

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: December 4, 2015

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.1.R.1	Project: MJWC00115
Sample ID: 385101010	Client ID: MJWC001
Matrix: Soil	
Collect Date: 23-OCT-15 13:20	
Receive Date: 05-NOV-15	
Collector: Client	
Moisture: 39.2%	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Gravimetric Solids												
ASTM D 2216 % Moisture "As Received"												
Moisture		39.2				percent		LYT1	11/10/15	0955	1521927	1
Rad Gamma Spec Analysis												
Gammaspec, Gamma, Solid "Dry Weight Corrected"												
Actinium-227	U	-0.215	+/-0.482	0.811		pCi/g		RXF2	12/03/15	0829	1522386	2
Antimony-125	U	0.028	+/-0.202	0.314		pCi/g						
Cesium-137		0.412	+/-0.161	0.123	0.100	pCi/g						
Cobalt-60	U	-0.00499	+/-0.0647	0.127		pCi/g						
Europium-154	U	-0.12	+/-0.203	0.354		pCi/g						
Protactinium-231	U	0.695	+/-0.928	1.68		pCi/g						
Radium-226		0.954	+/-0.275	0.189		pCi/g						
Radium-228		1.34	+/-0.513	0.391		pCi/g						
Tin-126	U	0.115	+/-0.148	0.298		pCi/g						
Rad Gas Flow Proportional Counting												
GFPC, Gross A/B, solid "Dry Weight Corrected"												
Alpha		10.5	+/-3.46	3.88	4.00	pCi/g		JXB7	12/02/15	1425	1525768	3
Beta		15.1	+/-2.51	2.48	10.0	pCi/g						

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	ASTM D 2216 (Modified)	
2	DOE HASL 300, 4.5.2 3/Ga-01-R	
3	EPA 900.0/SW846 9310/SM 7110B Modified	

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: 2.L.I.R.5
Sample ID: 385101011
Matrix: Soil
Collect Date: 23-OCT-15 13:25
Receive Date: 05-NOV-15
Collector: Client
Moisture: 38%

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Gravimetric Solids												
ASTM D 2216 % Moisture "As Received"												
Moisture		38.0				percent		LYT1	11/10/15	0955	1521927	1
Rad Alpha Spec Analysis												
ASP Plutonium Isotopic, Solid "Dry Weight Corrected"												
Plutonium-238	U	-0.00704	+/-0.0486	0.118	1.00	pCi/g		HAKB	11/23/15	1502	1522577	2
Plutonium-239/240	U	0.00959	+/-0.0674	0.139	1.00	pCi/g						
ASP Uranium Isotopic, Solid "Dry Weight Corrected"												
Uranium-232	U	0.0807	+/-0.102	0.157	1.00	pci/g		HAKB	11/24/15	0851	1522580	3
Uranium-233/234		1.14	+/-0.379	0.191	1.00	pci/g						
Uranium-235/236		0.181	+/-0.164	0.151	1.00	pci/g						
Uranium-238		0.932	+/-0.342	0.150	1.00	pci/g						
Alphaspec Np237, Solid "Dry Weight Corrected"												
Neptunium-237	U	-0.0704	+/-0.163	0.483	1.00	pCi/g		HAKB	11/23/15	1711	1522576	4
Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"												
Thorium-228		1.13	+/-0.529	0.459	1.00	pCi/g		HAKB	11/24/15	1014	1522579	5
Thorium-229	U	0.0807	+/-0.185	0.294	1.00	pCi/g						
Thorium-230		0.386	+/-0.315	0.324	1.00	pCi/g						
Thorium-232		1.25	+/-0.519	0.253	1.00	pCi/g						
Am241, Cm Solid "Dry Weight Corrected"												
Americium-241	U	0.00	+/-0.0354	0.0527	1.00	pCi/g		HAKB	11/24/15	1039	1522571	6
Curium-242	U	0.00	+/-0.0401	0.0596	1.00	pCi/g						
Curium-243/244	U	0.0174	+/-0.0488	0.0521	1.00	pCi/g						
Curium-245/246	U	0.0354	+/-0.0695	0.0964	1.00	pCi/g						
Liquid Scint Pu241, Solid "Dry Weight Corrected"												
Plutonium-241	L	-4.74	+/-5.44	9.65	15.0	pCi/g		HAKB	11/25/15	1941	1522578	7
Rad Gamma Spec Analysis												
Gamma I129, Solid "Dry Weight Corrected"												
Iodine-129	U	-0.0436	+/-0.248	0.475	1.00	pCi/g		MJH1	12/02/15	1806	1522374	8
Gammaspec, Gamma, Solid "Dry Weight Corrected"												
Actinium-227	U	-0.0642	+/-0.373	0.675		pCi/g		RXF2	12/03/15	0829	1522386	9
Antimony-125	U	0.0506	+/-0.145	0.272		pCi/g						
Cesium-137		0.547	+/-0.125	0.105	0.100	pCi/g						
Cobalt-60	U	0.00102	+/-0.0394	0.0847		pCi/g						
Europium-154	U	-0.13	+/-0.176	0.304		pCi/g						
Protactinium-231	U	0.928	+/-0.752	1.35		pCi/g						

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 Project: Soil Radioisotopes

Client Sample ID: 2.1.1.R.1
 Sample ID: 385101010
 Matrix: Soil
 Collect Date: 23-OCT-15
 Receive Date: 05-NOV-15
 Collector: Client
 Moisture: 39.2%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		39.2						percent		LYT1	11/10/15	0955	1521927	1
Rad Gamma Spec Analysis														
<i>GammaSpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.215	+/-0.482	0.811	0.377	+/-0.493		pCi/g		RXF2	12/03/15	0829	1522386	2
Antimony-125	U	0.028	+/-0.202	0.314	0.144	+/-0.202		pCi/g						
Bismuth-212	UI	0.00	+/-0.921	1.95	0.889	+/-1.04		pCi/g						
Bismuth-214		0.954	+/-0.275	0.189	0.0836	+/-0.288		pCi/g						
Cesium-137		0.412	+/-0.161	0.123	0.055	+/-0.165	0.100	pCi/g						
Cobalt-60	U	-0.00499	+/-0.0647	0.127	0.053	+/-0.0647		pCi/g						
Europium-154	U	-0.12	+/-0.203	0.354	0.149	+/-0.210		pCi/g						
Lead-212		1.10	+/-0.172	0.174	0.0808	+/-0.200		pCi/g						
Lead-214		1.22	+/-0.259	0.213	0.0968	+/-0.281		pCi/g						
Potassium-40		22.8	+/-2.72	1.37	0.584	+/-3.35		pCi/g						
Protactinium-231	U	0.695	+/-0.928	1.68	0.781	+/-0.993		pCi/g						
Radium-226		0.954	+/-0.275	0.189	0.0836	+/-0.288		pCi/g						
Radium-228		1.34	+/-0.513	0.391	0.168	+/-0.554		pCi/g						
Thallium-208		0.387	+/-0.102	0.119	0.0536	+/-0.108		pCi/g						
Tin-126	U	0.115	+/-0.148	0.298	0.143	+/-0.157		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		10.5	+/-3.46	3.88	1.64	+/-4.01	4.00	pCi/g		JXB7	12/02/15	1425	1525768	3
Beta		15.1	+/-2.51	2.48	1.13	+/-3.30	10.0	pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5.2.3/Ga-01-R
3	EPA 900.0/SW846.9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Sample ID: 385101010

