
TECHNICAL MEMORANDUM
SUBAREA 5B, ROUND 2, SOIL SAMPLE RESULTS
SANTA SUSANA FIELD LABORATORY SITE
AREA IV RADIOLOGICAL STUDY

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SUBJECT: Subarea 5B, Round 2 Soil Sample Results

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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. Analytical results from the Round 1 sampling activities were reviewed in conjunction with the aforementioned lines of evidence, and sample locations were identified for further investigation during the Round 2 soil sampling effort. This technical memorandum documents the soil sampling activities, analytical results, and conclusions of the Round 2 soil sampling. The primary objective of the Round 2 soil sampling effort was to further investigate potential radionuclide contamination by laterally and vertically delineating radionuclide concentrations that exceeded project established Radiological Trigger Levels (RTL) detected during the Round 1 sampling activities. This objective was achieved through the collection and analysis of step-out surface and subsurface soil sample locations, as described in Section 4.2 of the Final Field Sampling Plan (FSP) for Soil Sampling (HGL, 2012a). If an exceedance was isolated, a step-out location was placed approximately 15 feet north, south, east, and west of the Round 1 exceedance location. If there were multiple Round 1 exceedances grouped together, step-out sampling locations were targeted around the exceedances to best characterize the lateral and vertical extent of potential radionuclide impacted soils.

The approach for Round 2 soil sampling was to identify potential sample locations from the lines of evidence listed above, prepare a Round 2 FSP Addendum for the subarea, present the FSP to USEPA’s SSFL Technical Stakeholder Workgroup, and review and finalize proposed locations with the Workgroup.

2.0 SOIL SAMPLING ACTIVITIES

2.1 Soil Sample Location Placement and Utility Clearance

A total of 20 surface and 20 subsurface samples were proposed based on Round 1 sample exceedances detected at 15 locations: Former Building 4010 Area (three locations) and 17th Street Drainage (12 locations). The rationale for soil step-out sample locations is detailed in the Subarea 5B Round 2 Addendum to the Final FSP for Soil Sampling (HGL, 2012b). Table 1 summarizes the proposed samples and the samples actually collected. Figure 1 illustrates soil sample locations and exceedances reported during the Round 1 and Round 2 sampling events within Subarea 5B. Deviations from the FSP for Soil Sampling are discussed in Section 2.3.

Table 1
Summary of Planned and Collected Step-out Samples by Area

Area	Surface		Subsurface		Total	
	Planned	Collected	Planned	Collected	Planned	Collected
Former Building 4010	6	9	6	9	12	18
17th Street Drainage	14	14	14	14	28	28
Total	20	23	20	23	40	46

The proposed sampling locations were discussed during a technical review meeting held on February 22, 2012, with members of USEPA’s SSFL Technical Stakeholder Workgroup consisting of representatives of the Department of Energy (DOE), the State of California Department of Toxic Substances Control (DTSC), The Boeing Company (Boeing), USEPA, and the community.

After the locations were finalized with the Stakeholder Workgroup, proposed sampling locations were marked in the field using a SPS 852 handheld Trimble global positioning system (GPS) and magnetic survey spikes. Before 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

Surface soil samples were collected using a stainless steel trowel or shovel. Subsurface samples were collected using a Geoprobe 6600 Series direct-push technology unit or a hand auger. Soil samples were collected in accordance with the procedures detailed in the Final FSP for Soil Sampling (HGL, 2012a), and the FSP Addendum for Subarea 5B (HGL, 2012b).

Soil cores were logged and the boring logs are provided in Attachment 2. A total of 46 surface and subsurface soil samples were collected from March 6 to June 25, 2012.

During the February 22, 2012, technical review meeting, recommendations and action items including those on the topic of Likely Chemical Remediation Zones (LCRZ), were discussed. Former Building 4010 and the 17th Street Drainage were identified as LCRZs. USEPA understands that soil may be excavated and removed from areas identified as LCRZs. Therefore, USEPA placed a reduced number of surface and subsurface samples around the perimeter of these zones to better define the potential extent of contamination. In accordance with USEPA’s role under the Administrative Order on Consent (AOC) for Remedial Action (DTSC, 2010) between DTSC and DOE for the SSFL site, USEPA will conduct confirmation soil sampling to verify that site remediation goals have been achieved at all such remediation zones. These follow-on efforts are not included in the current scope of work and will be accomplished using additional external funding.

2.3 Deviations from the Field Sampling Plan Addendum

Three step-out locations (six samples) were added due to a RTL exceedance of cesium (Cs)-137 at Location 5B-00289 within the Former Building 4010 Area. The exceedance was identified after the FSP Addendum for Subarea 5B (HGL, 2012b) was finalized. Table 2 summarizes the additional step-out locations where samples were collected.

Table 2
Summary of Additional Step-out Locations Sampled

Sample Location	Sample Identification	Sample Type	Sample Depth
5B-00364	20761	Surface	0.0 – 0.5
5B-00364	20762	Subsurface	1.0 – 5.0
5B-00365	20763	Surface	0.0 – 0.5
5B-00365	20764	Subsurface	1.0 – 4.0
5B-00366	20765	Surface	0.3 – 0.8
5B-00366	20766	Subsurface	1.0 – 5.0

Note:
Sample depth measured in feet below ground surface.

2.4 Soil Boring Summary

Twenty-three subsurface soil samples were collected from 23 subsurface borings. One boring was advanced to 10 feet below ground surface (bgs), 14 borings terminated between 5 and 10 feet bgs, and eight borings were completed at a depth less than 5.0 feet bgs. Boreholes were terminated at a depth less than 10 feet bgs due to refusal at bedrock.

Soil samples were classified and described in accordance with the Final FSP for Soil Sampling (HGL, 2012a). The most common soil types observed were sand, silty sand, silt, and silty

clay. Fill material was encountered in all or a portion of 10 borings. The fill material consisted of soils that exhibited a mottled texture and frequently contained material such as concrete, asphalt or glass. Native soil was encountered below the fill material in each of the 10 borings. Thirteen borings consisted solely of native soil. A summary of the Boring Log information is presented in Table A.1 and the boring logs are provided in Attachment 2.

3.0 ROUND 2 SOIL ANALYTICAL RESULTS

Soil samples were analyzed in accordance with the Final Quality Assurance Project Plan (QAPP) for Soil Sampling (HGL, 2012c). Six analytes were removed from the gamma spectrometry method after Round 1 sampling was complete and were not analyzed in Round 2 samples for the following reasons:

- silver (Ag)-108 is derived from Ag-108m,
- barium (Ba)-133, could not be resolved in the presence of naturally occurring radionuclides,
- Ba-137m is directly derived from Cs-137,
- tellurium (Te)-125m is derived from antimony (Sb)-125 (and is therefore duplicative),
- radon (Rn)-220, and Rn-222 were calculated from other radionuclides.

For a discussion of how the Round 2 analyte list was developed, see Section 2.2 of the Final FSP for Soil Sampling (HGL, 2012a).

Surface and subsurface soil sample Locations 5B-00344, 5B-00345, and 5B-00346 were analyzed for strontium (Sr)-90 based on the Sr-90 exceedance reported at Location 5B-00316 (surface sample) during the Round 1 soil sampling event.

Surface and subsurface soil sample Locations 5B-00347, 5B-00348, 5B-00364, 5B-00365, and 5B-00366 were analyzed for gamma spectrometry default analytical suites based on the europium (Eu)-152 and Cs-137 exceedances reported at Locations 5B-00289 and 5B-00332 (surface samples) respectively, during the Round 1 soil sampling event.

Surface and subsurface soil sample Locations 5B-00350 through 5B-00363 were analyzed for gamma spectrometry default analytical suites based on Cs-137 exceedances reported at Locations 5B-00211, 5B-00212, 5B-00214, 5B-00217 through 5B-00225 (surface/drainage samples) during the Round 1 soil sampling event.

All samples were collected and analyzed in accordance with the rationale presented in Table 2.3 of the Final FSP for Soil Sampling (HGL, 2012a).

Round 2 soil sampling locations were determined based on RTL exceedances detected in Round 1 soil samples. The Round 2 samples were tested for those analytes that were detected above the RTL in Round 1 samples.

Radiological trigger levels are reference soil concentrations for the radionuclides of concern for the SSFL Area IV Radiological Study. They were designed for screening analytical results of site soil and sediment collected during Round 1 sampling to inform decisions for Round 2 sampling (also called step-out sampling). Individual Round 1 analytical results were compared to RTLs and if results exceed an RTL step-out sampling was conducted. The primary purpose of the RTLs were to guide the placement of Round 2 sampling locations and will not be used to screen Round 2 sample results.

The Round 2 analytical results are documented in this technical memorandum; however, the analytical results have not been screened using the RTLs. The Subarea 5B Round 2 analytical results will be evaluated, along with Round 1 results, using Field Action Level (FAL) established specifically for the SSFL Area IV Radiological Study. The results of the evaluation will be presented in the Radiological Characterization of Soils in Area IV and NBZ report.

Figure 1 presents the locations of the soil samples collected during the Round 1 and Round 2 sampling events. A summary of the Round 2 analytical results is provided in Table A.2.

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). A total of three field duplicate samples were collected during the Round 2 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 Z-score (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:

- X_s = activity of the sample
- X_d = 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. By extension, 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 data manager, and recorded in the project database as of August 28, 2012. Subsequent modifications to the approved data or the project database may not be reflected in this assessment.

Round 2 field duplicate sample data includes 118 individual radionuclide results from 59 sample/duplicate pairs. Those original reported results included analytes which were not evaluated for any of the following reasons: several radionuclides were removed from consideration (and do not have RTLs), results were rejected by data validation, and analytes that are simply inferred from previously reported results, such as yttrium-90, which is inferred from the reported Sr-90 results, are redundant.

The Z_{DUP} evaluation of the remaining 50 qualified pairs follows:

- 46 Z_{DUP} evaluation results (92.0 percent) were within the expected 95 percent confidence interval for this evaluation, with Z_{DUP} less than 1.96;
- Four Z_{DUP} evaluation results (8.0 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 Z_{DUP} values 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 two 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 (approximately one Z_{DUP} evaluation result in this Z_{DUP} set) is expected to exceed a Z_{DUP} score of 2.58.

In a small dataset such as this, the occurrence of four Z_{DUP} results in the warning range is not unexpected. While the frequency may reflect a small underestimate in the laboratory’s reported uncertainty, the individual results have been reviewed and do not appear to indicate a significant data quality issue. 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, 2012a) and the QAPP (HGL, 2012c). A total of 15 rinsate and two source water samples were collected during the Round 2 sampling

event. Each sample was tested for isotopic uranium, as a surrogate indicator of cross-contamination. Any results that were rejected for laboratory quality reasons would have been removed from consideration, as in the evaluation of field duplicate samples. In this dataset, however, no sample results were rejected. Tritium analyses were not performed on the field samples in this subarea. Therefore, tritium results for the rinsate and source water samples were not evaluated or included in this report.

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

Round 2 rinsate and source water samples include 90 individual Total activity results, from which 45 data pairs were evaluated by Z-score duplicate comparison. The Z_{DUP} scores are summarized below.

- 43 Z_{DUP} evaluation results (95.6 percent) were within the expected 95 percent confidence interval for this evaluation, with Z_{DUP} less than 1.96;
- One Z_{DUP} evaluation result (2.2 percent) was 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 (2.2 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 (two Z_{DUP} evaluation results) will be in the range between 1.96 and 2.58 and approximately one percent of the reported results (less than one Z_{DUP} evaluation result) will exceed 2.58. The single exceedance in this case includes a rinsate sample with an activity concentration less than the associated MDC. In a small sample set such as this one, the single exceedance, with a Z_{DUP} score of 2.69, and the single warning approximate the expected frequency.

The evaluation of equipment blank results indicates that the decontamination of the field sampling equipment is acceptable and 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 CONCLUSIONS

The Round 2 analytical results are documented in this technical memorandum; however, the analytical results have not been screened using the RTLs. Radiological trigger levels were reference soil concentrations designed to be used as a decision making tool to guide the placement of Round 2 step-out sampling locations. No additional step-out sampling will be conducted as part of the EPA's SSFL Area IV Study; therefore, there is no technical reason to compare the data to RTLs.

The Subarea 5B Round 1 and Round 2 analytical results will be evaluated using FALs established specifically for the SSFL Area IV Radiological Study. The results of the evaluation will be presented in the Radiological Characterization of Soils in Area IV and NBZ report.

6.0 REFERENCES

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

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

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

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

HydroGeoLogic, Inc., 2012b. Subarea 5B Round 2 Addendum to the Final Field Sampling Plan for Soil Sampling, Area IV Radiological Study, Santa Susana Field Laboratory, Ventura County, California. March.

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

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FIGURE

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Figure 1 Subarea 5B Sample Locations Round 1 and Round 2 Santa Susana Field Laboratory

U.S. EPA Region 9



Legend

Soil Sample Locations

- Round 1 - Drainage
- ▲ Round 1 - Surface Subsurface
- ▲ Round 1 - Subsurface
- ▲ Round 2 - Surface Subsurface

Likely Remediation Zones

Chemical (as of 5/2012)

Subareas

Structures

Existing

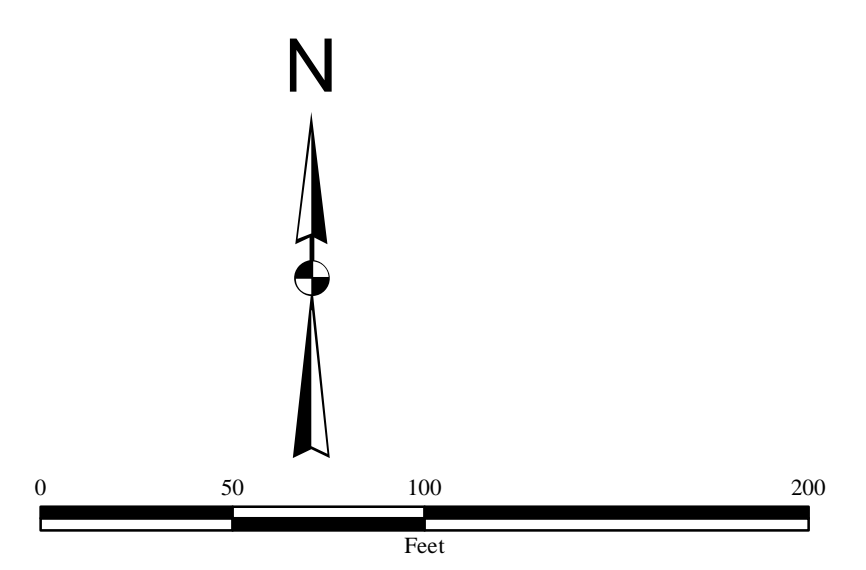
Removed

Roads

Approximate Drainage Pathways

20-foot elevation contours

Note:
SNAP - Systems for Auxiliary Nuclear Power



ATTACHMENT 1

Tables

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Table A.1
Boring Log Summary
Subarea 5B, Round 2

Sample Location	Surface Collection Interval (ft bgs)	Subsurface Collection Interval (ft bgs)	Soil Description	Total Depth (ft bgs)	Refusal Depth (ft bgs)	Notes/Comments	Northing ¹	Easting ¹
5B-00344	0.0-0.5	1-5	SM/SP	5.25	5.25	Fill to 5.1 ft, refusal at bedrock.	1,907,997.44	6,346,388.88
5B-00345	0.0-0.5	1-5	SM/SP	8.00	8.00	Fill to 6.5 ft, refusal at bedrock.	1,907,987.60	6,346,381.65
5B-00346	0.0-0.5	1-4.5	SM/SP	4.50	4.50	Fill to 3.5 ft, refusal at bedrock.	1,907,976.17	6,346,385.85
5B-00347	0.25-0.5	1-5	SM/CL/SP	9.00	9.00	Fill to 3.0 ft, refusal at bedrock.	1,908,030.31	6,346,440.95
5B-00348	0.16-0.5	1-5	SM/SP	6.50	6.50	Fill to 2.0 ft, refusal at bedrock.	1,908,029.95	6,346,449.61
5B-00349	0.16-0.5	1-2.67	SM/ML/SP	2.67	2.67	Refusal at bedrock.	1,908,019.54	6,346,445.86
5B-00350	0.0-0.5	1-5	SM/CL/SP	6.75	6.75	Fill to 1.0 ft, refusal at bedrock.	1,907,244.36	6,347,159.07
5B-00351	0.0-0.5	1-5	SM/ML/CL/SP	10.00	NA	Fill to 1.0 ft.	1,907,318.33	6,347,258.33
5B-00352	0.0-0.5	1-5	SM/ML/SP	5.67	5.67	Refusal at bedrock.	1,907,258.27	6,347,276.65
5B-00353	0.0-0.5	1-5	SM/ML/SP	7.00	7.00	Refusal at bedrock.	1,907,212.78	6,347,174.52
5B-00354	0.0-0.5	1-4	SM/SP	4.00	4.00	Refusal at bedrock.	1,907,228.36	6,347,295.48
5B-00355	0.0-0.5	1-3.5	SM/SP	3.50	3.50	Refusal at bedrock.	1,907,199.85	6,347,322.03
5B-00356	0.0-0.5	1-4.5	SM/ML/SP	4.50	4.50	Refusal at bedrock.	1,907,174.25	6,347,348.40
5B-00357	0.0-0.5	1-5	SC/SP	5.75	5.75	Refusal at bedrock.	1,907,210.17	6,347,371.48
5B-00358	0.0-0.5	1-5	ML/SM	5.17	5.17	Refusal at bedrock.	1,907,173.20	6,347,479.18
5B-00359	0.0-0.5	1-5	ML/SM	6.25	6.25	Refusal at bedrock.	1,907,137.47	6,347,462.76
5B-00360	0.0-0.5	1-3.9	ML/SM	3.90	3.90	Refusal at bedrock.	1,907,110.15	6,347,457.73
5B-00361	0.0-0.5	1-5	ML/SM	6.00	6.00	Refusal at bedrock.	1,907,090.49	6,347,476.68

Table A.1
Boring Log Summary
Subarea 5B, Round 2

Sample Location	Surface Collection Interval (ft bgs)	Subsurface Collection Interval (ft bgs)	Soil Description	Total Depth (ft bgs)	Refusal Depth (ft bgs)	Notes/Comments	Northing ¹	Easting ¹
5B-00362	0.0-0.5	1-5	SM/SP/SC	6.50	6.50	Refusal at bedrock.	1,907,022.98	6,347,425.42
5B-00363	0.0-0.5	1-4.5	ML/CL/SP	4.50	4.50	Fill to 2.0 ft, refusal at bedrock.	1,906,919.09	6,347,182.72
5B-00364	0.0-0.5	1-5	SM/ML/SP	5.00	5.00	Fill to 0.5 ft, refusal at bedrock.	1,907,932.60	6,346,508.37
5B-00365	0.3-0.8	1-4	SP/ML/SM/SP	4.00	4.00	Fill to 1.0 ft, refusal at bedrock.	1,907,898.34	6,346,498.96
5B-00366	0.3-0.8	1-5	ML/SM/SP	5.00	5.00	Refusal at bedrock.	1,907,892.90	6,346,521.64

Notes:

