FIELD SAMPLING PLAN ADDENDUM 11

WEST LAKE LANDFILL SUPERFUND SITE OPERABLE UNIT 1

Prepared For:

The United States Environmental Protection Agency Region VII

Prepared on Behalf of:

The West Lake Landfill OU-1 Respondents

Prepared By:

PARSONS

301 Plainfield Road, Suite 350
Syracuse, New York 13212

In Association With:

Engineering for a Better World
FEEZOR ENGINEERING, INC.

3377 Hollenberg Drive
Bridgeton, Missouri 63044

And

AMERIPHYSICS

9111 Cross Park Drive, Suite D200
Knoxville, TN 37923

SEPTEMBER 28, 2023

40618770

TABLE OF CONTENTS

LIST OF ACRONYMS II

1.0 ADDITIONAL BORINGS 1

1.1 Introduction 1

1.2 Proposed Additional Boring Locations 1

1.2.1 Closed Demolition Landfill Step-Out Borings 1

1.2.2 Area 2 Access Road Step-Out Borings 1

1.2.3 Area 1 Perimeter Step-Out Boring 2

1.2.4 Inactive Sanitary Landfill Step-Out Borings 2

1.3 Drilling and Sampling Methods and Protocols 2

LIST OF TABLES

Table A11-1 Summary of Analytical Results
Table A11-2 Proposed Addendum 11 Step-Out Borings
Table A11-3 Grab and Composite Sample collection Intervals Summary

LIST OF FIGURES

Figure A11-1 Proposed Boring Locations in the CDL and Area 2 Access Road
Figure A11-2 Proposed Boring Locations in the ISL and Area 1

LIST OF ACRONYMS

ACRONYM	Definition
ft	foot/feet
DI	Design Investigation
DIER	Design Investigation Evaluation Report
DIWP	Design Investigation Work Plan
DMP	Data Management Plan
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
OU	Operable Unit
pCi/g	picocurie/gram
QAPP	Quality Assurance Project Plan
RIM	radiologically impacted material
Site	West Lake Landfill Superfund Site
WAC	waste acceptance criteria

1.0 ADDITIONAL BORINGS

1.1 Introduction

This Field Sampling Plan (FSP) Addendum 11 has been prepared on behalf of West Lake Landfill OU-1 Respondents Bridgeton Landfill, LLC, Cotter Corporation (N.S.L.), and the U.S. Department of Energy (DOE) (collectively, Respondents) for the design investigation for the selected Amended Remedy for Operable Unit 1 (OU-1) of the West Lake Landfill Superfund Site (Site). The United States Environmental Protection Agency (EPA) approved (with modifications) the FSP, with the associated Design Investigation Work Plan (DIWP), Quality Assurance Project Plan (QAPP), and Data Management Plan (DMP), in September 2020. The final version of the FSP is dated October 16, 2020.

Addendum 11 has been prepared in response to EPA's June 22, 2023 Design Investigation Evaluation Report (DIER) comment letter and as discussed with EPA on conference calls. Additional step-out boring locations are proposed as part of this Addendum primarily to complete delineation of the extent of radiologically impacted material (RIM) greater than 7.9 picocurie/gram (pCi/g), but also to aid in defining the extent of Municipal Solid Waste (MSW) adjacent to the Area 2 access road, for the purpose of confirming the OU-1 boundary and designing and specifying the extent of the Uranium Mill Tailings Radiation Control Act (UMTRCA) criteria cap. Addendum 11 investigation results will be summarized in an addendum to the DIER.

1.2 Proposed Additional Boring Locations

1.2.1 Closed Demolition Landfill Step-Out Borings

Boring CD-EA-199-D had poor recovery, was not drilled into alluvium, and was not drilled for the purpose of defining the extent RIM greater than 7.9 pCi/g. Therefore, an additional boring is proposed. CD-EA-199-F will be drilled as shown in **Figure A11-1**, to complete the delineation of RIM to the northwest of CD-EA-199-D.

Step-out borings were not drilled for CD-EA-199-E to bound the extent of RIM (see **Table A11-1**) to the northwest between A2-SB-165-I, A2-PB-162, and CD-EA-198-R or to bound the extent of RIM to the southwest between A2-SB-165-G (see **Table A11-1**) and CD-EA-208-C. Therefore, three borings CD-EA-199-G, CD-EA-199-H, and CD-EA-199-I are proposed as shown in **Figure A11-1** to complete the delineation of RIM to the northwest of CD-EA-199-E and southeast between A2-SB-165-G and CD-EA-208-C.

Each of the closed demolition landfill (CDL) step-out borings will be drilled five feet into alluvium using sonic drilling technology.

1.2.2 Area 2 Access Road Step-Out Borings

Combined thorium greater than 7.9 pCi/g was detected in soil samples collected from 3 to 4 ft below Design Investigation (DI) datum in boring A2-SB-165-D (see **Table A11-1**) located along the access road into Area 2 as shown in **Figure A11-1**.

Three step-out borings (A2-SB-165-K, A2-SB-165-L, and A2-SB-165-M) are proposed as shown in **Figure A11-1** to complete the delineation of surficial RIM to the north, east, and south of A2-SB-165-D. Step-out borings in this area were previously attempted using direct push technology, but due to the presence of wire and nails, the

target drill depths were not achieved. Therefore, A2-SB-165-K, A2-SB-165-L, and A2-SB-165-M will be drilled to 8 foot (ft) below DI datum using sonic drilling technology.

1.2.3 Area 1 Perimeter Step-Out Boring

Soil with combined thorium greater than 7.9 pCi/g was found at 2-4 ft below DI datum at perimeter boring A1-PB-104 **(see Table A11-1**). Therefore, A1-PB-104-B is proposed as shown in **Figure A11-2** to complete the delineation of RIM to the northwest of A1-PB-104.

The boring will be drilled five feet into alluvium using sonic drilling technology.

1.2.4 Inactive Sanitary Landfill Step-Out Borings

Soil with combined thorium greater than 7.9 pCi/g was found at 15 to 20 and 20 to 25 ft below DI datum at boring Inactive Sanitary Landfill (ISL)-EA-173 **(see Table A11-1**). Therefore, four borings (ISL-EA-173-A, ISL-EA-173-B, ISL-EA-173-C, and ISL-EA-173-D) are proposed as shown in **Figure A11-2** to complete the delineation of RIM to the east, west, south, and southeast of ISL-EA-173.

Combined thorium greater than 7.9 pCi/g was detected in soil samples collected from 45-50 ft below DI datum in boring ISL-EA-181 (**Table A11-1**). Therefore, one step-out boring (ISL-EA-181-C) is proposed as shown in **Figure A11-2** to complete the delineation of RIM to the southeast of ISL-EA-181.

There is uncertainty regarding the extent of MSW along the eastern boundary of the ISL and the Area 2 access road between ISL-EA-186 and ISL-EA-187. Given the potential need to excavate relatively newer MSW from the ISL in this area to address the OU-1 cover extent, three additional borings are proposed. ISL-EA-186-I, ISL-EA-186-J, and ISL-EA-187-D will be drilled as shown in **Figure A11-2**, to delineate the extent of MSW along the eastern edge of the ISL.

Each of the ISL step-out borings will be drilled five feet into alluvium using sonic drilling technology.

1.3 Drilling and Sampling Methods and Protocols

The FSP standardizes the field procedures to be performed during the design investigation activities for OU-1. The work proposed in this Addendum 11 uses the standard methods and protocols provided in the FSP. The specific provisions in the FSP that will be used are described below. The details regarding the proposed borings are summarized in **Tables A11-2 and A11-3**.

All of the proposed borings will be drilled using sonic drilling technology following FSP Section 2.2.1.2.

Proposed borings CD-EA-199-F, CD-EA-199-G, CD-EA-199-H, CD-EA-199-I, ISL-EA-173-A, ISL-EA-173-B, ISL-EA-173-C, ISL-EA-173-D, ISL-EA-181-C, ISL-EA-186-I, ISL-EA-186-J, and ISL-EA-187-D will be drilled 5 ft into alluvium, logged, and sampled following the protocols for the "Enclosure A Borings" borings in FSP Sections 2.4.1 and 2.4.3. Grab and composite samples will be submitted to the laboratory for analysis of the radiological parameters listed in FSP Section 2.4.5.2 per the sample schedule in **Table A11-3**. Downhole gamma logging will also be performed in these boreholes following the procedures in FSP Section 2.3.2.

Proposed boring A1-PB-104-B will be drilled 5 ft into alluvium, logged, and sampled following the protocols for the "PB Geotechnical" borings in FSP Sections 2.4.1 and 2.4.3. Grab and composite samples will be submitted to the laboratory for analysis of the radiological parameters listed in FSP Section 2.4.5.2 per the sample schedule

in **Table A11-3**. Downhole gamma logging will also be performed in this borehole following the procedures in FSP Section 2.3.2.

Proposed borings A2-SB-165-K, A2-SB-165-L, and A2-SB-165-M will be drilled to 8 ft below DI datum. Soil samples will be logged and sampled following the procedures in FSP Section 2.4.1 and 2.4.2.6. Grab and composite samples will be submitted to the laboratory for analysis of the radiological parameters listed in FSP Section 2.4.5.2 per the sample schedule in **Table A11-3**.

Proposed borings will be appropriately abandoned following the protocol described in FSP Section 2.2.3 immediately after drilling and/or gamma logging to minimize safety risks and potential for odors or other emissions.

