47-2) BETA_LSC_AE					Strontium-90 (10098-97-2) SR90_SEP_LSC					Technetium-99 (14133-76-7) RADISO_ICPMS_ASTM_AE					Uranium-238 (U-238) RADISO_ICPMS_ASTM_AE				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
17.5	18	B1NPW0		ESL																20.6	pCi/g	U			83.5	pCi/g	U			4.65	pCi/g	U			228	pCi/g	U			0.18	pCi/g			
24.5	25	B1NPW3		ESL						0.157	pCi/g			0.121						19.9	pCi/g	U			80.7	pCi/g	U			4.53	pCi/g	U			221	pCi/g	U			0.131	pCi/g			
30	30.5	B1NPW4		ESL	12700	pCi/g			23.8	9690	pCi/g			13.3						16700	pCi/g			19.9	361000	pCi/g			80.6	162000	pCi/g			42.8	221	pCi/g	U			18.5	pCi/g			
29	31.5	B1NR91		ESL	1070	pCi/g			8.21	827	pCi/g			1.06	0.285	pCi/g			0.171	8580	pCi/g			24.3	45500	pCi/g			85	27800	pCi/g			6.68	97.5	pCi/g	U			27.7	pCi/g			
31.5	32	B1NPW5		ESL	393	pCi/g			3.25	448	pCi/g			5.4						5430	pCi/g			23	11100	pCi/g			80.5	8370	pCi/g			6.3	92.4	pCi/g	U			17.5	pCi/g			
34	34.5	B1NPW6		ESL	1030	pCi/g			4.69	1700	pCi/g			0.288						4090	pCi/g			20.4	23500	pCi/g			71.4	14100	pCi/g			5.6	81.9	pCi/g	U			68.6	pCi/g			
32	34.5	B1NR92	duplicate	ESL	110	pCi/g			10.7	176	pCi/g			3.57						2450	pCi/g			20.9	38200	pCi/g			73.2	22700	pCi/g			5.56	84	pCi/g	U			12.9	pCi/g			
37	37.5	B1NPW7		ESL	873	pCi/g			7.01	1390	pCi/g			0.81	1.25	pCi/g			0.259	1540	pCi/g			21.7	10900	pCi/g			75.8	6290	pCi/g			6.31	87.1	pCi/g	U			9.68	pCi/g			
39.5	40	B1NPW8	duplicate	ESL	16.4	pCi/g			3.2	41.9	pCi/g			0.4						50.1	pCi/g			19	133	pCi/g			76.7	83.8	pCi/g			4.56	209	pCi/g	U			0.322	pCi/g			
45	45.5	B1NPX0		ESL						2.5	pCi/g			0.183						23.8	pCi/g			20.9	84.4	pCi/g	U			15.3	pCi/g			4.95	231	pCi/g	U			0.175	pCi/g			
47	47.5	B1NPX1		ESL	38.3	pCi/g			3.45	9.29	pCi/g			0.319						18.2	pCi/g	U			195	pCi/g			73.8	101	pCi/g			4.3	202	pCi/g	U			0.145	pCi/g			
51.5	52	B1NPX3		ESL						0.511	pCi/g			0.206						21.5	pCi/g	U			87.1	pCi/g	U			5.11	pCi/g	U			238	pCi/g	U			0.175	pCi/g			
57	57.5	B1NPX5		ESL	6.16	pCi/g			5.45	9.01	pCi/g			1.77	0.919	pCi/g			0.394	20.7	pCi/g	U			86.3	pCi/g			72.6	56.2	pCi/g			0.564	83.3	pCi/g	U			0.154	pCi/g			
59.5	60	B1NPX6		ESL						0.914	pCi/g			0.228						19.8	pCi/g	U			80.3	pCi/g	U			4.61	pCi/g	U			219	pCi/g	U			0.197	pCi/g			
64	64.5	B1NPX8		ESL						7.78	pCi/g			0.322						17.2	pCi/g	U			69.5	pCi/g	U			28	pCi/g			4.06	190	pCi/g	U			0.136	pCi/g			
70	70.5	B1NPY0		ESL																23.4	pCi/g	U			94.5	pCi/g	U			5.6	pCi/g	U			258	pCi/g	U			0.207	pCi/g			
72	72.5	B1NPY1		ESL																20.7	pCi/g	U			83.8	pCi/g	U			5.15	pCi/g			4.65	229	pCi/g	U			0.156	pCi/g			
79.5	80	B1NPY4		ESL																21.1	pCi/g	U			85.3	pCi/g	U			4.92	pCi/g	U			233	pCi/g	U			0.143	pCi/g			
86.5	87	B1NPY7		ESL																21	pCi/g	U			84.9	pCi/g	U			5.35	pCi/g	U			233	pCi/g	U			0.159	pCi/g			
92.5	93	B1NPY9		ESL																20.3	pCi/g	U			82.2	pCi/g	U			5.25	pCi/g	U			224	pCi/g	U			0.151	pCi/g			
106.5	107	B1NR05		ESL																20.7	pCi/g	U			83.9	pCi/g	U			5.3	pCi/g	U			229	pCi/g	U			0.158	pCi/g			
132	132.5	B1NR16		ESL																21	pCi/g	U			84.9	pCi/g	U			5.42	pCi/g	U			231	pCi/g	U			0.197	pCi/g			
152	152.5	B1NR24		ESL																20.5	pCi/g	U			83	pCi/g	U			5.24	pCi/g	U			226	pCi/g	U			0.225	pCi/g			
194.5	195	B1NR41		ESL																20.6	pCi/g	U			83.4	pCi/g	U			8.36	pCi/g			5.2	228	pCi/g	U			0.189	pCi/g			
202	202.5	B1NR44		ESL																21.1	pCi/g	U			85.4	pCi/g	U			5.38	pCi/g	U			233	pCi/g	U			0.146	pCi/g			
237	237.5	B1NR58		ESL																20.3	pCi/g	U			82.2	pCi/g	U			5.54	pCi/g	U			224	pCi/g	U			0.126	pCi/g			
250	250.5	B1NR63		ESL																21.8	pCi/g	U			88.2	pCi/g	U			5.97	pCi/g	U			241	pCi/g	U			0.123	pCi/g			
265.5	266	B1NR69		ESL																18.3	pCi/g	U			74	pCi/g	U			5.06	pCi/g	U			202	pCi/g	U			0.105	pCi/g			
282	282.5	B1NR76		ESL																17.5	pCi/g	U			70.9	pCi/g	U			4.83	pCi/g	U			193	pCi/g	U			0.121	pCi/g			
284.5	285	B1NR77		ESL																21.3	pCi/g	U			86.1	pCi/g	U			5.87	pCi/g	U			234	pCi/g	U			0.363	pCi/g			
289.5	290	B1NRP7	duplicate	ESL																22.7	pCi/g	U			91.9	pCi/g	U			6.3	pCi/g	U			251	pCi/g	U			0.407	pCi/g			
297	297.5	B1NR82		ESL																18.8	pCi/g	U			75.9	pCi/g	U			5.11	pCi/g	U			207	pCi/g	U			0.222	pCi/g			
302	302.5	B1NR84		ESL																16.9	pCi/g	U			68.5	pCi/g	U			4.63	pCi/g	U			186	pCi/g	U			0.4	pCi/g			

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Table A4-30. Metal Analysis Results for Borehole C5515 (216-A-2) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Antimony (7440-36-0) 6020M_ICPMS_ASTM_AE				Arsenic (7440-38-2) 6020M_ICPMS_ASTM_AE		Barium (7440-39-3) 6010M_ICP_ASTM_AE				Cadmium (7440-43-9) 6020M_ICPMS_ASTM_AE				Calcium (7440-70-2) 6010M_ICP_ASTM_AE				Chromium (7440-47-3) 6020M_ICPMS_ASTM_AE				Copper (7440-50-8) 6020M_ICPMS_ASTM_AE				Lead (7439-92-1) 6020M_ICPMS_ASTM_AE			
					Conc'n	Units	Q	VQ	Conc'n	Units	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
17.5	18	B1NPW0		ESL	13.3	ug/kg	U		2130	ug/kg	60700	ug/kg	C		133	ug/kg	U		7510000	ug/kg			7260	ug/kg			11100	ug/kg			2480	ug/kg		
24.5	25	B1NPW3		ESL	12.9	ug/kg	U		1140	ug/kg	75000	ug/kg	C		129	ug/kg	U		4960000	ug/kg			4570	ug/kg			11300	ug/kg			2810	ug/kg		
30	30.5	B1NPW4		ESL	29.3	ug/kg			2360	ug/kg	50500	ug/kg	C		129	ug/kg	U		8140000	ug/kg			10500	ug/kg			8990	ug/kg			3840	ug/kg		
29	31.5	B1NR91		ESL	28.5	ug/kg	U		2460	ug/kg	70700	ug/kg			266	ug/kg			7930000	ug/kg			11900	ug/kg			10500	ug/kg			3670	ug/kg		
31.5	32	B1NPW5		ESL	27	ug/kg	U		2460	ug/kg	55200	ug/kg			91.5	ug/kg			7510000	ug/kg			9830	ug/kg			8400	ug/kg			3080	ug/kg		
34	34.5	B1NPW6		ESL	24	ug/kg	U		2800	ug/kg	56000	ug/kg			55.2	ug/kg			8760000	ug/kg			10600	ug/kg			8940	ug/kg			2860	ug/kg		
32	34.5	B1NR92	duplicate	ESL	24.5	ug/kg	U		2590	ug/kg	66300	ug/kg			61.5	ug/kg			9060000	ug/kg			10900	ug/kg			10000	ug/kg			3480	ug/kg		
37	37.5	B1NPW7		ESL	25.4	ug/kg	U		2630	ug/kg	55400	ug/kg			51.6	ug/kg			8650000	ug/kg			9790	ug/kg			8610	ug/kg			3190	ug/kg		
39.5	40	B1NPW8	duplicate	ESL	19.6	ug/kg			2140	ug/kg	45100	ug/kg	C		122	ug/kg	U		8120000	ug/kg			7210	ug/kg			7420	ug/kg			3120	ug/kg		
45	45.5	B1NPX0		ESL	13.5	ug/kg	U		2610	ug/kg	62500	ug/kg	C		135	ug/kg	U		8680000	ug/kg			9710	ug/kg			8210	ug/kg			3630	ug/kg		
47	47.5	B1NPX1		ESL	12.5	ug/kg			2580	ug/kg	52500	ug/kg			118	ug/kg	U		8230000	ug/kg			8860	ug/kg			8720	ug/kg			3120	ug/kg		
51.5	52	B1NPX3		ESL	16	ug/kg			2830	ug/kg	55600	ug/kg	C		139	ug/kg	U		9720000	ug/kg			11200	ug/kg			8050	ug/kg			3310	ug/kg		
57	57.5	B1NPX5		ESL	24.4	ug/kg	U		2750	ug/kg	54900	ug/kg			50.8	ug/kg			9670000	ug/kg			10200	ug/kg			8700	ug/kg			3360	ug/kg		
59.5	60	B1NPX6		ESL	13.7	ug/kg			3150	ug/kg	61900	ug/kg	C		128	ug/kg	U		9090000	ug/kg			10500	ug/kg			8920	ug/kg			3640	ug/kg		
64	64.5	B1NPX8		ESL	11.1	ug/kg	U		1640	ug/kg	61100	ug/kg			111	ug/kg	U		7300000	ug/kg			6830	ug/kg			7620	ug/kg			2720	ug/kg		
70	70.5	B1NPY0		ESL	15.1	ug/kg	U		3050	ug/kg	70100	ug/kg			151	ug/kg	U		10500000	ug/kg			11200	ug/kg			11000	ug/kg			3930	ug/kg		
72	72.5	B1NPY1		ESL	13.4	ug/kg	U		2460	ug/kg	53600	ug/kg	C		134	ug/kg	U		8280000	ug/kg			9040	ug/kg			8280	ug/kg			3440	ug/kg		
79.5	80	B1NPY4		ESL	13.6	ug/kg	U		2720	ug/kg	71800	ug/kg	C		136	ug/kg	U		8340000	ug/kg			10400	ug/kg			8470	ug/kg			3730	ug/kg		
86.5	87	B1NPY7		ESL	13.6	ug/kg	U		3150	ug/kg	71200	ug/kg			136	ug/kg	U		8570000	ug/kg			11900	ug/kg			9350	ug/kg			4170	ug/kg		
92.5	93	B1NPY9		ESL	13.1	ug/kg	U		3240	ug/kg	67100	ug/kg			131	ug/kg	U		8420000	ug/kg			12000	ug/kg			9790	ug/kg			4170	ug/kg		
106.5	107	B1NR05		ESL	13.4	ug/kg	U		2600	ug/kg	59200	ug/kg			134	ug/kg	U		8210000	ug/kg			9400	ug/kg			8380	ug/kg			3210	ug/kg		
132	132.5	B1NR16		ESL	13.5	ug/kg	U		2580	ug/kg	68600	ug/kg			135	ug/kg	U		8270000	ug/kg			9460	ug/kg			8900	ug/kg			3580	ug/kg		
152	152.5	B1NR24		ESL	13.2	ug/kg	U		2580	ug/kg	67300	ug/kg			132	ug/kg	U		7970000	ug/kg			11100	ug/kg			9780	ug/kg			3550	ug/kg		
194.5	195	B1NR41		ESL	13.3	ug/kg	U		2560	ug/kg	78500	ug/kg			133	ug/kg	U		8180000	ug/kg			13300	ug/kg			11000	ug/kg			3640	ug/kg		
202	202.5	B1NR44		ESL	13.6	ug/kg	U		1740	ug/kg	56900	ug/kg			136	ug/kg	U		6620000	ug/kg			15800	ug/kg			9970	ug/kg			2710	ug/kg		
237	237.5	B1NR58		ESL	13.1	ug/kg	U		1510	ug/kg	54700	ug/kg			131	ug/kg	U		6000000	ug/kg			10600	ug/kg			8810	ug/kg			2770	ug/kg		
250	250.5	B1NR63		ESL	14.1	ug/kg	U		1550	ug/kg	51100	ug/kg			141	ug/kg	U		6100000	ug/kg			14800	ug/kg			9510	ug/kg			2690	ug/kg		
265.5	266	B1NR69		ESL	11.8	ug/kg	U		1050	ug/kg	59000	ug/kg			118	ug/kg	U		5210000	ug/kg			8140	ug/kg			8890	ug/kg			2340	ug/kg		
282	282.5	B1NR76		ESL	11.3	ug/kg	U		751	ug/kg	56000	ug/kg			113	ug/kg	U		4980000	ug/kg			15000	ug/kg			10900	ug/kg			1940	ug/kg		
284.5	285	B1NR77		ESL	13.7	ug/kg	U		7910	ug/kg	158000	ug/kg			185	ug/kg			13300000	ug/kg			34600	ug/kg			24900	ug/kg			6930	ug/kg		
289.5	290	B1NRP7	duplicate	ESL	14.7	ug/kg	U		11000	ug/kg	204000	ug/kg			351	ug/kg			21000000	ug/kg			47500	ug/kg			37400	ug/kg			9440	ug/kg		
297	297.5	B1NR82		ESL	12.1	ug/kg	U		2140	ug/kg	142000	ug/kg			150	ug/kg			9870000	ug/kg			23600	ug/kg			23500	ug/kg			5200	ug/kg		
302	302.5	B1NR84		ESL	10.9	ug/kg	U		3020	ug/kg	134000	ug/kg			133	ug/kg			11100000	ug/kg			20900	ug/kg			21100	ug/kg			7080	ug/kg		

Table A4-30. Metal Analysis Results for Borehole C5515 (216-A-2) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Magnesium (7439-95-4)				Potassium (7440-09-7)				Selenium (7782-49-2)				Silver (7440-22-4)			
					6010M_ICP_ASTM_AE				6010M_ICP_ASTM_AE				6020M_ICPMS_ASTM_AE				6020M_ICPMS_ASTM_AE			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
17.5	18	B1NPW0		ESL	4150000	ug/kg			827000	ug/kg			267	ug/kg	U		53.9	ug/kg		
24.5	25	B1NPW3		ESL	3190000	ug/kg			695000	ug/kg			258	ug/kg	U		35.7	ug/kg		
30	30.5	B1NPW4		ESL	4590000	ug/kg			965000	ug/kg			257	ug/kg	U		925	ug/kg		
29	31.5	B1NR91		ESL	5220000	ug/kg			1180000	ug/kg			2850	ug/kg	U		615	ug/kg		
31.5	32	B1NPW5		ESL	4220000	ug/kg			932000	ug/kg			2700	ug/kg	U		457	ug/kg		
34	34.5	B1NPW6		ESL	4610000	ug/kg			948000	ug/kg			2400	ug/kg	U		334	ug/kg		
32	34.5	B1NR92	duplicate	ESL	5050000	ug/kg			1010000	ug/kg			2450	ug/kg	U		416	ug/kg		
37	37.5	B1NPW7		ESL	4550000	ug/kg			899000	ug/kg			2540	ug/kg	U		150	ug/kg		
39.5	40	B1NPW8	duplicate	ESL	3790000	ug/kg			805000	ug/kg			245	ug/kg	U		44.7	ug/kg		
45	45.5	B1NPX0		ESL	4530000	ug/kg			943000	ug/kg			270	ug/kg	U		40.5	ug/kg		
47	47.5	B1NPX1		ESL	4220000	ug/kg			939000	ug/kg			236	ug/kg	U		43.6	ug/kg		
51.5	52	B1NPX3		ESL	4940000	ug/kg			1140000	ug/kg			278	ug/kg	U		37.4	ug/kg		
57	57.5	B1NPX5		ESL	5040000	ug/kg			1040000	ug/kg			2440	ug/kg	U		46.2	ug/kg		
59.5	60	B1NPX6		ESL	5070000	ug/kg			1170000	ug/kg			256	ug/kg	U		44.9	ug/kg		
64	64.5	B1NPX8		ESL	3600000	ug/kg			1080000	ug/kg			222	ug/kg	U		38.6	ug/kg		
70	70.5	B1NPY0		ESL	5670000	ug/kg			1300000	ug/kg			302	ug/kg	U		46.6	ug/kg		
72	72.5	B1NPY1		ESL	4660000	ug/kg			1060000	ug/kg			268	ug/kg	U		43.6	ug/kg		
79.5	80	B1NPY4		ESL	4740000	ug/kg			1360000	ug/kg			273	ug/kg	U		34.8	ug/kg		
86.5	87	B1NPY7		ESL	5150000	ug/kg			1570000	ug/kg			271	ug/kg	U		41.9	ug/kg		
92.5	93	B1NPY9		ESL	4720000	ug/kg			1330000	ug/kg			263	ug/kg	U		40.7	ug/kg		
106.5	107	B1NR05		ESL	4520000	ug/kg			1170000	ug/kg			268	ug/kg	U		35.4	ug/kg		
132	132.5	B1NR16		ESL	4630000	ug/kg			1220000	ug/kg			271	ug/kg	U		45.5	ug/kg		
152	152.5	B1NR24		ESL	4560000	ug/kg			1260000	ug/kg			265	ug/kg	U		40.7	ug/kg		
194.5	195	B1NR41		ESL	5140000	ug/kg			1570000	ug/kg			266	ug/kg	U		48.6	ug/kg		
202	202.5	B1NR44		ESL	4430000	ug/kg			1060000	ug/kg			273	ug/kg	U		42.4	ug/kg		
237	237.5	B1NR58		ESL	3950000	ug/kg			1040000	ug/kg			263	ug/kg	U		39.1	ug/kg		
250	250.5	B1NR63		ESL	3930000	ug/kg			1010000	ug/kg			282	ug/kg	U		37.5	ug/kg		
265.5	266	B1NR69		ESL	2690000	ug/kg			873000	ug/kg			236	ug/kg	U		34.8	ug/kg		
282	282.5	B1NR76		ESL	2510000	ug/kg			638000	ug/kg			227	ug/kg	U		43.4	ug/kg		
284.5	285	B1NR77		ESL	9490000	ug/kg			3270000	ug/kg			275	ug/kg	U		92.8	ug/kg		
289.5	290	B1NRP7	duplicate	ESL	12400000	ug/kg			3320000	ug/kg			294	ug/kg	U		111	ug/kg		
297	297.5	B1NR82		ESL	7450000	ug/kg			2320000	ug/kg			242	ug/kg	U		70.6	ug/kg		
302	302.5	B1NR84		ESL	7230000	ug/kg			2110000	ug/kg			219	ug/kg	U		75.1	ug/kg		

Table A4-31. Wet Chemistry Analysis Results for Borehole C5515 (216-A-2) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Nitrate (14797-55-8) 9056				Nitrite (14797-65-0) 9056				Alkalinity (ALKALINITY) 2320				Fluoride (16984-48-8) 9056				Phosphate (14265-44-2) 9056				Sulfate (14808-79-8) 9056			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
17.5	18	B1NPW0		ESL	1130	ug/kg	U		1130	ug/kg	U		54100	ug/kg			498	ug/kg			1690	ug/kg	U		1690	ug/kg	U	
24.5	25	B1NPW3		ESL	1000	ug/kg	U		1000	ug/kg	U		46500	ug/kg			322	ug/kg			1500	ug/kg	U		14100	ug/kg		
30	30.5	B1NPW4		ESL	1010	ug/kg	U		1010	ug/kg	U		124000	ug/kg			202	ug/kg	U		47800	ug/kg			1520	ug/kg	U	
29	31.5	B1NR91		ESL	1000	ug/kg	U		1000	ug/kg	U		57800	ug/kg			200	ug/kg	U		31900	ug/kg			1500	ug/kg	U	
31.5	32	B1NPW5		ESL	997	ug/kg	U		997	ug/kg	U		127000	ug/kg			205	ug/kg			110000	ug/kg			1500	ug/kg	U	
34	34.5	B1NPW6		ESL	993	ug/kg	U		993	ug/kg	U		73000	ug/kg			199	ug/kg	U		34900	ug/kg			1490	ug/kg	U	
32	34.5	B1NR92	duplicate	ESL	999	ug/kg	U		999	ug/kg	U		54700	ug/kg			200	ug/kg	U		49100	ug/kg			1500	ug/kg	U	
37	37.5	B1NPW7		ESL	985	ug/kg	U		985	ug/kg	U		54700	ug/kg			197	ug/kg	U		10300	ug/kg			2070	ug/kg		
39.5	40	B1NPW8	duplicate	ESL	7510	ug/kg			1010	ug/kg	U		37500	ug/kg			201	ug/kg	U		5920	ug/kg			1510	ug/kg	U	
45	45.5	B1NPX0		ESL	1000	ug/kg	U		1000	ug/kg	U		42000	ug/kg			201	ug/kg	U		6470	ug/kg			1510	ug/kg	U	
47	47.5	B1NPX1		ESL	2170	ug/kg			1000	ug/kg	U		60000	ug/kg			200	ug/kg	U		6950	ug/kg			2710	ug/kg		
51.5	52	B1NPX3		ESL	1020	ug/kg	U		1020	ug/kg	U		36300	ug/kg			203	ug/kg	U		1520	ug/kg	U		3670	ug/kg		
57	57.5	B1NPX5		ESL	1790	ug/kg			1000	ug/kg	U		44800	ug/kg			201	ug/kg	U		1510	ug/kg	U		7630	ug/kg		
59.5	60	B1NPX6		ESL	3500	ug/kg			1020	ug/kg	U		37900	ug/kg			203	ug/kg	U		1530	ug/kg	U		6820	ug/kg		
64	64.5	B1NPX8		ESL	13000	ug/kg			1000	ug/kg	U		44100	ug/kg			200	ug/kg	U		1500	ug/kg	U		12500	ug/kg		
70	70.5	B1NPY0		ESL	1410	ug/kg			1000	ug/kg	U		44900	ug/kg			200	ug/kg	U		1500	ug/kg	U		9430	ug/kg		
72	72.5	B1NPY1		ESL	2520	ug/kg			1020	ug/kg	U		38800	ug/kg			219	ug/kg			1530	ug/kg	U		18900	ug/kg		
79.5	80	B1NPY4		ESL	1740	ug/kg			1130	ug/kg	U		43600	ug/kg			290	ug/kg			1690	ug/kg	U		39500	ug/kg		
86.5	87	B1NPY7		ESL	5910	ug/kg			1000	ug/kg	U		39600	ug/kg			291	ug/kg			1500	ug/kg	U		75100	ug/kg		
92.5	93	B1NPY9		ESL	2830	ug/kg			1000	ug/kg	U		39500	ug/kg			200	ug/kg	U		1500	ug/kg	U		53800	ug/kg		
106.5	107	B1NR05		ESL	1670	ug/kg			1000	ug/kg	U		51700	ug/kg			214	ug/kg			1500	ug/kg	U		8350	ug/kg		
132	132.5	B1NR16		ESL	1220	ug/kg			1000	ug/kg	U		44800	ug/kg			258	ug/kg			1500	ug/kg	U		3370	ug/kg		
152	152.5	B1NR24		ESL	1130	ug/kg			1000	ug/kg	U		45600	ug/kg			200	ug/kg	U		1500	ug/kg	U		5850	ug/kg		
194.5	195	B1NR41		ESL	2090	ug/kg			1000	ug/kg	U		51700	ug/kg			200	ug/kg	U		1500	ug/kg	U		6000	ug/kg		
202	202.5	B1NR44		ESL	1220	ug/kg			1000	ug/kg	U		44100	ug/kg			237	ug/kg			1500	ug/kg	U		4900	ug/kg		
237	237.5	B1NR58		ESL	1000	ug/kg	U		1000	ug/kg	U		38100	ug/kg			200	ug/kg	U		1500	ug/kg	U		4460	ug/kg		
250	250.5	B1NR63		ESL	1000	ug/kg	U		1000	ug/kg	U		44800	ug/kg			201	ug/kg			1500	ug/kg	U		7120	ug/kg		
265.5	266	B1NR69		ESL	1020	ug/kg	U		1020	ug/kg	U		48900	ug/kg			204	ug/kg	U		1530	ug/kg	U		9140	ug/kg		
282	282.5	B1NR76		ESL	1800	ug/kg			1000	ug/kg	U		50200	ug/kg			234	ug/kg			1500	ug/kg	U		6860	ug/kg		
284.5	285	B1NR77		ESL	33700	ug/kg			1000	ug/kg	U		50200	ug/kg			200	ug/kg	U		1500	ug/kg	U		28600	ug/kg		
289.5	290	B1NRP7	duplicate	ESL	51100	ug/kg			1060	ug/kg	U		72000	ug/kg			289	ug/kg			1600	ug/kg	U		43400	ug/kg		
297	297.5	B1NR82		ESL	203000	ug/kg			1000	ug/kg	U		68400	ug/kg			325	ug/kg			1500	ug/kg	U		31100	ug/kg		
302	302.5	B1NR84		ESL	234000	ug/kg			1000	ug/kg	U		63100	ug/kg			321	ug/kg			1500	ug/kg	U		35500	ug/kg		

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Table A4-32. Miscellaneous Analysis Results for Borehole C5515 (216-A-2) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Total carbon (TC) 415.1				Total Inorganic Carbon (TINC) 415.1				Total organic carbon (TOC) 415.1			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
17.5	18	B1NPW0		ESL	2510000	ug/kg			1820000	ug/kg			684000	ug/kg		
24.5	25	B1NPW3		ESL	1570000	ug/kg			622000	ug/kg			952000	ug/kg		
30	30.5	B1NPW4		ESL	2720000	ug/kg			1880000	ug/kg			841000	ug/kg		
29	31.5	B1NR91		ESL	2370000	ug/kg			1660000	ug/kg			711000	ug/kg		
31.5	32	B1NPW5		ESL	2550000	ug/kg			2020000	ug/kg			529000	ug/kg		
34	34.5	B1NPW6		ESL	3490000	ug/kg			3060000	ug/kg			269000	ug/kg	U	
32	34.5	B1NR92	duplicate	ESL	2880000	ug/kg			2180000	ug/kg			694000	ug/kg		
37	37.5	B1NPW7		ESL	3240000	ug/kg			2930000	ug/kg			269000	ug/kg	U	
39.5	40	B1NPW8	duplicate	ESL	3050000	ug/kg			2510000	ug/kg			269000	ug/kg	U	
45	45.5	B1NPX0		ESL	3420000	ug/kg			3000000	ug/kg			269000	ug/kg	U	
47	47.5	B1NPX1		ESL	2680000	ug/kg			2650000	ug/kg			269000	ug/kg	U	
51.5	52	B1NPX3		ESL	3260000	ug/kg			2360000	ug/kg			898000	ug/kg		
57	57.5	B1NPX5		ESL	2810000	ug/kg			2550000	ug/kg			269000	ug/kg	U	
59.5	60	B1NPX6		ESL	2870000	ug/kg			2070000	ug/kg			803000	ug/kg		
64	64.5	B1NPX8		ESL	2110000	ug/kg			2120000	ug/kg			269000	ug/kg	U	
70	70.5	B1NPY0		ESL	2460000	ug/kg			2680000	ug/kg			269000	ug/kg	U	
72	72.5	B1NPY1		ESL	2860000	ug/kg			1800000	ug/kg			1060000	ug/kg		
79.5	80	B1NPY4		ESL	2550000	ug/kg			1820000	ug/kg			732000	ug/kg		
86.5	87	B1NPY7		ESL	2510000	ug/kg			1840000	ug/kg			675000	ug/kg		
92.5	93	B1NPY9		ESL	2460000	ug/kg			1950000	ug/kg			508000	ug/kg		
106.5	107	B1NR05		ESL	2220000	ug/kg			1710000	ug/kg			511000	ug/kg		
132	132.5	B1NR16		ESL	2490000	ug/kg			1760000	ug/kg			731000	ug/kg		
152	152.5	B1NR24		ESL	2360000	ug/kg			1800000	ug/kg			555000	ug/kg		
194.5	195	B1NR41		ESL	2110000	ug/kg			1480000	ug/kg			635000	ug/kg		
202	202.5	B1NR44		ESL	1820000	ug/kg			1260000	ug/kg			550000	ug/kg		
237	237.5	B1NR58		ESL	1620000	ug/kg			1450000	ug/kg			269000	ug/kg	U	
250	250.5	B1NR63		ESL	1590000	ug/kg			1480000	ug/kg			269000	ug/kg	U	
265.5	266	B1NR69		ESL	1550000	ug/kg			1410000	ug/kg			269000	ug/kg	U	
282	282.5	B1NR76		ESL	1360000	ug/kg			1030000	ug/kg			269000	ug/kg	U	
284.5	285	B1NR77		ESL	2980000	ug/kg			2920000	ug/kg			269000	ug/kg	U	
289.5	290	B1NRP7	duplicate	ESL	5110000	ug/kg			5320000	ug/kg			269000	ug/kg	U	
297	297.5	B1NR82		ESL	3050000	ug/kg			2800000	ug/kg			269000	ug/kg	U	
302	302.5	B1NR84		ESL	4190000	ug/kg			4340000	ug/kg			269000	ug/kg	U	

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Table A4-33. Physical Analysis Results for Borehole C5515 (216-A-2) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cation Exchange Capacity (CEC) CATIONEXCH_TR				Percent moisture (wet sample) (%MOISTURE) D2216				pH Measurement (PH) 9040				Specific Conductance (CONDUCT) 9050			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
15.5	16	B1NPV9		ESL					4.54	%										
17.5	18	B1NPW0		ESL					5.35	%			8.04	unitless			98	uS/cm		
20.5	21	B1NPW1		ESL					7.55	%										
24.5	25	B1NPW3		ESL					2.96	%			8.48	unitless			137	uS/cm		
30	30.5	B1NPW4		ESL					2.6	%			8.7	unitless			289	uS/cm		
29	31.5	B1NR91		ESL					6.09	%			7.56	unitless			151	uS/cm		
31.5	32	B1NPW5		ESL					3.15	%			8.14	unitless			330	uS/cm		
34	34.5	B1NPW6		ESL					3.25	%			8.03	unitless			190	uS/cm		
32	34.5	B1NR92	duplicate	ESL					3.71	%			7.47	unitless			158	uS/cm		
37	37.5	B1NPW7		ESL					3.49	%			7.8	unitless			139	uS/cm		
39.5	40	B1NPW8	duplicate	ESL					2.06	%			7.35	unitless			138	uS/cm		
39.5	40	B1NRP2	duplicate	ESL					2.11	%										
42.5	43	B1NPW9		ESL					2.95	%										
45	45.5	B1NPX0		ESL					3.55	%			7.5	unitless			97	uS/cm		
47	47.5	B1NPX1		ESL					5.35	%			7.53	unitless			136	uS/cm		
49	49.5	B1NPX2		ESL					3.74	%										
51.5	52	B1NPX3		ESL					2.06	%			7.51	unitless			88	uS/cm		
54	54.5	B1NPX4		ESL					2.33	%										
57	57.5	B1NPX5		ESL					2.32	%			7.64	unitless			115	uS/cm		
59.5	60	B1NPX6		ESL					2.7	%			7.5	unitless			105	uS/cm		
62	62.5	B1NPX7		ESL					2.85	%										
64	64.5	B1NPX8		ESL					3.73	%			7.4	unitless			161	uS/cm		
66.5	67	B1NPX9		ESL					2.4	%										
70	70.5	B1NPY0		ESL	6.31	mEQ/100g			16.3	%			7.51	unitless			124	uS/cm		
72	72.5	B1NPY1		ESL					3.86	%			7.48	unitless			133	uS/cm		
74	74.5	B1NPY2		ESL					3.27	%										
77.5	78	B1NPY3		ESL					3.45	%										
79.5	80	B1NPY4		ESL					3.82	%			7.4	unitless			173	uS/cm		
82	82.5	B1NPY5		ESL					3.73	%										
84.5	85	B1NPY6		ESL					3.77	%										
86.5	87	B1NPY7		ESL	7.68	mEQ/100g			5.84	%			7.42	unitless			317	uS/cm		
90	90.5	B1NPY8	duplicate	ESL					4.64	%										
90	90.5	B1NRP3	duplicate	ESL					4.43	%										
92.5	93	B1NPY9		ESL					4.99	%			7.49	unitless			244	uS/cm		
94.5	95	B1NR00		ESL					3.75	%										
96.5	97	B1NR01		ESL					2.86	%										
99.5	100	B1NR02		ESL					2.57	%										
101.5	102	B1NR03		ESL					3.14	%										
104.5	105	B1NR04		ESL					2.91	%										
106.5	107	B1NR05		ESL					3.38	%			7.72	unitless			136	uS/cm		
109.5	110	B1NR06		ESL					3.29	%										
112.5	113	B1NR07		ESL					3.1	%										
114	114.5	B1NR08		ESL					3.04	%										
117	117.5	B1NR09		ESL					2.75	%										
120	120.5	B1NR10		ESL					3.1	%										
122	122.5	B1NR11		ESL					3.12	%										
124.5	125	B1NR12		ESL					2.98	%										
127	127.5	B1NR13		ESL					2.81	%										
129.5	130	B1NR14		ESL					3.16	%										
132	132.5	B1NR16		ESL	8.48	mEQ/100g			4.21	%			7.79	unitless			121	uS/cm		

Table A4-33. Physical Analysis Results for Borehole C5515 (216-A-2) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cation Exchange Capacity (CEC) CATIONEXCH_TR				Percent moisture (wet sample) (%MOISTURE) D2216				pH Measurement (PH) 9040				Specific Conductance (CONDUCT) 9050			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
132.5	135	B1NR15		ESL					2.95	%										
134.5	135	B1NR17		ESL					3.36	%										
137	137.5	B1NR18		ESL					3.74	%										
139.5	140	B1NR19	duplicate	ESL					3.79	%										
139.5	140	B1NRP4	duplicate	ESL					3.97	%										
142	142.5	B1NR20		ESL					3.66	%										
144.5	145	B1NR21		ESL					4.6	%										
147	147.5	B1NR22		ESL					3.66	%										
149.5	150	B1NR23		ESL					3.37	%										
152	152.5	B1NR24		ESL					4.06	%			7.63	unitless			116	uS/cm		
154.5	155	B1NR25		ESL					3.95	%										
157	157.5	B1NR26		ESL					3.62	%										
159.5	160	B1NR27		ESL					3.96	%										
162	162.5	B1NR28		ESL					3.26	%										
164.5	165	B1NR29		ESL					3.56	%										
172	172.5	B1NR32		ESL					3.21	%										
179.5	180	B1NR35		ESL					3.32	%										
187	187.5	B1NR38		ESL					3.52	%										
189.5	190	B1NRP5	duplicate	ESL					3.66	%										
194.5	195	B1NR41		ESL	7.67	mEQ/100g			4.95	%			7.49	unitless			127	uS/cm		
202	202.5	B1NR44		ESL					4.25	%			7.63	unitless			118	uS/cm		
210	210.5	B1NR47		ESL					3.24	%										
217	217.5	B1NR50		ESL					3.21	%										
224.5	225	B1NR53		ESL					3.11	%										
229	229.5	B1NR55		ESL					3.1	%										
232	232.5	B1NR56		ESL					3.02	%										
234.5	235	B1NR57		ESL					3.35	%										
237	237.5	B1NR58		ESL					3.97	%			7.69	unitless			105	uS/cm		
239.5	240	B1NR59	duplicate	ESL					3.27	%										
239.5	240	B1NRP6	duplicate	ESL					3.45	%										
242	242.5	B1NR60		ESL					3.41	%										
244	244.5	B1NR61		ESL					3.64	%										
247	247.5	B1NR62		ESL					3.35	%										
250	250.5	B1NR63		ESL					4.96	%			7.47	unitless			124	uS/cm		
252	252.5	B1NR64		ESL					5.86	%										
254.5	255	B1NR65		ESL					3.71	%										
257	257.5	B1NR66		ESL					3.69	%										
259.5	260	B1NR67		ESL					3.85	%										
262	262.5	B1NR68		ESL					4.41	%										
265.5	266	B1NR69		ESL	8.28	mEQ/100g			6.56	%			7.59	unitless			134	uS/cm		
267	267.5	B1NR70		ESL					3.15	%										
269	269.5	B1NR71		ESL					3.07	%										
272	272.5	B1NR72		ESL					3.65	%										
274.5	275	B1NR73		ESL					4.17	%										
277	277.5	B1NR74		ESL					3.72	%										
279.5	280	B1NR75		ESL					3.62	%										
282	282.5	B1NR76		ESL					3.12	%			7.72	unitless			126	uS/cm		
284.5	285	B1NR77		ESL	10.6	mEQ/100g			15.9	%			7.62	unitless			265	uS/cm		
287	287.5	B1NR78		ESL					22.4	%										
289.5	290	B1NR79	duplicate	ESL					23.6	%										

Table A4-33. Physical Analysis Results for Borehole C5515 (216-A-2) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cation Exchange Capacity (CEC)				Percent moisture (wet sample) (%MOISTURE)				pH Measurement (PH)				Specific Conductance (CONDUCT)			
					CATIONEXCH_TR				D2216				9040				9050			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
289.5	290	B1NRP7	duplicate	ESL					23.8	%			7.73	unitless			335	uS/cm		
292	292.5	B1NR80		ESL					18.2	%										
294.5	295	B1NR81		ESL					21	%										
297	297.5	B1NR82		ESL					20.2	%			7.48	unitless			578	uS/cm		
299.5	300	B1NR83		ESL					19.4	%										
302	302.5	B1NR84		ESL	15.1	mEQ/100g			19.8	%			7.45	unitless			639	uS/cm		
304.5	305	B1NR85		ESL	6.36	mEQ/100g			6.44	%										
307	307.5	B1NR86		ESL					4.52	%										
309.5	310	B1NR87		ESL					3.59	%										
312	312.5	B1NR88		ESL					3.53	%										
315	315.5	B1NR89		ESL					2.8	%										

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Table A4-34. Radiochemical Analysis Results for Borehole C5515 (216-A-2) Samples from CH2M HILL's 222S Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Americium-241 (14596-10-2) Eichrom/Prec/AEA					Americium-241 (14596-10-2) GEA					Cesium-137 (10045-97-3) GEA					Cobalt-60 (10198-40-0) GEA					Europium-152 (14683-23-9) GEA					Europium-154 (15585-10-1) GEA					Europium-155 (14391-16-3) GEA				
					Conc'	Units	Q	V	MDA	Conc'	Units	Q	VQ	MD	Conc'	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
27	27.5	B1NRJ2		222-S	94000	pCi/g			33000	87000	pCi/g			0	31000	pCi/g			0	0	pCi/g	U		0	0	pCi/g	U		0	0	pCi/g	U		0	0	pCi/g	U		0

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Gross alpha (12587-46-1) GPC					Gross beta (12587-47-2) GPC					Plutonium-238 (13981-16-3) Eichrom/Prec/AEA					Plutonium-239/240 (PU-239/240) Eichrom/Prec/AEA					Strontium-90 (10098-97-2) Sep/GPC					Uranium-233 (13968-55-3) ICP/MS					Uranium-234 (13966-29-5) ICP/MS				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
27	27.5	B1NRJ2		222-S	483000	pCi/g			0	341000	pCi/g			0	21000	pCi/g	U		21000	426000	pCi/g			21000	125000	pCi/g			0	19.3	pCi/g	U			49.8	pCi/g	B		

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Uranium-235 (15117-96-1) ICP/MS					Uranium-236 (13982-70-2) ICP/MS					Uranium-238 (U-238) ICP/MS				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
27	27.5	B1NRJ2		222-S	1.97	pCi/g				1.03	pCi/g	X			47.4	pCi/g			

Note:

No field QC samples were collected.

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Table A4-35. Volatile Organic Analysis Results for Borehole C5515 (216-A-21) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	1,1,1-Trichloroethane (71-55-6) 8260				1,1,2,2-Tetrachloroethane (79-34-5) 8260				1,1,2-Trichloroethane (79-00-5) 8260				1,1-Dichloroethane (75-34-3) 8260				1,1-Dichloroethene (75-35-4) 8260				1,2,4-Trimethylbenzene (95-63-6) 8260				1,2-Dichloroethane (107-06-2) 8260				1,2-Dichloroethene (Total) (540-59-0) 8260				1,2-Dichloropropane (78-87-5) 8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
21	22.5	B1P3K7		STLSL	0.2	ug/kg	U		0.19	ug/kg	U		0.38	ug/kg	U		1.3	ug/kg	U		0.74	ug/kg	U		0.29	ug/kg	U		0.59	ug/kg	U		0.73	ug/kg	U		0.5	ug/kg	U	
25.1	26.6	B1P3K8		STLSL	0.16	ug/kg	U		0.15	ug/kg	U		0.31	ug/kg	U		1	ug/kg	U		0.59	ug/kg	U		0.4	ug/kg	B		0.47	ug/kg	U		0.59	ug/kg	U		0.4	ug/kg	U	
39	40.5	B1P3K9		WSCF	0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U						0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U	
58.2	59.9	B1P3L0		WSCF	0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U						0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U	
Equipment blank tied to B1P3K6*		B1P3M8	Equipment Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3K9		B1P3M6	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3L0		B1P3M7	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					5				N/A				N/A				10				N/A				N/A				5				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	1-Butanol (71-36-3) 8260				2-Butanone (78-93-3) 8260				2-Hexanone (591-78-6) 8260				2-Pentanone, 4-Methyl (108-10-1) 8260				Acetone (67-64-1) 8260				Acetonitrile (75-05-8) 8260				Benzene (71-43-2) 8260				Bromodichloromethane (75-27-4) 8260				Bromoform (75-25-2) 8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
21	22.5	B1P3K7		STLSL	4.6	ug/kg	U		1.9	ug/kg	U		0.38	ug/kg	U		2.2	ug/kg	U		5.1	ug/kg	U		2.7	ug/kg	U		0.23	ug/kg	U		0.45	ug/kg	U		0.33	ug/kg	U	
25.1	26.6	B1P3K8		STLSL	3.7	ug/kg	U		1.5	ug/kg	U		0.3	ug/kg	U		1.7	ug/kg	U		4.1	ug/kg	U		2.1	ug/kg	U		0.18	ug/kg	U		0.36	ug/kg	U		0.26	ug/kg	U	
39	40.5	B1P3K9		WSCF	97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U						0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U	
58.2	59.9	B1P3L0		WSCF	93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U						0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U	
Equipment blank tied to B1P3K6*		B1P3M8	Equipment Blank	WSCF	100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3K9		B1P3M6	Field Blank	WSCF	100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3L0		B1P3M7	Field Blank	WSCF	100	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				20				N/A				5				N/A				N/A			

Table A4-35. Volatile Organic Analysis Results for Borehole C5515 (216-A-21) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Bromomethane (74-83-9)				Butane, 2-methyl- (78-78-4)				Carbon disulfide (75-15-0)				Carbon tetrachloride (56-23-5)				Chlorobenzene (108-90-7)				Chloroethane (75-00-3)				Chloroform (67-66-3)				Chloromethane (74-87-3)				cis-1,2-Dichloroethylene (156-59-2)			
					8260				8260				8260				8260				8260				8260				8260				8260				8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
21	22.5	B1P3K7		STLSL	0.42	ug/kg	U						0.74	ug/kg	U		1.2	ug/kg	U		0.17	ug/kg	U		0.47	ug/kg	U		0.19	ug/kg	U		0.6	ug/kg	U		0.58	ug/kg	U	
25.1	26.6	B1P3K8		STLSL	0.34	ug/kg	U		5.6	ug/kg			0.6	ug/kg	U		0.98	ug/kg	U		0.13	ug/kg	U		0.38	ug/kg	U		0.15	ug/kg	U		0.48	ug/kg	U		0.46	ug/kg	U	
39	40.5	B1P3K9		WSCF	0.97	ug/kg	U						0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U	
58.2	59.9	B1P3L0		WSCF	0.93	ug/kg	U						0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U	
Equipment blank tied to B1P3K6*		B1P3M8	Equipment Blank	WSCF	1	ug/L	U						22	ug/L			1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3K9		B1P3M6	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3L0		B1P3M7	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A				N/A			

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	cis-1,3-Dichloropropene (10061-01-5)				Cyclohexanone (108-94-1)				Dibromochloromethane (124-48-1)				Ethylbenzene (100-41-4)				Hexane (110-54-3)				Methylene chloride (75-09-2)				n-Butylbenzene (104-51-8)				Styrene (100-42-5)				Tetrachloroethene (127-18-4)			
					8260				8260				8260				8260				8260				8260				8260				8260				8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
21	22.5	B1P3K7		STLSL	0.98	ug/kg	U		18	ug/kg	U		0.39	ug/kg	U		0.25	ug/kg	U		0.61	ug/kg	U		3.4	ug/kg	U		0.72	ug/kg	U		1.6	ug/kg	U		0.37	ug/kg	U	
25.1	26.6	B1P3K8		STLSL	0.79	ug/kg	U		15	ug/kg	U		0.31	ug/kg	U		0.2	ug/kg	U		0.49	ug/kg	U		2.7	ug/kg	U		0.57	ug/kg	U		1.3	ug/kg	U		0.3	ug/kg	U	
39	40.5	B1P3K9		WSCF	0.97	ug/kg	U						0.97	ug/kg	U		0.97	ug/kg	U						0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U	
58.2	59.9	B1P3L0		WSCF	0.93	ug/kg	U						0.93	ug/kg	U		0.93	ug/kg	U						0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U	
Equipment blank tied to B1P3K6*		B1P3M8	Equipment Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3K9		B1P3M6	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3L0		B1P3M7	Field Blank	WSCF	1	ug/L	U						1	ug/L	U		1	ug/L	U						1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					N/A				N/A				N/A				N/A				N/A				5				N/A				N/A				N/A			

Table A4-35. Volatile Organic Analysis Results for Borehole C5515 (216-A-21) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Toluene (108-88-3) 8260				trans-1,2-Dichloroethylene (156-60-5) 8260				trans-1,3-Dichloropropene (10061-02-6) 8260				trans-1,3-Dichloropropene (10061-02-6) 8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
21	22.5	B1P3K7		STLSL	0.18	ug/kg	U		0.3	ug/kg	U		0.27	ug/kg	U		0.48	ug/kg	U	
25.1	26.6	B1P3K8		STLSL	0.56	ug/kg	J		0.24	ug/kg	U		0.22	ug/kg	U		0.39	ug/kg	U	
39	40.5	B1P3K9		WSCF	0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U		0.97	ug/kg	U	
58.2	59.9	B1P3L0		WSCF	0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U		0.93	ug/kg	U	
Equipment blank tied to B1P3K6*		B1P3M8	Equipment Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3K9		B1P3M6	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3L0		B1P3M7	Field Blank	WSCF	1	ug/L	U		1	ug/L	U		1	ug/L	U		1	ug/L	U	
Target Quantitation Limit (ug/kg)					5				N/A				N/A				N/A			

Note:

* Sample B1P3K6 is an Activity Screen sent to 222-S.

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Table A4-36.Volatile Organic Analysis Results for Borehole C5515 (216-A-21) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Vinyl chloride (75-01-4) 8260				Xylenes (total) (1330-20-7) 8260			
					Conc'n	Units	Q	VQ	Conc'n	Units	Q	VQ
21	22.5	B1P3K7		STLSL	0.32	ug/kg	U		1.2	ug/kg	U	
25.1	26.6	B1P3K8		STLSL	0.26	ug/kg	U		0.93	ug/kg	U	
39	40.5	B1P3K9		WSCF	0.97	ug/kg	U		0.97	ug/kg	U	
58.2	59.9	B1P3L0		WSCF	0.93	ug/kg	U		0.93	ug/kg	U	
Equipment blank tied to B1P3K6*		B1P3M8	Equipment Blank	WSCF	1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3K9		B1P3M6	Field Blank	WSCF	1	ug/L	U		1	ug/L	U	
Field blank tied to B1P3L0		B1P3M7	Field Blank	WSCF	1	ug/L	U		1	ug/L	U	
Target Quantitation Limit					N/A				N/A			

Note:

* Sample B1P3K6 is an Activity Screen sent to 222-S.

