

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: January 14, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.1.1
 Sample ID: 387686017
 Matrix: Soil
 Collect Date: 10-DEC-15
 Receive Date: 17-DEC-15
 Collector: Client
 Moisture: 28.4%

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		28.4						percent		CXC1	12/17/15	1415	1532052	1
Rad Gamma Spec Analysis														
<i>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.125	+/-0.263	0.463	0.218	+/-0.270		pCi/g		RXF2	01/11/16	1057	1532065	2
Antimony-125	U	-0.0689	+/-0.0893	0.154	0.0713	+/-0.0947		pCi/g						
Bismuth-212	UI	0.00	+/-0.992	1.13	0.533	+/-1.11		pCi/g						
Bismuth-214		0.876	+/-0.192	0.134	0.0627	+/-0.205		pCi/g						
Cesium-137		0.648	+/-0.0815	0.0597	0.0273	+/-0.0968	0.100	pCi/g						
Cobalt-60	U	-0.0211	+/-0.0408	0.0717	0.0321	+/-0.042		pCi/g						
Europium-154	U	-0.099	+/-0.128	0.219	0.0991	+/-0.136		pCi/g						
Lead-212		1.20	+/-0.124	0.108	0.0513	+/-0.157		pCi/g						
Lead-214		1.19	+/-0.196	0.312	0.152	+/-0.219		pCi/g						
Potassium-40		18.3	+/-1.40	0.563	0.245	+/-2.12		pCi/g						
Protactinium-231	UI	0.00	+/-0.735	0.851	0.400	+/-0.746		pCi/g						
Radium-226		0.876	+/-0.192	0.134	0.0627	+/-0.205		pCi/g						
Radium-228		1.22	+/-0.289	0.256	0.117	+/-0.349		pCi/g						
Thallium-208		0.304	+/-0.0741	0.0654	0.0304	+/-0.0783		pCi/g						
Tin-126	UI	0.00	+/-0.121	0.151	0.0721	+/-0.123		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		18.4	+/-5.12	3.97	1.50	+/-6.27	4.00	pCi/g		KXB2	01/07/16	1215	1534691	3
Beta		26.2	+/-3.51	2.40	1.05	+/-5.24	10.0	pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GI-RAD-A-021	CXC1	12/17/15	1415	1532052

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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Contact: Ms. Laurie Losey

Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.1.1
Sample ID: 387686017

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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 Address : 15 Hazelwood Drive
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 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes
 Client Sample ID: 4.1.B.R.2.1
 Sample ID: 387686018
 Matrix: Soil
 Collect Date: 10-DEC-15
 Receive Date: 17-DEC-15
 Collector: Client
 Moisture: 28%

Report Date: January 14, 2016

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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Gravimetric Solids

ASTM D 2216 % Moisture "As Received"

Moisture		28.0						percent		CXC1	12/17/15	1415	1532052	1
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Rad Gamma Spec Analysis

Gammascpec, Gamma, Solid "Dry Weight Corrected"

Actinium-227	U	0.238	+/-0.289	0.581	0.271	+/-0.310		pCi/g		RXF2	01/11/16	1057	1532065	2
Antimony-125	U	0.00464	+/-0.122	0.236	0.108	+/-0.122		pCi/g						
Bismuth-212	UI	0.00	+/-1.14	1.81	0.827	+/-1.31		pCi/g						
Bismuth-214		0.823	+/-0.225	0.183	0.0822	+/-0.235		pCi/g						
Cesium-137		0.520	+/-0.119	0.0997	0.0444	+/-0.126	0.100	pCi/g						
Cobalt-60	U	0.00669	+/-0.066	0.132	0.0567	+/-0.0661		pCi/g						
Europium-154	U	0.143	+/-0.0985	0.404	0.177	+/-0.118		pCi/g						
Lead-212		1.24	+/-0.138	0.115	0.0535	+/-0.195		pCi/g						
Lead-214		1.08	+/-0.219	0.167	0.0768	+/-0.239		pCi/g						
Potassium-40		15.0	+/-2.16	0.794	0.304	+/-2.55		pCi/g						
Protactinium-231	U	0.543	+/-0.659	1.26	0.593	+/-0.714		pCi/g						
Radium-226		0.823	+/-0.225	0.183	0.0822	+/-0.235		pCi/g						
Radium-228		1.25	+/-0.401	0.431	0.191	+/-0.431		pCi/g						
Thallium-208		0.370	+/-0.105	0.0959	0.0431	+/-0.110		pCi/g						
Tin-126	UI	0.00	+/-0.143	0.111	0.0529	+/-0.145		pCi/g						

Rad Gas Flow Proportional Counting

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

Alpha		21.9	+/-5.64	4.00	1.49	+/-7.05	4.00	pCi/g		KXB2	01/07/16	1215	1534691	3
Beta		28.1	+/-3.74	2.71	1.20	+/-5.57	10.0	pCi/g						

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GI.-RAD-A-021	CXC1	12/17/15	1415	1532052

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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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.2.1
Sample ID: 387686018

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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Company : MJW Technical Services
 Address : 15 Hazelwood Drive
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 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Report Date: March 8, 2016

Client Sample ID: 4.1.B.R.2.2
 Sample ID: 392045006
 Matrix: Soil
 Collect Date: 10-DEC-15
 Receive Date: 25-FEB-16
 Collector: Client
 Moisture: 18.4%

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>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	-0.00531	+/-0.317	0.592	0.278	+/-0.317		pCi/g		MXR1	03/08/16	0646	1547793	1
Antimony-125	U	0.0616	+/-0.133	0.262	0.122	+/-0.136		pCi/g						
Bismuth-212	U	0.376	+/-0.866	1.47	0.680	+/-0.883		pCi/g						
Bismuth-214		0.986	+/-0.198	0.159	0.0727	+/-0.216		pCi/g						
Cesium-137		0.354	+/-0.109	0.0967	0.0444	+/-0.113	0.100	pCi/g						
Cobalt-60	U	0.0226	+/-0.0565	0.114	0.0507	+/-0.0574		pCi/g						
Europium-154	U	0.0709	+/-0.124	0.267	0.116	+/-0.128		pCi/g						
Lead-212		1.23	+/-0.149	0.131	0.0615	+/-0.190		pCi/g						
Lead-214		1.20	+/-0.256	0.379	0.183	+/-0.279		pCi/g						
Potassium-40		13.9	+/-1.62	0.721	0.297	+/-2.01		pCi/g						
Protactinium-231	U	0.407	+/-0.725	1.24	0.583	+/-0.754		pCi/g						
Radium-226		0.986	+/-0.198	0.159	0.0727	+/-0.216		pCi/g						
Radium-228		1.10	+/-0.385	0.366	0.166	+/-0.416		pCi/g						
Thallium-208		0.419	+/-0.0954	0.0711	0.032	+/-0.102		pCi/g						
Tin-126	UI	0.00	+/-0.180	0.194	0.0929	+/-0.181		pCi/g						

