TELEDYNE
BROWN ENGINEERING, INC.
A Teledyne Technologies Company
2508 Quality Lane
Knoxville, TN 37931-3133
865-690-6819

Dave Culp
Chase Environmental Group, Inc.
109 Flint Rd

Oak Ridge, TN 37830

Report of Analysis/Certificate of Conformance

03/15/2016

LIMS #: L67141
Project ID#: CH085-3EADVDISP-16
Received: 03/07/2016
Delivery Date: 04/06/2016
P.O.#: C1602021-001
Release #:
SDG#:

This is to certify that Teledyne Brown Engineering - Environmental Services located at 2508 Quality Lane, Knoxville, Tennessee, 37931, has analyzed, tested and documented samples, as received by the laboratory, as specified in the applicable purchase order.

This also certifies that requirements of applicable codes, standards and specifications have been fully met and that any quality assurance documentation which verified conformance to the purchase order is on file and may be examined upon request.

I hereby certify that the above statements are true and correct.

Keith Jeter
Operations Manager

Cross Reference Table

Client ID	Laboratory ID	Station ID (if applicable)
C1602021-M-001 RAPID COUNT	L67141-1	
C1602021-S-001 RAPID COUNT	L67141-2	
C1602021-S-002 RAPID COUNT	L67141-4	
C1602021-S-003 RAPID COUNT	L67141-5	
C1602021-S-004 RAPID COUNT	L67141-6	
C1602021-S-005 RAPID COUNT	L67141-7	
C1602021-S-006 RAPID COUNT	L67141-9	
C1602021-S-007 RAPID COUNT	L67141-11	

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Cross Reference Table

Client ID	Laboratory ID	Station ID (if applicable)
C1602021-S-008 RAPID COUNT	L67141-12	
C1602021-S-009 RAPID COUNT	L67141-14	
C1602021-S-010 RAPID COUNT	L67141-15	
C1602021-W-001	L67141-16	
C1602021-W-002	L67141-17	

Method Reference Numbers

Matrix	Analysis	Method Reference
S	GAMMA	EPA 901.1
SD	GAMMA	EPA 901.1
WO	GR-A	EPA 900.0
WO	GR-B	EPA 900.0

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Report of Analysis

03/15/16 13:23

L67141

Chase Environmental Group, Inc.

CH085-3EADVDISP-16

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

Sample ID: **C1602021-M-001 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-1

Collect Start: 03/04/2016 15:05
Collect Stop:
Receive Date: 03/07/2016

Matrix: Solids (SD)
Volume:
% Moisture:

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**6.16E+00**	1.12E+00	4.26E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
TL-208	2007	**4.55E+00**	3.91E-01	1.61E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
PB-212	2007	**4.92E+00**	1.84E-01	9.71E-02	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
BI-214	2007	**3.37E+01**	1.26E+00	2.75E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
BI-212	2007	**7.43E+00**	1.56E+00	6.40E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
PB-214	2007	**3.02E+01**	4.75E-01	1.23E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
RA-226	2007	**2.93E+01**	5.24E-01	1.07E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
AC-228	2007	**2.25E+01**	7.03E-01	1.74E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
RA-228	2007	**2.38E+01**	8.92E-01	2.51E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
TH-228	2007	**7.39E+00**	1.55E+00	6.37E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
TH-230	2007	**3.04E+01**	7.18E-01	2.26E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	
TH-232	2007	**2.24E+01**	7.01E-01	1.73E-01	pCi/g		1038.56	g wet	03/04/16 15:05	03/11/16	4252	Sec	+		Yes	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

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MDC - Minimum Detectable Concentration

Report ot Analysis

03/15/16 13:23

L67141

Chase Environmental Group, Inc.

CH085-3EADVDISP-16

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

Dave Culp

Sample ID: **C1602021-S-001 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-2

Collect Start: 03/04/2016 15:23
Collect Stop:
Receive Date: 03/07/2016

Matrix: Soil (S)
Volume:
% Moisture: 34.9

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**1.97E+01**	3.46E+00	2.52E+00	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
TL-208	2007	**1.35E+01**	1.01E+00	8.89E-01	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
PB-212	2007	**1.55E+01**	4.68E-01	5.13E-01	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
BI-214	2007	**9.90E+01**	3.43E+00	1.63E+00	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
BI-212	2007	**2.03E+01**	3.60E+00	3.62E+00	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
PB-214	2007	**9.24E+01**	1.27E+00	6.20E-01	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
RA-226	2007	**8.56E+01**	1.27E+00	5.52E-01	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
AC-228	2007	**7.68E+01**	1.94E+00	9.63E-01	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
RA-228	2007	**7.93E+01**	2.44E+00	1.62E+00	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
TH-228	2007	**2.02E+01**	3.59E+00	3.60E+00	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
TH-230	2007	**9.35E+01**	1.89E+00	1.22E+00	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	
TH-232	2007	**7.66E+01**	1.93E+00	9.61E-01	pCi/g Dry		274.88	g dry	03/04/16 15:23	03/10/16	4053	Sec	+		Yes	

Flag Values
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TELEDYNE BROWN ENGINEERING, INC.
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Dave Culp

Sample ID:	**C1602021-S-002 RAPID COUNT**	Collect Start:	03/04/2016 15:51	Matrix:	Soil (S)
Station:		Collect Stop:		Volume:	
Description:		Receive Date:	03/07/2016	% Moisture:	14.14
LIMS Number:	L67141-4				

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**2.89E+01**	2.83E+00	1.20E+00	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
TL-208	2007	**1.10E+00**	4.64E-01	3.61E-01	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
PB-212	2007	**1.18E+00**	1.71E-01	1.87E-01	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
BI-214	2007	**5.32E+00**	9.96E-01	1.04E+00	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
PB-214	2007	**5.34E+00**	4.03E-01	2.51E-01	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
RA-226	2007	**4.87E+00**	4.30E-01	2.57E-01	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
AC-228	2007	**1.26E+00**	4.43E-01	4.54E-01	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
RA-228	2007	**1.43E+00**	7.91E-01	1.02E+00	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
TH-228	2007	8.88E-01	1.01E+00	**1.76E+00**	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	U		No	
TH-230	2007	**5.25E+00**	4.90E-01	4.61E-01	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
TH-232	2007	**1.26E+00**	4.42E-01	4.53E-01	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	
TH-234	2007	**5.49E+00**	2.21E+00	2.15E+00	pCi/g Dry		325.23	g dry	03/04/16 15:51	03/10/16	4050	Sec	+		Yes	

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- High = Activity concentration exceeds customer reporting value
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- H = High recovery

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No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

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L67141

Chase Environmental Group, Inc.

Dave Culp

CH085-3EADVDISP-16

Sample ID: **C1602021-S-003 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-5

Collect Start: 03/04/2016 15:55
Collect Stop:
Receive Date: 03/07/2016

Matrix: Soil (S)
Volume:
% Moisture: 16.72

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**2.91E+01**	2.30E+00	8.82E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
TL-208	2007	**1.22E+00**	3.30E-01	2.51E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
PB-212	2007	**1.35E+00**	2.13E-01	1.60E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
BI-214	2007	**9.28E-01**	4.18E-01	7.57E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
BI-212	2007	**1.88E+00**	1.06E+00	1.08E+00	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
PB-214	2007	**8.11E-01**	2.06E-01	1.85E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
RA-226	2007	**6.61E-01**	2.22E-01	1.64E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
AC-228	2007	**1.38E+00**	4.62E-01	3.00E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
RA-228	2007	**1.11E+00**	6.13E-01	6.44E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
TH-228	2007	**1.87E+00**	1.06E+00	1.07E+00	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
TH-230	2007	**7.16E-01**	3.26E-01	3.23E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	
TH-232	2007	**1.38E+00**	4.61E-01	2.99E-01	pCi/g Dry		356.04	g dry	03/04/16 15:55	03/10/16	4027	Sec	+		Yes	

Flag Values
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U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
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Spec = MDC exceeds customer technical specification
L = Low recovery
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Yes = Peak identified in gamma spectrum

