

APPENDIX C
Land Soil Sample Data and Sign Test Results

Survey Unit 1
R-14 Range Systematic Soil Sample Data

Survey Unit Description	Laydown Yard
MARSSIM Class	1
U-238 DCGLw	208

Surface Soil Samples¹

Sample ID	Analytical Results				
	U-238 ³ Result (pCi/g)		MDC (pCi/g)	Flag ⁴	Sign Test Parameter ⁵
SS-1-1	23.60	+/- 5.90	7.50	G	1
SS-1-2	2.60	+/- 2.50	4.00	U	1
SS-1-3	6.80	+/- 1.70	1.70	LT,G	1
SS-1-4	5.40	+/- 1.70	2.10	LT,G	1
SS-1-5	34.60	+/- 7.10	7.50	G	1
SS-1-6	22.00	+/- 3.50	2.40	G	1
SS-1-7	41.30	+/- 5.50	2.20	G	1
SS-1-8	6.00	+/- 4.00	6.00	U,G	1
SS-1-9	59.10	+/- 7.80	3.10	G	1
SS-1-10	3.50	+/- 1.10	1.40	LT,G	1
SS-1-11	12.90	+/- 2.30	1.70	G	1
SS-1-12	12.30	+/- 2.60	2.50	G	1
SS-1-13	0.80	+/- 4.50	7.80	U,G	1
SS-1-14	6.10	+/- 4.80	7.70	U,G	1
Mean	16.93	MARSSIM Sign Test Evaluation			
Median	9.55	<i>Sum of Positive Signs</i>			<i>14</i>
SD	17.34	<i>Sign Test Critical Value N = 14</i>			<i>10</i>
Max	59.10	<i>Null Hypothesis Evaluation</i>			<i>Rejected</i>
Min	0.80	<i>Survey Unit Evaluation</i>			PASS

Subsurface Soil Samples²

Sample ID	Analytical Results				
	U-238 ³ Result (pCi/g)		MDC (pCi/g)	Flag ⁴	Sign Test Parameter ⁵
SB-1-1	18.90	+/- 5.70	6.80	G	1
SB-1-2	5.70	+/- 1.60	1.90	LT,G	1
SB-1-3	1.40	+/- 3.30	5.60	U,G	1
SB-1-4	4.50	+/- 1.90	2.70	LT,G	1
SB-1-5	28.90	+/- 4.20	2.20	G	1
SB-1-6	23.80	+/- 6.00	6.30	G	1
SB-1-7	11.50	+/- 2.20	1.70	G	1
SB-1-8	3.00	+/- 3.00	4.80	U,G	1
SB-1-9	16.40	+/- 2.90	2.20	G	1
SB-1-10	2.70	+/- 1.20	1.60	LT,G	1
SB-1-11	6.30	+/- 1.50	1.50	LT,G	1
SB-1-12	10.20	+/- 2.20	2.00	G	1
SB-1-13	1.40	+/- 1.40	2.30	U,G	1
SB-1-14	17.30	+/- 5.70	6.50	G	1
Mean	10.86	MARSSIM Sign Test Evaluation			
Median	8.25	<i>Sum of Positive Signs</i>			<i>14</i>
SD	8.88	<i>Sign Test Critical Value N = 14</i>			<i>10</i>
Max	28.90	<i>Null Hypothesis Evaluation</i>			<i>Rejected</i>
Min	1.40	<i>Survey Unit Evaluation</i>			PASS

- Notes:**
- 1 Surface soil samples collected from 0-6 inches
 - 2 Subsurface soil samples collected from 7-12 inches
 - 3 U-238 results inferred directly from surrogate Th-234 results
 - 4 U = Result is less than sample specific MDC
G = Sample density differs by more than 15% LCS density
LT = Result is above the achieved MDC, but is still below the required MDC
 - 5 MARSSIM Sign Test parameter. If Result > DCGLw, Sign = -1, otherwise 1.

