APPENDIX P-4
FSS SAMPLE & MEASUREMENT LOCATIONS & COORDINATES

Survey Area: LSA 03 **Description:** Plant Open Land Area
Survey Unit: 02 **Description:** West of Site Pond in "Area 5"
Survey Type: FSS **Classification:** Class 2

Measurement or Sample ID	Surface or CSM	Type	Start Elevation*	End Elevation*	Northing** (Y Axis)	Easting** (X Axis)	Remarks / Notes
L03-02-01-P-S-S-00	Uniform	S	427.4	426.9	864144	826693	Surface 6-inch grab
L03-02-02-P-R-S-00	Uniform	S	426.9	422.5	864144	826693	Root 5-foot composite
L03-02-04-P-S-S-00	Uniform	S	427.6	427.1	864089	826662	Surface 6-inch grab
L03-02-05-P-R-S-00	Uniform	S	427.1	422.7	864089	826662	Root 5-foot composite
L03-02-07-P-S-S-00	Uniform	S	428.0	427.5	864035	826693	Surface 6-inch grab
L03-02-08-P-R-S-00	Uniform	S	427.5	423.1	864035	826693	Root 5-foot composite
L03-02-10-P-S-S-00	Uniform	S	430.1	429.6	863980	826662	Surface 6-inch grab
L03-02-11-P-R-S-00	Uniform	S	429.6	425.2	863980	826662	Root 5-foot composite
L03-02-13-P-S-S-00	Uniform	S	429.4	428.9	863980	826724	Surface 6-inch grab
L03-02-14-P-R-S-00	Uniform	S	428.9	424.5	863980	826724	Root 5-foot composite
L03-02-16-P-S-S-00	Uniform	S	430.6	430.2	863926	826693	Surface 6-inch grab
L03-02-17-P-R-S-00	Uniform	S	430.2	425.7	863926	826693	Root 5-foot composite
L03-02-19-P-S-S-00	Uniform	S	429.4	428.9	863926	826756	Surface 6-inch grab
L03-02-20-P-R-S-00	Uniform	S	428.9	424.5	863926	826756	Root 5-foot composite
L03-02-22-P-S-S-00	Uniform	S	431.4	430.9	863871	826724	Surface 6-inch grab
L03-02-23-P-R-S-00	Uniform	S	430.9	426.5	863871	826724	Root 5-foot composite
L03-02-11-P-R-Q-00	Uniform	Q	429.6	425.2	863980	826662	Root 5-foot composite
L03-02-19-P-S-Q-00	Uniform	Q	429.4	428.9	863926	826756	Surface 6-inch grab
L03-02-25-P-S-B-00	Uniform	B	427.4	426.9	864173	826679	Surface 6-inch grab
L03-02-26-P-S-B-00	Uniform	B	429.4	428.9	863924	826763	Surface 6-inch grab

Green shaded samples are the samples at each sample location, for use in WRS test.

*Elevations are in feet above mean sea level.
** Missouri - East State Plane Coordinates [North American Datum (NAD) 1983] (Open Land Area) OR
Distance in feet from lower left corner of the surface (Structures); each surface has it's own (X,Y) = (0,0); OR
For piping the distance from the beginning of the survey unit.
Surface: Floor = F; Wall = W; Ceiling = C; Roof = R
CSM: Three-Layer (Surface-Root-Deep) or Uniform
Type: Systematic = S, Biased = B; QC =Q; Investigation = I

Quality Record

HDP-PR-FSS-721 *Final Status Survey Data Evaluation*
Steps 8.3 Preliminary Data Review and 8.4 Calculation of the Sum-of-Fractions (SOF)