Rad Gas Flow Proportional Counting

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

Alpha		18.1	+/-4.09	3.87	1.66	+/-5.45	4.00	pCi/g		JXB7	03/03/16	1051	1547854	2
Beta		23.1	+/-3.48	4.21	2.00	+/-4.88	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	CXC1	02/26/16	1456	1547784

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300.4.5.2.3/Ga-01-R
2	EPA 900.0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery Test

Batch ID Recovery% Acceptable Limits

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Report Date: March 8, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.J.B.R.2.2
Sample ID: 392045006

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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Report Date: January 14, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.2.3
 Sample ID: 387686019
 Matrix: Soil
 Collect Date: 10-DEC-15
 Receive Date: 17-DEC-15
 Collector: Client
 Moisture: 20.3%

Project: MJWC00115
 Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Gravimetric Solids														
<i>ASTM D 2216 % Moisture "As Received"</i>														
Moisture		20.3						percent		CXC1	12/17/15	1415	1532052	1
Rad Alpha Spec Analysis														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	0.00534	+/-0.0558	0.116	0.0296	+/-0.0559	1.00	pCi/g		HAKB	01/07/16	1208	1532467	2
Plutonium-239/240	U	0.00991	+/-0.055	0.105	0.0242	+/-0.0551	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232	U	0.0132	+/-0.0352	0.104	0.0284	+/-0.0353	1.00	pCi/g		HAKB	01/07/16	1206	1532463	3
Uranium-233/234		0.763	+/-0.209	0.109	0.0334	+/-0.243	1.00	pCi/g						
Uranium-235/236		0.148	+/-0.0964	0.0781	0.0179	+/-0.0994	1.00	pCi/g						
Uranium-238		1.05	+/-0.240	0.0778	0.0178	+/-0.295	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	0.0925	+/-0.255	0.442	0.112	+/-0.255	1.00	pCi/g		HAKB	01/07/16	1409	1532466	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		1.02	+/-0.584	0.584	0.188	+/-0.607	1.00	pCi/g		HAKB	01/07/16	1206	1532462	5
Thorium-229	U	-0.0649	+/-0.150	0.446	0.121	+/-0.151	1.00	pCi/g						
Thorium-230		0.761	+/-0.481	0.412	0.105	+/-0.496	1.00	pCi/g						
Thorium-232		0.859	+/-0.495	0.323	0.0604	+/-0.514	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241	U	-0.00304	+/-0.0456	0.107	0.0305	+/-0.0456	1.00	pCi/g		HAKB	01/08/16	0856	1532464	6
Curium-242		0.00	+/-0.0342	0.0509	0.00	+/-0.0343	1.00	pCi/g						
Curium-243/244	U	-0.0108	+/-0.0326	0.0917	0.0233	+/-0.0327	1.00	pCi/g						
Curium-245/246	X	0.0695	+/-0.0766	0.0521	0.00	+/-0.0772	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	0.0117	+/-6.40	11.0	5.37	+/-6.40	15.0	pCi/g		HAKB	01/13/16	1230	1532468	7
Rad Gamma Spec Analysis														
<i>Gamma I129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	-0.00845	+/-0.173	0.363	0.140	+/-0.173	1.00	pCi/g		MJHI	01/11/16	1845	1533088	8
<i>Gamma spec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.06	+/-0.261	0.473	0.224	+/-0.263		pCi/g		RXF2	01/11/16	1058	1532065	9
Antimony-125	U	-0.0905	+/-0.0928	0.160	0.0747	+/-0.102		pCi/g						
Bismuth-212	UI	0.00	+/-0.687	1.17	0.552	+/-0.946		pCi/g						
Bismuth-214		0.798	+/-0.177	0.135	0.0631	+/-0.190		pCi/g						
Cesium-137		0.112	+/-0.0592	0.0615	0.0284	+/-0.0599	0.100	pCi/g						
Cobalt-60	U	-0.0276	+/-0.0415	0.0582	0.0255	+/-0.0433		pCi/g						
Europium-154	U	0.0741	+/-0.116	0.229	0.104	+/-0.121		pCi/g						
Lead-212		1.21	+/-0.132	0.111	0.0531	+/-0.162		pCi/g						
Lead-214		1.18	+/-0.184	0.144	0.0682	+/-0.206		pCi/g						

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 Project: Soil Radioisotopes
 Client Sample ID: 4.1.B.R.2.3
 Sample ID: 387686019

Report Date: January 14, 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>GammaSpec, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		16.6	+/-1.53	0.734	0.332	+/-2.09		pCi/g						
Protactinium-231	U	0.00	+/-0.786	0.824	0.389	+/-0.852		pCi/g						
Radium-226		0.798	+/-0.177	0.135	0.0631	+/-0.190		pCi/g						
Radium-228		1.18	+/-0.384	0.211	0.0954	+/-0.404		pCi/g						
Thallium-208		0.355	+/-0.0735	0.0591	0.0274	+/-0.0795		pCi/g						
Tin-126	U	0.089	+/-0.179	0.192	0.0929	+/-0.184		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		11.7	+/-3.75	3.78	1.54	+/-4.36	4.00	pCi/g		KXB2	01/07/16	1215	1534691	10
Beta		27.4	+/-3.59	3.49	1.62	+/-5.21	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.246	+/-0.853	1.72	0.750	+/-0.853	2.00	pCi/g		KSD1	01/06/16	1541	1534449	11
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium		2.74	+/-2.40	4.00	1.93	+/-2.40	6.00	pCi/g		TXJ1	01/05/16	2259	1533791	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	0.682	+/-0.958	1.62	0.787	+/-0.959	2.00	pCi/g		TXJ1	01/13/16	0844	1533783	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	-1.03	+/-1.55	2.82	1.35	+/-1.55	5.00	pCi/g		MYM	01/12/16	0726	1534428	14

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXCI	12/17/15	1415	1532052

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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Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.2.3
Sample ID: 387686019

