DRAFT FINAL
TECHNICAL MEMORANDUM
DEEP BOREHOLE SOIL SAMPLE RESULTS
SANTA SUSANA FIELD LABORATORY SITE
AREA IV RADIOLOGICAL STUDY

TO:	Andrew Bain, EPA Region 9 RPM
FROM:	T. Stewart Williford, P.G., HGL
THROUGH:	L. Steven Vaughn, R.G., HGL Project Manager
	Rene R. Rodriguez, P.E., HGL Deputy Project Manager
CC:	Mary Aycock, EPA Region 9 RPM
	Shiann-Jang Chern, Ph.D., P.E., EPA Region 9 RPM
	Yarissa Martinez, P.E., EPA Region 9 RPM
	Gregg Dempsey, Technical Advisor
DATE:	September 7, 2012
SUBJECT:	Deep Boreholes Soil Sample Results
CONTRACT NO:	EP-S7-05-05
TASK ORDER NO:	0038

1.0 INTRODUCTION

HydroGeoLogic, Inc. (HGL) is conducting a comprehensive radiological characterization study of Area IV and the Northern Buffer Zone (NBZ) at the Santa Susana Field Laboratory (SSFL) site in Ventura County, California. This work is being executed under U.S. Environmental Protection Agency (USEPA) Region 7 Architect and Engineering Services Contract EP-S7-05-05, Task Order 0038. The technical lead on the project is USEPA Region 9.

As part of the radiological study, surface and subsurface soil samples were collected from locations identified from geophysical surveys, gamma scanning, historical aerial photographs and findings of the Historical Site Assessment. Sampling efforts in the study area were divided into Subareas. During round 1 soil sampling activities, select locations required technology that was capable of drilling through construction debris and concrete in order to achieve desired depths. This Technical Memorandum documents the soil sampling activities, analytical results, and conclusions of the deep borehole soil sampling. The primary objective of the deep borehole soil sampling effort was to evaluate the nature of potential radionuclide contamination in soil beneath former nuclear reactor concrete vaults. This objective was achieved through the collection of deep subsurface soil samples targeted beneath the nuclear reactor vaults at select locations.

The approach for the deep borehole soil sampling was derived from the lines of evidence listed above and from review of the round 1 borehole logs, as-built drawings, and information from

the "Gold Standard" database to ensure the deep soil samples were collected from the targeted building footprints (HGL, 2012a). The Deep Borehole FSP Addendum was prepared to convey the sampling approach to Stakeholders, and the sampling approach was presented and approved by the technical workgroup.

2.0 SOIL SAMPLING ACTIVITIES

2.1 Soil Sample Location Placement and Utility Clearance

A total of 12 deep subsurface samples were proposed in the Final Deep Borehole FSP Addendum (HGL, 2012a). A total of 18 deep subsurface soil samples were collected from the following subareas between February 13 and February 22, 2012:

- Subarea 5A - former Kinetic Experiment Water Boiler (KEWB), Building 4073;
- Subarea 5C - former Systems for Nuclear Auxiliary Power (SNAP), Building 4059;
- Subarea 6 - former Sodium Reactor Experiment (SRE), Building 4143; and
- Subarea 7 - former Shield Test and Irradiation Reactor (STIR), Building 4028.

Table 1 below summarizes the proposed samples and lists the samples actually collected. Figure 1 illustrates soil sample locations (proposed and collected). Deviations from the FSP for Soil Sampling are discussed below.

Table 1
Summary of Planned and Collected Locations by Subarea

Subarea	Former Building	Subsurface	
		Planned	Collected
5A	KEWB	2	2
5C	SNAP	3	3
6	SRE	4	8
7	STIR	3	5
Total		12	18

The proposed sampling locations were marked in the field using a SPS 852 handheld Trimble global positioning system (GPS) and magnetic survey spikes. Before intrusive sampling activities commenced, utility clearances were performed at each location by Underground Service Alert (Dig Alert) and a private utility locator.

2.2 Sample Collection

Subsurface soil samples were collected using sonic drilling technologies. A 100-C Sonic Drill rig was utilized to advance the deep boreholes in accordance with the procedures detailed in the Final Deep Borehole FSP Addendum (HGL, 2012a). This rig was selected for its capability to advance deep boreholes in various subsurface conditions, such as concrete and

other construction debris. During drilling, soil cores were logged and the boring logs are provided in Attachment 2.

2.3 Deviations from the Field Sampling Plan Addendum

In addition to the 12 proposed deep subsurface soil samples, six additional samples were collected due to conditions encountered while drilling. Four additional samples were collected from the SRE in order to sample above and below concrete at the soil and bedrock interface and two additional samples were collected from the STIR due to gamma anomalies detected in the boreholes.

2.4 Soil Boring Summary

A total of 12 deep subsurface borings were advanced to the proposed underlying bedrock (HGL, 2012a). Total depths in soil borings ranged from 8 feet below ground surface (bgs) to 57 feet bgs. The shallowest boring was advanced at the KEWB in Subarea 5A and the deepest boring was advanced in Subarea 5C at the SNAP. Groundwater was encountered in three of the soil borings at depths as follows: 22.5 feet bgs and 29 feet bgs at the SRE, and 42 feet bgs at the SNAP. No groundwater was encountered in borings advanced at the KEWB or the STIR locations.

Soil samples were classified and described in accordance with the Final FSP for Soil Sampling (HGL, 2012b). The most common soil types observed were as follows:

- sand,
- silty sand,
- silt,
- sandy clay,
- silty clay, and
- clay.

All 12 locations contained fill material consisting of concrete and building debris, with average fill thicknesses of 7.0 feet (KEWB), 48.33 feet (SNAP), 24.13 feet (SRE), and 25.33 feet (STIR). A summary of the boring log information is presented in Table A.1 in Attachment 1 and the boring logs are provided in Attachment 2.

3.0 SOIL ANALYTICAL RESULTS

Analyses of soil samples were conducted in accordance with the draft revised Final Quality Assurance Project Plan (QAPP) for Soil Sampling which was finalized in March 2012 (HGL, 2012c). All soil samples were analyzed for the default suite of analytes presented in Table 2.3 of the FSP for Soil Sampling (HGL, 2012b). In addition to the default analytes, soil samples collected in the former SNAP Building 4059 footprint, former KEWB Building 4073 footprint, and former STIR Building 4028 footprint were also analyzed for the site-specific analytes nickel (Ni)-59, Ni-63, technetium (Tc)-99, and tritium (H-3). At the former SRE Building 4143 footprint soil samples were also analyzed for the site-specific analytes carbon (C)-14, Ni-

59, Ni-63, Tc-99, and H-3 in accordance with the rationale presented in Table 2.3 of the Final Deep Borehole FSP Addendum (HGL, 2012a).

3.1 Radiological Trigger Levels

Analytical results were compared to the radiological trigger levels (RTLs) established specifically for the Area IV Santa Susana Field Laboratory Radiological Study. RTLs are reference soil concentrations for the radionuclides of concern of the Radiological Study. Analytical results below their respective RTL are considered non-actionable and uncontaminated, and results that equal or exceed the RTLs are actionable and may represent contamination. The process used to derive the RTLs is presented in the Technical Memorandum, Radiological Trigger Levels (HGL, 2011a), and is briefly summarized below.

The SSFL Radiological Background Study (HGL, 2011b), developed Background Threshold Values (BTV) which are upper concentration limits of radionuclides of concern from offsite samples. These were calculated from 149 samples. The laboratory minimum detectable concentrations (MDC), for a single sample, can be greater than the respective BTV. Hence, the RTLs were formed from the greater of BTV or MDC values plus an additional method uncertainty (for comparison of individual sample results to the RTL). An RTL exceedance is then greater than locally determined background concentrations.

3.2 Analytical Results

A total of 18 samples were collected during the deep borehole soil sampling event. All of the soil samples collected were analyzed for the SSFL default suite as listed in Table 2.3 of the Final FSP for Soil Sampling (HGL, 2012b). In addition, select soil samples were also analyzed for C-14, H-3, Ni-59, Ni-63, and Tc-99.

Analytical results of soil samples reported one site-related man-made radionuclide and six naturally occurring radionuclides, also known as Naturally Occurring Radioactive Material (NORM), that exceeded their respective RTLs. The only exceedances reported were in samples collected from within the footprint of the former STIR Building 4028.

Plutonium (Pu)-239/240 exceeded the RTL of 0.0404 picocuries per gram (pCi/g) with a concentration of 0.187 pCi/g in the subsurface soil sample collected from Location 7-00186.

The six NORM radionuclides exceedances were detected in the subsurface sample collected from Location 7-00188. The specific radionuclides, reported concentrations, and respective RTLs are summarized below:

- Bismuth (Bi)-214 was detected at a concentration of 1.63 pCi/g, which exceeded the RTL of 1.59 pCi/g.
- Lead (Pb)-214 was detected at a concentration of 1.74 pCi/g, which exceeded the RTL of 1.7 pCi/g.

- Thorium (Th)-230 was detected at a concentration of 2.31 pCi/g which exceeded the RTL of 2.2 pCi/g.
- Uranium (U)-233/234 was detected at a concentration of 2.29 pCi/g, which exceeded the RTL of 2.02 pCi/g.
- U-235/236 was detected at a concentration of 0.171 pCi/g, which exceeded the RTL of 0.151 pCi/g.
- U-238 was detected at a concentration of 2.23 pCi/g which exceeded the RTL of 1.80 pCi/g.

Figure 1 presents the location of each boring advanced during the deep borehole sampling event. Figure 2 presents the location and concentration of the site related man-made radionuclide detected above the RTL in the subsurface sample collected from Location 7-00186, and the NORM exceedances detected in the subsurface sample collected from Location 7-00188. Table 2 presents the location, sample identification, radionuclide, activity, MDC, RTL, and sample depth of the six NORM exceedances detected in the sample collected from Location 7-00188. A summary of all the analytical results is provided in Table A.2.

3.3 Radiological Trigger Levels Data Quality Gap Result Evaluations

A data quality gap is a sample result for which the MDC is greater than the RTL, but the reported activity is below the RTL, indicating an indeterminate result that may or may not exceed the RTL. The elevated MDC could be the result of sample matrix or spectral interference or, in some cases, laboratory issues that prevent accurate quantification of sample activity to a level low enough to support the RTLs.

The use of RTLs is predicated on the assumption that analytical results will be of known and predictable quality, with the uncertainty constrained to a level that supports direct comparison of results to RTLs. The reported analytical uncertainty is sufficiently reliable to be considered, however the magnitude of that uncertainty may not always allow direct comparison of the activity to the RTL, as discussed above. In many cases, the reported activity is sufficiently below the RTL (more than the associated, elevated 2σ total propagated uncertainty [TPU]) to decide that the result does not represent an exceedance. For these cases, results are removed from further data quality gap assessment.

Remaining data quality gap results are evaluated on a case-by-case basis to determine whether further action is warranted or beneficial. Out of 18 environmental samples and one field duplicate sample (883 individual radionuclide results), there is one such data quality gap in the deep borehole samples.

Sample 70325 has a data quality gap for niobium-94. Niobium-94 emits gamma photons at a relatively low energy which, in soil samples, is subject to matrix-specific spectral interference from an elevated Compton continuum. This is an inherent limitation of gamma spectrometry and further analysis is not expected to significantly improve the quality of this result. The data

quality gap does not support a determination of an exceedance for this radionuclide and no further action is necessary.

4.0 QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

In addition to the environmental samples collected, quality control samples were collected as described in the QAPP (HGL, 2012c). The results of the quality control samples collected and their affect on data usability are described in the following subsections.

4.1 Field Duplicates

Field duplicate soil samples were collected at a frequency of 1 per 20 samples (5 percent). One field duplicate samples were collected during the sampling event. The field duplicate evaluation criterion includes an additional 1σ uncertainty factor of 10 percent to allow for heterogeneity of co-located, but non-homogenized, field samples.

The comparability of a field duplicate result to that of the original sample is assessed by evaluating the duplicate Z-score comparison (Z_{DUP}). The Z-score is a statistical test that indicates how many standard deviations an observation is from the expected value. The Z-score is defined in the QAPP (HGL, 2012c), and the Z_{DUP} is calculated as follows:

$$Z_{DUP} = \frac{|X_s - X_d|}{\sqrt{{u_s}^2 + {u_d}^2}}$$

where:

Xs = activity of the sample
Xd = activity of the duplicate
u_s = combined standard (1σ) uncertainty of the sample
u_d = combined standard (1σ) uncertainty of the duplicate

Higher Z_{DUP} scores indicate greater disparity between the sample and the duplicate results. A Z_{DUP} score of 2.0, for example, indicates that the duplicate result differs from the sample result by twice the overall uncertainty of the two results. Hence, a Z_{DUP} score of 1.96 (the warning level) indicates that the two results are statistically equivalent, at the 95 percent confidence interval. A Z_{DUP} score of 2.58 (the exceedance level) indicates that the two results are statistically equivalent, at the 99 percent confidence interval.

A Z_{DUP} evaluation is performed on each paired set of analytes for which parent and duplicate data are reported. This quality assurance/quality control assessment is performed on the validated laboratory results approved and accepted by the project, and recorded in the project database as of July 8, 2012. Subsequent modifications to the approved data or the project database may not be reflected in this assessment.

The one field duplicate sample data collected during this sampling event yielded 94 individual radionuclide results from 47 sample/duplicate analyte pairs. Those individual radionuclide results included several analytes which were subsequently removed from consideration, and

thus were not evaluated. In addition, any individual radionuclide results that were rejected by data validation were removed from consideration. Finally, analytes that are simply inferred from previously reported results, such as yttrium-90, which is inferred from the reported strontium (Sr)-90 results, are considered redundant and have also been removed from consideration.

The Z_{DUP} evaluation of the remaining 41 qualified pairs follows:

- 40 Z_{DUP} evaluation results (97.6 percent) were within the expected 95 percent confidence interval for this evaluation, with Z_{DUP} less than 1.96;
- Zero Z_{DUP} evaluation results (0.0 percent) were between the 95 percent and 99 percent confidence interval with Z_{DUP} at or above 1.96, but below 2.58;
- One Z_{DUP} evaluation result (2.4 percent) exceeded the 99 percent confidence interval, with a Z_{DUP} value at or above 2.58.

The Z_{DUP} statistical test predicts that, in a homogeneous sample/duplicate pairing, 4 percent of reported Z_{DUP} scores (approximately 2 Z_{DUP} evaluation results in this Z_{DUP} set) will be in the warning range between 1.96 and 2.58. In addition, 1 percent (between zero and one Z_{DUP} evaluation result in this Z_{DUP} set) are expected to exceed a Z_{DUP} score of 2.58.

