

Hematite Decommissioning Project	Procedure: HDP-PR-FSS-701, Final Status Survey Plan Development		
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APPENDIX P-4

FSS SAMPLE & MEASUREMENT LOCATIONS & COORDINATES

Survey Area:	BSA 05	Description:	Class 1 Structure inside LSA 05-02
Survey Unit:	02	Description:	Former Tile Barn Foundation
Survey Type:	FSS	Classification:	Class 1

Measurement or Sample ID	Surface or CSM	Type	Start * Elevation	End * Elevation	Location ID	Remarks / Notes
B05-02-01-S-O-S-00	O	S	NA	NA	Footer Section 1	Former Barn Footer
B05-02-02-S-O-S-00	O	S	NA	NA	Footer Section 2	Former Barn Footer
B05-02-03-S-O-S-00	O	S	NA	NA	Footer Section 3	Former Barn Footer
B05-02-04-S-O-S-00	O	S	NA	NA	Footer Section 4	Former Barn Footer
B05-02-05-S-O-S-00	O	S	NA	NA	Footer Section 5	Former Barn Footer
B05-02-06-S-O-S-00	O	S	NA	NA	Footer Section 6	Former Barn Footer
B05-02-07-S-O-S-00	O	S	NA	NA	Footer Section 7	Former Barn Footer
B05-02-08-S-O-S-00	O	S	NA	NA	Footer Section 8	Former Barn Footer
B05-02-09-S-O-S-00	O	S	NA	NA	Footer Section 9	Former Barn Footer
B05-02-10-S-O-S-00	O	S	NA	NA	Footer Section 10	Former Barn Footer
B05-02-11-S-O-S-00	O	S	NA	NA	Footer Section 11	Former Barn Footer
B05-02-12-S-O-S-00	O	S	NA	NA	Footer Section 12	Former Barn Footer
B05-02-13-S-O-S-00	O	S	NA	NA	Footer Section 13	Former Barn Footer
B05-02-14-S-O-S-00	O	S	NA	NA	Footer Section 14	Former Barn Footer
B05-02-15-S-O-S-00	O	S	NA	NA	Footer Section 15	Former Barn Footer
B05-02-16-S-O-S-00	O	S	NA	NA	Footer Section 16	Former Barn Footer
B05-02-17-S-O-S-00	O	S	NA	NA	Footer Section 17	Former Barn Footer
B05-02-18-S-O-S-00	O	S	NA	NA	Footer Section 18	Former Barn Footer
B05-02-19-S-O-S-00	O	S	NA	NA	Footer Section 19	Former Barn Footer
B05-02-20-S-O-S-00	O	S	NA	NA	Footer Section 20	Former Barn Footer
B05-02-21-S-O-S-00	O	S	NA	NA	Footer Section 21	Former Barn Footer
B05-02-22-S-O-S-00	O	S	NA	NA	Footer Section 22	Former Barn Footer
B05-02-23-S-O-S-00	O	S	NA	NA	Footer Section 23	Former Barn Footer
B05-02-24-S-O-S-00	O	S	NA	NA	Footer Section 24	Former Barn Footer
B05-02-25-S-O-S-00	O	S	NA	NA	Footer Section 25	Former Barn Footer
B05-02-26-S-O-S-00	O	S	NA	NA	Footer Section 26	Former Barn Footer
B05-02-27-S-O-S-00	O	S	NA	NA	Footer Section 27	Former Barn Footer
B05-02-28-S-O-S-00	O	S	NA	NA	Footer Section 28	Former Barn Footer
B05-02-29-S-O-S-00	O	S	NA	NA	Footer Section 29	Former Barn Footer
B05-02-30-S-O-S-00	O	S	NA	NA	Footer Section 30	Former Barn Footer
B05-02-31-S-O-S-00	O	S	NA	NA	Ramp Footer Section 1	Former Ramp Footer
B05-02-32-S-O-S-00	O	S	NA	NA	Ramp Footer Section 2	Former Ramp Footer
B05-02-33-S-O-S-00	O	S	NA	NA	Ramp Footer Section 3	Former Ramp Footer
B05-02-34-S-O-S-00	O	S	NA	NA	Ramp Footer Section 4	Former Ramp Footer
B05-02-35-S-O-S-00	O	S	NA	NA	Ramp Footer Section 5	Former Ramp Footer
B05-02-36-S-O-S-00	O	S	NA	NA	Ramp Footer Section 6	Former Ramp Footer
B05-02-37-S-O-S-00	O	S	NA	NA	Ramp Footer Section 7	Former Ramp Footer
B05-02-38-S-O-S-00	O	S	NA	NA	Drain Basin Section 1	Remaining Drain Basin
B05-02-39-S-O-S-00	O	S	NA	NA	Drain Basin Section 2	Remaining Drain Basin
B05-02-40-S-O-S-00	O	S	NA	NA	Drain Basin Section 3	Remaining Drain Basin
B05-02-41-S-O-S-00	O	S	NA	NA	Drain Basin Section 4	Remaining Drain Basin
B05-02-42-S-O-S-00	O	S	NA	NA	Drain Basin Section 5	Remaining Drain Basin
B05-02-43-S-O-S-00	O	S	NA	NA	Small Junction Box	Remaining Drain Basin
B05-02-44-S-O-S-00	O	S	NA	NA	Metal Storm Drain Pipe Ext 1	Remaining Drain Basin
B05-02-45-S-O-S-00	O	S	NA	NA	Metal Storm Drain Pipe Ext 2	Remaining Drain Basin
B05-02-46-S-O-S-00	O	S	NA	NA	Metal Storm Drain Pipe Ext 3	Remaining Drain Basin
B05-02-47-S-O-S-00	O	S	NA	NA	Metal Storm Drain Pipe Ext 4	Remaining Drain Basin
B05-02-48-S-O-S-00	O	S	NA	NA	Metal Storm Drain Pipe Int.	Remaining Drain Basin