Survey Unit 2
R-14 Range Systematic Soil Sample Data

Survey Unit Description	Firing Line
MARSSIM Class	1
U-238 DCGLw	208

Surface Soil Samples¹

Sample ID	Analytical Results				
	U-238 ³ Result (pCi/g)		MDC (pCi/g)	Flag ⁴	Sign Test Parameter ⁵
SS-2-1	11.70	+/- 2.10	1.70	G	1
SS-2-2	92.00	+/- 13.00	7.00	G	1
SS-2-3	3.40	+/- 1.30	1.60	LT,G	1
SS-2-4	12.80	+/- 2.20	1.60		1
SS-2-5	0.30	+/- 3.70	6.60	U,G	1
SS-2-6	0.45	+/- 0.53	0.86	U,G	1
SS-2-7	1.20	+/- 2.90	5.10	U,G	1
SS-2-8	0.40	+/- 0.65	1.09	U,G	1
SS-2-9	0.20	+/- 3.50	6.30	U,G	1
SS-2-10	0.71	+/- 0.74	1.19	U,G	1
SS-2-11	1.10	+/- 2.70	4.70	U,G	1
SS-2-12	0.53	+/- 0.90	1.51	U,G	1
SS-2-13	0.30	+/- 0.90	1.54	U,G	1
SS-2-14	1.80	+/- 3.20	5.30	U,G	1
Mean	9.06	MARSSIM Sign Test Evaluation			
Median	0.91	<i>Sum of Positive Signs</i>			<i>14</i>
SD	24.23	<i>Sign Test Critical Value N = 14</i>			<i>10</i>
Max	92.00	<i>Null Hypothesis Evaluation</i>			<i>Rejected</i>
Min	0.20	<i>Survey Unit Evaluation</i>			PASS

Subsurface Soil Samples²

Sample ID	Analytical Results				
	U-238 ³ Result (pCi/g)		MDC (pCi/g)	Flag ⁴	Sign Test Parameter ⁵
SB-2-1	11.60	+/- 4.80	6.90	G	1
SB-2-2	3.90	+/- 1.20	1.40	LT,G	1
SB-2-3	4.10	+/- 3.10	4.80	U,G	1
SB-2-4	8.00	+/- 3.40	4.60	G	1
SB-2-5	0.00	+/- 2.40	4.40	U,G	1
SB-2-6	0.00	+/- 1.80	3.40	U,G	1
SB-2-7	0.60	+/- 2.20	3.90	U,G	1
SB-2-8	0.00	+/- 1.70	3.20	U,G	1
SB-2-9	0.00	+/- 2.60	4.80	U,G	1
SB-2-10	0.00	+/- 4.20	7.70	U,G	1
SB-2-11	0.00	+/- 3.00	5.70	U,G	1
SB-2-12	1.45	+/- 0.77	1.05	LT,G	1
SB-2-13	0.00	+/- 0.87	1.61	U,G	1
SB-2-14	0.85	+/- 0.64	0.97	U,G	1
Mean	2.18	MARSSIM Sign Test Evaluation			
Median	0.30	<i>Sum of Positive Signs</i>			<i>14</i>
SD	3.59	<i>Sign Test Critical Value N = 14</i>			<i>10</i>
Max	11.60	<i>Null Hypothesis Evaluation</i>			<i>Rejected</i>
Min	0.00	<i>Survey Unit Evaluation</i>			PASS

- Notes:**
- 1 Surface soil samples collected from 0-6 inches
 - 2 Subsurface soil samples collected from 7-12 inches
 - 3 U-238 results inferred directly from surrogate Th-234 results
 - 4 U = Result is less than sample specific MDC
G = Sample density differs by more than 15% LCS density
LT = Result is above the achieved MDC, but is still below the required MDC
 - 5 MARSSIM Sign Test parameter. If Result > DCGLw, Sign = -1, otherwise 1.