The single "exceedance" i.e. Z_{DUP} score at or above 2.58, is related to the sample/duplicate pair 60550/60551, in which the Sr-90 Z_{DUP} score is 3.63. Sample heterogeneity in the co-located but non-homogenized field samples may contribute to this excursion; however, a review of the associated laboratory records suggest that a small underestimate in the laboratory's reported uncertainty may be a more likely contributing factor. Nonetheless, the frequency and magnitude of the excursion is consistent with observed field duplicate assessments for this project and there is no indication of any significant impact on the quality or usability of the data. A summary of the parent and associated duplicate sample results is provided Table A.3.

4.2 Equipment Rinsate and Source Water Blanks

Equipment rinsate blanks were collected at a frequency of one per day, for each type of sampling equipment used per field team. Equipment rinsate blanks were collected in accordance with the FSP for Soil Sampling (HGL, 2012b) and the QAPP (HGL, 2012c). A total of eight rinsate samples and one source water sample were collected during the sampling event. Each sample was tested for isotopic uranium, as a surrogate indicator of cross-contamination. Any individual radionuclide results that were rejected for laboratory quality reasons would have been removed from consideration, as in the evaluation of field duplicate samples, above. In this dataset, however, no individual radionuclide results were rejected. No H-3 analyses were performed on the field samples in this subarea. Therefore, any H-3 results for the rinsate and source water samples are not evaluated or included in this report. This equipment rinsate assessment is performed on the validated laboratory results approved and accepted by the project, and recorded in the project database as of July 8, 2012. Subsequent

modifications to the approved data or the project database may not be reflected in this assessment.

In all cases, the "unfiltered" samples were analyzed by the laboratory and the Total activity is reported.

Rinsate and source water samples include 48 individual total activity results, from which 24 data pairs were evaluated by Z-score duplicate comparison. The Z_{DUP} scores are summarized below.

- 22 Z_{DUP} evaluation results (91.7 percent) were within the expected 95 percent confidence interval for this evaluation, with Z_{DUP} less than 1.96;
- Two Z_{DUP} evaluation results (8.3 percent) were between the 95 percent and 99 percent confidence interval with Z_{DUP} at or above 1.96, but below 2.58;
- Zero Z_{DUP} evaluation results (0.0 percent) exceeded the 99 percent confidence interval, with the Z_{DUP} value at or above 2.58.

As with the field duplicates, the Z_{DUP} statistical test predicts that approximately 4 percent of reported Z_{DUP} scores will be in the range between 1.96 and 2.58 and approximately one percent of the reported Z_{DUP} evaluation results will exceed 2.58. Given the very small sample population considered in this report, the two warning Z_{DUP} evaluation results and zero exceedances approximate the expected frequency.

The evaluation of equipment blank results indicates that the decontamination of the field sampling equipment was acceptable and that there is no evidence of sample cross-contamination from the sampling equipment that would adversely affect the quality or usability of the reported field sample data. A summary of the rinsate and source water blank analytical results are provided in Table A.4.

5.0 SUMMARY OF FINDINGS

Site-related man-made radionuclide Pu-239/240 was detected in the subsurface sample collected from Location 7-00186 (0.187 pCi/g), at a concentration that exceeded the RTL of 0.0404 pCi/g. Sample location 7-00186 is located within the footprint of the former STIR building.

The six NORM radionuclides exceedances were detected in the subsurface sample collected from Location 7-00188, which is also located within the footprint of the former STIR building. The specific radionuclides, reported concentrations, and respective RTLs are summarized below:

- Bismuth-214 was detected at a concentration of 1.63 pCi/g, which exceeded the RTL of 1.59 pCi/g.
- Lead-214 was detected at a concentration of 1.74 pCi/g, which exceeded the RTL of 1.7 pCi/g.
- Thorium-230 was detected at a concentration of 2.31 pCi/g, which exceeded the RTL of 2.2 pCi/g.
- Uranium233/234 was detected at a concentration of 2.29 pCi/g which exceeded the RTL of 2.02 pCi/g.
- U-235/236 was detected at a concentration of 0.171 pCi/g, which exceeded the RTL of 0.151 pCi/g.
- U-238 was detected at a concentration of 2.23 pCi/g, which exceeded the RTL of 1.8 pCi/g.

The deep borehole locations supplement round 1 soil sampling activities by providing data for native soil beneath the nuclear reactor deep concrete vaults to be collected. It is not within the scope of this investigation to do additional deep borehole step-out locations. Therefore, an investigation data gap exists within the footprint of the former STIR building; additional samples should be collected to further investigate the exceedances detected at Location 7-00186 and 7-00188. Recommendations for further proposed sampling will be discussed in the Final Comprehensive Soil Data Report available in December 2012.

6.0 REFERENCES

Department of Toxic Substances Control (DTSC), 2010a. Administrative Order On Consent For Remedial Action, Santa Susana Field Laboratory, Simi Hills, Ventura County, California. December.

HydroGeoLogic, Inc. (HGL), 2011a. Technical Memorandum, Radiological Trigger Levels, Santa Susana Field Laboratory, Area IV Radiological Study. December.

HGL, 2011b. Final Radiological Background Study Report, Santa Susana Field Laboratory, Ventura County. October.

HGL, 2012a. Final Deep Borehole FSP Addendum, Area IV Radiological Study, Santa Susana Field Laboratory Ventura County, California. January.

HGL, 2012b. Final Field Sampling Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory Ventura County, California. March.

HGL, 2012c. Quality Assurance Project Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory, Ventura County, California. March.

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Table 2
Man-made and Naturally Occurring Radioactive Material Exceedances
Deep Boreholes

Sample Location	Sample ID	Analyte Name	Activity	MDC	RTL	Sample Depth (ft bgs)	HSA Findings/Aerial Photograph Features	Downhole Gamma Logging Results	Boring log
7-00186	70322	Pu-239-240	0.187	0.005	0.0404	24.00 - 28.00	Potential radiological contamination in soil fill used to backfill the excavation at the base of the former reactor pool, fuel storage vault, and test vault left behind after the completion of D&D.	No gamma anomaly detected.	Subsurface sampling indicates sample was backfill material.
7-00188	70325	Bi-214	1.63	0.0426	1.59	22.00 - 23.00	Potential radiological contamination in soil fill used to backfill the excavation at the base of the former reactor pool, fuel storage vault, and test vault left behind after the completion of D&D.	3 Sigma gamma anomaly detected at 23 feet bgs.	Subsurface sampling indicates sample was weathered sandstone.
7-00188	70325	Pb-214	1.74	0.0495	1.7	22.00 - 23.00	Potential radiological contamination in soil fill used to backfill the excavation at the base of the former reactor pool, fuel storage vault, and test vault left behind after the completion of D&D.	3 Sigma gamma anomaly detected at 23 feet bgs.	Subsurface sampling indicates sample was weathered sandstone.
7-00188	70325	Th-230	2.31 L	0.093	2.2	22.00 - 23.00	Potential radiological contamination in soil fill used to backfill the excavation at the base of the former reactor pool, fuel storage vault, and test vault left behind after the completion of D&D.	3 Sigma gamma anomaly detected at 23 feet bgs.	Subsurface sampling indicates sample was weathered sandstone.
7-00188	70325	U-233/234	2.29	0.0597	2.02	22.00 - 23.00	Potential radiological contamination in soil fill used to backfill the excavation at the base of the former reactor pool, fuel storage vault, and test vault left behind after the completion of D&D.	3 Sigma gamma anomaly detected at 23 feet bgs.	Subsurface sampling indicates sample was weathered sandstone.
7-00188	70325	U-235/236	0.171	0.0431	0.151	22.00 - 23.00	Potential radiological contamination in soil fill used to backfill the excavation at the base of the former reactor pool, fuel storage vault, and test vault left behind after the completion of D&D.	3 Sigma gamma anomaly detected at 23 feet bgs.	Subsurface sampling indicates sample was weathered sandstone.
7-00188	70325	U-238	2.23	0.0349	1.8	22.00 - 23.00	Potential radiological contamination in soil fill used to backfill the excavation at the base of the former reactor pool, fuel storage vault, and test vault left behind after the completion of D&D.	3 Sigma gamma anomaly detected at 23 feet bgs.	Subsurface sampling indicates sample was weathered sandstone.

Notes:

Reporting units in picocuries per gram (pCi/g).

Refer to Table 2.1 of the Final Field Sampling Plan for Soil Sampling (HGL, 2012a) for a definition of radionuclide symbols.

bgs - below ground surface

D&D - decontamination and decommissioning

ft - feet

HSA - Historical Site Assessment

ID - identification

MDC - minimum detection concentration

RTL - radiological trigger level

L - Analyte present. Reported value may be biased low. Actual value is expected to be higher.

FIGURES

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Figure 1
Deep Borehole Overview
Santa Susana Field Laboratory

U.S. EPA Region 9

NBZ-E
NBZ-W
SRE COMPLEX
Subarea 7
Subarea 6
KEWB
STIR
Subarea 5A
SNAP
Subarea 5B
Subarea 8N
Subarea 5C
N
0 100 200 400
Scale In Feet

Legend

- Deep Drill Locations

Likely Remediation Zones

- Decontamination and Decommissioning

Structures

- Existing Structure
- Removed Structure

Notes:
KEWB - Kinetics Experiment Water Boiler Reactor
NBZ-E - Northern Buffer Zone Northeast
NBZ-W - Northern Buffer Zone Northwest
SNAP - Systems for Auxiliary Nuclear Power
SRE - Sodium Reactor Experiment
STIR - Shield Test Irradiation Reactor

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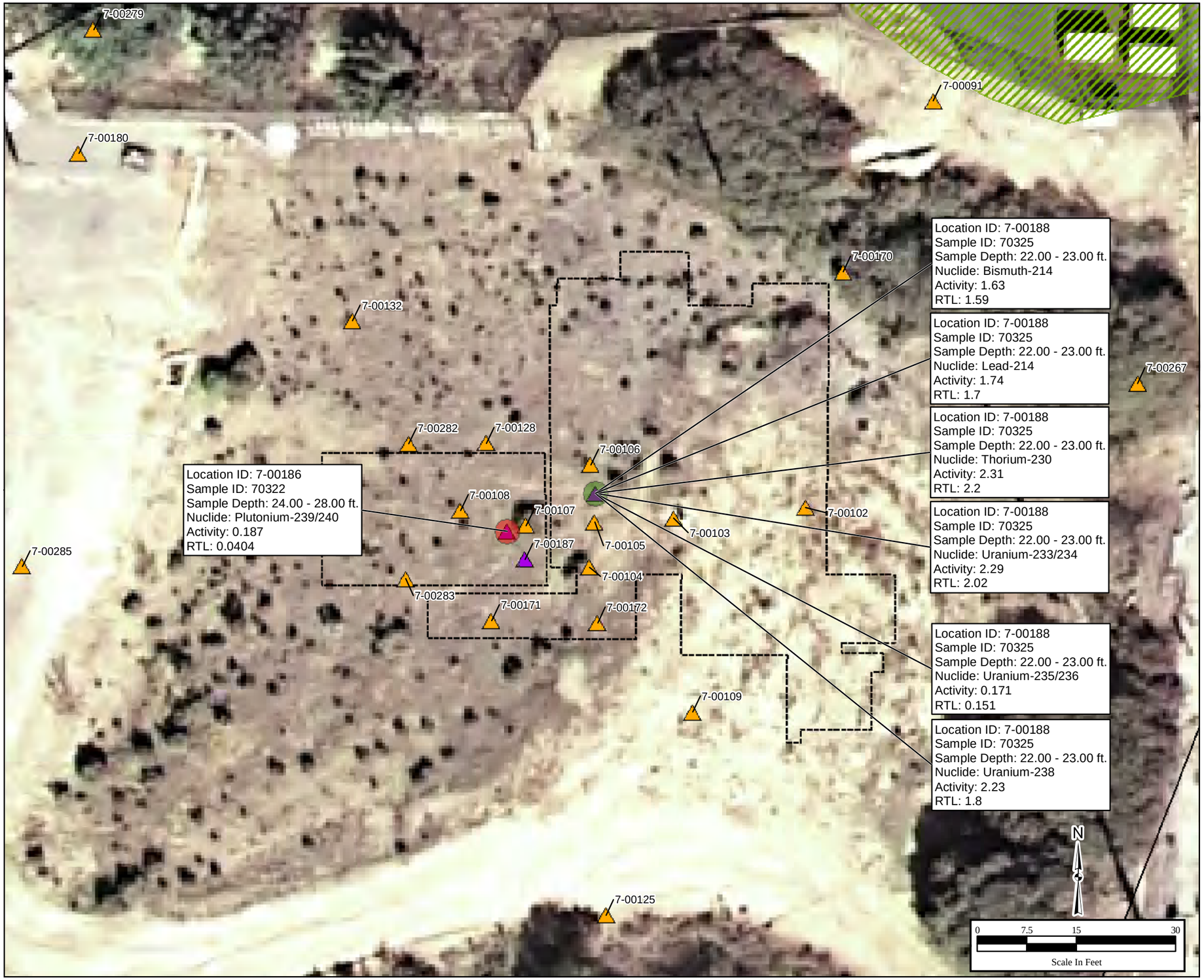
Fig1_Overview.mxd
7/25/2012 pbillock
Source:HGL 2010, CIRGIS 2007

HGL—Technical Memorandum, Deep Borehole, Soil Sample Results, SSFL— Ventura County, California

Figure 2
Deep Borehole Sample Locations
Former STIR Building 4028
Santa Susana Field Laboratory

U.S. EPA Region 9



Legend

Exceed RTLs

- Man-Made
- Naturally Ocurring Radioactive Materials

Subsurface Sample Locations

- Deep Borehole Strategy
- Direct Push Technology

Likely Remediation Zones

- Decontamination and Decommissioning

Structures

- Removed Structure

Notes:
ID - Identification
RTL - Radiological Trigger Level
STIR - Shield Test Irradiation Reactor

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Source:HGL 2010, CIRGIS 2007

HGL HydroGeoLogic, Inc

ATTACHMENT 1

Tables

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Table A.1
Boring Log Summary
Deep Borehole

Sample Location	Subsurface Collection Interval (ft bgs)	Soil Description	Total Depth (ft bgs)	Northing[1]	Easting[1]
5A-00260	5.5-8.0	ML	8	6347391.607	1908222.441
5A-00261	8.5-9.5	ML/SM/ML/SP	9.5	6347399.033	1908223.838
5C-00146	45.0-49.0	ML/CL/SM/SP/SC/SM	50	6345994.788	1907707.417
5C-00147	38.0-42.0	ML/CL/SM/SC/ML/SM	57	6345977.922	1907720.551
5C-00148	37.0-41.0	ML/CL/SM/SC/SM/GW	44	6345976.877	1907697.665
6-00323	16.0-20.0/23.0-27.0	ML/CL/SM/CL	30	6347543.358	1908731.849
6-00324	16.0-20.0/24.75-27.0	ML/SM	27	6347585.002	1908773.908
6-00325	19.0-23.0/26.0-27.0	SM/CL/SC/SM/ML/SW	27	6347543.712	1908752.144
6-00326	17.0-21.0/22.75-25.0	ML/SM/CL/SM/SP	25	6347567.486	1908748.233
7-00186	24.0-28.0	SM/ML/SC/SM/SW	32	6346570.968	1908157.734
7-00187	24.5-28.5/27.0-28.5	ML/SM/SC/SP/SW/SM/SP	33.5	6346573.608	1908153.530
7-00188	16.5-19.5/22.0-23.0	ML/SM/SC/SM	23	6346584.208	1908163.524

