



Midwest Laboratories
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www.midwestlabs.com

18 February 2020

Work Order: 1556951

KARLA ADAMI
CITY OF LARAMIE WWTP - 34024
PO BOX C
LARAMIE, WY 82073
RE: 503 Regs for Biosolids

Enclosed are the results of analyses for samples received by the laboratory on 2020-02-11 09:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert Ferris", with a long, sweeping horizontal stroke extending to the right.

Robert Ferris
Project Manager
raf4@midwestlabs.com



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CITY OF LARAMIE WWTP - 34024
 PO BOX C
 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
01	1556951-01	Solid	2020-02-10 11:00	2020-02-11 09:15
02	1556951-02	Solid	2020-02-10 11:00	2020-02-11 09:15
03	1556951-03	Solid	2020-02-10 11:00	2020-02-11 09:15
04	1556951-04	Solid	2020-02-10 11:00	2020-02-11 09:15

Containers used for the following analyses:

- 1556951-01 A: PAI-DK 01, SM 4500-NH3 C-1997
- 1556951-01 B: EPA 9045, SM 2540 G
- 1556951-01 C: Total Metals per EPA 6010B, Total Metals per EPA 6020, Total Metals per EPA 7471
- 1556951-01 D: EPA 353.2
- 1556951-02 A: PAI-DK 01, SM 4500-NH3 C-1997
- 1556951-02 B: EPA 9045, SM 2540 G
- 1556951-02 C: Total Metals per EPA 6010B, Total Metals per EPA 6020, Total Metals per EPA 7471
- 1556951-02 D: EPA 353.2
- 1556951-03 A: PAI-DK 01, SM 4500-NH3 C-1997
- 1556951-03 B: EPA 9045, SM 2540 G
- 1556951-03 C: Total Metals per EPA 6010B, Total Metals per EPA 6020, Total Metals per EPA 7471
- 1556951-03 D: EPA 353.2
- 1556951-04 A: PAI-DK 01, SM 4500-NH3 C-1997
- 1556951-04 B: EPA 9045, SM 2540 G
- 1556951-04 C: Total Metals per EPA 6010B, Total Metals per EPA 6020, Total Metals per EPA 7471
- 1556951-04 D: EPA 353.2



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Reported:
2020-02-18 09:19

Analysis Results Reviewed by:

Total Metals per EPA 6010B reviewed by kkh9.

Total Metals per EPA 6020 reviewed by kkh9.

Total Metals per EPA 7471 reviewed by kkh9.

EPA 353.2 reviewed by jdb5.

EPA 9045 reviewed by jdb5.

PAI-DK 01 reviewed by jdb5.

SM 2540 G reviewed by jdb5.

SM 4500-NH3 C-1997 reviewed by jdb5.



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 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Sample ID: 01
Laboratory ID: 1556951-01
Sampled Date/Time: 2020-02-10 11:00

Analyte	Dry Weight Result	Reporting Limit	Units	As Received		Method	Prepared	Analyzed	Analyst	(Container) /
				Result						Notes
Total Metals										
Arsenic	3.9	0.002	mg/kg dry	3.0	mg/kg	EPA 6020	2020-02-12	2020-02-17	ras7	(C)
Barium	134.5	0.1	mg/kg dry	103.3	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Cadmium	0.7	0.2	mg/kg dry	0.5	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Calcium	31100	12.6	mg/kg dry	23880	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Chromium	12.2	0.8	mg/kg dry	9.4	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Copper	109.6	0.4	mg/kg dry	84.2	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Iron	9125	3.2	mg/kg dry	7007	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Lead	15.3	1.7	mg/kg dry	11.7	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Magnesium	6783	3.1	mg/kg dry	5209	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Manganese	217.7	0.2	mg/kg dry	167.2	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Mercury	0.13	0.001	mg/kg dry	0.10	mg/kg	EPA 7471	2020-02-12	2020-02-13	trh1	(C)
Molybdenum	1.7	0.3	mg/kg dry	1.3	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Nickel	9.0	0.4	mg/kg dry	6.9	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Phosphate (P2O5)	8991	29.0	mg/kg dry		mg/kg	Calculation	2020-02-12	2020-02-13	ery3	
Phosphorus	3926	1.7	mg/kg dry	3015	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Potash (K2O)	7921	15.2	mg/kg dry		mg/kg	Calculation	2020-02-12	2020-02-13	ery3	
Potassium	6601	4.8	mg/kg dry	5069	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Selenium	2.7	0.01	mg/kg dry	2.1	mg/kg	EPA 6020	2020-02-12	2020-02-17	ras7	(C)
Silver	<	0.3	mg/kg dry	<	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)/ U
Sodium	548.4	2.1	mg/kg dry	421.1	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Sulfur	2892	2.1	mg/kg dry	2221	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Zinc	149.1	1.3	mg/kg dry	114.5	mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Environmental Chemistry										
Ammonia as N	1320	13.0	mg/kg dry	1020	mg/kg	SM 4500-NH3 C-1997	2020-02-13	2020-02-13	mpc8	(A)
Total Kjeldahl Nitrogen	11700	651	mg/kg dry	9020	mg/kg	PAI-DK 01	2020-02-17	2020-02-17	mpc8	(A)
Nitrate/Nitrite Nitrogen	251	5.0	mg/kg dry	193	mg/kg	EPA 353.2	2020-02-12	2020-02-12	JAJ4	(D)
Organic Nitrogen	10400	651	mg/kg dry		mg/kg	Calculation	2020-02-17	2020-02-17	mpc8	
pH @ 19.2°C			S.U.	7.25	S.U.	EPA 9045	2020-02-12	2020-02-12	lkm2	(B)
Percent Solids		0.01	%	76.79	%	SM 2540 G	2020-02-11	2020-02-12	lkm2	(B)