Sample ID	Sample Depth (ft)	Type (Systematic, Bias, QC)	TestAmerica Analytical Results																									
			Ra-226						Tc-99					Th-232						Inferred U-234				U-235				U-238			
			Result	Uncertainty	MDC	Qualifier	Net Result*	Corrected Result	Result	Corrected Result	Uncertainty	MDC	Qualifier	Result	Uncertainty	MDC	Qualifier	Net Result**	Corrected Result	Result	Uncertainty	MDC	Qualifier	Result	Uncertainty	MDC	Qualifier	Result	Uncertainty	MDC	Qualifier
L03-02-01-P-S-S-00	0.00	S	1.360	0.187	0.067	NA	0.290	0.290	0.096	0.096	0.031	0.211	U	1.070	0.162	0.121	NA	0.070	0.070	0.071	NA	NA	NA	0.002	0.152	0.259	U	0.875	0.333	0.899	U
L03-02-02-P-R-S-00	0.50	S	1.090	0.151	0.066	NA	0.020	0.020	0.069	0.069	0.033	0.221	U	1.030	0.148	0.085	NA	0.030	0.030	1.405	NA	NA	NA	0.073	0.131	0.240	U	0.915	0.293	0.815	NA
L03-02-04-P-S-S-00	0.00	S	1.250	0.176	0.070	NA	0.180	0.180	0.105	0.105	0.032	0.218	U	0.995	0.166	0.123	NA	-0.005	0.000	2.136	NA	NA	NA	0.112	0.151	0.248	U	1.320	0.543	0.818	NA
L03-02-05-P-R-S-00	0.50	S	1.560	0.204	0.082	NA	0.490	0.490	0.054	0.054	0.044	0.264	U	1.400	0.217	0.114	NA	0.400	0.400	0.941	NA	NA	NA	0.041	0.093	0.276	U	1.510	0.573	0.866	NA
L03-02-07-P-S-S-00	0.00	S	1.170	0.161	0.067	NA	0.100	0.100	0.059	0.059	0.054	0.206	U	1.090	0.192	0.110	NA	0.090	0.090	3.054	NA	NA	NA	0.167	0.123	0.173	U	0.975	0.310	0.774	NA
L03-02-08-P-R-S-00	0.50	S	1.360	0.198	0.075	NA	0.290	0.290	0.054	0.054	0.014	0.262	U	1.310	0.223	0.141	NA	0.310	0.310	3.625	NA	NA	NA	0.199	0.198	0.247	U	1.070	0.386	1.060	NA
L03-02-10-P-S-S-00	0.00	S	1.220	0.167	0.067	NA	0.150	0.150	0.084	0.084	0.028	0.213	U	1.280	0.216	0.100	NA	0.280	0.280	1.293	NA	NA	NA	0.068	0.135	0.238	U	0.751	0.294	0.860	U
L03-02-11-P-R-S-00	0.50	S	1.270	0.169	0.052	NA	0.200	0.200	0.034	0.034	0.035	0.236	U	1.200	0.178	0.114	NA	0.200	0.200	2.368	NA	NA	NA	0.125	0.153	0.236	U	1.320	0.553	0.845	NA
L03-02-13-P-S-S-00	0.00	S	1.140	0.177	0.088	NA	0.070	0.070	0.048	0.048	0.075	0.225	U	1.420	0.278	0.142	NA	0.420	0.420	3.031	NA	NA	NA	0.160	0.162	0.280	U	1.670	0.660	0.992	NA
L03-02-14-P-R-S-00	0.50	S	1.270	0.172	0.066	NA	0.200	0.200	-0.001	0.000	0.051	0.219	U	1.100	0.171	0.124	NA	0.100	0.100	0.750	NA	NA	NA	0.031	0.143	0.220	U	1.520	0.587	0.884	NA