TABLES

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	RADIUM-226				RADIUM-228			
							RESULT_UNIT	pci/g				pci/g			
						Start_Depth Below	End_Depth	RESULT_ERROR_DEL				RESULT_ERROR_DEL			
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	DID	Below_DID	RESULT	QUALIFIERS	TA	MDL	RESULT	QUALIFIERS	TA	MDL
A1-PB-104	A1-PB-104-0.5-1-N	546702	0.5	1	N	0.5	1	0.667	J	0.202	0.137	1.08	J	0.321	0.235
A1-PB-104	A1-PB-104-1.5-2-N	546702	1.5	2	N	1.5	2	0.704	J	0.184	0.145	0.541	J	0.357	0.276
A1-PB-104	A1-PB-104-2-4-N	546702	2	4	Y	2	4	1.19	J	0.162	0.0856	0.61	J	0.329	0.21
A1-PB-104	A1-PB-104-4-6-N	546702	4	6	Y	4	6	1.09	J	0.151	0.0905	0.969	J	0.244	0.201
A1-PB-104	A1-PB-104-6-8-N	530381	6	8	Y	6	8	0.748		0.112	0.0756	0.369		0.182	0.154
A1-PB-104	A1-PB-104-8-13-N	530381	8	13	Y	8	13	0.698		0.11	0.0658	0.3		0.158	0.241
A2-SB-165-D	A2-SB-165-D-0-0.5-N	583196	0	0.5	N	-1.4	-0.9	0.462		0.0936	0.0572	0.507		0.131	0.1
A2-SB-165-D	A2-SB-165-D-0.5-1-N	583196	0.5	1	N	-0.9	-0.4	0.333		0.144	0.111	0	UJ	0.239	0.168
A2-SB-165-D	A2-SB-165-D-1-1.5-N	583196	1	1.5	N	-0.4	0.1	0.845		0.132	0.0755	0.281		0.2	0.155
A2-SB-165-D	A2-SB-165-D-1.5-2-N	583196	1.5	2	N	0.1	0.6	1.04		0.162	0.0845	0.876		0.253	0.179
A2-SB-165-D	A2-SB-165-D-2-3-N	583196	2	3	Y	0.6	1.6	1.35		0.139	0.0753	0.505		0.214	0.187
A2-SB-165-D	A2-SB-165-D-3-4-N	583196	3	4	Y	1.6	2.6	1.23		0.163	0.0858	0.636		0.224	0.194
A2-SB-165-G	A2-SB-165-G-0-0.5-N	592997	0	0.5	N	-2	-1.5	0.474		0.0937	0.0597	0.224		0.175	0.124
A2-SB-165-G	A2-SB-165-G-0.5-1-N	592997	0.5	1	N	-1.5	-1	0.512		0.0943	0.066	0.373		0.142	0.136
A2-SB-165-G	A2-SB-165-G-1-1.5-N	592997	1	1.5	N	-1	-0.5	0.643		0.125	0.0746	0.498		0.201	0.16
A2-SB-165-G	A2-SB-165-G-1.5-2-N	592997	1.5	2	N	-0.5	0	0.486		0.112	0.0925	0	UJ	0.18	0.156
A2-SB-165-G	A2-SB-165-G-2-3-N	592997	2	3	Y	0	1	0.894		0.119	0.0757	0.432		0.212	0.148
A2-SB-165-G	A2-SB-165-G-3-4-D	592997	3	4	Y	1	2	1.15		0.138	0.07	0.391	UJ	0.202	0.283
A2-SB-165-G	A2-SB-165-G-3-4-N	592997	3	4	Y	1	2	1.28		0.124	0.0684	0.372		0.167	0.155
A2-SB-165-G	A2-SB-165-G-4-5-N	592997	4	5	Y	2	3	1.53		0.161	0.109	1.22		0.318	0.254
A2-SB-165-G	A2-SB-165-G-5-6-N	592997	5	6	Y	3	4	0.98		0.143	0.0976	0.67		0.275	0.17
A2-SB-165-G	A2-SB-165-G-6-7-N	592997	6	7	Y	4	5	0.734		0.142	0.104	0.957		0.257	0.164
A2-SB-165-G	A2-SB-165-G-7-8-N	592997	7	8	Y	5	6	0.915		0.125	0.077	0.896		0.232	0.185
CD-EA-199-D	CD-EA-199-D-0-4-D	581255	0	4	Y	0	4	1.02		0.12	0.0675	0.772		0.224	0.144
CD-EA-199-D	CD-EA-199-D-0-4-N	581255	0	4	Y	0	4	0.994		0.0982	0.0604	0.725		0.156	0.137
CD-EA-199-D	CD-EA-199-D-4.5-5-N	581255	4.5	5	N	4.5	5	1.24		0.136	0.0783	0.764		0.202	0.149
CD-EA-199-D	CD-EA-199-D-8.5-9-N	581255	8.5	9	N	8.5	9	0.3		0.0995	0.0903	0.114	U	0.185	0.206
CD-EA-199-D	CD-EA-199-D-12-16-N	581255	12	16	Y	12	16	1.16		0.164	0.0905	1.07		0.255	0.206
CD-EA-199-D	CD-EA-199-D-17-17.5-N	581255	17	17.5	N	17	17.5	0.634		0.116	0.0829	0.572		0.221	0.156
CD-EA-199-E	CD-EA-199-E-0-1-N	598058	0	1	Y	0	1	1.07		0.135	0.0865	0.885		0.213	0.127
CD-EA-199-E	CD-EA-199-E-0-4-N	592866	0	4	Y	0	4	0.89		0.172	0.115	0.813		0.321	0.207
CD-EA-199-E	CD-EA-199-E-1-2-N	598058	1	2	Y	1	2	1.19		0.133	0.0818	1.05		0.261	0.177
CD-EA-199-E	CD-EA-199-E-2-3-N	598058	2	3	Y	2	3	1.67		0.206	0.135	1.6		0.346	0.657
CD-EA-199-E	CD-EA-199-E-3-4-N	598058	3	4	Y	3	4	1.08		0.152	0.0859	0.685		0.196	0.166
CD-EA-199-E	CD-EA-199-E-4-5-N	598058	4	5	Y	4	5	1.71		0.184	0.098	0.628		0.212	0.179
CD-EA-199-E	CD-EA-199-E-4-8-N	592866	4	8	Y	4	8	1.62		0.133	0.0772	0.721		0.183	0.135
CD-EA-199-E	CD-EA-199-E-5-6-N	598058	5	6	Y	5	6	1.51		0.168	0.102	0.588		0.203	0.201
CD-EA-199-E	CD-EA-199-E-6-6.5-N	598058	6	6.5	N	6	6.5	1.6		0.145	0.0762	0.69		0.208	0.142
CD-EA-199-E	CD-EA-199-E-12-13-N	598058	12	13	Y	12	13	2.46		0.161	0.0761	1.05		0.195	0.157
CD-EA-199-E	CD-EA-199-E-12-16-N	592866	12	16	Y	12	16	2.45		0.222	0.129	0.872		0.398	0.256
CD-EA-199-E	CD-EA-199-E-13-14-N	598058	13	14	Y	13	14	1.84		0.157	0.0764	1.12		0.234	0.185
CD-EA-199-E	CD-EA-199-E-14-14.5-N	598058	14	14.5	N	14	14.5	1.49		0.207	0.114	0.488		0.241	0.176
CD-EA-199-E	CD-EA-199-E-16-17-N	598058	16	17	Y	16	17	7.13		0.284	0.114	1.13		0.243	0.22
CD-EA-199-E	CD-EA-199-E-16-20-D	592866	16	20	Y	16	20	5.46		0.275	0.131	1.18		0.325	0.263
CD-EA-199-E	CD-EA-199-E-16-20-N	592866	16	20	Y	16	20	3.93		0.213	0.0937	1.04		0.262	0.181
CD-EA-199-E	CD-EA-199-E-17-18-N	598087	17	18	Y	17	18	7.96		0.387	0.175	1.41		0.399	0.322
CD-EA-199-E	CD-EA-199-E-18-19-N	598087	18	19	Y	18	19	4.03		0.279	0.124	1.26		0.351	0.231
CD-EA-199-E	CD-EA-199-E-20-21-N	598087	20	21	Y	20	21	1.42		0.158	0.0999	1.25		0.221	0.129
CD-EA-199-E	CD-EA-199-E-20-24-N	592866	20	24	Y	20	24	1.15		0.125	0.0829	1.02		0.228	0.18
CD-EA-199-E	CD-EA-199-E-21-22-N	598087	21	22	Y	21	22	1.28		0.238	0.136	1.06		0.384	0.319
CD-EA-199-E	CD-EA-199-E-22-22.5-N	598087	22	22.5	N	22	22.5	1.18		0.168	0.103	0.987		0.267	0.177
CD-EA-199-E	CD-EA-199-E-28-29-N	598087	28	29	Y	28	29	1.12		0.193	0.111	1.29		0.3	0.205
CD-EA-199-E	CD-EA-199-E-28.5-28.9-N	592866	28.5	28.9	N	28.5	28.9	1		0.139	0.0852	1.04		0.236	0.138
CD-EA-199-E	CD-EA-199-E-32-33-N	598087	32	33	Y	32	33	1.02		0.156	0.107	0.985		0.31	0.255
CD-EA-199-E	CD-EA-199-E-32-36-N	592866	32	36	Y	32	36	0.891		0.113	0.0623	0.862		0.203	0.145
CD-EA-199-E	CD-EA-199-E-33-34-N	598087	33	34	Y	33	34	1.14		0.15	0.0855	0.785		0.234	0.235
CD-EA-199-E	CD-EA-199-E-34-35-N	598087	34	35	Y	34	35	0.968		0.142	0.0768	1.03		0.238	0.148
CD-EA-199-E	CD-EA-199-E-35-35.5-N	598087	35	35.5	N	35	35.5	1.28		0.181	0.126	1.17		0.27	0.202
CD-EA-199-E	CD-EA-199-E-36-37-N	598087	36	37	Y	36	37	1.14		0.176	0.106	0.752		0.326	0.189
CD-EA-199-E	CD-EA-199-E-36-39-N	592866	36	39	Y	36	39	0.901		0.104	0.0739	0.9		0.191	0.14
CD-EA-199-E	CD-EA-199-E-37-37.5-N	598087	37	37.5	N	37	37.5	0.927		0.19	0.106	0.903		0.228	0.178