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 PO BOX C
 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Sample ID: 02
Laboratory ID: 1556951-02
Sampled Date/Time: 2020-02-10 11:00

Analyte	Dry Weight	Reporting	Units	As Received	Method	Prepared	Analyzed	Analyst	(Container) /
	Result	Limit		Result					Notes
Total Metals									
Arsenic	3.8	0.002	mg/kg dry	3.0 mg/kg	EPA 6020	2020-02-12	2020-02-17	ras7	(C)
Barium	147.2	0.1	mg/kg dry	114.8 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Cadmium	0.5	0.3	mg/kg dry	0.4 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Calcium	39430	13.6	mg/kg dry	30740 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Chromium	11.8	0.8	mg/kg dry	9.2 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Copper	110.3	0.4	mg/kg dry	86.0 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Iron	9125	3.4	mg/kg dry	7115 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Lead	13.9	1.8	mg/kg dry	10.8 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Magnesium	6519	3.3	mg/kg dry	5083 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Manganese	217.5	0.3	mg/kg dry	169.6 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Mercury	0.14	0.0005	mg/kg dry	0.11 mg/kg	EPA 7471	2020-02-12	2020-02-13	trh1	(C)
Molybdenum	1.8	0.3	mg/kg dry	1.4 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Nickel	8.5	0.4	mg/kg dry	6.6 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Phosphate (P2O5)	9428	31.1	mg/kg dry	mg/kg	Calculation	2020-02-12	2020-02-13	ery3	
Phosphorus	4117	1.8	mg/kg dry	3210 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Potash (K2O)	7711	16.3	mg/kg dry	mg/kg	Calculation	2020-02-12	2020-02-13	ery3	
Potassium	6426	5.1	mg/kg dry	5010 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Selenium	2.6	0.01	mg/kg dry	2.0 mg/kg	EPA 6020	2020-02-12	2020-02-17	ras7	(C)
Silver	0.3	0.3	mg/kg dry	0.3 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)/ J
Sodium	544.8	2.3	mg/kg dry	424.8 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Sulfur	2828	2.3	mg/kg dry	2205 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Zinc	152.2	1.4	mg/kg dry	118.7 mg/kg	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Environmental Chemistry									
Ammonia as N	1220	128	mg/kg dry	955 mg/kg	SM 4500-NH3 C-1997	2020-02-13	2020-02-13	mpc8	(A)
Total Kjeldahl Nitrogen	12300	641	mg/kg dry	9620 mg/kg	PAI-DK 01	2020-02-17	2020-02-17	mpc8	(A)
Nitrate/Nitrite Nitrogen	240	5.0	mg/kg dry	187 mg/kg	EPA 353.2	2020-02-12	2020-02-12	JAJ4	(D)
Organic Nitrogen	11100	641	mg/kg dry	mg/kg	Calculation	2020-02-17	2020-02-17	mpc8	
pH @ 19.1°C			S.U.	7.27 S.U.	EPA 9045	2020-02-12	2020-02-12	lkm2	(B)
Percent Solids		0.01	%	77.97 %	SM 2540 G	2020-02-11	2020-02-12	lkm2	(B)



