Surface and Subsurface Soils at the Pond B Dam: July 1998

by

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Executive Summary

Pond B, 685-13G, is an inactive reactor cooling impoundment located on the R-Reactor Effluent System in the east-central portion of the Department of Energy's (DOE) Savannah River Site (SRS) in Aiken, South Carolina. The dam was built in 1961 and is approximately 45 feet high, impounding a 30 feet deep pond with a surface area of 257 acres and a storage capacity of 4,413 acre-feet of water. Pond B received radioactively contaminated cooling water from R Reactor between 1961 and 1964.

Several inspections of Pond B by Westinghouse Savannah River Company (WSRC), the Federal Energy Regulatory Commission, and DOE have identified increased seepage and saturation through the earthen dam to the downstream face of the dam. The soil within the dam is losing shearing strength, thus decreasing the slope stability and internal friction angle characteristics of the soil, which are the properties by which the embankment is held in place. Repairing the Pond B dam structure will require stripping topsoil and vegetation from the face of the dam and downstream from the toe, installing a new drain system and monitoring equipment, and reinforcing the embankment with additional pervious material on the downstream face of the dam.

On July 27 through July 29, 1998, soil samples were collected by Savannah River Technology Center (SRTC) Environmental Analysis Section (EAS) personnel and subcontractor staff along the downstream face and toe of the Pond B dam, areas that could be disturbed later during the proposed dam repair project. Additional samples were collected from Pond B sediments for comparison. Samples were analyzed at SRS to determine whether the soil contained measurable radioactive contamination as a result of seepage through the dam. Confirmation analyses were performed on a subset of samples at an independent offsite laboratory. The radiological data provided by this soil sampling study will be used to determine safety, health and radiological control precautions necessary when soil is removed from the dam during the dam repair project.

Results of the July 1998 sampling event show no evidence of radionuclide contamination on the downslope face of the Pond B dam or migration or transport of contaminants as a result of seepage through the dam.

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Introduction

Pond B, 685-13G, is an inactive reactor cooling impoundment built in 1961 on the Department of Energy's (DOE) Savannah River Site (SRS) in Aiken, South Carolina (Figure 1). The dam is approximately 45 feet high, impounding a 30 feet deep pond with a surface area of 257 acres and a storage capacity of 4,413 acre-feet of water. The dam is located on the R-Reactor Effluent System in the east-central portion of the SRS.

Between 1961 and 1964, Pond B received R-Reactor cooling water discharges that were contaminated with ^{137}Cs , ^{90}Sr and plutonium. Though the pond has not been used since 1964, radionuclides from the contaminated cooling water remain in the water and in the surface sediments of the pond (Halverson et al. 1998).

Several inspections of the Pond B dam by Westinghouse Savannah River Company (WSRC), the Federal Energy Regulatory Commission, and DOE have identified increased seepage and saturation through the dam to the downstream face of the dam. The soil within the dam is losing shearing strength, thus decreasing the slope stability and internal friction angle characteristics of the soil, which are the properties which hold the embankment in place. The saturation problem appears to result from toe drain failure and root system penetration by trees and vegetation that were allowed to flourish over the entire dam face for a number of years.

The current proposal to fix and repair the Pond B dam structure includes installing a new drain system and monitoring equipment. Then the dam will be reinforced with additional pervious material on the downstream face of the dam.

An initial step, however, involves stripping topsoil and vegetation from the face of the dam and from at least a 50 to 100 foot area along the toe of the dam. Pond B sediments and water are known to be radioactively contaminated, and water is generally responsible for the mobility of elements in soil systems. It is important to consider the question of whether radioactive contamination could have migrated with the water through the dam to contaminate the soil on the outside surface of the dam. Soil contamination on the dam would affect the health and safety practices required for personnel repairing the dam.

A previous study of Pond B sediments indicated that maximum ^{137}Cs concentrations remained near the surface and decreased exponentially with depth, with a halving depth of 3.5 cm. Whicker et al. (1990) determined that the adsorption coefficient, K_d , for Pond B sediment/water, using shallow sediments, was 3.2×10^4 for ^{137}Cs . This K_d value for the Pond B sediments is high enough that the mobility of ^{137}Cs was expected to be very low. Due to this low mobility, ^{137}Cs would not be expected to migrate very far into the dam with the seep water. Therefore contamination in the soil on the downstream face of the dam was expected to be very low.

Objectives

This sampling program was designed to determine whether soil that could later be disturbed during the proposed dam repair project contains measurable radioactive contamination as a result of seepage through the dam. Screening soil samples were collected by EAS and subcontractor staff and were analyzed at SRS. The sampling subcontractor was RCS Corporation, Engineering and Environmental Services (RCS). Confirmation analyses were performed on a subset of the samples at an independent offsite laboratory, General Engineering Laboratories (GEL) of Charleston, SC. The radiological data provided by this soil sampling study will be used to determine safety, health and radiological control precautions necessary when soil is being removed from the dam during the dam repair project.

The objectives of this report are to:

- Describe the sampling methodology used during the July 1998 sampling event at the downstream face of the Pond B dam and in Pond B,
- Present the results of the sampling event, and
- Compare, where possible, these results to related risk-based standards.

Figure 1. Pond B at the Savannah River Site

Site Description

The proposed Pond B dam replacement project covers a variety of habitats, from the natural slopes down the hill to the floodplain itself. Beginning down the slope at the ends of the dam, much of the area is a closed canopy loblolly pine (*Pinus taeda*) plantation. Present in the understory are loblolly pine, red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), and American holly (*Ilex opaca*). The herbaceous and vine layer is sparse and consists mainly of grape (*Vitis* sp.), poison oak (*Rhus toxicodendron*), and jessamine (*Gelsemium sempervirens*). Soils of this area are mapped as Blanton series.

Moving from the slope to the floodplain, most of the overstory changes to tulip tree (*Liriodendron tulipifera*) and red maple. A number of species are present in the understory, including tulip tree, red maple, red bay (*Persea borbonia*) and sweetgum. The herbaceous layer is dominated by maidencane (*Panicum hemitomon*), sensitive fern (*Onoclea sensibilis*), and juncus (*Juncus* sp.). Soils of this area are mapped as Fluvaquents and are listed for the SRS as hydric soils.

The wetland areas immediately below the dam (Figure 2) are believed to have been natural wetlands prior to the construction of Pond B dam, though soil saturation is likely to have increased as a result of the man-made impoundment. Roughly 3.4 acres of wetlands will be impacted by the extension of the toe of the dam 100 yards into the wetlands from the existing toe of the dam.

Methods

Sampling

The sampling described below was performed in accordance with procedures in WSRC Procedure Manual 3Q5. A total of 185 samples were scheduled for collection from 30 sampling locations. This included 86 standard samples, 86 archive samples, 3 replicates and 10 split samples. Every effort was made to collect the planned number of samples, but in a few cases, samples could not be collected as planned. Sampling locations are shown in Figure 3. Coordinates for these points are listed in Table 1.

SRTC/EAS purchased soil augering equipment to use in the hard clayey material of the Pond B dam (Figure 4). The working unit consisted of a four-cycle engine, with a centrifugal clutch, driving a flexible shaft. The flexible shaft was attached to the hand held auger drive unit. As a safety feature for the operator, a solid torque tube was used to connect the engine to the auger drive unit and to effectively transfer and absorb generated torque during operation. A dedicated tripod and winch was used to extract the augers and extensions after reaching the desired depth.

The numbered markers along the top of the dam were utilized to locate the sampling points on the dam. Sampling locations were established at an elevation just below the visible seepage line (upper tier), at points in line with the odd numbered marker (8 locations). A second tier (lower tier) of sampling locations was established along the seepage flow stream (Figure 5) at the base (toe) of the dam in line with each of the numbered markers (15 locations). Samples were also collected downstream from the toe of the dam (Figure 6), at 20-yard intervals (5 locations), with the fifth location being 100 yards from the toe of the dam. At each of the dam and downstream locations (28 locations), an attempt was made to sample each of the following intervals: surface (0 – 1 foot), near surface (2 – 4 feet) and subsurface (4 – 10 feet). A complete list of samples is provided in Appendix A.

Samples were not collected from locations and intervals where the auger would not penetrate the aggregate stone material used for drainage in the toe of the dam. In addition, samples were not collected from the subsurface interval at locations not accessible using the earth drill. Samples that were not collected are listed in Table 2.

Figure 2. Wetland Areas near the Pond B Dam

Table 1. Pond B Soil and Sediment Sampling Locations³.

Location Number ¹	SRS-North	SRS-East	DD-North ²	DD -East ²	UTM-North	UTM-East
PBL-1	56057.68	87893.98	33.2931	81.5442	3683722	449327
PBU-1	56080.99	87892.67	33.2932	81.5443	3683727	449323
PBL-2	56042.16	87797.27	33.2929	81.5445	3683701	449306
PBL-3	56019.80	87696.22	33.2927	81.5447	3683677	449285
PBU-3	56048.99	87695.72	33.2928	81.5447	3683684	449280
PBL-4	55994.68	87598.54	33.2925	81.5449	3683653	449266
PBL-5	55994.37	87491.58	33.2923	81.5452	3683634	449239
PBU-5	56018.42	87490.64	33.2924	81.5452	3683640	449235
PBL-6	55971.03	87389.91	33.2921	81.5454	3683610	449218
PBL-7	55970.66	87300.02	33.2919	81.5456	3683594	449196
PBU-7	55994.79	87299.03	33.2920	81.5457	3683600	449192
PBL-8	55967.15	87190.51	33.2918	81.5459	3683573	449170
PBL-9	55957.11	87102.05	33.2916	81.5461	3683555	449150
PBU-9	55995.62	87099.17	33.2917	81.5462	3683564	449142
PBL-10	55985.05	86993.13	33.2915	81.5465	3683542	449118
PBL-11	55995.29	86894.24	33.2913	81.5467	3683527	449092
PBU-11	56018.95	86895.50	33.2914	81.5468	3683533	449088
PBL-12	55993.74	86790.26	33.2912	81.5470	3683508	449067
PBL-13	56018.48	86691.27	33.2911	81.5473	3683496	449038
PBU-13	56047.46	86692.43	33.2911	81.5474	3683504	449033
PBL-14	56043.60	86594.94	33.2910	81.5476	3683485	449010
PBL-15	56056.18	86496.29	33.2908	81.5479	3683471	448983
PBU-15	56080.95	86496.15	33.2909	81.5480	3683477	448979
PBW-1	55913.48	87100.60	33.2915	81.5460	3683544	449158
PBW-2	55836.74	87005.15	33.2912	81.5461	3683508	449148
PBW-3	55787.33	87006.03	33.2911	81.5461	3683496	449157
PBW-4	55731.41	86994.49	33.2909	81.5460	3683480	449164
PBW-5	55624.03	86969.42	33.2906	81.5458	3683449	449177
PBS-1	56233.53	86577.16	33.2914	81.5480	3683529	448971
PBS-2	56315.52	87978.94	33.2938	81.5445	3683800	449302

¹ Location number terminology is explained in Appendix A.² DD = Decimal Degrees.³ Sampling locations were georegistered by BSRI surveyor Kenny Wilson.

Figure 4. Photograph of Power Soil Auger Used During Sampling at the Pond B Dam

Figure 5. Photograph Along the Face of the Pond B Dam (view of seepage flow stream at the toe)

Figure 6. Photograph of Hand Auger Used During Sampling Downstream from the Toe of the Pond B Dam

Table 2. Samples Which Were Not Collected

Sample Number	Reason the Sample Was Not Collected
PBL9-2 & PBL9-2A	Auger obstructed by stones.
PBL9-3 & PBL9-3A	Auger obstructed by stones.
PBL12-3, PBL12-3A, PBL12-3C	Too saturated
PBW1-3 & PBW1-3A	Too saturated
PBW2-3 & PBW2-3A	Too saturated
PBW3-3 & PBW3-3A	Too saturated
PBW4-3, PBW4-3A, PBL4-3C	Too saturated
PBW5-3 & PBW5-3A	Too saturated

Soil samples collected using the motor-driven auger were considered homogenized by the mixing action of the rotating auger bit. The samples collected by hand auger in the wetlands were mixed by placing the soil into a stainless steel mixing bowl and agitating the soil with a stainless steel spoon. After mixing, a field analysis for gamma radioactivity was performed. After the field screening, the soil from each sampling interval was promptly placed in polyethylene bags such that no headspace remained. The bags were then sealed and labeled. For each sampling interval, at least two bags were filled: the standard sample plus an archive sample. For sampling intervals chosen for replicate samples, three containers were filled: the standard sample, an archive sample and a replicate. For sampling intervals chosen for split samples, three containers were filled: the standard sample, archive sample, and the split sample. The subcontractor, RCS Corporation, provided the materials necessary for accomplishing these tasks, including the polyethylene bags and transport containers.

Shallow surface sediment samples were collected from 2 locations in Pond B, near the dam (Figure 3 and Figure 7) using a hand auger. EAS personnel collected these samples from the pond, then Safety and Health Operations personnel cleared the samples as nonradioactive samples requiring no special handling. SRTC completed the field screening of these sediment samples and did record measurable ^{137}Cs gamma activity. Subcontractor personnel were responsible for providing the sample bottles, applying the labels, filling out the red logbook and chain of custody, and all other aspects of preparing the samples.

Field Notes

For each sample, field notes taken during sampling included, as a minimum, the names of the personnel involved, the date and time of collection, the sample location identification number, gamma screening results and any other pertinent information relevant to the sampling procedure for each sampling location.

Samplers documented the following essential field sample information in the red logbook issued to EAS for this project by the Environmental Monitoring Section (EMS) Groundwater Monitoring Group:

- Sample ID
- Sample location
- Sample date and time
- Depth interval
- Initials of sampler
- Sample type and matrix
- Gamma screening results
- Comments on any unusual circumstances, deviations from plans, or comments relating to the quality or representativeness of the samples
- Information on the parent sample of any field replicate or split

Sample Control (Chain-of-Custody)

The sampling subcontractor, RCS Corporation, implemented chain of custody practices to insure the integrity of the sample and the accurate accounting of all documents and field/laboratory notes. Sampling Chain of Custody (COC) forms were provided by EMS for the screening samples and by the offsite contract laboratory, GEL, for the confirmation samples. The information contained on each sampling chain of custody form was not altered in any way by the subcontractor without prior consent of the EAS Technical Lead. When the analytical laboratory received samples, an internal laboratory COC began and was maintained.

Packaging and Shipping

RCS packaged all samples. Parent samples and replicates were delivered to the EMS laboratories. Split samples were packaged appropriately and delivered to personnel from General Engineering Laboratories (GEL), an independent, offsite laboratory service from Charleston, South Carolina. Archive samples were taken to an onsite storage location.

Figure 7. Photograph of Sediment Sample Collection in Pond B Near the Dam

Analyses

Samples were screened in the field for gamma radioactivity and the results were recorded the Chain of Custody forms. The apparatus used for the screening consisted of a 2 inch by 2 inch NaI detector/preamplifier and an Ortec microNomad™ portable multichannel analyzer (MCA) controlled by a laptop computer (Figure 8). The sodium iodide (NaI) detector was enclosed in a 0.5-inch thick steel collimator to ensure that it viewed only the soil in the sample bag. Although both the MCA and the laptop computer can be battery operated, a portable generator was used to supply 110 AC to the system due to the length of time required to complete each series of measurements.

The field gamma ray measurements were not intended to detect environmental radiation levels but to determine if measurable contamination levels existed in the soil samples. The NaI detector viewed a 2" diameter section of the sample bag. The counting time was 300 seconds. ^{137}Cs was the isotope of interest because it (1) is one of the most common fission products and (2) it has a long (30 years) half life to be present in measurable quantities.

Measurable ^{137}Cs contamination was found only in the two sediment samples. Figure 9 compares the spectrum found for sediment sample PBS-2 with a typical soil sample PBU7-1. The lower spectrum is PBS-2, and the dark region of interest (ROI) portion of the spectrum containing the ^{137}Cs peak. The upper spectrum is PBU7-1, and there is no corresponding peak in that portion of the spectrum. The small peak in both spectra at 609 KeV is probably from ^{214}Bi .

Figure 8. Photograph of Field Gamma Survey Equipment and Setup at the Pond B Dam

Figure 9, Spectrum for a Sediment Sample (PBS-2) and a Typical Pond B Dam Soil Sample (PBU7-1)

The ^{137}Cs content of PBS-2 assayed at $2.11\text{E}+04$ pCi/kg. The net count, after background subtraction, in the ROI is 679 ± 52 , or 31.1 pCi/kg/count. A peak having 20% of the amplitude of the present peak would have been easily resolved, giving a sensitivity of the present system of $4.20\text{E}+03$ pCi/kg. This could be reduced with improved instrumentation.

The soil samples were prepared and analyzed using routine EMS procedures (WSRC-3Q1-4, Environmental Radiochemistry Procedures, and WSRC-3Q1-6, Environmental Counting Room Procedures). Preparation for gamma analysis required soil samples to be dried (approximately 24 hours at 105°C), weighed, sifted through a # 30 mesh (0.6mm) sieve to remove large rocks and vegetation, blended for one hour, and pulverized. Approximately 500 ml of the pulverized sample was placed into a tared 500 ml polyethylene bottle and weighed. The bottles were filled to the 500 ml level, which corresponded to the EMS calibration geometry. These preparations were then sent to the counting room for analysis on the Canberra Genie-VMSTM gamma spectrometry system.

Samples were placed in proximity to a high purity germanium detector (greater than 35% efficiency) and counted for 5000 seconds. The same detector was used for all samples. One out of ten samples was recounted (5000 seconds) for quality assurance purposes. If a sample received a recount to confirm or rule out the presence of a radionuclide(s), the sample was counted for 10,000 seconds.

Prior to alpha/beta activity determination, samples were dried for approximately 4 hours at 105°C then a 0.5-gram aliquot was digested with acid. For quality control purposes, each group of approximately 8 samples contained one reagent blank, one reagent spike containing both an alpha- and beta-emitting isotope, and a matrix spike containing the

same isotopes and one sample prepared in replicate. Each preparation was quantitatively transferred to a planchet and sent to the counting room for analysis on an Ortec Countmaster™ low background gas flow proportional counter. Instrument background and efficiencies were checked daily. The analyst ensured and documented that the instrument was operating within its tolerance limits on the previous and succeeding daily checks. Each sample was counted for 20 minutes.

After review by EMS counting room professional staff, the data were transferred to the information management system and then validated and verified by the EMS Data Manager. Before release, the EMS Quality Control Coordinator approved the data.

Typical minimum detectable concentrations (MDCs) are given below in Table 3. The MDCs for a specific sample may be different because of variations in the sample preparation, size, and content, and because of variations in the chemical recoveries, counting efficiencies, reagent blanks, decay time, counting time and instrument backgrounds.

Table 3. Representative EMS Minimum Detectable Concentrations

Nuclide	MDC (pCi/kg)
Gross Alpha	2.07E+03
Gross Beta	2.88E+03
Actinium-228	2.077E+03
Cobalt-60	6.198E+01
Cesium-137	7.916E+01
Bismuth-212	5.136E+02
Bismuth-214	1.264E+02
Potassium-40	4.738E+02
Lead-212	1.469E+02
Lead-214	1.307E+02
Thallium-208	6.239E+01

Replicates and Splits

Field replicates are two separate aliquots of the same field sample which have been independently processed and analyzed for the same parameters by a single laboratory to determine that laboratory's precision in its sample processing and analysis systems. Three field replicates (PBS1-1, PBL11-1, and PBU5-3) were ordered for this project and delivered to EMS, the screening laboratory. A comparison of analyte results for the replicates is shown in Table 4.

Splits are two separate aliquots of the same field sample, which have been processed and analyzed for the same parameters by two independent laboratories. For this project, nine samples were split and sent to both EMS and GEL. Results for ¹³⁷Cs are shown in Table 5.

Results from both split samples and replicate samples can be compared as relative percent difference (RPD). RPD is calculated as the difference between two samples divided by the average result of the two samples, multiplied by one hundred to convert the number to a percentage.

Table 4. Field Replicate Results, Grouped by Analyte

Sample ID	EMCAP Root	Date	Analyte	Qualifier ¹	Activity (pCi/kg)	1 Sigma (pCi/kg)	Relative % Difference
PBS1-1B	98808501	29-Jul	Cs-137		1.39E+04	4.42E+02	17%
PBS1-1	98808500	29-Jul	Cs-137		1.65E+04	5.24E+02	
PBL11-1B	98809799	27-Jul	Cs-137		9.00E+01	2.31E+01	7%
PBL11-1	98809796	27-Jul	Cs-137		9.65E+01	1.84E+01	
PBU5-3B	98809730	28-Jul	Cs-137	U	2.22E+01	1.50E+01	NA
PBU5-3	98809725	28-Jul	Cs-137	U	-8.70E+00	1.47E+01	
PBS1-1B	98808501	29-Jul	Gross B		1.31E+04	1.51E+03	1%
PBS1-1	98808500	29-Jul	Gross B		1.32E+04	1.50E+03	
PBL11-1B	98809799	27-Jul	Gross B	U	-1.16E+03	8.39E+02	NA
PBL11-1	98809796	27-Jul	Gross B	U	4.27E+01	9.09E+02	
PBU5-3B	98809730	28-Jul	Gross B	U	1.92E+03	9.86E+02	NA
PBU5-3	98809725	28-Jul	Gross B	U	1.20E+03	9.27E+02	
PBS1-1B	98808501	29-Jul	Gross A		2.78E+03	8.99E+02	20%
PBS1-1	98808500	29-Jul	Gross A		3.41E+03	9.53E+02	
PBL11-1B	98809799	27-Jul	Gross A		2.44E+03	8.20E+02	NA
PBL11-1	98809796	27-Jul	Gross A	U	9.41E+02	5.80E+02	
PBU5-3B	98809730	28-Jul	Gross A	U	1.38E+03	6.85E+02	NA
PBU5-3	98809725	28-Jul	Gross A	U	9.57E+02	5.99E+02	
PBL11-1B	98809799	27-Jul	Tl-208		2.51E+02	3.57E+01	13%
PBL11-1	98809796	27-Jul	Tl-208		2.86E+02	3.34E+01	
PBS1-1B	98808501	29-Jul	Tl-208		4.24E+02	3.11E+01	0%
PBS1-1	98808500	29-Jul	Tl-208		4.22E+02	3.00E+01	
PBU5-3B	98809730	28-Jul	Tl-208		3.43E+02	3.84E+01	2%
PBU5-3	98809725	28-Jul	Tl-208		3.51E+02	3.42E+01	
PBL11-1B	98809799	27-Jul	Bi-212		6.14E+02	1.74E+02	14%
PBL11-1	98809796	27-Jul	Bi-212		7.08E+02	1.51E+02	
PBS1-1B	98808501	29-Jul	Bi-212		8.08E+02	1.33E+02	10%
PBS1-1	98808500	29-Jul	Bi-212		7.30E+02	9.70E+01	
PBU5-3B	98809730	28-Jul	Bi-212		1.06E+03	2.07E+02	21%
PBU5-3	98809725	28-Jul	Bi-212		8.57E+02	1.74E+02	

¹ U = Analyzed for but not detected.

NA = Not Applicable.