*X and Y coordinates originate from lower left or southwest corner of structural surface. Each structural surface has it's own origin (0,0) point.

Surface: Floor = F; Wall = W; Ceiling = C; Roof = R; O = Other

CSM: Three-Layer (Surface-Root-Deep) or Uniform

Type: Systematic = S, Biased = B; QC = Q; Investigation = I

Quality Record

Ludlum 2360 276928	Ludlum 43-68 D	Active Probe Area 125 cm ²	α HDP Efficiency 26.0%	α Cal. Efficiency N/A	β HDP Efficiency 13.8%	β Cal. Efficiency N/A
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TOTAL WEIGHTED INSTRUMENT EFFICIENCY CALCULATION

Radionuclide	Radiation	Maximum Energy (MeV)	Instrument Efficiency (ϵ_i)	Surface Efficiency (ϵ_s)	Yield 100%	Activity Fraction	Weighted Efficiency
Am-241	Alpha	5.6	0.2600	0.25	1.00	2.682E-03	1.74E-04
Np-237	Alpha	5.0	0.2600	0.25	1.00	5.573E-05	3.62E-06
Pu-239	Alpha	5.2	0.2600	0.25	1.00	2.027E-06	1.32E-07
Tc-99	Beta	0.294	0.1380	0.25	1.00	2.829E-03	9.76E-05
Th-232	Alpha	4.1	0.2600	0.25	1.00	3.214E-03	2.09E-04
Ra-228	Beta	0.046	0.1380	0.00	1.00	3.214E-03	0.00E+00
Ac-228	Beta	2.13	0.1380	0.50	1.00	3.214E-03	2.22E-04
Th-228	Alpha	5.5	0.2600	0.25	1.00	3.214E-03	2.09E-04
Ra-224	Alpha	5.8	0.2600	0.25	1.00	3.214E-03	2.09E-04
U-234	Alpha	4.9	0.2600	0.25	1.00	8.270E-01	5.38E-02
U-235	Alpha	4.7	0.2600	0.25	1.00	3.720E-02	2.42E-03
Th-231	Beta	0.390	0.1380	0.25	1.00	3.720E-02	1.28E-03
U-238	Alpha	4.3	0.2600	0.25	1.00	1.270E-01	8.26E-03
Th-234	Beta	0.270	0.1380	0.25	1.00	1.270E-01	4.38E-03
Pa-234m	Beta	2.20	0.1380	0.50	1.00	1.270E-01	8.76E-03