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 PO BOX C
 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Sample ID: 03
Laboratory ID: 1556951-03
Sampled Date/Time: 2020-02-10 11:00

Analyte	Dry Weight		Reporting		As Received		Prepared	Analyzed	Analyst	(Container) / Notes
	Result	Limit	Units	Result	Method	Method				
Total Metals										
Arsenic	4.0	0.002	mg/kg dry	3.1 mg/kg	EPA 6020	EPA 6020	2020-02-12	2020-02-17	ras7	(C)
Barium	134.2	0.1	mg/kg dry	106.0 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Cadmium	0.5	0.2	mg/kg dry	0.4 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Calcium	31450	12.3	mg/kg dry	24850 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Chromium	12.2	0.7	mg/kg dry	9.6 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Copper	96.9	0.4	mg/kg dry	76.6 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Iron	9414	3.1	mg/kg dry	7438 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Lead	20.1	1.6	mg/kg dry	15.9 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Magnesium	6536	3.0	mg/kg dry	5164 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Manganese	213.9	0.2	mg/kg dry	169.0 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Mercury	0.23	0.0005	mg/kg dry	0.18 mg/kg	EPA 7471	EPA 7471	2020-02-12	2020-02-13	trh1	(C)
Molybdenum	2.1	0.3	mg/kg dry	1.7 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Nickel	9.8	0.4	mg/kg dry	7.7 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Phosphate (P2O5)	8199	28.3	mg/kg dry	mg/kg	Calculation	Calculation	2020-02-12	2020-02-13	ery3	(C)
Phosphorus	3581	1.7	mg/kg dry	2829 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Potash (K2O)	7356	14.8	mg/kg dry	mg/kg	Calculation	Calculation	2020-02-12	2020-02-13	ery3	(C)
Potassium	6130	4.6	mg/kg dry	4843 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Selenium	2.8	0.01	mg/kg dry	2.2 mg/kg	EPA 6020	EPA 6020	2020-02-12	2020-02-17	ras7	(C)
Silver	<	0.3	mg/kg dry	< mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)/ U
Sodium	511.5	2.1	mg/kg dry	404.1 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Sulfur	2677	2.1	mg/kg dry	2115 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Zinc	142.5	1.2	mg/kg dry	112.6 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Environmental Chemistry										
Ammonia as N	1180	127	mg/kg dry	936 mg/kg	SM 4500-NH3 C-1997	SM	2020-02-13	2020-02-13	mpc8	(A)
Total Kjeldahl Nitrogen	12000	633	mg/kg dry	9450 mg/kg	PAI-DK 01	PAI-DK 01	2020-02-17	2020-02-17	mpc8	(A)
Nitrate/Nitrite Nitrogen	238	5.0	mg/kg dry	188 mg/kg	EPA 353.2	EPA 353.2	2020-02-12	2020-02-12	JAJ4	(D)
Organic Nitrogen	10800	633	mg/kg dry	mg/kg	Calculation	Calculation	2020-02-17	2020-02-17	mpc8	(A)
pH @ 19.2°C			S.U.	7.33 S.U.	EPA 9045	EPA 9045	2020-02-12	2020-02-12	lkm2	(B)
Percent Solids		0.01	%	79.01 %	SM 2540 G	SM 2540 G	2020-02-11	2020-02-12	lkm2	(B)



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 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Sample ID: 04
Laboratory ID: 1556951-04
Sampled Date/Time: 2020-02-10 11:00