Survey Unit 3

R-14 Range Systematic Soil Sample Data

Survey Unit Description	Grassy Field
MARSSIM Class	1
U-238 DCGLw	208

Surface Soil Samples¹

Sample ID	Analytical Results				
	U-238 ³ Result (pCi/g)		MDC (pCi/g)	Flag ⁴	Sign Test Parameter ⁵
SS-3-1	2.60	+/- 3.40	5.50	U,G	1
SS-3-2	10.40	+/- 4.80	7.00	G	1
SS-3-3	3.60	+/- 4.50	7.40	U,G	1
SS-3-4	1.60	+/- 3.50	6.10	U,G	1
SS-3-5	2.10	+/- 2.90	4.80	U,G	1
SS-3-6	1.60	+/- 1.70	2.70	U,G	1
SS-3-7	8.40	+/- 4.70	6.80	G	1
SS-3-8	14.70	+/- 4.70	6.20	G	1
SS-3-9	8.10	+/- 2.00	2.20	G	1
SS-3-10	5.20	+/- 1.40	1.70	LT,G	1
SS-3-11	4.80	+/- 4.60	7.40	U,G	1
SS-3-12	4.60	+/- 1.70	2.30	LT,G	1
SS-3-13	2.50	+/- 1.30	1.90	LT,G	1
SS-3-14	12.80	+/- 2.50	2.00	G	1
Mean	5.93	MARSSIM Sign Test Evaluation			
Median	4.70	<i>Sum of Positive Signs</i>			<i>14</i>
SD	4.29	<i>Sign Test Critical Value N = 14</i>			<i>10</i>
Max	14.70	<i>Null Hypothesis Evaluation</i>			<i>Rejected</i>
Min	1.60	<i>Survey Unit Evaluation</i>			PASS

Subsurface Soil Samples²

Sample ID	Analytical Results				
	U-238 ³ Result (pCi/g)		MDC (pCi/g)	Flag ⁴	Sign Test Parameter ⁵
SB-3-1	3.70	+/- 3.90	6.30	U,G	1
SB-3-2	0.00	+/- 2.60	4.70	U,G	1
SB-3-3	3.10	+/- 4.60	7.50	U,G	1
SB-3-4	1.50	+/- 1.60	2.60	U,G	1
SB-3-5	0.00	+/- 4.20	7.40	U,G	1
SB-3-6	3.10	+/- 4.50	7.50	U,G	1
SB-3-7	6.10	+/- 4.90	7.80	U,G	1
SB-3-8	4.80	+/- 3.70	5.80	U,G	1
SB-3-9	5.60	+/- 1.70	2.10	LT,G	1
SB-3-10	8.30	+/- 2.30	2.60	G	1
SB-3-11	0.00	+/- 3.60	6.40	U,G	1
SB-3-12	1.20	+/- 1.40	2.30	U,G	1
SB-3-13	4.20	+/- 1.80	2.60	LT,G	1
SB-3-14	8.80	+/- 2.20	2.50	G	1
Mean	3.60	MARSSIM Sign Test Evaluation			
Median	3.40	<i>Sum of Positive Signs</i>			<i>14</i>
SD	2.92	<i>Sign Test Critical Value N = 14</i>			<i>10</i>
Max	8.80	<i>Null Hypothesis Evaluation</i>			<i>Rejected</i>
Min	0.00	<i>Survey Unit Evaluation</i>			PASS

- Notes:**
- 1 Surface soil samples collected from 0-6 inches
 - 2 Subsurface soil samples collected from 7-12 inches
 - 3 U-238 results inferred directly from surrogate Th-234 results
 - 4 U = Result is less than sample specific MDC
G = Sample density differs by more than 15% LCS density
LT = Result is above the achieved MDC, but is still below the required MDC
 - 5 MARSSIM Sign Test parameter. If Result > DCGLw, Sign = -1, otherwise 1.