Total Weighted Instrument Efficiency = Σ Weighted Instrument Efficiency for all Nuclides of Concern

$\Sigma =$ 8.00%

Weighted Instrument Efficiency = $\epsilon_i * \epsilon_s * \text{Yield} * \text{Activity Fraction}$

ϵ_i = 2 Pi Instrument Efficiency for Nuclide of Concern

ϵ_s = Surface Efficiency for Nuclide of Concern

<p>Meter 43-89</p>

Ludlum 2360 248161	Ludlum 43-68 B	Active Probe Area 125 cm ²	α HDP Efficiency 29.1%	α Cal. Efficiency N/A	β HDP Efficiency 13.6%	β Cal. Efficiency N/A
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TOTAL WEIGHTED INSTRUMENT EFFICIENCY CALCULATION

Radionuclide	Radiation	Maximum Energy (MeV)	Instrument Efficiency (ϵ_i)	Surface Efficiency (ϵ_s)	Yield 100%	Activity Fraction	Weighted Efficiency
Am-241	Alpha	5.6	0.2910	0.25	1.00	2.682E-03	1.95E-04
Np-237	Alpha	5.0	0.2910	0.25	1.00	5.573E-05	4.05E-06
Pu-239	Alpha	5.2	0.2910	0.25	1.00	2.027E-06	1.47E-07
Tc-99	Beta	0.294	0.1360	0.25	1.00	2.829E-03	9.62E-05
Th-232	Alpha	4.1	0.2910	0.25	1.00	3.214E-03	2.34E-04
Ra-228	Beta	0.046	0.1360	0.00	1.00	3.214E-03	0.00E+00
Ac-228	Beta	2.13	0.1360	0.50	1.00	3.214E-03	2.19E-04
Th-228	Alpha	5.5	0.2910	0.25	1.00	3.214E-03	2.34E-04
Ra-224	Alpha	5.8	0.2910	0.25	1.00	3.214E-03	2.34E-04
U-234	Alpha	4.9	0.2910	0.25	1.00	8.270E-01	6.02E-02
U-235	Alpha	4.7	0.2910	0.25	1.00	3.720E-02	2.71E-03
Th-231	Beta	0.390	0.1360	0.25	1.00	3.720E-02	1.26E-03
U-238	Alpha	4.3	0.2910	0.25	1.00	1.270E-01	9.24E-03
Th-234	Beta	0.270	0.1360	0.25	1.00	1.270E-01	4.32E-03
Pa-234m	Beta	2.20	0.1360	0.50	1.00	1.270E-01	8.64E-03

Total Weighted Instrument Efficiency = Σ Weighted Instrument Efficiency for all Nuclides of Concern

$\Sigma =$ 8.75%

Weighted Instrument Efficiency = $\epsilon_i * \epsilon_s * \text{Yield} * \text{Activity Fraction}$

ϵ_i = 2 Pi Instrument Efficiency for Nuclide of Concern

ϵ_s = Surface Efficiency for Nuclide of Concern

<p>Meter 43-89</p>

HDP-PR-FSS-721 Final Status Survey Data Evaluation
Preliminary Data Review and Determination of Sum-of-Fractions (SOF)