Table 4. Field Replicate Results, Grouped by Analyte (continued)

Sample ID	EMCAP Root	Date	Analyte	Qualifier ¹	Activity (pCi/kg)	1 Sigma (pCi/kg)	Relative % Difference (RPD)
PBL11-1B	98809799	27-Jul	Bi-214		6.84E+02	5.77E+01	5%
PBL11-1	98809796	27-Jul	Bi-214		6.51E+02	6.01E+01	
PBS1-1B	98808501	29-Jul	Bi-214		7.43E+02	4.27E+01	6%
PBS1-1	98808500	29-Jul	Bi-214		7.03E+02	4.20E+01	
PBU5-3B	98809730	28-Jul	Bi-214		7.84E+02	6.18E+01	10%
PBU5-3	98809725	28-Jul	Bi-214		8.65E+02	6.16E+01	
PBL11-1B	98809799	27-Jul	Pb-212		8.51E+02	6.55E+01	1%
PBL11-1	98809796	27-Jul	Pb-212		8.57E+02	6.20E+01	
PBS1-1B	98808501	29-Jul	Pb-212		1.22E+03	5.92E+01	12%
PBS1-1	98808500	29-Jul	Pb-212		1.08E+03	5.45E+01	
PBU5-3B	98809730	28-Jul	Pb-212		1.05E+03	7.41E+01	7%
PBU5-3	98809725	28-Jul	Pb-212		9.76E+02	7.03E+01	
PBL11-1B	98809799	27-Jul	Pb-214		5.81E+02	5.68E+01	6%
PBL11-1	98809796	27-Jul	Pb-214		5.49E+02	5.76E+01	
PBS1-1B	98808501	29-Jul	Pb-214		7.78E+02	5.65E+01	8%
PBS1-1	98808500	29-Jul	Pb-214		7.16E+02	5.39E+01	
PBU5-3B	98809730	28-Jul	Pb-214		9.41E+02	7.23E+01	9%
PBU5-3	98809725	28-Jul	Pb-214		8.57E+02	7.27E+01	
PBL11-1B	98809799	27-Jul	K-40		6.05E+02	2.35E+02	15%
PBL11-1	98809796	27-Jul	K-40		5.19E+02	2.28E+02	
PBS1-1B	98808501	29-Jul	K-40		1.01E+03	1.54E+02	35%
PBS1-1	98808500	29-Jul	K-40		7.11E+02	1.77E+02	
PBU5-3B	98809730	28-Jul	K-40		7.16E+02	2.66E+02	41%
PBU5-3	98809725	28-Jul	K-40		1.09E+03	2.89E+02	

¹ U = Analyzed for but not detected.

NA = Not Applicable.

Table 5. Split Sample Results, Grouped by Analyte

Laboratory	Sample ID	Parameter	Detection Limit (pCi/kg)	Qualifier ¹	Activity (pCi/kg)	1 Sigma (pCi/kg)	Relative % Difference
EMS	PBL3-2	Cs-137	5.0E+01	U	5.95E+00	8.70E+00	NA
GEL	PBL3-2C	Cs-137	3.57E+01	U	2.60E+01	2.10E+01	
EMS	PBL5-2	Cs-137	6.0E+01	U	2.32E+01	1.62E+01	NA
GEL	PBL5-2C	Cs-137	3.41E+01	U	1.61E+01	2.75E+01	
EMS	PBL7-1	Cs-137	6.0E+01	U	4.46E+01	2.16E+01	NA
GEL	PBL7-1C	Cs-137	3.05E+01		1.20E+02	3.59E+01	
EMS	PBL9-1	Cs-137	5.0E+01	U	2.02E+01	1.76E+01	NA
GEL	PBL9-1C	Cs-137	3.87E+01		1.10E+02	3.79E+01	
EMS	PBL11-3	Cs-137	5.0E+01	U	1.78E+01	1.29E+01	NA
GEL	PBL11-3C	Cs-137	2.67E+01		6.75E+01	2.93E+01	
EMS	PBU7-1	Cs-137	6.0E+01		2.84E+02	4.31E+01	52%
GEL	PBU7-1C	Cs-137	2.92E+01		1.66E+02	5.32E+01	
EMS	PBU11-2	Cs-137	6.0E+01	U	3.70E+00	1.55E+01	NA
GEL	PBU11-2C	Cs-137	6.43E+01	U	3.82E+01	4.43E+01	
EMS	PBW3-1	Cs-137	3.0E+01		3.89E+01	1.61E+01	99%
GEL	PBW3-1C	Cs-137	2.09E+01		1.15E+02	3.19E+01	
EMS	PBS2-1	Cs-137	8.0E+01		2.11E+04	6.70E+02	8%
GEL	PBS2-1C	Cs-137	3.59E+01		1.94E+04	2.21E+03	

¹ U = Analyzed for but not detected.

NA = Not Applicable.

Sample replication is the preparation and/or analysis of two or more aliquots of the same sample. They are used as a measure of the ability of the laboratory to obtain the same result on the same sample on repeated analysis. Sample replicates are the primary source of information for determination of the precision of an analysis. There are several possible interpretations of the results obtained from the analysis of replicates. The first case involves a result above the reporting level derived from the replicates. The closeness of the individual results gives a direct indication of the ability of the test to generate a reproducible result on the real sample. It is an approximation of the width of the distribution of the random error associated with the measurement technique at that level of analyte. For a measurement technique where the contaminant of interest is almost always measured in the sample, sample replicates are a very useful quality control.

The second case concerns an analyte that is not detected in the sample and the replicate. The inability of the measurement technique to detect an analyte in the sample is possible information that can be used in a verification of the lack of contamination in the sample. However, it may also be a result of a failure of the measurement technique to function properly. Proper functioning of the measurement technique must be confirmed by other means, such as matrix spikes and matrix spike duplicates.

The third case is where the analyte is present in the sample at the detection limit or the reporting level. Sometimes the sample and the replicate results will fortuitously lie on the reportable side of the detection limit; however the more common occurrence is that the values bracket the detection limit. This gives one result as a number and the other as not detected.

Although some samples are heterogeneous and will give poor comparability for the replicates, regular occurrences of wide variation in the results of replicate analysis would be cause for concern. Such wide variation of results may suggest that the laboratory is not performing the preparation procedures in exactly the same manner for each sample. The relative percent difference (RPD) should be less than 35% for soil analysis replicates at the same laboratory. A review of RPD in Table 4 reveals that they generally meet the <35% RPD. There were two exceptions in the analysis of ^{40}K .

The ^{137}Cs analysis results for the split samples sent to EMS and to GEL are shown in Table 5 above. The GEL detection limits are lower and GEL sample results were more frequently measured greater than the detection limit. In the three samples, PBU-7, PBW3-1 and PBS-2, where both GEL and EMS measured ^{137}Cs above detection limits the RPDs were 52%, 99% and 8% respectively. At PBU-7, both laboratories measured ^{137}Cs slightly above the detection limit. In sample PBS-2, the ^{137}Cs was measured well above the detection limit. With more activity and a greater count rate, each laboratory's measure of ^{137}Cs in PBS-2 is more precise than similar measurements of ^{137}Cs in the other samples. The 8% RPD between GEL and EMS in sample PBS-2 is a good inter-laboratory confirmation of statistical agreement between the sample handling and analysis techniques for both laboratories. In the other split samples the ^{137}Cs analyses are consistently at or below the detection limits for GEL and EMS and the RPD is generally "Not Applicable (NA)".

Discussion

Analytical Results

Three laboratories provided analytical services. The Analytical Development Section (ADS) from SRTC provided the field gamma screening. The Environmental Monitoring Section (EMS) of the Environment, Safety, Health and Quality Assurance Division provided laboratory radioanalytical screening results and General Engineering Laboratories (GEL) from Charleston, SC performed the confirmation radioanalytical results on the split samples.

EMS analytical results for the July 1998 sampling event at the Pond B dam are presented in Appendix B. Lab blanks and standards are not presented. Sample data are presented with the sample number, transect number, depth interval, analysis laboratory number, sample date, analyte, detection limit, result qualifier, result, and standard error. Data presented in Appendix B should be considered scoping level data.

Table 6 lists the radioisotopes detected by EMS in the samples and the average and maximum results. Cesium-137 and ^{60}Co are man-made radioisotopes. The remaining radioisotopes detected are naturally occurring. ^{137}Cs was detected in 25 samples. Gross alpha was detected in 33 samples and was highest in the dam samples. Gross alpha activity in some of the dam samples was roughly five times the activity in the sediment samples. Gross beta activity was detected in six samples: the three Pond B sediment samples and three upper tier dam samples. Gross beta measurements were highest in the Pond B sediment samples, with the highest sediment value (18,700 pCi/kg) being nearly twice the highest surface soil sample result (10,100 pCi/kg) from the dam. Thallium-208, ^{212}Pb , ^{214}Pb , and ^{214}Bi were detected in all samples. Potassium-40, ^{228}Ac and ^{212}Bi were detected in most of the samples. Cobalt-60 and ^{224}Ra were detected in one sample each: a Pond B sediment sample and a lower tier sample, respectively.

In an aquatic system, many radionuclides reside almost entirely in the sediments. A much smaller fraction of the total radionuclide inventory might be found in the water column and biota. It is important to remember that seepage water is in intimate contact with soil surfaces at all times. As a result, contaminants in seepage water are never isolated from soil surfaces but are in intimate contact with them. If the direction of water movement is known, then the direction of element migration is generally known. Soil has significant surface area that can mediate various physical and chemical surface reactions, thereby affecting the rate of element migration. The primary physical reactions on soil surfaces that govern the migration of contaminants in water, are hydrolysis, oxidation, reduction, and adsorption. Adsorption is defined as the accumulation of an element at the surface of soil particles, resulting in a decrease in the concentration of the dissolved element in water.

Table 6. Radionuclides Detected at Pond B Dam Sampling Locations - July 1998

Analyte	Number of Sampling Points	Number of Detects	Average Results: Dam & Downslope (pCi/kg) ¹	Average Results: Pond B Sediments (pCi/kg) ²	Maximum Results: Dam & Downslope (pCi/kg) ³	Maximum Results for Pond B Sediments (pCi/kg) ⁴
Gross Alpha	81	33	2,506	2,597	16,600	3,410
Gross Beta	81	6	1,135	15,000	10,100	18,700
Actinium-228	81	80	1,152	1,277	2,760	1,480
Bismuth-212	81	69	861	799	2,460	859
Bismuth-214	81	81	768	845	1,740	1,090
Cobalt-60	81	1	6	45	33	66
Cesium-137	81	25	32	17,167	284	21,100
Potassium-40	81	62	843	619	5,950	1,010
Lead-212	81	81	1,056	1,210	2,620	1,330
Lead-214	81	81	768	798	1,770	900
Radium-224	81	1	NA ⁵	NA ⁵	1,820	NA
Thallium-208	81	81	375	451	938	508

¹Average of all results of samples from the dam and downslope. Includes instrument readings below detection limit. Pond B sediments not included.

²Average all result for Pond B sediments. Includes instrument readings below detection limit.

³Maximum results of all samples from the dam and downslope. Pond B sediments not included.

⁴Maximum results of all Pond B sediment samples.

⁵Not Applicable. Only one sample had a value.

The radionuclide inventory of Pond B is known to be dominated by ¹³⁷Cs. Various studies have shown that ¹³⁷Cs mobility through SRS soils is low. An assessment of the general ability of the soils on the SRS to retain cesium and other wastewater constituents was conducted by Looney et al. (1985). The results of their work indicated that cesium should be highly retained under reasonable conditions of pH, oxidation potentials, and dissolved solids. Whicker et al (1990) found that Pond B sediments contained 99% of the ¹³⁷Cs inventory (1.21×10^1 Ci in 1990), while the filtered water contained merely 0.66%. They found that mobility of ¹³⁷Cs through Pond B sediments should be expected to be very low and pointed out the efficiency of the Pond B system for retaining radionuclides, effectively preventing dispersal of its radionuclide inventory and adequately shielding the surroundings from gamma radiation. Maximum ¹³⁷Cs concentrations occurred near the surface, then decreased exponentially, with a halving depth of 3.5 cm. Numerical integration indicated that 95% of the total ¹³⁷Cs inventory occurred in the top 17 cm (Whicker et al. 1990).

For the samples collected in July 1998, the 25 sample locations and depth intervals where ¹³⁷Cs was detected are listed in Table 7. As expected, ¹³⁷Cs was detected in all three of the Pond B sediment samples. Although there has been no input of ¹³⁷Cs to Pond B in more than 30 years, previous studies have indicated that ¹³⁷Cs remains in the surface sediments, perhaps due to sorption of ¹³⁷Cs from the water or release from decaying vegetation (Pinder et al. 1995). Cesium-137 was also detected in fifteen of the dam samples and seven of the downstream samples. In all but four of these 25 samples, ¹³⁷Cs was detectable only in the top (surface) depth interval. The ¹³⁷Cs activities measured in the sediment samples were roughly two to three orders of magnitude higher than those measured in the dam samples.

Table 7. Cesium-137 Activities, Locations and Intervals Where Detected

Sample ID	Depth Interval	Date	MDA (pCi/kg) ¹	Activity (pCi/kg)	1 Sigma (pCi/kg)
<u>Lower Tier:</u>					
PBL2-1	1	28-Jul	5.00E+01	7.81E+01	2.95E+01
PBL4-1	1	28-Jul	5.00E+01	1.02E+02	3.01E+01
PBL5-1	1	28-Jul	6.00E+01	7.41E+01	2.77E+01
PBL6-1	1	28-Jul	4.00E+01	1.45E+02	2.81E+01
PBL11-1	1	27-Jul	6.00E+01	9.65E+01	1.84E+01
PBL11-1B	1	27-Jul	5.00E+01	9.00E+01	2.31E+01
PBL12-1	1	27-Jul	7.00E+01	9.73E+01	2.82E+01
PBL13-1	1	27-Jul	5.00E+01	1.43E+02	2.89E+01
PBL14-1	1	27-Jul	4.00E+01	1.17E+02	3.03E+01
<u>Upper Tier:</u>					
PBU3-1	1	28-Jul	6.00E+01	6.19E+01	2.54E+01
PBU7-1	1	28-Jul	6.00E+01	2.84E+02	4.31E+01
PBU7-2	2	28-Jul	6.00E+01	6.27E+01	2.39E+01
PBU9-1	1	28-Jul	5.00E+01	1.35E+02	2.46E+01
PBU11-1	1	27-Jul	6.00E+01	6.51E+01	3.38E+01
PBU15-1	1	27-Jul	7.00E+01	7.00E+01	2.26E+01
<u>Downstream:</u>					
PBW1-2	2	29-Jul	4.00E+01	5.38E+01	1.09E+01
PBW2-1	1	29-Jul	6.00E+01	6.76E+01	1.89E+01
PBW3-1	1	29-Jul	3.00E+01	3.89E+01	1.61E+01
PBW3-2	2	29-Jul	4.00E+01	7.73E+01	2.20E+01
PBW4-1	1	29-Jul	5.00E+01	5.22E+01	2.07E+01
PBW4-2	2	29-Jul	5.00E+01	6.19E+01	2.09E+01
PBW5-1	1	29-Jul	5.00E+01	5.81E+01	2.07E+01
<u>Pond B Sediments:</u>					
PBS1-1	1	29-Jul	6.00E+01	1.65E+04	5.24E+02
PBS1-1B	1	29-Jul	7.00E+01	1.39E+04	4.42E+02
PBS2-1	1	29-Jul	8.00E+01	2.11E+04	6.70E+02

¹Minimum Detectable Activity.

The background concentration of a given element in soil represents the concentration present after the soil was formed and underwent some degree of weathering. It gives no indication of the maximum concentration of the element that a soil can immobilize, i.e., the element loading capacity of the soil. Background radionuclides fall into three categories: (1) naturally occurring isotopes, (2) global man-made isotopes dispersed as atmospheric fallout from nuclear weapons testing, and (3) constituents potentially released from the site and deposited by atmospheric fallout.

In 1996, a background soil radionuclide data set specific to SRS was compiled from ongoing investigations in the SRS environmental restoration program (PRC 1996), Table 8. Background sediment data was collected during the Comprehensive Cooling Water Study in the 1980s (DuPont 1985 and DuPont 1987). These data sets were used to compare with results from the July 1998 sampling of soil on and around Pond B dam. The radioisotopes detected in surface soils at the Pond B dam are within the range typically found in nationwide and SRS specific soil surveys as shown in Table 8. Cesium-137 measured in the dam samples was within SRS and national background levels. Potassium-40 found in the dam samples also was within SRS and national background levels. Gross alpha, gross beta, ^{60}Co and ^{212}Pb levels were within SRS background levels, though national background levels were not available for comparison. No background data for ^{212}Bi , ^{214}Bi , ^{214}Pb and ^{208}Tl were available for comparison.

Table 8. Nationwide and SRS Background Soil Radioisotope Concentrations Compared to Pond B

Constituent	Nationwide Soils (pCi/kg) ^{1,7}	SRS Background Soils (pCi/kg) ⁷	Pond B Sediment (pCi/kg) ⁴	Pond B Dam ^{5,6} (pCi/kg)
Gross Alpha	NA	<10 to 44,530 ²	2,597	<MDA to 16,600
Nonvolatile Beta	NA	<10 to 54,820 ²	15,000	< MDA to 10,100
Actinium-228	NA	<10 to 2,540 ²	1,277	< MDA to 2,760
Bismuth-212	NA	NA	799	< MDA to 2,460
Bismuth-214	NA	NA	845	< MDA to 1,740
Cobalt-60	NA	<4,000 ³	45	< MDA
Cesium-137	10 to 3,500	<0.3 to 2,210 ² <2,000 ³	17,167	< MDA to 284
Potassium-40	3,000 to 20,000	66 to 11,600 ²	619	< MDA to 5,950
Lead-212	NA	13 to 3,200 ²	1,210	< MDA to 2,620
Lead-214	NA	NA	798	< MDA to 1,770
Thallium-208	NA	NA	451	< MDA to 938

¹ EPA 1994

² PRC 1996.

³ Meyer's Branch sediment data, DuPont, 1987. Used as background soil data in WSRC 1992.

⁴ Average of Pond B sediment data from EMS, this report – Appendix B.

⁵ EMS data, this report – Appendix B.

⁶ MDA = Minimum detectable activity.

⁷ NA = Not available

Dose Estimate for Pond B Dam Workers

Using the data from the July 1998 sampling program, the maximum potential dose to a person working on the dam and directly exposed to radioactivity in the soil was estimated (Table 9). For the soil samples taken from the Pond B dam area and analyzed by EMS, ^{60}Co , ^{137}Cs , gross beta, gross alpha and several naturally occurring radionuclides were detected. The numerical average was used for dose calculations (DOE 1991). Doses for various naturally occurring radionuclides were not calculated separately since they were contained in the gross alpha and gross beta determinations. Pond sediment samples were excluded since there will be no work in the pond during the dam repair. Conservatively, the gross beta was assumed to be ^{90}Sr and the gross alpha was assumed to be ^{239}Pu . The total potential dose from inhalation, ingestion, dermal absorption and ground shine pathways was conservatively estimated to be about 32 mrem per year, which is below all regulatory requirements. Dose calculations also assumed that a worker performs construction activity at Pond B eight hours per day for 250 days per year.

The various worker dose pathways are described below.

Inhalation Pathway: There will be no inhalation dose unless the soil is dry and resuspended into the air. Under the worst case scenario, the worker would be exposed to the nuisance dust limit of 10 mg/m^3 of air. Assuming a breathing rate of 9.6 m^3 per 8 hour work period (Huang and Marter 1983), and using a published inhalation dose factor (DOE 1988a), the potential dose from the inhalation pathway would be 31 mrem/yr.

Ingestion Pathway: EPA risk assessments commonly assume that a worker will ingest 0.05 g of contaminated soil each workday (WSRC 1992). Using a published ingestion dose factor (DOE 1988a), the potential dose from the ingestion pathway would be 0.14 mrem/yr.

Dermal Absorption Pathway: Equation variables from a risk evaluation of Par Pond surface water and exposed sediments (WSRC 1992) can be used to determine the worker dose from the dermal absorption pathway. It can be assumed that $3,120 \text{ cm}^2$ of the worker's skin (hands and arms) comes in contact with soil. The soil to skin adherence factor is 2.77 mg/cm^2 and the absorption factor is 0.03. Using a published ingestion dose factor (this assumes a similar body distribution for ingestion and dermal absorption) the potential dose from the dermal absorption pathway would be 0.71 mrem/yr.

Ground Shine Dose: The ground shine dose can be estimated in a very crude and conservative manner by assuming that the radioactivity is uniformly distributed in the top 15 cm of the soil, no radioactivity is located at greater depths, and the soil density is 2 g/cm^3 . The area of contamination is assumed to be an infinite plane and no credit is taken for absorption of the gamma radiation in the soil. Using published information (DOE 1988b), the potential dose one meter above the surface would be 0.18 mrem/yr.

Table 9. Dose Estimates for Pond B Dam Workers

Radionuclide	Radioactivity (Average) pCi/kg	Inhalation Dose Factor rem/μCi	Ingestion Dose Factor rem/μCi	Ground Dose Factor mrem/yr/(μCi/m2)	CEDE (mrem/yr of exposure)			Total (mrem/yr of exposure)	
					Inhalation	Ingestion	Dermal Absorption		Ground Shine
Co-60	5.99E+00	1.50E-01	2.60E-02	2.27E+02	2.2E-05	1.9E-06	1.0E-05	9.2E-02	9.2E-02
Cs-137 ¹	3.23E+01	3.20E-02	5.00E-02	6.11E+01	2.5E-05	2.0E-05	1.0E-04	1.3E-01	1.3E-01
Gross Beta ²	1.13E+03	1.30E+00	1.30E-01	0.00E+00	3.5E-02	1.8E-03	9.5E-03	0.0E+00	4.7E-02
Gross Alpha ³	2.51E+03	5.10E+02	4.30E+00	3.78E-02	3.1E+01	1.3E-01	7.0E-01	6.5E-03	3.2E+01
Total					3.1E+01	1.4E-01	7.1E-01	1.4E-01	3.2E+01

¹ Assumes equilibrium with ^{137m}Ba² Assumes all activity is ⁹⁰Sr³ Assumes all activity is ²³⁹Pu

Summary

The current proposal to fix and repair the Pond B dam structure involves stripping topsoil and vegetation from the face of the dam and from at least a 50 to 100 foot area along the toe of the dam. Then the dam would be reinforced with additional pervious material on the downstream face of the dam. Roughly 3.4 acres of wetlands would be impacted by the extension of the toe of the dam 100 yards into the wetlands from the existing toe of the dam.

Previous studies on SRS soils in general (Looney et al. 1985) and Pond B in particular (Whicker et al, 1990) indicated that mobility of ^{137}Cs through Pond B sediments should be expected to be very low. Consequently, ^{137}Cs would not be expected to migrate from Pond B through the dam with the seepage water. Results from the Pond B sediment samples and Pond B dam soil samples collected in July 1998 support the findings of these previous studies. Radioisotope levels measured in the dam soil samples were within background levels for SRS. While this finding supports the presupposition that contamination has not spread from Pond B water to the top layer of soil on the downstream side of the dam, it does not rule out the possibility that very small levels or radioactivity have migrated with the seepage water.

Actual levels of activity found in the samples were used to calculate potential dose to a person working on the dam during the proposed dam repair project. The maximum potential dose was conservatively calculated to be 32 mrem per year, which is below regulatory requirements.

The Pond B Dam repair project work will be performed according to site procedures.

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**Appendix A:
Sample Listing**

SAMPLE LABELING

The sample number as described below identified all samples. The sample number is designed to identify the sample location, sampling interval and type of sample.