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Table A4-37. Physical Properties Analysis Results for Borehole C5515 (216-A-21) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Percent moisture (wet sample) (%MOISTURE) D2216			
					Conc'n	Units	Q	VQ
21	22.5	B1P3K7		STLSL	12	%		
25.1	26.6	B1P3K8		STLSL	5.8	%		
Target Quantitation Limit					N/A			

Note:
No field QC samples were collected.

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Table A4-38. Analysis Results for Borehole C5302 (200-E-102) Samples from PNNL's Environmental Service Laboratory

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Cesium-137 (10045-97-3)					Technetium-99 (14133-76-7)					Technetium-99 (14133-76-7)					Uranium-238 (U-238)					Uranium-238 (U-238)				
					GEA					RADISO_ICPMS_ASTM_AE					RADISO_ICPMS_WE					RADISO_ICPMS_ASTM_AE					RADISO_ICPMS_WE				
					Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA	Conc'n	Units	Q	VQ	MDA
39	40.5	B1P3M1		ESL	3.67E+03	pCi/g				221	pCi/g	U			0.178	pCi/g	U			2.33	pCi/g				0.0965	pCi/g			
58.2	59.9	B1P3M2		ESL	1.76E+02	pCi/g				257	pCi/g	U			0.173	pCi/g	U			0.197	pCi/g				0.000125	pCi/g			

Note:

No field QC samples were collected.

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Table A4-39. Summary Table for All Constituents in Shallow-Zone Soil Samples for the 216-A-4 Crib (C4560)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
216-A-4 (C4560)															
Aroclor-1016	12674-11-2	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1221	11104-28-2	GENORG	ug/kg	2	0	0	100	100			8082_PCB_GC	8082_PCB_GC			
Aroclor-1232	11141-16-5	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1242	53469-21-9	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1248	12672-29-6	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1254	11097-69-1	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1260	11096-82-5	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1262	37324-23-5	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1268	11100-14-4	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Oil and grease	OIL/GREASE	GENORG	ug/kg	2	0	0	695000	696000			9071_OILGREASE	9071_OILGREASE			
Total petroleum hydrocarbons - diesel range	TPHDIESEL	GENORG	ug/kg	2	0	0	3900	3900			WTPH_DIESEL	WTPH_DIESEL			
Total petroleum hydrocarbons - gasoline	TPHGASOLINE	GENORG	ug/kg	2	0	0	30	30			WTPH_GASOLINE	WTPH_GASOLINE			
Total petroleum hydrocarbons - kerosene	TPHKEROSEN	GENORG	ug/kg	2	0	0	3900	3900			WTPH_DIESEL	WTPH_DIESEL			
Cadmium	7440-43-9	METAL	ug/kg	2	1	50	20	20	204	204	200.8_METALS_ICPMS	200.8_METALS_ICPMS	0.5	3	B195V9
Chromium	7440-47-3	METAL	ug/kg	2	2	100			3700	4540	200.8_METALS_ICPMS	200.8_METALS_ICPMS	0.5	3	B195V9
Copper	7440-50-8	METAL	ug/kg	2	1	50	641	641	729	729	200.8_METALS_ICPMS	200.8_METALS_ICPMS	0.5	3	B195V9
Hexavalent Chromium	18540-29-9	METAL	ug/kg	2	0	0	210	210			7196_CR6	7196_CR6			
Lead	7439-92-1	METAL	ug/kg	2	2	100			4560	9240	200.8_METALS_ICPMS	200.8_METALS_ICPMS	0.5	3	B195V9
Mercury	7439-97-6	METAL	ug/kg	2	0	0	10	10			200.8_METALS_ICPMS	200.8_METALS_ICPMS			
Silver	7440-22-4	METAL	ug/kg	2	0	0	10	10			200.8_METALS_ICPMS	200.8_METALS_ICPMS			
Uranium	7440-61-1	METAL	ug/kg	2	0	0	160	161			200.8_METALS_ICPMS	200.8_METALS_ICPMS			
pH Measurement	PH	PHYSICAL	pH	2	2	100			9.24	9.44	150.1_PH	150.1_PH	12.5	15	B195W0
Americium-241	14596-10-2	RAD	pCi/g	2	2	100			0.058	0.088	AMCMISO_IE_PREC_AEA	AMCMISO_IE_PREC_AEA	12.5	15	B195W0
Cesium-137	10045-97-3	RAD	pCi/g	2	1	50	-0.001	-0.001	0.606	0.606	GAMMA_GS	GAMMA_GS	0.5	3	B195V9
Cobalt-60	10198-40-0	RAD	pCi/g	2	0	0	0	0.001			GAMMA_GS	GAMMA_GS			
Europium-152	14683-23-9	RAD	pCi/g	2	0	0	-0.029	-0.003			GAMMA_GS	GAMMA_GS			
Europium-154	15585-10-1	RAD	pCi/g	2	0	0	-0.015	0.016			GAMMA_GS	GAMMA_GS			
Europium-155	14391-16-3	RAD	pCi/g	2	0	0	0.025	0.04			GAMMA_GS	GAMMA_GS			
Iodine-129	15046-84-1	RAD	pCi/g	2	0	0	-0.21	0.301			I129_SEP_LEPS_GS	I129_SEP_LEPS_GS			
Plutonium-238	13981-16-3	RAD	pCi/g	2	0	0	-0.015	0.014			PUISO_IE_PRECIP_AEA	PUISO_IE_PRECIP_AEA			
Plutonium-239/240	PU-239/240	RAD	pCi/g	2	2	100			0.35	0.45	PUISO_IE_PRECIP_AEA	PUISO_IE_PRECIP_AEA	12.5	15	B195W0
Technetium-99	14133-76-7	RAD	pCi/g	2	0	0	-0.029	0.05			TC99_TR_SEP_GPC	TC99_TR_SEP_GPC			
Total beta radiostrontium	SR-RAD	RAD	pCi/g	2	1	50	0.28	0.28	0.37	0.37	SRTOT_SEP_PRECIP_GPC	SRTOT_SEP_PRECIP_GPC	12.5	15	B195W0
Tritium	10028-17-8	RAD	pCi/g	2	0	0	-0.063	-0.018			TRITIUM_COX_LSC	TRITIUM_COX_LSC			

Table A4-39. Summary Table for All Constituents in Shallow-Zone Soil Samples for the 216-A-4 Crib (C4560)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Uranium-233/234	U-233/234	RAD	pCi/g	2	2	100			0.13	0.14	UISO_IE_PRECIP_AEA	UISO_IE_PRECIP_AEA	12.5	15	B195W0
Uranium-235	15117-96-1	RAD	pCi/g	2	1	50	0.014	0.014	0.022	0.022	UISO_IE_PRECIP_AEA	UISO_IE_PRECIP_AEA	12.5	15	B195W0
Uranium-238	U-238	RAD	pCi/g	2	2	100			0.12	0.16	UISO_IE_PRECIP_AEA	UISO_IE_PRECIP_AEA	0.5	3	B195V9
1,2,4-Trichlorobenzene	120-82-1	SVOA	ug/kg	2	0	0	310	310			8270_SVOA_GCMS	8270_SVOA_GCMS			
1,4-Dichlorobenzene	106-46-7	SVOA	ug/kg	2	0	0	330	330			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4-Dinitrotoluene	121-14-2	SVOA	ug/kg	2	0	0	69	70			8270_SVOA_GCMS	8270_SVOA_GCMS			
2-Chlorophenol	95-57-8	SVOA	ug/kg	2	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Chloro-3-methylphenol	59-50-7	SVOA	ug/kg	2	0	0	69	70			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Nitrophenol	100-02-7	SVOA	ug/kg	2	0	0	670	670			8270_SVOA_GCMS	8270_SVOA_GCMS			
Acenaphthene	83-32-9	SVOA	ug/kg	2	0	0	69	70			8270_SVOA_GCMS	8270_SVOA_GCMS			
n-Nitrosodi-n-dipropylamine	621-64-7	SVOA	ug/kg	2	0	0	69	70			8270_SVOA_GCMS	8270_SVOA_GCMS			
Pentachlorophenol	87-86-5	SVOA	ug/kg	2	0	0	310	310			8270_SVOA_GCMS	8270_SVOA_GCMS			
Phenol	108-95-2	SVOA	ug/kg	2	0	0	100	100			8270_SVOA_GCMS	8270_SVOA_GCMS			
Pyrene	129-00-0	SVOA	ug/kg	2	0	0	69	70			8270_SVOA_GCMS	8270_SVOA_GCMS			
Tributyl phosphate	126-73-8	SVOA	ug/kg	2	0	0	69	70			8270_SVOA_GCMS	8270_SVOA_GCMS			
1,1,1-Trichloroethane	71-55-6	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,2,2-Tetrachloroethane	79-34-5	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,2-Trichloroethane	79-00-5	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
1,1-Dichloroethane	75-34-3	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
1,1-Dichloroethene	75-35-4	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloroethane	107-06-2	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloroethene (Total)	540-59-0	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloropropane	78-87-5	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
1-Butanol	71-36-3	VOA	ug/kg	2	0	0	35	37			8260_VOA_GCMS	8260_VOA_GCMS			
2-Butanone	78-93-3	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
2-Hexanone	591-78-6	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
2-Pentanone, 4-Methyl	108-10-1	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Acetone	67-64-1	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Benzene	71-43-2	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Bromodichloromethane	75-27-4	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Bromoform	75-25-2	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Bromomethane	74-83-9	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Carbon disulfide	75-15-0	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Carbon tetrachloride	56-23-5	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Chlorobenzene	108-90-7	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			

Table A4-39. Summary Table for All Constituents in Shallow-Zone Soil Samples for the 216-A-4 Crib (C4560)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Chloroethane	75-00-3	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Chloroform	67-66-3	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Chloromethane	74-87-3	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
cis-1,2-Dichloroethylene	156-59-2	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
cis-1,3-Dichloropropene	10061-01-5	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Dibromochloromethane	124-48-1	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Ethylbenzene	100-41-4	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Methylene chloride	75-09-2	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
n-Butylbenzene	104-51-8	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Styrene	100-42-5	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Tetrachloroethene	127-18-4	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Toluene	108-88-3	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
trans-1,2-Dichloroethylene	156-60-5	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
trans-1,3-Dichloropropene	10061-02-6	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Trichloroethene	79-01-6	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Vinyl chloride	75-01-4	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Xylenes (total)	1330-20-7	VOA	ug/kg	2	0	0	1.7	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
Cyanide	57-12-5	WETCHEM	ug/kg	2	0	0	200	200			335.2_CYANIDE	335.2_CYANIDE			
Fluoride	16984-48-8	WETCHEM	ug/kg	2	0	0	1130	1130			300.0_ANIONS_IC	300.0_ANIONS_IC			
Nitrate	14797-55-8	WETCHEM	ug/kg	2	1	50	2820	2820	4350	4350	300.0_ANIONS_IC	300.0_ANIONS_IC	0.5	3	B195V9
Nitrite	14797-65-0	WETCHEM	ug/kg	2	0	0	3060	3060			300.0_ANIONS_IC	300.0_ANIONS_IC			
Nitrogen in Nitrite and Nitrate	NO2+NO3-N	WETCHEM	ug/kg	2	2	100			560	840	353.2_NO3/NO2	353.2_NO3/NO2	0.5	3	B197D7
Phosphate	14265-44-2	WETCHEM	ug/kg	2	0	0	8130	8130			300.0_ANIONS_IC	300.0_ANIONS_IC			
Sulfate	14808-79-8	WETCHEM	ug/kg	2	0	0	4900	4900			300.0_ANIONS_IC	300.0_ANIONS_IC			

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Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
216-A-4 (C4560)															
Aroclor-1016	12674-11-2	GENORG	ug/kg	3	0	0	6.9	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1221	11104-28-2	GENORG	ug/kg	3	0	0	7.6	100			8082_PCB_GC	8082_PCB_GC			
Aroclor-1232	11141-16-5	GENORG	ug/kg	3	0	0	8.7	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1242	53469-21-9	GENORG	ug/kg	3	0	0	8.1	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1248	12672-29-6	GENORG	ug/kg	3	0	0	10	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1254	11097-69-1	GENORG	ug/kg	3	1	33	51	52	56	56	8082_PCB_GC	8082_PCB_GC	18.5	21	B195W2
Aroclor-1260	11096-82-5	GENORG	ug/kg	3	1	33	51	52	47	47	8082_PCB_GC	8082_PCB_GC	18.5	21	B195W2
Aroclor-1262	37324-23-5	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Aroclor-1268	11100-14-4	GENORG	ug/kg	2	0	0	51	52			8082_PCB_GC	8082_PCB_GC			
Oil and grease	OIL/GREASE	GENORG	ug/kg	3	1	33	695000	696000	197000	197000	9071_OILGREASE	9071_OILGREASE	18.5	21	B195W2
Total petroleum hydrocarbons - diesel range	TPHDIESEL	GENORG	ug/kg	3	0	0	2000	3900			WTPH_DIESEL	WTPH_DIESEL			
Total petroleum hydrocarbons - gasoline range	TPHGASOLINE	GENORG	ug/kg	3	0	0	29	30			WTPH_GASOLINE	WTPH_GASOLINE			
Total petroleum hydrocarbons - kerosene range	TPHKEROSENE	GENORG	ug/kg	3	0	0	3900	27000			WTPH_DIESEL	WTPH_DIESEL			
Antimony	7440-36-0	METAL	ug/kg	1	1	100			660	660	6010_METALS_ICP_TR	6010_METALS_ICP_TR	18.5	21	B195W2
Arsenic	7440-38-2	METAL	ug/kg	1	1	100			2300	2300	6010_METALS_ICP_TR	6010_METALS_ICP_TR	18.5	21	B195W2
Barium	7440-39-3	METAL	ug/kg	1	1	100			68300	68300	6010_METALS_ICP_TR	6010_METALS_ICP_TR	18.5	21	B195W2
Beryllium	7440-41-7	METAL	ug/kg	1	1	100			200	200	6010_METALS_ICP_TR	6010_METALS_ICP_TR	18.5	21	B195W2
Bismuth	7440-69-9	METAL	ug/kg	1	1	100			144000	144000	6010_METALS_ICP_TR	6010_METALS_ICP_TR	18.5	21	B195W2
Boron	7440-42-8	METAL	ug/kg	1	0	0	6500	6500			6010_METALS_ICP_TR	6010_METALS_ICP_TR			
Cadmium	7440-43-9	METAL	ug/kg	3	1	33	20	24			200.8_METALS_ICPMS	200.8_METALS_ICPMS	0.5	3	B195V9
Chromium	7440-47-3	METAL	ug/kg	3	3	100			3700	13500	200.8_METALS_ICPMS	6010_METALS_ICP_TR	18.5	21	B195W2
Copper	7440-50-8	METAL	ug/kg	3	2	67	641	641	729	15000	200.8_METALS_ICPMS	6010_METALS_ICP_TR	18.5	21	B195W2
Hexavalent Chromium	18540-29-9	METAL	ug/kg	3	0	0	210	270			7196_CR6	7196_CR6			
Lead	7439-92-1	METAL	ug/kg	3	3	100			4560	9240	200.8_METALS_ICPMS	200.8_METALS_ICPMS	0.5	3	B195V9
Mercury	7439-97-6	METAL	ug/kg	3	1	33	10	10	920	920	7471_HG_CVAA	7471_HG_CVAA	18.5	21	B195W2
Nickel	7440-02-0	METAL	ug/kg	1	1	100			8700	8700	6010_METALS_ICP_TR	6010_METALS_ICP_TR	18.5	21	B195W2
Selenium	7782-49-2	METAL	ug/kg	1	0	0	320	320			6010_METALS_ICP_TR	6010_METALS_ICP_TR			
Silver	7440-22-4	METAL	ug/kg	3	1	33	10	10	2200	2200	6010_METALS_ICP_TR	6010_METALS_ICP_TR	18.5	21	B195W2
Uranium	7440-61-1	METAL	ug/kg	3	1	33	160	161	1970000	1970000	UTOT_KPA	UTOT_KPA	18.5	21	B197F0

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Percent moisture (dry sample)	%MOISTURE-D	PHYSICAL	%	1	1	100			9.5	9.5	D2216_%MOIS	D2216_%MOIS	18.5	21	B19861
Percent moisture (wet sample)	%MOISTURE	PHYSICAL	%	1	1	100			8.7	8.7	D2216_%MOIS	D2216_%MOIS	18.5	21	B19861
Percent Solids	%SOLIDS	PHYSICAL	%	1	1	100			91.3	91.3	%SOLIDS	%SOLIDS	18.5	21	B19861
pH Measurement	PH	PHYSICAL	pH	3	3	100			9.2	9.44	9045_PH	150.1_PH	12.5	15	B195W0
Americium-241	14596-10-2	RAD	pCi/g	3	3	100			0.058	3810	AMCMISO_IE_PREC_AEA	AMCMISO_IE_PLATE_AEA	18.5	21	B197F0
Cesium-137	10045-97-3	RAD	pCi/g	3	2	67	-0.001	-0.001	0.606	63600	GAMMA_GS	GAMMA_GS	18.5	21	B197F0
Cobalt-60	10198-40-0	RAD	pCi/g	3	1	33	0	0.001	14.3	14.3	GAMMA_GS	GAMMA_GS	18.5	21	B197F0
Europium-152	14683-23-9	RAD	pCi/g	3	0	0	-0.029	71			GAMMA_GS	GAMMA_GS			
Europium-154	15585-10-1	RAD	pCi/g	3	1	33	-0.015	0.016	179	179	GAMMA_GS	GAMMA_GS	18.5	21	B197F0
Europium-155	14391-16-3	RAD	pCi/g	3	0	0	0.025	85			GAMMA_GS	GAMMA_GS			
Iodine-129	15046-84-1	RAD	pCi/g	3	0	0	-0.21	3.28			I129_SEP_LEPS_GS	I129_SEP_LEPS_GS			
Plutonium-238	13981-16-3	RAD	pCi/g	3	1	33	-0.015	0.014	209	209	PUISO_PLATE_AEA	PUISO_PLATE_AEA	18.5	21	B197F0
Plutonium-239/240	PU-239/240	RAD	pCi/g	3	3	100			0.35	21400	PUISO_IE_PRECIP_AEA	PUISO_PLATE_AEA	18.5	21	B197F0
Potassium-40	13966-00-2	RAD	pCi/g	1	0	0	29	29			GAMMA_GS	GAMMA_GS			
Radium-226	13982-63-3	RAD	pCi/g	1	0	0	33	33			GAMMA_GS	GAMMA_GS			
Radium-228	15262-20-1	RAD	pCi/g	1	0	0	33	33			GAMMA_GS	GAMMA_GS			
Technetium-99	14133-76-7	RAD	pCi/g	3	0	0	-0.029	5.61			TC99_TR_SEP_GPC	TC99_TR_SEP_GPC			
Thorium-228	14274-82-9	RAD	pCi/g	1	0	0	33	33			GAMMA_GS	GAMMA_GS			
Thorium-232	TH-232	RAD	pCi/g	1	0	0	33	33			GAMMA_GS	GAMMA_GS			
Total beta radiostrontium	SR-RAD	RAD	pCi/g	3	2	67	0.28	0.28	0.37	3860000	SRTOT_SEP_PRECIP_GPC	SRTOT_SEP_PRECIP_GPC	18.5	21	B197F0
Tritium	10028-17-8	RAD	pCi/g	3	0	0	-0.801	-0.018			TRITIUM_COX_LSC	TRITIUM_COX_LSC			
Uranium-233/234	U-233/234	RAD	pCi/g	3	3	100			0.13	478	UISO_IE_PRECIP_AEA	UISO_PLATE_AEA	18.5	21	B197F0
Uranium-235	15117-96-1	RAD	pCi/g	3	1	33	0.014	35.4	0.022	0.022	UISO_IE_PRECIP_AEA	UISO_IE_PRECIP_AEA	12.5	15	B195W0
Uranium-238	U-238	RAD	pCi/g	3	3	100			0.12	683	UISO_IE_PRECIP_AEA	UISO_PLATE_AEA	18.5	21	B197F0
1,2,4-Trichlorobenzene	120-82-1	SVOA	ug/kg	3	0	0	19	310			8270_SVOA_GCMS	8270_SVOA_GCMS			
1,4-Dichlorobenzene	106-46-7	SVOA	ug/kg	2	0	0	330	330			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4-Dinitrotoluene	121-14-2	SVOA	ug/kg	3	0	0	19	70			8270_SVOA_GCMS	8270_SVOA_GCMS			
2-Chlorophenol	95-57-8	SVOA	ug/kg	3	0	0	15	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Chloro-3-methylphenol	59-50-7	SVOA	ug/kg	3	0	0	29	70			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Nitrophenol	100-02-7	SVOA	ug/kg	3	0	0	46	670			8270_SVOA_GCMS	8270_SVOA_GCMS			

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Acenaphthene	83-32-9	SVOA	ug/kg	3	0	0	18	70			8270 SVOA GCMS	8270 SVOA GCMS			
Diethylphthalate	84-66-2	SVOA	ug/kg	1	0	0	44	44			8270 SVOA GCMS	8270 SVOA GCMS			
Di-n-butylphthalate	84-74-2	SVOA	ug/kg	1	0	0	30	30			8270 SVOA GCMS	8270 SVOA GCMS			
n-Nitrosodi-n-dipropylamine	621-64-7	SVOA	ug/kg	3	0	0	21	70			8270 SVOA GCMS	8270 SVOA GCMS			
Pentachlorophenol	87-86-5	SVOA	ug/kg	3	0	0	130	310			8270 SVOA GCMS	8270 SVOA GCMS			
Phenol	108-95-2	SVOA	ug/kg	3	0	0	94	100			8270 SVOA GCMS	8270 SVOA GCMS			
Pyrene	129-00-0	SVOA	ug/kg	3	0	0	24	70			8270 SVOA GCMS	8270 SVOA GCMS			
Tributyl phosphate	126-73-8	SVOA	ug/kg	3	0	0	69	360			8270 SVOA GCMS	8270 SVOA GCMS			
1,1,1-Trichloroethane	71-55-6	VOA	ug/kg	3	0	0	0.12	1.9			8260 VOA GCMS	8260 VOA GCMS			
1,1,2,2-Tetrachloroethane	79-34-5	VOA	ug/kg	3	0	0	0.79	1.9			8260 VOA GCMS	8260 VOA GCMS			
1,1,2-Trichloroethane	79-00-5	VOA	ug/kg	3	0	0	0.83	1.9			8260 VOA GCMS	8260 VOA GCMS			
1,1-Dichloroethane	75-34-3	VOA	ug/kg	3	0	0	0.23	1.9			8260 VOA GCMS	8260 VOA GCMS			
1,1-Dichloroethene	75-35-4	VOA	ug/kg	3	0	0	0.73	1.9			8260 VOA GCMS	8260 VOA GCMS			
1,2-Dichloroethane	107-06-2	VOA	ug/kg	3	0	0	0.15	1.9			8260 VOA GCMS	8260 VOA GCMS			
1,2-Dichloroethene (Total)	540-59-0	VOA	ug/kg	3	0	0	0.66	1.9			8260 VOA GCMS	8260 VOA GCMS			
1,2-Dichloropropane	78-87-5	VOA	ug/kg	3	0	0	0.11	1.9			8260 VOA GCMS	8260 VOA GCMS			
1-Butanol	71-36-3	VOA	ug/kg	3	0	0	35	37			8260 VOA GCMS	8260 VOA GCMS			
2-Butanone	78-93-3	VOA	ug/kg	3	0	0	1.2	1.9			8260 VOA GCMS	8260 VOA GCMS			
2-Hexanone	591-78-6	VOA	ug/kg	3	0	0	1.4	1.9			8260 VOA GCMS	8260 VOA GCMS			
2-Pentanone, 4-Methyl	108-10-1	VOA	ug/kg	3	0	0	0.97	1.9			8260 VOA GCMS	8260 VOA GCMS			
Acetone	67-64-1	VOA	ug/kg	3	0	0	1.7	22			8260 VOA GCMS	8260 VOA GCMS			
Benzene	71-43-2	VOA	ug/kg	3	0	0	0.12	1.9			8260 VOA GCMS	8260 VOA GCMS			
Bromodichloromethane	75-27-4	VOA	ug/kg	3	0	0	0.076	1.9			8260 VOA GCMS	8260 VOA GCMS			
Bromoform	75-25-2	VOA	ug/kg	3	0	0	0.67	1.9			8260 VOA GCMS	8260 VOA GCMS			
Bromomethane	74-83-9	VOA	ug/kg	3	0	0	0.96	1.9			8260 VOA GCMS	8260 VOA GCMS			
Carbon disulfide	75-15-0	VOA	ug/kg	3	0	0	0.29	1.9			8260 VOA GCMS	8260 VOA GCMS			
Carbon tetrachloride	56-23-5	VOA	ug/kg	3	0	0	0.15	1.9			8260 VOA GCMS	8260 VOA GCMS			
Chlorobenzene	108-90-7	VOA	ug/kg	3	0	0	0.13	1.9			8260 VOA GCMS	8260 VOA GCMS			
Chloroethane	75-00-3	VOA	ug/kg	3	0	0	0.6	1.9			8260 VOA GCMS	8260 VOA GCMS			
Chloroform	67-66-3	VOA	ug/kg	3	0	0	0.13	1.9			8260 VOA GCMS	8260 VOA GCMS			

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Chloromethane	74-87-3	VOA	ug/kg	3	0	0	0.25	1.9			8260 VOA GCMS	8260 VOA GCMS			
cis-1,2-Dichloroethylene	156-59-2	VOA	ug/kg	3	0	0	0.22	1.9			8260 VOA GCMS	8260 VOA GCMS			
cis-1,3-Dichloropropene	10061-01-5	VOA	ug/kg	3	0	0	0.16	1.9			8260 VOA GCMS	8260 VOA GCMS			
Dibromochloromethane	124-48-1	VOA	ug/kg	3	0	0	0.64	1.9			8260 VOA GCMS	8260 VOA GCMS			
Ethylbenzene	100-41-4	VOA	ug/kg	3	0	0	0.41	1.9			8260 VOA GCMS	8260 VOA GCMS			
Methylene chloride	75-09-2	VOA	ug/kg	3	1	33	1.7	1.9	11	11	8260 VOA GCMS	8260 VOA GCMS	18.5	21	B195W2
n-Butylbenzene	104-51-8	VOA	ug/kg	3	0	0	0.81	1.9			8260 VOA GCMS	8260 VOA GCMS			
Styrene	100-42-5	VOA	ug/kg	3	1	33	1.7	1.9	0.41	0.41	8260 VOA GCMS	8260 VOA GCMS	18.5	21	B195W2
Tetrachloroethene	127-18-4	VOA	ug/kg	3	0	0	0.22	1.9			8260 VOA GCMS	8260 VOA GCMS			
Toluene	108-88-3	VOA	ug/kg	3	0	0	0.64	1.9			8260 VOA GCMS	8260 VOA GCMS			
trans-1,2-Dichloroethylene	156-60-5	VOA	ug/kg	3	0	0	0.33	1.9			8260 VOA GCMS	8260 VOA GCMS			
trans-1,3-Dichloropropene	10061-02-6	VOA	ug/kg	3	0	0	0.57	1.9			8260 VOA GCMS	8260 VOA GCMS			
Trichloroethene	79-01-6	VOA	ug/kg	3	0	0	0.065	1.9			8260 VOA GCMS	8260 VOA GCMS			
Vinyl chloride	75-01-4	VOA	ug/kg	3	0	0	0.69	1.9			8260 VOA GCMS	8260 VOA GCMS			
Xylenes (total)	1330-20-7	VOA	ug/kg	3	0	0	0.88	1.9			8260 VOA GCMS	8260 VOA GCMS			
Ammonia	7664-41-7	WETCHEM	ug/kg	1	1	100			1010	1010	350.1 AMMONIA	350.1 AMMONIA	18.5	21	B195W2
Cyanide	57-12-5	WETCHEM	ug/kg	3	0	0	130	200			9010 CYANIDE	335.2 CYANIDE			
Fluoride	16984-48-8	WETCHEM	ug/kg	3	0	0	100	1130			300.0 ANIONS IC	300.0 ANIONS IC			
Nitrate	14797-55-8	WETCHEM	ug/kg	3	2	67	2820	2820	4350	8410	300.0 ANIONS IC	300.0 ANIONS IC	18.5	21	B195W2
Nitrite	14797-65-0	WETCHEM	ug/kg	3	0	0	131	3060			300.0 ANIONS IC	300.0 ANIONS IC			
Nitrogen in Nitrite and Nitrate	NO2+NO3-N	WETCHEM	ug/kg	3	3	100			560	2100	353.2 NO3/NO2	353.1 NO3/NO2	18.5	21	B195W2
Phosphate	14265-44-2	WETCHEM	ug/kg	3	0	0	500	8130			300.0 ANIONS IC	300.0 ANIONS IC			
Sulfate	14808-79-8	WETCHEM	ug/kg	3	1	33	4900	4900	8000	8000	300.0 ANIONS IC	300.0 ANIONS IC	18.5	21	B195W2
216-A-4 (C5301)															
Aroclor-1016	12674-11-2	GENORG	ug/kg	7	0	0	6.4	12			8082 PCB GC	8082 PCB GC			
Aroclor-1221	11104-28-2	GENORG	ug/kg	7	0	0	6.4	23			8082 PCB GC	8082 PCB GC			
Aroclor-1232	11141-16-5	GENORG	ug/kg	7	0	0	6.4	12			8082 PCB GC	8082 PCB GC			
Aroclor-1242	53469-21-9	GENORG	ug/kg	7	0	0	6.4	12			8082 PCB GC	8082 PCB GC			
Aroclor-1248	12672-29-6	GENORG	ug/kg	7	0	0	6.4	12			8082 PCB GC	8082 PCB GC			
Aroclor-1254	11097-69-1	GENORG	ug/kg	7	0	0	3.9	12			8082 PCB GC	8082 PCB GC			

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Aroclor-1260	11096-82-5	GENORG	ug/kg	7	0	0	3.9	12			8082 PCB GC	8082 PCB GC			
Aroclor-1262	37324-23-5	GENORG	ug/kg	7	0	0	3.9	12			8082 PCB GC	8082 PCB GC			
Aroclor-1268	11100-14-4	GENORG	ug/kg	7	0	0	3.9	12			8082 PCB GC	8082 PCB GC			
Oil and grease	OIL/GREASE	GENORG	ug/kg	7	1	14	78400	250000	250000	250000	1664A OILGREASE	1664A OILGREASE	29	31.5	B1L4T7
Total petroleum hydrocarbons - diesel range	TPHDIESEL	GENORG	ug/kg	7	0	0	1600	3500			WTPH DIESEL	WTPH DIESEL			
Total petroleum hydrocarbons - gasoline range	TPHGASOLINE	GENORG	ug/kg	7	0	0	8	250			WTPH GASOLINE	WTPH GASOLINE			
Total petroleum hydrocarbons - kerosene range	TPHKEROSENE	GENORG	ug/kg	7	0	0	520	3500			WTPH DIESEL	WTPH DIESEL			
Cadmium	7440-43-9	METAL	ug/kg	7	3	43	100	140	105	168	200.8 METALS ICPMS	200.8 METALS ICPMS	283	285	B1L4W7
Chromium	7440-47-3	METAL	ug/kg	7	7	100			4940	25000	200.8 METALS ICPMS	200.8 METALS ICPMS	283	285	B1L4W7
Copper	7440-50-8	METAL	ug/kg	7	7	100			6370	19800	200.8 METALS ICPMS	200.8 METALS ICPMS	283	285	B1L4W7
Hexavalent Chromium	18540-29-9	METAL	ug/kg	1	0	0	150	150			7196 CR6	7196 CR6			
Lead	7439-92-1	METAL	ug/kg	7	7	100			2600	7690	6010 METALS ICP TR	200.8 METALS ICPMS	283	285	B1L4W7
Mercury	7439-97-6	METAL	ug/kg	7	0	0	7	51			7471 HG CVAA	200.8 METALS ICPMS			
Silver	7440-22-4	METAL	ug/kg	7	0	0	100	200			200.8 METALS ICPMS	6010 METALS ICP TR			
Uranium	7440-61-1	METAL	ug/kg	7	7	100			372	1030	200.8 METALS ICPMS	UTOT KPA	43	45.5	B1L5N6
Bulk density - dry	BULKDENSITY-	PHYSICAL	kg/m3	4	4	100			1550	1740	D2937 DENSITY	D2937 DENSITY	43	45.5	B1L4V2
Bulk density - wet	BULKDENSITY-	PHYSICAL	kg/m3	4	4	100			1613	2007	D2937 DENSITY	D2937 DENSITY	283	285	B1L4W7
Percent moisture (dry sample)	%MOISTURE-D	PHYSICAL	%	3	3	100			3.5	4.6	D2216 %MOIS	D2216 %MOIS	43	45.5	B1L4V2
Percent moisture (wet sample)	%MOISTURE	PHYSICAL	%	5	5	100			3.3	14.3	D2216 %MOIS	D2216 %MOIS	283	285	B1L4W7
Percent passing 1.5 inch sieve	PAS1.5IN	PHYSICAL	%	4	4	100			100	100	D422 PARTCLSIZE	D422 PARTCLSIZE	43	45.5	B1L4V2
Percent passing 3 inch sieve	PAS3IN	PHYSICAL	%	4	4	100			100	100	D422 PARTCLSIZE	D422 PARTCLSIZE	43	45.5	B1L4V2
Percent passing 3/4 inch sieve	PAS3/4IN	PHYSICAL	%	4	4	100			100	100	D422 PARTCLSIZE	D422 PARTCLSIZE	43	45.5	B1L4V2
Percent passing 3/8 inch sieve	PAS3/8IN	PHYSICAL	%	4	4	100			99.3	100	D422 PARTCLSIZE	D422 PARTCLSIZE	122	124	B1L4V7
Percent passing No.10 sieve	PAS#10	PHYSICAL	%	4	4	100			95.4	99.9	D422 PARTCLSIZE	D422 PARTCLSIZE	260	262	B1L4W2
Percent passing No.100 sieve	PAS#100	PHYSICAL	%	4	4	100			12	98.1	D422 PARTCLSIZE	D422 PARTCLSIZE	283	285	B1L4W7
Percent passing No.140 sieve	PAS#140	PHYSICAL	%	4	4	100			9.2	96.5	D422 PARTCLSIZE	D422 PARTCLSIZE	283	285	B1L4W7
Percent passing No.20 sieve	PAS#20	PHYSICAL	%	4	4	100			79.2	98.9	D422 PARTCLSIZE	D422 PARTCLSIZE	283	285	B1L4W7
Percent passing No.200 sieve	PAS#200	PHYSICAL	%	4	4	100			7.2	85.2	D422 PARTCLSIZE	D422 PARTCLSIZE	283	285	B1L4W7
Percent passing No.4 sieve	PAS#4	PHYSICAL	%	4	4	100			98.9	100	D422 PARTCLSIZE	D422 PARTCLSIZE	122	124	B1L4V7
Percent passing No.40 sieve	PAS#40	PHYSICAL	%	4	4	100			35.3	98.7	D422 PARTCLSIZE	D422 PARTCLSIZE	283	285	B1L4W7

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Percent passing No.60 sieve	PAS#60	PHYSICAL	%	4	4	100			18.4	98.5	D422 PARTCLSIZE	D422 PARTCLSIZE	283	285	B1L4W7
Percent Solids	%SOLIDS	PHYSICAL	%	3	3	100			95.6	96.7	%SOLIDS	%SOLIDS	122	124	B1L4V7
pH Measurement	PH	PHYSICAL	pH	7	7	100			8.14	8.86	150.1 PH	150.1 PH	29	31.5	B1L5N2
Total solids	TS	PHYSICAL	%	2	2	100			2.3	4	160.3 TOTSOLIDS	160.3 TOTSOLIDS	43	45.5	B1L5N6
Americium-241	14596-10-2	RAD	pCi/g	7	1	14	-0.006	0.05	0.045	0.045	AMCMISO IE PREC AEA	AMCMISO IE PREC AEA	122	124	B1L4V7
Antimony-125	14234-35-6	RAD	pCi/g	1	0	0	0.086	0.086			GAMMA GS	GAMMA GS			
Beryllium-7	13966-02-4	RAD	pCi/g	1	0	0	0.05	0.05			GAMMA GS	GAMMA GS			
Cesium-134	13967-70-9	RAD	pCi/g	1	0	0	0.075	0.075			GAMMA GS	GAMMA GS			
Cesium-137	10045-97-3	RAD	pCi/g	7	0	0	-0.008	0.051			GAMMA GS	GAMMA GS			
Cobalt-60	10198-40-0	RAD	pCi/g	7	0	0	-0.001	0.072			GAMMA GS	GAMMA GS			
Europium-152	14683-23-9	RAD	pCi/g	7	0	0	-0.012	0.084			GAMMA GS	GAMMA GS			
Europium-154	15585-10-1	RAD	pCi/g	7	0	0	-0.042	0.23			GAMMA GS	GAMMA GS			
Europium-155	14391-16-3	RAD	pCi/g	7	0	0	0.021	0.081			GAMMA GS	GAMMA GS			
Iodine-129	15046-84-1	RAD	pCi/g	7	1	14	-0.614	1.84	1.04	1.04	I129 SEP LEPS GS	I129 SEP LEPS GS	283	285	B1L4W7
Nickel-63	13981-37-8	RAD	pCi/g	7	0	0	-1.84	3.2			NI63 LSC	NI63 LSC			
Plutonium-238	13981-16-3	RAD	pCi/g	7	0	0	-0.002	0.036			PUISO IE PRECIP AEA	PUISO IE PRECIP AEA			
Plutonium-239/240	PU-239/240	RAD	pCi/g	7	3	43	0.002	0.037	0.01	0.067	PUISO IE PRECIP AEA	PUISO IE PRECIP AEA	122	124	B1L4V7
Potassium-40	13966-00-2	RAD	pCi/g	1	1	100			17.1	17.1	GAMMA GS	GAMMA GS	43	45.5	B1L5N6
Radium-226	13982-63-3	RAD	pCi/g	1	1	100			0.357	0.357	GAMMA GS	GAMMA GS	43	45.5	B1L5N6
Radium-228	15262-20-1	RAD	pCi/g	1	1	100			0.512	0.512	GAMMA GS	GAMMA GS	43	45.5	B1L5N6
Ruthenium-106	13967-48-1	RAD	pCi/g	1	0	0	0.43	0.43			GAMMA GS	GAMMA GS			
Technetium-99	14133-76-7	RAD	pCi/g	7	0	0	0.055	0.36			TC99 TR SEP GPC	TC99 ETVDSK LSC			
Thorium-228	14274-82-9	RAD	pCi/g	1	1	100			0.347	0.347	GAMMA GS	GAMMA GS	43	45.5	B1L5N6
Thorium-232	TH-232	RAD	pCi/g	1	1	100			0.512	0.512	GAMMA GS	GAMMA GS	43	45.5	B1L5N6
Total beta radiostrontium	SR-RAD	RAD	pCi/g	7	1	14	-0.84	0.14	0.44	0.44	SRTOT SEP PRECIP GPC	SRTOT SEP PRECIP GPC	43	45.5	B1L4V2
Tritium	10028-17-8	RAD	pCi/g	7	3	43	-0.623	0.643	13.1	1100	TRITIUM COX LSC	TRITIUM COX LSC	283	285	B1L4W7
Uranium-233/234	U-233/234	RAD	pCi/g	7	7	100			0.11	0.521	UISO IE PRECIP AEA	UISO PLATE AEA	43	45.5	B1L5N6
Uranium-235	15117-96-1	RAD	pCi/g	7	5	71	0.015	0.073	0.014	0.031	UISO IE PRECIP AEA	UISO IE PRECIP AEA	29	31.5	B1L5N2
Uranium-238	U-238	RAD	pCi/g	7	7	100			0.12	0.541	UISO IE PRECIP AEA	UISO PLATE AEA	43	45.5	B1L5N6
1,2,4-Trichlorobenzene	120-82-1	SVOA	ug/kg	6	0	0	140	160			8270 SVOA GCMS	8270 SVOA GCMS			

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
1,2,4-Trimethylbenzene	95-63-6	SVOA	ug/kg	2	0	0	150	190			8270 SVOA GCMS	8270 SVOA GCMS			
1,2-Dichlorobenzene	95-50-1	SVOA	ug/kg	2	0	0	230	250			8270 SVOA GCMS	8270 SVOA GCMS			
1,3-Dichlorobenzene	541-73-1	SVOA	ug/kg	2	0	0	270	280			8270 SVOA GCMS	8270 SVOA GCMS			
1,4-Dichlorobenzene	106-46-7	SVOA	ug/kg	6	0	0	250	280			8270 SVOA GCMS	8270 SVOA GCMS			
2,4,5-Trichlorophenol	95-95-4	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
2,4,6-Trichlorophenol	88-06-2	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
2,4-Dichlorophenol	120-83-2	SVOA	ug/kg	2	0	0	140	180			8270 SVOA GCMS	8270 SVOA GCMS			
2,4-Dimethylphenol	105-67-9	SVOA	ug/kg	2	0	0	230	230			8270 SVOA GCMS	8270 SVOA GCMS			
2,4-Dinitrophenol	51-28-5	SVOA	ug/kg	2	0	0	620	640			8270 SVOA GCMS	8270 SVOA GCMS			
2,4-Dinitrotoluene	121-14-2	SVOA	ug/kg	6	0	0	140	160			8270 SVOA GCMS	8270 SVOA GCMS			
2,6-Dinitrotoluene	606-20-2	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
2-Butoxyethanol	111-76-2	SVOA	ug/kg	2	0	0	150	210			8270 SVOA GCMS	8270 SVOA GCMS			
2-Chloronaphthalene	91-58-7	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
2-Chlorophenol	95-57-8	SVOA	ug/kg	6	0	0	140	160			8270 SVOA GCMS	8270 SVOA GCMS			
2-Methylnaphthalene	91-57-6	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
2-Methylphenol (cresol, o-)	95-48-7	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
2-Naphthylamine	91-59-8	SVOA	ug/kg	2	0	0	310	390			8270 SVOA GCMS	8270 SVOA GCMS			
2-Nitroaniline	88-74-4	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
2-Nitrophenol	88-75-5	SVOA	ug/kg	2	0	0	140	180			8270 SVOA GCMS	8270 SVOA GCMS			
2-Picoline	109-06-8	SVOA	ug/kg	2	0	0	1000	1000			8270 SVOA GCMS	8270 SVOA GCMS			
3,3'-Dichlorobenzidine	91-94-1	SVOA	ug/kg	2	0	0	270	340			8270 SVOA GCMS	8270 SVOA GCMS			
3+4 Methylphenol (cresol, m+p)	65794-96-9	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
3-Nitroaniline	99-09-2	SVOA	ug/kg	2	0	0	140	190			8270 SVOA GCMS	8270 SVOA GCMS			
4,6-Dinitro-2-methylphenol	534-52-1	SVOA	ug/kg	2	0	0	230	340			8270 SVOA GCMS	8270 SVOA GCMS			
4-Bromophenylphenyl ether	101-55-3	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
4-Chloro-3-methylphenol	59-50-7	SVOA	ug/kg	6	0	0	140	160			8270 SVOA GCMS	8270 SVOA GCMS			
4-Chloroaniline	106-47-8	SVOA	ug/kg	2	0	0	290	310			8270 SVOA GCMS	8270 SVOA GCMS			
4-Chlorophenylphenyl ether	7005-72-3	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
4-Nitroaniline	100-01-6	SVOA	ug/kg	2	0	0	210	290			8270 SVOA GCMS	8270 SVOA GCMS			
4-Nitrophenol	100-02-7	SVOA	ug/kg	6	0	0	210	340			8270 SVOA GCMS	8270 SVOA GCMS			

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Acenaphthene	83-32-9	SVOA	ug/kg	6	0	0	140	160			8270 SVOA GCMS	8270 SVOA GCMS			
Acenaphthylene	208-96-8	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Anthracene	120-12-7	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Benzo(a)anthracene	56-55-3	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Benzo(a)pyrene	50-32-8	SVOA	ug/kg	2	0	0	210	230			8270 SVOA GCMS	8270 SVOA GCMS			
Benzo(b)fluoranthene	205-99-2	SVOA	ug/kg	2	0	0	170	210			8270 SVOA GCMS	8270 SVOA GCMS			
Benzo(ghi)perylene	191-24-2	SVOA	ug/kg	2	0	0	230	330			8270 SVOA GCMS	8270 SVOA GCMS			
Benzo(k)fluoranthene	207-08-9	SVOA	ug/kg	2	0	0	170	210			8270 SVOA GCMS	8270 SVOA GCMS			
Benzoic acid	65-85-0	SVOA	ug/kg	2	0	0	410	1000			8270 SVOA GCMS	8270 SVOA GCMS			
Benzothiazole	95-16-9	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Benzyl alcohol	100-51-6	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Bis(2-chloro-1-methylethyl)ether	108-60-1	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Bis(2-Chloroethoxy)methane	111-91-1	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Bis(2-chloroethyl) ether	111-44-4	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Bis(2-ethylhexyl) phthalate	117-81-7	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Butylbenzylphthalate	85-68-7	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Carbazole	86-74-8	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Chrysene	218-01-9	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Cyclohexanone	108-94-1	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Decane	124-18-5	SVOA	ug/kg	2	0	0	150	210			8270 SVOA GCMS	8270 SVOA GCMS			
Dibenz[a,h]anthracene	53-70-3	SVOA	ug/kg	2	0	0	270	340			8270 SVOA GCMS	8270 SVOA GCMS			
Dibenzofuran	132-64-9	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Dibutyl Butylphosphonate	78-46-6	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Diethylphthalate	84-66-2	SVOA	ug/kg	2	1	50	210	210	280	280	8270 SVOA GCMS	8270 SVOA GCMS	122	124	B1L4V7
Dimethyl phthalate	131-11-3	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Di-n-butylphthalate	84-74-2	SVOA	ug/kg	3	1	33	140	150	200	200	8270 SVOA GCMS	8270 SVOA GCMS	29	31.5	B1L5N2
Di-n-octylphthalate	117-84-0	SVOA	ug/kg	2	0	0	150	210			8270 SVOA GCMS	8270 SVOA GCMS			
Dodecane	112-40-3	SVOA	ug/kg	2	0	0	140	170			8270 SVOA GCMS	8270 SVOA GCMS			
Fluoranthene	206-44-0	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Fluorene	86-73-7	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Hexachlorobenzene	118-74-1	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Hexachlorobutadiene	87-68-3	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Hexachlorocyclopentadiene	77-47-4	SVOA	ug/kg	2	0	0	150	160			8270 SVOA GCMS	8270 SVOA GCMS			
Hexachloroethane	67-72-1	SVOA	ug/kg	2	0	0	230	260			8270 SVOA GCMS	8270 SVOA GCMS			
Indeno(1,2,3-cd)pyrene	193-39-5	SVOA	ug/kg	2	0	0	250	340			8270 SVOA GCMS	8270 SVOA GCMS			
Isophorone	78-59-1	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Naphthalene	91-20-3	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Nitrobenzene	98-95-3	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
n-Nitrosodi-n-dipropylamine	621-64-7	SVOA	ug/kg	6	0	0	140	160			8270 SVOA GCMS	8270 SVOA GCMS			
n-Nitrosodiphenylamine	86-30-6	SVOA	ug/kg	2	0	0	160	170			8270 SVOA GCMS	8270 SVOA GCMS			
Pentachlorophenol	87-86-5	SVOA	ug/kg	6	0	0	210	420			8270 SVOA GCMS	8270 SVOA GCMS			
Phenanthrene	85-01-8	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
Phenol	108-95-2	SVOA	ug/kg	6	0	0	140	160			8270 SVOA GCMS	8270 SVOA GCMS			
Pyrene	129-00-0	SVOA	ug/kg	6	0	0	140	160			8270 SVOA GCMS	8270 SVOA GCMS			
Pyridine	110-86-1	SVOA	ug/kg	2	0	0	140	340			8270 SVOA GCMS	8270 SVOA GCMS			
Total cresols	1319-77-3	SVOA	ug/kg	2	0	0	170	220			8270 SVOA GCMS	8270 SVOA GCMS			
Tributyl phosphate	126-73-8	SVOA	ug/kg	7	0	0	35	160			8270 SVOA GCMS	8270 SVOA GCMS			
Tris-2-chloroethyl phosphate	115-96-8	SVOA	ug/kg	2	0	0	140	150			8270 SVOA GCMS	8270 SVOA GCMS			
1,1,1-Trichloroethane	71-55-6	VOA	ug/kg	7	0	0	0.15	1.3			8260 VOA GCMS	8260 VOA GCMS			
1,1,2,2-Tetrachloroethane	79-34-5	VOA	ug/kg	7	0	0	0.14	1.3			8260 VOA GCMS	8260 VOA GCMS			
1,1,2-Trichloroethane	79-00-5	VOA	ug/kg	7	0	0	0.29	1.3			8260 VOA GCMS	8260 VOA GCMS			
1,1-Dichloroethane	75-34-3	VOA	ug/kg	7	0	0	0.97	1.3			8260 VOA GCMS	8260 VOA GCMS			
1,1-Dichloroethene	75-35-4	VOA	ug/kg	7	0	0	0.56	1.3			8260 VOA GCMS	8260 VOA GCMS			
1,2,4-Trimethylbenzene	95-63-6	VOA	ug/kg	1	0	0	0.22	0.22			8260 VOA GCMS	8260 VOA GCMS			
1,2-Dichloroethane	107-06-2	VOA	ug/kg	7	0	0	0.45	1.3			8260 VOA GCMS	8260 VOA GCMS			
1,2-Dichloroethene (Total)	540-59-0	VOA	ug/kg	7	0	0	0.56	1.3			8260 VOA GCMS	8260 VOA GCMS			
1,2-Dichloropropane	78-87-5	VOA	ug/kg	7	0	0	0.38	1.3			8260 VOA GCMS	8260 VOA GCMS			
1-Butanol	71-36-3	VOA	ug/kg	7	0	0	3.5	110			8260 VOA GCMS	8260 VOA GCMS			
2-Butanone	78-93-3	VOA	ug/kg	7	0	0	1.1	1.4			8260 VOA GCMS	8260 VOA GCMS			
2-Hexanone	591-78-6	VOA	ug/kg	7	0	0	0.29	1.3			8260 VOA GCMS	8260 VOA GCMS			