MEASUREMENT ID	MEASUREMENT LOCATION	DATE MEAS	MEASUREMENT	Step 8.3.2				Corrected Net dpm/100cm ²	Fraction of DCGL Step 8.4.3		
				GROSS cpm (α+β)	BKG cpm (a+b)	Net cpm (α + β)	Combined Net dpm/100 cm ² (α+β)				
B05-02-01-S-O-S-00	Footer Section 1	08/14/2013	alpha + beta TSC	338	253	85	850	850	4%		
B05-02-02-S-O-S-00	Footer Section 2	08/14/2013	alpha + beta TSC	328	253	75	750	750	4%		
B05-02-03-S-O-S-00	Footer Section 3	08/14/2013	alpha + beta TSC	318	253	65	650	650	3%		
B05-02-04-S-O-S-00	Footer Section 4	08/14/2013	alpha + beta TSC	380	253	127	1270	1270	7%		
B05-02-05-S-O-S-00	Footer Section 5	08/14/2013	alpha + beta TSC	332	253	79	790	790	4%		
B05-02-06-S-O-S-00	Footer Section 6	08/14/2013	alpha + beta TSC	358	253	105	1050	1050	6%		
B05-02-07-S-O-S-00	Footer Section 7	08/14/2013	alpha + beta TSC	329	253	76	760	760	4%		
B05-02-08-S-O-S-00	Footer Section 8	08/14/2013	alpha + beta TSC	381	253	128	1280	1280	7%		
B05-02-09-S-O-S-00	Footer Section 9	08/14/2013	alpha + beta TSC	350	253	97	970	970	5%		
B05-02-10-S-O-S-00	Footer Section 10	08/14/2013	alpha + beta TSC	364	253	111	1110	1110	6%		
B05-02-11-S-O-S-00	Footer Section 11	08/14/2013	alpha + beta TSC	355	253	102	1020	1020	5%		
B05-02-12-S-O-S-00	Footer Section 12	08/14/2013	alpha + beta TSC	352	253	99	990	990	5%		
B05-02-13-S-O-S-00	Footer Section 13	08/14/2013	alpha + beta TSC	347	253	94	940	940	5%		
B05-02-14-S-O-S-00	Footer Section 14	08/14/2013	alpha + beta TSC	355	253	102	1020	1020	5%		
B05-02-15-S-O-S-00	Footer Section 15	08/14/2013	alpha + beta TSC	372	253	119	1190	1190	6%		
B05-02-16-S-O-S-00	Footer Section 16	08/14/2013	alpha + beta TSC	241	250	-9	-82	0	0%		
B05-02-17-S-O-S-00	Footer Section 17	08/14/2013	alpha + beta TSC	230	250	-20	-183	0	0%		
B05-02-18-S-O-S-00	Footer Section 18	08/14/2013	alpha + beta TSC	256	250	6	55	55	0%		
B05-02-19-S-O-S-00	Footer Section 19	08/14/2013	alpha + beta TSC	266	250	16	146	146	1%		
B05-02-20-S-O-S-00	Footer Section 20	08/14/2013	alpha + beta TSC	259	250	9	82	82	0%		
B05-02-21-S-O-S-00	Footer Section 21	08/14/2013	alpha + beta TSC	264	250	14	128	128	1%		
B05-02-22-S-O-S-00	Footer Section 22	08/14/2013	alpha + beta TSC	271	250	21	192	192	1%		
B05-02-23-S-O-S-00	Footer Section 23	08/14/2013	alpha + beta TSC	268	250	18	165	165	1%		
B05-02-24-S-O-S-00	Footer Section 24	08/14/2013	alpha + beta TSC	293	250	43	393	393	2%		