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CH085-3EADVDISP-16

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

Dave Culp

Sample ID: **C1602021-S-004 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-6

Collect Start: 03/04/2016 15:41
Collect Stop:
Receive Date: 03/07/2016

Matrix: Soil (S)
Volume:
% Moisture: 15.01

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**2.49E+01**	2.11E+00	7.70E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
TL-208	2007	**1.11E+00**	2.34E-01	2.38E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
PB-212	2007	**1.39E+00**	1.22E-01	1.25E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
BI-214	2007	**2.37E+00**	6.06E-01	6.07E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
BI-212	2007	**1.37E+00**	7.36E-01	9.33E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
PB-214	2007	**2.98E+00**	2.53E-01	1.52E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
RA-226	2007	**2.80E+00**	2.52E-01	1.39E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
AC-228	2007	**1.32E+00**	3.23E-01	3.35E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
RA-228	2007	**1.72E+00**	6.54E-01	4.84E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
TH-228	2007	**1.36E+00**	7.33E-01	9.29E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
TH-230	2007	**3.08E+00**	3.44E-01	2.77E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	
TH-232	2007	**1.32E+00**	3.23E-01	3.34E-01	pCi/g Dry		334.49	g dry	03/04/16 15:41	03/10/16	4004	Sec	+		Yes	

Flag Values
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Dave Culp

CH085-3EADVDISP-16

Sample ID: **C1602021-S-005 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-7

Collect Start: 03/04/2016 16:05
Collect Stop:
Receive Date: 03/07/2016

Matrix: Soil (S)
Volume:
% Moisture: 35.97

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**2.39E+01**	3.27E+00	1.13E+00	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
TL-208	2007	**1.67E+01**	1.31E+00	3.80E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
PB-212	2007	**1.80E+01**	5.05E-01	2.52E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
BI-214	2007	**1.16E+02**	3.81E+00	7.50E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
BI-212	2007	**2.22E+01**	4.30E+00	1.73E+00	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
PB-214	2007	**1.09E+02**	1.40E+00	3.04E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
RA-226	2007	**9.80E+01**	1.32E+00	2.70E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
AC-228	2007	**8.49E+01**	2.08E+00	4.66E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
RA-228	2007	**8.82E+01**	2.55E+00	7.06E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
TH-228	2007	**2.21E+01**	4.28E+00	1.72E+00	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
TH-230	2007	**1.09E+02**	2.03E+00	5.82E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	
TH-232	2007	**8.48E+01**	2.07E+00	4.65E-01	pCi/g Dry		248.26	g dry	03/04/16 16:05	03/11/16	4471	Sec	+		Yes	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
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L67141

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Dave Culp

CH085-3EADVDISP-16

Sample ID: **C1602021-S-006 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-9

Collect Start: 03/04/2016 16:16
Collect Stop:
Receive Date: 03/07/2016

Matrix: Soil (S)
Volume:
% Moisture: 32.15

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**2.46E+01**	3.33E+00	9.71E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
TL-208	2007	**9.32E+00**	9.51E-01	3.60E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
PB-212	2007	**9.72E+00**	4.02E-01	1.93E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
BI-214	2007	**5.82E+01**	3.04E+00	6.47E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
BI-212	2007	**1.22E+01**	3.35E+00	1.45E+00	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
PB-214	2007	**5.50E+01**	1.14E+00	2.44E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
RA-226	2007	**5.26E+01**	1.16E+00	2.34E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
AC-228	2007	**4.41E+01**	1.73E+00	3.82E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
RA-228	2007	**4.54E+01**	2.02E+00	5.80E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
TH-228	2007	**1.22E+01**	3.33E+00	1.45E+00	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
TH-230	2007	**5.55E+01**	1.63E+00	4.65E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	
TH-232	2007	**4.40E+01**	1.73E+00	3.81E-01	pCi/g Dry		303.1	g dry	03/04/16 16:16	03/11/16	4485	Sec	+		Yes	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

**** Unless otherwise noted, the analytical results reported are related only to the samples tested in the condition they are received by the laboratory.

MDC - Minimum Detectable Concentration

Report of Analysis

03/15/16 13:23

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L67141

Chase Environmental Group, Inc.

Dave Culp

CH085-3EADVDISP-16

Sample ID: **C1602021-S-007 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-11

Collect Start: 03/04/2016 16:34
Collect Stop:
Receive Date: 03/07/2016

Matrix: Soil (S)
Volume:
% Moisture: 16.88

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**2.84E+01**	1.80E+00	2.35E-01	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	
TL-208	2007	**1.18E+00**	2.68E-01	9.20E-02	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	
PB-212	2007	**1.48E+00**	1.62E-01	5.70E-02	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	
BI-214	2007	**5.71E+00**	6.68E-01	2.22E-01	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	
PB-214	2007	**4.76E+00**	2.96E-01	7.78E-02	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	
RA-226	2007	**4.41E+00**	2.87E-01	6.97E-02	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	
AC-228	2007	**1.06E+00**	3.21E-01	1.11E-01	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	
RA-228	2007	9.98E-01	7.51E-01	**2.70E-01**	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	U		Yes	
TH-228	2007	-1.52E-02	3.61E-01	**5.99E-01**	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	U		No	
TH-230	2007	**4.94E+00**	3.77E-01	1.58E-01	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	
TH-232	2007	**1.06E+00**	3.20E-01	1.10E-01	pCi/g Dry		339.84	g dry	03/04/16 16:34	03/11/16	4494	Sec	+		Yes	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

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MDC - Minimum Detectable Concentration

Report of Analysis

03/15/16 13:23

L67141

Chase Environmental Group, Inc.

CH085-3EADVDISP-16

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

Dave Culp

Sample ID: **C1602021-S-008 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-12

Collect Start: 03/04/2016 16:44
Collect Stop:
Receive Date: 03/07/2016

Matrix: Soil (S)
Volume:
% Moisture: 13.45

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**2.64E+01**	2.40E+00	3.31E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
TL-208	2007	**1.14E+00**	3.54E-01	1.48E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
PB-212	2007	**1.16E+00**	1.54E-01	6.88E-02	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
BI-214	2007	**3.97E+00**	8.41E-01	3.63E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
PB-214	2007	**3.62E+00**	3.34E-01	1.00E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
RA-226	2007	**3.71E+00**	3.28E-01	9.74E-02	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
AC-228	2007	**1.25E+00**	3.95E-01	1.72E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
RA-228	2007	**1.21E+00**	7.19E-01	3.37E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
TH-228	2007	8.09E-02	4.94E-01	**8.28E-01**	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	U		No	
TH-230	2007	**3.59E+00**	4.70E-01	1.59E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
TH-232	2007	**1.25E+00**	3.94E-01	1.72E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	
TH-234	2007	**4.32E+00**	1.63E+00	8.08E-01	pCi/g Dry		319.72	g dry	03/04/16 16:44	03/11/16	4494	Sec	+		Yes	

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
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High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

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MDC - Minimum Detectable Concentration

Report of Analysis

03/15/16 13:23

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L67141

Chase Environmental Group, Inc.

Dave Culp

CH085-3EADVDISP-16

Sample ID: **C1602021-S-009 RAPID COUNT**
Station:
Description:
LIMS Number: L67141-14

Collect Start: 03/04/2016 16:50
Collect Stop:
Receive Date: 03/07/2016

Matrix: Soil (S)
Volume:
% Moisture: 13.73

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**3.37E+01**	2.33E+00	3.19E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
TL-208	2007	**1.60E+00**	3.43E-01	1.06E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
PB-212	2007	**1.45E+00**	1.58E-01	6.21E-02	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
BI-214	2007	**5.47E+00**	8.18E-01	2.90E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
BI-212	2007	**1.73E+00**	9.21E-01	3.96E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
PB-214	2007	**5.91E+00**	3.19E-01	7.95E-02	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
RA-226	2007	**5.58E+00**	3.57E-01	7.48E-02	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
AC-228	2007	**1.32E+00**	3.61E-01	1.51E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
RA-228	2007	**1.22E+00**	7.03E-01	2.67E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
TH-228	2007	**1.72E+00**	9.17E-01	3.95E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
TH-230	2007	**5.84E+00**	4.93E-01	1.43E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	
TH-232	2007	**1.31E+00**	3.60E-01	1.50E-01	pCi/g Dry		335.88	g dry	03/04/16 16:50	03/11/16	4494	Sec	+		Yes	

Flag Values
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High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

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MDC - Minimum Detectable Concentration

Report of Analysis

03/15/16 13:23

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L67141

Chase Environmental Group, Inc.