Sample numbering scheme: Project, Location - Interval, Type

The individual elements are explained below:

Project	PB = Pond B project
Locations	U1 = Upper Transect, marker #1 L1 = Lower Transect, marker #1 W1= Wooded area downstream, first marker away the dam S1 = Pond sediment location 1
Intervals	1 - First sampling interval 0 - 1 foot 2 - Second sampling interval 2 - 4 feet 3 - Third sampling interval 4 - 10 feet
Type	A = Archive B = Replicate C = Split for GEL analysis

Listing of Samples

	Sample Number		Sample Location	Sampling Interval (ft depth)	Sample Type
1	PB	U1 - 1	Pond B Dam Upper Transect, Marker 1	0-1	
2	PB	U1 - 1 A	Pond B Dam Upper Transect, Marker 1	0-1	archive
3	PB	U1 - 2	Pond B Dam Upper Transect, Marker 1	2-4	
4	PB	U1 - 2 A	Pond B Dam Upper Transect, Marker 1	2-4	archive
5	PB	U1 - 3	Pond B Dam Upper Transect, Marker 1	4-10	
6	PB	U1 - 3 A	Pond B Dam Upper Transect, Marker 1	4-10	archive
7	PB	U3 - 1	Pond B Dam Upper Transect, Marker 3	0-1	
8	PB	U3 - 1 A	Pond B Dam Upper Transect, Marker 3	0-1	archive
9	PB	U3 - 2	Pond B Dam Upper Transect, Marker 3	2-4	
10	PB	U3 - 2 A	Pond B Dam Upper Transect, Marker 3	2-4	archive
11	PB	U3 - 3	Pond B Dam Upper Transect, Marker 3	4-10	
12	PB	U3 - 3 A	Pond B Dam Upper Transect, Marker 3	4-10	archive
13	PB	U5 - 1	Pond B Dam Upper Transect, Marker 5	0-1	
14	PB	U5 - 1 A	Pond B Dam Upper Transect, Marker 5	0-1	archive
15	PB	U5 - 2	Pond B Dam Upper Transect, Marker 5	2-4	
16	PB	U5 - 2 A	Pond B Dam Upper Transect, Marker 5	2-4	archive
17	PB	U5 - 3	Pond B Dam Upper Transect, Marker 5	4-10	parent
18	PB	U5 - 3 B	Pond B Dam Upper Transect, Marker 5	4-10	replicate
19	PB	U5 - 3 A	Pond B Dam Upper Transect, Marker 5	4-10	archive
20	PB	U7 - 1	Pond B Dam Upper Transect, Marker 7	0-1	
21	PB	U7 - 1 A	Pond B Dam Upper Transect, Marker 7	0-1	archive
22	PB	U7 - 1 C	Pond B Dam Upper Transect, Marker 7	0-1	split for GEL
23	PB	U7 - 2	Pond B Dam Upper Transect, Marker 7	2-4	
24	PB	U7 - 2 A	Pond B Dam Upper Transect, Marker 7	2-4	archive
25	PB	U7 - 3	Pond B Dam Upper Transect, Marker 7	4-10	
26	PB	U7 - 3 A	Pond B Dam Upper Transect, Marker 7	4-10	archive
27	PB	U9 - 1	Pond B Dam Upper Transect, Marker 9	0-1	
28	PB	U9 - 1 A	Pond B Dam Upper Transect, Marker 9	0-1	archive
29	PB	U9 - 2	Pond B Dam Upper Transect, Marker 9	2-4	
30	PB	U9 - 2 A	Pond B Dam Upper Transect, Marker 9	2-4	archive

	Sample Number	Sample Location	Sampling Interval (ft depth)	Sample Type
31	PB U9 - 3	Pond B Dam Upper Transect, Marker 9	4-10	
32	PB U9 - 3 A	Pond B Dam Upper Transect, Marker 9	4-10	archive
33	PB U11 - 1	Pond B Dam Upper Transect, Marker 11	0-1	
34	PB U11 - 1 A	Pond B Dam Upper Transect, Marker 11	0-1	archive
35	PB U11 - 2	Pond B Dam Upper Transect, Marker 11	2-4	
36	PB U11 - 2 C	Pond B Dam Upper Transect, Marker 11	2-4	split for GEL
37	PB U11 - 2 A	Pond B Dam Upper Transect, Marker 11	2-4	archive
38	PB U11 - 3	Pond B Dam Upper Transect, Marker 11	4-10	
39	PB U11 - 3 A	Pond B Dam Upper Transect, Marker 11	4-10	archive
40	PB U13 - 1	Pond B Dam Upper Transect, Marker 13	0-1	
41	PB U13 - 1 A	Pond B Dam Upper Transect, Marker 13	0-1	archive
42	PB U13 - 2	Pond B Dam Upper Transect, Marker 13	2-4	
43	PB U13 - 2 A	Pond B Dam Upper Transect, Marker 13	2-4	archive
44	PB U13 - 3	Pond B Dam Upper Transect, Marker 13	4-10	
45	PB U13 - 3 A	Pond B Dam Upper Transect, Marker 13	4-10	archive
46	PB U15 - 1	Pond B Dam Upper Transect, Marker 15	0-1	
47	PB U15 - 1 A	Pond B Dam Upper Transect, Marker 15	0-1	archive
48	PB U15 - 2	Pond B Dam Upper Transect, Marker 15	2-4	
49	PB U15 - 2 A	Pond B Dam Upper Transect, Marker 15	2-4	archive
50	PB U15 - 3	Pond B Dam Upper Transect, Marker 15	4-10	
51	PB U15 - 3 A	Pond B Dam Upper Transect, Marker 15	4-10	archive
52	PB L1 - 1	Pond B Dam Lower Transect, Marker 1	0-1	
53	PB L1 - 1 A	Pond B Dam Lower Transect, Marker 1	0-1	archive
54	PB L1 - 2	Pond B Dam Lower Transect, Marker 1	2-4	
55	PB L1 - 2 A	Pond B Dam Lower Transect, Marker 1	2-4	archive
56	PB L1 - 3	Pond B Dam Lower Transect, Marker 1	4-10	
57	PB L1 - 3 A	Pond B Dam Lower Transect, Marker 1	4-10	archive
58	PB L2 - 1	Pond B Dam Lower Transect, Marker 2	0-1	
59	PB L2 - 1 A	Pond B Dam Lower Transect, Marker 2	0-1	archive
60	PB L2 - 2	Pond B Dam Lower Transect, Marker 2	2-4	
61	PB L2 - 2 A	Pond B Dam Lower Transect, Marker 2	2-4	archive
62	PB L2 - 3	Pond B Dam Lower Transect, Marker 2	4-10	
63	PB L2 - 3 A	Pond B Dam Lower Transect, Marker 2	4-10	archive
64	PB L3 - 1	Pond B Dam Lower Transect, Marker 3	0-1	

	Sample Number		Sample Location	Sampling Interval (ft depth)	Sample Type
65	PB	L3 - 1 A	Pond B Dam Lower Transect, Marker 3	0-1	archive
66	PB	L3 - 2	Pond B Dam Lower Transect, Marker 3	2-4	
67	PB	L3 - 2 A	Pond B Dam Lower Transect, Marker 3	2-4	archive
68	PB	L3 - 2 C	Pond B Dam Lower Transect, Marker 3	2-4	split for GEL
69	PB	L3 - 3	Pond B Dam Lower Transect, Marker 3	4-10	
70	PB	L3 - 3 A	Pond B Dam Lower Transect, Marker 3	4-10	archive
71	PB	L4 - 1	Pond B Dam Lower Transect, Marker 4	0-1	
72	PB	L4 - 1 A	Pond B Dam Lower Transect, Marker 4	0-1	archive
73	PB	L4 - 2	Pond B Dam Lower Transect, Marker 4	2-4	
74	PB	L4 - 2 A	Pond B Dam Lower Transect, Marker 4	2-4	archive
75	PB	L4 - 3	Pond B Dam Lower Transect, Marker 4	4-10	
76	PB	L4 - 3 A	Pond B Dam Lower Transect, Marker 4	4-10	archive
77	PB	L5 - 1	Pond B Dam Lower Transect, Marker 5	0-1	
78	PB	L5 - 1 A	Pond B Dam Lower Transect, Marker 5	0-1	archive
79	PB	L5 - 2	Pond B Dam Lower Transect, Marker 5	2-4	
80	PB	L5 - 2 A	Pond B Dam Lower Transect, Marker 5	2-4	archive
81	PB	L5 - 2 C	Pond B Dam Lower Transect, Marker 5	2-4	split for GEL
82	PB	L5 - 3	Pond B Dam Lower Transect, Marker 5	4-10	
83	PB	L5 - 3 A	Pond B Dam Lower Transect, Marker 5	4-10	archive
84	PB	L6 - 1	Pond B Dam Lower Transect, Marker 6	0-1	
85	PB	L6 - 1 A	Pond B Dam Lower Transect, Marker 6	0-1	archive
86	PB	L6 - 2	Pond B Dam Lower Transect, Marker 6	2-4	
87	PB	L6 - 2 A	Pond B Dam Lower Transect, Marker 6	2-4	archive
88	PB	L6 - 3	Pond B Dam Lower Transect, Marker 6	4-10	
89	PB	L6 - 3 A	Pond B Dam Lower Transect, Marker 6	4-10	archive
90	PB	L7 - 1	Pond B Dam Lower Transect, Marker 7	0-1	
91	PB	L7 - 1 A	Pond B Dam Lower Transect, Marker 7	0-1	archive
92	PB	L7 - 1 C	Pond B Dam Lower Transect, Marker 7	0-1	split for GEL
93	PB	L7 - 2	Pond B Dam Lower Transect, Marker 7	2-4	
94	PB	L7 - 2 A	Pond B Dam Lower Transect, Marker 7	2-4	archive
95	PB	L7 - 3	Pond B Dam Lower Transect, Marker 7	4-10	
96	PB	L7 - 3 A	Pond B Dam Lower Transect, Marker 7	4-10	archive
97	PB	L8 - 1	Pond B Dam Lower Transect, Marker 8	0-1	
98	PB	L8 - 1 A	Pond B Dam Lower Transect, Marker 8	0-1	archive

	Sample Number		Sample Location	Sampling Interval (ft depth)	Sample Type
99	PB	L8 - 2	Pond B Dam Lower Transect, Marker 8	2-4	
100	PB	L8 - 2 A	Pond B Dam Lower Transect, Marker 8	2-4	archive
101	PB	L8 - 3	Pond B Dam Lower Transect, Marker 8	4-10	
102	PB	L8 - 3 A	Pond B Dam Lower Transect, Marker 8	4-10	archive
103	PB	L9 - 1	Pond B Dam Lower Transect, Marker 9	0-1	
104	PB	L9 - 1 A	Pond B Dam Lower Transect, Marker 9	0-1	archive
105	PB	L9 - 1 C	Pond B Dam Lower Transect, Marker 9	0-1	split for GEL
106	PB	L9 - 2	Pond B Dam Lower Transect, Marker 9 ¹	2-4	
107	PB	L9 - 2 A	Pond B Dam Lower Transect, Marker 9 ¹	2-4	archive
108	PB	L9 - 3	Pond B Dam Lower Transect, Marker 9 ¹	4-10	
109	PB	L9 - 3 A	Pond B Dam Lower Transect, Marker 9 ¹	4-10	archive
110	PB	L10 - 1	Pond B Dam Lower Transect, Marker 10	0-1	
111	PB	L10 - 1 A	Pond B Dam Lower Transect, Marker 10	0-1	archive
112	PB	L10 - 2	Pond B Dam Lower Transect, Marker 10	2-4	
113	PB	L10 - 2 A	Pond B Dam Lower Transect, Marker 10	2-4	archive
114	PB	L10 - 3	Pond B Dam Lower Transect, Marker 10	4-10	
115	PB	L10 - 3 A	Pond B Dam Lower Transect, Marker 10	4-10	archive
116	PB	L11 - 1	Pond B Dam Lower Transect, Marker 11	0-1	
117	PB	L11 - 1 A	Pond B Dam Lower Transect, Marker 11	0-1	archive
118	PB	L11 - 2	Pond B Dam Lower Transect, Marker 11	2-4	
119	PB	L11 - 2 A	Pond B Dam Lower Transect, Marker 11	2-4	archive
120	PB	L11 - 3	Pond B Dam Lower Transect, Marker 11	4-10	
121	PB	L11 - 3 A	Pond B Dam Lower Transect, Marker 11	4-10	archive
122	PB	L12 - 1	Pond B Dam Lower Transect, Marker 12	0-1	
123	PB	L12 - 1 B	Pond B Dam Lower Transect, Marker 12	0-1	replicate
124	PB	L12 - 1 A	Pond B Dam Lower Transect, Marker 12	0-1	archive
125	PB	L12 - 2	Pond B Dam Lower Transect, Marker 12	2-4	
126	PB	L12 - 2 A	Pond B Dam Lower Transect, Marker 12	2-4	archive
127	PB	L12 - 3	Pond B Dam Lower Transect, Marker 12 ¹	4-10	
128	PB	L12 - 3 A	Pond B Dam Lower Transect, Marker 12 ¹	4-10	archive
129	PB	L12 - 3 C	Pond B Dam Lower Transect, Marker 12 ¹	4-10	split for GEL
130	PB	L13 - 1	Pond B Dam Lower Transect, Marker 13	0-1	
131	PB	L13 - 1 A	Pond B Dam Lower Transect, Marker 13	0-1	archive
132	PB	L13 - 2	Pond B Dam Lower Transect, Marker 13	2-4	

	Sample Number	Sample Location	Sampling Interval (ft depth)	Sample Type
133	PB L13 - 2 A	Pond B Dam Lower Transect, Marker 13	2-4	archive
134	PB L13 - 3	Pond B Dam Lower Transect, Marker 13	4-10	
135	PB L13 - 3 A	Pond B Dam Lower Transect, Marker 13	4-10	archive
136	PB L14 - 1	Pond B Dam Lower Transect, Marker 14	0-1	
137	PB L14 - 1 A	Pond B Dam Lower Transect, Marker 14	0-1	archive
138	PB L14 - 2	Pond B Dam Lower Transect, Marker 14	2-4	
139	PB L14 - 2 A	Pond B Dam Lower Transect, Marker 14	2-4	archive
140	PB L14 - 3	Pond B Dam Lower Transect, Marker 14	4-10	
141	PB L14 - 3 A	Pond B Dam Lower Transect, Marker 14	4-10	archive
142	PB L15 - 1	Pond B Dam Lower Transect, Marker 15	0-1	
143	PB L15 - 1 A	Pond B Dam Lower Transect, Marker 15	0-1	archive
144	PB L15 - 2	Pond B Dam Lower Transect, Marker 15	2-4	
145	PB L15 - 2 A	Pond B Dam Lower Transect, Marker 15	2-4	archive
146	PB L15 - 3	Pond B Dam Lower Transect, Marker 15	4-10	
147	PB L15 - 3 A	Pond B Dam Lower Transect, Marker 15	4-10	archive
148	PB W1 - 1	Downstream of Pond B Dam, 1st site	0-1	
149	PB W1 - 1 A	Downstream of Pond B Dam, 1st site	0-1	archive
150	PB W1 - 2	Downstream of Pond B Dam, 1st site	2-4	
151	PB W1 - 2 A	Downstream of Pond B Dam, 1st site	2-4	archive
152	PB W1 - 3	Downstream of Pond B Dam, 1st site ¹	4-10	
153	PB W1 - 3 A	Downstream of Pond B Dam, 1st site ¹	4-10	archive
154	PB W2 - 1	Downstream of Pond B Dam, 2nd site	0-1	
155	PB W2 - 1 A	Downstream of Pond B Dam, 2nd site	0-1	archive
156	PB W2 - 2	Downstream of Pond B Dam, 2nd site	2-4	
157	PB W2 - 2 A	Downstream of Pond B Dam, 2nd site	2-4	archive
158	PB W2 - 3	Downstream of Pond B Dam, 2nd site ¹	4-10	
159	PB W2 - 3 A	Downstream of Pond B Dam, 2nd sit ¹	4-10	archive
160	PB W3 - 1	Downstream of Pond B Dam, 3rd site	0-1	
161	PB W3 - 1 A	Downstream of Pond B Dam, 3rd site	0-1	archive
162	PB W3 - 1 C	Downstream of Pond B Dam, 3rd site	0-1	split for GEL
163	PB W3 - 2	Downstream of Pond B Dam, 3rd site	2-4	
164	PB W3 - 2 A	Downstream of Pond B Dam, 3rd site	2-4	archive
165	PB W3 - 3	Downstream of Pond B Dam, 3rd site ¹	4-10	
166	PB W3 - 3 A	Downstream of Pond B Dam, 3rd site ¹	4-10	archive

	Sample Number		Sample Location	Sampling Interval (ft depth)	Sample Type
167	PB	W4 - 1	Downstream of Pond B Dam, 4th site	0-1	
168	PB	W4 - 1 A	Downstream of Pond B Dam, 4th site	0-1	archive
169	PB	W4 - 2	Downstream of Pond B Dam, 4th site	2-4	
170	PB	W4 - 2 A	Downstream of Pond B Dam, 4th site	2-4	archive
171	PB	W4 - 3	Downstream of Pond B Dam, 4th site ¹	4-10	
172	PB	W4 - 3 A	Downstream of Pond B Dam, 4th site ¹	4-10	archive
173	PB	W4 - 3 C	Downstream of Pond B Dam, 4th site ¹	4-10	split for GEL
174	PB	W5 - 1	Downstream of Pond B Dam, 5th site	0-1	
175	PB	W5 - 1 A	Downstream of Pond B Dam, 5th site	0-1	archive
176	PB	W5 - 2	Downstream of Pond B Dam, 5th site	2-4	
177	PB	W5 - 2 A	Downstream of Pond B Dam, 5th site	2-4	archive
178	PB	W5 - 3	Downstream of Pond B Dam, 5th site ¹	4-10	
179	PB	W5 - 3 A	Downstream of Pond B Dam, 5th site ¹	4-10	archive
180	PB	S1 - 1	Pond B near Dam, location 1	shallow	
181	PB	S1 - 1 B	Pond B near Dam, location 1	shallow	replicate
182	PB	S1 - 1 A	Pond B near Dam, location 1	shallow	archive
183	PB	S2 - 1	Pond B near Dam, location 2	shallow	
184	PB	S2 - 1 C	Pond B near Dam, location 2	shallow	split for GEL
185	PB	S2 - 1 A	Pond B near Dam, location 2	shallow	archive

¹ Sample could not be collected.

**Appendix B:
EMS Analytical Data**

EMS ANALYTICAL DATA**Analytical Data Table Nomenclature**

Laboratory results are presented for each sample collected. For each analyte in the laboratory analyses tables, the following information is presented:

Sample Number: The WSRC Sample Identification Number

Trans. ID: Transect identification number.

Depth Int.: Depth interval.

- 1 - First sampling interval 0 - 1 foot
- 2 - Second sampling interval 2 - 4 feet
- 3 - Third sampling interval 4 - 10 feet

Anal. Lab ID: Analytical Laboratory identification number. Internal sample number used in the EMS lab.

Date: Date the sample was collected.

Analyte: Parameter measured.

DL (pCi/kg): Detection Limit. The detection limit is the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is above zero. It answers the question, "Is it present".

Qual.: Qualifier. Letter indicating special conditions associated with the result

If the final concentration in the sample was found to be below the detection limit, the value reported is flagged with a "U" qualifier.