Notes:

[1]Northing and easting measured using NAD83 SPZ5 US Feet

bgs - below ground surface

CL - clay

ft - feet

ML - silt

SC - clayey sand

SM - silty sand

SP - poorly graded sand

SW - well graded sand

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
5A-00260	30443	Ac-227	-0.0245 U	0.167	0.051	0.217	5.50 - 8.00
5A-00260	30443	Am-241	0.0104	0.0195	0.0063	0.0454	5.50 - 8.00
5A-00260	30443	Bi-212	0.689 J	0.107	0.0692	2.15	5.50 - 8.00
5A-00260	30443	Bi-214	0.822	0.0264	0.0395	1.59	5.50 - 8.00
5A-00260	30443	Cd-113m	-20.6 U	111	35.3	3030	5.50 - 8.00
5A-00260	30443	Cm-243/244	-0.0044 U	0.0267	0.0056	0.0443	5.50 - 8.00
5A-00260	30443	Co-60	-0.0033 U	0.0151	0.0046	0.028	5.50 - 8.00
5A-00260	30443	Cs-134	0 U	0.0128	0.0044	0.0864	5.50 - 8.00
5A-00260	30443	Cs-137	0.0046 U	0.0148	0.0051	0.207	5.50 - 8.00
5A-00260	30443	Eu-152	0.0145 U	0.041	0.0156	0.0566	5.50 - 8.00
5A-00260	30443	Eu-154	-0.0302 U	0.0883	0.0273	0.15	5.50 - 8.00
5A-00260	30443	Eu-155	0.044 JS	0.0591	0.02	0.231	5.50 - 8.00
5A-00260	30443	H-3	1.42 U	6.39	1.85	11.9	5.50 - 8.00
5A-00260	30443	Ho-166m	0.0112 U	0.0242	0.0075	0.0432	5.50 - 8.00
5A-00260	30443	K-40	21.7	0.122	1.29	32.4	5.50 - 8.00
5A-00260	30443	Na-22	-0.0099 U	0.0177	0.0059	0.037	5.50 - 8.00
5A-00260	30443	Nb-94	0.0014 U	0.0135	0.004	0.0214	5.50 - 8.00
5A-00260	30443	Ni-59	1.79 U	4.31	1.19	8.39	5.50 - 8.00
5A-00260	30443	Ni-63	0.814	1.34	0.418	4.92	5.50 - 8.00
5A-00260	30443	Np-236	-0.0072 U	0.0315	0.0095	0.047	5.50 - 8.00
5A-00260	30443	Np-239	0.0137 U	0.114	0.0345	0.139	5.50 - 8.00
5A-00260	30443	Pa-231	0.148 U	0.71	0.225	0.936	5.50 - 8.00
5A-00260	30443	Pb-212	1.22	0.0275	0.0749	2.69	5.50 - 8.00
5A-00260	30443	Pb-214	0.921	0.0292	0.0455	1.7	5.50 - 8.00
5A-00260	30443	Pu-238	-0.0106 U	0.039	0.0089	0.0415	5.50 - 8.00
5A-00260	30443	Pu-239/240	-0.005 U	0.034	0.0079	0.0404	5.50 - 8.00
5A-00260	30443	Pu-244	-0.0056 U	0.0233	0.0041	0.0313	5.50 - 8.00
5A-00260	30443	Sb-125	0.01 U	0.0382	0.0113	0.354	5.50 - 8.00
5A-00260	30443	Sn-126	-0.0007 U	0.0151	0.0045	0.0237	5.50 - 8.00
5A-00260	30443	Sr-90	-0.0503 U	0.228	0.0573	0.485	5.50 - 8.00
5A-00260	30443	Tc-99	-0.447 U	1.15	0.331	1.63	5.50 - 8.00
5A-00260	30443	Th-228	1.18	0.0956	0.099	3.98	5.50 - 8.00
5A-00260	30443	Th-229	0.0363	0.068	0.0214	0.145	5.50 - 8.00
5A-00260	30443	Th-230	0.724	0.0777	0.0725	2.2	5.50 - 8.00
5A-00260	30443	Th-232	1.19	0.014	0.0957	3.1	5.50 - 8.00
5A-00260	30443	Th-234	1.38	0.248	0.129	3.19	5.50 - 8.00
5A-00260	30443	Tl-208	0.387	0.014	0.0219	0.937	5.50 - 8.00
5A-00260	30443	Tm-171	0.482 U	9.66	3.37	72.4	5.50 - 8.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
5A-00260	30443	U-233/234	0.878	0.0813	0.0969	2.02	5.50 - 8.00
5A-00260	30443	U-235/236	0.0791	0.049	0.0266	0.151	5.50 - 8.00
5A-00260	30443	U-238	0.781	0.0491	0.0881	1.8	5.50 - 8.00
5A-00261	30444	Ac-227	-0.0393 U	0.173	0.0544	0.217	8.50 - 9.50
5A-00261	30444	Am-241	-0.0033 U	0.0227	0.0045	0.0454	8.50 - 9.50
5A-00261	30444	Bi-212	0.88	0.141	0.0806	2.15	8.50 - 9.50
5A-00261	30444	Bi-214	0.86	0.0332	0.0431	1.59	8.50 - 9.50
5A-00261	30444	Cd-113m	22.8 U	119	36.6	3030	8.50 - 9.50
5A-00261	30444	Cm-243/244	-0.0037 U	0.0272	0.006	0.0443	8.50 - 9.50
5A-00261	30444	Co-60	-0.0053 U	0.0205	0.0062	0.028	8.50 - 9.50
5A-00261	30444	Cs-134	0.0004 U	0.0161	0.0056	0.0864	8.50 - 9.50
5A-00261	30444	Cs-137	-0.0009 U	0.0193	0.0067	0.207	8.50 - 9.50
5A-00261	30444	Eu-152	-0.0483 UJ	0.0439	0.0176	0.0566	8.50 - 9.50
5A-00261	30444	Eu-154	-0.0405 U	0.114	0.0357	0.15	8.50 - 9.50
5A-00261	30444	Eu-155	0.0923 JS	0.0503	0.0206	0.231	8.50 - 9.50
5A-00261	30444	H-3	0.6 U	6.47	1.83	11.9	8.50 - 9.50
5A-00261	30444	Ho-166m	0.0057 U	0.0302	0.0087	0.0432	8.50 - 9.50
5A-00261	30444	K-40	20.6	0.159	1.13	32.4	8.50 - 9.50
5A-00261	30444	Na-22	0.0002 U	0.0243	0.007	0.037	8.50 - 9.50
5A-00261	30444	Nb-94	-0.0003 U	0.0168	0.0048	0.0214	8.50 - 9.50
5A-00261	30444	Ni-59	-0.232 U	3.92	1.11	8.39	8.50 - 9.50
5A-00261	30444	Ni-63	-0.0955 U	1.27	0.375	4.92	8.50 - 9.50
5A-00261	30444	Np-236	-0.017 U	0.0282	0.0093	0.047	8.50 - 9.50
5A-00261	30444	Np-239	-0.0408 U	0.114	0.0365	0.139	8.50 - 9.50
5A-00261	30444	Pa-231	-0.28 U	0.725	0.238	0.936	8.50 - 9.50
5A-00261	30444	Pb-212	1.25	0.0292	0.0706	2.69	8.50 - 9.50
5A-00261	30444	Pb-214	0.892	0.0345	0.0426	1.7	8.50 - 9.50
5A-00261	30444	Pu-238	-0.0003 U	0.0173	0.0036	0.0415	8.50 - 9.50
5A-00261	30444	Pu-239/240	0.0068	0.0151	0.0047	0.0404	8.50 - 9.50
5A-00261	30444	Pu-244	0.0096	0.0052	0.0043	0.0313	8.50 - 9.50
5A-00261	30444	Sb-125	0.0052 U	0.0455	0.0133	0.354	8.50 - 9.50
5A-00261	30444	Sn-126	0.0007 U	0.02	0.0057	0.0237	8.50 - 9.50
5A-00261	30444	Sr-90	0.023 U	0.195	0.054	0.485	8.50 - 9.50
5A-00261	30444	Tc-99	0.394 U	1.11	0.336	1.63	8.50 - 9.50
5A-00261	30444	Th-228	1.28	0.127	0.109	3.98	8.50 - 9.50
5A-00261	30444	Th-229	0.0054 U	0.0982	0.026	0.145	8.50 - 9.50
5A-00261	30444	Th-230	0.913	0.0762	0.0846	2.2	8.50 - 9.50
5A-00261	30444	Th-232	1.06	0.0146	0.0908	3.1	8.50 - 9.50