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Le	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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"	1532467	77.1	(15%-125%)
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1532463	88.9	(15%-125%)
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1532463	93.4	(15%-125%)
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1532466	89.4	(15%-125%)
Actinium-227 Tracer	Alphaspec Th229 + 228.230.232 Solid "Dry Weight Corrected"	1532462	98.2	(15%-125%)
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1532464	70.1	(15%-125%)
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1532468	77.1	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1534449	78.2	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1534428	91.9	(15%-125%)

Notes:

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

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Report Date: January 14, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Project: MJWC00115
 Client ID: MJWC001

Client Sample ID: 4.1.B.R.2.4
 Sample ID: 387686020
 Matrix: Soil
 Collect Date: 10-DEC-15
 Receive Date: 17-DEC-15
 Collector: Client
 Moisture: 17.5%

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		17.5						percent		CXC1	12/17/15	1415	1532052	1
Rad Alpha Spec Analysis														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	-0.00326	+/-0.0489	0.114	0.0327	+/-0.049	1.00	pCi/g		HAKB	01/11/16	0914	1532467	2
Plutonium-239/240	U	0.00847	+/-0.0471	0.0902	0.0207	+/-0.0471	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232	U	-0.00739	+/-0.051	0.124	0.0369	+/-0.0511	1.00	pCi/g		HAKB	01/07/16	1206	1532463	3
Uranium-233/234		0.640	+/-0.175	0.0834	0.0239	+/-0.202	1.00	pCi/g						
Uranium-235/236		0.0659	+/-0.0626	0.0661	0.0151	+/-0.0635	1.00	pCi/g						
Uranium-238		0.735	+/-0.185	0.057	0.0107	+/-0.219	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	0.00246	+/-0.183	0.406	0.111	+/-0.183	1.00	pCi/g		HAKB	01/07/16	1409	1532466	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		0.974	+/-0.570	0.610	0.206	+/-0.594	1.00	pCi/g		HAKB	01/11/16	0930	1532462	5
Thorium-229	U	-0.09	+/-0.204	0.557	0.182	+/-0.205	1.00	pCi/g						
Thorium-230		0.244	+/-0.316	0.450	0.129	+/-0.319	1.00	pCi/g						
Thorium-232		1.01	+/-0.518	0.306	0.0574	+/-0.541	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241	U	-0.0205	+/-0.0401	0.112	0.0371	+/-0.0401	1.00	pCi/g		HAKB	01/08/16	0856	1532464	6
Curium-242	U	-0.00334	+/-0.0288	0.0668	0.0125	+/-0.0289	1.00	pCi/g						
Curium-243/244	U	-0.0113	+/-0.0383	0.0995	0.0313	+/-0.0384	1.00	pCi/g						
Curium-245/246	X	0.0714	+/-0.0689	0.0428	0.00	+/-0.0694	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	2.13	+/-5.61	9.57	4.66	+/-5.63	15.0	pCi/g		HAKB	01/13/16	1317	1532468	7
Rad Gamma Spec Analysis														
<i>Gamma I129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	-0.0551	+/-0.154	0.309	0.0961	+/-0.156	1.00	pCi/g		MJH1	01/12/16	0624	1533088	8
<i>Gammaspect, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	U	-0.121	+/-0.263	0.471	0.220	+/-0.269		pCi/g		RXF2	01/12/16	0633	1532065	9
Antimony-125	U	0.0252	+/-0.0874	0.175	0.0802	+/-0.0882		pCi/g						
Bismuth-212	UI	0.00	+/-0.662	1.24	0.575	+/-0.887		pCi/g						
Bismuth-214		0.714	+/-0.169	0.113	0.0508	+/-0.179		pCi/g						
Cesium-137		0.0418	+/-0.0463	0.069	0.0312	+/-0.0464	0.100	pCi/g						
Cobalt-60	U	0.0102	+/-0.0336	0.0718	0.0308	+/-0.0339		pCi/g						
Europium-154	U	0.035	+/-0.121	0.222	0.097	+/-0.122		pCi/g						
Lead-212		1.10	+/-0.123	0.103	0.0483	+/-0.156		pCi/g						
Lead-214		1.12	+/-0.153	0.309	0.149	+/-0.180		pCi/g						

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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: 4.1.B.R.2.4
 Sample ID: 387686020

Report Date: January 14, 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>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		15.2	+/-1.54	0.626	0.262	+/-2.02		pCi/g						
Protactinium-231	U	0.0322	+/-0.503	0.835	0.387	+/-0.504		pCi/g						
Radium-226		0.714	+/-0.169	0.113	0.0508	+/-0.179		pCi/g						
Radium-228		1.26	+/-0.247	0.225	0.0983	+/-0.309		pCi/g						
Thallium-208		0.294	+/-0.074	0.0583	0.0261	+/-0.078		pCi/g						
Tin-126	UI	0.00	+/-0.138	0.136	0.0645	+/-0.140		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A.B. solid "Dry Weight Corrected"</i>														
Alpha		13.7	+/-4.39	3.75	1.41	+/-5.13	4.00	pCi/g		KXB2	01/07/16	1209	1534691	10
Beta		20.1	+/-3.51	3.24	1.44	+/-4.60	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.346	+/-0.829	1.67	0.738	+/-0.829	2.00	pCi/g		KSD1	01/06/16	1541	1534449	11
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist. Solid "Dry Weight Corrected"</i>														
Tritium	U	1.28	+/-2.06	3.50	1.69	+/-2.06	6.00	pCi/g		TXJ1	01/06/16	0032	1533791	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.0269	+/-0.911	1.57	0.765	+/-0.911	2.00	pCi/g		TXJ1	01/13/16	0930	1533783	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	0.716	+/-1.85	3.18	1.52	+/-1.85	5.00	pCi/g		MYM	01/12/16	0742	1534428	14

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	12/17/15	1415	1532052

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
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Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: 4.1.B.R.2.4
Sample ID: 387686020

Report Date: January 14, 2016

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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"							1532467	89.3	(15%-125%)				
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"							1532463	98.3	(15%-125%)				
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"							1532463	83.9	(15%-125%)				
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"							1532466	89.4	(15%-125%)				
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"							1532462	85.6	(15%-125%)				
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"							1532464	97.4	(15%-125%)				
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"							1532468	89.3	(15%-125%)				
Strontium Carrier	GFPc, Sr90, solid "Dry Weight Corrected"							1534449	71.7	(25%-125%)				
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"							1534428	91.8	(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
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Report Date: January 14, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.I.B.R.2.5
 Sample ID: 387694003
 Matrix: Soil
 Collect Date: 10-DEC-15
 Receive Date: 17-DEC-15
 Collector: Client
 Moisture: 20.7%