¹Northing and easting measured using NAD83 SPZ5 US Feet

bgs - below ground surface

CL - clay

ft - feet

ML - silt

NA - not applicable

SC - clayey sand

SM - silty sand

SP - poorly graded sand

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00344	20718	Sr-90	-0.0609 U	0.213	0.0516	0.00 - 0.50
5B-00344	20719	Sr-90	-0.038 U	0.188	0.0452	1.00 - 5.00
5B-00345	20720	Sr-90	0.104 U	0.208	0.0645	0.00 - 0.50
5B-00345	20721	Sr-90	-0.142 U	0.293	0.0725	1.00 - 5.00
5B-00346	20722	Sr-90	0.0033 U	0.293	0.0818	0.00 - 0.50
5B-00346	20723	Sr-90	0.146	0.19	0.0636	1.00 - 4.50
5B-00347	20724	Ac-227	-0.0177 U	0.15	0.0464	0.25 - 0.50
5B-00347	20724	Bi-212	0.753 J	0.116	0.0807	0.25 - 0.50
5B-00347	20724	Bi-214	0.694	0.0267	0.0352	0.25 - 0.50
5B-00347	20724	Cd-113m	14.5 U	97.9	30	0.25 - 0.50
5B-00347	20724	Co-60	-0.0083 U	0.016	0.0052	0.25 - 0.50
5B-00347	20724	Cs-134	0.0017 U	0.0128	0.0044	0.25 - 0.50
5B-00347	20724	Cs-137	0.0731	0.0162	0.0098	0.25 - 0.50
5B-00347	20724	Eu-152	0.0566 Z	0.0414	0.0219	0.25 - 0.50
5B-00347	20724	Eu-154	0.0198 U	0.0974	0.0289	0.25 - 0.50
5B-00347	20724	Eu-155	0.0527 JS	0.0466	0.0181	0.25 - 0.50
5B-00347	20724	Ho-166m	-0.0021 U	0.025	0.0073	0.25 - 0.50
5B-00347	20724	K-40	21.1	0.115	1.14	0.25 - 0.50
5B-00347	20724	Na-22	-0.0116 U	0.0195	0.0065	0.25 - 0.50
5B-00347	20724	Nb-94	0.0041 U	0.0141	0.0041	0.25 - 0.50
5B-00347	20724	Np-236	-0.0071 U	0.0253	0.0076	0.25 - 0.50
5B-00347	20724	Np-239	0.0305 U	0.1	0.031	0.25 - 0.50
5B-00347	20724	Pa-231	0.21 U	0.639	0.2	0.25 - 0.50
5B-00347	20724	Pb-212	1.04	0.0247	0.058	0.25 - 0.50
5B-00347	20724	Pb-214	0.692	0.026	0.0353	0.25 - 0.50
5B-00347	20724	Sb-125	0.0085 U	0.037	0.011	0.25 - 0.50
5B-00347	20724	Sn-126	0.0009 U	0.0162	0.0047	0.25 - 0.50
5B-00347	20724	Th-234	0.855 J	0.182	0.0999	0.25 - 0.50
5B-00347	20724	Tl-208	0.35	0.0145	0.0217	0.25 - 0.50
5B-00347	20724	Tm-171	3.6 J	5.3	1.96	0.25 - 0.50
5B-00347	20725	Ac-227	0.0521 U	0.218	0.0679	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00347	20725	Bi-212	0.81 J	0.14	0.0868	1.00 - 5.00
5B-00347	20725	Bi-214	0.922	0.0334	0.0457	1.00 - 5.00
5B-00347	20725	Cd-113m	-8.68 U	144	46.3	1.00 - 5.00
5B-00347	20725	Co-60	0.0035 U	0.0212	0.0062	1.00 - 5.00
5B-00347	20725	Cs-134	0 U	0.0163	0.0055	1.00 - 5.00
5B-00347	20725	Cs-137	-0.0069 U	0.0189	0.0058	1.00 - 5.00
5B-00347	20725	Eu-152	-0.0021 U	0.0536	0.0194	1.00 - 5.00
5B-00347	20725	Eu-154	-0.0175 U	0.114	0.0346	1.00 - 5.00
5B-00347	20725	Eu-155	0.122 JS	0.0769	0.0335	1.00 - 5.00
5B-00347	20725	Ho-166m	-0.0029 U	0.0296	0.0087	1.00 - 5.00
5B-00347	20725	K-40	23.5	0.14	1.46	1.00 - 5.00
5B-00347	20725	Na-22	-0.0201 UJ	0.023	0.0086	1.00 - 5.00
5B-00347	20725	Nb-94	0.0119 JS	0.0179	0.0058	1.00 - 5.00
5B-00347	20725	Np-236	-0.001 U	0.0433	0.0147	1.00 - 5.00
5B-00347	20725	Np-239	0.0038 U	0.146	0.0449	1.00 - 5.00
5B-00347	20725	Pa-231	-0.197 U	0.917	0.301	1.00 - 5.00
5B-00347	20725	Pb-212	1.34	0.0359	0.0888	1.00 - 5.00
5B-00347	20725	Pb-214	1.02	0.0382	0.0528	1.00 - 5.00
5B-00347	20725	Sb-125	0.0068 U	0.0495	0.0148	1.00 - 5.00
5B-00347	20725	Sn-126	-0.0012 U	0.0189	0.0056	1.00 - 5.00
5B-00347	20725	Th-234	1.55 J	0.363	0.187	1.00 - 5.00
5B-00347	20725	Tl-208	0.399	0.018	0.0237	1.00 - 5.00
5B-00347	20725	Tm-171	-13.6 U	19.9	7.45	1.00 - 5.00
5B-00348	20726	Ac-227	-0.0379 U	0.172	0.0514	0.16 - 0.50
5B-00348	20726	Bi-212	0.832	0.115	0.0743	0.16 - 0.50
5B-00348	20726	Bi-214	0.803	0.0264	0.0389	0.16 - 0.50
5B-00348	20726	Cd-113m	-71.9 U	111	37.3	0.16 - 0.50
5B-00348	20726	Co-60	0.0087 J	0.0174	0.0052	0.16 - 0.50
5B-00348	20726	Cs-134	0.0049 U	0.0129	0.0045	0.16 - 0.50
5B-00348	20726	Cs-137	0.254	0.0165	0.0161	0.16 - 0.50
5B-00348	20726	Eu-152	-0.0006 U	0.0418	0.0128	0.16 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00348	20726	Eu-154	-0.0173 U	0.0898	0.0272	0.16 - 0.50
5B-00348	20726	Eu-155	0.074 JS	0.0606	0.0251	0.16 - 0.50
5B-00348	20726	Ho-166m	-0.0062 U	0.0237	0.0071	0.16 - 0.50
5B-00348	20726	K-40	25.2	0.12	1.42	0.16 - 0.50
5B-00348	20726	Na-22	0.0047 U	0.0201	0.0062	0.16 - 0.50
5B-00348	20726	Nb-94	0.003 U	0.0134	0.0039	0.16 - 0.50
5B-00348	20726	Np-236	-0.009 U	0.032	0.0101	0.16 - 0.50
5B-00348	20726	Np-239	-0.0701 U	0.113	0.0376	0.16 - 0.50
5B-00348	20726	Pa-231	0.385 J	0.728	0.235	0.16 - 0.50
5B-00348	20726	Pb-212	1.25	0.0275	0.0755	0.16 - 0.50
5B-00348	20726	Pb-214	0.914	0.0305	0.0451	0.16 - 0.50
5B-00348	20726	Sb-125	-0.0008 U	0.0391	0.0117	0.16 - 0.50
5B-00348	20726	Sn-126	0.0093 J	0.0154	0.0048	0.16 - 0.50
5B-00348	20726	Th-234	1.47 J	0.247	0.148	0.16 - 0.50
5B-00348	20726	Tl-208	0.369	0.015	0.0217	0.16 - 0.50
5B-00348	20726	Tm-171	3.47 U	9.27	3.19	0.16 - 0.50
5B-00348	20727	Ac-227	-0.0096 U	0.182	0.0532	1.00 - 5.00
5B-00348	20727	Bi-212	0.899	0.123	0.0741	1.00 - 5.00
5B-00348	20727	Bi-214	0.967	0.0271	0.0462	1.00 - 5.00
5B-00348	20727	Cd-113m	24.8 U	123	36	1.00 - 5.00
5B-00348	20727	Co-60	0.0016 U	0.0181	0.0054	1.00 - 5.00
5B-00348	20727	Cs-134	-0.001 U	0.0133	0.0046	1.00 - 5.00
5B-00348	20727	Cs-137	0.0096 J	0.0179	0.0064	1.00 - 5.00
5B-00348	20727	Eu-152	-0.0126 U	0.0446	0.0136	1.00 - 5.00
5B-00348	20727	Eu-154	-0.0254 U	0.0936	0.0286	1.00 - 5.00
5B-00348	20727	Eu-155	0.0591 JS	0.0654	0.0239	1.00 - 5.00
5B-00348	20727	Ho-166m	-0.0147 U	0.0243	0.008	1.00 - 5.00
5B-00348	20727	K-40	25.2	0.123	1.41	1.00 - 5.00
5B-00348	20727	Na-22	-0.0029 U	0.0195	0.0063	1.00 - 5.00
5B-00348	20727	Nb-94	0.0002 U	0.0152	0.0044	1.00 - 5.00
5B-00348	20727	Np-236	-0.001 U	0.0346	0.0105	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00348	20727	Np-239	0.0213 U	0.125	0.0365	1.00 - 5.00
5B-00348	20727	Pa-231	0.028 U	0.749	0.226	1.00 - 5.00
5B-00348	20727	Pb-212	1.37	0.0304	0.0808	1.00 - 5.00
5B-00348	20727	Pb-214	1.04	0.033	0.0492	1.00 - 5.00
5B-00348	20727	Sb-125	0.0109 U	0.0407	0.0122	1.00 - 5.00
5B-00348	20727	Sn-126	0.0025 U	0.0173	0.005	1.00 - 5.00
5B-00348	20727	Th-234	1.31 J	0.274	0.138	1.00 - 5.00
5B-00348	20727	Tl-208	0.397	0.0154	0.0232	1.00 - 5.00
5B-00348	20727	Tm-171	-7.52 U	11.4	4.26	1.00 - 5.00
5B-00349	20728	Ac-227	-0.0459 U	0.204	0.0634	0.16 - 0.50
5B-00349	20728	Bi-212	0.818	0.122	0.0728	0.16 - 0.50
5B-00349	20728	Bi-214	0.811	0.0304	0.0397	0.16 - 0.50
5B-00349	20728	Cd-113m	19.5 U	138	45.7	0.16 - 0.50
5B-00349	20728	Co-60	-0.004 U	0.0177	0.0054	0.16 - 0.50
5B-00349	20728	Cs-134	-0.0032 U	0.0149	0.0053	0.16 - 0.50
5B-00349	20728	Cs-137	0.0597	0.0169	0.0075	0.16 - 0.50
5B-00349	20728	Eu-152	-0.0011 U	0.0521	0.0161	0.16 - 0.50
5B-00349	20728	Eu-154	-0.063 U	0.102	0.0343	0.16 - 0.50
5B-00349	20728	Eu-155	0.0723 JS	0.0752	0.0278	0.16 - 0.50
5B-00349	20728	Ho-166m	-0.0055 U	0.0264	0.0081	0.16 - 0.50
5B-00349	20728	K-40	26.9	0.145	1.63	0.16 - 0.50
5B-00349	20728	Na-22	-0.0209 UJ	0.02	0.0081	0.16 - 0.50
5B-00349	20728	Nb-94	0.0064 U	0.0162	0.005	0.16 - 0.50
5B-00349	20728	Np-236	-0.0029 U	0.0394	0.0117	0.16 - 0.50
5B-00349	20728	Np-239	0.039 U	0.142	0.0438	0.16 - 0.50
5B-00349	20728	Pa-231	-0.667 UJ	0.829	0.305	0.16 - 0.50
5B-00349	20728	Pb-212	1.36	0.035	0.0837	0.16 - 0.50
5B-00349	20728	Pb-214	0.918	0.0366	0.0453	0.16 - 0.50
5B-00349	20728	Sb-125	-0.0154 U	0.0457	0.0141	0.16 - 0.50
5B-00349	20728	Sn-126	0.0026 U	0.0177	0.0053	0.16 - 0.50
5B-00349	20728	Th-234	1.79 J	0.385	0.461	0.16 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00349	20728	Tl-208	0.4	0.0159	0.0234	0.16 - 0.50
5B-00349	20728	Tm-171	-8.51 U	14.7	4.79	0.16 - 0.50
5B-00349	20729	Ac-227	0.0035 U	0.172	0.0521	1.00 - 2.67
5B-00349	20729	Bi-212	0.819	0.113	0.0685	1.00 - 2.67
5B-00349	20729	Bi-214	0.728	0.0273	0.0364	1.00 - 2.67
5B-00349	20729	Cd-113m	23.3 U	115	36.4	1.00 - 2.67
5B-00349	20729	Co-60	0.0004 U	0.0164	0.0048	1.00 - 2.67
5B-00349	20729	Cs-134	0.007 JS	0.0134	0.0047	1.00 - 2.67
5B-00349	20729	Cs-137	-0.0032 U	0.0149	0.0053	1.00 - 2.67
5B-00349	20729	Eu-152	-0.0295 U	0.0406	0.0175	1.00 - 2.67
5B-00349	20729	Eu-154	-0.0465 U	0.0859	0.0282	1.00 - 2.67
5B-00349	20729	Eu-155	0.0644 JS	0.0617	0.0234	1.00 - 2.67
5B-00349	20729	Ho-166m	0.0064 U	0.0244	0.0074	1.00 - 2.67
5B-00349	20729	K-40	24.8	0.117	1.48	1.00 - 2.67
5B-00349	20729	Na-22	-0.0048 U	0.0185	0.0057	1.00 - 2.67
5B-00349	20729	Nb-94	0.0033 U	0.0137	0.0041	1.00 - 2.67
5B-00349	20729	Np-236	-0.0029 U	0.0325	0.0109	1.00 - 2.67
5B-00349	20729	Np-239	-0.0208 U	0.117	0.0357	1.00 - 2.67
5B-00349	20729	Pa-231	-0.278 U	0.705	0.235	1.00 - 2.67
5B-00349	20729	Pb-212	1.25	0.0284	0.0766	1.00 - 2.67
5B-00349	20729	Pb-214	0.815	0.0303	0.0417	1.00 - 2.67
5B-00349	20729	Sb-125	0.0127 U	0.0385	0.0115	1.00 - 2.67
5B-00349	20729	Sn-126	0.0052 U	0.0157	0.0048	1.00 - 2.67
5B-00349	20729	Th-234	1.05 J	0.246	0.116	1.00 - 2.67
5B-00349	20729	Tl-208	0.382	0.0147	0.0219	1.00 - 2.67
5B-00349	20729	Tm-171	-0.97 U	9.95	3.5	1.00 - 2.67
5B-00350	20730	Ac-227	0.129 J	0.205	0.0691	0.00 - 0.50
5B-00350	20730	Bi-212	0.663	0.13	0.0632	0.00 - 0.50
5B-00350	20730	Bi-214	0.822	0.0316	0.04	0.00 - 0.50
5B-00350	20730	Cd-113m	-61.1 U	132	45.4	0.00 - 0.50
5B-00350	20730	Co-60	0.0085 U	0.0196	0.0059	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00350	20730	Cs-134	0.0069 U	0.0155	0.0053	0.00 - 0.50
5B-00350	20730	Cs-137	0.0552	0.0177	0.0086	0.00 - 0.50
5B-00350	20730	Eu-152	0.0117 U	0.0467	0.0159	0.00 - 0.50
5B-00350	20730	Eu-154	-0.0057 UJ	0.104	0.0312	0.00 - 0.50
5B-00350	20730	Eu-155	0.0387 JS	0.0739	0.0235	0.00 - 0.50
5B-00350	20730	Ho-166m	0.0123 U	0.0272	0.0083	0.00 - 0.50
5B-00350	20730	K-40	20.7	0.128	1.29	0.00 - 0.50
5B-00350	20730	Na-22	-0.0047 U	0.0208	0.0074	0.00 - 0.50
5B-00350	20730	Nb-94	0.0075 JS	0.0153	0.0047	0.00 - 0.50
5B-00350	20730	Np-236	0.0028 U	0.0392	0.0116	0.00 - 0.50
5B-00350	20730	Np-239	-0.029 U	0.13	0.0408	0.00 - 0.50
5B-00350	20730	Pa-231	-0.235 U	0.827	0.265	0.00 - 0.50
5B-00350	20730	Pb-212	1.14	0.0315	0.0759	0.00 - 0.50
5B-00350	20730	Pb-214	0.858	0.0335	0.0458	0.00 - 0.50
5B-00350	20730	Sb-125	0.0084 U	0.0459	0.0137	0.00 - 0.50
5B-00350	20730	Sn-126	-0.0098 U	0.0161	0.0054	0.00 - 0.50
5B-00350	20730	Th-234	1.15 J	0.399	0.306	0.00 - 0.50
5B-00350	20730	Tl-208	0.331	0.0158	0.0199	0.00 - 0.50
5B-00350	20730	Tm-171	-11.9 U	18.4	6.15	0.00 - 0.50
5B-00350	20731	Ac-227	-0.0916 U	0.172	0.0568	1.00 - 5.00
5B-00350	20731	Bi-212	0.779	0.112	0.0715	1.00 - 5.00
5B-00350	20731	Bi-214	0.94	0.0264	0.0438	1.00 - 5.00
5B-00350	20731	Cd-113m	-63.7 U	111	38.1	1.00 - 5.00
5B-00350	20731	Co-60	0.0034 U	0.0155	0.0044	1.00 - 5.00
5B-00350	20731	Cs-134	0.0057 U	0.0128	0.0044	1.00 - 5.00
5B-00350	20731	Cs-137	0.0164	0.0171	0.0058	1.00 - 5.00
5B-00350	20731	Eu-152	-0.0148 U	0.0413	0.0142	1.00 - 5.00
5B-00350	20731	Eu-154	0.025 UJ	0.0866	0.0297	1.00 - 5.00
5B-00350	20731	Eu-155	0.0705 JS	0.0596	0.0215	1.00 - 5.00
5B-00350	20731	Ho-166m	-0.0032 U	0.0233	0.0069	1.00 - 5.00
5B-00350	20731	K-40	20.2	0.108	1.16	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00350	20731	Na-22	0.0049 U	0.0186	0.0054	1.00 - 5.00
5B-00350	20731	Nb-94	0.0023 U	0.0138	0.0041	1.00 - 5.00
5B-00350	20731	Np-236	-0.015 U	0.0322	0.0101	1.00 - 5.00
5B-00350	20731	Np-239	-0.0185 U	0.115	0.0347	1.00 - 5.00
5B-00350	20731	Pa-231	-0.0712 U	0.71	0.214	1.00 - 5.00
5B-00350	20731	Pb-212	1.22	0.0282	0.077	1.00 - 5.00
5B-00350	20731	Pb-214	1.03	0.03	0.0513	1.00 - 5.00
5B-00350	20731	Sb-125	-0.0022 U	0.0384	0.0117	1.00 - 5.00
5B-00350	20731	Sn-126	0.0047 U	0.0155	0.0046	1.00 - 5.00
5B-00350	20731	Th-234	1.53	0.256	0.148	1.00 - 5.00
5B-00350	20731	Tl-208	0.384	0.014	0.0224	1.00 - 5.00
5B-00350	20731	Tm-171	0.916 U	10.7	3.71	1.00 - 5.00
5B-00351	20732	Ac-227	0.0051 U	0.222	0.0654	0.00 - 0.50
5B-00351	20732	Bi-212	0.746 J	0.164	0.0939	0.00 - 0.50
5B-00351	20732	Bi-214	0.869	0.0427	0.0473	0.00 - 0.50
5B-00351	20732	Cd-113m	10.7 U	146	43.1	0.00 - 0.50
5B-00351	20732	Co-60	0.0019 U	0.0251	0.0073	0.00 - 0.50
5B-00351	20732	Cs-134	0.0063 U	0.0199	0.0067	0.00 - 0.50
5B-00351	20732	Cs-137	0.0878 J	0.0237	0.0117	0.00 - 0.50
5B-00351	20732	Eu-152	-0.0187 U	0.0562	0.0191	0.00 - 0.50
5B-00351	20732	Eu-154	0.0226 UJ	0.142	0.0406	0.00 - 0.50
5B-00351	20732	Eu-155	0.0718 JS	0.0676	0.0285	0.00 - 0.50
5B-00351	20732	Ho-166m	0.0043 U	0.0355	0.0104	0.00 - 0.50
5B-00351	20732	K-40	18.9	0.189	1.09	0.00 - 0.50
5B-00351	20732	Na-22	0.0029 U	0.0294	0.0086	0.00 - 0.50
5B-00351	20732	Nb-94	-0.0013 U	0.0189	0.0056	0.00 - 0.50
5B-00351	20732	Np-236	-0.0173 U	0.0381	0.0125	0.00 - 0.50
5B-00351	20732	Np-239	0.057 U	0.149	0.0452	0.00 - 0.50
5B-00351	20732	Pa-231	-0.287 U	0.916	0.284	0.00 - 0.50