Analyte	Dry Weight		Reporting		As Received		Prepared	Analyzed	Analyst	(Container) / Notes
	Result	Limit	Units	Result	Method	Method				
Total Metals										
Arsenic	3.8	0.002	mg/kg dry	3.0 mg/kg	EPA 6020	EPA 6020	2020-02-12	2020-02-17	ras7	(C)
Barium	138.9	0.1	mg/kg dry	111.1 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Cadmium	0.5	0.2	mg/kg dry	0.4 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Calcium	31410	11.9	mg/kg dry	25120 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Chromium	11.3	0.7	mg/kg dry	9.1 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Copper	117.3	0.4	mg/kg dry	93.8 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Iron	8757	3.0	mg/kg dry	7003 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Lead	14.9	1.6	mg/kg dry	11.9 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Magnesium	6485	2.9	mg/kg dry	5186 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Manganese	215.3	0.2	mg/kg dry	172.2 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Mercury	0.16	0.001	mg/kg dry	0.12 mg/kg	EPA 7471	EPA 7471	2020-02-12	2020-02-13	trh1	(C)
Molybdenum	2.0	0.3	mg/kg dry	1.6 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Nickel	8.4	0.4	mg/kg dry	6.7 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Phosphate (P2O5)	9069	27.2	mg/kg dry	mg/kg	Calculation	Calculation	2020-02-12	2020-02-13	ery3	(C)
Phosphorus	3960	1.6	mg/kg dry	3167 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Potash (K2O)	7951	14.3	mg/kg dry	mg/kg	Calculation	Calculation	2020-02-12	2020-02-13	ery3	(C)
Potassium	6626	4.5	mg/kg dry	5299 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Selenium	2.6	0.01	mg/kg dry	2.1 mg/kg	EPA 6020	EPA 6020	2020-02-12	2020-02-17	ras7	(C)
Silver	<	0.3	mg/kg dry	< mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)/ U
Sodium	564.7	2.0	mg/kg dry	451.6 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Sulfur	2972	2.0	mg/kg dry	2377 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Zinc	150.6	1.2	mg/kg dry	120.4 mg/kg	EPA 6010B	EPA 6010B	2020-02-12	2020-02-13	ery3	(C)
Environmental Chemistry										
Ammonia as N	1200	125	mg/kg dry	961 mg/kg	SM 4500-NH3 C-1997	SM	2020-02-13	2020-02-13	mpc8	(A)
Total Kjeldahl Nitrogen	12200	625	mg/kg dry	9730 mg/kg	PAI-DK 01	PAI-DK 01	2020-02-17	2020-02-17	mpc8	(A)
Nitrate/Nitrite Nitrogen	246	5.0	mg/kg dry	197 mg/kg	EPA 353.2	EPA 353.2	2020-02-12	2020-02-12	JAJ4	(D)
Organic Nitrogen	11000	625	mg/kg dry	mg/kg	Calculation	Calculation	2020-02-17	2020-02-17	mpc8	(A)
pH @ 19.1°C			S.U.	7.32 S.U.	EPA 9045	EPA 9045	2020-02-12	2020-02-12	lkm2	(B)
Percent Solids		0.01	%	79.97 %	SM 2540 G	SM 2540 G	2020-02-11	2020-02-12	lkm2	(B)



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Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B001020

Blank (B001020-BLK1)

Prepared: 2020-02-12 Analyzed: 2020-02-13

Barium	<	0.002	mg/kg wet							U
Cadmium	<	0.004	mg/kg wet							U
Calcium	<	0.2	mg/kg wet							U
Chromium	<	0.01	mg/kg wet							U
Copper	<	0.006	mg/kg wet							U
Iron	<	0.05	mg/kg wet							U
Lead	<	0.03	mg/kg wet							U
Magnesium	<	0.05	mg/kg wet							U
Manganese	<	0.004	mg/kg wet							U
Molybdenum	<	0.005	mg/kg wet							U
Nickel	<	0.007	mg/kg wet							U
Phosphorus	0.04	0.03	mg/kg wet							J
Potassium	0.11	0.08	mg/kg wet							J
Silver	<	0.004	mg/kg wet							U
Sodium	0.12	0.03	mg/kg wet							J
Sulfur	0.07	0.03	mg/kg wet							J
Zinc	<	0.02	mg/kg wet							

LCS (B001020-BS1)

Prepared: 2020-02-12 Analyzed: 2020-02-13

Barium	0.95	0.002	mg/kg wet	1.00		94.7	80-120			
Cadmium	0.93	0.004	mg/kg wet	1.00		93.4	80-120			
Calcium	49.24	0.2	mg/kg wet	51.0		96.5	80-120			
Chromium	0.94	0.01	mg/kg wet	1.00		94.3	80-120			
Copper	1.91	0.006	mg/kg wet	2.00		95.4	80-120			
Iron	1.91	0.05	mg/kg wet	2.00		95.6	80-120			
Lead	0.93	0.03	mg/kg wet	1.00		93.2	80-120			
Magnesium	19.75	0.05	mg/kg wet	21.0		94.0	80-120			
Manganese	1.88	0.004	mg/kg wet	2.00		94.2	80-120			
Molybdenum	1.90	0.005	mg/kg wet	2.00		95.1	80-120			
Nickel	0.96	0.007	mg/kg wet	1.00		95.5	80-120			
Phosphorus	19.50	0.03	mg/kg wet	20.0		97.5	80-120			
Potassium	28.73	0.08	mg/kg wet	30.0		95.8	80-120			
Silver	0.95	0.004	mg/kg wet	1.00		94.9	80-120			
Sodium	5.85	0.03	mg/kg wet	6.00		97.4	80-120			
Sulfur	4.82	0.03	mg/kg wet	5.00		96.3	80-120			
Zinc	1.91	0.02	mg/kg wet	2.00		95.6	80-120			