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		20.7						percent		CXC1	12/17/15	1405	1532054	1
Rad Alpha Spec Analysis														
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>														
Plutonium-238	U	0.014	+/-0.0527	0.0886	0.0166	+/-0.0527	1.00	pCi/g		HAKB	01/07/16	1208	1532467	2
Plutonium-239/240	U	0.000739	+/-0.0547	0.122	0.0331	+/-0.0548	1.00	pCi/g						
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>														
Uranium-232		0.00	+/-0.0385	0.0573	0.00	+/-0.0387	1.00	pCi/g		HAKB	01/07/16	1206	1532463	3
Uranium-233/234		0.963	+/-0.250	0.0911	0.0209	+/-0.301	1.00	pCi/g						
Uranium-235/236		0.132	+/-0.0973	0.0495	0.00	+/-0.100	1.00	pCi/g						
Uranium-238		1.16	+/-0.274	0.0911	0.0209	+/-0.341	1.00	pCi/g						
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>														
Neptunium-237	U	0.00534	+/-0.245	0.539	0.169	+/-0.246	1.00	pCi/g		HAKB	01/07/16	1409	1532466	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>														
Thorium-228		0.751	+/-0.506	0.380	0.0734	+/-0.521	1.00	pCi/g		HAKB	01/07/16	1206	1532462	5
Thorium-229		0.133	+/-0.262	0.364	0.068	+/-0.263	1.00	pCi/g						
Thorium-230		0.983	+/-0.556	0.227	0.00	+/-0.578	1.00	pCi/g						
Thorium-232		1.06	+/-0.574	0.226	0.00	+/-0.598	1.00	pCi/g						
<i>Am241, Cm Solid "Dry Weight Corrected"</i>														
Americium-241		0.0371	+/-0.0657	0.0995	0.0253	+/-0.0659	1.00	pCi/g		HAKB	01/08/16	0856	1532464	6
Curium-242	U	-0.00437	+/-0.0377	0.0872	0.0163	+/-0.0377	1.00	pCi/g						
Curium-243/244	U	-0.00386	+/-0.0333	0.0772	0.0144	+/-0.0334	1.00	pCi/g						
Curium-245/246		0.00	+/-0.0376	0.0559	0.00	+/-0.0377	1.00	pCi/g						
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>														
Plutonium-241	U	4.98	+/-6.51	11.0	5.35	+/-6.60	15.0	pCi/g		HAKB	01/13/16	1404	1532468	7
Rad Gamma Spec Analysis														
<i>Gamma I129, Solid "Dry Weight Corrected"</i>														
Iodine-129	U	-0.0178	+/-0.375	0.658	0.300	+/-0.375	1.00	pCi/g		MJH1	01/12/16	0634	1533088	8
<i>Gammasespec, Gamma, Solid "Dry Weight Corrected"</i>														
Actinium-227	UI	0.00	+/-0.617	0.542	0.254	+/-0.638		pCi/g		RXF2	01/11/16	0707	1532066	9
Antimony-125	U	0.0532	+/-0.109	0.209	0.0967	+/-0.111		pCi/g						
Bismuth-212	UI	0.00	+/-1.07	1.37	0.635	+/-1.32		pCi/g						
Bismuth-214		1.09	+/-0.178	0.144	0.0657	+/-0.200		pCi/g						
Cesium-137		0.101	+/-0.0708	0.079	0.0358	+/-0.0713	0.100	pCi/g						
Cobalt-60	U	0.00863	+/-0.0498	0.0871	0.0377	+/-0.050		pCi/g						
Europium-154	U	0.00303	+/-0.141	0.246	0.107	+/-0.141		pCi/g						
Lead-212		1.14	+/-0.172	0.137	0.065	+/-0.197		pCi/g						
Lead-214		1.07	+/-0.189	0.150	0.0693	+/-0.209		pCi/g						

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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: 4.1.B.R.2.5
 Sample ID: 387694003

Report Date: January 14, 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>Gammascpec, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		17.3	+/-1.69	0.939	0.411	+/-2.28		pCi/g						
Protactinium-231	U	0.436	+/-0.777	0.996	0.464	+/-0.783		pCi/g						
Radium-226		1.09	+/-0.178	0.144	0.0657	+/-0.200		pCi/g						
Radium-228		1.09	+/-0.319	0.267	0.117	+/-0.359		pCi/g						
Thallium-208		0.388	+/-0.0943	0.0734	0.0333	+/-0.0999		pCi/g						
Tin-126	U	0.0862	+/-0.123	0.183	0.088	+/-0.125		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A B, solid "Dry Weight Corrected"</i>														
Alpha		17.2	+/-4.72	3.92	1.53	+/-5.79	4.00	pCi/g		KXB2	01/08/16	1204	1534687	10
Beta		23.0	+/-3.45	2.56	1.11	+/-4.86	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	0.662	+/-1.02	1.76	0.806	+/-1.03	2.00	pCi/g		KSD1	01/06/16	1527	1534450	11
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium	U	0.597	+/-2.26	3.90	1.88	+/-2.26	6.00	pCi/g		TXJI	01/06/16	0205	1533791	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.556	+/-0.935	1.64	0.799	+/-0.935	2.00	pCi/g		TXJI	01/13/16	1016	1533783	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	-1.11	+/-1.92	3.47	1.66	+/-1.92	5.00	pCi/g		MYM	01/12/16	0758	1534428	14

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXC1	12/17/15	1405	1532054

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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Company : MJW Corporation
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Buffalo, New York 14228

Report Date: January 14, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.2.5
Sample ID: 387694003

Project: MJWC00115
Client ID: MJWC001

Parameter	Qualifier	Result	Uncertainty	MDC	Lc	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
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"	1532467	76.7	(15%-125%)										
Uranium-232 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1532463	71	(15%-125%)										
Uranium-235/236 Tracer	ASP Uranium Isotopic, Solid "Dry Weight Corrected"	1532463	76.7	(15%-125%)										
Americium-243 Tracer	Alphaspec Np237, Solid "Dry Weight Corrected"	1532466	81.5	(15%-125%)										
Actinium-227 Tracer	Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"	1532462	91.8	(15%-125%)										
Americium-243 Tracer	Am241, Cm Solid "Dry Weight Corrected"	1532464	65.8	(15%-125%)										
Plutonium-242 Tracer	Liquid Scint Pu241, Solid "Dry Weight Corrected"	1532468	76.7	(15%-125%)										
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Corrected"	1534450	81.4	(25%-125%)										
Technetium-99m Tracer	Liquid Scint Tc99, Solid "Dry Weight Corrected"	1534428	94.5	(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 : MFW Corporation
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: January 14, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.2.6
 Sample ID: 387694004
 Matrix: Soil
 Collect Date: 10-DEC-15
 Receive Date: 17-DEC-15
 Collector: Client
 Moisture: 16.4%