5B-00351	20732	Pb-212	1.1	0.0364	0.0661	0.00 - 0.50
5B-00351	20732	Pb-214	0.91	0.0412	0.0455	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00351	20732	Sb-125	-0.0065 U	0.0542	0.0166	0.00 - 0.50
5B-00351	20732	Sn-126	0.0067 U	0.0226	0.0067	0.00 - 0.50
5B-00351	20732	Th-234	1.27 J	0.3	0.157	0.00 - 0.50
5B-00351	20732	Tl-208	0.365	0.0208	0.0249	0.00 - 0.50
5B-00351	20732	Tm-171	12.4 J	12.9	5.11	0.00 - 0.50
5B-00351	20733	Ac-227	-0.0171 U	0.165	0.0504	1.00 - 5.00
5B-00351	20733	Bi-212	0.778	0.112	0.0679	1.00 - 5.00
5B-00351	20733	Bi-214	0.888	0.0259	0.0417	1.00 - 5.00
5B-00351	20733	Cd-113m	-50.3 U	108	36.4	1.00 - 5.00
5B-00351	20733	Co-60	0.0053 U	0.0149	0.0045	1.00 - 5.00
5B-00351	20733	Cs-134	0.0068 JS	0.0126	0.0045	1.00 - 5.00
5B-00351	20733	Cs-137	-0.0003 U	0.0148	0.0051	1.00 - 5.00
5B-00351	20733	Eu-152	-0.0075 U	0.0405	0.0145	1.00 - 5.00
5B-00351	20733	Eu-154	-0.0268 UJ	0.0816	0.0251	1.00 - 5.00
5B-00351	20733	Eu-155	0.0152 U	0.0573	0.0171	1.00 - 5.00
5B-00351	20733	Ho-166m	-0.0013 U	0.0227	0.0068	1.00 - 5.00
5B-00351	20733	K-40	19.1	0.103	1.14	1.00 - 5.00
5B-00351	20733	Na-22	-0.0048 U	0.0172	0.0053	1.00 - 5.00
5B-00351	20733	Nb-94	0.0046 U	0.0134	0.0041	1.00 - 5.00
5B-00351	20733	Np-236	-0.0125 U	0.031	0.0097	1.00 - 5.00
5B-00351	20733	Np-239	-0.012 U	0.112	0.0341	1.00 - 5.00
5B-00351	20733	Pa-231	0.115 U	0.688	0.21	1.00 - 5.00
5B-00351	20733	Pb-212	1.32	0.0271	0.0809	1.00 - 5.00
5B-00351	20733	Pb-214	0.996	0.0289	0.049	1.00 - 5.00
5B-00351	20733	Sb-125	-0.003 U	0.0372	0.0109	1.00 - 5.00
5B-00351	20733	Sn-126	-0.0077 U	0.0143	0.0048	1.00 - 5.00
5B-00351	20733	Th-234	1.66	0.234	0.145	1.00 - 5.00
5B-00351	20733	Tl-208	0.397	0.014	0.0224	1.00 - 5.00
5B-00351	20733	Tm-171	-4.89 U	9.57	3.58	1.00 - 5.00
5B-00352	20734	Ac-227	-0.048 U	0.163	0.0499	0.00 - 0.50
5B-00352	20734	Bi-212	0.638	0.121	0.0637	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00352	20734	Bi-214	0.874	0.0273	0.0415	0.00 - 0.50
5B-00352	20734	Cd-113m	-4.11 U	107	32.7	0.00 - 0.50
5B-00352	20734	Co-60	0.001 U	0.0158	0.0046	0.00 - 0.50
5B-00352	20734	Cs-134	0.0072 JS	0.0134	0.0046	0.00 - 0.50
5B-00352	20734	Cs-137	0.0599	0.0171	0.0083	0.00 - 0.50
5B-00352	20734	Eu-152	-0.0042 U	0.0408	0.014	0.00 - 0.50
5B-00352	20734	Eu-154	-0.0046 UJ	0.0915	0.0264	0.00 - 0.50
5B-00352	20734	Eu-155	0.051 JS	0.0576	0.0209	0.00 - 0.50
5B-00352	20734	Ho-166m	-0.0037 U	0.024	0.0072	0.00 - 0.50
5B-00352	20734	K-40	20	0.13	1.08	0.00 - 0.50
5B-00352	20734	Na-22	-0.0057 U	0.019	0.0059	0.00 - 0.50
5B-00352	20734	Nb-94	0.004 U	0.0142	0.0042	0.00 - 0.50
5B-00352	20734	Np-236	-0.0018 U	0.0308	0.0094	0.00 - 0.50
5B-00352	20734	Np-239	-0.0224 U	0.109	0.0325	0.00 - 0.50
5B-00352	20734	Pa-231	-0.214 U	0.682	0.21	0.00 - 0.50
5B-00352	20734	Pb-212	1	0.0267	0.0585	0.00 - 0.50
5B-00352	20734	Pb-214	0.905	0.0299	0.0431	0.00 - 0.50
5B-00352	20734	Sb-125	-0.0111 U	0.038	0.0119	0.00 - 0.50
5B-00352	20734	Sn-126	-0.0044 U	0.0151	0.0046	0.00 - 0.50
5B-00352	20734	Th-234	1.37	0.237	0.13	0.00 - 0.50
5B-00352	20734	Tl-208	0.323	0.015	0.0196	0.00 - 0.50
5B-00352	20734	Tm-171	-3.03 U	9.55	3.28	0.00 - 0.50
5B-00352	20735	Ac-227	-0.0126 U	0.155	0.0453	1.00 - 5.00
5B-00352	20735	Bi-212	0.704	0.1	0.0636	1.00 - 5.00
5B-00352	20735	Bi-214	0.769	0.0231	0.0367	1.00 - 5.00
5B-00352	20735	Cd-113m	-47.6 U	98.3	33.4	1.00 - 5.00
5B-00352	20735	Co-60	-0.0008 U	0.0141	0.0042	1.00 - 5.00
5B-00352	20735	Cs-134	-0.0005 U	0.0111	0.0039	1.00 - 5.00
5B-00352	20735	Cs-137	-0.0034 U	0.0129	0.0046	1.00 - 5.00
5B-00352	20735	Eu-152	0.0015 U	0.0371	0.0117	1.00 - 5.00
5B-00352	20735	Eu-154	0.0624 J	0.0787	0.0287	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00352	20735	Eu-155	0.0675 JS	0.0523	0.0199	1.00 - 5.00
5B-00352	20735	Ho-166m	0.0015 U	0.0214	0.0061	1.00 - 5.00
5B-00352	20735	K-40	18.5	0.0886	1.04	1.00 - 5.00
5B-00352	20735	Na-22	-0.0011 U	0.0166	0.0058	1.00 - 5.00
5B-00352	20735	Nb-94	0.0009 U	0.0123	0.0035	1.00 - 5.00
5B-00352	20735	Np-236	-0.0065 U	0.0288	0.0089	1.00 - 5.00
5B-00352	20735	Np-239	0.0056 U	0.103	0.0297	1.00 - 5.00
5B-00352	20735	Pa-231	-0.123 U	0.629	0.187	1.00 - 5.00
5B-00352	20735	Pb-212	1.04	0.0337	0.0622	1.00 - 5.00
5B-00352	20735	Pb-214	0.818	0.0269	0.0388	1.00 - 5.00
5B-00352	20735	Sb-125	0.0271 JS	0.0353	0.0119	1.00 - 5.00
5B-00352	20735	Sn-126	-0.0052 U	0.0129	0.004	1.00 - 5.00
5B-00352	20735	Th-234	1.39	0.229	0.133	1.00 - 5.00
5B-00352	20735	Tl-208	0.364	0.0124	0.0209	1.00 - 5.00
5B-00352	20735	Tm-171	0.875 U	9.72	3.23	1.00 - 5.00
5B-00353	20736	Ac-227	0.008 U	0.191	0.0562	0.00 - 0.50
5B-00353	20736	Bi-212	0.681 J	0.122	0.0762	0.00 - 0.50
5B-00353	20736	Bi-214	0.912	0.0279	0.0437	0.00 - 0.50
5B-00353	20736	Cd-113m	-46.2 U	124	40	0.00 - 0.50
5B-00353	20736	Co-60	-0.0035 U	0.0171	0.0051	0.00 - 0.50
5B-00353	20736	Cs-134	0.0018 U	0.0134	0.0045	0.00 - 0.50
5B-00353	20736	Cs-137	0.0793	0.0162	0.0082	0.00 - 0.50
5B-00353	20736	Eu-152	-0.0124 U	0.0463	0.0163	0.00 - 0.50
5B-00353	20736	Eu-154	-0.0792 UJ	0.0912	0.0347	0.00 - 0.50
5B-00353	20736	Eu-155	0.0847 JS	0.0636	0.0299	0.00 - 0.50
5B-00353	20736	Ho-166m	-0.0059 U	0.0241	0.0073	0.00 - 0.50
5B-00353	20736	K-40	21.1	0.137	1.23	0.00 - 0.50
5B-00353	20736	Na-22	-0.0034 U	0.0203	0.0061	0.00 - 0.50
5B-00353	20736	Nb-94	-0.0003 U	0.0145	0.0043	0.00 - 0.50
5B-00353	20736	Np-236	-0.0058 U	0.035	0.0109	0.00 - 0.50
5B-00353	20736	Np-239	0.0101 U	0.129	0.0378	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00353	20736	Pa-231	-0.256 U	0.776	0.259	0.00 - 0.50
5B-00353	20736	Pb-212	1.11	0.0322	0.0746	0.00 - 0.50
5B-00353	20736	Pb-214	1.02	0.033	0.0512	0.00 - 0.50
5B-00353	20736	Sb-125	-0.0003 U	0.0416	0.0126	0.00 - 0.50
5B-00353	20736	Sn-126	-0.0077 U	0.0156	0.0051	0.00 - 0.50
5B-00353	20736	Th-234	1.09 J	0.362	0.294	0.00 - 0.50
5B-00353	20736	Tl-208	0.308	0.0152	0.0196	0.00 - 0.50
5B-00353	20736	Tm-171	-8.49 U	14.7	4.94	0.00 - 0.50
5B-00353	20737	Ac-227	-0.0778 U	0.18	0.0585	1.00 - 5.00
5B-00353	20737	Bi-212	0.8 J	0.139	0.0835	1.00 - 5.00
5B-00353	20737	Bi-214	0.992	0.032	0.0489	1.00 - 5.00
5B-00353	20737	Cd-113m	-29.6 U	119	42.4	1.00 - 5.00
5B-00353	20737	Co-60	-0.0018 U	0.0182	0.0054	1.00 - 5.00
5B-00353	20737	Cs-134	0.0056 U	0.0159	0.0055	1.00 - 5.00
5B-00353	20737	Cs-137	-0.0181 UJ	0.0191	0.0073	1.00 - 5.00
5B-00353	20737	Eu-152	0.0112 U	0.0459	0.0193	1.00 - 5.00
5B-00353	20737	Eu-154	-0.05 UJ	0.105	0.0336	1.00 - 5.00
5B-00353	20737	Eu-155	0.0281 U	0.0589	0.0185	1.00 - 5.00
5B-00353	20737	Ho-166m	0.0107 U	0.0286	0.0088	1.00 - 5.00
5B-00353	20737	K-40	18.3	0.126	0.991	1.00 - 5.00
5B-00353	20737	Na-22	-0.0228 UJ	0.0197	0.0083	1.00 - 5.00
5B-00353	20737	Nb-94	0.0045 U	0.0169	0.0051	1.00 - 5.00
5B-00353	20737	Np-236	-0.0005 U	0.0322	0.0095	1.00 - 5.00
5B-00353	20737	Np-239	-0.005 U	0.121	0.0367	1.00 - 5.00
5B-00353	20737	Pa-231	-0.253 U	0.752	0.249	1.00 - 5.00
5B-00353	20737	Pb-212	1.27	0.0294	0.0709	1.00 - 5.00
5B-00353	20737	Pb-214	1.12	0.0325	0.0525	1.00 - 5.00
5B-00353	20737	Sb-125	-0.0055 U	0.0431	0.0128	1.00 - 5.00
5B-00353	20737	Sn-126	0.0059 U	0.0186	0.0056	1.00 - 5.00
5B-00353	20737	Th-234	1.44	0.232	0.12	1.00 - 5.00
5B-00353	20737	Tl-208	0.4	0.0167	0.0238	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00353	20737	Tm-171	-3.83 U	7.1	2.54	1.00 - 5.00
5B-00354	20738	Ac-227	-0.113 UJ	0.154	0.0553	0.00 - 0.50
5B-00354	20738	Bi-212	0.639 J	0.125	0.0848	0.00 - 0.50
5B-00354	20738	Bi-214	0.829	0.0292	0.0422	0.00 - 0.50
5B-00354	20738	Cd-113m	-39.8 U	101	32.9	0.00 - 0.50
5B-00354	20738	Co-60	0.0006 U	0.0182	0.0052	0.00 - 0.50
5B-00354	20738	Cs-134	0.0048 U	0.0144	0.005	0.00 - 0.50
5B-00354	20738	Cs-137	0.0777	0.0183	0.01	0.00 - 0.50
5B-00354	20738	Eu-152	0.0189 U	0.0407	0.0146	0.00 - 0.50
5B-00354	20738	Eu-154	-0.0843 UJ	0.0936	0.0358	0.00 - 0.50
5B-00354	20738	Eu-155	0.073 JS	0.0484	0.0219	0.00 - 0.50
5B-00354	20738	Ho-166m	0.0078 U	0.0275	0.008	0.00 - 0.50
5B-00354	20738	K-40	20.6	0.155	1.11	0.00 - 0.50
5B-00354	20738	Na-22	-0.0053 U	0.0218	0.0066	0.00 - 0.50
5B-00354	20738	Nb-94	0.0022 U	0.0151	0.0044	0.00 - 0.50
5B-00354	20738	Np-236	-0.0045 U	0.0262	0.0077	0.00 - 0.50
5B-00354	20738	Np-239	0.01 U	0.102	0.0311	0.00 - 0.50
5B-00354	20738	Pa-231	0.175 U	0.671	0.218	0.00 - 0.50
5B-00354	20738	Pb-212	1.01	0.0249	0.0571	0.00 - 0.50
5B-00354	20738	Pb-214	0.886	0.0291	0.043	0.00 - 0.50
5B-00354	20738	Sb-125	0.0098 U	0.0394	0.0116	0.00 - 0.50
5B-00354	20738	Sn-126	-0.0049 U	0.0167	0.005	0.00 - 0.50
5B-00354	20738	Th-234	1.11 J	0.184	0.115	0.00 - 0.50
5B-00354	20738	Tl-208	0.329	0.0155	0.0209	0.00 - 0.50
5B-00354	20738	Tm-171	-0.547 U	5.52	1.89	0.00 - 0.50
5B-00354	20739	Ac-227	-0.0228 U	0.13	0.0394	1.00 - 4.00
5B-00354	20739	Bi-212	0.733	0.0814	0.0539	1.00 - 4.00
5B-00354	20739	Bi-214	0.73	0.019	0.0365	1.00 - 4.00
5B-00354	20739	Cd-113m	-1.55 U	87.2	26	1.00 - 4.00
5B-00354	20739	Co-60	0.0044 U	0.0122	0.0036	1.00 - 4.00
5B-00354	20739	Cs-134	-0.0024 U	0.0094	0.0033	1.00 - 4.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00354	20739	Cs-137	-0.0008 U	0.0109	0.0037	1.00 - 4.00
5B-00354	20739	Eu-152	-0.0233 UJ	0.0315	0.0115	1.00 - 4.00
5B-00354	20739	Eu-154	0.0127 UJ	0.063	0.0218	1.00 - 4.00
5B-00354	20739	Eu-155	0.0685 JS	0.0473	0.0196	1.00 - 4.00
5B-00354	20739	Ho-166m	-0.0162 UJ	0.0165	0.0064	1.00 - 4.00
5B-00354	20739	K-40	18.9	0.0846	1.08	1.00 - 4.00
5B-00354	20739	Na-22	-0.0064 U	0.013	0.0042	1.00 - 4.00
5B-00354	20739	Nb-94	0.0008 U	0.0101	0.003	1.00 - 4.00
5B-00354	20739	Np-236	0.0069 U	0.0263	0.0083	1.00 - 4.00
5B-00354	20739	Np-239	0.0042 U	0.0891	0.0265	1.00 - 4.00
5B-00354	20739	Pa-231	-0.121 U	0.555	0.175	1.00 - 4.00
5B-00354	20739	Pb-212	1.19	0.0219	0.0816	1.00 - 4.00
5B-00354	20739	Pb-214	0.86	0.0228	0.0422	1.00 - 4.00
5B-00354	20739	Sb-125	-0.0121 U	0.0283	0.0092	1.00 - 4.00
5B-00354	20739	Sn-126	-0.004 U	0.0111	0.0035	1.00 - 4.00
5B-00354	20739	Th-234	1.3 J	0.218	0.135	1.00 - 4.00
5B-00354	20739	Tl-208	0.37	0.0105	0.02	1.00 - 4.00
5B-00354	20739	Tm-171	-4.71 U	11.6	4.18	1.00 - 4.00
5B-00355	20740	Ac-227	0.0957 J	0.192	0.0602	0.00 - 0.50
5B-00355	20740	Bi-212	0.742	0.117	0.066	0.00 - 0.50
5B-00355	20740	Bi-214	0.785	0.0276	0.0384	0.00 - 0.50
5B-00355	20740	Cd-113m	-64.9 U	120	42	0.00 - 0.50
5B-00355	20740	Co-60	0.0041 U	0.0167	0.0048	0.00 - 0.50
5B-00355	20740	Cs-134	-0.0041 U	0.0133	0.0047	0.00 - 0.50
5B-00355	20740	Cs-137	0.0607	0.0161	0.0075	0.00 - 0.50
5B-00355	20740	Eu-152	-0.0178 U	0.0443	0.0141	0.00 - 0.50
5B-00355	20740	Eu-154	-0.0553 UJ	0.0888	0.0308	0.00 - 0.50
5B-00355	20740	Eu-155	0.0242 U	0.0655	0.0206	0.00 - 0.50
5B-00355	20740	Ho-166m	-0.0168 U	0.0242	0.0084	0.00 - 0.50
5B-00355	20740	K-40	19.8	0.126	1.16	0.00 - 0.50
5B-00355	20740	Na-22	0.0017 U	0.0206	0.006	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00355	20740	Nb-94	0.0026 U	0.014	0.0041	0.00 - 0.50
5B-00355	20740	Np-236	-0.0056 U	0.0352	0.0109	0.00 - 0.50
5B-00355	20740	Np-239	0.078 J	0.127	0.0411	0.00 - 0.50
5B-00355	20740	Pa-231	0.344 U	0.784	0.259	0.00 - 0.50
5B-00355	20740	Pb-212	1.18	0.0309	0.0791	0.00 - 0.50
5B-00355	20740	Pb-214	0.927	0.0327	0.0473	0.00 - 0.50
5B-00355	20740	Sb-125	-0.0088 U	0.0413	0.0128	0.00 - 0.50
5B-00355	20740	Sn-126	-0.0074 U	0.015	0.0049	0.00 - 0.50
5B-00355	20740	Th-234	1.53 J	0.284	0.17	0.00 - 0.50
5B-00355	20740	Tl-208	0.325	0.0153	0.0193	0.00 - 0.50
5B-00355	20740	Tm-171	-2.78 U	14.6	4.97	0.00 - 0.50
5B-00355	20741	Ac-227	-0.01 U	0.118	0.0403	1.00 - 3.50
5B-00355	20741	Bi-212	0.636	0.078	0.0481	1.00 - 3.50
5B-00355	20741	Bi-214	0.728	0.0187	0.0331	1.00 - 3.50
5B-00355	20741	Cd-113m	11.5 U	78.7	26.8	1.00 - 3.50
5B-00355	20741	Co-60	0.0013 U	0.0119	0.0034	1.00 - 3.50
5B-00355	20741	Cs-134	-0.0025 U	0.0087	0.0031	1.00 - 3.50
5B-00355	20741	Cs-137	0.0028 U	0.0106	0.0037	1.00 - 3.50
5B-00355	20741	Eu-152	-0.0046 U	0.0287	0.0109	1.00 - 3.50
5B-00355	20741	Eu-154	0.0124 UJ	0.0615	0.0182	1.00 - 3.50
5B-00355	20741	Eu-155	0.0598 JS	0.0408	0.0142	1.00 - 3.50
5B-00355	20741	Ho-166m	-0.0006 U	0.0166	0.005	1.00 - 3.50
5B-00355	20741	K-40	20.3	0.0828	1.27	1.00 - 3.50
5B-00355	20741	Na-22	-0.0005 U	0.0134	0.0046	1.00 - 3.50
5B-00355	20741	Nb-94	0.0078 JS	0.0097	0.0034	1.00 - 3.50
5B-00355	20741	Np-236	-0.0132 U	0.0225	0.0077	1.00 - 3.50
5B-00355	20741	Np-239	0.0074 U	0.0802	0.0239	1.00 - 3.50
5B-00355	20741	Pa-231	-0.0428 U	0.496	0.155	1.00 - 3.50
5B-00355	20741	Pb-212	1.03	0.0199	0.0624	1.00 - 3.50
5B-00355	20741	Pb-214	0.822	0.0205	0.0384	1.00 - 3.50