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.	
Surrogate/Tracer Recovery	Test												Batch ID	Recovery%	Acceptable Limits

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Sample ID: 385101011

Project: MJWC00115

Client ID: MJWC001

Rad Gamma Spec Analysis

Gammascpec, Gamma, Solid "Dry Weight Corrected"

Radium-226	1.09	+/-0.243	0.179	pCi/g	
Radium-228	1.14	+/-0.349	0.335	pCi/g	
Tin-126	UJ	0.00	+/-0.192	0.193	pCi/g

Rad Gas Flow Proportional Counting

GFPC, Gross A/B, solid "Dry Weight Corrected"

Alpha	15.2	+/-3.77	3.96	4.00	pCi/g	JXB7	12/02/15	1434	1525768	10
Beta	31.9	+/-3.02	2.28	10.0	pCi/g					

GFPC, Sr90, solid "Dry Weight Corrected"

Strontium-90	U	-0.654	+/-0.560	1.36	2.00	pCi/g	KSD1	12/02/15	1712	1525755	11
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Rad Liquid Scintillation Analysis

LSC, Tritium Dist, Solid "Dry Weight Corrected"

Tritium	U	3.34	+/-2.60	4.09	6.00	pCi/g	TXJ1	12/02/15	2119	1522724	12
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Liquid Scint C14, Solid "Dry Weight Corrected"

Carbon-14	U	-0.367	+/-0.773	1.33	2.00	pCi/g	TXJ1	12/04/15	0600	1522716	13
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Liquid Scint Tc99, Solid "Dry Weight Corrected"

Technetium-99	U	3.12	+/-2.16	3.55	5.00	pCi/g	MYM1	11/29/15	1442	1522715	14
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The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

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2040 Savage Road Charleston SC 29407 - (843) 558-8171 - www.gel.com

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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.1.R.5

Project: MJWC00115

Sample ID: 385101011

Client ID: MJWC001

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	ASTM D 2216 (Modified)	
2	DOE EML HASL-300, Pu-11-RC Modified	
3	DOE EML HASL-300, U-02-RC Modified	
4	ASTM C 1476-00 Modified	
5	DOE EML HASL-300, Th-01-RC Modified	
6	DOE EML HASL-300, Am-05-RC Modified	
7	DOE EML HASL-300, Pu-11-RC Modified	
8	DOE EML HASL-300, I-01 Modified	
9	DOE HASL 300, 4.5 2 3/Ga-01-R	
10	EPA 900.0/SW846 9310/SM 7110B Modified	
11	EPA 905.0 Modified/DOE RP501 Rev 1 Modified	
12	EPA 906.0 Modified	
13	EPA EERF C-01 Modified	
14	DOE EML HASL-300, Tc-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Plutonium-242 Tracer	ASP Plutonium Isotopic, Solid "Dry Weight Corrected"			88	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"			48	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"			62.1	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"			94.5	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"			91	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"			81.5	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"			88	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"			87.8	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"			95.2	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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 Matrix: Soil
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 Receive Date: 05-NOV-15
 Collector: Client
 Moisture: 38%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		38.0						percent		LYT1	11/10/15	0955	1521927	1
Rad Alpha Spec Analysis														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	-0.00704	+/-0.0486	0.118	0.0352	+/-0.0486	1.00	pCi/g		HAKB	11/23/15	1502	1522577	2
Plutonium-239/240	U	0.00959	+/-0.0674	0.139	0.0454	+/-0.0675	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232		0.0807	+/-0.102	0.157	0.0535	+/-0.103	1.00	pci/g		HAKB	11/24/15	0851	1522580	3
Uranium-233/234		1.14	+/-0.379	0.191	0.0487	+/-0.456	1.00	pci/g						
Uranium-235/236		0.181	+/-0.164	0.151	0.0282	+/-0.169	1.00	pci/g						
Uranium-238		0.932	+/-0.342	0.150	0.0281	+/-0.400	1.00	pci/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	-0.0704	+/-0.163	0.483	0.132	+/-0.163	1.00	pCi/g		HAKB	11/23/15	1711	1522576	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		1.13	+/-0.529	0.459	0.147	+/-0.555	1.00	pCi/g		HAKB	11/24/15	1014	1522579	5
Thorium-229		0.0807	+/-0.185	0.294	0.0674	+/-0.186	1.00	pCi/g						
Thorium-230		0.386	+/-0.315	0.324	0.0823	+/-0.320	1.00	pCi/g						
Thorium-232		1.25	+/-0.519	0.253	0.0474	+/-0.550	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241		0.00	+/-0.0354	0.0527	0.00	+/-0.0355	1.00	pCi/g		HAKB	11/24/15	1039	1522571	6
Curium-242		0.00	+/-0.0401	0.0596	0.00	+/-0.0402	1.00	pCi/g						
Curium-243/244		0.0174	+/-0.0488	0.0521	0.00	+/-0.0489	1.00	pCi/g						
Curium-245/246		0.0354	+/-0.0695	0.0964	0.018	+/-0.0697	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	-4.74	+/-5.44	9.65	4.69	+/-5.44	15.0	pCi/g		HAKB	11/25/15	1941	1522578	7
Rad Gamma Spec Analysis														
<i>Gamma I129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	-0.0436	+/-0.248	0.475	0.193	+/-0.249	1.00	pCi/g		MJH1	12/02/15	1806	1522374	8
<i>Gammasp. Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0642	+/-0.373	0.675	0.313	+/-0.375		pCi/g		RXF2	12/03/15	0829	1522386	9
Antimony-125	U	0.0506	+/-0.145	0.272	0.124	+/-0.146		pCi/g						
Bismuth-212	UI	0.00	+/-0.827	1.97	0.906	+/-1.49		pCi/g						
Bismuth-214		1.09	+/-0.243	0.179	0.0796	+/-0.260		pCi/g						
Cesium-137		0.547	+/-0.125	0.105	0.0469	+/-0.133	0.100	pCi/g						
Cobalt-60	U	0.00102	+/-0.0394	0.0847	0.0335	+/-0.0394		pCi/g						
Europium-154	U	-0.13	+/-0.176	0.304	0.128	+/-0.186		pCi/g						
Lead-212		1.17	+/-0.156	0.140	0.0648	+/-0.186		pCi/g						
Lead-214		1.20	+/-0.278	0.475	0.229	+/-0.297		pCi/g						

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Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
<i>GammaSpec, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		18.3	+/-2.31	0.968	0.396	+/-2.80		pCi/g						
Protactinium-231	UI	0.00	+/-0.752	1.35	0.625	+/-0.886		pCi/g						
Radium-226		1.09	+/-0.243	0.179	0.0796	+/-0.260		pCi/g						
Radium-228		1.14	+/-0.349	0.335	0.144	+/-0.387		pCi/g						
Thallium-208		0.416	+/-0.100	0.103	0.0463	+/-0.106		pCi/g						
Tin-126	UI	0.00	+/-0.192	0.193	0.0909	+/-0.194		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		15.2	+/-3.77	3.96	1.73	+/-4.79	4.00	pCi/g		JXB7	12/02/15	1434	1525768	10
Beta		31.9	+/-3.02	2.28	1.05	+/-5.42	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.654	+/-0.560	1.36	0.580	+/-0.560	2.00	pCi/g		KSD1	12/02/15	1712	1525755	11
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium		3.34	+/-2.60	4.09	1.78	+/-2.60	6.00	pCi/g		TXJ1	12/02/15	2119	1522724	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.367	+/-0.773	1.33	0.654	+/-0.773	2.00	pCi/g		TXJ1	12/04/15	0600	1522716	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99		3.12	+/-2.16	3.55	1.71	+/-2.19	5.00	pCi/g		MYM	11/29/15	1442	1522715	14