Survey Unit 4

R-14 Range Systematic Soil Sample Data

Survey Unit Description	Grassy Field
MARSSIM Class	2
U-238 DCGLw	208

Surface Soil Samples¹

Sample ID	Analytical Results					Sign Test Parameter ⁴
	U-238 ² Result (pCi/g)		MDC (pCi/g)	Flag ³		
SS-4-1	2.30	+/- 1.40	2.10	LT,G	1	
SS-4-2	2.20	+/- 1.60	2.50	U,G	1	
SS-4-3	2.70	+/- 1.70	2.60	LT,G	1	
SS-4-4	6.70	+/- 2.00	2.40	LT,G	1	
SS-4-5	1.90	+/- 1.40	2.20	U,G	1	
SS-4-6	0.70	+/- 1.20	2.00	U,G	1	
SS-4-7	1.90	+/- 1.60	2.60	U,G	1	
SS-4-8	3.90	+/- 2.40	3.60	LT,G	1	
SS-4-9	6.10	+/- 2.00	2.50	LT,G	1	
SS-4-10	3.90	+/- 1.90	2.60	LT,G	1	
SS-4-11	1.10	+/- 1.20	1.90	U,G	1	
SS-4-12	1.90	+/- 1.50	2.30	U,G	1	
SS-4-13	1.80	+/- 1.30	2.10	U,G	1	
SS-4-14	1.80	+/- 1.30	1.90	U,G	1	
Mean	2.78	MARSSIM Sign Test Evaluation				
Median	2.05	<i>Sum of Positive Signs</i>			<i>14</i>	
SD	1.77	<i>Sign Test Critical Value N = 14</i>			<i>10</i>	
Max	6.70	<i>Null Hypothesis Evaluation</i>			<i>Rejected</i>	
Min	0.70	<i>Survey Unit Evaluation</i>			PASS	

- Notes:**
- 1** Surface soil samples collected from 0-6 inches
 - 2** U-238 results inferred directly from surrogate Th-234 results
 - 3** U = Result is less than sample specific MDC
G = Sample density differs by more than 15% LCS density
LT = Result is above the achieved MDC, but is still below the required MDC
 - 4** MARSSIM Sign Test parameter. If Result > DCGLw, Sign = -1, otherwise 1.

Survey Unit 5

R-14 Range Systematic Soil Sample Data

Survey Unit Description	Land Area West of Firing Line
MARSSIM Class	2
U-238 DCGLw	208

Surface Soil Samples¹

Analytical Results						
Sample ID	U-238 ² Result (pCi/g)			MDC (pCi/g)	Flag ³	Sign Test Parameter ⁴
SS-5-1	2.20	+/-	1.60	2.50	U,G	1
SS-5-2	2.50	+/-	1.40	2.10	LT,G	1
SS-5-3	1.60	+/-	2.00	3.30	U,G	1
SS-5-4	1.40	+/-	1.30	2.10	U,G	1
SS-5-5	0.10	+/-	1.40	2.50	U,G	1
SS-5-6	2.30	+/-	1.60	2.50	U,G	1
SS-5-7	0.94	+/-	0.69	1.03	U,G	1
SS-5-8	1.86	+/-	0.78	0.96	LT,G	1
SS-5-9	0.82	+/-	0.55	0.80	LT,G	1
SS-5-10	3.70	+/-	1.20	1.50	LT,G	1
SS-5-11	1.40	+/-	1.30	2.10	U,G	1
SS-5-12	0.52	+/-	0.91	1.53	U,G	1
SS-5-13	0.90	+/-	1.10	1.80	U,G	1
SS-5-14	0.80	+/-	1.20	1.90	U,G	1
Mean	1.50	MARSSIM Sign Test Evaluation				
Median	1.40	<i>Sum of Positive Signs</i>				<i>14</i>
SD	0.95	<i>Sign Test Critical Value N = 14</i>				<i>10</i>
Max	3.70	<i>Null Hypothesis Evaluation</i>				<i>Rejected</i>
Min	0.10	<i>Survey Unit Evaluation</i>				PASS

- Notes:**
- 1** Surface soil samples collected from 0-6 inches
 - 2** U-238 results inferred directly from surrogate Th-234 results
 - 3** U = Result is less than sample specific MDC
G = Sample density differs by more than 15% LCS density
LT = Result is above the achieved MDC, but is still below the required MDC
 - 4** MARSSIM Sign Test parameter. If Result > DCGLw, Sign = -1, otherwise 1.