5B-00355	20741	Sb-125	0.0161 JS	0.0269	0.0086	1.00 - 3.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00355	20741	Sn-126	-0.001 U	0.0105	0.0032	1.00 - 3.50
5B-00355	20741	Th-234	1.08	0.186	0.106	1.00 - 3.50
5B-00355	20741	Tl-208	0.296	0.0097	0.0165	1.00 - 3.50
5B-00355	20741	Tm-171	-6.54 U	8.95	3.43	1.00 - 3.50
5B-00356	20742	Ac-227	-0.195 UJ	0.18	0.0721	0.00 - 0.50
5B-00356	20742	Bi-212	0.756	0.122	0.0663	0.00 - 0.50
5B-00356	20742	Bi-214	0.851	0.0309	0.0419	0.00 - 0.50
5B-00356	20742	Cd-113m	-23.3 U	122	36.9	0.00 - 0.50
5B-00356	20742	Co-60	-0.0075 U	0.0172	0.0054	0.00 - 0.50
5B-00356	20742	Cs-134	0.0073 JS	0.0144	0.005	0.00 - 0.50
5B-00356	20742	Cs-137	0.0645	0.0161	0.0073	0.00 - 0.50
5B-00356	20742	Eu-152	-0.0083 U	0.0461	0.0147	0.00 - 0.50
5B-00356	20742	Eu-154	-0.0147 UJ	0.0949	0.0329	0.00 - 0.50
5B-00356	20742	Eu-155	0.0335 JS	0.0656	0.0213	0.00 - 0.50
5B-00356	20742	Ho-166m	-0.0021 U	0.0256	0.0077	0.00 - 0.50
5B-00356	20742	K-40	20.1	0.13	1.27	0.00 - 0.50
5B-00356	20742	Na-22	-0.0105 U	0.0208	0.0069	0.00 - 0.50
5B-00356	20742	Nb-94	-0.0042 U	0.0145	0.0045	0.00 - 0.50
5B-00356	20742	Np-236	-0.0154 U	0.0349	0.0114	0.00 - 0.50
5B-00356	20742	Np-239	0.0286 U	0.125	0.0375	0.00 - 0.50
5B-00356	20742	Pa-231	-0.149 U	0.751	0.247	0.00 - 0.50
5B-00356	20742	Pb-212	1.16	0.0302	0.0711	0.00 - 0.50
5B-00356	20742	Pb-214	0.943	0.0323	0.0452	0.00 - 0.50
5B-00356	20742	Sb-125	0.0294 JS	0.0428	0.0139	0.00 - 0.50
5B-00356	20742	Sn-126	-0.0048 U	0.0161	0.005	0.00 - 0.50
5B-00356	20742	Th-234	1.17 J	0.273	0.134	0.00 - 0.50
5B-00356	20742	Tl-208	0.334	0.0163	0.0199	0.00 - 0.50
5B-00356	20742	Tm-171	-1.68 U	14	4.68	0.00 - 0.50
5B-00356	20743	Ac-227	0.0075 U	0.112	0.0345	1.00 - 4.50
5B-00356	20743	Bi-212	0.824	0.0884	0.0657	1.00 - 4.50
5B-00356	20743	Bi-214	0.897	0.02	0.0409	1.00 - 4.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00356	20743	Cd-113m	8.08 U	74.8	23.1	1.00 - 4.50
5B-00356	20743	Co-60	-0.0046 U	0.012	0.0037	1.00 - 4.50
5B-00356	20743	Cs-134	-0.0044 U	0.0094	0.0035	1.00 - 4.50
5B-00356	20743	Cs-137	-0.0092 UJ	0.0126	0.0044	1.00 - 4.50
5B-00356	20743	Eu-152	-0.0163 U	0.0287	0.0105	1.00 - 4.50
5B-00356	20743	Eu-154	-0.0038 UJ	0.0666	0.0232	1.00 - 4.50
5B-00356	20743	Eu-155	0.094 JS	0.0333	0.0177	1.00 - 4.50
5B-00356	20743	Ho-166m	0.0006 U	0.0185	0.0054	1.00 - 4.50
5B-00356	20743	K-40	19.3	0.086	1.03	1.00 - 4.50
5B-00356	20743	Na-22	-0.0051 U	0.0142	0.0044	1.00 - 4.50
5B-00356	20743	Nb-94	0.0047 U	0.0108	0.0033	1.00 - 4.50
5B-00356	20743	Np-236	-0.0073 U	0.019	0.0059	1.00 - 4.50
5B-00356	20743	Np-239	-0.006 U	0.074	0.0227	1.00 - 4.50
5B-00356	20743	Pa-231	-0.288 U	0.461	0.161	1.00 - 4.50
5B-00356	20743	Pb-212	1.31	0.0184	0.0715	1.00 - 4.50
5B-00356	20743	Pb-214	0.991	0.0211	0.0447	1.00 - 4.50
5B-00356	20743	Sb-125	-0.0091 U	0.0271	0.0084	1.00 - 4.50
5B-00356	20743	Sn-126	-0.0016 U	0.0117	0.0034	1.00 - 4.50
5B-00356	20743	Th-234	1.51	0.136	0.106	1.00 - 4.50
5B-00356	20743	Tl-208	0.465	0.0105	0.0257	1.00 - 4.50
5B-00356	20743	Tm-171	2.38 J	4.15	1.51	1.00 - 4.50
5B-00357	20744	Ac-227	0.0682 U	0.202	0.0607	0.00 - 0.50
5B-00357	20744	Bi-212	0.85	0.132	0.0817	0.00 - 0.50
5B-00357	20744	Bi-214	0.82	0.0317	0.0417	0.00 - 0.50
5B-00357	20744	Cd-113m	-60.8 U J	132	43.9	0.00 - 0.50
5B-00357	20744	Co-60	0 U	0.018	0.0053	0.00 - 0.50
5B-00357	20744	Cs-134	-0.0047 U	0.0149	0.0054	0.00 - 0.50
5B-00357	20744	Cs-137	0.0645	0.0193	0.0082	0.00 - 0.50
5B-00357	20744	Eu-152	-0.0135 U	0.0482	0.0215	0.00 - 0.50
5B-00357	20744	Eu-154	0.0146 U	0.107	0.0313	0.00 - 0.50
5B-00357	20744	Eu-155	0.081 JSK	0.07	0.0282	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00357	20744	Ho-166m	0.001 U	0.0275	0.008	0.00 - 0.50
5B-00357	20744	K-40	23	0.126	1.24	0.00 - 0.50
5B-00357	20744	Na-22	0.0011 U	0.0216	0.0064	0.00 - 0.50
5B-00357	20744	Nb-94	0.0092 JSK	0.0166	0.0052	0.00 - 0.50
5B-00357	20744	Np-236	0.0041 U	0.0377	0.0114	0.00 - 0.50
5B-00357	20744	Np-239	-0.0362 U	0.131	0.0394	0.00 - 0.50
5B-00357	20744	Pa-231	0.286 U	0.83	0.273	0.00 - 0.50
5B-00357	20744	Pb-212	1.08	0.0325	0.0622	0.00 - 0.50
5B-00357	20744	Pb-214	0.933	0.0349	0.0456	0.00 - 0.50
5B-00357	20744	Sb-125	0.0157 U	0.0468	0.0142	0.00 - 0.50
5B-00357	20744	Sn-126	0.0062 U	0.0182	0.0054	0.00 - 0.50
5B-00357	20744	Th-234	1.2	0.323	0.139	0.00 - 0.50
5B-00357	20744	Tl-208	0.344	0.0169	0.0211	0.00 - 0.50
5B-00357	20744	Tm-171	-9.57 U	12.6	4.93	0.00 - 0.50
5B-00357	20745	Ac-227	-0.0098 U	0.179	0.0549	1.00 - 5.00
5B-00357	20745	Bi-212	0.766	0.142	0.0797	1.00 - 5.00
5B-00357	20745	Bi-214	0.958	0.0319	0.0484	1.00 - 5.00
5B-00357	20745	Cd-113m	10.7 U J	118	36.1	1.00 - 5.00
5B-00357	20745	Co-60	0.0127 J	0.0214	0.0065	1.00 - 5.00
5B-00357	20745	Cs-134	0.0004 U	0.0152	0.0052	1.00 - 5.00
5B-00357	20745	Cs-137	0.0539	0.0194	0.0162	1.00 - 5.00
5B-00357	20745	Eu-152	0.027 J	0.0462	0.0153	1.00 - 5.00
5B-00357	20745	Eu-154	-0.0502 U	0.11	0.0356	1.00 - 5.00
5B-00357	20745	Eu-155	0.0545 JSK	0.0552	0.0204	1.00 - 5.00
5B-00357	20745	Ho-166m	0.0024 U	0.0306	0.0088	1.00 - 5.00
5B-00357	20745	K-40	20.7	0.141	1.13	1.00 - 5.00
5B-00357	20745	Na-22	0.0101 U	0.0258	0.0079	1.00 - 5.00
5B-00357	20745	Nb-94	0.0069 U	0.0181	0.0056	1.00 - 5.00
5B-00357	20745	Np-236	-0.007 U	0.0296	0.0089	1.00 - 5.00
5B-00357	20745	Np-239	-0.0109 U	0.114	0.0351	1.00 - 5.00
5B-00357	20745	Pa-231	0.286 U	0.744	0.235	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00357	20745	Pb-212	1.14	0.0299	0.064	1.00 - 5.00
5B-00357	20745	Pb-214	1	0.0327	0.0474	1.00 - 5.00
5B-00357	20745	Sb-125	0.0105 U	0.0458	0.0135	1.00 - 5.00
5B-00357	20745	Sn-126	0.0011 U	0.019	0.0057	1.00 - 5.00
5B-00357	20745	Th-234	1.32	0.202	0.119	1.00 - 5.00
5B-00357	20745	Tl-208	0.358	0.0174	0.0225	1.00 - 5.00
5B-00357	20745	Tm-171	-0.266 U	6.42	2.23	1.00 - 5.00
5B-00358	20746	Ac-227	-0.0074 U	0.185	0.0565	0.00 - 0.50
5B-00358	20746	Bi-212	0.909	0.124	0.0915	0.00 - 0.50
5B-00358	20746	Bi-214	1.01	0.0301	0.0489	0.00 - 0.50
5B-00358	20746	Cd-113m	25.1 U	127	39.1	0.00 - 0.50
5B-00358	20746	Co-60	0.0011 U	0.0169	0.005	0.00 - 0.50
5B-00358	20746	Cs-134	-0.0032 U	0.0147	0.0052	0.00 - 0.50
5B-00358	20746	Cs-137	0.0946	0.0154	0.0088	0.00 - 0.50
5B-00358	20746	Eu-152	-0.0229 U	0.0448	0.0143	0.00 - 0.50
5B-00358	20746	Eu-154	-0.0707 U J	0.0957	0.0341	0.00 - 0.50
5B-00358	20746	Eu-155	0.0498 JSK	0.065	0.022	0.00 - 0.50
5B-00358	20746	Ho-166m	0.0024 U J	0.0255	0.0077	0.00 - 0.50
5B-00358	20746	K-40	23.2	0.129	1.25	0.00 - 0.50
5B-00358	20746	Na-22	-0.003 U	0.0199	0.0061	0.00 - 0.50
5B-00358	20746	Nb-94	0.0058 U	0.0152	0.0047	0.00 - 0.50
5B-00358	20746	Np-236	-0.0266 U J	0.0337	0.0119	0.00 - 0.50
5B-00358	20746	Np-239	-0.0183 U	0.125	0.0385	0.00 - 0.50
5B-00358	20746	Pa-231	-0.0722 U	0.777	0.24	0.00 - 0.50
5B-00358	20746	Pb-212	1.31	0.0312	0.075	0.00 - 0.50
5B-00358	20746	Pb-214	1.15	0.0326	0.054	0.00 - 0.50
5B-00358	20746	Sb-125	0.007 U	0.0437	0.0128	0.00 - 0.50
5B-00358	20746	Sn-126	0.004 U	0.0175	0.0053	0.00 - 0.50
5B-00358	20746	Th-234	1.24	0.27	0.141	0.00 - 0.50
5B-00358	20746	Tl-208	0.373	0.0161	0.022	0.00 - 0.50
5B-00358	20746	Tm-171	3.28 U	12.4	4.29	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00358	20747	Ac-227	-0.0232 U	0.199	0.0591	1.00 - 5.00
5B-00358	20747	Bi-212	0.788	0.125	0.075	1.00 - 5.00
5B-00358	20747	Bi-214	0.983	0.0286	0.0466	1.00 - 5.00
5B-00358	20747	Cd-113m	-5.92 U	131	40.1	1.00 - 5.00
5B-00358	20747	Co-60	0.0029 U	0.0177	0.0051	1.00 - 5.00
5B-00358	20747	Cs-134	0.0024 U	0.014	0.0047	1.00 - 5.00
5B-00358	20747	Cs-137	0.0043 U	0.0173	0.0058	1.00 - 5.00
5B-00358	20747	Eu-152	-0.0256 U	0.046	0.0173	1.00 - 5.00
5B-00358	20747	Eu-154	-0.069 UJ	0.0941	0.034	1.00 - 5.00
5B-00358	20747	Eu-155	0.0827 SJ	0.0691	0.0287	1.00 - 5.00
5B-00358	20747	Ho-166m	-0.0058 U	0.0252	0.0076	1.00 - 5.00
5B-00358	20747	K-40	21.6	0.135	1.26	1.00 - 5.00
5B-00358	20747	Na-22	0.0029 U	0.0206	0.0069	1.00 - 5.00
5B-00358	20747	Nb-94	0.0063 U	0.0155	0.0047	1.00 - 5.00
5B-00358	20747	Np-236	-0.0103 U	0.0382	0.0121	1.00 - 5.00
5B-00358	20747	Np-239	-0.0812 U	0.131	0.0438	1.00 - 5.00
5B-00358	20747	Pa-231	-0.614 UJ	0.782	0.287	1.00 - 5.00
5B-00358	20747	Pb-212	1.31	0.0338	0.0875	1.00 - 5.00
5B-00358	20747	Pb-214	1.11	0.0354	0.055	1.00 - 5.00
5B-00358	20747	Sb-125	-0.0118 U	0.0432	0.0135	1.00 - 5.00
5B-00358	20747	Sn-126	0.0003 U	0.0174	0.0051	1.00 - 5.00
5B-00358	20747	Th-234	1.44 J	0.314	0.192	1.00 - 5.00
5B-00358	20747	Tl-208	0.394	0.0153	0.0228	1.00 - 5.00
5B-00358	20747	Tm-171	-11.1 U	15.4	5.93	1.00 - 5.00
5B-00359	20748	Ac-227	0.0274 U	0.189	0.0642	0.00 - 0.50
5B-00359	20748	Bi-212	0.865	0.126	0.084	0.00 - 0.50
5B-00359	20748	Bi-214	1.05	0.0312	0.0493	0.00 - 0.50
5B-00359	20748	Cd-113m	-51 U	124	48	0.00 - 0.50
5B-00359	20748	Co-60	0.0019 U	0.0178	0.0051	0.00 - 0.50
5B-00359	20748	Cs-134	-0.0029 U	0.0145	0.005	0.00 - 0.50
5B-00359	20748	Cs-137	0.0825	0.0152	0.0099	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00359	20748	Eu-152	-0.0082 U	0.0448	0.0157	0.00 - 0.50
5B-00359	20748	Eu-154	-0.08 UJ	0.0986	0.0364	0.00 - 0.50
5B-00359	20748	Eu-155	0.0407 SJ	0.0669	0.0215	0.00 - 0.50
5B-00359	20748	Ho-166m	0.0018 U	0.026	0.0076	0.00 - 0.50
5B-00359	20748	K-40	24.3	0.124	1.39	0.00 - 0.50
5B-00359	20748	Na-22	-0.0006 U	0.0212	0.0061	0.00 - 0.50
5B-00359	20748	Nb-94	0.0046 U	0.0154	0.0046	0.00 - 0.50
5B-00359	20748	Np-236	0.0014 U	0.0361	0.0105	0.00 - 0.50
5B-00359	20748	Np-239	-0.02 U	0.127	0.0382	0.00 - 0.50
5B-00359	20748	Pa-231	-0.18 UJ	0.782	0.24	0.00 - 0.50
5B-00359	20748	Pb-212	1.2	0.0314	0.0765	0.00 - 0.50
5B-00359	20748	Pb-214	1.13	0.0328	0.0566	0.00 - 0.50
5B-00359	20748	Sb-125	0.0216 U	0.0444	0.0141	0.00 - 0.50
5B-00359	20748	Sn-126	-0.0023 U	0.0168	0.005	0.00 - 0.50
5B-00359	20748	Th-234	1.22 J	0.291	0.138	0.00 - 0.50
5B-00359	20748	Tl-208	0.378	0.0162	0.0227	0.00 - 0.50
5B-00359	20748	Tm-171	-0.593 U	11.6	4.03	0.00 - 0.50
5B-00359	20749	Ac-227	-0.118 UJ	0.162	0.0557	1.00 - 5.00
5B-00359	20749	Bi-212	0.673	0.106	0.0669	1.00 - 5.00
5B-00359	20749	Bi-214	0.932	0.0252	0.0433	1.00 - 5.00
5B-00359	20749	Cd-113m	8.57 U	112	36.8	1.00 - 5.00
5B-00359	20749	Co-60	-0.0019 U	0.0144	0.0043	1.00 - 5.00
5B-00359	20749	Cs-134	-0.001 U	0.0122	0.0043	1.00 - 5.00
5B-00359	20749	Cs-137	0.0136	0.014	0.006	1.00 - 5.00
5B-00359	20749	Eu-152	0.0117 U	0.041	0.0131	1.00 - 5.00
5B-00359	20749	Eu-154	-0.0345 U	0.0851	0.0269	1.00 - 5.00
5B-00359	20749	Eu-155	0.0802 SJ	0.0548	0.0242	1.00 - 5.00
5B-00359	20749	Ho-166m	-0.0049 U	0.0231	0.0068	1.00 - 5.00
5B-00359	20749	K-40	20.4	0.107	1.15	1.00 - 5.00
5B-00359	20749	Na-22	0.005 U	0.0191	0.0057	1.00 - 5.00
5B-00359	20749	Nb-94	0.0102 SJ	0.014	0.0046	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00359	20749	Np-236	-0.0065 U	0.0314	0.0108	1.00 - 5.00
5B-00359	20749	Np-239	0.0063 U	0.113	0.0328	1.00 - 5.00
5B-00359	20749	Pa-231	0.0114 UJ	0.689	0.201	1.00 - 5.00
5B-00359	20749	Pb-212	1.18	0.0283	0.0695	1.00 - 5.00
5B-00359	20749	Pb-214	1.01	0.0297	0.0478	1.00 - 5.00
5B-00359	20749	Sb-125	-0.0009 U	0.0373	0.0111	1.00 - 5.00
5B-00359	20749	Sn-126	0.0017 U	0.0148	0.0042	1.00 - 5.00
5B-00359	20749	Th-234	1.42 J	0.24	0.155	1.00 - 5.00
5B-00359	20749	Tl-208	0.368	0.0141	0.0215	1.00 - 5.00
5B-00359	20749	Tm-171	-1.62 U	10.6	3.56	1.00 - 5.00
5B-00360	20750	Ac-227	0.0793 U	0.222	0.0696	0.00 - 0.50
5B-00360	20750	Bi-212	0.908 J	0.184	0.0944	0.00 - 0.50
5B-00360	20750	Bi-214	1.16	0.0419	0.0578	0.00 - 0.50
5B-00360	20750	Cd-113m	-33.2 U	143	45	0.00 - 0.50
5B-00360	20750	Co-60	-0.0105 U	0.0258	0.0081	0.00 - 0.50
5B-00360	20750	Cs-134	0.0063 U	0.0198	0.0068	0.00 - 0.50
5B-00360	20750	Cs-137	0.0842 J	0.0241	0.0119	0.00 - 0.50
5B-00360	20750	Eu-152	0.0019 U	0.0582	0.0182	0.00 - 0.50
5B-00360	20750	Eu-154	-0.0635 U	0.136	0.0441	0.00 - 0.50
5B-00360	20750	Eu-155	0.0509 SJ	0.0646	0.0221	0.00 - 0.50
5B-00360	20750	Ho-166m	-0.0147 U	0.0355	0.011	0.00 - 0.50
5B-00360	20750	K-40	24.5	0.211	1.36	0.00 - 0.50
5B-00360	20750	Na-22	0.0061 U	0.0306	0.0087	0.00 - 0.50
5B-00360	20750	Nb-94	0.012 SJ	0.0224	0.0068	0.00 - 0.50
5B-00360	20750	Np-236	-0.0128 U	0.0339	0.0105	0.00 - 0.50
5B-00360	20750	Np-239	0.025 U	0.142	0.0435	0.00 - 0.50
5B-00360	20750	Pa-231	0.212 UJ	0.927	0.287	0.00 - 0.50
5B-00360	20750	Pb-212	1.39	0.0355	0.079	0.00 - 0.50
5B-00360	20750	Pb-214	1.24	0.0414	0.0597	0.00 - 0.50
5B-00360	20750	Sb-125	0.0021 U	0.0557	0.0163	0.00 - 0.50
5B-00360	20750	Sn-126	-0.004 U	0.0229	0.0067	0.00 - 0.50