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		16.4						percent		CXC1	12/17/15 1405	1532054	1
Rad Alpha Spec Analysis													
<i>ASP Plutonium Isotopic, Solid "Dry Weight Corrected"</i>													
Plutonium-238		0.00	+/-0.0369	0.055	0.00	+/-0.037	1.00	pCi/g		HAKB	01/07/16 1208	1532467	2
Plutonium-239/240	U	-0.00879	+/-0.0389	0.101	0.0232	+/-0.039	1.00	pCi/g					
<i>ASP Uranium Isotopic, Solid "Dry Weight Corrected"</i>													
Uranium-232	U	-0.0214	+/-0.0724	0.188	0.0591	+/-0.0725	1.00	pCi/g		HAKB	01/07/16 1206	1532463	3
Uranium-233/234		0.918	+/-0.238	0.108	0.0308	+/-0.287	1.00	pCi/g					
Uranium-235/236		0.0234	+/-0.0537	0.0853	0.0195	+/-0.0539	1.00	pCi/g					
Uranium-238		0.764	+/-0.215	0.0736	0.0138	+/-0.254	1.00	pCi/g					
<i>Alphaspec Np237, Solid "Dry Weight Corrected"</i>													
Neptunium-237	U	-0.0924	+/-0.263	0.641	0.232	+/-0.263	1.00	pCi/g		HAKB	01/07/16 1409	1532466	4
<i>Alphaspec Th229 + 228,230,232 Solid "Dry Weight Corrected"</i>													
Thorium-228		0.806	+/-0.525	0.490	0.134	+/-0.541	1.00	pCi/g		HAKB	01/07/16 1206	1532462	5
Thorium-229	U	0.0547	+/-0.205	0.345	0.0645	+/-0.205	1.00	pCi/g					
Thorium-230		1.10	+/-0.584	0.438	0.112	+/-0.609	1.00	pCi/g					
Thorium-232		0.698	+/-0.467	0.343	0.0642	+/-0.480	1.00	pCi/g					
<i>Am241, Cm Solid "Dry Weight Corrected"</i>													
Americium-241	U	0.00796	+/-0.0442	0.0848	0.0194	+/-0.0443	1.00	pCi/g		HAKB	01/08/16 0856	1532464	6
Curium-242		0.00	+/-0.0345	0.0513	0.00	+/-0.0345	1.00	pCi/g					
Curium-243/244	U	-0.00363	+/-0.0313	0.0725	0.0136	+/-0.0314	1.00	pCi/g					
Curium-245/246	X	0.0525	+/-0.0692	0.0525	0.00	+/-0.0695	1.00	pCi/g					
<i>Liquid Scint Pu241, Solid "Dry Weight Corrected"</i>													
Plutonium-241	U	1.95	+/-6.61	11.3	5.51	+/-6.63	15.0	pCi/g		HAKB	01/13/16 1450	1532468	7
Rad Gamma Spec Analysis													
<i>Gamma I129, Solid "Dry Weight Corrected"</i>													
Iodine-129	U	0.165	+/-0.505	1.07	0.452	+/-0.511	1.00	pCi/g		MJH1	01/12/16 0634	1533088	8
<i>Gammaspac, Gamma, Solid "Dry Weight Corrected"</i>													
Actinium-227	U	-0.0465	+/-0.215	0.403	0.192	+/-0.216		pCi/g		RXF2	01/11/16 0708	1532066	9
Antimony-125	U	0.0538	+/-0.0679	0.138	0.0647	+/-0.0722		pCi/g					
Bismuth-212	UI	0.00	+/-0.526	0.949	0.448	+/-0.607		pCi/g					
Bismuth-214		0.796	+/-0.143	0.113	0.0532	+/-0.159		pCi/g					
Cesium-137	UI	0.00	+/-0.0335	0.0706	0.0334	+/-0.0429	0.100	pCi/g					
Cobalt-60	U	0.00282	+/-0.027	0.0532	0.0237	+/-0.027		pCi/g					
Europium-154	U	-0.0338	+/-0.105	0.187	0.0857	+/-0.106		pCi/g					
Lead-212		1.03	+/-0.116	0.0909	0.0434	+/-0.142		pCi/g					
Lead-214		0.944	+/-0.153	0.119	0.0566	+/-0.169		pCi/g					

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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: 4.1.B.R.2.6
 Sample ID: 387694004

Report Date: January 14, 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>GammaSpec, Gamma, Solid "Dry Weight Corrected"</i>														
Potassium-40		15.4	+/-1.29	0.629	0.286	+/-1.84		pCi/g						
Protactinium-231	U	0.249	+/-0.528	0.651	0.307	+/-0.531		pCi/g						
Radium-226		0.796	+/-0.143	0.113	0.0532	+/-0.159		pCi/g						
Radium-228		0.863	+/-0.221	0.262	0.123	+/-0.239		pCi/g						
Thallium-208		0.275	+/-0.071	0.0506	0.0235	+/-0.0747		pCi/g						
Tin-126	U	0.0707	+/-0.135	0.148	0.0714	+/-0.136		pCi/g						
Rad Gas Flow Proportional Counting														
<i>GFPC, Gross A/B, solid "Dry Weight Corrected"</i>														
Alpha		11.5	+/-3.60	3.97	1.69	+/-4.22	4.00	pCi/g		KXB2	01/08/16	1204	1534687	10
Beta		20.6	+/-2.76	2.59	1.19	+/-3.97	10.0	pCi/g						
<i>GFPC, Sr90, solid "Dry Weight Corrected"</i>														
Strontium-90	U	-0.0449	+/-0.503	1.00	0.429	+/-0.503	2.00	pCi/g		KSD1	01/07/16	1155	1534450	11
Rad Liquid Scintillation Analysis														
<i>LSC, Tritium Dist, Solid "Dry Weight Corrected"</i>														
Tritium	U	1.29	+/-2.20	3.75	1.81	+/-2.20	6.00	pCi/g		TXJ1	01/06/16	0449	1533791	12
<i>Liquid Scint C14, Solid "Dry Weight Corrected"</i>														
Carbon-14	U	-0.403	+/-0.899	1.57	0.765	+/-0.899	2.00	pCi/g		TXJ1	01/13/16	1103	1533783	13
<i>Liquid Scint Tc99, Solid "Dry Weight Corrected"</i>														
Technetium-99	U	-0.751	+/-1.88	3.36	1.61	+/-1.88	5.00	pCi/g		MYM	01/12/16	0814	1534428	14