Table A4-40. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-4 Crib (C4560 and C5301)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
2-Pentanone, 4-Methyl	108-10-1	VOA	ug/kg	7	0	0	1.1	1.6			8260 VOA GCMS	8260 VOA GCMS			
Acetone	67-64-1	VOA	ug/kg	7	0	0	1.1	3.9			8260 VOA GCMS	8260 VOA GCMS			
Acetonitrile	75-05-8	VOA	ug/kg	1	0	0	2	2			8260 VOA GCMS	8260 VOA GCMS			
Benzene	71-43-2	VOA	ug/kg	7	0	0	0.17	1.3			8260 VOA GCMS	8260 VOA GCMS			
Bromodichloromethane	75-27-4	VOA	ug/kg	7	0	0	0.34	1.3			8260 VOA GCMS	8260 VOA GCMS			
Bromoform	75-25-2	VOA	ug/kg	7	0	0	0.25	1.3			8260 VOA GCMS	8260 VOA GCMS			
Bromomethane	74-83-9	VOA	ug/kg	7	0	0	0.32	1.3			8260 VOA GCMS	8260 VOA GCMS			
Carbon disulfide	75-15-0	VOA	ug/kg	7	0	0	0.56	1.3			8260 VOA GCMS	8260 VOA GCMS			
Carbon tetrachloride	56-23-5	VOA	ug/kg	7	0	0	0.93	1.3			8260 VOA GCMS	8260 VOA GCMS			
Chlorobenzene	108-90-7	VOA	ug/kg	7	0	0	0.13	1.3			8260 VOA GCMS	8260 VOA GCMS			
Chloroethane	75-00-3	VOA	ug/kg	7	0	0	0.36	1.3			8260 VOA GCMS	8260 VOA GCMS			
Chloroform	67-66-3	VOA	ug/kg	7	0	0	0.15	1.3			8260 VOA GCMS	8260 VOA GCMS			
Chloromethane	74-87-3	VOA	ug/kg	7	0	0	0.45	1.3			8260 VOA GCMS	8260 VOA GCMS			
cis-1,2-Dichloroethylene	156-59-2	VOA	ug/kg	7	0	0	0.44	1.3			8260 VOA GCMS	8260 VOA GCMS			
cis-1,3-Dichloropropene	10061-01-5	VOA	ug/kg	7	0	0	0.75	1.3			8260 VOA GCMS	8260 VOA GCMS			
Cyclohexanone	108-94-1	VOA	ug/kg	1	0	0	14	14			8260 VOA GCMS	8260 VOA GCMS			
Dibromochloromethane	124-48-1	VOA	ug/kg	7	0	0	0.29	1.3			8260 VOA GCMS	8260 VOA GCMS			
Ethylbenzene	100-41-4	VOA	ug/kg	7	0	0	0.19	1.3			8260 VOA GCMS	8260 VOA GCMS			
Hexane	110-54-3	VOA	ug/kg	1	0	0	0.46	0.46			8260 VOA GCMS	8260 VOA GCMS			
Methylene chloride	75-09-2	VOA	ug/kg	7	0	0	1.1	2.6			8260 VOA GCMS	8260 VOA GCMS			
n-Butylbenzene	104-51-8	VOA	ug/kg	7	0	0	0.54	1.3			8260 VOA GCMS	8260 VOA GCMS			
Styrene	100-42-5	VOA	ug/kg	7	0	0	1.1	1.3			8260 VOA GCMS	8260 VOA GCMS			
Tetrachloroethene	127-18-4	VOA	ug/kg	7	0	0	0.28	1.3			8260 VOA GCMS	8260 VOA GCMS			
Toluene	108-88-3	VOA	ug/kg	7	0	0	0.13	1.3			8260 VOA GCMS	8260 VOA GCMS			
trans-1,2-Dichloroethylene	156-60-5	VOA	ug/kg	7	0	0	0.23	1.3			8260 VOA GCMS	8260 VOA GCMS			
trans-1,3-Dichloropropene	10061-02-6	VOA	ug/kg	7	0	0	0.21	1.3			8260 VOA GCMS	8260 VOA GCMS			
Trichloroethene	79-01-6	VOA	ug/kg	7	0	0	0.37	1.3			8260 VOA GCMS	8260 VOA GCMS			
Vinyl chloride	75-01-4	VOA	ug/kg	7	0	0	0.24	1.3			8260 VOA GCMS	8260 VOA GCMS			
Xylenes (total)	1330-20-7	VOA	ug/kg	7	0	0	0.88	1.3			8260 VOA GCMS	8260 VOA GCMS			
Chloride	16887-00-6	WETCHEM	ug/kg	7	3	43	1670	1700	500	6560	300.0 ANIONS IC	300.0 ANIONS IC	122	124	B1L4V7
Cyanide	57-12-5	WETCHEM	ug/kg	7	1	14	130	200	890	890	335.2 CYANIDE	335.2 CYANIDE	29	31.5	B1L5N2
Fluoride	16984-48-8	WETCHEM	ug/kg	7	0	0	210	2000			300.0 ANIONS IC	300.0 ANIONS IC			
Nitrate	14797-55-8	WETCHEM	ug/kg	7	4	57	3900	3980	2570	185000	300.0 ANIONS IC	300.0 ANIONS IC	283	285	B1L4W7
Nitrite	14797-65-0	WETCHEM	ug/kg	7	1	14	1580	1610	427	427	300.0 ANIONS IC	300.0 ANIONS IC	43	45.5	B1L5N6
Phosphate	14265-44-2	WETCHEM	ug/kg	7	1	14	11700	12000	4200	4200	300.0 ANIONS IC	300.0 ANIONS IC	43	45.5	B1L5N6
Sulfate	14808-79-8	WETCHEM	ug/kg	7	3	43	6370	6500	4300	18800	300.0 ANIONS IC	300.0 ANIONS IC	283	285	B1L4W7

Table A4-41. Summary Table for All Constituents in Shallow Zone Soil Samples for the 216-A-2 Crib (C5515)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
216-A-2 (C5515)															
Aroclor-1016	12674-11-2	GENORG	ug/kg	1	0	0	11	11			8082_PCB_GC	8082_PCB_GC			
Aroclor-1221	11104-28-2	GENORG	ug/kg	1	0	0	21	21			8082_PCB_GC	8082_PCB_GC			
Aroclor-1232	11141-16-5	GENORG	ug/kg	1	0	0	11	11			8082_PCB_GC	8082_PCB_GC			
Aroclor-1242	53469-21-9	GENORG	ug/kg	1	0	0	11	11			8082_PCB_GC	8082_PCB_GC			
Aroclor-1248	12672-29-6	GENORG	ug/kg	1	0	0	11	11			8082_PCB_GC	8082_PCB_GC			
Aroclor-1254	11097-69-1	GENORG	ug/kg	1	0	0	11	11			8082_PCB_GC	8082_PCB_GC			
Aroclor-1260	11096-82-5	GENORG	ug/kg	1	0	0	11	11			8082_PCB_GC	8082_PCB_GC			
Aroclor-1262	37324-23-5	GENORG	ug/kg	1	0	0	11	11			8082_PCB_GC	8082_PCB_GC			
Aroclor-1268	11100-14-4	GENORG	ug/kg	1	0	0	11	11			8082_PCB_GC	8082_PCB_GC			
Total petroleum hydrocarbons - diesel range	TPHDIESEL	GENORG	ug/kg	1	0	0	3200	3200			WTPH_DIESEL	WTPH_DIESEL			
Total petroleum hydrocarbons - gasoline range	TPHGASOLINE	GENORG	ug/kg	1	0	0	250	250			WTPH_GASOLINE	WTPH_GASOLINE			
Total petroleum hydrocarbons - kerosene range	TPHKEROSENE	GENORG	ug/kg	1	0	0	3200	3200			WTPH_DIESEL	WTPH_DIESEL			
Arsenic	7440-38-2	METAL	ug/kg	1	1	100			3320	3320	200.8_METALS_ICPMS	200.8_METALS_ICPMS	13	15.5	B1NRH0
Barium	7440-39-3	METAL	ug/kg	1	1	100			50000	50000	200.8_METALS_ICPMS	200.8_METALS_ICPMS	13	15.5	B1NRH0
Cadmium	7440-43-9	METAL	ug/kg	1	0	0	99	99			200.8_METALS_ICPMS	200.8_METALS_ICPMS			
Chromium	7440-47-3	METAL	ug/kg	1	1	100			6020	6020	200.8_METALS_ICPMS	200.8_METALS_ICPMS	13	15.5	B1NRH0
Copper	7440-50-8	METAL	ug/kg	1	1	100			7910	7910	200.8_METALS_ICPMS	200.8_METALS_ICPMS	13	15.5	B1NRH0
Lead	7439-92-1	METAL	ug/kg	1	1	100			3410	3410	200.8_METALS_ICPMS	200.8_METALS_ICPMS	13	15.5	B1NRH0
Mercury	7439-97-6	METAL	ug/kg	1	0	0	50	50			200.8_METALS_ICPMS	200.8_METALS_ICPMS			
Selenium	7782-49-2	METAL	ug/kg	1	0	0	298	298			200.8_METALS_ICPMS	200.8_METALS_ICPMS			
Silver	7440-22-4	METAL	ug/kg	1	0	0	99	99			200.8_METALS_ICPMS	200.8_METALS_ICPMS			
Uranium	7440-61-1	METAL	ug/kg	1	1	100			364	364	200.8_METALS_ICPMS	200.8_METALS_ICPMS	13	15.5	B1NRH0
Americium-241	14596-10-2	RAD	pCi/g	1	0	0	0.019	0.019			AMCMISO_IE_PREC_AEA	AMCMISO_IE_PREC_AEA			
Carbon-14	14762-75-5	RAD	pCi/g	1	0	0	1.66	1.66			C14_COX_LSC	C14_COX_LSC			
Cesium-137	10045-97-3	RAD	pCi/g	1	0	0	-0.003	-0.003			GAMMA_GS	GAMMA_GS			
Cobalt-60	10198-40-0	RAD	pCi/g	1	0	0	0.001	0.001			GAMMA_GS	GAMMA_GS			
Europium-152	14683-23-9	RAD	pCi/g	1	0	0	0.01	0.01			GAMMA_GS	GAMMA_GS			
Europium-154	15585-10-1	RAD	pCi/g	1	0	0	-0.015	-0.015			GAMMA_GS	GAMMA_GS			
Europium-155	14391-16-3	RAD	pCi/g	1	0	0	0.037	0.037			GAMMA_GS	GAMMA_GS			
Iodine-129	15046-84-1	RAD	pCi/g	1	0	0	-0.195	-0.195			I129_SEP_LEPS_GS	I129_SEP_LEPS_GS			
Nickel-63	13981-37-8	RAD	pCi/g	1	0	0	-2.8	-2.8			NI63_LSC	NI63_LSC			
Plutonium-238	13981-16-3	RAD	pCi/g	1	0	0	-0.006	-0.006			PUISO_IE_PRECIP_AEA	PUISO_IE_PRECIP_AEA			
Plutonium-239/240	PU-239/240	RAD	pCi/g	1	0	0	0.006	0.006			PUISO_IE_PRECIP_AEA	PUISO_IE_PRECIP_AEA			
Technetium-99	14133-76-7	RAD	pCi/g	1	0	0	0.068	0.068			TC99_TR_SEP_GPC	TC99_TR_SEP_GPC			
Total beta radiostrontium	SR-RAD	RAD	pCi/g	1	0	0	0.32	0.32			SRTOT_SEP_PRECIP_GPC	SRTOT_SEP_PRECIP_GPC			
Tritium	10028-17-8	RAD	pCi/g	1	0	0	-1.02	-1.02			TRITIUM_COX_LSC	TRITIUM_COX_LSC			
Uranium-233/234	U-233/234	RAD	pCi/g	1	1	100			0.15	0.15	UISO_IE_PRECIP_AEA	UISO_IE_PRECIP_AEA	13	15.5	B1NRH0
Uranium-235	15117-96-1	RAD	pCi/g	1	1	100			0.016	0.016	UISO_IE_PRECIP_AEA	UISO_IE_PRECIP_AEA	13	15.5	B1NRH0

Table A4-41. Summary Table for All Constituents in Shallow Zone Soil Samples for the 216-A-2 Crib (C5515)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Uranium-238	U-238	RAD	pCi/g	1	1	100			0.13	0.13	UISO_IE_PRECIP_AEA	UISO_IE_PRECIP_AEA	13	15.5	B1NRH0
1,2,4-Trichlorobenzene	120-82-1	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
1,4-Dichlorobenzene	106-46-7	SVOA	ug/kg	1	0	0	260	260			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4-Dinitrotoluene	121-14-2	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
2-Chlorophenol	95-57-8	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Chloro-3-methylphenol	59-50-7	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Nitrophenol	100-02-7	SVOA	ug/kg	1	0	0	210	210			8270_SVOA_GCMS	8270_SVOA_GCMS			
Acenaphthene	83-32-9	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
n-Nitrosodi-n-dipropylamine	621-64-7	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
Pentachlorophenol	87-86-5	SVOA	ug/kg	1	0	0	210	210			8270_SVOA_GCMS	8270_SVOA_GCMS			
Phenol	108-95-2	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
Pyrene	129-00-0	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
Tributyl phosphate	126-73-8	SVOA	ug/kg	1	0	0	150	150			8270_SVOA_GCMS	8270_SVOA_GCMS			
1,1,1-Trichloroethane	71-55-6	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,2,2-Tetrachloroethane	79-34-5	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,2-Trichloroethane	79-00-5	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
1,1-Dichloroethane	75-34-3	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
1,1-Dichloroethene	75-35-4	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloroethane	107-06-2	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloroethene (Total)	540-59-0	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloropropane	78-87-5	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
1-Butanol	71-36-3	VOA	ug/kg	1	0	0	100	100			8260_VOA_GCMS	8260_VOA_GCMS			
2-Butanone	78-93-3	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
2-Hexanone	591-78-6	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
2-Pentanone, 4-Methyl	108-10-1	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Acetone	67-64-1	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Benzene	71-43-2	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Bromodichloromethane	75-27-4	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Bromoform	75-25-2	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Bromomethane	74-83-9	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Carbon disulfide	75-15-0	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Carbon tetrachloride	56-23-5	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Chlorobenzene	108-90-7	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Chloroethane	75-00-3	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Chloroform	67-66-3	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Chloromethane	74-87-3	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
cis-1,2-Dichloroethylene	156-59-2	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
cis-1,3-Dichloropropene	10061-01-5	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Dibromochloromethane	124-48-1	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			

Table A4-41. Summary Table for All Constituents in Shallow Zone Soil Samples for the 216-A-2 Crib (C5515)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Ethylbenzene	100-41-4	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Methylene chloride	75-09-2	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
n-Butylbenzene	104-51-8	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Styrene	100-42-5	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Tetrachloroethene	127-18-4	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Toluene	108-88-3	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
trans-1,2-Dichloroethylene	156-60-5	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
trans-1,3-Dichloropropene	10061-02-6	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Trichloroethene	79-01-6	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Vinyl chloride	75-01-4	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Xylenes (total)	1330-20-7	VOA	ug/kg	1	0	0	1	1			8260_VOA_GCMS	8260_VOA_GCMS			
Cyanide	57-12-5	WETCHEM	ug/kg	1	0	0	195	195			335.2_CYANIDE	335.2_CYANIDE			
Fluoride	16984-48-8	WETCHEM	ug/kg	1	0	0	294	294			300.0_ANIONS_IC	300.0_ANIONS_IC			
Nitrate	14797-55-8	WETCHEM	ug/kg	1	1	100			2650	2650	300.0_ANIONS_IC	300.0_ANIONS_IC	13	15.5	B1NRH0
Nitrite	14797-65-0	WETCHEM	ug/kg	1	0	0	1610	1610			300.0_ANIONS_IC	300.0_ANIONS_IC			
Phosphate	14265-44-2	WETCHEM	ug/kg	1	0	0	6010	6010			300.0_ANIONS_IC	300.0_ANIONS_IC			
Sulfate	14808-79-8	WETCHEM	ug/kg	1	1	100			12700	12700	300.0_ANIONS_IC	300.0_ANIONS_IC	13	15.5	B1NRH0

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Table A4-42. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-2 Crib (C5515)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
216-A-2 (C5515)															
Aroclor-1016	12674-11-2	GENORG	ug/kg	11	0	0	6.1	12			8082_PCB_GC	8082_PCB_GC			
Aroclor-1221	11104-28-2	GENORG	ug/kg	11	0	0	6.1	24			8082_PCB_GC	8082_PCB_GC			
Aroclor-1232	11141-16-5	GENORG	ug/kg	11	0	0	6.1	12			8082_PCB_GC	8082_PCB_GC			
Aroclor-1242	53469-21-9	GENORG	ug/kg	11	0	0	6.1	12			8082_PCB_GC	8082_PCB_GC			
Aroclor-1248	12672-29-6	GENORG	ug/kg	11	0	0	6.1	12			8082_PCB_GC	8082_PCB_GC			
Aroclor-1254	11097-69-1	GENORG	ug/kg	11	3	27	6.7	12	34	52	8082_PCB_GC	8082_PCB_GC	29	31.5	B1NT07
Aroclor-1260	11096-82-5	GENORG	ug/kg	11	0	0	6.7	12			8082_PCB_GC	8082_PCB_GC			
Aroclor-1262	37324-23-5	GENORG	ug/kg	11	0	0	6.7	12			8082_PCB_GC	8082_PCB_GC			
Aroclor-1268	11100-14-4	GENORG	ug/kg	11	0	0	6.7	12			8082_PCB_GC	8082_PCB_GC			
Total petroleum hydrocarbons - diesel range	TPHDIESEL	GENORG	ug/kg	11	0	0	1500	5100			WTPH_DIESEL	WTPH_DIESEL			
Total petroleum hydrocarbons - gasoline range	TPHGASOLINE	GENORG	ug/kg	10	0	0	18	250			WTPH_GASOLINE	WTPH_GASOLINE			
Total petroleum hydrocarbons - kerosene range	TPHKEROSENE	GENORG	ug/kg	11	0	0	630	5100			WTPH_DIESEL	WTPH_DIESEL			
Arsenic	7440-38-2	METAL	ug/kg	11	11	100			716	6370	200.8_METALS_ICPMS	200.8_METALS_ICPMS	285	287	B1NRJ0
Barium	7440-39-3	METAL	ug/kg	11	11	100			42200	117000	200.8_METALS_ICPMS	200.8_METALS_ICPMS	285	287	B1NRJ0
Cadmium	7440-43-9	METAL	ug/kg	11	3	27	98	130	100	351	200.8_METALS_ICPMS	200.8_METALS_ICPMS	285	287	B1NRJ0
Chromium	7440-47-3	METAL	ug/kg	11	11	100			6020	23600	200.8_METALS_ICPMS	200.8_METALS_ICPMS	285	287	B1NRJ0
Copper	7440-50-8	METAL	ug/kg	11	11	100			7200	23300	6010_METALS_ICP_TR	200.8_METALS_ICPMS	285	287	B1NRJ0
Hexavalent Chromium	18540-29-9	METAL	ug/kg	10	3	30	100	240	220	247	7196_CR6	7196_CR6	132.5	135	B1P3J8
Lead	7439-92-1	METAL	ug/kg	11	11	100			1520	10300	200.8_METALS_ICPMS	200.8_METALS_ICPMS	285	287	B1NRJ0
Mercury	7439-97-6	METAL	ug/kg	11	4	36	49	51	80	154	7471_HG_CVAA	200.8_METALS_ICPMS	32	34.5	B1NRH2
Selenium	7782-49-2	METAL	ug/kg	11	4	36	260	910	394	786	200.8_METALS_ICPMS	200.8_METALS_ICPMS	285	287	B1NRJ0
Silver	7440-22-4	METAL	ug/kg	11	3	27	98	750	127	630	200.8_METALS_ICPMS	6010_METALS_ICP_TR	29	31.5	B1NRH1
Uranium	7440-61-1	METAL	ug/kg	10	10	100			250	147000	200.8_METALS_ICPMS	UTOT_KPA	29	31.5	B1NT07
Americium-241	14596-10-2	RAD	pCi/g	12	9	75	0.012	0.019	0.021	94000	AMCMISO_IE_PREC_AEA	AMCMISO_EIE_PREC_AEA	27	27.5	B1NRJ2
Carbon-14	14762-75-5	RAD	pCi/g	10	0	0	-0.565	12.4			C14_COX_LSC	C14_COX_LSC			
Cesium-137	10045-97-3	RAD	pCi/g	12	7	58	-0.008	0.008	5.31	31000	GAMMA_GS	GAMMA_GS	27	27.5	B1NRJ2
Cobalt-60	10198-40-0	RAD	pCi/g	12	4	33	-0.005	0.003	0.199	0.382	GAMMA_GS	GAMMA_GS	29	31.5	B1NRH1
Europium-152	14683-23-9	RAD	pCi/g	12	0	0	-0.027	4.75			GAMMA_GS	GAMMA_GS			
Europium-154	15585-10-1	RAD	pCi/g	12	1	8	-0.016	3.09	1.28	1.28	GAMMA_GS	GAMMA_GS	32	34.5	B1NRH2
Europium-155	14391-16-3	RAD	pCi/g	12	0	0	0	3.85			GAMMA_GS	GAMMA_GS			
Gross alpha	12587-46-1	RAD	pCi/g	1	1	100			483000	483000	ALPHA_GPC	ALPHA_GPC	27	27.5	B1NRJ2
Gross beta	12587-47-2	RAD	pCi/g	1	1	100			341000	341000	BETA_GPC	BETA_GPC	27	27.5	B1NRJ2

Table A4-42. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-2 Crib (C5515)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Iodine-129	15046-84-1	RAD	pCi/g	10	0	0	-0.911	4.3			I129_SEP_LEPS_GS	I129_SEP_LEPS_GS			
Nickel-63	13981-37-8	RAD	pCi/g	10	1	10	-2.8	27.2	10.6	10.6	NI63_LSC	NI63_LSC	32	34.5	B1NRH2
Plutonium-238	13981-16-3	RAD	pCi/g	12	4	33	-0.015	21000	31.7	120	PUISO_PLATE_AEA	PUISO_PLATE_AEA	32	34.5	B1NRH3
Plutonium-239/240	PU-239/240	RAD	pCi/g	12	7	58	-0.004	0.009	0.56	426000	PUISO_IE_PRECIP_AEA	PUISO_EIE_PRECIP_AEA	27	27.5	B1NRJ2
Potassium-40	13966-00-2	RAD	pCi/g	3	3	100			11.7	14.3	GAMMA_GS	GAMMA_GS	29	31.5	B1NRH1
Radium-226	13982-63-3	RAD	pCi/g	3	1	33	1.7	1.93	0.402	0.402	GAMMA_GS	GAMMA_GS	32	34.5	B1NRH3
Radium-228	15262-20-1	RAD	pCi/g	3	1	33	0.963	2.04	0.83	0.83	GAMMA_GS	GAMMA_GS	32	34.5	B1NRH3
Strontium-90	10098-97-2	RAD	pCi/g	1	1	100			125000	125000	SRTOT_SEP_PRECIP_GPC	SRTOT_SEP_PRECIP_GPC	27	27.5	B1NRJ2
Technetium-99	14133-76-7	RAD	pCi/g	10	3	30	-0.204	0.176	4.56	6.27	TC99_TR_SEP_GPC	TC99_TR_SEP_GPC	29	31.5	B1NRH1
Total beta radiostrontium	SR-RAD	RAD	pCi/g	11	6	55	-0.99	0.32	2.2	18700	SRTOT_SEP_PRECIP_GPC	SRTOT_SEP_PRECIP_GPC	29	31.5	B1NRH1
Tritium	10028-17-8	RAD	pCi/g	10	4	40	-11.6	2.09	14.4	2860	TRITIUM_COX_LSC	TRITIUM_COX_LSC	285	287	B1NRJ0
Uranium-233	13968-55-3	RAD	pCi/g	1	0	0	19.3	19.3			RADISOTOPES_ICPMS	RADISOTOPES_ICPMS			
Uranium-233/234	U-233/234	RAD	pCi/g	11	11	100			0.11	43.2	UISO_IE_PRECIP_AEA	UISO_PLATE_AEA	32	34.5	B1NRH3
Uranium-234	13966-29-5	RAD	pCi/g	1	1	100			49.8	49.8	RADISOTOPES_ICPMS	RADISOTOPES_ICPMS	27	27.5	B1NRJ2
Uranium-235	15117-96-1	RAD	pCi/g	12	8	67	0.004	3.61	0.011	4.28	UISO_IE_PRECIP_AEA	UISO_PLATE_AEA	29	31.5	B1NT07
Uranium-236	13982-70-2	RAD	pCi/g	1	1	100			1.03	1.03	RADISOTOPES_ICPMS	RADISOTOPES_ICPMS	27	27.5	B1NRJ2
Uranium-238	U-238	RAD	pCi/g	12	12	100			0.11	56.6	UISO_IE_PRECIP_AEA	UISO_PLATE_AEA	32	34.5	B1NRH3
1,2,4-Trichlorobenzene	120-82-1	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
1,2-Dichlorobenzene	95-50-1	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
1,3-Dichlorobenzene	541-73-1	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
1,4-Dichlorobenzene	106-46-7	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4,5-Trichlorophenol	95-95-4	SVOA	ug/kg	2	0	0	34	870			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4,6-Trichlorophenol	88-06-2	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4-Dichlorophenol	120-83-2	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4-Dimethylheptane	2213-23-2	SVOA	ug/kg	2	2	100			210	240	8270_SVOA_GCMS	8270_SVOA_GCMS	29	31.5	B1NRH1
2,4-Dimethylphenol	105-67-9	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4-Dinitrophenol	51-28-5	SVOA	ug/kg	2	0	0	340	870			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,4-Dinitrotoluene	121-14-2	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2,6-Dimethylheptane	1072-05-5	SVOA	ug/kg	1	1	100			150	150	8270_SVOA_GCMS	8270_SVOA_GCMS	32	34.5	B1NRH3
2,6-Dinitrotoluene	606-20-2	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2-Chloronaphthalene	91-58-7	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2-Chlorophenol	95-57-8	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2-Methylnaphthalene	91-57-6	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			

Table A4-42. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-2 Crib (C5515)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
2-Methylphenol (cresol, o-)	95-48-7	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
2-Nitroaniline	88-74-4	SVOA	ug/kg	2	0	0	34	870			8270_SVOA_GCMS	8270_SVOA_GCMS			
2-Nitrophenol	88-75-5	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
3,3'-Dichlorobenzidine	91-94-1	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
3+4 Methylphenol (cresol, m+p)	65794-96-9	SVOA	ug/kg	1	0	0	69	69			8270_SVOA_GCMS	8270_SVOA_GCMS			
3-Nitroaniline	99-09-2	SVOA	ug/kg	2	0	0	34	870			8270_SVOA_GCMS	8270_SVOA_GCMS			
4,6-Dinitro-2-methylphenol	534-52-1	SVOA	ug/kg	2	0	0	340	870			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Bromophenylphenyl ether	101-55-3	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Chloro-3-methylphenol	59-50-7	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Chloroaniline	106-47-8	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Chlorophenylphenyl ether	7005-72-3	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Methylphenol (cresol, p-)	106-44-5	SVOA	ug/kg	1	0	0	350	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Nitroaniline	100-01-6	SVOA	ug/kg	2	0	0	340	870			8270_SVOA_GCMS	8270_SVOA_GCMS			
4-Nitrophenol	100-02-7	SVOA	ug/kg	9	0	0	210	870			8270_SVOA_GCMS	8270_SVOA_GCMS			
Acenaphthene	83-32-9	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Acenaphthylene	208-96-8	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Anthracene	120-12-7	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Benzo(a)anthracene	56-55-3	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Benzo(a)pyrene	50-32-8	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Benzo(b)fluoranthene	205-99-2	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Benzo(ghi)perylene	191-24-2	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Benzo(k)fluoranthene	207-08-9	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Bis(2-chloro-1-methylethyl)ether	108-60-1	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Bis(2-Chloroethoxy)methane	111-91-1	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Bis(2-chloroethyl) ether	111-44-4	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Bis(2-ethylhexyl) phthalate	117-81-7	SVOA	ug/kg	2	1	50	34	34	47	47	8270_SVOA_GCMS	8270_SVOA_GCMS	32	34.5	B1NRH2
Butylbenzylphthalate	85-68-7	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Carbazole	86-74-8	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Chrysene	218-01-9	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Dibenz[a,h]anthracene	53-70-3	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Dibenzofuran	132-64-9	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Diethylphthalate	84-66-2	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Dimethyl phthalate	131-11-3	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Di-n-butylphthalate	84-74-2	SVOA	ug/kg	2	1	50	34	34	38	38	8270_SVOA_GCMS	8270_SVOA_GCMS	32	34.5	B1NRH2
Di-n-octylphthalate	117-84-0	SVOA	ug/kg	2	0	0	15	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Fluoranthene	206-44-0	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			

Table A4-42. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-2 Crib (C5515)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Fluorene	86-73-7	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Heptane, 2,5-dimethyl-	2216-30-0	SVOA	ug/kg	1	1	100			180	180	8270_SVOA_GCMS	8270_SVOA_GCMS	32	34.5	B1NRH3
Hexachlorobenzene	118-74-1	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Hexachlorobutadiene	87-68-3	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Hexachlorocyclopentadiene	77-47-4	SVOA	ug/kg	2	0	0	340	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Hexachloroethane	67-72-1	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Indeno(1,2,3-cd)pyrene	193-39-5	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Isophorone	78-59-1	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Naphthalene	91-20-3	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Nitrobenzene	98-95-3	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
n-Nitrosodi-n-dipropylamine	621-64-7	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
n-Nitrosodiphenylamine	86-30-6	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Pentachlorophenol	87-86-5	SVOA	ug/kg	9	0	0	210	870			8270_SVOA_GCMS	8270_SVOA_GCMS			
Phenanthrene	85-01-8	SVOA	ug/kg	2	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Phenol	108-95-2	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Pyrene	129-00-0	SVOA	ug/kg	9	0	0	34	350			8270_SVOA_GCMS	8270_SVOA_GCMS			
Tributyl phosphate	126-73-8	SVOA	ug/kg	11	1	9	34	170	20	20	8270_SVOA_GCMS	8270_SVOA_GCMS	32	34.5	B1NRH2
(m+p)-Xylene	179601-23-1	VOA	ug/kg	1	0	0	0.58	0.58			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,1-Trichloroethane	71-55-6	VOA	ug/kg	12	0	0	0.15	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,2,2-Tetrachloroethane	79-34-5	VOA	ug/kg	12	0	0	0.14	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,2-Trichloroethane	79-00-5	VOA	ug/kg	12	0	0	0.29	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1,1-Dichloroethane	75-34-3	VOA	ug/kg	12	0	0	0.97	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1,1-Dichloroethene	75-35-4	VOA	ug/kg	12	0	0	0.56	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1,2,4-Trimethylbenzene	95-63-6	VOA	ug/kg	4	2	50	0.22	0.22	0.43	0.55	8260_VOA_GCMS	8260_VOA_GCMS	32	34.5	B1NRH3
1,2-Dichloroethane	107-06-2	VOA	ug/kg	12	0	0	0.45	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloroethene (Total)	540-59-0	VOA	ug/kg	12	0	0	0.55	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloropropane	78-87-5	VOA	ug/kg	12	0	0	0.38	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1-Butanol	71-36-3	VOA	ug/kg	12	0	0	3.5	130			8260_VOA_GCMS	8260_VOA_GCMS			
2-Butanone	78-93-3	VOA	ug/kg	12	0	0	1	1.4			8260_VOA_GCMS	8260_VOA_GCMS			
2-Hexanone	591-78-6	VOA	ug/kg	12	0	0	0.29	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
2-Pentanone, 4-Methyl	108-10-1	VOA	ug/kg	12	0	0	1	1.7			8260_VOA_GCMS	8260_VOA_GCMS			
Acetone	67-64-1	VOA	ug/kg	12	3	25	1	3.9	6.4	8.2	8260_VOA_GCMS	8260_VOA_GCMS	32	34.5	B1NRD0
Acetonitrile	75-05-8	VOA	ug/kg	4	0	0	2	2			8260_VOA_GCMS	8260_VOA_GCMS			
Benzene	71-43-2	VOA	ug/kg	12	0	0	0.17	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Bromodichloromethane	75-27-4	VOA	ug/kg	12	0	0	0.34	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Bromoform	75-25-2	VOA	ug/kg	12	0	0	0.25	1.3			8260_VOA_GCMS	8260_VOA_GCMS			

Table A4-42. Summary Table for All Constituents in Deep-Zone Soil Samples for the 216-A-2 Crib (C5515)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
Bromomethane	74-83-9	VOA	ug/kg	12	0	0	0.32	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Carbon disulfide	75-15-0	VOA	ug/kg	12	0	0	0.56	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Carbon tetrachloride	56-23-5	VOA	ug/kg	12	0	0	0.92	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Chlorobenzene	108-90-7	VOA	ug/kg	12	0	0	0.13	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Chloroethane	75-00-3	VOA	ug/kg	12	0	0	0.36	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Chloroform	67-66-3	VOA	ug/kg	12	0	0	0.14	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Chloromethane	74-87-3	VOA	ug/kg	12	0	0	0.45	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
cis-1,2-Dichloroethylene	156-59-2	VOA	ug/kg	12	0	0	0.44	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
cis-1,3-Dichloropropene	10061-01-5	VOA	ug/kg	12	0	0	0.74	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Cyclohexanone	108-94-1	VOA	ug/kg	4	0	0	14	14			8260_VOA_GCMS	8260_VOA_GCMS			
Dibromochloromethane	124-48-1	VOA	ug/kg	12	0	0	0.29	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Ethylbenzene	100-41-4	VOA	ug/kg	12	0	0	0.19	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Hexane	110-54-3	VOA	ug/kg	4	0	0	0.46	0.47			8260_VOA_GCMS	8260_VOA_GCMS			
Methylene chloride	75-09-2	VOA	ug/kg	12	1	8	1	2.6	3.7	3.7	8260_VOA_GCMS	8260_VOA_GCMS	32	34.5	B1NRH3
n-Butylbenzene	104-51-8	VOA	ug/kg	12	0	0	0.54	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Styrene	100-42-5	VOA	ug/kg	12	1	8	1	1.3	9	9	8260_VOA_GCMS	8260_VOA_GCMS	32	34.5	B1NRD0
Tetrachloroethene	127-18-4	VOA	ug/kg	12	0	0	0.28	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Tetrahydrofuran	109-99-9	VOA	ug/kg	1	0	0	6.8	6.8			8260_VOA_GCMS	8260_VOA_GCMS			
Toluene	108-88-3	VOA	ug/kg	12	2	17	0.13	1.3	0.54	0.57	8260_VOA_GCMS	8260_VOA_GCMS	32	34.5	B1NRH3
trans-1,2-Dichloroethylene	156-60-5	VOA	ug/kg	12	0	0	0.23	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
trans-1,3-Dichloropropene	10061-02-6	VOA	ug/kg	12	0	0	0.21	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Trichloroethene	79-01-6	VOA	ug/kg	12	0	0	0.37	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Vinyl chloride	75-01-4	VOA	ug/kg	12	0	0	0.24	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Xylenes (total)	1330-20-7	VOA	ug/kg	12	0	0	0.87	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
Cyanide	57-12-5	WETCHEM	ug/kg	11	2	18	152	230	120	210	9012_CYANIDE	9012_CYANIDE	32	34.5	B1NRH3
Fluoride	16984-48-8	WETCHEM	ug/kg	11	0	0	250	300			9056_ANIONS_IC	300.0_ANIONS_IC			
Nitrate	14797-55-8	WETCHEM	ug/kg	11	11	100			974	57100	9056_ANIONS_IC	300.0_ANIONS_IC	285	287	B1NRJ0
Nitrite	14797-65-0	WETCHEM	ug/kg	11	3	27	1580	1640	1180	2560	9056_ANIONS_IC	9056_ANIONS_IC	29	31.5	B1NRH1
Phosphate	14265-44-2	WETCHEM	ug/kg	11	4	36	6010	6130	31000	313000	300.0_ANIONS_IC	9056_ANIONS_IC	29	31.5	B1NT07
Sulfate	14808-79-8	WETCHEM	ug/kg	11	9	82	3360	3500	1600	35300	9056_ANIONS_IC	300.0_ANIONS_IC	285	287	B1NRJ0

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Table A4-43. Summary Table for All Constituents in Deep Zone Soil Samples for the 216-A-21 Crib (C5571)

Constituent	CAS Number	Constituent Class	Units	Number of Results	Number of Detects	Frequency of Detects (%)	Minimum Nondetect	Maximum Nondetect	Minimum Detect	Maximum Detect	Analytical Method for Minimum Detect (or nondetect)	Analytical Method for Maximum Detect (or nondetect)	Start Depth of Maximum Detect (ft bgs)	End Depth of Maximum Detect (ft bgs)	Sample Numbers of Maximum Detect
216-A-21 (C5571)															
Percent moisture (wet sample)	%MOISTURE	PHYSICAL	%	2	2	100			5.8	12	D2216_%MOIS	D2216_%MOIS	21	22.5	B1P3K7
1,1,1-Trichloroethane	71-55-6	VOA	ug/kg	4	0	0	0.16	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,2,2-Tetrachloroethane	79-34-5	VOA	ug/kg	4	0	0	0.15	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
1,1,2-Trichloroethane	79-00-5	VOA	ug/kg	4	0	0	0.31	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
1,1-Dichloroethane	75-34-3	VOA	ug/kg	4	0	0	0.93	1.3			8260_VOA_GCMS	8260_VOA_GCMS			
1,1-Dichloroethene	75-35-4	VOA	ug/kg	4	0	0	0.59	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
1,2,4-Trimethylbenzene	95-63-6	VOA	ug/kg	2	1	50	0.29	0.29	0.4	0.4	8260_VOA_GCMS	8260_VOA_GCMS	25.1	26.6	B1P3K8
1,2-Dichloroethane	107-06-2	VOA	ug/kg	4	0	0	0.47	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloroethene (Total)	540-59-0	VOA	ug/kg	4	0	0	0.59	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
1,2-Dichloropropane	78-87-5	VOA	ug/kg	4	0	0	0.4	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
1-Butanol	71-36-3	VOA	ug/kg	4	0	0	3.7	97			8260_VOA_GCMS	8260_VOA_GCMS			
2-Butanone	78-93-3	VOA	ug/kg	4	0	0	0.93	1.9			8260_VOA_GCMS	8260_VOA_GCMS			
2-Hexanone	591-78-6	VOA	ug/kg	4	0	0	0.3	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
2-Pentanone, 4-Methyl	108-10-1	VOA	ug/kg	4	0	0	0.93	2.2			8260_VOA_GCMS	8260_VOA_GCMS			
Acetone	67-64-1	VOA	ug/kg	4	0	0	0.93	5.1			8260_VOA_GCMS	8260_VOA_GCMS			
Acetonitrile	75-05-8	VOA	ug/kg	2	0	0	2.1	2.7			8260_VOA_GCMS	8260_VOA_GCMS			
Benzene	71-43-2	VOA	ug/kg	4	0	0	0.18	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Bromodichloromethane	75-27-4	VOA	ug/kg	4	0	0	0.36	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Bromoform	75-25-2	VOA	ug/kg	4	0	0	0.26	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Bromomethane	74-83-9	VOA	ug/kg	4	0	0	0.34	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Butane, 2-methyl-	78-78-4	VOA	ug/kg	1	1	100			5.6	5.6	8260_VOA_GCMS	8260_VOA_GCMS	25.1	26.6	B1P3K8
Carbon disulfide	75-15-0	VOA	ug/kg	4	0	0	0.6	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Carbon tetrachloride	56-23-5	VOA	ug/kg	4	0	0	0.93	1.2			8260_VOA_GCMS	8260_VOA_GCMS			
Chlorobenzene	108-90-7	VOA	ug/kg	4	0	0	0.13	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Chloroethane	75-00-3	VOA	ug/kg	4	0	0	0.38	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Chloroform	67-66-3	VOA	ug/kg	4	0	0	0.15	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Chloromethane	74-87-3	VOA	ug/kg	4	0	0	0.48	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
cis-1,2-Dichloroethylene	156-59-2	VOA	ug/kg	4	0	0	0.46	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
cis-1,3-Dichloropropene	10061-01-5	VOA	ug/kg	4	0	0	0.79	0.98			8260_VOA_GCMS	8260_VOA_GCMS			
Cyclohexanone	108-94-1	VOA	ug/kg	2	0	0	15	18			8260_VOA_GCMS	8260_VOA_GCMS			
Dibromochloromethane	124-48-1	VOA	ug/kg	4	0	0	0.31	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Ethylbenzene	100-41-4	VOA	ug/kg	4	0	0	0.2	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Hexane	110-54-3	VOA	ug/kg	2	0	0	0.49	0.61			8260_VOA_GCMS	8260_VOA_GCMS			
Methylene chloride	75-09-2	VOA	ug/kg	4	0	0	0.93	3.4			8260_VOA_GCMS	8260_VOA_GCMS			
n-Butylbenzene	104-51-8	VOA	ug/kg	4	0	0	0.57	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Styrene	100-42-5	VOA	ug/kg	4	0	0	0.93	1.6			8260_VOA_GCMS	8260_VOA_GCMS			
Tetrachloroethene	127-18-4	VOA	ug/kg	4	0	0	0.3	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Toluene	108-88-3	VOA	ug/kg	4	1	25	0.18	0.97	0.56	0.56	8260_VOA_GCMS	8260_VOA_GCMS	25.1	26.6	B1P3K8
trans-1,2-Dichloroethylene	156-60-5	VOA	ug/kg	4	0	0	0.24	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
trans-1,3-Dichloropropene	10061-02-6	VOA	ug/kg	4	0	0	0.22	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Trichloroethene	79-01-6	VOA	ug/kg	4	0	0	0.39	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Vinyl chloride	75-01-4	VOA	ug/kg	4	0	0	0.26	0.97			8260_VOA_GCMS	8260_VOA_GCMS			
Xylenes (total)	1330-20-7	VOA	ug/kg	4	0	0	0.93	1.2			8260_VOA_GCMS	8260_VOA_GCMS			

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Table A-44. Physical Analysis Results for Borehole C5301 (216-A-4) Samples

Sample Top (ft bgs)	Sample Bottom (ft bgs)	Sample	QC Sample Type	Lab Code	Bulk density - dry (BULKDENSITY-DRY) D2937 Conc'n	Units	Q	VQ	Bulk density - wet (BULKDENSITY-WET) D2937 Conc'n	Units	Q	VQ	Percent moisture (dry sample) (%MOISTURE-D) D2216 Conc'n	Units	Q	VQ	Percent moisture (wet sample) (%MOISTURE) D2216 Conc'n	Units	Q	VQ	Percent passing 1.5 inch sieve (PAS1.5IN) D422 Conc'n	Units	Q	VQ
29	31.5	B1L4T7		WSCF																				
29	31.5	B1L4T7		SHAW									4.2	%			4.1	%						
29	31.5	B1L5N2	duplicate	WSCF																				
43	45.5	B1L4V2		WSCF																				
43	45.5	B1L4V2		SHAW	1740	kg/m3			1860	kg/m3			4.6	%			4.4	%			100	%		
43	45.5	B1L5N5	split	STLSL																				
43	45.5	B1L5N6	split	STLSL																				
122	124	B1L4V7		WSCF																				
122	124	B1L4V7		FIELD																				
122	124	B1L4V7		SHAW	1700	kg/m3			1756	kg/m3			3.5	%			3.3	%			100	%		
260	262	B1L4W2		WSCF																				
260	262	B1L4W2		SHAW	1550	kg/m3			1613	kg/m3							4.1	%			100	%		
283	285	B1L4W7		WSCF																				
283	285	B1L4W7		SHAW	1717	kg/m3			2007	kg/m3							14.3	%			100	%		
Target Quantitation Limit					N/A				N/A				N/A				N/A				N/A			

2
3

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The letters in the columns labeled "Q" are QC flags affixed by the laboratories. The flags have the following meanings.

B: For organic analyses, indicates that the blank was contaminated with the analyte.

D: Analyte was identified in an analysis at the secondary dilution factor (i.e., dilution factor different than 1.0).

E: For inorganic analyses, result is an estimate because of interference.

J: Result is an estimate.

N: Analyte spike recovery was outside of control limits.

U: Analyte was undetected, with the indicated reporting limit.

Where more than one letter is used for a result, the meanings of the individual letters are combined.

Where validation qualifier flags were assigned by the data validator, they are entered in a separate column labeled "VQ." Where validation flags do not occur, this column is omitted. Validation flags have the following meanings.

J: Result is an estimate.
U: Analyte was undetected, with the indicated reporting limit.
R: Result is rejected for decision making.

For radionuclide analysis, a column labeled "MDA" appears. This column gives the minimum detectable activity, as reported by the laboratory.

Table A4-45. Analytical Method Numbers and Term Abbreviations

Analytical Method/ Term/Abbreviation	Definition	Reference
150.1	Determination of pH by electrometric measurement	EPA/600/4-79-020, *Methods or Chemical Analysis of Water and Wastes*
160.3	Determination of residue, total (gravimetric, dried at 103-105°C)	EPA/600/4-79-020, *Methods for Chemical Analysis of Water and Wastes*
1664A	Determination of N-hexane extractable material (HEM; Oil, and Grease)	EPA/600/4-79-020, *Methods for Chemical Analysis of Water and Wastes*
200.8	Determination of trace metal elements by inductive coupled plasma/mass spectrometry	EPA/600/R-94/111, *Methods for the Determination of Metals in Environmental Samples*
300.0	Determination of inorganic anions by ion chromatography	EPA/600/R-93/100, *Methods for the Determination of Inorganic Substances in Environmental Samples*
300.7	Determination of anions by chromatography method for anions	EPA/600/4-86/024, *Development of Standard Methods for the Collection and Analysis of Precipitation*
335.2	Determination of cyanide by titrimetric spectrophotometry	EPA/600/4-79-020, *Methods for Chemical Analysis of Water and Wastes*
350.1	Determination of ammonia nitrogen by semi-automated	EPA/600/R-93/100, *Methods for the Determination of*

Table A4-45. Analytical Method Numbers and Term Abbreviations

Analytical Method/ Term/Abbreviation	Definition	Reference
	colorimetry	*Inorganic Substances in Environmental Samples*
353.1	Determination of nitrogen, nitrate-nitrite (colorimetric, automated, hydrazine reduction)	EPA/600/4-79-020, *Methods for Chemical Analysis of Water and Wastes*
353.2	Determination of nitrate-nitrite by automated colorimetry	EPA/600/R-93/100, *Methods for the Determination of Inorganic Substances in Environmental Samples*
413.1	Determination of oil and grease by total recoverable, spectrophotometric, infrared	EPA/600/4-79-020, *Methods forChemical Analysis of Water and Wastes*
906	Determination of tritium in various matrices by liquid scintillation counting	EPA/600/4-80-032, *Prescribed Procedures for Measurement of Radioactivity in Drinking Water*
6010	Determination of metals and trace elements by inductive coupled plasma	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
7196	Determination of hexavalent chromium by automated colorimetry	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
7471	Determination of mercury by cold vapor atomic absorption	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
8015	Determination of nonhalogenated volatile organics by gas chromatography	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
8082	Determination of polychlorinated biphenyls by gas chromatography	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
8260	Determination of volatile organics by gas chromatography/mass spectrometry	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
8270	Determination of semivolatile organics by gas chromatography/mass spectrometry	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
9010	Determination of total and amenable cyanide by colorimetry	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
9012	Determination of total and amenable cyanide by automated colorimetry with off-line distillation	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
9045	Determination of pH	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*

Table A4-45. Analytical Method Numbers and Term Abbreviations

Analytical Method/ Term/Abbreviation	Definition	Reference
9056	Determination of inorganic anions by ion chromatography	SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update IV-B*
9071	Determination of oil and grease by solvent extraction	SW-846, 1999, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update III-A*
D422	Determination of soil particulate size	ASTM D422-63, *Standard Test Method for Particle-Size Analysis of Soils*
D2216	Determination of soil water content	ASTM D2216-98, *Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*
D2937	Determination of soil density	ASTM D2937-00e1, *Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method*
TPH	Total petroleum hydrocarbon	Ecology Publication ECY 97-602, *Analytical Methods for Petroleum Hydrocarbons*
WTPH-Diesel WTPH-Kerosene	Washington State method to determine total petroleum hydrocarbons, diesel range and kerosene range, by gas chromatography	Ecology Publication ECY 97-602, *Analytical Methods for Petroleum Hydrocarbons*
WTPH-Gasoline	Washington State method to determine total petroleum hydrocarbons, gasoline range, by gas chromatography	Ecology Publication ECY 97-602, *Analytical Methods for Petroleum Hydrocarbons*

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A5 References

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Appendix B

Geophysical Logs

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B1 Introduction

This appendix presents the following geophysical logs:

- Borehole C5515 in the 216-A-2 Crib
- Borehole C5570 in the 216-A-2 Crib
- Borehole A5910 (Well 299-E24-53) near the 216-A-2 Crib
- Borehole C4671 in the 216-A-4 Crib
- Borehole C5301 (Well 299-E24-23) in the 216-A-4 Crib
- Borehole A5911 (Well 299-E24-54) near the 216-A-4 Crib
- Borehole C5571 in the 216-A-21 Crib
- Borehole C5302 in the 200-E-102 Trench

Borehole C4560 in the 216-A-4 Crib does not have a geophysical log since high levels of contamination caused it to be terminated before reaching the bottom of the waste crib.