**Table A.2
Analytical Results Summary
Subarea 5B, Round 2**

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00360	20750	Th-234	1.6	0.246	0.145	0.00 - 0.50
5B-00360	20750	Tl-208	0.452	0.0224	0.0275	0.00 - 0.50
5B-00360	20750	Tm-171	3.77 U	7.8	2.61	0.00 - 0.50
5B-00360	20751	Ac-227	-0.0142 U	0.18	0.0547	1.00 - 3.90
5B-00360	20751	Bi-212	0.888	0.118	0.0801	1.00 - 3.90
5B-00360	20751	Bi-214	1.08	0.0272	0.0497	1.00 - 3.90
5B-00360	20751	Cd-113m	27.6 U	119	37.7	1.00 - 3.90
5B-00360	20751	Co-60	-0.0024 U	0.0158	0.0048	1.00 - 3.90
5B-00360	20751	Cs-134	-0.0004 U	0.0133	0.0046	1.00 - 3.90
5B-00360	20751	Cs-137	-0.0119 U	0.015	0.0062	1.00 - 3.90
5B-00360	20751	Eu-152	-0.0054 U	0.0443	0.0188	1.00 - 3.90
5B-00360	20751	Eu-154	-0.0408 U	0.0938	0.0298	1.00 - 3.90
5B-00360	20751	Eu-155	0.0642 SJ	0.0639	0.0239	1.00 - 3.90
5B-00360	20751	Ho-166m	0.0049 U	0.0245	0.0074	1.00 - 3.90
5B-00360	20751	K-40	22.4	0.122	1.34	1.00 - 3.90
5B-00360	20751	Na-22	-0.0076 U	0.0186	0.006	1.00 - 3.90
5B-00360	20751	Nb-94	0.0018 U	0.0145	0.0043	1.00 - 3.90
5B-00360	20751	Np-236	0.0064 U	0.0343	0.0102	1.00 - 3.90
5B-00360	20751	Np-239	0.0306 U	0.124	0.038	1.00 - 3.90
5B-00360	20751	Pa-231	0.159 UJ	0.769	0.254	1.00 - 3.90
5B-00360	20751	Pb-212	1.33	0.03	0.0816	1.00 - 3.90
5B-00360	20751	Pb-214	1.2	0.0321	0.058	1.00 - 3.90
5B-00360	20751	Sb-125	-0.0022 U	0.0389	0.0114	1.00 - 3.90
5B-00360	20751	Sn-126	-0.0036 U	0.0159	0.0049	1.00 - 3.90
5B-00360	20751	Th-234	1.74	0.259	0.153	1.00 - 3.90
5B-00360	20751	Tl-208	0.414	0.0149	0.0239	1.00 - 3.90
5B-00360	20751	Tm-171	-3.75 U	10.4	3.79	1.00 - 3.90
5B-00361	20752	Ac-227	-0.0417 U	0.19	0.0593	0.00 - 0.50
5B-00361	20752	Bi-212	0.773 J	0.123	0.0841	0.00 - 0.50
5B-00361	20752	Bi-214	1.06	0.0313	0.0504	0.00 - 0.50
5B-00361	20752	Cd-113m	29.7 U	128	39.4	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00361	20752	Co-60	0.008 U	0.0178	0.0054	0.00 - 0.50
5B-00361	20752	Cs-134	-0.0016 U	0.0149	0.0052	0.00 - 0.50
5B-00361	20752	Cs-137	0.0922	0.0163	0.0086	0.00 - 0.50
5B-00361	20752	Eu-152	0.0063 U	0.0487	0.0141	0.00 - 0.50
5B-00361	20752	Eu-154	-0.0318 U	0.102	0.0315	0.00 - 0.50
5B-00361	20752	Eu-155	0.0704 SJ	0.0637	0.0289	0.00 - 0.50
5B-00361	20752	Ho-166m	-0.0137 U	0.0253	0.0086	0.00 - 0.50
5B-00361	20752	K-40	22.7	0.131	1.23	0.00 - 0.50
5B-00361	20752	Na-22	-0.0004 U	0.0218	0.0065	0.00 - 0.50
5B-00361	20752	Nb-94	0.0092 SJ	0.0161	0.0052	0.00 - 0.50
5B-00361	20752	Np-236	-0.012 U	0.0344	0.0105	0.00 - 0.50
5B-00361	20752	Np-239	0.0402 U	0.129	0.0398	0.00 - 0.50
5B-00361	20752	Pa-231	-0.491 UJ	0.788	0.274	0.00 - 0.50
5B-00361	20752	Pb-212	1.27	0.0322	0.0728	0.00 - 0.50
5B-00361	20752	Pb-214	1.15	0.0344	0.0546	0.00 - 0.50
5B-00361	20752	Sb-125	-0.0308 SUJ	0.0424	0.0148	0.00 - 0.50
5B-00361	20752	Sn-126	0.006 U	0.0175	0.0053	0.00 - 0.50
5B-00361	20752	Th-234	1.51 J	0.281	0.16	0.00 - 0.50
5B-00361	20752	Tl-208	0.393	0.0161	0.0232	0.00 - 0.50
5B-00361	20752	Tm-171	-6.54 U	12.6	4.68	0.00 - 0.50
5B-00361	20753	Ac-227	-0.0029 U	0.171	0.0501	1.00 - 5.00
5B-00361	20753	Bi-212	0.798	0.109	0.0722	1.00 - 5.00
5B-00361	20753	Bi-214	1.02	0.027	0.0482	1.00 - 5.00
5B-00361	20753	Cd-113m	86.5 J	115	42.5	1.00 - 5.00
5B-00361	20753	Co-60	0.0047 U	0.0159	0.0046	1.00 - 5.00
5B-00361	20753	Cs-134	-0.0037 U	0.0124	0.0045	1.00 - 5.00
5B-00361	20753	Cs-137	-0.0076 U	0.0146	0.0053	1.00 - 5.00
5B-00361	20753	Eu-152	-0.0303 UJ	0.0405	0.0147	1.00 - 5.00
5B-00361	20753	Eu-154	-0.0728 UJ	0.0816	0.0311	1.00 - 5.00
5B-00361	20753	Eu-155	0.107 SJ	0.0555	0.0269	1.00 - 5.00
5B-00361	20753	Ho-166m	-0.0076 U	0.0227	0.007	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00361	20753	K-40	20	0.11	1.09	1.00 - 5.00
5B-00361	20753	Na-22	-0.0041 U	0.0166	0.0052	1.00 - 5.00
5B-00361	20753	Nb-94	0.0031 U	0.0138	0.004	1.00 - 5.00
5B-00361	20753	Np-236	0.0069 U	0.0318	0.0109	1.00 - 5.00
5B-00361	20753	Np-239	-0.001 U	0.115	0.0335	1.00 - 5.00
5B-00361	20753	Pa-231	0.401 J	0.726	0.255	1.00 - 5.00
5B-00361	20753	Pb-212	1.34	0.0288	0.0723	1.00 - 5.00
5B-00361	20753	Pb-214	1.2	0.0306	0.0538	1.00 - 5.00
5B-00361	20753	Sb-125	0.0048 U	0.0385	0.0115	1.00 - 5.00
5B-00361	20753	Sn-126	-0.0031 U	0.0149	0.0044	1.00 - 5.00
5B-00361	20753	Th-234	1.59	0.25	0.143	1.00 - 5.00
5B-00361	20753	Tl-208	0.414	0.0143	0.0236	1.00 - 5.00
5B-00361	20753	Tm-171	-0.823 U	9.67	3.26	1.00 - 5.00
5B-00362	20754	Ac-227	-0.061 U	0.186	0.0596	0.00 - 0.50
5B-00362	20754	Bi-212	0.6	0.128	0.0642	0.00 - 0.50
5B-00362	20754	Bi-214	0.817	0.031	0.0403	0.00 - 0.50
5B-00362	20754	Cd-113m	-6.45 U J	124	41.5	0.00 - 0.50
5B-00362	20754	Co-60	0.0016 U	0.0177	0.0052	0.00 - 0.50
5B-00362	20754	Cs-134	0.0079 JSK	0.0149	0.0053	0.00 - 0.50
5B-00362	20754	Cs-137	0.0835	0.0183	0.0084	0.00 - 0.50
5B-00362	20754	Eu-152	-0.0006 U	0.0442	0.0158	0.00 - 0.50
5B-00362	20754	Eu-154	-0.0258 U	0.0991	0.0301	0.00 - 0.50
5B-00362	20754	Eu-155	0.0244 U	0.0681	0.021	0.00 - 0.50
5B-00362	20754	Ho-166m	-0.0077 U	0.0257	0.0081	0.00 - 0.50
5B-00362	20754	K-40	20.9	0.122	1.13	0.00 - 0.50
5B-00362	20754	Na-22	0.005 U	0.0214	0.0064	0.00 - 0.50
5B-00362	20754	Nb-94	-0.0039 U	0.0149	0.0047	0.00 - 0.50
5B-00362	20754	Np-236	-0.0057 U	0.0361	0.0109	0.00 - 0.50
5B-00362	20754	Np-239	-0.0115 U	0.123	0.0379	0.00 - 0.50
5B-00362	20754	Pa-231	0.508 J	0.806	0.289	0.00 - 0.50
5B-00362	20754	Pb-212	1.01	0.0303	0.0573	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00362	20754	Pb-214	0.924	0.0315	0.0445	0.00 - 0.50
5B-00362	20754	Sb-125	-0.0208 U	0.0417	0.0135	0.00 - 0.50
5B-00362	20754	Sn-126	0.0017 U	0.0169	0.0051	0.00 - 0.50
5B-00362	20754	Th-234	1.36	0.302	0.142	0.00 - 0.50
5B-00362	20754	Tl-208	0.347	0.0157	0.0209	0.00 - 0.50
5B-00362	20754	Tm-171	-0.368 U	14.9	4.99	0.00 - 0.50
5B-00362	20755	Ac-227	-0.0263 U	0.192	0.0581	1.00 - 5.00
5B-00362	20755	Bi-212	0.817	0.122	0.0685	1.00 - 5.00
5B-00362	20755	Bi-214	0.997	0.0282	0.048	1.00 - 5.00
5B-00362	20755	Cd-113m	-19.9 U J	126	39.6	1.00 - 5.00
5B-00362	20755	Co-60	0.0063 U	0.0169	0.005	1.00 - 5.00
5B-00362	20755	Cs-134	0.002 U	0.0136	0.0046	1.00 - 5.00
5B-00362	20755	Cs-137	0.0155	0.0168	0.0068	1.00 - 5.00
5B-00362	20755	Eu-152	-0.037 U	0.0443	0.0194	1.00 - 5.00
5B-00362	20755	Eu-154	-0.102 U J	0.0908	0.0384	1.00 - 5.00
5B-00362	20755	Eu-155	0.0335 JSK	0.0654	0.0206	1.00 - 5.00
5B-00362	20755	Ho-166m	0.0013 U	0.0248	0.0073	1.00 - 5.00
5B-00362	20755	K-40	21.3	0.123	1.15	1.00 - 5.00
5B-00362	20755	Na-22	-0.0057 U	0.0192	0.0058	1.00 - 5.00
5B-00362	20755	Nb-94	0.0072 U	0.0153	0.0047	1.00 - 5.00
5B-00362	20755	Np-236	-0.0041 U	0.0354	0.0105	1.00 - 5.00
5B-00362	20755	Np-239	0.0081 U	0.132	0.0395	1.00 - 5.00
5B-00362	20755	Pa-231	0.388 U	0.804	0.263	1.00 - 5.00
5B-00362	20755	Pb-212	1.37	0.0319	0.0875	1.00 - 5.00
5B-00362	20755	Pb-214	1.2	0.0328	0.0594	1.00 - 5.00
5B-00362	20755	Sb-125	0.0332 JSK	0.0446	0.0153	1.00 - 5.00
5B-00362	20755	Sn-126	-0.0055 U	0.016	0.005	1.00 - 5.00
5B-00362	20755	Th-234	1.36	0.279	0.148	1.00 - 5.00
5B-00362	20755	Tl-208	0.404	0.0146	0.0235	1.00 - 5.00
5B-00362	20755	Tm-171	-2.34 U	11.4	4.04	1.00 - 5.00
5B-00363	20756	Ac-227	-0.0593 U	0.121	0.0388	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00363	20756	Bi-212	0.72	0.0846	0.0568	0.00 - 0.50
5B-00363	20756	Bi-214	0.884	0.0193	0.0395	0.00 - 0.50
5B-00363	20756	Cd-113m	-2.35 U	79.4	24.3	0.00 - 0.50
5B-00363	20756	Co-60	-0.0032 U	0.0123	0.0038	0.00 - 0.50
5B-00363	20756	Cs-134	0.004 U	0.0097	0.0034	0.00 - 0.50
5B-00363	20756	Cs-137	0.08	0.0115	0.0062	0.00 - 0.50
5B-00363	20756	Eu-152	-0.0109 U	0.0304	0.0096	0.00 - 0.50
5B-00363	20756	Eu-154	-0.0009 UJ	0.0658	0.0223	0.00 - 0.50
5B-00363	20756	Eu-155	0.0735 JS	0.0411	0.018	0.00 - 0.50
5B-00363	20756	Ho-166m	-0.008 U	0.0174	0.0056	0.00 - 0.50
5B-00363	20756	K-40	18.9	0.0893	1.15	0.00 - 0.50
5B-00363	20756	Na-22	-0.0097 U	0.014	0.0049	0.00 - 0.50
5B-00363	20756	Nb-94	0.003 U	0.0105	0.0032	0.00 - 0.50
5B-00363	20756	Np-236	-0.0034 U	0.0231	0.007	0.00 - 0.50
5B-00363	20756	Np-239	0.0061 U	0.0818	0.024	0.00 - 0.50
5B-00363	20756	Pa-231	-0.141 U	0.508	0.161	0.00 - 0.50
5B-00363	20756	Pb-212	1.11	0.0202	0.0657	0.00 - 0.50
5B-00363	20756	Pb-214	0.943	0.0217	0.0441	0.00 - 0.50
5B-00363	20756	Sb-125	0.0004 U	0.0284	0.0086	0.00 - 0.50
5B-00363	20756	Sn-126	-0.0022 U	0.0112	0.0034	0.00 - 0.50
5B-00363	20756	Th-234	1.49	0.187	0.126	0.00 - 0.50
5B-00363	20756	Tl-208	0.373	0.0106	0.0204	0.00 - 0.50
5B-00363	20756	Tm-171	-2.1 U	8.96	2.99	0.00 - 0.50
5B-00363	20757	Ac-227	0.0088 U	0.128	0.038	1.00 - 4.50
5B-00363	20757	Bi-212	0.787	0.0783	0.0564	1.00 - 4.50
5B-00363	20757	Bi-214	0.935	0.0182	0.0411	1.00 - 4.50
5B-00363	20757	Cd-113m	-0.336 U	84.1	27	1.00 - 4.50
5B-00363	20757	Co-60	-0.003 U	0.0106	0.0033	1.00 - 4.50
5B-00363	20757	Cs-134	0.0014 U	0.0089	0.003	1.00 - 4.50
5B-00363	20757	Cs-137	0.0058 J	0.011	0.0039	1.00 - 4.50
5B-00363	20757	Eu-152	-0.0088 U	0.0299	0.0106	1.00 - 4.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00363	20757	Eu-154	-0.0187 UJ	0.058	0.0213	1.00 - 4.50
5B-00363	20757	Eu-155	0.0759 JS	0.0446	0.0173	1.00 - 4.50
5B-00363	20757	Ho-166m	-0.0007 U	0.0166	0.0049	1.00 - 4.50
5B-00363	20757	K-40	17.8	0.0799	1.03	1.00 - 4.50
5B-00363	20757	Na-22	0.001 U	0.0123	0.0042	1.00 - 4.50
5B-00363	20757	Nb-94	0.0039 U	0.0097	0.003	1.00 - 4.50
5B-00363	20757	Np-236	-0.0033 U	0.0245	0.0076	1.00 - 4.50
5B-00363	20757	Np-239	-0.0075 U	0.0853	0.0253	1.00 - 4.50
5B-00363	20757	Pa-231	0.163 U	0.528	0.166	1.00 - 4.50
5B-00363	20757	Pb-212	1.29	0.0211	0.0851	1.00 - 4.50
5B-00363	20757	Pb-214	1.1	0.0214	0.0522	1.00 - 4.50
5B-00363	20757	Sb-125	0.0039 U	0.0279	0.0085	1.00 - 4.50
5B-00363	20757	Sn-126	0.0008 U	0.0108	0.0032	1.00 - 4.50
5B-00363	20757	Th-234	1.23 J	0.2	0.131	1.00 - 4.50
5B-00363	20757	Tl-208	0.379	0.0101	0.0203	1.00 - 4.50
5B-00363	20757	Tm-171	-11.7 UJ	9.97	4.46	1.00 - 4.50
5B-00364	20761	Ac-227	-0.0192 U	0.149	0.0442	0.00 - 0.50
5B-00364	20761	Bi-212	0.685	0.0991	0.0593	0.00 - 0.50
5B-00364	20761	Bi-214	0.766	0.0238	0.0371	0.00 - 0.50
5B-00364	20761	Cd-113m	22.5 U J	101	29.9	0.00 - 0.50
5B-00364	20761	Co-60	0.0014 U	0.0141	0.004	0.00 - 0.50
5B-00364	20761	Cs-134	0.0002 U	0.0115	0.0038	0.00 - 0.50
5B-00364	20761	Cs-137	0.0138	0.0134	0.0044	0.00 - 0.50
5B-00364	20761	Eu-152	-0.0148 U	0.0364	0.0131	0.00 - 0.50
5B-00364	20761	Eu-154	-0.0148 U	0.076	0.0231	0.00 - 0.50
5B-00364	20761	Eu-155	0.0527 SK	0.0499	0.0188	0.00 - 0.50
5B-00364	20761	Ho-166m	-0.0058 U	0.0205	0.0062	0.00 - 0.50
5B-00364	20761	K-40	20.9	0.0917	1.14	0.00 - 0.50
5B-00364	20761	Na-22	-0.008 U	0.0159	0.0051	0.00 - 0.50
5B-00364	20761	Nb-94	-0.0017 U	0.012	0.0036	0.00 - 0.50
5B-00364	20761	Np-236	0.002 U	0.0279	0.0085	0.00 - 0.50

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00364	20761	Np-239	0.0113 U	0.1	0.0294	0.00 - 0.50
5B-00364	20761	Pa-231	-0.266 U	0.606	0.198	0.00 - 0.50
5B-00364	20761	Pb-212	1.01	0.0248	0.0547	0.00 - 0.50
5B-00364	20761	Pb-214	0.894	0.0256	0.0414	0.00 - 0.50
5B-00364	20761	Sb-125	0.0257 JSK	0.0354	0.0119	0.00 - 0.50
5B-00364	20761	Sn-126	0.0011 U	0.0131	0.0038	0.00 - 0.50
5B-00364	20761	Th-234	1.08	0.213	0.11	0.00 - 0.50
5B-00364	20761	Tl-208	0.304	0.0128	0.0179	0.00 - 0.50
5B-00364	20761	Tm-171	-6.69 U J	8.23	3.24	0.00 - 0.50
5B-00364	20762	Ac-227	-0.025 U	0.205	0.0617	1.00 - 5.00
5B-00364	20762	Bi-212	0.672	0.134	0.0795	1.00 - 5.00
5B-00364	20762	Bi-214	0.782	0.032	0.0409	1.00 - 5.00
5B-00364	20762	Cd-113m	-13.1 U J	136	40.7	1.00 - 5.00
5B-00364	20762	Co-60	-0.0054 U	0.0184	0.0057	1.00 - 5.00
5B-00364	20762	Cs-134	-0.0035 U	0.0158	0.0055	1.00 - 5.00
5B-00364	20762	Cs-137	-0.0038 U	0.0174	0.0061	1.00 - 5.00
5B-00364	20762	Eu-152	0.0033 U	0.0505	0.0165	1.00 - 5.00
5B-00364	20762	Eu-154	0.0445 U	0.111	0.0331	1.00 - 5.00
5B-00364	20762	Eu-155	0.0744 JSK	0.0723	0.0281	1.00 - 5.00
5B-00364	20762	Ho-166m	0.0146 JSK	0.0291	0.009	1.00 - 5.00
5B-00364	20762	K-40	20.5	0.142	1.12	1.00 - 5.00
5B-00364	20762	Na-22	-0.0057 U	0.022	0.0067	1.00 - 5.00
5B-00364	20762	Nb-94	0.0119 JSK	0.0171	0.0056	1.00 - 5.00
5B-00364	20762	Np-236	-0.008 U	0.0383	0.0121	1.00 - 5.00
5B-00364	20762	Np-239	-0.0376 U	0.137	0.0419	1.00 - 5.00
5B-00364	20762	Pa-231	-0.165 U	0.836	0.264	1.00 - 5.00
5B-00364	20762	Pb-212	1.28	0.0341	0.0769	1.00 - 5.00
5B-00364	20762	Pb-214	0.894	0.036	0.0438	1.00 - 5.00
5B-00364	20762	Sb-125	0.0352 JSK	0.0479	0.0163	1.00 - 5.00
5B-00364	20762	Sn-126	-0.0026 U	0.0176	0.0053	1.00 - 5.00
5B-00364	20762	Th-234	1.69 J	0.369	0.448	1.00 - 5.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00364	20762	Tl-208	0.392	0.0179	0.0241	1.00 - 5.00
5B-00364	20762	Tm-171	-6.88 U	15	4.9	1.00 - 5.00
5B-00365	20763	Ac-227	-0.0035 U	0.143	0.0418	0.30 - 0.80
5B-00365	20763	Bi-212	0.672	0.0982	0.0619	0.30 - 0.80
5B-00365	20763	Bi-214	0.434	0.0228	0.0234	0.30 - 0.80
5B-00365	20763	Cd-113m	-18 U J	94.1	28	0.30 - 0.80
5B-00365	20763	Co-60	-0.0035 U	0.0125	0.0039	0.30 - 0.80
5B-00365	20763	Cs-134	0.0001 U	0.0111	0.0038	0.30 - 0.80
5B-00365	20763	Cs-137	-0.0076 U	0.0125	0.0043	0.30 - 0.80
5B-00365	20763	Eu-152	-0.0168 U	0.0343	0.0114	0.30 - 0.80
5B-00365	20763	Eu-154	0.0162 U	0.0746	0.0218	0.30 - 0.80
5B-00365	20763	Eu-155	0.0717 JSK	0.057	0.0239	0.30 - 0.80
5B-00365	20763	Ho-166m	0.0003 U	0.0197	0.006	0.30 - 0.80
5B-00365	20763	K-40	19.8	0.0917	1.07	0.30 - 0.80
5B-00365	20763	Na-22	0.0053 U	0.016	0.0048	0.30 - 0.80
5B-00365	20763	Nb-94	0.0028 U	0.0116	0.0035	0.30 - 0.80
5B-00365	20763	Np-236	-0.0015 U	0.0292	0.0089	0.30 - 0.80
5B-00365	20763	Np-239	-0.0258 U	0.0975	0.0293	0.30 - 0.80
5B-00365	20763	Pa-231	-0.173 U	0.588	0.179	0.30 - 0.80
5B-00365	20763	Pb-212	1.15	0.0238	0.0643	0.30 - 0.80
5B-00365	20763	Pb-214	0.516	0.025	0.0263	0.30 - 0.80
5B-00365	20763	Sb-125	0.0014 U	0.0327	0.0097	0.30 - 0.80
5B-00365	20763	Sn-126	-0.0038 U	0.0127	0.004	0.30 - 0.80
5B-00365	20763	Th-234	0.794	0.243	0.108	0.30 - 0.80
5B-00365	20763	Tl-208	0.366	0.012	0.0209	0.30 - 0.80
5B-00365	20763	Tm-171	-0.58 U	11.1	3.74	0.30 - 0.80
5B-00365	20764	Ac-227	0.0676 U	0.208	0.0652	1.00 - 4.00
5B-00365	20764	Bi-212	0.838	0.137	0.0786	1.00 - 4.00
5B-00365	20764	Bi-214	0.921	0.0316	0.045	1.00 - 4.00
5B-00365	20764	Cd-113m	14.2 U J	139	44.2	1.00 - 4.00
5B-00365	20764	Co-60	-0.0071 U	0.0178	0.0057	1.00 - 4.00

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00365	20764	Cs-134	0.0077 JSK	0.0156	0.0055	1.00 - 4.00
5B-00365	20764	Cs-137	0.0016 U	0.0183	0.0063	1.00 - 4.00
5B-00365	20764	Eu-152	-0.0211 U	0.0494	0.017	1.00 - 4.00
5B-00365	20764	Eu-154	0.0427 U	0.11	0.0331	1.00 - 4.00
5B-00365	20764	Eu-155	0.0949 SK	0.075	0.0255	1.00 - 4.00
5B-00365	20764	Ho-166m	0.0044 U	0.029	0.0087	1.00 - 4.00
5B-00365	20764	K-40	21.1	0.119	1.14	1.00 - 4.00
5B-00365	20764	Na-22	-0.01 U	0.0223	0.0072	1.00 - 4.00
5B-00365	20764	Nb-94	0.0028 U	0.0169	0.0051	1.00 - 4.00
5B-00365	20764	Np-236	-0.0064 U	0.0409	0.0128	1.00 - 4.00
5B-00365	20764	Np-239	0.0225 U	0.139	0.0427	1.00 - 4.00
5B-00365	20764	Pa-231	-0.0632 U	0.85	0.285	1.00 - 4.00
5B-00365	20764	Pb-212	1.32	0.0342	0.0742	1.00 - 4.00
5B-00365	20764	Pb-214	0.963	0.0356	0.0459	1.00 - 4.00
5B-00365	20764	Sb-125	0.0124 U	0.0477	0.0142	1.00 - 4.00
5B-00365	20764	Sn-126	-0.0013 U	0.0181	0.0055	1.00 - 4.00
5B-00365	20764	Th-234	1.3	0.328	0.155	1.00 - 4.00
5B-00365	20764	Tl-208	0.434	0.0172	0.026	1.00 - 4.00
5B-00365	20764	Tm-171	-6.13 U	16.5	5.76	1.00 - 4.00
5B-00366	20765	Ac-227	0.0372 U	0.196	0.0577	0.30 - 0.80
5B-00366	20765	Bi-212	0.741	0.135	0.0725	0.30 - 0.80
5B-00366	20765	Bi-214	0.865	0.0296	0.0425	0.30 - 0.80
5B-00366	20765	Cd-113m	-74.2 U J	130	44.7	0.30 - 0.80
5B-00366	20765	Co-60	0.0025 U	0.0186	0.0055	0.30 - 0.80
5B-00366	20765	Cs-134	0.0008 U	0.0143	0.005	0.30 - 0.80
5B-00366	20765	Cs-137	-0.0048 U	0.0188	0.0059	0.30 - 0.80
5B-00366	20765	Eu-152	-0.0144 U	0.0477	0.0192	0.30 - 0.80
5B-00366	20765	Eu-154	-0.0146 U	0.0994	0.0297	0.30 - 0.80
5B-00366	20765	Eu-155	0.0896 JSK	0.0711	0.0299	0.30 - 0.80
5B-00366	20765	Ho-166m	0.0008 U	0.0277	0.008	0.30 - 0.80
5B-00366	20765	K-40	22.7	0.131	1.23	0.30 - 0.80