L03-02-16-P-S-S-00	0.00	S	1.130	0.170	0.079	NA	0.060	0.060	0.090	0.090	0.073	0.234	U	1.190	0.195	0.128	NA	0.190	0.190	5.236	NA	NA	NA	0.289	0.162	0.198	NA	0.862	0.339	0.978	U
L03-02-17-P-R-S-00	0.50	S	1.250	0.164	0.062	NA	0.180	0.180	0.061	0.061	0.062	0.234	U	1.240	0.194	0.134	NA	0.240	0.240	1.897	NA	NA	NA	0.102	0.142	0.243	U	0.856	0.296	0.801	NA
L03-02-19-P-S-S-00	0.00	S	1.040	0.148	0.068	NA	-0.030	0.000	0.213	0.213	0.163	0.240	U	0.997	0.156	0.088	NA	-0.003	0.000	3.133	NA	NA	NA	0.163	0.114	0.164	U	1.960	0.650	0.795	NA
L03-02-20-P-R-S-00	0.50	S	1.330	0.193	0.085	NA	0.260	0.260	0.041	0.041	0.022	0.233	U	1.310	0.203	0.119	NA	0.310	0.310	0.741	NA	NA	NA	0.033	0.169	0.284	U	1.110	0.338	0.887	NA
L03-02-22-P-S-S-00	0.00	S	1.090	0.155	0.069	NA	0.020	0.020	0.141	0.141	0.044	0.212	U	1.060	0.160	0.084	NA	0.060	0.060	2.103	NA	NA	NA	0.111	0.147	0.249	U	1.160	0.332	0.889	NA
L03-02-23-P-R-S-00	0.50	S	1.210	0.174	0.070	NA	0.140	0.140	0.009	0.009	0.031	0.221	U	1.220	0.185	0.167	NA	0.220	0.220	1.926	NA	NA	NA	0.099	0.145	0.240	U	1.350	0.601	0.919	NA
L03-02-11-P-S-Q-00	0.50	Q	1.260	0.166	0.069	NA	0.190	0.190	-0.001	0.000	0.025	0.233	U	1.230	0.181	0.093	NA	0.230	0.230	3.529	NA	NA	NA	0.191	0.119	0.173	NA	1.450	0.553	0.838	NA
L03-02-19-P-R-Q-00	0.00	Q	1.030	0.149	0.070	NA	-0.040	0.000	0.346	0.346	0.146	0.234	NA	1.070	0.165	0.131	NA	0.070	0.070	1.859	NA	NA	NA	0.090	0.150	0.249	U	1.830	0.587	0.850	NA
L03-02-25-P-S-B-00	0.00	B	1.010	0.159	0.079	NA	-0.060	0.000	0.022	0.022	0.117	0.222	U	0.978	0.203	0.114	NA	-0.022	0.000	2.962	NA	NA	NA	0.158	0.160	0.251	U	1.490	0.602	0.905	NA
L03-02-26-P-S-B-00	0.00	B	0.908	0.131	0.061	NA	-0.162	0.000	0.265	0.265	0.106	0.257	NA	0.935	0.139	0.082	NA	-0.065	0.000	2.473	NA	NA	NA	0.133	0.102	0.160	U	1.120	0.480	0.735	NA
Systematic Minimum			0.000						0.000					0.000						0.071				0.002				0.751			
Systematic Maximum			0.490						0.213					0.420						5.236				0.289				1.960			
Systematic Mean			0.166						0.072					0.183						2.107				0.111				1.202			
Systematic Median			0.165						0.060					0.195						2.014				0.107				1.135			
Systematic Standard Deviation			0.127						0.051					0.138						1.302				0.073				0.341			
			With ingrowth, use Ra226 bkg =				1.07							Th232 bkg =		1.0															