Activity (pCi/kg): Measured result of the analysis

1 Sigma (pCi/kg): One standard deviation

EMS Analytical Data**Lower Tier**

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL1-1	1	1	98809745	28-Jul	Gross A	5530		9.16E+03	2.69E+03
PBL1-1	1	1	98809745	28-Jul	Gross B	9640	U	1.06E+03	2.78E+03
PBL1-1	1	1	98809745	28-Jul	Ac-228	140		1.07E+03	8.14E+01
PBL1-1	1	1	98809745	28-Jul	Bi-212	380		6.73E+02	1.59E+02
PBL1-1	1	1	98809745	28-Jul	Bi-214	90		8.43E+02	5.73E+01
PBL1-1	1	1	98809745	28-Jul	Co-60	50	U	5.65E+00	1.23E+01
PBL1-1	1	1	98809745	28-Jul	Cs-137	60	U	-8.95E+00	1.58E+01
PBL1-1	1	1	98809745	28-Jul	K-40	300		8.65E+02	2.20E+02
PBL1-1	1	1	98809745	28-Jul	Pb-212	90		1.09E+03	7.46E+01
PBL1-1	1	1	98809745	28-Jul	Pb-214	110		8.35E+02	6.92E+01
PBL1-1	1	1	98809745	28-Jul	Tl-208	50		3.49E+02	3.69E+01
PBL1-2	1	2	98809743	28-Jul	Gross A	5460	U	5.41E+03	2.14E+03
PBL1-2	1	2	98809743	28-Jul	Gross B	9590	U	3.59E+03	2.92E+03
PBL1-2	1	2	98809743	28-Jul	Ac-228	160		1.01E+03	8.08E+01
PBL1-2	1	2	98809743	28-Jul	Bi-212	370		6.54E+02	1.74E+02
PBL1-2	1	2	98809743	28-Jul	Bi-214	100		7.51E+02	6.14E+01
PBL1-2	1	2	98809743	28-Jul	Co-60	50	U	1.40E+01	1.23E+01
PBL1-2	1	2	98809743	28-Jul	Cs-137	50	U	-3.05E+01	1.49E+01
PBL1-2	1	2	98809743	28-Jul	K-40	410		8.95E+02	2.43E+02
PBL1-2	1	2	98809743	28-Jul	Pb-212	100		9.81E+02	7.23E+01
PBL1-2	1	2	98809743	28-Jul	Pb-214	100		8.43E+02	6.68E+01
PBL1-2	1	2	98809743	28-Jul	Tl-208	50		3.65E+02	3.61E+01
PBL1-3	1	3	98809746	28-Jul	Gross A	5430	U	8.81E+02	1.35E+03
PBL1-3	1	3	98809746	28-Jul	Gross B	9560	U	2.78E+03	2.82E+03
PBL1-3	1	3	98809746	28-Jul	Ac-228	160		1.03E+03	8.72E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL1-3	1	3	98809746	28-Jul	Bi-212	350		7.51E+02	1.64E+02
PBL1-3	1	3	98809746	28-Jul	Bi-214	90		7.43E+02	6.20E+01
PBL1-3	1	3	98809746	28-Jul	Co-60	50	U	2.11E+01	1.29E+01
PBL1-3	1	3	98809746	28-Jul	Cs-137	50	U	-1.93E+01	1.57E+01
PBL1-3	1	3	98809746	28-Jul	K-40	350		4.27E+02	2.62E+02
PBL1-3	1	3	98809746	28-Jul	Pb-212	100		1.01E+03	7.05E+01
PBL1-3	1	3	98809746	28-Jul	Pb-214	100		8.92E+02	6.89E+01
PBL1-3	1	3	98809746	28-Jul	Tl-208	50		3.84E+02	3.77E+01
PBL2-1	2	1	98809744	28-Jul	Gross A	5410		8.46E+03	2.58E+03
PBL2-1	2	1	98809744	28-Jul	Gross B	9540	U	8.46E+03	3.18E+03
PBL2-1	2	1	98809744	28-Jul	Ac-228	170		9.76E+02	8.34E+01
PBL2-1	2	1	98809744	28-Jul	Bi-212	310		6.41E+02	1.88E+02
PBL2-1	2	1	98809744	28-Jul	Bi-214	100		7.46E+02	6.73E+01
PBL2-1	2	1	98809744	28-Jul	Co-60	50	U	1.79E+01	1.16E+01
PBL2-1	2	1	98809744	28-Jul	Cs-137	50		7.81E+01	2.95E+01
PBL2-1	2	1	98809744	28-Jul	K-40	490		1.24E+03	2.34E+02
PBL2-1	2	1	98809744	28-Jul	Pb-212	100		9.84E+02	6.99E+01
PBL2-1	2	1	98809744	28-Jul	Pb-214	110		8.32E+02	6.53E+01
PBL2-1	2	1	98809744	28-Jul	Tl-208	50		2.86E+02	4.18E+01
PBL2-2	2	2	98809747	28-Jul	Gross A	5450	U	1.52E+03	1.50E+03
PBL2-2	2	2	98809747	28-Jul	Gross B	9580	U	-1.96E+03	2.58E+03
PBL2-2	2	2	98809747	28-Jul	Ac-228	140		1.17E+03	8.73E+01
PBL2-2	2	2	98809747	28-Jul	Bi-212	300		6.24E+02	1.49E+02
PBL2-2	2	2	98809747	28-Jul	Bi-214	100		7.59E+02	5.95E+01
PBL2-2	2	2	98809747	28-Jul	Co-60	40	U	-1.28E+01	1.23E+01
PBL2-2	2	2	98809747	28-Jul	Cs-137	60	U	1.99E+01	1.49E+01
PBL2-2	2	2	98809747	28-Jul	K-40	190		5.43E+02	2.53E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL2-2	2	2	98809747	28-Jul	Pb-212	100		1.09E+03	7.19E+01
PBL2-2	2	2	98809747	28-Jul	Pb-214	110		7.05E+02	5.73E+01
PBL2-2	2	2	98809747	28-Jul	Tl-208	50		3.00E+02	3.50E+01
PBL2-3	2	3	98809748	28-Jul	Gross A	1760	U	9.08E+02	5.61E+02
PBL2-3	2	3	98809748	28-Jul	Gross B	3120	U	1.44E+02	8.77E+02
PBL2-3	2	3	98809748	28-Jul	Ac-228	180		1.05E+03	8.72E+01
PBL2-3	2	3	98809748	28-Jul	Bi-212	380		7.73E+02	1.65E+02
PBL2-3	2	3	98809748	28-Jul	Bi-214	100		7.51E+02	6.00E+01
PBL2-3	2	3	98809748	28-Jul	Co-60	50	U	2.22E+01	1.36E+01
PBL2-3	2	3	98809748	28-Jul	Cs-137	50	U	-1.63E+01	1.51E+01
PBL2-3	2	3	98809748	28-Jul	K-40	420		5.30E+02	2.41E+02
PBL2-3	2	3	98809748	28-Jul	Pb-212	90		9.78E+02	6.91E+01
PBL2-3	2	3	98809748	28-Jul	Pb-214	100		7.41E+02	6.14E+01
PBL2-3	2	3	98809748	28-Jul	Tl-208	50		3.46E+02	3.32E+01
PBL3-1	3	1	98809830	28-Jul	Gross A	1760	U	1.69E+03	6.89E+02
PBL3-1	3	1	98809830	28-Jul	Gross B	3090	U	1.64E+02	8.85E+02
PBL3-1	3	1	98809830	28-Jul	Ac-228	130		1.18E+03	4.77E+01
PBL3-1	3	1	98809830	28-Jul	Bi-212	340		7.86E+02	1.07E+02
PBL3-1	3	1	98809830	28-Jul	Bi-214	80		8.11E+02	3.81E+01
PBL3-1	3	1	98809830	28-Jul	Co-60	40	U	-1.72E+00	7.34E+00
PBL3-1	3	1	98809830	28-Jul	Cs-137	60	U	3.46E+01	9.96E+00
PBL3-1	3	1	98809830	28-Jul	K-40	350		1.00E+03	1.45E+02
PBL3-1	3	1	98809830	28-Jul	Pb-212	80		9.65E+02	4.20E+01
PBL3-1	3	1	98809830	28-Jul	Pb-214	90		7.57E+02	4.01E+01
PBL3-1	3	1	98809830	28-Jul	Tl-208	40		3.89E+02	2.24E+01
PBL3-2	3	2	98809828	28-Jul	Gross A	1760	U	1.12E+03	6.08E+02
PBL3-2	3	2	98809828	28-Jul	Gross B	3110	U	4.27E+02	8.92E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL3-2	3	2	98809828	28-Jul	Ac-228	120		1.06E+03	4.51E+01
PBL3-2	3	2	98809828	28-Jul	Bi-212	280		8.30E+02	1.25E+02
PBL3-2	3	2	98809828	28-Jul	Bi-214	80		7.95E+02	3.53E+01
PBL3-2	3	2	98809828	28-Jul	Co-60	30	U	-5.24E+00	6.58E+00
PBL3-2	3	2	98809828	28-Jul	Cs-137	50	U	5.95E+00	8.70E+00
PBL3-2	3	2	98809828	28-Jul	K-40	290		9.05E+02	1.42E+02
PBL3-2	3	2	98809828	28-Jul	Pb-212	80		1.04E+03	4.35E+01
PBL3-2	3	2	98809828	28-Jul	Pb-214	100		7.78E+02	3.95E+01
PBL3-2	3	2	98809828	28-Jul	Tl-208	40		3.19E+02	2.22E+01
PBL3-3	3	3	98809838	28-Jul	Gross A	2280	U	1.59E+03	5.74E+02
PBL3-3	3	3	98809838	28-Jul	Gross B	4020	U	-4.30E+02	7.82E+02
PBL3-3	3	3	98809838	28-Jul	Ac-228	150		1.00E+03	8.86E+01
PBL3-3	3	3	98809838	28-Jul	Bi-212	370		6.00E+02	2.05E+02
PBL3-3	3	3	98809838	28-Jul	Bi-214	80		8.11E+02	5.81E+01
PBL3-3	3	3	98809838	28-Jul	Co-60	50	U	7.27E+00	1.24E+01
PBL3-3	3	3	98809838	28-Jul	Cs-137	50	U	1.45E+01	1.46E+01
PBL3-3	3	3	98809838	28-Jul	K-40	370		5.89E+02	2.36E+02
PBL3-3	3	3	98809838	28-Jul	Pb-212	100		9.95E+02	6.92E+01
PBL3-3	3	3	98809838	28-Jul	Pb-214	110		8.19E+02	6.42E+01
PBL3-3	3	3	98809838	28-Jul	Tl-208	50		3.24E+02	3.09E+01
PBL4-1	4	1	98809750	28-Jul	Gross A	1560		1.61E+03	6.36E+02
PBL4-1	4	1	98809750	28-Jul	Gross B	2620	U	4.68E+02	7.64E+02
PBL4-1	4	1	98809750	28-Jul	Ac-228	160		9.49E+02	8.11E+01
PBL4-1	4	1	98809750	28-Jul	Bi-212	380		8.30E+02	1.73E+02
PBL4-1	4	1	98809750	28-Jul	Bi-214	90		8.46E+02	6.22E+01
PBL4-1	4	1	98809750	28-Jul	Co-60	50	U	-1.58E+01	1.42E+01
PBL4-1	4	1	98809750	28-Jul	Cs-137	50		1.02E+02	3.01E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL4-1	4	1	98809750	28-Jul	K-40	550	U	3.95E+02	2.66E+02
PBL4-1	4	1	98809750	28-Jul	Pb-212	90		9.84E+02	7.20E+01
PBL4-1	4	1	98809750	28-Jul	Pb-214	110		8.73E+02	7.26E+01
PBL4-1	4	1	98809750	28-Jul	Tl-208	50		4.00E+02	3.45E+01
PBL4-2	4	2	98809753	28-Jul	Gross A	1560		1.61E+03	6.38E+02
PBL4-2	4	2	98809753	28-Jul	Gross B	2620	U	5.54E+02	7.65E+02
PBL4-2	4	2	98809753	28-Jul	Ac-228	150		1.09E+03	8.62E+01
PBL4-2	4	2	98809753	28-Jul	Bi-212	380		5.68E+02	1.68E+02
PBL4-2	4	2	98809753	28-Jul	Bi-214	80		7.27E+02	5.53E+01
PBL4-2	4	2	98809753	28-Jul	Co-60	40	U	-2.16E+00	1.17E+01
PBL4-2	4	2	98809753	28-Jul	Cs-137	60	U	4.43E+01	1.61E+01
PBL4-2	4	2	98809753	28-Jul	K-40	440		8.78E+02	3.27E+02
PBL4-2	4	2	98809753	28-Jul	Pb-212	100		1.05E+03	7.16E+01
PBL4-2	4	2	98809753	28-Jul	Pb-214	100		7.81E+02	6.05E+01
PBL4-2	4	2	98809753	28-Jul	Tl-208	40		4.22E+02	3.78E+01
PBL4-3	4	3	98809754	28-Jul	Gross A	5430	U	2.76E+03	1.78E+03
PBL4-3	4	3	98809754	28-Jul	Gross B	9540	U	-1.12E+03	2.62E+03
PBL4-3	4	3	98809754	28-Jul	Ac-228	170		1.16E+03	9.55E+01
PBL4-3	4	3	98809754	28-Jul	Bi-212	380		9.16E+02	1.86E+02
PBL4-3	4	3	98809754	28-Jul	Bi-214	90		8.65E+02	6.30E+01
PBL4-3	4	3	98809754	28-Jul	Co-60	50	U	-1.08E+00	1.29E+01
PBL4-3	4	3	98809754	28-Jul	Cs-137	50	U	-2.04E+01	1.53E+01
PBL4-3	4	3	98809754	28-Jul	K-40	1180	U	8.89E+02	2.70E+02
PBL4-3	4	3	98809754	28-Jul	Pb-212	110		1.03E+03	7.57E+01
PBL4-3	4	3	98809754	28-Jul	Pb-214	120		6.81E+02	6.86E+01
PBL4-3	4	3	98809754	28-Jul	Tl-208	60		3.32E+02	3.38E+01
PBL5-1	5	1	98809757	28-Jul	Gross A	6700	U	4.62E+03	1.65E+03