B2 References

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HGLP-LDR-075, 2007, *C5302 Log Data Report,* Stoller Hanford Office, Richland, Washington.

HGLP-LDR-086, 2007, *C5571 Log Data Report*, Stoller Hanford Office, Richland, Washington.

HGLP-LDR-090, 2007, *C5515 Log Data Report,* Stoller Hanford Office, Richland, Washington.

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1 **Attachment B-1. Geophysical Log – Borehole C5515 (216-A-2 Crib)**

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C5515
Log Data Report

Borehole Information:

Borehole: C5515			**Site:** 216-A-2 Crib		
Coordinates (WA St Plane)		**GWL[1] (ft):**	313.9	**GWL Date:**	08/23/07
North (m)	**East (m)**	**Drill Date**	**TOC Elevation**	**Total Depth (ft)**	**Type**
Not Available	Not Available	08/07	Not Available	322	Cable

Casing Information:

Casing Type	**Stickup (ft)**	**Outer Diameter (in.)**	**Inside Diameter (in.)**	**Thickness (in.)**	**Top (ft)**	**Bottom (ft)**
Threaded Steel	2.2	1 ¾	9 5/8	9/16	2.2	85
Not Available	4.0	8 3/4	7 ¾	½	4.0	321.9

Borehole Notes:

The logging engineer measured the casing diameters using a caliper and steel tape. The driller provided the casing depth. Logging data acquisition is referenced to the ground surface.

The first casing string (10-in.) was logged in July 2007. The casing was internally contaminated during drilling. To remove the contamination before logging, the casing was swabbed with wet "towels." As a further precaution, the logging sondes and cable were sleeved to prevent contamination of equipment. After completion of logging, the borehole was deepened with an 8-in. casing. Additional logging was conducted from 84 to 322 ft during August 2007.

Logging Equipment Information:

Logging System:	Gamma 1E		**Type:**	SGLS (70%) SN: 34TP40587A
Effective Calibration Date:	05/22/07	**Calibration Reference:**	HGLP-CC-016	
		Logging Procedure:	HGLP-MAN-002, Rev 0	

Logging System:	Gamma 4L		**Type:**	SGLS (60%) SN: 47TP32211A
Effective Calibration Date:	07/09/07	**Calibration Reference:**	HGLP-CC-020	
		Logging Procedure:	HGLP-MAN-002, Rev 0	

Logging System:	Gamma 1C		**Type:**	HRLS SN: 39-A314
Effective Calibration Date:	11/22/06	**Calibration Reference:**	HGLP-CC-004	
		Logging Procedure:	HGLP-MAN-002, Rev 0	

Logging System:	G Gamma 4 H (with AmBe source)		**Type:**	NMLS SN: H310700352
Effective Calibration Date:	11/22/06	**Calibration Reference:**	HGLP-CC-002	
		Logging Procedure:	HGLP-MAN-002, Rev 0	

Logging System:	G Gamma 4 H (with AmBe source)		**Type:**	PNLS SN: H310700352
Effective Calibration Date:	NA	**Calibration Reference:**	None required.	
		Logging Procedure:	HGLP-MAN-002, Rev 0	

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Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3	4 Repeat
Date	07/30/07	07/30/07	07/30/07	07/30/07
Logging Engineer	Pearson	Pearson	Pearson	Pearson
Start Depth (ft)	0.0	22.0	36.0	69.0
Finish Depth (ft)	22.0	37.0	85.0	79.0
Count Time (sec)	100	20	100	100
Live/Real	R	R	R	R
Shield (Y/N)	N	N	N	N
MSA Interval (ft)	1.0	1.0	1.0	1.0
ft/min	N/A[2]	N/A	N/A	N/A
Pre-Verification	AE227CAB	AE227CAB	AE227CAB	AE227CAB
Start File	AE227000	AE227023	AE227039	AE227089
Finish File	AE227022	AE227038	AE227088	AE227099
Post-Verification	AE227CAA	AE227CAA	AE227CAA	AE227CAA
Depth Return Error (in.)	N/A	N/A	N/A	- 1
Comments	None	Dead Time > 40 %	Fine gain adjustment after file -086	None

Log Run	11	12	13 Repeat	
Date	08/23/07	08/28/07	08/28/07	
Logging Engineer	Pearson	Pearson	Pearson	
Start Depth (ft)	322.0	84.0	108.0	
Finish Depth (ft)	161.0	162.0	84.0	
Count Time (sec)	100	100	100	
Live/Real	R	R	R	
Shield (Y/N)	N	N	N	
MSA Interval (ft)	1.0	1.0	1.0	
ft/min	N/A	N/A[3]	N/A	
Pre-Verification	DL021CAB	DL031CAB	DL031CAB	
Start File	DL021000	DL031000	DL031079	
Finish File	DL021161	DL031078	DL031103	
Post-Verification	DL021CAA	DL031CAA	DL031CAA	
Depth Return Error (in.)	- 2.5	N/A	+ 1	
Comments	Fine gain adjustment after files -035, 101, 135, 144	None	None	

High Rate Logging System (HRLS) Log Run Information:

Log Run	5	6			
Date	07/30/07	07/30/07			
Logging Engineer	Pearson	Pearson			
Start Depth (ft)	21.0	26.0			
Finish Depth (ft)	36.0	29.0			
Count Time (sec)	300	300			
Live/Real	R	R			
Shield (Y/N)	N	Y (Internal)			
MSA Interval (ft)	1.0	0.5			
ft/min	N/A	N/A			
Pre-Verification	AC175CAB	AC175CAB			
Start File	AC175000	AC175016			
Finish File	AC175015	AC175022			
Post-Verification	AC175CAA	AC175CAA			
Depth Return Error (in.)	- 0.5	- 0.5			
Comments	No fine gain adjustment	Fine gain adjustment after file -018			

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Neutron Moisture Logging System (NMLS) Log Run Information:

Log Run	7	8 Repeat	14	15	16 Repeat
Date	07/31/07	07/31/07	08/28/07	08/28/07	08/28/07
Logging Engineer	Pearson	Pearson	Pearson	Pearson	Pearson
Start Depth (ft)	0.0	25.0	84.0	284.0	305.0
Finish Depth (ft)	85.0	35.0	284.0	313.0	280.0
Count Time (sec)	15	15	15	15	15
Live/Real	R	R	R	R	R
Shield (Y/N)	N	N	N	N	N
MSA Interval (ft)	0.25	0.25	0.25	0.25	0.25
ft/min	N/A	N/A	N/A	N/A	N/A
Pre-Verification	DH622CAB	DH622CAB	DH672CAB	DH672CAB	DH672CAB
Start File	DH622000	DH622341	DH672000	DH682000	DH682117
Finish File	DH622340	DH622381	DH672801	DH682116	DH682217
Post-Verification	DH622CAA	DH622CAA	DH682CAA	DH682CAA	DH682CAA
Depth Return Error (in.)	N/A	0	N/A	N/A	- 1.5
Comments	No fine gain adjustment	No fine gain adjustment	No fine gain adjustment	No fine gain adjustment	No fine gain adjustment

Passive Neutron Logging System (PNLS) Log Run Information:

Log Run	9	10 Repeat			
Date	07/31/07	07/31/07			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	0.0	24.0			
Finish Depth (ft)	85.0	30.0			
Count Time (sec)	60	15			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	0.25			
ft/min	N/A	N/A			
Pre-Verification	DH632CAB	DH632CAB			
Start File	DH632000	DH632086			
Finish File	DH632085	DH632110			
Post-Verification	DH632CAA	DH632CAA			
Depth Return Error (in.)	N/A	- 1			
Comments	No fine gain adjustment	No fine gain adjustment			

Logging Operation Notes:

For log runs 1 through 10 (0 to 85 ft), a plastic sleeve was placed over the sondes and cable to prevent internal casing contamination from adhering to the equipment. Logging was conducted with a centralizer on each sonde. Measurements are referenced to ground surface.

Analysis Notes:

Analyst:	P.D. Henwood	Date:	09/24/07	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging systems were performed before and after each day's data acquisition. Acceptance criteria were met for all systems. A casing correction for 9/16-in.-thick casing was applied to the spectral log data (SGLS and HRLS) from the ground surface to 85 ft. A casing correction for 1/2-in. thick casing was applied to SGLS data acquired below 85 ft.

SGLS and HRLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL worksheet templates identified as G1EMay07.xls and G4LJuly07.xls for the SGLS and G1CNov06.xls for the HRLS using efficiency functions and

corrections for casing and dead time as determined from annual calibrations. Where dead time is excessive, HRLS data (with and without the internal shield) are substituted for the SGLS data. Moisture data were converted to volumetric moisture using calibrations acquired from 6- and 8-in. casings. Therefore, the data acquired in the 10-in. casing (0 to 85 ft) are not accurate and indicate only relative moisture changes and the data below 85 ft are based on calibrations. There is no calibration for passive neutron data that are reported in counts per second.

Results and Interpretations:

Cs-137 is detected in this borehole at the ground surface and from 18 to 86 ft. The maximum concentration is measured at approximately 2 million pCi/g at 27.5 ft in depth. However, because the contamination appears to lie in a thin interval (probably 0.5 ft or less) this assay could be significantly underestimated. The calibration of the logging system response is based on an infinite, uniform distribution that is not consistent with thin bed responses. Internal casing contamination appears to be reflected in the data. Concentration data below 28 ft most likely is solely due to casing contamination rather than contamination in the formation.

From 21 to 24 ft, and again from 32 to 37 ft, Cs-137 concentrations determined from the SGLS are about an order of magnitude higher than those determined by the HRLS. In these intervals, the values are at or below the low end of the HRLS measurement range and the SGLS values are considered more reliable.

Moisture data reflect some thin intervals of slightly higher moisture content. The data from 282 to 302 ft reflect a relatively large interval of higher moisture that coincides with an interval of high K-40, U-238, and Th-232 concentrations that represent a lithologic change. The relatively high moisture represented at approximately 27.5 ft may not be accurate. The detector is influenced by the extremely high gamma activity at this depth. High moisture is indicated in the data acquired in July near the bottom of the extent of the first casing string at approximately 85 ft. It is believed this moisture is the result of attempts to swab the borehole to remove internal contamination rather than formation moisture. It is not known if the relatively high moisture between 85 and 92 ft is also an artifact of the swabbing.

Passive neutron logging was performed in the borehole. This logging method has been shown to be effective in qualitatively detecting zones of alpha-emitting contaminants from secondary neutron flux generated by the (α,n) reaction and may indicate the presence of transuranic radionuclides. Many transuranic radionuclides decay predominantly by alpha particle emission and the passive neutron system may be useful to identify the existence of these radionuclides where no gamma emissions are available for detection. There is no calibration for this logging system and the data provided are to be used qualitatively.

The passive neutron indicates approximately 100 cps at 27.5 ft. This count rate is believed to be influenced by the high gamma activity at this depth rather than representing the existence of alpha emitting contaminants. The count rate exhibited by the passive neutron logging is subtracted from the moisture count rate data acquired at the same depths to better approximate the true moisture content.

The repeat sections for the SGLS, NMLS, and PNLS indicate good agreement.

List of Plots:

Manmade Radionuclides (2 pages)
Natural Gamma Logs (2 pages)
Combination Plot (3 pages)
Combination Plot (0-325 ft) (1 page)
Total Gamma, Moisture, & Passive Neutron (2 pages)
Total Gamma & Dead Time (2 pages)
Repeat of Manmade Radionuclides (1 page)
Repeat Section of Natural Gamma Logs (1 page)
Repeat of Moisture & Passive Neutron (1 page)

[1] GWL – groundwater level

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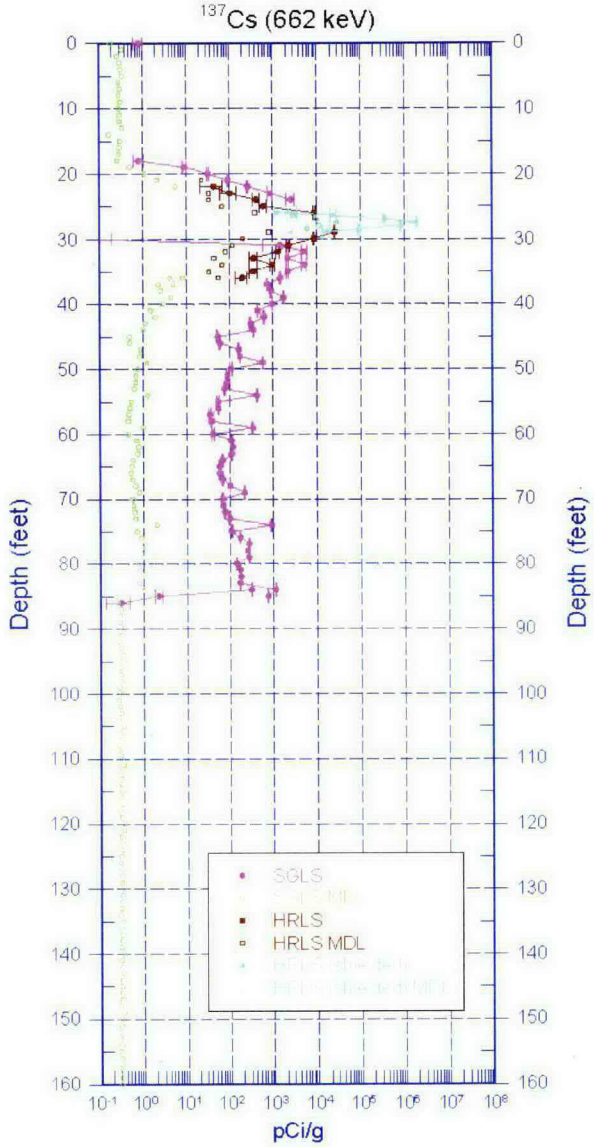
C5515
Manmade Radionuclides



Zero Reference = Ground surface

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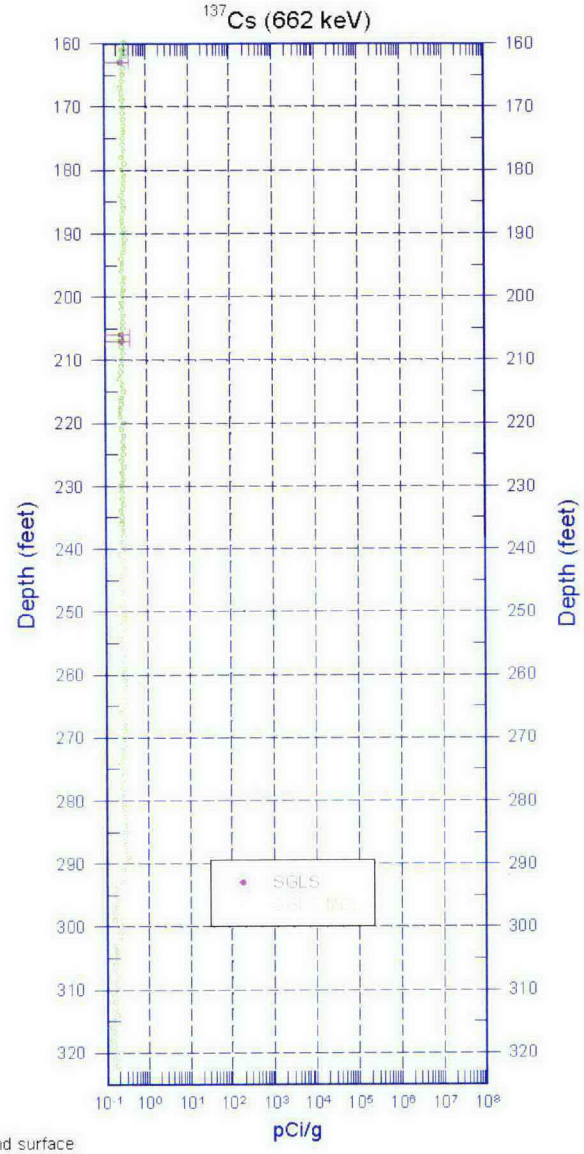
C5515
Manmade Radionuclides



Zero Reference = Ground surface

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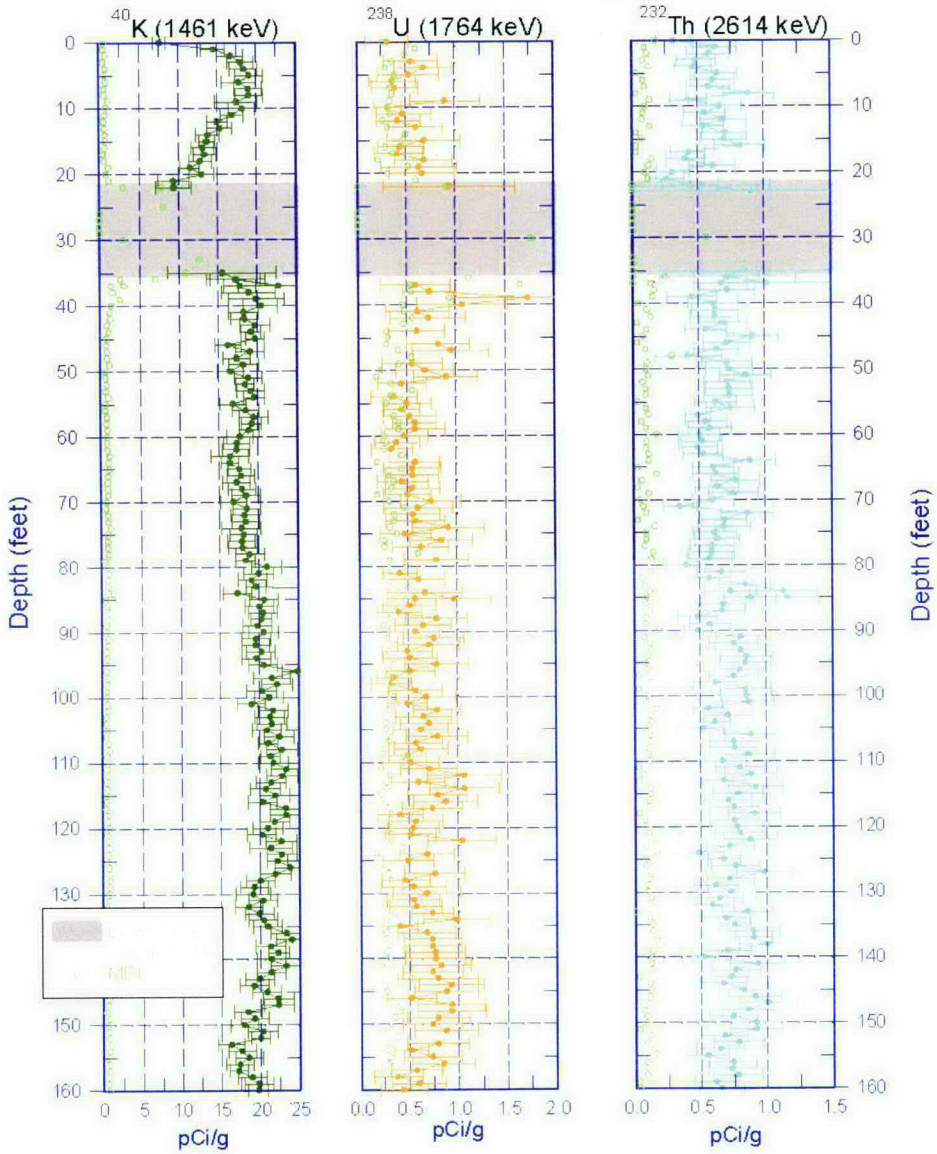
C5515
Natural Gamma Logs



Zero Reference = Ground surface

1

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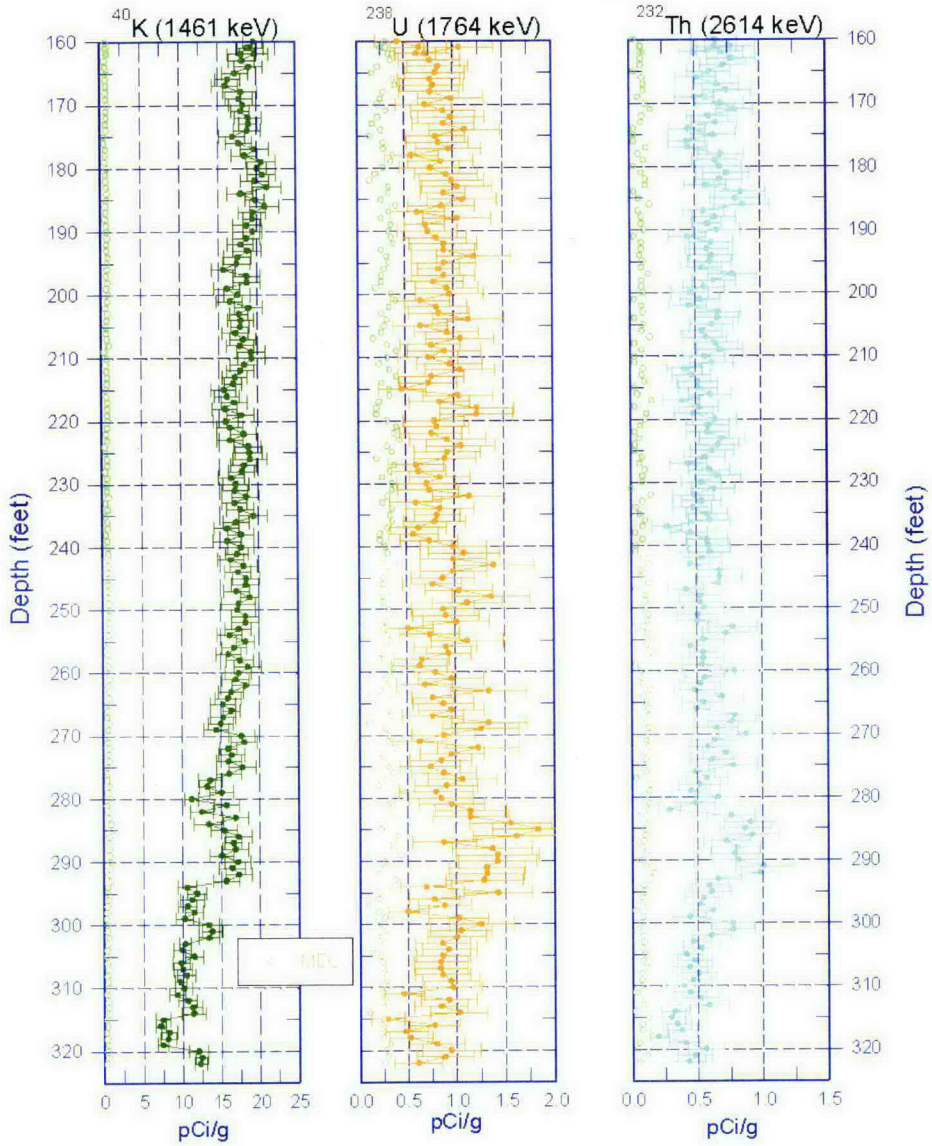
C5515
Natural Gamma Logs



Zero Reference = Ground surface

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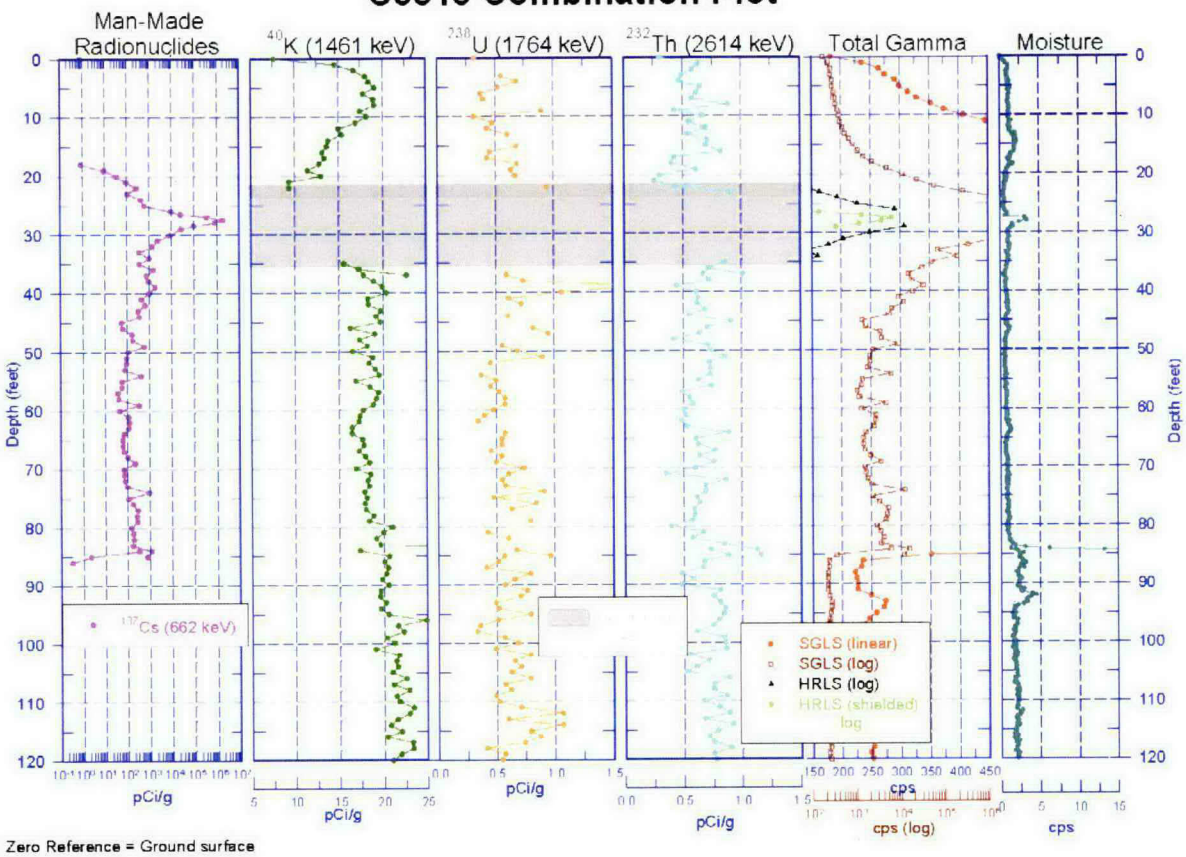
HGLP-LDR-090

C5515 Combination Plot



1

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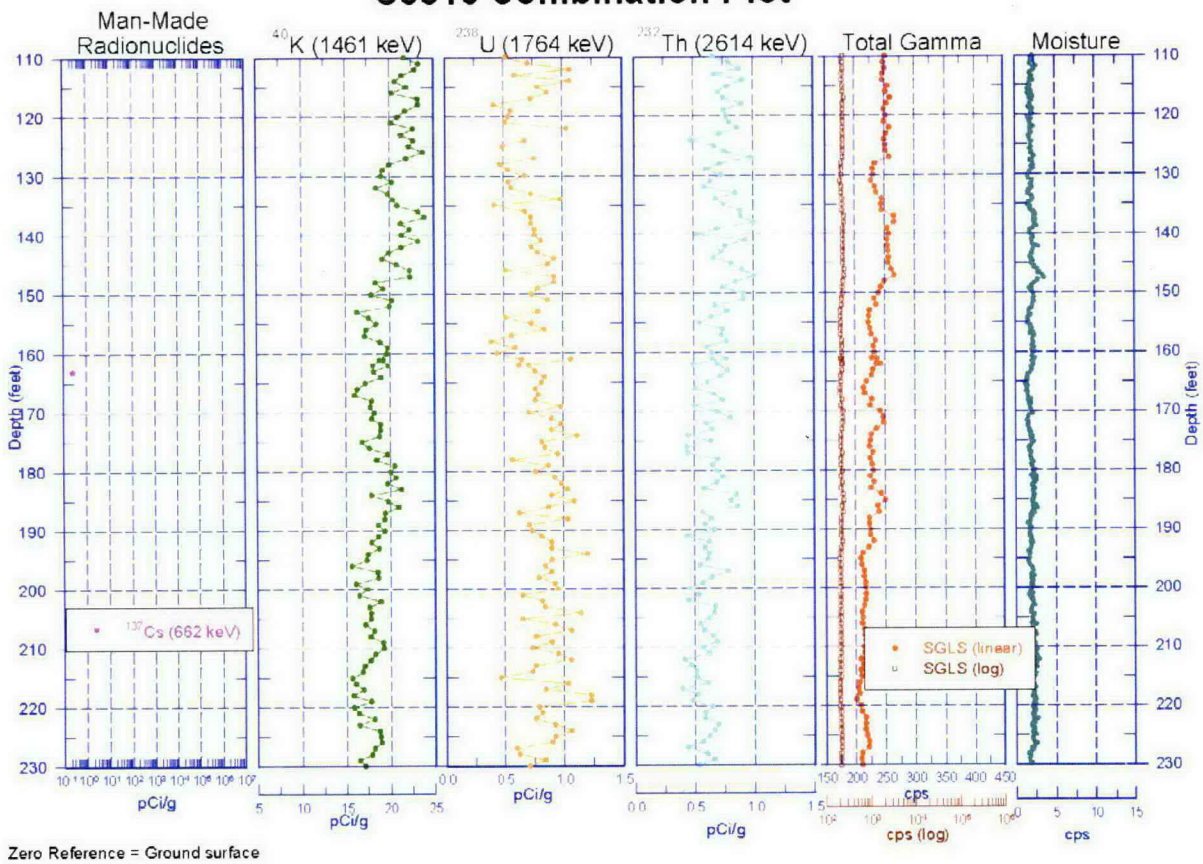
HGLP-LDR-090

C5515 Combination Plot



Zero Reference = Ground surface

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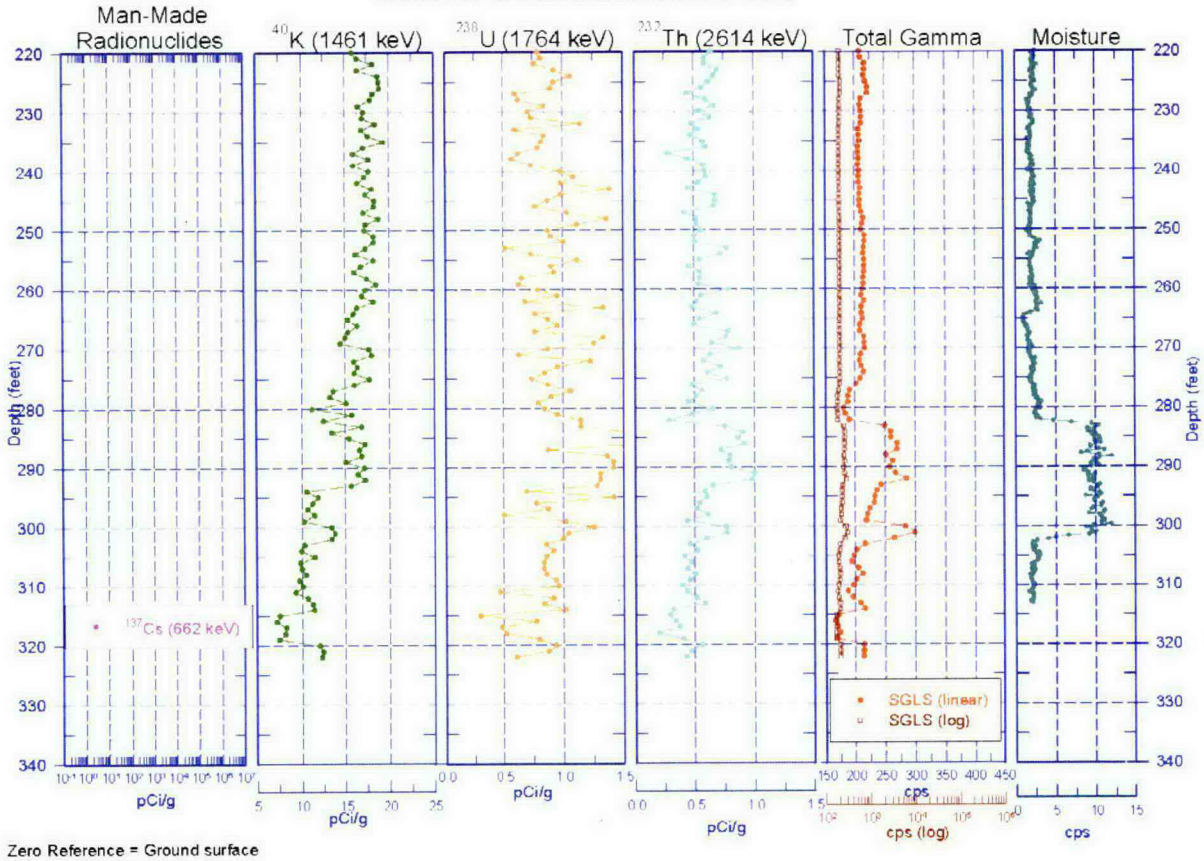
HGLP-LDR-090

C5515 Combination Plot



Zero Reference = Ground surface

1

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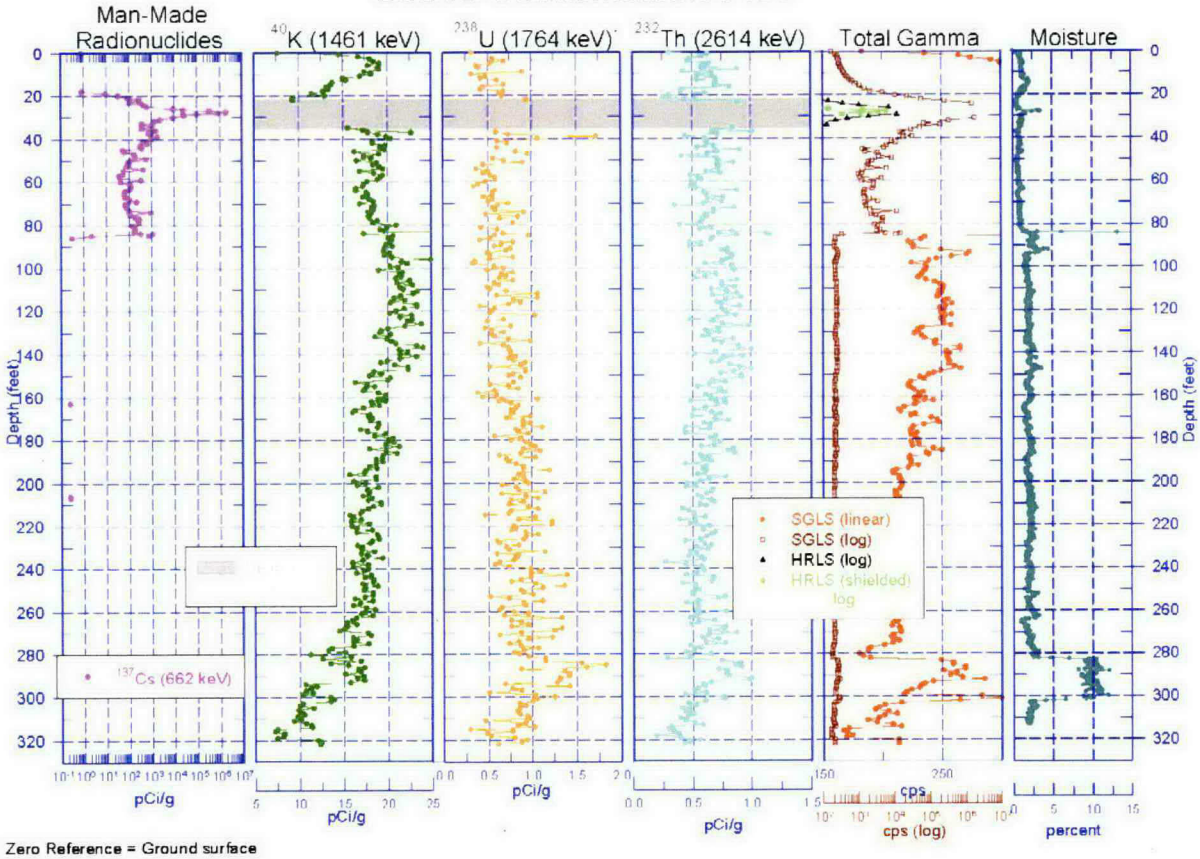
HGLP-LDR-090

C5515 Combination Plot



Zero Reference = Ground surface

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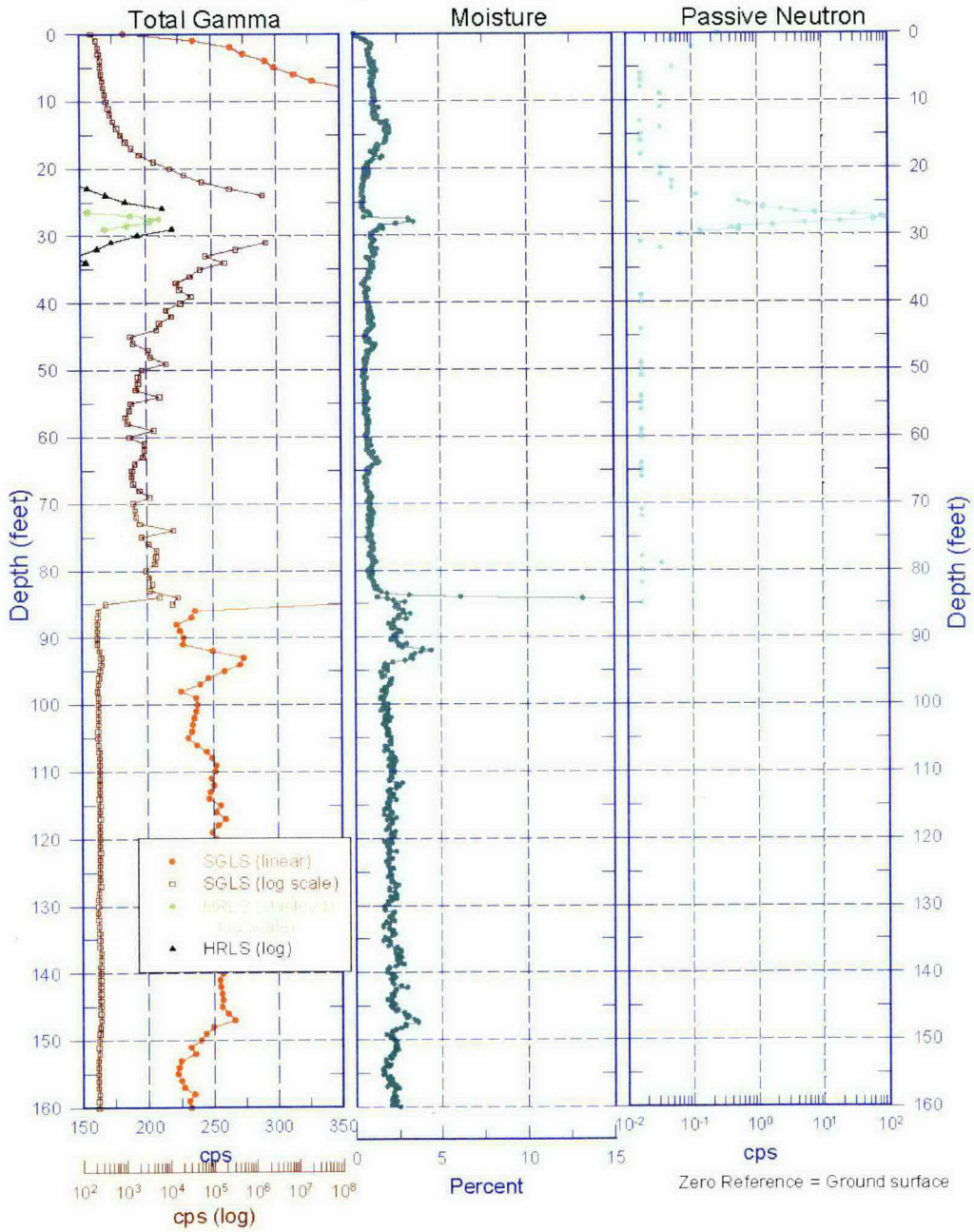
HGLP-LDR-090

C5515
Total Gamma, Moisture, & Passive Neutron



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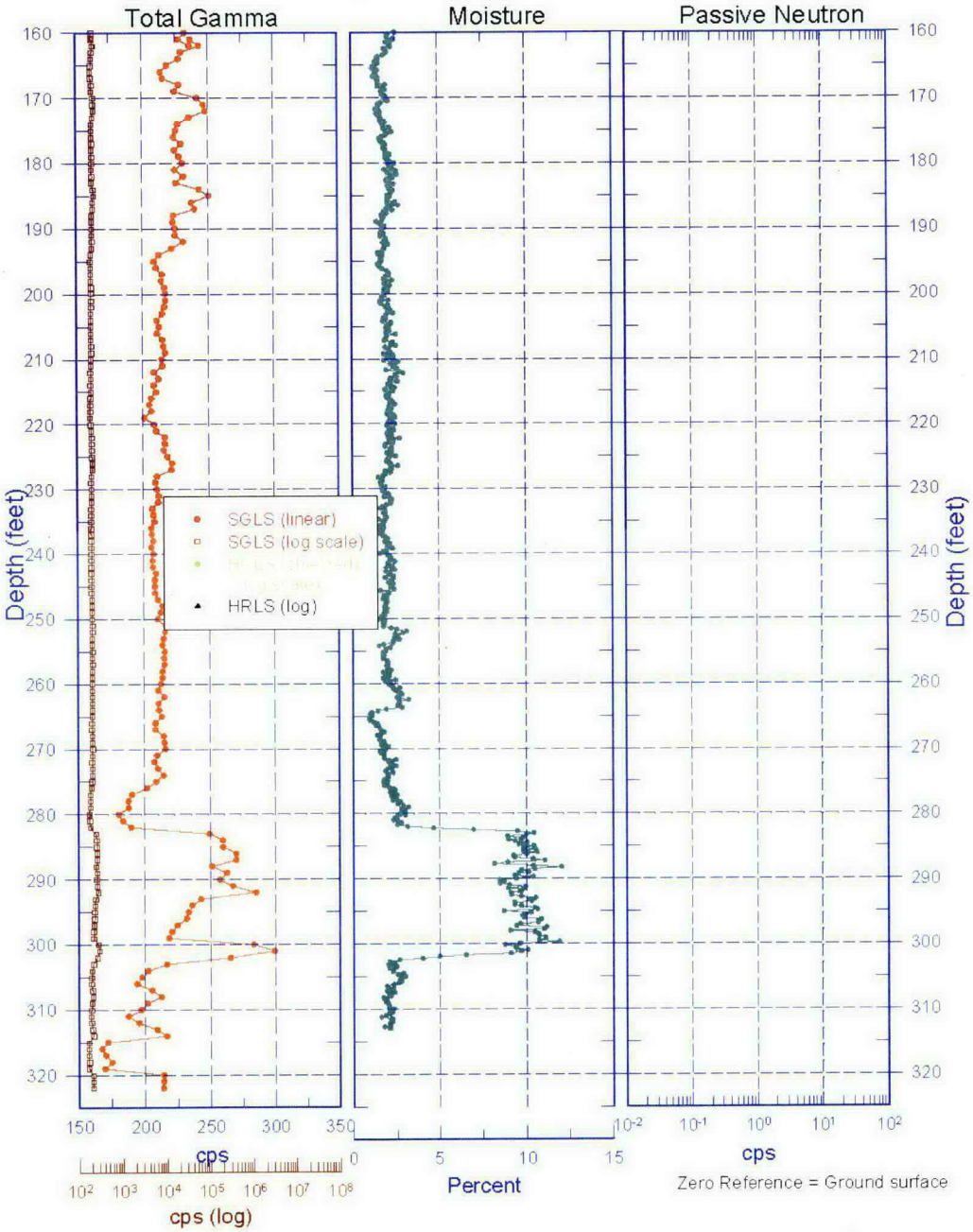
C5515
Total Gamma, Moisture, & Passive Neutron



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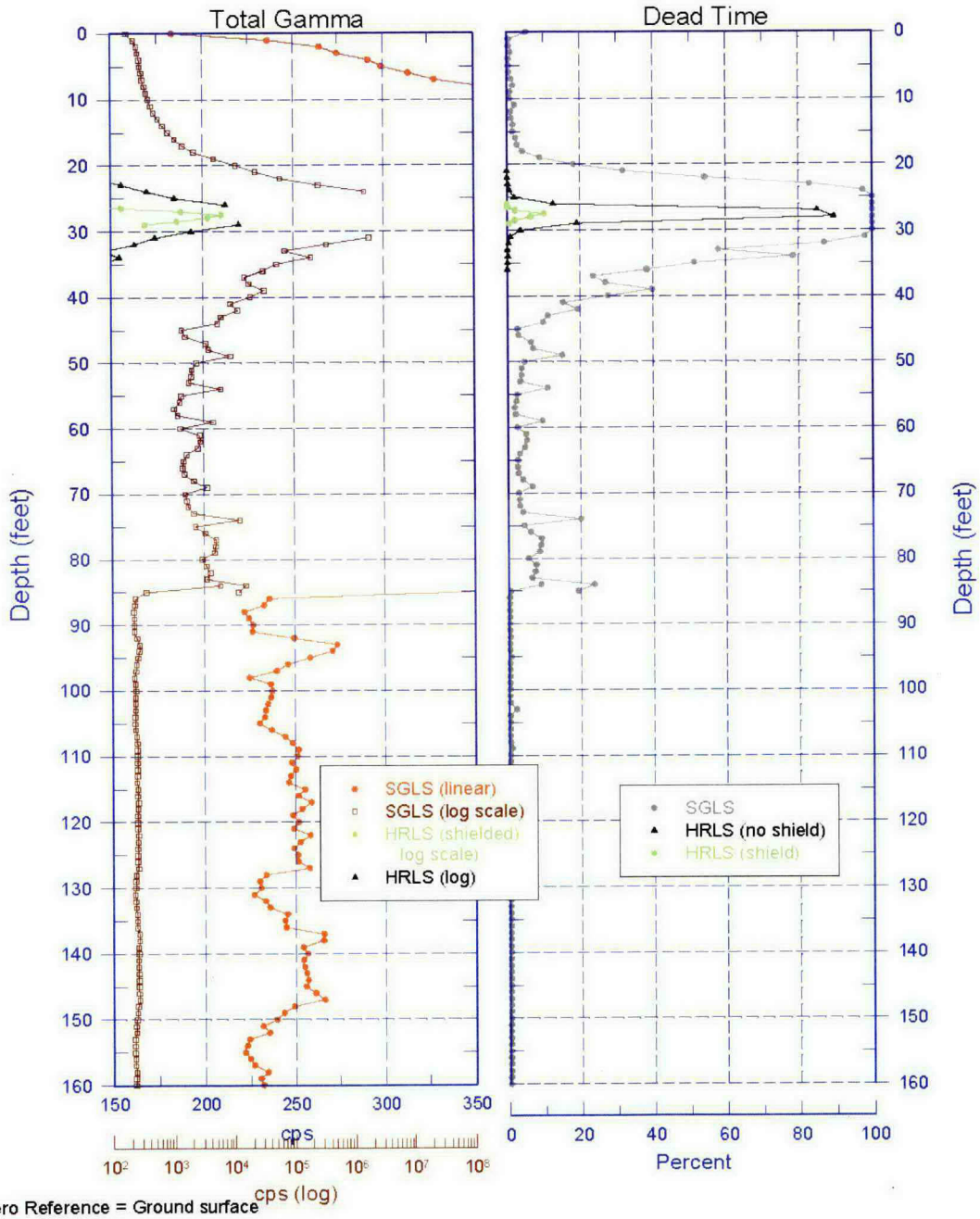
C5515
Total Gamma & Dead Time