NOTES:
Gross results in units of pCi/g.
* Background with ingrowth, 1.07 pCi/g subtracted from gross result.
**Background, 1.0 pCi/g subtracted from gross result.
U Qualifier: Result is less than the sample detection limit.
All uncertainty values are reported at the 2-sigma confidence level.

Sample ID	Sample Depth (ft)	Type (Systematic, Bias, QC)	Enr.	SOF_N	Root Stratum SOF Verification (unexcavated/not backfilled only)					MDC
			Enrichment (%)	SOF_N	Is Sample in the Root Stratum?	Is ROOT Sample SOF > 0.5?	root count	excavation count	surface count	
L03-02-01-P-S-S-00	0.00	S	0.1	0.20	SURFACE	good			1	0.18
L03-02-02-P-R-S-00	0.50	S	1.3	0.04	ROOT	good	1			0.12
L03-02-04-P-S-S-00	0.00	S	1.4	0.12	SURFACE	good			1	0.14
L03-02-05-P-R-S-00	0.50	S	0.5	0.47	ROOT	good	1			0.15
L03-02-07-P-S-S-00	0.00	S	2.6	0.12	SURFACE	good			1	0.12
L03-02-08-P-R-S-00	0.50	S	2.9	0.34	ROOT	good	1			0.15
L03-02-10-P-S-S-00	0.00	S	1.4	0.23	SURFACE	good			1	0.13
L03-02-11-P-R-S-00	0.50	S	1.5	0.23	ROOT	good	1			0.13
L03-02-13-P-S-S-00	0.00	S	1.5	0.28	SURFACE	good			1	0.16
L03-02-14-P-R-S-00	0.50	S	0.4	0.17	ROOT	good	1			0.14
L03-02-16-P-S-S-00	0.00	S	5.0	0.17	SURFACE	good			1	0.14
L03-02-17-P-R-S-00	0.50	S	1.9	0.23	ROOT	good	1			0.14
L03-02-19-P-S-S-00	0.00	S	1.3	0.04	SURFACE	good			1	0.11
L03-02-20-P-R-S-00	0.50	S	0.5	0.30	ROOT	good	1			0.16
L03-02-22-P-S-S-00	0.00	S	1.5	0.07	SURFACE	good			1	0.12
L03-02-23-P-R-S-00	0.50	S	1.2	0.20	ROOT	good	1			0.16
L03-02-11-P-S-Q-00	0.50	Q	2.1	0.25		good				0.12
L03-02-19-P-R-Q-00	0.00	Q	0.8	0.07		good				0.15
L03-02-25-P-S-B-00	0.00	B	1.7	0.03		good				0.14
L03-02-26-P-S-B-00	0.00	B	1.9	0.03		good				0.11
			1.6	0.04						
				0.47			16	8	0	8
				0.20		count tot				
			Average Enrichment (%)	0.20						
				0.11						

DCLG$_W$, Measure Tc-99, All SEAs

	Uniform
U-234	195.4
U-235	51.6
U-238	168.8
Tc-99	25.1
Th-232	2.0
Ra-226	1.9

weighted SOF_{MEAN} **0.20**

fractions	SS	RS	ES
	0.5	0.5	0

SOF_{MEAN} Re-use Backfill Material
0.17 Stockpile 8b

SOF_{MEAN} Groundwater
0.16

SOF <=1
$SOF_{MEAN, SU}$ 0.53 **PASS**

Calculate the dose contribution for the SU by multiplying $SOF_{MEAN,SU}$ (including contribution from Re-use backfill and Groundwater) by 25 mrem.

13.3 mrem

Infer U234			
U-238/U235	**U-234/U235**	**U-234**	**% Enrichment**
568.2	46.3	0.1	0.1
12.5	19.2	1.4	1.3
11.8	19.1	2.1	1.4
36.5	22.7	0.9	0.5
5.8	18.3	3.1	2.6
5.4	18.2	3.6	2.9
11.1	19.1	1.3	1.4
10.6	18.9	2.4	1.5
10.4	18.9	3.0	1.5
49.0	24.2	0.7	0.4
3.0	18.1	5.2	5.0
8.4	18.6	1.9	1.9
12.0	19.2	3.1	1.3
34.0	22.7	0.7	0.5
10.5	18.9	2.1	1.5
13.6	19.4	1.9	1.2
7.6	18.5	3.5	2.1
20.2	20.6	1.9	0.8
9.4	18.7	3.0	1.7
8.4	18.6	2.5	1.9
		Average Enrichment (%)	**1.56**

Infer U-234 MDC using U-235 MDC * ratio of U-234:U-235 @ that sample's enrichment
12.00
4.61
4.73
6.27
3.16
4.50
4.54
4.47
5.31
5.32
3.59
4.52
3.15
6.46
4.72
4.65
3.20
5.12
4.71
2.98