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL5-1	5	1	98809757	28-Jul	Gross B	11840	U	2.84E+03	2.46E+03
PBL5-1	5	1	98809757	28-Jul	Ac-228	160		1.27E+03	9.84E+01
PBL5-1	5	1	98809757	28-Jul	Bi-212	400		9.08E+02	2.20E+02
PBL5-1	5	1	98809757	28-Jul	Bi-214	90		9.76E+02	6.45E+01
PBL5-1	5	1	98809757	28-Jul	Co-60	50	U	1.46E+01	1.27E+01
PBL5-1	5	1	98809757	28-Jul	Cs-137	60		7.41E+01	2.77E+01
PBL5-1	5	1	98809757	28-Jul	K-40	510		1.10E+03	2.59E+02
PBL5-1	5	1	98809757	28-Jul	Pb-212	130		1.07E+03	8.05E+01
PBL5-1	5	1	98809757	28-Jul	Pb-214	110		8.62E+02	7.16E+01
PBL5-1	5	1	98809757	28-Jul	Tl-208	60		4.43E+02	3.74E+01
PBL5-2	5	2	98809755	28-Jul	Gross A	1760	U	1.55E+03	6.74E+02
PBL5-2	5	2	98809755	28-Jul	Gross B	3110	U	-1.12E+03	8.08E+02
PBL5-2	5	2	98809755	28-Jul	Ac-228	140		1.18E+03	9.65E+01
PBL5-2	5	2	98809755	28-Jul	Bi-212	350		6.05E+02	1.62E+02
PBL5-2	5	2	98809755	28-Jul	Bi-214	100		9.49E+02	6.47E+01
PBL5-2	5	2	98809755	28-Jul	Co-60	50	U	5.65E-01	1.24E+01
PBL5-2	5	2	98809755	28-Jul	Cs-137	60	U	2.32E+01	1.62E+01
PBL5-2	5	2	98809755	28-Jul	K-40	1030	U	4.70E+02	2.39E+02
PBL5-2	5	2	98809755	28-Jul	Pb-212	90		1.09E+03	7.80E+01
PBL5-2	5	2	98809755	28-Jul	Pb-214	110		7.92E+02	6.77E+01
PBL5-2	5	2	98809755	28-Jul	Tl-208	50		4.97E+02	3.97E+01
PBL5-3	5	3	98809758	28-Jul	Gross A	1750	U	2.89E+02	4.36E+02
PBL5-3	5	3	98809758	28-Jul	Gross B	3100	U	-8.00E+02	8.26E+02
PBL5-3	5	3	98809758	28-Jul	Ac-228	120		8.38E+02	9.22E+01
PBL5-3	5	3	98809758	28-Jul	Bi-212	320		8.89E+02	1.72E+02
PBL5-3	5	3	98809758	28-Jul	Bi-214	100		5.62E+02	6.01E+01
PBL5-3	5	3	98809758	28-Jul	Co-60	50	U	8.59E+00	1.26E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL5-3	5	3	98809758	28-Jul	Cs-137	50	U	2.28E+01	1.36E+01
PBL5-3	5	3	98809758	28-Jul	K-40	450		4.70E+02	2.43E+02
PBL5-3	5	3	98809758	28-Jul	Pb-212	100		8.54E+02	6.69E+01
PBL5-3	5	3	98809758	28-Jul	Pb-214	110		6.70E+02	5.58E+01
PBL5-3	5	3	98809758	28-Jul	Tl-208	50		2.86E+02	3.19E+01
PBL6-1	6	1	98809756	28-Jul	Gross A	1740	U	6.86E+02	5.20E+02
PBL6-1	6	1	98809756	28-Jul	Gross B	3080	U	7.41E+02	9.00E+02
PBL6-1	6	1	98809756	28-Jul	Ac-228	180		1.24E+03	8.89E+01
PBL6-1	6	1	98809756	28-Jul	Bi-212	360		6.62E+02	1.58E+02
PBL6-1	6	1	98809756	28-Jul	Bi-214	110		7.73E+02	6.28E+01
PBL6-1	6	1	98809756	28-Jul	Co-60	60	U	3.30E+01	1.39E+01
PBL6-1	6	1	98809756	28-Jul	Cs-137	40		1.45E+02	2.81E+01
PBL6-1	6	1	98809756	28-Jul	K-40	490		9.73E+02	2.80E+02
PBL6-1	6	1	98809756	28-Jul	Pb-212	100		1.08E+03	7.72E+01
PBL6-1	6	1	98809756	28-Jul	Pb-214	110		8.05E+02	6.55E+01
PBL6-1	6	1	98809756	28-Jul	Tl-208	50		3.49E+02	3.49E+01
PBL6-2	6	2	98809759	28-Jul	Gross A	1750	U	4.89E+02	4.82E+02
PBL6-2	6	2	98809759	28-Jul	Gross B	3110	U	5.86E+02	9.08E+02
PBL6-2	6	2	98809759	28-Jul	Ac-228	200		1.07E+03	7.76E+01
PBL6-2	6	2	98809759	28-Jul	Bi-214	100		7.51E+02	6.92E+01
PBL6-2	6	2	98809759	28-Jul	Co-60	50	U	-2.70E+00	1.49E+01
PBL6-2	6	2	98809759	28-Jul	Cs-137	60	U	-9.38E+00	1.62E+01
PBL6-2	6	2	98809759	28-Jul	K-40	430		1.05E+03	2.59E+02
PBL6-2	6	2	98809759	28-Jul	Pb-212	100		9.54E+02	7.43E+01
PBL6-2	6	2	98809759	28-Jul	Pb-214	110		8.00E+02	6.46E+01
PBL6-2	6	2	98809759	28-Jul	Tl-208	50		3.38E+02	3.72E+01
PBL6-3	6	3	98809874	28-Jul	Gross A	1580		3.86E+03	9.45E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL6-3	6	3	98809874	28-Jul	Gross B	2500	U	1.72E+03	8.00E+02
PBL6-3	6	3	98809874	28-Jul	Ac-228	160		1.50E+03	1.10E+02
PBL6-3	6	3	98809874	28-Jul	Bi-212	380		8.46E+02	2.30E+02
PBL6-3	6	3	98809874	28-Jul	Bi-214	100		9.62E+02	6.58E+01
PBL6-3	6	3	98809874	28-Jul	Co-60	50	U	1.81E+00	1.31E+01
PBL6-3	6	3	98809874	28-Jul	Cs-137	60	U	-4.49E+00	1.68E+01
PBL6-3	6	3	98809874	28-Jul	K-40	390		2.04E+03	3.08E+02
PBL6-3	6	3	98809874	28-Jul	Pb-212	100		1.29E+03	8.86E+01
PBL6-3	6	3	98809874	28-Jul	Pb-214	120		1.01E+03	7.22E+01
PBL6-3	6	3	98809874	28-Jul	Tl-208	60		4.70E+02	4.11E+01
PBL7-1	7	1	98810318	28-Jul	Gross A	1400	U	6.19E+02	4.46E+02
PBL7-1	7	1	98810318	28-Jul	Gross B	2420	U	9.03E+02	7.22E+02
PBL7-1	7	1	98810318	28-Jul	Ac-228	150		9.38E+02	7.73E+01
PBL7-1	7	1	98810318	28-Jul	Bi-214	80		7.19E+02	6.04E+01
PBL7-1	7	1	98810318	28-Jul	Co-60	50	U	1.92E+01	1.36E+01
PBL7-1	7	1	98810318	28-Jul	Cs-137	60	U	4.46E+01	2.16E+01
PBL7-1	7	1	98810318	28-Jul	K-40	970	U	2.28E+02	2.23E+02
PBL7-1	7	1	98810318	28-Jul	Pb-212	110		7.86E+02	6.61E+01
PBL7-1	7	1	98810318	28-Jul	Pb-214	110		6.38E+02	5.89E+01
PBL7-1	7	1	98810318	28-Jul	Tl-208	50		2.78E+02	3.07E+01
PBL7-2	7	2	98810319	28-Jul	Gross A	1940	U	1.11E+03	4.66E+02
PBL7-2	7	2	98810319	28-Jul	Gross B	3400	U	6.22E+01	6.72E+02
PBL7-2	7	2	98810319	28-Jul	Ac-228	110		9.35E+02	7.20E+01
PBL7-2	7	2	98810319	28-Jul	Bi-212	380		5.65E+02	1.57E+02
PBL7-2	7	2	98810319	28-Jul	Bi-214	100		6.30E+02	5.58E+01
PBL7-2	7	2	98810319	28-Jul	Co-60	50	U	1.91E+00	1.23E+01
PBL7-2	7	2	98810319	28-Jul	Cs-137	50	U	1.02E+01	1.46E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL7-2	7	2	98810319	28-Jul	K-40	250		7.73E+02	2.09E+02
PBL7-2	7	2	98810319	28-Jul	Pb-212	90		9.57E+02	7.23E+01
PBL7-2	7	2	98810319	28-Jul	Pb-214	100		5.84E+02	5.59E+01
PBL7-2	7	2	98810319	28-Jul	Tl-208	50		2.89E+02	3.07E+01
PBL7-3	7	3	98810322	28-Jul	Gross A	1530	U	1.06E+03	5.59E+02
PBL7-3	7	3	98810322	28-Jul	Gross B	2680	U	-2.51E+02	7.35E+02
PBL7-3	7	3	98810322	28-Jul	Ac-228	150		9.84E+02	8.39E+01
PBL7-3	7	3	98810322	28-Jul	Bi-212	340		5.89E+02	1.31E+02
PBL7-3	7	3	98810322	28-Jul	Bi-214	80		6.49E+02	5.77E+01
PBL7-3	7	3	98810322	28-Jul	Co-60	40	U	1.41E+01	1.07E+01
PBL7-3	7	3	98810322	28-Jul	Cs-137	50	U	-2.78E+01	1.45E+01
PBL7-3	7	3	98810322	28-Jul	K-40	930	U	3.46E+02	2.09E+02
PBL7-3	7	3	98810322	28-Jul	Pb-212	90		9.68E+02	6.76E+01
PBL7-3	7	3	98810322	28-Jul	Pb-214	110		6.78E+02	5.92E+01
PBL7-3	7	3	98810322	28-Jul	Tl-208	50		3.46E+02	3.57E+01
PBL8-1	8	1	98809886	28-Jul	Gross A	1540	U	5.00E+02	4.51E+02
PBL8-1	8	1	98809886	28-Jul	Gross B	2690	U	-2.02E+02	7.34E+02
PBL8-1	8	1	98809886	28-Jul	Ac-228	160		1.13E+03	7.50E+01
PBL8-1	8	1	98809886	28-Jul	Bi-212	370		8.22E+02	2.03E+02
PBL8-1	8	1	98809886	28-Jul	Bi-214	110		6.54E+02	5.46E+01
PBL8-1	8	1	98809886	28-Jul	Co-60	40	U	-9.89E+00	1.17E+01
PBL8-1	8	1	98809886	28-Jul	Cs-137	60	U	9.86E+00	1.62E+01
PBL8-1	8	1	98809886	28-Jul	K-40	490		9.19E+02	3.15E+02
PBL8-1	8	1	98809886	28-Jul	Pb-212	100		1.04E+03	7.27E+01
PBL8-1	8	1	98809886	28-Jul	Pb-214	120		7.16E+02	6.61E+01
PBL8-1	8	1	98809886	28-Jul	Tl-208	50		3.30E+02	3.34E+01
PBL8-2	8	2	98809887	28-Jul	Gross A	1550		1.70E+03	6.72E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL8-2	8	2	98809887	28-Jul	Gross B	2690	U	7.97E+02	8.05E+02
PBL8-2	8	2	98809887	28-Jul	Ac-228	150		9.22E+02	6.95E+01
PBL8-2	8	2	98809887	28-Jul	Bi-212	400		6.08E+02	1.36E+02
PBL8-2	8	2	98809887	28-Jul	Bi-214	90		6.32E+02	5.54E+01
PBL8-2	8	2	98809887	28-Jul	Co-60	30	U	-2.34E+00	8.54E+00
PBL8-2	8	2	98809887	28-Jul	Cs-137	50	U	5.65E-01	1.43E+01
PBL8-2	8	2	98809887	28-Jul	K-40	990	U	5.19E+02	2.20E+02
PBL8-2	8	2	98809887	28-Jul	Pb-212	90		9.78E+02	6.89E+01
PBL8-2	8	2	98809887	28-Jul	Pb-214	110		7.24E+02	5.97E+01
PBL8-2	8	2	98809887	28-Jul	Tl-208	50		3.54E+02	3.82E+01
PBL8-3	8	3	98809888	28-Jul	Gross A	1550	U	2.95E+02	4.08E+02
PBL8-3	8	3	98809888	28-Jul	Gross B	2700	U	3.81E+02	7.76E+02
PBL8-3	8	3	98809888	28-Jul	Ac-228	170		1.01E+03	8.68E+01
PBL8-3	8	3	98809888	28-Jul	Bi-212	370		6.59E+02	1.95E+02
PBL8-3	8	3	98809888	28-Jul	Bi-214	100		6.46E+02	5.92E+01
PBL8-3	8	3	98809888	28-Jul	Co-60	50	U	6.22E+00	1.18E+01
PBL8-3	8	3	98809888	28-Jul	Cs-137	60	U	1.55E+01	1.69E+01
PBL8-3	8	3	98809888	28-Jul	K-40	480		9.22E+02	2.84E+02
PBL8-3	8	3	98809888	28-Jul	Pb-212	100		9.32E+02	6.92E+01
PBL8-3	8	3	98809888	28-Jul	Pb-214	120		6.08E+02	6.42E+01
PBL8-3	8	3	98809888	28-Jul	Tl-208	50		2.97E+02	3.26E+01
PBL9-1	9	1	98809823	28-Jul	Gross A	1640		6.95E+03	1.25E+03
PBL9-1	9	1	98809823	28-Jul	Gross B	2740	U	1.44E+03	8.77E+02
PBL9-1	9	1	98809823	28-Jul	Ac-228	140		1.30E+03	1.01E+02
PBL9-1	9	1	98809823	28-Jul	Bi-212	330		7.62E+02	1.95E+02
PBL9-1	9	1	98809823	28-Jul	Bi-214	80		9.54E+02	7.45E+01
PBL9-1	9	1	98809823	28-Jul	Co-60	50	U	1.04E+01	1.58E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL9-1	9	1	98809823	28-Jul	Cs-137	50	U	2.02E+01	1.76E+01
PBL9-1	9	1	98809823	28-Jul	K-40	350		5.95E+03	5.59E+02
PBL9-1	9	1	98809823	28-Jul	Pb-212	90		1.18E+03	7.92E+01
PBL9-1	9	1	98809823	28-Jul	Pb-214	100		8.46E+02	7.14E+01
PBL9-1	9	1	98809823	28-Jul	Tl-208	50		4.46E+02	4.20E+01
PBL10-1	10	1	98809817	27-Jul	Gross A	1550	U	1.28E+03	6.08E+02
PBL10-1	10	1	98809817	27-Jul	Gross B	2690	U	2.92E+02	7.73E+02
PBL10-1	10	1	98809817	27-Jul	Ac-228	140		8.78E+02	7.76E+01
PBL10-1	10	1	98809817	27-Jul	Bi-212	330		3.46E+02	1.20E+02
PBL10-1	10	1	98809817	27-Jul	Bi-214	80		6.00E+02	5.24E+01
PBL10-1	10	1	98809817	27-Jul	Co-60	40	U	1.39E+01	1.08E+01
PBL10-1	10	1	98809817	27-Jul	Cs-137	50	U	8.19E+00	1.36E+01
PBL10-1	10	1	98809817	27-Jul	K-40	310		5.57E+02	2.30E+02
PBL10-1	10	1	98809817	27-Jul	Pb-212	90		6.70E+02	5.42E+01
PBL10-1	10	1	98809817	27-Jul	Pb-214	100		5.65E+02	5.27E+01
PBL10-1	10	1	98809817	27-Jul	Tl-208	50		2.28E+02	2.82E+01
PBL10-2	10	2	98809818	27-Jul	Gross A	1530	U	1.11E+03	5.55E+02
PBL10-2	10	2	98809818	27-Jul	Gross B	2670	U	-1.59E+02	7.30E+02
PBL10-2	10	2	98809818	27-Jul	Ac-228	140		9.38E+02	7.93E+01
PBL10-2	10	2	98809818	27-Jul	Bi-212	370		6.92E+02	1.95E+02
PBL10-2	10	2	98809818	27-Jul	Bi-214	90		5.51E+02	5.58E+01
PBL10-2	10	2	98809818	27-Jul	Co-60	50	U	1.15E+01	1.24E+01
PBL10-2	10	2	98809818	27-Jul	Cs-137	40	U	2.29E+01	1.49E+01
PBL10-2	10	2	98809818	27-Jul	K-40	410		8.46E+02	2.86E+02
PBL10-2	10	2	98809818	27-Jul	Pb-212	80		9.57E+02	6.93E+01
PBL10-2	10	2	98809818	27-Jul	Pb-214	110		5.30E+02	5.45E+01
PBL10-2	10	2	98809818	27-Jul	Tl-208	50		3.16E+02	3.04E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL10-3	10	3	98809819	27-Jul	Gross A	1810	U	5.05E+02	5.01E+02
PBL10-3	10	3	98809819	27-Jul	Gross B	3210	U	2.92E+02	9.20E+02
PBL10-3	10	3	98809819	27-Jul	Ac-228	160		1.01E+03	7.88E+01
PBL10-3	10	3	98809819	27-Jul	Bi-212	380		7.11E+02	1.86E+02
PBL10-3	10	3	98809819	27-Jul	Bi-214	90		5.97E+02	5.84E+01
PBL10-3	10	3	98809819	27-Jul	Co-60	40	U	-6.68E+00	1.20E+01
PBL10-3	10	3	98809819	27-Jul	Cs-137	50	U	-3.22E+00	1.41E+01
PBL10-3	10	3	98809819	27-Jul	K-40	1070	U	5.14E+02	2.43E+02
PBL10-3	10	3	98809819	27-Jul	Pb-212	90		8.92E+02	6.99E+01
PBL10-3	10	3	98809819	27-Jul	Pb-214	110		6.73E+02	7.15E+01
PBL10-3	10	3	98809819	27-Jul	Tl-208	50		3.05E+02	3.70E+01
PBL11-1	11	1	98809796	27-Jul	Gross A	1830	U	9.41E+02	5.80E+02
PBL11-1	11	1	98809796	27-Jul	Gross B	3230	U	4.27E+01	9.09E+02
PBL11-1	11	1	98809796	27-Jul	Ac-228	160		8.51E+02	8.42E+01
PBL11-1	11	1	98809796	27-Jul	Bi-212	420		7.08E+02	1.51E+02
PBL11-1	11	1	98809796	27-Jul	Bi-214	80		6.51E+02	6.01E+01
PBL11-1	11	1	98809796	27-Jul	Co-60	40	U	-4.57E+00	1.35E+01
PBL11-1	11	1	98809796	27-Jul	Cs-137	60		9.65E+01	1.84E+01
PBL11-1	11	1	98809796	27-Jul	K-40	470		5.19E+02	2.28E+02
PBL11-1	11	1	98809796	27-Jul	Pb-212	90		8.57E+02	6.20E+01
PBL11-1	11	1	98809796	27-Jul	Pb-214	110		5.49E+02	5.76E+01
PBL11-1	11	1	98809796	27-Jul	Tl-208	50		2.86E+02	3.34E+01
PBL11-1B	11	1	98809799	27-Jul	Gross A	1830		2.44E+03	8.20E+02
PBL11-1B	11	1	98809799	27-Jul	Gross B	3240	U	-1.16E+03	8.39E+02
PBL11-1B	11	1	98809799	27-Jul	Ac-228	160		1.11E+03	8.35E+01
PBL11-1B	11	1	98809799	27-Jul	Bi-212	360		6.14E+02	1.74E+02
PBL11-1B	11	1	98809799	27-Jul	Bi-214	90		6.84E+02	5.77E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL11-1B	11	1	98809799	27-Jul	Co-60	50	U	6.81E+00	1.28E+01
PBL11-1B	11	1	98809799	27-Jul	Cs-137	50		9.00E+01	2.31E+01
PBL11-1B	11	1	98809799	27-Jul	K-40	270		6.05E+02	2.35E+02
PBL11-1B	11	1	98809799	27-Jul	Pb-212	100		8.51E+02	6.55E+01
PBL11-1B	11	1	98809799	27-Jul	Pb-214	110		5.81E+02	5.68E+01
PBL11-1B	11	1	98809799	27-Jul	Tl-208	50		2.51E+02	3.57E+01
PBL11-2	11	2	98809800	27-Jul	Gross A	1820	U	1.38E+03	6.51E+02
PBL11-2	11	2	98809800	27-Jul	Gross B	3220	U	-2.09E+02	8.89E+02
PBL11-2	11	2	98809800	27-Jul	Ac-228	140		9.73E+02	8.96E+01
PBL11-2	11	2	98809800	27-Jul	Bi-212	310		8.11E+02	1.74E+02
PBL11-2	11	2	98809800	27-Jul	Bi-214	90		6.78E+02	6.05E+01
PBL11-2	11	2	98809800	27-Jul	Co-60	40	U	1.49E+01	1.38E+01
PBL11-2	11	2	98809800	27-Jul	Cs-137	50	U	1.85E+01	1.47E+01
PBL11-2	11	2	98809800	27-Jul	K-40	300		6.05E+02	2.65E+02
PBL11-2	11	2	98809800	27-Jul	Pb-212	80		8.78E+02	6.58E+01
PBL11-2	11	2	98809800	27-Jul	Pb-214	100		7.35E+02	5.86E+01
PBL11-2	11	2	98809800	27-Jul	Tl-208	40		3.70E+02	3.27E+01
PBL11-3	11	3	98809801	27-Jul	Gross A	1810	U	3.89E+02	3.36E+02
PBL11-3	11	3	98809801	27-Jul	Gross B	3220	U	1.79E+02	6.41E+02
PBL11-3	11	3	98809801	27-Jul	Ac-228	140		7.41E+02	7.26E+01
PBL11-3	11	3	98809801	27-Jul	Bi-212	320		7.43E+02	1.64E+02
PBL11-3	11	3	98809801	27-Jul	Bi-214	70		5.68E+02	4.45E+01
PBL11-3	11	3	98809801	27-Jul	Co-60	40	U	-7.70E+00	1.19E+01
PBL11-3	11	3	98809801	27-Jul	Cs-137	50	U	1.78E+01	1.29E+01
PBL11-3	11	3	98809801	27-Jul	K-40	770	U	-1.22E+02	1.77E+02
PBL11-3	11	3	98809801	27-Jul	Pb-212	90		7.84E+02	5.93E+01
PBL11-3	11	3	98809801	27-Jul	Pb-214	100		5.84E+02	6.20E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL11-3	11	3	98809801	27-Jul	Tl-208	60		2.89E+02	3.27E+01
PBL12-1	12	1	98809790	27-Jul	Gross A	1680		1.78E+03	7.22E+02
PBL12-1	12	1	98809790	27-Jul	Gross B	2720	U	2.36E+03	8.92E+02
PBL12-1	12	1	98809790	27-Jul	Ac-228	170		2.64E+03	1.11E+02
PBL12-1	12	1	98809790	27-Jul	Bi-212	490		1.78E+03	2.82E+02
PBL12-1	12	1	98809790	27-Jul	Bi-214	130		1.53E+03	9.23E+01
PBL12-1	12	1	98809790	27-Jul	Co-60	60	U	8.19E-01	1.54E+01
PBL12-1	12	1	98809790	27-Jul	Cs-137	70		9.73E+01	2.82E+01
PBL12-1	12	1	98809790	27-Jul	K-40	500		1.71E+03	3.24E+02
PBL12-1	12	1	98809790	27-Jul	Pb-212	150		2.06E+03	1.20E+02
PBL12-1	12	1	98809790	27-Jul	Pb-214	130		1.58E+03	1.01E+02
PBL12-1	12	1	98809790	27-Jul	Tl-208	70		9.03E+02	6.22E+01
PBL12-2	12	2	98809794	27-Jul	Gross A	1500		2.01E+03	6.93E+02
PBL12-2	12	2	98809794	27-Jul	Gross B	2470	U	1.15E+03	7.57E+02
PBL12-2	12	2	98809794	27-Jul	Ac-228	200		2.76E+03	1.58E+02
PBL12-2	12	2	98809794	27-Jul	Bi-212	460		2.46E+03	3.26E+02
PBL12-2	12	2	98809794	27-Jul	Bi-214	130		1.74E+03	9.70E+01
PBL12-2	12	2	98809794	27-Jul	Co-60	70	U	-3.62E-01	1.80E+01
PBL12-2	12	2	98809794	27-Jul	Cs-137	70	U	-1.37E+01	2.04E+01
PBL12-2	12	2	98809794	27-Jul	K-40	730		1.16E+03	3.51E+02
PBL12-2	12	2	98809794	27-Jul	Pb-212	140		2.62E+03	1.49E+02
PBL12-2	12	2	98809794	27-Jul	Pb-214	150		1.77E+03	1.12E+02
PBL12-2	12	2	98809794	27-Jul	Tl-208	70		9.38E+02	6.78E+01
PBL13-1	13	1	98809784	27-Jul	Gross A	1400	U	1.00E+03	5.22E+02
PBL13-1	13	1	98809784	27-Jul	Gross B	2420	U	1.09E+02	6.74E+02
PBL13-1	13	1	98809784	27-Jul	Ac-228	130		9.05E+02	8.11E+01
PBL13-1	13	1	98809784	27-Jul	Bi-212	330		9.30E+02	1.92E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL13-1	13	1	98809784	27-Jul	Bi-214	100		6.78E+02	4.96E+01
PBL13-1	13	1	98809784	27-Jul	Co-60	40	U	1.22E+00	1.11E+01
PBL13-1	13	1	98809784	27-Jul	Cs-137	50		1.43E+02	2.89E+01
PBL13-1	13	1	98809784	27-Jul	K-40	350		1.10E+03	2.85E+02
PBL13-1	13	1	98809784	27-Jul	Pb-212	90		9.22E+02	6.54E+01
PBL13-1	13	1	98809784	27-Jul	Pb-214	100		7.81E+02	6.14E+01
PBL13-1	13	1	98809784	27-Jul	Tl-208	50		3.38E+02	3.39E+01
PBL13-2	13	2	98809785	27-Jul	Gross A	1800		2.73E+03	8.58E+02
PBL13-2	13	2	98809785	27-Jul	Gross B	2720	U	1.61E+03	8.58E+02
PBL13-2	13	2	98809785	27-Jul	Ac-228	160		1.17E+03	9.08E+01
PBL13-2	13	2	98809785	27-Jul	Bi-212	380		8.35E+02	2.24E+02
PBL13-2	13	2	98809785	27-Jul	Bi-214	100		7.16E+02	5.97E+01
PBL13-2	13	2	98809785	27-Jul	Co-60	30	U	-2.60E+01	1.12E+01
PBL13-2	13	2	98809785	27-Jul	Cs-137	60	U	1.26E+01	1.54E+01
PBL13-2	13	2	98809785	27-Jul	K-40	540		1.14E+03	3.50E+02
PBL13-2	13	2	98809785	27-Jul	Pb-212	100		1.03E+03	7.32E+01
PBL13-2	13	2	98809785	27-Jul	Pb-214	100		7.51E+02	6.28E+01
PBL13-2	13	2	98809785	27-Jul	Ra-224	1140		1.82E+03	5.58E+02
PBL13-2	13	2	98809785	27-Jul	Tl-208	50		3.78E+02	4.14E+01
PBL13-3	13	3	98809786	27-Jul	Gross A	1590		5.24E+03	1.10E+03
PBL13-3	13	3	98809786	27-Jul	Gross B	2500	U	1.43E+03	7.99E+02
PBL13-3	13	3	98809786	27-Jul	Ac-228	170		1.62E+03	1.08E+02
PBL13-3	13	3	98809786	27-Jul	Bi-212	400		1.26E+03	2.31E+02
PBL13-3	13	3	98809786	27-Jul	Bi-214	110		9.43E+02	6.91E+01
PBL13-3	13	3	98809786	27-Jul	Co-60	60	U	1.91E+01	1.42E+01
PBL13-3	13	3	98809786	27-Jul	Cs-137	70	U	1.23E+01	1.85E+01
PBL13-3	13	3	98809786	27-Jul	K-40	490		1.26E+03	2.93E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL13-3	13	3	98809786	27-Jul	Pb-212	120		1.21E+03	8.91E+01
PBL13-3	13	3	98809786	27-Jul	Pb-214	120		8.57E+02	7.38E+01
PBL13-3	13	3	98809786	27-Jul	Tl-208	60		4.92E+02	4.49E+01
PBL14-1	14	1	98809772	27-Jul	Gross A	1510	U	3.59E+02	2.93E+02
PBL14-1	14	1	98809772	27-Jul	Gross B	2600	U	9.59E+02	5.46E+02
PBL14-1	14	1	98809772	27-Jul	Ac-228	130		9.38E+02	6.78E+01
PBL14-1	14	1	98809772	27-Jul	Bi-212	310		7.38E+02	1.77E+02
PBL14-1	14	1	98809772	27-Jul	Bi-214	80		5.89E+02	5.28E+01
PBL14-1	14	1	98809772	27-Jul	Co-60	40	U	-1.72E+00	1.12E+01
PBL14-1	14	1	98809772	27-Jul	Cs-137	40		1.17E+02	3.03E+01
PBL14-1	14	1	98809772	27-Jul	K-40	350		6.76E+02	2.14E+02
PBL14-1	14	1	98809772	27-Jul	Pb-212	90		8.65E+02	6.31E+01
PBL14-1	14	1	98809772	27-Jul	Pb-214	100		6.35E+02	5.39E+01
PBL14-1	14	1	98809772	27-Jul	Tl-208	40		2.81E+02	2.82E+01
PBL14-2	14	2	98809773	27-Jul	Gross A	1560	U	8.51E+02	5.26E+02
PBL14-2	14	2	98809773	27-Jul	Gross B	2620	U	1.40E+03	8.08E+02
PBL14-2	14	2	98809773	27-Jul	Ac-228	170		9.35E+02	8.31E+01
PBL14-2	14	2	98809773	27-Jul	Bi-214	90		5.62E+02	5.54E+01
PBL14-2	14	2	98809773	27-Jul	Co-60	50	U	4.81E+00	1.18E+01
PBL14-2	14	2	98809773	27-Jul	Cs-137	60	U	6.92E+00	1.50E+01
PBL14-2	14	2	98809773	27-Jul	K-40	430		8.92E+02	2.41E+02
PBL14-2	14	2	98809773	27-Jul	Pb-212	100		7.59E+02	6.11E+01
PBL14-2	14	2	98809773	27-Jul	Pb-214	100		6.19E+02	6.09E+01
PBL14-2	14	2	98809773	27-Jul	Tl-208	50		2.84E+02	3.45E+01
PBL14-3	14	3	98809774	27-Jul	Gross A	1670		3.11E+03	8.68E+02
PBL14-3	14	3	98809774	27-Jul	Gross B	2660	U	1.91E+03	8.68E+02
PBL14-3	14	3	98809774	27-Jul	Ac-228	180		1.06E+03	9.31E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL14-3	14	3	98809774	27-Jul	Bi-212	400		9.16E+02	2.08E+02
PBL14-3	14	3	98809774	27-Jul	Bi-214	100		6.00E+02	5.91E+01
PBL14-3	14	3	98809774	27-Jul	Co-60	60	U	-4.54E+00	1.65E+01
PBL14-3	14	3	98809774	27-Jul	Cs-137	60	U	-1.65E+01	1.65E+01
PBL14-3	14	3	98809774	27-Jul	K-40	1180	U	6.30E+02	2.70E+02
PBL14-3	14	3	98809774	27-Jul	Pb-212	120		8.68E+02	8.30E+01
PBL14-3	14	3	98809774	27-Jul	Pb-214	110		6.08E+02	6.08E+01
PBL14-3	14	3	98809774	27-Jul	Tl-208	60		3.51E+02	3.85E+01
PBL15-1	15	1	98809767	27-Jul	Gross A	1510	U	8.03E+02	4.97E+02
PBL15-1	15	1	98809767	27-Jul	Gross B	2600	U	-7.03E+02	6.74E+02
PBL15-1	15	1	98809767	27-Jul	Ac-228	130		9.05E+02	5.70E+01
PBL15-1	15	1	98809767	27-Jul	Bi-212	300		7.78E+02	1.62E+02
PBL15-1	15	1	98809767	27-Jul	Bi-214	70		6.43E+02	5.43E+01
PBL15-1	15	1	98809767	27-Jul	Co-60	40	U	1.29E+01	1.09E+01
PBL15-1	15	1	98809767	27-Jul	Cs-137	50	U	5.03E+00	1.42E+01
PBL15-1	15	1	98809767	27-Jul	K-40	390		5.38E+02	2.78E+02
PBL15-1	15	1	98809767	27-Jul	Pb-212	80		8.97E+02	6.22E+01
PBL15-1	15	1	98809767	27-Jul	Pb-214	90		5.86E+02	5.76E+01
PBL15-1	15	1	98809767	27-Jul	Tl-208	40		2.92E+02	3.31E+01
PBL15-2	15	2	98809768	27-Jul	Gross A	4750		6.38E+03	2.19E+03
PBL15-2	15	2	98809768	27-Jul	Gross B	8130	U	-1.75E+02	2.26E+03
PBL15-2	15	2	98809768	27-Jul	Ac-228	150		1.08E+03	8.47E+01
PBL15-2	15	2	98809768	27-Jul	Bi-212	360		5.24E+02	1.84E+02
PBL15-2	15	2	98809768	27-Jul	Bi-214	100		7.89E+02	6.24E+01
PBL15-2	15	2	98809768	27-Jul	Co-60	50	U	1.93E+01	1.10E+01
PBL15-2	15	2	98809768	27-Jul	Cs-137	60	U	-2.68E+01	1.68E+01
PBL15-2	15	2	98809768	27-Jul	K-40	410		1.29E+03	2.51E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL15-2	15	2	98809768	27-Jul	Pb-212	90		1.16E+03	8.47E+01
PBL15-2	15	2	98809768	27-Jul	Pb-214	120		7.38E+02	6.23E+01
PBL15-2	15	2	98809768	27-Jul	Tl-208	50		2.73E+02	3.49E+01
PBL15-3	15	3	98809766	27-Jul	Gross A	1620	U	6.54E+02	4.99E+02
PBL15-3	15	3	98809766	27-Jul	Gross B	2650	U	1.11E+03	7.96E+02
PBL15-3	15	3	98809766	27-Jul	Ac-228	180		1.21E+03	9.65E+01
PBL15-3	15	3	98809766	27-Jul	Bi-212	380		8.05E+02	1.97E+02
PBL15-3	15	3	98809766	27-Jul	Bi-214	100		7.19E+02	6.69E+01
PBL15-3	15	3	98809766	27-Jul	Co-60	50	U	3.27E+00	1.32E+01
PBL15-3	15	3	98809766	27-Jul	Cs-137	60	U	-6.65E+00	1.76E+01
PBL15-3	15	3	98809766	27-Jul	K-40	470		6.08E+02	2.62E+02
PBL15-3	15	3	98809766	27-Jul	Pb-212	110		1.12E+03	8.01E+01
PBL15-3	15	3	98809766	27-Jul	Pb-214	120		6.92E+02	6.38E+01
PBL15-3	15	3	98809766	27-Jul	Tl-208	60		4.16E+02	3.99E+01