Zero Reference = Ground surface

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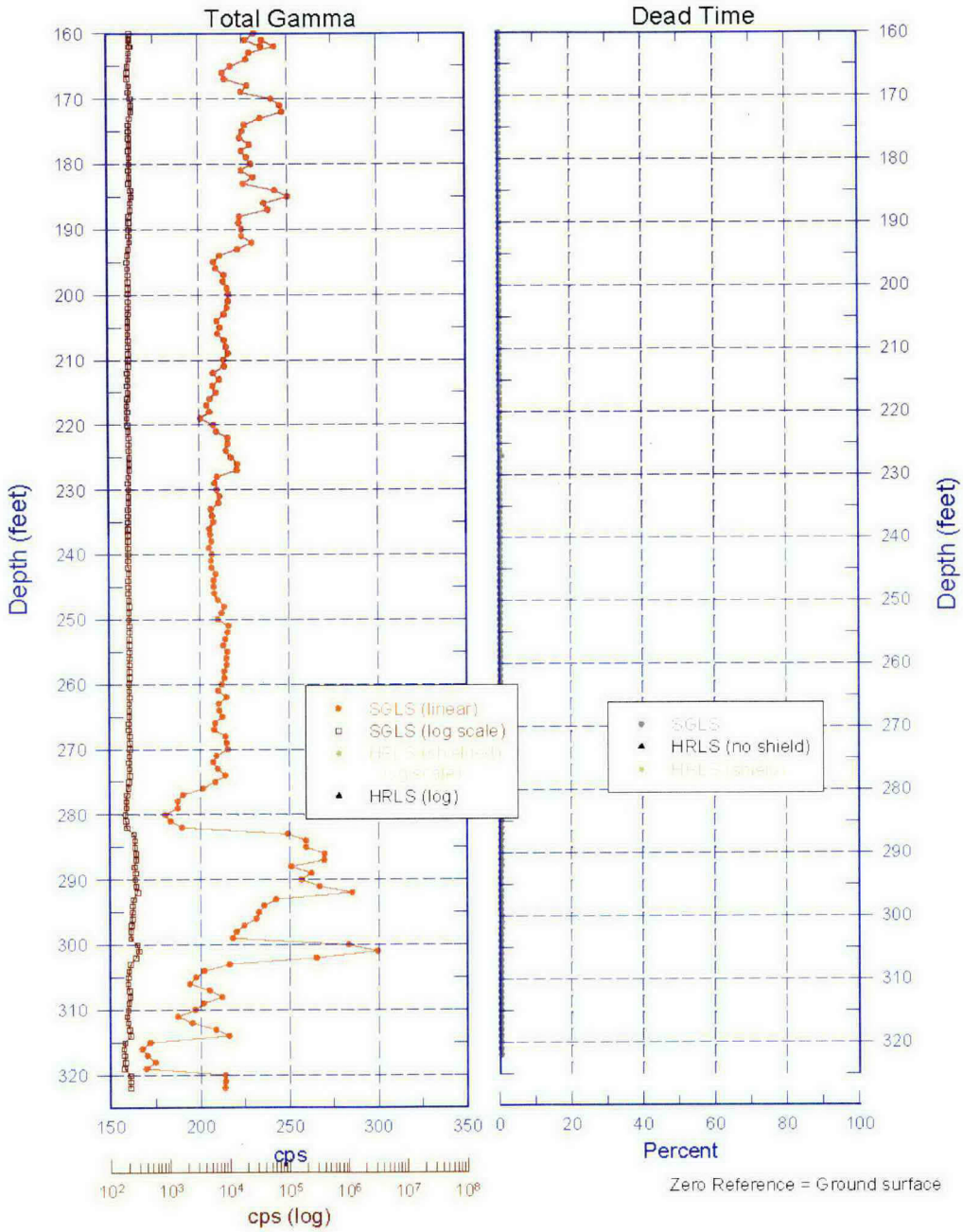
C5515
Total Gamma & Dead Time



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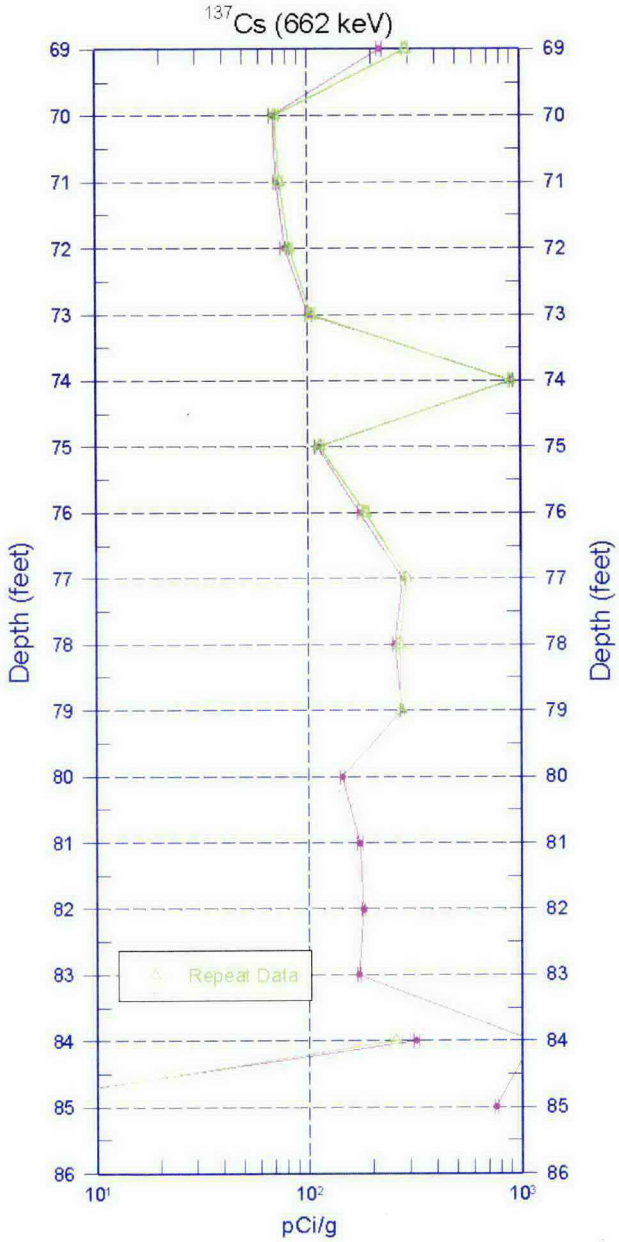
HGLP-LDR-090

C5515
Repeat of Manmade Radionuclides



Zero Reference = Ground surface

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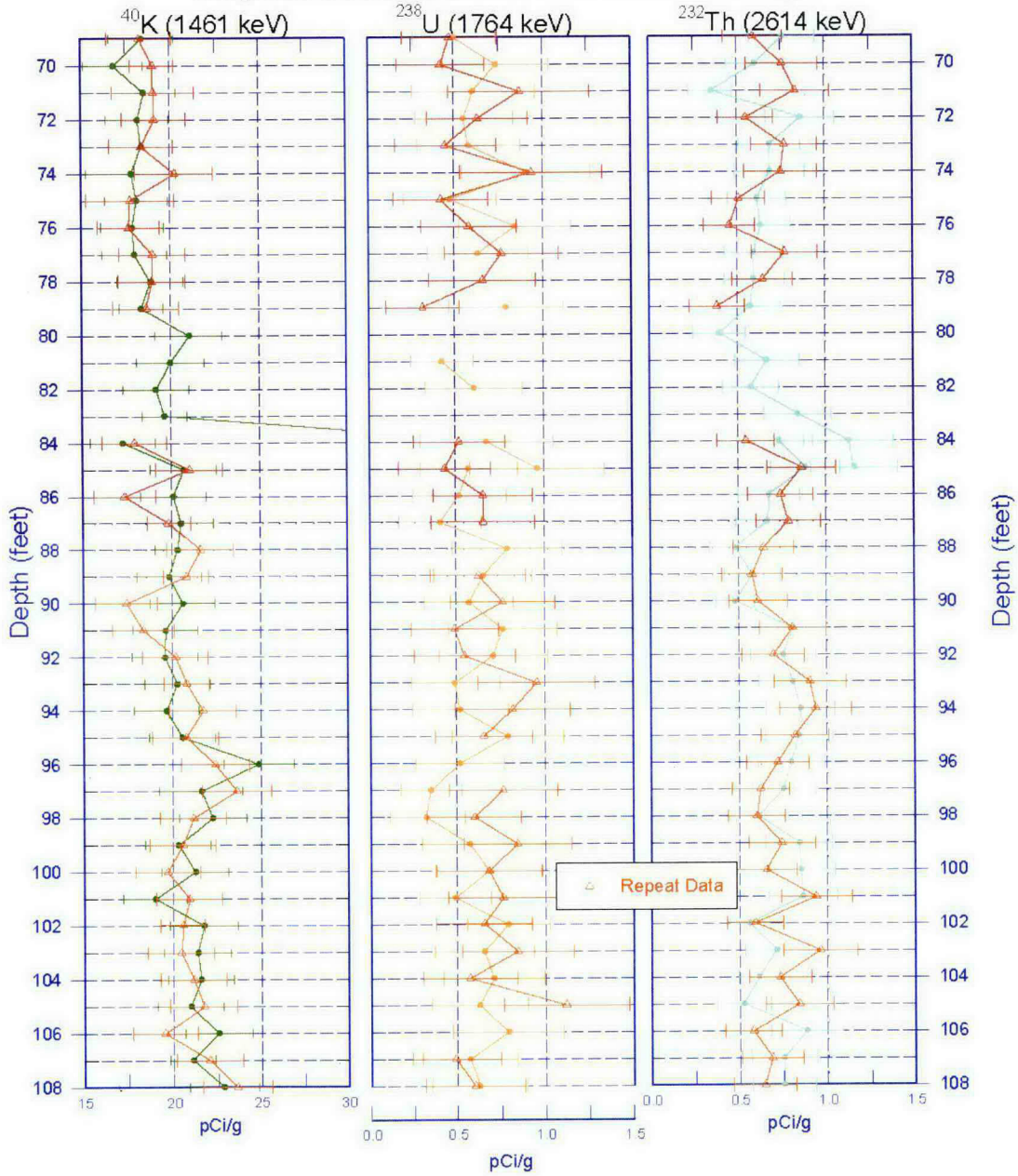
HGLP-LDR-090

C5515

Repeat Section of Natural Gamma Logs



Zero Reference = Ground surface

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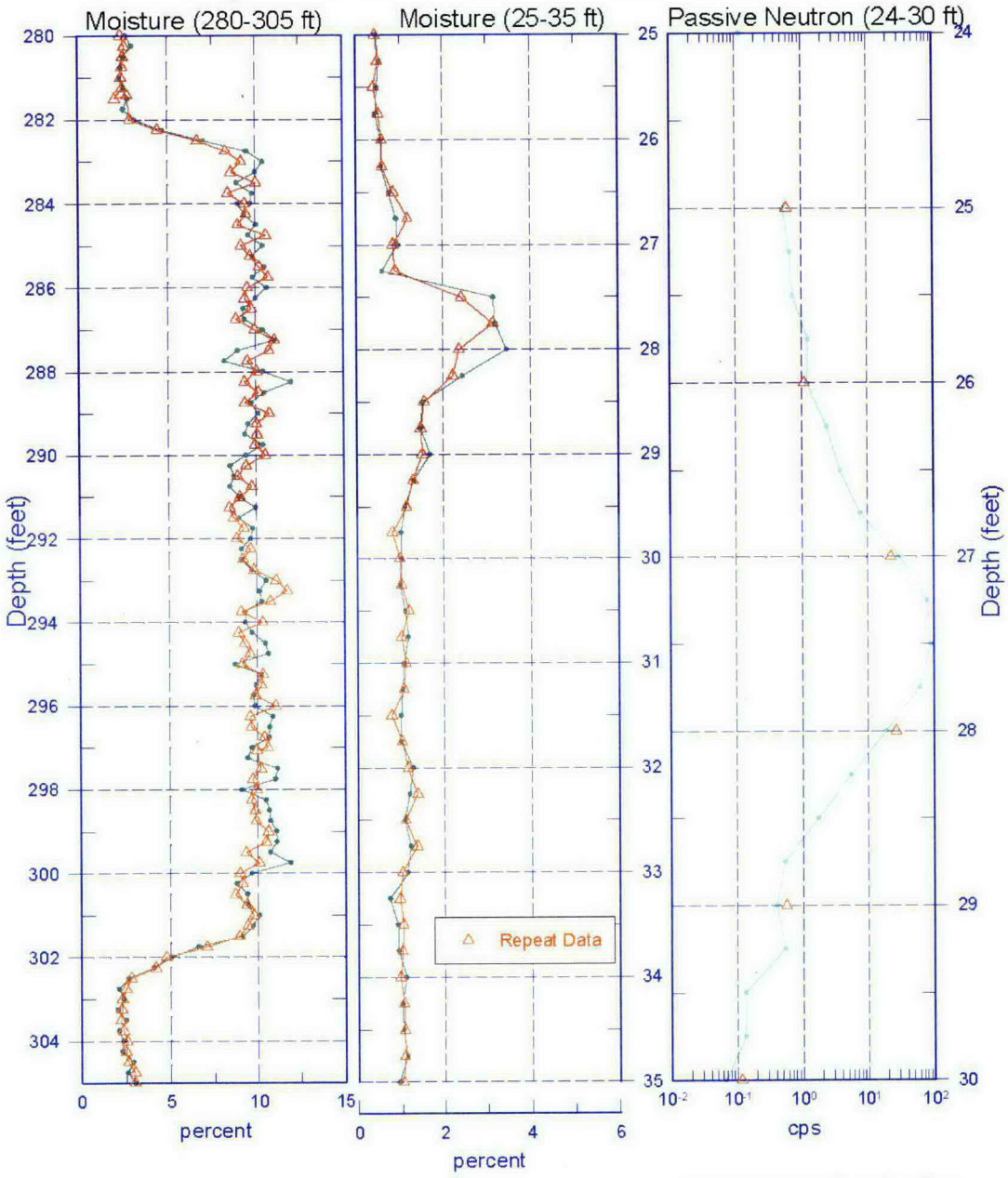
HGLP-LDR-090

C5515
Repeat of Moisture & Passive Neutron



Zero Reference = Ground surface

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1 **Attachment B-2. Geophysical Log – Borehole C5570 (216-A-2 Crib)**

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HGLP-LDR-071

C5570
Log Data Report

Borehole Information:

Borehole:	C5570		**Site:**	216-A-2 Crib	
Coordinates (WA St Plane)		**GWL[1] (ft):**	261.15	**GWL Date:**	07/05/05
North (m)	**East (m)**	**Drill Date**	**TOC Elevation**	**Total Depth (ft)**	**Type**
Not available	Not available	05/07	Not available	35	Percussion

Casing Information:

Casing Type	**Stickup (ft)**	**Outer Diameter (in.)**	**Inside Diameter (in.)**	**Thickness (in.)**	**Top (ft)**	**Bottom (ft)**
Threaded Steel	4.4	6 5/8	5 3/8	5/8	4.4	35

Borehole Notes:

The logging engineer measured the casing diameters using a caliper and steel tape. The driller provided the casing depth. Logging data acquisition is referenced to the ground surface.

Logging Equipment Information:

Logging System:	Gamma 1N		**Type:**	SGLS (60%) SN: 45TP22010A
Effective Calibration Date:	02/20/07	**Calibration Reference:**	HGLP-CC-010	
		Logging Procedure:	HGLP-MAN-002, Rev 0	

Logging System:	Gamma 1C		**Type:**	HRLS SN: 39-A314
Effective Calibration Date:	11/22/06	**Calibration Reference:**	HGLP-CC-004	
		Logging Procedure:	HGLP-MAN-002, Rev 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	**1**	**2 Repeat**			
Date	05/02/07	05/02/07			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	34.5	23.5			
Finish Depth (ft)	23.5	0.5			
Count Time (sec)	20	100			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	1.0			
ft/min	N/A[2]	N/A			
Pre-Verification	AN052CAB	AN052CAB			
Start File	AN052000	AN052012			
Finish File	AN052011	AN052035			
Post-Verification	AN052CAA	AN052CAA			
Depth Return Error (in.)	N/A	+ 0.25			
Comments	High rate interval; dead time > 40%	Gain adjustment after file -027			

2 1

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HGLP-LDR-071

High Rate Logging System (HRLS) Log Run Information:

Log Run	3	4 Repeat			
Date	05/02/07	05/02/07			
Logging Engineer	Pearson	Pearson			
Start Depth (ft)	34.5	29.5			
Finish Depth (ft)	23.5	26.0			
Count Time (sec)	300	300			
Live/Real	R	R			
Shield (Y/N)	N	Internal			
Sample Interval (ft)	1.0	0.5			
ft/min	N/A	N/A			
Pre-Verification	AC173CAB	AC173CAB			
Start File	AC173000	AC173012			
Finish File	AC173011	AC173019			
Post-Verification	AC173CAA	AC173CAA			
Depth Return Error (in.)	- 0.5	N/A			
Comments	Fine gain adjustment after file -000	No fine gain adjustment			

Logging Operation Notes:

Logging was conducted with a centralizer on each sonde. Measurements are referenced to ground surface.

Analysis Notes:

Analyst:	P.D. Henwood	Date:	05/03/07	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging systems were performed before and after data acquisition. Acceptance criteria were met for all systems.

A casing correction for 5/8-in.-thick casing was applied to the spectral log data (SGLS and HRLS).

SGLS and HRLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL worksheet templates identified as G1NFeb07.xls for the SGLS and G1CNov06.xls for the HRLS using efficiency functions and corrections for casing and dead time as determined from annual calibrations. Dead time corrections are applied where dead times exceed approximately 11 percent for both the SGLS and HRLS. Where dead time is excessive HRLS data (with and without the internal shield) are substituted.

Results and Interpretations:

^{137}Cs is detected in this borehole from 18.5 ft to the bottom of the borehole (34.5 ft). The maximum concentration is measured at approximately 20 million pCi/g at 27.5 ft in depth. However, because the contamination appears to lie in a thin interval (probably 0.5 ft or less), this assay could be significantly underestimated. The calibration of the logging system response is based on an infinite, uniform distribution that is not consistent with thin bed responses.

The repeat section for the SGLS indicates good agreement.

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HGLP-LDR-071

List of Log Plots:

Manmade Radionuclides
Natural Gamma Logs
Combination Plot (0-120 ft)
Combination Plot (0-40 ft)
Total Gamma & Dead Tune
Repeat Section of Natural Gamma Logs

[1] GWL – groundwater level

1

3

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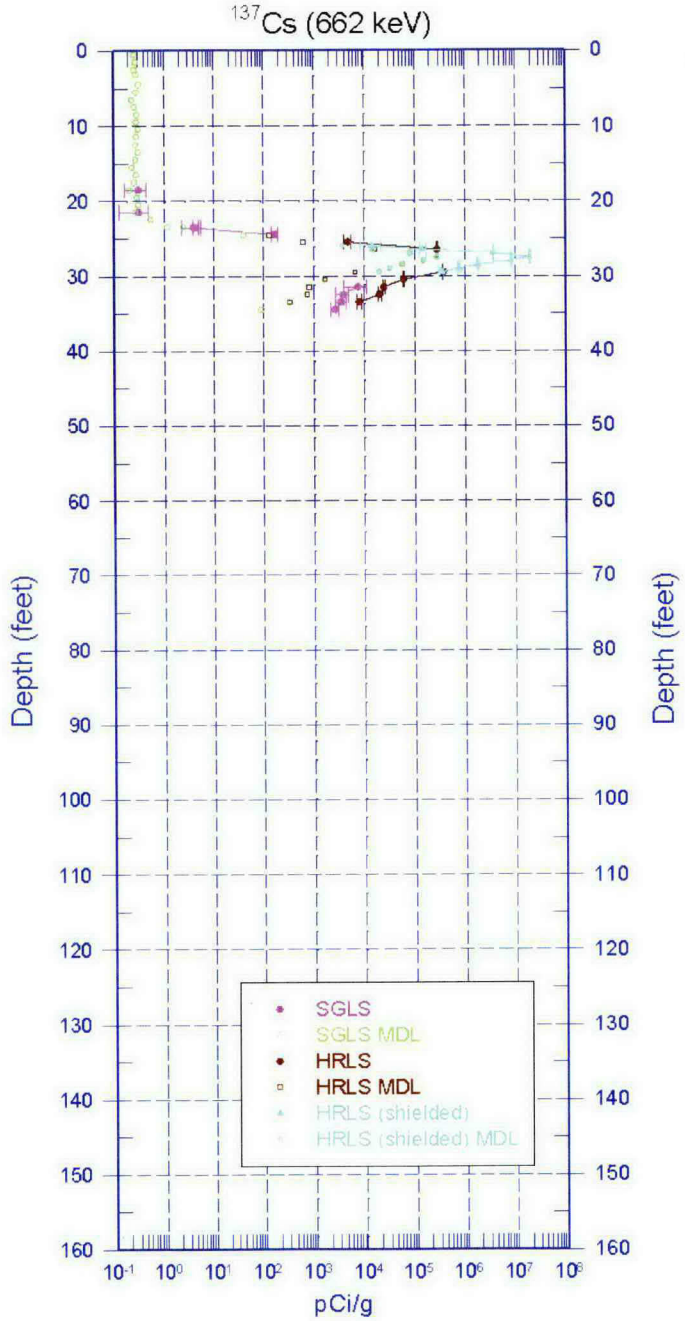
HGLP-LDR-071

C5570
Manmade Radionuclides



Zero Reference = Ground surface

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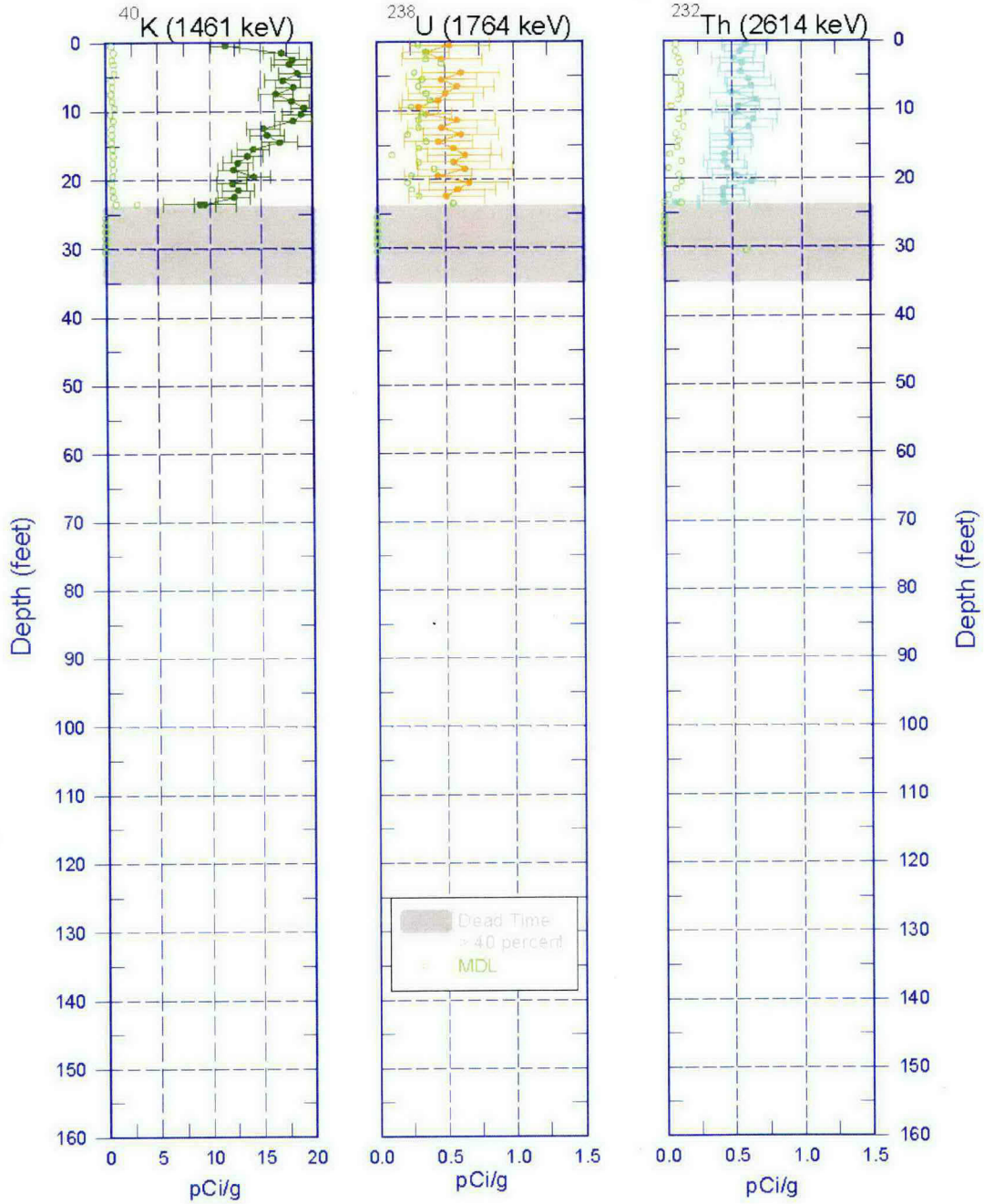
HGLP-LDR-071

C5570
Natural Gamma Logs



Zero Reference = Ground surface

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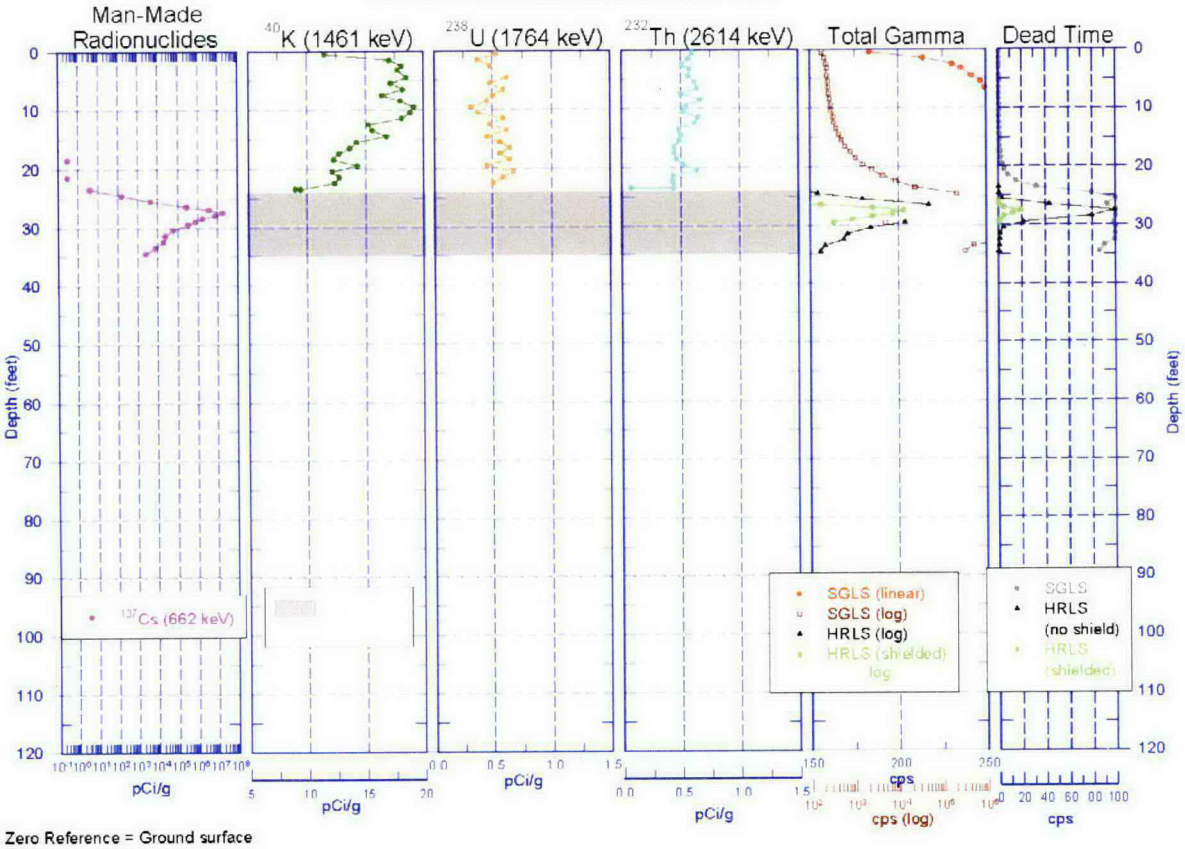
HGLP-LDR-071

C5570 Combination Plot



Zero Reference = Ground surface

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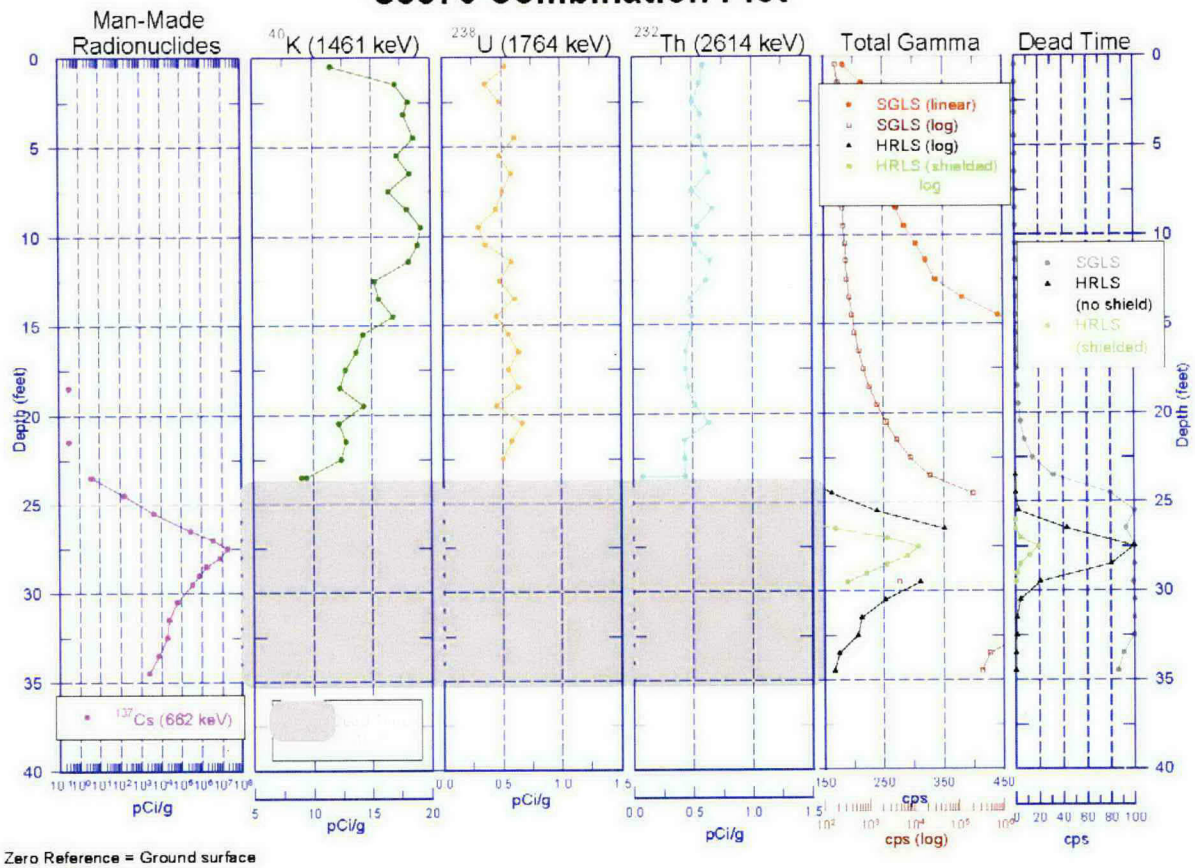
HGLP-LDR-071

C5570 Combination Plot



Zero Reference = Ground surface

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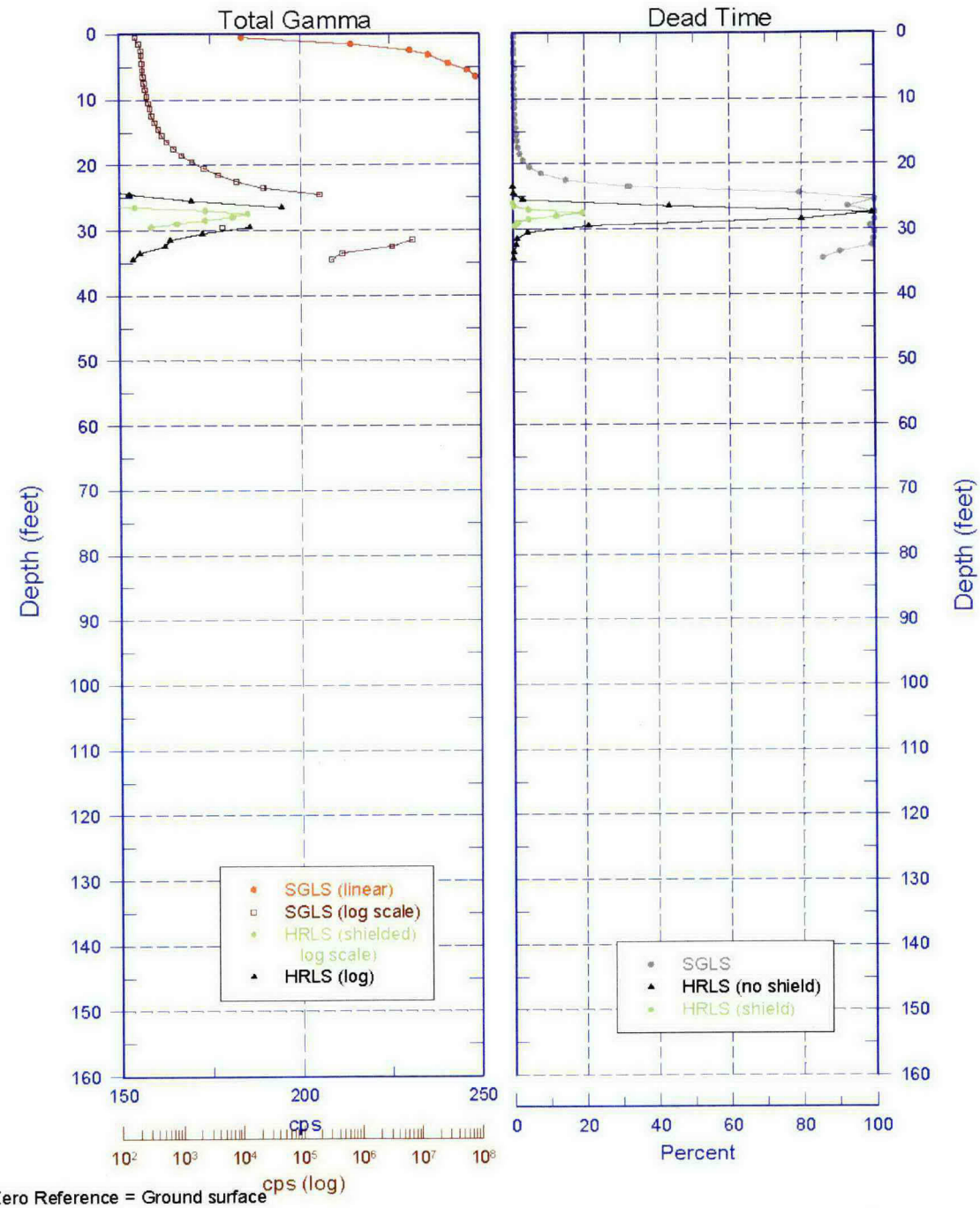
HGLP-LDR-071

C5570
Total Gamma & Dead Time



Zero Reference = Ground surface

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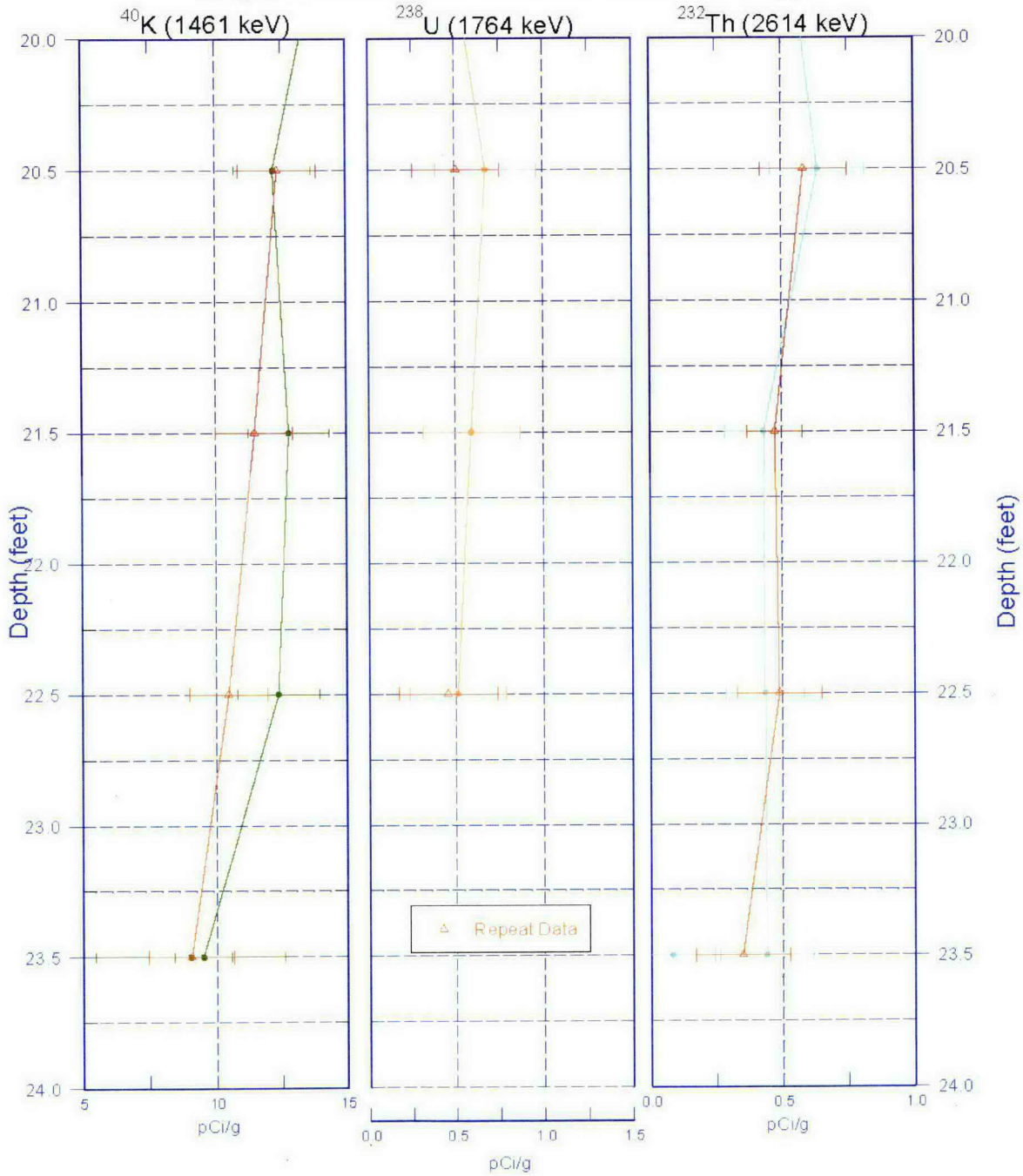
HGLP-LDR-071

C5570

Repeat Section of Natural Gamma Logs



Zero Reference = Ground surface

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1 **Attachment B-3. Geophysical Log – Borehole 299-E24-53 (Proximal to 216-A-2 Crib)**

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DOE-EM/GJ1081-2006

299-E24-53 (A5910)
Log Data Report

Borehole Information:

Borehole:	299-E24-53 (A5910)		Site:	216-A-2 Crib	
Coordinates (WA St Plane)		GWL[1] (ft):	None	GWL Date:	10/20/05
North	East	Drill Date	Elevation (TOC)	Total Depth (ft)	Type
135527.688	575189.278	01/55	715.98	52	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded steel	1.0	8 5/8	8	5/16	0	52

Borehole Notes:

Casing diameter and stickup measurements were acquired using a caliper and steel tape. Measurements are rounded to the nearest 1/16 inch. Logging data acquisition is referenced to the top of casing (TOC).

Spectral Gamma Logging System (SGLS) Equipment Information:

Logging System:	Gamma 4E		Type:	SGLS (70%) SN: 34TP40587A
Effective Calibration Date:	12/21/04	Calibration Reference:	DOE/EM-GJ854-2005	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

High Rate Logging System (HRLS) Equipment Information:

Logging System:	Gamma 1C		Type:	HRLS SN: 39-A314
Effective Calibration Date:	10/06/05	Calibration Reference:	DOE/EM-GJ1019-2005	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Neutron Moisture Logging System (NMLS) Equipment Information:

Logging System:	Gamma 4F		Type:	SN: H380932510
Effective Calibration Date:	10/24/05	Calibration Reference:	DOE/EM-GJ1020-2005	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

2

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	4	5	6	7 Repeat	
Date	10/25/05	10/25/05	10/25/05	10/25/05	
Logging Engineer	Spatz	Spatz	Spatz	Spatz	
Start Depth (ft)	51.5	37.5	31.5	20.5	
Finish Depth (ft)	36.5	30.5	1.5	10.5	
Count Time (sec)	100	20	100	100	
Live/Real	R	R	R	R	
Shield (Y/N)	N	N	N	N	
MSA Interval (ft)	1.0	1.0	1.0	1.0	
ft/min	N/A[2]	N/A	N/A	N/A	
Pre-Verification	DE951CAB	DE951CAB	DE951CAB	DE951CAB	
Start File	DE951000	DE951016	DE951024	DE951055	
Finish File	DE951015	DE951023	DE951054	DE951065	
Post-Verification	DE951CAA	DE951CAA	DE951CAA	DE951CAA	
Depth Return Error (in.)	N/A	N/A	0	0	
Comments	No fine-gain adjustment	No fine-gain adjustment	No fine-gain adjustment	No fine-gain adjustment	

High Rate Logging System (HRLS) Log Run Information:

Log Run	8				
Date	10/27/05				
Logging Engineer	Spatz				
Start Depth (ft)	37.5				
Finish Depth (ft)	31.5				
Count Time (sec)	300				
Live/Real	R				
Shield (Y/N)	N				
MSA Interval (ft)	1.0				
ft/min	N/A				
Pre-Verification	AC149CAB				
Start File	AC149000				
Finish File	AC149006				
Post-Verification	AC149CAA				
Depth Return Error (in.)	N/A				
Comments	No fine-gain adjustment				

Neutron Moisture Logging System (NMLS) Log Run Information:

Log Run	1	2	3 Repeat		
Date	10/20/05	10/20/05	10/20/05		
Logging Engineer	Spatz	Spatz	Spatz		
Start Depth (ft)	1.0	26.5	22.5		
Finish Depth (ft)	27.5	51.75	32.5		
Count Time (sec)	N/A	N/A	N/A		
Live/Real	R	R	R		
Shield (Y/N)	N	N	N		
MSA Interval (ft)	0.25	0.25	0.25		
ft/min	1.0	1.0	1.0		
Pre-Verification	DF062CAB	DF072CAB	DF072CAB		
Start File	DF062000	DF072000	DF072102		
Finish File	DF062106	DF072101	DF072142		

1

Log Run	1	2	3 Repeat		
Post-Verification	DF062CAA	DF072CAA	DF072CAA		
Depth Return Error (in.)	0	N/A	N/A		
Comments	None	None	None		

Logging Operation Notes:

Logging was performed in this borehole with the SGLS, HRLS, and NMLS. Logging was conducted with a centralizer on each sonde. Measurements are referenced to the top of casing. Repeat sections were collected in this borehole to evaluate the logging systems' performance.

Analysis Notes:

Analyst:	Henwood	Date:	12/19/05	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging systems were performed before and after data acquisition. Acceptance criteria were met for all systems.

A casing correction for 5/16-in.-thick casing (8-in. casing) was applied to the spectral log data (SGLS and HRLS). For moisture corrections an 8-in. inside diameter casing was assumed.

SGLS and HRLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL worksheet templates identified as G4EApr05.xls and G1COct05.xls for the SGLS and HRLS, respectively, using efficiency functions and corrections for casing, water, and dead time as determined from annual calibrations. Dead time corrections are applied where dead times exceed approximately 11 percent. Where SGLS dead time exceeds 40 percent, HRLS data are substituted. Correction for water was not needed in this borehole.

Results and Interpretations:

^{137}Cs was detected from 29 ft to the bottom of the borehole (52 ft). A zone of high ^{137}Cs exists between approximately 29 and 40 ft. The maximum concentration is approximately 4,600 pCi/g at 33.5 ft.

^{60}Co was detected at 31.5 ft and from 36.5 to 48.5 ft. The maximum concentration is approximately 4 pCi/g at 36.5 ft. It is probable ^{60}Co also exists in the high rate interval from 32 to 36.5 ft at higher concentrations.

^{154}Eu was detected at 31.5 ft and from 36.5 to 40.5 ft. The maximum concentration is approximately 6 pCi/g at 36.5 ft. It is probable ^{154}Eu also exists in the high rate interval from 32 to 36.5 ft at higher concentrations.

Gamma activity from uranium is usually dominated by emissions from ^{238}U daughters such as ^{226}Ra, ^{214}Pb, and ^{214}Bi. These isotopes occur in the lower part of the decay chain and achieve secular equilibrium with the parent ^{238}U over a time frame approaching a million years. Processed uranium refers to material that has been chemically purified. The purification process removes the daughter elements; therefore, man-made uranium can be differentiated from natural uranium by the absence of gamma rays from long-term daughters combined with the presence of less intense gamma rays from short-term daughters.

The primary gamma activity associated with man-made uranium originates from ^{234m}Pa. The 1001-keV gamma ray is the most intense (0.84% yield), and a confirming line occurs at 766 keV (0.29% yield). These lines are seldom strong enough to be detected in natural uranium at background levels, but can be detected when man-made uranium concentrations exceed 10 pCi/g. Natural uranium is most commonly detected and quantified from gamma rays at 1764 or 609 keV (yields of 15.4% and 44.8%, respectively), at

levels below 1 pCi/g. These gamma rays originate from ^{214}Bi, which is far down in the decay series and therefore not present in detectable amounts in man-made uranium. However, ^{214}Bi is a short-term daughter of ^{222}Rn, and it is possible that ^{214}Bi concentrations may be temporarily elevated as a result of radon accumulation.

Processed uranium also contains ^{235}U in various amounts according to the enrichment used for the reactor fuel at Hanford and burn up time. This radionuclide can be measured directly from energy peaks at approximately 186, 202, and 205 keV. The highest yield (57.2 %) is from the 186-keV gamma ray that is used to assay ^{235}U.

Evidence of processed uranium exists from 37.5 to 51.5 ft (total depth of the borehole). Although no detections of processed uranium exist in the high activity zone between 29 and 37.5 ft, it is likely present. The MDLs for ^{234m}Pa and ^{235}U in the high activity zone, as determined from the SGLS, are approximately 20,000 and 700 pCi/g, respectively. The maximum concentrations determined from the SGLS for ^{234m}Pa and ^{235}U were approximately 500 and 35 pCi/g, respectively.

Moisture measurements show significant variability with the maximum percent moisture of 22 percent indicated at 49 ft.

Spectral gamma and moisture data were acquired in this borehole in 1999 by Waste Management Federal Services NW using the Radionuclide Logging System (RLS). A comparison of RLS spectral data with the current SGLS and HRLS data indicates good agreement and no significant changes since 1999. The moisture profiles also indicate good agreement even though approximately 6 years have elapsed between measurements.

The repeat sections for the SGLS and NMLS indicate good agreement for the naturally occurring radionuclides and moisture.

A visual comparison of the log profiles of a total gamma log acquired by PNL in 1982 and the current SGLS total gamma indicates similar character, suggesting no significant changes in the past 23 years.