Ave Conc. Ra-226, SS	Ave Conc. Tc-99, SS	Ave Conc. Th-232, SS	Ave Conc. U-234, SS	Ave Conc. U-235, SS	Ave Conc. U-238, SS
0.290	0.096	0.070	0.071	0.002	0.875
-	-	-	-	-	-
0.180	0.105	0.000	2.136	0.112	1.320
-	-	-	-	-	-
0.100	0.059	0.090	3.054	0.167	0.975
-	-	-	-	-	-
0.150	0.084	0.280	1.293	0.068	0.751
-	-	-	-	-	-
0.070	0.048	0.420	3.031	0.160	1.670
-	-	-	-	-	-
0.060	0.090	0.190	5.236	0.289	0.862
-	-	-	-	-	-
0.000	0.213	0.000	3.133	0.163	1.960
-	-	-	-	-	-
0.020	0.141	0.060	2.103	0.111	1.160
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
0.109	**0.105**	**0.139**	**2.507**	**0.134**	**1.197**

Ave Conc. Ra-226, RS	Ave Conc. Tc-99, RS	Ave Conc. Th-232, RS	Ave Conc. U-234, RS	Ave Conc. U-235, RS	Ave Conc. U-238, RS
-	-	-	-	-	-
0.020	0.069	0.030	1.405	0.073	0.915
-	-	-	-	-	-
0.490	0.054	0.400	0.941	0.041	1.510
-	-	-	-	-	-
0.290	0.054	0.310	3.625	0.199	1.070
-	-	-	-	-	-
0.200	0.034	0.200	2.368	0.125	1.320
-	-	-	-	-	-
0.200	0.000	0.100	0.750	0.031	1.520
-	-	-	-	-	-
0.180	0.061	0.240	1.897	0.102	0.856
-	-	-	-	-	-
0.260	0.041	0.310	0.741	0.033	1.110
-	-	-	-	-	-
0.140	0.009	0.220	1.926	0.099	1.350
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
0.223	**0.040**	**0.226**	**1.707**	**0.088**	**1.206**

Ave Conc. Ra-226, ES	Ave Conc. Tc-99, ES	Ave Conc. Th-232, ES	Ave Conc. U-234, ES	Ave Conc. U-235, ES	Ave Conc. U-238, ES
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
0.000	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