Upper Tier

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU1-1	1	1	98809844	28-Jul	Gross A	1970		3.32E+03	6.95E+02
PBU1-1	1	1	98809844	28-Jul	Gross B	3180	U	2.32E+03	7.36E+02
PBU1-1	1	1	98809844	28-Jul	Ac-228	160		1.40E+03	1.01E+02
PBU1-1	1	1	98809844	28-Jul	Bi-212	450		1.09E+03	2.08E+02
PBU1-1	1	1	98809844	28-Jul	Bi-214	100		8.62E+02	6.77E+01
PBU1-1	1	1	98809844	28-Jul	Co-60	60	U	1.64E+01	1.43E+01
PBU1-1	1	1	98809844	28-Jul	Cs-137	80	U	6.08E+01	2.14E+01
PBU1-1	1	1	98809844	28-Jul	K-40	420		2.00E+03	3.16E+02
PBU1-1	1	1	98809844	28-Jul	Pb-212	110		1.26E+03	8.05E+01
PBU1-1	1	1	98809844	28-Jul	Pb-214	120		7.78E+02	6.95E+01
PBU1-1	1	1	98809844	28-Jul	Tl-208	60		4.46E+02	4.27E+01
PBU1-2	1	2	98809847	28-Jul	Gross A	2060		3.32E+03	1.01E+03
PBU1-2	1	2	98809847	28-Jul	Gross B	3100		4.08E+03	1.11E+03
PBU1-2	1	2	98809847	28-Jul	Ac-228	210		1.88E+03	1.21E+02
PBU1-2	1	2	98809847	28-Jul	Bi-212	510		1.34E+03	2.31E+02
PBU1-2	1	2	98809847	28-Jul	Bi-214	130		9.46E+02	8.08E+01
PBU1-2	1	2	98809847	28-Jul	Co-60	60	U	1.56E+01	1.55E+01
PBU1-2	1	2	98809847	28-Jul	Cs-137	80	U	4.86E+01	2.04E+01
PBU1-2	1	2	98809847	28-Jul	K-40	470		8.49E+02	3.16E+02
PBU1-2	1	2	98809847	28-Jul	Pb-212	150		1.54E+03	1.04E+02
PBU1-2	1	2	98809847	28-Jul	Pb-214	130		9.92E+02	8.77E+01
PBU1-2	1	2	98809847	28-Jul	Tl-208	60		5.49E+02	5.32E+01
PBU1-3	1	3	98809845	28-Jul	Gross A	2150		2.19E+03	8.73E+02
PBU1-3	1	3	98809845	28-Jul	Gross B	3140	U	2.70E+03	1.05E+03
PBU1-3	1	3	98809845	28-Jul	Ac-228	220		1.83E+03	1.25E+02
PBU1-3	1	3	98809845	28-Jul	Bi-212	550		1.46E+03	3.78E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU1-3	1	3	98809845	28-Jul	Bi-214	130		1.09E+03	8.30E+01
PBU1-3	1	3	98809845	28-Jul	Co-60	60	U	1.58E+01	1.57E+01
PBU1-3	1	3	98809845	28-Jul	Cs-137	70	U	-1.58E+01	1.99E+01
PBU1-3	1	3	98809845	28-Jul	K-40	610		1.95E+03	3.76E+02
PBU1-3	1	3	98809845	28-Jul	Pb-212	130		1.87E+03	1.11E+02
PBU1-3	1	3	98809845	28-Jul	Pb-214	130		1.09E+03	8.32E+01
PBU1-3	1	3	98809845	28-Jul	Tl-208	70		7.16E+02	5.41E+01
PBU3-1	3	1	98809832	28-Jul	Gross A	7170	U	3.89E+03	1.89E+03
PBU3-1	3	1	98809832	28-Jul	Gross B	12160	U	6.78E+02	3.09E+03
PBU3-1	3	1	98809832	28-Jul	Ac-228	190		1.21E+03	9.59E+01
PBU3-1	3	1	98809832	28-Jul	Bi-212	450		8.03E+02	2.09E+02
PBU3-1	3	1	98809832	28-Jul	Bi-214	110		1.01E+03	7.46E+01
PBU3-1	3	1	98809832	28-Jul	Co-60	50	U	1.32E+01	1.32E+01
PBU3-1	3	1	98809832	28-Jul	Cs-137	60		6.19E+01	2.54E+01
PBU3-1	3	1	98809832	28-Jul	K-40	1190	U	5.08E+02	2.73E+02
PBU3-1	3	1	98809832	28-Jul	Pb-212	110		1.25E+03	8.45E+01
PBU3-1	3	1	98809832	28-Jul	Pb-214	120		1.04E+03	7.38E+01
PBU3-1	3	1	98809832	28-Jul	Tl-208	50		4.35E+02	4.31E+01
PBU3-2	3	2	98809835	28-Jul	Gross A	4660	U	3.65E+03	1.73E+03
PBU3-2	3	2	98809835	28-Jul	Gross B	7860	U	6.84E+01	2.20E+03
PBU3-2	3	2	98809835	28-Jul	Ac-228	150		1.13E+03	9.66E+01
PBU3-2	3	2	98809835	28-Jul	Bi-212	430		9.89E+02	2.22E+02
PBU3-2	3	2	98809835	28-Jul	Bi-214	100		9.03E+02	6.49E+01
PBU3-2	3	2	98809835	28-Jul	Co-60	60	U	1.24E+01	1.46E+01
PBU3-2	3	2	98809835	28-Jul	Cs-137	60	U	1.24E+01	1.55E+01
PBU3-2	3	2	98809835	28-Jul	K-40	440		1.01E+03	2.88E+02
PBU3-2	3	2	98809835	28-Jul	Pb-212	110		1.04E+03	7.23E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU3-2	3	2	98809835	28-Jul	Pb-214	120		8.95E+02	6.91E+01
PBU3-2	3	2	98809835	28-Jul	Tl-208	60		4.00E+02	4.20E+01
PBU3-3	3	3	98809833	28-Jul	Gross A	4660	U	2.56E+03	1.58E+03
PBU3-3	3	3	98809833	28-Jul	Gross B	7810	U	2.70E+03	2.32E+03
PBU3-3	3	3	98809833	28-Jul	Ac-228	180		1.12E+03	7.70E+01
PBU3-3	3	3	98809833	28-Jul	Bi-212	360		9.35E+02	2.32E+02
PBU3-3	3	3	98809833	28-Jul	Bi-214	90		8.59E+02	6.36E+01
PBU3-3	3	3	98809833	28-Jul	Co-60	50	U	2.84E+00	1.45E+01
PBU3-3	3	3	98809833	28-Jul	Cs-137	50	U	7.16E+00	1.69E+01
PBU3-3	3	3	98809833	28-Jul	K-40	350		9.24E+02	2.58E+02
PBU3-3	3	3	98809833	28-Jul	Pb-212	110		1.03E+03	7.30E+01
PBU3-3	3	3	98809833	28-Jul	Pb-214	120		8.41E+02	7.08E+01
PBU3-3	3	3	98809833	28-Jul	Tl-208	60		3.86E+02	4.22E+01
PBU5-1	5	1	98809724	28-Jul	Gross A	1830	U	7.81E+02	5.64E+02
PBU5-1	5	1	98809724	28-Jul	Gross B	3110	U	-2.52E+02	8.49E+02
PBU5-1	5	1	98809724	28-Jul	Ac-228	180		1.11E+03	8.65E+01
PBU5-1	5	1	98809724	28-Jul	Bi-212	370		9.78E+02	1.73E+02
PBU5-1	5	1	98809724	28-Jul	Bi-214	100		7.57E+02	6.09E+01
PBU5-1	5	1	98809724	28-Jul	Co-60	50	U	1.42E+01	1.18E+01
PBU5-1	5	1	98809724	28-Jul	Cs-137	60	U	1.21E+01	1.65E+01
PBU5-1	5	1	98809724	28-Jul	K-40	530		6.14E+02	3.04E+02
PBU5-1	5	1	98809724	28-Jul	Pb-212	100		9.57E+02	6.72E+01
PBU5-1	5	1	98809724	28-Jul	Pb-214	110		6.62E+02	6.62E+01
PBU5-1	5	1	98809724	28-Jul	Tl-208	50		3.73E+02	3.61E+01
PBU5-2	5	2	98809727	28-Jul	Gross A	1830		2.35E+03	8.07E+02
PBU5-2	5	2	98809727	28-Jul	Gross B	3110	U	2.89E+02	8.92E+02
PBU5-2	5	2	98809727	28-Jul	Ac-228	190		1.06E+03	8.96E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU5-2	5	2	98809727	28-Jul	Bi-212	420		8.24E+02	1.93E+02
PBU5-2	5	2	98809727	28-Jul	Bi-214	90		7.81E+02	6.46E+01
PBU5-2	5	2	98809727	28-Jul	Co-60	60	U	3.14E+01	1.30E+01
PBU5-2	5	2	98809727	28-Jul	Cs-137	60	U	2.56E+01	1.69E+01
PBU5-2	5	2	98809727	28-Jul	K-40	490		6.97E+02	3.05E+02
PBU5-2	5	2	98809727	28-Jul	Pb-212	100		1.07E+03	7.54E+01
PBU5-2	5	2	98809727	28-Jul	Pb-214	110		7.57E+02	6.99E+01
PBU5-2	5	2	98809727	28-Jul	Tl-208	60		2.97E+02	4.12E+01
PBU5-3	5	3	98809725	28-Jul	Gross A	1800	U	9.57E+02	5.99E+02
PBU5-3	5	3	98809725	28-Jul	Gross B	3090	U	1.20E+03	9.27E+02
PBU5-3	5	3	98809725	28-Jul	Ac-228	150		1.08E+03	8.91E+01
PBU5-3	5	3	98809725	28-Jul	Bi-212	430		8.57E+02	1.74E+02
PBU5-3	5	3	98809725	28-Jul	Bi-214	100		8.65E+02	6.16E+01
PBU5-3	5	3	98809725	28-Jul	Co-60	60	U	2.73E+01	1.33E+01
PBU5-3	5	3	98809725	28-Jul	Cs-137	50	U	-8.70E+00	1.47E+01
PBU5-3	5	3	98809725	28-Jul	K-40	350		1.09E+03	2.89E+02
PBU5-3	5	3	98809725	28-Jul	Pb-212	100		9.76E+02	7.03E+01
PBU5-3	5	3	98809725	28-Jul	Pb-214	120		8.57E+02	7.27E+01
PBU5-3	5	3	98809725	28-Jul	Tl-208	60		3.51E+02	3.42E+01
PBU5-3B	5	3	98809730	28-Jul	Gross A	1810	U	1.38E+03	6.85E+02
PBU5-3B	5	3	98809730	28-Jul	Gross B	3100	U	1.92E+03	9.86E+02
PBU5-3B	5	3	98809730	28-Jul	Ac-228	150		1.10E+03	9.00E+01
PBU5-3B	5	3	98809730	28-Jul	Bi-212	370		1.06E+03	2.07E+02
PBU5-3B	5	3	98809730	28-Jul	Bi-214	100		7.84E+02	6.18E+01
PBU5-3B	5	3	98809730	28-Jul	Co-60	50	U	2.69E-01	1.24E+01
PBU5-3B	5	3	98809730	28-Jul	Cs-137	60	U	2.22E+01	1.50E+01
PBU5-3B	5	3	98809730	28-Jul	K-40	1170	U	7.16E+02	2.66E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU5-3B	5	3	98809730	28-Jul	Pb-212	100		1.05E+03	7.41E+01
PBU5-3B	5	3	98809730	28-Jul	Pb-214	120		9.41E+02	7.23E+01
PBU5-3B	5	3	98809730	28-Jul	Tl-208	60		3.43E+02	3.84E+01
PBU7-1	7	1	98809728	28-Jul	Gross A	1850		2.37E+03	8.16E+02
PBU7-1	7	1	98809728	28-Jul	Gross B	3090	U	1.18E+03	9.36E+02
PBU7-1	7	1	98809728	28-Jul	Ac-228	190		1.29E+03	9.26E+01
PBU7-1	7	1	98809728	28-Jul	Bi-212	430		7.86E+02	1.93E+02
PBU7-1	7	1	98809728	28-Jul	Bi-214	110		1.04E+03	7.61E+01
PBU7-1	7	1	98809728	28-Jul	Co-60	50	U	7.38E+00	1.29E+01
PBU7-1	7	1	98809728	28-Jul	Cs-137	60		2.84E+02	4.31E+01
PBU7-1	7	1	98809728	28-Jul	K-40	460		1.15E+03	2.86E+02
PBU7-1	7	1	98809728	28-Jul	Pb-212	120		1.14E+03	7.91E+01
PBU7-1	7	1	98809728	28-Jul	Pb-214	120		1.01E+03	7.43E+01
PBU7-1	7	1	98809728	28-Jul	Tl-208	60		4.59E+02	4.12E+01
PBU7-2	7	2	98809726	28-Jul	Gross A	1830		3.65E+03	9.82E+02
PBU7-2	7	2	98809726	28-Jul	Gross B	3100	U	1.20E+03	9.46E+02
PBU7-2	7	2	98809726	28-Jul	Ac-228	140		1.23E+03	8.84E+01
PBU7-2	7	2	98809726	28-Jul	Bi-212	320		9.70E+02	1.68E+02
PBU7-2	7	2	98809726	28-Jul	Bi-214	100		9.19E+02	6.61E+01
PBU7-2	7	2	98809726	28-Jul	Co-60	40	U	-2.37E+01	1.34E+01
PBU7-2	7	2	98809726	28-Jul	Cs-137	60		6.27E+01	2.39E+01
PBU7-2	7	2	98809726	28-Jul	K-40	530		6.89E+02	3.03E+02
PBU7-2	7	2	98809726	28-Jul	Pb-212	140		1.12E+03	8.22E+01
PBU7-2	7	2	98809726	28-Jul	Pb-214	130		9.35E+02	7.53E+01
PBU7-2	7	2	98809726	28-Jul	Tl-208	40		4.16E+02	3.84E+01
PBU7-3	7	3	98809729	28-Jul	Gross A	1830	U	5.35E+02	5.19E+02
PBU7-3	7	3	98809729	28-Jul	Gross B	3120	U	1.02E+03	9.34E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU7-3	7	3	98809729	28-Jul	Ac-228	160		1.25E+03	1.03E+02
PBU7-3	7	3	98809729	28-Jul	Bi-212	390		1.04E+03	2.01E+02
PBU7-3	7	3	98809729	28-Jul	Bi-214	110		8.62E+02	7.16E+01
PBU7-3	7	3	98809729	28-Jul	Co-60	50	U	-1.09E+01	1.36E+01
PBU7-3	7	3	98809729	28-Jul	Cs-137	60	U	1.07E+01	1.66E+01
PBU7-3	7	3	98809729	28-Jul	K-40	450		7.05E+02	3.14E+02
PBU7-3	7	3	98809729	28-Jul	Pb-212	100		1.14E+03	7.41E+01
PBU7-3	7	3	98809729	28-Jul	Pb-214	120		9.14E+02	6.96E+01
PBU7-3	7	3	98809729	28-Jul	Tl-208	60		4.11E+02	3.74E+01
PBU9-1	9	1	98809733	28-Jul	Gross A	1710	U	1.53E+03	6.69E+02
PBU9-1	9	1	98809733	28-Jul	Gross B	2920	U	1.41E+03	8.95E+02
PBU9-1	9	1	98809733	28-Jul	Ac-228	160		1.09E+03	8.73E+01
PBU9-1	9	1	98809733	28-Jul	Bi-214	110		9.03E+02	6.95E+01
PBU9-1	9	1	98809733	28-Jul	Co-60	50	U	1.86E+01	1.31E+01
PBU9-1	9	1	98809733	28-Jul	Cs-137	50		1.35E+02	2.46E+01
PBU9-1	9	1	98809733	28-Jul	K-40	990	U	2.38E+02	2.24E+02
PBU9-1	9	1	98809733	28-Jul	Pb-212	140		1.04E+03	8.23E+01
PBU9-1	9	1	98809733	28-Jul	Pb-214	110		7.86E+02	7.43E+01
PBU9-1	9	1	98809733	28-Jul	Tl-208	60		3.24E+02	3.99E+01
PBU9-2	9	2	98809731	28-Jul	Gross A	1740	U	9.24E+02	5.77E+02
PBU9-2	9	2	98809731	28-Jul	Gross B	2980	U	1.73E+02	8.36E+02
PBU9-2	9	2	98809731	28-Jul	Ac-228	160		9.81E+02	8.81E+01
PBU9-2	9	2	98809731	28-Jul	Bi-212	340		1.03E+03	2.47E+02
PBU9-2	9	2	98809731	28-Jul	Bi-214	90		8.62E+02	5.89E+01
PBU9-2	9	2	98809731	28-Jul	Co-60	40	U	-6.76E+00	1.12E+01
PBU9-2	9	2	98809731	28-Jul	Cs-137	50	U	-1.85E+01	1.55E+01
PBU9-2	9	2	98809731	28-Jul	K-40	410		7.08E+02	2.43E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU9-2	9	2	98809731	28-Jul	Pb-212	100		9.27E+02	6.77E+01
PBU9-2	9	2	98809731	28-Jul	Pb-214	110		7.92E+02	5.93E+01
PBU9-2	9	2	98809731	28-Jul	Tl-208	50		4.05E+02	3.43E+01
PBU9-3	9	3	98809734	28-Jul	Gross A	1740		2.02E+03	7.51E+02
PBU9-3	9	3	98809734	28-Jul	Gross B	2970	U	1.61E+03	9.28E+02
PBU9-3	9	3	98809734	28-Jul	Ac-228	150		1.06E+03	8.70E+01
PBU9-3	9	3	98809734	28-Jul	Bi-214	100		6.08E+02	5.80E+01
PBU9-3	9	3	98809734	28-Jul	Co-60	50	U	3.00E+01	1.24E+01
PBU9-3	9	3	98809734	28-Jul	Cs-137	50	U	-1.60E+01	1.55E+01
PBU9-3	9	3	98809734	28-Jul	K-40	440		1.07E+03	2.97E+02
PBU9-3	9	3	98809734	28-Jul	Pb-212	90		1.02E+03	7.05E+01
PBU9-3	9	3	98809734	28-Jul	Pb-214	100		6.59E+02	6.24E+01
PBU9-3	9	3	98809734	28-Jul	Tl-208	50		3.70E+02	3.55E+01
PBU11-1	11	1	98809808	27-Jul	Gross A	1770	U	1.38E+03	6.57E+02
PBU11-1	11	1	98809808	27-Jul	Gross B	2990	U	1.32E+03	9.11E+02
PBU11-1	11	1	98809808	27-Jul	Ac-228	160		1.22E+03	9.26E+01
PBU11-1	11	1	98809808	27-Jul	Bi-212	380		1.09E+03	2.00E+02
PBU11-1	11	1	98809808	27-Jul	Bi-214	100		8.54E+02	6.09E+01
PBU11-1	11	1	98809808	27-Jul	Co-60	50	U	8.73E-01	1.30E+01
PBU11-1	11	1	98809808	27-Jul	Cs-137	60		6.51E+01	3.38E+01
PBU11-1	11	1	98809808	27-Jul	K-40	530		5.30E+02	2.54E+02
PBU11-1	11	1	98809808	27-Jul	Pb-212	100		1.25E+03	8.57E+01
PBU11-1	11	1	98809808	27-Jul	Pb-214	120		8.95E+02	7.15E+01
PBU11-1	11	1	98809808	27-Jul	Tl-208	50		3.84E+02	3.61E+01
PBU11-2	11	2	98809809	27-Jul	Gross A	1730	U	9.76E+01	3.89E+02
PBU11-2	11	2	98809809	27-Jul	Gross B	2960	U	2.81E+01	8.12E+02
PBU11-2	11	2	98809809	27-Jul	Ac-228	140		1.08E+03	9.00E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU11-2	11	2	98809809	27-Jul	Bi-212	370		9.62E+02	1.72E+02
PBU11-2	11	2	98809809	27-Jul	Bi-214	100		7.24E+02	5.51E+01
PBU11-2	11	2	98809809	27-Jul	Co-60	40	U	-6.76E+00	1.24E+01
PBU11-2	11	2	98809809	27-Jul	Cs-137	60	U	3.70E+00	1.55E+01
PBU11-2	11	2	98809809	27-Jul	K-40	420		7.41E+02	2.46E+02
PBU11-2	11	2	98809809	27-Jul	Pb-212	90		1.14E+03	7.74E+01
PBU11-2	11	2	98809809	27-Jul	Pb-214	100		8.57E+02	6.28E+01
PBU11-2	11	2	98809809	27-Jul	Tl-208	50		3.11E+02	3.34E+01
PBU11-3	11	3	98809813	27-Jul	Gross A	4150		5.78E+03	1.91E+03
PBU11-3	11	3	98809813	27-Jul	Gross B	7110	U	-4.14E+02	1.95E+03
PBU11-3	11	3	98809813	27-Jul	Ac-228	160		1.09E+03	6.80E+01
PBU11-3	11	3	98809813	27-Jul	Bi-214	90		8.32E+02	5.97E+01
PBU11-3	11	3	98809813	27-Jul	Co-60	40	U	2.22E+01	1.10E+01
PBU11-3	11	3	98809813	27-Jul	Cs-137	50	U	2.30E+00	1.45E+01
PBU11-3	11	3	98809813	27-Jul	K-40	380		7.51E+02	2.73E+02
PBU11-3	11	3	98809813	27-Jul	Pb-212	90		1.11E+03	7.46E+01
PBU11-3	11	3	98809813	27-Jul	Pb-214	100		7.00E+02	6.62E+01
PBU11-3	11	3	98809813	27-Jul	Tl-208	50		3.57E+02	3.59E+01
PBU13-1	13	1	98809778	27-Jul	Gross A	4510	U	7.78E+02	1.16E+03
PBU13-1	13	1	98809778	27-Jul	Gross B	7710	U	3.14E+03	2.31E+03
PBU13-1	13	1	98809778	27-Jul	Ac-228	130		9.81E+02	8.11E+01
PBU13-1	13	1	98809778	27-Jul	Bi-212	350		6.35E+02	2.09E+02
PBU13-1	13	1	98809778	27-Jul	Bi-214	90		6.89E+02	5.38E+01
PBU13-1	13	1	98809778	27-Jul	Co-60	50	U	5.70E+00	1.29E+01
PBU13-1	13	1	98809778	27-Jul	Cs-137	50	U	3.73E+01	1.73E+01
PBU13-1	13	1	98809778	27-Jul	K-40	470		6.19E+02	2.36E+02
PBU13-1	13	1	98809778	27-Jul	Pb-212	90		1.07E+03	7.19E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU13-1	13	1	98809778	27-Jul	Pb-214	110		7.43E+02	6.04E+01
PBU13-1	13	1	98809778	27-Jul	Tl-208	50		3.62E+02	3.73E+01
PBU13-2	13	2	98809779	27-Jul	Gross A	3980		4.11E+03	1.62E+03
PBU13-2	13	2	98809779	27-Jul	Gross B	6820	U	9.68E+02	1.96E+03
PBU13-2	13	2	98809779	27-Jul	Ac-228	200		9.73E+02	7.22E+01
PBU13-2	13	2	98809779	27-Jul	Bi-214	80		6.41E+02	5.32E+01
PBU13-2	13	2	98809779	27-Jul	Co-60	50	U	-2.04E+00	1.26E+01
PBU13-2	13	2	98809779	27-Jul	Cs-137	50	U	1.98E+01	1.42E+01
PBU13-2	13	2	98809779	27-Jul	K-40	900	U	2.55E+02	2.03E+02
PBU13-2	13	2	98809779	27-Jul	Pb-212	90		9.89E+02	6.84E+01
PBU13-2	13	2	98809779	27-Jul	Pb-214	110		6.76E+02	5.91E+01
PBU13-2	13	2	98809779	27-Jul	Tl-208	40		2.92E+02	2.91E+01
PBU13-3	13	3	98809780	27-Jul	Gross A	4530	U	2.38E+03	1.49E+03
PBU13-3	13	3	98809780	27-Jul	Gross B	7680	U	3.57E+03	2.35E+03
PBU13-3	13	3	98809780	27-Jul	Ac-228	140		1.10E+03	8.59E+01
PBU13-3	13	3	98809780	27-Jul	Bi-212	380		6.68E+02	2.18E+02
PBU13-3	13	3	98809780	27-Jul	Bi-214	110		7.08E+02	6.01E+01
PBU13-3	13	3	98809780	27-Jul	Co-60	40	U	-1.68E+01	1.30E+01
PBU13-3	13	3	98809780	27-Jul	Cs-137	60	U	2.76E+01	1.62E+01
PBU13-3	13	3	98809780	27-Jul	K-40	470		5.11E+02	2.99E+02
PBU13-3	13	3	98809780	27-Jul	Pb-212	100		1.07E+03	7.47E+01
PBU13-3	13	3	98809780	27-Jul	Pb-214	110		7.59E+02	6.09E+01
PBU13-3	13	3	98809780	27-Jul	Tl-208	50		3.46E+02	3.78E+01
PBU15-1	15	1	98809738	27-Jul	Gross A	5490		1.66E+04	3.50E+03
PBU15-1	15	1	98809738	27-Jul	Gross B	8150		1.01E+04	2.89E+03
PBU15-1	15	1	98809738	27-Jul	Ac-228	170		1.89E+03	1.20E+02
PBU15-1	15	1	98809738	27-Jul	Bi-212	420		1.32E+03	2.49E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU15-1	15	1	98809738	27-Jul	Bi-214	130		9.89E+02	7.34E+01
PBU15-1	15	1	98809738	27-Jul	Co-60	60	U	-3.14E+00	1.64E+01
PBU15-1	15	1	98809738	27-Jul	Cs-137	70		7.00E+01	2.26E+01
PBU15-1	15	1	98809738	27-Jul	K-40	560		1.49E+03	3.45E+02
PBU15-1	15	1	98809738	27-Jul	Pb-212	120		1.61E+03	9.96E+01
PBU15-1	15	1	98809738	27-Jul	Pb-214	130		1.04E+03	8.03E+01
PBU15-1	15	1	98809738	27-Jul	Tl-208	60		7.08E+02	5.41E+01
PBU15-2	15	2	98809741	27-Jul	Gross A	4370		9.38E+03	2.15E+03
PBU15-2	15	2	98809741	27-Jul	Gross B	6200		7.08E+03	1.77E+03
PBU15-2	15	2	98809741	27-Jul	Ac-228	160		1.81E+03	1.16E+02
PBU15-2	15	2	98809741	27-Jul	Bi-212	440		9.30E+02	2.24E+02
PBU15-2	15	2	98809741	27-Jul	Bi-214	110		9.57E+02	6.95E+01
PBU15-2	15	2	98809741	27-Jul	Co-60	50	U	-2.95E+00	1.47E+01
PBU15-2	15	2	98809741	27-Jul	Cs-137	60	U	-1.81E+01	1.81E+01
PBU15-2	15	2	98809741	27-Jul	K-40	530		1.26E+03	3.20E+02
PBU15-2	15	2	98809741	27-Jul	Pb-212	110		1.59E+03	9.76E+01
PBU15-2	15	2	98809741	27-Jul	Pb-214	120		9.24E+02	7.30E+01
PBU15-2	15	2	98809741	27-Jul	Tl-208	60		6.03E+02	5.01E+01
PBU15-3	15	3	98809742	27-Jul	Gross A	6340		1.07E+04	3.11E+03
PBU15-3	15	3	98809742	27-Jul	Gross B	9890	U	3.08E+03	2.99E+03
PBU15-3	15	3	98809742	27-Jul	Ac-228	190		1.73E+03	1.20E+02
PBU15-3	15	3	98809742	27-Jul	Bi-212	460		1.06E+03	2.72E+02
PBU15-3	15	3	98809742	27-Jul	Bi-214	120		8.78E+02	7.14E+01
PBU15-3	15	3	98809742	27-Jul	Co-60	50	U	3.14E+00	1.45E+01
PBU15-3	15	3	98809742	27-Jul	Cs-137	60	U	6.16E+00	1.65E+01
PBU15-3	15	3	98809742	27-Jul	K-40	560		1.73E+03	3.46E+02
PBU15-3	15	3	98809742	27-Jul	Pb-212	110		1.59E+03	9.50E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU15-3	15	3	98809742	27-Jul	Pb-214	130		7.97E+02	6.91E+01
PBU15-3	15	3	98809742	27-Jul	Tl-208	60		6.11E+02	5.04E+01