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	THORIUM-230				THORIUM-232			
							RESULT_UNIT	pci/g				pci/g			
						Start_Depth Below	End_Depth			RESULT_ERROR_DEL				RESULT_ERROR_DEL	
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	DID	Below_DID	RESULT	QUALIFIERS	TA	MDL	RESULT	QUALIFIERS	TA	MDL
A1-PB-104	A1-PB-104-0.5-1-N	546702	0.5	1	N	0.5	1	1.43	J	0.333	0.26	0.877	J	0.249	0.135
A1-PB-104	A1-PB-104-1.5-2-N	546702	1.5	2	N	1.5	2	2.32	J	0.568	0.393	0.82	J	0.352	0.307
A1-PB-104	A1-PB-104-2-4-N	546702	2	4	Y	2	4	8.99	J	1.25	0.52	0.583	J	0.331	0.221
A1-PB-104	A1-PB-104-4-6-N	546702	4	6	Y	4	6	2.93	J	0.433	0.259	0.926	J	0.243	0.148
A1-PB-104	A1-PB-104-6-8-N	530381	6	8	Y	6	8	1.81		0.484	0.245	0.361		0.228	0.191
A1-PB-104	A1-PB-104-8-13-N	530381	8	13	Y	8	13	2.64		0.562	0.234	0.311		0.207	0.181
A2-SB-165-D	A2-SB-165-D-0-0.5-N	583196	0	0.5	N	-1.4	-0.9	0.652		0.275	0.341	0.273		0.159	0.169
A2-SB-165-D	A2-SB-165-D-0.5-1-N	583196	0.5	1	N	-0.9	-0.4	1.15		0.297	0.248	0.468		0.178	0.0758
A2-SB-165-D	A2-SB-165-D-1-1.5-N	583196	1	1.5	N	-0.4	0.1	2.84		0.742	0.7	0.491		0.358	0.472
A2-SB-165-D	A2-SB-165-D-1.5-2-N	583196	1.5	2	N	0.1	0.6	2.46		0.44	0.288	0.992		0.273	0.143
A2-SB-165-D	A2-SB-165-D-2-3-N	583196	2	3	Y	0.6	1.6	3.41		0.521	0.3	0.41		0.202	0.211
A2-SB-165-D	A2-SB-165-D-3-4-N	583196	3	4	Y	1.6	2.6	9.82		1.27	0.67	0.194	UJ	0.234	0.309
A2-SB-165-G	A2-SB-165-G-0-0.5-N	592997	0	0.5	N	-2	-1.5	1.45		0.288	0.211	0.348		0.145	0.128
A2-SB-165-G	A2-SB-165-G-0.5-1-N	592997	0.5	1	N	-1.5	-1	0.517		0.203	0.248	0.382		0.143	0.102
A2-SB-165-G	A2-SB-165-G-1-1.5-N	592997	1	1.5	N	-1	-0.5	1.63		0.345	0.286	0.253		0.145	0.154
A2-SB-165-G	A2-SB-165-G-1.5-2-N	592997	1.5	2	N	-0.5	0	1.27		0.247	0.169	0.397		0.134	0.0627
A2-SB-165-G	A2-SB-165-G-2-3-N	592997	2	3	Y	0	1	44.2		2.59	0.406	0.973		0.414	0.309
A2-SB-165-G	A2-SB-165-G-3-4-D	592997	3	4	Y	1	2	2.02		0.359	0.237	0.344		0.152	0.121
A2-SB-165-G	A2-SB-165-G-3-4-N	592997	3	4	Y	1	2	2.01		0.331	0.175	0.333		0.141	0.11
A2-SB-165-G	A2-SB-165-G-4-5-N	592997	4	5	Y	2	3	1.9		0.315	0.179	0.945		0.218	0.104
A2-SB-165-G	A2-SB-165-G-5-6-N	592997	5	6	Y	3	4	1.46		0.31	0.253	0.859		0.223	0.116
A2-SB-165-G	A2-SB-165-G-6-7-N	592997	6	7	Y	4	5	1.94		0.363	0.262	0.963		0.253	0.174
A2-SB-165-G	A2-SB-165-G-7-8-N	592997	7	8	Y	5	6	1.56		0.323	0.195	0.74		0.222	0.126
CD-EA-199-D	CD-EA-199-D-0-4-D	581255	0	4	Y	0	4	1.65		0.217	0.132	0.863		0.152	0.0663
CD-EA-199-D	CD-EA-199-D-0-4-N	581255	0	4	Y	0	4	1.4		0.221	0.161	0.878		0.166	0.0771
CD-EA-199-D	CD-EA-199-D-4.5-5-N	581255	4.5	5	N	4.5	5	3.16		0.305	0.125	0.725		0.151	0.0998
CD-EA-199-D	CD-EA-199-D-8.5-9-N	581255	8.5	9	N	8.5	9	0.797		0.206	0.202	0.23		0.107	0.101
CD-EA-199-D	CD-EA-199-D-12-16-N	581255	12	16	Y	12	16	1.1		0.213	0.147	0.768		0.169	0.0489
CD-EA-199-D	CD-EA-199-D-17-17.5-N	581255	17	17.5	N	17	17.5	0.827		0.203	0.191	0.479		0.143	0.0979
CD-EA-199-E	CD-EA-199-E-0-1-N	598058	0	1	Y	0	1	1.36		0.289	0.213	0.788		0.217	0.154
CD-EA-199-E	CD-EA-199-E-0-4-N	592866	0	4	Y	0	4	1.13		0.28	0.236	1.06		0.253	0.142
CD-EA-199-E	CD-EA-199-E-1-2-N	598058	1	2	Y	1	2	0.865		0.427	0.545	0.795		0.33	0.24
CD-EA-199-E	CD-EA-199-E-2-3-N	598058	2	3	Y	2	3	1.22		0.325	0.355	1.27		0.276	0.118
CD-EA-199-E	CD-EA-199-E-3-4-N	598058	3	4	Y	3	4	1.16		0.271	0.273	0.786		0.195	0.0948
CD-EA-199-E	CD-EA-199-E-4-5-N	598058	4	5	Y	4	5	1.42		0.42	0.469	0.621		0.271	0.302
CD-EA-199-E	CD-EA-199-E-4-8-N	592866	4	8	Y	4	8	1.25		0.421	0.477	0.71		0.288	0.266
CD-EA-199-E	CD-EA-199-E-5-6-N	598058	5	6	Y	5	6	1.12		0.364	0.405	0.939		0.281	0.158
CD-EA-199-E	CD-EA-199-E-6-6.5-N	598058	6	6.5	N	6	6.5	1.11		0.38	0.386	0.442		0.228	0.194
CD-EA-199-E	CD-EA-199-E-12-13-N	598058	12	13	Y	12	13	2.24		0.355	0.217	0.826	J	0.208	0.0637
CD-EA-199-E	CD-EA-199-E-12-16-N	592866	12	16	Y	12	16	2.4		0.481	0.389	0.717		0.265	0.231
CD-EA-199-E	CD-EA-199-E-13-14-N	598058	13	14	Y	13	14	1.58		0.317	0.271	0.941		0.236	0.178
CD-EA-199-E	CD-EA-199-E-14-14.5-N	598058	14	14.5	N	14	14.5	1.23		0.304	0.246	0.447		0.184	0.158
CD-EA-199-E	CD-EA-199-E-16-17-N	598058	16	17	Y	16	17	6.31		0.554	0.172	1.06		0.234	0.139
CD-EA-199-E	CD-EA-199-E-16-20-D	592866	16	20	Y	16	20	6.57	J	0.607	0.275	1.42		0.28	0.11
CD-EA-199-E	CD-EA-199-E-16-20-N	592866	16	20	Y	16	20	3.9	J	0.486	0.316	0.921		0.234	0.155
CD-EA-199-E	CD-EA-199-E-17-18-N	598087	17	18	Y	17	18	9.18		0.67	0.224	1.62		0.286	0.139
CD-EA-199-E	CD-EA-199-E-18-19-N	598087	18	19	Y	18	19	3.74		0.371	0.175	1.13		0.206	0.113
CD-EA-199-E	CD-EA-199-E-20-21-N	598087	20	21	Y	20	21	1.24		0.199	0.152	1.07		0.178	0.108
CD-EA-199-E	CD-EA-199-E-20-24-N	592866	20	24	Y	20	24	1.16		0.258	0.169	1.35		0.272	0.149
CD-EA-199-E	CD-EA-199-E-21-22-N	598087	21	22	Y	21	22	1.49		0.205	0.102	0.88		0.163	0.112
CD-EA-199-E	CD-EA-199-E-22-22.5-N	598087	22	22.5	N	22	22.5	1.19		0.203	0.135	0.8		0.161	0.0796
CD-EA-199-E	CD-EA-199-E-28-29-N	598087	28	29	Y	28	29	1.17		0.21	0.157	0.86		0.174	0.105
CD-EA-199-E	CD-EA-199-E-28.5-28.9-N	592866	28.5	28.9	N	28.5	28.9	0.922		0.252	0.264	1.25		0.249	0.0994
CD-EA-199-E	CD-EA-199-E-32-33-N	598087	32	33	Y	32	33	0.935		0.174	0.132	0.94		0.165	0.0807
CD-EA-199-E	CD-EA-199-E-32-36-N	592866	32	36	Y	32	36	0.833		0.184	0.146	0.763		0.165	0.0719
CD-EA-199-E	CD-EA-199-E-33-34-N	598087	33	34	Y	33	34	0.894		0.169	0.143	1.04		0.167	0.0765
CD-EA-199-E	CD-EA-199-E-34-35-N	598087	34	35	Y	34	35	1.01		0.18	0.136	0.794		0.15	0.0703
CD-EA-199-E	CD-EA-199-E-35-35.5-N	598087	35	35.5	N	35	35.5	1.26		0.196	0.141	0.987		0.166	0.0858
CD-EA-199-E	CD-EA-199-E-36-37-N	598087	36	37	Y	36	37	0.899		0.172	0.125	0.749		0.151	0.0835
CD-EA-199-E	CD-EA-199-E-36-39-N	592866	36	39	Y	36	39	0.803		0.24	0.274	0.918		0.212	0.117
CD-EA-199-E	CD-EA-199-E-37-37.5-N	598087	37	37.5	N	37	37.5	1.03		0.174	0.125	0.882		0.152	0.055