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CITY OF LARAMIE WWTP - 34024
 PO BOX C
 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B001020

Matrix Spike (B001020-MS1)	Source: 1556307-01			Prepared: 2020-02-12 Analyzed: 2020-02-13						
Barium	338.1	0.4	mg/kg dry	241	115.5	92.5	75-125			
Cadmium	210.9	0.9	mg/kg dry	241	<	87.6	75-125			
Chromium	225.3	2.9	mg/kg dry	241	8.09	90.2	75-125			
Copper	556.0	1.4	mg/kg dry	482	111.6	92.3	75-125			
Iron	5704	12.1	mg/kg dry	482	5141	117	75-125			
Lead	222.8	6.4	mg/kg dry	241	8.65	88.9	75-125			
Manganese	735.8	0.9	mg/kg dry	482	309.1	88.6	75-125			
Molybdenum	445.2	1.2	mg/kg dry	482	4.15	91.6	75-125			
Nickel	221.6	1.6	mg/kg dry	241	7.43	89.0	75-125			
Silver	218.6	1.1	mg/kg dry	241	<	90.8	75-125			
Zinc	775.7	4.8	mg/kg dry	482	346.9	89.0	75-125			

Matrix Spike Dup (B001020-MSD1)	Source: 1556307-01			Prepared: 2020-02-12 Analyzed: 2020-02-13						
Barium	355.4	0.4	mg/kg dry	241	115.5	99.4	75-125	4.99	20	
Cadmium	218.2	0.9	mg/kg dry	241	<	90.4	75-125	3.44	20	
Chromium	234.0	2.9	mg/kg dry	241	8.09	93.6	75-125	3.77	20	
Copper	590.9	1.4	mg/kg dry	483	111.6	99.3	75-125	6.09	20	
Iron	5809	12.1	mg/kg dry	483	5141	NR	75-125	1.83	20	SPK
Lead	255.2	6.4	mg/kg dry	241	8.65	102	75-125	13.6	20	
Manganese	763.0	1.0	mg/kg dry	483	309.1	94.0	75-125	3.64	20	
Molybdenum	461.3	1.2	mg/kg dry	483	4.15	94.7	75-125	3.56	20	
Nickel	229.4	1.6	mg/kg dry	241	7.43	91.9	75-125	3.42	20	
Silver	227.3	1.1	mg/kg dry	241	<	94.2	75-125	3.91	20	
Zinc	797.9	4.8	mg/kg dry	483	346.9	93.4	75-125	2.83	20	

Batch B001021

Blank (B001021-BLK1)	Prepared: 2020-02-12 Analyzed: 2020-02-17									
Arsenic	0.0001	0.00002	mg/kg wet							J
Selenium	0.0003	0.00008	mg/kg wet							J



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CITY OF LARAMIE WWTP - 34024
 PO BOX C
 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B001021										
LCS (B001021-BS1)										
					Prepared: 2020-02-12 Analyzed: 2020-02-17					
Arsenic	0.21	0.00002	mg/kg wet	0.200		107	80-120			
Selenium	0.23	0.00008	mg/kg wet	0.200		114	80-120			
Matrix Spike (B001021-MS1)										
		Source: 1556307-01			Prepared: 2020-02-12 Analyzed: 2020-02-17					
Arsenic	58.92	0.05	mg/kg dry	48.7	8.26	104	75-125			
Selenium	58.73	0.2	mg/kg dry	48.7	6.55	107	75-125			
Matrix Spike Dup (B001021-MSD1)										
		Source: 1556307-01			Prepared: 2020-02-12 Analyzed: 2020-02-17					
Arsenic	57.91	0.05	mg/kg dry	48.5	8.26	102	75-125	1.73	20	
Selenium	57.90	0.2	mg/kg dry	48.5	6.55	106	75-125	1.42	20	
Batch B001039										
Blank (B001039-BLK1)										
					Prepared: 2020-02-12 Analyzed: 2020-02-13					
Mercury	<	0.000004	mg/kg wet							U
LCS (B001039-BS1)										
					Prepared: 2020-02-12 Analyzed: 2020-02-13					
Mercury	0.001	0.000004	mg/kg wet	0.00100		104	80-120			
Matrix Spike (B001039-MS1)										
		Source: 1556307-01			Prepared: 2020-02-12 Analyzed: 2020-02-13					
Mercury	2.9	0.01	mg/kg dry	2.65	0.12	104	80-120			
Matrix Spike Dup (B001039-MSD1)										
		Source: 1556307-01			Prepared: 2020-02-12 Analyzed: 2020-02-13					
Mercury	3.2	0.01	mg/kg dry	2.93	0.12	104	80-120	9.61	20	