Dave Culp

CH085-3EADVDISP-16

Sample ID: **C1602021-S-010 RAPID COUNT** | Collect Start: 03/04/2016 17:26 | Matrix: Soil (S)
Station: | Collect Stop: | Volume:
Description: | Receive Date: 03/07/2016 | % Moisture: 11.63
LIMS Number: L67141-15

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
K-40	2007	**2.91E+01**	1.95E+00	2.71E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
TL-208	2007	**1.21E+00**	3.09E-01	1.01E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
PB-212	2007	**1.54E+00**	1.52E-01	6.28E-02	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
BI-214	2007	**1.08E+00**	3.76E-01	2.98E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
BI-212	2007	**5.88E+00**	1.04E+00	4.55E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
PB-214	2007	**8.29E-01**	1.62E-01	8.00E-02	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
RA-226	2007	**8.89E-01**	1.74E-01	6.56E-02	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
AC-228	2007	**9.81E-01**	5.12E-01	1.58E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
RA-228	2007	**1.93E+00**	6.07E-01	2.48E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
TH-228	2007	**5.85E+00**	1.04E+00	4.53E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
TH-230	2007	**7.45E-01**	2.96E-01	1.50E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	
TH-232	2007	**9.79E-01**	5.11E-01	1.58E-01	pCi/g Dry		396	g dry	03/04/16 17:26	03/11/16	4496	Sec	+		Yes	

Sample ID: **C1602021-W-001** | Collect Start: 03/04/2016 16:54 | Matrix: Water (WO)
Station: | Collect Stop: | Volume:
Description: | Receive Date: 03/07/2016 | % Moisture:
LIMS Number: L67141-16

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
GR-A	2008	**1.19E+01**	6.90E+00	5.22E+00	pCi/L		230	ml		03/14/16	50	M	+			
GR-B	2008	**2.64E+01**	6.17E+00	6.78E+00	pCi/L		230	ml		03/14/16	50	M	+			

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
\+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

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MDC - Minimum Detectable Concentration

Report ot Analysis

03/15/16 13:23

TELEDYNE BROWN ENGINEERING, INC.
A Teledyne Technologies Company

L67141

Chase Environmental Group, Inc.

Dave Culp

CH085-3EADVDISP-16

Sample ID: **C1602021-W-002**
Station:
Description:
LIMS Number: L67141-17

Collect Start: 03/04/2016 17:12
Collect Stop:
Receive Date: 03/07/2016

Matrix: Water (WO)
Volume:
% Moisture:

Radionuclide	SOP#	Activity Conc	Uncertainty 2 Sigma	MDC	Units	Run #	Aliquot Volume	Aliquot Units	Reference Date	Count Date	Count Time	Count Units	Flag Values			
GR-A	2008	4.80E-01	2.15E+00	**3.16E+00**	pCi/L		500	ml		03/14/16	50	M	U			
GR-B	2008	**2.19E+01**	3.61E+00	3.40E+00	pCi/L		500	ml		03/14/16	50	M	+			

Flag Values
U = Compound/Analyte not detected (< MDC) or less than 3 sigma
+ = Activity concentration exceeds MDC and 3 sigma; peak identified(gamma only)
U* = Compound/Analyte not detected. Peak not identified, but forced activity concentration exceeds MDC and 3 sigma
High = Activity concentration exceeds customer reporting value
Spec = MDC exceeds customer technical specification
L = Low recovery
H = High recovery

Bolded text indicates reportable value.

No = Peak not identified in gamma spectrum
Yes = Peak identified in gamma spectrum

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MDC - Minimum Detectable Concentration

L67141

Chain of Custody Record No. C1602021-001

Chase Environmental Group, Inc.
109 Flint Rd., Oak Ridge, TN 37830
865-481-8801

Project Name: Advanced Disposal
Send Report To: Dave Culp
Address: 109 Flint Rd
Oak Ridge, TN 37830
E-mail: dculp@chaseenv.com
Phone: 865-207-3664
Fax: 865-481-8818

Project Number: C1602021
Sampler (Print Name): Dave Culp
Sampler (Print Name): Tony McGill
Shipment Method: Hand Deliver
Airbill Number: N/A
Laboratory Receiving: Teledyne Brown

Page 1 of 2

Purchase Order #: _____

Analysis Requested: NORM Gamma Spec Lib. (Ingrow Radium Projeny)

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	NORM Gamma Spec Lib. (Ingrow Radium Projeny)	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
C1602021-M-001	3/4/16	1505	Filter sock	1	✓	Filter Sock	
C1602021-S-001	3/4/16	1523	Soil	1	✓		
C1602021-S-002	3/4/16	1551	Soil	1	✓		
C1602021-S-003	3/4/16	1555	Soil	1	✓		
C1602021-S-004	3/4/16	1541	Soil	1	✓		
C1602021-S-005	3/4/16	1605	Soil	1	✓		
C1602021-S-006	3/4/16	1616	Soil	1	✓		
C1602021-S-007	3/4/16	1634	Soil	1	✓		
C1602021-S-008	3/4/16	1644	Soil	1	✓		
C1602021-S-009	3/4/16	1650	Soil	1	✓		
C1602021-S-010	3/4/16	1726	Soil	1	✓		

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Tony McGill	Kim Thurman	3/7/16	1639
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By laboratory):

QA/QC level		Turnaround		Sample Receipt	
Level I	↑	Routine	↑	Total # Containers Received?	
Level II	↑	24 Hour	↑	COC Seals Present?	
Level III	↑	1 Week	↑	COC Seals Intact?	
Other	↑	Other _____		Received Containers Intact?	
				Temperature?	

ADSBR000229

L67141

Chain of Custody Record No. C1602021-001

Chase Environmental Group, Inc.
109 Flint Rd., Oak Ridge, TN 37830
865-481-8801

Page 2 of 2

Purchase Order #: _____

Project Name: Advanced Disposal	Project Number: C1602021
Send Report To: Dave Culp	Sampler (Print Name): Dave Culp
Address: 109 Flint Rd.	Sampler (Print Name): Tony McGill
Oak Ridge, TN 37830	Shipment Method: Hand Deliver
E-mail: dculp@chaseenv.com	Airbill Number: N/A
Phone: 865-207-3664	Laboratory Receiving: Teledyne Brown
Fax: 865-481-8818	

Analysis Requested: ~~Norm Gamma Spectra~~, Gross Alpha, Gross Beta

Field Sample ID	Sample Date	Sample Time	Sample Matrix	Number of Containers	~~Norm Gamma Spectra~~	Gross Alpha	Gross Beta	Comments, Special Instructions, etc.	Lab Sample ID (to be completed by lab)
C1602021-W-001	3/4/16	1654	Liquid	1	✓	✓	✓	Need Detection Sensitivity of <5pCi/L Ra226+225 <15pCi/L Gross Alpha	
C1602021-W-002	3/4/16	1712	Liquid	1	✓	✓	✓		

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Tony McGill	Hunley O Jr	3/7/16	1639
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Sample Custodian Remarks (Completed By laboratory):

QA/QC level		Turnaround		Sample Receipt	
Level I	↑	Routine	↑	Total # Containers Received?	
Level II	↑	24 Hour	↑	COC Seals Present?	
Level III	↑	1 Week	↑	COC Seals Intact?	
Other	↑	Other _____		Received Containers Intact?	
				Temperature?	