Table A.2
Analytical Results Summary
Subarea 5B, Round 2

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00366	20765	Na-22	-0.0036 U	0.0215	0.0065	0.30 - 0.80
5B-00366	20765	Nb-94	0.0054 U	0.0166	0.0049	0.30 - 0.80
5B-00366	20765	Np-236	0.0051 U	0.0379	0.0115	0.30 - 0.80
5B-00366	20765	Np-239	0.01 U	0.134	0.0391	0.30 - 0.80
5B-00366	20765	Pa-231	-0.433 U	0.806	0.275	0.30 - 0.80
5B-00366	20765	Pb-212	1.21	0.0331	0.0688	0.30 - 0.80
5B-00366	20765	Pb-214	0.976	0.0338	0.0471	0.30 - 0.80
5B-00366	20765	Sb-125	-0.0302 U	0.0435	0.0151	0.30 - 0.80
5B-00366	20765	Sn-126	-0.0098 U	0.0169	0.0056	0.30 - 0.80
5B-00366	20765	Th-234	1.09	0.298	0.136	0.30 - 0.80
5B-00366	20765	Tl-208	0.379	0.0166	0.0223	0.30 - 0.80
5B-00366	20765	Tm-171	-9.67 U	12.6	4.96	0.30 - 0.80
5B-00366	20766	Ac-227	0.0086 U	0.199	0.0583	1.00 - 5.00
5B-00366	20766	Bi-212	0.851	0.134	0.0861	1.00 - 5.00
5B-00366	20766	Bi-214	0.869	0.031	0.0426	1.00 - 5.00
5B-00366	20766	Cd-113m	-18.7 U J	131	41.3	1.00 - 5.00
5B-00366	20766	Co-60	-0.0055 U	0.0176	0.0055	1.00 - 5.00
5B-00366	20766	Cs-134	-0.0005 U	0.0149	0.0052	1.00 - 5.00
5B-00366	20766	Cs-137	-0.0182 U J	0.0168	0.0069	1.00 - 5.00
5B-00366	20766	Eu-152	-0.0297 U	0.0476	0.0181	1.00 - 5.00
5B-00366	20766	Eu-154	0.0061 U	0.101	0.0295	1.00 - 5.00
5B-00366	20766	Eu-155	0.053 JSK	0.0703	0.0244	1.00 - 5.00
5B-00366	20766	Ho-166m	0.0074 U	0.0282	0.0083	1.00 - 5.00
5B-00366	20766	K-40	21.7	0.13	1.17	1.00 - 5.00
5B-00366	20766	Na-22	-0.0035 U	0.0214	0.0065	1.00 - 5.00
5B-00366	20766	Nb-94	0.0089 JSK	0.0161	0.005	1.00 - 5.00
5B-00366	20766	Np-236	-0.0008 U	0.0379	0.0115	1.00 - 5.00
5B-00366	20766	Np-239	-0.0075 U	0.131	0.0385	1.00 - 5.00
5B-00366	20766	Pa-231	-0.144 U	0.819	0.259	1.00 - 5.00
5B-00366	20766	Pb-212	1.28	0.0326	0.0726	1.00 - 5.00
5B-00366	20766	Pb-214	0.934	0.0352	0.0451	1.00 - 5.00

**Table A.2
Analytical Results Summary
Subarea 5B, Round 2**

Sample Location	Sample ID	Analyte Name	Activity	MDC	TPU	Sample Depth (feet bgs)
5B-00366	20766	Sb-125	-0.0035 U	0.0448	0.0134	1.00 - 5.00
5B-00366	20766	Sn-126	0.0024 U	0.0176	0.0051	1.00 - 5.00
5B-00366	20766	Th-234	1.51 J	0.361	0.391	1.00 - 5.00
5B-00366	20766	Tl-208	0.38	0.0164	0.0226	1.00 - 5.00
5B-00366	20766	Tm-171	-11.8 U J	12.8	4.81	1.00 - 5.00

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.

K - Analyte present. Reported value may be biased high. Actual value is expected to be lower.

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.

Z - The initial laboratory result was reported above its respective RTL (or Lookup Table value). The gamma spectrometry data has been inspected to determine whether the exceeding analyte is present at a quantity greater than the RTL. In the analyst's judgment, the result is unsupported by the analytical data and is therefore not considered an RTL exceedance.

Table A.3
Parent and Field Duplicate Sample Results Summary
Subarea 5B, Round 2

Sample Location	Parent Sample					Field Duplicate Sample				
	Sample ID	Analyte Name	Activity	MDC	TPU	Sample ID	Analyte Name	Activity	MDC	TPU
5B-00345	20720	Sr-90	0.104 U	0.208	0.0645	20758	Sr-90	0.106 U	0.22	0.0678
5B-00358	20746	Ac-227	-0.0074 U	0.185	0.0565	20760	Ac-227	-0.175 U J	0.204	0.0769
5B-00358	20746	Bi-212	0.909	0.124	0.0915	20760	Bi-212	0.648	0.129	0.0724
5B-00358	20746	Bi-214	1.01	0.0301	0.0489	20760	Bi-214	0.935	0.0295	0.0459
5B-00358	20746	Cd-113m	25.1 U	127	39.1	20760	Cd-113m	-163 U J	133	58
5B-00358	20746	Co-60	0.0011 U	0.0169	0.0050	20760	Co-60	-0.0000635 U	0.0186	0.00544
5B-00358	20746	Cs-134	-0.0032 U	0.0147	0.0052	20760	Cs-134	-0.00797 U	0.0141	0.00528
5B-00358	20746	Cs-137	0.0946	0.0154	0.0088	20760	Cs-137	0.0833 J	0.0185	0.00895
5B-00358	20746	Eu-152	-0.0229 U	0.0448	0.0143	20760	Eu-152	-0.0185 U	0.0499	0.0178
5B-00358	20746	Eu-154	-0.0707 U J	0.0957	0.0341	20760	Eu-154	0.0127 U	0.108	0.0323
5B-00358	20746	Eu-155	0.0498 JSK	0.065	0.022	20760	Eu-155	0.00532 U	0.076	0.0225
5B-00358	20746	Ho-166m	0.0024 U J	0.0255	0.0077	20760	Ho-166m	-0.012 U J	0.0266	0.00846
5B-00358	20746	K-40	23.2	0.129	1.25	20760	K-40	21.1	0.138	1.31
5B-00358	20746	Na-22	-0.0030 U	0.0199	0.0061	20760	Na-22	-0.00942 U	0.0215	0.0077
5B-00358	20746	Nb-94	0.0058 U	0.0152	0.0047	20760	Nb-94	0.0101 JSK	0.0167	0.00531
5B-00358	20746	Np-236	-0.0266 U J	0.0337	0.0119	20760	Np-236	-0.00954 U	0.0409	0.0124
5B-00358	20746	Np-239	-0.0183 U	0.125	0.0385	20760	Np-239	-0.00121 U	0.137	0.0421
5B-00358	20746	Pa-231	-0.0722 U	0.777	0.24	20760	Pa-231	-0.188 U	0.86	0.282
5B-00358	20746	Pb-212	1.31	0.0312	0.075	20760	Pb-212	1.16	0.0347	0.0773
5B-00358	20746	Pb-214	1.15	0.0326	0.054	20760	Pb-214	1.09	0.0355	0.0564

Table A.3
Parent and Field Duplicate Sample Results Summary
Subarea 5B, Round 2

Sample Location	Parent Sample					Field Duplicate Sample				
	Sample ID	Analyte Name	Activity	MDC	TPU	Sample ID	Analyte Name	Activity	MDC	TPU
5B-00358	20746	Sb-125	0.007 U	0.0437	0.0128	20760	Sb-125	0.0154 U	0.0466	0.0142
5B-00358	20746	Sn-126	0.004 U	0.0175	0.0053	20760	Sn-126	0.000185 U	0.0181	0.0053
5B-00358	20746	Tl-208	0.373	0.0161	0.022	20760	Tl-208	0.369	0.0173	0.0219
5B-00358	20746	Tm-171	3.28 U	12.4	4.29	20760	Tm-171	3.69 U	19.5	5.72
5B-00363	20756	Ac-227	-0.0593 U	0.121	0.0388	20759	Ac-227	0.0981 U	0.221	0.0679
5B-00363	20756	Bi-212	0.72	0.0846	0.0568	20759	Bi-212	0.806	0.133	0.0767
5B-00363	20756	Bi-214	0.884	0.0193	0.0395	20759	Bi-214	0.993	0.0328	0.0489
5B-00363	20756	Cd-113m	-2.35 U	79.4	24.3	20759	Cd-113m	-63 U	144	51.6
5B-00363	20756	Co-60	-0.0032 U	0.0123	0.0038	20759	Co-60	-0.00545 U	0.0182	0.00567
5B-00363	20756	Cs-134	0.004 U	0.0098	0.0034	20759	Cs-134	0.0173 JS	0.0172	0.00692
5B-00363	20756	Cs-137	0.08	0.0115	0.0062	20759	Cs-137	0.076	0.0192	0.00951
5B-00363	20756	Eu-152	-0.0109 U	0.0304	0.0096	20759	Eu-152	-0.0093 U	0.054	0.0237
5B-00363	20756	Eu-154	-0.000894 UJ	0.0658	0.0223	20759	Eu-154	-0.0384 UJ	0.107	0.0335
5B-00363	20756	Eu-155	0.0735 JS	0.0411	0.018	20759	Eu-155	0.036 U	0.0803	0.0255
5B-00363	20756	Ho-166m	-0.0080 U	0.0174	0.0056	20759	Ho-166m	0.0169 JS	0.029	0.00905
5B-00363	20756	K-40	18.9	0.0893	1.15	20759	K-40	20.7	0.128	1.13
5B-00363	20756	Na-22	-0.0097 U	0.014	0.0049	20759	Na-22	-0.0117 U	0.0223	0.00742
5B-00363	20756	Nb-94	0.0030 U	0.0105	0.0032	20759	Nb-94	0.000378 U	0.0163	0.00473
5B-00363	20756	Np-236	-0.0034 U	0.0231	0.0070	20759	Np-236	0.0175 U	0.043	0.0135
5B-00363	20756	Np-239	0.0061 U	0.0818	0.024	20759	Np-239	0.02 U	0.146	0.0427

Table A.3
Parent and Field Duplicate Sample Results Summary
Subarea 5B, Round 2

Sample Location	Parent Sample					Field Duplicate Sample				
	Sample ID	Analyte Name	Activity	MDC	TPU	Sample ID	Analyte Name	Activity	MDC	TPU
5B-00363	20756	Pa-231	-0.141 U	0.508	0.161	20759	Pa-231	-0.18 U	0.911	0.28
5B-00363	20756	Pb-212	1.11	0.0202	0.0657	20759	Pb-212	1.25	0.0359	0.0732
5B-00363	20756	Pb-214	0.943	0.0217	0.0441	20759	Pb-214	1.1	0.038	0.0532
5B-00363	20756	Sb-125	0.0004 U	0.0284	0.0086	20759	Sb-125	0.0168 U	0.0494	0.015
5B-00363	20756	Sn-126	-0.0022 U	0.0112	0.0034	20759	Sn-126	-0.00669 U	0.0179	0.00553
5B-00363	20756	Tl-208	0.373	0.0106	0.0204	20759	Tl-208	0.376	0.0182	0.0233
5B-00363	20756	Tm-171	-2.1 U	8.96	2.99	20759	Tm-171	-10.9 U	17.9	6.73

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.

K - Analyte present. Reported value may be biased high. Actual value is expected to be lower.

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.4
Rinsate and Source Water Comparison Summary
Subarea 5B, Round 2

Sample Type	Sample ID	U-233/U-234			U-235/U-236			U-238		
		Activity	MDC	TPU	Activity	MDC	TPU	Activity	MDC	TPU
Rinsate	R0377	-0.0477 U	0.122	0.0246	0.0184 J	0.0249	0.0131	-0.0107 U	0.0586	0.0106
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0379	-0.0309 U	0.124	0.0292	0.01 U	0.05	0.0125	0.00356 U	0.0501	0.0111
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0381	-0.0104 U	0.0628	0.0114	0.00774 J	0.021	0.00776	0.00626 J	0.017	0.00628
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0383	-0.0196 U	0.0961	0.0217	-0.00329 U	0.0589	0.0107	0.00169 U	0.0385	0.00745
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0385	0.0946 J	0.103	0.0413	0 J	0.0436	0.0161	0.0203 UJ	0.103	0.0262
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0387	0.0147 UJ	0.127	0.0329	-0.0053 UJ	0.095	0.0172	0.0487 J	0.0264	0.0221
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0389	0.0149 UJ	0.101	0.0252	0.0277 J	0.0375	0.0197	0.00628 UJ	0.0884	0.0195
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0391	-0.02 UJ	0.113	0.0225	0.0153 UJ	0.0764	0.0191	0.0345 J	0.0765	0.024
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0518	-0.00218 U	0.093	0.0217	0.0026 U	0.0591	0.0114	-0.0033 U	0.0592	0.0107
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0600	-0.0492 U	0.137	0.0271	0.0171 U	0.0865	0.0221	0.00497 U	0.07	0.0155
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813
Rinsate	R0601	0.0268 U	0.154	0.042	-0.0268 U	0.112	0.0198	0.00281 U	0.0639	0.0124
Source	S0280	-0.0214 U	0.0718	0.0125	0 J	0.0221	0.00816	-0.00475 U	0.042	0.00813

Table A.4
Rinsate and Source Water Comparison Summary
Subarea 5B, Round 2

Sample Type	Sample ID	U-233/U-234			U-235/U-236			U-238		
		Activity	MDC	TPU	Activity	MDC	TPU	Activity	MDC	TPU
Rinsate	R0724	-0.0175 U	0.128	0.032	0	0.0247	0.0113	0.00207 U	0.047	0.0129
Source	S0281	-0.0573 U	0.181	0.0354	0.00875 U	0.123	0.0273	0.0162 U	0.0805	0.0201
Rinsate	R0725	0.00143 U	0.0892	0.0237	0.0132 U	0.0666	0.0199	0.0156	0.0435	0.0154
Source	S0281	-0.0573 U	0.181	0.0354	0.00875 U	0.123	0.0273	0.0162 U	0.0805	0.0201
Rinsate	R0801	0.0338 U	0.0966	0.0308	0.0153 U	0.0772	0.0231	0.0203 U	0.0624	0.0203
Source	S0281	-0.0573 U	0.181	0.0354	0.00875 U	0.123	0.0273	0.0162 U	0.0805	0.0201
Rinsate	R0802	-0.00812 U	0.101	0.0252	0.0175	0.0237	0.0164	0.00396 U	0.0557	0.0151
Source	S0281	-0.0573 U	0.181	0.0354	0.00875 U	0.123	0.0273	0.0162 U	0.0805	0.0201

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

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Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 344
Drilling Company: HydroGeoLogic	Driller: G. Morse	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/7/12 0951	Date/Time Total Depth Reached: 3/7/12 0955	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20718 - 1000	
Geologist: I. Shaw	Checked By / Date: Will Humpal 3-8-12			

Radiological Background: 16/2667/74	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background:	0.0 ppm
----------------------------------------	---------------------------------------------------------------------	------------------------------------------	---------

Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)	
							Feet bgs.	
0.0			0.0	16/66	AF: Artificial Fill (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable) NA/Pancake Silty Sand, Yellowish Brown (5/4 10%R), 75% fine sand, 25% silt, trace fine gravel, low dense, dry, no odor or staining TD = 0.5 ft bgs no gw encountered	AF/sm		
0.5			0.0	16/78				
1.0								
2.0								
3.0								
4.0								
5.0								
6.0								

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 344
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 5.25 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/7/12 1005	Date/Time Total Depth Reached: 3/7/12 1015	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20719-1040	
Geologist: I. Stone	Checked By / Date: Duff Thompson 3-8-12			

Radiological Background: 16 / 2667 / 74	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Borehole Gamma Readings Feet bgs. +0.5' = 2728 (CPM)
0.0			0.0	60	Silty Sand, Yellowish brown (5/4 104R), 75% fine sand, 25% silt, trace fine gravel, dry, low dense, no odor or staining	AF/sm	3823
0.5			0.0	54	Silty Sand, Brown (4/3 104R)	AF/sm	4155
1.0			0.0	66	60% fine sand, 40% silt, trace gravel, dry, med dense, no odor or staining slight mottling		4485
2.0			0.0	60			4644
2.0			0.0	84			4887
3.0			0.0	72			5020
3.0			0.0	60			5188
4.0			0.0	54	Silty Sand w/clay, Brown (4/4 7.54R) 60% fine sand, 30% silt, 10% clay, dry, trace gravel, med dense, no odor or staining		6291
4.0			0.0	72	Silty Sand, Yellowish Brown (5/4 104R) 60% fine sand, 40% silt, trace gravel, dry, med dense, no odor or staining	AF/sm	5243
5.0			0.0	84	Gravelly Sand, light yellowish brown (6/4 70% fine sand, 25% fine gravel, 5% silt, 10% dry, low dense, no odor or staining	AF/spm	5255
5.0			0.0	66	Silty Sand, yellowish brown (5/4 104R), 60% fine sand, 40% silt, trace gravel, dry, med dense no odor Sand (unconsolidated sandstone); brownish yellow (6/6 104R) 95% fine sand, 5% silt, dry, med dense, no odor or staining	AF/sp AF/sm SP	5155
6.0					TD = 5.25 ft bgs no gw encountered refusal on sandstone no anomalies detected		

SSFL BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 345
Drilling Company: HydroGeologic	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/7/12 0828	Date/Time Total Depth Reached: 3/7/12 0832	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20720-0835 20753(0.5 ft) - NT	
Geologist: I. Stone	Checked By / Date: [Signature] 7-8-12			

Radiological Background: 17 / 2816 / 97	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description AF: Artificial Fill (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)	
							Feet bgs.	
0.0			0.0	17/78	S. Hy Sand, light yellowish brown (6/4 10YR) 75% fine sand, 25% silt, trace fine gravel, dry, low dense, no odor or staining	AF/ SM		
0.5			0.0	17/78				
1.0					TD = 0.5 ft bgs no gw encountered			
2.0								
3.0								
4.0								
5.0								
6.0								

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 345
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 8 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/7/12 0844	Date/Time Total Depth Reached: 3/7/12 0905	
Type of Sampling Device: 1.75 macrocore with acetate liner		Samples Collected: 20721-0940 One 1/2 Gallon Bag (Approx 8 lbs.)		
Geologist: I. Stone		Checked By / Date: Will Thompson 3-8-12		

Radiological Background: 17 / 2816 / 97	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background:	0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description of Artificial Fill (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings + 0.5' = 2763 (CPM)
0.0			0.0	72	Silty Sand, light yellowish brown (6/4 10YR), 75% fine grained sand, 25% silt, trace gravel, dry, low dense, no odor or staining	AF/SM		3221
0.5			0.0	60	Silty Sand, Brown (4/3 10YR)	AF/SM		4376
1.0			0.0	54	60% fine sand, 40% silt, trace gravel, dry, med dense, no odor or staining	AF/SM	1	4544
			0.0	54				4551
2.0			0.0	60	Silty Sand, Dark yellowish brown (4/4 10YR)	AF/SM	2	5098
			0.0	66	70% fine sand, 30% silt, dry, med dense, trace gravel, mottling, no odor or staining	AF/SM		5160
3.0			0.0	84	-concrete		3	5156
			0.0	60				5197
4.0			0.0	60			4	5456
			0.0	48				5180
5.0			0.0	60	Sand w/silt, light olive yellow (5/4 2.5Y)	AF/SP	5	5191
			0.0	96	90% fine sand, 10% silt, dry, med-high dense, no odor or staining			5378
6.0			0.0	90			6	5573

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 346
Drilling Company: HydroGeologic	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/6/12 1457	Date/Time Total Depth Reached: 3/6/12 1454	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20722-1455	
Geologist: I. Stone		Checked By / Date: J. Robbins, J. Alderman 3/7/12		

Radiological Background: 16 / 2671 / 78	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background:	0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.5			0.0	15/72	<p>Silty sand, yellowish brown (5/6 10YR). 75% fine sand, 25% silt, trace gravel (granitic), dry, low dense, no odor or staining</p> <p>TD = 0.5 ft bgs no gw encountered</p>	Af/Sm	
1.0		0.0	16/90				
2.0							
3.0							
4.0							
5.0							
6.0							

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 346
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 4.5 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/6/12/503	Date/Time Total Depth Reached: 3/6/12 1510	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: One 1/2 Gallon Bag (Approx. 8 lbs.)		20723 - 1540	
Geologist: I. Stone	Checked By / Date: J. Robbins Goldman 3/7/12			

Radiological Background: 16/2671/78	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background:	0.3 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings 0.5 = 2641 (CPM)
0.0			0.0	60	Silty Sand, Yellowish brown (5/6 10YR), 75% fine sand, 25% silt, trace gravel, dry, low dense, no odor or staining	AF/SM	2793
0.5			0.0	78			3894
1.0			0.0	54			4426
2.0			0.0	66	Silty Sand, Dark yellowish brown (4/4 10YR), 60% fine sand, 40% silt, trace gravel (granitic), med dense, no odor or staining	AF/SM	4543
2.0			0.0	72			4997
3.0			0.0	84			5162
3.0			0.0	60	concrete chon ^{ES} (1.5")		5090
4.0			0.0	78	Sand (weathered sandstone), light yellowish brown (6/4 2.5Y) 95% fine sand, 5% silt, med-high dense, no odor or staining	SP	5045
4.0			0.0	60			5059
5.0			0.0	60			4929
6.0					TD=4.5ft bgs no gw encountered refusal on sandstone/weathered bedrock no anomalies detected		

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 347
Drilling Company: HydroGeoLogic	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/7/12 1409	Date/Time Total Depth Reached: 3/7/12 1420	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20724 - 1425	
Geologist: I. Stone		Checked By / Date: ditt Hayslet 3-8-12		

Radiological Background: 15 / 2528 / 95	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description of Artificial Fill (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
0.0			0.0	16/84	3" asphalt			
0.5			0.0	16/84	Silty Sand, Yellowish brown (5YR 10YR) 60% fine sand, 40% silt, trace gravel, trace asphalt; trace debris (wire), dry, no odor or staining, med dense	AE / SM		
1.0								
2.0								
3.0								
4.0								
5.0								
6.0								

TD = 0.5 ft bgs
No GW encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 347
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 9 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/7/12 1422	Date/Time Total Depth Reached: 3/7/12 1430	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20725-1515	
Geologist: J. Stone	Checked By / Date: Will Knudt 3-8-12			