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	ASTM C 1476-00 Modified
5	DOE EML HASL-300, Th-01-RC Modified
6	DOE EML HASL-300, Am-05-RC Modified
7	DOE EML HASL-300, Pu-11-RC Modified
8	DOE EML HASL-300, I-01 Modified
9	DOE HASL 300, 4 5 2.3/Ga-01-R
10	EPA 900.0/SW846 9310/SM 7110B Modified
11	EPA 905.0 Modified/DOE RP501 Rev. 1 Modified
12	EPA 906.0 Modified
13	EPA EERF C-01 Modified

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Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: 2.1.1.R.5
Sample ID: 385101011

Report Date: December 17, 2015

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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14 DOE EML HASL-300, Te-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Plutonium-242 Tracer	ASP Plutonium Isotopic, Solid "Dry Weight Corrected"	1522577	88	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1522580	48	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1522580	62.1	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1522576	94.5	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"	1522579	91	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1522571	81.5	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1522578	88	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1525755	87.8	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1522715	95.2	(15%-125%)

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: December 4, 2015

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.2.R.1	Project: MJWC00115
Sample ID: 385101012	Client ID: MJWC001
Matrix: Soil	
Collect Date: 23-OCT-15 13:50	
Receive Date: 05-NOV-15	
Collector: Client	
Moisture: 44.8%	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Gravimetric Solids												
ASTM D 2216 % Moisture "As Received"												
Moisture		44.8				percent		LYT1	11/10/15	0955	1521927	1
Rad Gamma Spec Analysis												
Gammascpec, Gamma, Solid "Dry Weight Corrected"												
Actinium-227	U	-0.0756	+/-0.477	0.785		pCi/g		RXF2	12/03/15	0829	1522386	2
Antimony-125	U	0.00758	+/-0.170	0.309		pCi/g						
Cesium-137		0.348	+/-0.169	0.144	0.100	pCi/g						
Cobalt-60	U	-0.0384	+/-0.071	0.130		pCi/g						
Europium-154	U	0.00384	+/-0.250	0.489		pCi/g						
Protactinium-231	U	0.464	+/-0.717	1.34		pCi/g						
Radium-226		0.815	+/-0.223	0.242		pCi/g						
Radium-228		1.30	+/-0.395	0.385		pCi/g						
Th-232	U	0.0935	+/-0.132	0.221		pCi/g						
Rad Gas Flow Proportional Counting												
GFPC, Gross A/B, solid "Dry Weight Corrected"												
Alpha		10.3	+/-3.27	3.96	4.00	pCi/g		JXB7	12/02/15	1433	1525768	3
Beta		26.2	+/-3.01	3.22	10.0	pCi/g						

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	ASTM D 2216 (Modified)	
2	DOE HASL 300, 4.5.2 3/Ga-01-R	
3	EPA 900.0/SW846 9310/SM 7110B Modified	

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: December 4, 2015

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.1	Project: MJWC00115
Sample ID: 385101013	Client ID: MJWC001
Matrix: Soil	
Collect Date: 23-OCT-15 14:15	
Receive Date: 05-NOV-15	
Collector: Client	
Moisture: 30.8%	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Gravimetric Solids												
ASTM D 2216 % Moisture "As Received"												
Moisture		30.8				percent		LYT1	11/10/15	0955	1521927	1
Rad Gamma Spec Analysis												
Gammaspec, Gamma, Solid "Dry Weight Corrected"												
Actinium-227	U	0.140	+/-0.350	0.639		pCi/g		RXF2	12/03/15	0830	1522386	2
Antimony-125	U	0.016	+/-0.134	0.239		pCi/g						
Cesium-137		0.288	+/-0.0732	0.0982	0.100	pCi/g						
Cobalt-60	U	0.00293	+/-0.0494	0.0975		pCi/g						
Europium-154	U	-0.0189	+/-0.156	0.295		pCi/g						
Protactinium-231	U	0.622	+/-0.911	1.17		pCi/g						
Radium-226		1.04	+/-0.206	0.164		pCi/g						
Radium-228		1.22	+/-0.322	0.237		pCi/g						
Tin-126	U	0.0754	+/-0.141	0.183		pCi/g						
Rad Gas Flow Proportional Counting												
GFPC, Gross A/B, solid "Dry Weight Corrected"												
Alpha		13.8	+/-3.76	3.91	4.00	pCi/g		JXB7	12/02/15	1434	1525768	3
Beta		32.2	+/-3.40	2.94	10.0	pCi/g						

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	ASTM D 2216 (Modified)	
2	DOE HASL 300.4 5.2 3/Ga-01-R	
3	EPA 900.0/SW846 9310/SM 7110B Modified	

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
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Report Date: December 17, 2015

Contact: Ms. Lauric Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.2.R.1
 Sample ID: 385101012
 Matrix: Soil
 Collect Date: 23-OCT-15
 Receive Date: 05-NOV-15
 Collector: Client
 Moisture: 44.8%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		44.8						percent		LYT1	11/10/15	0955	1521927	1
Rad Gamma Spec Analysis														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.0756	+/-0.477	0.785	0.365	+/-0.478		pCi/g		RXF2	12/03/15	0829	1522386	2
Antimony-125	U	0.00758	+/-0.170	0.309	0.140	+/-0.170		pCi/g						
Bismuth-212	UI	0.00	+/-1.11	1.91	0.852	+/-1.11		pCi/g						
Bismuth-214		0.815	+/-0.223	0.242	0.108	+/-0.233		pCi/g						
Cesium-137		0.348	+/-0.169	0.144	0.0648	+/-0.172	0.100	pCi/g						
Cobalt-60	U	-0.0384	+/-0.071	0.130	0.0525	+/-0.0732		pCi/g						
Europium-154	U	0.00384	+/-0.250	0.489	0.211	+/-0.250		pCi/g						
Lead-212		0.874	+/-0.154	0.157	0.0728	+/-0.170		pCi/g						
Lead-214		0.840	+/-0.197	0.217	0.0987	+/-0.208		pCi/g						
Potassium-40		15.9	+/-2.43	1.10	0.425	+/-2.80		pCi/g						
Protactinium-231	U	0.464	+/-0.717	1.34	0.612	+/-0.724		pCi/g						
Radium-226		0.815	+/-0.223	0.242	0.108	+/-0.233		pCi/g						
Radium-228		1.30	+/-0.395	0.385	0.160	+/-0.425		pCi/g						
Thallium-208		0.259	+/-0.129	0.110	0.0486	+/-0.131		pCi/g						
Tm-126	U	0.0935	+/-0.132	0.221	0.105	+/-0.139		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A, B, solid "Dry Weight Corrected"</i>														
Alpha		10.3	+/-3.27	3.96	1.75	+/-3.86	4.00	pCi/g		JXB7	12/02/15	1433	1525768	3
Beta		26.2	+/-3.01	3.22	1.53	+/-4.73	10.0	pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5.2.3/Ga-01-R
3	EPA 900.0/SW846.9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

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Report Date: December 17, 2015

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.2.R.1
Sample ID: 385101012

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.	
Surrogate/Tracer Recovery	Test												Batch ID	Recovery%	Acceptable Limits