03/08/16 17:07

SR #: SR46752

Teledyne Brown Engineering
Sample Receipt Verification/Variance Report

Client: CHASE ENVIRONMENTAL GROUP INC Project #: CH085-3EADVDISP-16 LIMS #L67141

Initiated By: KTHURMAN
Init Date: 03/08/16 Receive Date: 03/08/16

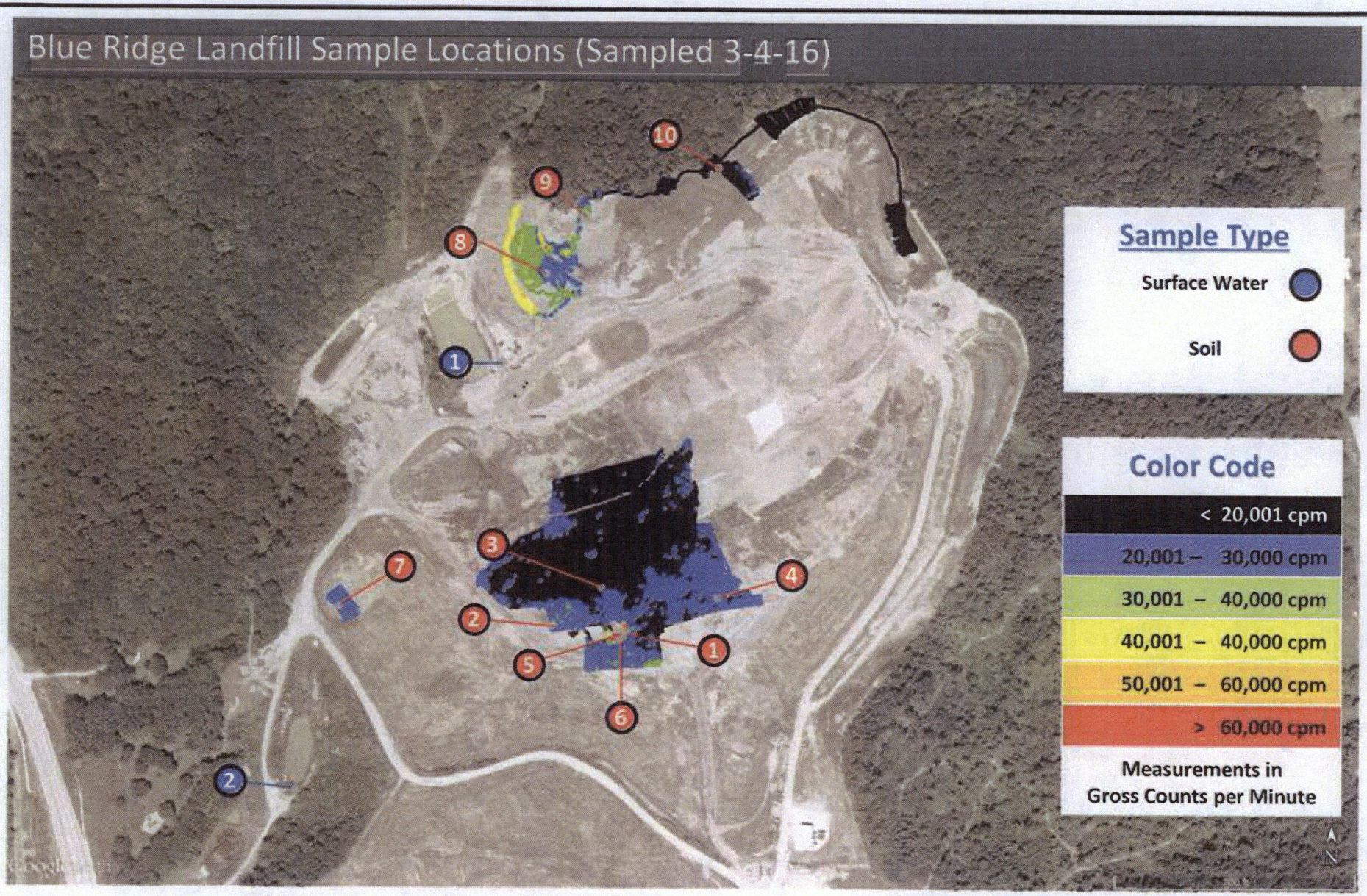
Notification of Variance

Person Notified: Contacted By:
Notify Date:
Notify Method:
Notify Comment:

Client Response

Person Responding:
Response Date:
Response Method:
Response Comment

	Criteria	Yes No NA	Comment
1	Shipping container custody seals present and intact.	NA	
2	Sample container custody seals present and intact.	NA	
3	Sample containers received in good condition	Y	
4	Chain of custody received with samples	Y	
5	All samples listed on chain of custody received	Y	
6	Sample container labels present and legible.	Y	
7	Information on container labels correspond with chain of custody	Y	
8	Sample(s) properly preserved and in appropriate container(s)	NA	
9	Other (Describe)	NA	
For Hazardous Materials Only:			
10	Paperwork shows TBE and shippers name, address and phone number	NA	
11	Paperwork shows sample quantity information	NA	



Map of Sample Locations

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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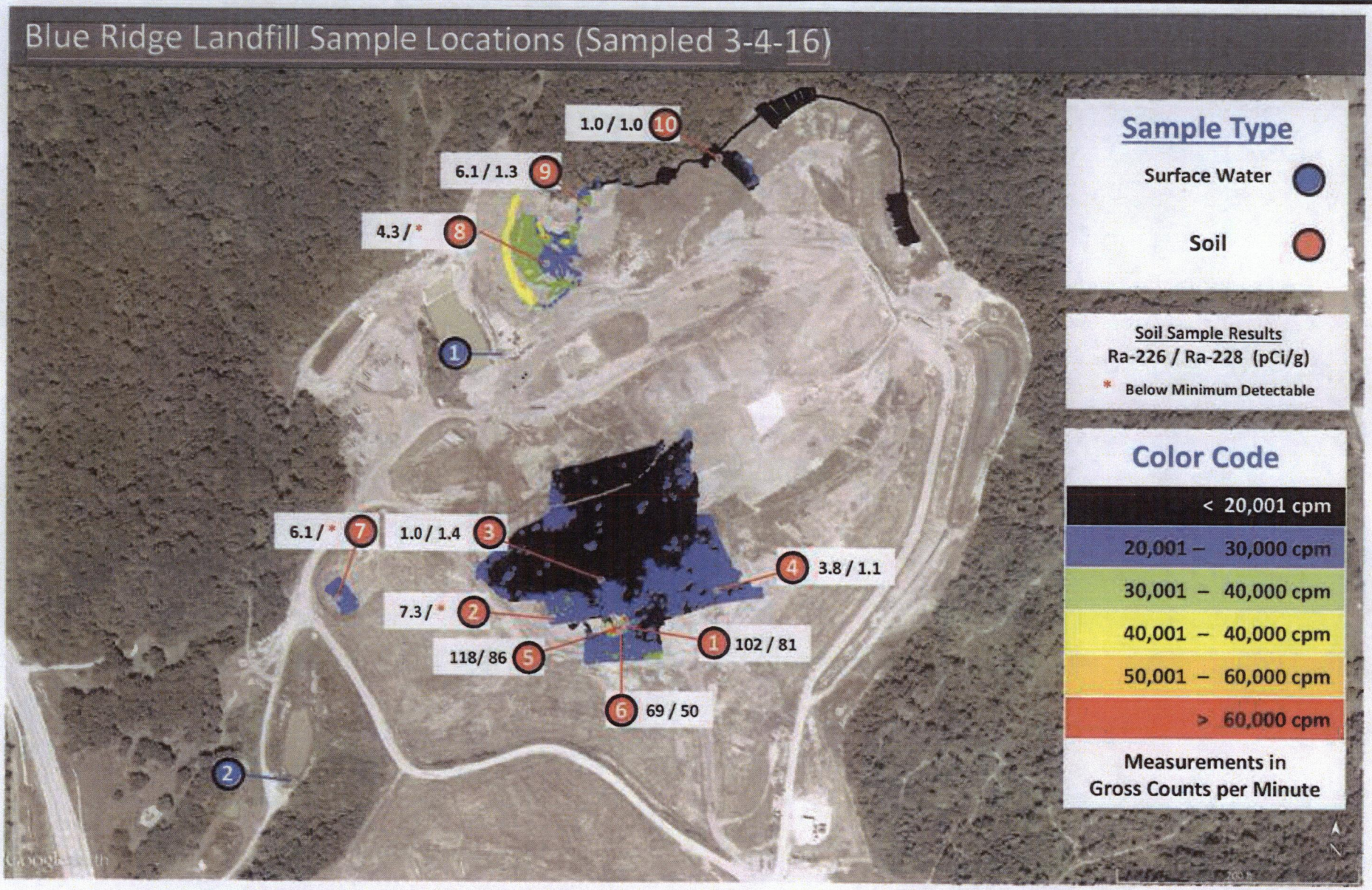
Appendix E	E.1 of E.1