List of Plots:

^{137}Cs (662 keV)
^{60}Co and ^{154}Eu
Processed Uranium
Natural Gamma Logs
Combination Plot
Total Gamma & Moisture
Total Gamma & Dead Time
RLS/SGLS Comparison of ^{137}Cs
RLS/SGLS Comparison of ^{60}Co and ^{154}Eu
RLS/SGLS Comparison of Uranium
Moisture Comparison
Repeat Section of Natural Gamma Logs
Moisture Repeat Section

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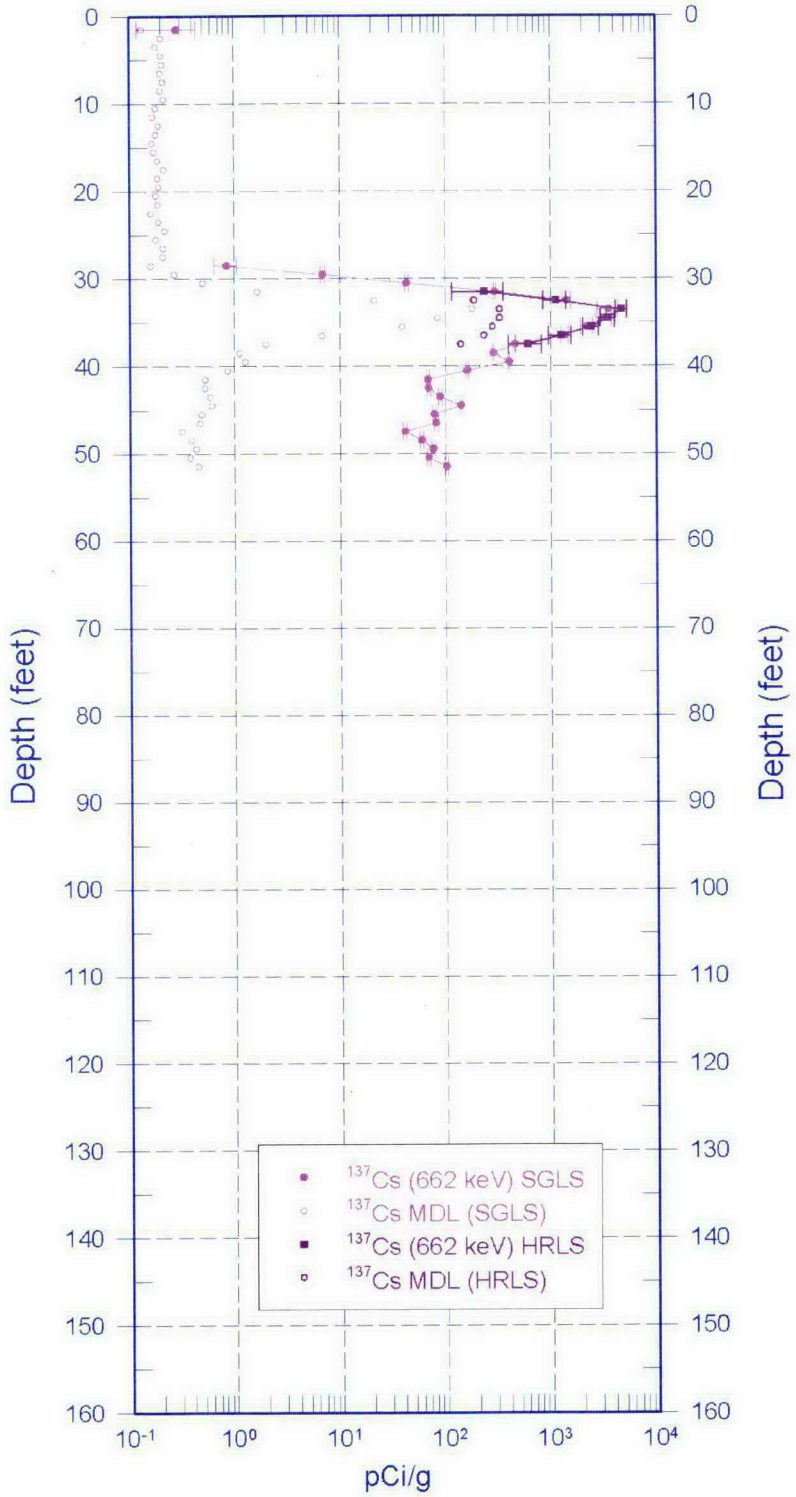
[1] GWL – groundwater level
[2] N/A – not applicable

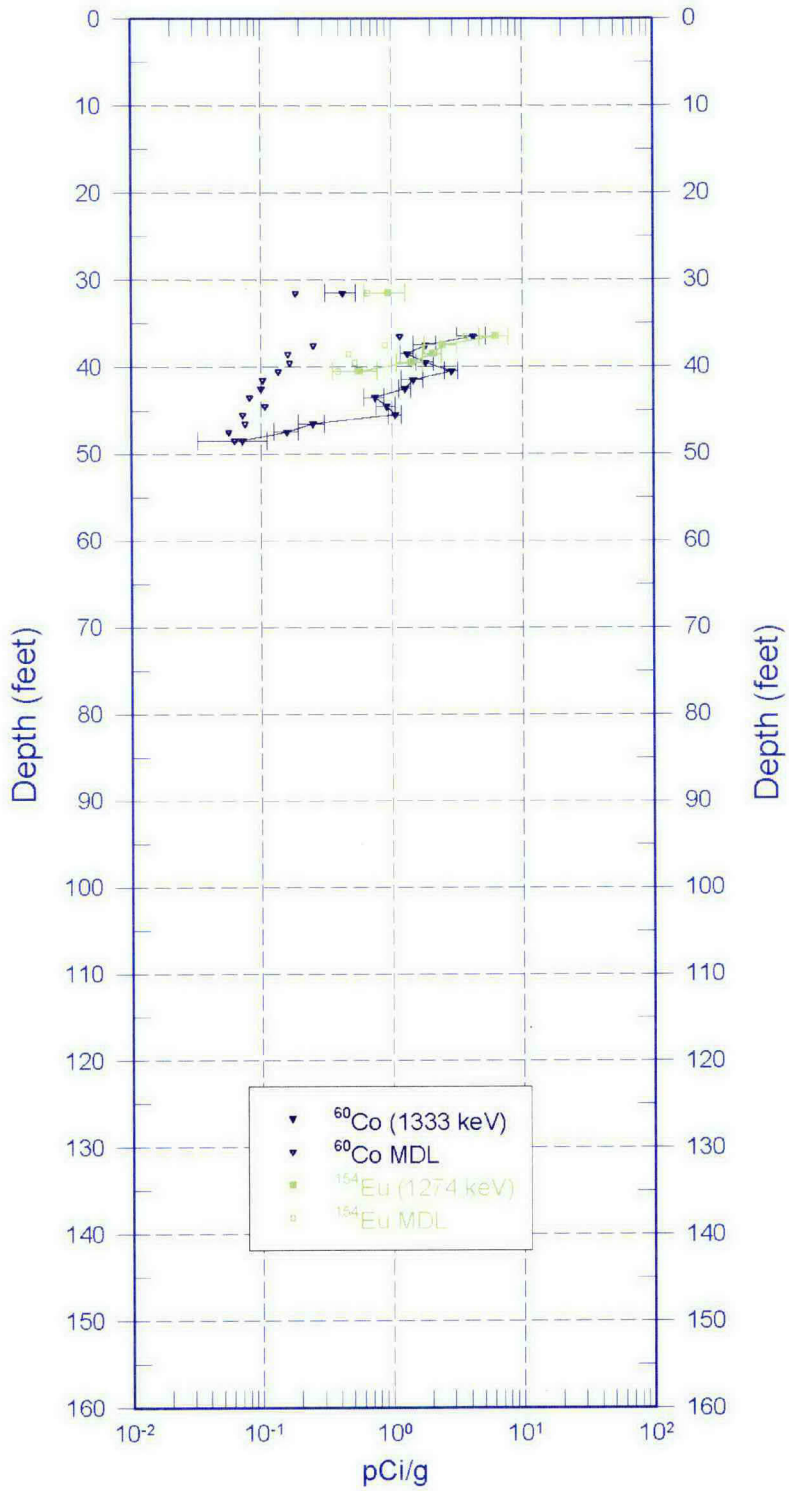
299-E24-53 (A5910)
^{137}Cs (662 keV)



Zero Reference = Top of Casing

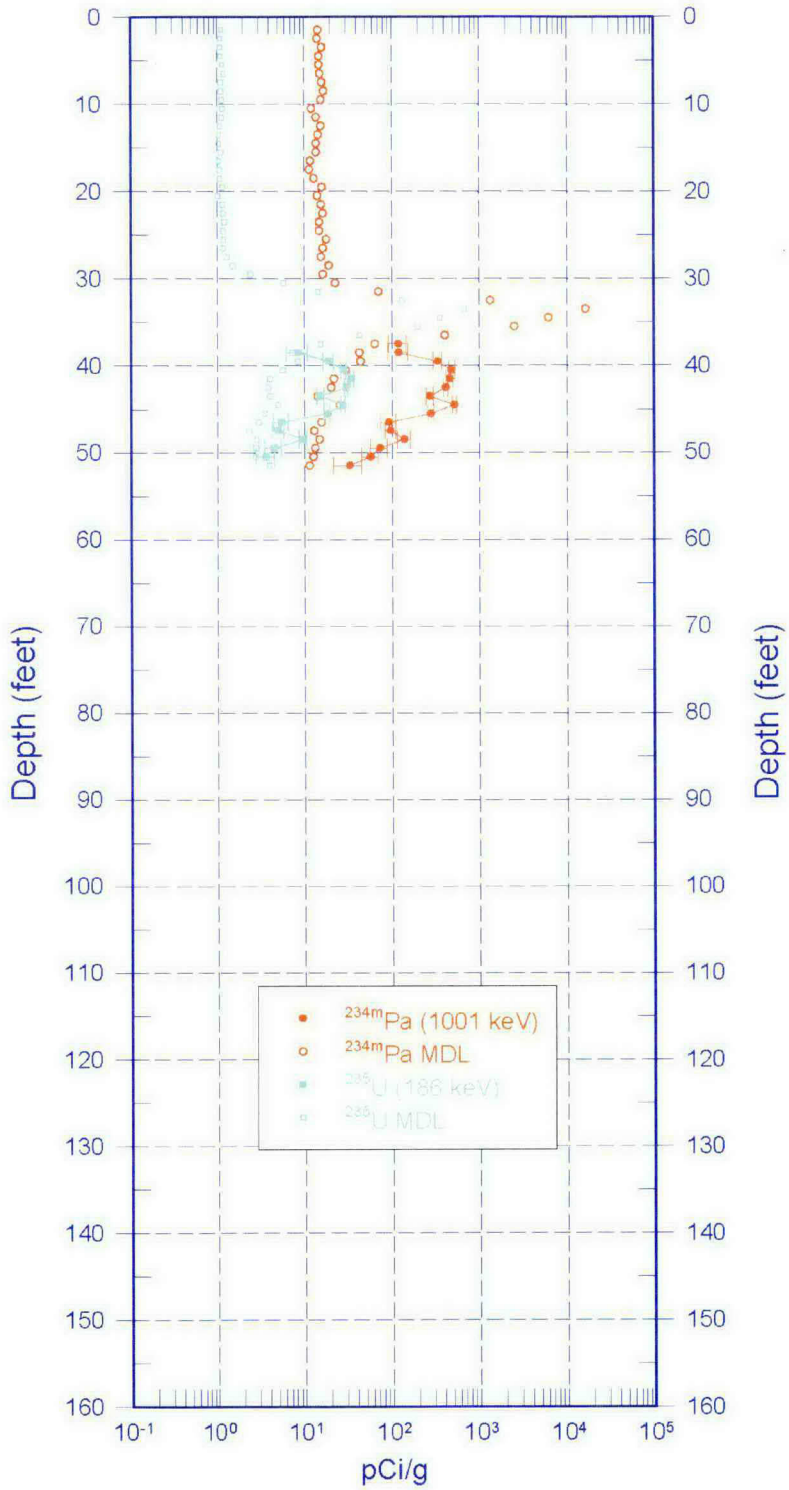
299-E24-53 (A5910)

^{60}Co and ^{154}Eu



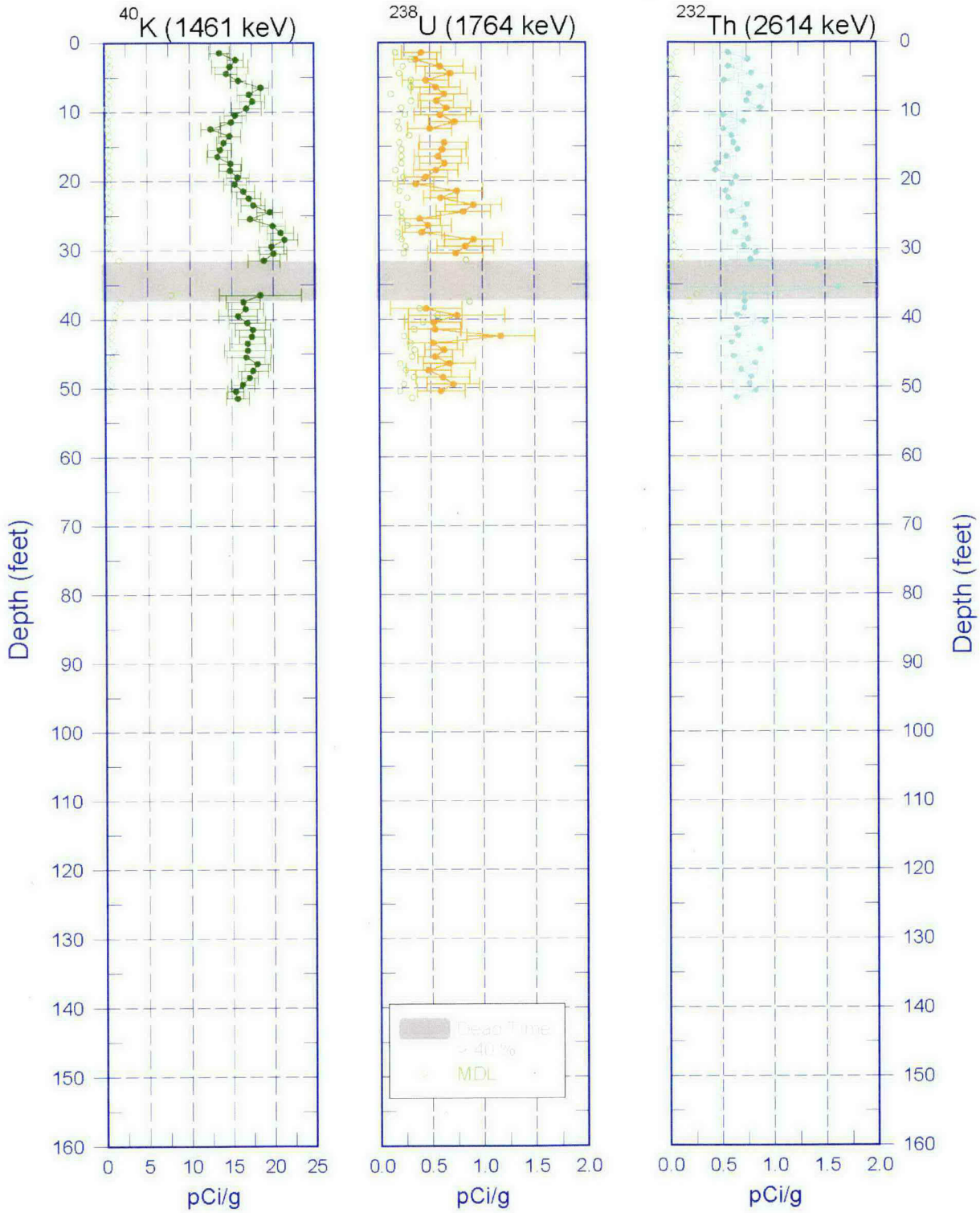
1 Zero Reference = Top of Casing

299-E24-53 (A5910)
Processed Uranium



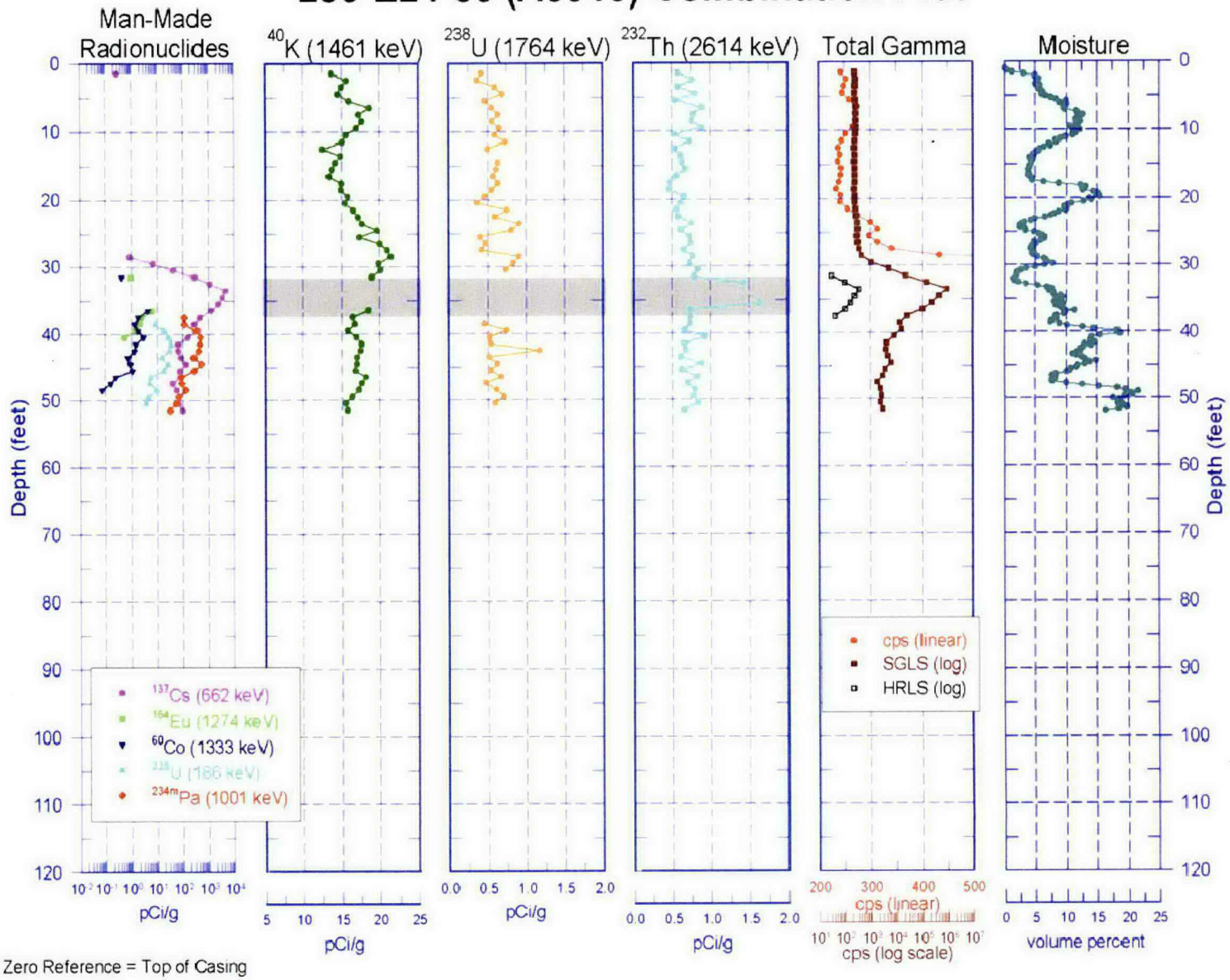
1 Zero Reference = Top of Casing

299-E24-53 (A5910)
Natural Gamma Logs

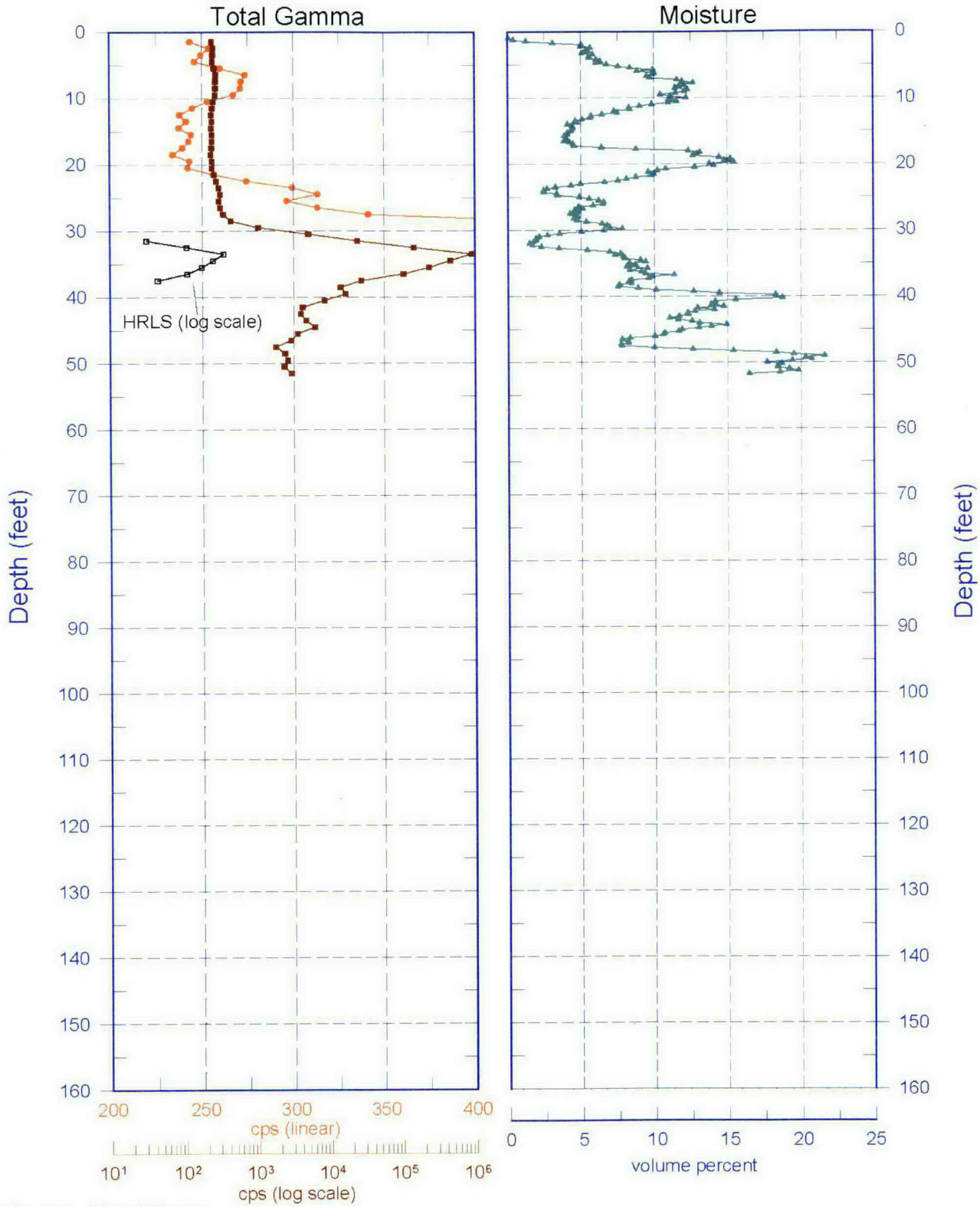


Zero Reference = Top of Casing

299-E24-53 (A5910) Combination Plot

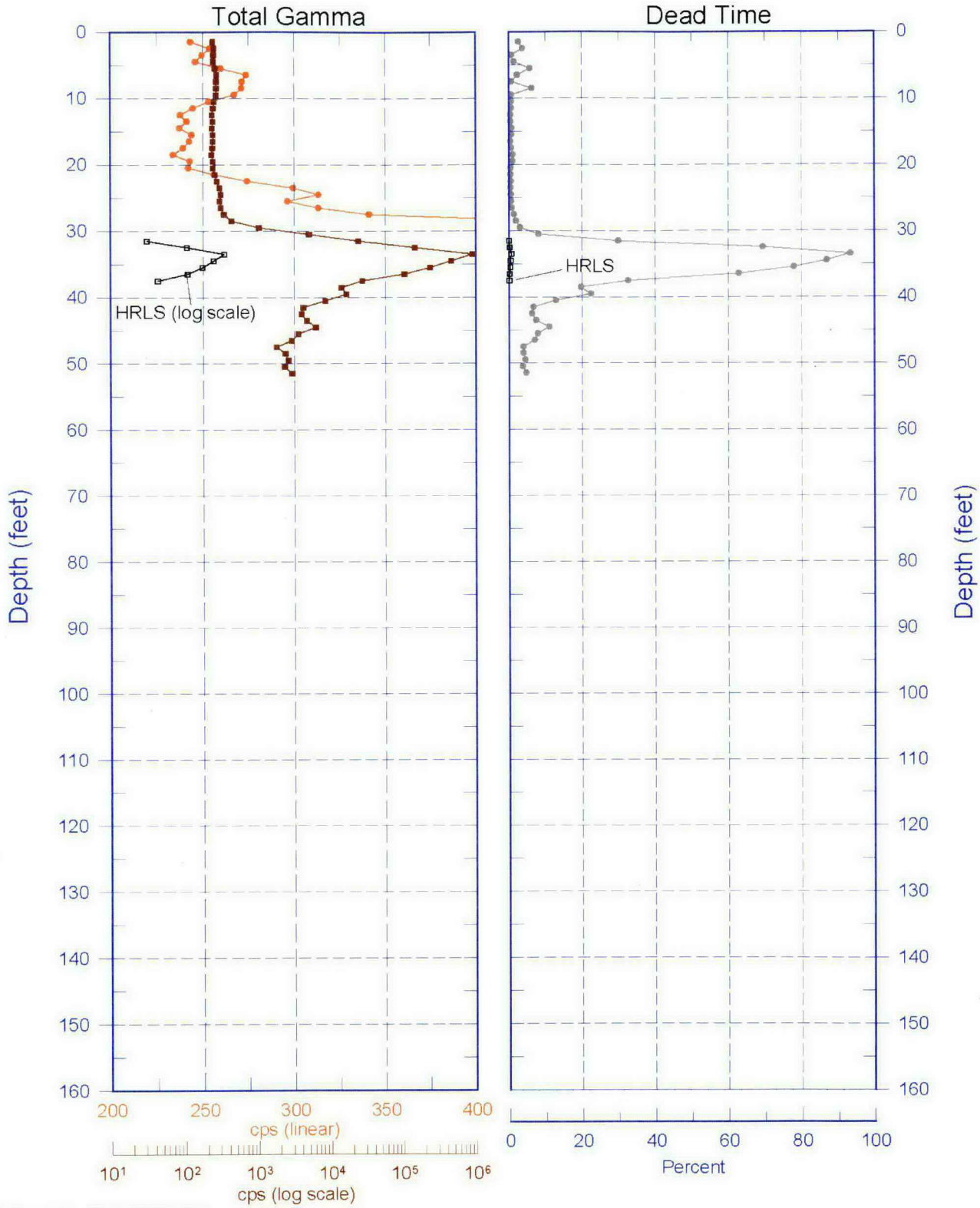


299-E24-53 (A5910)
Total Gamma & Moisture



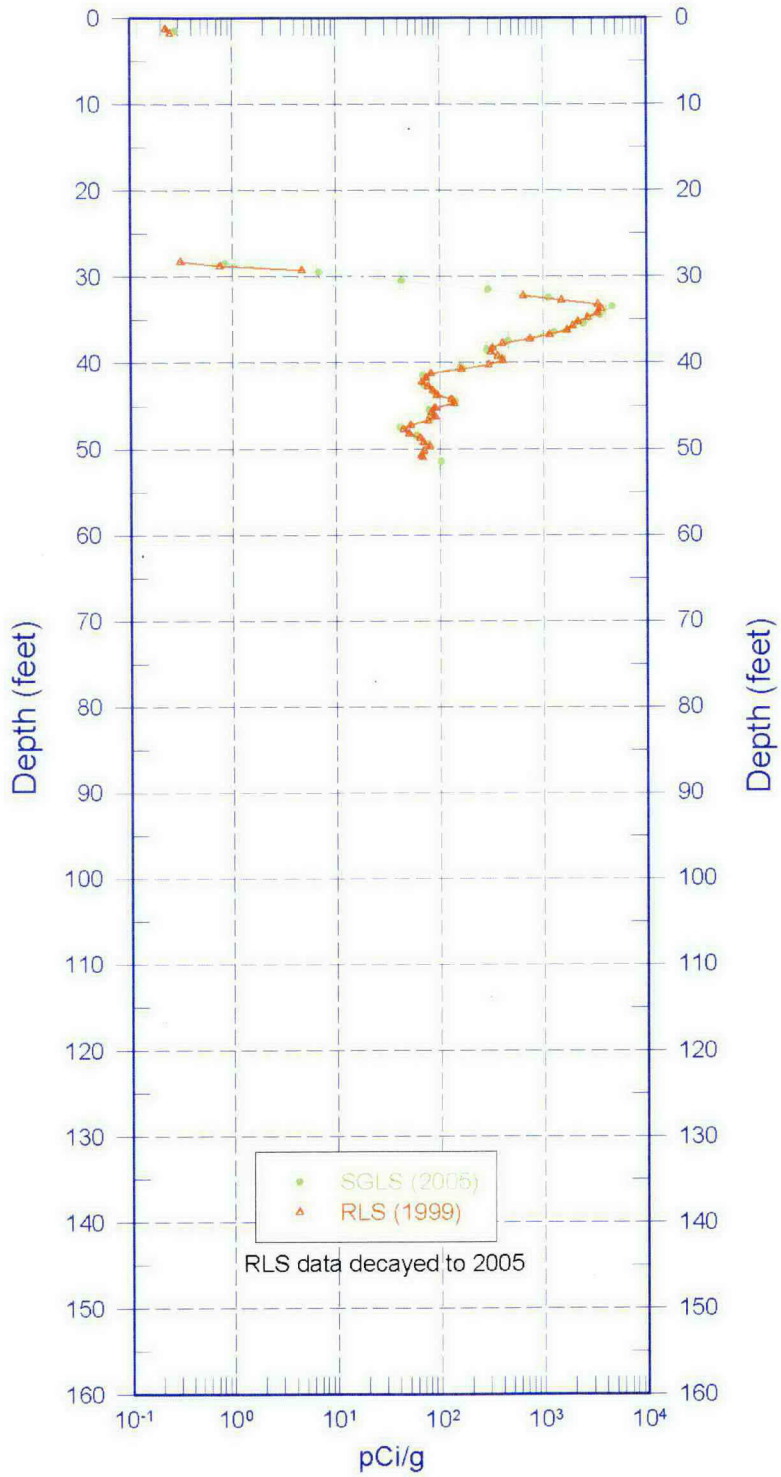
1 Reference - Top of Casing

299-E24-53 (A5910)
Total Gamma & Dead Time



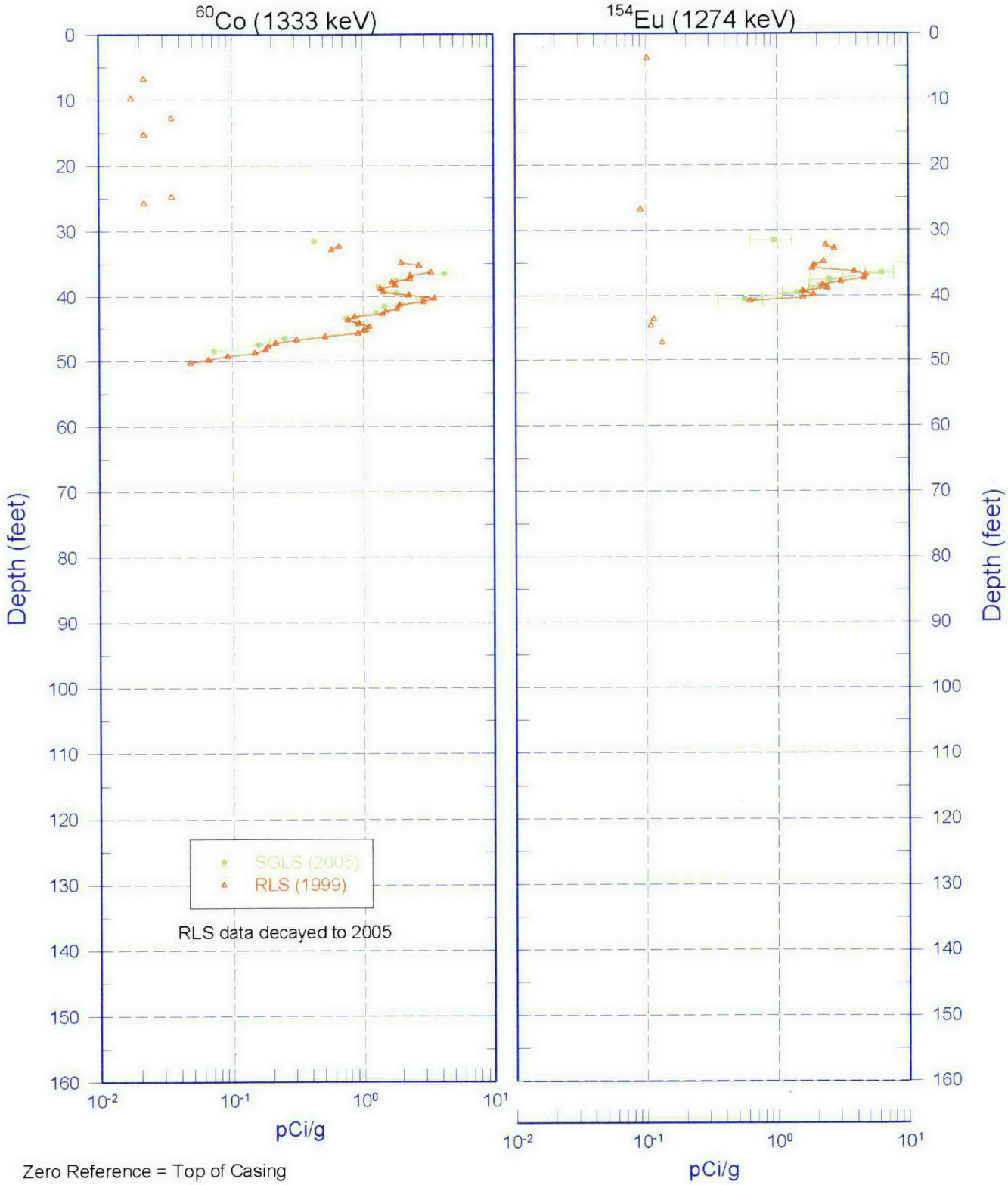
Reference - Top of Casing

299-E24-53 (A5910)
RLS/SGLS Comparison of ^{137}Cs



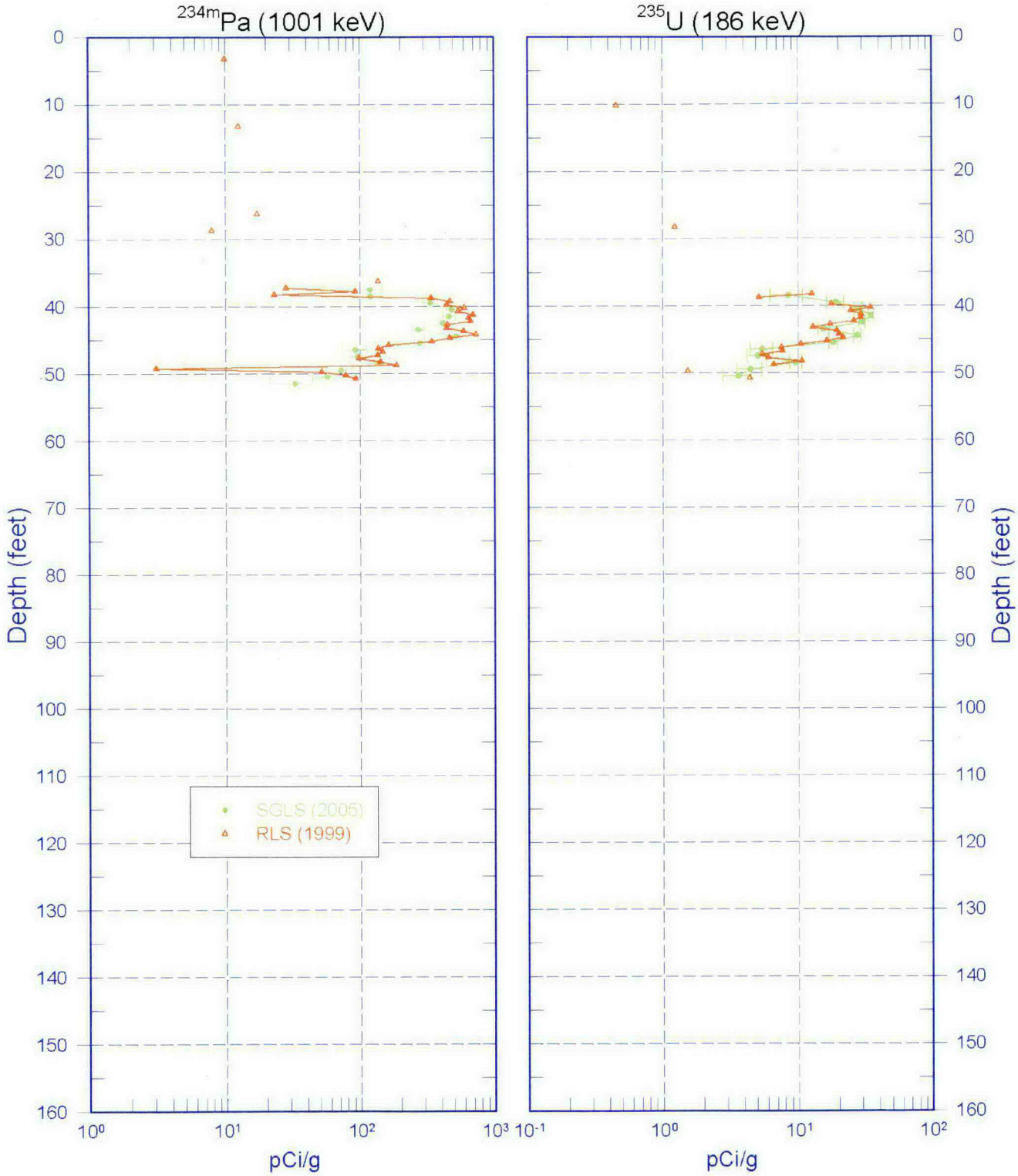
1 Zero Reference = Top of Casing

299-E24-53 (A5910)
RLS/SGLS Comparison of ^{60}Co and ^{154}Eu



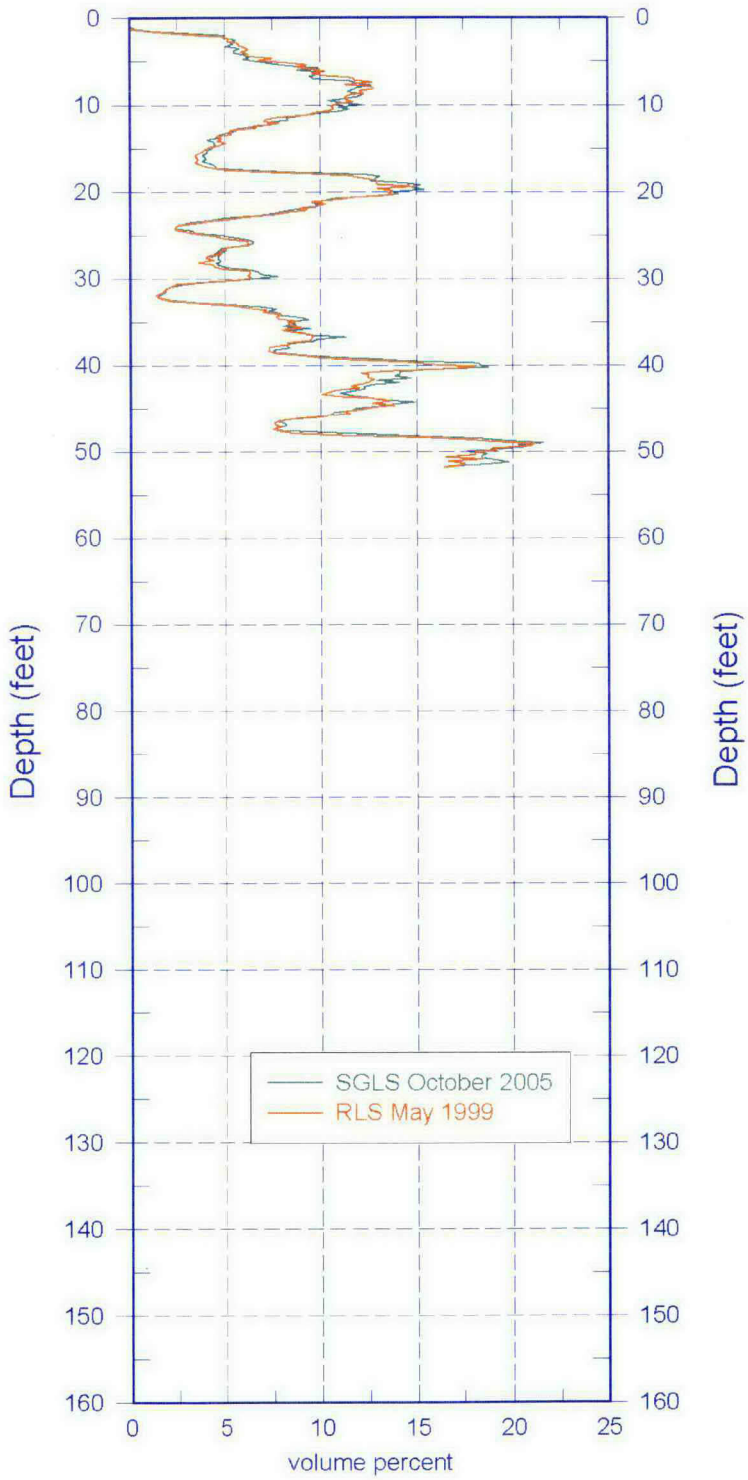
Zero Reference = Top of Casing

299-E24-53 (A5910)
RLS/SGLS Comparison of Uranium



Zero Reference = Top of Casing

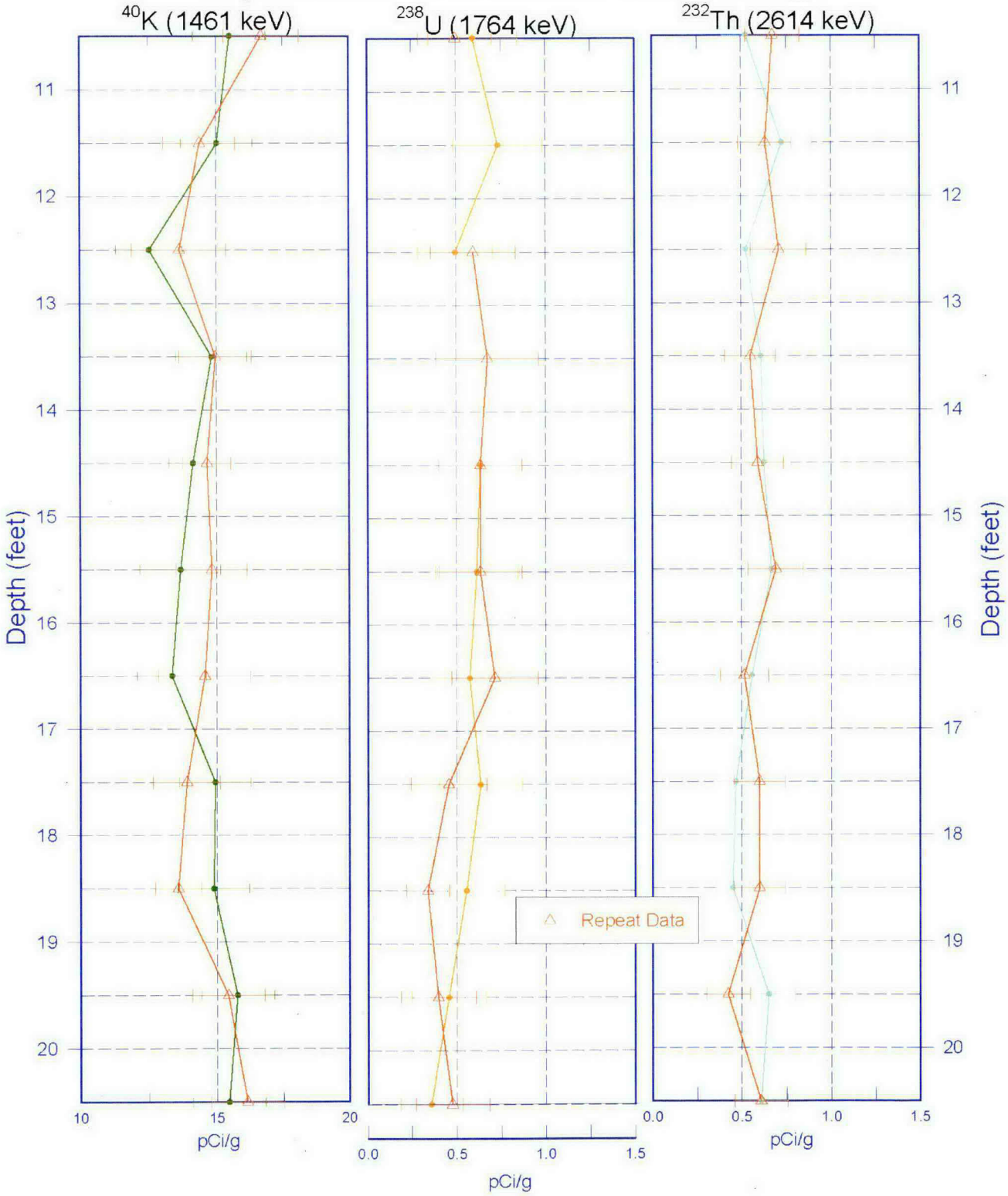
299-E24-53 (A5910)
Moisture Comparison



1 Reference - Top of Casing

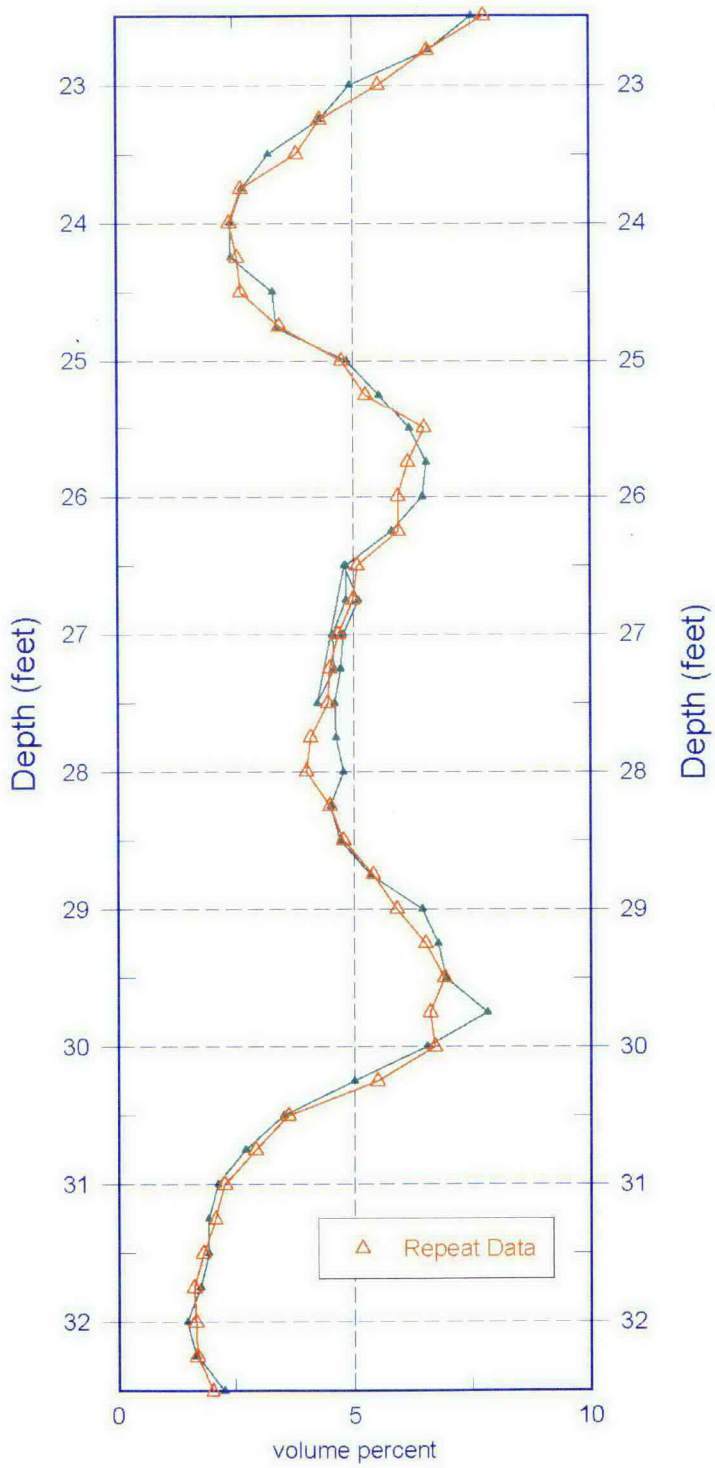
299-E24-53 (A5910)

Repeat Section of Natural Gamma Logs



1 Zero Reference = Top of Casing

299-E24-53 (A5910)
Moisture Repeat Section



1 Reference - Top of Casing

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1 **Attachment B-4. Geophysical Log – Borehole C4671 (216-A-4 Crib)**

Stoller
Hanford Office

DOE-EM/GJ827-2005

C4671
Log Data Report

Borehole Information:

Borehole:	C4671		Site:	216-A-4 Crib	
Coordinates (WA State Plane)		GWL (ft)[1]:	233.4	GWL Date:	07/22/2004
North	East	Drill Date	TOC[2] Elevation	Total Depth (ft)	Type
Not available	Not available	08/26/2004	Not available	60	Direct Push

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded steel	0.0	6 5/8	5 3/8	0.625	0	60
The logger used a caliper and steel tape to measure outside and inside casing diameter. All measurements were rounded to the nearest 1/16-in.						

Borehole Notes:

Zero reference is the ground surface. C4671is a direct push hole installed approximately 4 ft away from borehole C4560 to investigate unanticipated high contamination levels encountered at about 20 ft below ground surface as the hole was being drilled. Because C4671 was driven as a sealed tube, it was considered to be a "low risk" borehole and was not swabbed prior to logging.