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	TOTAL RADIUM			Total Thorium		
							RESULT_UNIT	pci/g			pci/g		
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth Below DID	End_Depth Below_DID	RESULT	QUALIFIERS	RESULT_ERROR_DELTA	RESULT	QUALIFIERS	RESULT_ERROR_DELTA
A1-PB-104	A1-PB-104-0.5-1-N	546702	0.5	1	N	0.5	1	1.747	J	0.523	2.307	J	0.582
A1-PB-104	A1-PB-104-1.5-2-N	546702	1.5	2	N	1.5	2	1.245	J	0.541	3.14	J	0.920
A1-PB-104	A1-PB-104-2-4-N	546702	2	4	Y	2	4	1.8	J	0.491	9.573	J	1.581
A1-PB-104	A1-PB-104-4-6-N	546702	4	6	Y	4	6	2.059	J	0.395	3.856	J	0.676
A1-PB-104	A1-PB-104-6-8-N	530381	6	8	Y	6	8	1.117		0.294	2.171		0.712
A1-PB-104	A1-PB-104-8-13-N	530381	8	13	Y	8	13	0.998		0.268	2.951		0.769
A2-SB-165-D	A2-SB-165-D-0-0.5-N	583196	0	0.5	N	-1.4	-0.9	0.969		0.225	0.925		0.434
A2-SB-165-D	A2-SB-165-D-0.5-1-N	583196	0.5	1	N	-0.9	-0.4	0.333		0.383	1.62		0.475
A2-SB-165-D	A2-SB-165-D-1-1.5-N	583196	1	1.5	N	-0.4	0.1	1.13		0.332	3.33		1.10
A2-SB-165-D	A2-SB-165-D-1.5-2-N	583196	1.5	2	N	0.1	0.6	1.92		0.415	3.45		0.713
A2-SB-165-D	A2-SB-165-D-2-3-N	583196	2	3	Y	0.6	1.6	1.86		0.353	3.82		0.723
A2-SB-165-D	A2-SB-165-D-3-4-N	583196	3	4	Y	1.6	2.6	1.87		0.387	10.0		1.50
A2-SB-165-G	A2-SB-165-G-0-0.5-N	592997	0	0.5	N	-2	-1.5	0.698		0.269	1.80		0.433
A2-SB-165-G	A2-SB-165-G-0.5-1-N	592997	0.5	1	N	-1.5	-1	0.885		0.236	0.899		0.346
A2-SB-165-G	A2-SB-165-G-1-1.5-N	592997	1	1.5	N	-1	-0.5	1.14		0.326	1.88		0.490
A2-SB-165-G	A2-SB-165-G-1.5-2-N	592997	1.5	2	N	-0.5	0	0.486		0.292	1.67		0.381
A2-SB-165-G	A2-SB-165-G-2-3-N	592997	2	3	Y	0	1	1.33		0.331	45.2		3.00
A2-SB-165-G	A2-SB-165-G-3-4-D	592997	3	4	Y	1	2	1.54		0.340	2.36		0.511
A2-SB-165-G	A2-SB-165-G-3-4-N	592997	3	4	Y	1	2	1.65		0.291	2.34		0.472
A2-SB-165-G	A2-SB-165-G-4-5-N	592997	4	5	Y	2	3	2.75		0.479	2.85		0.533
A2-SB-165-G	A2-SB-165-G-5-6-N	592997	5	6	Y	3	4	1.65		0.418	2.32		0.533
A2-SB-165-G	A2-SB-165-G-6-7-N	592997	6	7	Y	4	5	1.69		0.399	2.90		0.616
A2-SB-165-G	A2-SB-165-G-7-8-N	592997	7	8	Y	5	6	1.81		0.357	2.30		0.545
CD-EA-199-D	CD-EA-199-D-0-4-D	581255	0	4	Y	0	4	1.79		0.344	2.51		0.369
CD-EA-199-D	CD-EA-199-D-0-4-N	581255	0	4	Y	0	4	1.72		0.254	2.28		0.387
CD-EA-199-D	CD-EA-199-D-4.5-5-N	581255	4.5	5	N	4.5	5	2.00		0.338	3.89		0.456
CD-EA-199-D	CD-EA-199-D-8.5-9-N	581255	8.5	9	N	8.5	9	0.414		0.285	1.03		0.313
CD-EA-199-D	CD-EA-199-D-12-16-N	581255	12	16	Y	12	16	2.23		0.419	1.87		0.382
CD-EA-199-D	CD-EA-199-D-17-17.5-N	581255	17	17.5	N	17	17.5	1.21		0.337	1.31		0.346
CD-EA-199-E	CD-EA-199-E-0-1-N	598058	0	1	Y	0	1	1.96		0.348	2.15		0.506
CD-EA-199-E	CD-EA-199-E-0-4-N	592866	0	4	Y	0	4	1.70		0.493	2.19		0.533
CD-EA-199-E	CD-EA-199-E-1-2-N	598058	1	2	Y	1	2	2.24		0.394	1.66		0.757
CD-EA-199-E	CD-EA-199-E-2-3-N	598058	2	3	Y	2	3	3.27		0.552	2.49		0.601
CD-EA-199-E	CD-EA-199-E-3-4-N	598058	3	4	Y	3	4	1.77		0.348	1.95		0.466
CD-EA-199-E	CD-EA-199-E-4-5-N	598058	4	5	Y	4	5	2.34		0.396	2.04		0.691
CD-EA-199-E	CD-EA-199-E-4-8-N	592866	4	8	Y	4	8	2.34		0.316	1.96		0.709
CD-EA-199-E	CD-EA-199-E-5-6-N	598058	5	6	Y	5	6	2.10		0.371	2.06		0.645
CD-EA-199-E	CD-EA-199-E-6-6.5-N	598058	6	6.5	N	6	6.5	2.29		0.353	1.55		0.608
CD-EA-199-E	CD-EA-199-E-12-13-N	598058	12	13	Y	12	13	3.51		0.356	3.07	J	0.563
CD-EA-199-E	CD-EA-199-E-12-16-N	592866	12	16	Y	12	16	3.32		0.620	3.12		0.746
CD-EA-199-E	CD-EA-199-E-13-14-N	598058	13	14	Y	13	14	2.96		0.391	2.52		0.553
CD-EA-199-E	CD-EA-199-E-14-14.5-N	598058	14	14.5	N	14	14.5	1.98		0.448	1.68		0.488
CD-EA-199-E	CD-EA-199-E-16-17-N	598058	16	17	Y	16	17	8.26		0.527	7.37		0.788
CD-EA-199-E	CD-EA-199-E-16-20-D	592866	16	20	Y	16	20	6.64		0.600	7.99	J	0.887
CD-EA-199-E	CD-EA-199-E-16-20-N	592866	16	20	Y	16	20	4.97		0.475	4.82	J	0.720
CD-EA-199-E	CD-EA-199-E-17-18-N	598087	17	18	Y	17	18	9.37		0.786	10.8		0.956
CD-EA-199-E	CD-EA-199-E-18-19-N	598087	18	19	Y	18	19	5.29		0.630	4.87		0.577
CD-EA-199-E	CD-EA-199-E-20-21-N	598087	20	21	Y	20	21	2.67		0.379	2.31		0.377
CD-EA-199-E	CD-EA-199-E-20-24-N	592866	20	24	Y	20	24	2.17		0.353	2.51		0.530
CD-EA-199-E	CD-EA-199-E-21-22-N	598087	21	22	Y	21	22	2.34		0.622	2.37		0.368
CD-EA-199-E	CD-EA-199-E-22-22.5-N	598087	22	22.5	N	22	22.5	2.17		0.435	1.99		0.364
CD-EA-199-E	CD-EA-199-E-28-29-N	598087	28	29	Y	28	29	2.41		0.493	2.03		0.384
CD-EA-199-E	CD-EA-199-E-28.5-28.9-N	592866	28.5	28.9	N	28.5	28.9	2.04		0.375	2.17		0.501
CD-EA-199-E	CD-EA-199-E-32-33-N	598087	32	33	Y	32	33	2.01		0.466	1.88		0.339
CD-EA-199-E	CD-EA-199-E-32-36-N	592866	32	36	Y	32	36	1.75		0.316	1.60		0.349
CD-EA-199-E	CD-EA-199-E-33-34-N	598087	33	34	Y	33	34	1.93		0.384	1.93		0.336
CD-EA-199-E	CD-EA-199-E-34-35-N	598087	34	35	Y	34	35	2.00		0.380	1.80		0.330
CD-EA-199-E	CD-EA-199-E-35-35.5-N	598087	35	35.5	N	35	35.5	2.45		0.451	2.25		0.362
CD-EA-199-E	CD-EA-199-E-36-37-N	598087	36	37	Y	36	37	1.89		0.502	1.65		0.323
CD-EA-199-E	CD-EA-199-E-36-39-N	592866	36	39	Y	36	39	1.80		0.295	1.72		0.452
CD-EA-199-E	CD-EA-199-E-37-37.5-N	598087	37	37.5	N	37	37.5	1.83		0.418	1.91		0.326