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CITY OF LARAMIE WWTP - 34024
 PO BOX C
 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B001000										
Blank (B001000-BLK1) Prepared & Analyzed: 2020-02-12										
Nitrate/Nitrite Nitrogen	<	0.2	mg/kg wet							
LCS (B001000-BS1) Prepared & Analyzed: 2020-02-12										
Nitrate/Nitrite Nitrogen	20.78	1.0	mg/kg wet	20.0		104	85-115			
Matrix Spike (B001000-MS1) Source: 1557370-01 Prepared & Analyzed: 2020-02-12										
Nitrate/Nitrite Nitrogen	29.91	1.0	mg/kg dry	20.0	8.85	105	80-120			
Matrix Spike Dup (B001000-MSD1) Source: 1557370-01 Prepared & Analyzed: 2020-02-12										
Nitrate/Nitrite Nitrogen	29.52	1.0	mg/kg dry	20.0	8.85	103	80-120	1.33	20	
Batch B001005										
Blank (B001005-BLK1) Prepared: 2020-02-11 Analyzed: 2020-02-12										
Percent Solids	99.98	0.01	%							
LCS (B001005-BS1) Prepared: 2020-02-11 Analyzed: 2020-02-12										
Percent Solids	97.57	0.01	%	97.6		100	80-120			
Duplicate (B001005-DUP1) Source: 1556951-03 Prepared: 2020-02-11 Analyzed: 2020-02-12										
Percent Solids	78.96	0.01	%		79.01			0.0633	20	
Duplicate (B001005-DUP2) Source: 1556953-02 Prepared: 2020-02-11 Analyzed: 2020-02-12										
Percent Solids	71.49	0.01	%		70.20			1.82	20	
Batch B001029										
LCS (B001029-BS1) Prepared & Analyzed: 2020-02-12										
pH @ 19°C	6.99		S.U.	7.16		97.6	85-115			



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CITY OF LARAMIE WWTP - 34024
 PO BOX C
 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B001029

Duplicate (B001029-DUP1)		Source: 1556307-01		Prepared & Analyzed: 2020-02-12						
pH @ 19.1°C	6.63		S.U.		6.61			0.302	20	

Batch B001067

Blank (B001067-BLK1)		Prepared & Analyzed: 2020-02-13								
Ammonia as N	<	10.0	mg/kg wet							

LCS (B001067-BS1)		Prepared & Analyzed: 2020-02-13								
Ammonia as N	3833	125	mg/kg wet	4150		92.4	85-115			

Matrix Spike (B001067-MS1)		Source: 1557481-02		Prepared & Analyzed: 2020-02-13						
Ammonia as N	16400	453	mg/kg dry	9070	7482	98.4	80-120			

Matrix Spike Dup (B001067-MSD1)		Source: 1557481-02		Prepared & Analyzed: 2020-02-13						
Ammonia as N	16230	453	mg/kg dry	9010	7482	97.1	80-120	1.05	20	

Batch B001127

Blank (B001127-BLK1)		Prepared & Analyzed: 2020-02-17								
Total Kjeldahl Nitrogen	<	100	mg/kg wet							

LCS (B001127-BS1)		Prepared & Analyzed: 2020-02-17								
Total Kjeldahl Nitrogen	5432	250	mg/kg wet	5330		102	85-115			

Matrix Spike (B001127-MS1)		Source: 1557481-01		Prepared & Analyzed: 2020-02-17						
Total Kjeldahl Nitrogen	59560	1990	mg/kg dry	20900	38890	98.7	80-120			