Logging Equipment Information:

Logging System:	Gamma 4E		Type:	70% HPGe (34TP40587A)
Calibration Date:	07/2004	Calibration Reference:	DOE/EM-GJ692-2004	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Logging System:	Gamma 1C		Type:	"Planar" HPGe (39A314)
Calibration Date:	09/2004	Calibration Reference:	DOE/EM-GJ713-2004	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Logging System:	Gamma 4L		Type:	^{3}He detector (U1754)
Calibration Date:	N/A	Calibration Reference:	N/A	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

2

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3	4	5
Date	09/01/04	09/01/04	09/01/04	09/01/04	09/01/04
Logging Engineer	Spatz	Spatz	Spatz	Spatz	Spatz
Start Depth (ft)	58.0'	49.0'	47.0'	11.0'	8.0'
Finish Depth (ft)	48.0'	47.0'	10.0'	0	2.0'
Count Time (sec)	20 s	100 s	20 s	100 s	100 s
Live/Real	R	R	R	R	R
Shield (Y/N)	NA	NA	NA	NA	NA
MSA Interval (ft)	1.0'	1.0'	1.0'	1.0'	1.0'
ft/min	NA	NA	NA	NA	NA
Pre-Verification	DE321CAB	DE321CAB	DE321CAB	DE321CAB	DE321CAB
Start File	DE321000	DE321012	DE321015	DE321053	DE321065
Finish File	DE321011	DE321014	DE321052	DE321064	DE321071
Post-Verification	DE321CAA	DE321CAA	DE321CAA	DE321CAA	DE321CAA
Depth Return Error (in.)	N/A	N/A	N/A	0	0
Comments	High rate interval	No fine gain adjustments made	High rate interval	No fine gain adjustment made	Repeat interval

High Rate Logging System (HRLS) Log Run Information:

Log Run	6	7	8	9	10
Date	09/02/04	09/02/04	09/02/04	09/02/04	09/02/04
Logging Engineer	Spatz	Spatz	Spatz	Spatz	Spatz
Start Depth (ft)	58.0'	52.0'	46.0'	42.0'	36.0'
Finish Depth (ft)	52.0'	46.0'	42.0'	36.0'	26.0'
Count Time (sec)	100 s	300 s	100 s	300 s	100 s
Live/Real	R	R	R	R	R
Shield (Y/N)	None	None	None	None	None
MSA Interval (ft)	1.0'	1.0'	1.0'	1.0'	1.0'
ft/min	NA	NA	NA	NA	NA
Pre-Verification	AC109CAB	AC109CAB	AC109CAB	AC109CAB	AC109CAB
Start File	AC109000	AC109007	AC109014	AC109019	AC109026
Finish File	AC109006	AC109013	AC109018	AC109025	AC109036
Post-Verification	AC109CAA	AC109CAA	AC109CAA	AC109CAA	AC109CAA
Depth Return Error (in.)	NA	NA	NA	NA	NA
Comments	No fine gain adjustment made	No fine gain adjustment made	No fine gain adjustment made	No fine gain adjustment made	No fine gain adjustment made

Log Run	11	12	13	14
Date	09/02/04	09/02/04	09/02/04	09/02/04
Logging Engineer	Spatz	Spatz	Spatz	Spatz
Start Depth (ft)	26.0'	16.0'	27.0'	23.0'
Finish Depth (ft)	13.0'	13.0'	16.0'	18.0'
Count Time (sec)	20 s	300 s	100 s	100 s
Live/Real	R	R	R	R
Shield (Y/N)	None	None	Both internal & external	Both internal & external
MSA Interval (ft)	1.0'	1.0'	1.0'	1.0'
ft/min	NA	NA	NA	NA
Pre-Verification	AC109CAB	AC109CAB	AC109CAB	AC109CAB
Start File	AC109037	AC109051	*AC109055	*AC109067
Finish File	AC109050	AC109054	AC109066	AC109072
Post-Verification	AC109CAA	AC109CAA	AC109CAA	AC109CAA
Depth Return Error (in.)	NA	-1"	NA	0
Comments	High-high rate interval	No fine gain adjustment made	No fine gain adjustment made. *For these spectra, a centralizer was not installed on the sonde	Repeat section. *For these spectra, a centralizer was not installed on the sonde

Passive Neutron Logging System (PNLS) Log Run Information:

Log Run	15	16		
Date	09/08/04	09/08/04		
Logging Engineer	Spatz	Spatz		
Start Depth (ft)	0.0'	15.0'		
Finish Depth (ft)	58.0'	30.0'		
Count Time (sec)	15 s	15 s		
Live/Real	R	R		
Shield (Y/N)	None	None		
MSA Interval (ft)	N/A	N/A		
ft/min	1.0	1.0		
Pre-Verification	DL072CAB	DL072CAB		
Start File	DL072000	DL072233		
Finish File	DL072232	DL072293		
Post-Verification	DL072CAA	DL072CAA		
Depth Return Error (in.)	NA	NA		
Comments	None	Repeat section		

Logging Operation Notes:

Pre- and post-survey SGLS verification measurements were acquired in the Amersham verifier. Unusually high levels of activity (approximately 34 cps) from the 662 keV gamma line associated with ^{137}Cs were observed in both the pre-run and post-run verification spectra on September 1, 2004. At the time, this was attributed to ambient levels related to near-surface contamination or "shine." Logging was performed with a centralizer on the sonde. Maximum log depth was 58.41 ft.

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The Gamma 4E system was next used to log C4176 at the 216-S-20 Crib on September 14, 2004. At that time, contamination was detected on the sonde by the logging engineer. Radiological surveys on September 15 found contamination on the wipes used to clean the logging sonde and cable and on the gloves and clothing of a logging engineer. Subsequent investigation indicated that the contamination originated in borehole C4671. A borehole swab detected contamination on the inside of the casing at C4671. The passive neutron sonde and the external shield for the high rate logging sonde were also found to be contaminated, and contamination was found on the drive head of the push rig. Prior to logging C4671, the Gamma 4E system had been used to log C3426 (299-W15-46) on August 31, 2004. Although the upper part of this hole had penetrated significant contamination, the August 31 log event was performed inside a second casing string, which was installed specifically to isolate subsurface contamination. Only negligible levels of activity related to the 662 keV photopeak were observed in the pre-run and post-run verification spectra at that borehole.

All available data indicate the presence of contamination on the inside of the casing at C4671 prior to logging on September 1, 2004. Visual inspection with a borehole television camera on January 25 indicated that the casing appears to be intact and the bottom plug is in place. The source of the internal contamination in C4671 is unknown. A more detailed discussion of the contamination incident is attached.

High rate logging was performed from 13 to 58 ft. Both the internal and external tungsten shields were used from 16 to 27 ft (log runs 13 and 14) in the depth interval of highest gamma activity. The pre- and post-verification measurements for the high rate system were acquired in the CS-137 verifier, SN 1013.

The passive neutron log was run over the entire length of the borehole. This log detects neutrons originating from (α, n) reactions between alpha particles emitted by radioactive decay of heavy elements and light elements such as oxygen in the soil. It is considered useful as a qualitative indicator of the presence of transuranic (TRU) radionuclides.

C4671 was classified as "low risk," and radiological support was not provided during logging operations. High ambient levels of ^{137}Cs activity were detected in the verifier both before and after logging operations. This effectively masked the contamination on the sonde, and it was not discovered until the logging system was next deployed at C4176, approximately two weeks later.

Analysis Notes:

Analyst:	McCain/Henwood	**Date:**	2/10/05	**Reference:**	GJO-HGLP 1.6.3, Rev. 0

SGLS pre- and post-run verification spectra were collected in the Amersham verifier at the beginning and end of each day. Both net count rate and FWHM were compared to verification criteria for gamma activity at 609, 1461, and 2615 keV. In general, the spectra exhibited minor loss of efficiency and peak spreading, particularly at higher gamma energies. Net count rates for the 609, 1461, and 2615 keV photopeaks were 7.4, 8.8, and 10.4 percent lower in the post-run verification, relative to the pre-run verification. Net count rates for the 2615 peak were slightly below the lower control limit, but well within the 20% HASQARD criteria. Visual examination of the verification spectra indicated the detector is functioning normally, and the results are provisionally accepted.

As noted above, unusually high levels of gamma activity at 662 keV were observed in both the pre- and post-run verification spectra. Preliminary inspection indicated approximately the same count rate in both spectra, and the activity was attributed to ^{137}Cs contamination at or near the ground surface or "shine" from nearby contamination. Closer inspection of the spectra indicated that overall detector efficiency declined by about 7 to 10 percent between the pre- and post-run verification spectra. This degree of change over the course of a day is not unusual. If the net count rate at 662 keV is evaluated in terms of the decreasing efficiency, a net increase of about 2.6 cps was observed. This supports the finding that the contamination originated in borehole C4671.

Log spectra for the SGLS were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Pre-run verification spectra were used to determine the energy and resolution calibration for processing the data using APTEC SUPERVISOR. Concentrations were calculated in EXCEL (source file: G4Ejul04.xls), using parameters determined from analysis of recent calibration data. Zero reference was the ground surface. The casing configuration was assumed to consist of 6-inch ID casing from surface to 60 ft. A correction factor for casing thickness of 0.625 in. was used over the entire borehole. Dead time corrections were applied to the SGLS data where dead time exceeded 10 percent. Where SGLS dead time exceeds 40 percent, HRLS data are substituted. No water correction was applied.

High rate log spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Verification spectra were used to determine the energy and resolution calibration for processing the data using APTEC SUPERVISOR. Concentrations for HRLS spectra were calculated in EXCEL (source file G1cMay04.xls). Logging was conducted in a single casing string for each log run. A correction for a 0.625-in.-thick casing was applied to the HRLS data. Dead time corrections are applied to the HRLS data where dead time exceeds 10.5 percent. Where HRLS dead time exceeds 30 percent, shields are used to reduce dead time and a shield correction factor is applied. Both internal and external shield were used in the interval from 16 to 27 ft. No water corrections were required.

The passive neutron log is presented as raw count rate vs. depth, and the log is intended for qualitative evaluation only. However, the ^{3}He detector used in the passive neutron log is known to be affected by high gamma flux (Knoll 2000) and it is highly probable that the high neutron count rates reported between 12 and 29 ft are associated with high gamma activity and do not represent the presence of TRU. A plot showing PNLS response plotted as a function of ^{137}Cs activity is attached. For ^{137}Cs concentrations above 10^{6} pCi/g, there appears to be a correlation between passive neutron count rate and ^{137}Cs concentration. Therefore, the neutron anomaly between 15 and 28 ft appears to be primarily the result of gamma activity and not TRU. Minor passive neutron activity at 45 and 55 ft is also probably due to high gamma levels.

Log Plot Notes:

Separate log plots are provided for gross gamma and dead time, naturally occurring radionuclides (^{40}K, ^{238}U, and ^{232}Th), and man-made radionuclides. Repeat logs for man-made radionulcides are included for the SGLS and the HRLS. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, or casing correction. A combination plot is also included to facilitate correlation. An additional combination plot is provided to show the passive neutron log with total gamma, dead time, and ^{137}Cs concentration.

Results and Interpretations:

^{137}Cs was the only man-made radionuclide detected in this borehole. ^{137}Cs was detected at the ground surface at a concentration of 60 pCi/g. Between ground surface and 12 ft, concentrations varied from 36 to 80 pCi/g. Beginning at 12-ft depth, ^{137}Cs concentration increases rapidly to a maximum value of approximately 2.36×10^{8} pCi/g at 20-ft depth. The zone of maximum concentration appears to be less than 1 ft thick. Between 20 and 32 ft, ^{137}Cs concentrations decrease to between 10^{3} and 10^{4} pCi/g and remain in this range to total depth at 58 ft. Sharp peaks occur at 35, 45, and 55 ft; these may be related to accumulated contamination at casing joints. As discussed above, this boring is known to have significant internal contamination, and at least some of the observed contamination can be attributed to internal casing contamination and/or sonde contamination. Assuming the contamination on the sonde (as determined from pre- and post-run verification spectra) is equivalent to about 2.6 cps for the 662 keV photopeak, this is equivalent to an "apparent" ^{137}Cs concentration of about 1.7 pCi/g. Clearly, this represents a relatively insignificant effect on the total concentrations reported in the log. The contribution from contamination on the sonde also appears to be significantly less than total contamination levels measured in the borehole,

suggesting that the effects of internal casing contamination are much greater than that of sonde contamination. The contamination observed at 55 ft (approximately 10^6 pCi/g) probably represents the highest level that can be attributed to internal contamination. The intense gamma activity at 20 ft strongly suggests a relatively thin layer of extremely high levels of ^{137}Cs contamination. Even assuming that the effects of internal casing contamination contribute to "apparent" concentrations on the order of 10^3 to 10^6 pCi/g, the effect on ^{137}Cs levels at 20 ft would still be less than 1 percent.

The passive neutron log appears to have been affected by high gamma activity and should not be considered a reliable indicator of TRU in this borehole. Careful examination of HRLS spectra at 20 ft fails to show any gamma lines indicative of ^{239}Pu or other transuranics. However, it is likely that the intense radioactivity associated with ^{137}Cs, as well as attenuation in the tungsten shielding, would effectively mask the presence of lower-energy gamma lines typical of TRU. HRLS spectra collected with both shields exhibit low-energy gamma lines, which are attributed to the characteristic K_α and K_β fluorescence lines for tungsten.

The passive neutron log also exhibits a value of 10 cps at ground surface, decreasing to less than 0.1 cps at 3-ft depth. The source of this activity is not known. SGLS spectra from this depth range show no evidence of gamma lines indicative of transuranic elements. For ^{239}Pu, the minimum detection limit is estimated to be about 85,000 pCi/g, based on the 375 keV line.

Repeat logs for the SGLS demonstrate good repeatability for the natural radionuclides (1461, 1764, and 2614 keV). However, the repeat plot for ^{137}Cs (662 keV) shows an average decrease of approximately 34 percent in the repeat log relative to the original log. This discrepancy is highly unusual, and an effort was made to assess the possible cause. In C4671, the repeat section was collected in the borehole interval between 2 and 8 ft. The original log data were collected in run 4, which extended from 11 ft to ground surface. The logging engineer immediately lowered the sonde to the 8-ft depth and logged the repeat section from 8 ft to 2 ft. Time stamps on the field spectra files indicate that only 3 minutes elapsed from the last measurement of run 4 at the ground surface (DE321064) and the first run of the repeat section (DE321065). The elapsed time between the original measurement in the repeat interval (DE321056 at 8 ft) and the last repeat measurement (DE321071 at 2 ft) is approximately 27 minutes. Within this time period, loss of efficiency in the detector should have been negligible, and the agreement in natural radionuclides supports this observation. Comparison of individual spectra also indicates that the only significant change is a loss of counts within the 662 keV photopeak. Collectively, these observations indicate that the detector continued to function normally, and that at least some of the contamination on the sonde (or on the inside of the casing within the repeat interval) was dislodged between completion of log run 4 and the beginning of log run 5. The nature of this contamination, or the mechanism by which it was dislodged, is not known.

Repeat logs for the HRLS demonstrate excellent repeatability for the ^{137}Cs measurement in the high activity interval.

References:

Fecht, K.R., G.V. Last, and K.R. Price, 1977. *Evaluation of Scintillation Probe Profiles from 200 Area Crib Monitoring Wells*, ARH-ST-156, Atlantic Richfield Hanford Company, Richland, Washington.

Knoll, G F, 2000. *Radiation Detection and Measurement*, 3rd Edition, New York, New York.

1

Evaluation of Sonde Contamination Incident in Boreholes C4176 and C4671

Introduction

On September 15, 2004, radioactive contamination was detected on the spectral gamma logging system (SGLS) designated Gamma 4E while logging in borehole C4176, near the 216-S-20 Crib. Evaluation of the log data showed that the sonde was contaminated with residual ^{137}Cs, and that data collected in borehole C4176 between 241 and 66 ft on September 14, 2004 are suspect. This incident prompted a thorough investigation of recent log data to determine how the sonde became contaminated and to assess any effect this contamination may have had on other borehole logs. This document summarizes findings and provides recommendations to avoid future occurrences.

Evaluation of Log Data

Log data for borehole C4176 are shown in Figure 1. For discussion purposes, the logging activities are broken down into three separate events, with individual runs within each event identified by letters. All log runs were made with SGLS Gamma 4E.

Date	Event	Depth Interval
August 26	Run 1	53 – 0 ft
September 14	Run 2a	241 – 66 ft
September 15	Run 2b	87 – 52 ft
September 28	Run 3a	0 – 235 ft
September 29	Run 3b	240.4 – 220 ft

Borehole C4176 was drilled with a cable tool rig in two stages, using telescoping casing to seal off contamination in the upper vadose zone. In the first stage, 10-3/4-in. OD casing was set at 55 ft. The borehole interval from 0 to 53 ft was logged on August 26, 2004 (Run 1). The SGLS detected high gamma activity from 20 to 35 ft. ^{137}Cs was detected at the ground surface and from 19 to 53 ft. Near the ground surface, 131 pCi/g was detected at 1-ft depth. The maximum concentration of 3,540 pCi/g was detected at 24-ft depth. An additional peak was observed at 51 ft with a maximum concentration of 73 pCi/g. ^{60}Co was detected from 33 to 38 ft, with a maximum concentration of 1.4 pCi/g at 33 ft. Lesser amounts of ^{60}Co were detected at 41 and 43 ft and from 50 to 52 ft. ^{234m}Pa (an indicator of anthropogenic ^{238}U) was detected from 33 to 40 ft, with a maximum concentration of 201 pCi/g at 33 and 34 ft. It is likely that both ^{60}Co and ^{238}U also exist with the high ^{137}Cs interval from 20 to 33 ft, but they are not detected because of the intense gamma activity associated with ^{137}Cs. Fecht et al. (1977) reports Pu, Sr, ^{137}Cs, ^{60}Co, and U as potential contaminants at the 216-S-20 Crib.

^{137}Cs was also detected in both the pre- and post-run verification spectra. This was attributed to "shine" from surface contamination. This is a relatively common occurrence and the presence of a 662 keV peak from ^{137}Cs in the verification spectra was not considered unusual, especially since the log showed relatively high values close to the surface.

An 8-5/8-in. OD casing was used to advance the borehole from 55 to 245 ft in depth. On September 14, 2004, the hole was logged inside the 8-5/8-in. casing (Run 2a). Since the hole was considered "low risk," no attempt was made to swab the casing prior to logging. ^{137}Cs was again detected in the pre-run verification spectra, but this was not considered unusual since the counts were comparable to those seen previously (3.72 cps, compared to 3.99 cps). The sonde was lowered to the bottom of the hole at 241 ft and logging proceeded upward to 66 ft. Significant ^{137}Cs was noted at the bottom of the hole and in all subsequent log spectra collected on that day, as well as in the post-run verification spectra (2.6 cps). A well-defined peak was present at 662 keV in all spectra, and the net count rate for the 662-keV peak varied from 2.5 to 7.1 cps, with a mean value of 3.4 cps. This is equivalent to a persistent apparent ^{137}Cs concentration on the order of 1.3 to 3.8 pCi/g, and is consistent with the net count rates of 3.7 and 2.6 cps observed in the pre-run and post-run verification spectra.

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During the logging operation, the logging engineer wiped the cable as it was withdrawn from the borehole. After approximately 60 ft of logging (sonde at about 180-ft depth), the logging engineer was replaced. The sonde was withdrawn from the hole at the end of the day and a post-run verification spectrum was collected. ^{137}Cs was also noted in the post-run spectrum. The following day (September 15), a pre-run verification spectra was collected and the sonde was lowered to a depth of 87 ft and logging proceeded upward to 52 ft (Run 2b). The interval from 87 to 67 ft was labeled as a repeat section, since it had been logged the previous day. While logging operations were underway, radiological control technicians (RCTs) were notified to survey the wipes used to clean the cable, sonde, and centralizer from the previous day. Contamination was found. The gloves of both logging engineers were also contaminated. The sonde was left inside the borehole while a complete radiation survey of the logging system was performed. When the sonde was removed from the borehole, the centralizer was contaminated. A post-run verification spectra was not collected on this day because of the delay in removing the sonde from the borehole. Evaluation of log data for September 15 (Run 2b) does not show evidence of sonde contamination. Apparent ^{137}Cs concentrations in the repeat interval are at or near the MDL of approximately 0.2 to 0.3 pCi/g. A borehole swab in C4176 after the logging events did not detect any evidence of contamination.

On September 28 and 29, 2004, borehole C4176 was re-logged after it had been determined that log data collected on September 14 was affected by contamination on the sonde. Run 3a on September 28 extended from the ground surface to 235 ft. After logging was completed, the cable was checked for contamination as the sonde was withdrawn from the hole. None was found. Run 3b was made on September 29. In this run, the sonde was allowed to touch bottom and the hole was logged from 240.4 to 220 ft. Total depth of the hole was 240.4 ft on September 29, compared to 241.0 ft on September 14. Pre- and post-run verification spectra collected on September 28 and 29 show only trace amounts of ^{137}Cs. A background spectrum collected prior to logging on September 29 also shows only minor ^{137}Cs activity, which can be attributed to "shine." ^{137}Cs was detected at the bottom of the hole at an apparent concentration of 3.5 pCi/g. This is very close to the value observed at the bottom of the hole on September 14. ^{137}Cs was also detected from 231 to 233 ft, with a maximum concentration of about 0.6 pCi/g, and from 156 to 157 ft, with a maximum concentration of about 0.33 pCi/g. The peak from 156 to 157 ft corresponds to an increase in ^{137}Cs observed on the September 14 log.

Probable Source of Contamination

When the sonde was examined after logging on September 15, sandy material on the centralizer was found to be contaminated. This material most likely originated from borehole C4176, and it is likely that contaminated material was encountered near the bottom of the hole. Material lost from the drive barrel during sampling may have contributed to low levels of internal contamination in C4176. Both the "contaminated" SGLS log on September 14 and the repeat log on September 28 consistently detected ^{137}Cs at the bottom of the hole and from 156 to 157 ft.

Prior to logging at C4176, Gamma 4E had most recently been used to log borehole C4671 on September 1, 2004. This was a direct push tube (DPT) installed at the 216-A-4 Crib. It was installed approximately 4 ft away from borehole C4560, which had been suspended after unanticipated levels of subsurface contamination were encountered. C4671 was intended to investigate this contamination. It consisted of a 6-in.-diameter heavy wall steel casing with a solid tip driven into the ground. Because of the plug in the end of the casing, it was considered a "low risk" borehole even though it was known to penetrate significant contamination. ^{137}Cs concentrations in excess of 236 million pCi/g were measured in this borehole. This borehole was also logged with the high rate logging system and the passive neutron logging system. Further investigation showed that the passive neutron sonde and the external shield for the high rate logging system were also contaminated. A borehole swab in C4671 also indicated contamination.

From this information, it is concluded that the initial source of the sonde contamination was borehole C4671. However, the possibility of internal contamination in borehole C4176 remains probable, even though a borehole swab after logging operations failed to detect anything. Between logging events on September 14 and September 15, the cable, sonde, and centralizer were cleaned. The wipes and other material from this operation were bagged. When they were checked on September 15, contamination was

found. Comparison of log data from September 15 (run 2b) and September 14 (run 2a) clearly show that most, if not all, of the contamination on the sonde was removed by the cleaning. When the sonde was removed from the borehole on September 15, fine-grained material had accumulated on the centralizer; this material was found to be contaminated. Since the cleaning would have removed all visible material, it is almost certain that this material came from borehole C4176. This contamination is most likely related to material lost from drive barrels or samplers when the borehole was at or near total depth.

Evaluation of Verification Data

Investigation of the contamination incident led to evaluation of previous verification spectra. Table 1 summarizes borehole intervals logged with SGLS Gamma 4E between August 26 and September 29, 2004. This time period extends from the first log of C4176 through the final logging operations performed to replace suspect data, and lists all logs within that period. The radioactive contamination is known to be ^{137}Cs, so all verification spectra have been reprocessed to "force" a region of interest for the 661.62 keV gamma line from ^{137}Cs. In addition, the net count rate for the 1460.83 keV gamma line from ^{40}K (typically the most prominent peak in the verification spectrum) is shown, and the ratio between net count rate for the 662 peak vs. net count rate for the 1461 peak is also shown.

The presence of a 662-keV peak in verification spectra is not uncommon, and net count rates of 1 to 4 cps can be attributed to "shine," or ambient activity from surface contamination, or other sources unrelated to the logging activity. The exceptions are verification spectra collected on September 1, 2004, at borehole C4671. Net count rates of about 34 cps were observed for the 662 keV gamma line in both the pre-run and post-run verification spectra collected that day. Although this is substantially greater than normal, the fact that it appeared in the pre-run verification spectra indicated that there were unusually high ambient levels of ^{137}Cs. Since there appeared to be a slight decrease from the pre-run to the post run, the observed ^{137}Cs peak was attributed to "shine." However, it is known that the overall efficiency of the SGLS detector tends to decrease slightly over the course of a day. Therefore, the net counts at 662 keV were "normalized" relative to net counts for the ^{40}K peak at 1461 keV, which should be at a more consistent level. The change in this ratio indicates that an increase in the relative amount of ^{137}Cs occurred between the beginning and end of the log run on September 1, and suggests the sonde may have become contaminated in that borehole. Comparison of the 662 peak to the 1461 peak in the verification spectra leads to an estimated increase of about 2.6 cps in net activity for the 662 keV peak. However, the high "ambient" ^{137}Cs activity in the verification spectra (about 34 cps) masked this increase. When the sonde was next used in C4176 on September 14, the pre-run verification spectra had a 662 keV peak with a net count rate of 3.7 cps. This was comparable to typical values commonly attributed to "shine" at other locations and was actually less than the 4 cps observed in the verification spectra when C4176 was first logged on August 26. However, the minimum count rate for the 662 keV peak observed in log spectra collected on September 14 was 2.5 cps. This is roughly the same as the estimated net increase in ^{137}Cs activity observed on September 1, and leads to the conclusion that the sonde was contaminated in borehole C4671 on September 1, but was not detected until the logging system was next used in borehole C4176 on September 14.

The sonde was wiped down after the log run on September 14 and before logging on September 15. The wipes were contaminated. Log data collected on September 15 appears to be free of the "residual" ^{137}Cs activity noted on September 14, and it is concluded that most, if not all, of the contamination on the sonde was removed by routine wiping. The sonde was checked by RCTs after the log run of September 15, and no contamination was found. After C4176, the sonde was next used on September 22 in borehole C4665 (299-E25-95), a new groundwater well near AX Farm. ^{137}Cs activity was noted in both pre-run and post-run verification spectra, and the borehole log indicates a maximum ^{137}Cs concentration of 3.3 pCi/g at 4 ft, decreasing to below the MDL at about 25 ft. On the next day, the borehole interval below 260 ft was logged and only intermittent traces of ^{137}Cs at the MDL were found. This log profile is consistent with other logs in the area and does not appear to have been affected by any contamination on the sonde. On September 27, the sonde was used to log C4570 (699-17-27P) in the 100-K Area, and only intermittent traces of ^{137}Cs at the MDL were found. These are common in all logs at Hanford. During routine log processing, a region of interest (ROI) is "forced" for the ^{137}Cs peak at 662 keV and random fluctuations lead to intermittent traces where the net counts are at or slightly above the minimum detectable activity.

When these spectra are examined, there is no evidence of a peak at 662 keV and the traces are not considered statistically significant.

Conclusion and Recommendations

Available evidence indicates the SGLS Gamma 4E sonde was most likely contaminated from logging operations conducted in borehole C4671 on September 1. However, the contamination was not detected because of high ^{137}Cs concentrations throughout the borehole and very high "ambient" ^{137}Cs activity at the surface. Since C4671 was classified as "low risk," no radiological survey was performed and the contamination went undetected. When the sonde was next used on September 14 in borehole C4176, the ^{137}Cs activity observed in the pre-run verification spectrum did not appear unreasonable for "shine," but the persistent level of 2.5 to 3 cps throughout the logged interval clearly indicated the sonde was contaminated, and led the logging engineer to request a radiological survey of the wipes. Evaluation of verification spectra and log data collected on September 15 and afterward shows that the contamination was removed by routine wiping, and the sonde is no longer contaminated. Repeat logs in borehole C4176 indicate minor ^{137}Cs concentrations from 157 to 158 ft and near the bottom of the hole. The presence of contamination associated with fine-grained material on the centralizer after the log run on September 15 strongly suggests the presence of contaminated material on the inside of the 8-5/8-in. casing in borehole C4176. Before C4176 is abandoned, a sample should be collected from the bottom of the borehole and analyzed for comparison with the sandy material from the centralizer.

The relatively high background gamma activity at 662 keV effectively masked the presence of contamination on the sonde, but Stoller logging personnel quickly detected it when the sonde was next used.

Evaluation of verification spectra and log data collected since September 15 clearly shows that the sonde is no longer contaminated. However, the fact that contamination was picked up in a "low risk" borehole strongly suggests that all boreholes should be swabbed prior to logging, regardless of risk category. As an added precaution, geophysical logging personnel should have radiation detection instruments available at the logging site, so that suspected contaminated material can be more quickly identified and reported. These instruments are provided through the Grand Junction Office. It is not the intent to supplant the existing radiation control program, but to provide a means for early warning in low-risk situations where full-time RCT coverage is not practical.

Table 1. Summary of Gamma 4E Log Data from 8/26/04 to 9/29/04

Date	Borehole	Depth Interval	Verification Spectra	^{137}Cs (0662) & ^{40}K (1461) data			Discussion of Results
				0662 cps	1461 cps	0662/1461	
8/26/04	C4176	53-0 22-17	DE281CAB DE281CAA	3.99 3.95	20.89 20.80	0.191 0.190	Initial log run in C4176. 0662 peak typical of ^{137}Cs "shine." ^{60}Co, ^{134}Cs and ^{235}U (^{234m}Pa) detected. Maximum ^{137}Cs is 3541 pCi/g at 24 ft.
8/30/04	C4260 299-E33-48	287-59	DE291CAB DE291CAA	1.13 1.14	20.83 21.01	0.054 0.054	Only intermittent traces of ^{137}Cs at or near MDL
8/31/04	C4260 299-E33-48	138-115	DE301CAB DE301CAA	0.62 1.18	20.93 21.48	0.029 0.055	
8/31/04	C3426 299-W15-46	197-110 120-110	DE311CAB DE311CAA	0.40 0.74	20.79 20.16	0.019 0.037	Only intermittent traces of ^{137}Cs at or near MDL
9/01/04	C4671	58-48 49-47 47-10 11-0 8-2	DE321CAB DE321CAA	34.36 33.96	21.11 19.29	1.627 1.760	Multiple SGLS runs with varying count times to deal with high gamma activity and detector dead time. High ^{137}Cs in pre-run attributed to "shine." Extremely high levels of ^{137}Cs detected throughout the borehole. Loss of efficiency masks increase in ^{137}Cs on sonde in post-run. Net increase in 0662 approximately 2.6 cps. Borehole swabbed on 9/04 – evidence of contamination found. PNLS sonde and external shield for HRLS also found to be contaminated
9/14/04	C4176	241-66	DE331CAB DE331CAA	3.72 2.60	20.91 19.69	0.178 0.132	^{137}Cs in verification spectra actually lower than previous (DE281CAB/CAA above) 0662 net counts varied from 2.51 to 7.12 cps, with average 3.39 cps and median 3.27 cps.
9/15/04	C4176	87-52	DE341CAB	1.18	20.56	0.057	Sonde was wiped down from previous day. wipes found to be contaminated (after DE341CAB). Evidence of borehole contamination from previous day discovered. Sandy material on centralizer found to be contaminated after log run. Borehole swabbed on 9/??/04 – no evidence of contamination.
9/22/04	C4665 299-E25-94	0-183 150-260	DE351CAB DE351CAA	3.81 3.20	20.93 20.68	0.182 0.155	Maximum ^{137}Cs concentration 3.3 pCi/g at 4 ft – decreases to MDL at about 25 ft. ^{137}Cs below MDL (0.22 pCi/g) at 1 ft. Observed contamination likely related to previous ground surface
9/23/04	C4665 299-E25-94	259-326	DE361CAB DE361CAA	3.86 3.66	20.54 20.27	0.188 0.181	Traces of ^{137}Cs at MDL (0.17 – 0.22 pCi/g).
9/27/04	C4570 699-17-27P	0-26 22-19	DE371CAB DE371CAA	0.69 0	19.91 20.47	0.035 0	Only intermittent traces of ^{137}Cs at or near MDL.
9/28/04	C4176	0-235	DE381CAB DE381CAA	0.44 0.57	20.75 20.20	0.021 0.026	Results indicate bottom of 10 ¾ casing at 58 ft; lower extent of contaminated zone at 57 ft. ^{137}Cs at or below MDL below 57 ft. Possible ^{137}Cs at 156-157 ft.
9/29/04	C4176	240.4-220	DE391CAB DE391BAB DE391CAA	0.53 1.02 0.39	20.21 2.33 19.92	0.026 0.436 0.019	DE391BAB is "background" with sonde hanging in air. TD is 0.6 ft higher than 9/14/04. ^{137}Cs at TD identical to 9/14/84. ^{137}Cs generally at or below MDL. Possible ^{137}Cs at 231 to 233 ft.

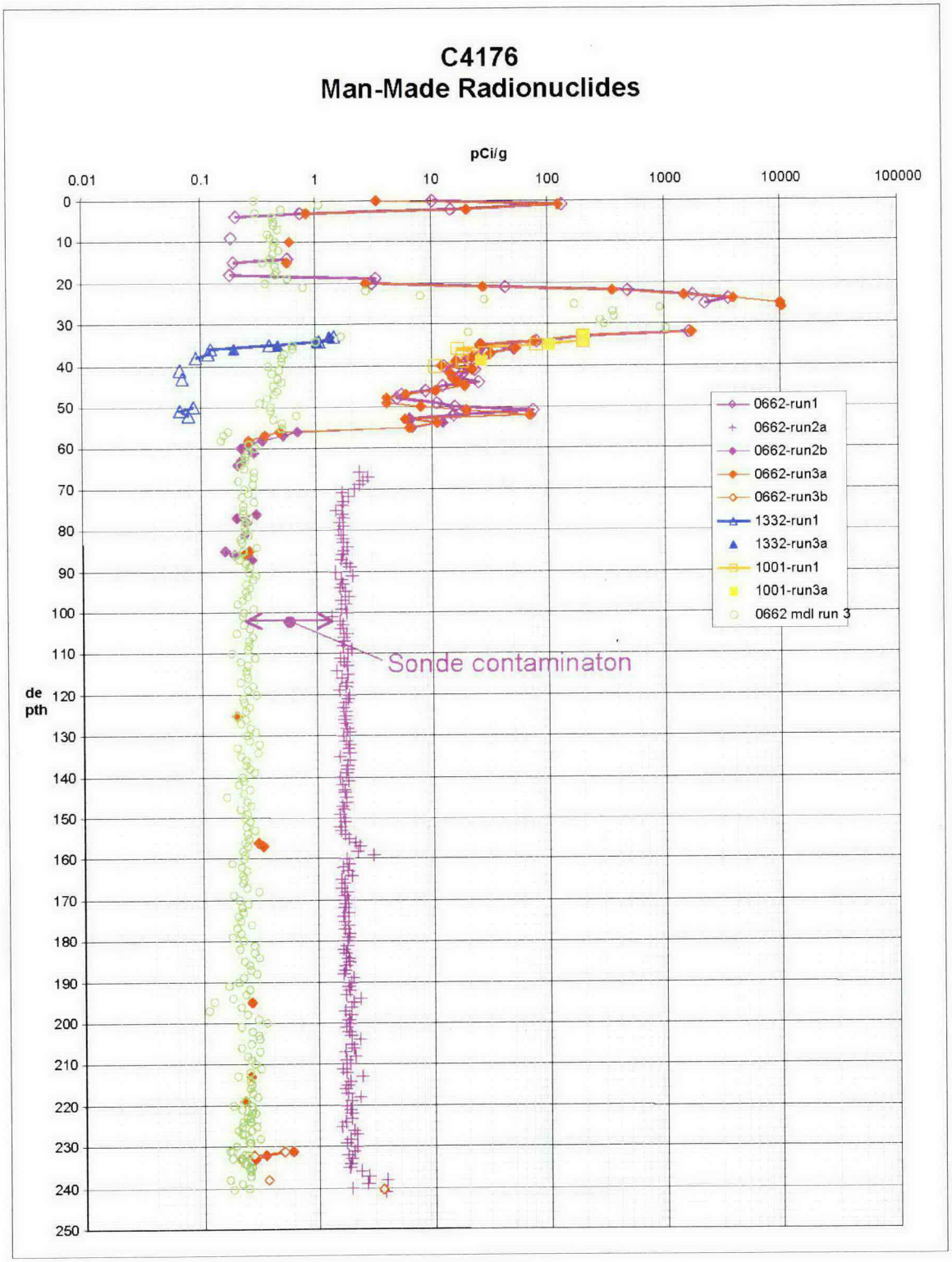
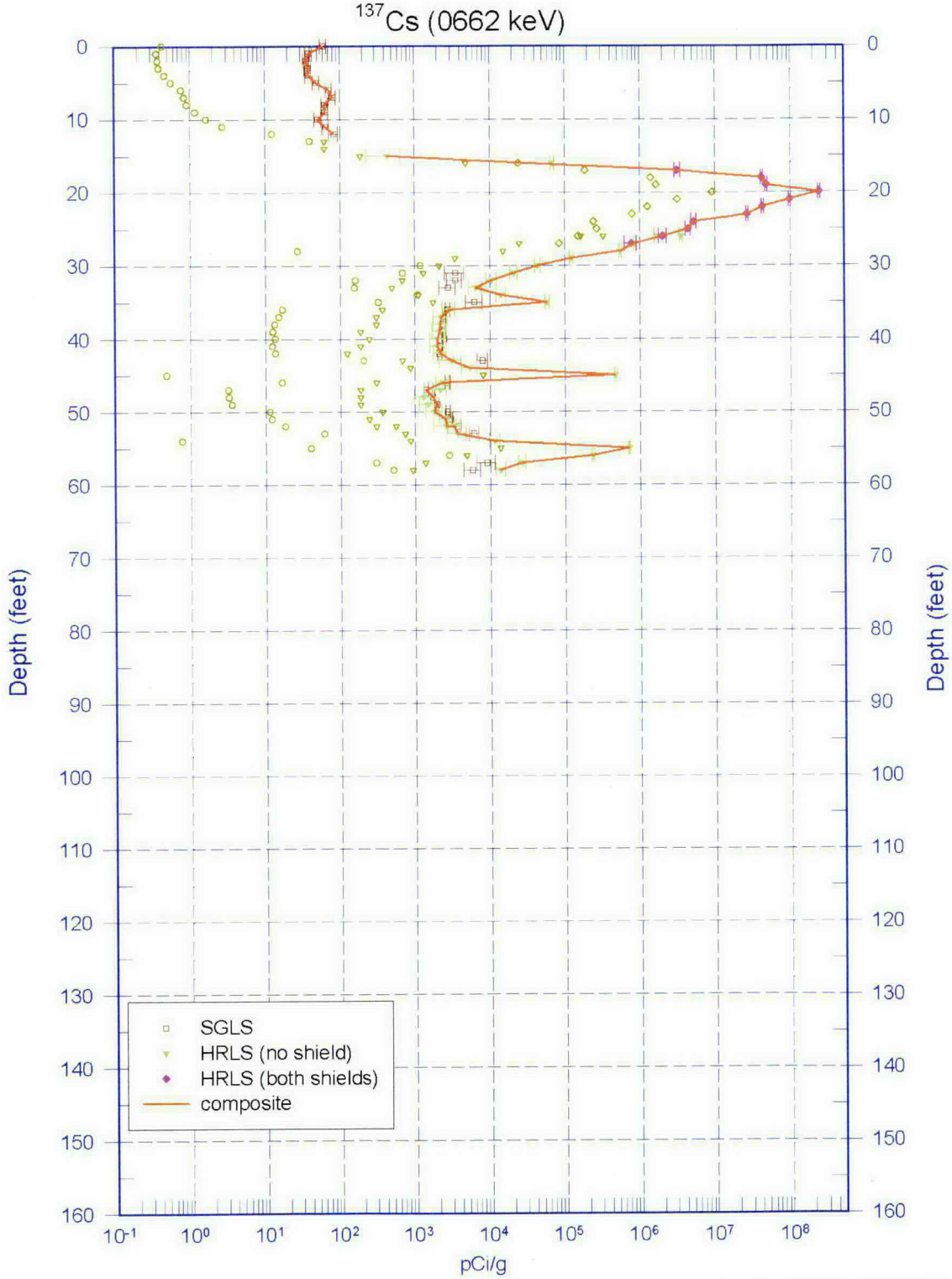