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	CXCI	12/17/15	1405	1532054

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

Report Date: January 14, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.2.7
 Sample ID: 387694002
 Matrix: Water
 Collect Date: 10-DEC-15
 Receive Date: 17-DEC-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	-7.31	+/-32.0	55.4	26.5	+/-32.1		pCi/L		MJH1	01/08/16	1547	1532831	1
Antimony-125	U	-1.74	+/-11.4	20.7	9.75	+/-11.5		pCi/L						
Bismuth-212	U	18.3	+/-61.0	112	52.1	+/-61.6		pCi/L						
Bismuth-214	U	-0.944	+/-11.1	18.1	8.54	+/-11.1		pCi/L						
Cesium-137	UI	0.00	+/-4.32	8.62	4.03	+/-5.05	10.0	pCi/L						
Cobalt-60	U	1.00	+/-4.49	8.56	3.84	+/-4.51		pCi/L						
Europium-154	U	-3.61	+/-12.3	22.0	9.81	+/-12.4		pCi/L						
Lead-212	UI	0.00	+/-12.8	14.5	7.00	+/-13.3		pCi/L						
Lead-214	U	1.04	+/-11.0	16.7	7.92	+/-11.0		pCi/L						
Potassium-40	U	-19.8	+/-63.3	115	53.0	+/-63.9		pCi/L						
Protactinium-231	U	-33.2	+/-57.1	96.3	45.7	+/-59.5		pCi/L						
Radium-228	U	13.7	+/-20.8	34.6	16.1	+/-21.7		pCi/L						
Thallium-208	U	-0.335	+/-5.70	9.29	4.39	+/-5.70		pCi/L						
Tin-126	U	-10.5	+/-15.1	16.8	8.11	+/-15.9		pCi/L						

Rad Gas Flow Proportional Counting

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

Alpha	U	-0.333	+/-1.90	4.15	1.67	+/-1.91	5.00	pCi/L		JXB7	01/05/16	1141	1533798	2
Beta	U	-0.332	+/-2.44	4.64	2.07	+/-2.44	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

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

Report Date: March 8, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.3.2
 Sample ID: 392045008
 Matrix: Soil
 Collect Date: 08-DEC-15
 Receive Date: 25-FEB-16
 Collector: Client
 Moisture: 28.9%

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

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	U	0.215	+/-0.380	0.639	0.300	+/-0.393		pCi/g		MXR1	03/08/16	0653	1547793	1
Antimony-125	U	0.0164	+/-0.150	0.282	0.131	+/-0.150		pCi/g						
Bismuth-212	UI	0.00	+/-1.07	1.86	0.859	+/-1.22		pCi/g						
Bismuth-214		1.03	+/-0.241	0.186	0.0843	+/-0.256		pCi/g						
Cesium-137		1.55	+/-0.170	0.0885	0.0392	+/-0.212	0.100	pCi/g						
Cobalt-60	U	-0.00791	+/-0.0669	0.125	0.0543	+/-0.067		pCi/g						
Europium-154	U	0.0173	+/-0.174	0.340	0.148	+/-0.174		pCi/g						
Lead-212		1.29	+/-0.142	0.124	0.0579	+/-0.187		pCi/g						
Lead-214		1.00	+/-0.256	0.202	0.0941	+/-0.270		pCi/g						
Potassium-40		14.6	+/-1.86	0.875	0.356	+/-2.24		pCi/g						
Protactinium-231	UI	0.00	+/-0.760	1.45	0.684	+/-0.843		pCi/g						
Radium-226		1.03	+/-0.241	0.186	0.0843	+/-0.256		pCi/g						
Radium-228		0.819	+/-0.438	0.387	0.171	+/-0.448		pCi/g						
Thallium-208		0.330	+/-0.0963	0.0733	0.0322	+/-0.100		pCi/g						
Tin-126	UI	0.00	+/-0.104	0.172	0.083	+/-0.106		pCi/g						

Rad Gas Flow Proportional Counting

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

Alpha		12.9	+/-3.69	3.88	1.65	+/-4.46	4.00	pCi/g		JXB7	03/03/16	1051	1547854	2
Beta		26.8	+/-3.14	2.85	1.32	+/-4.90	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	CXC1	02/26/16	1456	1547784

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4 5 2 3/Ga-01-R
2	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 Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: March 8, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.3.2
Sample ID: 392045008

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 Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes
 Client Sample ID: 4.1.B.R.4.2
 Sample ID: 392045009
 Matrix: Soil
 Collect Date: 08-DEC-15
 Receive Date: 25-FEB-16
 Collector: Client
 Moisture: 24.1%

Report Date: March 8, 2016

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

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	U	-0.0917	+/-0.263	0.486	0.228	+/-0.266		pCi/g		MXR1	03/08/16	0653	1547793	1
Antimony-125	U	-0.0105	+/-0.109	0.201	0.0928	+/-0.109		pCi/g						
Bismuth-212	UI	0.00	+/-0.742	1.30	0.600	+/-1.00		pCi/g						
Bismuth-214		0.856	+/-0.144	0.122	0.055	+/-0.160		pCi/g						
Cesium-137		1.03	+/-0.122	0.0622	0.0276	+/-0.149	0.100	pCi/g						
Cobalt-60	U	-0.0172	+/-0.0535	0.0833	0.0361	+/-0.0541		pCi/g						
Europium-154	U	0.0443	+/-0.112	0.235	0.103	+/-0.114		pCi/g						
Lead-212		1.32	+/-0.134	0.104	0.0486	+/-0.178		pCi/g						
Lead-214		1.03	+/-0.190	0.137	0.0632	+/-0.210		pCi/g						
Potassium-40		13.5	+/-1.43	0.572	0.231	+/-1.85		pCi/g						
Protactinium-231	UI	0.00	+/-0.799	0.930	0.434	+/-0.809		pCi/g						
Radium-226		0.856	+/-0.144	0.122	0.055	+/-0.160		pCi/g						
Radium-228		0.973	+/-0.410	0.252	0.111	+/-0.436		pCi/g						
Thallium-208		0.291	+/-0.0789	0.0739	0.0338	+/-0.0826		pCi/g						
Tin-126	UI	0.00	+/-0.123	0.126	0.0599	+/-0.126		pCi/g						