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
5A-00261	30444	Th-234	1.47	0.2	0.129	3.19	8.50 - 9.50
5A-00261	30444	Tl-208	0.427	0.0183	0.0261	0.937	8.50 - 9.50
5A-00261	30444	Tm-171	-0.118 U	6.28	2.01	72.4	8.50 - 9.50
5A-00261	30444	U-233/234	0.817	0.0787	0.0885	2.02	8.50 - 9.50
5A-00261	30444	U-235/236	0.0447	0.0537	0.0207	0.151	8.50 - 9.50
5A-00261	30444	U-238	0.766	0.0149	0.0826	1.8	8.50 - 9.50
5C-00146	10248	Ac-227	-0.0335 U	0.164	0.0487	0.217	45.00 - 49.00
5C-00146	10248	Am-241	-0.0027 U	0.0305	0.0061	0.0454	45.00 - 49.00
5C-00146	10248	Bi-212	0.759	0.114	0.0657	2.15	45.00 - 49.00
5C-00146	10248	Bi-214	0.851	0.0256	0.0404	1.59	45.00 - 49.00
5C-00146	10248	Cd-113m	29.3 U	110	32.4	3030	45.00 - 49.00
5C-00146	10248	Cm-243/244	-0.0136 U	0.0417	0.0079	0.0443	45.00 - 49.00
5C-00146	10248	Co-60	0.0014 U	0.0159	0.0047	0.028	45.00 - 49.00
5C-00146	10248	Cs-134	0.0017 U	0.0123	0.0042	0.0864	45.00 - 49.00
5C-00146	10248	Cs-137	-0.0137 UJ	0.0143	0.0056	0.207	45.00 - 49.00
5C-00146	10248	Eu-152	0.0286 J	0.0414	0.015	0.0566	45.00 - 49.00
5C-00146	10248	Eu-154	-0.0542 U	0.0864	0.0294	0.15	45.00 - 49.00
5C-00146	10248	Eu-155	0.0666 JS	0.0573	0.0246	0.231	45.00 - 49.00
5C-00146	10248	H-3	0.592 U	6.46	1.83	11.9	45.00 - 49.00
5C-00146	10248	Ho-166m	0.0033 U	0.0236	0.0068	0.0432	45.00 - 49.00
5C-00146	10248	K-40	24.3	0.112	1.36	32.4	45.00 - 49.00
5C-00146	10248	Na-22	0.0149 J	0.02	0.0067	0.037	45.00 - 49.00
5C-00146	10248	Nb-94	-0.0007 U	0.0135	0.0039	0.0214	45.00 - 49.00
5C-00146	10248	Ni-59	-0.349 U	3.45	0.979	8.39	45.00 - 49.00
5C-00146	10248	Ni-63	0.597	1.1	0.34	4.92	45.00 - 49.00
5C-00146	10248	Np-236	-0.0005 U	0.0319	0.0097	0.047	45.00 - 49.00
5C-00146	10248	Np-239	-0.0417 U	0.111	0.0339	0.139	45.00 - 49.00
5C-00146	10248	Pa-231	0.367 J	0.708	0.227	0.936	45.00 - 49.00
5C-00146	10248	Pb-212	1.21	0.0282	0.0715	2.69	45.00 - 49.00
5C-00146	10248	Pb-214	0.923	0.0298	0.0444	1.7	45.00 - 49.00
5C-00146	10248	Pu-238	0.004 U	0.0195	0.0051	0.0415	45.00 - 49.00
5C-00146	10248	Pu-239/240	0.0018 U	0.0195	0.0046	0.0404	45.00 - 49.00
5C-00146	10248	Pu-244	0.0071	0.0137	0.0046	0.0313	45.00 - 49.00
5C-00146	10248	Sb-125	-0.0133 U	0.0372	0.0117	0.354	45.00 - 49.00
5C-00146	10248	Sn-126	-0.0053 U	0.0146	0.0045	0.0237	45.00 - 49.00
5C-00146	10248	Sr-90	0.0215 U	0.29	0.082	0.485	45.00 - 49.00
5C-00146	10248	Tc-99	-0.178 U	1.13	0.33	1.63	45.00 - 49.00
5C-00146	10248	Th-228	1.22	0.0643	0.1	3.98	45.00 - 49.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
5C-00146	10248	Th-229	-0.0105 U	0.074	0.0166	0.145	45.00 - 49.00
5C-00146	10248	Th-230	0.733	0.0786	0.0735	2.2	45.00 - 49.00
5C-00146	10248	Th-232	1.27	0.0384	0.101	3.1	45.00 - 49.00
5C-00146	10248	Th-234	1.28 J	0.25	0.134	3.19	45.00 - 49.00
5C-00146	10248	Tl-208	0.378	0.0139	0.0218	0.937	45.00 - 49.00
5C-00146	10248	Tm-171	0.798 U	10.3	3.44	72.4	45.00 - 49.00
5C-00146	10248	U-233/234	0.823	0.0616	0.0867	2.02	45.00 - 49.00
5C-00146	10248	U-235/236	0.054	0.0415	0.0204	0.151	45.00 - 49.00
5C-00146	10248	U-238	0.712	0.0143	0.0773	1.8	45.00 - 49.00
5C-00147	10249	Ac-227	0.0114 U	0.177	0.0533	0.217	38.00 - 42.00
5C-00147	10249	Am-241	-0.0052 U	0.0353	0.0069	0.0454	38.00 - 42.00
5C-00147	10249	Bi-212	0.757	0.121	0.0672	2.15	38.00 - 42.00
5C-00147	10249	Bi-214	0.807	0.0279	0.039	1.59	38.00 - 42.00
5C-00147	10249	Cd-113m	9.75 U	118	38.6	3030	38.00 - 42.00
5C-00147	10249	Cm-243/244	0.0099 U	0.0592	0.0163	0.0443	38.00 - 42.00
5C-00147	10249	Co-60	0.0052 U	0.0169	0.005	0.028	38.00 - 42.00
5C-00147	10249	Cs-134	0.0025 U	0.0135	0.0046	0.0864	38.00 - 42.00
5C-00147	10249	Cs-137	-0.0035 U	0.0163	0.0049	0.207	38.00 - 42.00
5C-00147	10249	Eu-152	-0.0132 U	0.0428	0.0155	0.0566	38.00 - 42.00
5C-00147	10249	Eu-154	-0.0514 U	0.0893	0.0294	0.15	38.00 - 42.00
5C-00147	10249	Eu-155	0.04 JS	0.0648	0.021	0.231	38.00 - 42.00
5C-00147	10249	H-3	-2.22 U	6.48	1.67	11.9	38.00 - 42.00
5C-00147	10249	Ho-166m	-0.0023 U	0.0249	0.0075	0.0432	38.00 - 42.00
5C-00147	10249	K-40	22	0.124	1.23	32.4	38.00 - 42.00
5C-00147	10249	Na-22	-0.0047 U	0.0195	0.0059	0.037	38.00 - 42.00
5C-00147	10249	Nb-94	0.0039 U	0.0147	0.0044	0.0214	38.00 - 42.00
5C-00147	10249	Ni-59	-8.01 R	4.15	2.32	8.39	38.00 - 42.00
5C-00147	10249	Ni-63	0.507 U	1.19	0.363	4.92	38.00 - 42.00
5C-00147	10249	Np-236	-0.0023 U	0.0347	0.0102	0.047	38.00 - 42.00
5C-00147	10249	Np-239	0.0336 U	0.118	0.0361	0.139	38.00 - 42.00
5C-00147	10249	Pa-231	-0.369 U	0.721	0.247	0.936	38.00 - 42.00
5C-00147	10249	Pb-212	1.2	0.0296	0.0703	2.69	38.00 - 42.00
5C-00147	10249	Pb-214	0.835	0.0315	0.0413	1.7	38.00 - 42.00
5C-00147	10249	Pu-238	0.0041	0.0056	0.0029	0.0415	38.00 - 42.00
5C-00147	10249	Pu-239/240	0.0068	0.0131	0.0044	0.0404	38.00 - 42.00
5C-00147	10249	Pu-244	0.0026 U	0.0131	0.0033	0.0313	38.00 - 42.00
5C-00147	10249	Sb-125	-0.005 U	0.0402	0.0118	0.354	38.00 - 42.00
5C-00147	10249	Sn-126	-0.0055 U	0.0153	0.0048	0.0237	38.00 - 42.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
5C-00147	10249	Sr-90	0.137	0.173	0.0579	0.485	38.00 - 42.00
5C-00147	10249	Tc-99	-0.0601 U	1.17	0.344	1.63	38.00 - 42.00
5C-00147	10249	Th-228	1.43	0.059	0.112	3.98	38.00 - 42.00
5C-00147	10249	Th-229	0.0593	0.0647	0.0236	0.145	38.00 - 42.00
5C-00147	10249	Th-230	0.607	0.0705	0.0661	2.2	38.00 - 42.00
5C-00147	10249	Th-232	1.23	0.0395	0.0997	3.1	38.00 - 42.00
5C-00147	10249	Th-234	1.32 J	0.329	0.341	3.19	38.00 - 42.00
5C-00147	10249	Tl-208	0.37	0.015	0.0226	0.937	38.00 - 42.00
5C-00147	10249	Tm-171	-9.71 UJ	11.1	4.21	72.4	38.00 - 42.00
5C-00147	10249	U-233/234	0.814	0.083	0.093	2.02	38.00 - 42.00
5C-00147	10249	U-235/236	0.0415	0.0501	0.0203	0.151	38.00 - 42.00
5C-00147	10249	U-238	0.728	0.0501	0.0848	1.8	38.00 - 42.00
5C-00148	10250	Ac-227	-0.129 U	0.198	0.0677	0.217	37.00 - 41.00
5C-00148	10250	Am-241	0.0032 U	0.0157	0.0039	0.0454	37.00 - 41.00
5C-00148	10250	Bi-212	0.761	0.14	0.0697	2.15	37.00 - 41.00
5C-00148	10250	Bi-214	0.768	0.0309	0.0394	1.59	37.00 - 41.00
5C-00148	10250	Cd-113m	-41.1 U	131	40.6	3030	37.00 - 41.00
5C-00148	10250	Cm-243/244	0.0028 U	0.0247	0.0061	0.0443	37.00 - 41.00
5C-00148	10250	Co-60	0.0052 U	0.0198	0.0058	0.028	37.00 - 41.00
5C-00148	10250	Cs-134	-0.0005 U	0.0149	0.0051	0.0864	37.00 - 41.00
5C-00148	10250	Cs-137	-0.0116 U	0.0179	0.0062	0.207	37.00 - 41.00
5C-00148	10250	Eu-152	-0.0186 U	0.0486	0.0167	0.0566	37.00 - 41.00
5C-00148	10250	Eu-154	-0.03 U	0.104	0.0317	0.15	37.00 - 41.00
5C-00148	10250	Eu-155	0.0571 JS	0.0724	0.0257	0.231	37.00 - 41.00
5C-00148	10250	H-3	2.03 U	6.32	1.87	11.9	37.00 - 41.00
5C-00148	10250	Ho-166m	-0.0068 U	0.0279	0.0086	0.0432	37.00 - 41.00
5C-00148	10250	K-40	21.7	0.136	1.34	32.4	37.00 - 41.00
5C-00148	10250	Na-22	0.0022 U	0.0223	0.0065	0.037	37.00 - 41.00
5C-00148	10250	Nb-94	0.0059 U	0.0165	0.005	0.0214	37.00 - 41.00
5C-00148	10250	Ni-59	-7.64 R	4.07	2.24	8.39	37.00 - 41.00
5C-00148	10250	Ni-63	0.182 U	1.26	0.375	4.92	37.00 - 41.00
5C-00148	10250	Np-236	-0.0171 U	0.0379	0.0125	0.047	37.00 - 41.00
5C-00148	10250	Np-239	0.0073 U	0.137	0.0404	0.139	37.00 - 41.00
5C-00148	10250	Pa-231	0.0951 U	0.857	0.265	0.936	37.00 - 41.00
5C-00148	10250	Pb-212	1.24	0.0332	0.0803	2.69	37.00 - 41.00
5C-00148	10250	Pb-214	0.878	0.0353	0.0447	1.7	37.00 - 41.00
5C-00148	10250	Pu-238	-0.0026 U	0.0206	0.0036	0.0415	37.00 - 41.00
5C-00148	10250	Pu-239/240	0.0068	0.0062	0.004	0.0404	37.00 - 41.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
5C-00148	10250	Pu-244	0.0035 U	0.0179	0.0046	0.0313	37.00 - 41.00
5C-00148	10250	Sb-125	-0.0033 U	0.0456	0.014	0.354	37.00 - 41.00
5C-00148	10250	Sn-126	-0.001 U	0.0183	0.0055	0.0237	37.00 - 41.00
5C-00148	10250	Sr-90	0.217	0.201	0.0733	0.485	37.00 - 41.00
5C-00148	10250	Tc-99	0.162 U	1.07	0.32	1.63	37.00 - 41.00
5C-00148	10250	Th-228	1.28	0.0831	0.101	3.98	37.00 - 41.00
5C-00148	10250	Th-229	0.0049 U	0.0853	0.0224	0.145	37.00 - 41.00
5C-00148	10250	Th-230	0.791	0.0526	0.073	2.2	37.00 - 41.00
5C-00148	10250	Th-232	1.17	0.0132	0.0925	3.1	37.00 - 41.00
5C-00148	10250	Th-234	1.29 J	0.305	0.159	3.19	37.00 - 41.00
5C-00148	10250	Tl-208	0.376	0.0164	0.0225	0.937	37.00 - 41.00
5C-00148	10250	Tm-171	0.0944 U	16.2	5.45	72.4	37.00 - 41.00
5C-00148	10250	U-233/234	0.737	0.0431	0.0806	2.02	37.00 - 41.00
5C-00148	10250	U-235/236	0.0472	0.0183	0.0181	0.151	37.00 - 41.00
5C-00148	10250	U-238	0.721	0.0148	0.079	1.8	37.00 - 41.00
6-00323	60547	Ac-227	0.0109 U	0.173	0.0521	0.217	16.00 - 20.00
6-00323	60547	Am-241	-0.0009 U	0.0161	0.0029	0.0454	16.00 - 20.00
6-00323	60547	Bi-212	0.713	0.114	0.0683	2.15	16.00 - 20.00
6-00323	60547	Bi-214	0.705	0.028	0.0366	1.59	16.00 - 20.00
6-00323	60547	C-14	0.147 U	0.669	0.201	2.96	16.00 - 20.00
6-00323	60547	Cd-113m	-33.3 U	115	38.8	3030	16.00 - 20.00
6-00323	60547	Cm-243/244	-0.0051 U	0.028	0.006	0.0443	16.00 - 20.00
6-00323	60547	Co-60	-0.0037 U	0.0158	0.0048	0.028	16.00 - 20.00
6-00323	60547	Cs-134	-0.0047 U	0.0131	0.0047	0.0864	16.00 - 20.00
6-00323	60547	Cs-137	0.0293	0.0174	0.0065	0.207	16.00 - 20.00
6-00323	60547	Eu-152	-0.0242 U	0.0427	0.0164	0.0566	16.00 - 20.00
6-00323	60547	Eu-154	-0.0065 U	0.0928	0.0269	0.15	16.00 - 20.00
6-00323	60547	Eu-155	0.0535 JS	0.0631	0.0221	0.231	16.00 - 20.00
6-00323	60547	H-3	-0.283 U	6.96	1.95	11.9	16.00 - 20.00
6-00323	60547	Ho-166m	-0.0004 U	0.0245	0.0073	0.0432	16.00 - 20.00
6-00323	60547	K-40	19.5	0.118	1.09	32.4	16.00 - 20.00
6-00323	60547	Na-22	-0.0122 U	0.0189	0.0065	0.037	16.00 - 20.00
6-00323	60547	Nb-94	0.0015 U	0.0139	0.0041	0.0214	16.00 - 20.00
6-00323	60547	Ni-59	-0.112 U	4.07	1.14	8.39	16.00 - 20.00
6-00323	60547	Ni-63	0.447 U	1.02	0.311	4.92	16.00 - 20.00
6-00323	60547	Np-236	-0.0126 U	0.033	0.0102	0.047	16.00 - 20.00
6-00323	60547	Np-239	0.0179 U	0.12	0.036	0.139	16.00 - 20.00
6-00323	60547	Pa-231	-0.123 U	0.727	0.231	0.936	16.00 - 20.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00323	60547	Pb-212	1.11	0.0288	0.0659	2.69	16.00 - 20.00
6-00323	60547	Pb-214	0.756	0.0307	0.0379	1.7	16.00 - 20.00
6-00323	60547	Pu-238	0.0058 U	0.0179	0.0051	0.0415	16.00 - 20.00
6-00323	60547	Pu-239/240	0.0074	0.0144	0.0048	0.0404	16.00 - 20.00
6-00323	60547	Pu-244	0.0068	0.0061	0.0039	0.0313	16.00 - 20.00
6-00323	60547	Sb-125	-0.0041 U	0.0393	0.0115	0.354	16.00 - 20.00
6-00323	60547	Sn-126	0.0029 U	0.0164	0.0048	0.0237	16.00 - 20.00
6-00323	60547	Sr-90	0.0617 U	0.161	0.048	0.485	16.00 - 20.00
6-00323	60547	Tc-99	0.435 U	1.01	0.305	1.63	16.00 - 20.00
6-00323	60547	Th-228	1.06	0.0736	0.101	3.98	16.00 - 20.00
6-00323	60547	Th-229	-0.0135 U	0.0953	0.0214	0.145	16.00 - 20.00
6-00323	60547	Th-230	0.647	0.101	0.0775	2.2	16.00 - 20.00
6-00323	60547	Th-232	1.01	0.0495	0.0965	3.1	16.00 - 20.00
6-00323	60547	Th-234	1.11 J	0.258	0.135	3.19	16.00 - 20.00
6-00323	60547	Tl-208	0.359	0.0148	0.0217	0.937	16.00 - 20.00
6-00323	60547	Tm-171	-0.807 U	11	3.86	72.4	16.00 - 20.00
6-00323	60547	U-233/234	0.714	0.0811	0.0846	2.02	16.00 - 20.00
6-00323	60547	U-235/236	0.0384	0.0208	0.0174	0.151	16.00 - 20.00
6-00323	60547	U-238	0.778	0.0396	0.0875	1.8	16.00 - 20.00
6-00323	60555	Ac-227	0.0112 U	0.18	0.0552	0.217	23.00 - 27.00
6-00323	60555	Am-241	-0.0032 U	0.0215	0.0042	0.0454	23.00 - 27.00
6-00323	60555	Bi-212	0.735 J	0.154	0.0803	2.15	23.00 - 27.00
6-00323	60555	Bi-214	0.828	0.0341	0.0437	1.59	23.00 - 27.00
6-00323	60555	C-14	0.0991 U	0.654	0.196	2.96	23.00 - 27.00
6-00323	60555	Cd-113m	-57.8 U	118	39.6	3030	23.00 - 27.00
6-00323	60555	Cm-243/244	-0.0012 U	0.0215	0.0047	0.0443	23.00 - 27.00
6-00323	60555	Co-60	0.0029 U	0.0223	0.0063	0.028	23.00 - 27.00
6-00323	60555	Cs-134	-0.008 U	0.0166	0.0063	0.0864	23.00 - 27.00
6-00323	60555	Cs-137	-0.0076 U	0.0205	0.0066	0.207	23.00 - 27.00
6-00323	60555	Eu-152	0.0141 U	0.0474	0.0156	0.0566	23.00 - 27.00
6-00323	60555	Eu-154	-0.0524 U	0.124	0.0398	0.15	23.00 - 27.00
6-00323	60555	Eu-155	0.0662 JS	0.0497	0.0205	0.231	23.00 - 27.00
6-00323	60555	H-3	2.28 U	5.21	1.57	11.9	23.00 - 27.00
6-00323	60555	Ho-166m	-0.0024 U	0.0309	0.0089	0.0432	23.00 - 27.00
6-00323	60555	K-40	21.7	0.174	1.2	32.4	23.00 - 27.00
6-00323	60555	Na-22	0.0053 U	0.0278	0.0079	0.037	23.00 - 27.00
6-00323	60555	Nb-94	0.0114 JS	0.0192	0.0059	0.0214	23.00 - 27.00
6-00323	60555	Ni-59	-5.87 UJ	4.63	2.02	8.39	23.00 - 27.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00323	60555	Ni-63	-0.174 U	0.937	0.277	4.92	23.00 - 27.00
6-00323	60555	Np-236	-0.0021 U	0.0291	0.0086	0.047	23.00 - 27.00
6-00323	60555	Np-239	0.0234 U	0.121	0.037	0.139	23.00 - 27.00
6-00323	60555	Pa-231	-0.179 U	0.76	0.241	0.936	23.00 - 27.00
6-00323	60555	Pb-212	1.1	0.0304	0.0626	2.69	23.00 - 27.00
6-00323	60555	Pb-214	0.867	0.0338	0.0421	1.7	23.00 - 27.00
6-00323	60555	Pu-238	-0.0019 U	0.0302	0.0073	0.0415	23.00 - 27.00
6-00323	60555	Pu-239/240	0.0052 U	0.0161	0.0046	0.0404	23.00 - 27.00
6-00323	60555	Pu-244	0.0102	0.0055	0.0046	0.0313	23.00 - 27.00
6-00323	60555	Sb-125	0.0189 U	0.0467	0.0141	0.354	23.00 - 27.00
6-00323	60555	Sn-126	0.0117 J	0.0207	0.0063	0.0237	23.00 - 27.00
6-00323	60555	Sr-90	0.207	0.268	0.0878	0.485	23.00 - 27.00
6-00323	60555	Tc-99	-0.068 U	1.01	0.296	1.63	23.00 - 27.00
6-00323	60555	Th-228	1.09	0.0728	0.102	3.98	23.00 - 27.00
6-00323	60555	Th-229	0.0267	0.062	0.0189	0.145	23.00 - 27.00
6-00323	60555	Th-230	0.753	0.049	0.08	2.2	23.00 - 27.00
6-00323	60555	Th-232	1.2	0.018	0.106	3.1	23.00 - 27.00
6-00323	60555	Th-234	1.46	0.199	0.127	3.19	23.00 - 27.00
6-00323	60555	Tl-208	0.354	0.0182	0.0227	0.937	23.00 - 27.00
6-00323	60555	Tm-171	-0.242 U	6.46	2.07	72.4	23.00 - 27.00
6-00323	60555	U-233/234	0.757	0.0607	0.0835	2.02	23.00 - 27.00
6-00323	60555	U-235/236	0.0383	0.0543	0.0197	0.151	23.00 - 27.00
6-00323	60555	U-238	0.887	0.0355	0.0921	1.8	23.00 - 27.00
6-00324	60548	Ac-227	0.0364 U	0.174	0.0532	0.217	16.00 - 20.00
6-00324	60548	Am-241	0.0075 U	0.0238	0.0068	0.0454	16.00 - 20.00
6-00324	60548	Bi-212	0.8	0.102	0.0663	2.15	16.00 - 20.00
6-00324	60548	Bi-214	0.794	0.0249	0.038	1.59	16.00 - 20.00
6-00324	60548	C-14	0.249 U	0.876	0.264	2.96	16.00 - 20.00
6-00324	60548	Cd-113m	12.2 U	120	37.9	3030	16.00 - 20.00
6-00324	60548	Cm-243/244	-0.0111 U	0.0377	0.0076	0.0443	16.00 - 20.00
6-00324	60548	Co-60	-0.0039 U	0.0137	0.0042	0.028	16.00 - 20.00
6-00324	60548	Cs-134	-0.0009 U	0.012	0.0042	0.0864	16.00 - 20.00
6-00324	60548	Cs-137	0.106	0.0122	0.009	0.207	16.00 - 20.00
6-00324	60548	Eu-152	0.0051 U	0.0433	0.0145	0.0566	16.00 - 20.00
6-00324	60548	Eu-154	-0.0582 UJ	0.0782	0.0277	0.15	16.00 - 20.00
6-00324	60548	Eu-155	0.0174 U	0.0623	0.0188	0.231	16.00 - 20.00
6-00324	60548	H-3	2.12 U	6.36	1.88	11.9	16.00 - 20.00
6-00324	60548	Ho-166m	0.0044 U	0.0223	0.0067	0.0432	16.00 - 20.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00324	60548	K-40	18.6	0.131	1.13	32.4	16.00 - 20.00
6-00324	60548	Na-22	-0.0092 U	0.0169	0.0056	0.037	16.00 - 20.00
6-00324	60548	Nb-94	0.0045 U	0.0128	0.0039	0.0214	16.00 - 20.00
6-00324	60548	Ni-59	-9.64 R	5.54	2.9	8.39	16.00 - 20.00
6-00324	60548	Ni-63	0.343 U	0.979	0.297	4.92	16.00 - 20.00
6-00324	60548	Np-236	0.0027 U	0.0338	0.01	0.047	16.00 - 20.00
6-00324	60548	Np-239	-0.0152 U	0.118	0.036	0.139	16.00 - 20.00
6-00324	60548	Pa-231	-0.0546 U	0.721	0.222	0.936	16.00 - 20.00
6-00324	60548	Pb-212	1.12	0.029	0.0691	2.69	16.00 - 20.00
6-00324	60548	Pb-214	0.914	0.0294	0.0436	1.7	16.00 - 20.00
6-00324	60548	Pu-238	0.0064 U	0.0278	0.0076	0.0415	16.00 - 20.00
6-00324	60548	Pu-239/240	0.0044 U	0.0216	0.0056	0.0404	16.00 - 20.00
6-00324	60548	Pu-244	0.0074 U	0.0239	0.0068	0.0313	16.00 - 20.00
6-00324	60548	Sb-125	-0.008 U	0.0379	0.0114	0.354	16.00 - 20.00
6-00324	60548	Sn-126	-0.0007 U	0.0142	0.0043	0.0237	16.00 - 20.00
6-00324	60548	Sr-90	-0.0285 U	0.234	0.0612	0.485	16.00 - 20.00
6-00324	60548	Tc-99	0.383 U	1.12	0.339	1.63	16.00 - 20.00
6-00324	60548	Th-228	1.12	0.0822	0.101	3.98	16.00 - 20.00
6-00324	60548	Th-229	0.0123 U	0.0573	0.0151	0.145	16.00 - 20.00
6-00324	60548	Th-230	0.837	0.0662	0.0836	2.2	16.00 - 20.00
6-00324	60548	Th-232	1.12	0.0166	0.0989	3.1	16.00 - 20.00
6-00324	60548	Th-234	1.18 J	0.266	0.141	3.19	16.00 - 20.00
6-00324	60548	Tl-208	0.309	0.0145	0.0181	0.937	16.00 - 20.00
6-00324	60548	Tm-171	-4.12 U	12.3	4.22	72.4	16.00 - 20.00
6-00324	60548	U-233/234	0.783	0.0803	0.0867	2.02	16.00 - 20.00
6-00324	60548	U-235/236	0.0436	0.0443	0.0193	0.151	16.00 - 20.00
6-00324	60548	U-238	0.804	0.0152	0.086	1.8	16.00 - 20.00
6-00324	60554	Ac-227	0.0783 J	0.153	0.0494	0.217	24.75 - 27.00
6-00324	60554	Am-241	0.0008 U	0.0185	0.0036	0.0454	24.75 - 27.00
6-00324	60554	Bi-212	0.754	0.119	0.0712	2.15	24.75 - 27.00
6-00324	60554	Bi-214	0.73	0.0279	0.0381	1.59	24.75 - 27.00
6-00324	60554	C-14	-0.131 U	0.661	0.195	2.96	24.75 - 27.00
6-00324	60554	Cd-113m	-34 U	99.1	31.8	3030	24.75 - 27.00
6-00324	60554	Cm-243/244	-0.0084 U	0.0293	0.0051	0.0443	24.75 - 27.00
6-00324	60554	Co-60	-0.0009 U	0.0167	0.0048	0.028	24.75 - 27.00
6-00324	60554	Cs-134	-0.0002 U	0.0128	0.0044	0.0864	24.75 - 27.00
6-00324	60554	Cs-137	-0.0155 UJ	0.0163	0.0061	0.207	24.75 - 27.00
6-00324	60554	Eu-152	0.0117 U	0.0389	0.0129	0.0566	24.75 - 27.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00324	60554	Eu-154	0.0189 U	0.0972	0.0288	0.15	24.75 - 27.00
6-00324	60554	Eu-155	0.0387 JS	0.045	0.0188	0.231	24.75 - 27.00
6-00324	60554	H-3	-2.94 U	6.99	1.83	11.9	24.75 - 27.00
6-00324	60554	Ho-166m	0.0029 U	0.0262	0.0076	0.0432	24.75 - 27.00
6-00324	60554	K-40	20.5	0.114	1.11	32.4	24.75 - 27.00
6-00324	60554	Na-22	0.003 U	0.0221	0.0064	0.037	24.75 - 27.00
6-00324	60554	Nb-94	0.0004 U	0.0145	0.0042	0.0214	24.75 - 27.00
6-00324	60554	Ni-59	-0.756 U	3.7	1.08	8.39	24.75 - 27.00
6-00324	60554	Ni-63	-0.206 U	0.909	0.268	4.92	24.75 - 27.00
6-00324	60554	Np-236	-0.0099 U	0.0253	0.0078	0.047	24.75 - 27.00
6-00324	60554	Np-239	0.0068 U	0.102	0.031	0.139	24.75 - 27.00
6-00324	60554	Pa-231	0.197 U	0.652	0.213	0.936	24.75 - 27.00
6-00324	60554	Pb-212	1.17	0.0244	0.0651	2.69	24.75 - 27.00
6-00324	60554	Pb-214	0.756	0.0274	0.037	1.7	24.75 - 27.00
6-00324	60554	Pu-238	0.0002 U	0.0199	0.0045	0.0415	24.75 - 27.00
6-00324	60554	Pu-239/240	0.0022 U	0.0199	0.0049	0.0404	24.75 - 27.00
6-00324	60554	Pu-244	0.0025 U	0.0127	0.0032	0.0313	24.75 - 27.00
6-00324	60554	Sb-125	-0.0029 U	0.0372	0.011	0.354	24.75 - 27.00
6-00324	60554	Sn-126	0.0018 U	0.0162	0.0047	0.0237	24.75 - 27.00
6-00324	60554	Sr-90	0.0643 U	0.208	0.0607	0.485	24.75 - 27.00
6-00324	60554	Tc-99	0.158 U	1.01	0.3	1.63	24.75 - 27.00
6-00324	60554	Th-228	1.32	0.0504	0.116	3.98	24.75 - 27.00
6-00324	60554	Th-229	0.0404	0.095	0.0286	0.145	24.75 - 27.00
6-00324	60554	Th-230	0.806	0.0495	0.084	2.2	24.75 - 27.00
6-00324	60554	Th-232	1.17	0.0622	0.106	3.1	24.75 - 27.00
6-00324	60554	Th-234	1.3	0.181	0.115	3.19	24.75 - 27.00
6-00324	60554	Tl-208	0.39	0.0145	0.0234	0.937	24.75 - 27.00
6-00324	60554	Tm-171	-0.568 U	5.45	1.86	72.4	24.75 - 27.00
6-00324	60554	U-233/234	0.832	0.0418	0.0866	2.02	24.75 - 27.00
6-00324	60554	U-235/236	0.028	0.0417	0.0155	0.151	24.75 - 27.00
6-00324	60554	U-238	0.747	0.0144	0.08	1.8	24.75 - 27.00
6-00325	60549	Ac-227	0.0101 U	0.159	0.0476	0.217	19.00 - 23.00
6-00325	60549	Am-241	0.0025 U	0.0126	0.0031	0.0454	19.00 - 23.00
6-00325	60549	Bi-212	0.64	0.107	0.0576	2.15	19.00 - 23.00
6-00325	60549	Bi-214	0.709	0.0236	0.0347	1.59	19.00 - 23.00
6-00325	60549	C-14	-0.131 U	0.637	0.188	2.96	19.00 - 23.00
6-00325	60549	Cd-113m	-4.92 U	104	32.2	3030	19.00 - 23.00
6-00325	60549	Cm-243/244	-0.0051 U	0.0215	0.0038	0.0443	19.00 - 23.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00325	60549	Co-60	-0.005 U	0.0137	0.0042	0.028	19.00 - 23.00
6-00325	60549	Cs-134	-0.0033 U	0.0114	0.004	0.0864	19.00 - 23.00
6-00325	60549	Cs-137	0.0765	0.015	0.0081	0.207	19.00 - 23.00
6-00325	60549	Eu-152	-0.0115 U	0.0391	0.0127	0.0566	19.00 - 23.00
6-00325	60549	Eu-154	-0.0058 U	0.0823	0.0247	0.15	19.00 - 23.00
6-00325	60549	Eu-155	0.0044 U	0.0561	0.0163	0.231	19.00 - 23.00
6-00325	60549	H-3	-0.846 U	6.97	1.93	11.9	19.00 - 23.00
6-00325	60549	Ho-166m	-0.0088 U	0.0207	0.0066	0.0432	19.00 - 23.00
6-00325	60549	K-40	18.8	0.0986	1.07	32.4	19.00 - 23.00
6-00325	60549	Na-22	-0.0016 U	0.0166	0.0048	0.037	19.00 - 23.00
6-00325	60549	Nb-94	-0.0037 U	0.0122	0.0038	0.0214	19.00 - 23.00
6-00325	60549	Ni-59	1.47 U	4.23	1.16	8.39	19.00 - 23.00
6-00325	60549	Ni-63	-0.0374 U	0.944	0.281	4.92	19.00 - 23.00
6-00325	60549	Np-236	-0.0043 U	0.0306	0.009	0.047	19.00 - 23.00
6-00325	60549	Np-239	0.0154 U	0.108	0.0321	0.139	19.00 - 23.00
6-00325	60549	Pa-231	-0.284 U	0.635	0.212	0.936	19.00 - 23.00
6-00325	60549	Pb-212	1.1	0.0264	0.0695	2.69	19.00 - 23.00
6-00325	60549	Pb-214	0.747	0.0275	0.0389	1.7	19.00 - 23.00
6-00325	60549	Pu-238	-0.0067 U	0.0273	0.0052	0.0415	19.00 - 23.00
6-00325	60549	Pu-239/240	0.0091	0.022	0.0066	0.0404	19.00 - 23.00
6-00325	60549	Pu-244	0.0028 U	0.014	0.0035	0.0313	19.00 - 23.00
6-00325	60549	Sb-125	0.0044 U	0.0357	0.0108	0.354	19.00 - 23.00
6-00325	60549	Sn-126	-0.001 U	0.014	0.0041	0.0237	19.00 - 23.00
6-00325	60549	Sr-90	0.302	0.249	0.0902	0.485	19.00 - 23.00
6-00325	60549	Tc-99	0.568	1.04	0.318	1.63	19.00 - 23.00
6-00325	60549	Th-228	1.15	0.0781	0.109	3.98	19.00 - 23.00
6-00325	60549	Th-229	-0.0214 U	0.0937	0.0189	0.145	19.00 - 23.00
6-00325	60549	Th-230	0.919	0.0767	0.0946	2.2	19.00 - 23.00
6-00325	60549	Th-232	1.14	0.0523	0.107	3.1	19.00 - 23.00
6-00325	60549	Th-234	0.918 J	0.241	0.112	3.19	19.00 - 23.00
6-00325	60549	Tl-208	0.322	0.0134	0.0189	0.937	19.00 - 23.00
6-00325	60549	Tm-171	-5.55 U	9.54	3.62	72.4	19.00 - 23.00
6-00325	60549	U-233/234	0.744	0.0599	0.0801	2.02	19.00 - 23.00
6-00325	60549	U-235/236	0.0462	0.0404	0.0188	0.151	19.00 - 23.00
6-00325	60549	U-238	0.843	0.0327	0.0863	1.8	19.00 - 23.00
6-00325	60553	Ac-227	0.0511 U	0.166	0.0498	0.217	26.00 - 27.00
6-00325	60553	Am-241	0.0118	0.0205	0.0069	0.0454	26.00 - 27.00
6-00325	60553	Bi-212	0.747	0.112	0.063	2.15	26.00 - 27.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00325	60553	Bi-214	0.918	0.0247	0.0425	1.59	26.00 - 27.00
6-00325	60553	C-14	-0.0365 U	0.635	0.188	2.96	26.00 - 27.00
6-00325	60553	Cd-113m	24.6 U	110	32.5	3030	26.00 - 27.00
6-00325	60553	Cm-243/244	0.0041 U	0.0205	0.0052	0.0443	26.00 - 27.00
6-00325	60553	Co-60	0.0043 U	0.0164	0.0047	0.028	26.00 - 27.00
6-00325	60553	Cs-134	0.0019 U	0.0117	0.0041	0.0864	26.00 - 27.00
6-00325	60553	Cs-137	-0.0169 UJ	0.0146	0.006	0.207	26.00 - 27.00
6-00325	60553	Eu-152	0.019 U	0.04	0.0139	0.0566	26.00 - 27.00
6-00325	60553	Eu-154	-0.0151 U	0.0874	0.0264	0.15	26.00 - 27.00
6-00325	60553	Eu-155	0.0482 JS	0.0555	0.0209	0.231	26.00 - 27.00
6-00325	60553	H-3	-2.21 U	6.77	1.81	11.9	26.00 - 27.00
6-00325	60553	Ho-166m	-0.0039 U	0.0229	0.0068	0.0432	26.00 - 27.00
6-00325	60553	K-40	24.8	0.119	1.39	32.4	26.00 - 27.00
6-00325	60553	Na-22	0.0065 U	0.0184	0.0056	0.037	26.00 - 27.00
6-00325	60553	Nb-94	0.0004 U	0.0132	0.0038	0.0214	26.00 - 27.00
6-00325	60553	Ni-59	-7.97 R	5.14	2.51	8.39	26.00 - 27.00
6-00325	60553	Ni-63	-0.115 U	0.992	0.294	4.92	26.00 - 27.00
6-00325	60553	Np-236	-0.0058 U	0.0311	0.0096	0.047	26.00 - 27.00
6-00325	60553	Np-239	-0.0563 U	0.109	0.0349	0.139	26.00 - 27.00
6-00325	60553	Pa-231	-0.299 U	0.67	0.213	0.936	26.00 - 27.00
6-00325	60553	Pb-212	1.28	0.0279	0.0772	2.69	26.00 - 27.00
6-00325	60553	Pb-214	1	0.0287	0.0486	1.7	26.00 - 27.00
6-00325	60553	Pu-238	0.0031 U	0.0153	0.0038	0.0415	26.00 - 27.00
6-00325	60553	Pu-239/240	0.0044 U	0.0217	0.0057	0.0404	26.00 - 27.00
6-00325	60553	Pu-244	0.0007 U	0.0153	0.003	0.0313	26.00 - 27.00
6-00325	60553	Sb-125	-0.0028 U	0.0364	0.0109	0.354	26.00 - 27.00
6-00325	60553	Sn-126	0.0038 U	0.0148	0.0043	0.0237	26.00 - 27.00
6-00325	60553	Sr-90	-0.0033 U	0.337	0.0921	0.485	26.00 - 27.00
6-00325	60553	Tc-99	-0.274 U	0.99	0.286	1.63	26.00 - 27.00
6-00325	60553	Th-228	1.35	0.0488	0.115	3.98	26.00 - 27.00
6-00325	60553	Th-229	0.0065 U	0.092	0.0235	0.145	26.00 - 27.00
6-00325	60553	Th-230	1.19	0.0782	0.107	2.2	26.00 - 27.00
6-00325	60553	Th-232	1.16	0.0603	0.104	3.1	26.00 - 27.00
6-00325	60553	Th-234	1.48	0.245	0.134	3.19	26.00 - 27.00
6-00325	60553	Tl-208	0.411	0.0139	0.0232	0.937	26.00 - 27.00
6-00325	60553	Tm-171	-0.624 U	9.18	3.09	72.4	26.00 - 27.00
6-00325	60553	U-233/234	0.938	0.0581	0.0951	2.02	26.00 - 27.00
6-00325	60553	U-235/236	0.0593	0.0179	0.0202	0.151	26.00 - 27.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00325	60553	U-238	1.06	0.0144	0.103	1.8	26.00 - 27.00
6-00326	60550	Ac-227	-0.0008 U	0.133	0.0398	0.217	17.00 - 21.00
6-00326	60550	Am-241	-0.0056 U	0.0338	0.007	0.0454	17.00 - 21.00
6-00326	60550	Bi-212	0.52	0.088	0.051	2.15	17.00 - 21.00
6-00326	60550	Bi-214	0.393	0.0202	0.0218	1.59	17.00 - 21.00
6-00326	60550	C-14	0.147 U	0.858	0.258	2.96	17.00 - 21.00
6-00326	60550	Cd-113m	0.416 U	87.5	27	3030	17.00 - 21.00
6-00326	60550	Cm-243/244	0.0034 U	0.0357	0.0091	0.0443	17.00 - 21.00
6-00326	60550	Co-60	-0.0016 U	0.0125	0.0037	0.028	17.00 - 21.00
6-00326	60550	Cs-134	-0.003 U	0.01	0.0035	0.0864	17.00 - 21.00
6-00326	60550	Cs-137	0.0011 U	0.0122	0.0036	0.207	17.00 - 21.00
6-00326	60550	Eu-152	-0.0263 UJ	0.0305	0.0117	0.0566	17.00 - 21.00
6-00326	60550	Eu-154	-0.0089 U	0.0713	0.0216	0.15	17.00 - 21.00
6-00326	60550	Eu-155	0.0177 U	0.0482	0.0146	0.231	17.00 - 21.00
6-00326	60550	H-3	0.382 U	6.43	1.81	11.9	17.00 - 21.00
6-00326	60550	Ho-166m	-0.0093 U	0.018	0.0059	0.0432	17.00 - 21.00
6-00326	60550	K-40	19.7	0.0786	1.14	32.4	17.00 - 21.00
6-00326	60550	Na-22	0.0033 U	0.0156	0.0045	0.037	17.00 - 21.00
6-00326	60550	Nb-94	-0.0051 U	0.0104	0.0034	0.0214	17.00 - 21.00
6-00326	60550	Ni-59	-6.35 R	3.89	1.95	8.39	17.00 - 21.00
6-00326	60550	Ni-63	0.54 U	1.16	0.356	4.92	17.00 - 21.00
6-00326	60550	Np-236	-0.0231 UJ	0.0255	0.0094	0.047	17.00 - 21.00
6-00326	60550	Np-239	-0.0206 U	0.0888	0.0271	0.139	17.00 - 21.00
6-00326	60550	Pa-231	-0.0893 U	0.551	0.173	0.936	17.00 - 21.00
6-00326	60550	Pb-212	0.882	0.0223	0.0567	2.69	17.00 - 21.00
6-00326	60550	Pb-214	0.391	0.0231	0.0228	1.7	17.00 - 21.00
6-00326	60550	Pu-238	-0.007 U	0.0242	0.0042	0.0415	17.00 - 21.00
6-00326	60550	Pu-239/240	-0.0045 U	0.0242	0.0042	0.0404	17.00 - 21.00
6-00326	60550	Pu-244	0.0014 U	0.019	0.0042	0.0313	17.00 - 21.00
6-00326	60550	Sb-125	-0.0045 U	0.0297	0.0091	0.354	17.00 - 21.00
6-00326	60550	Sn-126	-0.0037 U	0.0123	0.0038	0.0237	17.00 - 21.00
6-00326	60550	Sr-90	-0.0697 U	0.248	0.0641	0.485	17.00 - 21.00
6-00326	60550	Tc-99	0.24 U	1.15	0.346	1.63	17.00 - 21.00
6-00326	60550	Th-228	0.958	0.0968	0.0945	3.98	17.00 - 21.00
6-00326	60550	Th-229	0.0127 U	0.0954	0.0254	0.145	17.00 - 21.00
6-00326	60550	Th-230	0.317	0.11	0.0552	2.2	17.00 - 21.00
6-00326	60550	Th-232	0.783	0.0465	0.0804	3.1	17.00 - 21.00
6-00326	60550	Th-234	0.526 J	0.204	0.0834	3.19	17.00 - 21.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00326	60550	Tl-208	0.283	0.0112	0.017	0.937	17.00 - 21.00
6-00326	60550	Tm-171	-1.39 U	7.82	2.75	72.4	17.00 - 21.00
6-00326	60550	U-233/234	0.288	0.0833	0.0504	2.02	17.00 - 21.00
6-00326	60550	U-235/236	0.0063 U	0.0681	0.0161	0.151	17.00 - 21.00
6-00326	60550	U-238	0.343	0.0663	0.0534	1.8	17.00 - 21.00
6-00326	60552	Ac-227	0.0864 J	0.157	0.0497	0.217	22.75 - 25.00
6-00326	60552	Am-241	-0.0041 U	0.0362	0.0077	0.0454	22.75 - 25.00
6-00326	60552	Bi-212	0.651	0.103	0.0577	2.15	22.75 - 25.00
6-00326	60552	Bi-214	0.762	0.023	0.0373	1.59	22.75 - 25.00
6-00326	60552	C-14	-0.224 U	0.891	0.263	2.96	22.75 - 25.00
6-00326	60552	Cd-113m	36.4 U	103	31.1	3030	22.75 - 25.00
6-00326	60552	Cm-243/244	-0.0001 U	0.0385	0.0091	0.0443	22.75 - 25.00
6-00326	60552	Co-60	0.0106 J	0.0156	0.0049	0.028	22.75 - 25.00
6-00326	60552	Cs-134	-0.0009 U	0.0114	0.004	0.0864	22.75 - 25.00
6-00326	60552	Cs-137	-0.0016 U	0.0139	0.0041	0.207	22.75 - 25.00
6-00326	60552	Eu-152	-0.0312 UJ	0.0368	0.0143	0.0566	22.75 - 25.00
6-00326	60552	Eu-154	-0.0127 U	0.0809	0.0244	0.15	22.75 - 25.00
6-00326	60552	Eu-155	0.0429 JS	0.0551	0.0194	0.231	22.75 - 25.00
6-00326	60552	H-3	1.46 U	6.45	1.87	11.9	22.75 - 25.00
6-00326	60552	Ho-166m	-0.0086 U	0.0211	0.0066	0.0432	22.75 - 25.00
6-00326	60552	K-40	22	0.106	1.24	32.4	22.75 - 25.00
6-00326	60552	Na-22	-0.0079 U	0.0173	0.0057	0.037	22.75 - 25.00
6-00326	60552	Nb-94	0.0052 U	0.0131	0.0039	0.0214	22.75 - 25.00
6-00326	60552	Ni-59	0.0057 U	4.05	1.13	8.39	22.75 - 25.00
6-00326	60552	Ni-63	0.708	1.32	0.409	4.92	22.75 - 25.00
6-00326	60552	Np-236	-0.006 U	0.0295	0.0091	0.047	22.75 - 25.00
6-00326	60552	Np-239	-0.0078 U	0.104	0.0304	0.139	22.75 - 25.00
6-00326	60552	Pa-231	-0.345 U	0.609	0.214	0.936	22.75 - 25.00
6-00326	60552	Pb-212	1.13	0.0259	0.0683	2.69	22.75 - 25.00
6-00326	60552	Pb-214	0.828	0.0273	0.041	1.7	22.75 - 25.00
6-00326	60552	Pu-238	-0.0021 U	0.0314	0.0077	0.0415	22.75 - 25.00
6-00326	60552	Pu-239/240	-0.0072 U	0.025	0.0047	0.0404	22.75 - 25.00
6-00326	60552	Pu-244	0.0073	0.0173	0.0053	0.0313	22.75 - 25.00
6-00326	60552	Sb-125	0.0052 U	0.0341	0.0102	0.354	22.75 - 25.00
6-00326	60552	Sn-126	0.0022 U	0.0144	0.0042	0.0237	22.75 - 25.00
6-00326	60552	Sr-90	-0.0531 U	0.209	0.0517	0.485	22.75 - 25.00
6-00326	60552	Tc-99	0.131 U	1.13	0.338	1.63	22.75 - 25.00
6-00326	60552	Th-228	1.24	0.1	0.104	3.98	22.75 - 25.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
6-00326	60552	Th-229	0.0598	0.0585	0.0226	0.145	22.75 - 25.00
6-00326	60552	Th-230	0.781	0.0711	0.0765	2.2	22.75 - 25.00
6-00326	60552	Th-232	1.09	0.0398	0.0924	3.1	22.75 - 25.00
6-00326	60552	Th-234	1.26 J	0.223	0.128	3.19	22.75 - 25.00
6-00326	60552	Tl-208	0.348	0.0128	0.0201	0.937	22.75 - 25.00
6-00326	60552	Tm-171	-0.784 U	8.63	2.91	72.4	22.75 - 25.00
6-00326	60552	U-233/234	0.728	0.0825	0.0816	2.02	22.75 - 25.00
6-00326	60552	U-235/236	0.0331	0.018	0.015	0.151	22.75 - 25.00
6-00326	60552	U-238	0.702	0.0145	0.0771	1.8	22.75 - 25.00
7-00186	70322	Ac-227	0.0064 U	0.185	0.055	0.217	24.00 - 28.00
7-00186	70322	Am-241	-0.0009 U	0.0157	0.0028	0.0454	24.00 - 28.00
7-00186	70322	Bi-212	0.572 J	0.185	0.148	2.15	24.00 - 28.00
7-00186	70322	Bi-214	0.667	0.0296	0.0348	1.59	24.00 - 28.00
7-00186	70322	Cd-113m	1.15 U	121	36	3030	24.00 - 28.00
7-00186	70322	Cm-243/244	-0.0057 U	0.02	0.0035	0.0443	24.00 - 28.00
7-00186	70322	Co-60	0.0004 U	0.0187	0.0055	0.028	24.00 - 28.00
7-00186	70322	Cs-134	0.001 U	0.0141	0.0047	0.0864	24.00 - 28.00
7-00186	70322	Cs-137	-0.0081 U	0.0164	0.0054	0.207	24.00 - 28.00
7-00186	70322	Eu-152	-0.0007 U	0.0461	0.0151	0.0566	24.00 - 28.00
7-00186	70322	Eu-154	-0.0439 U	0.0979	0.0311	0.15	24.00 - 28.00
7-00186	70322	Eu-155	0.0367 JS	0.0666	0.0219	0.231	24.00 - 28.00
7-00186	70322	H-3	-1.18 U	7.04	1.93	11.9	24.00 - 28.00
7-00186	70322	Ho-166m	-0.0074 U	0.0253	0.0078	0.0432	24.00 - 28.00
7-00186	70322	K-40	21.5	0.13	1.33	32.4	24.00 - 28.00
7-00186	70322	Na-22	0.0045 U	0.022	0.0065	0.037	24.00 - 28.00
7-00186	70322	Nb-94	0.0008 U	0.0146	0.0043	0.0214	24.00 - 28.00
7-00186	70322	Ni-59	-3.67 UJ	4.52	1.64	8.39	24.00 - 28.00
7-00186	70322	Ni-63	0.478 U	1.02	0.313	4.92	24.00 - 28.00
7-00186	70322	Np-236	-0.0071 U	0.0357	0.0112	0.047	24.00 - 28.00
7-00186	70322	Np-239	0.0218 U	0.126	0.0374	0.139	24.00 - 28.00
7-00186	70322	Pa-231	0.368 U	0.777	0.273	0.936	24.00 - 28.00
7-00186	70322	Pb-212	1.06	0.0305	0.0687	2.69	24.00 - 28.00
7-00186	70322	Pb-214	0.706	0.0335	0.0366	1.7	24.00 - 28.00
7-00186	70322	Pu-238	0.0061	0.0118	0.004	0.0415	24.00 - 28.00
7-00186	70322	Pu-239/240	0.187	0.005	0.021	0.0404	24.00 - 28.00
7-00186	70322	Pu-244	0.0079	0.0118	0.0044	0.0313	24.00 - 28.00
7-00186	70322	Sb-125	0.0026 U	0.043	0.0131	0.354	24.00 - 28.00
7-00186	70322	Sn-126	-0.002 U	0.0167	0.005	0.0237	24.00 - 28.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
7-00186	70322	Sr-90	0.0598 U	0.207	0.0604	0.485	24.00 - 28.00
7-00186	70322	Tc-99	0.395 U	0.955	0.29	1.63	24.00 - 28.00
7-00186	70322	Th-228	1.03	0.0673	0.101	3.98	24.00 - 28.00
7-00186	70322	Th-229	-0.0502 U	0.13	0.0278	0.145	24.00 - 28.00
7-00186	70322	Th-230	0.779	0.077	0.0858	2.2	24.00 - 28.00
7-00186	70322	Th-232	1.01	0.0662	0.0997	3.1	24.00 - 28.00
7-00186	70322	Th-234	1.12 J	0.287	0.14	3.19	24.00 - 28.00
7-00186	70322	Tl-208	0.318	0.0151	0.0191	0.937	24.00 - 28.00
7-00186	70322	Tm-171	-3.54 U	14.5	5	72.4	24.00 - 28.00
7-00186	70322	U-233/234	0.677	0.052	0.0751	2.02	24.00 - 28.00
7-00186	70322	U-235/236	0.021	0.0408	0.0137	0.151	24.00 - 28.00
7-00186	70322	U-238	0.686	0.033	0.0751	1.8	24.00 - 28.00
7-00187	70323	Ac-227	-0.0617 U	0.15	0.0467	0.217	24.50 - 28.50
7-00187	70323	Am-241	0	0.0056	0.0021	0.0454	24.50 - 28.50
7-00187	70323	Bi-212	0.737	0.0985	0.0646	2.15	24.50 - 28.50
7-00187	70323	Bi-214	0.754	0.023	0.037	1.59	24.50 - 28.50
7-00187	70323	Cd-113m	-60.2 U	99.4	32.8	3030	24.50 - 28.50
7-00187	70323	Cm-243/244	0.0014 U	0.0241	0.0059	0.0443	24.50 - 28.50
7-00187	70323	Co-60	0.0015 U	0.0146	0.0043	0.028	24.50 - 28.50
7-00187	70323	Cs-134	-0.0006 U	0.0108	0.0037	0.0864	24.50 - 28.50
7-00187	70323	Cs-137	0.0013 U	0.0134	0.0046	0.207	24.50 - 28.50
7-00187	70323	Eu-152	-0.0055 U	0.0361	0.0116	0.0566	24.50 - 28.50
7-00187	70323	Eu-154	-0.0806 UJ	0.0738	0.0302	0.15	24.50 - 28.50
7-00187	70323	Eu-155	0.0775 JS	0.0522	0.0225	0.231	24.50 - 28.50
7-00187	70323	H-3	-1.42 U	6.96	1.9	11.9	24.50 - 28.50
7-00187	70323	Ho-166m	0.0117 JS	0.0213	0.0066	0.0432	24.50 - 28.50
7-00187	70323	K-40	21.3	0.101	1.21	32.4	24.50 - 28.50
7-00187	70323	Na-22	-0.0058 U	0.0156	0.005	0.037	24.50 - 28.50
7-00187	70323	Nb-94	0.0062 JS	0.0127	0.0039	0.0214	24.50 - 28.50
7-00187	70323	Ni-59	-1.72 U	4.16	1.48	8.39	24.50 - 28.50
7-00187	70323	Ni-63	0.388 U	1.01	0.307	4.92	24.50 - 28.50
7-00187	70323	Np-236	0.0064 U	0.0296	0.0091	0.047	24.50 - 28.50
7-00187	70323	Np-239	0.0254 U	0.104	0.0307	0.139	24.50 - 28.50
7-00187	70323	Pa-231	-0.405 U	0.612	0.212	0.936	24.50 - 28.50
7-00187	70323	Pb-212	1.12	0.0252	0.0668	2.69	24.50 - 28.50
7-00187	70323	Pb-214	0.824	0.0265	0.0403	1.7	24.50 - 28.50
7-00187	70323	Pu-238	0.0032	0.0086	0.0032	0.0415	24.50 - 28.50
7-00187	70323	Pu-239/240	0.0081 U	0.0251	0.0072	0.0404	24.50 - 28.50