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	RADIUM-226				RADIUM-228			
							RESULT_UNIT	pci/g				pci/g			
						Start_Depth Below	End_Depth	RESULT_ERROR_DEL				RESULT_ERROR_DEL			
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	DID	Below_DID	RESULT	QUALIFIERS	TA	MDL	RESULT	QUALIFIERS	TA	MDL
ISL-EA-173	ISL-EA-173-0-0.5-N	558205	0	0.5	N	0	0.5	0.54		0.0775	0.0493	0.145	U	0.0859	0.181
ISL-EA-173	ISL-EA-173-0-5-N	539816	0	5	Y	0	5	0.673		0.105	0.0655	0.0357	U	0.141	0.134
ISL-EA-173	ISL-EA-173-0.5-1-N	558205	0.5	1	N	0.5	1	0.762		0.1	0.0595	0.142	U	0.112	0.174
ISL-EA-173	ISL-EA-173-1-1.5-N	558205	1	1.5	N	1	1.5	0.831		0.171	0.0944	0.509		0.25	0.181
ISL-EA-173	ISL-EA-173-1.5-2-N	558205	1.5	2	N	1.5	2	0.531		0.131	0.088	0.538		0.197	0.143
ISL-EA-173	ISL-EA-173-2-2.5-N	558205	2	2.5	N	2	2.5	0.504		0.13	0.101	0.296		0.212	0.194
ISL-EA-173	ISL-EA-173-2.5-3-N	558205	2.5	3	N	2.5	3	1.04		0.113	0.0551	0.103	U	0.127	0.119
ISL-EA-173	ISL-EA-173-3-3.5-N	558205	3	3.5	N	3	3.5	0.827		0.14	0.0838	0.441		0.144	0.329
ISL-EA-173	ISL-EA-173-3.5-4-N	558205	3.5	4	N	3.5	4	0.563		0.134	0.0974	0.533		0.203	0.204
ISL-EA-173	ISL-EA-173-5-10-N	539816	5	10	Y	5	10	0.911		0.131	0.0909	0.953		0.301	0.216
ISL-EA-173	ISL-EA-173-5-5.5-N	558205	5	5.5	N	5	5.5	0.892		0.201	0.124	0.748		0.406	0.256
ISL-EA-173	ISL-EA-173-5.5-6-N	558205	5.5	6	N	5.5	6	0.902		0.16	0.0981	0.987		0.229	0.185
ISL-EA-173	ISL-EA-173-6-6.5-N	558446	6	6.5	N	6	6.5	1.09		0.236	0.161	0.956		0.35	0.28
ISL-EA-173	ISL-EA-173-6.5-7-N	558446	6.5	7	N	6.5	7	1.14		0.154	0.0773	0.754		0.238	0.186
ISL-EA-173	ISL-EA-173-7-7.5-N	558446	7	7.5	N	7	7.5	0.898		0.163	0.101	0.621		0.273	0.126
ISL-EA-173	ISL-EA-173-10-10.5-N	558446	10	10.5	N	10	10.5	0.783		0.161	0.112	0.555		0.246	0.228
ISL-EA-173	ISL-EA-173-10-15-N	539816	10	15	Y	10	15	0.748		0.115	0.0565	0.275		0.166	0.262
ISL-EA-173	ISL-EA-173-10.5-11-N	558446	10.5	11	N	10.5	11	0.46		0.12	0.0835	0.391		0.216	0.147
ISL-EA-173	ISL-EA-173-11-11.5-N	558446	11	11.5	N	11	11.5	0.522		0.126	0.0935	0.634		0.256	0.368
ISL-EA-173	ISL-EA-173-11.5-12-N	558446	11.5	12	N	11.5	12	0.654		0.112	0.0888	0.814		0.239	0.17
ISL-EA-173	ISL-EA-173-12-12.5-N	558446	12	12.5	N	12	12.5	0.489		0.108	0.0612	0.155	U	0.158	0.179
ISL-EA-173	ISL-EA-173-12.5-13-N	558446	12.5	13	N	12.5	13	0.65		0.143	0.0914	0.346		0.205	0.241
ISL-EA-173	ISL-EA-173-13-13.5-N	558446	13	13.5	N	13	13.5	0.806		0.192	0.115	0.451		0.24	0.299
ISL-EA-173	ISL-EA-173-13.5-14-N	558050	13.5	14	N	13.5	14	0.701		0.174	0.108	0.52		0.279	0.232
ISL-EA-173	ISL-EA-173-15-15.5-N	558050	15	15.5	N	15	15.5	7.07		0.319	0.135	0.719		0.416	0.287
ISL-EA-173	ISL-EA-173-15-20-D	539816	15	20	Y	15	20	1.65		0.15	0.0544	0.487	J	0.23	0.161
ISL-EA-173	ISL-EA-173-15-20-N	539816	15	20	Y	15	20	1.28		0.165	0.106	1.24	J	0.283	0.185
ISL-EA-173	ISL-EA-173-15.5-16-N	558050	15.5	16	N	15.5	16	1.88		0.173	0.0977	1.01		0.258	0.191
ISL-EA-173	ISL-EA-173-16-16.5-N	558050	16	16.5	N	16	16.5	1.32		0.16	0.0771	0.763		0.201	0.144
ISL-EA-173	ISL-EA-173-16.5-17-N	558050	16.5	17	N	16.5	17	2.4		0.178	0.0817	0.395		0.209	0.164
ISL-EA-173	ISL-EA-173-17-17.5-N	558050	17	17.5	N	17	17.5	2.43		0.204	0.0849	0.564		0.244	0.148
ISL-EA-173	ISL-EA-173-17.5-18-N	558050	17.5	18	N	17.5	18	1.74		0.159	0.0787	0.956		0.216	0.157
ISL-EA-173	ISL-EA-173-20-20.5-N	558050	20	20.5	N	20	20.5	1.12		0.152	0.097	0.566		0.209	0.143
ISL-EA-173	ISL-EA-173-20-25-N	539816	20	25	Y	20	25	1.7		0.166	0.0877	0.497		0.231	0.157
ISL-EA-173	ISL-EA-173-20.5-21-N	558050	20.5	21	N	20.5	21	0.987		0.116	0.0613	0.364		0.136	0.147
ISL-EA-173	ISL-EA-173-21-21.5-N	558050	21	21.5	N	21	21.5	1.1		0.171	0.109	0.544		0.291	0.18
ISL-EA-173	ISL-EA-173-21.5-22-N	558050	21.5	22	N	21.5	22	0.956		0.119	0.0723	0.429		0.18	0.135
ISL-EA-173	ISL-EA-173-22-22.5-N	558050	22	22.5	N	22	22.5	1.36		0.162	0.093	0.953		0.225	0.189
ISL-EA-173	ISL-EA-173-25-25.5-N	558050	25	25.5	N	25	25.5	1.77		0.163	0.0805	0.863		0.219	0.158
ISL-EA-173	ISL-EA-173-25.5-26-N	558050	25.5	26	N	25.5	26	2.26		0.168	0.0881	0.924		0.207	0.194
ISL-EA-173	ISL-EA-173-25.8-26.3-N	539816	25.8	26.3	N	25.8	26.3	1.5		0.163	0.0898	0.751		0.223	0.163
ISL-EA-173	ISL-EA-173-26-26.3-N	558050	26	26.3	N	26	26.3	1.97		0.17	0.0902	0.777		0.234	0.165
ISL-EA-173	ISL-EA-173-30-30.5-N	558050	30	30.5	N	30	30.5	1.39		0.145	0.0845	1.17		0.226	0.166
ISL-EA-173	ISL-EA-173-30-35-N	539816	30	35	Y	30	35	1.31		0.193	0.137	1.15		0.404	0.329
ISL-EA-173	ISL-EA-173-30.5-31-N	558050	30.5	31	N	30.5	31	1.24		0.174	0.097	1.53		0.307	0.188
ISL-EA-173	ISL-EA-173-31-31.5-N	558050	31	31.5	N	31	31.5	1.32		0.207	0.111	1.53		0.316	0.19
ISL-EA-173	ISL-EA-173-31.5-31.8-N	558050	31.5	31.8	N	31.5	31.8	1.14		0.192	0.111	0.974		0.248	0.217
ISL-EA-173	ISL-EA-173-35-35.5-N	558050	35	35.5	N	35	35.5	1.68		0.198	0.106	1.01		0.377	0.244
ISL-EA-173	ISL-EA-173-35-40-N	539816	35	40	Y	35	40	1.19		0.153	0.101	1.16		0.245	0.186
ISL-EA-173	ISL-EA-173-35.5-36-N	558052	35.5	36	N	35.5	36	1.24		0.151	0.0895	1.39		0.265	0.174
ISL-EA-173	ISL-EA-173-36-36.5-N	558052	36	36.5	N	36	36.5	1.16		0.125	0.075	1.27		0.212	0.144
ISL-EA-173	ISL-EA-173-36.5-37-N	558052	36.5	37	N	36.5	37	1.31		0.173	0.121	1.13		0.366	0.259
ISL-EA-173	ISL-EA-173-37-37.5-N	558052	37	37.5	N	37	37.5	1.26		0.142	0.0795	0.776		0.397	0.24
ISL-EA-173	ISL-EA-173-37.5-38-N	558052	37.5	38	N	37.5	38	0.95		0.125	0.0858	1.02		0.251	0.164
ISL-EA-173	ISL-EA-173-38-38.5-N	558052	38	38.5	N	38	38.5	0.921		0.14	0.0736	1.22		0.195	0.128
ISL-EA-173	ISL-EA-173-38.5-38.8-N	558052	38.5	38.8	N	38.5	38.8	1.01		0.129	0.0711	1.02		0.206	0.158
ISL-EA-173	ISL-EA-173-40-40.5-N	558052	40	40.5	N	40	40.5	1.16		0.2	0.111	0.821		0.316	0.214
ISL-EA-173	ISL-EA-173-40.5-41-N	558052	40.5	41	N	40.5	41	1.02		0.127	0.0718	0.907		0.255	0.163
ISL-EA-173	ISL-EA-173-40.8-41.3-N	539816	40.8	41.3	N	40.8	41.3	1.24		0.137	0.0679	1.03		0.218	0.156
ISL-EA-173	ISL-EA-173-41-41.3-N	558052	41	41.3	N	41	41.3	1.4		0.23	0.147	1.62		0.43	0.336
ISL-EA-181	ISL-EA-181-0-5-N	567168	0	5	Y	0	5	1.03		0.126	0.0771	1.09		0.27	0.175
ISL-EA-181	ISL-EA-181-6.5-6.9-N	567168	6.5	6.9	N	6.5	6.9	1.07		0.11	0.0776	1.17		0.255	0.145
ISL-EA-181	ISL-EA-181-10-15-D	567168	10	15	Y	10	15	1.07		0.118	0.0887	1.11		0.204	0.167
ISL-EA-181	ISL-EA-181-10-15-N	567168	10	15	Y	10	15	1.03		0.129	0.0831	0.935		0.213	0.159
ISL-EA-181	ISL-EA-181-16.5-16.9-N	567168	16.5	16.9	N	16.5	16.9	1.01		0.133	0.091	1		0.293	0.185
ISL-EA-181	ISL-EA-181-20-25-N	567168	20	25	Y	20	25	0.86		0.134	0.0975	0.601		0.218	0.168
ISL-EA-181	ISL-EA-181-26.5-26.8-N	567168	26.5	26.8	N	26.5	26.8	0.462		0.121	0.109	0.306	UJ	0.177	0.365
ISL-EA-181	ISL-EA-181-30-35-N	567168	30	35	Y	30	35	1.22		0.158	0.0999	1.28		0.286	0.166
ISL-EA-181	ISL-EA-181-35-40-N	567168	35	40	Y	35	40	0.837		0.199	0.0995	0.992		0.302	0.227
ISL-EA-181	ISL-EA-181-40-45-N	567168	40	45	Y	40	45	1.34		0.164	0.0927	0.972		0.23	0.184