WRS TEST						
SAMPLE ID	**AREA (Reference, Survey Unit)**	**Gross SOF ($X_{i,ref}$, $Y_{i,SU,gross}$)**	**ADJUSTED SOF (Z_i)**	**RANKS**	**REFERENCE AREA RANKS**	
9574-SS-140910-01-01	Reference	1.31	2.310	46	46	
9574-SS-140910-01-02	Reference	1.18	2.179	37	37	
9574-SS-140910-01-03	Reference	1.06	2.064	32	32	
9574-SS-140910-01-04	Reference	1.10	2.101	33	33	
9574-SS-140910-01-05	Reference	1.29	2.293	45	45	
9574-SS-140910-01-07	Reference	1.34	2.339	47	47	
9574-SS-140910-01-08	Reference	1.15	2.154	36	36	
9574-SS-140910-01-09	Reference	1.18	2.182	38	38	
9574-SS-140910-01-10	Reference	1.23	2.227	43	43	
9574-SS-140910-01-11	Reference	1.38	2.380	48	48	
9574-SS-140910-01-12	Reference	1.05	2.055	31	31	
9574-SS-140910-01-13	Reference	0.94	1.941	21	21	
9574-SS-140910-01-14	Reference	1.12	2.119	34	34	
9574-SS-140910-01-15	Reference	1.15	2.152	35	35	
9574-SS-140910-01-16	Reference	1.03	2.028	28	28	
9574-SS-140910-01-17	Reference	0.44	1.443	16	16	
9574-SS-140910-01-18	Reference	1.19	2.188	40	40	
9574-SS-140910-01-20	Reference	0.76	1.757	18	18	
9574-SS-140910-01-21	Reference	1.02	2.023	27	27	
9574-SS-140910-01-22	Reference	1.02	2.018	26	26	
9574-SS-140910-01-23	Reference	1.00	2.002	23	23	
9574-SS-140910-01-24	Reference	0.87	1.873	20	20	
9574-SS-140910-01-25	Reference	1.04	2.040	30	30	
9574-SS-140910-01-26	Reference	0.96	1.959	22	22	
9574-SS-140910-01-27	Reference	1.20	2.204	41	41	
9574-SS-140910-01-28	Reference	1.01	2.007	25	25	
9574-SS-140910-01-29	Reference	1.22	2.223	42	42	
9574-SS-140910-01-30	Reference	1.03	2.035	29	29	
9574-SS-140910-01-31	Reference	1.00	2.005	24	24	
9574-SS-140910-01-32	Reference	0.86	1.865	19	19	
9574-SS-140910-01-33	Reference	1.24	2.238	44	44	Min adjusted bkg SOF: 1.44
9574-SS-140910-01-34	Reference	1.19	2.185	39	39	
L03-02-01-P-S-S-00	Survey Unit	1.26	1.260	8	0	No WRS test necessary
L03-02-02-P-R-S-00	Survey Unit	1.11	1.105	2	0	No WRS test necessary
L03-02-04-P-S-S-00	Survey Unit	1.18	1.180	4	0	No WRS test necessary
L03-02-05-P-R-S-00	Survey Unit	1.54	1.538	17	0	Perform WRS test
L03-02-07-P-S-S-00	Survey Unit	1.19	1.188	5	0	No WRS test necessary
L03-02-08-P-R-S-00	Survey Unit	1.40	1.402	15	0	No WRS test necessary
L03-02-10-P-S-S-00	Survey Unit	1.30	1.298	12	0	No WRS test necessary
L03-02-11-P-R-S-00	Survey Unit	1.29	1.292	10	0	No WRS test necessary
L03-02-13-P-S-S-00	Survey Unit	1.34	1.340	13	0	No WRS test necessary
L03-02-14-P-R-S-00	Survey Unit	1.23	1.232	7	0	No WRS test necessary
L03-02-16-P-S-S-00	Survey Unit	1.23	1.231	6	0	No WRS test necessary
L03-02-17-P-R-S-00	Survey Unit	1.30	1.297	11	0	No WRS test necessary
L03-02-19-P-S-S-00	Survey Unit	1.09	1.085	1	0	No WRS test necessary
L03-02-20-P-R-S-00	Survey Unit	1.37	1.368	14	0	No WRS test necessary
L03-02-22-P-S-S-00	Survey Unit	1.13	1.129	3	0	No WRS test necessary
L03-02-23-P-R-S-00	Survey Unit	1.27	1.267	9	0	No WRS test necessary
			Rank Sums	1176	1039	W_r
			# Reference Area Measurements	**m**	32	
			# Survey Unit Measurements	**n**	16	
			Total Number of Measurements	**N**	48	
			(1-α) percentile of a standard normal distribution (MARSSIM Pg. I-10)	**z**	1.645	α = 0.05
			WRS Critical Value (MARSSIM Pg. I-10, Eq. I.1)	**CV**	860	
				TEST:	**PASS**	

Uniform DCGL Criteria Evaluation	
N/2 Value Verification	
Isotope(s)	**SOF (Ra/Tc/Th/Iso U)**
St. Dev.	0.11
$DCGL_{SOF}$	1
LBGR (Mean)	0.20
Shift	0.80
Relative Shift (Δ/σ)	6.96
MARSSIM Table 5.1 (P_r)	1.000000
N	12
N + 20%	14.4
N/2	8
FSS N/2	8
Verification Check	**SUFFICIENT MEASUREMENTS**

"N/2" Corresponds to the number of survey unit measurement locations required for the WRS Test

MARSSIM Table 5.1

Δ/σ	P_r
0.1	0.528182
0.2	0.556223
0.3	0.583985
0.4	0.611335
0.5	0.638143
0.6	0.664290
0.7	0.689665
0.8	0.714167
0.9	0.737710
1.0	0.760217
1.1	0.781627
1.2	0.801892
1.3	0.820978
1.4	0.838864
1.5	0.855541
1.6	0.871014
1.7	0.885299
1.8	0.898420
1.9	0.910413
2.0	0.921319
2.25	0.944167
2.5	0.961428
2.75	0.974067
3.0	0.983039
3.5	0.993329
4.0	0.997658
4.01	1.000000