Rad Gas Flow Proportional Counting

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

Alpha		11.5	+/-3.23	3.90	1.74	+/-3.95	4.00	pCi/g		JXB7	03/03/16	1045	1547854	2
Beta		24.0	+/-2.54	1.97	0.903	+/-4.21	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	CXC1	02/26/16	1456	1547784

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5 2.3/Ga-01-R
2	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 Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: March 8, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.4.2
Sample ID: 392045009

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 Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228

Report Date: March 8, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.5.2
 Sample ID: 392045010
 Matrix: Soil
 Collect Date: 08-DEC-15
 Receive Date: 25-FEB-16
 Collector: Client
 Moisture: 25.1%

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>Gamma with Ingrowth "Dry Weight Corrected"</i>														
Actinium-227	U	-0.354	+/-0.338	0.592	0.276	+/-0.378		pCi/g		MXR1	03/08/16	0702	1547793	1
Antimony-125	U	-0.0195	+/-0.157	0.285	0.133	+/-0.157		pCi/g						
Bismuth-212		1.32	+/-0.958	1.18	0.525	+/-0.966		pCi/g						
Bismuth-214		1.03	+/-0.209	0.161	0.0727	+/-0.226		pCi/g						
Cesium-137		2.22	+/-0.185	0.0961	0.0435	+/-0.258	0.100	pCi/g						
Cobalt-60	U	0.00378	+/-0.0363	0.0783	0.0318	+/-0.0363		pCi/g						
Europium-154	U	0.107	+/-0.154	0.334	0.147	+/-0.162		pCi/g						
Lead-212		1.04	+/-0.172	0.148	0.0696	+/-0.194		pCi/g						
Lead-214		1.15	+/-0.212	0.188	0.0873	+/-0.234		pCi/g						
Potassium-40		15.8	+/-1.87	0.876	0.367	+/-2.30		pCi/g						
Protactinium-231	UI	0.00	+/-1.01	1.08	0.498	+/-1.04		pCi/g						
Radium-226		1.03	+/-0.209	0.161	0.0727	+/-0.226		pCi/g						
Radium-228		1.43	+/-0.316	0.243	0.102	+/-0.368		pCi/g						
Thallium-208		0.251	+/-0.155	0.0833	0.0376	+/-0.157		pCi/g						
Tin-126	UI	0.00	+/-0.173	0.211	0.100	+/-0.174		pCi/g						

Rad Gas Flow Proportional Counting

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

Alpha		13.5	+/-3.89	3.99	1.68	+/-4.70	4.00	pCi/g		JXB7	03/03/16	1045	1547854	2
Beta		24.3	+/-3.63	4.11	1.93	+/-5.01	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	CXC1	02/26/16	1456	1547784

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2 3/Ga-01-R
2	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 Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228
Contact: Ms. Laurie Losey
Project: Soil Radioisotopes
Client Sample ID: 4.I.B.R.5.2
Sample ID: 392045010

Report Date: March 8, 2016

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 Technical Services
 Address : 15 Hazelwood Drive
 Suite 112
 Buffalo, New York 14228
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes
 Client Sample ID: 4.1.B.R.6.2
 Sample ID: 392045011
 Matrix: Soil
 Collect Date: 08-DEC-15
 Receive Date: 25-FEB-16
 Collector: Client
 Moisture: 17.4%

Report Date: March 8, 2016

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

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	U	0.0784	+/-0.317	0.539	0.254	+/-0.319		pCi/g		MXR1	03/08/16	0706	1547793	1
Antimony-125	U	-0.00414	+/-0.109	0.200	0.0927	+/-0.109		pCi/g						
Bismuth-212	UI	0.00	+/-0.942	1.28	0.592	+/-1.20		pCi/g						
Bismuth-214		0.813	+/-0.151	0.134	0.0611	+/-0.168		pCi/g						
Cesium-137		0.437	+/-0.0786	0.0791	0.0362	+/-0.0883	0.100	pCi/g						
Cobalt-60	U	-0.0293	+/-0.0369	0.0633	0.0263	+/-0.0393		pCi/g						
Europium-154	U	0.101	+/-0.114	0.254	0.113	+/-0.124		pCi/g						
Lead-212		0.831	+/-0.153	0.114	0.0538	+/-0.172		pCi/g						
Lead-214		1.15	+/-0.209	0.328	0.159	+/-0.234		pCi/g						
Potassium-40		11.4	+/-1.37	0.441	0.168	+/-1.68		pCi/g						
Protactinium-231	U	0.411	+/-0.675	1.03	0.482	+/-0.681		pCi/g						
Radium-226		0.813	+/-0.151	0.134	0.0611	+/-0.168		pCi/g						
Radium-228		0.902	+/-0.260	0.238	0.105	+/-0.296		pCi/g						
Thallium-208		0.230	+/-0.0676	0.0606	0.0272	+/-0.0707		pCi/g						
Tin-126	UI	0.00	+/-0.105	0.147	0.0697	+/-0.107		pCi/g						

Rad Gas Flow Proportional Counting

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

Alpha		11.8	+/-3.35	3.97	1.76	+/-4.06	4.00	pCi/g		JXB7	03/03/16	1052	1547854	2
Beta		22.0	+/-3.12	3.68	1.75	+/-4.54	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	CXC1	02/26/16	1456	1547784

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4 5 2.3/Ga-01-R
2	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 Technical Services
Address : 15 Hazelwood Drive
Suite 112
Buffalo, New York 14228

Report Date: March 8, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.6.2
Sample ID: 392045011

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).