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	THORIUM-230				THORIUM-232			
							RESULT_UNIT	pci/g				pci/g			
						Start_Depth Below	End_Depth			RESULT_ERROR_DEL				RESULT_ERROR_DEL	
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	DID	Below_DID	RESULT	QUALIFIERS	TA	MDL	RESULT	QUALIFIERS	TA	MDL
ISL-EA-173	ISL-EA-173-0-0.5-N	558205	0	0.5	N	0	0.5	2.24		0.493	0.395	0.482		0.229	0.189
ISL-EA-173	ISL-EA-173-0-5-N	539816	0	5	Y	0	5	1.79		0.637	0.694	0.154	UJ	0.315	0.542
ISL-EA-173	ISL-EA-173-0.5-1-N	558205	0.5	1	N	0.5	1	1.24		0.314	0.321	0.284		0.135	0.0809
ISL-EA-173	ISL-EA-173-1-1.5-N	558205	1	1.5	N	1	1.5	1.43		0.307	0.255	0.729		0.21	0.14
ISL-EA-173	ISL-EA-173-1.5-2-N	558205	1.5	2	N	1.5	2	0.261	UJ	0.697	1.22	0.34	UJ	0.347	0.523
ISL-EA-173	ISL-EA-173-2-2.5-N	558205	2	2.5	N	2	2.5	0.945		0.276	0.26	0.215		0.14	0.16
ISL-EA-173	ISL-EA-173-2.5-3-N	558205	2.5	3	N	2.5	3	1.76		0.401	0.344	0.239		0.171	0.216
ISL-EA-173	ISL-EA-173-3-3.5-N	558205	3	3.5	N	3	3.5	2.84		0.428	0.284	0.359		0.166	0.168
ISL-EA-173	ISL-EA-173-3.5-4-N	558205	3.5	4	N	3.5	4	1.67		0.37	0.328	0.426		0.185	0.167
ISL-EA-173	ISL-EA-173-5-10-N	539816	5	10	Y	5	10	1.09		0.286	0.224	1.03	J	0.259	0.0709
ISL-EA-173	ISL-EA-173-5-5.5-N	558205	5	5.5	N	5	5.5	0.92		0.264	0.228	1.1		0.274	0.178
ISL-EA-173	ISL-EA-173-5.5-6-N	558205	5.5	6	N	5.5	6	1.01		0.296	0.299	0.774		0.254	0.25
ISL-EA-173	ISL-EA-173-6-6.5-N	558446	6	6.5	N	6	6.5	0.893		0.227	0.231	0.851		0.201	0.145
ISL-EA-173	ISL-EA-173-6.5-7-N	558446	6.5	7	N	6.5	7	2.44		0.369	0.217	0.559		0.183	0.148
ISL-EA-173	ISL-EA-173-7-7.5-N	558446	7	7.5	N	7	7.5	3.19		0.478	0.285	0.551		0.201	0.134
ISL-EA-173	ISL-EA-173-10-10.5-N	558446	10	10.5	N	10	10.5	1.05		0.268	0.267	0.419		0.165	0.16
ISL-EA-173	ISL-EA-173-10-15-N	539816	10	15	Y	10	15	1.32		0.407	0.411	0.275		0.185	0.189
ISL-EA-173	ISL-EA-173-10.5-11-N	558446	10.5	11	N	10.5	11	0.921		0.248	0.262	0.504		0.167	0.137
ISL-EA-173	ISL-EA-173-11-11.5-N	558446	11	11.5	N	11	11.5	0.833		0.261	0.247	0.645		0.211	0.129
ISL-EA-173	ISL-EA-173-11.5-12-N	558446	11.5	12	N	11.5	12	1.06		0.29	0.29	0.554		0.185	0.0716
ISL-EA-173	ISL-EA-173-12-12.5-N	558446	12	12.5	N	12	12.5	0.674	UJ	0.507	0.802	0.142	UJ	0.208	0.34
ISL-EA-173	ISL-EA-173-12.5-13-N	558446	12.5	13	N	12.5	13	1.71		0.432	0.433	0.297		0.174	0.166
ISL-EA-173	ISL-EA-173-13-13.5-N	558446	13	13.5	N	13	13.5	1.31		0.515	0.668	0.562		0.296	0.339
ISL-EA-173	ISL-EA-173-13.5-14-N	558050	13.5	14	N	13.5	14	1.2		0.26	0.173	0.539		0.175	0.125
ISL-EA-173	ISL-EA-173-15-15.5-N	558050	15	15.5	N	15	15.5	194		3.9	0.403	2.71		0.488	0.315
ISL-EA-173	ISL-EA-173-15-20-D	539816	15	20	Y	15	20	14.6	J	1.3	0.529	0.737		0.327	0.322
ISL-EA-173	ISL-EA-173-15-20-N	539816	15	20	Y	15	20	5.69	J	0.635	0.202	0.857	J	0.248	0.0767
ISL-EA-173	ISL-EA-173-15.5-16-N	558050	15.5	16	N	15.5	16	22.5		1.32	0.356	1.08		0.298	0.167
ISL-EA-173	ISL-EA-173-16-16.5-N	558050	16	16.5	N	16	16.5	11.5		1.09	0.587	0.582		0.287	0.33
ISL-EA-173	ISL-EA-173-16.5-17-N	558050	16.5	17	N	16.5	17	52.6		2.85	0.537	0.917		0.396	0.27
ISL-EA-173	ISL-EA-173-17-17.5-N	558050	17	17.5	N	17	17.5	67		3.18	0.722	1.14		0.438	0.32
ISL-EA-173	ISL-EA-173-17.5-18-N	558050	17.5	18	N	17.5	18	17.3		1.05	0.257	1.01		0.264	0.171
ISL-EA-173	ISL-EA-173-20-20.5-N	558050	20	20.5	N	20	20.5	10.9		0.987	0.474	0.493		0.22	0.17
ISL-EA-173	ISL-EA-173-20-25-N	539816	20	25	Y	20	25	52.2		2.4	0.411	0.275		0.208	0.226
ISL-EA-173	ISL-EA-173-20.5-21-N	558050	20.5	21	N	20.5	21	13.3		1.46	0.628	0.522		0.311	0.27
ISL-EA-173	ISL-EA-173-21-21.5-N	558050	21	21.5	N	21	21.5	11.1		1.35	0.871	0.329	UJ	0.303	0.421
ISL-EA-173	ISL-EA-173-21.5-22-N	558050	21.5	22	N	21.5	22	15.8		1.29	0.597	0.174	UJ	0.228	0.368
ISL-EA-173	ISL-EA-173-22-22.5-N	558050	22	22.5	N	22	22.5	14.9		1.37	0.351	1.43		0.458	0.365
ISL-EA-173	ISL-EA-173-25-25.5-N	558050	25	25.5	N	25	25.5	1.97		0.596	0.649	0.755		0.363	0.405
ISL-EA-173	ISL-EA-173-25.5-26-N	558050	25.5	26	N	25.5	26	3.82		0.63	0.363	0.919		0.307	0.171
ISL-EA-173	ISL-EA-173-25.8-26.3-N	539816	25.8	26.3	N	25.8	26.3	1.92		0.562	0.622	0.553		0.291	0.315
ISL-EA-173	ISL-EA-173-26-26.3-N	558050	26	26.3	N	26	26.3	4.56		0.731	0.393	0.754		0.314	0.268
ISL-EA-173	ISL-EA-173-30-30.5-N	558050	30	30.5	N	30	30.5	2.01		0.453	0.347	1.19		0.341	0.236
ISL-EA-173	ISL-EA-173-30-35-N	539816	30	35	Y	30	35	1.3		0.294	0.16	1.3		0.286	0.0696
ISL-EA-173	ISL-EA-173-30.5-31-N	558050	30.5	31	N	30.5	31	1.74		0.421	0.331	1.54		0.382	0.234
ISL-EA-173	ISL-EA-173-31-31.5-N	558050	31	31.5	N	31	31.5	1.15		0.35	0.369	1.39		0.33	0.136
ISL-EA-173	ISL-EA-173-31.5-31.8-N	558050	31.5	31.8	N	31.5	31.8	1.66		0.421	0.359	1.1		0.341	0.29
ISL-EA-173	ISL-EA-173-35-35.5-N	558050	35	35.5	N	35	35.5	1.43		0.48	0.542	1.32		0.403	0.31
ISL-EA-173	ISL-EA-173-35-40-N	539816	35	40	Y	35	40	1.36		0.245	0.118	1.26		0.231	0.0501
ISL-EA-173	ISL-EA-173-35.5-36-N	558052	35.5	36	N	35.5	36	1.56		0.331	0.231	1.37		0.294	0.0751
ISL-EA-173	ISL-EA-173-36-36.5-N	558052	36	36.5	N	36	36.5	1.25		0.263	0.22	1.04		0.22	0.0934
ISL-EA-173	ISL-EA-173-36.5-37-N	558052	36.5	37	N	36.5	37	1.33		0.3	0.182	1.26		0.286	0.136
ISL-EA-173	ISL-EA-173-37-37.5-N	558052	37	37.5	N	37	37.5	1.11		0.261	0.222	0.947		0.223	0.11
ISL-EA-173	ISL-EA-173-37.5-38-N	558052	37.5	38	N	37.5	38	1.13		0.254	0.202	1.03		0.229	0.12
ISL-EA-173	ISL-EA-173-38-38.5-N	558052	38	38.5	N	38	38.5	1.21		0.261	0.206	1.06		0.23	0.118
ISL-EA-173	ISL-EA-173-38.5-38.8-N	558052	38.5	38.8	N	38.5	38.8	1.12		0.241	0.173	1.11		0.232	0.133
ISL-EA-173	ISL-EA-173-40-40.5-N	558052	40	40.5	N	40	40.5	1.1		0.214	0.12	0.878		0.189	0.0962
ISL-EA-173	ISL-EA-173-40.5-41-N	558052	40.5	41	N	40.5	41	0.975		0.245	0.21	1.02		0.238	0.158
ISL-EA-173	ISL-EA-173-40.8-41.3-N	539816	40.8	41.3	N	40.8	41.3	0.94		0.338	0.249	0.866		0.319	0.211
ISL-EA-173	ISL-EA-173-41-41.3-N	558052	41	41.3	N	41	41.3	1.29		0.321	0.302	1.27		0.294	0.196
ISL-EA-181	ISL-EA-181-0-5-N	567168	0	5	Y	0	5	1.3		0.198	0.123	1.16		0.178	0.0392
ISL-EA-181	ISL-EA-181-6.5-6.9-N	567168	6.5	6.9	N	6.5	6.9	1.43		0.195	0.0935	1.06		0.164	0.0368
ISL-EA-181	ISL-EA-181-10-15-D	567168	10	15	Y	10	15	1.59		0.218	0.101	1.12		0.178	0.0402
ISL-EA-181	ISL-EA-181-10-15-N	567168	10	15	Y	10	15	1.54		0.207	0.0952	1.12		0.173	0.0564
ISL-EA-181	ISL-EA-181-16.5-16.9-N	567168	16.5	16.9	N	16.5	16.9	1.39		0.206	0.128	1.06		0.171	0.0393
ISL-EA-181	ISL-EA-181-20-25-N	567168	20	25	Y	20	25	1.45		0.24	0.123	1		0.194	0.0501
ISL-EA-181	ISL-EA-181-26.5-26.8-N	567168	26.5	26.8	N	26.5	26.8	0.551		0.131	0.0978	0.274		0.0906	0.058
ISL-EA-181	ISL-EA-181-30-35-N	567168	30	35	Y	30	35	1.5		0.196	0.0954	1.01		0.157	0.0354
ISL-EA-181	ISL-EA-181-35-40-N	567168	35	40	Y	35	40	1.09		0.222	0.132	1.12		0.217	0.0545
ISL-EA-181	ISL-EA-181-40-45-N	567168	40	45	Y	40	45	2.02		0.28	0.13	1.01		0.198	0.0943