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: December 17, 2015

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.1
 Sample ID: 385101013
 Matrix: Soil
 Collect Date: 23-OCT-15
 Receive Date: 05-NOV-15
 Collector: Client
 Moisture: 30.8%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		30.8						percent		LYT1	11/10/15	0955	1521927	1
Rad Gamma Spec Analysis														
<i>Gammascpec. Gamma. Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.140	+/-0.350	0.639	0.301	+/-0.356		pCi/g		RXF2	12/03/15	0830	1522386	2
Antimony-125	U	0.016	+/-0.134	0.239	0.111	+/-0.134		pCi/g						
Bismuth-212	UI	0.00	+/-1.37	1.82	0.854	+/-1.72		pCi/g						
Bismuth-214		1.04	+/-0.206	0.164	0.0747	+/-0.226		pCi/g						
Cesium-137		0.288	+/-0.0732	0.0982	0.0449	+/-0.0774	0.100	pCi/g						
Cobalt-60	U	0.00293	+/-0.0494	0.0975	0.042	+/-0.0494		pCi/g						
Europium-154	U	-0.0189	+/-0.156	0.295	0.129	+/-0.156		pCi/g						
Lead-212		1.23	+/-0.139	0.134	0.0629	+/-0.171		pCi/g						
Lead-214		1.05	+/-0.219	0.182	0.0846	+/-0.236		pCi/g						
Potassium-40		20.4	+/-2.02	0.904	0.384	+/-2.66		pCi/g						
Protactinium-231	UI	0.00	+/-0.911	1.17	0.549	+/-0.922		pCi/g						
Radium-226		1.04	+/-0.206	0.164	0.0747	+/-0.226		pCi/g						
Radium-228		1.22	+/-0.322	0.237	0.100	+/-0.368		pCi/g						
Thallium-208		0.357	+/-0.101	0.0901	0.0412	+/-0.105		pCi/g						
Tin-126	U	0.0754	+/-0.141	0.183	0.0874	+/-0.142		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		13.8	+/-3.76	3.91	1.67	+/-4.61	4.00	pCi/g		JXB7	12/02/15	1434	1525768	3
Beta		32.2	+/-3.40	2.94	1.36	+/-5.71	10.0	pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5.2.3/Ga-01-R
3	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: December 17, 2015

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.1
Sample ID: 385101013

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.	
Surrogate/Tracer Recovery	Test												Batch ID	Recovery%	Acceptable Limits

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: January 20, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.2
 Sample ID: 388092014
 Matrix: Soil
 Collect Date: 23-OCT-15
 Receive Date: 23-DEC-15
 Collector: Client
 Moisture: 23.4%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
<i>Gammaspac, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.127	+/-0.391	0.692	0.324	+/-0.396		pCi/g		MJH1	01/18/16	0721	1534020	1
Antimony-125	U	0.108	+/-0.151	0.300	0.140	+/-0.159		pCi/g						
Bismuth-212	UI	0.00	+/-1.32	1.98	0.921	+/-1.41		pCi/g						
Bismuth-214		1.04	+/-0.232	0.213	0.0981	+/-0.249		pCi/g						
Cesium-137		0.303	+/-0.0886	0.115	0.0525	+/-0.0924	0.100	pCi/g						
Cobalt-60	U	-0.00758	+/-0.0572	0.108	0.046	+/-0.0573		pCi/g						
Europium-154	UI	0.00	+/-0.166	0.400	0.179	+/-0.222		pCi/g						
Lead-212		1.24	+/-0.157	0.146	0.0684	+/-0.197		pCi/g						
Lead-214		1.24	+/-0.257	0.223	0.104	+/-0.280		pCi/g						
Potassium-40		22.1	+/-2.25	0.793	0.318	+/-2.94		pCi/g						
Protactinium-231	UI	0.00	+/-0.865	1.49	0.701	+/-0.950		pCi/g						
Radium-226		1.04	+/-0.232	0.213	0.0981	+/-0.249		pCi/g						
Radium-228		1.50	+/-0.407	0.346	0.152	+/-0.459		pCi/g						
Thallium-208		0.522	+/-0.106	0.103	0.0469	+/-0.115		pCi/g						
Tin-126	UI	0.00	+/-0.110	0.200	0.0953	+/-0.113		pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	12/24/15	0703	1533924

The following Analytical Methods were performed

Method	Description
I	DOE HASL 300.4 5 2 3/Ga-01-R

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: January 20, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.2
Sample ID: 388092014

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.	
Surrogate/Tracer Recovery	Test												Batch ID	Recovery%	Acceptable Limits

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
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Report Date: January 20, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.2
 Sample ID: 388092004
 Matrix: Soil
 Collect Date: 23-OCT-15
 Receive Date: 23-DEC-15
 Collector: Client
 Moisture: 23.4%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lo	TPU	RL	Units	DF	Analyst	Date Time	Batch	Mtd.
Gravimetric Solids													
<i>ASTM D 2216 % Moisture "As Received"</i>													
Moisture		23.4						percent		LYT1	12/24/15 0703	1533555	1
Rad Alpha Spec Analysis													
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>													
Plutonium-238		0.102	+/-0.097	0.102	0.0231	+/-0.0982	1.00	pCi/g		MXS2	01/13/16 1052	1534070	2
Plutonium-239/240	U	-0.026	+/-0.0426	0.135	0.040	+/-0.0427	1.00	pCi/g					
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>													
Uranium-232	U	0.00139	+/-0.0639	0.140	0.0441	+/-0.0639	1.00	pCi/g		MXS2	01/12/16 1015	1534063	3
Uranium-233/234		1.25	+/-0.292	0.113	0.0308	+/-0.366	1.00	pCi/g					
Uranium-235/236		0.0992	+/-0.090	0.0826	0.0155	+/-0.0917	1.00	pCi/g					
Uranium-238		1.13	+/-0.276	0.0951	0.0218	+/-0.339	1.00	pCi/g					
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>													
Neptunium-237	U	-0.0129	+/-0.298	0.674	0.216	+/-0.298	1.00	pCi/g		MXS2	01/13/16 1217	1534069	4
<i>Alphaspec Th229, 228,230,232 Solid "Dry Weight Corrected"</i>													
Thorium-228		1.13	+/-0.756	0.684	0.176	+/-0.806	1.00	pCi/g		MXS2	01/12/16 1031	1534062	5
Thorium-229	U	0.0533	+/-0.296	0.568	0.130	+/-0.297	1.00	pCi/g					
Thorium-230		0.335	+/-0.458	0.625	0.159	+/-0.465	1.00	pCi/g					
Thorium-232		1.20	+/-0.724	0.489	0.0915	+/-0.779	1.00	pCi/g					
<i>Am241, Cm Solid "Dry Weight Corrected"</i>													
Americium-241	U	0.00709	+/-0.0394	0.0755	0.0173	+/-0.0394	1.00	pCi/g		MXS2	01/12/16 1103	1534067	6
Curium-242		0.00	+/-0.0383	0.057	0.00	+/-0.0383	1.00	pCi/g					
Curium-243/244	U	-0.00325	+/-0.028	0.0649	0.0121	+/-0.0281	1.00	pCi/g					
Curium-245/246		0.0156	+/-0.0438	0.0468	0.00	+/-0.0439	1.00	pCi/g					
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>													
Plutonium-241	U	-7.0	+/-6.45	11.5	5.60	+/-6.45	15.0	pCi/g		MXS2	01/14/16 1516	1534073	7
Rad Gamma Spec Analysis													
<i>Gamma I129, Solid "Dry Weight Corrected"</i>													
Iodine-129	U	-0.163	+/-0.426	0.661	0.262	+/-0.433	1.00	pCi/g		MJH1	01/15/16 0848	1535059	8
<i>Gammaspac, Gamma, Solid "Dry Weight Corrected"</i>													
Actinium-227	U	-0.0302	+/-0.280	0.493	0.235	+/-0.280		pCi/g		MJH1	12/29/15 1155	1533562	9
Antimony-125	U	-0.0752	+/-0.0966	0.167	0.0779	+/-0.103		pCi/g					
Bismuth-212	U	0.00	+/-0.808	1.37	0.647	+/-1.13		pCi/g					
Bismuth-214		0.820	+/-0.164	0.137	0.064	+/-0.180		pCi/g					
Cesium-137		0.222	+/-0.0669	0.0421	0.0184	+/-0.0699	0.100	pCi/g					
Cobalt-60	U	-0.0195	+/-0.0396	0.0712	0.0313	+/-0.0406		pCi/g					
Europium-154	U	-0.11	+/-0.139	0.227	0.102	+/-0.147		pCi/g					
Lead-212		1.31	+/-0.125	0.110	0.0525	+/-0.173		pCi/g					
Lead-214		0.836	+/-0.188	0.145	0.0685	+/-0.202		pCi/g					