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
7-00187	70323	Pu-244	0.0095	0.0086	0.0055	0.0313	24.50 - 28.50
7-00187	70323	Sb-125	0.0077 U	0.0347	0.0104	0.354	24.50 - 28.50
7-00187	70323	Sn-126	-0.0025 U	0.0129	0.0038	0.0237	24.50 - 28.50
7-00187	70323	Sr-90	0.0058 U	0.203	0.0548	0.485	24.50 - 28.50
7-00187	70323	Tc-99	0.0935 U	1.01	0.3	1.63	24.50 - 28.50
7-00187	70323	Th-228	1.34	0.117	0.11	3.98	24.50 - 28.50
7-00187	70323	Th-229	0.0583	0.0695	0.0244	0.145	24.50 - 28.50
7-00187	70323	Th-230	0.999	0.0881	0.0889	2.2	24.50 - 28.50
7-00187	70323	Th-232	1.26	0.0388	0.101	3.1	24.50 - 28.50
7-00187	70323	Th-234	1.28 J	0.233	0.132	3.19	24.50 - 28.50
7-00187	70323	Tl-208	0.351	0.0119	0.0204	0.937	24.50 - 28.50
7-00187	70323	Tm-171	-4.67 U	9.38	3.36	72.4	24.50 - 28.50
7-00187	70323	U-233/234	1.06	0.0641	0.105	2.02	24.50 - 28.50
7-00187	70323	U-235/236	0.0766	0.0432	0.0245	0.151	24.50 - 28.50
7-00187	70323	U-238	0.955	0.0149	0.0964	1.8	24.50 - 28.50
7-00187	70326	Ac-227	0.0137 U	0.192	0.0592	0.217	27.00 - 28.50
7-00187	70326	Am-241	-0.0048 U	0.0199	0.0035	0.0454	27.00 - 28.50
7-00187	70326	Bi-212	0.667	0.123	0.063	2.15	27.00 - 28.50
7-00187	70326	Bi-214	0.732	0.0288	0.0365	1.59	27.00 - 28.50
7-00187	70326	Cd-113m	-35.7 U	127	40.5	3030	27.00 - 28.50
7-00187	70326	Cm-243/244	-0.0114 U	0.0314	0.0059	0.0443	27.00 - 28.50
7-00187	70326	Co-60	-0.0087 U	0.018	0.0059	0.028	27.00 - 28.50
7-00187	70326	Cs-134	0.0071 JS	0.0142	0.0049	0.0864	27.00 - 28.50
7-00187	70326	Cs-137	0.0105 J	0.0167	0.0059	0.207	27.00 - 28.50
7-00187	70326	Eu-152	0.0323 J	0.0474	0.0173	0.0566	27.00 - 28.50
7-00187	70326	Eu-154	-0.0222 U	0.0988	0.0305	0.15	27.00 - 28.50
7-00187	70326	Eu-155	0.0477 JS	0.0719	0.0239	0.231	27.00 - 28.50
7-00187	70326	H-3	-1.44 U	6.93	1.89	11.9	27.00 - 28.50
7-00187	70326	Ho-166m	-0.0022 U	0.0263	0.0078	0.0432	27.00 - 28.50
7-00187	70326	K-40	22.2	0.126	1.38	32.4	27.00 - 28.50
7-00187	70326	Na-22	-0.0114 U	0.0208	0.0069	0.037	27.00 - 28.50
7-00187	70326	Nb-94	-0.001 U	0.0152	0.0045	0.0214	27.00 - 28.50
7-00187	70326	Ni-59	-0.508 U	4.17	1.2	8.39	27.00 - 28.50
7-00187	70326	Ni-63	0.143 U	1	0.301	4.92	27.00 - 28.50
7-00187	70326	Np-236	0.0075 U	0.0382	0.0114	0.047	27.00 - 28.50
7-00187	70326	Np-239	0.0342 U	0.13	0.0403	0.139	27.00 - 28.50
7-00187	70326	Pa-231	-0.505 U	0.769	0.266	0.936	27.00 - 28.50
7-00187	70326	Pb-212	1.04	0.0319	0.0692	2.69	27.00 - 28.50