B05-02-25-S-O-S-00	Footer Section 25	08/14/2013	alpha + beta TSC	233	250	-17	-155	0	0%		
B05-02-26-S-O-S-00	Footer Section 26	08/14/2013	alpha + beta TSC	252	250	2	18	18	0%		
B05-02-27-S-O-S-00	Footer Section 27	08/14/2013	alpha + beta TSC	233	250	-17	-155	0	0%		
B05-02-28-S-O-S-00	Footer Section 28	08/14/2013	alpha + beta TSC	281	250	31	283	283	1%		
B05-02-29-S-O-S-00	Footer Section 29	08/14/2013	alpha + beta TSC	271	250	21	192	192	1%		
B05-02-30-S-O-S-00	Footer Section 30	08/14/2013	alpha + beta TSC	272	250	22	201	201	1%		
B05-02-31-S-O-S-00	Ramp Footer Section 1	08/14/2013	alpha + beta TSC	468	354	114	1140	1140	6%		
B05-02-32-S-O-S-00	Ramp Footer Section 2	08/14/2013	alpha + beta TSC	430	354	76	760	760	4%		
B05-02-33-S-O-S-00	Ramp Footer Section 3	08/14/2013	alpha + beta TSC	352	354	-2	-20	0	0%		
B05-02-34-S-O-S-00	Ramp Footer Section 4	08/14/2013	alpha + beta TSC	370	354	16	160	160	1%		
B05-02-35-S-O-S-00	Ramp Footer Section 5	08/14/2013	alpha + beta TSC	386	354	32	320	320	2%		
B05-02-36-S-O-S-00	Ramp Footer Section 6	08/14/2013	alpha + beta TSC	391	354	37	370	370	2%		
B05-02-37-S-O-S-00	Ramp Footer Section 7	08/14/2013	alpha + beta TSC	445	354	91	910	910	5%		
B05-02-38-S-O-S-00	Drain Basin Section 1	08/14/2013	alpha + beta TSC	387	354	33	330	330	2%		
B05-02-39-S-O-S-00	Drain Basin Section 2	08/14/2013	alpha + beta TSC	390	354	36	360	360	2%		
B05-02-40-S-O-S-00	Drain Basin Section 3	08/14/2013	alpha + beta TSC	350	354	-4	-40	0	0%		
B05-02-41-S-O-S-00	Drain Basin Section 4	08/14/2013	alpha + beta TSC	372	354	18	180	180	1%		
B05-02-42-S-O-S-00	Drain Basin Section 5	08/14/2013	alpha + beta TSC	354	354	0	0	0	0%		
B05-02-43-S-O-S-00	Small Junction Box	08/14/2013	alpha + beta TSC	359	379	-20	-200	0	0%		
B05-02-44-S-O-S-00	Metal Storm Drain Pipe Ext 1	08/14/2013	alpha + beta TSC	403	354	49	490	490	3%		
B05-02-45-S-O-S-00	Metal Storm Drain Pipe Ext 2	08/14/2013	alpha + beta TSC	400	354	46	460	460	2%		
B05-02-46-S-O-S-00	Metal Storm Drain Pipe Ext 3	08/14/2013	alpha + beta TSC	424	354	70	700	700	4%		
B05-02-47-S-O-S-00	Metal Storm Drain Pipe Ext 4	08/14/2013	alpha + beta TSC	384	354	30	300	300	2%		
B05-02-48-S-O-S-00	Metal Storm Drain Pipe Int.	08/14/2013	alpha + beta TSC	400	354	46	460	460	2%		
								Min	0	3%	Average Fraction Step 8.4.5.g
								Max	1280		
								Mean	488	DCGL _{so}	mrem SU Dose Contribution Step 8.4.6
								Median	365	0.7	
								Stdev	419.3	mrem	