ADSBR000232



Map of Sample Locations - Radium Results (3 week ingrowth)

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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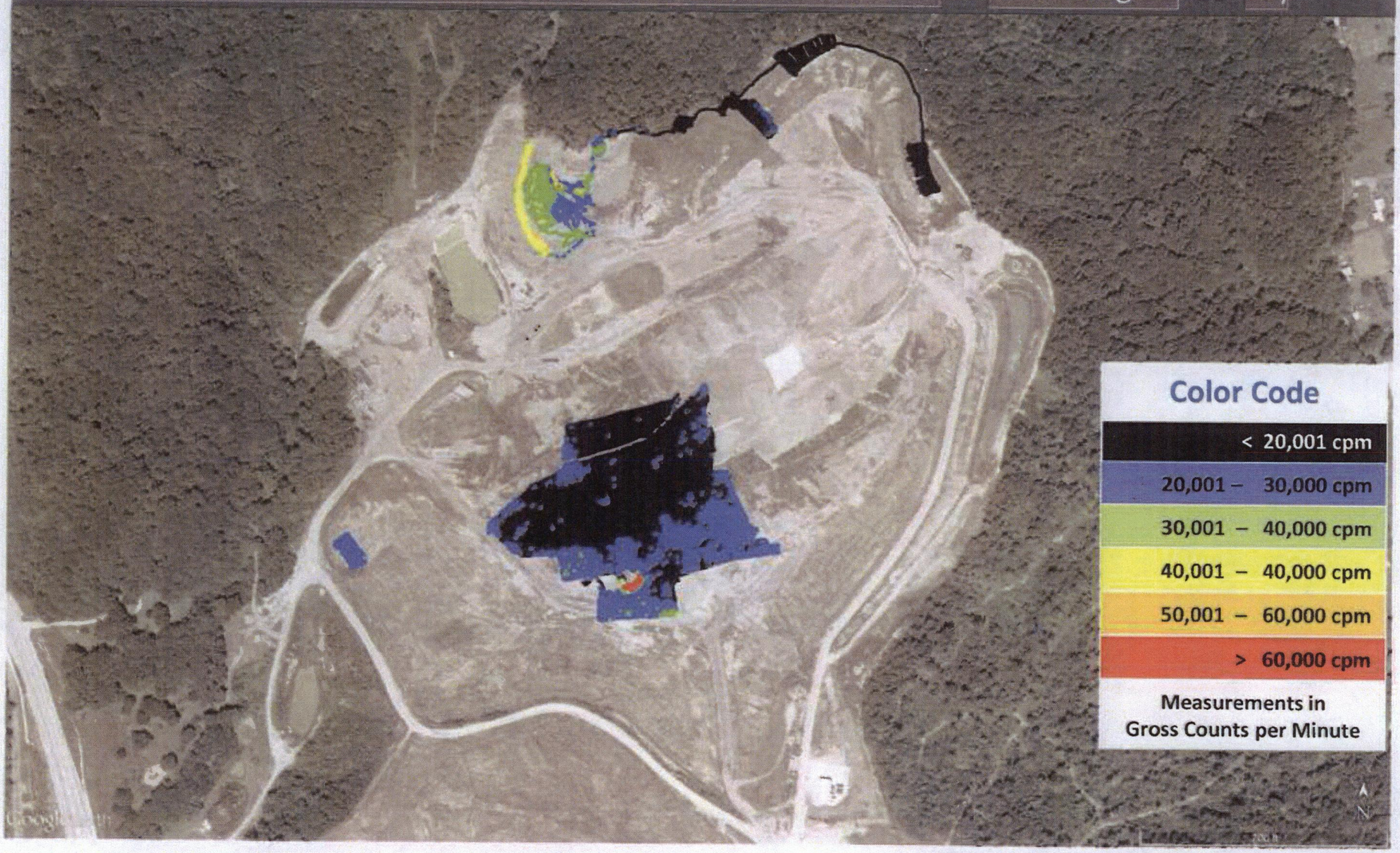
Appendix E	E.2 of E.2

ADSBR000233

Plot of Blue Ridge Landfill Gamma Scan (Survey Performed 3-2-16 through 3-11-16)



GPS Plot of Gamma Scans

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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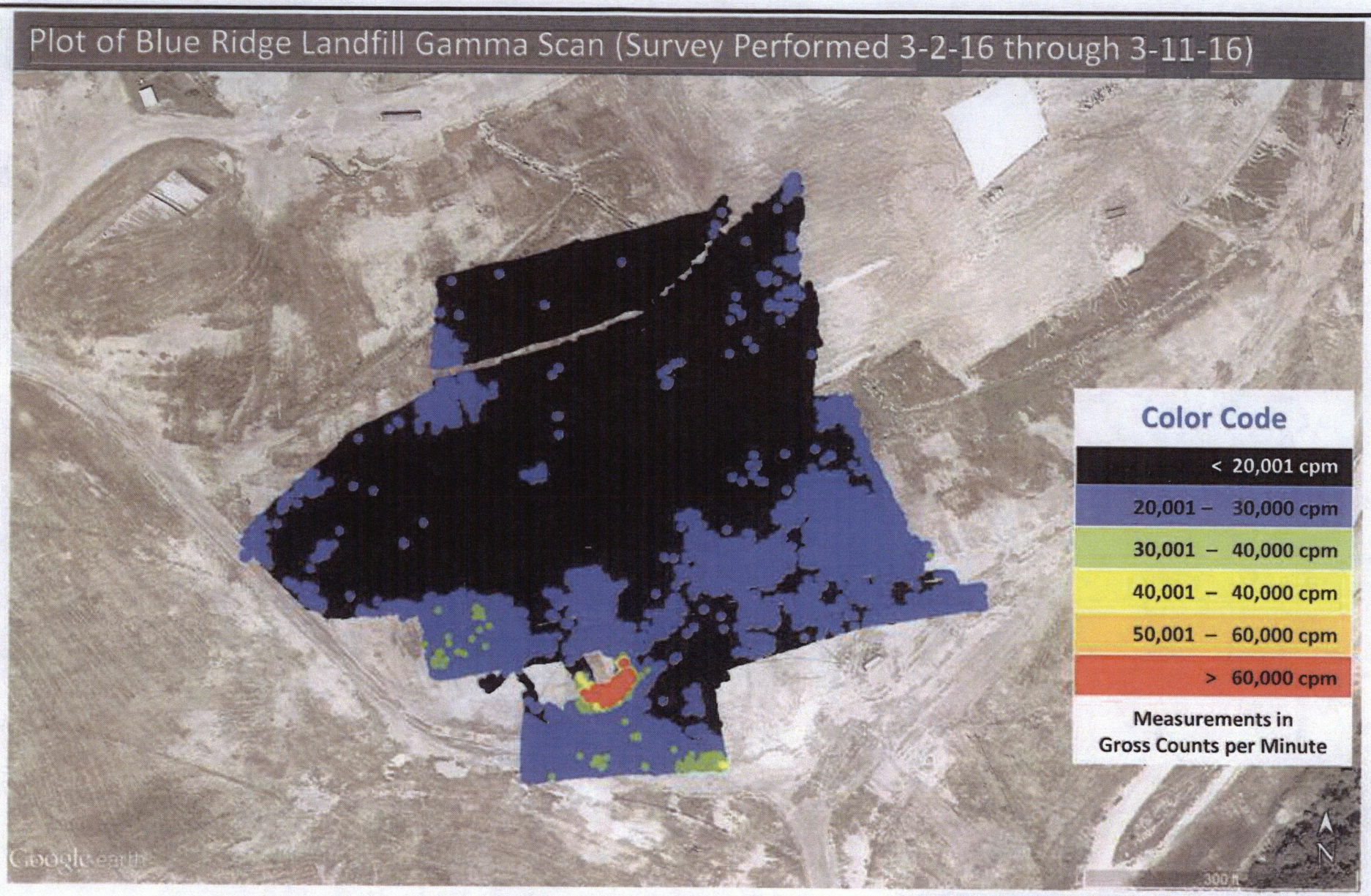
Appendix F	F.1 of F.2