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CITY OF LARAMIE WWTP - 34024 PO BOX C LARAMIE, WY 82073	Project: 503 Regs for Biosolids Project Number: 2019 compost Project Manager: KARLA ADAMI	Reported: 2020-02-18 09:19
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Environmental Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B001127										
Matrix Spike Dup (B001127-MSD1)										
		Source: 1557481-01			Prepared & Analyzed: 2020-02-17					
Total Kjeldahl Nitrogen	59900	1990	mg/kg dry	20900	38890	101	80-120	0.573	20	



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CITY OF LARAMIE WWTP - 34024
 PO BOX C
 LARAMIE, WY 82073

Project: 503 Regs for Biosolids
 Project Number: 2019 compost
 Project Manager: KARLA ADAMI

Reported:
 2020-02-18 09:19

Certified Analyses included in this Report

Method	Analyte	Certifications
<i>EPA 353.2 in Solid</i>	Nitrate/Nitrite Nitrogen	IA,FL
<i>EPA 6010B in Solid</i>	Barium	TX,KS,FL,UT,OK,IA,WA
	Cadmium	TX,KS,FL,UT,OK,IA,WA
	Calcium	TX,KS,IA,FL
	Chromium	TX,KS,FL,UT,OK,IA,WA
	Copper	TX,KS,FL,UT,OK,IA,WA
	Iron	FL,KS,TX,UT,OK,IA,WA
	Lead	FL,KS,TX,UT,OK,IA,WA
	Magnesium	FL,TX,KS,UT,OK,IA,WA
	Manganese	FL,KS,TX,UT,OK,IA,WA
	Molybdenum	TX,KS,FL,UT,IA,OK,WA
	Nickel	FL,KS,TX,UT,OK,IA,WA
	Phosphorus	FL,KS,TX,UT,OK,IA,WA
	Potassium	FL,KS,TX,UT,OK,IA,WA
	Silver	FL,KS,TX,UT,OK,IA,WA
	Sodium	FL,KS,TX,UT,OK,IA,WA
	Zinc	FL,KS,TX,UT,IA,WA
<i>EPA 6020 in Solid</i>	Arsenic	IA,KS,FL
	Selenium	KS,IA,FL
<i>EPA 7471 in Solid</i>	Mercury	TX,KS,FL,UT,OK,IA,WA
<i>EPA 9045 in Solid</i>	pH	FL,OK,KS,WA
<i>PAI-DK 01 in Solid</i>	Total Kjeldahl Nitrogen	IA,FL
<i>SM 2540 G in Solid</i>	Percent Solids	FL,IA,WA
<i>SM 4500-NH3 C-1997 in Solid</i>	Ammonia as N	FL

Non-Certified Analyses included in this Report

Method	Analyte
<i>EPA 6010B in Solid</i>	Sulfur

Code	Description	Number	Expires
FL	Florida Department of Health	E87918	06/30/2020
IA	Iowa Department of Natural Resources	064	05/01/2021
KS	Kansas Department of Health and Environment	E-10402	04/30/2020
NE	State of Nebraska Dept of Health & Human Services	NE-04-05	06/30/2020
OK	Oklahoma Department of Environmental Quality	2019-094	08/31/2020
TX	Texas Commission on Environmental Quality	T104704416-19-13	07/31/2020
UT	State of Utah Department of Health	NE000012019-9	07/31/2020
WA	State of Washington Department of Ecology	C912	06/07/2020

Work Order: 1556951

The result(s) issued on this report only reflect the analysis of the sample(s) submitted. For applicable test parameters, Midwest Laboratories is in compliance with NELAC requirements. Our reports and letters are for the exclusive and confidential use of our clients and may not be reproduced in whole or in part, nor may any reference be made to the work, the results, or the company in any advertising, news release, or other public announcements without obtaining our prior written authorization.



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CITY OF LARAMIE WWTP - 34024
PO BOX C
LARAMIE, WY 82073

Project: 503 Regs for Biosolids
Project Number: 2019 compost
Project Manager: KARLA ADAMI

Reported:
2020-02-18 09:19

Notes and Definitions

- U Analyte included in the analysis, but not detected
- SPK Spike recovery calculation is not required when sample level is greater than three times the spiking level.
- J Estimated value
- < Less than reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference

EPA 524.2, EPA 624, EPA 8260, OA-1, TCLP VOC, GRO, and all microbiological analyses are conducted in the facility located at 13606 B Street, Omaha, NE 68144. All other analyses are conducted in the main facility located at 13611 B Street, Omaha, NE 68144.