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
7-00187	70326	Pb-214	0.783	0.0329	0.0414	1.7	27.00 - 28.50
7-00187	70326	Pu-238	-0.0044 U	0.0182	0.0032	0.0415	27.00 - 28.50
7-00187	70326	Pu-239/240	0.0002 U	0.0202	0.0045	0.0404	27.00 - 28.50
7-00187	70326	Pu-244	-0.0023 U	0.0182	0.0032	0.0313	27.00 - 28.50
7-00187	70326	Sb-125	0.0239 JS	0.0434	0.0138	0.354	27.00 - 28.50
7-00187	70326	Sn-126	0.0007 U	0.0171	0.005	0.0237	27.00 - 28.50
7-00187	70326	Sr-90	0.0002 U	0.154	0.0394	0.485	27.00 - 28.50
7-00187	70326	Tc-99	0.107 U	1.06	0.314	1.63	27.00 - 28.50
7-00187	70326	Th-228	0.939	0.104	0.0866	3.98	27.00 - 28.50
7-00187	70326	Th-229	0 U	0.0766	0.0191	0.145	27.00 - 28.50
7-00187	70326	Th-230	0.824	0.0718	0.0774	2.2	27.00 - 28.50
7-00187	70326	Th-232	0.852	0.0471	0.0775	3.1	27.00 - 28.50
7-00187	70326	Th-234	1.5 J	0.38	0.394	3.19	27.00 - 28.50
7-00187	70326	Tl-208	0.292	0.0148	0.0187	0.937	27.00 - 28.50
7-00187	70326	Tm-171	-1.76 U	17.9	5.25	72.4	27.00 - 28.50
7-00187	70326	U-233/234	0.895	0.0607	0.0964	2.02	27.00 - 28.50
7-00187	70326	U-235/236	0.0449	0.0203	0.0186	0.151	27.00 - 28.50
7-00187	70326	U-238	0.946	0.0386	0.0994	1.8	27.00 - 28.50
7-00188	70324	Ac-227	-0.0601 U	0.18	0.0557	0.217	15.50 - 19.50
7-00188	70324	Am-241	0.0074 U	0.03	0.0083	0.0454	15.50 - 19.50
7-00188	70324	Bi-212	0.797	0.117	0.0738	2.15	15.50 - 19.50
7-00188	70324	Bi-214	0.805	0.0276	0.0386	1.59	15.50 - 19.50
7-00188	70324	Cd-113m	-42.3 U	119	38.3	3030	15.50 - 19.50
7-00188	70324	Cm-243/244	-0.0123 U	0.0366	0.0075	0.0443	15.50 - 19.50
7-00188	70324	Co-60	0.0112 J	0.0169	0.0053	0.028	15.50 - 19.50
7-00188	70324	Cs-134	-0.0002 U	0.0133	0.0045	0.0864	15.50 - 19.50
7-00188	70324	Cs-137	-0.0055 U	0.0161	0.005	0.207	15.50 - 19.50
7-00188	70324	Eu-152	-0.0327 UJ	0.0434	0.0159	0.0566	15.50 - 19.50
7-00188	70324	Eu-154	-0.0519 U	0.0882	0.0302	0.15	15.50 - 19.50
7-00188	70324	Eu-155	0.0497 JS	0.0673	0.0234	0.231	15.50 - 19.50
7-00188	70324	H-3	-1.05 U	6.9	1.9	11.9	15.50 - 19.50
7-00188	70324	Ho-166m	-0.0139 U	0.0242	0.008	0.0432	15.50 - 19.50
7-00188	70324	K-40	21	0.126	1.22	32.4	15.50 - 19.50
7-00188	70324	Na-22	-0.0058 U	0.0182	0.0056	0.037	15.50 - 19.50
7-00188	70324	Nb-94	-0.0006 u	0.0142	0.0042	0.0214	15.50 - 19.50
7-00188	70324	Ni-59	-2.18 U	5.18	1.63	8.39	15.50 - 19.50
7-00188	70324	Ni-63	0.15 U	0.956	0.287	4.92	15.50 - 19.50
7-00188	70324	Np-236	0.0159 U	0.0361	0.0116	0.047	15.50 - 19.50