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 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes
 Client Sample ID: 2.1.3.R.2
 Sample ID: 388092004

Report Date: January 20, 2016

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
<i>Gammaspac, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		21.4	+/-1.75	0.709	0.312	+/-2.52		pCi/g						
Protactinium-231	U	0.00	+/-0.657	1.11	0.532	+/-0.791		pCi/g						
Radium-226		0.820	+/-0.164	0.137	0.064	+/-0.180		pCi/g						
Radium-228		1.24	+/-0.304	0.243	0.110	+/-0.359		pCi/g						
Thallium-208		0.415	+/-0.0764	0.0712	0.0332	+/-0.0849		pCi/g						
Tin-126	U	0.00	+/-0.133	0.144	0.0693	+/-0.135		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A-B, solid "Dry Weight Corrected"</i>														
Alpha		8.03	+/-2.30	3.33	1.58	+/-2.79	4.00	pCi/g		JXB7	01/11/16	1859	1534760	10
Beta		23.1	+/-1.60	1.45	0.693	+/-3.78	10.0	pCi/g						
<i>GFPC, Sr-90, solid "Dry Weight Corrected"</i>														
Strontium-90		0.609	+/-0.802	1.37	0.600	+/-0.809	2.00	pCi/g		KSD1	01/07/16	1129	1534788	11
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium	U	-0.623	+/-2.47	4.34	2.10	+/-2.47	6.00	pCi/g		TXJ1	01/10/16	1707	1534918	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	0.0874	+/-0.821	1.40	0.687	+/-0.821	2.00	pCi/g		TXJ1	01/16/16	0753	1534935	13
<i>Liquid Scint Tc-99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	0.813	+/-2.06	3.54	1.70	+/-2.06	5.00	pCi/g		MYM	01/19/16	0553	1534638	14

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYTI	12/24/15	0703	1533555

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	ASTM C 1476-00 Modified
5	DOE EML HASL-300, Th-01-RC Modified
6	DOE EML HASL-300, Am-05-RC Modified
7	DOE EML HASL-300, Pu-11-RC Modified
8	DOE EML HASL-300, I-01 Modified
9	DOE HASL 300, 4.5 2.3/Ga-01-R
10	EPA 900.0/SW846 9310/SM 7110B Modified
11	EPA 905.0 Modified/DOE RP501 Rev 1 Modified
12	EPA 906.0 Modified
13	EPA EERF C-01 Modified

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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: 2.1.3.R.2
Sample ID: 388092004

Report Date: January 20, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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14 DOE EML HASL-300, Te-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Plutonium-242 Tracer	ASP Plutonium Isotopic, Solid "Dry Weight Corrected"	1534070	78.7	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1534063	65.3	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1534063	85	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1534069	82.8	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"	1534062	65.3	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1534067	85.2	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1534073	77.5	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1534788	76	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1534638	95.9	(15%-125%)

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Report Date: February 10, 2016

Client Sample ID: 2.1.4.R.2
 Sample ID: 389296001
 Matrix: Soil
 Collect Date: 23-OCT-15
 Receive Date: 14-JAN-16
 Collector: Client
 Moisture: 32.8%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		32.8						percent	CXC1	01/14/16	1208	1537312	1	
Rad Gamma Spec Analysis														
<i>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	-0.441	+/-0.339	0.554	0.256	+/-0.398		pCi/g	RXF2	02/05/16	0631	1537546	2	
Antimony-125	U	0.0499	+/-0.142	0.264	0.122	+/-0.144		pCi/g						
Bismuth-212	UI	0.00	+/-1.31	1.75	0.810	+/-1.49		pCi/g						
Bismuth-214		0.854	+/-0.215	0.164	0.0735	+/-0.226		pCi/g						
Cesium-137		0.829	+/-0.113	0.0977	0.0441	+/-0.131	0.100	pCi/g						
Cobalt-60	U	-0.0209	+/-0.0508	0.0925	0.0387	+/-0.0517		pCi/g						
Europium-154	U	-0.0112	+/-0.145	0.281	0.120	+/-0.145		pCi/g						
Lead-212		1.19	+/-0.141	0.131	0.0611	+/-0.173		pCi/g						
Lead-214		1.07	+/-0.182	0.174	0.0801	+/-0.202		pCi/g						
Potassium-40		17.7	+/-1.99	0.888	0.371	+/-2.51		pCi/g						
Protactinium-231	UI	0.00	+/-0.795	1.08	0.497	+/-0.813		pCi/g						
Radium-226		0.854	+/-0.215	0.164	0.0735	+/-0.226		pCi/g						
Radium-228		1.03	+/-0.394	0.343	0.152	+/-0.421		pCi/g						
Thallium-208		0.422	+/-0.0863	0.101	0.0462	+/-0.093		pCi/g						
Tin-126	UI	0.00	+/-0.124	0.100	0.0461	+/-0.126		pCi/g						
<i>Gammasp. Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.300	+/-0.408	0.780	0.363	+/-0.432		pCi/g	RXF2	01/18/16	0952	1537545	3	
Antimony-125	U	0.146	+/-0.174	0.347	0.160	+/-0.187		pCi/g						
Bismuth-212	UI	0.00	+/-1.23	1.58	0.710	+/-1.24		pCi/g						
Bismuth-214		0.696	+/-0.176	0.204	0.0913	+/-0.187		pCi/g						
Cesium-137		0.667	+/-0.166	0.102	0.0449	+/-0.177	0.100	pCi/g						
Cobalt-60	U	0.0324	+/-0.0703	0.148	0.0642	+/-0.0719		pCi/g						
Europium-154	U	0.020	+/-0.175	0.347	0.147	+/-0.175		pCi/g						
Lead-212		0.941	+/-0.157	0.181	0.0848	+/-0.179		pCi/g						
Lead-214		0.696	+/-0.207	0.240	0.111	+/-0.216		pCi/g						
Potassium-40		16.6	+/-2.16	1.04	0.425	+/-2.58		pCi/g						
Protactinium-231	UI	0.00	+/-1.02	1.47	0.683	+/-1.04		pCi/g						
Radium-226		0.696	+/-0.176	0.204	0.0913	+/-0.187		pCi/g						
Radium-228		1.19	+/-0.335	0.330	0.139	+/-0.381		pCi/g						
Thallium-208		0.294	+/-0.114	0.105	0.047	+/-0.117		pCi/g						
Tin-126	UI	0.00	+/-0.205	0.209	0.0989	+/-0.206		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		15.1	+/-3.77	3.56	1.50	+/-4.75	4.00	pCi/g	KXB2	01/26/16	1151	1539462	4	
Beta		27.1	+/-2.91	2.75	1.29	+/-4.77	10.0	pCi/g						