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CHAIN OF CUSTODY

Lab Work Order Number: 1556951
 Date Generated: 01/28/2020

Client Name CITY OF LARAMIE WWTP - 34024		Project Name 503 Regs for Biosolids		Requested Analyses (Test Names)						Copy To:						
Client Contact KARLA ADAMI		Project Description 2019 Compost		503 Regulations Ag, As-M, Ba, Ca, Cd, Cr, Cu, Fe, Hg, K, Mg, Mn, Mo, Na, Ni, P, Pb, S, Se-M, Zn	Ammonia-Titration, Nitrate/Nitrite, Percent Solids, pH, TKN-Titration											
Address PO BOX C		Purchase Order Number														
City LARAMIE		Midwest Labs Contact Robert Ferris														
State/Zip WY, 82073		Regulatory (Circle One) <input checked="" type="radio"/> Yes <input type="radio"/> No														
Phone 3077215204		Fax 0		Regulatory Agency EPA												
Sampler Name (printed) Karla Adami		Sample Type (Circle One - See Below) D G W <input checked="" type="radio"/> S/H U P								Email to:						

Lab ID	Sample Name or Field ID	Sampled Date	Sampled Time	Sample Code	Matrix Code	Container Count	Preservation Code						Sample Comments	
01	01	2-10-20	11am	S	S	2	1	2	1					
02	02	↓	↓	S	S	2	1	2	2					
03	03	↓	↓	S	S	2	1	2	2					
04	04	↓	↓	S	S	2	1	2	2					

FOR COOPER: **1556951**
COC
 Sticker #: 1




Relinquished By <i>Karla Adami</i>	Date/Time 2-10-20 2pm	Received By <i>NF</i>	Date/Time 2/11/20	Lab Internal Use Only:	
Relinquished By	Date/Time	Received By	Date/Time	Temperature Upon Receipt: <u>9.3</u>	
Comments:				Cooler Numbers:	
				Notes:	

Matrix Codes: S=Solid

Preservation Codes: 1=Cool 6°C, 11=[Group Analysis], 2=None

Sample Type Codes: D = Drinking Water (Safe Drinking Water Act), G = Groundwater, W = Wastewater (Clean Water Act), S/H = Solid/Hazardous Waste (RCRA), U = Underground Storage Tank (UST), P = Process Water

Chain of Custody will have a signature upon receipt but no subsequent signatures.



Work Order 1556951

Regulatory




This sheet **MUST** be filled out before samples can be processed. To ensure that holding times are met, it is your responsibility that a completed form comes attached to the Chain of Custody. Samples must be received on ice.


Is this sample for regulatory/permit reporting? Yes No

What city/state was your sample collected in? Laramie, Wyoming

What agency/state are you reporting? EPA



HCRCORDER:
1556951
COC
Sticker #: 2



What type of sample? (Circle One)

Drinking Water
For human consumption,
30 hr hold time

Ground Water

Wastewater

Soild Waste

Hazardous Waste

UST

Storm Water

Process Water

Livestock

SEE REVERSE SIDE FOR SAMPLING INSTRUCTIONS

RC FORM 14-3 Effective 01.30.19

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Lab Number: _____

 Thermometer Used: Therm Fisher IR 11

 Cooler Intact: Yes No
 Received on Ice: Yes No
 Hand Delivered: Yes No

 Sample Temperature (°C): 9.3

 Date & Initials of person accepting samples: 1/31/2010 JF Zinko

Comments

Chain of Custody present?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Sample ID(s):	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Sample Location(s):	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Client contact:	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Analysis Requested:	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Date & Time of collection:	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Sampler name on COC?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Chain of custody relinquished with signature?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Chain of custody complete?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Sample labels match COC?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Written in indelible ink?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Labels indicate proper preservation?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Samples arrived within hold time?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Samples arrived within correct temperature?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Sufficient volume?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Appropriate containers used?	<input checked="" type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>	N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	N/A	
Headspace in VOA vials?	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	N/A	
Trip Blank present?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	N/A	

Client Notification/Resolution: Date/Time Contacted: _____

Person Contacted: _____ Contacted By: _____

Comments/Resolution: _____


 WORKORDER:
1556951
COC
 Sticker #: 3