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
7-00188	70324	Np-239	-0.0345 U	0.125	0.0379	0.139	15.50 - 19.50
7-00188	70324	Pa-231	-0.042 U	0.756	0.243	0.936	15.50 - 19.50
7-00188	70324	Pb-212	1.26	0.0302	0.0838	2.69	15.50 - 19.50
7-00188	70324	Pb-214	0.875	0.0324	0.0446	1.7	15.50 - 19.50
7-00188	70324	Pu-238	0.0084	0.0125	0.0046	0.0415	15.50 - 19.50
7-00188	70324	Pu-239/240	-0.0003 U	0.0177	0.0037	0.0404	15.50 - 19.50
7-00188	70324	Pu-244	0.0025 U	0.0125	0.0031	0.0313	15.50 - 19.50
7-00188	70324	Sb-125	-0.0027 U	0.0391	0.0119	0.354	15.50 - 19.50
7-00188	70324	Sn-126	-0.0004 U	0.0159	0.0047	0.0237	15.50 - 19.50
7-00188	70324	Sr-90	-0.0714 U	0.236	0.0576	0.485	15.50 - 19.50
7-00188	70324	Tc-99	0.122 U	0.941	0.28	1.63	15.50 - 19.50
7-00188	70324	Th-228	1.39	0.0498	0.119	3.98	15.50 - 19.50
7-00188	70324	Th-229	0.0469	0.0622	0.0223	0.145	15.50 - 19.50
7-00188	70324	Th-230	0.868	0.0876	0.0895	2.2	15.50 - 19.50
7-00188	70324	Th-232	1.13	0.049	0.103	3.1	15.50 - 19.50
7-00188	70324	Th-234	1.21 J	0.293	0.148	3.19	15.50 - 19.50
7-00188	70324	Tl-208	0.374	0.0145	0.0221	0.937	15.50 - 19.50
7-00188	70324	Tm-171	1.43 U	14.3	4.79	72.4	15.50 - 19.50
7-00188	70324	U-233/234	0.779	0.0955	0.0864	2.02	15.50 - 19.50
7-00188	70324	U-235/236	0.0729	0.018	0.0225	0.151	15.50 - 19.50
7-00188	70324	U-238	0.874	0.0145	0.0898	1.8	15.50 - 19.50
7-00188	70325	Ac-227	-0.121 U	0.26	0.0831	0.217	22.00 - 23.00
7-00188	70325	Am-241	0.0192	0.0132	0.0068	0.0454	22.00 - 23.00
7-00188	70325	Bi-212	0.888 J	0.192	0.0973	2.15	22.00 - 23.00
7-00188	70325	Bi-214	1.63	0.0426	0.0787	1.59	22.00 - 23.00
7-00188	70325	Cd-113m	-42.4 U	173	52.4	3030	22.00 - 23.00
7-00188	70325	Cm-243/244	-0.0111 U	0.033	0.0068	0.0443	22.00 - 23.00
7-00188	70325	Co-60	-0.0017 U	0.0273	0.008	0.028	22.00 - 23.00
7-00188	70325	Cs-134	-0.0001 U	0.0206	0.0069	0.0864	22.00 - 23.00
7-00188	70325	Cs-137	-0.0124 U	0.0233	0.0087	0.207	22.00 - 23.00
7-00188	70325	Eu-152	-0.0336 U	0.0664	0.0234	0.0566	22.00 - 23.00
7-00188	70325	Eu-154	-0.054 U	0.151	0.0482	0.15	22.00 - 23.00
7-00188	70325	Eu-155	0.0656 JS	0.0835	0.028	0.231	22.00 - 23.00
7-00188	70325	H-3	-1.96 U	6.83	1.83	11.9	22.00 - 23.00
7-00188	70325	Ho-166m	0.0049 U	0.0394	0.0115	0.0432	22.00 - 23.00
7-00188	70325	K-40	21	0.202	1.21	32.4	22.00 - 23.00
7-00188	70325	Na-22	-0.015 U	0.0293	0.0096	0.037	22.00 - 23.00
7-00188	70325	Nb-94	0.0158 JS	0.0245	0.0079	0.0214	22.00 - 23.00