Radiological Background: 15/2528/95	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings = 0.5' = 2656 (CPM)
			0.0	66	3" asphalt			3052
0.5			6.0	66	Silty Sand, Yellowish brown (5/4 10R) 60% fine sand, 40% silt, trace gravel, trace asphalt, dry, med dense, debris (wire), no odor or staining	AF/SM		4290
1.0			0.0	72	Silty Sand, Brownish Yellow (6/6 10YR) 70% fine sand, 30% silt, dry, slightly mottled, trace sandstone gravel, med dense, no odor or staining	AF/SM	1	4977
			0.0	72				5209
2.0			0.0	66			2	5272
			0.0	60				5582
3.0			0.0	54	Silty Sand, very dark grayish brown (3/2 10YR) 60% fine sand, 40% silt, dry, med dense, no odor or staining	SM	3	5520
			0.0	54				5891
4.0			0.0	60			4	5943
			0.0	66				5903
5.0			0.0	84			5	5797
			0.0	78	Clay Brownish Yellow (6/6 10YR) light olive brown (5/3 2.5Y) 95% clay, 5% silt, dry, high tough, high dry strength, no shrinkage, med plasticity, no odor or staining	CL		5737
6.0			0.0	96			6	5964

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03		Subarea: 5B	Group: 1	Location ID: 348	
Drilling Company: Boart Longyear		Driller: Don Hansen		Ground Elevation: NA		Total Depth Drilled: 6.5 ft bgs.	
Drilling Equipment: 6600 Geoprobe		Borehole Diameter: 1.75 in.		Date/Time Drilling Started: 3/7/12 1151		Date/Time Total Depth Reached: 3/7/12 1205	
Type of Sampling Device: 1.75 macrocore with acetate liner				Samples Collected: 20727-1230 One 1/2 Gallon Bag (Approx 8 lbs.)			
Geologist: I. Stone				Checked By / Date: Kiff Knight 3-8-12			
Radiological Background: 16/2772/85		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background: 0.0 ppm			
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM) Feet bgs. +0.5' = 2720
			0.0	66	2" Asphalt		3327
0.5			0.0	54	Silty Sand, Dark Brown (3/3 10YR), 60% fine sand, 40% silt, trace gravel (non-hex), dry, med dense, no odor or staining	AP/SM	3541
1.0			0.0	66			4648
			0.0	60			5185
2.0			0.0	66	Sand, Pale Yellow (7/3 2.5Y), 95% fine sand, 5% silt, dry, med-high dense, no odor or staining	SP	5128
			0.0	102			5193
3.0			0.0	78			5235
			0.0	90	Silty Sand, Dark Brown (3/3 10YR) 60% fine sand, 40% silt, dry, med dense, no odor or staining	SM	5479
4.0			0.0	66	Sand (S) Sand (weathered sandstone) (S)	SM	5900
			0.0	84			6216
5.0			0.0	78	Sand (weathered sandstone), very pale brown (7/4 10YR) 95% fine sand, 5% silt, dry, med-high dense, no odor or staining	SP	5803
			0.0	54			5150
6.0			0.0	102			4761

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 349
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 2.67 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/7/12 1540	Date/Time Total Depth Reached: 3/7/12 1545	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: 20729-1600		One 1/2 Gallon Bag (Approx 8 lbs.)	
Geologist: I. Stone	Checked By / Date: Will Hunt 3-8-12			

Radiological Background: 17 / 2610 / 68	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings +0.5' = 2904 (CPM)
			0.0	90	2" asphalt			3040
0.5			0.0	60	Silty Sand, Yellowish brown (5/6 10YR) 70% fine grained sand, 30% silt, dry, med dense, no odor or staining	SM		4473
1.0			0.0	84				4934
			0.0	48	Sand, Pale Yellow (7/4 2.5Y) 95% fine sand, 5% silt, dry, med-high dense, no odor or staining	SP		4917
2.0			0.0	60	Sandy Silt, Dark Brown (3/3 10YR) 40% fine sand, 60% silt, dry, low toughness low strength, slow dewatering, no odor or staining	ML	2	5073
			0.0	54	Sand (weathered sandstone), very pale brown (7/4 10YR) 95% fine sand, 5% silt, dry, high dense no odor or staining	SP	3	4869
3.0								
4.0								
5.0								
6.0								

TD = 2ft 8in bgs
no gw encountered
refusal on sandstone
no anomalies detected

SSFL BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 350
Drilling Company: HydroGeoLogic	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/8/12 0911	Date/Time Total Depth Reached: 3/8/12 0915	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Apprx 8 lbs.)		20730 - 0920	
Geologist: I. Stone	Checked By / Date: J. Robbins / 3/9/12			

Radiological Background: 17 / 2802 / 76	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
0.0			0.0	17/84	<p>Silty Sand, yellowish brown (5/4 10YR), 75% fine sand, 25% silt, trace gravel, trace rootlets, dry, low dense, no odor or staining</p> <p>TP = 0.54 ft bgs no gw encountered</p>	AF/Sms		
0.5			0.0	17/96				
1.0								
2.0								
3.0								
4.0								
5.0								
6.0								

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03		Subarea: 5B		Group: 8		Location ID: 350	
Drilling Company: Boart Longyear		Driller: Don Hansen		Ground Elevation: NA		Total Depth Drilled: 6.75 ft bgs.			
Drilling Equipment: 6600 Geoprobe		Borehole Diameter: 1.75 in.		Date/Time Drilling Started: 3/8/12 0921		Date/Time Total Depth Reached: 3/8/12 0935			
Type of Sampling Device: 1.75 macrocore with acetate liner				Samples Collected: 20731 - 1000		One 1/2 Gallon Bag (Approx 8 lbs.)			
Geologist: I. Stone				Checked By / Date: Robinson Goldman 3/9/12					
Radiological Background: 17 / 2802 / Fb		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background:		0.0 ppm			
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings 0.5' = 2727 (CPM)	
0.0			0.0	72	Silty Sand, Yellowish Brown (5/4 10YR) 75% fine sand, 25% silt, trace gravel (non-angular) trace pebbles, dry, low dense, no odor and staining	AK/SM		2954	
0.5			0.0	60				4132	
1.0			0.0	66	Silty Sand, Brown (5/3 10YR)	SM	1	4934	
			0.0	54	60% fine sand, 40% silt, dry, low dense, no odor or staining			5186	
2.0			0.0	60	slow dilatancy		2	5404	
			0.0	84				5443	
3.0			0.0	72			3	5394	
			0.0	96				5347	
4.0			0.0	84	Silty Sand, Yellowish Brown (5/6 10YR)	SM	4	5430	
			0.0	72	80% fine sand, 20% silt, dry, med dense, no odor or staining			5165	
5.0			0.0	60			5	5282	
			0.0	78				5549	
6.0			0.0	72	Clay w/ Sand, Brown (5/7 10YR), 10% fine sand, 90% clay, dry, med strength, med tough, med plasticity, no odor or staining, no dilatancy.	CL	6	5659	

SSFL BORING LOG



Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03		Subarea: 5B		Group: 8		Location ID: 351	
Drilling Company: HydroGeoLogic		Driller: T. Morse		Ground Elevation: NA		Total Depth Drilled: 0.5 ft bgs.			
Drilling Equipment: Trowel/shovel		Borehole Diameter: NA		Date/Time Drilling Started: 3/8/12 1342		Date/Time Total Depth Reached: 3/8/12 1348			
Type of Sampling Device: Trowel/shovel		Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20732-1350					
Geologist: I. Stone		Checked By / Date: J. Robbins/Goldman 3/9/12							
Radiological Background: 1b / 2903 / 65		Radiological Equipment Used: Micro R / Downhole / Pancake Meters			PID Used: Mini Rae 2000 - Background: 0.0 ppm				
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (Feet bgs. / CPM)		
0.0			0.0	1b/78	Silty Sand, Yellowish Brown (5/4 10YR) 75% fine sand, 25% silt, trace gravel, dry, low dense, no odor or staining TD = 0.5 ft logs No gas encountered	AF/ SM			
0.5			0.0	17/54					
1.0									
2.0									
3.0									
4.0									
5.0									
6.0									

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03		Subarea: 5B	Group: 8	Location ID: 351	
Drilling Company: Boart Longyear		Driller: Don Hansen		Ground Elevation: NA		Total Depth Drilled: 10 ft bgs.	
Drilling Equipment: 6600 Geoprobe		Borehole Diameter: 1.75 in.		Date/Time Drilling Started: 3/8/12 1357		Date/Time Total Depth Reached: 3/8/12 1356	
Type of Sampling Device: 1.75 macrocore with acetate liner				Samples Collected: 20733-1435 One 1/2 Gallon Bag (Approx 8 lbs.)			
Geologist: I. Stone				Checked By / Date: Robbin Goldman 3/9/12			
Radiological Background: 16 / 2903 / 65		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background: 0.0 ppm			

Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings	
							Feet bgs.	+0.5' = 2839 (CPM)
			0.0	66	Silty sand, yellowish brown (5/4 10YR) 75% fine sand, 25% silt, trace gravel, dry, low dense, no odor or staining	AE/ SM		3270
0.5			0.0	60				4331
1.0			0.0	78			1	4869
			0.0	54	Sandy silt Dark yellowish brown (4/6 10YR) Clayey silt w/ clay 60% silt, 30% fine sand, 10% clay. dry, low-med toughness, low-med strength, med plasticity	ML		4926
2.0			0.0	60			2	4975
			0.0	54				5067
3.0			0.0	78	Silty clay w/ sand, yellowish brown (5/6 10YR) 10% fine sand, 40% silt, 50% clay, dry, med strength, med toughness, med plasticity, no odor or staining	CL	3	5190
			0.0	66				5350
4.0			0.0	78	Sand, yellowish brown (5/8 10YR) 80% fine sand, 15% medium sand, 5% silt, dry, med dense, no odor or staining	SP	4	5570
			0.0	72				5239
5.0			0.0	54			5	5180
			0.0	60				5348
6.0			0.0	54	Cont'd on next page		6	5179

SSFL BORING LOG



Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 352
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 5.67 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/8/12 1510	Date/Time Total Depth Reached: 3/8/12 1519	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: 20735 - 1540 One 1/2 Gallon Bag (Approx 8 lbs.)		Checked By / Date: J. Robbins Goldman 3/9/12	
Geologist: I. Stone				

Radiological Background: 16 / 2841 / 85	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings +0.5' = 2883 (CPM)
0.0			0.0	96	Silty Sand, Yellowish brown (5/4 10YR) 75% fine sand, 25% silt, dry, trace rootlets low dense, no odor or staining	SM	0.0	3170
0.5			0.0	90			4666	
1.0			0.0	54			5181	
			0.0	54			5067	
2.0			0.0	66	Sandy silt, Brown (5/3 10YR) 60% 35% fine sand, 60% silt, 5% clay, dry, med to low med strength, low-med toughness, low plasticity, no odor or staining	ML	2.0	5083
			0.0	60			5077	
3.0			0.0	78			4664	
			0.0	60			4788	
4.0			0.0	54	Sand w/ silt, Dark Yellowish brown (4/6 10YR) 90% fine sand, 10% silt, dry, med dense, no odor or staining	SP	4.0	4900
			0.0	48			4611	
5.0			0.0	42			4674	
			0.0	66	Sand (weathered sandstone), Brownish yellow (6/6 10YR) 95% fine sand, 5% silt, high dense, no odor dry, to or staining, dry	SP		NM
6.0					TID = 5 ft 8 in bgs no gas encountered; refusal on sandstone			

SSFL BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03		Subarea: 5B	Group: 8	Location ID: 353	
Drilling Company: HydroGeoLogic		Driller: T. Morse		Ground Elevation: NA		Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel		Borehole Diameter: NA		Date/Time Drilling Started: 3/8/12 1022		Date/Time Total Depth Reached: 3/8/12 1025	
Type of Sampling Device: Trowel/shovel				Samples Collected: 20736-1026			
Geologist: I. Stone				Checked By / Date: Robbin Yedman 3/9/12			
Radiological Background: 16 / 2656 / 46		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background: 0.0 ppm			
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.0			0.0	16/84	Silty Sand, Dark Brown (3/3 10% ^W), 75% fine sand, 25% silt, moist, low dense, no odor or staining	SM	
0.5			0.0	16/72			
1.0							
2.0							
3.0							
4.0							
5.0							
6.0							

TD = 0.5 ft bgs
no gw encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 353
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 7 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/8/12 1032	Date/Time Total Depth Reached: 3/8/12 1043	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: 20737 - 1110 One 1/2 Gallon Bag (Approx 8 lbs.)			
Geologist: I. Stone	Checked By / Date: Robert Johnson 3/9/12			

Radiological Background: 16 / 2656 / 46	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 8.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.0			0.0	54	Silty Sand, Dark Brown (3/3 10YR)		2813
0.5			0.0	60	75% fine sand, 25% silt, moist, low dense, no odor or staining	SM	3988
1.0			0.0	96	Silty Sand, Brown (4/3 10YR) 60% fine sand, 40% silt, moist, med dense, no odor or staining	SM	4874
2.0			0.0	54	Sandy Silt, Dark yellowish brown (4/6 10YR)	ML	5142
2.0			0.0	60	40% fine sand, 60% silt, dry, med low-med strength, low toughness, low plasticity, slow dilatancy, no odor or staining		5222
3.0			0.0	66			5275
3.0			0.0	66			5215
4.0			0.0	72			5351
4.0			0.0	60			5570
5.0			0.0	54			5525
5.0			0.0	54	Sandy silt w/ clay, Dark yellowish brown (4/6 10YR)		5334
6.0			0.0	60	30% fine sand, 60% silt, 10% clay, dry, moist, low-med strength, low-med toughness, med plasticity, no odor or staining	ML	5189
6.0			0.0	66			5417

Project Name:		Project Number:	Subarea:	Group:	Location ID:		
SSFL Area IV Radiological Study		EP038.01.22.04.03	5B	8	353		
Radiological Background:		Radiological Equipment Used:		PID Used:			
16 / 2656 / 46		Micro R / Downhole / Pancake Meters		Mini Rae 2000 - Background: 0.0 ppm			
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
6.0				66	Sandy silty clay silty clay, same as above		5417
				60	Sand (weathered sandstone), yellowish brown (5/6 (dry)), moist, high dense, no odor or staining	Mu	5364
7.0			54	SP		5207	
8.0					TD = 7ft bgs no gw encountered refusal on sandstone no anomalies detected		
9.0							
10.0							
11.0							
12.0							
13.0							

SSFL BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 354
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 4 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/9/12 0903	Date/Time Total Depth Reached: 3/9/12 0916	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: 20739 - 0940 One 1/2 Gallon Bag (Approx 0.5 lbs) (2) 5 lbs			
Geologist: I. Stone	Checked By / Date: J. Solomon 3/12/12			

Radiological Background: 15 / 2934 / 59	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings 10.5' = 2796 (CPM)
0.0			0.0	78	Silly Sand, Dark yellowish brown (4/4 10YR)		3104
0.5			0.0	60	75% fine sand, 25% silt, dry, low dense, no odor or staining	SM	4091
1.0			0.0	54			4821
			0.0	72	Silly Sand, Yellowish Brown (5/4 10YR)		5044
2.0			0.0	66	60% fine sand, 40% silt moist, med dense, no odor or staining	SM	4990
			0.0	90	Silly Sand, Brownish Yellow (6/6 10YR)		4850
			0.0	60	80% fine sand, 20% silt, moist, med dense, no odor or staining	SM	4845
3.0			0.0	66	Sand (weathered sandstone), very pale brown (7/4 6.5YR)	SP	5132
			0.0	66	95% fine sand, 5% silt, moist, high dense, no odor or staining		4712
4.0			0.0	66			
5.0					TD = 4 ft bgs no gw encountered Refusal on sandstone no anomalies detected		
6.0							

SSFL BORING LOG

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03		Subarea: 5B	Group: 8	Location ID: 355	
Drilling Company: HydroGeoLogic		Driller: T. Morse		Ground Elevation: NA		Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel		Borehole Diameter: NA		Date/Time Drilling Started: 3/9/12 10:19		Date/Time Total Depth Reached: 3/9/12 10:24	
Type of Sampling Device: Trowel/shovel				Samples Collected: One 1/2 Gallon Bag (Approx. 0.5 lbs.) 20740-1025			
Geologist: I. Stone				Checked By / Date: Robbin Goldman 3/12/12			
Radiological Background: 17/2797/74		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background: 0.0 ppm			
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain-size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.0			17/96	NR/pancake	S. lgy Sand, Dark Yellowish Brown (4H 10K) 75% fine sand, 25% silt, trace scattered, dry, low dense, no odor or staining	SM	
0.5			17/54				
1.0							
2.0							
3.0							
4.0							
5.0							
6.0							

TD = 0.5 ft bgs
no gas encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 355
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 3.5 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/9/12 1035	Date/Time Total Depth Reached: 3/9/12 1039	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: 20741 ~ 1100 One 1/2 Gallon Bag (Approx 8 lbs.) 5 lbs.			
Geologist: I. Stone		Checked By / Date: J. Haloman 3/12/12		

Radiological Background: 17 (2797) 74	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 00 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Feet bgs. *0.5 = 2803 (CPM)
0.0			0.0	54	Silty Sand, Dark yellowish brown (4/4 10YR) 75% fine sand, 25% silt, trace rootlets, dry, low dense, no odor or staining	SM	3039
0.5			0.0	48			4108
1.0			0.0	54			4820
			0.0	66	Sand (weathered sandstone cobbles), Brownish yellow (6/6 10YR) 5% silt, 80% fine sand, 15% medium sand, dry, high dense, no O+S	SP	5165
2.0			0.0	72	Silty Sand, Dark brown yellowish brown (4/4 10YR) 60% fine sand, 40% silt, dry, med dense, no odor or staining	SM	5121
			0.0	90			5166
3.0			0.0	84	Sand, (weathered sandstone), Yellow (7/6 10YR) 90% fine sand, 5% silt, dry, high dense 15% medium sand, no odor or staining	SP	5214
			0.0	72			4897
4.0					TD = 3.5 ft bgs No gas encountered refusal on sandstone no anomalies detected		
5.0							
6.0							

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 356
Drilling Company: HydroGeoLogic	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/9/12 1115	Date/Time Total Depth Reached: 3/7/12 1118	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs) 5 lbs		Checked By / Date: J. Stone / 3/12/12	

Radiological Background: 17 / 3059 / 63	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs. Borehole Gamma Readings (CPM)
0.0 - 0.5			0.0	17/66	<p>Silty Sand, Dark yellowish brown (4/4/04R), 75% fine sand, 25% silt, trace rocklets, dry, low dense, no odor or staining</p> <p>TD = 0.5 ft bgs no gw encountered</p>		
0.5 - 1.0			0.0	17/66			
1.0 - 2.0							
2.0 - 3.0							
3.0 - 4.0							
4.0 - 5.0							
5.0 - 6.0							

SSFL BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 3	Location ID: 356
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 4.5 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/9/12 1125	Date/Time Total Depth Reached: 3/9/12 1130	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: 20743-1155 One 1/2 Gallon Bag (Approx 8 lbs) 5163			
Geologist: I. Stone	Checked By / Date: Robert Madonia 3/12/12			
Radiological Background: 17 / 3059 / 63	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm		

Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.0			0.0	66	Silty Sand, Dark Yellowish brown (4/14 10YR)	SM	3124
0.5			0.0	96	75% fine sand, 25% silt, dry, low dense, no odor or staining trace rootlets		4370
1.0			0.0	60	Sandy silt, Dark Yellowish brown (4/3 10YR)	ML	5284
			0.0	72	40% fine sand, 60% silt, dry, low tough, low strength, no odor or staining		5495
2.0			0.0	48	Silty Sand, Yellowish brown (5/6 10YR)	SM	5590
			0.0	48	70% fine sand, 10% medium sand, 20% silt, dry, med dense, no odor or staining		5916
3.0			0.0	66	Sand (weathered sandstone), Brownish Yellow (6/6 10YR)	SP	5925
			0.0	54	95% 80% fine sand, 15% medium sand, 5% silt, dry moist, high dense, no odor or staining		5695
4.0			0.0	60			5434
			0.0	72			5467
5.0					TD = 4.5 ft bgs no gw encountered refusal on sandstone		
6.0							

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 5370 357	
Drilling Company: HGL	Driller: Matt Birney	Ground Elevation: NA	Total Depth Drilled: 5'9" ft bgs.		
Drilling Equipment/Hand Auger Surface shovel / Subsurface	Borehole Diameter: 3.0 inches	Date/Time Drilling/Started: 6/25/12/1325	Date/Time Total Depth Reached: 6/25/12 / 1400		
Type of Sampling Device: Handauger (subsurface) / (surface) shovel	Samples Collected: Surface: 20744 / Subsurface: 20745 One 1/2 Gallon Bag (Approx 8 lbs.) (1330) (1425)		Checked By / Date: 53 Cliff Thompson 6/26/12		
Geologist: Stephanie Lapierre Montrose	Radiological Background: 3002 / 42	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 3000 - Background: 0.0 ppm		

Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Feet bgs. 0.5 = 2926 (CPM)
0.0			0.0	54	SC clayey sand (dark yellowish brown 10YR 4/4)	SC	3025
0.5			0.0	78	20% clay, 80% fine-coarse grained sand, trace sandstone gravel, subangular, low plasticity, soft-firm, dry		3442
1.0			0.0	96	Same as above - no bone or twigs or vegetation		4292
			0.0	78	Same as above	SC	4838
2.0			0.0	78			5128
			0.0	60	SC clayey sand (dark yellowish brown) 10YR 4/4	SC	5177
3.0			0.0	66	20% clay, 80% fine-coarse grained sand, trace sandstone gravel - subangular, low plasticity, soft-firm, dry		5157
			0.6	66	Same as above roots		5090
4.0			2.7	54		SC	5181
			1.2	60	Same as above trace siltstone gravel - subangular		5023
5.0			0.4	60	SP/SC sand with clay 10-15% clay, 85-90% fine to (yellowish brown) 10YR 5/6	SP/SC	5300
			0.4	60	coarse grained sand, low dense, low plasticity, soft, dry		5354
6.0					TD = 5'9" bgs on sandstone		5354 MB