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Certificate of Analysis

Company : MJW Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: 2.1.4.R.2
Sample ID: 389296001

Report Date: February 10, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RI	Units	DF	Analyst	Date	Time	Batch	Mtd.
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The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	01/14/16	1208	1537312

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5.2.3/Ga-01-R
3	DOE HASL 300, 4.5.2.3/Ga-01-R
4	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: December 4, 2015

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.5

Project: MJWC00115

Sample ID: 385101014

Client ID: MJWC001

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	ASTM D 2216 (Modified)	
2	DOE EML HASL-300, Pu-11-RC Modified	
3	DOE EML HASL-300, U-02-RC Modified	
4	ASTM C 1476-00 Modified	
5	DOE EML HASL-300, Th-01-RC Modified	
6	DOE EML HASL-300, Am-05-RC Modified	
7	DOE EML HASL-300, Pu-11-RC Modified	
8	DOE EML HASL-300, I-01 Modified	
9	DOE HASL 300, 4.5 2.3/Ga-01-R	
10	EPA 900.0/SW846 9310/SM 7110B Modified	
11	EPA 905.0 Modified/DOE RPS01 Rev 1 Modified	
12	EPA 906.0 Modified	
13	EPA EERF C-01 Modified	
14	DOE EML HASL-300, Te-02-RC Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Plutonium-242 Tracer	ASP Plutonium Isotopic, Solid "Dry Weight Corrected"			73.5	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"			57.6	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"			61.8	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"			88.8	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"			86.9	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"			101	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"			73.5	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"			88.9	(25%-125%)
Technetium-99m Tracer	Liquid Scint Te99, Solid "Dry Weight Corrected"			95.4	(15%-125%)

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: December 4, 2015

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.5	Project: MJWC00115
Sample ID: 385101014	Client ID: MJWC001
Matrix: Soil	
Collect Date: 23-OCT-15 14:25	
Receive Date: 05-NOV-15	
Collector: Client	
Moisture: 25.5%	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Gravimetric Solids												
ASTM D 2216 % Moisture "As Received"												
Moisture		25.5				percent		LYT1	11/10/15	0955	1521927	1
Rad Alpha Spec Analysis												
ASP Plutonium Isotopic, Solid "Dry Weight Corrected"												
Plutonium-238	U	-0.0185	+/-0.0428	0.127	1.00	pCi/g		HAKB	11/23/15	1502	1522577	2
Plutonium-239/240	U	0.0546	+/-0.0967	0.161	1.00	pCi/g						
ASP Uranium Isotopic, Solid "Dry Weight Corrected"												
Uranium-232	U	-0.0456	+/-0.0927	0.227	1.00	pCi/g		HAKB	11/30/15	2226	1522580	3
Uranium-233/234		1.08	+/-0.212	0.0973	1.00	pCi/g						
Uranium-235/236	U	0.0722	+/-0.0726	0.104	1.00	pCi/g						
Uranium-238		1.08	+/-0.210	0.0729	1.00	pCi/g						
Alphaspec Np237, Solid "Dry Weight Corrected"												
Neptunium-237	U	-0.0367	+/-0.162	0.424	1.00	pCi/g		HAKB	11/23/15	1711	1522576	4
Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"												
Thorium-228		1.50	+/-0.741	0.618	1.00	pCi/g		HAKB	11/24/15	1025	1522579	5
Thorium-229	U	-0.035	+/-0.242	0.589	1.00	pCi/g						
Thorium-230		0.858	+/-0.569	0.557	1.00	pCi/g						
Thorium-232		1.74	+/-0.745	0.237	1.00	pCi/g						
Am241, Cm Solid "Dry Weight Corrected"												
Americium-241	U	0.0159	+/-0.0447	0.0477	1.00	pCi/g		HAKB	11/24/15	1039	1522571	6
Curium-242	U	0.00	+/-0.0363	0.054	1.00	pCi/g						
Curium-243/244	U	-0.00377	+/-0.0325	0.0754	1.00	pCi/g						
Curium-245/246	X	0.0546	+/-0.0719	0.0546	1.00	pCi/g						
Liquid Scint Pu241, Solid "Dry Weight Corrected"												
Plutonium-241	U	-1.72	+/-6.59	11.5	15.0	pCi/g		HAKB	11/25/15	2043	1522578	7
Rad Gamma Spec Analysis												
Gamma 1129, Solid "Dry Weight Corrected"												
Iodine-129	U	0.0945	+/-0.141	0.484	1.00	pCi/g		MJH1	12/02/15	1807	1522374	8
Gammaspect, Gamma, Solid "Dry Weight Corrected"												
Actinium-227	U	0.0787	+/-0.370	0.660		pCi/g		RXF2	12/03/15	0830	1522386	9
Antimony-125	U	-0.0421	+/-0.149	0.249		pCi/g						
Cesium-137		0.222	+/-0.0932	0.0969	0.100	pCi/g						
Cobalt-60	U	0.0191	+/-0.0571	0.116		pCi/g						
Europium-154	U	-0.0293	+/-0.222	0.407		pCi/g						
Protactinium-231	UI	0.00	+/-0.894	1.19		pCi/g						

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: December 17, 2015

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.5
 Sample ID: 385101014
 Matrix: Soil
 Collect Date: 23-OCT-15
 Receive Date: 05-NOV-15
 Collector: Client
 Moisture: 25.5%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		25.5						percent		LYTI	11/10/15	0955	1521927	1
Rad Alpha Spec Analysis														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	-0.0185	+/-0.0428	0.127	0.0346	+/-0.0429	1.00	pCi/g		HAKB	11/23/15	1502	1522577	2
Plutonium-239/240		0.0546	+/-0.0967	0.161	0.0518	+/-0.097	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232	U	-0.0456	+/-0.0927	0.227	0.0858	+/-0.0928	1.00	pci/g		HAKB	11/30/15	2226	1522580	3
Uranium-233/234		1.08	+/-0.212	0.0973	0.0331	+/-0.285	1.00	pci/g						
Uranium-235/236		0.0722	+/-0.0726	0.104	0.0364	+/-0.0737	1.00	pci/g						
Uranium-238		1.08	+/-0.210	0.0729	0.021	+/-0.285	1.00	pci/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	-0.0367	+/-0.162	0.424	0.0971	+/-0.163	1.00	pCi/g		HAKB	11/23/15	1711	1522576	4
<i>Alphaspec Th229 - 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		1.50	+/-0.741	0.618	0.186	+/-0.784	1.00	pCi/g		HAKB	11/24/15	1025	1522579	5
Thorium-229	U	-0.035	+/-0.242	0.589	0.175	+/-0.242	1.00	pCi/g						
Thorium-230		0.858	+/-0.569	0.557	0.159	+/-0.586	1.00	pCi/g						
Thorium-232		1.74	+/-0.745	0.237	0.00	+/-0.799	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241		0.0159	+/-0.0447	0.0477	0.00	+/-0.0448	1.00	pCi/g		HAKB	11/24/15	1039	1522571	6
Curium-242		0.00	+/-0.0363	0.054	0.00	+/-0.0364	1.00	pCi/g						
Curium-243/244	U	-0.00377	+/-0.0325	0.0754	0.0141	+/-0.0326	1.00	pCi/g						
Curium-245/246	X	0.0546	+/-0.0719	0.0546	0.00	+/-0.0722	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	-1.72	+/-6.59	11.5	5.57	+/-6.59	15.0	pCi/g		HAKB	11/25/15	2043	1522578	7
Rad Gamma Spec Analysis														
<i>Gamma 1129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	0.0945	+/-0.141	0.484	0.168	+/-0.148	1.00	pCi/g		MJH1	12/02/15	1807	1522374	8
<i>GammaSpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.0787	+/-0.370	0.660	0.311	+/-0.371		pCi/g		RXF2	12/03/15	0830	1522386	9
Antimony-125	U	-0.0421	+/-0.149	0.249	0.115	+/-0.150		pCi/g						
Bismuth-212	UI	0.00	+/-0.961	1.77	0.825	+/-1.16		pCi/g						
Bismuth-214		0.904	+/-0.206	0.189	0.0867	+/-0.221		pCi/g						
Cesium-137		0.222	+/-0.0932	0.0969	0.044	+/-0.0953	0.100	pCi/g						
Cobalt-60	U	0.0191	+/-0.0571	0.116	0.0506	+/-0.0578		pCi/g						
Europium-154	U	-0.0293	+/-0.222	0.407	0.184	+/-0.222		pCi/g						
Lead-212		1.36	+/-0.144	0.128	0.0602	+/-0.190		pCi/g						
Lead-214		1.14	+/-0.204	0.178	0.0826	+/-0.228		pCi/g						