Table A.2
Analytical Results Summary
Deep Borehole

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	RTL	Sample Depth (feet bgs)
7-00188	70325	Ni-59	1.39 U	4.12	1.11	8.39	22.00 - 23.00
7-00188	70325	Ni-63	0.218 U	1.04	0.314	4.92	22.00 - 23.00
7-00188	70325	Np-236	0.0092 U	0.0476	0.0147	0.047	22.00 - 23.00
7-00188	70325	Np-239	0.022 U	0.171	0.0502	0.139	22.00 - 23.00
7-00188	70325	Pa-231	-0.164 U	1.1	0.356	0.936	22.00 - 23.00
7-00188	70325	Pb-212	1.33	0.0432	0.079	2.69	22.00 - 23.00
7-00188	70325	Pb-214	1.74	0.0495	0.081	1.7	22.00 - 23.00
7-00188	70325	Pu-238	-0.0011 U	0.0195	0.0042	0.0415	22.00 - 23.00
7-00188	70325	Pu-239/240	0.0015 U	0.0162	0.0038	0.0404	22.00 - 23.00
7-00188	70325	Pu-244	0.0059	0.0114	0.0038	0.0313	22.00 - 23.00
7-00188	70325	Sb-125	-0.0043 U	0.0646	0.0196	0.354	22.00 - 23.00
7-00188	70325	Sn-126	-0.0181 UJ	0.0243	0.0086	0.0237	22.00 - 23.00
7-00188	70325	Sr-90	0.0116 U	0.183	0.0487	0.485	22.00 - 23.00
7-00188	70325	Tc-99	0.146 U	0.926	0.276	1.63	22.00 - 23.00
7-00188	70325	Th-228	1.4	0.0621	0.119	3.98	22.00 - 23.00
7-00188	70325	Th-229	0.033	0.0614	0.0199	0.145	22.00 - 23.00
7-00188	70325	Th-230	2.31	0.093	0.169	2.2	22.00 - 23.00
7-00188	70325	Th-232	1.35	0.0178	0.115	3.1	22.00 - 23.00
7-00188	70325	Th-234	1.95	0.372	0.193	3.19	22.00 - 23.00
7-00188	70325	Tl-208	0.436	0.0256	0.0279	0.937	22.00 - 23.00
7-00188	70325	Tm-171	-12.1 UJ	14.8	5.85	72.4	22.00 - 23.00
7-00188	70325	U-233/234	2.29	0.0597	0.19	2.02	22.00 - 23.00
7-00188	70325	U-235/236	0.171	0.0431	0.0367	0.151	22.00 - 23.00
7-00188	70325	U-238	2.23	0.0349	0.185	1.8	22.00 - 23.00

Notes:

Refer to Table 2.1 of the Final Field Sampling Plan for Soil Sampling (HGL, 2012a) for a definition of radionuclide symbols.

Reporting units in picocuries per gram.

bgs - below ground surface

ID - identification

MDC - minimum detectable concentration

RTL - radiological trigger level

TPU - total propagated uncertainty

J - The analyte was detected at the reported concentration; the quantitation is an estimate.

S - Analyte result is subject to spectral interference. Unless otherwise qualified, the data is believed to be consistent with the background study results and may be used for its intended purpose.

U - Not considered detected. The associated number is the reported concentration.

UJ - Not considered detected. The associated number is the reported concentration, which may be inaccurate.

Table A.3
Parent and Field Duplicate Results Summary
Deep Borehole

Sample Location	Parent Sample					Field Duplicate Sample				
	Sample ID	Analyte Name	Activity	MDC	TPU	Sample ID	Analyte Name	Activity	MDC	TPU
6-00326	60550	Ac-227	-0.000767 U	0.133	0.0398	60551	Ac-227	0.068 J	0.131	0.0425
6-00326	60550	Ac-228	0.813	0.0694	0.0406	60551	Ac-228	0.838	0.0798	0.0427
6-00326	60550	Am-241	-0.00556 U	0.0338	0.00702	60551	Am-241	0.00679	0.0132	0.00441
6-00326	60550	Bi-212	0.52	0.088	0.051	60551	Bi-212	0.611 J	0.158	0.158
6-00326	60550	Bi-214	0.393	0.0202	0.0218	60551	Bi-214	0.386	0.0231	0.0237
6-00326	60550	C-14	0.147 U	0.858	0.258	60551	C-14	0.258 U	0.887	0.268
6-00326	60550	Cd-113m	0.416 U	87.5	27	60551	Cd-113m	12.5 U	84.8	26
6-00326	60550	Cm-243/244	0.00338 U	0.0357	0.00911	60551	Cm-243/244	-0.00407 U	0.0378	0.00935
6-00326	60550	Co-60	-0.00155 U	0.0125	0.00366	60551	Co-60	0.00462 U	0.0163	0.00472
6-00326	60550	Cs-134	-0.00304 U	0.01	0.00349	60551	Cs-134	-0.00236 U	0.0112	0.00396
6-00326	60550	Cs-137	0.00109 U	0.0122	0.00356	60551	Cs-137	-0.00602 U	0.0145	0.00445
6-00326	60550	Eu-152	-0.0263 UJ	0.0305	0.0117	60551	Eu-152	-0.0196 U	0.031	0.011
6-00326	60550	Eu-154	-0.00894 U	0.0713	0.0216	60551	Eu-154	-0.0269 U	0.0847	0.0265
6-00326	60550	Eu-155	0.0177 U	0.0482	0.0146	60551	Eu-155	0.0353 JS	0.0403	0.0142
6-00326	60550	H-3	0.382 U	6.43	1.81	60551	H-3	1.42 U	5.97	1.74
6-00326	60550	Ho-166m	-0.00927 U	0.018	0.00585	60551	Ho-166m	-0.00532 U	0.0219	0.00654
6-00326	60550	K-40	19.7	0.0786	1.14	60551	K-40	19.6	0.0926	1.07
6-00326	60550	Na-22	0.00327 U	0.0156	0.00451	60551	Na-22	-0.00692 U	0.0177	0.00551

Table A.3
Parent and Field Duplicate Results Summary
Deep Borehole

Sample Location	Parent Sample					Field Duplicate Sample				
	Sample ID	Analyte Name	Activity	MDC	TPU	Sample ID	Analyte Name	Activity	MDC	TPU
6-00326	60550	Nb-94	-0.00505 U	0.0104	0.00336	60551	Nb-94	0.00142 U	0.0123	0.00354
6-00326	60550	Ni-63	0.54 U	1.16	0.356	60551	Ni-63	0.611	1.01	0.314
6-00326	60550	Np-236	-0.0231 UJ	0.0255	0.00938	60551	Np-236	-0.0157 UJ	0.0212	0.00731
6-00326	60550	Np-239	-0.0206 U	0.0888	0.0271	60551	Np-239	0.00566 U	0.0846	0.0257
6-00326	60550	Pa-231	-0.0893 U	0.551	0.173	60551	Pa-231	0.281 J	0.547	0.185
6-00326	60550	Pb-212	0.882	0.0223	0.0567	60551	Pb-212	0.866	0.0212	0.0493
6-00326	60550	Pb-214	0.391	0.0231	0.0228	60551	Pb-214	0.422	0.0236	0.0238
6-00326	60550	Pu-238	-0.00695 U	0.0242	0.00423	60551	Pu-238	-0.00756 U	0.0308	0.0059
6-00326	60550	Pu-239/240	-0.00453 U	0.0242	0.00423	60551	Pu-239/240	0.00418 U	0.029	0.00751
6-00326	60550	Pu-244	0.00135 U	0.019	0.0042	60551	Pu-244	0.00636 U	0.0196	0.00559
6-00326	60550	Sb-125	-0.00449 U	0.0297	0.00913	60551	Sb-125	0.0105 U	0.0318	0.00948
6-00326	60550	Sn-126	-0.00371 U	0.0123	0.00376	60551	Sn-126	0.00151 U	0.0145	0.00416
6-00326	60550	Sr-90	-0.0697 U	0.248	0.0641	60551	Sr-90	0.523	0.365	0.134
6-00326	60550	Tc-99	0.24 U	1.15	0.346	60551	Tc-99	0.0784 U	1.06	0.314
6-00326	60550	Th-228	0.958 L	0.0968	0.0945	60551	Th-228	1.01 L	0.0505	0.0977
6-00326	60550	Th-229	0.0127 UL	0.0954	0.0254	60551	Th-229	0.0203 UL	0.0627	0.0179
6-00326	60550	Th-230	0.317 L	0.11	0.0552	60551	Th-230	0.451 L	0.0884	0.0632
6-00326	60550	Th-232	0.783 L	0.0465	0.0804	60551	Th-232	0.894 L	0.0495	0.0896

Table A.3
Parent and Field Duplicate Results Summary
Deep Borehole

Sample Location	Parent Sample					Field Duplicate Sample				
	Sample ID	Analyte Name	Activity	MDC	TPU	Sample ID	Analyte Name	Activity	MDC	TPU
6-00326	60550	Tl-208	0.283	0.0112	0.017	60551	Tl-208	0.295	0.0128	0.0184
6-00326	60550	Tm-171	-1.39 U	7.82	2.75	60551	Tm-171	-0.22 U	4.4	1.5
6-00326	60550	U-233/234	0.288	0.0833	0.0504	60551	U-233/234	0.323	0.0501	0.0487
6-00326	60550	U-235/236	0.00632 U	0.0681	0.0161	60551	U-235/236	0.0274	0.0186	0.0138
6-00326	60550	U-238	0.343	0.0663	0.0534	60551	U-238	0.461	0.0353	0.0595

Notes:

Refer to Table 2.1 of the Final Field Sampling Plan for Soil Sampling (HGL, 2012a) for a definition of radionuclide symbols.

Reporting units in picocuries per gram.

ID - identification

MDC - minimum detectable concentration

TPU - total propagated uncertainty

J - The analyte was detected at the reported concentration; the quantitation is an estimate.

L - Isotope present. Reported value may be biased low. Actual value is expected to be higher.

U - Not considered detected. The associated number is the reported concentration.

U J - Not considered detected. The associated number is the reported concentration, which may be inaccurate.

UL - Not considered detected. The associated number is the reported concentration,which may be inaccurate due to a low bias.

Table A.4
Rinsate and Source Comparison Summary
Deep Borehole

Sample Type	Sample ID	U-233/U-234			U-235/U-236			U-238		
		Activity	MDC	TPU	Activity	MDC	TPU	Activity	MDC	TPU
Rinsate	R0371	-0.0482 U	0.207	0.0496	0.0127 J	0.0344	0.0127	-0.0205 U	0.0954	0.0178
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0369	0.0303 U	0.169	0.046	-0.0157 U	0.123	0.0217	0.00613 U	0.0864	0.0191
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0367	0.0672 J	0.132	0.0415	-0.00578 U	0.104	0.0188	-0.0247 U	0.124	0.0241
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0365	-0.0382 U	0.135	0.0272	0.0117 J	0.0316	0.0117	0.00264 U	0.0601	0.0116
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0363	-0.0104 U	0.0756	0.0134	-0.00743 U	0.0658	0.0127	0.0107 U	0.0532	0.0133
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0361	-0.0048 U	0.0621	0.0119	-0.0122 U	0.0669	0.0121	-0.00494 U	0.0437	0.00846
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0359	-0.0167 U	0.0616	0.0108	0.0173 J	0.0484	0.0143	0.0246 J	0.0167	0.0124
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0357	-0.00115 U	0.0501	0.00964	0.00786 J	0.0213	0.00787	0.00813 U	0.0405	0.0101
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813

Notes:

Refer to Table 2.1 of the Final Field Sampling Plan for Soil Sampling (HGL, 2012a) for a definition of radionuclide symbols.

Reporting units in picocuries per liter.

ID - identification

MDC - minimum detectable concentration

TPU - total propagated uncertainty

J - The analyte was detected at the reported concentration; the quantitation is an estimate.

U - Not considered detected. The associated number is the reported concentration.

ATTACHMENT 2

Boring Logs

The boring logs are provided in a separate pdf on SharePoint due to size restrictions.

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