MARSSIM Table 5.2, α = 0.05, β = 0.10

α (or β)	$Z_{1-\alpha}$ (or $Z_{1-\beta}$)
0.005	2.576
0.01	2.326
0.015	2.241
0.025	1.960
0.05	1.645
0.10	1.282
0.15	1.036
0.2	0.842
0.25	0.674
0.30	0.524

α
β

FORM HDP-PR-FSS-703-1
FIELD DUPLICATE SAMPLE ASSESSMENT

Survey Unit No.:	LSA 03-02				Survey Unit Description:		Class 2 Survey Unit West of Site Pond in "Area 5"					
			Sample (pCi/g)		Field Duplicate Sample (pCi/g)		Average Activity ($\bar{X}$)	Nuclide DCGL				Statistic Exceeds Limit?
Sample ID	Field Duplicate Sample ID	Radionuclide	Activity (x_i)	MDC	Activity (x_i)	MDC	(pCi/g)	(pCi/g)	Statistic[2]	Warning Limit	Control Limit	(Y/N)
L03-02-11-P-R-S-00	L03-02-11-P-S-Q-00	Ra-226	1.270	0.0519	1.260	0.069	1.265	1.9	0.01	0.269	0.403	N
L03-02-11-P-R-S-00	L03-02-11-P-S-Q-00	Tc-99	0.0344	0.236	-0.0014	0.233	0.0165	25.1	NA	3.552	5.321	NA
L03-02-11-P-R-S-00	L03-02-11-P-S-Q-00	Th-232	1.2	0.114	1.230	0.093	1.215	2.0	0.030	0.283	0.424	N
L03-02-11-P-R-S-00	L03-02-11-P-S-Q-00	U-234[1]	2.368	NA	3.529	NA	2.949	195.4	1.161	27.649	41.425	N
L03-02-11-P-R-S-00	L03-02-11-P-S-Q-00	U-235	0.125	0.236	0.191	0.173	0.158	51.6	NA	7.301	10.939	NA
L03-02-11-P-R-S-00	L03-02-11-P-S-Q-00	U-238	1.32	0.845	1.45	0.838	1.385	168.8	0.13	23.885	35.786	N

Comments:
1. U-234 is inferred, no MDC available.
2. Duplicate assessment is not necessary if the result of either sample is < MDC.

Performed by: Thomas Yardy

Reviewed by: Clark Evers

Date:

Date:

Quality Record

FORM HDP-PR-FSS-703-1
FIELD DUPLICATE SAMPLE ASSESSMENT

Survey Unit No.:	LSA 03-02				Survey Unit Description:		Class 2 Survey Unit West of Site Pond in "Area 5"					
			Sample (pCi/g)		Field Duplicate Sample (pCi/g)							
Sample ID	Field Duplicate Sample ID	Radionuclide	Activity (x_i)	MDC	Activity (x_i)	MDC	Average Activity ($\bar{X}$) (pCi/g)	Nuclide DCGL (pCi/g)	Statistic[2]	Warning Limit	Control Limit	Statistic Exceeds Limit? (Y/N)
L03-02-19-P-S-S-00	L03-02-19-P-R-Q-00	Ra-226	1.04	0.0682	1.03	0.0695	1.035	1.9	0.01	0.269	0.403	N
L03-02-19-P-S-S-00	L03-02-19-P-R-Q-00	Tc-99	0.213	0.24	0.346	0.234	0.2795	25.1	NA	3.552	5.321	NA
L03-02-19-P-S-S-00	L03-02-19-P-R-Q-00	Th-232	0.997	0.088	1.07	0.131	1.034	2.0	0.073	0.283	0.424	N
L03-02-19-P-S-S-00	L03-02-19-P-R-Q-00	U-234[1]	3.133	NA	1.859	NA	2.496	195.4	1.274	27.649	41.425	N
L03-02-19-P-S-S-00	L03-02-19-P-R-Q-00	U-235	0.163	0.164	0.0904	0.249	0.127	51.6	NA	7.301	10.939	NA
L03-02-19-P-S-S-00	L03-02-19-P-R-Q-00	U-238	1.96	0.795	1.83	0.85	1.895	168.8	0.13	23.885	35.786	N

Comments:
1. U-234 is inferred, no MDC available.
2. Duplicate assessment is not necessary if the result of either sample is < MDC.