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
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 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes
 Client Sample ID: 2.1.3.R.5
 Sample ID: 385101014

Report Date: December 17, 2015

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis														
<i>GammaSpec, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		23.4	+/-2.39	0.990	0.421	+/-3.11		pCi/g						
Protactinium-231	UI	0.00	+/-0.894	1.19	0.558	+/-0.946		pCi/g						
Radium-226		0.904	+/-0.206	0.189	0.0867	+/-0.221		pCi/g						
Radium-228		1.30	+/-0.429	0.395	0.178	+/-0.476		pCi/g						
Thallium-208		0.438	+/-0.0875	0.0877	0.0398	+/-0.0959		pCi/g						
Tin-126	U	0.0537	+/-0.150	0.141	0.0658	+/-0.152		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A-B, solid "Dry Weight Corrected"</i>														
Alpha		14.8	+/-3.83	3.98	1.72	+/-4.78	4.00	pCi/g		JXB7	12/02/15	1437	1525768	10
Beta		32.2	+/-3.48	3.52	1.66	+/-5.76	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90		0.706	+/-0.901	1.53	0.670	+/-0.910	2.00	pCi/g		KSD1	12/02/15	1712	1525755	11
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium		2.92	+/-2.17	3.39	1.48	+/-2.18	6.00	pCi/g		TXJ1	12/02/15	2207	1522724	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.771	+/-0.904	1.57	0.772	+/-0.904	2.00	pCi/g		TXJ1	12/04/15	0633	1522716	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	0.482	+/-1.54	2.65	1.28	+/-1.54	5.00	pCi/g		MYM 1	11/29/15	1509	1522715	14

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	ASTM C 1476-00 Modified
5	DOE EML HASL-300, Th-01-RC Modified
6	DOE EML HASL-300, Am-05-RC Modified
7	DOE EML HASL-300, Pu-11-RC Modified
8	DOE EML HASL-300, I-01 Modified
9	DOE HASL 300, 4.5.2.3/Ga-01-R
10	EPA 900.0/SW846 9310/SM 7110B Modified
11	EPA 905.0 Modified/DOE RP501 Rev 1 Modified
12	EPA 906.0 Modified
13	EPA EERF C-01 Modified

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: December 17, 2015

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.3.R.5
Sample ID: 385101014

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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14 DOE EML HASL-300, Tc-02-RC Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
Plutonium-242 Tracer	ASP Plutonium Isotopic. Solid "Dry Weight Corrected"	1522577	73.5	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic. Solid "Dry Weight Corrected"	1522580	57.6	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic. Solid "Dry Weight Corrected"	1522580	61.8	(15%-125%)
Americium-243 Tracer	Alphaspec Np237. Solid "Dry Weight Corrected"	1522576	88.8	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228.230.232 Solid "Dry Weight Corrected"	1522579	86.9	(15%-125%)
Americium-243 Tracer	Am241. Cm Solid "Dry Weight Corrected"	1522571	101	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1522578	73.5	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1525755	88.9	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99. Solid "Dry Weight Corrected"	1522715	95.4	(15%-125%)

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: December 17, 2015

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.4.R.1
 Sample ID: 385101015
 Matrix: Soil
 Collect Date: 23-OCT-15
 Receive Date: 05-NOV-15
 Collector: Client
 Moisture: 46.3%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		46.3						percent		LYT1	11/10/15	0955	1521927	1
Rad Gamma Spec Analysis														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	0.154	+/-0.379	0.649	0.304	+/-0.386		pCi/g		RXF2	12/03/15	0831	1522386	2
Antimony-125	U	0.023	+/-0.153	0.270	0.125	+/-0.154		pCi/g						
Bismuth-212		1.73	+/-1.05	1.29	0.581	+/-1.06		pCi/g						
Bismuth-214		0.714	+/-0.197	0.194	0.0891	+/-0.207		pCi/g						
Cesium-137		0.940	+/-0.124	0.083	0.0369	+/-0.150	0.100	pCi/g						
Cobalt-60	U	0.0155	+/-0.0656	0.113	0.0493	+/-0.066		pCi/g						
Europium-154	U	0.0304	+/-0.208	0.345	0.152	+/-0.208		pCi/g						
Lead-212		0.728	+/-0.143	0.148	0.0699	+/-0.156		pCi/g						
Lead-214		1.01	+/-0.188	0.201	0.0939	+/-0.208		pCi/g						
Potassium-40		15.5	+/-1.88	0.840	0.346	+/-2.30		pCi/g						
Protactinium-231	UI	0.00	+/-0.669	1.04	0.480	+/-0.737		pCi/g						
Radium-226		0.714	+/-0.197	0.194	0.0891	+/-0.207		pCi/g						
Radium-228		0.983	+/-0.339	0.304	0.132	+/-0.370		pCi/g						
Thallium-208		0.260	+/-0.0965	0.0944	0.043	+/-0.0993		pCi/g						
Tin-126	UI	0.00	+/-0.124	0.228	0.109	+/-0.157		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		9.24	+/-3.19	3.92	1.71	+/-3.63	4.00	pCi/g		JXB7	12/02/15	1435	1525768	3
Beta		26.8	+/-2.95	2.71	1.26	+/-4.48	10.0	pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	LYT1	11/10/15	0955	1521927

The following Analytical Methods were performed

Method	Description
1	ASTM D 2216 (Modified)
2	DOE HASL 300, 4.5.2 3/Ga-01-R
3	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Certificate of Analysis

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: December 17, 2015

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.4.R.1
Sample ID: 385101015

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.	
Surrogate/Tracer	Recovery	Test											Batch ID	Recovery%	Acceptable Limits