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	TOTAL RADIUM			Total Thorium		
							RESULT_UNIT	pci/g			pci/g		
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth Below DID	End_Depth Below_DID	RESULT	QUALIFIERS	RESULT_ERROR_DELTA	RESULT	QUALIFIERS	RESULT_ERROR_DELTA
ISL-EA-173	ISL-EA-173-0-0.5-N	558205	0	0.5	N	0	0.5	0.685		0.163	2.722		0.722
ISL-EA-173	ISL-EA-173-0-5-N	539816	0	5	Y	0	5	0.7087		0.246	1.944		0.952
ISL-EA-173	ISL-EA-173-0.5-1-N	558205	0.5	1	N	0.5	1	0.904		0.212	1.524		0.449
ISL-EA-173	ISL-EA-173-1-1.5-N	558205	1	1.5	N	1	1.5	1.34		0.421	2.159		0.517
ISL-EA-173	ISL-EA-173-1.5-2-N	558205	1.5	2	N	1.5	2	1.069		0.328	0.601	U	1.04
ISL-EA-173	ISL-EA-173-2-2.5-N	558205	2	2.5	N	2	2.5	0.8		0.342	1.16		0.416
ISL-EA-173	ISL-EA-173-2.5-3-N	558205	2.5	3	N	2.5	3	1.143		0.240	1.999		0.572
ISL-EA-173	ISL-EA-173-3-3.5-N	558205	3	3.5	N	3	3.5	1.268		0.284	3.199		0.594
ISL-EA-173	ISL-EA-173-3.5-4-N	558205	3.5	4	N	3.5	4	1.096		0.337	2.096		0.555
ISL-EA-173	ISL-EA-173-5-10-N	539816	5	10	Y	5	10	1.864		0.432	2.12	J	0.545
ISL-EA-173	ISL-EA-173-5-5.5-N	558205	5	5.5	N	5	5.5	1.64		0.607	2.02		0.538
ISL-EA-173	ISL-EA-173-5.5-6-N	558205	5.5	6	N	5.5	6	1.889		0.389	1.784		0.550
ISL-EA-173	ISL-EA-173-6-6.5-N	558446	6	6.5	N	6	6.5	2.046		0.586	1.744		0.428
ISL-EA-173	ISL-EA-173-6.5-7-N	558446	6.5	7	N	6.5	7	1.894		0.392	2.999		0.552
ISL-EA-173	ISL-EA-173-7-7.5-N	558446	7	7.5	N	7	7.5	1.519		0.436	3.741		0.679
ISL-EA-173	ISL-EA-173-10-10.5-N	558446	10	10.5	N	10	10.5	1.338		0.407	1.469		0.433
ISL-EA-173	ISL-EA-173-10-15-N	539816	10	15	Y	10	15	1.023		0.281	1.595		0.592
ISL-EA-173	ISL-EA-173-10.5-11-N	558446	10.5	11	N	10.5	11	0.851		0.336	1.425		0.415
ISL-EA-173	ISL-EA-173-11-11.5-N	558446	11	11.5	N	11	11.5	1.156		0.382	1.478		0.472
ISL-EA-173	ISL-EA-173-11.5-12-N	558446	11.5	12	N	11.5	12	1.468		0.351	1.614		0.475
ISL-EA-173	ISL-EA-173-12-12.5-N	558446	12	12.5	N	12	12.5	0.644		0.266	0.816	U	0.715
ISL-EA-173	ISL-EA-173-12.5-13-N	558446	12.5	13	N	12.5	13	0.996		0.348	2.007		0.606
ISL-EA-173	ISL-EA-173-13-13.5-N	558446	13	13.5	N	13	13.5	1.257		0.432	1.872		0.811
ISL-EA-173	ISL-EA-173-13.5-14-N	558050	13.5	14	N	13.5	14	1.221		0.453	1.739		0.435
ISL-EA-173	ISL-EA-173-15-15.5-N	558050	15	15.5	N	15	15.5	7.789		0.735	196.71		4.39
ISL-EA-173	ISL-EA-173-15-20-D	539816	15	20	Y	15	20	2.137	J	0.38	15.337	J	1.627
ISL-EA-173	ISL-EA-173-15-20-N	539816	15	20	Y	15	20	2.52	J	0.448	6.547	J	0.883
ISL-EA-173	ISL-EA-173-15.5-16-N	558050	15.5	16	N	15.5	16	2.89		0.431	23.58		1.62
ISL-EA-173	ISL-EA-173-16-16.5-N	558050	16	16.5	N	16	16.5	2.083		0.361	12.082		1.38
ISL-EA-173	ISL-EA-173-16.5-17-N	558050	16.5	17	N	16.5	17	2.795		0.387	53.517		3.25
ISL-EA-173	ISL-EA-173-17-17.5-N	558050	17	17.5	N	17	17.5	2.994		0.448	68.14		3.62
ISL-EA-173	ISL-EA-173-17.5-18-N	558050	17.5	18	N	17.5	18	2.696		0.375	18.31		1.31
ISL-EA-173	ISL-EA-173-20-20.5-N	558050	20	20.5	N	20	20.5	1.686		0.361	11.393		1.21
ISL-EA-173	ISL-EA-173-20-25-N	539816	20	25	Y	20	25	2.197		0.397	52.475		2.608
ISL-EA-173	ISL-EA-173-20.5-21-N	558050	20.5	21	N	20.5	21	1.351		0.252	13.822		1.77
ISL-EA-173	ISL-EA-173-21-21.5-N	558050	21	21.5	N	21	21.5	1.644		0.462	11.429		1.65
ISL-EA-173	ISL-EA-173-21.5-22-N	558050	21.5	22	N	21.5	22	1.385		0.299	15.974		1.52
ISL-EA-173	ISL-EA-173-22-22.5-N	558050	22	22.5	N	22	22.5	2.313		0.387	16.33		1.83
ISL-EA-173	ISL-EA-173-25-25.5-N	558050	25	25.5	N	25	25.5	2.633		0.382	2.725		0.959
ISL-EA-173	ISL-EA-173-25.5-26-N	558050	25.5	26	N	25.5	26	3.184		0.375	4.739		0.937
ISL-EA-173	ISL-EA-173-25.8-26.3-N	539816	25.8	26.3	N	25.8	26.3	2.251		0.386	2.473		0.853
ISL-EA-173	ISL-EA-173-26-26.3-N	558050	26	26.3	N	26	26.3	2.747		0.404	5.314		1.05
ISL-EA-173	ISL-EA-173-30-30.5-N	558050	30	30.5	N	30	30.5	2.56		0.371	3.2		0.794
ISL-EA-173	ISL-EA-173-30-35-N	539816	30	35	Y	30	35	2.46		0.597	2.6		0.58
ISL-EA-173	ISL-EA-173-30.5-31-N	558050	30.5	31	N	30.5	31	2.77		0.481	3.28		0.803
ISL-EA-173	ISL-EA-173-31-31.5-N	558050	31	31.5	N	31	31.5	2.85		0.523	2.54		0.680
ISL-EA-173	ISL-EA-173-31.5-31.8-N	558050	31.5	31.8	N	31.5	31.8	2.114		0.440	2.76		0.762
ISL-EA-173	ISL-EA-173-35-35.5-N	558050	35	35.5	N	35	35.5	2.69		0.575	2.75		0.883
ISL-EA-173	ISL-EA-173-35-40-N	539816	35	40	Y	35	40	2.35		0.398	2.62		0.476
ISL-EA-173	ISL-EA-173-35.5-36-N	558052	35.5	36	N	35.5	36	2.63		0.416	2.93		0.625
ISL-EA-173	ISL-EA-173-36-36.5-N	558052	36	36.5	N	36	36.5	2.43		0.337	2.29		0.483
ISL-EA-173	ISL-EA-173-36.5-37-N	558052	36.5	37	N	36.5	37	2.44		0.539	2.59		0.586
ISL-EA-173	ISL-EA-173-37-37.5-N	558052	37	37.5	N	37	37.5	2.036		0.539	2.057		0.484
ISL-EA-173	ISL-EA-173-37.5-38-N	558052	37.5	38	N	37.5	38	1.97		0.376	2.16		0.483
ISL-EA-173	ISL-EA-173-38-38.5-N	558052	38	38.5	N	38	38.5	2.141		0.335	2.27		0.491
ISL-EA-173	ISL-EA-173-38.5-38.8-N	558052	38.5	38.8	N	38.5	38.8	2.03		0.335	2.23		0.473
ISL-EA-173	ISL-EA-173-40-40.5-N	558052	40	40.5	N	40	40.5	1.981		0.516	1.978		0.403
ISL-EA-173	ISL-EA-173-40.5-41-N	558052	40.5	41	N	40.5	41	1.927		0.382	1.995		0.483
ISL-EA-173	ISL-EA-173-40.8-41.3-N	539816	40.8	41.3	N	40.8	41.3	2.27		0.355	1.806		0.657
ISL-EA-173	ISL-EA-173-41-41.3-N	558052	41	41.3	N	41	41.3	3.02		0.660	2.56		0.615
ISL-EA-181	ISL-EA-181-0-5-N	567168	0	5	Y	0	5	2.12		0.396	2.46		0.376
ISL-EA-181	ISL-EA-181-6.5-6.9-N	567168	6.5	6.9	N	6.5	6.9	2.24		0.365	2.49		0.359
ISL-EA-181	ISL-EA-181-10-15-D	567168	10	15	Y	10	15	2.18		0.322	2.71		0.396
ISL-EA-181	ISL-EA-181-10-15-N	567168	10	15	Y	10	15	1.965		0.342	2.66		0.380
ISL-EA-181	ISL-EA-181-16.5-16.9-N	567168	16.5	16.9	N	16.5	16.9	2.01		0.426	2.45		0.377
ISL-EA-181	ISL-EA-181-20-25-N	567168	20	25	Y	20	25	1.461		0.352	2.45		0.434
ISL-EA-181	ISL-EA-181-26.5-26.8-N	567168	26.5	26.8	N	26.5	26.8	0.768		0.298	0.825		0.2216
ISL-EA-181	ISL-EA-181-30-35-N	567168	30	35	Y	30	35	2.5		0.444	2.51		0.353
ISL-EA-181	ISL-EA-181-35-40-N	567168	35	40	Y	35	40	1.829		0.501	2.21		0.439
ISL-EA-181	ISL-EA-181-40-45-N	567168	40	45	Y	40	45	2.312		0.394	3.03		0.478

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	RADIUM-226				RADIUM-228			
							RESULT_UNIT	pci/g				pci/g			
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth Below DID	End_Depth Below_DID	RESULT	QUALIFIERS	RESULT_ERROR_DEL TA	MDL	RESULT	QUALIFIERS	RESULT_ERROR_DEL TA	MDL
ISL-EA-181	ISL-EA-181-45-46-N	570259	45	46	Y	45	46	0.498		0.106	0.0711	0.891		0.223	0.133
ISL-EA-181	ISL-EA-181-45-50-N	567168	45	50	Y	45	50	2.3		0.282	0.185	8.92		0.721	0.284
ISL-EA-181	ISL-EA-181-46-47-N	570259	46	47	Y	46	47	0.612		0.124	0.0809	2.05		0.269	0.11
ISL-EA-181	ISL-EA-181-47-48-N	570259	47	48	Y	47	48	3.46		0.321	0.251	20.1		1.08	0.497
ISL-EA-181	ISL-EA-181-48-49-N	570259	48	49	Y	48	49	2.19		0.221	0.133	8.32		0.522	0.245
ISL-EA-181	ISL-EA-181-49-49.4-N	570259	49	49.4	N	49	49.4	2.86		0.353	0.229	14.4		0.811	0.368
ISL-EA-181	ISL-EA-181-50-55-N	567168	50	55	Y	50	55	1.17		0.188	0.103	2.44		0.411	0.216
ISL-EA-181	ISL-EA-181-55-60-N	567168	55	60	Y	55	60	0.734		0.108	0.0779	1.04		0.234	0.168

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	THORIUM-230				THORIUM-232			
							RESULT_UNIT	pci/g				pci/g			
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth Below DID	End_Depth Below_DID	RESULT	QUALIFIERS	RESULT_ERROR_DEL TA	MDL	RESULT	QUALIFIERS	RESULT_ERROR_DEL TA	MDL
ISL-EA-181	ISL-EA-181-45-46-N	570259	45	46	Y	45	46	0.854		0.201	0.158	0.899		0.193	0.0832
ISL-EA-181	ISL-EA-181-45-50-N	567168	45	50	Y	45	50	5.02		1.26	0.664	2.87		0.941	0.338
ISL-EA-181	ISL-EA-181-46-47-N	570259	46	47	Y	46	47	0.748		0.217	0.23	1.69		0.276	0.111
ISL-EA-181	ISL-EA-181-47-48-N	570259	47	48	Y	47	48	6.58		1.18	0.814	11.4		1.46	0.243
ISL-EA-181	ISL-EA-181-48-49-N	570259	48	49	Y	48	49	1.42		0.863	1.2	2.96		0.915	0.634
ISL-EA-181	ISL-EA-181-49-49.4-N	570259	49	49.4	N	49	49.4	1.74		0.443	0.328	0.844		0.312	0.251
ISL-EA-181	ISL-EA-181-50-55-N	567168	50	55	Y	50	55	3.7		1.21	0.802	1.28		0.716	0.493
ISL-EA-181	ISL-EA-181-55-60-N	567168	55	60	Y	55	60	0.768		0.206	0.193	0.568	J	0.159	0.055