*NOTE: Differences from documented survey results are due to rounding in Excel

**HDP-PR-FSS-721 Final Status Survey Data Evaluation
Preliminary Data Review and Determination of Sum-of-Fractions (SOF)**

Instrument used for FSS Static Measurements:

	08/14/2013	Survey # 3063 C 130814
Ludlum 2360/43-89 "D" Detector Area (A) = 125 cm ²	ave. ambient bkg = 253 cpm ($\alpha + \beta$)	weighted eff (ϵ_w)= 0.08000
Ludlum 2360/43-89 "B" Detector Area (A) = 125 cm ²	ave. ambient bkg = 250 cpm ($\alpha + \beta$)	weighted eff (ϵ_w)= 0.08750
	08/14/2013	Survey # 3064 C 130814
Ludlum 2360/43-89 "D" Detector Area (A) = 125 cm ²	ave. ambient bkg = 354 cpm ($\alpha + \beta$)	weighted eff (ϵ_w)= 0.08000
	08/14/2013	Survey # 3065 C 130814
Ludlum 2360/43-89 "D" Detector Area (A) = 125 cm ²	ave. ambient bkg = 354 cpm ($\alpha + \beta$)	weighted eff (ϵ_w)= 0.08000
	08/14/2013	Survey # 3066 C 130814
Ludlum 2360/43-89 "D" Detector Area (A) = 125 cm ²	ave. ambient bkg = 379 cpm ($\alpha + \beta$)	weighted eff (ϵ_w)= 0.08000
	08/14/2013	Survey # 3084 C 130814
Ludlum 2360/43-89 "D" Detector Area (A) = 125 cm ²	ave. ambient bkg = 354 cpm ($\alpha + \beta$)	weighted eff (ϵ_w)= 0.08000
TSC (dpm/100cm ²) =	(gcpm-bkg) / ($\epsilon_w * (A_{det}/100 \text{ cm}^2)$)	
DCGL (structures) =	18,925 dpm/100 cm ²	

**HDP-PR-HP-314 *Unrestricted Release of Materials and Equipment*
Removable Data Evaluation**

All removable measurements less than MDA, see FSS Survey Documentation for results.