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: December 4, 2015

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.4.R.6 Project: MJWC00115
Sample ID: 385101016 Client ID: MJWC001
Matrix: Water
Collect Date: 23-OCT-15 15:50
Receive Date: 05-NOV-15
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
Gammascpec, Gamma, Liquid (Standard List) "As Received"												
Actinium-227	U	26.9	+/-27.0	52.1		pCi/L		MJH1	11/17/15	0712	1521915	1
Antimony-125	U	4.70	+/-8.70	16.6		pCi/L						
Cesium-137	U	-2.31	+/-3.68	6.47	10.0	pCi/L						
Cobalt-60	U	-1.13	+/-3.71	6.93		pCi/L						
Europium-154	U	-3.4	+/-10.3	19.3		pCi/L						
Protactinium-231	U	3.68	+/-51.3	93.2		pCi/L						
Radium-228	U	-3.95	+/-18.1	28.1		pCi/L						
Tin-126	U	0.580	+/-9.88	16.3		pCi/L						
Rad Gas Flow Proportional Counting												
GFPC, Gross A/B, liquid "As Received"												
Alpha	U	2.30	+/-2.34	3.73	5.00	pCi/L		JXB7	12/02/15	1323	1525771	2
Beta	U	0.780	+/-2.45	4.41	5.00	pCi/L						

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 901.1	
2	EPA 900.0/SW846 9310	

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: December 17, 2015

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.4.R.6
 Sample ID: 385101016
 Matrix: Water
 Collect Date: 23-OCT-15
 Receive Date: 05-NOV-15
 Collector: Client

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

GammaSpec, Gamma, Liquid (Standard List) "As Received"

Actinium-227	UI	0.00	+/-27.0	52.1	24.7	+/-29.9		pCi/L		MJH1	11/17/15	0712	1521915	1
Antimony-125	U	4.70	+/-8.70	16.6	7.66	+/-8.96		pCi/L						
Bismuth-212	U	27.7	+/-53.0	104	47.6	+/-54.5		pCi/L						
Bismuth-214	U	1.92	+/-13.5	17.4	8.14	+/-13.5		pCi/L						
Cesium-137	U	-2.31	+/-3.68	6.47	2.92	+/-3.83	10.0	pCi/L						
Cobalt-60	U	-1.13	+/-3.71	6.93	2.97	+/-3.74		pCi/L						
Europium-154	U	-3.4	+/-10.3	19.3	8.27	+/-10.4		pCi/L						
Lead-212	UI	0.00	+/-9.61	14.1	6.77	+/-10.1		pCi/L						
Lead-214	U	-6.06	+/-10.1	14.7	6.88	+/-10.5		pCi/L						
Potassium-40	U	16.4	+/-63.1	78.1	34.0	+/-63.1		pCi/L						
Protactinium-231	U	3.68	+/-51.3	93.2	43.8	+/-51.4		pCi/L						
Radium-228	U	-3.95	+/-18.1	28.1	12.7	+/-18.2		pCi/L						
Thallium-208	UI	0.00	+/-6.73	6.79	3.10	+/-6.74		pCi/L						
Tin-126	U	0.580	+/-9.88	16.3	7.74	+/-9.89		pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Gross A-B, liquid "As Received"

Alpha		2.30	+/-2.34	3.73	1.44	+/-2.37	5.00	pCi/L		JXB7	12/02/15	1323	1525771	2
Beta	U	0.780	+/-2.45	4.41	1.95	+/-2.46	5.00	pCi/L						

The following Analytical Methods were performed

Method	Description
1	EPA 901.1
2	EPA 900.0/SW846 9310

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits
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Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Company : MJW Corporation
 Address : 15 Hazelwood Drive
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 Buffalo, New York 14228

Report Date: December 17, 2015

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 2.1.4.R.7
 Sample ID: 385101017
 Matrix: Water
 Collect Date: 23-OCT-15
 Receive Date: 05-NOV-15
 Collector: Client

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Rad Gamma Spec Analysis

GammaSpec, Gamma, Liquid (Standard List) "As Received"

Actinium-227	U	-0.931	+/-27.1	48.3	22.8	+/-27.1		pCi/L		MJH1	11/17/15	0713	1521915	1
Antimony-125	U	5.58	+/-8.83	17.4	8.04	+/-9.19		pCi/L						
Bismuth-212	U	45.2	+/-56.9	105	47.9	+/-60.6		pCi/L						
Bismuth-214	U	3.34	+/-10.1	16.8	7.85	+/-10.2		pCi/L						
Cesium-137	U	-1.14	+/-3.71	6.56	2.97	+/-3.74	10.0	pCi/L						
Cobalt-60	U	-1.93	+/-4.34	7.89	3.46	+/-4.43		pCi/L						
Europium-154	U	1.81	+/-10.3	20.3	8.79	+/-10.3		pCi/L						
Lead-212	U	0.00	+/-11.6	14.1	6.76	+/-12.5		pCi/L						
Lead-214	U	8.04	+/-11.6	18.2	8.64	+/-12.1		pCi/L						
Potassium-40	U	-14.9	+/-53.9	88.4	39.3	+/-54.4		pCi/L						
Protactinium-231	U	-4.21	+/-55.7	98.0	46.3	+/-55.8		pCi/L						
Radium-228	U	-5.09	+/-16.9	29.0	13.2	+/-17.1		pCi/L						
Thallium-208	U	2.34	+/-5.38	7.05	3.24	+/-5.38		pCi/L						
Tin-126	U	4.05	+/-11.3	14.6	6.95	+/-11.4		pCi/L						

Rad Gas Flow Proportional Counting

GFPC, Gross A. B, liquid "As Received"

Alpha		3.66	+/-2.84	4.25	1.72	+/-2.90	5.00	pCi/L		JXB7	12/02/15	1327	1525771	2
Beta	U	1.50	+/-2.51	4.35	1.92	+/-2.52	5.00	pCi/L						

The following Analytical Methods were performed

Method	Description
1	EPA 901.1
2	EPA 900.0/SW846 9310

Surrogate/Tracer Recovery	Test	Batch ID	Recovery%	Acceptable Limits

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

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Certificate of Analysis

Report Date: December 4, 2015

Company : MJW Corporation
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 2.1.4.R.7 Project: MJWC00115
Sample ID: 385101017 Client ID: MJWC001
Matrix: Water
Collect Date: 23-OCT-15 16:00
Receive Date: 05-NOV-15
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	DF	Analyst	Date	Time	Batch	Method
Rad Gamma Spec Analysis												
Gammascpec, Gamma, Liquid (Standard List) "As Received"												
Actinium-227	U	-0.931	+/-27.1	48.3		pCi/L		MJH1	11/17/15	0713	1521915	1
Antimony-125	U	5.58	+/-8.83	17.4		pCi/L						
Cesium-137	U	-1.14	+/-3.71	6.56	10.0	pCi/L						
Cobalt-60	U	-1.93	+/-4.34	7.89		pCi/L						
Europium-154	U	1.81	+/-10.3	20.3		pCi/L						
Protactinium-231	U	-4.21	+/-55.7	98.0		pCi/L						
Radium-228	U	-5.09	+/-16.9	29.0		pCi/L						
Tin-126	U	4.05	+/-11.3	14.6		pCi/L						
Rad Gas Flow Proportional Counting												
GFPC, Gross A/B, liquid "As Received"												
Alpha	U	3.66	+/-2.84	4.25	5.00	pCi/L		JXB7	12/02/15	1327	1525771	2
Beta	U	1.50	+/-2.51	4.35	5.00	pCi/L						

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 901.1	
2	EPA 900.0/SW846.9310	

Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).