NO GW encountered
NO odor or staining

* Surface & Subsurface log

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 358
Drilling Company: HGL	Driller: M. Birney	Ground Elevation: NA	Total Depth Drilled: 5.2 ft bgs.	
Drilling Equipment: Hand Auger	Borehole Diameter: 3.0 inches	Date/Time Drilling Started: 3/19/12 1430	Date/Time Total Depth Reached: 3/19/12 1505	
Type of Sampling Device: Handauger	Samples Collected: One 1/2 Gallon Bag (Approx 3 lbs.)		20747 (15/0)	
Geologist: L.R. Goldman	Checked By / Date: J. Robbins 3/20/12			

Radiological Background: 17/2913/65	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background:	0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (Feet bgs. CPM)
					Surface = grass		70.5 = 3691 (CPM)
0.5			0.1	84	sandy silt: brown (10YR 4/3), semi-moist, dense,	ML	4104
			0.1	48	75% silt, 25% fine sand, cohesive, low plasticity, no odor or staining, trace rootlets		5087
1.0			0.1	78			5252
			0.1	48			5523
2.0			0.1	102			5382
			0.1	84			5515
3.0			0.1	66			5593
			0.1	66			5698
4.0			0.1	60			5641
			0.1	104	silty sand: dark yellowish brown (10YR 4/6), moist, dense, slightly cohesive, low plasticity, no odor or staining, trace silt nodules, 65% fine sand, 35% silt, small opaque minerals		5662
5.0			0.1	126	sandstone bedrock: yellowish brown (10YR 5/4), moist, dense, no odor or staining	SM Bed rock	5360
6.0					refusal @ 52" bgs no ground water encountered		

SSFL BORING LOG



5B_359

Project Name: SSFL Area IV Radiological Study		Project Number: EP038.01.22.04.03		Subarea: 5B	Group: 8	Location ID: 359	
Drilling Company: HydroGeoLogic		Driller: M. Birney		Ground Elevation: NA		Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel		Borehole Diameter: NA		Date/Time Drilling Started: 3/19/12		Date/Time Total Depth Reached: 3/19/12	
Type of Sampling Device: Trowel/shovel				Samples Collected: One 1/2 Gallon Bag (Approx 2 lbs.)			
Geologist: L.R. Goldman				Checked By / Date: [Signature] 3-19-12			
Radiological Background: 17/2892/66		Radiological Equipment Used: Micro R / Downhole / Pancake Meters		PID Used: Mini Rae 2000 - Background: 0.0 ppm			
Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
0.0			0.0	102 T6	Surface: grass + soil Sandy silt: very dark grayish brown (10YR 3/2), moist, dense, no odor or staining, 85% silt, 15% fine sand, cohesive, low plasticity, abundant rootlets	ML	
0.5			0.1	102 20			
1.0				102 20			
2.0							
3.0							
4.0							
5.0							
6.0							

total depth = 0.51 bgs
no groundwater encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: SB	Group: 8	Location ID: 359
Drilling Company: HGL	Driller: C. Knight	Ground Elevation: NA	Total Depth Drilled: 6.25 ft bgs.	
Drilling Equipment: Hand Auger	Borehole Diameter: 3.0 inches	Date/Time Drilling Started: 3/19/12 1320	Date/Time Total Depth Reached: 3/19/12	
Type of Sampling Device: Handauger	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20749 (1415)	
Geologist: L.R. Goldman	Checked By / Date: J. Koblin 3/19/12			

Radiological Background: 17/2892/66	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
			0.0	102	pancake surface = soil + grass			10.6 = 2809
0.5			0.1	102	Sandy silt: very dark grayish brown (10YR 3/2), moist, dense, no odor or staining, 85% silt, 15% fine sand, cohesive, low plasticity, abundant rootlets	ML		2845
1.0			0.1	96				3373
			0.1	54				3373
			0.1	54				3312
2.0			0.1	60				4885
			0.1	72				5025
3.0			0.1	60	silty sand: dark yellowish brown (10YR 4/4), semi-moist, no odor or staining, 75% fine to med. sand, 25% silt, non-cohesive, low plasticity, tree root in bucket.	SM		509
			0.1	64				5122
4.0			0.1	66				5088
			0.1	78				5308
5.0			0.1	66				5237
			0.1	54				5368
6.0			0.1	60	Sandstone bedrock: light yellowish brown (10YR 6/4), semi-moist, mechanically weathered to SP	Bed rock		3170

0.75' - 0.1 66
total depth (0.75' no ground water encountered)



Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 360
Drilling Company: HydroGeoLogic	Driller: M. Birney	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/19/12 1104	Date/Time Total Depth Reached: 3/19/12 1110	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20750 (1110)	
Geologist: L.R. Goldman	Checked By / Date: [Signature] 3-19-12			

Radiological Background: 18 / 2949 / 86	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.1 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
0.5			0.1	66	pancake / uk Surface = tall grass + soil			
0.5			0.1	90	Sandy silt: dark yellowish brown (10YR 3/4), moist, no odor or staining, 80% silt, 20% fine to med. sand, low plasticity, cohesive, rootlets, present in trace amounts, low density soft	ML		
1.0								
2.0								
3.0								
4.0								
5.0								
6.0								

total depth = 0.5' bgs
no groundwater encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: SB	Group: 8	Location ID: 360
Drilling Company: HGL	Driller: M. Birney	Ground Elevation: NA	Total Depth Drilled: 3.0 3.9 ft bgs.	
Drilling Equipment: Hand Auger	Borehole Diameter: 3.0 inches	Date/Time Drilling Started: 3/19/12 11:00	Date/Time Total Depth Reached: 3/19/12 11:41	
Type of Sampling Device: Handauger	Geologist: LR Goldman	Samples Collected: One 1/2 Gallon Bag (Approx 0.5 lbs.)	20751 (1145)	
Radiological Background: 18/2949/86		Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.1 ppm	
Checked By / Date: LR Goldman 3/20/12				

Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description	USCS Symbol	Borehole Gamma Readings (CPM)
			0.1	66	Surface = grass + soil		10.5 = 2910
0.5			0.1	90	Sandy silt: dark yellowish brown (10YR 3/4), moist, no odor or staining, 80% silt, 20% fine to med. sand, low plasticity, low cohesive, rootlets present in trace amounts, low density, soft	ML	3385
1.0			0.1	60			4169
2.0			0.1	78			5069
			0.1	78			5160
			0.1	48			5193
3.0			0.1	78			5218
			0.1	72	Silty sand: dark yellowish brown (10YR 4/4), moist, no odor or staining, 75% fine to med. sand, 25% silt, semi-moist, non-cohesive, no odor or staining, low plasticity	SM	5157
4.0			0.1	126			5139
			0.1	90	Sandstone bedrock: yellowish brown (10YR 5/4), semi-moist, no odor or staining, mechanically weathered to SP	Bed-rock	5061
5.0							
6.0							

total depth = 3.91 bgs
no groundwater encountered

SSFL BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 361
Drilling Company: HydroGeologic	Driller: C. Knight	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/19/12 0924	Date/Time Total Depth Reached: 3/19/12 0928	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Approx 3 lbs)		20752 (0930)	
Geologist: L. Goldman		Checked By / Date: [Signature] 3-19-12		

Radiological Background: 18/3084/61	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)	
							Feet bgs.	
0.0			0.0	18/12	MR/pancake surface: tall grass + soil			
0.5			0.0	20/54	Sandy silt: very dark brown (10YR 2/2), 80% silt, 10% med. sand, 10% fine sand, med. plasticity, med. ^{stiff} stiff _{plastic} , cohesive, no odor or staining, trace rootlets + mica flecks	ML		
1.0								
2.0								
3.0								
4.0								
5.0								
6.0								

total depth = 0.5' bgs
no GW encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 361
Drilling Company: HGL	Driller: C. Knight	Ground Elevation: NA	Total Depth Drilled: 6 ft bgs.	
Drilling Equipment: Hand Auger	Borehole Diameter: 3.0 inches	Date/Time Drilling Started: 3/19/12 0930	Date/Time Total Depth Reached: 3/19/12 1000	
Type of Sampling Device: Handauger	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		20753(1100)	
Geologist: L.R. Goldman	Checked By / Date: J. Robinson / 3/19/12			

Radiological Background: 18/3084/61	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background:	0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Feet bgs. +0.5 = 2968 (CPM)
			0.0	72	ML pancake		3171
0.5			0.0	54	Sandy silt: very dark brown (10YR 2/2) 80% silt, 10% med sand, 10% fine sand, med. plasticity, med. dense, cohesive, no odor or staining, trace rootlets + mica flakes	ML	4090
1.0			0.0	60	-----		4999
			0.0	66	Silt w/ sand: dark yellowish brown (10YR 3/4), 80% silt, 10% med sand, 10% fine sand, dense, semi-moist, no odor or staining, cohesive, med. plasticity, trace rootlets	ML	5284
2.0			0.0	78			5153
			0.0	78			5096
3.0			0.0	48			5282
			0.0	60			5240
4.0			0.0	66	-----		5362
			0.0	54	Silty sand: dark yellowish brown (10YR 4/4), 75% fine to med. sand, 25% silt, semi-moist, non cohesive, no odor or staining, low plasticity, trace rootlets	SM	5642
5.0			0.0	78			5651
			0.0	78			5954
6.0			0.0	78	Sandstone bedrock: yellowish brown (10YR 5/4), semi-moist, no odor or staining, mechanically weathered to SP	Bed rock (SP)	6247

total depth = 6.0'
no ground water encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 362
Drilling Company: HGL	Driller: Matt Birney	Ground Elevation: NA	Total Depth Drilled: 60.5' ft bgs.	
Drilling Equipment/Hand Auger shovel (surface) / (subsurface)	Borehole Diameter: 3.0 inches	Date/Time Drilling Started: 6/25/12/1450	Date/Time Total Depth Reached: 6/25/12 / 1511	
Type of Sampling Device: Handauger (subsurface) / shovel (surface)	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.)		surface 20754 (1450) / subsurface 20755 (1545)	
Geologist: Stephanie Lepere Montrose	Checked By / Date: 50 Cliff Knight 6/26/12			

Radiological Background: 3021 / 40	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 3000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings + 0.5 = 3135 (CPM)
0.0			0.0	78	SM silty sand 10% clay, 30% silt, 60% fine-coarse grained sand, low dense, low plasticity, trace sandstone gravel - subangular, twigs, vegetation	SM	3337	
0.5			0.0	108	SM silty sand 10% clay, 30% silt, 60% fine-coarse grained sand, low dense, low plasticity, trace sandstone gravel - subangular, twigs, vegetation	SM	3717	
1.0			0.5	60	Same as above - no twigs or vegetation	SM	4536	
			0.2	78			4961	
2.0			0.0	66	SM/SC silty sand with clay 15% clay, 25% silt, 60% fine-coarse (trace coarse grains), low plasticity, firm, dry trace subangular sandstone gravel	SM/SC	5191	
			0.0	72			5340	
3.0			0.0	60	SM/SC Same as above	SM/SC	5292	
			0.0	66			5296	
4.0			0.0	48	SP sand 10% clay, 10% silt, 80% fine to coarse (trace coarse grains), low plasticity, soft; dry, trace sandstone gravel - subangular, loose	SP	5236	
			0.0	60			5158	
5.0			0.0	54	SC clayey sand 20% clay, 75% fine-coarse grained sand (trace coarse grains), 5% sandstone gravel - subangular, low plasticity, soft - firm, dry	SC	5330	
			0.0	42			5486	
6.0			0.0	72			5781	

* surface & subsurface log

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 363
Drilling Company: HydroGeoLogic	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Trowel/shovel	Borehole Diameter: NA	Date/Time Drilling Started: 3/9/12 1405	Date/Time Total Depth Reached: 3/9/12 1410	
Type of Sampling Device: Trowel/shovel	Samples Collected: One 1/2 Gallon Bag (Approx 5 lbs.)		20756-1415 (1) 1/2 gallon bag 5 lbs	
Geologist: I. Stone	Checked By / Date: J.R. Feldman 3/12/12			

Radiological Background: 17 / 2935 / 83	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings
							Feet bgs. (CPM)
0.0			0.0	17/84	<p>Sandy Silt, Brown (4/3 10YR) 35% fine sand, 60% silt, 5% clay, trace construction debris (brick, gravel), trace roots, low tough, low strength, dry, no odor or skewing</p> <p>TD = 0.5 ft bgs no gw encountered</p>	AF / ML	
0.5			0.0	17/72			
1.0							
2.0							
3.0							
4.0							
5.0							
6.0							

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 8	Location ID: 363
Drilling Company: Boart Longyear	Driller: Don Hansen	Ground Elevation: NA	Total Depth Drilled: 4.5 ft bgs.	
Drilling Equipment: 6600 Geoprobe	Borehole Diameter: 1.75 in.	Date/Time Drilling Started: 3/9/12 1416	Date/Time Total Depth Reached: 3/9/12 1423	
Type of Sampling Device: 1.75 macrocore with acetate liner	Samples Collected: One 1/2 Gallon Bag (Approx 8 lbs.) 51b		20757-1445	
Geologist: I. Stone	Checked By / Date: Robert Medman 3/12/12			

Radiological Background: 17 / 2535 / 83	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 2000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings Feet bgs. + 0.5 = 2892 (CPM)
0.0			0.0	60	Sandy Silt, Brown (4/3 10 ⁴ R)	AF/ML	3107
0.5			0.0	90	35% 40% fine sand, 60% silt, 5% clay, trace construction debris (brick, gravel), trace pebbles, low toughness, low strength, dry, no odor or staining		4354
1.0			0.0	72	Silty Clay w/ sand, Very dark grayish brown (3/2 10 ⁴ R)	AF/CL	5222
			0.0	78	10% fine sand, 40% silt, 50% clay, trace gravel (non-native), dry, med tough, med strength, med plasticity, no odor or staining		5205
2.0			0.0	84	Sand w/ silt, Yellowish brown (5/6 10 ⁴ R)	SP	5305
			0.0	84	90% fine sand, 10% silt, dry, med-high dense, no odor or staining		5158
3.0			0.0	60			5066
			0.0	66			5077
4.0			0.0	72	Silt Clay, Dark yellowish brown (4/4 10 ⁴ R)	CL	5662
			0.0	54	5% fine sand, 95% clay, med-tough, med strength, no odor or staining		
			0.0	54	Sand (weathered sandstone), Pale yellow (7/3 10 ⁴ R)	SP/Bedrock	6410
					95% fine sand, 5% silt, dry, high dense, no odor or staining		
5.0					TD = 4.5 ft bgs no gw encountered no anomalies detected refusal on sandstone		
6.0							

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 58	Group: 1	Location ID: 364
Drilling Company: HGL	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.5 ft bgs.	
Drilling Equipment: Shovel/Trowel	Borehole Diameter: NA	Date/Time Drilling Started: 6/25/12 0905	Date/Time Total Depth Reached: 6/25/12 0909	
Type of Sampling Device: Shovel/Trowel	Samples Collected: (1) Bag (Approx 5 lbs.)		20761 - 0910	
Geologist: Ian Stone		Checked By / Date: <i>Cliff Knight</i> 6/26/12		

Radiological Background: 2720 / 31	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 3000 - Background:	0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
0.0			72		AF = artificial fill			
0.5			78		Silty Sand, light yellowish brown (6/4 10YR) 60% fine sand, 15% medium sand, 25% silt, dry, trace gravel, loss, trace rootlets, no odor or staining	AF / SM		
1.0								
2.0								
3.0								
4.0								
5.0								
6.0								

TD = 0.5 ft bgs
no gw encountered

SSFL BORING LOG

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 364
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Depth Drilled: 5.0 ft bgs.	
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1.75"	Date/Time Drilling Started: 6/25/12 0912	Date/Time Total Depth Reached: 6/25/12 0917	
Type of Sampling Device: 1.75" macrocore with acetate liner	Samples Collected: 20762-0940 (1) 1/2 Gallon Bag (Approx. 5 lbs.)			
Geologist: I. Stone	Checked By / Date: Cliff Knight 6/26/12			

Radiological Background: 2720 / 31	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 3000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings +0.5' = 2900 (CPM)
					AF = artificial fill			
0.5			0.0	48	Silty Sand, light yellowish brown (6/4 10YR) 60% fine sand, 15% stiff medium sand, 25% silt, (0-0.5') dry, trace gravel, loose, no odor or staining, trace rootlets	AF/ SM		3712
			0.0	60	Sandy silt, Dark yellowish brown (4/6 10YR) 40% fine sand, 60% silt, med stiff, dry, med stiff, low low tough, low low strength, and low plasticity, no odor or staining	ML	1	4915
1.0			0.0	48				5227
			0.0	48				5496
2.0			0.0	54	(0.5' - 1.8') Sandy silt, Yellowish brown (5/6 10YR) 30% fine sand, 65% silt, 5% clay, moist, med stiff, low low tough, low strength, low plasticity, no odor or staining	ML	2	5464
			0.0	54				5349
3.0			0.0	48	(1.8' - 2.9') Sand (weathered sandstone), Brownish yellow (6/6 10YR) 60% fine sand, 35% medium sand, 5% silt moist, very dense, no odor or staining	SP	3	5310
			0.0	60				5408
4.0			0.0	60			4	5487
			0.0	66				NA
5.0			0.0	72			5	NA
6.0					TD = 5.0 ft bgs No gr encountered refusal on sandstone no anomalies detected; unable to widen past 4.0 ft bgs		6	

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: SB	Group: 1	Location ID: 365
Drilling Company: HGL	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.8 ft bgs.	
Drilling Equipment: Shovel/Trowel	Borehole Diameter: NA	Date/Time Drilling Started: 6/25/12 1000	Date/Time Total Depth Reached: 6/25/12 1014	
Type of Sampling Device: Shovel/Trowel	Samples Collected: (1) 1/2 Gallon Bag (Approx 5 lbs.)		20763 -1015	
Geologist: Ian Stone		Checked By / Date: Cliff Knight 6/26/12		

Radiological Background: 2545 / 40	Radiological Equipment Used: Micro R / Downhole / Pancake Meters	PID Used: Mini Rae 3000 - Background:	0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Borehole Gamma Readings (CPM)
					AF = artificial fill		
0.0			0.0	84	ASPHALT (0-0.3')		
0.5			0.0	84	Sand w/ gravel, Olive brown (4/4 2.54) 30% fine sand, 55% medium sand, 5% coarse sand, 10% gravel, moist, med. dense, no odor or staining	AF / SP	
1.0							
2.0							
3.0							
4.0							
5.0							
6.0							

TD = 0.8 ft bgs
no gw encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 366
Drilling Company: HGL	Driller: T. Morse	Ground Elevation: NA	Total Depth Drilled: 0.8 ft bgs.	
Drilling Equipment: Shovel/Trowel	Borehole Diameter: NA	Date/Time Drilling Started: 6/25/12 1120	Date/Time Total Depth Reached: 6/25/12 1134	
Type of Sampling Device: Shovel/Trowel	Samples Collected: (1) Bag (Approx 5 lbs.)		20765 - 1135	
Geologist: Ian Stone		Checked By / Date: Cliff Knight 6/26/12		

Radiological Background: 2561 / 37	Radiological Equipment Used: Micro R7 Downhole / Pancake Meters	PID Used: Mini Rae 3000 - Background:	0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, mineralogy, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings (CPM)
0.0			84		Asphalt (0.0 - 0.3')			
0.5			90		Sandy Silt, Dark yellowish brown (3/4 10YR) 30% fine sand, 70% silt, moist, and stiff, low tough, low strength, low plasticity, no odor or staining.	ML		
1.0								
2.0								
3.0								
4.0								
5.0								
6.0								

TD = 0.8 ft bgs
no gw encountered

Project Name: SSFL Area IV Radiological Study	Project Number: EP038.01.22.04.03	Subarea: 5B	Group: 1	Location ID: 366
Drilling Company: Boart Longyear	Driller: D. Hansen	Ground Elevation: NA	Total Depth Drilled: 5.0 ft bgs.	
Drilling Equipment: Geoprobe 6600	Borehole Diameter: 1.75"	Date/Time Drilling Started: 6/25/12 1137	Date/Time Total Depth Reached: 6/25/12 1143	
Type of Sampling Device: 1.75" macrocore with acetate liner	Samples Collected: 20766 - 1205 (1) 1/2 Gallon Bag (Approx 5 lbs.)			
Geologist: F. Stone	Checked By / Date: Cliff Knight 6/26/12			

Radiological Background: 2561 / 37	Radiological Equipment Used: Micro-R / Downhole / Pancake Meters	PID Used: Mini Rae 3000 - Background: 0.0 ppm
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Depth (ft bgs)	Interval	Recovery	PID	Radiological	Description (Include lithology, grain size, sorting, angularity, Munsell color name & notation, minerology, bedding, plasticity, density, consistency, etc., as applicable)	USCS Symbol	Feet bgs.	Borehole Gamma Readings 10.5' = 2892 (CPM)
			0.0	66	Asphalt (0.0-0.3')			3627
0.5			0.0	66	Sandy silt, Dark yellowish Brown (3/4 10YR) 30% fine sand, 70% silt, moist, low tough, low strength, low plasticity, med stiff, no odor or staining	ML		4746
1.0			0.0	78			1	5261
			0.0	66	(0.3-1.5')			5471
2.0			0.0	66	Silty Sand, Dark yellowish brown (4/6 10YR) 60% fine sand, 40% silt, moist, med dense, no odor or staining	SM	2	5282
			0.0	60				5382
3.0			0.0	54	Silty sand, Brownish yellow (6/6 10YR)		3	5469
			0.0	60	75% fine sand, 25% silt, moist, med dense, no odor or staining	SM		5341
4.0			0.0	54			4	5153
			0.0	54	Sand (weathered sandstone), Yellowish Brown (5/6 10YR) 70% fine sand, 25% medium sand, 5% silt, moist, Very dense, no odor or staining	SP		NA
5.0			0.0	60			5	NA
6.0					TID=5.0 ft bgs no gw. encountered no anomalies detected refusal on sandstone, unable to widen hole past 4ft bgs		6	