ADSBR000234



GPS Plot of Gamma Scans

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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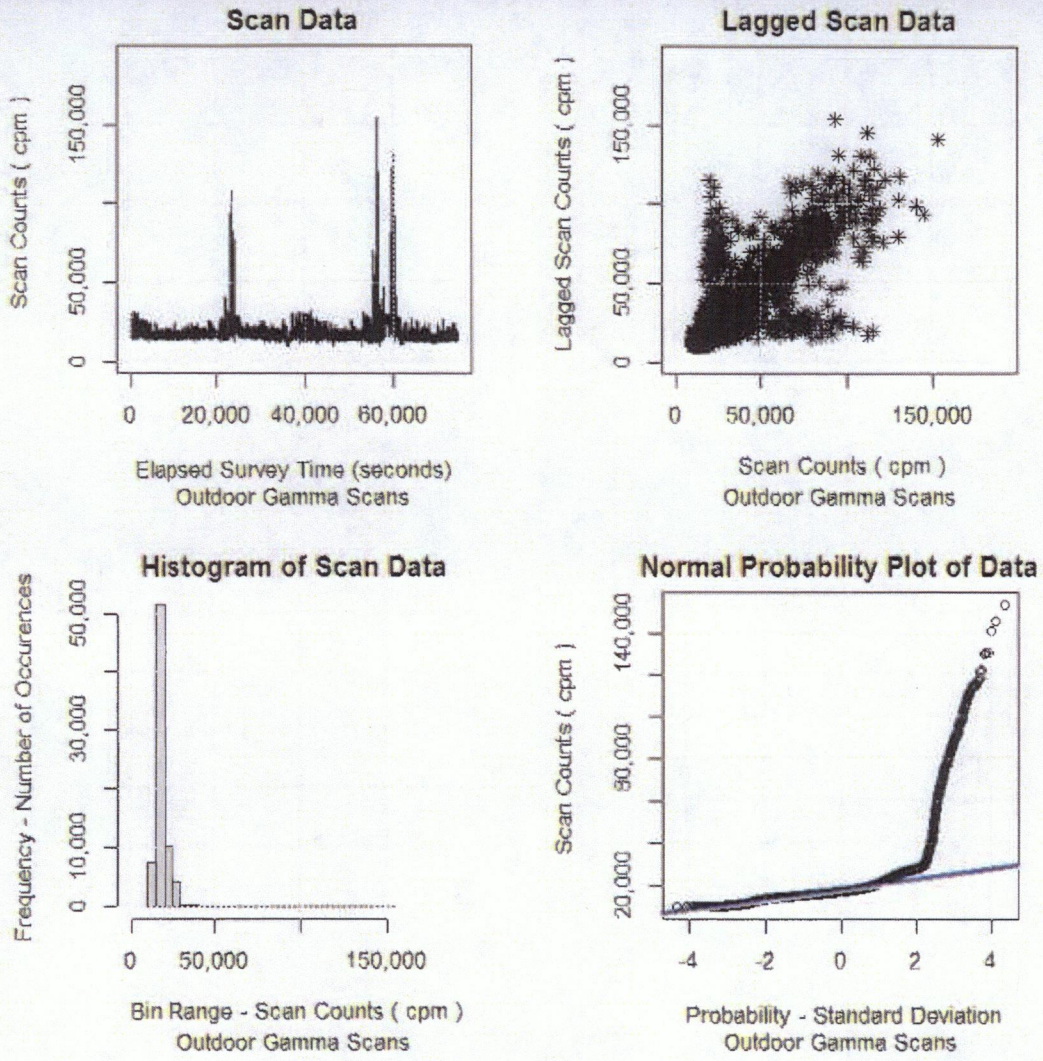
Appendix F	F.2 of F.2

ADSBR000235

Blue Ridge Landfill Gamma Scan (Survey Performed 3-2-16 through 3-11-16)



4-Plot Graph of Gamma Scans
G101

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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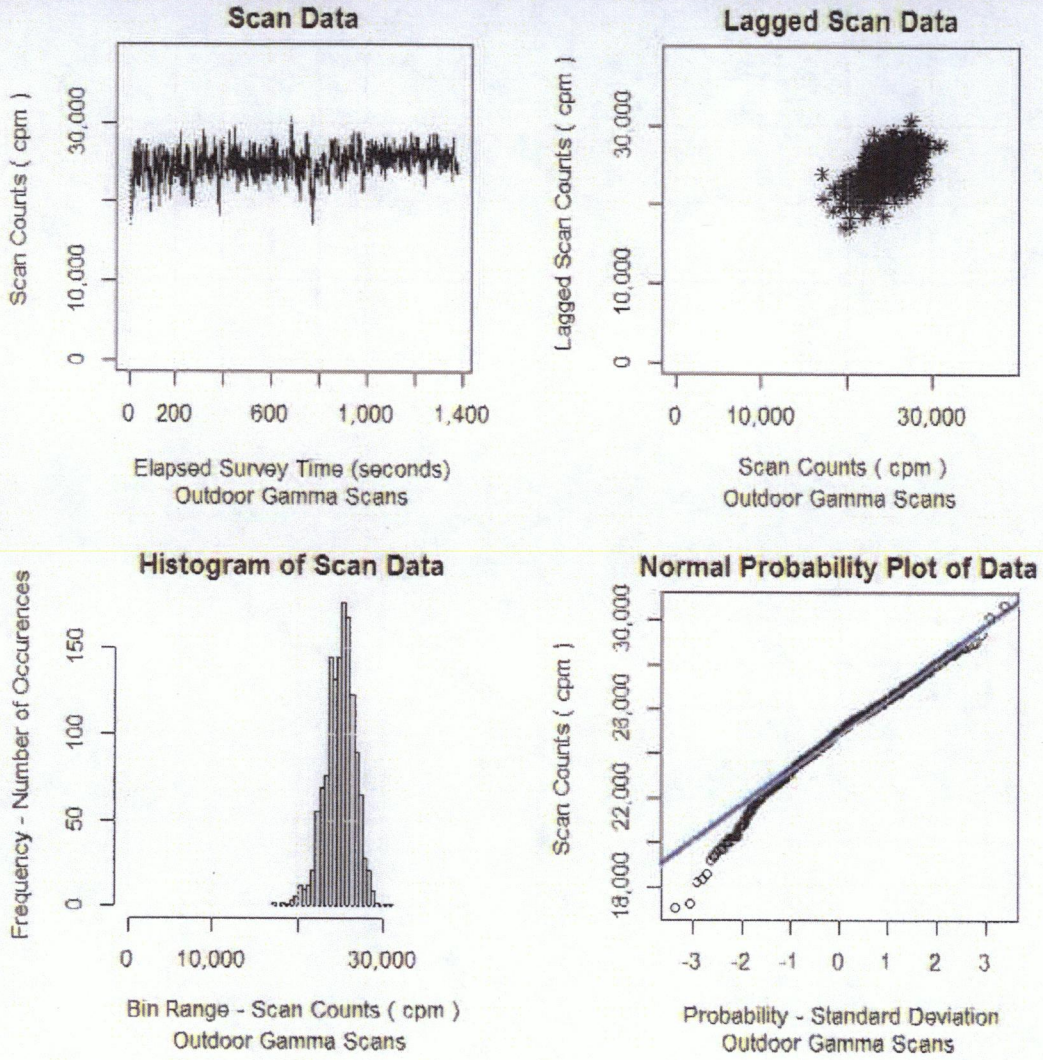
Appendix G	G.1 of G.5