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
 Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Report Date: January 14, 2016

Client Sample ID: 4.1.B.R.6.5
 Sample ID: 387686001
 Matrix: Water
 Collect Date: 08-DEC-15
 Receive Date: 17-DEC-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

Gammaspex. Gamma, Liquid (Standard List) "As Received"

Actinium-227	U	-5.03	+/-24.0	41.8	19.8	+/-24.1		pCi/L		MJH1	01/08/16	1528	1532831	1
Antimony-125	U	4.25	+/-8.41	15.4	7.19	+/-8.63		pCi/L						
Bismuth-212	UI	0.00	+/-40.4	81.5	37.4	+/-43.9		pCi/L						
Bismuth-214	U	5.43	+/-10.9	14.1	6.62	+/-11.1		pCi/L						
Cesium-137	U	-2.33	+/-3.63	5.67	2.60	+/-3.78	10.0	pCi/L						
Cobalt-60	U	2.66	+/-3.47	7.22	3.24	+/-3.68		pCi/L						
Europium-154	U	2.89	+/-9.61	19.0	8.49	+/-9.70		pCi/L						
Lead-212	UI	0.00	+/-8.36	10.8	5.16	+/-8.94		pCi/L						
Lead-214	U	-6.29	+/-8.35	12.9	6.11	+/-8.83		pCi/L						
Potassium-40	U	15.2	+/-54.2	56.4	24.5	+/-54.2		pCi/L						
Protactinium-231	U	12.7	+/-53.2	79.1	37.4	+/-53.6		pCi/L						
Radium-228	U	2.62	+/-17.6	27.0	12.5	+/-17.6		pCi/L						
Thallium-208	UI	0.00	+/-6.22	5.08	2.32	+/-6.27		pCi/L						
Tin-126	U	1.38	+/-7.06	10.8	5.15	+/-7.09		pCi/L						

Rad Gas Flow Proportional Counting

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

Alpha	U	-0.903	+/-1.18	3.27	1.25	+/-1.18	5.00	pCi/L		JXB7	01/06/16	1117	1533798	2
Beta	U	-1.38	+/-2.25	4.58	2.04	+/-2.25	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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GEL LABORATORIES LLC

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Certificate of Analysis

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

Report Date: January 14, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.6.5
Sample ID: 387686001

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).

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Report Date: March 8, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.8.2
 Sample ID: 392045012
 Matrix: Soil
 Collect Date: 09-DEC-15
 Receive Date: 25-FEB-16
 Collector: Client
 Moisture: 18.2%

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

Gamma with Ingrowth "Dry Weight Corrected"

Actinium-227	UI	0.00	+/-0.303	0.621	0.295	+/-0.346		pCi/g		MXR1	03/08/16	0723	1547793	1
Antimony-125	U	0.0613	+/-0.124	0.243	0.113	+/-0.127		pCi/g						
Bismuth-212	UI	0.00	+/-0.925	1.43	0.664	+/-1.20		pCi/g						
Bismuth-214		0.853	+/-0.160	0.158	0.0726	+/-0.175		pCi/g						
Cesium-137		0.697	+/-0.126	0.0857	0.0392	+/-0.138	0.100	pCi/g						
Cobalt-60	U	-0.0221	+/-0.0487	0.0877	0.0383	+/-0.0498		pCi/g						
Europium-154	U	0.0435	+/-0.123	0.252	0.111	+/-0.124		pCi/g						
Lead-212		0.996	+/-0.141	0.126	0.0597	+/-0.162		pCi/g						
Lead-214		1.28	+/-0.219	0.350	0.170	+/-0.241		pCi/g						
Potassium-40		13.5	+/-1.44	0.538	0.214	+/-1.86		pCi/g						
Protactinium-231	U	0.258	+/-0.646	1.11	0.525	+/-0.659		pCi/g						
Radium-226		0.853	+/-0.160	0.158	0.0726	+/-0.175		pCi/g						
Radium-228		0.968	+/-0.291	0.209	0.0891	+/-0.317		pCi/g						
Thallium-208		0.255	+/-0.0831	0.0837	0.0385	+/-0.0858		pCi/g						
Tin-126	U	-0.0994	+/-0.136	0.225	0.108	+/-0.144		pCi/g						

Rad Gas Flow Proportional Counting

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

Alpha		12.6	+/-3.74	3.97	1.68	+/-4.46	4.00	pCi/g		JXB7	03/03/16	1052	1547854	2
Beta		20.7	+/-2.68	2.47	1.14	+/-4.04	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	CXC1	02/26/16	1456	1547784

The following Analytical Methods were performed

Method	Description
1	DOE HASL 300, 4.5.2 3/Ga-01-R
2	EPA 900 0/SW846 9310/SM 7110B Modified

Surrogate/Tracer Recovery Test

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

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

Report Date: March 8, 2016

Contact: Ms. Laurie Losey
Project: Soil Radioisotopes

Client Sample ID: 4.I.B.R.8.2
Sample ID: 392045012

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).

GEL LABORATORIES LLC

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

Certificate of Analysis

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

Report Date: January 14, 2016

Contact: Ms. Laurie Losey
 Project: Soil Radioisotopes

Client Sample ID: 4.1.B.R.8.5
 Sample ID: 387686002
 Matrix: Water
 Collect Date: 09-DEC-15
 Receive Date: 17-DEC-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

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

Actinium-227	U	-19.1	+/-30.1	44.1	21.0	+/-31.4		pCi/L		MJH1	01/08/16	1528	1532831	1
Antimony-125	U	3.18	+/-10.2	16.1	7.56	+/-10.3		pCi/L						
Bismuth-212	U	26.7	+/-54.3	90.7	42.0	+/-55.7		pCi/L						
Bismuth-214	UI	0.00	+/-9.97	10.9	5.06	+/-10.0		pCi/L						
Cesium-137	U	-2.85	+/-5.01	7.76	3.65	+/-5.18	10.0	pCi/L						
Cobalt-60	U	0.442	+/-3.51	6.71	2.99	+/-3.52		pCi/L						
Europium-154	U	-1.68	+/-11.0	17.3	7.66	+/-11.0		pCi/L						
Lead-212	U	1.88	+/-7.75	11.8	5.66	+/-7.80		pCi/L						
Lead-214	U	5.04	+/-10.2	13.9	6.59	+/-10.5		pCi/L						
Potassium-40	U	-46.3	+/-47.6	73.6	33.2	+/-52.2		pCi/L						
Protactinium-231	U	-0.382	+/-46.9	82.5	39.0	+/-46.9		pCi/L						
Radium-228	U	5.68	+/-16.4	22.9	10.4	+/-16.6		pCi/L						
Thallium-208	U	-3.71	+/-4.63	6.74	3.15	+/-4.93		pCi/L						
Tin-126	U	4.82	+/-8.44	13.5	6.44	+/-8.73		pCi/L						

Rad Gas Flow Proportional Counting

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

Alpha	U	-1.07	+/-1.61	4.27	1.65	+/-1.61	5.00	pCi/L		JXB7	01/05/16	1137	1533798	2
Beta	U	1.40	+/-2.72	4.78	2.15	+/-2.73	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).