Figure 1. Preliminary Log Data C4176

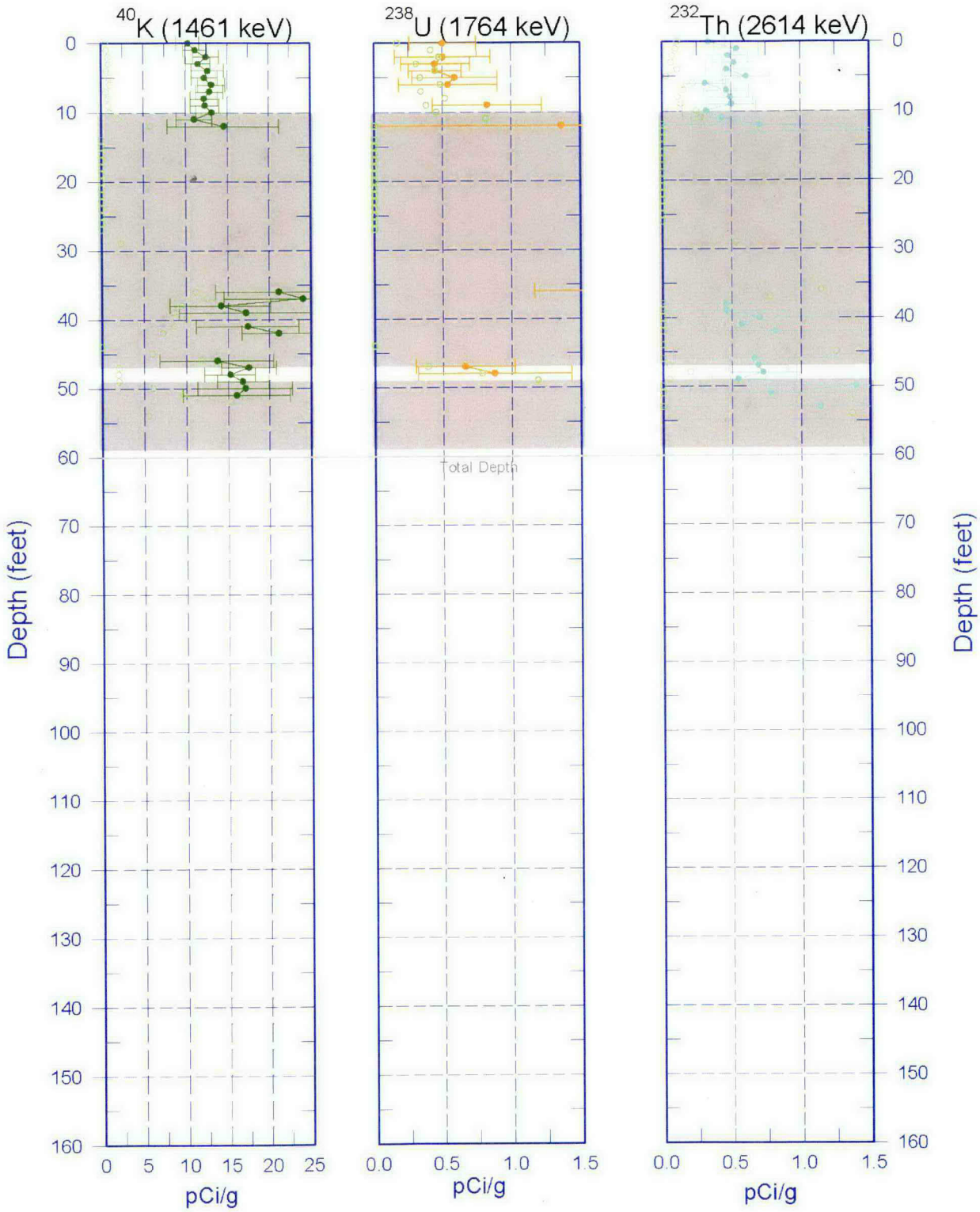
C4671
Man-Made Radionuclide



1 Zero Reference = Ground Surface

Last Log Date - 09/02/04

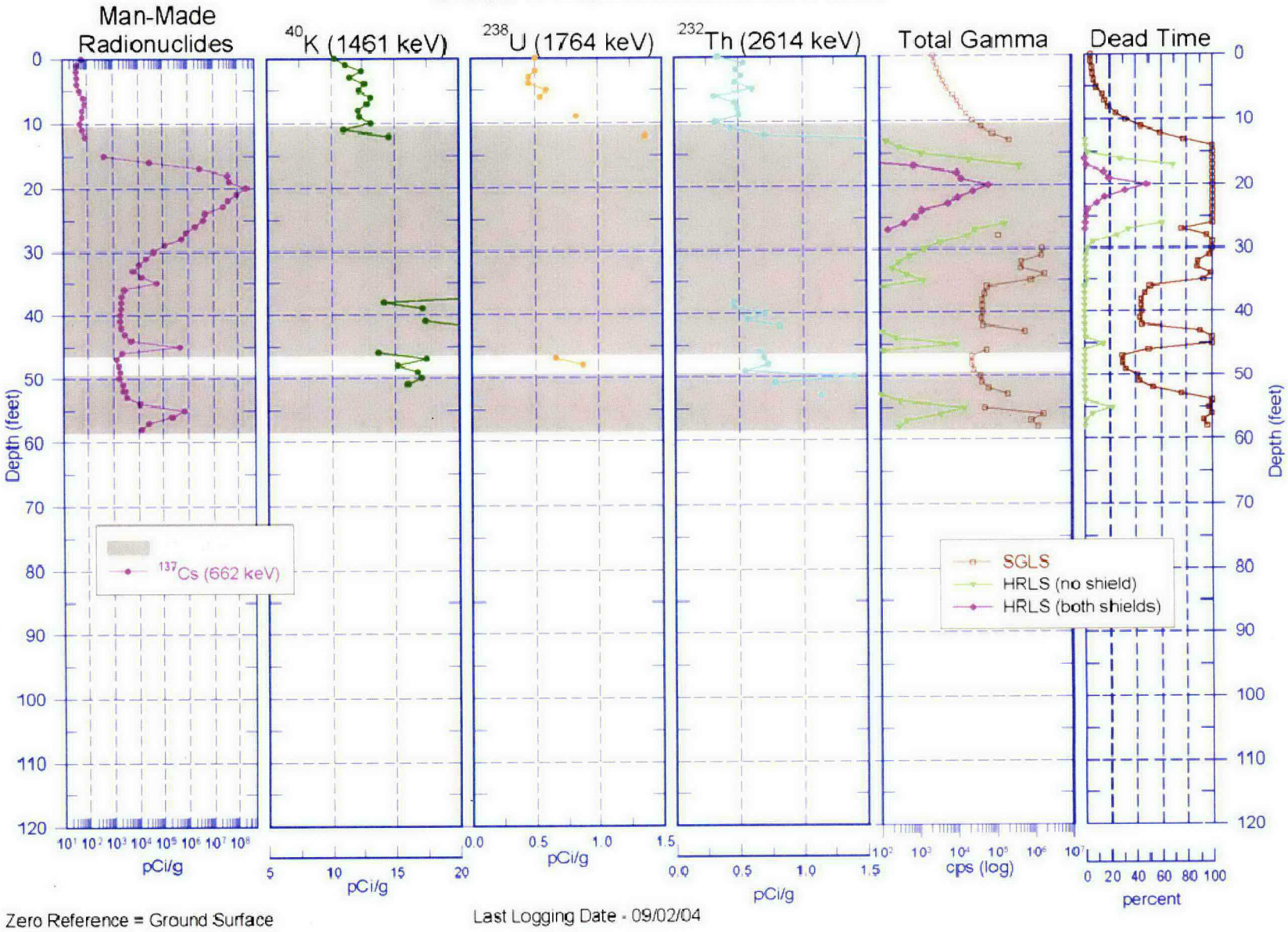
C4671
Natural Gamma Logs



Zero Reference = Ground Surface

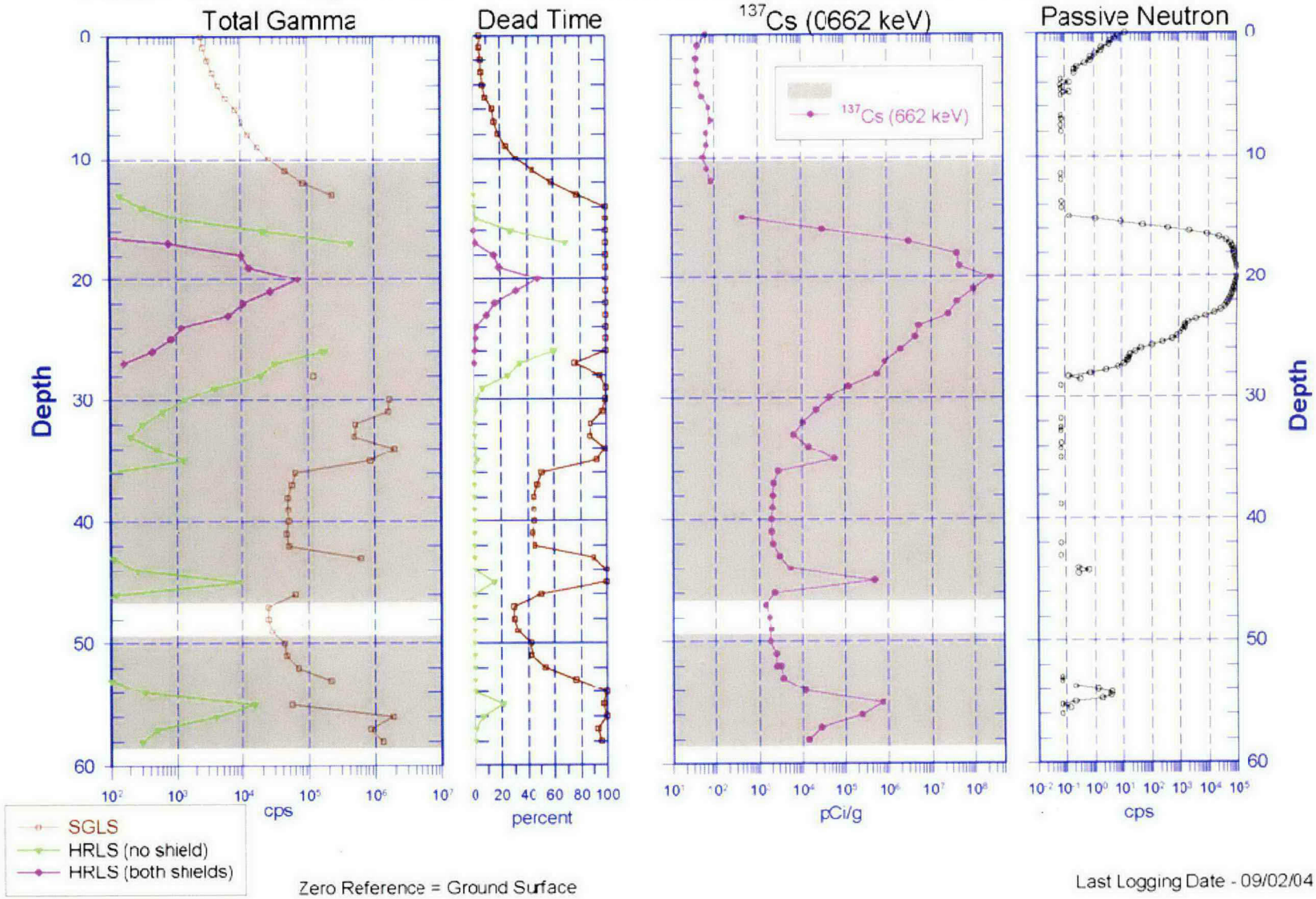
Last Log Date - 09/02/04

C4671 Combination Plot

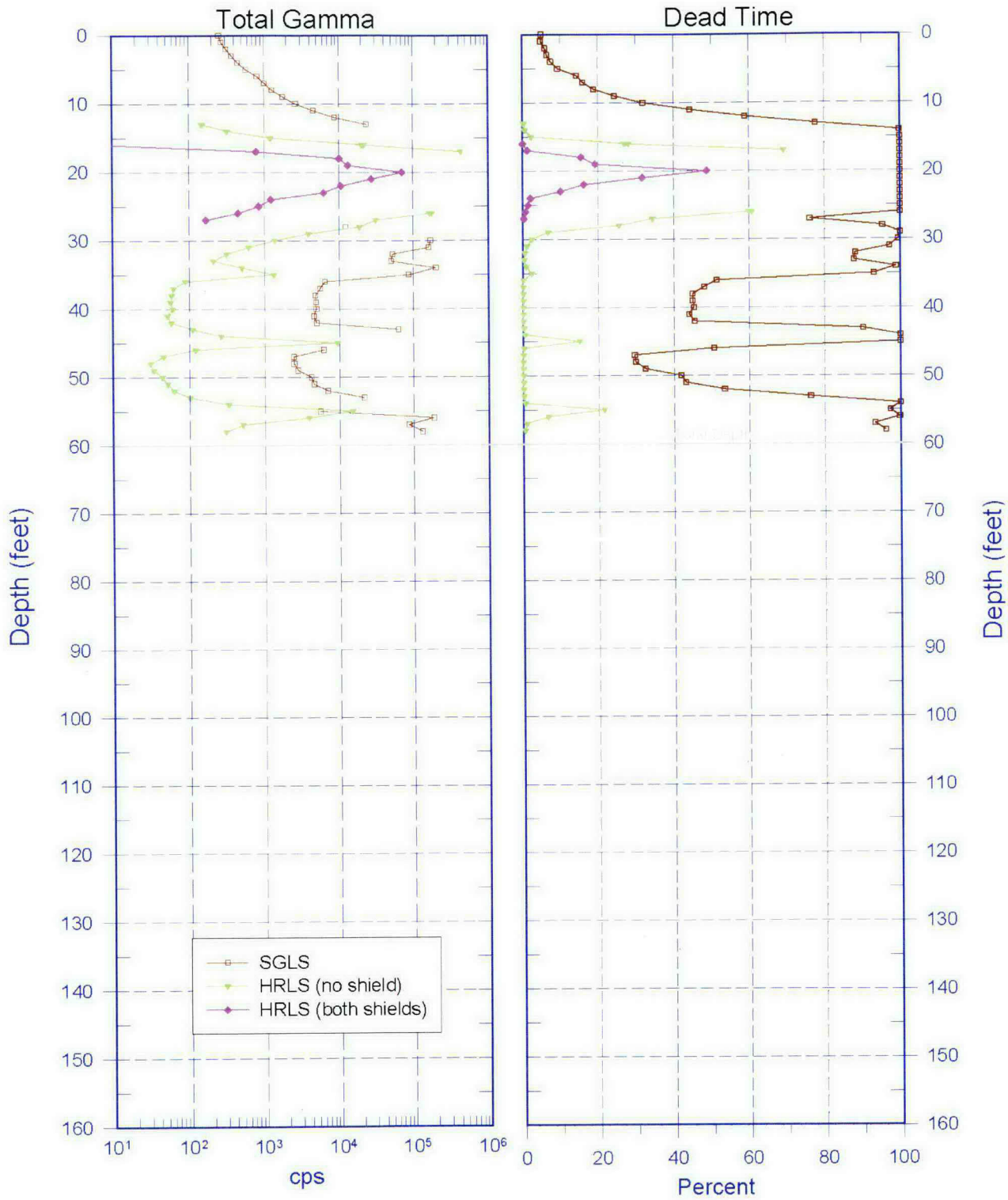


C4671

Total Gamma, Man-Made Radionuclides, and Passive Neutron



C4671
Total Gamma & Dead Time

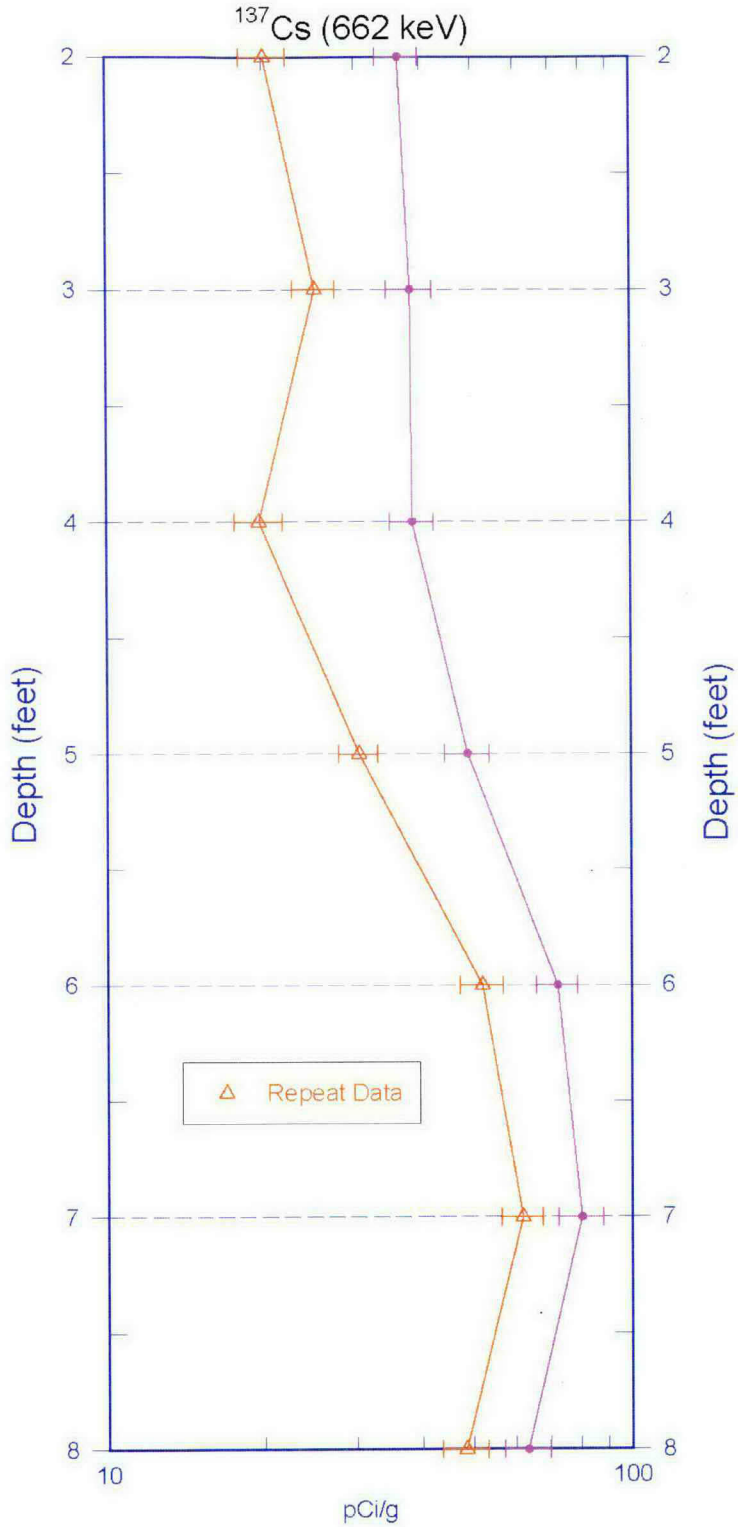


Zero Reference = Ground Surface

Last Logging Date - 09/02/04

C4671

SGLS Repeat Section: Man-Made Radionuclides

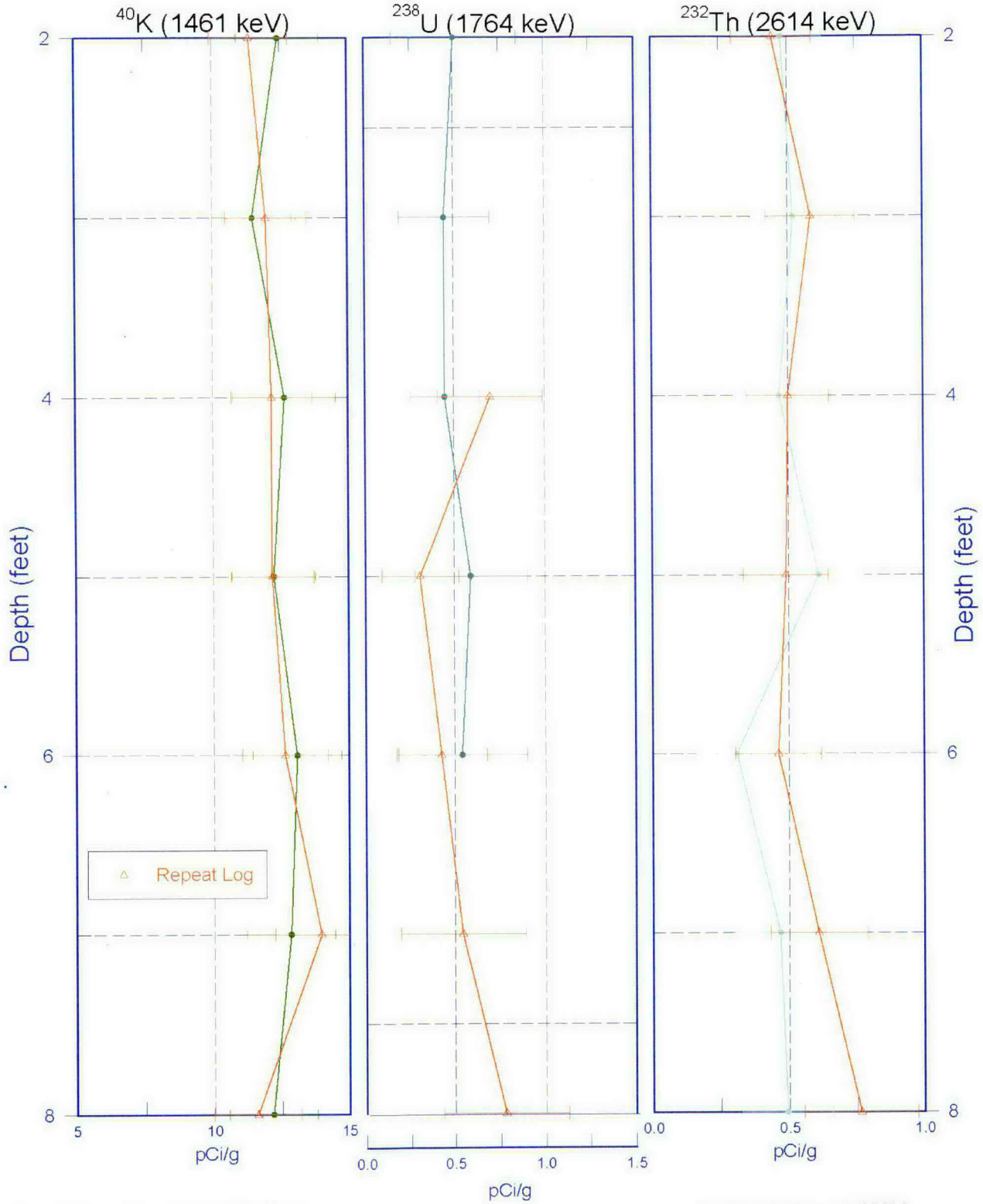


1 Zero Reference = Ground Surface

Last Log Date - 09/02/04

C4671

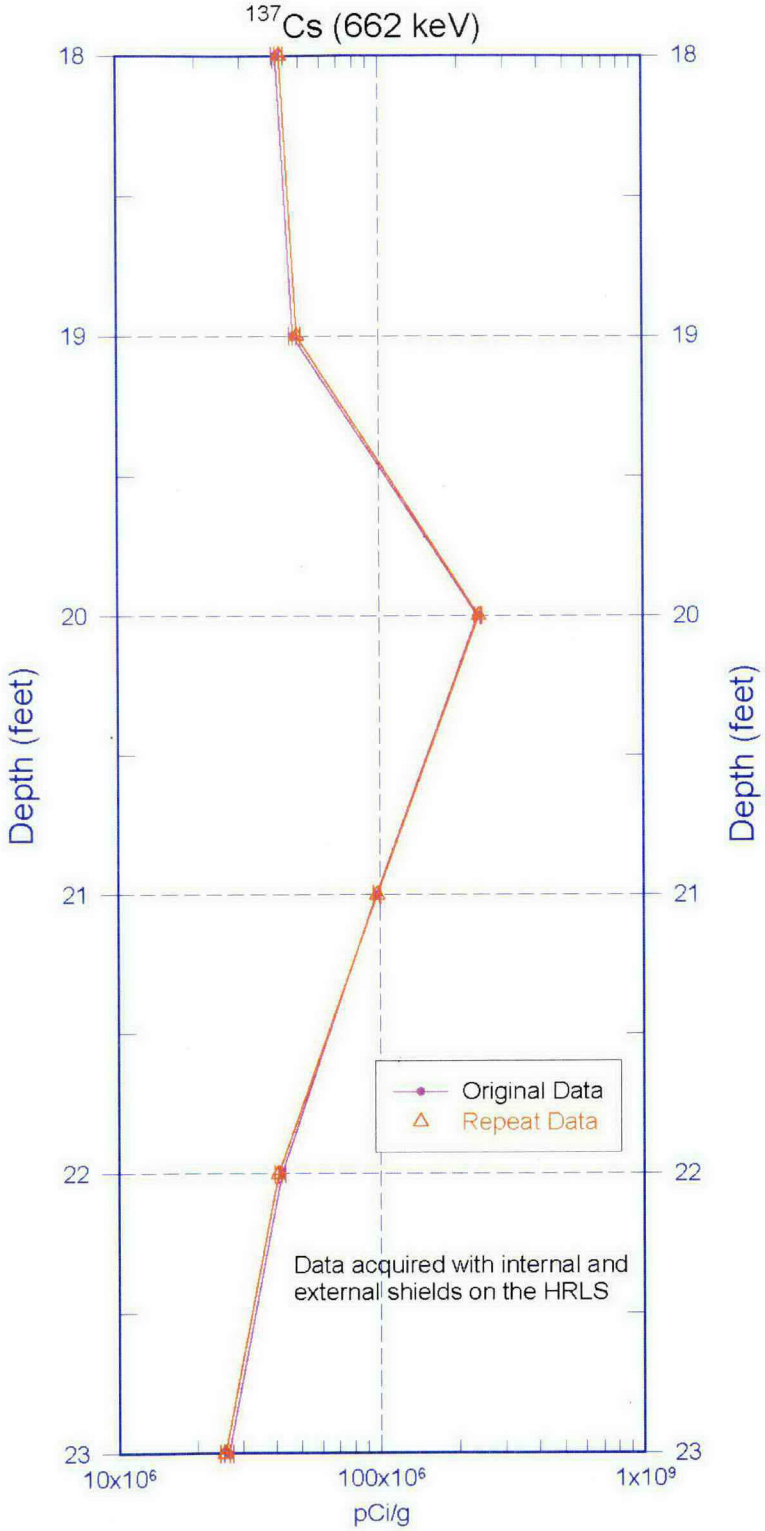
SGLS Repeat Section: Natural Radionuclides



Zero Reference = Ground Surface

Last Log Date - 09/02/04

C4671
HRLS Repeat Section: Man-Made Radionculide



Zero Reference = Ground Surface

Last Log Date - 09/02/04

1 **Attachment B-5. Geophysical Log – Borehole C5301 (216-A-4 Crib)**

Stoller
Hanford Office

HGLP-LDR-038, Rev. 1

C5301
Log Data Report

Borehole Information:

Borehole:	C5301		Site:	216-A-4 Crib	
Coordinates (WA St Plane)		GWL[1] (ft):	314.1	GWL Date:	01/11/07
North (m)	East (m)	Drill Date	TOC Elevation	Total Depth (ft)	Type
Not available	Not available	01/07	Not available	355	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Threaded Steel	0.5	10 3/4	9 5/8	9/16	0.5	85
Threaded Steel	4.3	8 3/4	7 3/4	1/2	4.3	355

Borehole Notes:

This borehole was first logged in December 2006 in the first casing string from the ground surface to 85 ft; a Log Data Report was issued for this logging event. Additional log data were acquired in January 2007 from 84 to 355 ft. The original Log Data Report is revised to include the data from the second logging event.

The logging engineer measured the casing diameters using a caliper and steel tape. Logging data acquisition is referenced to the ground surface. The same logging systems were used to acquire data for both logging events.

Logging Equipment Information:

Logging System:	Gamma 4N		Type:	SGLS (60%) SN: 45-TP22010A
Effective Calibration Date:	04/06/06	Calibration Reference:	DOE-EM/GJ1177-2006	
		Logging Procedure:	HGLP-MAN-002, Rev. 2	

Logging System:	Gamma 4H		Type:	NMLS SN: H310700352
Effective Calibration Date:	11/22/06	Calibration Reference:	HGLP-CC-002	
		Logging Procedure:	HGLP-MAN-002, Rev. 2	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2 Repeat	5	6 Repeat	7
Date	12/06/06	12/06/06	01/15/07	01/15/07	01/15/07
Logging Engineer	Pearson	Pearson	Pearson	Pearson	Pearson
Start Depth (ft)	0.0	46.0	355.0	165.0	137.0
Finish Depth (ft)	85.0	54.0	136.0	138.0	84.0
Count Time (sec)	200	400	100	100	100
Live/Real	R	R	R	R	R
Shield (Y/N)	N	N	N	N	N
MSA Interval (ft)	1.0	1.0	1.0	1.0	1.0
ft/min	N/A[2]	N/A	N/A	N/A	N/A
Pre-Verification	DN501CAB	DN501CAB	DN621CAB	DN631CAB	DN631CAB
Start File	DN501000	DN501086	DN621000	DN631000	DN631028

2 Page 1

Log Run	1	2 Repeat	5	6 Repeat	7
Finish File	DN501085	DN501102	DN621219	DN631027	DN631081
Post-Verification	DN501CAA	DN501CAA	DN621CAA	DN631CAA	DN631CAA
Depth Return Error (in.)	N/A	- 1	- 3.5	N/A	0
Comments	No fine-gain adjustment.	No fine-gain adjustment.	No fine-gain adjustment.	No fine-gain adjustment.	No fine-gain adjustment.

Neutron Moisture Logging System (NMLS) Log Run Information:

Log Run	3	4 Repeat	8	9	10
Date	12/06/06	12/06/06	01/15/07	01/16/07	01/17/07
Logging Engineer	Pearson	Pearson	Pearson	Pearson	Pearson
Start Depth (ft)	0.0	46.0	128.0	216.0	313.75
Finish Depth (ft)	85.0	54.0	84.0	127.0	215.0
Count Time (sec)	15	15	15	15	15
Live/Real	R	R	R	R	R
Shield (Y/N)	N	N	N	N	N
Sample Interval (ft)	0.25	0.25	0.25	0.25	0.25
ft/min	1.0	1.0	1.0	1.0	1.0
Pre-Verification	DH322CAB	DH322CAB	DH402CAB	DH412CAB	DH422CAB
Start File	DH322000	DH322341	DH402000	DH412000	DH422000
Finish File	DH322340	DH322373	DH402176	DH412356	DH422395
Post-Verification	DH322CAA	DH322CAA	DH402CAA	DH412CAA	DH422CAA
Depth Return Error (in.)	N/A	- 0.5	0	- 2	N/A
Comments	None	None	None	None	None

Log Run	11 Repeat				
Date	01/17/07				
Logging Engineer	Pearson				
Start Depth (ft)	300.0				
Finish Depth (ft)	276.0				
Count Time (sec)	15				
Live/Real	R				
Shield (Y/N)	N				
Sample Interval (ft)	0.25				
ft/min	1.0				
Pre-Verification	DH422CAB				
Start File	DH422396				
Finish File	DH422488				
Post-Verification	DH422CAA				
Depth Return Error (in.)	- 2.5				
Comments	None				

Logging Operation Notes:

Logging was conducted with a centralizer on each sonde and measurements are referenced to ground surface.

Analysis Notes:

Analyst:	Henwood	Date:	01/24/07	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging systems were performed before and after the day's data acquisition. The acceptance criteria were met for the SGLS and NMLS.

A casing correction for a 9/16-in. thick casing was applied to the SGLS data acquired from the ground surface to 85 ft. Below 85 ft, a correction for a 0.5-in. thick casing was applied.

NMLS data were not converted to volumetric moisture and are reported in counts per second (cps). There are no calibrations available for 7- and 10-in. boreholes. A change in the count rate at 85 ft is due to the change in casing diameter.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with an EXCEL worksheet template identified as G4NApr06.xls using an efficiency function and corrections for casing and dead time as determined from annual calibrations.

A repeat section was collected with the SGLS from 46 to 54 ft at 400 seconds and 0.5 ft intervals to derive additional detail of the highest contamination. For purposes of this report these log data are presented as main log data because of the improved counting statistics. Repeat sections were also acquired for the SGLS and NMLS in the second logging event in January.

Results and Interpretations:

Cs-137 was the only manmade radionuclide detected. It was detected from the ground surface to 23 ft and from 46 to 76 ft. The maximum concentration of 15 pCi/g was recorded at 49 ft.

Log run 1 U-238 data indicate radon (Rn-222) in the borehole after approximately 90 minutes of logging. The Rn-222 daughter, (i.e. Bi-214) apparent concentrations increase steadily, consistent with ingrowth of the daughter from Rn-222, during the remainder of the day's logging. It is most apparent from 46 to 54 ft where the 400 second counting time was utilized and the daughter has apparently reached decay equilibrium with the parent.

Moisture data indicate some variability, most notably from 282 to 296 ft. This interval coincides with relatively elevated KUT concentrations that likely reflect fine-grained sediment such as clay.

The SGLS and NMLS repeat logs show good repeatability.

List of Log Plots:

Depth Reference is ground surface
Depth Scale - 20 ft/inch except for repeat logs

Man-made Radionuclides
Natural Gamma Logs
Combination Plot
Combination Plot (0-360 ft)
Total Gamma, Dead Time, & Moisture
Repeat of Manmade Radionuclides
Repeat of Natural Gamma Logs (46-54 ft)
Repeat of Natural Gamma Logs (138-165 ft)
Repeat of Total Gamma, Dead Time, & Moisture (46-54 ft)
Repeat of Total Gamma, Dead Time, & Moisture (138-165 ft)

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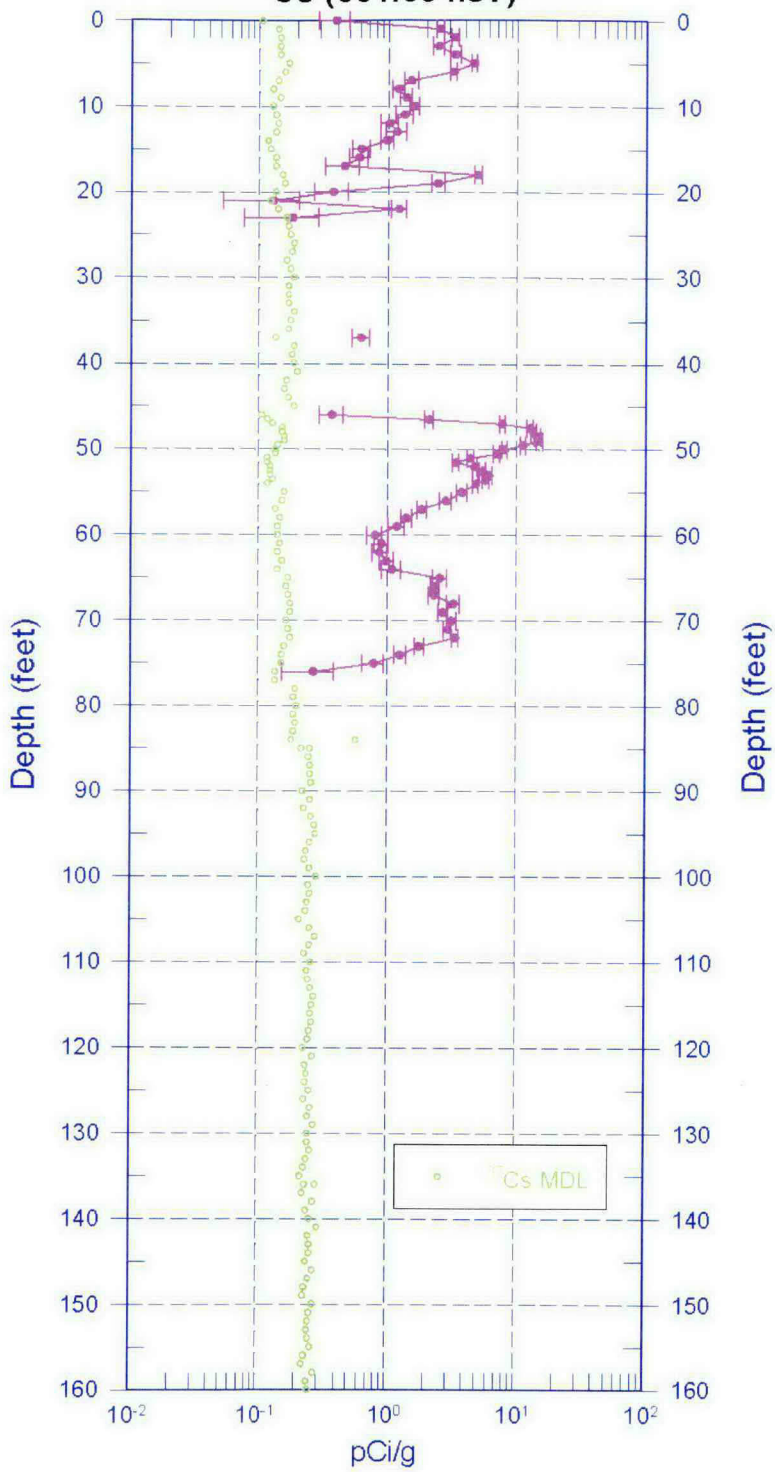
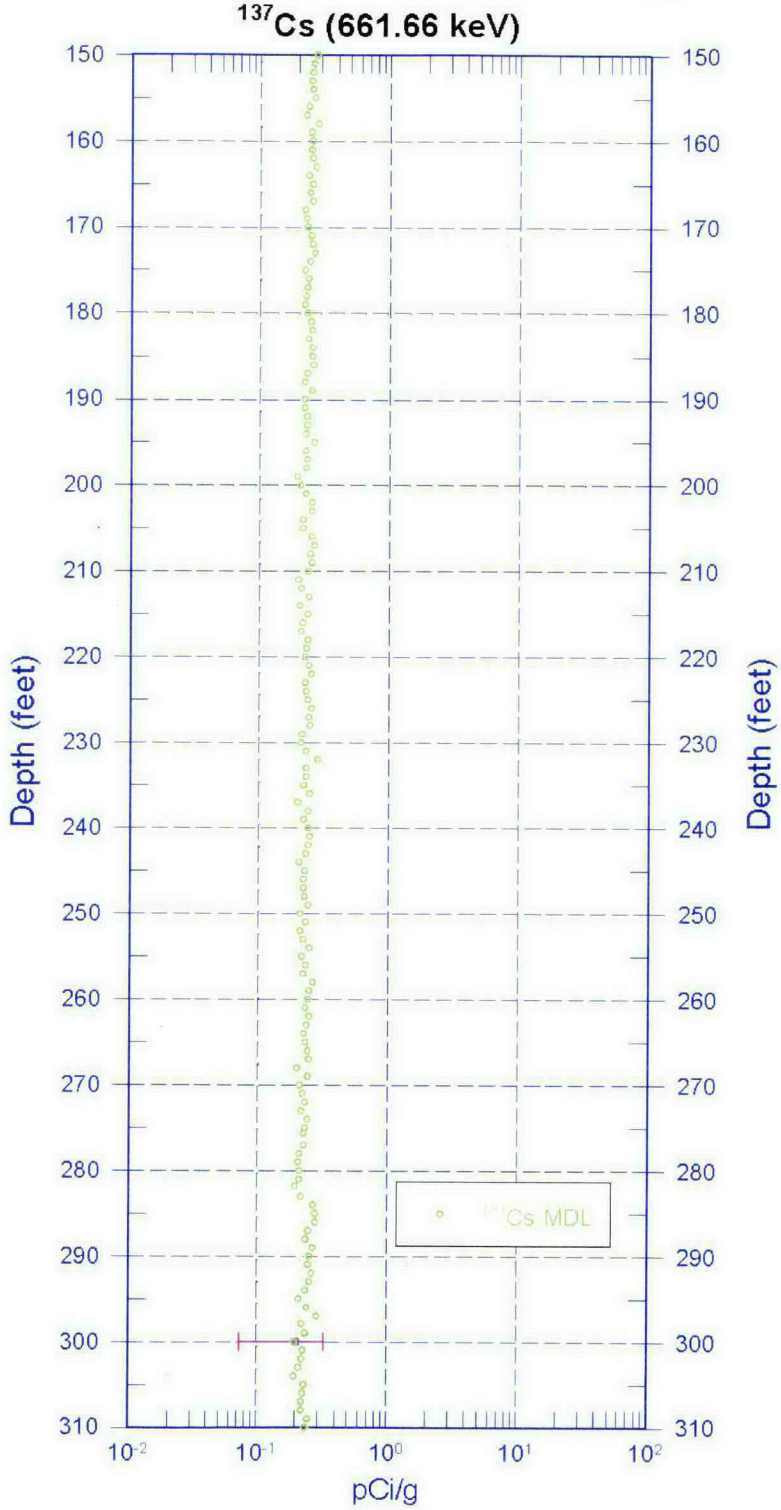
[1] GWL – groundwater level

C5301
Manmade Radionuclides
^{137}Cs (661.66 keV)



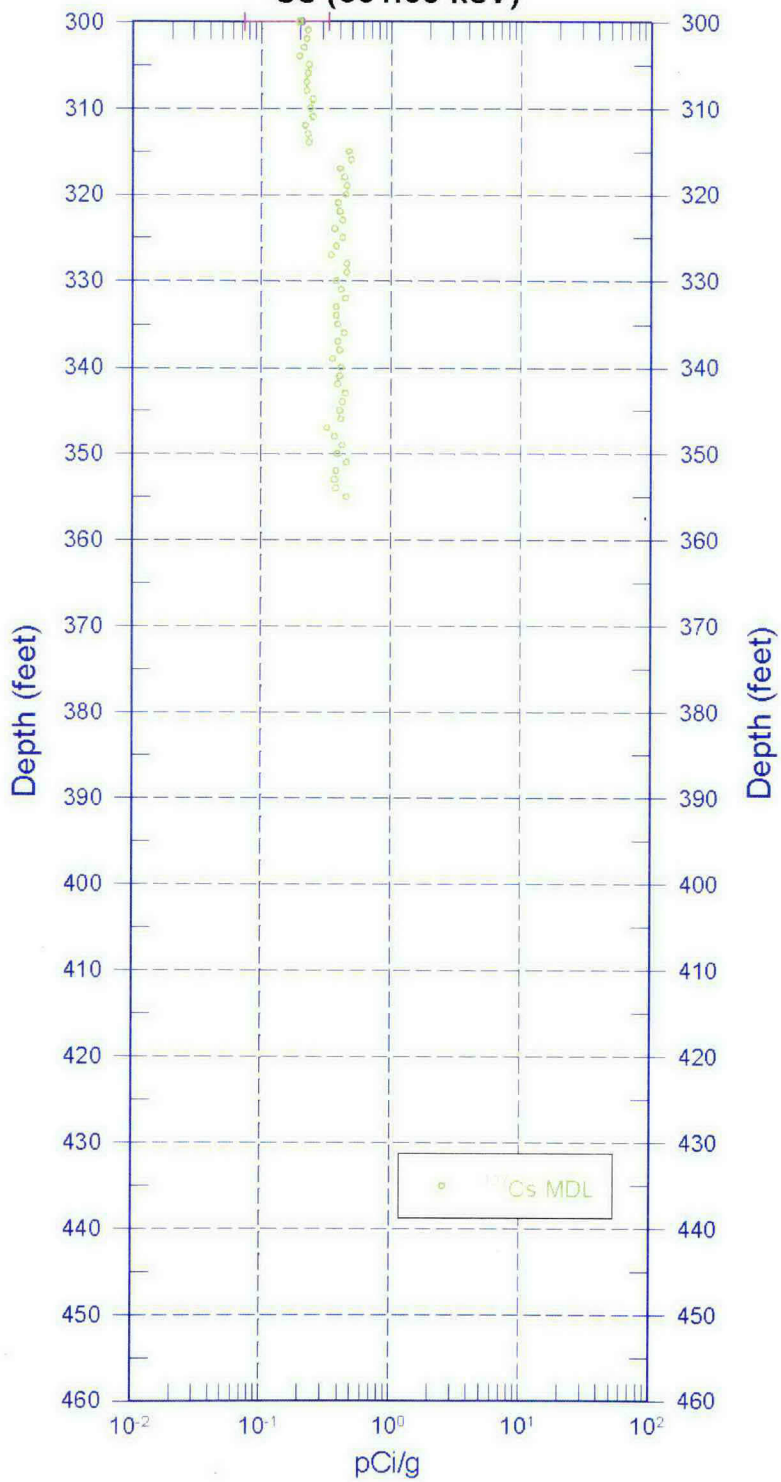
Zero Reference - Ground Surface

C5301
Manmade Radionuclides



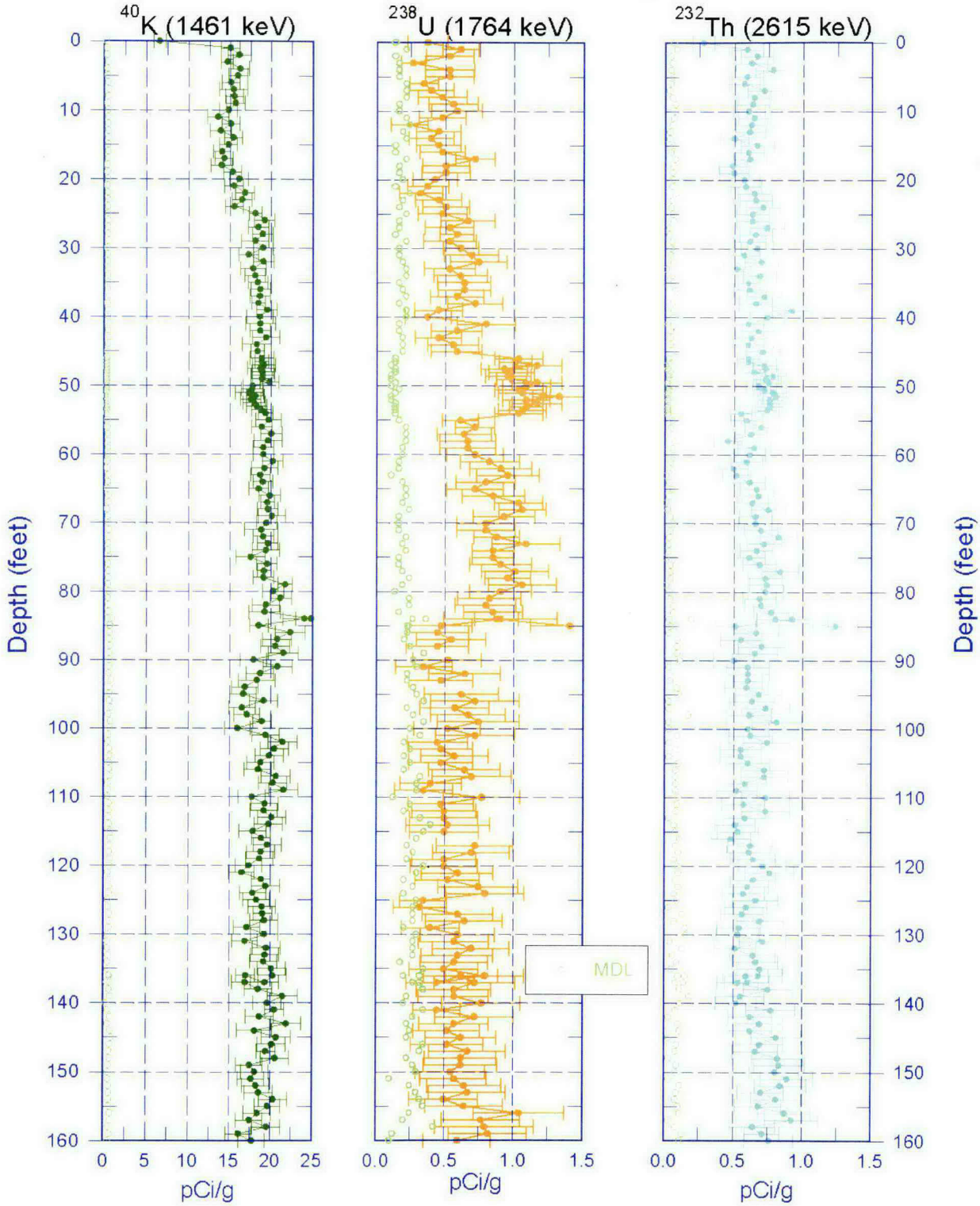
1 Zero Reference - Ground Surface

C5301
Manmade Radionuclides
^{137}Cs (661.66 keV)



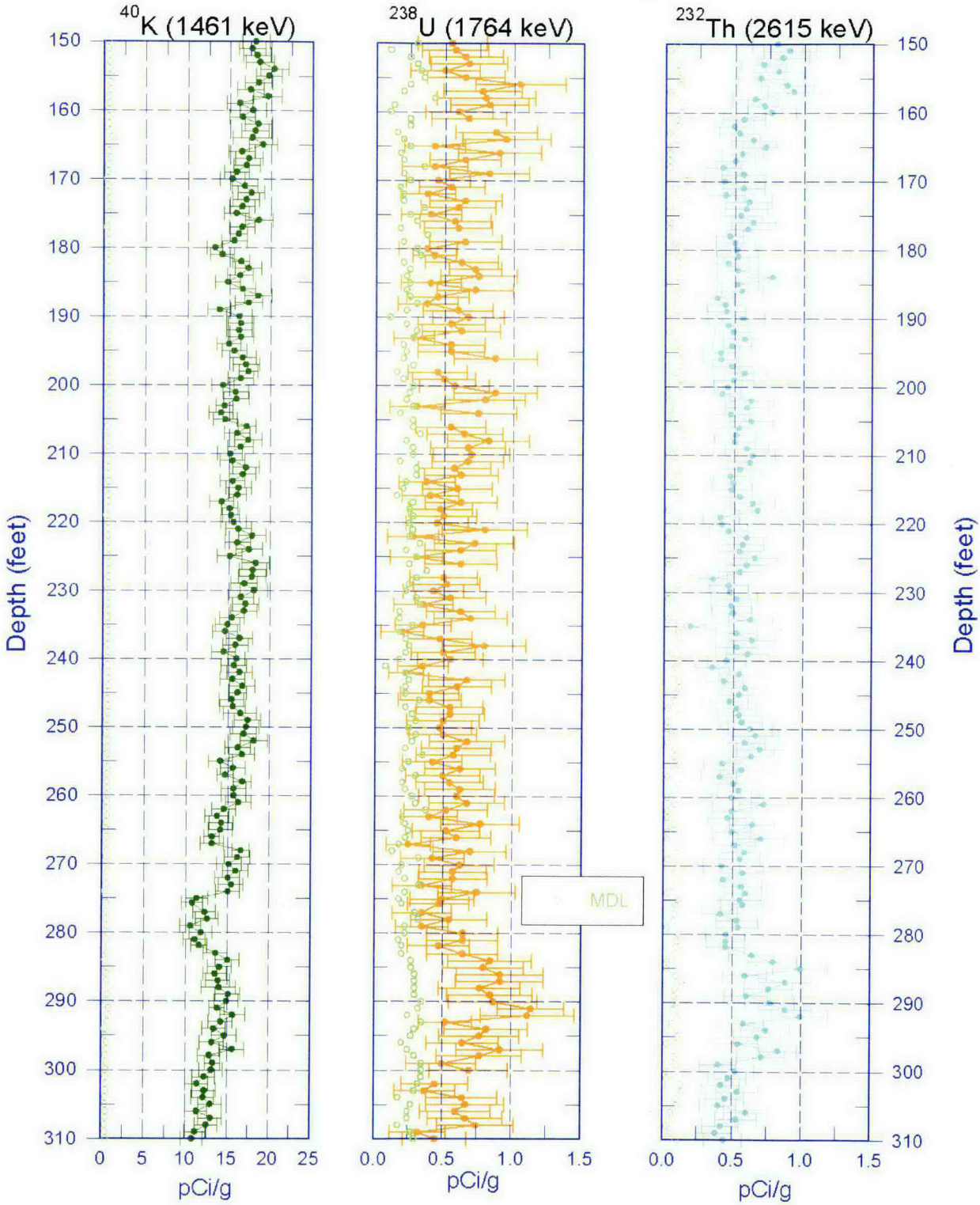
1 Zero Reference - Ground Surface

C5301
Natural Gamma Logs



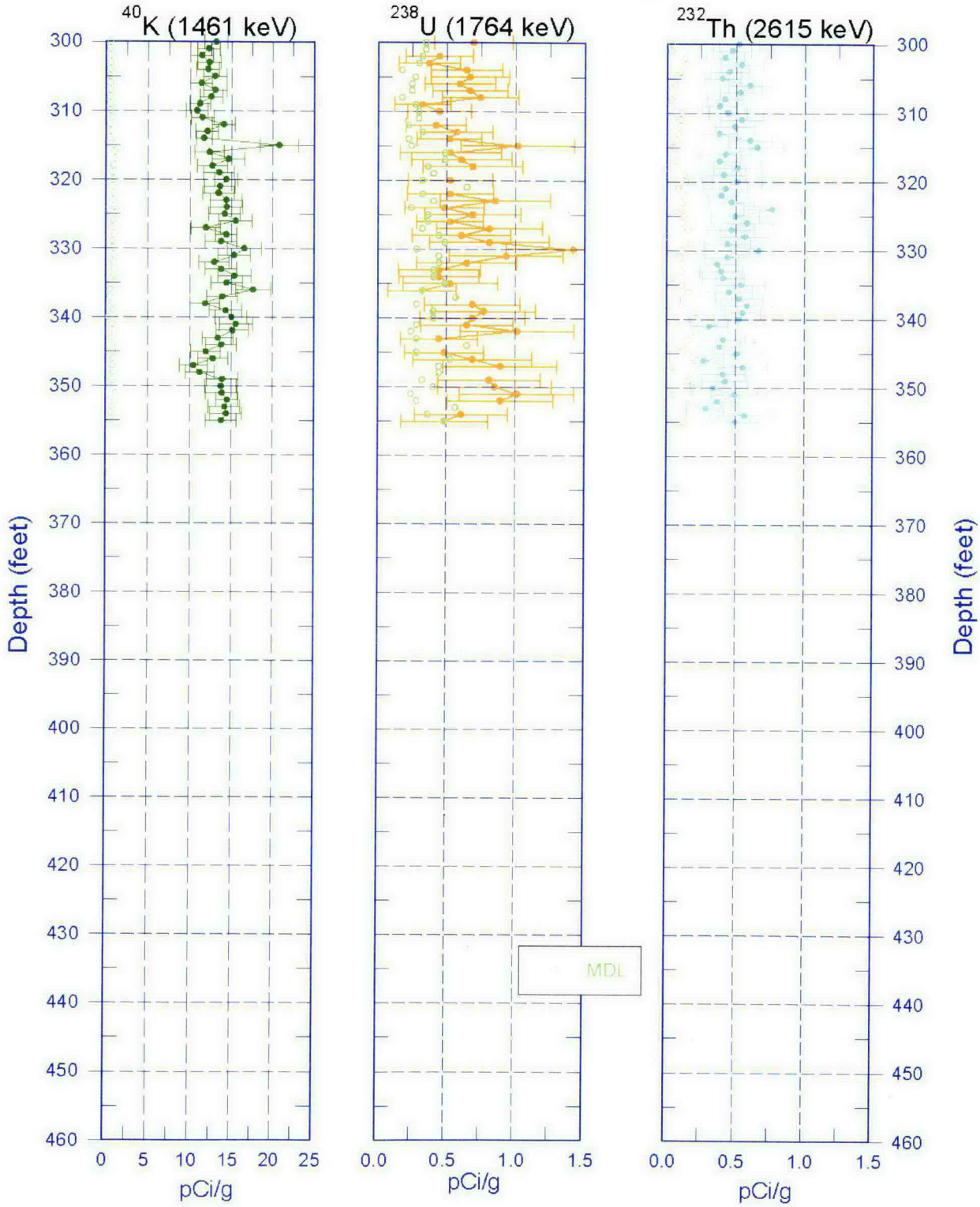
Zero Reference = Ground Surface

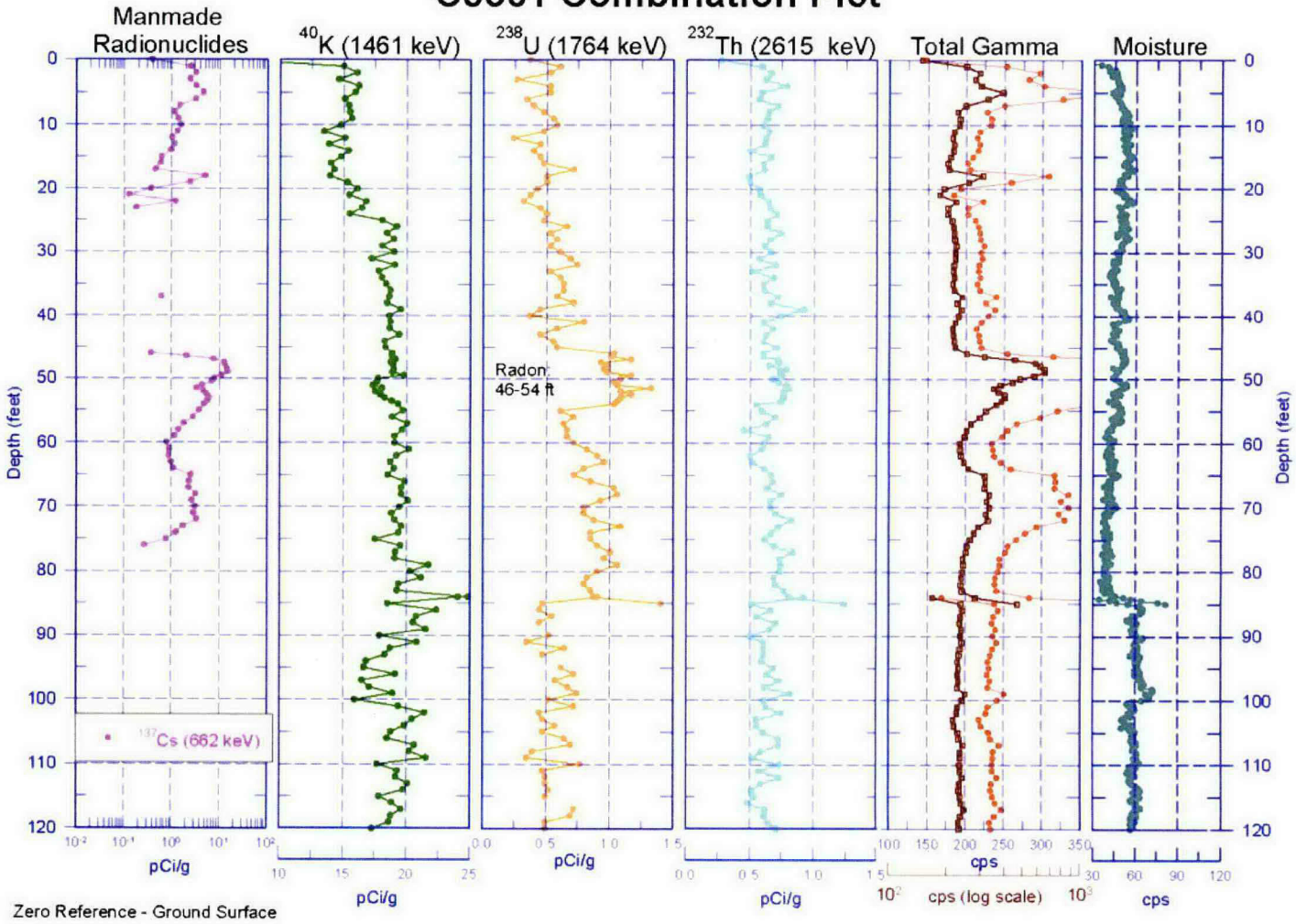
C5301
Natural Gamma Logs



Zero Reference = Ground Surface

C5301
Natural Gamma Logs



Zero Reference = Ground Surface

C5301 Combination Plot