ADSBR000236

Blue Ridge Landfill Gamma Scan (Survey Performed 3-2-16 through 3-11-16)



4-Plot Graph of Gamma Scans
BRA1

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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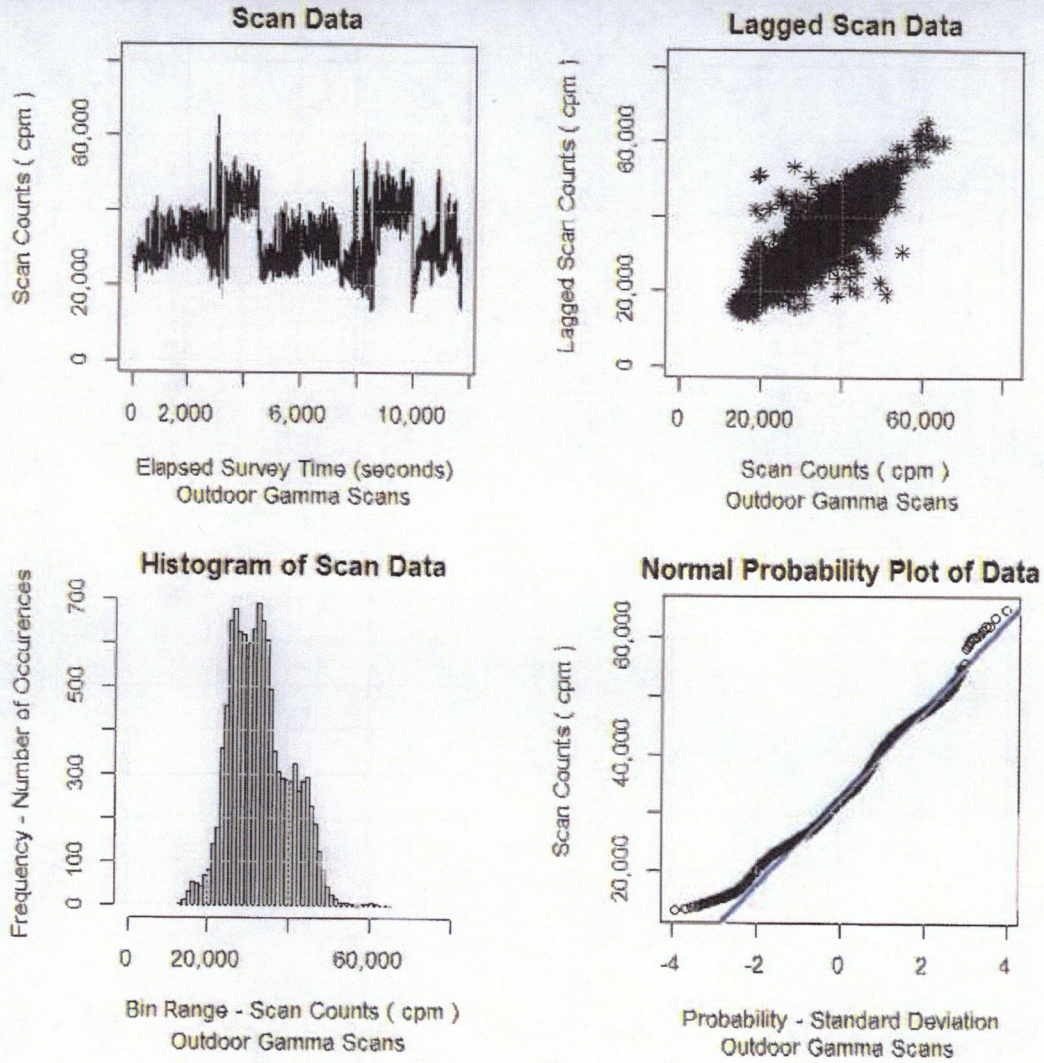
Appendix G	G.2 of G.5

ADSBR000237

Blue Ridge Landfill Gamma Scan (Survey Performed 3-2-16 through 3-11-16)



4-Plot Graph of Gamma Scans
BRA2

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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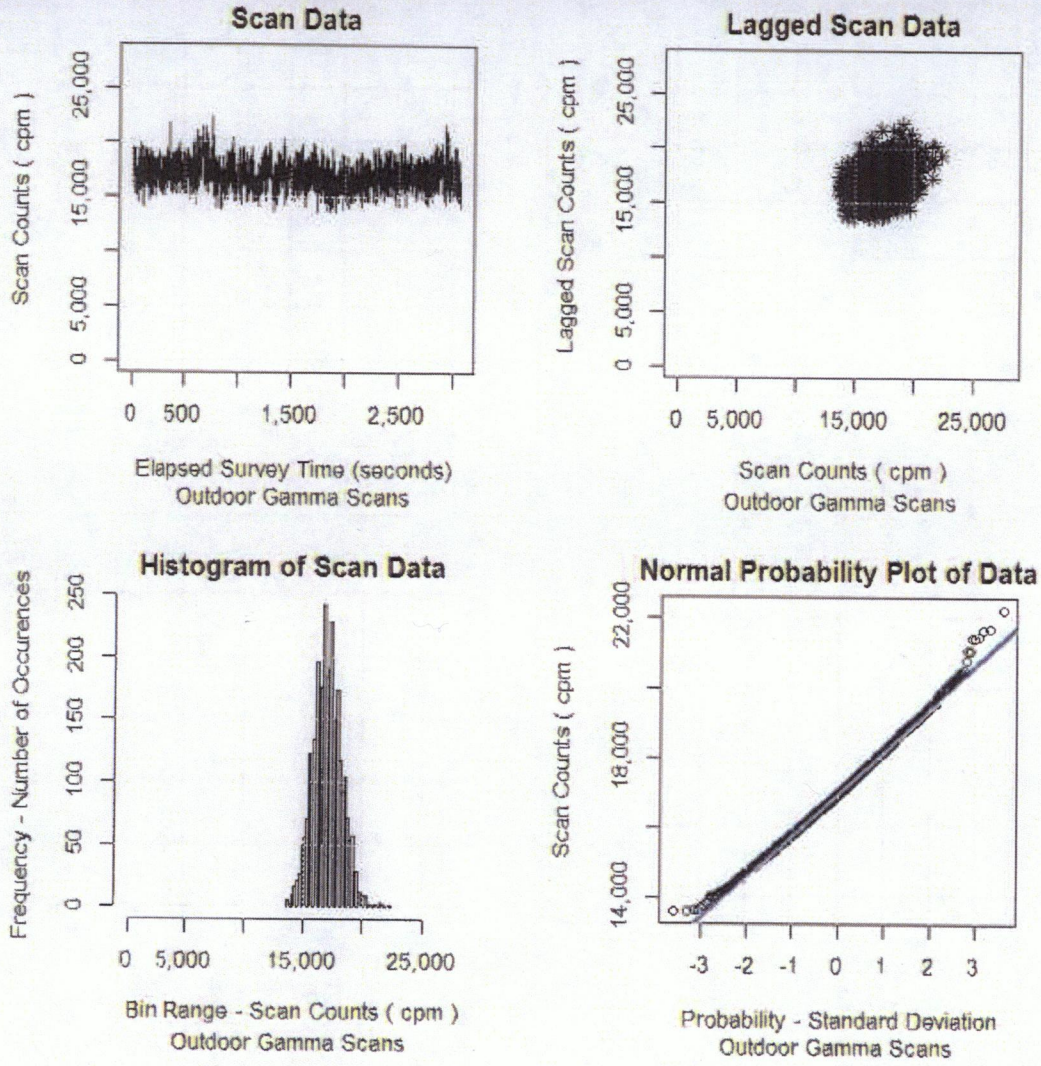
Appendix G	G.3 of G.5

ADSBR000238

Blue Ridge Landfill Gamma Scan (Survey Performed 3-2-16 through 3-11-16)