**HDP-PR-FSS-721 Final Status Survey Data Evaluation
Performance of Statistical Tests**

Sign Test					
SAMPLE ID	SAMPLE ID	Gross TSC Step 8.5.4.a	Gross TSC / Adj. Gross DCGL (W_s) Step 8.5.4.b	Difference ($1-W_s$) Step 8.5.4.d	Corrected Difference Step 8.5.4.e
B05-02-01-S-O-S-00	Footer Section 1	850	0.045	0.955	0.955
B05-02-02-S-O-S-00	Footer Section 2	750	0.040	0.960	0.960
B05-02-03-S-O-S-00	Footer Section 3	650	0.034	0.966	0.966
B05-02-04-S-O-S-00	Footer Section 4	1270	0.067	0.933	0.933
B05-02-05-S-O-S-00	Footer Section 5	790	0.042	0.958	0.958
B05-02-06-S-O-S-00	Footer Section 6	1050	0.055	0.945	0.945
B05-02-07-S-O-S-00	Footer Section 7	760	0.040	0.960	0.960
B05-02-08-S-O-S-00	Footer Section 8	1280	0.068	0.932	0.932
B05-02-09-S-O-S-00	Footer Section 9	970	0.051	0.949	0.949
B05-02-10-S-O-S-00	Footer Section 10	1110	0.059	0.941	0.941
B05-02-11-S-O-S-00	Footer Section 11	1020	0.054	0.946	0.946
B05-02-12-S-O-S-00	Footer Section 12	990	0.052	0.948	0.948
B05-02-13-S-O-S-00	Footer Section 13	940	0.050	0.950	0.950
B05-02-14-S-O-S-00	Footer Section 14	1020	0.054	0.946	0.946
B05-02-15-S-O-S-00	Footer Section 15	1190	0.063	0.937	0.937
B05-02-16-S-O-S-00	Footer Section 16	0	0.000	1.000	1.000
B05-02-17-S-O-S-00	Footer Section 17	0	0.000	1.000	1.000
B05-02-18-S-O-S-00	Footer Section 18	55	0.003	0.997	0.997
B05-02-19-S-O-S-00	Footer Section 19	146	0.008	0.992	0.992
B05-02-20-S-O-S-00	Footer Section 20	82	0.004	0.996	0.996
B05-02-21-S-O-S-00	Footer Section 21	128	0.007	0.993	0.993
B05-02-22-S-O-S-00	Footer Section 22	192	0.010	0.990	0.990
B05-02-23-S-O-S-00	Footer Section 23	165	0.009	0.991	0.991
B05-02-24-S-O-S-00	Footer Section 24	393	0.021	0.979	0.979
B05-02-25-S-O-S-00	Footer Section 25	0	0.000	1.000	1.000
B05-02-26-S-O-S-00	Footer Section 26	18	0.001	0.999	0.999
B05-02-27-S-O-S-00	Footer Section 27	0	0.000	1.000	1.000
B05-02-28-S-O-S-00	Footer Section 28	283	0.015	0.985	0.985
B05-02-29-S-O-S-00	Footer Section 29	192	0.010	0.990	0.990
B05-02-30-S-O-S-00	Footer Section 30	201	0.011	0.989	0.989
B05-02-31-S-O-S-00	Ramp Footer Section 1	1140	0.060	0.940	0.940
B05-02-32-S-O-S-00	Ramp Footer Section 2	760	0.040	0.960	0.960
B05-02-33-S-O-S-00	Ramp Footer Section 3	0	0.000	1.000	1.000
B05-02-34-S-O-S-00	Ramp Footer Section 4	160	0.008	0.992	0.992
B05-02-35-S-O-S-00	Ramp Footer Section 5	320	0.017	0.983	0.983
B05-02-36-S-O-S-00	Ramp Footer Section 6	370	0.020	0.980	0.980
B05-02-37-S-O-S-00	Ramp Footer Section 7	910	0.048	0.952	0.952
B05-02-38-S-O-S-00	Drain Basin Section 1	330	0.017	0.983	0.983
B05-02-39-S-O-S-00	Drain Basin Section 2	360	0.019	0.981	0.981
B05-02-40-S-O-S-00	Drain Basin Section 3	0	0.000	1.000	1.000
B05-02-41-S-O-S-00	Drain Basin Section 4	180	0.010	0.990	0.990
B05-02-42-S-O-S-00	Drain Basin Section 5	0	0.000	1.000	1.000
B05-02-43-S-O-S-00	Small Junction Box	0	0.000	1.000	1.000
B05-02-44-S-O-S-00	Metal Storm Drain Pipe Ext 1	490	0.026	0.974	0.974
B05-02-45-S-O-S-00	Metal Storm Drain Pipe Ext 2	460	0.024	0.976	0.976
B05-02-46-S-O-S-00	Metal Storm Drain Pipe Ext 3	700	0.037	0.963	0.963
B05-02-47-S-O-S-00	Metal Storm Drain Pipe Ext 4	300	0.016	0.984	0.984
B05-02-48-S-O-S-00	Metal Storm Drain Pipe Int.	460	0.024	0.976	0.976
Number of Positive Differences (S+)					48
Sign Test Critical Value (MARSSIM Table I-3)					18

$\alpha = 0.05$

MARSSIM Table I-3 Critical Values for the Sign Test Statistic S+		MARSSIM Table I-3 Critical Values for the Sign Test Statistic S+	
N	Alpha = 0.05	N	0.05
4	4	28	18
5	4	29	19
6	5	30	19
7	6	31	20
8	6	32	21
9	7	33	21
10	8	34	22
11	8	35	22
12	9	36	23
13	9	37	23
14	10	38	24
15	11	39	25
16	11	40	25
17	12	41	26
18	12	42	26
19	13	43	27
20	14	44	27
21	14	45	28
22	15	46	29
23	15	47	29
24	16	48	30
25	17	49	30
26	17	50	31
27	18		

TEST: **PASS**

If every measurement in the systematic sample population is \leq the DCGL, a statistical test is not required.