TABLE A11-1 SUMMARY OF ANALYTICAL RESULTS

							CHEMICAL_NAME	TOTAL RADIUM			Total Thorium		
							RESULT_UNIT	pci/g			pci/g		
Location ID	SYS_SAMPLE_CODE	SDG	Start Depth	End Depth	Composite (Y/N)	Start_Depth Below DID	End_Depth Below_DID	RESULT	QUALIFIERS	RESULT_ERROR_DELTA	RESULT	QUALIFIERS	RESULT_ERROR_DELTA
ISL-EA-181	ISL-EA-181-45-46-N	570259	45	46	Y	45	46	1.39		0.329	1.75		0.394
ISL-EA-181	ISL-EA-181-45-50-N	567168	45	50	Y	45	50	11.22		1.003	7.89		2.201
ISL-EA-181	ISL-EA-181-46-47-N	570259	46	47	Y	46	47	2.66		0.393	2.44		0.493
ISL-EA-181	ISL-EA-181-47-48-N	570259	47	48	Y	47	48	23.6		1.40	18.0		2.64
ISL-EA-181	ISL-EA-181-48-49-N	570259	48	49	Y	48	49	10.5		0.743	4.38		1.78
ISL-EA-181	ISL-EA-181-49-49.4-N	570259	49	49.4	N	49	49.4	17.3		1.16	2.58		0.755
ISL-EA-181	ISL-EA-181-50-55-N	567168	50	55	Y	50	55	3.61		0.599	4.98		1.926
ISL-EA-181	ISL-EA-181-55-60-N	567168	55	60	Y	55	60	1.774		0.342	1.336	J	0.365

PARSONS

TABLE A11-2 PROPOSED ADDENDUM 11 STEP-OUT BORINGS

Area	Northing (Local Site Coordinates)	Easting (Local Site Coordinates)	Location ID	Estimated Total Boring Depth (feet B2005GS)	Total Laboratory Analytical Samples	Core Scan Interval (feet B2005GS)	Downhole Gamma Interval (feet B2005GS)	Justification
Area 1	1,069,066.26	835,792.84	A1-PB-104-B	12	7	0-12	-	Rush Thorium results >7.9 pCi/g at 2 to 4 ft below DI Datum at A1-PB-104
CD - Boneyard	1,069,724.69	835,674.36	CD-EA-199-F	40	8	0-40	0-40	Define extent of RIM above 7.9 pCi/g, due to low recovery in CD-EA-199-D
CD - Boneyard	1,069,503.26	835,544.64	CD-EA-199-G	40	8	0-40	0-40	Define extent of RIM above 7.9 pCi/g, between A2-SB-165-I, A2-PB-162, and CD-EA-198-R and between A2-SB-165-G and CD-EA-208-C
CD - Boneyard	1,069,397.95	835,571.04	CD-EA-199-H	40	8	0-40	0-40	
CD - Boneyard	1,069,590.04	835,538.51	CD-EA-199-I	40	8	0-40	0-40	
ISL	1,068,811.23	835,612.89	ISL-EA-173-A	40	8	0-40	0-40	Rush Thorium results >7.9 pCi/g at 15 to 20 ft and 20 to 25 ft below DI Datum at ISL-EA-173
ISL	1,068,776.48	835,650.51	ISL-EA-173-B	40	8	0-40	0-40	
ISL	1,068,729.77	835,618.78	ISL-EA-173-C	40	8	0-40	0-40	
ISL	1,068,763.40	835,562.61	ISL-EA-173-D	40	8	0-40	0-40	
ISL	1,068,235.04	834,923.99	ISL-EA-181-C	60	12	0-60	0-60	Rush Thorium results >7.9 pCi/g at 45 to 50 ft below DI Datum at ISL-EA-181
ISL	1,069,185.52	835,610.78	ISL-EA-186-I	30	6	0-30	0-30	Define extent of MSW along the eastern edge of the ISL
ISL	1,069,167.12	835,682.01	ISL-EA-186-J	30	6	0-30	0-30	
ISL	1,069,256.91	835,531.46	ISL-EA-187-D	30	6	0-30	0-30	
Area 2 Access Road	1,069,552.09	835,456.21	A2-SB-165-K	8	10	0-8	-	Rush Thorium results >7.9 pCi/g at 3 to 4 ft below DI Datum at A2-SB-165-D
Area 2 Access Road	1,069,544.11	835,495.43	A2-SB-165-L	8	10	0-8	-	
Area 2 Access Road	1,069,447.77	835,529.81	A2-SB-165-M	8	10	0-8	-	
TOTAL BORING/ SAMPLE COUNT	-	-	**16**	-	**131**	-	-	

TABLE A11-3 GRAB AND COMPOSITE SAMPLE COLLECTION INTERVALS SUMMARY

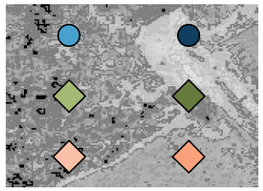
Area	Borings	Estimated Boring Depth	Grab Sample Collection Intervals (ft below DI datum)	Composite Sample Collection Intervals (ft below DI datum)
Area 1	A1-PB-104-B	12	Samples collected from 0-1 and 1-2 from the six inch interval with highest radiological response	2-4, 4-6, 6-8, 8-10, 10-12
CD - Boneyard	CD-EA-199-F, CD-EA-199-G, CD-EA-199-H, and CD-EA-199-I	40	One six inch sample collected per core run where gamma is > 20,000 cpm	0-4, 4-8, 8-12, 12-16, 16-20, 20-24, 24-28, 28-32, 32-36, 36-40
ISL	ISL-EA-173-A, ISL-EA-173-B, ISL-EA-173-C, and ISL-EA-173-D	40	One six inch sample collected per core run where gamma is > 20,000 cpm	0-5, 5-10, 10-15, 15-20, 20-25, 25-30, 30-35, 35-40
ISL	ISL-EA-181-C	60	One six inch sample collected per core run where gamma is > 20,000 cpm	0-5, 5-10, 10-15, 15-20, 20-25, 25-30, 30-35,35-40, 40-45, 45-50, 50-55, 55-60
ISL	ISL-EA-186-I, ISL-EA-186-J, and ISL-EA-187-D	40	One six inch sample collected per core run where gamma is > 20,000 cpm	0-5, 5-10, 10-15, 15-20, 20-25, 25-30
ISL - Access Road into Area 2	A2-SB-165-K, A2-SB-165-L, and A2-SB-165-M	8	0-0.5, 0.5-1, 1-1.5, 1.5-2	2-3, 3-4, 4-5, 5-6, 6-7, 7-8

FIGURES

LEGEND

- PROPERTY BOUNDARY
- SITE BOUNDARY
- OPERABLE UNIT 1 BOUNDARIES (AREA 1 AND AREA 2)
- OPERABLE UNIT 2 BOUNDARIES (CLOSED DEMOLITION AND INACTIVE SANITARY LANDFILLS)

PRE-D.I. BORING | D.I. BORING



- MAXIMUM RESULT IS LESS THAN OR EQUAL TO 7.9 pCi/g
- MAXIMUM RESULT IS GREATER THAN 7.9 pCi/g AND LESS THAN OR EQUAL TO 52.9 pCi/g
- MAXIMUM RESULT IS GREATER THAN 52.9 pCi/g

NOTE: AERIAL IMAGERY PROVIDED BY FIRMATEK AND IS DATED DECEMBER 15TH, 2022

NORTH

0 50 100 Feet

PARSONS®
301 Plainfield Rd, Ste 350, Syracuse, NY 13212
Ph: 315-451-9560
Missouri State Certificate of Authority #: 2019041541

FEEZOR ENGINEERING
Feezor Engineering, Inc.
3377 Hollenberg Dr, Bridgeton, MO 63044
Ph: 217-483-3118
Missouri State Certificate of Authority #: E-200912211

PROJECT
WEST LAKE LANDFILL
SUPERFUND SITE
OU-1 REMEDIAL DESIGN
BRIDGETON, ST. LOUIS COUNTY, MO

PREPARED FOR
THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION VII
ON BEHALF OF
WEST LAKE LANDFILL OU-1
RESPONDENTS

FIGURE # A11-1
DRAWN BY:
APPROVED BY:
DATE:

FIGURE TITLE
PROPOSED BORING LOCATIONS IN THE CDL AND AREA 2 ACCESS ROAD

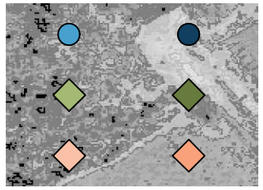
SRC: A11_proposed borings_ #20230816PML1056_02.dwg DATE: 9/28/2023 11:40:11 AM

LEGEND

- PROPERTY BOUNDARY
- SITE BOUNDARY
- OPERABLE UNIT 1 BOUNDARIES
- OPERABLE UNIT 2 BOUNDARIES (CLOSED DEMOLITION AND INACTIVE SANITARY LANDFILLS)

PRE-D.I. BORING

D.I. BORING



MAXIMUM RESULT IS LESS THAN OR EQUAL TO 7.9 pCi/g

MAXIMUM RESULT IS GREATER THAN 7.9 pCi/g AND LESS THAN OR EQUAL TO 52.9 pCi/g

MAXIMUM RESULT IS GREATER THAN 52.9 pCi/g

NOTE: AERIAL IMAGERY PROVIDED BY FIRMATEK AND IS DATED DECEMBER 15TH, 2022

NORTH

0 150 300 Feet

SCALE 1" = 150'

PARSONS®
301 Plainfield Rd, Ste 350, Syracuse, NY 13212
Ph: 315-451-9560
Missouri State Certificate of Authority #: 2019041541

FEEZOR ENGINEERING
Feezor Engineering, Inc.
3377 Hollenberg Dr, Bridgeton, MO 63044
Ph: 217-483-3118
Missouri State Certificate of Authority #: E-200912211

PROJECT
WEST LAKE LANDFILL
SUPERFUND SITE
OU-1 REMEDIAL DESIGN
BRIDGETON, ST. LOUIS COUNTY, MO

PREPARED FOR
THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION VII
ON BEHALF OF
WEST LAKE LANDFILL OU-1
RESPONDENTS

FIGURE # A11-2

DRAWN BY:
APPROVED BY:
DATE:

FIGURE TITLE

PROPOSED BORING LOCATIONS IN THE ISL AND AREA 1

SRC: proposed borings_ #20230816PML1056_01.dwg DATE: 9/7/2023 11:49:35 AM