4-Plot Graph of Gamma Scans
BRA3

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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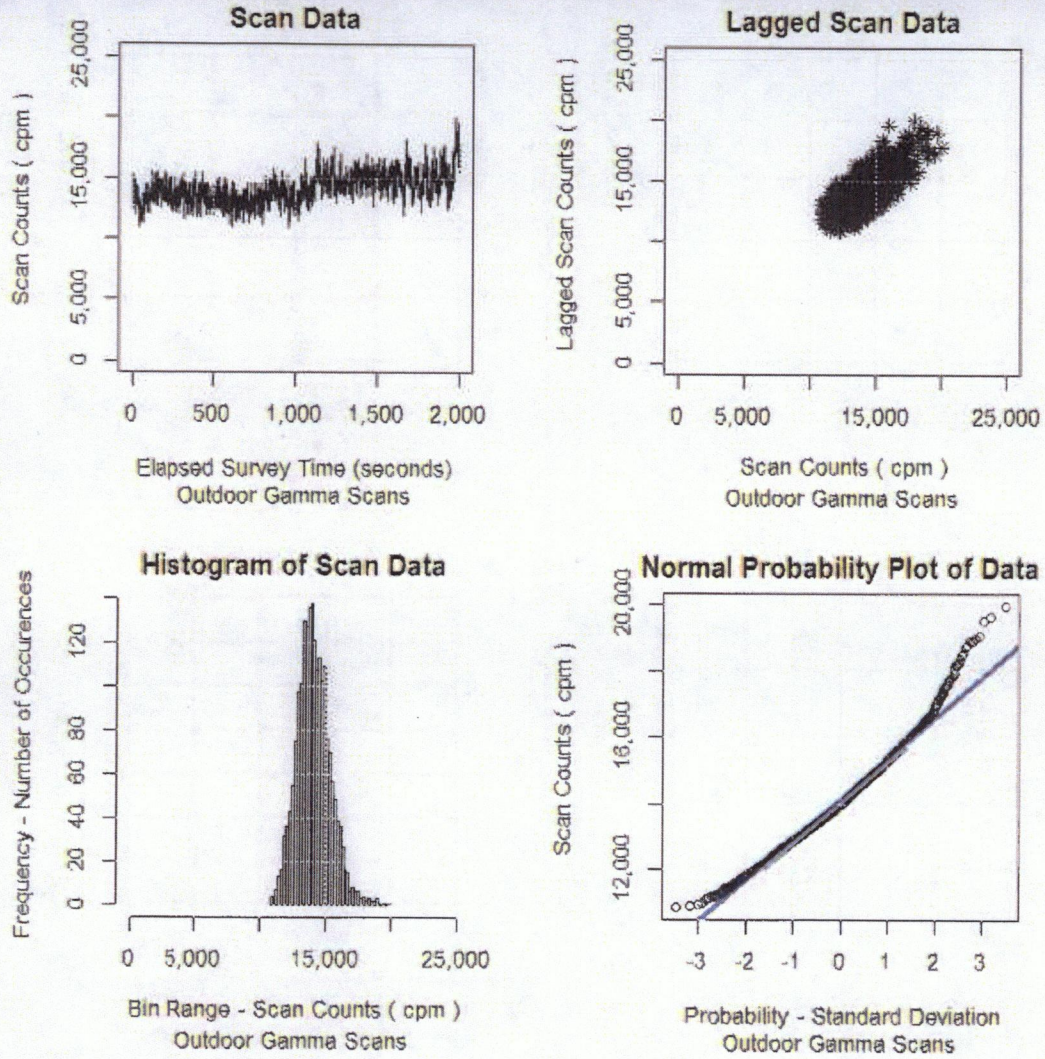
Appendix G	G.4 of G.5

ADSBR000239

Blue Ridge Landfill Gamma Scan (Survey Performed 3-2-16 through 3-11-16)



4-Plot Graph of Gamma Scans
BRA4

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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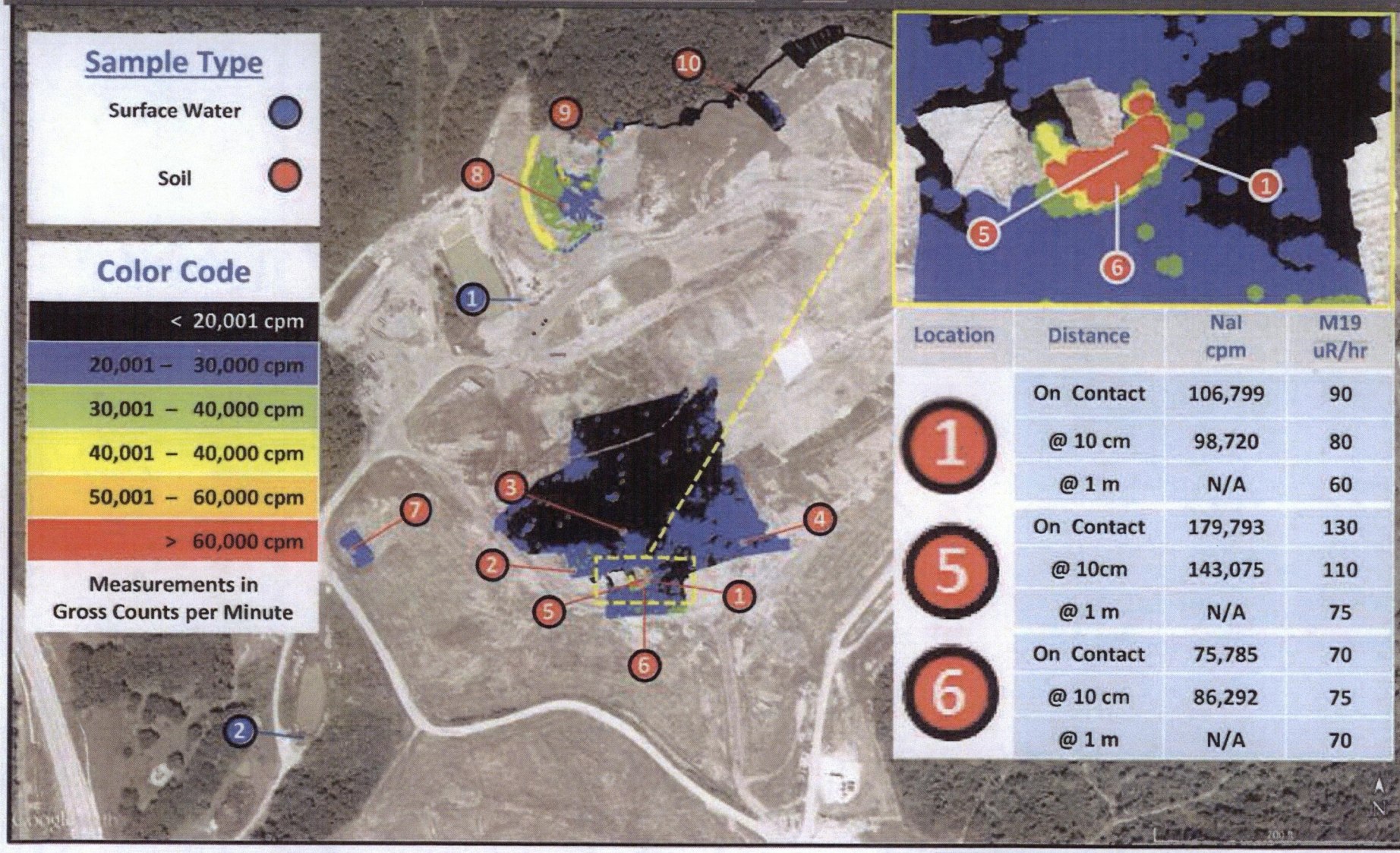
Appendix G	G.5 of G.5

ADSBR000240

Blue Ridge Landfill Sample Locations (Sampled 3-4-16)



Location	Distance	NaI cpm	M19 uR/hr
1	On Contact	106,799	90
	@ 10 cm	98,720	80
	@ 1 m	N/A	60
5	On Contact	179,793	130
	@ 10cm	143,075	110
	@ 1 m	N/A	75
6	On Contact	75,785	70
	@ 10 cm	86,292	75
	@ 1 m	N/A	70

Elevated Activity Measurements

Blue Ridge Landfill
2700 Winchester Road
Irvine, KY 40336

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Appendix H	H.1 of H.1

ADSBR000241