Survey Unit 6
R-14 Range Systematic Soil Sample Data

Survey Unit Description	Land Area East of Firing Line
MARSSIM Class	2
U-238 DCGLw	208

Surface Soil Samples¹

Sample ID	Analytical Results					Sign Test Parameter ⁴
	U-238 ² Result (pCi/g)		MDC (pCi/g)	Flag ³		
SS-7-1	2.00	+/- 1.30	2.00	U,G		1
SS-7-2	2.30	+/- 4.50	7.50	U,G		1
SS-7-3	0.15	+/- 0.60	1.07	U,G		1
SS-7-4	3.70	+/- 4.40	7.20	U,G		1
SS-7-5	0.00	+/- 3.50	6.10	U,G		1
SS-7-6	3.30	+/- 2.10	3.20	LT,G		1
SS-7-7	3.00	+/- 1.70	2.50	LT,G		1
SS-7-8	1.80	+/- 4.00	6.80	U,G		1
SS-7-9	1.10	+/- 1.00	1.60	U,G		1
SS-7-10	2.50	+/- 3.30	5.50	U,G		1
SS-7-11	0.30	+/- 3.80	6.50	U,G		1
SS-7-12	0.00	+/- 4.00	7.50	U,G		1
SS-7-13	0.00	+/- 3.50	6.20	U,G		1
SS-7-14	0.70	+/- 1.10	1.80	U,G		1
Mean	1.49	MARSSIM Sign Test Evaluation				
Median	1.45	<i>Sum of Positive Signs</i>				<i>14</i>
SD	1.33	<i>Sign Test Critical Value N = 14</i>				<i>10</i>
Max	3.70	<i>Null Hypothesis Evaluation</i>				<i>Rejected</i>
Min	0.00	<i>Survey Unit Evaluation</i>				PASS

- Notes:**
- 1 Surface soil samples collected from 0-6 inches
 - 2 U-238 results inferred directly from surrogate Th-234 results
 - 3 U = Result is less than sample specific MDC
 G = Sample density differs by more than 15% LCS density
 LT = Result is above the achieved MDC, but is still below the required MDC
 - 4 MARSSIM Sign Test parameter. If Result > DCGLw, Sign = -1, otherwise 1.

APPENDIX C
Land Biased Soil Sample Data

R-14 Range Biased Soil Sample Data

U-238 DCGLw	208
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Surface Soil Samples¹

			Analytical Results				
Survey Unit	Class	Sample ID	U-238 ³ Result (pCi/g)			MDC (pCi/g)	Flag ⁴
1	1	SS-01-15	275.00	+/-	33.00	6.00	G
1	1	SS-01-16	77.40	+/-	10.00	4.20	G
1	1	SS-01-17	43.00	+/-	9.30	10.40	M3,G
2	1	SS-02-15	16.70	+/-	2.60	1.50	
2	1	SS-02-16	93.00	+/-	13.00	7.00	G
3	1	SS-03-15	109.00	+/-	17.00	12.00	M3,G
4	2	SS-04-15	24.30	+/-	7.50	10.00	M3,G
Mean			91.20				
Median			77.40				
SD			88.17				
Max			275.00				
Min			16.70				

Subsurface Soil Samples²

			Analytical Results				
Survey Unit	Class	Sample ID	U-238 ³ Result (pCi/g)			MDC (pCi/g)	Flag ⁴
1	1	SB-01-15	191.00	+/-	27.00	19.00	M3,G
1	1	SB-01-16	20.20	+/-	5.60	7.10	G
1	1	SB-01-17	18.50	+/-	3.30	2.50	G
2	1	SB-02-15	7.30	+/-	3.90	5.60	LT
2	1	SB-02-16	59.70	+/-	8.80	6.30	G
3	1	SB-03-15	37.90	+/-	8.80	10.20	M3,G
4	2	SB-04-15	1.60	+/-	2.60	4.30	U,G
Mean			48.03				
Median			20.20				
SD			66.01				
Max			191.00				
Min			1.60				

- Notes:**
- 1** Surface soil samples collected from 0-6 inches
 - 2** Subsurface soil samples collected from 7-12 inches
 - 3** U-238 results inferred directly from surrogate Th-234 results
 - 4** U = Result is less than sample specific MDC
 - G = Sample density differs by more than 15% LCS density
 - M3 = Requested MDC not met, but reported activity is greater than reported MDC
 - LT = Result is above the achieved MDC, but is still below the required MDC