Performed by: Thomas Yardy

Reviewed by: Clark Evers

Date:

Date:

Quality Record

LSA 03-02 Sys SOF

0.2
0.0
0.1
0.5
0.1
0.3
0.2
0.2
0.3
0.2
0.2
0.2
0.0
0.3
0.1
0.2

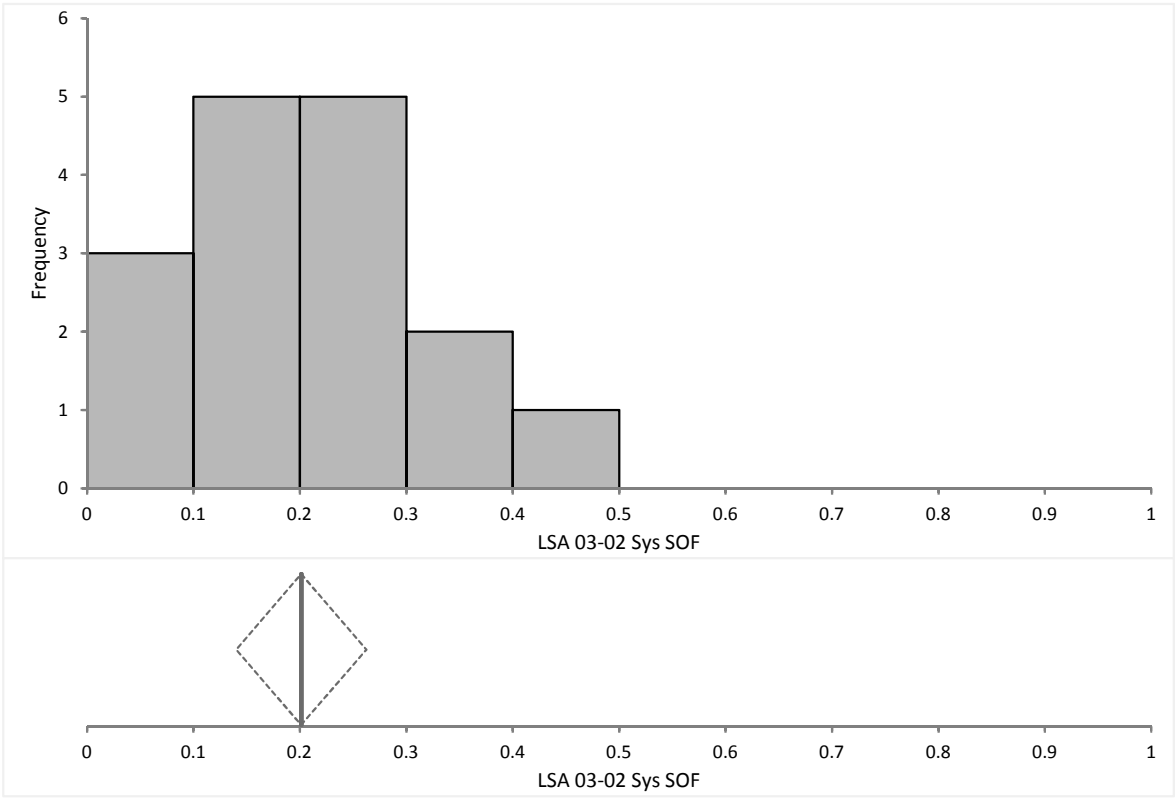
Distribution: LSA 03-02 Sys SOF

Analyse-it v4.65.2

SOFn Only A1:A17

Last updated 26 April 2017 at 10:20 by W. Clark Evers

Descriptives



	N
	16

	Mean	95% CI	Mean SE	SD	Variance	Skewness	Kurtosis
LSA 03-02 Sys SOF	0.20	0.14 to 0.26	0.029	0.11	0.01	0.6	0.79

	Minimum	1st quartile	Median	97.87% CI	3rd quartile	Maximum	IQR
LSA 03-02 Sys SOF	0.04	0.12	0.20	0.12 to 0.28	0.26	0.5	0.14