Downstream

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBW1-1	1	1	98809862	29-Jul	Gross A	1350	U	1.27E+03	5.57E+02
PBW1-1	1	1	98809862	29-Jul	Gross B	2380	U	-8.95E+01	6.66E+02
PBW1-1	1	1	98809862	29-Jul	Bi-214	70		2.49E+02	3.26E+01
PBW1-1	1	1	98809862	29-Jul	Co-60	40	U	8.59E+00	8.80E+00
PBW1-1	1	1	98809862	29-Jul	Cs-137	40	U	1.64E+01	1.06E+01
PBW1-1	1	1	98809862	29-Jul	K-40	640	U	-3.30E+02	1.50E+02
PBW1-1	1	1	98809862	29-Jul	Pb-212	90		3.05E+02	3.66E+01
PBW1-1	1	1	98809862	29-Jul	Pb-214	90		2.52E+02	3.77E+01
PBW1-1	1	1	98809862	29-Jul	Tl-208	40		8.89E+01	2.07E+01
PBW1-2	1	2	98809863	29-Jul	Gross A	1450	U	2.86E+02	3.77E+02
PBW1-2	1	2	98809863	29-Jul	Gross B	2550	U	-4.38E+02	6.76E+02
PBW1-2	1	2	98809863	29-Jul	Ac-228	140		5.51E+02	6.92E+01
PBW1-2	1	2	98809863	29-Jul	Bi-212	280		4.08E+02	1.39E+02
PBW1-2	1	2	98809863	29-Jul	Bi-214	60		4.24E+02	4.46E+01
PBW1-2	1	2	98809863	29-Jul	Co-60	40	U	2.32E+01	9.50E+00
PBW1-2	1	2	98809863	29-Jul	Cs-137	40		5.38E+01	1.09E+01
PBW1-2	1	2	98809863	29-Jul	K-40	310		3.30E+02	1.85E+02
PBW1-2	1	2	98809863	29-Jul	Pb-212	70		5.14E+02	4.49E+01
PBW1-2	1	2	98809863	29-Jul	Pb-214	90		3.59E+02	4.92E+01
PBW1-2	1	2	98809863	29-Jul	Tl-208	40		1.56E+02	2.45E+01
PBW2-1	2	1	98809864	29-Jul	Gross A	1340		2.63E+03	7.28E+02
PBW2-1	2	1	98809864	29-Jul	Gross B	2340	U	1.01E+03	7.14E+02
PBW2-1	2	1	98809864	29-Jul	Ac-228	190		1.35E+03	9.84E+01
PBW2-1	2	1	98809864	29-Jul	Bi-212	420		6.27E+02	1.42E+02
PBW2-1	2	1	98809864	29-Jul	Bi-214	100		7.92E+02	6.24E+01
PBW2-1	2	1	98809864	29-Jul	Co-60	50	U	1.95E+01	1.12E+01

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBW2-1	2	1	98809864	29-Jul	Cs-137	60		6.76E+01	1.89E+01
PBW2-1	2	1	98809864	29-Jul	K-40	480	U	2.61E+02	2.09E+02
PBW2-1	2	1	98809864	29-Jul	Pb-212	100		1.29E+03	8.59E+01
PBW2-1	2	1	98809864	29-Jul	Pb-214	120		8.03E+02	6.78E+01
PBW2-1	2	1	98809864	29-Jul	Tl-208	50		4.03E+02	3.86E+01
PBW2-2	2	2	98809856	29-Jul	Gross A	1430		2.61E+03	7.46E+02
PBW2-2	2	2	98809856	29-Jul	Gross B	2540	U	6.03E+02	7.46E+02
PBW2-2	2	2	98809856	29-Jul	Ac-228	170		2.17E+03	1.21E+02
PBW2-2	2	2	98809856	29-Jul	Bi-212	400		1.15E+03	2.11E+02
PBW2-2	2	2	98809856	29-Jul	Bi-214	100		1.10E+03	6.58E+01
PBW2-2	2	2	98809856	29-Jul	Co-60	50	U	1.51E+01	1.29E+01
PBW2-2	2	2	98809856	29-Jul	Cs-137	50	U	3.38E+01	1.95E+01
PBW2-2	2	2	98809856	29-Jul	K-40	780	U	-1.57E+01	1.78E+02
PBW2-2	2	2	98809856	29-Jul	Pb-212	100		1.88E+03	1.09E+02
PBW2-2	2	2	98809856	29-Jul	Pb-214	120		1.21E+03	7.76E+01
PBW2-2	2	2	98809856	29-Jul	Tl-208	60		6.86E+02	4.84E+01
PBW3-1	3	1	98809857	29-Jul	Gross A	1500	U	2.84E+02	2.80E+02
PBW3-1	3	1	98809857	29-Jul	Gross B	2670	U	4.30E+02	5.38E+02
PBW3-1	3	1	98809857	29-Jul	Ac-228	110		3.05E+02	6.18E+01
PBW3-1	3	1	98809857	29-Jul	Bi-214	60		1.63E+02	3.30E+01
PBW3-1	3	1	98809857	29-Jul	Co-60	30	U	2.12E+01	1.15E+01
PBW3-1	3	1	98809857	29-Jul	Cs-137	30		3.89E+01	1.61E+01
PBW3-1	3	1	98809857	29-Jul	K-40	640	U	1.18E+01	1.84E+02
PBW3-1	3	1	98809857	29-Jul	Pb-212	70		2.56E+02	3.46E+01
PBW3-1	3	1	98809857	29-Jul	Pb-214	70		2.73E+02	3.70E+01
PBW3-1	3	1	98809857	29-Jul	Tl-208	30		7.68E+01	2.54E+01
PBW3-2	3	2	98809858	29-Jul	Gross A	470		4.15E+02	4.02E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBW3-2	3	2	98809858	29-Jul	Gross B	2490		1.14E+03	7.54E+02
PBW3-2	3	2	98809858	29-Jul	Ac-228	120		4.73E+02	4.99E+01
PBW3-2	3	2	98809858	29-Jul	Bi-214	80		2.97E+02	4.54E+01
PBW3-2	3	2	98809858	29-Jul	Co-60	30	U	-4.49E-01	6.91E+00
PBW3-2	3	2	98809858	29-Jul	Cs-137	40		7.73E+01	2.20E+01
PBW3-2	3	2	98809858	29-Jul	K-40	270		5.59E+02	2.09E+02
PBW3-2	3	2	98809858	29-Jul	Pb-212	90		3.22E+02	3.80E+01
PBW3-2	3	2	98809858	29-Jul	Pb-214	90		2.49E+02	3.97E+01
PBW3-2	3	2	98809858	29-Jul	Tl-208	40		8.54E+01	2.58E+01
PBW4-1	4	1	98809853	29-Jul	Gross A	480		2.35E+03	7.12E+02
PBW4-1	4	1	98809853	29-Jul	Gross B	2510		1.15E+03	7.75E+02
PBW4-1	4	1	98809853	29-Jul	Ac-228	130		7.11E+02	7.84E+01
PBW4-1	4	1	98809853	29-Jul	Bi-214	90		4.81E+02	5.34E+01
PBW4-1	4	1	98809853	29-Jul	Co-60	50	U	1.82E+00	1.19E+01
PBW4-1	4	1	98809853	29-Jul	Cs-137	50		5.22E+01	2.07E+01
PBW4-1	4	1	98809853	29-Jul	K-40	370		4.81E+02	2.15E+02
PBW4-1	4	1	98809853	29-Jul	Pb-212	80		6.30E+02	5.68E+01
PBW4-1	4	1	98809853	29-Jul	Pb-214	100		5.14E+02	5.22E+01
PBW4-1	4	1	98809853	29-Jul	Tl-208	40		1.95E+02	3.14E+01
PBW4-2	4	2	98809854	29-Jul	Gross A	440		2.86E+03	7.36E+02
PBW4-2	4	2	98809854	29-Jul	Gross B	2310		5.28E+02	6.81E+02
PBW4-2	4	2	98809854	29-Jul	Ac-228	170		9.81E+02	8.49E+01
PBW4-2	4	2	98809854	29-Jul	Bi-212	380		8.92E+02	2.16E+02
PBW4-2	4	2	98809854	29-Jul	Bi-214	100		6.65E+02	5.24E+01
PBW4-2	4	2	98809854	29-Jul	Co-60	40	U	2.19E+00	1.05E+01
PBW4-2	4	2	98809854	29-Jul	Cs-137	50		6.19E+01	2.09E+01
PBW4-2	4	2	98809854	29-Jul	K-40	520		9.73E+02	2.61E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBW4-2	4	2	98809854	29-Jul	Pb-212	100		8.59E+02	6.57E+01
PBW4-2	4	2	98809854	29-Jul	Pb-214	120		6.32E+02	6.18E+01
PBW4-2	4	2	98809854	29-Jul	Tl-208	50		3.70E+02	3.84E+01
PBW5-1	5	1	98809855	29-Jul	Gross A	440		1.40E+03	3.89E+02
PBW5-1	5	1	98809855	29-Jul	Gross B	2320		4.88E+02	4.71E+02
PBW5-1	5	1	98809855	29-Jul	Ac-228	150		9.30E+02	6.81E+01
PBW5-1	5	1	98809855	29-Jul	Bi-212	340		7.38E+02	1.36E+02
PBW5-1	5	1	98809855	29-Jul	Bi-214	90		6.43E+02	5.28E+01
PBW5-1	5	1	98809855	29-Jul	Co-60	40	U	1.13E+01	1.08E+01
PBW5-1	5	1	98809855	29-Jul	Cs-137	50		5.81E+01	2.07E+01
PBW5-1	5	1	98809855	29-Jul	K-40	390	U	2.62E+02	1.81E+02
PBW5-1	5	1	98809855	29-Jul	Pb-212	90		8.89E+02	6.41E+01
PBW5-1	5	1	98809855	29-Jul	Pb-214	100		5.49E+02	6.16E+01
PBW5-1	5	1	98809855	29-Jul	Tl-208	50		3.11E+02	3.35E+01
PBW5-2	5	2	98808509	29-Jul	Gross A	1580	U	1.32E+03	4.36E+02
PBW5-2	5	2	98808509	29-Jul	Gross B	2760	U	8.43E+02	5.78E+02
PBW5-2	5	2	98808509	29-Jul	Ac-228	160		7.76E+02	8.38E+01
PBW5-2	5	2	98808509	29-Jul	Bi-214	90		6.16E+02	5.42E+01
PBW5-2	5	2	98808509	29-Jul	Co-60	40	U	-1.60E+00	1.16E+01
PBW5-2	5	2	98808509	29-Jul	Cs-137	60	U	5.24E+01	1.76E+01
PBW5-2	5	2	98808509	29-Jul	K-40	430		9.57E+02	2.50E+02
PBW5-2	5	2	98808509	29-Jul	Pb-212	90		8.30E+02	6.19E+01
PBW5-2	5	2	98808509	29-Jul	Pb-214	110		6.30E+02	5.70E+01
PBW5-2	5	2	98808509	29-Jul	Tl-208	50		3.24E+02	3.20E+01

Pond B Sediments

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBS1-1	1	1	98808500	29-Jul	Gross A	1900		3.41E+03	9.53E+02
PBS1-1	1	1	98808500	29-Jul	Gross B	3250		1.32E+04	1.50E+03
PBS1-1	1	1	98808500	29-Jul	Ac-228	130		1.17E+03	5.59E+01
PBS1-1	1	1	98808500	29-Jul	Bi-212	340		7.30E+02	9.70E+01
PBS1-1	1	1	98808500	29-Jul	Bi-214	130		7.03E+02	4.20E+01
PBS1-1	1	1	98808500	29-Jul	Co-60	50	U	4.62E+01	9.30E+00
PBS1-1	1	1	98808500	29-Jul	Cs-137	60		1.65E+04	5.24E+02
PBS1-1	1	1	98808500	29-Jul	K-40	370		7.11E+02	1.77E+02
PBS1-1	1	1	98808500	29-Jul	Pb-212	150		1.08E+03	5.45E+01
PBS1-1	1	1	98808500	29-Jul	Pb-214	190		7.16E+02	5.39E+01
PBS1-1	1	1	98808500	29-Jul	Tl-208	70		4.22E+02	3.00E+01
PBS1-1B	1	1	98808501	29-Jul	Gross A	1940		2.78E+03	8.99E+02
PBS1-1B	1	1	98808501	29-Jul	Gross B	3260		1.31E+04	1.51E+03
PBS1-1B	1	1	98808501	29-Jul	Ac-228	150		1.18E+03	5.74E+01
PBS1-1B	1	1	98808501	29-Jul	Bi-212	360		8.08E+02	1.33E+02
PBS1-1B	1	1	98808501	29-Jul	Bi-214	130		7.43E+02	4.27E+01
PBS1-1B	1	1	98808501	29-Jul	Co-60	40		6.57E+01	8.32E+00
PBS1-1B	1	1	98808501	29-Jul	Cs-137	70		1.39E+04	4.42E+02
PBS1-1B	1	1	98808501	29-Jul	K-40	340		1.01E+03	1.54E+02
PBS1-1B	1	1	98808501	29-Jul	Pb-212	150		1.22E+03	5.92E+01
PBS1-1B	1	1	98808501	29-Jul	Pb-214	180		7.78E+02	5.65E+01
PBS1-1B	1	1	98808501	29-Jul	Tl-208	70		4.24E+02	3.11E+01
PBS2-1	2	1	98808503	29-Jul	Gross A	1850	U	1.60E+03	6.97E+02
PBS2-1	2	1	98808503	29-Jul	Gross B	3230		1.87E+04	1.68E+03
PBS2-1	2	1	98808503	29-Jul	Ac-228	160		1.48E+03	7.68E+01
PBS2-1	2	1	98808503	29-Jul	Bi-212	390		8.59E+02	1.41E+02

Sample Number	Trans. ID	Depth Int.	Anal. Lab ID	Date	Analyte	DL (pCi/kg)	Qual.	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBS2-1	2	1	98808503	29-Jul	Bi-214	170		1.09E+03	5.62E+01
PBS2-1	2	1	98808503	29-Jul	Co-60	50	U	2.43E+01	9.51E+00
PBS2-1	2	1	98808503	29-Jul	Cs-137	80		2.11E+04	6.70E+02
PBS2-1	2	1	98808503	29-Jul	K-40	840	U	1.36E+02	1.36E+02
PBS2-1	2	1	98808503	29-Jul	Pb-212	180		1.33E+03	7.05E+01
PBS2-1	2	1	98808503	29-Jul	Pb-214	240		9.00E+02	7.65E+01
PBS2-1	2	1	98808503	29-Jul	Tl-208	90		5.08E+02	4.04E+01

**Appendix C:
GEL Analytical Data**

GEL ANALYTICAL DATA

Summary

Nine soil samples for WSRC arrived at GEL Charleston, South Carolina on August 11, 1998, for analysis. The samples listed on the chain arrived without any visible signs of tampering.

The temperature of the samples was 15 °C. The samples were stored properly according to SW-846 procedures and the GEL Standard Operating Procedures (SOP).

The following samples were received by the laboratory:

<u>WSRC Sample ID</u>	<u>GEL Sample Number</u>
PBL3-2C	9808376-01
PBL5-2C	9808376-02
PBL7-1C	9808376-03
PBL9-1C	9808376-04
PBL11-3C	9808376-05
PBU7-1C	9808376-06
PBU11-2C	9808376-07
PBW3-1C	9808376-08
PBS2-1C	9808376-09

Data Quality Case Narrative

GEL maintains acceptance criteria for QC samples through the use of statistical process control (SPC). The SPC limits are used to qualify data usability.

GEL instruments were properly calibrated during analyses.

All samples were analyzed within the required holding time.

No target analytes were detected in the method blank above the required acceptance limit.

All analyte recoveries in the matrix spike were within required acceptance limits.

All analyte recoveries in the laboratory control sample were within the required acceptance limits.

All sample replicate results were within the required acceptance limits.

None of the samples were diluted.

There were no Nonconformance reports associated with this batch of analyses.

Analytical Data Table Nomenclature

Laboratory results are presented for each replicate sample collected. For each analyte in the laboratory analyses tables, the following information is presented:

Sample Number: The WSRC Sample Identification Number

Trans. ID: Transect identification number.

Depth Int.: Depth interval.

1 - First sampling interval	0 - 1 foot
2 - Second sampling interval	2 - 4 feet
3 - Third sampling interval	4 - 10 feet

Analyte: Parameter measured.

DL (pCi/kg): Detection Limit. The definition of Detection Limit used at GEL is: The minimum level of an analyte that can be determined (identified not quantified) with 99% confidence. The values are normally achieved by preparing and analyzing seven aliquots of laboratory water spiked 1 to 5 times the estimated method detection limit (MDL), taking the standard deviation and multiplying it against the one-tailed t-statistic at 99%. This computed value is then verified for reasonableness by repeating the study using the concentration found in the initial study, calculating an F-ratio, and computing the final limit. Sample specific preparation and dilution factors are applied to these limits when they are reported.

The detection limit is the minimum concentration of a substance that can be identified, measured, and reported with 99% confidence that the analyte concentration is above zero. It answers the question, "Is it present".

The definition of Quantitation Limit used at GEL is: The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. The QL is generally 5 to 10 times the MDL. However, it may be nominally chosen within these guidelines to simplify data reporting. For many analytes the QL analyte concentration is selected as the lowest non-zero standard in the calibration curve. Sample QL's are highly matrix-dependent. Sample specific preparation and dilution factors are applied to these limits when they are reported.

The QL is always $\geq$ DL.

Qualifier: Letter indicating special conditions associated with the result

If the final concentration in the sample was found to be below the DL, the value reported is flagged with a "U" qualifier.

If the final concentration in the sample was found to be below the QL but above the DL, then the value reported is flagged with a "J" qualifier.

If the final concentration in the sample was found to be above the QL, no qualifier is listed for the parameter.

Activity (pCi/kg): Measured result of the analysis

1 Sigma (pCi/kg): One standard deviation

GEL Analytical Data

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL3-2C	3	2	Gross A	2.90E+03		7.54E+03	2.65E+03
PBL3-2C	3	2	Gross B	4.95E+03		5.97E+03	2.66E+03
PBL3-2C	3	2	Ac-228	1.07E+02		1.03E+03	2.26E+02
PBL3-2C	3	2	Ba-133	3.76E+01	U	-1.64E+01	2.50E+01
PBL3-2C	3	2	Cf-249	3.67E+01	U	9.67E+00	2.00E+01
PBL3-2C	3	2	Cf-251	1.13E+02	U	-6.02E+01	6.76E+01
PBL3-2C	3	2	Ce-141	9.29E+01	U	4.94E+00	5.26E+01
PBL3-2C	3	2	Ce-144	1.94E+02	U	7.35E+01	1.07E+02
PBL3-2C	3	2	Co-57	2.27E+01	U	-1.67E+01	1.35E+01
PBL3-2C	3	2	Co-58	4.18E+01	U	-7.85E+00	2.35E+01
PBL3-2C	3	2	Co-60	2.85E+01	U	-6.64E+00	1.66E+01
PBL3-2C	3	2	Cs-134	2.87E+01	U	-1.62E+00	1.90E+01
PBL3-2C	3	2	Cs-135	1.36E+02	U	4.89E+01	8.12E+01
PBL3-2C	3	2	Cs-137	3.57E+01	U	2.60E+01	2.10E+01
PBL3-2C	3	2	Eu-152	7.95E+01	U	-2.19E+01	4.51E+01
PBL3-2C	3	2	Eu-154	9.38E+01	U	8.18E+01	1.33E+02
PBL3-2C	3	2	Eu-155	9.19E+01	U	6.38E+01	6.05E+01
PBL3-2C	3	2	K-40	2.51E+02		1.12E+03	3.84E+02
PBL3-2C	3	2	Mn-54	3.58E+01	U	1.46E+01	1.88E+01
PBL3-2C	3	2	Na-22	3.21E+01	U	2.96E+01	4.83E+01
PBL3-2C	3	2	Nb-94	2.78E+01	U	-8.61E+00	1.58E+01
PBL3-2C	3	2	Np-239	1.66E+02	U	-1.08E+01	9.32E+01
PBL3-2C	3	2	Pb-212	4.92E+01		1.14E+03	1.41E+02
PBL3-2C	3	2	Pm-144	3.21E+01	U	1.13E+01	1.68E+01
PBL3-2C	3	2	Pm-146	3.97E+01	U	6.33E+00	2.19E+01
PBL3-2C	3	2	Ru-103	5.36E+01	U	1.42E+01	2.92E+01
PBL3-2C	3	2	Ru-106	2.55E+02	U	-1.07E+01	1.45E+02
PBL3-2C	3	2	Sb-124	4.41E+01	U	1.48E+01	2.41E+01
PBL3-2C	3	2	Sb-125	7.89E+01	U	-1.91E+01	4.52E+01
PBL3-2C	3	2	Sn-113	4.50E+01	U	-1.48E+01	2.59E+01
PBL3-2C	3	2	Sn-126	3.34E+01	U	2.17E+00	1.81E+01
PBL3-2C	3	2	Y-88	4.17E+01	U	1.06E+00	2.21E+01
PBL3-2C	3	2	Zn-65	5.52E+01	U	-3.17E+01	4.07E+01

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL3-2C	3	2	Zr-95	7.59E+01	U	1.63E+01	4.55E+01
PBL5-2C	5	2	Gross A	2.44E+03		5.23E+03	2.14E+03
PBL5-2C	5	2	Gross B	4.88E+03	U	4.39E+03	2.50E+03
PBL5-2C	5	2	Ac-228	1.11E+02		1.03E+03	2.24E+02
PBL5-2C	5	2	Ba-133	3.64E+01	U	-1.31E+00	2.38E+01
PBL5-2C	5	2	Cf-249	3.60E+01	U	-3.15E+00	1.97E+01
PBL5-2C	5	2	Cf-251	1.10E+02	U	-4.53E+01	6.35E+01
PBL5-2C	5	2	Ce-141	8.71E+01	U	6.43E+01	6.55E+01
PBL5-2C	5	2	Ce-144	1.96E+02	U	4.48E+01	1.07E+02
PBL5-2C	5	2	Co-57	2.43E+01	U	5.96E+00	1.31E+01
PBL5-2C	5	2	Co-58	3.91E+01	U	-8.80E+00	2.28E+01
PBL5-2C	5	2	Co-60	3.18E+01	U	7.11E+00	1.60E+01
PBL5-2C	5	2	Cs-134	3.00E+01	U	-4.23E+01	2.00E+01
PBL5-2C	5	2	Cs-135	1.36E+02	R	5.00E+02	1.72E+02
PBL5-2C	5	2	Cs-137	3.41E+01	U	1.61E+01	2.75E+01
PBL5-2C	5	2	Eu-152	8.01E+01	U	-4.44E+01	4.94E+01
PBL5-2C	5	2	Eu-154	8.48E+01	U	-1.93E+01	5.61E+01
PBL5-2C	5	2	Eu-155	9.52E+01	U	8.51E+01	8.13E+01
PBL5-2C	5	2	K-40	3.04E+02		4.69E+02	3.96E+02
PBL5-2C	5	2	Mn-54	3.47E+01	U	2.32E+01	1.94E+01
PBL5-2C	5	2	Na-22	3.07E+01	U	-7.05E+00	2.03E+01
PBL5-2C	5	2	Nb-94	3.30E+01	U	9.65E+00	1.80E+01
PBL5-2C	5	2	Np-239	1.51E+02	U	-1.38E+02	8.86E+01
PBL5-2C	5	2	Pb-212	5.51E+01		1.16E+03	1.45E+02
PBL5-2C	5	2	Pm-144	3.06E+01	U	-7.30E+00	1.77E+01
PBL5-2C	5	2	Pm-146	3.72E+01	U	-7.70E+00	2.08E+01
PBL5-2C	5	2	Ru-103	5.51E+01	U	2.71E+01	2.86E+01
PBL5-2C	5	2	Ru-106	2.78E+02	U	-3.90E+01	1.80E+02
PBL5-2C	5	2	Sb-124	4.41E+01	U	6.48E+00	2.40E+01
PBL5-2C	5	2	Sb-125	7.21E+01	U	-1.48E+01	4.00E+01
PBL5-2C	5	2	Sn-113	4.79E+01	U	3.77E+00	2.58E+01
PBL5-2C	5	2	Sn-126	3.29E+01	U	1.15E+01	1.73E+01
PBL5-2C	5	2	Y-88	4.70E+01	U	1.64E+01	2.28E+01
PBL5-2C	5	2	Zn-65	6.24E+01	U	2.37E+00	3.76E+01
PBL5-2C	5	2	Zr-95	8.79E+01	U	7.83E+01	5.41E+01

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL7-1C	7	1	Gross A	2.11E+03		3.12E+03	1.72E+03
PBL7-1C	7	1	Gross B	4.57E+03	U	9.08E+02	2.05E+03
PBL7-1C	7	1	Ac-228	1.02E+02		8.53E+02	2.11E+02
PBL7-1C	7	1	Ba-133	3.37E+01	U	-2.24E+00	2.20E+01
PBL7-1C	7	1	Cf-249	3.45E+01	U	7.46E+00	1.82E+01
PBL7-1C	7	1	Cf-251	1.02E+02	U	-4.06E+01	5.82E+01
PBL7-1C	7	1	Ce-141	8.90E+01	U	2.33E+01	6.06E+01
PBL7-1C	7	1	Ce-144	1.80E+02	U	-2.23E+01	9.87E+01
PBL7-1C	7	1	Co-57	2.18E+01	U	1.04E+00	1.18E+01
PBL7-1C	7	1	Co-58	3.69E+01	U	-5.25E+00	2.11E+01
PBL7-1C	7	1	Co-60	3.02E+01	U	1.39E+00	1.59E+01
PBL7-1C	7	1	Cs-134	2.77E+01	U	-1.05E+01	1.85E+01
PBL7-1C	7	1	Cs-135	1.23E+02	R	2.85E+02	1.33E+02
PBL7-1C	7	1	Cs-137	3.05E+01		1.20E+02	3.59E+01
PBL7-1C	7	1	Eu-152	8.01E+01	U	-1.15E+00	4.61E+01
PBL7-1C	7	1	Eu-154	8.21E+01	U	2.04E+01	4.59E+01
PBL7-1C	7	1	Eu-155	8.62E+01	U	5.58E+01	8.73E+01
PBL7-1C	7	1	K-40	2.57E+02		9.84E+02	3.46E+02
PBL7-1C	7	1	Mn-54	3.28E+01	U	2.71E+00	1.83E+01
PBL7-1C	7	1	Na-22	2.97E+01	U	7.19E+00	1.66E+01
PBL7-1C	7	1	Nb-94	2.74E+01	U	1.05E-01	1.53E+01
PBL7-1C	7	1	Np-239	1.55E+02	U	-1.85E+01	8.43E+01
PBL7-1C	7	1	Pb-212	4.81E+01		9.10E+02	1.18E+02
PBL7-1C	7	1	Pm-144	3.12E+01	U	2.96E+00	1.72E+01
PBL7-1C	7	1	Pm-146	3.66E+01	U	3.60E+00	1.96E+01
PBL7-1C	7	1	Ru-103	5.00E+01	U	-5.16E+00	2.76E+01
PBL7-1C	7	1	Ru-106	2.69E+02	U	8.68E+01	1.42E+02
PBL7-1C	7	1	Sb-124	4.41E+01	U	1.81E+01	2.32E+01
PBL7-1C	7	1	Sb-125	7.47E+01	U	-2.03E+01	4.16E+01
PBL7-1C	7	1	Sn-113	4.36E+01	U	-3.73E+00	2.37E+01
PBL7-1C	7	1	Sn-126	2.89E+01	U	-1.22E+00	1.62E+01
PBL7-1C	7	1	Y-88	3.11E+01	U	6.71E-01	1.58E+01
PBL7-1C	7	1	Zn-65	6.52E+01	U	7.37E+00	3.87E+01
PBL7-1C	7	1	Zr-95	7.56E+01	U	-6.09E+00	4.28E+01
PBL9-1C	9	1	Gross A	3.73E+03		7.94E+03	3.05E+03

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL9-1C	9	1	Gross B	5.58E+03		9.77E+03	3.19E+03
PBL9-1C	9	1	Ac-228	1.05E+02		1.29E+03	2.43E+02
PBL9-1C	9	1	Ba-133	4.04E+01	U	3.46E+00	2.64E+01
PBL9-1C	9	1	Cf-249	3.83E+01	U	-4.41E+00	2.13E+01
PBL9-1C	9	1	Cf-251	1.20E+02	U	-1.90E+00	6.77E+01
PBL9-1C	9	1	Ce-141	1.05E+02	U	3.24E+01	5.79E+01
PBL9-1C	9	1	Ce-144	2.06E+02	U	-1.92E+00	1.15E+02
PBL9-1C	9	1	Co-57	2.65E+01	U	4.72E+00	1.45E+01
PBL9-1C	9	1	Co-58	4.75E+01	U	5.80E+00	3.03E+01
PBL9-1C	9	1	Co-60	3.84E+01	U	3.83E+00	2.07E+01
PBL9-1C	9	1	Cs-134	3.33E+01	U	1.17E+01	2.03E+01
PBL9-1C	9	1	Cs-135	1.46E+02	R	3.20E+02	1.74E+02
PBL9-1C	9	1	Cs-137	3.87E+01		1.10E+02	3.79E+01
PBL9-1C	9	1	Eu-152	8.86E+01	U	-2.23E+01	5.33E+01
PBL9-1C	9	1	Eu-154	1.11E+02	U	2.86E+01	5.83E+01
PBL9-1C	9	1	Eu-155	1.04E+02	U	9.08E+01	9.43E+01
PBL9-1C	9	1	K-40	3.42E+02		6.67E+03	9.97E+02
PBL9-1C	9	1	Mn-54	4.18E+01	U	3.75E+00	2.73E+01
PBL9-1C	9	1	Na-22	4.03E+01	U	1.04E+01	2.11E+01
PBL9-1C	9	1	Nb-94	3.59E+01	U	6.22E+00	2.01E+01
PBL9-1C	9	1	Np-239	1.75E+02	U	-4.74E+01	9.79E+01
PBL9-1C	9	1	Pb-212	5.49E+01		1.41E+03	1.66E+02
PBL9-1C	9	1	Pm-144	3.63E+01	U	-3.73E+00	2.10E+01
PBL9-1C	9	1	Pm-146	4.30E+01	U	8.93E+00	2.33E+01
PBL9-1C	9	1	Ru-103	6.05E+01	U	9.33E+00	3.30E+01
PBL9-1C	9	1	Ru-106	3.10E+02	U	5.62E+01	1.70E+02
PBL9-1C	9	1	Sb-124	5.02E+01	U	-1.67E+00	2.84E+01
PBL9-1C	9	1	Sb-125	9.62E+01	U	2.03E+01	5.22E+01
PBL9-1C	9	1	Sn-113	5.09E+01	U	1.38E+01	2.73E+01
PBL9-1C	9	1	Sn-126	3.63E+01	U	8.03E+00	2.26E+01
PBL9-1C	9	1	Y-88	4.95E+01	U	1.66E-01	2.63E+01
PBL9-1C	9	1	Zn-65	8.49E+01	U	-3.44E+01	5.86E+01
PBL9-1C	9	1	Zr-95	8.67E+01	U	2.73E+00	4.91E+01
PBL11-3C	11	3	Gross A	3.73E+03		4.28E+03	2.41E+03
PBL11-3C	11	3	Gross B	5.85E+03		7.26E+03	3.10E+03

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBL11-3C	11	3	Ac-228	8.64E+01		8.43E+02	1.82E+02
PBL11-3C	11	3	Ba-133	2.80E+01	U	-7.13E+00	1.83E+01
PBL11-3C	11	3	Cf-249	2.85E+01	U	1.79E+01	1.50E+01
PBL11-3C	11	3	Cf-251	9.31E+01	U	1.89E+00	5.03E+01
PBL11-3C	11	3	Ce-141	7.78E+01	U	2.86E+01	5.81E+01
PBL11-3C	11	3	Ce-144	1.59E+02	U	2.71E+01	8.35E+01
PBL11-3C	11	3	Co-57	1.88E+01	U	-5.69E+00	1.13E+01
PBL11-3C	11	3	Co-58	2.89E+01	U	-1.39E+01	1.72E+01
PBL11-3C	11	3	Co-60	2.23E+01	U	-1.24E+01	1.34E+01
PBL11-3C	11	3	Cs-134	2.18E+01	U	-3.65E+00	1.37E+01
PBL11-3C	11	3	Cs-135	8.98E+01	U	7.84E+01	8.21E+01
PBL11-3C	11	3	Cs-137	2.67E+01		6.75E+01	2.93E+01
PBL11-3C	11	3	Eu-152	6.82E+01	U	-4.35E+00	3.86E+01
PBL11-3C	11	3	Eu-154	7.05E+01	U	5.10E+00	3.83E+01
PBL11-3C	11	3	Eu-155	8.02E+01	U	6.09E+00	4.62E+01
PBL11-3C	11	3	K-40	2.79E+02		4.73E+02	3.46E+02
PBL11-3C	11	3	Mn-54	2.82E+01	U	2.40E+01	1.15E+01
PBL11-3C	11	3	Na-22	2.55E+01	U	1.65E+00	1.39E+01
PBL11-3C	11	3	Nb-94	2.28E+01	U	9.99E-01	1.24E+01
PBL11-3C	11	3	Np-239	1.32E+02	U	-2.74E+01	7.80E+01
PBL11-3C	11	3	Pb-212	4.15E+01		8.78E+02	1.08E+02
PBL11-3C	11	3	Pm-144	2.60E+01	U	3.31E+00	1.40E+01
PBL11-3C	11	3	Pm-146	3.14E+01	U	-7.02E-01	1.80E+01
PBL11-3C	11	3	Ru-103	4.32E+01	U	1.54E-01	2.48E+01
PBL11-3C	11	3	Ru-106	2.35E+02	U	3.80E+01	1.24E+02
PBL11-3C	11	3	Sb-124	3.46E+01	U	7.35E+00	1.83E+01
PBL11-3C	11	3	Sb-125	6.57E+01	U	-4.82E+00	3.77E+01
PBL11-3C	11	3	Sn-113	3.34E+01	U	-2.16E+01	2.04E+01
PBL11-3C	11	3	Sn-126	2.33E+01	U	-3.61E+00	1.30E+01
PBL11-3C	11	3	Y-88	4.11E+01	U	1.70E+01	1.83E+01
PBL11-3C	11	3	Zn-65	5.00E+01	U	7.54E+00	2.99E+01
PBL11-3C	11	3	Zr-95	6.25E+01	U	-1.30E+01	3.54E+01
PBU7-1C	7	1	Gross A	3.25E+03		8.53E+03	2.86E+03
PBU7-1C	7	1	Gross B	4.19E+03	U	4.16E+03	2.21E+03
PBU7-1C	7	1	Ac-228	1.04E+02		1.10E+03	2.22E+02

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU7-1C	7	1	Ba-133	3.53E+01	U	-2.08E+01	2.16E+01
PBU7-1C	7	1	Cf-249	3.17E+01	U	-4.51E+00	1.85E+01
PBU7-1C	7	1	Cf-251	9.93E+01	U	1.45E+01	5.41E+01
PBU7-1C	7	1	Ce-141	8.07E+01	U	1.73E+01	5.52E+01
PBU7-1C	7	1	Ce-144	1.69E+02	U	8.33E+01	9.00E+01
PBU7-1C	7	1	Co-57	1.94E+01	U	4.67E+00	1.03E+01
PBU7-1C	7	1	Co-58	3.87E+01	U	1.71E+01	2.82E+01
PBU7-1C	7	1	Co-60	2.99E+01	U	5.89E+00	1.50E+01
PBU7-1C	7	1	Cs-134	2.66E+01	U	-3.46E+00	1.69E+01
PBU7-1C	7	1	Cs-135	1.21E+02	U	7.90E+01	6.85E+01
PBU7-1C	7	1	Cs-137	2.92E+01		1.66E+02	5.32E+01
PBU7-1C	7	1	Eu-152	7.76E+01	U	-1.79E+01	4.54E+01
PBU7-1C	7	1	Eu-154	9.53E+01	U	4.83E+00	5.06E+01
PBU7-1C	7	1	Eu-155	7.21E+01	U	6.46E+01	6.49E+01
PBU7-1C	7	1	K-40	2.66E+02		6.95E+02	3.17E+02
PBU7-1C	7	1	Mn-54	3.59E+01	U	1.32E+01	1.91E+01
PBU7-1C	7	1	Na-22	3.46E+01	U	1.80E+00	1.84E+01
PBU7-1C	7	1	Nb-94	3.09E+01	U	2.48E+01	1.92E+01
PBU7-1C	7	1	Np-239	1.32E+02	U	1.24E+01	7.07E+01
PBU7-1C	7	1	Pb-212	4.36E+01		1.20E+03	1.57E+02
PBU7-1C	7	1	Pm-144	2.77E+01	U	-2.02E+00	1.54E+01
PBU7-1C	7	1	Pm-146	3.80E+01	U	1.11E+01	2.13E+01
PBU7-1C	7	1	Ru-103	4.80E+01	U	-1.04E+01	2.67E+01
PBU7-1C	7	1	Ru-106	2.86E+02	U	3.47E+01	1.54E+02
PBU7-1C	7	1	Sb-124	4.35E+01	U	2.19E+01	2.24E+01
PBU7-1C	7	1	Sb-125	7.45E+01	U	4.42E+00	4.26E+01
PBU7-1C	7	1	Sn-113	4.24E+01	U	-5.02E+00	2.47E+01
PBU7-1C	7	1	Sn-126	3.00E+01	U	1.33E+01	2.20E+01
PBU7-1C	7	1	Y-88	3.88E+01	U	-1.75E+01	2.38E+01
PBU7-1C	7	1	Zn-65	7.24E+01	U	-5.83E+01	4.78E+01
PBU7-1C	7	1	Zr-95	7.58E+01	U	2.10E+01	4.00E+01
PBU11-2C	11	2	Gross A	2.66E+03		5.86E+03	2.37E+03
PBU11-2C	11	2	Gross B	4.49E+03		8.43E+03	2.66E+03
PBU11-2C	11	2	Ac-228	2.09E+02		8.81E+02	3.40E+02
PBU11-2C	11	2	Ba-133	6.96E+01	U	-1.22E+01	4.49E+01

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBU11-2C	11	2	Cf-249	6.83E+01	U	2.37E+01	3.64E+01
PBU11-2C	11	2	Cf-251	2.08E+02	U	5.15E+01	1.17E+02
PBU11-2C	11	2	Ce-141	1.75E+02	U	-2.60E+01	9.98E+01
PBU11-2C	11	2	Ce-144	3.43E+02	U	-1.47E+02	1.99E+02
PBU11-2C	11	2	Co-57	4.54E+01	U	1.58E+00	2.53E+01
PBU11-2C	11	2	Co-58	7.85E+01	U	-4.02E+01	4.83E+01
PBU11-2C	11	2	Co-60	6.01E+01	U	1.53E+01	3.43E+01
PBU11-2C	11	2	Cs-134	5.58E+01	U	-1.64E+01	3.79E+01
PBU11-2C	11	2	Cs-135	2.55E+02	U	1.42E+01	1.47E+02
PBU11-2C	11	2	Cs-137	6.43E+01	U	3.82E+01	4.43E+01
PBU11-2C	11	2	Eu-152	1.69E+02	U	3.84E+00	1.06E+02
PBU11-2C	11	2	Eu-154	1.56E+02	U	-3.92E+01	8.88E+01
PBU11-2C	11	2	Eu-155	1.85E+02	U	1.22E+02	9.92E+01
PBU11-2C	11	2	K-40	6.64E+02	U	4.88E+02	5.77E+02
PBU11-2C	11	2	Mn-54	6.83E+01	U	2.03E+01	3.68E+01
PBU11-2C	11	2	Na-22	5.65E+01	U	-1.40E+01	3.22E+01
PBU11-2C	11	2	Nb-94	6.24E+01	U	-2.95E+00	3.55E+01
PBU11-2C	11	2	Np-239	3.10E+02	U	-7.93E+00	1.73E+02
PBU11-2C	11	2	Pb-212	8.92E+01		1.04E+03	1.59E+02
PBU11-2C	11	2	Pm-144	6.55E+01	U	4.96E+00	3.66E+01
PBU11-2C	11	2	Pm-146	7.94E+01	U	2.55E+01	4.26E+01
PBU11-2C	11	2	Ru-103	1.06E+02	U	-9.23E+00	5.92E+01
PBU11-2C	11	2	Ru-106	5.51E+02	U	-3.93E+01	3.11E+02
PBU11-2C	11	2	Sb-124	8.60E+01	U	-3.42E+01	5.09E+01
PBU11-2C	11	2	Sb-125	1.57E+02	U	-4.58E+00	8.73E+01
PBU11-2C	11	2	Sn-113	8.10E+01	U	-1.78E+00	4.46E+01
PBU11-2C	11	2	Sn-126	6.02E+01	U	-3.68E+01	3.77E+01
PBU11-2C	11	2	Y-88	7.02E+01	U	-2.95E+01	4.32E+01
PBU11-2C	11	2	Zn-65	1.37E+02	U	5.79E+01	7.61E+01
PBU11-2C	11	2	Zr-95	1.59E+02	U	-2.02E+01	9.16E+01
PBW3-1C	3	1	Gross A	1.87E+03		2.49E+03	1.47E+03
PBW3-1C	3	1	Gross B	3.93E+03		4.01E+03	2.07E+03
PBW3-1C	3	1	Ac-228	7.96E+01		2.50E+02	1.35E+02
PBW3-1C	3	1	Ba-133	2.69E+01	U	1.94E+00	2.35E+01
PBW3-1C	3	1	Cf-249	2.16E+01	U	6.24E+00	2.38E+01

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBW3-1C	3	1	Cf-251	7.15E+01	U	-1.63E+01	5.93E+01
PBW3-1C	3	1	Ce-141	5.91E+01	U	2.19E+01	4.63E+01
PBW3-1C	3	1	Ce-144	1.15E+02	U	-2.76E+01	9.38E+01
PBW3-1C	3	1	Co-57	1.43E+01	U	4.99E+00	1.12E+01
PBW3-1C	3	1	Co-58	3.02E+01	U	-4.20E+00	2.28E+01
PBW3-1C	3	1	Co-60	2.83E+01	U	1.89E+01	2.05E+01
PBW3-1C	3	1	Cs-134	2.22E+01	U	-2.42E+00	2.05E+01
PBW3-1C	3	1	Cs-135	8.45E+01	U	4.31E+01	1.07E+02
PBW3-1C	3	1	Cs-137	2.09E+01		1.15E+02	3.19E+01
PBW3-1C	3	1	Eu-152	6.20E+01	U	3.29E+01	4.61E+01
PBW3-1C	3	1	Eu-154	6.75E+01	U	-1.34E+01	5.19E+01
PBW3-1C	3	1	Eu-155	5.32E+01	U	2.93E+01	4.11E+01
PBW3-1C	3	1	K-40	2.49E+02	U	6.82E+01	2.67E+02
PBW3-1C	3	1	Mn-54	2.61E+01	U	1.96E+01	1.77E+01
PBW3-1C	3	1	Na-22	2.44E+01	U	-4.92E+00	1.88E+01
PBW3-1C	3	1	Nb-94	2.33E+01	U	1.76E-01	1.76E+01
PBW3-1C	3	1	Np-239	9.90E+01	U	2.88E+01	7.78E+01
PBW3-1C	3	1	Pb-212	3.16E+01		3.57E+02	6.84E+01
PBW3-1C	3	1	Pm-144	2.49E+01	U	5.84E+00	1.83E+01
PBW3-1C	3	1	Pm-146	2.70E+01	U	1.08E+01	1.71E+01
PBW3-1C	3	1	Ru-103	3.39E+01	U	2.65E+01	2.93E+01
PBW3-1C	3	1	Ru-106	2.33E+02	U	1.16E+02	1.74E+02
PBW3-1C	3	1	Sb-124	3.55E+01	U	2.60E+01	2.60E+01
PBW3-1C	3	1	Sb-125	5.81E+01	U	1.32E+01	4.40E+01
PBW3-1C	3	1	Sn-113	3.55E+01	U	2.82E+01	2.82E+01
PBW3-1C	3	1	Sn-126	2.26E+01	U	-3.98E+00	1.71E+01
PBW3-1C	3	1	Y-88	3.94E+01	U	2.06E+01	2.74E+01
PBW3-1C	3	1	Zn-65	6.30E+01	U	4.81E+01	4.71E+01
PBW3-1C	3	1	Zr-95	6.25E+01	U	-1.75E+00	5.41E+01
PBS2-1C	2	1	Gross A	2.02E+03		4.86E+03	2.07E+03
PBS2-1C	2	1	Gross B	4.44E+03		1.66E+04	3.16E+03
PBS2-1C	2	1	Ac-228	8.25E+01		1.57E+03	2.79E+02
PBS2-1C	2	1	Ba-133	5.92E+01	U	-1.93E+00	3.91E+01
PBS2-1C	2	1	Cf-249	5.76E+01	U	4.34E+01	3.29E+01
PBS2-1C	2	1	Cf-251	1.49E+02	U	9.39E+01	1.08E+02

Sample ID	Trans. ID	Depth Int.	Anal. Lab ID	DL (pCi/kg)	Qualifier	Activity (pCi/kg)	±1 Sigma (pCi/kg)
PBS2-1C	2	1	Ce-141	1.17E+02	U	7.39E+01	7.70E+01
PBS2-1C	2	1	Ce-144	2.41E+02	U	-1.12E+02	1.41E+02
PBS2-1C	2	1	Co-57	2.99E+01	U	-4.26E+00	1.70E+01
PBS2-1C	2	1	Co-58	2.89E+01	U	-6.39E+00	1.71E+01
PBS2-1C	2	1	Co-60	2.47E+01	U	8.13E+00	1.33E+01
PBS2-1C	2	1	Cs-134	3.49E+01	U	-5.82E+00	2.33E+01
PBS2-1C	2	1	Cs-135	1.98E+02	U	1.22E+02	1.76E+02
PBS2-1C	2	1	Cs-137	3.59E+01		1.94E+04	2.21E+03
PBS2-1C	2	1	Eu-152	1.30E+02	U	-2.65E+01	7.53E+01
PBS2-1C	2	1	Eu-154	6.34E+01	U	-1.86E+01	3.77E+01
PBS2-1C	2	1	Eu-155	1.15E+02	U	4.86E+01	6.32E+01
PBS2-1C	2	1	K-40	2.20E+02		3.52E+02	2.90E+02
PBS2-1C	2	1	Mn-54	2.27E+01	R	2.52E+01	1.59E+01
PBS2-1C	2	1	Na-22	2.30E+01	U	-6.67E+00	1.37E+01
PBS2-1C	2	1	Nb-94	2.56E+01	U	1.65E+01	1.40E+01
PBS2-1C	2	1	Np-239	2.13E+02	U	1.84E+02	1.51E+02
PBS2-1C	2	1	Pb-212	7.04E+01		1.53E+03	1.77E+02
PBS2-1C	2	1	Pm-144	2.42E+01	U	-1.59E+00	1.39E+01
PBS2-1C	2	1	Pm-146	7.31E+01	U	-3.61E+00	4.34E+01
PBS2-1C	2	1	Ru-103	8.57E+01	U	1.99E+01	4.80E+01
PBS2-1C	2	1	Ru-106	3.46E+02	U	1.42E+02	1.94E+02
PBS2-1C	2	1	Sb-124	5.44E+01	U	5.50E+00	3.09E+01
PBS2-1C	2	1	Sb-125	1.48E+02	U	6.26E+01	8.64E+01
PBS2-1C	2	1	Sn-113	7.17E+01	U	-3.68E+01	4.27E+01
PBS2-1C	2	1	Sn-126	2.20E+01	U	-1.10E+01	1.35E+01
PBS2-1C	2	1	Y-88	2.78E+01	U	-1.94E-01	1.55E+01
PBS2-1C	2	1	Zn-65	6.38E+01	U	5.38E+00	4.19E+01
PBS2-1C	2	1	Zr-95	6.21E+01	U	3.50E+01	3.38E+01